Install Your Mobile Rig in Your Vehicle's Dashboard Page 53

QST
DIGITAL EDITION

ARRL the national association for amateur radio®
December 2020 www.arrl.org
DEVOTED ENTIRELY TO AMATEUR RADIO

QST Reviews

Yaesu FTDX101MP MF, HF, and 6-Meter Transceiver

Radioddity GA-510 Dual-Band Handheld Transceiver

Workshop Vises

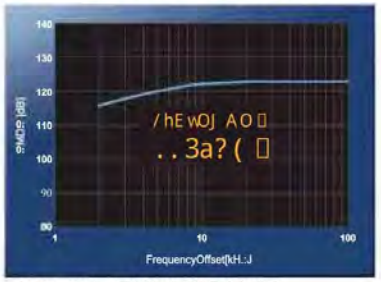
Four State QRP Group Cric-Key Kit

The Birth of the New Standard in HF, Inheriting the Performance of the World Leading HF Hybrid SDR radio, FTnxlOJ

A New Legend Begins…

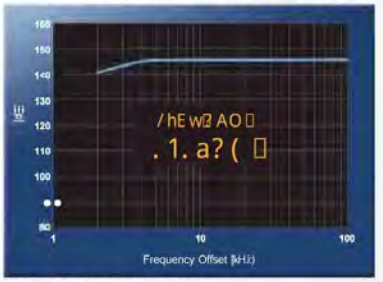
Facts:

- **2kHz RMDR 116 dB+**



. 1J Ew2^ka Db`fmd `^i J fufkd
Avk^j f` O^kdb 96OJ AO&

- **2kHz BDR 141 dB+**



. 1J Ew2^ka ?il `hfkd
Avk^j f` O^kdb 98 AO&

- **2kHz 3rd IMDR 109 dB+**

. 1J Ew2^ka Oa Fkdpoj l ari^dl k
Avk^j f` O^kdb 9F AO&

Ultimtlte RF Performtlnce with

- ***5-inch TFT Color Touch Panel with 3DSS visual Display***
- ***MPVD** (Multi-Purpose VFO Outer Dial) **enables Outstanding Operating Per.formo,nce***
- ***Remote Operation with LAN or Internet*** **LANunit(optional)*

HF/50MHz TRANSCEIVER

FTox'10

'Bucpck^i Pmb^hbo PM*0- 7L mdfl k^i

As of Oct. 2020, this device has not been approved by the FCC. This device may not be offered for sale or lease until the approval of the FCC has been obtained. The information shown is preliminary and may be subject to change without notice or obligation.

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The radio

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The radio

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System Fusion II Compatible

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- New Memory Auto Grouping (MAG) Function
- New Multi-Channel Standby (MCS) Function
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- Easy Hands-Free Operation with Built-in Bluetooth® Unit

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50 W DIGITAL MOBILE TRANSCEIVER

FTM-300DR

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WIRES-X

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The radio

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Cushcraft...Keeping You in Touch Around the Globe

MA-6B 6-Band Beam

Small Footprint – Big Signal

2-Elements on 20/17/15/12/10/6 Meters!!!

Cushcraft's latest MA-6B gives you *2-elements on six bands!* You get solid *signal-boosting directivity* in a bantam-size and weight.

It mounts on your roof or mast using standard TV hardware. It's perfect for exploring exciting DX without the high cost and heavy lifting of installing a large tower and a full-sized array. Its 7 foot 3-inch boom has less than 9 feet of turning radius. Contest tough – handles 1500 Watts.

The unique MA-6B is a *two-element Yagi* on 20/17/15/12/10/6 Meters. It delivers solid power-multiplying gain over a dipole on *all* bands.You get automatic band switching and a super easy installation in a compact 26-pound package.

When working DX, what really matters are the interfering signals and noise you *don't hear*. That's where the MA-6B's impressive side rejection and front-to-back ratio really shines.

MA-5B, $579.95. Like MA-6B but five bands: 20/17/15/12/10 Meters. 12 and 17 Meters is a single element trapped dipole.
***See cushcraftamateur.com** for gain figures.*

Cushcraft 10, 15 & 20 Meter Tribander Beams

Only the best tri-band antennas become DX classics, which is why the Cushcraft World-Ranger A4S, A3S, and A3WS go to the head of the class. For more than 30 years, these pace-setting performers have taken on the world's most demanding operating conditions and proven themselves every time. The key to success comes from attention to basics. For example, element length and spacing has been carefully refined over time, and high-power traps are still hand-made and individually tuned using laboratory-grade instruments. All this attention to detail means low SWR, wide bandwidth, optimum directivity, and high efficiency – important performance characteristics you rely on to maintain regular schedules, rack up impressive contest scores, and grow your collection of rare QSLs!

It goes without saying that the World-Ranger lineup is also famous for its rugged construction. In fact, the majority of these antennas sold years ago are still in service today! Conservative mechanical design, rugged over-sized components, stainless-steel hardware, and aircraft-grade 6063 make all the difference.

The 3-element A3S/A3WS and 4-element A4S are world-famous for powerhouse gain and super performance. **A-3WS, $529.95,** 12/17 M. **30/40 Meter** *add-on kits* available.

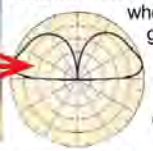
Cushcraft R9...80-6 Meters 80 Meters...No Radials...1500W

Cushcraft's world famous R8 now has a big brother!

Big Brother R9 now includes 75/80 Meters for local ragchewing and worldwide low band DX *without radials!*

Its omni-directional low angle radiation gives you exciting and easy DX on all 9 bands: 75/80, 40, 30, 20, 17, 15, 12, 10 and 6 Meters with low SWR. QSY instantly -- no antenna tuner needed.

Use full 1500 Watts SSB/CW when the going gets tough to break through pileups/ poor band conditions.



The R9 is super easy to assemble, installs just about anywhere, and its low profile blends inconspicuously into the background in urban and country settings alike.

Compact Footprint: Installs in an area about the size of a child's sandbox -- no ground radials to bury with all RF-energized surfaces safely out of reach.

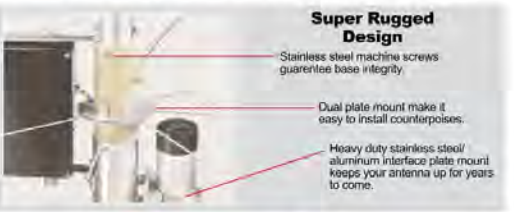
Rugged Construction: Thick fiberglass insulators, all stainless steel hardware and 6063 aircraft-aluminum tubing is double or triple walled at key stress points to handle anything Mother Nature can dish out.

31.5 feet tall, 25 lbs. Mounting mast 1.25 to 2 inches. Wind surface area is 4 square feet.

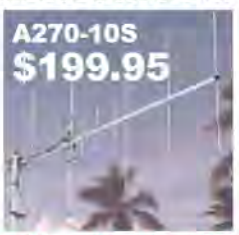
R8, $569.95. Like R9 antenna but less 75/80 Meters.

R-8TB, $99.95. Tilt-base lets you tilt your antenna up/down easily by yourself to work on.

R-8GK, $79.95. Three-point guy kit for high winds.



Cushcraft Dual-Band Yagis



One Yagi for Dual-Band FM Radios

Dual-bander VHF rigs are the norm these days, so why not complement your FM base station with a dual-band Yagi? Not only will you eliminate a costly feed line, you'll realize extra gain for digital modes like high-speed packet and D-Star! Cushcraft's A270-6S provides three elements per band and the A270-10S provides five for solid point-to-point performance. They're both pre-tuned and assembly is a snap using the fully illustrated manual.

Cushcraft Famous Ringos Compact FM Verticals

W1BX's famous Ringo antenna has been around for a long time and remains unbeaten for solid reliability. The Ringo is broad-banded, lightning protected, extremely rugged, economical, electrically bullet-proof, low-angle, and more -- but mainly, it just plain works! To discover why hams and commercial two-way installers around the world still love this antenna, order yours now!

Your New MFJ 2019 Ham Radio Catalog is HERE!

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Add shipping. Prices and specifications subject to change. 2016 ©Cushcraft.

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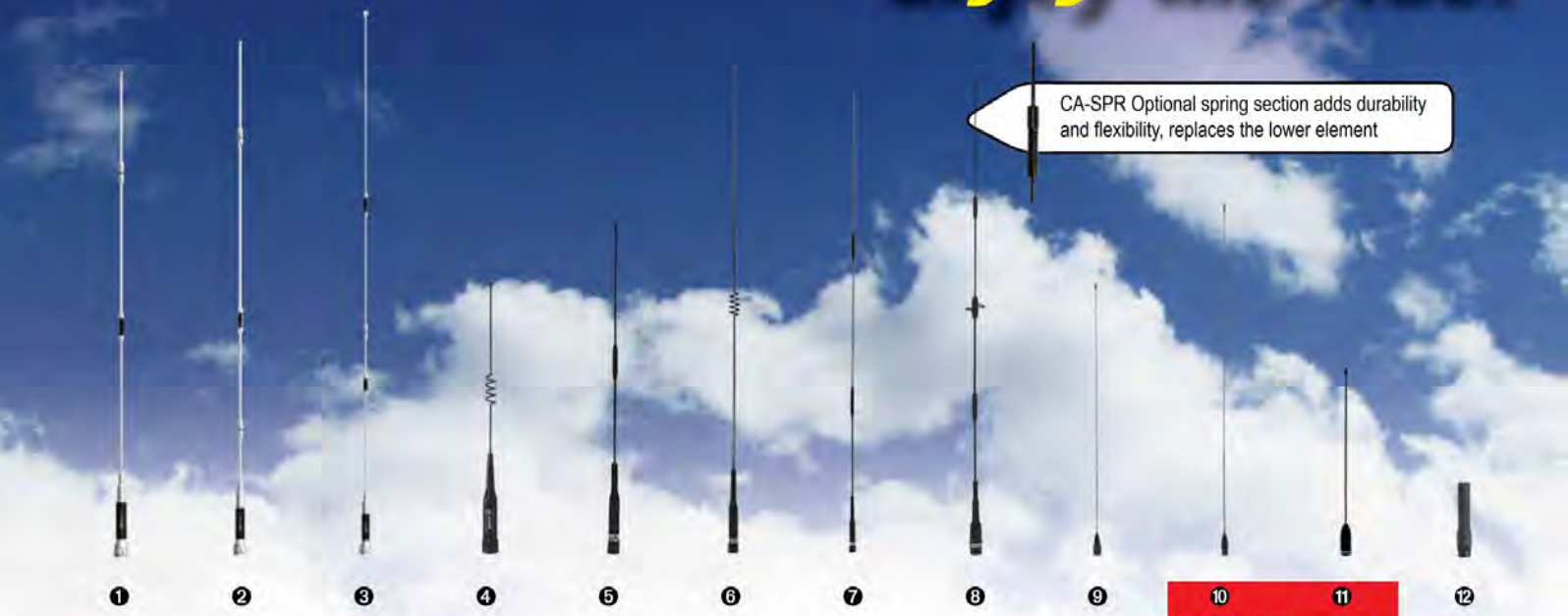

Mobile Antennas

❶ COMET **CSB-750A** DUAL-BAND 2M/440MHz w/FOLD-OVER
2M: 1/2 wave • 440MHz: 5/8 wave x 2 • VSWR: 1.5:1 or less • Length: 42" • Conn: PL-259 • Max. Pwr: 150W

❷ COMET **CSB-770A** DUAL-BAND 2M/440MHz w/FOLD-OVER
2M: 5/8 wave center load • 440MHz: 5/8 wave x 2 center load • VSWR: 1.5:1 or less • Length: 51" • Conn: PL-259 • Max Pwr: 150W

❸ COMET **CSB-790A** DUAL-BAND 2M/440MHz w/FOLD-OVER
2M: 7/8 wave center load • 440MHz: 5/8 wave x 3 center load • VSWR: 1.5:1 or less • Length: 62" • Conn: PL-259 • Max Pwr: 150W

❹ COMET **B-10/B-10NMO** DUAL-BAND 2M/440MHz
2M: 1/4 wave • 440MHz: 1/2 wave • Length: 12" • Conn: B-10 PL-259, B-10NMO - NMO style • Max Pwr: 50W

❺ COMET **SBB-2/SBB-2NMO** DUAL-BAND 2M/440MHz
2M: 1/4 wave • 440MHz: 5/8 wave center load • VSWR: 1.5:1 or less • Length: 18" • Conn: SBB-2 PL-259, SBB-2NMO - MNO style • Max Pwr: 60W

❻ COMET **SBB-5/SBB-5NMO** DUAL-BAND 2M/440MHz w/FOLD-OVER
2M: 1/2 wave • 440MHz: 5/8 wave x 2 • Length: 39" • Conn: SBB-5 PL-259, SBB-5NMO - NMO style • Max Pwr: 120W

❼ COMET **SBB-7/SBB-7NMO** DUAL-BAND 2M/440MHz w/FOLD-OVER
2M: 6/8 wave • 440MHz: 5/8 wave x 3 • Length: 58" • Conn: SBB-7 PL-259, SBB-7NMO - NMO style • Max Pwr: 70W

❽ COMET **CA-2X4SR/CA-2X4SRNMO** WIDE-BAND 140-160MHz 435-465MHz w/FOLD-OVER
2M: 5/8 wave • 440MHz: 5/8 wave x 3 • Length: 40" • Conn: CA-2x4S PL-259, CA-2x4SRNMO NMO style • Max Power: 150W

❾ COMET **BNC-24** DUAL BAND 2M/440MHz HT ANTENNA
RX range: 100-1200MHz • Length: 17" • SuperFlex featherweight whip • Conn: BNC

❿ COMET **SMA-24** NEW! **SMA-24J** DUAL BAND 2M/440MHz HT ANTENNA
RX range: 100-1200MHz • Length: 17" • SuperFlex featherweight whip • Conn: SMA-24: SMA-male / SMA-24J: SMA-female

⓫ COMET **SMA-503** NEW! **SMA-503J** DUAL BAND 2M/440MHz HT ANTENNA
RX range: 100-1200MHz • Length: 8.75" • Conn SMA-503: SMA-male, SMA-503J: SMA-female

⓬ *Maldol* **MH-209, MH-209SMA** DUAL BAND 2M/440MHz HT ANTENNA
Length: 3" • Conn: MH-209 BNC, MH-209SMA: SMA-male • Soft rubber cover, good performance in a small package!

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QST

Contents

December 2020 ♦ Volume 104 ♦ Number 12

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9 **Second Century**
Why I'm An ARRL Member

30 **The Tuna Tin "S" — A Bare-Bones Synthesized QRPp Transmitter**
Bob Fontana, AK3Y

37 **Product Review**
Mark Wilson, K1RO
Yaesu FTDX101MP MF, HF, and 6-Meter Transceiver; Radioddity GA-510 Dual-Band Handheld Transceiver; Workshop Vises; Four State QRP Group Cric-Key Kit

53 **Installing an In-Dash Mount for Your Mobile Rig**
Glen Popiel, KW5GP

56 **Sled Dogs and Ham Radio in the North Maine Woods**
Derrick Ouellette, KW1A

64 **January 2021 Kids Day**

64 **The 2021 ARRL International DX Contest**

65 **The 2021 ARRL Straight Key Night**

65 **The 2021 January VHF Contest**

66 **The 2021 ARRL RTTY Roundup**

66 **SKYWARN® Recognition Day 2020: COVID-19 Adjustments**

67 **2020 ARRL June VHF Contest Results**
Phil Koch, K3UA

69 **2020 ARRL Field Day Results**

85 **A Look Back — February 1971**

Columns

Celebrating Our Legacy....91
Classic Radio....92
Contest Corral....63
Correspondence....24
The Doctor is In....49
Eclectic Technology....36
Feedback....52
Happenings....59
Hints & Hacks....51
How's DX?....78
Member Spotlight....13
Public Service....61
The World Above 50 MHz....80
Up Front....20
100, 50, and 25 Years Ago....94

Departments

ARRL Section Managers....16
ARRL VEC Honor Roll....84
Certificate of Code Proficiency Recipients....83
Convention and Hamfest Calendar....84
Field Organization Reports....62
Guide to ARRL Member Benefits....14
Ham Ads....124
Index of Advertisers....126
Officers, Division Directors, and Staff....15
QST Cover Plaque Award....55
Silent Keys....95
Special Event Stations....82
W1AW Qualifying Runs....83
W1AW Schedule....77
W1AW's QSL File....28

Our Cover
As we approach the cold months in many areas, hams prepare their stations for some cozy indoor operating. Season's Greetings to our members, from everyone at *QST*!

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- Highest gain Dual-band Base Antenna!

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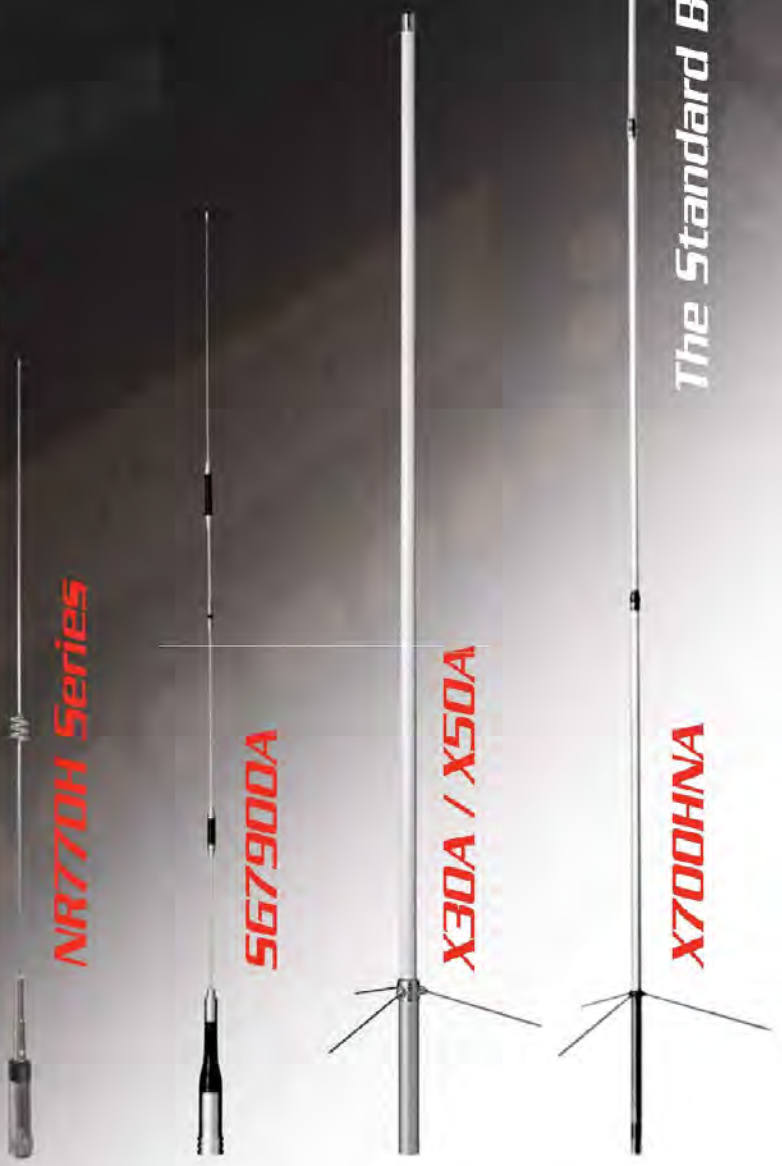
Here is a small sample of our wide variety of antennas

Model	Bands	Length Ft.	Max Pwr. Rating	Conn.
Dualband Base Station/Repeater Antennas				
X700HNA (4 section)	2m/70cm	24	200	N
X510HD (3 Section)	2m/70cm	17.2	330/250	UHF or N
X300A (2 Section)	2m/70cm	10	200	UHF or N
X200A (2 Section)	2m/70cm	8.3	200	UHF
X50A (1 Section)	2m/70cm	5.6	200	UHF or N
X30A (1 Section)	2m/70cm	4.5	150	UHF
Monoband Base Station/Repeater Antennas				
F23H (3 Section)	144-174 MHz (W/ Cut Chart)	15	350	UHF
F22A (2 Section)	2m	10.5	200	UHF
CP22E (Aluminum)	2m	8.9	200	UHF
F718A (Coax Element)	70cm	15	250	N
Dualband Mobile Antennas				
SG7900A	2m/70cm	62.2 in.	150	UHF or NMO
SG7500A	2m/70cm	40.6 in.	150	UHF or NMO
NR770H Series	2m/70cm	38.2 in.	200	UHF or NMO
MR77 Series	2m/70cm	20 in.	70	Mag Combo
AZ504FXH	2m/70cm	15.5 in.	50	UHF
AZ504SP	2m/70cm	15.5 in.	50	UHF
NR7900A	2m/70cm	57 in.	300/250	UHF
Monoband Mobile Antennas				
NR22L	2m	96.8 in.	100	UHF
M285	2m	52.4 in.	200	UHF or NMO



RF PARTS™ COMPANY

Diamond Antenna is a division of RF Parts Company

Norm Fusaro, W3IZ, w3iz@arrl.org

Second Century

Why I'm An ARRL Member

Like many hams, when I first started in ham radio, getting an ARRL membership was something you did naturally — if you were a ham, you became an ARRL member. When I first joined, I was mainly interested in DXCC and receiving QST. Later on, however, I realized that as a member of a national association, I was part of something bigger. That's when "the League" became my League — and by extension, it is our League, that does so much in service to ham radio.

Our League is our liaison to the FCC. When there are threats to our frequency allocations, ARRL navigates the government bureaucracy to ensure that we can retain these valuable bands of radio spectrum. There are some who think fighting for frequency spectrum above the traditional HF, VHF, and UHF bands is a waste of resources. However, radio amateurs have been advancing radio science since the beginning. When radio was in its infancy, the Navy was only interested in very low frequencies and cast off the HF bands to the amateurs, who discovered that communications over long distances was possible with ionospheric propagation. As mesh networking is becoming popular, especially as a tool for public service communications, the microwave frequencies assigned to the Amateur Radio Service have greater value, and our League is fighting to keep them in the Amateur Radio Service. At the time of this writing, our League is preparing a response to an FCC Notice of Proposed Rulemaking to charge a fee for amateur radio license transactions.

ARRL and the FCC have worked together to create the Volunteer Monitor program, a team of vetted and skilled radio amateurs who help support the FCC field offices by listening to hams on the air. This doesn't mean that every offender on the local repeater is going to the stockade, but it provides direction for the volunteers to collect information that will help the FCC prosecute egregious offenders. The FCC and ARRL know that good operators far outnumber the bad actors, so Volunteer Monitors make note of the exemplary operators, who we recognize with a Good Operator Notice.

ARRL is one of many societies of the International Amateur Radio Union (IARU), which represents amateur radio on the global stage. We need amateur radio in other countries not only so we can have people to contact, but because amateur radio is a public resource that must be protected. Without the amateur radio societies of the IARU, ham radio simply would not exist.

Our League works directly with manufacturers that cause problems. Historically, this has included the BPL industry, manufacturers of wireless modem jacks that operated on 3.52 MHz, and others. Recently, ARRL has worked with two solar-panel manufacturers and manufacturers of wireless power transfer devices to solve noise issues with their product. Currently, the ARRL Lab is actively involved with the IARU and the International Telecommunication Union (ITU), helping to develop international law about spectrum use and interference at all levels, and specifically wireless power transfer for electric vehicles. As an individual, I could not possibly be heard by the automobile industry when it comes to RF noise or anything else. Our League has staff who are voting members on IEEE boards that shape industry standards, Electromechanical Compatibility (EMC) standards, and power company policies on how to handle RFI issues.

Amateur radio should be fun, and our League sponsors many on-air contests and operating events. Even if competitive contesting is not your primary activity, these events bring many hams together on the air at one time, to offer you an opportunity to sharpen your skills, test your station, or try out things you have been experimenting with at your station. Proficiency gained while playing a game is the best kind of training. Regardless of what you do for fun, it's all ham radio and our League is here to ensure you can do what it is that you like to do.

You are reading this in *QST*, so it's probably safe to say you are already an ARRL member. Thank you for your membership. Your job now is to find someone who is not a member of our League and explain to them why you are an ARRL member, and how it would benefit them to be a member too. So, why am I a member of ARRL? For the very same reasons every radio amateur should be a member: because the ARRL represents me, and you, and all of amateur radio.

Norm Fusaro, W3IZ
Director of Operations

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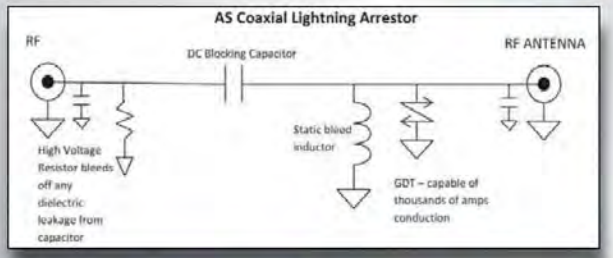

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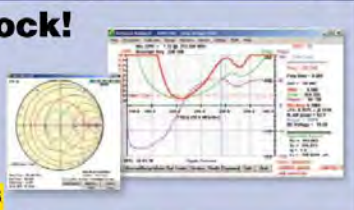

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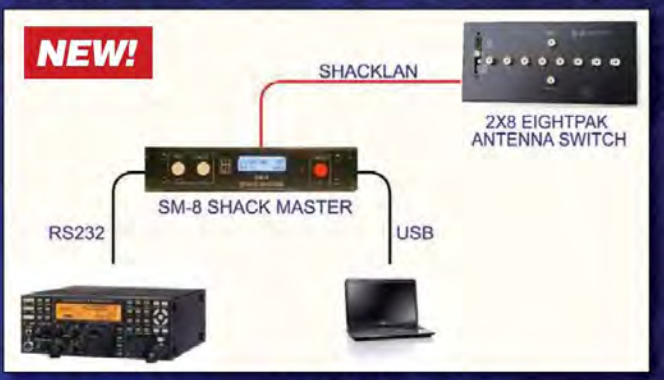
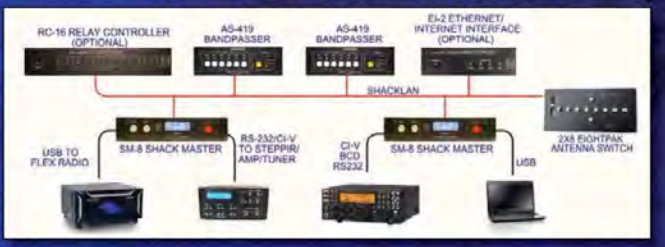


A more complex system could be a SO2R contest station as shone.



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Meghan Reilly, mreilly@arrl.org

Member Spotlight

Emergency Coordinator and Digital Guru Samantha Henley, KEØLMY

Samantha Henley's, KEØLMY, most recent achievement was being invited onto the Indianapolis Motor Speedway special events team, W9IMS, and operating during the Indy 500. She's a volunteer for several organizations and is generous with her time and assistance. Her current positions are Assistant Director of the Camden County, Missouri Emergency Management Agency (EMA) and Deputy Director of Benton County EMA. She also manages the finances for the Local Emergency Planning Committee (LEPC), runs the Camden County CERT website and Facebook page, acts as Emergency Coordinator for Benton County ARES (and runs their website, blog, and Facebook page), is Public Information Officer (PIO) for the Warsaw Fire Protection District, and serves as the Net Control Operator and program manager for the Region A Healthcare Net. She is the president of Dam Amateur Radio Klub, KEØTGG (DARK), a special events club which supports the Benton County ARES. In addition to all of the above, she and her husband Roger, KDØWXT, are the parents of two children — Renee, KEØLMZ, and Alex, KEØYGT.

A Family Affair

Samantha was introduced to radio by her husband in 2016. They were homeschooling their kids and Sam thought that radio could be a good learning tool. "I thought it would be a great science class for my children," she said. "You don't have to know everything right away. As the hobby grows and evolves, you can learn new things all the time." Renee regularly runs the Region A Healthcare Net and the weekly Benton County ARES net, and both she and Alex are involved

with the Warsaw Cadet and Junior Firefighter Program and the teen CERT program. Alex is currently studying for his General-class license. Like their mother, they're interested in emergency response. Samantha explained, "With cell phone service being spotty in Missouri, I love the idea of having another tool to use if I or anyone I came across was in trouble and needed to call for help." Together with her children, they built their own dipole and J-pole antennas.

Samantha faced some challenges when getting involved in amateur radio, but she persevered. "I ran into the same problem most male-dominated hobbies have," she said, with the misperception that "this is no place for women." But, she affirmed, when you approach anything with an open mind and a willingness to learn, you'll be met with fresh perspectives. As a homeschool teacher, she especially values open dialogue. She said, "Be willing to listen and don't assume or act like you know everything. We can all learn from each other."

COVID-19 Response

A desire to learn and grow is even more essential during the time of a global pandemic. Adopting a positive outlook, Samantha sees this time as an opportunity. The Benton County ARES conducted a Simulated Emergency Test (SET), which had to be altered due to a spike in active COVID-19 cases in the county. Samantha explained, "Normally, the EMA, CERT, and ARES for our county have a physical, as well as an on-the-air, portion to the SET. This year, we had to cancel the physical portion, but we will still hold our on-the-air portion." She said this change in plans "forced us to adapt and overcome the challenge, and it prepares us for the chance that we may not always be able to meet in person during large-scale emergencies."

Web Connections

Through their website and social media pages, the Benton County ARES has been able to "reach out to people who otherwise would not know this group exists." Through social media and digital technology, Samantha hopes to connect with a variety of people. She said, "I wholeheartedly believe all types of media and communications can work in tandem."

Samantha is passionate about helping others, in both emergency situations and her personal life. Her Facebook page sums up much of her philosophy, where she said, "There is nothing more giving than a volunteer's heart." When asked what she would say if she could send out a message to every ham, Samantha answered, "Persevere. Decide why or what you want and pursue it, no matter what others say. Do this hobby for you, not anyone else."

Guide to Member Benefits

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Create an online ARRL Member account, and get access to members-only benefits. Register at **www.arrl.org/myARRL**. Already registered? Log in at the top of the ARRL website.

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  Members in the US receive a choice of print magazine: *QST*, ARRL's membership journal (12 monthly issues), or *On the Air*, our new magazine for new and beginner-to-intermediate-level radio amateurs (6 bimonthly issues). All members can access the digital editions of *QST*, *On the Air*, *QEX*, and *NCJ* from a web browser and apps available for iOS, Android, and Kindle Fire devices. Members need a valid ARRL account to access ARRL's digital magazines, the Archives and Periodicals Search, and the Product Review Archive.
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ARRL supports legislation and regulatory measures that preserve and protect meaningful access to the radio spectrum. Our **ARRL Regulatory Information Branch** answers member questions concerning FCC rules and operating practices. **ARRL's Volunteer Counsel** and **Volunteer Consulting Engineer** programs open the door to assistance with antenna regulation and zoning issues.

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The American Radio Relay League, Inc.

ARRL, the national association for Amateur Radio® in the United States: supports the awareness and growth of amateur radio worldwide; advocates for meaningful access to radio spectrum; strives for every member to get involved, get active, and get on the air; encourages radio experimentation and, through its members, advances radio technology and education; and organizes and trains volunteers to serve their communities by providing public service and emergency communications *(ARRL's Vision Statement, adopted in January 2016).*

ARRL is an incorporated, noncommercial association without capital stock chartered under the laws of the State of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986. Its affairs are governed by a Board of Directors, whose voting members are elected every 3 years by the general membership. The officers are elected or appointed by the Directors.

ARRL is noncommercial, and no one with a pervasive and continuing conflict of interest is eligible for membership on its Board.

"Of, by, and for the radio amateur," ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

A *bona fide* interest in amateur radio is the only essential qualification of membership; an amateur radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US.

Membership inquiries and general correspondence should be addressed to the administrative headquarters: ARRL, 225 Main St., Newington, Connecticut 06111-1400 USA.

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As an ARRL member, you elect the Director and Vice Director who represent your Division on ARRL policy matters. If you have a question or comment about ARRL policies, contact your representatives listed below.

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The 15 Divisions of ARRL are arranged into 71 administrative *Sections*, each headed by an elected *Section Manager* (SM). Your Section Manager is the person to contact when you have news about your activities, or those of your radio club. If you need assistance with a local problem, your Section Manager is your first point of contact. He or she can put you in touch with various ARRL volunteers who can help (such as Technical Specialists).Your Section Manager is also the person to see if you'd like to become a Section volunteer. Whatever your license class, your SM has an appointment available. Visit your Section page at **www.arrl.org/sections**.

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Up Front

A New Radio Recruit

On Kids Day, Bill Maurer's, WB6JJJ, 9-year-old granddaughter, Miranda, went to his house to play radio. She had the most fun turning the DB-36 antenna that she could see out the shack window and tuning in the SSB stations that sounded like a duck. She was able to try a few contacts in the CW All Asia Contest, where she read the display and then reported their call sign and age. In just a few moments, they had three Japanese stations in the log. [Bill Maurer, WB6JJJ, photo]

We DX TX RX

While at a local hospital's parking garage, Rick Cartell, W9NKV, saw an interesting license plate holder. A physician's license plate said, "I DX TX RX," meaning, "I diagnose, treat, prescribe." Of course, hams see those initials differently. The doctor would probably be surprised to know that the license plate can also be interpreted as, "I distance contact, transmit, receive." [Rick Cartell, W9NKV, photo]

Tomato Tower Symbiosis

Ron Pace, AA4RP, has found another use for his 50-foot tower. A tomato plant has been climbing the tower and has now grown to about 12 feet tall. He had to use a ladder to pick some tomatoes, which have been flourishing in their new environment. [Ron Pace, AA4RP, photo]

Radio Birthday Cake

John Leonardelli, VE3IPS, recently received a unique and thoughtful gift from his daughter, Kristen, and her boyfriend, Eman. On his birthday, they presented him with an Icom 705 cake. John said, "A cake is even better than a shiny new radio." [John Leonardelli, VE3IPS, photo]

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Letters from Our Members

Phoenix the DX Dog

I was reading the October issue of *QST* and I always enjoy looking through the QSL cards in "W1AW's QSL File." I was surprised, however, when I saw my own card. My QSL card is in memory of Phoenix, my Golden Retriever, who passed away in 2016. Phoenix was always in the shack with me as I traveled the world via amateur radio.

In early 2004, Phoenix reached up to the radio table and began "listening" to all the sounds of amateur radio. After that, I decided to use a photo of Phoenix on my QSL card. The original Phoenix QSL card featured the same picture as it does today, along with the words "Phoenix listens for a rare DX call." As I exchanged QSL cards from around the world, he became known as "Phoenix the DX Dog." He often received his own "QSL" cards with the RS(T) reported as "woof x woof."

After he passed away, I changed the words on the QSL card to "In Memory of Phoenix the DX Dog 2003 – 2016SK," which is the card featured in the October issue. The Quarter Century Wireless Association also published an article about Phoenix and me in their April 2018 newsletter, *The QCWA Journal.*

Phoenix may be gone, but his memory lives on. Thank you again for selecting my QSL card for publication in the October issue of *QST.*

George R. Joyner, KD4QMY
Macon, Georgia
Life Member

Radio in the Modern World

I greatly enjoyed Bob Inderbitzen's, NQ1R, article, "Radio and the Ecosystem of Innovation," in the "Second Century" editorial in the August 2020 issue. His emphasis on the ubiquitous nature of radio in our modern world resonated with me.

I often find myself pointing out the hidden radio technologies in use in consumer devices. Just the other day, I overheard a young man say something about radio being an old 20th-century technology. I responded by pointing out that the Wi-Fi network system he was using at that very moment, as well as the Bluetooth earphones in his hand, are both radio systems. This led to a great discussion, as we went on to identify other current radio-based systems, such as GPS navigation, the satellite link to the corporate office, and, of course, cellular voice and data. I also offered some examples of how my deeper understanding of radio signals allows me to use these systems more effectively and troubleshoot interference, range problems, shielding, and other signal challenges.

In amateur radio, I have observed that new hams seem to have a much better time when they learn at least a bit about how radio works. A general understanding of the subject seems to add to the enjoyment of even those hams who are primarily interested in communicating, rather than experimenting. The "how" of radio is well worth sharing with both hams and the general public.

Steve Johnston, WD8DAS
Fitchburg, Wisconsin

Hurricane Safety Tip

Firstly, I wanted to thank Rick Palm, K1CE, for his article on public service operations during emergencies. As a native of Central Florida, a ham for over 70 years, and a CERT member, I especially appreciated the story, "Hurricane Laura and Amateur Radio," in the "Public Service" column in the November issue.

There is one concern I have regarding this article. In a hurricane emergency, you recommended securing the door from the inside with a bar or lock with a chain. However, this would prevent anyone from coming to the aid of a person inside, should they suffer a medical emergency, such as a heart attack, stroke, or electric shock. A safer way would be to provide a sliding bolt that is operable from inside and outside and a small hurricane-rated window in the door, to enable a concerned party to check on the operator's welfare and gain entry if there was a problem.

I also wanted to thank Steve Ford, WB8IMY, for all the work and *QST* improvements over the years. In his "Second Century" editorial, "Moving On," in the September issue, he mentioned a ham who is 86 years old and learning new things. I am 88 years old and an active professional engineer — and current with my required continuing education — who is involved in community activities, travels often (in normal times), and is writing a book.

Howard Sims, W4OSX
Altamonte Springs, Florida

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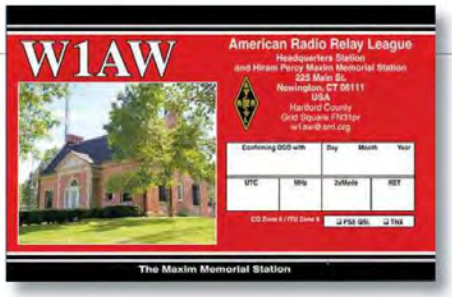
W1AW's QSL File

Every month, W1AW receives hundreds of QSL cards from hams all over the world, confirming contact with the Hiram Percy Maxim Memorial Station at ARRL Headquarters. Maybe you'll recognize an on-air friend — or even yourself — among these recent cards.



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The Tuna Tin "S" — A Bare-Bones Synthesized QRPp Transmitter

This update to a classic design includes tunable frequencies and a digital display.

Bob Fontana, AK3Y

In the May 1976 issue of *QST*, Doug DeMaw, W1CER/W1FB (SK), developed a two-transistor QRPp — 'p' denotes less than 1 W — transmitter using a pair of 2N2222A transistors. Dubbed the "Tuna Tin 2," the transmitter was crystal controlled and produced a 250 to 350 mW output for a cost of less than $10. In the March 2000 issue of *QST*, Ed Hare, W1RFI, provided an updated version of Doug's original design.

Here, we take another step forward. The Tuna Tin "S" (for *synthesized*) keeps costs below $20, and is still small enough to fit within the confines of a tuna tin, but has an integral VFO, digital display, and a higher power MOSFET final.

An Arduino-Controlled Synthesizer

Crystal-controlled designs severely limit the ability of the QRP/QRPp operator to make a contact. You significantly increase the chance of making a contact if you can reply to a CQ on the caller's frequency.

The Tuna Tin "S" uses a Silicon Labs Si5351 configurable clock generator (**www.silabs.com/documents/public/data-sheets/Si5351-B.pdf**). It can generate frequencies up to nearly 200 MHz. Multiple vendors supply the Si5351 on a breakout board that contains the chip, a precision 25 MHz crystal reference, a 3.3 V low-dropout regulator, which permits operation with either 3.3 V or 5 V logic. There are SMA pads for three simultaneous outputs. The breakout boards, together with three edge launch SMA connectors, are available for as little as $3 each from several internet sources.

Table 1 — A Snippet of Code for Use on 40 Meters

```
#include <Wire.h>  // Include I2L Library
#include <Adafruit_SI5351.h>  // Include SI5351 Synthesizer Library

Adafruit_SI5351 clockgen = Adafruit_SI5351();  // Setup SI5351 object
clockgen.begin();  // Initialize SI5351 Clock Generator

void SetFreq(long Freq) {  // Use SI5351 Fractional Mode
    // Freq in Hertz with 100 Hertz resolution
 int d = 2500, k = 100, l = 0, m = 1;
 Freq -= 7000000;

 clockgen.setupPLL(SI5351_PLL_B, 28, (int)(Freq/100), d);
 clockgen.setupMultisynth(1, SI5351_PLL_B, k, l, m);
}
```

The Si5351 clock generator breakout board forms the basis for the master oscillator part of this design. It is controlled by an Arduino Nano microcontroller, available for as little as $4. The Arduino Nano processes interrupts from a rotary encoder, sends frequency commands to the Si5351 synthesizer chip, and controls the output of the organic light-emitting diode (OLED) display.

An Arduino code snippet for controlling the Si5351 on 40 meters is shown in Table 1. The full code listing for using the Tuna Tin "S" on 80, 40, 20, 15, and 10 meters is on the **www.arrl.org/qst-in-depth** web page.

The libraries *Wire.h* and *Adafruit_SI5351.h* provide the necessary data structures for I2L and the synthesizer breakout board. After setting up a SI5351 object and initializing it with *clockgen.begin()*, the board is ready to accept commands.

The frequency of the onboard PLL is set using the *clockgen.setupPLL* routine, which sets PLL_B to 25 MHz × (*m* + *n*/*d*). For our example transmit frequency of 7043.2 kHz, follow the snippet in Table 1. The code first strips off 7,000,000 Hz — the low end of the band — from the desired operating frequency, resulting in a remainder of 43,200 Hz. Next, the PLL is set to 25 MHz × (28 + (43,200 / 100) / 2,500) = 704.32 MHz.

The **Multisynth** command further divides this PLL frequency to 704.32 MHz / (100 + 0/1) = 7043.2 kHz as desired. In this case, the PLL is set to 100 times the 40-meter frequency, and then divided by 100 to yield the output frequency, because the internal PLL of the Si5351 works best in the 600 to 900 MHz range. For other bands — see the full code — the divisors are suitably modified.

The output from the Si5351 is essentially a square wave with a peak value of ~3 V. This signal directly drives the gate of the IRF510 MOSFET.

The frequency of the Si5351 can be selected through the use of a KY-040 rotary encoder module, see **www.handsontec.com/dataspecs/module/Rotary%20Encoder.pdf**, which is handled by an interrupt service routine (ISR) on the Arduino Nano. When the unit is initially powered **ON**, the frequency is set to the QRP calling frequency of 7040 kHz. **Forward** or **Backward** rotation of the encoder will vary this frequency by ±100 Hz, respectively, or 2 kHz per 360-degree revolution. Press the rotary encoder button to change the tuning rate to 1 kHz per click, or 20 kHz for a complete 360-degree revolution. Pressing again returns the tune rate to 100 Hz per click.

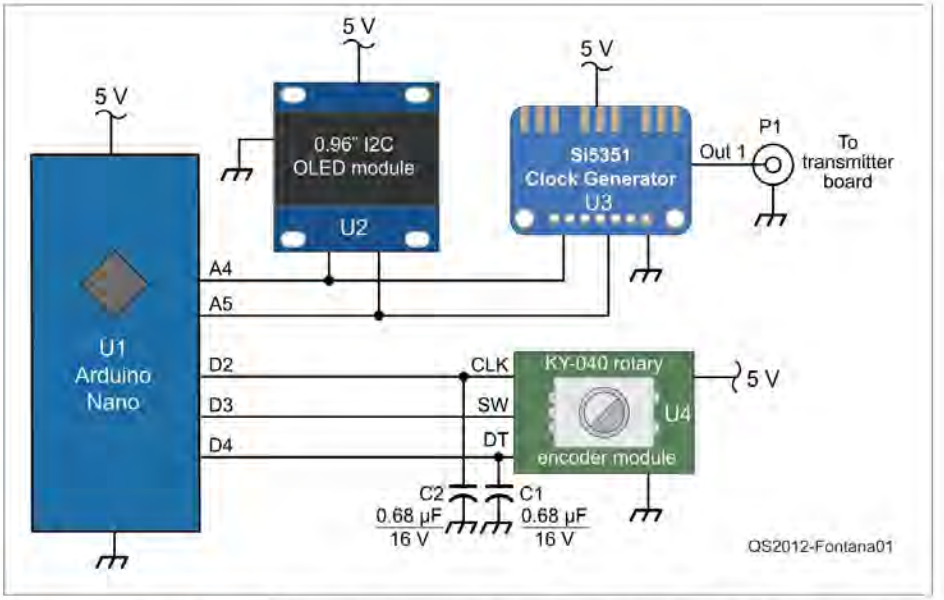

Figure 1 — Block diagram for synthesizer, control and display circuitry. Modules are available from **www.adafruit.com**, **www.arduino.cc**, **www.microcenter.com**, and other vendors

C1, C2 — 0.68 µF, 16 V capacitor
P1 — Edge-launched SMA connector (typically provided with U3 module)
U1 — Arduino Nano V.3 ATmega328 module
U2 — OLED display (0.96 inches I2C Serial 128 × 64 display module)
U3 — Si5351A I2C 25 MHz clock generator breakout board with SMA end launch connectors
U4 — KY-040 rotary encoder module

A 0.96-inch monochrome OLED display shows the transmit frequency. The OLED display needs no backlight, because it emits visible light. In low ambient light, the OLED screen can achieve a higher contrast ratio than an LCD. The OLED connects with the Arduino via the I2C two-wire interface. It has a different physical address than the synthesizer module, so there are no conflicts between the two devices existing on the same set of serial lines.

Figure 1 shows a block diagram for the synthesizer. Only four modules are needed: Arduino Nano, Si5351 clock generator board, OLED display, and KY-040 rotary encoder, along with two bypass capacitors to make an extremely versatile HF source. The bypass capacitors prevent noise from affecting the interrupt on the Nano. Place the 0.68 μF capacitors right at the encoder itself.

I initially implemented the synthesizer board with Arduino controller, the display, and rotary encoder on a large universal breadboard for testing. In the final configuration (see Figure 2 and Table 2) the compact boards are housed in a tin container.

Figure 2 — Close-up of the final configuration of the Tuna Tin 'S'.

Table 2 — Module Board Dimensions

Arduino Nano	44 × 18 mm (including micro USB connector)
OLED Display	27 × 27 mm
Si5351 Synthesizer Module	30 × 22 mm (not including optional SMA connectors)
KY-040 Rotary Encoder Module	19 × 26 mm

Download the source code for the synthesizer subassembly from the *QST* in Depth web page. The *.ino* file can be compiled and downloaded to the Arduino Nano using the Arduino IDE (**www.arduino.cc/en/main/software**), available for Windows, Mac, and Linux operating systems.

I produced a printed circuit board for the synthesizer module dimensioned 55 × 65 millimeter. Gerber files are available on the *QST* in Depth web page.

A schematic of the synthesizer with Arduino, Si5351 breakout board, voltage regulator, and headers is shown in Figure 3. The populated board is seen in Figure 4. With suitable filtering, this module can operate as a separate VFO or signal generator.

MOSFET Power Amplifier and Band-Pass Filter

High-power MOSFET devices result in more efficient architectures than the earlier Tuna Tin designs. This RF amplifier, along with the 40-meter band-pass filter (see Figure 5) uses an IRF510 N-channel MOSFET in a common source configuration.

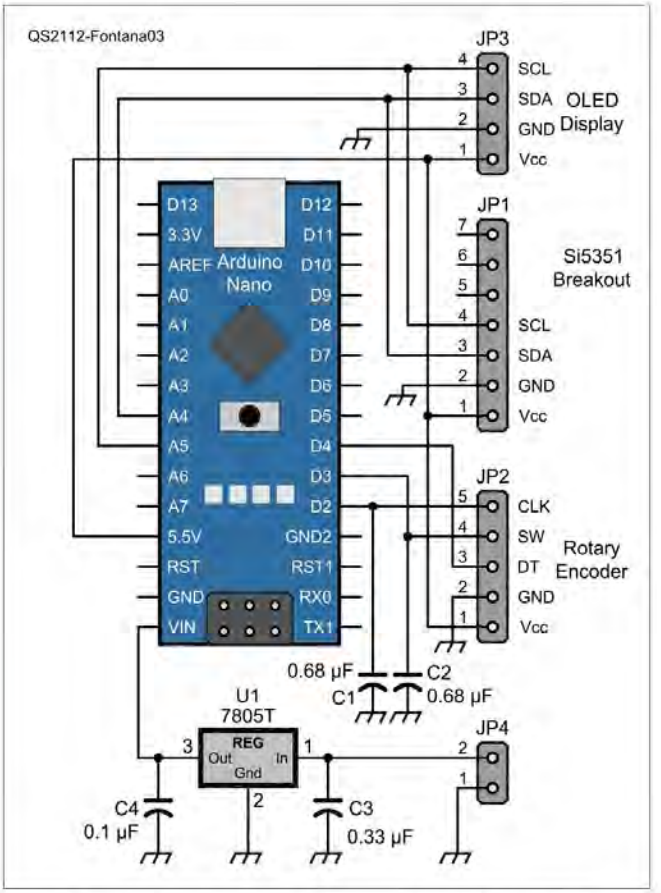

Figure 3 — Schematic of the synthesizer board shows the voltage regulator and headers for the OLED display, the Si5351, and KY-040 rotary encoder.

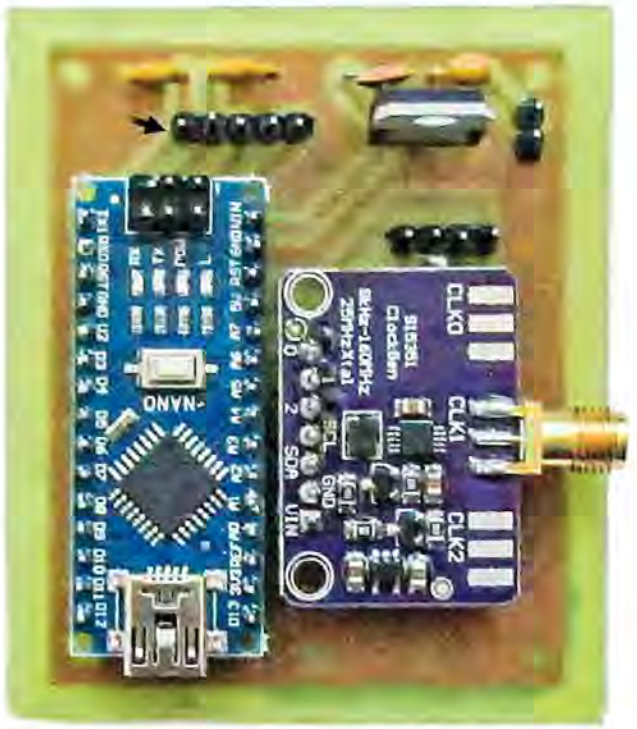

Figure 4 — Synthesizer board with Nano on the left, rotary encoder header pins on the top left, power input pins on the far right top, and the four OLED pins just above the synthesizer breakout board on the right.

The IRF510 must be slightly forward biased by adjusting potentiometer R3. The output voltage for the adjustable voltage regulator U1 is: $V_{OUT} = 1.25 (1 + R3/R2)$ providing a range of 0 to 3.85 V on the gate of the MOSFET via R1. The MOSFET conducts when the gate-to-source voltage is in the 2 to 4 V range.

The SI5351 synthesizer produces a square wave that is rich in harmonics, so it is essential to provide adequate filtering of the output waveform in order to meet FCC emission requirements. The band-pass filter comprises C6, C7, C8, C9, L2, L3, and L4. L2 and C7 are series resonant in the 40-meter band, while L4 and C9 are series resonant to provide a notch at the second harmonic. You can model the filter with *LTSpice*, **www.analog.com/en/design-center/design-tools-and-calculators/ltspice-simulator.html**.

Measurements achieved better than 44 dB suppression of the second harmonic, and 48 dB suppression of the third at 600 mW RF output power. No higher harmonics were noticeable.

RF Output

The transmitter power varies according to supplied drain voltage. The LM317T regulator keeps the bias constant regardless of applied drain voltage. The measured RF power output versus drain voltage (see *QST* in Depth) is just over 200 mW at 9 V, 425 mW at 12 V, and 600 mW at 15 V. Measurements showed a clean keying waveform (see *QST* in Depth). Figure 6 shows the completed 50 × 70 millimeter transmitter board, less the synthesizer.

Construction Notes

You can modify the Tuna Tin "S" for use on other bands by changing the band-pass filter components

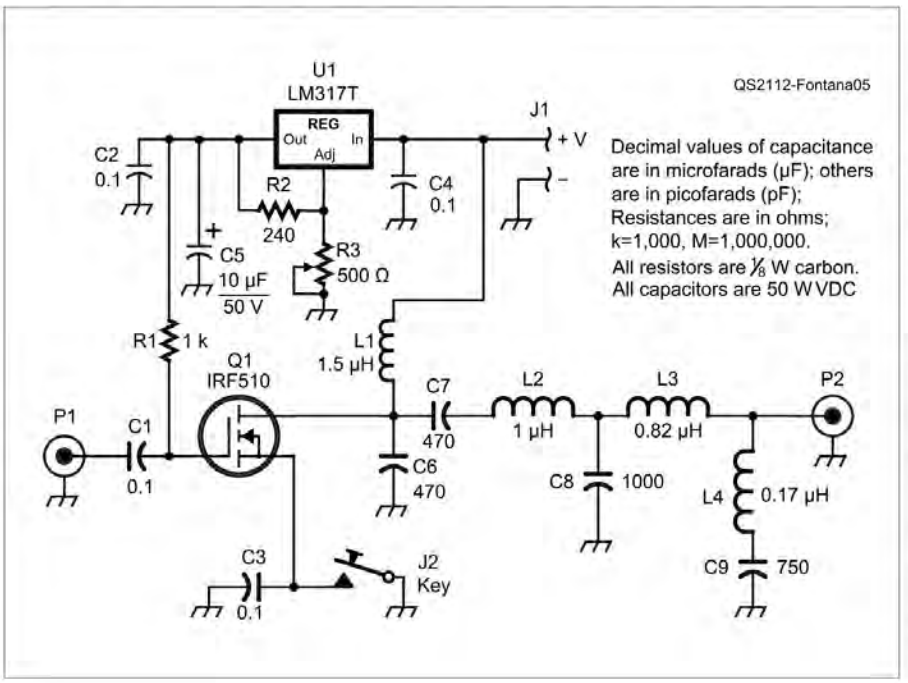

Figure 5 — Schematic diagram of the MOSFET RF amplifier with 40-meter band-pass filter.

L1 – L4 are wound with #26 AWG enameled wire on 0.224" square plastic coil forms
C1, C2, C3, C4 — 0.1 µF, 50 V compact multilayer ceramic capacitor
C5 — 10 µF, 16 V miniature electrolytic capacitor
C6, C7 — 470 pF, 50 V ceramic disc capacitor
C8 — 1,000 pF, 50 V ceramic disc capacitor
C9 — 750 pF, 50 V ceramic disc capacitor.
J1, J2 — two-pin 2.54 mm male pin header connector
L1 — 1.5 µH coil (19 turns)
L2 — 1.0 µH coil (16 turns)
L3 — 0.82 µH (14 turns)
L4 — 0.17 µH (7 turns)
P1, P2 — SMA end launch PCB connectors
Q1 — IRF510 N-Channel MOSFET
R1 — 1 kΩ, ⅛ W carbon resistor
R2 — 240 Ω, ⅛ W carbon resistor
R3 — 500 Ω miniature potentiometer
U1 — LM317T adjustable voltage regulator

Table 3 — Modifying the Tuna Tin "S" for Other Bands by Changing Band-Pass Filter Components

For 80-meter CW operation:

C6	470 pF	L1	1.5 μH (19 turns #26 AWG)
C7	2,000 pF	L2	1.0 μH (16 turns #26 AWG)
C8	2,200 pF	L3	2.7 μH (26 turns #26 AWG)
C9	750 pF	L4	0.68 μH (13 turns #26 AWG)

For 20-meter CW operation:

C6	220 pF	L1	1.5 μH (19 turns #26 AWG)
C7	150 pF	L2	1.0 μH (16 turns #26 AWG)
C8	330 pF	L3	0.47 μH (11 turns #26 AWG)
C9	190 pF	L4	0.17 μH (7 turns #26 AWG)

(see Table 3). For all the coils, I used plastic 0.224-inch square by 0.160-inch tall bobbins with attached mounting pins from **www.goldmine-elec-products.com/prodinfo.asp?number=G22420**. For these bobbins, and using #26 AWG enameled wire, the inductance L is: $L = 4.13 \times 10^{-3}\ N^2\ \mu H$.

When the calculated number of turns is not close to an integer value, it may be necessary to spread or compress the turns on the bobbin to achieve the desired result.

The IRF510 MOSFET should be complemented with a small heatsink, because it can get toasty, even at these low power levels. There was no transmit/receive (T/R) switch referenced in the drawings. In previous Tuna Tin designs, a simple toggle switch swapped the antenna between a transmit port and a receive port.

One nice advantage of the Si5351 synthesizer module is that it can simultaneously output three separate programmable frequencies. In the article,

Figure 6 — RF amplifier board with input on the right and output on the left.

"40-Meter Transceiver for Low-Power Operation," from the April 1980 issue of *Ham Radio Magazine*, John L. Keith, WB5DJE, shows a companion receiver using a front-end doubling mixer. It is easily constructed using the Multisynch capabilities of the chipset, dividing the transmitter operating frequency by two.

Component procurement for this project was itself a study in ham radio scrounging. Every single component was obtained through online auction sites. With a little searching, the entire project can be built for much less than $20. The chassis for my transmitter was made from a candy tin (see the lead image and Figure 2). Interfacing included a power plug, BNC connectors for antenna and receiver, key jack, and a DPDT T/R switch.

Adjustments

To adjust the bias on the MOSFET, attach a dummy load, set the bias full **OFF**, with potentiometer R3 set to 0 Ω. Slowly increase the bias with R3 while keying to obtain a power supply current of 220 to 250 mA. Alternatively, slowly adjust the bias potentiometer until the RF power output no longer increases, or increases just slightly. Make sure that the current does not exceed 300 mA, or you risk destroying the device.

The 25 MHz crystal on the Si5351 breakout board is quite accurate, but if adjustment is needed, it is easy enough to compensate for this in the Arduino code. Using a frequency counter or external receiver, determine the frequency offset from the displayed value on the OLED. This offset is then subtracted from the desired operating frequency prior to setting the Si5351. In my case, the actual measured frequency was approximately 375 Hz higher than the programmed frequency, and I simply subtracted 375 Hz prior to setting the Si5351 — see the Arduino code.

When using the transmitter with a station receiver, it is possible to receive a low-level synthesizer signal, even when the transmitter is not keyed. This can mask weaker signals if not properly blanked. To remedy this situation, connect a DPDT transmit/receive (T/R) switch (see Figure 7), with one portion of the switch used to signal the Arduino that the synthesizer output should be blanked on receive. Pin 26 (D8) of the Arduino is used to toggle the Si5351 output using

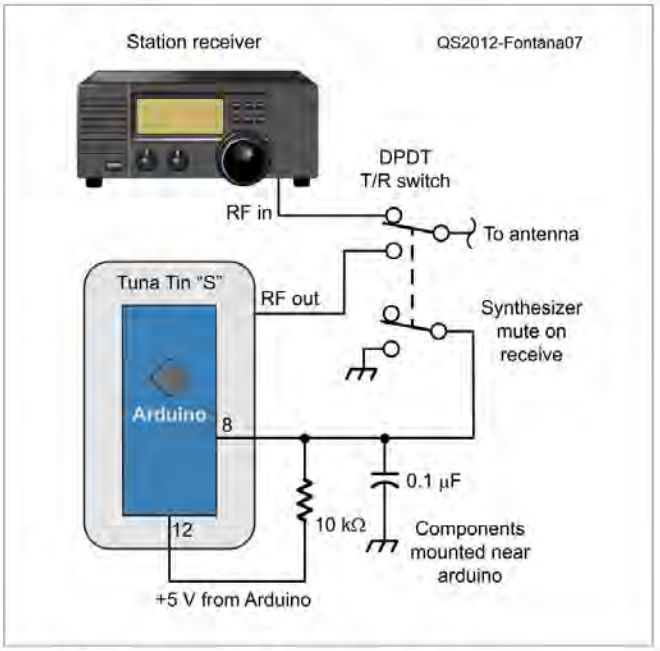

Figure 7 — T/R switch with synthesizer muting.

the commands: *clockgen.enableOutputs(true)* on transmit, and *clockgen.enableOutputs(false)* on receive. The Si5351 output responds within a couple of RF cycles, so this provides a very clean way to suppress any spurious signals at the receiver. The 10 kΩ pull-up resistor and 0.1 µF bypass capacitor are simply added to the copper side of the printed circuit board (see the Gerber files on the *QST* in Depth page).

I found the slight bleed-through of the synthesizer output when enabled to be extremely useful in zero-beating the transmitter to a tuned signal. The lead image shows my Tuna Tin "S" in operation with my Collins 75S-3 receiver.

The Si5351 synthesizer produces a square wave that is rich in harmonics, so it is essential to provide adequate filtering of the output waveform in order to meet FCC emission requirements.

Operational Results

I fired away some CQs, delivering 600 mW to an end-fed antenna that was up 50 feet. I then listened on the band using a remote SDR receiver at **kiwisdr.com/public/**. I chose an SDR in Peoria, Illinois, approximately 660 miles distant from my home in Maryland, initially hoping to hear myself on that system. To see how well my signal was propagating, I logged into the Reverse Beacon Net (RBN) at **www.reversebeacon.net**. I entered my call sign to see which receiving stations heard me, and what my signal-to-noise ratio was in real time. After sending out two strings of CQs, stations in New Hampshire, Massachusetts, and North Carolina picked up my CQs reporting signal-to-noise ratios from 4 dB to 29 dB. Not shabby for a first attempt.

On a second try that evening, I received reports from Kansas (9 dB SNR), but more surprising, I received a call back from Art, VE3AIH/W4, in Tallahassee, Florida, who heard my CQ and contacted me with a 569 report. My first contact averaged 1,192 miles per watt, definitely making my day.

Summary

QRP and QRPp operation can be a lot of fun. With the advent of low-cost, software-definable radios — for example, the bank of SDR receivers at **kiwisdr.com/public/** — and internet-based logging programs like the RBN, it is now possible to evaluate the performance of your QRPp rig directly on the air, even before that first exciting contact

I hope that you will find the Tuna Tin "S" to be a nice addition to your ham radio bag of tricks. This low-cost, synthesized transmitter design is not only fun to make and fun to operate, but it will get you some surprising kudos from the QRP crowd.

Dr. Robert J. Fontana, AK3Y, is a retired electrical engineer with a PhD from Stanford University. Prior to retirement, Bob was the founder, president, and CEO of Multispectral Solutions, Inc. (MSSI), a small business that specialized in ultra-wideband (UWB) technology for communications, radar, and tracking/positioning applications. Bob was elected a Fellow of the Institute of Electrical and Electronics Engineers in 2007 for his work with UWB technology. First licensed in 1965, Bob holds an Amateur Extra-class license and enjoys ragchewing on 20- and 40-meter SSB, as well as CW and digital modes like FT8.

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Steve Ford, WB8IMY, wb8imy@arrl.net

Eclectic Technology

High-Frequency Trading at HF Frequencies

When you have millions of dollars riding on a stock trade, every second — and every fraction of a second — counts. If you're entering buy and sell orders, you want your orders to get into the system ahead of the competition. Being at the head of the line can mean the difference between large profits and large losses.

If you imagined a stereotypical stock trading floor with swarms of people shouting and waving pieces of paper, those days are long gone. Trades are conducted today by computers swapping information at phenomenal speeds. In fact, speed has become such a critical factor that companies are willing to spend almost anything to gain an edge.

In 2010, Spread Networks installed a dedicated fiber-optic cable between Chicago and New York at a cost of more than $300 million. Until the cable was installed, the shortest round-trip travel time for data between those two points was 14.5 milliseconds. By spending nearly a third of a billion dollars, Spread Networks managed to shave off *one millisecond*. That's a mind-boggling amount of money to spend to save a millisecond, but in the world of high-frequency trading, as it is called, a millisecond can make an enormous difference.

Such tiny time savings are extremely important for high-frequency financial traders, because they take advantage of it to buy or sell before others learn of distant price shifts. This strategy is known as latency arbitrage and it is driving a technological arms race in the trading world.

In 2015, Hibernia Networks completed a costly 4,600-kilometer fiber-optic cable that took a direct route between New York and London. According to Hibernia, transatlantic traders on their network are now enjoying round-trip times of just 59 milliseconds. More cables are planned and companies are searching for even more efficient (read: faster) ways of transferring data.

Figure 1 — An HF antenna facility for high-frequency trading owned by IMC BV. [Bob Van Valzah, KE9YQ, photo]

Shortwave Enters the Scene

You'd think nothing could beat data transfers at the speed of light in optical cables, but light travels somewhat slower when passing through fiber networks. Again, it is a minuscule speed reduction, but enough to make a difference in high-frequency trading.

Several companies are experimenting with radio links on HF frequencies to reduce latency by a few more milliseconds. Because of the highly competitive nature of the business, most of what they are doing is shrouded in secrecy. Even so, it is difficult to hide directional multiband HF antenna systems. One was spotted this year in the west Chicago area by Bob Van Valzah, KE9YQ. It consists of a few log-periodic dipole arrays on a tall tower (see Figure 1). It took some sleuthing, but Bob finally tracked down the owner: IMC BV, a trading firm.

There have been reports of other mysterious HF antennas popping up in rural areas. No one seems to know what frequencies are involved, although the use of multiband antennas suggests they are switching from one band to another according to shifting propagation. We also don't know how much power they are using, or the types of digital modulation.

Apparently, they are enjoying some level of success, since more of these facilities are appearing on the landscape. The vagaries of HF propagation must present a challenge, as hams know very well, and the signal bandwidths are nothing remotely close to what fiber-optic users enjoy — but if it saves a millisecond or two, it's worth it to them.

It will be interesting to see how this approach to trading technology plays out. According to the experts, even low-Earth-orbiting satellites, such as the new SpaceX Starlink network, can't compete with a direct HF link when it comes to point-to-point speed.

Mark J. Wilson, K1RO, k1ro@arrl.org

Product Review

Yaesu FTDX101MP MF, HF, and 6-Meter Transceiver

Reviewed by Joel R. Hallas, W1ZR
w1zr@arrl.org

In the November 2019 issue of *QST*, we reviewed Yaesu's FTDX101D, a 100 W, SSB, CW, AM, FM, and digital-mode transceiver for 160 through 6 meters. In that review, we mentioned that there was also a 200 W version available, the FTDX101MP, which we review this month. You may wish to look at the earlier review to follow along in our discussion of the differences. For those interested in naming conventions, the "MP" of the product name is in honor of the founder of Yaesu, the late Sako Hasegawa, JA1MP.

A Full-Size HF Transceiver

While many manufacturers strive to offer a compact, travel-friendly transceiver, the FTDX101MP configuration is based on different design objectives. This transceiver is designed to sit in the center of your operating position with a full-size front panel that includes dedicated concentric controls for most functions.

This radio will be an easy-to-access focal point of a full-featured fixed-station layout. Controls are well marked and identified, but most are not illuminated, so your station should be well-lighted to see the control labels, at least until your muscle memory is well-programmed.

Changes Between the Models

A look at the front panels of the two transceivers confirms that, other than the model numbers on the upper right, the two panels are identical, with the same controls and indicators in all the same places. There are, however, some important differences that are apparent upon a deeper inspection.

Of course, the most significant difference is that the maximum RF output power of the 'MP is 200 W versus 100 W for the 'D model. This difference, 3 dB, or half an S-unit, doesn't sound like a big improvement, but may be important to some users. For example:

Bottom Line

The Yaesu FTDX101MP is a very effective, full-size, full-featured, 200 W PEP transceiver that would work well in most stations, especially those involved in serious contesting or DX chasing where strong close-in signals abound.

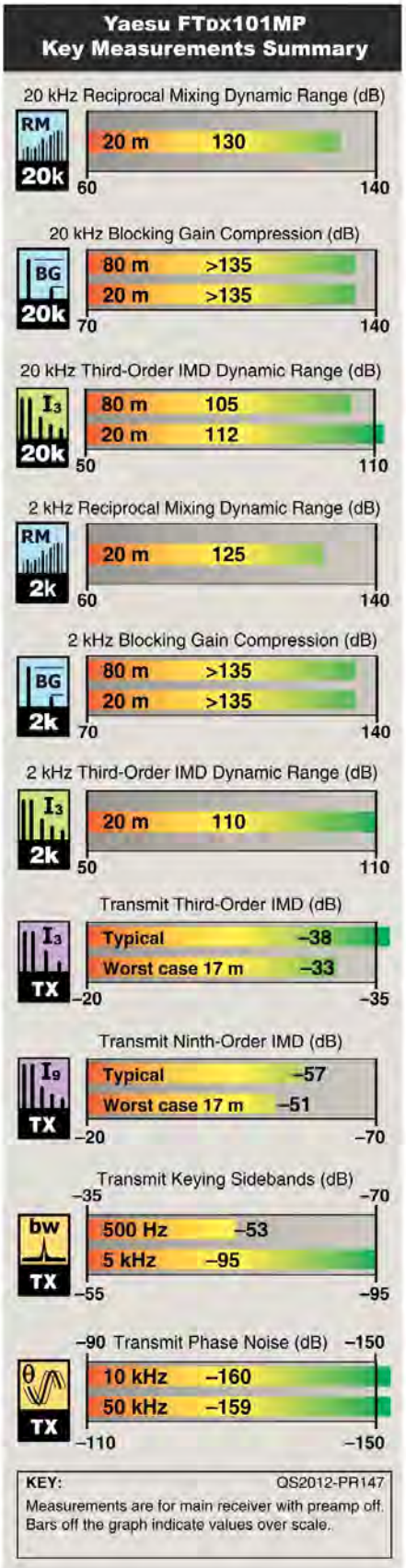


Table 1
Yaesu FTDX101MP, serial number 9M060545

Manufacturer's Specifications	Measured in the ARRL Lab
Frequency coverage: Receive, 0.03 – 75 MHz; transmit, 160 – 6 meter amateur bands only.	Receive and transmit, as specified, including 60 meters on 5.332, 5.348, 5.3585, 5.373, and 5.405 MHz (preset channels).
Power requirement: Transmit, 720 VA, Receive (with signal), 120 VA.	Transmit, typically 560 VA, 642 VA max. at maximum RF power output. Receive, 54 VA (max brightness). Power off, <1 mA.
Modes of operation: SSB, CW, AM, FM, FSK, PSK, SSB data modes.	As specified.

Main Receiver

	Main Receiver Dynamic Testing*
SSB/CW sensitivity (preamp 2 on): 0.16 µV (1.8 – 30 MHz) 0.125 µV (50 – 54 MHz) 0.16 µV (70 – 70.5 MHz).	Noise floor (MDS), 500 Hz bandwidth, 600 Hz roofing filter: *Preamp / Off / P1 / P2* 0.137 MHz –121 –131 –118 dBm 0.475 MHz –124 –133 –136 dBm 1.0 MHz –125 –134 –138 dBm 3.5 MHz –125 –133 –138 dBm 14 MHz –125 –134 –138 dBm 50, 70 MHz –127 –136 –138 dBm
ADC overload level: Not specified.	>+10 dBm.
Noise figure: Not specified.	Preamp off/1/2, 14 MHz: 22/13/9 dB; 50 MHz, 20/11/9 dB.
AM sensitivity: 6 kHz BW, 10 dB (S+N/N), preamp 2 on: 6.3 µV (0.5 – 1.8 MHz) 2.0 µV (1.8 – 30 MHz) 1.0 µV (50 – 54 MHz) 2.0 µV (70 – 70.5 MHz).	10 dB (S+N)/N, 1 kHz tone, 30% modulation, 9 kHz BW: *Preamp / Off / P1 / P2* 1.0 MHz 3.39 1.15 0.79 µV 3.88 MHz 4.12 1.43 0.94 µV 29.0 MHz 2.98 1.02 0.87 µV 50.4 MHz 2.82 1.08 0.94 µV 70.4 MHz 3.63 1.30 1.23 µV
FM sensitivity: 12 kHz BW, 12 dB SINAD, preamp 2 on: 0.25 µV (28 – 30 MHz) 0.20 µV (50 – 54 MHz) 0.25 µV (70 – 70.5 MHz).	For 12 dB SINAD, 3 kHz deviation, 16 kHz BW: *Preamp / Off / P1 / P2* 29 MHz 1.17 0.41 0.35 µV 52 MHz 1.06 0.39 0.35 µV 70 MHz 1.03 0.35 0.33 µV
Spectral sensitivity: Not specified.	Panadapter and waterfall, preamp Off/1/2 14 MHz, –120/–129/–138 dBm 50 MHz, –125/–133/–141 dBm 3DSS, preamp Off/1/2 14 MHz, –121/–130/–137 dBm 50 MHz, –125/–133/–141 dBm
Blocking gain compression dynamic range: Not specified.	Blocking gain compression dynamic range, 500 Hz BW, 600 Hz roofing filter:** *Preamp / 20 kHz offset Off/P1/P2 / 5/2 kHz offset Preamp off* 3.5 MHz >135/>143/145 >135/135 dB 14 MHz >135/>144/147 >135/>135 dB 50 MHz >137/139/133 >137/>137 dB
Reciprocal mixing dynamic range: Not specified.	14 MHz, 20/5/2 kHz offset: 130/128/125 dB, for 600 and 300 Hz roofing filter.

ARRL Lab Two-Tone IMD Testing (600 Hz roofing filter, 500 Hz bandwidth)

Band/Preamp	*Spacing*	*Measured IMD Level*	*Measured Input Level*	*IMD DR*
3.5 MHz/Off	20 kHz	–125 dBm –97 dBm	–20 dBm –5 dBm	105 dB
14 MHz/Off	20 kHz	–125 dBm –97 dBm	–13 dBm –5 dBm	112 dB
14 MHz/P1	20 kHz	–134 dBm –97 dBm	–22 dBm –10 dBm	112 dB
14 MHz/P2	20 kHz	–138 dBm –97 dBm	–30 dBm –17 dBm	108 dB
14 MHz/Off	5 kHz	–125 dBm –97 dBm	–13 dBm –5 dBm	112 dB
14 MHz/Off	2 kHz	–125 dBm –97 dBm	–15 dBm –5 dBm	110 dB

Manufacturer's Specifications		Measured in the ARRL Lab		
Band/Preamp	*Spacing*	*Measured IMD Level*	*Measured Input Level*	*IMD DR*
50 MHz/Off	20 kHz	–127 dBm –97 dBm	–22 dBm –13 dBm	105 dB
50 MHz/P2	20 kHz	–138 dBm –97 dBm	–36 dBm –24 dBm	102 dB

Second-order intercept point: Not specified.	Preamp Off/P1/P2 14 MHz, +67/+67/+67 dBm 21 MHz, +63/+61/+61 dBm 50 MHz, +59/+57/+57 dBm
IF and image rejection: IF, ≥60 dB (1.8 – 28 MHz, VC on), ≥60 dB (50 MHz); image, ≥70 dB (1.8 – 28 MHz), ≥60 dB (50 MHz).	IF rejection, VC off/on: 7 MHz, 72/105 dB; 10.1 MHz, 70/100 dB; 14 MHz, 102/105 dB, 50 MHz, 105/105 dB. Image rejection, VC off/on: 7 MHz, 88/95 dB; 10.1 MHz, 78/105 dB; 14 MHz, 70/89 dB; 50 MHz, 69/69 dB.
Noise reduction: Not specified.	Up to 20 dB.
FM two-tone third-order IMD dynamic range: Not specified.	20 kHz offset, P2 on: 29 MHz, 86 dB;† 52 MHz, 86 dB. 10 MHz offset, P2 on: 29 MHz, 119 dB; 52 MHz, 110 dB.
Squelch sensitivity: (preamp 2 on) FM, 28 – 30 MHz, 0.25 µV, 50 – 54 MHz, 0.2 µV, SSB, CW AM, 2 µV.	FM, P2 on: 29 MHz, 0.27 – 0.58 µV; 52 MHz, 0.27 – 0.57 µV. HF squelch: 1.19 – 13.3 µV.
S-meter sensitivity: Not specified.	S-9 signal, preamp Off/P1/P2: 14 MHz, 132/46.7/17.6 µV; 50 MHz, 99/38/14.6 µV; Scaling: 3 dB per S-unit.
Notch filter depth: Not specified.	Tunable notch filter, >70 dB; auto notch > 70 dB, attack time 2 ms for one or two tones.
IF/audio response: Not specified.	Range at –6 dB points;‡ CW (500 Hz BW): 453 – 945 Hz; Equivalent Rectangular BW: 489 Hz; SSB (2.4 kHz BW): 289 – 2,406 Hz; AM (9 kHz BW): 98 – 1,668 Hz.
Audio output: 2.5 W at 10% THD at 4 Ω.	As specified. THD 0.3% at 1 V_{RMS}.
Receive processing delay time: Not specified.	25 ms.
Transmitter	**Transmitter Dynamic Testing**
Power output: 5 – 200 W (SSB, CW, FM), 5 – 50 W (AM).	SSB, CW, FM (typical): 1.8 – 30 MHz, 5.0 – 196 W; 50 – 54 MHz; 4.9 – 185 W; AM (typical): 1.8 – 30 MHz, 5.0 – 48 W; 50.4 MHz, 5.1 – 46 W.
Spurious-signal and harmonic suppression: ≥50 dB (HF); ≥66 dB (50 MHz).	HF, 69 dB typical; worst case, 58 dB (80 m); 50 MHz, 71 dB. Complies with FCC emission standards.
Third-order intermodulation distortion (IMD) products: Not specified.	3rd/5th/7th/9th order, 200 W PEP: –38/–46/–51/–57 dB (HF typical) –33/–40/–45/–51 dB (worst case, 17 m) –37/–44/–47/–54 dB (14 MHz) –40/–44/–51/–58 dB (50 MHz) At 50 W PEP RF output: –35/–44/–54/–63 dB (14 MHz) –40/–47/–58/–72 dB (50 MHz)
CW keyer speed range: Not specified.	4 to 56 WPM. Iambic mode A, B, Y, ACS, semi-automatic.
CW keying characteristics: Not specified.	See Figures 1 and 2.
Transmit-receive turnaround time (PTT release to 50% audio output: Not specified.	S-9 signal, AGC fast, SSB: 54 ms; AGC fast, CW, full break-in: 30 ms.
Receive-transmit turnaround time (TX delay): Not specified.	SSB, 24 ms; FM, 18 ms (29 and 52 MHz).
Transmit phase noise: Not specified.	See Figure 3.
Amplifier key line closure to RF output: 15 – 30 ms (adjustable).	As specified.

Size (height, width, depth, with protrusions): 5.9 × 16.5 × 15 inches; weight, 31.3 pounds.

Second-order intercept points were determined using S-5 reference.
*Sub receiver test results were very similar to the main receiver test results. See **www.arrl.org/qst-in-depth** for additional measurements.
**Blocking dynamic range exceeds these values. No blocking was observed with up to +10 dBm signal at the antenna jack, the maximum level used in ARRL Lab testing.
†Measurement is noise limited at the value indicated.
‡Default values; bandwidth is adjustable.

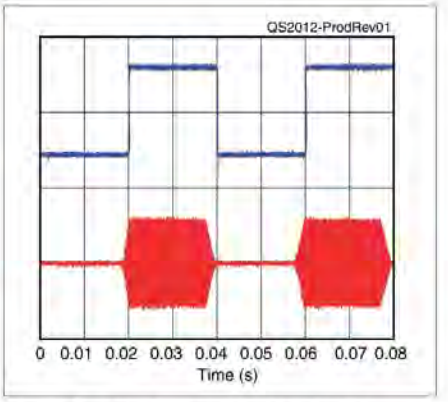


Figure 1 — CW keying waveform for the Yaesu FTDX101MP showing the first two dits in full-break-in (QSK) mode using external keying and the default rise time setting. Equivalent keying speed is 60 WPM. The upper trace is the actual key closure; the lower trace is the RF envelope. (Note that the first key closure starts at the left edge of the figure.) Horizontal divisions are 10 ms. The transceiver was being operated at 200 W output on the 14 MHz band.

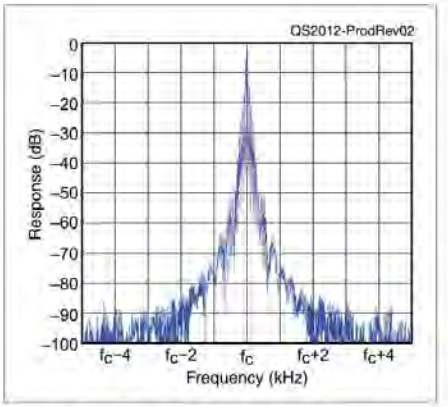


Figure 2 — Spectral display of the Yaesu FTDX101MP transmitter during keying sideband testing. Equivalent keying speed is 60 WPM using external keying and the default rise time setting. Spectrum analyzer resolution bandwidth is 10 Hz, and the sweep time is 30 seconds. The transmitter was being operated at 200 W PEP output on the 14 MHz band, and this plot shows the transmitter output ±5 kHz from the carrier. The reference level is 0 dBc, and the vertical scale is in decibels.

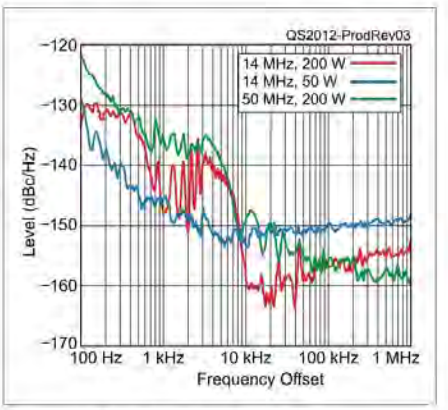


Figure 3 — Spectral display of the Yaesu FTDX101MP transmitter output during phase-noise testing. Power output is 200 W on the 14 MHz band (red trace), 50 W on the 14 MHz band (blue trace), and 200 W on the 50 MHz band (green trace). The carrier, off the left edge of the plot, is not shown. This plot shows phase noise 100 Hz to 1 MHz from the carrier. The reference level is –120 dBc/Hz, and the vertical scale is 5 dB per division.

- Amateurs who frequent 30 meters can operate up to the 200 W legal limit, without need for an additional amplifier.
- While 3 dB will not make a noticeable difference during casual contacts when signals are strong, it can easily make the difference between completing a contact and frustration while trying to break through a pileup or when signals are barely out of the noise.
- Some older linear amplifiers need a bit more than 100 W drive to yield full-rated output. In addition, those amplifiers needing close to 100 W drive will generally see a more linear signal from a transceiver operated well below its full-power output.
- Both FTDX101 models operate from external power supplies. The 'MP comes with an included dedicated power supply to provide the 50 V required by the 200 W power amplifier stage. If you were to buy a dedicated 13.8 V, 23 A supply for the 100 W 'D model, it might come out about the same in terms of required space. If you already have a 13.8 V dc distribution system in your station with sufficient capacity, the 'MP model will add an additional box to your station's equipment inventory (and space requirements).
- The 'MP model includes two features that are offered as options on the 'D model (and both must be specified on initial order). These are the 300 Hz bandwidth CW/data roofing filter ($260), and the VCT101 motor-driven RF preselector for the second receiver ($330). Note that both models include a 600 Hz roofing filter as standard equipment, along with selectable DSP filtering down to a bandwidth of 50 Hz, and both models include the preselector in the primary receiver. In addition to providing additional protection from strong close-in signals in CW mode, the 300 Hz filter also provides a small improvement in the already excellent receiver close-in dynamic performance for CW or data mode operation. The 'MP model also brings with it multiple subtle improvements to the display system, presented on a 7-inch TFT (thin-film transistor) color touch-panel display.

If you were to buy an FTDX101D with the optional 300 Hz filter, the optional preselector for the second receiver, and a typical 13.8 V, 23 A power supply, you would add about 60% of the $1,300 (list) price difference between the two radios, perhaps making it easier to decide to purchase the more-powerful 'MP version that includes those functions in its base price.

How It Works

Both FTDX101 models make use of traditional down-converting superhet architectures in both of the dual

Lab Notes: Yaesu FTDX101MP

Bob Allison, WB1GCM

Receiver testing for FTDX101MP indicates both main and sub receiver offer performance virtually identical to that of the FTDX101D reviewed in the November 2019 issue of *QST*. Two-tone, third-order IMD dynamic range on 20 meters is the highest we have measured, and the receiver exhibits excellent reciprocal mixing dynamic range (RMDR) and blocking gain compression dynamic range as well (see the FTDX101D review for more information).

Transmit intermodulation distortion (IMD) in the FTDX101MP is reasonably low. We generally look for third/fifth/seventh/ninth-order IMD products to be no higher than –30/–40/–50/–60 dB relative to full PEP output. The seventh- and ninth-order products must be kept as low as possible, as they will cause the most interference on adjacent frequencies. The FTDX101MP transmit IMD products are close to or exceed this performance at full PEP power output. Other operators on the band hearing the FTDX101MP will enjoy a respectably clean transmitted signal. At the 50 W PEP output level, typically the power level needed to drive an RF power amplifier, the distortion products are even lower. As always, monitor the automatic level control (ALC) and keep the ALC in the specified range when speaking, and keep the ALC level at zero when transmitting digital modes, such as FT8.

Transmit phase noise is very low, as shown in Figure 3. At 100 Hz away from the carrier, the transmit phase noise is about the lowest we've observed in the ARRL Lab. This means considerably less potential interference to other operators listening very close to the transmitted frequency. Farther away from the carrier, the phase noise is even lower, approaching the noise floor of the test instrument. Excellent keying waveform shaping, with no shortening of the first transmitted dit, and a correspondingly narrow CW bandwidth, makes for a clean transmitter, a complement to this model's top performing receiver.

My only critique of the test data is the S-meter scaling. The widely adopted convention for S-meters is a 50 µV signal level for S-9, and scaling of 6 dB per S-unit. With Preamp 1 engaged, the FTDX101MP's S-meter reads close to S-9 with a 50 µV (–73 dBm) signal level input at the antenna jack, but the scaling is 3 dB per S-unit. This scaling means S-0 is equal to a signal level of –100 dBm, typical of other Yaesu transceivers measured in the ARRL Lab. If the S-meter used 6 dB per S-unit scaling, S-0 would equal –127 dBm.

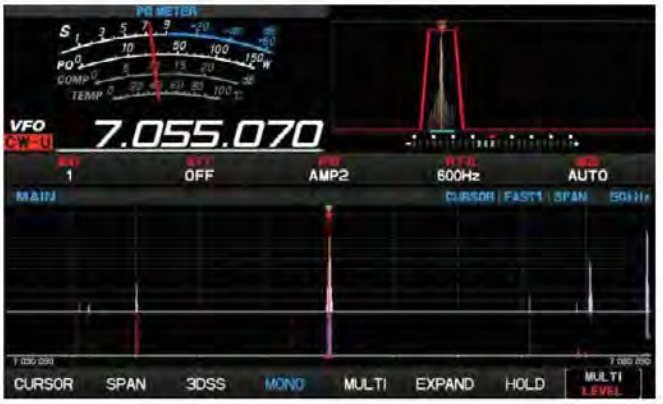


Figure 4 — Screenshot of the Yaesu FTDX101MP display, showing a single panadapter display, with panadapter below, including the frequency tuned by VFO A. The upper right display shows the received bandwidth with the received signal within. The spectrum span can be adjusted from a width of 1 kHz to 1,000 kHz (50 kHz shown) in 10 steps.

Figure 5 — Same as Figure 4, except we have tapped the 3DSS on-screen button, and now have a 3D view with time marching out the back of the screen, instead of the waterfall. This way, you can see what happened before, as well as what's happening now.

Figure 6 — Same as Figure 5, except a second spectrum view of the sub-receiver display has been added to the right of the first. Note that the second is on a different band, bandwidth, mode, and antenna. Either can be anywhere within the FTDX101MP's tuning range. The two displays can also be one above the other, if you prefer — lots of flexibility available.

Figure 7 — Pressing the **FUNC** button below the screen opens up the top menu display. The **MULTI** button is used to select the desired function, and pressing the desired function button brings up the adjustable parameter, or an additional layer of menu items.

receivers, with the result that the very highest close-in receiver dynamic range is achieved. This has been a major competitive marker for some years, and this transceiver, as well as the FTDX101D, puts Yaesu at the top of list, as seen in the ARRL Lab measurements in Table 1 and independently tested and listed in the Sherwood Engineering tabulated summary of receiver performance (**www.sherweng.com/table.html**).

The FTDX101MP controls, in my opinion, are well thought out and well positioned, providing a large measure of flexibility and control. For example, touch the MHz or kHz area of the frequency display to select the tuning knob steps — quite intuitive.

If you are operating using just the primary receiver (press the **MONO** key to select a single receiver), the display for that receiver fills the entire screen (see Figure 4). This can be helpful whether you just look closely at a narrow range, or open up the display width to cover a large segment or even the full band. While the operating frequency is nicely presented in a large, bright font, the frequency scale of the panadapter display is in a very tiny font.

In addition to the typical panadapter presentation, the FTDX101MP offers a three-dimensional view, with the history shown going out the rear, as shown in Figure 5. The spectrum of both receivers can be observed simultaneously, as shown in Figure 6. Additional display and operating options can be selected by pressing the **FUNC** key, with the selection options shown in Figure 7.

Yaesu offers the optional FH-2 Remote Control Keypad for use with the FTDX101MP, as well as other

Yaesu transceivers. While all functions on the remote can be performed from the transceiver's front panel, the FH-2 makes it easier to perform some functions, particularly operating the voice memories and CW keyer memories. Yaesu also recently introduced the SCU-LAN10 unit for remote control of the FTDX101D and FTDX101MP transceivers.

While many manufacturers have chosen to use a simpler direct-sampling SDR architecture, with potential benefits in terms of reduced spurious responses, Yaesu's use of the traditional superhet approach allows a receiver with higher dynamic range than that limited by the closer-to-antenna analog-to-digital conversion stage required in direct sampling receivers. Some day that will likely no longer be a limit, but for now, superhets seem to have the receiver performance edge in amateur transceivers.

On the Air with the FTDX101MP

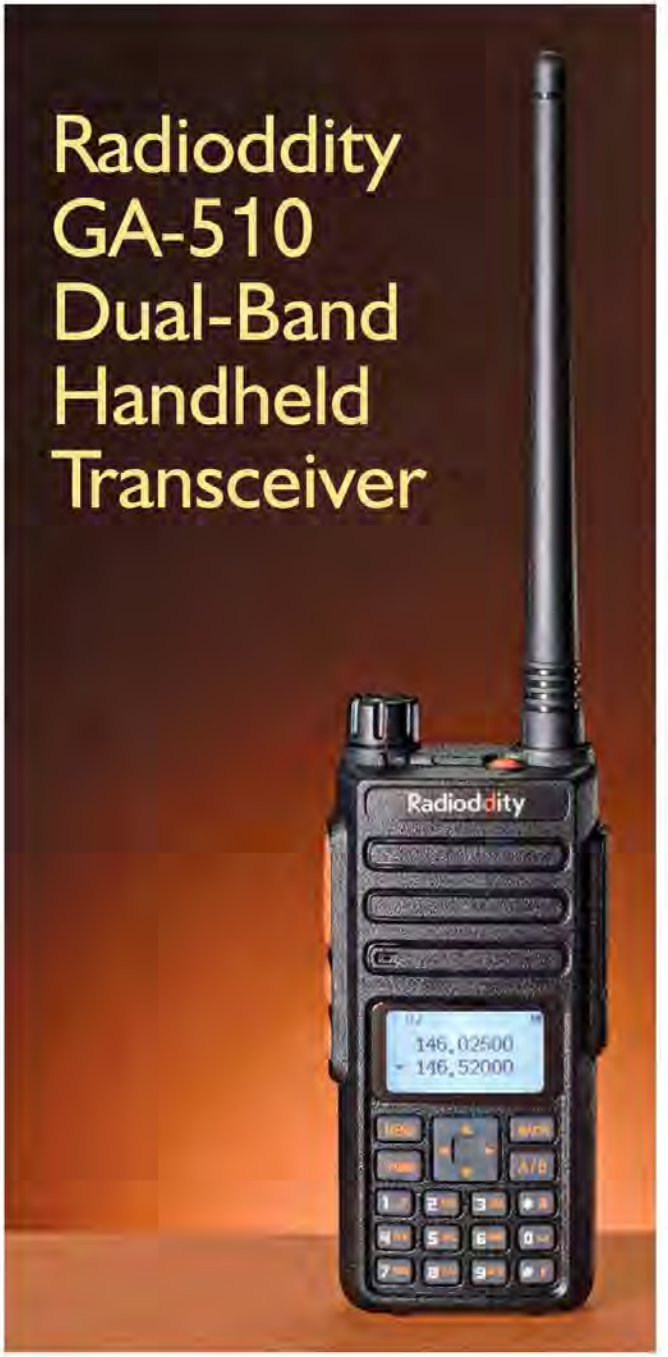
The FTDX101MP worked well as the primary transceiver at W1ZR over a number of weeks. I made contacts on both CW and SSB, all with reports of good signal quality. In addition to being easy for me to operate with a minimum learning curve, the operators on the other end also had an easy time copying me on both modes, with me using the Yaesu SSM-75G hand mic for SSB. The operating experience is essentially identical to the FTDX101D — refer to the November 2019 review for more information.

Documentation

The FTDX101MP comes with a 122-page *Operation Manual*. A complete schematic package is provided on eight double-sided 16 × 12 inch sheets and a 21-page *CAT Operation Reference Manual* is available for download from the Yaesu website. The *Operation Manual* does a reasonably good job at getting you started with the radio. The *CAT Operation Reference* provides a detailed description of the command set needed to communicate from PC to radio — perfect if you want to write your own CAT software, but not so useful in helping you set up a connection from the radio to the CAT PC software that most of us will elect to run on our PCs.

Manufacturer: Yaesu USA, 6125 Phyllis Dr., Cypress, CA 90630; **www.yaesu.com**. Price: Yaesu FTDX101MP, $4,400; FH-2 Remote Control Keypad; $99.

Radioddity GA-510 Dual-Band Handheld Transceiver



Reviewed by Dan Wall, W1ZFG
w1zfg@arrl.net

Another new entry into the field of low-cost handhelds is the Radioddity GA-510. It is a dual-band radio with frequency ranges of 136 to 174 MHz and 400 to 520 MHz. This radio does transmit outside of the 2-meter and 70-centimeter amateur bands, so users should be careful when selecting the operating frequency. Transmit power output is selectable at three levels, and it also receives the FM broadcast band. The start-up screen indicates that this model is sourced from Baofeng.

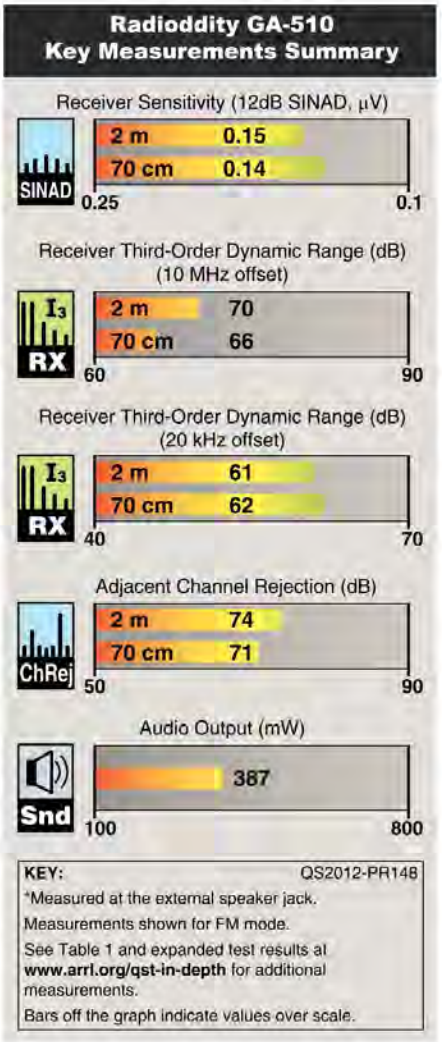


Table 2
Radioddity GA-510, serial number 19GA51000001

Additional ARRL Lab measurements are available at **www.arrl.org/qst-in-depth**.

Manufacturer's Specifications	Measured in ARRL Lab
Frequency coverage: Receive and transmit, VHF and UHF.	Transmit and receive: 136 – 173.995, 400 – 519.995 MHz, 76 – 108 MHz (receive only).
Modes: Analog FM.	FM, FM-N (FM narrow), WFM (receive only).
Power requirements: 7.4 V dc (internal battery pack only). Battery capacity: 2,200 mAh.	At 8.3 V dc (full charge): Receive, 390 mA (max volume, max lights); 96 mA (standby, lights off). Power save on, 20 mA. Transmit (high/medium/low): 146 MHz, 2.35/1.76/1.12 A 440 MHz, 2.34/1.74/0.95 A Power off, <1 mA.
Receiver	**Receiver Dynamic Testing**
Sensitivity: For 12 dB SINAD, 0.25 µV.	For 12 dB SINAD, FM/FM-N: 146 MHz, 0.15/0.14 µV. 440 MHz: 0.14/0.14 µV.
Adjacent-channel rejection: ≥70 dB (wide), ≥60 dB (narrow).	20 kHz offset, FM/FM-N: 146 MHz, 74/76 dB; 440 MHz, 71/72 dB.
Squelch sensitivity: Not specified.	At threshold, 146 MHz, 0.1 µV – 0.16 µV; 440 MHz, 0.09 µV – 0.18 µV.*
S-meter sensitivity: Not specified.	For four bars, 146 MHz, 1.17 µV; 440 MHz, 1.23 µV.
Audio output: 1,000 mW.	At the external speaker jack, 387 mW at 10% THD into 8 Ω. THD at 1 V_{RMS}, 3.4%.
Transmitter	**Transmitter Dynamic Testing**
Power output: <5.0 W (high), <1 W (low).	At 8.3 V dc (full charge), high/med/low: 146 MHz, 8.0/4.0/1.1 W 440 MHz, 5.1/4.0/1.1 W
Spurious signal and harmonic suppression: ≥57 dB.	146 MHz, 63 dB; 440 MHz, >70 dB. Meets FCC requirements.
Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.	Squelch on, S-9 signal: 146 and 440 MHz, 622 ms.**
Receive-transmit turnaround time (TX delay): Not specified.	146 MHz, 470 ms; 440 MHz, 494 ms.**

Size (height, width, depth): 5.3 × 2.3 ×1.3 inches (with protrusions). Belt clip, add 0.5 inch. Antenna length: 5.7 inches. Weight: 8.8 ounces with battery and antenna.

*Squelch range is narrow, only slightly more than 6 dB of range.
**Operator must wait a half-second to speak after pressing the PTT button, due to turnaround time. Transmit-receive turnaround is a bit slow compared to other radios.

Out of the Box

The radio comes with an impressive list of supplied accessories. There is a dual-band flexible antenna with a reverse SMA connector, a programming cable with USB and dual audio connectors, a desktop charging base with ac adapter, a belt clip, and a wrist strap. There is an item that is listed as an earpiece, but it functions as a microphone as well. There is a push-to-talk switch in the middle of the earpiece/microphone wire. The *User Manual* is printed in both English and German.

The radio comes supplied with two 7.4 V, 2,200 mAh Li-ion battery packs. Because there are two battery packs supplied with this radio, the website is able to boast of a 96-hour battery life.

The manual does not list any optional accessories available, but not much else is needed. There are additional accessories displayed on the Radioddity website, but they are grouped by accessory type across all the different radios available, which made it difficult for me to find accessories for a specific model.

Features

The radio itself is slim and lightweight, which fits the hand nicely. On the top of the radio is the **ON/OFF/VOLUME** knob, the antenna connector, and an **RX/TX** status light, which turns green when receiving a signal, red when transmitting, and off when in standby. There is also an orange **SOS** button. When pressed and held, this button puts the radio into the alarm

mode. In this mode, the radio can be set to sound an alarm through the radio speaker, to transmit a cycling tone over the air, or to transmit "119" (which could be 911 in reverse, but I'm not sure) over the air. Pressing the orange **SOS** button again returns the radio to normal operation.

On the left side of the radio, there is an ample PTT button and two smaller orange buttons, described as **SIDE KEY 1** and **SIDE KEY 2**. Pressing **SIDE KEY 1** momentarily will switch the radio to FM broadcast reception mode. Signals received on the amateur bands will interrupt the FM broadcast until the amateur band signal goes away. Pressing **SIDE KEY 1** again will exit the FM broadcast mode and return the radio to regular operation. Pressing and holding **SIDE KEY 2** will open the squelch to allow listening to a weak signal. Pressing **SIDE KEY 2** momentarily will change the power level for the selected channel or frequency.

On the right side of the radio is the accessory jack. This is where you plug in the supplied earphone/microphone or the supplied programming cable. The external speaker jack accepts a stereo 2.5-millimeter plug, and the external microphone jack accepts a stereo 3.5-millimeter plug, which is compatible with a typical Kenwood headset configuration.

The good-sized LCD is easy to read with the backlight on. I found it difficult to read the display in low-light conditions when the backlight is off. The backlight turns on automatically with the press of any button, and it automatically turns off after 1 to 10 seconds (user programmable). The backlight can also be set to be always on.

There is a good-sized front-mounted speaker which provides plenty of receive audio. The internal microphone is below the speaker.

The keypad below the LCD has a standard 12-key numeric keypad, along with four dedicated function buttons and four-way arrows buttons. Press and hold the # key for about 2 seconds to enable the scan mode. A momentary press of the * key will enable the reverse function for repeaters. Press and hold the * key for about 2 seconds to enable or disable the keypad lock.

The **BACK** button is used to exit menus and cancel menu options. The **VFO/MR** button switches between the frequency (VFO) mode and the memory or channel (**MR**) mode. The **A/B** button switches between the upper and the lower display. The frequency or channel on the selected display becomes the active frequency or channel.

The up/down arrow button is used to navigate through the menu options, as well as to select channels and step up or down in frequency, depending on operating mode. The *User Manual* does not make any reference to the left/right arrow buttons and they didn't appear to do anything.

The **MENU** button is used to enter the menu and confirm menu options. There are 38 menus with various user selectable options that control all the settings of the radio. Several of the more notable features that can be set up are: squelch, frequency step (2.5 to 50 kHz), transmit power, power saver, or transmit subaudible tone frequencies. There is also a voice feature that speaks when function or numeric buttons are pressed. The voice function can be disabled by a menu setting.

The radio also has dual-watch capability. It can scan between two frequencies and lock the transmit frequency to one of the two channels it monitors.

Scanning

The radio has three different modes of operation in the scan function: time, carrier, or search.

In the time operation mode, the scanner stops when it detects a signal and resumes scanning after a factory pre-set time. (This time does not appear to be adjustable.)

In the carrier operation mode, the scanner stops when it detects a signal and resumes scanning after a factory pre-set time when no signal is present. (This time does not appear to be adjustable.)

In the search operation mode, the scanner stops when it detects a signal. To resume scanning, you must press and hold the # key again.

The radio will also scan for CTCSS and DCS tones.

Programming

The transceiver has 128 memory channels that each can hold receive and transmit frequencies, transmit

Bottom Line

The Radioddity GA-510 offers good performance for the 2-meter/70-centimeter FM operator. Programming is best done using the supplied cable and free downloadable software.

power level, group signaling information, bandwidth, and a six-character alphanumeric identifier or channel name.

Regarding manually programming this radio, the *User Manual* states, "Manual programming is somewhat difficult until you get used to it, especially when programming in duplex channels." There is no automatic repeater shift function as found on more expensive radios, so you must program a receive frequency, an offset frequency, and an offset direction (plus, minus, or none) for each channel. You can only save memory channels from the upper VFO display. You cannot overwrite existing memory channels, but must first delete a memory channel before updating or replacing its contents. The alphanumeric labels cannot be entered manually, so you must use computer software to upload them.

Free programming software is available for download from the Radioddity website, and the popular CHIRP software is also supported. The programming software is a basic, no-frills program that was easy to install and use. It does make programming the radio much easier.

To use the software, connect the supplied programming cable between the GA-510 and a USB port on your computer. Turn on the radio, and if you have previously loaded a compatible driver from a different radio, it may be recognized. If not, there is a driver available for download from the Radioddity website. There is also a file on the website with step-by-step instructions on how to download and install the driver and how to use the programming software.

As mentioned earlier, there are many parameters that can only be set using the programming software. For example, the channels that I entered manually would not scan. After I entered repeaters using the software and setting the **SCAN ADD** column to **YES**, all programmed channels scanned normally.

Final Thoughts

The GA-510 from Radioddity has quite a few features found on higher-priced units. On-the-air testing showed that the receiver had good sensitivity on the 2-meter and 70-centimeter amateur bands and the FM broadcast band. The audio quality was good, even at higher volumes. The slim, lightweight design made it comfortable to hold and operate. The manual programming is somewhat tedious, but with a programming cable supplied and free software available for download, I had no need to program it manually.

This radio is more than adequate for newer operators to use to determine what features they would like in their next radio. Experienced operators may find that this radio may not have all the features they want in their main radio, but would find it to be a good choice for a backup radio in a go-kit. Given all of the supplied accessories and a price of $65, you can't go wrong.

Manufacturer: Radioddity, 36 Berkley Dr., Newark, DE 19702; **www.radioddity.com**. Price: $65.

Workshop Vises

Reviewed by Paul Danzer, N1II
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The first vise I ever used was in high school woodworking shop. It had a jaw that was almost 2 feet long and a threaded shaft about 2 inches in diameter. The next one I used mounted to a table top with screws, weighed less than a pound, and could only open its jaws about 1 inch.

Surprisingly, when I looked online to see what was available today, not much had changed. Monster units are still available, and sizes range down to a few inches and a few ounces. There are a few different mounting options — screw down, clamp to the table edge, free standing, and vacuum base.

Table 3
Vise Parameters

	Yost	MYTEC	Z-COLOR
Weight	3.25 pounds	3.79 pounds	9.5 ounces
Mounting	Vacuum clamp	Table edge clamp	Screws or sits on table
Jaw width/height (inches)	2.5 × 0.5	2 × 0.5	2.187 × 0.5
Jaw opening (inches)	2.5	3.125	2.125

In my workshop, the vise is a multi-purpose tool. You might think that it's only used to hold a box or piece of metal for drilling, but over the years, I have used it for a number of other purposes.

If you need a length of six-conductor cable, it's easy and quick to accomplish. Lay out six pieces of wire, put one end in the vise and the other in a manual drill. Turn the handle on the drill and you now have a length of twisted six-conductor (or whatever number you want) cable. If one of the pieces of wire is solid, the twisted group will probably stay together. If it's stranded wire, a few cable ties will hold it.

Working with those pesky connectors where you have to solder several connecting wires is also just as easy. Put the connector in a small vise, feed the wire, and solder from above.

I also use my vise for bending sheet metal and for making a rolled edge. If I am using very thin metal — imagine a salvaged piece of tin can — it is difficult to get an edge that will not cut your hand. I make a crude 180-degree bend with a set of gas pliers and then put the edge into the vise jaws to flatten the fold and make a safe edge.

For this review, I tried three of the many inexpensive vises available from **amazon.com** and other online sources. Although these specific models were available when this review was prepared, the selection or prices may have changed by the time you read this.

Yost Tools V-275 Portable Vacuum Base Vise

With a lever control to seal the vacuum base to a smooth surface, this solid 3¼-pound unit, shown in Figure 8, can handle good-sized projects. The jaws ride on two smooth cylinders with a center screw that allows the jaws to open to a maximum of 2½ inches. The cast metal parts are finished in a grey/silver coat.

The jaws have a V-shaped groove running their length and three vertical grooves to hold cylindrical parts.

Figure 8 — The Yost vise is vacuum mounted and includes two soft jaw covers. The center lever locks or loosens the ball mount.

Soft covers prevent scratching objects held in the jaws. Without the covers, the jaws are 2½ inches wide and ½ inch high.

A friction ball couples the jaw assembly to the base. When loosened, the jaws can rotate 360 degrees, tilt approximately 45 degrees to each side, and 90 degrees to the front (away from the friction lever). When the jaws are open fully, an internal mechanism keeps the jaws from riding off their mount.

Experience with other devices shows that, over time, you may experience problems with the vacuum seal that holds the vise in place. This 3¼-pound unit is mounted on a large enough base that vacuum hold may not be needed for many tasks.

Price: about $25 on **amazon.com**. Search for Yost V-275.

MYTEC Home Clamp-On Vise, 2.5 Inch

The MYTEC vise, shown in Figure 9, is designed for home use, although picking up the unit at close to 4 pounds suggests it is fairly heavy duty. The jaws are made of steel screwed onto the cast base. The jaw surface is 2 inches wide by ½ inch high, and the bottom of each jaw surface has a rectangular notch. Soft jaw covers are included to prevent scratching.

The jaws ride on two sliding side surfaces and a single center screw. The distance from the bottom of the jaws to the screw is ⅞ inch. The top assembly can be rotated 360 degrees and locked into position with a

Figure 9 — Made of cast metal, the MYTEC vise includes soft jaw covers and soft inserts to prevent scratching the mounting surface or work. Without the soft inserts, the clamp mount can fit a benchtop as wide as 3⅛ inches.

lever on the side. The unit as delivered needed a bit of force to turn the locking lever for the first time. A screw with a jam nut under the jaw head can be adjusted to increase or decrease the rotation tension. The manufacturer also suggests applying a few drops of oil to the jaw screw.

Holding the unit on my lap, I turned the jaw opening adjustment screw to see if the movable section remained locked to the adjusting screw at maximum jaw opening. The answer is — it hurt when the back section fell off the screw and onto my knee.

Price: about $29 on **amazon.com**. Search for MYTEC Home Vise.

Figure 10 — The small and light Z-COLOR vise can only take items as deep as the jaw height — approximately ½ inch.

Z-COLOR Mini Flat Clamp Vise

For less than $10 plus shipping, you get a lightweight (9.5-ounce), very basic vise. The jaws are approximately 2 3/16 inches wide and ½ inch deep. The package includes the vise, two jaw extensions made of hard plastic, and four screws with hard plastic sleeves that match holes in the jaw (see Figure 10).

The bottom of the jaws rest on the mounting surfaces, so items up to only ½ inch deep will fit. The jaws will open 2⅛ inches and the movable jaw will not fall off. The vise can be mounted to a workbench with four screws through slotted holes or just rested on the work surface.

The tops of the jaws each have four holes, and the spacing of these holes matches the holes in the orange plastic jaw extensions. Although it looks like you can screw on the jaw extensions with the supplied metric screws, the outer four holes are not threaded far enough to tighten the supplied screws completely, and the inner holes have just a tiny bit of threading. The result is that you can mount the jaw extensions, very loosely, using the outer holes. Shorter screws might yield a tighter fit.

You can also use the screws to mount the four orange cylindrical sleeves in the outer holes, again, loosely. It wasn't apparent to me what you might use these for.

Even with the loose screws, I was able to use this vise to hold a PC board as wide as the jaw opening — a bit over 2 inches — at a price comparable to, or less than, a single-purpose PC board holder. This rugged little vise is easily picked up and stored.

Price: about $10 on **amazon.com**. Search for Z-COLOR Mini Flat.

Four State QRP Group Cric-Key Kit

Reviewed by Steve Ford, WB8IMY
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Don't let the appearance of the Four State QRP Group Cric-Key fool you — this is a real CW keyer and key. The speed is adjustable between 5 and 50 WPM, and the keying output uses a MOSFET capable of switching up to 1 A, so it will safely key any radio. The key paddles are adjustable for both spacing and tension.

The Cric-Key is powered by a 9 V battery and draws less than a microamp when the keyer is not in use. Rather than an audible sidetone, the Cric-Key uses a red LED to indicate keying (most transceivers include a sidetone).

This key was designed by Dave Cripe, NMØS, for use with the Four State Cricket series of minimalist QRP radios, but you can use it with any transceiver you like. The Cric-Key is a useful keyer, but it is also educational and fun to build. This is one of those kits that's so straightforward, it's difficult to make a mistake if you follow the instructions. Best of all, you have instant gratification the moment you're finished.

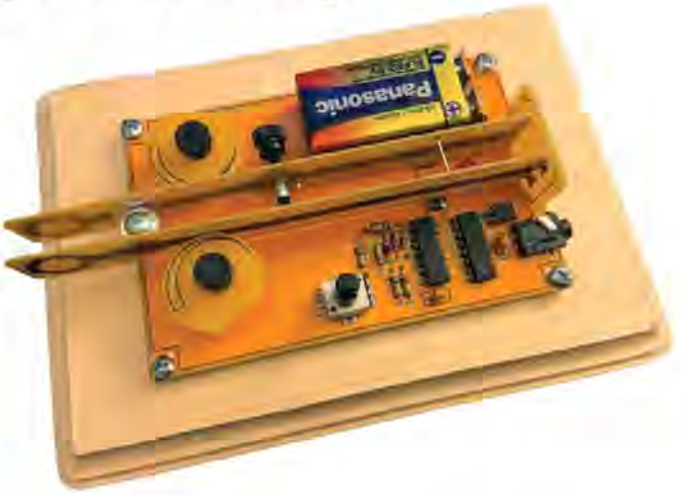
Building the Cric-Key

The kit has only 19 components, consisting of a couple of integrated circuits (ICs) and an assortment of resistors, diodes, capacitors, and the optoisolator. The circuit board is well designed, with all parts placed in a logical arrangement that offers ample space even for my thick fingers.

In the 90 minutes I spent building, it seemed that the lion's share was spent with the mechanical portions of the key. This involves separating a few circuit board sections and carefully mounting them onto the main board. The paddles, for example, consist of two long pieces that must be aligned and soldered. There are also two discs that are used in clever fashion to adjust the paddle spacing. It may not be apparent how the discs function when looking at the photo, but it becomes obvious once you've installed them.

Bottom Line

The Cric-Key is a cleverly designed keyer kit with an integrated paddle that goes together in an evening and results in a useful piece of station gear.



The kit comes with spacers and bolts for mounting within an enclosure if you prefer. It also provides a set of screws, and I used these to secure my Cric-Key to the included pine board for stability.

Enjoying the Cric-Key

Despite their unusual construction, the Cric-Key paddles felt surprisingly good once I adjusted them to my liking. I like my paddles sensitive, so I used the discs to put the paddle contacts right where I need them. Light finger taps were more than enough to operate the Cric-Key in this configuration.

Ergonomically, the Cric-Key is a pleasure to use. For example, the speed potentiometer has an extended shaft, which makes it easy to tweak while you're operating.

I should point out that the Cric-Key lacks an on/off power switch. Instead, plugging in the cable for your transceiver completes the path to ground through the 3.5-millimeter jack for the negative terminal of the battery, which then activates the Cric-Key. I didn't realize this when I finished the kit, and at first, I thought it wasn't working. A quick glance at the schematic diagram confirmed my suspicion, and with the cable in place, I was under way.

This is a simple kit that even a beginner should be able to tackle. Considering its economical price, a batch of Cric-Keys would make an entertaining club project.

Manufacturer: Four State QRP Group, **www.4sqrp.com**. Price: $25, plus shipping.

Joel R. Hallas, W1ZR, w1zr@arrl.org

The Doctor is In

Some Antennas Need Low-Resistance Connections to be Effective

Q Paul, WB5AGF, asks: A friend (N5BGZ) and I have gotten very interested in building small transmitting HF loop antennas. Is there anything in the amateur literature that discusses how to implement very low-resistance (mΩ level) RF connections?

I am reasonably up-to-date on what has been published in amateur radio periodicals on small loop antennas — going back to Ted Hart's, W5QJR, article, "Small, High-Efficiency Loop Antennas," in the June 1986 issue of *QST* — but I don't truly understand what is needed for joints that don't turn the high RF current into heat.

A First, thank you to Senior Lab Engineer Zack Lau, W1VT, for his comments on this. The loss could be indirectly measured by calculating the bandwidth of the loop — the narrower the bandwidth, the better. Zack's guess is that the best approach is to braze everything once, then carefully sand and polish all joints to a mirror-like surface.

Another parameter is the needed duration of the connection, because most connection arrangements degrade over time. Some mechanical connections that degrade due to oxidation can have their resistance growth delayed by a combination of conductive anticorrosion grease on the surface and covering the joint with something that keeps new oxygen away. Some antenna materials, particularly aluminum, lose their connectivity due to shrinking under pressure. In the 1950s, the wire under screw terminals got thinner over time and the resistance went up, resulting in house fires. This was also a problem with radio equipment that used aluminum rivets to attach things, such as tube sockets, to steel chassis. Almost all radios from those times that I have restored had dc resistances between the socket and its ground connections, and the actual chassis ground, in the single-digit ohms range — perfect for causing all manner of problems. Brazing or welding may be the best option. Soldering is close, but difficult for some metals, and unprotected joints degrade with exposure over time. Any mechanical connection involving aluminum (beam clamps or other joints) should be tightened periodically and appropriate compounds applied to all mechanical joints, as well as electrical insulating material to protect the connections.

Q Tage, K1SEI, asks: A friend has an 18-foot open boat that he hopes to put on the air on 60 meters. He was wondering what kind of counterpoise to use with his whip antenna. He would not want to drill through or make any major modifications to the hull. Trailing wires seems easy when under way, but would need to be wound in when approaching docks, so we'd like to avoid that obvious option. Does a vertical antenna need ¼-wavelength radials when on seawater, or is a good ground connection in saltwater sufficient?

A *Windfall*, a 25 ½-foot sailboat, has served me as a successful marine mobile platform for years, using an insulated backstay for an antenna (see Figure 1). It has a fiberglass hull and inboard diesel auxiliary. I assumed that I would need to penetrate the hull for radials, but first tried just tying my automatic tuner's ground terminal through a short heavy wire to an engine block bolt — I used the same bolt that the battery ground was tied to, because that was convenient.

Figure 1 — *Windfall*'s insulated backstay antenna.

The tuner was mounted on the aft-cabin bulkhead, just below the backstay position, so it has short connections to both the antenna base and the engine ground. I was surprised at how well it worked, so I never changed it, although a better ground would likely offer greater efficiency.

It isn't just using the engine block as the ground, but also all the negative power wires that run against the hull, as far forward as the bow lights. The capacitance through the hull to the seawater seems to do it. Of particular interest was working from Long Island Sound into the 75-meter Sunday 4 PM (EST) Antique Wireless Association (**https://antiquewireless.org/homepage**) AM net (3837 kHz, 7 PM during DST on 3840 kHz) while on the water. This can be a challenge from the home station with a 125 W, 100% modulated, AM carrier, and a full-size dipole at 60 feet, but I made a better contact from the boat with a 25 W carrier, so I figured I was done with my grounding system. It seems to work well on all bands, with solid contacts to Europe on 20 meters. While the backstay is sloped, I don't observe much in the way of directivity, but I'm sure there is some.

With a shorter loaded antenna, with its lower radiation resistance, the counterpoise is more important, but I think the idea should still work. As a "capacitor," it doesn't need to be straight, so it could go around the inside of the hull. Make sure it is taped, or otherwise secured, to the inside of the hull. Additional air space will significantly reduce the capacitance and moving with a rocking boat will change the tuning, making operation unstable, to say the least.

Q William asks: I built Bob Heil's, K9EID, pine board transmitter project from the January 2018 issue of *QST*. The transmitter works great, but I don't have a boatanchor-era vacuum-tube receiver, so I would like to use my normal station solid-state transceiver for my receiver. Instead of using a Dow-Key relay, I plan to use a Potter and Brumfield relay 3PDT to switch the antenna from receive to transmit, while grounding the receiver antenna input. This works, but I'm concerned about overloading the front end of my transceiver. With 5 W out from the transmitter, my solid-state transceiver's S-meter is pegged. I'm concerned about this damaging my modern-day transceiver. I have an old Dow-Key relay, but I'm afraid to use it, because the relay does not ground the receiver when transmitting. Am I safe using either one of the two relays, or should I acquire a tube-type receiver?

A One problem is that no one is sure about the safe input level of modern gear, because the manufacturers don't specify, although they might answer if asked about a particular transceiver on a particular band.

We can believe that an input of +10 dBm is safe, because during *QST* Product Reviews we test transceiver's receivers in the ARRL Lab for IMD at that level and haven't damaged one yet. We have some evidence (from W1AW exposure) that +20 dBm signals might cause damage, but that is based on circumstantial evidence. We know that a transceiver or receiver at W1AW can pick up signals at that level while W1AW is transmitting, and we know that front ends at W1AW have been damaged, but it's also possible that the damage was due to lightning or some other source.

Dow-Key made a number of different coaxial relays over the years. The ones that I had, circa the 1950s, had a small circular inspection and contact cleaning access plate at the bottom, from which you could see the contacts. Mine shorted the receiver input, while the relay was switched to transmit. If yours are like mine, the receiver side is the long SO-239 coax jack, on the same side as the coil and is connected if the relay coil is not powered on.

A receiver or transceiver with a calibrated S-meter will read S-9 with 50 μV at the antenna terminals. That is –73 dBm at 50 Ω. Thus, a safe +10 dBm would be at S-9 +83 dB — which would likely move your S-meter needle pretty far to the right. Unfortunately, most S-meters are not well calibrated, so that will just be a guide with most transceivers. If you had a calibrated signal generator, you could find out what +10 dBm looks like on your S-meter. If not, you could approach it from a different direction.

Your 5 W transmitter signal is at +7 dBW, which is +37 dBm. Thus, the relay isolation needs to be a minimum of 27 dB from the transmitter port to the receiver port to limit the input to +10 dBm. Of course, it is always good to have a bit more.

The best way to make sure your receiver will be safe is to use a receiver protector, as discussed in *QST* Product Reviews (see the Product Review archive at **www.arrl.org/qst-product-review** for more info). Just make sure that it is connected so that it is not in-line while you are transmitting. In many transceivers with a single antenna connection, this connection must be made inside the transceiver.

Do you have a question? Ask the Doctor! Send your questions to "The Doctor," ARRL, 225 Main St., Newington, CT 06111, or email your question to: **doctor@arrl.org**.

Listen to the archives of the *ARRL The Doctor is In* podcast on iTunes, Blubrry, Stitcher, or on the ARRL website at **www.arrl.org/doctor**.

Hints & Hacks

A Clever Solution for Stainless Steel, Crimping Caution, and More

Screwdriver Antenna Solution

Screwdriver antennas are neat multiband mobile radiators, but because of their length, they can be problematic when it comes to using your garage. In my case, I had to unmount the antenna when entering and then remount when leaving (see Figure 1). Even if I put the upper whip on an antenna spring or a fold-over detent, it wasn't going to fit.

Because my screwdriver antenna mounts to an SO-239 connector, I realized that I could make a short vertical antenna using a mating PL-259 connector. It would be short enough to make it into the garage, yet long enough for me to check conditions on the bands while driving around town. If I discovered decent conditions, I could stop and mount the screwdriver antenna. Otherwise, I could just continue listening.

I had a stainless-steel element that I picked up at a hamfest, so I cut it to fit. I crimped it to the center pin of a PL-259 and filled the back shell with RTV silicone rubber (see Figure 2). However, while gently pulling on it after some use, the element came right out of the PL-259. The crimp hadn't survived all the road vibration and the RTV silicone did not stick to the element.

I decided to solder the stainless-steel antenna to the PL-259 shell and fill the shell with epoxy. The epoxy would dampen the vibrations

Figure 1 — (Left) The author couldn't drive into his garage without first removing the long whip element from his screwdriver HF mobile antenna. [Richard F. Gillette, W9PE, photo]

Figure 2 — (Right) A shortened element would at least allow the author to drive in and out of the garage, as well as around town, while checking receive conditions to determine whether installing the full-sized element would be worthwhile. However, securing the stainless-steel element to the PL-259 connector presented a problem. [Richard F. Gillette, W9PE, photo]

Figure 3 — (Bottom) The solution to attaching the stainless-steel element was a "solution" indeed — an electroplating solution! The positive battery lead is attached to the copper. [Richard F. Gillette, W9PE, photo]

to center pin to prevent it from gradually separating over time. The problem is that stainless steel won't take solder. I'm a determined ham and I wasn't about to let this stop me. My solution for my solution, so to speak, was to copper plate the end of the antenna.

I gathered a shot glass, vinegar, a NiCad battery, and a small piece of copper foil. I cleaned the end of the stainless-steel element and placed it in the glass of vinegar with the foil hanging over the side (see Figure 3).

After a few minutes, I could see copper deposition on the stainless element. When I had a nice copper coating, I tinned it with solder and easily attached it to the PL-259 center pin. This easy technique may be the answer for other situations where you need to securely solder to stainless steel. — *73, Richard F. Gillette, W9PE,* **rf.gillette@ieee.org**

Crimping Caution

When I was on active duty in the US Air Force many years ago, we did an analysis of a failed power circuit. Our conclusion substantiated published information available at the time, which was: don't crimp a solder-covered wire to a terminal. Instead, use the correct type and size crimper, the correct size terminal for the wire, and crimp properly. Next, do a pull-out test and *then* solder the wire, as crimped, to the terminal.

If you solder before you crimp, the solder may heat under high load currents, causing the connection to loosen. That will lead to failure. Adding the solder as the last step reduces corrosion possibilities and adds mechanical strength to the connection. Clean terminals and wire are required, of course.
— *73, Gary Charniga, AD0PE,* **gcharniga@centurytl.net**

An Easy Strain Relief for Wire Antennas

There are a number of ideas to help alleviate the stress effects of high winds on wire antennas that are strung in trees. Many of these involve a pulley with weights and ropes; some are quite complicated and involve a bit of work to get them right. But many wire antennas can get away with much simpler strain reliefs.

One solution is throttle return springs, which are available at auto parts stores. You can find light ones, about 5 inches in length, that are strong enough to do the job. Attach them to the ends of the antenna between the insulators and the tree branches. You'll also find these springs, such as the Dorman Help! Assortment, for less than $10 on Amazon. — *73, Joe Falletta, W6UDO,* **w6udo@arrl.net**

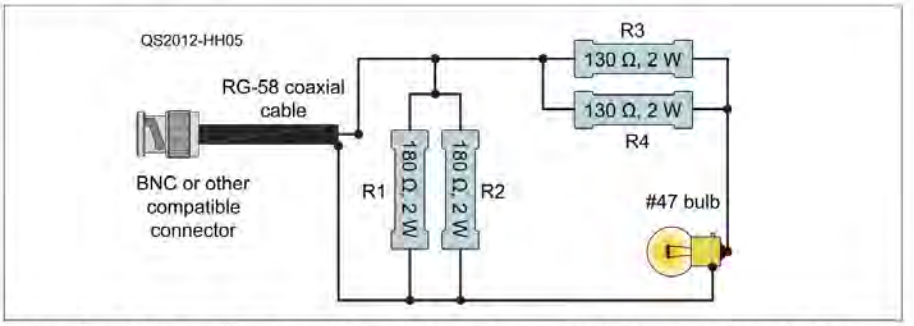


Figure 5 — A schematic diagram of the handheld dummy load. Parts are available from Mouser Electronics at **www.mouser.com**.

R1 — 180 Ω 2 W resistor (Mouser 594-5083NW180R0JA100)
R2 — 180 Ω 2 W resistor (Mouser 594-5083NW180R0JA100)
R3 —130 Ω 2 W resistor (Mouser 594-5083NW130R0JA100)
R4 — 130 Ω 2 W resistor (Mouser 594-5083NW130R0JA100)
Lamp — Type 47 (Mouser 606-CM47)

An Easy Handheld Dummy Load and Output Tester

Five-watt handheld transceivers are the most popular variety by far. Whether digital or analog, they are mainstays of VHF and UHF communication, especially in public service applications.

Before you deploy on a public service activation, it helps to be able to test the radio and make sure it is generating full output. The dummy load and indicator shown in Figure 4 will do the job easily and inexpensively. The circuit (see Figure 5) provides a safe load for the transceiver and the lamp glows brightly to indicate full 5 W output. The reason for using resistors in series and parallel rather than a single resistor in series with the lamp is to protect the radio if the lamp filament opens. If this occurs, the radio will still "see" a sufficient load.
— *73, William Rynone, WB2EIQ,* **rynone.eng@gmail.com**.

Figure 4 — This easy-to-build dummy load provides a quick output indication for 5 W handheld transceivers. [William Rynone, WB2EIQ, photo]

"Hints and Hacks" items have not been tested by *QST* or ARRL unless otherwise stated. Although we can't guarantee that a given hint will work for your situation, we make every effort to screen out harmful information. Send technical questions directly to the hint's author.

QST invites you to share your hints with fellow hams. Send them to "Attn: Hints and Hacks" at ARRL Headquarters, 225 Main St., Newington, CT 06111, or via email to **hh@arrl.org**. Please include your name, call sign, complete mailing address, daytime telephone number, and email address on all correspondence. Whether you are praising or criticizing an item, please send the author(s) a copy of your comments.

Feedback

- In the November 2020 *QST* article, "Exploring Radio Mathematics" by Dave Casler, KE0OG, an equation on page 35 said, "i squared = sqrt(–1)" when it should have said "i = sqrt(–1)." Also, an equation on page 37 said, "3/5.66 /–45° = 0.53/ –45°" when it should have read, "3/5.66 angle(–45°) = 0.53 angle(–45°)" for the sake of clarity. *QST* regrets the error.

- In the list of 2019 ARRL Leadership Donors in the July 2020 issue of *QST*, Jeffrey T. Kopcack, K8JTK, should have been listed as a President Society, Maxim Class donor. *QST* regrets the error.

Installing an In-Dash Mount for Your Mobile Rig

Win style points and save space with this secure and accessible assembly project.

Glen Popiel, KW5GP

Finding a good place to mount a mobile rig in your car is getting more and more difficult these days. It seems like every available inch inside is taken. Most often, I've had to resort to flexible gooseneck-style mounts attached to one of the seat floor bolts. Of course, this interferes with the passenger's leg room and makes the whole thing look like an afterthought at best.

Designing the Setup

When I got my latest vehicle, I decided it was time to try something different. When I get a new car, I start by replacing the factory radio in the dashboard. Most often, modern cars have larger double-DIN (roughly 4 × 7 inches) factory radios, which are based on the ISO7736 international standard. When I replace the factory radio, I prefer to use a single-DIN radio (roughly 2 × 7 inches) with a double-DIN-sized mounting bracket. The unused part of the opening is filled with the blank panel that comes with the radio mounting kit. This time, I decided to see if I could fit a mobile rig into that blank space.

Many of today's mobile rigs have a detachable front panel, often referred to as a *control head*. The control head method of installing radios in vehicles has been around a long time, and goes back to the time when vacuum tube-based mobile units were installed in police cars, taxis, etc. The bulky, heat-generating radio body was often mounted in the trunk, and a smaller control head was used to house the front panel and microphone connection for the radio. The control head then connected back to the main body of the radio via cable.

Installing the Radio

I have done this project with both a Kenwood V71 and a Yaesu FT-8800 VHF/UHF mobile rig (see Figure 1), but I'm sure there are many other radios with detachable front panels that will work as well. (I haven't yet tried it with an HF/VHF/UHF rig, such as the Yaesu FT-857, but that looks like it would fit as well.) The key is to make sure that the detachable front panel of the rig is small enough to fit into the single-DIN opening in the dashboard. It doesn't have to be an exact fit, in fact, you'll want it to be a bit smaller, so you can add a custom-made bezel around the rig's front panel to fill the opening.

The trick to this type of installation is fitting the control head to the mounting bracket. Most control heads are only an inch or two deep, whereas the holes in

Figure 1 — The Yaesu FT-8800 mounted in a Ford Explorer SUV.

the mounting bracket are made for a radio that's much deeper, often 6 inches or more. Because you don't want to drill holes in the side of the rig's control head and possibly damage the electronics inside, you'll need to fashion a mounting assembly to fit the larger double-DIN mounting bracket. What I used was a small 2-by-4-inch piece of wood cut to fit the mounting holes of the double-DIN bracket and installed the rig's control head so that it stuck out just enough to fit through the dashboard, as shown in Figures 2 and 3.

Creating the Bezel

Once I had the control head installed in the mounting bracket, along with the new stereo radio unit, it was time to create a bezel to completely close off the opening and help make the finished installation look like it was professionally done. I used a small piece of ⅛-inch-thick plexiglass, which was carefully cut and filed to shape. I then painted the finished bezel black to match the dashboard area surrounding it, and then installed the bezel assembly to the control head by using a small amount of black rubber sealant on the back side. The completed stereo radio and control head assembly was then installed into the opening in the dashboard as normal. I then ran the separation cable for the rig from the control head back to the body of the radio that I chose to mount under one of the removable rear floor panels of my SUV.

When I repeated this process with my Jeep Patriot, I tried to make creating the bezel easier and used a ⅛-inch-thick sheet of pressboard with the body of the radio mounted under the driver's seat.

Figure 2 — The control head mounting bracket attached to the 2 × 4 inch piece of wood.

Figure 3 — The completed control head mounting assembly, ready to install the bezel.

"It was time to create a bezel to completely close off the opening and help make the finished installation look like it was professionally done."

Figure 4 — The installation in a Jeep Patriot, using the press-board bezel. Notice that this bezel is not as smooth as the plexiglass bezel.

In hindsight, I would recommend using the original plexiglass design for the bezel, as this yields a much smoother painted surface, as you can see in Figure 4.

In either case, both installations worked out well, and I am quite pleased with the finished results. The installation was quick and easy. The nice thing is that the new in-dash mount for the rig puts everything in a secure and accessible location, while making the entire assembly look like it came that way from the factory. Not only that, but there's now plenty of leg room for any passengers that are along for the ride.

Photos by the author.

Glen Popiel, KW5GP, has written several articles for *QST*. He is an ARRL member, a Volunteer Examiner, and a member of QRP-ARCI, the Olive Branch Amateur Radio Club, and the Chickasaw Amateur Radio Association. He is a network engineer and technology consultant for Ciber Global, LLC., and the Mississippi Department of Education, specializing in open-source solutions. First licensed in 1973, Glen holds an Amateur Extra-class license and has worked in the computer and electronics field for over 45 years. He lives in Southaven, Mississippi, where he continues to develop new amateur radio projects. He can be contacted at **kw5gp@arrl.net**.

For updates to this article, see the *QST* Feedback page at www.arrl.org/feedback.

Congratulations

September 2020
QST Cover Plaque Award Winner

Zach Thompson
KM4BLG

Zach's article, "Easy to Use Antenna Mast for Portable Operators," describes a ham radio use for hiking and trekking poles. When you make camp, the poles can be configured to support a portable antenna.

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Easy to Use
Antenna Mast for Portable Operators

This portable mast uses your trekking poles and won't break your budget or your back.

Zach Thompson, KM4BLG

With a large portion of hams living in antenna-restricted areas, and with amateur radio equipment becoming more compact and lightweight, many hams are turning to portable operation. What portable operation looks like for you can vary based on your needs, objectives, and budget.

Motivation

A few years ago, I got involved with portable operating through SOTA (Summits on the Air), an awards program that encourages amateur radio operation from the tops of designated mountain peaks. Many of these mountain peaks involve a fair bit of hiking, which adds an additional dynamic to the experience. One major goal for any kind of hiking or backpacking is to minimize the load; equipment that is small and lightweight is necessary for success. Most portable operators use wire antennas because they are affordable, lightweight, compact, and easy to deploy. However, one limitation of wire antennas is the need for some sort of overhead support, such as a tree, tower, pole, or another tall object. Often, there will be few or no suitable supports, or supports might not be conveniently located.

Sled Dogs and Ham Radio in the North Maine Woods

Derrick Ouellette, KW1A

The Can-Am Crown International Sled Dog Race is a 250-mile journey through the North Maine Woods, held on the first weekend of March in Fort Kent, Maine. Race participants stop at four checkpoints (two of which are off the grid) where mushers can eat, rest, and warm up. During this time of year, the landscape can range from below-zero temperatures with wind chills as low as –40 °F, to sun and calm winds with a mild temperature of 20 °F.

A 250-mile remote sled dog race has a critical need for amateur radio.

▲ Jack Caron, W1AYX, and Bob Brooks, W1AGC, at the start of the race. [Janice Kasper, photo]

◀ Rob Hoey, W1EBA; Marty Baker, K1MJB, and Derrick Ouellette, KW1A, operated net control. [Jennifer Ouellette, photo]

Aroostook County, Maine, is made up of small towns and villages, unorganized territories, lakes and rivers, and the vast woodland distances between them. It's the largest county east of the Mississippi and is filled with friendly, hardworking people. There are many log trucks and wood mills, and the area is full of opportunities for outdoor recreation. However, it lacks good cell phone coverage and reliable internet (some areas don't have any).

A Need for Ham Radio

Some of the race checkpoints are so remote, the only effective way to communicate race times and supply checkpoint needs, attend to medical emergencies, or handle any other message traffic is via ham radio. This is possible by using both of the Saint John Valley Amateur Radio Association's (N1SJV) repeaters, various HF modes, cross-banding, and simplex for inter-checkpoint communications. It takes tons of ham radio equipment and the dedication of over 20 hams dispersed throughout race locations. The event requires year-round planning.

Race Logistics

The event begins in the early morning on the first Saturday in March, along Main Street in Fort Kent, which runs parallel to the Saint John River that marks the border between the US and Canada. The race usually lasts until late Monday evening, but it depends on the weather and how fast the dogs are running.

It takes four hams to run net control (NC) — two during the day and two at night. These hams take 12-hour shifts logging official times and delivering messages to and from the event command center. NC is set up at the bottom of the ski slope at Lonesome Pine Trails in Fort Kent, and is the race finish line. The NC location is great for exposing ham radio to the public. Those who enter the building can easily see ham radio in action. Some people come into the "shack" to ask questions and look around. As an ARRL Volunteer Examiner (VE) and instructor, I enjoy opportunities to share our great hobby with others. Sometimes we broadcast on local TV and radio stations during the event.

As the race begins, hams at the start line relay their start times, bib numbers, and the number of dogs each sled has, for tracking purposes. The start location is down the road from NC and can be relayed via handheld transceiver simplex. A half a mile from the finish line, there are hams waiting in vehicles to give a warning that a team is coming, as sometimes it can be hours before another team comes. Although it's only half a mile away, it's on the other side of a hill, and a handheld transceiver won't get through to NC.

Checkpoint Components

The first checkpoint is in the small town of Portage Lake, about 65 miles from the start line. At this location, a mast is in the air supporting the VHF antenna and an HF dipole with the help of a huge snow pile. This spot is an official spectator checkpoint, so the public is welcome to enjoy the races firsthand.

The next two checkpoints are at remote logging camps. The first logging camp is about 55 miles from Portage Lake, and the next is about 35 miles from there. These roads are plowed specifically for this event, and someone has to open the camps by starting generators and getting fuel. These checkpoints aren't open to the public, and have just the supplies needed for the race. Because these checkpoints have no landline or cell phone coverage, ham radio is critical. VHF repeaters and HF voice is used as backup, and Winlink is also used. These two checkpoints can talk to each other via VHF simplex due to a river running between them, cutting out the hills and mountains that would normally prohibit this in the area. The mushers stay at these checkpoints for a mandatory rest time while veterinarians check the dogs and the sleds get restocked, before travelling about 52 miles to the last checkpoint.

The last checkpoint before the finish line is in Allagash. It opens Sunday afternoon at Two Rivers Lunch restaurant and runs into late Monday or Tuesday morning, depending on team speeds. The radio "shack" is the center of attention because it's placed on a table in the middle of the restaurant. This checkpoint uses mainly VHF, but has HF as backup. It's another great location to promote ham radio. There's an official time-tracking board near the ham setup that's updated every time a team arrives and departs. Spectators can see the ham operators in action, relaying information back and forth to NC. It's busy here, and the hams do an awesome job in a hectic environment. The finish line is 45 miles from this checkpoint in Fort Kent, where NC watches the teams finish the race after having travelled a total distance of about 250 miles.

Additionally, there's at least one safety station between each checkpoint where non-hams use public safety radio to communicate back to the checkpoint, and to help track where the teams are. Some of these stations include snowmobiles with mobile radios attached to them.

Additional Races

During the Can-Am Crown International Sled Dog Race, there are also 30- and 100-mile races that take place.

▲ Supplies and antennas at one of the logging-camp checkpoints. [Brit Rothrock, AB1KI, and Ann Rothrock, KB1PYV, photo]

◀ After a heavy snowfall, Derrick Ouellette, KW1A, cleaned snow off of the solar panels just before the races. [Derrick Ouellette, KW1A, photo]

The 30-mile race has a checkpoint similar to the safety station on a snowmobile, is manned by a few hams, and is set up at Black Lake. Mushers participating in the 100-mile race travel to Allagash and back to Fort Kent. A checkpoint with hams is set up at the old Allagash school, and requires a mandatory rest time.

Conclusion

These races wouldn't be successful without the dedication of amateur radio volunteers from all over Maine (some have even come from out of state). We're thankful to be able to use the Saint John Valley Amateur Radio Association's repeaters for the event. I hope every ham has a chance to do something like this at least once during their ham radio journey.

Derrick Ouellette, KW1A, obtained his Technician-class license during his senior year of high school and earned his Amateur Extra-class license soon after. Derrick has had several elected positions in his local radio club, most notably President. Being a firefighter EMT, his favorite part of ham radio is public service. Derrick also enjoys making rare DX contacts as well as extended contacts. He can be reached at **kw1a@arrl.net**.

For updates to this article, see the *QST* Feedback page at www.arrl.org/feedback.

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Happy Holidays and Peace on Earth

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Happenings

FCC Orders Amateur Access to 3.5 GHz Band to "Sunset"

Despite vigorous and continuing opposition from ARRL and others, the FCC has ordered the "sunsetting" of the 3.3 – 3.5 GHz amateur radio secondary spectrum allocation. The decision allows current amateur activity on the band to continue, subject to a later decision. The FCC took the action on September 30 in a *Report and Order* (R&O) and *Further Notice of Proposed Rulemaking* in WT Docket No. 19-348.

"We adopt our proposal from the *Notice of Proposed Rulemaking* to remove the amateur allocation from the 3.3 – 3.5 GHz band," the FCC said in its *R&O*. "[W]e adopt changes to our rules today that provide for the sunset of the secondary amateur allocation in the band, but allow continued use of the band for amateur operations, pending resolution of the issues raised in the *Further Notice*."

The FCC had proposed in 2019 to reallocate 3.45 – 3.55 GHz for "flexible-use service" and auction the desirable "mid-band" spectrum to 5G providers. These and other recent spectrum-repurposing actions stem from the 2018 MOBILE NOW Act, in which Congress directed the FCC to make additional spectrum available to auction for mobile and fixed wireless broadband.

In the run-up to the Commission's decision, ARRL met with the FCC's staff to explain its concerns and to answer questions. Subsequently, ARRL met with the wireless advisors to the FCC Chairman and two Commissioners. In those meetings, ARRL reiterated that continued secondary status for amateurs will not impair or devalue use of this spectrum by the primary licensees intending to provide 5G or other service. ARRL noted amateur radio's long history of successful coexistence with primary users of the 9-centimeter band, sharing this spectrum with the federal government users and secondary, non-federal occupants.

ARRL pointed out that vital links in amateur television and amateur radio high-speed mesh networks using the band have been especially valuable during such emergency situations as the wildfires on the west coast. Deleting the amateur secondary allocation will result in lost opportunities for experimentation and public service with no countervailing public interest, ARRL said.

The FCC action means that amateur radio will lose access to the 3.5 GHz secondary allocation, even where commercial operations do not exist. ARRL told the Commission that it should not intentionally allow this spectrum to be vacant and unused, wasting the public resource, when amateurs can use some portion of it in many areas without detriment to any other licensee, just as it has in the past. ARRL argues that amateur operations should be permitted until and unless an actual potential for interference exists.

ARRL expressed gratitude to the many members and organizations that joined ARRL in challenging the action. ARRL will continue its efforts to preserve secondary amateur radio access to 3.3 – 3.5 GHz. Members may share comments at the ARRL Response to Amateur Access on 3.5 GHz band page, at **www.arrl.org/3-GHz-Band**.

ARRL National Convention and Orlando HamCation® Postponed to February 2022

ARRL and the Orlando Amateur Radio Club (OARC) announced in October that the ARRL National Convention and Orlando HamCation® — which was to host the convention — were being postponed until February 11 – 13, 2022. The convention had been set for next February.

"The joint decision came after considering the national public health emergency, including the health and safety of all participants, the uncertainty that continues to impact our organizations, and the reluctance to travel to, and attend, large events," said ARRL CEO David Minster, NA2AA. "We regret the disruption to the hard work already completed by so many volunteers preparing for the ARRL National Convention and HamCation."

HamCation General Chairman Michael Cauley, W4MCA, said it was a difficult decision to postpone the event, but "our top priority is delivering a safe and successful HamCation experience for everyone, including our attendees, dedicated volunteers, exhibitors, and service partners."

OARC President John Knott, N4JTK, noted that holding the convention in 2022 will mark the 75th anniversary of HamCation — one of the largest annually held gatherings of radio amateurs in the US.

"We want our diamond anniversary show to be an exciting, five-star event," said Knott. "We look forward to seeing you in Orlando in 2022."

HamCation may organize some online presentations and programs for what would have been Ham Cation 2021 next February. A QSO party was also under consideration. The HamCation website, **www.hamcation.com**, will post details.

ARISS to Celebrate 20 Years of Ham Radio on the International Space Station

Amateur Radio on the International Space Station (ARISS) celebrates 20 years of continuous ham radio operations on the International Space Station (ISS) in December. Over the past 2 decades, ARISS has supported nearly 1,400 scheduled ham radio contacts with schools, student groups, and other organizations.

Planning for ARISS began in 1996 as a cooperative venture among national amateur radio and amateur satellite societies, with support from their respective space agencies. The ARISS ham radio gear actually arrived on the station before the Expedition 1 crew, headed by Commander Bill Shepherd, ex-KD5GSL. The FCC issued the call sign NA1SS for ISS operations. After Expedition 1 arrived on station, some initial tests with ARISS ground stations and individual hams confirmed the ham gear was working properly.

The first ARISS school contact was made with students at Luther Burbank Elementary School in Illinois on December 21, 2000, with Shepherd at the helm of NA1SS on the ISS.

In September, ARISS announced the installation of the initial element of its next-generation ham radio system in the ISS *Columbus* module. The new radio system replaces equipment originally certified for spaceflight in mid-2000. The onboard ham station also provides a contingency communications system for the ISS crew. Several astronauts have also enjoyed using NA1SS to make casual contacts with — and delighting — earthbound radio amateurs.

Students at Kittredge Magnet School near Atlanta, Georgia, recently took part in an ARISS contact with astronaut Drew Morgan, KI5AAA, who answered 15 student questions. The Kittredge Magnet School Amateur Radio Club is KQ4KMS.

Jordan was among the participating students at Celia Hays Elementary School in Rockwall, Texas, late last February, who were excited to have their ARISS contact with astronaut Drew Morgan. More than 190 students sat on the gym floor while another 680 on campus listened via the school's intercom.

In Brief...

Phil Temples, K9HI

- Phil Temples, K9HI, has been appointed as New England Division Vice Director. He succeeds Mike Raisbeck, K1TWF, who was elected earlier this year as ARRL First Vice President. ARRL President Rick Roderick, K5UR, made the appointment after consulting with New England Division Director Fred Hopengarten, K1VR, and the region's Section Managers. An ARRL Life Member, Temples has been licensed for 50 years. He served three terms as Eastern Massachusetts Section Manager.
- New Section Managers have been appointed in South Texas, Northern New Jersey, and Delaware. Stuart Wolfe, KF5NIX, was appointed ARRL South Texas Section Manager. He succeeds Paul Gilbert, KE5ZW, who stepped down to become ARRL Director of Emergency Management. Wolfe will complete the remainder of Gilbert's term. Bob Buus, W2OD, was appointed as Northern New Jersey Section Manager to succeed Steve Ostrove, K2SO (SK), who stepped down due to failing health. Buus will serve out the current term of office, which concludes on June 30, 2021. Mark Stillman, KA3JUJ, was appointed as ARRL Delaware Section Manager. He succeeds Bill Duveneck, KB3KYH, who has moved out of the Delaware Section after serving since 2014.

Steve Aberle, WA7PTM, wa7ptm@arrl.net

Public Service

Upgrade Your Emergency Data Communications Toolkit with HamWAN

This month's column was written by subject matter expert Steve Aberle, WA7PTM. Steve is a retired Data Network and Security Manager, and was previously a law enforcement first responder and a County Emergency Communications Director. He's also active in ARES and RACES.

Emergency management relies on digital data for situational awareness, visual assessments, exchange of forms, lists of medicines and supplies, resource requests, and more. Even though commercial communications products and services have become more reliable over time, they do become overloaded and fail, albeit less frequently.

Incident commanders, first responders, emergency managers, and the general public are accustomed to high data speeds at work, in the community, and at home. 4G LTE phone networks with 30+ Mbps (megabits per second) download speeds are commonplace, and home internet continues to become faster, with gigabit speeds available in some locations.

When amateur radio volunteers talk to agency officials about potential data communications in an emergency or disaster, they might mention their terminal node controllers (TNC) and sound card modems. However, in the two-symbol system our TNCs use, 0.0012 Mbps and 0.0096 Mbps packet radio, 0.0252 Mbps VARA FM, or even 0.0560 Mbps on 125 and 70 centimeters (which is limited by FCC Rule §97.307(f) (6) to v.92 dial-up modem speed), is unlikely to impress anyone. These speeds were eclipsed by more modern technologies decades ago.

Achieving Faster Data Speeds

The amateur radio public service community needs a faster way to exchange digital data in our emergency communications toolkit.

One solution to achieve faster data communications via radio is to move into the SHF amateur spectrum. In 2013, a group of amateur radio volunteers with data networking experience in the Puget Sound area of northwest Washington implemented the radio-based data communications system called HamWAN (Ham Wide Area Network). HamWAN has network clients including the state's Emergency Management Division and Department of Transportation, emergency operation centers (EOCs), hospitals, and the Red Cross (see **www.hamwan.org** for more information). The basic network design has now been cloned in Tennessee, Georgia, New Mexico, British Columbia, and Florida. A similar routed network has been established in Michigan.

HamWAN is a system of commercial-grade microwave radios and dishes on the 5-centimeter amateur radio band (5.650 to 5.925 GHz). Installations consist of dish-style radio antennas creating a point-to-point network backbone, and up to three

This HamWAN dish was installed at the Washington State Department of Transportation (WSDOT) in Vancouver, Washington. It's aimed at Larch Mountain. [Steve Aberle, WA7PTM, photo]

120° sector antennas for client radio connections. Routing is implemented using standard commercial networking protocols. Because HamWAN is a scalable IP-based routed network, not an ad hoc (mesh) network, the overhead of the networking protocols themselves don't become a throughput burden as the network grows.

Speeds monitored on the Puget Sound HamWAN network vary depending on equipment and distance, but one link consistently reaches 300 Mbps and several regularly report 130 or 144 Mbps.

Client speeds in the 5 Mbps to 20 Mbps range are common, so amateur radio data communications can once again be a viable part of the emergency plan in a local jurisdiction. As an added benefit, redundant ties to the internet allow messages to leave and enter HamWAN, but if the internet is down or cut off, HamWAN can still function independently.

Using HamWAN for Emergencies

A temporary emergency or disaster communications network implementation might involve attaching one or more ad hoc networks to HamWAN via client nodes. This could be as simple as a battery-operated portable radio or dish on a hilltop linked to a HamWAN sector antenna and cabled to an access point which would feed a network at an incident command post or evacuation center.

Networks won't do any good in an emergency or disaster if services are unavailable. One should consider how a served agency uses the internet, and then add services to support their needs. The Puget Sound HamWAN has its own Domain Name System (DNS), Network Time Protocol (NTP), and Simple Mail Transfer Protocol (SMTP) servers. Users have other servers on the network, with one example being a Voice over Internet Protocol (VoIP) server. Web, chat, and collaboration servers might be part of a minimal service offering. Cameras with semi-public PTZ (pan tilt zoom) control have been added to many of the HamWAN link sites, and one of those was used to make the first report of a wildfire in September. This is a great use of our microwave frequencies which, if unused, are in danger of being reallocated to commercial service providers.

In February 2019, at the Washington Emergency Communications Coordination Working Group (WECCWG) meeting in Vancouver, Washington, HamWAN was showcased to ESF #2 (Emergency Support Function #2 — Communications) partners from around the state. The services demonstrated over a temporary HamWAN connection were Winlink via Telnet, digital mobile radio (DMR) backbone transport, a VoIP phone conference bridge, and a fast file transfer of ICS 213 messages (where the Seattle EOC shared a Raspberry Pi desktop over HamWAN and a folder with 8 MB of messages was transferred via "drag and drop" in less than 15 seconds).

The cost of client nodes ranges from $50 to $350, with very capable configurations being around $150 (**www.hamwan.org/Standards/Component%20Engineering/Client%20Hardware.html**). Link sites, a combination of linking and sector antennas, can be less than the price of two PACTOR-4 (0.0105 Mbps) modems.

Conclusion

In June 2016, the Federal Emergency Management Agency (FEMA) held the multi-state Cascadia Subduction Zone (CSZ) Catastrophic Earthquake and Tsunami Functional Exercise. The *Statewide After-Action Report* produced by the State of Oregon said, "Existing auxiliary amateur radio processes are slow and not capable of handling the large volumes of traffic expected during an event of this size, mostly due to radio bandwidth issues." Radio amateurs need to be aware of the perception by governmental entities of the capabilities and limitations of amateur radio and step up to meet that challenge. HamWAN is a way to do that.

Field Organization Reports

September 2020

Public Service Honor Roll

This listing recognizes radio amateurs whose public service performance during the month indicated 70 or more points in six categories. Details on the program can be found at **www.arrl.org/public-service-honor-roll**.

720
KD8TTE

595
W7PAT

560
WA3EZN

457
WA7PTM

368
KE8BYC

355
KE8KOC

320
K8AMH

310
ND8W

296
WA2CCN

275
N9VC

262
AD8CM

260
KW9EMG

210
KI5GRH

205
WB9WKO

195
KB2RTZ
AL0Y

192
W9RY

185
W2PH

180
KB8RCR

175
K3FAZ

166
AI9F

160
KK3F
AC0KQ
W4DNA
K0RCJ

155
W8IM

150
N8SY

145
N1LL

140
K9LGU
K4IWW

138
WD8USA

135
W3YVQ
AD3J

133
K8RDN
N3KRX

132
AC8NP

130
WC4FSU
N2WGF
WB9QPM
N4CNX
KL7RF
KW1U

127
KA8ZGY

126
AB3WG

125
KO4OL
AG9G
KF5IOU
KY2MMM
AF4NC

120
WA4VGZ
W4NWT
K2TV
KC9FXE
W0LAW
KA9QWC
KF5OMH
KG5NNA
WK4WC
KC8WH
K3JL
KY2D
WB4ZIQ

118
KB3YRU

115
N8MKY
KD8ZCM
N1TF

110
AD4DO
W7EES
KA9MZJ
K3IN
NI2W
WA3QLW
KA5AZK
WB8YLO
K6HTN
WB8TQZ
N1IQI
KD2JKV
W1RVY
KB2QO
W3GWM
N3SW

109
K1HEJ

108
W4CMH
N2DW
WS4P
WF2Y

105
W2PAX

100
WB4RJW
KZ8Q
KN9P
AA3SB

KE5YTA
KB8LKH
AC8RV
WB8SIQ
N1LAH
W3CJD

99
KD2LPM

98
W2CTG

97
W9EEU

96
KE1ML

95
K1XFC
W4INK

92
KN4AAG
NC8V
K8MDA

90
KM4WHO
AA4XZ
WB4ZDU
AB9ZA
K3MIY
AA3N
W4EDN
W4TTO
K8KRA
KB8HJJ
KA1G
WB8WKQ
K8ED
KC1HHO
KC1KVY
WD0BFO
K2MJF
KA2HZP
W2AH

89
K9GDF
W8MAL
WB8YYS
N6IET

88
KB1NMO
N3JET

86
K6JT

85
NX9K
KD8UUB
KV8Z
WV5Q

84
KC8YVF

83
WA1LPM

82
K1STM

80
W9BGJ
N8MRS
KD8UOT
KA2GQQ

79
WB8R
KB0DTI

78
W5XX

77
N8CJS
NV1N

76
KA0DBK
WB2VUF

75
WB3FTQ
KF5IVJ
KC1MSN

74
W3ZR

72
K6RAU
K0EK

70
WX2DX
K8OVO
W8DW
KC2PQC

The following stations qualified for PSHR in August, but were not reported in this column: K3IN 155, KK3F 150, W3YVQ 135, NA7G 130, NI2W 102, AA3SB 100, AB3WG 99, WD0BFO 90, KA0DBK 83, N3JET 80, WB3FTQ 75.

Section Traffic Manager Reports

The following Section Traffic Managers reported: AR, CO, CT, DE, EB, EMA, EPA, IL, IN, KS, KY, LA, LAX, MDC, ME, MI, MN, MO, MS, MT, ND, NE, NFL, NLI, NM, NNJ, NTX, OH, OR, SC, SD, SFL, SJV, SNJ, TN, WCF, WI, WMA, WPA, WTX, WV, WY.

Section Emergency Coordinator Reports

The following Section Emergency Coordinators reported: AR, CT, ENY, ID, IL, IN, KY, LA, MDC, ME, MI, MN, MS, ND, NFL, NLI, NM, NNJ, NV, OH, OR, SCV, SFL, SJV, SNJ, STX, SV, TN, UT, VI, VT, WI, WPA, WTX, WV, WWA, WY.

Brass Pounders League

The BPL is open to all amateurs in the US, Canada, and US possessions who report to their SMs a total of 500 or more points or a sum of 100 or more origination and delivery points for any calendar month. Messages must be handled on amateur radio frequencies within 48 hours of receipt in standard ARRL radiogram format. Call signs of qualifiers and their monthly BPL total points follow.

KK3F 1,506, K6HTN 967, NX9K 763, WB9WKO 678, WB8WKQ 515, KW1U 540, WB8WKQ 515, KB8RCR 509.

The following station qualified for BPL in August, but was not listed in this column last month: KK3F 980.

Bruce Draper, AA5B, aa5b.corral@gmail.com

Contest Corral December 2020

Check for updates and a downloadable PDF version online at **www.arrl.org/contest-calendar**.
Refer to the contest websites for full rules, scoring information, operating periods or time limits, and log submission information.

Start - Finish Date-Time		Start - Finish Date-Time		Bands	Contest Name	Mode	Exchange	Sponsor's Website
1	0300	1	0400	1.8-28	QCX Challenge	CW	RST, name, SPC, rig	qrp-labs.com/party.html
2	1700	2	2000	144	VHF-UHF FT8 Activity Contest	Dig	4-char grid square	ft8activity.eu/index.php/en
3	0000	3	0300	1.8	QRP ARCI Topband Sprint	CW	RST, SPC, mbr or power	qrparci.org/contests
3	1800	3	2200	28	NRAU 10-Meter Activity Contest	CW Ph Dig	RS(T), 6-char grid square	www.nrau.net
3	2000	3	2200	1.8-50	SKCC Sprint Europe	CW	RST, SPC, name, mbr or power	www.skccgroup.com
4	2200	6	1600	1.8	ARRL 160-Meter Contest	CW	W/VE: RST + ARRL/RAC Section. DX: RST	www.arrl.org/160-meter
5	0500	6	1000	3.5-28	UFT Meeting	CW	RST, mbr or "NM"	www.uft.net
5	0600	5	0800	7, 14	Wake-Up! QRP Sprint	CW	RST, serial, suffix of previous QSO	qrp.ru/contest/wakeup
5	1200	6	1159	3.5-28	PRO CW Contest	CW	RST, serial, "M" if member	www.procontestclub.ro
5	1800	6	2359	3.5-28	FT Roundup	Dig	RST, SP or serial	rttycontesting.com
5	2000	6	1959	3.5-28	EPC Ukraine DX Contest	Dig	RSQ, Ukraine region or serial	epc-ukraina.ucoz.com
8	0200	8	0400	3.5-28	ARS Spartan Sprint	CW	RST, SPC, power	arsqrp.blogspot.com
9	0130	9	0330	3.5-14	NAQCC CW Sprint	CW	RST, SPC, mbr or power	naqcc.info
9	1700	9	2000	432	VHF-UHF FT8 Activity Contest	Dg	4-char grid square	ft8activity.eu/index.php/en
12	0000	13	2359	28	ARRL 10-Meter Contest	CW Ph	W/VE/XE: RS(T), state or province. DX: RS(T), serial. MM: RST, ITU region	www.arrl.org/10-meter
12	0000	14	2359	1.8-7	PODXS 070 Club Triple Play Low Band Sprint	Dig	RST, SPC	www.podxs070.com
12	0600	13	1800	3.5-28	TRC Digi Contest	Dig	RST, serial, "TRC" if member	trcdx.org/rules-trc-digi
12	1200	13	2359	1.8-50	SKCC Weekend Sprintathon	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
12	1600	13	1559	3.5-28	International Naval Contest	CW Ph	RS(T), Naval club and mbr (or serial for non-members)	www.rnars.org.uk
13	2000	13	2300	1.8-28	QRP ARCI Holiday Spirits Homebrew Sprint	CW	RST, SPC, mbr or power	qrparci.org/contests
13	2100	13	2259	14	CQC Great Colorado Snowshoe Run	CW	RST, SPC	www.coloradoqrpclub.org
14	0100	14	0300	1.8-28	4 States QRP Group Second Sunday Sprint	CW Ph	RS(T), SPC, mbr or power	www.4sqrp.com
16	0130	16	0330	3.5-14	NAQCC CW Sprint	CW	RST, SPC, mbr or power	naqcc.info
18	1600	18	1700	3.5, 7	AGB-Party Contest	CW Ph Dig	RS(T), serial, mbr (if a member)	ev5agb.com/contest/agb_party.htm
18	2000	18	2359	1.8	Russian 160-Meter Contest	CW Ph	RS(T), oblast code or serial	qrz.ru/contest/detail/90.html
19	0000	19	2359	1.8-50	Feld Hell Sprint	Dig	RST, mbr, SPC, grid	sites.google.com/site/feldhellclub
19	0000	19	2359	3.5-28	OK DX RTTY Contest	Dig	RST, CQ zone	okrtty.crk.cz
19	0000	19	2359	1.8-144	RAC Winter Contest	CW Ph	RS(T), VE province/territory or serial	wp.rac.ca/rac-canada-winter-contest-rules
19	1400	20	1400	1.8-28	Croatian CW Contest	CW	RST, serial	9acw.org/index.php/rules
20	1800	20	2359	3.5-28	ARRL Rookie Roundup, CW	CW	Name, 2-digit year first licensed, SPC	www.arrl.org/rookie-roundup
20	2300	21	0100	1.8-28	Run for the Bacon QRP Contest	CW	RST, SPC, mbr or power	qrpcontest.com/pigrun
23	0000	23	0200	1.8-28	SKCC Sprint	CW	RST, SPC, name, mbr or power	www.skccgroup.com
26	0000	26	2359	3.5-28	Gedebage CW Contest	CW	RST, serial	olkb.or.id
26	0830	26	1059	3.5, 7	DARC Christmas Contest	CW Ph	RS(T), DOK or serial	darc.de/der-club/referate/conteste/weihnachtswettbewerb/en
26	1500	27	1500	1.8	Stew Perry Topband Challenge	CW	4-character grid square	www.kkn.net/stew
27	0000	27	1159	3.5-28	RAEM Contest	CW	Serial, latitude, longitude (e.g. 57N 85W)	raem.srr.ru/en/main
31	0900	31	2359	3.5, 7	Bogor Old and New Contest	Ph	RS, operator age	www.orari-bogor.org/rule

There are a number of weekly contests not included in the table above. For more info, visit: **www.qrpfoxhunt.org**, **www.ncccsprint.com**, and **www.cwops.org**.
All dates refer to UTC and may be different from calendar dates in North America. Contests are not conducted on the 60-, 30-, 17-, or 12-meter bands. Mbr = Membership number. Serial = Sequential number of the contact. SPC = State, Province, DXCC Entity. XE = Mexican state. Listings in blue indicate contests sponsored by ARRL or *NCJ*. The latest time to make a valid contest QSO is the minute listed in the "Finish Time" column. *Data for Contest Corral is maintained on the WA7BNM Contest Calendar at* **www.contestcalendar.com** *and is extracted for publication in* QST *2 months prior to the month of the contest. ARRL gratefully acknowledges the support of Bruce Horn, WA7BNM, in providing this service.*

January 2021 Kids Day

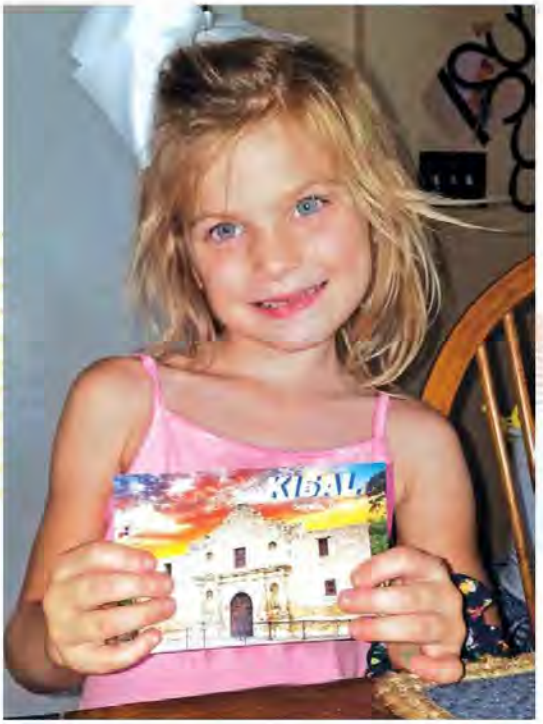
1800 UTC – 2359 UTC Saturday, January 2, 2021

The first Saturday in January is the time to get young people on the air to experience what amateur radio is all about!

Sponsored by the Boring (Oregon) Amateur Radio Club, this event has a simple exchange suitable for younger operators: first name, age, location, and favorite color. After that, the contact can be as long or short as each participant likes.

Kids Day is the perfect opportunity to open your shack doors and invite kids over to discover the excitement of amateur radio. When unlicensed operators are on the air, a control operator must observe third-party traffic restrictions when making DX contacts.

Complete rules can be found at
www.arrl.org/kids-day



Six-year-old Dahla Davis participated in the 2020 Kids Day along with her grandfather, Red Salas, KG5SFT. Dahla was excited to receive a QSL card from one of the stations they worked. [Red Salas, KG5SFT, photo]

The 2021 ARRL International DX Contest

CW: 0000 UTC Saturday, February 20 – 2359 UTC Sunday, February 21
SSB: 0000 UTC Saturday, March 6 – 2359 UTC Sunday, March 7

Join thousands of operators worldwide as they compete in this exciting international contest. Whether you're looking for casual DX contacts, or pursuing new countries toward awards or your DXCC, this event has something for everyone.

- W/VE stations send signal report and state or province; DX stations send signal report and transmit power.
- Upload your Cabrillo-formatted log to the ARRL web app at **http://contest-log-submission.arrl.org** or send paper logs to ARRL — DX Contest, 225 Main St., Newington, CT 06111.
- Log submission deadlines are 7 days after the event weekends. For this event, the CW deadline is 2359 UTC on February 27, and the SSB deadline is 2359 UTC on March 14.

Complete rules can be found at
www.arrl.org/arrl-dx

The 2020 ARRL International DX Contest was Aaron Ray's, N4ARY, first time taking part. He completed 162 contacts, earning fourth place in the Single Operator, Low Power category for the Georgia Section. [Aaron Ray, N4ARY, photo]

The 2021 ARRL Straight Key Night

0000 UTC – 2359 UTC Friday, January 1, 2021

For the 2020 SKN, John Oppenheimer, KN5L, used his 1923 Vibroplex bug with his Elecraft K2/10. [John Oppenheimer, KN5L, photo]

Start off the new year with the sounds of Morse code! Straight Key Night (SKN) isn't a contest, so there's no need for quick exchanges. All you need is your favorite straight key or bug.

Many hams enjoy dusting off vintage rigs and keys, but all gear (new or old) is welcome. The number of contacts you make isn't important, and many new and longtime friends get together on the air for the event.

Send your list of stations worked and SKN stories and photos, along with your votes for Best Fist and Most Interesting QSO, to **straightkey@arrl.org** before January 31, 2021. A paper summary of your activity can be mailed to ARRL — Straight Key Night, 225 Main St., Newington, CT 06111. Be sure to post your stories and photos at **www.arrl.org/soapbox**.

Complete rules can be found at
www.arrl.org/straight-key-night

The 2021 January VHF Contest

1900 UTC Saturday, January 16 – 0359 UTC Monday, January 18, 2021

A new season of VHF contesting kicks off with the 2021 ARRL January VHF contest. The third weekend in January offers many opportunities for contacts on amateur bands 50 MHz and above. Between meteor scatter, winter E skip, aurora, EME, and tropospheric scatter/ducting, there are lots of possibilities for enhanced propagation.

During the 2020 January VHF Contest, Justin Clark, KJ7JC, operated rover from Four Peaks Mountain in Arizona. He earned a top-ten finish in the Classic Rover category. [Justin Clark, KJ7JC, photo]

Whether you prefer CW, phone, or one of the newer digital modes, there's plenty of ways for hams of all experience levels to participate in the event.

Assistance is available to all entry classes, so stations can coordinate when and where to attempt contacts, whether they're at home, portable, or on the road. Coordinate with your local club or group and let them know when and where you'll be on the air for the event.

The contest exchange is your Maidenhead grid square. More information on grid squares can be found at **www.arrl.org/grid-squares**.

10-Day Log Deadline: Logs must be uploaded or postmarked no later than 0359 UTC January 28, 2021. Electronic Cabrillo-formatted logs must be uploaded to **http://contest-log-submission.arrl.org** or paper summary sheets and logs must be mailed to ARRL — January VHF Contest, 225 Main St., Newington, CT 06111.

Complete rules can be found at
www.arrl.org/january-vhf

The 2021 ARRL RTTY Roundup

1800 UTC Saturday, January 2 – 2359 UTC Sunday, January 3

The 2021 ARRL RTTY Roundup kicks off Saturday, January 2. If you're new to digital modes, this can be your opportunity to explore the excitement of digital contesting. Getting on digital modes is easier now than ever — all you need is a computer, a transceiver, and a sound card interface. Many of the new HF rigs even have built-in interfaces that allow your PC to be connected directly to your transceiver. If you're new to digital contesting, visit **www.rttycontesting.com** for tips on how to get started.

Exchange: W/VE stations send signal report and state; DX stations send signal report and consecutive serial number starting with 001.

As specified in the contest rules, a control operator must be present to manually initiate and log each contact. Control may be either local or remote. FT8's Fox and Hound mode is not permitted.

Using modes in which more than one signal is decoded at a time, such as PSK31 and FT8/FT4, requires the participant to enter in the Single Operator, Unlimited or Multioperator category.

7-day log deadline: All logs must be received via web app or postmarked no later than 2359 UTC on January 10, 2021. Upload your Cabrillo-formatted logs to **http://contest-log-submission.arrl.org** or mail paper logs to ARRL — RTTY Roundup, 225 Main St., Newington, CT 06111.

New Categories for 2021

- New categories include RTTY-only (Single Operator and Single Operator, Unlimited), Mixed Mode (RTTY along with any other digital mode), and Digital-only.
- Digital modes include all non-RTTY modes, such as FT4 and FT8, PSKx, JTx, ASCII, AMTOR, Packet, and others.
- Mixed Mode and Digital-only categories are considered Unlimited by default.
- When submitting your Cabrillo-formatted log file, it's important to make sure that RTTY contacts are designated as "RY" in the Mode field; "DG" should be used to designate all other digital modes. For more information about the Cabrillo log format, visit **http://wwrof.org/cabrillo**.
- Two new Multioperator categories have been added, both with no power sub-categories: Multioperator, Two Transmitter and Multioperator, Multitransmitter.

Complete rules can be found at **www.arrl.org/rtty-roundup**

SKYWARN® Recognition Day 2020: COVID-19 Adjustments

Each year on SKYWARN Recognition Day, radio amateurs celebrate the relationship between the amateur radio community and the National Weather Service (NWS) SKYWARN program. The purpose of the event is to recognize amateur radio operators for their vital public service during times of severe weather, and to strengthen the bond between them and their local NWS office. The event is co-sponsored by ARRL and the NWS.

During the event, radio amateurs typically participate from their home stations and stations at NWS forecast offices, with the goal of making contacts with as many NWS forecast offices as possible. However, due to COVID-19 restrictions this year, participation from NWS forecast offices will be minimal. Because of this, the focus will shift to contacting as many SKYWARN-trained spotters as possible.

Operators are encouraged to exchange their name, location, SKYWARN Recognition Day number, and current weather conditions with other participating stations. Radio amateurs who wish to participate may sign up for a SKYWARN Recognition Day number by completing the registration form on the event website. For more information and full operating guidelines, visit **www.weather.gov/crh/skywarnrecognition**.

SKYWARN Recognition Day 2020 will be held from 0000 UTC to 2400 UTC on December 5.

Phil Koch, K3UA, k3ua1541@me.com

2020 ARRL June VHF Contest Results

This year's ARRL June VHF Contest was held June 13 – 15, 2020.

Sponsored Plaque Winners

There are numerous contest plaques that go unsponsored each year. If you or your club is interested in sponsoring a plaque, please contact the ARRL Contest Branch at **contests@arrl.org**. Plaques are currently priced at $80, which includes all shipping and handling costs to the winner. Send your $80 payment by check (make payable to ARRL) and mail to ARRL — Contest Plaques, 225 Main St., Newington, CT 06111 USA.

Plaque Category	Winner	Plaque Sponsor
Overall Single Operator, High Power	K1TEO	Charles Dietz, W5PR
Overall Single Operator, Low Power	WB1GQR (W1SJ, op)	Jeffrey Klein, K1TEO
Overall Single Operator, QRP Portable	WA2TMC	Andrea Slack, K2EZ
Overall Single Operator, Three-Band	KO9A	Northern Lights Radio Society
Overall Single Operator, Low Power, Rookie	K9SPH	W3ZZ First Log Award – Memorial by Tim, K3LR, and Dave, W9PA
Overall Single Operator, FM Only	WG4I	Andrea Slack, K2EZ
Overall Rover	K2EZ/R	Andrea Slack, K2EZ
Overall Limited Rover	K9PW/R	Andrea Slack, K2EZ
Overall Unlimited Rover	NØLD/R	Andrea Slack, K2EZ
Atlantic Division Single Operator, High Power	K1RZ	Potomac Valley Radio Club
Atlantic Division Single Operator, Low Power	N2WK	Potomac Valley Radio Club
Atlantic Division Multioperator	KD2LGX	Al Oldfield, W9KXI, and Ken Kent, KA2LIM
Central Division Single Operator, High Power	K9CT	Society of Midwest Contesters
Central Division Single Operator, Low Power	K2DRH	Society of Midwest Contesters
Central Division Single Operator, QRP Portable	N9TTX	Society of Midwest Contesters
Central Division Rover	W9FZ/R	Society of Midwest Contesters
Dakota Division Single Operator, Low Power	NØUR	Northern Lights Radio Society
Delta Division Single Operator, High Power	W5ZN	Memorial to Mike Bruck, W5MRB, from his friends
Hudson Division Single Operator, High Power	W2IRT	Jay Buscemi, NY2NY, in memory of Dick Knadle, K2RIW
Hudson Division Single Operator, Low Power	NO2EL	Matthew Ryffel, K2NUD
Northwestern Division Single Operator, Low Power	WZ8T	Northern Lights Radio Society
Roanoke Division Single Operator, High Power	W3IP	Potomac Valley Radio Club
Roanoke Division Single Operator, Low Power	N4LAZ	Potomac Valley Radio Club
Roanoke Division Rover	W4EO/R	George Molnar, KF2T
Canada Single Operator, Low Power	VE3DS	Neil Macklem, VE3SST
Canada Rover	VE3OIL/R	Neil Macklem, VE3SST
Canada Unlimited Rover	VE7AFZ/R	Neil Macklem, VE3SST
Northwestern Division Single Operator, Three-Band	KA6BIM	Pacific Northwest VHF Society
Central Division Single Operator, Three-Band	KO9A	Society of Midwest Contesters

Full Results Online

You can read the full results of the contest online at **http://contests.arrl.org**. You'll find detailed analysis and more play-by-play, along with the full line scores. Improve your results by studying your log-checking report, too.

Top Ten

Classic Rover

K2EZ/R	209,916
KF2MR/R	121,032
KA2LIM/R	110,815
N7GP/R	97,440
VE3OIL/R	84,640
K2QO/R	76,912
VA3ELE/R	64,296
W3ICC/R	56,070
W4EO/R	55,088
W9FZ/R	46,942

Limited Rover

K9PW/R	70,680
KA5D/R	42,160
W5TN/R	40,917
NU4E/R	40,293
K5ND/R	39,072
KEØMHJ/R	35,836
NV4B/R	30,804
N6GP/R	20,256
N2DXT/R	19,110
KI5FIQ/R	15,930

Unlimited Rover

NØLD/R	143,773
KBØYHT/R	64,295
KD5IKG/R	62,524
K6MI/R	39,039
K9JK/R	28,980
KG6CIH/R	7,923
K3RW/R	2,508
VE7AFZ/R	1,449
K7ATN/R	114

Single Operator, High Power

K1TEO	506,989
K1RZ	290,830
K1BX	282,746
K9CT	261,375
K5TR	239,705
W5ZN	205,700
N2YB	178,088
KC4PX	165,438
K1KG	159,378
WA1T	154,088

Single Operator, Low Power

WB1GQR (W1SJ, op)	213,060
AF1T	210,532
K2DRH	191,673
NØUR	150,017
N2WK	136,040
WA3NUF	114,696
WØZQ	109,850
W9GA	107,262
NØLL	101,568
KAØPQW	82,908

Single Operator, Portable

WA2TMC	24,780
W4RXR	12,416
NØJK	7,242
KCØSKM	6,552
K3HW	4,558
WB2AMU	4,232
W7JET	3,164
WD5AGO	2,535
KD8RTT	2,508
K7JSG	2,052

Single Operator, Three-Band

KO9A	139,332
N4OGW	106,023
K2PS	68,040
NS4T	66,912
AG4W	58,680
NØHJZ	56,261
VE3KI	51,948
KK4MA	48,513
VE3SST	47,813
VA3ASE	46,269

Single Operator, FM Only

WG4I	6,183
KC6ZWT	2,975
KG7AZY	1,177
WB6ETY	884
KG5UNK	522
KC9PCP	336
W7AIT	294
AE6GR	287
K6QCB	264
W6ESL	264

Limited Multioperator

KG5CCI	404,505
N2NT	318,052
KZ9O	240,816
AA4ZZ	225,806
K5QE	220,640
N4SVC	171,360
N4WW	151,048
K3CT	104,988
WD9EXD	82,593
W1QK	77,558

Unlimited Multioperator

K8GP	212,925
W2AAU	202,080
KE1LI	131,005
KD2LGX	122,170
W9XA	107,217
W4IY	98,450
N3NGE	61,759
KV1J	60,711
N8GA	59,444
AG4V	41,454

Affiliated Club Competition

Club	Score	Entries
Unlimited		
Mt. Airy VHF Radio Club	1,939,838	56
Society of Midwest Contesters	1,759,546	78
Potomac Valley Radio Club	1,572,300	101
The Ontario VHF Assn.	1,379,218	56
Medium		
Yankee Clipper Contest Club	1,129,529	46
North East Weak Signal Group	933,546	20
Northern Lights Radio Soc.	845,924	25
Frankford Radio Club	552,837	29
Roadrunners Microwave Group	422,900	7
Florida Contest Group	369,035	21
Florida Weak Signal Soc.	350,724	5
Badger Contesters	336,439	21
Arizona VHF Soc.	331,831	12
DFW Contest Group	309,240	12
Carolina DX Assn.	307,747	10
Arizona Outlaws Contest Club	293,963	36
Minnesota Wireless Assn.	253,971	22
Alabama Contest Group	242,635	9
Grand Mesa Contesters of Colorado	218,499	12
New Mexico VHF Society	196,632	9
Pacific Northwest VHF Soc.	164,826	37
North Texas Microwave Soc.	162,033	4
Michigan VHF-UHF Soc.	158,402	6
Northern California Contest Club	158,277	36
Tennessee Contest Group	155,128	17
Southern California Contest Club	133,690	28
Great Places Contest Club	114,642	5
Northeast Maryland AR Contest Soc.	114,242	11
Central Texas DX and Contest Club	108,920	10
South East Contest Club	107,088	7
Texas DX Soc.	100,877	8
North Coast Contesters	94,762	5
Kentucky Contest Group	93,456	8
Contest Club Ontario	64,839	9
South Jersey Radio Assn.	60,218	6
Mad River Radio Club	55,130	8
Hudson Valley Contesters and DXers	39,050	6
Radiosport Manitoba	31,847	3
Rochester VHF Group	20,714	3
Contoocook Valley Radio Club	15,658	3
Rochester (NY) DX Assn.	14,805	4
Mother Lode DX/Contest Club	14,778	6
Providence Radio Assn.	14,327	3
Willamette Valley DX Club	14,291	7
North Texas Contest Club	10,919	3
North Richland Hills ARC	10,619	7
Western Washington DX Club	9,287	7
Wayne County ARC	7,020	3
Alaska VHF-Up Group	2,170	4
Orca DX and Contest Club	1,742	4
Local		
Orleans County ARC	275,324	8
Eastern Connecticut ARA	187,776	4
CTRI Contest Group	180,681	9
Chippewa Valley VHF Contesters	163,208	5
The Villages ARC	68,466	4
Bristol (TN) ARC	51,377	6
Bergen ARA	29,705	6
Meriden ARC	26,567	4
St. Louis ARC	16,661	3
Niagara Frontier Radiosport	14,181	5
Metro DX Club	13,266	3
Ventura County AR Soc.	1,179	3

The 2021 ARRL June VHF contest will be held June 12 – 14, 2021.

Division Winners

Classic Rover

Atlantic	KF2MR/R	121,032
Central	W9FZ/R	46,942
Dakota	WØZF/R	18,560
Delta	W5VY/R	25,970
Great Lakes	KF8QL/R	12,276
Midwest	WAØCNS/R	2,208
Northwestern	AC7SG/R	6,080
Pacific	WB6HYD/R	16,848
Roanoke	W4EO/R	55,088
Southwestern	N7GP/R	97,440
West Gulf	K2EZ/R	209,916
Canada	VE3OIL/R	84,640

Limited Rover

Atlantic	KØBAK/R	3,960
Central	K9PW/R	70,680
Dakota	NØSPN/R	2,516
Delta	AE5P/R	15,500
Great Lakes	AE8AT/R	209
Hudson	N2DXT/R	19,110
Midwest	KEØMHJ/R	35,836
New England	KJ2G/R	14,938
Northwestern	KC7OOY/R	1,920
Pacific	KE6QR/R	13,320
Roanoke	NU4E/R	40,293
Rocky Mountain	AA5PR/R	14,342
Southeastern	NV4B/R	30,804
Southwestern	N6GP/R	20,256
West Gulf	KA5D/R	42,160
Canada	VE3RKS/R	255

Unlimited Rover

Central	K9JK/R	28,980
New England	KG6CIH/R	7,923
Northwestern	K3RW/R	2,508
Pacific	K6MI/R	39,039
West Gulf	NØLD/R	143,773
Canada	VE7AFZ/R	1,449

Single Operator, High Power

Atlantic	K1RZ	290,830
Central	K9CT	261,375
Dakota	KØSIX	141,602
Delta	W5ZN	205,700
Great Lakes	KB8U	83,589
Hudson	W2IRT	74,340
Midwest	KØTPP	84,838
New England	K1TEO	506,989
Northwestern	K7CW	23,859
Pacific	K7CA	23,230
Roanoke	W3IP	143,988
Rocky Mountain	W9RM	125,268
Southeastern	KC4PX	165,438
Southwestern	N1AV	126,252
West Gulf	K5TR	239,705
Canada	VE3WY	66,348

Single Operator, Low Power

Atlantic	N2WK	136,040
Central	K2DRH	191,673
Dakota	NØUR	150,017
Delta	WB5JJJ	26,460
Great Lakes	N8DZR	28,413
Hudson	NO2EL	39,429
Midwest	NØLL	101,568
New England	WB1GQR (W1SJ, op)	213,060
Northwestern	WZ8T	14,432
Pacific	K2GMY	15,318
Roanoke	N4LAZ	36,180
Rocky Mountain	AI5I	33,232
Southeastern	N4IS	48,178
Southwestern	K6JO	15,390
West Gulf	K5TRA	41,584
Canada	VE3DS	74,571

Single Operator, Portable

Atlantic	WA2TMC	24,780
Central	N9TTX	90
Dakota	KCØSKM	6,552
Delta	W4RXR	12,416
Great Lakes	N8OSF	63
Hudson	WB2AMU	4,232
Midwest	NØJK	7,242
New England	AG1A	250
Northwestern	K7JSG	2,052
Pacific	AA6XA	540
Roanoke	N4QX	245
Rocky Mountain	W8FK	1,600
Southeastern	KN4ZKT	903
Southwestern	W7JET	3,164
West Gulf	WD5AGO	2,535
Canada	VE2NCG	1,479

Single Operator, Three-Band

Atlantic	K3TEF	29,120
Central	KO9A	139,332
Dakota	NØHJZ	56,261
Delta	N4OGW	106,023
Great Lakes	KM8V	29,312
Hudson	W2JTM	18,849
Midwest	KEØSVL	44,172
New England	N1JD	28,462
Northwestern	KA6BIM	6,432
Pacific	NU6S	12,408
Roanoke	KK4MA	48,513
Rocky Mountain	KØNR	26,620
Southeastern	K2PS	68,040
Southwestern	N7IR	26,611
West Gulf	N5XTR	23,326
Canada	VE3KI	51,948

Single Operator, FM Only

Atlantic	KC2RTE	36
Central	KC9PCP	336
Delta	W5WGF	65
Hudson	KB6EE	56
Midwest	NØYH	39
New England	KB1YNT	207
Northwestern	KJ7BSP	26
Pacific	KC6ZWT	2,975
Rocky Mountain	KG7AZY	1,177
Southeastern	WG4I	6,183
Southwestern	AE6GR	287
West Gulf	KG5UNK	522
Canada	VA2DG	87

Limited Multioperator

Atlantic	K3CT	104,988
Central	KZ9O	240,816
Delta	KG5CCI	404,505
Great Lakes	KC8LYF	9
Hudson	N2NT	318,052
Midwest	NJ8M	38,253
New England	W1QK	77,558
Pacific	W6TCP	15,000
Roanoke	AA4ZZ	225,806
Rocky Mountain	AA5B	75,504
Southeastern	N4SVC	171,360
Southwestern	WO1S	4,370
West Gulf	K5QE	220,640
Canada	VE3MIS	29,812

Unlimited Multioperator

Atlantic	KD2LGX	122,170
Central	W9XA	107,217
Delta	AG4V	41,454
Great Lakes	N8GA	59,444
Hudson	W2AAU	202,080
New England	KE1LI	131,005
Pacific	K6LRG	3,780
Roanoke	K8GP	212,925
Southwestern	NI6E	11,858
West Gulf	KC5MVZ	8,694

2020 ARRL Field Day Results

Over 1.8 million contacts were made by nearly 19,000 participants during the most unique Field Day in recent history.

Paul Bourque, N1SFE
ARRL Contest Program Manager

This year's ARRL Field Day was unlike any other. With most of the country under restrictions due to the COVID-19 pandemic, many groups chose to participate from their home stations as Class D or E entrants, rather than gathering as a large group. This year, there was a total of 10,213 entries, with 18,886 participants.

ARRL issued two temporary rule waivers for Field Day 2020. The first allowed Class D (home) stations to work all other stations, including other Class D stations, for point credit (standard Field Day rules don't count Class D-to-Class D contacts toward the total score). Secondly, all entrants, regardless of their entry class, were able to credit their individual score to that of their club. These aggregate scores list each club alphabetically, along with the total score of all entries attributing their score to the club, and the number of entries.

While the total number of entries increased more than threefold, this year saw a significant decrease in the number of reported participants. With a decline in the number of large groups participating as Class A and F stations, the average number of participants per entry dropped significantly. This can't only be attributed to groups not gathering in large numbers, but also to decreased participation due to the impact of COVID-19.

With social distancing guidelines in place, many individuals who would normally join their club or group for Field Day chose not to. Over 80% of the entries were from participants operating from their home stations, either on commercial or emergency power. Large groups who would normally be classified as Class A (groups of three or more participants), operated as Class B (groups of one or two participants).

Even though the number of individual participants decreased since last year, the number of total contacts

Top Ten Scores

Call Sign	Score	Class	Section
W9SU	17,330	3A	IN
W4IY	17,110	8A	VA
NR4M	16,018	3A	VA
KØRF	14,054	2D	CO
K5CM	13,442	2A	OK
W1NVT	12,784	2A	VT
K1B	12,220	4E	NH
AA3B	11,902	1E	EPA
NV9L	11,392	2E	IL
W6YX	11,246	2F	SCV

Entries by BASE Class Summary

Class	Entries
A	611
B	1,086
C	134
D	6,318
E	1,980
F	84
Total	10,213

2020 Field Day Overall Statistics

Number of Participants:	18,886
Total Entries:	10,213
Checklogs:	610
CW QSOs:	821,190
Digital QSOs:	380,317
Phone QSOs:	661,478
Total QSOs:	1,862,985

Matthew Teears, WA7WWW, and John Knuth, WA7TPV, operated low-power portable using solar power from the top of Mount Spokane in eastern Washington. It was Matthew's first time participating in ARRL Field Day. [John Knuth, WA7TPV, photo]

Transmitter Count by Class

Class	Class Definition
A	Three-person or more club/non-club portable using emergency power
AB	Per above, with battery or alternate non-generator power source
AC	Per above, but with commercial power
B1	One-person club/non-club portable using emergency power
B1B	One person per above, with battery or alternate non-generator power source
B1C	One person per above, but with commercial power
B2	Two-person club/non-club portable using emergency power
B2B	Two persons per above, with battery or alternate non-generator power source
B2C	Two persons per above, but with commercial power
C	Mobile stations
D	Home stations using commercial power
E	Home stations using emergency power
F	EOC stations

Count by Class Summary

Class	Entries	Class	Entries	Class	Entries
A	517	B1C	60	C	134
AB	23	B2	126	D	6,318
AC	71	B2B	53	E	1,980
B1	467	B2C	13	F	84
B1B	367				

Transmitter Count by Class

1A	139	6AC	12	4C	4
2A	332	2B	48	1D	6,129
3A	366	1B1	462	2D	288
4A	180	2B1	4	3D	93
5A	155	1B1B	365	4D	44
6A	42	2B1B	2	5D	10
7A	21	3B1B	3	7D	7
8A	16	1B1C	57	1E	1,844
9A	9	2B1C	6	2E	220
10A	10	1B2	89	3E	42
1AB	10	2B2	30	4E	28
2AB	6	3B2	3	5E	10
3AB	15	1B2B	34	6E	6
4AB	16	2B2B	36	7E	14
5AB	5	3B2B	3	1F	24
1AC	21	1B2C	11	2F	80
2AC	48	2B2C	4	3F	33
3AC	48	1C	126	4F	28
4AC	24	2C	12	6F	6
5AC	10	3C	3	10F	10

Entries by ARRL RAC Section/Prefix

Section	Entries	Section	Entries	Section	Entries	Section	Entries
MAR	39	MDC	187	OR	166	WI	169
AB	30	ME	59	ORG	162	WMA	70
AK	12	MI	266	PAC	23	WNY	181
AL	138	MN	171	PE	2	WPA	153
AR	84	MO	192	PR	28	WTX	47
AZ	224	MS	53	QC	79	WV	66
BC	98	MT	31	RI	48	WWA	304
CO	177	NC	361	SB	72	WY	18
CT	143	ND	10	SC	119	DX: LU – Argentina	1
DE	34	NE	49	SCV	194	DX: VK – Australia	2
EB	100	NFL	222	SD	42	DX: LZ – Bulgaria	1
EMA	173	NH	100	SDG	62	DX: PY – Brazil	2
ENY	158	NL	1	SF	61	DX: CE – Chile	1
EPA	299	NLI	102	SFL	128	DX: CO1 – Cuba	2
EWA	62	NM	70	SJV	60	DX: HC – Ecuador	1
GA	282	NNJ	140	SK	12	DX: UA3 – European Russia	2
GTA	110	NNY	13	SNJ	91	DX: DL – Germany	1
IA	93	NT	2	STX	273	DX: TG – Guatemala	1
ID	56	NTX	332	SV	116	DX: JA – Japan	15
IL	371	NV	51	TN	215	DX: XE – Mexico	5
IN	175	OH	483	UT	76	DX: PA – Netherlands	2
KS	102	OK	100	VA	398	DX: DU – Philippines	1
KY	93	ONE	94	VI	7	DX: TA – Turkey	1
LA	80	ONN	6	VT	37	DX: YV – Venezuela	2
LAX	228	ONS	113	WCF	118		
MB	7						

rose by 70%. Forty-four percent of contacts completed were on CW — almost double from last year. The number of CW contacts surpassed that of contacts made on phone by almost 200,000. Contacts made on digital modes comprised the remaining 20% of the total number of contacts reported.

This year, not only did participants submit entries from all 84 ARRL/RAC Sections (including the new Prince Edward Island Section), there was also an increase in participation from outside the US and Canada. Participants from 16 DX entities submitted entries, including Japan, Turkey, and the Philippines. That's the highest number of countries outside of the US and Canada that have participated in Field Day in recent years.

Activity by Class

Class A — Club or Non-Club groups of three or more people who set up temporary/portable Field Day sites away from their usual station locations: 611 entries (5.98%)

Class B — Temporary or portable Club or Non-Club groups of one or two people who set up temporary/portable Field Day sites away from their usual station locations: 1,086 entries (10.63%)

Craig Ward, WE2DX, and members of the Tri-County Radio Association set up their small 2020 ARRL Field Day operation in South Mountain State Forest in New York. Though their setup was hampered by steady rain, the weather cleared for Sunday's operations. [Craig Ward, WE2DX, photo]

Class C — Mobile or rover operators from vehicles, bicycles, and even boats: 134 entries (1.31%)

Class D/Class E — Stations operating from home, with either commercial power (Class D) or emergency power (Class E): 8,298 entries (81.25%)

Class F — Stations operating from or as EOCs: 84 entries (0.83%)

Checklogs — 610 entries were listed as checklogs because they were DX stations or were missing the required list of calls sorted by band and mode. Checklogs are acknowledged at the bottom of the page at **www.arrl.org/logs-received**.

Web Applet Growth

This year also saw improvements in the Field Day web applet. Many participants provided feedback on this, and we're working on making even more improvements in the coming years. Not only can participants immediately see if their entry was submitted and if it's complete, they're also able to share their Field Day stories and photos to the Field Day Soapbox (**http://field-day.arrl.org/fdsoapbox.php**).

This year, 98% of the 10,213 entries were submitted via the web applet — an increase from 95% in 2019. Transitioning to electronic entry reporting reduces the amount of time required to review and process entries. As the amount of paper entries substantially decreases, ARRL is better able to compile and process Field Day results more accurately.

The uncertainties of COVID-19 caused many groups and individuals to rethink their planning for Field Day. Many groups had to downsize and encourage individuals to participate from home. We'd like to know how you and your group responded to the challenges that were presented this year. Tell us how you adapted, either through the Soapbox or ARRL's Field Day Facebook page at **www.facebook.com/groups/arrlfd**.

Looking Ahead

As you prepare for Field Day 2021, consider the challenges you faced during this year's event. While Field Day is an emergency preparedness exercise, it's also an opportunity to showcase amateur radio to family members, neighbors, and other members of the community. You might want to look at ways to do things differently while keeping you, your family, and your community safe. The 2021 ARRL Field Day will take place on June 26 – 27.

Hannah Downey, W7OIC, operated her first ARRL Field Day along with Michael Downey, N2UN, as a Class 1B station at L.L. Stub Stewart State Park in Oregon. [Michael Downey, N2UN, photo]

Tom Davis, WB9CHY, operated CW from his home station during the 2020 ARRL Field Day. He was excited to "pound some brass." [Tom Davis, WB9CHY, photo]

Sebastián Delmont, W2ASD, maintained proper social distancing requirements by operating from a raft on Silver Lake in Woodridge, New York, during the 2020 ARRL Field Day. He made nine contacts on SSB, but said he had a lot of fun. [Sebastián Delmont, W2ASD, photo]

Scores

Club Aggregate Scores are listed below. Aggregate scores are listed alphabetically by club name, along with the total score of individual entries attributing their score to the club, and the number of individual entries. Due to the high volume of entries this year, full line scores will be posted on the ARRL Field Day Page at **http://field-day.arrl.org**.

You can also click here to view the full line scores.

Club Aggregate Scores

Club Name	Aggregate Score	Entries
2 Flattire RC	766	1
220 MHz Guys	1,238	4
3 Guys With Radios ARC	718	1
3 Rivers ARC	1,124	1
3730 Group	4,230	3
4SQRP	1,468	3
570-V Connection	6,671	8
599 DX Assn.	574	1
603 ARC	872	1
618 Comms	462	1
A1 Ops	2,886	1
AARCMN	932	3
Aardvark Wireless Group	12,354	10
ABCD Group	8,256	1
Acadiana ARA	3,304	1
Ad Hoc ARS	670	1
Adams Co. ARS	2,778	7
Addison Co. ARA	2,980	5
Aero ARC	1,664	2
Aeronautical Center ARC	1,570	4
Aerospace Employees Assn. ARC	806	3
Ak-Sar-Ben ARC	6,110	12
Alabama Contest Group	3,502	3
Alachua EOC RC	2,736	2
Alamance ARC	4,844	9
Alameda Co. Sheriff's Comms Team	538	3
Alamogordo ARC	1,020	1
Albany (GA) ARC	468	1
Albany ARA	13,128	12
Albemarle ARC	14,702	20
Albemarle ARS	5,462	10
Alberta Clippers	2,005	1
Albuquerque DX Assn.	7,323	6
Alcorn Co. ARES	1,396	2
Alexandria RC	4,608	14
Alford Memorial RC	7,789	16
Algonquin ARC	6,562	7
Alhambra High School ARC	242	1
All ARC	2,428	2
Allegan Co. ARC	90	1
Allegheny Valley Radio Assn.	990	1
Alliance ARC	3,718	5
Alsea Valley ARG	524	2
Amargosa ARC	1,524	1
Amateur Radio Community Services	378	1
Amateur Radio League of Lawrence Co.	1,350	1
Amateur Radio of Churchill Co.	598	1
America West ARC	898	1
American Legion Post 33 ARC	646	1
American Legion Post 42 RC	872	2
Ancient Modulators	280	1
Anderson RC (KY)	3,490	1
Anderson RC (SC)	2,212	4
Andrew Johnson ARC	1,563	1
Androscoggin ARES/RACES	926	1
Anne Arundel RC	2,116	3
Anoka Co. RC	2,632	2
Antelope Acres ARC	970	1
Antelope Valley ARC	1,320	4
Anthracite Repeater Assn.	1,646	2
Antietam Radio Assn.	3,094	6
Appalachian DX Assn.	1,520	1
Apple City ARC	1,058	3
AR Caravan Club	374	2
ARA of Nebraska	2,810	4
ARA of Southwest Florida	1,438	3
ARA of the Southern Tier	1,780	4
ARASNE	3,328	2
ARC at Indiana Univ	4,506	1
ARC EmComm Srvc	2,816	5
ARC of Alameda	1,968	2
ARC of Augusta	2,143	2
ARC of Butts Co.	2,018	4
ARC of Columbia Co.	1,800	4
ARC of El Cajon	518	1
ARC of the Univ of Arkansas	74	1
ARES of Douglas & Elbert Co.	5,366	1
ARESLAXNW	2,567	4
Arizona ARC	1,522	1
Arizona Outlaws Contest Club	23,084	17
Arkansas ARC	362	1
Arkansas Diamond ARC	160	2
Arkansas Radio Emergency Services	494	1
Arkansas River Valley ARF	13,620	10
Arlington (VA) ARC	218	1
Arlington ARC	5,887	13
Aroostook ARA	1,214	3
Arrow Communications Assn.	12,165	13
Arrowhead Radio Amateur Club	184	1
ARS at Louisiana State Univ	1,346	1
Artificial Intelligence to Continuous Wave	112	1
ARTS of Louisville	7,196	10
Ashe Co. ARC	5,238	3
Ashtabula Co. ARC	1,302	1
Associated Radio Amateurs of Long Beach	4,236	12
Atchison Co. AR Service	502	1
Athens (GA) RC	2,330	5
Athens Co. ARA	6,204	7
Atlantic Region Repeater Legion	1,144	1
Auburn Area Emergency Comms Team	1,876	5
Auburn Univ AR	302	1
Austin ARC	7,584	17
Avengers	1,076	1
Azalea Coast ARC	2,564	2
AZVHFS	466	1
Backyard Bushman	225	1
Backyard Field Day	1,826	1
Badger Contesters	94	1
Bainbridge Island ARC	382	1
Baltimore ARC	1,238	1
Baltimore Polytechnic Alumni RC	1,260	1
Bama Ham'ers	2,272	1
Bankhead ARC	3,015	7
BARC	2,238	1
Barnstable ARC	8,220	4
Barrie ARC	6,180	16
Barron Co. ARA	1,342	2
Barry ARA	1,684	2
Barstow ARC	1,560	5
Bartlesville ARC	322	1
Bass Hill Repeater Group	2,712	1
Bastrop Co. ARC	3,332	2
Baton Rouge ARC	5,920	11
Battleship New Jersey AR Station	178	1
BayNet	2,525	10
Bayouland Emergency ARES	1,738	2
Baytown Area ARC	326	1
BCARS.ORG	4,074	4
BEANOS	6,482	3
Bear Bait RC	1,858	5
Bear Rocks Community Club	644	1
Bearcat DX Club	1,606	3
BEARS of Manchester ARC	794	3
Beaumont ARC	3,102	1
Beaver Valley ARA	1,284	1
Bedford ARC	1,258	2
Belews Cove Minions	3,940	1
Bella Vista RC	4,610	1
Bellbrook ARC	8,458	13
Bellevue ARC	2,987	4
Benicia ARC	5,880	7
Benton ARS	7,576	5
Bergen ARA	2,424	5
Bergen Co. Emergency Management RC	2,074	6
Berwick Contest Team	6,924	1
Big Bear ARC	152	1
Big Bend ARC	7,767	6
Big Island ARC	4,198	7
Big Mountain Radio ARC	1,346	1
Big Sandy ARC	1,140	2
Big Sky Contesters	720	2
Big Spring ARC	70	1
Big Thunder ARC	2,062	2
Bill and Ken	244	1
Billerica ARS	10,481	6
Binghamton ARA	5,690	9
Birmingham ARC	1,602	2
Bishop ARC	2,072	4
Bitterroot ARC	172	1
Black Diamond ARC	362	2
Black River ARC	2,838	2
Black River Radio Ops	10,582	1
Blackstone Valley ARC	4,157	14
Blazing Paddles FD Team	14,413	4
Bloomington ARC	1,802	5
Blossomland ARA	5,720	5
Blue Ridge ARC	8,248	9
Blue Ridge ARS	688	1
Blue Springs ARC	1,486	3
Bluegrass ARS	322	1
Boaz-Albertville ARC	1,154	1
Boca Raton ARA	6,749	13
Boeing Employees AR Operators North Soc.	1,848	2
Boeing Employees ARS	3,678	7
Boeing Employees ARS – St. Louis	7,819	7
Bolingbrook ARS	3,518	8
Bomb Squad of Berdoo	570	1
BONAC ARC	3,460	4
Bonner Co. ARES	4,048	5
Boomer Bill ARC	416	1
Boone & Hamilton Co. ARES	1,108	2
Boonville ARC	2,436	1
Bootheel ARC	984	1
Boschveldt QRP Club	2,285	1
Boston ARC	3,800	5
Boston Mountain RC	240	1
Boston Valley Simplex Club	3,102	4
Boulder ARC	16,790	12
Brainerd Area ARC	8,506	3
Brandon ARC	652	2
Brandon ARS	3,384	2
Brazoria Co. AR Service	607	2
Brazos Valley ARC	8,476	21
Bridgerland ARC	1,122	1
Brightleaf ARC	3,337	8
Bristol (TN) ARC	5,217	10
Broken Arrow ARC	5,750	4
Broken Arrow EM ARC	1,840	2
Broughton Memorial Field Day Group	12,504	18
Brown ARC	1,386	1
Brownwood ARC	1,831	2
Brunswick Shores ARC	6,806	7
Bryan ARC	3,150	6
BTU RC	382	1
Bull Trout Burners	1,172	1
Bullitt ARS	7,556	6
Burchett Museum and RC	1,216	1
Burlington ARC	4,128	7
Burlington Co. RC	4,512	8
Butler Co. (OH) ARA	6,581	6
Butler Co. (PA) ARA	9,320	5
Butler Co. AR Public Srvc Group	2,212	8
Cabarrus ARS	2,636	5
Caldwell ARES	750	1
Calgary ARA	1,700	1
Calgary Communications Club	466	1
Calhoun Co. ARA	2,712	3
California City ARC	2,656	2
California Dept of Justice RC	1,608	1
California DX Assn.	2,240	1
CalNet	280	1
Calvert ARA	2,648	4
Cambridge ARA	752	2
Camden Co. ARS	602	2
Cameron Co. ARA	846	1
Cameron Mackenzie	54	1
Camp Pouch ARA	2,228	1
Campbell River ARS	436	3
Candlewood ARA	7,452	9
Canton ARC	8,984	3
Cape Ann ARA	1,702	3
Cape Fear ARS	9,139	10
Cape May Co. ARC	116	1
Capital City ARC	1,790	3
Carbon ARC	62	1
Carbon Co. DXCC	13,861	8
Carolina ARES	624	1
Carolina DX Assn.	2,754	3
Carroll Co. Contesters	1,922	3
Carroll Co. MD ARC	3,046	2
CARS ARS	350	1
Carson Valley RC	60	1
Carteret Em Mgmt Vol ARC	2,038	1
Cascade AR Enthusiasts	114	1
Cascade RC	1,966	3
Cascades ARS	1,200	2
Case ARC	9,360	2
Cass Co. ARC	1,872	4
Castle Shannon VFD ARC	674	1
Catalina RC	162	1
Catalpa ARS	120	1
Cattail Branch Wireless Soc.	762	1
CCDXARC	1,950	1
Cedar Creek ARC	66	1
Cedar Forest QRP Group	2,000	1
Cedar Valley ARC	1,932	1
CenTor ARC	2,574	2
Central Alberta ARC	2,928	7
Central Idaho ARC	6,482	4
Central Illinois RC	6,822	7
Central Indiana ARA	1,962	5
Central Kansas ARC	416	1
Central Kentucky ARS	6,482	1
Central Louisiana ARC	4,300	5
Central Mass ARA	10,130	12
Central Michigan ARC	4,454	8
Central Mississippi ARA	1,584	2
Central Missouri Radio Assn.	4,690	8
Central Montana ARC	1,424	1
Central Ohio Contest Assn.	150	1
Central Ohio Ops Klub Extra Novice	2,820	3
Central Oregon Coast ARC	9,124	10
Central Oregon DX Club	12,704	6
Central Texas DX and Contest Club	9,264	6
Central Toronto ARC	674	1
Central Vermont ARC	6,362	2
Central Virginia Contest Club	7,074	5
Central West Virginia Wireless Assn.	8,624	2
Centralia ARES	910	1
Chandler Ham RC	298	2
Charleston ARS	1,691	4
Charlevoix/Cheboygan/Emmet Co. Pub Srvc Comms Org	811	3
Charlotte ARC	1,068	4
Charlotte ARS	3,478	2
Chautauqua And Erie ARC	208	1
Chenango Valley ARA	2,006	3
Chequamegon Nicolet National Forest AR Group	858	1

Cherokee ARS	5,354	14
Cherokee Capital ARS	1,102	3
Cherryland ARC	4,768	4
Cherryville Repeater Assn. II	2,376	5
Chesapeake AR Service	4,354	9
Cheshire Co. DX ARC	4,822	7
Chicago FM Club	588	2
Chicago Suburban Radio Assn.	1,116	3
Chicago Suburban Radio Assn.	4,056	7
Chickasaw ARC and Olive branch ARC	144	1
Chipola ARC	588	2
Chippewa Valley VHF Contesters	240	1
Chisholm Trail ARC	96	1
Citrus Co. ARC	1,490	2
Clallam Co. ARC	4,428	9
Clark Co. (IN) ARC	3,710	6
Clark Co. (WA) ARC	4,956	14
Clark Co. (WA) ARES/RACES	3,535	4
Clark Fork Valley ARC	1,608	1
Classic Operators Contest Club	314	1
Clay Co. Area ARC	174	1
Clay Co. Auxcom	2,174	1
Clearwater ARS/St. Petersburg ARC/		
Upper Pinellas ARC	4,074	7
Cleveland ARC	8,240	11
Cleveland Co. AR Service	3,758	1
Clinton Co. ARA	4,060	8
Clinton Co. Contestors	2,610	1
Club de Radio Amateur Outaouais	4,912	5
Club RA Sorel-Tracy	226	2
Club Radio Amateur de Québec	14,650	18
Club Radio Amateur Sorel – Tracy	654	1
Club Radioamateur De La Vallée Du Richelieu	824	2
Club RadioAmateur Drummondville	3,564	3
Club Station Répétitrice de Laval	1,220	6
Coal Country ARC	1,818	2
Coastal ARS	2,898	2
Coastal Plains ARC	2,480	4
Cochise ARA	2,182	5
Coconino ARC	2,594	12
Coffee Co. AuxCom Team	604	1
Colbert Co. ARC	2,316	1
Collins ARC	6,084	3
Colorado QRP Club	15,001	10
Columbia (MD) ARA	5,916	12
Columbia (OR) ARA	1,254	3
Columbia (SC) ARC	3,766	6
Columbia Basin DX Club	1,151	1
Columbia River DX Club	524	1
Columbia-Montour ARC (PA)	8,625	15
Columbus ARC	10,430	7
Communications Support Team	662	2
Comox Valley ARC	1,493	5
Comstock ARA	753	4
Conejo Valley ARC	12,699	26
Contest Club Ontario	23,468	9
Contoocook Valley RC	15,120	5
Convair – 220 Club of San Diego	168	1
Coon Valley ARC	186	1
Coos Co. RC	252	1
Copper Country Radio Amateur Assn.	4,636	4
Coquitlam ARES Soc.	9,679	9
Corona Police CSV Team	1,736	1
CorTek Radio Assn.	13,382	5
Coshocton Co. ARA	6,943	5
Cottonwood Heights ARC	3,062	1
Cove Repeater Assn.	1,864	6
Coventry EMA	4,178	5
Covey Hill ARC	204	3
Coweta RC	10,054	5
Cowtown ARC	4,538	4
CQ805	584	1
Crane Hill Amateurs	392	1
Crawford ARS	2,110	1
Creek Co. ARES	282	1
CRES ARC	5,799	16
Crescenta Valley RC	1,806	10
Cross Co. ARC	498	1
CTRI Contest Group	6,892	5
Cullman ARC	1,258	1
Culpeper ARA	1,126	1
Culver City ARES	3,007	10
Cumberland ARC	3,764	8
Cumberland Plateau ARC	2,956	2
Cumberland Valley ARC	2,638	3
Cupertino ARES	5,176	11
Custer Co. ARC	384	1
Cuyahoga ARS	5,662	5
Cuyahoga Falls ARC	16,268	21
CWOps	3,840	3
D.A.R.K Dam AR Klub	744	1
Dallas ARC	12,019	12
Dalton ARC	3,086	5
David Barts	240	1
David Sarnoff ARC	5,992	14
Davie/Cooper City ARC	6,412	7
Daviess Co. ARC	368	1
Davis Co. ARC	4,130	7
Dayton ARA/Xenia Weather AR Net	3,260	3
Daytona Beach CERT AR Team	4,510	1
Decatur ARC	316	3
Deep South ARC	2,792	6
Degray ARC	104	1
DeKalb Co. ARC	5,762	3
Delaware ARA	23,084	14
Delaware Lehigh ARC	2,186	4
Delaware Valley ARS	2,582	5
Delaware Valley Radio Assn.	2,515	5
Delta ARC	3,318	10
Delta ARS	2,586	6
Denver RC	3,609	10
Denver Water ARC	128	1
Des Moines Radio Amateur Assn.	5,908	6
Desert RATS of Palm Springs	2,046	7
DFW Contest Group	47,347	20
Dial RC of Middletown	23,120	20
Dickson Co. ARC	3,006	2
Dietmar Fichter	1,820	1
Dillman's AR Experimenters	5,746	5
Disney Em AR Srvc	1,780	2
District 3 AR Group	710	1
Dixie ARC	5,490	6
Do Something ARC	796	1
Dog Daze Radio Group	444	1
Dog Hollow Contest Group	798	1
Douglas Co. ARC	5,146	2
Downey ARC	5,134	10
Dr. Loomis Memorial Junior Mechanics League	4,442	1
Drake Contest Club	3,172	1
Drumlins ARC	798	1
DuPage ARC	13,359	20
Dupee Shpivatih FD Group	5,058	1
East Bay ARC	3,574	7
East Coast Kerchunkers	478	2
East Greenbush ARA	3,125	10
East Highland Park Radio Rangers	143	1
East Penn ARC	848	1
Eastern Arizona ARS	468	2
Eastern CT ARA	6,466	2
Eastern New Mexico ARC	1,282	3
Eastern Ozarks ARC Inc	242	1
Eastern PA ARA	1,148	3
Eastern Panhandle ARC	4,296	3
Eastern Shore ARC	3,722	8
Easton ARS	4,380	8
Eastside AR Service	1,870	1
Eastside Contest Group	734	2
Eau Claire ARC	1,634	1
Eddy Ranch Contest Group	442	1
Eden Prairie RC	3,588	2
Edge Lords	1,610	1
Edmond ARS	12,422	17
Edmonds Woodway ARC	1,094	4
El Dorado Co. ARC	11,921	16
El Paso ARC	886	2
El Paso Contest Club	934	1
El Segundo ARG	784	1
Elgin ARS	1,480	2
Elk Co. ARA	1,340	1
Elko ARC	134	1
Ellijay ARS	1,502	4
Ellis Co. ARC	5,432	8
Ellsworth Amateur Wireless Assn.	5,278	3
Ellsworth ARA	4,703	8
Elmendorf ARS	492	1
Elmira ARC	356	2
Elmore Co. ARES	1,506	1
Emerald Coast ARA	470	2
Emergency Comms Assn. of St. Charles	2,268	5
Emporia ARS	2,184	2
Endless Mountains ARC	1,056	4
EPCorn	1,419	3
Escondido ARS	4,796	7
Estero RC	2,554	2
Estes Valley ARC	5,952	9
Etowah Valley ARC	797	2
Everglades ARC	456	7
Ewephoria RC	2,680	5
Explorer Post 599	2,267	6
f.a.r.g. TN (Moonshine)	1,330	1
Fair Lawn ARC	8,916	15
Fallbrook ARC	2,518	3
Falmouth ARA	12,684	18
Fannin Co. ARC	1,828	3
FARCE	1,024	2
Farrell-Gray	930	1
Faulkner Co. ARC	2,609	5
Fauquier ARA	11,293	12
Fayette Co. ARC	2,590	5
FBOM International	1,694	1
FCT2020	280	1
FD2020 in the park Sabin MN	2,292	1
Federación de Radio Aficionados de Puerto Rico	6,384	15
Federation of AR Operators	5,264	1
Findlay ARC	1,510	3
Findlay RC	1,244	1
First Baptist Church Huntsville RC	5,170	4
First State ARC	7,518	10
Five Flags ARA	4,542	2
Florence ARC	1,670	2
Florida Contest Group	9,088	12
Fluvanna ARES Group	322	1
Fluvanna Co. ARES	6,796	6
FM38 Repeater Group	3,708	1
Fond du Lac ARC	1,386	3
Foothill Flyers RC	275	1
Foothills ARS	622	2
Foothills ARS (AB)	3,068	4
Foothills ARS (CA)	1,972	5
Ford AR League	976	3
Forsyth ARC	25,690	23
Fort Armstrong Wireless Assn.	1,550	1
Fort Collins CW	8,524	3
Fort Herkimer ARC	2,230	1
Fort Madison ARC	1,288	4
Fort Myers ARC	2,492	10
Fort Saskatchewan ARC	598	1
Fort Smith Area ARC	489	2
Fort Venango Mike and Key Club	1,746	2
Fort Washington ARC	1,195	5
Fort Wayne RC	9,294	8
Forx ARC	5,128	1
Four Lakes ARC	3,280	6
Four State QRP Group	2,480	2
Four States ARC	998	1
Fox Cities ARC	4,110	3
Fox River Radio League	16,761	26
Framingham ARA	6,808	11
Frank Phillips Memorial Repeater Assn.	1,712	1
Frankford RC	69,570	26
Franklin Co. (MA) ARC	3,278	5
Franklin Co. (ME) ARES	932	1
Franklin Co. (NC) ARC	6,802	7
Franklin Co. (VA) ARC	12,462	5
Franklin Lakes OEM RC	1,320	1
Frederick ARC	486	1
Fredericton ARC	646	1
Fresno ARC	8,974	6
Friends of ARG	2,358	4
Friends of KI4OOL	2,575	1
Friends of W1RI	1,014	1
Front Yard Radio Group	860	1
Fullerton RC	780	3
Fulton Co. ARC	3,500	4
FVVFD	6,743	14
G.R.E.A.T. Club	684	1
Gainesville ARS	1,612	4
Garden City ARC	1,190	4
Garden State ARA	10,825	15
Garland ARC	4,868	9
Garlic Valley ARC	306	1
Garrett Co. ARES	3,470	2
Gaston Co. ARS	3,036	1
GEARS	1,374	3
Geezer Contesting Club	2,330	2
Genesee Co. RC	2,845	6
Genesee Radio Amateurs	2,952	4
Georgia Tech ARC	2,320	1
Georgian Bay ARC	3,768	5
Glenn Valenta Memorial ARC	634	1
Gloucester Co. ARC	14,346	5
Glynn ARA	3,258	5
Gold Coast ARA	5,136	6
Golden Spike ARC	1,098	3
Gopher ARC at U of MN	140	1
Gordon, PA Hams	1,024	1
Goshen ARC	1,164	3
GOTAHAMS	2,890	5
Grand Mesa Contesters of Colorado	17,518	3
Grand Rapids ARA	3,570	3
Grand Strand ARC	5,144	9
Grande Ronde Radio Amateurs Assn.	2,878	1
Granite State ARA	9,220	17
Gratiot Co. Old Timers	1,754	1
Grayson Co. ARC	2,510	4
Great Bay RA	702	3
Great River ARC	1,338	3
Great Salt Lake Contest Club	1,309	2
Great South Bay ARC	8,994	26
Great Southern DX Assn.	11,790	5
Greater Beloit ARC	8,996	8
Greater Bridgeport ARC	2,234	3
Greater Kingston RC	78	1
Greater Nebraska AR League	924	1
Greater Norwalk ARC	7,768	8
Green Bay Mike & Key Club	3,245	6
Green Mountain Wireless Soc.	5,538	10
Green River Valley ARS	3,638	3
Green Valley ARC	7,922	5
Greensboro ARA	1,814	2
Greenwood ARC	1,344	4
Greer ARC	24,238	9
Gretna	1,130	1
Grundy Co. ARC	1,866	2
Guelph ARC	1,499	8
Gwinnett ARC	424	1
Gwinnett ARS	19,368	30
Haldimand Norfolk ARC	1,900	7
Half Moon Bay ARC	3,976	9
Halifax ARC	5,920	13
Ham Assn. of Mesquite	5,644	5
Ham Radio Adventures	170	1
Ham Radio Outlet Milwaukee ARC	426	1
Ham Radio Outlet of Virginia ARC	198	1
HAMARS	2,537	2
Hambuds	236	2
Hamfesters RC	3,089	10
Hamilton (OH) ARC	3,678	2
Hamilton (ON) ARC	2,742	6
Hampden Co. Radio Assn.	10,408	14
Hampstead Hams	4,292	7
Hancock ARC	2,060	1
Hancock AUXCOM Team	1,738	1
Hancock-Hawkins AR Team	442	1
Hannibal ARC	3,414	2
Harford Co. ARES	2,448	1
Harris Intersil ARC	924	3
Hassayampa AR Klub	225	1
Hattiesburg ARC	604	1
Hays/Caldwell ARC	2,182	7
Hayward RC	1,166	3
Haywood Co. ARC	507	2
Hazel Park ARC	8,156	14
Heart O' Texas ARC	4,334	5
Heart of America RC	903	3
Heart of Dixie ARS	3,350	3
Heart of Wisconsin ARG	174	1
Heartland Hams ARC	1,756	2
Heligate ARC	10,588	4
Henderson ARC	74	1
Henry Co. ARC	658	1
Henry Co. AUXCOMM	1,430	2
Heritage Hunt Hams	4,856	7
Hernando Co. ARA	3,072	1
Hiawatha Valley ARC	7,315	13
Hidden Valleys ARC	3,846	5
High Desert ARG	2,474	4
High Desert Wireless	9,310	2
High Point ARC	3,408	3
High Sierra Field Day Group	4,179	5
Highland ARA	1,676	1
Highlands Co. ARC	1,040	2
Highlands Hams	1,558	5
Highline ARC	4,350	8
Hilltop Transmitting Assn.	2,536	5
Hinesville AR Emergency Soc.	130	1
Hiram Percy Maxim Memorial Station	750	1
Hocking Valley ARC	286	2
Holland ARC	5,576	2
Holmesburg ARC	2,785	6
Honolulu ARC	55	1
Hoodview ARC	1,986	5
Hoosier Hills Ham Club	5,264	4
Hoosier Lake RC	708	1
Hooterville Wireless Assn.	354	1
Hop River RC	250	1
Hot Springs ARC	2,680	1
Hot Springs Village ARC	196	1
Housatonic ARC	2,347	3
HP Boise ARC	2,072	4
Hualapai ARC	1,613	3
Hub City ARC	190	1
Huber Heights ARC	2,988	6
Hudson Valley Contesters and DXers	3,020	1
Hughes ARC	6,238	13
Humboldt ARC	2,929	8
Hunt Co. Packet Club	4,050	1
Hunters Ridge Hams	1,870	2
Huntsville ARC	25,889	24
Huron ARA	5,646	7
Hurst ARC	3,086	5
Idaho Renegades	2,718	1
Iguana Air Corps Contest Club	1,896	1

IMARC	474	1
Indian Peaks RC	296	1
Indian River ARC	382	1
Indiana Co. ARC	3,096	8
Indianapolis RC	1,120	4
Indy United ARC	18,442	3
Insurance City Repeater Club	1,624	1
Intel Emergency AR Srvc	318	1
Intercity ARC	3,952	4
Int'l Soc. for AR Innovation	2,187	5
Inverhuron Ham RC	2,766	2
Inyo Winds on Polaris Mtn Family Field Day	1,050	1
Iowa City ARC	1,468	5
Iowa Wireless AR Network	3,970	4
Iredell Co. ARS	412	2
Iroquois Co. ARC	1,922	2
Irvine Disaster EmComms	6,209	22
Irving ARC	2,754	5
Island Co. ARC	1,937	7
Island Park Group	1,282	1
Issaquah ARC	2,861	7
Jackson ARC	9,680	3
Jackson Co. AR Service	730	3
Jackson Co. ARA	516	1
Jacksonville ARS	992	2
Jamestown ARC	1,446	1
JANET Club	1,324	3
Jasper RC	586	1
Jayhawk ARS	556	2
Jefferson (LA) ARC	8,715	9
Jefferson Co. (MO) Radio Amateur Club	1,302	1
Jefferson Co. (NY) Radio Amateur Club	162	1
Jefferson Co. (TX) ARC	2,658	2
Jefferson Co. (WA) ARC	7,030	8
Jersey Shore ARS	560	2
Jim Bell Wireless Assn.	912	1
Johnson Co. ARC	350	1
Johnson Co. Radio Amateurs Club	7,336	13
Johnson Space Center ARC/ Clear Lake ARC	9,531	6
Joplin ARC	1,078	1
Juneau ARC	1,194	1
Jupiter Tequesta Repeater Group	274	1
K1USN RC	4,704	6
K9NZF Systems Kleer Konnect Network	1,482	1
KA4WJA Repeater Group	282	2
Kachina ARC	1,002	1
Kalamazoo ARC	1,640	4
Kamloops ARC	644	1
Kanawha ARC	7,160	8
Kankakee Area Radio Soc.	458	1
Kansas Antenna Club in Johnson Co.	2,934	5
Kansas City Assn. for the Blind ARC	2,206	2
Kansas City Contest Club	18,456	9
Kansas City DX Club	1,690	1
Kansas/Nebraska ARC	1,580	10
Katy ARS	3,080	6
Kaw Valley ARC	5,258	6
Kay Co. ARC	3,513	5
Kemptville AR Group	2,974	5
Kendall ARS	4,530	6
Kennehoochee ARC	1,430	1
Kent ARS	898	1
Kent Co. ARC	3,298	7
Kentucky Contest Group	9,588	5
Keowee Toxaway ARC	2,324	5
Kern Co. – Central Valley ARC	1,126	3
Kershaw Co. ARC	446	5
Keuka Lake ARA	2,266	9
Key City ARC	780	2
Kicked Back Contesters Club	1,832	4
Kilocycle Club of Ft. Worth	306	1
Kilowatt Microwave Enthusiasts Club	1,218	1
King George AR Operators	5,120	13
King Harbor Yacht Club Radio Fleet	2,304	1
Kingman AR CW Operators Club	2,954	5
Kingman CW Operators Club	450	1
Kings Co. (NY) ARC	1,424	2
Kings Co. and Annapolis Valley ARCs	9,402	7
Kingston Amateurs	9,648	10
Kitchener-Waterloo ARC	10,362	17
Kitsap Co. ARC	1,695	6
Kitsap Co. DX Club	4,964	2
Klamath Basin ARA	1,620	1
KnightLites QRP Soc.	1,500	1
Knox Co. ARC	1,312	3
Kokomo ARC	2,098	1
Ko'olau ARC	570	1
L.A. City ACS	3,683	10
L.A.R.E.S. NET	260	1
La Mirada RC	880	1
Lafayette Co. ARES	376	1
Lafayette DX Assn.	12,793	12
LaGrange ARC	1,410	3
Laguna Mountain FD	2,102	1
Lake Agassiz RC	2,730	2
Lake ARA	11,850	4
Lake Area (SD) Radio Klub	5,890	7
Lake Area (TX) ARC	8,189	17
Lake Conroe ARC	1,940	3
Lake Co. ARA	10,808	7
Lake Co. RACES/ARES	10,228	10
Lake Monroe ARS	10,578	16
Lake of the Ozarks ARC	3,444	1
Lake Oswego ARC	2,279	8
Lake Travis ARC	1,010	1
Lakeland ARC	7,008	13
Lakes Area (TX) ARC	428	3
Lakes Area (WI) ARC	494	1
Lakes Region Repeater Assn.	606	1
Lakeway ARC	372	1
Lamar ARC	664	1
Lambert Family	582	1
Lambton Co. RC	2,756	4
Lamorinda Area Radio Interest Group	816	4
Lanark North Leeds ARES Inc	4,150	2
Lancaster ARC	4,205	5
Land of Lakes ARC	804	2
Lanierland ARC	506	1
L'Anse Creuse ARC	8,436	6
Lapeer Co. ARA	3,712	2
Larkfield ARC	920	2
Laughery Valley ARC	926	1
Laurel ARC	718	1
Lawton – Fort Sill ARC	322	1
Lebanon Valley Soc. of Radio Amateurs	2,667	4
Lee Co. CERT	578	2
Lee DeForest ARC	614	1
LEFROG	5,300	2
Lehigh Valley ARC	2,507	13
Lenoir ARC	3,354	5
Lewis and Clark RC	4,984	9
Lewisville ARA	4,883	10
Lighthouse ARA	6,915	7
Limestone ARES	798	1
Lincoln ARC	4,628	2
Lincoln Co. (ME) ARC	3,430	2
Lincoln Co. (OR) ARC	792	2
Lincoln Co. ARA	1,604	2
Lincoln Co. Volunteer Communications	1,510	1
Lincoln Hills ARC	764	4
Littleton Area Radio Klub	4,876	10
Livermore AR Klub	902	4
Liverpool Amateur Repeater Club	3,628	6
Livonia ARC	9,616	12
Lockport ARA	2,272	1
Lodi ARC	6,508	15
LOHSEP ARC	172	1
Loma Pioneer Repeater Club	1,556	3
London ARC	9,700	17
Long Island CW Club	8,358	18
Long Island Mobile ARC	5,666	10
Long Tail RC	326	1
Longmont ARC	1,310	8
Lorain Co. ARA	2,118	4
Loren D. Hayes Memorial ARC	1,204	1
Los Alamos ARC	4,670	7
Los Angeles ARC	1,560	2
Los Fanfarrones FD Squad	3,806	1
Loudoun ARC	316	1
Loudoun ARG	8,600	9
Louisiana Delta RC	1,804	1
Low Country Contest Club	3,536	5
Lowell ARC	2,202	5
Lower Arkansas Ham Operators Group	104	1
Lubbock ARC	7,244	2
Lucas ARC	3,490	8
Lunenburg Co. ARC	1,352	4
Lynchburg ARC	8,452	13
MAARS	1,600	2
Macon Co. ARC	2,708	6
Macoupin Co. ARC	1,254	3
Mad River RC	21,634	5
Madison Co. (OH) ARC	10,602	10
Magic Valley ARC	762	1
Magnolia ARC	10,498	2
Magnolia DX Assn.	1,290	1
Mahoning Valley ARA	4,481	9
Maine Ham Radio Soc.	833	2
Majors Field ARC	2,461	5
Mammoth Cave ARC	2,160	1
Manotick ARG	698	1
Mansfield-Johnson AR Service	8,212	11
Maple Grove RC	2,160	4
Maple Ridge ARC	706	2
Maple Valley ARC	3,686	8
MARCA	3,431	6
Marconi ARC of Newfoundland	1,280	1
Maricopa ARA	934	2
Marietta ARC	2,626	5
Marinette Menominee ARC	2,458	2
Marion ARC	3,184	3
Marion Co. AuxCom/ARES	462	1
Marion Co. Ham RC	670	1
Maritime Contest Club	878	1
Marple Newtown ARC & Mobile Sixers RC	2,038	4
Marshall (TX) ARC	514	1
Marshall Co. ARA	1,012	2
Marshall Co. ARS	540	3
Martin Co. ARA	4,384	6
Maryland Mobileers ARC	7,036	6
Massillon ARC	4,044	2
Matagorda Co. ARC	1,130	1
Maui ARC	4,172	8
Maury ARC	2,386	4
Maverick Radio Mentors	970	1
Mayerthorpe Flying Tigers	686	1
Mayes Co. ARC	636	1
McArc	1,132	1
McDowell ARA	4,014	3
McDowell ARC	3,234	1
McGregor Memorial EMS ARC	606	2
McHenry Co. RACES/ARES	3,946	1
McHenry Co. Wireless Assn.	15,712	6
McKean Co. ARC	376	2
McKinney ARC	4,926	5
McMinnville ARC	2,127	9
Mecklenburg ARS	9,896	17
Medina Co. ARC	8,250	11
Meigs Co. ARC	1,072	1
Mercer Co. ARC	1,260	4
Meriden ARC	12,018	21
Messila Valley RC	4,694	9
Metro ARC	770	2
Metro Atlanta Telephone Pioneer ARC	3,180	1
Metro Detroit SATERN	784	1
Metro DX Club	17,501	10
Metro North Railroad ARA	110	1
Metrocrest ARS	3,752	10
Metropolitan ARC	738	1
Mettler-Green	690	1
Metuchen RC	862	1
Miami Co. ARC	1,764	1
Michiana ARC	4,932	1
Michigan QRP Club	1,970	1
Microhams ARC	4,656	10
Mics and Beer	1,454	1
Mid Coast Red Cross RC	5,290	1
Mid Island Radio Assn.	452	2
Mid-Ohio Valley ARC	464	1
Mid-Atlantic ARC	2,498	5
Mid-Atlantic Portable Operators Assn.	3,156	1
Mid Coast Chapter Am. Red Cross	340	1
Mid-Del ARC	1,654	2
Middle Peninsula ARC	2,584	4
Middlesex ARS	1,604	2
Midland (MI) ARC	1,187	5
Midland (TX) ARC	9,040	8
Mid-MO ARC	15,952	14
Mid-State ARC	2,864	10
Midwest ARC	972	2
Mifflin Co. Contesters	640	2
Mike & Key ARC	18,702	14
Mila's Field Day Group	1,401	2
Mile Highlanders Group	450	4
Milford ARC	3,316	4
Milky Way Wireless Club	780	1
Milledgeville ARC	150	1
Miller Co. ARES	282	1
Milton ARC	1,294	1
Milwaukee Radio Amateurs' Club	3,190	5
Milwaukee Repeater Club	784	3
Minden ARA	590	1
Mining ARC/St. Paul RC	5,245	10
Minnesota Wireless Assn.	26,404	16
Minnesota/Wisconsin Radio Group	394	1
Mississauga ARC	3,186	7
Mississippi Coast ARA	1,273	4
Mississippi Valley ARA	7,028	2
Mississippi Valley DX/Contest Club	108	1
Missouri Illinois ARC	2,258	2
Mitchell ARC	210	1
Mizpah Shrine Radio Unit	2,216	3
MM Expeditionary Force	20,484	5
Mobile ARC	2,806	1
Mohave ARC	742	3
Mohawk ARC	13,670	14
Moncton Area ARC	776	1
Monessen ARC	1,198	4
Monkey Lover's Radio Consortium	9,967	11
Monongalia Wireless Assn.	5,390	3
Monroe Co. Radio Comms Assn.	6,409	9
Montachusett ARA	2,634	7
Montezuma Valley Ham Breakfast Group	3,154	1
Montgomery Amateur Club	14,198	20
Montgomery ARC/Damascas ECT	3,928	3
Montgomery ARC/Damascus ECT	11,458	15
Montrose ARC	9,332	5
Montvale OEM	4,362	6
Moore Co. ARS	4,134	5
Moose Jaw ARC	542	1
Mora Open Repeater Assn.	2,378	5
Morewood Heights	218	1
Morocco Mole Contest Club	3,810	1
Morongo Basin ARC	616	2
Morris RC/Hanover Twp OEM	8,500	8
Mother Lode Dx/Contest Club	3,283	3
Motor City RC	2,264	3
Motorola ARC	1,250	1
Mound ARA	5,335	11
Mount Allamuchy Scout Reservation	177	1
Mount Diablo ARC	2,348	8
Mount Shasta ARC	282	1
Mount Vaca RC	354	2
Mount Vernon (OH) ARC	6,074	1
Mount Vernon (VA) ARC	2,018	5
Mount Vernon Boy Scout Troop 40 ARC	488	1
Mount Washington ARC	350	1
Mountain ARC (CA)	394	3
Mountain ARC (CO)	2,968	3
Mountain ARC (MD)	1,312	2
Mountain State Transmitters	906	1
Mountain Top ARA	1,570	6
Mountaineer ARA	150	1
Mountaineer ARA	8,824	5
Mt. Magazine ARC	1,998	1
Muncie Area ARC	2,611	3
Murgas ARC	9,172	9
Murphys Marauders	8,647	6
Murray State Univ ARC	5,123	8
Muscatine ARC	96	1
Muscle Shoals ARC	466	2
Muskegon Area AR Council	938	5
Muskogee ARC	13,442	1
MVARA	210	1
MVARC	1,270	1
North Richland Hills ARC	10,082	12
N4N Field Day Group	10,740	8
N8NCC Memorial Club	1,258	1
N9UDO Memorial Field Day	470	2
Nacogdoches ARC	4,923	9
NALCO ARES/RACES	947	3
Nanaimo ARA	2,164	3
Narwhal	1,416	1
NASA Marshall Space Flight Center ARC	2,384	3
Nashoba Valley ARC	7,571	11
Nashua Area Radio Soc.	14,952	16
Nashville ARC	2,882	5
Nassau ARC	2,486	6
Natchaug ARC	280	1
National Comms System ARC	904	1
National Electronics Museum RC	4,960	4
National Trail ARC	1,064	1
Naturist ARC	416	1
NCAARS/Brock Mtn CG	8,196	1
NCPARC	230	1
NEMO ARC	3,942	8
Neuse River Basin ARA	230	1
New England QRP Group	3,340	1
New England Radio Discussion Soc.	2,806	3
New Jersey Antique RC	1,096	1
New Jersey Institute of Technology ARC	364	1
New Mexico Big River Contesters	994	1
New Providence ARC	10,790	12
New River Valley ARC	1,554	1
Newark Ohio ARA	1,198	5
Newport Beach Repeater Club	856	3
Newport Co. Contest Club	4,514	1
Newport Co. RC	17,408	11
Newton ARA	2,460	6
Newton/McPherson ARC	2,004	1
NHRC A.R.S.	858	1
Niagara Frontier Radiosport	20,470	12
Niagara Peninsula ARC	8,768	15
Niagara RC	968	3
Nittany ARC	9,765	12

Nixa ARC	688	2
No Name Radio Gang	830	1
NOARCFL	1,764	7
NOARS	5,322	9
Noise Blankers Radio Group	5,840	4
North Arkansas ARS	658	2
North Augusta Belvedere RC	3,102	6
North Bay ARA	2,106	1
North Carolina DX and Contest Club	3,214	2
North Central Arkansas ARC	966	3
North Central Missouri ARC/ Livingston Co. ARES	926	1
North Coast ARC	444	3
North Florida ARC	546	1
North Franklin ARS	620	3
North Fulton ARL	23,881	35
North Georgia ARC	2,436	3
North Georgia QRP Club	5,888	6
North Hills ARC of Pittsburgh	3,132	8
North Mason Amateur Emergency Service Club	534	1
North Okanagan Radio Amateur Club	2,787	7
North Ottawa ARC	2,822	10
North Penn ARC	2,022	3
North Port ARC	7,072	2
North Shore (BC) ARC	2,076	5
North Shore (IL) RC	31,053	26
North Shore (ON) ARC	5,218	11
North Texas Radiosport Assn.	1,268	1
Northeast ARC	2,700	1
NorthEast Arkansas RC	144	1
Northeast Iowa Radio Amateur Assn.	2,776	4
NorthEast Louisiana ARC	11,344	4
Northeast Maryland AR Contest Soc.	18,393	24
Northeast Missouri ARC	294	1
Northeast Oklahoma Radio Amateurs	642	2
Northeast Tarrant ARC	6,487	16
NorthEast Wireless RC	1,532	4
Northeastern Indiana ARA	4,072	4
Northern Arizona DX Assn.	11,685	12
Northern California Contest Club	2,704	4
Northern Colorado ARC	1,798	4
Northern DX Assn.	924	1
Northern Illinois Quad Co. ARG	1,778	2
Northern Kentucky ARC	1,950	4
Northern Ohio DX Assn.	4,932	7
Northern Panhandle ARC	382	1
Northern Utah Contest Club	2,366	1
Northville ARA	1,305	4
Northwest ARS	16,144	17
Northwest Florida ARC	11,722	6
Northwest Illinois RC	1,720	3
Northwest Indiana DX Club	1,226	3
Northwest Ohio ARC	944	1
Nortown ARC	1,742	4
Not Quite Workable Contest Club	4,722	1
NSARC (BC)	256	1
Oak Forest ARC	968	5
Oak Hill ARC	13,264	8
Oak Mountain QRP Daredevils	4,800	1
Oak Ridge ARC	3,358	6
Oakland Co. ARS	6,951	6
Oakland Radio Comm Assn.	4,216	19
Oakville ARC	2,582	4
Oarc ARC	196	1
OCAPA	7,468	13
Ocean Co. ARES	1,438	3
Ocean Monmouth ARC	6,875	11
Ocean State ARG	908	1
Ogden ARC	1,246	2
Ohio Valley ARC	2,154	1
Ohio Valley Experimenters Club	218	1
OH-KY-IN ARS	15,792	8
Okaw Valley ARC	7,228	6
Old Barney ARC	17,452	19
Old Post ARS	564	1
Ole Virginia Hams	4,471	11
Olive Branch ARC/Chickasaw ARA	5,536	4
Olympia ARS	3,711	8
One Old Timer	260	1
Oneonta ARC	918	1
Onslow ARC Inc.	1,952	5
Orange ARC	250	1
Orange Co. (CA) ARC	13,450	23
Orange Co. (NY) ARC	7,288	17
Orange Co. (NY) ARES/RACES	2,352	2
Orange Co. ARES	174	2
Orange Co. Radio Amateurs & Durham FM Assn.	26,624	24
Orange Park ARC	3,391	12
Orca DX and Contest Club	3,864	3
Oregon Tualatin Valley ARC	7,230	9
Orlando ARC	1,194	2
Orleans Co. ARC	7,518	5
Oro Valley ARC	4,808	17
Oro Valley ARC	16,516	31
Oroville ARS	654	1
Orrville ARS	700	2
Ottawa ARC	7,330	6
Ottawa Valley Mobile RC	11,847	22
Ottawa Valley QRP Soc.	1,370	1
Ottumwa ARC	356	1
Outer Banks Repeater Assn.	974	3
Outstanding In Their Field ARC	1,802	3
Overlook Mountain ARC	3,364	3
Owatonna Steele Co. AR	1,014	2
Owatonna Steele Co. ARC	2,526	2
Owensboro ARC	4,500	2
Oxford Co. ARES	1,948	3
Ozaukee RC	18,592	11
Ozone ARC	1,398	5
Pacific Co. ARC	210	1
Paducah ARA	17,196	13
Page Valley ARC	3,104	1
Pahrump AR Repeater Assn.	2,032	1
Palatine ARES/RACES/AuxComm	264	1
Palestine Anderson Co. ARC	574	1
Palisades ARC	346	1
Palm Beach ARC	424	1
Palmetto ARC	985	2
Palmetto ARC	1,690	1
Palms West ARC	2,659	5
Palo Alto ARA	12,726	14
Palomar ARC	228	2
Palos Verdes ARC	15,399	16
Palouse Hills ARC	686	4
Pamlico ARC	1,252	1
Pamlico ARS	3,848	5
Panama City ARC	4,708	11
Panhandle ARC	4,951	5
Panorama Land ARC	2,798	3
Panther ARC	3,064	3
PAPA System	2,615	8
Parker Radio Assn.	7,369	8
Parkersburg AR Klub	1,260	3
Parma RC	1,512	5
Parry Sound ARC	736	1
Pasadena RC	15,105	26
Paso Robles ARC	4,541	7
Passaic Co. OEM	3,006	1
Pathfinders ARC	1,590	1
Patoka Valley ARC	2,113	4
Paulding ARC	1,892	2
Peace River Radio Assn.	4,796	7
Peak Radio Assn.	3,064	7
Peconic ARC	1,412	4
Peekskill/Cortlandt ARA	6,152	14
Peel ARC	9,214	13
Pella ARC	1,000	1
Pen Bay ARC	1,202	1
Penn Wireless Assn.	2,502	5
Pennsylvania Knightlites	3,430	1
Peoria Area ARC	4,442	1
Peterborough ARC	2,400	6
Philips ARC	10,618	6
Phillips Co. ARC	348	1
Phil-Mont Mobile RC	4,593	9
Piedmont ARC	13,930	9
Pikes Peak Radio Amateur Assn.	2,584	5
Pine Bluff ARC	60	1
Pine State ARC	2,850	5
Pioneer ARC	4,774	8
Pioneer Radio Operators Soc.	328	1
Piscataquis ARC	7,336	3
Pizza Lovers 259	454	1
Plano AR Klub	3,698	5
Platinum Coast ARS	22,114	17
Platte Co. ARG	4,434	8
Plattsmouth ARC	1,434	1
Pocatello ARC	142	2
PODXS 070	5,198	17
Point Loma ARC	6,098	6
Police AR Team of Westford	12,420	23
Pork and Beans	278	1
Port City ARC	1,482	3
Port Lavaca ARC	1,784	4
Portage Co. AR Service	14,582	22
Portland ARC	5,119	5
Portsmouth (OH) RC	681	3
Portsmouth (VA) ARC	628	1
Potomac Valley RC	29,430	24
Pottstown Area ARC	12,622	16
Poway ARS	4,732	8
Prairie Dog ARC	10,726	12
Preble ARA	3,980	7
Prescott Russell ARC	2,130	4
Preston Co. ARC	2,462	5
Pretty Good Ham Club	153	1
Providence EMA RACES	1,256	1
Providence RA	8,104	5
Pueblo West ARC	1,806	3
Putnam Co. ARES/RACES	256	1
Putnam Emergency Amateur Repeater League	1,030	4
QRP ARC International	11,248	10
Qrp Aris	470	1
QRP Pals	16,095	2
QSY Soc.	5,700	8
Quannapowitt Radio Assn.	136	1
Queen Anne's ARC	2,381	7
Queen City Emergency Net	2,766	3
Quinte & Prince Edward RCs	3,414	7
R F Hill ARC	1,172	4
Radio Amateur Club of Knoxville	1,612	4
Radio Amateur Downstate Illinois Organization	1,124	2
Radio Amateur Soc. Of Norfolk	822	2
Radio Amateurs of Corry	172	1
Radio Amateurs of Greater Syracuse	7,973	12
Radio Amateurs of Northern Vermont	19,091	7
Radio Amateurs of Skagit Co.	4,388	11
Radio Artisans	1,676	1
Radio Assn. of Western New York	2,316	4
Radio Assn. of Western New York	24	1
Radio Central ARC and Order of Boiled Owls of NY	13,465	16
Radio Club of Redmond	4,052	7
Radio Club of Tacoma	7,568	18
Radio Farm	7,924	5
Radio Operadores Del Este	3,024	6
Radio Operators Assn. Of Dallas	578	1
Radio Research Club	682	3
Radio Soc. of Ohio	1,250	1
Radio Soc. of Tucson	8,130	9
Rainbow Canyon ARC	4,172	1
Rains ARA	2,668	4
Raleigh ARS	15,976	27
Ramona Outback ARS	3,908	5
Randallstown ARC	11,764	3
Randolph Co. Emergency RC	1,402	1
Rappackers Contest Group	16,018	1
Rappahannock ARA	4,824	4
Rappahannock Valley ARC	8,966	8
Raritan Bay Radio Amateurs	2,010	4
RASON	160	1
Raytown ARC	3,548	7
Razorback Contest Club	3,690	1
Reading RC	4,149	7
Red Mountain Radio Amateurs	352	1
Red River Radio Amateurs	4,556	5
Red River Valley ARC	870	3
Red Rose Repeater Assn.	1,860	2
Redondo Beach DCS	1,428	2
REDXA/MARS	12,140	16
Reelfoot ARC	7,776	5
Regina ARA	1,119	2
Reno Co. (KS) ARA	1,250	1
Renton EmComm Srvcs	390	1
Reve Carberry	60	1
RF Hill ARC	444	2
Rich & Ron's Field Day	624	1
Richardson Wireless Klub	5,124	8
Richfield ARC	204	1
Richmond Amateur Telecommunications Soc.	172	2
Richmond ARC	1,249	4
RICOMU	2,614	1
Rio Hondo ARC	98	1
Rip Van Winkle ARS	2,014	3
Risingsun Field Day Group	1,886	1
Rissler Family	1,088	1
River Bend Wireless Operators Club	10,885	9
River City AR Comms Soc.	6,155	13
Riverbend Wireless and Mechanical Soc.	175	1
Riverland ARC	2,506	6
Riverside Co. ARA	1,782	2
Roanoke Valley ARC	9,038	16
Rochester (MN) ARC	9,030	15
Rochester (NY) DX Assn.	29,237	22
Rockingham Co. ARC	1,842	2
Rockwall ARC	2,042	6
Rocky Mountain Ham Radio	11,581	10
Rocky Mountain Race Week	1,094	1
Rogue Valley ARC	1,432	2
Rome RC	126	1
Ron's One Man Team	1,350	1
Rowan ARS	2,148	3
Rowdies	518	1
Royal Gorge ARC	690	1
Ruckerville Amateur Transmitting Soc.	1,522	3
Runestone ARC	616	2
Rural Radio Preparedness Assn.	1,154	1
Rusk Co. ARC	380	1
Rutledge Rookies	222	1
Ryan Jennings	688	1
SAARS	310	1
Sachse ARA	648	3
Sacramento Co. ARES	536	1
Sacramento Mountains RC	500	1
Saginaw Valley ARA	2,040	2
Saguaro Nights ARC	890	1
Salem ARC	3,312	7
Salkehatchie ARS	4,600	4
Salt City DX Assn.	11,508	6
Salt Spring Island ARS	448	1
Samuel F Morse ARC	3,494	5
San Andreas Field Day Survivors	2,289	3
San Angelo ARC	391	1
San Antonio RC	1,305	6
San Benito Co. ARA	3,850	8
San Diego Contest Club	5,402	1
San Diego Yacht Club ARG	1,146	1
San Fernando Valley ARC	4,333	14
San Francisco RC	846	4
San Gorgonio Pass Amateur Club	1,232	2
San Jose ARES RACES	1,385	4
San Juan Co. ARS	2,351	11
San Mateo RC	7,860	19
Sand Hills ARC	1,522	1
Sandhills ARC	96	1
Sandy ARC	152	1
Sangamon Valley RC	2,090	8
Santa Clara Co. ARA	2,100	6
Santa Clarita ARC	892	3
Santa Fe ARC	462	1
Santa Fe ARES	1,762	4
Santa Fe Trail ARC	1,862	4
Santa Rosa Co. ARES	720	1
SARA MN	4,982	14
Sarasota Emergency RC	3,028	4
Saratoga Co. ARA	7,405	15
Saskatoon ARC	3,214	5
Satellite ARC	142	1
Sawnee ARA	10,298	12
SC4ARC	11,310	12
SCAN/Red Ant Annihilators	604	2
Scarborough ARC	1,302	4
Schaumburg ARC	10,310	12
Schoharie Co. ARA	1,426	1
Scioto Valley ARC	1,112	2
Scott Co. (KY) ar Service	796	2
Scott Co. (VA) ARS	97	2
Scott Co. ARC	1,516	3
SDGARES	12,726	9
SEARC	110	1
Seaway Valley ARC	344	1
Sedalia Pettis AR Klub	272	1
SEKARC	4,599	8
SEMNARC	520	1
Seneca RC	3,672	4
Sheboygan Co. ARC	1,982	5
Shelby ARC	2,967	5
Shelby Co. ARES	882	1
Shenandoah Valley ARC	2,706	2
Sheriff's Tactical AR Comms	756	3
Shiawassee ARA	638	2
Shore Points ARC	102	1
Shoreline ARC	1,210	2
Short Mountain Repeater Club	212	1
Shreveport ARA	6,294	7
Sierra ARC of the High Mojave	2,274	4
Sierra ARC of the high Mojave	318	1
Sierra Blanca ARC	1,424	4
Sierra Foothills ARC	11,655	26
Sierra Intermountain Emergency Radio Assn.	1,497	5
Sierra Nevada ARS	5,357	11
Signal Hill ARC	16,757	4
Silly Hats Club	900	1
Silver Comet ARS	6,151	11
Silver Springs RC	9,533	10
Silvercreek ARA	7,826	6
Simi Settlers ARC	591	2
Simmons Family	190	1
Sioux Empire ARC	3,770	3
Siskiyou Co. ARA	932	1
Six Meter Club of Chicago	1,680	7
Skagit AR Emergency Comms Club	828	3
Ski Country ARC	8,874	13
Sky Valley ARC	3,084	6

Skyline ARC	696	2
Skyline RC	1,468	2
Skyline Tower ARC	846	1
Skyview Radio Soc.	9,220	6
Slivercreek ARA	132	1
SLSRC	194	1
Smith Chart ARS	10,916	5
Smithsonian Institute ARC	2,386	1
Smokin Tokin Jokin ARC	78	1
Smoky Mountain ARC	14,192	13
Snake River ARC	1,760	1
Snohomish Co. Hams Club	7,143	15
Snoring Beagle Field Day Dogs	958	1
Soc. of Midwest Contesters	16,180	12
Soc.orro ARA	2,952	3
Somerset Co. ARC	1,388	4
Sonoma Co. Radio Amateurs	7,901	17
Souris Valley ARC	3,504	1
South Bay ARA	6,785	18
South Bay ARC	1,030	5
South Canadian ARS	10,732	15
South Carroll ARG	2,704	2
South East Contest Club	6,887	7
South East Metro ARC	4,545	10
South Georgia ARC	1,342	1
South Halton ARES	1,316	3
South Hill Contest Club	1,660	1
South Jersey Radio Assn.	9,989	11
South Lake Charles RC	1,570	2
South Lane ARA	312	1
South Lyon Area ARC	12,588	15
South Mountain Radio Amateurs	6,857	9
South Orange ARA	9,083	23
South Orange Co. ARA	406	1
South Pasadena ARC	2,214	7
South Plainfield ARC	1,754	2
South San Francisco Comms	588	3
South Texas ARC	190	1
South Texas DX and Contest Club	688	2
South Wake ARC	1,800	5
Southborough Rod & Gun ARC	937	1
Southeast Louisiana ARC	624	2
Southeast Texas Amateur Club	606	1
Southeastern Massachusetts ARA	288	1
Southern Berkshire ARC	2,813	7
Southern California Contest Club	15,780	8
Southern Counties ARA	4,443	8
Southern IN ARA	1,480	2
Southern Indiana Tri-Co. Club	426	1
Southern MI ARS	6,426	3
Southern PA Comms Group	1,797	8
Southern Peninsula AR Klub	3,124	9
Southern Pennsylvania ARC	1,280	3
Southern Plateau ARC	104	1
Southington ARA	1,350	4
Southtowns ARS	2,756	1
Southwest Columbus Ham RC	308	1
Southwest Dallas Co. ARC	3,936	2
Southwest Idaho ARC	194	1
Southwest Iowa ARC	713	3
Southwest Mississippi ARC	1,822	5
Southwest Missouri ARC	176	1
Southwest Ohio DX Assn.	882	1
Southwick RACES	2,940	1
Spa ARA	2,361	3
Sparta ARC	762	5
Spartanburg ARC	7,474	7
Spirit Valley Amateurs	1,638	2
Splinter Group ARC	6,043	6
Splitrock ARA	3,126	7
Spokane DX Assn.	6,182	10
Sportsman's Paradise ARC	3,378	4
Spout Springs Repeater Assn.	2,924	2
Spring Hill ARC	584	2
Springhill ARC	870	1
Squaw Island ARC	2,031	8
St. Augustine ARS	2,996	4
St. Charles ARC	5,538	7
St. Clair ARC	1,672	3
St. Cloud ARC	526	1
St. Croix ARC (ME)	210	1
St. Louis & Suburban RC	3,166	9
St. Louis ARC	10,924	11
St. Louis QRP Soc.	2,818	2
St. Mary's Co. ARA	2,213	5
St. Croix ARC	2,336	1
St. Joseph Co. (MI) ARC	604	1
St. Louis QRP Soc.	8,625	8
St. Petersburg ARC	88	1
St. Thomas ARC	1,662	5
Stamford ARA	825	3
Stanford ARC	13,860	7
Stanly Co. ARC	1,530	3
Stanwood Camano ARC	6,898	8
Starved Rock RC	374	1
State Line RC	2,998	8
Statesboro ARS	106	1
Steel City ARC	4,640	2
STE-MON QRP Club	2,710	2
Stephen F. Austin RC	230	1
Sterling Park ARC	1,498	8
Steubenville-Weirton ARC	1,274	5
Stillwater ARC	78	1
Stockton-Delta ARC	3,360	3
Stones River ARC	1,534	1
Story Co. ARC	6,071	9
Straight Key Century Club	15,055	17
Stratford ARC	1,392	4
Sturdy Mem Hospital ARC	1,996	5
Suburban Technical ARS	2,116	3
Suburban UHF Am Repeater Soc.	418	1
Sudden Valley ARC	736	1
Suffolk Co. RC	422	1
Sumter ARA	262	1
Sun City ARC	3,898	10
Sun City ARS	330	2
Sun City Center ARC	802	3
Sun City Grand Hams	422	1
Sun City Hilton Head ARC	2,860	3
Sun City Summerlin ARC	262	1
Sun Coast ARC Soc.	1,220	4
Sun Country ARS	6,734	4
Suncoast ARC	878	1
Sunnyvale ARES	4,273	9
Superstition ARC	5,050	4
Surrey AR Comms	1,980	4
Susquehanna Co. ARC	2,710	1
Susquehanna Valley ARC	536	3
Sussex ARA	584	2
Sussex Co. ARC	2,094	6
Suwannee ARC	122	1
Swamp Fox Contest Group	651	1
Sweetwater ARC	1,832	2
Symbol Technologies ARC	660	2
T.I.P.C.	1,165	1
TAARS	160	1
Tall Corn ARC	1,044	2
Tallahassee ARS	5,851	11
Tamaqua Wireless Assn.	1,348	2
Tamiami ARC	11,964	15
Tampa ARC	5,384	5
Taylor Co. ARC	944	1
TCARES	280	2
Tellico Lake ARC	7,766	10
Tenn Rose	70	1
Tennessee Contest Group	13,625	11
Tennessee Valley DX Assn.	8,966	3
Terrain Gain Gang	5,880	3
Texas DX Soc.	45,022	21
Texas Emergency Amateur Communicators	1,156	6
The 415 ARC	6,400	3
The Emergency Repeater System	1,306	1
The FPL Group	748	1
The Guys	8,232	4
The MegaMachine Repeater Group	1,230	1
The Road Show ARC	3,282	3
The Seven Thirty ARS	7,002	12
The Transmitter Soc.	112	1
The Unreal RC	935	2
The Villages ARC	15,046	31
The World RC	2,258	1
Thibodaux ARC	2,526	3
Thomas Rees	380	1
Thomasville ARC	1,030	1
Thousand Islands R.C.	1,824	1
Three Generations of Hams	1,626	3
Thumb Radio Group	416	1
Thunder Bay ARC	662	2
Thunderbird ARC	6,294	11
Tidelands ARS	144	1
Tilson Contest Club	8,018	1
Tim Smith	92	1
Timpson Area RC	262	1
Tippecanoe ARA	1,294	1
Tishomingo Co. ARC	172	1
TLSC Ham Radio Group	2,114	1
Toledo Mobile Radio Assn.	2,384	8
Tompkins Co. ARA	1,714	5
Top of Michigan ARC	556	3
Topanga Disaster Radio Team	1,770	4
TOPARC	738	1
Toronto ARC	2,992	10
Totah ARC	534	1
Tri-Co. ARC (GA)	1,374	1
Tri-Co. ARC (TX)	658	2
Tri-Co. ARC (WI)	5,512	4
Tri-Lakes ARC	3,854	5
Tri-State ARS	14,594	12
Tri-City ARC of CT	4,596	7
Tri-Co. ARA (CA)	576	4
Tri-Co. ARA (NJ)	2,878	5
Tri-Co. ARC (PA)	710	3
Trident ARC	2,964	4
Tri-State ARA	2,480	4
Tri-States ARC (GA)	410	1
Tri-Town Radio Amateur Club	6,826	5
Trojan ARC	4,018	1
Troop 2008	384	1
Troy ARA	778	4
Truro ARC	1,694	4
Tryon ARC	104	1
Tulsa Digital RC	4,755	1
Tuolumne Co. AR & Electronics Soc.	1,072	1
Turkey Heaven Mtn Repeater Assn.	3,276	2
TUSCO ARC	4,090	4
Twin Cities Maker ARC	418	2
Twin Cities Repeater Club	1,762	3
Twin City (IL) ARC	5,970	5
Twin City FM Club	600	1
Twin Rivers ARC	998	3
Twin State RC	5,220	10
Two Rivers ARC of McKeesport	5,112	4
Tyler ARC	1,255	5
Union City Wireless Assn.	5,606	1
Union Co. (NC) ARC	8,626	7
Union Co. (OH) ARC	2,584	3
Union Métropolitaine des Sans-filistes de Montréal	6,168	8
United Radio Amateur Club	1,026	3
Univ of Alabama RC W4UAL	1,486	3
Univ of Arizona ARC	2,244	4
Univ of Michigan	362	1
Univ of Mississippi ARC	1,862	3
Univ of Southern California ARC	884	1
Upper Canada QRP Club	4,295	5
USECA	276	1
USS Wisconsin RC	316	1
Utah ARC	5,042	7
Utah DX Assn.	7,012	5
Utah Valley ARC	8,284	7
Utica ARC	1,478	2
Utica Shelby Emergency Comms Assn.	2,792	8
Vaca Valley RC	3,238	4
Valley & Massanutten ARA	180	1
Valley and Massanutten ARA	10,418	13
Valley of the Moon ARC	3,946	8
Van Wert ARC	4,850	1
VCARA	2,066	3
VECTOR	285	1
Ventura Co. ARC	4,298	9
Ventura Co. ARS	4,702	12
Verde Valley ARA	646	2
Vermilion Co. ARA	878	1
Vero Beach ARC	2,608	1
VFW Post 3115 ARC	248	1
Vicksburg ARC	4,260	3
Victor Valley ARC	198	1
Victoria-Haliburton ARA	1,504	3
Vienna Wireless Soc.	21,907	27
Vilas Co. RC	1,659	1
Villa Rica RC	1,812	3
Village 7 ARC	944	1
Village Hams	1,112	1
Villanova Univ ARC	312	1
Virgin Valley ARC	234	2
Virginia Beach ARC	2,879	6
Virginia Beach ARC/Virginia DX Century Club	3,594	11
Virginia Mountain ARC	2,118	2
VMware ARC	1,040	5
W/K ARC of Greater Milwaukee	14,554	9
W3AO Team	73,149	26
W4IBM ARC	596	2
W6TRW ARC	1,988	4
Wabash Valley ARA	5,314	3
WACOM	275	1
Wahkiakum Co. ARC	4,204	7
Waldo Co. ARA	2,054	1
Walla Walla Valley ARC	1,394	3
Waltham ARA	3,760	8
Walton Co. ARES and Repeater Group	2,052	2
Warminster ARC	6,860	15
Warren ARS	2,122	3
Warren Co. NY RC	6,270	4
Washington Amateur Communications	2,330	1
Washington Area ARC	1,264	2
Watauga ARC	3,276	9
Water Island DX group	468	1
Waterbury ARC	410	1
Waterman's Museum	844	1
Waterton Contest Club	12,374	6
Watertown ARC	1,493	1
WATTS Family ARC	606	1
Wayne ARC	7,276	6
Wayne Co. ARC	10,350	7
WCARC of TX	6,802	6
WCARCofTX	658	1
WCARS-Murphy/Cherokee Co. ARES	1,206	2
WD Contest Group	3,886	3
Wellesley ARS	2,606	6
Wellington RC	755	1
West Allis RAC	6,558	11
West Carleton ARC	1,050	1
West Central Louisiana ARC	832	2
West Chester ARA	11,248	13
West Essex ARC	680	3
West Fork ARC	1,845	6
West Georgia ARS	2,276	1
West Island ARC	3,856	6
West Kootenay ARC	960	2
West Palm Beach ARG	972	3
WEST PARK RADIOPS	1,616	2
West Point Fire CERT	886	1
West River RC	304	1
West Seattle ARC	3,955	14
West Tennessee ARS	354	2
West Texas ARC	1,940	2
West Valley ARA	18,212	18
West Valley ARC	82	1
West Virginia AR	4,244	6
West Volusia ARS	1,992	2
Westchester Emergency Comms Assn.	10,733	9
Western Carolina ARS	868	2
Western Colorado ARC	1,888	1
Western Illinois ARC	5,613	4
Western Placer ARC	180	1
Western Tidewater RA	1,671	5
Western Washington DX Club	2,419	3
Westmoreland ARC	4,409	5
Westside ARC	1,768	2
Wexaukee ARC	1,587	4
Whatcom Co. ARES	1,638	1
Wheaton Community Radio Amateurs	182	1
Whidbey Island Trailblazers	2,270	1
White Mountain ARC	568	2
White Rock ARC	164	1
White Rock Lake ARC	1,533	4
Whitewater Valley ARC	1,470	1
Whitley Co. ARC	3,768	3
Whitman ARC	3,634	11
Whitman Co. ARES	96	1
Wichita ARC	60	1
Wichita Contest Club	174	1
Wilderness Road ARC	3,566	5
Willamette Valley DX Club	8,902	6
Williamsburg Area ARC	8,998	22
Williamson Co. ARES	26,740	29
Wilmington Area ARC	342	2
Wilson ARC	58	1
Wilsons Wonders	4,755	1
Windmill ARG	5,266	1
Winnipeg ARC	2,036	3
Winona ARC	3,070	1
Wiregrass ARC	5,786	4
Wireless Operators of Winsted	300	1
Wireless Soc. of Southern Maine	9,694	5
Wisconsin ARC	3,822	8
Wisconsin Valley Radio Assn.	2,062	7
Wistaria Wireless Soc.	1,386	1
Wood Co. ARC	1,696	4
Wood Co. ARES/RACES	2,952	1
Wood Co. Emergency Comms	2,124	1
Woodbridge Wireless	23,230	9
Woodchuck ARC	1,574	2
Woodford Co. ARC	58	1
Woodford Repeater Assn.	1,194	4
Woodmont ARA	546	4
Worcester EmComms Team	643	1
Worthington Christian School ARC	1,328	1
WRAET	100	1
Wireless Assn. of South Hills	5,670	12
WX0MIK	110	1
XRX RC	4,683	5
Yakima ARC	776	1
Yankee Clipper Contest Club	7,091	6
Yavapai ARC	1,583	6
Yellowstone RC	2,222	6
Yelm ARG	64	1
Yonkers ARC	1,256	2
York Co. Radio Soc.	995	1
York Co. SC ARS	6,629	7
York RC	13,206	14
York Region ARC	8,574	19
Youth on the Air	308	1
Yuba-Sutter ARC	974	2
Zephyrhills Area ARC	2,734	1
Zero-Beaters ARC	424	1
Zuni Loop MEF	6,110	7

Please click here to view the full line scores.

W1AW Schedule

PAC	MTN	CENT	EAST	UTC	MON	TUE	WED	THU	FRI
6 AM	7 AM	8 AM	9 AM	1400		FAST CODE	SLOW CODE	FAST CODE	SLOW CODE
7 AM-1 PM	8 AM-2 PM	9 AM-3 PM	10 AM-4 PM	1500-1700 1800-2045	VISITING OPERATOR TIME (12 PM-1 PM CLOSED FOR LUNCH)				
1 PM	2 PM	3 PM	4 PM	2100	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE
2 PM	3 PM	4 PM	5 PM	2200	CODE BULLETIN				
3 PM	4 PM	5 PM	6 PM	2300	DIGITAL BULLETIN				
4 PM	5 PM	6 PM	7 PM	0000	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE
5 PM	6 PM	7 PM	8 PM	0100	CODE BULLETIN				
6 PM	7 PM	8 PM	9 PM	0200	DIGITAL BULLETIN				
6^{45} PM	7^{45} PM	8^{45} PM	9^{45} PM	0245	VOICE BULLETIN				
7 PM	8 PM	9 PM	10 PM	0300	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE
8 PM	9 PM	10 PM	11 PM	0400	CODE BULLETIN				

W1AW's schedule is at the same local time throughout the year. From the second Sunday in March to the first Sunday in November, UTC = Eastern US time + 4 hours. For the rest of the year, UTC = Eastern US time + 5 hours.

♦ Morse code transmissions: Frequencies are 1.8025, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675, 50.350, and 147.555 MHz.

Slow Code = practice sent at 5, 7½, 10, 13, and 15 WPM.

Fast Code = practice sent at 35, 30, 25, 20, 15, 13, and 10 WPM.

Code bulletins are sent at 18 WPM.

For more information, visit us at
www.arrl.org/w1aw

♦ W1AW Qualifying Runs are sent on the same frequencies as the Morse code transmissions. West Coast qualifying runs are transmitted by various West Coast stations on CW frequencies that are normally used by W1AW, in addition to 3590 kHz, at various times. Underline 1 minute of the highest speed you copied, certify that your copy was made without aid, and send it to ARRL for grading. Please include your name, call sign (if any), and complete mailing address. Fees: $10 for a certificate, $7.50 for endorsements.

♦ Digital transmissions: Frequencies are 3.5975, 7.095, 14.095, 18.1025, 21.095, 28.095, 50.350, and 147.555 MHz.

Bulletins are sent using 45.45-baud Baudot, PSK31 in BPSK mode, and MFSK16 on a daily revolving schedule.

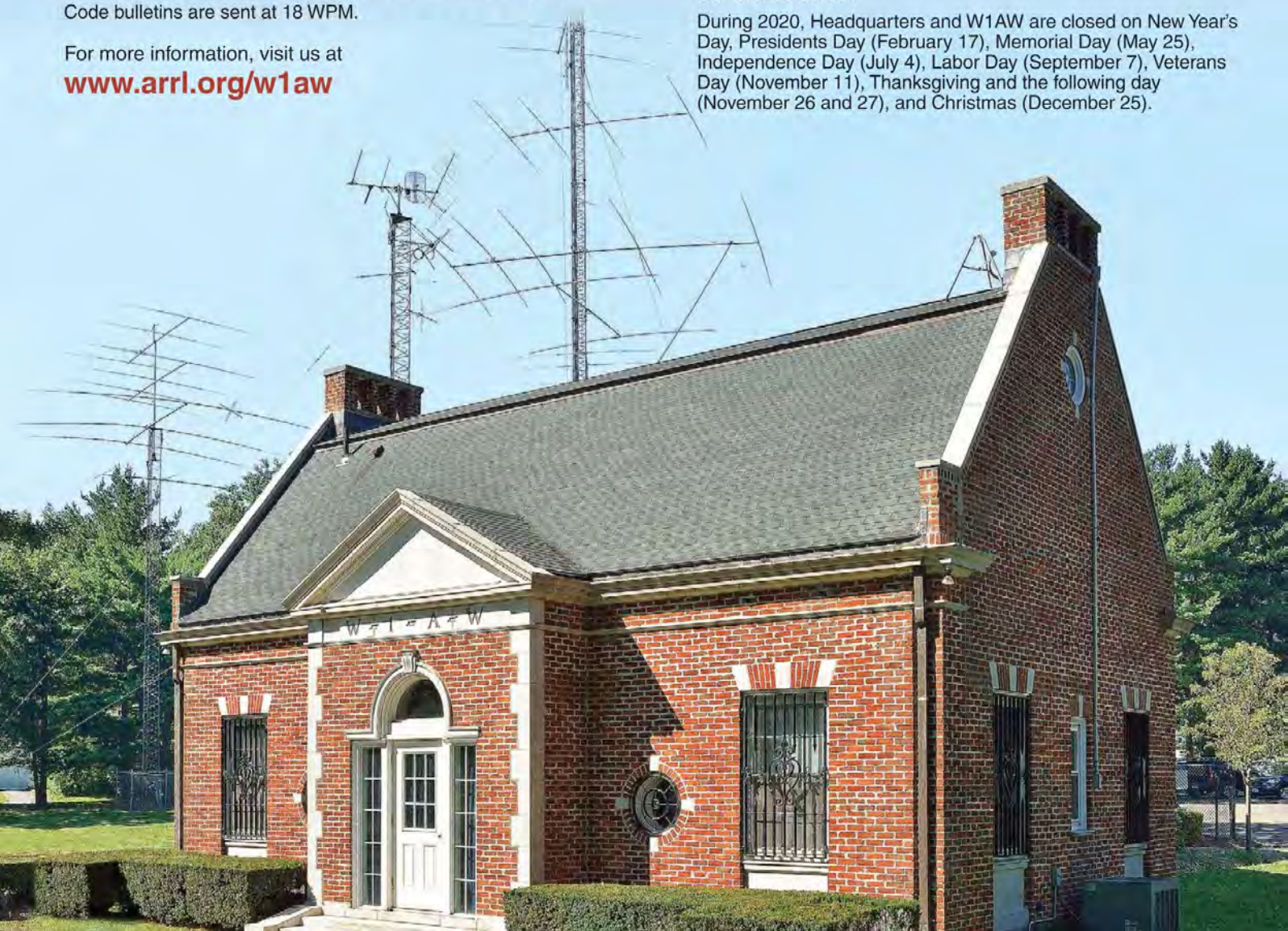
Keplerian elements for many amateur satellites will be sent on the regular digital frequencies on Tuesdays and Fridays at 6:30 PM Eastern time using Baudot and PSK31.

♦ Voice transmissions: Frequencies are 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59, 50.350, and 147.555 MHz. Voice transmissions on 7.290 MHz are in AM double sideband, full carrier.

♦ Notes: On Fridays, UTC, a DX bulletin replaces the regular bulletins. W1AW is open to visitors 10 AM to noon and 1 PM to 3:45 PM Monday through Friday. FCC-licensed amateurs may operate the station during that time. Be sure to bring your current FCC amateur license or a photocopy. In a communication emergency, monitor W1AW for special bulletins as follows: voice on the hour, teleprinter at 15 minutes past the hour, and CW on the half hour.

W1AW code practice and CW/digital/phone bulletin transmission audio is also available real-time via the *EchoLink Conference Server* W1AWBDCT. The conference server runs concurrently with the regularly scheduled station transmissions. The W1AW Qualifying Run texts can also be copied via the EchoLink Conference Server.

During 2020, Headquarters and W1AW are closed on New Year's Day, Presidents Day (February 17), Memorial Day (May 25), Independence Day (July 4), Labor Day (September 7), Veterans Day (November 11), Thanksgiving and the following day (November 26 and 27), and Christmas (December 25).



Bernie McClenny, W3UR, w3ur@arrl.org

How's DX?

Next Destination: Tokelau, ZK3A

For this month's column, Dr. Hrane Milosevic, YT1AD, reflected on his DXpedition to Tokelau in 2019.

For many amateur radio operators around the world, Tokelau is one of the most wanted countries on different modes and bands. Tokelau is a nation made up of three separate atolls — Atafu, Nukunonu, and Fakaofo (Fale) — and is a territory of New Zealand. There are also hundreds of other small uninhibited islands within the archipelago.

Licensing

During a presentation of our 9MØW DXpedition to the Spratly Islands in 2018 at the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute," I met Alex Yakovlev, UT5UY, after many prior radio contacts. He is one of the main directors of RigExpert, which was one of our main sponsors for the DXpedition. He proposed a DXpedition to the island of Tokelau, which he had visited in 2011. I agreed and we began preparations. I named two co-leaders for the DXpedition — Alex for logistics and Roman Tkachenko, URØMC, for the technical side.

ZK3A DXpedition leader Hrane Milosevic, YT1AD, and Alexey Yakovlev, UT5UY, breaking bread and discussing the Tokelau Islands.

There is no airport in Tokelau, so the best way to reach it is by boat from Apia, Samoa. My first step to prepare for the DXpedition was to visit the Tokelau representatives office in Apia to find out how to obtain an amateur radio license for Tokelau. After a few inquiries, I was a bit disappointed, as there was no definitive answer. But I was able to obtain the phone number of the Teletok CEO, Mr. Tealofi Enosa, who is responsible for amateur licensing in Tokelau. I called Mr. Enosa and asked for details about licensing. He quietly listened to my story and then asked me where I was. After telling him I was in Apia at the Hotel Millenia, he responded that he too was at the same hotel. We agreed to meet over dinner. After this successful meeting, I quickly reached out to my Ukrainian friends to give them the good news. The DXpedition planning started the next day.

Preparations

In the beginning of May 2019, Dusko Dumanovic, ZL3WW, and I travelled to the island of Fakaofo in Tokelau, in preparation for our October 2019 DXpedition. We stopped by the Teletok office, which was headed by Mr. Enosa and his deputy, Mr. Bosco. They provided us with all the information we needed regarding transportation, travel, food, accommodation, and other technical details. At the end of the meeting, we received our amateur radio license with the call sign ZK3A, valid from May 10 to December 31, 2019, for NZ$100. Mr. Enosa also asked our team to make an amateur radio equipment donation not only for the island of Fakaofo (where we would operate), but also for the other two islands, Nukunonu (ZK3NT) and Atafu (ZK3AT).

◀ The 2019 ZK3A DXpedition QSL card.

▲ ZK3A DXpedition leader Hrane Milosevic, YT1AD, explaining amateur radio to some of the locals in the Tokelau Islands.

During our return trip from Fakaofo to Apia, we made a short visit to the other two atolls — Nukunonu and Atafu — which gave us a nice overview of this small country, despite the large territorial waters between them.

Most of the logistical details were handled by the Ukrainian and Russian operators. On August 13 and 14, we organized a meeting in Zaporizhia, Ukraine. Our host was Igor Syerikov, UT7QF. After returning from Ukraine, I was very satisfied that all the main issues had been resolved and we were ready to begin our adventure. Our final DXpedition team members included UT5UY; URØMC; RW7K; USØKW; R7KW; UT8IO; SV2BFN; ZL3WW; VK3FY; VK3GK; K6VHF; WD5COV; KO8SCA; N7QT; VE7NY; PY2DX; UR9QQ; RX3APM, and YT1AV.

In order to avoid any issues that could come up, in September 2019 I made the decision to send an advance team with three members to Tokelau aboard the MV *Kalopaga*. Two boat seats for Adrian Ciuperca, KO8SCA, and Dusko were confirmed immediately, but Rob Fanfant, N7QT, was on a waiting list for departure on September 24. We received good news on September 23. The government of Tokelau scheduled a second boat, the *Mataliki*, headed to Tokelau along with the MV *Kalopaga*. The *Mataliki* travelled directly to Fakaofo, so all three team members arrived in Fakaofo 2 days ahead of schedule.

Our remaining team members arrived in Samoa on September 29. The next day, we presented our passports to obtain the Tokelau entry permits and left our luggage for inspection. According to the schedule, the *Mataliki* first went to Atafu, then to Nukunonu, and last to Fakaofo, which meant we would have an additional 2 days of operating.

On October 1, the day of departure, we got up at 6 AM, followed by a 15-minute breakfast and 15-minute walk to the port, where we had immigration and customs control. We received our passports with the entry permit for Tokelau, then we stepped onto the *Mataliki* and set sail by 8 AM.

Some of the locals from Fakaofo Island celebrating fishing day.

Adrian Ciuperca, KO8SCA, takes a quick break for a photo while working on the ZK3A antennas on Fakaofo Island, Tokelau.

Arrival and Operations

Upon arrival on the island, we immediately received our luggage and divided our team into two groups. Ten team members stayed on the main island of Fale, and the other nine team members left by small boat to another island where the Teletok office was located, about 2 miles away from the main island.

The advance team had already installed the largest and most complex antenna systems. On arrival, the main team installed a delta loop for 160 meters and a seven-element, 6-meter beam hung from a cell phone tower. Roman was responsible for our EME contacts, and he was delighted each time he was able to make one.

Propagation was on our side and we were able to get on the air with eight stations simultaneously on different bands and modes. Having teams spread on two different islands, about 2 kilometers apart, gave us the opportunity to work multiple modes on the same band at the same time. After an 8-day operation, we had more than 50,000 contacts. We were active from 1.8 to 50 MHz on CW, SSB, RTTY, FT8, EME, and SSTV. Our team also enjoyed swimming and fishing in some of the most beautiful waters in the world.

We planned to be on the island until October 11; however, on October 9, we received the unfortunate news that a child from Nukunonu Island was ill. The *Mataliki* immediately changed its schedule in order to bring this sick child urgently to Apia.

We had two options — pack everything in 3 hours to be on that boat, or stay for an additional 10 days. Because we all had flight reservations for the trip home, we decided to leave immediately. We would arrive in Apia 2 days ahead of schedule.

When we returned home, we were excited to see all the commentaries and support from other hams on social media. Thank you to all of the amateur radio operators around the world for listening and calling us patiently in the big pileups. As team leader, I must emphasize the professional attitude of the entire team of amateurs.

All photos provided by the author.

Wrap-Up

For those interested in more details on the ZK3A DXpedition to Tokelau, check out **www.tokelau2019.com**. Don't forget to send your DXpedition news, about any serious or holiday-style operations to **Bernie@dailydx.com**. Until next month, see you in the pileups!
— *Bernie, W3UR*

Jon Jones, NØJK, n0jk@arrl.org

The World Above 50 MHz

Autumn Weather Brings Tropo DX

Crisp September mornings and sunny days brought several outstanding tropospheric openings in September. On September 15 and 16, a high-pressure system settled over the eastern half of North America. Stations including KR1ST (FN21), WZ1V (FN31), and K1HTV (FM18) worked as far west as WAØI (EM39) in central Missouri on 2 meters. Ron, WZ1V, called it "the best tropo opening in 10 years." Tropo appeared again on September 25 and 26. That evening, stations in the Dallas-Fort Worth metroplex worked to New England.

Using Tropospheric Propagation for DX

Tropospheric propagation occurs when the differences in air temperature and humidity cause a gradient that can refract radio signals back to the Earth beyond the line-of-sight horizon. It is quite different than "skip" on HF radio, where the ionosphere bends and reflects radio signals. This takes place 50 – 250 miles high. Tropospheric propagation, or *tropo*, takes place only a mile or so above the Earth's surface. It is caused by a temperature inversion. This is a boundary layer where a sharp change takes place in temperature and humidity, usually caused by a layer of warm, dry air over cool, moist air. Normally the moisture content and temperature of the lower atmosphere decrease with altitude. In an inversion, the temperature suddenly rises, and the moisture content decreases significantly. Radio signals going through the inversion are bent and refracted back towards the Earth. Some inversions begin at the ground with fog. The inversions that are most useful for VHF/UHF DX take place 1,500 – 6,000 feet high. When a strong inversion occurs, the temperature rises, and the humidity of the air decreases in a layer. This can cause super refraction or ducting. The ability of air to refract radio signals is defined as *N*, which involves temperature, moisture content, and air pressure. Cool, moist air has a high *N* value. What we are interested in is the change in *N*, or *dN*. Tropospheric propagation is strongest where the index of refraction, or *dN*, changes sharply with altitude.

Not all radio signals are refracted to the same degree. It takes a higher *dN* (greater than 19) to refract 2-meter signals than 70-centimeter signals. The inversion layer depth also determines the frequency of signals that may be refracted. UHF signals can be refracted by shallow layers, lower frequencies need a deeper layer. For 50 MHz signals to refract by tropo, the layer needs to be over 1,000 feet thick. Microwave signals may be refracted by a layer only 100 feet thick.

Weather Systems and Tropo

The most common weather systems forming long-distance tropo are stable anticyclonic high-pressure systems and wave cyclones. Stable high-pressure systems occur in late summer and early fall. These bring the majority of long-distance and long-duration tropo openings. These high-pressure systems may stall out over eastern North America, and sometimes a hurricane may block them for days. The air in a high-pressure system sinks towards ground in a process called *subsidence*. As the air is forced down, it is compressed, heated, and dried. This creates layers of warm, dry air over cool moist air — an inversion. Subsidence thus creates strong, stable inversions.

According to Emil Pocock, W3EP, who wrote the article, "The Weather that Brings VHF DX" in the May 1983 issue of *QST*, wave cyclones can also create tropo. These systems occur in all months, most often in the spring. In these types of openings, cool moist air is drawn north under warm dry air to a strong low-pressure system. The September 15 tropo opening was created by a high-pressure subsidence system, which was blocked by Hurricane Sally. The opening on September 26 was more complex and appeared to be a combination of both a high-pressure system and a wave cyclone. Studying weather maps such as the Weather Channel's "classic surface maps" (which can be found at **www.weather.com/maps/currentusweather**) and Hepburn's Tropospheric forecasts (found at **www.dxinfocentre.com/tropo**) may give you clues for these openings.

On the Bands

50 MHz. Sporadic E appeared on September 6. K5ND (EM12), KØGU (DN70), and NØJK (EM28) copied XE2ML (DL74) on FT8. On September 12, XE1MEX (EL09) worked YS1RS and TI2CC in the ARRL September VHF Contest on E_s. Meteor scatter was good on Sunday morning of the ARRL VHF Contest. Jim, K5ND/R, in rare EM24, completed a number of MSK144 contacts, including AAØMZ (EM29) and NØLWF

Here and There

The Geminid meteor shower is predicted to peak this year on December 14 at 0100 UTC. The meteors are relatively slow at 35 kilometers per second. They are better for meteor scatter on 28 and 50 MHz than they are on 144 MHz. Based on the radiant location, the best path and times are north to south, 10 PM to midnight, and 0500 – 0700 local time.

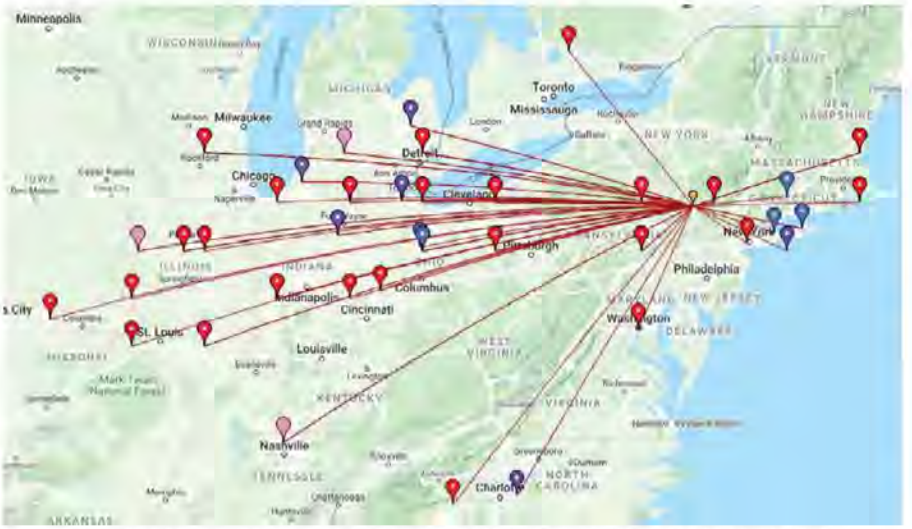


Figure 1 — The PSKReporter map of KR1ST (FN21), showing 2-meter openings out to the Midwest on the evening of September 15 (September 16 UTC). [**www.pskreporter.info/pskmap**]

Figure 2 — Mike White's, K7ULS, temporary antenna setup. [Mike White, K7ULS, photo]

(EN10). W9FF (EN40) and W8GEX (EM79) were loud on many bursts to EM28 for NØJK. NØLL (EM09) said NØLWF (EN10) was very loud on MSK144 tropo on September 25.

144 MHz. Tropo appeared often. On September 8, WZ1V (FN31) worked northeast to 50 W VA1WV (FN75) on FT8. On September 9, "JD," W1JD (FM18), heard W4EO in Richmond, Virginia, on 146.520 MHz, working stations in New England using a handheld transceiver with a rubber duck antenna on FM direct. KG4HOT (FM07) worked stations in Nova Scotia. JD worked KT1R in West Virginia and north to W1VD (FN31) with 25 W and a seven-element Yagi. Joe, K1YOW (FN42), used NOAA weather radar to help him find tropo. He worked stations from Nova Scotia to Virginia on FT8.

Hepburn's maps suggested the potential for tropo on Sunday evening of the ARRL VHF Contest on September 13. But the tropo came in the following 2 days after the contest.The tropo settled into the Midwest on September 14 (see Figure 1). KFØM (EM17) worked stations into Texas. On September 15, NØJK (EM28) worked northeast to K9MU (EN44) on FT8.

The tropo drifted east, and K1HTV (FM18) said the band was open continuously from 0130Z on September 16 to 0300Z on the 17th. He worked 66 stations in 14 states on FT8. The best DX contact for Rich was with WAØI (EM39) and "one of the more interesting contacts was with K2DRH at 1730Z (1:30 PM EDT) on 2-meter FT8." Alex, KR1ST (FN21), made 57 contacts on 2-meter FT8 with 800 W and a nine-element Yagi. WZ1V (FN31) said his best DX was with WAØI. WZ1V found WB4OMG (EL98) on tropo in the 2-meter Sprint on September 22 on FT8.

On Friday, September 25, K5SW (EM25) and KFØM (EM17) worked Arliss, W7XU (EN13), on SSB tropo. On Saturday, September 26, NØJK (EM28) and KFØM (EM17) found 2 meters "wide open" from Kansas to Georgia, Ohio, Michigan, and south to Texas on tropo at 1300Z. With 50 W and a seven-element Yagi on FT8, NØJK worked southeast to W4IMD (EM84), east to WB8ART (EM79), and south to K5VW (EM00). KFØM worked stations in Georgia, Mississippi, Texas, Illinois, and Ohio. That evening, the tropo moved south of Kansas.

From grid EM12, Jim, K5ND, worked K3SX (FM19) on FT8 with only 100 W and a six-element Yagi. He added 20 new grids and has a blog about the opening at **www.k5nd.net/2020/09/tropo-on-two-exceptional-opening-into-the-midwest**.

222 MHz. Mike, K7ULS (DN41), worked Ray, WA4NJP (EM84), via JT65 EME on September 5 at 0420Z (see Figure 2). KR1ST and WZ1V (FN31) logged KA9CFD (EN41) on September 16 over 1,300 kilometers on FT8 tropo. W5AFY put KU8Y (EN61) in his log on tropo on September 26.

432 MHz. K1YOW (FN42) worked W3IP (FM19) on September 13 on FT8 at 651 kilometers with 75 W and a "chimney-mounted small Yagi." KR1ST added AA9MY (EN50), and NY2NY (FN30) logged N9AKR (EN61). W5AFY (EM04) logged W9UHF (EN71) on September 26.

902 MHz. W5LUA (EM12) worked KU8Y (EN61) on FT8 tropo on September 26.

1296 MHz. Ron, WZ1V (FN31) worked KO4YC (FM17) and K2CKA (FM06) on SSB tropo on September 7. KR1ST (FN21) logged KU8Y (EN71) at 897 kilometers, and WZ1V worked N8LRG (EN81) on September 16. On September 26, K5SW (EM25) and KFØM (EM17) logged K5IM (EM20) on CW.

Maty Weinberg, KB1EIB, events@arrl.org; www.arrl.org/special-event-stations

Special Event Stations

Working special event stations is an enjoyable way to help commemorate history. Many provide a special QSL card or certificate!

Through Dec. 31, 0000Z – 2359Z, W5YD, Mississippi State, MS. Mississippi State University Amateur Radio Club. **W5YD Centennial Celebration**. 80, 40, 20, and 17 meters. QSL. Mississippi State University Amateur Radio Club, Dept. of Physics & Astronomy, P.O. Box 5167, Mississippi State, MS 39762-5167. **www.w5yd.org.msstate.edu**

Through Dec. 31, 0000Z – 2359Z, various call signs, various cities, IA. Great River Amateur Radio Club. **Iowa State Parks On-the-Air Centennial Celebration**. All bands, all frequencies, as available. Certificate & QSL. IASPOTA-2020, Great River Amateur Radio Club, P.O. Box 1384, Dubuque, IA 52004. *Members will operate with their own call signs from state parks throughout Iowa. QSL for contact; certificate for five parks. See website for complete information.* **www.w0dbq.org/iaspota**

Nov. 7 – Nov. 15, 0001Z – 2359Z, K8BF, Mantua, OH. Portage County Amateur Radio Service. **15th Anniversary**. 21.315 14.285 7.185 3.815; 160, 80, 40, 20, 15, 10, 6, and 2 meters; 70 centimeters, and EchoLink (K8SRR); all modes. Certificate. Tom Parkinson, 9992 State Route 700, Mantua, OH 44255. **www.portcars.org**

Nov. 7 – Dec. 4, 1800Z – 2000Z, GB200FN, Romsey, United Kingdom, RSGB. **Florence Nightingale Bicentenary 2020**. 14.210 3.665. QSL. John Wakefield, Oakhurst, Lower Common Rd., Romsey SO51 6BT, United Kingdom. **www.qrz.com/db/gb200fn**

Nov. 14, 1300Z – 1900Z, W1M, Russell, MA. Western Massachusetts Council/BSA. **Woronoco Heights Outdoor Adventure/SCOTA**. 14.290 14.060 10.115 7.190. QSL. Tom Barker, 329 Faraway Rd., Whitefield, NH 03598. *All logging is done on paper, then uploaded to LoTW and eQSL. W1M will operate on Brandmeister TG 3100 for demonstration purposes. Expect to see different call signs.*

Nov. 17, 1500Z – 2100Z, W3GH, New Kensington, PA. Skyview Radio Society. **Founders Day**. 14.260 7.240. QSL. Skyview Radio Society, Founders Day Event, 2335 Turkey Ridge Rd., New Kensington, PA 15068. **jfpainter@yahoo.com**

Nov. 19 – Nov. 21, 1800Z – 1900Z, KM4PMO/W4H, Mars Hill, NC. High Appalachian Mountain Amateur Radio Society. **Hammarlund Hullabaloo**. 14.250 7.250. Certificate & QSL. Jerry H. Robinson, P.O. Box 366, Mars Hill, NC 28754-0366. *Crank up your Hammarlund radios and make contact with us. Contacts by other radios are, of course, also welcome.* **JerryRobinson@ieee.org**

Nov. 21, 0800Z – 2000Z, K9S, Belleville, IL. St. Clair Amateur Radio Club. **175th Anniversary of Concordia United Church of Christ**. 14.380 14.350 14, 340 14.250. QSL. Len Peak, 108 Sheffield Dr., Belleville, IL 62223. **www.scarc.net**

Dec. 4 – Dec. 14, 1300Z – 2200Z, W2W, Baltimore, MD. Amateur Radio Club of the National Electronics Museum. **Pearl Harbor Day Commemoration**. 14.241 14.041 7.241 7.041. Certificate & QSL. W2W Pearl Harbor, P.O. Box 1693, MS 4015, Baltimore, MD 21203. *Club members will operate from their home stations. Primary operation will be Dec. 4 – 7, with additional operation possible between Dec. 8 – 14; operation on 80 meters (3.541, 3.841) and digital modes possible.* **www.ww-2.us**

Dec. 5, 1300Z – 1900Z, W1M, Russell, MA. Western Massachusetts Council/BSA. **Woronoco Heights Outdoor Adventure/SCOTA** 14.290 14.060 10.115 7.190. Certificate. Tom Barker, 329 Faraway Rd., Whitefield, NH 03598. *All logging is done on paper and then uploaded to LoTW and eQSL. W1M will operate on Brandmeister TG 3100 for demonstration purposes. Expect to see different call signs.*

Dec. 5, 1300Z – 2200Z, W9WWI, Bethlehem, IN. Clark County Amateur Radio Club of Indiana. **Christmas in Bethlehem**. 14.240; all bands, all modes. Certificate. W9WWI, P.O. Box 201, Sellersburg, IN 47172. **www.clarkcountyarc.org**

Dec. 5 – Dec. 6, 0500Z – 0500Z, W8A, Kent, OH. Breweries On The Air. **Celebrating the 21st Amendment to the US Constitution**. 14.240 7.240. Certificate. Thomas R. Sly, WB8LCD, 1480 Lake Martin Dr., Kent, OH 44240. **www.breweriesontheair.com**

Dec. 7, 1600Z – 2130Z, W5KID, Baton Rouge, LA. Baton Rouge Amateur Radio Club. **Pearl Harbor Remembrance Day**. 14.250 14.035 7.225 7.035. QSL. USS *Kidd* Amateur Radio Club, 305 S. River Rd., Baton Rouge, LA 70802. **qrz.com/db/w5kid**

Dec. 12, 1700Z – 2359Z, NI6IW, San Diego, CA. USS *Midway* (CV-41) Museum Ship. **Commemorating Pearl Harbor Remembrance Day** .14.320 7.250 14.070 (PSK31) D-STAR on various reflectors. QSL. USS *Midway* Museum Ship (COMEDTRA), 910 N. Harbor Dr., San Diego, CA 92101.

Dec. 17 – Dec. 20, 1400Z – 2200Z, WX3MAS, Nazareth, PA. Christmas City Amateur Radio Club. **WX3MAS Special Event**. 14.265 7.270 3.850; CW and PSK31 on 20 and 40 meters, and FT8. Certificate & QSL. WX3MAS, 14 Gracedale Ave., Greystone Building, Nazareth, PA 18064. **www.dlarc.org**

Dec. 17 – Dec. 24, 1400Z – 2300Z, KC5OUR, Belen, NM. Valencia County Amateur Radio Association. **Bethlehem on the Air**. 21.283 14.283 7.183 3.883. QSL. VCARA, P.O. Box 268, Peralta, NM 87068. **kc5our@arrl.net** *or* **www.kc5our.com**

Dec. 18 – Dec. 20, 0000Z – 2359Z, W4A, Bluff City, TN. N9EN. **Major Edwin Howard Armstrong Memorial Special Event Operation**.14.040 7.020 3.530. QSL. Via bureau, or direct to Brad Anbro, N9EN, 1118 Walnut Grove Rd., Bluff City, TN 37618.

Dec. 18 – Dec. 24, 0001Z – 2359Z, W4F, Vienna, VA. Vienna Wireless Society. **120th Anniversary of the First Wireless Voice Transmission**. 14.250 7.185; 80, 40, 20, 15,10, 6, and 2 meters, CW and SSB, as well as FT8 using fox/hound mode. QSL. Vienna Wireless Society, W4F, P.O. Box 418, Vienna, VA 22183. **www.viennawireless.net**

Dec. 19 – Dec. 20, 1400Z – 2200Z, W2XMN & W2XEA, Loxahatchee, FL. Major Edwin H. Armstrong Memorial Radio Club. **130th Birthday of Major Edwin H. Armstrong**. 28.400 18.150 14.265 7.195. QSL. Major Edwin H. Armstrong Memorial Radio Club, P.O. Box 1584, Loxahatchee, FL 33470. **www.qrz.com/db/w2xmn**

Certificates and QSL cards: To obtain a certificate from any of the special event stations offering them, send your QSO information along with a 9 × 12 inch self-addressed, stamped envelope (three units of postage) to the address listed in the announcement. To receive a special event QSL card (when offered), be sure to include a self-addressed, stamped business envelope along with your QSL card and QSO information.

Submissions must be received by ARRL HQ no later than the 1st of the second month preceding the publication date; a special event listing for **March** *QST* would have to be received by **January 1**.

Certificate of Code Proficiency

Recipients

Sponsored by VIBROPLEX
www.vibroplex.com

This month, ARRL and Vibroplex recognize merit and progress in Morse code proficiency on the part of the following individuals, who have achieved proficiency at the following rates, in words per minute.

June 2020

Michael P. Essi, K8WZY	10
Richard J. Gibilisco, NE0J	10
Kenneth A. Knox, KD2KEH	10
Mark A. Rollings, N5JJC	10
Byron L. Smith, W9ELM	10
Gary G. Swenson, KA2HAN	10
Christopher H. Tenev, K2QFA	10
Richard W. Candelent, KE1RC	15
John M. Carlson, K0HD	15
Maynard L. Denny, K4WMT	15
Steven K. Jenkins, W4MGT	15
Colin K. Phoon, AE3A	15
Maynard L. Denny, K4WMT	20
Ronald J. Hollas, K8RJH	20
Steven K. Jenkins, W4MGT	20
Garth R. Kennedy, W9KJ	20
Juan P. Munoz, KC2FKM	20
Robin L. Zinsmaster, N6PHP	20
Leland R. Bond, N7KC	25
Ronald J. Hollas, K8RJH	25
Lynn R. Landin, WB0U	25
Murray A. Scott, KE8UM	25
Jay P. Jenkins, WE2KEY	40

July 2020

John T. Clement, Sr., NM2R	10
Andrew M. Majot, K5QO	10
John P. Scruggs, N4JRC	10
Samuel P. Unruh, K0SPU	10
Sean Walberg, KN4ZMA	10
William J. Wilkes, Jr., K4EMU	10
Paul A. Gierow, KN4NVU	15
Robert S. Boles, W4SB	25
Garth R. Kennedy, W9KJ	25
Arnold M. Podolsky, W8DU	25
Frank P. Arciuolo, W1ZAH	30
Juan P. Munoz, KC2FKM	40

August 2020

Gary G. Gimmestad, K9KOE	10
John D. LeJeune, KR4CC	10
John D. LeJeune, KR4CC	15
Brian E. Lewis, KO4AXD	15
Gary G. Swenson, KA2HAN	15
Christopher H. Tenev, K2QFA	15
Nancy K. Wigginton, N1GFV	20
Philip L. Graitcer, K3UT	25
Larry A. Miller, NR3R	25
Michael E. Snook, W7LG	25

September 2020

William A. Freeman, KE1G	10
Roger Hillson, KM4LHZ	10
Lloyd L. Lank, KD0I	10
Joseph S. Kennedy, WQ6Q	15
Robert E. Rightmire, WA7YNU	15
Robert L. Heider, W0EJO	20
J. Michael Shaw, Sr., K2LRE	20
Larry A. Miller, NR3R	30
John T. Pescatore, K3TN	30

Congratulations to all the recipients.

December 2020 W1AW Qualifying Runs

W1AW, the Hiram Percy Maxim Memorial Station at ARRL Headquarters in Newington, Connecticut, transmits Morse code Qualifying Runs to assist ham radio operators in increasing and perfecting their proficiency in Morse code. Amateur radio operators can earn a Certificate of Code Proficiency or endorsements by listening to W1AW Qualifying Runs.

December Qualifying Runs will be transmitted by W1AW in Newington, Connecticut at the times shown at 1.802.5, 3.581.5, 7.047.5, 14.047.5, 18.097.5, 21.067.5, 28.067.5, 50.350, and 147.555 MHz. The West Coast Qualifying Runs are tentatively scheduled to be transmitted by K6KPH on Saturday, December 12 at 2 PM PST (2200 UTC) on 3581.5, 7047.5, 14047.5, and 18097.5 kHz. Unless indicated otherwise, sending speeds are from 10 to 40 WPM.

Amateur radio operators who participate in Qualifying Runs may submit proof of 1 minute of the highest speed they have copied in the hope of qualifying for the Certificate of Code Proficiency, or an endorsement to their existing certificate.

Legibly copy at least 1 minute of text by hand, and mail the sheet to: W1AW Qualifying Runs, 225 Main St., Newington, CT USA 06111.

Include $10 (check or money order) if this is a submission for your initial Code Proficiency certificate; $7.50 if you are applying for an endorsement (available for speeds up to 40 WPM). Your test will be checked against the actual transmissions to determine if you have qualified.

For more information about Qualifying Runs, please visit **www.arrl.org/qualifying-run-schedule**.

For information about how to qualify for the Certificate of Code Proficiency, please visit **www.arrl.org/code-proficiency-certificate**.

W1AW Code Proficiency Schedule — December 2020
(All times are in Eastern Standard Time)

Monday	Tuesday	Wednesday	Thursday	Friday
12/7 4 PM – 2100Z 10 – 35 WPM	**12/8** 7 PM – 0000Z **(12/9 – UTC)** 35 – 10 WPM		**12/10** 10 PM – 0300Z **(12/11 – UTC)** 10 – 40 WPM	**12/11** 9 AM – 1400Z 10 – 35 WPM
	12/15 4 PM – 2100Z 10 – 35 WPM	**12/16** 7 PM – 0000Z **(12/17 – UTC)** 10 – 40 WPM	**12/17** 9 AM – 1400Z 35 – 10 WPM	**12/18** 10 PM – 0300Z **(12/19 – UTC)** 10 – 35 WPM
12/21 4 PM – 2100Z 10 – 40 WPM	**12/22** 9 AM – 1400Z 10 – 35 WPM	**12/23** 10 PM – 0300Z **(12/24 – UTC)** 35 – 10 WPM	**Christmas Eve**	**Christmas**
12/28 10 PM – 0300Z **(12/29 – UTC)** 10 – 40 WPM		**12/30** 10 PM – 0300Z **(12/31 – UTC)** 10 – 40 WPM	**New Year's Eve**	

Convention and Hamfest Calendar

A = AUCTION
D = DEALERS / VENDORS
F = FLEA MARKET
H = HANDICAP ACCESS
Q = FIELD CHECKING OF QSL CARDS
R = REFRESHMENTS
S = SEMINARS / PRESENTATIONS
T = TAILGATING
V = VE SESSIONS

Abbreviations

Spr = Sponsor
Tl = Talk-in frequency
Adm = Admission

WEST CENTRAL FLORIDA SECTION CONVENTION

December 11 – 12, Plant City, FL
D F H Q R S T V
Friday 1 – 6 PM, Saturday 8 AM – 4 PM. *Spr:* Florida Gulf Coast ARC. Florida Strawberry Festival Grounds, Expo Building, 301 Berryfest St. Tampa Bay Hamfest. *Adm:* Advance $9, door $10. **www.tampabayhamfest.com**

Maryland (Cheltenham) — Dec. 12 D F H R T V
8:30 AM – noon. Spr: American Legion and Prince George's ERA. American Legion Youth Camp, 9201 Surratts Rd. *Tl*: 145.23 (110.9 Hz). *Adm*: $6. **www.pgares.org**

New York (Marathon) — Jan. 9 F H R V
7 AM – noon. Spr: Skyline ARC of Cortland, NY. Marathon NY Civic Center, 16 Brink St. Tl: 147.18 (71.9 Hz). *Adm*: $5. **www.skylineradioclub.org**

NEW YORK CITY — LONG ISLAND SECTION CONVENTION

January 9, Brookville, NY
S
7:30 AM, forums start at 9 AM. *Spr:* Ham Radio University ARC. Ham Radio University, Virtual Hamfest. *Adm:* Free. **www.hamradiouniversity.org**

Wisconsin (Racine) — Jan. 9 F H R S V
8 AM – 1 PM. *Spr:* West Allis RAC. EAA Chapter 838 Hangar and Museum, 3333 N. Green Bay Rd. *Tl:* 147.4+600 (127.3 Hz). *Adm:* Advance $6, door $7. **www.warac.org/sawp/index.htm**

To All Event Sponsors

Before making a final decision on a date for your event, you are encouraged to check the Hamfest and Convention Database (**www.arrl.org/hamfests-and-conventions-calendar**) for events that may already be scheduled in your area on that date. See **www.arrl.org/hamfest-convention-application** for an online registration form.

The deadline for receipt of items for this column is the **1st of the second month preceding publication date**. For example, your information must arrive at HQ by **October 1** to be listed in the **December** issue.

ARRL VEC Volunteer Examiner Honor Roll

The ARRL VEC Honor Roll recognizes the top five Volunteer Examiners in each ARRL Division according to the total number of ARRL exam sessions in which they have participated since their accreditations. Considering each session requires an average time commitment of 2 to 4 hours or more, the thousands of hours these VEs have invested represent extraordinary dedication! Whether you are one of our VE Teams that tests once a week, once a month, or once a year, we want to express our warmest appreciation to all volunteers for your generous contribution to the ARRL VEC program.

If you are an ARRL VE, you can view your session stats online at **www.arrl.org/ve-session-counts**.
If you are not a VE, become one today! See **www.arrl.org/become-an-arrl-ve**.

Examiner	Sessions	Accreditation Date
Atlantic		
Jobst Vandrey, AC0LP	324	23-Jun-08
James McCloskey, NS3K	320	14-Nov-94
Edward Genoino, WA2NDA	298	10-Jul-85
George Brechmann, N3HBT	280	01-Apr-91
William Klepser, Jr., WB2AIV	215	09-Jun-99
Central		
Ed Wagner, AB9FN	351	01-Jul-02
Allan Bukowski, N9ZD	319	01-Jun-92
Eldon Boehm, NK9U	316	21-Nov-86
Donald Hlinsky, N9IZU	305	01-Mar-91
Timothy Pechtold, AA9BV	277	01-Nov-92
Dakota		
John Schwarz, Jr., AE0AL	309	26-Oct-94
Jeffrey Goodnuff, W0KF	308	17-Jun-03
Shep Shepardson, N0NMZ	255	12-Mar-01
Daniel Royer, KE0OR	239	01-Jul-91
Dennis Ackerman, KB0OQQ	221	15-Jul-96
Delta		
Arthur Parry, Jr., WB4BGX	269	01-May-91
Joe Lowenthal, WA4OVO	252	25-May-06
Roger Gray, N5QS	233	01-Mar-93
Bobbie Williams, W1BEW	222	01-Jun-92
Dawn Gray, N5QT	215	01-Mar-93
Great Lakes		
Charles Hall, W8HF	286	01-Jun-92
David Potter, KE8OHG	261	03-Jun-20
Archie Mack, Sr., AF4EB	228	19-Aug-97
Dale Pritchett, KC8HJL	223	26-Mar-98
Christian Anderson, Sr., K8VJ	220	09-Feb-90

Examiner	Sessions	Accreditation Date
Hudson		
Paul Maytan, AC2T	671	06-Sep-84
Stanley Rothman, WA2NRV	462	01-Mar-85
E. Drew Moore, W2OU	448	01-Aug-90
Fritz Boigris, KB2O	428	26-Oct-84
Gerald Miller, Jr., AA2ZJ	402	05-Dec-95
Midwest		
David Bartholomew, AB0TO	725	22-Mar-02
Kevin Naumann, N0WDG	637	17-Nov-02
Harry Steger, Jr., W0HMS	562	26-Aug-08
Roland Kramer, W0RL	527	21-Jun-01
Jeanette Nordman, AB0YX	460	21-Aug-03
New England		
Bob Phinney, K5TEC	801	20-Jan-14
Paul Lux, K1PL	422	25-Jan-85
Robert Beaudet, W1YRC	388	01-Aug-90
Bruce Anderson, W1LUS	340	11-Feb-88
Lawrence Polowy, KU1L	338	02-Jan-85
Northwestern		
Richard Morgan, KD7GIE	450	11-Aug-00
Loren Hole, KK7M	381	06-Sep-84
George Ftikas, N7TQZ	302	01-Dec-92
S. Riley McLean, W7RIL	301	02-Sep-99
David Brooks, N7HT	300	10-Jun-87
Pacific		
Morris Jones, AD6ZH	482	27-Nov-01
Dieter Stussy, KD6LVW	420	27-Jan-94
Gordon Fuller, WB6OVH	351	06-Sep-84
Bill Nichols, NN7K	333	01-Sep-93
Jim Brunk, N6BHX	285	13-Jul-95

Examiner	Sessions	Accreditation Date
Roanoke		
Judy Friel, AC4RG	289	01-Feb-91
Alan Ronald Moeck, WA2RPX	264	27-Sep-94
David Snyder, W4SAR	249	01-May-93
Sheila Frank, KT4YW	221	30-Oct-96
Terry Sanner, WV8V	217	06-Sep-84
Rocky Mountain		
Robert Hamilton, N0RN	389	19-May-87
David Avery, N0HEQ	301	13-Jan-88
Jeffrey Weinberg, W0QO	299	01-Apr-93
Donald Baune, AC0EX	259	19-Sep-06
David Sharpe, KI0HG	257	02-Feb-98
Southeastern		
*Gary Lee Pike, KA4KBX	1,507	03-Sep-09
Collin Pike, KJ4AXB	851	26-Apr-11
Anna Grogan Pike, KD4PCU	773	18-Aug-09
Justin Lee Pike, KJ4AXF	773	12-Nov-12
Ryan Krenzischek, W4NTR	761	04-Jan-13
Southwestern		
Bill Martin, AI0D	1,063	01-Nov-84
Fred Bollinger, AB7JF	538	17-Apr-95
David Morrill, N7TWT	438	20-Jul-00
Bruce Ziemienski, WA6BZ	321	25-Mar-02
Richard Buck, KC7OCT	312	21-May-97
West Gulf		
Franz Laugermann, K3FL	1,044	01-Dec-91
Gerald Grant, WB5R	483	04-Jan-85
Adolph Chris Koehler, K5VCR	474	29-Sep-95
Wilbert Cannonier, KK5JJ	469	03-Nov-95
Daniel Quigley, N7HQ	468	24-Apr-20

*Congratulations to Gary Lee Pike, KA4KBX, from Roanoke, Alabama (Southeastern Division), the third VE to reach 1,000 session participation!

A Look Back

QST
February 1971
75 Cents
devoted entirely to
amateur radio
OFFICIAL JOURNAL OF THE ARRL
ARRL

A Ham in the People's Paradise

Panmunjom, December 23, 1968. The crew of the *Pueblo* (including K1SCQ, WA6KXE, and K7RSM) crosses the "Bridge Of No Return" to freedom. *(U.S. Navy photo)*

BY RALPH McCLINTOCK,* K1SCQ

ROBOT SAT squarely on his padded chair expounding on the greatness of the Korean mechanized agrarian society which over his shoulder looked strangely like a brownish-gray ox pulling a single-blade plow. But my mind was about 12,000 miles away as my fingers tapped out the QSO I was in with FB8ZZ. The QRM was bad but we could make a fairly good go of it. After him, Paul FR7ZC/MM called and said he was on his way back to Reunion. The band was going out fast – but not before Robot finished his lecture.

Robot was a senior major in the North Korean Red Army and he had just spent the past three hours enlightening us on the glorious achievements of Communism. It had been about six months since I had last had an actual QSO, let alone seen a receiver or anything remotely resembling a rig.

In December, 1967, I was a communications technician stationed with the U.S. Navy near Yokohama, Japan, and spending my off time operating as KA2KS. On December 27th, our section was standing a day watch (7:00 A.M. - 4:00 P.M.) when a few of us were asked by the division chief petty officer if we would like to go out on some trips. These "trips" were actually temporary assignments to various ships of the U.S. 7th Fleet and normally lasted from 30 to 60 days, after which time we would return to our home base of operations in Japan. In this batch were trips on aircraft carriers, including the U.S.S. *Enterprise*, destroyers and a new intelligence vessel which had just arrived in Japan, the U.S.S. *Pueblo*. After some bickering back and forth I wound up "volunteering" for a 30-day trip on the *Pueblo* to the coast of North Korea.

The "HL DXpedition"

On the afternoon of January 23, 1968, the ship was about 15 miles off the small island of YO-DO outside Wonsan Harbor, North Korea. We had finished a turkey dinner with all the trimmings and in two more days we would be back in Japan. The day watch was on and four of us had just gone up to relieve the men in the research shack so they could eat. Up to that time, we had been receiving and recording fire-control radars from the North Korean coast but now we were receiving a navigational radar from a high speed surface vessel. At about 1:30 P.M. from off the port bow, a North Korean SO-I class subchaser was approaching at high speed towards the *Pueblo* and the "DX-pedition" was about to begin.

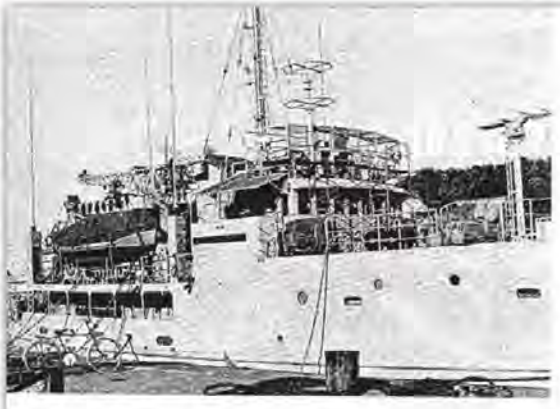
On watch, activity on the hf bands had not been too busy so I had time to drop one of my R-390As down to 14,220 MHz and was listening to Willard (WIJFG) and Charlie (WIFH) working some of the Far East DX that was getting through to the east coast. For most of the trip I had a chance to listen on the ham bands (we ran in silence so no transmitters were allowed on the air) and conditions on 20 were fairly decent. I didn't realize it then, but in about one hour I could be taking a sledge hammer and fire axe to those R-390As along with all the other juicy receiving equipment on board *Pueblo* (about five million dollars worth).

At about 1:30 P.M., as I said, the natives were getting really restless and we had brought up one of the transmitters on RTTY trying to raise Japan. While the natives began getting restless throwing spears (50-caliber machine gun and 57-millimeter cannon) at us, the crew held them off with a volley of four-letter words and the RTTY pecked away. Finally our ammunition was spent and the battle was over.

The rest is pretty much history and sometimes seems like too recent history. After the ship was tied up at Wonsan harbor the crew was tied and blindfolded and thrown on buses. We were then driven through what appeared to be a military base

Why should QST *record the account of Ralph McClintock, K1SCQ, who along with his shipmates on the* USS Pueblo, *spent many long months in a North Korean prison? Because ham radio was a valuable diversion during his internment. Here is his story.*

*44 Parkway Crescent, Milton, MA 02187.



Many hours of silent vicarious hamming were spent by the author aboard the *USS Pueblo* (AGER-2), shown here 20 days before her capture.

and crowds of civilians screaming "Kill American." The driver of the bus sounded like a woman and while driving through these crowds, she was continually blowing the horn. It was bad, but it was Morse code. She spelled out, perhaps a dozen times, MEGUKDIE. It was not for two months that I found out what she was sending. MEGUK simply meant "American National". Over the next nine months we discovered that all of the people in the Korean People's Army were quite proficient at code.

C. W. Communication!

We were kept eight in a room, and guards would come in at all hours spelling out various things in code. Their favorite was to use Q signals for different questions they were trying to ask.

The one that always got me was when a six-and-a-half-foot guard would kick the door in and stand there with his AK-47 sub-machine gun and simply say in a high pitched voice "LALALILA – LILILI - LILA." I finally broke down the QRM and figured out he was sending "DADADITDA - DITDITDIT - DITDA." I was sorry, but I had to give him a "DITDITDIDITDIT - DADADADADIT - DITDITDITDITDIT;" he just had to get that bad chirp out of his transmitter!

As the days dragged on into weeks and the weeks dragged on into months, we settled down into a life of waiting – mainly waiting for night, so that we would be alone and there would be freedom in sleep. From time to time the Koreans would come up with schemes to speed our "Repatriation"and reunion with our grief-stricken families, or simply more junk propaganda.

Letters Home

The first important program was a series of letters to our families telling them of the kind and lenient treatment (they leniently beat us into line with their kindly kicks) and how the U.S. Government must admit and apologize for the grave criminal acts of *Pueblo*. After these first letters we fell into the system of writing and rewriting them at least ten times. They would first spend about two days telling us what we would put in them. We would then sit down and write a chatty letter to home, not even mentioning the *Pueblo* or the fact that we were in North Korea. Through the process of American ingenuity and Korean confusion, we would arrive at a letter they would approve of.

In the second series of letters in August, 1968, I wrote a letter to my mother. I was trying to put as much meaningless dribble in it about as many people as I could. The purpose being to show that we did have some part in writing the letter and that we still did have some sanity. The one passage I did add that I later lived to regret was one concerning my cohort in crime, Al Burnett, WIJNV. The letter was five pages long and one of the statements was, "You might call Al and tell him I hope his swinging link is better but if it's not, to keep taking his medicine as Dr. Pabst and Dr. Coax had ordered." Good old Al and his bottle of Pabst Ale (adds at least .3uv sensitivity to the receiver). About a month and a half later I was taken down to see Robot and he produced a picture of "Uncle Al McClintock" standing next to a radio antenna in Vietnam. Al works as a heavy crane operator at the General Dynamics Shipyard in Quincy, Mass. The picture was taken one afternoon after he came home from work when he was in his coveralls standing next to his beam and tower, and wouldn't you know it, his work clothes were green along with a green swampy background. But the worst of all was the fact that he was sticking his tongue out.

That one took about three days to explain and it finally came down to my convincing them that Al was crazy and the picture was taken at a mental hospital where he was being treated for his swinging link.

Freedom Planning

On summer afternoons we were taken out for "sports time." Starting with pushups and jumping jacks, we progressed into kickball, soccer, and basketball. After some time the soccer was transformed into American football with 15 to 20 men on a side. We started with tag football but with all the built up emotions and aggressions inside, we started taking them out on ourselves and it soon evolved into semi-tackle football. After a broken nose playing football, dislocated knee playing basketball, and a broken finger playing kickball, we wound up with 41 men on a side for "volleyball." With this many men playing volleyball you don't get much exercise so a lot of us started jogging. There were two other hams on *Pueblo*, Dave Ritter, WA6KXE, from Northridge, California, and Mike (Axle) Alexander, K7RSM, from Richland, Washington. I had known Dave for about a year back at KA2KS, and we would talk continually about equipment and antennas. He had been working in his room on a mobile linear to run one-kilowatt peak, taking a space of about six inches square. I got interested in the ideas and we worked out plans for marketing it "when we got out." It featured a broadband toroidal input-output circuit utilizing a tube like the 8122 or the

Except for "sports time" and thinking ham radio, there was little entertainment provided by the captors. Here the author (right) and a shipmate pretend to concentrate on a game of chess. This photo by the North Koreans was staged (both kings were placed on the board in the check-mate position).

4CX350. The plans looked great and if everything worked it would have a single band switch and loading capacitor for controls. It seemed paradoxical to sit in our rooms, with all of the usual anti-American literature deploring capitalism in front of us, while we thought continually of how to make money "when we got out."

Along about August through the first part of September, things were going badly for the Koreans at the Panmunjom talks. The propaganda schemes were getting nowhere and under no circumstances would the U.S. believe that the *Pueblo* ever did intrude – and stated emphatically that the ship was seized in international waters. The only thing the Koreans could ever come up with was more of the same propaganda.

"Radio" Appeals

This time there was going to be a slight twist to it. We were going to make radio appeals aimed at the U.S. They wanted us to choose prominent people in the U.S. who would be in a position to help us in our dilemma. In the last campaigns we had literally earned our battle scars, so now we knew the routine. We would begin with massive resistance toward the Korean plans and then turn around and go along with them. As I said before, by doing this, we could keep guessing and generally get more by their censors.

Our crew was busy picking prominent people to make appeals to such as the sewer commissioner of Kalamazoo, Michigan or the great humanitarian Elmer Suggins. Considering the situation at hand, there seemed only one person to appeal to other than the Divine Being, that being K7UGA.

I sat for four days writing my appeal and after it was finished I was branded everything from a coward to a collaborator (the exact words are not quite printable) by the crew, till they were educated. The Koreans were pretty up on what they wanted for these appeals so it was going to take something special to get through this time. The best approach was to give them what they wanted the first time and to work it to a point where as editing of the tape recording later by the Koreans would render it meaningless. Because of this, I concentrated all of my efforts on the first two sentences.

Dear Senator Goldwater.

You may not recall, but we first met in *Kansas* on the 7th of May at *Uncle George Appleby's*. We also met later at *Quentin, Rose* and *Roger Raymond's*.

I leave it to the reader to "break" the cipher system. Anyways, the whole plan of radio appeals was dropped as the two sides at Panmunjom suddenly seemed closer on agreement. So the one thing I did want to get out of North Korea was never used, to my knowledge.

Expanding Horizons

The latter part of September, as I said, brought new expectations and for the first time we were taken out on trips to various points of interest in the country. Till this time, the only thing to look at, other than the required reading material, was the radar antenna on the hill in back of us and its associated Surface-to-Air-Missile battery. Each missile battery has three sets of radars with it, and this seemed to be the older Russian type, vintage around the mid 1950s. Being an avid DXer, I found this particular radar interesting because of its configuration. We were about a half a mile away from it and at that distance it looked as if it had two sets of diagonal spreaders about the size of a 20-meter quad. After eleven months of looking at it and listening to it turn, I was convinced the Koreans got stuck with one of our old propitch rotors we gave to the Russians during Lend-Lease.

To get back to the story, in September the buttering-up period began. For seven months we had been kicked, beaten and starved and to say the least, it blew our minds when the guards came in to see if we were well, or if we were warm at night. But the biggest thing of all was the meals. We now had some potatoes in the soup besides the turnips and grass (that's the green lawn type), the rice was now white and there weren't any 74-legged, crawly beasts running through it.

There were four little trips in all, three of them to Pyongyang, the capital, to see Army shows in which they do nothing else but kill Americans. The fourth and final trip was to a town called Sinchon which just happened to be 7 miles from the DMZ. Sinchon was the sight of a horror museum consisting of atrocities committed by the U.S. Army during the Korean War. They took us through bunkers where thousands of innocent women and children were supposedly burned alive, showed pictures of cities burned to the ground (looked strangely like *Life* magazine pictures of Nagasaki after the bomb) but the best of all were the pictures of U.S. spy activities in the 1930s.

The first photo was of an old U.S. Navy RBA receiver which the Koreans had labeled a "High Power Spy Transmitter." The second photo was of the hidden antenna system – or for the uninitiated, a church with a cross on top. After a ten-minute lecture on this display, the officer asked if any of us knew what this was. Being pretty sharp on military gear and having a big mouth, I volunteered (someday I'll learn), "That's definitely a Super snooper-detector-collector, Cracker-Jack-spy transbobulator, utilizing a Barabas cross antenna array." I said before, that Sinchon was about 7 miles from the DMZ and Panmunjom. When the trips began the scuttlebutt was pretty high that something was up, and you can imagine how we felt when we were given new clean clothes, haircuts and candy before we left for Sinchon.

Back to The Ranch

As it turned out, the negotiations at Panmunjom had speeded up and the Koreans were told the U.S. would sign an agreement saying that the *Pueblo* intruded into Korean waters and to have the crew ready to pass across the border. While we were enjoying the educational tour at Sinchon, we found out later the U.S. was telling the Koreans that they would never sign any agreement for there was no amount of documents they could be shown that would prove the ship was not captured in international waters. The train trip back to Pyongyang and the camp was something else. About the only thing I can relate it to is hearing Gus on a barren reef in the South Indian Ocean – you're the only one to hear him, he comes back and blows your call, then his rig fizzles out.

The months of October and November were times of utter boredom and disappointment. We were back to a diet of turnip soup and hot water. The boredom started to take its toll and we found ourselves arguing with each other to the point of fighting.

Once in a while, we would get a letter from home (2 months old) but about the strangest thing that happened occurred around November 5th. We knew the elections were coming up but that was about all. Robot came around one day passing out a few letters for us and he gave me a large white envelope. I claim a record for it so if anyone can top it I'd like to hear. The white envelope contained an absentee ballot for the 1968 Presidential elections. I thought the skipper, Captain Bucher, would bust a gut when he saw that thing.

December dragged on and we were in our 12th month of the DXpedition and still weren't on the air. Christmas was about two weeks away and we were at an all-time low. On December 12, 1968, we were taken up to the meeting room and met General Pak.

The Koreans read all of the U.S. news magazines, and all of them had pictures of us taken by the Koreans. These pictures were included in the two letters we had written home. The articles pointed out hand signals supposedly spelling out the word "help," as well as excerpts from our letters concerning meaningless dribble.

The General screamed and swore at us for the way we had used him and the generosity of the Korean people. We were told we would live to regret it and we would never cross them again. This was the beginning of hell week, the first time we really thought we might never make it.

They weren't pressed for time and because of this they were able to carry out a methodical system of beatings on each man. To make a long and painful story short, on the seventh day of hell week, the North Korean command at Panmunjom sent the word to get us ready to move out. This time the U.S.was ready to sign an agreement for our release and all I can say is it came just in time.

Again we boarded the trains for Sinchon then the buses to Panmunjom. At 11:30 A.M. Korean time, one by one we started across the Bridge of No Return. We had made it, 82 men and one dead shipmate, that of Duane Hodges, a tall quiet kid from Creswell, Oregon, blown to pieces 335 days before.

The flight across the Pacific and our return to the United States is history but something that none of us will ever forget. From my experiences, I do feel bad at times, but I will always be thankful to the North Koreans for one thing. They took 82 human beings and turned them into 82 good Americans, for this I can say thank you. QST

RULES FOR LIFE MEMBERSHIP

1. Life Membership is granted only by the Executive Committee, upon proper application from a Full (U.S. or Canadian licensed) Member.
2. The Life Membership fee is twenty times the annual dues rate, or currently $130.
3. An applicant may choose an alternative time-payment plan of 8 quarterly instalments, $16.25 each. In such instance he will be provided an interim two-year Full Membership certificate. Upon completion of the payments, the application will be presented to the Executive Committee for approval.
4. Life Memberships are non-transferable and dues payments are non-refundable. In the event an applicant is unable to complete payments on the instalment plan, he will be given a term of membership, at the annual dues rate, commensurate with payments received.
5. Other licensed amateurs in the same family, and at the same address, of a Life Member may retain or obtain Family Membership upon payment of the annual dues of $2, but without receipt of *QST*. The dues of the Family Member may be prepaid for any number of years in advance, but there is no special rate.
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Celebrating Our Legacy

Ham Radio Shaped My Career

At the age of 85, I think back to when I became a ham. I qualified for Novice and Technician licenses after my high school graduation in 1952. After one year as a Novice, I upgraded to General. In 1953, I volunteered for the United States Army Air Force's (USAAF) Aviation Cadet Training Program to become an aircraft navigator. My ham radio knowledge helped with some of the electronics training, especially with radar.

After graduating from the Aviation Cadet Training Program in 1955, I was assigned to USAAF's only squadron that did aerial electronic geodetic survey for mapmaking by the US Coast and Geodetic Survey. From the air, we measured distances between two ground radio sites using an airborne digital "ranging code" of the same type later used in GPS. Multisite measured data was then transformed into ground survey networks.

In 1958, my family and I left active duty so I could go back to college on the Korean GI bill. I quickly realized how much my ham radio and USAAF electronic experience helped me study electrical engineering. After graduating in 1962 with both a BS and MS, I then went to work for NASA.

I now realize that ham radio started me on my path to a very interesting professional life, guiding me to further education and to 25 years teaching in our local university. You never know where radio will take you.

John Painter, W5LQS
Bryan, Texas

Reconnecting on and off the Air

On Christmas Day in 1968, Metro Sinko, WB8ALM, and I had a CW contact on the 15-meter novice band

Mike Bald, K4MIA, working CW on the 15-meter Novice band.

running 75 W crystal-controlled oscillators. After a 20-minute contact, we said goodbye and later exchanged QSL cards. He was my first Ohio contact and I was his first Florida contact. It wasn't until 10 or 11 years ago that Metro entered every contact he ever made into an electronic log. When he entered my old call sign, **QRZ.com** referenced my new one, K4MIA. He sent me an email about our contact in 1968. On December 25, 2019, 51 years later, we made another contact. That short CW contact in 1968 eventually led to a lasting friendship.

Mike Bald, K4MIA
Loxahatchee, Florida

My Journey to Amateur Extra

I first got started with radio on a farm, by reading books and experimenting. I earned the first Citizens Band (CB) Radio Service license in my hometown of Springdale, Arkansas, in 1961. My issued call was 8Q1311.

After joining the Air Force in 1963, I was drafted into computer maintenance. During that time, I was still interested in radio. In 1966, I earned my Novice license at 25 years old, with the help of a friend. I didn't test for my General because I knew I wasn't ready for the code test. I built my own 40-meter transmitter using an antenna chassis from a ship. I made a crystal oscillator compartment using a 6AG7 tube. The final was a pair of 5933 tubes. I ran about 60 W into an antenna made out of three sections of electrical pipe on a Coca Cola bottle. The antenna was coupled with the coax by a tap on the coil to ground (believe it or not, this transmitter still works).

I managed to find a surplus receiver while working at the United States Air Force Military Auxiliary Radio System (AFMARS). The receiver was a 1942 Collins AN/ARR-15. The frequency range was 1500 to 18500 kc. I made some changes and a power supply for it. It was really good for 40-meter CW, but I sold it many years ago. Last year I found one, and I now have my Novice station back in action. However, the old Novice crystals are the wrong frequency.

In 1969, I moved to Miami, Florida. After the Air Force I worked for RCA in data processing. After a failed attempt in 1970, I earned my General-class license in 1971. It was hard for me to pass the 13 words per minute test. During this time, I put together a Heathkit SB-102 and used it for many years. In 2006, I earned my Amateur Extra-class license. It's been a long and happy journey since earning my CB license on the farm in Arkansas.

Gary Stutts, WB4SRR
Melbourne, Florida

Send reminiscences of your early days in radio to "Celebrating Our Legacy," ARRL, 225 Main St., Newington, CT 06111 or **celebrate@arrl.org**. Submissions selected for publication will be edited for space and clarity. Material published in "Celebrating Our Legacy" may also appear in other ARRL media. The publishers of *QST* assume no responsibility for statements made in this column.

Harold Kramer, WJ1B, wj1b@arrl.net

Classic Radio

Ameco 2-Meter Converters

In the 1960s, the 2-meter band was hopping, because 2-meter phone privileges were given to Novice-class licensees. It was easy to acquire VHF receive capability by using your existing HF receiver with an inexpensive receive converter that converted VHF signals to HF signals, such as the then-popular line of Ameco Nuvistor VHF-to-HF receiving converters.

The CN144 Converter and the PS1 power supply connected. [Harold Kramer, WJ1B, photo]

Ameco Background

Ameco (American Electronics Company) sold ham equipment such as transmitters, converters, telegraph keys, and preamplifiers in the 1950s and continued through the '70s.

Ameco converters were available in three factory-wired models ($49.95), and three kit-form models ($34.95). We'll be focusing on the 1962 CN144W for 2 meters (see Figure 1), which used the Nuvistor tubes (see Figure 2), and the Model PS-1 Power Supply, which was sold separately as a wired and tested version ($11.50) or a kit version ($10.50).

2-Meter Converters

Along with a choice of input frequencies, these converters were available with a choice of three IF output frequencies: 7 – 1 MHz, 14 – 18 MHz, or 28 – 30 MHz. The IF bandwidth covered 4 MHz on 6 and 2 meters, and 5 MHz on 220 MHz. By using a converter, all the features of the communications receiver are retained, such as AGC control, RF gain, and filters. I used my Ameco 2-meter converter with my Hammarlund HQ-100A receiver at an IF frequency of 7 – 11 MHz.

These converters are not limited to one IF output. They could cover any frequency between 0.5 and 35 MHz. Ameco touted in their advertisements that the IF output could be easily changed by replacing a plug-in crystal and, in certain cases, by making some simple circuit modifications. The 7 – 11 MHz frequencies worked best with most inexpensive novice receivers, because it was their most RF sensitive range. With ham-band only receivers, the output frequency needed to be in the 10-meter band in order to obtain necessary bandwidth. Accessories for these converters included the PS-1 power supply and the Model CSB Converter Selector Box, which was used to switch any one of four converters into a single receiver.

The converters themselves were distinctive. They were long and narrow, with dimensions of 6¾ × 2 × 2½ inches. This allowed them to be conveniently placed on top of a receiver. Rather than a conventional steel chassis, both the power supply and the converters had what Ameco called a "satin copper" two-piece chassis. There was a hole on each side of the chassis that was evidently used to adjust internal tuning slugs; although

Figure 1 — The CN144 circuitry. [Harold Kramer, WJ1B, photo]

these adjustments were not mentioned in the operating instructions.

Another unusual feature was that the 50 Ω input and output connectors were "auto radio plugs," which were used to connect a car radio to its antenna. They also took up less room on the chassis. A procedure for attaching coax cable to these connectors was included in the operating instructions.

External Power Supply

The converters had no internal power supply. Ameco provided a matching model PS-1 power supply. The power supply measures 2.5 × 4.3 × 6.7 inches, and it also had a copper chassis (see Figure 2). The PS-1 had a female octal tube socket, and the CN converter had the matching male octal socket, so that the PS-1 plugged directly into the converter without any cables. It is a clever design that allowed rapidly moving a single power supply from device to device, as needed.

The PS-1 was a linear power supply with a selenium half-wave rectifier and a single pi-network for filtering the B+. There was no voltage regulator, no fuse, and no ground pin on the AC plug. It would not be considered safe by modern standards. It could be configured to run B+ or B– voltages, depending on an internal tap. According to Ameco, the power supply provides 6.3 V at 0.855 A for the filaments, and 100 – 125 V dc at 25 mA for the plates. The converters could be rewired for 12 V filaments for mobile or portable use. Ameco also suggested that power for the converter could be taken from a separate receiver, because many vacuum-tube receivers had accessory sockets for powering external devices. The operating instructions even included a hand-drawn schematic of a voltage regulator circuit, using an OB2 regulator tube for use with a receiver accessory socket.

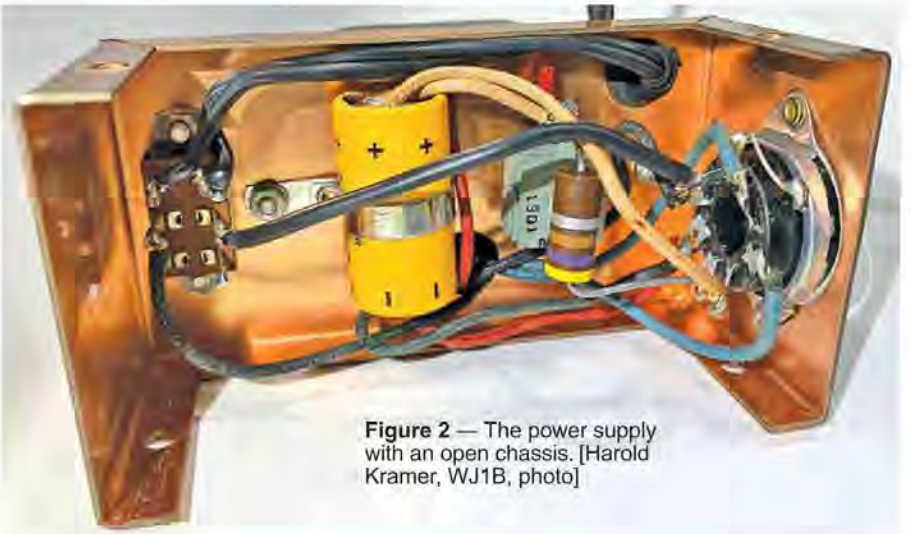

Figure 2 — The power supply with an open chassis. [Harold Kramer, WJ1B, photo]

Nuvistor Tubes

A schematic diagram of the converter was not supplied. Ed Tilton, W1HDQ (SK), wrote in the September 1962 issue of *QST*'s "Product Review" notes that "the first and second neutralized RF amplifiers are 6DS4 Nuvistors in cascade." He also noted that "the RF gain was controlled by a knob on the front of the converter by varying the cathode resistor in the second RF amplifier."

Ameco's instructions noted that the second RF amplifier was followed by another 6DS4 Nuvistor mixer, for a total of three Nuvistor tubes. A conventional 6J6 tube served as the crystal-controlled oscillator and multiplier. The instructions also stated, "The converter has excellent internal shielding and bypass components and provides high sensitivity and maximum rejection of spurious, unwanted signals."

The three different models have almost identical parts layouts with only some small variations due to component size differences. Ameco claimed 45 dB average gain, –3.0 dB noise on 2 meters, along with better than 70 dB image and spurious rejection. The *QST* review had no quantitative data to verify these claims.

With their Nuvistor tubes, these Ameco converters were state of the art in the early '60s. Nuvistor tubes were developed by RCA, and they are

Figure 3 — The 6CW4 Nuvistor tube. [Harold Kramer, WJ1B, photo]

small metal and ceramic vacuum tubes that are the size of a thimble (see Figure 3). They are only ⅘ inches high, and they have tiny pin connectors at their base, along with two alignment tabs. While most Ameco used 6DS4 Nuvistors, some converters use 6CW4 Nuvistor tubes that were an earlier version of the 6DS4.

According to the RCA specifications sheet, Nuvistors "have excellent performance and low noise in the VHF and UHF range." RCA also claimed they "had high reliability, and high resistance to nuclear radiation, shock, and vibration." They also used a special RCA dark heater that operated as much as 350 Kelvin below conventional tube heaters.

VHF Operating

These relatively inexpensive, high-performance converters got many operators using VHF without having to purchase a separate VHF receiver. For many of us, this VHF experience early in our amateur radio careers created a lifelong interest in VHF operating.

100, 50, and 25 Years Ago

December 1920

- The cover art shows a cage antenna swinging above a snow-covered house, with the greeting, "Seasons greetings to all — from the nearest to the farthest."
- The editorial, "*QST* the World Over," reports that our favorite magazine has subscribers from many countries, with the latest being Syria.
- In "Dangerous Legislation Confronts Us," the editor reports that the Navy Department is proposing taking control of radio in the US, this time via Senate Bill S-4038.
- The editor discusses "Self-Rectifying C.W. Sets," and suggests some circuit examples.
- S. Kruse gives us Part II of "The Bureau of Standards — A.R.R.L. Tests of Short Wave Radio Signal Fading."
- "2QR Heard in Scotland?" reports that George Benzie of Aberdeenshire, Scotland, heard the radiophone signals (on October 6, 1920) from ARRL station 2QR, operated by Harold and Hugh Robinson of Keyport, New Jersey.

December 1970

- The cover photo shows W1FBY adjusting his new triband beam, described in this issue.
- The editorial questions if we need a Washington lobbyist in "Washington Lobby?" and decides that we don't.
- Wes Hayward, W7ZOI, presents "A Second-Generation MOSFET Receiver," in a detailed nine-page article.
- Douglas Blakeslee, W1KLK, and Carl Smith, W1ETU, provide "Some Notes on the Design and Construction of Grounded-Grid Linear Amplifiers." Eleven pages of them, to be exact!
- Kenneth Stone, K8ORD, describes his latest project, "SPAKEY, A Controlled-Space IC Keyer."
- Peter Zilliox, WA3EQK, reports on building "A High-Output VFO for a Beginner's Transmitter."
- Melvin Wilson, W2BOC, gives us Part I of "Midlatitude Intense Sporadic-E Propagation," discussing its causes and results.
- Jan King, W3GEY, presents us with a summary of "Australis-Oscar 5 Spacecraft Performance."

December 1995

- The cover photo shows a jolly old Santa (a.k.a. Bill Moore, KC1L) leaving some gifts for ARRL Headquarters station W1AW.
- The editorial, "Repeater Coordination: Unfinished Business," takes us through the history of that coordination, and tells us what's new.
- George Steinert, N6ZS, tells us about "J75A: A Dream Come True," following a year of exhaustive planning and the help of several local hams on Dominica, just in time for the 1995 ARRL International DX Test on CW.
- Paul Newland, AD7I, explains his "DAS – DTMF Accessory Squelch," that enables your receiver to alert you when a designated identifier is recognized.
- Roger Sparks, W7WKB, built an antenna he calls "The Super Sloper," to greatly improve a sloper's front-to-back ratio.
- Timothy Hulick, W9QQ, puts together a good antenna for DX, which he calls "A Two-Element Vertical Parasitic Array for 75 Meters."
- Scott Richardson, AA6U, spins the wild tale of a "Roving Contest Adventure: 16 Grid Squares in 30 Hours," for which he was ably assisted by Jeff Lehman, KD6DHB, and Dave Pinder, KE6JPT.
- Bruce Vaughan, NR5Q, takes us on a wonderful trip through his past, beginning with his father's purchase of "The Six-Volt Zenith."
- In the "Happenings" column, Joe Obstfeld, 4X6KJ/JY8KJ, reports some important recent ham work undertaken by James Cain, K1TN, in "Joint Israel-Jordan Operation Makes History."

Silent Keys

It is with deep regret that we record the passing of these radio amateurs:

W1ANN **Paczkowski**, Ann L., Dallas, NC
N1AWQ **Cubi**, Richard F., Halifax, MA
•W1AX **Corey**, Roger E., Ashland, MA
♦KM1C **Pedersen**, William N., Oriental, NC
K1DC **Benecchi**, Donald, Dothan, AL
WB1DRH **Goldman**, Harriet, Milton, MA
N1DVQ **Case**, Charles L., Palm Coast, FL
W1ELX **Dunn**, J. Stewart, Windham, NH
♦WA1FSR **Parent**, J. Robert U., Southington, CT
KA1ICG **Johnnen**, Carl F., East Kingston, NH
N1ORW **Passafiume**, Carl E., West Haven, CT
•K1QIG **Stowers**, Clifford, Fairfield, ME
•K1TXU **Doane**, Ernest R. "Skip," Colorado Springs, CO
♦K1WJY **Frost**, Donald M., Bar Harbor, ME
W1XWX **Lalumia**, Joe F., Rockwall, TX
W2AP **Binder**, Paul R., Montague, NJ
♦W2CSS **Hyman**, Jay S., Brooklyn, NY
WB2HOL **Leggio**, Joseph A., Summerfield, NC
WA2JTX **Rambusch**, Paul E., Putnam Valley, NY
KE2LK **Beckett**, Scott A., Champaign-Urbana, IL
K2OZO **Kruger**, Matthew I., Shavertown, PA
AB2SO **Paul**, Steven S., Ocean City, NJ
•WA2UXQ **Molock**, Stanley L., Yonkers, NY
N2XOD **Hedlund**, Dalva E., Ithaca, NY
W2YE **Maylott**, Richard W., Leesburg, VA
♦W2YEZ **Kundrat**, Harry, Jr., New Providence, NJ
N2ZM **McGregor**, Donald R., Apex, NC
WA3DIT **Gerhart**, John J., Jr., Dunnellon, FL
K3GY **Eller**, Donald W., Erie, PA
WA3IHR **Roberts**, Edward H., Bel Air, MD
NV3L **La Rue**, Michael, Chino Valley, AZ
W3OBY **Hanemann**, Herman A., Jr., New Cumberland, PA
KT4A **Durkin**, James P., Atlanta, GA
W4AAY **Conover**, Richard K., Glen Allen, VA
WD4AFY **Blackburn**, Andrew, III, "Andy," Savannah, GA
♦N4CGC **Kearns**, Maxton C., Jr., Rockingham, NC
KK4CUS **Council**, Thomas W., Gaffney, SC
KS4DE **McCoy**, James W., Waynesville, NC
KJ4DHI **Ryan**, James Patrick, Macon, GA
K4DII **McKenzie**, Frederick M., Titusville, FL
W4GZK **Vardeman**, Frank B., Atlanta, GA
♦AE4HF **Lee**, Jimmy F., Rogersville, AL
N4KVA **Dawson**, Horace K., Shelby, NC
K4NOS **Nosker**, David A., Fort Myers Beach, FL
WA4NWY **Fritts**, Raines R., Lexington, KY
AC4PV **Wingfield**, Ray Atlee, Williamsburg, VA
KG4SPH **Cox**, Cynthia V., Hertford, NC
KT4TX **White**, Joseph E., Citrus Springs, FL
•KJ4UFH **Rhoney**, Scott L., Westfield, NC
AF4UU **Holcombe**, Robert A., Stafford, VA
KM4VPR **Boggs**, Gary W., Gadsden, AL
KD4YSN **Richardson**, Dennis L., Richmond, VA
KF5AZF **Peters**, Richard D. "Rich," Richardson, TX
WB5BLR **O'Dowd**, Michael, San Antonio, TX
WX5DF **Forsyth**, Douglas E., Norman, OK
KC5DPC **Blanton**, Marion G., Slidell, TX
W5HRF **Gikas**, Gus N., Baton Rouge, LA
KD5IZF **Millican**, Dave F., Mesquite, TX
•N5JVK **Brooks**, Willie C., Alamogordo, NM
N5KUJ **Perry**, David, Norman, OK
W5PPO **Kinslow**, Roy H., Dallas, TX
♦•W5RDC **Meharg**, Louis S., Houston, TX
N5TPD **Ambrose**, Jimmy L., Springhill, LA
KC5UNC **Sprain**, Eugene P., Jr., Tonawanda, NY
WA5VYK **Detiveaux**, Sherrell J., Odessa, TX
KI6CVC **Miles**, Alta N., San Bernardino, CA
W6LGK **Wathne**, Sigurd R. "Sig," Santa Barbara, CA
WB6NVO **Skinner**, Sandra J., Tucson, AZ
KF6RZP **Erickson**, John K., Arcata, CA
KJ6TAV **Hawk**, Mae, Rancho Cucamonga, CA
W6UR **Roux**, Louis A., Bakersfield, CA
W6WR **Scagliola**, James R., Petaluma, CA
KC6ZOI **Gonzales**, Gloria M., Fresno, CA
KC7ASV **Vander Meer**, James D., Chehalis, WA
♦NL7C **Moody**, James L., Jr., Childress, TX
WB7DOO **Brown**, Ernest G., Airway Heights, WA
KJ7GZ **Hill**, Charles L., Yuma, AZ
N7HZO **Haugsten**, Harry G., III, "Hoot," Hillsboro, OR
♦W7IB **McPartland**, William J. "Casey," Foresthill, CA
NC7MT **Patterson**, William B., Chapel Hill, NC
ND7N **Coit**, Kenneth T., Raleigh, NC
N7OBQ **Hackleman**, Debra "Deb," Monmouth, OR
WA7PFR **Parker**, David H., Prineville, OR
K7TBL **Silke**, James D., Eugene, OR
•N8HEJ **Miller**, Billy R., Bryson City, NC
KB8HG **Nelson**, John F., Ludington, MI
K8KT **Thompson**, Karl S., Charleston, WV
KA8OJN **Poston**, Charles D., Hattiesburg, MS
WD8RTH **Anderson**, John W., Wells, MI
WW8USA **Hagan**, Robert A. "Bob," The Villages, FL
K8WLF **Hemrich**, Frank M., Concord Township, OH
KB8YKI **Bleiler**, Raymond A. "Rocky," Mentor, OH
K9CFH **Crawford**, Gregory K., Monticello, IL
N9CVC **Mingus**, Randy, Pekin, IL
W9DBB **Homer**, William F., Land O'Lakes, FL
K9DEA **Keister**, Mark E., Jekyll Island, GA
WA9HTX **Lagerman**, Peter M., Longmont, CO
WD9HYI **Hylemon**, John E., Demotte, IN
N9IXD **Zander**, Martin, Chicago, IL
KA9JJS **Hayes**, Douglas J., Mount Vernon, IL
NS9K **Braghini**, Arthur A. "Art," Rantoul, IL
N9MHD **Banker**, Dale E., Jr., Columbia City, IN
K9OXI **Sparrow**, Charles V. "Chuck," Indianapolis, IN
WA9QGL **Tullis**, Samuel N., Huntington, IN
K9STH **Zook**, Glen E., Richardson, TX
K9YCG **Mathews**, Loren T., Kissimmee, FL
♦W9ZMR **Piletic**, Kenneth A., Bakersfield, CA
KAØENS **Tempero**, Gordon E., Topeka, KS
KBØFHS **Nomer**, Steve W., Wichita, KS
KØGHC **Anderson**, Richard D., Westminster, CO
NIØI **Wilson**, Thomas M., Sioux Falls, SD
WØPKZ **Freeman**, Harris B., Moab, UT
♦KEØT **Dollerschell**, Ronald F., Sioux City, IA
KØTVD **Sudds**, Chuck W., Omaha, IA
NØUBC **Scism**, Donald G., Columbia, MO
WØUTS **Voth**, Bertrand W., Minneapolis, KS
VE3BTI **DeRoy**, Arnold L., Windsor, ON, Canada
ZL2AH **Reed**, Wallace "Joe," Marton, New Zealand
9K2AF **Al-Ahmad Al-Jaber Al-Sabah**, Sabah, Kuwait

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Note: Silent Key reports must confirm the death by one of the following means: a copy of a newspaper obituary notice, a copy of the death certificate, or a letter from the family lawyer or the executor. Please be sure to include the amateur's name, address, and call sign. Allow several months for the listing to appear in this column.

Many hams remember a Silent Key with a memorial contribution to the ARRL Foundation or to ARRL. If you wish to make a contribution in a friend or relative's memory, you can designate it for an existing youth scholarship, the Jesse A. Bieberman Meritorious Membership Fund, the Victor C. Clark Youth Incentive Program Fund, or the General Fund. Contributions to the Foundation are tax deductible to the extent permitted under current tax law. Our address is: The ARRL Foundation Inc., 225 Main St., Newington, CT 06111.

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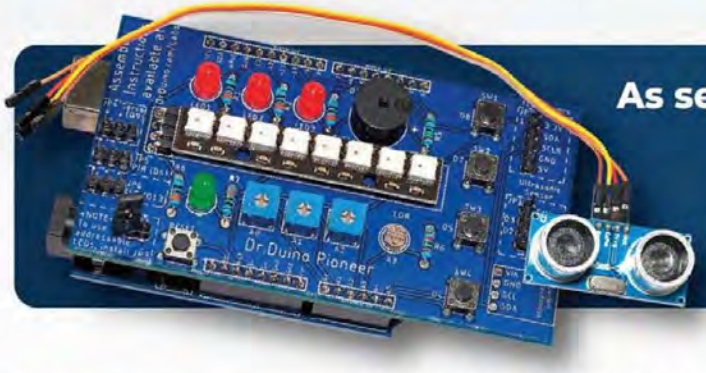

As seen in QST Magazine November 2020
Page 51 Product Review Section

«The Pioneer Edition is an excellent learning platform to begin working with the Arduino»
Revied by Glen Popiel, KW5GP

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- Two separate mono inputs or one stereo input
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- Basic EQ units EQ20 and EQ20B*
- DSP noise cancelling versions EQ20-DSP and EQ20B*-DSP * Denotes Bluetooth on input

Read the excellent review in December 2019 QST!

High-performance audio processing... ...with first class DSP noise cancelling... ...for a great listening experience

Dual In-Line

Fully featured flexible dual channel DSP noise cancelling unit - 8 Filter levels 9 to 40dB - 3.5mm mono or stereo inputs - Line level input/output - 7 watts mono speaker output - Headphone socket - Suitable for all types of radio incl' SDR - Easy to use controls for quick and easy operation - Enjoy clear intelligble "noise-free"speech from your radio - Replacement for bhi NEIM1031 In-Line

Compact In-Line

Easy to use in-line DSP noise cancelling unit with simple "real-time" control of audio and functions - Works on all radio bands

- Powerful high-performance audio processor
- Unique DSP noise cancelling technology
- Remove noise and interference - Hear weak signals clearly - Rotary encoders perform all functions
- Easy to use with "real time" adjustments
- Use with headphones or a loudspeaker

New NES10-2MK4

New improved design

- 5W audio power
- Latest bhi DSP noise cancelling 8 to 40dB
- Up to 65dB tone reduction
- Single switch on top of speaker for power, audio and DSP
- Headphone socket
- Base station or mobile use

New DESKTOP MKII

Now includes the latest bhi DSP noise cancelling technology for even better receive audio

- 10W Amplified DSP noise cancelling base station speaker
- "Real-time" control of all functions
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Alpha Delta surge protectors have been thoroughly tested and approved, and have been assigned NSN numbers by the Defense Logistics Agency (DLA) for use in all MIL apps. **Cage Code 389A5**.

Products are made in the U.S.A. in our ISO-9001 certified facility for highest reliability. ARC-PLUG™ gas tube modules are field replaceable. ARC-PLUG™ and connectors are "O" ring sealed.

These ATT units are grounded (hardware provided) to your Single Point Ground (SPG), or attached to our Model UCGC Universal Copper Ground Rod Clamp which is attached to your 5/8" ground rod (SPG and ground rod must be properly attached together). Surge voltages are then **discharged directly** to ground. You can attach up to 4 Model ATT3G50s to the Model UCGC clamp.

- **Model ATT3G50U**
  (UHF F/F, 500 MHz, 200 watts) ..... $52.00 ea.
- **Model ATT3G50UB**
  (as above but 3/4" bulkhead one side, UHF F/F) ..... $62.00 ea.
- **Model ATT3G50UBXL**
  (as above but 1.5" bulkhead one side, UHF F/F) ..... $62.00 ea.
- **Model ATT3G50U/M90**
  (rotatable 90 deg UHF male, UHF female, 500 MHz) ..... $65.00 ea.
- **Model ATT3G50F**
  (F/F "F" connectors, 75 ohms, 3 GHz, 200 watts) ..... $62.00 ea.
- **Model ATT3G50**
  (Type N F/F, 3 GHz, 200 watts, DLA/NSN approved) ..... $62.00 ea.
- **Model ATT3G50B**
  (Type N, bulkhead one side, F/F, 3 GHz, mtg hrdwr, 200 watts) ..... $84.95 ea.
- **Model ATT3G50M**
  (N male, N female, 3 GHz, 200 watts) ..... $80.00 ea.
- **Model UCGC**
  Universal Copper Ground Rod Clamp, for 5/8" ground rods ..... $50.00 ea.

For 2 kW rating, add "HP" to ATT P.N. Same price.
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The Most Popular Rotator in the World!

For medium communications arrays up to 15 square feet wind load area. Has 5-second brake delay, Test/Calibrate function. Low temperature grease permits normal operation down to -30 degrees F. Alloy ring gear gives extra strength up to 100,000 PSI for maximum reliability. *Precision* indicator potentiometer. Ferrite beads reduce RF susceptibility. Cinch plug plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced movement. North/South center of rotation scale on meter, low voltage control, max mast $2^{1}/_{16}$".

HAM-VI – $809.95 with DCU-2

HAM-VII – $959.95 with DCU-3

HAM IV and HAM V Rotator Specifications	
Wind Load Capacity (inside tower)	15 square feet
Wind Load (w/mast adapter)	**7.5 square feet**
Turning Power	800 in.-lbs.
Brake Power	**5000 in.-lbs.**
Brake Construction	Electric Wedge
Bearing Assembly	**Dual race/96 ball bearings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	26 lbs.
Effective Moment (in tower)	**2800 ft.-lbs**

TAILTWISTER SERIES II – $869.95

For Large Medium Antenna Arrays up to 20 sq. ft. wind load.

Has 5-second brake delay, Test/Calibrate functions. Low temp grease, tough alloy ring gear, indicator potentiometer, ferrite beads on potentiometer wires, weatherproof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing, electric locking steel wedge brake, North/South center of rotation scale meter, low voltage control, $2^{1}/_{16}$" max mast. **MSHD, $139.95**. Above tower heavy duty mast support. T2X, HAM-IV, HAM-V, HAM-VI. Accepts $1^{7}/_{8}$-$2^{5}/_{8}$" OD.

T-2XD2 – $979.95 with DCU-2

T-2XD3 – $1039.95 with DCU-3

TAILTWISTER Rotator Specifications	
Wind Load Capacity (inside tower)	20 square feet
Wind Load (w/mast adapter)	**10 square feet**
Turning Power	1000 in.-lbs.
Brake Power	**9000 in.-lbs.**
Brake Construction	Electric Wedge
Bearing Assembly	**Triple race/138 ball bearings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	31 lbs.
Effective Moment (in tower)	**3400 ft.-lbs**

CD-45II – $499.95

For antenna arrays up to 8.5 sq. feet mounted inside tower or 5 sq. ft. with mast adapter.

Low temperature grease good to -30 F degrees. New Test/Calibrate function. Bell rotator design gives total weather protection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted directional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes maximum mast size to $2^{1}/_{16}$ inches. MSLD light duty lower mast support included.

CD-45D2 – $599.95 with DCU-2

CD-45D3 – $659.95 with DCU-3

CD-45II Rotator Specifications	
Wind Load Capacity (inside tower)	8.5 square feet
Wind Load (w/mast adapter)	**5.0 square feet**
Turning Power	600 in.-lbs.
Brake Power	**800 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/48 ball bearings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	22 lbs.
Effective Moment (in tower)	**1200 ft.-lbs**

New!

Hy-Gain Programmable DCU-3 Digital Rotator Controller

DCU-3 – $499.95

Hy-gain DCU-3 Digital Controller lets you program 6 beam headings! Gives you full automatic or manual control of your hy-gain HAM or Tailtwister Rotators.

Press a memory button or dial in your beam heading or let *Ham Radio Deluxe* (or other) take control. Your antenna auto rotates precisely and safely to your DX.

DCU-3 automatically jogs your antenna free and safely unlocks it before rotating begins (*great for older rotators with "sticky" brakes*) then turns off your motor before reaching its final heading. Your antenna gently coasts to a stop before the brake re-locks -- greatly reducing damaging overshoots and extending rotator life.

Simply press *Left* and *Right* buttons for full manual control and fine tuning.

Bright blue LCD shows current, dialed in and computer controlled beam headings in one degree increments and your call.

Calibrate lets you accurately match your display to your true beam heading. Has USB/RS-232 ports for computer control. Adjustable LCD sleep time. Field upgradeable firmware. 8.5Wx4.3H x9D".

110 VAC. Order DCU-3X for 220 VAC.

DCU-2 Digital Rotator Controller – $459.95
Like DCU-3, but less programmable memories. 110 VAC. Order **DCU-2X**, for 220 VAC.

AR-40 – $399.95

For compact antenna arrays and large FM/TV up to 3.0 square feet wind load area.

Dual 12 ball bearing race. Automatic position sensor never needs resetting. Fully automatic control -- just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. $2^{1}/_{16}$ inch maximum mast size. MSLD light duty lower mast support included.

AR-40 Rotator Specifications	
Wind Load Capacity (inside tower)	3.0 square feet
Wind Load (w/mast adapter)	**1.5 square feet**
Turning Power	350 in.-lbs.
Brake Power	**450 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/12 ball bearings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**5**
Shipping Weight	14 lbs.
Effective Moment (in tower)	**300 ft.-lbs**

Replace your Yaesu Rotator Controller

YRC-1 – $369.95

Hy-gain YRC-1 – more features, more robust, far less prone to lightning damage. Costs less than repairing!

Easy-to-use -- dial in your beam heading and tap GOTO button. Exclusive 180 degree *AutoReversal*™ for fast longpath operation. All DCU-2 features. Bright blue LCD shows current, dialed-in, computer controlled beam headings, call. USB port for computer control. Extra heavy-duty AC power supply. Fast variable DC motor minimizes overshoot. Intuitive menu. Field upgradeable. For Yaesu G-800/1000/2800/G450/650. AC or DC motors.

YRC-3, $449.95. Like YRC-1 and adds 6 memories.

AR-500 Rotator/Controller – $169.95

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MFJ-1026
$239.95

MFJ-1025, $209.95. Like MFJ-1026 less active antenna, use external noise antenna.

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Plug in this MFJ Morse Code Reader with built-in keyer and watch CW turn into solid text messages as they scroll across an easy-to-read LCD

MFJ-464
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Built-in keyer makes working high speed CW a breeze. Type-ahead buffer, message memories and adjustable speed lets you compete with the best high speed CW operators – they won't even know you never passed a code test!

Everything you need for ultimate CW: sends/reads 5-99 WPM, automatic speed tracking, large 2-line LCD shows send/receive messages, use single, iambic paddle or computer keyboard, front panel speed, volume controls, 4 message memories, type ahead buffer, read again buffer, adjustable weight & sidetone, RFI proof, easy menu operation, more!

MFJ-551, $29.95. RFI suppressed keyboard.

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Makes contesting easy -- Calls CQ, sends your call, does contest exchanges – in your own natural voice

MFJ-434B
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MFJ Contest Voice Keyer™ makes contesting easy! Calls CQ, sends your call and does contest exchanges for you in your own natural voice!

Save your voice! Record and play back frequently used phrases like "CQ Contest this is KF5C", "You're 59", "Qth is Mississippi".

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MFJ SDR T/R Protection Switch

New!

MFJ-1708SDR, $89.95. An inexpensive wide-band SDR dongle receiver lets you see an entire band on a frequency/waterfall computer display! If you want to know where the activity is, who's generating splatter, what's in the DX window, how wide your audio is or what frequencies are clear, it's all right there! While receiving on your transceiver, MFJ-1708SDR switches your SDR to your antenna showing the entire band. On transmit your SDR is switched out and grounded to protect your SDR. PTT and a failsafe RF sense circuit switches MFJ-1708SDR. For HF/VHF.

MFJ-1270X TNC for VHF Packet/APRS

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If you want to know where the activity is, who's generating splatter, what's in the DX window, how wide your audio is or what frequencies are clear, it's all right there! While receiving on your transceiver, MFJ-1708B-SDR switches your SDR to your antenna showing the entire band. On transmit your SDR is switched out and grounded to protect your SDR. PTT and a failsafe RF sense switches MFJ-1708B-SDR. For HF/VHF/UHF. Monitor multiple bands with multiple SDRs and a multi-coupler.

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MFJ-1708SDR, $99.95. Original model for HF/VHF.

New B series improvements...
The original MFJ-1708 series used one relay and wires to connect the SO-239s. The new B-series uses four relays and connectors on a *single* pc board. This gives you > 50 dB isolation at 300 MHz and > 68 dB at 50 MHz. SWR < 1.16:1 at 50 MHz and < 1.75:1 at 450 MHz at the transmit port. Mute output is a selectable short or open to ground. Use "boat anchors" or modern receivers or key a linear amplifier. Receiver input protection prevents overload from nearby high power signals and from receive to transmit. A hybrid splitter on SDR models reduces loading effect and gives > 15 dB isolation between the SDR REC and XCVR ports to reduce interference. The original MFJ-1708 series is still available.

MFJ Low Noise VLF/HF Receiving Loop

Pull weak signals out of static crashes, atmospheric, man-made and power line noise!

Hear signals 500 KHz to 30 MHz cleaner, quieter than ever before! Power line noise disappears. Rotate its figure 8 pattern and its extremely deep null to completely eliminate an interfering signal or greatly peak a desired one. Fully protected state of-the-art Gali MMICs in push-pull gives you a preamp with extremely high dynamic range, low IMD and 25 dB of low noise gain. Excellent performance on strong and weak signals without overload. 36-inch dia. loop. 1-in. OD 6061 aluminum.

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Receives 25-1300 MHz

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MFJ-1866, $59.95. Like MFJ-1868 but transmits 144-1290 MHz. Coax and mounting hardware not included.

Tuned Indoor SDR Active Antenna

MFJ-1020C
$119.95

Make your SDR receiver come alive with HF signals, .3-40 MHz, while rejecting interference with MFJ-1020C *tunable* indoor active antenna! Gain control, telescoping whip.

Untuned Indoor SDR Active Antenna

MFJ-1022, $79.95. Hear weak, noisy VLF to UHF signals. Noise-less feedback gives excellent low noise reception. Handles strong signals.

Active Outdoor Antenna

MFJ-1024
$179.95

World Radio TV Handbook says "MFJ-1024 is a *first rate, easy-to-operate active antenna, quiet, excellent dynamic range, good gain, very low noise factor, broad frequency coverage, excellent choice...*" **Outdoor** mounted 54-inch whip/pre-amp gives maximum signal and minimum noise. Covers .05-30 MHz. **Indoor** unit: 20 dB attenuator, gain control, 2 receiver and 2 antenna switches.

HF SDR Preselector

MFJ-1040C
$139.95

Tuneable MFJ-1040C lets you copy weak, noisy SDR signals from 1.8 to 54 MHz. Greatly tunes out and reject out-of-band interference. Up to 20 dB gain. Has gain control. Cascode FET/bipolar transistor gives low noise, high gain without overloading. Switches for 2 antennas and 2 receivers. SO-239s. Has 20 dB attenuator. Automatically bypasses when transmitting or use PTT. 6½W x 2½H x 4D inches.

MFJ LW/MW/SW SDR Preselector/Tuner

MFJ-956
$79.95

Highly rated series-tuned MFJ-956 boosts your desired signals while greatly rejecting interference and preventing serious overload. **Greatly** improves reception 0.15 to 30 MHz. Incredibly effective below 2 MHz. **Super** easy to operate, select band and tune! **Bypass** tuner and ground receiver switch positions. **Compact** 2 x 3 x 4 inches. SO-239 connectors.

MFJ-1708B, $119.95.

MFJ RF Sense Transmit/Receive Switch

Switches your antenna from receiver to transmitter using a relay. Shorts your receiver to ground during transmit. Use RF sensing with adjustable delay or PTT line. Has selectable open/short mute.

MFJ-1707B, $119.95.

Auto switch XCVR between 2 antennas

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1.8-500MHz

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Switch to the amateur band of choice and press "Sweep Center". The chosen band is swept and the SWR graphed in seconds!

Manual band-sweep function:
Select the band, select the center frequency, and select the bandwidth. Manually sweep the chosen frequency range and display the SWR graph.

Multiple Manual Band-Sweeps
Manually graph the user defined bandwidth multiple times and see the results overlaid in 5 selectable colors! Make antenna length, position, height above ground, gamma match adjustments, etc…and graph each adjustment in seconds, in a new color, without losing the previous graph!

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HARDWARE

RSS is a Raspberry Pi™ computer running Linux and RigPi Keyer and Audio boards. RigPi Keyer uses K1EL WinKeyer3 integrated circuit for keyboard/paddle input. RigPi Audio is used for VoIP for remote, digital modes and I/Q spectral display (Panadaptor).

OPTIONS

MFJ-1305RP, $24.95. 5V, 3A Pwr Supl.
MFJ-1234BSD,$59.95. RigPi 2.0 software on SD Card only.
MFJ-1234BOS, $29.95. Rig Pi Version 2.0 software download.
MFJ-1234AB, $79.95. Audio Board.
MFJ-1234KB, $79.95. Keyer Board.
MFJ-1234BC, $29.95. Metal cabinet for Raspberry Pi 4B, audio, keyer boards.

TECH HELP

- RigPi forum is *https://rigpi.groups.io*
- RigPi website is *https://rigpi.net*

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Plug MFJ's CW Reader with Keyer into your transceiver's phone jack and key jack.

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MFJ-464

$239.95

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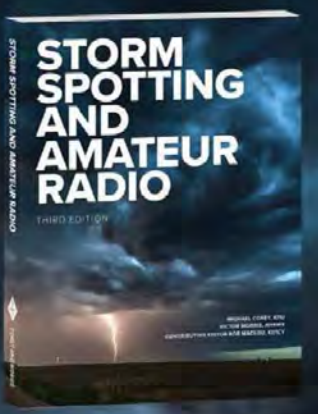

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Operate 80-10 or 40-10M with one support/no tuner.
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MFJ-1982MP, $79.95. 300 Watts.
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Off Center Fed Dipoles

Lightweight, virtually invisible. Gives you directivity and gain (*see MFJ website*).
MFJ-2012, $89.95, 40/20/10/6 Meters, 1500 Watts. 67 ft.
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MFJ-1777, $79.95.102 foot, 160-6 Meters with tuner/balun. *Extremely low feedline loss.* Super strong fiberglass center insulator provides stress relief for included 100 feet ladder line. *Ceramic* end insulators. 1500 Watts SSB/CW/Digital.

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7-strand, 14-ga. copper wire.*Ceramic* insulators. Center insulator with SO-239
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MFJ-1779B, $59.95. 80-40M,135 feet.
MFJ-1779A, $79.95. 160M, 265 feet.

20M Extended Double Zepp

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MFJ Vertical Mounted Antennas

MFJ 6-Band Cobweb Antenna

MFJ-1836H, $299.95. Six-bands: 20/17/15/12/10/6 Meters, 1.5 kW. *Perfect for restricted space.* Nearly invisible. 9x9x1/2 feet, 8 lbs. Outstand-ing performance! Horizontally polarized gives less noise, more gain over verticals. Omni-directional. No radials needed! Works great at low heights. Low SWR.
MFJ-1836, $269.95. Like MFJ-1836H, but 300 Watts.

MFJ *4-Band* Dipole Octopus Antenna

***Octopus** antenna hub turns hamsticks into four balanced* HF/VHF/UHF *dipoles!* Rotate for maximum signal, minimum QRM/noise. Mount low for local NVIS, high for DX. Perfect for portable, limited space, HOAs, camping, ARES. Balun. No tuner needed.
MFJ-2104, $289.95. Includes 8 hamsticks for 75/40/20/15 M.
MFJ-2100, $119.95. Hub only. Use eight hamsticks.

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MFJ-2990,$399.95. High performance 43 foot vertical operates 160-6 Meters, 1500 Watts SSB/CW/Digital. 2 square feet wind load. Self-supporting, no guy wires needed. 6063 aircraft aluminum tubing, bottom section 2" OD, .120" wall thickness. 20 lbs. Requires antenna tuner, ground/counterpoise.

BigStick ™ Vertical

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BigEAR ™ Dipole

MFJ-2289, $209.95. 7-55 MHz. *Full-size* 20-6 Meter dipole, 40M air loading coil. Two 17 ft. telescopic whips, 28" collapsed.

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MFJ-264 $89.95

Oil-Cooled 1 kW CW, 2 kW SSB 50-Ohm VersaLoad™

Run 1kW CW or 2 kW PEP for 10 minutes. Run *continuous duty* with 200 Watts CW or 400W PEP. Transformer oil included. SWR 1.2:1 to 30 MHz. Low SWR to 400 MHz. SO-239 connector. Safety vent with cap, carrying handle. 7½H x 6⅝D in. **MFJ-250X, $69.95.** No transformer oil.

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MFJ-261 $34.95 *with PL-259* DC to 500 MHz

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MFJ's 2500 Watt *fan cooled* load handles legal limit amps, 2500W average one minute on, ten minutes off, 300W continuous. DC- 6 Meters. SWR <1.25, 30 MHz; <1.4, 30-60 MHz. Detailed power curve. 12 VDC or 110 VAC. 8¼W x 4H x 9½D in. SO-239s. 5 pounds.

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New high-tech metal film resistor on large heavy-duty air-cooled heatsink. 300 Watts for ten seconds and 125W continuously. SWR < 1.1, 1 GHz; <1.2, 1.5 GHz; <1.5, 3 GHz. N-connector. 10¾W x 2¼H x 5¼D inches.

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MFJ-267 $179.95

SWR/Wattmeters

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Large 3-inch lighted Cross-Needle meter covers 1.8-200 MHz in 30/300W power ranges. Read forward, reflected power, SWR *simultaneously*. 3¼W x 3¼H x 3¼D in. SO-239 connectors. **MFJ-842, $69.95.** 140-525 MHz, 15/150W.

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High-accuracy 1.8-60 MHz Digital SWR/Wattmeter

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MFJ-828 $269.95

MFJ GrandMaster™ SWR/Wattmeters

GrandMaster™ SWR/Power Meters are the *Cadillacs of ham radio!* Large 3¼ x 1¼ inch precision illuminated meter gives easy wide-angle viewing of SWR, forward or reflected power. 7½W x 3⅛H x 4¼D in. SO-239s. **MFJ-870, $89.95.** 1.6-60 MHz. 30/300/3000 Watt ranges. **MFJ-874, $129.95.** 1.8-525 MHz. 5/20/200 Watt ranges.

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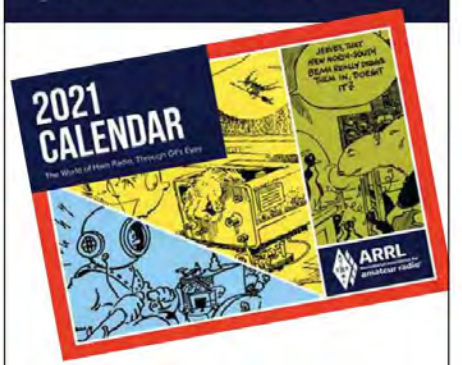

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MFJ-225
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MFJ-249D, $279.95

If digital display is all you need MFJ-249D does everything MFJ-259D does without analog meters.

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- **B. MFJ-92AA10, $39.95.** 10-Pack 2500 mAh Ni-MH Supercells.
- **C. MFJ-66D, $39.95.** Dip coils, set of two covers 1.8-230 MHz.
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Includes six position ceramic antenna switch, 50 Ohm dummy load, indestructible multi-color Lexan front panel with detailed logging scales and legends.

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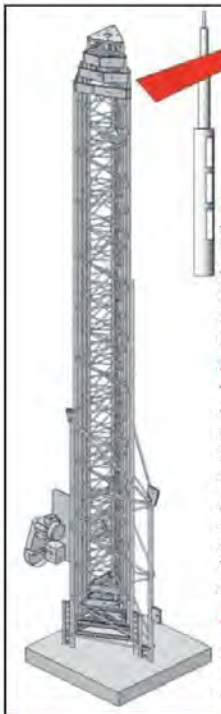

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Superior Strength

Tashjian uses ASTM A513 1026 Type 5 tubing for tower legs. This high strength tubing allows for larger antennas at code wind speeds. W towers have pulley frames on one side, LM tower 2 sides, and DX towers all three sides.

All Tashjian Towers include the tower base, an operation manual, and winch. Delivery or lead time are 3 months but currently building towers to ship from stock. Cost to ship a Tashjian Tower is lower than other crank up tower manufacturers. Installation is available in California by Tashjian Towers a licensed contractor in Ca.

Tower Model	Antenna Area EIA H 100 MPH	Price 2018
MW-33	45	$4,437
WT-51	12	$3,621
WT-67	11	$5,916
LM-237	20	$2,856
LM-354	18	$5,151
LM-354HDSP	45	$9,231
LM-470	24	$10,404
LM-584	13	$11,169
DX-70	45	$15,606
DX-70HD	70	$22,899
DX-86	26	$16,779
DX-86HD	38	$24,582
DX-100	24	$29,070
DX-100HD	40	$32,130
TM-370HD	28	$12,597
TM-490HD	42	$16,932
TM-5100HDR	32	$27,285

Tashjian Towers Corporation (Formerly Tri-Ex Towers Corp.)
2765 S. Temperance, Fowler Ca 93625
Phone: (559) 834-4300
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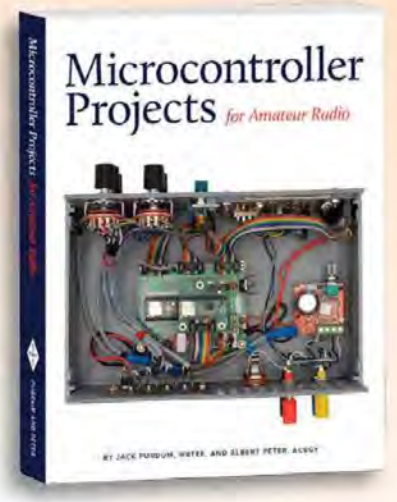

All the information you need to build fascinating projects using the Arduino, STM32 (“Blue Pill”), ESP32, and Teensy 4.0 micro-controllers.

Unfamiliar with C or C++ programming? No problem. *Microcontroller Projects for Amateur Radio* provides all the introduction you need to build projects such as a programmable power supply, a signal generator, a DSP mic processor, and more!

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MFJ Mobile Antennas!

Dual Band Mag Mount Antennas

MFJ-1724B

2-Meter/440 MHz

MFJ-1724B **$34.95**

This antenna is perfect for your dual band mobile or HT. Powerful 3 1/2 inch magnet holds firm at highway speeds, rubber guard, 19" black stainless steel whip, low SWR, excellent gain, 300 Watts PEP, 12 feet coax with PL-259. Free BNC adapter.

MFJ-281 **$15.95**

MFJ-281

Clearest speech you ever heard!
3" speaker, 8W, 8 Ohms, 6' cord, 3.5 mm plug.

MFJ-1729

Power*Gain™

MFJ-1729 **$49.95**

Ham Radio's most powerful dual band antenna gives whopping gain on 440 MHz and 2-Meters! Low SWR. 27 1/2" stainless steel Slimline™ radiator minimizes wind vibration for less SWR flutter for longer range, better readability. 12' coax, PL-259, Heavy duty magnet mount.

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MFJ-1728B **$34.95**

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MFJ Super-Strong Magnet Mounts with Coax/PL-259

MFJ 5-inch Magnet

Best Seller!
These jetblack 5-inch super strong magnet mounts have 17' coaxial line terminated with PL-259 connectors. SO-239 (BS) or NMO (BM) for your VHF/UHF antennas or 3/8-24 threaded (BT) for your HF hamstick antennas with a 3/8-24 threaded connector.

$19.95 Each

MFJ-335BS – SO-239
MFJ-335BM – NMO
MFJ-335BT – 3/8 - 24 For HF sticks

MFJ 3-inch Magnet

3-inch Black Magnet Antenna Mounts
17-foot coax is terminated with PL-259 connector. Choose SO-239 (BS) or NMO (BM). For VHF/UHF lightweight antennas.
MFJ-333BS Pictured

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MFJ SMA/BNC Cables

Release strain on your HT's antenna connector! 3 ft. flexible, mini coax with SO-239 connector.

$19.95 Each

A. **MFJ-5612S** SMA Male.
B. **MFJ-5612SF** SMA Female Wouxun/Baofeng.
C. **MFJ-5612B** BNC Male.

MFJ Triple 5-inch Magnets

Goliath™ – Ultimate Strength Magnet
Three super-strong 5-Inch Magnets make up this MFJ Goliath™ Tri-Magnet Mount. 1/4" thick steel triangle base. 17' coax. Select SO-239, NMO, 3/8-24 antennas.
Caution: once on, it's difficult to get off!

$44.95 Each

MFJ-336S – SO-239
MFJ-336M – NMO
MFJ-336T – 3/8 x 24

HF/VHF/UHF 200 Watt Duplexers

MFJ-916B **$34.95**

Use separate HF/VHF and 440 MHz UHF antennas with single transceiver OR use two separate HF/VHF and 440 MHz UHF transceivers with a single HF/VHF/UHF antenna. Heavy-duty diecast enclosure houses low/high pass networks that separate/combine HF/VHF/UHF signals. Low loss SO-239s. 50 Ohm ports. **MFJ-916BC, $59.95** 3 ft. coax pigtails on 2-port side.

1.8-200 MHz SWR/Wattmeter

Compact 1.8-200 MHz SWR/Wattmeter has HUGE 3" Cross-Needle meter. Read forward/reflected power and SWR simultaneously. Perfect for mobile/portable. 30/300 Watt ranges. Built-in meter light. SO-239s. 3 1/4W x 3 1/4H x 3 1/4D". **MFJ-842, $69.95** covers 140-525 MHz, 15/150 Watts.

MFJ-822 **1.8-200 MHz $69.95**
MFJ-842 140-525

VHF/UHF Hi-Gain Antennas

A. MFJ-1402, $39.95.
VHF/UHF RuffRiderJunior™. Premium, short 16 1/2" antenna fits in any garage on any auto. 1/4 Wave on 2 Meters, 1/2 Wave, gain on 440 MHz. 100W. No foldover. B or C.

B. MFJ-1412, $39.95.
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C. MFJ-1422, $44.95.
VHF/UHF RuffRider High Gain™. 41 1/2 inch long antenna gives extra gain with little height increase. Handles 150 Watts. 1/2 wave with good gain on 2 Meters, 5/8 wave, excellent gain on 440 MHz. Black or chrome.

D. MFJ-1432, $64.95.
VHF/UHF RuffRider Hyper Gain™. 62 1/2" brute gives whopping gain on 7/8 Wave 2-Meters, 5/8 Wave and a MONSTER gain on 440 MHz. MFJ will rock your ham radio world! 150 Watts. Use tri-magnet. Black or Chrome.

MFJ Mobile HF Ham Sticks

Each is ruggedly constructed. A heavy duty 4 foot, 3/8 inch diameter fiberglass rod; a nearly indestructible .125 inch diameter PH-17-7 stainless steel whip and chrome plated brass fittings will give you years of service. It's sleek, low profile construction has low wind loading and its semi-rigid fiberglass eliminates the need for springs or guys.

Black anti-static jacket protects loading coil, blends with any vehicle. Stainless steel whip is adjustable for lowest SWR. Push it down to park in the garage or fully extend it for maximum efficiency during mobile operation.

Includes allen wrench and complete tuning and matching instructions. Handle 250 Watts PEP. Whips are 7 feet fully extended, and collapse to about 4 feet for easy storage.

Simply screws into any 3/8 x 24 female mount for quick bandchanging. Get them all for great band coverage!

MFJ-1675T - 75 Meters
MFJ-1660T - 60 Meters
MFJ-1640T - 40 Meters
MFJ-1630T - 30 Meters
MFJ-1620T - 20 Meters
MFJ-1617T - 17 Meters
MFJ-1615T - 15 Meters
MFJ-1612T - 12 Meters
MFJ-1610T - 10 Meters
MFJ-1606T - 6 Meters

$19.95 -$21.95 Each

60-75 Meters $29.95 each

— 3/8-24 Ham Stick Mounts —

MFJ-343, $15.95. Tough 3/8-24 hard mount for permanent installation.

MFJ-342T, $15.95. 3/8-24 HF horizontal or vertical 1/4 or 1/2 inch pipe or mirror mount.

MFJ-344, $15.95. Like MFJ-342T, but horizontal pipe mount.

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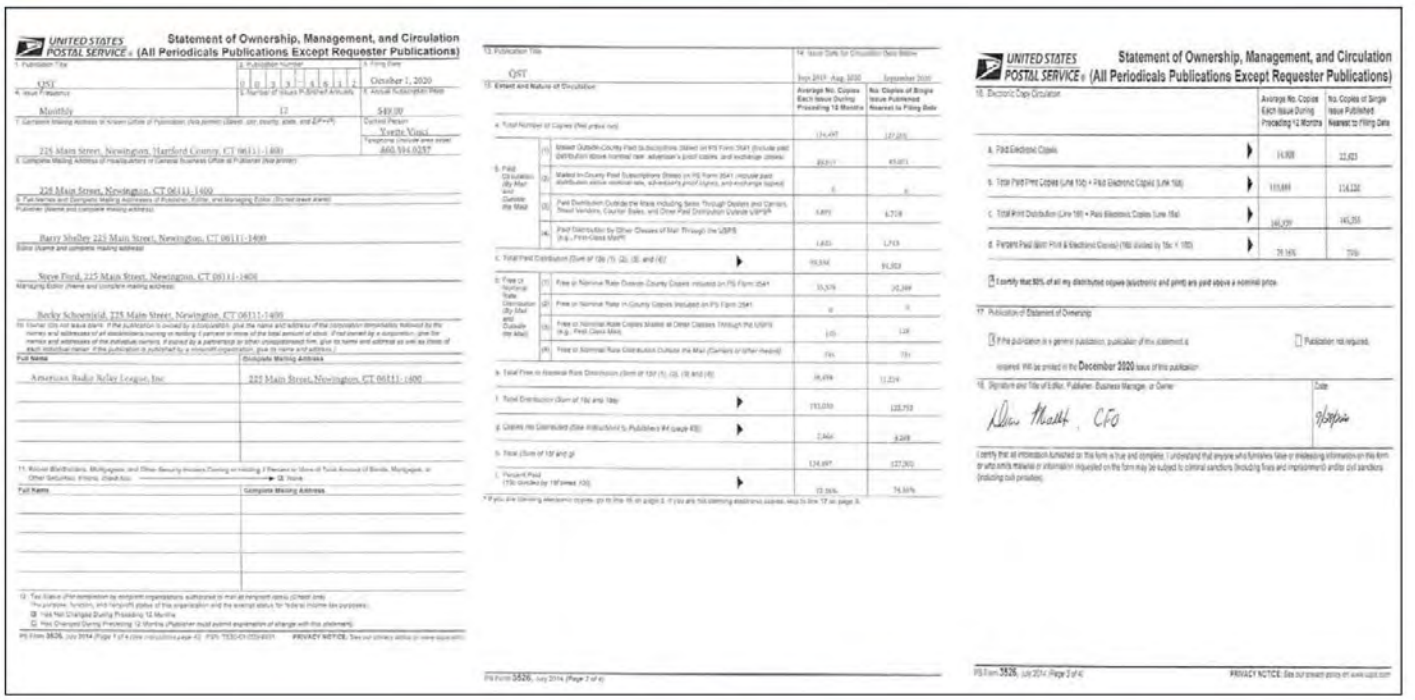

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e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3) and (4))	16,466	16,108
f. Total Distribution (Sum of 15c and 15e)	115,698	117,617
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d. Percent Paid (Both Print & Electronic Copies) (16b divided by 16c × 100)	81.36%	81%

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← *Light Duty Lightweight Fiberglass Masts*

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Standard Models: H models have QuickClamps™

MFJ-1906, $159.95/MFJ-1906H, $219.95, 33 feet, ext., 6 ft. collapsed, six 6-ft. sections, 13 lbs. 2" bottom, 3/4" top OD.
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MFJ-1900, $79.95. Mount clamps mast to mounting pipe.
MFJ-13S, $69.95. 5 Military *QuickClamps*™. Fit 3/4" to 2" OD.
MFJ-13HD, $69.95. Extra set clamps, 1- 2 1/2" masts.

Mast Guy Ring Sets

Fits masts 3/4" to 1 1/4" dia OD. **MFJ-2830X, $9.95,** *fiberglass*; **MFJ-2840X, $12.95**, *aluminum.*

Left: *Stainless Steel Hose Clamps* recommended for permanent installations. Fiberglass is slotted.

Right: UV protected Military grade *QuickClamps*.Guy 2 levels when fully extended.

18' Telescopic Mast & Tripod

MFJ-1919EX, $179.95.
Put your antennas up high anywhere with this super-strong* 18 foot telescoping fiberglass mast and MFJ-1919 heavy duty steel tripod.** ***QuickClamps™ lower mast to 5 feet. Mast has thick 1/8 in. wall, .75" top, 1.5" bottom dia. 15 lbs. Steel tripod has braced triangle base, non-skid feet, mast lock.

MFJ-1918EX, $109.95.
MFJ-1918 tripod has super strong 9.5 foot telescoping fiberglass mast. 3.8 feet collapsed. *QuickClamps*™. Thick 1/8 inch wall, .75" top, 1" bottom diameters. 6.5 lbs.

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MFJ-1921, $199.95, Giant tripod base spreads to 8 feet! Supports massive antennas. Adjustable length non-skid legs accommodates uneven ground surfaces. Optional foot anchors **MFJ-1905, $34.95**, see **Tripod Anchors** bottom right. 5.75Hx7D feet collapsed. 14 lbs.

MFJ-1919, $109.95, *Large tripod* base spreads to 4.8 feet. Supports 100 pounds. 7.8 feet, 1.4 inch diameter mast. 4.5H x .5D feet collapsed. 9.75 lbs.

MFJ-1918, $69.95, Smaller tripod base spreads to 2.75 ft. Support 66 lbs. 6 foot, 1" dia. mast. 3.2H x .3D ft. collapsed. 6.75 lbs.

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40-6 Meters

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Includes four 12 foot radials. Current balun reduces feedline radiation and pattern distortion.

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Build your own 80-6 Meter *mini*-dipole using two HF mobile whips! Only MFJ-347 mount *isolates* dipole elements and lets you use a balun to give a true *balanced dipole*. Prevents pattern distortion, noise pickup and RFI radiation from RF on coax shield. Solid aluminum. Use mast up to 1 1/4" OD.

MFJ-347
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3/8-24 Hamstick
MFJ-342T
$15.95
Mount 3/8-24 HF/VHF hamsticks vertically or horizontally on masts up to 1 inch. Built-in SO239 connector.

MFJ Balcony Mount

MFJ-1907
$49.95

Mount *multiple* HF/VHF hamsticks, verticals, dipoles vertically and/or horizontally on your apartment/condo balcony. High-strength aircraft aluminum extends out 14". Two U-bolts mount up to 1 1/2" diameter.

Tripod Anchors

Securely anchor tripod to ground with these 3 stainless steel foot braces and your stakes. For high winds, unlevel ground, tall antennas. Fits legs to 1 1/2"OD.

MFJ-1905
$34.95

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4. Closing date for Ham-Ads is the 15th of the second month preceding publication date. No cancellations or changes will be accepted after this closing date. Example: Ads received December 16th through January 15th will appear in March *QST*. If the 15th falls on a weekend or holiday, the Ham-Ad deadline is the previous working day. Please contact the Advertising Department at 860-594-0255 or hamads@arrl.org for further information or to submit your ad.

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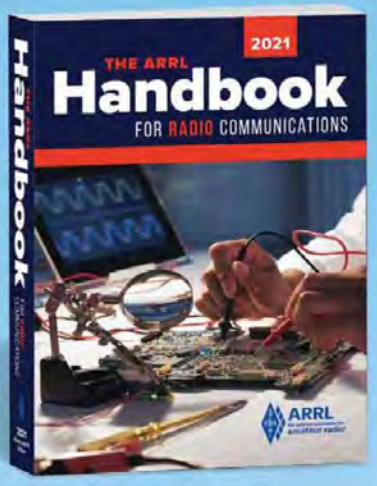

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QST Index of

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Alpha Delta Radio Communications, LLC – www.alphadeltaradio.com 102
Ameritron – www.ameritron.com 17
Arcom Communications – www.arcomcontrollers.com 114
Array Solutions – www.arraysolutions.com 12
ARRL – www.arrl.org 110, 112, 114, 118 120, 122, 125
Begali Keys – www.i2rtf.com 112
bhi Ltd – www.bhi-ltd.com 101
Bioenno Power – www.bioennopower.com 120
BridgeCom Systems – www.BridgeComSystems.com ..... 22, 23, Cover III
Clear Signal Products, Inc. – www.coaxman.com 110
Communication Concepts, Inc. – www.communication-concepts.com 125
Cushcraft – www.cushcraftamateur.com 2
Debco Electronics, Inc. – www.Debcoelectronics.com 114
Diamond Antenna – www.diamondantenna.net 8
Dr.Duino™ – www.DrDuino.com/HamRadio 98
DX Engineering – www.DXEngineering.com 25
Elecraft – www.elecraft.com 19
Elk Antennas – www.ElkAntennas.com 118
Eton Corporation – www.etoncorp.com 16A, 16B
Expert Linears America, LLC – www.ExpertLinears.com 125
EZ Hang – www.ezhang.com 112
FlexRadio Systems – www.flexradio.com 26, 27, 116
Global TSCM Group, Inc. – www.kn2c.us 118
Ham Ads – www.arrl.org/ham-ad-listing 124
Ham Radio Outlet – www.hamradio.com 96, 97
Ham Repair Guy– www.amprepairguy.com 126
Hammond Mfg. Co. – www.hammondmfg.com 114
Heil Sound – www.heilsound.com 110
Hy-Gain – www.hy-gain.com 10, 103
ICOM America – www.icomamerica.com 99
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MFJ Enterprises – www.mfjenterprises.com 105, 107, 109, 111, 113, 115, 117, 119, 121, 123
Mosley Electronics – www.mosley-electronics.com 120
Motosports of Ukiah – www.hondashop.com 120
N3ZN Keys, LLC – www.n3znkeys.com 118
NCG Company – www.natcommgroup.com 3, 108
OCI-Olds Communications Inc. – www.ocicom.com 127
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Palomar Engineers – www.Palomar-Engineers.com 126
Paradan Radio – www.paradanradio.com 114
PreciseRF – http://preciserf.com 11
Quicksilver Radio Products – www.qsradio.com 106
Radio Amateur Callbook – www.callbook.biz 118
Radio Club of JHS 22 NYC – www.wb2jkj.org 112
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RT Systems – www.rtsystems.com 122
RW Antenna Store – www.rwantennastore.com 112
SSB-Electronic GmbH – www.ssb-electronic.com 110
SteppIR Communications Systems – www.steppir.com 7
Tac-Comm – www.tac-comm.com 118
Tashjian Towers – www.TashTowers.com 120
Ten-Ten International Net, Inc. – www.ten-ten.org 110
Tigertronics – www.tigertronics.com 118
Timewave Technology, Inc. – www.timewave.com 104
W5SWL Electronics – www.w5swl.com 102
Warren Gregoire & Associates – www.superbheadsets.com 126
West Mountain Radio – www.westmountainradio.com 18
Wolf River Coils, LLC – www.wolfrivercoilsllc.com 118
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Scores (continued from page 76)

Score listings are grouped according to the number of transmitters in simultaneous operation and their entry class. The listings show club or group name, call sign(s) used, total number of QSOs, number indicating power output used (5 is less than 5 W; 2 is less than 150 W; 1 is more than 150 W), number of participants, and total score including bonus points and ARRL Section. Entries are listed from highest to lowest claimed score in each class. Class A stations are clubs or groups portable with three or more participants. Class B stations are portables with one or two participants. When there are two operators, the other operator's call is listed in parentheses, if it is known. Class C stations are mobiles. Class D stations are home stations using commercial power. Class E stations are home stations using emergency power. Class F stations are EOC stations.

Three or More Person Club/ Non-Club Portable

1A

NCAARS/ Brock Mtn. CG					
NG5M	1,815	2	4	8,196	AR
Case ARC					
W8EDU	1,709	2	3	7,986	OH
Fresno ARC					
KØAV	1,672	2	3	6,838	CO
Federation of AR Operators					
K9ZA	1,195	2	3	5,264	IL
Dr. Loomis Memorial Junior Mechanics League					
W3KDR	1,136	2	8	4,442	MDC
Benton ARS					
K5NE	1,349	2	10	4,122	AR
Belews Cove Minions					
N4CWZ	1,136	2	4	3,940	NC
3730 Group					
VE3ORF	679	2	6	3,572	ONE
Souris Valley ARC					
KØAJW	723	2	15	3,504	ND
Nashoba Valley ARC					
N1NC	735	2	11	3,288	EMA
Mid-Atlantic Portable Operators Assn.					
N8T	1,291	2	3	3,156	WV
Page Valley ARC					
K4PMH	877	2	11	3,104	VA
Ottawa ARC					
VE3RC	584	2	10	3,050	ONE
Bass Hill Repeater Group					
W1KX	465	2	6	2,712	ME
Big Bend ARC					
K5FD	1,472	1	10	2,641	WTX
Clinton Co. Contestors					
W9PC	569	2	9	2,610	IN
Monkey Lover's Radio Consortium					
N6IP	1,393	1	4	2,487	SCV
Lake Agassiz RC					
NØLAC (+WXØND)	3,31	2	10	2,340	ND
Colbert Co. ARC					
WX4CC	431	2	4	2,316	AL
Alabama Contest Group					
W4AQP	512	2	3	2,298	AL
VE3BY	825	2	3	2,000	ONS
Middle Peninsula ARC					
W4HZL	382	2	23	1,962	VA
Iguana Air Corps Contest Club					
K9IZ	767	2	3	1,896	IN
Samuel F. Morse ARC					
W6SFM	222	2	13	1,788	SV
Calgary ARA					
VE6NQ	322	2	19	1,700	AB
FBOM International					
WL5H	389	2	6	1,694	SV
Mike and Key ARC					
AG7T	300	2	3	1,550	WWA
Plattsmouth ARC					
KBØSMX	185	2	11	1,434	NE
Narwhal					
K3QB	212	2	11	1,416	WWA
South Lake Charles RC					
KI5EE	300	2	4	1,416	LA
Maple Valley ARC					
K7C	270	2	3	1,288	WWA
Geezer Contesting Club					
K7NM	241	2	3	1,250	UT
Motorola ARC					
K9MOT	249	2	3	1,250	WI
Reno Co. (KS) ARA					
WØWR	200	2	10	1,250	KS
The MegaMachine Repeater Group					
K2XD	160	2	4	1,230	ENY
Murray State Univ ARC					
WV4O	91	2	3	1,230	KY
Bull Trout Burners					
WT7B	411	2	3	1,172	ID
El Dorado Co. ARC					
AG6AU	253	2	8	1,156	SV
WR5O	447	2	6	1,144	NM
Maui ARC					
KH6RS	550	1	2	1,141	PAC
Iroquois Co. ARC					
AD9L (+W9GRS)	73	2	6	1,138	IL
Matagorda Co. ARC					
W5WTM	216	2	6	1,130	STX
WVØH	312	2	4	1,102	CO
Explorer Post 599					
WA2DFI	285	2	3	1,088	AZ
Sierra Foothills ARC					
W6EK	87	2	11	1,076	SV
Maverick Radio Mentors					
WB5WIA	155	2	5	970	NTX
Skyline RC					
K7BSK	210	2	30	966	UT
NB7O	109	2	3	946	OR
Androscoggin ARES/RACES					
KA1AAR	228	2	5	926	ME
Ocean State ARG					
K1OS	104	2	6	908	RI
Saguaro Nights ARC					
NS7F	111	2	6	890	AZ
603 ARC					
N1PTT	211	2	5	872	NH
Spring Hill ARC					
N5II	223	2	4	870	LA
NHRC A.R.S.					
W1CUM	304	2	3	858	VT
Waterman's Museum					
NIØP	146	2	3	844	VA
Cascade RC					
W7EK	100	2	10	842	WWA
W7SAZ	194	2	5	838	AZ
No Name Radio Gang					
WA1HRE	258	2	3	830	CT
Associated Radio Amateurs of Long Beach					
W6RO	36	2	11	790	LAX
KD4QDM	134	2	6	758	VA
Hiawatha Valley ARC					
AAØRW	182	2	12	756	MN
Knox Co. ARC					
W9GFD	159	2	6	726	IL
District 3 ARG					
KØB	80	2	8	710	IA
Royal Gorge ARC					
NCØA	85	2	5	690	CO
Mayerthorpe Flying Tigers					
VE6FT	263	1	3	686	AB
Radio Club of Redmond					
W7DM	155	2	4	664	EWA
Fredericton ARC					
VE9ND	127	2	8	646	MAR
Clinton Co. ARA					
WF8B	148	2	3	646	OH
North Penn ARC					
W3BTN	73	2	3	640	EPA
Radio Amateurs of Greater Syracuse					
N2JOM	122	2	7	634	WNY
Athens (GA) RC					
W4A	18	2	7	626	GA
Carolina ARES					
WX4SC	37	2	8	624	SC
Lancaster ARC					
N2GDU	43	2	3	622	WNY
Santa Clarita ARC					
W6JW	75	2	12	618	LAX
Stanly Co. ARC					
K4OGB	178	2	10	606	NC
Amateur Radio of Churchill Co.					
K7F	24	2	10	598	NV
Jasper RC					
W4BBE	82	2	9	586	GA
CQ805					
N6EOF	146	2	4	584	SB
KAØCSW	105	2	3	570	MN
Western Tidewater RA					
WT4RA	289	1	7	539	VA
WR4T	97	2	3	538	OH
SEMNARC					
WØVGW	85	2	6	520	MN
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NV8E	248	1	3	518	OH
Mount Vernon Boy Scout Troop 40 ARC					
WNØBSA	20	2	7	488	IA
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NE9T	31	2	10	474	IN
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WAØFYA	137	2	5	424	MO
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K8AX	94	2	4	416	MI
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Univ of Michigan					
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Creek Co. ARES					
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FCT2020					
KF7RPV	15	2	3	280	WWA
West Volusia ARS					
W4V	50	2	3	270	NFL
Lorain Co. ARA					
KE8MXX	48	2	3	266	OH
Alsea Valley ARG					
KJ7JHL	6	2	3	262	OR
L.A.R.E.S. NET					
KP4NET (+WP3B)	70	2	5	260	PR
Twin State RC					
KC1CCT	40	2	3	256	NH
Indiana Co. ARC					
KC3DTE	103	2	3	256	WPA
Muskegon Area AR Council					
W8ZHO	1	2	4	252	MI
L.A. City ACS					
W6DWP	49	2	3	248	LAX
Boston Mountain RC					
K5JTB	45	2	3	240	AR
Guelph ARC					
VE3KCY	21	2	3	234	ONS
W5VUI	25	2	4	200	STX
JANET Club					
KK6JA	6	2	3	174	SCV
Land of Lakes ARC					
N9TNT	50	2	4	150	IN
Tidelands ARS					
K5BS	47	2	10	144	STX
W8NCI	43	2	3	136	OH
Salem ARC					
W7SAA	29	2	4	108	OR
Poway ARS					
KQ6RS	25	2	3	100	SDG

1A – Battery

K6MI	646	5	6	7,370	SCV
Oak Mountain QRP Daredevils					
KJ4M	430	5	3	4,800	AL
Hunt Co. Packet Club					
N5T	340	5	4	4,050	NTX
Pennsylvania Knightlites					
KA2QPG	321	5	4	3,430	WPA
New England QRP Group					
K1DFT	324	5	3	3,340	ME
DeKalb Co. ARC					
W4GBR	260	5	5	3,050	AL
Sioux Empire ARC					
KEØZ	252	5	1	2,870	ND
Carbon Co. DXCC					
K9AVT	229	5	1	2,640	WY
Alberta Clippers					
VE6EX	186	5	5	2,005	AB
Marconi ARC of Newfoundland					
Sioux Empire ARC					
KEØZ	252	5	1	2,870	ND
Carbon Co. DXCC					
K9AVT	229	5	1	2,640	WY
Carbon Co. DXCC					
WØMB	163	5	1	1,835	MO
VO1MRC	43	5	3	1,280	NL
Gretna					
KE4RG	98	5	3	1,130	VA
Inyo Winds on Polaris Mtn. Family Field Day					
K6SB	80	5	3	1,050	SJV
Hidden Valleys ARC					
W9JFK	61	5	4	690	W
KU4CG	113	2	1	476	WV
K5KHK	22	5	1	435	WNY
Kitchener-Waterloo ARC					
VE3NUZ	10	5	1	300	ONS
VA3OTC	14	5	3	285	ONS
Richmond ARC					
VA7MAC (+VA7NAB)	1	5	1	155	BC

1A – Commercial

Newport Co. RC					
KB1ZZU	250	2	4	1,470	RI
FVVFD					
K4F	202	2	5	1,138	NFL
Front Yard radio Group					
NØIRN	136	2	3	860	MO
Iroquois Co. ARC					
KC9GWD	17	2	8	784	IL
Club Radio Amateur Sorel – Tracy					
VE2CBS	151	2	3	654	QC
Arkansas Radio Emergency Services					
N5AT	72	2	10	494	AR
Delaware Valley Radio Assn.					
N3DD	183	1	6	345	EPA
South Lane ARA					
W7SLA	71	2	3	312	OR
Auburn Univ AR					
K4RY	126	2	5	302	AL

Delaware Valley Radio Assn.
W2ZQ 170 1 6 269 SNJ
Eastern Ozarks ARC Inc.
KØEOR 46 2 3 242 MO
Ohio Valley Experimenters Club
KD8LBS 79 2 3 218 OH
K5CXO 10 2 6 190 STX
Valley & Massanutten ARA
W4BVB 65 2 4 180 VA
Jefferson Co. (NY) Radio Amateur Club
NY2JC 56 2 4 162 NNY
NorthEast Arkansas RC
K5NEA 47 2 9 144 AR
Eastern Shore ARC
K4BW 6 2 10 62 VA

2A

Muskogee ARC
K5CM (+KD5ET)
3,087 2 6 13,442 OK
Radio Amateurs of Northern Vermont
W1NVT (+W1PU)
4,171 2 15 12,784 VT
Huntsville ARC
K4BFT (+K4GIG)
2,489 2 35 9,986 AL
Greer ARC
K4SV 3,129 2 25 9,712 SC
McHenry Co. Wireless Assn.
K9RN 2,006 2 10 8,930 IL
Frankford RC
K3II 1,626 2 3 6,754 EPA
Hellgate ARC
W7PX 2,169 2 4 6,676 MT
Fort Collins CW
KØDIT 1,437 2 4 6,298 CO
Lynchburg ARC
K4CQ 1,294 2 19 5,862 VA
Newport Co. RC
NE1RI 1,530 2 18 5,784 RI
High Desert Wireless
W5YA 1,427 2 4 5,712 NM
Union City Wireless Assn.
W3CG 1,412 2 12 5,606 WPA
Montrose ARC
KØIIT 1,596 2 25 4,802 CO
Not Quite Workable Contest Club
K8NQW 1,043 2 4 4,722 OH
Trojan ARC
NWØK 817 2 4 4,018 KS
Carbon Co. DXCC
N7W 1,183 2 9 4,006 WY
Massillon ARC
W8AU (+W8NP)
832 2 35 3,868 OH
Magnolia ARC
K5DY (+W5YD)
714 2 9 3,778 MS
Razorback Contest Club
W5YO 1,073 2 6 3,690 AR
Reelfoot ARC
K4RFT 599 2 7 3,634 TN
Mississippi Valley ARA
W9MVA 1066 2 10 3,522 WI
Lake of the Ozarks ARC
NØZS (+AA4SB)
1,197 2 15 3,444 MO
Wireless Soc. of Southern Maine
WS1SM 714 2 11 3,376 ME
Monkey Lover's Radio Consortium
K6MMM 596 2 20 3,352 SCV
Canton ARC
W8AL (+NX8J)
647 2 25 3,240 OH
Montezuma Valley Ham Breakfast Group
WØCCA 651 2 3 3,154 CO
Charlotte ARS
WX4E 590 2 21 3,062 WCF
Grand Rapids ARA
W8DC 658 2 10 2,804 MI
Blue Ridge ARC
W4YK 824 2 8 2,754 NC
Shenandoah Valley ARC
W4RKC 608 2 10 2,614 VA
Lincoln Co. (ME) ARC
K1LX (+K1GAH)
466 2 5 2,606 ME
Harford Co. ARES
WD3E 540 2 7 2,448 MDC
York Co. SC ARS
K4YTZ 964 2 5 2,378 SC
Fox Cities ARC
W9ZL 525 2 15 2,350 WI
Ellsworth Amateur Wireless Assn.
W1TU 384 2 3 2,308 ME
King Harbor Yacht Club Radio Fleet
K6HYC (+K6UU)
457 2 5 2,304 LAX
Tri-Co. ARA (NJ)
WE2DX 730 2 3 2,288 ENY
Columbus ARC
W4CVY (+W4FIZ)
728 2 30 2,272 GA
Whidbey Island Trailblazers
W7WIT 601 2 4 2,270 EWA
Lake Co. ARA
N8BC 597 2 5 2,250 OH
California DX Assn.
AJ2J (+K6K)
631 2 6 2,240 LAX
Azalea Coast ARC
AC4RC 558 2 10 2,196 NC
Mammoth Cave ARC
KY4X 625 2 10 2,160 KY
Crawford ARS
W3MIE 412 2 25 2,110 WPA
Laguna Mountain FD
WW6CC (+W6BAF)
367 2 10 2,102 SDG
Hancock ARC
W9ATG (+N9TT)
378 2 48 2,060 IN
Waldo Co. ARA
N1TN 642 2 11 2,054 ME
Gwinnett ARS
W4KLY 434 2 3 1,986 GA
Clark Co. (WA) ARC
W7AIA 354 2 12 1,956 WWA
Trident ARC
N4EE 771 2 15 1,952 SC
ARC Of Alameda
K6QLF 442 2 4 1,914 EB
Whitley Co. ARC
WC9AR 316 2 4 1,882 IN
Bryan ARC
W5BCS 297 2 39 1,850 STX
Delaware Lehigh ARC
W3OK 342 2 10 1,780 EPA
Madison Co. (OH) ARC
KE8RV 337 2 7 1,766 OH
ARESLAXNW
W1EH (+K6ECG)
265 2 6 1,690 LAX
Paso Robles ARC
W6R (+W6LKF)
367 1 20 1,684 SCV
Owensboro ARC
K4HY 322 2 13 1,666 KY
Whatcom Co.
W7WWU 387 2 15 1,638 WWA
Davie/Cooper City ARC
NA4DC 140 2 12 1,626 SFL
Clark Fork Valley ARC
KO6UW 228 2 13 1,608 MT
Coastal ARS
W4LHS 393 2 14 1,564 GA
Wayne ARC
N8IW 343 2 3 1,540 OH
Arizona ARC
W7IO 247 2 10 1,522 AZ
Mics and Beer
WJ7H 326 2 3 1,454 EWA
Heartland Hams ARC
WØHLH 410 2 3 1,450 IA
Disney Emergency AR Service
WD4WDW 426 1 6 1,424 NFL
Brown ARC
K5BWD 250 2 8 1,386 NTX
Capital City ARC
N7RB 122 2 25 1,364 MT
Lincoln ARC
KØKKV 357 2 4 1,358 NE
Blossomland ARA
W8MAI (+W8KIT)
294 2 12 1,344 MI
Mid-Del ARC
W5MWC 293 2 7 1,336 OK
The Emergency Repeater System
N5ERS 268 2 3 1,306 NTX
Milton ARC
K3FLT (+K3WJH)
137 2 8 1,294 EPA
Magnolia DX Assn.
K5MDX 222 2 4 1,290 MS
MVARC
KJ7GUI 227 2 4 1,270 ID
Pamlico ARC
K4BCH 352 2 12 1,252 NC
Green Mountain Wireless Soc.
N1VT 30 2 6 1,230 VT
NØOH 234 2 8 1,206 MN
Washington Area ARC
WØARC 149 2 9 1,180 IA
Boaz-Albertville ARC
KN4UPN 149 2 8 1,154 AL
Atlantic Region Repeater Legion
W2XTV 397 2 4 1,144 NNJ
3 Rivers ARC
N7ELI 87 2 6 1,124 ID
Mike & Key ARC
K7ANE 384 2 3 1,118 EWA
Addison Co. ARA
N1FS 170 2 3 1,116 VT
New Jersey Antique RC
W2RTM 342 2 15 1,096 NNJ
Santa Fe Trail ARC
KSØKS 198 2 21 1,094 KS
Utica ARC
K2IQ 179 2 6 1,092 WNY
Central Missouri Radio Assn.
KØSI 101 2 6 1,088 MO
DeKalb Co. ARC
KK4ICU 266 2 15 1,082 AL
Avengers
K5C 211 2 6 1076 NTX
Ruckerville Amateur Transmitting Soc.
N4CVG 178 2 13 1,076 KY
Meigs Co. ARC
KC4MC (+KC4MC)
51 2 7 1,072 TN
Tri Co. ARC (WI)
W9MQB 172 2 7 1,070 WI
Gwinnett ARS
W4GR 199 2 3 1,056 GA
Charleston ARS
WA4USN (+KN4EXJ)
151 2 12 1,052 SC
Greensboro ARA
W4GSO 1 2 10 1,052 NC
Gordon, PA Hams
WR1B 90 2 4 1,024 EPA
Friends of W1RI
W1RI 133 2 4 1,014 RI
Pella ARC
KØPEA 173 2 25 1,000 IA
Richardson Wireless Klub
K5RWK (+K5W)
287 2 12 984 NTX
WCARS-Murphy/Cherokee Co. ARES
WC4NC 123 2 3 982 NC
Hidden Valleys ARC
KC9KQ (+KC9MCC)
84 2 15 976 WI
Coal Country ARC
WV8CCC 113 2 4 976 WV
Hamilton (OH) ARC
W8AJT 212 2 7 974 OH
Village 7 ARC
KCØRVS 59 2 15 944 CO
Farrell-Gray
KØW 54 2 3 930 CO
Gainesville ARS
K4GNV 188 2 10 926 NFL
Issaquah ARC
W7BI 305 1 3 919 WWA
Owatonna Steele Co. AR
WBØPKG 304 2 6 918 MN
Central Indiana ARA
KB9FVJ 17 2 14 904 IN
Midwest ARC
WØQJ 163 2 5 902 MO
America West ARC
K7AWA 146 2 3 898 AZ
Phil-Mont Mobile RC
W3EM 154 2 10 890 EPA
Univ of Southern California ARC
W6YV 186 2 3 884 LAX
Suncoast ARC
WA4T 59 2 4 878 WCF
Metuchen RC
K2YNT 258 2 4 862 NNJ
Do Something ARC
K7DSC 86 2 7 796 ID
Coweta RC
N4CRC 172 2 5 782 NC
San Fernando Valley ARC
W6SD 107 2 4 764 LAX
Eastern Shore ARC
K9AGR 77 2 4 758 KY
Caldwell ARES
K4KMW 250 2 3 750 KY
KJ6OKV (+KJ6OKV)
17 2 3 750 ORG
Lincoln Co. (OR) ARC
N7OY 93 2 9 740 OR
Club Radioamateur De La Vallee Du Richelieu
VE2CVR 99 2 20 734 QC
Ogden ARC
W7SU 227 2 26 724 UT
Hoosier Lake RC
K9CWD 71 2 12 708 IN
Lenoir ARC
N4LNR 129 2 4 708 NC
Hughes ARC
W1MII 22 2 3 694 LAX
Central Toronto ARC
VA3CTA 2 2 3 674 GTA
Raritan Bay Radio Amateurs
K2GE 49 2 3 648 NNJ
Golden Spike ARC
K7UB 195 2 3 640 ID
Portsmouth (VA) ARC
W4POX 139 2 10 628 VA
Rich & Ron's Field Day
KJ6HRO 56 2 3 624 SV
Lakes Region Repeater Assn.
W1BST 53 2 24 606 NH
Greenwood ARC
VE1PHL 26 2 6 602 MAR
Twin City FM Club
WØEF 75 2 7 600 MN
Fort Madison ARC
WFØRT 19 2 3 598 IA
Mountain ARC (CO)
NXØG 23 2 6 596 CO
Green Bay Mike & Key Club
K9EAM 14 2 20 578 WI
Palestine Anderson Co. ARC
K5PAL 62 2 8 574 NTX
Calvert ARA
K3CAL 97 2 4 554 MDC
Mifflin Co. Contesters
W3MCC 70 2 3 530 EPA
Kent Co. ARC
KC3ARC 50 2 5 504 DE
Rochester (NY) DX Assn.
N2DD 73 2 3 496 WNY
Fullerton RC
W6ULI 22 2 5 494 ORG
Frederick ARC
K3ERM 64 2 5 486 MDC
Maple Ridge ARC
VA7DBJ 28 2 3 452 BC
Hancock-Hawkins AR Team
N2H 46 2 12 442 TN
Tri Co. ARC (TX)
WC5C 20 2 3 442 NTX
Troop 2008
KO5HX (+KO5HX)
40 2 5 384 STX
White Mountain ARC
W1MWV 66 2 3 382 NH
Bainbridge Island ARC
W7NPC 16 2 5 382 WWA
Clinton Co. ARA
W8SBL 36 2 4 342 OH
Twin State RC
W1FN 41 2 5 332 NH
Westside ARC
W5ABD 23 2 5 296 LA

2A – Battery

QRP Pals
N9NE 797 5 3 8,165 WI
Hampden Co. Radio Assn.
NE1C 433 5 6 5,190 WMA
Huntsville ARC
AA2MA 36 5 3 975 AL

2A – Commercial

Zephyrhills Area ARC
W1PB 685 2 25 2,734 WCF
Carbon Co. DXCC
WØCW 949 2 3 2,346 MO
TLSC Ham Radio Group
K3T 778 2 26 2,114 WPA
Spartanburg ARC
K4II 400 2 15 1,610 SC
Preble ARA
NJ8BB 216 2 4 1,038 OH
North Central Missouri ARC/Livingston Co. ARES
NØLIV 138 2 16 926 MO
Greater Nebraska AR League
KØGNE 247 2 3 924 NE
Columbia (OR) ARA
N7EI 204 2 6 876 OR
Skyline Tower ARC
W7DTV 207 2 5 846 OR
Housatonic ARC
N1KT 457 1 5 735 CT
3 Guys With Radios ARC
KM3GWR 112 2 3 718 IL
Bear Rocks Community Club
N3BJY/KB3ZID
147 2 3 644 WPA
Mayes Co. ARC
WX5MC 99 2 8 636 OK
ARC of Columbia Co.
K4KNS 75 2 15 620 GA
Key City ARC
KC5OLO 176 2 25 574 WTX
Moore Co. ARS
NC4ML 2 2 10 554 NC
Moose Jaw ARC
VE5MA 152 2 8 542 SK
Jersey Shore ARS
NJ2AR 21 2 25 496 SNJ
Southern Indiana Tri-Co. Club
KC9OLF 138 2 3 426 IN
Suffolk Co. RC
W2DQ 48 2 10 422 NLI
Sun City Summerlin ARC
K7S 6 2 7 262 NV
Tishomingo Co. ARC
W5TCR 61 2 3 172 MS
Pretty Good Ham Club
WOOGIE 103 1 3 153 WI
Mile Highlanders Group
W4MHG 11 2 3 72 TN

3A

Indy United ARC
W9SU (+W9RCA)
4,841 2 32 17,330 IN
Rappackers Contest Group
NR4M 3,917 2 7 16,018 VA
Randallstown ARC
N3IC (+K3MZ)
2,801 2 10 9,724 MDC
OH-KY-IN ARS
K4BRI 2172 2 10 8,202 KY
Delaware ARA
K8ES 2,274 2 20 8,140 OH
Central West Virginia Wireless Assn.
K8DF (+WV8HC)
1,963 2 20 7,544 WV
Tennessee Valley DX Assn.
KM4EA 1,630 2 16 6,494 TN
Rocky Mountain Ham Radio
N0SZ (+W0KVA)
1607 2 29 5962 CO
L'Anse Creuse ARC
N8LC 1,514 2 12 5,626 MI
ARES of Douglas and Elbert Co.
W0RDR (+WA0DE)
1,248 2 18 5,366 CO
Forx ARC
N0GF (+ND0GF)
1,187 2 15 5,128 ND
Michiana ARC
W9AB 1,209 2 14 4,932 IN
Utah Valley ARC
K7UVA (+K7GSL)
1,272 2 58 4,156 UT
Parker Radio Assn.
K0PRA (+N2SRK)
1,303 2 50 4,074 CO
Stanwood Camano ARC
W7PIG 702 2 25 3,836 WWA
Los Fanfarrones FD Squad
KP4EC 878 2 6 3,806 PR
The 415 ARC
N9WH 744 2 19 3,264 IL
XRX RC
W2XRX 782 2 11 3,254 WNY
McDowell ARC
WV8ED 1,022 2 9 3,234 WV
Hernando Co. ARA
K4BKV 500 2 10 3,072 NFL
Winona ARC
W0NE 878 2 16 3,070 MN
Gaston Co. ARS
N4GAS 846 2 9 3,036 NC
Wood Co. ARES/RACES
W9WCA 569 2 10 2,952 WI
Central Vermont ARC
W1BD 2147 1 5 2,817 VT
Idaho Renegades
K7TM 500 2 3 2,718 ID
Cumberland Plateau ARC
W4T (+NV1T)
569 2 25 2,716 TN
McKinney ARC
W5MRC 538 2 31 2,532 NTX
Bastrop Co. ARC
K5OQ 559 2 0 2,522 STX
Queen City Emergency Net
W8VND 622 2 10 2,366 OH
Jackson ARC
KS0JA (+N0YUP)
432 2 20 2,360 KS
Montgomery ARC/Damascas ECT
W3M (+KV3B)
334 2 16 2,324 MDC
FD2020 in the park Sabin MN
NY0MN 416 2 10 2,292 MN
Bama Ham'ers
AI4AL 338 2 6 2,272 AL
The World RC
W3WRC 445 2 7 2,258 SV
Clay Co. AuxCom
N9CCA 351 2 7 2,174 IN
Ohio Valley ARC
KT9K 396 2 9 2,154 IN
Antietam Radio Assn.
W3CWC 426 2 13 2,110 MDC
Club Radioamateur de Drummondville
VE2CRD (+VA2IMD)
362 2 9 2,074 QC
Pahrump AR Repeater Assn.
W6NYK 116 2 39 2,032 NV
Black River ARC
K8BRC 423 2 12 2,024 MI
Mt. Magazine ARC
W5MAG 514 2 10 1,998 AR
Fort Wayne RC
W9TE 356 2 19 1,994 IN
St. Charles ARC
WZ0W 371 2 5 1,942 MO
Eastside AR Service
NE5TX 350 2 5 1,870 STX
South Mountain Radio Amateurs
WC3R 302 2 3 1,858 EPA
The Road Show ARC
WA4TRS 416 2 10 1,846 NC
Thousand Islands R.C.
KC2TI 367 2 18 1,824 NNY
Hancock AUXCOM Team
WV8HAT (+KD8SKZ)
347 2 9 1,738 WV
Big Thunder ARC
KC9YJO 375 2 13 1,720 IL
Frank Phillips Memorial Repeater Assn.
AB5J (+N5ZPG)
133 2 14 1,712 OK
Anoka Co. RC
W0YFZ 307 2 7 1,682 MN
Northeastern Indiana ARA
W9OU 299 2 30 1,660 IN
Des Moines Radio Amateur Assn.
W0AK 276 2 19 1,630 IA
California City ARC
KE6RN 292 2 21 1,586 SJV
New River Valley ARC
N4NRV 251 2 18 1,554 VA
Aero ARC
W3PGA 219 2 18 1,542 MDC
Stones River ARC
K4FUN 233 2 32 1,534 TN
Kansas Antenna Club in Johnson Co.
K0ANT 268 2 12 1,528 KS
Marple Newtown ARC & Mobile Sixers RC
N3NZ 268 2 19 1,508 EPA
Elmore Co. ARES
WA7ZAF 387 2 19 1,506 ID
K9NZF Systems Kleer Konnect Network
W9A 503 2 6 1,482 IN
Westside ARC
WA6RC 191 2 3 1,472 LAX
Whitewater Valley ARC
N9JM 488 2 12 1,470 IN
GOTAHAMS
WG6OTA 125 2 24 1,468 LAX
Jamestown ARC
W0FX 232 2 5 1,446 ND
Olympia ARS
NT7H 225 2 8 1,434 WWA
Kennehoochee ARC
W4BTI 320 2 8 1,430 GA
Randolph Co. Emergency RC
K4RAN 351 2 13 1,402 AL
Hoosier Hills Ham Club
W9GUS 126 2 15 1,354 IN
Northeast Iowa Radio Amateur Assn.
W0MG (+W0AWW)
92 2 12 1,328 IA
High Sierra Field Day Group
K6HS 324 2 4 1,324 SV
Mining ARC/St. Paul RC
W0MR 231 2 36 1,300 MN
Lebanon Valley Soc. of Radio Amateurs
K3LV 154 2 10 1,294 EPA
Beaver Valley ARA
W3SGJ 267 2 9 1,284 WPA
Reading RC
W3BN 211 2 31 1,270 EPA
Lincoln Co. ARA
W4BV (+KF4YTL)
301 2 8 1,252 TN
Friends of ARG
W4U 187 2 3 1,246 GA
Algonquin ARC
N1EM 171 2 7 1,226 EMA
Oak Hill ARC
N5OAK 258 2 4 1,222 STX
Barron Co. ARA
KD9EJA 198 2 7 1,212 WI
Pen Bay ARC
W1PBR 148 2 5 1,202 ME
Yonkers ARC
W2YRC 239 2 17 1,188 ENY
San Gorgonio Pass Amateur Club
W6PRC 132 2 22 1,154 ORG
Birmingham ARC
W4CUE (+KD4KZT)
106 2 20 1,152 AL
Delta ARC
W4BS 135 2 25 1,150 TN
Marion ARC
KE8AFF 129 2 3 1,144 OH
Culpeper ARA
W4CUL (+K4MVM)
271 2 11 1,126 VA
Anne Arundel RC
W3VPR 195 2 13 1,122 MDC
Lake Conroe ARC
AC5LC 169 2 14 1,098 STX
Red River Radio Amateurs
K0RQ 358 2 7 1,078 ND
Easton ARS
K3HMA 648 1 5 1,046 MDC
Riverside Co. ARA
W6TJ 133 2 11 1,028 ORG
Cabarrus ARS
K4WC 222 2 16 1,014 NC
Cumberland ARC
K3IEC 10 2 6 970 EPA
Warren ARS
KD0FGV 69 2 13 910 IA
West Point Fire CERT
W6WPT 120 2 4 886 SJV
Chequamegon Nicolet National Forest ARG
N9CNF 37 2 3 858 WI
East Penn ARC
W3LP 149 2 4 848 EPA
Limestone ARES
N4SEV (+KE4GOI)
111 2 12 798 AL
Bishop ARC
K7D 101 2 7 772 NV
Metropolitan ARC
K8NOW 118 2 4 738 MI
Jacksonville ARS
K9JX 48 2 4 722 IL
Cuyahoga Falls ARC
KE8OJH 79 2 7 688 OH
Blue Ridge ARS
W4NYK 51 2 23 688 SC
Plano AR Klub
K5PRK 154 2 5 658 NTX
Sheboygan Co. ARC
W9VCL 50 2 5 650 WI
St. Joseph Co. (MI) ARC
K8SJC 103 2 3 604 MI
Club de Radio Amateur Outaouais
VA2EP 118 2 6 586 QC
South Wake ARC
N4SWC 157 2 3 564 NC
Sacramento Co. ARES
NM3S 48 2 4 536 SV
Boomer Bill ARC
W6AFS 33 2 3 416 SJV
White Rock ARC
VE7DB 91 1 12 164 BC
Denver Water ARC
KD0SSP 39 2 4 128 CO
Southern Plateau ARC
KN4WAN 27 2 5 104 TN

3A – Battery

Tulsa Digital RC
KT5DIG 441 5 10 4,755 OK
Terrain Gain Gang
K7JRB 221 5 3 2,660 OR
Terrain Gain Gang
W7IME 197 5 3 2,520 WWA
Fauquier ARA
K3FA 145 5 3 1,855 VA
Terrain Gain Gang
W7CLU 50 5 3 700 OR

3A – Commercial

Cleveland Co. AR Service
NA4CC 948 2 12 3,758 NC
High Point ARC
W4UA 844 2 21 3,290 NC
Drake Contest Club
K8UU 798 2 7 3,172 OH
Beaumont ARC
W5RIN 893 2 0 3,102 STX
Mobile ARC
W4IAX 629 2 7 2,806 AL
Southwest Dallas Co. ARC
W5WB 551 2 19 2,662 NTX
Rockingham Co. ARC
N4IV 397 2 12 1,568 NC
Ashtabula Co. ARC
K8CY 242 2 17 1,302 OH
Orange Co. (NY) ARES/RACES
KD2NMG 238 2 6 928 ENY
Scioto Valley ARC
W8BAP 187 2 11 870 OH
Cross Co. ARC
WA5CC 24 2 4 498 AR
Daviess Co. ARC
KC9SFL 121 2 5 368 IN
Radio Amateurs of Corry
W3YXE 61 2 12 172 WPA

4A

ABCD Group
N6HC 2,254 2 6 8,256 LAX
Central Kentucky ARS
AJ4A 2,054 2 22 6,482 KY
Mount Vernon (OH) ARC
K8EEN 1,604 2 14 6,074 OH
Windmill ARG
W3LTR 2,408 2 9 5,266 EPA
Piedmont ARC
K4PAR (+K4P)
1,388 2 9 4,768 GA
Superstition ARC
K7K 714 2 2 3,158 AZ
Arizona Outlaws Contest Club
W7MRF 796 2 7 3,142 AZ
Spout Springs Repeater Assn.
WF7S 766 2 8 2,798 EWA
Franklin Co. (NC) ARC
AA4RV 547 2 18 2,794 NC
Northeast ARC
N1ERC 910 2 10 2,700 EMA
Sun Country ARS
N4EK 382 2 20 2,488 NFL
Washington Amateur Communications
WA3COM 550 2 10 2,330 WPA
West Georgia ARS
W4F (+W4FWD)
366 2 32 2,276 GA
BARC
AB5UE 342 2 5 2,238 STX
Fort Herkimer ARC
W2FHA (+KD2ILO)
360 2 15 2,230 WNY
South Lyon Area ARC
N8SL 522 2 5 2,136 MI
Kokomo ARC
W9GO 502 2 19 2,098 IN
Southern MI ARS
W8DF 384 2 34 2,034 MI
Cumberland Valley ARC
W3ACH 298 2 23 2,026 WPA
CCDXARC
AD1T 457 2 5 1,950 NH
Cherryville Repeater Assn. II
W2CRA 462 2 15 1,810 NNJ
Penn Wireless Assn.
W3SK 208 2 4 1,700 EPA
Highland ARA
K8HO 414 2 14 1,676 OH
Estero RC
W6JU (+W6SLO)
212 2 7 1,654 SB
Insurance City Repeater Club
W1DHT 265 2 15 1,624 CT
Middlesex ARS
W1EDH 245 2 15 1,536 CT
Chesapeake AR Service
W4CAR 120 2 19 1,434 VA
Northern Illinois Quad Co. ARG
K9T 135 2 8 1,424 IL
Butler Co. (PA) ARA
W3UDX (+AA3YW)
272 2 7 1,378 WPA
Elk Co. ARA
N3NIA 195 2 11 1,340 WPA
Jefferson Co. (MO) Radio Amateur Club
KB0TLL 135 2 3 1,302 MO
Maury ARC
W4GGM 100 2 14 1,300 TN
North Texas Radiosport Assn.
KN5TR 158 2 7 1,268 NTX
Fort Venango Mike and Key Club
W3ZIC 279 2 4 1,266 WPA
Findlay RC
W8FT 322 2 5 1,244 OH
Piscataquis ARC
K1PQ 151 2 8 1,156 ME
Rural Radio Preparedness Assn.
KO4SRC 49 2 4 1,154 NFL
Bridgerland ARC
W7IVM 285 2 20 1,122 UT
Sweetwater ARC
WY7U 53 2 8 1,100 WY
Lake Travis ARC
WA5WW/WA5RP
5 2 4 1,010 STX
Wood Co. ARC
W8C 147 2 8 1,008 OH
Kent ARS
K3ARS 174 2 6 898 MDC
Tamaqua Wireless Assn.
W3TWA 129 2 10 884 EPA
Northern Colorado ARC
W0UPS 67 2 5 884 CO
Vermilion Co. ARA
W9MJL 175 2 9 878 IL

4A – Battery

Portland ARC
W7LT 388 5 12 4,115 OR
Boschveldt QRP Club
W3BQC 172 5 6 2,285 EPA
Snake River ARC
K7SI 120 5 8 1,760 ID
Foothill Flyers RC
W6FHF 25 5 7 275 LAX

4A – Commercial

Miami Co. ARC
K9ZEV 504 2 13 1,764 IN
Fort Armstrong Wireless Assn.
K3QY 600 2 32 1,550 WPA
Grayson Co. ARC
K5GCC 312 2 12 1,214 NTX
Thomasville ARC
AA4P 227 2 8 1,030 GA
Ad Hoc ARS
KD9EMV 80 2 6 670 IN

5A

Lake ARA
K4FC 3,674 2 15 11,232 NFL
Black River Radio Ops
NW8S (+N8ESG)
2,438 2 17 10,582 OH
Rappahannock Valley ARC
K4TS 1667 2 29 6,128 VA
Holland ARC
K8DAA (+KE8BSL)
1,688 2 15 5,326 MI
Warren Co. NY RC
W2C (+W2WCR)
1,212 2 26 5,024 ENY
Rainbow Canyon ARC
N7U 848 2 32 4,172 UT
Morocco Mole Contest Club
N8IVE 961 2 6 3,810 OH
Panhandle ARC
W5WX 1,125 2 25 3,660 WTX
Eastern CT ARA
KZ1M (+K1MUJ)
1,110 2 20 3,560 CT
Cherryland ARC
W8TCM 1,063 2 12 3,554 MI
TUSCO ARC
W8ZX 676 2 25 3,084 OH
Lancaster ARC
W2SO 460 2 11 2,964 WNY
LEFROG
W9FRG 631 2 5 2,846 WI
Susquehanna Co. ARC
N3SRC (+KC1FWU)
527 2 35 2,710 EPA
Vero Beach ARC
W4OT 455 2 34 2,608 SFL
Lockport ARA
W2RUI 370 2 14 2,272 WNY
Clark Co. (IN) ARC
W9WWI 400 2 6 2,264 IN
Glynn ARA
K4B 360 2 8 2,210 GA
HAMARS
W4H 370 2 5 2,192 NC
Wood Co. Emergency Communications
WC8EC 276 2 46 2,124 WV
Western Colorado ARC
W0RRZ 561 2 7 1,888 CO
Risingsun Field Day Group
W8MAL 342 2 8 1,886 OH
Fulton Co. ARC
K8BXQ 369 2 5 1,868 OH
Vilas Co. RC
W9VRC 809 1 5 1,659 WI
Klamath Basin ARA
W7VW (+KB7GAB)
188 2 20 1,620 OR
Andrew Johnson ARC
W4WC 403 1 21 1,563 TN
Chenango Valley ARA
W2RME 188 2 13 1,458 WNY
Burchett Museum and RC
K6SLC 83 2 5 1,216 LAX
Grundy Co. ARC
W9G 89 2 12 1,162 IL
Mississippi Coast ARA
W5SGL 79 2 5 734 MS

5A – Battery

SDGARES
W6F 835 5 11 9,160 SDG

5A – Commercial

Brainerd Area ARC
W0UJ 619 2 12 2,514 MN

6A

Wabash Valley ARA
W9UUU 724 2 15 4,142 IN
Olive Branch ARC/Chickasaw ARA
K5M 1,066 2 12 3,656 MS
Overlook Mountain ARC
N2LL 626 2 22 3,076 ENY
Bonner Co. ARES
K7BNR 406 2 6 2,512 ID
Red Rose Repeater Assn.
W3RRR 130 2 11 1,526 EPA

6A – Commercial

Columbia (SC) ARC
W4CAE 227 2 6 1,306 SC
North Mason Amateur Emergency Service Club
N7ME (+KG7WEQ)
82 2 14 534 WWA

7A

Grande Ronde Radio Amateurs Assn.
W7GRA 561 2 7 2,878 OR
Stockton-Delta ARC
W6SF 462 2 25 2,852 SJV

8A

Woodbridge Wireless
W4IY 4,196 2 20 17,110 VA
Gloucester Co. ARC
W2MMD 2,564 2 28 9,984 SNJ

9A

Five Flags ARA
W4UC 748 2 26 3,616 NFL

10A

Vaca Valley RC
W6VVR 157 2 43 2,162 EB

One or Two Person Club/ Non-Club Portable

1B – 1 Operator

Mad River RC
KW8N 1,639 2 1 6,942 OH
Mad River RC
K1LT 1,528 2 1 6,362 OH
Green Valley ARC
WA7NB 1,519 2 1 5,592 AZ
K8ER 1,082 2 1 4,478 MI
Mad River RC
K8RYU 1,114 2 1 4,314 OH
The Guys
N9EP 1,013 2 1 4,174 IL
Fox River Radio League
K9PW 1,288 2 1 4,126 IL
Willamette Valley DX Club
K2PO 920 2 1 3,926 OR
Southern California Contest Club
N6MI 926 2 1 3,866 SB
Westchester Emergency Communications Assn.
N2NI 1,040 2 1 3,816 ENY
Lapeer Co. ARA
N8LJ 817 2 1 3,414 MI
WA8Y 774 2 1 3,246 MI
N7RVD 715 2 1 3,210 EWA
Iowa Wireless AR Network
KD0Q 708 2 1 2,978 IA
N7WY 693 2 1 2,902 WY
N8ZR 663 2 1 2,902 WV
W4KD 684 2 1 2,864 OH
K7CAR 809 2 1 2,618 UT
KB4CG 593 2 1 2,582 VA
Soc. of Midwest Contesters
WD8DSB 513 2 1 2,302 IN
WA5BDU 487 2 1 2,198 AR
Kings Co. and Annapolis Valley ARCs
VA1AVR 639 2 1 2,128 MAR
Story Co. ARC
N0HR 429 2 1 2,066 IA
WD Contest Group
KB0LF 350 2 1 2,050 NE
WA4PGM 498 2 1 2,022 VA
Rappahannock Valley ARC
KK4NDE 397 2 1 1,938 VA
Boulder ARC
KG0EW 625 2 1 1,934 CO
Rochester (NY) DX Assn.
KV2X 444 2 1 1,922 WNY
Utah DX Assn.
WR7Q 446 2 1 1,914 UT
N4UF 430 2 1 1,766 NFL
Sawnee ARA
NR4N 332 2 1 1,644 GA
W0QL 344 2 1 1,626 CO
Tri-State ARS
N9OL 284 2 1 1,584 IN
L.A. City ACS
N6VI 339 2 1 1,562 LAX
Palo Alto ARA
N6A (K8TR)
365 2 1 1,558 EB
South Bay ARA
AF6TF 266 2 1 1,514 SCV
Rip Van Winkle ARS
NX2X 345 2 1 1,502 ENY
W0XR 337 2 1 1,498 CO
Albemarle ARC
K4CGY 423 2 1 1,450 VA
K1USN RC
N1DC 319 2 1 1,410 EMA
N0UY 311 2 1 1,394 MN
Albemarle ARC
AK4BR 517 2 1 1,384 VA
W0RX 308 2 1 1,374 MN
Saginaw Valley ARA
W8DW 303 2 1 1,350 MI
Green Valley ARC
K0UM 268 2 1 1,322 AZ
Delaware ARA
WA8RR 243 2 1 1,322 OH
Union Métropolitaine des Sans-filistes de Montréal
VA2IU 268 2 1 1,316 QC
Morris RC/Hanover Twp OEM
W2GM 252 2 1 1,306 WNY
Carolina DX Assn.
W9EQ 214 2 1 1,306 NC
Motor City RC
W8MCW 210 2 1 1,286 MI
Pottstown Area ARC
K3TWL 446 2 1 1,266 EPA
Carroll Co. Contesters
KB3WAV 248 2 1 1,258 MDC
Olive Branch ARC/Chickasaw ARA
KK5PAC 276 2 1 1,254 MS
Escondido ARS
WD6TED 246 2 1 1,220 SDG
Kilowatt Microwave Enthusiasts Club
K3MEC (+ND3F)
174 2 1 1,218 VA
Raytown ARC
K0LBR 529 2 1 1,208 MO
KU7K 258 2 1 1,168 OR
Portage Co. AR Service
N8WCP 507 2 1 1,164 OH
Boulder ARC
W0IVJ 501 2 1 1,158 CO
Univ of Arizona ARC
K7ZOO 131 2 1 1,134 AZ
San Mateo RC
AB6D 127 2 1 1,108 SCV
Huber Heights ARC
AE8AT 213 2 1 1,102 OH
Addison Co. ARA
N1TRK 236 2 1 1,068 VT
Barrie ARC
VE3XNS 133 2 1 1,062 ONS
K7KHC 301 2 1 1,050 MT
Winnipeg ARC
VA4CQ 178 2 1 1,032 MB
N1XWI 146 2 1 1,010 NH
Davie/Cooper City ARC
N2BBT 213 2 1 1,002 SFL
Four States ARC
AA5VE 212 2 1 998 NTX
KA2BIG 422 2 1 994 NV
VE3WH 221 2 1 984 ONS
New Providence ARC
KC2WUF 183 2 1 980 NNJ
Peak Radio Assn.
KE7ZKH 138 2 1 970 OR
570-V Connection
WA8RC 175 2 1 950 MI
Pasadena RC
AC6X 348 2 1 946 LAX
Athens Co. ARA
N8SUZ 146 2 1 942 OH
Genesee Co. RC
K8KZB 169 2 1 926 MI
Three Generations of Hams
AC3V 165 2 1 906 EPA
Oakland Co. ARS
N8VY 188 2 1 902 MI
Utica Shelby Emergency Communications Assn.
N8CLZ 12 2 1 894 MI
WB4UBK 168 2 1 894 NFL
Alabama Contest Group
NF7D 368 1 1 886 AL
Mike & Key ARC
WA7DY 159 2 1 884 WWA
South Orange ARA
WE4BY 366 2 1 882 ORG
K6KWI 133 2 1 882 ORG
SDGARES
K6RJF 62 2 1 874 SDG
KD9MER 184 2 1 872 IN
Radio Farm
N0MMA 193 2 1 866 CO
North Penn ARC
KS3Z 141 2 1 862 EPA
Outstanding In Their Field ARC
W5UAA 178 2 1 862 NTX
Ozaukee RC
K9DJT 188 2 1 860 WI
WB0SMX 125 2 1 850 AZ
Utah DX Assn.
AD7KG 174 2 1 846 UT
Cameron Co. ARA
KC3CC (+W3DO)
124 2 1 846 WPA
Panhandle ARC
KF5JED 195 2 1 840 WTX
VA3QR/P 162 2 1 832 ONE
Kingman AR CW Operators Club
K7CNT 170 2 1 830 AZ
REDXA/MARS
N3RC 195 2 1 830 SF
Red River Radio Amateurs
KA0LDG 40 2 1 830 ND
KD2PSC 96 2 1 820 WNY
Ozaukee RC
W9JI 166 2 1 814 WI
Lake Area (TX) ARC
KF5VO 251 2 1 812 NTX
N0NS 138 2 1 812 IA
Long Island Mobile ARC
W2ASC 179 2 1 808 NLI
Warminster ARC
AA3K 247 2 1 802 EPA
Fort Collins CW
W0DAS 226 2 1 798 CO
WO4X 118 2 1 780 VA
KT3A 63 2 1 778 EPA
Warren Co. NY RC
KC2SDS 81 2 1 774 ENY
Silver Springs RC
NA4DA 205 2 1 770 NFL
Central Massachusetts ARA
WK1H 152 2 1 736 WMA
W2TM 124 2 1 736 ID
Palos Verdes ARC
W6HIP 87 2 1 734 LAX
WA9STI 162 2 1 734 WI
Wisconsin Valley Radio Assn.
KB9VBR 83 2 1 726 WI
Highlands Hams
KM4CRB 237 2 1 724 AL
WB9QAF 99 2 1 720 NE
Downey ARC
KB6WKT 184 2 1 706 LAX
Maple Grove RC
W0YES 172 2 1 696 MN
Prairie Dog ARC
W7XU 144 2 1 690 SD
N0DR 219 2 1 688 SD
KF7R 112 2 1 680 AZ
Broken Arrow ARC
N2YTI 81 2 1 674 OK
WX5SKY 160 2 1 670 OK
Marion Co. Ham RC
AG5AB 60 2 1 670 MS
Story Co. ARC
W0YR 110 2 1 670 IA
Boeing Employees ARS – St. Louis
AB0RX 110 2 1 666 MO
El Dorado Co. ARC
WC6J 154 2 1 666 SV
Central Oregon DX Club
WB7WHG 61 2 1 654 OR
Larkfield ARC
AA2VG 137 2 1 650 NLI
MARCA
K7TV 125 2 1 650 AZ
N2JF 250 2 1 650 SFL
Broughton Memorial Field Day Group
WB2SMK 100 2 1 640 ENY
N2NQ 122 2 1 638 VA
K9ZU 133 2 1 626 VA
Island Co. ARC
N7KN 160 2 1 626 WWA
K2KR 186 2 1 622 CO
Roanoke Valley ARC
KN4MKX 119 2 1 616 VA
WD9EWK 32 2 1 614 AZ
VA6RCN 120 2 1 610 AB
Soc. of Midwest Contesters
W8RZ 142 2 1 606 MI
Boulder ARC
KD0RC 224 1 1 602 CO
Bolingbrook ARS
N9TBD 113 2 1 602 IL
Escondido ARS
AE6BH 113 2 1 600 SDG
KA4HHM 61 2 1 594 NFL
Ozaukee RC
W9KHH 60 2 1 590 WI
Niagara Peninsula ARC
VE3OQP 18 2 1 586 GTA
KU4MH 107 2 1 584 VA
Heart of Dixie ARS
AD0DO 112 2 1 582 AL
K0PIR 59 2 1 580 SD
Radio Operators Assn. Of Dallas
K7G (WA7SKG)
149 2 1 578 OR
Oregon Tualatin Valley ARC
K7YIC 32 2 1 578 OR
Montrose ARC
AA0CW 138 2 1 572 CO
W8FWY 80 2 1 570 OH
WB1DMK 105 2 1 570 CT
Genesee Co. RC
KD8DEU 104 2 1 566 MI
W5WTC 107 2 1 564 OK
Pasadena RC
NG6F 56 2 1 562 LAX
KC8SQC 53 2 1 562 MI
Bedford ARC
N5TLE 155 2 1 560 NTX
Moore Co. ARS
KN4SNI 203 2 1 556 NC
Big Island ARC
WH6FYK 126 2 1 554 PAC
Pioneer ARC
K0OMH 151 2 1 552 NE
Ocean Monmouth ARC
N2POW 150 2 1 550 NNJ
Littleton Area Radio Klub
W1A (WA1HRH)
123 2 1 542 NH
WB0OFR 145 2 1 540 CO
Mound ARA
N8JXJ 43 2 1 536 OH
Minnesota Wireless Assn.
N0BK 101 2 1 534 MN

4 Field Day continued

Mount Vernon (VA) ARC
AJ4YB 88 2 1 526 VA
Portage Co. AR Service
KB8UHN 188 2 1 526 OH
Metrocrest ARS
KG5E 137 2 1 524 NTX
Riverland ARC
KB3MKD 67 2 1 518 WI
Canton ARC
AC8RH 82 2 1 514 OH
KC0MPD 96 2 1 512 NFL
Loudoun ARG
KS1G 31 2 1 512 VA
AD7DD 40 2 1 510 EWA
Falmouth ARA
W5IPA 41 2 1 510 EMA
North Shore (IL) RC
WQ9F 26 2 1 510 IL
Butler Co. AR Public Service Group
N3WH 126 2 1 502 WPA
K5Z (K5QBX)
175 1 1 500 AR
Barrie ARC
VA3LZ 75 2 1 500 ONS
KC1JTS 36 2 1 494 CT
Newton ARA
W0WTM 57 2 1 488 IA
AE0Q 67 2 1 484 CO
Halifax ARC
VE1BC 84 2 1 478 MAR
KF5YDR 14 2 1 478 STX
North Fulton ARL
AG4YL 63 2 1 476 GA
VE7AF 64 2 1 474 BC
South Orange ARA
AE6H 60 2 1 470 ORG
WA2PCN 84 2 1 470 NE
K3ARO 58 2 1 466 DE
KN6GQS 54 2 1 466 LAX
Knox Co. ARC
N9VPV 50 2 1 464 IL
N9DPP 156 2 1 462 IN
AB0MV 54 2 1 458 CO
Cherokee ARS
K8MC 52 2 1 458 GA
Ski Country ARC
K0JEG 52 2 1 458 CO
Tompkins Co. ARA
WA2TPQ 63 2 1 456 WNY
K6RIN 52 2 1 454 SJV
McGregor Memorial EMS ARC
W1HMM 79 2 1 452 NH
Thunder Bay ARC
W8RAD 51 2 1 452 MI
KD8IPF 50 2 1 450 MI
Keuka Lake ARA
N2FMS 148 2 1 446 WNY
White Rock Lake ARC
K5YR 72 2 1 446 NTX
VE2THQ 49 2 1 446 QC
Clearwater ARS/St. Petersburg ARC/
Upper Pinellas ARC
AA0O 60 2 1 440 NFL
K5XDF 120 2 1 440 LA
North Fulton ARL
AC4YL 44 2 1 438 GA
Club Radio Amateur de Québec
VA2GRU 43 2 1 436 QC
AG7TX 68 2 1 434 NV
Mountain ARC (CO)
KM5RVA 46 2 1 434 CO
Hamilton (ON) ARC
VE3XBF 42 2 1 434 GTA
Rochester (MN) ARC
KC0P 39 2 1 430 MN
Cleveland ARC
AE4GS 70 2 1 430 WCF
Anderson RC (SC)
KK4AGN 278 1 1 428 SC
AI7AQ 69 2 1 426 AZ
North Shore (IL) RC
N9GHP 37 2 1 424 IL
KI5JF 176 1 1 423 STX
K0DAJ 86 2 1 422 SD
AJ4BB 35 2 1 420 NV
Lake Monroe ARS
KN4VJL 35 2 1 420 NFL
AA3C 134 2 1 418 NTX
K9WBS 32 2 1 414 AZ
KK4NUB 16 2 1 412 NC
Montgomery ARC/Damascus ECT
K3LO 40 2 1 410 MDC
Columbia-Montour ARC (PA)
N3OMA 30 2 1 410 EPA
Associated Radio Amateurs of Long
Beach
AG6RS 26 2 1 408 ORG
KD6RMS 128 2 1 406 LAX
Warminster ARC
N3RMC 78 2 1 406 EPA
Raleigh ARS
KG4AKV 78 2 1 406 NC
Hellgate ARC
KF7CBY 11 2 1 400 MT

Dillman's AR Experimenters
W9BU 25 2 1 400 IN
Portage Co. AR Service
W8KNO 62 2 1 398 OH
Carroll Co. Contesters
KC3RW 22 2 1 394 MDC
Garden State ARA
WA2JOE 72 2 1 394 NNJ
Bloomington ARC
KB9LGS 20 2 1 390 IN
North Shore (ON) ARC
VE3IRB 17 2 1 384 GTA
Police AR Team of Westford
KC1HTB 67 2 1 384 EMA
Rocky Mountain Ham Radio
K0SWE 33 2 1 382 CO
Bishop ARC
W7KRF 16 2 1 382 ORG
Radio Amateurs of Northern Vermont
K1BIF 231 1 1 381 VT
Ole Virginia Hams
KK4ZUU 65 2 1 380 VA
North Ottawa ARC
N8YOD 65 2 1 380 MI
Bonner Co. ARES
W7BID 115 2 1 380 ID
KA9JBD 13 2 1 378 WI
WB0M 61 2 1 374 NE
Ozaukee RC
KD9FM 81 2 1 372 WI
Lakeway ARC
N4GFH 61 2 1 372 TN
W7WVF 11 2 1 372 OR
Sangamon Valley RC
K9ZXO 30 2 1 370 IL
Ak-Sar-Ben ARC
KD0MMG 10 2 1 370 NE
Outstanding in Their Field ARC
WK2S 30 2 1 370 NNJ
Southern Peninsula AR Klub
KJ4MZ 58 2 1 366 VA
Tampa ARC
AE4AW 7 2 1 364 WCF
Barrie ARC
VE3YTN 28 2 1 362 ONS
Granite State ARA
W1EAA 40 2 1 362 NH
Binghamton ARA
AB2GD 5 2 1 360 ENY
W1RER 27 2 1 358 AZ
WQ7F 54 2 1 358 MDC
Raleigh ARS
KD4ISC 52 2 1 354 NC
Schaumburg ARC
K9JDM 58 2 1 354 IL
Cascades ARS
KC8IJZ 101 2 1 352 MI
Newport Co. RC
AC1GM 50 2 1 350 RI
K8TSG 100 2 1 350 OH
KI4SP 50 2 1 350 AL
Chenango Valley ARA
AD2TM 74 2 1 348 WNY
Northern California Contest Club
WB6CZG 70 2 1 348 SCV
L.A. City ACS
KD6BAC 48 2 1 346 LAX
Snohomish Co. Hams Club
K7NWR 47 2 1 344 WWA
KW7WP 80 2 1 342 OR
W2ACE 23 2 1 342 WWA
Walla Walla Valley ARC
N7DMR 25 2 1 340 EWA
North Shore (ON) ARC
VE3IGX 51 2 1 330 GTA
Long Island CW Club
K4RLC 45 2 1 330 NC
Fox River Radio League
KW0E 87 2 1 324 IL
York Region ARC
VE3IPS 33 2 1 324 GTA
Blossomland ARA
K8WMU 111 2 1 322 MI
Cumberland Valley ARC
KC3OLO 18 2 1 322 EPA
Kay Co. ARC
N9JYJ 83 2 1 320 OK
Tri-Town Radio Amateur Club
K9EGS 19 2 1 320 IL
Nashoba Valley ARC
KD1SM 83 2 1 316 WMA
Issaquah ARC
KI7RMO 8 2 1 316 WWA
N8IJY 81 2 1 314 OH
K7GUD 131 2 1 312 ID
KC2ZOA 30 2 1 310 SFL
York Region ARC
VE3CA 65 2 1 310 GTA
Long Island CW Club
W8KO 40 2 1 310 ORG
AF9FA 28 2 1 306 WI
Microhams ARC
N7CFO 76 2 1 302 EWA
Chicago Suburban Radio Assn.
K9KTU 25 2 1 300 WI

Parker Radio Assn.
NN0G 69 2 1 300 CO
W9EJM 50 2 1 300 IL
Elgin ARS
KF6RQZ 25 2 1 300 ORG
N6DPL 25 2 1 300 ORG
Prairie Dog ARC
K0HW 40 2 1 298 SD
KD2TIX 24 2 1 298 WNY
KE0VIM 22 2 1 294 VA
Raleigh ARS
KM4JRH 21 2 1 292 NC
N9FUE 71 2 1 292 IL
Island Co. ARC
N7AXJ 10 2 1 288 WWA
KC0VRV 47 2 1 288 MN
Tri-City ARC of CT
K0JEB 67 2 1 284 CT
Sierra Nevada ARS
K6CZH 66 2 1 282 NV
North Okanagan Radio Amateur Club
VE7WBM 16 2 1 282 BC
KK6DAC 15 2 1 280 SCV
San Fernando Valley ARC
K6ATO 14 2 1 278 LAX
KB1RZA 64 2 1 278 VT
KF7UUC 14 2 1 278 EWA
Lowell ARC
K8TCS 13 2 1 276 MI
Littleton Area Radio Klub
W1G (N1GB)
56 2 1 274 VT
K5OAR 31 2 1 274 OH
KI7RHJ 62 2 1 274 AZ
Jupiter Tequesta Repeater Group
KN4GPL 6 2 1 274 SFL
Mount Vernon (VA) ARC
N1BJF 62 2 1 274 VA
Rockingham Co. ARC
W4AYO 62 2 1 274 NC
Raleigh ARS
KN4ORA 61 2 1 272 NC
KI7TYU 30 2 1 270 WWA
Orange Co. (CA) ARC
AI6ZV 5 2 1 270 ORG
KB9LLD 10 2 1 270 AL
Whitman ARC
WI1G 110 2 1 270 EMA
WM2W 10 2 1 270 WPA
Ellsworth ARA
W1DLC 59 2 1 268 ME
Rochester (NY) DX Assn.
W2BSN 58 2 1 266 WNY
KB8UIP 8 2 1 266 SDG
KJ7DZ 57 2 1 264 OR
K0NR 56 2 1 262 CO
KN0P 54 2 1 258 SV
N2XQP 4 2 1 258 EPA
Westchester Emergency Communications
Assn.
KD2QLQ 30 2 1 256 NNY
Peak Radio Assn.
KE7OSN 3 2 1 256 OR
KG4ODA 53 2 1 256 SFL
KJ4QEG 3 2 1 256 VA
NSARC (BC)
VA7BTE 3 2 1 256 BC
Crescenta Valley RC
WA6FEQ 3 2 1 256 LAX
AC9XC 2 2 1 254 IN
NT6N 29 2 1 252 SV
Lakeland ARC
K4LKL (+NJ4Y)
1 2 1 252 WCF
Hoodview ARC
N7LF 101 2 1 252 OR
Sonoma Co. Radio Amateurs
N6IIY 50 2 1 250 SF
South East Metro ARC
WA0KRL 50 2 1 250 MN
AG6HQ 49 2 1 248 ORG
W5RJJ 195 1 1 245 NM
Top of Michigan ARC
KM4YEB 46 2 1 242 MI
N9NWI 46 2 1 242 IL
Granite State ARA
K1RD 45 2 1 240 NH
David Barts
N5JRN 38 2 1 240 WWA
W7CJH 45 2 1 240 WI
Lodi ARC
KG7OR 22 2 1 236 SJV
K0MIS 21 2 1 234 CO
N3INM 42 2 1 234 IL
Maple Valley ARC
KL0PC 24 2 1 230 WWA
Explorer Post 599
KD7FQI 39 2 1 228 AZ
W2BXR 46 2 1 228 EPA
AF7VC 25 2 1 224 OR
N2NKX 35 2 1 220 WNY
Richmond ARC
VE7VBI 35 2 1 220 BC
AARCMN
KE0PWN 35 2 1 220 MN

Sonoma Co. Radio Amateurs
WW6RC 17 2 1 218 SF
West Seattle ARC
KG7UCL 32 2 1 214 WWA
Maple Valley ARC
KJ7CFV 32 2 1 214 WWA
Edmonds Woodway ARC
N7PHY 31 2 1 212 WWA
Highline ARC
N5BTO 30 2 1 210 WWA
N1UI 27 2 1 204 MI
Muscle Shoals ARC
W4PRS 76 2 1 202 AL
Central Michigan ARC
KC8EHR 25 2 1 200 MI
Clark Co. (WA) ARC
W7CHE 24 2 1 198 WWA
Macoupin Co. ARC
KC9WZO 72 2 1 194 IL
KD8KTN 22 2 1 194 MI
Montachusett ARA
W1FSH 21 2 1 192 NH
Shreveport ARA
KC5PQL 20 2 1 190 LA
South Texas ARC
KJ5DW 20 2 1 190 STX
Boca Raton ARA
K1DS 11 2 1 186 SFL
Sierra Foothills ARC
K6KEC 15 2 1 180 MT
KD9CES 15 2 1 180 IN
Radio Central ARC and Order of Boiled
Owls of NY
WB2KUT 15 2 1 180 NLI
Battleship New Jersey AR Station
KB3NRL 14 2 1 178 EPA
Kaw Valley ARC
N0CBI 14 2 1 178 KS
KC1MIJ 13 2 1 176 EMA
Southwest Missouri ARC
KE0AYS 13 2 1 176 MO
Paducah ARA
KN4TIP 13 2 1 176 KY
K7ZX 31 2 1 174 OR
KI7CBV 12 2 1 174 OR
Westmoreland ARC
KK4ZWW 12 2 1 174 VA
W7AMC 11 2 1 172 NV
WB6PWD 11 2 1 172 LAX
Bryan ARC
AA5W 30 2 1 170 STX
Oxford Co. ARES
AC1GX 10 2 1 170 ME
Soc. of Midwest Contesters
K9GY 10 2 1 170 IL
Keuka Lake ARA
KD2BPJ 10 2 1 170 WNY
W1JWM 6 2 1 170 EMA
K4VXD 8 2 1 166 TN
David Sarnoff ARC
N2CTW 8 2 1 166 NNJ
W9NZB 4 2 1 166 WI
Orange Park ARC
KM4CTD 7 2 1 164 NFL
Candlewood ARA
N1IBQ 7 2 1 164 CT
Peterborough ARC
VE3LSO 7 2 1 164 ONE
Fort Smith Area ARC
K5T (KE5TC)
113 1 1 163 AR
Granite State ARA
KC1EMI 3 2 1 162 NH
K5XRS 4 2 1 158 STX
KM6EAH 4 2 1 158 SV
VA7NAB 1 5 1 155 BC
Lake Monroe ARS
KN4IIY 26 2 1 154 NFL
KE7GOV 1 2 1 152 WWA
Raleigh ARS
KM4EP 1 2 1 152 NC
Roanoke Valley ARC
N4ZSG 1 2 1 152 VA
K0FNS 50 2 1 150 CO
Edmonds Woodway ARC
N7IAD 37 2 1 124 WWA
KC3PGO 35 2 1 120 WPA
Muskegon Area AR Council
K8EOD 16 2 1 114 MI
Warminster ARC
KC3HXF 30 2 1 110 EPA
Red River Radio Amateurs
K0OP 30 2 1 110 MN
KM4HQE 27 2 1 104 TN
KC1JPU 27 2 1 104 WMA
KE8KOR 26 2 1 102 WWA
Woodmont ARA
WA1LEI 24 2 1 98 CT
Arkansas Diamond ARC
AF5EI 23 2 1 96 AR
N1KWG 18 2 1 86 NH
W7IJP 17 2 1 84 EWA
W7TCT 17 2 1 84 EWA
South Lyon Area ARC
W8MSC 5 2 1 70 MI

San Juan Co. ARS
AF4PM 5 2 1 60 WWA
Microhams ARC
KB7WSD 4 2 1 58 WWA
KK6NFW 1 2 1 52 SCV

1B – 1 Operator Battery

K5SL 664 5 1 7,290 LA
Potomac Valley RC
K3ZZ 657 5 1 6,540 MDC
W3TS 587 5 1 6,320 EPA
Colorado QRP Club
KF7MD 552 5 1 5,665 CO
Straight Key Century Club
KB4QQJ 518 5 1 5,380 NC
KEØTT 466 5 1 4,810 MN
Central Vermont ARC
K1MZM 331 5 1 3,545 VT
Colorado QRP Club
KFØUR 324 5 1 3,390 CO
Metro Atlanta Telephone Pioneer ARC
K4PQC 273 5 1 3,180 GA
Dillman's AR Experimenters
AE8M 317 5 1 3,170 OH
VE3KQN 276 5 1 3,110 ONE
Butler Co. (PA) ARA
WB3FAE 305 5 1 3,100 WPA
K2QO 286 5 1 3,010 WNY
Athens Co. ARA
WD8RIF 245 5 1 3,000 OH
Johnson Space Center ARC/Clear Lake ARC
W5OC 223 5 1 2,975 STX
KEØZ 252 5 1 2,870 ND
Arrow Communications Assn.
KB6NU 225 5 1 2,900 MI
W4CGP 251 5 1 2,860 TN
Ham Assn. of Mesquite
KG5AUU 220 5 1 2,850 AR
Lake Co. ARA
AA8OY 255 5 1 2,700 OH
Hot Springs ARC
KTØA 253 5 1 2,680 SD
Radio Farm
WØODS 233 5 1 2,680 IA
W/K ARC of Greater Milwaukee
K9WIS 226 5 1 2,610 WI
Minnesota Wireless Assn.
WØCWO (+KØPC)
239 5 1 2,540 MN
Carbon Co. DXCC
K9AVT 229 5 1 2,640 WY
Sun City Hilton Head ARC
AD5EN 209 5 1 2,485 SC
Rochester (NY) DX Assn.
K2DB 232 5 1 2,470 NFL
Tri-Town Radio Amateur Club
K9PMV 229 5 1 2,440 IL
North Shore (IL) RC
KV3T 205 5 1 2,400 IL
Oregon Tualatin Valley ARC
WS7L 204 5 1 2,390 WWA
Ocean Monmouth ARC
N2JJF 187 5 1 2,305 NNJ
W3WT 174 5 1 2,090 EPA
Littleton Area Radio Klub
W1B (W2APF)
200 5 1 2,050 NH
Ellsworth Amateur Wireless Assn.
W8HAP 179 5 1 2,040 ME
Cedar Forest QRP Group
W4DIT (+K4KO)
175 5 1 2,000 TN
N9AOP 192 5 1 1,970 IL
VE3EDX 162 5 1 1,870 ONN
KI4IO 175 5 1 1,850 VA
KØQJK 169 5 1 1,840 CO
Carbon Co. DXCC
WØMB 163 5 1 1,835 MO
Dietmar Fichter
VE3CG 147 5 1 1,820 ONS
West Allis RAC
WO9B 117 5 1 1,820 MI
QRP ARC International
AC7A 166 5 1 1,810 AZ
Panther ARC
W3YJ 135 5 1 1,800 WPA
WA4DOX 165 5 1 1,800 VA
Signal Hill ARC
NM3A 224 5 1 1,780 WPA
Valley and Massanutten ARA
KF4FC 130 5 1 1,770 VA
Boeing Employees ARS – St. Louis
AAØCL 150 5 1 1,750 MO
W1PID 130 5 1 1,750 NH
Burlington Co. RC
K2QPN 120 5 1 1,745 SNJ
W7FS 312 5 1 1,710 OR
K2KGJ 145 5 1 1,700 ENY
Oxford Co. ARES
KA1SG 155 5 1 1,700 ME
Kentucky Contest Group
N4TY 155 5 1 1,700 KY
Mad River RC
W3USA (K8MR)
155 5 1 1,700 OH
St. Louis QRP Soc.
WA9GQT 125 5 1 1,700 IL
Sierra ARC of The High Mojave
WA6ARA 116 5 1 1,670 SJV
Kemptville ARG
VE3DQN 108 5 1 1,630 ONE
Alamance ARC
N4MIO 108 5 1 1,610 NC
Tri-State ARS
K9EXY 143 5 1 1,580 IN
WA4NKL 127 5 1 1,570 GA
KFØXV 140 5 1 1,550 KS
WA7ZZB 100 5 1 1,550 EWA
KB4IRR 139 5 1 1,540 MO
Delaware Valley Radio Assn.
W3PR 149 5 1 1,540 SNJ
WB2FUV 129 5 1 1,540 ENY
WB5IUG 123 5 1 1,530 NTX
KnightLites QRP Soc.
N4HAY 145 5 1 1,500 NC
Vienna Wireless Soc.
W4DDT 114 5 1 1,500 VA
WD7Y 124 5 1 1,490 NV
KC5PXW 174 5 1 1,455 NC
KØWOI 117 5 1 1,420 IA
KN1H 116 5 1 1,410 NH
STE-MON QRP Club
N5ESE 113 5 1 1,380 STX
Ottawa Valley QRP Soc.
VA3RKM 84 5 1 1,370 ONE
Brunswick Shores ARC
ND2O 110 5 1 1,350 NC
STE-MON QRP Club
N5NAA 118 5 1 1,330 STX
Valley and Massanutten ARA
K2HYD 107 5 1 1,320 VA
WB8JAY 116 5 1 1,305 OH
K5LXP 101 5 1 1,300 NM
Nashua Area Radio Soc.
NE1RD 112 5 1 1,300 NH
Dillman's AR Experimenters
WB9CIF 115 5 1 1,300 IN
Florence ARC
NG4S 104 5 1 1,290 SC
VE2ZM 100 5 1 1,250 QC
Club radioamateur de Drummondville
VA2EO 109 5 1 1,240 QC
Williamsburg Area ARC
K4JST 79 5 1 1,235 VA
Orange Co. (CA) ARC
K6GTE 105 5 1 1,195 ORG
Zuni Loop MEF
KM6TNT 95 5 1 1,195 LAX
Ski Country ARC
KIØG 92 5 1 1,170 CO
Conejo Valley ARC
K6PVZ 76 5 1 1,160 SB
W8BUD 101 5 1 1,160 MI
WA4APL 101 5 1 1,160 NC
Red River Radio Amateurs
WØCZ 81 5 1 1,160 ND
Alford Memorial RC
N1RBD 64 5 1 1,155 GA
Austin ARC
KJ5T 100 5 1 1,150 NTX
Pasadena RC
W6KA (+N6AN)
111 5 1 1,140 LAX
Montgomery Amateur Club
W5NZ 58 5 1 1,130 AL
K7YDL 106 5 1 1,125 OR
Ottawa ARC
VE3IGJ 97 5 1 1,120 ONE
West Island ARC
VE2DDZ 76 5 1 1,110 QC
K3TW 75 5 1 1,100 NFL
WØJRM 85 5 1 1,100 IA
Geezer Contesting Club
K7PDW 83 5 1 1,080 UT
ND5OO 102 5 1 1,050 IN
W3ATB 90 5 1 1,050 NH
WUØL 90 5 1 1,050 KS
WJ7S 79 5 1 1,040 UT
Straight Key Century Club
KW4JS 95 5 1 1,000 TN
Kendall ARS
N5YZV 80 5 1 1,000 STX
York Co. Radio Soc.
N4ARI (+WC4R)
65 5 1 995 VA
Tri-State ARS
W9FHA 94 5 1 990 IN
WG8Y 82 5 1 970 NC
Clark Co. (WA) ARES/RACES
KJ7BSP 42 5 1 960 WWA
Williamson Co. ARES
N4OPI 81 5 1 960 TN
Florida Contest Group
NK4DX 50 5 1 950 NFL
QRP ARC International
W8EWH 69 5 1 940 MI
WD5HNI 84 5 1 940 STX
Warminster ARC
K3FMQ 77 5 1 920 EPA
JANET Club
AG6NS 68 5 1 890 SCV
Cochise ARA
K7OED 36 5 1 890 AZ
Frankford RC
K3SW 82 5 1 870 EPA
Four State QRP Group
NK8O 51 5 1 860 MN
Granite State ARA
K1EHZ 60 5 1 850 NH
Tennessee Contest Group
W4SK 80 5 1 850 TN
Panther ARC
NAØB 69 5 1 840 WPA
KM4CQG 77 5 1 815 WCF
KØAIZ 73 5 1 805 NE
Upper Canada QRP Club
VE3FI 111 5 1 805 ONE
Upper Canada QRP Club
VE3MNE 110 5 1 800 ONE
KC7FCW 97 5 1 790 WWA
Northern Colorado ARC
KEØLCK 74 5 1 790 CO
KØWRY 64 5 1 790 KS
Ellsworth ARA
KQ1P 64 5 1 790 ME
Kern Co. – Central Valley ARC
K6FA 63 5 1 780 SJV
Schaumburg ARC
N9MVO 53 5 1 780 IL
WB6VIC 76 5 1 780 LAX
VE3GTM (+VE3EKN)
43 5 1 765 ONE
Rochester (NY) DX Assn.
AC2RL 61 5 1 760 WNY
Hannibal ARC
NØBPA 71 5 1 760 MO
AA4CS 101 5 1 755 NFL
Green Bay Mike & Key Club
KBØP 46 5 1 745 WI
AAØT 66 5 1 740 SC
Valley of the Moon ARC
KD6FIL 41 5 1 700 SF
Big Island ARC
KH6DLK 44 5 1 690 PAC
Queen Anne's ARC
N3AAZ 14 5 1 690 MDC
Kemptville ARG
VE3VSK 65 5 1 690 ONE
PAPA System
KM6UPQ 57 5 1 685 LAX
KX7L 53 5 1 675 WWA
SDGARES
K6AQ 12 5 1 670 SDG
Upper Canada QRP Club
VE3SIQ 84 5 1 670 ONE
WØAUS (+WØZQ)
52 5 1 670 MN
Boulder ARC
W1ANT 51 5 1 660 CO
Shreveport ARA
WA5ARJ 61 5 1 660 LA
KA9FQG 50 5 1 650 IN
VE6ZC 21 5 1 640 AB
WA2TMF 41 5 1 625 SNJ
AA3GM 47 5 1 620 WPA
Fresno ARC
KM6ZYC 47 5 1 620 SJV
Forsyth ARC
N2AWE 37 5 1 620 NC
Upper Canada QRP Club
VA3ET 52 5 1 620 ONE
KB7LJP 35 5 1 600 WWA
Chicago Suburban Radio Assn.
KD9IPO 15 5 1 600 IL
Lake Conroe ARC
W5RIF 50 5 1 600 STX
Fox River Radio League
N9TCA 28 5 1 590 IL
Twin State RC
KB1VP 33 5 1 580 VT
KC3MSE 106 5 1 580 MDC
Zuni Loop MEF
N6GA (+N6MST)
45 5 1 565 LAX
Schaumburg ARC
K9KMV 41 5 1 555 IL
Kalamazoo ARC
AC8JW 20 5 1 550 MI
Forsyth ARC
KG4JWU 40 5 1 550 NC
KØCD 40 5 1 550 WI
NP2GG 20 5 1 535 CT
Foothills ARS
K6YA (KA6MZE)
76 5 1 530 SCV
K8AG 48 5 1 530 MI
Bergen ARA
W2JEK 33 5 1 530 NNJ
AE3J 36 5 1 510 EPA
NV6W 12 5 1 510 SCV
Minnesota Wireless Assn.
AEØEE 25 5 1 500 MN
KØDMT 50 5 1 500 MO
NOARS
N8CX 35 5 1 500 OH
Fort Venango Mike and Key Club
KB3JC 33 5 1 480 WPA
N7MQ 33 5 1 480 WY
St. Louis QRP Soc.
NØMII 33 5 1 480 IL
ARESLAXNW
NS3C 34 5 1 475 LAX
Radio Amateurs of Greater Syracuse
KD4MCB 44 5 1 470 WNY
N8PN 22 5 1 470 MN
Roanoke Valley ARC
KN4AJQ 39 5 1 465 VA
Arrow Communications Assn.
AB8OJ 1 5 1 455 MI
Etowah Valley ARC
KJ4LPI 43 5 1 455 GA
KK6AYK 21 5 1 455 EB
N5EP 29 5 1 440 WI
Mecklenburg ARS
N9KIY 19 5 1 440 SC
XRX RC
K5KHK 22 5 1 435 WNY
KE8FZT 27 5 1 435 MI
White Rock Lake ARC
N5CSU 17 5 1 435 NTX
Stanford ARC
K2YY 28 5 1 430 EMA
San Mateo RC
K3AM 16 5 1 430 SCV
Richardson Wireless Klub
KM5VZ 8 5 1 430 NTX
Big Sky Contesters
WB7BWZ 28 5 1 430 MT
BayNet
AA6PZ 54 5 1 420 SCV
N6VNO 22 5 1 420 SCV
KD8RTT 13 5 1 415 KS
Hughes ARC
KN6ISU 31 5 1 415 LAX
Salt City DX Assn.
AB2MP 16 5 1 410 WNY
Frankford RC
K3PP 16 5 1 410 EPA
North Georgia QRP Club
WD4EXI 36 5 1 410 GA
Radio Amateurs of Greater Syracuse
N2DM 27 5 1 405 WNY
AC5XK 25 5 1 400 EMA
Columbia (MD) ARA
W3XG 25 5 1 400 MDC
W7HMT 10 5 1 400 EWA
WA2WMR 30 5 1 400 VA
WA4HWT 50 5 1 400 GA
Rochester (NY) DX Assn.
K2RNY 24 5 1 390 WNY
Portage Co. AR Service
KD8CGH 24 5 1 390 OH
WA9YEE 34 5 1 390 CO
Palos Verdes ARC
KM6YGM 46 5 1 380 LAX
KR6AI 33 5 1 380 SV
Lafayette DX Assn.
N9LJX 5 5 1 375 IN
Coquitlam ARES Soc.
VA7ROH 25 5 1 375 BC
W8TV 24 5 1 375 WV
K1DCT 12 5 1 370 CT
Radio Amateur Soc. of Norfolk
K4EKB 33 5 1 370 VA
Conejo Valley ARC
KN6ISM 24 5 1 370 SB
VE2HEW 4 5 1 370 QC
Saratoga Co. ARA
K2ZIP 1 5 1 365 ENY
AC6NN 21 5 1 360 VA
Greater Norwalk ARC
KC1GBZ 11 5 1 360 CT
KD2SXO 2 5 1 360 ENY
W9YO 31 5 1 360 IL
Cape Fear ARS
KG6HYJ 1 5 1 355 NC
Lewisville ARA
AE5EZ 20 5 1 350 NTX
Sunnyvale ARES
AK6TG 20 5 1 350 SCV
KØARG 12 5 1 350 CO
Charleston ARS
AJ4UQ 10 5 1 345 SC
North Shore (IL) RC
WB9UVJ 28 5 1 345 IL
Williamson Co. ARES
KA4BKA 38 5 1 340 TN
Fox River Radio League
KC9BKS 19 5 1 340 IL
San Mateo RC
KM6LLM 18 5 1 340 SCV
WWØWB 38 5 1 340 CO
San Mateo RC
KJ6AJN 17 5 1 335 SCV
Bristol (TN) ARC
KM4NXW 57 5 1 335 TN

VY1KX 19 5 1 335 NT
KD5MOA 16 5 1 330 STX
KN6CRN 15 5 1 325 EB
McMinnville ARC
AA7TC 9 5 1 320 OR
AI4WM 33 5 1 315 MI
San Mateo RC
KM6LUK 13 5 1 315 SCV
Sonoma Co. Radio Amateurs
KN6AWA 13 5 1 315 SF
QRP ARC International
N4IX 53 5 1 315 GA
N7NKR 13 5 1 315 CO
Central Alberta ARC
VE6JHK 11 5 1 315 AB
W1QWT 13 5 1 315 EMA
KB5JO 16 5 1 310 STX
Findlay ARC
K8KTO 30 5 1 300 OH
ARA of Nebraska
KAØFTY 30 5 1 300 NE
KE3FL 5 5 1 300 MDC
South Pasadena ARC
KI6ZKM 10 5 1 300 LAX
Denver RC
KN4RDF 15 5 1 300 CO
NO5V 9 5 1 300 STX
Ottawa Valley Mobile RC
VA3YYF 10 5 1 300 ONE
Elgin ARS
VE3NUZ 10 5 1 300 ONS
VE6NS 5 5 1 300 AB
WA2ZCM 20 5 1 300 NC
WA9QXY 15 5 1 300 WPA
NALCO ARES/RACES
K8ING 8 5 1 290 EB
Pikes Peak Radio Amateur Assn.
WØUHU 4 5 1 290 CO
Silver Comet ARS
K4JDA 4 5 1 285 GA
Oakland Radio Communication Assn.
KK6YRB 23 5 1 285 EB
Ottawa Valley Mobile RC
VA3VGR 7 5 1 285 ONE
Warminster ARC
K2ULR 13 5 1 280 EPA
KC1NBP 19 5 1 280 WMA
Oro Valley ARC
KK1J 26 5 1 280 AZ
Utah ARC
W7PQ 13 5 1 280 UT
Police AR Team of Westford
KB1LSH 5 5 1 275 EMA
Framingham ARA
KB1YXL 5 5 1 275 EMA
Wahkiakum Co. ARC
KB7AJY 5 5 1 275 WWA
WACOM
KC3TOM 25 5 1 275 WPA
The Unreal RC
NØECK 5 5 1 275 MN
KDØG 4 5 1 270 CO
KM6WCO 4 5 1 270 ORG
Colorado QRP Club
NAØTC (+KCØZGK)
16 5 1 270 CO
North Okanagan Radio Amateur Club
VA7SZ 4 5 1 270 BC
White Rock Lake ARC
W5WXY 4 5 1 270 NTX
KB9LNR 3 5 1 265 IL
KI7URL 23 5 1 265 WY
Socorro ARA
AC5BX 21 5 1 260 NM
Lancaster ARC
N2DJS 11 5 1 260 WNY
South East Metro ARC
KEØHAL 1 5 1 255 WI
KI6PIE 1 5 1 255 LAX
St. Charles ARC
WØDTM 1 5 1 255 MO
KG6BXW 11 5 1 250 SJV
Radio Club of Tacoma
AC7QN 19 5 1 245 WWA
Mahoning Valley ARA
W8IWD 19 5 1 245 OH
Pasadena RC
AJ6KZ 8 5 1 230 LAX
Backyard Bushman
KC8NDA 15 5 1 225 MI
AG6AQ 7 5 1 220 SCV
Granite State ARA
WI1O 7 5 1 220 NH
K1QKZ 16 5 1 210 TN
Pacific Co. ARC
K7KK (+N7KK)
12 5 1 210 WWA
KD2EVC 12 5 1 210 ENY
N6UA 12 5 1 210 NE
Pasadena RC
N9LFF 11 5 1 205 LAX
ARA of Nebraska
KEØVOH 10 5 1 200 NE
Radio Soc. of Tucson
KJ7NWQ 10 5 1 200 AZ
West Valley ARA
NS8X 15 5 1 200 SB
Columbia-Montour ARC (PA)
WA4THR 10 5 1 200 EPA
KD5QYV 9 5 1 195 NTX
Squaw Island ARC
WA2SSJ 9 5 1 195 WNY
South Canadian ARS
AG5DB 4 5 1 190 OK
KN6IPZ 8 5 1 190 LAX
K6LOL 5 5 1 185 ID
Police AR Team of Westford
KB1UKU 6 5 1 180 EMA
North Georgia QRP Club
WØRON 6 5 1 180 GA
Riverbend Wireless and Mechanical Soc.
KYØGBZ 5 5 1 175 MN
K6WS 12 5 1 170 SJV
Orange Co. Radio Amateurs & Durham FM Assn.
KN4PTU 3 5 1 170 NC
York Region ARC
VA3SWD 3 5 1 165 GTA
Hughes ARC
WA6SET 3 5 1 165 LAX
WA6TQA 3 5 1 165 VA
Kansas Antenna Club in Johnson Co.
KEØCXK 1 5 1 160 KS
PODXS 070
N9ANA (+K9VIC)
1 5 1 160 IL
VE3YUX 1 5 1 160 ONE
RASON
W1FJW 1 5 1 160 CT
Dallas ARC
AG9SG 1 5 1 155 NTX
West Valley ARA
KN6FGH 21 5 1 155 SCV
Tallahassee ARS
N4JEL 21 5 1 155 NFL
Central Alberta ARC
VA6MPM 1 5 1 155 AB
Northeast Tarrant ARC
WB5JFP 1 5 1 155 NTX
Richmond ARC
VA7MAC (+VA7NAB)
1 5 1 155 BC
K3WAS 11 5 1 140 KS
N1ZF 9 5 1 135 CT
KI7IOC 16 5 1 130 OR
Coquitlam ARES Soc.
VA7DGT 14 5 1 120 BC
AL7JK 6 5 1 110 AK
Oakland Radio Communication Assn.
KM6ZNZ 4 5 1 110 EB
Culver City ARES
KN6JJK 11 5 1 105 LAX
Palos Verdes ARC
KM6YGS 10 5 1 100 LAX
KN6IOB 6 5 1 100 EB
Jefferson (LA) ARC
KC5KWZ 7 5 1 85 LA
Smoky Mountain ARC
KO4DNO 7 5 1 85 TN
Oro Valley ARC
K7QG 6 5 1 80 AZ
Oakland Radio Communication Assn.
KM6UFZ 3 5 1 80 EB
Maple Grove RC
KFØADU 4 5 1 70 MN
Poway ARS
KK6EVD 4 5 1 70 SDG
Aerospace Employees Assn. ARC
KK6GCB 4 5 1 70 LAX
Culver City ARES
AI6UG 3 5 1 65 LAX
Oakland Radio Communication Assn.
W6OFD 3 5 1 65 EB
San Juan Co. ARS
KJ7BUV 2 5 1 60 WWA
N1EWF 1 5 1 55 CT
San Juan Co. ARS
N7TZW 1 5 1 55 WWA

1B – 1 Operator Commercial

Great Southern DX Assn
NA5DX 537 2 1 2,192 MS
Missouri Illinois ARC
ADØJA 1,056 2 1 2,162 MO
Pottstown Area ARC
KC3HRV 978 2 1 2,006 EPA
Texas DX Soc.
K5EC 356 2 1 1,464 STX
Moore Co. ARS
KN4HPJ 501 2 1 1,352 NC
Ron's One Man Team
KE2UK 325 2 1 1,350 NLI
West Valley ARA
W6IA 448 2 1 1,336 SF
Riverland ARC
AB9NE 292 2 1 1,218 WI
K8LBH 223 2 1 942 MI
Northville ARA
W1GHD 183 2 1 916 CT
Alliance ARC
KD8MQ 151 2 1 828 OH
KA5CRL 163 2 1 802 NTX
Athens Co. ARA
N8VZ 117 2 1 718 OH
Barrie ARC
VA3QT 92 2 1 718 ONE
EPCom
VE7FTX 246 2 1 642 BC
VE3LMS 124 2 1 570 ONS
KCØOW 236 2 1 522 OK
N5PV 122 2 1 504 STX
Microhams ARC
N7SS 56 2 1 496 WWA
WD4LSS 111 2 1 494 NC
K5RM 109 2 1 486 AR
Bolingbrook ARS
KD9MDO 124 2 1 422 IL
Spring Hill ARC
WS8Ø 132 2 1 414 NFL
VE3SHO 97 2 1 400 GTA
K7HZ 86 2 1 394 OR
N4KHI 61 2 1 386 NFL
W6TRW ARC
N6EWT 83 2 1 382 SB
Keuka Lake ARA
W2JTC 61 2 1 376 WNY
Keuka Lake ARA
KC2YTD 66 2 1 360 WNY
Hooterville Wireless Assn.
NØOWD (+WRØH)
76 2 1 354 MO
Sierra ARC of The High Mojave
AD6HF 134 1 1 318 SJV
Twin Rivers ARC
KCØQMI 62 2 1 298 IL
Rappahannock ARA
KC4TVN 32 2 1 274 VA
NØPFS 56 2 1 274 SD
Saratoga Co. ARA
KG5JEN 9 2 1 268 ENY
Crescenta Valley RC
W6IFR 9 2 1 268 LAX
KB7HCZ 7 2 1 264 EWA
Phil-Mont Mobile RC
WU3I 39 2 1 228 EPA
Lake Area (SD) Radio Klub
KØSHD 45 2 1 224 SD
Keuka Lake ARA
K2GQG 31 2 1 212 WNY
Valley and Massanutten ARA
K4PZC 30 2 1 210 NC
Bristol (TN) ARC
W4JH 24 2 1 198 TN
West Valley ARA
N9DK 37 2 1 192 SB
K7JAX (+KJ7BKH)
6 2 1 174 OR
West Chester ARA
WBØNPN 104 1 1 154 OH
Keuka Lake ARA
W2RMT 1 2 1 154 WNY
Keuka Lake ARA
K2RTH 1 2 1 152 WNY
Long Island Mobile ARC
WA2NLL 27 2 1 104 NLI
Missouri Illinois ARC
KØNJN 13 2 1 96 MO
Palomar ARC
ADØL 16 2 1 82 SDG
San Francisco RC
K6RGG 14 2 1 80 EB
Colorado QRP Club
KCØZGK 14 2 1 78 CO
N4N Field Day Group
KI4YSP 7 2 1 78 MN

1B – 2 Operator

WØCO (+WØFD)
1,750 2 2 7,726 CO
Minnesota Wireless Assn.
NØAT (+NØKK)
1,293 2 2 6,212 MN
Soc. of Midwest Contesters
W9AV (+WC9R)
1,333 2 2 5,024 WI
Frankford RC
K2TW (+W3BGN)
1,111 2 2 4,540 NNJ
ARC at Indiana Univ
K9IU (+WBØSND)
1,039 2 2 4,506 IN
Contest Club Ontario
VE3KP (+VE3WRL)
914 2 2 3,906 ONE
Cuyahoga ARS
K8RGI 725 2 2 3,532 OH
N9EZ (+WA1UJU)
809 2 2 3,386 MI
Lincoln ARC
KØNE (+KØDI)
780 2 2 3,270 NE
Southern California Contest Club
N7DA (+K6VCR)
849 2 2 2,934 ORG
KØG (AAØYX, WAØRSX)
200 5 2 2,450 CO
Arizona Outlaws Contest Club
W7W (NS6W, NE7EE)
486 2 2 2,194 AZ
Preble ARA
N8XC (+N8XCC)
676 2 2 1,858 OH
Lakeland ARC
K1DU (+W4EMT)
340 2 2 1,810 WCF
Signal Hill ARC
N3QKA (+N3BNA)
355 2 2 1,770 EPA
Gratiot Co. Old Timers
W8AWE (+W8DCQ)
406 2 2 1,754 MI
Cuyahoga Falls ARC
W8AKR (+NV3Y)
396 2 2 1,734 OH
Radio Artisans
K3NG 415 2 2 1,676 EPA
North Shore (BC) ARC
VE7UTS 378 2 2 1,502 BC
Wistaria Wireless Soc.
K6TY (WB6MLI, WB6VRN)
209 2 2 1,386 SJV
Big Mountain Radio ARC
N3BIG (N3SIQ, W2IWW)
447 2 2 1,346 NNJ
Radio Soc. of Ohio
K8RSO (K8WFL, KE8BQV)
350 2 2 1,250 WPA
Rochester (NY) DX Assn.
N2BEG (+KC2JXP)
304 2 2 1,240 WNY
Heart O' Texas ARC
WA5IEX (+KE5UBO)
223 2 2 1,042 NTX
Prairie Dog ARC
KTØW (+AEØA)
282 2 2 976 SD
Orlando ARC
KO4BRD 100 2 2 970 WCF
Inverhuron Ham RC
VE3IHR (VE3PCP, VA3AQZ)
148 2 2 966 ONS
York RC
N9ZE 294 2 2 958 MI
Hughes ARC
N6MDV (+K6VHY)
61 2 2 852 LAX
Ski Country ARC
K9MWM (+NØDBY)
341 2 2 832 CO
Northeast Tarrant ARC
KK5HT (+WB4EEH)
170 2 2 752 NTX
Panama City ARC
N4Y (N4KGL, WA6QKN)
129 2 2 744 NFL
K1MSH (+KB1NKU)
75 2 2 724 SFL
WØKU (+WØPER)
123 2 2 704 CO
KJ7KAY 10 2 2 690 UT
West Kootenay ARC
VE7HLW (+VA7GMA)
151 2 2 684 BC
Nanaimo ARA
VE7LSE (VA7KLB)
136 2 2 642 BC
W1DGL (+N7HVC)
215 2 2 608 AZ
K2WNY (+K2SH)
89 2 2 594 WNY
Sierra Foothills ARC
KM6RGO 61 2 2 578 SV
W7TKE (+W7SME)
35 2 2 520 MT
Atchison Co. AR Service
KSØAT (+KØDXY)
101 2 2 502 KS
Portland ARC
N2UN 16 2 2 482 OR
St. Clair ARC
KC9AEC (+KI4MEW)
164 2 2 478 IL
Water Island DX group
KP2AD 109 2 2 468 VI
Snohomish Co. Hams Club
KD7JB 57 2 2 464 EWA
Twin Cities Repeater Club
WØBU (KBØNES, KCØDMF)
102 2 2 454 MN
W7LRP (+NG7IL)
74 2 2 448 UT
Eddy Ranch Contest Group
K5WV (K9IG)
68 2 2 442 NTX

NOARS
W8AJF (+KA8ZEP)
135 2 2 420 OH
Explorer Post 599
W2KP (+KI7YRY)
11 2 2 404 AZ
WBØJGB (+WBØJGC)
70 2 2 390 EPA
Nashua Area Radio Soc.
KC1IML (+KC1IMK)
9 2 2 388 NH
Red Mountain Radio Amateurs
KB7MLK (+KB7AWG)
151 2 2 352 NTX
KDØCUR (+KF6KAT)
101 2 2 352 KS
WM4X (+KJ4SOI)
47 2 2 344 VA
Bear Bait RC
KD2MIV 90 2 2 330 WNY
N8QL 87 2 2 324 OH
Apple City ARC
K7HO 58 2 2 312 EWA
Twin Cities Maker ARC
KØHAX (+KE0VDF)
30 2 2 310 MN
Humboldt ARC
KB6DE (+KK6MPY)
29 2 2 308 SF
AA3TL (+KB3DYI)
93 2 2 306 EPA
Heartland Hams ARC
NØMHK 39 2 2 306 IA
Central Massachusetts ARA
N1TYH 12 2 2 274 WMA
River City AR Communications Soc.
KN6HTD 1 2 2 272 SV
220 MHz Guys
KD9BYW (+NE9A)
54 2 2 258 IL
Providence RA
AJ1S (+KC1LDI)
51 2 2 252 NH
Snohomish Co. Hams Club
WA7BAR (+WA7JIL)
51 2 2 252 EWA
K1BBB (+KD8VDX)
47 2 2 244 MI
Hamfesters RC
K9ACM (+KD9LGI)
34 2 2 244 MI
Bill and Ken
K4RET (+W2AGV)
47 2 2 244 VA
KBØROA (+KBØRCS)
31 2 2 212 MN
Cherokee ARS
KN4LSE (+KN4LSE)
26 2 2 202 GA
Victor Valley ARC
K6QWR (W6WSS, KB6AE)
24 2 2 198 ORG
Nittany ARC
KB3WEU (+N3HOD)
21 2 2 192 WPA
KF6KAT (+KDØCUR)
10 2 2 190 KS
N7JA (+KJ7FSU)
13 2 2 176 EWA
Monkey Lover's Radio Consortium
K6WC (AE6RF, KQ6YV)
6 2 2 172 SCV
Mountain Top ARA
WM6T (+WA6IL)
6 2 2 162 ORG
Guelph ARC
VE3MKY (+VE3ILJ)
43 2 2 136 ONS
VE2DLA (+VE2QMR)
22 2 2 124 QC
London ARC
VE3ACW (+VE3ACW)
24 2 2 98 ONS
SDGARES
K6KMH 9 2 2 68 AZ

1B – 2 Operator Battery

N3CU 348 5 2 3,600 EPA
KE3V (+WB3CEG)
238 5 2 2,530 WPA
Georgia Tech ARC
W4ATL 217 5 2 2,320 GA
Milwaukee Radio Amateurs' Club
NX1K 161 5 2 2,060 WI
West Valley ARA
WUØI (+KK6DZS)
125 5 2 2,000 IN
Edge Lords
KA5D 107 5 2 1,610 STX
Upper Canada QRP Club
VE3ECY (VE3ULC, VE3MJD)
105 5 2 1,400 ONE
KI7TRV 95 5 2 1,360 EWA
Elgin ARS
VE3RSE (+VE3MGQ)
103 5 2 1,180 ONS
T.I.P.C.
N4AX (+N4AX)
123 5 2 1,165 AL
Newport Co. RC
K1NPT (+K6MAC)
58 5 2 1,035 RI
Delta ARS
VE7AA (+VE7LO)
17 5 2 1,020 BC
Police AR Team of Westford
W1DJR (+AC1IY)
114 5 2 1,020 EMA
AJ4WC (+KJ4TOJ)
82 5 2 970 NFL
North Okanagan Radio Amateur Club
VE7KPZ (+VE7WWJ)
79 5 2 945 BC
W9IKU (+KDØDCJ)
57 5 2 920 WI
Wellington RC
K4BYB 19 5 2 755 SFL
Westmoreland ARC
W4GMF (+KK4POF)
118 5 2 740 VA
Willamette Valley DX Club
N7QR 31 5 2 625 OR
K7ARJ (+N7GOA)
45 5 2 600 ID
Regina ARA
VE5DLD 33 5 2 585 SK
N3OFR (+N3RLX)
32 5 2 510 EPA
Hughes ARC
KV6R (+KN6HVH)
42 5 2 470 ORG
KN4QPA (+N1DUC)
28 5 2 390 VA
NZ5G 25 5 2 385 STX
KU4UV 31 5 2 375 KY
Ottawa Valley Mobile RC
VE3LAF 26 5 2 330 ONE
NA1CN (+WA1QDX)
16 5 2 310 CT
Comox Valley ARC
VE7CVW (+VE7XFA)
9 5 2 295 BC
VECTOR
VA7LET (+VE7GMW)
7 5 2 285 BC
W8RCH 10 5 2 200 OH
The Villages ARC
KBØZUQ (+NØSMX)
12 5 2 160 NFL
Bristol (TN) ARC
W4BCU 7 5 2 120 TN
Hughes ARC
KN6HVH 4 5 2 70 ORG

1B – 2 Operator Commercial

Newport Co. RC
NJ3K (+WA1VQY)
897 2 2 4,138 WPA
Schoharie Co. ARA
WW2G (+KC2IBE)
1,055 1 2 1,426 ENY
OH-KY-IN ARS
WE8M (+KE8IFV)
187 2 2 894 OH
Woodbridge Wireless
KN4AHN (+KN4AUC)
158 2 2 586 VA
Columbia (MD) ARA
KS3O (+K3TBD)
71 2 2 454 MDC
Genesee Radio Amateurs
KD2QAR 80 2 2 310 WNY
Morewood Heights
WUØT (+KB3VRH)
34 2 2 218 WPA
North Shore (ON) ARC
VA3VZ (+VE3LEX)
43 2 2 176 ONE
Peak Radio Assn.
KF7DVN (+W7BNC)
33 2 2 116 OR
WA7TPB 14 2 2 78 WWA

2B – 1 Operator

Humboldt ARC
KK6SYJ 34 2 1 620 SF
HP Boise ARC
N7DKW 10 2 1 370 ID

2B – 1 Operator Battery

VE3YTP 45 5 1 635 GTA
K7AVG 8 5 1 390 OR

2B – 1 Operator Commercial

W6BCE 92 2 1 518 LAX
KEØHMS 22 2 1 114 SD
Tenn Rose
KN4NVU 8 2 1 70 TN

2B – 2 Operator

Signal Hill ARC
K4NN (NB3I, N6CQ)
1,561 2 2 6,292 EPA
Raleigh ARS
W4TTX 881 2 2 2,930 NC
Union Co. (NC) ARC
WZ4M (+W4TRT)
506 2 2 2,260 NC
Calhoun Co. ARA
W4S (KM4TMA, N4SFR)
632 2 2 2,018 AL
W3SW 614 2 2 1,882 WNY
AD2P (+N2HMM)
627 2 2 1,752 NNJ
N4N Field Day Group
N4N (KE4UW)
271 2 2 1,732 GA
KD5BBR (+KD5BBS)
309 2 2 1686 OK
KE7F (+N7EMT)
1,282 1 2 1,540 OR
Straight Key Century Club
W6WU (+N3TNS)
329 2 2 1,436 MDC
National Electronics Museum RC
N3YPJ (+N3LRP)
562 2 2 1,374 MDC
f.a.r.g. TN (Moonshine)
K4U (AC4M)
324 2 2 1,330 TN
Snoring Beagle Field Day Dogs
K4DKW 177 2 2 958 MI
Microhams ARC
W7YED (+KJ7KOJ)
158 2 2 892 WWA
Univ of Arizona ARC
K7ASQ 67 2 2 876 AZ
Arrow Communications Assn.
W8RP (W8TAM, WT8J)
197 2 2 860 MI
Sierra Foothills ARC
W6YUE (+N6UTT)
156 2 2 762 ORG
Livonia ARC
KE8ETI (+KE8CEH)
150 2 2 750 MI
K4JBL (+W4GLK)
93 2 2 736 TN
Kansas City Contest Club
NØYL (+WØSO)
174 2 2 702 KS
K7JSG (+N5XRQ)
92 2 2 638 EWA
KK4DDF (+KD8QPQ)
109 2 2 620 VA
Lodi ARC
WB6BET 171 2 2 592 EB
Aerospace Employees Assn. ARC
KK6KC 84 2 2 578 LAX
Green Valley ARC
N7GV (K3BAT K7RCR)
79 2 2 508 AZ
N8PDX (+KG7OSB)
62 2 2 474 OR
QRP Aris
KD4PBJ (+KN4NVU)
49 2 2 470 TN
618 Communications
K9AI 55 2 2 462 IL
AB1LG 33 2 2 416 CO
Apple City ARC
KB7YS 59 2 2 368 EWA
Longmont ARC
KDØJPE (+KCØRWO)
12 2 2 298 CO
Downey ARC
KM6SR (+KG6CQQ)
23 2 2 296 LAX
KB3WPR (+KD9PIJ)
1 2 2 252 WI

2B – 2 Operator Battery

Signal Hill ARC
KK4PH (+WS6X)
653 5 2 6,915 VA
Wilsons Wonders
WU7H 401 5 2 4,755 EWA
KA5CJJ (+W5LL)
370 5 2 3,360 OK
AF4CM 270 5 2 3,105 OK
N7IC (+KE5NJV)
220 5 2 2,630 OK
Friends of KI4OOL
N8DNZ 209 5 2 2,575 AL
N3A (K3WWP, KC2EGL)
228 5 2 2,530 WPA
K2ONN (+NC4RT)
211 5 2 2,460 NC
Benicia ARC
W6RSS (+KM6ZTH)
113 5 2 1,810 EB
Muncie Area ARC
KB9ZUV (+ KB7ZGB)
156 5 2 1,715 IN
St. Louis QRP Soc.
NØA (KØFHG)
117 5 2 1,520 MO
Pottstown Area ARC
KE3KQ (+KB3SJR)
83 5 2 1,280 EPA
NØSUW (+WBØSIO)
67 5 2 1,220 MN
Orange Park ARC
N4O (KA3EHL, KK4RDI)
21 5 2 860 NFL
Radio Amateurs of Greater Syracuse
KD2KUB 60 5 2 670 WNY
W6JTH (+KI6WX)
38 5 2 615 SV
Outstanding in Their Field ARC
WØIS (+KCØOIA)
13 5 2 570 MN
Edmond ARS
KG5JST 8 5 2 430 OK

2B – 2 Operator Commercial

Friends of ARG
W9U (N9YBK, KD9JSX)
28 2 2 306 IL
Indian Peaks RC
AEØJC 123 2 2 296 CO

3B – 1 Operator Battery

Baynet
KN6BJC 13 5 1 215 SCV

3B – 2 Operator

Friends of ARG
W7U (W7AZC, K7RKL)
23 2 2 596 AZ

Mobile Stations

1C

DFW Contest Group
W1JCW 1,187 5 1 6,085 STX
WW5X 455 2 1 1,946 AL
Dupage ARC
W9XS 387 2 1 1,798 IL
St. Charles ARC
NØAX 381 2 2 1,606 MO
Arrow Communications Assn.
KB8U 118 5 1 1,490 MI
Smith Chart ARS
N4CW 360 2 1 1,490 NC
Wahkiakum Co. ARC
WB6AGE 290 2 1 1,392 WWA
Sierra Foothills ARC
WU6X 321 2 1 1,326 SV
Waterton Contest Club
WØNT 263 2 1 1,202 CO
Mining ARC/St. Paul RC
KØTG 243 2 1 1,122 MN
Rocky Mountain Race Week
KTØF 342 2 2 1,094 KS
Tallahassee ARS
KN4TRT 161 2 1 1,090 NFL
Metro DX Club
WA9LEY 270 2 1 1,060 IL
K7TQ 238 2 1 1,002 ID
Ak-Sar-Ben ARC
WØOJU 82 5 1 970 NE
Central Michigan ARC
W8ZZX 454 2 1 958 MI
KB9LFZ 341 2 1 832 NTX
W7CGA 141 2 1 814 NE
Benicia ARC
NR5NN 161 2 1 748 EB
K8EG 172 2 1 708 OH
Burlington ARC
VA3OBO 157 2 1 678 ONS
Yellowstone RC
K9YNP 82 2 1 640 MT
Snohomish Co. Hams Club
N7AME 76 2 1 624 WWA
Boca Raton ARA
W4BFL 107 2 1 578 SFL
SC4ARC
KN6CZD 13 2 1 576 SCV
McHenry Co. Wireless Assn.
K9JK 33 5 1 570 IL
Pottstown Area ARC
KØBAK 320 1 1 552 EPA
K7BWC 105 2 1 496 UT
WD5IKX 171 2 1 492 NTX
Wahkiakum Co. ARC
W7ERY 24 5 1 455 WWA
Huntsville ARC
K4CNY 1 2 1 452 AL
Utah ARC
WA7X 145 2 2 440 ID

Central Kansas ARC					
KBØLZQ	133	2	1	416	KS
SC4ARC					
KN6CZH	17	2	1	384	SCV
WE5MAG	82	2	1	376	WCF
W3AO Team					
N8EME	25	5	1	375	EPA
N7DLV	60	2	1	370	WWA
AA8P	52	2	1	358	OH
Lamorinda Area Radio Interest Group					
K6ORI	104	2	1	358	EB
OCAPA					
N5OHL	64	2	1	356	OK
W7JZE	43	2	2	340	AZ
NØJK	8	5	1	330	KS
Coquitlam ARES Soc.					
VA7EVR	23	2	2	328	BC
NØSFF	17	2	5	304	IA
Barstow ARC					
W6DPS	24	2	1	298	ORG
KJ7KCB	60	2	1	290	AZ
Tompkins Co. ARA					
WA2LXB	59	2	1	268	WNY
Warminster ARC					
W3FLH	48	2	1	254	EPA
Arlington ARC					
KG5CVO	1	2	2	252	NTX
San Mateo RC					
KK6NGE	1	2	1	252	SCV
Crescenta Valley RC					
AE6GR	49	2	1	248	LAX
KN4MCE	42	2	1	248	NC
Orange Co. (CA) ARC					
W6FKX	45	2	1	240	ORG
Radio Central ARC and Order of Boiled Owls of NY					
W2IIT	47	2	3	238	NLI
Conejo Valley ARC					
W6KME	44	2	1	238	SB
San Mateo RC					
W6JMZ	42	2	1	234	SCV
Irvine Disaster EmComms					
N6YH	40	2	1	230	ORG
Conejo Valley ARC					
AE6JR	31	2	1	212	SB
Sangamon Valley RC					
KC9BMT	16	2	1	212	IL
Friends of ARF					
N9LCR	30	2	1	210	IL
South Bay ARA					
W6TYD	23	2	1	196	EB
Humboldt ARC					
KN6CEJ	9	5	1	195	SF
Utica Shelby EmComms Assn.					
N8KAN	36	2	1	194	MI
Tri Lakes ARC					
NT5R	5	5	1	190	MO
Niagara Peninsula ARC					
VA3KWG	8	5	1	190	GTA
Palo Alto ARA					
W6APZ	20	2	1	190	SCV
VE2SUD	36	1	2	186	QC
Rochester (MN) ARC					
KFØAKV	7	5	1	185	MN
Half Moon Bay ARC					
KN6JKZ	6	5	1	180	SCV
KX4YJ	5	5	1	175	TN
Milwaukee Repeater Club					
KD9PIJ	2	2	3	174	WI
KG6MWI	9	2	1	174	SCV
W4YS	11	2	1	172	SV
Fayette Co. ARC					
KI4ASK	2	5	1	170	GA
Yellowstone RC					
KI7NVQ	10	2	1	170	MT
KCØJQO	9	2	1	168	MN
Heritage Hunt Hams					
KK4BZ	9	2	1	168	SDG
AA9XD	4	2	1	166	TN
Sierra Blanca ARC					
NQ5X	5	2	1	160	NTX
Irvine Disaster EmComms					
W6IRC	5	2	1	160	ORG
Aerospace Employees Assn. ARC					
KM6WBU	4	2	1	158	LAX
Irvine Disaster EmComms					
KM6WMD	4	2	1	158	ORG
Columbia-Montour ARC (PA)					
KC3LRC	3	2	1	156	OH
Radio Club of Tacoma					
KA7DCX	1	5	1	155	WWA
Williamsburg Area ARC					
KM4TNI	1	5	1	155	VA
Half Moon Bay ARC					
KI6MQB	2	2	1	154	SCV
Rappahannock Valley ARC					
KN4VSV	1	2	1	152	VA
Metrocrest ARS					
NN5R	1	2	1	152	NTX
Ottawa Valley Mobile RC					
VA2EEK	25	2	1	150	QC
Lehigh Valley ARC					
KB3RBW	16	5	1	130	EPA
Wisconsin ARC					
KB9PRF	38	2	1	126	WI
Montgomery ARC/Damascus ECT					
N6MEJ	37	2	1	124	MDC
ARESLAXNW					
KM6SEG	14	5	1	120	LAX
KG4NDS	34	2	1	118	STX
KA3KSP	32	2	1	114	WPA
Kansas/Nebraska ARC					
WBØSRP	31	2	1	112	KS
Everglades ARC					
WX2L	28	2	2	106	SFL
Kershaw Co. ARC					
KO4BGC	1	5	1	105	SC
Oakland Radio Communication Assn.					
KC2YOT	9	2	1	82	EB
Six Meter Club of Chicago					
WA9FIH	40	2	1	80	IL
Ole Virginia Hams					
K3FR	14	2	1	78	VA
Lodi ARC					
KN6CTQ	13	2	1	76	SV
Midwest ARC					
KEØPQJ	10	2	1	70	MO
Prairie Dog ARC					
KEØIDM	8	2	1	66	SD
Monkey Lover's Radio Consortium					
KM6DPW	8	2	1	66	SCV
Halifax ARC					
VE1WØ	8	2	1	66	MAR
Southern Peninsula AR Klub					
KE4WMF	7	2	1	64	VA
KEØYTP	7	2	1	64	MO
Albemarle ARC					
KN4LAU	6	2	1	62	VA
Benicia ARC					
KK6ZIZ	2	5	1	60	EB
KX4LZ	5	2	1	60	MT
KJ7ODZ	4	2	1	58	OR
Ventura Co. ARS					
N6ZE	3	2	1	56	OR
Bryan ARC					
N5ZKF	1	2	1	52	STX
KA1KNW	24	2	1	48	CT
KB1KST	6	2	1	12	RI

2C

Fox River Radio League					
W9XA	173	2	2	930	MN
Fauquier ARA					
NB3A	73	2	2	404	VA
Federación de Radio Aficionados de Puerto Rico					
KP4FRA	8	2	2	366	PR
N2YY	2	2	1	254	NLI
Sierra Foothills ARC					
KG6UCS	14	2	1	178	SV
West Seattle ARC					
KJ7CBO	18	2	1	86	WWA

3C

Twin State RC					
W1UC	164	2	2	1,006	NH

4C

Wood Co. ARC					
K8L	20	2	1	490	OH

Home Stations Commercial Power

1D

W3AO Team					
KD4D	2,201	2	1	9,024	MDC
W3AO Team					
K3RA	2,125	2	1	8,656	MDC
Philips ARC					
W1LA	1,935	2	1	7,790	WCF
Arizona Outlaws Contest Club					
K6LL	1,896	2	2	7,722	AZ
Orange Co. Radio Amateurs & Durham FM Assn.					
N1LN	1,802	2	2	6,454	NC
Greer ARC					
N4XL	1,521	2	1	6,182	SC
Metro DX Club					
K9ZO	1,833	2	1	5,976	IL
Ozaukee RC					
W9XT	1,671	2	1	5,964	WI
Arkansas River Valley ARF					
K5PXP	1,444	2	1	5,922	AR
Northwest Florida ARC					
KE4FD	1,941	2	1	5,844	NFL
Minnesota Wireless Assn.					
KØAD	1,361	2	1	5,768	MN
Kansas City Contest Club					
KØVXU	1,402	2	1	5,758	KS
Piscataquis ARC					
N1BUG	1,373	2	1	5,642	ME
Kansas City Contest Club					
KØVBU	1,360	2	1	5,590	KS
CorTek Radio Assn.					
W9CA	1,337	2	1	5,498	IL
Texas DX Soc.					
KØNM	1,334	2	1	5,382	STX
Columbus ARC					
K4BAI	1,283	2	1	5,282	GA
CorTek Radio Assn.					
KS9W	1,304	2	1	5,266	CO
Forsyth ARC					
KM4SII	1,307	2	1	5,232	NC
Dial RC of Middletown					
N8AA	1,150	2	1	4,850	OH
N4BP	2,339	1	1	4,828	SFL
North Shore (IL) RC					
W8LVN	1,180	2	1	4,770	IL
VE5MX	2,353	1	3	4,756	SK
Wireless Soc. of Southern Maine					
W1GF	1,164	2	1	4,706	ME
Mid-MO ARC					
NWØM	1,150	2	1	4,650	MO
Palo Alto ARA					
N6RK	1,124	2	1	4,646	SV
Collins ARC					
N5CXX	1,141	2	2	4,644	NTX
McHenry Co. Wireless Assn.					
N7US	1,120	2	1	4,630	IL
Frankford RC					
NY3B	1,145	2	1	4,630	EPA
Smith Chart ARS					
W4KX	1,094	2	1	4,626	NC
Billerica ARS					
K1OA	1,204	2	1	4,618	EMA
Bella Vista RC					
KM5G	1,140	2	1	4,610	AR
W3AO Team					
AA3S	1,130	2	1	4,570	MDC
Blazing Paddles FD Team					
WG9L	1,050	2	1	4,540	IL
Orange Co. Radio Amateurs & Durham FM Assn.					
WA4PSC	1,090	2	1	4,510	NC
Central Virginia Contest Club					
W4MYA	1,110	2	1	4,490	VA
Waterton Contest Club					
WØETT	1,110	2	1	4,490	CO
Mid-MO ARC					
K9ZTV	1,056	2	1	4,474	MO
Tri-State ARS					
WA2USA	1,086	2	1	4,394	IN
W/K ARC of Greater Milwaukee					
W9I	1,084	2	1	4,386	WI
Texas DX Soc.					
KG5U	1,046	2	1	4,334	STX
Southern MI ARS					
W8RT	1,071	2	2	4,334	MI
Western Illinois ARC					
N9JF	1,040	2	1	4,310	IL
Wayne ARC					
K8AJS	1,028	2	1	4,246	OH
Williamson Co. ARES					
W3TB	1,039	2	1	4,206	TN
Aardvark Wireless Group					
W4CU	1,038	2	1	4,202	WCF
Coweta RC					
W4XO	1,038	2	1	4,202	GA
AA2BJ	1,178	2	2	4,196	EPA
Coshocton Co. ARA					
N8VV	1,044	2	1	4,180	OH
Platinum Coast ARS					
AD4ES	1,026	2	1	4,154	SFL
Wiregrass ARC					
K1DC	1,026	2	1	4,154	AL
Murgas ARC					
K2LNS	1,026	2	1	4,154	EPA
MM Expeditionary Force					
N9AU	1,000	2	1	4,150	WI
Oro Valley ARC					
W8TK	1,000	2	1	4,150	AZ
Oak Hill ARC					
K5TR	1,019	2	1	4,126	STX
Salt City DX Assn.					
N2MF	2,175	1	1	4,123	WNY
Palos Verdes ARC					
K6PV	1,285	2	1	4,118	LAX
DFW Contest Group					
N5QQ	1,015	2	1	4,110	NTX
Frankford RC					
N3AD	2,006	1	1	4,062	EPA
Lafayette DX Assn.					
K9WX	903	2	1	4,060	IN
Texas DX Soc.					
KE8G	1,000	2	1	4,050	OH
Barnstable ARC					
W1WEF	1,000	2	1	4,050	EMA
Huron ARA					
W7UT	985	2	1	3,990	SD
North Shore (IL) RC					
K7CS	959	2	1	3,986	IL
Delaware ARA					
K8BTU	962	2	1	3,980	OH
St Louis ARC					
KØLIR	960	2	1	3,972	MO
Radio Amateurs of Northern Vermont					
K1VMT	980	2	1	3,970	VT
WN7S	968	2	1	3,922	VA
Lake Monroe ARS					
W4CI	958	2	1	3,882	NFL
Boeing Employees ARS – St. Louis					
WØTT	948	2	1	3,842	MO
Broughton Memorial Field Day Group					
K2UF	937	2	1	3,798	ENY
Williamson Co. ARES					
AA9K	933	2	1	3,782	TN
Northern Arizona DX Assn.					
W2OR	931	2	1	3,774	NFL
Paducah ARA					
N4QS	928	2	1	3,758	KY
WAØBJR	927	2	1	3,758	MO
Westchester EmComms Assn.					
KO8SCA	1,837	1	1	3,724	NNY
Southern California Contest Club					
NO6T	2,746	1	4	3,720	ORG
KV8Q	916	2	1	3,714	OH
Tampa ARC					
N4TP	1,827	2	5	3,704	WCF
Monongalia Wireless Assn.					
K3JT	946	2	1	3,702	WV
Kingston Amateurs					
VE3PJ	1,562	2	1	3,688	ONE
High Desert Wireless					
WØCP	887	2	1	3,598	CO
Broken Arrow ARC					
K5WE	1,767	1	1	3,584	OK
South Lyon Area ARC					
K4YL	885	2	2	3,580	WCF
AGØK	807	2	2	3,578	SC
Northeast Maryland AR Contest Soc.					
N3HCN	845	2	1	3,510	EPA
Mississippi Valley ARA					
N9CIQ	864	2	1	3,506	WI
Texas DX Soc.					
N9MM	2,066	1	1	3,500	STX
Radio Soc. of Tucson					
K6WSC	860	2	2	3,490	AZ
WK2G	914	2	1	3,486	EPA
Central Mass ARA					
W1GD	829	2	1	3,466	WMA
Blossomland ARA					
KE3K	828	2	1	3,462	MI
North Port ARC					
N8DM	837	2	2	3,396	WCF
Smoky Mountain ARC					
KC4NX	1,650	2	1	3,350	TN
Murphys Marauders					
K1EBY	820	2	1	3,330	CT
Eastern Panhandle ARC					
N8II	1,529	2	1	3,308	WV
Acadiana ARA					
K5UA	1,164	2	2	3,304	LA
KR2AA	1,612	1	1	3,274	NLI
Huntsville ARC					
KR4F	805	2	1	3,270	AL
West Chester ARA					
W8TM	777	2	1	3,258	OH
Blazing Paddles FD Team					
N9LQ	727	2	1	3,248	IL
Utah ARC					
NG7M	1,797	1	1	3,238	UT
MM Expeditionary Force					
W9RN	772	2	1	3,238	WI
Eden Prairie RC					
AIØY	795	2	1	3,230	IL
Contest Club Ontario					
VE3NZ	1,587	1	1	3,224	GTA
Reelfoot ARC					
K9IL	785	2	1	3,190	TN
OH-KY-IN ARS					
KA3MTT	785	2	1	3,190	KY
W4TM	780	2	1	3,170	GA
Texas DX Soc.					
N5XZ	1,545	1	1	3,140	STX
Fauquier ARA					
K1HTV	773	2	1	3,124	VA
Central Illinois RC					
AC9S	787	2	1	3,118	IL
Lake Co. ARA					
K8BL	763	2	1	3,102	OH
Madison Co. (OH) ARC					
N8CWU	1,119	2	1	3,098	OH
Rochester (NY) DX Assn.					
N8KH	662	2	1	3,094	SFL
Frankford RC					
K3WJV	1,466	1	1	3,082	EPA
Two Rivers ARC of McKeesport					
WA3HAE	755	2	1	3,070	WPA
Orange Co. Radio Amateurs & Durham FM Assn.					
N8BR	754	2	1	3,066	NC
Tennessee Contest Group					
WF7T	742	2	1	3,028	TN
Hudson Valley Contesters and DXers					
W2XL	811	2	1	3,020	ENY
National Electronics Museum RC					
WA3AER	714	2	1	3,006	MDC
Martin Co. ARA					
W4SPR	738	2	1	3,002	SFL
W3AO Team					
WØCN	2,944	1	1	2,994	VA
Portage Co. AR Service					
WB9LBI	653	2	1	2,962	OH
Lewisville ARA					
W5JK	728	2	1	2,960	NTX
Kitsap Co. DX Club					
W7CD	651	2	1	2,954	WWA

First Baptist Church Huntsville RC
N4YG 719 2 1 2,926 AL
Delaware ARA
K8MP 692 2 1 2,918 OH
Kaw Valley ARC
KE0EK 714 2 2 2,906 KS
Eastern CT ARA
W1EQ 714 2 1 2,906 CT
DFW Contest Group
AD5XD 1,293 2 1 2,896 NTX
Butler Co. (OH) ARA
KC8RP 709 2 1 2,886 OH
A-1 Ops
N6TT 1,418 1 1 2,886 LAX
KD7YZ 706 2 1 2,874 KY
Wayne Co. ARC
K0PB 835 2 1 2,866 EPA
Hellgate ARC
N7IP 704 2 1 2,866 MT
Kentucky Contest Group
K4WW 700 2 1 2,850 KY
Estes Valley ARC
W0YBS 700 2 1 2,850 CO
W4VS 1,397 2 1 2,848 GA
Coweta RC
N4OO 872 2 1 2,822 GA
Dallas ARC
KM5L 630 2 1 2,804 NTX
Mountaineer ARA
K8TW 687 2 1 2,798 OH
WD4CNO 682 2 1 2,778 WCF
Bullitt ARS
KE4KY 680 2 1 2,770 KY
Contest Club Ontario
VA3SB 670 2 1 2,730 ONE
Monroe Co. Radio Communications Assn.
W8PI 658 2 1 2682 MI
DFW Contest Group
W8FN 657 2 1 2,678 NC
Northwest ARS
W5MF 631 2 1 2,670 STX
Frankford RC
N3RD 1,309 1 1 2,668 EPA
Hannibal ARC
K0CA 626 2 1 2,654 MO
Ellis Co. ARC
KI5MM 1,301 2 1 2,652 NTX
Montgomery Amateur Club
K8AJX 600 2 1 2,650 AL
Fluvanna Co. ARES
NG2H 647 2 1 2,638 VA
Utah DX Assn.
NN7ZZ 1,293 1 1 2,636 UT
W9PA 644 2 1 2,626 IN
K3DMG 640 2 1 2,610 OH
Poway ARS
NC6K 590 2 1 2,604 SDG
Columbia-Montour ARC (PA)
K3QIA 613 2 1 2,602 EPA
Fox River Radio League
K9MMS 612 2 1 2,598 IL
Franklin Co. (MA) ARC
N1YL 625 2 2 2,588 WMA
Texas DX Soc.
KC5TT 634 2 1 2,586 STX
Delaware ARA
W8ERD 609 2 1 2,586 OH
South East Contest Club
KU8E 1,257 1 1 2,564 GA
Mansfield-Johnson AR Service
KN5TX 1,250 2 1 2,550 NTX
Kansas City Contest Club
KS0MO 618 2 1 2,522 MO
Forsyth ARC
WB4MSG 794 2 1 2,520 NC
K5LG 1,233 1 1 2,516 AR
Cleveland ARC
W4JUU 603 2 1 2,516 TN
Greater Norwalk ARC
AA1XV 585 2 1 2,490 CT
DuPage ARC
W9ZV 610 2 1 2,490 IL
South Mountain Radio Amateurs
W3KBG 610 2 1 2,484 EPA
Montrose ARC
NN7A 606 2 1 2,474 CO
Cape Fear ARS
KJ4RV 604 2 1 2,466 NC
Ski Country ARC
K0ALT 579 2 1 2,466 CO
Jefferson Co. (WA) ARC
W7LD 603 2 1 2,462 WWA
Metro DX Club
K9CJ 602 2 1 2,458 IL
Murphys Marauders
W1TJL 2,289 1 1 2,457 CT
LEFROG
W9KEY 691 2 1 2,454 WI
Rochester (NY) DX Assn.
AI2N 600 2 1 2,450 WNY
Des Moines Radio Amateur Assn.
NU0Q 581 2 1 2,450 IA
Boston Valley Simplex Club
KB2KOL 743 2 1 2,444 WNY
WT9U 598 2 1 2,442 IN
North Shore (IL) RC
KC9IL 797 2 1 2,434 IL
Northwest ARS
KA5K 569 2 1 2,426 STX
Smithsonian Institute ARC
NN3SI 1,118 1 1 2,386 MDC
Old Barney ARC
K2SG 1,160 1 1 2,370 SNJ
Heart O' Texas ARC
K5IMC 580 2 1 2,370 NTX
Oak Hill ARC
KI5JMU 1,160 2 1 2,370 STX
South Lyon Area ARC
K8UT 579 2 1 2,366 MI
Northern Utah Contest Club
W3BES 579 2 1 2,366 UT
K7VIC 577 2 1 2,358 MT
Dallas ARC
KG5EIU 480 2 1 2,354 NTX
KZ5D 1,151 1 1 2,352 LA
Owatonna Steele Co. ARC
KA0PQW 604 2 1 2,334 MN
North Fulton ARL
W3WL 568 2 1 2,320 GA
Mad River RC
K8MR 569 2 1 2,316 OH
Murgas ARC
N3PF 752 2 1 2,306 EPA
McDowell ARA
KG4IKQ 538 2 1 2,302 NC
Midland (TX) ARC
N5NA 560 2 1 2,290 WTX
Texas DX Soc.
AJ4F 567 2 1 2,286 STX
Minnesota Wireless Assn.
K0MPH 562 2 1 2,282 MN
Blue Ridge ARC
KC5F 557 2 1 2,278 NC
Kentucky Contest Group
ND4Y 701 2 1 2,270 KY
REDXA/MARS
N6IE 679 2 1 2,266 SF
KI8R 553 2 1 2,262 OH
Hazel Park ARC
W8HP 587 2 1 2,256 MI
Mountaineer ARA
W8OP 550 2 1 2,250 WV
Tri Co. ARC (WI)
K9LGU 513 2 2 2,246 WI
Old Barney ARC
N2OO 592 2 1 2,238 SNJ
Franklin Co. (VA) ARC
W4YE 520 2 1 2,230 VA
K2MK 545 2 1 2,226 WCF
W/K ARC of Greater Milwaukee
NK9G 544 2 1 2,226 WI
W3AO Team
WB2ZAB 986 2 1 2,212 MDC
W4UWC 544 2 1 2,206 KY
N4N Field Day Group
AJ2Y 513 2 1 2,202 GA
Kings Co. and Annapolis Valley ARCs
VE1RSM 525 2 1 2,196 MAR
Nacogdoches ARC
K5ME 510 2 1 2,190 STX
Boulder ARC
N0TA 1,013 1 1 2,176 CO
Pottstown Area ARC
WA3LAB 506 2 1 2,174 EPA
Reading RC
K3ATO 1,067 1 1 2,170 EPA
Marinette Menominee ARC
K8IR 530 2 1 2,170 MI
Contest Club Ontario
VE3TM 530 2 1 2,170 ONE
Greer ARC
N4IQ 503 2 1 2,162 SC
Falmouth ARA
K1RK 696 2 1 2,152 EMA
Minnesota Wireless Assn.
W0G 1,051 2 1 2,152 MN
Radio Central ARC and Order of Boiled Owls of NY
K2QMF 525 2 1 2,150 NLI
Metro DX Club
N9TK 1,048 1 1 2,146 IL
Orange Co. Radio Amateurs & Durham FM Assn.
N4KW 527 2 1 2,142 NC
Williamson Co. ARES
AD4CJ 502 2 1 2,138 TN
Florida Contest Group
K4NMR 522 2 1 2,138 WCF
Bellbrook ARC
W8ASA 522 2 1 2,138 OH
WCARC of TX
W5TA 521 2 1 2,134 STX
W0UI 792 2 2 2,134 CO
W/K ARC of Greater Milwaukee
K9GDF 490 2 1 2,130 WI
Saskatoon ARC
VE5UO 563 2 1 2,128 SK
Orange Co. Radio Amateurs & Durham FM Assn.
W4BOH 518 2 1 2,122 NC
BONAC ARC
K4RUM 1,045 1 1 2,120 NLI
N7ZZ 552 2 1 2,120 WI
KB0VHA 517 2 1 2,118 CO
Lake Co. RACES/ARES
W9QL 756 2 1 2,116 IL
K2AK 516 2 1 2,114 AZ
Grand Mesa Contesters of Colorado
K0UK 514 2 1 2,106 CO
K0HX 518 2 1 2,104 MO
Twin City (IL) ARC
WB9HFK 525 2 1 2,102 IL
Boca Raton ARA
N3JT 1,025 1 1 2,100 VA
Coweta RC
N5TOO 512 2 1 2,098 GA
The Villages ARC
K2PS 1,023 1 1 2,096 NFL
Spartanburg ARC
W4NTO 1,022 1 1 2,094 SC
South Carroll ARF
WA3FAE 540 2 1 2,094 MDC
North Fulton ARL
KB4KBS 492 2 1 2,088 GA
Bellevue ARC
KV0I 1,223 1 1 2,083 NE
Central Louisiana ARC
N5CM 508 2 1 2,082 LA
Lake Co. RACES/ARES
K9KM 507 2 1 2,078 IL
Niagara Peninsula ARC
VE3MM 507 2 1 2,078 ONS
The Seven Thirty ARS
VE3NJC 507 2 1 2,078 ONS
Midland (TX) ARC
W5LXS 506 2 1 2,074 WTX
Monkey Lover's Radio Consortium
W6NN 1,012 1 1 2,074 SCV
DFW Contest Group
W0VX 506 2 1 2,074 NTX
Vicksburg ARC
K5XU 525 2 1 2,072 MS
Radio Central ARC and Order of Boiled Owls of NY
KC2KY 576 2 1 2,072 NLI
Utah Valley ARC
K7UA 505 2 1 2,070 UT
Mahoning Valley ARA
KB8GAE 505 2 1 2,070 OH
ARASNE
W1AQ 960 2 5 2,070 RI
Forsyth ARC
W4UX 505 2 1 2,070 NC
Potomac Valley RC
N4CF 506 2 1 2,068 VA
Noise Blankers Radio Group
K5OY 504 2 1 2,066 AR
Silver Springs RC
WA3LXD 503 2 1 2,066 NFL
Greer ARC
WN4AFP 524 2 1 2,066 SC
Club Radio Amateur de Québec
VE2EBK 403 2 1 2,062 QC
Westmoreland ARC
N3YUG 1,005 2 1 2,060 MDC
Wilderness Road ARC
K4FT 481 2 1 2,056 KY
Lake Co. RACES/ARES
W9BR 1,002 2 1 2,054 IL
Frankford RC
K3WW 500 2 1 2,050 EPA
Livonia ARC
K8AZT 500 2 1 2,050 MI
Platinum Coast ARS
W4EE 500 2 1 2,050 SFL
Twin City (IL) ARC
K9CW 499 2 1 2,046 IL
Spokane DX Assn.
K7GS 498 2 1 2,042 EWA
REDXA/MARS
W6XU 500 2 1 2,042 SF
London ARC
VA3YV 631 2 1 2,036 ONS
Hiawatha Valley ARC
K0HD 496 2 1 2,034 MN
Soc. of Midwest Contesters
KD9GY 990 2 1 2,030 IL
W2DTK 935 2 2 2,022 WNY
Lake Co. ARA
WB8SIG 492 2 2 2,018 OH
West Allis RAC
W9WLX 557 2 1 2,014 WI
Kitsap Co. DX Club
W6OAT 980 1 1 2,010 WWA
Forsyth ARC
NA4J 488 2 1 2,002 NC
Texas DX Soc.
K5TU 476 2 1 1,994 STX
Meriden ARC
KB1EHE 971 2 2 1,992 CT
Salkehatchie ARS
KY4E 398 2 6 1,982 SC
Huntsville ARC
N7KDT 457 2 1 1,978 AL
Frankford RC
W2MKM 961 1 1 1,972 NNJ
North Richland Hills ARC
AI5R 380 2 1 1,970 NTX
VA3RSA 480 2 1 1,970 GTA
Ottawa ARC
VE3TG 481 2 1 1,960 ONE
Mohawk ARC
N1UZ 472 2 1 1,958 WMA
Ak-Sar-Ben ARC
K0IL 476 2 1 1,954 NE
N5EE 951 1 1 1,952 AR
First State ARC
NU3A 461 2 1 1,944 DE
Mountain ARC (CO)
K0TER 422 2 1 1,938 CO
Valley and Massanutten ARA
W4PJW 472 2 1 1,938 VA
KB3AAY 471 2 1 1,934 MDC
Cedar Valley ARC
W0GN 481 2 2 1,932 IA
Radio Central ARC and Order of Boiled Owls of NY
AH2O 831 1 1 1,931 NLI
Sun Country ARS
WA1PMA 468 2 1 1,922 NFL
EWEphoria RC
N8NN 462 2 1 1,920 NFL
Orleans Co. ARC
NR2C 468 2 1 1,920 WNY
Palos Verdes ARC
NG6R 417 2 1 1,916 LAX
Frankford RC
N2UU 465 2 1 1,910 SNJ
Union Co. (OH) ARC
AB8FE 463 2 1 1,902 OH
Brazos Valley ARC
K5IZO 438 2 1 1,902 STX
Lake Area (TX) ARC
KD2KW 391 2 1 1,884 NTX
Northeast Maryland AR Contest Soc.
N3FJP 1,683 1 1 1,882 MDC
Smoky Mountain ARC
W6UB 458 2 1 1,882 TN
Coventry EMA
W1KDA 471 2 1 1,874 RI
Pine State ARC
K1GUP 499 2 1 1,872 ME
Tri-City ARC of CT
K1EV 435 2 1 1,866 CT
Gold Coast ARA
AI4WW 907 1 1 1,864 SFL
Gwinnett ARS
KD3GC 906 2 1 1,862 GA
Lodi ARC
W0UY 428 2 1 1,862 KS
Northern Arizona DX Assn.
N6MA 904 1 1 1,858 AZ
Barnstable ARC
WA1NLG 390 2 1 1,856 EMA
Paducah ARA
N4FZ 451 2 1 1,854 KY
DuPage ARC
WB9UGX 426 2 1 1,854 IL
DuPage ARC
AC9NQ 450 2 1 1,850 IL
L'Anse Creuse ARC
N8FYL 423 2 1 1,840 MI
W3AO Team
W3LL 1,691 1 1 1,835 MDC
Livonia ARC
K8MU 446 2 1 1,834 MI
DuPage ARC
KA9BHD 448 2 1 1,828 IL
NJ2OM 451 2 1 1,828 NNJ
Straight Key Century Club
KF6C 442 2 1 1,818 WNY
Texas DX Soc.
W5FMH 922 1 1 1,818 STX
Tennessee Contest Group
K4TZ 441 2 1 1,814 KY
Central Oregon Coast ARC
N7GYL 341 2 1 1,814 OR
Garden State ARA
WB2RPW 416 2 1 1,814 OH
Macon Co. ARC
N0PR 428 2 1 1,812 MO
Cape Fear ARS
KI4W 440 2 1 1,810 NC
Palos Verdes ARC
N6HE 393 2 1 1,810 LAX
Prairie Dog ARC
N0MHL 440 2 1 1,810 SD
Texas DX Soc.
WG5H 445 2 1 1,806 STX
Louisiana Delta RC
WW5L 877 2 1 1,804 LA
Midland (TX) ARC
K5RS 438 2 1 1,802 WTX
Pasadena RC
N2JNR 437 2 1 1,802 LAX
Willamette Valley DX Club
AK6A 440 2 1 1,796 OR

Gloucester Co. ARC
AB2E 870 1 1 1,790 SNJ
McKinney ARC
K5LY 435 2 1 1,790 NTX
ARC of Augusta
AA5JF 1,024 1 4 1,787 GA
Tennessee Valley DX Assn.
W4DAN 408 2 1 1,782 TN
WD9CIR 433 2 1 1,782 IL
Police AR Team of Westford
W1IS 441 2 2 1,780 EMA
NG3Y 432 2 1 1,778 MDC
Gwinnett ARS
W3DJS 360 2 1 1,778 GA
Williamson Co. ARES
WB5WAJ 729 2 1 1,778 TN
Paducah ARA
KB9BVL 862 2 1 1,774 KY
Long Island CW Club
WF3T 430 2 1 1,770 NFL
Edmond ARS
N5UM 1,076 1 1 1,769 OK
CTRI Contest Group
W1AN 428 2 1 1,762 CT
Sportsman's Paradise ARC
KO4DN 427 2 1 1,758 NFL
Tri-City ARC of CT
W1RPQ 393 2 1 1,756 CT
KW4VE 850 2 1 1,750 TN
North Fulton ARL
N4TOL 500 2 1 1,750 GA
West Chester ARA
AD8FD 400 2 1 1,748 OH
Downey ARC
N6QQ 424 2 1 1,746 LAX
York RC
NX9G 413 2 1 1,744 IL
Dial RC of Middletown
KD8W 406 2 2 1,742 OH
Greer ARC
KØFE 434 2 2 1,740 SC
Pioneer ARC
KAØUNB 422 2 1 1,738 NE
Smith Chart ARS
K4HA 432 2 1 1,734 NC
Dallas ARC
AE5FM 357 2 1 1,728 NTX
Kentucky Contest Group
KM4FO 419 2 1 1,726 KY
Keowee Toxaway ARC
KS4YX 419 2 1 1,726 SC
BEANOS
NN4DF 419 2 1 1,726 NFL
Emporia ARS
KDØOIX 418 2 1 1,722 KS
West Volusia ARS
WW3A 420 2 1 1,722 NFL
Northeast Louisiana ARC
W5LA 416 2 1 1,714 LA
Potomac Valley RC
N3AM 830 1 1 1,710 MDC
Thibodaux ARC
W5YL 432 2 1 1,710 LA
W3AO Team
K3MM 503 2 1 1,708 MDC
Bankhead ARC
K4NA 414 2 1 1,706 AL
Garland ARC
K5KJ 827 1 1 1,704 NTX
Kingston Amateurs
VE3SCN 386 2 1 1,696 ONE
Kansas City DX Club
KSØAA 410 2 1 1,690 KS
Palmetto ARC
N4EFS 390 2 1 1,690 SC
Peekskill/Cortlandt ARA
WA2MCR 478 2 1 1,688 ENY
Vicksburg ARC
KJ5RC 409 2 1 1,686 MS
West Valley ARA
W8RJL 384 2 1 1,686 SCV
Central Illinois RC
AB9M 383 2 1 1,682 IL
Sun Country ARS
KM4RL 408 2 1 1,682 NFL
Potomac Valley RC
W3CB 408 2 1 1,682 MI
Central Oregon Coast ARC
ACØWN 307 2 1 1,678 OR
MARCA
WB6DHI 406 2 1 1,674 AZ
OCAPA
WD5G 372 2 1 1,674 OK
Hurst ARC
AB5XS 354 2 1 1,666 NTX
SC4ARC
KM6DOV 232 2 16 1,662 SCV
Pasadena RC
N6NQ 378 2 1 1,662 LAX
DFW Contest Group
WØTG 403 2 1 1,662 NTX
Paducah ARA
AB4IQ 379 2 1 1,658 KY
Gloucester Co. ARC
K2SE 402 2 1 1,658 SNJ
Palo Alto ARA
K6MM 406 2 1 1,658 SCV
Murray State Univ ARC
WB8SKP 402 2 2 1,658 KY
Adams Co. ARS
K3DQB 402 2 1 1,654 EPA
Dallas ARC
KF5ZBL 303 2 1 1,654 NTX
Platinum Coast ARS
K4QD 401 2 1 1,652 SFL
K1USN RC
K1DJ 800 1 1 1,650 EMA
Radio Farm
WØGXA 400 2 1 1,650 IA
Tri-Co. ARC (WI)
K9KEU 374 2 1 1,646 WI
Twin City (IL) ARC
KX9X 422 2 1 1,646 IL
W5BT 399 2 1 1,646 WTX
Radio Central ARC and Order of Boiled Owls of NY
KA2D 352 2 1 1,644 NLI
Boulder ARC
KV5Y 398 2 1 1,642 CO
Oro Valley ARC
AK2L 397 2 1 1,638 AZ
QSY Soc.
W2NTV 430 2 1 1,638 ENY
Lewis and Clark RC
KD9DD 299 2 1 1,636 IL
Eau Claire ARC
KB9S 371 2 2 1,634 WI
Tamiami ARC
W2XYZ 642 1 1 1,634 WCF
Portage Co. AR Service
K8CAV 296 2 1 1,622 OH
El Dorado Co. ARC
KE6GLA 618 2 2 1,618 SV
N9NM 391 2 1 1,614 STX
High Sierra Field Day Group
NK7I 340 2 1 1,610 ID
River Bend Wireless Operators Club
WA9LT 432 2 1 1,610 IL
Framingham ARA
K1HT 389 2 1 1,606 EMA
Forsyth ARC
KM4VCO 454 2 3 1,604 NC
Tri-State ARS
AA9WJ 312 2 1 1,598 IN
KØNW 774 1 1 1,598 ORG
Albemarle ARS
NM6X 387 2 1 1,598 SFL
DFW Contest Group
AA5TB 393 2 1 1,596 NTX
Oak Hill ARC
W5KV 723 2 1 1,596 STX
Nittany ARC
K3QP 385 2 2 1,592 WPA
W3AO Team
N4ZR 771 1 1 1,592 MDC
Cleveland ARC
KJ4IWZ 385 2 1 1,590 TN
Pathfinders ARC
VA4PAR 720 2 5 1,590 MB
Paducah ARA
KC4WPS 383 2 1 1,582 KY
Central Massachusetts ARA
KM1D 356 2 1 1,574 WMA
Frankford RC
WA3AAN 773 1 1 1,574 EPA
Fox Cities ARC
KKØI 380 2 1 1,570 WI
Fort Wayne RC
W9GT 386 2 1 1,570 IN
Fluvanna Co. ARES
K4ISW 353 2 1 1,562 VA
EmComms Assn. of St. Charles
KB3HF 328 2 1 1,562 MO
Texas DX Soc.
N5MT 352 2 1 1,558 LA
Half Moon Bay ARC
KØDTJ 358 2 1 1,556 SCV
Vienna Wireless Soc.
W2WCM 701 2 1 1,554 VA
Arkansas River Valley ARF
WB5BHS 334 2 1 1,554 AR
Hidden Valleys ARC
K9OT 376 2 1 1,552 WI
Barry ARA
K8YE 375 2 1 1,550 MI
Albemarle ARC
KE7HX 408 2 1 1,548 VA
Silvercreek ARA
N8JLM 386 2 3 1,546 OH
WY2U 324 2 3 1,546 NLI
Jefferson Co. (WA) ARC
AH6EZ 327 2 1 1,540 WWA
Smoky Mountain ARC
K9UON 347 2 1 1,538 TN
Suburban Technical ARS
KB9REV 347 2 2 1,538 IL
Peel ARC
VA3PM 322 2 1 1,538 GTA
El Dorado Co. ARC
W1SRD 825 1 1 1,528 SV
Columbus ARC
K8LBQ 369 2 1 1,526 GA
ARTS of Louisville
KC4ZMZ 737 2 1 1,524 KY
Appalachian DX Assn.
K3LHD 1,270 1 3 1,520 EPA
Thunderbird ARC
N7SU 317 2 1 1,518 AZ
Blazing Paddles FD Team
WT2P 711 1 1 1,513 IL
Vienna Wireless Soc.
K3MT 384 2 1 1,510 VA
Tri-Lakes ARC
KØUA 365 2 1 1,510 MO
Mohawk ARC
K1TKS 363 2 1 1,502 WMA
River Bend Wireless Operators Club
KWØJ 363 2 1 1,502 IA
N2EY 338 2 1 1,502 EPA
Mountaineer ARA
W8SP 273 2 9 1,500 WV
Platinum Coast ARS
AF4Z 362 2 1 1,498 SFL
MM Expeditionary Force
W9LR 339 2 1 1,494 WI
Watertown ARC
NF9V 737 1 1 1,493 WI
Carbon Co. DXCC
NXØI 360 2 1 1,490 MO
Green River Valley ARS
N9BIL 334 2 1 1,486 IL
St. Mary's Co. ARA
N5TB 360 2 1 1,484 MDC
Montachusett ARA
N1MGO 358 2 1 1,482 WMA
Northern Arizona DX Assn.
AF7EL 357 2 20 1,478 AZ
Turkey Heaven Mtn. Repeater Assn.
K4PI 714 1 1 1,478 GA
Kaw Valley ARC
WAØARM 631 2 1 1,478 KS
Falmouth ARA
KB1TLR 611 2 1 1,472 EMA
London ARC
VE3OT 355 2 1 1,470 ONS
Framingham ARA
W1VIV 305 2 1 1,470 EMA
The Villages ARC
K2DM 1,034 1 1 1,469 NFL
Silver Springs RC
KM4HI 469 2 1 1,466 NFL
Kansas City Assn. for the Blind ARC
NRØR 354 2 1 1,466 MO
Central Michigan ARC
W8MAA 354 2 1 1,466 MI
Walton Co. ARES and Repeater Group
WA4DYD 304 2 1 1,466 GA
Kansas City Contest Club
KØTRL 477 2 1 1,464 KS
Nashoba Valley ARC
N1SV 1,413 1 1 1,463 EMA
Mother Lode DX/Contest Club
K6OK 353 2 1 1,462 SV
Fox River Radio League
K9DXA 353 2 1 1,462 IL
Montgomery Amateur Club
N4AU 303 2 1 1,462 AL
Sawnee ARA
W4ED 353 2 1 1,462 GA
Peace River Radio Assn.
KA1DJ 587 2 1 1,460 WCF
AF2F 352 2 1 1,458 NNJ
Phil-Mont Mobile RC
WA3GM 351 2 1 1,454 EPA
WP3R 1,078 1 1 1,453 PR
Roanoke Valley ARC
K4BNZ 357 2 1 1,452 VA
First Baptist Church Huntsville RC
K4JAZ 325 2 1 1,450 AL
NØBUI 700 1 1 1,450 MN
K5JAZ 349 2 1 1,446 LA
West Texas ARC
N5MI 349 2 1 1,446 WTX
Northern Ohio DX Assn.
N8TR 349 2 1 1,446 OH
Fair Lawn ARC
W2AAB 349 2 1 1,446 NNJ
Green Mountain Wireless Soc.
W1SFR 348 2 1 1,442 VT
St. Augustine ARS
N4RRR 694 2 1 1,438 NFL
Anderson RC (SC)
WB4LZT 346 2 1 1,434 SC
Dial RC of Middletown
K8CI 320 2 1 1,430 OH
Splinter Group ARC
NI8Z 320 2 1 1,430 OH
Milford ARC
K8PK 687 1 1 1,424 OH
Central Montana ARC
KIØBJ 381 2 1 1,424 MT
Richardson Wireless Klub
NN5T 344 2 1 1,424 NTX
Arkansas River Valley ARF
N5QJ 1,372 1 1 1,422 AR
San Mateo RC
W6UQ 379 2 1 1,420 SCV
Vienna Wireless Soc.
KN4VKN 308 2 1 1,418 VA
Maryland Mobileers ARC
W3USN 342 2 1 1,418 MDC
Utah DX Assn.
WI7P 342 2 1 1,418 UT
Palos Verdes ARC
K6RO 831 1 1 1,415 LAX
Salt City DX Ass.
K2ZL 341 2 1 1,414 WNY
Greater Norwalk ARC
K1RF 318 2 1 1,412 CT
Oro Valley ARC
N7GHZ 343 2 1 1,410 AZ
Fort Wayne RC
WA9BBN 340 2 1 1,410 IN
Dial RC of Middletown
K8DSS 289 2 1 1,406 WCF
Livonia ARC
KB8TL 339 2 1 1,406 MI
Silver Comet ARS
N4MNW 339 2 1 1,406 GA
Forsyth ARC
W2DZO 450 2 1 1,406 NC
Radio Club of Tacoma
W7LKG 339 2 1 1,406 WWA
Huntsville ARC
N4NM 313 2 1 1,402 AL
Okaw Valley ARC
W9KXQ 451 2 2 1,400 IL
Algonquin ARC
NB1N 336 2 1 1,394 EMA
Long Island Mobile ARC
NY2H 336 2 1 1,394 NLI
McDowell ARA
W4BTW 336 2 1 1,394 NC
Heart of Dixie ARS
WA4CQG 336 2 1 1,394 AL
The Villages ARC
WB4CKI 336 2 1 1,394 NFL
Central Louisiana ARC
WW5G 336 2 1 1,394 LA
Holmesburg ARC
W3WHK 342 2 1 1,390 EPA
Bristol (TN) ARC
W4TTM 335 2 1 1,390 TN
Housatonic ARC
N3DAW 341 2 1 1,386 MDC
Los Alamos ARC
NM5U 334 2 1 1,386 NM
Wireless Assn. of South Hills
W3WH 334 2 1 1,386 WPA
DFW Contest Group
WC5D 334 2 1 1,386 NTX
K8ATG 565 2 1 1,384 WV
Univ of Mississippi ARC
KE5UGA 335 2 1 1,384 MS
St. Louis ARC
NØIS 333 2 1 1,382 MO
Fort Wayne RC
AC9EZ 378 2 1 1,380 IN
Montvale OEM
K2FJ 331 2 1 1,374 NNJ
Heart of Dixie ARS
K4IQJ 331 2 1 1,374 AL
Tri-Co. ARC (GA)
K4VQ 662 2 1 1,374 GA
Paducah ARA
KO4XJ 340 2 1 1,372 KY
McHenry Co. Wireless Assn.
KG9X 330 2 1 1,370 IL
North Fulton ARL
KN4UNI 300 2 1 1,370 GA
Mississauga ARC
VA3JK 330 2 1 1,370 GTA
Radio Club of Redmond
WC7Q 658 1 1 1,366 WWA
Sawnee ARA
WW8RR 336 2 1 1,366 GA
The Seven Thirty ARS
VA3UG 656 2 1 1,362 ONS
AD7LL 302 2 1 1,358 TN
Gwinnett ARS
KA4KKF 302 2 1 1,358 GA
Lafayette DX Assn.
KF9UP 401 2 1 1,358 IN
Grand Mesa Contesters of Colorado
KØAE 327 2 1 1,358 CO
Lafayette DX Assn.
W9LDX 605 1 1 1,358 IN
Western Washington DX Club
K7RL 713 1 1 1,357 WWA
KH6LC 653 1 1 1,356 PAC
Club Radio Amateur de Québec
VA2QR 324 2 1 1,356 QC
Tamiami ARC
K4EU 300 2 1 1,350 WCF
Kendall ARS
K5NOF 300 2 1 1,350 STX
Livonia ARC
K8AEF 300 2 1 1,350 MI
Oakland Co. ARS
K8NWD 325 2 1 1,350 MI

NOARS
W1PDI 325 2 1 1,350 OH
OCAPA
AA5KD 312 2 1 1,346 OK
Barnstable ARC
K1DCA 174 2 1 1,346 EMA
Southern Co. ARA
KD2QED 302 2 1 1,346 SNJ
North Richland Hills ARC
KD5RXP 306 2 2 1,346 NTX
El Dorado Co. ARC
WA6LIE 324 2 1 1,346 SCV
K3KU 455 2 1 1,344 MDC
Old Barney ARC
K2RET 325 2 1 1,336 SNJ
Coastal ARS
KT4ZB 642 2 1 1,334 GA
Worthington Christian School ARC
W0WCS 589 2 2 1,328 MN
Mike & Key ARC
K9VD 343 2 1 1,326 WWA
North Fulton ARL
N7QPP 319 2 1 1,326 GA
Waltham ARA
AB1J 320 2 1 1,324 EMA
Monongalia Wireless Assn.
K8WV 333 2 1 1,324 WV
Tennessee Contest Group
K3FH 327 2 1 1,322 WPA
KN4DS 303 2 1 1,322 GA
Meriden ARC
N1API 318 2 1 1,322 CT
Villa Rica RC
N4FWD 318 2 1 1,322 GA
New Providence ARC
KB2FCV 328 2 2 1,318 NNJ
Northeast Maryland AR Contest Soc.
WT3C 322 2 2 1,318 MDC
Johnson Co. Radio Amateurs Club
KØIZ 1246 1 2 1,316 CO
Lucas ARC
WB5K 316 2 1 1,314 NTX
Club Radio Amateur de Québec
VE2WPL 215 2 1 1,310 QC
Old Barney ARC
KZ2I 539 2 1 1,308 SNJ
Potomac Valley RC
K4HQK 314 2 1 1,306 VA
Paducah ARA
ND4X 275 2 1 1,304 KY
Columbia (SC) ARC
KB4DE 313 2 1 1,302 SC
Heritage Hunt Hams
N4RA 441 2 1 1,302 WV
Tellico Lake ARC
WK9M 313 2 1 1,302 TN
State Line RC
N3TU 312 2 1 1,298 DE
Delaware ARA
WD8KNC 287 2 1 1,298 OH
Rochester (MN) ARC
K0MD 852 1 1 1,297 MN
Splitrock ARA
W2PJ 1,239 1 1 1,296 WNY
Tippecanoe ARA
K9JWI 311 2 1 1,294 IN
Albuquerque DX Assn.
NZ7Q 311 2 1 1,294 NM
W1RM 311 2 1 1,294 CT
Sonoma Co. Radio Amateurs
WB6FRZ 286 2 1 1,294 SF
Radio Amateurs of Greater Syracuse
K9CHP 260 2 1 1,290 WNY
Albany ARA
KM2O 245 2 1 1,290 ENY
Kings Co. and Annapolis Valley ARCs
VE1JG 285 2 1 1,290 MAR
Radio Amateurs of Skagit Co.
K7LVJ 307 2 1 1,288 WWA
Cass Co. ARC
W9LCM 1238 1 1 1,288 IN
N3IW 284 2 1 1,286 WPA
Low Country Contest Club
W4MEL 309 2 1 1,286 SC
Northeast Maryland AR Contest Soc.
NE3MD 650 1 1 1,285 MDC
Oakland Co. ARS
W1SKU 1,232 1 1 1,285 MI
Island Park Group
N6JF 283 2 2 1,282 ID
Contest Club Ontario
VE3MA 308 2 1 1,282 ONS
Peace River Radio Assn.
K4NAX 310 2 1 1,280 WCF
Paso Robles ARC
KB6TAZ 1,227 1 1 1,277 SCV
Splinter Group ARC
W8MET 1,227 1 2 1,277 OH
Boeing Employees AR Operators North Soc.
W7FLY 305 2 1 1,276 WWA
Southwest Dallas Co. ARC
KB5NJD 306 2 1 1,274 NTX
Warminster ARC
NR3Z 306 2 1 1,274 EPA
Northern Ohio DX Assn.
K8FF 305 2 1 1,270 OH
Smoky Mountain ARC
W4PCA 280 2 1 1,270 TN
Bolingbrook ARS
W9KM 305 2 1 1,270 IL
W3AO Team
W3IDT 492 2 1 1,268 MDC
Toronto ARC
VE3HEU 330 2 1 1,266 GTA
W5PUF 304 2 1 1,266 STX
Franklin Co. (NC) ARC
K2GAV 495 2 1 1,264 NC
Garden State ARA
K2NPT 315 2 1 1,264 SNJ
Florida Contest Group
K0LUZ 607 1 1 1,264 NFL
Pottstown Area ARC
WF3M 251 2 1 1,264 EPA
Niagara Frontier Radiosport
KM2L 303 2 1 1,262 WNY
Forsyth ARC
N4HER 253 2 1 1,262 NC
North Richland Hills ARC
N5DN 303 2 1 1,262 NTX
Broughton Memorial Field Day Group
NM2R 303 2 1 1,262 ENY
Lighthouse ARA
K3QH 605 1 1 1,260 SFL
K9WWT 605 1 1 1,260 IN
Baltimore Polytechnic Alumni RC
W3CDI 309 2 1 1,260 MDC
AB2TB 302 2 1 1,258 NNJ
ARASNE
N1RR 755 1 1 1,258 EMA
Cullman ARC
N5GEN 302 2 1 1,258 AL
N8NCC Memorial Club
N8NCC 302 2 1 1,258 KS
W9CYA 302 2 1 1,258 KY
St. Louis ARC
WA0IYY 277 2 1 1,258 MO
Dalton ARC
AB4BJ 1,204 1 2 1,254 GA
K4AL 301 2 1 1,254 TN
Radio Central ARC and Order of Boiled Owls of NY
KS2G 470 2 1 1,254 NLI
Splinter Group ARC
N8TCP 276 2 1 1,254 OH
York RC
AC9QS 350 2 1 1,252 IL
Fair Lawn ARC
K2PJC 302 2 1 1,250 ENY
North Georgia ARC
KC4GCK 300 2 1 1,250 GA
Thunderbird ARC
KC0GU 300 2 1 1,250 CO
Moore Co. ARS
N4BRD 300 2 1 1,250 NC
N7DX 300 2 1 1,250 WWA
Williamsburg Area ARC
W4NYY 600 2 1 1,250 VA
WX8C 305 2 2 1,248 MI
Silvercreek ARA
AB8OU 304 2 1 1,246 OH
NA8W 299 2 1 1,246 OH
First State ARC
AC3DH 299 2 1 1,244 DE
Lafayette DX Assn.
N9LF 225 2 1 1,244 IN
Texas DX Soc.
KB5WWW 298 2 1 1,242 STX
Hiawatha Valley ARC
KIØF 1,002 1 1 1,241 MN
Lewis and Clark RC
KJ4EG 276 2 1 1,240 IL
Wexaukee ARC
WA8UPB 297 2 1 1,238 MI
KE8PX 296 2 1 1,234 OH
N6OKU 592 2 1 1,234 ORG
SEKARC
W0RT 296 2 1 1,234 KS
El Dorado Co. ARC
W1RH 697 1 1 1,233 SV
San Andreas Field Day Survivors
W6ML 772 1 1 1,232 SJV
Halifax ARC
VE1PK 260 2 3 1,230 MAR
Metro DX Club
W9ILY 295 2 1 1,230 IL
Fayette Co. ARC
WB5KFP 270 2 1 1,230 GA
Bristol (TN) ARC
AA4DD 294 2 1 1,226 TN
Topanga Disaster Radio Team
KG6MZS 301 2 1 1,226 LAX
Ventura Co. ARC
K6QV 223 2 1 1,224 SB
Radio Amateurs of Greater Syracuse
KC2HO 269 2 2 1,224 WNY
Niagara Frontier Radiosport
NN2NN 378 2 1 1,222 WNY
Mora Open Repeater Assn.
N0OK 368 2 1 1,222 MN
Platinum Coast ARS
W4SO 293 2 1 1,222 SFL
Broken Arrow ARC
W5BM 268 2 1 1,222 OK
Radio Amateurs of Skagit Co.
K7NTW 292 2 1 1,218 WWA
Noise Blankers Radio Group
K5KVN 281 2 1 1,214 AR
Brazos Valley ARC
W2OZB 291 2 1 1,214 STX
Tallico Lake ARC
W4SSF 323 2 1 1,212 TN
AA4LR 310 2 1 1,210 GA
Mike & Key ARC
N7BV 290 2 1 1,210 WWA
Messila Valley RC
WA5DJJ 292 2 1 1,210 NM
Straight Key Century Club
W8IQ 302 2 1 1,208 OH
Arrow Communications Assn.
AB3DC 212 2 1 1,206 MI
Central Mississippi ARA
AG5BC 289 2 1 1,206 MS
Irvine Disaster EmComms
K6PB 237 2 1 1,206 ORG
North Richland Hills ARC
W5HP 289 2 1 1,206 NTX
Radio Society of Tucson
AG7JG 288 2 1 1,200 AZ
St. Louis ARC
W0SLW 575 1 1 1,200 MO
Orange Co. Radio Amateurs & Durham FM Assn.
KR4UB 287 2 1 1,198 NC
Mila's Field Day Group
AJ3AA 806 1 1 1,195 NC
K2WK 286 2 1 1,194 VA
Big Bend ARC
KM4TYV 286 2 1 1,194 TN
Blue Ridge ARC
N1DAY 286 2 1 1,194 NC
WA7NPX 286 2 1 1,194 MO
River Bend Wireless Operators Club
W0QC 286 2 1 1,194 IA
Arizona Outlaws Contest Club
W0RIC 286 2 1 1,194 AZ
Greater Beloit ARC
KE9N 1,042 1 1 1,192 IL
Gwinnett ARS
KX4HA 286 2 1 1,190 GA
Nortown ARC
VE3II 285 2 1 1,190 ONS
Contest Club Ontario
VE3UZ 285 2 1 1,190 ONS
Meriden ARC
KC1SA 307 2 1 1,188 CT
Orange Co. (CA) ARC
N1BKB 500 2 1 1,184 ORG
Mohawk ARC
N1ERS 276 2 1 1,182 WMA
Lighthouse ARA
W4OX 259 2 1 1,182 SFL
W5TAF 309 2 1 1,182 VA
Radio Club of Tacoma
WE7P 258 2 1 1,182 WWA
Great South Bay ARC
K2TV 208 2 1 1,180 NLI
Watauga ARC
NI4E 565 1 1 1,180 NC
Union Co. (NC) ARC
KV4N 257 2 1 1,178 NC
WA1FMM 269 2 1 1,178 CO
Hualapai ARC
N7K 535 1 3 1,177 AZ
Majors Field ARC
K5PS 571 1 1 1,176 NTX
Montvale OEM
K2TWI 281 2 1 1,174 NNJ
Central Oregon Coast ARC
K7AAT 233 2 1 1,174 OR
North Shore (IL) RC
WA9IVH 276 2 1 1,174 IL
Great Salt Lake Contest Club
K7KC 953 1 2 1,171 UT
Anthracite Repeater Assn.
AI3Q 280 2 1 1,170 EPA
Platte Co. ARG
K6FN 255 2 1 1,170 MO
Metro DX Club
K9CS 280 2 1 1,170 IL
Phil-Mont Mobile RC
N3QV 255 2 1 1,170 EPA
Utah Valley ARC
NA7C 280 2 1 1,170 UT
VA3GE 280 2 1 1,170 ONE
Tri-Lakes ARC
W9MAF 280 2 1 1,170 MO
Lake Area (TX) ARC
K5VOP 197 2 3 1,168 NTX
W/K ARC of Greater Milwaukee
KC9UQR 255 2 1 1,168 WI
Monroe Co. Radio Communications Assn.
KG8P 300 2 1 1,166 MI
Forsyth ARC
W1LLO 254 2 1 1,166 NC
Raleigh ARS
WA4BPJ 279 2 1 1,166 NC
Blue Springs ARC
KA0REN 278 2 1 1,162 MO
Montrose ARC
W7LEV 278 2 1 1,162 CO
Rochester (MN) ARC
K4IU 555 1 2 1,160 MN
Montgomery Amateur Club
W4MTM 207 2 1 1,160 AL
Meriden ARC
K1VDF 277 2 1 1,158 CT
Frankford RC
W2LCQ 277 2 1 1,158 NLI
WEST PARK RADIOPS
W8PN 277 2 1 1,158 OH
Bellbrook ARC
KM8AM 1,106 1 1 1,156 OH
Radio Amateurs of Greater Syracuse
KD2A 276 2 1 1,154 WNY
Williamsburg Area ARC
KL0SS 502 2 1 1,154 VA
Cheshire Co. DX ARC
N1KWF 276 2 1 1,154 NH
Bergen ARA
N2GM 276 2 1 1,154 NNJ
N3AS 302 2 1 1,154 EPA
Mizpah Shrine Radio Unit
N9MR 279 2 1 1,154 IN
Coquitlam ARES Soc.
VE7WJ 452 2 1 1,154 BC
North Richland Hills ARC
KB5WCK 281 2 1 1,152 NTX
N3IL 282 2 1 1,152 OH
Stanford ARC
ND2T 252 2 1 1,152 SCV
Columbia Basin DX Club
WS7G 1,101 1 3 1,151 EWA
North Fulton ARL
KK4E 275 2 1 1,150 GA
The Guys
WA9JSI 250 2 1 1,148 IL
GOTAHAMS
K6EV 274 2 1 1,146 LAX
N9OF 274 2 1 1,146 STX
San Diego Yacht Club ARG
W6IM 541 2 3 1,146 SDG
KM2T 273 2 1 1,142 WCF
Int'l Soc. for AR Innovation
K2IW 505 1 1 1,139 ENY
KG5RJ 272 2 1 1,138 NTX
Minnesota Wireless Assn.
KØTC 272 2 1 1,138 MN
Union Métropolitaine des Sans-fillistes de Montréal
VE2HLS 247 2 1 1,138 QC
Midland (TX) ARC
W5AJ 274 2 1 1,138 WTX
South East Metro ARC
KB0R 277 2 1 1,136 MN
Old Barney ARC
N2NF 271 2 1 1,134 SNJ
Platte Co. ARG
WA0TJT 271 2 1 1,134 MO
McArc
W5AFV 271 2 3 1,132 STX
Raleigh ARS
K4BYN 270 2 1 1,130 NC
KB5RXL 270 2 1 1,130 NTX
KE4WLE 260 2 3 1,130 OH
Spartanburg ARC
WA8OJR 270 2 1 1,130 SC
The Road Show ARC
W4PH 270 2 1 1,128 NC
Raleigh ARS
N4EII 269 2 1 1,126 NC
ARTS of Louisville
N4UL 269 2 1 1,126 KY
Alcorn Co. ARES
WB5CON 269 2 1 1,126 MS
SEKARC
KB0PQP 792 1 1 1,123 KS
North Richland Hills ARC
N5QV 268 2 1 1,122 NTX
Dial RC of Middletown
W3GP 243 2 1 1,122 NC
Northeast Maryland AR Contest Soc.
N3EEN 274 2 1 1,120 EPA
N3PKJ 392 2 1 1,120 WPA
Falmouth ARA
K1WCC 434 2 1 1,118 EMA
York Region ARC
VE3IBW 242 2 1 1,118 GTA
N8BL 245 2 1 1,116 WV
CRES ARC
N9CX 268 2 1 1,114 OH
Village Hams
KE9SA 272 2 2 1,112 WI
Orange Co. (CA) ARC
KI6X 273 2 1 1,112 ORG
Denver RC
AD0YO 265 2 1 1,110 CO
K6UF 265 2 1 1,110 SCV
Prairie Dog ARC
WA0GMH 265 2 1 1,110 SD

Escondido ARS
N6EP 275 2 1 1,108 SDG
Lake Area (TX) ARC
NA5W 191 2 1 1,108 NTX
Midland (TX) ARC
WA5PFJ 264 2 1 1,106 WTX
Maui ARC
KH6TU 532 1 1 1,105 PAC
CWops
K8CMO 263 2 1 1,102 OH
Cumberland ARC
N3EPY 215 2 1 1,102 EPA
Peel ARC
VE3CWU 263 2 1 1,102 GTA
WA0N 526 2 1 1,102 KS
QSY Soc.
WA2NYY 241 2 1 1,100 ENY
Forsyth ARC
WS4NC 219 2 1 1,100 NC
Parker Radio Assn.
AB4BA 290 2 1 1,098 CO
K0WEW 262 2 1 1,098 KS
Paducah ARA
KS4V 237 2 1 1,098 KY
Findlay ARC
N8ET 268 2 1 1,098 OH
Dial RC of Middletown
W8RES 262 2 1 1,098 OH
Lighthouse ARA
N4WZ 946 1 1 1,096 SFL
CorTek Radio Assn.
AG9A 263 2 1 1,092 IL
Monroe Co. Radio Communications Assn.
WA8YZB 269 2 1 1,092 MI
Randallstown ARC
AJ1DM 260 2 1 1,090 RI
Great Southern DX Assn.
K5DL 260 2 1 1,090 MS
West Virginia AR
WW8RT 260 2 1 1,090 WV
North Ottawa ARC
KF8VN 259 2 1 1,086 MI
Victoria-Haliburton ARA
VA3ZNQ 289 2 1 1,086 ONE
Framingham ARA
KE3KK 259 2 1 1,084 WMA
Portage Co. AR Service
K3GP 258 2 1 1,082 OH
Cuyahoga Falls ARC
N8LGP 258 2 1 1,082 OH
W0PV 260 2 1 1,082 WCF
Central West Virginia Wireless Assn.
NR8X 515 2 1 1,080 WV
Kings Co. and Annapolis Valley ARCs
VE1BAB 233 2 1 1,080 MAR
Joplin ARC
KE0RUZ 257 2 1 1,078 MO
Ham Assn. of Mesquite
KE5NUB 209 2 1 1,076 NTX
Delaware ARA
N8FTB 231 2 1 1,074 OH
Fauquier ARA
NR3N 256 2 1 1,074 VA
Hamilton (ON) ARC
VE3RIA 231 2 1 1,074 ONS
Coastal Plains ARC
W4GHW 256 2 7 1,074 GA
Forsyth ARC
AD4ET 260 2 2 1,072 NC
Northern Kentucky ARC
AI4BJ 253 2 1 1,072 KY
Tuolumne Co. AR & Electronics Soc.
WA6N 256 2 1 1,072 SJV
California City ARC
KK6VZI 255 2 1 1,070 SJV
Northwest Florida ARC
N4UVR 262 2 1 1,070 NFL
South Orange ARA
N6PM 255 2 1 1,070 ORG
Alamance ARC
KG4ZOD 509 2 1 1,068 NC
BCARS.ORG
KC3KFW 254 2 1 1,066 WPA
Contest Club Ontario
VE3CV 259 2 1 1,066 ONS
K4MX 253 2 1 1,062 VA
W7SST 253 2 1 1,062 STX
Frankford RC
KA2K 505 2 1 1,060 SNJ
Hampden Co. Radio Assn.
W1AST 295 2 1 1,060 WMA
AA8GP 260 2 1 1,058 OH
Police AR Team of Westford
K1IG 182 2 1 1,058 EMA
Club Radio Amateur de Québec
VE2GHO 255 2 1 1,058 QC
Niagara Frontier Radiosport
W2VM 252 2 1 1,058 WNY
The 415 ARC
W9XB 252 2 1 1,058 IL
Kay Co. ARC
W0DY 1,007 1 1 1,057 OK
Ellis Co. ARC
WR5AY 503 1 1 1,056 NTX
Yankee Clipper Contest Club
K1ZD 502 1 1 1,054 CT
CorTek Radio Assn.
KK9DX 251 2 1 1,054 TN
Williamson Co. ARES
KM4IYO 251 2 1 1,054 TN
Northeast Iowa Radio Amateur Assn.
K0INR 251 2 1 1,054 IA
Murphys Marauders
N1IXF 391 2 1 1,052 CT
South East Contest Club
N4GG 501 1 1 1,052 GA
CTRI Contest Group
K1ECU 225 2 1 1,050 CT
Murphys Marauders
K1RM 500 1 1 1,050 CT
North Augusta Belvedere RC
K7UPJ 250 2 1 1,050 WCF
Old Barney ARC
N2HM 225 2 1 1,050 SNJ
Great South Bay ARC
NO2C 250 2 1 1,050 NLI
N0UMP 250 2 1 1,050 MO
West Carleton ARC
VE3KI 250 2 1 1,050 ONE
Olympia ARS
W7NN 1,000 1 1 1,050 WWA
Franklin Co. (NC) ARC
W8EMD 250 2 1 1,050 NC
North Shore (IL) RC
W9AT 230 2 1 1,048 GA
Butler Co. (PA) ARA
AA3LX 251 2 1 1,042 WPA
Kentucky Contest Group
WX4W 241 2 1 1,042 KY
Bellbrook ARC
K8SJM 247 2 1 1,038 OH
Kansas City Contest Club
AA0FO 171 2 1 1,034 KS
N5VDQ 269 2 6 1,034 NTX
El Dorado Co. ARC
N6GHZ 246 2 1 1,034 SV
Mohawk ARC
W1PFZ 198 2 1 1,034 WMA
W5TMT 246 2 1 1,034 STX
Schaumburg ARC
W9YY 246 2 1 1,034 IL
Wayne Co. ARC
KC3NDU 170 2 1 1,030 EPA
570-V Connection
W3HGT 490 2 1 1,030 WPA
Virginia Beach ARC
WA4EUL 245 2 1 1,030 VA
Peace River Radio Assn.
KG4QIV 301 2 1 1,028 WCF
Albany ARA
N2SQW 222 2 1 1,028 ENY
KS7T 513 1 1 1,027 MT
Tri-Town Radio Amateur Club
KA9IUC 194 2 1 1,026 IL
London ARC
VA3AHQ 244 2 1 1,026 ONS
Ak-Sar-Ben ARC
W0JG 438 2 1 1,026 NE
Collins ARC
K5QY 293 2 1 1,022 NTX
Parker Radio Assn.
KE0DC 243 2 1 1,022 CO
Roanoke Valley ARC
KK4VA 220 2 1 1,022 VA
South East Contest Club
N5FPW 218 2 1 1,022 NC
North Georgia ARC
W4ZST 486 2 1 1,022 GA
The Guys
N9PS 255 2 1 1,020 IL
K2PAL 242 2 1 1,018 NLI
K7HPN 217 2 1 1,018 AZ
Frankford RC
W8FJ 483 1 1 1,016 EPA
Mohawk ARC
AB1CW 241 2 1 1,014 WMA
Lake Area (SD) Radio Klub
KB0VXD 191 2 1 1,014 SD
WB8AKW 482 1 1 1,014 OH
Clearwater ARS/St. Petersburg ARC/
Upper Pinellas ARC
NY4I 170 2 1 1,012 WCF
West Virginia AR
AB8RL 240 2 1 1,010 WV
AD5JK 244 2 1 1,010 OK
Pamlico ARS
K4JJW 240 2 1 1,010 NC
Arlington ARC
N5LFE 190 2 1 1,010 NTX
North Shore (ON) ARC
VE3HYJ 240 2 1 1,010 GTA
Aardvark Wireless Group
W4UB 215 2 1 1,010 WCF
W3AO Team
K3ZO 957 1 1 1,007 MDC
Mike & Key ARC
N7EW 215 2 1 1,006 WWA
York Region ARC
VE3CGR 214 2 1 1,006 GTA
Sierra Blanca ARC
W5DET 239 2 1 1,006 NM
Radio Operadores Del Este
KP4RV 376 2 1 1,004 PR
Pasadena RC
W4EF 253 2 1 1,004 LAX
Kachina ARC
W7DRW 238 2 1 1,002 AZ
Rochester (NY) DX Assn.
KB2E 240 2 1 1,000 WNY
Radio Central ARC and Order of Boiled
Owls of NY
K2LE 237 2 1 998 NLI
Mountain ARC (MD)
KB3CS 424 1 1 998 MDC
Edmond ARS
W8OU 237 2 1 998 OK
South Bay ARA
WT6K 474 1 1 998 EB
Foothills ARS (CA)
WQ6L 895 1 1 995 SCV
Albemarle ARC
K4DND 236 2 1 994 VA
Central Oregon Coast ARC
K7QN 111 2 1 994 MO
Chicago Suburban Radio Assn.
AA9F 212 2 1 992 IL
Greater Beloit ARC
K9BY 220 2 1 992 IL
Loudoun ARG
K3SEN 235 2 1 990 VA
Hampden Co. Radio Assn.
N1TA 235 2 1 990 WMA
Southern Peninsula AR Klub
WD0FYV 210 2 1 990 VA
Great Southern DX Assn
WM5DX 235 2 1 990 MS
Santa Fe ARES
AG5S 239 2 1 988 NM
East Greenbush ARA
N2CJF 240 2 1 988 CT
Aardvark Wireless Group
N4KIN 240 2 1 988 WCF
Hampstead Hams
KO4FD 234 2 1 986 NC
W4SJV 201 2 1 982 NFL
W1MI 208 2 1 980 WMA
The Villages ARC
W3US 235 2 1 980 NFL
The Villages ARC
K1CTR 232 2 1 978 NFL
River Bend Wireless Operators Club
KG0GGY 232 2 1 978 IL
Lighthouse ARA
W4QN 788 1 7 977 SFL
Cuyahoga ARS
WT8O 463 2 1 976 OH
Huntsville ARC
KS4L 206 2 1 974 AL
Story Co. ARC
N1XK 233 2 1 974 IA
Kingston Amateurs
VE3ORY 206 2 1 974 ONE
Ottawa Valley Mobile RC
VE3RXH 158 2 1 974 ONE
Green Bay Mike & Key Club
K9GB 209 2 1 970 WI
N4RE 205 2 1 970 NC
Arrow Communications Assn.
N8SBE 215 2 1 970 MI
The Seven Thirty ARS
VE3CWP 230 2 1 970 ONS
Brazos Valley ARC
W5TKZ 230 2 1 970 STX
Spartanburg ARC
W0NV 205 2 1 970 SC
Snohomish Co. Hams Club
KJ7AKV 233 2 1 968 WWA
Bellbrook ARC
AC8ZU 229 2 1 966 OH
K4SAF 204 2 1 966 KY
DFW Contest Group
K5BG 458 1 1 966 NTX
Richardson Wireless Klub
KD4C 179 2 1 966 NTX
Oro Valley ARC
NG7A 229 2 1 966 IA
VCARA
NM5PS 229 2 1 966 NM
Sierra Nevada ARS
W6US 204 2 1 966 NV
Western Illinois ARC
W9WE 229 2 1 966 IL
St. Augustine ARS
WA4GPM 255 2 1 966 NFL
The Villages ARC
K2TE 457 1 1 964 NFL
North Fulton ARL
K4FPV 180 2 1 964 GA
Ocean Co. ARES
N2LD 228 2 1 962 SNJ
Dial RC of Middletown
W8ISZ 268 2 1 962 OH
Bellbrook ARC
W8LRJ 208 2 1 962 OH
KD5J 471 1 1 961 AR
South Orange ARA
K6VO 227 2 1 958 ORG
KR0P 227 2 1 958 NE
Orange Co. (NY) ARC
N2BEF 202 2 1 958 ENY
N3ITN 454 2 1 958 EPA
Montgomery Amateur Club
NA4MM 227 2 1 958 AL
Nashua Area Radio Soc.
NF1H 227 2 1 958 NH
Orange Co. Radio Amateurs & Durham
FM Assn.
W4KIL 202 2 1 958 NC
KC2DUX 85 2 5 956 SNJ
North Fulton ARL
KS4KJ 402 2 1 954 GA
Westchester EmComms Assn.
N2SF 392 2 2 954 ENY
Brightleaf ARC
W4JNC 226 2 1 954 NC
Falmouth ARA
WA1DRQ 201 2 1 954 EMA
Schaumburg ARC
KA9QGH 235 2 1 952 WI
Columbia (MD) ARA
WA4GUD 209 2 1 952 MDC
W7VJ 901 1 1 951 WWA
Mother Lode DX/Contest Club
K6LRN 200 2 1 950 SV
Dallas ARC
KE5JIT 150 2 1 950 NTX
Anoka Co. RC
KE0BRZ 200 2 1 950 MN
Randallstown ARC
N2DA 225 2 1 950 VA
South Mountain Radio Amateurs
N3SW 175 2 1 950 VA
Peel ARC
VA3QSL 200 2 1 950 GTA
Wireless Soc. of Southern Maine
K1JB 225 2 1 948 ME
Loudoun ARG
K0ZR 449 1 1 948 VA
Austin ARC
KE3D 224 2 1 946 STX
Stratford ARC
W1CTN 310 2 1 946 CT
K3FMF 223 2 1 942 EPA
ARC of Butts Co.
K3GWK 215 2 1 942 GA
KZ7ZUL 223 2 1 942 UT
Warminster ARC
WA3JZN 223 2 1 942 EPA
KE6YLH 178 2 1 940 SCV
Florida Contest Group
AA8R 222 2 1 938 WCF
Benton ARS
N2JAS 362 2 4 938 WPA
Lake Co. RACES/ARES
N9TF 222 2 1 938 IL
Delaware Valley ARS
WB3LGC 197 2 1 938 DE
Orange Co. (CA) ARC
W6WG 231 2 1 936 SJV
Milford ARC
AB8O 221 2 1 934 OH
KI5IXP 221 2 1 934 STX
South Plainfield ARC
N0CC 221 2 1 934 NNJ
Warren ARS
N0KRQ 221 2 1 934 IA
Panama City ARC
VA3ECO 201 2 1 934 ONN
El Paso Contest Club
WJ5L 221 2 1 934 WTX
Niagara Frontier Radiosport
K2RSK 222 2 1 932 WNY
Siskiyou Co. ARA
K6DBS 325 2 1 932 SV
Spokane DX Assn.
K7STO 249 2 3 930 EWA
Columbia-Montour ARC (PA)
KC3OLH 215 2 3 930 EPA
Monessen ARC
KI3R 220 2 1 930 WPA
North Augusta Belvedere RC
KP2L 220 2 1 930 SC
Gwinnett ARS
N4NQ 220 2 1 930 GA
Clearwater ARS/St. Petersburg ARC/
Upper Pinellas ARC
WA4ATF 218 2 2 930 WCF
Indiana Co. ARC
K3VAR 219 2 1 926 WPA
Smith Chart ARS
K4QL 230 2 1 926 NC
Five Flags ARA
KF4DVF 184 2 1 926 NFL
Laughery Valley ARC
WA8ONN 221 2 1 926 IN
LaGrange ARC
K3IMC 382 2 1 924 GA
River Bend Wireless Operators Club
KB0XY 197 2 1 924 IA

Northern DX Assn.
W8KEN 437 1 1 924 OH
K4RDU 218 2 1 922 VA
Oak Hill ARC
K5TMT 218 2 1 922 STX
Redondo Beach DCS
KI6RRD 218 2 1 922 LAX
Salem ARC
N7TE 218 2 1 922 OR
Central Oregon Coast ARC
K6RMP 95 2 1 918 OR
Oneonta ARC
WB2HLM 217 2 1 918 WNY
Sky Valley ARC
KA7BVS 166 2 1 914 WWA
Smoky Mountain ARC
W7FKI 216 2 1 914 TN
Jefferson Co. (WA) ARC
W7IEQ 216 2 1 914 WWA
Edmond ARS
WD5CSK 314 2 1 914 OK
South East Contest Club
AD8J 431 1 1 912 NC
Granite State ARA
KT1F 216 2 1 912 NH
Austin ARC
K5GM 215 2 1 910 STX
Lowell ARC
K9DH 215 2 1 910 MI
Hampstead Hams
N5VX 215 2 1 910 NC
Delta ARS
VE7AHT 215 2 1 910 BC
Fair Lawn ARC
W2DLT 475 1 1 910 EPA
Texas DX Soc.
W5GCX 240 2 1 910 STX
El Dorado Co. ARC
AF6SA 513 1 1 907 SV
AA4NP 214 2 1 906 SFL
Broughton Memorial Field Day Group
K2UYK 228 2 1 906 ENY
Marietta ARC
K8DUB 214 2 1 906 OH
Mountain State Transmitters
KE8LGO 214 2 1 906 WV
W3AO Team
N3ALN 228 2 1 906 MDC
Sussex Co. ARC
WG2Z 214 2 1 906 NNJ
Columbia (MD) ARA
W2WCF 327 2 1 904 MDC
Lake Monroe ARS
KC4GO 213 2 1 902 NFL
Whitman ARC
W1CVE 213 2 1 902 EMA
Carolina DX Assn.
W3OA 213 2 1 902 NC
East Bay ARC
W6MRR 188 2 1 902 EB
Willamette Valley DX Club
AD7L 212 2 1 898 OR
NASA Marshall Space Flight Center ARC
AE4FQ 132 2 1 898 AL
Bear Bait RC
K2EXE 162 2 1 898 WNY
London ARC
VE3FBZ 212 2 1 898 ONS
W6TRW ARC
W6TRW 219 2 1 898 LAX
Union Métropolitaine des Sans-filistes de Montréal
VE2SYQ 214 2 1 896 QC
Binghamton ARA
N2ENG 211 2 1 894 WNY
Wireless Assn. of South Hills
N3FB 202 2 1 894 WPA
Radio Club of Tacoma
W7DK 215 2 5 894 WWA
Central Texas DX and Contest Club
WA2VYA 211 2 1 894 STX
Potomac Valley RC
W3YY 421 1 1 892 VA
Walla Walla Valley ARC
W7HJL 198 2 1 892 EWA
Columbus ARC
K4EOR 185 2 1 890 GA
Meriden ARC
KE1AU 210 2 1 890 CT
Sportsman's Paradise ARC
KN4TDL 210 2 1 890 NFL
Grand Strand ARC
KN4UUR 313 2 1 890 SC
Valley and Massanutten ARA
KN4YFI 210 2 1 890 VA
Federación de Radio Aficionados de Puerto Rico
KP4JRS 210 2 1 890 PR
Potomac Valley RC
N3HEE 210 2 1 890 MDC
VE3ZDR 191 2 1 890 ONN
Comox Valley ARC
VE7XF 210 2 1 890 BC
Associated Radio Amateurs of Long Beach
AI6V 215 2 1 888 LAX
Davie/Cooper City ARC
K5SEU 211 2 1 888 SFL
Meriden ARC
N1BRL 209 2 1 886 CT
Radio Operadores Del Este
NP3V 216 2 1 886 PR
Kanawha ARC
W8IW 209 2 1 886 WV
WD4LYV 209 2 7 886 GA
Hilltop Transmitting Assn.
WS3C 210 2 1 886 EPA
Yankee Clipper Contest Club
K1GQ 417 1 1 884 NH
KL2R 418 1 1 884 AK
Dixie ARC
KV7V 205 2 1 884 UT
Vienna Wireless Soc.
N1GFV 366 2 1 884 VA
South East Metro ARC
N0BM 171 2 1 884 MN
Southwest Ohio DX Assn.
K9NW 208 2 1 882 OH
Yuba-Sutter ARC
KC9EI 208 2 1 882 SV
Story Co. ARC
KN0R 183 2 1 882 IA
Nittany ARC
N3LI 163 2 1 882 WPA
Mecklenburg ARS
W4SJN 215 2 1 882 NC
Kanawha ARC
WV8AE 208 2 1 882 WV
Microhams ARC
KC7IGT 689 1 1 880 WWA
Northwest ARS
N5XJB 157 2 1 878 STX
North Okanagan Radio Amateur Club
VA7ST 207 2 1 878 BC
Maritime Contest Club
VE9VIC 207 2 1 878 MAR
NY9X 183 2 1 876 IL
Lighthouse ARA
W4THI 182 2 2 876 SFL
Nashville ARC
K4HCK 181 2 1 874 TN
First State ARC
KB2GCG 206 2 1 874 DE
Sheboygan Co. ARC
KD9TZ 206 2 1 874 WI
Green River Valley ARS
K0NIA 181 2 1 874 IA
N2RI 181 2 1 874 NLI
Northwest ARS
NM5G 217 2 1 874 STX
Chicago Suburban Radio Assn.
W9SW 206 2 1 874 IL
Mother Lode DX/Contest Club
NC6R 821 1 1 871 SV
K5VSD 209 2 1 870 MS
REDXA/MARS
K6ANP 250 2 1 870 SF
Candlewood ARA
N1GSA 206 2 1 870 CT
Potomac Valley RC
WA3MJZ 205 2 1 870 MDC
York Co. SC ARS
K3NP 400 1 1 869 NC
Westchester EmComms Assn.
WB2NVR 419 1 1 869 ENY
Kitchener-Waterloo ARC
VE3MJM 409 2 2 868 ONS
Mid-MO ARC
W4RK 359 1 1 868 MO
Escondido ARS
KE6PY 190 2 1 866 SDG
Fair Lawn ARC
N2SU 174 2 1 866 NNJ
Niagara Frontier Radiosport
W2DXE 204 2 1 866 WNY
Mid-MO ARC
W0ESE 204 2 1 866 MO
Peekskill/Cortlandt ARA
NM9J 187 2 1 864 ENY
London ARC
VA3DAE 407 2 1 864 ONS
Halifax ARC
VE1BB 407 2 1 864 MAR
Wabash Valley ARA
K9TA 203 2 1 862 IN
West Palm Beach ARG
KS3K 184 2 1 862 SFL
South Jersey Radio Assn.
N2ATB 203 2 1 862 SNJ
NZ4C 178 2 1 862 NC
Nassau ARC
W2UQ 203 2 1 862 NLI
Anne Arundel RC
AB3XJ 170 2 1 860 MDC
Salem ARC
KJ7JUI 204 2 1 860 OR
NG1I 357 2 1 860 WMA
Radio Soc. of Tucson
AC2K 177 2 1 858 AZ
Great Southern DX Assn.
AE5MI 202 2 1 858 MS
North Hills ARC of Pittsburgh
K2RK 202 2 1 858 WPA
Morris RC/Hanover Twp OEM
WA2IMS 202 2 1 858 NNJ
Orange Co. (CA) ARC
K6RBS 571 1 1 855 ORG
Port Lavaca ARC
K5SBR 201 2 1 854 STX
Paulding ARC
KV4TE 179 2 1 854 GA
Potomac Valley RC
W3TAS 201 2 1 854 DE
Central Oregon Coast ARC
AA5Y 701 1 1 851 OR
KF7JZ 200 2 1 850 MS
Quinte & Prince Edward RCs
VE3FZ 233 2 1 850 ONE
Algonquin ARC
W1UE 200 2 1 850 EMA
San Mateo RC
WA6ECH 200 2 1 850 SCV
Cascades ARS
K8TS 205 2 1 848 MI
DFW Contest Group
N5JR 219 2 1 848 NTX
Platte Co. ARG
AK0SK 199 2 1 846 MO
Lafayette DX Assn.
K9ELF 177 2 1 846 IN
South Orange ARA
WA6ED 199 2 1 846 ORG
KB8VND 397 2 1 844 MS
Kicked Back Contesters Club
WV5Y 347 1 1 844 STX
Cuyahoga Falls ARC
AC8XO 173 2 1 842 OH
Coal Country ARC
AE8CW 198 2 1 842 WV
Stanwood Camano ARC
K7IOC 198 2 1 842 WWA
Kent Co. ARC
KA3ZLS 198 2 1 842 DE
Fallbrook ARC
KG6HSQ 203 2 5 842 SDG
QSY Soc.
W2DX 198 2 1 842 ENY
Western Washington DX Club
K6KR 417 1 1 838 WWA
Lakeland ARC
KQ4KX 204 2 1 838 WCF
Ocean Monmouth ARC
NC1A 172 2 1 838 NNJ
The Villages ARC
WB2ART 197 2 1 838 NFL
K6KQV 203 2 1 836 SCV
North Shore (ON) ARC
VE3HIX 173 2 1 836 GTA
K3GHH 196 2 1 834 NNY
Surrey AR Communications
VE7IO 171 2 1 834 BC
St. Charles ARC
W0PC 196 2 1 834 MO
Univ of Alabama RC W4UAL
KV4T 606 1 1 833 AL
QSY Soc.
WA2JQK 233 2 1 832 ENY
NEMO ARC
KC0FGX 195 2 1 830 MO
Wellesley ARS
N1WEN 203 2 1 830 EMA
Potomac Valley RC
N3XL 195 2 1 830 MDC
VCARA
N5PR 170 2 1 830 NM
Union Métropolitaine des Sans-filistes de Montréal
VE2WNF 174 2 1 830 QC
Skyview Radio Soc.
W3ANX 170 2 1 830 WPA
Arrow Communications Assn.
WA8TON 195 2 1 830 MI
Long Island Mobile ARC
WB2KWC 170 2 1 830 NLI
Virginia Beach ARC/Virginia DX Century Club
KC2DLR 389 2 1 828 VA
Forsyth ARC
W3NPS 169 2 1 826 NC
Tampa ARC
W4DUG 194 2 3 826 WCF
Lincoln Co. (ME) ARC
K1XK 387 2 2 824 ME
Mid-Atlantic ARC
N3LMV 387 2 2 824 EPA
Frankford RC
NB3R 387 1 1 824 EPA
W/K ARC of Greater Milwaukee
K9ZN 188 2 2 822 WI
Old Barney ARC
KF2BQ 193 2 1 822 SNJ
VE7CV 225 2 1 822 BC
West Valley ARA
N5YJZ 192 2 1 818 SCV
Fayette Co. ARC
KV4UD 546 1 1 816 GA
Black River ARC
KD8JBG 166 2 1 814 MI
Arrow Communications Assn.
KE8HUM 167 2 1 814 MI
Brainerd Area ARC
N0KEN 166 2 1 814 MN
Central Oregon Coast ARC
AB7JW 122 2 1 812 OR
Radio Farm
K0VM 381 1 1 812 IA
KC9TSF 185 2 3 810 IL
West Chester ARA
KE8JWE 190 2 1 810 OH
WD Contest Group
KG0RD 190 2 1 810 NE
KK4DF 190 2 1 810 NC
Williamson Co. ARES
KM4PT 190 2 1 810 TN
Mid-MO ARC
N0SS 165 2 4 810 MO
Lambton Co. RC
VE3WRW 200 2 1 810 ONS
Bastrop Co. ARC
WD5IQR 190 2 1 810 STX
Mound ARA
WE8R 165 2 1 810 OH
San Fernando Valley ARC
K6FG 421 1 1 808 LAX
WCARC of TX
WB5GVY 193 2 1 808 STX
Northwest Florida ARC
KB4JNW 189 2 2 806 NFL
Northwest Illinois RC
KC9NVN 191 2 1 806 IL
Central Virginia Contest Club
KG4W 378 1 1 806 VA
Montgomery ARC/Damascus ECT
W2LNX 164 2 1 806 MDC
West Virginia AR
K8RRT 197 2 1 804 WV
Rowan ARS
AJ4UX 326 2 2 802 NC
Wellesley ARS
AK1MD 376 1 1 802 EMA
W3AO Team
KE3Q 326 2 1 802 MDC
Algonquin ARC
KV1J 188 2 1 802 EMA
Gold Coast ARA
N4TUR 188 2 1 802 SFL
The Villages ARC
ND4G 188 2 1 802 NFL
North Shore (IL) RC
NJ9R 188 2 1 802 IL
West Island ARC
VE2YNI 188 2 1 802 QC
Central Michigan ARC
W8EO 188 2 1 802 MI
Lafayette DX Assn.
W9TN 163 2 1 802 IN
Pioneer ARC
WN0L 188 2 1 802 NE
Williamsburg Area ARC
AI4WU 229 2 1 800 VA
ARC EmComm Services
WA2CNV 325 2 1 800 NLI
Indy United ARC
WB9KVD 189 2 1 800 IN
Seneca RC
AC8NP 150 2 1 798 OH
Dog Hollow Contest Group
AK9D 165 2 2 798 KS
Lenoir ARC
K4SEH 215 2 1 798 NC
Arkansas River Valley ARF
KG5WTU 187 2 1 798 AR
Coastal Plains ARC
KK4WX 193 2 7 798 GA
Albemarle ARC
N3US 323 2 1 798 VA
Hoodview ARC
N7TNP 187 2 1 798 OR
Great River ARC
WB9O 162 2 1 798 IL
Central Illinois RC
KC9GF 215 2 1 796 IL
Two Rivers ARC of McKeesport
WI3R 164 2 1 796 WPA
Lighthouse ARA
AJ4XM 111 2 1 794 SFL
Radio Club of Redmond
N7KE 372 1 1 794 WWA
Central Alberta ARC
VE6BLD 372 2 1 794 AB
SDGARES
KN6FDP 161 2 1 792 SDG
VE3SV 371 2 1 792 ONS
SC4ARC
AJ6KX 35 2 16 790 SCV

Northwest Florida ARC
K4LIX 188 2 1 790 NFL
N7GTE 351 2 1 790 UT
Cascade RC
W7GKF 185 2 1 790 WWA
Marietta ARC
W8HH 160 2 1 790 OH
Tri-State ARS
WB9ONU 185 2 1 790 IN
Two Rivers ARC of McKeesport
WU3U 253 2 1 790 WPA
Nacogdoches ARC
AE5P 138 2 1 788 NTX
Eastern New Mexico ARC
KF5VQK 159 2 1 788 WTX
Waterton Contest Club
KJ0I 369 1 1 788 CO
Forsyth ARC
KM4HVB 127 2 1 788 NC
Hampstead Hams
W4GKR 266 2 1 788 NC
Northern Ohio DX Assn.
AF8C 318 2 1 786 OH
Greater Beloit ARC
K9FLO 184 2 1 786 IL
KD2JC 184 2 1 786 NNJ
Shelby ARC
KM4C 194 2 1 786 NC
N5MF 184 2 1 786 AZ
Albemarle ARC
K4SHR 230 2 1 784 VA
El Segundo ARG
WB6YMI 236 2 1 784 LAX
Ham Assn. of Mesquite
K5IBK 183 2 1 782 NTX
Austin ARC
KC6ARO 183 2 1 782 STX
South Lyon Area ARC
KG8MM 366 2 1 782 MI
Providence RA
N1DM 183 2 1 782 EMA
Old Barney ARC
N2DSW 237 2 1 782 SNJ
Fulton Co. ARC
NA9RB 183 2 1 782 IL
Aardvark Wireless Group
WA4EEZ 183 2 1 782 WCF
Lebanon Valley Soc. of Radio Amateurs
N3RJ 580 1 1 781 EPA
Faulkner Co. ARC
AA5JC 270 2 2 780 AR
York Co. SC ARS
K4DQP 335 2 3 780 SC
Milky Way Wireless Club
KC7KFF 267 2 2 780 AZ
KF6I 382 1 1 780 ORG
Oakland Co. ARS
K8SIX 364 1 1 778 MI
Johnson Space Center ARC/Clear Lake ARC
KB5PGY 122 2 1 778 STX
Kalamazoo ARC
KE8ICM 182 2 1 778 MI
North Georgia QRP Club
KJ4YM 158 2 1 778 GA
ARA of Southwest Florida
W9KB 182 2 1 778 SFL
Rochester (MN) ARC
AI0M 725 1 1 776 MN
Moncton Area ARC
VE9EMM 283 2 12 776 MAR
Rogue Valley ARC
KD7MPA 181 2 1 774 OR
Jefferson Co. (WA) ARC
W7PT 181 2 1 774 WWA
Prairie Dog ARC
W0SD 181 2 1 774 SD
Boca Raton ARA
AB4LL 180 2 1 770 SFL
DFW Contest Group
NT5V 720 1 1 770 NTX
Halifax ARC
VE1GPY 205 2 1 770 MAR
Silver Comet ARS
KM4IKO 179 2 1 766 GA
2 flattire rc
VE7US 308 2 1 766 BC
North Shore (IL) RC
WB9JNZ 308 2 1 766 IL
Lake Co. RACES/ARES
K9DRW 357 2 1 764 IL
Wiregrass ARC
N4IDH 183 2 1 764 AL
KI5DRY 178 2 1 762 STX
Greensboro ARA
KX4TE 178 2 1 762 NC
David Sarnoff ARC
N2LO 153 2 1 762 SNJ
Club Radio Amateur de Québec
VE2ZWA 78 2 1 762 QC
Nittany ARC
W3SWL 128 2 1 762 WPA
Benicia ARC
KK6ZIZ 181 2 1 760 EB
Maine Ham Radio Soc.
N1EP 205 2 1 760 ME
St Louis ARC
AB0TO 204 2 1 758 MO
Fannin Co. ARC
K5MJD 181 2 3 758 NTX
Kansas City Contest Club
KC0DEB 221 2 1 758 KS
South Canadian ARS
N5OP 177 2 1 758 OK
Barrie ARC
VA3RON 304 2 1 758 ONS
Kingston Amateurs
VA3TIC 608 1 1 758 ONE
Scarborough ARC
VE3NR 179 2 1 758 GTA
Garden State ARA
W2KQ 177 2 1 758 NNJ
Vienna Wireless Soc.
AE4R 160 2 1 756 VA
Riverside Co. ARA
K6LG 151 2 1 754 ORG
K7DR 151 2 1 754 MI
DuPage ARC
K9EW 101 2 1 754 IL
WCARC of TX
KF5RX 176 2 1 754 STX
Silver Comet ARS
KM4VTE 200 2 1 754 GA
Fauquier ARA
KX4KU 151 2 1 754 VA
Orange Co. (CA) ARC
KX6A 181 2 4 754 ORG
Huntsville ARC
N4BCD 352 2 1 754 TN
Meriden ARC
NZ1J 183 2 1 754 CT
Huntsville ARC
W1HKJ 176 2 1 754 AL
Mound ARA
W8DYY 302 2 8 754 OH
Watauga ARC
K2SD 351 1 1 752 NC
Arizona Outlaws Contest Club
K7JQ 189 2 1 752 AZ
Story Co. ARC
AD0H 215 2 1 750 IA
Spartanburg ARC
K4SPD 175 2 1 750 SC
Franklin Co. (VA) ARC
N6DW 255 1 1 750 VA
ND9E 176 2 1 750 IL
Bonner Co. ARES
NQ7C 250 2 1 750 ID
Williamson Co. ARES
W4GHD 350 1 1 750 TN
Scott Co. ARC
W5MSV 175 2 1 750 MS
North Fulton ARL
WB4ABY 227 2 1 750 GA
Ellijay ARS
AA4RP 175 2 1 748 GA
Ham Assn. of Mesquite
AB8YZ 135 2 1 748 NTX
K4LDI 184 2 1 748 GA
Fox River Radio League
W9HI 217 2 1 748 IL
Messila Valley RC
K5LA 174 2 1 746 WTX
KP4P 174 2 1 746 STX
Northern Arizona DX Assn.
WB7EUJ 175 2 20 746 AZ
HP Boise ARC
WV7I 220 2 2 746 ID
Coventry EMA
N1CLG 176 2 1 744 RI
Pasadena RC
NO6B 347 2 1 744 LAX
Nacogdoches ARC
W5TV 150 2 1 744 NTX
Radio Club of Tacoma
WB4SPB 111 2 1 744 WWA
Des Moines Radio Amateur Assn.
K2DSW 173 2 1 742 IA
Intercity ARC
K8HF 173 2 1 742 OH
Texas DX Soc.
NE5B 173 2 1 742 STX
Club Radio Amateur de Québec
VE2CDC 73 2 1 742 QC
Silver Springs RC
W3HII 173 2 1 742 NFL
Schaumburg ARC
W9DXR 173 2 1 742 IL
Kansas City Assn. for the Blind ARC
K5POU 201 2 2 740 MO
Sarasota Emergency RC
W4INK 73 2 1 740 WCF
Police AR Team of Westford
KB1OIQ 382 1 1 739 EMA
Clark Co. (WA) ARC
AB7RW 172 2 1 738 WWA
West Seattle ARC
KD7DK 143 2 2 738 WWA
Okaw Valley ARC
KD9DXF 172 2 1 738 IL
Mike & Key ARC
KE7JIM 173 2 1 738 WWA
TOPARC
NZ5X 172 2 1 738 WTX
Oakville ARC
VA3EC 172 2 1 738 GTA
York Region ARC
VA3MCT 122 2 1 738 GTA
W3NCR 150 2 1 736 MDC
Grand Strand ARC
K5GLB 171 2 1 734 SC
Grayson Co. ARC
K5KDE 171 2 1 734 NTX
KE2I 171 2 2 734 ENY
Palms West ARC
N3EA 171 2 1 734 SFL
Barrie ARC
VE3RRD 146 2 1 734 ONS
Medina Co. ARC
KE8JIE 193 2 2 732 OH
ARC of Butts Co.
KW4AQ 341 2 1 732 GA
Sweetwater ARC
N7LX 187 2 1 732 WY
W7LG 162 2 3 732 WPA
First Baptist Church Huntsville RC
AK4WO 170 2 1 730 AL
Lighthouse ARA
KK9O 154 2 1 730 SFL
Metrocrest ARS
N5GDL 165 2 1 730 NTX
NEMO ARC
NR0Q 240 2 1 730 MO
Contest Club Ontario
VE3EJ 170 2 1 730 GTA
Central Virginia Contest Club
K4JKB 525 1 1 728 VA
Low Country Contest Club
KF4GLE 339 2 1 728 SC
Rochester (MN) ARC
K0RGR 178 2 1 728 MN
Murgas ARC
N3SRO 339 2 1 728 EPA
Poway ARS
NN3V 189 2 1 728 SDG
Hamfesters RC
W9HLQ 210 2 2 728 IL
Salem ARC
K7DSG 184 2 1 726 OR
Kendall ARS
KI5AIU 119 2 1 726 STX
King George AR Operators
KW4XZ 169 2 1 726 VA
Auburn Area EmComms Team
NS7C 83 2 1 726 WWA
Georgian Bay ARC
VE3PQ 145 2 1 726 ONS
San Juan Co. ARS
K9QJS 178 2 1 722 WWA
Coventry EMA
KC1BRV 148 2 3 722 RI
Union Métropolitaine des Sans-filistes de Montréal
VA2EM 168 2 1 722 QC
Kingston Amateurs
VE3KFS 168 2 1 722 ONE
Parkersburg AR Klub
WA8KAN 336 1 1 722 WV
Arkansas River Valley ARF
WB5JJJ 168 2 1 722 AR
Highlands Co. ARC
K1PJ 155 2 1 720 WCF
West Fork ARC
KC5MK 185 2 1 720 NTX
Club Radio Amateur de Québec
VE2BOL 70 2 1 720 QC
Lakeland ARC
W4TJM 335 1 1 720 WCF
AG5T 167 2 1 718 STX
Stanwood Camano ARC
KD6TR 167 2 1 718 WWA
W5ON 167 2 1 718 AR
Northeast Tarrant ARC
WB4FSR 142 2 1 718 NTX
Straight Key Century Club
AC2C 166 2 1 714 MDC
KC7YRA 376 1 1 714 WY
Gwinnett ARS
KD4YDD 166 2 1 714 GA
Alford Memorial RC
N4BFR 138 2 1 714 GA
United Radio Amateur Club
NA6Q 169 2 1 714 LAX
CTRI Contest Group
NG1M 332 2 1 714 RI
Haldimand Norfolk ARC
VE3RTL 220 2 1 714 ONS
W1FQX 166 2 1 714 NTX
K6KM 333 1 1 711 EB
AE0IB 165 2 1 710 MO
Vienna Wireless Soc.
KM4UDX 40 2 1 710 VA
Old Barney ARC
N1IBM 165 2 1 710 SNJ
Pamlico ARS
N4PRS 115 2 1 710 NC
Four Lakes ARC
NI9T 140 2 1 710 WI
W3AO Team
W2GPS 165 2 1 710 MDC
CRES ARC
K8LJ 215 2 1 708 OH
Ventura Co. ARC
KA6BJA 176 2 1 706 SB
BCARS.ORG
KE3ZT 170 2 1 706 WPA
Tellico Lake ARC
KV4XY 146 2 1 706 TN
St. Louis QRP Soc.
N8LA 164 2 1 706 MO
N0NV 183 2 1 706 MO
Truro ARC
VE1CHL 174 2 1 706 MAR
N5SDR 171 2 2 704 STX
Grundy Co. ARC
N9YZA 654 1 1 704 IL
Kanawha ARC
WV8V 327 2 1 704 WV
Raritan Bay Radio Amateurs
K2PW 145 2 1 702 NNJ
Texas DX Soc.
K5HEM 163 2 1 702 STX
Brunswick Shores ARC
N3CKI 163 2 1 702 NC
Utica Shelby EmComms Assn.
N8KLX 163 2 1 702 MI
State Line RC
NY3C 163 2 1 702 DE
Sierra Foothills ARC
W6VP 163 2 1 702 SV
Tall Corn ARC
W0BNW 188 2 1 702 IA
Valley of the Moon ARC
KA5WSS 163 2 1 700 SF
Quinte & Prince Edward RCs
VE3IEM 168 2 1 700 ONE
North Shore (IL) RC
WD9GYM 138 2 1 700 IL
Clallam Co. ARC
K6MBY 137 2 1 698 WWA
Escondido ARS
K7YMG 137 2 1 698 SDG
Tellico Lake ARC
K0RGI 137 2 1 698 TN
Mohawk ARC
KT1I 162 2 1 698 WMA
N9WG 162 2 1 698 IN
Peterborough ARC
VE3RVZ 162 2 1 698 ONE
Brightleaf ARC
W4YDY 162 2 1 698 NC
Los Alamos ARC
WD5CAW 162 2 1 698 NM
Delta ARC
AC5MR 148 2 1 696 TN
Patoka Valley ARC
K4PSE 223 2 1 696 IN
KC4TNQ 142 2 1 696 TN
Carbon Co. DXCC
KI0I 168 2 1 696 MO
W4VG 170 2 1 696 VA
Spokane DX Assn.
WX7P 323 2 1 696 EWA
Whitman ARC
K1TWH 177 2 1 694 EMA
Spartanburg ARC
K4XP 322 1 1 694 SC
Yankee Clipper Contest Club
KI1U 136 2 1 694 CT
Platinum Coast ARS
NC4H 161 2 1 694 SFL
Chicago Suburban Radio Assn.
W9CHI 272 2 1 694 IL
Southern Berkshire ARC
WA1OTZ 161 2 1 694 CT
KB6A 182 2 1 692 ORG
Northeast Maryland AR Contest Soc.
N3FM 642 1 1 692 MDC
Arkansas River Valley ARF
N5KLE 151 2 1 692 AR
Palo Alto ARA
N6AJS 160 2 1 692 SCV
220 MHz Guys
WA9NNN 162 2 1 692 IL
Radio Soc. of Tucson
K7HIL 270 1 1 690 AZ
Piedmont ARC
KB4AS 20 2 1 690 GA
Central Virginia Contest Club
KB4YPN 320 2 1 690 VA
Columbia (MD) ARA
KE3VR 160 2 1 690 MDC
Tennessee Valley DX Assn.
N4HL 160 2 1 690 TN
Tennessee Contest Group
N4IR 320 1 1 690 TN

N4WXB 160 2 1 690 AL
Saginaw Valley ARA
N8EUI 160 2 1 690 MI
Mississauga ARC
VE3MDX 160 2 1 690 GTA
St. Louis QRP Soc.
WØDF 160 2 1 690 MO
BONAC ARC
WZ2Y 160 2 1 690 NLI
Radio Central ARC and Order of Boiled Owls of NY
K2RB 350 1 1 688 NLI
Dial RC of Middletown
NN8M 140 2 1 688 OH
WA6URY 363 1 1 687 LAX
AB3AI 163 2 1 686 IN
Northwest ARS
KB9KY 159 2 1 686 STX
Frankford RC
KU2C 318 1 1 686 EPA
Orleans Co. ARC
N2WK 318 1 1 686 WNY
Fair Lawn ARC
NP4H 109 2 1 686 NNJ
W5BDJ 209 2 1 686 NTX
G.R.E.A.T. Club
AK4I 193 2 3 684 TN
Maple Grove RC
KØBHJ 138 2 1 684 MN
Coventry EMA
N1YNI 217 2 1 684 RI
Garden City ARC
N8TW 166 2 1 684 MI
K1MC 158 2 1 682 EMA
Southern Berkshire ARC
N2KOF 160 2 1 682 CT
San Juan Co. ARS
N6AU 158 2 1 682 WWA
SDGARES
NB1Z 115 2 1 682 SDG
DFW Contest Group
WA5RR 135 2 1 682 NTX
Estes Valley ARC
WØLI 158 2 1 682 CO
K4CV 158 2 1 680 TN
KD7HGL 155 2 1 680 WWA
Metrocrest ARS
N5IMS 125 2 1 680 NTX
Associated Radio Amateurs of Long Beach
NC6Q 162 2 1 680 LAX
Kanawha ARC
WV8FV 315 2 1 680 WV
Spokane DX Assn.
AD7XG 157 2 1 678 EWA
Salt City DX Assn.
K1PTF 157 2 1 678 WNY
K1SET 132 2 1 678 NH
Lewis and Clark RC
K9JDN 132 2 1 678 IL
Platinum Coast ARS
KE3VV 157 2 1 678 SFL
Aardvark Wireless Group
KR4U 157 2 1 678 WCF
Silver Springs RC
N4GL 157 2 1 678 NFL
N5DD 139 2 1 678 NTX
N5PU 157 2 1 678 MS
VE2SCA 157 2 1 678 QC
Columbia (MD) ARA
W3GJN 163 2 1 678 MDC
Holmesburg ARC
WA3ERQ 157 2 1 678 EPA
Sierra Foothills ARC
WA4VXW 135 2 1 678 SV
Milford ARC
WS6K 157 2 1 678 OH
Whitman ARC
WA1RIW 157 2 1 676 EMA
Montgomery ARC/Damascus ECT
AK3Y 331 1 1 674 MDC
Peel ARC
VE3FOX 81 2 1 674 GTA
Oakville ARC
VE3JI 131 2 1 674 GTA
Gwinnett ARS
AD4PZ 156 2 1 672 GA
KE8JIT 161 2 1 672 WV
Lake Monroe ARS
K4AHO 130 2 1 670 NFL
K4FU 155 2 1 670 NFL
K6EM 155 2 1 670 ORG
Bristol (TN) ARC
KA4R 155 2 1 670 TN
FVVFD
KB2M 264 1 1 670 NFL
Newton ARA
KEØLCS 130 2 1 670 IA
Austin ARC
KG5RXG 155 2 1 670 STX
KM5RG 155 2 1 670 STX
Potomac Valley RC
KU4V 141 2 1 670 NC
American Legion Post 42 RC
N2GWK 131 2 1 670 KY
W3AO Team
W2CDO 155 2 1 670 MDC
Metro ARC
WA9FZB 155 2 1 670 IL
Colorado QRP Club
WØCQC 133 2 1 670 CO
AK2U 154 2 1 666 WV
King George AR Operators
K8EAC 130 2 1 666 VA
DFW Contest Group
N5UI 154 2 1 666 NTX
Thunderbird ARC
NJ8G 154 2 1 666 AZ
Orca DX and Contest Club
VA7RN 308 1 1 666 BC
North Shore (ON) ARC
VE3LKS 131 2 1 666 GTA
North Fulton ARL
W4YBV 158 2 2 666 GA
Aroostook ARA
W5KF 156 2 2 666 ME
North Shore (IL) RC
WW9F 129 2 1 666 IL
El Dorado Co. ARC
K6TQ 382 1 1 665 SV
Alexandria RC
N4ASX 257 2 1 664 VA
Eastside Contest Group
W6SX 307 1 1 664 SJV
Frankford RC
WB2PJH 307 1 1 664 NNJ
Iowa Wireless AR Network
AEØTB 153 2 1 662 IA
CRES ARC
K3CTN 153 2 1 662 OH
Nittany ARC
K3YV 208 2 1 662 WPA
Davie/Cooper City ARC
K4JGC 153 2 1 662 SFL
West Chester ARA
N8JK 153 2 1 662 OH
Northwest Illinois RC
W9YS 153 2 1 662 IL
Minnesota Wireless Assn.
WØF 153 2 1 662 MN
San Benito Co. ARA
KM6HRW 132 2 1 660 SCV
Livonia ARC
N8MR 132 2 1 660 MI
Rogue Valley ARC
AC7S 304 2 1 658 OR
Monkey Lover's Radio Consortium
AF6GQ 127 2 1 658 SCV
Snohomish Co. Hams Club
AJ7B 130 2 1 658 WWA
Brunswick Shores ARC
K6RM 152 2 1 658 NC
Oro Valley ARC
KC7AA 152 2 1 658 AZ
Henry Co. ARC
KD9ILY 152 2 1 658 IN
Ole Virginia Hams
KG4NXT 304 1 2 658 VA
Northern Arizona DX Assn.
N3AIU 152 2 20 658 VA
Lucas ARC
N3FKZ 152 2 1 658 NTX
Union Métropolitaine des Sans-filistes de Montréal
VE2QV 127 2 1 658 QC
WCARC of TX
W2MN 152 2 1 658 STX
Sawnee ARA
W4DD 152 2 1 658 GA
WB8SDA 152 2 1 658 OH
Meriden ARC
K1LYP 303 2 1 656 CT
Arizona Outlaws Contest Club
KC7V 303 1 1 656 AZ
Huron ARA
KMØF 303 2 1 656 SD
Eastern Panhandle ARC
N3MBH 160 2 1 656 WV
ARC of Columbia Co.
K1OYQ 151 2 1 654 GA
Vienna Wireless Soc.
K4CTC 126 2 1 654 VA
Potomac Valley RC
K4TMC 302 2 1 654 NC
Hays/Caldwell ARC
KN8KAZ 151 2 1 654 STX
Northwest ARS
N5EN 111 2 4 654 STX
Associated Radio Amateurs of Long Beach
N6UTC 157 2 1 654 LAX
Land of Lakes ARC
N9YK 151 2 1 654 IN
Lewis and Clark RC
W9MXC 202 2 1 654 IL
Long Island CW Club
WBØJRH 101 2 1 654 MN
WR9R 140 2 1 654 IN
K1USN RC
K1RV 301 1 1 652 EMA
Arizona Outlaws Contest Club
NA2U 301 1 1 652 AZ
Stanwood Camano ARC
W7TST 301 1 1 652 WWA
Swamp Fox Contest Group
WB4HRL 325 1 1 651 SC
Wireless Assn. of South Hills
K3VX 150 2 1 650 WPA
Wireless Assn. of South Hills
KB3GMN 300 2 1 650 WPA
Wiregrass ARC
KB4XT 150 2 1 650 AL
Long Island CW Club
KC9MTP 150 2 1 650 IN
Sun City ARC
KD5KC 150 2 1 650 WTX
KR1ST 600 1 1 650 EPA
David Sarnoff ARC
N2EI 150 2 1 650 SNJ
Grand Strand ARC
W2GFV 155 2 1 650 NNJ
West Chester ARA
W8ND 150 2 1 650 OH
Dillman's AR Experimenters
W9CC 150 2 2 650 IN
Palos Verdes ARC
WA6MEM 150 2 1 650 LAX
Fox River Radio League
WB9CHY 125 2 1 650 IL
Columbia-Montour ARC (PA)
K3TTT 138 2 1 648 EPA
Mid-State ARC
K9ICP 299 2 1 648 IN
Newton ARA
NØNC 150 2 1 648 IA
Potomac Valley RC
WA4JUK 154 2 1 648 VA
Hellgate ARC
K7MSO 95 2 1 646 MT
Huntsville ARC
K8KI 149 2 1 646 AL
Fox River Radio League
KA9VMD 149 2 1 646 IL
Heritage Hunt Hams
KK4ADQ 298 2 1 646 VA
Ventura Co. ARS
KM6B 149 2 1 646 SB
Loma Pioneer Repeater Club
W6INO 149 2 1 646 SCV
KA2ENE 187 2 1 644 WNY
Southern Co. ARA
KN2J 150 2 1 644 SNJ
Kamloops ARC
VA7AQD 127 2 1 644 BC
Central Alberta ARC
VE6CIA 86 2 1 644 AB
Worcester EmComms Team
W1NJC 593 1 1 643 WMA
N4N Field Day Group
KT4XN 296 1 1 642 NFL
Orange Co. (NY) ARC
W2BCC 148 2 1 642 ENY
Panama City ARC
W4GHG 148 2 1 642 NFL
Tamiami ARC
W5GJ 296 1 1 642 WCF
Mound ARA
W8WGT 148 2 1 642 OH
Sun Country ARS
WA4IPU 161 2 1 642 NFL
REDXA/MARS
WD6T 296 1 1 642 EB
KJ3LR 127 2 1 640 WCF
N3OJL 164 2 1 640 WPA
NorthEast Wireless RC
WB2KHO 295 2 1 640 NLI
Franklin Co. (VA) ARC
AA4SS 147 2 1 638 VA
Potomac Valley RC
K1RZ 294 1 1 638 MDC
Poway ARS
N6WST 185 2 1 638 SDG
OCAPA
NQ5M 147 2 1 638 OK
W1TS 200 2 1 638 CT
Northeastern Indiana ARA
W9GOO 147 2 1 638 IN
Boca Raton ARA
K4KGG 299 1 1 637 ENY
Warminster ARC
KD3TB 148 2 1 636 EPA
Portage Co. AR Service
KE8BWA 147 2 1 634 OH
Platte Co. ARG
KØKEX 71 2 1 634 MO
Squaw Island ARC
WB2JLR 246 2 1 634 WNY
AF4T 121 2 1 632 TN
Rappahannock ARA
K4YM 203 2 4 630 VA
Pottstown Area ARC
KC3MAI 145 2 1 630 EPA
Wilderness Road ARC
KY4KD 145 2 1 630 KY
Irving ARC
N2VIP 120 2 1 630 NTX
N8ZFH 160 2 1 630 MI
Los Alamos ARC
W5PDO 165 2 1 630 NM
Fresno ARC
W6NIF 145 2 1 630 SJV
Davis Co. ARC
WB7TJI 149 2 1 630 UT
Majors Field ARC
WBØTEV 120 2 1 630 NTX
Alford Memorial RC
KK4KHS 289 2 1 628 GA
Long Island CW Club
WØJMW 239 2 1 628 KS
Noise Blankers Radio Group
K5PO 146 2 1 626 AR
W/K ARC of Greater Milwaukee
K9GL 144 2 1 626 WI
Fulton Co. ARC
KA9TOX 144 2 1 626 IL
Platinum Coast ARS
KEØNRY 144 2 1 626 SFL
Albuquerque DX Assn.
N5SJ 288 1 1 626 NM
Spokane DX Assn.
N7GCO 288 1 1 626 EWA
Cherryland ARC
NU8A 144 2 1 626 MI
Southern Berkshire ARC
W2BEE 144 2 1 626 ENY
FARCE
W6UHQ 115 2 1 626 SV
KB1WLB 200 2 1 624 RI
Splitrock ARA
N2TM 404 1 1 623 NNJ
Fluvanna Co. ARES
K4MSR 221 2 1 622 VA
Garden State ARA
KG2NV 200 2 1 622 NNJ
KG4OKG 143 2 1 622 GA
Messila Valley RC
KG5MAF 144 2 1 622 NM
Sierra Nevada ARS
KM6DZ 143 2 1 622 NV
West Virginia AR
N8DJW 143 2 1 622 WV
Surrey AR Communications
VA7XB 118 2 1 622 BC
North Fulton ARL
W5JR 118 2 1 622 GA
West Allis RAC
AA9RK 118 2 3 620 WI
Garden State ARA
KA2IRQ 96 2 1 620 NNJ
Dickson Co. ARC
KI4MRH 143 2 1 620 TN
Westchester EmComms Assn.
N2EJI 119 2 1 620 ENY
Lake Co. RACES/ARES
NR9H 147 2 1 620 IL
Framingham ARA
K1UR 497 1 1 619 EMA
Montgomery ARC/Damascus ECT
KC3OOF 144 2 2 618 MDC
Loudoun ARG
KE4S 117 2 1 618 VA
Garden State ARA
N2MEP 142 2 1 618 NNJ
Saratoga Co. ARA
W5BN 117 2 1 618 ENY
Radio Assn of Western New York
KD2ISV 223 2 2 616 WNY
Society of Midwest Contesters
KØTQ 283 1 1 616 IN
Panama City ARC
KW4UT 84 2 1 616 NFL
W2GDJ 164 2 1 616 ENY
River City AR Comms Soc.
KE8FT 464 1 1 615 SV
Kicked Back Contesters Club
K5ENG 282 1 1 614 STX
Mohawk ARC
K6IPO 141 2 1 614 WMA
K7NWF 141 2 1 614 AZ
Hampstead Hams
KA4SQN 107 2 1 614 NC
Blackstone Valley ARC
W1DDD 149 2 1 614 RI
St. Charles ARC
AEØCJ 166 2 1 612 MO
REDXA/MARS
K6RIM 141 2 1 612 SF
Dial RC of Middletown
KO8F 70 2 1 612 OH
Albemarle ARS
N4APO 153 2 1 612 NC
El Paso ARC
WD5FVQ 142 2 1 612 WTX
Mizpah Shrine Radio Unit
AA9DU 144 2 1 610 IN
North Richland Hills ARC
AB5ZJ 140 2 1 610 NTX

570-V Connection
K4FAN 213 2 1 610 NFL
Cherokee Capital ARS
K4WM 140 2 1 610 GA
Toledo Mobile Radio Assn.
KD8WBZ 140 2 1 610 OH
South Carroll ARG
N3DUE 230 2 1 610 MDC
Dalton ARC
N4JGW 280 2 1 610 GA
Hampden Co. Radio Assn.
W3SM 280 1 1 610 CT
Forsyth ARC
WB4DOC 127 2 1 610 NC
Steubenville-Weirton ARC
WD8SAB 121 2 1 610 OH
Sunnyvale ARES
AI6SL 150 2 1 608 SCV
Lenoir ARC
K3OS 115 2 1 608 NC
Cape Ann ARA
NQ1W 60 2 3 608 EMA
Mount Diablo ARC
W6MEW 140 2 1 608 EB
Saratoga Co. ARA
K2LM 69 2 1 606 ENY
Fallbrook ARC
KC6MIE 174 2 3 606 SDG
Muncie Area ARC
KD9ANS 141 2 1 606 IN
Kitchener-Waterloo ARC
VA3NNW 104 2 3 606 ONS
Ottawa Valley Mobile RC
VE3LBU 89 2 1 606 ONE
Southeast Texas Amateur Club
W5AUG 188 2 1 606 STX
Mid-State ARC
W8ISH 114 2 1 606 IN
Baton Rouge ARC
KE5TA 138 2 1 602 LA
KG0D 138 2 1 602 WWA
Southern PA Communications Group
KK3G 138 2 1 602 EPA
Sussex Co. ARC
KR2D 138 2 1 602 NNJ
Clearwater ARS/St. Petersburg ARC/
Upper Pinellas ARC
N4ESU 276 2 1 602 NLI
Edmond AR
N5YFA 138 2 1 602 OK
VE3WEJ 138 2 1 602 ONS
Carbon Co. DXCC
W0MAF 138 2 1 602 MO
Murray State Univ ARC
N4ZY 551 1 1 601 KY
Granite State ARA
AC1J 223 2 1 600 NH
Ozaukee RC
AC9WL 88 2 6 600 WI
Tamiami ARC
KG4IYS 275 1 1 600 WCF
Philips ARC
W1DYJ 132 2 1 600 EMA
K8NGW 120 2 1 598 MI
Straight Key Century Club
KB8UMD 137 2 1 598 MI
Preston Co. ARC
KE8AE 144 2 1 598 WV
Big Island ARC
KH6RDO 137 2 1 598 PAC
Richardson Wireless Klub
N5SKT 148 2 1 598 NTX
Hazel Park ARC
N8HZM 274 1 1 598 MI
North Shore (IL) RC
N9AEP 112 2 1 598 IL
Fort Saskatchewan ARC
VA6AN 202 2 1 598 AB
Philips ARC
W1HP 265 2 1 598 EMA
Littleton Area Radio Klub
WG1X 137 2 1 598 NH
Ventura Co. ARS
KK6UE 144 2 1 596 SB
NQ1M 273 2 1 596 EMA
Halifax ARC
VA1MM 273 1 1 596 MAR
Fair Lawn ARC
W2MSA 273 2 1 596 NNJ
AB1WG 136 2 1 594 VT
Police AR Team of Westford
AG1A 101 2 3 594 EMA
Hilltop Transmitting Assn.
K3JPT 136 2 1 594 EPA
First State ARC
K3PGM 136 2 1 594 DE
Bryan ARC
K5BGB 136 2 1 594 STX
Central Massachusetts ARA
KA3RLZ 222 2 1 594 WMA
Port Lavaca ARC
KF5DDV 136 2 1 594 STX
Radio Operadores Del Este
KP4RD 136 2 1 594 PR
Genesee Co. RC
N8MME 136 2 1 594 MI
Great South Bay ARC
NU2Q 136 2 1 594 NLI
Granite State ARA
W1UMR 310 1 2 594 NH
Northwest ARS
K5GQ 271 1 1 592 STX
Ole Virginia Hams
N7QLK 147 2 1 592 VA
East Greenbush ARA
WA2WAP 541 1 1 591 ENY
CRES ARC
K8LE 135 2 1 590 OH
Radio Amateur Downstate Illinois
Organization
KA9FCZ 135 2 1 590 IL
Minden ARA
KD5ZLB 110 2 1 590 LA
Seneca RC
KE8ERN 135 2 1 590 OH
Police AR Team of Westford
W1CCE 135 2 1 590 EMA
Alamance ARC
W1ES 135 2 1 590 NC
Kanawha ARC
WJ4VA 135 2 1 590 VA
Lake Monroe ARS
WR4RW 85 2 1 590 NFL
KB8ZR 134 2 1 586 OH
River City AR Communications Soc.
KP4MD 288 1 1 586 SV
Katy ARS
W4LXM 134 2 1 586 STX
Cape Ann ARA
W4RIG 59 2 1 586 EMA
Broughton Memorial Field Day Group
AJ2E 124 2 3 584 ENY
KE6JAC 134 2 1 584 SCV
Sun City Center ARC
W1WAB 34 2 1 584 WCF
Southern Peninsula AR Klub
W3AF 167 2 2 584 VA
Silver Comet ARS
K4SHW 283 1 1 583 GA
AB7YQ 158 2 6 582 AZ
Livermore AR Klub
KI6OY 133 2 1 582 EB
York Co. SC ARS
AE4VJ 120 2 1 580 SC
570-V Connection
K5AEM 134 2 1 580 NTX
Garland ARC
K5QHD 189 2 1 580 NTX
Frankford RC
W3JJL 530 1 1 580 EPA
OCAPA
KB1ZQ 264 2 2 578 OK
Central Louisiana ARC
KD5YS 132 2 1 578 LA
Grand Rapids ARA
KF8QL 133 2 1 578 MI
Bristol (TN) ARC
KT4O 214 2 1 578 TN
Tompkins Co. ARA
N2XJS 264 2 1 578 WNY
Woodbridge Wireless
N4LJS 132 2 1 578 VA
Kingman AR CW Operators Club
WB6CGJ 134 2 1 578 AZ
South Pasadena ARC
WB6YJJ 209 2 1 578 LAX
Pikes Peak Radio Amateur Assn.
K3ILC 140 2 1 576 CO
K5CKS 297 1 1 576 AR
Orange Co. Radio Amateurs & Durham
FM Assn.
KX4P 136 2 36 576 NC
Loudoun ARG
W4AU 263 1 1 576 VA
Edmonds Woodway ARC
WA7BRL 112 2 1 576 WWA
Stamford ARA
K1FI 262 2 1 574 CT
Woodbridge Wireless
KA4RRU 131 2 1 574 VA
Cherokee ARS
KB4MG 101 2 2 574 GA
Hiawatha Valley ARC
KB0LYL 262 2 1 574 MN
North Carolina DX and Contest Club
N3CZ 135 2 1 574 NC
Rocky Mountain Ham Radio
NR5ON 106 2 2 574 NM
Central Massachusetts ARA
WB1AEL 131 2 1 574 NH
599 DX Assn.
WS1L 262 1 1 574 WMA
Mid-MO ARC
AD0YM 130 2 1 570 MO
Ko'olau ARC
AH6NF 130 2 1 570 PAC
Roanoke Valley ARC
K4WFO 195 2 1 570 VA
Ellis Co. ARC
K5EIS 105 2 1 570 NTX
K8RJW 130 2 1 570 OH
Hiawatha Valley ARC
K0MN 150 2 1 570 MN
Long Island Mobile ARC
N2RQ 62 2 2 570 NLI
Marion ARC
N8EE 130 2 1 570 OH
ARA of Southwest Florida
NW9H 130 2 1 570 SFL
Ottawa Valley Mobile RC
VE3HSU 130 2 1 570 ONE
Verde Valley ARA
W7CL 520 1 1 570 AZ
Gloucester Co. ARC
WA2IBZ 130 2 1 570 SNJ
Snohomish Co. Hams Club
W0FLZ 147 2 1 570 WWA
WY7KY 210 2 1 570 WY
Hazel Park ARC
AC8JF 197 2 1 568 MI
Niagara Frontier Radiosport
KA2WIK 130 2 1 568 WNY
Sky Valley ARC
KB7GFL 80 2 1 568 WWA
Somerset Co. ARC
NJ3T 259 2 1 568 WPA
SEKARC
WI4T 260 1 1 568 MO
Hazel Park ARC
AA8IK 129 2 1 566 MI
Garden State ARA
AC2PD 129 2 1 566 SNJ
Fort Washington ARC
KA3LXM 104 2 1 566 MDC
KB0EO 493 1 1 566 MN
Kitsap Co. ARC
KE7DZ 129 2 1 566 WWA
Orange Co. (NY) ARC
N2ETA 113 2 1 566 ENY
Greer ARC
ND7J 503 1 1 566 NC
The Villages ARC
W4MRJ 129 2 2 566 NFL
Baton Rouge ARC
W5TZX 129 2 1 566 LA
Gwinnett ARS
WA4HNL 203 2 1 566 GA
Sierra Foothills ARC
WA6E 135 2 1 566 SV
Straight Key Century Club
AA4XU 129 2 1 564 WCF
KD0LHI 107 2 2 564 ID
Copper Country Radio Amateur Assn.
W9GY 257 1 1 564 MI
MARCA
WA7RLL 132 2 1 564 AZ
WO7U 130 2 1 564 MO
Orange Co. (CA) ARC
AF6N 128 2 1 562 ORG
KD5ZAT 128 2 1 562 NTX
Kendall ARS
W5ATG 128 2 1 562 STX
Rocky Mountain Ham Radio
WA7BNG 128 2 1 562 CO
Blackstone Valley ARC
KA1QYP 137 2 1 560 WMA
KG7CM 120 2 1 560 WWA
York Co. SC ARS
N4UFP 158 2 1 560 SC
Cabarrus ARS
W4GHV 217 2 1 560 NC
Harris Intersil ARC
WA4EMU 105 2 1 560 SFL
EPCom
VA7RA 509 1 1 559 BC
Niagara Frontier Radiosport
AA2ZW 127 2 1 558 WNY
Scott Co. ARC
K1REZ 27 2 1 558 MS
South Bay ARA
K6VUG 131 2 1 558 EB
Great South Bay ARC
KA2S 102 2 1 558 NLI
Lake Co. RACES/ARES
KD9BBB 152 2 1 558 IL
Dixie ARC
KG7SXQ 52 2 1 558 UT
Montgomery Amateur Club
KJ6MTJ 127 2 1 558 AL
Lakeland ARC
KO4AWN 102 2 1 558 WCF
K0WB 127 2 1 558 MO
Easton ARS
W3WTD 127 2 1 558 MDC
Oakland Co. ARS
W8KRS 127 2 1 558 MI
OCAPA
WA9AFM 52 2 1 558 OK
Arlington ARC
KD5WBW 92 2 1 556 NTX
Stanford ARC
KJ6SDF 102 2 1 556 VA
KM3A 110 2 1 556 ORG
Yavapai ARC
KG6AY 461 1 1 555 AZ
Hampden Co. Radio Assn.
AA1WH 101 2 1 554 WMA
Shelby ARC
AJ4QJ 202 2 2 554 NC
K5SS 127 2 1 554 NTX
Stanly Co. ARC
KC1FUU 126 2 1 554 NC
Kingman AR CW Operators Club
KF7YHB 126 2 1 554 AZ
K0OOK 126 2 1 554 NTX
Lake Co. RACES/ARES
N9ETH 252 1 1 554 IL
Minnesota Wireless Assn.
NI0K 252 2 1 554 MN
Ottawa ARC
VE3QO 126 2 1 554 ONE
Hamilton (ON) ARC
VE3ZX 101 2 1 554 GTA
FVVFD
W4POT 101 2 1 554 NFL
Northern California Contest Club
K2RD 500 1 1 552 NV
K4QDO 126 2 1 552 GA
Lehigh Valley ARC
WW3TRG 137 2 1 552 EPA
Yankee Clipper Contest Club
N1KM 251 1 1 551 RI
Virginia Beach ARC/Virginia DX Century
Club
AI4MI 125 2 1 550 VA
Gold Coast ARA
K4BH 100 2 1 550 SFL
Dial RC of Middletown
K8WWS 100 2 1 550 OH
The Villages ARC
K9IA 125 2 1 550 NFL
KF7QXT 100 2 1 550 UT
Salkehatchie ARS
KK4EGZ 125 2 1 550 SC
First State ARC
N3FG 100 2 1 550 EPA
Athens (GA) RC
N4JAH 250 2 1 550 GA
N0TK 125 2 1 550 CO
London ARC
VA3CBN 100 2 2 550 ONS
Aardvark Wireless Group
W4GAC 125 2 1 550 WCF
Palo Alto ARA
W6NEV 125 2 1 550 SCV
W7KRS 125 2 1 550 WWA
North Richland Hills ARC
K5HTE 130 2 1 548 NTX
Binghamton ARA
NN2K 100 2 1 548 WNY
South East Metro ARC
WK0X 140 2 3 548 MN
Mohawk ARC
KF4GAF 124 2 1 546 WMA
Carolina DX Assn.
N4APR 124 2 1 546 NC
Antietam Radio Assn.
WA3PTV 156 2 1 546 WPA
Western Tidewater RA
AE4IX 125 2 1 544 VA
North Shore (IL) RC
NR9K 157 2 1 544 IL
AF6VN 98 2 1 542 MI
Fair Lawn ARC
KB2MDR 123 2 1 542 NNJ
Murray State Univ ARC
KJ4W 136 2 2 542 KY
Onslow ARC Inc.
KK4VBG 123 2 1 542 NC
San Benito Co. ARA
KM6CTR 127 2 1 542 SCV
W4IBM ARC
K0CZR 246 2 1 542 GA
Winnipeg ARC
VE3RUA 142 2 1 542 ONN
Cabarrus ARS
W4LN 83 2 1 542 NC
South Texas DX and Contest Club
W5QLF 123 2 1 542 STX
Alexandria RC
W7VOA 152 2 1 542 VA
Piscataquis ARC
KB1WEA 97 2 1 538 ME
Broughton Memorial Field Day Group
KB2IXT 488 1 1 538 ENY
Orange Co. (NY) ARC
KB2SSZ 122 2 1 538 ENY
Twin Rivers ARC
KC9RFO 122 2 1 538 IL
Peconic ARC
W2AMC 122 2 1 538 NLI
W4QK 244 1 1 538 GA
Meriden ARC
WB1GYZ 122 2 1 538 CT
San Andreas Field Day Survivors
W6SW 387 1 1 537 LAX
North Fulton ARL
KM4BUN 113 2 3 536 GA

Northeast Maryland AR Contest Soc.
N3UR 174 2 1 536 MDC
Clearwater ARS/St. Petersburg ARC/ Upper Pinellas ARC
N4BOZ 79 2 1 536 WCF
Mansfield-Johnson AR Service
N4BWB 243 1 1 536 NTX
N5TM 243 1 1 536 STX
N8AWW 132 2 1 536 MI
Boeing Employees ARS – St. Louis
WBØQLU 152 2 1 536 MO
Martin Co. ARA
AA4CP 71 2 1 534 SFL
Radio Amateur Downstate Illinois Organization
AI9H 96 2 3 534 IL
Totah ARC
K8OIP 96 2 1 534 NM
First State ARC
KC3DY 121 2 1 534 DE
Richardson Wireless Klub
N5EYQ 242 2 1 534 NTX
Wireless Assn. of South Hills
N8NEU 121 2 1 534 WPA
The Seven Thirty ARS
VE3EKA 121 2 1 534 ONS
Regina ARA
VE5CON 134 2 1 534 SK
Cambridge ARA
W8FHF 146 2 2 534 OH
Snohomish Co. Hams Club
W9LD 121 2 2 534 ID
Hazel Park ARC
W9NPI 121 2 1 534 MI
BONAC ARC
K2EC 241 2 1 532 NLI
Downey ARC
N6TEB 131 2 1 532 LAX
Contoocook Valley RC
K1JY 120 2 1 530 NH
Great South Bay ARC
K2IZ 120 2 1 530 NLI
St. Louis & Suburban RC
KCØBYE 120 2 1 530 MO
Federación de Radio Aficionados de Puerto Rico
KP4DQC 133 2 1 530 PR
North Hills ARC of Pittsburgh
N2MA 120 2 1 530 WPA
Splitrock ARA
N2XP 170 2 1 530 NNJ
Columbia-Montour ARC (PA)
N3JPV 140 2 1 530 EPA
SARA MN
N5LB 120 2 1 530 MN
Patoka Valley ARC
N9NAU 95 2 1 530 IN
VY2DM 120 2 1 530 PE
Eastern Shore ARC
W4ACM 110 2 1 530 VA
Ashe Co. ARC
WK4P 120 2 1 530 NC
W3AO Team
WR3R 120 2 1 530 MDC
Radio Amateur Club of Knoxville
WR4MS 95 2 1 530 TN
Saskatoon ARC
VA5DAK 139 2 1 528 SK
East Bay ARC
W6DEI 103 2 1 528 EB
K5HDU 119 2 1 526 STX
Northwest ARS
N6HB 94 2 1 526 STX
Clallam Co. ARC
N7KC 84 2 1 526 WWA
Mining ARC/St. Paul RC
NØAR 122 2 1 526 MN
Club Radio Amateur de Québec
VE2PN 19 2 1 526 QC
Williamson Co. ARES
WA4JA 238 2 1 526 TN
Florida Contest Group
K3SV 247 1 1 525 WCF
Conejo Valley ARC
AJ6CL 130 2 1 524 SB
South Lyon Area ARC
K8VT 119 2 1 524 MI
OH-KY-IN ARS
KC8HQS 242 1 1 524 OH
High Desert ARG
KG7AV 119 2 1 524 OR
York Region ARC
VE3CES 120 2 1 524 GTA
South Mountain Radio Amateurs
W3HMS 120 2 1 524 EPA
Pasadena RC
W9EO 132 2 1 524 LAX
Calvert ARA
WA4BRX 165 2 1 524 MDC
WA7YAZ 124 2 1 524 UT
Murphys Marauders
K1AZ 120 2 1 522 CT
Lakeland ARC
N6MRS 118 2 1 522 WCF
Peel ARC
VE3DRS 74 2 1 522 GTA
Huntsville ARC
WG8S 118 2 1 522 AL
W6BO 248 1 1 521 SV
Lake Area (TX) ARC
K5MAY 135 2 1 520 NTX
Conejo Valley ARC
K7SDW 235 1 1 520 SB
Samuel F. Morse ARC
KM6TVV 93 2 1 520 SV
San Andreas Field Day Survivors
WA6LBY 119 2 1 520 LAX
Orange Co. Radio Amateurs & Durham FM Assn.
KA5ETS 117 2 1 518 NC
KEØPRS 117 2 1 518 KS
Montgomery Amateur Club
KN4AAZ 42 2 1 518 AL
Orange Co. (NY) ARC
N2JAM 117 2 1 518 ENY
ARC of El Cajon
WA6MHZ 112 2 1 518 SDG
WS4Y 117 2 1 518 NFL
Palmetto ARC
K4AXV 221 2 1 516 SC
KD2MI 92 2 1 516 NLI
Jackson Co. ARA
KI5JJP 121 2 1 516 MS
W6TRW ARC
KI6NAZ 196 1 1 516 LAX
Lakeland ARC
NJ4Y 205 2 1 516 WCF
WJ1X 233 1 1 515 CT
WCARC of TX
AA5DE 116 2 1 514 STX
Glynn ARA
AK4YW 116 2 1 514 GA
Mountaineer ARA
K8YYY 232 1 1 514 WV
Framingham ARA
KB1VXY 182 2 1 514 EMA
Denver RC
KEØNRE 116 2 1 514 CO
KFØAIZ 116 2 1 514 KS
KKØO 166 2 1 514 KS
Club Radio Amateur de Québec
VE2JI 21 2 1 514 QC
Twin State RC
W1FNJ 116 2 1 514 NH
New Providence ARC
W2PTP 101 2 1 514 NNJ
Cleveland ARC
WA4NIV 144 2 1 514 TN
Faulkner Co. ARC
AE5NW 181 2 1 512 AR
Barstow ARC
K6XS 130 2 1 512 ORG
NØKRE 134 2 1 512 AZ
Sierra Nevada ARS
W7VD 119 2 1 512 NV
The Villages ARC
K1LTJ 241 1 1 511 NFL
Lowell ARC
KB8ZGL 230 2 1 510 MI
Outer Banks Repeater Assn.
KN4EWI 138 2 1 510 NC
Intercity ARC
N8QKE 85 2 1 510 OH
Barrie ARC
VE3FDZ 85 2 1 510 ONS
WA2BOT 230 1 1 510 NLI
Mid-State ARC
WA9VBG 119 2 1 510 IN
WB6DIK 65 2 1 510 ORG
Cape Ann ARA
AB1XK 46 2 1 508 EMA
Iowa City ARC
KEØQKF 124 2 1 508 IA
Radio Soc. of Tucson
KJ7JFF 117 2 1 508 AZ
Northwest Florida ARC
N4VSP 117 2 1 508 NFL
Johnson Co. Radio Amateurs Club
NØRC 71 2 1 508 KS
Toronto ARC
VE3CXY 123 2 1 508 GTA
Nashua Area Radio Soc.
K1BRM 28 2 1 506 NH
Gold Coast ARA
KD4HGR 114 2 1 506 SFL
Shreveport ARA
KD5DE 114 2 1 506 LA
Redondo Beach DCS
WA6OWM 114 2 1 506 LAX
Garland ARC
WW5SS 45 2 1 506 NTX
KGØTW 120 2 1 504 MO
London ARC
VE3GSO 227 2 3 504 ONS
Radio Club of Redmond
W9PL 227 1 1 504 WWA
San Benito Co. ARA
WB6EWM 117 2 1 504 SCV
Cuyahoga ARS
AC8NW 113 2 1 502 OH
Thunderbird ARC
ADØX 113 2 1 502 AZ
Clallam Co. ARC
K7WWP 113 2 1 502 WWA
Wayne Co. ARC
KC3GSV 113 2 1 502 EPA
Dayton ARA/Xenia Weather AR Net
KD8SAV 113 2 1 502 OH
Macoupin Co. ARC
KD9EFO 116 2 1 502 IL
N6KHO 226 2 2 502 OR
Tri-State ARS
N9JCA 113 2 1 502 IN
Nashua Area Radio Soc.
NU1T 113 2 1 502 NH
Niagara Peninsula ARC
VE3JDF 113 2 1 502 GTA
W4GRV 113 2 1 502 TN
Vicksburg ARC
W5BDB 113 2 1 502 MS
All ARC
W7PU 76 1 1 502 WWA
Schaumburg ARC
W9KAO 124 2 1 502 IL
Madison Co. (OH) ARC
WD8NVN 88 2 1 502 OH
Burlington Co. RC
AK2S 141 1 2 500 SNJ
Cumberland ARC
K3EYL 125 2 2 500 EPA
Sacramento Mountains RC
KAØZPP 175 2 1 500 NM
Onslow ARC Inc.
KN4HGI 75 2 1 500 NC
Clark Co. (WA) ARC
N7VS 120 2 1 500 OR
Radio Central ARC and Order of Boiled Owls of NY
W2YK 118 2 1 500 ENY
Denver RC
WØGV 126 2 2 500 CO
Williamson Co. ARES
AK4FA 409 1 3 499 TN
Heart of America RC
KAØYJE 112 2 1 498 MO
Pine State ARC
KD1OM 113 2 1 498 ME
N5XE 115 2 1 498 OK
NØYO 224 2 1 498 KS
Alford Memorial RC
W3BLT 112 2 1 498 GA
Central Oregon DX Club
W7VHM 112 2 1 498 OR
Clinton Co. ARA
W9AMA 134 2 1 498 OH
Barstow ARC
WA6MTZ 112 2 1 498 ORG
Mound ARA
AC8G 446 1 1 496 OH
Medina Co. ARC
K2RWO 223 2111 496 OH
Greater Beloit ARC
KC9PZI 223 2 1 496 WI
Bolingbrook ARS
KD9NHZ 116 2 1 496 IL
Gwinnett ARS
KN4VCQ 73 2 1 496 GA
NALCO ARES/RACES
K6APW 86 2 1 494 OR
York RC
K9PLX 111 2 1 494 IL
KBØUAZ 86 2 1 494 MN
St. Louis ARC
KDØPMW 111 2 1 494 MO
NQØM 111 2 1 494 KS
West Texas ARC
NT5EE 111 2 1 494 WTX
Lakes Area (WI) ARC
W9AKS 111 2 1 494 WI
Livonia ARC
WV8A 95 2 1 494 MI
AC8AP 221 1 1 492 OH
SARA MN
AGØH 111 2 1 492 MN
Maui ARC
KH6CJJ 270 1 1 492 PAC
Elmendorf ARS
KL6RG 93 2 1 492 AK
Nixa ARC
KØLAF 136 2 1 492 MO
NØTT 221 1 1 492 MO
Gwinnett ARS
WB2RIS 105 2 1 492 GA
Rappahannock ARA
K4JTN 85 2 1 490 VA
DuPage ARC
KC9JBU 110 2 1 490 IL
Hurst ARC
KG5VMO 110 2 1 490 NTX
Paso Robles ARC
KJ6OHI 85 2 1 490 SCV
Littleton Area Radio Klub
N1GB 110 2 1 490 VT
NN7CW 110 2 1 490 NFL
Oro Valley ARC
W7BV 110 2 1 490 AZ
South Canadian ARS
WA5EEZ 208 2 1 490 OK
WB2COY 110 2 1 490 ENY
WB9LWO 110 2 1 490 IL
Albemarle ARS
K4VHV 85 2 1 488 NC
Fox River Radio League
K9FE 191 2 1 488 IL
Halifax ARC
VA1CC 89 2 1 488 MAR
West Central Louisiana ARC
W5LSV 121 2 1 488 LA
Lee Co. CERT
AI4EW 112 2 1 486 NC
Mecklenburg ARS
K4GKK 218 2 1 486 NC
Blackstone Valley ARC
KC1LWH 109 2 1 486 RI
Lodi ARC
KC9ZO 109 2 1 486 IL
St. Louis ARC
KDØNEO 218 1 1 486 MO
Stanwood Camano ARC
KG7OSP 109 2 1 486 WWA
Camden Co. ARS
KK4SSH 109 2 1 486 GA
KN4YNK 109 2 1 486 VA
Pioneer ARC
KØOM 109 2 1 486 NE
Cleveland ARC
NR4CW 84 2 1 486 TN
Police AR Team of Westford
W1FDR 84 2 1 486 EMA
Long Island CW Club
W7JMM 85 2 1 486 OR
Wisconsin ARC
W9MXQ 218 2 1 486 WI
Great South Bay ARC
W2JV 335 1 1 485 NLI
Tri-Co. ARC (PA)
N3VYZ 217 2 1 484 WPA
Virginia Beach ARC
N4JJ 117 2 1 484 VA
Grayson Co. ARC
N5SLY 109 2 1 484 NTX
Niagara Frontier Radiosport
WB2WPM 217 1 1 484 WNY
N6RSH 311 1 1 483 NE
York RC
AC9WN 108 2 1 482 IL
Oro Valley ARC
K7EAZ 113 2 1 482 AZ
Los Alamos ARC
KBØBED 108 2 1 482 NM
FVVFD
KE1F 108 2 1 482 NFL
KE8MUW 108 2 1 482 OH
Candlewood ARA
N1RV 216 2 1 482 CT
Sun City ARC
N5ZN 108 2 1 482 WTX
West Allis RAC
NO9B 108 2 1 482 WI
W1LMS 38 2 1 482 CT
First State ARC
W3ISR 108 2 1 482 DE
Orange Co. (CA) ARC
W6ZQ 216 1 1 482 ORG
Pueblo West ARC
WØOJW 129 2 1 482 CO
Forsyth ARC
AK4D 115 2 1 480 NC
Penn Wireless Assn.
K3FKW 115 2 1 480 EPA
Murgas ARC
K3TOW 64 2 1 480 EPA
Raleigh ARS
K4CBW 195 2 4 480 NC
Sawnee ARA
W4RIN 69 2 1 480 GA
WO3T 165 2 2 480 WPA
KB3LSX 107 2 1 478 TN
Southington ARA
KC1ERO 107 2 1 478 CT
Frankford RC
N2RC 107 2 1 478 ENY
Radio Club of Tacoma
N7TES 120 2 1 478 WWA
NE7D 214 1 1 478 OR
W8DSI 107 2 1 478 NC
NØAMP 110 2 1 476 CO
VA7VK 213 1 1 476 BC
WA7YNU 109 2 1 476 MT
Anthracite Repeater Assn.
WB3EGD 42 2 1 476 EPA
Brazos Valley ARC
KE4DRF 72 2 1 474 STX
Coastal Plains ARC
KF4BI 113 2 7 474 GA

Rochester (MN) ARC
KG0KJ 106 2 1 474 MN
Montgomery ARC/Damascus ECT
N3COB 202 2 1 474 MDC
Jefferson (LA) ARC
N5HZ 212 1 1 474 LA
The Seven Thirty ARS
VA3AUW 126 2 1 474 ONS
Lunenburg Co. ARC
VE1BZI 106 2 1 474 MAR
Burlington ARC
VE3ISO 107 2 1 474 GTA
W7GDK 106 2 1 474 AZ
W7SDC 106 2 1 474 UT
Northeast Maryland AR Contest Soc.
KC3OOL 226 1 1 473 MDC
AA1W 206 2 1 472 NH
Northwest ARS
KE5IOV 123 2 1 472 STX
CorTek Radio Assn.
N9GY 117 2 1 472 IL
NZ5A 106 2 1 472 STX
Saratoga Co. ARA
K2LK 105 2 1 470 ENY
Delta ARC
K4DVE 100 2 2 470 TN
L'Anse Creuse ARC
K8NVH 105 2 1 470 MI
Prairie Dog ARC
K8UDH 105 2 1 470 NE
Six Meter Club of Chicago
K9LAE 156 2 1 470 IL
3730 Group
KA1BZE 153 2 1 470 EMA
Tri-State ARS
KE9YK 160 2 1 470 IN
Ellis Co. ARC
N1XAC 107 2 1 470 NTX
Reelfoot ARC
N4PWG 55 2 1 470 TN
Lucas ARC
NW5Q 210 2 1 470 NTX
Club Radio Amateur de Québec
VA2PK 10 2 1 470 QC
Meriden ARC
W1EDX 210 2 1 470 CT
South Canadian ARS
W5MSL 99 2 1 470 OK
Austin ARC
W5RKN 105 2 1 470 STX
W/K ARC of Greater Milwaukee
W9DUB 85 2 1 470 WI
Lake Co. ARA
WA8TWM 210 2 1 470 OH
Platinum Coast ARS
WB5ZGA 105 2 1 470 SFL
Palmetto ARC
K4CAE 279 1 1 469 SC
North Fulton ARL
K4SQC 146 2 1 468 GA
KI5GX 107 2 1 468 AL
Halifax ARC
VA1RST 80 2 1 468 MAR
Meriden ARC
K1LHO 104 2 1 466 CT
Shelby ARC
K4ZXN 104 2 1 466 NC
Florida Contest Group
N4LF 104 2 1 466 DE
Coconino ARC
N7YIQ 104 2 1 466 AZ
Four Lakes ARC
NQ9A 82 2 1 466 WI
Calgary Communications Club
VE6PLC 104 2 1 466 AB
AZVHFS
W2ODH 162 2 1 466 AZ
Mid-Ohio Valley ARC
AB8S 150 2 1 464 WV
Hazel Park ARC
KB3EHW 79 2 1 464 MI
CenTor ARC
VA3SXP 135 2 1 464 GTA
Tamaqua Wireless Assn.
W3OFD 117 2 1 464 EPA
South Mountain Radio Amateurs
W0BR 221 1 1 463 EPA
Santa Fe ARC
AE6VZ 53 2 1 462 NM
TUSCO ARC
KE8JNN 53 2 1 462 OH
Oro Valley ARC
KT7AZ 103 2 1 462 AZ
Ocean Monmouth ARC
N2BZD 78 2 1 462 NNJ
McKinney ARC
N5YZ 103 2 1 462 NTX
Livonia ARC
N8XI 133 2 1 462 MI
N4N Field Day Group
NE4S 103 2 1 462 GA
NP4ET 412 1 1 462 PR
Winnipeg ARC
VE4DL 85 2 1 462 MB

ARTS of Louisville
W4DFR 103 2 1 462 KY
St. Louis & Suburban RC
WB0IIS 78 2 1 462 MO
W3AO Team
WK3A 103 2 1 462 MDC
Nittany ARC
WX2DX 28 2 1 462 WPA
Sun City ARC
KD6CUB 205 2 1 460 WTX
Radio Soc. of Tucson
KI7TIG 53 2 1 460 AZ
Preston Co. ARC
NN8W 103 2 1 460 WV
Garden State ARA
AC2F 102 2 1 458 NNJ
Oro Valley ARC
AE9Q 102 2 1 458 AZ
Pamlico ARS
K4ONC 104 2 1 458 NC
Hampstead Hams
KA4SFF 77 2 1 458 NC
PODXS 070
KC3EF 102 2 1 458 NFL
KF3G 102 2 1 458 EPA
K0YA 102 2 1 458 STX
Wireless Assn. of South Hills
N3RDV 102 2 1 458 WPA
N4DLR 102 2 1 458 OH
WEST PARK RADIOPS
N8WS 102 2 1 458 OH
Des Moines Radio Amateur Assn.
N0AC 102 2 1 458 CO
Greenwood ARC
VE1VEI 102 2 1 458 MAR
South Halton ARES
VE3CEZ 80 2 1 458 GTA
Radio Central ARC and Order of Boiled Owls of NY
W2EMN 102 2 1 458 NLI
Kankakee Area Radio Soc.
W9IE 102 2 1 458 IL
W9JXT 104 2 1 458 ORG
Montgomery Amateur Club
WB5NHX 102 2 1 458 AL
Broughton Memorial Field Day Group
K2AE 306 1 1 456 ENY
RF Hill ARC
W3EX 194 2 1 456 EPA
Two Rivers ARC of McKeesport
W3ON 302 1 1 456 WPA
N5JJC 354 1 1 455 NTX
WA5LHM 203 1 1 455 STX
Six Meter Club of Chicago
AB9BZ 101 2 1 454 IL
Niagara RC
AE2MS 202 2 1 454 WNY
Maui ARC
AH6SZ 101 2 1 454 PAC
Skyview Radio Soc.
K3CLT 101 2 1 454 WPA
Chesapeake AR Service
K4DGW 101 2 1 454 VA
Spokane DX Assn.
K7KB 202 1 1 454 EWA
KA2CNN 101 2 1 454 RI
Southeast Louisiana ARC
KE5KMM 101 2 1 454 LA
Old Barney ARC
N2XW 101 2 1 454 SNJ
Fond du Lac ARC
N9EZF 101 2 1 454 WI
N9ITO 101 2 1 454 IL
VA7ME 202 1 1 454 BC
West Island ARC
VE2FCR 101 2 1 454 QC
York Region ARC
VE3BWV 101 2 1 454 GTA
Bullitt ARS
W4PF 101 2 1 454 KY
Orange Co. (CA) ARC
W6ATB 101 2 1 454 ORG
Pizza Lovers 259
W6DR 101 2 1 454 SCV
York RC
WD9END 102 2 1 454 IL
West Allis RAC
K9BTQ 101 2 1 452 WI
Central Illinois RC
KE9UA 201 2 1 452 IL
KI5GNH 201 2 1 452 STX
Villa Rica RC
KK4OHF 107 2 1 452 GA
Radio Club of Tacoma
KR7W 101 2 1 452 WWA
Sheriff's Tactical AR Communications
W4TLA 101 2 1 452 WCF
Bear Bait RC
WA2DTN 123 2 1 452 WNY
Boeing Employees ARS – St. Louis
K2DP 401 1 1 451 MO
Bankhead ARC
N4JDB 401 1 1 451 AL
San Benito Co. ARA
AA6W 68 2 9 450 SCV

Birmingham ARC
AG5AT 100 2 1 450 AL
AG7WW 190 2 1 450 OR
Boston ARC
K1SU 102 2 1 450 EMA
Maury ARC
K4BX 100 2 1 450 TN
St. Augustine ARS
K4HRL 100 2 1 450 NFL
Sportsman's Paradise ARC
K4SQL 100 2 1 450 NFL
Central Idaho ARC
K7TPH 100 2 1 450 ID
Garden State ARA
KA2F 100 2 1 450 SNJ
Maury ARC
KA4ZDR 200 2 1 450 TN
Orange Park ARC
KB2EZN 104 2 1 450 NFL
Peekskill/Cortlandt ARA
KD2ITZ 109 2 2 450 ENY
Peconic ARC
KE2YK 100 2 1 450 NLI
KE8ESJ 100 2 1 450 OH
KE0YCS 100 2 1 450 CO
KG5BZW 100 2 1 450 NTX
Alexandria RC
KV3W 100 2 1 450 VA
N3JNX 100 2 1 450 EPA
Bristol (TN) ARC
N4KZS 100 2 1 450 TN
North Fulton ARL
N7BU 50 2 1 450 GA
Blossomland ARA
N8CBA 100 2 1 450 MI
Kingman CW Operators Club
NS0O 100 2 1 450 AZ
Kitchener-Waterloo ARC
VA3DKL 100 2 1 450 ONS
Quinte & Prince Edward RCs
VA3NGE 131 2 1 450 ONE
Kingston Amateurs
VA3WW 75 2 1 450 ONE
Lunenburg Co. ARC
VE1AUZ 100 2 1 450 MAR
VE2GHI 100 2 1 450 QC
VE3VSM 100 2 1 450 ONS
Falmouth ARA
W1CN 100 2 1 450 EMA
Shreveport ARA
W5SUM 200 2 1 450 LA
W7WHW 100 2 1 450 EWA
Butler Co. (OH) ARA
W8GEX 200 1 1 450 OH
Pikes Peak Radio Amateur Assn.
WA2JQZ 105 2 1 450 CO
WA4ZOF 100 2 1 450 GA
Lake Co. RACES/ARES
WO9S 100 2 1 450 IL
Lake Monroe ARS
AA4XZ 62 2 1 448 NFL
Albemarle ARS
KU4BY 102 2 1 448 NC
Salt Spring Island ARS
VE7GDH 148 2 1 448 BC
Samuel F Morse ARC
AI6U 49 2 1 446 SV
Meriden ARC
KB1JL 100 2 1 446 CT
KC7WDL 94 2 2 446 NM
North Shore (IL) RC
KG9ML 99 2 1 446 IL
Greer ARC
KI4ABS 76 2 1 446 SC
Virginia Beach ARC/Virginia DX Century Club
N4IRK 99 2 1 446 VA
East Bay ARC
N6RLS 54 2 1 446 EB
Dial RC of Middletown
NR8R 98 2 1 446 OH
Nashua Area Radio Soc.
W1AKI 98 2 1 446 NH
Huntsville ARC
W4ORS 99 2 1 446 AL
El Dorado Co. ARC
W6RC 199 1 1 446 SV
Paso Robles ARC
W6RR 198 1 1 446 SB
Northeast Maryland AR Contest Soc.
WA1HEW 99 2 1 446 EPA
WB7CJO 99 2 1 446 WY
Palms West ARC
WB2SNN 104 2 1 444 SFL
Tri-State ARA
AB8WW 98 2 1 442 WV
Lakeland ARC
KF4TPW 98 2 1 442 WCF
Society of Midwest Contesters
N5KB 111 2 1 442 IA
VE7GEL 98 2 1 442 BC
Iowa City ARC
W3ACO 196 2 1 442 IA
Cuyahoga Falls ARC
WA8WFX 193 2 1 442 OH

Jefferson (LA) ARC
WF5O 98 2 1 442 LA
East Bay ARC
KO6NO 195 2 1 440 EB
Ottawa ARC
VE3IRR 77 2 1 440 ONE
New England Radio Discussion Soc.
WB2UQP 145 2 1 440 ME
Blue Ridge ARC
AI4GR 120 2 1 438 NC
Tellico Lake ARC
K4ZRP 100 2 1 438 TN
Point Loma ARC
K6JUN 97 2 1 438 SDG
Schaumburg ARC
KB9RHR 97 2 1 438 IL
River City AR Communications Soc.
KK6DCT 102 2 1 438 SV
Newport Beach Repeater Club
KM6JON 72 2 4 438 ORG
Texas DX Soc.
N5DTT 94 2 1 438 STX
Mohawk ARC
NM1C 100 2 2 438 WMA
Thunderbird ARC
NX7B 97 2 1 438 AZ
Valley of the Moon ARC
W1EJ 98 2 1 438 SF
WA5LFD 135 2 1 438 STX
Des Moines Radio Amateur Assn.
W0FLS 97 2 1 438 IA
South Orange ARA
K6FTL 129 2 1 436 ORG
Northern Ohio DX Assn.
KA1RUE 123 2 1 436 OH
South Orange ARA
KM6FOY 100 2 1 436 ORG
Story Co. ARC
K0GR 193 2 1 436 IA
Indiana Co. ARC
N3LT 109 2 1 436 WPA
Cuyahoga Falls ARC
N8OOP 129 2 1 436 OH
South Bay ARA
WB9YVM 43 2 1 436 EB
AC0WL 192 1 1 434 MO
Platinum Coast ARS
K3VN 96 2 1 434 SFL
Society of Midwest Contesters
K9DEB 96 2 1 434 IL
Alford Memorial RC
KI4FWY 114 2 1 434 GA
Oak Hill ARC
N5YHF 156 2 2 434 STX
WB2UDC 96 2 1 434 NNJ
Rockwall ARC
N5YDX 99 2 1 432 NTX
Radio Club of Tacoma
W6RHY 191 2 2 432 WWA
Orange Co. (NY) ARC
WM2C 59 2 1 432 ENY
Kendall ARS
K5AYR 45 2 1 430 STX
Radio Assn. of Western New York
KA2GVY 90 2 1 430 WNY
Milwaukee Radio Amateurs' Club
KA9WXN 51 2 2 430 WI
EWEphoria RC
N4CQN 70 2 1 430 NFL
South Halton ARES
VA3RHH 70 2 1 430 GTA
Kingston Amateurs
VE3GO 95 2 1 430 ONE
Butler Co. AR Public Service Group
W3SSH 70 2 1 430 WPA
WE8L 72 2 1 430 OH
Univ of Alabama RC W4UAL
KI4GGJ 221 1 1 429 AL
Mike & Key ARC
AE1J 98 2 1 428 WWA
Bearcat DX Club
K8RER 139 2 4 428 OH
KG0R 159 2 4 428 AR
Cupertino ARES
KN6PE 76 2 1 428 SCV
South Halton ARES
VE3OGP 90 2 1 428 GTA
Jackson Co. AR Service
W3WDD 189 2 1 428 NC
AE1D 136 2 1 426 NH
Tennessee Contest Group
K4BP 188 2 1 426 TN
Wayne ARC
K8RMC 94 2 1 426 OH
Northwest Indiana DX Club
KC9OYE 101 2 1 426 IN
Shelby ARC
KN4RJX 124 2 1 426 NC
N3CMH 94 2 1 426 NFL
N5VF 120 2 1 426 VA
N9ZWY 89 2 2 426 WI
VA3ROC 122 2 1 426 ONS
Columbia (SC) ARC
W1GTT 44 2 1 426 SC

Ham Radio Outlet Milwaukee ARC
W9AWX 101 2 1 426 WI
Santa Fe ARES
WB7Y 110 2 1 426 NM
WO9Z 109 2 1 426 IN
Panther ARC
AB3YH 92 2 2 424 WPA
Vienna Wireless Soc.
K3NHT 49 2 2 424 VA
Palm Beach ARC
KC3D 187 1 1 424 SFL
Gwinnett ARC
WA4ZXV 98 2 1 424 AL
New England Radio Discussion Soc.
K1VW 100 2 1 422 ME
Coshocton Co. ARA
KC8PUW 93 2 1 422 OH
Squaw Island ARC
KD2PER 186 2 1 422 WNY
Warminster ARC
KD3RF 106 2 2 422 EPA
Fauquier ARA
KG4EHL 77 2 1 422 VA
Moore Co. ARS
KV4ZZ 93 2 1 422 NC
Queen Anne's ARC
N1AHO 93 2 1 422 MDC
Sun City Grand Hams
N6RY 93 2 1 422 AZ
Chicago Suburban Radio Assn.
W9JGH 99 2 1 422 IL
Hamfesters RC
W9JPR 136 2 2 422 IL
REDXA/MARS
AA0BV 101 2 1 420 SF
Alexandria RC
KI4BXU 135 2 1 420 VA
N2CJN 98 2 1 420 SCV
Clark Co. (IN) ARC
NJ9U 176 2 1 420 IN
VA2EI 94 2 1 420 QC
Framingham ARA
W1HNZ 157 1 1 420 EMA
Orange Co. (NY) ARC
W2COD 175 2 1 420 ENY
SARA MN
W0GAF 100 2 1 420 MN
Kansas City Contest Club
K3PA 191 1 1 418 KS
Collins ARC
K5TIP 92 2 1 418 NTX
Yavapai ARC
K7DWI 92 2 1 418 OR
Suburban UHF Am Repeater Soc.
K9IJ 93 2 1 418 IL
Parma RC
KA8HUZ 92 2 1 418 OH
Orrville ARS
KD8SQ 184 2 2 418 OH
N2FBV 92 2 1 418 NLI
Mecklenburg ARS
WB2NHQ 119 2 1 418 NC
Mecklenburg ARS
KK4HOK 43 2 1 416 NC
Kingston Amateurs
VE3EAC 94 2 1 416 ONE
Cape Fear ARS
W4LEA 63 2 3 416 NC
Charlotte ARS
W0ZEN 133 2 1 416 EMA
Madison Co. (OH) ARC
AD8AL 144 2 1 414 OH
K2EKM 91 2 1 414 VA
Police AR Team of Westford
KB1MGI 91 2 1 414 EMA
Boca Raton ARA
KB4EE 66 2 1 414 SFL
Alachua EOC RC
KK4INZ 70 2 1 414 NFL
KW7R 91 2 1 414 NTX
N1XL 182 2 1 414 NC
Fluvanna Co. ARES
N4PJL 169 2 1 414 VA
San Antonio RC
N5YBG 121 2 1 414 STX
N0ZMF 91 2 1 414 KS
Hays/Caldwell ARC
W1LOZ 91 2 1 414 STX
Orange Park ARC
K2RMA 94 2 1 412 NFL
Delaware Valley ARS
KC3AM 172 2 1 412 DE
Olive Branch ARC/Chickasaw ARA
KF8PD 181 1 1 412 MS
The Villages ARC
KM4PIH 45 2 1 412 NFL
Boeing Employees ARS
NS7O 93 2 1 412 WWA
North Shore (ON) ARC
VA3AG 179 2 1 412 GTA
Tamiami ARC
W1JBD 97 2 1 412 WCF
Orange Co. Radio Amateurs & Durham FM Assn.
W4AEN 97 2 1 412 NC
Haywood Co. ARC
WB4OQL 361 1 1 411 NC
Silver Comet ARS
K4CGA 114 2 1 410 GA
Central Oregon Coast ARC
K7TMV 100 2 1 410 OR
Eastern New Mexico ARC
KA5B 90 2 1 410 NM
Nassau ARC
N2LVG 180 1 1 410 NLI
York Region ARC
VE3IGG 80 2 3 410 GTA
Williamson Co. ARES
W4BJB 65 2 1 410 TN
Waterbury ARC
W7YY 180 2 1 410 CT
Sun City ARC
WB5LJO 180 2 1 410 WTX
Samuel F. Morse ARC
WB6UBK 65 2 1 410 SV
Sterling Park ARC
AJ4LN 179 2 1 408 VA
Chipola ARC
NW4R 41 2 1 408 NFL
W7WOW 129 2 1 408 NV
David Sarnoff ARC
WJ3P 28 2 1 408 SNJ
K2UCW 89 2 1 406 WNY
Northern Kentucky ARC
KC4KEZ 77 2 1 406 KY
KC5GOI 89 2 1 406 NTX
New Providence ARC
W2IOC 128 2 1 406 NNJ
Blue Ridge ARC
W4IOE 89 2 1 406 NC
W7PL 108 2 1 406 OR
Comstock ARA
W7VY 178 2 1 406 NV
Thibodaux ARC
WA5PRI 89 2 1 406 LA
South Orange Co. ARA
WA9SGD 64 2 1 406 ORG
Patoka Valley ARC
KA9GDW 155 1 1 405 IN
ARTS of Louisville
AB9LF 177 2 1 404 IN
Southern California Contest Club
K6FGV 177 2 1 404 LAX
Garden State ARA
NN2AJO 90 2 1 404 SNJ
South Orange ARA
WA6LDI 114 2 2 404 ORG
Wisconsin ARC
WA9WYI 67 2 1 404 WI
Denver RC
W0MDK 94 2 1 404 CO
Falmouth ARA
K1WDY 69 2 1 402 EMA
Kent Co. ARC
K3LT 88 2 1 402 DE
KC9GIC 176 2 1 402 IN
Six Meter Club of Chicago
KC9KLA 176 2 1 402 IL
KK4AC 88 2 1 402 GA
Onslow ARC Inc.
KN4YXQ 176 2 1 402 NC
Mound ARA
N8DNG 107 2 1 402 OH
W1NF 88 2 1 402 EMA
Montgomery Amateur Club
W4CRS 176 2 1 402 AL
ND1J 351 1 1 401 GA
NOARCFL
KI5FR 65 2 3 400 NFL
Cumberland ARC
N3FWE 130 2 1 400 EPA
Hamfesters RC
N9ZD 125 2 1 400 IL
W1WIU 297 1 1 400 RI
KG5VK 268 1 1 399 NTX
Delaware ARA
AA8TA 62 2 1 398 OH
Binghamton ARA
K4RFK 110 2 1 398 WNY
KB8GVW 138 2 1 398 OH
FARCE
KC6KWP 88 2 1 398 SV
Mora Open Repeater Assn.
KJ9W 124 2 1 398 MN
Tellico Lake ARC
KM4H 87 2 1 398 TN
Brunswick Shores ARC
N2MH 87 2 1 398 NNJ
West Seattle ARC
NN7M 91 2 1 398 WWA
Williamson Co. ARES
W4DML 174 2 1 398 TN
W5JE 62 2 1 398 AR
Boston ARC
WA1GXC 111 2 1 398 RI
WB9JTK 124 1 1 398 WCF
WC7F 87 2 1 398 ID
Wilderness Road ARC
K3KZU 87 2 1 396 KY
KE8KIK 171 2 1 396 OH
River City AR Communications Soc.
KM6SBB 53 2 3 396 SV
Mora Open Repeater Assn.
K0YR 173 2 1 396 MN
Huron ARA
WB0ULX 155 2 1 396 SD
K2WJ 86 2 1 394 STX
Cumberland ARC
K3EYK 72 2 1 394 EPA
Fannin Co. ARC
N0FOI 172 2 1 394 NTX
Chicago Suburban Radio Assn.
W9TTY 15 2 1 394 IL
Vienna Wireless Soc.
K6BFA 57 2 1 392 VA
Wireless Assn. of South Hills
KB3BYA 95 2 1 392 WPA
Lafayette DX Assn.
N9FN 38 2 1 392 IN
Mississauga ARC
VA3NWW 91 2 1 392 GTA
Wellesley ARS
W1DAN 113 2 1 392 EMA
Northeast Oklahoma Radio Amateurs
W5GFI 233 1 1 392 OK
Cuyahoga ARS
AC8TN 122 2 1 390 OH
K7BG 85 2 1 390 SD
Old Barney ARC
KA2YNH 60 2 1 390 SNJ
Nashua Area Radio Soc.
KC1IMK 30 2 2 390 NH
KC3MSR 60 2 1 390 MDC
Oro Valley ARC
KE7AZ 61 2 1 390 AZ
KG5WZW 85 2 1 390 NTX
SEKARC
K0SMK 334 1 1 390 KS
Smoky Mountain ARC
KR4FK 120 2 1 390 TN
Great Bay RA
N1AMD 87 2 1 390 NH
David Sarnoff ARC
N2EIM 85 2 1 390 NNJ
Peekskill/Cortlandt ARA
N2SO 170 1 1 390 ENY
Point Loma ARC
N6KIM 60 2 2 390 SDG
Milwaukee Repeater Club
N0XXL 170 2 1 390 WI
Club de Radio Amateur Outaouais
VE2KZW 85 2 1 390 QC
Morris RC/Hanover Twp OEM
WA2VQF 85 2 1 390 NNJ
Lake Agassiz RC
WA0CSL 85 2 1 390 ND
WE8T 60 2 1 390 OH
Silver Springs RC
KC5CMX 98 1 1 389 NFL
High Sierra Field Day Group
WB6W 189 1 1 389 EWA
River City AR Communications Soc.
KL7HQR 169 2 1 388 SV
Half Moon Bay ARC
N1HEL 169 2 1 388 SCV
Brazoria Co. AR Service
K5QOI 37 1 1 387 STX
Utica ARC
AA2CU 84 2 1 386 WNY
CO2BK 84 2 1 386 PR
Silver Springs RC
N4LZ 84 2 1 386 NFL
Surrey AR Communications
VE7TI 59 2 1 386 BC
Great South Bay ARC
W2PW 77 2 1 386 NLI
Davie/Cooper City ARC
WB4EHG 118 1 1 386 SFL
WC3N 171 1 1 385 MDC
Rockwall ARC
K5GCW 167 2 1 384 NTX
Custer Co. ARC
KE0ZUL 102 2 2 384 CO
Garden State ARA
W2OD 117 2 1 384 NNJ
PODXS 070
K7PAX 83 2 1 382 WWA
North Fulton ARL
KC4UCT 58 2 1 382 GA
South Jersey Radio Assn.
KD2EPM 83 2 1 382 SNJ
KD2JFU 109 2 1 382 WNY
Orleans Co. ARC
KD2RWC 83 2 1 382 WNY
KD5QZG 66 2 1 382 LA
Northern Panhandle ARC
KD8GXI 70 2 1 382 OH
Indian River ARC
KN4JN 83 2 1 382 SFL
Montachusett ARA
NZ1D 58 2 1 382 NFL
Brandon ARC
VE4MR 83 2 1 382 MB
Northeast Maryland AR Contest Soc.
W6YTG 83 2 1 382 MDC
St. Louis ARC
W0RL 34 2 1 382 MO
K2TRX 115 1 1 380 NNJ
Thomas Rees
KB7XL 165 2 2 380 NV
Plano AR Klub
NE5IL 101 2 1 380 NTX
Montvale OEM
NZ2K 85 2 1 380 NNJ
Kitchener-Waterloo ARC
VE3HZ 65 2 1 380 ONS
W1OPR 83 2 1 380 ME
Cheshire Co. DX ARC
WA1ZYX 110 2 1 380 NH
WB8CPG 96 2 1 380 OH
Westmoreland ARC
N3KUN 171 1 2 379 MDC
Cupertino ARES
K6WGY 53 2 1 378 SCV
Apple City ARC
K7MOV 82 2 1 378 EWA
Toledo Mobile Radio Assn.
KA9IVY 164 2 1 378 OH
Addison Co. ARA
KE1VT 52 2 1 378 VT
Estes Valley ARC
KE0SDV 84 2 1 378 CO
AR Community Services
KN4CFI 32 2 1 378 KY
Paducah ARA
NW9W 82 2 1 378 IL
Union Co. (OH) ARC
NX8Y 82 2 1 378 OH
Messila Valley RC
W5RRX 98 2 1 378 NM
South Orange ARA
W6INE 97 2 1 378 ORG
W3AO Team
WA3MD 77 2 1 378 MDC
NOARS
WA8YVF 154 2 1 378 OH
East Greenbush ARA
WB2HPR 82 2 1 378 ENY
WB5EXI 57 2 1 378 STX
South Canadian ARS
WG5T 82 2 1 378 OK
AI4IC 82 2 1 376 TN
Great South Bay ARC
KD2RMD 163 2 1 376 NLI
Intercity ARC
W8DLB 113 2 1 376 OH
Albany ARA
WA3AFS 62 2 1 376 ENY
Rocky Mountain Ham Radio
N3XKB 140 1 1 375 NM
Nashoba Valley ARC
K1LK 116 2 1 374 EMA
Radio Central ARC and Order of Boiled Owls of NY
KB2ZPB 81 2 1 374 NLI
Yellowstone RC
KD7HU 95 2 1 374 MT
Long Island CW Club
N8PEM 152 2 1 374 OH
York Region ARC
VA3ASE 99 2 1 374 GTA
W4ELP 81 2 1 374 VA
Jefferson (LA) ARC
W5CMM 113 2 1 374 LA
Police AR Team of Westford
WB2OSZ 87 2 1 374 EMA
K7DBN 104 2 1 372 UT
Mining ARC/St. Paul RC
K0RJW 161 2 1 372 MN
York Region ARC
VA3HDL 143 2 1 372 GTA
Radio Amateurs of Skagit Co.
W7TAO 88 2 1 372 WWA
Valley and Massanutten ARA
K4DJG 80 2 1 370 VA
Tri-State ARS
KC9TYA 80 2 1 370 IN
Mississippi Coast ARA
KF5BA 160 2 1 370 MS
Indianapolis RC
KJ9Z 160 2 1 370 IN
Vienna Wireless Soc.
KN4ZMA 8 2 1 370 VA
Alexandria RC
KT3I 55 2 1 370 VA
Platinum Coast ARS
NB4C 160 2 1 370 SFL
Halifax ARC
VE1ANU 160 1 1 370 MAR
Club Station Répétitrice de Laval
VE2SIL 80 2 1 370 QC
London ARC
VE3IDT 160 2 1 370 ONS
Nashville ARC
W4ENT 80 2 2 370 TN
North Fulton ARL
WA2EXZ 160 2 1 370 GA
Symbol Technologies ARC
WA2HMM 80 2 1 370 NLI

Ole Virginia Hams
WA4KFZ 80 2 1 370 VA
Jayhawk ARS
WA0YQM 80 2 1 370 KS
Stanly Co. ARC
WK4WC 80 2 1 370 NC
KI5GZO 142 2 1 368 LA
Union Métropolitaine des Sans-filistes de Montréal
VE2GTZ 39 2 3 368 QC
Azalea Coast ARC
W4BIX 69 2 1 368 SC
Aroostook ARA
KC1ECV 58 2 1 366 ME
Issaquah ARC
KC7JLM 79 2 1 366 WWA
Orange Co. (NY) ARC
KD2KBU 83 2 1 366 ENY
Medina Co. ARC
KD8SSX 79 2 1 366 OH
El Dorado Co. ARC
KK6YYD 79 2 2 366 SV
Communications Support Team
N7UFC 63 2 1 366 WWA
London ARC
VE3XDM 79 2 1 366 ONS
Lynchburg ARC
W4GDG 79 2 1 366 VA
Irving ARC
W5FRS 79 2 1 366 NTX
570-V Connection
WB3AAC 79 2 1 366 TN
Gwinnett ARS
K4VBM 61 2 1 364 GA
Macon Co. ARC
KD0ETU 157 2 1 364 MO
N2QGV 79 2 1 364 NFL
N8OH 115 2 1 364 OH
Monongalia Wireless Assn.
N8OZY 157 2 1 364 WV
N9UDO Memorial Field Day
N9PQJ 157 2 1 364 WI
Peel ARC
VE3EU 40 2 1 364 ONS
Delaware ARA
W8JJB 57 2 1 364 OH
New Jersey Institute of Technology ARC
WW2I 157 2 1 364 NNJ
Falmouth ARA
K1CB 78 2 1 362 EMA
Platinum Coast ARS
K4ILG 61 2 1 362 SFL
Orange Co. (CA) ARC
K6PGH 93 2 1 362 ORG
Parkersburg AR Klub
KA8NJW 156 2 1 362 WV
KB1HKN 78 2 1 362 EMA
Oro Valley ARC
KB7AZ 86 2 1 362 AZ
Huntsville ARC
KG4TEI 156 2 1 362 AL
Indiana Co. ARC
KM3M 156 2 1 362 WPA
South Bay ARC
KM6VME 53 2 1 362 LAX
Silver Springs RC
KQ3K 78 2 1 362 NFL
PODXS 070
VA7GEM 78 2 1 362 BC
WA8LRW 156 1 1 362 OH
Arkansas ARC
WB5RUH 78 2 1 362 AR
Kansas Antenna Club in Johnson Co.
WB0KSL 78 2 1 362 KS
Federación de Radio Aficionados de Puerto Rico
WP4QWH 78 2 1 362 PR
Mecklenburg ARS
WT9Y 87 2 1 362 NC
Baton Rouge ARC
AG5AY 98 2 1 360 LA
Peace River Radio Assn.
K4KXX 155 2 1 360 WCF
Genesee Co. RC
K8LJG 90 2 1 360 MI
Bergen Co. Emergency Management RC
N2AXX 113 2 1 360 NNJ
VA3SRV 155 2 1 360 ONS
Dalton ARC
W4DRC 155 2 1 360 GA
Forsyth ARC
W4UDB 155 2 1 360 NC
Central Virginia Contest Club
WB3D 162 1 1 360 VA
QSY Soc.
KA2R 77 2 1 358 ENY
Police AR Team of Westford
KD1D 53 2 1 358 EMA
Ocean Monmouth ARC
KD2OUG 104 2 1 358 NNJ
Hays/Caldwell ARC
KD5MMM 77 2 1 358 STX
Central Michigan ARC
KD8RSH 154 2 1 358 MI
Ozone ARC
KE5QKR 27 2 1 358 LA
N1DIQ 154 2 1 358 VT
Peekskill/Cortlandt ARA
N2MUZ 77 2 1 358 ENY
Huntsville ARC
N4CNY 154 2 1 358 AL
Portage Co. AR Service
N8GIE 154 2 1 358 OH
Lynchburg ARC
NJ4Q 77 2 1 358 VA
Barrie ARC
VE3TTP 79 2 1 358 ONS
WD5HJF 77 2 1 358 AR
Eden Prairie RC
WD0END 86 2 1 358 MN
Middle Peninsula ARC
WM4MW 77 2 1 358 VA
North Augusta Belvedere RC
WM4RT 77 2 1 358 SC
Arizona Outlaws Contest Club
WO7R 154 1 1 358 AZ
ARC of Augusta
K4NXA 30 2 1 356 SC
Parma RC
K8CMD 88 2 1 356 OH
West Valley ARA
KK6VF 103 2 1 356 SCV
Reelfoot ARC
KN4OPZ 153 2 1 356 TN
Radio Central ARC and Order of Boiled Owls of NY
N2YBB 80 2 1 356 NLI
Endless Mountains ARC
N3GTH 68 2 1 356 EPA
Holmesburg ARC
WA2UAR 31 2 1 356 EPA
Forsyth ARC
K4HKE 102 2 1 354 NC
K5WX 76 2 1 354 STX
KF4AAF 76 2 1 354 NFL
Snohomish Co. Hams Club
KG7WFO 85 2 1 354 WWA
VMware ARC
KM6I 152 1 1 354 SCV
N5UTG 76 2 1 354 NTX
NY9P 76 2 1 354 IL
VE3SST 86 2 1 354 GTA
Hampstead Hams
W4CWO 52 2 1 354 NC
W6NS 76 2 1 354 SB
Northern Illinois Quad Co. ARG
W9SAU 51 2 1 354 IL
Fox River Radio League
WB9LPW 76 2 1 354 IL
K2MFW 104 1 1 353 SNJ
West Seattle ARC
AC7MX 51 2 1 352 WWA
Metrocrest ARS
K5GIL 53 2 1 352 NTX
Murgas ARC
KB3VS 151 2 1 352 EPA
Ford AR League
KC8YEJ 108 2 1 352 MI
Lincoln Co. ARA
KO4BMD 151 2 1 352 TN
Highline ARC
W3RWN 151 2 1 352 WWA
Hidden Valleys ARC
W9FAA 103 2 1 352 WI
Greater Beloit ARC
WD9BB 151 2 1 352 WI
K1NE 75 2 1 350 ENY
Billerica ARS
K1TW 79 2 1 350 EMA
K4MIC 120 2 1 350 WV
Peace River Radio Assn.
K4PGD 75 2 1 350 SFL
Police AR Team of Westford
KC1ELF 71 2 1 350 EMA
Dial RC of Middletown
KD8WXP 75 2 1 350 OH
SARA MN
KE0N 75 2 1 350 MN
The Villages ARC
KN4ULF 82 2 2 350 NFL
Johnson Co. ARC
KY5M 150 2 1 350 NTX
ARC EmComm Service
N2LDV 100 2 1 350 NLI
ARC EmComm Service
N2LEB 100 2 1 350 NLI
Haldimand Norfolk ARC
VE3DYY 147 2 1 350 ONS
Kitchener-Waterloo ARC
VE3RKS 57 2 2 350 ONS
Univ of Mississippi ARC
W1IBL 50 2 1 350 UT
CARS ARS
W2ECK 75 2 1 350 GA
Oro Valley ARC
W2HZ 150 1 1 350 AZ
Spokane DX Assn.
WA0WWW 75 2 1 350 EWA
RF Hill ARC
WS2K 75 2 1 350 EPA
Metrocrest ARS
AC5DL 94 2 1 348 NTX
Orange Co. (CA) ARC
K6JEY 82 2 1 348 LAX
Bergen ARA
KC2WQD 149 2 1 348 NNJ
SEKARC
NØYH 149 2 1 348 MO
K3URT 146 2 1 346 EPA
K8LT 79 2 1 346 NH
K8MA 74 2 1 346 OH
Green Bay Mike & Key Club
KC9ZSR 74 2 1 346 WI
Fort Myers ARC
KK4SER 74 2 1 346 SFL
Morris RC/Hanover Twp OEM
N1MID 75 2 1 346 NNJ
South Orange ARA
NJ6N 83 2 1 346 ORG
Orange Co. Radio Amateurs & Durham FM Assn.
W1KES 74 2 1 346 NC
North Fulton ARL
W4IU 148 2 1 346 GA
Palisades ARC
W6GAA 120 2 1 346 LAX
North Fulton ARL
WO4MW 117 2 1 346 GA
Lewisville ARA
W5YS 95 1 1 345 NTX
AA5AH 83 2 1 344 NTX
Gloucester Co. ARC
AC2PT 97 2 1 344 SNJ
West Central Louisiana ARC
AC2WU 74 2 1 344 LA
Central Illinois RC
AC9TN 147 2 1 344 IL
AD7MC 55 2 1 344 WWA
Pottstown Area ARC
K3ALV 97 2 1 344 EPA
Orange Co. (NY) ARC
KD2SSS 24 2 1 344 ENY
Queen Anne's ARC
KD3CR 97 2 1 344 MDC
Alamance ARC
KJ4UBM 69 2 1 344 NC
Warren Co. NY RC
N1NDN 147 2 1 344 ENY
Clearwater ARS/St. Petersburg ARC/ Upper Pinellas ARC
N4GRC 97 2 1 344 NC
Seaway Valley ARC
VE3AIH 66 2 1 344 ONE
VE6SPS 80 2 1 344 AB
Murray State Univ ARC
W4PJC 74 2 1 344 KY
WB8ASI 147 1 1 344 MI
AF8G 73 2 1 342 NC
North Richland Hills ARC
K5GD 73 2 1 342 NTX
Mecklenburg ARS
K5MPG 84 2 1 342 NC
Blackstone Valley ARC
KB1WV 85 2 1 342 RI
KB9VMW 96 2 1 342 IN
Midland (MI) ARC
KC8ITI 125 2 1 342 MI
Mining ARC/St. Paul RC
KC0INP 75 2 1 342 MN
Tall Corn ARC
KD0GFQ 78 2 1 342 IA
GEARS
KF6NCX 73 2 1 342 SV
Columbia (MD) ARA
KM4ND 48 2 1 342 SFL
K0SNG 73 2 1 342 NTX
N1ZX 73 2 1 342 SFL
Binghamton ARA
N2PM 48 2 2 342 WNY
Etowah Valley ARC
N4QET 146 2 1 342 GA
Palos Verdes ARC
N6YFM 73 2 1 342 LAX
The Villages ARC
N8RW 73 2 1 342 NFL
Southwest Iowa ARC
N0BHB 73 2 1 342 IA
N0VTY 73 2 1 342 IA
W3KM 73 2 1 342 EPA
Big Thunder ARC
W9RLL 73 2 1 342 WI
Watauga ARC
WA4NC 96 2 1 342 NC
WA4OFW 146 2 1 342 VA
Tamiami ARC
WB8FXJ 80 2 1 342 WCF
Steel City ARC
AG5FX 100 2 1 340 WPA
Shiawassee ARA
KC8ETW 97 2 1 340 MI
Kay Co. ARC
KG5VW 145 2 1 340 OK
Ellijay ARS
N4FXZ 145 2 1 340 GA
North Central Arkansas ARC
N5LKE 145 2 1 340 AR
N7NEV 24 2 1 340 AZ
Portsmouth (OH) RC
N8JEN 79 2 1 340 OH
NO3J 79 2 1 340 EPA
Midcoast Chapter Am. Red Cross
W1ZE 85 2 1 340 ME
East Coast Kerchunkers
W3AVP 50 2 1 340 EPA
Southern Berkshire ARC
K1LEE 72 2 1 338 CT
Rochester (NY) DX Assn.
K2MTH 72 2 1 338 WNY
K3DFL 72 2 1 338 EPA
Dixie ARC
K7KYU 44 2 1 338 UT
Oro Valley ARC
K7ROG 72 2 1 338 AZ
Sussex ARA
KC3MAL 72 2 1 338 DE
KC5JMJ 94 2 1 338 LA
Toledo Mobile Radio Assn.
KD8EVN 75 2 1 338 OH
Federación de Radio Aficionados de Puerto Rico
KP4JFR 72 2 1 338 PR
QRP ARC International
N8WQ 72 2 1 338 OH
Club de Radio Amateur Outaouais
VE2EAJ 77 2 1 338 QC
Central Massachusetts ARA
W1TR 79 2 1 338 CT
VMware ARC
W6RQ 82 2 1 338 SCV
Palms West ARC
K2CIB 51 2 1 336 SFL
Woodford Repeater Assn.
K9BDH 246 1 3 336 IL
Genesee Radio Amateurs
KD2TTN 123 2 3 336 WNY
Tamiami ARC
KY4RS 75 2 1 336 KY
State Line RC
W3TCP 18 2 1 336 EPA
Red Rose Repeater Assn.
AF3Z 71 2 1 334 EPA
Southern California Contest Club
K6PO 71 2 1 334 SDG
Panama City ARC
KD4IMA 67 2 1 334 NFL
Lowell ARC
KE8CPD 142 2 1 334 MI
KF4HHG 71 2 1 334 NC
KI7DAN 71 2 1 334 UT
Heritage Hunt Hams
KM4IAJ 142 2 1 334 VA
QSY Soc.
NG2D 62 2 1 334 ENY
Int'l Soc. for AR Innovation
NS7I 87 2 1 334 WY
Williamson Co. ARES
W4UR 71 2 1 334 TN
Cascade RC
WA7AXT 71 2 1 334 WWA
First State ARC
WD3C 71 2 1 334 DE
Raytown ARC
W0AO 100 2 1 334 EWA
Madison Co. (OH) ARC
K8NAP 96 2 1 332 OH
KF3EB 49 2 1 332 WPA
NC4MI 102 2 1 332 NC
North Shore (IL) RC
W9DEE 91 2 2 332 IL
PODXS 070
AG4QX 70 2 1 330 WCF
Rockwall ARC
K5RXQ 140 2 1 330 NTX
Northern Ohio DX Assn.
K8LBT 140 2 1 330 OH
Toledo Mobile Radio Assn.
K8RDH 73 2 1 330 OH
KB0TUA 70 2 1 330 MO
Troy ARA
KF2WA 55 2 1 330 ENY
Fort Myers ARC
KN4CPA 70 2 1 330 SFL
Brazos Valley ARC
N5EKW 70 2 1 330 STX
Lakeland ARC
NC8I 71 2 1 330 WCF
Tompkins Co. ARA
NE2T 70 2 1 330 WNY
Albemarle ARS
NO4Y 70 2 1 330 NC
Ocean Monmouth ARC
W2LID 47 2 1 330 SNJ
Raleigh ARS
W4CP 140 2 1 330 NC
San Fernando Valley ARC
W6ELI 70 2 1 330 LAX

Paso Robles ARC
W6FM 140 1 1 330 SB
Samuel F Morse ARC
W6NKR 70 2 1 330 SV
W0RO 118 2 1 330 VA
AA5RN 139 2 1 328 NTX
York RC
AC9UV 91 2 1 328 IL
Foothills ARS (CA)
AJ0SE 70 2 1 328 SCV
K1FQL 139 1 1 328 SFL
Sterling Park ARC
KM4SK 89 2 1 328 VA
KU8Z 139 2 1 328 VA
Kemptville ARG
VE3CVG 116 2 1 328 ONE
Mecklenburg ARS
W4WNT 85 2 1 328 NC
Cherryland ARC
WX1J 77 2 1 328 MI
Greater Bridgeport ARC
AC1DQ 69 2 1 326 CT
W3AO Team
AC6WI 69 2 1 326 VA
Orange Co. (NY) ARC
K2ULZ 69 2 1 326 ENY
Delaware ARA
K8DL 44 2 1 326 OH
Fair Lawn ARC
KA2YRA 69 2 1 326 ENY
TUSCO ARC
KB8UJB 28 2 1 326 OH
KC8RAN 69 2 1 326 NTX
Blue Ridge ARC
KN4KWA 44 2 1 326 NC
Tampa ARC
KN4TYK 69 2 1 326 WCF
New Providence ARC
N2FYE 47 2 1 326 NNJ
N8OFP 69 2 1 326 OH
NA7RF 132 2 3 326 UT
Boca Raton ARA
W4KEK 88 1 1 326 ENY
Bryan ARC
W5HVS 69 2 1 326 STX
Sky Valley ARC
W7BCW 124 1 2 326 WWA
OSY Soc.
WA2WMJ 85 2 2 326 ENY
Orange Co. (NY) ARC
WB2KHE 88 2 1 326 ENY
Newark Ohio ARA
WE8V 138 2 1 326 OH
Sky Valley ARC
AC7LC 82 2 2 324 WWA
K4SNW 74 2 1 324 CO
Greater Norwalk ARC
KC1FB 86 2 1 324 CT
Aeronautical Center ARC
N5PT 69 2 1 324 OK
Barrie ARC
VE3KDG 37 2 1 324 ONS
London ARC
VE3KGK 127 2 1 324 ONS
Midland (TX) ARC
W5DTB 87 2 1 324 WTX
WA2VAX 137 2 1 324 SC
K7BX 68 2 1 322 WWA
KA1ULN 68 2 1 322 EMA
OCAPA
KA0ZWV 71 2 1 322 OK
Mansfield-Johnson AR Service
KB0BDJ 136 2 2 322 NTX
Ozone ARC
KD5GFG 136 2 1 322 LA
South Jersey Radio Assn.
KE2D 50 2 1 322 SNJ
Paducah ARA
KG4SRK 136 2 1 322 KY
Fluvanna ARES Group
KK4HUK 136 2 1 322 VA
NOARCFL
KN4CGX 86 2 1 322 NFL
Keuka Lake ARA
KS2YL 68 2 1 322 WNY
KS4S 68 2 1 322 NC
Montgomery Amateur Club
KU4PY 19 2 1 322 AL
Bartlesville ARC
KU5M 68 2 1 322 OK
N1NN 136 1 1 322 EMA
Montrose ARC
N7SE 68 2 1 322 CO
Huber Heights ARC
N8QNM 82 2 1 322 OH
Greater Norwalk ARC
NV1P 136 2 2 322 CT
Gwinnett ARS
W4KDA 136 2 1 322 GA
Lawton Fort Sill ARC
W5KS 136 2 1 322 OK
Northwest ARS
W5KY 68 2 1 322 STX
Columbia-Montour ARC (PA)
WC3A 82 2 1 322 NFL

Dixie ARC
K7OUF 33 2 1 320 UT
Radio Assn. of Western New York
KC2RBL 35 2 3 320 WNY
Lake ARA
N4KXO 83 2 1 320 NFL
North Franklin ARS
NG2C 60 2 1 320 NNY
St. Louis ARC
N0BDS 135 2 1 320 MO
PODXS 070
VA2SIB 70 2 1 320 QC
Kingston Amateurs
VE3FMK 84 2 1 320 ONE
Victoria-Haliburton ARA
VE3PC 135 2 2 320 ONE
Smoky Mountain ARC
KK4XA 262 1 1 319 TN
VE7XT 154 1 2 319 BC
Kent Co. ARC
K3REW 82 2 1 318 DE
McDowell ARA
K4UVX 134 2 1 318 NC
San Mateo RC
K6TET 86 1 1 318 SCV
CRES ARC
K8HTC 94 2 1 318 OH
Granite State ARA
KC1ILH 134 2 1 318 NH
Dayton ARA/Xenia Weather AR Net
KE8JNU 50 2 1 318 OH
Northern Arizona DX Assn.
KG7OH 106 2 20 318 AZ
Intel Emergency AR Service
KI7N 100 2 1 318 OR
North Fulton ARL
KN4OAK 34 2 1 318 GA
Ventura Co. ARS
KQ6NO 67 2 1 318 SB
KX4WS 42 2 1 318 SFL
Mohawk ARC
N1DBL 113 2 1 318 WMA
Potomac Valley RC
N3MK 134 1 1 318 VA
VE3BZC 67 2 1 318 GTA
Old Barney ARC
W2NRS 67 2 1 318 SNJ
Alabama Contest Group
W4NBS 67 2 1 318 AL
Northwest ARS
W5DCK 42 2 1 318 STX
WA4RXK 67 2 1 318 TN
Monroe Co. Radio Communications Assn.
N8DXR 267 1 1 317 MI
Hazel Park ARC
AA8UU 57 2 1 316 MI
K2CM 134 1 3 316 WNY
Bloomington ARC
KC9ACL 83 2 1 316 IN
USS Wisconsin RC
W4ZPR 54 2 1 316 VA
Chicago Suburban Radio Assn.
WB9NLO 133 2 1 316 IL
Lakeland ARC
AB4KA 82 2 1 314 WCF
K1BUK 68 2 1 314 CT
XRX RC
K5JSG 132 2 1 314 WNY
Radio Club of Redmond
K7LOG 66 2 1 314 WWA
Williamson Co. ARES
KA4OTB 264 1 1 314 TN
Splitrock ARA
KC2HRG 130 2 1 314 NNJ
Fort Madison ARC
KC9PL 66 2 1 314 IL
KD5SBP 30 2 1 314 MS
Johnson Co. Radio Amateurs Club
KE0EGG 132 2 2 314 NE
KM4WYO 67 2 1 314 AL
Hilltop Transmitting Assn.
KX2S 66 2 1 314 EPA
FVVFD
N2MJZ 66 2 1 314 NFL
North Augusta Belvedere RC
NC8N 132 2 1 314 SC
Plano AR Klub
NT5TT 66 2 1 314 NTX
W5MO 66 2 1 314 STX
REDXA/MARS
WW6D 41 2 1 314 SF
South Bay ARA
KA6S 199 1 1 313 EB
Indy United ARC
AA9HB 131 2 1 312 IN
Platinum Coast ARS
K4AOQ 131 2 1 312 SFL
Cove Repeater Assn.
K4IVE 76 2 1 312 NTX
Northern Ohio DX Assn.
K8KR 100 2 1 312 OH
Bolingbrook ARS
K9NYO 101 2 1 312 IL
KE0ITC 131 2 1 312 IA

Stanford ARC
KG6NUB 57 2 1 312 SCV
N3FD 131 2 1 312 EPA
Villanova Univ ARC
W3YP 50 2 9 312 EPA
Gwinnett ARS
W4KYW 131 2 1 312 GA
DFW Contest Group
W0UO 79 2 2 312 NTX
Reading RC
W3WJC 261 1 1 311 EPA
AA9ZI 65 2 1 310 GA
South Jersey Radio Assn.
K2WJL 130 2 1 310 SNJ
Lewisville ARA
K5LGX 80 2 1 310 NTX
SAARS
K8VA 65 2 1 310 MI
Wabash Valley ARA
K9DUR 60 2 1 310 IN
Southern Co. ARA
KB2DMU 63 2 1 310 SNJ
Issaquah ARC
KC7PBH 67 2 1 310 WWA
Williamson Co. ARES
KK4AIZ 125 2 1 310 TN
PODXS 070
KK6KMU 65 2 1 310 SDG
N6WJA 130 2 1 310 IL
Southwest Mississippi ARC
NM5Z 65 2 1 310 MS
VE3ETE 130 2 1 310 ONN
The Seven Thirty ARS
VE3FME 65 2 1 310 ONS
W5EST 65 2 1 310 AR
DFW Contest Group
WA5LXS 130 1 1 310 NTX
North Augusta Belvedere RC
WB5NHL 65 2 1 310 SC
North Shore (IL) RC
WB9MRI 65 2 1 310 IL
Pottstown Area ARC
K3BVQ 129 2 1 308 EPA
Albany ARA
KC2ZDC 129 2 1 308 ENY
Goshen ARC
KC9CDS 65 2 1 308 IN
Huntsville ARC
KD4IYD 129 2 1 308 AL
Runestone ARC
K0HC 66 2 1 308 MN
Runestone ARC
K0MHC 66 2 1 308 MN
Youth on the Air
W8Y 69 2 2 308 OH
Johnson Co. Radio Amateurs Club
AD0AB 128 1 1 306 KS
Union Co. (NC) ARC
K4EVT 73 2 1 306 NC
Boca Raton ARA
K4LA 64 2 1 306 SFL
ARTS of Louisville
K5BWJ 64 2 1 306 KY
Tri-State ARA
K8FER 64 2 1 306 WV
West Allis RAC
KA9JCP 128 2 1 306 WI
Radio Amateurs of Northern Vermont
KJ1V 106 2 2 306 VT
Potomac Valley RC
N3KN 131 1 1 306 VA
Lakeland ARC
N4HCZ 64 2 1 306 WCF
Tyler ARC
N9JN 128 2 1 306 NTX
Garlic Valley ARC
W6SC 128 1 1 306 SCV
W7QDM 64 2 1 306 ID
Simi Settlers ARC
AB6BW 136 1 1 305 SB
Cheshire Co. DX ARC
AC0WI 75 2 1 304 NH
Sierra Foothills ARC
AI6US 77 2 1 304 SV
Suburban Technical ARS
KA9ZXN 77 2 1 304 IL
DuPage ARC
KG9R 127 2 1 304 IL
Davis Co. ARC
KV7LC 41 2 1 304 UT
N1ABY 127 2 1 304 CT
Poway ARS
N6AT 86 2 2 304 SDG
Ashe Co. ARC
W4MLN 39 2 1 304 NC
Union Co. (OH) ARC
W8GMK 127 2 1 304 OH
Whitman ARC
AJ1L 63 2 1 302 EMA
Pottstown Area ARC
KB3WFQ 66 2 1 302 EPA
Central Texas DX and Contest Club
KF5RLL 126 2 1 302 STX
River City AR Communications Soc.
KF6QXX 126 2 1 302 SV

Lewisville ARA
KG5MVZ 33 2 2 302 NTX
St. Louis ARC
KG0KP 26 2 1 302 MO
Panama City ARC
KI4AWS 63 2 1 302 NFL
Kaw Valley ARC
K0RCJ 152 1 1 302 KS
Great South Bay ARC
N2ADC 126 1 1 302 NLI
Montvale OEM
N2CWV 63 2 1 302 ENY
Columbia (MD) ARA
N3KNN 76 2 1 302 MDC
Long Island CW Club
NO7E 50 2 1 302 NV
Florida Contest Group
NX4N 63 2 1 302 WCF
Georgian Bay ARC
VA3KOT 63 2 1 302 ONS
EmComms Assn. of St. Charles
WS0Z 71 2 2 302 MO
Addison Co. ARA
WX1O 252 1 1 302 VT
Loudoun ARG
W5ODJ 150 1 1 301 VA
Mansfield-Johnson AR Service
K5WXY 250 1 1 300 NTX
Benicia ARC
K6RDW 78 2 1 300 EB
Wireless Operators of Winsted
KA1WPM 94 2 1 300 CT
Northeast Tarrant ARC
KD5UJL 25 2 1 300 NTX
Pasadena RC
KF6RRR 125 2 1 300 LAX
Macon Co. ARC
K0KY 150 2 1 300 MO
Williamsburg Area ARC
NR4C 126 1 1 300 VA
Fair Lawn ARC
W2PX 125 2 1 300 NNJ
Fox River Radio League
W9YU 69 2 1 300 IL
Baton Rouge ARC
WA5MLF 64 2 1 300 LA
Harris Intersil ARC
AK4ZZ 37 2 1 298 SFL
Lapeer Co. ARA
KB8TAR 124 2 1 298 MI
Charlotte ARC
KE4JXF 102 2 1 298 NC
Montgomery Amateur Club
KK4GNG 62 2 1 298 AL
Oro Valley ARC
KM6JSR 62 2 1 298 AZ
Oakland Radio Communication Assn.
KO6R 37 2 1 298 EB
Tri-Co. ARA (NJ)
NJ5R 124 2 1 298 NNJ
VE3SSB 62 2 1 298 GTA
VE6CZT 124 1 1 298 AB
Bankhead ARC
W4TFW 64 2 1 298 AL
David Sarnoff ARC
WA2BSP 24 2 1 298 NNJ
Brightleaf ARC
WA4AKB 74 2 1 298 NC
Kaw Valley ARC
WD0DBS 100 2 1 298 KS
Rowan ARS
K4MV 123 2 1 296 NC
K6CAW 80 2 1 296 LAX
Endless Mountains ARC
KB3LLD 73 2 1 296 EPA
Toledo Mobile Radio Assn.
KB8IUP 123 2 2 296 OH
North Fulton ARL
KN4FYZ 70 2 1 296 GA
Communications Support Team
N7MU 63 2 1 296 WWA
Niagara Peninsula ARC
VA3OV 23 2 1 296 GTA
VA7PK 73 2 1 296 BC
Southern Co. ARA
W2JDT 100 2 1 296 SNJ
Rocky Mountain Ham Radio
W2KPB 123 2 1 296 NLI
West Valley ARA
W6BG 53 2 1 296 SCV
Kitsap Co. ARC
KB7KYK 132 1 1 295 WWA
SARA MN
AA0U 99 2 1 294 MN
Onslow ARC Inc.
K1LDO 70 2 1 294 NC
Delaware Valley ARS
K3WSP 72 2 1 294 DE
K4DSG 61 2 1 294 OK
Northern California Contest Club
K6CSL 61 2 1 294 SJV
Downey ARC
K6ICS 58 2 1 294 LAX
Hoodview ARC
K7ENN 61 2 1 294 OR

Wisconsin Valley Radio Assn.
K9LCK 36 2 1 294 WI
Lodi ARC
KC1KVR 111 2 1 294 NH
Hiawatha Valley ARC
KEØTTK 122 2 1 294 MN
AR Caravan Club
KI5FGJ 31 2 1 294 NM
Paducah ARA
KJ4EU 122 2 1 294 KY
Woodbridge Wireless
KV4UC 61 2 1 294 VA
Sun Coast ARC Soc.
VE7RG 122 1 1 294 BC
Nashoba Valley ARC
W1XP 61 2 1 294 EMA
W2JAN 61 2 1 294 ENY
Jefferson (LA) ARC
WA5CFT 61 2 1 294 LA
WH6CPT 61 2 1 294 ID
St. Mary's Co. ARA
W4VJU 243 1 1 293 MDC
San Jose ARES RACES
K6SW 62 2 1 292 SCV
Broughton Memorial Field Day Group
KB2WZT 121 2 1 292 NNY
Pasadena RC
KK6EUH 21 2 1 292 LAX
Radio Amateurs of Greater Syracuse
N2VZD 71 2 1 292 WNY
Southern PA Communications Group
N3GL 111 2 2 292 MDC
Frankford RC
NT3V 121 2 1 292 EPA
Burlington ARC
VE3AK 64 2 2 292 GTA
Lucas ARC
W5PKK 91 2 5 292 NTX
W5TTX 101 2 4 292 AL
Glynn ARA
W8ANG 61 2 3 292 GA
WB2DX 121 2 1 292 SC
OCAPA
WB5YBZ 121 2 1 292 OK
Port City ARC
AA1CA 60 2 1 290 NH
AA5PR 66 2 1 290 NM
AD4XP 99 2 1 290 TN
Island Co. ARC
AF9W 60 2 1 290 WWA
Blackstone Valley ARC
K1VI 60 2 1 290 RI
Queen Anne's ARC
K3RRP 120 2 1 290 MDC
Muncie Area ARC
K9HMX 43 2 1 290 IN
Sangamon Valley RC
K9IDQ 120 2 1 290 IL
Woodford Repeater Assn.
K9XE 74 2 1 290 IL
KA2TOV 60 2 1 290 NLI
Cumberland Valley ARC
KB3QJA 60 2 1 290 WPA
KC1AJT 60 2 1 290 EMA
Falmouth ARA
KC1ELB 120 2 1 290 EMA
Lewisville ARA
KF5OMH 20 2 1 290 NTX
Silver Comet ARS
KM4EOG 120 2 1 290 GA
PODXS 070
KM6KIZ 68 2 1 290 LAX
KQ9J 60 2 1 290 WI
Boston Valley Simplex Club
N2EJT 120 2 1 290 WPA
Garland ARC
N5LDD 120 2 1 290 NTX
San Mateo RC
N6TP 75 2 1 290 SCV
Hampden Co. Radio Assn.
NF1G 60 2 1 290 WMA
Kansas/Nebraska ARC
NØGJ 60 2 1 290 KS
Big Sky Contesters
NX7W 120 2 1 290 MT
Guelph ARC
VA3QB 114 2 1 290 ONS
Burlington ARC
VA3ZC 60 2 1 290 GTA
Northeast Tarrant ARC
W5EXJ 120 2 1 290 NTX
Morongo Basin ARC
W6BZY 60 2 1 290 ORG
Lynchburg ARC
WB2CYJ 120 2 1 290 VA
Adams Co ARS
WB3JKT 70 2 1 290 EPA
Hoosier Hills Ham Club
WD8JJA 60 2 1 290 IN
Silver Comet ARS
K4ELI 131 1 1 289 GA
Genesee Co. RC
W8ZAC 115 1 1 289 MI
Southwest Iowa ARC
WBØGXD 239 1 1 289 IA
K3EFS 210 1 1 288 EPA
Austin ARC
K5EJL 77 2 2 288 STX
Central Idaho ARC
KG7MFC 19 2 1 288 ID
North Fulton ARL
N4IHV 119 2 1 288 GA
The Seven Thirty ARS
VA3XT 119 2 1 288 ONS
Club Radio Amateur de Québec
VE2OV 119 2 1 288 QC
Scarborough ARC
VE3EPS 119 2 1 288 ONE
Hampden Co. Radio Assn.
W1IRL 19 2 1 288 WMA
W3WYM 36 2 1 288 MDC
W9CHD 47 2 1 288 WI
Davie/Cooper City ARC
WB2RUU 119 1 1 288 SFL
Edmond ARS
AB5TF 59 2 1 286 OK
West Essex ARC
K2DEG 104 2 1 286 NNJ
KC5NAV 61 2 1 286 NTX
KC8FOV 58 2 2 286 OH
KI4ABA 59 2 1 286 LA
KK5AA 59 2 1 286 AR
N3NMP 59 2 1 286 EPA
Club Station Repetitrice de Laval
VE2LPS 60 2 1 286 QC
York Region ARC
VE3HIS 118 2 1 286 GTA
Williamson Co. ARES
W4PHS 118 2 1 286 TN
4SQRP
W5ESE 61 2 1 286 STX
Garden City ARC
W8DOW 118 2 1 286 MI
Gainesville ARS
WB2FKO 65 2 1 286 NFL
WR4K 59 2 1 286 GA
Tyler ARC
WM5Q 122 1 1 285 NTX
Cape Fear ARS
K4PGM 113 2 1 284 NC
L'Anse Creuse ARC
K8AJJ 117 2 1 284 MI
Alliance ARC
KB8DNQ 75 2 1 284 OH
KD5COL 113 2 1 284 TN
Monroe Co. Radio Communications Assn.
KE8BYC 2 2 1 284 MI
Iowa City ARC
KØLUM 117 2 1 284 IA
Lucas ARC
N5WOI 17 2 1 284 NTX
Lodi ARC
N6ZDH 63 2 1 284 SJV
Kansas/Nebraska ARC
NØXGL 117 2 1 284 KS
Murray State Univ ARC
W4IRT 67 2 4 284 KY
AA8DN 58 2 1 282 OH
Williamsburg Area ARC
AI4QQ 58 2 1 282 VA
Bergen ARA
K2ZC 58 2 1 282 NNJ
Sierra Nevada ARS
K6ST 8 2 1 282 NV
K7SVX 82 2 2 282 ID
Orrville ARS
KA8YNW 116 2 2 282 OH
Miller Co. ARES
KF5WXF 58 2 1 282 AR
Pasadena RC
KJ6NO 58 2 1 282 ORG
Metro DX Club
KM9M 58 2 1 282 IL
St. Thomas ARC
KP2J 16 2 1 282 VI
Topanga Disaster Radio Team
N6OPE 58 2 1 282 LAX
Bellbrook ARC
N8UR 58 2 1 282 OH
Falmouth ARA
W1WH 66 2 1 282 EMA
Portage Co. AR Service
W8AHC 58 2 1 282 OH
Whitman ARC
WA1MAD 116 2 1 282 EMA
Fox River Radio League
WA9YKK 98 2 1 282 IL
Milford ARC
AD8DM 101 2 1 280 OH
Thunderbird ARC
AF6WF 63 2 2 280 AZ
Rochester (NY) DX Assn.
KA2CGB 115 2 1 280 WNY
Endless Mountains ARC
KB3ZQJ 115 2 1 280 EPA
Radio Central ARC and Order of Boiled Owls of NY
KC2ZOR 115 2 1 280 NLI
Ozone ARC
KD5PCK 115 2 1 280 LA
Ancient Modulators
KDØOQV 115 2 1 280 MO
Sparta ARC
KM4FSG 113 2 1 280 NC
CalNet
NO1PC 115 2 1 280 SCV
Broughton Memorial Field Day Group
W2BK 115 2 1 280 ENY
Wayne Co. ARC
W2JPG 58 2 15 280 EPA
Alexandria RC
W4EDF 62 2 1 280 VA
Northern Kentucky ARC
K8WDA 57 2 1 278 KY
KC9WIB 57 2 1 278 IL
KN4ZXG 32 2 1 278 VA
David Sarnoff ARC
N2VVL 114 2 1 278 SNJ
Susquehanna Valley ARC
N3KCR 114 2 1 278 EPA
Wilmington Area ARC
N9BBE 85 2 1 278 IL
NØKTB 76 2 1 278 NTX
VE7DFJ 57 2 1 278 BC
Orange Co. Radio Amateurs & Durham FM Assn.
W4EZ 57 2 1 278 NC
W6BP 65 2 1 278 SCV
Bolingbrook ARS
WA9IQL 14 2 3 278 IL
Warren ARS
WØJW 32 2 1 278 IA
AG5VE 76 2 1 276 STX
K4JIM 97 2 1 276 NFL
K7AMB 58 2 1 276 AZ
K7OWW 68 2 1 276 OR
Hidden Valleys ARC
KB9LIE 113 2 1 276 WI
KC7RSO 113 2 1 276 KS
Radio Amateurs of Skagit Co.
KE7AV 54 2 1 276 WWA
Cupertino ARES
KT6JK 13 2 1 276 SCV
USECA
N8BRO 113 2 1 276 MI
West Kootenay ARC
VE7CW 113 1 1 276 BC
W4SOF 113 2 1 276 NM
Virginia Beach ARC/Virginia DX Century Club
W4WV 113 2 1 276 VA
Tri-State ARA
W8DUQ 13 2 1 276 WV
CRES ARC
WB8ZTP 113 2 1 276 OH
Texas DX Soc.
K5GZR 76 1 1 275 STX
AJ7M 112 2 1 274 WWA
Montvale OEM
K2GFM 56 2 1 274 NNJ
PODXS 070
K4REB 112 2 1 274 NC
Mount Vaca RC
K6KN 40 2 1 274 SV
Mohave ARC
KA6GMA 56 2 1 274 AZ
Texas Emergency Amateur Communicators
KB5KN 112 2 1 274 STX
El Paso ARC
KC8GOQ 56 2 1 274 WTX
Pasadena RC
KF6RTA 57 2 1 274 LAX
Sierra ARC of The High Mojave
KM6DLI 57 2 1 274 SJV
ARC of Columbia Co.
N1ADM 56 2 1 274 GA
Milwaukee Radio Amateurs' Club
W9RH 62 2 1 274 WI
WA4YL 112 2 1 274 WCF
Mora Open Repeater Assn.
WBØVGI 31 2 1 274 MN
Katy ARS
K5DSM 111 2 1 272 STX
Orange Co. (NY) ARC
KC2VTM 71 2 2 272 ENY
Low Country Contest Club
KE4THX 111 2 1 272 SC
Maple Valley ARC
KG7AUP 111 2 1 272 WWA
Associated Radio Amateurs of Long Beach
KK6KN 111 2 4 272 LAX
Sedalia Pettis AR Klub
KØTV 43 2 1 272 MO
Cherokee ARS
KT4VQ 111 2 1 272 GA
York Region ARC
VE3WY 100 2 1 272 ONS
Peekskill/Cortlandt ARA
W2NYW 111 2 2 272 EPA
Albany ARA
W2XM 69 2 1 272 ENY
Cabarrus ARS
WB4JFS 98 2 1 272 NC
Northeast Maryland AR Contest Soc.
KA3YJM 61 1 1 271 MDC
Broken Arrow ARC
AF5SW 110 2 1 270 OK
Conejo Valley ARC
K3CAQ 60 2 1 270 ME
West Valley ARA
K6WV 33 2 1 270 SCV
Jacksonville ARS
KB9RUG 55 2 1 270 IL
KC5RGQ 55 2 1 270 NM
Montgomery Amateur Club
KR4JY 110 2 1 270 AL
Mercer Co. ARC
KT3P 55 2 1 270 WPA
Carroll Co. Contesters
KT3RR 110 2 1 270 EPA
Peekskill/Cortlandt ARA
N2EAB 60 2 1 270 ENY
Maple Valley ARC
N3R 30 2 1 270 WWA
Raleigh ARS
N4TL 120 1 1 270 NC
Bullitt ARS
NC9W 55 2 1 270 KY
Mid Island Radio Assn.
VE7AX 55 2 1 270 BC
W1NU 67 2 1 270 WMA
Yankee Clipper Contest Club
W1UK 98 2 1 270 CT
Oro Valley ARC
W7TRA 55 2 1 270 AZ
W9MDB 55 2 1 270 IL
L.A. City ACS
WA6SW 110 2 1 270 LAX
Eastern Shore ARC
WAØWHT 55 2 1 270 VA
Deep South ARC
WE5TM 55 2 1 270 AL
Huntsville ARC
AE4M 109 2 1 268 AL
Hazel Park ARC
K8ALH 109 2 1 268 MI
Wisconsin ARC
KC9PIF 109 2 1 268 WI
Arrow Communications Assn.
KEØATA 38 2 1 268 MI
Waltham ARA
KG1T 109 2 1 268 WMA
Williamson Co. ARES
KK4CQD 109 2 2 268 TN
Panama City ARC
KK4PJ 109 2 1 268 NFL
KØVW 109 1 1 268 WI
Saskatoon ARC
VE5RS 56 2 1 268 SK
Providence RA
W1ER 109 2 1 268 EMA
Police AR Team of Westford
AB1HD 54 2 1 266 SFL
Roanoke Valley ARC
AI4FP 108 2 2 266 VA
PAPA System
K9TAD 55 2 1 266 LAX
Sturdy Mem Hospital ARC
KA1EWN 108 2 1 266 EMA
Cuyahoga Falls ARC
KA8BSA 68 2 1 266 OH
Northeast Wireless RC
KC2VKD 29 2 1 266 NLI
KC3PIB 54 2 1 266 WPA
Delta ARC
KC7ND 58 2 1 266 TN
Sparta ARC
KM4FSE 108 2 1 266 NC
KN4BKO 54 2 1 266 NC
Platinum Coast ARS
KN4ZGM 54 2 1 266 SFL
Squaw Island ARC
N2VDE 108 2 1 266 WNY
Florida Contest Group
N4DL 57 2 1 266 CT
N5RWT 54 2 1 266 NM
VE9OA 58 2 1 266 MAR
Old Barney ARC
WA2ACV 54 2 1 266 SNJ
KB7HDX 107 2 1 264 EWA
KD8MRL 60 2 1 264 IL
Northwest ARS
KF5LMJ 7 2 1 264 STX
Muscle Shoals ARC
KN4AEU 57 2 1 264 AL
Gwinnett ARS
N4TRB 105 2 1 264 GA
DuPage ARC
N9DMS 107 2 1 264 IL
Palatine ARES/RACES/AuxComm
N9ITU 107 2 1 264 IL
Wisconsin Valley Radio Assn.
N9LIA 107 2 1 264 WI
North Hills ARC of Pittsburgh
WA2BSG 107 2 1 264 WPA
Federación de Radio Aficionados de Puerto Rico
WP4MPC 62 2 1 264 PR

Hamfesters RC
WA9FTU 213 1 1 263 IL
Palos Verdes ARC
AB9A 53 2 1 262 LAX
Hazel Park ARC
AD8M 106 2 1 262 MI
AG7EM 59 2 1 262 AZ
Timpson Area RC
K5ZMB 28 2 1 262 NTX
East Bay ARC
KD6MZC 53 2 1 262 EB
Lamorinda Area Radio Interest Group
KM6NQX 106 2 1 262 OR
Orange Co. Radio Amateurs & Durham FM Assn.
KW4KZ 106 2 1 262 NC
Longmont ARC
N0RQV 106 2 1 262 CO
Mississauga ARC
VA3TPV 53 2 1 262 GTA
Club Radio Amateur de Québec
VE2AW 106 2 1 262 QC
XRX RC
W2NED 53 2 1 262 WNY
Sumter ARA
W4RDS 53 2 1 262 SC
WB4KFO 106 2 1 262 VA
Northeast Maryland AR Contest Soc.
K3CHF 55 2 1 260 MDC
Mike & Key ARC
KB7THX 105 2 1 260 ORG
Hazel Park ARC
KE8UM 57 2 1 260 MI
Nacogdoches ARC
KI5FIQ 3 2 1 260 NTX
Mid-State ARC
KN9C 105 2 1 260 IN
Long Island CW Club
K0VU 28 2 1 260 MN
St. Louis & Suburban RC
N0AF 105 2 1 260 MO
Falmouth ARA
W1OH 35 2 3 260 EMA
One Old Timer
W1VR 104 2 1 260 NFL
JANET Club
W6OPQ 105 1 1 260 SCV
MAARS
WS0I 210 1 2 260 KS
Nacogdoches ARC
W5NRF 55 1 1 259 NTX
K2ECQ 54 2 1 258 WNY
Ski Country ARC
K4ULD 52 2 1 258 WCF
Hayward RC
K6DAC 36 2 1 258 EB
Butler Co. AR Public Service Group
KA3KST 104 2 1 258 WPA
Skyview Radio Soc.
KB3NSH 52 2 1 258 WPA
Snohomish Co. Hams Club
KC7YE 52 2 1 258 WWA
Northeastern Indiana ARA
KD9KMK 104 2 1 258 IN
Santa Fe Trail ARC
KD0RIU 53 2 1 258 KS
Huron ARA
KE0QEQ 52 2 1 258 SD
Utah ARC
KJ7MEB 54 2 1 258 UT
Forsyth ARC
NI4TG 104 2 1 258 NC
Kings Co. and Annapolis Valley ARCs
VE1LG 27 2 1 258 MAR
Hamilton (ON) ARC
VE3QYV 54 2 1 258 GTA
VE7OM 52 2 1 258 BC
Orange Co. (NY) ARC
W2LGB 84 2 1 258 ENY
Sheboygan Co. ARC
W9TA 102 2 1 258 WI
St. Clair ARC
W9ZS 52 2 1 258 IL
Central Indiana ARA
WA0JTL 52 2 1 258 IN
Ocean Co. ARES
WB2ALJ 52 2 1 258 SNJ
W0NU 102 2 1 258 NE
South Bay ARA
WX6A 104 1 1 258 SCV
Hampden Co. Radio Assn.
K3FEC 103 2 1 256 WMA
Northeast Maryland AR Contest Soc.
K4JDF 128 1 1 256 MDC
Wilderness Road ARC
KA4SWT 103 2 1 256 KY
Boston Valley Simplex Club
KB2JDB 103 2 1 256 WNY
Portage Co. AR Service
KB8TUY 103 2 1 256 OH
East Greenbush ARA
KC2HRO 87 2 1 256 ENY
Williamson Co. ARES
KD4VVC 103 2 1 256 TN
West Fork ARC
KE5BNO 103 2 1 256 NTX
SARA MN
KE0IYN 32 2 1 256 MN
Putnam Co. ARES/RACES
KT9JM 103 2 1 256 IN
Irvine Disaster EmComms
KW6B 28 2 1 256 ORG
N2ST 86 2 1 256 VA
Panama City ARC
N4STC 105 1 1 256 NFL
WA7NE 103 2 1 256 WWA
Mining ARC/St. Paul RC
WA0RKE 103 2 1 256 MN
Ellsworth ARA
N3OA 105 1 2 255 ME
South East Metro ARC
AB0XE 51 2 1 254 MN
AD4OS 60 2 2 254 IA
Cumberland ARC
AF3I 2 2 1 254 EPA
Majors Field ARC
AG5QQ 52 2 1 254 NTX
Columbia (MD) ARA
K3YMI 54 2 1 254 MDC
Mohave ARC
K7RM 51 2 1 254 AZ
Lake Area (TX) ARC
K8AMH 2 2 1 254 NTX
Oak Ridge ARC
K8BYP 119 1 1 254 TN
Radio Club of Tacoma
KA7NWF 102 2 1 254 WWA
Sturdy Mem Hospital ARC
KB1KA 102 2 1 254 RI
Pottstown Area ARC
KB3OZD 52 2 1 254 EPA
KJ4CJP 102 2 1 254 AL
South Mountain Radio Amateurs
N3ACP 102 2 1 254 EPA
Delaware ARA
N4HAI 51 2 1 254 OH
Oro Valley ARC
N6ITY 51 2 1 254 AZ
Brightleaf ARC
N8CQD 51 2 1 254 NC
DuPage ARC
N9IZU 52 2 2 254 IL
Ak-Sar-Ben ARC
N0STN 51 2 1 254 NE
Tennessee Contest Group
NS4X 51 2 1 254 TN
Maple Ridge ARC
VA7VX 51 2 1 254 BC
Club Radio Amateur de Québec
VE2SMS 52 2 1 254 QC
Club Station Répétitrice de Laval
VE2ZS 72 2 1 254 QC
West Seattle ARC
W7ITL 55 2 1 254 WWA
WB9AYW 54 2 1 254 IL
Williamson Co. ARES
WC4DA 52 2 1 254 TN
Mid-State ARC
WU9Y 51 2 1 254 IN
Texas Emergency Amateur Communicators
N5KWD 203 1 1 253 STX
Adams Co. ARS
K3DCS 101 2 1 252 EPA
KC2ELS 57 2 1 252 WWA
Sheriff's Tactical AR Communications
KE4TP 101 2 1 252 WCF
Lodi ARC
KF2VX 72 2 1 252 WNY
KV8Z 36 2 1 252 OH
Peekskill/Cortlandt ARA
N2KZ 1 2 1 252 ENY
Nassau ARC
N2SYE 101 2 1 252 NLI
Toronto ARC
VA3AY 101 2 1 252 GTA
Georgian Bay ARC
VA3TS 101 2 1 252 ONS
Radio Club of Tacoma
W7UUU 27 2 1 252 WWA
Northwest Illinois RC
W9HH 101 2 1 252 IL
West Allis RAC
W9JSP 51 2 1 252 WI
Coos Co. RC
WA7JAW 101 2 1 252 OR
Portage Co. AR Service
WA8US 101 2 1 252 OH
ARC of Columbia Co.
WK4F 51 2 1 252 GA
N4MM 192 1 1 251 VA
North Georgia QRP Club
AA4GA 50 2 1 250 GA
Gainesville ARS
AC4QS 50 2 1 250 NFL
AC7CJ 50 2 1 250 EWA
Wisconsin ARC
AC9JV 100 2 1 250 WI
Northeast Oklahoma Radio Amateurs
AE0X 50 2 1 250 MO
Longmont ARC
AF0W 50 2 1 250 CO
Hop River RC
K1MTD 100 2 1 250 CT
Wireless Assn. of South Hills
K3HCR 100 2 1 250 WPA
Murgas ARC
K3ZK 100 2 1 250 EPA
Alexandria RC
K4LDW 50 2 1 250 VA
Potomac Valley RC
K4MIL 50 2 1 250 VA
K5ABI 100 2 5 250 WTX
Utica Shelby EmComms Assn.
K8JEH 50 2 1 250 MI
North Shore (IL) RC
K9RE 50 2 1 250 IL
Okaw Valley ARC
K9TJR 64 2 1 250 IL
Lake Monroe ARS
KB3JU 50 2 1 250 NFL
Lodi ARC
KE5JTS 100 1 1 250 SJV
KE7GKI 50 2 1 250 AZ
Orange ARC
KG5JTM 100 2 1 250 STX
Hays/Caldwell ARC
KG5UNK 52 2 1 250 STX
Rocky Mountain Ham Radio
K0WSU 100 2 1 250 CO
West Valley ARA
KZ2V 50 2 1 250 SCV
Southern Berkshire ARC
N1XJM 180 1 1 250 ENY
Eastern Shore ARC
N4TIK 100 2 11 250 VA
Marshall Co. ARS
N5INV 100 2 1 250 TN
N8NA 50 2 1 250 DE
Kanawha ARC
N8TMW 100 2 1 250 WV
Keowee Toxaway ARC
N9GSX 100 2 3 250 SC
Western Illinois ARC
N9UPG 50 2 1 250 IL
Port Lavaca ARC
NA5YO 50 2 1 250 STX
Kingman AR CW Operators Club
NN6T 25 2 1 250 AZ
Mid-MO ARC
N0TKN 50 2 1 250 MO
Heart of America RC
N0UYN 50 2 1 250 MO
Oro Valley ARC
NU7Y 50 2 1 250 AZ
Hamilton (ON) ARC
VE3BK 100 2 1 250 GTA
Barrie ARC
VE3MKX 50 2 1 250 ONE
W1AVK 200 1 1 250 CT
Butler Co. AR Public Service Group
W3TXG 74 2 1 250 WPA
Emerald Coast ARA
W4DSL 100 2 1 250 NFL
Cape Fear ARS
W4MLW 50 2 1 250 NC
Deep South ARC
W4WMM 100 2 1 250 AL
Rockwall ARC
W5RTX 50 2 1 250 NTX
South Orange ARA
W6EDT 39 2 1 250 ORG
Orange Co. (CA) ARC
W6NKU 50 2 1 250 ORG
South Lyon Area ARC
W8XH 100 2 1 250 MI
Liverpool Amateur Repeater Club
WA2ZVN 50 2 1 250 WNY
Cleveland ARC
WA5CHJ 50 2 1 250 TN
SCAN/Red Ant Annihilators
WA6AUF 50 2 1 250 STX
Platte Co. ARG
W0JSH 100 2 1 250 MO
Albemarle ARS
K4LXN 50 2 1 248 NC
Williamson Co. ARES
KC1DWP 99 2 1 248 TN
Stratford ARC
W1RPG 99 2 1 248 CT
WA7BNM 52 2 1 248 LAX
Motor City RC
WA8FRD 99 2 1 248 MI
Oak Hill ARC
WZ5BBS 50 2 1 248 STX
Hamfesters RC
AB9MZ 24 2 2 246 IL
AI6MW 49 2 1 246 SB
K3RSS 98 2 1 246 MDC
Sussex ARA
KE3E 50 2 1 246 DE
Mount Vernon (VA) ARC
KK4ODQ 49 2 1 246 VA
L.A. City ACS
KM6JWV 48 2 1 246 LAX
Carbon Co. DXCC
K0XM 49 2 1 246 MO
Central Massachusetts ARA
N1FSK 49 2 1 246 WMA
Explorer Post 599
N7JK 48 2 1 246 AZ
N9RMH 98 2 1 246 IN
Framingham ARA
VE3IDX/W1 49 2 1 246 EMA
Queen City Emergency Net
W8WTD 82 2 1 246 OH
Lake Monroe ARS
WA3SXX 49 2 1 246 NFL
Kicked Back Contesters Club
WD5ACR 140 1 1 246 CO
KD6LZV 97 2 1 244 SJV
Tri-City ARC of CT
N1FAM 97 2 1 244 CT
Orange Co. (CA) ARC
N2VAJ 47 2 1 244 ORG
Southern Peninsula AR Klub
W4HRL 68 2 1 244 VA
Clallam Co. ARC
W7WEC 97 2 1 244 WWA
WD0FHK 47 2 1 244 KS
Explorer Post 599
KI7DUV 173 1 1 243 AZ
Williamsburg Area ARC
AJ4XV 96 2 1 242 VA
K5ND 48 2 1 242 NTX
South Canadian ARS
K5RHA 96 2 1 242 OK
United Radio Amateur Club
K6NT 48 2 1 242 LAX
K7VBY 23 2 1 242 OR
K9WWW 46 2 1 242 WWA
Preston Co. ARC
KC8KCI 96 2 2 242 WV
Lake Area (SD) Radio Klub
KE0EPY 35 2 1 242 SD
Mike & Key ARC
KG7DAB 96 2 1 242 WWA
KT5MR 48 2 1 242 STX
Butler Co. AR Public Service Group
N3OIK 96 2 1 242 WPA
Utica Shelby EmComms Assn.
N8KZ 63 2 1 242 MI
Northwest Indiana DX Club
N9ID 48 2 1 242 IN
Wireless Soc. of Southern Maine
NK1I 48 2 1 242 ME
Tri-Lakes ARC
NY0J 48 2 1 242 MO
London ARC
VE3PNK 96 2 1 242 ONS
Hays/Caldwell ARC
W5ERX 50 2 1 242 STX
Lake Conroe ARC
W5JAN 48 2 1 242 STX
AE6NN 50 1 1 241 ORG
AI4RF 190 1 1 240 NC
Newark Ohio ARA
KD8SCL 47 2 1 240 OH
Chippewa Valley VHF Contesters
N9TTX 120 2 1 240 WI
Union Métropolitaine des Sans-filistes de Montréal
VE2FAB 44 2 1 240 QC
North Shore (BC) ARC
VE7EF 95 2 1 240 BC
State Line RC
AC2BI 74 2 3 238 EPA
Niagara Frontier Radiosport
AC2FA 47 2 1 238 WNY
East Bay ARC
KE6RS 49 2 1 238 EB
Lake Area (TX) ARC
KG5BCW 14 2 1 238 NTX
Butler Co. AR Public Service Group
N3HRX 94 2 1 238 WPA
N7VM 54 2 1 238 SDG
Northeast Tarrant ARC
W5FOR 94 2 1 238 MI
Great South Bay ARC
WB2QGZ 94 2 1 238 NLI
San Francisco RC
WB7WBB 47 2 1 238 SCV
Straight Key Century Club
W0NZZ 53 2 1 238 STX
Central Missouri Radio Assn.
W0ZH 94 2 1 238 MO
ARC EmComm Service
KD2OID 43 2 6 236 NLI
Desert RATS of Palm Springs
KD6SEC 64 2 1 236 ORG
Peconic ARC
N2YIB 93 2 1 236 NLI
Silvercreek ARA
N8CD 47 2 1 236 OH
North Ottawa ARC
N8GMY 47 2 1 236 MI
Central Illinois RC
N9TO 134 1 1 236 IL

Murphys Marauders
NB1U 52 2 1 236 RI
Columbia (OR) ARA
W7CO 150 1 1 236 OR
Edmond ARS
WØHGJ 49 2 1 236 OK
Marple Newtown ARC & Mobile Sixers RC
K2HA 92 2 1 234 EPA
Hoosier Hills Ham Club
K9US 46 2 1 234 IN
Bellbrook ARC
KD8JQE 92 2 1 234 OH
KL7J 46 2 1 234 AK
Alexandria RC
KW4UJ 92 2 1 234 VA
N1JFU 46 2 1 234 EMA
Raleigh ARS
N3LTV 23 2 1 234 NC
N3XZ 114 1 1 234 EPA
NEMO ARC
NØBEX 46 2 2 234 MO
NØKJI 46 2 1 234 CO
Hughes ARC
NY6Y 46 2 1 234 LAX
Campbell River ARS
VA7QI 184 1 1 234 BC
Prescott Russell ARC
VE3NPI 46 2 1 234 ONE
Paso Robles ARC
W6YOY 46 2 1 234 SCV
W7VA 92 2 1 234 OR
WAØLIS 80 2 3 234 IL
Orange Co. Radio Amateurs & Durham FM Assn.
AJ2X 91 2 1 232 NC
Old Barney ARC
K2GMT 91 2 1 232 SNJ
Fair Lawn ARC
K3KKH 80 2 1 232 NNJ
Sun City ARC
K5AZZ 65 2 1 232 WTX
Southern Peninsula AR Klub
KC6ISS 38 2 1 232 VA
Preston Co. ARC
KC8YSO 41 2 1 232 WV
Central Ohio Ops Klub Extra Novice
KD8DZ 91 2 1 232 OH
Prairie Dog ARC
N7AXW 91 2 1 232 SD
Fox River Radio League
N9XP 69 2 20 232 IL
Kemptville ARG
VA3XAR 54 2 1 232 ONE
Foothills ARS (AB)
VE6JHH 47 2 1 232 AB
Parma RC
W8KU 21 2 1 232 OH
Hualapai ARC
WA7DHQ 48 2 1 232 AZ
Black Diamond ARC
WB8CNN 41 2 1 232 WV
WEØDX 77 2 1 232 MO
AD6GE 50 2 1 230 ORG
Waltham ARA
K1CE 45 2 1 230 NFL
Somerset Co. ARC
K3VL 90 2 1 230 WPA
Virginia Beach ARC/Virginia DX Century Club
K4AVK 60 2 1 230 VA
K4FYM 135 1 1 230 GA
Fort Wayne RC
KB9OZI 90 2 1 230 IN
Broughton Memorial Field Day Group
KD2QKU 90 2 1 230 ENY
Radio Amateurs of Skagit Co.
KG7MYX 5 2 1 230 WWA
Chesapeake AR Service
KK4OXH 40 2 1 230 VA
KØGOB 90 2 1 230 MO
Long Island CW Club
N1CC 45 2 1 230 AZ
N3RSY 45 2 1 230 EPA
Alford Memorial RC
N4EWT 20 2 1 230 GA
Watauga ARC
N4SCM 40 2 1 230 NC
Stephen F. Austin RC
N5RWK 50 2 1 230 STX
Tennessee Contest Group
W4KW 90 2 1 230 TN
NCPARC
WB2ONZ 40 2 1 230 NLI
Raytown ARC
WØAJ 45 2 1 230 MO
K9KMS 89 2 1 228 WI
Goshen ARC
K9WPV 89 2 1 228 IN
Northeast Tarrant ARC
KCØL 89 2 1 228 NTX
KE4KVC 57 2 1 228 TN
Aeronautical Center ARC
KF5GTX 78 1 1 228 OK
KF7DX 57 2 3 228 WWA
Wilderness Road ARC
KU4KD 89 2 1 228 KY
Cass Co. ARC
KV9N 70 2 1 228 IN
Montgomery Amateur Club
KW4ZD 39 2 1 228 AL
Sturdy Memorial Hospital ARC
N1ATM 89 2 2 228 EMA
Maple Valley ARC
NK7N 29 2 1 228 WWA
Radio Operadores Del Este
NP4D 49 2 1 228 PR
Saskatoon ARC
VE5MIK 39 2 1 228 SK
Mecklenburg ARS
W4VOX 114 1 1 228 NC
Conejo Valley ARC
AD6SF 88 2 1 226 SB
Palouse Hills ARC
AG7CC 55 2 1 226 EWA
The Villages ARC
K4ZDM 56 2 1 226 NFL
St. Louis & Suburban RC
KDØJBN 44 2 1 226 MO
Midland (TX) ARC
KG5KUQ 88 2 1 226 WTX
Portsmouth (OH) RC
N8MRB 34 2 1 226 OH
Southwest Mississippi ARC
N9UTJ 88 2 1 226 MS
North Shore (BC) ARC
VE7EE 38 2 1 226 BC
Spartanburg ARC
W4RR 176 1 1 226 SC
Dillman's AR Experimenters
W9WO 88 1 1 226 IN
Cherokee ARS
WD8IPE 88 2 1 226 GA
Housatonic ARC
WE1M 88 2 1 226 CT
Hassayampa AR Klub
KE6GFI 175 1 2 225 AZ
AJ4EY 37 2 1 224 VA
Western Washington DX Club
K7RA 48 2 1 224 WWA
Int'l Soc. for AR Innovation
K8EC 69 2 1 224 OH
Fulton Co. ARC
KA9YMG 87 2 1 224 IL
Nashoba Valley ARC
KB1HFT 87 1 1 224 EMA
Twin State RC
KC1GDW 47 2 2 224 NH
Chesapeake AR Service
KM4ALL 87 2 1 224 VA
Brandon ARS
KW4MB 85 2 1 224 WCF
N1IA 44 2 1 224 NC
N5WWY 61 2 1 224 LA
Orlando ARC
NE4H 63 2 1 224 NFL
VA7GP 110 1 1 224 BC
Univ of Alabama RC W4UAL
W4CCF 174 1 1 224 AL
WØCOE 87 2 1 224 MN
Lancaster ARC
AA2PR 73 1 1 223 WNY
Southern Peninsula AR Klub
AA4AV 86 2 1 222 VA
Albemarle ARC
AD6JV 43 2 1 222 VA
AJ4VE 172 1 1 222 GA
Tamiami ARC
K3SY 49 2 1 222 WCF
Platinum Coast ARS
K4JC 52 2 1 222 SFL
K4TAX 43 2 1 222 TN
K7YL 51 2 1 222 OR
Fort Wayne RC
K9EA 142 1 1 222 IN
Vienna Wireless Soc.
KA3RQR 36 2 1 222 VA
Columbus ARC
KM4TLR 56 2 1 222 GA
Fullerton RC
KØOV 49 2 1 222 ORG
Clallam Co. ARC
N1SB 43 2 1 222 WWA
Cape Fear ARS
N4KAY 86 2 1 222 NC
Western Carolina ARS
N4SET 38 2 1 222 NC
DFW Contest Group
N5CHA 46 2 1 222 NTX
Four Lakes ARC
NM9O 36 2 1 222 WI
VE2FD 43 2 1 222 QC
Florida Contest Group
W4GKA 43 2 1 222 SFL
Fayette Co. ARC
W4OGM 36 2 1 222 GA
Lake Area (TX) ARC
W5FQP 47 2 1 222 NTX
Steubenville-Weirton ARC
W8PAB 85 2 1 222 OH
Sierra Foothills ARC
WB6LPJ 43 2 1 222 SV
AC4DP 54 2 1 220 GA
Police AR Team of Westford
K1PAK 85 2 1 220 EMA
Rochester (NY) DX Assn.
K2DV 85 2 2 220 WCF
National Electronics Museum RC
K3YH 85 2 1 220 MDC
Emerald Coast ARA
K4KBD 85 2 1 220 NFL
KC1KHH 85 2 1 220 WI
Bellbrook ARC
KD8YNG 85 2 1 220 OH
KE4IFE 35 2 1 220 SC
N3MWQ 56 1 1 220 DE
North Richland Hills ARC
N5JOU 85 2 1 220 NTX
Pine State ARC
W1JFF 85 2 1 220 ME
Lynchburg ARC
W3RWB 85 2 1 220 VA
Milwaukee Repeater Club
WB9EFP 60 2 1 220 WI
Cambridge ARA
K8SLJ 84 2 1 218 OH
North Shore (IL) RC
K9SS 42 2 1 218 IL
The Villages ARC
KB8SB 42 2 1 218 NFL
Wiregrass ARC
KC4HW 42 2 1 218 AL
The Villages ARC
KF4CQ 42 2 1 218 NFL
Fair Lawn ARC
KG2AE 42 2 1 218 NNJ
Orange Co. Radio Amateurs & Durham FM Assn.
KG4CFX 17 2 1 218 NC
KO3F 42 2 1 218 SDG
Meriden ARC
N1YLN 34 2 2 218 CT
Indiana Co. ARC
N3DZ 84 2 1 218 WPA
Arlington (VA) ARC
NW3V 23 2 1 218 VA
EPCom
VE7PCE 34 2 2 218 BC
Peekskill/Cortlandt ARA
W2VJ 42 2 1 218 ENY
W5DD 75 2 1 218 STX
WA5JM 84 2 1 218 CO
TUSCO ARC
WA8SHP 84 2 1 218 OH
Jefferson (LA) ARC
WF9M 42 2 1 218 LA
Arlington ARC
WN5S 42 2 1 218 NTX
Mound ARA
K8MJH 167 1 1 217 OH
Martin Co. ARA
K4GMW 83 2 1 216 SFL
Tri-Co. ARC (TX)
K5DC 52 2 1 216 NTX
Arlington ARC
K5NNL 22 2 1 216 NTX
South Bay ARA
K6WW 54 2 1 216 EB
Capital City ARC
K7HLN 49 2 1 216 MT
Bloomington ARC
K9DIY 83 2 1 216 IN
Northwest ARS
KC5MW 83 2 1 216 STX
High Desert ARG
KF7MAX 83 2 1 216 OR
KJ6OIL 83 2 1 216 SB
KW4LU 33 2 1 216 TN
Hampden Co. Radio Assn.
N1JIE 33 2 1 216 WMA
N7DS 45 2 1 216 OR
Nortown ARC
VA3EJF 83 2 1 216 GTA
Toronto ARC
VA3TRK 83 2 1 216 GTA
Arkansas River Valley ARF
KB5FLA 165 1 1 215 AR
AA4RA 60 2 1 214 SC
Twin State RC
AB1XQ 82 2 1 214 VT
Nashua Area Radio Soc.
AC1FX 82 2 1 214 NH
Lynchburg ARC
AG2N 82 2 1 214 VA
Onslow ARC Inc.
K4BWM 41 2 1 214 NC
Cuyahoga Falls ARC
K8MAL 82 2 1 214 OH
Great Bay RA
KC1EOT 32 2 1 214 NH
KC9IC 41 2 1 214 AZ
McKean Co. ARC
KD2LYE 164 1 1 214 WNY
Cherryville Repeater Assn, II
KD2OAP 32 2 1 214 NNJ
KDØLOS 32 2 1 214 MO
Olive Branch ARC/Chickasaw ARA
KM4AEM 82 2 1 214 TN
North Fulton ARL
N4SEC 32 2 1 214 GA
N5KRC 41 2 1 214 STX
Lafayette DX Assn.
N9IP 32 2 1 214 IN
Barrie ARC
VE3DLS 82 2 1 214 ONS
Alamance ARC
W1LZ 32 2 1 214 NC
Great South Bay ARC
W2RV 82 2 1 214 NLI
Potomac Valley RC
W3IUU 41 2 1 214 MDC
Orange Co. (CA) ARC
W6ZE 82 2 1 214 ORG
EmComms Assn. of St. Charles
WDØEFP 41 2 1 214 MO
WM5F 41 2 1 214 ID
Murgas ARC
K3VQR 81 2 1 212 EPA
Short Mountain Repeater Club
K4T 81 2 1 212 TN
Desert RATS of Palm Springs
KA6UGS 60 2 1 212 ORG
Montachusett ARA
KB1LRL 70 2 1 212 WMA
KE6VFJ 46 2 1 212 LAX
Spokane DX Assn.
KI7DG 96 1 1 212 EWA
Delta ARC
KK4VPT 72 2 1 212 TN
Holmesburg ARC
N3ZZK 81 2 1 212 EPA
N5KO 81 1 1 212 SCV
Mercer Co. ARC
N8MP 81 2 1 212 OH
Mid-State ARC
N9EJR 74 2 1 212 IN
West Allis RAC
WA9AXQ 81 2 1 212 WI
WJ4HCP 50 2 1 212 TN
South East Contest Club
W3PJ 161 1 1 211 GA
Delta ARC
AB4NH 80 2 1 210 TN
MVARA
AC9EV 30 2 1 210 WI
K1DRH 40 2 1 210 EMA
K6VVK 40 2 1 210 SCV
Capital City ARC
K7MT 26 2 1 210 MT
Mitchell ARC
KBØMK 80 2 1 210 SD
Northeast Tarrant ARC
KC2US 30 2 1 210 NTX
Brunswick Shores ARC
KI4KK 15 2 1 210 NC
Lakes Area (TX) ARC
KI5CDP 40 2 1 210 STX
El Dorado Co. ARC
KK6PPP 30 2 2 210 SV
South Canadian ARS
N5UWY 40 2 1 210 OK
PODXS 070
N6MG 40 2 1 210 LAX
Lodi ARC
N6ZW 40 2 1 210 SJV
Straight Key Century Club
N9KJU 74 2 1 210 IL
Clearwater ARS/St. Petersburg ARC/Upper Pinellas ARC
NF1T 40 2 1 210 WCF
Scott Co. (KY) AR Service
NO4T 40 2 1 210 KY
Platte Co. ARG
NØEYE 66 2 1 210 MO
Great River ARC
NØYB 30 2 1 210 IA
St. Croix ARC (ME)
W1DEY 105 2 1 210 ME
Thunder Bay ARC
W1UP 40 2 1 210 MI
Orange Co. Radio Amateurs & Durham FM Assn.
W4KSZ 80 2 1 210 NC
North Richland Hills ARC
W5GT 30 2 1 210 NTX
Kansas City Contest Club
W7RY 40 2 1 210 MO
Bellbrook ARC
W8LLY 10 2 1 210 OH
MM Expeditionary Force
W9NJY 44 2 2 210 WI
Virginia Beach ARC/Virginia DX Century Club
WA4TMJ 40 2 1 210 VA
WAØVPJ 40 2 1 210 MN
Sunnyvale ARES
WB6PVU 40 2 1 210 SCV
Penn Wireless Assn.
WE3F 80 2 1 210 EPA

Nassau ARC
WY2P 30 2 1 210 EPA
Vienna Wireless Soc
K4FBI 21 2 1 208 VA
Tellico Lake ARC
K4MJF 29 2 1 208 TN
San Fernando Valley ARC
K6ZGW 40 2 1 208 LAX
KK5RW 79 2 1 208 STX
Hiawatha Valley ARC
KØZBI 28 2 1 208 MN
Chautauqua And Erie ARC
N2JYG 29 2 1 208 WNY
Scott Co. ARC
N5SPJ 16 2 1 208 MS
York Region ARC
VE3UT 79 2 1 208 ONE
Brightleaf ARC
W3LPR 60 2 1 208 NC
Cowtown ARC
WA5QGD 29 2 1 208 NTX
Ak-Sar-Ben ARC
WDØDEZ 29 2 5 208 NE
David Sarnoff ARC
K2PAT 57 1 1 207 NNJ
Central Oregon Coast ARC
K8OLS 57 1 1 207 OR
Guelph ARC
VA3PDC 157 1 1 207 ONS
Athens (GA) RC
AC4SH 78 2 1 206 GA
Auburn Area EmComms Team
AD7XS 18 2 1 206 WWA
Santa Clara Co. ARA
AI6JJ 39 2 1 206 SCV
Valley and Massanutten ARA
AK4VQ 78 2 1 206 VA
K2SAQ 14 2 1 206 NTX
Cherryville Repeater Assn. II
K2TZ 41 2 1 206 NNJ
The Villages ARC
K4ASN 15 2 1 206 NFL
Lucas ARC
K5MGB 40 2 1 206 NTX
Arizona Outlaws Contest Club
K7MY 42 2 1 206 AZ
K8SAS 156 1 1 206 OH
Hazel Park ARC
K8WU 44 2 1 206 MI
Cass Co. ARC
KB9WSL 78 2 1 206 IN
Hiawatha Valley ARC
KC5SAM 40 2 1 206 MN
Albany ARA
KD2SPL 28 2 1 206 ENY
Radio Amateur Club of Knoxville
KD4AYU 95 1 1 206 TN
Bellbrook ARC
KD8VIG 78 2 2 206 OH
KD9LVR 57 2 1 206 WI
Northeast Louisiana ARC
KG5TBT 78 2 1 206 LA
KH6GK 39 2 1 206 SDG
West Seattle ARC
KJ7JXM 17 2 1 206 WWA
Barstow ARC
KK6UHN 78 2 1 206 ORG
Lodi ARC
N3GTY 39 2 1 206 NC
Mila's Field Day Group
N4PY 101 1 1 206 NC
San Fernando Valley ARC
N6DEC 55 2 1 206 LAX
Nortown ARC
VE3ENA 78 2 1 206 GTA
Ottawa ARC
VE3QC 39 2 1 206 ONE
Oro Valley ARC
W1SR 39 2 1 206 AZ
Broughton Memorial Field Day Group
W2ALB 39 2 1 206 ENY
Tennessee Contest Group
W4BCG 41 2 1 206 TN
W4JNH 78 2 1 206 WCF
Key City ARC
W5WI 78 2 1 206 WTX
WA5PCR 39 2 1 206 NTX
Ole Virginia Hams
WB6UIE 39 2 1 206 VA
Yavapai ARC
WB9VGJ 39 2 1 206 AZ
Lincoln Hills ARC
WR6D 39 2 1 206 SV
Panhandle ARC
K5KBV 155 1 1 205 WTX
Wisconsin Valley Radio Assn.
AA9RB 27 2 1 204 WI
Mohawk ARC
KA1GCN 22 2 1 204 WMA
KAØAIG 77 2 1 204 MO
Ocean Monmouth ARC
KC2SVS 27 2 1 204 SNJ
Richfield ARC
KCØTJ 67 2 13 204 MN
West Seattle ARC
KI7LBE 50 2 1 204 WWA
Williamsburg Area ARC
KT4JB 40 2 1 204 VA
Alexandria RC
N4CWP 77 2 1 204 VA
Hualapai ARC
N7G 54 1 1 204 AZ
Niagara Peninsula ARC
VE3XC 27 2 1 204 GTA
Long Island CW Club
W5NWT 40 2 1 204 NTX
Wayne ARC
W8GMF 48 2 1 204 OH
WM1G 75 2 1 204 EMA
Aeronautical Center ARC
WV6T 77 2 1 204 OK
Ellis Co. ARC
AD5DJ 76 2 1 202 NTX
ARC of Butts Co.
AK4EM 76 2 1 202 GA
Lake Area (TX) ARC
K5PTB 38 2 1 202 NTX
REDXA/MARS
K6JS 38 2 1 202 SF
Monroe Co. Radio Communications Assn.
K8EBI 26 2 1 202 MI
Great South Bay ARC
KC2ZQO 8 2 1 202 NLI
Columbia (MD) ARA
KC3JPP 76 2 1 202 MDC
KD9KNJ 76 2 1 202 IN
American Legion Post 42 RC
KE4KBM 38 2 1 202 KY
Oakland Radio Communication Assn.
KK6KZG 26 2 1 202 EB
GEARS
N6FAV 46 2 1 202 SV
Scarborough ARC
VE3CNA 76 2 1 202 ONS
VE3EJM 76 2 1 202 ONS
VE6KJA 76 2 1 202 AB
South Jersey Radio Assn.
W2MC 26 2 1 202 EPA
Gwinnett ARS
WB4WTN 76 2 1 202 GA
Fair Lawn ARC
WO2W 11 2 1 202 NNJ
SDGARES
AF6GM 53 2 1 200 SDG
Framingham ARA
K1NDF 75 1 1 200 EMA
West Essex ARC
K2NNN 75 2 1 200 NNJ
Woodmont ARA
KB1ZYI 75 2 1 200 CT
Chenango Valley ARA
KB2YSI 75 2 1 200 WNY
Livonia ARC
KD8KTF 75 2 1 200 MI
KT9X 48 2 1 200 NV
Jefferson Co. (WA) ARC
N7TPR 25 2 1 200 WWA
Dial RC of Middletown
N8EH 25 2 1 200 OH
VA3KRT 75 2 1 200 ONE
Halifax ARC
VE1SQ 75 2 1 200 MAR
Sterling Park ARC
W4KLS 75 2 1 200 VA
McMinnville ARC
WB6RVP 48 2 1 200 OR
Newton ARA
WØYNI 75 2 1 200 IA
L.A. City ACS
KK6DA 149 1 1 199 LAX
Orange Co. (CA) ARC
AF6C 74 2 1 198 ORG
Central Massachusetts ARA
AI1G 37 2 1 198 WMA
K7GAN 37 2 1 198 WWA
River Bend Wireless Operators Club
K9WYF 74 2 1 198 IL
Newark Ohio ARA
KA8HKC 24 2 1 198 OH
South East Metro ARC
KA8VHF 74 2 1 198 MN
New Providence ARC
KC2OSR 74 2 1 198 NNJ
220 MHz Guys
KC9WUV 74 2 1 198 IL
Old Barney ARC
KE2NN 37 2 1 198 SNJ
Cuyahoga Falls ARC
KE8CTC 74 2 1 198 OH
N1ADX 74 2 1 198 WMA
Chandler Ham RC
N7CHN 37 2 1 198 AZ
NOARS
N8FDY 37 2 1 198 OH
South Wake ARC
N9PGG 74 2 1 198 NC
Ottawa Valley Mobile RC
VE3KJQ 37 2 1 198 ONE
Ottawa Valley Mobile RC
VE3NLW 37 2 1 198 ONE
The Villages ARC
W4RJA 60 2 1 198 NFL
Ham Radio Outlet of Virginia ARC
W4SHG 37 2 1 198 VA
Ventura Co. ARS
W6NCT 74 2 1 198 SB
Colorado QRP Club
WA6MOK 37 2 1 198 CO
Utah DX Assn.
WA7BKD 37 2 1 198 UT
Mahoning Valley ARA
WA8ZLK 74 2 1 198 OH
Cove Repeater Assn.
WB4J 74 2 1 198 NTX
PAPA System
WB6WUW 74 2 1 198 ORG
Sun City ARC
WB8LBZ 118 1 1 198 WTX
The Villages ARC
NØSMX 101 1 1 197 NFL
570-V Connection
WA3WNT 147 1 1 197 WPA
OARC ARC
AA5UY 18 2 1 196 LA
South Mountain Radio Amateurs
K3ZR 138 1 1 196 EPA
Chesapeake AR Service
K4CNH 23 2 1 196 VA
K1USN RC
KC1G 40 2 1 196 EMA
EWEphoria RC
KC8MLB 23 2 1 196 NFL
Nixa ARC
KQØQ 73 2 1 196 MO
West Tennessee ARS
N4JDN 73 2 1 196 TN
Williamson Co. ARES
NM4N 65 2 1 196 TN
Straight Key Century Club
VA7ES 67 2 1 196 BC
VE4WRK 37 2 1 196 MB
Sierra ARC of The High Mojave
W6DQ 69 2 2 196 SJV
Bellevue ARC
AAØZP 36 2 1 194 NE
Charleston ARS
AB4UG 22 2 1 194 SC
AB8FJ 36 2 1 194 OH
Santa Fe ARES
K5ZX 72 2 1 194 NM
Grand Strand ARC
KA4FVE 72 2 1 194 SC
SLSRC
KDØCIV 1 2 1 194 MO
KE4TH 36 2 1 194 UT
KE8CSW 72 2 1 194 OH
Mahoning Valley ARA
KE8KT 72 2 1 194 OH
Escondido ARS
KF6SJ 36 2 1 194 SDG
Maui ARC
KH6UU 36 2 1 194 PAC
Southwest Idaho ARC
KJ7NYE 36 2 1 194 ID
Federación de Radio Aficionados de Puerto Rico
KP4RMG 41 2 1 194 PR
Cochise ARA
KX6X 40 2 1 194 AZ
Northern Kentucky ARC
N4YHC 50 2 2 194 KY
Central Illinois RC
N9CKL 72 2 1 194 IL
Lynchburg ARC
NN4RB 22 2 1 194 VA
Kingston Amateurs
VE3KBF 72 2 1 194 ONE
Mississauga ARC
VE3YV 61 2 1 194 ONN
Watauga ARC
W4ZW 22 2 1 194 NC
Utah Valley ARC
W7BG 72 2 1 194 UT
Peak Radio Assn.
W7RIS 144 1 1 194 OR
Lake Area (TX) ARC
AF5RS 21 2 1 192 NTX
Oro Valley ARC
K7ADX 43 2 1 192 AZ
Cochise ARA
K7DTB 71 2 1 192 AZ
Alliance ARC
K8DXR 71 2 1 192 OH
Portage Co. AR Service
KA8TOA 71 2 1 192 OH
KD9GOL 49 2 1 192 IL
KG4TOU 31 2 1 192 WWA
Coconino ARC
KG7PAP 71 2 20 192 AZ
Gwinnett ARS
N4COR 36 2 1 192 GA
Owatonna Steele Co. ARC
NØMDC 71 2 1 192 MN
NØORQ 71 2 1 192 CO
Quinte & Prince Edward RCs
VE3OX 75 2 7 192 ONE
Charlotte ARC
W4DXL 71 2 1 192 NC
OCAPA
W5TJS 71 2 1 192 OK
Preble ARA
W8DCF 40 2 1 192 LA
W6TRW ARC
WA2KDL 38 2 1 192 LAX
WA6DNR 21 2 1 192 SF
Liverpool Amateur Repeater Club
WB2DVE 71 2 1 192 WNY
West Chester ARA
K8DEV 140 1 1 190 OH
Des Moines Radio Amateur Assn.
KAØDOS 20 2 1 190 IA
Troy ARA
KB2KDY 70 2 1 190 ENY
Ski Country ARC
KBØHP 40 2 1 190 CO
Waltham ARA
KC1GWX 35 2 1 190 EMA
Hampden Co. Radio Assn.
KC1V 35 2 1 190 CT
Fox Cities ARC
KC9VLP 20 2 1 190 WI
Nacogdoches ARC
KD5FEE 70 2 1 190 NTX
570-V Connection
KE2VO 70 2 1 190 WNY
Lakeland ARC
KI4CDY 70 2 1 190 WCF
Mound ARA
KM8N 70 2 1 190 OH
Sun City Hilton Head ARC
KN8F 70 2 1 190 SC
Shoreline ARC
N1KSY 70 2 1 190 CT
Mount Diablo ARC
N6ORB 67 2 1 190 EB
Steubenville-Weirton ARC
N8GD 35 2 1 190 OH
Clark Co. (WA) ARC
NS7U 70 2 1 190 WWA
Toronto ARC
VA3LDM 39 2 1 190 GTA
York Region ARC
VE3LRK 20 2 1 190 GTA
Oakville ARC
VE7KAJ 35 2 1 190 BC
Richmond ARC
VE7LIO 35 2 1 190 BC
Algonquin ARC
W1HFP 70 2 1 190 EMA
W4DAI 70 2 2 190 AL
Topanga Disaster Radio Team
W6TOP 10 2 1 190 LAX
WA2MFU 70 2 1 190 GA
WB9IRF 60 2 1 190 AZ
Columbia (SC) ARC
WD4DCW 70 2 1 190 SC
Hub City ARC
WDØHWL 20 2 1 190 SD
Katy ARS
AE5TG 36 2 1 188 STX
Meriden ARC
K1JCF 38 2 1 188 CT
Sierra Intermountain Emergency Radio Assn.
K1SCN 16 2 1 188 NV
LaGrange ARC
K4EAK 43 2 1 188 GA
K4MDI 69 2 1 188 SC
KB9RFU 69 2 1 188 IL
Straight Key Century Club
KD8VSQ 69 1 1 188 MI
Ham Assn. of Mesquite
KF5VAV 9 2 4 188 NTX
PAPA System
KN6IUW 19 2 1 188 ORG
Vienna Wireless Soc.
KX4QY 35 2 1 188 VA
N1OPF 69 2 1 188 EMA
Grand Rapids ARA
N8UXN 69 2 1 188 MI
Peconic ARC
NY2NY 69 1 1 188 NLI
3730 Group
VE3ARD 19 2 2 188 GTA
Ottawa Valley Mobile RC
VE3EUS 44 2 1 188 ONE
WA3IDX 40 2 1 188 KY
KC3NPK 81 1 1 187 WPA
Central Missouri Radio Assn.
AAØB 34 2 2 186 MO
Hazel Park ARC
KB5OO 68 2 1 186 MI
Jayhawk ARS
KBØIDB 68 2 1 186 KS
Brazos Valley ARC
KD5FBA 68 2 1 186 STX
Bellbrook ARC
KD8OPN 136 1 1 186 OH

Coon Valley ARC
KE0RG 68 2 1 186 IA
Issaquah ARC
KI7TTX 34 2 1 186 WWA
KK4T 68 2 1 186 NC
Maury ARC
KM1Z 34 2 1 186 TN
Vienna Wireless Soc.
KM4LHZ 13 2 1 186 VA
Albemarle ARC
KN4TBG 34 2 1 186 VA
Parker Radio Assn.
K0VAX 42 2 1 186 CO
Calvert ARA
N3PPH 34 2 1 186 MDC
Guelph ARC
VE3JVG 62 2 1 186 ONS
Murgas ARC
W3DZH 50 2 1 186 EPA
Montgomery ARC/Damascus ECT
W3TMS 136 1 1 186 MDC
Huntsville ARC
W4VPZ 68 2 1 186 AL
Yavapai ARC
W7SUA 34 2 1 186 AZ
AE9LL 65 2 1 184 IN
K1AUS 47 2 1 184 MT
Lynchburg ARC
K4YCR 67 2 1 184 VA
Portage Co. AR Service
K8YLK 67 2 1 184 OH
Arrowhead Radio Amateur Club
KC0WDQ 17 2 1 184 MN
Conejo Valley ARC
KD6IJF 17 2 1 184 SB
Radio Soc. of Tucson
KE7DX 17 2 1 184 AZ
Silver Springs RC
KN4MIV 67 2 1 184 NFL
Oro Valley ARC
N7MXO 42 2 1 184 AZ
Panama City ARC
NZ2I 65 2 1 184 NFL
Ottawa Valley Mobile RC
VA3LJS 67 2 1 184 ONE
Red River Valley ARC
WB5JT 67 2 1 184 NTX
Stamford ARA
N1CM 33 1 1 183 CT
Benicia ARC
AA6AM 59 2 1 182 EB
Lake ARA
AC2KW 33 2 1 182 NFL
K6MDS 66 2 1 182 SJV
Wheaton Community Radio Amateurs
KA3HSW 16 2 1 182 IL
Saratoga Co. ARA
KC2NXC 33 2 1 182 ENY
River Bend Wireless Operators Club
KD9JUP 16 2 1 182 IL
Edmonds Woodway ARC
KM7O 33 2 1 182 WWA
KN4YYY 33 2 1 182 NFL
SDGARES
N8KBC 33 2 1 182 SDG
Livonia ARC
N8RI 33 2 1 182 MI
Aroostook ARA
NG1F 16 2 1 182 ME
Granite State ARA
NI1E 33 2 1 182 NH
Mid-MO ARC
N0LBY 66 1 1 182 MO
Foothills ARS (AB)
VA6IAB 66 2 1 182 AB
Guelph ARC
VE3ML 34 2 1 182 ONS
Mid Island Radio Assn.
VE7XLH 34 2 1 182 BC
W2CHZ 63 2 1 182 WNY
W5CBP 36 2 1 182 NM
W5MCO 33 2 1 182 NM
W7RCS 37 2 1 182 WWA
Brightleaf ARC
WA4SLC 66 2 1 182 NC
WB8RFB 8 2 1 182 IL
Hampstead Hams
WN4OVA 33 2 1 182 NC
Columbia-Montour ARC (PA)
KC3LIR 65 2 1 180 EPA
KC7RCY 34 2 1 180 IL
KD2REH 65 2 1 180 NLI
Crescenta Valley RC
KE6PLA 37 2 1 180 LAX
Tamiami ARC
KJ4NDO 130 1 1 180 WCF
Texas Emergency Amateur Communicators
KK5DO 15 2 1 180 STX
Nacogdoches ARC
KT5TE 65 2 1 180 STX
Chipola ARC
KZ4EX 35 2 1 180 NFL
Whitman ARC
N1STV 65 2 1 180 EMA
South Jersey Radio Assn.
N2SCJ 65 2 1 180 SNJ
N3MRA 15 2 1 180 NM
North Ottawa ARC
N8KYO 65 2 1 180 MI
Phil-Mont Mobile RC
NC3U 65 2 1 180 EPA
Club Radio Amateur de Québec
VE2LPW 46 2 1 180 QC
Peterborough ARC
VE3AXT 40 2 1 180 ONE
Cuyahoga Falls ARC
W8BDE 65 2 1 180 OH
Frankford RC
WA2UBK 118 1 1 180 NNJ
Columbia-Montour ARC (PA)
WA3GQA 44 2 1 180 EPA
San Antonio RC
AA5CF 33 2 1 178 STX
AD4PM 32 2 1 178 NC
Middle Peninsula ARC
AJ4ZU 35 2 1 178 VA
Hampden Co. Radio Assn.
K1VOI 32 2 1 178 WMA
Chesapeake AR Service
KC4CAW 32 2 1 178 VA
Virginia Mountain ARC
KC4TQF 64 2 1 178 VA
Medina Co. ARC
KE8EFQ 32 2 1 178 OH
Pasadena RC
N3BKV 32 2 1 178 SJV
Sun Coast ARC Soc.
VA7ILO 32 2 1 178 BC
Greenwood ARC
VE1DHJ 32 2 1 178 MAR
PODXS 070
W4BZM 32 2 1 178 NFL
Blue Ridge ARC
W4JHU 32 2 1 178 NC
Arrow Communications Assn.
W8FSA 64 2 1 178 MI
Fox River Radio League
W9AUV 64 2 1 178 IL
Mount Diablo ARC
WA6CIE 64 2 1 178 EB
Midland (MI) ARC
WB8WNF 43 2 1 178 MI
WK9J 64 2 1 178 WCF
Mt. Allamuchy Scout Reservation
WW2BSA 127 1 1 177 NNJ
AD0RR 63 2 1 176 MO
K9ABR 63 2 1 176 IL
Wireless Assn. of South Hills
KC3MLC 58 2 1 176 WPA
Hamfesters RC
KC9PCP 63 2 1 176 IL
Antietam Radio Assn.
KD3JK 63 2 1 176 MDC
Bankhead ARC
KD4NIH 13 2 1 176 AL
Pasadena RC
KG6DNY 63 2 1 176 LAX
Radio Operadores Del Este
KP4LBA 32 2 1 176 PR
Massillon ARC
N8DZM 38 2 1 176 OH
Parkersburg AR Klub
W8IDW 13 2 1 176 WV
WA9KRL 63 2 1 176 IL
Watauga ARC
WS4JH 63 2 1 176 NC
Ellis Co. ARC
K7OEG 62 2 1 174 NTX
Antietam Radio Assn.
KA3CZY 123 1 1 174 WV
Saratoga Co. ARA
KC1NN 33 2 1 174 ENY
Poway ARS
KK6CTI 33 2 1 174 SDG
Tallahassee ARS
KQ3O 31 2 1 174 NFL
Marietta ARC
N8OIF 62 2 1 174 OH
Wichita Contest Club
N0XM 62 1 1 174 KS
Sterling Park ARC
NQ4K 31 2 1 174 VA
Prescott Russell ARC
VA3LP 12 2 1 174 ONE
Meriden ARC
W1DQ 31 2 1 174 CT
Garden State ARA
W2PSK 31 2 1 174 NNJ
Texas Emergency Amateur Communicators
W5FM 31 2 1 174 STX
Heart of Wisconsin ARG
W9JN 38 2 1 174 WI
Ventura Co. ARS
WA6FXT 31 2 1 174 SB
Montgomery ARC/Damascus ECT
WI3J 40 2 1 174 MDC
Lowell ARC
KD8FAL 31 2 1 172 MI
Forsyth ARC
KJ4IC 40 2 1 172 WCF
Bitterroot ARC
KJ7GYR 50 2 2 172 MT
KW1HF 61 2 1 172 OR
Montgomery Amateur Club
N4FLB 61 2 1 172 AL
VA2RIO 61 2 1 172 QC
The Seven Thirty ARS
VA3ORM 61 2 1 172 ONS
Hamilton (ON) ARC
VE3QEE 60 2 1 172 GTA
Adams Co. ARS
W3HN 61 2 1 172 EPA
W5YGS 44 2 1 172 OK
W7ID 61 1 1 172 ID
Warminster ARC
WA3ELQ 61 2 1 172 EPA
Peace River Radio Assn.
WB2YKY 60 2 1 172 WCF
Lake Co. ARA
WB8ZGH 61 2 1 172 OH
AB9EK 60 2 1 170 WI
Iowa City ARC
AC0XY 30 2 1 170 IA
Sun City ARC
AE5ZG 30 2 1 170 WTX
Gwinnett ARS
AF4FG 60 2 1 170 GA
Clark Co. (WA) ARC
AI9Q 60 2 1 170 WWA
K1DJB 50 2 1 170 CT
Vienna Wireless Soc.
K1NME 60 2 1 170 VA
Spring Hill ARC
K4DTR 60 2 1 170 NFL
Loudoun ARG
K4FW 60 2 1 170 VA
Ole Virginia Hams
K4GVT 60 2 1 170 VA
Faulkner Co. ARC
K5FRP 60 2 1 170 AR
Ventura Co. ARS
K6HHW 34 2 1 170 SB
Oregon Tualatin Valley ARC
K7BVT 102 1 1 170 OR
Adams Co. ARS
KC3HFT 60 2 1 170 EPA
KC4KZR 30 2 1 170 NC
Butler Co. (OH) ARA
KC8OC 60 2 1 170 OH
Fox River Radio League
KC9SEB 30 2 1 170 IL
KC9YQJ 60 2 1 170 IN
Ocean Monmouth ARC
KE4TKQ 10 2 1 170 NNJ
Hiawatha Valley ARC
KE0QBC 60 2 1 170 MN
KE0UNV 60 2 1 170 MO
Liverpool Amateur Repeater Club
KI2N 40 2 1 170 WNY
Los Angeles ARC
KW6RON 60 2 1 170 LAX
Ham Radio Adventures
N5CMC 30 2 1 170 OR
Oro Valley ARC
N7AKC 30 2 1 170 AZ
N0IZE 30 2 1 170 ME
Peterborough ARC
VE3KBI 60 2 1 170 ONE
Central Massachusetts ARA
W1PA 30 2 1 170 WMA
Old Barney ARC
W2TCR 30 2 1 170 SNJ
W4BXI 60 2 1 170 AL
Keowee Toxaway ARC
W4SLT 120 1 1 170 SC
Squaw Island ARC
WA2LTH 30 2 1 170 WNY
WA3TD 30 2 1 170 WPA
Panhandle ARC
WA5WFE 60 2 1 170 WTX
WA9CWE 60 2 1 170 IN
Long Island Mobile ARC
WB2ZEX 60 2 1 170 NLI
Oak Forest ARC
WB5ABB 30 2 1 170 STX
Oak Forest ARC
WB5ANN 30 2 1 170 STX
Southeast Louisiana ARC
WB5FBS 60 2 1 170 LA
Clark Co. (WA) ARC
WB7TZD 8 2 1 170 WWA
Jackson ARC
W0ZPO 60 2 1 170 KS
Granite State ARA
AB1BM 57 2 1 168 NH
Ellis Co. ARC
KD5AIA 59 2 2 168 NTX
Alamance ARC
KM4EFX 59 2 1 168 NC
Raleigh ARS
KN4RWI 59 2 1 168 NC
St. Mary's Co. ARA
N2OMC 59 2 1 168 MDC
W2ADW 30 2 1 168 WWA
W3AO Team
W3KX 59 1 1 168 MDC
Western Tidewater RA
W4DXZ 59 2 1 168 VA
Monkey Lover's Radio Consortium
W6LPW 59 2 1 168 SCV
CRES ARC
W8AGS 30 2 1 168 OH
Hambuds
WB5GM 33 2 1 168 STX
West Chester ARA
WB5XR 30 2 1 168 OH
Convair – 220 Club of San Diego
WB6SQA 59 2 1 168 SDG
Lake Area (TX) ARC
K5YE 64 1 15 167 NTX
SEKARC
N0SLT 117 1 1 167 MO
Sierra Foothills ARC
AA6RS 58 2 1 166 SV
Cuyahoga Falls ARC
AK8B 58 2 1 166 OH
Algonquin ARC
K1DIN 58 2 1 166 EMA
Meriden ARC
K1RCT 58 2 1 166 CT
K2BVR 29 2 1 166 OR
Northeast Wireless RC
K2FY 58 2 1 166 NLI
Arlington ARC
K5NN 29 2 1 166 NTX
Southern PA Communications Group
KE3TW 46 2 1 166 MDC
San Mateo RC
KI6UDZ 58 2 1 166 SCV
Downey ARC
KJ6YQV 8 2 1 166 LAX
Culver City ARES
KK6BEY 8 2 1 166 LAX
Virginia Beach ARC
KV4JM 29 2 1 166 VA
Fauquier ARA
KW4VA 24 2 2 166 VA
Falmouth ARA
N1JCT 8 2 1 166 EMA
Sun City ARS
N5MU 31 2 1 166 STX
N6RVC 29 2 1 166 LAX
Boeing Employees ARS
N7BVY 29 2 1 166 WWA
Halifax ARC
VE1GVY 58 2 1 166 MAR
Burlington ARC
VE3KAH 58 2 1 166 GTA
Candlewood ARA
W1QH 41 2 1 166 CT
Forsyth ARC
W4EXT 58 2 2 166 NC
Boca Raton ARA
W4WCD 58 2 1 166 SFL
San Mateo RC
W7TAD 4 2 1 166 NFL
Parma RC
W8WLI 58 2 1 166 OH
Estes Valley ARC
W9INE 58 2 1 166 CO
Downey ARC
WA6OUD 8 2 1 166 LAX
Longmont ARC
WB8VQI 30 2 1 166 CO
Delaware Lehigh ARC
AB3OS 57 2 1 164 EPA
Oro Valley ARC
AL7KE 48 2 1 164 AZ
Tampa ARC
K2LYV 29 2 1 164 WCF
Sawnee ARA
K4BSE 57 2 1 164 GA
K6SDW 30 2 1 164 SV
Steubenville-Weirton ARC
K8YHY 57 2 1 164 WV
Sachse ARA
KK6AXF 7 2 1 164 NTX
North Georgia ARC
KM4QHI 57 2 1 164 GA
Hughes ARC
KM6FP 57 2 1 164 LAX
Sun City ARS
K0LVS 57 2 1 164 STX
North Okanagan Radio Amateur Club
VA7NU 60 1 1 164 BC
Williamsburg Area ARC
W4DSR 36 2 1 164 VA
OCAPA
WA3OPY 57 2 1 164 OK
Franklin Co. (NC) ARC
WA4PMG 57 2 1 164 NC
NALCO ARES/RACES
NI6A 100 1 1 163 EB
Ozone ARC
AA5UZ 51 2 1 162 LA
State Line RC
K3ZED 56 2 1 162 EPA

Clinton Co. ARA
K8DSC 28 2 1 162 OH
South Lyon Area ARC
K8GNG 28 2 1 162 MI
Clark Co. (IN) ARC
KA9Z 112 1 1 162 IN
Troy ARA
KB2LZ 56 2 1 162 ENY
Twin Rivers ARC
KD9HLD 56 2 1 162 IL
Tri-Co. ARC (PA)
KE3WN 28 2 1 162 WPA
Livermore AR Klub
KF6JS 28 2 1 162 EB
KG2E 56 2 1 162 KY
KL4VA 28 2 1 162 AK
Society of Midwest Contesters
KO9A 41 2 1 162 IL
KT4X 56 2 1 162 GA
Delaware Lehigh ARC
N2LEC 56 2 1 162 NNJ
Sussex Co. ARC
N2WM 36 2 1 162 NNJ
McKean Co. ARC
N3HPL 81 2 2 162 WPA
N4EWF 28 2 1 162 AL
Valley and Massanutten ARA
N4RCE 56 2 1 162 VA
Athens (GA) RC
N6UBO 56 2 1 162 GA
Mound ARA
N8IPO 56 2 1 162 OH
Great South Bay ARC
W2YW 56 2 1 162 NLI
Tri-City ARC of CT
W3TMC 56 2 1 162 CT
Northern Arizona DX Assn.
W4BH 28 2201 162 NFL
Walla Walla Valley ARC
W7DP 56 2 2 162 EWA
Catalina RC
W7SA 56 2 1 162 AZ
Southington ARA
WA1JKR 43 2 1 162 CT
Mile Highlanders Group
WA4GLH 29 2 1 162 TN
South Wake ARC
WA4TCJ 56 2 1 162 NC
Austin ARC
WA5YZD 28 2 1 162 STX
WB4HXE 28 2 1 162 GA
WP4RF 29 2 1 162 PR
Putnam Emergency Amateur Repeater League
WV1V 49 2 1 162 CT
Lehigh Valley ARC
AK3M 55 2 1 160 EPA
Overlook Mountain ARC
K2UNI 55 2 1 160 ENY
Bristol (TN) ARC
K4XMN 5 2 1 160 TN
Lucas ARC
K5TCJ 43 2 1 160 NTX
Stanwood Camano ARC
KI7TOS 55 2 1 160 WWA
KJ5SO 55 2 1 160 LA
Roanoke Valley ARC
KS4BO 55 2 1 160 VA
Sawnee ARA
KW4WL 55 2 1 160 GA
Ellsworth ARA
N1CJS 55 2 1 160 ME
Niagara RC
N2KJC 55 2 1 160 WNY
Williamson Co. ARES
N4BAX 55 2 1 160 TN
North Coast ARC
N8QXC 55 2 1 160 OH
Kitchener-Waterloo ARC
VA3VDM 45 2 1 160 ONS
Guelph ARC
VE3KTB 47 2 1 160 ONS
Montachusett ARA
W1QED 55 2 1 160 WMA
Green Mountain Wireless Soc.
W1RLA 55 2 1 160 CT
Saratoga Co. ARA
W2EMS 55 2 1 160 ENY
Long Island Mobile ARC
W2MIT 47 2 1 160 NLI
Sunnyvale ARES
W6FUV 41 2 1 160 SCV
North Ottawa ARC
W9BWC 40 2 1 160 MI
W0TDH 80 2 1 160 NC
Cherokee ARS
WX4WCS 42 2 1 160 GA
Northern Arizona DX Assn.
AA7DK 54 2 20 158 AZ
Big Bend ARC
KA5PVB 54 2 1 158 WTX
Pikes Peak Radio Amateur Assn.
KB9VY 54 2 1 158 CO
Littleton Area Radio Klub
KC1AEM 54 2 1 158 VT
Bergen Co. Emergency Management RC
KC2QYM 54 2 1 158 NNJ
MARCA
KD7KDO 54 2 1 158 AZ
West Tennessee ARS
KE4FVU 4 2 1 158 TN
Hays/Caldwell ARC
KF4WSO 43 2 1 158 STX
San Francisco RC
KJ6PTX 54 2 1 158 SF
Tallahassee ARS
KN4FCC 27 2 1 158 NFL
Williamsburg Area ARC
KN4ZMH 4 2 1 158 VA
Southern PA Communications Group
KX3D 54 2 1 158 EPA
Long Island CW Club
N2GSL 27 2 1 158 NLI
Lake Area (TX) ARC
N5IKD 54 2 1 158 NTX
Virgin Valley ARC
N7OKD 27 2 1 158 NV
Club Radio Amateur de Québec
VA2DG 27 2 1 158 QC
Littleton Area Radio Klub
W1H 54 2 1 158 VT
Broughton Memorial Field Day Group
W2DFC 54 2 1 158 ENY
Nacogdoches ARC
W5WJC 52 2 1 158 NTX
Northville ARA
WA1ZU 52 2 1 158 ENY
Santa Clara Co. ARA
WA6QYS 54 2 1 158 SCV
Huron ARA
WA0NHJ 27 2 1 158 SD
Williamsburg Area ARC
WG4F 54 2 1 158 VA
Central Louisiana ARC
WQ5MM 54 2 1 158 LA
Southern PA Communications Group
WF3U 107 1 1 157 EPA
AG5RR 106 1 1 156 STX
Broughton Memorial Field Day Group
K2NMT 53 2 1 156 ENY
Columbus ARC
K4SPE 53 2 1 156 GA
Orange Co. Radio Amateurs & Durham FM Assn.
KA1HPM 53 2 1 156 NC
Reading RC
KT4JF 53 2 1 156 EPA
L'Anse Creuse ARC
N8HAR 53 2 1 156 MI
Hamfesters RC
N9KPD 53 2 1 156 IL
London ARC
VA3ATB 53 2 1 156 ONS
Club RA Sorel-Tracy
VE2YUC 3 2 1 156 QC
Orange Co. (CA) ARC
W6ETC 53 2 1 156 ORG
Mountain ARC (CA)
W6LSU 53 2 1 156 SJV
WZ6P 106 1 1 156 SB
South Jersey Radio Assn.
KC2SGV 105 1 1 155 SNJ
Texas DX Soc.
K5DD 26 2 1 154 STX
Queen City Emergency Net
K8FR 26 2 1 154 OH
Coventry EMA
KA1BNO 52 2 1 154 RI
Tri-City ARC of CT
KC1TWR 2 2 1 154 CT
Bankhead ARC
KE4DIS 52 2 1 154 AL
DuPage ARC
KE9MC 52 2 1 154 IL
Mining ARC/St. Paul RC
KE0PSK 52 2 1 154 MN
Santa Fe ARES
KF5RGU 2 2 1 154 NM
West Seattle ARC
KF7TTM 2 2 1 154 WWA
Culver City ARES
KM6RNJ 52 2 1 154 LAX
North Hills ARC of Pittsburgh
N3EVN 52 2 1 154 WPA
Granite State ARA
NF1L 52 2 1 154 NH
Alameda Co. Sheriff's Communications Team
NN6H 52 2 1 154 EB
W5WDY 26 2 1 154 NTX
San Mateo RC
W6MOU 52 2 1 154 SCV
Great South Bay ARC
WA2NDV 2 2 1 154 NLI
South Lake Charles RC
WA5KBH 26 2 4 154 STX
San Juan Co. ARS
WA7FUS 52 2 1 154 WWA
Williamson Co. ARES
WB4JAB 52 2 1 154 TN
Nacogdoches ARC
WB5IDY 28 2 1 154 NTX
VE2NTT 103 1 1 153 QC
Arrow Communications Assn.
AA8RK 51 2 1 152 MI
Spirit Valley Amateurs
AA0AC 33 2 1 152 MN
Potomac Valley RC
AE4NY 51 2 1 152 VA
Sandy ARC
K7DOD 51 1 1 152 UT
Portage Co. AR Service
K8SRR 38 2 2 152 OH
VMware ARC
KC1MNY 1 2 1 152 ME
Big Bear ARC
KE6FQC 51 2 1 152 ORG
Metrocrest ARS
KG5WVL 1 2 1 152 NTX
Sunnyvale ARES
KG6HI 51 2 1 152 SCV
KI4US 51 1 1 152 GA
Nashoba Valley ARC
KK1X 51 2 1 152 EMA
Radio Amateurs of Greater Syracuse
N2IK 51 2 1 152 WNY
Somerset Co. ARC
N3BLS 51 2 1 152 WPA
Northwest ARS
N5BIA 26 2 1 152 STX
N5RRC 51 2 1 152 LA
Wexaukee ARC
N8NJA 45 2 1 152 MI
N8PWM 51 2 1 152 MI
Nassau ARC
W2OSR 51 2 1 152 NLI
Jackson Co. AR Service
W4KNA 51 2 1 152 NC
Fayette Co. ARC
W4VBD 1 2 1 152 GA
South Lyon Area ARC
W8FFF 51 2 2 152 MI
Virginia Beach ARC/Virginia DX Century Club
W8NLZ 51 2 1 152 VA
Cheshire Co. DX ARC
WA1YZN 26 2 1 152 NH
WB7DUO 51 2 1 152 ID
Glynn ARA
WE8J 37 2 1 152 GA
Southern PA Communications Group
KD4IZ 101 1 1 151 MDC
Straight Key Century Club
WB8WUA 63 1 1 151 OH
Potomac Valley RC
AC4SJ 50 2 1 150 VA
Blue Ridge ARC
AJ4FV 50 2 1 150 NC
Milledgeville ARC
K4DRS 32 2 2 150 GA
Fox River Radio League
K9TCD 50 2 1 150 IL
Cass Co. ARC
KA9BYN 50 2 1 150 IN
Fort Madison ARC
KA9FAJ 50 2 1 150 IA
Portage Co. AR Service
KB8ZWT 50 2 1 150 OH
KC3EUU 50 2 1 150 EPA
Greater Beloit ARC
KC9QOO 38 2 1 150 SDG
Binghamton ARA
KD2PKP 50 2 1 150 WNY
Watauga ARC
KE4AAP 50 2 1 150 NC
Orange Park ARC
KE4YQR 25 2 1 150 NFL
Irvine Disaster EmComms
KE7RXD 50 2 1 150 ORG
Hazel Park ARC
KE8MNA 50 2 1 150 MI
KE0JYU 50 2 1 150 KS
KG2NI 50 2 1 150 WNY
KI5HCU 50 2 1 150 OK
OCAPA
KI5SAM 50 2 1 150 OK
Gwinnett ARS
KJ4CNC 37 2 1 150 GA
Coweta RC
KJ4TGTO 50 2 1 150 GA
King George AR Operators
KK4EOT 50 2 1 150 VA
Hurst ARC
KM5HT 50 2 1 150 NTX
Gainesville ARS
KN4KJB 25 2 1 150 NFL
Trident ARC
KN4NIQ 50 2 2 150 SC
Lehigh Valley ARC
N3XG 50 2 1 150 EPA
Charlevoix/Cheboygan/Emmet Co. Pub. Srvc. Comms. Org.
N8DNX 100 1 1 150 MI
CRES ARC
N8VWQ 26 2 1 150 OH
San Juan Co. ARS
NM7A 42 2 1 150 WWA
Santa Fe Trail ARC
N0KC 100 1 1 150 KS
Deep South ARC
W4MJE 25 2 1 150 AL
Jackson Co. AR Service
W4MNY 50 2 1 150 NC
OCAPA
W5SRO 25 2 1 150 OK
Mount Diablo ARC
W6CX 100 1 1 150 EB
W8BFX 50 2 1 150 WWA
Dial RC of Middletown
W8ELI 25 2 1 150 OH
North Ottawa ARC
W8SEV 50 2 1 150 MI
West Allis RAC
W9NAW 50 2 1 150 WI
Mountaineer ARA
WA8TGG 75 2 1 150 WV
Estes Valley ARC
WD1W 50 2 1 150 CO
Central Ohio Contest Assn.
WE8DX 50 2 1 150 OH
Johnson Co. Radio Amateurs Club
WN4KPG 50 2 2 150 KS
Pioneer ARC
W0NRW 26 2 1 150 NE
Great South Bay ARC
AC2BQ 49 2 1 148 NLI
KB3P 52 1 1 148 EPA
Burlington Co. RC
KC2OGR 40 2 1 148 SNJ
Adams Co. ARS
KC3GBU 49 2 1 148 EPA
Mountain Top ARA
KK6WKI 49 2 1 148 ORG
KN4EDG 39 2 1 148 NFL
Peekskill/Cortlandt ARA
N2CKD 49 2 1 148 ENY
Waterton Contest Club
N6YEL 49 2 1 148 CO
OH-KY-IN ARS
N8MRS 49 2 1 148 OH
West Island ARC
VE2RFI 49 2 1 148 QC
WA1VIL 29 2 1 148 EMA
Ruckerville Amateur Transmitting Soc.
WA4WCD 49 2 1 148 KY
Southern Co. ARA
W2KU 81 1 1 147 SNJ
AE5ZX 48 2 1 146 NM
K2RCB 24 2 1 146 DE
K3JDR 48 2 1 146 EPA
South Canadian ARS
K5HHQ 96 1 1 146 OK
Green Valley ARC
K7AFA 24 2 1 146 AZ
KA1AL 24 2 1 146 CT
Squaw Island ARC
KB2NCI 48 2 1 146 WNY
KB0DTI 25 2 1 146 KS
Fox River Radio League
KC9QJV 24 2 1 146 IL
KD8DNS 96 1 1 146 OH
Bellbrook ARC
KE0CZV 24 2 1 146 OH
Northeast Tarrant ARC
KF5LO 48 2 1 146 NTX
Peace River Radio Assn.
KG9EP 24 2 1 146 WCF
Sterling Park ARC
N3TG 40 2 1 146 VA
South Texas DX and Contest Club
N5PBP 48 2 1 146 STX
Orange Co. (CA) ARC
N6CTB 28 2 1 146 ORG
Palomar ARC
NE6O 40 2 1 146 SDG
Splitrock ARA
NJ2U 48 2 1 146 NNJ
Kitchener-Waterloo ARC
VE3ZUP 24 2 1 146 ONE
VE6GCM 48 2 1 146 AB
Martin Co. ARA
W1BLU 24 2 1 146 SFL
W4IPA 48 2 1 146 NTX
Ski Country ARC
W6CKC 33 2 1 146 CO
W8FUN 40 2 1 146 MI
Majors Field ARC
WS5GPA 24 2 1 146 NTX
Brightleaf ARC
K1KK 51 1 1 145 NC
Blackstone Valley ARC
W1JMZ 95 1 1 145 RI
North Coast ARC
K8DMM 47 2 1 144 OH
Chickasaw ARC and Olivebranch ARC
KA5WGF 47 2 1 144 MS
Johnson Space Center ARC/Clear Lake ARC
KC9CSC 27 2 1 144 STX

KDØJAX	47	2	1	144	CO
Kansas/Nebraska ARC					
KEØMDL	94	1	1	144	KS
Stockton-Delta ARC					
KK6RAO	47	2	1	144	SJV
Phil-Mont Mobile RC					
N1LC	47	2	1	144	EPA
Ottawa Valley Mobile RC					
VE3GIQ	47	2	1	144	ONE
North Shore (ON) ARC					
VE3VGJ	47	2	1	144	ONE
Livonia ARC					
W8NAT	26	2	1	144	MI
Albemarle ARS					
WB1CZX	34	2	1	144	NC
East Highland Park Radio Rangers					
K8CRC	93	1	1	143	MI
ADØIU	23	2	1	142	CO
Columbia (OR) ARA					
AF7ZA	46	2	1	142	OR
K4JSK	46	2	1	142	NC
K4TSO	46	2	1	142	SC
South Lyon Area ARC					
K8ERS	23	2	1	142	MI
ARC of Butts Co.					
KA3SME	46	2	1	142	GA
Thunderbird ARC					
KA7NPQ	46	2	1	142	AZ
Crescenta Valley RC					
KF6KXG	46	2	1	142	LAX
Police AR Team of Westford					
KG1RY	23	2	1	142	EMA
Columbia (SC) ARC					
KG4KOW	46	2	1	142	SC
Calhoun Co. ARA					
KG8R	46	2	1	142	AL
Snohomish Co. Hams Club					
KH6VM	46	2	1	142	WWA
St. Augustine ARS					
KM4PHI	45	2	1	142	NFL
Blossomland ARA					
KWØRM	23	2	1	142	MI
ARA of the Southern Tier					
N2PEZ	23	2	1	142	WNY
Cape Fear ARS					
N4USB	46	2	1	142	NC
DuPage ARC					
N9QGV	46	2	1	142	IL
Bergen Co. Emergency Management RC					
NJ2M	92	1	1	142	NNJ
Metrocrest ARS					
W5RPS	26	2	1	142	NTX
Cuyahoga Falls ARC					
W8DIS	23	2	1	142	OH
Satellite ARC					
WB6KDH	46	2	1	142	SB
Oro Valley ARC					
WB7BEV	46	2	1	142	AZ
Southern PA Communications Group					
W3II	77	1	1	141	EPA
Texas Emergency Amateur Communicators					
AB5KM	45	2	1	140	STX
El Dorado Co. ARC					
K6MLE	26	2	1	140	SV
Lodi ARC					
K6ZZD	27	2	1	140	SJV
Kershaw Co. ARC					
KC4RC	19	2	3	140	SC
North Coast ARC					
KD8JQ	25	2	1	140	OH
St. Louis & Suburban RC					
KEØLD	38	2	1	140	MO
Utica Shelby EmComms Assn.					
KI8M	45	2	1	140	MI
Southern Peninsula AR Klub					
KM4YSI	45	2	1	140	VA
North Augusta Belvedere RC					
KQ4KK	45	2	1	140	SC
Ellis Co. ARC					
KR5QA	45	2	1	140	NTX
Saratoga Co. ARA					
N2QFT	45	2	1	140	ENY
West Fork ARC					
N5WEB	90	1	1	140	NTX
DuPage ARC					
N9SXF	45	2	1	140	IL
Haldimand Norfolk ARC					
VE3HTF	45	2	1	140	ONS
Quinte & Prince Edward RCs					
VE3UGT	45	2	1	140	ONE
Central Mass ARA					
W1BNC	90	1	1	140	WMA
San Fernando Valley ARC					
W6CCC	28	2	1	140	LAX
Sierra Nevada ARS					
W7DBE	23	2	1	140	NV
Toledo Mobile Radio Assn.					
W8GSR	30	2	1	140	OH
West Allis RAC					
WI9EV	45	2	1	140	WI
AC2OC	22	2	1	138	ENY
Nittany ARC					
K3YZF	17	2	1	138	WPA
Great Salt Lake Contest Club					
K7MZ	22	2	1	138	UT
Olympia ARS					
K7TUM	44	2	1	138	WWA
KA2AEY	22	2	1	138	WNY
Burlington Co. RC					
KB2MMI	44	2	1	138	SNJ
Island Co. ARC					
KB7BTO	22	2	1	138	WWA
Boeing Employees ARS					
KB7KYA	42	2	1	138	WWA
Spokane DX Assn.					
KD7GHZ	22	2	1	138	EWA
Hiawatha Valley ARC					
KEØQBD	44	2	1	138	MN
Chesapeake AR Service					
KG4WOJ	42	2	1	138	VA
Mile Highlanders Group					
KI4EZC	22	2	1	138	TN
GOTAHAMS					
KN6ENV	22	2	1	138	LAX
Rochester (MN) ARC					
KØGMK	22	2	1	138	MN
Virginia Beach ARC/Virginia DX Century Club					
KW4GF	43	2	1	138	VA
Woodmont ARA					
N1TVL	34	2	2	138	CT
Westchester EmComms Assn.					
N2TFC	44	2	1	138	ENY
East Coast Kerchunkers					
N3ECK	22	2	1	138	EPA
N8VWY	22	2	1	138	OH
Arizona Outlaws Contest Club					
N9NA	44	1	1	138	AZ
Surrey AR Communications					
VE7SXM	44	2	1	138	BC
Potomac Valley RC					
W3TTT	44	2	1	138	MDC
Western Tidewater RA					
W4RGN	22	2	1	138	VA
K6AAI	87	1	1	137	SV
San Fernando Valley ARC					
W6DPM	87	1	1	137	LAX
Comstock ARA					
W7FD	87	1	4	137	NV
AA3SP	43	2	1	136	EPA
Garden City ARC					
AC8FJ	43	2	1	136	MI
Brazos Valley ARC					
K5JPP	28	2	1	136	STX
NOARCFL					
KA5NDH	43	2	1	136	NFL
McHenry Co. Wireless Assn.					
KA9CAR	43	2	1	136	IL
Peekskill/Cortlandt ARA					
KD2EVI	43	2	1	136	ENY
Radio Operadores Del Este					
KP4WA	43	2	1	136	PR
N3KCM	33	2	2	136	EPA
Watauga ARC					
N4DE	43	1	1	136	NC
CRES ARC					
N8OGI	43	2	1	136	OH
Mining ARC/St. Paul RC					
NØPEY	43	2	1	136	MN
Comox Valley ARC					
VA7VF	43	2	1	136	BC
Quannapowitt Radio Assn.					
W1USN	43	2	1	136	EMA
Broughton Memorial Field Day Group					
W2QAC	43	2	1	136	ENY
Lancaster ARC					
WA2QYA	28	2	1	136	WNY
South Bay ARC					
WA6WV	43	2	1	136	LAX
KB3UVG	85	1	1	135	EPA
Texas Emergency Amateur Communicators					
W9NUQ	85	1	1	135	STX
Anne Arundel RC					
AB3GS	42	2	1	134	MDC
Barry ARA					
AC8AZ	30	2	1	134	MI
Portage Co. AR Service					
AD8FQ	22	2	2	134	OH
Tyler ARC					
AF5JM	42	2	1	134	NTX
Squaw Island ARC					
K2AEI	42	2	1	134	WNY
K7PCB	21	2	1	134	UT
Elko ARC					
K7PRT	21	2	1	134	NV
KB4FB	42	1	1	134	WCF
South Jersey Radio Assn.					
KD2SSE	28	2	1	134	SNJ
KD9EII	42	2	2	134	IL
KE5WAN	21	2	1	134	STX
Thunderbird ARC					
KI7LW	22	2	1	134	AZ
Sierra Foothills ARC					
KM6JBI	21	2	1	134	SV
Coastal Plains ARC					
KN4RPS	42	2	7	134	GA
Billerica ARS					
N1ALO	42	2	1	134	EMA
Butler Co. AR Public Service Group					
N3SDO	42	2	1	134	WPA
N8ZKT	42	2	1	134	OH
NG7V	22	2	1	134	ID
Halifax ARC					
VA1ALW	23	2	1	134	MAR
Campbell River ARS					
VE7DVI	42	2	1	134	BC
North Okanagan Radio Amateur Club					
VE7JAR	42	2	1	134	BC
Northeast Maryland AR Contest Soc.					
W2QFV	42	2	29	134	MDC
Sierra ARC of The High Mojave					
W6TLA	21	2	2	134	SJV
Lynchburg ARC					
WA2OMT	42	2	1	134	VA
WBØNPR	42	2	1	134	ID
Central Missouri Radio Assn.					
WØRAG	42	2	1	134	MO
Cherokee Capital ARS					
AD4JW	41	2	2	132	GA
Susquehanna Valley ARC					
KB3AC	41	2	1	132	EPA
Tri-Co. ARA (CA)					
KB6IQ	31	2	1	132	ORG
Sierra Foothills ARC					
KB7QWC	21	2	1	132	SV
KCØCAU	41	2	1	132	ND
Radio Club of Redmond					
KE7WB	40	2	1	132	WWA
Slivercreek ARA					
KF8G	41	2	1	132	OH
Sierra Blanca ARC					
KG5OMB	30	2	1	132	NM
York Co. SC ARS					
KG9V	41	2	1	132	SC
Clallam Co. ARC					
KI7MZH	41	2	1	132	WWA
Wood Co. ARC					
KN4LEH	41	2	1	132	WCF
Cleveland ARC					
KQ4BAH	41	2	1	132	TN
NOARCFL					
N4CU	42	1	1	132	NFL
Montachusett ARA					
W1HFN	41	2	1	132	WMA
W2VDZ	41	2	1	132	NNJ
Oro Valley ARC					
W3KK	66	2	1	132	WPA
Sierra Nevada ARS					
W6DSG	41	2	1	132	NV
W6OLA	28	2	1	132	EWA
W8AW	41	2	1	132	OK
Ventura Co. ARC					
AE6GD	20	2	1	130	SB
K4TEP	40	2	2	130	AL
Lakes Area (TX) ARC					
K5PFE	40	2	1	130	STX
Rip Van Winkle ARS					
K8LEF	40	2	1	130	ENY
KA5ULE	40	2	2	130	WTX
Green Mountain Wireless Soc.					
KB1FDW	40	2	1	130	VT
KB5VKP	20	2	1	130	STX
Barron Co. ARA					
KB9TYC	30	2	1	130	WI
KC1DVT	20	2	1	130	ME
KC6YIH	40	2	1	130	LAX
Oro Valley ARC					
KC7AC	20	2	1	130	AZ
OH-KY-IN ARS					
KD8IOQ	20	2	1	130	OH
Oak Forest ARC					
KE5AOA	40	2	1	130	STX
Long Island CW Club					
KE8AQW	20	2	1	130	MI
Tri-Co. ARA (NJ)					
KF2UJ	20	2	1	130	NNJ
Hinesville AR Emergency Soc.					
KG7JBV	40	2	1	130	GA
Crescenta Valley RC					
KJ6LA	36	2	1	130	LAX
Roanoke Valley ARC					
KK4YKP	40	2	1	130	VA
Marshall Co. ARA					
KM4JZJ	65	2	1	130	KY
Tallahassee ARS					
KN4SCE	40	2	1	130	NFL
Iowa Wireless AR Network					
KØRKL	40	2	1	130	IA
Lynchburg ARC					
N2QT	20	2	1	130	VA
RF Hill ARC					
N3EOE	40	2	1	130	EPA
N3XDW	40	2	1	130	WPA
Bankhead ARC					
N4TMT	40	2	1	130	AL
REDXA/MARS					
N6VAW	40	2	1	130	SF
PODXS 070					
N7RI	20	2	1	130	WY
Colorado QRP Club					
NO2D	20	2	1	130	CO
Minnesota Wireless Assn.					
NUØW	20	2	1	130	MN
VA7KBM	22	2	1	130	BC
Haldimand Norfolk ARC					
VE3GCK	40	2	1	130	ONS
Nortown ARC					
VE3IJS	40	2	1	130	GTA
VE7BIA	40	2	2	130	BC
Blackstone Valley ARC					
W1AUT	60	1	3	130	EMA
Tri-City ARC of CT					
W1FWE	40	2	1	130	CT
Ocean Monmouth ARC					
W2FKN	8	2	1	130	NNJ
Alamance ARC					
W4VU	20	2	1	130	NC
W6SMF	20	2	1	130	SDG
Black Diamond ARC					
W8HY	40	2	1	130	WV
NØMQL	47	1	1	129	MN
AC8WC	39	2	1	128	MI
Fort Myers ARC					
K4RAB	39	2	1	128	SFL
Univ of Mississippi ARC					
K5LMB	39	2	1	128	MS
Superstition ARC					
K7AV	25	2	1	128	AZ
Warren Co. NY RC					
KB1IVE	39	2	1	128	ENY
St. Mary's Co. ARA					
KB1YZ	29	2	2	128	MDC
Overlook Mountain ARC					
KD2EYH	39	2	1	128	ENY
Kicked Back Contesters Club					
KD5YPH	27	2	1	128	CO
CRES ARC					
KD8ZG	30	2	1	128	OH
Huron ARA					
KDØZSM	39	2	1	128	SD
KIØAR	39	2	1	128	CO
South Pasadena ARC					
KR6CV	39	2	1	128	LAX
Minnesota Wireless Assn.					
N2RSC	39	2	1	128	MN
VE7NCD	38	2	1	128	BC
WA1FKP	46	2	1	128	AL
WAØPFC	39	2	1	128	UT
Bayouland Emergency ARES					
WD5JTZ	28	2	1	128	LA
Shreveport ARA					
WØKD	39	2	1	128	LA
Virginia Beach ARC					
K3QON	77	1	1	127	VA
K9XN	77	1	1	127	IN
Lake Area (TX) ARC					
AI5G	20	2	1	126	NTX
Reelfoot ARC					
K4NNH	19	2	1	126	TN
VMware ARC					
K5VTD	19	2	1	126	NTX
K6ESS	38	2	1	126	SV
Kern Co. – Central Valley ARC					
K6JLL	24	2	1	126	SJV
Newport Beach Repeater Club					
K6NBR	38	2	1	126	ORG
Spout Springs Repeater Assn.					
K7FTQ	19	2	1	126	EWA
Ozaukee RC					
K9QLP	38	2	1	126	WI
Candlewood ARA					
KB1ZIR	30	2	1	126	CT
Rome RC					
KB2CCD	19	2	1	126	WNY
North Franklin ARS					
KC2VMF	126	1	1	126	NNY
South East Contest Club					
KD4QMY	76	1	1	126	GA
KD5HIZ	22	2	1	126	STX
Clark Co. (WA) ARC					
KE7ZAC	38	2	1	126	WWA
Susquehanna Valley ARC					
KK4FYV	27	2	1	126	EPA
South Orange ARA					
KK6CHF	22	2	1	126	ORG
Meriden ARC					
N1ZN	38	2	1	126	CT
Rochester (NY) DX Assn.					
N4KHZ	19	2	1	126	WNY
Dalton ARC					
N5UOV	23	2	1	126	AL
Sierra Blanca ARC					
N5WPM	38	2	1	126	NM
ARA of the Southern Tier					
W3IHP	19	2	1	126	WNY
Society of Midwest Contesters					
W9FF	19	2	1	126	IL
Oakland Radio Communication Assn.					
WB6NER	38	2	1	126	EB
David Sarnoff ARC					
KB2SVD	39	1	1	125	SNJ
Florida Contest Group					
KJ4LQX	75	1	1	125	SFL
Orange Park ARC					
K4AWG	37	2	1	124	NFL

BayNet
K6CES 28 2 1 124 SCV
REDXA/MARS
K6CTA 19 2 1 124 SF
Associated Radio Amateurs of Long Beach
K6RFN 27 2 1 124 LAX
Oro Valley ARC
K7RJ 19 2 1 124 AZ
K7TR 37 2 1 124 WWA
East Greenbush ARA
KB2CDX 37 2 1 124 ENY
Northeast Maryland AR Contest Soc.
KC3PCY 37 2 1 124 MDC
Oak Forest ARC
KC5VEC 37 2 1 124 STX
Central Indiana ARA
KD9LAD 34 2 1 124 IN
Story Co. ARC
KE0YRU 37 2 2 124 IA
KJ7EDT 29 2 1 124 WWA
Mountain ARC (CA)
KN6GOR 37 2 1 124 SJV
SARA MN
K0AIF 37 2 1 124 MN
KU1Q 61 2 2 124 CT
Sawnee ARA
KW3D 37 2 1 124 GA
Liverpool Amateur Repeater Club
N1NQD 37 2 1 124 WNY
Endless Mountains ARC
N3OGD 37 2 1 124 EPA
Wireless Assn. of South Hills
N0VLR 37 2 1 124 WPA
W1CMR 37 2 1 124 UT
Genesee Radio Amateurs
WB2RYH 37 2 1 124 WNY
WC5DB 21 2 1 124 NTX
Rappahannock Valley ARC
WC9D 74 1 1 124 VA
AA6VX 18 2 1 122 SB
Aero ARC
AE3B 36 2 1 122 MDC
Cupertino ARES
AG6CL 36 2 1 122 SCV
Irvine Disaster EmComms
AJ6LU 36 2 1 122 ORG
Lincoln Hills ARC
K3RZB 36 2 1 122 SV
Lake Monroe ARS
K4BBC 36 2 1 122 NFL
Lynchburg ARC
K4WWP 36 2 1 122 VA
Highline ARC
K7BAB 42 1 1 122 WWA
Yavapai ARC
K8FB 18 2 1 122 AZ
Newark Ohio ARA
K8NQ 36 2 1 122 OH
Knox Co. ARC
K9BAZ 18 2 1 122 IL
Fort Myers ARC
KC4RAC 36 2 1 122 SFL
Crescenta Valley RC
KM6ERG 36 2 1 122 LAX
Southern Berkshire ARC
N1WHA 36 2 1 122 CT
Central Michigan ARC
NS8Q 19 2 1 122 MI
Ottawa Valley Mobile RC
VE3NZL 18 2 1 122 ONE
Huntsville ARC
W4EVV 18 2 1 122 AL
Suwannee ARC
W4VKD 18 2 1 122 RI
WA8SAN 18 2 1 122 OH
St. Louis & Suburban RC
W0GRW 18 2 1 122 MO
The Villages ARC
AL7BA/W4 71 1 1 121 NFL
Northeast Maryland AR Contest Soc.
N3OZT 71 1 1 121 MDC
N6TCZ 20 1 1 121 LAX
Warminster ARC
AG3L 35 2 1 120 EPA
Santa Clara Co. ARA
K6PBQ 30 2 1 120 SCV
Valley of the Moon ARC
K6YD 35 2 1 120 SF
Santa Clara Co. ARA
KA6YMD 35 2 1 120 SCV
Great South Bay ARC
KD2QWM 35 2 1 120 NLI
Northeast Tarrant ARC
KE5WGR 35 2 1 120 NTX
Sioux Empire ARC
KE0RJ 35 2 1 120 SD
Clark Co. (WA) ARC
KF7OJA 35 2 1 120 WWA
King George AR Operators
KK4EOU 35 2 1 120 VA
Cupertino ARES
KK6FPI 35 2 1 120 SCV
BEARS of Manchester ARC
N1ZXL 35 2 1 120 CT
Mecklenburg ARS
N4MBZ 35 2 1 120 NC
Lynchburg ARC
N4QWF 35 2 1 120 VA
Mansfield-Johnson AR Service
N5NI 35 2 1 120 NTX
Six Meter Club of Chicago
N9TUQ 35 2 1 120 IL
N0RMJ 35 2 1 120 MN
Coquitlam ARES Soc.
VE7IRT 35 2 1 120 BC
Northville ARA
W1AS 35 2 1 120 CT
Rappahannock Valley ARC
W4LLK 35 2 1 120 VA
Nashville ARC
W4WWF 35 2 1 120 TN
Newport Co. RC
AC1DV 34 2 1 118 RI
Falmouth ARA
K1AMJ 34 2 1 118 EMA
Williamson Co. ARES
K4ARC 34 2 1 118 TN
Vienna Wireless Soc.
K4EWE 28 2 1 118 VA
San Fernando Valley ARC
K6DLB 49 1 1 118 LAX
North Ottawa ARC
KB8ODB 34 2 1 118 MI
KC2DPF 34 2 1 118 VA
KC2MBO 34 2 1 118 ENY
KC9LVT 34 2 1 118 MI
Lewis and Clark RC
KD9ARW 34 2 1 118 IL
Sunnyvale ARES
KK6FPP 31 2 1 118 SCV
Orange Co. Radio Amateurs & Durham FM Assn.
KN4QBY 34 2 1 118 NC
Nittany ARC
NA3F 17 2 1 118 WPA
Truro ARC
VA1JG 34 2 1 118 MAR
Iredell Co. ARS
W1HO 17 2 1 118 NC
Oro Valley ARC
W5OT 34 2 1 118 AZ
Orange Co. ARES
W9TAX 20 2 1 118 NFL
BONAC ARC
WA2YMR 34 2 1 118 NLI
WD8BXP 34 2 1 118 MI
Great South Bay ARC
K2NYG 67 1 1 117 NLI
Downey ARC
AD6AF 32 2 1 116 LAX
NEMO ARC
AD0B 33 2 2 116 MO
Low Country Contest Club
AI4SX 33 2 1 116 SC
Oro Valley ARC
K7OHK 22 2 1 116 AZ
Addison Co. ARA
KA1LM 33 2 1 116 VT
Camden Co. ARS
KA7SQD 33 2 1 116 GA
Fort Myers ARC
KB9LXM 33 2 1 116 WCF
Riverland ARC
KC9HDS 33 2 1 116 WI
SARA MN
KD3VIN 33 2 1 116 MN
Radio Amateurs of Skagit Co.
KD7ZPJ 33 2 1 116 WWA
Cherokee ARS
KF4VX 33 2 1 116 GA
Austin ARC
KI5IYU 22 2 1 116 STX
South Pasadena ARC
KM6OUK 33 2 1 116 LAX
Watauga ARC
KN4LCX 33 2 1 116 NC
Ski Country ARC
K0VK 33 2 1 116 CO
Lake ARA
KV4I 66 1 1 116 NFL
Cape May Co. ARC
N2CMC 29 2 1 116 SNJ
Preble ARA
N8VKX 33 2 1 116 OH
W/K ARC of Greater Milwaukee
N9AFR 33 2 1 116 WI
Lewis and Clark RC
N9WHH 33 2 1 116 IL
Kitchener-Waterloo ARC
VA3JFZ 33 2 1 116 ONS
Delaware ARA
W8SMK 33 2 1 116 OH
Hamfesters RC
W9KXT 33 2 1 116 IL
Alford Memorial RC
WA4GIM 33 2 1 116 GA
WB5IZD 33 2 1 116 STX
San Fernando Valley ARC
WG6H 33 2 1 116 LAX
Phil-Mont Mobile RC
K3RON 65 1 1 115 EPA
West Fork ARC
K5TXB 65 1 1 115 NTX
Portsmouth (OH) RC
WX8G 65 1 1 115 OH
AC9OV 16 2 1 114 IL
AD5XM 32 2 1 114 LA
Garden State ARA
AD7I 16 2 1 114 NNJ
Nashoba Valley ARC
K1NKR 20 2 1 114 EMA
Fauquier ARA
K1RA 16 2 1 114 VA
Ak-Sar-Ben ARC
KA4ZZQ 32 2 1 114 NE
Nashua Area Radio Soc.
KC1DXL 32 2 1 114 EMA
Nittany ARC
KC3FDD 22 2 4 114 WPA
KD2RPX 32 2 1 114 SNJ
Messila Valley RC
KF5KHJ 32 2 1 114 NM
Hurst ARC
KG5KDO 16 2 1 114 NTX
Cascade AR Enthusiasts
KG7TUO 32 2 1 114 OR
Sawnee ARA
KG8TRS 32 2 1 114 GA
KI5OO 32 2 1 114 STX
Sterling Park ARC
KJ4VTH 16 2 1 114 VA
ARTS of Louisville
KN4GNU 32 2 1 114 KY
Mountain ARC (CA)
KN6EML 32 2 1 114 SJV
KW9D 32 2 1 114 IL
Grand Strand ARC
N4AJK 32 2 1 114 SC
Madison Co. (OH) ARC
NO8F 18 2 1 114 OH
Blackstone Valley ARC
W1KEN 16 2 1 114 WCF
Poway ARS
WA3YTI 32 2 1 114 SDG
WB1GGU 16 2 1 114 NH
Associated Radio Amateurs of Long Beach
WD6FON 32 2 1 114 LAX
AG7KO 63 1 1 113 WWA
South Bay ARA
AC6MM 31 2 1 112 EB
K5DOX 31 2 1 112 STX
Estes Valley ARC
K6OG 31 2 1 112 CO
San Juan Co. ARS
K7NHE 31 2 1 112 WWA
Oregon Tualatin Valley ARC
K7TLD 21 2 1 112 OR
South Bay ARC
KA6ZTO 20 2 1 112 ORG
Central Michigan ARC
KC8QZB 31 2 1 112 MI
Great South Bay ARC
KD2BNT 31 2 1 112 NLI
Delta ARC
KD4FUU 24 2 1 112 TN
Richmond Amateur Telecommunications Soc.
KD4LEM 31 2 1 112 VA
Findlay ARC
KD8AVT 31 2 1 112 OH
Artificial Intelligence to Continuous Wave
N3KA 18 2 1 112 SCV
N3TDE 62 1 1 112 EPA
North Fulton ARL
N4CLA 31 2 1 112 GA
N5CWA 17 2 1 112 STX
London ARC
VE3MWL 31 2 1 112 ONS
Delta ARS
VE7CLX 31 2 1 112 BC
Putnam Emergency Amateur Repeater League
W2CX 31 2 1 112 ENY
Boston Valley Simplex Club
W2RLN 31 2 1 112 WNY
Rains ARA
W5DBL 31 2 1 112 NTX
The Transmitter Soc.
WZ9O 20 2 1 112 WI
Story Co. ARC
AE0S 61 1 1 111 IA
Northville ARA
AG1YK 61 1 1 111 CT
Midland (MI) ARC
K6VWE 61 1 1 111 MI
San Antonio RC
WB5DRI 61 1 1 111 STX
Sheboygan Co. ARC
AA9SJ 30 2 1 110 WI
EmComms Assn. of St. Charles
AD0MO 30 2 1 110 MO
Straight Key Century Club
AF2Z 15 2 1 110 SNJ
Mifflin Co. Contesters
K3VZ 15 2 1 110 WPA
K6CTW 30 2 1 110 ORG
Metro North Railroad ARA
KA1FAI 30 2 1 110 CT
KB1KVD 60 1 1 110 EMA
KB8MRC 15 2 1 110 OH
Woodmont ARA
KC1ADT 30 2 2 110 CT
North Hills ARC of Pittsburgh
KC3MMC 30 2 1 110 WPA
Stanwood Camano ARC
KC7JM 30 2 1 110 WWA
Huber Heights ARC
KD8VOO 15 2 1 110 OH
CRES ARC
KD8WK 30 2 1 110 OH
SEARC
KD0ZXI 28 2 1 110 SD
Oakland Radio Communication Assn.
KE6IUE 30 2 1 110 EB
Genesee Co. RC
KE8OOK 15 2 1 110 MI
KE0UBI 30 2 1 110 MN
KF6FIX 5 2 1 110 ORG
South San Francisco Communications
KF6PFZ 30 2 1 110 SCV
Gwinnett ARS
KI4KXO 28 2 1 110 GA
Escondido ARS
KK6TV 15 2 1 110 SDG
Comstock ARA
KL2P 30 2 4 110 NV
Crescenta Valley RC
KM6LPZ 30 2 1 110 LAX
Panorama Land ARC
KM7H 30 2 1 110 EWA
KN4PLB 30 2 1 110 GA
KN6GOX 20 2 1 110 ORG
Binghamton ARA
N2BHD 15 2 1 110 WNY
Bergen ARA
N2CYY 30 2 1 110 NNJ
N3BE 15 2 1 110 EPA
South Bay ARA
N6EFF 30 2 1 110 EB
N7RR 16 2 1 110 WWA
West Chester ARA
N8EPG 30 2 1 110 OH
Splinter Group ARC
N8WUA 15 2 1 110 OH
N9MAP 15 2 1 110 ORG
York Region ARC
VA3DXZ 30 2 1 110 GTA
VA3RSX 30 2 1 110 GTA
The Seven Thirty ARS
VE3PV 30 2 1 110 ONS
Blackstone Valley ARC
W1CVC 30 2 1 110 RI
Lehigh Valley ARC
W3CDY 30 2 1 110 EPA
W3CEB 30 2 1 110 MDC
Los Alamos ARC
W5IL 16 2 1 110 NM
WB8ENE 15 2 1 110 OH
West Allis RAC
WB9GZP 30 2 1 110 WI
WC7X 15 2 1 110 UT
St. Louis QRP Soc.
W0DCX 15 2 1 110 MO
Meriden ARC
WV2LKM 30 2 1 110 CT
WX0MIK 16 2 1 110 MN
The Villages ARC
W3GYM 34 1 1 109 WCF
Hampden Co. Radio Assn.
AB1ZJ 29 2 1 108 WMA
NEMO ARC
AB0DK 26 2 1 108 MO
AD2EE 29 2 1 108 NLI
Everglades ARC
K4ABX 29 2 1 108 SFL
Kitsap Co. ARC
K7CDF 29 2 1 108 WWA
Highline ARC
K7ISL 29 2 1 108 WWA
Oro Valley ARC
K7VTT 29 2 1 108 AZ
Wisconsin Valley Radio Assn.
K9MIX 29 2 1 108 WI
Twin Cities Maker ARC
KD8GBL 15 2 1 108 MN
Charlevoix/Cheboygan/Emmet Co. Pub. Srvc. Comms. Org.
KE8BNV 58 1 1 108 MI
KI5FQJ 19 2 1 108 STX
KI5GCF 29 2 1 108 STX
KK6NXU 29 2 1 108 LAX
Kansas/Nebraska ARC
K0AOR 15 2 1 108 KS
N5BGZ 29 2 1 108 NTX
Valley of the Moon ARC
N6LY 29 2 1 108 SF
N7QNM 29 2 1 108 EWA

West Island ARC
VA2HKR 29 2 1 108 QC
Mississippi Valley DX/Contest Club
W0NFS 29 2 1 108 MO
Montgomery ARC/Damascus ECT
AB3VZ 28 2 1 106 MDC
Half Moon Bay ARC
AD6LS 28 2 1 106 SCV
K1FR 14 2 1 106 VA
Southwest Mississippi ARC
K5IKB 14 2 1 106 MS
Hays/Caldwell ARC
K5WWT 14 2 1 106 STX
Associated Radio Amateurs of Long Beach
K6MUG 28 2 1 106 SCV
Mount Diablo ARC
K6XC 14 2 1 106 EB
Moriessen ARC
KA3VEB 28 2 1 106 WPA
Bear Bait RC
KD2ETO 28 2 1 106 WNY
Statesboro ARS
KD4BWW 28 2 1 106 GA
Radio Club of Tacoma
KF7GPO 28 2 1 106 WWA
Everglades ARC
KG4OXO 28 2 1 106 SFL
KI7E 14 2 1 106 WWA
Denver RC
KØTOR 28 2 1 106 CO
Sun City Center ARC
KQ0J 14 2 1 106 WCF
Twin City (IL) ARC
KR4S 28 2 1 106 IL
N2HLJ 28 2 1 106 VA
Great South Bay ARC
N2RBP 14 2 1 106 NLI
Maricopa ARA
N7FAN 14 2 1 106 AZ
Sangamon Valley RC
N9LVV 14 2 1 106 IL
Haldimand Norfolk ARC
VA3HSR 28 2 1 106 ONS
Greenwood ARC
VE1DIY 28 2 1 106 MAR
VY2GF 28 2 1 106 PE
Central Oregon DX Club
W7JHR 14 2 1 106 OR
North Shore (IL) RC
W9VA 14 2 1 106 IL
Metrocrest ARS
WB5QNG 14 2 1 106 NTX
Radio Club of Tacoma
WG7X 28 2 1 106 WWA
Lucas ARC
WI5D 18 2 2 106 NTX
Fox River Radio League
K9RZ 50 1 1 105 AZ
Wexaukee ARC
KD8UVN 55 1 1 105 MI
Medina Co. ARC
K8JGR 27 2 1 104 OH
Littleton Area Radio Klub
KC1AAAY 27 2 1 104 VT
Arizona Outlaws Contest Club
KC1BB 27 1 1 104 AZ
KC7KNY 52 2 1 104 OR
Tryon ARC
KD2ABK 27 2 1 104 NNY
Conejo Valley ARC
KD6RCM 27 2 1 104 SB
KD9LRB 27 2 1 104 WI
Degray ARC
KE5VLX 27 2 1 104 AR
Ak-Sar-Ben ARC
KE0ULW 19 2 1 104 NE
Lower Arkansas Ham Operators Group
KK5KLK 21 2 1 104 AR
South Bay ARC
KK6BY 17 2 1 104 LAX
Conejo Valley ARC
KK6LMA 14 2 1 104 LAX
San Fernando Valley ARC
KM6JS 27 2 1 104 LAX
State Line RC
N3OAW 52 2 1 104 EPA
N5CMH 27 2 1 104 OK
Northeast Tarrant ARC
N5DWV 27 2 1 104 NTX
N6RD 27 2 1 104 EB
Guelph ARC
VE3QB 27 2 1 104 ONS
Blackstone Valley ARC
W1BRU 27 2 1 104 RI
Columbia-Montour ARC (PA)
W3GY 27 2 1 104 EPA
W6GF 54 1 1 104 EB
W7YG 27 2 1 104 WCF
East Greenbush ARA
WB2LXC 27 2 1 104 ENY
Sierra Intermountain Emergency Radio Assn.
K7VOC 53 1 1 103 NV
AB2WS 26 2 2 102 GA
Platte Co. ARG
AB0GD 18 2 1 102 MO
Microhams ARC
AE7Q 26 2 1 102 WWA
K1JHS 26 2 1 102 MS
Martin Co. ARA
K4AW 26 2 1 102 SFL
Sawnee ARA
K4JNM 26 1 1 102 GA
Alamance ARC
K4QE 48 1 1 102 NC
Sierra Foothills ARC
K6DGW 13 2 1 102 NV
Radio Amateurs of Skagit Co.
K7JNV 21 2 1 102 WWA
Meriden ARC
KC1KQH 1 2 1 102 CT
Kansas/Nebraska ARC
KE0EYG 26 2 1 102 KS
Crescenta Valley RC
KF6YAN 51 2 1 102 LAX
Lincoln Hills ARC
KN6DRM 26 2 1 102 SV
Falmouth ARA
KX1C 26 2 1 102 EMA
N3GTG 13 2 1 102 VA
Austin ARC
N5MHI 13 2 1 102 STX
Sierra Foothills ARC
N6MRP 17 2 1 102 SV
Mike & Key ARC
N7BRR 13 2 1 102 WWA
NH7U 13 2 1 102 PAC
Kitchener-Waterloo ARC
VE3EOI 13 2 1 102 ONS
VE9BWK 13 2 1 102 MAR
New Providence ARC
W2UDT 17 2 1 102 NNJ
PODXS 070
W3HF 13 2 1 102 EPA
Marple Newtown ARC & Mobile Sixers RC
W3JAM 26 2 1 102 EPA
Brazos Valley ARC
W5JAZ 26 2 1 102 CT
W6UGA 26 2 1 102 LAX
Gwinnett ARS
W7ALS 26 2 1 102 GA
Northeast Maryland AR Contest Soc.
W7IGC 14 2 1 102 MDC
Greater Beloit ARC
W9BJ 26 2 1 102 WI
Shore Points ARC
WA2YSA 13 2 1 102 SNJ
Niagara Frontier Radiosport
WB2AIV 26 2 1 102 WNY
WB4VYB 52 1 1 102 MS
Federación de Radio Aficionados de Puerto Rico
WP4PRS 13 2 1 102 PR
K4PZZ 51 1 1 101 VA
Southern Berkshire ARC
KC2CBV 51 1 1 101 ENY
AB8KP 50 1 1 100 MI
Stratford ARC
K1FJG 25 2 1 100 CT
Indiana Co. ARC
K3ZYK 25 2 1 100 WPA
K4DSB 25 2 1 100 WCF
Boeing Employees ARS
KA7TTY 15 2 1 100 WWA
King George AR Operators
KA8CFM 25 2 1 100 VA
Wisconsin ARC
KA9GLA 25 2 1 100 WI
Lehigh Valley ARC
KC3EXO 25 2 1 100 EPA
WRAET
KD2SGM 24 2 1 100 NNJ
Virginia Beach ARC/Virginia DX Century Club
KD4YLX 25 2 1 100 VA
Kansas/Nebraska ARC
KE0LOT 50 1 1 100 KS
L.A. City ACS
KM6PTE 24 2 1 100 LAX
Cherokee ARS
KN4QEX 19 2 1 100 GA
Lamorinda Area Radio Interest Group
KQ6OL 25 2 1 100 EB
Charleston ARS
KW4XQ 25 2 1 100 SC
Whitman ARC
N1CFB 13 2 1 100 EMA
Bankhead ARC
N4DPH 16 2 1 100 AL
N9LTA 25 2 1 100 WI
Metro ARC
N9LVG 25 2 1 100 IL
Garland ARC
NG5Y 25 2 1 100 NTX
Delta ARS
VA7MD 25 2 1 100 BC
Barrie ARC
VE3WPK 25 2 1 100 ONS
East Greenbush ARA
W2RBJ 50 1 1 100 ENY
W2ZYQ 50 1 1 100 WNY
Reading RC
W3ITH 25 2 1 100 EPA
Montgomery ARC/Damascus ECT
W3VVV 25 2 1 100 MDC
Sierra Foothills ARC
W6DT 23 2 1 100 SV
W6FGJ 25 2 1 100 AR
Comstock ARA
W7AB 25 2 4 100 NV
W9KOZ 25 2 1 100 CO
Chandler Ham RC
WB8ZXU 25 2 1 100 AZ
Lewisville ARA
WM1MM 25 2 1 100 NTX
Northeast Louisiana ARC
WM5LA 25 2 1 100 LA
W0VAL 15 2 1 100 CO
Delaware Valley Radio Assn.
NJ3U 49 1 1 99 SNJ
AA5NT 24 2 1 98 WCF
Mississippi Coast ARA
AB5FU 12 2 1 98 MS
Wisconsin ARC
AB9XI 24 2 1 98 WI
Straight Key Century Club
AC2RJ 12 2 1 98 ENY
State Line RC
K3CWI 24 2 1 98 EPA
Antelope Valley ARC
K6YQO 24 2 1 98 LAX
K8GVK 24 2 1 98 MI
Marietta ARC
K8HUG 19 2 1 98 OH
Kershaw Co. ARC
KB1ND 49 2 1 98 SC
Boone & Hamilton Co. ARES
KB0MPL 12 2 1 98 IA
First State ARC
KC3FAU 24 2 1 98 DE
Arizona Outlaws Contest Club
KF7U 24 1 1 98 AZ
Austin ARC
KG5SCN 12 2 1 98 STX
Johnson Space Center ARC/Clear Lake ARC
KG5URA 24 2 1 98 STX
KI6UOC 16 2 1 98 SF
BayNet
KK6LDH 22 2 1 98 SCV
KM4ZST 12 2 1 98 SC
Rio Hondo ARC
KM6MTV 24 2 1 98 LAX
Williamsburg Area ARC
KN4ZMF 24 2 1 98 VA
KO8S 12 2 1 98 MI
Denver RC
K0WN 4 2 3 98 CO
Delta ARC
KW4RJ 24 2 1 98 TN
SDGARES
N1TEN 24 2 1 98 SDG
Great Bay RA
N1XUQ 24 2 1 98 NH
Orange Co. (NY) ARC
N2SFS 13 2 1 98 ENY
REDXA/MARS
N6OJ 24 2 1 98 SF
N7BBU 12 2 1 98 OR
Katy ARS
NZ5TX 23 2 1 98 STX
Victoria-Haliburton ARA
VE3KZJ 24 2 1 98 ONE
Stratford ARC
W1CTC 24 2 1 98 CT
W2GJF 24 2 1 98 ENY
W3TZ 48 1 1 98 AR
Palouse Hills ARC
W7INF 12 2 1 98 WWA
Tyler ARC
WA5SVY 24 2 1 98 NTX
Grand Strand ARC
WB4LZW 12 2 1 98 SC
Longmont ARC
W0UM 12 2 1 98 CO
Fort Washington ARC
KB3SPH 47 1 1 97 MDC
Utah Valley ARC
AD6ZR 14 2 1 96 UT
Richardson Wireless Klub
AF5MN 23 2 2 96 NTX
Lake Co. ARA
K8QXO 23 2 1 96 OH
Lake Co. RACES/ARES
K9DRH 23 2 1 96 IL
K9MJA 23 2 1 96 IN
Radio Club of Tacoma
KC7PS 23 2 1 96 WWA
Kaw Valley ARC
KD0ZWQ 23 2 1 96 KS
Mansfield-Johnson AR Service
KI5IZI 23 2 1 96 NTX
Highline ARC
KI7OOI 23 2 1 96 WWA
Oro Valley ARC
KI7UCV 20 2 1 96 AZ
Haywood Co. ARC
KK4FEZ 23 2 1 96 NC
Austin ARC
KM5JU 23 2 1 96 STX
Yavapai ARC
KT7P 23 2 1 96 AZ
Lamorinda Area Radio Interest Group
KW6SA 23 2 1 96 EB
Troy ARA
N2LBZ 23 2 1 96 ENY
Kent Co. ARC
N3EDO 23 2 1 96 DE
N4PCC 23 2 1 96 NFL
Sandhills ARC
N4TMA 23 2 1 96 NC
South Canadian ARS
N5AAP 22 2 1 96 OK
Orange Co. (CA) ARC
NI6E 23 2 1 96 ORG
Oro Valley ARC
NN7BH 23 2 1 96 AZ
Lehigh Valley ARC
N0KIA 23 2 1 96 EPA
Owatonna Steele Co. AR
N0UW 23 2 1 96 MN
Peterborough ARC
VE3MT 46 1 1 96 ONE
North Fulton ARL
W1CY 23 2 1 96 GA
W4WLC 23 2 1 96 NFL
Olympia ARS
W7BRR 23 2 1 96 WWA
Chisholm Trail ARC
WA6NAB 23 2 1 96 OK
Muscatine ARC
WB0TSG 19 2 1 96 IA
WD4BMG 48 2 1 96 NC
Whitman Co. ARES
WI7EOC 23 2 1 96 EWA
Tri-Co. ARA (NJ)
AC2ZZ 22 2 1 94 NNJ
Santa Clarita ARC
AD6CY 11 2 1 94 LAX
North Richland Hills ARC
K5LTD 11 2 1 94 NTX
Salem ARC
K7JKM 22 2 1 94 OR
K8BMZ 14 2 1 94 MI
BEANOS
K8IJ 11 2 1 94 KY
Cuyahoga Falls ARC
K8RJM 44 1 1 94 OH
Aardvark Wireless Group
K9FBA 11 2 1 94 WCF
Estes Valley ARC
KA6WSI 11 2 1 94 CO
Great South Bay ARC
KC2SYF 22 2 1 94 NLI
Orange Co. (NY) ARC
KD2PTX 22 2 1 94 ENY
Johnson Co. Radio Amateurs Club
KD7MXY 22 2 2 94 KS
TCARES
KE6KYI 22 2 1 94 SJV
Longmont ARC
KE0SI 17 2 1 94 CO
KF5CZN 22 2 1 94 STX
Brazos Valley ARC
KF5PHA 22 2 1 94 STX
Keowee Toxaway ARC
KI4KKB 22 2 1 94 SC
KI5GZW 22 2 1 94 AR
FVVFD
KJ4VJZ 22 2 1 94 NFL
Stanwood Camano ARC
KK6SUE 22 2 1 94 WWA
San Juan Co. ARS
KU7M 22 2 1 94 WWA
Peekskill/Cortlandt ARA
N2HTT 11 2 1 94 WNY
VE2POU 22 2 1 94 QC
Toronto ARC
VE3HOY 11 2 1 94 GTA
Kemptville ARG
VE3JLV 22 2 1 94 ONE
Delta ARS
VE7XH 21 2 1 94 BC
RF Hill ARC
W3OTZ 22 2 1 94 EPA
Gwinnett ARS
W4DTR 22 2 1 94 GA
Schaumburg ARC
W9RKK 22 2 1 94 IL
Badger Contesters
WA9GON 11 2 1 94 WI
WN2A 11 2 1 94 NNJ
WO2N 11 2 1 94 NLI
Clark Co. (WA) ARC
AA6MR 21 2 2 92 WWA
Alford Memorial RC
AJ4XI 21 2 1 92 GA

K2AF	27	1	1	92	NNJ
Foothills ARS					
K3ADM	21	2	1	92	SCV
Murray State Univ ARC					
K4MKY	21	2	1	92	KY
Tim Smith					
K7TTK	21	2	1	92	OR
BEARS of Manchester ARC					
KB1JKA	21	2	1	92	CT
Adams Co. ARS					
KC3GBV	21	2	1	92	EPA
Huntsville ARC					
KF5UV	21	2	1	92	AL
Lake Area (TX) ARC					
KG5WVT	21	2	1	92	NTX
Coconino ARC					
KI7WTS	21	2	20	92	AZ
Yuba-Sutter ARC					
KK6VZD	21	2	1	92	SV
Alexandria RC					
KM4RDR	11	2	1	92	VA
Lee Co. CERT					
KN4CVQ	21	2	1	92	NC
Delta ARC					
KN4OEK	21	2	1	92	TN
KN4TAK	21	2	1	92	TN
Richardson Wireless Klub					
N5AJD	21	2	1	92	NTX
Arlington ARC					
N5PWW	21	2	1	92	NTX
Top of Michigan ARC					
N8JTQ	21	2	1	92	MI
South Orange ARA					
NH7WG	13	2	1	92	ORG
RF Hill ARC					
NI2Q	27	1	1	92	EPA
London ARC					
VE3TCO	21	2	2	92	ONS
Shenandoah Valley ARC					
W4MER	21	2	1	92	VA
Whitman ARC					
WA1Q	20	2	1	92	EMA
Forsyth ARC					
WA4NOT	21	2	1	92	NC
Four Lakes ARC					
WA9LJK	12	2	1	92	WI
Wexaukee ARC					
WB8WIV	16	2	1	92	MI
Dallas ARC					
WD5WIN	21	2	1	92	NTX
Rochester (MN) ARC					
W0MN	23	1	1	92	MN
DuPage ARC					
K9ROM	41	1	1	91	IL
Burlington Co. RC					
NB2S	41	1	1	91	SNJ
San Antonio RC					
AB5XZ	20	2	1	90	STX
Grand Strand ARC					
AC2LB	17	2	1	90	SC
San Jose ARES RACES					
AJ6DU	10	2	1	90	SCV
Meriden ARC					
K1WJL	28	1	1	90	CT
Medina Co. ARC					
K2KSU	20	2	1	90	OH
Bristol (TN) ARC					
K4BGV	20	2	1	90	TN
Jefferson Co. (TX) ARC					
K5AKO	20	2	1	90	STX
McKinney ARC					
K5VHC	10	2	1	90	NTX
Medina Co. ARC					
K8IIT	20	2	1	90	OH
Holmesburg ARC					
KA3TTT	10	2	1	90	EPA
Clark Co. (WA) ARC					
KA7RON	20	2	1	90	WWA
Sheboygan Co. ARC					
KC9YL	10	2	1	90	WI
Lewis and Clark RC					
KD9SG	20	2	1	90	IL
KE6JLF	20	2	1	90	LAX
Wireless Assn. of South Hills					
KE7FD	20	2	1	90	WPA
Clallam Co. ARC					
KE7Z	20	2	1	90	WWA
Allegan Co. ARC					
KE8OBK	20	2	1	90	MI
Livermore AR Klub					
KG6JHQ	20	2	1	90	EB
Palo Alto ARA					
KG6YUN	20	2	1	90	SCV
KJ7YY	20	2	1	90	ID
Orange Park ARC					
KK4ECR	10	2	1	90	NFL
El Dorado Co. ARC					
KK6VIX	27	1	1	90	SV
Glynn ARA					
N9PIT	20	2	1	90	GA
Mecklenburg ARS					
N0JJO	20	2	1	90	NC
Halifax ARC					
VA1DT	20	2	1	90	MAR
Club Radioamateur de la Vallée Du Richelieu					
VE2JM	40	1	1	90	QC
West Fork ARC					
W5FKN	20	2	1	90	NTX
Auburn Area EmComms Team					
W7INK	20	2	1	90	WWA
WA3GOS	10	2	1	90	MDC
Albany ARA					
WB2VXS	20	2	1	90	ENY
Smoky Mountain ARC					
WB4E	20	2	1	90	TN
ARA of Southwest Florida					
WB8VQU	20	2	1	90	SFL
Radio Research Club					
WB0QDO	20	2	1	90	SD
WN4RSS	20	2	1	90	NC
Albuquerque DX Assn.					
KR3DX	39	1	1	89	WPA
Central Louisiana ARC					
AB5JM	19	2	1	88	LA
KB1YO	19	2	1	88	CT
Cumberland ARC					
KB3POT	19	2	1	88	EPA
Lehigh Valley ARC					
KB3WLU	19	2	1	88	EPA
Mora Open Repeater Assn.					
KB0RFY	19	2	1	88	MN
Columbia (MD) ARA					
KC3BJS	19	2	1	88	MDC
Platte Co. ARG					
KC0QIG	19	2	1	88	MO
KD4ACG	19	2	1	88	WCF
KE0CCI	19	2	1	88	MO
Southwest Mississippi ARC					
KG5HGV	19	2	1	88	MS
Oro Valley ARC					
KG7DYX	15	2	1	88	AZ
St. Petersburg ARC					
KN4DXH	19	2	1	88	WCF
Lakes Area (TX) ARC					
N5EBH	19	2	1	88	STX
N8NSK	19	2	1	88	MI
Chesapeake AR Service					
NS1H	19	2	1	88	VA
Comox Valley ARC					
VE7XFA	16	2	1	88	BC
Monessen ARC					
W3CSL	19	2	1	88	WPA
Long Island Mobile ARC					
WA2SUH	19	2	1	88	NLI
South Jersey Radio Assn.					
WA2WTF	19	2	1	88	SNJ
Steubenville-Weirton ARC					
WD8IIJ	19	2	1	88	OH
Raytown ARC					
WX0MWL	19	2	1	88	MO
Western Illinois ARC					
NR9Q	37	1	1	87	IL
Middle Peninsula ARC					
AI4FH	18	1	1	86	VA
AJ6AN	9	2	1	86	SDG
Baton Rouge ARC					
K5HLC	18	2	1	86	LA
Lewisville ARA					
K5IWT	18	2	1	86	NTX
Kitsap Co. ARC					
K7ALM	18	2	1	86	WWA
KB3IPZ	18	2	1	86	EPA
Sangamon Valley RC					
KD9KOO	14	2	1	86	IL
Blue Springs ARC					
KE0VCD	9	2	1	86	MO
KG7DC	9	2	1	86	OR
Heritage Hunt Hams					
KI4SA	18	2	1	86	VA
Oro Valley ARC					
KI7DET	18	2	1	86	AZ
South Bay ARA					
KJ6DBE	9	2	1	86	EB
Tri-Co. ARA (CA)					
KK6WGT	18	2	1	86	LAX
NOARCFL					
KM4OZK	8	2	3	86	NFL
Great South Bay ARC					
N2CRV	18	2	1	86	NLI
Skyline ARC					
N2NRV	9	2	1	86	WNY
Humboldt ARC					
W6IES	18	2	1	86	SF
Edmond ARS					
WB5EVO	18	2	1	86	OK
Port Lavaca ARC					
WO5O	9	2	1	86	STX
Ole Virginia Hams					
KK4TCE	35	1	1	85	VA
Sierra Foothills ARC					
N7MSM	35	1	1	85	WY
Schaumburg ARC					
N9GUN	21	1	1	85	IL
W7TUE	35	1	1	85	AZ
Pasadena RC					
K1NAR	17	2	1	84	LAX
Rochester (NY) DX Assn.					
K2SI	12	2	1	84	WNY
Johnson Co. Radio Amateurs Club					
K7COM	17	2	1	84	KS
Garden City ARC					
KA8UZE	17	2	1	84	MI
KC7PD	17	2	1	84	OR
Macon Co. ARC					
KC0AMJ	42	2	1	84	MO
Washington Area ARC					
KC0YHU	17	2	1	84	IA
Ford AR League					
KD8CSE	17	2	1	84	MI
Fox River Radio League					
KD9OIN	17	2	1	84	IL
Keowee Toxaway ARC					
KE4OGG	17	2	1	84	SC
KE4ONY	17	2	1	84	AL
Vaca Valley RC					
KE5DC	17	2	1	84	EB
Northeast Tarrant ARC					
KE5MC	17	2	1	84	NTX
Boeing Employees ARS – St. Louis					
KF0ADW	17	2	1	84	MO
Alexandria RC					
KI4D	17	2	1	84	VA
Palos Verdes ARC					
KM6LGX	17	2	1	84	LAX
GOTAHAMS					
KM6UNQ	17	2	1	84	ORG
Pocatello ARC					
KO7P	17	2	1	84	ID
Rockwall ARC					
N5EBW	17	2	1	84	NTX
Alliance ARC					
N8IGZ	17	2	1	84	OH
Livonia ARC					
N8LSA	17	2	1	84	MI
DuPage ARC					
N9NWA	17	2	1	84	IL
Comox Valley ARC					
VE7YAH	17	2	1	84	BC
K1USN RC					
W1VP	17	2	1	84	EMA
Bergen Co. Emergency Management RC					
W2AMP	7	2	1	84	NNJ
W3SUE	17	2	1	84	SC
Lake Monroe ARS					
W4QED	17	2	2	84	NFL
W7JPF	17	2	1	84	OR
Stanford ARC					
WN6I	17	2	1	84	SCV
Eastern New Mexico ARC					
WS5D	9	2	1	84	NM
FVVFD					
WQ4X	33	1	1	83	NFL
Columbus ARC					
AD4NR	16	2	1	82	GA
Cherryville Repeater Assn. II					
K2MRH	16	2	1	82	NNY
Loma Pioneer Repeater Club					
K6BBY	32	1	1	82	SCV
Monkey Lover's Radio Consortium					
K6HJU	16	2	1	82	SCV
Irvine Disaster EmComms					
K6KWH	16	2	1	82	ORG
K9FAA	16	2	1	82	IN
Northeast Maryland AR Contest Soc.					
KA3HNK	16	2	1	82	MDC
West Valley ARC					
KA7RGW	16	2	1	82	AZ
KB1IRB	16	2	1	82	CT
Athens Co. ARA					
KB8TAD	16	2	1	82	OH
Riverland ARC					
KD9KGQ	16	2	1	82	WI
4SQRP					
KD9MDL	16	2	1	82	IL
KE8FHG	8	2	1	82	OH
KF4LGT	16	2	1	82	NC
Portland ARC					
KG7SEU	16	2	1	82	OR
Franklin Co. (NC) ARC					
KJ4TTI	16	2	1	82	NC
South Orange ARA					
KK6UMB	16	2	1	82	ORG
Fresno ARC					
KK6ZKE	16	2	1	82	SJV
Marshall Co. ARS					
KN4MBG	16	2	1	82	TN
KU4RC	16	2	1	82	NTX
KX7DAR	16	2	1	82	ID
Tompkins Co. ARA					
N2MOF	16	2	1	82	WNY
Southern Pennsylvania ARC					
N3IOE	41	2	1	82	EPA
Orange Co. Radio Amateurs & Durham FM Assn.					
N4GF	11	2	1	82	NC
ND3R	8	2	1	82	WPA
The Villages ARC					
NV1U	14	2	1	82	NFL
Toronto ARC					
VA3KCP	16	2	1	82	GTA
Barrie ARC					
VA3NED	16	2	1	82	ONS
W3HDG	8	2	1	82	WPA
Gwinnett ARS					
W3WWT	8	2	1	82	GA
Silver Comet ARS					
W4DTO	16	2	1	82	GA
PODXS 070					
W7JSD	8	2	1	82	AZ
Arizona Outlaws Contest Club					
W7RH	8	2	1	82	NV
The Villages ARC					
W9ETC	16	2	1	82	NFL
Southwest Iowa ARC					
WA0ZQG	16	2	1	82	IA
Parker Radio Assn.					
WB3EVZ	8	2	1	82	CO
San Antonio RC					
WJ4M	16	2	1	82	STX
Brownwood ARC					
AG5IT	31	1	1	81	NTX
Sierra Nevada ARS					
KD7ADI	31	1	1	81	SJV
Eastern Arizona ARS					
AF7EF	9	2	1	80	AZ
K2ZP	15	2	1	80	LA
Baton Rouge ARC					
K5NMT	15	2	1	80	LA
Antelope Valley ARC					
K6DER	15	2	1	80	LAX
Reading RC					
KB3LDI	15	2	1	80	EPA
Lehigh Valley ARC					
KC3BLF	15	2	1	80	EPA
Delaware Lehigh ARC					
KC3MLI	15	2	1	80	EPA
Toledo Mobile Radio Assn.					
KD8KXD	15	2	1	80	OH
Cuyahoga Falls ARC					
KE8GYR	15	2	1	80	OH
Johnson Co. Radio Amateurs Club					
KE0CGR	15	2	1	80	KS
Arlington ARC					
KF5NRS	15	2	1	80	NTX
South Bay ARA					
KF6ZYD	15	2	1	80	EB
KJ6KCG	15	2	1	80	ORG
Williamsburg Area ARC					
KM4YSN	15	2	2	80	VA
Paso Robles ARC					
KM6KSQ	30	1	1	80	SCV
Sierra Foothills ARC					
KM6NFS	10	2	1	80	SV
KM6TVJ	15	2	1	80	LAX
Midland (TX) ARC					
N5POB	15	2	1	80	WTX
AR Caravan Club					
N5UVQ	15	2	1	80	NM
N6REK	16	1	1	80	SB
NM8U	14	2	1	80	OH
Longmont ARC					
N0AJM	40	2	2	80	CO
EmComms Assn. of St. Charles					
N0AQI	15	2	1	80	MO
Lake Area (TX) ARC					
N0IIL	15	2	1	80	NTX
Barrie ARC					
VA3EEB	15	2	1	80	ONS
Mercer Co. ARC					
W3YEX	15	2	1	80	WPA
W4OCF	20	2	1	80	NFL
Austin ARC					
W5DVG	15	2	1	80	STX
Stanford ARC					
W6XW	15	2	1	80	AZ
Oro Valley ARC					
W9OW	15	2	1	80	AZ
Mount Vaca RC					
WA6TQJ	15	1	1	80	SV
WB4KSL	15	2	1	80	AL
Macon Co. ARC					
WB0HLW	40	2	1	80	MO
Kansas/Nebraska ARC					
W0FYX	15	2	1	80	KS
WW3MM	15	2	1	80	MDC
Sturdy Memorial Hospital ARC					
AA1MA	7	2	1	78	EMA
South Lyon Area ARC					
AC8NO	14	2	1	78	MI
Monroe Co. Radio Communications Assn.					
AD8EP	28	1	1	78	OH
Ak-Sar-Ben ARC					
AD0LS	14	2	1	78	NE
Arlington ARC					
AG5QE	7	2	1	78	NTX
Stillwater ARC					
K5HUN	14	2	1	78	OK
Meriden ARC					
KC1ISI	14	2	1	78	CT
River City AR Communications Soc.					
KD6RM	8	2	1	78	SV
San Gorgonio Pass Amateur Club					
KD6ZJZ	14	2	1	78	ORG
Bolingbrook ARS					
KD9PKQ	14	2	1	78	IL
Twin Cities Repeater Club					
KD0XT	14	2	1	78	MN

Grayson Co. ARC					
KG5QPI	7	2	1	78	NTX
Greater Kingston RC					
KI7T	14	2	1	78	WWA
KI7VWP	14	2	1	78	AZ
Monkey Lover's Radio Consortium					
KJ6WKT	14	2	1	78	SCV
Oxford Co. ARES					
N1YIS	14	2	1	78	ME
Westchester EmComms Assn.					
N2KT	14	2	1	78	ENY
Northeast Maryland AR Contest Soc.					
N3JWE	13	2	1	78	MDC
Associated Radio Amateurs of Long Beach					
N6RU	14	2	1	78	LAX
Orange Co. (CA) ARC					
N6TMT	14	2	1	78	ORG
Univ of Arizona ARC					
N7GSG	14	2	1	78	AZ
Milwaukee Radio Amateurs' Club					
N9UX	7	2	1	78	WI
NA0ED	14	2	1	78	CO
Lewisville ARA					
NE5ET	7	2	1	78	NTX
Ottawa Valley Mobile RC					
VA3BGO	14	2	1	78	ONE
Burlington ARC					
VA3YVE	14	2	1	78	GTA
London ARC					
VE3FRW	14	2	1	78	ONS
Mile Highlanders Group					
W4CDO	7	2	1	78	TN
Lake Monroe ARS					
W4IIR	14	2	1	78	ENY
Smokin Tokin Jokin ARC					
W9THC	7	2	1	78	SB
Falmouth ARA					
WA1RC	14	2	1	78	EMA
Decatur ARC					
WB4VHF	14	2	1	78	AL
Scott Co. (VA) ARS					
WE4ET	77	1	1	77	VA
Coconino ARC					
AE7OH	13	2	20	76	AZ
AG6QX	13	2	1	76	SCV
Oro Valley ARC					
K7GVB	13	2	1	76	AZ
Island Co. ARC					
K7MMC	7	2	1	76	WWA
Virgin Valley ARC					
K7ZZQ	13	2	1	76	NV
Oro Valley ARC					
K8LJK	13	2	1	76	AZ
Oro Valley ARC					
KA2IYU	13	2	1	76	AZ
Sparta ARC					
KA4APE	13	2	1	76	NC
KB7YEL	13	2	1	76	WNY
Burlington Co. RC					
KC2MTO	13	2	1	76	SNJ
KE0VPA	13	2	1	76	IA
Sparta ARC					
KF5DNI	11	2	1	76	NC
Coconino ARC					
KI6WCK	13	2	20	76	AZ
Verde Valley ARA					
KI7FXA	13	2	1	76	AZ
KJ4RGS	7	2	1	76	TN
North Fulton ARL					
KJ4YOT	13	2	1	76	GA
Palo Alto ARA					
KM6SKA	13	2	1	76	SCV
South Bay ARA					
KM6VHD	13	2	1	76	EB
Framingham ARA					
N1MH	13	2	1	76	EMA
Sterling Park ARC					
N4CV	11	2	1	76	VA
Panhandle ARC					
N5LUL	13	2	1	76	WTX
Santa Clara Co. ARA					
N6TRU	3	2	1	76	SCV
Ski Country ARC					
N0GLJ	9	2	1	76	CO
Elmira ARC					
VE3DCC	13	2	1	76	ONS
Smoky Mountain ARC					
W4LSM	13	2	1	76	TN
Radio Amateurs of Skagit Co.					
W7ABF	26	1	1	76	WWA
Oro Valley ARC					
W7JJO	13	2	1	76	AZ
Lake Oswego ARC					
W7ZZX	13	2	1	76	OR
McHenry Co. Wireless Assn.					
W9NBG	13	2	1	76	IL
Peak Radio Assn.					
WA7YXY	13	2	1	76	OR
The Villages ARC					
W9DAL	25	1	1	75	NFL
AC5CM	12	2	1	74	STX
Montgomery Amateur Club					
K1AZE	24	1	1	74	AL
Kansas Antenna Club in Johnson Co.					
K4JNB	12	2	1	74	KS
Henderson ARC					
K7JTC	12	2	1	74	NV
Radio Club of Tacoma					
K7YEM	6	2	1	74	WWA
K9MD	24	1	1	74	IN
Lehigh Valley ARC					
KB3UZE	12	2	1	74	EPA
Montachusett ARA					
KC1JEX	12	2	1	74	EMA
Phil-Mont Mobile RC					
KC2PMW	12	2	1	74	SNJ
Ozaukee RC					
KC9TSO	12	2	1	74	WI
Keuka Lake ARA					
KD2SPC	12	2	1	74	WNY
KD2SPM	2	2	1	74	NNJ
Utah ARC					
KE6JNO	12	2	1	74	UT
Delaware ARA					
KE8IZX	12	2	1	74	OH
Portage Co. AR Service					
KE8MWD	12	2	1	74	OH
Sonoma Co. Radio Amateurs					
KF6LMB	12	2	1	74	SF
Lake Area (TX) ARC					
KG5ORL	12	2	1	74	NTX
Messila Valley RC					
KJ5R	6	2	1	74	NM
Minnesota Wireless Assn					
KJ0P	8	2	1	74	MN
Conejo Valley ARC					
KM6WMV	12	2	1	74	SB
Williamsburg Area ARC					
KN4ZMG	2	2	1	74	VA
Vaca Valley RC					
KN6ETR	12	2	1	74	EB
Fauquier ARA					
KO4EGC	6	2	1	74	VA
EWEphoria RC					
N1JOO	12	2	1	74	NFL
Cove Repeater Assn.					
N2VOX	12	2	1	74	LA
Monessen ARC					
N3UML	12	2	1	74	WPA
Snohomish Co. Hams Club					
N7OBI	12	2	1	74	WWA
NX6C	6	2	1	74	LAX
VA7ZM	11	2	1	74	BC
Covey Hill ARC					
VE2DTV	12	2	1	74	QC
W4BTH	12	2	1	74	KY
Valley and Massanutten ARA					
W4JQT	12	2	2	74	VA
Ramona Outback ARS					
W6IET	12	2	1	74	SDG
W8XY	10	2	1	74	OH
Franklin Co. (MA) ARC					
WA1QKT	12	2	1	74	WMA
Pasadena RC					
WB6CIA	6	2	1	74	LAX
McMinnville ARC					
WE7DW	6	2	1	74	OR
Whitman ARC					
WG1L	6	2	1	74	EMA
ARC of the Univ of Arkansas					
WJ5V	24	1	1	74	AR
Newton ARA					
W0RLJ	12	2	1	74	IA
Maine Ham Radio Soc.					
N1MLE	23	1	1	73	ME
AF4WR	11	2	1	72	VA
K3YEO	7	2	1	72	VA
Gwinnett ARS					
K4CQO	11	2	1	72	GA
Albemarle ARC					
K4RKA	11	2	1	72	VA
DuPage ARC					
K9LEZ	11	2	1	72	IL
Topanga Disaster Radio Team					
K9TPR	11	2	1	72	LAX
Sussex Co. ARC					
KA2QOD	11	2	1	72	NNJ
Boston ARC					
KB1EKN	11	2	1	72	EMA
Warminster ARC					
KB1JEY	11	2	1	72	EPA
Baton Rouge ARC					
KD5MLD	11	2	1	72	LA
NOARS					
KD8RNF	11	2	1	72	OH
South East Metro ARC					
KD0ZWM	11	2	1	72	MN
Albemarle ARC					
KF4IE	22	1	1	72	VA
KJ6OVM	6	2	1	72	SJV
KK6VZE	11	2	1	72	SF
Humboldt ARC					
KN6CEH	10	2	1	72	SF
Palos Verdes ARC					
KO6MD	11	2	1	72	LAX
KW0MPS	7	2	1	72	MN
Eastern PA ARA					
N3SWR	11	2	2	72	EPA
WCARC of TX					
N5DFW	11	2	2	72	STX
HP Boise ARC					
NA7MS	10	2	1	72	ID
Club Station Répétitrice de Laval					
VE2GKL	11	2	1	72	QC
VE9WRS	11	2	1	72	MAR
Bear Bait RC					
WA2DAD	11	2	1	72	WNY
Utah ARC					
WB7TGP	11	2	1	72	UT
Valley of the Moon ARC					
WD6BOR	11	2	1	72	SF
Cleveland ARC					
WM4RB	11	2	1	72	TN
Chicago FM Club					
AC9NS	5	2	1	70	IL
Douglas Co. ARC					
AC0KN	10	2	1	70	KS
AC0MG	10	2	1	70	CO
Boca Raton ARA					
K4KZM	10	2	1	70	SFL
K6WK	10	2	1	70	SV
United Radio Amateur Club					
K6ZNL	10	2	1	70	LAX
Superstition ARC					
K7YJ	10	2	1	70	AZ
Mid-State ARC					
K9THR	10	2	1	70	IN
ARA of the Southern Tier					
KA4ERK	10	2	1	70	WNY
Oro Valley ARC					
KA0LCD	10	2	1	70	AZ
Franklin Co. (MA) ARC					
KC1DCQ	5	2	1	70	WMA
Peel ARC					
KC2TXO/VE3IO	2	1	70	GTA	
Saratoga Co. ARA					
KC2YLM	10	2	1	70	ENY
Warminster ARC					
KC3GWL	10	2	1	70	EPA
Heart O' Texas ARC					
KC5PRG	10	2	1	70	NTX
Wellesley ARS					
KD1VA	10	2	1	70	EMA
KD2DVW	5	2	1	70	SNJ
San Juan Co. ARS					
KD7TUN	10	2	1	70	WWA
Seneca RC					
KD8LLS	10	2	1	70	OH
KE5LLY	20	1	1	70	STX
Denver RC					
KE0YKV	10	2	1	70	CO
Orange Park ARC					
KF4LIS	10	2	1	70	NFL
Sierra Nevada ARS					
KF7KTC	10	2	1	70	NV
Franklin Co. (NC) ARC					
KG4VDM	10	2	1	70	NC
Lake Monroe ARS					
KJ4UDO	10	2	1	70	NFL
Woodbridge Wireless					
KM4DLU	10	2	1	70	MS
Humboldt ARC					
KN6FXK	10	2	1	70	SF
KO4DJG	8	2	1	70	SFL
Sky Valley ARC					
N7SRR	5	2	1	70	WWA
MARCA					
N7ZPY	10	2	1	70	AZ
VMware ARC					
NA6US	5	2	1	70	OR
Twin City (IL) ARC					
ND9JR	6	2	1	70	IL
Club Radioamateur Sorel-Tracy					
VE2GT	5	2	1	70	QC
Oro Valley ARC					
W1IXQ	10	2	1	70	AZ
Big Spring ARC					
W5WE	20	1	1	70	WTX
Nashville ARC					
W8NWA	5	2	1	70	TN
North Shore (IL) RC					
W9TOC	10	2	1	70	IL
Eastside Contest Group					
WA6MRK	20	1	1	70	SJV
Livermore AR Klub					
AE6D	9	2	1	68	EB
Red River Valley ARC					
AF5WO	18	1	1	68	NTX
Queen Anne's ARC					
K3QAC	9	2	1	68	MDC
Charlotte ARC					
K4RSG	9	2	1	68	NC
Mount Diablo ARC					
K6KHB	9	2	1	68	EB
North Ottawa ARC					
K8BGB	9	2	1	68	MI
Macon Co. ARC					
KC0ELC	17	2	1	68	MO
Ventura Co. ARC					
KD6UDA	9	2	1	68	SB
KE4GC	9	2	1	68	GA
Montgomery Amateur Club					
KN4SBC	9	2	1	68	AL
KN4UND	9	2	1	68	VA
KN6ITP	9	2	1	68	SCV
Orange Co. Radio Amateurs & Durham FM Assn.					
N2XZF	9	2	1	68	NC
North Fulton ARL					
N4NAS	9	2	1	68	GA
Clark Co. (IN) ARC					
N9BWT	9	2	1	68	IN
Middlesex ARS					
NM1Y	18	1	1	68	CT
Peel ARC					
VA3CQE	9	2	1	68	GTA
North Shore (ON) ARC					
VA3GDZ	9	2	1	68	GTA
Barrie ARC					
VA3PWO	9	2	1	68	ONS
Covey Hill ARC					
VE2FGL	9	2	2	68	QC
VE5WIZ	9	2	1	68	SK
Campbell River ARS					
VE7DAY	9	1	1	68	BC
Falmouth ARA					
W1FX	9	2	1	68	EMA
Yonkers ARC					
W2HY	5	2	1	68	ENY
Tri-Co. ARA (NJ)					
W2MWH	9	2	1	68	NNJ
Dallas ARC					
W5EBB	9	2	1	68	NTX
Hambuds					
WB5DYA	18	1	3	68	STX
WD9GJK	9	2	1	68	IL
KL1DJ	17	1	1	67	NTX
Mining ARC/St. Paul RC					
N0IWQ	17	1	1	67	MN
Ski Country ARC					
AB0TI	33	2	1	66	CO
AF9Z	4	2	1	66	IL
Raleigh ARS					
K1OC	5	2	1	66	NC
Harris Intersil ARC					
K4CXX	4	2	1	66	SFL
K5KMS	8	2	1	66	NTX
Cedar Creek ARC					
K5YWT	8	2	1	66	NTX
Bonner Co. ARES					
K7AVR	8	2	1	66	ID
Hocking Valley ARC					
K8SWS	8	2	1	66	OH
PODXS 070					
K9DWR	4	2	1	66	IL
DuPage ARC					
K9FEH	16	1	1	66	IL
KB9GEG	8	2	1	66	MS
Wireless Assn. of South Hills					
KC3GMM	8	2	1	66	WPA
KD1AX	4	2	1	66	TN
East Greenbush ARA					
KD2JCR	8	2	1	66	ENY
Northern Colorado ARC					
KE4JIC	6	2	1	66	CO
KF5RUW	8	2	1	66	STX
South Bay ARA					
KK6IPR	8	2	1	66	EB
Half Moon Bay ARC					
KM6KDZ	4	2	1	66	SCV
The Villages ARC					
KN4CKD	8	2	1	66	NFL
Rappahannock Valley ARC					
KN4KPT	8	2	1	66	VA
Decatur ARC					
KN4MDE	8	2	1	66	AL
Ramona Outback ARS					
KN6CPH	8	2	1	66	SDG
FVVFD					
KS4GD	4	2	1	66	GA
South Mountain Radio Amateurs					
KX3Z	8	2	1	66	EPA
High Point ARC					
KX4CAM	8	2	1	66	NC
Pine State ARC					
N1DAE	8	2	1	66	ME
Boca Raton ARA					
N2ELG	8	2	1	66	SFL
N3NR	8	2	1	66	EPA
N6BMG	8	2	1	66	ORG
Lunenburg Co. ARC					
VA1PYE	8	2	1	66	MAR
Toronto ARC					
VA3BOF	8	2	1	66	GTA
The Seven Thirty ARS					
VC3STYWELL	8	2	1	66	ONS
Radio Central ARC and Order of Boiled Owls of NY					
WB2ICQ	4	2	1	66	NLI
Wood Co. ARC					
WD8ICP	8	2	1	66	OH
K7UL	15	1	1	65	OR
AF4TQ	7	2	1	64	GA
Old Barney ARC					
K2SZ	7	2	1	64	SNJ
Tri-Co. ARC (PA)					
K3VED	14	1	1	64	WPA

Alexandria RC
K4FIO 7 2 1 64 VA
Brazos Valley ARC
K5MGJ 7 2 1 64 STX
Tri-Co. ARA (CA)
K6AHT 7 2 1 64 LAX
South Orange ARA
K6MSM 6 2 1 64 ORG
Lafayette DX Assn.
KA9OUT 7 2 1 64 IN
Mid-State ARC
KB9JMU 7 2 1 64 IN
Franklin Co. (MA) ARC
KC1BTV 4 2 1 64 WMA
Greater Bridgeport ARC
KC1MYE 7 2 1 64 CT
Cherryville Repeater Assn. II
KD2DB 14 1 1 64 NNJ
Arkansas Diamond ARC
KD5LBE 7 2 1 64 AR
KD9HWL 7 2 1 64 IN
York RC
KD9RCL 7 2 1 64 IL
Wilmington Area ARC
KD9VI 7 2 1 64 IL
KD0AKQ 7 2 1 64 IA
Radio Amateurs of Skagit Co.
KE7FQJ 7 2 1 64 WWA
KI1DUC 7 2 1 64 SCV
Tallahassee ARS
KI4EBD 7 2 1 64 NFL
Central Indiana ARA
KI4L 7 2 1 64 IN
King George AR Operators
KI4SDP 7 2 1 64 VA
Sachse ARA
KI5CYA 7 2 1 64 NTX
Associated Radio Amateurs of Long Beach
KJ6VSL 7 2 1 64 LAX
First Baptist Church Huntsville RC
KM4ECD 7 2 1 64 AL
Sparta ARC
KM4KWN 7 2 1 64 NC
Everglades ARC
KN4RGF 7 2 1 64 SFL
Squaw Island ARC
N2EZY 7 2 1 64 WNY
Burlington Co. RC
N2VW 14 1 1 64 SNJ
Toronto ARC
VA3DGD 7 2 1 64 GTA
VE5ZC 7 2 1 64 SK
East Greenbush ARA
W2RBS 7 2 1 64 ENY
W4YPW 7 2 1 64 OH
Jersey Shore ARS
WA2FAX 7 2 1 64 SNJ
Fullerton RC
WA6OPS 7 2 1 64 ORG
W0LR 7 2 1 64 KS
Iowa City ARC
W0PPF 64 1 1 64 IA
Indianapolis RC
WX9S 7 2 1 64 IN
St. Charles ARC
KE0ARY 13 1 1 63 MO
Orange Park ARC
W2CPO 13 1 1 63 NFL
Southern Co. ARA
AB2KP 6 2 1 62 SNJ
AB8SI 6 2 1 62 OH
Montgomery ARC/Damascus ECT
K3RBM 6 2 1 62 MDC
K4CYB 6 2 1 62 AL
L.A. City ACS
K6JGZ 6 2 1 62 LAX
K7MWP 6 2 1 62 WWA
K8UHL 3 2 1 62 KY
Whitman ARC
KB1OEP 6 2 1 62 EMA
Eastern Shore ARC
KB4MCP 6 2 1 62 VA
King George AR Operators
KB8BWG 6 2 1 62 VA
Carbon ARC
KC3LBI 4 2 1 62 EPA
KE0HLC 6 2 1 62 MO
Northwest ARS
KF5LFK 6 2 1 62 STX
Radio Club of Tacoma
KF7SCB 1 2 1 62 WWA
Mansfield-Johnson AR Service
KG5BHY 6 2 1 62 NTX
Lewisville ARA
KG5NIN 6 2 1 62 NTX
KI4NSQ 12 1 1 62 NC
Fort Washington ARC
KM4RDS 6 2 1 62 MDC
Kent Co. ARC
N2IMB 6 2 1 62 DE
South Mountain Radio Amateurs
NC3O 3 2 1 62 EPA
Covey Hill ARC
VE2HKR 6 2 1 62 QC
Haldimand Norfolk ARC
VE3KGE 6 2 1 62 ONS
Saskatoon ARC
VE5WD 6 2 1 62 SK
Greater Norwalk ARC
W1CAH 6 2 1 62 CT
Port City ARC
W1CEK 6 2 1 62 ME
Fair Lawn ARC
W2JC 6 2 1 62 NNJ
Reading RC
W3SMP 3 2 1 62 EPA
Arlington ARC
W5WJH 3 2 1 62 NTX
W8TAU 3 2 1 62 MI
WA1GOV 3 2 1 62 EMA
Fresno ARC
WA6ZBL 6 2 1 62 SJV
Austin ARC
WB2FHR 6 2 1 62 STX
Six Meter Club of Chicago
WD9GDB 6 2 1 62 IL
Longmont ARC
W0GMJ 6 2 1 62 CO
Federación de Radio Aficionados de Puerto Rico
WP3KW 6 2 1 62 PR
SEKARC
N3LRH 11 1 1 61 KS
McMinnville ARC
W7RPK 11 1 1 61 OR
Sonoma Co. Radio Amateurs
AD6YB 5 2 1 60 SF
Wellesley ARS
K1JTO 5 2 1 60 EMA
Rappahannock Valley ARC
K4THY 5 2 1 60 VA
Brazos Valley ARC
K5TNL 5 2 1 60 STX
Monkey Lover's Radio Consortium
K6EXT 5 2 1 60 SCV
Carson Valley RC
K7GUU 4 2 1 60 NV
Blackstone Valley ARC
KA1EMH 3 2 1 60 RI
David Sarnoff ARC
KA2BXH 10 1 1 60 SNJ
KB1RRP 5 2 1 60 AZ
Northeast Maryland AR Contest Soc.
KB3JQQ 5 2 1 60 MDC
Fort Washington ARC
KB3SWS 5 2 1 60 MDC
State Line RC
KB3WYH 5 2 1 60 EPA
Huntsville ARC
KB4NEI 5 2 1 60 AL
West Virginia ARC
KB8ZIO 5 2 1 60 WV
BayNet
KC6YDH 5 2 1 60 SCV
Snohomish Co. Hams Club
KC7WWO 5 2 1 60 WWA
South Jersey Radio Assn.
KD2JPV 5 2 1 60 SNJ
South San Francisco Communications
KD6ZXC 5 2 1 60 SCV
Huron ARA
KD0TKX 5 2 1 60 SD
Brazos Valley ARC
KE5VNY 5 2 1 60 STX
Wichita ARC
KE0ZUW 5 2 1 60 KS
Arlington ARC
KF5UNP 5 2 1 60 NTX
Oakland Radio Communication Assn.
KG6MAC 5 2 1 60 EB
Oro Valley ARC
KJ7CRF 5 2 1 60 AZ
Williamsburg Area ARC
KN4VSS 5 2 1 60 VA
St. Thomas ARC
KP2RH 5 2 1 60 VI
Arizona Outlaws Contest Club
KR2E 5 2 1 60 AZ
Oak Ridge ARC
KX4CH 5 2 1 60 TN
Pine Bluff ARC
N5PNZ 5 2 1 60 AR
Half Moon Bay ARC
N6BHS 10 1 1 60 SCV
NC9J 5 2 1 60 IL
Johnson Co. Radio Amateurs Club
N0GMD 5 2 1 60 KS
N0XFD 5 2 1 60 MN
Quinte & Prince Edward RCs
VE3UO 5 2 1 60 ONE
Barrie ARC
VE3WCX 5 2 1 60 ONS
VY0IQ 5 2 1 60 NT
Littleton Area Radio Klub
W1YJE 5 2 1 60 VT
Richmond Amateur Telecommunications Soc.
W4BNO 5 2 1 60 VA
San Fernando Valley ARC
W6WDY 5 2 1 60 LAX
Bolingbrook ARS
W9CY 5 2 1 60 IL
WA0YCN 5 2 1 60 MO
L'Anse Creuse ARC
WC8C 5 2 1 60 MI
Ak-Sar-Ben ARC
WE0BEP 5 2 1 60 NE
W0DYE 5 2 1 60 MN
Irvine Disaster EmComms
WT6A 5 2 1 60 ORG
Holmesburg ARC
KC3AZT 9 1 1 59 EPA
Lebanon Valley Soc. of Radio Amateurs
AB3WX 2 2 1 58 EPA
Great South Bay ARC
K2RYD 4 1 1 58 NLI
K8WZY 4 2 1 58 OH
Woodford Co. ARC
KB4ENQ 4 2 1 58 KY
KB9E 4 2 1 58 WI
KC9ZXM 4 2 1 58 IN
KC0PON 2 2 1 58 IA
Garland ARC
KF5FWK 4 2 1 58 NTX
Clark Co. (WA) ARC
KF7MJY 4 2 1 58 WWA
KF0ACI 4 2 1 58 MO
Lubbock ARC
KG5UMH 4 2 1 58 WTX
Pocatello ARC
KJ7KPP 4 2 1 58 ID
Microhams ARC
KK7TM 4 2 1 58 WWA
Associated Radio Amateurs of Long Beach
KM6HF 4 2 1 58 LAX
Wilson ARC
KO4CVU 4 2 1 58 TN
Northern Colorado ARC
KY0AZ 4 2 1 58 CO
N2QZR 4 2 1 58 WNY
Antietam Radio Assn.
N3ODE 4 2 1 58 MDC
Nittany ARC
N3RF 4 2 1 58 WPA
N6SMH 4 2 1 58 SV
Montgomery ARC/Damascas ECT
NG3D 2 2 1 58 MDC
Explorer Post 599
NI7E 4 2 1 58 AZ
Estes Valley ARC
N0SWA 2 2 1 58 CO
Story Co. ARC
NU0I 4 2 1 58 IA
VE7BLW 4 2 1 58 BC
Green Mountain Wireless Soc.
W1AD 4 2 1 58 NV
W4BNK 2 2 1 58 SFL
Garland ARC
W5DTG 4 2 1 58 NTX
W7SLS 4 1 1 58 WWA
Monroe Co. Radio Communications Assn.
W8IIE 4 2 1 58 MI
WB7CLF 4 2 1 58 WWA
Albany ARA
WF2B 8 1 1 58 ENY
St. Thomas ARC
WP2KR 4 2 1 58 VI
Southern MI ARS
WR8G 4 2 1 58 MI
NOARS
K2WJS 3 2 1 56 OH
Penn Wireless Assn.
K3JCP 3 2 2 56 EPA
The Villages ARC
K4VRC 3 2 1 56 NFL
Maui ARC
K6GSS/KH6 3 2 1 56 PAC
David Sarnoff ARC
KB2FA 3 2 1 56 SNJ
Penn Wireless Assn.
KB3MTW 3 2 1 56 EPA
Riverland ARC
KB9OFK 3 2 1 56 WI
Raleigh ARS
KE4PAX 3 2 1 56 NC
West Palm Beach ARG
KF4OD 3 2 1 56 SFL
Three Generations of Hams
KF5HFR 3 2 1 56 WPA
KF7IIR 3 2 1 56 WWA
KJ6WOM 3 2 1 56 SV
Spokane DX Assn.
K0NG 3 2 1 56 EWA
KS4FE 2 2 1 56 KY
Anderson RC (SC)
NY4F 3 2 1 56 SC
Central Alberta ARC
VE6WCE 3 2 1 56 AB
North Shore (BC) ARC
VE7JYH 3 2 1 56 BC
Albemarle ARC
W2PVY 3 2 1 56 VA
Cumberland ARC
W3JJB 3 2 1 56 EPA
Indianapolis RC
W9PLW 3 2 1 56 IN
Deep South ARC
WA4VKA 28 2 1 56 AL
Orange Park ARC
WD4EYI 3 2 1 56 NFL
Int'l Soc. for AR Innovation
WH6EXS 3 2 1 56 PAC
NASA Marshall Space Flight Center ARC
WL7C 3 2 1 56 AL
Honolulu ARC
KH6QJ 5 1 1 55 PAC
Microhams ARC
AD7F 1 2 1 54 WWA
Cameron Mackenzie
AL6A 2 2 1 54 AK
Mound ARA
K8BP 2 2 1 54 OH
Albemarle ARC
KA4JJD 2 2 1 54 VA
KC3EWJ 2 2 1 54 EPA
ARC Of Alameda
KC6ZZT 1 2 1 54 EB
KD2QLH 2 2 1 54 NNY
Athens Co. ARA
KD8FRQ 2 2 1 54 OH
KF1KI 2 2 1 54 WMA
Garland ARC
KF5UEI 2 2 1 54 NTX
Everglades ARC
KG20 27 2 1 54 SFL
Jefferson Co. (WA) ARC
KI7AUH 2 2 1 54 WWA
KI7FQT 1 2 1 54 AZ
W4IBM ARC
KJ4ZGL 2 2 1 54 GA
West Palm Beach ARG
KM4RYN 2 2 1 54 SFL
Panama City ARC
KN4TBZ 2 2 1 54 NFL
KN6EVH 1 2 1 54 SJV
N1AOK 2 2 1 54 CO
Huntsville ARC
N3WQL 2 2 1 54 AL
Brazos Valley ARC
N5LHN 2 2 1 54 STX
Club de Radio Amateur Outaouais
VA2ZIO 2 2 1 54 QC
York Region ARC
VA3BXG 1 2 1 54 GTA
Club Station Répétitrice de Laval
VE2LKR 2 2 1 54 QC
Scarborough ARC
VE3GNI 2 2 1 54 GTA
VE6RWP 2 2 1 54 AB
Kershaw Co. ARC
W4OLC 27 2 1 54 SC
Splitrock ARA
AC2IJ 1 2 1 52 NNJ
Sterling Park ARC
K3MAF 1 2 1 52 VA
Albemarle ARC
K4BAV 1 2 1 52 VA
Outer Banks Repeater Assn.
K4ME 1 2 1 52 NC
CRES ARC
K8YMG 1 2 1 52 OH
Waltham ARA
KC1NBI 1 2 1 52 EMA
KD4CXI 1 2 1 52 EPA
KD8COO 1 2 1 52 OH
Cuyahoga Falls ARC
KE8HJB 1 2 1 52 OH
Preble ARA
KF8RQ 1 2 1 52 OH
Olympia ARS
KI7FRC 1 2 1 52 WWA
San Mateo RC
KM6UZL 1 2 2 52 SCV
San Mateo RC
KM6UZM 1 2 2 52 SCV
San Mateo RC
KM6UZO 1 2 2 52 SCV
High Point ARC
KN4OCX 1 2 1 52 NC
Oakland Radio Communication Assn.
KN6EOK 1 2 1 52 SDG
River City AR Communications Soc.
KN6IXP 1 2 1 52 SV
McKinney ARC
KZ0FOX 1 2 1 52 NTX
Sheriff's Tactical AR Communications
N4DLW 1 2 1 52 WCF
N7VAZ 1 2 1 52 AZ
North Shore (BC) ARC
VA7SMF 1 2 1 52 BC
Jefferson Co. (WA) ARC
W7SAY 1 2 1 52 WWA
Lincoln Co. (OR) ARC
WA7MHB 1 2 1 52 OR
KA9LAW 25 2 1 50 IN
Kershaw Co. ARC
K4KBI 49 1 1 49 SC

Utica Shelby EmComms Assn.
KD8SRQ 24 2 1 48 MI
Ramona Outback ARS
KR6BG 24 2 1 48 SDG
Mississauga ARC
VE3DRZ 24 2 1 48 GTA
Desert RATS of Palm Springs
WM6Q 12 2 1 48 ORG
WB9PRG 15 2 1 42 WI
Coconino ARC
KI7WNS 10 2 1 40 NM
W1NH 20 2 1 40 NH
Villa Rica RC
K4CCO 19 2 1 38 GA
KO6YG 19 2 1 38 SCV
Kalamazoo ARC
KA8AOB 18 2 1 36 MI
WA2ZOT 9 2 1 36 WNY
Antietam Radio Assn.
N3VGS 15 2 1 30 MDC
Brazos Valley ARC
K5LKJ 13 2 1 26 NTX
Radio Assn. of Western New York
KG2OR 7 2 1 24 WNY
Desert RATS of Palm Springs
WA6QGH 12 2 1 24 ORG
Mid-State ARC
N9SIU 11 2 1 22 IN
Waltham ARA
WA1CFX 11 1 1 22 EMA
Scott Co. (VA) ARS
KE4DNU 10 2 1 20 VA
K1ALA 7 2 1 14 ME
Delta ARC
AG5QY 6 2 1 12 AR
Everglades ARC
K4CVW 6 2 1 12 SFL
KC7VGE 4 2 1 8 AZ
Everglades ARC
KO4APC 3 2 1 6 SFL
KO3Z 2 2 1 4 EPA
K3US 1 2 1 2 VA
KG9HN 1 2 1 2 IL

2D

Grand Mesa Contesters of Colorado
K0RF 3,501 2 2 14,054 CO
DFW Contest Group
K5RT 3,281 2 2 10,424 NTX
Tilson Contest Club
K5PI 2,031 2 1 8,018 STX
Jackson ARC
NJ8M 1,895 2 2 7,150 KS
San Diego Contest Club
NX6T 2,117 2 6 5,402 SDG
Brainerd Area ARC
K0TI 1,257 2 1 5,178 MN
Dupee Shpivatih FD Group
KC3WX 1,488 2 2 5,058 EPA
Ozaukee RC
WT9Q 1,298 2 2 5,044 WI
Nittany ARC
KC3R 3,151 1 5 4,605 WPA
Kitchener-Waterloo ARC
VE3YT 1,102 2 2 4,522 ONS
Albany ARA
N2LBR 1,033 2 2 4,266 ENY
Montgomery ARC/Damascus ECT
K9NO 1,271 2 4 4,238 IL
WA1Z 2,458 1 3 3,930 NH
Yankee Clipper Contest Club
W1FM 984 2 2 3,638 EMA
Club de Radio Amateur Outaouais
VE2CRO 868 2 2 3,544 QC
Morris RC/Hanover Twp OEM
NO2EL 658 2 1 2,982 NNJ
Northwest Florida ARC
AA4AQ 734 2 2 2,704 NFL
Hamilton (OH) ARC
N8SDR 1,077 2 7 2,704 OH
Boston ARC
N1QD 648 2 2 2,370 NH
Cheshire Co. DX ARC
K1CHR 947 2 2 2,302 NH
N4N Field Day Group
W4MC 520 2 1 2,230 SC
Shreveport ARA
K5SAR 547 2 5 2,144 LA
Big Bend ARC
W5TRL 521 2 1 2,122 STX
Ozaukee RC
N9UUR 505 2 2 2,068 WI
N4N Field Day Group
N1KDO 491 2 1 2,066 GA
K5ZD 1,207 1 1 2,045 WMA
Sierra Nevada ARS
WB2AWQ 450 2 2 1,950 NV
Algonquin ARC
N4ADC 478 2 2 1,934 WMA
KM4RT 1,631 1 1 1,830 TN
Dixie ARC
WI7J 389 2 3 1,828 UT
Lake Area (SD) Radio Klub
N0DL 356 2 1 1,784 SD
Lake Area (SD) Radio Klub
KK0SD 369 2 1 1,742 SD
Minnesota Wireless Assn.
WB0N 423 2 1 1,742 MN
Tellico Lake ARC
AC6ZM 409 2 1 1,686 TN
KA1YQC 406 2 1 1,674 EMA
W0AAE 1,088 1 1 1,585 WMA
Spirit Valley Amateurs
N0EO 354 2 3 1,486 MN
Nashville ARC
NT4J 350 2 3 1,448 TN
Granite State ARA
K1HMS 317 2 1 1,318 NH
Green River Valley ARS
NN9K 282 2 1 1,278 IL
Loren D. Hayes Memorial ARC
K8CGE 318 2 3 1,204 OH
Cleveland ARC
KA4J 318 2 9 1,150 TN
Ventura Co. ARS
AG6AG 260 2 1 1,106 SB
Pasadena RC
AA6QI 308 2 2 1,094 LAX
West Chester ARA
WC8VOA 744 1 3 1,068 OH
Copper Country Radio Amateur Assn.
W8PSP 446 2 5 982 MI
Microhams ARC
KB2S 205 2 1 964 WWA
Fair Lawn ARC
KM2C 406 2 2 962 NNJ
Southborough Rod & Gun ARC
W1SRG 485 1 5 937 EMA
Tellico Lake ARC
K4O 409 1 1 868 TN
First State ARC
K3F 193 2 9 864 DE
Microhams ARC
N7XE 240 2 1 850 WWA
Pottstown Area ARC
KA2VLP 290 2 2 844 EPA
Magic Valley ARC
K7MVA 233 2 15 762 ID
Silver Comet ARS
K4VTE 200 2 1 754 GA
N2IPH 173 2 1 742 SNJ
St. Louis QRP Soc.
KK0U 171 2 1 734 MO
Cape Fear ARS
K4FET 170 2 2 724 NC
Downey ARC
KD6KHJ 169 2 1 720 LAX
Mettler-Green
KE5VAJ 160 2 2 690 STX
Richmond ARC
VE7GOG 59 2 10 684 BC
Northern Arizona DX Assn.
KF7DUR 197 2 2 674 AZ
Irving ARC
W7KYG 91 2 2 672 NTX
KK5PL 308 2 2 666 NM
K1SWR 136 2 2 660 IA
Oregon Tualatin Valley ARC
W7TVC 155 2 3 598 OR
K3RWN 497 1 1 576 WPA
WM6Y 129 2 1 566 SDG
AF5D 193 2 1 562 NTX
Pioneer ARC
KB0ARZ 178 2 2 506 NE
DuPage ARC
WB9WOZ 114 2 1 494 IL
Davis Co. ARC
N7TEI 200 2 3 470 UT
Conejo Valley ARC
K6AGL 28 2 1 446 SB
KJ7LVP 96 2 2 432 EWA
K3WHD 110 2 1 424 WNY
Green Bay Mike & Key Club
N9BC 89 2 2 392 WI
Salem ARC
KJ7BRF 93 2 1 384 OR
Bullitt ARS
KN4YMJ 93 2 1 384 KY
WM4P 167 2 2 384 WCF
BTU RC
K3OQ 183 1 4 382 MDC
Central Mississippi ARA
N5DU 268 1 3 378 MS
Conejo Valley ARC
N6PK 84 2 1 372 SB
Stockton-Delta ARC
N6TCE 83 2 1 364 SJV
Coconino ARC
AG7XQ 155 2 20 360 AZ
KE5BM 58 2 1 350 VA
Mount Washington ARC
N1RHN 75 2 1 350 NH
Rochester (NY) DX Assn.
W2CCC 83 2 1 330 WNY
Pioneer Radio Operators Soc.
K2PRO 114 2 10 328 WNY
Morongo Basin ARC
N6D 138 2 2 326 ORG
Maryland Mobileers ARC
KA2JAI 89 2 2 322 MDC
Coconino ARC
KJ7OOQ 135 2 20 320 AZ
Fair Lawn ARC
K2FTP 46 2 2 318 NNJ
Federación de Radio Aficionados de Puerto Rico
KP4JJO 43 2 1 306 PR
Smoky Mountain ARC
K4TAK 41 2 1 298 TN
Mount Shasta ARC
W6BML 65 2 3 282 SV
N9MUC 65 2 2 280 IL
Cheshire Co. DX ARC
KB1KCT 60 2 1 278 NH
Lehigh Valley ARC
KS3RO 56 2 1 274 EPA
NOARCFL
W4AAZ 74 2 9 274 NFL
VE6XL 183 1 3 273 AB
Yellowstone RC
AA7VE 10 2 1 270 MT
Cove Repeater Assn.
AA5GV 107 2 2 264 NTX
K8ACJ 56 2 1 246 ORG
Alhambra High School ARC
K6R 52 1 3 242 SB
Golden Spike ARC
KE7EHJ 93 2 1 236 UT
Mississauga ARC
VE3MIS 92 1 1 230 GTA
AD7KI 39 2 2 226 OK
Golden Spike ARC
KE7DJQ 86 2 1 222 UT
Rutledge Rookies
WB4EML 86 2 2 222 TN
Hocking Valley ARC
KD8ORN 85 2 2 220 OH
McMinnville ARC
WA0OGN 62 2 3 218 OR
Mohave ARC
WC7W 81 2 2 214 AZ
Edmond ARS
N5JST 47 2 1 210 OK
Blackstone Valley ARC
K1WMC 41 2 8 172 EMA
Cherokee ARS
KO4DGN 10 2 1 170 GA
Kay Co. ARC
W5EKG 10 2 1 170 OK
DuPage ARC
KD9MQV 54 2 2 158 IL
St. Mary's Co. ARA
KB2SKP 45 2 2 140 MDC
Ventura Co. ARS
KM6GUE 29 2 1 140 SB
South Bay ARA
WY6P 41 2 2 132 EB
Niagara Peninsula ARC
VE3KPA 40 2 1 130 GTA
Southern PA Communications Group
WA3GYW 20 2 1 130 EPA
Edmond ARS
N5NOQ 38 2 1 126 OK
Cleveland ARC
KN4VBA 15 2 1 110 TN
Edmond ARS
N5QIM 59 1 1 109 OK
Niagara Peninsula ARC
VE3VM 26 2 2 102 GTA
Mohawk ARC
K1QED 25 2 1 100 WMA
KG5CUX 15 2 1 90 NTX
North Central Arkansas ARC
AD5LL 18 2 1 86 AR
KC1KZB 18 2 1 86 EMA
Bullitt ARS
KN4YMI 3 2 1 82 KY
DuPage ARC
W9TAM 11 2 1 72 IL
Federación de Radio Aficionados de Puerto Rico
NP3OR 8 2 1 66 PR
Yelm ARG
KJ7MUE 7 2 1 64 WWA

3D

Douglas Co. ARC
W0UK 1,402 2 6 5,076 KS
Providence RA
W1OP 1,229 2 5 4,648 RI
Billerica ARS
K1IR 2,532 1 4 4,381 EMA
Salt City DX Assn.
W2ZC 2,542 1 4 3,839 WNY
Brandon ARS
K4TN 728 2 16 3,160 WCF
Oro Valley ARC
AB7BB 1,008 2 2 3,148 AZ
Aardvark Wireless Group
AA2MF 708 2 1 2,982 WCF
Metro DX Club
N2BJ 2,309 1 1 2,720 IL
Rochester (NY) DX Assn.
K2TER 650 2 1 2,650 WNY
Edmond ARS
N5ZY 518 2 1 2,330 OK
Edmond ARS
N0LD 472 2 3 1,900 OK
Raleigh ARS
K4RGN 402 2 1 1,742 NC
Twin State RC
W1HS 370 2 1 1,436 NH
Plano AR Klub
K5WFR 186 2 2 1,196 NTX
W4Y 255 2 23 1,128 TN
Snohomish Co. Hams Club
NR3O 898 1 3 1,121 WWA
K6I 324 2 3 1,088 SV
Mound ARA
W8WGR 255 2 2 1,072 OH
Paulding ARC
W4TIY 292 2 7 1,038 GA
Yakima ARC
W7AQ 190 2 9 776 EWA
Skyline ARC
K2IWR 229 2 5 610 WNY
AA4FB 102 2 1 454 WCF
Katy ARS
KG5IGO 62 2 1 298 STX
VFW Post 3115 ARC
W0VFW 99 2 8 248 KS
Edmond ARS
KC0MTM 61 2 6 232 OK
Hot Springs Village ARC
W5HSV 73 2 11 196 AR
Gopher ARC at Univ of MN
W0YC 45 2 3 140 MN
Pioneer ARC
K0NSS 28 2 3 106 NE
Six Meter Club of Chicago
K9LH 21 2 2 92 IL

4D

DFW Contest Group
N5YA 3,931 1 5 6,286 STX
Sand Hills ARC
W0MI 385 2 7 1,522 KS
Gwinnett ARS
WA4YIH 345 2 1 1,430 GA
South Georgia ARC
W4TFM 436 2 4 1,342 GA
National Trail ARC
K9UXZ 347 2 15 1,064 IL
St. Cloud ARC
W0SV 136 2 25 526 MN
Murgas ARC
K3YTL 227 2 7 504 EPA
Southern IN ARA
WB9VPG 44 2 1 338 IN
Southwest Columbus Ham RC
WB8MMR 129 2 10 308 OH
Newport Beach Repeater Club
K6TXA 73 2 4 292 ORG

7D

South Jersey Radio Assn.
K2AA 1,773 2 15 7,294 SNJ

Home Stations Emergency Power

1E

Frankford RC
AA3B 2,913 2 1 11,902 EPA
W3AO Team
W4KFC 900 5 1 9,350 MDC
AA1K 786 5 1 8,010 DE
Niagara Frontier Radiosport
K2ZR 753 5 1 7,780 WNY
W3AO Team
N3OC 2,156 2 2 7,312 MDC
Contest Club Ontario
VE3MGY 1,630 2 1 7,170 ONS
Central Oregon DX Club
N7XU 1,809 2 1 7,010 OR
Magnolia ARC
N4OGW 657 5 1 6,720 MS
K4OAQ 1,632 2 1 6,578 VA
W6JTI 615 5 1 6,400 SF
Rochester (NY) DX Assn.
NN2L 555 5 1 5,700 WNY
Niagara Frontier Radiosport
K2NV 535 5 1 5,400 WNY
Mid Coast Red Cross RC
N1TRC 434 5 4 5,290 ME
Canton ARC
N8PW 508 5 1 5,230 OH
W8HW 513 5 1 5,180 SFL
K6LA 1,390 2 1 5,128 LAX
Blazing Paddles FD Team
AB9YC 1,073 2 5 5,112 IL
KE0UI 1,208 2 1 5,058 CO
Greater Beloit ARC
K9LJN 1,219 2 1 4,926 IL
Franklin Co. (VA) ARC
W4CB 1,140 2 1 4,810 VA

Arizona Outlaws Contest Club
KH7X 1,131 2 1 4,674 AZ
BEANOS
W4GJ 1,128 2 4 4,662 NFL
Candlewood ARA
W1QI 1,210 2 1 4,642 CT
Frankford RC
W2IRT 1,114 2 1 4,606 NNJ
Schaumburg ARC
KY0Q 424 5 1 4,490 IL
Peoria Area ARC
K9CT 2,146 1 1 4,442 IL
Ashe Co. ARC
K8AC 1,101 2 1 4,404 NC
Central Oregon DX Club
W7YAQ 992 2 1 4,218 OR
W9TS 392 5 1 4,170 IL
Franklin Co. (VA) ARC
K4ORD 971 2 1 4,034 VA
North Georgia QRP Club
KR4AE 386 5 1 4,010 GA
W3AO Team
K3AU 872 2 1 3,938 MDC
Orleans Co. ARC
N4ZN 371 5 1 3,860 WNY
Albuquerque DX Assn.
N2GG 1,794 2 1 3,838 NM
St. Louis QRP Soc.
K0S 359 5 1 3,740 MO
Okaw Valley ARC
AD9OV 890 2 1 3,710 IL
W6NCB 358 5 1 3,700 SJV
N1TO 891 2 1 3,614 SFL
WX8J 325 5 1 3,600 OH
Central Texas DX and Contest Club
AC4CA 861 2 1 3,594 STX
W9XU 842 2 1 3,518 WI
Butler Co. (PA) ARA
N2EM 350 5 1 3,500 WPA
Central Idaho ARC
KG7CW 931 2 1 3,472 ID
Rappahannock ARA
K1EEE 745 2 1 3,430 VA
Woodbridge Wireless
K5OF 1,637 2 1 3,424 NC
West Valley ARA
K6EI 297 5 1 3,420 EWA
Smoky Mountain ARC
K1GU 816 2 1 3,414 TN
Albany ARA
W2EG 763 2 1 3,402 ENY
Hoosier Hills Ham Club
AB9CA 784 2 1 3,386 IN
North Shore (IL) RC
KC9GLI 1,081 2 3 3,352 WI
Ottawa Valley Mobile RC
VE3LC 301 5 1 3,345 ONE
Tennessee Contest Group
W4UT 307 5 1 3,220 TN
Frankford RC
NW3Y 725 2 1 3,050 DE
DFW Contest Group
K5QR 278 5 1 3,030 NTX
K9SH 1,137 2 1 3,030 IN
Piedmont ARC
NZ2X 512 2 3 3,018 GA
York RC
K9KE 1,176 2 1 3,004 IL
Williamson Co. ARES
N4CCB 286 5 1 2,985 TN
Sawnee ARA
WG4I 267 5 1 2,920 GA
Lanark North Leeds ARES Inc.
VE3VY 275 5 1 2,900 ONE
Tri-Town Radio Amateur Club
WD9HSY 631 2 1 2,874 IL
Northwest ARS
KC3LEE 648 2 1 2,858 STX
Potomac Valley RC
W4IVF 652 2 1 2,858 VA
Owensboro ARC
W4NHO 621 2 2 2,834 KY
AE0DC 1178 2 10 2,830 MO
Garrett Co. ARES
K3LNZ 670 2 1 2,824 MDC
Colorado QRP Club
WC7S 266 5 1 2,810 WY
Carroll Co. MD ARC
WB8YYY 256 5 1 2,800 MDC
AB4EJ 1,322 2 1 2,794 AL
New Providence ARC
K2YG 243 5 1 2,780 NNJ
Kanawha ARC
KM8G 1,159 2 1 2,760 WV
Southtowns ARS
WB2ELW 696 2 8 2,756 WNY
570-V Connection
W3GQ 697 2 1 2,748 NC
River Bend Wireless Operators Club
K2DRH 2,583 1 1 2,747 IL
Medina Co. ARC
K8NVR 624 2 1 2,746 OH
Mohawk ARC
WB8PKK 256 5 1 2,730 WMA
Central Texas DX and Contest Club
W5CT 642 2 1 2,718 STX
Southern California Contest Club
W6AFA 1,257 2 1 2,664 LAX
North Carolina DX and Contest Club
K4SAA 269 5 1 2,640 NC
Arlington ARC
W5WS 238 5 1 2,595 NTX
Rochester (NY) DX Assn.
K2OS 242 5 1 2,570 WNY
Loudoun ARG
K4LRG 605 2 1 2,570 VA
Copper Country Radio Amateur Assn.
N8KSO 600 2 1 2,550 MI
Binghamton ARA
NA2X 228 5 1 2,530 WNY
Prairie Dog ARC
W0EJ 493 2 1 2,522 SD
WCARC of TX
AD5L 207 5 1 2,520 STX
Albemarle ARC
WR4I 246 5 1 2,510 VA
South Canadian ARS
KI5AIF 523 2 1 2,502 OK
Silver Springs RC
N4FP 585 2 1 2,490 NFL
Cowtown ARC
KG5OA 625 2 1 2,476 NTX
Liverpool Amateur Repeater Club
KE2WY 232 5 1 2,470 WNY
Cape Fear ARS
KM4ODS 597 2 1 2,470 NC
Dial RC of Middletown
W8EH 475 2 1 2,466 OH
Madison Co. (OH) ARC
N8ME 215 5 1 2,400 OH
K4RCA 1,016 2 1 2,382 VA
York RC
W9YK 548 2 1 2,362 IL
KW9R 211 5 1 2,360 WI
Oak Hill ARC
W5TN 714 2 1 2,346 STX
Ski Country ARC
WA1ENO 991 2 2 2,332 EMA
Alliance ARC
KD8BBK 545 2 1 2,330 OH
Maryland Mobileers ARC
W2OK 500 2 1 2,330 MDC
Intercity ARC
N8A 460 2 2 2,324 OH
Johnson Co. Radio Amateurs Club
NZ0F 514 2 1 2,306 KS
Brunswick Shores ARC
NC4S 509 2 1 2,286 NC
Society of Midwest Contesters
N5RP 690 2 1 2,284 IL
CTRI Contest Group
K1PAD 526 2 1 2,254 RI
Old Barney ARC
WS2C 199 5 1 2,240 SNJ
Georgian Bay ARC
VE3FP 494 2 1 2,226 ONS
Shreveport ARA
KA5M 523 2 1 2,216 LA
Falmouth ARA
W1IZZ 520 2 1 2,214 EMA
Seneca RC
WB8REI 432 2 3 2,214 OH
OH-KY-IN ARS
N8BV 1,025 2 1 2,200 OH
Montgomery ARC/Damascus ECT
W3KIT 486 2 1 2,194 MDC
Tallahassee ARS
K4SBZ 969 2 1 2,188 NFL
Garden State ARA
K2CYS 966 1 1 2,185 NNJ
KE0FOE 452 2 2 2,178 MO
Northwest ARS
K5NZ 506 2 1 2,174 STX
Tamiami ARC
NS4P 403 2 1 2,162 WCF
Grand Strand ARC
K4CU 551 2 1 2,156 SC
Portage Co. AR Service
K8IV 1,003 2 1 2,156 OH
Providence RA
K1MD 501 2 1 2,154 RI
Rains ARA
K5XB 1,001 2 2 2,152 NTX
Burlington ARC
VE3SMA 201 5 1 2,150 GTA
Smith Chart ARS
AB4V 476 2 2 2,140 NC
QRP ARC International
WZ2T 169 5 1 2,140 NNY
W2BJN 445 2 1 2,130 AL
K4FHI 187 5 1 2,120 NC
Vienna Wireless Soc.
KA4CDN 199 5 1 2,115 VA
CenTor ARC
VE3SB 196 5 1 2,110 GTA
W4IT 490 2 1 2,110 NFL
WO8L 202 5 1 2,110 NC
Wisconsin ARC
AC9QR 174 5 1 2,090 WI
W7GB 433 2 1 2,082 EWA
Ozaukee RC
W9GA 206 5 1 2,080 WI
Oakland Co. ARS
N8GAS 457 2 1 2,078 MI
The 415 ARC
N9AB 482 2 1 2,078 IL
New Providence ARC
K2AL 173 5 1 2,070 NNJ
West Valley ARA
AE6JV 431 2 1 2,056 NH
KB1AZ 195 5 1 2,055 NH
West Valley ARA
K6XM 452 2 2 2,046 SCV
Federación de Radio Aficionados de Puerto Rico
WP4SD 470 2 1 2,030 PR
Benicia ARC
K2GMY 159 5 1 2,020 EB
Montgomery Amateur Club
KV4AC 416 2 1 2,014 AL
Newton/McPherson ARC
K0HNC 478 2 1 2,004 KS
Vienna Wireless Soc.
K7AJG 324 2 3 1,990 VA
Northeast Tarrant ARC
W5AP 460 2 1 1,990 CO
Northeast Maryland AR Contest Soc.
KE3GK 1125 1 1 1,987 MDC
Society of Midwest Contesters
KJ9C 439 2 1 1,984 MT
W6COW 159 5 1 1,975 LAX
Michigan QRP Club
AB8DF 182 5 1 1,970 MI
New England Radio Discussion Soc.
W3NA 473 2 1 1,944 ME
Noise Blankers Radio Group
WB0RUR 421 2 1 1,934 AR
Granite State ARA
K1KA 1616 1 1 1,932 NH
Baton Rouge ARC
W5ZDW 502 2 1 1,932 LA
All ARC
N7EPD 430 2 1 1,926 WWA
Wayne Co. ARC
KZ3MW 149 5 1 1,920 EPA
Radio Farm
W7II 417 2 1 1,916 IA
Loudoun ARG
N1RM 170 5 1 1,915 VA
Mecklenburg ARS
W3DQS 439 2 1 1,906 NC
Kings Co. and Annapolis Valley ARCs
VE1FA 876 2 2 1,902 MAR
Morris RC/Hanover Twp OEM
WR2G 323 2 1 1,892 NNJ
Arkansas River Valley ARF
K5CS 410 2 1 1,890 AR
The Guys
KU9Z 421 2 1 1,890 IL
ARTS of Louisville
AG4EP 162 5 1 1,870 KY
CWops
K6AR 181 5 1 1,860 SDG
KB8PGW 401 2 1 1,854 MI
Dial RC of Middletown
N8HP 456 2 1 1,836 OH
Roanoke Valley ARC
W8SUN 154 5 1 1,835 VA
Silvercreek ARA
W8TB 410 2 1 1,832 OH
Backyard Field Day
W0D 419 2 1 1,826 MO
Central Massachusetts ARA
W1BIM 167 5 1 1,820 WMA
Dial RC of Middletown
N8QF 371 2 1 1,818 OH
Sunnyvale ARES
WU6P 121 5 1 1,815 SCV
Contoocook Valley RC
WA1VKO 582 2 1 1,814 NH
Vienna Wireless Soc.
NT8B 350 2 1 1,804 VA
Inverhuron Ham RC
VE7NI 135 5 1 1,800 BC
Socorro ARA
NA5N 163 5 1 1,780 NM
Clallam Co. ARC
K7NEW 405 2 1 1,766 WWA
QRP ARC International
KA9P 161 5 1 1,765 IL
Nashua Area Radio Soc.
AK1K 219 2 1 1,762 NH
Mountaineer ARA
WB8III 378 2 1 1,762 WV
Oak Ridge ARC
KY4L 327 2 1 1,758 TN
Burlington Co. RC
K2SQS 140 5 1 1,750 SNJ
Brownwood ARC
KG5THG 375 2 1 1,750 NTX
Lafayette DX Assn.
N9KT 249 2 1 1,744 IN
Rochester (NY) DX Assn.
W2LB 160 5 1 1,740 WNY
WX0CAS 420 2 1 1,738 CO
QRP ARC International
AI4VE 158 5 1 1,730 SC
K8ET 464 2 2 1,716 MI
Lake Monroe ARS
WA4NFY 392 2 2 1,696 NFL
Superstition ARC
NU7B 336 2 1 1,694 AZ
NY1P 144 5 1 1,690 CT
Salkehatchie ARS
K4HR 384 2 1 1,686 SC
Falmouth ARA
W1KM 384 2 1 1,686 EMA
AI3KS 307 2 1 1,678 EPA
Spa ARA
W5VY 156 5 1 1,675 AR
Oregon Tualatin Valley ARC
WB6OEE 152 5 1 1,670 OR
W8JH 151 5 1 1,660 OH
N1VF 374 2 1 1,658 SCV
K7IA 326 2 1 1,654 NM
Valley and Massanutten ARA
AD4TJ 295 2 1 1,652 VA
Central Ohio Ops Klub Extra Novice
W5UHQ 129 5 1 1,640 OH
Katy ARS
W5AQY 373 2 1 1,638 STX
North Fulton ARL
WK4U 383 2 1 1,638 GA
AF0Z 385 2 1 1,634 MN
DeKalb Co. ARC
AB4QL 138 5 1 1,630 AL
Kay Co. ARC
AG5VX 673 2 1 1,626 OK
WA4FOM 134 5 1 1,625 NNJ
Four State QRP Group
K9OZ 157 5 1 1,620 AR
KF8O 147 5 1 1,620 OH
W9EN 269 2 2 1,616 AZ
SC4ARC
N6OAD 147 2 16 1,614 SCV
Northeast Maryland AR Contest Soc.
K3TEF 454 2 1 1,598 EPA
Vienna Wireless Soc.
AK4AO 261 2 1 1,594 VA
Palos Verdes ARC
K6JW 123 5 1 1,590 LAX
Tennessee Contest Group
KS4X 155 5 1 1,585 TN
N9OHW 104 5 1 1,580 SCV
High Desert ARG
KC7DMF 142 5 1 1,570 OR
Dixie ARC
AC0PR 253 2 1 1,562 UT
Medina Co. ARC
NQ8T 131 5 1 1,560 OH
Davie/Cooper City ARC
W4RQ 121 5 1 1,560 SFL
River Bend Wireless Operators Club
W9DX 650 2 1 1,550 IL
Williamson Co. ARES
WD4CFN 130 5 1 1,550 TN
Ellsworth ARA
AB1EP 683 2 1 1,548 ME
Montgomery ARC/Damascas ECT
WM1E 324 2 1 1,546 MDC
Fort Wayne RC
KU8T 346 2 1 1,534 IN
K7RE 345 2 1 1,530 SD
Greater Norwalk ARC
K1RFD 350 2 1 1,524 CT
Hazel Park ARC
K8GT 368 2 1 1,522 MI
REDXA/MARS
N6YEU 619 2 1 1,520 SF
Garland ARC
K5DHY 319 2 1 1,518 NTX
Northeastern Indiana ARA
KD9GDY 299 2 1 1,516 IN
Silvercreek ARA
N8EI 480 2 1 1,516 OH
Splinter Group ARC
K8ARY 332 2 1 1,514 SC
Northern California Contest Club
N6TV 449 2 1 1,510 SCV
Hunters Ridge Hams
NK9R 126 5 1 1,510 GA
Sarasota Emergency RC
W2DEN 265 2 2 1,510 WCF
Rocky Mountain Ham Radio
KA8JMW 303 2 2 1,508 NM
W0GJ 624 1 1 1,498 IA
W6SDM 384 2 1 1,488 AZ
Mecklenburg ARS
K4KRW 332 2 1 1,478 NC
Cherokee ARS
KJ4UC 307 2 1 1,478 GA
K6LIE 132 5 1 1,470 NM
Albemarle ARC
KO8V 280 2 1 1,470 VA
Marion ARC
NR8I 330 2 1 1,470 OH
Estes Valley ARC
AE0JM 328 2 1 1,462 CO

W0PE	328	2	1	1,462	ORG
Heritage Hunt Hams					
KC4ZA	131	5	1	1,460	VA
Fauquier ARA					
KX4O	111	5	1	1,460	VA
KL1JP	252	2	1	1,458	AK
Four Lakes ARC					
AC9BJ	313	2	1	1,456	WI
Newport Co. RC					
KA1BQP	450	2	1	1,450	RI
Silvercreek ARA					
KI8B	300	2	1	1,450	OH
Northern Arizona DX Assn.					
NF7E	595	2	1	1,440	AZ
Cowtown ARC					
K5MW	297	2	1	1,438	NTX
NASA Marshall Space Flight Center ARC					
NN4NT	225	2	1	1,430	AL
Fort Collins CW					
N0AW	360	2	1	1,428	CO
Butler Co. (OH) ARA					
W8MRL	583	1	1	1,423	OH
REDXA/MARS					
N6ZFO	318	2	1	1,422	SF
Santa Clara Co. ARA					
AC6YY	321	2	1	1,420	SCV
Chesapeake AR Service					
K5VIP	316	2	1	1,412	VA
Niagara Peninsula ARC					
VA3FLF	108	5	1	1,410	GTA
Ottawa Valley Mobile RC					
VA2NB	126	5	1	1,405	QC
NO8C	628	1	1	1,397	OH
Minnesota Wireless Assn.					
KE0TL	266	2	2	1,394	MN
Highline ARC					
WA7KVI	281	2	1	1,394	WWA
Los Angeles ARC					
N6VOH	304	2	2	1,390	LAX
N8RAT	620	2	1	1,390	WV
Calvert ARA					
N3AE	309	2	1	1,384	MDC
Franklin Co. (NC) ARC					
K4BRU	282	2	1	1,378	NC
Red River Radio Amateurs					
W0OS	314	2	1	1,378	MN
Newport Co. RC					
WB4SON	80	5	1	1,375	RI
Case ARC					
AD8Y	288	2	2	1,374	OH
Fauquier ARA					
KN4GDX	318	2	1	1,370	VA
Old Barney ARC					
W2TT	305	2	1	1,370	SNJ
K4BSK	304	2	1	1,366	NC
K4TRH	121	5	1	1,360	TN
Maryland Mobileers ARC					
N3YPI	331	2	1	1,358	MDC
Boeing Employees ARS					
W7VXS	277	2	1	1,358	WWA
Arrow Communications Assn.					
AC8TO	226	2	1	1,354	MI
ARS at LA State Univ					
AD5VC	317	2	1	1,346	LA
Cupertino ARES					
K6TD	281	2	1	1,344	SCV
Mid-MO ARC					
K0EMT	99	5	1	1,340	MO
NOARS					
W8NNC	119	5	1	1,340	OH
Union Co. (NC) ARC					
N4YTM	329	2	1	1,336	NC
Waltham ARA					
W1MHL	226	2	2	1,336	EMA
Piedmont ARC					
WB4JWM	221	2	1	1,334	GA
York Co. SC ARS					
K4VSV	123	5	1	1,330	SC
N4N Field Day Group					
WB4SQ	526	2	1	1,328	GA
Piedmont ARC					
K4EGA	269	2	1	1,326	GA
Butler Co. (OH) ARA					
W8KJ	441	2	2	1,322	OH
Cuyahoga Falls ARC					
WA3JAT	353	2	1	1,320	OH
Potomac Valley RC					
K3AJ	292	2	1	1,318	MDC
Raleigh ARS					
KW4TI	291	2	1	1,314	NC
N1JD	291	2	1	1,314	ME
Albemarle ARC					
N0WP	307	2	1	1,312	VA
River City AR Communications Soc.					
K6GCN	131	5	1	1,310	SV
W3PNM	290	2	1	1,310	WPA
York Region ARC					
VE3NRT	116	5	1	1,305	GTA
Central Texas DX and Contest Club					
K5NA	287	2	1	1,298	STX
Benton ARS					
K5BKT	520	2	1	1,290	AR
Nashua Area Radio Soc.					
W1XMM	150	2	1	1,278	NH
KD8VT	1126	1	2	1,276	OH
Greater Norwalk ARC					
AI1V	181	2	1	1,274	CT
Medina Co. ARC					
K8FH	256	2	1	1,274	OH
Colorado QRP Club					
KR0U	112	5	1	1,270	CO
W1FJ	280	2	1	1,270	EMA
Clark Co. (WA) ARES/RACES					
KB7AK	154	2	1	1,266	WWA
SC4ARC					
KJ6VCP	110	2	16	1,266	SCV
Broughton Memorial Field Day Group					
W2IR	380	2	4	1,266	ENY
WT1A	407	2	2	1,266	ME
Ocean Monmouth ARC					
NO2T	227	2	1	1,258	NNJ
San Benito Co. ARA					
W6TST	174	2	2	1,258	SCV
Raleigh ARS					
W8WZ	203	2	1	1,258	NC
Green Mountain Wireless Soc.					
N1BBQ	128	2	3	1,256	VT
David Sarnoff ARC					
AC2YD	100	5	1	1,250	NNJ
Mecklenburg ARS					
KK4JFM	275	2	1	1,250	NC
Lanark North Leeds ARES Inc.					
VE3PYG	110	5	1	1,250	ONE
Southern Co. ARA					
KB2MN	310	2	2	1,240	SNJ
QRP ARC International					
N0EIC	119	5	1	1,240	MO
Bergen Co. Emergency Management RC					
K2LAX	272	2	1	1,238	NNJ
Baltimore ARC					
N3WD	343	2	1	1,238	MDC
West Island ARC					
VA2MM	246	2	1	1,234	QC
Twin Cities Repeater Club					
KE0VDC	270	2	1	1,230	MN
N6HCN	87	5	1	1,220	ORG
W8UE	107	5	1	1,220	MI
Cupertino ARES					
KI6LDM	155	2	1	1,218	SCV
Nashua Area Radio Soc.					
N1CEO	67	2	1	1,218	EMA
N5JND	264	2	1	1,206	STX
Boeing Employees ARS					
N7UIG	264	2	1	1,206	WWA
Rochester (MN) ARC					
K0VH	292	2	3	1,204	MN
Brunswick Shores ARC					
WA6SUZ	204	2	1	1,202	NC
West Chester ARA					
N8MIQ	85	5	1	1,200	OH
Willamette Valley DX Club					
N7JI	133	5	6	1,195	OR
Juneau ARC					
WL7CSJ	522	2	1	1,194	AK
Albany ARA					
K2QY	133	2	1	1,190	ENY
Edmond ARS					
K5JCN	109	5	1	1,190	OK
NEMO ARC					
KD0YTE	235	2	1	1,190	MO
SC4ARC					
KM6DKE	126	2	16	1,190	SCV
Highline ARC					
W7POE	211	2	1	1,188	WWA
Coshocton Co. ARA					
KB8PXM	179	2	1	1,186	OH
Half Moon Bay ARC					
KK6VGE	93	5	1	1,180	SCV
N2ZPY	220	2	3	1,170	WNY
Valley of the Moon ARC					
N6TVN	116	5	1	1,170	SF
Central Missouri Radio Assn.					
N0SSM	102	5	1	1,170	MO
ARA of Nebraska					
N0WJS	269	2	1	1,170	NE
Sturdy Memorial Hospital ARC					
W1TW	250	2	2	1,170	EMA
Davis Co. ARC					
WU7F	241	2	1	1,170	UT
K7NAL	508	2	1	1,166	UT
KA8HOK	241	2	1	1,164	AL
Boulder ARC					
NC0B	454	2	1	1,162	CO
AC0SR	101	5	1	1,160	MO
Wayne Co. ARC					
KC3NDW	81	5	1	1,160	EPA
Orange Co. Radio Amateurs & Durham FM Assn.					
WA2JLW	101	5	1	1,160	NC
Sonoma Co. Radio Amateurs					
W6GEE	228	2	1	1,158	SF
Athens Co. ARA					
W8MHV	204	2	2	1,158	OH
K2NPN	100	5	1	1,150	WNY
Oro Valley ARC					
K7AZT	250	2	1	1,150	AZ
FVVFD					
N3JUY	150	2	1	1,150	NFL
Plano AR Klub					
W8OV	200	2	1	1,150	NTX
WM4AA	100	5	1	1,150	SC
Southern IN ARA					
K9BLR	248	2	1	1,142	IN
ARA of Nebraska					
KB0ZOM	270	2	1	1,140	NE
Low Country Contest Club					
KB1AWM	214	2	1	1,134	SC
Port City ARC					
AA1SB	245	2	1	1,130	NH
North Shore (IL) RC					
K9RST	170	2	1	1,126	IL
Madison Co. (OH) ARC					
W8DPK	252	2	1	1,126	OH
WH7T	244	2	1	1,126	PAC
Northeast Maryland AR Contest Soc.					
K3RLW	194	2	1	1,118	MDC
CTRI Contest Group					
AI1TT	263	2	2	1,112	RI
Dallas ARC					
NT5TM	121	2	1	1,112	NTX
SC4ARC					
W6VG	75	2	16	1,112	SCV
Rocky Mountain Ham Radio					
K5TEE	241	2	1	1,110	NM
Piedmont ARC					
KM4LFT	65	2	1	1,110	GA
Alford Memorial RC					
KM4YMI	215	2	1	1,110	GA
Pikes Peak Radio Amateur Assn.					
KT0DX	530	2	1	1,110	CO
Zuni Loop MEF					
W6SIY	96	5	1	1,110	SJV
Sawnee ARA					
N1MHV	232	2	1	1,104	GA
Johnson Co. Radio Amateurs Club					
KA2FNK	238	2	1	1,102	KS
WG4FOC	75	5	1	1,100	NFL
4SQRP					
WG5F	95	5	1	1,100	OK
New Providence ARC					
K2GLS	211	2	1	1,094	NNJ
Pueblo West ARC					
NE0DA	236	2	1	1,094	CO
Southwest Mississippi ARC					
N5ZNT	186	2	1	1,092	MS
Peterborough ARC					
VA3NW	471	2	1	1,092	ONE
Boulder ARC					
W0RUN	251	2	1	1,090	CO
Clinton Co. ARA					
K8IO	367	2	1	1,084	OH
Zuni Loop MEF					
K6WHP	78	5	1	1,080	ORG
Lorain Co. ARA					
N8AUC	132	2	2	1,078	OH
Kent Co. ARC					
N3KRX	232	2	1	1,074	DE
Whitley Co. ARC					
KC9WBR	180	2	1	1,070	IN
W5DPH	282	2	1	1,070	OK
W0PWE	92	5	1	1,070	IA
W1HAD	561	1	2	1,067	CT
Easton ARS					
K3RKU	171	2	1	1,066	MDC
Nanaimo ARA					
VA7DXX	233	2	1	1,066	BC
Gold Coast ARA					
NX4T	195	2	2	1,064	SFL
Lambton Co. RC					
VE3CFK	227	2	1	1,058	ONS
Westmoreland ARC					
N4V	261	2	3	1,056	VA
Tamiami ARC					
AA4TI	403	1	1	1,053	WCF
Hughes ARC					
K6VHY	80	5	2	1,050	LAX
Fluvanna Co. ARES					
K8SYH	204	2	1	1,050	VA
York RC					
KB9SWI	225	2	1	1,050	IL
Rowan ARS					
KN4USA	225	2	1	1,050	NC
Tamiami ARC					
W4IEE	150	2	1	1,050	WCF
Union Co. (NC) ARC					
WD4E	100	5	1	1,050	NC
Humboldt ARC					
KG6LHW	148	2	1	1,048	SF
OCAPA					
WD0GTY	285	2	1	1,048	OK
Salt City DX Assn.					
AJ3K	150	2	1	1,044	WNY
KB0YH	177	2	1	1,040	CO
PODXS 070					
KC3FL	222	2	1	1,038	WCF
West Valley ARA					
KC7XE	235	2	1	1,038	SCV
Jefferson Co. (WA) ARC					
K7DCJ	196	2	1	1,034	WWA
KC0CCR	73	5	1	1,030	KS
WD Contest Group					
K0WD	288	2	1	1,026	NE
Quinte & Prince Edward RCs					
VA3EP	218	2	1	1,022	ONE
West Valley ARA					
AD6CL	44	5	7	1,020	SCV
Shoreline ARC					
WZ1V	331	2	1	1,020	CT
Big Island ARC					
AH6KO	217	2	1	1,018	PAC
Radio Amateurs of Northern Vermont					
K1ZK	78	5	1	1,015	VT
Saratoga Co. ARA					
KG2H	76	5	1	1,010	ENY
Valley and Massanutten ARA					
N4RLI	56	5	1	1,010	VA
Boone & Hamilton Co. ARES					
W0FS	91	5	1	1,010	IA
Central Missouri Radio Assn.					
KE0BJL	122	2	8	1,008	MO
NOARS					
W8KRF	216	2	1	1,008	OH
Long Island CW Club					
K2MZ	191	2	1	1,004	EMA
South East Contest Club					
NG2J	85	5	1	1,000	GA
Prairie Dog ARC					
AD0P	364	2	3	998	SD
Palo Alto ARA					
K6SV	233	2	1	994	SCV
New Mexico Big River Contesters					
N5HC	844	1	1	994	NM
Raytown ARC					
W0NRP	421	2	1	992	MO
Sierra Foothills ARC					
K6GPB	74	5	1	990	SV
Vienna Wireless Soc.					
W2QL	74	5	1	990	VA
Allegheny Valley Radio Assn.					
W3RA	240	2	1	990	WPA
Cleveland ARC					
W4LSV	84	5	1	990	TN
Texas DX Soc.					
WB5TKI	185	2	1	990	STX
North Shore (ON) ARC					
VA3TPS	251	2	1	988	ONE
Maple Valley ARC					
N7UIC	264	2	1	984	STX
Forsyth ARC					
KC4X	221	2	1	980	NC
Oakville ARC					
VE3HG	93	5	1	980	GTA
Eastern Shore ARC					
WA4LM	83	5	1	980	VA
Desert RATS of Palm Springs					
KJ6DQR	219	2	1	976	ORG
KZ1O	208	2	1	974	NFL
Mining ARC/St. Paul RC					
AA0BQ	72	5	1	970	MN
Orange Co. (CA) ARC					
KJ6ZH	72	5	1	970	SV
N7RCS	82	5	1	970	SFL
Great South Bay ARC					
W2HCB	163	2	1	970	NLI
Antelope Acres ARC					
WW6RY	155	2	4	970	LAX
Barnstable ARC					
N1ILZ	130	2	1	968	EMA
Huber Heights ARC					
N8VAR	211	2	1	966	OH
KE7NO	303	2	1	964	MT
KC5SM	456	2	1	962	AR
KD1LE	153	2	1	962	EMA
Long Island Mobile ARC					
KD2GXL	128	2	2	962	NLI
Peel ARC					
VE3CEB	178	2	1	962	GTA
Pamlico ARS					
AI4WL	245	2	1	958	NC
Tamiami ARC					
KN4ONE	152	2	1	958	WCF
Southern Pennsylvania ARC					
K3QF	201	2	1	954	EPA
KG5GCC	201	2	1	954	MS
Fort Wayne RC					
N9ZI	201	2	1	954	IN
Huntsville ARC					
K4FTY	140	5	1	950	AL
Radio Assn. of Western New York					
KA2IWK	160	2	1	950	WNY
Ole Virginia Hams					
KM4KLB	103	2	1	950	VA
King George AR Operators					
KN4MVD	150	2	1	950	VA
Baton Rouge ARC					
N5IB	230	2	1	950	LA
Central Ohio Ops Klub Extra Novice					
N8CJ	239	2	1	948	OH
K1SEC	199	2	1	946	EMA
Newport Co. RC					
KE1AK	199	2	1	946	RI
North Fulton ARL					
W4FRA	59	5	1	945	GA
Northwest Ohio ARC					
W8TY	211	2	1	944	OH
Mid-Atlantic ARC					
WB4PWZ	208	2	1	944	EPA
Brazos Valley ARC					
NA5D	204	2	1	938	STX

Radio Amateurs of Greater Syracuse
NK2C 172 2 1 938 WNY
St. Clair ARC
KEØYI 177 2 1 936 IL
W9DKB 173 2 1 934 WI
Palos Verdes ARC
K6MU 170 2 2 930 LAX
Preston Co. ARC
NR5N 78 5 1 930 WV
Ellsworth Amateur Wireless Assn.
W1LQ 78 5 1 930 ME
Zuni Loop MEF
K7PD 48 5 1 925 UT
Conejo Valley ARC
K6IDS 154 2 1 924 SB
W8WEJ 193 2 1 922 WV
Columbia-Montour ARC (PA)
KC3JNW 200 2 1 918 EPA
Kings Co. (NY) ARC
KD2QPU 192 2 1 918 NLI
Vaca Valley RC
N6THN 167 2 1 918 EB
Nashua Area Radio Soc.
AC1EV 474 1 1 914 EMA
Los Alamos ARC
KØCCM 191 2 1 914 NM
Peel ARC
VA3RMU 141 2 1 914 GTA
Jim Bell Wireless Assn.
AK4NG 160 2 4 912 AL
Socorro ARA
KC7QY 204 2 1 912 NM
Peel ARC
VE3TA 138 2 2 912 ONS
Jefferson (LA) ARC
AG5JW 174 2 1 908 LA
WT4R 76 5 1 905 TN
Ellsworth ARA
W3AKD 163 2 2 902 ME
Bearcat DX Club
W8BXG 326 2 1 902 OH
K5TSK 75 5 1 900 AR
Estero RC
K6AVP 138 2 1 900 SB
Silly Hats Club
N1XRR 91 5 2 900 SC
Ottawa Valley Mobile RC
VE3NA 65 5 1 900 ONE
Orange Co. Radio Amateurs & Durham FM Assn.
W4SAR 174 2 2 898 NC
ADØRW 166 2 1 894 IA
K3OMS 186 2 1 894 MDC
Lake Area (TX) ARC
KC5LL 170 2 1 892 NTX
Eastern PA ARA
AJ3C 146 2 1 890 EPA
WI8J 64 5 1 890 MI
SC4ARC
AF6IE 35 2 16 888 SCV
HP Boise ARC
KD7VZW 159 2 1 884 ID
Ramona Outback ARS
AA6PC 208 2 1 882 SDG
Sky Valley ARC
K8TOM 133 2 1 882 WWA
Marshall Co. ARA
KC4TIE 183 2 1 882 KY
Albemarle ARC
KK4JP 168 2 2 882 VA
Zuni Loop MEF
K7TP 73 5 1 880 SV
Greer ARC
NØDIM 198 2 1 880 SC
Highline ARC
W7DFO 64 5 1 880 WWA
KC8T 56 2 1 878 EPA
CWops
NS8O 182 2 1 878 OH
Alexandria RC
KA4GFY 217 2 1 874 VA
AI4RA 71 5 1 860 AL
Heritage Hunt Hams
KC4IM 71 5 1 860 VA
Lenoir ARC
KØCAT 155 2 2 860 NC
Antelope Valley ARC
WA6YEO 220 2 2 860 LAX
Montvale OEM
K2JK 177 2 1 858 NNJ
KD3JA 152 2 1 858 MDC
Southern California Contest Club
KI6VC 202 2 1 858 SJV
Union Co. (NC) ARC
KK4PIB 177 2 1 856 NC
N6EF 154 2 1 854 SV
Gwinnett ARS
N7GRB 176 2 1 854 GA
Alford Memorial RC
N4UJ 155 2 1 852 GA
Mount Diablo ARC
N6BHX 128 2 2 852 EB
W9BS 175 2 1 850 SFL
WA7DUH 349 2 1 848 EWA
Straight Key Century Club
K9JP 149 2 1 846 MI
Tallahassee ARS
W1XO 148 2 1 842 SV
Nashua Area Radio Soc.
W1YCZ 76 2 1 838 NH
W4DWS 172 2 1 838 GA
Albuquerque DX Assn.
N2GJ 160 2 1 834 NM
WA4MLD 171 2 1 834 MI
GEARS
KC9VAZ 58 5 1 830 SV
N6AA 340 1 1 830 LAX
South Lyon Area ARC
NF8M 170 2 1 830 MI
Big Bend ARC
W5WIZ 170 2 1 830 STX
Loma Pioneer Repeater Club
W6EDY 146 2 1 828 SCV
Cochise ARA
AA7JB 130 2 1 824 AZ
Big Bend ARC
KB5R 386 2 1 822 WTX
South Plainfield ARC
KD2FSI 95 5 1 820 NNJ
Broughton Memorial Field Day Group
W2UI 214 2 1 820 ENY
Tamiami ARC
KN4BAR 52 2 1 818 WCF
Whitley Co. ARC
N9QCL 119 2 1 816 IN
Aeronautical Center ARC
AF5BG 166 2 1 814 OK
Montgomery ARC/Damascus ECT
N1EK 282 2 1 814 MDC
Huntsville ARC
KB3A 216 2 1 810 AL
Kansas Antenna Club in Johnson Co.
KEØPRX 190 2 1 810 KS
Pasadena RC
KK6KOI 56 5 1 810 LAX
Oakland Radio Communication Assn.
KS6M 140 2 1 810 EB
Eastern Shore ARC
WA2AIC 124 2 1 810 VA
Benton ARS
WD5C 140 2 1 810 AR
Philips ARC
NF1A 144 2 1 804 EMA
West Chester ARA
AA8XX 326 2 1 802 OH
Sierra Intermountain Emergency Radio Assn.
K6LR 312 2 1 802 NV
Okaw Valley ARC
N9LIS 170 2 1 802 IL
Palo Alto ARA
KM6CPF 45 5 1 800 SCV
Jefferson (LA) ARC
K5DEU 321 2 1 798 LA
Brazos Valley ARC
K5LJ 162 2 1 798 STX
River City AR Communications Soc.
N6PGQ 238 2 2 794 SV
San Fernando Valley ARC
WA6KYR 161 2 1 794 LAX
SC4ARC
KJ6GMG 15 2 16 790 SCV
Pasadena RC
N6LL 170 2 1 790 LAX
Austin ARC
WB5AOH 54 5 1 790 STX
Athens (GA) RC
KX4AZ 115 2 1 786 GA
K4KSR 53 5 1 780 VA
Prairie Dog ARC
KØWIU 73 5 1 780 SD
Boca Raton ARA
N1QFH 14 2 1 780 SFL
Sioux Empire ARC
WBØHHM 260 2 1 780 SD
FVVFD
AI4DX 131 2 1 774 NFL
QRP ARC International
AB7MP 42 5 1 770 EWA
Monkey Lover's Radio Consortium
AC6SL 130 2 1 770 SCV
Peel ARC
VA3YT 62 5 1 770 GTA
K6BLY 309 1 1 768 SDG
AA4N 154 2 1 766 TN
Portage Co. AR Service
W8YIH 180 2 1 766 OH
North Fulton ARL
NV4C 50 5 1 765 GA
Cattail Branch Wireless Soc.
KM4OQO 546 1 2 762 VA
Mid-MO ARC
NØZH 153 2 1 762 MO
W8NOR 153 2 1 762 AZ
Aardvark Wireless Group
K7LSV 51 5 1 760 WCF
East Bay ARC
KE6BEE 142 2 1 758 EB
N6BOX 203 2 2 756 ORG
Oregon Tualatin Valley ARC
N7IQM 155 2 2 756 WWA
Point Loma ARC
K6ZH 126 2 1 754 SDG
Messila Valley RC
KM5ZE 126 2 1 754 NM
Henry Co. AUXCOMM
W4WYD 101 2 1 754 TN
N6PAZ 101 2 1 752 SJV
Niagara Peninsula ARC
VE3NDW 79 2 2 752 GTA
Davis Co. ARC
N7JEH 100 2 1 750 UT
Fond du Lac ARC
N9RPU 150 2 1 750 WI
The FPL Group
K8ESQ 136 2 1 748 MI
San Jose ARES RACES
AI6EH 39 5 1 745 SCV
Tri-Lakes ARC
KCØM 164 2 1 742 MO
Kingman AR CW Operators Club
WE7G 148 2 1 742 AZ
Oregon Tualatin Valley ARC
AD7OG 149 2 1 740 OR
Albemarle ARS
K4EIT 124 2 1 740 NC
Dalton ARC
KN4CNX 175 2 1 736 GA
Sierra Foothills ARC
N6CKV 122 2 1 736 SV
Arizona Outlaws Contest Club
WU9B 148 2 1 736 AZ
Wahkiakum Co. ARC
KC4ONA 39 5 1 735 WWA
K7MM 48 5 1 730 EWA
Motor City RC
K8SB 120 2 1 730 MI
W6MZ 38 5 1 730 SDG
WB4BIN 58 5 1 730 NTX
NØSFH 108 2 2 728 IA
Vienna Wireless Soc.
W4AWM 189 2 1 728 VA
Palo Alto ARA
N6DB 287 2 1 724 SCV
W3KS 237 2 1 724 DE
K3HH 150 2 1 720 NC
Snohomish Co. Hams Club
WA7JNJ 152 2 1 720 WWA
Piedmont ARC
K4IO 17 2 1 718 GA
K9CPO 144 2 1 718 WI
Irving ARC
N5BB 84 2 1 716 NTX
Police AR Team of Westford
N1DAM 69 5 1 715 EMA
KE4UKX 116 2 8 714 VA
Bellbrook ARC
N8VMX 103 2 1 714 OH
Gwinnett ARS
K4G 271 2 2 712 GA
Pamlico ARS
K4HPS 143 2 1 712 NC
Wahkiakum Co. ARC
K7SH 108 2 1 712 WWA
K1USN RC
N1VH 143 2 1 712 EMA
K2CWM 56 5 1 710 SNJ
New Providence ARC
K2EZR 140 2 1 710 NNJ
South Lyon Area ARC
NU8M 140 2 1 710 MI
Maple Grove RC
WØREW 140 2 1 710 MN
N3ZP 145 2 1 708 EPA
Cherokee ARS
W1JKU 46 2 1 708 GA
Montgomery Amateur Club
K4PO 114 2 1 706 AL
K5TWJ 138 2 1 702 IL
SARA MN
WØOXB 226 2 1 702 MN
Palos Verdes ARC
KB9ENS 93 2 2 700 LAX
KC9BLA 205 2 4 700 IN
David Sarnoff ARC
WB2YGF 45 5 1 700 NNJ
Cove Repeater Assn.
WD5DW 225 2 3 700 NTX
Mercer Co. ARC
NB3W 172 2 1 698 WPA
Manotick ARG
VE3AIR 91 2 1 698 ONE
Bedford ARC
W5DLW 149 2 1 698 NTX
CRES ARC
W3CRZ 157 2 1 696 OH
Rochester (NY) DX Assn.
KD2CT 109 5 1 695 WNY
Coshocton Co. ARA
W8CCA 27 5 1 695 OH
Boulder ARC
AIØJ 37 2 3 694 CO
KØGEO 110 2 1 690 STX
N9EAX 200 2 2 690 WI
Arrow Communications Assn.
WS8U 19 2 1 688 MI
Faulkner Co. ARC
K5DRU 265 1 1 687 AR
Granite State ARA
K1KXN 135 2 1 686 NH
Sonoma Co. Radio Amateurs
KZ6T 91 2 1 686 SF
Williamsburg Area ARC
K4MI 111 2 1 682 VA
N2CVS 133 2 1 682 NH
Utah ARC
WA7ZRG 247 2 1 680 UT
King George AR Operators
K9DOD 69 2 1 678 VA
River City AR Communications Soc.
W6BS 214 2 1 678 SV
Fannin Co. ARC
KF5KUW 132 2 1 676 NTX
Henry Co. AUXCOMM
N4RRW 146 2 1 676 TN
South Lyon Area ARC
WA8UMT 102 2 2 676 MI
Radio Amateur Club of Knoxville
WB3JKQ 108 2 1 676 TN
NT6H 43 5 2 675 SF
Castle Shannon VFD ARC
K3CSF 163 2 5 674 WPA
K6LU 106 2 1 674 ORG
San Mateo RC
W6BSD 123 2 1 672 SCV
Central Missouri Radio Assn.
AD0ZE 130 2 1 670 MO
Orleans Co. ARC
KD2EFR 210 2 1 670 WNY
South Canadian ARS
KG5BIM 310 2 1 670 OK
Ottawa Valley Mobile RC
VE3KTN 32 5 1 670 ONE
Lodi ARC
W6MSU 30 5 1 670 SJV
Nashoba Valley ARC
W1PJE 85 2 1 668 WMA
Hurst ARC
KØVD 129 2 1 666 NTX
Columbia-Montour ARC (PA)
WC3B 42 5 1 665 EPA
Three Generations of Hams
N3XXP 146 2 4 664 MDC
Platinum Coast ARS
N4EN 127 2 2 662 SFL
Kitchener-Waterloo ARC
VA3PAF 103 2 1 662 ONS
ARTS of Louisville
WX8V 128 2 1 662 KY
N1EDF 61 5 1 660 EMA
St. Thomas ARC
NP2WJ 28 2 1 660 VI
West Virginia ARC
KD8A 127 2 1 658 WV
Marietta ARC
W8JTW 104 2 1 658 OH
SC4ARC
K6TPS 60 2 2 656 SCV
KA2FHN 132 2 1 656 WNY
Pasadena RC
KC7O 202 2 1 654 LAX
San Mateo RC
N6IMY 92 2 1 654 SCV
Oroville ARS
W7XZ 126 2 1 654 SV
Virginia Beach ARC
KI5FJ 114 2 2 652 VA
Austin ARC
AG5TR 100 2 1 650 STX
Columbia (MD) ARA
K3TEE 40 5 1 650 MDC
NT4P 50 5 1 650 NC
Sierra Foothills ARC
W2VX 150 2 1 650 SV
Johnson Co. Radio Amateurs Club
AD0IM 149 2 1 646 KS
Garrett Co. ARES
KB8NUF 125 2 1 646 MDC
American Legion Post 33 ARC
W9TAL 45 2 1 646 IL
David Sarnoff ARC
N2LVI 146 2 1 642 SNJ
Albany ARA
N2MTG 246 2 1 642 ENY
Albuquerque DX Assn.
N5EPA 246 2 1 642 NM
Gwinnett ARS
WD4JEM 146 2 2 642 GA
Thunderbird ARC
AF7BJ 122 2 1 638 AZ
KJ6DQ 102 2 1 638 STX
BayNet
KJ6VU 112 2 1 638 SCV
Valley of the Moon ARC
N7PIB 122 2 1 638 SF
Boulder ARC
N7VZ 65 2 4 636 CO

Palms West ARC
KW4WA 31 5 1 635 SFL
Skyview Radio Soc.
AB3GY 121 2 1 634 WPA
Johnson Space Center ARC/Clear Lake ARC
AD5CQ 121 2 1 634 STX
Sierra Foothills ARC
KM7S 121 2 1 634 SV
Glenn Valenta Memorial ARC
KØXTR 97 2 2 634 CO
Mahoning Valley ARA
W4ZIP 81 2 1 634 OH
Sun City ARC
K5WPH 31 2 5 632 WTX
Candlewood ARA
W1JGM 181 2 2 632 CT
Valley and Massanutten ARA
WA4FJC 181 2 2 632 VA
Indianapolis RC
AC9VM 38 5 1 630 IN
North Fulton ARL
K6JSS 38 5 1 630 GA
KF7JIG 70 2 1 630 SC
Tallahassee ARS
KK4SIH 95 2 1 630 NFL
N7NB 95 2 1 630 WWA
Goshen ARC
KD9GGZ 121 2 1 628 IN
Oak Ridge ARC
W4AJP 131 2 1 628 TN
WU1T 132 2 1 628 EMA
Police AR Team of Westford
K1CL 119 2 1 624 EMA
KA7T 118 2 1 622 ID
Sierra Foothills ARC
KO6TH 55 2 1 622 SV
Alamance ARC
KN4AXJ 142 2 1 618 NC
KN4SWB 67 2 1 616 SC
Dial RC of Middletown
WA8YXY 102 2 1 616 OH
Medina Co. ARC
NF8O 232 2 1 614 OH
Lee DeForest ARC
W6WDS 68 2 1 614 ORG
Big Island ARC
WH6FQI 116 2 1 614 PAC
WT1L 141 2 1 612 AZ
Irvine Disaster EmComms
KE6GYD 79 2 1 610 ORG
W1TNX 90 2 1 608 NC
WATTS Family ARC
WAØTTS 128 2 1 606 MO
Hattiesburg ARC
KK4TXB 127 2 1 604 MS
NUØT 119 2 1 604 CO
Big Sandy ARC
AD5MQ 113 2 1 602 CO
St. Thomas ARC
NP2Q 114 2 1 602 VI
Hughes ARC
K6PNJ 75 2 1 600 LAX
Nassau ARC
KC2KC 45 5 1 600 NLI
WB5QNA 224 2 1 600 VA
Brightleaf ARC
N4PVH 128 2 1 598 NC
Peekskill/Cortlandt ARA
WD2L 174 2 1 598 TN
Edmond ARS
N5ZQ 203 2 3 596 OK
Clark Co. (WA) ARES/RACES
KJ7FTX 9 5 1 595 WWA
Heart O' Texas ARC
AE5CA 122 2 3 594 NTX
Northeast Tarrant ARC
W5JP 61 2 1 594 NTX
Minnesota Wireless Assn.
W6GMT 111 2 1 594 MN
N7DB 90 2 1 592 OR
Irvine Disaster EmComms
W6QN 86 2 1 592 ORG
Albemarle ARC
K4JZQ 120 2 1 590 VA
Lambton Co. RC
VA3OB 102 2 1 590 ONS
South Bay ARA
W6SFI 129 2 1 588 EB
Walton Co. ARES and Repeater Group
K4GO 84 2 1 586 GA
K7RTK 84 2 1 586 OR
Scott Co. (KY) AR Service
KN4LKC 84 2 1 586 KY
Sarasota Emergency RC
KT3V 116 2 1 584 WCF
W4ZTH 125 2 1 584 NFL
BEARS of Manchester ARC
K1SW 83 2 1 582 NH
Albemarle ARS
K4SDL 43 5 1 580 NC
Piedmont ARC
K6DPL 15 2 1 580 GA
KAØBOJ 202 2 1 580 NE
Long Island Mobile ARC
KD2GRS 35 2 1 580 NLI
N3JJT 120 2 1 580 OH
Central Alberta ARC
VE6DDD 265 2 1 580 AB
Sonoma Co. Radio Amateurs
AA6BD 13 2 1 576 SF
Broughton Memorial Field Day Group
KD2KCY 107 2 1 576 ENY
K4SWL 212 2 1 574 NC
Madison Co. (OH) ARC
W8WLK 162 2 1 574 OH
Delaware Valley ARS
AG3Q 117 2 2 572 DE
Boeing Employees AR Operators North Soc.
KNØW 81 2 1 572 WWA
Police AR Team of Westford
N1BYT 111 2 1 572 EMA
South Bay ARA
AE6YN 82 2 1 570 EB
Bomb Squad of Berdoo
K6GB 105 2 1 570 ORG
York RC
KC9UIU 151 2 1 570 IL
N6DVS 38 5 1 570 SCV
Green Mountain Wireless Soc.
W1SBW 129 2 1 568 VT
Davis Co. ARC
W7VQ 121 2 1 568 UT
KB5WBH 104 2 1 566 AR
South East Metro ARC
NØUC 139 2 1 566 MN
Metrocrest ARS
W5MDB 29 2 2 566 NTX
W6PZA 64 2 1 566 OR
Hughes ARC
K6LDQ 135 2 1 564 LAX
Rockwall ARC
KF5NXR 103 2 1 562 NTX
N4RCT 103 2 1 562 GA
Rocky Mountain Ham Radio
NØHQ 487 1 2 562 CO
Sangamon Valley RC
W9EBK 140 2 1 562 IL
Billerica ARS
K1VK 136 2 1 560 EMA
Ole Virginia Hams
K9VEG 21 5 1 560 VA
Saratoga Co. ARA
W2BEW 80 2 1 560 ENY
Northeast Maryland AR Contest Soc.
K2EJ 77 2 1 558 MDC
Macoupin Co. ARC
KD9LON 77 2 1 558 IL
W7DDE 102 2 1 558 OR
Northwest Indiana DX Club
W9KTP 77 2 1 558 IN
N7AND 48 5 1 555 WWA
Hughes ARC
K6ASN 82 2 2 554 LAX
Dallas ARC
KF5QOR 101 2 1 552 NTX
Tri-Co. ARC (WI)
AA9IK 100 2 1 550 WI
Trident ARC
KE4VA 250 2 1 550 SC
King George AR Operators
KK4VR 50 2 2 550 VA
Portage Co. AR Service
N8QZ 200 2 1 550 OH
Hilltop Transmitting Assn.
W3RMS 200 2 1 550 EPA
Lodi ARC
N6NFB 89 2 1 548 SJV
Kings Co. and Annapolis Valley ARCs
VE1QY 75 2 2 548 MAR
Bellevue ARC
ADØZC 80 2 1 546 NE
High Sierra Field Day Group
KQ7TJ 49 2 1 546 NV
North Florida ARC
N4MUH 99 2 1 546 NFL
VA7JC 103 2 1 546 BC
K7VIT 111 2 4 544 OR
Parker Radio Assn.
KEØPDU 98 2 1 542 CO
Bishop ARC
K6UN 145 2 1 540 ORG
Copper Country Radio Amateur Assn.
KB8W 39 5 1 540 MI
North Central Arkansas ARC
KEØLRR 147 2 1 540 AR
KG5WDF 45 2 1 540 STX
Ford AR League
N8HKU 95 2 1 540 MI
Radio Soc. of Tucson
WØPZD 60 2 1 540 AZ
Thunderbird ARC
AK7F 122 2 1 538 AZ
Big Sandy ARC
KEØGVX 47 2 1 538 CO
Lehigh Valley ARC
N3WGH 72 2 1 538 EPA
AARCMN
WAØRLY 100 2 1 536 MN
Cuyahoga Falls ARC
WO3X 143 2 1 536 OH
West Seattle ARC
AE7G 192 2 1 534 WWA
Lebanon Valley Soc. of Radio Amateurs
KM3D 42 2 1 534 EPA
W2ASD 43 2 5 534 ENY
Silver Comet ARS
K4LDC 104 2 1 532 GA
Monroe Co. Radio Communications Assn.
KA8NCR 106 2 1 530 MI
Newport Co. RC
KC1KUF 30 2 1 530 RI
Humboldt ARC
KN6CEI 21 2 1 530 SF
AB9YG 119 2 1 526 IL
K4KGM 69 2 1 526 NC
West Fork ARC
KG5OIB 137 2 1 524 NTX
NV1N 71 2 1 524 EMA
Blue Ridge ARC
W4FOT 137 2 1 524 NC
K4PH 93 2 1 522 NC
K5SMH 93 2 1 522 WTX
Mountain Top ARA
K6WDE 186 2 2 522 AZ
Ogden ARC
KE7DOA 93 2 1 522 UT
Hiawatha Valley ARC
KEØJRS 104 2 1 522 MN
Clark Co. (IN) ARC
KU4VG 68 2 1 522 KY
Lake Monroe ARS
WA3SGZ 93 2 1 522 NFL
The Villages ARC
K3ZGA 70 2 1 520 NFL
Colorado QRP Club
KØANS 17 5 1 520 CO
Ellsworth ARA
W3HBM 25 5 1 520 ME
Mansfield-Johnson AR Service
W5IMF 135 2 1 520 NTX
North Penn ARC
WA3NFV 135 2 1 520 EPA
Wayne ARC
KE8LVA 184 2 1 518 OH
Chicago FM Club
N9WRP 92 2 1 518 IL
McMinnville ARC
W7OWO 67 2 1 518 OR
Mount Vernon (VA) ARC
WJØT 67 2 1 518 VA
Riverland ARC
AB9TS 183 2 1 516 WI
Marshall (TX) ARC
KG5IEE 91 2 1 514 NTX
London ARC
VE3HOR 116 2 1 514 ONS
W8TOM 111 2 2 514 MI
K8MRT 85 2 1 512 MI
AA5ZT 90 2 1 510 OK
Charlotte ARC
KA4WYC 30 2 1 510 SC
North Shore (IL) RC
KD9EBS 36 5 1 510 IL
Point Loma ARC
KI6DGU 90 2 1 510 SDG
Palms West ARC
N2JB 7 5 1 510 SFL
Fluvanna Co. ARES
N8OQ 26 5 1 510 VA
Boston ARC
NV1W 36 5 1 510 EMA
Dial RC of Middletown
N8LRN 79 2 1 508 OH
Pottstown Area ARC
AA3WB 128 2 1 506 EPA
Lanierland ARC
AF4GT 89 2 1 506 GA
Skyview Radio Soc.
K3JAS 89 2 1 506 WPA
PODXS 070
KC9UR 89 2 1 506 IN
NO7G 89 2 1 506 MT
Kings Co. (NY) ARC
W2ZF 77 2 1 506 NLI
OH-KY-IN ARS
AC8UJ 82 2 1 504 OH
KG7JWD 177 2 1 504 WWA
Skyline RC
K1LOK 63 2 1 502 UT
Arlington ARC
N5ACK 88 2 1 502 NTX
Spa ARA
W5TCB 99 2 1 502 AR
North Hills ARC of Pittsburgh
KC3KSC 175 2 1 500 WPA
Mecklenburg ARS
KI4FAQ 62 2 1 498 SC
Roanoke Valley ARC
K1SO 173 2 1 496 VA
Sonoma Co. Radio Amateurs
N1CKA 92 2 2 496 SF
AB1CR 102 2 1 494 CT
RF Hill ARC
NE3I 34 2 1 494 EPA
Big Island ARC
NH6ET 61 2 1 494 PAC
Fox River Radio League
W9STS 45 2 1 494 SC
W1FYG 121 2 1 492 CT
WN3N 151 2 19 492 EPA
Williamsburg Area ARC
AB2AN 24 5 1 490 VA
Boeing Employees ARS – St. Louis
ADØWX 111 2 1 490 MO
Vienna Wireless Soc.
KK4DAS 67 5 1 490 VA
Lake Area (SD) Radio Klub
KØBBC 85 2 1 490 SD
Yellowstone RC
WN7Y 67 2 1 490 MT
Auburn Area EmComms Team
WA7AUB 88 2 1 488 WWA
Radio Research Club
WBØTSR 219 2 1 488 SD
Oakland Radio Communication Assn.
WW6OR 194 2 1 488 EB
KB1YNT 168 2 1 486 CT
Kitchener-Waterloo ARC
VA3TMV 84 2 1 486 ONS
Rochester (MN) ARC
AAØCN 78 2 1 484 MN
Greer ARC
AC4Q 117 2 1 484 SC
K9VQA 117 2 1 484 IL
Sunnyvale ARES
K6OTT 16 2 1 482 SCV
Patoka Valley ARC
K9RBH 132 1 1 482 IN
Sonoma Co. Radio Amateurs
KM6Y 37 2 1 482 SF
Franklin Co. (MA) ARC
N1AW 59 2 1 482 WMA
Alford Memorial RC
WC4Y 166 2 1 482 GA
N8NDJ 23 5 2 480 MI
Ottawa Valley Mobile RC
VE3XEM 165 2 1 480 ONE
Sonoma Co. Radio Amateurs
AE6SF 65 2 1 478 SF
King George AR Operators
KC4AUV 57 2 1 478 VA
Montgomery ARC/Damascus ECT
WB2U 82 2 1 478 MDC
Montgomery Amateur Club
N4UZZ 13 1 1 476 AL
Fauquier ARA
W4KRN 82 2 1 476 VA
CRES ARC
KE8OOS 23 5 1 475 OH
Broken Arrow EM ARC
AE5MM 56 2 1 474 OK
K7UWR 81 2 1 474 GA
Radio Amateurs of Skagit Co.
WA7GJZ 76 2 1 474 WWA
Vienna Wireless Soc.
K3NF 54 2 1 472 VA
Fox River Radio League
W9JDM 22 5 1 470 IL
Orange Co. Radio Amateurs & Durham FM Assn.
WB4OSU 55 2 1 470 NC
Albany (GA) ARC
KM4WW 159 2 1 468 GA
Cupertino ARES
AI6CC 57 2 1 466 SCV
Lake Oswego ARC
K7VMN 79 2 1 466 OR
W1AM 79 2 1 466 GA
St. Louis QRP Soc.
AAØVE 22 5 1 465 MO
Niagara Peninsula ARC
VA3WM 3 5 18 465 GTA
W7GE 33 5 1 465 WWA
FVVFD
N9LHS 57 2 1 464 NFL
The Seven Thirty ARS
AK4OG 34 2 1 462 VA
NEMO ARC
KDØPGM 106 2 1 462 MO
Marion Co. AuxCom/ARES
KE7OLU 6 2 1 462 OR
Willamette Valley DX Club
KR7X 78 2 1 462 OR
Kendall ARS
WA5UBO 106 2 1 462 STX
Coshocton Co. ARA
AB8SV 31 5 1 460 OH
NV5S 41 5 1 460 STX
Sonoma Co. Radio Amateurs
W6LZJ 22 5 1 460 SF
Northeast Wireless RC
WA2WLQ 36 5 1 460 NLI
North Hills ARC of Pittsburgh
K3RKC 77 2 1 458 WPA
Sonoma Co. Radio Amateurs
K6TJP 18 2 1 458 SF

Fort Myers ARC
KC0DE 77 2 1 458 SFL
KF5ZAP 28 2 1 458 NTX
Splinter Group ARC
K0BIE 77 2 1 458 OH
Central Texas DX and Contest Club
WB4KTF 65 2 1 458 STX
KG7FRS 143 2 1 456 UT
Waterton Contest Club
N9EDK 103 2 1 456 CO
Blackstone Valley ARC
WB1P 53 2 1 456 RI
Raritan Bay Radio Amateurs
K3GNZ 51 2 1 454 NNJ
Ski Country ARC
KD0WQC 101 2 1 454 CO
Oakland Radio Communication Assn.
KG6RYV 66 2 1 454 EB
East Greenbush ARA
N2USM 152 2 1 454 ENY
Mount Vernon (VA) ARC
W4RUS 36 2 1 454 VA
Island Co. ARC
W7COA 51 2 2 454 WWA
Wellesley ARS
AF1R 101 2 1 452 EMA
Radio Amateur Soc. Of Norfolk
W4NMH 26 2 1 452 VA
Bloomington ARC
W9YW 51 2 1 452 IN
South Canadian ARS
WX5MOR 51 2 1 452 OK
Police AR Team of Westford
AA1O 77 2 1 450 EMA
K2MTS 21 5 1 450 ENY
Philips ARC
KB1NO 100 2 1 450 EMA
Morris RC/Hanover Twp OEM
KC2RDX 75 2 1 450 NNJ
Los Alamos ARC
NM5BB 100 2 1 450 NM
Club Radio Amateur de Québec
VE2GAT 82 2 1 450 QC
Radio Amateurs of Greater Syracuse
W2LGA 100 2 1 450 WNY
Roanoke Valley ARC
W4TKW 150 2 1 450 VA
Maui ARC
WH6DUE 100 2 2 450 PAC
N8PFK 149 2 1 448 MI
Lake Oswego ARC
K7GPN 98 2 1 446 OR
Roanoke Valley ARC
W4CA 98 2 1 446 VA
Lake Monroe ARS
KB2CUX 47 2 3 444 NFL
W1JAB 44 2 1 444 NH
Dog Daze Radio Group
W6BIV 85 2 1 444 LAX
Police AR Team of Westford
WS3F 47 2 1 444 NH
KA8GPM 83 2 1 442 OH
Littleton Area Radio Klub
N6B 196 2 1 442 NH
Messila Valley RC
W6VJT 96 2 1 442 NM
South Pasadena ARC
W2JCL 45 2 1 440 LAX
Olympia ARS
WA7BAM 115 2 1 440 WWA
KI4FRU 47 2 1 438 NC
South Wake ARC
KK4B 72 2 1 438 NC
South Wake ARC
KK4BK 72 2 1 438 NC
Billerica ARS
N1HTS 94 2 1 438 EMA
Somerset Co. ARC
N3XF 72 2 1 438 WPA
Central Michigan ARC
WX8MOJ 53 2 3 436 MI
Int'l Soc. for AR Innovation
K2CR 107 2 1 434 NNJ
SARA MN
K0GW 96 2 1 434 MN
Pioneer ARC
K0VLA 96 2 1 434 NE
Tyler ARC
N1EW 141 2 1 432 NTX
Brazos Valley ARC
NT5SM 131 2 1 432 STX
San Antonio RC
N5IUT 20 2 1 430 STX
Long Island CW Club
W2LCW 28 5 1 430 NLI
Sun City ARC
KD5QHV 137 2 1 428 WTX
West Chester ARA
KD8VRX 86 2 1 428 OH
Bloomington ARC
N9VKU 123 2 1 428 IN
Hiawatha Valley ARC
W0IKE 38 2 12 426 MN
KD9NYE 20 5 1 425 IL
KB9FU 87 2 2 424 STX
W6DMS 37 2 1 424 ORG
Mike & Key ARC
WA7NIW 87 2 1 424 WWA
Wireless Soc. of Southern Maine
KB1YTR 36 2 1 422 MN
Ole Virginia Hams
KM4OZH 136 2 1 422 VA
REDXA/MARS
W6WF 132 2 1 422 SCV
Liverpool Amateur Repeater Club
WB2WGH 136 2 1 422 WNY
Pasadena RC
AC6VV 135 2 1 420 LAX
Virginia Beach ARC
K8HU 109 2 1 420 VA
Lorain Co. ARA
KC8CAD 68 2 1 420 OH
Sachse ARA
KG5WAW 27 5 1 420 NTX
Desert RATS of Palm Springs
KS6F 92 2 1 420 ORG
N9BT 27 5 1 420 IL
Oro Valley ARC
W7HD 37 5 1 420 AZ
Mecklenburg ARS
K4WSE 67 2 1 418 NC
XRX RC
KD2REU 37 2 2 418 WNY
K0MW 44 2 1 418 IA
Benton ARS
KB5QR 133 2 1 416 AR
KI4BIY 118 2 1 416 TN
Truro ARC
VE1HUL 52 2 1 416 MAR
Rochester (NY) DX Assn.
WA2CHV 70 2 1 416 WNY
AC0WZ 66 2 1 414 MO
Utah Valley ARC
AG7GX 49 2 1 414 UT
Peekskill/Cortlandt ARA
K2WPM 132 2 1 414 VA
FVVFD
K4BV 87 2 1 414 NFL
NOARCFL
KI4MEU 72 2 3 414 NFL
Outer Banks Repeater Assn.
K3OIL 68 2 1 412 NC
KA5FDX 78 2 2 412 AR
Radio Amateurs of Northern Vermont
KC1VT 81 2 1 412 VT
K7UIN 26 5 1 410 OR
Southington ARA
KC1MZI 26 5 1 410 CT
KD3PC 32 5 1 410 VA
Thibodaux ARC
KK5CM 130 2 1 410 LA
Tri-States ARC (GA)
KN9W 78 2 1 410 TN
Sun Coast ARC Soc.
VE7RBE 16 5 1 410 BC
Mid-MO ARC
WA2KBZ 60 2 1 410 MO
Fort Washington ARC
WA3YTK 40 2 1 410 MDC
Kanawha ARC
WA2GO 44 2 1 408 WV
KF6YU 67 2 1 406 CO
North Arkansas ARS
KK5XF 28 2 5 406 AR
N3ORX 79 2 1 406 TN
W7GF 64 2 1 406 OR
Hughes ARC
WB6MMQ 78 2 1 406 LAX
Columbia-Montour ARC (PA)
WE3WEE 64 2 1 406 EPA
Denver RC
KE0OSI 21 5 1 405 CO
Woodbridge Wireless
KC4DV 127 2 1 404 VA
Raleigh ARS
KF4VXJ 17 2 1 404 NC
Raytown ARC
W0JWT 27 2 1 404 MO
Lodi ARC
K6DGQ 63 2 1 402 SV
KA8KCR 25 5 1 400 NFL
KM6TRU 50 5 1 400 ORG
Columbia (SC) ARC
N2IXX 125 2 1 400 SC
Alford Memorial RC
N4TTY 125 2 1 400 GA
Deep South ARC
N9GQA 15 5 1 400 AL
Easton ARS
K3ATG 87 2 1 398 MDC
Southern Co. ARA
KD2JJF 74 2 1 398 SNJ
Haldimand Norfolk ARC
VE3DVC 62 2 1 398 ONS
Panorama Land ARC
WB7WUQ 54 2 1 398 EWA
Raleigh ARS
WB4DCM 68 2 1 396 NC
Lake Area (SD) Radio Klub
KB0LCR 67 2 1 394 SD
Minnesota/Wisconsin Radio Group
KB0VLR 80 2 2 394 MN
Williamsburg Area ARC
KC4CMR 122 2 1 394 VA
Downey ARC
AE6XC 77 2 1 392 LAX
Clinton Co. ARA
KE8GII 120 2 1 390 OH
Easton ARS
N3OUE 66 2 2 390 MDC
Oak Ridge ARC
KC4RD 105 2 1 388 TN
Eastern Arizona ARS
W7MIN 35 2 1 388 AZ
KC8PKY 118 2 2 386 IN
Piedmont ARC
KN4SSV 18 2 1 386 GA
Kitchener-Waterloo ARC
VE3EOS 118 2 1 386 ONS
Police AR Team of Westford
KB1SEQ 7 5 1 385 EMA
Central Alberta ARC
VA6SJA 17 2 1 384 AB
Martin Co. ARA
WC2M 17 2 1 384 SFL
K7JSC 16 2 1 382 UT
Salkehatchie ARS
K8USA 116 2 1 382 SC
Rip Van Winkle ARS
KC2JMS 116 2 1 382 ENY
South East Metro ARC
KD0IRF 66 2 1 382 MN
White Rock Lake ARC
KG5VSR 21 2 1 382 NTX
SC4ARC
W6NCS 16 2 16 382 SCV
WG0D 58 2 1 382 MN
Chicago Suburban Radio Assn.
K9ASM 65 2 1 380 IL
Florence ARC
KD4VH 65 2 1 380 SC
KE8MVL 33 2 1 380 OH
KF5ALL 33 5 1 380 NTX
Irvine Disaster EmComms
KJ6SBZ 26 5 1 380 ORG
Lenoir ARC
KN4FNI 115 2 1 380 NC
Warminster ARC
N3EXA 115 2 1 380 EPA
Roanoke Valley ARC
NS4TT 115 2 1 380 VA
Rusk Co. ARC
W5CWT 44 2 1 380 NTX
Bishop ARC
AD6NR 114 2 1 378 ORG
Sunnyvale ARES
KH6IKL 114 2 1 378 SCV
Rappahannock Valley ARC
KK4WPR 57 2 1 378 VA
Nashoba Valley ARC
KW2T 41 2 1 378 WMA
Mahoning Valley ARA
K8MSH 113 2 1 376 OH
KB2MGQ 113 2 1 376 SNJ
Philips ARC
KD1NA 113 2 1 376 EMA
Contoocook Valley RC
W1JS 45 2 1 376 NH
Queen Anne's ARC
W3MEO 13 5 1 375 MDC
Columbia-Montour ARC (PA)
AB3BL 62 2 1 374 EPA
Starved Rock RC
AC9QN 112 2 1 374 IL
Oak Forest ARC
KE5HDF 62 2 1 374 STX
Long Island CW Club
W6JIM 56 2 1 374 EB
Murray State Univ ARC
W4GV 76 2 1 372 KY
San Francisco RC
AA6OC 12 5 1 370 SF
KC3NTG 55 2 1 370 MDC
Johnson Co. Radio Amateurs Club
KC4TKL 56 2 1 370 KS
St. Louis ARC
K0DY 32 5 1 370 MO
K0SRL 27 5 1 370 IA
Irving ARC
N5HYP 60 2 1 370 NTX
Fort Myers ARC
WG4K 110 2 1 370 SFL
Tri-State ARS
KC9UVG 59 2 1 368 IN
SARA MN
KE0QQN 59 2 1 368 MN
Clark Co. (WA) ARC
KJ7BSO 59 2 1 368 WWA
ARTS of Louisville
KY1RK 109 2 1 368 KY
Peel ARC
VA3RIE 9 2 1 368 GTA
Auburn Area EmComms Team
KI7CAN 8 2 1 366 WWA
Delaware Valley ARS
N3LUD 86 2 3 366 DE
Baton Rouge ARC
N5DGK 7 2 1 364 LA
KC7JPC 30 2 1 362 EWA
Alford Memorial RC
KS4KY 106 2 1 362 GA
Pottstown Area ARC
N3WXW 89 2 1 362 EPA
ND1X 131 2 1 362 CT
Lunenburg Co. ARC
VE1IOU 212 1 1 362 MAR
VE3OIL 56 2 1 362 GTA
Pasadena RC
AC6LS 105 2 1 360 LAX
South Orange ARA
AD6OI 55 2 1 360 ORG
Mid-MO ARC
AD0KH 21 5 1 360 MO
Hunters Ridge Hams
K4GSX 11 5 1 360 GA
Wahkiakum Co. ARC
KC7IVJ 5 2 1 360 WWA
Cherokee ARS
KM4KB 55 2 3 360 GA
ARTS of Louisville
W4CN 36 2 4 360 KY
Sonoma Co. Radio Amateurs
W6GOL 105 2 1 360 SF
National Electronics Museum RC
WA3ZWC 105 2 1 360 MDC
Skagit AR EmComms Club
WB6NAH 4 2 1 360 WWA
Mahoning Valley ARA
WB8YHD 105 2 1 360 OH
Binghamton ARA
KD2PWB 54 2 1 358 WNY
Roanoke Valley ARC
N3AYW 104 2 2 358 VA
Rochester (MN) ARC
KD0YOZ 3 2 1 356 MN
Ottumwa ARC
KE0FWB 103 2 1 356 IA
L.A. City ACS
KM6AES 53 2 1 356 LAX
South Pasadena ARC
KM6IGY 3 2 1 356 LAX
Disney Emergency AR Service
KN4KVC 22 2 1 356 SFL
Boulder ARC
WE7A 103 2 1 356 CO
Zuni Loop MEF
WB6JDH 41 5 1 355 LAX
King George AR Operators
K1JOZ 1 2 1 354 VA
Easton ARS
K1VUV 52 2 1 354 MDC
South Orange ARA
K6NR 51 2 1 354 ORG
Lake Oswego ARC
K7PAC 204 1 1 354 OR
KB0HQM 52 2 1 354 KS
KE8DMB 102 2 1 354 WV
Lorain Co. ARA
KE8DRR 52 2 1 354 OH
Cupertino ARES
KI6DRN 52 2 1 354 SCV
Messila Valley RC
KJ5NJ 102 2 1 354 NM
York Region ARC
VE3EZ 102 2 1 354 GTA
Green Valley ARC
WA9TKK 26 2 1 354 AZ
SCAN/Red Ant Annihilators
WB6EGI 102 2 1 354 LAX
AD8CM 1 2 1 352 OH
Northern Ohio DX Assn.
WG8H 51 2 1 352 OH
AD6DM 25 2 1 350 SV
AE5ZA 50 2 1 350 NTX
Gold Coast ARA
AF4FA 50 2 1 350 SFL
Lewis and Clark RC
K4ZMD 10 5 1 350 IL
K0MWB 50 2 1 350 MN
Boca Raton ARA
N2NYR 75 2 1 350 SFL
Delta ARS
VA7IQ 100 2 1 350 BC
Coquitlam ARES Soc.
VE7KJR 100 2 1 350 BC
Saratoga Co. ARA
W2MRD 32 2 1 350 ENY
WB7S 30 5 1 350 WY
Milwaukee Radio Amateurs' Club
K9FI 99 2 2 348 WI
Phillips Co. ARC
KD0ARW 114 2 1 348 KS
St. Louis & Suburban RC
KR0RD 124 2 1 348 MO
HAMARS
KM4ZYW 39 5 1 345 NC

DFW Contest Group
W7ZCU 76 2 1 344 NTX
Woodford Repeater Assn.
WB9IFL 43 2 1 344 IL
K3IDE 86 2 1 342 NC
Williamson Co. ARES
N4PHL 41 2 1 342 TN
Radio Club of Tacoma
N7OMS 23 2 1 342 WWA
Wayne ARC
N8YM 39 2 1 342 OH
Northeast Tarrant ARC
W5MBH 46 2 1 342 NTX
AB4EL 19 5 1 340 NC
Parma RC
KA8VTV 95 2 3 340 OH
Bonner Co. ARES
KC7TV 145 2 1 340 ID
BayNet
NV2J 59 2 1 340 SCV
PAPA System
AB6MB 72 2 2 338 EB
Waltham ARA
K1RBC 72 2 1 338 NH
Phil-Mont Mobile RC
KB3SJS 94 2 1 338 EPA
Hamfesters RC
KB9NTX 47 2 1 338 IL
Sun Coast ARC Soc.
VA7FI 32 2 1 338 BC
Mid-Atlantic ARC
K3DS 93 2 1 336 EPA
Virginia Beach ARC/Virginia DX Century Club
K4NTO 93 2 1 336 VA
Lafayette DX Assn.
K9SE 34 2 1 336 IN
KI6CQ 43 2 1 336 TN
Niagara Peninsula ARC
VA3ONO 37 5 1 335 GTA
Maryland Mobileers ARC
AB3AC 46 2 1 334 MDC
SARA MN
AD0SN 46 2 1 334 MN
Sangamon Valley RC
KC9JPQ 42 2 2 334 IL
Four Lakes ARC
KC9UNZ 42 2 1 334 WI
Lincoln Hills ARC
KN6DRN 42 2 1 334 SV
W4RMS 46 2 1 334 NFL
W7JSS 46 2 1 334 OR
Raleigh ARS
AD4GX 41 2 1 332 NC
Eastern Panhandle ARC
N3RTD 71 2 1 332 MDC
Granite State ARA
WA1N 50 2 1 332 NH
AC7SR 27 5 1 330 WWA
AL7JX 54 2 1 330 AK
K6TOR 45 2 1 330 SF
York RC
KB9DVC 28 5 1 330 IL
KE5DG 45 2 1 330 STX
Irvine Disaster EmComms
KE6KYH 16 5 1 330 ORG
Great River ARC
KE0NHQ 18 5 1 330 IA
Sonoma Co. Radio Amateurs
KM6GUO 10 2 1 330 SF
PAPA System
KM6NLZ 48 2 1 330 LAX
Butler Co. (OH) ARA
KX8U 46 2 1 330 OH
N7KPN 70 2 1 330 OR
W7QH 62 2 1 330 OR
Virginia Beach ARC/Virginia DX Century Club
K4TOJ 79 2 2 328 VA
Okaw Valley ARC
K9DNO 89 2 1 328 IL
South Orange ARA
K6RJO 38 2 1 326 ORG
Preble ARA
KA8SBI 88 2 1 326 OH
Fort Smith Area ARC
KD5OHT 88 2 1 326 AR
Kitsap Co. ARC
KJ7LAN 57 2 1 326 WWA
KS3H 86 2 1 326 VA
Long Tail RC
NT3S 103 2 3 326 EPA
South Orange ARA
K6EEE 20 5 1 325 ORG
Alford Memorial RC
KE4QCM 56 2 1 324 GA
Utica Shelby EmComms Assn.
KA9LMK 86 2 1 322 MI
Bluegrass ARS
KI4ENS 36 2 1 322 KY
K3ORS 85 2 1 320 TN
Fox River Radio League
K9XP 68 2 1 320 IL
Point Loma ARC
KN6BN 45 2 1 320 SDG
Highlands Co. ARC
N4NSS 40 2 1 320 WCF
Sierra Nevada ARS
N7ROJ 17 5 1 320 NV
W2EB 7 5 1 320 WNY
W0MAR 85 2 1 320 CO
Mid-Del ARC
AB5M 17 2 1 318 OK
Putnam Emergency Amateur Repeater League
AC2SR 58 2 1 316 ENY
Loudoun ARC
K3WD 83 2 1 316 VA
South Bay ARC
K6CSH 33 2 1 316 LAX
Fox River Radio League
KC9ZZU 83 2 1 316 IL
Cove Repeater Assn.
KD6UY 32 2 1 316 NTX
Huber Heights ARC
KD8UPX 54 2 1 316 OH
Arizona Outlaws Contest Club
KY7M 69 2 1 316 SV
MARCA
N0RMZ 13 5 1 315 AZ
Kitsap Co. ARC
AG7QL 32 2 1 314 WWA
KB3JGA 16 2 1 314 MDC
SARA MN
KC0OIO 32 2 1 314 MN
Classic Operators Contest Club
KK7CO 54 2 1 314 AZ
Mountain ARC (MD)
N3IVK 41 2 1 314 MDC
Trident ARC
KX4MI 81 2 1 312 SC
Newark Ohio ARA
W8BR 81 2 1 312 OH
KP3DC 32 5 1 310 VA
K6KS 80 2 2 310 SV
K6QCB 23 2 1 310 ORG
Ski Country ARC
KE0URG 32 2 3 310 CO
Saratoga Co. ARA
N2MBX 80 2 1 310 ENY
High Sierra Field Day Group
VE7REZ/W6 29 2 1 310 ORG
W7HRF 30 2 1 310 ID
Coconino ARC
W7LUX 51 2 40 310 AZ
KD5VVJ 29 2 1 308 STX
KI4VLW 154 2 1 308 NC
Hampden Co. Radio Assn.
N1FTP 79 2 1 308 WMA
Aardvark Wireless Group
W4DCH 29 2 1 308 WCF
The Road Show ARC
WA4KNI 79 2 1 308 NC
Midland (MI) ARC
K0ACP 45 2 1 306 MI
VA3SHV 39 2 1 306 GTA
Kilocycle Club of Ft. Worth
W5RSG 48 2 1 306 NTX
WA4FHY 7 5 1 305 TN
West River RC
W1CWB 45 2 1 304 VT
KC3ELT 26 2 2 302 EPA
Cherokee ARS
KM4ZHZ 26 2 1 302 GA
Mountain Top ARA
W6GC 26 2 2 302 ORG
Nashoba Valley ARC
AB1XB 15 5 1 300 WMA
Southington ARA
KB1WOH 17 2 1 300 CT
Vienna Wireless Soc.
KD0MMF 25 2 1 300 VA
KK4ZDZ 16 2 1 300 KY
Straight Key Century Club
N7PHI 5 5 1 300 UT
N8JAX 75 2 1 300 WCF
Highlands Hams
N0ZO 50 2 1 300 AL
W1BVT 30 5 1 300 VT
Butler Co. (PA) ARA
W3TEK 75 2 1 300 WPA
Irvine Disaster EmComms
WB6CJH 17 2 1 300 ORG
Issaquah ARC
WT0F 40 2 1 300 WWA
Shiawassee ARA
AB8VS 74 2 1 298 MI
Woodchuck ARC
K8CVM 19 2 1 298 OH
Framingham ARA
KC1DMM 24 2 1 298 EMA
LaGrange ARC
KD4NTS 37 2 1 298 GA
Mansfield-Johnson AR Service
KI5HGT 74 2 2 298 NTX
Palo Alto ARA
KK6HWP 18 2 1 298 SCV
KQ6DI 24 2 1 298 SV
Ruckerville Amateur Transmitting Soc.
N4LSJ 74 2 1 298 OH
N7CVW 37 2 1 298 WWA
Portage Co. AR Service
N8QE 64 2 1 298 OH
NH6Z 37 2 1 298 OR
Lambton Co. RC
VE3FR 38 2 1 298 ONS
Palos Verdes ARC
AI6DF 23 2 1 296 LAX
Conejo Valley ARC
KA9WMI 23 2 1 296 SB
South Pasadena ARC
KK6ZVQ 23 2 1 296 LAX
PAPA System
KW6REX 38 2 1 296 ORG
WA1SFH 22 2 1 296 CT
Radio Amateurs of Greater Syracuse
K2VTT 12 2 1 294 WNY
Anderson RC (SC)
K4NWX 40 2 1 294 SC
Metro DX Club
K9GA 50 2 1 294 IL
Tri-Co. ARA (CA)
KA6CHX 22 2 1 294 LAX
Northeast Missouri ARC
KA9PDK 36 2 1 294 MO
L.A. City ACS
KM6AEQ 22 2 1 294 LAX
NA9L 36 2 1 294 IN
Raytown ARC
N0KW 71 2 1 292 MO
New Providence ARC
W2EMC 71 2 1 292 NNJ
North Ottawa ARC
W8RJC 71 2 1 292 MI
Indiana Co. ARC
K3LAB 35 2 1 290 WPA
Kitchener-Waterloo ARC
VA3IDD 28 5 1 290 ONS
W4TYD 35 2 1 290 SFL
Southeastern Massachusetts ARA
AC1EO 11 2 1 288 EMA
Radio Club of Tacoma
AG7WI 19 2 1 288 WWA
Marinette Menominee ARC
KB7KZ 66 2 1 288 MI
Easton ARS
KA3DCO 67 2 2 286 MDC
Half Moon Bay ARC
KN6IPE 18 2 1 286 SCV
W5HLP 68 2 1 286 NTX
Simi Settlers ARC
W6JWP 68 2 1 286 SB
Olympia ARS
KL7SK 19 5 1 285 WWA
Schaumburg ARC
KC9NZP 67 2 1 284 IL
Dallas ARC
N5SQA 67 2 1 284 NTX
Southern Peninsula AR Klub
AA4AG 59 2 1 282 VA
Sierra Intermountain Emergency Radio Assn.
AG6IF 40 2 1 282 NV
Antelope Valley ARC
AJ6HO 6 2 1 282 LAX
South Orange ARA
K6LMR 33 2 1 282 ORG
ARESLAXNW
KC6MEH 16 2 1 282 LAX
Western Tidewater RA
N4KIT 66 2 2 282 VA
Easton ARS
W3BJB 10 2 1 282 MDC
North Fulton ARL
AK7VV 3 5 1 280 WWA
Sportsman's Paradise ARC
K4GKJ 15 2 1 280 NFL
Sierra Foothills ARC
K6ABJ 12 2 1 280 SV
Natchaug ARC
KD1JK 15 2 1 280 CT
Rochester (MN) ARC
KE0EXE 6 5 1 280 MN
Prescott Russell ARC
VA3KV 13 5 1 280 ONE
Elmira ARC
VA3KXS 65 2 2 280 ONS
Coquitlam ARES Soc.
VA7UNX 33 2 1 280 BC
W7DBA 65 2 1 280 UT
W7RT 40 2 1 280 AZ
WA5FRF 13 2 1 280 STX
Maui ARC
WH6DUB 58 2 2 280 PAC
WK8A 26 5 1 280 MI
N4MBI 64 2 1 278 NC
Yellowstone RC
N7BLA 64 2 1 278 MT
Pork and Beans
NB3O 64 2 2 278 VA
Westchester EmComms Assn.
W2UL 64 2 1 278 ENY
Radio Club of Redmond
WT8P 32 2 1 278 WWA
K2CAB 63 2 1 276 WNY
Morris RC/Hanover Twp OEM
K2EMJ 13 2 1 276 NNJ
Radio Central ARC and Order of Boiled Owls of NY
KB2RSQ 63 2 1 276 NLI
Kalamazoo ARC
KB5BGC 63 2 1 276 MI
Bearcat DX Club
KD8KYK 63 2 1 276 OH
Madison Co. (OH) ARC
N8TLK 13 2 1 276 OH
Ozone ARC
WB5CXJ 13 2 1 276 LA
West Valley ARA
KC6ZKT 23 5 1 275 SCV
West Seattle ARC
KD2LTM 5 5 1 275 WWA
Wahkiakum Co. ARC
KG7WSQ 5 5 1 275 WWA
Irvine Disaster EmComms
KI6QJD 25 5 1 275 ORG
Lake Oswego ARC
K0AXS 25 5 1 275 OR
K7KL 31 2 1 274 OR
Suburban Technical ARS
KB9EPL 62 2 1 274 IL
Albemarle ARS
KN4ILC 62 2 1 274 NC
Montgomery Amateur Club
KS4TAC 62 2 1 274 AL
FVVFD
N1VTI 62 2 1 274 NFL
Ottawa Valley Mobile RC
VE3YDK 12 2 1 274 ONE
Clark Co. (IN) ARC
W9MCP 12 2 1 274 IN
Pasadena RC
WA6IFY 12 2 1 274 LAX
Pottstown Area ARC
WV3P 65 2 1 274 EPA
KX4AV 101 2 3 272 KY
Cuyahoga Falls ARC
W8EZT 61 2 1 272 OH
Coconino ARC
WB8VWC 61 2 20 272 AZ
NEMO ARC
WB0ZHB 38 2 2 272 MO
WL7OU 61 2 1 272 STX
Cupertino ARES
AG6GX 60 2 1 270 SCV
Larkfield ARC
K9IPO 4 5 1 270 NLI
Ocean Monmouth ARC
KA2QQQ 10 2 1 270 SNJ
Dial RC of Middletown
KC8WOF 4 5 1 270 OH
San Fernando Valley ARC
KG6FBM 24 5 1 270 LAX
Culver City ARES
KG6QEB 30 2 1 270 LAX
Alcorn Co. ARES
N5YAV 60 2 1 270 MS
Brandon ARC
VE4AEA 30 2 1 270 MB
QSY Soc.
W2CRM 5 2 1 270 ENY
Sierra Foothills ARC
W2MWK 5 2 1 270 SV
VCARA
W5ACW 30 2 1 270 NM
South Canadian ARS
W5MQC 60 2 1 270 OK
Oak Ridge ARC
WA0BAG 30 2 1 270 TN
Kitchener-Waterloo ARC
VE3KTZ 9 2 1 268 ONS
Great South Bay ARC
W2FTR 9 2 1 268 NLI
McMinnville ARC
W7ICS 9 2 1 268 OR
WB6YYZ 18 1 1 268 EPA
Northern Arizona DX Assn.
WW4MM 111 1 20 267 AZ
Central Oregon Coast ARC
KA6WAG 4 2 1 266 OR
Great South Bay ARC
KD2ADC 58 2 1 266 NLI
Dallas ARC
KF5QHQ 8 2 1 266 NTX
FVVFD
WS1C 8 2 1 266 NFL
KD8YDD 3 5 1 265 MI
Conejo Valley ARC
WB6ADC 23 5 1 265 SB
KD5YOU 7 2 1 264 STX
Delaware Valley Radio Assn.
KB2SYB 56 2 1 262 SNJ
Cuyahoga ARS
KD8ACO 56 2 1 262 OH
El Dorado Co. ARC
KM6VPJ 6 2 1 262 SV
N2OJD 56 2 1 262 OH
Irvine Disaster EmComms
N6EKC 56 2 1 262 ORG

Georgian Bay ARC
VE3WI 56 2 1 262 ONS
Ellsworth ARA
K3PW 2 5 2 260 ME
KD4CX 55 2 1 260 WCF
Culver City ARES
KK6TIP 1 5 1 260 LAX
North Georgia QRP Club
NA4O 14 5 1 260 GA
Ottawa Valley Mobile RC
VE3DTI 11 5 1 260 ONE
West Seattle ARC
VE6JIT 2 5 1 260 WWA
W4WWW 2 5 1 260 STX
McMinnville ARC
W7ISE 55 2 1 260 OR
W9YHF 11 5 1 260 SCV
Cherryland ARC
WB2LHP 21 5 1 260 MI
AC7CA 30 2 1 258 AZ
Tallahassee ARS
K4TB 4 2 1 258 NFL
San Jose ARES RACES
K6SLB 51 2 1 258 SCV
Fox River Radio League
K9MEV 29 2 1 258 IL
North Hills ARC of Pittsburgh
KB3LYB 53 2 1 258 WPA
Lynchburg ARC
KD4EMU 54 2 1 258 VA
KE6BGN 54 2 1 258 ORG
Heart O' Texas ARC
KG5WHS 4 2 1 258 NTX
KN6DOD 4 2 1 258 SJV
Hayward RC
KQ6BN 54 2 1 258 EB
Hoodview ARC
W7HDF 54 2 1 258 OR
Mountain Top ARA
AA6GJ 29 2 1 256 ORG
Raleigh ARS
KT4EM 53 2 1 256 NC
Pottstown Area ARC
W1DFM 53 2 2 256 EPA
Cuyahoga Falls ARC
WD8BQS 53 2 1 256 OH
South Orange ARA
AB6NS 1 5 1 255 ORG
Majors Field ARC
NT5CN 41 5 1 255 NTX
K4RT 52 2 1 254 VA
Toronto ARC
VA3JHL 52 2 1 254 GTA
El Dorado Co. ARC
W6WN 52 2 1 254 SV
AC8WW 51 2 1 252 OH
AG6JA 36 2 1 252 EB
BayNet
AI6MS 51 2 1 252 SCV
Cheshire Co. DX ARC
KA1VGM 51 2 1 252 NH
KC5PRK 1 2 1 252 STX
Skagit AR EmComms Club
KF7WMN 1 2 1 252 WWA
North Arkansas ARS
N5QYC 51 2 1 252 AR
NM5RC 101 2 1 252 NM
K8GQ 67 2 1 250 WV
Midland (MI) ARC
K8WSR 50 2 1 250 MI
Holland ARC
KE8JAS 25 2 1 250 MI
Athens Co. ARA
KE8LRZ 40 2 2 250 OH
KI0R 50 2 1 250 NTX
Portland ARC
KJ7GVL 27 2 1 250 OR
Tellico Lake ARC
KK6OKU 40 2 1 250 TN
Club radioamateur de Drummondville
VA2GLU 10 5 1 250 QC
Crescenta Valley RC
AD6IZ 47 2 1 248 LAX
K4OBY 37 2 1 248 SC
KK6MLY 49 2 1 248 LAX
SARA MN
K0HAS 49 2 1 248 MN
Cabarrus ARS
N4HWH 49 2 1 248 NC
N6HDN 49 2 1 248 SCV
Clallam Co. ARC
WY7W 160 1 1 248 WWA
River City AR Communications Soc.
K6MCS 48 2 1 246 SV
KD5OOJ 28 2 1 246 OK
KD0WAN 48 2 1 246 MO
Palo Alto ARA
KG6LWE 48 2 1 246 SCV
Lake Oswego ARC
N1ACW 48 2 1 246 OR
Niagara Peninsula ARC
VE3RNF 48 2 1 246 GTA
Carroll Co. MD ARC
W8BLR 24 2 1 246 MDC

Southern Pennsylvania ARC
KC3EGP 47 2 1 244 EPA
AC3SS 23 2 1 242 MDC
KE8HZZ 46 2 1 242 OH
Rains ARA
KG5NUX 46 2 1 242 NTX
Scioto Valley ARC
WB8JB 46 2 1 242 OH
AC1BB 9 5 1 240 IL
Roanoke Valley ARC
K2RBL 44 2 1 240 VA
Cumberland Plateau ARC
KM4IYQ 45 2 1 240 TN
KT4OO 70 2 1 240 SC
Ventura Co. ARS
N7WLC 95 2 1 240 SB
WB8TQZ 45 2 2 240 MI
KB3OUK 44 2 2 238 WPA
Blue Springs ARC
KD0MQO 44 2 1 238 MO
Davis Co. ARC
KF4USN 34 2 2 238 UT
Citrus Co. ARC
AC2N 43 2 10 236 NFL
Wisconsin Valley Radio Assn.
KB9DED 43 2 1 236 WI
Sun City ARC
KD5MFS 9 2 1 236 WTX
Raleigh ARS
NC4DK 43 2 1 236 NC
Mecklenburg ARS
KI4YDQ 21 2 1 234 NC
W1LOG 21 2 1 234 NH
W5HRP 27 2 1 234 AR
Delaware ARA
W8MDC 42 2 1 234 OH
Tri-State ARS
KD9KLI 41 2 1 232 IN
Big Island ARC
AH6J 40 2 1 230 PAC
K1YPP 20 2 1 230 WCF
KA5WMF 16 5 1 230 TN
Pueblo West ARC
KB0JIT 40 2 1 230 CO
Lake Oswego ARC
KD7PFH 40 2 2 230 OR
Wisconsin Valley Radio Assn.
KD9FLD 40 2 1 230 WI
Neuse River Basin ARA
N7GFB 39 2 1 230 NC
Mid-MO ARC
N0ESE 8 5 1 230 MO
Cherokee ARS
KA8DYD 22 2 1 228 GA
KD0NUK 21 2 1 228 MO
Twin State RC
N1HAC 39 2 1 228 NH
North Fulton ARL
W4JEW 24 2 1 228 GA
REDXA/MARS
AG6QR 21 2 1 226 SF
Fort Madison ARC
KC0TSL 22 2 2 226 IA
St. Charles ARC
W0KAH 38 2 1 226 MO
Arkansas River Valley ARF
KG5WLO 15 5 1 225 AR
Woodford Repeater Assn.
K9UOF 34 2 1 224 IL
Mid-Atlantic ARC
KB3RLP 37 2 1 224 EPA
KC5KBV 12 2 1 224 AR
WCARS-Murphy/Cherokee Co. ARES
KD4UYR 37 2 1 224 NC
Muskegon Area AR Council
KE8NWH 37 2 1 224 MI
Pasadena RC
KG6DKW 37 2 1 224 LAX
Ventura Co. ARC
KM6RSS 37 2 1 224 SB
Peak Radio Assn.
W7RTM 37 2 1 224 OR
Radio Amateurs of Northern Vermont
N1JEZ 173 1 1 223 VT
Mahoning Valley ARA
KD8QNY 36 2 1 222 OH
King George AR Operators
KO4EAY 36 2 4 222 VA
Green Mountain Wireless Soc.
N1MTS 36 2 1 222 VT
Top of Michigan ARC
NK5J 36 2 1 222 MI
Kern Co. – Central Valley ARC
N6ABT 35 2 1 220 SJV
Coquitlam ARES Soc.
VA7RLW 35 2 1 220 BC
Brazoria Co. AR Service
WD9GET 28 2 1 220 STX
Salem ARC
KG7ITQ 17 2 1 218 OR
KI5DXJ 20 2 1 218 STX
Grand Strand ARC
KM4FWT 34 2 1 218 SC
N4NVG 34 2 1 218 VA

Ocean Co. ARES
NJ2N 28 2 1 218 SNJ
Great South Bay ARC
W2UV 68 1 1 218 NLI
W4CEI 34 2 2 218 NC
Central Oregon DX Club
W7SCY 33 2 1 218 OR
Candlewood ARA
WA1JGA 49 2 2 218 CT
Mid-State ARC
WC9G 34 2 1 218 IN
Ak-Sar-Ben ARC
WD0A 33 2 1 218 NE
Northeast Tarrant ARC
AD5XE 33 2 1 216 NTX
K6DWD 33 2 1 216 SCV
Oregon Tualatin Valley ARC
KE7WNB 33 2 2 216 OR
Skagit AR EmComms Club
KI7LDQ 32 2 1 216 WWA
Ellijay ARS
KK4NTC 33 2 1 216 GA
Olympia ARS
W7PLC 15 2 1 216 WWA
Coconino ARC
KB7CFV 13 5 20 215 AZ
K4EBS 32 2 1 214 VA
Green Bay Mike & Key Club
K9EDD 82 2 1 214 WI
BCARS.ORG
N3EYF 36 1 2 214 WPA
Raleigh ARS
N8ZU 32 2 1 214 NC
Newport Co. RC
K1YBE 17 2 1 212 RI
Austin ARC
KG5RHR 26 2 1 212 STX
KG5TBL 31 2 1 212 LA
Oakland Radio Communication Assn.
KJ6WEG 31 2 1 212 EB
Toledo Mobile Radio Assn.
W8HHF 81 2 13 212 OH
KF8MZ 15 2 1 210 OH
Lakeland ARC
KM4STS 20 2 3 210 WCF
Oakland Radio Communication Assn.
KM6SNR 20 2 1 210 EB
N5OFQ 30 2 1 210 NM
Brazos Valley ARC
NV5B 40 2 1 210 STX
W5LRP 15 2 1 210 AR
Oro Valley ARC
W9GRG 30 2 1 210 AZ
Fresno ARC
WA6BDE 15 2 1 210 SJV
AE5CS 29 2 1 208 AR
Marshall Co. ARS
KM4CJT 29 2 2 208 TN
KN6HJW 29 2 1 208 SB
San Benito Co. ARA
W6KRK 29 2 1 208 SCV
McMinnville ARC
W7LAW 29 2 1 208 OR
Sonoma Co. Radio Amateurs
KI6UGB 18 2 2 206 SF
Raritan Bay Radio Amateurs
N2UUS 28 2 1 206 NNJ
W4YN 14 2 1 206 NC
Tamiami ARC
W1ICU 6 5 1 205 WCF
AA5TC 27 2 1 204 OK
Palo Alto ARA
KC6TYD 27 2 1 204 SCV
Albemarle ARC
KG4EIF 17 2 1 204 VA
Niagara Peninsula ARC
VA3ETN 27 2 1 204 GTA
North Shore (ON) ARC
VE3KZT 27 2 1 204 GTA
KB4QPR 26 2 1 202 VA
KJ7EPQ 26 2 1 202 OR
KW6V 26 2 1 202 SF
KZ3L 25 2 1 202 OH
Raleigh ARS
NC4FG 26 2 1 202 NC
VE3YYG 13 2 1 202 ONE
Alford Memorial RC
W1MKW 26 2 1 202 GA
Oakland Radio Communication Assn.
W7WEB 26 2 1 202 EB
Orange Park ARC
WH2AAT 26 2 1 202 NFL
AE9PM 25 2 1 200 IL
Broughton Memorial Field Day Group
KC2ZVK 25 2 1 200 ENY
Williamsburg Area ARC
KC4IRL 25 2 1 200 VA
QRP ARC International
KE1L 5 5 1 200 EMA
Brazos Valley ARC
KG5SXG 25 2 1 200 STX
Maple Valley ARC
KI7DTM 25 2 1 200 WWA
Orca DX and Contest Club
KK6IZS 30 5 1 200 EB

Cupertino ARES
KN6EDX 10 5 1 200 SCV
KO4BZD 5 5 1 200 TN
Iowa Wireless AR Network
N0XJA 6 5 1 200 IA
Radio Amateur Club of Knoxville
W4RAO 25 2 1 200 TN
WB3CJU 150 1 1 200 EPA
Northeast Iowa Radio Amateur Assn.
WB0MAR 18 2 1 200 IA
Chicago Suburban Radio Assn.
WW0SE 13 2 1 200 IL
Palouse Hills ARC
AE7UF 24 2 2 198 ID
Ellijay ARS
K9HRO 24 2 1 198 GA
Oakland Radio Communication Assn.
K6GWP 23 2 1 196 EB
Mount Diablo ARC
K6VK 23 2 1 196 EB
Irvine Disaster EmComms
KD6MJR 23 2 1 196 ORG
Fort Myers ARC
KM4OWA 23 2 1 196 SFL
BayNet
W6TRF 23 2 1 196 SCV
Central Missouri Radio Assn.
W0TES 23 2 1 196 MO
Conejo Valley ARC
KM6WMW 9 5 1 195 SB
Pine State ARC
K1RTF 22 2 1 194 ME
Gwinnett ARS
K4GTR 21 2 1 194 GA
KB8M 22 2 1 194 MI
Marple Newtown ARC & Mobile Sixers RC
KC3LEC 22 2 1 194 EPA
Muskegon Area AR Council
KE8IKT 22 2 1 194 MI
Sarasota Emergency RC
KG7KIQ 11 2 1 194 WCF
KL2YE 22 2 1 194 AK
Northeast Iowa Radio Amateur Assn.
N4HRL 12 2 1 194 IA
Nashua Area Radio Soc.
W1TED 22 2 1 194 NH
West Essex ARC
W2FKG 22 2 1 194 NNJ
Hilltop Transmitting Assn.
KD3HN 21 2 1 192 EPA
K0DVT 21 2 1 192 MN
VA3XTZ 21 2 1 192 ONS
San Juan Co. ARS
W7SLM 21 2 1 192 WWA
K4IDT 20 2 1 190 KY
Granite State ARA
KE1G 20 2 1 190 NH
KH6HT 20 2 1 190 PAC
KI8DP 20 2 1 190 MI
Portland ARC
KJ7HYL 5 2 1 190 OR
Raleigh ARS
KN4AAG 20 2 1 190 NC
Alford Memorial RC
KN4HKB 20 2 1 190 GA
Fort Myers ARC
KN4JAG 20 2 1 190 SFL
KN6IMJ 20 2 1 190 SB
Woodbridge Wireless
K0ZJD 20 2 1 190 GA
Florida Contest Group
WB4MM 20 2 1 190 NFL
Thunderbird ARC
K7RQN 44 2 1 188 AZ
Highlands Hams
KG4CQZ 19 2 1 188 AL
KA2GQQ 9 2 1 186 NNJ
Eastern PA ARA
KC3OND 18 2 1 186 EPA
Ventura Co. ARS
KE6SCS 9 2 1 186 SB
Lake Oswego ARC
KF7KXX 18 2 1 186 OR
White Mountain ARC
N1DOU 93 2 5 186 NH
N9WL 18 2 1 186 NM
Ottawa Valley Mobile RC
VE3QN 9 2 1 186 ONE
W6BUF 34 2 1 186 LAX
TCARES
W6LDB 18 2 1 186 SJV
Irvine Disaster EmComms
KI6CVY 7 5 1 185 ORG
Sun City Hilton Head ARC
N1ZK 7 5 1 185 SC
Valley and Massanutten ARA
K4NOV 17 2 1 184 VA
Utah Valley ARC
K7LSH 17 2 1 184 UT
Spa ARA
N5XFW 17 2 1 184 AR
Club Station Répétitrice de Laval
VA2YRB 17 2 1 184 QC
Foothills ARS (CA)
WB2URF 17 2 1 184 SCV

Fond du Lac ARC
KC9VXR 16 2 1 182 WI
Ventura Co. ARC
KD6ASL 16 2 1 182 SB
Mahoning Valley ARA
KD8NZF 16 2 1 182 OH
N1NAZ 16 2 1 182 NH
BayNet
W5ETH 16 2 1 182 SCV
W6KYF 8 2 1 182 SCV
Contoocook Valley RC
AA1ES 6 5 1 180 NH
AA0ZB 5 5 1 180 KS
Western Placer ARC
K1FMB 15 2 1 180 SV
Nittany ARC
K3CWP 13 2 1 180 WPA
Clark Co. (WA) ARC
K7NOJ 9 2 1 180 WWA
Kansas/Nebraska ARC
KB0NKP 15 2 1 180 KS
Kansas/Nebraska ARC
KB0RSJ 15 2 1 180 KS
Mid-MO ARC
KD0CCI 65 2 1 180 MO
KD0ZEI 15 2 1 180 IA
Santa Clarita ARC
KE6DXJ 15 2 1 180 LAX
Irvine Disaster EmComms
KI6VVJ 6 5 1 180 ORG
Highlands Hams
KK4YYG 15 2 1 180 AL
Arkansas River Valley ARF
KW5STW 9 2 1 180 AR
The Villages ARC
N2AMW 6 5 1 180 NFL
Mountain Top ARA
N6NTJ 15 2 1 180 ORG
N0WLX 15 2 1 180 NE
W6RKC 33 2 1 180 SV
KA8CLN 7 2 1 178 MI
West Seattle ARC
N7LYE 14 2 1 178 WWA
Hiawatha Valley ARC
AF5VH 8 2 1 176 MN
AARCMN
KE0LG 8 2 1 176 MN
KM4IC 13 2 1 176 VA
KM4ICE 13 2 1 176 VA
South Orange ARA
NU6R 13 2 1 176 ORG
The Seven Thirty ARS
VE3NNI 13 2 1 176 ONS
W6MJS 13 2 1 176 UT
Coconino ARC
NQ9C 5 5 20 175 AZ
Green Mountain Wireless Soc.
K1PWF 12 2 1 174 VT
North Franklin ARS
KA2TSD 12 2 1 174 NNY
Clay Co. Area ARC
KC9PHK 12 2 1 174 IL
Oakland Radio Communication Assn.
KI6FAH 12 2 1 174 EB
KI7ADC 12 2 1 174 OR
San Benito Co. ARA
KK6UGA 12 2 1 174 SCV
KN6FKQ 12 2 1 174 SDG
Radio Amateurs of Skagit Co.
K7AMF 11 2 1 172 WWA
Huber Heights ARC
KD8UZV 11 2 1 172 OH
LOHSEP ARC
WB5LIV 11 2 1 172 LA
WD6LL 60 2 1 172 SV
K4IJK 10 2 1 170 RI
South Canadian ARS
N1HOB 37 2 1 170 OK
Mid-Atlantic ARC
N2ZLQ 10 2 1 170 EPA
Hampden Co. Radio Assn.
W1TRK 10 2 1 170 WMA
Irvine Disaster EmComms
WA8EOH 4 5 1 170 ORG
WF7DX 10 2 3 170 WWA
AB1OP 9 2 1 168 ME
AG7OO 9 2 1 168 WWA
KA4WJA Repeater Group
KG4VET 59 2 1 168 NFL
KL5AF 9 2 1 168 AK
NI4ET 9 2 1 168 TN
W3JON 9 2 1 168 EPA
K7BIK 8 2 1 166 OR
K9TWW 58 2 1 166 MN
Highlands Hams
KA4NDY 8 2 1 166 AL
Williamsburg Area ARC
KM4SOZ 8 2 1 166 VA
Tri-Town Radio Amateur Club
WD9GHK 8 2 1 166 IL
Splitrock ARA
K2PHD 1 5 1 165 NNJ
Metro DX Club
K9EL 3 5 1 165 IL
Foothills ARS (CA)
KN6QI 23 5 1 165 SCV
K0BEJ 3 5 1 165 CO
South Orange ARA
KS6RFI 3 5 1 165 ORG
WW4FLY 3 5 1 165 AL
High Desert ARG
AG5YZ 7 2 1 164 NM
Bellevue ARC
KD0VUB 7 2 1 164 NE
Palouse Hills ARC
KK7VO 7 2 2 164 EWA
KN4ST 6 2 1 162 NC
Rains ARA
N5MBK 6 2 2 162 NTX
VE6PKT 3 2 1 162 AB
Tallahassee ARS
W4LCR 6 2 1 162 NFL
TAARS
KD4CEB 5 2 1 160 NC
KG0GB 5 2 1 160 CO
Huntsville ARC
KO4ALY 5 2 1 160 AL
Vienna Wireless Soc.
N4QX 3 2 1 160 VA
CRES ARC
KE8ILF 4 2 1 158 OH
Bryan ARC
KF5YAA 4 2 1 158 STX
Culver City ARES
KN6HMX 4 2 1 158 LAX
Orange Co. (NY) ARC
KD2JJY 3 2 1 156 ENY
KD5RYN 3 2 1 156 NTX
Univ of Arizona ARC
KG7YTR 3 2 2 156 AZ
North Fulton ARL
AK4TL 1 5 1 155 GA
Lehigh Valley ARC
KC3FEZ 1 5 2 155 EPA
Heart of America RC
K0UAA 1 5 1 155 MO
Irvine Disaster EmComms
N6AWQ 1 5 1 155 ORG
Brazos Valley ARC
KI5HNY 2 2 1 154 STX
Muskegon Area AR Council
N8PFC 2 2 1 154 MI
Northern Arizona DX Assn.
AA7CF 26 2 1 152 AZ
North Ottawa ARC
AC8ZT 1 2 1 152 MI
Candlewood ARA
KC1IBR 1 2 1 152 CT
N2COP 25 2 1 150 NC
Desert RATS of Palm Springs
KD6YJ 15 2 1 130 ORG
South Lyon Area ARC
N8AB 8 5 1 130 MI
Sangamon Valley RC
N9PUZ 20 2 1 130 IL
Federación de Radio Aficionados de Puerto Rico
NP4JF 19 2 1 126 PR
Sierra Intermountain Emergency Radio Assn.
KI6EWK 36 2 1 122 NV
Catalpa ARS
W8AG 35 2 1 120 MI
WZ0Q 4 5 1 120 NC
York RC
KB9TVD 32 2 1 114 IL
KA4WJA Repeater Group
KZ4CM 32 2 1 114 NFL
North Okanagan Radio Amateur Club
VA7AEJ 32 2 1 114 BC
N9UDO Memorial Field Day
KD9DZT 28 2 1 106 WI
Radio Research Club
KB0QEF 27 2 1 104 SD
Clinton Co. ARA
KD8DGH 26 2 1 102 OH
West Seattle ARC
N7URH 13 2 1 102 WWA
Denver RC
W6HAB 1 2 1 102 CO
Lewis and Clark RC
WM9Y 26 2 1 102 IL
Sussex Co. ARC
K8VAN 25 2 1 100 NNJ
Bergen Co. Emergency Management RC
KB2TLG 21 2 1 92 NNJ
220 MHz Guys
N9ASI 8 5 1 90 IL
Cochise ARA
KD8M 11 2 1 82 AZ
The Villages ARC
K1JLF 6 5 1 80 NFL
Alexandria RC
KJ4FUU 6 5 1 80 VA
Culver City ARES
WA6POP 5 5 1 75 LAX
Oro Valley ARC
W4ES 11 2 1 74 AZ
KD6GWH 11 2 1 72 SCV
N8YRE 11 2 1 72 OH
Mississippi Coast ARA
W5THT 15 1 1 71 MS
NA5RC 10 2 1 70 STX
Stamford ARA
AB1HI 9 2 1 68 CT
Parker Radio Assn.
AC0M 3 5 1 65 CO
Island Co. ARC
KG7LEA 3 5 1 65 WWA
KN4UAR 7 2 1 64 KY
Long Island CW Club
NY2G 7 2 1 64 NLI
EWEphoria RC
KN4JER 5 2 1 60 NFL
CRES ARC
W8NEE 3 2 1 58 OH
GOTAHAMS
KM6S 2 2 1 54 LAX
San Benito Co. ARA
W6WKB 2 2 1 54 SCV
Barstow ARC
N6ZGF 23 2 1 46 ORG

2E

MM Expeditionary Force
NV9L 3,606 2 3 11,392 IL
Northeast Louisiana ARC
W5WZ 2,401 2 2 9,324 LA
QRP Pals
WA0MN 758 5 1 7,930 MN
Lubbock ARC
KS5Z 1,672 2 2 7,186 WTX
Berwick Contest Team
WQ3N 2,282 2 5 6,924 EPA
W3AO Team
WA3EKL 1,947 2 4 6,640 MDC
Mike & Key ARC
K7LED 1,459 2 3 5,886 WWA
Texas DX Soc.
K5DX 2,925 1 1 5,651 STX
Cuyahoga Falls ARC
K8ZT 522 5 1 5,480 OH
Waterton Contest Club
W0ZA 1,317 2 2 5,290 CO
Jefferson (LA) ARC
W5GAD 1,218 2 3 5,122 LA
Newport Co. Contest Club
NC1CC 1,318 2 3 4,514 RI
W3AO Team
K3CCR 1,284 2 2 4,396 MDC
North Port ARC
KE4Q 1,101 2 2 3,676 WCF
Mike & Key ARC
N7XS 1,117 2 7 3,528 WWA
Potomac Valley RC
W0NA 1,612 1 2 3,474 VA
North Shore (IL) RC
AB9PR 889 2 2 3,166 IL
Club Radio Amateur de Québec
VE2CSP 700 2 5 3,102 QC
Orca DX and Contest Club
VA7MM 618 2 4 2,998 BC
Ramona Outback ARS
AA2IL 598 2 1 2,838 SDG
Wayne Co. ARC
WA2CCN 550 2 2 2,592 EPA
Orange Co. (CA) ARC
N6GP 610 2 2 2,344 LAX
St. Croix ARC
KP2RUM 537 2 2 2,336 VI
Panorama Land ARC
K7JAR 333 2 17 2,290 EWA
Central Idaho ARC
W7TID 443 2 2 2,272 ID
Genesee Radio Amateurs
N2OA 665 2 2 2,182 WNY
Saratoga Co. ARA
K1RQ 368 2 2 2,122 ENY
Mansfield-Johnson AR Service
AF4B 358 2 2 1,838 NTX
Cuyahoga Falls ARC
W8VPV 506 2 2 1,788 OH
K6RC 1,049 1 4 1,781 SV
Tri-State ARS
WB9YIG 399 2 9 1,716 IN
AK7AT 307 2 2 1,674 ID
VE6FI 1,614 1 2 1,664 AB
South Hill Contest Club
N7PP 485 2 6 1,660 WWA
Union Co. (NC) ARC
AE4WS 299 2 2 1,640 NC
Paducah ARA
KD9MS 293 2 1 1,626 IL
Prescott Russell ARC
VA3ISP 720 1 4 1,442 ONE
Orange Co. (NY) ARES/RACES
KC2ASA 145 2 4 1,424 ENY
Conejo Valley ARC
K6KY 195 2 1 1,360 SB
MAARS
KB0AZJ 109 5 1 1,340 KS
W3AO Team
W3AO 67 5 1 1,320 MDC
St. Louis QRP Soc.
AE0TT 273 2 1 1,298 MO
Maryland Mobileers ARC
W3NI 190 2 2 1,274 MDC
Niagara Peninsula ARC
VE3FNY 255 2 2 1,268 GTA
Providence EMA RACES
N1YKH 253 2 3 1,256 CT
Peak Radio Assn.
K7BTS 242 2 2 1,228 OR
AA9UF 180 2 2 1,170 IL
Conejo Valley ARC
W6RH 215 2 1 1,140 SB
VA2III 208 2 2 1,060 QC
N3DGE 202 2 1 1,058 EPA
Southern California Contest Club
AI6DO 62 5 1 1,000 LAX
Culver City ARES
AJ7C 183 2 1 992 LAX
K6P 179 2 4 982 SDG
Orange Co. (NY) ARC
K2NRS 162 2 2 974 ENY
KD2ABL 68 5 1 930 ENY
KS9G 247 2 3 896 IN
Ventura Co. ARS
NQ6X 126 2 1 872 SB
Ventura Co. ARC
W6JPG 111 2 1 868 SB
Conejo Valley ARC
N6XEW 165 2 1 850 SB
Clinton Co. ARA
WB8ZZR 191 2 1 836 OH
Maricopa ARA
NA7CS 126 2 6 828 AZ
Conejo Valley ARC
AI6YR 111 2 1 814 SB
West Valley ARA
W6ESL 96 2 2 798 SCV
Culver City ARES
K6CRW 165 2 1 762 LAX
Ak-Sar-Ben ARC
K0USA 152 2 3 754 NE
Orange Park ARC
K4YLX 42 5 4 750 NFL
Parry Sound ARC
VE3WC 243 2 3 736 ONS
Sudden Valley ARC
WA7SV 114 2 7 736 WWA
Shelby ARC
WG4Z 54 5 1 735 NC
Clark Co. (WA) ARES/RACES
WB7OSC 32 2 2 714 WWA
SEKARC
KC0SHN 119 2 4 708 EWA
KB2URI 66 2 1 666 WNY
Williamsburg Area ARC
WA3RWP 141 2 2 652 VA
Western Carolina ARS
KC4EZN 118 2 1 646 NC
Conejo Valley ARC
KD6NFD 60 2 2 626 SB
Red River Valley ARC
W4W 284 2 2 618 NTX
Conejo Valley ARC
KM6TXE 53 5 2 615 SB
St. Louis & Suburban RC
AA0Z 115 2 2 614 MO
Baton Rouge ARC
AB5TH 79 2 3 608 LA
KD6HOF 153 2 2 594 SV
Blackstone Valley ARC
NA1Q 12 2 5 574 WMA
Smoky Mountain ARC
N9KMY 58 2 1 566 TN
Calhoun Co. ARA
KI4TGN 101 2 3 552 AL
Columbia River DX Club
WW7E 474 1 2 524 OR
Indiana Co. ARC
KC3NHE 79 2 1 508 WPA
South Bay ARA
AG6TT 93 2 1 476 EB
W8APP 96 2 2 476 MI
Ventura Co. ARC
K6VQN 50 2 1 466 SB
Putnam Emergency Amateur Repeater League
AC2GC 45 2 2 440 ENY
Ventura Co. ARC
KK6VQO 40 2 1 430 SB
Conejo Valley ARC
W2AYZ 45 2 3 430 SB
Twin State RC
WA1ORT 48 2 2 430 NH
Edmond ARS
KM5GZ 79 2 2 408 OK
Federación de Radio Aficionados de Puerto Rico
WP4J 44 2 1 408 PR
Conejo Valley ARC
KK6YAM 15 2 1 380 SB
Panama City ARC
K4MDA 12 2 2 374 NFL

Santa Fe Trail ARC
K0DDS 55 2 2 360 KS
Federación de Radio Aficionados de Puerto Rico
NP4JN 45 2 1 340 PR
PAPA System
KC6ARY 26 2 2 314 LAX
Iredell Co. ARS
N4SZF 22 2 2 294 NC
Symbol Technologies ARC
KC2OKG 20 2 1 290 NLI
K5SRP 18 2 2 286 AR
KJ7RED 6 2 1 262 WWA
Sussex Co. ARC
KE2L 56 2 1 252 NNJ

3E

Skyview Radio Soc.
K3MJW 1,838 2 28 6,538 WPA
Steel City ARC
W3KWH 1,083 2 6 4,300 WPA
Nashua Area Radio Soc.
AB1QB 1,087 2 4 3,930 NH
Southwick RACES
WC1SW 761 2 4 2,940 WMA
Jefferson Co. (TX) ARC
W5SSV 578 2 25 2,568 STX
California Dept of Justice RC
W6DOJ 520 2 4 1,608 SV
Mansfield-Johnson AR Service
K3JAR 260 2 3 1,570 NTX
Woodchuck ARC
WA8Q 153 2 20 1,276 OH
Fallbrook ARC
KR6SSY 310 2 3 1,070 SDG
Issaquah ARC
AF7UX 32 2 1 464 WWA
Cowtown ARC
AF5YT 33 2 5 416 NTX

4E

Contoocook Valley RC
K1B 4,082 2 15 12,220 NH
Great Southern DX Assn.
K5GDX 1,707 2 6 6,660 MS
Foothills ARS (AB)
VE6FAR 436 2 12 2,096 AB
WA1QZK 352 2 1 1,494 EMA
La Mirada RC
N6MPO 165 2 8 880 LAX
Foothills ARS (AB)
VE6TD 27 2 2 558 AB

5E

FM38 Repeater Group
N9GMT 952 2 9 3,708 WI
K6LOR 5 5 5 805 ID

6E

Corona Police CSV Team
NC6V 247 2 1 1,736 ORG

7E

North Bay ARA
K6LI 294 2 25 2,106 EB

EOC Stations

1F

Point Loma ARC
W6A 825 2 1 3,686 SDG
Cottonwood Heights ARC
W7RCH 404 2 21 3,062 UT
Amargosa ARC
N7A 302 2 5 1,524 NV
Mohawk ARC
W1SEX 121 2 4 1,332 WMA
Franklin Lakes OEM RC
N2FLO 335 2 8 1,320 NNJ
Williamson Co. ARES
K4COM 632 2 1 1,314 TN
Franklin Co. (ME) ARES
W1FCA 86 2 2 932 ME
Rochester (MN) ARC
K0T 35 2 12 928 MN
National Communications System ARC
K4NCS 277 2 1 904 PAC
Drumlins ARC
N0EK 187 2 1 798 WNY
Hayward RC
KK6ZLY 51 2 1 650 EB
Rochester (MN) ARC
N0SPN 24 2 1 498 MN
Preble ARA
K8YR 174 2 1 398 OH
Baytown Area ARC
K5BAY 57 2 5 326 STX
Boeing Employees ARS
K7NWS 12 2 1 298 WWA
Green Mountain Wireless Soc.
WY2Y 74 2 3 298 VT
Fort Myers ARC
W4LCO 30 2 1 236 SFL
Queen Anne's ARC
KE3AO 21 2 7 192 MDC
McGregor Memorial EMS ARC
N1MCG 1 2 2 154 NH
Brazos Valley ARC
N5VCX 11 2 1 72 STX
Orange Co. ARES
W4MCO 3 2 2 56 NFL

2F

Stanford ARC
W6YX 3,254 2 6 11,246 SCV
Frankford RC
K2NJ 4,001 1 4 8,552 NNJ
Coquitlam ARES Soc.
VE7SCC 1,826 2 3 6,732 BC
Platinum Coast ARS
W4MLB 1,952 2 8 6,442 SFL
McHenry Co. RACES/ARES
K9ESV 896 2 15 3,946 IL
Bullitt ARS
KY4KY 722 2 12 3,596 KY
Passaic Co. OEM
K2P 537 2 6 3,006 NNJ
RICOMU
WA1USA 693 2 7 2,614 RI
Boonville ARC
WA0E (+W0BRC)
509 2 11 2,436 MO
Dickson Co. ARC
WC4DC (+W4MF)
469 2 12 2,386 TN
Alachua EOC RC
NF4AC 249 2 10 2,322 NFL
Camp Pouch ARA
WA2CP 2,007 1 3 2,228 NLI
Virginia Mountain ARC
W4COV 473 2 7 1,940 VA
Greater Bridgeport ARC
W1BPT 379 2 12 1,844 CT
Turkey Heaven Mtn Repeater Assn
N4THM 293 2 7 1,798 AL
Florida Contest Group
ND1C 188 2 30 1,702 NFL
Deep South ARC
K4DSR 411 2 19 1,666 AL
Bayouland Emergency ARES
W5BMC 179 2 15 1,610 LA
Lincoln Co. Volunteer Communications
NC4LC 277 2 6 1,510 NC
AR League of Lawrence Co.
NA3A 153 2 9 1,350 WPA
ARC EmComm Service
WB2QBP 197 2 3 1,080 NLI
Taylor Co. ARC
K4PRY 31 2 10 944 NFL
Shelby Co. ARES
K8EMA 208 2 8 882 OH
Hiram Percy Maxim Memorial Station
W1AW 559 1 1 750 CT
D.A.R.K Dam AR Klub
KE0TGG 123 2 5 744 MO
Santa Rosa Co. ARES
K4SRC 85 2 3 720 NFL
Laurel ARC
W3LRC 174 2 5 718 MDC
The Unreal RC
W0WX 105 2 3 660 MN
Central Indiana ARA
N9EOC 25 2 12 612 IN
Old Post ARS
W9EOC 57 2 10 564 IN
South San Francisco Communications
N6SSF 34 2 4 418 SCV
San Angelo ARC
W5SJT 141 1 11 391 WTX
Lafayette Co. ARES
KD5SHY 38 2 3 376 AR
Alameda Co. Sheriff's Communications Team
W6VO 71 2 5 192 EB
Alameda Co. Sheriff's Communications Team
W6VOM 71 2 5 192 EB
Decatur ARC
W4ATD 11 2 5 172 AL
Butler Co. AR Public Service Group
K3PSG 54 2 2 158 WPA
Sun City Center ARC
KE4ZIP 48 1 2 112 WCF

3F

Daytona Beach CERT AR Team
N4DAB (+KI4LOF)
882 2 10 4,510 NFL
South Canadian ARS
W5NOR 959 2 9 3,688 OK
Dayton ARA/Xenia Weather AR Net
W8XRN 335 2 23 2,440 OH
Carteret Emergency Management Vol ARC
K2ZV 383 2 4 2,038 NNJ
Tri-State ARA
W8VA 224 2 10 1,456 WV
Citrus Co. ARC
N4A 163 2 10 1,254 NFL
Alamogordo ARC
K5LRW 198 2 3 1,020 NM
Bootheel ARC
KB0UFL 148 2 8 984 MO
Lamar ARC
N0LAR 107 2 10 664 CO
Charlevoix/Cheboygan/Emmet Co. Pub. Srvc. Comms. Org.
W8CCE 154 1 7 553 MI

4F

Van Wert ARC
W8FY 1,460 2 17 4,850 OH
Anderson RC (KY)
K4TG 660 2 12 3,490 KY
BCARS.ORG
K3NQT 312 2 20 2,088 WPA
Broken Arrow EM ARC
WX5BA 171 2 6 1,366 OK
Centralia ARES
K7CEM 149 2 25 910 WWA
Metro Detroit SATERN
N8SE 265 2 4 784 MI
Coffee Co. AuxCom Team
WM4CC 77 2 9 604 TN

6F

ARA of the Southern Tier
W2ZJ 275 2 12 1,442 WNY

10F

Johnson Space Center ARC/Clear Lake ARC
W5RRR 1,574 2 30 4,902 STX