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Amateur Radio

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COMMUNICATIONS & TECHNOLOGY

AUGUST 2012

CQ

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- SSB Results: 2011 CQ WW DX Contest, p. 22
- CQ Reviews: Ten-Tec Model 1215 Antenna Tuner Kit, p. 32
- QRP in the South Pacific, p. 53

On the Cover:
Ashraf Chaabane, KF5EYY, operator at 3V8SS in Tunisia, with CQWW Contest certificate. Details on page 84.

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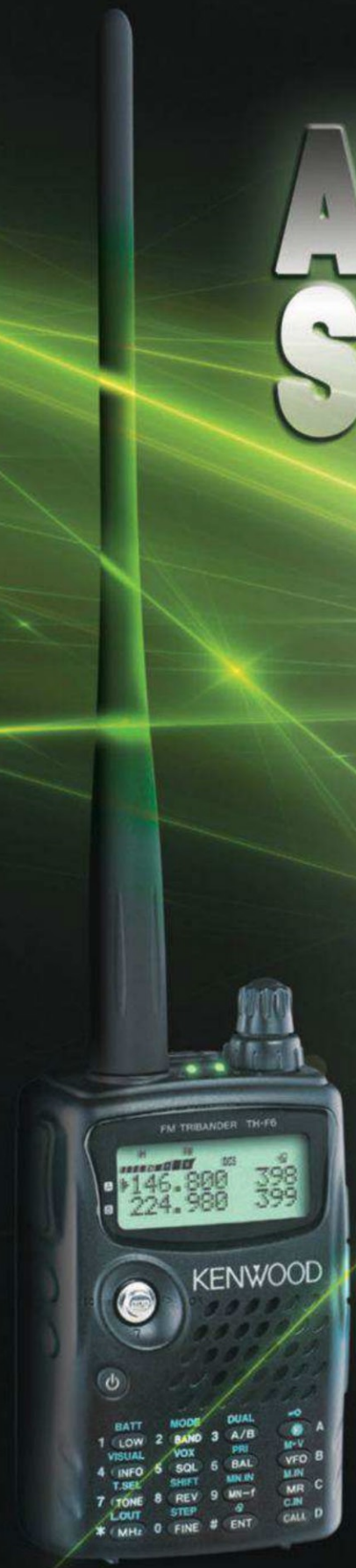

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[1]Note that certain frequencies are unavailable. [2]5W output

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Covers 6, 10, 12, 15, 17, 20, 30, and 40 Meters!

The Cushcraft R8 is recognized as the industry gold standard for multi-band verticals, with thousands in use worldwide. Efficient, rugged, and built to withstand the test of time, the R8's unique ground-independent design has a well-earned reputation for delivering top DX results under tough conditions. Best of all, the R8 is easy to assemble, installs just about anywhere, and blends inconspicuously with urban and country settings alike.

Automatic Band Switching: The R8's famous "black box" matching network combines with traps and parallel resonators to cover 8 bands. You QSY instantly, without a tuner!

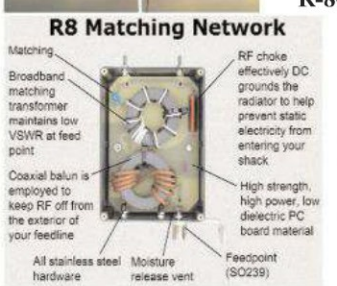
Rugged Construction: Thick fiberglass insulators, all-stainless hardware, and 6063 aircraft-aluminum tubing that is double or triple walled at key stress points handle anything Mother Nature can dish out.

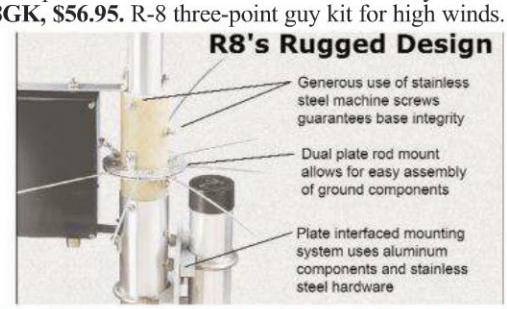
Compact Footprint: Installs in an area about the size of a child's sandbox -- no ground radials to bury and all RF-energized surfaces safely out of reach.

Legal-Limit Power: Heavy-duty components are contest-proven to handle all the power your amplifier can legally deliver and radiating it as RF rather than heat.

The sunspot count is climbing and long-awaited band openings are finally becoming a reality. Now is the perfect time to discover why Cushcraft's R8 multi-band vertical is the premier choice of DX-wise hams everywhere!

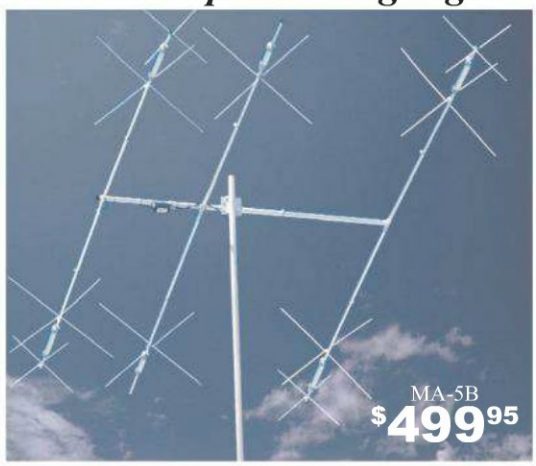
R-8GK, $56.95. R-8 three-point guy kit for high winds.





MA-5B *5-Band* Beam

Small Footprint -- Big Signal



The MA-5B is one of Cushcraft's most popular HF antennas, delivering solid *signal-boosting directivity* in a bantam-weight package. Mounts on roof using standard TV hardware. Perfect for exploring exciting DX without the high cost and heavy lifting of installing a large tower and 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-5B gives you 5-bands, automatic band switching and easy installation in a compact 26-pound package. On 10, 15 and 20 Meters the end elements become a two-element Yagi that delivers solid power-multiplying gain over a dipole on all three bands. On 12 and 17 Meters, the middle element is a highly efficient trap dipole. When working DX, what really matters are the interfering signals and noise you *don't hear*. That's where the MA-5B's impressive side rejection and front-to-back ratio really shines. *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.

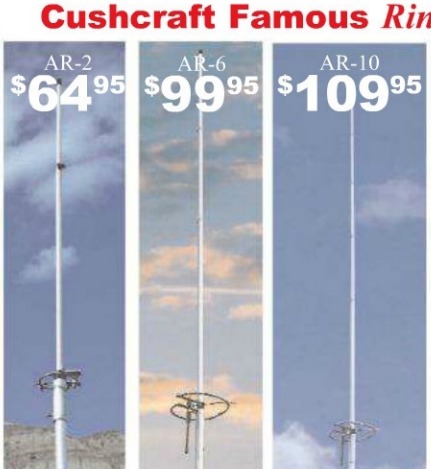
The 3-element A3S/A3WS and 4-element A4S are world-famous for powerhouse gain and super performance. **A-3WS, $499.95,** 12/17 M. **30/40 Meter** *add-on kits* available.

Cushcraft Dual Band Yagis

One Yagi for Dual-Band FM Radios

Dual-bander VHF rigs are the norm these days, so why not compliment 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 *Ringo* 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, lighting 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!

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Clyburn Nominated to Full Term on FCC

President Obama has nominated Mingon Clyburn to a full five-year term as an FCC Commissioner. A Democrat, Clyburn was appointed to the commission in 2009 to fill out the unexpired term of Republican Commissioner Deborah Taylor Tate, who had resigned. According to the ARRL Letter, FCC Chairman Julius Genachowski called Clyburn's renomination "an outstanding choice for the Commission and for the American people." Clyburn's nomination requires Senate confirmation.

House Committee Calls for Unified Oversight of MARS

A committee report accompanying the National Defense Authorization Act for fiscal year 2013 calls on the Pentagon to "clarify and maintain policy oversight of MARS within the Office of the Secretary of Defense" and to appoint one person to coordinate the policies and activities of volunteer group across the Army, Air Force, and Navy/Marine Corps. Currently, the Military Auxiliary Radio System operates independently in each service. The ARRL Letter says the report from the House Armed Services Committee recognized MARS as "an important back-up" to government communication systems but noted that oversight is unclear due to a recent Pentagon reorganization and that there is a lack of standardization among the three MARS branches.

Ohio Gets State "PRB-1" Law

Ohio has joined me roster of states that have incorporated into state law federal restrictions on zoning laws that involve amateur radio antennas and towers. Significantly, reports the ARRL Letter, Ohio's new law requires any agency that denies an amateur's antenna application to state the reasons for the denial and—on any appeal—the agency has the burden of proof, not the amateur.

Welsh Ham Carries Olympic Torch

A Welsh ham who has been actively involved in charity work for years was honored for his efforts by being allowed to carry the Olympic torch on its journey toward the opening ceremonies of the 2012 London games. According to Newsline, William Williams, GW8TGS, carried the torch through the city of Aberystwyth for about a half hour on May 27th.

Building Satellites with Video Game Technology

AMSAT-UK is part of a group planning to build a set of cubesats that will test an autonomous on-orbit docking system based on XBOX Kinect video game technology. The group also includes SpaceRef.com and Surrey Satellite Technology, Ltd., and is based at the University of Surrey in England, home of the UOSAT amateur satellites of the 1970s and '80s. AMSAT News Service reports that the project—named STRaND-2—will consist of two twin satellites that will be separated after launch. After each one is checked out, ground controllers will command them to dock with each other. They will then use components from a Kinect game controller scan the area around them and provide the satellites with 3-D spatial awareness to align with each other and dock. If successful, it could open a whole new way of building and maintaining satellites, including the potential for changing out modules in orbit or using multiple small cubesats to link up in orbit and build a large satellite by themselves.

The Strange Case of DJ6SI

CQ DX Hall of Fame member Baldur Drobnica, DJ6SI, has endured a bizarre series of events that started when he tried to operate his portable ham radio while on vacation in Greece. According to reports on Newsline and other sources, a police officer suspicious of the "strange noises" coming from Baldur's computer placed him under arrest. Initial reports were that he was charged with espionage, but Baldur said that did not happen.

He was, however, charged with making radio transmissions without permission from the Greek government (both Greece and Germany are signatories to the CEPT treaty which permits amateurs from any one member country to operate in any other member country without special permission), operating a radio that covered more spectrum than only the Greek amateur bands, and refusing to turn over his equipment to the arresting officer.

According to Baldur's attorney, the first two charges were dropped by the court after determining that Baldur was a properly licensed radio amateur. However, he was convicted on the third charge, which the attorney said would be appealed. Meanwhile, if you're visiting Greece, it might be best to leave your ham gear at home.

ICOM Inks Deal With Boy Scouts for 2013 Jamboree

ICOM America has agreed to be the amateur radio transceiver supplier for the national Scout Jamboree next year at Summit, West Virginia. The company will also supply three permanent repeaters for the new Jamboree site, one 2-meter analog repeater, a 70-centimeter analog machine and a 70-cm D-STAR repeater. In addition, ICOM will supply ten loaner stations for use by Boy Scout councils around the country to use in promoting amateur radio. Details of the stations, and of the planned setup for the Jamboree, are still being worked out.

Gene Zimmerman, W3ZZ, SK

VHF weak-signal authority and CQ Contest Committee member Gene Zimmerman, W3ZZ, became a Silent Key in early June. Gene was responsible for reorganizing the CQ World-Wide VHF Contest into its current format and was a major behind-the-scenes player in the launch of *CQ VHF* magazine in the mid-1990s. From 2002–2011, he was *QST* magazine's VHF columnist. Professionally, Gene was a microbiologist with a long career at the National Institutes of Health, both as a researcher and administrator. For more on Gene, see this month's "Zero Bias" and "VHF-Plus" columns.

New Extra Class Question Pool Effective July 1

July 1 is the effective date for the new Element 4 question pool ... the questions that make up the Amateur Extra Class license exam. Each exam is made up of 50 questions selected from the pool of just over 700 possible questions. The new question pool will be used through June 30, 2016. Next up for replacement is the Technician Class (Element 2) pool in 2014, followed by the General Class (Element 3) pool in 2015.

Additional and updated news is available on the Ham Radio News page of the CQ website at <http://www.cq-amateur-radio.com>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

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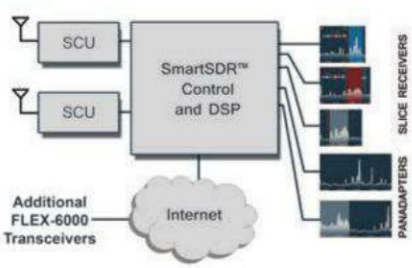

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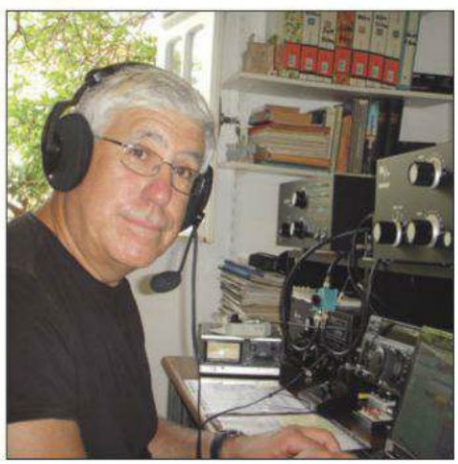

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departments

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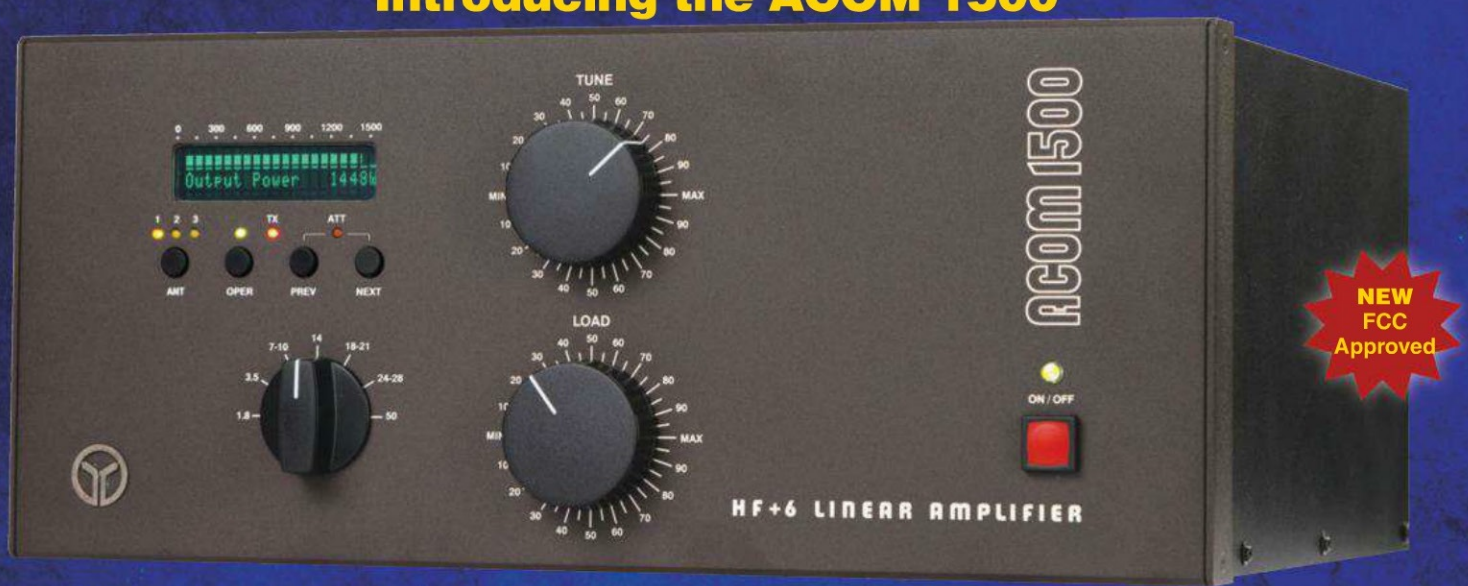
Introducing the OM Power OM2500A*

- Frequency coverage: All amateur bands 1.8 – 29.7 MHz
- Power output: 1500 W PEP All modes - no time limit
- Fully Automatic bandswitching and tune up
- Integrates with all popular transceivers

*This product has not been approved by the FCC. This device may not be sold or leased, or offered for sale or lease, until FCC approval has been obtained.

- Maximum output SWR: 2:1
- SWR protection: automatic switching to STBY
- Tube: GU84b Ceramic tetrode
- Power supply: 240 V - single phase

Introducing the ACOM 1500



- Frequency coverage: All amateur bands 1.8 – 54 MHz
- Power output: 1500 W PEP SSB, 1200W all other modes
- Manual band switching and tune up
- 3 antenna outputs

- Maximum output SWR: 3:1
- SWR protection: automatic switching to STBY
- Tube: 4CX1000 Ceramic tetrode
- Power supply: 240V - single phase

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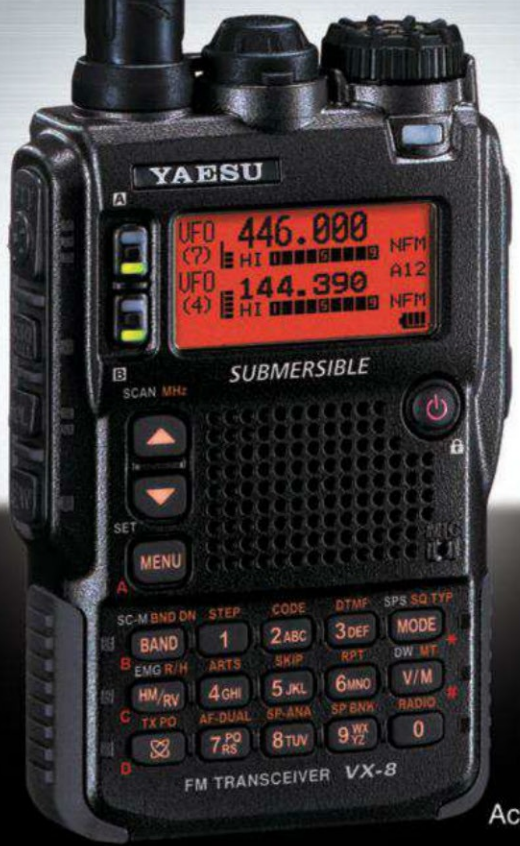
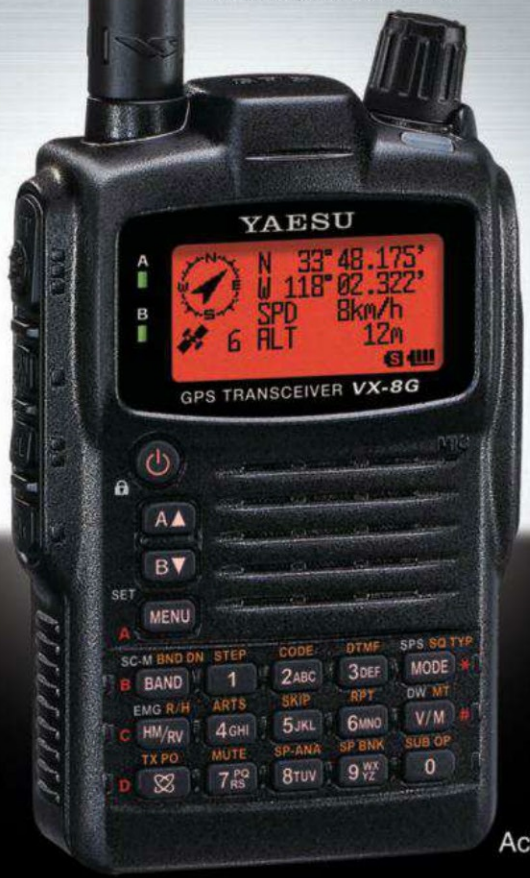
(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)



Actual Size

144/430 MHz
FM 5 W Dual Band Handheld
VX-8GR
(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)



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Attached to the radio (microphone input) using the optional GPS Antenna Adapter CT-136

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Bluetooth®

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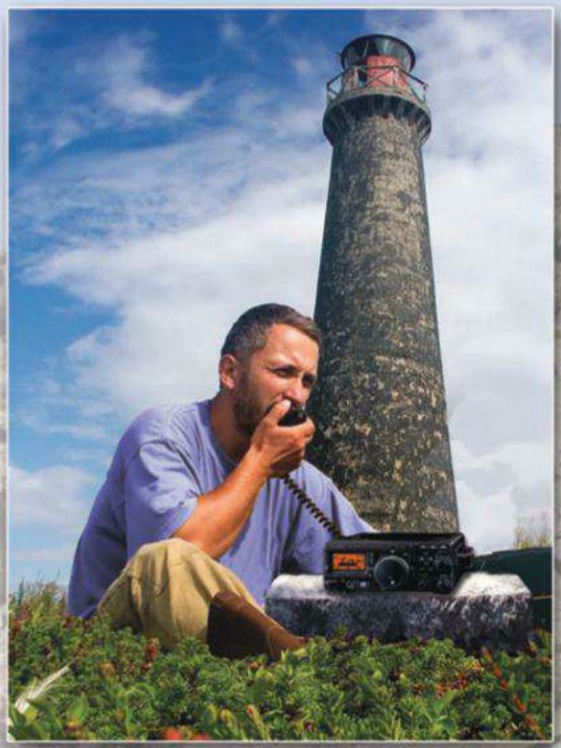

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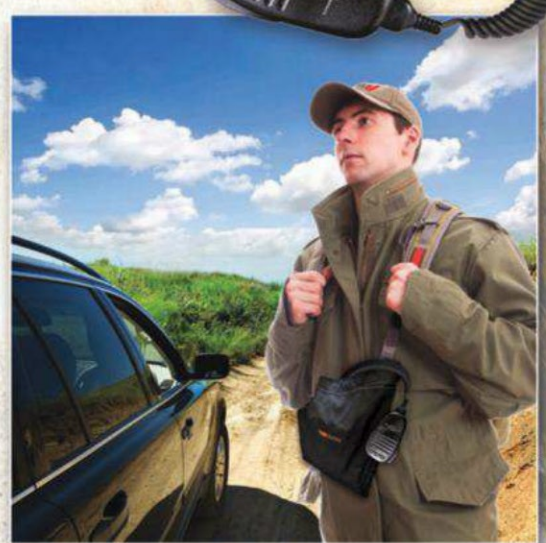
- Foot Stand
- Classically Designed Main Dial and Knobs
- Dynamic Microphone MH-31 A8J Included



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zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

Imagination and Adventure

"Aerialist." That's what it says on the business card handed to me at the Dayton Hamvention® by John Brosnahan, WØUN. Some of you may remember John from his days as President of Alpha Power or as an avid contester. The dictionary defines an aerialist as someone who performs feats in the air, such as a trapeze artist. I would be very surprised if John has been anywhere near a trapeze lately (a motorcycle, definitely, though, as both he and especially his wife Priscilla are *very* proficient . . . *Tnx K2RED).* The same is probably true of a surfboard, even though John's card also says—in somewhat smaller type—"Surfing the Ionosphere Since 1959."

When John gave me the card, my first impression was that it was cute—a ham radio twist on trapeze artists and surfers (whether of ocean waves or the internet). It wasn't until a few weeks later when I was looking up Thor Heyerdahl and *Kon-Tiki* that I realized the significance of John's card. What do John and Thor have in common?

If you look at this month's QRP column (which I certainly hope you will), you'll see that N6GA is starting out with a low-power rig that was inspired by the radio gear aboard the raft, *Kon-Tiki.* For those who weren't around ham radio in the 1940s and '50s, Thor Heyerdahl was an adventurer who had a theory that islands in the South Pacific could have been settled by people sailing from South America in rafts. To prove his point, Heyerdahl went to Peru and built a raft, which he named *Kon-Tiki*, from materials that might have been available a few thousand years ago, and set sail for Polynesia. His one concession to modernity was putting radio gear—ham radio gear—aboard the raft.

Cam, N6GA, was looking for a suitable illustration to accompany his column. I remembered seeing photos of the *Kon-Tiki* in some back issue of *CQ.* In searching the archives, I eventually found the perfect photo (you can see it on page 53), but I also came across an editorial by my predecessor, K2EEK, from January 1991 that put all of this in perspective.

Alan wrote that when he was a kid, for about $50 (a lot more then than now!), "you could actually (for real, no fooling) listen in and follow along with Thor Heyerdahl aboard the *Kon-Tiki* as he sailed from Peru to Tahiti." The company selling that $50 radio, he said, was selling more than a radio; it was selling a dream. "My imagination," Alan wrote, "was taking me back to the deck of the *Kon-Tiki* where Thor and I are lashing things down as waves break across the bow."

Alan continued, "The key words describing amateur radio for me and some of my friends who became amateurs at the same time are imagination and adventure, the adventure being someplace far away."

The point of Alan's editorial 21 years ago was that we need to find ways to perpetuate the sense of imagination and adventure as selling tools for our hobby. That's when my mind flashed on WØUN's card: Aerialist; Surfing the Ionosphere. *Imagination and adventure.*

My mind also flashed to the amateur satellite column in this month's issue of our sister magazine, *WorldRadio Online.* In it, Terry Douds, N8KI, writes about a team of folks at the University of Surrey in England, including AMSAT-UK, who are adapting video game technology—specifically the 3D spatial awareness technology of the XBOX Kinect game controller—to develop tiny satellites that can be commanded to dock with each other in orbit and to build themselves into larger modular satellites. The possibilities are endless—beyond satellites that can build themselves in orbit; it could be possible to send up a module with newer technology (or fresh batteries) to replace older modules; sending up a new experiment to replace one that's been completed; changing components of an on-board amateur radio station.

Imagination and adventure ... still alive and well in amateur radio, still selling the dream of using technology to communicate, as Alan put it, between Point A and Point B, especially when Point B is someplace far away. Earth orbit certainly qualifies as far away. So let's keep dreaming, let's keep turning dreams into reality, and let's keep selling ham radio's dream of *imagination and adventure* on the airwaves.

Another Goodbye

Bill Pasternak, WA6ITF, in "Newsline," labels Silent Key stories as "The Changing of the Guard." It seems that we are in the middle of a large-scale changing of the guard at the moment, as it feels like every month, I am noting the passing of another leader in our hobby. This month, it's Gene Zimmerman, W3ZZ.

In addition to being a Ph.D. microbiologist with a distinguished career at the National Institutes of Health, Gene was a major-league VHF DXer and contester, a long-time member of the CQ Contest Committee, a columnist for *CQ Contest* magazine back in the day, a former CQ World-Wide VHF Contest Director (he reorganized the contest to its current format), and VHF columnist for *QST* for nearly a decade. His knowledge and expertise covered the full spectrum (and not just the RF spectrum).

N6CL talks more about Gene in his "VHF-Plus" column this month on page 80, but from my perspective, Gene was one of those go-to guys on whom you could always depend for help with something or to give you straight answers when they were hard to come by from other sources. Gene was a wise and valued counselor on many topics well beyond the scope of VHF contesting. He was also my secret weapon when starting up *CQ VHF* back in the mid-90s. I went to my first VHF conference to try to round up writers, knowing no one, but having been told to look for Gene. I remember walking up to him at the Friday evening social hour, introducing myself, and telling him what we were up to. We started talking, and within minutes it was like we'd known each other for years.

Gene immediately took me under his wing, gave me unsolicited (but excellent) advice on what should be in the magazine, and introduced me to all the key people in the VHF weak-signal portion of our hobby. It was also the start of a 15+ year friendship.

Gene will be remembered for his encyclopedic knowledge, his sense of humor, his total lack of pretentiousness, and his ongoing crusade for the highest ethical standards in everything with which he got involved. It was an honor to be Gene's friend and I (along with the rest of the amateur radio community) will miss him greatly. 73, W2VU

*e-mail: <w2vu@cq-amateur-radio.com>

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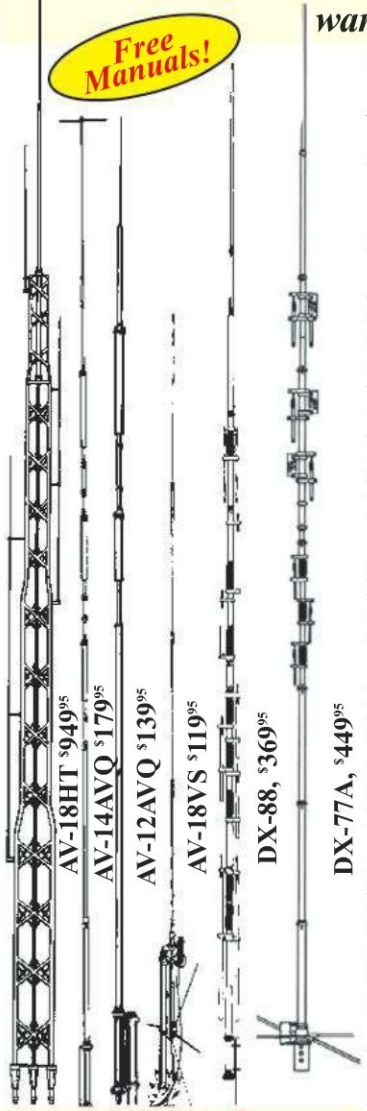

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AV-14AVQ, $179.95. (10,15,20,40 Meters). 18 ft., 9 lbs. The Hy-Gain AV-14AVQ uses the same trap design as the famous Hy-Gain Thunderbird beams. Three separate air dielectric Hy-Q traps with oversize coils give superb stability and 1/4 wave resonance on all bands. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

AV-12AVQ, $139.95. (10, 15, 20 Meters). 13 ft., 9 lbs. AV-12AVQ also uses Thunderbird beam design air dielectric traps for extremely Hy-Q performance. This is the way to go for inexpensive tri-band performance in limited space. Roof mount with AV-14RMQ kit, $89.95.

AV-18VS, $119.95 (10,12,15,17,20,30,40,80 Meters). 18 ft., 4 lbs. High quality construction and low cost make the AV-18VS an exceptional value. Easily tuned to any band by adjusting feed point at the base loading coil. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

DX-88, $369.95. (10, 12, 15,17,20,30,40,80 Meters, 160 Meters optional). 25 ft., 18 lbs.

All bands are *easily* tuned with the DX-88's *exclusive* adjustable capacitors. 80 and 40 Meters can even be tuned from the ground without having to lower the antenna. Super heavy-duty construction. DX-88 OPTIONS: 160 Meter add-on kit, KIT-160-88, $199.95. Ground Radial System, GRK-88, $99.95. Roof Radial System, RRK-88, $99.95.

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Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
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AV-14AVQ	**$179.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$139.95	10/15/20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$119.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 80 M	1500 W PEP	25 feet	18 pounds	75 mph no guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 40 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph no guy**	**1.5-1.625"**

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announcements

The following special event stations are scheduled for August :

CANTON, OHIO — Canton Amateur Radio Club will air special event station **W8AL**, from 1200 UTC to 2400 UTC August 4 and 1200 UTC to 2400 UTC August 5 to salute the Annual Pro Football Hall of Fame Festival in Canton. Frequencies include 28.365, 21.365, 14.265, and 7.265 MHz. For a certificate, send QSL and $2 to Roger Gray, W8VE, 3506 21st Street, NW, Canton, Ohio 44708. Website: <http://www.w8al.org>.

ALLIANCE, OHIO — Alliance Amateur Radio Club will air special event station **W8LKY** from 1400 to 2100 UTC August 18 to salute its 25th anniversary along with the Alliance Carnation Days festival. Frequencies are 7.045, 7.240±, 14.045, 14.240±, and 21.300. For certificate/QSL: W8LKY-Alliance Amateur Radio Club, P.O. Box 3344, Alliance, OH 44601.

CORONADO NATIONAL MEMORIAL, ARIZONA — Sierra Vista Contesting Club will air special event station **W7SVD** from 1500 to 2400 UTC August 25, from Montezuma Pass in the Huachuca Mountains of SE Arizona to commemorate the establishment of the National Park Service August 25, 1916. Frequencies include SSB 14.275, 21.285, 28.350; CW 14.050, 21.050, 28.050; PSK31 14.070, 21.070, 28.120 MHz. Send QSL and SASE to: W7SVD, 3707 Elder Ct., Sierra Vista, AZ 85650.

These hamfests, etc., are slated for August and early September:

ANGOLA, INDIANA — Land of Lakes Amateur Radio Club Angola Hamfest, August 4 at the Steuben County 4-H Fairgrounds. Contact Sharon Brown, WD9DSP, 260-475-5897. (Talk-in 147.18+ [PL 131.8]).

COLUMBUS, OHIO — Voice of Aladdin Amateur Radio Club, W8FEZ, and the **Ohio Section-ARRL Columbus Hamfest** and **ARRL Ohio State Convention,** August 4 at the Aladdin Shrine Center. Website: <http://www.aladdinshrine.org/hamfest.htm> or <http:// arrlohio.org>. (Talk-in 146.970 [PL 123.0]; exams).

ESCANABA, MICHIGAN — Delta County Amateur Radio Society U.P. Hamfest 2012, August 4 at the Bay de Noc Community College. Website: <http://dcars.org/u-p-hamfest/>. (Talk-in 147.150 +600 [PL 100]).

TRUMANSBURG, NEW YORK — Tompkins County Amateur Radio Association Ithaca Hamfest 2012 August 4 at the Trumansburg Fairgrounds. Contact: Bill Klinko, KC2OYN, 607-738-4694; e-mail: <whk2@cornell.edu>. (Talk-in 146.97– [PL 103.5]); exams)

VINTON, VIRGINIA — Roanoke Valley Amateur Radio Club Ham Fest and Flea Market , August 4 at William Byrd High School. Contact: RVARC, P.O. Box 2002, Roanoke, VA 24009. Website: <http://www.w4ca.us /page.php?5>. (Talk-in 146.985 –600 [PL 107.2]; exams beginning 11 AM).

PEOTONE, ILLINOIS — Hamfesters Amateur Radio Club 78th Annual Hamfest, August 5 at the Will County Fairgrounds. Contact Kerry Nelson, AA9SB, 708-335-4574; e-mail: <kw_nelson@earthlink.net>; Website: <http://bit.ly/J0dEHK>. (Talk-in 146.52 simplex; exams 8 to 10:30 AM)

PORTLAND, OREGON — Willamette Valley DX Club 2012 Pacific Northwest DX Convention, 5 PM August 3 to 11 AM August 5 at the Monarch Hotel and Conference Center. Contact Al Rovner, K7AR, <k7ar@arrl.net>. Website: <http://www.wvdxc.org/dxconvention>.

BERRYVILLE, VA — Shenandoah Valley Amateur Radio Club 62nd Annual Berryville Hamfest and Computer Show, August 5 at the Clarke County Ruritan Fairgrounds. Contact: Dave Adsit, 540-303-7055; e-mail: <hamfest2012@comcast.net>; Website: <http://www.w4rkc.org/hamfest>. Talk-in 146.82–; exam registration begins at noon with testing starting at 1 PM)

EDMONTON, ALBERTA, CANADA — Radio Amateurs of Canada Annual RAC Convention August 10–12 in Edmonton. Contact: RAC, 780-466-5779; Website: <http://convention2012.rac.ca>. (Card checking, CW exams)

MILO, MAINE — Piscataquis Amateur Radio Club Three Rivers Hamfest, August 11 at the American Legion Hall. E-mail: <parc@k1pq.org>. Website: <http://www.k1pq.org>. (Talk-in 145.105 [PL 103.5]; exams)

QUINCY, ILLINOIS — Western Illinois Amateur Radio Club Ham Radio and Computer Swapfest, August 11 at the Eagles Alps. Contact: Danny Pease, 217-430-2046; e-mail: <ng9r@arrl.net>; Website: <http://www.w9awe.org>. (Talk-in 147.030 +600 [CTCSS 103.5]; exams, ARRL and CQ awards card checking)

STURTEVANT, WISCONSIN — Racine Megacycle Club Fifth Annual Racine Megacycle Freefest 2012, August 11 at Fireman's ParkContact: Paul Giannoni, <kc9pg@yahoo.com>; Website: <http://www.w9udu.org>. (Talk-in 147.270+ [PL 127.3]).

SAINT ALBANS, VERMONT — Saint Albans Amateur Radio Club, Inc., STARC 2012 Summer Hamfest, August 11 at the Veterans of Foreign Wars – Post 758. (Exams, Technicians Cass only)

(Continued on page 99)

*Please submit hamfest and special event announcements **at least three months in advance** by e-mail to <hamfest@cq-amateur-radio.com> or <specialevent@cq-amateur-radio.com>, or by postal mail to: CQ Magazine, Attn: Hamfests (or Special Events), 25 Newbridge Rd., Hicksville, NY 11801.*

A publication of

CQ Communications, Inc.
25 Newbridge Road
Hicksville, NY 11801 USA.

CQ Amateur Radio (ISSN 0007-893X) Volume 68, No. 8. Published monthly by CQ Communications, Inc., 25 Newbridge Road., Hicksville, NY 11801, Telephone 516-681-2922. E-mail: cq@cq-amateur-radio.com. Fax 516-681-2926. Web site: www.cq-amateur-radio.com. Periodicals Postage Paid at Hicksville, NY 11801 and at additional mailing offices. Subscription prices (all in U.S. dollars): Domestic-one year $38.95, two years $70.95, three years $102.95; Canada/Mexico-one year $51.95, two years $96.95, three years $138.95: Foreign Air Post-one year $63.95, two years $120.95, three years $177.95. U.S. Government Agencies: Subscriptions to CQ are available to agencies of the United States government including military services, only on a cash with order basis. Requests for quotations, bids, contracts., etc. will be refused and will not be returned or processed. Entire contents copyrighted 2012 by CQ Communications, Inc. CQ does not assume responsibility for unsolicited manuscripts. Allow six weeks for change of address.

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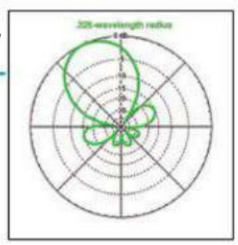

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- 100 W w/ auto tuner • built-in Power supply
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- 200W (FT-2000D)
- 3 Band Parametric Mic EQ • 3 IF roofing filters

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FT-8800R 2M/440 Mobile

- V+U/V+V/U+U operation
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- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

FREE YSK-8900

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VX-6R

2M/220/440HT

- wideband RX – 900 memories
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- Li-ION Battery - EAI system
- Fully submersible to 3 ft.
- CW trainer built-in

NEW Low Price!

VX-8DR/VX-8GR

50/144/220/440 (VX-8DR)
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- 5w (1w 222 Mhz VX-8DR only)
- Bluetooth optional (VX-8DR only)
- waterproof/submersible 3 ft 30 mins
- GPS/APRS operation optional
- Li-ion Hi-capacity battery
- wide band Rx

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VX-8GR only
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NEW!

FT-450D HF + 6M TCVR

- 100W HF/6M • Auto Tuner built-in • DSP Built-in
- 500 Memories • DNR, IF Notch, IF Shift

Call Now For Special Pricing

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http://www.hamradio.com

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The Dayton Hamvention® is SO big that you might want to consider going bicycle mobile just to make your way around! That's what Keith, KA9RSL, did. Of course, then we'd need bike lanes… (Photos by W2VU)

Here's our annual trek through the halls of Hara Arena to find out what new products were introduced at this year's Dayton Hamvention®.

"On Safari" at the 2012 Dayton Hamvention®

Part I: What's New in Transceivers, Receivers, and Amplifiers

BY RICHARD FISHER,* KI6SN

As has been the *CQ* tradition for lo' these many years, our team of intrepid reporters struck out on the *CQ* New Products Safari late Saturday afternoon and early Sunday at the 2012 Dayton Hamvention®.

CQ Editor Rich Moseson, W2VU, led the excursion with camera in hand. While we did not come across King Kong or Fay Wray (but who was that screaming?), there was a lot of new stuff to see, some of it cloaked in mystery . . .

The Hamvention is huge, so we're covering transceivers, receivers, and amplifiers this month. Antennas and accessories will be featured in the September issue. Due to the number of new rigs introduced, we have space here for only the most basic information.

*e-mail: *ki6sn@cq-amateur-radio.com*

Kenwood TS-990S HF/50 MHz Transceiver

There was a flurry of activity, curiosity, and a bit of mystery in Kenwood USA's booth where its soon-to-be-released TS-990S transceiver was on display—under glass. There were no promotional hand-outs. The radio's details were verbally delivered by Kenwood's Phil Parton, N4DRO.

This is the company's latest top-of-the-line radio that's expected to be ready for shipping sometime in November. Here are some of the TS-990's marquee features:

- Dual TFT (thin film transistor) display

Kenwood TS-990 HF/6m transceiver

- Dual receivers
- 5 to 200 watts power output
- SSB, CW, FSK, PSK, FM, AM
- HF through 50-MHz coverage
- Built-in switching power supply
- Built-in antenna tuner
- COM port, USB A/B port, and LAN port

"The sub receiver is a TS-590S, so it's mainly down conversion," Parton told onlookers huddled several deep. "The main receiver is complete down-conversion."

Five roofing filters are featured in the main band. There are three 32-bit DSP processors, plus a DVI (digital visual interface) connector on the back of the '990S, multiple USB ports, and optical IN and OUT. Parton said FCC acceptance is expected in August, adding that "The price (will be) somewhere between $5,000 and $10,000 … but at the same time, we say $10,000 is too much for anyone's top-of-the-line product. Shipping is expected by Thanksgiving."

A case for Sherlock Holmes? Perhaps, or we'll just have to wait until November. *(**INFORMATION:** For updates on pricing and availability, visit <http://www.KenwoodUSA.com>)*

Yaesu FT-DX 3000 HF/50 MHz Transceiver

In the high-stakes game of top-performing amateur radio transceivers, Yaesu is in with its new 100-watt FT-DX 3000, covering HF and 50 MHz. Its Dayton display unit was under glass, as well.

This slimmed-down version of the FT-DX 5000 has a single down-conversion 9-MHz first IF receiver with roofing filters at bandwidths of 300 Hz (optional), 600 Hz, and 3 kHz, providing "superior close-in dynamic range."

Yaesu FT-DX 3000 HF/6m transceiver

"The RF amplifier has optimized NF (noise figure) points, and the oversized wide-range RF transformer exhibits minimum saturation in strong signal processing," according to Yaesu. "This new radio has the high dynamic range IP3 (third-order distortion) performance that was realized and proven in the FT-DX 5000."

The FT-DX 3000 has a 32-bit high-speed floating decimal DSP with a maximum 2800 MIPS (million instructions per second) as well as an Auto-Notch digital noise filter, Contour DSP, and APF (all pass filter) signal processing.

Its high-resolution color LCD display is 3.5 inches wide, displaying operating information as well as a high-speed spectrum scope. Other FT-DX 3000 features include:

- Built-in receiver amplifier for 50 MHz
- Three antenna connectors, with capability of assigning one to "RX Only'
- Signal output for an external receiver
- 9-MHz IF output
- High-speed automatic antenna tuner built-in
- Optional μ-tune unit
- USB Interface

*(**INFORMATION:** <http://www.yaesu.com>)*

FLEX-6000 Series Transceivers with SmartSDR™

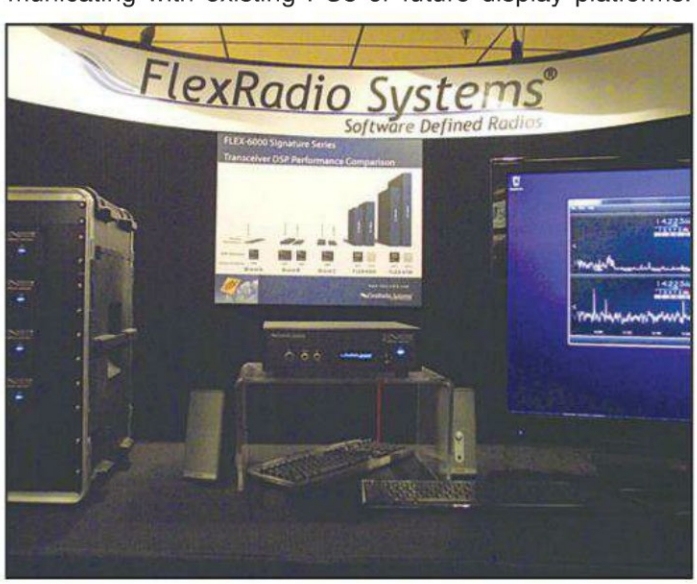
Dayton was FlexRadio's showcase for introducing its FLEX-6000 Series transceivers with SmartSDR™ software.

What's new in these high-end software-defined radios are capabilities involving direct digital reception, transmission, and networking. The key, FlexRadio says, is SmartSDR™, which "takes complex hardware and software and makes it elegant and simple to use. As smart phones and tablets have made computing devices accessible to the masses, the SmartSDR™ architecture truly delivers on software-defined radios for the masses."

Built in is a graphical interface "that is easy to learn and use" via multiple high-resolution, real-time spectral displays. "Intuitive controls are hidden from view to minimize clutter, yet are instantly available when needed."

FlexRadio says, "Just plug the radio into an antenna, power supply, and network, load the SmartSDR™ software on your existing PC, and operate."

Each '6000-series SDR has a 1-Gb Ethernet port for communicating with existing PCs or future display platforms.



FlexRadio pulled out all the stops to introduce the new Flex-6000 series of software-defined radios.

"Initial software enables operation within the home-network domain."

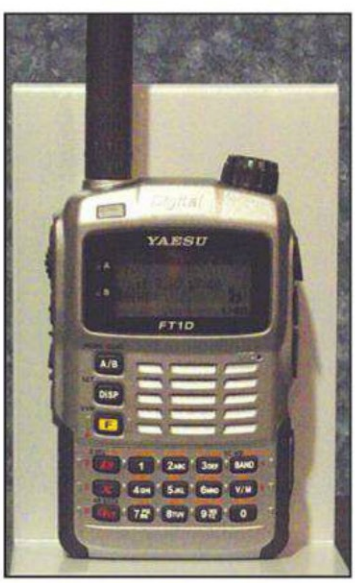
On receive, digital down conversion (DDC) of the signal at RF "virtually eliminates the performance limitation inherent in legacy superheterodyne roofing-filter-based transceivers," Flex data says. Direct digital receivers "are simply quieter and less fatiguing to listen to over long periods of time."

The FLEX-6700 transceiver and 6700-R receiver each "allow creation of up to eight independent 'slice receivers,' providing reception from 0.03 to 77 MHz and 135 to 165 MHz. The FLEX-6500 allows up to four slice receivers tuning from 0.03 to 77 MHz. "Each slice receiver can provide independent spectral display of up to 384 kHz," says Flex.

*(**INFORMATION:** <http://www.FlexRadio.com>)*

Yaesu FT1D 144/430 MHz Dual-Band Digital Transceiver

The Yaesu FT1D portable digital transceiver is the first dual-band digital/analog amateur transceiver developed with advanced C4FM (Continuous 4-level FM) FDMA (Frequency Division Multiple Access) digital technology "for a lower BER (bit error rate), resulting in stable communications without interruptions during mobile operations, even in a rapidly moving vehicle."



The FT-1D is Yaesu's first entry into the digital voice arena, presenting an alternative to D-STAR.

Features include: AF dual monitor, water-spray resistance (IPX5), large dot-matrix LCD, built-in GPS and antenna, GPS Logger, vibrate alert function, internal AM ferrite-bar antenna, and wideband receive. It is not compatible with D-STAR.

The Yaesu FT1D can achieve a data transfer rate of 9.6 kbps and is capable of switching between digital and analog communications with the press of a button.

A Short Message feature—a maximum of 80 alphanumeric characters—allows the operator to send a short message to group members simultaneously. With the optional MH-85A11U hand microphone, a digital image (essentially a snapshot) can be taken and transmitted, but cannot be viewed on the FT1D's screen due to LCD limitations. The image data includes the time and the GPS location of the snapshot. A Micro SD card can be installed for additional data storage.

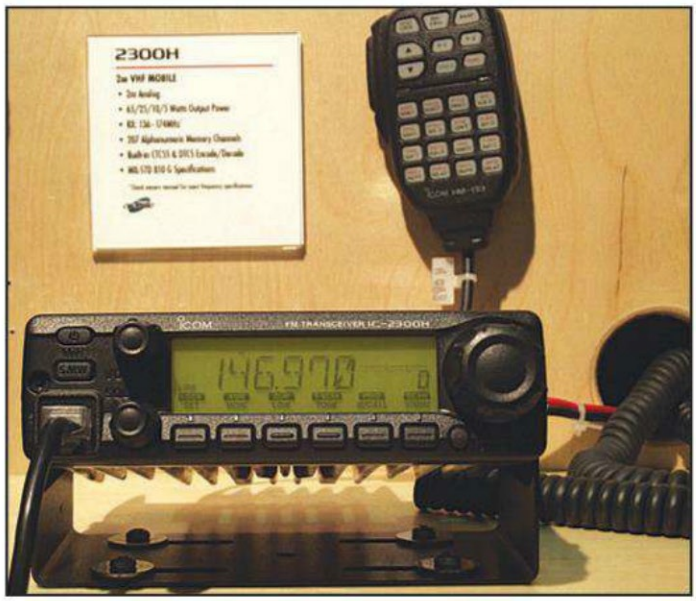
Also, an E-GPS function makes it possible to display the direction and distance to the other station. A back-track feature shows the direction and distance needed to return to your previous location.

*(**INFORMATION:** <http://www.yaesu.com>)*

ICOM IC-2300H 2-Meter FM Mobile Transceiver

The latest newsmaker in ICOM's evolution of 2-meter FM mobile transceivers is the IC-2300H, a physically smaller cousin to the company's popular IC-2200H.

The IC-2300H "retains the same basic features of the IC-2200H: 65 watts output, simple-to-use user interface, built-in CTCSS and DTCS encoder/ decoder, and so on. But it is packed in a smaller body than the IC-2200H," says ICOM. This new transceiver is 1.37 inches shorter in depth than the '2200H.



ICOM's IC-2300 offers all the features of the popular FT-2200 in a smaller radio.

Rugged? The '2300H has been tested to the latest MIL-STD-810 G, including the rigors of shock, vibration, and temperature. It is housed in an aluminum die-cast chassis that "provides effective heat dissipation and keeps RF output even during high-duty-cycle continuous transmission," ICOM notes. Depending on the transceiver version, output power can be selected in four steps: 65, 25, 10, and 5 watts.

Current IC-2200H users will find the IC-2300H operation quite familiar. The transceivers have a similar panel layout and user interface. The bottom of the display indicates the available functions of the front-panel buttons which are directly below the display.

The IC-2300H has a 70.6 by 20 mm LCD display with six large alphanumeric characters "offering a good viewing angle suitable for mobile operation," ICOM says. "The backlight color of the display is selectable from amber, yellow, and green for your visual enjoyment."

There are 207 memory channels in the IC-2300H, including 200 regular channels, 6 scan edges, and 1 call channel. The channel name is programmable with six characters for easy recognition.

*(**INFORMATION:** < http://www.icomamerica.com>)*

MFJ Enterprises MFJ-9417 17-Meter SSB Travel Radio

MFJ Enterprises has introduced another in its series of SSB Travel Radios with the MFJ-9417 for 17 meters, covering 18.08 to 18.17 MHz.

It features a single-conversion receiver and MFJ's ConstantCurrent™ speech processor in its transmit design.

The radio features "a quiet double-balanced-mixer front end, single-conversion clarity, and plenty of gain," an analog S-meter, eight poles of IF filtering, and a "smooth VFO—no annoying synthesizer jump or obscure keypad commands to deal with."

The '9417 puts out a full watt of audio through a 3-inch speaker, and its RF output transistor "easily tolerates 3:1 VSWR and feedline shorts or opens."

The radio draws 50–100 milliamperes on receive and 1.2 amperes peak on transmit at 13.8 VDC. The case measures 2.5 inches high, 6.5 inches wide, and 6 inches deep.

The MFJ-9417 is $259.95. (*Note:* To add code capability, the optional MFJ-415B CW module must been installed, providing semi-QSK break-in and sidetone. It is $49.95.)

*(**INFORMATION:** <http://www.MFJEnterprises.com>)*

MFJ Enterprises MFJ-9412 12-Meter Adventure Radio™

Designed specifically for outdoor operation, MFJ Enterprises's new 12-meter MFJ-9412 Adventure Radio covers 24.890–24.990 MHz with 20 watts SSB and CW PEP output.

All Adventure series radios feature MFJ's Constant Current™ speech processing and single-conversion superheterodyne receivers with a low-noise front end and double-balanced mixer, as well as a 2.3-kHz crystal ladder filter.

The radio has an analog S-meter that doubles as a speech-processing level monitor, analog tuning, one-half watt of audio from the '9412's 3.5-inch top-mount speaker, and a solid-state FET switch to key an external amplifier.

Adventure Radios are "energy efficient, operating from a 2-ampere AC supply (3 amps for the model '9410) or from a 12-volt battery." The '9412 case measures 2.5 inches high, 6.5 inches wide, and 6 inches deep.

The MFJ-9412 is $279.95. (*Note:* To add code capability, the optional MFJ-416 CW module for Adventure rigs must be installed. It is $49.95).

*(**INFORMATION:** <http://www.MFJEnterprises.com>)*

QRP Radios

Ten-Tec Argonaut VI QRP Transceiver

Harkening to the company's classic Argonaut series QRP radios dating to the last millennium, Ten-Tec will soon be releasing its Argonaut VI transceiver, delivering from 1 to 10 watts of RF power output.

Capable of CW, LSB, USB, and AM operation, the Argo VI has a double-conversion receiver with typical sensitivity of less than 1 microvolt, a dynamic range of 91 dB, 100 DSP filters from 100 Hz, and an RIT (receiver incremental tuning) range of ±8.2 kHz. The front-panel display is a multi-color backlit LCD. The radio has 100 memories.

The Argonaut VI covers 160 through 10 meters—with the exception of 60 and 12 meters—and runs on 9.5 to 14 VDC, drawing 550 milliamperes of current on receive and 3 amperes on transmit at its full 10-watt output power.

There are two independent VFOs for single or split operation, and frequency stability is measured by Ten-Tec to be +/-.5ppm (parts per million). Ten-Tec says the Argonaut VI will be priced "under $1,000."

*(**INFORMATION:** <http://www.TenTec.com>)*

Ten-Tec continues its classic Argonaut QRP line with the new Argonaut VI.

LNR Precision FX-2 QRP CW Transceiver

Perhaps best known as supplier of PAR EndFedz® antennas, LNR Precision introduced its two-band QRP CW transceiver at Dayton—the FX-2.

"This introductory-level radio is ideal for those who need portability or the convenience of a small lightweight radio," the company says. It covers both the 30-and 40-meter bands.

Weighing just over 10 ounces, the radio is housed in a "trail-friendly" cabinet 4 inches wide, 2.375 inches tall and 1.5 inches deep. The FX-2 is rated at 3 watts output on 30 meters and 4.5 on 40 from a 13.8-VDC power source. It is "small, lightweight, great for backpacking, and perfect for portable use," LNR says. "Please note that the FX-2 is targeted primarily at straight key users." The current version does not fully support iambic keying. Functions and frequency readout are via digital display.

The FX-2 transceiver from LNR.

***INFORMATION:** <http://LNRPrecision.com>)*

Hendricks QRP Kits TwoFer-Plus CW Transmitter

The Hendricks QRP Kits TwoFer-Plus is a simple single-band, crystal-controlled QRP CW transmitter that can be ordered for 40, 30, or 20 meters.

The Two-Fer was a classic transmitter design promoted by QRP Amateur Radio Club International in the 1980s. The Hendricks design has been updated and modernized to meet FCC spectral purity specifications.

The kits come with crystals in the QRP region of the band. The TwoFer-Plus power output is about 1 watt via a 2N3053 final transistor.

*(**INFORMATION:**<http://www.QRPkits.com>)*

Hendricks SMK-2 40-Meter CW Transceiver with Switched Crystal Board

The SMK-2 is a fully functional 40-meter transceiver kit built with surface-mount components. It has an independently tuned transmitter and direct-conversion receiver. The radio features "full break-in transmit with sidetone, and a modest 350 mW output." The crystal VXO receiver allows about 3 kHz+ tuning range on the crystal frequency.

*(**INFORMATION:** <http://www.QRPkits.com>)*

Hendricks KD1JV Tri-Band QRP CW Transceiver

Steve Weber, KD1JV, is a familiar face in the QRP kit arena.

MFJ 160-6 Meter Antenna

Self-supporting 43 foot vertical -- no guy wires required . . . 1500 Watts . . . exceptional performance . . . low-profile . . . includes base mount and legal limit balun . . . assembles in an hour . . .

MFJ-2990
$359.95

New!

Operate all bands 160 through 6 Meters at full 1500 Watt with this self-supporting, 43 feet high performance vertical! It assembles in less than an hour and its low-profile blends in with the sky and trees -- you can barely see it from across the street.

Exceptional Performance

The entire length radiates to provide exceptional low angle DX performance on 160 through 20 meters and very good performance on 17 through 6 Meters. You can shorten it by telescoping it down for more effective low angle radiation on higher bands if desired.

With an automatic antenna tuner there's no fuss -- just talk!

A wide-range automatic or manual antenna tuner *at your rig* easily matches this antenna for all bands 160-6 Meters. There's no physical tuning adjustments on the antenna -- you simply put it up!

An optimized balun design allows *direct coax feed* with negligible coax loss (typically less than ½ dB 60-6 Meters and less than 1 dB 160-80 M with good quality, low-loss coax).

Fully self-supporting, Extremely low wind loading, Very low visibility . . .

With just 2 square feet wind load, the fully self-supporting MFJ-2990 -- *no guy wires needed* -- has the lowest wind-loading and lowest visibility of any vertical antenna! The key is a six foot section of tapering diameter *stainless steel* whip that flexes in strong wind instead of stressing the bottom sections. Its 2-inch O.D. and .120 inch thick walled tubing bottom section makes it incredibly strong -- it'll stay up!

Weighs just 20 pounds -- you can easily put it up by yourself because its corrosion resistant *6063 aircraft aluminum* tubing and stainless steel construction make it light *and* super-strong.

Assembles in an hour

You can easily assemble it in an hour! Ground mounting lets you completely hide its antenna base in shrubbery. Includes ATB-65 high-strength antenna mount. Requires ground system -- at least one radial. More extensive ground system will give much better performance.

Great for Stealth Operation in antenna restricted areas

This very low-profile antenna is perfect for stealth operation in antenna restricted areas. Hide it behind trees, fences, buildings, bushes. Use it as a flagpole. Telescope it down during the day. Put it up at night and take it down in the morning before the neighbors even notice!

Quick and easy installation makes it great for DXpeditions, field day and other portable and temporary operations.

MFJ *Automatic* Tuners

MFJ-998
$699.95

For legal limit 1500 Watt SSB/CW amplifiers. Auto-ranging LCD and Cross-Needle SWR/Wattmeter, antenna switch, amp bypass, matches 12-1600 Ohms, 1.8-30 MHz.

MFJ-993B
$259.95

Dual power range -- 300 Watt range matches 6-1600 Ohms. 150 Watt/6-3200 Ohms. Auto-ranging LCD and Cross-Needle SWR/Wattmeter, antenna switch, 1.8-30 MHz.

MFJ *Manual* Tuners

MFJ-989D
$389.95

1500 Watts SSB/CW, 1.8-30 MHz. Active peak-reading Cross-Needle SWR/Wattmeter, balun, dummy load, antenna switch, aircore roller inductor.

MFJ-949E
$179.95

World's most popular tuner! 300 Watts, 1.8-30 MHz. Peak/Average Cross-Needle SWR/Wattmeter, 8 pos. antenna switch, dummy load, 1kV capacitors.

Window Feedthru

MFJ-4602
$69.95

Bring 3 coaxes, balanced line, random wire, ground thru window. Connectors mounted on *stainless steel* panel. ¾" thick *pressure-treated* weather-proof wood.

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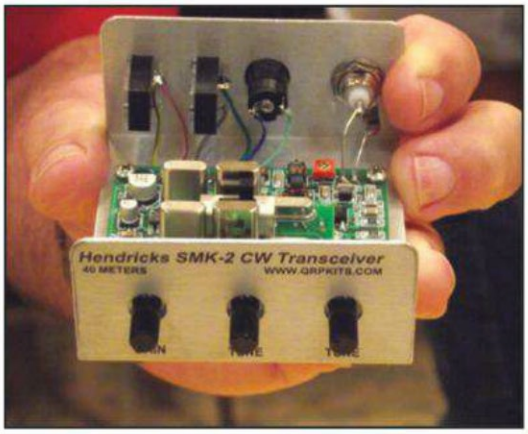


Hendricks QRP Kits SMK-2 transceiver

He has designed the Tri-Band QRP Transceiver, a new addition to the Hendricks QRP Kits line. It covers any three ham bands, 80, 40, 30, 20, 17, or 15 meters (choose at time of order), produces 5 watts output on all bands with 13.8V supply, and features a built-in iambic keyer with 5- to 40-wpm code speed.

The transceiver draws 90 milliamperes of current on receive (no signal) and 600 to 800 on transmit at 5 watts output. (Higher bands draw more current.) The Hendricks KD1JV Tri-Band transceiver is $200, plus shipping.

*(**INFORMATION:**<http://www.QRPkits.com>)*

Hendricks Ft. Tuthill 160-Meter QRP Transceiver

The Hendricks QRP Kits Ft. Tuthill 160-Meter QRP Transceiver is the next radio in evolution stemming from the Ft. Tuthill 15-Meter Transceiver.

Hendricks lists the 1.8-MHz's radio with the caveat that measurements were taken from prototypes, so "some variance in performance is expected from unit to unit."

The radio's direct-conversion receiver tunes in two ranges, high and low, from 1.8 to 1.88+ MHz. Current drain on receive is about 29 milliamperes at 12VDC (without the optional digital dial).

Receiver bandwidth is approximately 600 to 700 Hz with an MDS sensitivity of –116 dBm at 700 Hz. Third-order distortion (IP3) is +25 dBm. It has a blocking dynamic range (BDR) of about 100 dB (as limited by the CW filter response). RIT tuning range is about + 2.5/–6.5 kHz from the transmit "spot" frequency. On transmit, power output is about 3.5 to 4 watts at 13.8VDC. "At full transmit power, harmonic suppression exceeds FCC specifications," Hendricks says.

(***INFORMATION:*** *<http://www.QRPkits.com>)*

… and Amplifiers for QRO

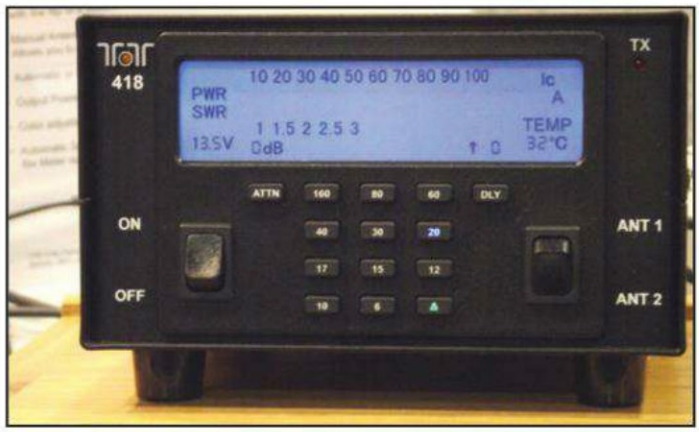
Ten-Tec 418 100-Watt Solid-State Linear Amplifier

With 5 watts of RF input drive the Ten-Tec Model 418 linear amplifier will produce 100 watts output on 160 through 6 meters, the company announced.

Output power and SWR are displayed on a large, front-panel LCD that is color adjustable. The amplifier features automatic or manual band selection "for worry-free operation." It can be bypassed with the flip of a switch, and there is a manual switch that allows the operator to change between two HF antennas.

There is "automatic sensing of 6-meter input," as well, according to Ten-Tec. "When a 6-meter signal is sensed, the 6-meter antenna port is automatically selected."

*(**INFORMATION:** <http://www.TenTec.com>)*



Ten-Tec's new Model 418 amplifier

Tokyo Hy-Power HL-2500fx Linear Amplifier

The HL-2500fx, promoted by Tokyo Hy-Power for its light weight and compactness, is a 1.5-kW solid-state linear amplifier covering 160 through 6 meters. Modes include SSB, CW, and RTTY from drive power of up to 100 watts. Six THP2933 MOSFET transistors are at the amplifier's output. It is capable of full QSK (break-in) operation.

The unit measures 14.6 inches wide, 5.7 inches high, and 16.5 inches deep. Its front-mounted LCD screen displays current band setting and any faults encountered by the amplifier. There are also two front-mounted meters. One continually displays the power (forward) output. The second meter is selectable via the front-mounted meter switch to display Power Reflected (PR), idle voltage to the MOSFETS (VD), transmitting current of the MOSFETS (ID), and ALC voltage.

Additional front-mounted controls include an automatic/manual band switch to select the mode of band switching, and a rotary band-selector switch to change the bands while in manual band-switch mode. Four LED indicators show: On Air, Fan Fault, Id/High current, and Protection/Fault indicator.

*(**INFORMATION:**<http://www.TokyoHyPower.com>)*

Tokyo Hy-Power HL-165Vkx 2-Meter Amplifier

So you're on 2-meters and want to add some *oomph* to your 5-, 10-, or 20-watt transceiver. Has Tokyo Hy-Power got the

Tokyo Hy-Power introduced several new amplifiers at Dayton, including the HL-2500 FX (see text), the HL-1500 AT, and the HL-1000 Marine, intended for MARS use.

boots for you! Its HL-165Vkx linear power amplifier can boost your output to as high as 150 watts on FM, SSB, or CW, depending on how much power you're using for drive.

When powered with 13.8VDC, 5 watts of drive will result in 90 watts out across the 2-meter band. With 10 watts drive, you'll get 130. For full 150-watt output, provide 20 watts drive.

This is a physically small amplifier, measuring 7.1 inches wide, 2.7 inches high, 10 inches deep. The HL-165Vkx has a built-in receiver pre-amp, as well.

*(**INFORMATION:** <http://www.TokyoHyPower.com>)*

Tokyo Hy-Power HL-355Vkx 2-Meter Linear Amplifier

For even higher power on the 2-meter band, Tokyo Hy-Power has introduced its HL-355Vkx 300-watt linear power amplifier. Covering 144 to 148 MHz, it will amplify CW, SSB, or FM RF inputs from 5 to 50 watts to produce up to 300 watts of RF output.

The company says it's an amplifier designed for DX contacts and EME experimentation. The cabinet measures 8.3 inches wide, 4.5 inches high, and 13.4 inches deep.

(***INFORMATION:*** *<http://www.TokyoHyPower.com>)*

Tokyo Hy-Power HL-130UKfx 440 MHz Amplifier

Like its lower-frequency cousin, the Tokyo-Hy-Power HL-130Ukx 70-cm RF amplifier is capable of giving low-power radios a bigger voice on the band—in this case up to 120 watts on 430 to 450 MHz. Provide 5 watts input on FM, SSB, or CW and you'll send 70 watts to the antenna. With 10 watts drive you'll get 100, and with 20 watts you get the full 120-watt output.

Like the '165Vkx, the HL-130Ukx is compact (7.1 inches wide, 2.7 inches high, and 10 inches deep), is RF key and PTT activated, and features standard SO-239 coaxial connectors as well as a low-noise GsAs FET receiver pre-amp.

*(**INFORMATION:** <http://www.TokyoHyPower.com>)*

Tokyo Hy-Power HL-250Ukx UHF Linear Amplifier

If 120 watts isn't enough for you on 70 centimeters, the Tokyo Hy-Power HL-250Ukx is a UHF linear amplifier capable of delivering up to 220 watts on 430 to 450 MHz. It has a built-in receiver pre-amplifier, as well.

Handling CW, SSB, and FM, the '250Ukx will put out 50 watts with 5 watts of drive; 120 watts with 20 watts of drive, and 220 watts with the maximum 50 watts of drive.

Tokyo Hy-Power says the amplifier was designed for either base station or mobile operation.

*(**INFORMATION:** <http://www.TokyoHyPower.com>)*

M² 2M-1K2 2-Meter Amplifier

The heart of M² Antenna Systems' new 2-meter 2M-1K2 power amplifier is a solitary component: "A very rugged LDMOSFET, rated at 1,250 watts output!" the company says.

Designed by Ken Holladay, K6HCP, "the 1K2 amplifier is beautiful in its simplicity," M² notes. "We have combined our 'state of the art' amplifier with a built-in, 92-percent efficient Powergate 2,400-watt switching supply." Covering 144 to 148 MHz, with power supply the 1K2 weighs 20.5 lbs. As an option, the amplifier and power supply are offered separately, as well.

If you really need power on 2 meters (like for EME), the 2M-1K2 power amplifier from M2 Antennas offers 1250 watts maximum output!

The single LDMOSFET is rated to handle a 65:1 mismatch. "The amplifier monitors the device's temperature and current, VSWR, drive, and mode to adjust output."

Two temperature-controlled whisper fans cool the finned LDMOSFET heat sink, cycling on and off as needed. A third, smaller fan cools the tank circuit components.

(***INFORMATION:*** *<http://www.m2inc.com>*)

Receive-Only…

GRE PSR-900B Scanner

Scanner fanatics will want to be sure to check out GRE's new PSR-900B, offering "amazing capability *along with ease of use,"* the company promises.

Covering 25–54, 108–136.99, 137–174, 216–512, 764–781.99, 791–798.99, 806–960 (excluding cellular bands), and 1240–1300 MHz, "this radio comes with a 2GB SD card preloaded with U.S. and Canadian public service frequencies. You automatically program your scanner merely by entering your zip code or city. It handles analog and digitals systems, including APCO 25."

The radio's detachable control head magnetically fastens to the head bracket for ease of installation and use in vehicles.

(***INFORMATION:*** *Visit <http://www.GREAmerica.com> or Universal Radio <http://www.Universal-Radio.com>)*

GRE PSR-110 Auto Racing Scanner

To be fully engaged in auto racing, fans need to tune into the action via VHF radio. GRE's new PSR-110 will get you onto the track and into the pits. It comes preprogrammed with six major race series: Champ Car, ARCA Re/Max, Indy Racing, Craftsman Truck, Busch Series, and Nextel Cup.

"It features keypad, a backlit LCD, an MRN (Motor Racing Network) button, a *favorites* button, and is mobile phone compatible," officials said. It has two LCD screens. "There is a full, multi-line alphanumeric on the front *and* there is one on the top to show the number of the monitored race car!"

Don't head for the track without GRECom's PSR-110 racing scanner. It's pre-programmed for all the major auto racing series, and it also lets you hook up dual headsets, complete with intercom and a cellphone connection so you can also take calls while monitoring a race.

Because of its racing specialization, the PSR-110 "will *not* tune other traditional scanner bands such as police, fire, weather, amateur, and so on. Please note that audio is only provided to a dual (two person) earphone jack (no speaker)."

(***INFORMATION:*** *See links above for PSR-900B)*

GRE PSR-120 Scanner

Here's a scanner that 'bout covers it all—the GRE PSR-120 handheld. With 300 memory channels, this handheld receiver covers: 25–54, 88–108, 108–174, 380–512, 806–823.9875, 849–868.9875, 894–960, 1240–1300 MHz. Twenty of the memories are for the FM broadcast band. In addition, five pre-programmed band searches are available (marine, fire/police, air, amateur radio, and weather).

Among the '120's features are a backlit display, lockout, priority channel, keypad, CTCSS/DCS decode, spectrum sweep, and BNC antenna.

The PSR-120 comes with a flexible BNC antenna, manual, belt clip, and AC adapter. It requires three AA cells (not supplied). There is a switch in the battery compartment that allows you to operate the radio with either alkaline or NiMH cells. The PSR-120 measures 2.675 by 4.635 inches by 1.2 inches and weighs 7 ounces.

(***INFORMATION:*** *See links above for PSR-900B)*

Coming Up ...

Next month we'll feature the new antennas and accessories we found on safari at the Dayton Hamvention®.

73 and stay tuned—*KI6SN*

LDG ELECTRONICS

#1 Line of Autotuners!

- *5 to 600 Watts PEP*
- *RF Sensing*
- *Auto and Semi Tuning Modes*
- *Two-Position Antenna Switch*
- *2,000 Memories per Antenna*
- *1.8 to 54 MHz range*
- *6 to 800 ohm range (15 to 150 on 6M)*

M-600 Meter sold separately

NEW! AT-600Proll

Building on the success of the AT-600Pro, LDG Electronics has refined and expanded the model with an optional external 4.5" analog meter. The new AT-600Proll keeps many of the same features of the previous model, but simplifies the operation. With the two-position antenna switch, there are 2,000 memories that store tuning parameters for almost instantaneous memory recall whenever you transmit on or near a frequency you've used before. Includes six-foot DC power cable.

Suggested Price $369.99; Optional M-600 external analog meter $129.99

M-1000 Meter sold separately

AT-1000Proll

LDG Electronics' new flagship 1KW tuner features: 5 to 1,000 Watts PEP; RF Sensing; Auto and Semi Tuning Modes; 1.8 to 54 MHz range; 6 to 800 ohm range (15 to 150 on 6M); simplified operation; and an optional external 4.5" analog meter. With the two-position antenna switch, there are 2,000 memories that store tuning parameters for almost instantaneous memory recall whenever you transmit on or near a frequency you've used before. Includes six-foot DC power cable.

Suggested Price $539.99; Optional M-1000 external analog meter $129.99

- *RF Sensing*
- *Tunes Automatically*
- *No Interface Cables Needed*

AT-100Proll

This desktop tuner covers all frequencies from 1.8–54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch with LEDs, allowing you to switch instantly between two antennas. The AT-100Proll requires just 1 watt for operation, but will handle up to 125 watts. Includes six-foot DC power cable.

Suggested Price $229.99

- *RF Sensing*
- *Tunes Automatically*
- *No Interface Cables Needed*

AT-200Proll

The AT-200Proll now includes LEDs to show antenna position and if the tuner is in bypass. A two-position antenna switch stores 2,000 memories per switch. Handles up to 250 watts SSB or CW on 1.8 to 30 MHz and 100 watts on 54 MHz. Rugged and easy to read LED bar graphs simultaneously show RF power and SWR. Includes a six-foot DC power cable.

Suggested Price $259.99

Your Favorite Dealer has LDG tuners in stock NOW!
Don't Miss Out — Call or visit them TODAY!

Z-100Plus

Small and simple to use, the Z-100Plus sports 2,000 memories that store both frequency and tuning parameters. It will run on any voltage source from 7 to 18 volts; six AA batteries will run it for a year of normal use. Current draw while tuning is less than 100ma. The Z-100Plus now includes an internal frequency counter so the operating frequency is stored with tuning parameters to make memory tunes a blazingly fast 0.1 seconds; full tunes take an average of only 6 seconds. Includes six-foot DC power cable.

Suggested Price $159.99

Z-11Proll

Designed from the ground up for battery operation. Only 5" × 7.7" × 1.5", and weighing only 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100 watt transceivers from 160 through 6 meters. The Z-11Proll uses LDG's state-of-the-art, processor-controlled, Switched-L tuning network. It will match dipoles, verticals, inverted-Vs, or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line. Includes six-foot DC power cable. ***Suggested Price $179.99***

radio not included

Z-817

The ultimate autotuner for QRP radios including the Yaesu FT-817(D). 2,000 memories cover 160 through 6 meters. Also functions as a general purpose antenna tuner with other QRP radios. Just transmit a carrier and press the Tune button on the tuner. Powered by four AA internal alkaline batteries (not included), so there are no additional cables required.

Suggested Price $129.99

IT-100

Matched in size to the IC-7000 and IC-706, for either manual or automatic tunes, and status LEDs. Control the IT-100 and its 2,000 memories from either its own button or the Tune button on your IC-7000 or other Icom rigs. For your Icom radio that is AH3 or AH-4 compatible. ***Suggested Price $179.99***

AT-897Plus for the Yaesu FT-897

radio not included

If you own a Yaesu FT-897 and want a broad range automatic antenna tuner, look no further! The AT-897Plus Autotuner mounts on the side of your FT-897 just like the original equipment, takes power directly from the CAT port of the FT-897, and provides a second CAT port on the back of the tuner so hooking up another CAT device couldn't be easier.

Suggested Price $199.99

Visit our website for a complete dealer list www.ldgelectronics.com

LDG Electronics, Inc. 1445 Parran Road, St. Leonard, MD 20685 **Phone 410-586-2177 • Fax 410-586-8475**

Results of the 2011 CQ WW DX SSB Contest

BY BOB COX,* K3EST

Expanded Results on the Web

Editor's Note: Having so many logs submitted for the CQ WW SSB Contest is great, but it does put a squeeze on space. In order to assure that the efforts of all entrants are recognized through the publication of complete line scores, certain other elements of our contest reporting have been moved to the CQ website. Please visit the CQWW DX Contest page (follow the links from <www.cq-amateur-radio.com>) for QRM, expanded top scores listings, and more. —*W2VU*

The radio conditions during the 2011 CQ WW DX SSB Contest were the best of the new cycle. The long-awaited cycle 24 finally showed real life. Contesters from all over the world turned on their rigs. What did they find? A dream contest unfolded over the weekend. Conditions went beyond expectations. If you listened on 10 meters, you found the band wall to wall with contesters from below 28.3 to above 29.2 MHz. It was a full megahertz of guys and gals having the time of their lives. After months of planning, building, and practicing, thousands of contesters took full advantage of the smiling ionosphere. It was a good time to introduce new contesters to the real fun of contesting. GM2T took up the challenge: "We introduced three new people to contesting—MMØVPR, MM6INS, and MM6KLZ.They were certainly buzzing after the contest. I think we converted them."

Reported here are the final results of the world's largest phone radio contest. Read on to see how you and your friends ended up. Everyone who operated the CQ WW last year was a winner.

High Power

Taking full advantage of his unique location in Morocco, Jim, W7EJ took CN2R to the world top spot. High power All Band traditionally has been the most prestigious category. Jim worked lots of 3-pointers from his Africa location. Not very far behind in second place was Juan, EA8CAC, operating EF8R. Juan averaged 194 QSOs/hour! Third place world and first place in Europe was Tonno, ES5TV guest operating from 4O3A. Taking second place in Europe and sixth in the world was Toni, OH2UA operating from the Azores as CR2X. From Luxembourg, Philippe, LX2A took LX7I to third place in Europe and ninth place world. Setting a new USA record, Doug, K1DG put his considerable skills to work to take the USA top position. He made over 9 million points! After years in the top ten, Mike, W9RE reached a new level of excellence by taking second place USA from Indiana. Mike said, "Best rates I have ever had in 40 years of contesting!" Third place was taken by Steve, N2IC/5 located way out in New Mexico. Mike and Steve broke the long held NE USA winning pattern. The top west coast score was WC6H operated by Tim, NU6S. Very close races were seen between A61EE and A65EE and AC2AI/KH2 and WH2X. Other worthy efforts were: ZD8O (N5ZO), VU2PAI, 5Z4EE, J28RO, Z21BB, 8Q7DV, PJ5/SO6X, EY7AD, 9M2CQC, PZ5MM, A61EE, A65EE, TK5KP, GZ5Y, 9M6YBG, ZK2X, RI1ANC, and DU9RG. All had excellent scores from interesting locations.

The continental winners were: North America VE2IM; Africa CN2R; Asia UPØL; Europe 4O3A; Oceania NH7A; South America P4ØW; Japan JAØJHA (new Japan record); U.S. K1DG (new US record).

Low Power

Anyone can enter the low power category. Just turn on your transceiver and get on the air. This means that this category has the most entrants of any CQ WW category.

The top position in the world went to Wolf, OE2VEL operating from the EA8ZS plantation. Wolf takes home the world high trophy. Operating from beautiful Dominican Republic, Ted, HI3TEJ again took world second place. Doing a very fine job from Tunisia and taking third place in the world was 3V8SS operated by Ash, KF5EYY. Lithuania proved the place to be in Europe—LY9A operated by Gedas, LY3BA won top honors in this tough category. Second place Europe went to low power champion, Manfred, DJ5MW. Taking Europe third place was another Lithuanian station, Remi, LY8O operating near Utena, about 100 km northeast from Vilnius.

This was a special year for low power in the US. Ed, N1UR not only took first place, he set a new US low power record. Moving up to second place was Terry, N4TZ/9 from Indiana. Third place US went to perennial top finisher Marvin, N5AW. Finishing well up in the standing from the far west were Bill K2PO/7, Guy, N7ZG, and Bill, N6RV.

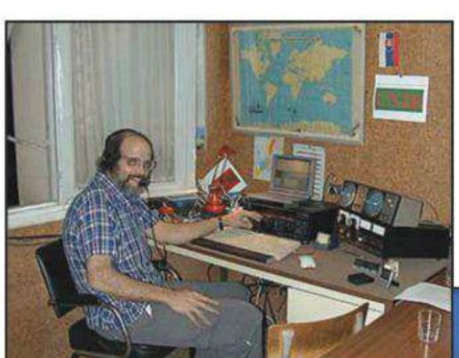
The efforts of Angel, YV5NEA Tony, HC2/KF6ZWD (now HC2AC), Jason, VK2LAW, and Masa, JH4UYB must be recognized. TA2/DL7BC, EK3GM, V51YJ, DV1JM, OD5SSB, HZ1PS, XU7ACY, 5N6/YL2SW, TA1CQ, YC6JRT, VP9I, EE9K, CN8VO, VR2YYW, VU2NKS, EY8AR, and 9M2TO all had excellent scores and handed out great multipliers.

The continental winners were: North America HI3TEJ; Africa EA8ZS; Asia JH4UYB; Europe LY9A; Oceania VK2LAW; South America YV5NEA; Japan JH4UYB; U.S.: N1UR.

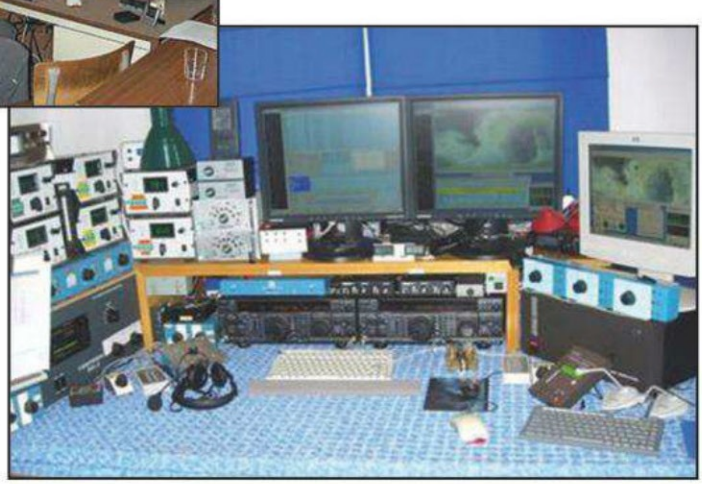
QRP

"Most impressive QSO I had was with E2E. I called him more than 40 minutes, and finally, he responded with 'You are whispering in the silence.' That's the beauty of QRP," said SP5DDJ. The QRP category calls upon an entrant to have the best antenna he can put up, hone SO2R skills, and finally, be lucky. Almost all QSOs by a QRP station are search and pounce. For the first time in a very long time the world scores were from challenging areas.

Coming out on top as world #1 was Randy, NDØC from southwestern Minnesota. He said, "What a blast! 10 meters was unreal: 94 countries and 30 zones with QRP from the 'Black Hole'. I had to force myself to leave 10 meters



Jim, W7EJ, at CN2R, #1 World High Power All Band.



The setup at CN2R, #1 World High Power All Band. →

*e-mail: <k3est@cqww.com>

Life's too short for QRP...
Unless you own a SteppIR!

**"Here's what 5 Watts QRP and the SteppIR Yagi can do.
Operations were from January through May and September 2011 to
Complete my QRP goal! Check it out!"**

— Sonny Alfman, W8FHF

Photo by Sonny Alfman, W8FHF

W8FHF DX QSO'S Since January 1, 2011 at QRP 5 Watts

1. Finland	51. Haiti	101. Dubai, UAR	151. St. Maarten Is.
2. Namibia	52. Chile	102. Kuwait	152. Iraq
3. USA	53. Argentina	103. Surinam	153. Bahrain
4. Antarctica	54. Venezuela	104. Paraguay	154. Iceland
5. Belgium	55. Mexico	105. Uruguay	155. Balearic Is.
6. Austria	56. Belize	106. Moldova	156. Corsica
7. Luxembourg	57. Peru	107. Cameroon	157. Cocos-Keeling Is.
8. Guatemala	58. Columbia	108. India	158. Guantanamo Bay
9. Germany	59. Australia	109. Madagascar	159. Lebanon
10. Sudan	60. Am. Virgin Is.	110. Guam	160. Revilla Gigedo Is.
11. Canary Islands	61. Dominican Rep.	111. Br. Virgin Is.	161. Sable Island
12. Jamaica	62. Romania	112. Martinique	162. Tajikistan
13. England	63. Panama	113. Dodecanese	163. Mongolia
14. France	64. Norway	114. Sardinia	164. St. Pierre Is.
15. Trinidad Is.	65. Barbados	115. San Marino	165. Isle of Jersey
16. Brazil	66. Nicaragua	116. Morocco	166. S. Korea
17. Cuba	67. Sweden	117. Curacao	167. Kaliningrad
18. S. Africa	68. Hungary	118. Andorra	168. Hong Kong
19. Denmark	69. Belarus	119. Ireland	169. Indonesia
20. Bulgaria	70. Ukraine	120. St Lucia	170. Isle of Guernsey
21. Czech Rep.	71. Oman	121. Macedonia	171. Kenya
22. Poland	72. Cyprus	122. Falkland Is.	172. Liechtenstein
23. Netherlands	73. Estonia	123. Bonaire	173. Liberia
24. Georgia	74. Gambia	124. Montserrat	174. Ethiopia
25. Grenada	75. S. Shetland Is.	125. Cayman Is.	175. Ascension Is.
26. Italy	76. Hawaii	126. Mauritius	176. Thailand
27. Serbia	77. Gibraltar	127. S. Orkney Is.	177. Vietnam
28. Svalbard	78. Rodriguez Is.	128. Aruba	178. Franz Josef Land
29. Japan	79. New Zealand	129. Fr. St. Martin Is.	179. Sierra Leone
30 .Dominica	80. Wales	130. Solomon Is.	180. New Caledonia
31. Bermuda Is.	81. Bosnia	131. Taiwan	181. Armenia
32. Nevis Is.	82. Honduras	132. Djibouti	182. W. Malaysia
33. Bolivia	83. Turkey	133. Cape Verde Is.	183. Jordan
34. Scotland	84. Crete	134. Malta	184. Central Africa Rep.
35. Russia - Eu	85. Latvia	135. Tonga	185. Market Reef
36. Slovakia	86. Israel	136. Saba Is.	186. Philippines
37. Slovenia	87. Croatia	137. Sao Tome Is.	187. Uganda
38. Azores	88. Madeira Is.	138. Ceuta	188. Guyana
39. Canada	89. Greenland	139. French Polynesia	189. Nigeria
40. Spain	90. Costa Rica	140. Western Kiribati	190. Pakistan
41. Switzerland	91. Greece	141. Tanzania	191. Palau Is.
42. N. Ireland	92. Russia - As.	142. Saudi Arabia	192. Sri Lanka
43. Faroe Island	93. Isle of Man	143. St. Vincent Is.	193. Afghanistan
44. Lithuania	94. St. Helena Is.	144. Senegal	194. Rotuma Is.
45. S. Cook Is.	95. Bahamas	145. Mozambique	195. Aland Is.
46. Alaska	96. Guadeloupe	146. Chad	196. E. Kiribati Is.
47. Puerto Rico	97. Azerbaijan	147. Algeria	197. Uzbekistan
48. Angola	98. Lesotho	148. Montenegro	198. Kazakhstan
49. El Salvador	99. Ecuador	149. Antigua	199. Reunion Is.
50. Zimbabwe	100. Portugal	150. Turks & Caicos Is.	200. Vanuatu

a. Total QRP DX Qso's since 01/01/2011: **331**. All contacts are true QSO's, no contests /nets.
b. Countries are listed in the order that they were worked. QTH: Norwich, Ohio.
c. Worked **168** countries on **SSB**, and **32** countries on **CW**. Antenna: 4 Element Stepp IR.
d. All contacts were Called and Worked with **5 Watts** output. Rig: Icom 746 Pro.
e. Started 5 watt QRP on Jan 1, 2011 & completed **100 countries on JAN 17, 2011**
f. Total countries worked running QRP 5 Watts since 01/01/2011 is **227** Countries.

SteppIR

2112 116th Ave NE Suite 1-5
Bellevue, WA 98004
www.steppir.com
Tel: (425) 453-1910 Fax: (425) 462-4415

2011 WW DX SSB TROPHY WINNERS AND DONORS

SINGLE OPERATOR
World All Band
CN2R (Opr.: James Sullivan, W7EJ)
Donor: Southern California DX Club

World Low Power
EA8ZS (Opr.: Wolfgang Klier, OE2VEL)
Donor: Slovenian Contest Club

World QRP
Randal Shirbroun, ND0C
Donor: Jeff Steinman, N5TJ

World Assisted
P40A (Opr.: John Bayne, KK9A)
Donor: Glenn Johnson, W0GJ

World Assisted Low Power
P40P (Opr.: Robert Wood, W5AJ)
Donor: Gail Sheehan, K2RED

U.S.A.
Doug Grant, K1DG
Donor: Potomac Valley R.C. – KC8C Memorial

U.S.A. Low Power
Edward Sawyer, N1UR
Donor: North Coast Contesters

U.S.A. QRP
Anthony Luscre, K8ZT*
Donor: Pat Collins, N8VW

U.S.A. Assisted
Richard Di Donna, NN3W
Donor: John Rodgers, WE3C

U.S.A. Assisted Low Power
James Bowman, KS1J
Donor: CQ magazine

U.S.A. Zone 3
WC6H (Opr.: Timothy Coad, NU6S)
Donor: Dave Pruett, K8CC & Greg Surma, K8GL

U.S.A. Zone 4
Mike Wetzel, W9RE
Donor: Dave Pruett, K8CC & Greg Surma, K8GL

Canada
VE2IM (Opr.: Yuri Onipko, VE3DZ)
Donor: Contest Club Ontario
VE3WT Memorial

Caribbean/C.A.
6Y9X (Opr.: Paul Young, K1XM)
Donor: Alex M. Kasevich, W1CDC

Europe
4O3A (Opr.: Tonno Vahk, ES5TV)
Donor: Potomac Valley R.C. – W4BVV Memorial

Europe Low Power
Gediminas Lucinskas, LY9A)
Donor: Scott Jones, N3RA & Tim Duffy, K3LR

Europe QRP
Sergey I. Smolka, UX2MF
Donor: CQ magazine

Europe Assisted
YP9W (Opr.: Tiberiu Tebeica, YO9GZU)
Donor: Gail Sheehan, K2RED

Europe Assisted Low Power
Kristjan Kodermac, S50XX
Donor: CQ magazine

Russia
Oleg Usov, UA9CDV
Donor: Roman Thomas, RZ3AA

Africa
EF8R (Opr.: Juan Hidalgo, EA8CAC)*
Donor: CQ magazine

Asia
UP0L (Opr.: Vladimir V. Vinichenko, UN9LW)
Donor: CQ magazine

Japan
Akira Minagawa, JA0JHA
Donor: Tack Kumagai, JE1CKA

Japan Low Power
Masaki Masa Okano, JH4UYB
Donor: Western Washington DX Club

Oceania
NH7A (Opr.: James Neiger, N6TJ)
Donor: Northern California DX Club

South America
P40W (Opr.: John Crovelli, W2GD)
Donor: Yankee Clipper Contest Club

SINGLE OPERATOR, SINGLE BAND
World – 28 MHz
ZX5J (Opr.: Sergio Almeida, PP5JR)
Donor: Joel Chalmers, KG6DX

World – 21 MHz
FY5KE (Opr.: Marc Sentuc, F1HAR)
Donor: Robert Naumann, W5OV

World – 14 MHz
Didier Bironneau, FY5FY
Donor: North Jersey DX Assn. – K2HLB Memorial

World – 7 MHz
4L0A (Opr.: Gia Gvaladze, 4L4WW)
Donor: Fred Laun, K3ZO – K7ZZ Memorial

World – 3.7 MHz
EF8S (Opr.: Leppala Mauri, OH2BYS)
Donor: Fred Capossela, K6SSS

World – 1.8 MHz
Fabio Piccinin, I4FYF
Donor: CQ magazine

USA – 28 MHz
William R. Tippett, II, W4ZV
Donor: Donald Thomas, N6DT

USA – 21 MHz
Patrick Barkey, N9RV/7
Donor: 11PM Dayton Pizza Gang

USA – 14 MHz
Daniel Handa, W7WA
Donor: Yankee Clipper Contest Club -
KC1F Memorial

USA – 7 MHz
Danford Kaeo, KF6A/8
Donor: Stanley Cohen, W8QDQ

USA – 3.7 MHz
Joseph A. Gagliardi, Jr, AA1BU
Donor: CQ magazine

USA – 1.8 MHz
Manuel Fonseca, Jr., W2MF
Donor: Glenn Johnson, W0GJ

Carib./C.A. (21 MHz)
ZF2AH (Opr.: Joseph F. Hypnarowski, W6VNR)
Donor: Nate Moreschi, N4YDU

Carib./C.A. (14 MHz) Low Power
Jose C. Vicens, NP4G
Donor: Al Crespo, F5VHJ

Carib./C.A. Assisted (28 MHz)
Alejandro Valdez, XE1EE
Donor: CQ magazine

Europe – 28 MHz
Slaven Galic, E77A
Donor: Charles Dietz, W5PR

Europe – 21 MHz
GI5K (Opr.: Chris Smith, MI0LLL)
Donor: Tine Brajnik, S50A

Europe – 14 MHz
Siggi Jakobsson, TF3CW
Donor: Charles Wooten, NF4A

Europe – 7 MHz
TM9R (Opr.: Michel Rousselet, F5FLN)
Donor: John Warren, NT5C

Europe – 3.7 MHz
Steve Cole, GW4BLE
Donor: Ted Demopoulos, KT1V

Europe – 1.8 MHz
Tomislav Polak, 9A2AJ
Donor: Robert Kasca, S53R

Oceania (28 MHz)
Fred K. Honnold, KH7Y
Donor: Bruce D. Lee, KD6WW

Asia –14 MHz
UP2L (Opr.: Grigory P. Smirnov, UN9LG)
Donor: Charles Shinn, W5PG

MULTI-OPERATOR, SINGLE TRANSMITTER

World
CR3A (Oprs.: CT1BOH, CT1FFU, CT3BD, CT3DL, CT3DZ, CT3EE, CT3EN, CT3KU)
Donor: So. Calif. DX Club – W6AM Memorial

U.S.A.
K1LZ (Oprs.: K0DXC, K1LZ, K1VR, KY1V, K3JO, N8BO)
Donor: Carolina DX Association

Carib./C.A.
VP5DX (Oprs.: N4KE, AB4UF, N4EPD, NU4Y)
Donor: Bob Raymond, WA1Z
Africa
D4C (Oprs.: I4UFH, IK2NCJ, IZ4DPV, IZ4UEZ, IZ8FWN, IT9SPB, IK1HJS)*
Donor: Doc Sayre, W7EW

Asia
P33W (Oprs.: R3DCX, RV1AW, RW3QC, RW4WR, UA2FZ, RA3AUU, 5B4AIE)
Donor: Edward L. Campbell, NX7TT
AA6BB and KA6V Memorial

Japan
JA8RWU (Oprs.: JA8CDT, JA8RWU, JE8KKX, JH8PNE/1, K3EST)
Donor: Arizona Outlaws Contest Club

Europe
TM6M (Oprs.: F1AKK, F4DXW, F5MUX, F5TTU, F8CMF, F8DBF)
Donor: Bob Cox, K3EST

Oceania
KH6MB (Oprs.: AH6NF, AH6S, KH6MB, N0QO, W7TAE, W0CN, WH6R)
Donor: Junichi Tanaka, JH4RHF

South America
PT5T (Oprs.: PP5XX, PP5EG, LU9ESD, LU8EOT, PP5RZ, PP5TR)
Donor: Victor Burns, KI6IM –
The Cuba Libra Contest Club

MULTI-OPERATOR, TWO TRANSMITTERS
World
PW7T (Oprs.: PY3VK, PT7CB, PT7CG, PT7WA, PT7YV, PT7ZT, PY1NX, PY2SEX, PY7RP, PY8AZT)
Donor: Array Solutions

U.S.A.
N1LN/4 (Oprs.: N1LN, N4YDU, W4KAZ, AD4L, KA1ARB, W4DTB, WW4M)
Donor: Kimo Chun, KH7U & Mike Gibson, KH6ND
Dan Robbins, KL7Y Memorial

Europe
IR4X (Oprs.: I4AVG, I4EAT, I4TJE, I4VEQ, I4IKW, I4USC, I4YRW, IK4AUY, IK4BOY, IK4ZGO, IZ3EYZ, IZ4AFW, IK2QPR)
Donor: Aki Nagi, JA5DQH

Oceania
AH0BT (Oprs.: W1FPU, W1NDE, KW2X, NA8O)
Donor: Japan CQ Ham Radio

MULTI-OPERATOR, MULTI-TRANSMITTER
World
C5A (Oprs.: OK1DIX, OK1DO, OK1FFU, OK1NY, OK1RI, OK1RK, OK8WW/OM2TW, OM5AW, OM6NM)
Donor: Dave Leeson, W6NL and Barb Leeson, K6BL

U.S.A.
K3LR (Oprs.: K3LR, N2NC, N5UM, W3TX, W2RQ, W5OV, K3LA, K8CX, N2NT, K1AR, N3SD, K3UA, DL6LAU, WM2H, N3GJ, LU7DW)
Donor: Jim Lawson, W2PV Memorial

Europe
DR1A (Oprs.: DB6JG, DF6JC, DJ6ET, DJ7EG, DJ7EO, DK6XZ, DL1MGB, DL3ABL, DL3BPC, DL3DXX, DL5CW, DL5LYM, DL6FBL, DL8DYL,DL8WPX, DL9DRA, JK3GAD, PA1TX, PC5A)
Donor: Finnish Amateur Radio League

Japan
JA5FDJ (Oprs.: JA5FDJ, JM1UWB, JA5FBZ, JH5FIS, JH5RXS, JJ5GMJ, JR5IAH, JR5JAQ)
Donor: Masahiro Kitagawa, JH3PRR

Oceania
KH7X
Donor: Tack Kumagai, JE1CKA
JR2GMC & JA9SSY Memorial

CONTEST EXPEDITIONS
World Single Operator
8Q7DV (Opr.: Vadim Ovsyannikov, R9DX)
Donor: National Capitol DX Assn.
Stuart Meyer, W2GHK Memorial

World Multi-Single
TX5A (Oprs.: RK7A, R3FA, UR5MID, US7UX, UT5UY, UU4JMG, UX0LL, US0KW, UA7A, RM2U)
Donor: Gail Sheehan, K2RED

World Multi-Multi
E51Z (Oprs.: AB6BH, N6AA, N6UWW, N6VI, VK4UC, W5NYV, W6NV, W6XD, WB6BFG)
Donor: CQ magazine

**Second place.*

The ED1R M2 #3 Europe crew, left to right: EC1KR, EA4TD, EA4AOC, EC4DX, EA7FTR, EB7DX, EC7AKV.

to pick up multipliers on 15 and 20." Finishing just behind for second world was Doug, VA3DF located on the western shores of Lake Ontario. Long-time top ten QRP entrant Izuno-san, JR4DAH took third place world and #1 Asia. Finishing second in the US was Anthony, K8ZT from Ohio. Third place USA went to a familiar QRPer, Doug, KR2Q. The highest USA score from zone 3 was W6QU operated by Bill, W8QZA. Taking first place in Europe was Sergey, UX2MF. Second place went to Boyan, LZ2SX. European third place honors went to Sergey, RN4HAB. RU9UN, NT4TS, NP2Q, RW3AI, EA1GT, VK4ATH, and G3R are to be congratulated for their outstanding efforts.

The continental winners were: North America NDØC; Africa J28AA; Asia JR4DAH; Europe UX2MF; Oceania YC2VEJ; South America PY2BN; Japan JR4DAH; U.S.: NDØC.

Assisted

Doing well in an assisted category requires a skilled tradeoff between spots and running. Too much emphasis on packet callouts will not bring you a win. This category allows an entrant to utilize any public spotting network. A reminder: Use of *any* QSO spotting tool places you in the Assisted category. Why not try to win one of the new assisted awards? Taking control of the world top spot was John, KK9A operating from P4ØA. Finishing second place in the World and first in the US was Rich, NN3W, quite an accomplishment from Maryland. Alex, A65BP a long time resident in Dubai took the third spot. First place in Europe went to YP9W operated by Tiberiu, YO9GZU a member of the World Wide Young Contesters. Second place Europe goes to Andy, SP8BRQ operating SO8A located in southeastern Poland. Imanol, EC2DX took third from beautiful San Sebastian.

Second place USA went to Lee, W2RE operating in the northern Catskill of New York. Third place in the U.S. went to long time assisted expert, Charles, K3WW. The fine effort of Robert, S50R from ST2AR handing out a double multiplier to most entrants, as well as the efforts of Hiroyuki, JS3CTQ and Nobuyuki, JH1EAQ must be recognized. The efforts of some very good multipliers need to be recognized as well: A65BP, FP/K1VJ, V55A, 6V7Q, TA3IW, BA4DL, JT1RF, XV1X, UA2FX, HBØ/SP7VC, LX5T, NH2T, NHØS, and DU1IVT.

The continental winners were: North America NN3W; Africa ST2AR; Asia A65BP; Europe YP9W (YO9GZU); Oceania WH7M; South America P4ØA (KK9A); Japan: JS3CTQ; U.S.: NN3W.

Assisted Low Power

The separate listing of the low power assisted entrants has spurred a renaissance in assisted submissions. Many were happy to see the

creation of separate categories for low and QRP assisted. We hope that many entrants will choose to try the low power assisted category. The world winner in this tough category was Robert, W5AJ operating from P4ØP. Robert put his Aruba location to good use. Second place in the world was Richard, NØHJZ, who put C6ARW in many logs from Grand Bahama Island. Third place in the world went to a station from zone 20, H22H, operated by Spyros, 5B4MF located in central Cyprus. First position in Europe was taken by Kristjan, S5ØXX located in western Slovenia. Even though Frank, DL2CC is a CW high-speed champion, he talked himself into second place Europe. Third place went to Tim, RL6M, who runs 100 watts all the time even on Top band. In the U.S., KS1J took away top honors and the U.S. low power assisted trophy. Second place went to Jerald, KT4ZB located in the coastal city of Savannah, Georgia. Lyle, WE9R located on the western

2011 CQ WW DX SSB TOP SCORES

WORLD

Single Operator High Power All Band

CN2R 18,417,840
EF8R 15,711,414
4O3A 14,408,401
VE2IM 14,349,100
P4ØW 14,346,144

28 MHz

ZX5J 2,855,000
FY/F5HRY 2,742,817
AY5F 1,888,656

21 MHz

FY5KE 2,778,468
GI5K 1,832,733
EY8MM 1,648,556

14 MHz

FY5FY 2,266,628
UP2L 1,401,538
TF3CW 1,378,428

7 MHz

4LØA 1,027,632
TM9R 911,818
YT8A 813,234

3.7 MHz

EF8S 454,234
GW4BLE 255,960
DR1D 235,712

1.8 MHz

I4FYF 74,844
9A2AJ 62,238
VE3PN 54,207

All Band Low Power

EA8ZS 6,423,441
HI3TEJ 5,916,690
3V8SS 4,304,006
N1UR 3,925,064
LY9A 3,446,940

28 MHz

3D2A 1,123,220
SV9GPV 977,120
JY4NE 961,674

21 MHz

A52AB 912,660
CN4P 807,234
PJ7X 486,783

14 MHz

NP4G 693,543
HC1JQ 639,705
RZ1ZZ 414,720

7 MHz

CO8ZZ 200,669
UY2UQ 108,225
EI4CF 79,778

3.7 MHz

UU2JM 57,760
NA8V 40,753
RW9CD 39,260

1.8 MHz

UK9AA 37,233
ER2RM 26,019
SQ9IAU 23,485

QRP All Band

NDØC 757,292
VA3DF 722,925
JR4DAH 633,304
K8ZT 572,544
KR2Q 505,512

Assisted All Band

P4ØA 14,268,432
NN3W 11,765,740
ER4A 10,551,696
A65BP 9,162,598
ST2AR 8,980,245

28 MHz

GW9T 1,525,665
PR2P 1,468,948
KG6DX 1,449,000

21 MHz

DL2ARD 1,868,160
VY2TT 1,506,339
XV9DX 1,375,198

14 MHz

9Y4D 2,291,352
IR4M 1,464,285
OG73X 1,371,546

7 MHz

JA8WKE 609,150
YT7A 609,054
YT1VP 544,416

3.7 MHz

SP3GEM 353,067
4L5O 289,328
SP5LS 197,562

1.8 MHz

OK6W 104,544
LY5E 104,468
LY7M 60,984

Low Power All Band

P4ØP 8,105,244
C6ARW 3,123,600
H22H 2,991,920
KS1J 2,580,719
S5ØXX 2,499,956

28 MHz

VK8DX 1,276,366
XE1CQ 964,302
EA8MT 842,180

21 MHz

HA3DX 600,048
DL5RDP 445,352
WA1FCN/4 209,850

14 MHz

YT8WW 491,130
SP5GRM 438,959
ES2MC 342,069

7 MHz

UT9MZ 147,980
EF7W 104,014
YQ5Q 97,136

3.7 MHz

F1EBN 64,902
UT7X 64,159
E74WN 52,245

1.8 MHz

SP1GZF 40,560
HA8BE 24,024
UT5UGR 13,338

QRP Assisted All Band

RT4W 683,439
DL8LR 425,776
EA3FF 246,052
IV3AOL 206,064
YO8WW 193,290

Multi-Operator Single Transmitter

CR3A 27,928,302
D4C 25,519,464
CN3A 25,054,428
P33W 24,172,854
TM6M 20,282,290

Multi-Operator Two Transmitter

PW7T 25,286,144
PJ4T 24,858,249
IR4X 20,929,708
EE9Z 17,916,525
PS2T 16,462,080

Multi-Operator Multi-Transmitter

C5A 44,901,680
K3LR 35,923,380
DR1A 32,937,369
KH7X 31,670,464
CR3L 31,406,340

UNITED STATES

Single Operator All Band

K1DG 9,432,996
W9RE 7,348,796
N2IC/5 5,838,750
AA1K/3 5,812,466
K1TO/4 5,669,775

28 MHz

W4ZV 1,250,304
W5PR 959,475
WB9Z 746,400

21 MHz

N9RV/7 1,045,785
WA3A 811,920
WA7LT 311,328

14 MHz

W7WA 1,068,560
WB2REM/4 312,988
K6HNZ 193,734

7 MHz

KF6A/8 97,128
W8BLA/4 34,920
WDØBGZ 25,666

3.7 MHz

AA1BU 127,365
AA9A 30,573
K1KNQ/4 26,892

1.8 MHz

W2MF 15,876
K5RX 6,118
W3GH 2,652

Low Power All Band

N1UR 3,925,064
N4TZ/9 2,330,965
N5AW 2,252,310
AD4Z 1,938,336
N8AA 1,890,000

28 MHz

K2PS/3 376,948
AC5O 343,764
K1VSJ 298,224

21 MHz

KX2S 167,912
N5CLK 107,625
N7FLT 99,674

14 MHz

N7BK 152,145
W2TF 127,702
WB2TFM/4 87,360

7 MHz

KI6LZ 32,880
W4HLN 22,253
NS3T 12,840

3.7 MHz

NA8V 40,753

1.8 MHz

NA4W 648
WD8DSB/9 304

QRP All Band

NDØC 757,292
K8ZT 572,544
KR2Q 505,512
W6QU 335,916
NT4TS 265,960

Assisted All Band

NN3W 11,765,740
W2RE 8,889,252
K3WW 6,385,984
W3UA/1 6,292,075
KU1CW/Ø 5,207,492

28 MHz

K2SSS 1,022,831
N4BP 846,022
K2PLF/3 808,916

21 MHz

N4PN 1,002,881
N7DD 999,999
KVØQ 758,632

14 MHz

W3FW 245,280
W9IIX 192,760
WR2G 138,320

7 MHz

N6SS/7 147,312
N8BI 127,889
KD4RH 58,298

3.7 MHz

K9SH 14,396
WA2AOG 5,760

1.8 MHz

NX5M 5,376

Low Power All Band

KS1J 2,580,719
KT4ZB 2,203,432
WE9R 1,879,809
W3KB 1,471,613
AD1C/Ø 1,335,108

28 MHz

K2MFY 293,124
W6AFA 281,248
N2FF 245,632

21 MHz

N9TGR 270,312
N4IJ/5 244,530
WA1FCN/4 209,850

7 MHz

W9KVR 1,161

QRP Assisted All Band

NN7SS 61,776

Multi-Operator Single Transmitter

K1LZ 12,256,067
N5DX 10,865,855
K8AZ 8,987,264
W2FU 8,601,138
N4WW 7,555,275

Multi-Operator Two Transmitter

N1LN/4 8,746,095
KB1H 8,220,322
K2LE/1 6,240,256
W5RU 5,775,350
K2AX 5,536,452

Multi-Operator Multi-Transmitter

K3LR 35,923,380
KC1XX 28,639,954
W3LPL 27,605,530
WE3C 19,909,728
W2PV/1 15,823,116

EUROPE

Single Operator All Band

4O3A 14,408,401
CR2X 13,824,720
LX7I 10,187,208
OE3K 9,285,381
TK5KP 7,897,932

28 MHz

E77A 1,297,719
S5ØG 1,024,860
TMØT 1,011,690

21 MHz

GI5K 1,832,733
CS2C 1,531,896
YT7AW 1,226,508

14 MHz

TF3CW 1,378,428
ES5RW 1,179,431
YL3FT 945,892

7 MHz

TM9R 911,818
YT8A 813,234
EU1A 617,920

3.7 MHz

GW4BLE 255,960
DR1D 235,712
OH1TX 181,944

1.8 MHz

I4FYF 74,844
9A2AJ 62,238
OH6MW 37,881

Low Power All Band

LY9A 3,446,940
DJ5MW 3,204,271
LY8O 2,397,720
S57AL 2,289,320
RW1CW 2,198,404

28 MHz

SV9GPV 977,120
DLØBX 445,230
9AØW 336,294

21 MHz

OZ5E 308,553
OK2VWB 192,325
IT9RYJ 165,648

14 MHz

RZ1ZZ 414,720
IZ7PDX 185,535
SQ4G 141,384

7 MHz

UY2UQ 108,225
EI4CF 79,778
SQ2OSE 55,566

3.7 MHz

UU2JM 57,760
SQ2NNN 35,424
EA5EOR 29,602

1.8 MHz

ER2RM 26,019
SQ9IAU 23,485
SP5CJY 21,692

QRP All Band

UX2MF 473,536
LZ2SX 419,818
RN4HAB 233,520
RW3AI 231,345
EA1GT 219,936

Assisted All Band

YP9W 8,207,289
SO8A 7,976,587
EC2DX 7,963,560
EB3CW 6,756,750
TM7F 6,170,500

28 MHz

GW9T 1,525,665
UA2FX 1,428,204
E71A 1,238,062

21 MHz

DL2ARD 1,868,160
OK1CDJ 1,330,944
HA8JV 1,205,542

14 MHz

IR4M 1,464,285
OG73X 1,371,546
OL9Z 1,254,693

7 MHz

YT7A 609,054
YT1VP 544,416
S56X 471,699

3.7 MHz

SP3GEM 353,067
SP5LS 197,562
DMØY 118,680

1.8 MHz

OK6W 104,544
LY5E 104,468
LY7M 60,984

Low Power All Band

S5ØXX 2,499,956
DL2CC 2,261,760
RL6M 2,027,220
E74AA 1,711,476
G3VAO 1,687,556

28 MHz

MØTNX 717,992
IU9A 513,240
EC5CSW 388,173

21 MHz

HA3DX 600,048
DL5RDP 445,352
UA1AFT 397,773

14 MHz

YT8WW 491,130
SP5GRM 438,959
ES2MC 342,069

7 MHz

UT9MZ 147,980
EF7W 104,014
YQ5Q 97,136

3.7 MHz

F1EBN 64,902
UT7X 64,159
E74WN 52,245

1.8 MHz

SP1GZF 40,560
HA8BE 24,024
UT5UGR 13,338

QRP Assisted All Band

RT4W 683,439
DL8LR 425,776
EA3FF 246,052
IV3AOL 206,064
YO8WW 193,290

Multi-Operator Single Transmitter

TM6M 20,282,290
EI7M 18,036,480
E7DX 16,976,648
OM8A 15,989,163
RL3A 14,814,776

Multi-Operator Two Transmitter

IR4X 20,929,708
PI4DX 15,157,233
ED1R 15,058,862
HG1S 13,468,912
HG7T 12,565,502

Multi-Operator Multi-Transmitter

DR1A 32,937,369
9A1P 24,237,360
C37N 21,123,688
OT5A 20,416,726
DFØHQ 19,224,054

shores of Lake Michigan rounded out the top three U.S. scores. From the U.S. west, K7FA and AD1C/Ø turned in a fine scores. A few of the nice multipliers on in this category were: KG4EM, H22H, EY7BJ, TK4LS, TA1ED, YBØMWM, BD4CD, UN7MMM, and 6K5AQY.

The continental winners were: North America C6ARW; Africa EA8MT; Asia H22H; Europe S5ØXX; Oceania VK8DX; South America P4ØP; Japan: JR4PMX/1; U.S.: KS1J.

Multi-Single

The number of callsigns participating in the MS category was about 1,929 representing 364 different teams! This fun category allows for more than one person to contribute to the score. A run station and a multiplier station allow for good use of different skills. The second operator actual has something to do which requires skill: find multipliers. "Wow! 10 meters—all 40 zones, 144 DXCC entities. With our modest setup, it was great fun," said 9A6B.

A new multi-single world record was set by the team at CR3A. They took full advantage of the outstanding conditions by making over 10,600 QSOs mostly with one radio! In second place was the Italian team from D4C. They had the highest multiplier count of the top three world MS. Rounding out third place was the multi-national team from CN3A. All three top MS were from northwestern Africa. The continent with the most multi-single operations has always been Europe. Moving up to the top position in Europe was TM6M. Located on the far western tip of France, the TM6M team set a new European record. Quite an accomplishment! Second place went to the East Cork Radio Group, EI7M. They commented, "We found 10m to be a revelation—all 40 zones worked for the first time. It's really strange to work KL7 on 10m and be disappointed that it is not a multiplier!" Third place in Europe went to the multi-national team E7DX located just northwest of Banja Luka. Once again in the U.S. Krassy's team at K1LZ took full advantage of the category's possibilities and registered 12-plus million points. This was enough to set a new USA MS record! Moving up to second place USA was N5DX. The team from Harrison, Arkansas had over 10-million points and an outstanding multiplier. Third place went to the perennial top finishing team at K8AZ. W6YI took top honors from the U.S. West Coast, followed by K7RL. Great job, guys! Some of the rarer ones appearing in many logs were: HU1YS, ST2UOK, TS2A, YM7KA, VR2EH, JT5DX, E2E, T7ØA, JW5E, and TX5A. A special mention must be made of the effort from P33W. On their way to finishing fourth in the world, they set a new Asia record.

The continental winners were: North America VE3EJ; Africa CR3A (new World record); Asia P33W (new record); Europe TM6M (new record); Oceania KH6MB; South America PT5T; Japan: JA8RWU; U.S.: K1LZ (new record).

Multi-Two

A competitive M2 is a challenge. The world's top team used seven operators to bring home the trophy. The PW7T, Fortaleza DX Group put Brazil in a lot of logs! PW7T says, "On Sunday afternoon, the shack got very noisy celebrating the last zone worked for a triple all zones on 10, 15, and 20m. Then the team shouted again when they put the 11,000th QSO in the log. We overcame the PY record by 52%." Not far behind was the multi-national team of PJ4T. Finishing out the top three world results was the famous team from IR4X. They set a new European record along the way to taking third place world and first place in Europe. Moving up into second place Europe was PI4DX, Contest Group Zeeuws-Vlaanderen. Third place in Europe went to ED1R, the PAPA3 Contest Club. Located in Chapel Hill, North Carolina, the operators of N1LN/4 proved they were up to the task by taking first place in the U.S. KB1H's station in northeastern Connecticut took second place U.S. honors. Andy's team at K2LE/1 took third place U.S. The far west U.S. station N7AT representing the Arizona Outlaws Contest Club did a great job from Arizona. There were several stations that put nice multipliers on the air and made big scores: EE9Z, KL7RA, AHØBT, 7Z1SJ, VP2MDG, B1Z, OJØX, YEØX, ZM4T, DX1M, and CE4CT.

The continental winners were: North America KL7RA; Africa EE9Z; Asia 7Z1SJ; Europe IR4X (new record),; Oceania AHØBT; South America PW7T; Japan No entry; U.S.: N1LN/4.

Multi-Multi

The conditions at last met expectations. How good were conditions? Look at the MM breakdown tables. The top three world MM stations made over 46,000 QSOs! A team of nine operators from the Czech and Slovak Republics put in a lot of hard work at C5A. For their efforts they took away the multi-multi world crown. They said, "Our second M/M effort from the beach in Gambia. We had a lot of problems before the contest but finally everything was sorted out and we were able to come with a decent station on the air." The K3LR team finished second in the world and set a new USA MM record! The K3LR team seems to enjoy the intense competition in the Multi-Multi category. They appear to have lots of fun, too! Topping the old USA MM record set by KC1XX in 1999 was not easy. What will happen in the 2012 CQWW Phone contest? DR1A finished third in the world and set a new European record.

2011 WW DX SSB TOP SCORES IN MOST ACTIVE ZONES

Zone 3

WC6H	3,740,904
K6XX	2,744,268
CF7FC	2,618,466
K6NA	2,580,581
W6PH	2,521,442

Zone 15

4O3A	14,408,401
OE3K	9,285,381
SO8A	7,976,587
TK5KP	7,897,932
OH8X	7,551,559

Zone 4

CF3A	10,750,452
VE3JM	7,721,180
W9RE	7,348,796
N2IC/5	5,838,750
KU1CW/Ø	5,207,492

Zone 16

UU7J	6,154,648
RT4RO	4,438,546
RM3F	4,370,232
EW2A	3,618,475
RW4W	3,393,440

Zone 5

VY2ZM	12,820,903
NN3W	11,765,740
K1DG	9,432,996
W2RE	8,889,252
K3WW	6,385,984

Zone 20

C4W	9,442,412
YP9W	8,207,289
YO3CZW	3,071,920
*H22H	2,991,920
LZ3FN	2,393,262

Zone 14

CR2X	13,824,720
LX7I	10,187,208
EC2DX	7,963,560
CR6K	7,333,520
EB3CW	6,756,750

Zone 25

JAØJHA	7,399,242
JS3CTQ	5,022,682
JH1EAQ	4,024,710
JQ1BVI	3,021,298
JA6LCJ	2,869,992

*Low Power

2011 CQ WW DX SSB BAND-BY-BAND BREAKDOWN—TOP ALL BAND SCORES

Number groups indicate: QSOs/Zones/Countries on each band

WORLD SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
CN2R	263/13/58	633/19/63	1118/28/100	1751/36/124	1650/34/112	2983/37/136
EF8R	79/9/25	158/10/36	728/24/75	2650/37/118	1929/36/101	3756/33/114
4O3A	229/12/60	649/22/84	1317/32/109	1712/38/124	1941/40/139	2329/39/134
VE2IM	115/10/14	653/17/71	842/28/102	1743/36/125	2006/35/120	2284/35/117
P4ØW	98/10/22	568/19/72	542/25/85	1572/35/104	1547/35/104	3328/33/110

USA TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
K1DG	72/12/42	281/22/77	461/28/91	795/37/106	1165/34/121	1922/33/121
W9RE	32/10/17	155/23/67	571/30/95	801/38/113	1069/33/110	1235/30/110
N2IC/5	19/9/10	111/20/51	641/31/79	340/34/92	845/37/108	1544/34/120
AA1K/3	40/13/21	141/15/52	248/26/77	601/36/101	661/32/90	1699/33/117
K1TO/4	6/3/5	98/16/47	123/21/55	738/38/110	450/30/87	2160/36/117

WORLD SINGLE OPERATOR ASSISTED ALL BAND

P4ØA	69/8/14	469/17/62	827/29/89	1614/32/109	2275/35/123	2216/35/116
NN3W	63/13/33	294/24/85	854/34/118	982/40/143	1120/38/153	1602/36/151
A65BP	115/11/39	150/12/49	734/30/103	837/36/130	864/36/137	1755/38/158
ST2AR	0/0/0	30/7/25	131/25/68	770/39/106	1003/36/116	3319/39/130
W2RE	32/9/25	300/22/81	414/31/98	945/39/125	1167/36/126	1391/33/118

USA SINGLE OPERATOR ASSISTED ALL BAND

NN3W	63/13/33	294/24/85	854/34/118	982/40/143	1120/38/153	1602/36/151
W2RE	32/9/25	300/22/81	414/31/98	945/39/125	1167/36/126	1391/33/118
K3WW	45/9/23	148/20/75	231/27/91	816/37/122	591/33/119	1433/32/116
W3UA/1	18/7/11	238/19/68	558/26/103	656/33/101	905/32/107	1072/30/110
KU1CW/Ø	14/7/9	88/17/51	606/23/67	571/35/95	699/33/91	1304/33/101

WORLD MULTI-OPERATOR SINGLE TRANSMITTER

CR3A	57/15/56	140/22/82	1739/33/125	2306/39/148	1768/40/157	4638/40/165
D4C	92/19/70	359/31/100	1004/33/116	2289/39/151	2144/40/160	3735/40/157
CN3A	83/10/53	459/25/93	829/33/114	2461/40/151	1322/40/158	4345/40/165
P33W	275/12/66	308/24/88	1419/35/119	2101/40/152	2284/40/155	2962/40/163
TM6M	163/15/67	600/25/94	1317/36/127	1842/40/149	2013/40/156	2695/40/166

USA MULTI-OPERATOR SINGLE TRANSMITTER

K1LZ	70/16/54	417/22/94	804/33/114	1008/38/144	1220/39/152	1425/37/156
N5DX	39/13/28	128/26/79	720/34/108	868/40/138	1154/39/146	1942/38/156
K8AZ	30/12/29	189/25/83	487/32/108	548/40/143	1284/38/144	1328/34/144
W2FU	27/11/25	271/21/83	469/31/106	542/39/135	1057/39/144	1470/37/148
N4WW	22/10/21	147/24/84	356/31/104	794/39/137	1300/39/146	1107/37/147

WORLD MULTI-OPERATOR TWO TRANSMITTER

PW7T	7/5/7	323/21/67	1570/34/115	2485/39/145	2848/40/158	3588/39/162
PJ4T	66/7/11	776/21/75	2013/32/109	2302/35/110	3662/38/131	3501/35/105
IR4X	164/13/65	872/24/94	1769/37/127	1639/38/150	2877/40/160	2400/40/168
EE9Z	141/8/40	908/19/76	1080/21/86	1995/33/117	2552/33/115	2856/31/96
PS2T	2/2/2	22/15/18	657/31/92	1800/39/142	2653/39/154	3316/39/147

USA MULTI-OPERATOR TWO TRANSMITTER

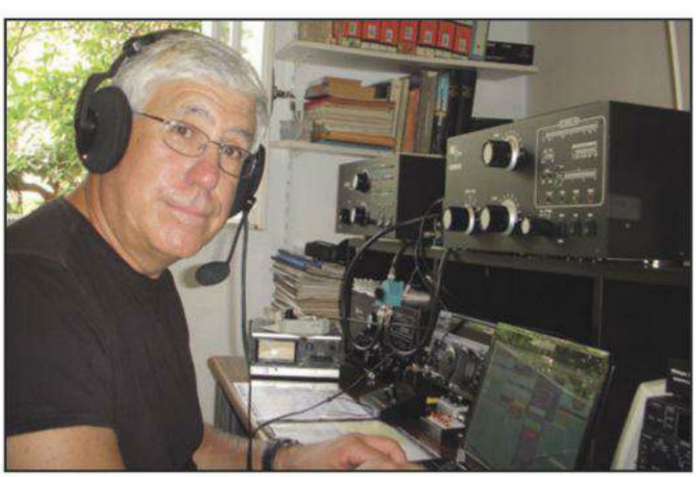
N1LN/4	69/11/22	360/18/69	498/27/95	1069/39/125	1075/36/129	1566/37/145
KB1H	27/9/14	245/20/80	370/30/99	558/38/128	1133/36/130	1586/35/142
K2LE/1	23/7/12	172/18/74	265/25/83	417/38/115	1127/34/124	1323/36/138
W5RU	12/6/11	142/20/65	250/30/89	419/39/115	794/39/137	1365/35/139
K2AX	14/7/7	196/19/66	257/23/88	532/39/122	658/36/125	1286/35/139

WORLD MULTI-OPERATOR MULTI-TRANSMITTER

C5A	201/17/51	1102/27/93	1806/32/110	4219/40/151	3805/39/145	6374/40/159
K3LR	441/18/66	1005/30/110	2223/37/136	3171/40/171	3449/40/169	3008/37/166
DR1A	932/16/75	1792/23/97	2992/38/142	4237/40/169	3054/40/163	2562/40/168
KH7X	245/12/15	985/33/56	1865/35/99	2718/39/132	3390/36/135	5290/39/153
CR3L	245/10/55	795/18/81	1786/31/109	3365/39/145	2981/39/149	3646/39/145

USA MULTI-OPERATOR MULTI-TRANSMITTER

K3LR	441/18/66	1005/30/110	2223/37/136	3171/40/171	3449/40/169	3008/37/166
KC1XX	145/14/35	627/27/99	1263/37/122	2561/40/160	3765/39/166	3029/38/161
W3LPL	327/17/53	873/32/103	1808/35/125	2759/40/164	2294/39/163	2806/37/163
WE3C	134/16/47	417/27/97	1160/35/119	2071/40/143	2246/36/146	2313/37/133
W2PV/1	180/13/35	473/25/91	842/33/110	1664/40/137	2031/37/148	1973/35/134



Al, F5VHJ, operated from TO5A.

Randy, ND0C, was #1 World QRP.

Congratulations, guys! Two new continental records from the top three! The competition in the USA for the top MM spot was wonderful. In the US, all three top finishers broke the old US MM record! After K3LR, Matt's KC1XX team took second place. In third place was Frank's team at W3LPL. Great job by everyone. DR1A not only set a new European record, they beat the old record by 5-million points! Their operators did a great job. In second place was radio club Porec, 9A1P with a beautiful take-off towards the Adriatic sea. Third place went to C37N. What a great job they did putting Andorra on the air. Special mention must be made of the outstanding efforts by JA5FDJ (a new JA record), JA3YBK, CR3L, A73A, KH7X, OT5A, LZ9W, 9A1P, DFØHQ, PJ2T, LP1H, NK7U, and K7ZSD.

The continental winners were: North America K3LR; Africa C5A; Asia A73A; Europe DR1A (new record); Oceania KH7X; South America PJ2T; Japan JA5FDJ (new record); U.S. K3LR (new record).

Team Contesting

1. WWYC Strike Team Alpha: 4O3A (ES5TV), CR2X (OH2UA), PZ5MM (DK1MM), NN3W, LX7I (LX2A): **59,950,079**

2. Neiger's Tigers: CN2R (W7EJ), TO5A (F5VHJ), NH7A (N6TJ), ZD8O (N5ZO): **40,351,249**

3. Team Aruba: P4ØA (KK9A), P4ØP (W5AJ), P4ØW (W2GD): **36,198,820**

EUROPE TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
4O3A	229/12/60	649/22/84	1317/32/109	1712/38/124	1941/40/139	2329/39/134
CR2X	271/14/58	481/20/70	912/30/93	2053/36/112	2272/38/112	2957/34/111
LX7I	373/12/59	515/15/72	1002/26/87	1499/32/91	1211/33/94	2146/32/95
OE3K	176/10/50	515/16/64	1092/27/91	1414/33/103	1563/36/101	1752/34/92
TK5KP	291/10/52	590/16/68	768/23/81	1452/32/105	1234/31/107	1723/33/93

EUROPE SINGLE OPERATOR ASSISTED ALL BAND

YP9W	133/8/50	217/15/68	1113/29/101	1133/38/123	1629/37/124	1253/36/118
SO8A	74/10/36	321/16/74	894/35/114	805/36/116	1137/39/128	1281/39/130
EC2DX	79/9/51	243/19/79	568/31/102	1010/38/119	1470/37/132	1116/40/135
EB3CW	0/0/0	337/14/63	478/25/92	1251/40/140	1359/39/140	833/40/122
TM7F	139/6/44	372/14/55	266/20/74	941/33/97	1002/31/88	1598/36/104

EUROPE MULTI-OPERATOR SINGLE TRANSMITTER

TM6M	163/15/67	600/25/94	1317/36/127	1842/40/149	2013/40/156	2695/40/166
EI7M	145/13/65	458/18/85	1579/34/114	1697/40/146	1943/39/149	2771/40/153
E7DX	266/11/65	1069/27/98	1069/35/125	1761/38/154	1630/40/158	2412/40/165
OM8A	122/14/68	359/24/96	1472/35/128	1613/40/151	1813/40/155	2007/40/160
RL3A	112/13/66	715/28/102	1379/39/130	2296/40/151	1865/39/155	1547/40/158

EUROPE MULTI-OPERATOR TWO TRANSMITTER

IR4X	164/13/65	872/24/94	1769/37/127	1639/38/150	2877/40/160	2400/40/168
PI4DX	348/11/59	766/20/79	1318/31/107	1503/35/126	1862/39/143	2578/39/148
ED1R	200/12/60	1010/24/88	1576/31/111	1258/39/135	2043/38/139	2468/39/137
HG1S	185/10/55	700/20/82	1469/36/124	2025/39/141	2049/39/148	1452/39/139
HG7T	252/9/49	751/17/75	1573/33/112	1997/38/130	1602/36/131	1864/40/127

EUROPE MULTI-OPERATOR MULTI-TRANSMITTER

DR1A	932/16/75	1792/23/97	2992/38/142	4237/40/169	3054/40/163	2562/40/168
9A1P	872/15/71	1766/19/87	3168/34/132	3388/39/159	2222/40/154	2358/40/155
C37N	904/15/69	2134/24/97	2660/29/109	3789/35/130	3311/34/124	2186/29/102
OT5A	1037/14/70	1413/18/78	2296/33/118	2697/40/154	2416/39/150	2214/40/129
DFØHQ	871/15/71	1660/25/97	2486/37/127	2607/40/156	1670/40/157	1315/40/149

Andy, UA3DPX, operating RM3F.

Adam, SP4CUF, All Band, Low Power, Poland.

4. DXXE Super Dawgs: XE1EE, EF8R, XE2S, XE3TT, XE2B: **18,134,859**

5. Contest Group du Quebec team: VE2EBK, VA2WA, VE2IM (VE3DZ), VA2OP: **17,976,925**

6. Carolina DX Association: K3XC/4, KI4TZ, KZ2I/4, N4ZC, W3GQ/4: **12,661,490**

7. Kaunas Technical University RC: LY1R, LY2J, LY4T, LY6A, LY9A: **10,962,776**

8. Team Orca: VA7ST, VA7BEC, VC3R (VE7VR), VE7XF, CF7FC (VA7FC): **8,677,676**

9. Minnesota Wireless Assoc. Team Mosquito: KØAD, KØKX, KØOB, KØRC, KØSV: **7,099,989**

10. Maritime Contest Club #1: VE9HF, VE1JS, VE1ZD, VA1MM, VY2LI: **4,093,185**

11. VK Contest Club Team – Kookaburras: VK2BO, VK6DXI, VK3TDX, VK8HPB, VK2IM : **4,052,812**

12. Minnesota Wireless Assoc. Foreign Legion: A51B, A52IR, A52PC, C6ARW, KP2/KØBBC: **3,691,111**

13. Minnesota Wireless Assoc. Team Loon: AE5E/Ø, KR5DX/Ø, WØERP, WBØN, WN4GMT/Ø: **2,177,033**

14. Maritime Contest Club #2: VE9AA, VE1ZA, VE1OP: **1,819,208**

15. DXXE Cats: XE3N, XE3DX, XE1CT, EA8MT: **1,671,384**

16. Minnesota Wireless Assoc. Team Eelpout: NØANP, NØBK, NØBUI, NØKK: **1,391,777**

17. Order of Boiled Owls: KS2G, N2FF, N2MUN, N2GA, K2RB: **1,082,849**

18. DELARA Team: KQ8RP, N9AUG/8, W8KTQ, KV8Q: **826,782**

19. DXXE Dawgs: XE1YYD, XE1AY, KK1Z, N6AN, YW5W: **615,397**

20. Skyview Radio Society: K3RMB, W3GH: **68,067**

21. GM4AAF Dundee Amateur Radio Club: MMØSVK, MMØDXD: **67,446**

Records

With conditions outstanding on the high bands, you might expect many records to fall. Many did, especially, in the assisted categories. Records exist for every mode in every country and continent. Take a look at the records (cqww.com) as you might find one you have a chance to beat. Outstanding efforts of super operators resulted in the following new world and continental records. Congratulations! Legend: leading letter A = assisted, Q = QRP, L = low power; High power = only A or bands. Example: AL28 = assisted low power 28 MHz, ALA = assisted low power all band

World: Q14 TG9ANF, Q3.7 4L9QQ, A14 9Y4D, ALA P4ØP (W5AJ), AL28 VK8DX, AL7 UT9MZ, AL3.7 F1EBN, AL1.8 SP1GZF, AQA RT4W, AQ28 IØUZF, AQ14 HG1X (HA1RS), AQ3.7 IZ1DGG, MS CR3A. **U.S.A.:** A K1DG, LA N1UR, L3.7 NA8V, AA NN3W, A28 K2SSS, A21 N4PN, ALA KS1J, AL28 K2MFY, AQA NN7SS, AQ28 K2FWA/4, MS K1LZ, MM K3LR. **North America:** Q14 TG9ANF, AA NN3W, A21 VY2TT, ALA C6ARW, AL28 WL7E, AQA NN7SS, AQ28 K2FWA/4, AQ14 VE3XD. **Africa**: Q14 J28AA, MS CR3A. **Asia**: Q3.7 4L9QQ (UR9QQ), A3.7 4L5O, ALA H22H (5B4MF), AL28 JM1LRQ, AL3.7 UN6P, MS P33W. **Japan:** A JAØJHA, AA JS3CTQ, A21 JN1NDY, A7 JA8WKE, ALA JR4PMX/1, AL28 JM1LRQ, AQA JA1KEB, MM JA5FDJ. **Europe**: 21 GI5K (MIØL-LL), L28 SV9GPV, A21 DL2ARD, A14 IR4M (IK4MGP), AL28 IU9A, AL21 HA3DX, AL7 UT9MZ, AL3.7 F1EBN, AL1.8 SP1GZF, AQA RT4W, AQ28 IØUZF, AQ14 HG1X (HA1RS), AQ3.7 IZ1DGG, MS TM6M, MM DR1A. **Oceania**: A28 KG6DX, AL28 VK8DX, AL14 ZL2HAM, AL7 AH6RR, AQ28 DU1AJ. **South America**: A14 9Y4D, A1.8 PV8DX, ALA P4ØP, AL28 PY3OZ, AQ28 LU7HZ.

Special Mention

"It took me about three years to work DXCC on 10 meters from Colorado. In the CQWW, I did it in one weekend," Jim, AD1C. "Seemed like a new country could be heard with each turn of my VFO," said KL8DX. A few of the interesting calls that made their way into many logs were: VP9I, VE2IM (zone 2), VE2GSO (zone 2), ZF2AH, J39BS, XP1A, HQ9L, HQ2GL, 6Y9X, TO5A, PJ7PL, PJ7X, PJ5/SO6X, J8/PE1IGM, IG9/12ADN, IH9YMC, ZD8O, EF9A, EE9K, J28RO, TR8CA, 5R8A, CN2R, CN8VO, CN4P, C91KHN, V5/NZ2P, V51YJ, 5N6/YL2SW, 9Q6CC, 5H3EE, Z21BB, 3V8SS, T6RH, EK6TA, EK3GM, TA2/DL7BC,

TA3HM, A92GR, A51B, A52AB, XU7ACY, C4W, H2T, C4Z, 4LØA, VR2XMT, VR2YYW, VR2PX, VU2PAI, VU2RCT, JY4NE, OD5SSB, 8Q7DV, JT1DA, JD1BIA, A41OO, HZ1PS, 9V1YC, BQ1ØØ, BM1ØØ, BX1ØØ, EY7AD, EY8MM, HSØZEE, ZC4LI, A61EE, A65EE, A61C, 9M2CQC, 9M2ESM, TK5KP, TK4LS, TA1CQ, TC1C, TA1CM, MUØGSY, HBØ/HB9LCW, GZ5Y, 9M6YBG, 9M4SMY, 9M8YY, 3D2A, ZK2X, T8AA, E51IWC, RI1ANC, J28AA, KG4EM, FP/K1VJ, V55A, 6V7Q, ST2AR, A52PC, VR2XLN, VU3DJQ, VU2CDP, JT1RF, 9V1RM, HSØZJU, E21EIC, A65BP, A65BU, A65CA, XV1X, XV9DX, TK4LS, SVØXBZ/9, SV5DKL, TA1ED, HBØ/SP7VC, 9M8Z, NHØS, AH2R, 9Y4D, ZF2OE, HU1YS, VP5DX, VQ5X, D4C, ST2UOK, TS2A, YM7KA, TC3EC, VR2EH, JT5DX, E2E, ZA2ØQA, GT8IOM, GDØAMD, GJ2A, T7ØA, JW5E, V84SCQ, TX5A, V26B, AA4V/VP9, VE2DXY, VP2MDG, EE9Z, 7Z1SJ, OJØX, AHØBT, C5A, VP5T, 3XY1D, A73A, C37N, HBØ/HB9AON, E51Z, 3A2MG.

Comments

For the 2011 CQ WW SSB, 7476 contest logs, of which 7382 were electronic, were received! A special thank you to all the entrants around the world for sending in a log. We really want you to send in your log. If you have any problem submitting a log or don't know how to begin, we can help you at <questions@cqww.com>. **Please send in your log no matter how small.** Submitting an electronic log is easy. Send your SSB log to <ssb@cqww.com> (CW to <cw@cqww.com>). Please send your log in Cabrillo format. If your radio has a computer interface, please submit a log with **exact frequencies**. Exact frequencies help in the log checking process. Very soon after you submit your log, it will appear on CQWW.com, tab logs, then **logs received list** with your category and score posted. Look over your data for accuracy. If you find an error, please let us know at <questions@cqww.com>. About one month before the results become finalized in *CQ* magazine, you will receive a password via e-mail which will allow access to your log (UBN) report at http://cqww.com. This is called your **report** (rpt). Look over the report to verify again your category and other information. If you find an error, please let us know at <questions@ cqww.com>.

Over the last few years we have spent a lot of time making sure that the Top Scores box is as true as possible. Some entrants forget to declare the right category. Please take the time to check your category is correct before you submit your log. The largest source of error is undeclared use of the internet to find QSOs. Remember help finding any QSO places you in the assisted category. The Assisted category is becoming much more competitive. There are separate awards and listing for high and low power assisted. The CQ WW has at its disposal many methods to verify the score of an entrant and ensure a fair contest. You may find an assisted category record that you can set or beat. You can find the complete CQ WW rules and records at cqww.com.

Remember, for all multi-operator categories, when two or more transmitters are present on a band a hardware device **MUST** be used to prevent more than one signal at any one time. This year we looked more carefully at SO2R entrants. It was discovered that several top scores did not have adequate protection against two signals at the same time. A single operator entrant can have only ONE signal on the air at ANY time. With the use of SDRs, the CQ WW CC can listen to the whole contest all the time. The presence of two signals simultaneously on the air on the same band by any entrant, or two simultaneous signals on separate bands by any single operator category is now detectable. You can avoid violating the rules by using a hardware lockout allowing only one signal at any time. You can find a few design suggestions for lockout hardware at cqww.com under the resources tab.

Remember, if you plan to try to make the Top Scores box, you can count on your log being carefully checked for rule compliance. Your competitors are relying on fair play. Running more power than the rules of your category allow, the use of undeclared packet, the use of additional operators for a single operator entry, two signals simultaneously on the same band, or on separate bands at the same time, if you are single operator, are violations of the CQ WW rules.

MS and M2 categories: Please indicate in the submitted log which of your transmitters is making each contact. All contesting logging programs allow transceiver designation during set-up. **U.S. Location:** For U.S. entrants please make sure your operating QTH is shown correctly. We need this information to place you in the right call area within the results. **Single band entrants**: Single bands entrants can make QSOs on other bands as a check log. Please submit the QSOs made on all bands you operate. Indicate in the comments section of the Cabrillo header that all contacts on your **non-entry** bands are to be a check log.

Thanks

Using an armamentarium of log-checking tools and data sources, the CQ WW Contest Committee has done its best to certify the winners in the 2011 CQ WW SSB contest. The members of the Committee who provided insight into many contesting topics are: CT1BOH, DB7MA, DJ6QT, DL6RAI, E21EIC, ES5TV, F6BEE, GØMTN, HA1AG, IK2QEI, JE1CKA, K1AR, K1DG, K3LR, K3WW, K3ZO, K5TR, K5ZD, K6AW, KM3T, KR2Q, KT3Y, LY3BA, LZ2CJ, N2AA, N2NC, N2NT, N5KO, N6AA, N6TR, N8BJQ, N9RV, OH2MM, OH6LI, PA3AAV, PP5JR, RA3AUU, S5ØA, USØLW, VE3EJ, W3ZZ, W5OV, W6OAT, W7EJ, WØYK, YU1EW, and ZS4TX . A special thank you to Ken, K1EA, who spent countless hours making the CQWW results the best in contesting. Thanks as always to John, K1AR, Tim, K3LR, and Ken, K1EA, for their advice. We want to thank Barry, W5GN, for providing the mechanism by which certificates are sent to winners in a timely manner. The CQWW records are maintained by John, N2NC, and K3EST.

This year the contest will seem strange without the significant presence of Gene, W3ZZ. Our very good friend became a SK in early June, 2012. For over more than 30 years Gene contributed to contesting on many levels. Most recently, he was the press secretary for the CQ WW Contest Committee. His talents will be sorely missed. The CQ WW Contest Committee dedicates the results of the 2012 CQ WW DX contests to the memory of our friend.

Congratulations to all the winners and entrants.

73, and CU in the 2012 contests!
73, Bob, K3EST

(Continued on page 100)

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RX: 0.030–60.000MHz*

Two 32 Bit IF-DSPs + 24 Bit
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Single Receive

+40dBm 3rd Order Intercept Point

3 Roofing Filters

Selectable, "Build Your Own"
IF Filter Shapes

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3 Roofing Filters

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IF Filter Shapes

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Looking for a great first kit-building project? Or an excellent antenna tuner you can build yourself, even if you're already an experienced builder? N2EI suggests taking a close look at Ten-Tec's Model 1215 Ten "T" Tuner kit.

CQ Reviews:

The Ten-Tec Model 1215 "Ten 'T' Tuner" Kit

BY T. J. "SKIP" AREY,* N2EI

Many amateur radio operators, especially those new to the hobby, have a desire to build a project that will enhance their ham radio activities. Quite a few of these folks have trouble figuring out a good place to start, especially if they have little or no electronic kit-building experience. Choosing that first kit-building project can be a tough proposition. Allow me to make a suggestion that will not only give you a great first-time building experience, but will also enhance any operator's station.

The "Ten 'T' Tuner" kit from Ten-Tec can be built in a couple of evenings by anyone with basic soldering skills and a few simple hand tools (see July *CQ*'s "Learning Curve" column for soldering basics and links to online tutorials). All soldering is "large format," mostly point-to-point wiring, with just a small handful of "through-hole" components to populate a single simple printed circuit board.

The kit combines a high pass "T" network with a wattmeter, SWR bridge, and four-position antenna switch, allowing you to match a wide range of antenna impedances to the common 50-ohm impedance most transmitters require. The Ten "T" Tuner can operate efficiently with power levels up to 200 watts.

The key to any high-quality kit is a well-written manual. The Ten "T" Tuner manual covers every aspect of the project, beginning with a discussion of the tuner's specifications, including a circuit overview and a detailed schematic drawing. Before you even unpack the kit, you are starting the project with a clear understanding of how the tuner works.

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The Ten-Tec Ten "T" Tuner is an excellent kit for first time builders. (Photo courtesy Ten-Tec)

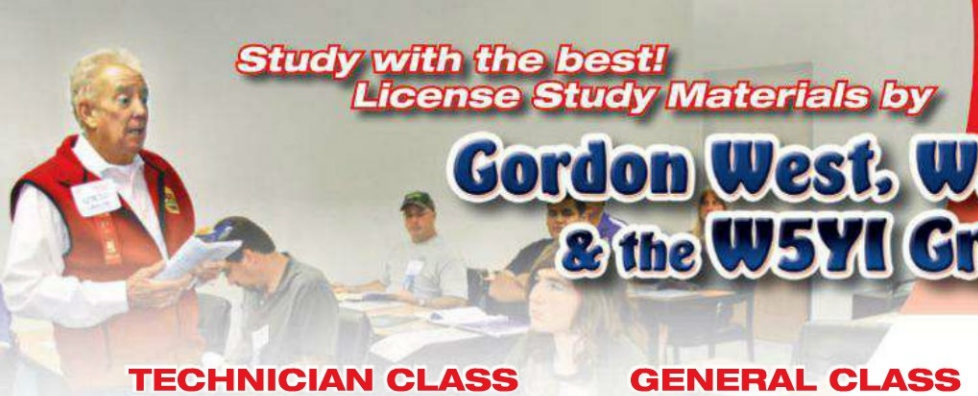
Next, the manual gives you a checklist of supplied parts—including graphics—to help you identify particular mechanical parts. I cannot stress enough how important it is to conduct a full inventory of this or any kit! Not because of any concern for missing parts, but mostly to help you sort the parts into easy-to-identify and handle groups. Old-timers often made use of cupcake tins to keep parts laid out in good order. It is still a good way to go.

Kit assembly is broken down into six *phases*. Each step of each phase has two check boxes. You want to check and then *recheck* each step before going forward. It's easy to let your enthusiasm move forward with a project, which may lead to slip-ups. True "double-checking" will assure you will make it to the end with a working unit.

Phase 1: Rotary Inductor Assembly

The first phase of the project is the construction of the *rotary inductor assembly*. Ten-Tec makes the process of coil-winding relatively easy by supplying coil forms with grooved patterns to assure proper wire spacing. The combination of careful directions and clear graphics makes winding the coil fairly simple. The biggest problem I encountered was

The finished rotary inductor assembly ready for installation.



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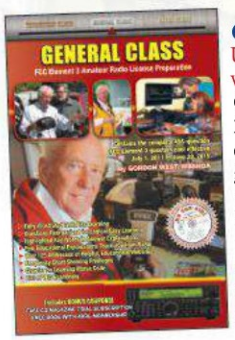

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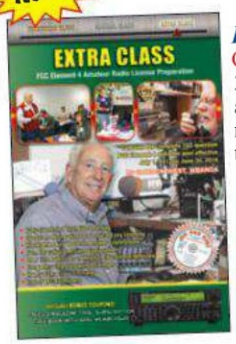

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allowing enough room in my rather cramped workshop to manage the long piece of silver-plated wire needed to wind the coil. Be sure to give yourself plenty of room to work with the wire during this step. At this stage, Ten-Tec recommends a small, soft-jawed vise to hold the coil form while guiding the wire. If one is not available, a patient assistant can perform the same function. The goal is to get the coil wire in place without scarring or kinking the silver-plated wire used for this variable inductor. If you take the time to pull the wire flat and tight over the coil forms, you will have a beautiful assembly you can point to with pride and say, "I made that!"

Getting this more complicated stage out of the way isn't just to make things seem easier down the line. Once the coil is formed, it is necessary to glue the variable-inductor hubs in place. Building the coil first while moving forward with further assembly assures that the epoxy will have more than enough time to set and make for a solid piece.

Phase 2: SWR Bridge Circuit

Phase two is the assembly of the SWR-bridge circuit. In this phase you have to populate a small printed circuit board with 11 components and a small toroidal RF transformer. Careful reading of the manual and attention to detail with all soldering to assure there are no *solder bridges* will produce a simple but well-designed SWR monitoring circuit. After building the rotary inductor in phase one, winding the RF transformer should be easy. Just remember to make sure

The completed Ten "T" Tuner ready for testing.

The Ten "T" Tuner ready to go QRV with my classic Ten-Tec Triton IV transceiver.

that you clear the connecting points on the transformer's wires of any varnish insulation. I like to scrape this off with a small hobby knife and then tin the wires with a thin coat of solder to assure a solid connection.

Phases 3–5

Phases three, four, and five divide up the point-to-point wiring of the unit's switches, chassis wiring and final mechanical assembly into easy-to-follow subsections. After populating and soldering the SWR bridge board, you may have an attack of overconfidence. Take your time and don't forget that sage advice: "Measure twice; cut once!" After you complete these stages, you will walk away with a whole new respect for color-coding your wiring in future projects. By following the wiring color scheme and cutting wire to the lengths listed in the manual, it is hard to go wrong at this point in the project.

At certain points, you will be warned to secure a wire at a particular location but not (yet) solder it. This is to allow for placing additional wires at that connection point prior to final soldering. But, hey, we all make mistakes, right? Keep a roll of *desoldering wick* handy just in case you go to place a wire and find you have inadvertently soldered something ahead of the need.

Phase 6: The "Smoke Test"

Phase six is the *smoke test*. The good news here is that even if you have made an error or two, you will be hard-pressed to get any smoke to leak out of this unit. This is one of the reasons why I recommend this as a great *first kit* experience.

The wattmeter circuit can be calibrated in one of two ways: (1) by using a transmitter capable of generating at least 100 watts and a 50-ohm dummy load capable of handling this power level; or (2) in the absence of a transmitter, the unit can be brought into *pretty good* calibration using a DC power source. The manual recommends a simple calibration source made out of a 9-volt battery and a 10K-ohm potentiometer. An accurate adjustable DC power supply will also work for this method.

With the meter calibrated, the final operational test is to put the tuner on the air. If the unit does not appear to be working correctly, the most likely problem is miswiring. Going over the wiring checklists, particularly in phases three through five, and following the manual's troubleshooting chart should get you back on the air in no time at all.

As constructed, the Ten-Tec Ten "T" Tuner will provide a match for single-wire or coaxial-fed antennas. If you are planning to use the tuner with an open-wire or ladder-line feedline, you will need to add a 4:1 balun to the circuit. You can either purchase this optional accessory from Ten-Tec or construct your own using T-200-2 series toroidal cores. Ten-Tec even gives you all the information to *roll your* own balun if you so choose. If you want one of the best low-profile, multiband antenna systems available, a dipole or doublet cut to a length accommodating the lowest frequency you plan to operate and fed with ladder line through a 4:1 balun to a tuner will allow you to work the world in high style. I have the awards to prove it!

I must confess that several of the newer transceivers at N2EI are equipped with automatic tuning units. That said, I love restoring older equipment, and the Ten-Tec Ten "T" Tuner makes it possible for me to get on the air with my classic rigs using very modest wire antennas. If you want an enjoyable kit-building experience that will give you a real workhorse accessory for your shack, the Ten-Tec Ten "T" Tuner is the kit to consider. The kit retails for $259 and is available direct from Ten-Tec at <http://www.tentec.com/products/Ten-"T"-Tuner-Kit.html>.

public service

BY RICHARD FISHER,* KI6SN

WX4HNC: Same Time, This Year

National Hurricane Center and More than 200 Hams Ready for the 'canes

It's no coincidence that the amateur radio transceivers and Echolink-connected computers at the National Hurricane Center in Miami get a thorough workout each year on the first Saturday of June. It's the first weekend of the June-through-November hurricane season—and a time chosen for the annual WX4NHC Station Test.

As we have seen time and again, EmComm (emergency communications) training is extremely important, but if radio amateurs don't have the means for making solid contact, what good does it do?

The purpose of this annual event "is to test all of our radio equipment, computers and antennas using as many modes and frequencies as possible in preparation for this year's hurricane season," said WX4NHC Assistant Amateur Radio Volunteer Coordinator Julio Ripoll, WD4R. "This was not a contest or simulated hurricane exercise." See photo A.

WX4NHC took to the airwaves on HF, VHF and UHF, plus 2- and 30-meter APRS. Operations were conducted on 3.950, 7.268, 21.325 and 28.525 MHz, ±QRM. For widest coverage, the station was primarily on 20 meters—14.325 MHz.

"During the test, one of our main computers shut down during the EchoLink Net due to a faulty fan that caused it to overheat," WD4R said. "We were able to install a backup computer and get back on EchoLink in only a few minutes. So it was good to find out about this problem and get it fixed before we operate during a hurricane, and also to practice setting up backup systems quickly." See photo B.

Ripoll noted that "even though propagation was only fair most of the time, the pile-ups on 20 meters went on for hours. ... We mostly made casual contacts and exchanged more than just signal reports. We also exchanged local weather observations and talked to many people that have supported hurricane operations in the past."

The VoIP Hurricane Net was conducted on IRLP node 9219/EchoLink WX-TALK conference node 7203 and on South Florida area VHF/UHF repeaters and simplex, Ripoll said. See photo C.

Each station working WX4NHC was asked to give his/her callsign, a signal report, location and name, plus a brief weather report—*sunny, rain* or *cloudy,* and so on. Non-hams were encouraged to submit their weather observations using the Online Hurricane Report Form at <http://bit.ly/Lfsduz>.

On high-frequency wireless, WX4NHC made 144 contacts, along with 59 on EchoLink/IRLP for a total of 203 QSOs, "including many states from the west coast to New England, Canada and Caribbean islands," Ripoll reported.

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e-mail: <ki6sn@cq-amateur-radio.com>

Photo A– This panoramic view shows the WX4NHC operating position and surroundings at the National Hurricane Center in Miami. That's the center's Julio Ripoll, WD4R, and Joanne Carbana, KG4GKU, seated in front of the transceivers during the Annual Station Test on June 2. (Courtesy of KJ4YDX)

The test ran from 1300–2100 UTC (9 a.m. to 5 p.m. EDT) on HF and from 1700 to 1900 UTC (1 to 3 p.m. EDT) on EchoLink.

"It was great to speak with Jean-Robert Gaillard, HH2JR, in Port-au-Prince, Haiti, and Father John Henault, HH6JH, on Ile de Vache (off the southwest coast of Haiti), who were so instrumental to our University of Miami/Medishare Ham Radio Mission after the Haiti Earthquake," WD4R added.

"We were surprised and honored to receive a very special weather report from Keith Wucherer, N2OBS," Ripoll said. He is a contractor who checked in from overseas. *(**NOTE:** N2OBS asked that we not disclose his country of operation.—KI6SN)*

"(In my travels) I am not able to bring my radio equipment," Wucherer said. "So I use the available resources—email and my laptops for communications."

A few days prior to the annual station test, Wucherer received a WX4NHC Online Hurricane Weather Report Submission e-mail, "so I figured to send in a weather report. ... Where I am, the simplest communications is most important and no cellular phone services are accessible. Radio provides a useful link to those who use it."

Wucherer "relayed our thanks to the men and women in uniform that are making hard sacrifices to serve our nation and defend our freedom," Ripoll said.

National Hurricane Center forecasters are calling for a "near-average" hurricane season this year with "a 50-percent probability of a near-normal season, a 25-percent probability of an above-normal season and a 25 percent probability of a below-normal season," according to published reports.

This year, for the first time in over 100 years, two tropical storms developed prior to the start of hurricane season—Alberto and Beryl. The only other year with two storms so early was 1887.

Climate Prediction Center forecasters say there is a 70-percent chance of having 9 to15 named storms, of which four to eight could become hurricanes, including one to three major hurricanes (Category 3, 4, or 5).

"These ranges do not represent the total possible ranges of activity seen in past similar years," the CPC noted. Tropical systems acquire a name upon reaching tropical storm strength with sustained winds of at least 39 miles per hour. Tropical storms become hurricanes when winds reach 74 miles per hour and become major hurricanes when winds increase to 111 miles per

hour. An average season has 12 named storms, including six hurricanes with three becoming major hurricanes.

QSL cards for WX4NHC Annual Station Test contacts are available via WD4R, <http://www.qrz.com/db/ wd4r/>. Please include a self-addressed, stamped envelope. Do not send cards to the NHC.

WD4R expressed appreciation to all operators making contact during the 2012 station test, "which helped us fine tune our equipment and practice our skills. We hope this hurricane season treats everyone well and the storms stay off-shore. But if they don't, amateur radio will be ready."

Photo B– Operators staffing WX4NHC in June included, from left, Julio Ripoll, WD4R; Hank Collins, W8KIW, and his wife, Pat; Joanne Carbana, KG4GKU; and Mike Kelley, KJ4YDX. (Courtesy of WD4R)

Next Month

September's *CQ* "Public Service" will include an inside look at the Hurricane Watch Net, in its 47th year of amateur radio service. Like WX4NHC, see what dedication and skill can do. Until then, keep your eyes to the skies and your ears to the radio. 73, Richard, KI6SN

WX4NHC

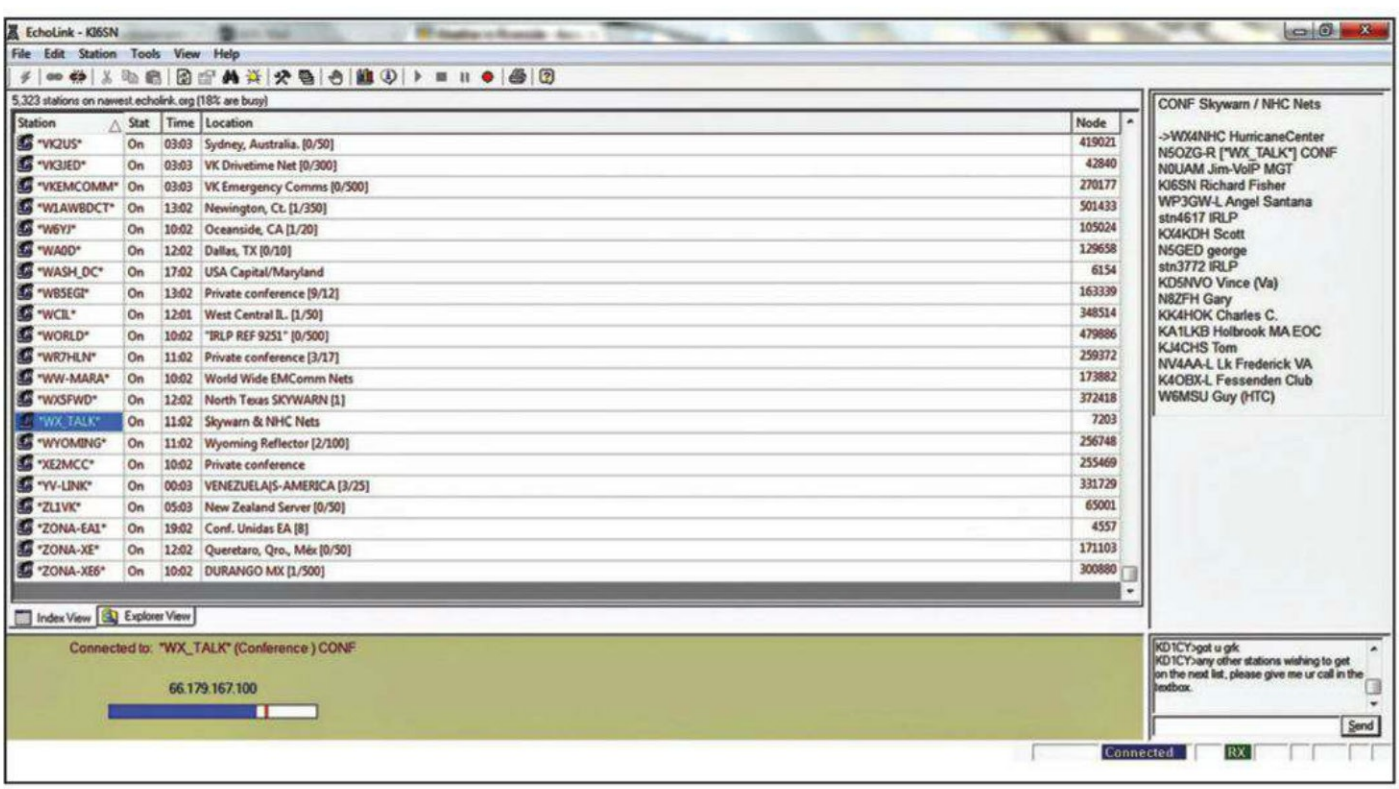

Photo C– Stations queued up via EchoLink to make contact with WX4NHC during the station test in June. Nearly 60 contacts were made via the WX-TALK Conference Node 7203 in just two hours. (Internet screen grab)

What You've Told Us...

Our May survey asked about your participation in several of the more specialized areas of ham radio. Two consistent responses were that very few people who had tried a particular activity did *not* like it, and that a large number of people who have not tried each activity said they would like to try it someday.

First up was hidden transmitter hunts. Only 2% of respondents do this as a regular part of their ham radio activities, but 21% said they do it occasionally. Another 16% said they'd tried it once and would like to do it again, while 31% said they'd never tried it but would like to. On the negative side, 29% said they have no interest and 2% tried it and didn't like it.

Three per cent of respondents regularly use amateur radio satellites, while another 9% operate the "birds" occasionally, and 27% have tried it once and would like to try it again. In addition, 44% said they'd never made a satellite contact but would like to try it, 15% said they have no interest and just 1% tried it and didn't' like it.

Digital keyboard modes such as RTTY and PSK-31 were our most popular specialty area (suggesting that it might no longer be a specialty area), with 24% operating keyboard modes regularly and another 16% watching the waterfall displays occasionally. Another 18% have tried it once and would like to do more of it, while 29% have not tried it but would like to, 10% are not interested and 3% did not like it when they did try it.

The 60-meter band remains beyond the reach of many older transceivers and that shows in our results, as only 4% of respondents operate the band regularly and 14% are there occasionally. An additional 9% have tried it once and would like to operate there again. Fifty-two per cent would like to try the band someday, 21% have no interest, and no one who has tried the band has not liked it.

Finally, VHF/UHF "weak-signal" communications is part of the regular ham radio routine for 13% of respondents and an occasional part for 20%, while 12% have tried it once and would like to try it again. In addition, 32% have never tried it but would like to, 20% have no interest and 3% did not like it when they did try it.

Thank you for your responses. This month's free subscription winner is Owen Godwin, KI4CT, of Lutz, Florida.

Reader Survey August 2012

We'd like to know more about you—about who you are, where you live, what kind(s) of work you do, and of course, what kinds of amateur radio activities you enjoy. Why? To help us serve you better.

Each time we run one of these surveys, we'll ask a few different questions and ask you to indicate your answers by circling numbers on the Survey Card and returning it to us. As a bit of incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to *CQ*.

This month's editorial talks about imagination and adventure as key elements of ham radio's appeal. We'd like to hear about your motivation to become a ham and how things may have changed since you joined the hobby.

Please answer by circling the appropriate numbers on the reply card or by going to the following web link <www.surveymonkey.com/s/CQAugust12> [From the digital edition, just click on the link].

1. How long have you been a ham?
- Not currently licensed 30
- Less than one year 31
- 1–5 years 32
- 6–10 years 33
- 11–20 years 34
- More than 20 years 35

2. What was your *main* motivation in becoming a ham? (Choose one)
- The lure of DX 36
- The lure of "off the grid" communication 37
- Contesting or other competition 38
- Public service/emergency communications 39
- Ham radio's "technology playground" 40
- The opportunity to build stuff 41
- The "mystery" of never knowing who you'll talk to next 42
- Family member influence 43
- Other 44

3. Has the activity that prompted you to become a ham met your expectations?
- Yes, and more beyond 45
- Yes, completely 46
- Some but not all 47
- Not really 48

4. Do you still participate in the activity that first drew you into amateur radio?
- Yes, more than ever 49
- Yes, as much as ever 50
- Yes, but less than in the past 51
- No 52

5. Since becoming a ham, have you discovered other aspects of our hobby that have given you at least as much enjoyment or fulfillment as your original motivation?
- Yes, several aspects 53
- Yes, one or two 54
- No 55

6. Do you still find "imagination and adventure" in your ham radio activities?
- Yes, more than in the past 56
- Yes, as much as in the past 57
- Yes, but not as much as in the past 58
- No, not anymore 59
- Never really did 60

Thank you for your responses. We'll be back with more questions next month.

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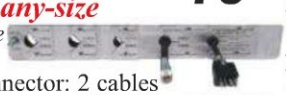

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BY IRWIN MATH,* WA2NDM

A Portable 20-meter Station – Pt. I

With summer almost over here, at least in the northeast U.S., we finally decided to complete our original summer project—a small, lightweight, inexpensive station for portable use, something we have wanted to do for a very long time. Unfortunately, we waited until the last minute!

At any rate, the objective was to be able to achieve worldwide communications with a compact station that could easily be transported, set up in minutes in a back yard or at the beach, and (most important) not cost an "arm and a leg." The result (which took much longer than expected) was a collection of items purchased from flea markets, a discount clothing store, a home-improvement center, and through the internet (over a period of four months or so). The final cost was extremely reasonable and considerably less expensive than purchasing comparable new equipment. This entire station will be described this month and next. As the various items were obtained from random sources, you probably will not be able to duplicate my configuration exactly. However, hopefully, this discussion will give you some ideas for a similar project of your own.

After some careful thought, the requirements we decided upon were SSB phone operation (possibly with a CW option) on 20 meters (for worldwide communications), a portable power supply allowing several hours of continuous operation, and an easily built collapsible antenna. All of this would then be housed in a small shoulder-type case such as those used to carry a laptop computer. The descriptions that follow are specific to what we came up with, and your approach may (and probably will) use different items.

For a transceiver, after an extensive hunt on the internet we were fortunate to obtain an intermittent MFJ-9420 20-meter SSB rig on eBay for a little less than $75. This was the most expensive part of the system. When we received it, we repaired a few questionable cold solder joints (which is probably why it was so inexpensive), carefully realigned everything according to the manual, and then tested the unit via a dummy load which consisted of two 100-ohm, 2-watt resistors in parallel (for 50 ohms) connected between the center pin of the UHF connector and the ground screw on the rig.

The MFJ instruction manual indicated that the rig could produce 20 watts peak output, and keying it for a few seconds resulted in the dummy load quickly getting quite hot, so we knew all was working. For these tests we used a standard workbench power supply. Current draw while transmitting (less than two amperes) was also in line with the manual as a further check of proper operation. By the way, a CW accessory board is available from MFJ if you want to also be able to operate CW.

The MFJ-9420 connects to a power supply via a two-position power jack on the rear panel, so we purchased a suitable mate from a local electronic supply source and soldered a 6-foot length of red (+) and black (-) #18 wires to the connector. At the ends of these wires we attached two alligator clips, also purchased from the same source. We also prepared a similar second cable, but this time with an automobile cigarette-lighter plug in place of the alligator clips in case we wanted to operate mobile.

*c/o CQ magazine

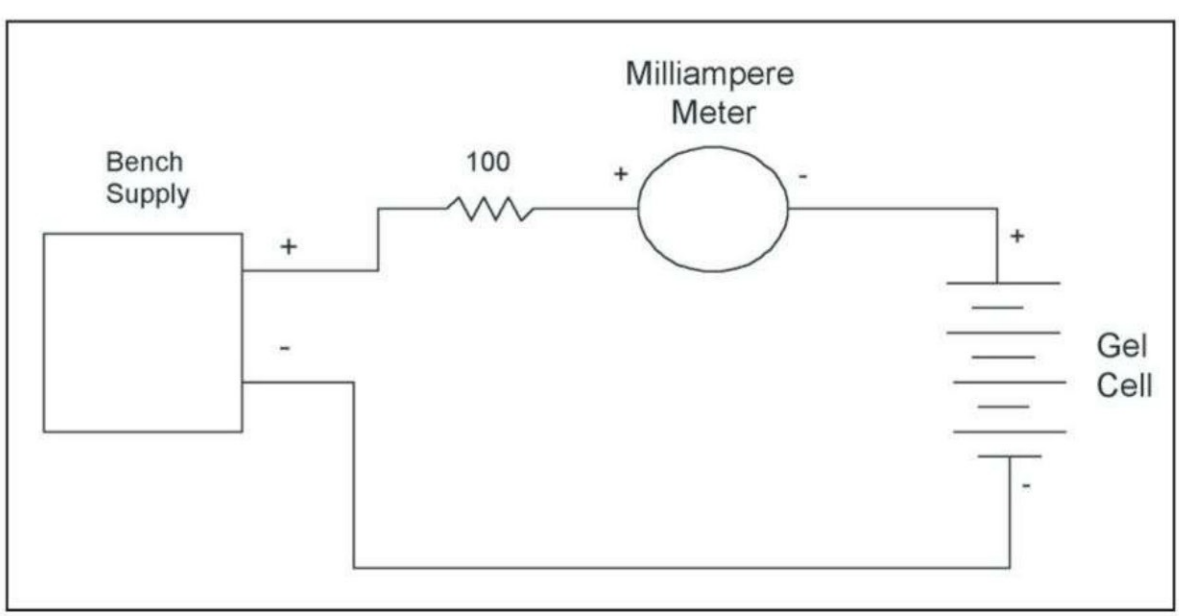


Fig. 1– Charging circuit for the 12-volt gel-cell battery.

A quick test with both cables was then done to assure that they would work properly.

For the portable power supply we decided to use a rechargeable lead-acid gel cell. A 12-volt, 7-ampere battery was obtained at virtually no cost (it was free.) from a discarded computer battery backup supply that a neighbor was getting rid of. The electronics in the supply had failed beyond repair, but the battery, as it turned out, was perfectly fine. We then charged this battery from our workbench supply (with a 100-ohm, 2 watt resistor in series with the battery and a milliampere meter) and adjusted the output voltage of the supply for a current flow of 100 milliamperes as shown in fig. 1. When the open-circuit voltage of the battery reached about 13 volts (with the charging resistor disconnected), we considered it fully charged. In our case it took about four hours to reach this point.

A quick test with a 12-volt automobile backup light bulb we had in the junk box confirmed that the battery could indeed produce and maintain significant current. The battery was then housed in a small case normally used for cosmetics that was purchased from a local discount clothing outlet for $5. At the same outlet we purchased another case, this time a laptop computer carrying case, for only $10 (on sale) that looked like it would house all of the components (other than the battery). It is amazing what you can find from sources that are as far from amateur radio as you can imagine as long as you keep an open mind.

To complete the transceiver we purchased a UHF-to-BNC adapter connector. We felt that small-diameter flexible coax such as RG-58/U would be a much better choice to run to the antenna (and transport) than heavier RG-8/U, especially in a portable station. We also built a transmission line consisting of a 15-foot length of RG-58/U with a BNC connector on each end for use with the antenna. Since the length was short, the losses due to the smaller coax were negligible.

Fig. 2 shows all of the main items of the portable station (including the antenna, loading coil, and mount), but without the power cables, coax, and other miscellaneous fittings.

Total cost so far was less than $20 (not counting the cost of the transceiver).

Next month, in part II, we will describe in detail the construction of the antenna and the final assembly of the station.

73, Irwin, WA2NDM

Fig. 2– Portable station major items as discussed in text.

Riley's ramblings

BY RILEY HOLLINNGSWORTH,* K4ZDH

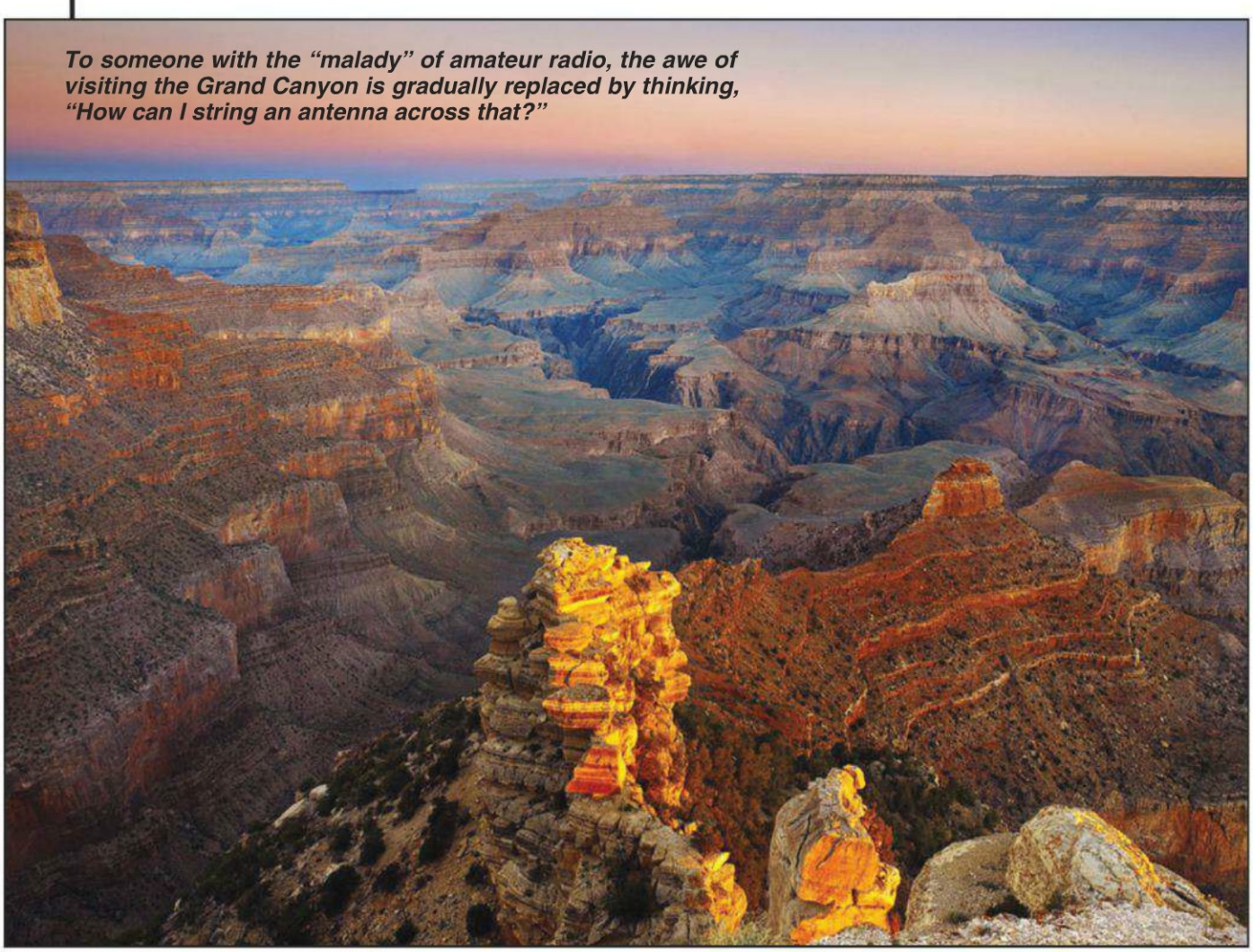
The "Malady" of Amateur Radio and Ham Radio's Own "Greatest Generation"

I'm writing this from a log cabin, or more accurately a log shack, built over three winters with a forester/carpenter friend in the woods behind the house. I say "winters" because I approached it as I would an antenna: The worse the weather, the more chance of success the project will have. I have fond memories of chipping ice off logs so that I could peel the bark. We used trees that needed thinning because they were strangling other trees. I built it so I would have a place to get away from radio and everything else and think and read.

However, being afflicted with the *malady* known as amateur radio, after about three days of thinking and reading, I was thinking of how I could set up the Yaesu 857D to operate from the cabin. The next day I was on 40 meters from my new "cabin shack," having tapped into the tower feed line, relay box and rotor control lines. I had a lot of "stuff" in the garage, but I didn't know I had 350 feet of heavy-duty extension cords and a gazillion feet of RG 213.

Here's another example of what this malady known as amateur radio is like. Once I was at the north rim of the Grand Canyon. After a few hours of being awed by the geology and the unimaginable concept of time, I was thinking of how a longwire could be strung across the whole canyon. I figured it could be done with two tour buses. I've had this malady for years, although as far as I know it hasn't been listed in the medical diagnostic manual (I keep hoping, though). It reminds me of that old

*C/O CQ magazine
e-mail: <k4zdh@cq-amateur-radio.com>



To someone with the "malady" of amateur radio, the awe of visiting the Grand Canyon is gradually replaced by thinking, "How can I string an antenna across that?"

Andy Griffith line. When told that someone "has ROTC," Griffith said, "Oh no. Is he real sick?"

Anyhow, I'm listening to 40 and 75 meters, and so many folks are talking about their upcoming trips to Dayton, the planning for their clubs' Field Day, teaching summer radio classes and giving exams. I wonder . . . What it is that inspires all these people to be so giving of their personal time in a world where there are never enough hours in a day, and where, sadly, there is no Main Street America anymore? What drives them to be so dedicated with no regard to financial gain or fame in an era when nobody has much real time for anything, thanks to our "labor saving" devices that just lead to more labor and less (no) peace?

Amateurs who organize hamfests, help out in disaster communications, or teach classes; the contesters, the traffic net participants, the digital folks, and the incredibly enthusiastic QRPers; those who live above 50 MHz, the DXpeditioners, and the people who just like to "ham," all understand that the greatest reward in doing something is to experience joy in doing it. Specifically for you teachers out there who work so hard to bring new people into ham radio, I hope you know what has been written about teachers: "Teachers may very well be immortal, because no one knows *when,* or even *if,* their legacy ever ends." Witness Earl Savage, K4SDS, in last month's column.

What motivates all of you has to be far beyond what Teddy Roosevelt implored us: "Do the best you can with what you have, where you are." You all do that, but what you accomplish is far beyond that.

Well, I think I know what it is. On a plane once I read it in a magazine I should have kept it. Since I didn't, I can't give credit to an author, but it is this: "It's *caring* more than others think wise, *risking* more than other think safe, *dreaming* more than others think practical, and *expecting* more than others think possible. The writer said, "That defines *excellence*."

Years ago and countless hamfests ago I heard Walt Stinson, WØCP, describe the source of your excellence best when he said, "We are all bound together by the love of the magic of radio." That's what inspires your excellence.

That is why, instead of being cynical or jaded about amateur radio after ten years of enforcement, I am more optimistic than ever about it. Our numbers are healthy and growing. Our service is included in the TV series *Last Man Standing*. It's a very popular web attraction on TWIT network live at <http://live.twit.tv>, with replays on <TWIT.TV/hn>, thanks to Bob Heil, K9EID; Gordon West, WB6NOA; George Thomas, W5JDX; Joe Walsh, WB6ACU; and many others. You all are doing your part to make sure America keeps its lead in science and technology, not an easy task these days!

Ham Radio's "Greatest Generation"

Could it be that this malady we call ham radio keeps us young? It must, because we have our own "Greatest Generation" that gave it to us and continues to teach and guide us. NBC's Tom Brokaw, in his book *The Greatest Generation* (Random House, 2004), wrote of the generation of Americans born in the 1920s who came of age during the Great Depression and fought in WW II. After the war and school, they "became a new kind of Army . . . moving into the landscapes of industry, science and education, arts and public policy, bringing the same passion and discipline that served them so well in the war."

In reading about Reynold "Fritz" Nitsch, W4NTO, receiving the George Hart Distinguished Service Award for long years of service to amateur radio, I am reminded of the first time I met him in Spartanburg, South Carolina. He was a prolific OO (ARRL Official Observer) and I wanted to meet him because in spite of thousands of OO notices, we had never received a complaint about him. In riding with him to dinner before giving a talk to his club, I will never forget what he said: "I decided to stop servicing that Red Cross tower over there. I used to replace the tower lights and do general maintenance." When I asked why, he said, "I got to realize I'm not 75 anymore."

Last year a local resident came to visit and asked if I would get in touch with his 94-year-old grandfather, a ham operator from New England who had recently moved to Gettysburg to live with his daughter. A few weeks later I met him and saw the rig he had set up in a very nice basement radio room. The guy was none other than Vic Pounoff, N4XR, one of the best known contesters the Yankee Clipper Contest Club has ever had. He was lightning-fast on CW and said that he wasn't sure he even owned a microphone. Within two weeks, on a chimney-mounted vertical antenna with no radials, which I didn't think would really work, he had gotten 40 countries!

Then there's Joe Gault, W4WZ, well into his 80s and my own Elmer who taught me the code, building and repairing beautiful vintage equipment, and is an active participant in a monthly "show and tell" luncheon for amateurs. He goes to all the class reunions from the years he spent as a physics teacher and it is not unusual for former students to tell him they got a ham license because of him. He gives me a hard workout during our weekly CW schedule on 40 meters, but to be honest, I can't quite keep up.

There's Royce Goodwin, WA4AFE, also in his 80s and lightning-fast on CW and a builder of incredible antennas. For 30 years I have talked to him first about any antenna project I ever started. For him to get another DX entity, there would have to be few more civil wars.

The first year I worked in amateur enforcement I met a delightful and enthusiastic person named Evelyn Gauzens, W4WYR, at a Florida hamfest. In checking up on her now I see that among many other accomplishments she spent 45 years as Chairman of the Tropical Hamboree in Miami. She is a life member of the Dade Radio Club, a long-time member of the Florida Phone Traffic Net, and a new inductee into the CQ Amateur Radio Hall of Fame. Her husband was a ham operator, and her son and granddaughter are active amateurs as well.

These ops and thousands of others like them in their 80s and above are amateur radio's own Greatest Generation. As we pursue this hobby/service that joyfully occupies our lives, we have to remember that *they gave us this great legacy known as ham radio and we stand on their shoulders.* Their legacy will last a thousand years *if we do our part.*

A Youth Elixer?

Thus, it very well may be that this ham radio malady we have is the answer to aging! Maybe it's the challenges and opportunities ham radio offers, from CW to PSK31 to building rigs to contesting to experimenting with everything from antennas to QRP rigs. The North Carolina writer Thomas Wolfe said "we are the sum of all the moments of our lives. All that is ours is in them."

I believe I am correct in saying that CW was the first form of digital communications, and that amateur radio was the first "internet." It just has to be that the passion for and the joy of the magic of radio is why amateur radio has had so many "finest hours." In teaching, contesting, experimenting with antennas, and all the opportunities in ham radio from modes to frequencies, from space communications to local nets, the intrigue and the joy of all that keeps us young at heart.

I look at my 47-year-old TA-33 beam ($125 from Allied Radio, including an AR 22 rotator and 50 feet of cable) that has survived so many ice storms and hurricanes, including Hugo in South Carolina, and don't quite understand how I can talk anywhere in the world so easily. I know there are better antennas, but just like the entire amateur radio experience, this is one of the many "moments" of my life that ham radio has given me. Much of my soul is in it, and I hope I am always awed by it. That's the magic of this passion that keeps us young. How fortunate we are!

A sincere thanks to our own Greatest Generation for what you have given us!

Now everyone of all ages, go enjoy amateur radio, remembering all the while what I preached to you over ten long years: Every gift of lasting value comes with responsibility.

73, Riley, K4ZDH

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From QST Magazine, March, 2005

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BY JOE EISENBERG,* KØNEB

2012 Dayton Hamvention® Kits Report

Another Dayton Hamvention® has come and gone, and I salute the hard-working committee members and volunteers who make this annual mega-event a success. Without all of their hard work there would be no Hamvention® to look forward to each year.

This year I found lots of tools available and no shortage of good sources of soldering irons, hand tools, solder wick, and above all, good-quality solder to build my future kits. My trip to Dayton 2012 did not disappoint when it came to seeing new kits introduced as well.

SOTA Tuner Kit

One of the new kits is the SOTA (Summits On The Air) half-wave antenna tuner. Mentioned in his June 2012 *CQ* editorial, Editor Rich Moseson, W2VU, put this kit together, and I thought I'd shed a little light on its inner workings.

The SOTA Tuner kit by Hendricks Kits is a low-cost, simple, and fun-to-build kit and is also ideally suited for a group kit-building experience. The SOTA Tuner allows you to tune a simple half-wave end-fed antenna and accommodates a suitable counterpoise wire as well. This type of antenna works well for portable use, and the tuner will handle up to QRP power levels of 5 watts. For someone interested in just shortwave listening, it is an ideal simple tuner to use with a general-coverage receiver primarily tuned to the frequencies from 40–15 meters. It is also well-suited for use by hams who hike to mountaintops to operate QRP. The SOTA Tuner, when complete, is very lightweight and compact for easy backpacking. With just one switch and one knob, it can't get much simpler to use.

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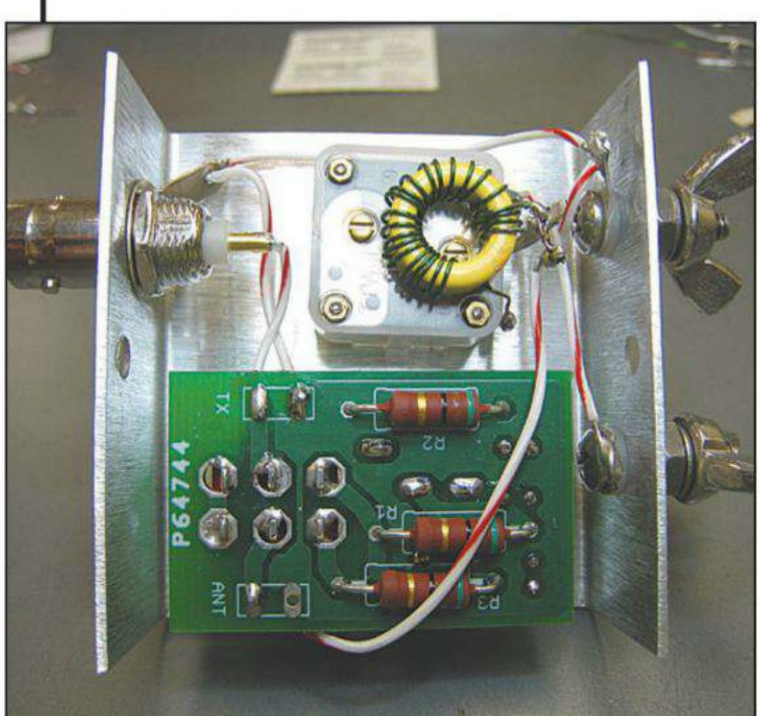
e-mail: <k0neb@cq-amateur-radio.com>



SOTA Tuner inside view.

The SOTA tuner kit includes the popular Dan Tayloe (N7VE) SWR indicator which allows you to tune the antenna without presenting an incorrect load to the output of the transmitter. This feature protects the final output transistor, which has no SWR protection in most QRP radio designs.

There are two toroids to wind in this kit, and for those who prefer not to wind them, remember that these toroids are pretty easy as toroids go, and the wire supplied with the kit is very easy to prepare. I used my three-step process for handling the toroid leads. I first use a lighter to singe the insulation, followed by using an emery board to remove the remaining insulation, followed by tinning the lead with good solder. This type of wire sometimes can be done in one step by using a blob of solder that is run up and down the lead to melt the insulation and tin the lead at the same time, but you need to have the iron heat on high. I prefer my method to be extra sure all of the insulation is removed and the lead is tinned before connection. There is some point-to-point wiring in order to connect the toroids to the SWR indicator board, the polyvaricon, and the antenna terminals, but none of it is difficult. The antenna terminals have wingnuts, making them fast and easy to use in the field.

Once completed, you can hang the antenna wire cut to the desired length for the band in use and attach it to the antenna terminal, and attach the counterpoise to the other terminal. Put it into the Tune mode and supply a low-power carrier and turn the knob until the LED dims or goes out. That finishes the simple procedure to tune it. Now it is ready to be switched into the operate position and enjoyed!

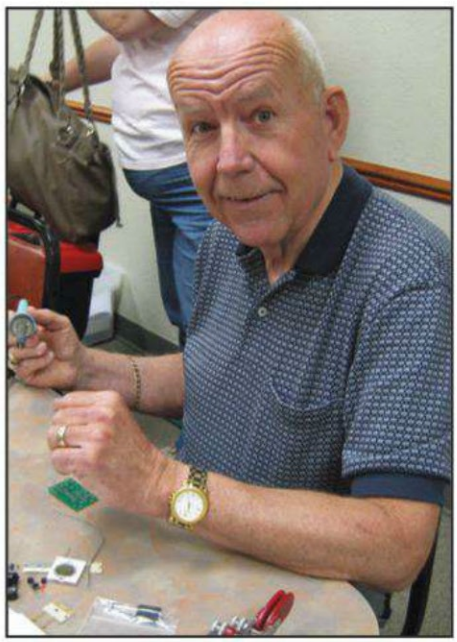
A wire length chart is provided in the downloadable instructions and can be printed to fit the bottom of the tuner so that the needed wire dimensions are always handy. If building this kit as a group project, allow about two hours for the build time so no one is rushed, and be prepared to help those who have not wound toroids before. These toroids are really simple and easy to make.

You can order the SOTA Tuner from Hendricks Kits for $30 plus shipping at <http://www.qrpkits.com>. Other new Hendricks kits seen at Dayton include a new Weber Tribander CW transceiver, Ft. Tuthill 160M CW transceiver, and the

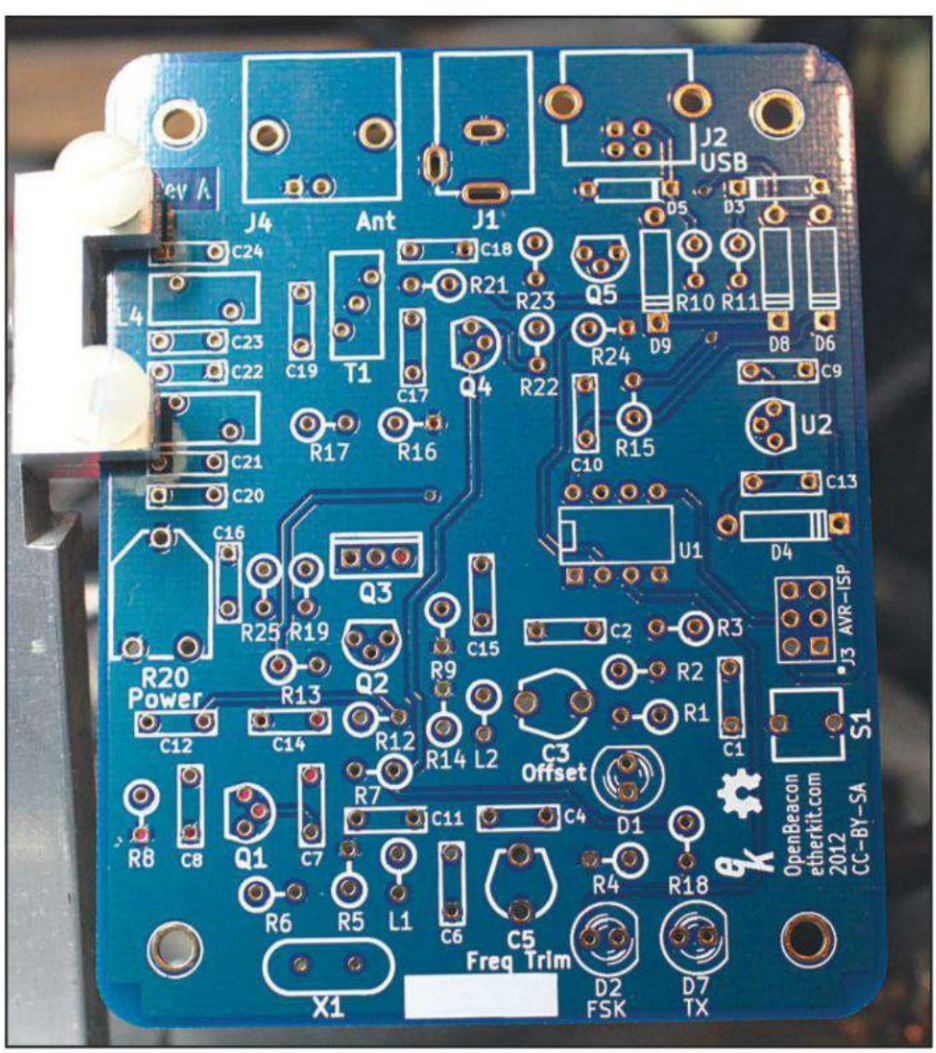
SMK-2 40M surface-mount CW transceiver kit. The SMK-2 has an optional three-crystal board, which allows it to cover the three most popular QRP watering holes in the 40-meter band. The Twofer Plus is an updated version of the Twofer CW transmitter. It comes with a case and is a simple build process. Look for more in-depth looks at some of these kits in future columns.

Etherkits OpenBeacon QRSS Beacon

Another fun kit that showed up at Dayton this year is the OpenBeacon QRSS beacon from Etherkits. Right now this kit is available only for the 30-meter QRSS frequency (10.140 MHz), but future plans include other bands as well. This kit features the ability to program the beacon with your callsign or change it at will for special event or club callsigns if needed. The OpenBeacon interfaces with your computer through the USB port and can actually be powered from the USB port if needed,



Doug Hendricks, KI6DS, joins in the fun at a monthly meeting of the HBQRP group in Ashland, Nebraska. Doug is the man behind Hendricks Kits.



Etherkits OpenBeacon board before component placement. Notice the use of vertically mounted resistors to maximize the use of space.

SOTA Tuner external view.

although for maximum power output a normal 12-VDC supply is recommended. In addition to changeable callsigns, the mode of transmission can be altered to include on/off CW keying, narrowband frequency shift keying, or a form of Hellschreiber transmission that results in visible characters and symbols being viewable.

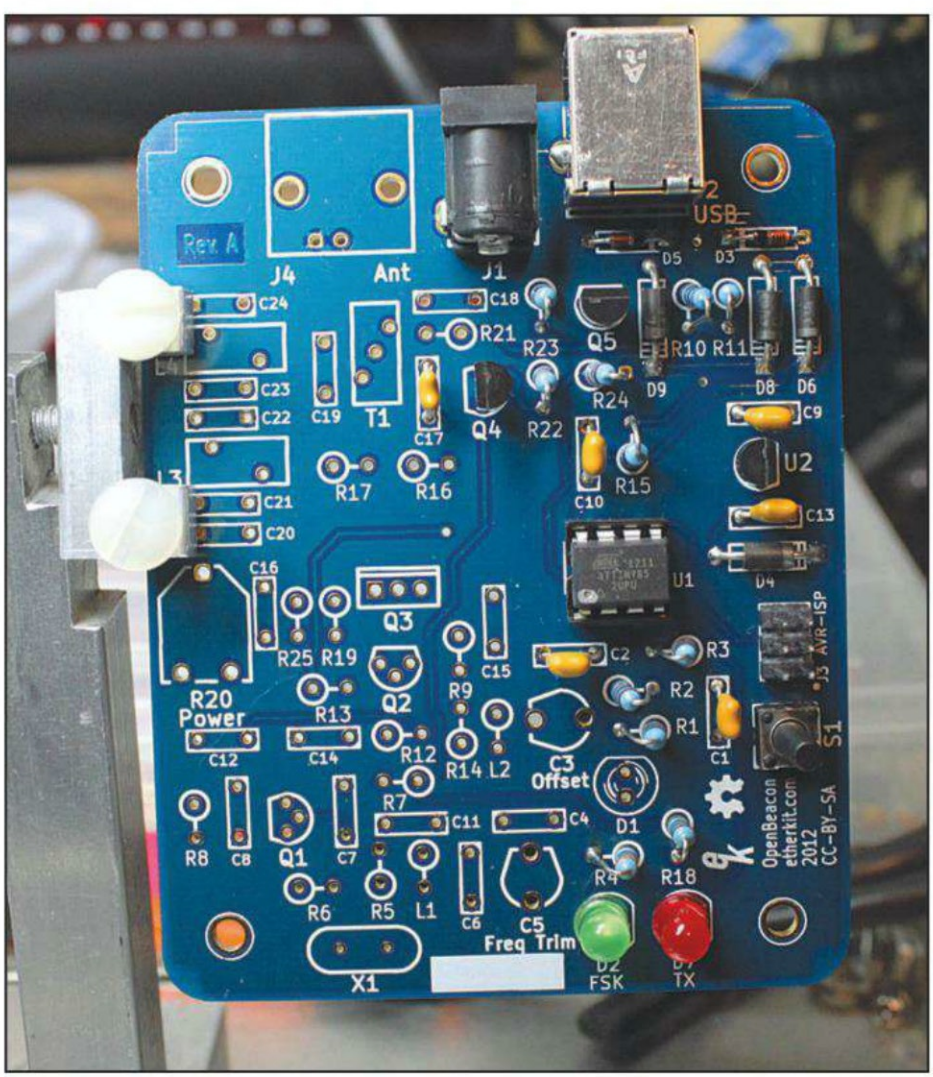
The OpenBeacon is assembled in three stages, allowing testing to be done first on the power supply and microcontroller/USB interface and then the oscillator, followed by the amplifier stage. As with a previous QRSS beacon kit I have built, one of the LEDs purposely does not light up, as it is used for its varicap properties instead of its ability to produce light. It is used to create the very narrow frequency shift most types of QRSS beacons use. The shift used for QRSS is often roughly 5–10 Hz and is adjustable. There are two other LEDs that are used to indicate the current status of the beacon—one LED for transmit and the other to indicate when FSK occurs.

Assembling the OpenBeacon is relatively simple, including the three toroids. One toroid is a bifilar with two different colors of wire supplied, making this toroid easier to make. All of the resistors are mounted upright on the board to conserve space. The controller IC is an 8-pin chip, and it is socketed in case an upgrade becomes available. Connecting the kit to your computer is accomplished by using a common USB A-to-B cable. This type of USB cable is commonly used to connect printers or external hard drives to a computer and is not included with the kit. Be sure to have one available when it comes time to test the first stage of construction. Programming the OpenBeacon is accomplished using a command-line interface and can be done once the first stage of building is complete.

At this writing, I had assembled the OpenBeacon up to the USB/Controller stage, and I will report on its completion next month. You can look at the documentation for this kit or purchase it at <http://www.etherkit.com>.

In Closing

It was a pleasure to meet many of my readers at the Dayton Hamvention® and I hope to meet many more at the Huntsville show in August. I won't be wearing the Dayton hat, but I'll have my red ball cap on and a *CQ* shirt. See you in Huntsville! 73 de KØNEB



Etherkits OpenBeacon board with USB/Microprocessor stage completed.

QRP in the South Pacific

BY CAM HARTFORD,* N6GA

This month we turn our attention to the South Pacific for a couple of QRP adventures. Remember the *Kon-Tiki*? (See opening photo.) It was the raft used by Thor Heyerdahl to sail from Peru to the Polynesian islands in 1947. His purpose was to show that the South Seas islands could have been populated by people who traveled from South America. To this end, he built the raft using materials and techniques that would have been available to the native population at the time, using balsa logs and other materials gathered locally in Peru. Heyerdahl permitted himself a deviation from the "original equipment" track by including some modern-day communications equipment. This consisted of transmitters for the 40-, 20-, 10- and 6-meter bands. These were tube-type rigs with about 10 watts input, which would fall pretty close to our current definition of QRP. The receiver they carried was a National NC-173. After the first 20 days of the trip, communication via ham radio frequencies was established and continued for the remaining 80 days of the voyage. An article describing the radio operation aboard Kon-Tiki was published in the December 1947 issue of *QST* magazine.

I was reminded of the *Kon-Tiki* adventure by Gary Davis, KD9SB. Gary wrote: "I have recently completed a 20-meter 1-watt output QRP transmitter for use on my sailboat (photo A). My transmitter was inspired by Thor Heyerdahl's 1947 *Kon-Tiki* balsa-raft voyage across the Pacific from Peru to Polynesia.

"The solar-powered transmitter has one sixth of the power output of the *Kon-Tiki* raft's 20-meter 6-watt transmitter. The transmitter has a loop-through connection for the receiver, weighs 5.5 oz., and has diode protection for high SWR. It can also be built for 40 meters, with 1.5 watts out. The inductors for the oscillator, RF amp, and PI output filter are off-the-shelf miniature parts from Mouser Electronics."

The schematic of Gary's transmitter is presented in fig. 1. For a complete parts list, contact the author at <gdavisKD9SB@sbcglobal.net>.

Gary uses a Yaesu VR500 pocket communications receiver with his homebrew transmitter. His best DX so far was with KD6JUI, a distance of 1886 miles. For an antenna, Gary uses a Zepp that is fed with window line. A full description of the antenna can be found in his article entitled "A 20 Meter Antenna for Sailboats," published in the October 2006 issue of *QST*.

CEØ/YV5IAL: A QRP Digital Portable Mini-Dxpedition

If *Kon-Tiki*'s path across the Pacific had dipped about a thousand miles to the south, it might have encountered Easter Island, from where our next story comes. Many of us dream of someday doing a portable operation from an exotic location. Roberto, YV5IAL, has done just that, and not from any ordinary, remote locale (photo B). Easter Island claims to be the most remote inhabited island in the world. Roberto journeyed there for a QRP mini-DXpedition. Here's his account:

"On the first days of January 2010, I made my dream come true—transmitting from an exotic DX entity in the middle of the Pacific Ocean. Easter Island is the most isolated island on the planet, thousands of miles away from anywhere.

Easter Island is more than 14 hours by plane from Caracas. The airfare is very expensive and the maximum weight of luggage allowed is less than 40 pounds per person.

Thor Heyerdahl sailed his raft Kon-Tiki on an adventurous voyage shared by hams around the world. National Radio provided the receivers and made sure everybody knew it, as seen in this ad from the September 1947 issue of CQ.

*1959 Bridgeport Ave., Claremont, CA 91711
e-mail: <qrp@cq-amateur-radio.com>

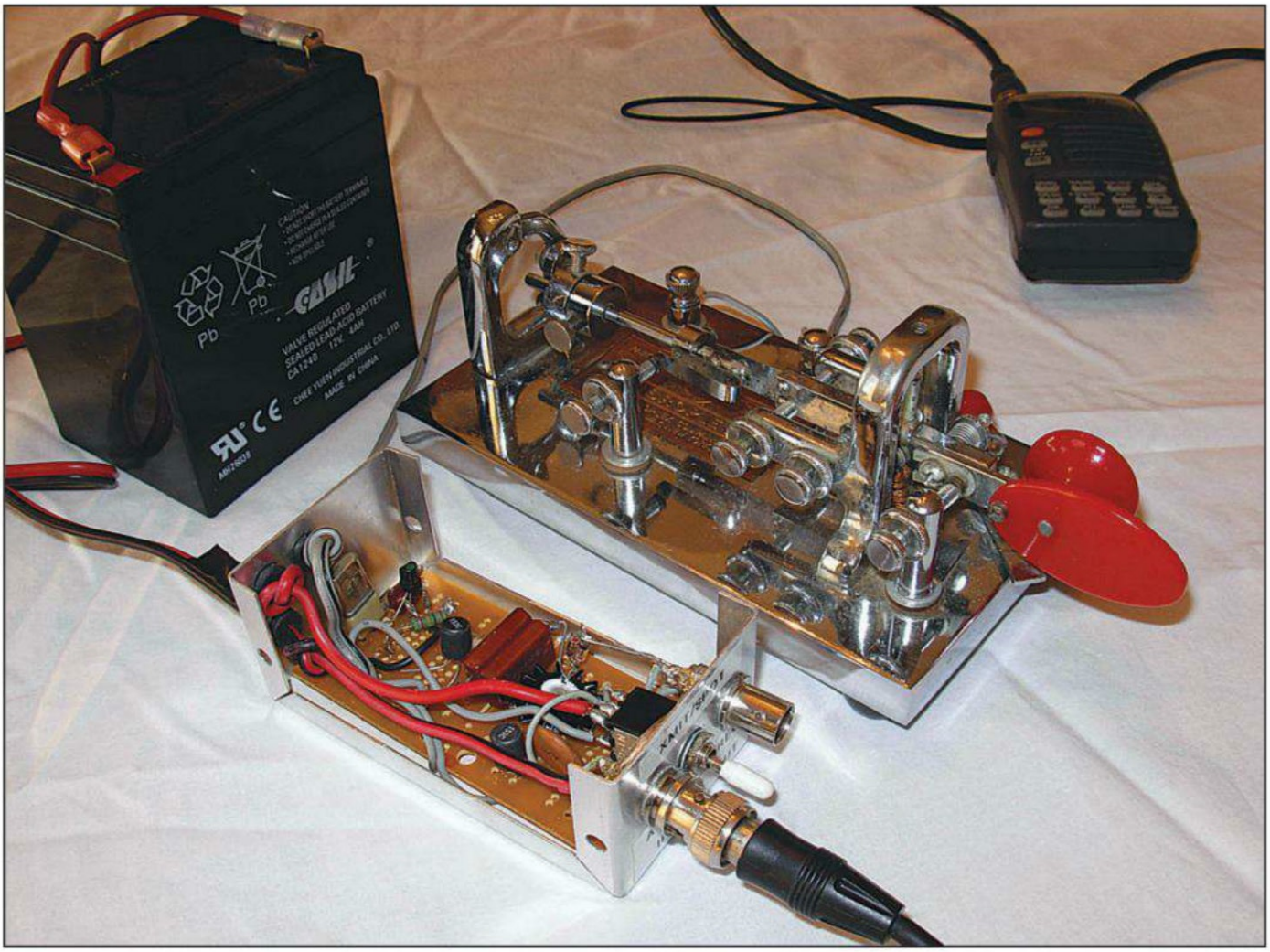


Photo A– KD9SB's Kon-Tiki inspired 20 meter CW transmitter.

I decided to work QRP, because the Yaesu FT-817ND, portable antenna, and accessories weighed less than 14 pounds, and the full station fit in two small bags (one for the radio and accessories and another for the antenna). I decided *not* to take the 100-watt station (Yaesu FT-857D and accessories) because the weight would have been twice or more. . . .

"After 20 hours of travel, I arrived at the hotel in Hanga Roa (the only town on the island). Immediately, I asked permission to install the antenna. Thirty minutes after, the Buddipole antenna was installed on the balcony and the radials (counterpoises) were spread all along the wood hotel room railings. CEØ/YV5IAL, QRP digital portable station was ready to start the First World Easter Island PSK activation (January 9 to 11, 2010).

Roberto's station components can be seen in photo C. His QRP PSK station consisted of an FT-817 and an HP 1910 IPAQ Pocket PC running PocketDigi software. Roberto continues with his observations about operating low power from a place where your signal has to travel for thousands of miles before it gets to the first available ham stations: "Wasting valuable time insistently calling DX will not work. Never forget that you're at a disadvantage. Only good antenna stations will be able to copy you. Avoid competing with another station, and wait patiently for the DX station calling CQ again."

When it came time to pack up and leave, Roberto's log included QSOs with the USA, Hawaii, Marshall Is., Uruguay, Argentina, Chile, Colombia, and Brazil. His most distant QSO: V73RS, 9750 km (6,058 mi) for 2437 km/watt. A very good show for a QRP rig and a portable antenna!

Flyweight Feedline

The subject of Flyweight Feedlines surfaced on QRP-L a couple of months ago. That prompted me to make a trip to the garage to retrieve some lightweight stuff with which I had experimented. My motivation for fabricating this feedline is now lost in the mists of time, but I think it had something to do with trying to make a portable antenna that would work well with my 4-band Elecraft K1.

I've used short lengths of RG-174 to feed a well-matched 20-meter dipole, but this little coax would never do well in feeding a non-resonant 4-band antenna. The feedpoint impedance would be all over the map, and the resulting feedline loss would gobble up most of my RF. Over the years people have pressed zip cord, computer ribbon cable, and all manner of hookup wire into feedline service, with varying results. The first use of computer ribbon cable I could find was "The St. Louis Doublet" by Dave Gauding, NFØR, published in *QRPp*, Spring 1999. Dave used a length of 2-conductor computer ribbon cable. This was followed by Doug Hendricks' KI6DS "Norcal Doublet" published in the Winter 2002 issue of *QRPp*. Doug's feedline was a length of 4-conductor flat ribbon cable, of which he used the outer two conductors for the feedline, the inner conductors providing only spacing.

Fast forward several years. A box of flat-ribbon cable caught my eye at a

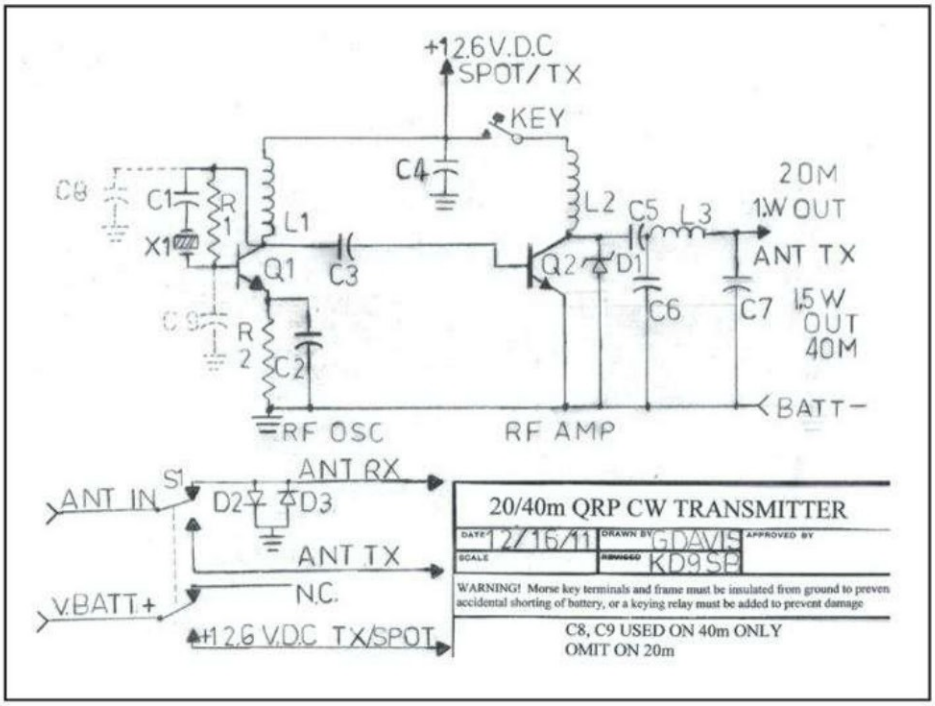


Fig. 1– This is the schematic of KD9SB's transmitter. The parts list can be obtained from the author. (See text for details.)

swap meet and followed me home. It was 100 feet of 37-conductor cable, enough to build 18 NorCal doublets. Since there was so much of it, I decided I could easily experiment and hopefully find something that would represent an improvement over the existing designs.

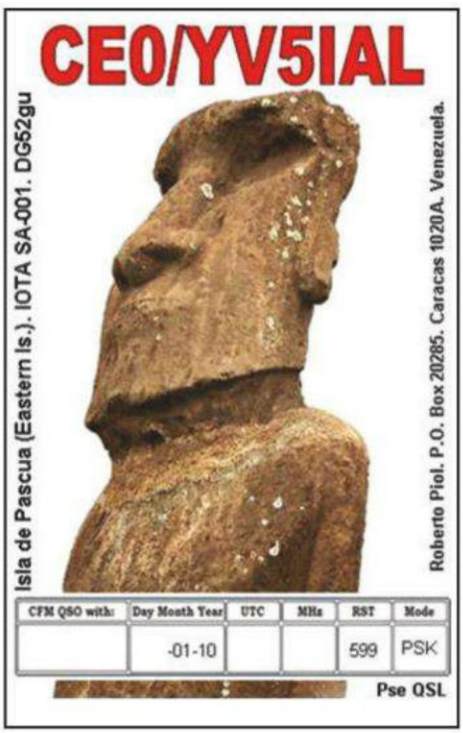
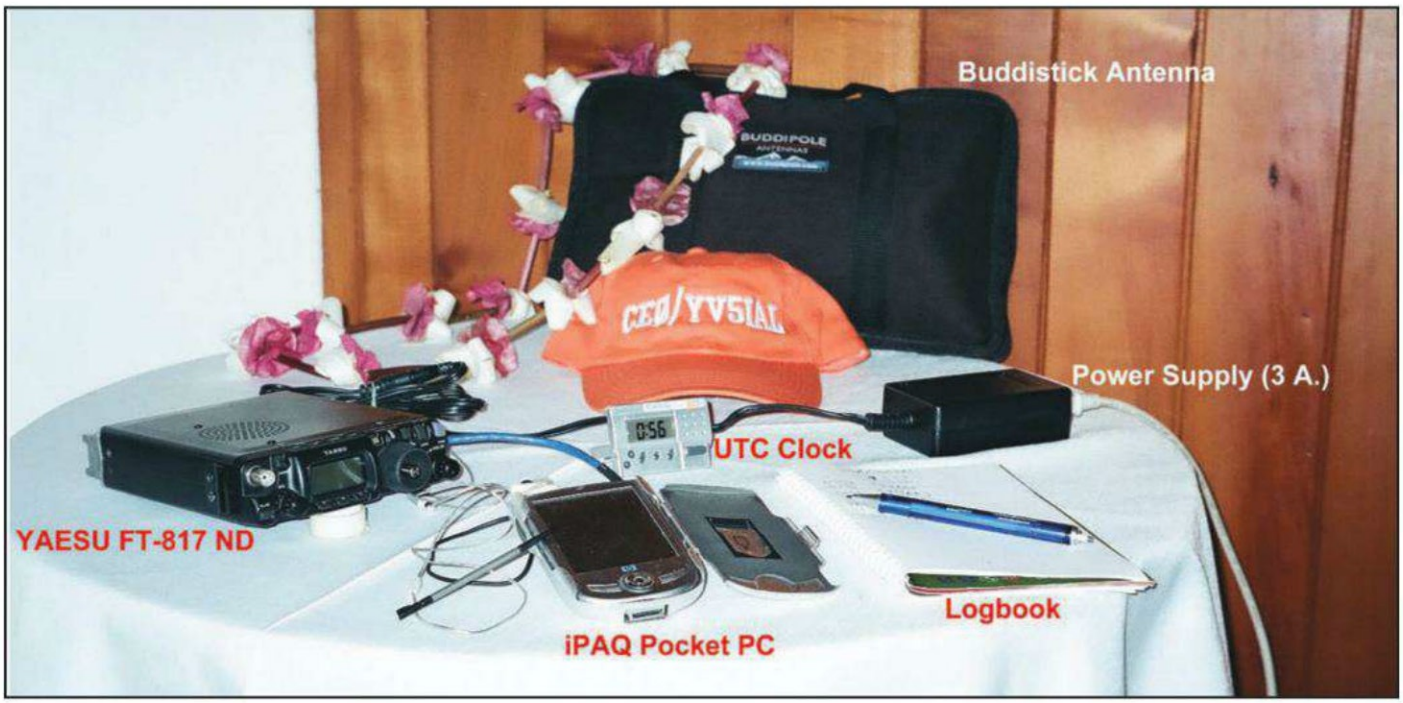


Photo B– YV5IAL's QSL card from Easter Island.

After many iterations I ended up with the feedline that you see in photo D. I peeled off a seven-conductor strip of the flat cable, used the two outer strands on each side for the conductors, and cut out the inner three conductors to make faux window line. Why? The losses in a feedline come primarily from the I^2R losses in the conductors and dialectric losses in the space between the conductors. In this ribbon cable the conductors are #28 stranded wire, which seemed a little wimpy to me. Doubling up on the conductors is a fairly painless way to cut down the ohmic losses. Likewise, air is the best dialectric we know other than vacuum, so by removing most of the inner three conductors we have a fairly good dialectric—not perfect, but pretty darn good.

Admittedly, constructing this feedline is a little more labor-intensive than making the NorCal Doublet feedline, which requires practically no work at all. However, the results are fairly impressive. I enlisted the help of Charlie, W6JJZ, and his AIM 4170 VNA to run some tests on this feedline. It ends up having a characteristic impedance of 280 ohms, a velocity factor of .87, and .9 dB loss per 100 feet at 10 MHz, which means this feedline weighs about the same as RG-174 but has the loss characteristics of RG-59 with foam dialectric.

The hard part is making it. I did it in three passes. The first pass was to mark the 7-conductor cable where the win-



Phopto C– The portable QRP PSK setup used by Roberto, YV5IAL, on Easter Island.

dows were to be cut out using a permanent marking pen. To speed up this task I made a template on a sheet of paper which I attached to a clip board. I laid the cable next to the template and marked it, and then slid the cable forward to the place where I could mark the next set of cuts.

In the next pass I made the slits in the cable between the conductors and the inner part which was to be cut out. A hobby knife worked well for this.

The last pass was to cut out the window sections, and this was done easily with a small set of diagonal cutters, as seen in photo E. It is a time-consuming process, but I found the time passed more quickly if I listened to code practice. Nothing like multi-tasking to make the time fly!

April Reader Survey—QRP

A monthly feature in *CQ* is the Reader Survey, wherein the editorial staff asks a series of questions aimed at learning more about our readers and, hopefully, improving the focus of the magazine. The subject of the April survey was QRP, and I found the results to be illuminating, if not downright profound.

This survey is voluntary, and of course not a statistical cross-section of the whole ham spectrum, so you'd expect that the ones who responded have at least a passing interest in low-power operating. Their attitude toward QRP operating bears this out, with the answers "I enjoy it when I do it" and "Love it" comprising 75% of the responses. "Great for Others" scored 10%; "Life's Too Short" came in at 9%; and "Hadn't thought about it" rounded out the responses with 7%.

The responses to the "Time devoted to QRP operating" question were skewed by the 19% who answered "Don't operate QRP at all," so I tossed out the non-QRPers and rearranged the numbers. The biggest response was in the 1–25% group, with 43% of QRPers responding. If you then add the 26–50% group (13%), the conclusion indicated is that a majority of QRPers spend less than half of their time operating QRP. Which means that half the time they are doing something else, from which it fol-

Photo D– Balanced feedline made from flat ribbon cable, flanked by RG-58 and RG-174.

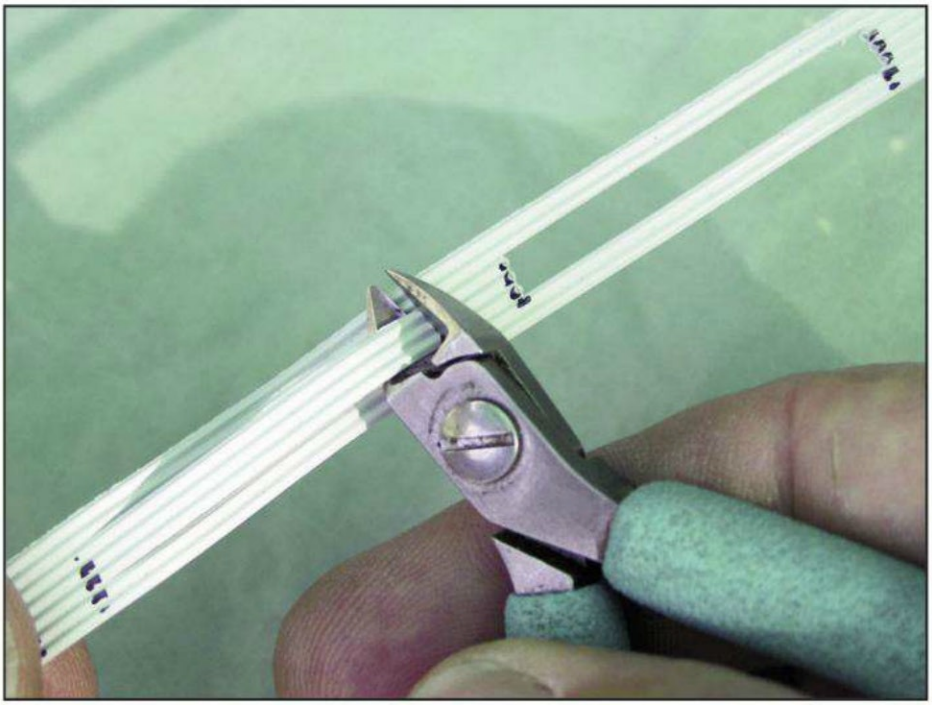


Photo E– The last step in fabricating the flyweight feedline.

lows that they do have a variety of interests in the radio world. Psychiatrists would probably say that this indicates a healthy state of mind, unlike the 18% of respondents (myself included) who operate 100% of their time at QRP levels. At least we're not irradiating our brains with dangerously high levels of RF, though.

The answers to the question about what modes are most often used are not surprising, with 61% of respondents using CW, followed by 32% for SSB, 16% Digital, 14% FM, and 2% Other. If the survey were to be run again in a couple of years, it wouldn't surprise me if the results showed an increase in the use of digital modes. Newer modes such as PSK, WSPR, and JT65 work quite well at QRP levels.

"Where" you operate QRP is pretty much what you would expect: 68% of respondents said Home, followed by 27% for Remote/Off Grid, 21% for Va - cation Home/Hotel, 20% for Car/Truck, 6% for Other, and 2% for Boat/Plane.

The last two questions were about the equipment we use. In the "Antenna" category, the home antenna was mentioned 61% of the time, a likely answer in that we operate from home most of the time per the answer to the "Where" question above. This was followed by portable homebrewed at 38% and portable purchased at 26%. Finally, 20% of respondents say they use a mobile antenna, which is notable because I've often heard it said that one can't operate mobile with anything less than 100 watts. 20% of the respondents would disagree.

Regarding what rigs we use, commercial QRP rigs edge out QRP kits 36% to 34%, meaning that we buy and build a kit almost as often as we buy a factory-built rig. 21% say they use the "Big Rig" by turning down the power. Way down the list is Scratch Built at 5%. I'll have to admit that I last scratch built a rig about two years ago. It's getting harder to scratch build with through-hole parts becoming scarcer and so many more designs using surface-mount parts and on-board processors. It appears that QRPers still have a desire to build their rigs and kits are fufilling that need.

Thanks to the editorial staff here at *CQ* for running the monthly Reader Survey. From the 2012 April survey I feel like I have a more-focused picture of who we QRPers really are.

Signing Off

As I'm writing these words, Field Day plans are coming into focus and gear is being retrieved from storage in anticipation of another good weekend in the woods. As you're reading this, FD '12 is history. I hope you had as great a time as I hope to!

72/73, Cam, N6GA

learning curve

BY RICH ARLAND,* K7SZ

The Best Laid Plans . . .

With Dayton/FDIM (Four Days In May, the annual QRP gathering at the Dayton Hamvention®) behind us, things are starting to get back to normal around the old Bent Dipole Ranch. I had anticipated finishing the July column about building and modifying the Wilderness Radio NorCal-40A <http://www.fix.net/~jparker/wilderness/nc40a.htm>. However, after a whirlwind two months (Ozarkcon QRP convention in Branson, Missouri, in April and Dayton/FDIM in May), I was unable to spend the necessary time at the workbench to complete the build/modifications and shoot the pictures for that column. Hopefully, next month we'll be able to finish that project. In the meantime, if you haven't already procured a NC-40A kit, this gives you additional time to get that project under way.

"Life is short, so enjoy!"

This month's column will instead be dedicated to exploring some opportunities to get on the air with a thought toward customization of your (my?) shack. Most of us have our "radio room" or "ham shack" in an isolated portion of our home for several reasons. First, it gives us a place to retire from the hustle and bustle of family life and enjoy some quality time on the radio. Secondly, and most probably the driving force behind a separate location for the shack, is the spousal unit or significant other. After all, we hams are a cloistered bunch and not everyone shares our love (mania??) with all things radio. Therefore, having a place to play radio that is not on the main thoroughfare of the homestead is a good thing—for all concerned.

However, when both spousal units are hams, this becomes a game changer. Both Patricia (KB3MCT) and I are active on VHF FM with our local club, (the Gwinnett Amateur Radio Society, GARS) and Gwinnett County Amateur Radio Emergency Services (ARES) group. The main reason Pat studied and passed her ham tests was to become active in emergency communications and make a difference when disaster struck. Therefore, we needed a small station in the main portion of the house in order to check into the various local nets and participate in ARES.

One of the first things I did upon moving into our new home was to install a simple Icom FM transceiver and a dual band V/UHF omni antenna in the corner of the kitchen. This has worked out well over the intervening years but there had to be a better solution … and there was. It came in the form of Ed Breneiser, WA3WSJ, that crazy dude who wanders the Appalachian Trail talking to people using his pedestrian mobile (/PM) radio set!

One of the first things you have to understand about Ed is that he isn't quite normal! Far from it; Ed's motto, "Life is short, so enjoy!" is his personal philosophy and guiding light. I truly envy Ed. Forced into early retirement, he married his passions of hiking and ham radio to become one of the world's leading proponents of man-pack HF operation from primitive locations. The Appalachian Trail, or "A-Trail" as it is called by those who regularly hike it, stretches across 14 states from New England to Georgia. It is a magnificent trail full of early American history and incredible scenic beauty.

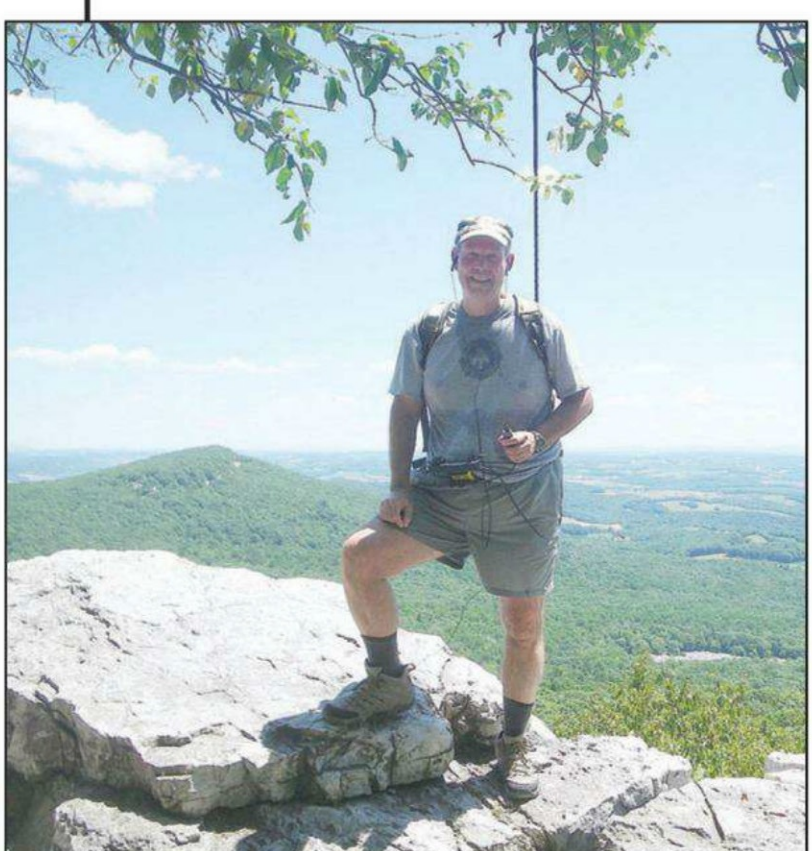
Ed was one of the guest speakers at the FDIM forums this year. His topic, "Pedestrian Mobile: Once You Go '/PM,' You'll Never Go Back," was, for me, the highlight of the forums and, having known Ed for almost 20 years, it was a chance for the two of us to buddy-up and compare notes.

So what does Ed's preoccupation with hiking the A-Trail with an HF man-pack set have to do with my living room? Read on, have no fear, this will make sense, I promise.

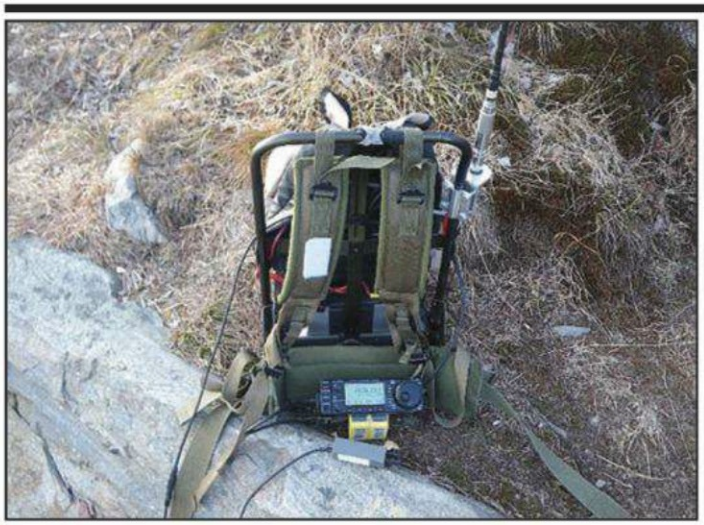
/PM Rig Selection

Ed's philosophy regarding ham radio and operations from the trail or campsite is: KISS (Keep It Simple, Stupid). Radio gear designed for use from the bush has undergone some very interesting changes over the last few years. Fifteen or more

*770 William St. SE, Dacula, GA 30019
e-mail: <k7sz@live.com>



Ed Breneiser, WA3WSJ, loves to operate pedestrian mobile (/PM), from Pulpit Rock on the Appalachian Trail in Pennsylvania.



This is Ed's ALICE pack modified to carry the ICOM IC-703Plus, a Lithium-Ion battery pack, and antenna for pedestrian mobile (/PM) operations.

years ago it was not uncommon for someone hiking or camping to drag along a Ten-Tec Argonaut 509, Heathkit HW-8 or similar 20+ year old rig and set up a simple shack in/near the tent. With the advent of the Elecraft K1 and KX-1 transceivers along with a plethora of kit radios aimed directly at the hiker/camper like the ATS series from Steve Weber, KD1JV, and the Hendricks QRP Kits PFR-3, things quickly changed. Now it was possible to not only take a rig with you that had some much needed and unique-to-the-trail features, but the radios themselves were true game-changers when it came to portability, reliability, ultra-low current requirements and ease of use.

In Ed's case he tried several arrangements and finally settled on the discontinued Icom IC-703 Plus, an HF plus 6 meter transceiver, for use as his main pedestrian mobile rig. While the Yaesu FT-817 is certainly smaller and covers more bands than the 703, the latter has one important feature that the 817 lacks: the ability to remove the front panel/control head and remote it from the main portion of the radio set. This feature is important for one primary reason: with the radio being carried on a back pack/pack frame arrangement any time you need to make changes to the rig's parameters you have to merely make the adjustments on the remote control head as opposed to un-shouldering the pack frame, diddling with the radio controls and then re-shouldering the pack frame to continue on your journey. The remote head makes pedestrian mobile operation easy. In addition, it has a large, easy-to-read, LCD display.

One other thought regarding the choice of the IC-703/703 Plus for backpacking is the fact that this radio set can produce up to 10 watts (mine does 12!) of RF output. The FT-817 produces only 5 watts of RF. This may seem like a very small point, but that extra 5 or so watts equals 3dB of additional transmitting power output, which may make the difference between making a contact or not. It's always nice to have that extra bit of power available, especially during an emergency. Another /PM consideration is power consumption. Generally, you should look for a rig with 500 mA or less of idle current on receive. Both the 703 and the 817 meet that parameter.

One final word on rigs: The two radios I have been comparing are multi-mode rigs: CW/SSB/Data. While there are a

number of CW-only rigs out there (namely the kits from Elecraft, KD1JV, and Hendricks QRP kits), not everyone loves CW as their favorite mode of operation. Therefore, I decided to concentrate on the two radio sets that should satisfy about 99% of the readership of this column. If your bag is CW, then by all means consider a K1, KX-1, PRF-3 or ATS rig as your /PM radio set of choice.

Now a Word about Batteries

Any time you are taking radio gear into the bush or plan on operating from a remote/primitive location, battery budget should be foremost in your mind. Batteries are heavy, they take up added space in your kit, and without them your rig doesn't work! A method to recharge your portable battery bank is always a good idea. This will allow almost unlimited operating time while on the trail or camped.

Ed has done a lot of research into batteries for pedestrian mobile operation. Over the last 10-15 years there have been tremendous strides made in battery technology that have a direct impact on anyone desiring to operate their ham gear outside of their shack. You have basically four types of rechargeable batteries available to power your /PM station: SLA (Sealed Lead-Acid or "gel-cells"), Ni-Cad (nickel-cadmium), NiMH (nickel-metal hydride) and several forms of Lithium-Ion (Li-Ion) cells. All of these have advantages and disadvantages.

While "Battery 101" is outside the purview of this month's column (it can be a column in itself), let's take a very quick look at the differences between these battery types.

SLA: These commonly-used "gel-cells" use relatively old-school technology, but they are well-established in the marketplace. The units are heavy since they incorporate lead as part of their storage media. They are inexpensive compared to the other portable/ rechargeable battery packages.

Ni-Cad batteries have also been around a long time. They have the ability to be recharged many hundreds of times, and their output current is constant over about 90% of their discharge cycle.

NiMH has much higher power density (the ability of the battery to deliver higher current in a similar form factor) than Ni-Cads or SLAs. Their main advantage over Ni-Cads is being able to run your rigs longer on a single charge.

Li-Ion is relatively new to the ham radio field (but likely in your cellphone). These batteries have a very high power density and very low weight when compared to SLAs, Ni-Cads and NiMH cells. However, they also have a higher pricetag and require specialized charging and power/current monitoring circuitry. On the other hand, their much improved battery density and lower weight make them great candidates for /PM operations.

Ed uses a 7.2 A/hr Li-Ion "water bottle battery" with his IC-703 Plus and highly recommends this combo for the occasional romp in the woods! The fact that he saved almost 8 pounds in battery weight alone is enough to get most hikers' attention! The old hiker's adage, "ounces equal pounds and pounds equal pain," is oh, so true. Anytime you have the chance to shave off weight from your pack-set, do it! Li-ion batteries cost more than other types, but if weight is a concern, then the overall improvement in portability is something you shouldn't overlook.

Ounces Equal Pounds

Once you have made choices in radios, batteries, antennas, and pack frames, it's time to weigh everything and make it all work together. One thing that Ed stresses is that, by def-

This is Pat's and my Stanley mobile work center box with the current equipment layout that we use for ARES/RACES deployments.

The IC-703 sits atop the Stanley mobile work center. AC power supply is located to the right of the radio and the mic/CW paddles are on the left. See text for details.

inition, pedestrian mobile operation mandates that everything, *everything,* must be carried by the operator. This means that the radio, power source, recharging circuitry, accessories (mic, key, tuner, headphones, digital voice recorder, etc.), antenna and drag wire have got to be factored into the equation.

According to Ed's research, you need to keep your /PM rig as light as possible with the average of 38 pounds being about the maximum comfortable load for a 190-pound male. Obviously if you can get away with less weight, by all means do it! After all, pedestrian mobile operation is supposed to be fun, not torture.

Antennas for the Trail

As many of us low-power aficionados know only too well, the antenna is the primary factor in making QSOs when using 5 watts or less. This goes double for /PM operations. The antenna is where you can be quite innovative (within reason). Most /PM outfits utilize some form of vertical antenna. The coil loaded "Ham-Stick-type" mobile antennas are quite popular as well as mono-band whips. The internal antenna tuner on the IC-703 will match almost any type of coaxial-fed antenna. That being said, both Ed and I have opted for Ham-Stick variants. Since these antennas are basically as very short quarter-wave vertical antennas, an RF counterpoise, in the form of a drag wire approximately one-quarter wavelength long, needs to be added to the ground side of the antenna mount. You may need to experiment to find the specific length that will keep your SWR in a range that a built-in or portable tuner can handle.

One thing will become very apparent quite quickly; you *must* watch where you

are going with an 8-11-foot tall whip above your head and a 22-foot drag wire splayed out behind you! Obviously, *avoid power lines.* While I realize there are few power lines in remote areas that you might be tempted to work pedestrian mobile, there are those times when you will want to walk about your neighborhood to check out a new antenna, equipment configuration, battery supply, etc. When you are tempted to wander about he neighborhood, be *very aware* of where you are walking as power lines can become entangled in your antenna and that would not be a good thing.

What Now?

OK, so now that we've run the gamut of pedestrian mobile operation, how, exactly, does this all fit into my living room ham shack? Very simply, my IC-703, which is my /PM radio set, is set up on top of my EmComm deployment package. In my case we have repurposed a Stanley roll-around tool case and we use it as a mobile/portable field station. My roll-around emergency communications station was initially envisioned to hold some deep cycle SLA batteries, a charging system, a power distribution system, and a variety of radios for different bands and services. By adding the Icom IC-703, Pat and I now have a very capable, extremely versatile, EmComm package that we can employ when we are deployed in support of our local ARES taskings.

Why is this so important? Well, since the IC-703 is my /PM rig as well as the radio we will be using for EmComm HF operations, and the V/UHF rig is used for routine net check-ins, both Pat and I are using on an everyday basis the actual equipment that we would be operating during an emergency. With the advent of today's menu-driven radios, it is difficult, if not nearly impossible, to maintain proficiency using any given radio during an emergency unless you also use it on a regular basis. This means that we maintain current proficiency with our gear. All this thanks to Eddie Breneiser, WA3WSJ, and his proclivity for operating in the wilds using commonly-available ham gear.

That's it for this month, gang. If you are interested, be sure to give pedestrian mobile a try. And give Ed's website, <http://wa3wsj.homestead.com/>, a close look. Ed is the "go-to guy" for all things /PM. His series of e-books will be of great help in your quest to get on the air pedestrian mobile!

73, Rich, K7SZ

BY DON ROTOLO,* N2IRZ

Back to Basics (or Maybe Forward . . .)

If you have never worked a digital mode, this month's column is for you. The digital age is well upon us, but perhaps you're one of those who haven't yet taken the plunge. It's been a long while since we've looked at setting up a digital station from scratch, so we'll do that this month. But before I even get into the details, it might be helpful to explain just what *digital* is from a ham radio perspective and what we do with it.

Digital refers to the way we encode the information we want to transfer. To be a digital mode, the information or data needs to be converted to a series of values that can be represented by numbers. At the receiving end those numbers are converted back into the original signal (or reasonably close). In contrast, an *analog* signal such as single sideband is not converted to discrete values, but sent as a continuously variable signal.

The value of digitizing a signal is that we can then use fancy mathematical tricks to extract the information from the signal while reducing the effects of noise and other distortion that we commonly hear on the signal path. In the digital world, we would know the separate "values" that are possible for the signal to have, so we can more accurately guess what a particular value should be. In addition, we can send additional data that will help us reconstruct any missing values—or at least be able to recognize that something is missing. In fact, there are some digital modes with which the data received can be *below* the noise and still be decoded perfectly. Marconi would be proud.

We use digital mostly for transferring computer data—anything from an image or text file to plain text in a "keyboard-to-keyboard QSO." However, in the past decade or so *digital voice* has become quite popular. Again, we can take the digital voice data stream, perform some fancy math tricks on it, and squeeze it into a channel so narrow as to be impossible in the analog world.

Enough about digital and how neat it is. Let's get into the nuts and bolts.

Basic Needs

The first thing you'll need is a radio, one that tunes to the frequencies of interest. For HF work, where you have a wide variety of modes and can expect to hear signals from very far away, you generally will want to be in the lower portion of each band. My favorite hangout is on 40 meters, between 7070 and 7100 kHz, since there's a lot of activity there at almost any hour of the day, but activity can be found at the top end of the CW portion of nearly every band. While much of the activity is found there, don't be afraid to poke around!

In the VHF world there are only a few dominant modes, primarily AX.25 packet. Two meters is the place to be, with lots of APRS packet activity at 144.39 MHz, and regular packet activity clustered around 145.01 MHz. Other bands tend to have far less activity, so if you're a beginner you might get frustrated scanning 70 cm, for example.

The brand and model of radio aren't all that important. You can use anything from a very basic walkie-talkie or shortwave receiver up to a fancy transceiver with all the bells and whistles. The only real requirement is that it can hear the signals you want to work, although having an external audio output would be nice.

It should go without saying that you'll need some kind of antenna. Again, whatever it takes to be able to hear those signals should be just fine. Better antennas generally mean more signals to hear.

Next you'll probably want a computer of some type. While there are some digital modes that can be worked using dedicated hardware, the overwhelming majority run on a Windows® PC, with a decent selection for Mac and Linux enthusiasts. The computer needs to be fairly modern, say Pentium-class, and be equipped with a sound card of some type. A quick check of a recent Sunday's newspaper advertising flyers revealed several complete computers having sufficient capabilities for just under $400. I can imagine that a frugal shopper might find something for considerably less than that, perhaps on the used or refurbished marketplace.

The next step is to get some digital software. There are dozens, or hundreds, of different software programs out there, but they fall into two basic categories: data transfer and QSO.

Data transfer software generally is used to send computer files from here to there. Although this is really valuable, for example for emergency communications, it's not much fun for a beginner.

QSO software is for live, real-time chats and ragchews. Although it also has value for emergency communications, most hams find it enjoyable to chat with others about the usual things we like to talk about. Some prefer to hear a live voice, and for those the analog phone modes are probably better choices. However, in my house, where the shack is in the family room with the TV, noise can be a problem—not the noise from the rest of the family, but my (loud) voice speaking into the microphone (headphones quiet the receive end). With keyboard-to-keyboard digital modes, the only noise I make is the tapping of keys on the

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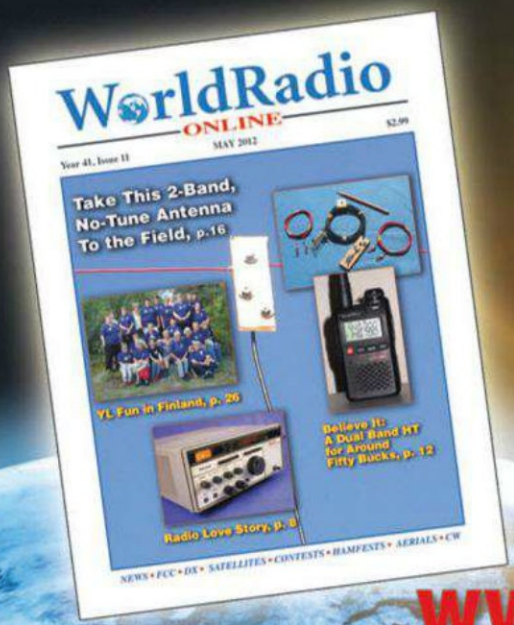

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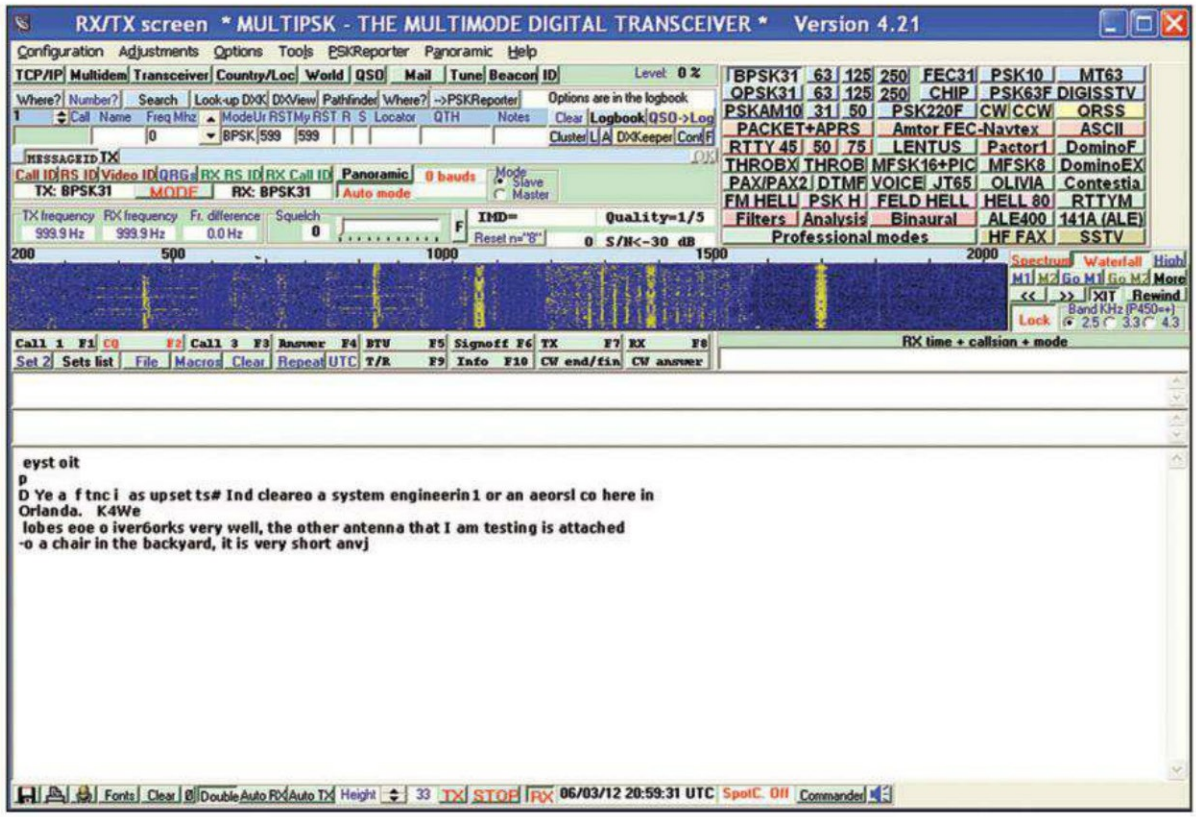

Fig. 1– The MultiPSK main screen. At top are the controls, a little intimidating, but easy and powerful once you get the hang of it. In the middle is the waterfall display of signals in the receiver's passband. Below are the text areas, the largest of these the received text.

keyboard. In fact, it's not the usual practice to even listen to the received audio when working digital modes.

Software Options

So, which software? For the most part, the main differences are the speed and the on-screen display. Some modes move data faster than others, and some software has a better look and feel—user interface—than others.

For a beginner, I recommend starting out with PSK31, a relatively low-speed mode that is a mature technology with plenty of activity on the bands. To get your copy visit <http://www.dxzone.com/catalog/Software/PSK31/>, which is a page on the DXZone website dedicated to the mode. There you'll find a wealth of PSK31 resources, including links to download several of the most popular software applications. My personal favorite is MultiPSK from F6CTE, a Windows-based freeware program that offers several digital modes, including PSK31. What I like best is that it doesn't touch the Windows registry: Uninstalling is as simple as deleting the files.

Download the software, unzip the 8-MB file, and read the instructions in the READ_ME.TXT file to install and configure the software, which should take just a few seconds if you choose "Automatic installation or updating" at the very bottom of the install screen. The software starts automatically and the opening screen is really intimidating! Don't fret, as while the screen is extraordinarily cluttered, this is only the configuration screen, which (once set) is rarely accessed. Find the "personal data" button near the bottom and fill in your information as best you can, with <MYCALL> being the bare minimum. When you're done, click "save" and then click "Exit to RX/TX Screen" which is the last entry on the top menu. For now, we want the default settings everywhere else.

Just about every other digital sound-card mode software I have ever used installs in about the same way. In general, if you read and follow the instructions, you'll end up at a screen much like that shown in fig. 1, which is the main screen for MultiPSK.

Now we need to get the receive audio into the computer sound card. The best way is to get a cable with an 1/8-inch (3.5-mm) mini phone plug on each end, connecting one end to the radio's line out (or headphone) output jack and the other end to the line in jack of the computer's sound card. Turn the volume on the radio way down for now, until we get

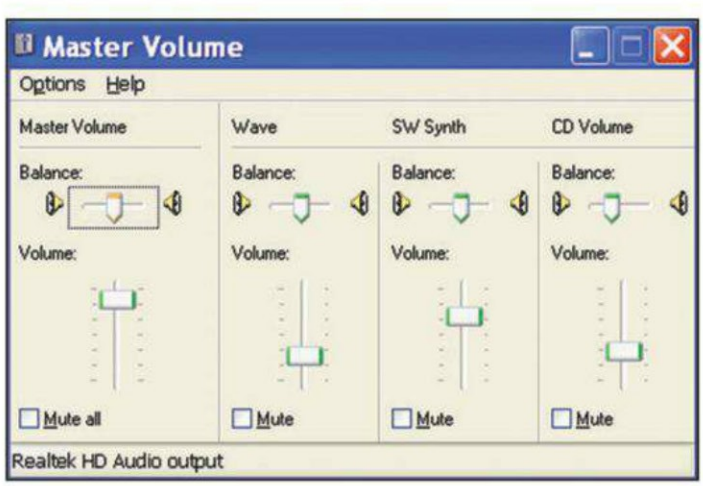

Fig. 2– The Windows sound mixer showing the output adjustments. Yours may look a little different, depending on your sound card. For Input adjustments, click on Options/Properties and select the "Recording" button to see those controls.

a feel for how "loud" the sound card wants the incoming signal to be. If the direct wire connection isn't an option for you at the moment, then you can use a microphone connected to the sound card to pick up the sound from the radio's loudspeaker. PSK31 is very noise-tolerant, so this won't affect your receive capabilities much (although hearing the digital "noise" will get annoying eventually).

Tune around 7070 or 7080 kHz, or somewhere you hear activity. PSK31 sounds somewhat like a single warbling tone, which you can hear on the WB8NUT digital modes page at <http://wb8nut.com/resources/psk31.wav>.

If the sound is making it into the sound card, you'll probably see something on the *waterfall display*, that dark blue or black area in the middle where signals in the receiver's passband are displayed as a slowly moving chart, kind of like a waterfall. At this point, adjust the radio's audio output so that the background is dark blue with some black, and the signal lines have some yellow in them, as you can see in fig. 1. If you see red, the audio is too loud, so turn it down. If there is only black, or dark blue, turn it louder. If the radio's volume control has no effect, open the Windows sound mixer and fiddle with the controls until the audio level is good. In the worst case, you may have to enable the Line In or some other sound input on the computer (see fig. 2). In extreme cases, you may need to attenuate the incoming audio with a pair of resistors, as shown in fig. 3.

At this point, tune around and look at the signals. Click on a signal to decode it, and get a feel for how the mode is used—CQ calls, the kinds of information traded, and so on. Get familiar with all that before trying to transmit.

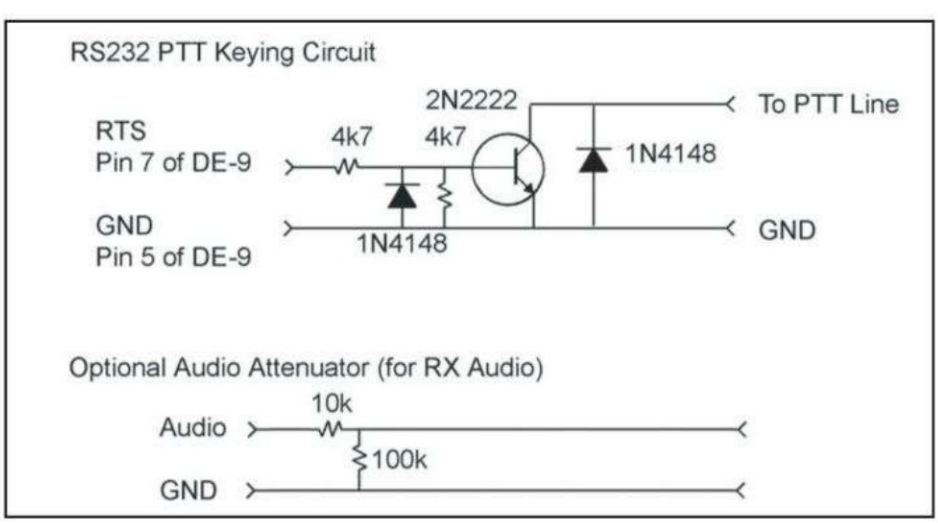

Fig. 3– A simple RS232 to PTT keying interface using readily available parts. Connect the left side to the 9-pin RS232 connector, and the right side to the radio's Push-To-Talk keying line. Beneath the interface is a simple audio attenuator that can be used if the radio's receive audio is way too loud for the sound card's input line. The connectors at each end should match the radio (left) and sound card (right) requirements.

In the meantime, figure out how you're going to control your transceiver's Push-To-Talk (PTT) input. The computer software needs to be able to control it, and that means some kind of hardware. A simple PTT interface is shown in fig. 3, and all of the parts are available at RadioShack, if they're not already in your junkbox. Note that this uses an RS232 serial port: If your computer doesn't have one, you can get a USB-to-RS232 converter.

While some do build their own PTT interface, most folks buy one. You can spend anything from about $26 for a basic interface from MFJ to a totally tricked-out $300 RigBlaster Pro from West Mountain Radio. Other choices include offerings from Rig Experts Canada and Timewave. Visit either WM2U's sound-card interface page at <http://www.qsl.net/wm2u/interface.html>, the web page on the DXzone website <http://www.dxzone.com/catalog/Technical_Reference/Sound_Card_Radio_Interfacing/>, or check the ads in *CQ* to get a better idea of your options. While it's possible to control PTT manually by keying the microphone, you'll find that is prone to error and gets really annoying very quickly.

Fig. 4– A basic sound card/radio interface from K4ABT. While the website <www.packetradio.com> can be a little confusing because of the multitude of options, there is very likely a plug 'n play option for whatever radio you happen to have. This RASCAL interface has served me well for several years.

Setting the Transmit Audio Level

Before you transmit, you *absolutely, positively must* set your transmit audio level. Not doing this will prevent your signal from being heard or decoded, so it's mandatory. To do this, check the documentation for your software for a good procedure, or try this which has worked for me:

Identify the control that sets the sound output level from your computer. This can be a potentiometer on your sound-card interface, or a control on the Windows sound mixer, for example. You can listen to your computer speakers, or actually transmit some text and listen on a second receiver. Turn the sound level all the way down, and start turning it up until you start to hear the signal. Make a note of this point. Then continue to turn it up until you start hearing some distortion of the signal, a raspy sound. Then set it halfway between that point and the point where you first started hearing the signal. That will get you close. Then get on the air and ask someone how your signal looks and sounds, tweaking the sound level according to their comments. As with almost every digital mode, you are far better off with too little sound output rather than too much.

Summary

That's getting started in a nutshell. Sound to and from the radio is easy, and controlling PTT only a tiny bit more difficult. Every software application I have ever used (dozens of them) has always included enough information to set up the software and interface to the radio. If you run into bigger problems than you can solve, try Google. Since digital sound-card modes have been around for as long as there have been sound cards, there's a huge amount of information out there, most of it quite good.

Write to me and let me know how you made out!

That's all the space I have this month. I'm always looking for new topics, so drop me a line if there's something you'd like to read about. I'm always glad to hear from readers of this column. Until next time . . .

73, Don, N2IRZ

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mobiling

BY JEFF REINHARDT,* AA6JR

Summer "High Times" on the Highways

High summer means "high times" on the highways, and this year is no exception. With a little breather from those high gas prices of spring and with a touch of wanderlust, there's still some time to enjoy mobiling across the vast expanses of North America.

I just returned from a wonderful trip to the east coast of the U.S., which always provides a bit of culture shock to my California mindset. Combining family reunion fun with sightseeing, some baseball games, and some great dining, I returned to Los Angeles with some terrific memories and a rental car company wondering how I put 2000 miles on its vehicle in just eight days. My "sticker shock" came from the tollways that adorn eastern roadscapes. At least I got to meet (and support) a lot of nice toll booth attendants!

I won't bore you with too many non-radio details ,but landing in New York, we took in the Big Apple for a few days, drove up through Connecticut and Massachusetts to Maine, dipped into the Canadian province of New Brunswick (be sure to take your passport), saw the beautiful Bay of Fundy and more, drove down to Philadelphia, visited Fort Sumter in Maryland, and then went on to a few days at the nation's capitol. In addition to some radio fun, my family members and I completed our "bucket list" quest to see a game in every Major League Baseball city (all 30 venues), and we finished visits to the "four corners" of the continental USA, stopping at the easternmost point and visiting the lighthouse at West Quoddy Head, Maine; it's a bit off the beaten track, but it's a lovely place. (see photo).

Our stop in New York included a visit to Flushing Meadows, site of the 1964–65 NY Word's Fair. Not much remains of that special time beyond the grounds themselves, but a stunning memento is the Unisphere, a symbol of that event, which remains a magnificent sight. Now open as parkland, it's worth a side trip. Of course a well-attended attraction at that fair was the ham radio station. I wonder if anyone ever tried to load up the stainless-steel Unisphere? Could be an interesting antenna!

Hats Off to Larry

While driving through Massachusetts, I was reminded that state has some of the best looking ham radio license plates, complete with an ersatz lightning bolt that sets ham operator's tags apart from the ordinary state-issued car ID. While on my travels, I received a nice note from Larry Banks, W1DYJ, who offered to share the nifty installation he did on his 2009 Audi A4. While my busy travel itinerary did not permit a visit with Larry (and I wish it had), his installation is first-rate and worth shar-

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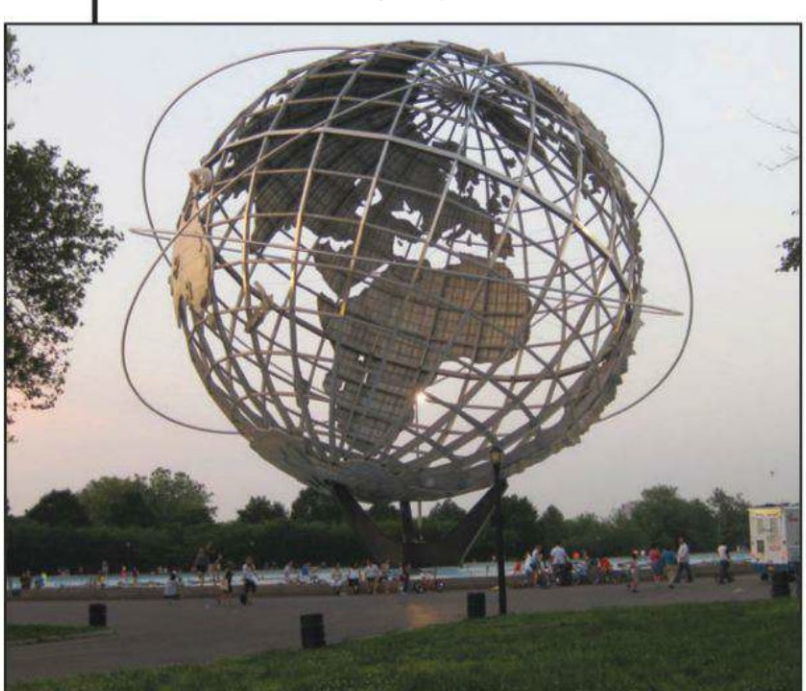
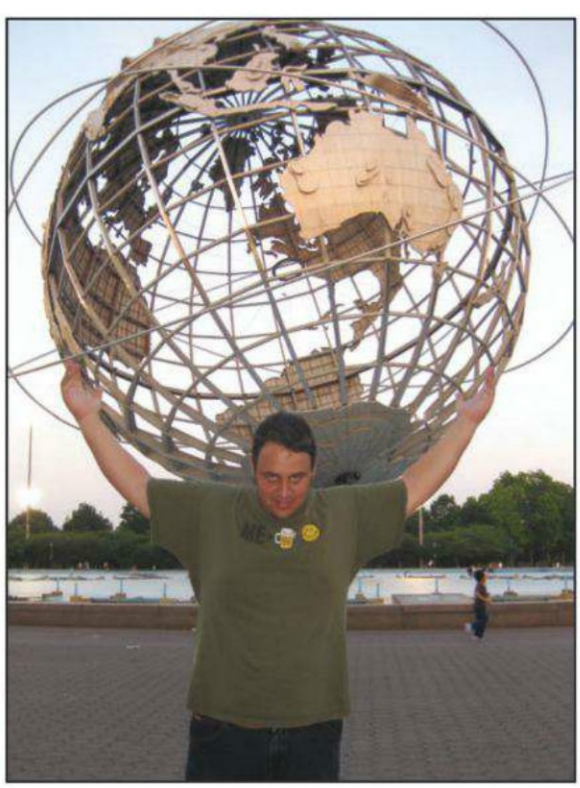


The Unisphere in Queens, NY, still stunning as it pushes age 50. (KD6ARA photo)



Steven Reinhardt, K6SJR, auditions to replace Atlas. (AA6JR photo)

To the ends of the Earth? Well at least the easternmost end of the continental USA. It's a fun trip to find the picturesque lighthouse at West Quoddy Head, Maine. (AA6JR photo)

ing. To see more details on Larry's rig, see his web page at <http://www.qsl.net/w1dyj/mobile.htm>.

Notably, Larry did his homework and took advantage of the features of his Yaesu FT-8800R, separating the radio's control head from the main transceiver unit. Like many other modern cars, Audi cleverly places the battery in the trunk, in this case in the well shared with the spare tire below the actual storage area. Larry took advantage of this feature, making a short run from the battery with power leads to the transceiver, which is concealed in a side panel, out of sight and securely away from the comings and goings of cargo. Next, he routed a cable to the control head, conveniently located at the fingertips of the driver or passenger, and one of the best features is Larry's having located the speaker on the knee bolster to the right of the steering wheel.

As you can see from the photos, this well thought-out deployment is clever, functional, unobtrusive, clear of all the car's safety gear, including air bags, and it's always ready to use. The "icing on the cake" is the tasteful antenna mounted on the trunk lid and is low enough to avoid overhead obstacles. Larry made the commitment to "drill the hole," and it paid off in an attractive fashion with a well-grounded skyhook. Oh yeah, he has one of those cool Massachusetts ham plates attached to his Audi, too. Some guys have all the luck.

Your Mobile Can Help Your Mobiling

The current crop of smart phones offers an ever-expanding menu of "apps" that complement the ham radio operator.

The battery is buried below the spare tire in W1DYJ's Audi. Routing power to the transceiver doesn't get much easier! (W1DYJ photo)

Fingertip control and an easily read display make operations easy for the driver or passenger in the W1DYJ mobile unit. (W1DYJ photo)

There's a dizzying array of material out there, and it seems to grow daily. One app another ham steered me toward costs a few bucks but in my opinion is well worth the investment. It works on my iPhone; I don't know if it's available for other "smart phone" platforms, but its' called iHAM Locate. The program seems to have a pretty complete listing of repeaters on just about every band, along with the pertinent information needed for the mobile or hand-held operator. You get frequency, offset, CTCSS tone, callsign, location, and more. By interacting with the phone's geolocation programming, it can tell you how far you are from the repeater. You can sort by state, city, call, and proximity, and search for repeater by band, from 10 meters through 900 MHz. It's a great tool to take along when you hit the road and after all, you're taking your phone along anyway, right? In the interest of full disclosure, I have no idea who wrote the program, and I actually paid to buy it, so there's no interest here other than the great utility the program seems to offer.

My Rig's in the Hospital

One of my favorite mobile radios, after many years of hard use, has just been shipped off for repairs. I think the Kenwood TM-742A triband is one of the nicest rigs ever made. If it had computer programming and an alphanumeric display, it would have been the perfect transceiver, in my humble opinion. That aside, my faithful companion, like so many other L.A. denizens, is off to "rehab." It was happy news to find the rig is still supported by the manufacturer's authorized service facility. Here's hoping they can breathe new life into the old beast so we both can enjoy many more miles on the highways.

Share Your Installation

Here's another invitation to share your installation and that hard-earned experience with *CQ*'s readership: Just send me your story along with some photos of your mobile installation to the e-mail address shown at the beginning of this column. It's in the best tradition of "hams helping hams," especially with the ever-growing variety of cars and trucks on the road today.

Summary

As we started this column, I wish you a continued happy summer season of easy travels and enjoyable moments as you mobile on down the nation's highways. I have a blast every time I hit the road, and if you look, there's a new friend and a new adventure around every corner. Happy Mobiling!

73, Jeff AA6JR

This speaker location is easily heard, yet away from other vehicle controls and some distance removed from the airbag deployment zone. (W1DYJ photo)

An unobtrusive antenna finishes off this classy installation with a ham plate that adds a nice finishing touch. (W1DYJ photo)

Pignology (!), a New Low-Band Vertical, an Improved UV-3R, and more

BY JOHN WOOD,* WV5J

From inflatable antenna towers to the latest apps for various logging software products, "What's New" strives to keep you up to date on the latest amateur radio products that come to market. It's not an easy thing to accomplish but please realize that *CQ* does its best to bring to you the latest items and apps as they debut and to explain to you in easy-to-understand terms the improvements and features of all of the new products, dependent upon the assistance of their owners, designers or manufacturers. I say that now as we move into an analytic mode and do our best to give you an easy-to-understand explanation of HamLog 4.0 and its relationship with Pignology.

Introducing "Pignology"

I have been informed that Pignology LLC (yes, it's real) has announced the release of Pigtail (photo A), a device that provides purchasers a method of wireless control of amateur radio transceivers by mobile platforms such as iPad, iPhone and iPod Touch, which is used through HamLog, a full featured logging application.

HamLog's creator Nick Garner, N3WG, tells me that HamLog has been in constant development since March 2009 and is now distributing in version 4.0. The Pigtail, as well as HamLog, were both designed for amateur radio operators who take their radios out of the shack to parks, hotels and mountain tops but still prefer a full-featured, software-based logging experience.

The Pigtail device uses Wi-Fi to expose its built-in serial port via a network connection and operates from a 9V battery or an optional, user-modifiable power connection. The Wi-Fi connection can be either ad-hoc or infrastructure, so it can operate stand-alone, without a wireless access point. It includes a custom-milled, silk-screened enclosure with a protective silicone cover and an acrylic window to view the status LEDs. Rig support includes popular radios from Elecraft, Yaesu, Icom and Kenwood, with new radios being added as they're tested.

Pigtail is available for $149.99 at <http://shop.pignology.net>. HamLog is available for iOS in the App Store as well as the Android Market for $0.99. Support for Pigtail in the Android version of HamLog is forthcoming. For more information, visit the product page at <http://pignology.net/pigtail> or for demo videos, visit <http://youtube.com/user/pignology>.

DX Engineering 160 Meter Vertical Antenna

Mark Haverstock of DX Engineering tells me that hams who operate on the 160-meter band can have a high-performance vertical antenna that allows them to achieve the strongest possible presence at their particular power level thanks to DX Engineering's new DXE-160VA-1 (photo B).

This antenna is a slow taper 55-foot high

Photo A– Through the use of HamLog 4.0, Pigtail from Pignology LLC gives iOS users wireless control over ham radio transceivers by Icom, Kenwood, Yaesu, Elecraft and others.

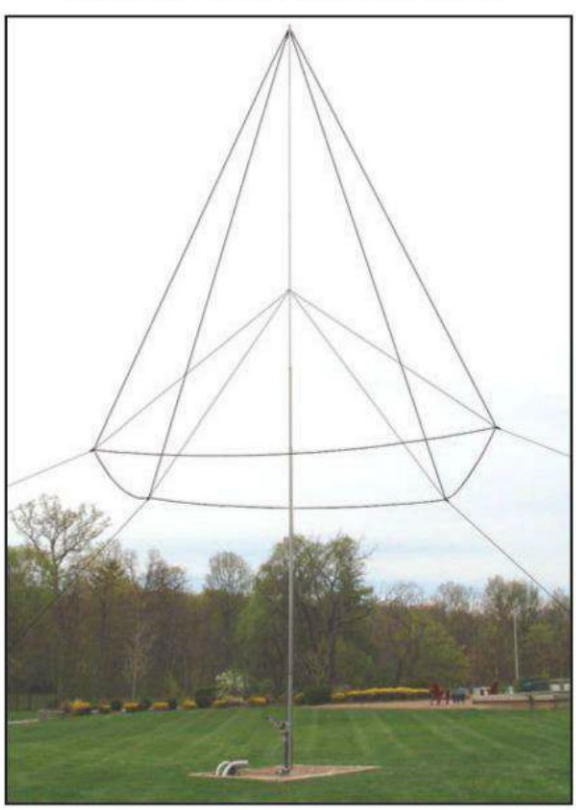


Photo B– DX Engineering says the secret to the operating capabilities of its 160-meter vertical antenna is its large capacitive hat.

*1870 Alder Branch Lane, Germantown, TN 38139
e-mail: <wv5j@cq-amateur-radio.com>

monoband vertical with a custom-designed capacity hat system (see photo) that allows coverage on 160 meters with, as Mark puts it, "unparalleled success in a compact antenna."

He adds that the DXE-160VA-1 is tunable with an impressive 40-kHz bandwidth which means that operation on the CW DX frequencies and DX phone frequencies is within range of most radios' internal tuners—no antenna changes are necessary. Power handling capability is 5KW on sideband or CW.

Included with this antenna system is a rugged stainless steel pivot fixture for ease of assembly and adjustments. Engineered with 6061-T8 and 6063-T832 corrosion-resistant aluminum tubing, stainless steel mounting brackets and hardware, this antenna is durable and attractive. Steady-state wind survival is in excess of 50 mph without guys.

The DXE-160VA-1 is priced at $839.95. The optional DXE-VRW-1 manual winch for easy one-person raising and lowering is priced at $169.95. For more information or to order, visit <www.dxengineering.com>.

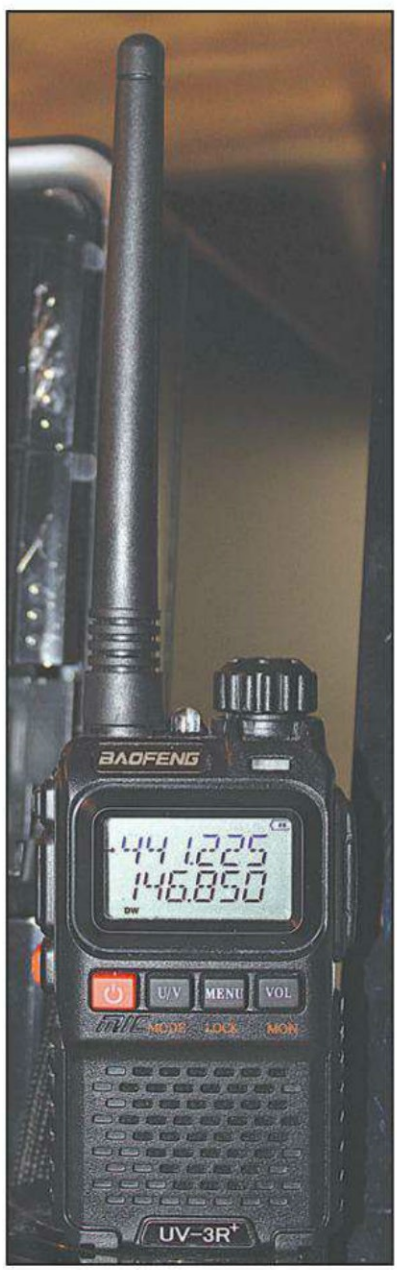


Photo C– You can recognize the remodeled UV-3R for 2012 by its dual display, its UV-3R I.D. plate, its dual-band VHF-UHF rubber antenna and its accompanying drop-in desktop charger.

New and Improved UV-3R

In past "What's New" columns, we've told you about the Baofeng UV-3R (photo C), the compact two-watt VHF-UHF dual band handheld from China that is packed with features and capabilities. Now we need to bring you up to date on a few improvements Baofeng has made to the UV-3R.

The revised UV-3R has been released as a 2012 model with the addition of a more user-friendly design that incorporates easy-to-understand controls along with a dual-bank display that shows the VHF and UHF frequencies to which the HT is tuned. The same dual display is also a big help to operating the unit since it shows dual-watch operation and menu options more clearly.

This 2012 UV-3R still includes its incorporated flashlight—a very handy feature—and also comes with a shortened dual-band VHF/UHF antenna, an incorporated front-panel nameplate and a drop-in charger that works with its rechargeable lithium ion battery that also serves as the radio's back panel and is designed so it allows for the addition of a very useful pocket or belt clip.

So when you're shopping any of the *CQ* advertisers which offer the UV-3R, don't forget to ask about the 2012 model with the dual display and drop-in charger. My spies tell me that this radio was available for purchase at this year's Dayton Hamvention®, so it should be easy to order now by phone or online.

Magnalight.com's Portable Hazardous Area Light

On a lighter note, Larson Electronics' Magnalight.com is introducing its RUL-9 portable hazardous area light that reportedly provides high power, durable operation, rechargeable capability and five hours of powerful illumination in a Class 1 Division 2-approved hazardous location rated package. (See photo D.)

Larson Electronics' tells me they've designed this portable hazardous loca-

Photo D– Equipped with a rechargeable lithium ion battery, this light can provide up to five hours of continuous illumination.

tion light to provide a strong light beam and long run times on a single charge of its lithium-ion batteries. Equipped with an integral carry handle, rear mounted LEDs and articulating head, this portable light is suited to a wide variety of uses including industrial and amateur radio applications, utility work, military and law enforcement, fire/ rescue/search, and emergency services.

Made in the USA and designed to provide a rugged lighting solution for use in demanding hazardous locations, the RUL-9 portable and rechargeable light produces 120,000 candlepower and can operate for five hours on a single charge of its lithium-ion batteries. Built with a high strength nylon body with rubberized coating, the RUL-9 is made to withstand demanding service, the kind that rescue units and ham radio operators run into occasionally.

As in most uses of lithium-ion batteries, it's not necessary to fully discharge the RUL-9's batteries before recharging. Larson says the included charger will not overcharge, and the unit can be left sitting for up to 18 months without losing its charge or a decrease in battery service life. The lithium ion battery pack in this portable light also helps this unit achieve a 33 percent lighter weight than its competitors, an important consideration for firefighters and volunteer search parties whose basic equipment can already weigh 65–70 lbs.

The beam from this portable light can reach over 600 feet, making it well suited to utility and emergency services applications as well. This versatile portable light is waterproof and includes a pair of rear mounted red and white LEDs that can act as locator, signal or warning lights as needed. Operation is controlled by a booted, three-way push-button switch which allows users to operate the main beam and LEDs independently or in tandem. The light head is adjustable and can be moved through 90 degrees of adjustment for optimal beam placement. An included 120 volt AC wall charger provides easy recharging and will not overcharge the unit, allowing operators to simply leave the light connected to the charging unit when not in use to ensure a full charge anytime the light is needed.

Magnalight also offers a magnetic mounting system which consists of a 5-inch diameter magnetic base with 200 lbs. of gripping force, powder coated steel bracket, and spring loaded fastener. This RUL-9-MB magnetic mounting base is easily attached and detached and allows operators to temporarily attach this unit to any metallic surface to provide a hands free source of illumination that can be positioned however they require. This portable hazardous location light meets NFPA 1901-14.1.11.2 compliance and is an ideal addition to any industry professionals' lighting equipment inventory.

Visit Magnalight.com to view the entire inventory of heavy duty lighting solutions or contact them for more information by calling 1 (800) 369-6671 or 1 (214) 616-6180 for international inquiries.

Book Corner

Firing Point, the latest book from active amateur radio operator Don Keith, N4KC, promises to be a popular read and a hot topic on the airwaves now that we know a movie based on the book is in pre-production (photo E).

For Don, it's his latest novel and 24th

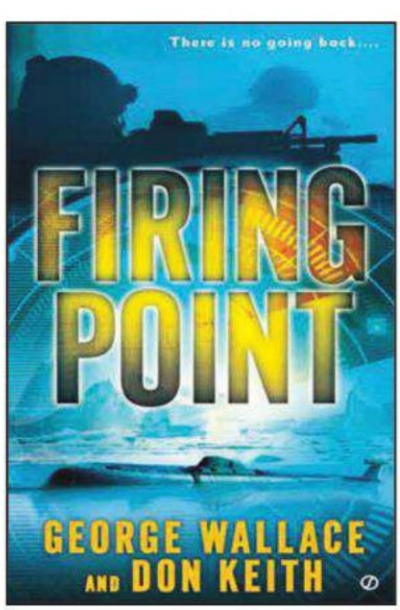


Photo E– Firing Point is the latest novel by ham author Don Keith, N4KC.

book that was scheduled to be published on July 4, 2012. Should you hear him on the air, be sure to congratulate him on the release of the book. He tells me that *Firing Point* (Signet/Penguin, 704 pgs.) is a taut, fast-paced thriller set in Russia and beneath the polar ice pack that tells the story of an American nuclear submarine crew and a team of Navy SEALs who are called upon to rescue the kidnapped Russian president. In the process, they will attempt to avert World War III.

Firing Point as co-written with former submarine skipper George Wallace and is the duo's second novel together. The first, *Final Bearing*, was a national best-seller and is still available wherever books are sold, including a new release as a Kindle eBook from Amazon.com.

The latest novel has also been optioned by Relativity Films (*Act of Valor*, *Social Media*, *The Fighter*) and is in pre-production as a major motion picture, with a 2013 release planned.

Keith was first licensed as an amateur radio operator in 1961 when he was 13 years old. He is an active DXer and contester and enjoys writing articles about the hobby and encouraging newcomers to ham radio. To read some his articles on the hobby or for more information about the author, visit <www.n4kc.com> or <www.donkeith.com>.

Also in the **Book Corner** this month are two new publications from the ARRL, the 4.0 CD revision of the *ARRL Software Library for Hams* and a new book that provides you with *The ABCs of Software Defined Radio*, by Martin Ewing, AA6E.

By being published as a CD, you get easy access to The ARRL Software Library for Hams and all that it entails (photo F). The CD is divided into folders which contain software for a variety of ham radio applications, utilities and information with videos, an image editor, DX Cluster client software and HF digital software for PSK31, MFSK16, MT63, RTTY along with WSJT and JT65. It also provides handy software tools for decoding CW, creating custom DSP audio filters and more. Bonus files include ARRL screensavers, audio samples and PowerPoint presentations. It's priced at $22.95 and is available online at <www.arrl.org>.

The second ARRL publication is *The ABCs of Software Defined Radio* (photo G), a book that may become the most dog-eared and page-worn book in your shack since its subhead proclaims unabashedly, "Why Your Next Radio Will Be SDR." Consider this book to be your introductory guide to Software Defined Radio (SDR) and digital signal processing technologies. Written in a friendly style, it offers a straightforward look inside SDR and provides a foundation for those who want to understand

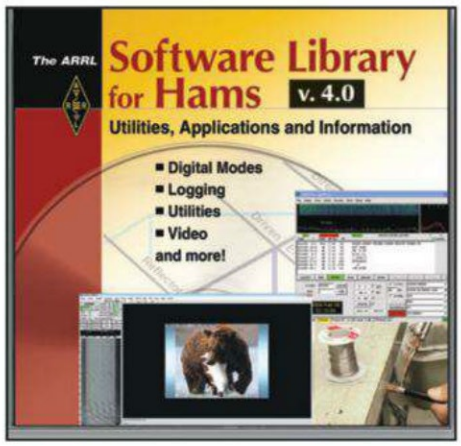


Photo F– The latest version of ARRL's Software Library for Hams *includes the actual software that you can install with a mouse-click.*

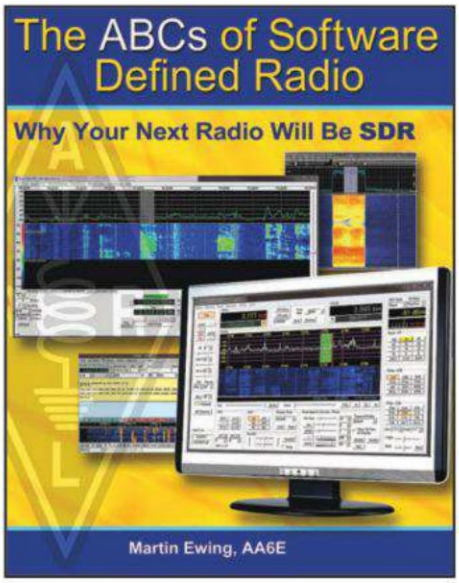


Photo G– The ABCs of Software Defined Radio *takes you behind the virtual dials to explain the basics of how SDR and digital signal processing are revolutionizing ham radio.*

the subject on a more fundamental level. It provides an understanding of the basic principles of SDR, the advantages of SDR technology and ways to utilize SDR in amateur radio operations. This book, priced at $22.95, may be the key to transporting today's active amateur radio operators to the new world of software defined radio. It's available online at <www.arrl.org>.

Well, that about does it for another edition of "What's New." I hope you feel well-informed and up-to-date on the newest products making their way to the amateur radio market. I know it's not easy to keep up but rest assured, whether it's a new transceiver or a new addition to your station, we'll always be there to help you stay tuned in to the cutting edge of the ham radio marketplace. Take care and be sure to enjoy your hobby—the greatest hobby ever created—and the privileges of your license class. Until the next time . . .

73 from me, WV5J

Note: *Listings in "What's New" are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

SUCH A HAM

vhf plus

BY JOE LYNCH,* N6CL

The *Perseids* Meteor Shower

The most popular meteor shower is the *Perseids* . There are two reasons: It occurs in the summer and generally it is a good shower with a plethora of meteors. This year's *Perseids* is scheduled to peak between 1200 and 1430 UTC, August 12 with an average of 100 meteors per hour.

Historically, the shower is linked to the Swift Tuttle comet and has been observed for more than 2000 years, with the earliest observation in the year 36 AD. The comet has a period of 130 years. It has been moving away from the sun for almost 20 years. Each time it comes close to the sun, debris is stripped from it and generally follows in the orbit behind the comet. We experience the meteor shower when our planet comes in close proximity to the debris.

With the sophistication of WSJT, making meteor-scatter contacts is a matter of setting the radio and the computer to the right frequency at the right time. Gone are the days of exchanging reports, which included "S-2" and "Roger, S-2."

Fortunately, however, this shower's popularity begs for the now old-fashioned way of making meteor-scatter QSOs. During an old-fashioned-type meteor shower random contacts often are possible. One station will call a very brief CQ and listen for a response.

A station hearing the first station will call that station, give his callsign, and either his grid locator or a signal report. The first station then announces the calling station's callsign and gives the responding grid locator or signal report.

The second station responds by saying "Roger" several times. The contact is considered complete if both parties have all they need for the QSO. The entire contact may take as little as 10 seconds to complete, if that.

With the decent prediction this year, there will be plenty of opportunities to make those old-fashioned random contacts. Therefore, I invite you to be a part of the fun.

15th International EME Conference

Sponsored by the UK Microwave Group (http://www.microwavers.org), the 15th International EME Conference will be held at Churchill College, Cambridge, UK, August 16–18, 2012. The University City of Cambridge is a world-famous center of scientific learning that has played a major part in mankind's scientific advances. Limited accommodations will be available until the day of the conference.

From the conference's website is the following:

The conference will take place on Friday 17th and Saturday 18th, culminating in the conference dinner on Saturday evening. Before the conference there will be an optional tour on Thursday 16th visiting Bletchley Park, the WW2 code breaking center and home of the world's first computer, a working replica of which can be seen. There are many other great exhibits of historic radio and code breaking interest. The tour package will include transport, guided tour, and a light lunch. The two main conference days will feature a full program of lectures, the usual test and measurement facilities, and displays of EME-related hardware and software products.

For more information, see the conference's website: <http://www.eme2012.com>.

VHF Plus Calendar

August 2	Full Moon
August 4-5	ARRL UHF and Above Contest (See text for details)
August 9	Last quarter Moon
August 10	Moon apogee
August 12	*Perseids* meteor shower peak
August 17	New Moon
August 16-18	15th International EME Conference (See text for details)
August 18-19	First weekend of the ARRL 10 GHz and above contest (See text for details)
August 23	Moon perigee
August 24	First quarter Moon
August 31	Full Moon

—EME conditions courtesy W5LUU

GPSL Great Success

Hosted by the Nebraska Stratospheric Amateur Radio, the organizer of this year's Great Plains Super Launch, the launch took place on June 9, 2012, from Glenwood High School, Glenwood, Iowa. Mark Conner, N9XTN, reported that five balloons launched and all five payloads were recovered in western Iowa. A video of the launches is at: <http://www.youtube.com/watch?v=kMSng23Apg8&list=UUzQZfhqXSsOcU5iZIIW2Ofg&index=1&feature=plcp>. Here is a photo album: <https://picasaweb.google.com/111334632256807627139/GreatPlainsSuperLaunch2012#>.

CQ VHF magazine "Up in the Air" columnist Bill Brown, WB8ELK, was one of the five who launched. He is scheduled to have a full report in the Summer 2012 issue.

STEM Education Identified as Critical for Continued Rides to Space

The following, from Southgate Amateur Radio News, is an excellent summary of Mark Hammond, N8MH's presentation at the AMSAT Forum at the 2012 Dayton Hamvention®.

The AMSAT Forum featured news of the educational opportunities for AMSAT to contribute to

e-mail: <n6cl@sbcglobal.net>

innovation in attracting and retaining students in science, technology, engineering, and mathematics, or STEM, disciplines. Educators have identified STEM programs as a priority in strengthening the nation's future workforce.

"Education is important to us," said AMSAT Vice-President Educational Relations Mark Hammond N8MH. "It's a part of our mission and vision." Mark noted several key points of AMSAT's support for STEM education:

• AMSAT is a non-profit volunteer organization which designs, builds, and operates experimental satellites and promotes space education.

• AMSAT works in partnership with government, industry, educational institutions, and fellow amateur radio societies.

• AMSAT encourages technical and scientific innovation, and promotes the training and development of skilled satellite and ground system designers and operators.

As evidenced by this year's acceptance of AMSAT's Project Fox cubesat in the NASA "Educational Launch of NanoSat," the ELaNa program, we were selected on our merit in support of NASA strategic and educational goals. Education is quickly becoming critical for our ride to space.

The recently formed educational partnership between AMSAT and ARRL, including NASA is looking for help. We need to develop an education program on the ground starting now. We have resources already available for STEM education in both the K-12 classroom and at the University level while our satellite builders work on the next flight.

For example, the huge collection of telemetry data collected during the recent ARISSat-1 flight is available on our FTP server. This data presents an opportunity for the utilization of satellite data in the classroom (through plotting, graphing, analyzing).

An immediate need is for volunteers to collect and organize existing STEM related lesson plans and ideas from the web, useful to K-12 educators and relevant to amateur radio and satellite. Critical steps such as this will allow ARISSat-1 telemetry data to be used in the classroom. Similar lesson plans and ideas can be used for educational purposes in future satellite missions, such as Fox-1 and Fox-2.

To support this effort specific tasks have been identified and now volunteers are needed to support:

• Educators: We need lesson plans/ideas related to satellites and amateur radio. ARISSat-1 telemetry data needs to be used in the classroom!

• Educators: sign up for ARRL Teacher's Institute program!

• Web content person for AMSAT's education web pages. Also, volunteers are needed to maintain a calendar of amateur radio youth events.

• Archivist/publicist of satellite educational activities (photos, stories for AMSAT Journal, press, videos).

• Mentors and ground station operators (with equipment!) for ARISS contacts.

• Look for opportunities to engage youth, and document it (photos, articles, AMSAT Journal, press).

To volunteer, contact Mark directly at n8mh@amsat.org. The AMSAT-EDU mailing list is the place to exchange education project ideas and to learn how to help with our educational outreach. Information on how to join the AMSAT-EDU list can be found on the AMSAT web at: http://www.amsat.org/mailman/listinfo.

AMSAT's vision is to deploy satellite systems with the goal of providing wide area and continuous coverage. AMSAT will continue active participation in human space missions and support a stream of LEO satellites developed in cooperation with the educational community and other amateur satellite groups. This is a path to getting Fox-1 in orbit, and our future Fox-2, ARISSat-2, -3, -?

Again, the key contact is AMSAT Vice-President Educational Relations Mark Hammond N8MH: <n8mh@amsat.org>.

Gene Zimmerman, W3ZZ, SK

Gene Zimmerman, W3ZZ, became a Silent Key on June 3, 2012. Gene was well-known among the weak signal community. He was an avid contester, both at home and with various contest groups.

Gene was a great colleague. It was a year ago in this column that I reported on Gene's retiring from "The World Above 50 MHz" column and being succeeded by Jon Jones, NØJK.

Gene was one who would do whatever he could for you. When my brother was sick with colon cancer, Gene tried to help us with leads to medical help. Unfortunately, Bill was too far down the cancer road for anyone to be able to help. Even so, I really appreciated his willingness to help.

With all that Gene contributed to the hobby, he will be greatly missed. For an obituary, please see this link: <http://www.arrl.org/news/former-the-world-above-50-mhz-conductor-gene-zimmerman-w3zz-sk>.

Takashi, JA6DR, SK

Word from Japan came concerning Takashi, JA6DR, becoming a Silent Key. Takashi was first licensed to operate 2 meters EME in 1975. He passed away on May 31 and was from Kunume, Fukuoka. His first EME success was also a first for Japan. It was reported on Japanese national TV in a 15-minute news segment.

Joël Oulié, F6FHP, SK

Joël Oulié, F6FHP, became a Silent Key on May 26, 2012. Joel was an avid weak signal operator, who worked all of the popular modes. Commenting on his passing, Sylvain, F6CIS, wrote: "A few days before his hospitalization occurred on May 21st, we spent an afternoon together in the maintenance of its long Yagi antenna 50 MHz. Certainly he was extremely weak but no less devoid of perfectionism and control. Full OM, DX and experienced man, Joël, F6FHP was an excellent operator and a very active emeritus technician internationally known and recognized."

Current Contests

There are two important contests this month: The **ARRL UHF and Above Contest** is scheduled for August 4–5. Complete rules can be found in the July issue of *QST*. The first weekend of the **ARRL 10 GHz** and above cumulative contest is scheduled for August 18–19. The second weekend is September 18–19. Complete rules for this contest also can be found in the July issue of *QST*.

Current Convention

The annual **Huntsville, Alabama, Hamfest** will be August 18-19, 2012 in the usual South Hall of the convention center. There are several VHF-related forums scheduled. For more information, see: <http://www.hamfest.org/>.

Meteor Showers

Beginning around July 17 and lasting until approximately August 24, you will see activity tied to the *Perseids* meteor shower. Its predicted peak is August 12, 2012 between 1200–1430 UTC. The κ-*Cygnids* meteor shower is expected to peak on August 17. The α-*Aurigids* is expected to peak around August 31.

For more information on the above meteor shower predictions see Tomas Hood, NW7US's "Propagation" column. Also visit the International Meteor Organization's website: <http://www.imo.net/calendar/2012>.

And Finally . . .

Particularly sad for me this month was the passing Gene Zimmerman, W3ZZ. Gene was a good friend and very supportive of me in many different ways I mentioned. In addition, he supported me in my becoming the editor of the restart of *CQ VHF* magazine.

I was very happy for him when he became "The World Above 50 MHz" columnist for *QST* a few years ago. I knew that he would do that column proud—and he did so. I was sad to have to write about his having to retire last year. I nominated him for the Wilson award for Central States VHF Society not knowing that I had already been chosen to receive the award. Graciously, the Society revived its President's award, and because Gene was not able to attend the conference, Jim Kennedy, KH6/K6MIO, received the award on Gene's behalf.

In honoring Gene, the ARRL Contest Branch created two awards for the ARRL June VHF Contest. Here is the official announcement:

> To honor long-time VHF contester Gene Zimmerman, W3ZZ, who became a Silent Key on June 3, two new awards have been introduced for the ARRL June VHF Contest in Gene's memory.
>
> The ARRL Contest Branch has renamed the plaque for the Overall Winner for the Limited Multioperator the Gene Zimmerman, W3ZZ Memorial Plaque. Gene was very active as part of the K8GP team in this category. A special thanks to Jeff Klein, K1TEO, who graciously relinquished his long-time sponsorship of this plaque to allow this to happen.
>
> In addition, a new award has been created, thanks to Tim Duffy, K3LR, and Dave Zeph, W9ZRX. The W3ZZ Rookie Award will be awarded to the top Single-Op, Low Power score on a minimum of two bands by a "rookie" submitting a log in the contest for the first time. This award is open to any operator that has never submitted a log to the June VHF Contest.

Both of these awards were made available beginning with this year's ARRL June VHF Contest. A special word of appreciation goes to Sean Kutzko, KX9X, for making these awards happen. Thank you, Sean.

If you have something to report for this, your column, please e-mail me at: <n6cl@sbcglobal.net>. Thank you.

Until next month . . .73 de Joe, N6CL

Looking Ahead in CQ

Here are some of the articles we're working on for upcoming issues of *CQ*:

- Route 66 On the Air
- Dayton Sunday Safari, Part II — Antennas & Accessories
- CW Results: 2011 CQ World Wide DX Contest
- Emergency Communications Special in October
- Technology Special in November

Do you have a story to tell? Somrthing for one of our specials? See our writers' guidlelines on the *CQ* website at <http://www.cq-amateur-radio.com/guide.html>.

BY TED MELINOSKY,* K1BV

County Awards Around the World

This month we feature several county awards from countries other than the United States which offer awards for contacting these interesting geographical entities.

The word "county" comes from the old French word *comté*, and when the Normans conquered England, the word followed them. As the English language evolved, comté evolved into *shire*. Since a shire was an administrative division of the kingdom, the word county further evolved to designate a legal division of national government in most modern uses. Smaller than a province and larger than a township, the county remains a useful geographical and political designation in a number of countries. From Europe, it followed English settlers to the New World, where it fit comfortably into the governmental structure of the time. Did you know that Iran and Liberia have counties? However, they don't offer awards for contacting their counties.

Canadian provinces are also composed of counties (and districts), although given the high level of county hunting mobiles heard in the USA, I can recall just one time I've heard a VE mobile activating them. The Province of Ontario has some 48 counties, and according to the website of the sponsor, the Ontario DX Association, the best time to work scarce counties is during the annual Ontario QSO Party held the last weekend of April each year and during the annual RAC Canada Day and RAC Winter Contests, when large numbers of Ontario stations are on the air.

Canada's Ontario Award

Sponsored by the Ontario DX Association, this award is available to any amateur for making a two-way contact with each of the 48 political subdivisions of Ontario, along with VE3ODX club station and VA3RAC. SWL OK. Contacts after April 1, 1999 count. All bands and modes accepted, except repeaters may not be used. Send GCR list and fee of $C5 or 5 IRCs to: Ontario Award, Ontario DX Association, 155 Main Street N., Apt. 313, Newmarket, Ontario, L3Y 8C2, Canada. Internet: <http://www.odxa.on.ca/awardont.htm>. This site provides a handy list of cities and towns within the borders of each of the counties.

The Ontario DX Association sponsors the Ontario Award for making a two-way contact with each of the 48 political subdivisions of Ontario, along with VE3ODX club station and VA3RAC.

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e-mail: <k1bv@cq-amateur-radio.com>

USA-CA Special Honor Roll

Robert Hynes, KI2G
USA-CA All Counties #1226
April 30, 2012

Larry Vogt, N4VA
USA-CA All Counties #1227
May 23, 2012

USA-CA Honor Roll

500

KI2G	3575
UW2ZM	3576
DK5AI	3577
N4VA	3578

1000

KI2G	1830
N4VA	1831

1500

KI2G	1540
N4VA	1831

2000

KI2G	1425
N4VA	1426

2500

KI2G	1341
N4VA	1342

3000

KI2G	1253
N4VA	1254

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

The political subdivisions of Ontario are: Algoma District, Brant County, Bruce County, City of Toronto, Cochrane District, Dufferin County, Durham Region, Elgin County, Essex County, Frontenac County, Grey County, Haldimand-Norfolk Region, Haliburton District, Haltlon Region, Hamilton-Wentworth Region, Hastings County, Huron County, Kenora District, Kent County, Lambton County, Lanark County, Leeds-Grenville County, Lenox-Addington County, Manitoulin District, Middlesex County, Muskoka District, Niagara District, Nipissing District, Northumberland County, Ottawa-Carleton District, Oxford County, Parry Sound District, Peel Region, Perth County, Peterborough County, Prescott-Russel County, Prince Edward County, Rainy River District, Renfrew County, Simcoe County, Stormont-Dundas-Glengarry Co., Sudbury District, Thunder Bay District, Timiskaming District, Victoria County, Waterloo Region, Wellington County, York Region.

England's Hampshire County Award

I believe that the Radio Society of Great Britain (RSGB) used to offer an award for contacting English counties, but it is no longer issued. Here, however, is an award offered by one of the many

On the Cover

Ashraf Chaabane, KF5EYY/ Op. 3V8SS
A Rising Star of Contesting from Tunisia

We hope that Ashraf will get his own Tunisian call sign soon. So far in Tunisia, only clubs have been allowed to have amateur radio stations. Ashraf has been one of the authorized operators at the Scouts of Sousse club station with the call 3V8SS. He has been bitten by the contest bug, a passion brought by visitors from Europe. Several Tunisian clubs have been supported by visiting amateur radio operators from other countries.

Tunisia is a very popular tourist destination with good Mediterranean climate, long sandy beaches and a liberal attitude. Ashraf is learning quickly and makes progress in every mode of contesting. He started off, of course, with telephony but a few years ago he was prompted by a returning visitor to learn Morse code. In recent years he has discovered radioteletype and other digital modes. He has already won a few trophies and contest awards, one of which he is showing in the photo on the cover.

Ashraf speaks fluent English and French. His website at <www.qsl.net/3v4-002/> is interesting, well-illustrated and up-to- date. He currently lives and works in the capital city of Tunis and for every contest has to drive nearly 100 miles to Sousse, where the 3V8SS station is located. Some two years ago, while visiting Texas because of his work, Ashraf visited local contesters and passed the FCC General Class license exam. He now holds the callsign KF5EYY. He is one of the founders of the national amateur radio organization of Tunisia, which expects that the regulations concerning our hobby will soon be adjusted to allow both individual nationals and visitors use the spectrum in the same way as in Europe.

(Cover photo and text by Henryk Kotowski, SMØJHF)

special interest clubs in England, which may be earned by contacting stations in the county of Hampshire in England.

The award is sponsored by the Royal Navy Amateur Radio Society (RNARS). Besides this award, you may want to check the society's website for a variety of navy-oriented awards.

The award is available for contacting/hearing any amateur stations in the county of Hampshire (note that Isle of Wight is a separate county and cannot be used) on or after 1 October 1960. Each Hampshire station counts one point and each RNARS special event station operated within the county counts two points.

The award is ssued in three classes:

	UK	EU	DX
Class 1	50 pts	20 pts	15 pts
Class 2	30 pts	15 pts	10 pts
Class 3	20 pts	10 pts	5 pts

Send GCR list and fee of UK £2, EU £2.50/$US4, or 5 IRC; and all others £3.50, $US7, or 10 IRCs. If sending IRCs, only the current version IRC is acceptable for RNARS Awards (old-style ones will be returned). The society has over 1000 members worldwide. Apply to: RNARS Award Manager, Ian M. Pitkin, G4KJD, Clover Cottage, Kenny, Ashill, NR Ilminster TA19 9NH, England. Internet: <http://www.rnars.org.uk>.

The award is sponsored by the Royal Navy Amateur Radio Society and is available for contacting/hearing any amateur stations in the county of Hampshire. (See text.)

Finland's OHCA: The OH County Award

Sponsored by the Finnish Amateur Radio League (SRAL), work OH counties after 1 February 1974. For the OHCA CW Award the contacts must have been made after 1 January 1983.

Work stations (SWL OK) situated in Finland with the OH, OHØ, and OJØ prefixes. All bands OK. CW, phone, or/and digital modes accepted. No use of repeaters allowed. Contacts worked with different callsigns and from different QTHs are accepted, if applicant is the same. Specify in the application if you want specific band or mode endorsements.

You must possess the cards. GCR list is accepted. Fee is 5 Euros , $US8, or 10 IRCs. Apply to: SRAL/Award Manager, P.O. Box 44, FIN 00441 Helsinki, Finland. Go to <http://sral.fi/en/award.html> for rules of all of the awards offered by SRAL.

This award is available in three classes:

Class 1 : Work all OH counties (currently 336).

Class 2: Work 150 OH counties.

Class 3: Work 100 OH Counties.

Sponsored by the Finnish Amateur Radio League (SRAL), work OH counties after 1 February 1974 to earn the OHCA CW Award.

An "old" county can be used to represent a new combined county, but the number of counties worked must be counted according to the current list of valid counties.

The list of contacts must be in order of county numbers. The application must be verified by two amateurs or the award manager of your own amateur radio league. See the current list of all valid OH counties at: <http://www. sral.fi/info/kunnat.html>.

Romania's Counties Award

The Romanian Counties Award is sponsored by the Romanian Federation of Radioamatorism (FRR) as part of a very comprehensive selection of awards. This is a quite difficult to obtain, since 30 of the 41 counties must be confirmed. I doubt anyone will have trouble finding the "mandatory" card showing your Bucharest QSO. Many of the other counties are located in remote rural areas, where ham activity is going to be sparse. There are a number of excellent YO operators who are active in just about any contest that involves DX contacts, so it really helps to be active in DX contesting. Oftentimes, you make your own luck.

The Romanian Counties Award is sponsored by the Romanian Federation of Radioamatorism (FRR). Contact at least 30 different YO counties, one of which must be Bucharest, the capital city of Romania.

Contact at least 30 different YO counties, one of which must be Bucharest, the capital city of Romania. All 8 call areas, from YO2–YO9 must be included. All contacts must have been made on or after 1 September 1949. The award may be endorsed on request for single band or mode. Send a GCR list and fee of 5 Lei (for YO), 7 IRCs, or the equivalent in $US (currently $US7 or 5 Euros) to: FRR, Romanian Federation Of Radio amatorism, CP 22-50, 014780 Bucharest, Romaina, or directly to YO3JW. Internet: <http://www.hamradio.ro/ default.asp?id =46&mnu=3>.

Romanian Counties:

AB/Alba/YO5, AG/Arges,/YO7, AR/ Arad/YO2, B(BU)/ Bucuresti/YO3, BC/ Bacau/YO8, BH/Bihor/YO5, BN/ Bistrita-Nasaud/YO5, BR/Braila/YO4, BT/Botosani/YO8, BV/Brasov/ YO6, BZ/Buzau/YO9, CJ/Cluj/YO5, CL/ Calaras/YO9, CS/Caras-Severin/YO2, CT/Constanta/YO4, DB/Dâmbovita/ YO9, DJ/Dolj/YO7, GJ/Gorj/YO7, GL/Galati/YO4, GR/Giurgiu/ YO9, HD/ Hunedoara/YO2, HR/Harghita/YO6, IF/ Ilfov/YO3, IL/Ialomita/YO9, IS/Iasi/ YO8, MM/Maramures/YO5, MH/ Mehedinti/YO, MS/Mures/YO6, NT/ Neamt/YO8, OT/Olt/YO7, PH/Prahova/ YO9, SB/Sibiu/YO6, SJ/Salaj/YO5, SM/Satu Mare/YO, SV/Suceava/YO8, TL/Tulcea/YO4, TM/Timis,/YO, TR/Teleorman/YO9, VL/Vâlcea/YO7, VS/Vaslui/YO8, VN/ Vrancea/YO4.

We are interested in learning of new awards for publication in this column. Please contact me with details and a sample of the award certificate via the address on the first page of this column. 73, Ted, K1BV

dx

BY CARL SMITH,* N4AA

DX News . . . and Those Who Make it Happen for Many of Us

As I reported last month, I was honored at the DX Dinner Friday night at the Dayton Hamvenbtion® by being inducted into the CQ DX Hall of Fame. The award was presented to me by Chip, K7JA, and Gail, K2RED, both of *CQ* magazine. Here now are the details:

In mid-April I received an e-mail saying that I had been selected for induction into the CQ DX Hall of Fame. My first thought was "yeah, right!" Whose idea of a late April Fool's joke is this? However, after an inquiry revealed it to be true, I had to sit back and think how in the world this had happened. What had I done to deserve such an honor?

Looking over the list of only 60 individuals who belong to this elite group (since 1967), I saw names I easily recognized as some of the best known DXers and DXpeditioners in the world. Yet here I was to be honored to stand among them. Thank You!

And thinking of thank you, all of those who have made a contribution to "QRZ DX," *The DX Magazine,* or this column over the years came to mind. You deserve my thanks for your unselfish contributions in order for others to share in the news and the stories you provided for the DX community to share in the excitement of DXing.

In addition to the contributors, there are two companies who have provided the printing of my publications. For QRZ DX, the company is Asheville Quick Print, owned and operated by Mr. Larry Brady, NC4LB. Larry is the only one who has printed QRZ DX since April 1995. The number of print subscriptions has steadily declined as more and more subscribers switched to the e-mail/PDF version, but each week I continue to print and mail a significant number to those who wish to receive it that way.

Then there is *The DX Magazine*. The company that prints the magazine is located in Missouri. I had the pleasure of visiting its facility back in the late 1990s. Much has changed since then, as it continues to upgrade its ability to serve its customers better. The company has been printing and mailing the magazine since my very first issue in January 1989. I am pleased to still have them and I thank them for their outstanding customer service and the fact that they produce an excellent product that I can be proud of and pleased to be able to send to you.

There are individuals who work with me to produce the end results. You can see their names and callsigns on the contents page of each issue of *The DX Magazine,* and I thank them so much for all they have done, and are doing, to help me bring you the quality product you deserve.

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

SWODXA DXpedition of the Year, HKØNA, Malpelo 2012. Left to right: Bob, K4UEE, Gregg, W6IZT, and Jorge, HK1R, accept the plaque at the DX Dinner in Dayton on May 18, 2012. (Photo courtesy of Scott, KØMD)

Material for *The DX Magazine* comes from the organizers and participants of DXpeditions who aren't looking for anything other than the outlet to tell their stories, and many of those stories are amazing. Then there are the "little pistols" who go on their first DXpedition and want to tell others how they went about it. All of these stories are worthy of being shared with other DXers, and they are interesting to read and see the photos, too.

"QRZ DX" is the end result of a huge amount of information that comes to me each week from all over the world. It comes from individuals, it comes from clubs, it comes in the form of newsletters, etc. I simply edit the material and put it into a format that you will like to see and read.

The fact that there are subscribers to both "QRZ DX" and *The DX Magazine* who go all the way back to issue number one shows there must be something being done right. There are those who went before me, such as Bob Winn, W5KNE, with "QRZ DX" and Chod Harris, VP2ML, with *The DX Magazine*. Chod was also the author of this column before he passed away. I have not forgotten that they allowed me to continue what *they* began, and I have tried to maintain the standard they set.

Thank you to all of the above for all you have done, which no doubt contributed significantly to my being selected for induction in the 2012 CQ DX Hall of Fame. It was not only *me*, but many of *us* who deserve this award.

Yemen – 7O6T

Perhaps due to the world economy the number of DXpeditions seems to have slowed down. A

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 341 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. (Stickers for the 340 level are available.) Please make checks payable to the Award Manager, Keith Gilbertson. Mail all updates to Keith Gilbertson, KØKG, 21688 Sandy Beach Lane, Rochret, MN 56578-99604.

CW

NØFW	340	N7FU	340	DL3DXX	340	YU1AB	339	W4MPY	333	K5RT	329	K8ME	323	ON4CAS	311	N2VW	280		
K2TQC	340	K4IQJ	340	N4NX	339	K8LJG	338	K5UO	333	JA7XBG	329	W9IL	323	N2LM	310	K4EQ	278		
WB4UBD	340	K4MQG	340	K4JLD	339	KA7T	338	N6AW	333	K6YK	329	OZ5UR	322	WD9DZV	309	4Z5SG	276		
K3UA	340	W8XD	340	K9BWQ	339	K3JGJ	338	HB9DDZ	333	K8SIX	328	W6YQ	319	KT2C	306	WA2VQV	276		
N4JF	340	N7RO	340	W7CNL	339	K7LAY	337	W7IIT	333	KE3A	326	KØKG	318	HB9DAX/QRPp	302				
K2FL	340	N5FG	340	N5ZM	339	PY2YP	334	G3KMQ	331	K6CU	326	CT1YH	317						
WK3N	340	K4CN	340	K9IW	339	K9OW	334	K6LEB	331	KA3S	325	EA3ALV	316	HA5LQ	301				
K9MM	340	OK1MP	340	W7OM	339	K1FK	334	N7WO	331	IKØADY	325	RA1AOB	314	K4IE	295				
W4OEL	340	N4AH	340	N4MM	339	W6OUL	334	W1DF	331	EA5BY	325	WA4DOU	313	N3RC	291				
EA2IA	340	F3TH	340	WØJLC	339	K2OWE	333	F6HMJ	330	WG5G/QRPp	325	YO9HP	313	K7CU	282				

SSB

XE1AE	341	K4IQJ	341	K5TVC	340	YU3AA	339	EA3BMT	336	K8SIX	333	KD5ZD	327	KA1LMR	309	K7ZM	297		
NØFW	341	N5FG	341	W6BCQ	340	4Z4DX	339	IKØAZG	336	KE3A	333	W9GD	326	RA1AOB	309	K2HJB	295		
K6YRA	341	K4CN	341	VE2GHZ	340	W7FP	339	W9IL	336	N2VW	333	W6OUL	326	G3KMQ	309	W9ACE	291		
IK1GPG	341	OZ3SK	341	K2FL	340	W4UNP	339	W8AXI	335	JA7XBG	333	VE7SMP	326	XE1MEX	309	W6MAC	289		
K2TQC	341	OK1MP	341	K9BWQ	340	K9IW	339	VK4LC	335	N5YY	333	VE7EDZ	325	AD7J	309	N3KV	289		
K4MZU	341	N4CH	341	W6DPD	340	N7WR	339	WS9V	335	K5UO	332	WØROB	324	IØYKN	307	K7CU	287		
DJ9ZB	341	DL3DXX	341	W7OM	340	W2FKF	339	AA4S	335	K8ME	332	F6BFI	324	XE1MW	306	WD8EOL	281		
WB4UBD	341	OZ5EV	341	W8ILC	340	W3AZD	339	PY2YP	335	K5RT	331	W4MPY	322	AA1VX	305	VE6MRT	279		
N4JF	341	DU9RG	341	W9SS	340	K1UO	339	K9OW	335	WØYDB	331	TI8II	321	W5GT	305	WA2VQV	278		
WK3N	341	N4MM	341	K9HQM	340	W7BJN	338	EA5BY	335	WA4WTG	331	YO9HP	321	K4IE	305	N3RC	295		
K4JLD	341	KE5K	341	KØKG	340	W2CC	338	XE1J	335	ZL1BOQ	331	KW3W	321	K4ZZR	305	IWØHOU	277		
N7BK	341	IN3DEI	341	AB4IQ	340	K3LC	337	OE3WWB	334	SV3AQR	331	N2LM	320	HB9DQD	304	WA5UA	276		
EA2IA	341	K5OVC	340	KZ2P	340	VK2HV	336	N6AW	334	CT1AHU	329	XE1RBV	318	AE9DX	304				
K4MQG	341	K3UA	340	YU1AB	340	W4WX	336	IK8CNT	334	N1ALR	329	ON4CAS	316	4Z5FL/M	303				
K9MM	341	VE2PJ	340	VE3MR	340	IØZV	337	EA4DO	334	K7HG	328	N8SHZ	313	K7SAM	302				
K3JGJ	341	N4NX	340	VE3MRS	340	OE2EGL	336	CT3BM	334	W1DF	327	IV3GOW	313	I3ZSX	301				
N5ZM	341	I8KCI	340	K7LAY	339	W4ABW	336	K8LJG	334	KE4SCY	327	W6NW	311	4X6DK	298				
N7RO	341	VE3XN	340	K8LJG	339	VE1YX	336	HB9DDZ	334	K6GFJ	327	KU4BP	311	WD9DZV	298				

RTTY

WB4UBD	339	NI4H	339	N5FG	337	N5ZM	335	OK1MP	334	K3UA	332	WK3N	327	K4CN	325	K8SIX	297		

notable recent exception was the 7O6T operation from Yemen. Here's an interview with the team leader, conducted by Christian, IZ4CKN, and posted on the "DX Coffee" website:

"Let's start with what made 7O6T possible—the license. We know that no license had been issued in Yemen for the last twenty years. How hard was it to obtain yours?

"It took a very dedicated man, Abdul Hameed from "Friendly Yemen Tours" in Sanaa, who didn't give up in reaching out to the highest people for help in the matter. The major issue is that there is no law or any regulation for amateur radio in Yemen, and you have to prove that it has nothing to do with prohibited services in Yemen, such as Skype, for example. I'm saying, it went as high as a consultant to the former president, also the owner of the local media channel and *Yemen Observer* magazine, the Minister of Interior, Minister of Information, Minister of Communication, Division of Radio in the Ministry of Information, and Vice-Minister of Communication. Original letters from our partners in Yemen were signed by the Ministry of Interior, then sent to all related ministries with supporting documentation. Then all those ministries had to reply to the Ministry of Interior. With the help of Ashraf (KF5EYY, aka 3V8SS), I put together a request to our local partner as to how the form should look. After all that, it had to be sent to Ministry of Information, which is responsible for all internal, foreign publications and media activities conducted in Yemen. Those letters went off to the

The WPX Program

CW

3284 .....SM2LKW

SSB

3129.....IK4NZD 3130.....WA3PZO

Mixed

2201.....IK4NZD 2202.....WB2SXY

CW: 450 SM2LKW. 2550 W9IL. 3850 W4VQ. 6000 K2VV.
SSB: 350 WA3PZO. 900 IK4NZD. 2450 W9IL. 2900 KF7RU. 5200 K2VV.
Mixed: 500 F4GTB. 750 WB2SXY. 950 IK4NZD. 3410 W9IL. 6900 K2VV.
Digital: 400 F4GTB.

20 Meters: IK4NZD
15 Meters: IK4NZD

Asia: IK4NZD
Africa: IK4NZD
Europe: IK4NZD, WA3PZO
North America: IK4NZD

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, I0JX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, N3XX, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, NN1N, HB9AUT, KC6X, N6IBF, W5ODD, I0RIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ., UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, UT9FJ, UT4EK, K9UQN, UR5FEO, LY2MM, N3RC, OH3MKH, RA3CQ, UT3IZ, S55SL, RU3ZX, YO9HP, RA3DNC, K8ZT, KE5K, JH8BOE, TF8GX, S58MU, UX1AA, AB1J, DM3FZN, AG4W, UA3QNS, RX3AGD, WB5JID, LY3W, LY5W, RW4WZ, VO1CV.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, N3XX, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, NN1N, W5ODD, I0RIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, UR5FEO, N3RC, UT3IZ RU3ZX, YO9HP, RA3DNC, K8ZT, KE5K, JH8BOE, S58MU, UX1AA, DM3FZN, AG4W, UA3QNS, RX3AGD, LY3W, LY5W, VO1CV.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage for airmail) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will now accept prefixes/calls which have been confirmed by eQSL.cc. Other electronic QSL confirmation means are not accepted.

*Please Note: The price of the 160, 30, 17, 12, 6, and Digital bars for the Award of Excellence are $6.50 each.

Malpelo Island, a nice place to see, but very difficult to live on. Here we can see two of the HKØNA operators making their way up the "mountain side." They were not experienced rock climbers and some of the team could not make it to the top operating site. (Photo courtesy of Glenn, WØGJ)

Pitcairn Island. This isolated island in the Pacific saw action from a group signing VP6T. One of the highlights of the team's time on the island was the celebration of the annual Bounty Days. Here we see the "Bounty Burning." which is a major part of the celebration. (Photo courtesy of Nigel, G3TXF)

The WAZ Program

6 Meters
109 SP3RNZ (26 zones)

20 Meters SSB
1206 ..... W7JVN
1207 ..... JH1OGT
1208 ..... AI6Z

10 Meters CW
203 ..... HA5WA

12 Meters CW
67 ..... PY2YP
68 ..... S55ZZ

15 Meters CW
347 ..... JH1OGT

17 Meters CW
87 ..... PY2YP

30 Meters CW
109 ..... PY2YP

40 Meters CW
287 ..... SP2FWC
288 ..... IV3IYH
289 ..... VE2TZT

40 Meters RTTY
001 ..... N5ZM

160 Meters
403 ..... VE3LYC (33 zones)
404 .... F5OHS (40 zones)

160 Meter Updates
K8GG ..... (40 zones)

All Band WAZ Mixed
8909 ..... NM5Z
8910 ..... US5CAO
8911 ..... K1KLM
8912 ..... IKØVVG
8913 ..... JT1BL
8914 ..... KX4P

SSB
5216 ..... KC6UTC
5217 ..... VR2PW
5218 ..... GØBPK

CW
686 ..... NM5Z
687 ..... R1AUR
688 ..... IT9XUA
689 ..... IZ2GOT
690 ..... JT1DA

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, P.O. Box 449, Wiggins, MS 39577-0449. The processing fee for all *CQ* awards is $6.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

Ministry of Telecommunications again. They were then signed by the Minister and Vice-Minister with 'issue frequencies and callsign order to the Manager, who requested letters from National Security and three other agencies in Yemen in support of our planned activity, which was provided by those agencies."

Sovereign Military Order of Malta – 1AØC

An announcement just in (mid-June) should make a lot of DXers happy. 1AØC will be active from SMOM; that's the Sovereign Military Order of Malta. From the last Most Wanted Survey by *The DX Magazine* it was ranked #79 in the world, but #44 in Asia and #67 in North America. Here's the announcement:

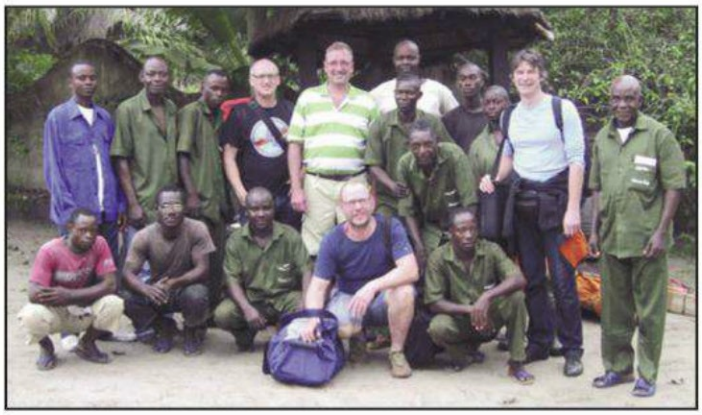
"Thirty years have passed since 1A made its way onto the DXCC list. An activation by an international team looks to celebrate the uniqueness of this event. So, from the 1st to the 4th of July, we will listen for them on the air as 1AØC from Santa Maria del Priorato, home of the Sovereign Military Order of Malta.

"The callsign that will be used belongs to the The Order of Malta's Italian Relief Corps (CISOM), an organization spe-

QSL Information

1AØKM via IKØFTA
1A3A via IZ4DPV
2A/DJ6AU via DJ6AU
2AØBQI/P via 2AØBQI
2EØCAX/P via 2EØCAX
2EØEBV/P via 2EØEBV
2EØJRZ via MØOXO
2EØKYI via MØOXO
2EØOLD via MØOXO
2EØOVL/M via 2EØOVL
3A/IK4RQJ via IK4RQJ
3A/IK5YOJ/P via IK5YOJ
3A/IZ1MHY via IZ1MHY
3A/IZ2LSC via IZ2LSC
3A/IZ4BBF via IZ4BBF
3A/KC8PG via KC8PG
3A/N5TJ via N5TJ
3A/OH4GN via N4GN
3A/ON6DP via ON6DP
3A/ON6DP/P via ON6DP
4JSØNG via 4J5A
4KØBO via DL4WK
4KØCW via DL6KVA
4KØVB via UA4WHX
4K12SONG via 4K4K
4K1V via RU3SD
4K4SONG via 4K6AL
4K50V via RU3SD
4K51V via RU3SD
4K52V via RU3SD

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)



The team at TN2T shown here with the "crew" at the hotel where they stayed. (Photo courtesy of Ronald, PA3EWP)

cialized in bringing assistance and relief during emergencies. This underscores the dual value of this activation. On the one hand, there's the fun side ham radio, giving a not so easy 'new one"' to as many stations as possible (especially from the U.S. and Japan).

"On the other hand, however, there's the noble goal, as often seen in ham radio, where a spirit of cooperation and mutual aid is shared by operators all over the world. The team's aim, in fact, is to raise funds—thanks to donations and contributions from QSL requests—in order to buy radio equipment which The Order of Malta's Italian Relief Corps volunteers will be able to use in case of emergencies.

"The operators list includes: 1AØX, 1AØZ, EA2RY, EA5RM, EA7AJR, EA7KW, F5CWU, IN3ZNR, IT9YVO, IZ8IYX, PB2T, SP3DOI, and KH6CG as a pilot for North America and Pacific.

"They will be active on HF+6m and the QSLs for contacts with 1AØC can be requested via Francesco Cozzi, 1AØZ.

"A website will be online soon, stay tuned!—73 de 1AØC"

Until next time, enjoy the chase, and Have Fun!

73, Carl, N4AA

5 Band WAZ

As of June 1, 2012, 882 stations have attained the 200 zone level and 1779 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

F6FHO

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

K8JRK, 199 (26)
UWØLT, 1999 (2 on 40)
N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40)
IK1AOD, 199 (1)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
RU3FM, 199 (1)
N3UN, 199 (18)
W1FZ, 199 (26)
SM7BIP, 199 (31)
N4NX, 199 (26)
EA7GF, 199 (1)
JA5IU, 199 (2)
RU3DX, 199 (6)
N4XR, 199 (27)
HA5AGS, 199 (1)
N5AW, 199 (17)
JH7CFX, 199 (2)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10)
RX4HZ, 199 (13)
S58Q, 199 (31)
K8PT, 199 (26)
N8AA, 199 (23)
IZ1ANU, 199 (1)
IN3ZNR, 199 (1)
IK4CIE, 199 (1)
JK1BSM, 199 (2)
EA5RM, 198 (1,19)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W9RN, 198 (26, 19 on 40)
W5CWQ,198 (17, 18)
UA4LY, 198 (6&2 on 10)
JA7XBG, 198 (2 on 80&10)
JA3GN, 198 (2 on 80&40)
N4GG, 198 (18,24)

The following have qualified for the basic 5 Band WAZ Award:

RW9QA (170 zones)
RZ3EC (170 zones)
JT1DA (154 zones)

5 Band WAZ updates:

N8LJ (198 zones)
KJ6P (191 zones)

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, P.O. Box 449, Wiggins, MS 39577-0449. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

BY GEORGE TRANOS,* N2GA

Misconceptions about Contesting

To those unfamiliar with contesting, coming across an on-the-air event can be intimidating. Many people may be calling and the information exchanged can be cryptic and may be sent and received quickly. This might appear to be bizarre to one who is unaccustomed to such behavior. It is easy to get confused with the abbreviations and "cut" numbers. Hopefully we can clear up some of the common misconceptions.

Do They Want to Work Me?

"Do they want to work me?" is the most commonly heard question. Yes, each and every contact counts (in most contests), so the person calling CQ more than likely would love you to call him/her! In some contests, such as DX contests, only contacts with distant stations in other countries count for credit. In those contests, look for stations outside your country. They will be happy to work you. Without lots of regular hams to work, the big guns would quickly run out of people to contact. They need you! If you really don't believe this, try calling CQ yourself in the last hour of any major contest. The bigger stations will find you because you'll be a new station that they haven't worked before. You might also be a needed multiplier (state, country, prefix, or whatever special status designates a station as more significant than a normal contact).

Do I Have to Submit a Contest Log?

"Do I have to submit a contest log?" is another common question. No, you don't have to, but the sponsor would love you to do so. Your contact will count regardless of whether or not you submit a log. Submitting a log allows the contest sponsor to check the information you sent against the data logged by the stations you worked. If this information does not agree, then the other station would not get credit for the contact (or lose points). If the info in both logs matches, then a valid contact took place. There would be nothing to check against if you did not send in a log.

Do I Have to Make Lots of Contacts?

"Can I just contact one person in the contest?" Yes, this is also allowed. However, it is better for you to make at least a few contacts so you would not be shown as a "unique" call. Uniques are calls that are shown in only one contest log. Contesters will still value your call and get credit for a valid contact. If you contact more than one person, your information would show up in those logs and your callsign would no longer be unique. Many times unique calls are valid contacts. However, there are times when they are simply logged incorrectly by the contester who has made an error hearing or entering your callsign.

What's This "Exchange" Stuff?

"How do I know what information needs to be sent?" Most people will be happy to help you out with this. They need your information for the "exchange" to be correct. All of the needed material can be found in the contest rules. You can still participate even without knowing exactly what needs to be sent. Just ask the first person you contact to explain the exchange. Many times you can

Calendar of Events

All year	**CQ DX Marathon http://bit.ly/vEKMWD**
Aug. 4	European HF Championship http://bit.ly/H2eMg5
Aug. 5	SARL HF Phone Contest http://bit.ly/H0IqQf
Aug. 4–5	10-10 Int'l Summer Contest SSB http://bit.ly/yTsaDk
Aug. 4–5	North American CW QSO Party http://bit.ly/GLPfXz
Aug. 4–5	ARRL UHF Contest http://www.arrl.org/august-uhf
Aug. 11–12	Worked All Europe CW Contest http://bit.ly/JUUR1n
Aug. 11–12	Maryland-DC QSO Party http://mdcqsoparty.w3vpr.org/
Aug. 18–19	ARRL 10 GHz and Up Contest http://www.arrl.org/10-ghz-up
Aug. 18–19	SARTG RTTY Contest http://bit.ly/JDCfaq
Aug. 18–19	North American SSB QSO Party http://bit.ly/GLPfXz
Aug 19	SARL HF Digital Contest http://bit.ly/H0IqQf
Aug. 25–26	YO DX Contest http://bit.ly/J759Kv
Aug. 25–26	Hawaii QSO Party http://bit.ly/IBSSAe
Aug 25-26	Ohio QSO Party http://www.ohqp.org/
Aug. 25-26	SCC RTTY Championship http://bit.ly/I6rx9O
Aug. 26	SARL HF CW Contest http://bit.ly/H0IqQf
Sept. 1–2	All Asian SSB Contest http://bit.ly/As5VzH
Sept. 1–2	CW Open http://www.cwops.org/cwopen.html
Sept. 8–9	Worked All Europe SSB Contest http://bit.ly/JUUR1n
Sept. 8–9	ARRL September VHF QSO Party http://bit.ly/K5O4kY
Sept. 8–9	Arkansas QSO Party http://arkanhams.org
Sept. 29–30	**CQ WW RTTY DX Contest http://www.cqwwrtty.com**

Basic information on many of these events may be found in *WorldRadio Online's* Contest Corner at <www.worldradiomagazine.com>. For complete information on any of these contests, see their respective sponsors' web pages.

*P.O. Box 657, Copiague, NY 11726
e-mail: <n2ga@cq-amateur-radio.com>

Uwe, DL4AAE, participates in many contests.

figure it out just by listening. For example, if you hear someone send "59 New York," you can assume the exchange is signal report and state. Other times it might take some explanation. ARRL Sweepstakes is a contest with a long exchange that takes some explanation. You might hear "K2DO 401 A N2GA 91 NLI" for example. "K2DO" is the person I'm contacting. The next part is the "QSO number"—you are my contact number 401. "A" is the contest category—indicating single operator, low power. N2GA is my callsign. "91" is the year first licensed (also called the "check"), and "NLI" is my ARRL section —New York City/Long Island. In contests such as Sweepstakes, it is important to send this information in the proper sequence or you could confuse the receiving station.

If you sent the numbers in a different sequence, the QSO number and check could somehow be transposed.

I'm Not Good at Math…

"What are multipliers and how do they help me?" Multipliers are what make contests interesting. If there were no multipliers, then the sheer number of contacts would be the deciding factor in who wins. With multipliers, it is possible for someone with fewer contacts than someone else (but more multipliers) to win. This causes a need for a contest strategy. Multipliers can be finite things such as U.S. states, Canadian provinces, or ARRL sections. There also are cases where there are no limits to the number of multipliers—contests such as the CQ WPX Contest, where callsign prefix is the multiplier. Multipliers can count once per contest, once per band, once per band and mode, etc. The contest rules will specify what they are and how they should be counted. Multipliers make contests interesting. Some people search out only needed multipliers. Others travel to desirable places just to *be* a needed multiplier.

… But I Do Know the Difference Between Numbers and Letters!

"Why do some people send letters when numbers are expected in CW contests?" Some operators shorten their exchange by using "cut" numbers. A simple example is when someone sends 5NN instead of 599 as the signal report. Similarly, a zero can be replaced with a "T" and a one can be replaced with an "A". A QSO number of ATT would then be interpreted as 100. Taken to an extreme, some use "E" as five and use other abbreviations. If done properly, using "cut" numbers can save time. If done incorrectly, they only serve to confuse those receiving them. Some places where this can be helpful include signal reports, power sent, and QSO numbers. "Cut" numbers should not be used when indicating things such as age, year first licensed, etc. Obviously, they should also not be used in callsigns!

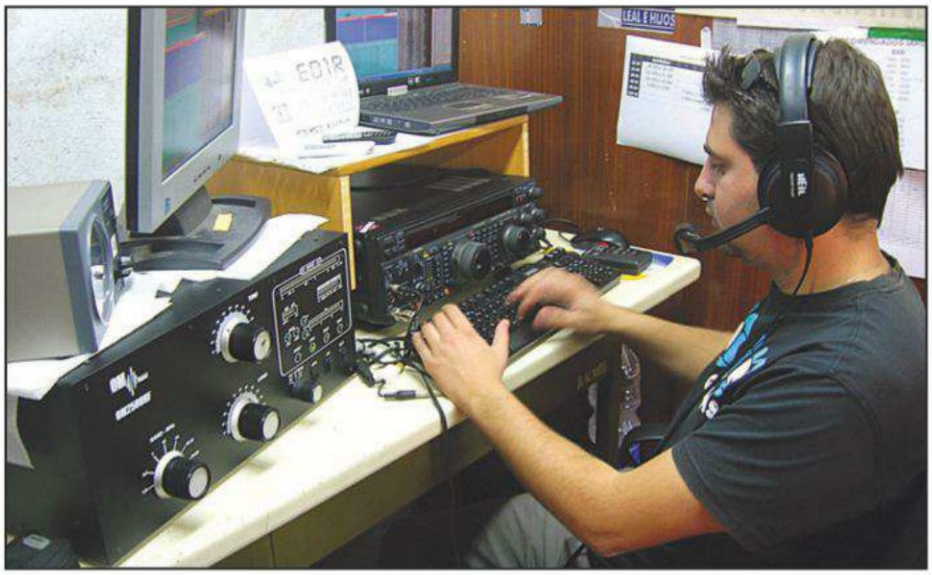
Who's This Guy on "My" Frequency?

"We normally meet on the air at 2100 UTC every day, but a contester is on our frequency. Can we ask him to move?" Yes, you can ask; however, please do so nicely! Courtesy goes a long way. He may ask for a contact with you in the contest first. If you cooperate with him, he will be more likely to move. Remember no one person owns a frequency. In general, the one there first has the right to use it. He may not want to move, so you might have to switch your QSO to another spot. Also, it is important to note that changing propagation can cause seemingly clear frequencies to become busy. Try to assume that interference is unintentional. It is best not to get into a frequency fight that zaps time and energy. Instead be more productive with your time and find a clear frequency or search and pounce for a while instead.

Other Common Questions…

"Can my friend operate in a contest using my callsign?" In the United States, yes, assuming that a control operator (you) is present and that your friend does not contact anyone in another country that does not have a third-party agreement with us. In other countries check with your country's licensing authority. If your friend is licensed to operate on the frequencies in use, then he/she may be the control operator (with your permission, of course).

"I tried sending my callsign to answer a CQ but they didn't appear to hear me. What am I doing wrong?" Sometimes



One of the ops at ED1R, 2011 CQ WW DX SSB Contest, #3 Europe Multi-Op Two-Transmitters. For a group photo and additional details see the WW DX SSB Results elsewhere in this issue.

propagation may not be there for the other station to hear you. It could be he is using an amplifier so you may hear him well but he may not hear you calling him. This is sometimes referred to as being an alligator—all mouth and no ears! It's also possible that many stations are calling him and you can't hear the other ones. If the calling station comes back to someone else, try to listen to see who he responds to. Another area may have better propagation than you do. You might not be doing anything wrong. You just might have to wait a little bit for propagation to change and then your callsign might pop out of the noise. If you hear other nearby stations working him and you don't, then it's possible that something is amiss. You might have a problem with your equipment or you might be calling when the other station is not listening. If there's a pile-up, then the needed station might be tuning up or down a little from his transmit frequency. Try listening and finding the stations that he's working and determine his pattern. He might just be listening up a little bit and stay there or he might be tuning up a little each time. Listen first to determine this and then try to call where he's listening. *(On some bands, especially 40 meters, some stations operate "split," transmitting in one portion of the band and listening in another. In this case, the station will periodically announce the listening frequency.—ed.)*

"People tell me that I'm loud and have a big signal but I make the same number of contacts in every contest. How can I ever do better?" There are many ways to improve your score. Think about how to do so while still having fun. If you spend all of your time tuning around looking for stations calling CQ (*searching and pouncing*) and people continually tell you that you're loud, consider finding a clear frequency and calling CQ yourself (this is called *running*). You should increase your rate significantly by using this tactic, and your QSO totals and score should improve. You also might want to set a goal for yourself and come up with a strategy on how to accomplish that goal. Determine how many hours you have available to operate and pick the most productive hours from your location to maximize your score. This includes studying propagation to know which band or bands is/are most likely to get you the greatest number of QSOs and/or multipliers at the times that you'll be on.

In Conclusion…

While contests may seem intimidating at first, most are fairly straightforward. The information exchanged normally is formatted and it provides the framework for the contest. Regular participants are typically happy to help out newcomers and let them know what material needs to be sent.

So the next time you hear that cacophony of sound, jump right in and join the fray! You might find yourself enjoying the rhythm of contesting and becoming a regular yourself. Partake as much as you like and have fun. After all, that's what operating should be all about. Don't let misconceptions about contesting prevent you from experiencing the joy of radio. 73, George, N2GA

BY TOMAS HOOD,* NW7US

The Summer Anomaly

A Quick Look at Current Cycle 24 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, May 2012: 69
Twelve-month smoothed, November 2011: 61

10.7 cm Flux
Observed Monthly, May 2012: 122
Twelve-month smoothed, November 2011: 120

***Ap* Index**
Observed Monthly, May 2012: 8
Twelve-month smoothed, November 2011: 8

One Year Ago: A Quick Look at Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, May 2011: 42
Twelve-month smoothed, November 2010: 27

10.7 cm Flux
Observed Monthly, May 2011: 96
Twelve-month smoothed, November 2010: 88

***Ap* Index**
Observed Monthly, May 2011: 9
Twelve-month smoothed, November 2010: 6

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for August 2012

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 8-9, 16-17	A	A	B	C
High Normal: 1-4, 7, 11, 14-15 18-23, 28-31	A	B	C	C-D
Low Normal: 5-6, 10	B	C-B	C-D	D-E
Below Normal: 12-13. 25-27	C	C-D	D-E	E
Disturbed: 24	C-D	D	E	E

Where expected signal quality is:
A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be good (B) on August 1–4, fair to good (C-B) on the 5th and 6th, good (B) on the 7th, etc.

3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

Are the daytime Maximum Usable Frequencies (MUFs) on radio propagation circuits spanning daylight regions higher during the summer than during the winter? With more hours of daylight wouldn't the increased exposure to solar radiation cause greater ionization? The surprising answer is that no, that is not generally the case. A look at many signal paths reveals that there are higher peaks during the winter daytime than during the summer daytime. However, during the summer night those same paths may have higher MUFs than during the winter nights. This is known as the *Summer Anomaly*.

In the past, it was believed that this anomaly was in part caused by temperature differences. This model held that during the Northern Hemispheric winter months the atmosphere is cold and therefore denser, and that because the Earth is closer to the Sun, more intense daytime ionization occurs; thus, winter daytime critical frequencies are high. During the long hours of winter darkness, on the other hand, the ionosphere has more time to recombine, and nighttime critical frequencies fall to very low levels. Conversely, in the summer the *F2* layer heats up, causing it to expand during the daylight hours. This results in a lower ionization density than is observed during the winter. This, it was believed, creates summer daytime *F2*-layer critical frequencies that are lower than winter values. Moreover, because of the longer hours of daylight during the summer, recombination does not occur to the extent that it does in winter. This would mean that nighttime *F2*-layer critical frequencies during the summer months are significantly higher than they are during the winter months.

As scientists continue to explore our understanding of how the ionosphere works, it becomes ever more accurate and clear. Research has revealed that the reason summer MUFs are lower during the day is due only in part to temperature differences. The rest of the story lies in ion chemistry, not a thinning of the ionosphere. (*An interesting side-note:* You can now take a virtual tour of the ionosphere by using free software available from NASA and Google.com. See fig. 1.)

In the lower part of our atmosphere, below 100 km, atoms and molecules are well mixed by wind and temperature. Above 100 km, atoms and molecules are distributed vertically by gravity according to their atomic weights. The heaviest atoms, argon, settle toward the bottom of the ionospheric layers, while the lightest atoms, hydrogen, extend to the greatest heights. The exact composition depends on temperature. In the winter, when atoms and molecules are colder, they move lower, in part causing the ionosphere to contain a greater density of oxygen atoms. During the summer, they move to greater heights as they warm up, and the ionosphere becomes dominated by a more even

*e-mail: <nw7us@nw7us.us>

Hot Summer Items . . .

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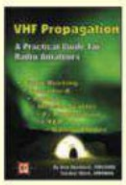

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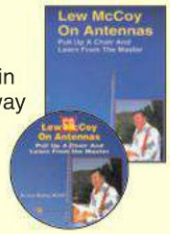
Lew McCoy on Antennas

by Lew McCoy, W1ICP



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by Bob Haviland, W4MB

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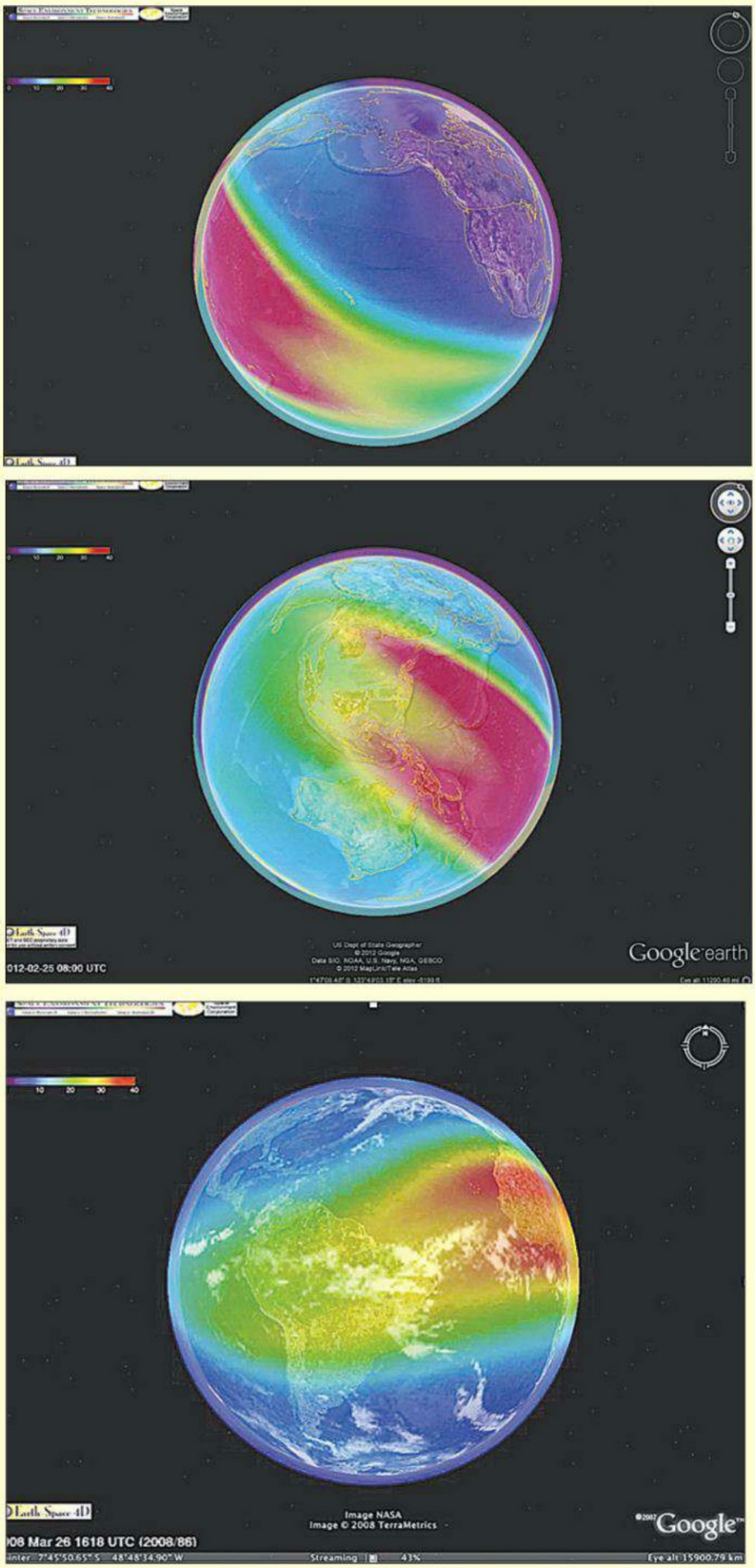

Fig. 1– Screen captures of the 4D ionosphere as modeled by NASA and Google Earth©. Colors represent electron content. Bright red is high density; that's where radio communications are restricted to few or no frequencies. Blue denotes low density; no problem there and propagation will be as expected. Using the intuitive Google Earth interface, users can fly above, around, and through these regions getting a true 4D view of the situation; the fourth dimension is time. This is a real-time system updated every 10 minutes.See: <http://g.nw7us.us/xs3Zwz>. (Credit: Google Earth/NASA

mixture of nitrogen and oxygen molecules. In this upper atmosphere, ionization is more affected by the geomagnetic field than by atmospheric turbulence.

Ionization is the creation of ions by atoms losing their electrons. This is caused by the energy of photons from sunlight breaking the electron away from the atom. In the absence of sunlight, these free electrons recombine with whatever nearby molecule or atom happens to be available.

Electrons do not always recombine with the relatively small number of positive ions available, but they may also become attached to some of the far more numerous neutral molecules, forming negative ions. This is a great thing for those who DX the lower part of the HF spectrum, as these electrons are not disassociated from the negative ions very quickly during the morning sunlight. Since these negative ions are more massive than electrons and positive ions, they do not absorb radio energy. This makes a morning window for low-band DXing.

During the summer, then, the ratio of atoms to molecules is less than the ratio during the winter. The make-up of the ionosphere during the winter favors the production of electrons from oxygen atoms over the losses of electrons by recombination in molecular interactions. Since the summer ionosphere has a mixture of nitrogen and oxygen molecules, more recombination takes place and the ionosphere loses some of its ionization. If one looks at a given summertime signal path and compares it with the same path during the winter, it is clear that the Maximum Usable Frequency will generally peak higher in the winter. However, the nighttime critical frequencies generally will be higher than in summer nighttime.

We'll continue to delve into the science of the ionosphere and space weather, as well as using computer software tools that aid in understanding, analyzing, and predicting radio signal propagation. Stay tuned each month!

August Propagation

Late August and early September are a difficult time of year during which to make accurate band predictions, because conditions can change drastically from day to day. On many days typical summertime conditions will continue much as they were during June and July.

On the other days conditions may sound typically fall-like, with somewhat higher daytime usable frequencies and somewhat lower nighttime usable frequencies. When you add *equinoctial* conditions that can begin as early as late August, we often experience optimum openings between the Northern and Southern Hemispheres on the one hand, but periods of active to stormy conditions on the other.

Despite being in the rise phase of solar Cycle 24 with low to moderate solar activity, during the daylight hours good DX conditions should be possible on several bands: 15, 17, and 20 meters. Expect signals on the 17- and 20-meter bands to peak approximately during the two-hour window immediately following sunrise and again during the late afternoon. These two bands, and to a lesser degree the 15-meter band, will see openings for DX throughout the daylight hours. Fairly good DX openings should occur along an arc extending across central Africa, Latin America, and into the far Pacific area.

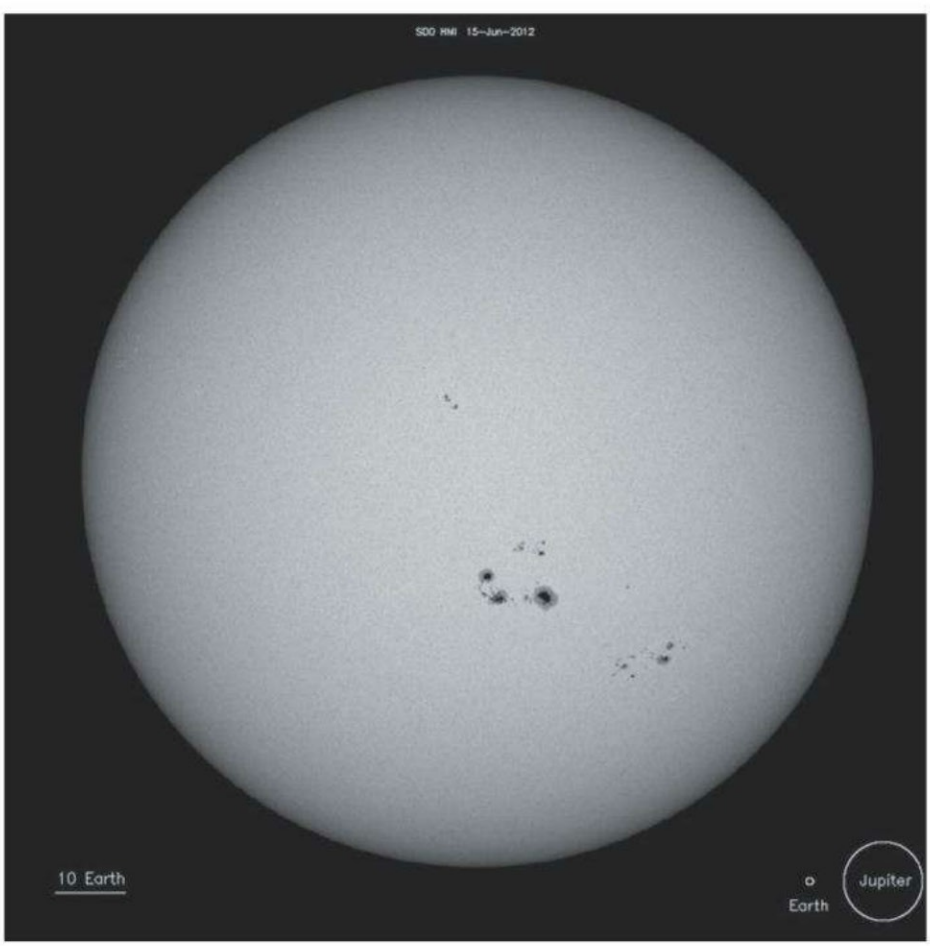

Fig. 2– A large active sunspot region seen in this Intensitygram image captured on June 15, 2012 by the Solar Dynamics Observatory Helioseismic and Magnetic Imager (SDO/HMI) helps improve summer-time radiowave propagation on the high frequencies. This sunspot region is numbered by NOAA as Active Region 11504. As the region continued to rotate across the solar disc, it helped keep the high frequencies alive with DX, as the 10.7-cm radio flux remained in the mid to upper 100s, and the background hard x-ray flux remained moderate. Sunspot regions with large spots are not unusual, although most sunspot regions tend to be smaller, with many of them spread out around the solar disc. (Source: NASA/SDO/Helioseismic and Magnetic Imager [HMI])

Peak conditions should occur during the afternoon hours, but an increasing number of earlier openings should be possible by early September.

Between sundown and sunrise 20 meters is expected to be the best DX band. However, with current solar activity the band in general will suffer compared with the past few years. Openings might be possible to many areas of the world, some with surprisingly strong signal levels. Until midnight, good DX conditions should be found for openings toward Latin America, the far Pacific, and into Asia. You might even catch some activity on 17 or even 15. Fairly good conditions are also expected on 30, 40, 60, and 80 meters despite the high static level at times. Openings should be possible before midnight along an arc extending from northern Europe, through Africa, and into Latin America, the far Pacific, and Asia after midnight.

By late August it should be possible to work some DX on 160 meters during the hours of darkness. Conditions on this band, as well as on 40, 60, and 80 meters, will tend to peak just as the sun begins to *rise* on the *light*, or easternmost, terminal of a path.

For *short-skip* openings during August and early September try 80 meters during the day for distances less than 250 miles, with 60 and 40 meters also usable. During the hours of darkness both 80 and 160 meters should provide excellent communications over this distance. For openings between 250 and 750 miles use 30 and 40 meters during the day for distances up to 500 miles, and 20 and 17 meters between 500 and 750 miles. At night 40 and 30 meters should be the best bands for this distance until midnight, with 80 meters optimum from midnight to sunrise. Try 60 meters, as well. For openings between 750 and 1300 miles, try 20 and 17 meters, as they should provide optimum propagation during the hours of daylight.

Optimum conditions should continue on these bands for this distance range after sundown and until midnight. Between midnight and sunrise the best band should be 40 meters, but check 60 meters, too. For openings between 1300 miles and the one-hop short-skip limit of approximately 2300 miles try 20 and 17 meters during the day, with 15 meters also usable. After sundown try 30, 40, and 60 meters, with 80 meters also providing good propagation conditions for this distance range.

VHF Conditions

Sporadic-*E* propagation usually begins

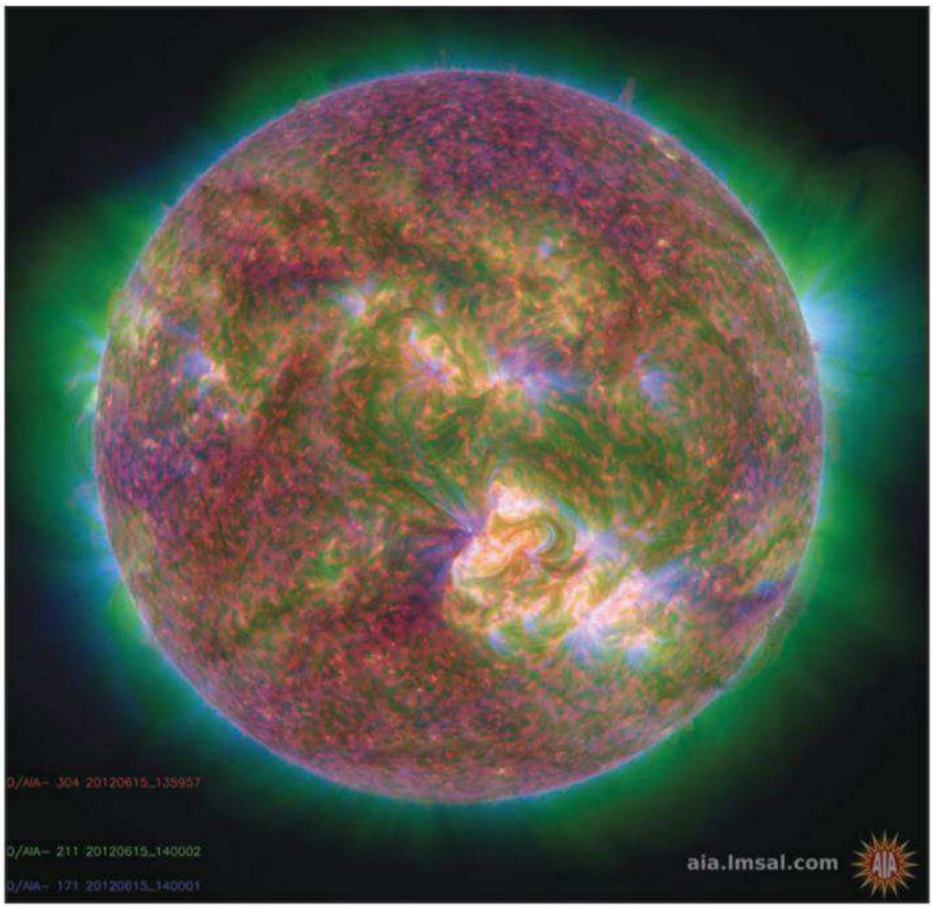

Fig. 3– The huge sunspot region 11504 as seen in the combined wavelengths of 171, 211, and 304 Angstroms, by the SDO Atmospheric Imaging Assembly. The region produced many small flares and a few moderately-strong flares during mid-July. (Source: Solar Dynamics Observatory [SDO]/Atmospheric Imaging Assembly [AIA])

to taper off during August, but it should continue to occur fairly frequently. Some 6 meter sporadic-*E* openings are expected during the month over distances of approximately 750 to 1300 miles. During periods of intense and widespread sporadic-*E* ionization, two-hop openings may be possible considerably beyond this range. Also check the 2-meter band for an occasional sporadic-*E* short-skip opening between approximately 1200 to 1400 miles. While sporadic-*E* short-skip openings may occur at any time, there is a tendency for them to peak between 8 AM and noon, and again between 6 PM and 9 PM local daylight time.

The *Perseids* meteor shower covers the period of July 23 to August 22. The peak is expected to occur on August 11 and will be most observable in the Northern Hemisphere. The maximum hourly visual rate typically reaches 80. It is expected to be a moderate shower.

Aurora? Aurora is a frequent player due to the increase in solar activity now that we're in the rise phase of Cycle 24. The Earth is constantly barraged by the expulsion of solar plasma riding the solar wind. When we have coronal mass ejections erupting from the Sun, the solar wind reaches storm-level speed, and the plasma of the CME slams into the Earth's magnetosphere, causing auroral activity in the highest latitudes. This year some of these have occurred even during the late spring and early summer. Auroral-scatter-type openings, on both 6 and 2 meters, can range from a few hundred up to about a thousand miles, and they are usually characterized by very rapid flutter and Doppler shift on SSB signals.

For the very patient, check the 6-meter band for possible trans-equatorial (TE) openings between 8 and 11 PM local daylight time. This type of propagation favors openings from the southern tier states into deep South America, with the signal path crossing the magnetic equator at a right angle. TE openings during August are rare, but they can occur. Very weak signals and severe flutter fading usually characterize them.

Don't forget to check out *CQ VHF* magazine for more details on VHF propagation and conditions. If you use Twitter.com, you can follow @hfradio-spacewx for hourly updates that include the *K*-index numbers. You can also check the numbers at <http://SunSpotWatch.com>.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for May 2012 is 69.0, up from April's 55.2 and March's 64.2. The lowest daily sunspot value of 52 was recorded for May 30, while the highest daily sunspot count was 98 on May 16. The 12-month running smoothed sunspot number centered on November 2011 is 61.1, up from October's 59.9. A smoothed sunspot count of 77, give or take about 9 points, is expected for August 2012.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 121.5 for May 2012, up from April's 113.1 and March's 115.1. The 12-month smoothed 10.7-cm flux centered on November 2011 is 119.5, up from October's 118.4. The predicted smoothed 10.7-cm solar flux for August 2012 is 132, give or take about 9 points.

The observed monthly mean planetary *A*-index (*Ap*) for May 2012 is 8. The 12-month smoothed *Ap* index centered on November 2011 is 8.0, the same as for October. Expect the overall geomagnetic activity to vary greatly between quiet to stormy during August, much like the months prior, because we're seeing the Sun become ever more active as we move toward the cycle maximum. Refer to the Last-Minute Forecast for the outlook on conditions during this month.

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may e-mail me, write me a letter, or catch me on the HF amateur bands. You can directly interact with me on Twitter.com by following @NW7US. You can find complete details on my main web page, at <http://NW7US.us>.

Remember, *CQ* magazine is on Facebook at <http://www.facebook.com/CQMag>. For space weather and radio propagation information on Facebook, please join this columnist's dedicated page at <http://www.facebook.com/spacewx.hfradio>.

73, Tomas, NW7US

SPANAWAY, WASHINGTON — Radio Club of Tacoma HamFest, August 11 at the Bethel Junior High School. Contact: Larry, KD4VOM, 253-843-2190; e-mail: <hamfest@w7dk.org>; Website: <http://www.w7dk.org>. (Talk-in 147.280+ [PL 103.5] or 147.500; exams begin at 10 AM)

ADAMS, MASSACHUSETTS — Northern Berkshire Amateur Radio Club NoBARC Hamfest, August 12 at Bowe Field in the Adams Agricultural Fair Grounds off Route 8. E-mail: <hamfest@nobarc.org>. (Talk-in 146.910 [PL 162.2]; exams 9 AM)

WIMBORNE, DORSET, UNITED KINGDOM — Flight Refueling Amateur Radio Society Hamfest, August 12 at the Cobham Sports and Social Club, Merley Park Road. Contact: Mike Sykes 01202 883479; e-mail: <hamfest@frars.org.uk>; Website: <http:// www.frars.org.uk>. (Talk-in 145.550)

HUNTSVILLE, ALABAMA — Huntsville Hamfest Association and **Huntsville Amateur Radio Club** will hold the **Huntsville Hamfest and ARRL SE Division Conference**, August 18–19 at the Von Braun Civic Center. Contact: Dave Givens, K5RSI, 8003 Craigmont Rd. S.W., Huntsville, AL 35802; 256-882-9137; e-mail: <k5rsi@arrl.net>; Website: <http:// www.hamfest.org/>. (Talk-in 146.94 (No tone). Back up frequency is 147.30 [no tone]; exams, card checking) ***(See Us at the CQ Booth.)***

LaPORTE, INDIANA — Porter County Amateur Radio Club Hamfest/Hog Roast, August 18 at the concrete tower at US. 35 and Schultz Road. Contact Mat Lasayko, KC9KUD, 219-916-4907. Website: <http://www.pc-arc. net>.

DENVER, COLORADO — The Denver Radio Club, WØTX, Denver Hamfest 2012, August 19 at the Jefferson County Fairgrounds. Contact: Bryan Steinberg, KBØA, 303-987-9596; e-mail: <drcfest@w0tx.org>; Website: <http://www.w0tx.org>. Talk-in 145.490– or 448.625– [PL 100.0]; exams 10 AM)

LAFAYETTE, INDIANA — Tippecanoe Amateur Radio Association 42nd Lafayette Hamfest, August 19 at the Home Econ Building in the Tippecanoe County Fairgrounds. Contact: TARA, P.O. Box 8081, Lafayette, IN 47903-8081; e-mail: <kb9gfb@gmail.com>; Website: <http://bit.ly/JjbSVG>. (Talk-in 147.135+ [PL 88.5]; exams 11 AM)

FREDERICK, MARYLAND — National Capitol DX Association DXCC-EAST Convention 2012, August 24–25 at the Holiday Inn Hotel & Conference. Contact: Mike Cizek, W3MC, 410-562-3010; e-mail: <convention@ncdxa.org>; Website: <http://www. dxcceast.com/>. (Talk-in 146.480; card checking; exams Saturday 1–3 PM).

JOPLIN, MISSOURI — Joplin Amateur Radio Club Joplin Hamfest, August 24–25 at the Holiday Inn Convention Center, Interstate 44 at exit 8B. Contact: JARC, P.O. Box 2983, Joplin, MO 64803-2983; 417-437-9547; Website: <http://www.joplin-arc.org>. (Talk-in 147.210+; exams, card checking)

DES MOINES, WASHINGTON — Highline Amateur Radio Club Ham Radio Swap Fest and Raffle, August 25 at the Des Moines Activity Center. Contact: Dennis Reanier, 206-241-6812; e-mail: <highlinearc@hotmail. com>.

GAINESVILLE, TEXAS — Cooke County Amateur Radio Club Gainesville Hamfest 2012, August 25 at the Gainesville Civic Center. Contact James K. Floyd, N5ZPU, 940-668-7511; e-mail: <jfloyd54@suddenlink.net>; Website: <http://gainesvillehamfest.org>. (Talk-in 147.34 [PL 100] or 442.775 [PL 100]; exams 9:30 AM)

OWOSSO, MICHIGAN — Shiawassee Amateur Radio Association Hamfest, August 25 at the Baker College Welcome Center. Contact: Don Warner, WB8GUS, 810-599-0729; e-mail: <wb8gus@arrl.net>; Website: <http://www.w8qqq.org>. (Talk-in 147.02 [PL 100]; exams 10 and 11 AM)

SWAINSBORO, GEORGIA — Southeast Amateur Radio Association 1st Annual Hamfest, August 25 at the Varner 4-H Center. For more information regarding VE exams, contact: Jim Hill, N4MOC, 478-237-4663; e-mail: <jimmhill@bellsouth.net>. Contact: Ron Hill, N4SFU, 51 Bobwhite Road, Twin City, GA 30471; 478-455-1909; e-mail: <rhill@ pineland.net>; Website: <http://www. kj4mks.com>. (Talk-in 146.715– [PL 88.5]; exams)

VANCOUVER, WASHINGTON — Clark County Amateur Radio Club Second Annual Clark County Ham Fair, August 25 at the Clark County Square Dance Center. E-mail: <clarkcountyhamfair@w7aia.org>; Website: <http:// www.w7aia.org>. (Talk-in 147.240 or 443.925 [PL 94.8] or 146.520 simplex)

NEW KENSINGTON, PENNSYLVANIA — Skyview Radio Society Swap 'n Shop 2012 and Western Pennsylvania ARRL Convention, August 26 at the Skyview Radio Society. Contact: Skyview Radio Society <ab3er@arrl.net>; Website: <http://www. skyviewradio.net>. (Talk-in 146.640– [PL 131.8])

DALLAS, NORTH CAROLINA — The Shelby Amateur Radio Club will hold the **56th Annual Shelby Hamfest**, September 1–2 at 1303 Dallas-Cherryvale Highway. Contact: Ben Melvin, <chairman@shelbyhamfest.org>. Website: <http://bit.ly/lO3aeZ>. (Talk-in 146.880- or 147.120+; exams)

MENA, ARKANSAS — Queen Wilhelmina Hamfest Association 43rd Annual Queen Wilhelmina Hamfest, September 8–9 at Queen Wilhelmina State Park on Hwy. 88. Contact: Randy Baggett, 479-928-5845; e-mail: <kg5ne@centurytel.net>. Website: <http://menahamfest.org>. (Exams)

LINCOLN, CALIFORNIA — Western Placer Amateur Radio Club Fourth Annual Hamfest, September 8 at McBean Park. Activities include prizes, a flea market, refreshments, and VE exams. Contact Harvey Ulijohn, KD6LND, 916-543-9286; e-mail: <hulijohn@ ssctv.net>. Website: <http://www.wparc.org>. (Talk-in 147.360+ [PL 179.9]; exams).

LOUISVILLE, KENTUCKY — Greater Louisville Hamfest Association Greater Louisville Hamfest 2012, September 8 at the Paroquet Springs Conference Center. Contact: The Greater Louisville Hamfest Association, P.O. Box 34444, Louisville, Kentucky 40232-4444; Website: <http://louisvillehamfest. com/info.htm>. (Talk-in 146.700 [PL 79.7]; exams).

SPRINGFIELD, NEBRASKA — Ak-Sar-Ben Amateur Radio Club Flea-Esta, Saturday, September 8 at the Sarpy County Fair Grounds on 4-H Boulevard. Contact: Pat Joseph, 402-492-9156; e-mail: <flea@aksarbenarc.org>. Website: <http://www.aksarbenarc.org>.

NEWTOWN, CONNECTICUT — Candlewood Amateur Radio Association Western CT Hamfest, September 9 at the Edmond Town Hall. Contact: Joe de Groot, AB1DO, 39 Sunnyview Drive, Redding, CT 06896; 203-938-4880; e-mail: <ab1do@arrl.net>; Website: <http://bit.ly/IEVzAM>. (Talk-in 147.300+ [PL 100]).

Number groups after call letters denote following: Band (A = all), Final Score, Number of QSOs, Zones, and Countries. An asterisk (*) before a call indicates low power. Certificate winners are listed in bold. (All country terminology reflects the DXCC list at the time of the contest.)

2011 SSB RESULTS
SINGLE OPERATOR
NORTH AMERICA
United States

K1DG	**A**	**9,432,996**	**4696**	**166**	**558**
KK1KW	**"**	**5,304,936**	**3552**	**135**	**411**
K5ZD/1	**"**	**5,057,340**	**2880**	**150**	**470**
K8PO/1	"	3,412,855	2450	121	382
K1RX	"	3,341,180	2371	132	395
K1ZR	"	2,007,486	1730	95	319
KQ2M/1	"	1,434,125	1849	66	209
K1ZZ	"	1,384,416	1224	94	302
NX9G/1	"	1,141,024	1138	112	282
W1FJ	"	1,136,930	1057	107	303
W1HIS	"	1,041,003	917	99	324
KB1W	"	977,481	956	85	284
K1LU	"	837,261	849	100	269
K1QS	"	828,144	706	102	330
AA1ON	"	773,644	1007	72	197
W1WEF	"	714,960	793	102	229
W1RZF	"	618,032	734	63	241
W1XX	"	608,895	800	80	235
N1MJF	"	550,620	658	86	259
N1DD	"	450,566	515	97	237
K1RM	"	369,444	643	54	150
W1ZS	"	310,695	457	53	178
W1MSW	"	194,994	353	50	157
KG1D	"	175,490	305	51	167
K1BV	"	139,125	391	33	92
AJ1E	"	125,874	245	48	141
K1YSY	"	76,797	170	61	100
W5MPC/1	"	70,848	230	46	77
N1GLT	"	60,918	165	38	105
WA1OUI	"	36,736	129	40	72
KB1MCK	"	29,109	111	23	70
W1FM	"	28,808	113	42	62
WBØPOH/1	"	28,280	107	30	71
KB1ODO	"	24,525	115	21	54
N1PFB	"	20,832	91	35	61
W1ZK	**28**	**175,428**	**500**	**31**	**101**
K1WHS	"	106,555	425	25	76
NN1N	"	54,863	229	23	60
AA1BU	**3.7**	**127,365**	**449**	**21**	**84**
***N1UR**	**A**	**3,925,064**	**2424**	**135**	**449**
***WB1DX**	**"**	**1,071,616**	**1022**	**85**	**283**
*W1JQ	"	806,096	852	70	262
*NG7A/1	"	332,142	451	69	212
*W1CCE	"	289,628	497	68	176
*W1/YO7ARY	"	232,407	416	51	166
*WA1DRQ	"	219,520	360	55	169
*W1AIR	"	208,320	328	66	158
*NE1RD	"	169,761	289	55	158
*WU1T	"	158,032	332	35	131
*KB1NHV	"	117,986	260	53	120
*K1HT	"	106,106	237	46	108
*K1SM	"	100,142	235	42	119
*W1EL	"	97,174	225	36	118
*N1OXA	"	95,128	211	58	130
*NX1T	"	94,611	226	54	129
*KB1REQ	"	68,211	169	32	111
*KA1CH	"	67,104	184	37	107
*W1DYJ	"	62,252	158	47	111
*KA1WIF	"	59,472	172	46	98
*KK1F	"	49,530	136	37	90
*NV1P	"	43,050	145	34	89
*ND1T	"	42,745	144	23	80
*K1VU	"	39,216	127	41	88
*N1NN	"	28,120	119	27	68
*N1RNR	"	28,013	96	39	70
*N1ZN	"	25,116	105	31	61
*W1MJB	"	19,968	98	24	54
*W1BJ	"	19,662	99	22	65
*NF1L	"	18,308	81	33	59
*N1GN	"	17,072	70	33	64
*AB1OD	"	15,045	72	33	52
*KA1C	"	12,810	67	21	49
*W1CRK	"	12,702	74	22	51
*W1OHM	"	8,896	58	22	42
*W1GEK	"	8,775	84	6	33
*WA1KSN	"	3,952	37	20	32
*KD1EU	"	3,240	32	13	23
*WN1E	"	1,596	21	12	16
*W1MJ	"	1,140	20	4	15
*N1IMW	"	672	15	8	13
*N1NAZ	"	360	11	7	11
***K1VSJ**	**28**	**298,224**	**727**	**33**	**111**
*KT1VT	"	71,915	268	23	72
*AB1J	"	65,702	261	21	70
*N1IX	"	57,998	229	22	72
*N1WRK	"	43,920	170	23	67
*NJ1H	"	40,035	178	19	66
*N1AIA	"	12,276	73	19	47
*AA1I	"	2,146	26	9	20
N2RJ	**A**	**1,754,970**	**1531**	**95**	**316**
WW2DX	**"**	**1,130,980**	**1379**	**74**	**219**
WA2NHA	"	890,704	912	90	268
W2LU	"	825,020	776	121	294
KM2L	"	478,836	596	72	211
N2LT	"	398,268	526	73	203
KC2SST	"	275,456	395	51	205
K2FJ	"	256,968	406	74	184
K2SLZ	"	233,704	398	59	164
KC2LST	"	205,884	325	57	171
K3QDV/2	"	186,984	372	43	153
W2BSN	"	106,176	246	47	111
WG2Y	"	99,616	219	35	141
WS9M/2	"	83,430	231	50	112
W2MC	"	71,550	174	47	103
K2JMY	"	54,210	180	35	95
K2DV	"	53,550	194	45	81
W2ARP	"	29,779	128	22	75
KB2KOL	"	22,326	80	50	72
NG2P	"	19,992	71	36	66
N2NW	"	19,635	79	40	65
KA2AEY	"	11,446	72	17	42
N2EIK	**28**	**81,003**	**447**	**13**	**54**
N2CU	"	43,610	175	21	68
W2EG	7	4,318	44	7	27
W2MF	**1.8**	**15,876**	**137**	**13**	**50**
***NW2K**	**A**	**1,041,780**	**976**	**98**	**290**
***K2GV**	**"**	**647,964**	**666**	**99**	**270**
*N2JJ	"	519,400	695	63	202
*WB2WPM	"	481,985	547	86	243
*WB2KLD	"	450,600	541	78	222
*K2CS	"	380,680	565	62	186
*WS2W	"	302,787	273	38	115
*N3XOF/2	"	290,667	413	66	191
*NT2A	"	244,800	314	79	227
*WA2JQK	"	221,851	316	75	212
*AB2TC	"	207,711	386	45	144
*KC2QJB	"	172,815	313	52	153
*WA1FXK/2	"	169,290	321	52	146
*K2QB	"	132,492	281	51	130
*AA2DT	"	113,760	233	49	131
*K2RET	"	110,374	235	45	128
*K2DSL	"	107,415	250	51	114
*K2XC	"	71,145	172	47	108
*WA2YSJ	"	61,200	134	59	111
*N2DD	"	60,066	179	38	103
*WB2ZEX	"	59,004	176	44	105
*N2GXJ	"	53,515	142	45	94
*W2ANQ	"	49,518	161	37	94
*WA2NLL	"	48,556	139	33	89
*N2WSY	"	42,196	124	36	118
*W2FUI	"	33,887	116	34	69
*KC2DGC	"	32,880	127	33	87
*W2HCB	"	30,492	119	43	78
*N2VM	"	29,997	105	35	66
*N2JBA	"	24,336	110	29	75
*N2EI	"	23,318	98	25	64
*KA2ANF	"	17,440	86	31	49
*K2JF	"	14,337	71	26	55
*K2RRM	"	11,505	74	18	47
*K2EL	"	10,458	67	20	43
*W2VU	"	8,479	56	21	40
*N2OBY	"	7,812	47	23	40
*WA2OOB	"	4,242	37	13	29
*N2SAB	"	3,290	28	19	28
*W2KRD	"	2,992	33	19	25
*KC2SYF	"	2,356	26	10	21
*KC2HRG	"	1,924	29	12	25
*KC2CK	"	1,316	23	10	18
*AC2DX	"	650	16	10	15
*W2IMY	"	616	15	10	12
*N2AMW	"	414	11	9	9
*N2NUR	"	390	10	4	9
*KC2JRQ	"	231	8	5	6
*KD2DO	"	224	14	9	7
*N2MTG	"	36	3	3	3
***N2GA**	**28**	**106,375**	**327**	**27**	**88**
*W2AAB	"	43,741	197	21	62
*N2SLO	"	34,350	171	18	57
*K2KJ	"	24,640	120	22	58
*WB2DVE	"	23,590	123	20	50
*N2BEG	"	3,895	35	15	26
*WA3YRI/2	"	3,471	38	15	24
*N2VIG	"	2,387	36	8	23
***KX2S**	**21**	**167,912**	**396**	**35**	**116**
*K2BQW	"	40,406	183	18	71
*K2HVE	"	1,566	30	10	19
*W2UIS	"	125	10	4	9
***W2TF**	**14**	**127,702**	**346**	**32**	**102**
*W3EH/2	"	28,269	132	19	62
*W2GSB	"	3,696	52	7	26
					(OP: AB2ZI)
AA1K/3	**A**	**5,812,466**	**3390**	**155**	**458**
W3LL	**"**	**3,537,314**	**2035**	**146**	**476**
KB3UHN	**"**	**3,333,632**	**2726**	**132**	**380**
K3CR	"	2,129,536	1539	137	371
					(OP: LZ4AX)
K3TC	"	1,339,250	1042	127	360
N3AD	"	1,329,032	1068	106	360
W3BGN	"	1,120,049	1084	97	274
WT3Q	"	1,114,237	922	116	345
W3DF	"	765,916	993	75	217
N3ME	"	730,206	783	88	271
K1RH/3	"	679,613	698	74	267
K3TN	"	553,797	521	100	287
N3UM	"	443,308	548	84	223
W3AYT	"	388,020	502	80	210
NN3RP	"	302,176	445	69	197
N3ST	"	297,440	383	90	196
N3RJ	"	150,288	275	56	146
AK3S	"	139,821	247	56	153
WO3L	"	91,182	194	55	127
K3RMB	"	65,415	160	47	100
K3FIT	"	52,976	182	28	84
W2DLT/3	"	50,875	181	34	91
W3FVT	"	46,125	140	32	93
K3AJ	"	27,720	102	34	76
K9ZU/3	"	9,860	56	29	39
K3ISH	"	8,694	58	22	32
N3XL	"	7,198	64	18	41
W3TNU	"	1,696	24	12	20
WA3A	**21**	**811,920**	**1749**	**37**	**133**
KM3J	7	19,829	98	22	57
K4JLD/3	3.7	9,996	74	13	38
W3GH	1.8	2,652	48	11	23
***KB3LIX**	**A**	**815,340**	**767**	**90**	**291**
***WB8YYY/3**	**"**	**594,600**	**704**	**69**	**231**
*KD3HN	"	423,271	492	88	223
*AA3LX	"	356,408	447	86	213
*W3DQN	"	275,334	448	58	160
*W3PO	"	256,476	455	44	157
*KN3A	"	211,992	339	58	161
*W3TOM	"	192,280	351	59	161
*K3CWF	"	141,459	279	44	139
*K3JD	"	123,725	257	41	134
*KB3IBT	"	121,576	265	39	128
*K3VED	"	110,360	230	57	121
*K2LNS/3	"	107,046	221	50	121
*AB3AH	"	106,950	277	43	112
*WA1T/3	"	99,078	257	41	106
*ND3R	"	74,576	171	48	110
*NY3C	"	65,536	195	31	97
*K3DCW	"	52,969	133	51	110
*K3YH	"	45,425	149	27	88
*NX3SS	"	44,888	133	38	86
*WA2EAJ/3	"	35,840	119	39	73
*KQ3Q	"	35,653	143	31	70
*N3EMA	"	30,636	105	39	72
*N2US/3	"	25,092	104	28	74
*K3BD	"	24,480	103	26	70
*WB3IGR	"	18,900	83	28	62
*WA3DMD	"	18,675	131	21	54
*W3RBX	"	16,195	85	27	52
*K3TXT	"	14,444	72	32	60
*K2HU/3	"	9,792	58	25	47
*N1EVV/3	"	7,735	43	27	38
*N3JNX	"	4,830	48	19	23
*N3XPD	"	3,996	42	11	25
*W3WTW	"	3,783	39	13	26
*WBØYLE/3	"	3,686	35	16	22
*W3RLO	"	2,345	27	13	22
*KB3VBE	"	2,322	32	20	23
*KB3OPP	"	1,104	20	11	12
*W3RLS	"	814	14	9	13
*W3JG	"	589	15	8	11
*KB3GJT	"	196	8	7	7
***K2PS/3**	**28**	**376,948**	**931**	**32**	**111**
*WB9KPT/3	"	101,196	344	25	83
*N8NA/3	"	84,133	298	25	76
*K3FS	"	37,260	191	19	62
*K3SWZ	"	31,363	144	24	55
*K3JPT	"	13,398	95	15	43
***NS3T**	**7**	**12,840**	**82**	**15**	**45**
K1TO/4	**A**	**5,669,775**	**3575**	**144**	**421**
K4AB	**"**	**4,348,836**	**2616**	**152**	**451**
KØEJ/4	**"**	**3,388,000**	**2458**	**127**	**373**
K3XC/4	"	3,344,285	1871	154	511
K4SSU	"	3,304,824	2190	149	403
					(OP: NA4BW)
N6AR/4	"	3,012,450	1911	132	438
AG4W	"	2,625,810	1785	139	406
N4RA	"	2,404,035	1420	150	465
K5RQ/4	"	2,203,418	1807	112	322
KZ2I/4	"	1,995,408	1481	121	375
NA4K	"	1,720,503	1375	112	335
N4UU	"	1,582,020	1456	109	314
K4RO	"	1,483,070	1266	117	313
W4JAM	"	1,373,922	1049	122	364
K4PV	"	1,337,368	1176	130	349
KA8Q/4	"	1,159,842	1004	94	317
N4NO	"	965,168	1059	84	253
N4MM	"	914,660	805	96	284
WA4TII	"	808,008	742	101	292
W4KW	"	714,469	754	93	250
NJ2F/4	"	700,920	690	94	266
W4WWQ	"	566,496	653	96	240
N1TO/4	"	557,641	718	67	220
W4EEH	"	546,624	676	77	211
N4AA	"	514,600	592	78	232
AK4I	"	514,102	592	93	233
W4PV	"	457,560	577	92	218
WB4YDY	"	438,858	544	88	213
AB4GG	"	433,008	546	81	210
WX4US	"	417,051	522	89	222
K4ADR	"	382,800	478	76	214
K4FYM	"	349,204	474	77	191
K4MF	"	329,466	454	69	189
NC4MI	"	322,803	453	77	190
WA4JUK	"	322,340	455	83	201
WA4GIF	"	317,745	396	93	214
WX4G	"	296,780	436	94	190
KJ4QDZ	"	286,041	411	67	190
K4KR	"	284,610	308	92	266
W4PHS	"	263,208	387	79	185
W4QK	"	250,250	364	79	171
N4DU	"	236,130	361	82	173
WY6K/4	"	230,167	374	80	171
WA8QYJ/4	"	226,106	382	75	187
WD4MB	"	192,474	326	64	158
KW4CQ	"	188,034	336	71	188
W4UT	"	186,010	349	51	139
WB4SQ	"	183,535	349	75	160
K4EDI	"	169,510	273	72	181
WD4DHJ	"	164,728	348	67	169
W2OO/4	"	157,620	288	66	147
N4LZ	"	143,472	274	57	139
K4PHE	"	138,381	273	52	141
N3EH/4	"	135,014	339	56	153
N4JOW	"	132,930	228	62	148
K4YMQ	"	128,898	270	51	135
NE8J/4	"	124,906	289	48	125
W9FW/4	"	119,850	215	77	158
KJ4DHB	"	117,987	227	55	146
N8MPX/4	"	116,892	229	55	136
WB4MNK	"	116,865	264	80	165
K3JWI/4	"	106,222	225	51	122
KT4Q	"	105,846	212	59	118
WM2Z/4	"	96,690	303	48	117
KN4ZZ	"	94,675	225	56	119
KB5JC/4	"	91,504	216	50	122
K4JAF	"	87,420	211	51	104
WA4MAE	"	86,940	217	51	110
AI4CJ	"	85,086	230	56	118
KC4D	"	76,850	196	39	106
W4BCU	"	74,000	196	60	125
AE4EC	"	70,281	191	54	117
KC4JD	"	68,562	231	30	87
AF4RK	"	63,042	181	30	103
K8YC/4	"	63,030	145	49	116
NS4X	"	60,706	172	47	80
K2SD/4	"	54,626	164	45	98
KK9O/4	"	48,490	155	39	91
K4CEB	"	46,986	171	34	89
KB4FB	"	46,893	128	54	93
W4WEA	"	43,596	140	40	86
WA4ZXV	"	43,186	143	39	104
N4PLM	"	42,513	143	38	73
KI4VCT	"	33,920	122	33	73
WD8RYC/4	"	33,480	103	37	87
KI4PWO	"	32,604	131	35	79
N4AAI	"	30,250	118	38	72
NY4O	"	28,676	118	36	71
KD4QMY	"	25,800	101	30	70
KD2JA/4	"	21,586	96	32	54
N4RVM	"	19,110	94	25	66
NA4C	"	17,978	99	40	61
WO4O	"	16,038	74	24	57
AB4EJ	"	8,316	65	27	36
KD8IGK/4	"	7,475	43	24	41
N4VAN	"	6,499	43	27	40
KC4GL	"	6,384	43	23	33
K4BGV	"	1,156	22	13	21
KB3TXC/4	"	544	12	6	10
W4ZV	**28**	**1,250,304**	**2477**	**37**	**139**
NB4M	"	171,496	484	32	104
AA4SC	"	168,603	500	33	96
W4SLT	"	46,900	130	31	103
AI4WW	"	28,352	167	19	45
K4DJ	"	23,485	148	20	41
KK4EQF	"	2,400	28	11	19
K4SX	**21**	**92,521**	**259**	**35**	**108**
WB2REM/4	**14**	**312,988**	**717**	**40**	**129**
K4RDU	"	90,792	273	29	88
NN4F	"	39,208	143	29	75
W8BLA/4	**7**	**34,920**	**156**	**24**	**73**
KY4P	"	14,570	88	15	47
K1KNQ/4	**3.7**	**26,892**	**125**	**20**	**61**
***AD4Z**	**A**	**1,938,336**	**1546**	**125**	**363**
***K7SV/4**	**"**	**1,083,564**	**827**	**124**	**350**
***N2WN/4**	**"**	**1,000,043**	**933**	**106**	**291**
*N9CM/4	"	853,770	804	105	277
*NV4B	"	837,211	808	98	281
*N2ESP/4	"	694,918	723	83	260
*NA4CW	"	645,008	646	102	262
*KS4X	"	537,602	640	79	220
*N4JF	"	431,361	641	80	207
*K4CGY	"	409,851	562	73	206
*W6DVS/4	"	400,350	490	82	232
*AJ4CU	"	356,025	418	83	220
*KK4RV	"	344,400	464	76	204
*N3UA/4	"	342,350	381	90	244
*W4GDG	"	273,278	472	52	162
*W4GHS	"	271,890	384	83	182
*W4HRC	"	268,047	410	68	169
*W4FT	"	262,988	351	82	196
*W4NZC	"	232,736	385	64	160
*AA4FU	"	229,680	331	72	189
*W9DKC/4	"	218,891	260	78	229
*K4ML	"	201,252	385	43	143
*N4EK	"	200,942	334	54	163
*K4LTA	"	195,447	425	63	164
*WF7T/4	"	186,205	314	67	156
*K4FJW	"	183,738	332	65	161
*NG4L	"	182,910	373	48	134
*W4YE	"	164,832	304	57	145
*K7CS/4	"	146,626	335	45	122
*N4VDL	"	145,665	302	58	137
*KF7CG/4	"	135,930	269	62	135
*W1IE/4	"	132,678	268	57	186
*WB4OMM	"	129,554	242	65	146
*W9NWY/4	"	127,264	284	49	145
*K4NC	"	126,166	256	61	138
*K4JC	"	122,230	261	53	117
*N4UEZ	"	120,003	260	57	124
*NM2L/4	"	117,552	248	55	131
*K4DMH	"	109,120	277	52	124
*W8KHP/4	"	105,560	211	54	128
*K4CWA	"	102,102	247	66	121
*AI4KM	"	96,102	277	50	121
*KI4TXP	"	95,368	218	56	126
*NZ4O	"	95,284	212	44	120
*W9DHD/4	"	94,050	201	44	121
*W4ZAO	"	93,626	227	53	116
*KI3S/4	"	84,732	241	39	99
*W4TUN	"	84,266	208	51	131
*NE4M	"	83,850	205	54	96
*W4TSP	"	80,652	197	52	104
*W4TKI	"	79,599	205	57	100
*AI4UN	"	75,203	195	57	100
*K4LCM	"	73,537	178	40	111
*W4BK	"	69,120	190	35	93
*N4ERZ	"	62,618	180	35	96
*KD4NEM	"	62,308	179	40	108
*N4WO	"	61,388	159	42	107
*AJ4VE	"	61,021	155	41	98
*K4ORD	"	58,756	153	53	95
*K4OST	"	57,460	173	36	94
*NM3G/4	"	57,183	167	50	97
*K4KAY	"	55,860	156	39	101
*KS4L	"	55,008	147	42	102
*AJ4LN	"	53,654	150	51	88
*KQ4Y	"	51,090	147	38	93
*K4FS	"	50,550	145	48	102
*KA4R	"	48,773	146	51	100
*N8BGJ/4	"	47,243	153	39	80
*NR4C	"	46,291	158	35	84
*K4ALE	"	45,144	161	30	84
*K3MZ/4	"	44,400	150	32	79
*N4DTF	"	41,839	132	48	91
*KI4WCQ	"	41,210	127	40	90
*KI3O/4	"	39,483	133	48	75
*KD4ACG	"	37,440	136	32	85
*KK4CIS	"	36,356	122	35	87
*KJ4UBL	"	36,344	136	36	82
*NJ8J/4	"	33,756	137	37	79
*KI4CBN	"	32,809	111	30	79
*K4GOP	"	32,552	132	25	79
*KJ4VTH	"	31,570	113	39	71
*KK4KW	"	30,360	99	35	75
*AI4SV	"	29,973	129	21	76
*K4TOJ	"	29,232	102	38	74
*KK4EUJ	"	28,536	104	40	76
*K4CC	"	26,670	100	47	58
*NB4F	"	24,832	98	31	66
*WA4OAB	"	23,940	101	27	63
*K2DN/4	"	21,750	112	31	56
*KJ4NOP	"	20,501	95	27	56
*KD4YDD	"	19,600	100	28	52
*KK4BQC	"	19,200	98	37	63
*N3TG/4	"	17,978	78	32	57
*W7HJ/4	"	17,442	70	37	65
*AA4KD	"	16,808	77	33	55
*WA4JA	"	16,632	84	26	51
*KJ4IWX	"	15,760	87	23	57
*K4MOA	"	15,652	68	19	67
*W1LZ/4	"	13,770	68	27	54
*W4PFM	"	13,244	65	26	51
*N1QEQ/4	"	12,848	80	22	51
*NS4T	"	10,608	58	17	51
*K4IDK	"	10,164	64	28	49
*AK4NC	"	10,080	65	35	49
*K9IAC/4	"	9,936	72	22	50
*AJ1F/4	"	9,869	70	19	52
*KT4OO	"	8,526	52	22	36
*KD4WUO	"	7,923	57	19	38
*K4TVO	"	7,424	46	25	39
*AJ4FV	"	7,205	46	18	37
*N4RWH	"	7,038	52	16	35
*WA4AA	"	6,930	52	24	39
*W4OGG	"	6,858	50	23	31
*AK4D	"	6,018	48	24	35
*K9RIM/4	"	5,454	35	20	34
*K4DET	"	5,208	38	26	36
*N8IK/4	"	4,136	43	20	27
*AJ4RK	"	3,825	36	19	32
*KJ4SZL	"	3,698	42	16	27
*N4LKE	"	3,626	38	20	29
*WB8ZKI/4	"	3,174	36	17	29
*K4YCR	"	2,821	38	10	21
*KF4YPD	"	2,345	38	16	19
*WA4GQG	"	2,275	26	12	23
*AJ4ZU	"	1,653	20	11	18
*KJ4UNX	"	1,452	18	16	17
*K4PG	"	1,160	22	6	14
*K6RM/4	"	1,104	16	8	15
*KJ4FEL	"	589	15	8	11
*WB1CZX/4	"	315	10	7	8
*KD4RSL	"	231	7	4	7
*W4EBA	"	153	6	3	6
*NØRZT/4	"	120	5	5	5
*KH6OU/4	"	88	4	4	4
*K4DKE	"	80	5	4	4
*K4WES	"	24	2	2	2
*K4OC	"	20	2	2	2
***N4IG**	**28**	**246,186**	**631**	**32**	**109**
***N3LL/4**	**"**	**209,170**	**605**	**32**	**98**
*KD4MXA	"	99,412	311	27	89
*AK4Q	"	66,785	268	25	70
*KS4YX	"	57,148	240	24	67
*KG6MC/4	"	36,401	175	25	64
*KJ4AOM	"	19,564	138	23	50
*W4FRA	"	18,827	105	15	52
*N8OQ/4	"	14,036	107	18	40
*KE4QCM	"	2,646	23	20	22
*KV1P/4	"	2,618	38	8	26
*KK4AIA	"	540	12	8	10
*WR1Q/4	"	276	10	6	6
*KJ4PJU	"	224	10	6	8
*KJ4DHF	"	128	6	4	4
*AE9Q/4	"	77	4	3	4
*WA4AXT	21	66,096	258	24	78
*NQ4K	"	54,912	205	24	72
*NY4S	"	17,040	104	22	49
***WB2TFM/4**	**14**	**87,360**	**261**	**28**	**92**
*KC1SS/4	"	5,076	48	13	34
*WE4AWJ	"	3,000	32	12	28
***W4HLN**	**7**	**22,253**	**129**	**20**	**57**
*NA4W	1.8	648	30	7	11
					(OP: K4WI)
N2IC/5	**A**	**5,838,750**	**3500**	**165**	**460**
NR5M	**"**	**3,438,650**	**2707**	**139**	**346**
AC4CA/5	"	1,353,404	1126	117	325
K5ER	"	1,156,155	989	114	315
AD5XD	"	996,898	873	116	318
K5LAD	"	775,968	793	96	258
W5GFI	"	613,054	696	93	230
K5ZCJ	"	595,467	710	87	240
N5VU	"	523,446	617	72	237
AG5Z	"	502,208	698	85	219
W5UE	"	225,467	420	44	155
KE3D/5	"	175,392	294	72	152
K5JX	"	147,459	283	64	135
K5BTK	"	117,872	296	30	109
KD5J	"	87,172	226	50	98
W5THT	"	53,298	165	41	85
N5RMS	"	32,487	117	41	78
W5CO	"	28,421	120	35	62
WA5LFD	"	24,768	99	34	62
WB5C	"	22,188	112	28	58
K5KVN	"	20,325	101	21	54
K8TE/5	"	18,060	82	33	51
K5GZR	"	17,200	77	28	58
N8OO/5	"	10,608	136	14	37
K5HDU	"	9,513	67	22	41
N9RO/5	"	7,884	58	27	27
KC5TA	"	2,236	26	19	24
W5PR	**28**	**959,475**	**2086**	**38**	**127**
N5RZ	**"**	**687,735**	**1740**	**37**	**118**
N5MOA	"	200,100	475	34	116
AB5C	"	84,474	262	29	85
WS5H	"	55,744	204	26	78
KD5JAA	"	52,065	212	25	64
W5MK	"	39,216	173	25	61
K5MLC	"	22,021	146	19	42
K8OZ/5	**21**	**99,064**	**310**	**32**	**90**
W5RI	3.7	4,797	72	14	27
K5RX	**1.8**	**6,118**	**69**	**14**	**32**
***N5AW**	**A**	**2,252,310**	**1444**	**151**	**428**
***N5DO**	**"**	**1,052,064**	**919**	**106**	**310**
*K5DHY	"	522,176	591	92	236
*W1JCW/5	"	449,624	584	78	218
*WA5SOG	"	367,488	525	75	189
*WA5IYX	"	344,774	594	66	145
*KE5LQ	"	240,720	372	73	163
*W5TMC	"	148,932	294	59	138
*NW5Q	"	117,658	245	61	117
*AE5MM	"	101,088	258	43	119
*WDØGTY/5	"	99,225	221	62	113
*KE5ZCF	"	88,245	214	52	107
*K5TRI	"	83,160	269	48	87
*NN5T	"	66,440	158	55	96
*AA5BE	"	58,590	172	48	107
*NG5C	"	56,544	195	40	74
*N5PD	"	52,966	150	51	91
*WA5ICA	"	47,151	149	39	78
*N4GCA/5	"	39,296	194	41	87
*N5DTT	"	34,845	130	35	66
*K5TA	"	30,943	111	29	68
*K5XA	"	27,600	97	27	88
*KØBWQ/5	"	26,532	129	34	65
*KC5HAV	"	23,661	105	36	63
*KB6OJE/5	"	23,326	104	37	70
*KF5IXE	"	22,425	119	24	51
*W5IV	"	15,708	75	30	54
*W5RAW	"	13,452	72	28	48
*K2WJ/5	"	10,902	74	29	40
*KB5REX	"	10,880	51	29	51
*KC6ZBE/5	"	10,656	58	23	51
*K8GCU/5	"	9,734	74	20	42
*AD5XM	"	8,448	53	28	38
*KB5DRJ	"	7,884	57	35	38
*N5LUL	"	7,650	51	20	31
*AE5NO	"	5,824	39	20	36
*K5MBA	"	986	28	9	8
***AC5O**	**28**	**343,764**	**794**	**35**	**127**
*N5UWY	"	32,047	157	22	51
*AA5JG	"	16,409	96	20	41
*AD5XQ	"	8,814	101	8	31
*KF5GWM	"	2,001	32	12	17
***N5CLK**	**21**	**107,625**	**343**	**31**	**92**
*N2OML/5	14	1,104	21	8	15
WC6H	**A**	**3,740,904**	**2489**	**155**	**397**
					(OP: NU6S)
K6XX	**"**	**2,744,268**	**2114**	**141**	**348**
K6NA	**"**	**2,580,581**	**1690**	**154**	**403**
W6PH	"	2,521,442	1747	141	398
NT6AA	"	1,308,915	1127	124	311
KC6X	"	1,020,162	883	120	309
AA6YX	"	384,384	559	89	184
K6XN	"	326,215	522	80	185
KI6CG	"	274,670	444	74	153
N6MI	"	271,614	466	72	151
KT6VV	"	223,300	399	74	146
W6FA	"	188,400	300	82	158
KB6FB	"	184,682	366	69	145
W6RFF	"	179,322	324	85	157
W6RKC	"	142,556	314	59	98
WA6URY	"	116,232	272	74	93
KF6T	"	114,048	249	63	129
AJ6V	"	113,072	236	62	129
K6SFK	"	96,600	217	62	113
W6EB	"	75,900	191	62	103
WA6KEK	"	75,020	188	51	104
N6MM	"	65,786	196	51	76
N6RI	"	62,363	156	49	102
K6KAL	"	61,614	130	77	112
W6SX	"	55,195	166	48	85
KG6TBR	"	53,938	175	59	90
K6MKF	"	50,820	143	56	84
W6SSB	"	37,380	147	42	63
W7UG/6	"	20,610	125	28	62
AE6RR	"	16,008	71	33	59

N6DW	"	14,823	73	33	48
AD6KA	"	13,650	81	30	40
KE6GFI	"	13,330	95	23	39
KJ6LJB	"	9,072	69	23	31
W6SJ	"	2,870	28	18	23
N6BY	"	1,065	27	3	12
W4EF/6	**28**	**444,540**	**1021**	**35**	**120**
N6AN	"	259,831	694	35	108
K6JAT	"	126,850	396	30	88
WA6KHK	"	113,620	321	33	97
W6FB	"	4,092	49	15	17
NK6A	**21**	**84,720**	**273**	**32**	**88**
N2NS/6	"	2,635	48	14	17
K6HNZ	**14**	**193,734**	**558**	**38**	**103**
K6ATZ	"	56,784	213	31	81
W6FCS	"	3,916	33	14	30
***N6RV**	**A**	**1,022,801**	**991**	**109**	**268**
***NN3V/6**	**"**	**516,224**	**721**	**95**	**201**
*AA6K	"	462,301	555	101	212
*WW6O	"	287,039	447	77	162
*N6DZR	"	276,360	424	75	163
*NN6CH	"	265,716	431	79	163
*K7XE/6	"	222,686	405	70	136
*N6BM	"	207,144	400	66	150
*K6GHA	"	165,462	296	68	150
*KE6SHL	"	142,307	290	69	118
*KE6WC	"	138,367	312	74	105
*N6ORB	"	134,288	306	51	103
*N6NF	"	85,408	200	50	107
*K6EGF	"	71,103	153	69	104
*K6LRN	"	63,852	227	31	71
*AA6EE	"	57,589	170	59	74
*WA6WPG	"	48,185	157	37	78
*NA6G	"	46,990	144	53	74
*N6YEU	"	26,013	104	30	57
*KQ6X	"	23,002	117	46	60
*KK7GO/6	"	20,790	99	40	70
*N6BHX	"	17,640	100	32	40
*WV6N	"	16,200	81	35	46
*AF6SA	"	15,438	73	33	50
*K6CSL	"	15,147	85	38	43
*K6VFF	"	14,214	88	28	41
*KJ6PVA	"	11,160	75	40	50
*K6MUG	"	11,050	63	31	34
*AG6AY	"	10,380	69	28	32
*AE6XC	"	10,032	63	32	44
*N6ENO	"	9,328	66	23	30
*K6MLF	"	7,552	63	33	31
*WQ6X	"	7,383	75	33	36
*N6ZE	"	5,457	45	26	25
*K6BBQ	"	5,350	53	20	30
*AD6LV	"	5,304	40	22	30
*KI6ORO	"	5,244	57	21	25
*KE6MRG	"	3,381	29	23	26
*AF6OP	"	3,024	33	21	27
*W6CDA	"	2,450	25	15	20
*KG6TYB	"	1,855	26	17	18
*N6DXM	"	1,512	24	14	14
*K6MSM	"	1,176	20	10	14
*AF6NI	"	1,080	17	12	12
*NW6J	"	768	17	12	12
*KG6YPH	"	81	5	5	4
*W6ZL	28	37,360	166	23	57
*W7XZ/6	"	20,790	120	23	40
*WA7BNM/6	"	12,896	81	21	41
*KJ6LBA	"	10,535	89	19	30
*KU6T	"	9,614	78	20	26
*KJ6CSI	"	1,500	26	15	15
*KO6YG	"	156	9	6	7
***AE9F/6**	**21**	**52,320**	**207**	**28**	**68**
*AE6YB	"	28,258	157	21	50
*WA6ADP	"	10,207	85	20	39
*KJ6OGE	"	2,220	33	14	16
***KI6LZ**	**7**	**32,880**	**169**	**24**	**56**
*KI6JJW	"	3,795	69	14	19
*K6WAO	"	72	4	4	4

K5RR/7	**A**	**2,034,000**	**1461**	**140**	**360**
WS7X	**"**	**1,151,216**	**1589**	**108**	**233**
K7EDX	"	1,081,584	1276	94	242
K7KU	"	1,050,874	943	120	287
		(OP: KØKR)			
NX1P/7	"	987,216	1063	126	267
N7BV	"	881,790	983	113	244
W7FP	"	854,964	820	108	266
KE2VB/7	"	659,214	830	99	219
N5LZ/7	"	609,880	762	104	212
W7WW	"	557,700	688	76	224
K7JQ	"	403,312	526	96	181
KF7GNI	"	389,136	575	87	181
KØTO/7	"	370,668	533	90	186
KF7IQ	"	356,814	546	79	179
WA7PRC	"	329,525	463	93	176
WO7V	"	317,534	449	82	177
K7HP	"	286,561	486	88	151
K7AED	"	251,251	415	80	171
KD7MSC	"	200,312	373	68	128
WD7K	"	188,580	326	78	132
KD7H	"	183,741	305	78	141
N6TW/7	"	181,401	293	91	148
KD7DCR	"	176,456	376	63	121
W7TX	"	152,425	300	56	119
WR5G/7	"	142,506	279	64	125
K9JDV/7	"	138,852	248	80	123
K7ABL	"	110,720	250	67	106
W7JY	"	95,325	259	58	97
WN7T	"	87,764	233	59	89
N7VS	"	86,172	236	73	99
AD7XG	"	84,780	226	54	103
W7SO	"	81,468	200	55	91
KT7E	"	80,370	217	60	111
KS7T	"	73,743	201	46	95
N7LR	"	67,636	183	58	90
KN7K	"	50,479	145	60	83
KG7P	"	39,808	127	57	71
WF4U/7	"	38,000	134	34	66
N7QS	"	36,504	129	41	67
W7GT	"	35,808	142	37	59
KF7IUH	"	35,568	157	34	70
KI7N	"	33,464	133	39	55
K7EY	"	31,302	114	45	66
NI7R	"	25,380	99	38	56
WG7X	"	23,320	82	48	62
W7AUM	"	19,856	109	31	37
W7CH	"	14,326	83	27	31
KB7AZ	"	13,090	73	30	40
KB7ME	"	12,596	66	23	44
K7MKL	"	11,956	80	29	32
W6NF/7	"	10,268	64	32	36
AD7UP	"	8,760	62	23	37
KB7UJI	"	8,625	67	36	39
K2AVI/7	"	4,732	42	21	31
W7JAM	"	3,672	45	24	30
W7VS	"	3,612	29	13	29
KD7JET	"	1,856	25	16	16
KB7YYY	"	1,620	21	15	15
KK7CG	"	1,178	22	16	15
K7KFB	"	105	8	4	3
W7AT	**28**	**379,638**	**1039**	**36**	**102**
		(OP: W7EW)			
N7CW	"	208,956	571	33	99
K7MY	"	69,084	264	27	74
W7KKR	"	31,104	152	24	48
KB7QFE	"	22,120	110	24	55
N4CC/7	"	19,198	132	21	37
W7EWB	"	16,762	110	20	38
K9DR/7	"	11,592	83	19	44
N9RV/7	**21**	**1,045,785**	**2241**	**37**	**136**
WA7LT	"	311,328	895	33	105
W7VO	"	187,884	449	36	117
W7WA	**14**	**1,068,560**	**2123**	**40**	**145**
N7IX	"	42,488	178	25	69
W7PU	"	33,561	177	31	68
WU6W/7	7	6,204	63	19	28
K7QFE	1.8	198	13	6	5
***K2PO/7**	**A**	**1,820,940**	**1547**	**126**	**319**
***N7ZG**	**"**	**1,241,411**	**1065**	**129**	**304**
*K7ACZ	"	716,568	644	122	287
*N7IR	"	463,200	547	97	203
*AK7AT	"	283,630	463	80	146
*AF7S	"	247,428	406	86	151
*N7VPN	"	244,416	334	88	180
*NE7D	"	223,000	358	82	141
*WA7PVE	"	195,415	390	74	135
*W7ASF	"	158,899	287	73	148
*WA7NWL	"	158,646	299	70	123
*K7HBN	"	151,470	300	69	118
*WAØWWW/7	"	145,848	275	73	133
*W7YAQ	"	143,859	242	85	152
*K7ALA	"	140,352	326	65	127
*K6WSC/7	"	121,094	247	68	123
*W7WEC	"	114,456	291	61	91
*KB7QND	"	110,188	245	56	113
*NX7TT	"	101,612	328	31	102
*N7KN	"	93,756	244	59	97
*N7VEA	"	80,028	190	63	99
*W7QN	"	73,839	200	50	101
*WZ7Z	"	71,780	210	58	90
*AA7DK	"	66,411	194	51	90
*K7DNH	"	63,474	195	62	87
*KB7HDX	"	60,465	184	53	86
*WE7P	"	56,574	177	50	76
*WT6P/7	"	56,515	176	58	69
*W2AJW/7	"	51,850	153	50	72
*N6LB/7	"	50,050	178	54	76
*K7LOP	"	46,200	141	43	77
*W7YVK	"	43,240	162	42	52
*W7FD	"	38,902	134	42	64
*W6LLP/7	"	35,046	147	34	65
*AE7IX	"	33,728	106	40	84
*AD7MQ	"	33,372	130	39	64
*KBØOLA/7	"	33,210	134	39	51
*AD7XV	"	32,883	122	54	59
*W8BFX/7	"	31,668	123	38	53
*N7TE	"	31,392	120	37	59
*K7TR	"	29,100	126	39	61
*N7AME	"	28,702	148	48	65
*KF7GYE	"	26,967	123	36	53
*K7WLF	"	25,480	99	39	59
*AD7T	"	21,760	131	28	52
*K7JAN	"	20,720	102	39	41
*W7JU	"	19,236	95	25	59
*KW7I	"	18,240	100	34	46
*ND7W	"	18,080	99	29	51
*N7EIE	"	17,236	111	29	33
*W6RA/7	"	16,562	80	40	58
*AC7VX	"	13,940	68	34	48
*KD7VV	"	13,432	67	28	45
*KF7PBM	"	11,988	69	31	43
*NR7Q	"	11,890	77	19	39
*KD7IBE	"	11,304	78	33	39
*KC7H	"	10,948	67	33	35
*WA7SHP	"	10,850	69	28	34
*KF7DYX	"	10,422	69	21	33
*K6UM/7	"	9,211	55	25	36
*W7JFF	"	7,182	51	23	31
*KG7VQ	"	6,624	55	17	31
*K7JKM	"	6,100	61	31	30
*KE7UQL	"	5,992	51	28	28
*WB4SPB/7	"	5,967	42	22	29
*K7DVD	"	5,635	58	25	24
*W7DK	"	4,400	39	16	24
*K6TUJ/7	"	3,784	44	20	23
*KD7SWL	"	3,159	32	18	21
*W7GIB	"	3,096	34	16	20
*AB5ZA/7	"	2,584	28	17	17
*KB6BYU/7	"	2,170	26	15	20
*KC7WDL	"	1,166	24	12	10
*K7FLI	"	912	17	11	13
*N6AFV/7	"	840	19	10	10
*N7QMT	"	64	5	4	4
***K7ULS**	**28**	**178,475**	**598**	**32**	**89**
***AB7ZU**	**"**	**178,407**	**494**	**31**	**98**
*WØPAN/7	"	48,332	212	24	62
*KE7XM	"	31,350	129	26	69
*K7AZW	"	19,929	112	27	46
*KJ7QT	"	17,395	105	24	47
*WE6EZ/7	"	10,505	72	19	36
*K6ZY/7	"	8,145	73	17	28
*KF7DTQ	"	7,130	63	17	29
*K7STO	"	5,168	74	16	22
*WC7CW	"	3,255	44	13	18
*NE4RD/7	"	128	7	4	4
***N7FLT**	**21**	**99,674**	**300**	**30**	**92**
***W7UPF**	**"**	**92,520**	**314**	**29**	**91**
*W7FYW	"	9,600	64	18	42
***N7BK**	**14**	**152,145**	**399**	**32**	**103**
*WB7FJG	7	744	15	12	12

K8GL	**A**	**3,508,164**	**2097**	**146**	**448**
N8BJQ	**"**	**3,104,331**	**2023**	**141**	**402**
NE8P	"	1,579,738	1272	115	328
ND8L	"	1,025,808	863	107	319
K8AO	"	1,014,222	999	106	275
K8ZZU	"	575,195	631	86	249
WD8EOL	"	537,285	668	78	223
WN8R	"	515,694	535	102	264
NN8M	"	447,200	533	77	248
K8FL	"	424,992	518	87	217
KQ8RP	"	418,302	582	79	227
K8WT	"	375,144	473	91	203
K8YYY	"	286,500	381	86	214
W8OHT	"	278,307	464	78	211
N8HP	"	277,628	390	90	191
N8IVE	"	269,616	405	59	187
N8II	"	267,860	451	77	150
K8VUS	"	233,099	343	77	180
N9AUG/8	"	202,240	318	72	184
AJ8B	"	89,739	204	51	118
WA8TM	"	84,640	207	46	114
K8MM	"	78,280	182	38	114
N8XI	"	55,800	165	45	79
K8QF	"	42,728	157	26	72
WF8P	"	35,306	116	38	89
WA8AR	"	19,829	97	23	56
KD8KTN	"	4,104	38	17	37
K8LO	"	3,128	32	15	19
W8RID	"	2,484	24	13	23
W8HMK	"	950	14	12	13
NF8J	**28**	**201,688**	**521**	**31**	**105**
KF6A/8	**7**	**97,128**	**457**	**28**	**86**
***N8AA**	**A**	**1,890,000**	**1299**	**135**	**405**
***WB8TLI**	**"**	**1,179,224**	**946**	**119**	**327**
*KE8UN	"	407,008	516	90	226
*WA8FRE	"	398,389	572	69	200
*KF8BT	"	339,300	494	66	195
*K8PGJ	"	260,804	436	57	169
*KB8KE	"	246,123	345	77	184
*W8TM	"	237,416	363	69	167
*W8GOC	"	228,904	352	70	178
*W8KTQ	"	204,680	342	72	166
*WB8EKG	"	202,911	299	69	170
*K8MEG	"	196,140	335	57	153
*W8KNO	"	176,960	319	70	154
*KE8FO	"	155,457	281	61	146
*W8ASA	"	148,261	321	49	124
*W8IDM	"	115,840	269	43	117
*WA8YVF	"	88,650	219	50	100
*N8PPF	"	78,740	193	47	108
*NR8R	"	76,416	202	62	130
*N8BV	"	55,176	204	38	94
*KJ8O	"	52,632	167	38	98
*KB8TL	"	52,470	175	33	77
*N2OPW/8	"	45,216	118	45	112
*WB8MIW	"	43,802	139	38	83
*KD8CAO	"	37,800	100	44	96
*N8OQQ	"	37,185	131	37	74
*WT8E	"	34,317	116	45	78
*WS6K/8	"	26,578	113	32	65
*N8HAM	"	26,010	100	37	65
*K8MU	"	19,845	100	27	54
*WC8Z	"	16,920	100	36	54
*KD8JAM	"	12,920	71	22	54
*W8DW	"	10,974	74	16	43
*KB8MYC	"	10,164	56	21	45
*K8RGM	"	9,581	54	24	43
*KD8MBI	"	2,774	26	17	21
*KV8Q	"	1,560	20	13	17
*AB8YK	"	143	11	6	5
*KC8PZX	"	54	4	3	3
***N8CN**	**28**	**106,560**	**340**	**28**	**83**
*NX8G	"	45,985	213	20	65
*AA8N	"	38,157	187	18	61
*K7DR/8	"	34,943	154	21	62
*N8WAV	"	23,322	125	20	49
*KD8QFM	"	17,688	132	19	47
*KD8HHG	"	143	7	5	6
***WZ8T**	**21**	**79,925**	**257**	**29**	**86**
*NR8U	"	3,852	40	9	27
*WA8SSQ	14	4,488	46	8	25
***NA8V**	**3.7**	**40,753**	**197**	**19**	**64**

W9RE	**A**	**7,348,796**	**3863**	**164**	**512**
W9OP	**"**	**1,415,097**	**1142**	**115**	**344**
AC9S	"	768,950	876	91	247
W9GT	"	683,298	829	82	237
KF9TI	"	479,482	563	75	223
N9WKW	"	405,114	586	69	182
WA9IVH	"	385,632	497	87	222
K2UR/9	"	363,792	846	34	125
K1TN/9	"	349,461	447	94	207
K9DN	"	321,440	466	66	179
K9SG	"	321,000	388	90	231
KG9N	"	199,794	568	44	90
WD9T	"	181,306	268	86	183
WT9U	"	159,192	298	62	136
WI9WI	"	136,278	262	63	138
N9FC	"	97,800	213	45	118
N9CO	"	29,492	105	32	69
AJ9C	"	25,360	108	17	63
W9OA	"	23,700	137	22	53
AB9M	"	20,160	77	42	54
N5IE/9	"	14,819	77	20	53
N9ROD	"	12,354	77	36	51
K9DUR	"	5,200	39	16	34
KR9E	"	1,792	22	9	19
WB9Z	**28**	**746,400**	**1842**	**34**	**116**
K9BGL	**"**	**623,100**	**1476**	**32**	**118**
W9SE	"	198,858	569	30	101
WD9CIR	21	8,476	64	18	34
AA9A	**3.7**	**30,573**	**160**	**17**	**62**
K9IDQ	"	5,733	61	12	27
***N4TZ/9**	**A**	**2,330,965**	**1543**	**133**	**412**
***K9JE**	**"**	**669,930**	**731**	**87**	**239**
*W9ZRX	"	503,181	572	98	245
*K9QVB	"	487,536	532	92	244
*KD9MS	"	401,166	465	95	228
*AB9KZ	"	388,056	508	71	205
*N9CIQ	"	306,861	465	65	168
*WA9LT	"	297,990	569	51	147
*W9ILY	"	291,851	459	69	172
*N9UY	"	179,322	328	57	152
*W9GG	"	160,632	327	63	144
*W9AV	"	149,955	308	63	132
*N9LYE	"	124,206	273	48	115
*W9TTT	"	115,420	213	59	140
*NY9K	"	112,140	271	55	123
*W9/DO1FDK	"	111,864	328	67	110
*KD4ULW/9	"	99,040	237	52	108
*KC9CDW	"	91,140	249	39	108
*W9THD	"	76,712	190	52	120
*KC9IRQ	"	68,208	134	69	127
*NV9X	"	58,656	149	41	100
*WC9C	"	48,800	173	23	77
*WB9LRK	"	46,449	155	32	85
*KC9QPM	"	41,268	174	38	76
*AI9K	"	30,962	125	42	71
*KA9VHG	"	27,700	107	39	61
*KA9JAC	"	27,141	98	39	70
*K9DXL	"	25,650	100	29	66
*KB9YGD	"	25,359	122	27	52
*KC9IL	"	24,072	99	39	63
*W9FZ	"	21,200	104	43	57
*NØEOP/9	"	17,009	98	24	49
*KC9TTR	"	16,055	72	38	57
*AB9XI	"	15,045	72	38	47
*N9PQJ	"	12,282	71	24	45
*KC9UJS	"	11,151	79	21	38
*N9YH	"	10,203	67	18	39
*KB9O	"	10,143	58	26	43
*WI9M	"	9,782	56	28	39
*KC9EOQ	"	8,384	49	24	40
*W9JET	"	8,142	67	29	40
*KC9ZO	"	6,392	50	30	38
*K9JCS	"	5,805	53	19	26
*KE9EX	"	3,060	34	21	30
*AB9YG	"	2,006	23	16	18
*KA9OBZ	"	1,785	22	15	20
*WO9I	"	1,131	24	11	18
*AB9TC	"	312	10	7	6
*KC9GHQ	"	48	5	4	4
***NV9L**	**28**	**173,750**	**499**	**28**	**97**
*KØCD/9	28	16,491	107	19	50
*W9AKS	28	9,570	66	17	38
*WB8ZBK/9	14	1,632	26	5	19
*WD8DSB/9	1.8	304	41	4	4

WØUA	**A**	**4,338,264**	**2812**	**160**	**428**
NØKE	**"**	**1,399,320**	**1145**	**138**	**322**
KQØC	"	1,281,721	1169	122	297
KØVXU	"	1,083,346	796	127	379
NCØB	"	813,960	820	103	254
K9DU/Ø	"	745,545	831	98	247
KDØFW	"	446,168	495	114	230
KØOU	"	430,430	529	85	216
K5VYT/Ø	"	393,666	503	71	202
KIØHQ	"	382,470	501	75	210
K9MWM/Ø	"	343,360	492	99	191
NØUY	"	333,594	494	80	178
WDØECO	"	308,568	469	78	180
NØBUI	"	294,873	469	56	171
NFØN	"	276,794	420	63	175
KG9DN/Ø	"	266,994	449	67	167
KØBUD	"	227,850	385	62	155
KØFX	"	207,360	351	68	172
NUØC	"	160,132	300	55	141
KØJJR	"	154,044	300	56	142
KØVG	"	136,647	278	55	134
KIØF	"	136,112	303	48	140
WØAO	"	111,240	238	57	123
NYØT	"	64,056	154	53	104
NAØBR	"	61,880	175	43	87
WØPPF	"	47,069	144	40	81
KØALT	"	40,016	129	50	72
NØOK	"	29,250	118	27	63
WØLM	"	26,471	94	37	66
KØPFZ	"	4,633	47	18	23
WØJEC	"	4,465	37	18	29
KBØL	"	4,050	35	23	31
KDØBIK	"	2,948	54	21	23
KØFYI	"	2,080	27	16	24
KDØLSN	"	1,800	23	18	22
N7DR/Ø	**28**	**535,704**	**1250**	**34**	**122**
KØVH	"	48,416	196	28	61
WXØU	"	6,160	63	15	29
NØZC	"	3,200	44	11	21
KØRH	**21**	**183,121**	**510**	**36**	**113**
NØKQ	"	3,808	49	16	18
WDØBGZ	**7**	**25,666**	**126**	**24**	**58**
***WØETT**	**A**	**878,982**	**881**	**109**	**273**
***NTØF**	**"**	**698,255**	**708**	**100**	**259**
*WBØTSR	"	513,152	638	81	223
*WØOVM	"	257,620	469	66	154
*KIØI	"	238,618	379	75	154
*WØZF	"	223,332	376	64	158
*WBØLJK	"	209,196	346	78	156
*KØTT	"	199,820	348	67	139
*WØPI	"	197,757	337	67	152
*WBØULX	"	150,696	239	64	170
*KCØVEU	"	122,578	279	53	114
*WAØGUD	"	117,245	251	58	121
*KØSV	"	113,661	261	62	111
*ADØH	"	73,840	276	26	78
*NØXG	"	68,649	177	49	98
*KØRJW	"	58,125	166	53	102
*W7KAM/Ø	"	56,414	160	45	89
*NØGOS	"	51,480	161	43	77
*KDØZZ	"	49,912	143	46	90
*WDØBWM	"	46,230	134	42	92
*K2HT/Ø	"	44,400	151	42	78
*NØRDL	"	42,770	165	47	83
*KRØL	"	42,699	124	43	86
*KAØVXK	"	36,260	120	54	86
*WA5SWN/Ø	"	33,950	120	25	72
*KAØLDG	"	28,475	124	29	56
*NØLIA	"	27,930	120	40	65
*WAØLJM	"	21,894	101	25	57
*KØLAF	"	20,705	103	41	60
*KDØCVO	"	17,034	63	44	58
*WBØIEL	"	16,615	141	41	92
*WØGUY	"	16,296	109	25	59
*WØNFS	"	15,476	83	22	51
*N2SRK/Ø	"	14,070	94	23	44
*KDØJBN	"	13,851	78	32	49
*NØSFH	"	12,408	67	23	43
*KØPIR	"	10,472	70	18	38
*KØLDS	"	9,072	69	29	43
*NO2D/Ø	"	8,468	58	24	34
*KDØJHW	"	6,077	53	24	35
*NØLZ	"	4,850	40	23	27
*KAØCSW	"	3,900	53	13	26
*WN4GMT/Ø	"	3,870	39	14	29
*WCØV	"	3,608	38	18	26
*NIØR	"	3,526	37	21	22
*NØUJJ	"	2,752	36	21	22
*KØVBU	"	2,016	22	13	19
*KDØCVZ	"	1,560	26	11	15
*AAØAA	"	1,272	29	12	12
*ACØSR	"	1,102	20	12	17
*KCØWCF	"	886	28	13	15
*KCØVFP	"	621	12	11	12
*WØHGJ	"	440	21	10	10
*NØSO	"	180	7	6	6
*KDØKQS	"	108	5	4	5
*KCØRSX	"	54	3	3	3
***KBØYH**	**28**	**122,380**	**367**	**30**	**86**
*KØBAM	"	14,442	124	20	38
*WØCO	"	7,700	65	14	30
*K9WN/Ø	"	4,477	48	13	24
*KDØPIO	"	2,418	35	14	17
*W6GMT/Ø	"	1,924	36	12	14
*KBØVVD	"	1,456	24	10	16
*N9HDE/Ø	14	45	3	2	3
*KØBRG	"	4	1	1	1

Alaska

KL7AF	**A**	**3,195,180**	**3453**	**117**	**271**
		(OP: KH6SH)			
AL1G	"	544,205	1697	54	101
KL8DX	**28**	**260,624**	**1347**	**28**	**83**
***KL7AC**	**A**	**356,928**	**958**	**65**	**104**
*KL2SX	"	315,905	649	82	123

Bermuda

***VP9I**	**A**	**2,808,459**	**3464**	**95**	**274**
		(OP: N1SV)			

Canada

VY2ZM	**A**	**12,820,903**	**6434**	**169**	**564**
		(OP: K1ZM)			
VE9HF	"	1,451,362	1524	97	310
VO2NS	"	1,203,804	1810	81	225
VA1MM	"	1,027,767	1257	91	270
VE1JS	"	449,834	659	60	193
VE9AA	**28**	**321,320**	**866**	**32**	**113**
***VE1ZA**	**A**	**1,379,316**	**1264**	**100**	**311**
*VE1RSM	"	536,608	664	84	244
*VE1ZJ	"	504,992	606	93	251
*VE1SQ	"	375,135	544	70	197
*VE1KY	"	67,350	172	47	103
*VO1OR	"	4,232	33	17	29
***VY2LI**	**28**	**353,280**	**1048**	**29**	**99**
*VO1BQ	14	3,780	56	5	25

VE2IM	**A**	**14,349,100**	**7643**	**161**	**549**
		(OP: VE3DZ)			
VE2GSO	"	2,684,100	3172	85	260
VE2EZD	"	590,870	703	82	240
VE2IDX	**7**	**222,876**	**762**	**27**	**96**
***VA2WA**	**A**	**1,392,636**	**1321**	**97**	**316**
		(OP: VA2WDQ)			
***VE2EBK**	**"**	**1,263,936**	**1022**	**110**	**354**
*VA2OP	"	971,253	1197	80	267
*VE2HIT	"	729,270	811	99	271
*VE2AWR	"	485,616	670	64	204
*VE2KY	"	75,348	195	45	111
*VA2IC	"	33,060	178	23	53
*VE2JM	"	32,640	148	22	63
*VE2ESU	"	25,802	122	33	64
*VE2GLA	"	10,780	64	25	52
*VE2AXO	"	9,520	60	35	45
*VE2DRO	"	3,913	37	18	25
*VE2BJU	"	2,432	46	11	21
*VA2UTC	"	2,304	32	13	23
***VE3ZF/2**	**21**	**37,229**	**220**	**13**	**46**

CF3A	**A**	**10,750,452**	**6161**	**153**	**501**
		(OP: VE3AT)			
VE3JM	**"**	**7,721,180**	**4885**	**147**	**449**
VE3OI	**"**	**5,032,740**	**3548**	**135**	**420**
VC3R	"	3,867,607	3027	118	373
		(OP: VE7VR)			
VE3FWA	"	3,215,275	1792	152	513
VE3OX	"	556,134	634	100	254
VE3KPP	"	515,340	800	65	187
VE3AD	"	433,672	542	92	210
VA3ZDX	"	352,044	472	90	218
VE3XN	"	227,694	296	86	191
VE3XB	"	147,550	245	69	158
VE3FTM	"	76,725	183	46	109
VE3NLH	"	35,076	125	41	70
VA3MW	"	30,168	201	19	53
VA3PGL	"	1,352	28	11	15
VE3KZ	**28**	**690,030**	**1642**	**34**	**119**
VE3KKB	"	498,672	1221	31	113
VE3MIS	**14**	**286,128**	**750**	**37**	**107**
VA3XH	**7**	**71,505**	**284**	**25**	**80**
VE3FU	"	5,502	45	11	31
VE3PN	**1.8**	**54,207**	**511**	**15**	**42**
***VE3FDT**	**A**	**1,489,464**	**1402**	**109**	**302**
***VA3SWG**	**"**	**1,200,150**	**1488**	**76**	**239**
*VE3TW	"	864,936	886	96	273
*VE3NB	"	635,712	683	75	261
*VE3MGY	"	446,523	999	66	165
*VE3IAE	"	352,160	419	78	232
*VE3TU	"	330,220	620	58	151
*VA3AR	"	308,728	449	70	189
*VE3OM	"	230,405	364	60	167
*VE3LC	"	210,816	392	50	166
*VA3GD	"	198,202	351	66	160
*VE3XAT	"	179,070	298	67	168
*VA3TPS	"	161,160	308	61	143
*VE3JOC	"	137,286	344	48	126
*VE3GYL	"	128,050	253	65	132
*VA3DBT	"	112,176	258	48	123
*VA3GKO	"	92,718	322	59	94
*VE3BDE	"	69,120	240	32	88
*VE3RCN	"	65,860	199	47	101
*VE3SB	"	64,413	189	49	104
*VE3FH	"	57,974	217	23	78
*VA3RNJ	"	57,505	159	53	102
*VA3KAI	"	55,386	160	58	95
*VA3WU	"	47,736	157	52	84
*VE3JI	"	42,624	143	43	85
*VA3ZWT	"	26,976	114	27	69
*VA3FN	"	22,264	105	33	55
*VA3TPV	"	5,980	46	20	32
***VA3YP**	**28**	**633,701**	**1696**	**32**	**107**
*VA3EC	"	119,605	453	19	76
*VE3TG	"	98,196	350	21	77
***VA3GUY**	**14**	**89,355**	**288**	**26**	**85**
*VE3AUO	"	1,827	29	13	16
***VE3CV**	**3.7**	**27,540**	**316**	**13**	**32**
***VE3EDY**	**1.8**	**8,360**	**229**	**8**	**12**

VE4EAR	**A**	**3,000,956**	**2542**	**129**	**373**
VE4KZ	**14**	**29,072**	**170**	**23**	**56**
***VE4YU**	**A**	**273,052**	**432**	**76**	**160**
*VE4RA	"	88,360	198	67	121
*VA4HZ	"	25,908	135	32	70

VE5CPU	A	1,408	27	11	11
***VE5ZX**	**A**	**1,384,170**	**1488**	**122**	**308**
*VE5UO	"	388,436	570	82	187
*VE5SF	"	95,238	311	36	81
*VE5JL	"	5,940	63	28	36
*VE5AAD	28	20,907	113	24	45

VE6EX	**A**	**1,242,351**	**1999**	**97**	**200**
VA6UK	"	204,445	597	49	106
***VE6DKC**	**A**	**99,624**	**244**	**53**	**115**
*VE6SQ	"	92,225	291	63	92
*VE6ZC	"	85,652	306	57	76

VA7ST	**A**	**1,282,924**	**1596**	**105**	**244**
VA7AAA	"	380,490	1015	50	115
		(OP: VE7SZ)			
VA7BS	"	7,995	70	28	37
VE7XF	**21**	**333,640**	**913**	**38**	**114**
CG7SZ	**14**	**1,226,736**	**3158**	**39**	**129**
		(OP: VA7RR)			
CG7ZZF	"	231,660	658	38	118
***VE7BC**	**A**	**168,800**	**318**	**76**	**124**
*VE7RSV	"	69,069	189	57	86
*VE7BGP	"	23,876	112	41	53
*VE7YJ	"	4,173	46	19	20
*VE7VAW	"	2,280	31	15	15
*VA7AQD	"	1,664	22	14	18
***VA7CRZ**	**28**	**44,550**	**243**	**25**	**50**
*VE7QC	"	14,355	104	19	36
***VE7CV**	**21**	**221,382**	**713**	**31**	**95**

VY1EI 21 426,720 1931 30 75
*VE8GER A 276,540 490 72 148
*VY1CQ " 8,246 59 31 31

Cayman Islands
ZF2AH 21 1,147,144 3390 35 117

Costa Rica
*TI2WMP 7 7,896 65 11 36

Cuba
*CO2CW A 162,538 415 50 131
*CM8AKD 28 382,212 1536 28 80
*CO8AW " 105,908 581 21 62
*CO8ZZ 7 200,669 849 25 84
*CL8AKY 1.8 720 54 5 5

Dominican Republic
*HI3TEJ A 5,916,690 5025 130 377
*HI3EPR 28 412,176 2012 26 67
*HI8PJP " 12,950 152 14 23
*HI3K 21 398,412 1563 30 89

Greenland
XP1A 21 975,900 2581 37 113 (OP: OX3KQ)

Grenada
*J39BS 28 136,000 781 26 54

Guadeloupe
*FG1PP A 57,915 151 49 94

Honduras
HQ2GL 28 829,560 2888 29 95
HQ9R 21 327,376 1229 28 84 (OP: HR9/WQ7R)
*HR1RTF A 95,408 220 57 121

Jamaica
6Y9X A 9,783,295 7270 128 417 (OP: K1XM)

Martinique
TO5A A 6,275,358 5050 132 399 (OP: F5VHJ)
FM5CD 7 272,500 846 26 99
*FM1HN 28 2,368 30 13 19
*FM5FJ 14 176,640 546 31 97

Mexico
XE2S A 1,529,352 1775 136 260
XE2B 28 471,280 1609 32 105
XE2X " 394,284 1391 28 88
XE1B 14 548,000 1932 34 103
XE2AA " 61,642 441 23 51
*XE3N A 776,469 1928 49 134
*XE2MX " 297,600 439 105 205
*XE1AY " 62,400 207 44 76
*XE3DX " 10,994 129 22 24
*XE3TT " 1,008 15 13 15
*XE1BY 28 294,267 890 34 107
*XE1ZTW " 20,591 128 15 44
*XE2RV " 162 9 5 4
*XE1XOE 21 95,920 614 23 57
*XE1CT 14 41,741 212 27 62

Panama
*HP3FTD A 28,551 110 34 59
*HP1DCP 21 8,225 76 19 28

Puerto Rico
*WP3GW A 380,582 525 68 210
*KP4RV " 289,456 494 69 160
*WP4NEG " 59,024 213 34 90
*KP4/WA2HLV 28 7,995 56 17 24
*NP4G 14 693,543 2144 34 117

Sint Maarten
*PJ7PL 28 51,569 458 20 33 (OP: WA1ZAM)
*PJ7X 21 486,783 1705 31 90 (OP: K2WR)

St. Eustatius & Saba
PJ5/SO6X A 1,830,161 2960 84 199 (OP: SP6IXF)

St. Vincent
*J8/PE1IGM A 17,072 106 32 56

U.S. Virgin Islands
NP2N A 1,737,890 2141 98 272
KV4FZ 1.8 59,396 484 17 45
*KP2MM A 1,336,559 2324 88 199 (OP: N2TTA)

AFRICA

African Italy
IG9/I2ADN 28 413,910 1184 33 93
*IH9YMC 28 27,146 197 13 36

Angola
D2QV 28 1,007,265 2307 36 123

Ascension Island
ZD8O A 9,097,105 5415 144 445 (OP: N5ZO)

Canary Islands
EF8R A 15,711,414 9300 149 469 (OP: EA8CAC)
EA8CNB 21 368,067 1120 26 93
EA8LS " 188,628 529 32 100
EF8S 3.7 454,234 1346 23 98 (OP: OH2BYS)
*EA8ZS A 6,423,441 3918 135 434 (OP: OE2VEL)
*EA8OM " 524,475 707 59 200 (OP: DJ1OJ)
*EA8DD " 453,492 729 65 163
*EA8BTQ " 283,270 794 38 92
*EA8BQM " 63,008 249 21 67
*EA8AQV " 56,471 151 57 92
*EC8CQ 28 288,052 1000 26 75
*EC8AQQ 21 68,904 308 19 68

Ceuta and Melilla
EF9A 28 1,677,781 3789 38 123 (OP: EA5DY)
*EE9K A 193,893 490 41 106 (OP: EA9CF)

Djibouti
J28RO A 735,232 1026 64 192 (OP: F5IRO)

Gabon
TR8CA A 323,510 643 51 136

Kenya
5Z4EE A 707,735 932 84 193

Madagascar
5R8A 28 389,499 1153 29 92
*5R8UI 28 3,264 49 8 16

Madeira Islands
CT3FQ 28 1,364,406 3550 33 105
*CT3FJ 14 20,064 106 20 56

Morocco
CN2R A 18,417,840 8398 167 593 (OP: W7EJ)
*CN8VO A 561,960 741 79 201
*CN8YE " 350,930 656 44 146
*CN8SG 28 49,896 313 13 41
*CN4P 21 807,234 1921 31 115 (OP: CN8NK)

Mozambique
C91KHN A 80,630 266 39 71

Namibia
V5/NZ2P A 70,560 246 29 83 (OP: DJ6OV)
*V51YJ A 982,762 1412 71 171

Nigeria
*5N6/YL2SW A 502,250 708 63 187

Rep. of Congo
*9Q6CC 28 530,010 1466 34 101 (OP: CX2CC)

South Africa
ZS6GF A 269,862 429 84 162
ZS2DL " 167,127 525 36 77
ZS6EE 28 233,100 656 33 93
ZS6A " 39,246 178 26 67
ZS6TQ 14 477,247 1133 36 113
*ZS2NF A 67,678 174 59 78
*ZS1JY " 39,456 148 39 57
*ZS2EC " 14,820 72 30 46
*ZS6ELI " 12,529 68 28 39
*ZS1DX " 6,960 45 28 30

Tanzania
*5H3EE 28 935,877 2043 37 120

Tunisia
*3V8SS A 4,304,006 3746 91 315 (OP: KF5EYY)

Zimbabwe
Z21BB A 834,505 1404 63 148

ASIA

Afghanistan
*T6RH A 60,775 179 41 102
*T6RS " 14,280 79 30 55

Armenia
EK6TA 28 1,122,550 3052 35 108
*EK3GM A 1,347,760 1505 74 266
*EK6GB " 151,032 380 47 121
*EK6LX " 4,788 43 12 30

Asiatic Russia
UA9CDV A 7,224,372 4218 158 499
RA9AE " 2,041,830 1682 110 353
UA9XL " 1,168,090 1206 95 290
RW9DW " 1,110,682 1288 83 243
RA9AAA " 1,099,569 1254 81 232
UA9TF " 1,072,513 1094 101 290
RL9I " 1,040,860 1341 71 213
RA9JBA " 737,334 1093 68 206
UA9FGJ " 627,750 737 78 232
RM9T " 529,788 658 78 216
UA9XF " 280,212 496 55 173
RZ9AN " 122,880 207 79 177
RV9WP " 114,276 235 65 149
RZ9OW " 55,500 209 39 72
RU9UC " 44,268 150 34 85
RD9FM " 34,320 111 43 77
RN9A " 33,930 127 29 88
R8TX " 11,033 89 21 38
RV9LM 28 27,966 169 19 40
RK9AWT 21 147,010 479 28 94 (OP: UA9AB)
RA9ULK " 71,151 267 29 82
RT8O " 33,165 237 13 42
UI9I 14 1,321,008 3037 39 135 (OP: RU9I)
RK9UN " 298,144 800 36 118
RX9JD " 106,080 417 23 73
UA9JFR " 5,290 44 20 26
UA9KAA 1.8 30,044 201 11 47
*RT9S A 1,745,808 1427 106 338
*R9FR " 680,400 801 82 254
*R8MD " 606,720 792 74 242
*R9RA " 462,590 638 68 209
*UA9FLK " 434,562 638 66 216
*UA9SUX " 408,704 649 64 184
*RT9YA " 373,843 548 78 205
*UA9AL " 281,799 485 54 159
*RV9WND " 253,253 477 70 183
*RX9KD " 210,752 536 50 128
*RW9RO " 201,498 469 61 152
*RT8X " 196,857 380 55 152
*RA9OGA " 186,914 447 43 126
*UA8WAA " 170,718 317 67 155
*R8XX " 163,664 373 52 141
*UA9JNT " 158,424 392 52 132
*R9OAZ " 137,703 315 62 135
*UA9YTN " 115,908 300 47 109
*UA9NP " 102,680 289 43 108
*RV9AM " 99,385 267 38 105
*RA9AN " 90,423 232 38 115
*UA9JFH " 89,739 234 45 124
*RC8I " 89,298 314 38 83 (OP: RO9I)
*UA9YTH " 81,774 247 38 88
*RW9MZ " 75,218 217 37 106
*R9XAA " 60,480 217 30 96
*R9UG " 59,124 171 60 96
*UA9ODE " 43,641 149 34 83
*RK9FBO " 42,840 161 31 74
*UA9KB " 34,387 103 53 84
*UB9AAJ " 33,512 124 33 85
*RA9AP " 31,926 120 28 74
*UF8T " 20,124 92 27 59
*R8XA " 11,505 70 19 46
*RU9CD " 10,412 77 29 47
*RA9ODW " 9,656 73 21 47
*UA9CIM " 6,789 44 34 39
*RV9CQ " 4,270 41 27 34
*UA9XBJ " 2,944 31 16 30
*UA9LBQ " 1,960 22 15 20
*UA9LP " 1,537 19 11 18
*UA9OAO " 1,458 27 11 16
*RA9JB " 870 19 11 18
*RZ9UN " 725 21 10 15
*RZ8U 28 333,777 1546 23 74
*UA9LAO " 251,220 900 25 81
*RU9WZ " 138,750 501 28 83
*R8XF " 120,990 453 29 80
*UA9UDR " 98,413 349 26 93
*RZ9YB " 50,286 258 20 67
*RD8O " 45,430 278 10 49
*UA9UX " 33,027 119 26 83
*UA9SAW " 30,452 227 8 38
*R8FR " 10,030 63 15 44
*RV9CW " 9,782 71 21 46
*RV9YZ 21 362,670 891 33 124
*UA9OMT " 207,375 661 28 97
*RA9FEL " 175,163 618 24 85
*RX9CCJ " 159,750 477 28 97
*UB8QAA " 39,546 237 18 60
*RX9KT 14 178,542 581 28 89
*RX9FG " 83,325 344 24 77
*RD9T " 14,740 88 16 51
*RW9TR 7 18,426 109 20 54
*RW9CD 3.7 39,260 238 13 52
*R9AT 1.8 5,088 72 9 23
RCØF A 1,674,378 2354 89 214
RAØ/KE5JA " 1,082,184 1578 87 181
RWØUU " 603,059 1114 83 180
UAØSDX " 588,600 655 79 281
RWØUM " 553,697 848 100 213
UAØIBX " 481,467 934 80 147
UAØOD " 426,114 802 66 168
RUØLQ " 336,168 919 66 102
UAØYAY " 149,416 374 49 103
RTØQ " 132,392 348 55 97
RKØSM " 91,348 291 49 115
UAØBA " 45,600 242 37 58
RUØLL " 22,908 95 41 51
UAØW " 304 11 8 11
RAØQD 28 198,135 757 28 91
RØAA 21 415,220 1269 29 101
*UAØZS A 696,008 1161 80 161
*UAØCNX " 690,690 1288 75 178
*RAØQW " 380,210 805 60 137
*UAØC " 157,206 368 71 126
*UAØQNV " 145,500 324 59 135
*RZØSB " 112,539 293 45 116
*UAØLNL " 52,632 243 48 105
*RZØSW " 41,877 197 48 93
*RDØA " 28,792 101 38 80
*RAØAQQ " 13,794 103 17 49
*RXØSC " 13,430 69 28 51
*UAØAKY 28 73,450 258 25 88
*RXØAE " 40,764 203 18 61
*RAØQQ " 31,820 149 23 63
*UAØUK 21 179,200 799 29 83
*UAØXAK " 58,604 329 32 60
*RNØCW 14 286 10 4 7
*RØCY 7 7,406 76 17 29

Asiatic Turkey
*TA2/DL7BC A 2,224,068 1977 99 307
*TA3HM " 571,520 1107 42 148
*TC2T " 275,471 535 53 150 (OP: TA2MW)
*TA8AT " 54,096 198 34 78
*YM3KB " 8,910 59 20 35 (OP: TA3DJ)
*TA7AO 28 621 19 8 15
*TA4ED 21 119,890 492 22 73
*TA2FE 1.8 7,163 93 6 23

Azerbaijan
*4K9W A 14,356 71 23 51
*4K8M 28 27,864 106 28 80

Bahrain
A92GR 28 368,106 1143 28 86

Bhutan
*A51B 28 266,236 1266 24 77
*A52AB 21 912,660 2823 34 106 (OP: UA3AB)
*A52PP 14 198 12 5 6

Cambodia
*XU7ACY A 568,996 1137 70 166

China
BA1AI A 364,326 679 77 169
BD3MN " 217,070 461 84 161
BA5HAM " 167,132 539 35 92
BD3CB " 62,111 236 53 80
BA1KW " 47,630 255 39 71
BD4TZ " 29,795 175 41 60
BD4BO " 25,359 102 44 63
BD2IAQ " 15,300 108 32 53
BD4HHZ " 5,035 58 25 28
BH4TPC " 2,301 31 18 21
BG4AGR " 759 16 12 11
BA7LO " 357 10 7 10
*BI7LSI A 647,710 1187 76 190
*BA1SN " 388,926 744 80 166
*BG4ACE " 315,630 747 71 139
*BG8GAM " 219,207 457 86 181
*BD6AHU " 179,982 436 69 129
*BH7PFH " 150,800 351 60 148
*BD7OZG " 149,506 390 63 118
*BH4SYG " 118,008 255 63 135
*BD9ALM " 82,467 265 50 97
*BD4RDU " 75,456 294 56 88
*BY4LY " 73,831 350 48 53 (OP: BD4MCG)
*BG5CIC " 63,784 209 43 91
*BD3MF " 56,048 227 42 82
*BH4TNQ " 51,546 184 56 86
*BD5HSV " 49,840 196 50 90 (OP: BD5HSV)
*BD4HZ " 48,380 195 44 74
*BG4HJE " 48,339 166 47 84
*BA4VE " 48,000 252 47 73
*BD5BMC " 38,184 160 41 70
*BH4SRB " 37,092 136 46 86
*BH1KTL " 33,852 263 31 60
*BD7LYR " 24,310 123 45 65
*BH4WFT " 21,400 136 39 68
*BD7JAD " 21,150 142 38 56
*BD4UN " 20,646 144 42 51
*BH4QFI " 12,549 76 39 50
*BD4KRB " 12,070 128 33 38
*BD9GBE " 11,410 86 27 43
*BG4GVY " 10,836 97 23 40
*BG4LKZ " 10,679 97 23 36
*BD4IJ " 10,500 71 30 40
*BH4JGD " 8,667 75 36 45
*BG5FCH " 8,284 69 34 42
*BD3MV " 7,598 83 21 37
*BG6AHD " 6,100 60 20 30
*BG5FHT " 3,612 41 18 24
*BA4SCP " 3,575 66 25 30
*BH1ERB " 3,500 57 23 27
*BG1TXU " 3,417 67 23 28
*BD4WF " 3,294 45 23 31
*BD2UYY " 3,212 44 20 24
*BG2WCG " 2,415 43 15 20
*BH4KGW " 2,262 31 18 21
*BG3QWI " 2,204 37 19 19
*BG2TAA " 1,833 42 20 19 (OP: N1MM)
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*BD1MWH " 1,711 21 11 18
*BG2WES " 1,443 21 17 20
*BG5FIM " 1,302 22 14 17
*BG5DSD " 1,258 23 14 20
*BH1LYV " 1,200 27 11 13
*BG2TQV " 1,190 19 16 18
*BH4RZI " 1,026 22 13 14
*BI7MLE " 999 16 12 15
*BG6QYE " 930 22 14 17
*BD2VJM " 870 52 13 16
*BG8GOD " 840 19 8 16
*BD5DMO " 638 14 10 12
*BD2TBJ " 378 10 9 9
*BG2TBN " 306 10 9 9
*BG5DLX " 304 9 8 8
*BD2RBI " 252 8 6 8
*BD5DOD " 204 9 6 6
*BH4RWX " 196 11 7 7
*BG2VEY " 144 6 3 6
*BH1IUM " 80 7 5 5
*BG5FCD " 64 4 4 4
*BH4SKP " 48 5 4 4
*BH1LND " 4 2 2 2
*BG6CJR 28 17,664 133 22 47
*BD2BT " 13,860 85 20 43
*BG3TBS " 12,296 120 19 39
*BH4TMX " 8,400 89 22 34
*BH1CXR " 2,590 33 14 21
*BH4SCF " 558 17 8 10
*BD7LDM 21 28,630 212 21 49
*BG2BLM " 23,712 186 23 53
*BH4RRG " 10,556 103 23 35
*BH4TPJ " 8,640 99 18 36
*BD4MCG " 8,037 96 19 28
*BD4UM " 6,721 97 17 30
*BD4QK " 6,000 49 17 31
*BG1LYZ " 5,382 63 15 31
*BG7IEU " 4,655 84 15 20
*BD4LJW " 3,287 95 9 10
*BG4KLA " 2,668 94 10 13
*JAØUMV/BA7MY " 1,325 52 10 15
*BG5DLV " 726 20 9 13
*BH4RTD " 150 10 4 6
*BA4WR 14 47,628 287 28 56
*BH4TPI " 528 16 9 13
*BG5DOX " 98 6 3 4
*BG3MWT 7 350 13 7 7

Cyprus
C4W A 9,442,412 5752 128 453 (OP: 5B4WN)
H2T 28 1,566,138 3931 37 110 (OP: 5B4XF)
*C4Z 21 378,684 1087 33 101 (OP: 5B4AIZ)

Georgia
4LØA 7 1,027,632 2407 36 122 (OP: 4L4WW)

Hong Kong
VR2XMT 28 329,522 1170 32 90
*VR2YYW A 288,345 615 67 168
*VR2VIY " 13,692 81 34 50
*VR2PX 21 109,956 447 32 87
*VR2PW 14 17,808 116 27 57

India
VU2PAI A 4,741,164 3515 129 379
VU2RCT " 311,181 520 67 170
VU2SWS " 152,862 316 69 150
VU2JOS " 13,782 141 64 89
VU2BL " 12,014 105 31 67
VU2JMA " 2,026 40 22 28
VU2WSM " 1,558 24 16 25
VU2MCW " 1,104 23 13 17
VU2LBW 28 18,400 105 23 57
*VU2NKS A 129,626 253 64 133
*VU3KPL " 23,800 101 33 67
*VU3LMS " 4,985 69 35 50
*VU3DMP 21 14,208 97 18 46
*VU2YAM 14 2,745 43 18 27

Israel
4X2M 14 670,293 1589 37 116
*4Z5MV A 68,666 197 42 97
*4Z5FL " 13,650 110 40 35
*4Z5FI 28 96,117 507 16 53

Japan
JE1LFX A 2,687,616 2608 118 266
JA1OVD " 921,448 1218 91 192
JF1OPL " 770,762 1114 92 182
JH1EVD " 538,180 754 93 191
JH1HIC " 394,800 601 93 187
JQ1QKK " 354,000 685 64 136
JA1WWO " 292,456 442 95 183
JA1IKA " 196,176 414 82 119
JL1RXW " 193,284 335 83 151
JA1IXY " 113,918 208 71 135
7L2PDJ " 87,204 226 61 95
JH1ASG " 53,580 197 51 63
JL1DLQ " 49,140 171 49 77
JO1SIM " 41,293 180 51 68
JO1VRV " 35,108 123 57 74
JA1TMG " 33,516 129 41 57
JE1HRC " 28,512 119 44 64
JF1UOX " 7,076 51 26 35
JJ1WWL " 2,898 33 17 25
JN1RQV " 2,790 27 18 27
JI1DSU " 1,908 23 18 18
JS1KQQ " 1,188 17 16 17
JF1UOW " 432 9 7 9
JO1WKO 28 467,698 1091 35 119
JE1CKA " 334,476 1156 31 77
JJ1RDX " 289,000 874 32 93
JR1LZK " 57,720 305 25 53
JA1JYS " 5,670 52 14 28
JA1QXY 21 507,082 1414 36 106
JR1MQT " 297,696 1087 32 64
JO1COV " 173,760 555 32 88
JG1WCT " 2,275 37 13 12
JK1OPL 7 52,962 212 29 68
*JJ1VRO A 1,795,240 1775 118 252
*JL1MWI " 519,112 1011 55 132
*JR1BTG " 327,381 793 45 114
*JA1GLE " 288,200 572 74 146
*JA1PJS " 170,190 384 66 117
*JA1HNW " 144,000 313 74 126
*JA1VGV " 134,332 333 65 107
*7K1MAG " 126,016 300 69 107
*JA1AZR " 109,813 298 59 90
*JF1WNT " 106,920 262 66 99
*JF1KWG " 94,659 282 48 91
*JA1SCE " 92,106 265 60 93
*7K2PZG " 82,620 189 73 107
*JJ1ENZ " 81,205 225 59 90
*JP1HUJ " 54,526 183 59 78
*JA1UZG " 54,470 185 49 81
*JF1VNR " 47,125 182 48 77
*7K4VPV " 39,405 139 47 64
*JR1MRG " 32,806 144 42 52
*JA9DTV/1 " 27,063 113 42 51
*JA1RYC " 26,057 151 24 47
*JI1UCL " 25,900 135 40 60
*JA1LPQ " 22,968 127 36 52
*JA1FO " 18,648 95 32 52
*7K4TBB " 18,492 130 41 51
*JG1WGE " 18,389 124 30 41
*JA1OHP " 16,940 90 36 41
*JJ1LRD " 15,132 88 34 44
*JF1DWJ " 14,457 80 35 44
*JE1CWQ " 13,870 94 28 45
*7L3DGP " 12,648 86 28 34
*JE1REU " 9,975 61 31 44
*JG1LPL " 9,180 79 21 30
*7M1MCY " 5,735 75 19 18
*JA1EMQ " 4,800 39 22 26
*JG1FGL/1 " 4,770 40 20 25
*JA1ATM " 4,628 48 21 31
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*JP1LRT " 3,608 36 17 27
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*JR1AHP " 532 10 9 10
*JA1FRQ " 420 10 7 8
*JA1BNW " 24 2 2 2
*JA1KK " 121,626 271 66 108
*JN1IZR 28 285,250 882 32 93
*7K3OWM " 202,950 829 25 65
*JI1HFJ " 79,904 349 26 62
*JP1IXV " 27,084 147 21 53
*JH1FNU " 26,248 157 19 49
*JH1XUZ " 12,408 95 20 27
*JA1PUK " 12,017 71 19 42
*JA1SKE " 10,530 86 15 30
*JA1BIV " 6,678 50 21 32
*JK1FUP " 4,560 52 15 23
*JH8FAJ/1 " 253 11 3 8
*7K4XNN 21 122,720 447 33 85
*JA1TBX " 35,073 195 25 56
*JK1NSR " 27,924 146 26 52
*JA1JLP " 19,845 105 17 46
*JF1PYJ " 13,157 99 21 38
*JK1BII " 10,192 79 20 32
*7K4TKB " 7,680 78 18 22
*JJ1HHJ " 4,403 50 17 20
*JG1APX " 4,114 49 13 21
*JH1CFC " 1,566 24 13 16
*JI1UDD " 1,276 23 11 11
*JA1DBG " 1,210 25 9 12
*JN1DNV " 1,014 24 10 16
*JN1BBO " 288 8 5 7
*JR1KDA " 91 7 3 4
*JL7FBV/1 " 54 3 3 3
*JO1WIZ " 24 2 2 2
*JE1RRK 14 10,550 93 19 31
*JH1XUP " 10,494 68 23 43
*JG1GCO " 950 20 8 11
*JE1GZB " 154 10 6 5
*JA1XMS 7 41,055 191 29 56
*JH1RDU " 252 13 5 4
*JE1SPY 3.7 378 20 8 10
JA2PAC A 2,100,621 2066 119 292
JR2PMT " 743,682 886 99 218
JE2DJC " 197,556 380 65 137
JA2HOL " 69,654 191 49 92
JA2CPD " 19,565 94 39 52
JK2TTP " 3,634 29 19 27
JA2TTH " 2,419 29 19 22
JA2FJP 28 564,250 1680 29 93
JA2VHO " 183,276 649 32 76
JH2BTM " 41,633 205 24 55
JE2OTM 21 260,130 739 35 103
JF2BDK 14 110,808 351 30 84
*JA2AXB A 1,228,080 1607 104 197
*JA2CUS " 275,152 446 77 155
*JA2GHP " 125,970 302 58 112
*JA2KPW " 85,376 280 46 82
*JF2CTY " 31,806 151 35 58
*JE2DOD " 23,552 106 35 57
*JF2OHQ " 19,671 95 32 47
*JA2HBK " 8,100 48 36 39
*JA2QVP " 4,646 41 21 25
*JH2MYN 28 191,646 610 35 91
*JA2KVB " 57,232 205 34 78
*JF2AIJ " 28,137 137 23 60
*JA2QQC " 21,420 141 19 44
*JA2PFO " 13,268 102 22 40
*JE2HXL 21 53,944 249 26 62
*JA2KKA " 21,240 149 21 39
*JE2TLZ " 5,480 56 15 25

*JR2AAN/2	"	3,465	39	16	19
*JF2FKJ	"	2,075	44	11	14
*JQ2XVY	"	78	5	2	4
*JA2GTW	7	21,125	133	24	41
JA3QOS	A	876,000	967	117	258
JA3EY	"	328,070	544	93	172
JN3QNG	"	98,256	219	76	108
JS3LSQ	"	38,812	130	51	73
JH3GCN	"	27,664	99	44	68
JA3AVO	"	20,075	102	31	42
JG3LGD	"	45	3	2	3
JI3BFC	28	238,144	771	33	89
JA3LEZ	"	83,808	320	27	70
JR3NZC	21	773,295	1885	35	120
JF3LOP	3.7	2,938	68	13	13
*JH3CUL	A	887,432	1082	100	222
*JA3IKG	"	171,853	360	70	117
*JA3DAY	"	109,296	265	51	93
*JE3UHV	"	63,627	225	48	79
*JL3RDC	"	47,736	177	48	69
*JH3BYX	"	39,289	200	41	60
*JO3PSJ	"	17,325	126	28	47
*JA3UWB	"	7,176	75	21	18
*JH3GMI	"	1,144	22	12	14
*JI3OGI	"	396	13	8	10
*JR3SZZ	"	42	3	3	3
*JL3MCM	28	77,900	310	29	71
*JR3BOT	"	24,765	146	21	44
*JN3TRK	"	21,252	106	25	59
*JA3EBT	"	19,520	124	17	44
*JA3KDJ	"	14,326	119	21	37
*JM3QIS	"	10,624	98	21	43
*JO3RCK	"	6,815	71	19	28
*JI3DST	"	6,732	54	14	37
*JG3LDD	"	5,187	59	17	22
*JG2CNS/3	"	760	16	8	12
*JN3CSF	"	15	3	2	3
*JR3RIY	21	418,896	1067	34	110
*JF3BFS	"	391,408	1058	34	102
*JI3FSI	"	20,803	109	23	48
*JR3KAH	"	10,282	76	18	35
*JA3PYH	"	7,866	72	17	29
*JA3NOJ	"	1,224	17	11	13
*JR3XNL	"	989	24	10	13
*JG3EHD	"	36	3	2	2
*JA3BBG	"	0	1	1	1
*JF3IYW	14	19,328	132	24	40
JH4UTP	A	1,907,672	2273	104	234
JO4CTB	"	193,640	454	86	149
JA4RWN	"	150,880	325	67	117
JA4EE	"	4,224	32	18	30
JA4BXU	"	24	2	2	2
*JH4UYB	A	2,525,595	2282	118	293
*JE4QGF	"	60,027	207	39	68
*JR4PDP	"	41,790	185	40	65
*JA4AQR	"	30,240	144	26	46
*JO4CZY	"	10,579	74	30	41
*JG4OOU	28	73,040	300	25	63
*JR4LRY	21	17,192	131	23	33
*JA4CBX	"	4,422	68	14	19
*JH4WUI	"	3,404	46	15	22
*JR4CTF	"	2,686	49	14	20
*JI4JGD	"	2,516	30	14	20
*JR4GPA	14	55,614	240	29	64
*JA4AVO	7	153	11	4	5
JA5SUD	A	56,322	145	51	98
JA5DWY	"	10,810	92	17	30
JA5BZL	28	67,260	217	36	82
JJ5GSY	21	4,730	51	17	26
*JG5UWK	A	89,161	250	67	96
*JJ5HUD	"	30,591	124	40	63
*JA5CBU	"	7,074	51	24	30
*JA5XPD	28	7,750	52	22	40
*JA5FMT	"	3,915	59	12	15
JA6LCJ	A	2,869,992	2582	122	290
JA6BWH	"	379,745	538	83	182
JA6PCH	"	135	5	4	5
JH6AUS	28	686,504	1561	37	127
JR6VIX	21	13,664	105	23	33
JE6HUR	14	6,000	68	18	30
*JA6FGC	A	2,016	25	16	20
*JA6WFM	28	471,618	1276	35	98
*JH6FTJ	"	26,255	161	18	41
*JA6FHF	21	38,304	152	23	62
JA7NVF	A	2,717,708	2673	119	285
JA7BME	"	1,416,800	1483	113	237
JA7JH	"	74,900	189	55	85
JO7GVC	"	41,019	133	38	75
JA7DOT	28	99,495	369	29	70
JH7KTI	"	5,088	44	21	27
JA7BJS	21	169,175	618	29	72
*JH7CUO	A	597,065	902	83	162
*JA7HYS	"	79,325	188	68	99
*JP7AWQ	"	61,440	195	50	78
*JA7SSP	"	33,488	147	41	63
*JA7ADV	"	22,590	103	43	47
*JI7GYU	"	10,375	64	38	45
*JH8CLC/7	"	104	5	4	4
*JH7RTQ	28	346,388	926	35	104
*JA7BEW	"	265,467	908	31	76
*JE7HYK	"	11,600	95	20	30
*JA7AXP	"	893	17	7	12
*JP7CFP	21	3,298	38	16	18
*JA7LLL	14	26,344	139	24	50
*JI7EMD	"	6,095	70	17	36
JH8DHV	28	83,885	337	29	66
JA8ECS	"	70,560	286	27	71
JH8CXW	"	34,800	171	26	49
JG8TDZ	"	29,625	163	25	54
*JA8CSY	A	367,302	525	93	184
*JA8IJI	"	148,225	343	67	108
*JL8MBF	"	43,989	136	51	78
*JE8CRA	"	7,119	61	26	37
*JA8CEA	28	26,228	112	26	57
*JK8JNH	21	19,912	94	26	50
JA9JFO	A	209,440	398	87	133
JF9KVT	"	14,807	94	29	38
JH9KVF	28	371,560	1079	34	106
JA9CCG	21	50,740	237	25	61
JH9URT	14	138,754	460	29	90
*JA9TQY	A	266,950	539	56	134
*JA9EJG	28	6,750	56	14	31
*JF9OFC	"	920	16	9	11
*JR9NVB	7	37,268	197	26	51
JAØJHA	A	7,399,242	5243	148	373
JAØAXV	"	1,002,842	997	115	274
JHØINP	"	3,097	57	9	10
JAØGEY	28	39,963	211	25	52
JAØIOF	"	19,276	123	21	40
JJØKRD	14	197,771	551	35	98
JAØGCY	"	1,914	28	12	21
*JHØNEC	A	993,149	1201	101	212
*JL1EEI/Ø	"	39,655	160	39	64
*JAØBJY	"	35,280	142	33	57
*JAØAVS	"	29,970	117	40	71
*JAØRCK	"	870	15	14	15
*JHØJDV	28	190,850	687	29	81
*JRØBUL	"	13,716	100	21	33
*JRØEQQ	"	2,170	38	9	22
*JJØNSL	21	6,090	57	18	24
*JHØEPI	14	112,053	359	33	90

Jordan

*JY4NE	28	961,674	2461	36	111

Kazakhstan

UPØL	A	9,848,370	5433	153	537
UN8GU	28	601,344	1607	32	112
UP7P	"	588,593	1510	36	127
(OP: UN7PBY)					
UN9GD	"	87,480	384	27	81
UP2L	14	1,401,538	3239	37	129
(OP: UN9LG)					
*UN6G	A	313,782	553	72	169
*UN2G	"	181,168	398	61	147
*UN7E/7	"	133,250	251	52	153
*UN6GK	"	100,048	249	38	110
*UN7FDP	"	40,439	141	37	72
*UN7JX	28	435,626	1248	31	108
*UN7EX	"	81,732	333	24	74
*UN3Z	"	50,100	208	25	75
*UN8PT	"	35,372	208	21	53
*UN9LU	"	19,053	113	18	55
*UN7CN	"	12,906	106	13	41
*UN6LN	14	331,350	849	34	116
*UN7RL	7	20,191	150	14	47

Kyrgyzstan

EX2T	21	356,728	1133	31	91
EX2X	14	299,250	918	33	100
*EX8LF	28	11,596	134	15	37
*EX7ML	21	183,184	717	26	81
*EX8MAT	1.8	546	38	6	8

Lebanon

*OD5SSB	A	397,056	732	39	153

Macau

*XX9AU	21	3,276	95	11	17

Maldives

8Q7DV	A	6,125,544	4359	140	412

Mongolia

JT1DA	28	387,816	1493	27	86
JT1DN	21	9,225	111	16	29

Nepal

*9N7AK	A	5,110	55	30	40

Ogasawara

*JD1BIA	21	2,025	43	13	14

Oman

*A41OO	7	2,442	46	12	21

Saudi Arabia

*HZ1PS	A	436,224	706	64	149
*7Z1OO	"	35,256	134	25	79
*7Z1HL	28	6,160	57	13	27

Singapore

9V1YC	28	528,675	1665	34	99
*9V1IZ	A	2,553	43	17	20
*9V1DE	28	1,325	24	11	14

South Korea

HL5UOG	A	21,948	98	37	56
HL3AMO	7	11,676	182	20	22
*DS5TOS	A	316,020	679	81	149
*HL5BMX	"	48,760	236	35	57
*HL9VOA	"	17,255	95	38	47
*DS3BNU/2	"	8,673	75	26	33
*DS4GGM	"	8,493	77	26	31
*HL5YI	28	15,314	108	18	44

Sri Lanka

*4S7DF	A	544	12	7	10

Taiwan

BQ1OO	A	411,680	1191	43	117
(OP: BM2JCC)					
BM1OO	"	347,760	1525	69	92
(OP: BU2AW)					
BX1OO	"	230,048	600	64	118
(OP: BU2AV)					
BX5AA	28	662,060	1981	35	105
*BU2AE	A	178,368	500	66	126
*BU2AV	28	1,127	27	10	13

Tajikistan

EY7AD	A	1,515,300	2056	76	224
EY8MM	21	1,648,556	3547	38	144
*EY8AR	A	225,720	421	59	161
*EY7BD	"	26,746	150	28	58
*EY8DD	28	35,100	277	11	34
*EY8BJ	21	36,708	222	12	57

Thailand

HSØZEE	A	501,468	703	98	250
HSØZDR	21	79,288	294	28	78
*E27EK	A	9,088	73	28	43
*E2ØNKB	"	3,430	40	20	29
*E2ØYLM	28	54,280	271	27	65
*HS8JYX	21	2,080	40	10	16
*E21IZC	"	345	14	6	9

UK Sov. Bases on Cyprus

ZC4LI	28	316,274	1395	20	62

United Arab Emirates

A61EE	A	1,620,490	1736	76	271
A65EE	"	1,336,896	1832	62	202
*A61C	21	180,075	654	24	81
*A61BK	3.7	88	5	3	5

Uzbekistan

*UK9AA	1.8	37,233	232	13	50

Vietnam

*XV4Y	A	5,452	45	26	32

West Malaysia

9M2CQC	A	532,000	1150	86	180
9M2ESM	28	170,016	639	34	104
9M2IDJ	"	135,192	515	34	97
*9M2TO	A	175,500	605	54	96
*9M2ZAK	"	46,529	210	48	71
*9M2/JE1SCJ	"	4,838	57	27	32
*9W2WWW	28	58,065	256	30	75
*9W2TS	"	4,200	57	12	23
*9W2CEH	"	3,564	41	15	21

EUROPE

Aland Islands

OHØX	A	5,932,188	4097	171	563
(OP: OH2PM)					
OHØV	7	491,876	2106	33	121
(OP: OH6LI)					

Albania

ZA/IW2JOP	A	17,472	95	52	52

Austria

OE3K	A	9,285,381	6512	156	501
(OP: OE3DIA)					
OE9R	"	4,105,764	3649	126	440
(OP: OE9MON)					
OE6MMF	"	286,344	643	76	215
OE2LCM	"	49,914	198	37	57
OE2IJL	"	43,992	146	50	106
OE2PTN	"	30,016	162	37	97
*OE6U	A	303,050	722	67	208
(OP: OE6HLF)					
*OE3DMA	"	214,272	476	72	184
*OE1TKW	"	69,007	203	53	98
*OE5FPL	"	38,912	179	39	89
*OE2LRO	"	15,300	126	26	64
*OE5D	28	100,687	361	29	78
(OP: OE2UKL)					
*OE8CLR	14	30	3	3	3

Azores

CR2X	A	13,824,720	8946	172	556
(OP: OH2UA)					
CR2T	28	516,129	2056	31	98
(OP: CU2AF)					

Balearic Islands

EA6SX	A	6,754,224	4993	157	512
EA6XQ	"	353,646	659	95	259
EA6AZ	"	352,600	682	61	154
EA6DX	28	162,552	650	38	118
EA6UP	"	113,708	462	36	95
*EA6OM	28	60,652	236	33	85

Belarus

EW8DD	A	2,096,665	2719	122	413
EW8DX	"	661,026	1373	88	305
EU6AF	"	334,866	886	79	215
EW4MM	"	294,115	611	81	214
EW1BA	"	1,242	16	11	16
EU1A	7	617,920	2443	36	124
EW1DO	3.7	82,808	853	16	72
*EU2DX	A	394,922	944	67	252
*EU2EU	"	278,641	519	84	263
*EW8NN	"	227,635	682	64	201
*EU4CQ	"	97,783	370	56	173
*EU6AA	"	71,890	301	48	134
*EV6M	"	64,064	250	46	130
*EW7LE	"	33,782	148	40	87
*EW8ADX	"	12,284	62	38	45
*EW2EG	"	7,566	110	20	58
*EW2EO	"	1,640	32	14	26
*EU2MM	"	60	5	2	2
*EW1KV	28	34,914	275	16	50
*EU4AA	"	1,350	22	11	14
*EW6DI	21	21,172	200	18	49

Belgium

OR1Z	A	514,944	1323	66	222
*ON7HLU	A	297,402	561	73	218
*ON5UJ	"	259,532	406	77	222
*ON7BS	"	235,936	589	66	226
*ON3AR	"	224,344	519	63	169
*ON6AT	"	153,360	421	59	157
*ON8PH	"	123,692	353	73	141
*ON5HC	"	44,541	198	41	106
*ON6VOX	"	44,148	224	45	111
*ON7CO	"	25,750	161	35	90
*OR3R	"	19,580	173	25	85
*ON4LWX	"	9,844	76	30	62
*ON6MI	"	7,030	95	20	54
*OP4A	28	169,264	504	38	104
*ON3ND	"	47,002	292	23	48
*ON5WL	"	5,250	69	15	20
*ON6FC	"	4,042	42	18	29
*OR2F	14	30,832	260	20	62
(OP: ON8LDS)					
*OO4O	7	13,275	182	9	50

Bosnia-Herzegovina

E77A	28	1,297,719	3307	40	131
E73W	"	873,580	2451	39	116
(OP: E73O)					
E73S	7	5,805	117	8	35
*E77M	A	28,625	182	34	91
*E73MJ	"	12,600	149	16	59
*E77J	"	7,252	49	34	40
(OP: YT5TT)					
*E75MM	"	4,611	63	14	39
*E77O	"	4,368	34	28	28
*E74Y	28	74,538	246	40	83
*E76MB	"	6,750	92	16	34
*E73XL	21	280	10	6	8
*E74A	"	45	4	2	3
*E73X	7	5,580	107	8	37

Bulgaria

LZ3FN	A	2,393,262	2689	126	432
LZ2ZY	"	186,300	346	85	191
LZ2JR	"	127,890	298	73	137
LZ2PG	"	114,699	251	74	99
LZ1VPS	"	10,541	109	24	59
LZ2ZG	28	330	8	7	8
LZ3ZZ	14	56,050	442	23	72
LZ1RA	"	29,790	285	19	71
*LZ2FQ	A	638,385	996	95	270
*LZ2STO	"	464,968	646	89	272
*LZ5XQ	"	309,582	522	94	200
*LZ2HN	"	231,795	451	84	219
*LZ1AQ	"	219,968	590	61	163
*LZ2HR	"	120,716	388	56	150
*LZ1IKY	"	61,766	288	47	131
*LZ3GH	"	59,422	258	45	101
*LZ1VCT	"	49,725	218	48	105
*LZ3TL	"	37,536	231	43	93
*LZ2XF	"	31,413	138	38	73
*LZ1FJ	"	25,179	203	23	86
*LZ2FM	"	18,079	108	30	71
*LZ1OJ	"	9,317	89	26	51
*LZ2VR	"	7,527	105	16	23
*LZ1ONK	"	5,412	52	17	24
*LZ3RN	"	308	8	7	7
*LZ1PJ	"	16	2	2	2
*LZ2HA	28	117,375	448	34	91
*LZ2PS	"	91,044	432	31	77
*LZ2JA	"	87,785	457	32	65
*LZ1EP	"	15,680	124	17	40
*LZ5GM	"	6,480	110	11	25
*LZ3DJ	21	22,630	196	20	53
*LZ2JOW	14	11,078	127	12	46
*LZ5Z	"	3,760	83	9	31

Corsica

TK5KP	A	7,897,932	6058	145	506
(OP: IK8UND)					

Crete

SV9DJO	A	122,112	559	35	124
SV9AHZ	"	5,293	43	27	40
*SV9COL	A	101,598	413	48	129
*SVØXCC/9	"	81,000	506	31	119
*SV9GPV	28	977,120	3552	38	117

Croatia

9A3B	A	4,532,850	3807	142	488
(OP: 9A1AA)					
9A2JK	"	354,658	501	104	279
9A3KS	"	90,312	242	74	138
9A4WY	28	32,615	228	19	36
9A2VR	7	129,960	908	22	92
9A25TA	"	12,384	264	7	41
(OP: 9A3TA)					
9A2LX	3.7	19,908	286	10	53
9A2AJ	1.8	62,238	815	13	69
*9A1IW	A	248,776	551	73	184
*9A2VX	"	119,658	364	55	176
*9A65CVW	"	20,482	99	45	88
(OP: 9A6Z)					
*9A5IGY	"	7,749	131	12	51
*9A1CVG	"	7,623	100	20	57
*9A1SZ	"	5,548	90	22	51
*9A7DCK	"	3,584	58	15	41
*9A5YY	"	2,546	26	17	21
*9A2XW	"	475	24	8	11
*9AØW	28	336,294	846	40	113
*9AØ4JB	"	156,300	430	38	112
(OP: 9A3JB)					
*9A5ST	"	116,760	381	38	101
*9A1DL	"	17,690	125	20	38
*9A3TU	"	14,835	96	23	46
*9A8A	"	6,120	57	17	28
*9A6KZH	21	19,125	163	23	52
*9A4R	14	25,174	205	21	61
*9A5KIS	"	11,880	143	13	47
*9A1AKL	7	18,620	189	15	61
(OP: 9A3NU)					

Czech Republic

OK1C	A	343,440	629	83	241
OK1AXB	"	172,482	416	70	197
OK1DQT	"	72,408	360	40	128
OK1FRO	"	16,480	141	25	78
OK1AVV	"	7,800	62	25	50
OK6DJ	"	1,496	35	9	8
OK3FLY	"	676	21	11	15
OK1XC	28	220,096	653	36	116
OK1NOR	"	110,081	658	18	49
OK2ABU	"	80,808	373	29	75
OLØW	21	248,965	819	33	112
(OP: OK1DSZ)					
OK8ACS	7	39,618	330	17	76
OK1HFP	3.7	42,375	616	13	62
OK1A	1.8	4,620	103	7	37
*OK1CLD	A	447,529	847	79	232
*OK1HEH	"	250,170	646	63	206
*OK1MKU	"	247,894	463	80	237
*OK2KG	"	204,127	480	63	178
*OK2BEN	"	125,080	417	56	180
*OK7N	"	111,244	277	67	136
*OK6RW	"	109,446	292	61	161
*OK2EA	"	107,238	331	57	126
*OK1BLU	"	93,955	304	58	157
*OK1PMA	"	83,224	323	51	151
*OK2MG	"	70,296	251	55	119
*OK2KFK	"	70,104	298	49	135
*OK5OK	"	66,202	275	45	113
*OK2WYK	"	45,240	215	38	107
*OK2VX	"	44,671	292	34	97
*OL2T	"	24,240	191	33	87
*OK1DKO	"	23,490	105	37	50
*OK5AMA	"	23,400	151	34	83
*OK2EC	"	22,885	187	28	87
*OK2UFU	"	18,560	170	37	79
*OK2SWD	"	16,461	148	23	70
*OK1VHV	"	16,038	111	30	69
*OK2MA	"	15,655	64	43	58
*OK2UHP	"	15,200	103	32	63
*OK2MRJ	"	10,296	130	13	53
*OK1BA	"	10,032	73	21	36
*OK2UGG	"	9,660	80	25	67
*OK1KMG	"	6,930	85	30	69
(OP: OK1ULE)					
*OK1DI	"	5,148	37	26	26
*OK1ULE	"	160	16	8	8
*OK4BX	28	94,452	372	30	72
*OK2QX	"	88,000	345	31	79
*OK1FNT	"	33,375	204	25	50
*OK1IN	"	14,528	99	23	41
*OK1ARO	"	14,105	103	28	37
*OK1DEK	"	9,984	89	18	21
*OK1KZ	"	7,760	85	17	23
*OK1DSX	"	4,002	33	18	28
*OK1IEI	"	2,430	39	12	18
*OK2VWB	21	192,325	546	35	122
*OK2BZE	"	59,126	301	24	70
*OL9M	"	42,828	259	21	62
(OP: OK1MMN)					
*OK1IPU	14	92,340	601	25	83
*OL6ØOU	"	47,008	344	25	79
(OP: OK2ILD)					
*OK1MKI	"	25,160	253	18	67
*OK1XV	"	24,231	108	30	93
*OK1TRA	"	18,690	190	15	55
*OK1LX	7	53,298	612	14	67
*OK2XKA	"	37,655	368	17	68
*OK/LZ3SF	"	22,780	338	12	56
*OK2BRS	"	11,514	174	11	46
*OK1FC	3.7	5,194	68	13	36
*OK1ZY	"	2,850	75	7	31
*OK1DST	"	990	45	4	18
*OL6P	1.8	16,218	347	6	47
(OP: OK2PP)					

Denmark

OZ2BKK	A	741,576	989	110	314
OZ1KEF	"	706,384	965	106	286
OZ6AGX	"	190,512	486	66	186
5Q2T	"	188,232	582	71	205
OZ1IKY	"	159,608	270	87	194
OZ7EA	"	113,832	370	53	151
5P8W	"	44,232	289	35	117
OZ8DX	"	5,000	42	20	30
OZØW	"	2,100	73	10	32
(OP: OZ6ADL)					
OZ3BJ	28	117,963	311	39	114
OZ8RH	"	57,856	278	34	79
OZ8PG	"	30,816	137	27	69
OZ7X	21	380,160	1097	33	99
OZ7AEI	7	1,550	63	4	21
*OZ4VW	A	468,023	494	125	294
*OZ1ACB	"	429,624	800	78	246
*OZ4NA	"	386,828	712	83	263
*5PØO	"	166,738	626	55	187
*OZ1LFI	"	127,719	485	48	159
*OZ1KVM	"	126,440	439	59	159
*OZ1LCG	"	91,575	249	55	130
*OZ7DK	"	88,938	338	46	116
*OZ1KKH	"	88,800	212	56	166
*OZ5TL	"	77,507	317	44	135
*OZ2CA	"	56,856	242	29	74
*OZ9DG	"	27,398	142	40	93
*OZ9URA	"	24,960	160	35	95
*OZ5HZ	"	23,165	150	31	82
*OZ5WQ	"	14,036	105	36	80
*OZ7SG	"	10,561	84	25	34
*OZ8KEL	"	8,855	107	19	58
*OZ1DGQ	"	6,050	59	22	28
*OZ1SMB	"	2,397	38	19	32
*OZ5KSL	"	575	25	7	18
*OZ7RQ	28	46,075	206	28	69
*OZ/DJ1XT	"	22,914	182	18	39
*OZ9V	"	5,600	77	13	27
*OZ5E	21	308,553	950	35	112
*OZ1JVX	7	21,600	227	16	59
*OZ4RT	"	5,704	110	7	39

England

M7A	A	2,757,888	2931	122	382
(OP: LY4Y)					
G6T	"	2,002,770	2319	95	290
(OP: G4MKP)					
GØBNR	"	1,515,234	1204	130	472
G4SGI	"	275,128	629	62	176
G4IUF	"	263,718	405	89	233
GØGFQ	"	256,951	399	86	177
G4VMX	"	83,020	267	47	93
GØAZH	"	58,842	259	35	91
MØSLC	"	57,996	269	44	118
G3PHO	"	32,428	98	63	71
GØPHY	"	18,096	91	38	66
GØUBX	"	7,074	60	23	31
GØAEV	28	605,808	1487	40	128
G5E	"	334,642	863	38	116
GØHVQ	"	197,417	641	37	94
G3VPW	"	154,452	540	30	92
M5A	"	104,060	707	16	39
G3TDH	"	95,550	401	30	75
G3RWF	"	73,781	350	26	63
GØRPM	"	33,294	143	25	68
GØMTN	21	121,176	629	26	62
G3TXF	7	390,034	2173	32	107
*MØMCV	A	771,840	1283	87	297
*G6SFP	"	610,272	982	83	205
*M6TBY	"	406,952	707	86	252
*G4RHR	"	266,676	528	67	217
*G4ADJ	"	255,553	596	65	206
*G4DFI	"	242,950	671	56	170
*G4ENZ	"	230,626	475	67	175
*G1FON	"	176,505	427	57	148
*G4DDL	"	138,888	397	51	165
*2EØPLA	"	125,364	411	51	135
*G8AFN	"	105,040	321	51	151
*G8ZRE	"	81,826	340	45	118
*G4SGX	"	73,748	255	48	131
*G4DDX	"	73,305	247	50	131
*G4LPD	"	65,527	259	44	117
*MØMXX	"	65,411	311	37	112
*G4WGE	"	57,509	246	35	96
*GØTAN	"	57,057	257	36	107
*MØOSH	"	48,285	217	43	102
*MØRYB	"	41,832	205	34	92
*GØCER	"	40,660	177	33	62
*GØCPA	"	36,765	238	36	93
*G3RSD	"	31,200	192	32	88
*GØPBE	"	27,615	189	28	77
*2EØIJK	"	18,079	70	45	56
*MØDCD	"	9,699	89	22	39
*M1ACB	"	8,694	73	28	41
*G4HHJ	"	7,590	72	21	45
*2EØTZY	"	6,720	68	19	45
*MØTQR	"	4,092	59	20	46
*MØNSA	"	2,520	38	13	32
*G7RTI	"	806	24	8	18
*M5ALG	"	144	12	4	8
*G3IZD	28	81,061	341	23	80
*G4DBW	"	77,964	350	25	64
*M1DST	"	67,239	341	27	66
*G4VPD	"	14,575	137	20	33
*G3VYI	"	6,808	73	17	29
*GØFPU	"	3,861	57	10	17
*G4FKA	21	80,136	418	22	86
*G7UGC	"	54,054	301	20	79
*GØRAH	"	29,160	248	17	55
*GØRRM	14	33,704	329	20	68
*2E1FVS	7	41,208	249	21	81
*G7AAQ	"	5,016	97	8	36
*M9M	"	902	47	5	17
(OP: MMØCWJ)					
*MØDNY	"	80	7	3	7
*G4KNO	3.7	17,024	226	11	53
*G4PKP	1.8	9,464	190	6	46

Estonia

ES5G	A	7,371,441	5762	163	530
(OP: ES7GM)					
ES2IPA	"	217,674	553	67	211
ES2BH	"	58,082	222	40	73

ES6QZ	"	8,772	100	16	52
ES5RW	**14**	**1,179,431**	**3497**	**39**	**140**
ES2DJ	**7**	**23,370**	**192**	**21**	**61**
***ES4RD**	**A**	**652,638**	**1012**	**99**	**280**
***ES6PA**	**"**	**289,784**	**635**	**74**	**221**
*ES8SX	"	132,525	399	54	171
*ES6RMR	"	131,421	401	55	158
*ES5YG	"	28,440	181	33	87
(OP: ES5TAUX)					
*ES1BA	"	4,704	31	26	30
***ES6TX**	**28**	**95,885**	**310**	**33**	**94**
*ES1N	"	3,311	60	13	30
***ES1LS**	**21**	**116,039**	**556**	**30**	**91**
*ES1CN	"	110,257	459	30	103
***ES6KW**	**3.7**	**16,802**	**247**	**10**	**52**

European Russia

RM3F	**A**	**4,370,232**	**3967**	**151**	**482**
(OP: UA3DPX)					
UA4W	**"**	**3,104,960**	**3384**	**147**	**473**
R5GA	**"**	**2,926,660**	**3255**	**133**	**450**
RM4HZ	"	1,504,932	2542	107	322
R3GZ	"	1,175,752	2235	95	281
UA3VFS	"	1,071,714	1517	109	365
RK3ZZ	"	968,091	1050	110	357
RA3NC	"	713,461	986	116	333
UA5D	"	559,320	1035	91	263
RN3ZC	"	481,701	862	90	273
UC7A	"	455,710	755	105	293
R3CM	"	443,394	981	76	230
UA4AAC	"	406,461	771	84	255
RA3TT	"	291,856	621	70	202
UA4NCI	"	286,604	686	76	198
RX6AM	"	285,770	1002	63	142
R2DW	"	274,224	420	84	264
UA3TCJ	"	261,744	936	56	112
U1BD	"	252,048	708	69	198
R3FN	"	246,510	502	76	194
R3QF	"	203,255	326	88	207
RA3NF	"	203,040	369	76	194
UA4NC	"	191,961	506	67	210
RA7C	"	177,510	315	87	204
RN3BO	"	175,560	343	82	184
R3QX	"	163,452	319	77	180
RZ3EC	"	157,300	308	69	151
RD3QA	"	152,418	427	69	197
R3OM	"	130,146	371	63	155
R3DL	"	109,564	294	56	140
UA6AES	"	85,956	272	48	108
RV6FA	"	79,346	174	64	130
RJ4F	"	77,077	253	44	77
RU3KC	"	76,960	271	50	135
R3NA	"	75,114	202	66	148
RV4LC	"	63,357	307	32	115
RU3DX	"	51,100	234	47	99
RV3IC	"	46,970	151	56	98
R3BT	"	45,426	126	58	76
UA3DPM	"	40,416	158	32	64
UA1ORK	"	37,926	110	44	85
UA3QNS	"	37,250	105	55	94
RA3SL	"	29,875	114	44	81
RU6FC	"	27,120	112	45	68
UA3BM	"	19,470	84	46	64
RA4UVK	"	14,322	87	26	36
UA3LIU	"	9,222	63	28	59
R1AC	"	8,833	47	31	42
RA3YDA	"	6,670	43	25	33
UA6YW	"	6,400	58	19	31
RA7A	"	782	15	10	13
RW3VA	"	224	10	6	10
UA4HOX	**28**	**431,880**	**1461**	**38**	**139**
RA6XV	**"**	**262,564**	**1024**	**39**	**125**
UA3ADN	"	184,836	743	34	112
RV3A	"	148,808	456	36	116
RA1AW	"	133,835	465	36	109
RK3SWB	"	113,854	283	40	111
(OP: RV3SFF)					
R3RK	"	91,616	555	28	84
RZ3DX	"	64,370	219	38	119
R2DX	"	41,503	349	24	53
RY7G	"	13,570	114	20	39
UA3EAY	"	12,420	77	31	61
RA1OD	"	5,400	36	20	34
RT7D	"	169,476	916	30	86
RA3OA	**7**	**75,072**	**600**	**24**	**68**
R3VA	1.8	6,678	141	6	36
***RW1CW**	**A**	**2,198,404**	**1935**	**140**	**491**
***RN6HCW**	**"**	**1,888,173**	**3106**	**91**	**296**
*UA3BL	"	1,335,945	1604	117	410
*UA1CEI	"	1,284,825	2061	115	348
*R7MM	"	1,182,298	1442	111	370
*R7NW	"	1,033,728	1360	125	387
*RW4WA	"	836,684	1401	100	304
*UA3UNP	"	667,821	1034	98	315
*RU4SO	"	662,388	975	92	290
*RA4DR	"	607,578	989	95	298
*RA4ACX	"	599,472	1000	93	275
*RK3IM	"	571,342	681	104	359
*RU4AA	"	562,485	951	96	289
*RX3ZX	"	453,568	648	95	278
*RZ4WZ	"	432,708	846	85	236
*RN3ZR	"	410,625	700	92	283
*R3ZV	"	406,196	808	85	271
*UA6YE	"	370,712	1002	71	227
*RN4CU	"	356,072	549	103	273
*UA1CUR	"	331,128	607	82	242
*R7AY	"	328,020	590	91	217
*RZ3QZ	"	320,071	649	69	194
*UA3OQ	"	287,565	672	66	219
*RM7M	"	264,972	699	61	223
*UA3RC	"	242,307	712	65	182
*RX6LOL	"	225,496	457	71	213
*RD3AJB	"	219,225	519	60	177
*RA3DAD	"	213,416	374	75	221
*RN4SC	"	194,967	519	62	199
*UA6HZ	"	193,440	407	80	230
*RA3XCZ	"	191,400	530	65	210
*RA4PBE	"	190,762	401	79	207
*U1BA	"	182,860	455	60	163
*UB3DAO	"	179,140	385	66	194
*RV3YR	"	170,068	355	71	173
*UA4UT	"	166,660	373	77	183
*UA1ZLN	"	156,825	525	51	154
*RA3ATE	"	156,315	519	57	198
*UA6LN	"	146,487	335	67	186
*RV4CO	"	143,676	431	57	177
*RO3M	"	139,920	323	68	197
*RA6LIS	"	136,822	473	48	155
*R3AAA	"	135,681	430	52	161
*UA6HHE	"	133,030	451	59	192
*UA4LW	"	131,784	437	56	172
*RU6YK	"	130,788	364	59	130
*R3ZK	"	130,380	569	61	185
*RV1CB/1	"	125,064	402	53	163
*RA3TUT	"	122,724	214	76	176
*RZ1OK	"	121,980	443	44	146
*RV1AE	"	111,504	469	39	145
*UA4CNJ	"	103,500	434	44	163
*RN4NF	"	100,912	236	58	154
*RW3WX	"	100,155	245	67	98
*UC6A	"	95,340	234	58	169
*R7MP	"	94,525	351	46	153
*R2EAA	"	92,880	327	54	161
*RW3SZ	"	91,959	231	73	130
*RA1AJF	"	89,488	250	61	127
*RA3XT	"	86,730	274	46	131
*UA6LCG	"	85,698	315	56	151
*RK3TS	"	80,910	323	45	129
*RA4AAO	"	80,190	287	54	144
*RD3DS	"	77,040	253	58	122
*RL6MA	"	76,616	338	33	124
*RV3ZN	"	63,106	326	37	102
*UD4FD	"	59,821	228	43	120
*R3OA	"	59,432	310	37	115
*RA3TJX	"	58,838	198	45	101
*UA3IVF	"	57,216	331	27	101
*UA4AVN	"	56,550	277	36	114
*RA3RGQ	"	54,102	157	51	76
*UA3DLD	"	51,562	229	36	91
*RW1AI	"	50,040	190	54	126
*UA3ACL	"	49,651	226	42	131
*RA3RBL	"	49,608	224	48	111
*RZ3DAO	"	44,982	204	42	111
*RU3SD	"	44,764	188	39	85
*UA3UBT	"	42,951	207	35	104
*RW6A	"	39,678	205	36	66
*RU3UB	"	37,910	166	49	121
*RL3QCQ	"	37,597	196	38	93
*RZ3GV	"	37,410	170	40	105
*R6DX	"	34,974	117	47	87
*RY3F	"	31,354	216	26	96
*RA6AAW	"	31,270	117	44	82
*RK3IT	"	30,208	108	47	81
*UA6HO	"	28,336	104	44	68
*RW3A	"	27,108	196	32	76
*RL3T	"	26,790	159	33	81
*RZ3DC	"	25,410	93	38	67
*RA3PPA	"	25,200	115	35	70
*RA3EA	"	25,172	105	45	71
*UA1TGQ	"	25,125	156	30	95
*RA6XB	"	24,766	107	39	83
*UB1AAZ	"	23,870	155	31	79
*RA3RUF	"	23,232	155	41	91
*UA4FTA	"	22,345	98	45	64
*RA3UT	"	22,008	115	30	54
*RU4FA	"	21,735	119	36	79
*R3RR	"	21,632	102	48	80
*RV3FU	"	19,320	137	27	78
*RV6ACC	"	19,152	170	19	65
*RX3MX	"	18,094	88	37	46
*RU3UA	"	18,009	88	33	54
*R4WT	"	17,888	123	24	62
*RW6BD	"	17,400	136	28	72
*RX3MM	"	16,849	77	38	45
*R6CW	"	15,251	78	42	59
*RZ3AV	"	14,288	90	27	49
*RN3BU	"	14,196	101	27	57
*RX3VF	"	13,287	119	32	71
*RD4AAA	"	12,120	103	21	39
*RK3DU	"	11,214	93	26	63
*RN3FY	"	11,122	117	20	63
*RN3ZIN	"	10,160	84	27	53
*R7GA	"	10,062	89	20	58
*RA/SM6LRR	"	9,996	88	24	60
(OP: SM6LRR)					
*RX6LDQ	"	9,657	91	24	63
*RV4HL	"	8,162	82	20	57
*UA3ZCJ	"	7,752	75	27	49
*RX3AEX	"	6,987	98	13	38
*RW3LL	"	6,596	52	26	42
*RU6HL	"	5,712	41	22	29
*RN3DDR	"	5,544	68	19	44
*RK4NAB	"	5,376	83	15	41
*RA4FP	"	5,096	33	23	33
*RZ3AUL	"	4,998	63	14	37
*RA3VKU	"	4,828	58	23	45
*UA3DSS	"	4,674	52	19	22
*RA6YJ	"	4,400	33	25	30
*RA4UAT	"	4,081	37	20	33
*UA4PDZ	"	3,332	70	12	37
*UA6YI	"	3,102	26	22	25
*UA4PAQ	"	3,060	57	24	44
*RW4NH	"	3,034	28	16	21
*UA6JFG	"	1,800	28	14	26
*UA6ART	"	1,617	19	16	17
*RA4LBS/3	"	221	15	3	10
*UA6HRX	"	204	12	5	7
***RA3QUA**	**28**	**107,388**	**323**	**39**	**132**
***R7AM**	**"**	**83,754**	**520**	**28**	**71**
*RD3PX	"	72,750	440	26	71
*UA3VVB	"	70,406	337	29	78
*RT3D	"	69,312	294	32	82
*UA4WAU	"	64,641	490	22	65
*RX3QFN	"	53,120	331	26	57
*RW6AH	"	39,744	327	18	51
*UA3DCM	"	37,018	268	20	63
*RA3XO	"	36,360	164	28	73
*RW1CX	"	33,170	146	31	76
*RW3FY	"	31,050	205	23	52
*RA4FUT	"	30,051	222	23	58
*UA6ARR	"	22,814	147	21	40
*RA3DGH	"	21,285	235	16	39
*R7NK	"	20,790	104	30	60
*UA3RN	"	18,600	115	26	49
*UA3DUJ	"	16,013	136	23	44
*RV3LO	"	13,300	69	27	43
*RL3Q	"	11,151	104	16	47
*RX6MR	"	9,956	89	21	55
*R3BB	"	8,844	65	24	42
*UA4ASE	"	8,640	99	15	33
*RV4LS	"	7,546	62	17	32
*RW4F	"	6,018	55	18	33
*RA4LK	"	4,472	52	12	40
*UA4ACP	"	4,370	102	12	26
*UA1AAR	"	2,923	43	14	23
*RL3QDD	"	2,590	40	14	23
*RA3IS	"	1,720	25	20	23
*RU3XY	"	1,450	33	7	22
*RW4LQ	"	1,450	21	12	17
*RX3DPK	"	1,320	27	8	16
*RD3AEF	"	943	20	7	16
*RA3XGY	"	168	9	6	6
*RA3SS	"	98	6	7	7
*UA3AKI	"	6	1	1	1
***UA3ABJ**	**21**	**156,420**	**724**	**34**	**98**
*UA4WKK	"	29,820	241	21	63
*RL3QCS	"	19,988	206	20	56
*RU3UW	"	14,460	207	12	48
*RA3XEV	"	13,260	129	14	46
*RU3WR	"	8,550	101	15	42
*UA4PL	"	182	8	5	8
***RZ1ZZ**	**14**	**414,720**	**1610**	**29**	**106**
***RL3ZH**	**7**	**44,678**	**401**	**19**	**70**
*R4HR	"	9,735	143	14	41
*RN3KK	"	6,600	103	9	41
***R3LC**	**3.7**	**13,920**	**232**	**10**	**48**
*RW6ALB	"	9,313	167	13	54
*RD3VC	"	7,314	118	9	37
***UA4NDX**	**1.8**	**4,680**	**126**	**8**	**32**
*RA4FWA	"	1,029	37	6	15
*R7NP	"	180	14	5	10

European Turkey

***TA1CQ**	**A**	**308,302**	**841**	**65**	**213**
***TC1C**	**"**	**263,626**	**836**	**64**	**189**
*TA1AZE	"	6,930	84	18	45
***TA1CM**	**28**	**81,536**	**491**	**29**	**83**
*TA1HZ	21	56	5	3	5

Faroe Islands

***OY9R**	**A**	**25,134**	**149**	**32**	**86**

Finland

OH8X	**A**	**7,551,559**	**4839**	**170**	**539**
(OP: OH6KZP)					
OH4A	**"**	**6,573,600**	**5017**	**155**	**505**
(OP: OH1NOA)					
OH2BH	**"**	**6,557,782**	**4742**	**164**	**515**
(OP: OH6UM)					
OH6GDX	"	1,259,972	1321	116	360
OH5NZ	"	401,280	608	97	233
OH6NVC	"	238,239	509	61	196
OH2N	"	52,852	165	54	92
OH6FTR	"	32,562	160	40	94
OH6JE	"	30,250	197	34	91
OH8KVA	"	23,562	116	47	79
OH3LB	"	242	8	5	6
OH1O	**28**	**193,380**	**488**	**36**	**129**
OG1T	"	2,484	41	11	12
(OP: OH1TIN)					
OH7HD	**21**	**421,441**	**1454**	**35**	**116**
OH2XF	"	70,000	273	29	96
OH6GAZ	"	68,328	337	30	87
OH2V	14	1,260	60	5	25
(OP: OH4KED)					
OH1TX	**3.7**	**181,944**	**1161**	**28**	**98**
OH6MW	**1.8**	**37,881**	**539**	**11**	**58**
OG5B	"	224	15	4	10
(OP: OH5BM)					
***OH1BV**	**A**	**259,794**	**503**	**84**	**222**
***OH3P**	**"**	**175,071**	**506**	**60**	**141**
*OH1XY	"	131,334	342	54	123
*OH2MO	"	100,188	266	54	153
*OH9GGY	"	51,208	152	56	92
*OH8KVY	"	43,099	135	51	80
*OH2FTA	"	25,650	157	33	81
*OH2JLN	"	15,300	135	20	70
*OH3HS	"	10,586	68	26	53
*OH6GFI	"	3,717	51	19	40
*OH6HZH	"	1,404	31	13	23
*OH3FMI	"	616	19	11	17
*OH6RC	28	7,353	62	18	39
*OH2LU	"	7,140	68	16	35
***OH3WR**	**21**	**42,319**	**275**	**25**	**76**
*OH1TD	"	31,374	219	18	65
***OH5GIO**	**14**	**34,848**	**247**	**24**	**75**
*OH6ZH	"	24,384	147	21	75
*OH1FJ	"	18,282	199	14	52

France

F5RAB	**A**	**1,152,055**	**1153**	**120**	**395**
F6DZU	**"**	**1,002,288**	**1510**	**85**	**229**
F5POJ	"	565,800	1119	74	226
F5BBD	"	545,280	1078	89	266
F5VHY	"	448,140	576	86	244
F6BZQ	"	417,008	780	70	198
F5PAL	"	412,206	808	75	234
F1AGR	"	201,422	450	68	186
F5AMH	"	191,178	697	44	85
F5YJ	"	146,091	376	64	169
F1SMV	"	18,224	101	28	40
F8DHE	"	17,480	77	50	65
TMØT	**28**	**1,011,690**	**2695**	**39**	**123**
F8AAN	"	348,132	1138	40	94
F1NGP	"	284,715	710	40	145
F4DSK	"	229,767	644	32	107
F5TMJ	"	27,000	157	26	49
F6GPT	**21**	**50,840**	**431**	**22**	**60**
TM9R	**7**	**911,818**	**3255**	**34**	**124**
(OP: F5FLN)					
F4GLQ	"	484	19	8	14
***F5BEG**	**A**	**1,082,730**	**1392**	**89**	**285**
***F4FJH**	**"**	**923,742**	**762**	**149**	**517**
*F5DRD	"	615,664	1057	85	283
*F8DRE	"	457,695	672	84	231
*F6DRP	"	298,920	732	56	156
*F8ATM	"	260,937	448	72	165
*F5AAR	"	257,535	553	71	220
*F5OQK	"	244,296	501	71	190
*F5LMJ	"	168,432	396	62	180
*F8AEE	"	162,114	477	61	185
*F4GBW	"	153,648	660	39	155
*F6EWX	"	150,975	436	56	169
*F5RD	"	139,471	437	57	154
*F4EIH	"	131,264	355	55	169
*F1MLN	"	128,444	317	53	110
*F1FPL	"	127,743	281	64	173
*F6HHR	"	112,572	356	55	157
*F4ASK	"	107,568	356	52	164
*F4DXP	"	104,517	348	53	136
*F4BIV	"	95,742	320	53	144
*F4FSV	"	90,882	249	59	139
*F5JU	"	86,360	219	57	79
*F8DZU	"	83,148	266	49	120
*F4EJW	"	71,967	392	36	113
*F4CUI	"	69,224	241	44	92
*F4GLK	"	62,952	269	32	97
*F8DYD	"	55,278	192	46	120
*F1IWH	"	40,449	218	39	100
*F6FLU	"	38,599	130	48	73
*F5BTH	"	33,750	160	44	91
*F1EPQ	"	32,643	222	28	89
*F6KFA	"	14,784	147	22	66
(OP: F6CZV)					
*F1VNR	"	14,605	91	33	82
*F/SP9UUC	"	12,528	96	21	51
*F4CGJ	"	9,976	95	28	58
*F5KAY	"	9,440	89	24	56
(OP: F5ILN)					
*F5TGR	"	3,108	31	20	22
*F4DBD	"	2,880	55	16	32
*F4JLC	"	2,280	34	16	24
*F8DZY	"	2,132	23	18	23
*F4LKJ	"	1,980	35	15	30
*F3WT	"	1,870	25	17	17
*F4GOU	"	1,558	39	13	28
*F4RST	"	1,462	23	16	18
*F4FIA	"	1,290	40	6	24
*F4FWN	"	782	17	11	12
***F5LIW**	**28**	**175,436**	**579**	**35**	**87**
*F4FQZ	"	63,933	293	29	72
*F4DZF	"	20,294	138	25	48
*F8NUH	"	13,776	109	19	37
*F5LCU	"	3,605	45	16	19
*F4FSB	"	2,656	51	12	20
***F1ICR**	**21**	**9,222**	**115**	**16**	**42**
*F5NQL	"	3,861	63	9	30
***F5CCX**	**14**	**53,675**	**314**	**31**	**82**
*F5MPN	"	13,504	143	16	48
*F1LPN	"	3,120	67	9	31
***F5CYS**	**7**	**54,360**	**565**	**17**	**73**
*F4FBP	"	2	1	1	1

Germany

DJ4PT	**A**	**6,262,800**	**4443**	**148**	**452**
DL1IAO	**"**	**6,242,336**	**4320**	**139**	**469**
DL2DX	**"**	**3,070,608**	**2038**	**148**	**488**
DL5JS	"	1,322,496	1494	105	343
DL9GWD	"	1,099,260	1068	132	426
DL6EZ	"	877,680	1232	84	234
DL1RYD	"	690,759	990	106	317
DD8SM	"	672,129	855	100	291
DK2AT	"	652,534	921	99	332
DL3LAB	"	591,888	1015	72	192
DG8AM	"	558,336	980	96	288
DJ1ER	"	401,973	566	112	317
DJ3HJ	"	390,424	799	82	214
DF3TE	"	340,452	663	70	224
DL8DBW	"	328,866	644	93	261
DJ1TU	"	261,485	497	66	175
DL6MIG	"	252,057	491	80	201
DJ6TK	"	229,064	496	73	201
DL2VK	"	214,668	397	90	178
DJ8LX	"	213,344	442	68	158
DGØCC	"	185,049	562	65	196
DL/JA2BNN	"	170,500	506	62	158
DC9ZP	"	168,207	375	66	161
DG9MDM	"	138,496	248	95	161
DF5BX	"	105,468	355	46	141
DL6UNF	"	105,192	305	58	158
DK1FW	"	75,046	189	47	110
DF9RD	"	74,200	290	53	122
DL1WM	"	71,344	197	65	131
DL7DCL	"	70,434	243	48	81
DF6RI	"	68,672	252	43	105
DL6ZXG	"	67,782	220	44	99
DC1JAG	"	67,252	237	45	127
DK8CB	"	42,502	187	48	110
DL9GFB	"	38,076	167	30	84
DL1STG	"	37,204	103	45	86
DL3BWF	"	29,877	190	22	47
DL8LAQ	"	29,526	109	34	77
DH1PAL	"	28,438	125	39	79
DL6DVU	"	22,977	144	31	80
DK1AW	"	19,350	106	35	55
DL8CA	"	13,454	75	24	38
DM4DX	"	12,870	62	31	47
DB3FS	"	8,816	88	25	51
DL2ARG	"	5,985	51	24	33
DL8UVG	"	5,616	78	15	21
DL7AT	"	4,284	36	20	31
DL3KVT	"	3,960	67	15	40
DL8USA	"	2,220	22	18	19
DL2IAN	**28**	**291,096**	**762**	**39**	**117**
DK5JM	**"**	**280,770**	**825**	**37**	**110**
DJ6XV	"	67,624	288	29	78
DK7AN	"	48,450	244	29	73
DHØGDS	"	43,168	247	25	46
DF5RF	"	30,932	169	22	52
DH1HJL	"	828	20	12	11
DL1DWR	"	828	23	6	6
DJ7WW	**21**	**325,212**	**919**	**39**	**125**
DL4LBK	"	114,070	449	28	94
DK4VF	"	1,349	27	9	10
DO2WHK	"	954	29	7	11
DL9LM	**14**	**68,080**	**411**	**28**	**87**
DL9ZWG	"	18,870	168	17	57
DKØEE	**7**	**210,699**	**1074**	**26**	**97**
(OP: AF4DQ)					
DL5RU	"	22,041	202	15	64
DR1D	**3.7**	**235,712**	**1658**	**25**	**91**
DL1TPY	"	6,608	129	8	48
DL7AOR	"	5,720	114	10	45
***DJ5MW**	**A**	**3,204,271**	**2547**	**142**	**511**
***DL6DCD**	**"**	**1,258,686**	**1502**	**105**	**384**
***DF2SD**	**"**	**1,132,668**	**1331**	**104**	**327**
*DJØMCZ	"	855,680	1204	92	290
*DL4ZA	"	767,261	1167	90	283
*DM5JBN	"	584,766	983	90	288
*DM1CM	"	557,220	927	92	278
*DL4WA	"	548,760	824	95	313
*DJ4JF	"	520,039	646	107	260
*DG2JA	"	504,648	835	83	261
*DG1IU	"	470,184	797	75	237
*DL8ZAW	"	447,123	672	81	228
*DF5BM	"	420,189	693	82	275
*DJ8UV	"	404,016	998	66	162
*DF9FT	"	325,040	554	81	191
*DH2PG	"	321,646	594	74	204
*DL1TRK	"	277,641	603	79	260
*DL1EHR	"	270,816	596	71	177
*DL5DTG	"	265,440	544	83	233
*DK3WM	"	249,744	562	61	203
*DF6QC	"	246,468	684	57	219
*DO6MBA	"	243,936	588	58	184
*DL8ULO	"	232,656	610	63	199
*DG6OAG	"	224,763	505	58	173
*DK4WF	"	208,236	396	74	148
*DQØA	"	201,872	485	73	175
(OP: DK2DQ)					
*DM2AWM	"	198,912	517	57	199
*DL1JGO	"	198,254	468	69	169
*DL2DQL	"	195,200	406	70	174
*DK7CH	"	186,825	534	70	195
*DJ4DN	"	181,655	389	69	166
*DB1CP	"	176,712	421	69	153
*DF3IS	"	176,175	424	68	175
*DF1LX	"	172,800	344	72	216
*DL2AL	"	158,400	422	55	170
*DL6NAL	"	141,460	384	60	160
*DF6WE	"	137,280	380	62	158
*DL4RAT	"	136,947	312	62	129
*DK3WN	"	133,200	381	61	161
*DF5AN	"	130,872	257	76	170
*DC2DC	"	128,000	400	51	149
*DJ4WM	"	123,478	403	53	161
*DK3FB	"	121,422	369	51	126
*DL9LF	"	119,948	300	55	136
*DL3SG	"	118,770	289	68	154
*DK7GH	"	111,585	268	55	160
*DL2KWA	"	103,037	442	45	154
*DL2MRE	"	100,600	299	55	145
*DO1CS	"	94,620	315	48	118
*DL5ZB	"	94,522	228	69	98
*DL5ASE	"	93,125	229	58	91
*DK7FP	"	92,925	270	51	126
*DL3SBD	"	89,112	251	60	128
*DK2BJ	"	87,000	297	52	148
*DK8EY	"	86,751	276	55	134
*DG2MEL	"	86,208	321	57	135
*DL1GHJ	"	81,445	284	57	122
*DL2DUA	"	72,468	311	46	137
*DF2FM	"	64,124	199	55	109
*DO5TMM	"	61,893	328	32	85
*DO1AYJ	"	60,878	250	38	84
*DF4TD	"	60,534	161	52	125
*DK4WO	"	59,220	222	46	94
*DL7ULM	"	57,036	199	43	73
*DH8LAW	"	57,000	243	39	111
*DLØPS	"	56,172	171	51	100
(OP: DO6NIK)					
*DO3PKE	"	56,168	286	37	99
*DL3RCG	"	56,028	220	49	112
*DD1OP	"	55,645	218	44	111
*DL1BA	"	54,450	187	44	77
*DL4EBA	"	54,442	238	44	119
*DK6NF	"	53,500	177	52	73
*DL3MVC	"	53,301	254	43	120
*DL4EAX	"	49,907	198	39	104
*DJ4PK	"	48,300	196	38	77
*DK1LRS	"	47,212	240	36	112
*DL6ZNG	"	47,088	208	44	100
*DO1DJJ	"	45,955	200	35	66
*DJ6UP	"	43,901	204	45	98
*DL1VJL	"	41,745	152	42	73
*DL3BY	"	41,134	240	33	98
*DL1NPG	"	41,076	137	53	110
*DL1DXF	"	38,760	150	41	79
*DO3ME	"	37,125	191	35	64
*DJ5LY	"	36,075	121	46	65
*DB9RZ	"	35,378	159	43	90
*DL9HB	"	33,625	149	42	83
*DL1MWG	"	32,574	211	32	90
*DL6RBH	"	32,431	166	31	82
*DL7FA	"	32,256	209	30	82
*DB3BX	"	32,144	113	40	58
*DL1DF	"	30,870	151	41	85
*DL1BDK	"	30,613	176	38	83
*DK4REX	"	30,378	151	40	82
*DJ5IW	"	29,212	158	29	105
*DL7VRG	"	29,083	138	43	84
*DM3FF	"	28,997	163	35	72
*DO7FOX	"	28,710	170	31	68
*DL1KRT	"	28,575	155	35	92
*DG6DAF	"	27,234	145	33	56
*DL5ANS	"	25,988	107	37	52
*DL3VL	"	25,019	99	45	82
*DG1DRS	"	24,708	136	28	88
*DM5CQ	"	24,708	163	30	86
*DL5CL	"	24,104	137	29	63
*DA9L	"	23,332	163	26	50
*DL2DOC	"	22,400	130	41	71
*DL7UGO	"	18,584	98	30	62
*DK5OCE	"	18,564	146	28	74
*DO2MS	"	18,088	109	25	51
*DB1SMW	"	17,280	144	30	66
*DM2TO	"	16,116	79	40	62
*DJ2GMS	"	15,996	89	33	53
*DF5TR	"	15,936	102	30	53
*DL3UX	"	15,840	109	30	66
*DO1JMW	"	14,535	142	17	34
*DG7HL	"	13,359	103	24	49
*DG1NI	"	13,176	91	29	43
*DO1RTO	"	12,663	94	25	38
*DL9FB	"	12,369	118	29	64
*DO6NI	"	11,748	110	20	46
*DC2CT	"	11,704	55	39	49
*DG4HZ	"	10,428	118	20	59
*DL1VTL	"	9,588	66	33	61
*DK5FT	"	9,558	73	25	34
*DO5AWE	"	9,380	100	19	51
*DL8CKL	"	8,664	62	29	47
*DG1KTS	"	8,658	73	24	54
*DH5WB	"	8,004	98	16	30
*DK2PZ	"	7,425	82	25	50
*DM2TIM	"	7,260	69	22	33
*DL9RB	"	7,224	81	32	54
*DO3KTM	"	6,882	80	23	51
*DM2AJK	"	6,566	73	24	43
*DL4EPM	"	5,896	54	23	44
*DL6OAK	"	5,120	58	21	43
*DL1AWC	"	5,115	67	17	38
*DL7CU	"	5,074	50	17	26
*DO2HRB	"	4,998	74	15	36
*DM5JL	"	4,704	50	20	36
*DO9HSK	"	4,180	55	16	28
*DK8AP	"	4,089	42	20	27
*DL6NDW	"	3,990	48	16	26
*DJ5KX	"	3,444	36	17	25
*DK6EA	"	2,993	31	20	21
*DL3DXF	"	2,940	30	16	19
*DL/PA2HBN	"	2,640	47	19	29
*DGØOM	"	2,583	27	17	24
*DG8HJ	"	2,491	32	18	29
*DL6FKK	"	2,400	45	15	35
*DL9NEI	"	2,109	27	19	18
*DL9HCO	"	1,961	37	13	24
*DL1GO	"	1,755	34	14	25
*DL2ASB	"	1,716	51	7	32
*DC2IP	"	1,566	22	14	15
*DL1SBF	"	1,364	22	14	17
*DL7LZ	"	1,342	24	10	12
*DL2MJ	"	1,334	16	13	16
*DO1NPF	"	1,175	25	10	15
*DF9FS	"	1,092	31	10	18
*DH6PF	"	930	29	10	20
*DL2BPA	"	828	14	12	11
*DK6YM	"	768	29	8	16
*DK8NT	"	728	25	5	23
*DL4MHE	"	726	17	10	12
*DO5HAI	"	630	20	7	14
*DL4EBW	"	555	13	8	7
*DG4DDA	"	475	15	8	11
*DO9AT	"	240	21	4	12
*DK8RE	"	224	23	4	12

*DG6SCP	"	140	10	4	10
*DLØSX	"	60	4	3	3
***DLØBX**	**28**	**445,230**	**1205**	**37**	**116**
					(OP: DK9JI)
*DK3QZ	"	91,080	375	31	59
*DJ1ZU	"	76,340	320	33	77
*DL3WKG	"	59,856	288	29	57
*DL5SWB	"	45,200	245	26	54
*DJ9DZ	"	37,392	170	32	50
*DH3RB	"	26,460	152	24	46
*DL3DRN	"	26,136	165	22	44
*DK4US	"	12,528	112	16	32
*DF8XC	"	11,718	85	20	43
*DL1MHJ	"	9,120	86	16	32
*DL3DRA	"	8,338	140	22	43
*DK4EF	"	3,348	43	14	17
*DL4SUN	"	1,305	17	13	16
*DM1LM	"	1,085	22	14	17
*DL2HBX	"	72	6	2	2
*DB1RTE	"	6	1	1	1
*DDØRIT	"	6	1	1	1
*DO2HBX	"	6	1	1	1
***DJ9ZB**	**21**	**64,856**	**268**	**32**	**102**
***DL5KUD**	**"**	**48,379**	**210**	**26**	**75**
*DL1FZZ	"	10,112	63	21	43
*DO1WHU	"	8,160	92	16	32
*DO2LR	"	2,607	42	12	21
*DO4TP	"	1,863	35	12	15
***DL9ZP**	**14**	**128,655**	**612**	**32**	**103**
*DL1AL	"	29,993	252	22	67
*DC2TOM	"	5,005	59	13	42
*DL6UAM	"	3,872	78	9	35
*DL1HWH	"	2,960	83	5	32
*DL5FCY	"	2,470	54	8	30
*DL1BZA	"	1,014	32	7	19
***DL8AAM**	**7**	**39,872**	**347**	**18**	**71**
***DK8QU**	**1.8**	**10,505**	**229**	**5**	**50**
*DL7DZ	"	8,151	155	7	50
*DL1ET	"	4,136	95	4	40
*DL1APX	"	1,400	56	4	24
*DL1HSI	"	858	45	4	22

Greece

SV2GJV	**A**	**298,598**	**496**	**99**	**247**
SV1GRD	**"**	**172,250**	**431**	**62**	**188**
SV2FLQ	"	126,352	494	54	158
SV1MNF	"	70,855	302	50	135
J48OV	**7**	**328,860**	**2044**	**27**	**99**
					(OP: HA5OV)
J48CM	**3.7**	**99,900**	**1064**	**17**	**73**
					(OP: YU7CM)
***SV7BVM**	**A**	**205,128**	**554**	**78**	**186**
***SV2YC**	**"**	**150,976**	**487**	**52**	**172**
*SV1MO	"	133,030	257	81	184
*SV2QQS	"	104,442	348	54	152
*SV1HKD	"	75,978	245	53	148
*SV3GKU	"	9,936	67	29	40
*SV1IZY	"	3,108	28	17	20
*SV1JFT	"	2,352	39	15	27
***SV1UT**	**21**	**141,219**	**885**	**29**	**88**
***SV1MRV**	**14**	**6,325**	**136**	**14**	**41**
*SV1MQJ	"	2,210	62	7	27

Guernsey

***2UØFER**	**A**	**5,874**	**59**	**24**	**42**
***MUØGSY**	**28**	**226,170**	**1007**	**25**	**80**

Hungary

HA1TNX	**A**	**1,654,497**	**1484**	**133**	**404**
HA5SE	"	431,310	762	85	245
HA5JI	"	377,136	985	47	115
HA7I	**3.7**	**79,054**	**813**	**17**	**77**
					(OP: HA7JTR)
***HA5AQ**	**A**	**167,268**	**313**	**78**	**134**
*HAØRZK	"	41,588	224	41	107
*HA7MW	"	6,090	49	27	31
*HA2MN	"	1,209	22	13	18
***HA9MDP**	**28**	**52,638**	**246**	**28**	**65**
*HA3JO	"	29,941	173	28	51

Iceland

TF3AM	**A**	**445,250**	**1233**	**61**	**213**
TF4X	**28**	**538,785**	**3098**	**25**	**92**
					(OP: TF3Y)
TF3CW	**14**	**1,378,428**	**3861**	**38**	**136**
TF3ZA	**3.7**	**135,136**	**960**	**18**	**85**
***TF8GX**	**28**	**254,790**	**1487**	**24**	**71**

Ireland

EI4DW	**A**	**711,326**	**987**	**76**	**222**
EI9KC	**28**	**57,448**	**293**	**23**	**63**
EI2CN	**14**	**751,851**	**2589**	**34**	**105**
***EI8GQB**	**A**	**1,168,020**	**1495**	**85**	**327**
					(OP: ON4EI)
*EI4GNB	"	394,625	650	73	214
*EI4HQ	"	357,655	700	75	232
*EI3ENB	"	135,830	388	60	175
*EI6KD	"	67,996	198	58	120
*EI2KA	"	35,518	181	31	87
*EI4GAB	"	30,747	152	32	79
*EI3CTB	"	25,190	169	30	80
*EI3FEB	14	1,333	35	7	24
***EI4CF**	**7**	**79,778**	**531**	**23**	**90**

Italy

IZ6ERS	**A**	**1,068,189**	**1796**	**92**	**319**
IV3UHL	**"**	**973,420**	**1240**	**106**	**370**
IØLYO	**"**	**807,139**	**1078**	**101**	**336**
IK1JJM	"	802,734	1025	103	294
I4XNN	"	741,336	1003	100	308
IZ8FFA	"	459,726	633	108	289
IZ3SQW	"	355,320	642	75	205
IZØPAU	"	339,390	808	74	196
IZ5NSH	"	323,323	736	67	180
IWØGTA	"	305,550	600	79	236
IZ8FBU	"	279,672	608	67	191
IZ8IEV	"	229,471	555	76	177
IWØHLZ	"	196,662	751	55	164
IKØYUT	"	175,305	443	59	136
IZ5IJY	"	160,020	428	63	191
IK6GPZ	"	150,840	531	56	124
IK1MNG	"	128,612	372	44	114
IK1RGK	"	103,896	284	70	152
IZ8EDL	"	102,053	218	64	175
IK8NRW	"	74,112	262	52	140
IZ1DUI	"	54,945	166	67	118
IZ3LSZ	"	30,976	135	41	47
IK3XTY	"	29,193	203	33	78
IZ2SNI	"	25,197	150	35	76
IW2NBW	"	23,004	153	32	76
I6KIU	"	21,594	83	51	71
IZ1JMN	"	16,000	82	34	66
IZ1LAT	"	11,481	74	34	55
I6FDJ	"	11,352	116	26	62
IK2AOO	"	9,408	63	27	37
IZ2KRZ	"	7,350	43	32	38
IZ6JHO	"	5,280	49	26	29
IW5ELR	"	2,880	26	19	26
IK8VKW	"	2,379	46	11	28
IZØFVH	"	54	3	3	3
IZ4COW	**28**	**776,714**	**1921**	**40**	**126**
IZ1GCV	"	33,603	311	23	46
IZØRCP	"	12,696	76	25	44
IWØBCF	**21**	**151,135**	**463**	**38**	**129**
IZ8HUJ	"	124,843	565	30	101
IK8INR	"	25,380	134	25	69
IZØGXM	"	180	6	4	6
IZ8FOV	**14**	**51,701**	**457**	**24**	**73**
IZ4TOA	14	48,832	307	26	83
IV3UTV	**7**	**224,079**	**1504**	**26**	**87**
IK2MPR	"	3,220	70	10	36
IV3KFB	**3.7**	**127,088**	**1179**	**18**	**76**
I4FYF	**1.8**	**74,844**	**872**	**13**	**71**
***IO2Z**	**A**	**1,030,920**	**1115**	**111**	**329**
					(OP: IK2DZN)
***IK2QLX**	**"**	**501,160**	**817**	**84**	**251**
***IZ5IMD**	**"**	**277,200**	**541**	**79**	**221**
*IK7NXU	"	272,840	424	109	250
*IV3BCA	"	260,505	589	92	223
*IZ5MXA	"	224,104	624	72	185
*IK7RVY	"	162,378	510	48	138
*IZ2BKA	"	156,960	362	61	157
*IK7WPD	"	147,849	353	63	158
*IK3SSW	"	139,893	454	48	163
*IK2YSJ	"	126,000	416	50	150
*IZ8TXX	"	117,813	290	77	150
*IK2REA	"	115,404	365	51	126
*IW3ICN	"	98,032	365	42	134
*I1PLX	"	94,875	199	65	188
*IV3NVB	"	94,750	218	82	168
*IZ3DBA	"	91,000	293	63	137
*IZ7RJT	"	81,702	291	51	127
*IWØEAC	"	76,780	249	70	150
*IK2IKW	"	73,600	236	54	130
*IZ4EFP	"	71,734	242	57	121
*IN3ADW	"	68,272	231	44	92
*IK4FWF	"	64,702	242	48	125
*IK2QIN	"	54,166	213	44	102
*IZ4DUX	"	54,000	237	38	112
*IZ8MXB	"	45,135	129	60	93
*IZ2LQD	"	43,092	196	39	75
*IZ5ILJ	"	42,233	171	43	114
*IV3IDP	"	40,963	208	35	102
*IZ2UST	"	40,310	185	43	96
*IZ2JNN	"	40,250	294	26	89
*IZ5RNC	"	38,448	149	49	95
*IV3BXV	"	38,376	154	48	75
*I2BZN	"	37,530	205	41	98
*IK3MLF	"	37,485	158	42	111
*IK6EUH	"	36,984	148	41	97
*I5DOF	"	34,706	216	33	101
*IWØEYT	"	29,591	140	40	87
*IN3HUU	"	28,886	121	39	62
*IK2WFN	"	27,392	146	37	70
*IW8BSR	"	27,018	182	36	78
*IZ6INR	"	23,548	151	36	80
*IZ2QBH	"	23,422	113	40	58
*IW3HMH	"	21,828	141	33	74
*IZ1HBC	"	20,650	123	38	80
*IZØPMV	"	20,207	169	27	94
*IZ4HZA	"	20,000	100	38	62
*IX1CKN	"	19,511	118	31	78
*IZ7SLU	"	19,467	123	28	75
*IZ8GBT	"	17,686	98	30	44
*IK1YHX	"	14,790	96	32	70
*IZ8LIP	"	14,418	81	39	50
*IZ1RFL	"	13,986	90	31	43
*IZ8CJV	"	13,200	70	43	67
*IZØTHT	"	12,513	102	29	68
*IZ2OBS	"	11,748	98	29	60
*IK8SDA	"	10,934	60	31	40
*IZ2NYY	"	10,296	69	32	56
*IZ4OUA	"	8,833	79	28	45
*IK2AUK	"	8,383	81	25	58
*IZ4OSG	"	7,150	68	23	32
*IZ5ILK	"	7,139	49	27	32
*IZØIRH	"	7,062	84	19	47
*IZ6LOF	"	6,612	69	22	36
*I7/IN3IZT	"	5,320	39	26	30
*IZ1AOD	"	5,175	77	19	50
*IWØAEN	"	5,130	65	17	40
*IK4XQT	"	4,732	66	20	32
*IW1RGP	"	4,140	69	13	47
*IW5ELA	"	4,080	31	20	31
*IZ8FTW	"	3,403	32	15	26
*IW5ECP	"	2,898	38	20	26
*IZ3TFL	"	2,838	34	17	26
*IZ1DLY	"	2,679	38	20	27
*IK4JQQ	"	2,520	55	11	31
*IW2FUT	"	2,200	32	12	13
*IK5PVX	"	2,016	31	14	18
*IØLTX	"	1,768	23	16	18
*IZØEGC	"	1,767	19	15	16
*IZ2GMT	"	1,767	33	11	20
*IZ8QMF	"	1,480	25	15	22
*IK8JDH	"	1,344	36	9	19
*IZ1QYD	"	1,240	33	15	25
*IW6NZY	"	1,128	17	12	12
*IZØEUS	"	550	12	11	11
*IZ5JMX	"	150	5	5	5
*IZ5OQX	"	42	3	3	3
*IZ5GSV	"	24	2	2	2
***IK2SGB**	**28**	**103,768**	**327**	**34**	**102**
*IK2OLD	"	51,961	252	30	61
*IR7J	"	48,060	289	27	63
*IZ4DYP	"	30,888	192	24	42
*IZ4AIF	"	30,544	175	25	58
*IZ1PMC	"	20,191	157	21	40
*IK7FMQ	"	20,100	134	25	42
*IV3PGQ	"	19,866	135	20	46
*I5QNJ	"	15,189	98	24	37
*I4VIL	"	13,570	82	22	37
*IZ5HQB	"	10,730	96	22	36
*IZ1ANZ	"	9,331	101	12	19
*IZ5UGE	"	6,909	63	20	27
***IZ8RSO**	**21**	**35,910**	**273**	**25**	**65**
*I3FGX	"	3,000	41	13	27
***IZ7PDX**	**14**	**185,535**	**1127**	**33**	**100**
***IZ2JQP**	**"**	**133,023**	**617**	**34**	**105**
*IZØUME	"	29,584	269	17	69
*IK5BSC	"	13,272	130	21	58
*I3QKO	"	12,738	143	15	51
*IZ4MNZ	"	5,936	95	11	42
*IK5RUP	"	5,885	77	13	42
*IZ5UGM	"	946	28	7	15
***IZ5RLK**	**7**	**28,718**	**338**	**17**	**66**
*IV3TQE	"	22,100	166	19	66
*IC8FBU	"	3,652	65	9	35
*IZ2LTW	"	1,025	56	3	22

Kaliningrad

UA2KK	**A**	**215,302**	**1044**	**19**	**64**
					(OP: UA2FB)
UA2CZ	"	198,440	333	90	152
***RA2FF**	**A**	**263,064**	**331**	**114**	**274**
*RN2FQ	"	83,414	272	51	128
*UA2AB	"	96	4	4	4
*RA2FB	1.8	1,608	63	5	19

Latvia

YL2SM	**A**	**4,503,630**	**3802**	**144**	**466**
YL2CI	**"**	**1,870,990**	**2443**	**111**	**355**
YL7A	"	817,930	839	123	403
YL3DR	"	607,168	858	104	320
YL2TB	"	280,784	604	82	240
YL3FT	**14**	**945,892**	**2602**	**38**	**140**
***YL2GUV**	**A**	**41,910**	**140**	**50**	**115**
*YL3DX	"	37,268	210	35	86
*YL2QV	"	35,875	126	48	77
*YL3GCV	"	2,970	40	17	16
***YL3CU**	**7**	**27,975**	**297**	**15**	**60**

Liechtenstein

HBØ/HB9LCW	**14**	**90,888**	**691**	**20**	**64**

Lithuania

LY4T	**A**	**1,663,305**	**2018**	**116**	**395**
LY9Y	**"**	**1,110,600**	**1304**	**106**	**344**
LY2TS	"	457,888	876	89	260
LY2AE	"	431,480	880	85	250
LY2OU	**28**	**212,640**	**624**	**38**	**122**
LY2DM	"	58,425	290	27	68
LY2MM	**7**	**71,172**	**502**	**23**	**85**
LY2ER	"	6,612	57	21	37
LY4OO	**3.7**	**18,648**	**258**	**11**	**52**
***LY9A**	**A**	**3,446,940**	**3307**	**136**	**473**
***LY8O**	**"**	**2,397,720**	**2088**	**139**	**441**
***LY6A**	**"**	**1,832,013**	**1889**	**126**	**423**
*LY5I	"	562,485	944	97	288
*LY2OM	"	162,397	494	53	198
*LY1VP	"	140,998	399	57	164
*LY2N	"	135,814	352	65	153
*LY4BP	"	119,201	395	54	145
*LY1RB	"	85,374	330	50	136
*LY3I	"	19,646	153	25	69
*LY2HQ	"	14,964	99	28	58
*LY1NDN	"	4,845	76	13	38
*LY4B	28	21,168	157	20	43
*LY2BBF	"	16,800	149	18	38
*LY3B	"	11,914	117	16	30
*LY2BOS	"	3,978	54	12	22
***LY1XA**	**21**	**47,412**	**221**	**29**	**79**
***LY4G**	**14**	**45,760**	**255**	**27**	**77**
***LY5S**	**7**	**5,830**	**124**	**10**	**43**
***LY2ND**	**1.8**	**3,876**	**128**	**5**	**29**

Luxembourg

LX7I	**A**	**10,187,208**	**6746**	**150**	**498**
					(OP: LX2A)
LX1SG	"	199,436	825	37	109
LX1EA	"	1,210	22	10	12
LX3PR	"	72	5	4	5
LX1NO	**21**	**705,888**	**2201**	**37**	**115**

Macedonia

Z36N	**28**	**301,070**	**929**	**40**	**121**
***Z35W**	**A**	**260,568**	**623**	**81**	**227**
*Z33A	"	88,689	542	36	105
*Z35G	"	44,844	222	39	109

Malta

*9H1XT	A	352	12	7	9

Moldova

***ER4LX**	**A**	**544,896**	**1242**	**79**	**265**
*ER1BF	"	73,870	339	45	133
***ER5DX**	**28**	**42,032**	**227**	**26**	**48**
*ER1EA	"	17,640	121	20	36
***ER1CS**	**14**	**50,592**	**300**	**27**	**75**
***ER2RM**	**1.8**	**26,019**	**384**	**9**	**54**

Montenegro

4O3A	**A**	**14,408,401**	**8177**	**183**	**650**
					(OP: ES5TV)

Netherlands

PA3AAV	**A**	**1,903,320**	**1668**	**141**	**481**
PA1NHZ	**"**	**1,014,816**	**1497**	**95**	**277**
PC2T	"	862,578	1298	89	257
PAØJNH	"	656,880	885	90	318
PE1MPA	"	581,889	837	100	263
PF1MO	"	493,020	980	73	224
PA1NL	"	415,872	752	81	223
PI4ZI	"	271,375	577	96	229
					(OP: PA2MRT)
PA3BWK	"	184,889	491	64	199
PA9DD	"	108,730	305	58	108
PAØLSK	"	58,100	209	45	95
PAØVST	"	15,228	72	30	51
PA3AJI	"	12,213	91	25	44
PA3GCV	**28**	**98,754**	**390**	**33**	**76**
PG9HF	"	5,080	56	16	24
***PA8KW**	**A**	**1,249,934**	**1354**	**125**	**393**
***PA1PE**	**"**	**485,528**	**607**	**118**	**325**
*PH2A	"	390,194	591	95	234
*PAØAGA	"	373,410	991	69	201
*PD2J	"	359,352	709	63	185
*PA3FYG	"	334,960	640	77	239
*PA1RBZ	"	270,596	626	62	182
*PF9A	"	247,698	546	70	208
*PAØB	"	220,462	659	53	189
*PA3DBS	"	151,076	552	59	152
*PG7V	"	147,510	372	58	140
*PD1B	"	143,964	433	52	134
*PG1R	"	123,966	409	51	162
*PE1LGZ	"	117,458	459	42	167
*PA2CVD	"	107,787	408	46	137
*PD5JFK	"	99,520	349	48	112
*PD3EM	"	94,010	302	47	123
*PA4HM	"	93,704	343	45	59
*PA5LV	"	80,013	300	48	131
*PA2CHM	"	60,676	290	39	115
*PA3GDD	"	60,588	249	46	107
*PE2JMR	"	52,360	269	33	77
*PA3DAT	"	46,020	179	44	112
*PD1SGH	"	44,974	198	34	79
*PA5VK	"	44,010	194	42	93
*PA3J	"	42,161	243	37	96
*PA3AWW	"	40,172	179	44	77
*PD1TV	"	39,208	232	30	74
*PA2GRU	"	38,736	219	37	107
*PD1EJA	"	37,269	201	29	72
*PD1ABO	"	28,900	168	33	67
*PD5T	"	26,208	174	33	84
*PDØPRS	"	25,690	159	30	40
*PAØMAW	"	24,165	123	36	99
*PA3CMF	"	21,340	150	30	80
*PE2KM	"	20,970	118	32	58
*PA3GEO	"	17,005	135	26	69
*PAØEMO	"	16,720	160	22	66
*PD1T	"	16,366	184	25	73
*PA1FJ	"	14,271	101	28	43
*PE1RDP	"	13,552	96	30	58
*PD3ALX	"	12,204	78	24	30
*PA1TO	"	11,972	116	19	54
*PA1AK	"	11,970	103	27	63
*PI4ZOD	"	11,376	112	21	51
					(OP: PD1BK)
*PE1NCP	"	10,492	110	21	40
*PA1MBC	"	10,268	104	21	47
*PA1VC	"	10,074	90	21	52
*PA3AQL	"	9,936	137	22	70
*PE1MR	"	9,916	97	20	47
*PAØFEI	"	9,520	55	33	47
*PE1NBD	"	9,514	71	27	40
*PE1DGM	"	9,179	103	17	50
*PD4M	"	8,246	117	19	43
*PAØFAW	"	6,528	75	20	48
*PA3GQF	"	5,544	91	17	49
*PA3ETC	"	4,368	60	17	31
*PA1VD	"	4,212	50	20	34
*PDØNMF	"	4,080	45	16	32
*PA3JQD	"	3,300	63	16	39
*PA3CWN	"	2,958	39	12	17
*PA3DWK	"	2,360	31	18	22
*PAØLIE	"	2,296	24	18	23
*PA3EEG	"	1,456	28	10	16
*PC5F	"	1,196	18	10	13
*PA3RC	"	1,122	22	8	9
*PAØSKP	"	928	29	7	25
*PAØWYS	"	810	28	7	11
*PA1CWI	"	408	12	7	10
*PDØHVL	"	210	8	7	8
*PAØUKC	28	480	22	5	5
*PG54ØBUFFALO		21	2,720	60	11
29					
					(OP: PA2REH)
*PD1RP	7	7,280	163	8	44
***PA1CM**	**1.8**	**8,060**	**157**	**6**	**46**

Northern Ireland

MIØBPB	**28**	**330,264**	**1280**	**32**	**100**
GI5K	**21**	**1,832,733**	**4154**	**40**	**149**
					(OP: MIØLLL)
***MIØM**	**A**	**1,917,828**	**2638**	**87**	**261**
					(OP: MIØSAI)
*GIØKVQ	"	510,942	1008	55	146
*GI7AXB	"	92,829	438	31	66
*MIØVAX	28	5,908	113	10	18

Norway

LN8W	**A**	**5,623,365**	**4430**	**132**	**459**
					(OP: LB8IB)
LA1PHA	"	417,232	714	92	264
LA9DAA	"	358,875	632	77	184
LA6KOA	"	301,340	956	65	182
LA5FJA	"	115,304	261	66	137
LA6ZFA	"	79,304	257	57	127
LA2IJ	"	64,584	205	51	133
LA5PRA	"	47,712	214	31	83
LA8KRA	"	30,226	185	41	86
LA7SI	"	23,790	125	39	91
LA2AB	**28**	**60,264**	**244**	**33**	**91**
					(OP: LA6GF)
***LA9BM**	**A**	**856,560**	**1530**	**99**	**331**
*LA1XFA	"	344,568	601	78	216
*LA2HFA	"	173,352	538	57	176
*LA8OM	"	114,810	516	44	134
*LA1VNA	"	67,248	308	35	109
*LA8OKA	"	63,664	260	44	129
*LA7TN	"	53,223	248	42	115
*LA2WRA	"	53,088	195	48	110
*LA6HJA	"	30,744	200	32	90
*LA2XIA	"	28,167	181	36	87
*LA1HSA	"	20,497	141	30	73
*LA6VQ	"	11,591	82	27	40
*LA2NTA	"	8,250	62	30	45
*LA6PBA	"	7,425	78	18	37
*LA3EPA	"	5,475	70	25	48
*LA4NL	"	4,897	73	14	45
*LA1YPA	"	4,752	41	24	24
*LA8JRA	"	3,480	50	20	38
*LA2GN	"	1,520	42	12	26
*LA6BNA	"	899	23	11	18
*LA9NSA	"	272	10	8	9
***LA1DSA**	**28**	**22,610**	**170**	**21**	**49**
*LA6YIA	"	20,026	131	17	45
***LA9QNA**	**21**	**9,735**	**106**	**17**	**42**

Poland

SP9LJD	**A**	**7,124,894**	**4727**	**143**	**524**
SP9XCN	**"**	**5,768,996**	**4279**	**149**	**494**
SP9AQF	"	1,419,333	1551	137	364
SN5V	"	778,375	1105	101	224
					(OP: SQ5EBM)
SPØPZK	"	647,787	1256	77	250
SN2Q	"	278,733	513	73	200
SP8TDV	"	255,732	439	88	215
SP8UFB	"	189,952	400	68	156
SQ7B	"	151,875	479	59	184
SP8HXN	"	126,776	267	74	138
SP3PJY	"	125,325	355	62	163
					(OP: 3Z3AHK)
SP9RHN	"	120,600	382	72	153
SP7VS	"	111,446	246	63	143
SO4R	"	49,770	257	35	91
					(OP: SP4JCP)
SN5U	"	36,000	145	54	71
SN4W	"	32,364	250	27	97
					(OP: SP4ICP)
SP2LQP	"	21,582	97	39	60
SP8DHJ	"	16,856	149	24	74
SP3RBG	"	4,459	32	23	26
SN8B	**28**	**541,899**	**1272**	**39**	**132**
SP3GXH	"	225,120	645	40	94
SQ6R	"	146,802	552	32	97
SP2MHC	"	360	11	10	10
SN7O	**21**	**189,800**	**654**	**34**	**112**
					(OP: SP7IVO)
SP9EJH	"	10,962	100	18	40
SP2SWR	**7**	**82,830**	**614**	**22**	**88**
SP9JZT	"	39,292	331	20	74
SP8RHL	"	20,988	319	15	51
SP6PYP	"	1,350	20	9	16
					(OP: SP6T)
SP2FAP	"	6	1	1	1
SP6AXW	**1.8**	**20,928**	**315**	**7**	**57**
SP5GMM	"	7,680	120	7	53
***SN3B**	**A**	**582,160**	**982**	**96**	**287**
					(OP: SQ3JPV)
***SP9NWN**	**"**	**562,872**	**794**	**103**	**273**
***SP9OYB**	**"**	**468,520**	**676**	**107**	**317**
*SP1MGM	"	448,056	820	99	293
*SO9G	"	415,820	699	87	253
					(OP: SP9DTE)
*SQ3VV	"	324,696	581	82	250
					(OP: SQ3WW)
*SQ4JEN	"	309,738	650	80	206
*SQ2WHH	"	277,480	754	66	214
*SP8CGU	"	270,384	635	71	191
*SP5XSL	"	260,352	593	69	219
*SP2OVQ	"	204,622	481	68	194
*SQ7NSN	"	195,320	486	74	183
*SP5ELW	"	190,708	316	90	188
*SQ9ANS	"	184,450	492	64	174
*SP5FKW	"	176,628	598	63	183
*SP9DEM	"	174,823	387	83	170
*SP3UIW	"	167,250	470	62	161
*SP9PEX	"	162,602	444	63	146
					(OP: SQ9NKK)
*SP1EG	"	162,048	502	65	191
*SQ5NWD	"	151,654	491	52	139
*SP4CUF	"	150,480	416	55	154
*SP1QXK	"	143,675	349	67	108
*SP3JHY	"	124,868	272	71	141
*SP2ILQ	"	111,696	393	50	158
*SQ2BNM	"	109,484	309	57	145
*SP9OHY	"	107,328	346	51	121
*SP7TEX	"	102,627	314	51	130
*SN9Y	"	99,750	322	56	134
					(OP: SP9UOP)
*SQ9DXT	"	96,384	327	57	135
*SQ5OUO	"	92,616	342	53	151
*SP6OPZ	"	87,360	275	51	117
*SP9RTL	"	84,150	326	45	142
*SO5D	"	78,324	319	54	129
*SP2OFR	"	77,760	234	58	122
*SP6QKS	"	77,700	285	54	121
*SQ9JYK	"	73,260	232	61	124
*SP4AAZ	"	72,400	278	51	130
*SP6GTN	"	71,709	256	48	111
*SP3IC	"	67,465	249	38	93
*SP4FMD	"	67,301	292	47	120
*SQ6STI	"	59,878	195	61	121
*SQ2EAN	"	59,332	339	31	132
*SP9ODM	"	58,855	288	33	116
*SO7B	"	57,967	230	50	119
*SP7SZW	"	56,090	297	37	105
*SP5GRU	"	48,332	179	53	119
*SQ9KEJ	"	45,828	228	51	120
*SQ7LQJ	"	42,987	187	59	102
*SP3BVI	"	40,217	207	37	94
*SN9R	"	37,392	191	37	77
					(OP: SP9BRP)
*SN1Z	"	37,352	118	57	104
					(OP: SQ1EIX)
*SQ3HTX	"	36,162	262	28	95
*SQ1KSA	"	36,064	168	43	69
*SP4GHL	"	34,404	177	43	98
*SP6OWY	"	33,082	119	46	73
*SP9CLU	"	32,382	174	39	87
*SQ8JMZ	"	32,292	218	37	101
*SQ3LLR	"	32,230	225	28	82
*SN5O	"	32,092	157	38	75
					(OP: SP5BYC)
*SP5ICS	"	29,988	124	43	76
*SP4OIZ	"	29,636	204	38	86
*SQ5HAU	"	28,866	150	38	64
*SQ5SAA	"	28,179	144	36	57
*SP3HC	"	27,903	191	40	91
*SP3JZX	"	27,666	218	22	84
*SQ9IWS	"	27,108	147	32	76
*SQ5MRI	"	27,084	282	22	89
*SP9OHL	"	26,316	110	47	82
*SO2D	"	26,190	125	43	92
					(OP: SP2IKP)
*SP7LIE	"	24,182	119	42	65
*SP6FJ	"	22,440	121	22	46
*SP9IHP	"	20,880	90	39	48
*SQ6LJV	"	20,670	130	27	26
*SP8GNF	"	19,292	130	31	75
*SP9CLO	"	17,680	107	32	53
*SP8HPW	"	17,544	106	34	68
*SP6AHL	"	16,920	123	31	63
*SQ1PTO	"	16,896	122	29	67
*SP2RIQ	"	16,660	109	30	55
*SQ7OTA	"	15,229	104	32	65
*SP5NZZ	"	14,796	79	38	70
*SQ7BFT	"	12,052	100	26	66
*SP5LCS	"	11,739	118	27	64
*SP5DDF	"	11,590	73	41	54
*SP6PAX	"	11,544	98	25	53
					(OP: SP6OPZ)
*SP3IOE	"	10,919	81	27	34
*SP8BOZ	"	10,836	170	18	68
*SQ1KTR	"	9,144	82	27	45
*SPØPLH	"	8,760	102	22	51
*SP4AVG	"	8,184	84	18	44
*SQ6IYV	"	7,800	73	23	55
*SP7FBQ	"	7,300	81	24	49
*SQ9MUO	"	7,049	70	26	27
*SP2DKI	"	4,473	63	15	48
*SQ7BTY	"	4,332	59	22	35
*SP5CIB	"	4,312	38	19	30
*SQ9APU	"	3,600	49	15	35
*SQ6RGH	"	2,368	25	13	24
*SP5IKO	"	2,166	22	17	21
*SQ5OVL	"	1,612	18	14	17
*SP5LGN	"	1,428	24	10	11
*SP9AUV	"	1,204	17	13	15
*SQ5GLU	"	660	19	8	12
*SP9KJU	"	598	29	5	18
*SQ5KGS	"	432	18	9	15
*SQ6COE	"	432	19	10	14
*SP6EIY	"	220	10	5	5
***SP7FI**	**28**	**89,994**	**368**	**32**	**74**
*SQ9MEE	"	44,850	252	27	51
*SP5DXU	"	34,773	200	27	40
*SP8CIV	"	31,789	189	28	55
*SP7BCA	"	28,392	168	26	58
*SN1C	"	26,164	179	19	43
					(OP: SP1RFC)
*SQ5STN	"	19,652	114	24	44
*SP9GLJ	"	9,720	89	18	27
*SP6XP	"	6,279	68	16	23

*SP9EWM	"	4,950	68	13	12
*SP8DIP	"	2,328	33	12	12
*SQ3RPM	"	1,936	30	11	11
*SQ8OGC	"	1,914	52	11	18
*SP9LAW	"	1,296	32	8	10
*SQ5OBU	"	1,134	18	10	11
*SQ2OMB	"	912	26	8	8
***SN1T**	**21**	**43,065**	**287**	**23**	**64**
(OP: SQ1RET)					
*SP4ICD	"	31,752	209	22	59
*SP9BMH	"	24,948	147	28	49
*SP9NLI	"	2,475	60	10	23
*SP5BMU	"	912	34	8	16
***SQ4G**	**14**	**141,384**	**817**	**32**	**97**
*SP6RYD	"	53,586	300	30	87
*SO8L	"	50,547	429	22	65
(OP: SQ8JLU)					
*SP1FRC	"	26,809	224	19	64
*SP5DRE	"	24,310	183	20	65
*SP8OOB	"	6,716	96	11	35
*SP6HDS	"	252	9	6	8
*SP7SZC	"	24	2	2	2
***SQ2OSE**	**7**	**55,566**	**654**	**16**	**65**
*SP1FFC	"	33,872	427	15	58
***SQ2NNN**	**3.7**	**35,424**	**452**	**11**	**61**
*SQ2HNA	"	22,428	338	10	53
*SP4SHD	"	22,032	279	11	57
***SQ9IAU**	**1.8**	**23,485**	**408**	**8**	**53**
***SP5CJY**	**"**	**21,692**	**311**	**10**	**58**
*SP4NDU	"	7,488	190	6	42
*SQ6ACF	"	414	30	3	15

Portugal

CR6K	**A**	**7,333,520**	**5623**	**135**	**445**
(OP: CT1CJJ)					
CT1DOF	"	96	4	4	4
CT1EAT	**28**	**164,450**	**529**	**36**	**94**
CS2C	**21**	**1,531,896**	**3905**	**38**	**148**
(OP: OK1RF)					
CT1FJK	"	40,080	151	25	95
***CT2GSN**	**A**	**427,750**	**691**	**69**	**226**
***CT1FHL**	**"**	**378,371**	**741**	**71**	**212**
*CT1EGF	"	109,934	239	67	142
*CT2CRP	"	79,712	294	54	134
*CT2IWW	"	63,921	230	46	97
*CT7ABG	"	10,902	100	21	58
*CT1EBM	"	7,038	57	27	42
***CT2KFA**	**21**	**85,614**	**508**	**27**	**87**
***CT1DZY**	**14**	**59,764**	**251**	**31**	**103**
*CT/HB9AAP	"	18,800	206	23	71

Romania

YO3CZW	**A**	**3,071,920**	**4184**	**106**	**364**
YO3RU	**"**	**1,030,515**	**1446**	**105**	**339**
YO5QAW	"	197,035	586	61	190
YO2MFC	"	148,248	409	57	156
YO9GVN	"	56,700	266	42	98
YO9IKW	"	55,198	178	55	88
YO8BFB	"	25,258	153	28	45
YO2MIL	"	3,312	36	20	28
YP3A	**28**	**255,827**	**908**	**37**	**106**
(OP: YO3GOD)					
YO9IF	"	7,003	74	16	31
YO3FOM	"	1,615	29	10	9
YO9XC	**21**	**77,168**	**502**	**26**	**78**
YO3VU	**14**	**296,526**	**1338**	**37**	**109**
YO5BQQ	**7**	**30,494**	**358**	**16**	**63**
YO7LGI	"	14,916	158	15	51
YO4AUP	**3.7**	**11,834**	**192**	**10**	**51**
***YO5KTK**	**A**	**344,520**	**762**	**78**	**241**
(OP: YO5PJF)					
***YO5OBA**	**"**	**321,714**	**566**	**96**	**270**
*YO4US	"	202,320	557	61	179
*YO2MTG	"	183,080	485	54	145
*YO8SMM	"	179,928	515	61	191
*YO8THG	"	165,130	372	68	177
*YO8RTR	"	152,152	447	57	152
*YO4RST	"	151,734	397	60	149
*YO4SI	"	127,645	386	62	183
*YO3HBK	"	121,680	484	52	156
*YO2MKT	"	120,474	293	61	146
*YO9IAB	"	104,606	377	48	145
*YO9KPM	"	101,370	397	46	140
(OP: YO9HOW)					
*YO4FKO	"	81,200	295	46	99
*YO4KAK	"	72,833	302	48	125
*YO2LXW	"	71,064	267	54	135
*YP6Z	"	63,848	138	61	123
*YO2MHJ	"	59,974	180	64	127
*YO2LIM	"	52,728	223	43	113
*YO4CVT	"	43,605	119	50	85
*YO7BGB	"	43,186	270	37	106
*YO9FEH	"	36,704	211	42	106
*YO5CBN	"	32,130	227	24	95
*YO2LAN	"	31,833	128	43	88
*YO2MLG	"	28,044	100	49	74
*YO2MNC	"	28,044	138	36	87
*YO3FRI	"	23,680	117	35	45
*YO5CUQ	"	22,344	105	37	61
*YO9HG	"	17,300	151	22	78
*YO2MLM	"	14,732	86	27	31
*YO9ADN	"	13,677	114	32	65
*YO2MJZ	"	12,558	129	17	52
*YO8RKP	"	7,777	99	25	52
*YO5COG	"	5,568	74	16	42
*YO2QY	"	5,546	37	26	33
*YO8RES	"	4,559	78	12	35
*YO8SKY	"	4,452	34	23	30
*YO7BEM	"	3,657	64	16	37
*YO9HRB	"	3,216	71	11	37
*YO9FLD	"	2,501	29	16	25
*YO7AWZ	"	1,056	21	12	21
***YO2YA**	**28**	**66,348**	**259**	**31**	**83**
***YO5PCY**	**"**	**58,300**	**260**	**30**	**76**
*YO2AGO	"	50,193	199	34	65
*YO8RZJ	"	29,172	230	23	45
*YO3CVG	"	27,307	157	27	56
*YO5FMT	"	15,876	148	20	29
*YO8BGE	"	15,458	112	22	37
*YO5TP	"	11,070	96	21	33
*YO5BLA	"	5,194	44	19	34
*YO4AUL	"	2,632	34	20	27
*YO3IJF	"	2,542	53	10	21
*YO9IPM	"	2,360	48	8	12
*YO4BXX	"	2,160	55	10	20
*YO9IGQ	"	848	27	6	10
*YO4GNJ	"	208	10	5	8
*YO2MSP	"	130	6	4	6
*YO6DDF	21	80	4	4	4
***YO5BRE**	**14**	**11,523**	**128**	**18**	**51**
*YO9AGI	"	8,060	156	11	41
*YO9CWY	"	7,008	130	9	39
***YO7LBX**	**7**	**27,612**	**306**	**14**	**64**
*YO4RDW	"	25,434	236	16	65
*YP2W	"	3,807	61	11	36
(OP: YO2MCK)					

Sardinia

ISØHQJ	**A**	**415,259**	**1151**	**58**	**163**
***ISØBSR**	**A**	**128,575**	**605**	**34**	**105**
***ISØGRB**	**7**	**39,440**	**361**	**18**	**67**

Scotland

MMØAMW	**A**	**790,187**	**1423**	**65**	**162**
GMØOQV	**"**	**696,192**	**1294**	**77**	**182**
GM2Y	"	166,980	435	67	175
(OP: MMØDXH)					
MM1D	**3.7**	**58,716**	**570**	**16**	**68**
***MMØFNR**	**A**	**332,175**	**658**	**73**	**236**
*MMØLBX	"	99,297	362	49	128
*GM3C	"	96,679	350	47	140
(OP: GMØNBM)					
*MM1X	"	90,090	521	35	91
*MMØDXD	"	66,924	344	34	122
*MMØBQN	"	1,026	30	5	13
*MMØSVK	28	522	30	3	3
***GM7TUD**	**21**	**159,040**	**535**	**37**	**123**
***GM4UBJ**	**1.8**	**2,080**	**62**	**5**	**27**

Serbia

YT9M	**A**	**786,592**	**1315**	**87**	**289**
YU5CW	"	303,606	650	82	221
YU1CC	"	44,955	139	61	74
YTØW	**28**	**699,300**	**2313**	**34**	**101**
(OP: YU1JW)					
YT3PL	"	183,370	716	34	76
YT7AW	**21**	**1,226,508**	**3066**	**39**	**140**
YU5A	**"**	**1,101,924**	**2868**	**38**	**133**
(OP: YU1EW)					
YT1A	**14**	**677,820**	**2395**	**36**	**129**
YUØT	"	271,638	1016	35	103
YT8A	**7**	**813,234**	**3157**	**37**	**129**
(OP: YU1EA)					
YT7DQ	**3.7**	**95,201**	**1097**	**13**	**70**
***YT2VP**	**A**	**39,754**	**232**	**39**	**100**
*YU7KW	"	21,630	128	33	72
*YU7ONE	"	11,968	123	23	65
***YU7WW**	**28**	**78,780**	**326**	**32**	**69**
*YU7KM	"	28,424	177	27	49
*YU1B	"	27,090	205	22	41
***YU1IZ**	**21**	**13,568**	**152**	**19**	**45**
*YT2SMS	14	13,400	147	15	52
*YU1TY	"	1,920	60	6	26
***YU1EL**	**7**	**26,702**	**256**	**15**	**64**
*YU1AST	1.8	1,100	40	5	20
(OP: YU2EA)					

Shetland and Fair Isle

GZ5Y	**A**	**507,408**	**790**	**83**	**258**
(OP: GM4SSA)					

Sicily

IT9UTT	7	4,242	99	9	33
***IT9WTY**	**A**	**144,878**	**364**	**64**	**150**
*IR9Z	"	55,632	258	44	108
***IT9AJP**	**28**	**60,742**	**249**	**33**	**88**
*IT9AXQ	"	48,392	318	28	64
*IT9ATQ	"	47,292	273	26	58
***IT9RYJ**	**21**	**165,648**	**731**	**35**	**101**
*IT9YAO	"	90,300	706	25	75
***IT9LED**	**14**	**33,998**	**383**	**21**	**68**
*IT9BDQ	"	2,400	45	8	32
***IR9P**	**7**	**27,864**	**275**	**14**	**67**

Slovak Republic

OM4KK	**A**	**882,414**	**1220**	**102**	**317**
OM3IAG	**"**	**870,400**	**1397**	**105**	**295**
OM5WW	"	194,776	585	64	187
OM8KD	"	49,179	247	48	121
OM5EA	"	23,352	124	32	52
OM3TPN	"	6,204	71	23	43
***OM5NL**	**A**	**503,004**	**700**	**90**	**244**
***OM7AB**	**"**	**248,832**	**808**	**53**	**203**
*OM1DK	"	183,480	289	86	178
*OM6AL	"	149,076	502	56	190
*OM7OM	"	75,952	281	53	149
*OM2DT	"	73,320	236	62	173
*OM7AG	"	64,241	193	59	168
*OM7JM	"	56,304	259	44	109
*OM4DA	"	24,396	206	25	89
*OM3R	"	13,563	118	32	67
(OP: OM3CFR)					
*OM3TLE	"	10,864	144	24	73
*OM7LM	"	4,331	38	26	35
*OM1ADX	"	4,042	52	16	31
***OM6AS**	**28**	**63,388**	**308**	**31**	**61**
***OM3DX**	**"**	**59,073**	**266**	**31**	**66**
*OM7ACA	21	4,386	53	15	28
***OM3TB**	**14**	**29,232**	**310**	**20**	**67**
***OM7KW**	**7**	**54,435**	**443**	**19**	**76**
*OM6TX	"	18,690	219	14	56
*OM3CDN	"	6,987	135	8	43

Slovenia

S53MM	**A**	**5,827,791**	**4431**	**149**	**464**
S51F	**"**	**2,834,903**	**2421**	**140**	**489**
S56B	"	259,623	596	77	196
S51NM	"	27,913	102	41	62
S56JJV	"	286	19	8	18
S5ØG	**28**	**1,024,860**	**2376**	**39**	**135**
(OP: S56M)					
S58D	"	89,184	688	17	31
S52OP	**21**	**567,336**	**1677**	**36**	**118**
S57C	**3.7**	**16,588**	**295**	**11**	**47**
***S57AL**	**A**	**2,289,320**	**1902**	**130**	**475**
*S57U	"	650,866	841	103	318
*S56WPF	"	193,356	400	81	181
*S58RU	"	132,220	384	62	158
*S5ØUM	"	57,072	293	41	123
*S55KM	"	40,183	202	39	104
*S55KZ	"	26,058	161	31	98
***S57S**	**28**	**44,850**	**244**	**23**	**52**
*S56AA	21	5,168	63	14	24
*S5ØAC	"	255	11	6	9
*S58MU	1.8	714	35	3	18

Spain

EE3A	**A**	**4,230,408**	**3649**	**123**	**384**
(OP: EA3ATM)					
EA3GEG	**"**	**2,830,927**	**2940**	**111**	**340**
EA7KB	"	675,854	1243	89	273
EF2O	"	633,292	908	89	300
(OP: EA2AOO)					
EA2KV	"	496,496	957	73	213
EA5FWW	"	483,796	703	78	238
EA4BM	"	312,208	619	70	177
EA5AV	"	277,200	452	98	232
EA3EIQ	"	190,976	454	69	187
EA1KE	"	120,384	413	56	120
EB1IC	"	110,772	292	56	125
EB7CIN	"	109,056	281	70	143
EA3BFB	"	61,588	161	67	111
EA2DPA	"	59,452	269	45	122
EA3AV	"	46,292	138	49	93
EA1AR	"	35,432	167	36	50
EA7HAB	"	31,866	143	43	70
EA5/LB7Q	"	30,492	259	35	86
EA7HGX	"	18,900	110	37	68
EA5/LA7VK	"	18,816	134	34	62
EA2VE	"	3,660	86	10	10
EA7OT	**28**	**774,288**	**1942**	**39**	**132**
EA2BC	"	195,614	1012	29	65
EE5J	"	165,360	786	30	76
(OP: EA5YJ)					
EA3GZR	"	37,345	201	32	65
EA7GSU	"	28,728	173	22	54
ED5J	"	27,930	188	20	37
(OP: EA5DM)					
ED7K	"	18,533	174	15	28
(OP: EA7IBK)					
EA3CEC	"	9,405	59	21	36
EA1IFF	"	900	30	5	13
EA3BOX	**21**	**368,037**	**1467**	**32**	**97**
EE3E	**7**	**211,709**	**1245**	**28**	**99**
(OP: EA3ELZ)					
EA5RU	**1.8**	**20,569**	**343**	**10**	**57**
***EA1CP**	**A**	**1,254,500**	**1373**	**115**	**385**
***EE7R**	**"**	**833,655**	**987**	**113**	**334**
*EA4DAT	"	631,442	1078	81	241
*ED7R	"	535,440	1047	72	204
(OP: EA7IZJ)					
*EA3GHZ	"	515,336	1115	81	215
*EA1BLI	"	508,938	894	89	224
*EA1JO	"	350,132	602	78	245
*EA1EA	"	340,725	524	100	175
*EA3AYQ	"	236,418	590	68	205
*EA2RW	"	214,292	430	87	230
*EA3TA	"	212,058	550	62	176
*EA3ODC	"	206,701	498	62	191
*EA5HQY	"	196,080	398	85	219
*EB1EVX	"	147,800	491	49	151
*EA2JE	"	124,858	366	45	118
*EA3NA	"	121,726	271	80	162
*EC1BA	"	116,688	449	44	160
*EA1TI	"	112,838	303	65	158
*EA3DWX	"	109,252	333	52	139
*EA4LU	"	105,241	311	53	138
*EF7A	"	100,926	502	30	51
*EA1YE	"	97,995	405	44	95
*EA3GOD	"	97,440	307	50	90
*EB5RR	"	94,248	264	64	140
*EA3NE	"	88,400	229	70	138
*EB5CS	"	77,736	285	39	84
*EB3FLY	"	70,474	228	51	116
*EA1NE	"	62,034	223	49	98
*EA1AW	"	55,062	206	61	146
*EA4RF	"	54,684	184	45	81
*EB5BIH	"	51,086	149	72	106
*EA7HE	"	45,484	200	39	98
*EA1AY	"	43,194	229	36	102
*EA5KGD	"	34,706	155	37	97
*EF5T	"	33,147	222	35	92
(OP: EA5HRT)					
*EA7IQM	"	30,498	246	20	26
*EA2DJL	"	29,568	160	35	97
*EA7HYL	"	28,776	152	38	94
*EA3GEO	"	25,652	100	44	62
*EA4EHC	"	24,644	97	40	82
*EA5XA	"	24,138	121	30	51
*EB5AV	"	23,647	148	36	71
*EA2CRK	"	23,532	118	33	73
*EA3GUM	"	23,415	133	35	70
*EA7CWA	"	21,836	104	36	67
*EA7JDR	"	19,425	148	30	75
*ED1D	"	16,320	126	31	65
(OP: EA1HNW)					
*EA3HJO	"	14,196	88	32	59
*EC1ABR	"	13,640	88	28	34
*EB3WH	"	13,468	128	24	67
*EB1GZO	"	10,508	68	29	45
*EA5GSD	"	7,182	43	30	33
*EA7JHV	"	5,950	74	26	44
*EA5CRC	"	5,490	44	27	34
*EA2AVM	"	4,680	48	16	23
*EA2CHL	"	4,620	65	23	43
*EA5HAY	"	3,388	38	20	24
*EA3CH	"	2,009	30	18	23
*EA3WX	"	1,500	27	11	9
*EA2AOS	"	468	17	7	6
*EA1DFP	"	132	15	1	10
***EA5AER**	**28**	**259,581**	**900**	**33**	**108**
***EE1B**	**"**	**206,340**	**774**	**30**	**84**
(OP: EA1YB)					
*EA1BIM	"	176,880	583	31	103
*EF2F	"	169,388	795	31	75
(OP: EA2DNR)					
*EA4UV	"	130,310	379	39	118
*EA3AKA	"	124,174	681	28	66
*ED7C	"	121,272	408	30	94
(OP: EA7HMD)					
*ED4T	"	121,000	450	30	91
(OP: EA4CWN)					
*EB5BBM	"	80,988	344	28	74
*EA3CS	"	80,344	334	36	85
*EA5HJO	"	78,942	347	29	89
*EA4FLY	"	78,153	327	28	81
*EA2BVV	"	63,000	374	21	54
*EA5DIT	"	52,800	239	28	72
*EA1DK	"	52,788	227	29	77
*EE7Z	"	48,081	263	24	69
(OP: EA7FUN)					
*EA7VJ	"	37,856	168	29	83
*EB7CVL	"	37,335	180	29	66
*EA4EJR	"	18,711	123	20	57
*EA7FRX	"	17,355	122	20	45
*EC7ZL	"	15,222	100	22	37
*EA5CZM	"	5,203	68	13	30
*EA3GXD	"	5,184	41	21	33
*EA7IVN	"	4,914	92	11	31
*EA2RCA	"	2,128	38	10	9
*EA4EEJ	"	2,052	44	11	16
*EA4IE	"	1,575	33	10	15
***EA3KT**	**21**	**98,454**	**498**	**27**	**95**
***EA2SS**	**"**	**89,790**	**460**	**29**	**94**
*EC7JA	"	76,444	465	27	89
*EC7DZZ	"	56,256	362	19	77
*EA4BZ	"	44,702	259	23	80
*EE7E	"	43,460	237	23	83
*EA5HEU	"	40,086	188	27	75
*EA5BZ	"	17,690	270	13	48
*EA5FCW	"	13,888	126	20	42
*EA5TN	"	1,539	21	11	16
*EA2DDE	"	104	7	3	5
***ED5K**	**14**	**36,838**	**182**	**30**	**83**
(OP: EA5FHK)					
*EA4CT	"	16,968	158	17	67
*EA4YK	"	9,916	69	24	43
*EA7IIW	"	8,468	106	18	40
*EB3GIH	"	7,884	127	10	44
*EA5NR	"	624	13	7	9
***EA1CQ**	**7**	**54,080**	**369**	**18**	**86**
*EA7CVF	"	25,813	230	18	65
*EE5W	"	13,715	156	15	50
(OP: EA5AVW)					
*EA4AAQ	"	6,327	146	10	47
*EE5N	"	4,050	79	11	34
(OP: EA5JON)					
***EA5EOR**	**3.7**	**29,602**	**284**	**15**	**67**

Sweden

SM5Q	**A**	**2,135,006**	**1934**	**128**	**374**
SM6BGG	**"**	**1,223,558**	**1890**	**107**	**264**
SM3C	"	1,159,680	1327	113	367
(OP: SM5CCT)					
SM7PEV	"	587,367	1055	77	272
SM4DQE	"	580,068	1096	88	281
SE6Y	"	558,450	984	91	274
(OP: SM6DED)					
SMØBSO	"	482,802	740	106	296
SI3A	"	358,720	711	77	227
(OP: SM3LIV)					
SM6JCC	"	186,715	317	105	244
SA6AIN	"	147,651	488	62	175
SM5BMB	"	124,250	228	86	164
SHØG	"	53,098	174	56	83
SD3A	"	48,334	178	49	120
(OP: SM3FJF)					
SM3NFB	"	16,107	86	37	54
SM6AHU	"	14,892	130	32	70
SM7HVQ	"	14,070	84	29	41
SA7AUW	"	6,670	53	25	33
SM2MZC	"	144	6	3	5
SM3PZG	**28**	**275,794**	**930**	**34**	**112**
SLØW	**21**	**248,788**	**822**	**34**	**114**
(OP: SMØAJU)					
***SJ7M**	**A**	**321,464**	**642**	**72**	**209**
***SM6FJY**	**"**	**273,680**	**635**	**75**	**236**
*SM3X	"	267,372	602	68	184
(OP: SM3CVM)					
*SF3A	"	230,265	551	64	191
(OP: SM3CER)					
*SM5BS	"	165,830	396	63	143
*SM6C	"	132,804	391	57	181
*SM5DXR	"	103,592	363	47	137
*SE6C	"	74,692	301	44	98
(OP: SM6CDN)					
*SA6BKQ	"	68,502	302	40	107
*SI5Y	"	55,800	235	46	104
(OP: SM5BKK)					
*SM3EAE	"	52,992	197	52	92
*SF5D	"	50,318	211	47	92
(OP: SMØDSF)					
*SA3BGM	"	42,174	181	48	94
*SMØHBV/3	"	30,622	196	30	92
*SE6N	"	29,768	193	26	96
(OP: SA6AXR)					
*SI6E	"	28,690	142	30	65
*SE2A	"	28,194	219	28	83
*SMØFM	"	27,178	129	41	66
*SMØLIU	"	21,168	174	27	81
*SM6USS	"	10,725	86	26	49
*SM6IQD	"	10,488	65	31	45
*SA6G	"	7,811	54	28	45
*SM4JSF	"	3,774	42	19	32
*SA7AOI	"	1,485	20	13	14
*SM6RXZ	"	780	18	8	7
***SK4UW**	**28**	**51,408**	**294**	**26**	**58**
*SM5QU	"	41,650	206	27	58
*SM2A	"	7,854	93	16	35
(OP: SM2ILF)					
*SM7S	"	4,704	40	17	25
*SM7RPU	"	4,144	57	13	24
*SM3AGO	"	2,100	26	13	17
***SM6WZH**	**21**	**16,320**	**178**	**17**	**47**

Switzerland

HB9TOC	**A**	**644,298**	**858**	**103**	**335**
HB9EVI	"	8,262	99	20	61
***HB9ARF**	**A**	**537,165**	**867**	**95**	**250**
*HB9CNY	"	216,783	493	61	156
*HB9WDY	"	95,816	335	53	150
*HB3YXV	"	12,225	144	18	57
***HB9DCM**	**28**	**116,160**	**417**	**35**	**86**
*HB9CUB	"	10,920	117	15	27
***HB9AWS**	**14**	**26,433**	**150**	**24**	**65**
***HB9DHG**	**7**	**46,816**	**595**	**15**	**62**

Ukraine

UU7J	**A**	**6,154,648**	**5172**	**159**	**533**
(OP: UUØJM)					
US5D	**"**	**3,371,856**	**2989**	**135**	**462**
(OP: UT7DX)					
UY7MM	**"**	**3,272,808**	**3180**	**142**	**502**
UW5U	"	2,737,300	2655	145	475
(OP: UY2UA)					
UV5U	"	2,078,406	1821	140	454
UT6EE	"	816,387	1094	104	325
UX5UO	"	670,702	811	120	323
UT7NY	"	664,832	1013	106	286
US3IZ	"	568,192	768	98	270
UXØRR	"	369,328	658	83	245
UR4EI	"	247,020	527	72	204
UY8IO	"	204,063	556	60	191
US7IS	"	200,717	511	65	192
UT5RB	"	134,590	486	45	170
UYØZG	"	93,120	472	45	115
US4IQS	"	80,444	448	37	82
UU2JG	"	65,835	174	62	109
UXØKN	"	44,330	114	64	79
USØQG	"	41,405	257	37	132
UT2IW	"	27,750	108	39	72
UV7QA	"	26,269	166	34	75
UY5TF	"	22,148	180	26	72
UT1UW	"	8,961	54	36	51
US5VAC	"	8,262	76	22	32
UT4MW	"	4,590	60	14	40
UU4JC	"	828	18	8	10
US5UO	**28**	**24,750**	**105**	**32**	**58**
UR5ZMK	**14**	**67,800**	**367**	**30**	**90**
UR5QW	"	12,831	98	25	66
UX7CQ	**7**	**43,834**	**313**	**22**	**79**
UR7QC	"	31,832	245	23	69
UX1VT	**3.7**	**23,499**	**361**	**11**	**52**
UY3AW	"	8,437	132	10	49
US5AKU	"	1,323	24	10	17
UT5ECZ	**1.8**	**15,480**	**243**	**9**	**51**
***USØHZ**	**A**	**1,271,538**	**1683**	**113**	**388**
***UR4U**	**"**	**1,151,208**	**1281**	**122**	**420**
(OP: UR4UDI)					
*UT4EK	"	750,237	1148	104	289
*UY2IG	"	693,160	1111	99	304
*UT3EV	"	607,875	1074	94	281
*UT7CA	"	575,477	962	89	270
*UT3I	"	558,000	937	92	280
(OP: US2IHS)					
*UT3UZ	"	546,354	842	90	291
*UW7F	"	475,272	896	87	282
(OP: UR5FEO)					
*UR5MM	"	460,265	877	87	278
*UX7MR	"	444,448	856	84	260
*US2IW	"	313,020	484	93	189
*UX3HA	"	264,020	668	76	231
*UW7RV	"	226,270	495	67	175
*UT8IT	"	224,796	577	64	222
*US7LM	"	210,627	458	73	196
*UX2KA	"	203,732	342	77	135
*UV3QF	"	191,660	522	65	194
*UT5JCE	"	190,368	396	79	209
*UY5TE	"	181,846	591	49	168
*UW2Q	"	178,944	540	55	201
(OP: UR6QS)					
*US7IID	"	176,382	556	48	198
*UT4QV	"	153,370	499	57	188
*UR5RP	"	140,385	402	63	182
*UY1HY	"	140,270	349	52	117
*UX7FC	"	139,356	367	65	172
*UX7QG	"	116,850	400	52	153
*UTØLK	"	115,948	477	55	147
*UW2F	"	112,888	392	49	157
(OP: UTØFT)					
*UY5AA	"	111,585	246	79	136
*UT8UF	"	98,658	371	51	138
*US5IND	"	94,446	318	61	157
*UT4PR	"	90,272	294	53	155
*UR7QM	"	88,730	337	49	141
*UT5EOX	"	73,910	252	55	135
*US7WW	"	71,340	249	49	125
*UT7LW	"	58,617	190	45	122
*UW7M	"	56,448	330	27	117
(OP: UR3MP)					
*USØTA	"	53,865	140	51	82
*UTØCK	"	53,625	257	47	118
*UR7QA	"	46,136	305	38	120
*UTØEZ	"	43,624	157	43	109
*UY5QJ	"	42,560	123	59	74
*US5ISV	"	41,344	213	29	99
*UX8IW	"	39,615	231	32	107
*UR5LAK	"	39,370	207	38	117
*UT5KL	"	34,164	242	35	82
*UU6JJ	"	33,792	192	46	86
*UR7HCX	"	32,131	202	33	94
*UR5KER	"	26,290	142	36	74
*US8UA	"	22,790	112	40	66
*UR5XMM	"	20,819	128	35	74
*UT8IA	"	20,774	152	30	64
*UX7QV	"	19,292	104	38	68
*UT8UD	"	19,176	192	26	76
*US5ZFT	"	18,939	161	24	83
*UT7UE	"	18,054	142	35	83
*UX7U	"	17,604	120	36	72
(OP: UX7UA)					
*UT2AA	"	17,120	107	32	75
*UR5WHT	"	16,758	161	25	73
*UY5AR	"	16,376	109	33	56
*US1GBH	"	15,052	86	35	71
*UT5ULX	"	14,060	98	33	62
*US4IRT	"	13,802	84	33	70
*UT4UB	"	11,600	69	33	47
*UR3PGW	"	9,954	83	24	55
*UT7HM	"	5,621	67	23	50
*UU4JQE	"	3,978	41	19	32
*US5WDJ	"	1,922	37	14	17
***UW8SM**	**28**	**234,135**	**631**	**39**	**126**
*UT4TA	"	104,188	378	35	87
*UR2VA	"	95,795	346	33	86
*UT8EU	"	72,956	309	33	89
*UT1IM	"	69,743	401	26	71
*US7IVW	"	58,272	338	27	69
*UR5WHQ	"	55,008	235	33	63
*UR5ETN	"	52,960	324	24	56
*US7IA	"	51,850	299	24	61
*US2IF	"	43,056	312	20	52
*US3WO	"	32,680	182	29	47
*US5ZCW	"	29,330	295	22	48
*UR7CT	"	18,880	123	24	40
*UR5EAF	"	16,748	124	28	51
*UR5EIH	"	15,960	102	27	49
*UX6IB	"	9,487	100	18	35
*UYØCA	"	9,471	80	20	21
*UT1KY	"	7,854	99	14	19
*UR4IPH	"	3,680	45	12	28
*UXØUW	"	162	15	3	3
***UT7LA**	**21**	**168,572**	**598**	**34**	**114**
*UR8QR	"	67,626	382	23	79
***UT1XX**	**14**	**61,149**	**406**	**25**	**84**
*UR5EFL	"	4,048	84	9	35
***UY2UQ**	**7**	**108,225**	**801**	**23**	**88**
*UT5PY	"	23,184	267	16	56
*UT8QQ	"	15,912	187	20	58
***UU2JM**	**3.7**	**57,760**	**570**	**21**	**74**
*UT5CB	1.8	616	32	4	18

Wales

GWØETF	**A**	**22,119**	**217**	**22**	**51**
GWØGEI	"	17,019	103	24	69
MWØMWZ	**7**	**72,471**	**809**	**18**	**69**
GW4BLE	**3.7**	**255,960**	**1645**	**20**	**88**
***MWØLAO**	**A**	**465,570**	**873**	**74**	**241**
*MWØOPS	"	235,092	563	70	204
*GW4HBK	"	99,902	305	53	156
*GW8NBI	"	80,370	348	37	134
*2WØBRR	"	71,121	296	35	116
*MWØBER	"	14,950	108	24	41
*MW1CFA	"	7,296	70	21	43
*GW3GUX	"	7,020	97	16	49
***GWØNPL**	**28**	**43,350**	**197**	**21**	**64**
*MWØCRI	"	13,120	98	30	50
***GW4EVX**	**21**	**53,675**	**318**	**23**	**72**
*GW7VQD	14	1,170	32	7	19

OCEANIA

Australia

VK3TDX	**A**	**2,120,625**	**2040**	**106**	**269**
VK2IM	**"**	**1,587,385**	**1640**	**121**	**244**
VK7ZE	"	946,736	1078	104	212
VK4IU	"	700,752	1194	75	133
VK2GWK	"	307,890	590	62	136
VK4DMC	"	187,812	450	68	120
VK3AVV	"	147,726	323	63	111
VK4SDD	"	124,440	384	53	83

VK4HG	"	116,820	255	59	118
VK4GH	"	90,216	211	70	109
VK3CTN	"	20,114	85	29	60
VK4VI	"	15,624	72	39	54
VK2BO	"	5,368	45	26	35
VK2PN	"	4,371	37	19	28
VK2TTP	"	3,888	38	22	26
VK2ACC	"	2,242	25	18	20
VK5MK	"	1,254	25	16	17
VK4TL	21	26,988	148	26	52
***VK2LAW**	A	561,000	819	89	166
***VK3TZ**	"	194,331	354	83	128
*VK4VDX	"	187,668	337	81	153
*VK4BOF	"	89,377	320	56	83
*VK2MWG	"	85,204	182	52	127
*VK4BL	"	75,543	204	52	97
*VK2ERP	"	51,246	181	51	95
*VK3FM	"	48,870	138	54	81
*VK3WZ	"	34,727	121	45	76
*VK4XES	"	23,664	99	33	54
*VK4FATT	"	16,376	93	36	53
*VK8AR	"	8,382	62	30	36
					(OP: OZ1AA)
*VK5AKH	"	6,695	49	27	38
*VK3SMC	"	3,692	45	26	26
*VK2GR	"	3,268	34	20	23
*VK1XYZ	"	2,279	27	20	23
*VK8HPB	"	2,279	25	20	23
*VI6CR	"	2,067	28	18	21
*VK7BEN	"	1,620	23	10	17
*VK6WX	"	936	18	12	14
*VK4MON	"	357	12	8	9
*VK5MPJ	"	70	5	5	5
***VK4EJ**	28	174,610	657	29	66
*VK2NU	"	35,192	158	25	58
*VK1SV	3.7	121	8	5	6

Brunei

***V85ZX**	A	58,176	247	42	59

East Malaysia

9M6YBG	A	734,484	1362	83	111
9M4SMY	"	161,283	534	50	61
					(OP: JE9MBV)
9M8YY	28	187,824	755	27	59
					(OP: JR3WXA)
***9W6ZAM**	28	4,520	59	18	22

Fiji

***3D2A**	28	1,123,220	2794	34	108
					(OP: VK4AN)

Guam

AC2AI/KH2	A	1,331,362	2100	92	141
WH2X	"	1,326,339	1849	90	169

Hawaii

NH7A	A	6,560,946	5007	143	316
					(OP: N6TJ)
NH6WZ	"	488,519	963	74	107
KH6GT	"	223,748	714	54	68
NH7RO	"	188,400	353	80	123
KH6OA	"	3,483	40	22	21
KH7Y	28	1,374,849	3187	38	119
KH6QJ	3.7	90	5	4	5
***KH6CJJ**	A	450,843	796	79	122
*KH7T	"	308,095	546	88	127
*KH6OO	"	28,280	119	45	56

Indonesia

YC1DOL	A	4,539	38	22	29
YC1LA	21	119,802	553	27	55
YB3GE	14	22,010	131	20	51
YB8FL	7	85,855	421	25	52
YDØLOU	"	37,914	221	25	46
YB1BGI	"	5,535	80	17	24
YD1BSL	"	1,254	26	11	11
***YC6JRT**	A	268,270	536	61	132
*YB1UUN	"	85,351	236	51	86
*YC2FAJ	"	68,242	230	51	98
*YBØJZS	"	41,866	136	47	74
*YB1AQD	"	39,186	140	50	76
*YCØOXA	"	13,600	69	31	49
*YF1AR	"	2,736	27	13	25
*YBØCOU	"	2,496	27	19	20
***YB3IZK**	28	42,975	233	25	50
*YC1RHS	"	6,201	67	16	23
***YC1KI**	21	98,800	424	27	77
*YC1ELI	"	31,104	149	23	58
*YC1BRS	"	10,545	77	21	36
*YF8RIM	"	2,592	29	13	19
***YD2NDX**	7	15,694	126	21	38
*YD1DDB	"	6,072	79	18	28
*YD1EGP	"	735	21	10	11
*YC9CT	"	352	10	8	8

New Zealand

ZL2MF	A	149,688	305	68	130
ZL4NR	"	135,546	293	62	112
ZL2US	"	45,486	133	45	88
***ZL2U**	A	70,040	238	53	83
*ZL2MM	"	53,802	197	46	80
*ZL3DXT	"	44,428	175	45	71
*ZL3DW	"	20,202	103	33	45
***ZL1YE**	28	109,032	598	22	44
***ZL2KBR**	14	35,904	182	16	52

Niue

ZK2X	A	5,218,226	4460	127	292

Palau

T8AA	A	42,159	226	34	35

Philippines

DU9RG	A	1,641,640	1674	106	258
DU1JI	14	41,580	280	22	32
***DV1JM**	A	242,000	531	67	109
***DU1LC**	"	202,740	584	48	76
***DV1MM**	21	32,016	212	22	36
*DU1ACV	"	1,280	28	10	10
*DU7RH	7	1,440	25	10	14

South Cook Islands

*E51IWC	28	1,030	47	6	4

SOUTH AMERICA

Antarctica

RI1ANC	A	817,716	1187	72	177

Argentina

LT1F	A	4,243,590	3944	103	287
					(OP: LU2FE)
LU7HN	"	1,518,197	3295	35	132
LU1VM	"	958,292	1703	68	146
LU5FD	"	695,244	1012	87	166
LW9ETQ	"	134,694	442	41	85
LU1DZ	"	36,816	131	41	77
LU1QAH	"	1,829	21	12	19
AY5F	28	1,888,656	3992	37	131
LU2DKT	1.8	880	18	10	12
***LW1HR**	A	262,122	660	60	98
***LT5Y**	"	245,658	426	45	51
*LU2EE	"	234,033	504	58	123
*LU1VZ	"	212,930	516	71	128
					(OP: LU9VEA)
*LU5CAB	"	176,547	523	55	92
*LU5FR	"	173,340	391	62	118
*LW3DN	"	120,204	370	44	82
*LW4EF	"	59,740	278	39	64
*LU9EY	"	39,168	194	41	61
*LT4K	"	21,165	206	37	46
					(OP: LU6KA)
*LU6DRN	"	17,763	99	39	54
*L73DX	"	14,129	107	35	36
*LR1A	"	3,913	48	19	24
*LW3DC	"	828	19	10	13
***LW6DG**	28	958,518	2404	33	108
***LU6FOV**	"	382,850	1093	33	97
*LW7DUC	"	375,160	1232	27	86
*LQ1H	"	353,340	1087	27	90
*LU3DK	"	215,270	804	23	80
*LU5MT	"	143,718	551	24	78
*LU7YZ	"	107,787	499	22	71
*LW5EAE	"	81,524	380	22	67
*LU8DY	"	78,526	376	22	57
*LU5DDX	"	71,298	352	27	75
*LW1DG	"	68,456	315	24	62
*LU9DPM	"	52,440	267	25	51
*LW6DAK	"	38,776	193	23	51
*LU1EXR	"	18,392	107	21	55
*LW9DHR	"	18,312	179	16	26
*LU5EVK	"	16,391	169	17	20
*LU6EVD	"	16,254	115	19	44
*LO7D	"	14,174	155	16	22
					(OP: LW1DRH)
*LU2DVF	"	3,672	52	14	22
*LU1IBL	"	473	15	6	5
*LU7ADR	"	414	12	7	11
*LU7DSU	21	12,144	69	26	40
*LU2EM	"	2,414	50	16	18
***LQ5H**	14	121,166	516	30	64
					(OP: LU3HS)
*LU6FHO	7	406	37	6	8

Aruba

P4ØW	A	14,346,144	7655	157	497
					(OP: W2GD)
***P43E**	A	346,425	830	51	98

Bolivia

CP1FF	A	74,947	228	44	105

Brazil

PY2YU	A	7,710,430	5210	131	387
PP1CZ	"	1,320,352	1932	69	179
PY5KD	"	464,640	470	103	281
PY1WS	"	285,792	459	88	141
PV8ADI	"	143,655	402	43	114
PY2KQ	"	116,739	396	39	70
PS8DX	"	79,002	290	30	84
PY1PDF	"	58,500	251	48	82
PY2KP	"	28,188	100	43	73
PU2KXM	"	18,561	137	23	46
PT2CVA	"	13,248	86	20	52
					(OP: PT2AC)
PY2LCN	"	3,100	70	12	13
PU2OOT	"	1,260	40	9	11
ZX5J	28	2,855,000	5097	39	161
PY2LED	"	1,129,968	2796	33	111
PP5KR	"	323,312	1381	23	65
PY5QW	"	127,116	450	21	78
PP5JN	"	104,635	490	22	63
PU2WCD	"	17,118	133	16	38
PR5B	21	1,519,875	3069	36	139
					(OP: PY2LSM)
PV8CQ	"	82,467	480	20	43
PY5AB	7	27,936	172	22	50
PY3PC	"	126	32	3	4
***PY2NY**	A	1,351,647	1609	92	205
***PY2SE**	"	430,274	974	55	114
*ZX5ZZ	"	131,532	448	48	65
*PY2ASS	"	85,560	344	37	83
					(OP: PY2AXH)
*PY1MT	"	79,728	290	44	88
*PY3XX	"	75,768	290	52	71
*PX3X	"	50,255	203	42	73
*PY2KPY	"	44,676	227	34	39
*PV2C	"	32,825	168	44	57
					(OP: PY2RDZ)
*PY2SBY	"	31,621	135	43	60
*PY1CX	"	29,304	153	39	72
*PT2AW	"	27,864	107	44	64
*PY3TIO	"	23,025	131	31	44
*PY1JR	"	13,284	112	37	45
*PY2TOP	"	6,195	68	26	33
*PV8RR	"	4,264	50	15	26
*PY1XP	"	3,984	50	21	27
*PS7AB	"	2,880	43	22	26
*PP5BB	"	882	18	7	14
*PV8AZ	"	841	21	13	16
*PY2TIM	"	252	7	5	7
***PU2LEP**	28	938,349	2140	35	118
*PU8WWW	"	176,657	637	29	98
*PY1RY	"	102,999	684	19	38
*PU2SDX	"	95,550	392	30	68
*PU5FJR	"	94,326	437	23	56
*PU1MMZ	"	84,880	421	26	54
*PS2R	"	62,412	272	19	65
					(OP: PY2TI)
*PY1CD	"	56,522	401	17	42
*PU3IKE	"	43,566	304	18	35
*PY2SEI	"	36,432	231	20	46
*PY1PL	"	35,109	301	14	33
*PP5MQ	"	32,085	206	24	45
*PY1RBM	"	31,772	147	26	68
*PU2UEO	"	30,690	142	28	62
*PU2STZ	"	29,760	171	25	55
*PU5AAD	"	26,600	126	19	57
*PU1JOR	"	26,320	129	28	66
*PP5ZD	"	19,580	176	15	29
*PY3AJB	"	18,693	118	21	46
*PP5EJ	"	14,768	116	18	34
*PU8TLS	"	11,480	107	14	42
*PU3SVA	"	6,580	78	15	20
*PY4RR	"	6,240	79	19	33
*PU2UTC	"	5,291	50	9	28
*PU3KNP	"	5,236	61	17	27
*PU2LVA	"	4,224	58	11	22
*PU1VHF	"	2,040	38	15	19
*PU2RKP	"	1,953	45	9	12
*PU3KNG	"	1,452	30	10	12
*PU2NDY	"	624	22	6	10
*PU2SGL	"	154	10	5	6
***PY3FBI**	21	77,280	326	28	68
*PY1NB	"	16,128	95	22	41
*PV8RF	"	5,600	55	16	34
*PY2BRC	"	6	1	1	1
***PS8RF**	14	19,684	198	15	23
*PR7AYE	"	18,900	101	21	49
*PY1ON	7	3,458	36	14	24

Chile

CE2WZ	A	7,080	45	27	33
CA3KHZ	28	20,720	199	18	22
CE3DNP	14	104,310	427	29	61
***CE2UIR**	A	41,040	154	55	65
*CE3TKV	"	9,450	92	23	31
*CE3WYZ	"	3,160	49	19	21
***CE4SES**	28	61,731	439	17	40
*CE4WW	"	57,600	355	23	49
					(OP: CE4UJU)
***CE4SFG**	21	70,070	287	29	69
***CE3GDR**	7	10,368	94	20	34

Colombia

***5K3R**	A	311,552	465	77	179
*HK3Q	"	154,030	296	67	144
*HK8EA	"	8,512	59	23	41
*HK6RF	"	6,448	68	25	27
***HK3TU**	28	375,594	1436	29	89
*HJ4ZJS	"	49,977	311	23	58

Ecuador

HC2AQ	21	511,000	1304	34	106
***HC2/KF6ZWD**	A	3,206,432	2964	113	275
*HC5VF	"	186,592	382	59	137
***HC1JQ**	14	639,705	1407	37	128

French Guiana

FY/F5HRY	28	2,742,817	5325	38	141
					(OP: F5HRY)
FY5KE	21	2,778,468	5170	40	146
					(OP: F1HAR)
FY5FY	14	2,266,628	4318	38	144
***FY5PO**	A	261,975	540	58	117
*FY/F4GHA	"	4,020	38	25	35

Guyana

8R1EA	28	1,831,852	4233	35	123
					(OP: AH8DX)

Paraguay

ZP5DBC	21	775,047	1805	37	130
***ZP6DYA**	28	13,794	153	21	36

Peru

OA4SS	A	2,932,960	2925	110	258

Suriname

PZ5MM	A	9,764,010	6648	125	397
					(OP: DK1MM)

Trinidad & Tobago

***9Z4DZ**	21	61,484	309	18	58

Uruguay

CW5W	A	6,026,109	4134	138	381
					(OP: CX6VM)
CX2DK	21	745,668	1763	37	117
***CX9AU**	A	1,216,051	1570	89	194
*CX7ACH	"	21,033	156	20	37
***CV4C**	28	558,756	1434	35	118
					(OP: CX4CR)
*CX1DP	"	347,383	1156	26	83
*CX4AD	"	243,712	744	28	91
*CX5CBA	"	201,663	790	24	73
*CX2TG	"	198,432	761	23	73
*CX1AZ	21	14,570	124	22	40

Venezuela

4M6CQ	7	175,801	619	24	83
					(OP: YV6BXN)
YV5MSG	3.7	74,157	458	16	41
YV5IAL	1.8	230	12	3	7
***YV5NEA**	A	3,313,500	3256	95	280
*YY5COR	"	21,160	104	33	59
*YV5NWG	"	11,560	57	33	52
***YW5W**	28	200,914	650	32	81
					(OP: YV5TX)
*YV1FYZ	"	11,100	222	10	15
***YV5ER**	21	144,000	527	28	72
*YY1RJG	"	26,656	173	18	50
***YY2CAR**	7	15,535	95	17	48
*YY2ACA	"	14,413	79	17	54

QRP

NDØC	A	757,292	820	89	243
VA3DF	"	722,925	758	85	272
JR4DAH	"	633,304	837	99	202
K8ZT	"	572,544	612	90	246
KR2Q	"	505,512	593	80	226
UX2MF	"	473,536	751	94	298
LZ2SX	"	419,818	804	87	227
W6QU	"	335,916	463	81	177
					(OP: W8QZA)
NT4TS	"	265,960	423	60	184
NP2Q	"	252,336	713	53	115
W1MR	"	243,756	392	65	179
RN4HAB	"	233,520	664	61	217
RW3AI	"	231,345	618	58	207
EA1GT	"	219,936	592	55	177
RU9UN	"	217,140	344	70	165
G3R	"	195,316	508	53	140
					(OP: GØDCK)
CT1AOZ	"	186,018	347	72	186
IZ1JLF	"	165,880	436	62	158
HR2DX	"	163,770	440	40	119
UT5UUV	"	149,856	517	47	176
KT8K	"	137,360	297	47	123
PE2K	"	132,591	490	46	147
N1TM	"	127,721	258	52	135
OK1XOE	"	116,802	396	48	158
UA7G	"	107,926	259	70	112
UX8ZA	"	102,176	410	47	159
K8DRT	"	92,612	204	51	118
R7FO	"	89,000	398	41	137
HA7YS	"	84,280	324	53	162
UT7MT	"	79,130	349	45	148
LZ7H	"	74,725	312	43	132
YO4AAC	"	63,244	250	45	118
PC2F	"	62,823	305	36	93
VA3RKM	"	58,519	174	45	94
SP9RQH	"	56,525	197	61	114
ON3TO	"	49,256	262	31	100
WA2OQJ	"	48,708	146	36	87
VK4ATH	"	46,872	155	55	69
EU3AA	"	42,614	224	37	112
SQ9AOR	"	38,040	167	41	79
N7JLC	"	35,072	113	55	82
KI4SVM	"	33,182	130	28	66
PY4ZO	"	32,305	168	32	59
RM4A	"	31,088	182	31	85
SQ3OGP	"	31,040	198	29	68
LA1TPA	"	30,264	203	27	77
VA3WR	"	28,676	115	42	65
JP7CZE	"	27,552	143	36	60
DL4ALI	"	27,360	155	32	64
UAØSBQ	"	25,098	115	23	66
CT1ESQ	"	24,206	133	36	97
SM7TZK	"	23,862	136	37	86
PAØRBO	"	22,770	157	29	81
IV3BTY	"	18,912	169	22	74
EA3FHP	"	18,879	128	29	64
7K1CPT	"	18,312	94	35	49
KIØG/5	"	17,820	107	21	45
PI4ETL	"	16,720	175	18	70
					(OP: PDØPMS)
GM4HQF	"	16,632	119	21	67
RX3AU	"	14,996	72	39	53
BD9ATY	"	13,284	95	34	48
EA3TJ	"	10,384	103	20	39
CO2VE	"	10,260	79	18	36
UA9OQA	"	10,147	99	27	46
USØYA	"	9,727	55	32	39
NX2PX	"	9,152	60	13	39
PY2BN	"	8,493	71	27	30
YU1LM	"	5,840	72	21	52
N4NYY/2	"	5,616	38	21	31
HB9EMS	"	5,559	56	22	29
JL6LTB	"	5,184	55	20	28
F4EMK	"	3,822	49	16	33
DJ6FO	"	3,640	46	18	38
WX4RM	"	2,829	25	17	24
US3ITA	"	2,255	33	14	27
BD4HUB	"	2,184	31	18	21
MØSFR	"	2,090	31	14	24
KK7VL	"	1,800	25	13	17
JR1UJX	"	1,624	27	13	15
LB4CD	"	1,476	43	12	29
W2JEK	"	1,472	23	13	19
N8HM/3	"	1,462	22	14	20
G6CSY	"	1,160	20	10	10
PA1B	"	1,073	29	8	21
AF9J	"	1,040	27	14	12
K5JVC	"	882	14	7	14
EA7HOJ	"	729	27	9	18
UA3TW	"	713	23	8	15
A41OF	"	156	7	6	7
WA5J	"	143	10	6	5
DF9WOY	"	63	7	3	6
W5GAI	28	152,865	445	29	100
JR3RWB	"	131,450	470	30	80
EU1AA	"	126,072	428	35	101
K4WI	"	123,120	378	28	92
K4CIA	"	119,427	356	27	94
K4MTI	"	80,080	347	26	78
VE3HG	"	79,380	303	23	75
LU3HFA	"	61,748	280	23	63
YO5OHY	"	53,820	275	28	62
SP5DDJ	"	50,052	241	31	55
WB7OCV/2	"	49,840	204	22	67
SQ5NBE	"	28,560	196	24	44
N8MWK	"	27,090	120	25	61
JR6HMJ/1	"	25,760	167	23	47
OZ6OM	"	25,452	125	24	60
JI3CJO	"	24,752	167	20	36
VE3GTC	"	24,120	121	17	55
W6AQ	"	20,800	132	23	42
BD4GNV	"	20,022	115	24	47
SO1D	"	17,212	137	19	33
					(OP: SP1JPQ)
EC4AA	"	17,136	137	17	46
KB2HSH	"	17,112	100	14	48
YO4ATW	"	16,640	153	19	46
UXØZAB	"	15,209	94	27	40
UW5ECQ	"	14,070	118	23	44
					(OP: UV5ECQ)
G4GSA	"	13,500	124	17	33
DF7LS	"	13,224	138	18	40
I5KAP	"	12,220	103	19	28
YO6XK	"	12,220	132	17	35
OM8JP	"	11,712	110	18	30
LA5WNA	"	6,431	60	15	44
UA6AK	"	4,704	53	15	33
IT9DTU	"	2,736	32	14	22
UU3JU	"	2,670	45	10	20
EA3GI	"	2,607	39	13	20
YO5PWR	"	2,046	39	11	20
BD4HY	"	1,885	31	13	16
9W2VVH	"	1,580	39	9	11
EA4CU	"	1,365	30	7	14
IZ8JJI	"	684	24	8	11
N6NUL	"	290	17	5	5
JA1XUU	"	160	6	4	6
F5UL	"	132	9	6	6
JR1USU	"	120	5	4	4
AB1HD	"	4	1	1	1
K1NUN	"	2	1	1	1
VE6BMX	21	77,096	375	25	67
G4CWH	"	68,420	347	27	83
SP4LVK	"	67,872	330	27	74
YO5AIR	"	66,010	383	28	87
EI4II	"	63,180	383	23	85
I4PZP	"	44,710	270	22	63
JH3DMQ	"	42,994	242	23	51
YC2VEJ	"	24,568	158	24	50
JR1NKN	"	18,044	147	22	30
LA8WG	"	17,360	157	18	47
WA6FGV	"	16,940	125	18	37
LY5G	"	15,748	157	15	47
UI8CM	"	12,985	97	12	41
JR2EKD	"	12,444	109	18	33
OK1AIJ	"	8,595	153	10	35
FM1II	"	7,918	79	11	26
UA1CEC	"	5,456	120	11	33
EW6FX	"	3,120	67	8	32
JRØQUR	"	1,320	21	14	16
AB8FJ	"	798	17	7	12
BD4WM	"	777	17	9	12
W9BNO/Ø	"	703	20	10	9
RZ6HX	"	620	21	4	16
JG1GPY	"	504	12	7	7
BG4HTM	"	198	10	5	6
KL7DE	"	140	8	3	4
7M3FMR	"	63	5	3	4
TG9ANF	14	327,236	1179	29	95
YO8SSB	"	112,255	498	32	111
UAØA	"	60,742	213	31	90
SP3DRM	"	41,610	331	20	75
YT1CS	"	40,630	399	17	68
N5VEZ	"	36,957	180	24	73
J28AA	"	32,100	152	22	53
					(OP: E7ØA)
SM6CRM	"	27,552	231	21	63
VA7IR	"	27,158	175	23	51
MØJBA	"	8,635	160	12	43
E73CV	"	6,958	108	11	38
LZ1ZC	"	6,670	142	8	38
IZ2QKG	"	5,324	111	8	36
OK1XYZ	"	3,612	75	9	34
KR2AA	"	3,570	38	13	29
E76EA	"	1,938	57	8	26
RW6AML	"	768	14	11	13
YO2MBU	"	504	23	6	15
JK3AHS	"	50	4	2	3
BH8ADT	"	21	4	3	4
ACØOP	"	6	1	1	1
ES6Q	7	45,178	317	20	78
					(OP: WS4T)
SP4GFG	"	32,648	329	17	60
SP2QOT	"	17,886	240	11	55
ON3DI	"	16,368	211	10	52
CO6CBF	"	16,120	145	16	46
I2/IZ3IBL	"	13,608	208	11	52
JH1APZ	"	4,032	60	14	14
JA2MWV	"	3,680	53	15	17
IP7J	"	3,000	81	7	33
DJ3GE	"	1,749	53	5	28
N2JNZ	"	840	15	7	13
UU7JF	"	500	19	7	13
4L9QQ	3.7	62,928	422	8	49
					(OP: UR9QQ)
OL4W	"	13,939	266	8	45
					(OP: OK1IF)
HA6VA	"	12,586	211	10	52
SQ8MFB	"	6,486	149	6	40
VA3WPV	"	456	30	4	4
9A4AA	1.8	1,830	61	5	25
SQ2RGB	"	1,682	74	4	25
K1HTJ/Ø	"	320	43	4	4
IZ7SIA	"	272	20	4	12
K3TW/4	"	144	12	3	6
IK7XNF	"	104	9	4	9

ASSISTED

NORTH AMERICA

United States

W3UA/1	A	6,292,075	3447	147	500
N1DG	"	3,772,496	1858	160	568
K1LI	"	2,534,532	1601	136	436
KG1E	"	2,508,484	1712	128	389
AA1V	"	2,451,216	1297	151	518
KA2KON/1	"	1,933,624	1191	133	451
W1CTN	"	1,714,662	1103	119	443
KI1G	"	1,660,892	1055	141	413
W2JU/1	"	1,293,408	922	116	383
NE1B	"	964,706	738	113	366
W1EBI	"	913,902	732	115	339
K1JB	"	864,993	795	96	297
W1ZT	"	767,595	745	89	276
W1EQ	"	737,962	692	88	306
K1TH	"	714,288	701	86	282
K2TE/1	"	696,890	585	113	341
AD1DX	"	687,750	675	99	294
K1TR	"	622,660	668	80	246
K1RV	"	565,920	521	94	299
WK1J	"	562,900	674	86	239
W3IZ/1	"	418,560	478	77	243
NU3C/1	"	410,292	613	67	194
W1GSH	"	402,520	554	68	222
W1MAW	"	399,025	499	68	207
K1EO	"	396,458	426	74	260
K1QX	"	269,955	314	77	238
KT1B	"	235,944	377	50	176
K3IU/1	"	230,378	322	55	199
N1ITT	"	191,744	368	57	167
K1TC	"	179,608	239	76	210
N1SNB	"	158,465	283	57	148
N1YX	"	157,759	264	73	144
K1SND	"	144,050	272	61	154
WV1M	"	87,014	217	35	104
W1MAT	"	86,122	201	36	113
W1RM	"	81,510	140	82	127
AE1T	"	75,858	200	42	99
K1FWE	"	56,862	136	52	110
W1ZZ	"	25,630	91	29	81
W1JR	"	9,570	57	26	40
WB1DXD	21	91,800	280	26	82
***KS1J**	A	2,580,719	1773	117	410
*NF1O	"	813,467	666	108	331
*NE1F	"	327,352	356	89	243
*N1API	"	232,713	392	52	169
*AD1L	"	226,809	329	64	173
*K2RS/1	"	221,409	367	55	164
*K1KXN	"	215,738	395	71	198
*N1IW	"	203,670	272	78	201
*WA1ZYX	"	158,661	300	47	136
*N1BMX	"	118,146	244	53	141
*W1KMA	"	116,021	258	52	129
*W8TOM/1	"	103,930	223	64	126
*N1DS	"	46,580	154	44	93
*W1KF	"	40,713	130	36	87
*WO1N	"	33,152	112	39	73
*K1TW	"	27,413	122	23	56
*WA1N	"	17,835	79	31	56
*KK1X	"	9,280	68	20	38
*K3EIN/1	"	4,374	47	19	35
***W1WBB**	28	113,315	307	25	106
*N1VVV	"	56,964	224	25	69
W2RE	A	8,889,252	4249	170	573
N2MM	"	4,987,210	2641	157	541
W1GD/2	"	4,241,050	2114	161	540
N1EU/2	"	3,867,644	2032	150	521
AB3CX/2	"	3,259,934	1877	141	472
N2SR	"	2,989,300	1614	149	519
WW2Y	"	2,333,256	1447	141	432
W2YR	"	1,666,089	1006	136	467
K2GN	"	1,505,088	1005	132	404
N2GC	"	1,490,890	1005	129	401
W3MR/2	"	1,459,110	1016	118	392
W2RD	"	1,426,079	897	139	424
N2SQW	"	1,407,820	1188	102	328
N1IBM/2	"	1,283,013	900	126	387
W2GDJ	"	1,271,940	940	125	368
K2EP	"	1,219,707	818	134	397
W2IRT	"	1,113,030	814	124	374
KF2O	"	1,047,948	685	139	422
W6XR/2	"	1,042,304	776	114	365

K2ONP	"	977,523	799	117	340
N2VW	"	930,715	713	121	364
KC2QLJ	"	628,900	772	82	249
K2CYE	"	578,280	652	76	240
K2BX	"	559,350	605	92	247
KG2V	"	502,252	457	100	309
K2RB	"	412,227	539	66	215
K2QPN	"	405,855	489	78	233
AA2DC	"	345,800	392	76	249
N2ED	"	343,420	584	53	167
WK2H	"	300,150	410	54	207
W2LE	"	292,516	479	44	173
K2XF	"	286,314	442	53	185
N1JP/2	"	222,915	347	51	180
K2SG	"	199,888	298	66	182
NA2M	"	126,480	260	49	137
K2XA	"	97,194	193	66	128
N2WKS	"	93,513	188	58	125
K2MK	"	82,739	201	43	114
N2OO	"	60,325	179	44	83
W2NK	"	54,470	163	43	87
K2NV	"	52,094	173	36	86
AB2E	"	45,696	141	43	85
WF2B	"	42,000	124	39	86
N2WK	"	8,330	56	29	41
N2CJ	"	8,250	53	26	40
W2NO	"	8,175	47	33	42
K2SSS	**28**	**1,022,831**	**2023**	**37**	**144**
W2RR	"	310,488	822	29	107
		(OP: WA2AOG)			
K2CJ	"	29,185	151	14	51
AC2AJ	"	6,888	50	17	39
N2YBB	**21**	**226,575**	**518**	**37**	**122**
N2MUN	**"**	**199,665**	**515**	**29**	**106**
WR2G	**14**	**138,320**	**352**	**32**	**108**
WA2AOG	3.7	5,760	58	10	30
***KA2D**	**A**	**1,073,190**	**916**	**95**	**320**
*WA3RHW/2	"	432,729	531	77	220
*W2RDM	"	296,496	415	55	206
*K2SI	"	64,236	154	52	107
*N2SCJ	"	39,039	107	42	101
*K9CHP/2	"	33,804	127	36	72
*K2TZY	"	32,334	112	30	72
*KC2NYU	"	31,096	125	28	76
*WC2L	"	25,351	89	28	73
*KJ4IC/2	"	16,910	68	32	63
*WB2VSL	"	15,379	74	30	61
*KA2AEV	"	12,462	72	17	45
*N2RQ	"	10,075	62	22	43
*AC2EV	"	2,960	27	15	25
*NC2N	"	2,124	23	14	22
		(OP: EW1AR)			
***K2MFY**	**28**	**293,124**	**675**	**31**	**125**
***N2FF**	**"**	**245,632**	**580**	**30**	**122**
*K2PAL	"	8,748	70	15	39
***KS2G**	**21**	**118,950**	**346**	**26**	**96**
NN3W	**A**	**11,765,740**	**4915**	**185**	**683**
K3WW	**"**	**6,385,984**	**3264**	**158**	**546**
AA3B	"	5,064,637	2630	150	527
K3PP	"	4,289,472	2253	160	517
K3MD	"	2,771,496	1842	136	428
N3IQ	"	2,660,168	1382	162	547
N1WR/3	"	2,428,770	1548	139	431
N3MX	"	2,107,164	1413	123	411
N3AM	"	2,009,194	1298	133	409
K3NM	"	1,909,600	1119	141	475
N3ZA	"	1,852,800	1115	144	456
K3IPK	"	1,524,042	1083	122	385
W3GM	"	1,490,086	1044	125	389
		(OP: K3ND)			
WA3F	"	1,406,224	1059	120	371
W3KL	"	1,284,000	1068	120	308
AA3K	"	1,271,700	984	116	355
WN3R	"	1,255,938	967	115	364
W3OU	"	1,246,878	942	118	359
W2GPS/3	"	1,173,910	957	118	327
N3WD	"	1,027,400	902	112	328
K3FT	"	979,476	979	84	288
NB3C	"	890,530	720	123	307
K4IKM/3	"	661,300	640	99	290
N3NR	"	621,810	610	100	278
NW3H	"	520,524	600	81	261
KE3X	"	514,600	618	75	235
NK3Y	"	429,692	547	84	200
W3EKT	"	371,808	490	79	209
KA3HED	"	307,190	396	75	203
W3ZZ	"	302,395	410	82	225
K3AU	"	288,456	362	77	226
		(OP: K2YWE)			
W3UL	"	274,111	393	82	187
W3EA	"	205,972	317	59	174
K3VA	"	197,113	352	48	155
K3YD	"	193,440	313	57	183
K3TUF	"	155,828	251	82	157
WØBR/3	"	155,820	238	74	171
W2CDO/3	"	145,275	275	50	145
W3TZ	"	117,658	254	55	123
W3WC	"	114,723	227	52	137
K3SV	"	101,010	214	53	129
K3YDX	"	88,038	167	55	146
N3XUD	"	54,000	164	42	102
K3TEJ	"	48,875	149	30	85
AF3I	"	20,430	87	37	53
W3NRJ	"	4,424	42	19	37
		(OP: W6NRJ)			
K3YG	"	2,352	28	4	24
K2PLF/3	**28**	**808,916**	**1676**	**34**	**138**
K3NK	"	183,294	438	34	119
W3FW	**14**	**245,280**	**629**	**36**	**110**
N3NRN	"	32,571	115	26	73
K3QX	**7**	**22,176**	**122**	**14**	**52**
***W3KB**	**A**	**1,471,613**	**1165**	**105**	**346**
***W6AAN/3**	**"**	**811,944**	**772**	**103**	**275**
*N3ALN	"	630,765	709	77	244
*WM3O	"	546,334	571	96	250
*N3TD	"	306,138	436	73	186
*WA3AER	"	303,970	449	70	199
*W4EE/3	"	299,874	465	63	183
*W3OD	"	227,255	278	71	230
*WA3ERQ	"	36,652	114	37	82
*AB3IC	"	34,465	133	34	79
*KB3VMR	"	31,080	111	32	73
N4ZC	**A**	**3,727,767**	**1927**	**162**	**537**
K1ZZI/4	**"**	**3,689,741**	**1994**	**152**	**507**
WJ2D/4	**"**	**3,014,362**	**1816**	**146**	**461**
K3IE/4	"	2,549,274	1689	132	414
K5EK/4	"	2,373,510	1429	147	463
W3OA/4	"	2,293,571	1375	146	453
W4QN	"	2,181,067	1344	143	446
W3GQ/4	"	2,098,272	1422	128	400
N4DJ	"	2,087,646	1447	128	389
N4PQX	"	2,030,380	1191	145	460

N3CZ/4	"	1,895,784	1394	129	372
KE4UW	"	1,846,988	1220	133	439
N4KG	"	1,678,061	1038	143	446
KI4TZ	"	1,495,758	1051	135	384
K5AUP/4	"	1,421,967	1110	114	339
N4VV	"	1,343,930	920	124	402
WB4MSG	"	1,185,336	933	120	369
KG4W	"	1,143,610	886	111	352
N4RV	"	1,084,600	808	125	368
N3MK/4	"	1,076,955	767	126	409
WW4CP	"	955,300	972	97	313
W7WZ/4	"	938,904	821	106	350
AA4DD	"	932,715	818	112	293
K1KO/4	"	926,115	785	105	330
W2YE/4	"	827,585	796	95	272
NF4A	"	767,276	647	110	323
W7DO/4	"	711,226	670	103	295
N2TU/4	"	627,270	534	110	325
W4AS	"	581,728	546	96	296
K4LQ	"	576,138	536	104	289
K5VIP/4	"	552,900	521	103	277
AF7W/4	"	454,716	524	84	222
K1MIJ/4	"	382,796	463	86	246
K4BP	"	352,060	435	93	197
ND4V	"	334,305	442	83	202
W4PG	"	312,354	549	49	152
K3KO/4	"	259,008	299	71	233
WI4T	"	228,179	312	74	185
NN4X	"	218,450	297	76	181
KB4CP	"	218,380	267	81	224
N4CR	"	211,357	365	73	168
N4DW	"	207,036	269	77	207
NF3C/4	"	176,328	285	64	173
		(OP: W4VIC)			
W4AX	"	173,478	378	50	124
W4IR	"	172,536	264	64	173
NV4A	"	169,442	254	67	180
K4APG	"	163,280	250	76	184
K4QPL	"	162,759	258	67	160
K4DLI	"	157,176	278	60	162
N4DXI	"	151,380	305	56	124
N4TL	"	131,670	296	44	121
K1GU/4	"	117,208	234	54	130
N3BM/4	"	98,256	198	54	124
N4NM	"	93,060	230	54	111
W4MJW	"	79,665	223	47	94
AE4TX	"	59,920	154	49	91
WS3N/4	"	55,142	128	50	108
WO4MW	"	49,457	138	49	88
NY4I	"	47,376	126	42	102
WR4B	"	42,291	124	44	83
KD4W	"	38,880	112	52	92
W4AEJ	"	37,389	110	30	91
N4NW	"	32,712	97	44	72
W4GHD	"	32,292	109	37	71
N3FP/4	"	22,199	101	23	56
K4TRH	"	10,553	74	18	43
W6UB/4	"	3,696	44	7	21
N4BP	**28**	**846,022**	**1768**	**37**	**130**
N4ZZ	**"**	**569,400**	**1323**	**33**	**117**
K4ZGB	"	393,104	926	34	124
K4EU	"	351,378	770	35	127
K4UTE	"	287,292	585	37	141
K2SX/4	"	259,161	665	32	115
N4XD	"	249,543	582	34	119
W9WI/4	"	232,263	615	30	101
KR4F	"	199,123	410	35	138
N4GI	"	99,636	315	29	85
N4QS	"	27,920	125	25	55
K4XD	"	6,030	50	19	26
N4PN	**21**	**1,002,881**	**1973**	**40**	**147**
WØYR/4	"	138,159	423	25	94
W4TTY	**14**	**67,440**	**205**	**28**	**92**
KD4RH	**7**	**58,298**	**207**	**25**	**78**
***KT4ZB**	**A**	**2,203,432**	**1480**	**133**	**406**
***K4MCK**	**"**	**697,450**	**709**	**91**	**279**
*N4CW	"	586,506	521	102	307
*K4FPF	"	501,084	629	62	217
*AB4SF	"	368,391	506	76	205
*W1MD/4	"	334,230	318	92	298
*W3ZL/4	"	233,322	375	63	159
*W4DTB	"	153,258	334	42	136
*K4FTO	"	91,531	221	40	117
*K1GW/4	"	67,620	195	40	107
*W4PGM	"	61,776	168	40	104
*K4JRA	"	55,800	155	30	94
*WA4PGM	"	40,120	128	39	79
*W4KPG	"	34,608	119	34	69
*W9KB/4	"	21,000	100	38	67
*K4HC	"	18,914	72	36	62
*N4BFR	"	17,325	79	36	69
*K4NAB	"	16,709	89	28	49
*W4HIJ	"	14,700	72	33	51
*KM4RK	"	14,040	71	38	52
*KC4QYG	"	8,911	56	22	45
*K4GRE	"	3,648	29	19	29
*W4CHX	"	1,980	27	17	19
*KI4HHK	"	1,767	26	12	19
*KF9FR/4	"	1,716	23	18	21
***WØPV/4**	**28**	**216,600**	**507**	**34**	**116**
*KK4CLY	"	94,189	261	31	100
*K4WW	"	63,770	317	14	56
*NS2X/4	"	58,916	221	26	77
*WV4V	"	48,676	200	22	64
*W6BSY/4	"	38,675	183	28	91
*K4DXA	"	18,732	95	24	60
*N4LF	"	9,024	67	12	36
***WA1FCN/4**	**21**	**209,850**	**528**	**35**	**115**
***W4LC**	**"**	**195,460**	**488**	**32**	**113**
W5GN	**A**	**2,295,397**	**1550**	**130**	**437**
WØVX/5	**"**	**1,499,172**	**1151**	**116**	**345**
K5MV	"	874,197	830	108	303
K5QXR	"	628,848	612	107	290
WG5J	"	605,052	508	114	327
AK5DX	"	528,688	608	114	268
ND5T	"	491,471	565	92	267
K7IA/5	"	267,972	369	89	185
KG5VK	"	240,000	295	71	229
K5KDX	"	219,840	389	72	168
W5KI	"	82,896	193	60	97
WD5R	"	12,474	92	19	44
AA5AU	"	2,320	27	16	24
N5MX	"	24	2	2	2
W9DX/5	**28**	**286,748**	**660**	**34**	**120**
KE5FXE	"	121,440	395	29	86
N7KA/5	"	98,136	259	35	106
N5JB	"	75,946	225	33	94
KU5B	**21**	**741,014**	**1823**	**38**	**143**
WA5ZUP	"	193,968	491	34	110
N5ZK	"	180,143	481	38	113
		(OP: W5ASP)			
NX5M	**1.8**	**5,376**	**129**	**13**	**29**
***K5IID**	**A**	**696,930**	**672**	**101**	**289**

***N1CC/5**	**"**	**442,974**	**509**	**84**	**234**
*AD5CA	"	297,498	412	78	199
*WBØRUR/5	"	102,630	234	45	120
*K5WW	"	71,824	199	52	82
*WA5NOM	"	20,256	75	30	66
***WA5WFE**	**28**	**66,216**	**276**	**24**	**65**
*KK1Z/5	"	36,480	171	19	61
***N4IJ/5**	**21**	**244,530**	**589**	**39**	**126**
W6TK	**A**	**1,537,500**	**1146**	**138**	**354**
AA6PW	**"**	**1,522,070**	**1141**	**137**	**368**
N6QQ	**"**	**1,392,336**	**989**	**129**	**399**
K6TA	"	1,303,694	949	129	373
K9YC/6	"	1,224,720	1095	121	299
N6WS	"	1,193,189	892	127	352
W6SR	"	1,156,872	948	130	326
W1RH/6	"	493,640	531	100	244
N6KI	"	451,245	534	107	228
WX6V	"	325,381	384	85	216
N6DA	"	287,346	427	91	158
KI6QDH	"	282,318	450	78	145
K6ST	"	243,514	318	101	212
K6III	"	240,828	319	97	185
NU6T	"	234,240	374	86	170
WE6Z	"	217,047	364	73	140
W6DPD	"	204,823	309	71	168
K9JM/6	"	176,118	311	62	135
K6GEP	"	122,186	229	72	127
WB6JJJ	"	108,100	218	76	112
N6AJR	"	94,466	264	53	109
N5KO/6	"	62,272	162	57	82
N6VH	"	60,984	169	50	76
NE6I	"	59,983	167	44	89
N6OPR	"	40,186	143	49	93
K6GFJ	"	38,897	161	31	66
WA6KBL	"	35,777	101	44	89
K6OI	"	25,760	83	51	64
W6GJB	"	6,840	42	26	34
W6BCZG	"	6,720	46	27	33
K6XC	"	5,832	39	29	25
AG6AZ	"	3,800	27	23	27
KF6I	"	3,320	30	16	24
W6PK	"	475	12	9	10
K6AW	**28**	**429,590**	**934**	**38**	**132**
N6WM	**21**	**371,314**	**965**	**36**	**127**
AA3ZE/6	"	53,742	218	32	74
***WZ6Z**	**A**	**166,231**	**246**	**88**	**159**
***K6AAB**	**"**	**151,287**	**248**	**88**	**151**
*W6UX	"	142,104	310	66	120
*K6MMU	"	113,832	305	47	89
*N6RK	"	86,420	206	50	99
*W1SRD/6	"	84,667	177	55	124
*KI6WCI	"	78,469	209	50	81
*NT6X	"	49,300	138	60	85
*K6BIR	"	25,284	113	36	48
*KD6NR	"	20,720	120	27	43
*AG6AN	"	12,852	64	37	47
*W6DTW	"	9,916	61	31	36
*K6DSW	"	7,946	59	30	28
*KM6I	"	6,627	53	22	25
***W6AFA**	**28**	**281,248**	**740**	**34**	**102**
*WN6K	"	170,125	480	32	93
*ND6S	"	75,864	272	31	78
*AC6DX	"	68,820	205	30	94
*N6EE	"	48,339	137	31	100
K6LL/7	**A**	**2,372,128**	**1687**	**129**	**377**
W7PP	**"**	**1,795,158**	**1248**	**140**	**382**
KG7H	"	1,395,282	1115	134	344
N7TT	"	1,329,972	1024	143	354
K7XC	"	1,121,156	800	143	365
N7TR	"	1,022,996	1001	99	283
KI7M	"	953,056	970	118	259
K7NV	"	850,356	674	139	329
K7ZZ	"	783,804	783	121	251
W6AEA/7	"	766,360	860	92	230
K7EG	"	604,656	710	72	232
N7RK	"	478,392	475	112	260
KY7M	"	464,174	572	75	227
W6SA/7	"	353,642	456	100	202
AD7KG	"	332,930	402	115	223
AA7V	"	324,360	334	100	260
K7BG	"	305,013	391	105	188
K7ABV	"	295,232	489	68	156
N7RVD	"	279,300	429	84	161
K7RR	"	269,466	360	89	202
K7LV	"	238,539	386	76	183
WW7CA	"	206,752	394	53	155
K7VIT	"	202,910	397	76	121
N7TL	"	144,288	313	76	140
WR7Q	"	119,880	219	65	157
KO7X	"	102,312	216	67	107
N3XRU/7	"	81,081	165	82	107
WA1PMA/7	"	45,424	126	48	88
KR2E/7	"	36,400	139	38	62
W7MCM	"	20,833	109	34	49
AD7VB	"	8,379	52	19	38
W7GSV	"	1,908	21	15	21
K7AWB	"	400	10	10	10
W7UT	**28**	**494,607**	**1045**	**37**	**136**
W7ZR	"	322,524	767	36	117
K7LY	"	187,404	510	32	106
N6TR/7	"	133,504	383	35	93
WU9B/7	"	58,650	181	30	85
KF7E	"	56,373	169	35	94
KI7DG	"	14,560	80	23	47
NQ7R	"	2,133	27	8	19
N7DD	**21**	**999,999**	**1956**	**39**	**150**
KJ7NL	**14**	**21,586**	**135**	**27**	**59**
N6SS/7	**7**	**147,312**	**413**	**32**	**100**
***K7FA**	**A**	**685,884**	**753**	**122**	**244**
*NE7Q	"	249,335	431	79	156
*KC7DB	"	197,760	298	71	169
*K7TQ	"	187,005	349	65	130
*K7BBR	"	162,808	329	65	123
*W7RV	"	157,920	257	81	159
*W7MLG	"	81,600	196	57	103
*K7JE	"	47,260	130	47	92
*AK7S	"	46,632	145	45	71
*N7RXL	"	26,640	104	45	66
*WA7DUH	"	22,194	97	36	45
*N7GVV	"	19,998	85	39	62
*W7RIV	"	2,379	34	19	20
***N7MAL**	**28**	**38,868**	**192**	**24**	**55**
*K7EIQ	"	15,236	105	16	36
W8MJ	**A**	**3,971,984**	**2298**	**155**	**497**
N8TR	**"**	**3,695,950**	**1739**	**178**	**588**
WA3C/8	"	2,343,660	1402	145	491
N8RF	"	2,333,932	1521	131	417
K1LT/8	"	1,667,847	1179	132	391
N6FS/8	"	1,014,244	735	127	391
KG8CW	"	963,534	847	115	314
AC8G	"	957,000	825	112	323

N8MZ	"	768,504	671	112	314
KU1T/8	"	758,875	810	66	259
K8MJZ	"	333,472	462	75	197
W8TE	"	173,145	245	72	183
N8XE	"	31,872	102	50	78
N8IW	"	29,264	91	46	72
N8KOJ	"	864	15	12	15
W8CZN	**28**	**436,800**	**920**	**37**	**145**
AA8LL	**"**	**396,571**	**770**	**36**	**145**
N8BI	**7**	**127,889**	**392**	**30**	**97**
***WD8S**	**A**	**626,925**	**708**	**85**	**240**
***K8BL**	**"**	**404,992**	**344**	**118**	**330**
*K8LY	"	401,028	508	63	213
*NA8M	"	302,806	368	88	213
*AA8IA	"	183,048	294	66	166
*K8GT	"	135,142	259	59	138
*WO8USA	"	91,350	216	48	127
*K8TS	"	82,134	182	51	118
*N8VV	"	54,210	138	36	103
*AC8ZX	"	34,146	124	45	81
*KC8ZKI	"	7,040	44	23	41
*W8IDW	"	6,213	46	25	32
*W8WTS	"	726	14	10	12
*K8THU	"	192	6	6	6
***AD8W**	**28**	**36,450**	**152**	**25**	**65**
*AE8YL	21	6,882	53	16	46
N2BJ/9	**A**	**3,894,231**	**2350**	**143**	**480**
WO9Z	**"**	**2,183,826**	**1330**	**150**	**447**
K9IMM	"	2,157,442	1538	121	390
N9ZM	"	1,634,512	1168	125	377
N9MW	"	1,582,416	1273	121	365
K9MMS	"	998,400	765	133	347
KC9QQ	"	918,770	852	100	295
WA8MCD/9	"	653,660	535	114	346
W9GIG	"	611,858	492	112	354
AA9RN	"	589,967	693	84	227
N9FN	"	549,605	520	106	277
K9GS	"	321,204	433	83	201
K9EN	"	145,882	288	64	145
K9ZM	"	119,350	246	48	127
KA9FOX	"	104,500	208	69	121
N9OK	"	52,245	139	44	91
K9TY	"	28,652	91	41	75
W9II	"	17,381	73	33	58
KØTQ/9	"	6,032	45	20	32
W9XT	**28**	**356,000**	**784**	**35**	**125**
K9IG	"	98,503	256	29	108
W9IIX	**14**	**192,760**	**472**	**37**	**121**
KK9V	"	2,688	31	16	16
K9SH	**3.7**	**14,396**	**117**	**15**	**46**
***WE9R**	**A**	**1,879,809**	**1385**	**121**	**372**
***K9MY**	**"**	**900,924**	**878**	**108**	**281**
*N9UA	"	456,076	524	85	238
*K9OR	"	344,855	428	73	222
*N9MSG	"	334,776	413	76	220
*W9VQ	"	237,144	362	66	180
*KA9O	"	214,920	302	77	193
*KB9NW	"	101,179	247	52	129
*N9VPV	"	69,027	191	46	87
*NX9A	"	36,576	109	45	82
*W9LW	"	23,640	83	53	67
*WA9LEY	"	7,784	53	24	32
*N9BT	"	6,864	51	17	31
*W9TMW	"	6,664	46	17	39
*KA9QGH	"	3,354	32	17	26
***K9OM**	**28**	**240,240**	**570**	**35**	**121**
*K9QC	28	43,673	140	29	90
***N9TGR**	**21**	**270,312**	**599**	**36**	**132**
*W9KVR	7	1,161	19	11	16
KU1CW/Ø	**A**	**5,207,492**	**3282**	**148**	**414**
KØKX	**A**	**5,126,108**	**2714**	**159**	**517**
NØHR	"	2,928,042	1792	143	439
NØAT	"	2,451,852	1580	136	422
KBØEO	"	2,179,489	1664	126	341
KØRC	"	1,882,767	1216	136	415
KØMD	"	1,275,000	833	145	480
WØRX	"	1,267,266	1005	127	335
KØOB	"	1,201,116	917	115	359
AE5E/Ø	"	1,196,275	977	116	323
KØAP	"	1,053,240	1152	82	253
WØELT	"	987,480	907	103	287
NØBK	"	847,658	820	103	279
WBØN	"	528,528	542	102	261
KØPY	"	487,249	587	94	235
WØIZL	"	458,304	540	106	230
NEØU	"	421,290	357	115	338
WØRIC	"	416,630	508	98	207
WØRK	"	404,173	442	88	231
WØERP	"	384,377	498	86	215
NØIRM	"	319,818	397	102	200
NØRN	"	312,284	424	78	188
KEØL	"	295,932	397	88	185
NØKK	"	246,456	370	69	183
NØODK	"	241,774	401	60	161
KNØR	"	228,723	262	84	235
K1KD/Ø	"	225,515	440	60	125
AAØAW	"	220,242	377	58	155
K4IU/Ø	"	217,338	308	83	184
KØYR	"	200,695	390	62	143
WØSHL	"	195,650	252	95	206
WØZQ	"	189,750	304	69	161
WØJPL	"	141,504	252	66	135
		(OP: KØJPL)			
NØLD	"	130,180	216	91	139
WB6RAB/Ø	"	122,158	214	62	144
KØXD	"	92,518	245	56	111
KSØT	"	73,098	162	64	122
KØXTR	"	39,975	121	54	69
NØKBD	"	38,038	99	57	97
ADØDX	"	34,320	130	39	65
AAØA	"	26,322	108	33	74
KØFG	"	21,012	81	32	70
KCØUUT	"	19,610	102	31	43
KØAE	"	8,340	72	23	37
NØIM	"	7,326	45	27	39
NØUU	**28**	**85,878**	**261**	**33**	**84**
KR5DX/Ø	**"**	**63,983**	**248**	**28**	**81**
WØHBH	"	61,668	204	27	81
KØPK	"	14,472	70	23	49
KVØQ	**21**	**758,632**	**1520**	**39**	**145**
KC6R/Ø	"	249,390	580	38	125
KØAF	"	7,800	53	28	37
WØCEM	**14**	**89,271**	**292**	**29**	**88**
KØLUM	"	966	15	11	12
***AD1C/Ø**	**A**	**1,335,108**	**1077**	**107**	**337**
*KØCN	"	852,558	821	105	266
*KØAD	"	659,104	725	93	251
*KØMPH	"	496,059	552	90	237
*NXØI	"	483,108	587	83	234
*KA8HDE/Ø	"	284,067	453	75	168
*WBØSOK	"	259,182	332	89	217
*KØPC	"	258,680	401	70	162
*WGØM	"	189,112	270	98	209

*KCØJRW	"	107,900	241	49	117
*WØVB	"	62,466	153	71	103
*WØRU	"	30,086	144	34	64
*NØUV	"	24,000	95	30	66
*WBØQLU	"	15,770	71	35	48
*NRØL	"	3,450	34	16	30
*NØANP	"	2,790	34	20	25
*NØMK	"	2,352	26	20	22
***WØRAA**	**28**	**40,083**	**166**	**25**	**68**
*KFØIQ	"	9,240	61	15	40
*NØHF	21	15,180	85	20	46

Alaska

AL9A	**A**	**1,291,464**	**1779**	**98**	**226**
NL7Z	"	318,972	501	73	155
***WL7BDO**	**A**	**279,552**	**814**	**65**	**91**
*KL2HD	"	35,280	145	46	52
***WL7E**	**28**	**505,662**	**1471**	**37**	**105**

Bahamas

***C6ARW**	**A**	**3,123,600**	**3106**	**107**	**304**
		(OP: NØHJZ)			

Canada

VE9MY	**A**	**972,052**	**703**	**114**	**385**
VO1MX	"	250,514	996	38	80
VO1KVT	**28**	**209,193**	**850**	**26**	**77**
VE1OP	"	118,572	257	33	131
VY2TT	**21**	**1,506,339**	**3439**	**36**	**135**
		(OP: K6LA)			
VO1MP	**"**	**1,032,304**	**2110**	**38**	**144**
***VE1ZD**	**A**	**810,942**	**838**	**77**	**286**
*VE9NC	"	462,940	513	76	240
*VE9OA	"	74,730	198	36	105
*VO1DJT	"	51,720	214	39	81
VA2AM	**A**	**1,591,744**	**1053**	**136**	**472**
VE2FXL	"	644,980	724	89	251
VE2DC	"	78,470	201	35	98
***VE2LX**	**A**	**14,645**	**93**	**40**	**61**
VE3RTU	**A**	**4,910,544**	**2853**	**145**	**503**
VE3RZ	**"**	**3,003,696**	**1811**	**143**	**469**
VE3MMQ	"	2,739,724	1594	143	468
VA3DX	"	710,330	902	79	204
VE3CX	**28**	**948,935**	**2116**	**34**	**135**
VE3IQ	"	191,496	433	33	125
VA3PC	"	62,622	155	33	109
VA3TTU	14	18,532	83	21	61
***CJ3A**	**A**	**2,409,097**	**1849**	**115**	**394**
		(OP: VE3LA)			
*VE3OTL	"	274,275	430	80	185
*VE3AJ	"	60,006	187	45	92
***VE3CWU**	**28**	**96,945**	**304**	**27**	**88**
***VE3NR**	**14**	**133,718**	**354**	**33**	**106**
VE5UF	**A**	**308,864**	**886**	**35**	**117**
*VA5LF	A	14,229	65	44	49
VE6LB	**A**	**285,545**	**398**	**96**	**203**
VE6WQ	**28**	**1,146,876**	**2597**	**38**	**148**
VE6JY	**21**	**1,137,192**	**2218**	**40**	**156**
		(OP: VE5MX)			
VE6WZ	**7**	**154,880**	**569**	**30**	**98**
VA6MA	**3.7**	**40,310**	**350**	**21**	**37**
***VE6TN**	**A**	**1,500,720**	**1063**	**136**	**384**
*VE6FI	"	143,601	380	53	98
*VE6AX	"	66,285	175	55	80
CF7FC	**A**	**2,618,466**	**2648**	**135**	**311**
VE7WO	"	705,780	1154	94	176
VE7TK	"	481,900	595	92	224
VA7DZ	"	58,838	171	45	101
VE7TG	**21**	**59,469**	**166**	**35**	**94**
VA7JW	**14**	**63,480**	**219**	**30**	**85**
***VE7ABC**	**A**	**628,914**	**966**	**86**	**200**
***VE7JMN**	**"**	**584,921**	**660**	**107**	**246**
*VA7BEC	"	575,039	807	98	213
*VE7TVH	"	31,806	145	44	49

Guadeloupe

FG4NN	**A**	**658,434**	**920**	**52**	**205**

Guantanamo Bay

***KG4EM**	**A**	**217,620**	**338**	**81**	**179**

Martinique

FM5AN	**A**	**196,911**	**484**	**54**	**133**

Mexico

4C1JPG	**A**	**790,124**	**1740**	**80**	**132**
		(OP: XE1GRR)			
XE1YYD	"	55,772	149	56	90
XE2WK	"	32,438	165	36	62
XE1EE	**28**	**421,805**	**1385**	**32**	**113**
***XE1CQ**	**28**	**964,302**	**2558**	**36**	**137**

Puerto Rico

NP4Z	**A**	**8,141,335**	**5638**	**157**	**478**
***KP4KE**	**A**	**7,044,246**	**4560**	**154**	**495**
		(OP: DK8ZB)			
***KP4JRS**	**28**	**371,025**	**1763**	**27**	**70**

St. Kitts & Nevis

V47JA	**A**	**944,790**	**1206**	**81**	**249**

St. Pierre & Miquelon

FP/KV1J	**A**	**1,582,315**	**1911**	**93**	**278**

U.S. Virgin Islands

*NP2L	A	1,736	23	13	18
***KP2/KØBBC**	**28**	**280,447**	**1176**	**25**	**82**

AFRICA

Canary Islands

***EA8BZH**	**A**	**121,943**	**231**	**62**	**135**
*EA8CNR	"	53,622	142	64	98
***EA8MT**	**28**	**842,180**	**1712**	**38**	**132**

Madeira Islands

CQ9T	**A**	**3,027,360**	**2103**	**120**	**390**
		(OP: CT3KN)			
CT3HF	28	774,410	1485	40	142

Namibia

V55A	**28**	**1,134,984**	**2615**	**35**	**117**
		(OP: V31MA)			

Senegal

6V7Q	**A**	**4,971,876**	**3713**	**103**	**368**
		(OP: F8IJV)			

South Africa					
ZS5ZZ	A	24,960	100	39	57
***ZS5SAM**	A	187,887	444	51	110
Sudan					
ST2AR	A	8,980,245	5253	146	445
ASIA					
Asiatic Russia					
RG9A	A	8,716,407	4004	171	636
UA9MA	"	1,886,885	1858	99	278
UA9QCQ/9	"	1,563,289	1114	131	402
UA9CDC	"	1,405,998	1123	109	377
RM9RZ	"	1,230,500	980	126	374
R9DA	"	970,368	1005	90	271
UA9BA	"	784,822	543	124	439
RW9QC	"	762,372	842	98	253
R8MC	"	745,056	659	118	350
R9XT	"	596,752	811	79	225
UA9CGL	"	482,855	585	96	263
RW9QA	"	319,488	472	76	180
RN9CM	"	254,539	308	109	222
UA9OC	"	123,392	202	79	177
R8AA	"	80,454	198	42	117
UA9BS	"	41,895	142	44	89
RL9AA	28	730,516	1552	37	144
RC9F	"	393,984	1022	32	112
RK8I	"	165,773	698	24	73
UA9SCX	"	87,447	374	25	78
RM8W	"	55,080	189	34	102
UA9CSA	"	29,916	111	27	81
RA9SPF	21	271,285	706	38	123
RV9WB	"	40,083	172	25	68
RK9DM	14	320,108	751	36	122
RA9AU	"	287,202	698	36	115
RW9TP	"	110,055	304	34	111
UA9YF	"	10,659	71	22	35
RA9FW	3.7	88,822	377	18	71
***RF9C**	A	1,603,644	1262	112	364
			(OP: RV9CBW)		
***RV9UP**	"	1,405,128	1196	116	345
*RK9UE	"	625,743	905	68	209
*RX9CAZ	"	541,856	508	105	308
*RK9DC	"	536,884	642	86	230
*UA9UDX	"	513,081	789	80	199
*RU9AZ	"	369,484	521	71	213
*UA9AX	"	359,478	402	113	265
*RA9MX	"	304,290	347	91	254
*RA9DZ	"	289,449	430	71	190
*RT9U	"	187,230	323	77	160
*RN8W	"	138,567	263	62	159
*RG8U	"	78,400	192	56	104
*UA9LGD	"	65,783	161	51	106
*UA9OAL	"	62,764	183	40	102
*RA9CIN	"	37,518	138	34	77
*RZ9UMA	"	19,406	118	13	49
*RV9UBZ	"	15,572	86	19	49
*RA9YTX	"	10,368	61	23	49
*RV9CX	"	4,840	36	24	31
*UA9OR	"	4,539	33	20	31
***RZ9YF**	28	333,032	969	30	103
***RK9UC**	"	234,495	786	30	105
*RT9T	"	167,846	516	32	101
*UA9OW	"	84,672	330	23	85
*RW9C	"	78,234	318	23	79
*UA9AGX	"	66,424	191	32	120
*R9TV	"	10,904	87	10	37
*RA9UIV/9	14	16,704	87	23	49
UBØA	A	4,656,630	2964	151	467
RAØFU	"	4,147,430	2665	173	489
UCØA	"	2,592,810	2106	123	362
UAØSR	"	1,795,565	1720	108	313
RUØFM	"	1,766,655	1590	129	366
RAØFF	"	921,864	1276	90	194
UAØQBR	"	182,600	333	62	138
RAØSCJ	"	49,352	194	45	79
RAØSMS	"	15,326	80	30	49
RZØSR	28	539,312	1500	32	116
UAØAGI	"	310,478	1003	30	104
RKØAB	"	304,566	940	30	108
RUØA	"	203,912	585	29	113
UAØSE	"	110,558	418	25	81
RXØAK	"	1,050	21	6	15
RKØUT	14	637,794	1559	37	125
RAØUF	"	97,440	421	30	86
RAØWU	"	3,024	28	11	25
***RAØAY**	A	539,964	641	83	235
*UAØADX	"	116,160	475	23	65
*UAØSOX	"	57,134	161	57	97
*RAØANO	"	9,280	50	37	43
*RUØAT	"	5,400	47	23	37
***UAØIT**	14	227,106	797	30	81
***UAØWY**	21	188,750	654	30	95
Asiatic Turkey					
TA3IW	A	485,292	837	58	164
TA5IW	"	55,055	177	34	87
TA1FA/2	28	232,344	985	20	64
***TA5CV**	A	88,576	274	29	99
Bhutan					
A52PC	A	19,778	168	18	44
A52IR	3.7	1,050	34	9	12
			(OP: KØIR)		
China					
BA4DL	A	319,488	621	84	172
BA7IO	"	254,203	452	59	174
BD4FM	"	208,005	358	74	171
BD4DYH	"	116,501	302	71	116
BD3RQ	"	44,080	191	53	92
BA5AN	"	39,872	164	31	81
BD4CQ	28	371,336	1128	30	103
***BD4CD**	A	574,758	764	104	229
***BD3NCK**	"	178,840	687	46	90
*BG5LU	"	149,278	306	65	137
*BA8IK	"	97,650	247	57	129
*BD4UJ	"	85,462	293	57	116
*BG4HRM	"	65,351	230	58	85
*BG4FRZ	"	61,152	192	54	102
*BD4CZX	"	60,203	199	52	91
*BD7MTJ	"	45,743	140	61	88
*BD4AKT	"	44,278	176	48	83
*BH1EBF	"	42,804	199	37	79
*BD4KYA	"	31,920	193	34	50
*BA2IA	"	31,008	111	44	92
*BH1JGA	"	14,742	88	40	51
*BG1URZ	"	10,744	80	24	44
*BH1KZQ	"	8,662	87	32	39
*BD5DML	"	8,316	89	28	38
*BG4HQK	"	4,998	57	22	27
*BY4RWT	"	1,984	41	14	17
*BG3NUI	"	160	15	5	5
***BD7NWF**	28	399,042	1280	32	94
***BA4SD**	"	184,575	702	28	79
*BD5PN	"	41,002	214	24	59
*BD4AAS	"	37,904	252	27	65
*BD5CEC	"	1,740	32	14	16
***BD5FFK**	21	95,598	503	27	67
*BH4TVU	"	14,137	122	20	47
*BD7BAH	"	13,504	119	22	42
*BD4TK	7	600	18	10	10
*BD4TS	3.7	1,072	64	7	9
Cyprus					
C4N	28	1,351,579	2733	40	153
P3J	"	738,852	1904	34	104
			(OP: 5B4AHJ)		
***H22H**	A	2,991,920	1808	143	453
			(OP: 5B4MF)		
*P33P	"	129,442	393	32	90
			(OP: 5B4ZN)		
Georgia					
4L5O	3.7	289,328	1020	21	86
*4LØCR	21	16,430	111	14	39
			(OP: 4L1UN)		
Hong Kong					
VR2XLN	28	357,570	1131	36	109
India					
***VU3DJQ**	28	94,953	414	25	68
***VU2CDP**	21	18,815	106	21	50
Israel					
4XØA	28	227,010	626	35	106
			(OP: 4X1VF)		
***4Z5PJ**	A	38,142	129	41	76
***4X1GA**	28	60,240	271	23	57
Japan					
JH1EAQ	A	4,024,710	3265	130	324
JQ1BVI	"	3,021,298	2561	136	333
JH1QDB	"	486,038	614	101	197
JA1IZZ	"	327,880	462	93	187
JE1SGH	"	285,826	434	78	163
JR1GJP	"	96,280	235	51	115
JH1OVY	"	69,454	179	59	95
JH1APK	"	47,120	121	67	85
JR1IJV	"	38,624	227	25	43
JA1HGY	"	3,243	28	20	27
JF1SQC	28	602,922	1560	35	103
JL1SAM	"	379,358	923	38	120
JN1BMX	"	40,222	161	29	62
JA1PTJ	"	36,736	180	22	60
JN1NDY	21	880,542	2130	35	124
JA4FHE	"	339,465	899	36	123
JI1ALP	"	50,072	229	27	61
JH1ACA	14	142,426	392	38	104
***JR4PMX/1**	A	686,880	704	114	246
*JA1MZM	"	213,136	456	63	113
*JA1XRH	"	156,800	292	67	129
*JG1KGS	"	299	12	5	8
***JM1LRQ**	28	409,808	1389	32	80
*JM1NKT	"	303,696	749	36	116
*JA1BJI	"	118,556	440	31	76
*7N2UQC	"	86,456	349	27	74
*JA1JQY	"	8,736	83	17	25
*JS1IFK	14	6	1	1	1
JA2XCR	A	1,121,480	1010	128	296
JA2FSM	"	1,001,281	1120	111	238
JF2OZH	28	46,110	199	22	65
JH2FXK	"	1,080	18	10	10
***JG2KKG**	14	191,114	481	38	108
JS3CTQ	A	5,022,682	3648	145	352
JO3DDD	"	1,957,152	2302	107	241
JN3SAC	"	129,105	304	66	105
JH3PRR	28	616,056	1305	37	131
***JA3PYC**	A	276,424	475	74	144
***JN3DSH**	"	241,316	401	92	152
*JA3HBF	"	28,363	109	43	70
*JA3VUI	"	22,860	116	32	58
*JM3PLL	"	19,106	86	30	52
*JA3AHY	"	14,464	92	28	36
***JL3VUL**	28	85,262	330	27	62
JM4WUZ	A	1,061,240	1186	108	236
JO4CFV	"	218,808	450	80	136
***JE4MHL**	A	508,480	715	92	188
*JR4VEV	"	301,498	546	86	168
JA6BZI	A	1,974,210	1569	117	357
***JE6JNC**	A	271,743	449	83	156
*JA6DIJ	"	33,835	122	40	61
***JS6RTJ**	28	99,232	329	30	82
***JH6WHN**	"	84,128	339	26	62
JA7ZP	A	419,391	517	96	221
JA7VEI	"	302,742	417	95	183
JA7OWD	28	1,002,386	2407	36	118
JH7MEX	"	2,449	27	8	23
JA8WKE	7	609,150	1715	37	113
JF9JTS	A	767,236	1142	77	159
JR9GMS	28	48,504	208	27	59
JHØNOS	A	255,596	324	106	208
JAØCRI	"	21,645	75	39	72
JAØFVU	28	248,496	745	34	90
JHØEQN	"	175,665	669	29	76
***JHØMXV**	A	141,840	309	68	129
*JAØNFP	"	51,342	184	55	74
Kazakhstan					
UNØL	A	313,110	437	83	211
UN9PQ	"	181,687	341	58	141
UN7QF	"	142,590	404	40	107
UN5J	"	72	4	3	3
UN4PG	21	471,569	1281	34	127
***UN7MMM**	A	1,341,171	1466	87	264
*UN7FW	"	171,468	368	59	139
*UNØLE	"	60,522	137	55	99
***UN8GV**	28	257,810	739	32	113
*UN2E	"	68,952	260	28	76
***UN7BEW**	14	211,920	752	29	91
*UN6P	3.7	2,726	44	10	19
Mongolia					
JT1RF	A	1,753,050	2225	95	230
Saudi Arabia					
*7Z1AL	A	7,700	52	15	35
Singapore					
***9V1RM**	A	63,648	209	59	85
South Korea					
HL1/WX8C	14	9,288	82	21	33
***6K5AQY**	A	313,384	779	67	105
***HL1VAU**	"	272,880	483	86	154
*DS1ECY	21	5,358	65	17	21
Taiwan					
*BV4VQ	A	8,313	97	23	28
Tajikistan					
***EY7BJ**	A	768,300	979	81	244
*EY8ZF	"	206,034	594	28	110
Thailand					
***HSØZJU**	28	155,890	633	31	88
***E21EIC**	14	270,392	774	36	110
United Arab Emirates					
A65BP	A	9,162,598	4455	163	616
			(OP: RV6LNA)		
A65BU	28	285,324	862	29	95
A65CA	14	316,160	763	37	123
			(OP: RV6AJJ)		
Vietnam					
XV1X	A	778,910	1612	60	134
XV9DX	21	1,375,198	3221	40	147
			(OP: OM2DX)		
EUROPE					
Aland Islands					
OHØZ	A	4,524,385	3037	160	585
			(OP: OH6EI)		
Austria					
OE6MDF	A	1,470,530	1418	117	362
OE3WMW	28	169,756	609	33	91
***OE8Q**	A	1,214,976	1296	117	331
			(OP: OE8SKQ)		
*OE5JSL	"	340,800	527	97	223
*OE7AJT	"	105,834	256	52	134
Balearic Islands					
EA6LP	A	392,200	763	90	280
EC6AAE	14	447,180	1862	39	135
***EA6/AA5UK**	A	467,170	878	77	264
Belarus					
EW2A	A	3,618,475	2823	139	528
EW4AA	"	2,693,088	2201	138	510
EV1R	"	2,183,750	2282	141	484
EW8DJ	"	1,538,740	1543	137	443
EW8KY	"	900,098	1491	93	328A
EU5M	"	496,672	994	88	244
			(OP: EW7BR)		
EW8OM	"	62,640	233	44	100
EW8CY	"	38,860	164	37	108
EU1AZ	21	486,574	1288	38	149
EW6GF	14	99,855	661	28	77
***EW1IP**	A	970,140	1282	110	334
*EW8OG	"	343,332	638	83	214
*EW4DX	"	218,086	506	67	186
*EU1EU	"	69,394	384	43	114
***EW6AF**	21	180,649	842	30	101
***EW7DK**	"	175,968	602	34	122
***EU1DX**	14	51,404	181	34	108
Belgium					
OQ5M	A	4,624,334	3582	133	465
			(OP: ON5ZO)		
ON7ON	"	113,399	385	46	123
ON4IA	28	864,275	1789	40	151
OQ4B	"	486,585	1290	40	125
			(OP: ON4BHQ)		
ON4TO	"	424,935	1025	40	131
OSØS	"	152,800	638	32	68
OR7R	21	417,151	1169	34	127
ON5KQ	7	267,540	1450	33	107
***OT1S**	A	820,620	1175	93	330
			(OP: ON5RZ)		
*OO7W	"	520,001	1048	84	247
*ON7BBR	"	463,137	725	89	228
*ON6LR	"	422,576	477	114	229
*ON4CAS	"	139,128	329	62	125
*OR2A	"	56,092	230	39	109
			(OP: ON1CB)		
*OR4K	"	14,820	142	18	58
***ON4AXU**	28	282,252	691	39	133
***OR7W**	21	35,658	167	33	93
			(OP: ON4UW)		
Bosnia-Herzegovina					
E71A	28	1,238,062	2767	40	151
E7TT	21	27,812	288	16	52
			(OP: E78CB)		
E74ACL	14	58,830	364	30	81
***E74AA**	A	1,711,476	2600	102	366
*E73M	"	339,228	648	76	273
***E74WN**	3.7	52,245	610	12	69
Bulgaria					
LZ1BJ	A	336,840	993	63	147
LZ2ZD	"	97,580	258	67	103
LZ11PPE	"	41,514	343	27	75
			(OP: LZ2UW)		
LZ2PL	"	27,542	120	34	60
LZ5ZI	"	19,228	104	28	64
LZ9A	28	566,020	1407	40	142
LZ1NG	"	460,412	1207	40	148
LZ3NV	"	122,375	543	33	92
*LZ1MC	A	22,969	101	41	62
***LZ2DF**	28	281,564	695	40	132
***LZ9X**	14	189,028	842	37	120
			(OP: LZ1DNY)		
Corsica					
***TK4LS**	28	267,200	869	38	122
Crete					
***SVØXBZ/9**	28	10,296	195	13	31
			(OP: YL2VW)		
Croatia					
9A5BWW	A	161,109	399	71	172
9A2U	28	586,752	1331	39	152
			(OP: 9A3ZA)		
9A5D	"	396,300	1250	38	112
			(OP: 9A5DU)		
9A6M	7	118,375	752	28	97
***9A6JOY**	A	33,558	190	36	83
*9A12AO	"	6,555	81	19	50
			(OP: 9A2GA)		
***9A2NO**	28	75,999	217	38	109
*9A4VM	"	30,780	203	24	36
***9A1JSB**	3.7	35,866	423	12	67
			(OP: 9A7ZZ)		
Czech Republic					
OL3R	A	4,510,660	3090	149	558
			(OP: OK1VWK)		
OK7Y	"	357,894	545	98	256
OK1FAV	"	299,919	527	81	176
OK2ZV	"	208,456	596	38	104
OL5Y	"	183,148	361	67	144
OK2PCL	"	131,068	315	55	96
OK1DTC	"	22,472	87	43	63
OL5M	28	746,046	1677	40	151
OK1SKJ	"	356,550	913	40	110
OK1VD	"	32,490	141	33	62
OK1CDJ	21	1,330,944	2997	39	153
OK1FPS	"	934,439	2119	39	148
OL8M	"	753,328	1710	40	157
OL9Z	14	1,254,693	3236	40	157
			(OP: OK2PVF)		
OK1IC	"	606,406	1721	40	153
OK6W	1.8	104,544	1113	15	73
			(OP: OK1MU)		
OK1T	"	55,656	789	11	61
			(OP: OK1TP)		
***OK4DZ**	A	310,504	577	86	210
***OK2SAR**	"	199,867	547	61	208
*OK2TBC	"	75,831	283	54	103
*OK2PPM	"	70,380	203	54	153
*OK1EV	"	31,234	172	32	65
*OK1UFM	"	8,927	99	21	58
***OK6MA**	28	42,401	158	34	75
*OK1FHI	"	16,770	84	28	50
***OK3C**	21	189,716	573	38	134
			(OP: OK2ZC)		
***OK1UG**	7	88,810	659	21	86
*OK1LO	"	17,940	230	12	57
***OK2BU**	3.7	29,054	413	11	62
Denmark					
OZ2PBS	A	850,608	1016	108	324
5Q2J	"	388,944	551	91	242
OZ1ADL	28	903,000	1852	40	160
OZ7AM	21	431,694	1253	39	135
OZ1FJB	7	17,748	197	16	52
***OZ6C**	A	184,672	399	71	161
*OZ3ABE	"	24,054	129	30	84
Dodecanese					
SV5DKL	A	51,208	123	66	107
England					
G3TBK	A	2,719,774	2038	156	566
G3RXQ	"	1,418,436	1340	136	422
G4PIQ	"	317,440	563	83	227
G4WLC	"	160,149	365	68	185
MØTRN	"	108,086	298	55	132
G7VRK	"	60,356	177	55	103
G7TWC	"	44,704	159	45	82
G3ZGC	"	38,739	157	39	72
GØTSM	28	812,235	1887	40	133
GØVXE	"	260,604	664	40	131
G3XTT	"	244,614	517	39	138
M2H	"	223,082	692	37	105
			(OP: G3MXH)		
G3ZQH	"	169,677	544	35	118
GØW	"	77,600	330	32	65
			(OP: GØVDZ)		
M3C	"	55,227	202	31	92
			(OP: GØVQR)		
G4ERW	21	784,836	2100	37	119
G2F	14	646,140	1996	38	140
			(OP: MØCHK)		
G4NXG	3.7	28,026	254	14	67
***G3VAO**	A	1,687,556	1524	134	464
*G6NHU	"	216,752	517	64	184
*MØGKC	"	40,698	178	34	85
***MØTNX**	28	717,992	1823	40	124
***G4FJK**	"	49,883	281	25	58
*G4JFS	"	5,379	62	14	19
***MØKCM**	21	60,208	321	24	82
*G6UYG	7	6,240	91	11	41
Estonia					
ES5MG	28	279,378	654	40	158
ES2TI	"	204,402	636	38	125
ES1AN	"	122,247	435	39	114
ES5RY	21	465,408	1205	40	152
ES5QX	1.8	6,832	123	7	49
***ES5TF**	A	870,870	900	122	340
***ES4RX**	21	102,684	489	28	101
***ES2MC**	14	342,069	1154	40	139
*ES5KJ	3.7	3,120	74	6	33
European Russia					
RT4RO	A	4,438,546	4155	157	550
RW4W	"	3,393,440	3201	146	522
UI4I	"	3,291,314	3343	136	418
RA1AL	"	2,083,940	2142	136	444
UA1OMS	"	1,656,480	1867	140	440
RU5A	"	1,513,127	1978	112	361
UA1AFZ	"	1,065,084	1368	111	343
RC6U	"	990,045	1623	96	353
UA4PN	"	833,663	1055	121	372
R4RT	"	775,012	1666	90	266
R3KM	"	694,485	744	121	374
R3LA	"	654,736	615	146	396
R7HF	"	469,019	557	121	342
RA3PCI	"	378,378	466	100	278
RA4WC	"	356,260	423	105	365
RA4S	"	348,928	466	99	277
RM4R	"	301,500	509	90	285
RU4F	"	158,816	394	63	161
RU3GF	"	149,430	238	93	162
RN4SN	"	142,737	521	35	112
RV3FT	"	133,986	210	94	180
RU4PP	"	130,088	412	58	144
RA1QD	"	114,098	387	58	120
UA6YN	"	87,630	308	54	176
RA3THN	"	78,186	263	49	117
RU6YJ	"	48,256	193	44	72
RV6LN	"	31,236	127	46	91
RW4NN	"	29,785	108	47	68
UA4CNZ	"	21,240	213	21	69
RA6XR	"	20,240	145	27	88
RU6L	"	17,563	76	38	53
R3AT	"	15,444	84	33	66
UA6XDX	"	12,948	76	28	55
RL2A	"	12,136	106	31	51
RA3YC	"	6,550	45	21	29
UA6ACA	"	5,510	45	23	35
R4RM	"	1,824	22	16	22
RA4RT	"	1,740	20	14	16
UA4AZ	"	676	30	5	21
UA6G	"	80	5	4	4
R4RA	"	45	3	2	3
R7LV	28	941,360	2246	40	165
RT5K	"	613,116	1667	40	149
UA6AA	"	418,676	1291	39	149
R7AW	"	302,896	1002	36	140
UA3SAQ	"	290,682	675	40	149
RA3AH	"	218,770	694	38	129
UA4CC	"	211,422	542	37	130
RN1ON	"	130,152	611	36	100
RU3UN	"	117,552	312	39	119
R6YY	"	101,268	248	40	154
RX3AGD	"	65,888	212	40	76
RU6M	"	41,022	180	32	74
UA1ANA	"	33,078	143	33	78
RU3FN	"	4,000	39	18	22
RT3M	21	197,895	560	36	131
RW4PL	14	703,818	2202	40	143
RZ4HC	"	87,292	374	32	107
RY3D	7	344,292	1395	35	121
UA3MIF	"	209,196	732	33	116
RA3M	3.7	65,771	633	18	71
RN4AA	"	42,504	399	19	73
UA6AIW	1.8	9,804	173	8	49
***RL6M**	A	2,027,220	2298	123	442
***RO3DX**	"	1,009,596	889	142	446
*R2SA	"	486,496	849	85	283
*RZ1AU	"	470,092	860	79	247
*RK4WWQ	"	316,464	458	84	263
			(OP: RX4WX)		
*RU3DM	"	246,636	340	92	214
*R2AT	"	232,100	456	75	200
*RN6MA	"	200,980	480	64	196
*RA1AFR	"	180,040	314	85	195
*RK3BA	"	142,562	423	63	175
*RJ3AA	"	40,296	163	38	54
*RA1OHX	"	37,700	201	35	65
*UA3YAA	"	37,101	110	64	85
*RU1AB	"	29,766	108	46	75
*R1AT	"	29,160	172	33	87
*UA3RAU	"	28,500	131	44	106
*RN3FT	"	27,918	117	41	58
*RA4CEW	"	22,890	156	21	88
*RA6HQY	"	19,266	156	27	87
*RK2A	"	15,480	102	29	31
*RA3FD	"	10,824	70	31	51
*RA3LDX	"	9,520	102	21	59
*RA3VE	"	7,875	65	20	43
*RA4DAR	"	7,437	43	30	37
*RL6LP	"	5,400	36	26	34
*RK6AQM	"	4,290	44	22	33
*RW5D	"	2,176	22	17	17
*UA3YCX	"	360	13	7	11
***UA6LCN**	28	96,506	364	36	110
***UA4ALI**	"	95,232	425	31	97
*RA3DNC	"	89,100	361	33	77
*RN4AM	"	70,800	313	33	85
*RL3F	"	63,736	229	34	90
*RM6J	"	48,880	191	31	73
*R7MA	"	15,566	70	36	50
*RM5P	"	6,578	59	16	30
*RL3FA	"	1,242	18	9	18
***UA1AFT**	21	397,773	1059	39	154
***RV3ZQ**	"	169,105	596	36	119
***RZ4AG**	"	166,935	591	36	119
*RN4HFJ	"	68,930	421	25	88
***RX3DBG**	14	55,722	311	28	83
***RX3DUX**	7	54,864	259	28	99
***RA7Y**	3.7	13,862	281	11	47
European Turkey					
TA1DX	A	34,544	182	29	107
***TA1ED**	A	228,570	598	71	214
Finland					
OG2A	A	3,626,700	2842	147	513
			(OP: OH2RA)		
OG6N	"	3,541,974	2268	166	605
			(OP: OH6NIO)		
OH6RE	"	1,348,584	1069	149	528
OH6DX	"	1,068,856	933	139	489
OH1XT	"	345,040	724	63	127
OH6OS	"	323,232	412	90	274
OG4T	"	246,492	358	89	157
			(OP: OH4MFA)		
OH1MA	"	125,644	248	64	138
OH1EB	"	105,070	245	67	123
OH2BEN	"	59,040	173	53	91
OH5BM	"	396	17	6	12
OH2BN	"	12	2	2	2
OH3OJ	28	354,900	1005	39	136
OH1HB	21	190,686	517	39	144
OG73X	14	1,371,546	3376	40	158
			(OP: OH8LQ)		
OH6TN	"	49,187	308	24	77
OH8A	7	248,430	1551	33	97
			(OP: OH4KA)		
OH2CK	"	98,700	425	33	107
OH2BO	1.8	3,825	70	8	37
***OH1LEG**	A	905,641	979	117	376
***OH3JP**	"	756,514	771	123	379
*OH3FOG	"	380,886	541	116	282
*OH7KBF	"	57,782	228	48	125
*OH8KA	"	41,769	191	41	112
*OH2FHN	"	26,862	150	35	76
*OH8UV	"	19,116	99	41	77
*OH2LNH	"	12,852	101	25	59
*OH2JIU	"	3,752	53	19	37
***OH3BU**	28	151,960	489	33	112
*OH8FKU	"	18,204	113	21	53
*OH4KA	14	0	1	1	1
France					
TM7F	A	6,170,500	4318	140	462
			(OP: F6GLH)		
F6BEE	"	1,290,394	1147	128	299
F4FFH	"	804,153	1012	107	340
F6IGS	"	450,870	1016	69	157
F5CQ	"	444,210	549	104	231
F8CRS	"	318,043	454	97	222
F1RHS	"	265,851	415	70	201
F4CPF	"	130,080	202	82	158
F5VML	"	30,780	120	40	74
F4EIZ	"	812	15	13	15
F5UTN	28	1,118,592	2527	40	152
F1UVN	"	501,375	1060	40	151
TM7X	"	343,091	1320	36	125
F5NBX	"	303,680	798	38	122
F4FFZ	"	253,638	715	40	114
F6FYA	"	206,712	898	22	65
F1NZC	"	75,030	254	38	85

TM1E 21 862,356 2184 39 149
(OP: F1JRD)
TM4CW " 798,560 1959 39 145
(OP: F4CWN)
TM1T " 743,160 2144 39 126
(OP: F5TRO)
F8ARK 14 618,660 1891 37 143
***F4GCU** A 210,256 515 67 205
*F4GDI " 149,593 338 71 156
*F4FRF " 20,453 104 40 73
*F4FOO " 3,036 25 21 23
*F1AFW " 130 8 5 8
***F4EZJ** 28 330,533 849 40 121
*F4FDA " 260,052 704 39 117
*F4GTD " 144,054 404 40 119
*F4FEP " 139,664 444 39 77
*F4FYG 14 6,549 97 13 46
***TM6WW** 7 35,433 304 18 75
(OP: F8CGL)
***F1EBN** 3.7 64,902 684 15 72

Germany

DC4A A 4,673,377 2610 176 651
(OP: DL4NAC)
DL7ON " 2,917,728 1768 172 620
DL5AN " 2,713,368 1601 163 581
DL5GAC " 1,851,600 1604 138 462
DL1WA " 1,795,336 1479 138 476
DJ5AN " 1,712,340 1440 135 432
DK5DQ " 1,414,512 987 143 484
DL5AXX " 1,325,682 1211 129 294
DC3RJ " 1,317,630 1268 122 404
DJ7YP " 1,300,374 1053 133 488
DL8DAZ " 1,234,676 1254 128 414
DF5ZV " 1,116,378 1032 132 437
DM2DXA " 1,075,811 848 128 395
DL/JK2VOC " 1,009,867 1729 89 270
DF9GR " 993,240 1183 117 348
DL4LAM " 972,840 892 126 358
DF2RG " 954,990 979 119 367
DD1JN " 916,050 1064 116 349
DF2TT " 738,024 757 106 377
DK6CQ " 692,172 745 115 327
DF2UU " 675,913 985 114 319
DL8QS " 653,686 780 121 352
DK1KC " 651,653 682 112 331
DL1DVE " 599,760 626 111 297
DL8YR " 568,260 743 101 309
DF5MA " 536,550 779 96 254
DL1RG " 524,107 597 97 304
DL9EQ " 485,375 684 84 269
DL5YM " 465,102 910 77 220
DH1PS " 444,222 584 89 244
DL9NDV " 424,728 638 101 307
DL9NCR " 386,992 545 112 249
DL4YAO " 373,184 528 97 246
DL8RDL " 353,058 654 81 245
DK5MB " 346,632 563 78 225
DL2OBO " 253,572 481 71 155
DL7CX " 237,864 363 100 218
DD8JJ " 225,924 402 72 196
DP4N " 194,580 364 73 157
(OP: DL4NER)
DL5XL " 182,434 307 94 220
DL1YFF " 179,908 446 51 113
DK4LI " 153,525 271 83 184
DL9HD " 152,716 258 95 197
DL5MEV " 139,620 247 75 185
DK3GI " 125,019 340 78 183
DL8NBJ " 115,168 269 65 179
DG2NMH " 107,627 364 54 167
DL4RCK " 77,028 236 43 104
DJ6TB " 69,630 218 52 113
DL2OE " 66,215 144 66 139
DJ3WE " 59,392 210 41 87
DL4HG " 52,812 174 55 108
DL8SCG " 51,192 121 62 96
DL9GTB " 45,760 112 50 93
DL8UAA " 42,837 204 42 89
DL1PT " 39,886 202 49 105
DL6AG " 37,728 98 56 88
DF3QG " 36,079 143 37 72
DL2SWN " 35,282 110 45 73
DF2LH " 31,436 110 46 70
DM5TI " 28,659 127 43 80
DJ8QA " 21,230 150 32 78
DL1LMN " 10,115 62 32 53
DK1AX " 600 10 10 10
DF9ZP 28 1,055,750 2273 40 165
DH8BQA " 1,018,075 2128 40 153
DL5L " 745,710 1417 40 161
(OP: DG0OKW)
DJ0QN " 664,284 1332 40 157
DF9LJ " 68,750 206 38 87
DL1SWT " 12,528 68 19 53
DL2ARD 21 1,868,160 3587 40 170
DG3FK " 827,343 1902 38 145
DL2AMD " 243 12 5 4
DM3MM 14 584,087 1844 37 144
DL9GS " 31,164 198 30 76
DM0Y 3.7 118,680 1264 17 75
(OP: DL3BQA)
DJ1AA " 82,502 1101 13 70
DL5NAM " 77,400 947 15 71
DM7C " 20,636 222 16 61
(OP: DL8CX)
***DL2CC** A 2,261,760 1631 145 495
***DD5M** " 1,123,941 1071 129 408
(OP: DJ0ZY)
***DL1NKS** " 868,595 1283 107 348
*DK2CX " 838,880 996 111 317
*DJ9MH " 806,765 881 118 391
*DF2AJ " 735,641 942 102 295
*DK5D " 667,275 687 112 353
*DJ6OZ " 650,025 838 98 307
*DL7UIQ " 324,120 623 74 218
*DL4MNG " 314,628 588 80 234
*DL6ON " 253,917 506 77 240
*DH6DAO " 222,761 482 69 194
*DL2QT " 167,272 401 65 141
*DL6MHW " 165,480 320 81 199
*DL4NN " 129,165 301 67 170
*DF1HF " 127,070 281 73 189
*DC2VE " 125,976 320 66 166
*DL4GBA " 120,046 301 59 134
*DK7ZH " 117,236 395 52 160
*DL6HH " 112,197 245 72 179
*DL1BYL " 105,792 286 65 163
*DO1HGS " 94,990 267 52 109
*DR15ZBAY " 92,538 534 38 121
(OP: DK8NC)
*DJ3JD " 91,155 253 55 122
*DP5P " 75,100 671 18 82
*DL1DBR " 68,403 233 49 102
*DO2TE " 66,500 240 47 93
*DK2YL " 53,200 181 58 142
*DL8RB " 43,032 170 44 119
*DL2YCA " 35,332 168 35 86
*DM3F " 34,320 160 45 85
(OP: DH5FS)
*DJ0IP " 30,900 152 40 110
*DK5OS " 29,930 157 26 56
*DL5ST " 29,260 119 45 95
*DL5ASK " 29,154 101 41 72
*DJ2MX " 28,182 148 29 37
*DG3MR " 25,172 100 45 71
*DF6YC " 23,058 99 47 75
*DG2BHB " 21,944 135 30 74
*DD3WW " 20,384 81 44 47
*DL8ZAJ " 18,096 98 38 66
*DL1OJ " 17,787 118 27 50
*DG8FAY " 13,289 103 25 72
*DH4PSG " 12,540 58 36 40
*DL3BCR " 4,680 40 20 32
*DL9GTI " 3,520 28 18 26
*DL1SVA " 1,518 22 12 11
***DO5WW** 28 222,220 528 40 124
*DK5KMA " 137,900 405 40 100
*DL3ANK " 137,280 403 36 94
*DJ8ES " 78,080 237 38 90
*DM5BB " 56,720 275 30 50
*DL1DTL " 42,180 194 30 65
*DO1RJ " 24,102 124 29 49
*DL6MRS " 17,472 84 26 52
***DL5RDP** 21 445,352 1088 39 140
*DM6DX " 136,850 394 40 121
*DO7PD " 86,848 456 31 87
***DK8JB** 14 6,771 98 13 48

Greece

SV2BFN A 878,880 1395 120 360
SV1BFW " 265,500 341 111 243
SV8RX " 179,352 295 91 191
SV2LLM " 5,760 42 23 41
SV2DCD 28 1,126,656 2613 40 152
SV3AQR " 125,538 784 29 69
SV1JGX 14 232,960 1036 36 124
***SV2HWR** A 73,600 331 41 119

Guernsey

***MU0FAL** A 25,300 164 25 67

Hungary

HA8LLK A 457,560 921 92 236
HA3OU " 344,040 521 101 265
HA1SU " 812 21 12 17
HA8JV 21 1,205,542 2717 39 160
***HA5OO** A 163,313 418 57 140
***HA8CQ** " 134,466 394 65 154
*HG8C " 73,359 202 55 116
(OP: HA8EK)
*HA1NR " 840 30 9 21
***HA5UK** 28 296,595 717 40 129
***HA3DX** 21 600,048 1815 38 124
(OP: HA4XH)
***HG4F** 14 295,176 1340 35 112
***HA8BE** 1.8 24,024 346 9 57

Iceland

TF3SG A 89,964 460 36 117
TF3IG " 2,709 48 14 29
TF3AO 21 146,718 1071 18 81
TF3CY " 113,886 629 28 83
***TF3DC** A 30,502 144 33 118
*TF3PPN " 26,001 177 29 78

Ireland

EI7CC A 829,194 1170 82 257
EI2GLB " 20,700 104 41 59
EI2II 28 496,392 1315 38 110
EI4GXB " 74,037 322 28 59
EI6JK 21 363,834 1050 38 136
EI9HX 7 300,898 1520 31 111
EI2JD 1.8 5,715 139 5 40
***EI5GSB** A 909,238 1261 86 321
*EI7JZ " 390,250 542 87 263

Italy

IR3R A 1,750,481 1853 120 403
(OP: IK3STG)
IZ4GWE " 1,656,905 1722 118 387
IW2MZX " 1,203,285 1789 116 369
I7CSB " 778,956 882 121 346
IZ2ODM " 601,293 901 102 297
IZ1JLN " 550,408 736 108 320
IK6VXO " 457,079 532 101 290
IZ4REF " 376,749 458 112 257
IZ8DVD " 305,888 512 90 226
IZ3DVU " 128,148 302 65 112
IW0SAF " 48,708 176 63 101
IZ8ESX " 34,191 147 39 48
I3VJW " 30,940 96 54 65
IK2GZU " 29,680 91 55 85
IR4E " 25,839 141 33 54
IK2LTR " 18,045 175 15 30
IZ6KFH " 10,512 69 29 43
IZ4ORF " 9,504 67 27 45
IW0GYC " 5,616 50 24 28
IZ2DII " 4,708 72 11 11
IR4C 28 796,077 1684 40 157
(OP: IZ4NIC)
IZ5CML " 471,225 1067 40 143
IO3X " 440,583 1019 40 129
(OP: IV3JCC)
IR2L " 420,875 1054 39 136
(OP: IW2LLH)
IK4DCX " 358,332 953 39 117
IZ8GNR " 337,364 746 40 153
IK2SND " 293,535 809 39 126
IZ5NFD " 288,915 652 40 147
IK0YVV " 189,114 543 40 89
IZ4MJP " 176,000 440 40 120
I1NVU " 117,390 282 40 142
IZ5ASZ " 72,473 250 36 101
IZ2JCD " 14,874 84 24 50
IR5T 21 768,426 1919 39 139
(OP: IK5ORP)
IQ7AF 21 238,576 1079 36 112
(OP: IZ7ULZ)
IQ6RS " 142,776 609 29 79
IV3ARJ " 125,388 387 37 125
IR4M 14 1,464,285 3528 40 161
(OP: IK4MGP)
IZ8EFD " 166,135 797 36 113
IZ1NBX " 19,096 186 20 57
IZ4ORO 7 117,292 942 26 92
IZ1GAR " 106,820 613 32 108
IZ4AMS " 33,920 190 24 82
IZ2FOS 1.8 26,341 410 10 61
IK2TDM " 4,277 99 5 42
***IK6OIN** A 382,500 674 85 255
***IK5RUN** " 375,001 402 122 345
*IK1DFH " 169,344 347 81 207
*IZ1HDR " 109,044 282 68 165
*IK8MYM " 68,796 192 63 133
*IK3SCB " 46,080 165 58 102
*IZ2NZZ " 6,660 59 24 36
*IZ2CSX " 3,417 35 21 30
*IZ0LHL " 150 5 5 5
*IW7ECJ " 84 4 3 4
***IK2YGZ** 28 342,150 962 39 111
***IK4TVP** " 306,048 643 40 152
*IW1QN " 305,745 757 39 126
*I2WIJ " 123,074 329 40 109
*IK8TEO " 20,223 126 23 40
*IZ4AKO 14 9,360 69 24 48
***IK3UNA/1** 7 76,268 698 20 72
***IK0XBX** 3.7 34,936 328 16 72

Kaliningrad

UA2FX 28 1,428,204 3083 40 164
***UA2FT** 14 15,732 154 17 52

Latvia

YL9T A 702,792 997 105 349
(OP: YL2TW)
YL5T " 241,211 388 84 167
(OP: YL3DQ)
YL2KO " 103,342 316 57 106
YL2PP " 52,780 144 53 92
YL3FX 28 187,188 735 33 81
YL2KF 21 8,120 82 16 42
YL2BJ 14 567,286 1778 39 139
YL6W 1.8 54,756 657 14 64
(OP: YL2GD)
***YL2IP** A 89,280 230 61 131
***YL3AGV** 21 80,594 347 29 89

Liechtenstein

HB0/SP7VC A 981,039 1616 77 272

Lithuania

LY1R A 2,813,888 2356 140 476
LY2J " 1,206,630 1338 130 485
LY3CY " 405,288 897 70 242
LY2BKT 7 35,802 374 16 62
LY1G 3.7 102,616 835 22 79
LY5E 1.8 104,468 1039 16 75
(OP: LY2IJ)
LY7M " 60,984 736 13 64
***LY2K** A 633,472 989 96 296
*LY2SA " 277,101 464 88 223
*LY3IV " 2,496 44 13 35
***LY5D** 28 55,890 299 22 68

Luxembourg

LX5T A 1,086,551 1388 129 302
(OP: LX1KC)

Macedonia

Z37M 14 402,845 1627 35 120

Moldova

***ER3CT** A 475,401 885 82 239
*ER3DX " 41,850 115 60 90

Montenegro

***4O4A** A 99,424 273 65 143

Netherlands

PA3S A 1,720,129 1973 100 267
PE1MMZ " 627,312 802 100 236
PA3GLOU " 234,222 324 96 213
(OP: PA0LOU)
PH7A " 229,500 306 76 264
PG2AA " 161,182 419 54 149
PA7AL " 150,822 722 44 145
PA0O " 141,040 265 89 126
PA5O " 9,324 71 31 43
PA2C 28 458,561 1352 36 103
PA3C " 293,280 618 40 155
PA1T " 131,401 537 34 67
PI4COM 14 1,032,936 2604 40 153
(OP: PA1AW)
PA3BWD 3.7 12,636 128 15 66
***PA3T** A 538,671 834 93 246
***PD9X** " 446,152 1200 64 193
*PD7BZ " 297,190 599 71 192
*PE1FTV " 239,757 569 59 174
*PE4BAS " 220,218 445 73 181
*PA4PS " 38,940 210 38 94
*PA3HGF " 29,016 149 37 56
*PA3DDP " 14,744 100 28 69
*PA3ARM " 11,248 100 23 53
*PA9HR " 5,610 58 20 35
***PA0MIR** 28 147,285 463 36 99
*PA4EA " 19,437 128 22 35
*PE1PKR " 16,402 112 20 39

Northern Ireland

GI9Q A 65,303 232 44 89
(OP: GI4FUE)
***GI4SJQ** A 326,925 643 67 158
*GI4AAM " 213,860 564 65 224

Norway

LA6K A 1,746,316 1721 127 445
(OP: DL7URH)
LA9TY " 418,836 904 80 254
LA4RT " 52,245 231 39 90
LA7GNA 28 163,650 452 36 114
LA9TJA " 89,208 411 29 97
LA9DFA 21 415,800 1355 39 141
LN9Z 7 393,120 2308 32 112
(OP: LB1G)
LA2XPA 3.7 52,751 347 23 84
***LA5LJA** A 40,278 134 53 84

Poland

SO8A A 7,976,587 4512 175 598
(OP: SP8BRQ)
SO2S " 1,923,556 1885 139 495
(OP: SP2QG)
SQ9HZM " 1,856,870 1936 133 418
SN9P " 1,211,602 1196 120 398
(OP: SQ9GAI)
SO6I " 1,152,396 763 156 558
SO8T " 994,766 1190 119 372
(OP: SP8TJU)
SO7A " 919,800 1316 107 331
(OP: SP7MOC)
SQ9LR " 821,250 1004 103 272
SQ8JX " 818,896 1000 120 376
SP1MVG " 513,128 730 101 242
SP1KRF " 243,846 657 71 208
(OP: SP1IVL)
SO2W " 230,405 407 80 147
SQ1BHH " 73,720 250 54 98
SP9IBJ " 63,206 288 46 123
SP1MWN " 45,021 140 55 74
SQ7BFS " 30,789 183 32 67
SP4JTJ " 23,937 123 33 68
SP9TTT " 15,485 137 26 69
SP5ENA " 9,591 59 29 40
SP6FXY " 7,462 62 21 20
SP2HMN " 6,726 63 21 36
SP1MWK " 6,565 40 27 38
SP3KPN " 4,270 86 14 47
SN8G " 2,805 32 21 30
SP3S " 1,254 19 19 19
SP9DGO " 800 14 9 11
SN6T " 130 5 5 5
(OP: SP6T)
SP5DIR " 24 2 2 2
SP1RKT 28 505,081 1198 40 153
SP4YPB " 438,702 988 40 147
(OP: SP4JCQ)
SN2T " 376,800 990 39 121
(OP: SP2IST)
SP9RCL " 356,040 850 40 140
SP5WA " 332,550 912 38 112
SP1NY " 201,736 505 40 127
SP8BQL " 65,448 310 31 70
SQ1DWS " 59,160 220 40 76
SQ1VAA " 9,514 49 28 43
SN3C 21 276,848 695 38 138
(OP: SP3ASN)
SO4M 14 990,008 2664 40 148
(OP: SP4DEU)
SN8R " 778,960 2217 38 144
(OP: SP8ONZ)
SO8N 7 412,258 2027 34 120
(OP: SQ8GHY)
SP3GEM 3.7 353,067 1750 31 112
SP5LS " 197,562 1422 23 91
SP3GTS " 87,906 895 15 76
SP5ELA " 44,850 563 12 66
SO8R 1.8 57,827 793 13 64
(OP: SQ8JLA)
***SQ8LSC** A 446,886 533 109 298
***SP1RKR** " 366,436 636 78 244
***SN7S** " 266,936 689 67 177
(OP: SP7IDX)
*SQ4O " 89,006 184 68 123
*SO8W " 85,215 312 53 142
(OP: SQ8JLN)
*SN8J " 84,255 283 46 91
(OP: SP8JPR)
*SQ6PWJ " 65,598 265 49 125
*SQ1EIC " 60,750 250 42 108
*SQ6PPI " 54,560 233 46 114
*SP6IHE " 44,671 128 54 77
*SQ7OFB " 30,845 154 46 109
*SQ8LSB " 21,546 112 39 75
*SQ3RX " 17,664 74 35 57
*SO1K " 16,625 131 26 69
*SQ7NSQ " 13,144 110 29 77
*SP7CCB " 10,296 92 25 53
*SQ8JMC " 9,920 56 36 44
*SP3FTA " 7,150 98 15 35
*SQ8NZB " 6,728 42 28 30
*SP8QED " 3,131 42 12 19
*SP1MVL " 2,852 25 21 25
***SP3LWP** 28 220,000 573 39 121
*SP5EWX " 171,676 444 39 128
*SQ8J " 147,024 406 38 106
*SO4B " 107,734 262 39 127
(OP: SP4Z)
*SQ1RMM " 22,718 143 26 48
*SP1MHZ " 9,541 76 21 26
***SP6DVP** 21 113,582 441 31 91
*SP3FYX " 27,612 195 22 56
*SQ8GUM " 4,107 58 13 24
***SP5GRM** 14 438,959 1390 37 126
*SQ9HQ " 90,307 406 32 101
*SQ9OKV " 75,250 402 33 92
***SP8LBK** 3.7 21,390 315 10 52
***SP1GZF** 1.8 40,560 513 13 67

Portugal

CT2IOV 28 172,620 881 31 95
CT1IUA 14 765,450 2307 37 138
CT1EWA 7 31,356 337 15 63
***CT1FOQ** A 75,854 213 52 142
*CT1ENI " 42,432 118 51 105
***CT5KAO** 28 233,289 749 36 125
*CT2IVH " 86,862 509 27 66
***CT2JBG** 7 14,170 140 15 50

Romania

YP9W A 8,207,289 5478 163 584
(OP: YO9GZU)
YO3APJ " 1,516,410 1393 121 377
YO4DW " 887,807 1575 88 271
YR8D " 434,534 814 81 253
(OP: YO8BDQ)
YO8RNI " 375,126 689 88 221
YO6PVK " 254,330 512 83 207
YP5A " 168,350 571 45 137
(OP: YO5OLD)
YO2MLC " 49,155 208 47 98
YO6DBL " 44,902 204 43 114
YO5PBF " 31,944 282 24 64
YO5BEU " 4,224 93 9 39
YO9HP 28 504,900 1151 40 147
YO5PBW " 136,462 432 35 107
YO6BHN " 92,225 250 40 115
YO7DAA " 92,220 302 39 120
YO3JF " 30,537 124 31 56
YO5OED 21 188,508 764 31 107
***YO5CRQ** A 108,419 285 57 124
***YO9RKH** " 95,692 339 46 142
*YO5OAG " 49,769 184 52 105
*YO4CSL " 525 15 8 13
***YO2AOB** 28 185,570 567 38 116
*YO9BXC " 43,095 211 26 59
*YO6OHS " 42,366 233 27 42
*YO7FB " 40,281 225 29 58
*YP2U " 16,697 115 21 38
*YO5LD " 10,434 88 18 29
*YO3FGO 21 1,170 29 8 18
***YO5Q** 7 97,136 794 19 85
(OP: YO5OHO)

Scotland

GM0FGI A 452,790 807 88 263
GM4JR " 440,046 697 73 208
MM0GPZ " 324,896 658 55 153
MM3T 28 427,344 1226 39 135
(OP: GM0ELP)

Serbia

YU1AAV A 167,335 364 76 169
(OP: YT1CC)
YT2AA " 70,226 248 43 103
YT5T " 49,446 530 13 69
YT0Z 21 1,079,835 2598 40 152
(OP: YU1ZZ)
YT7Z " 924,606 2431 39 147
(OP: YU7EE)
YU5R " 715,088 1880 40 147
YT9A " 674,538 1771 38 145
YT4W 14 836,628 2666 38 148
(OP: YU1DW)
YT1FZ " 53,599 555 21 70
YT7A 7 609,054 2399 36 130
(OP: YU7GM)
YT1VP " 544,416 2192 35 124
YU0W " 46,645 429 20 75
YT4A 3.7 116,282 977 21 85
***YT7TA** A 28,792 117 45 73
***YT8WW** 14 491,130 1782 39 131

Sicily

IT9ZTX 28 611,520 1849 38 109
IT9XTP 21 411,084 1407 38 133
IO9E " 104,139 466 30 103
(OP: IT9DFI)
IT9/LY5W 14 83,520 621 22 68
***IT9IVE** A 123,640 417 54 166
*IT9RZU " 32,760 104 45 81
*IT9JDH " 5,568 70 20 44
***IU9A** 28 513,240 1431 37 119
*IT9ESW " 62,244 237 34 80
*IT9IMJ 3.7 2,460 58 8 33

Slovak Republic

OM0A A 1,298,472 1487 127 397
(OP: OM0AAO)
OM7PY " 302,270 501 87 247
OM5FA 3.7 88,616 987 17 71
***OM4O** A 300,268 697 65 206
(OP: OM3NI)
*OM7YC " 143,080 299 79 166
*OM4AQP " 118,976 493 42 134
*OM5UM " 76,209 305 49 142

Slovenia

S57DX A 6,086,280 4621 153 517
S58M " 2,489,034 2592 147 495
S51DI " 1,945,062 1391 155 447
S59AA " 573,076 729 116 306
S51DX " 191,760 494 71 184
S51JS " 91,817 361 50 137
S53O 28 904,519 2056 40 147
S50R " 699,485 1598 40 145
S56P " 153,468 501 35 81
***S50K** 21 1,193,192 2807 39 143
S53F " 756,551 1790 40 151
S57Z 14 1,100,626 3144 38 135
S56X 7 471,699 2088 33 120
***S50XX** A 2,499,956 2119 132 472
*S52WW " 88,872 332 44 140
***S56A** 28 273,728 612 40 142

Spain

EC2DX A 7,963,560 4486 174 618
EB3CW " 6,756,750 4258 158 557
EA4ETW " 1,604,964 1584 131 343
EE7L " 1,570,530 2447 104 286
(OP: EA7HLU)
EA7ELY " 1,436,974 1992 83 258
EE3R " 1,268,841 1179 131 352
(OP: EA3OR)
ED4A " 960,860 1174 114 335
(OP: EA4TV)
EA2QU " 572,838 567 134 349
EA1HOE " 545,675 1056 89 276
EA3NT " 480,384 621 117 267
EA1WX " 312,780 899 51 79
EA4DUT " 267,344 448 85 256
EA5FID " 113,031 243 71 100
EA2AZ " 89,100 334 43 122
EF5R " 74,467 304 32 81
(OP: EA5BWR)
EE5G " 62,712 128 87 114
(OP: EB5GG)
EA4EER " 384 8 8 8
EA5BY 28 804,287 1783 40 147
EA7KW " 785,813 1670 40 163
EC7ZK " 671,346 1859 40 131
EA3JW " 516,609 1225 40 143
EA1YO " 306,114 735 39 124
EA7ZY " 296,982 1260 34 92
EA4DEC " 222,632 806 33 103
EA1DR " 167,050 978 18 47
EA1AAE " 55,430 228 33 82
EA7LL 21 929,280 2696 36 124
EA3QP " 793,149 2088 38 141
EA3KN " 192,062 524 40 138
EA1ACP " 161,760 531 35 125
EA3IN 14 1,042,665 2776 40 155
EA1AAW 3.7 59,332 444 17 74
***EF1W** A 1,102,686 1416 104 318
(OP: EA1WS)
*EA1GWM " 213,920 429 74 206
*EA1JK " 108,150 445 28 77
*EA2WD " 93,100 300 51 89
*EA1AS " 28,426 150 34 88
*EA2CE " 25,116 142 31 60
*EA5HVH " 24,050 133 41 89
*EA2KP " 21,525 112 45 78
*EA7MT " 11,408 58 41 51
*EA3OW " 10,496 82 26 56
*EA2DCF " 2,793 38 17 32
***EC5CSW** 28 388,173 1311 34 107
*EA3RR " 324,415 965 37 118
*EA1DAX " 212,002 610 32 101
*EA5HVY " 100,788 319 37 111
*ED7D " 75,656 343 26 72
(OP: EA7KJ)
*EC4CBZ " 7,395 94 13 16

*EB3MA	"	4,280	49	18	22
***EE7K**	**21**	**59,472**	**328**	**25**	**93**
			(OP: EA7AKK)		
***EF7W**	**7**	**104,014**	**692**	**26**	**105**
*EA5HSI	"	40,067	277	23	80
*EA1GHT	"	17,475	149	14	61
*EA1FCH	1.8	2,074	69	5	29
Sweden					
8SØC	**A**	**2,162,916**	**1389**	**156**	**600**
			(OP: SMØMPV)		
SM5D	**"**	**1,525,920**	**1224**	**141**	**519**
			(OP: SM5DJZ)		
SM6NOC	"	676,863	724	127	346
SJ6A	"	611,200	767	101	281
			(OP: SM6JSM)		
SM5CZQ	"	235,365	532	53	142
SI2E	"	117,568	363	40	127
			(OP: SM2EKA)		
SM6NET	"	10,480	50	33	47
SM5EPO	"	6,110	53	18	29
SF7WT	**28**	**160,264**	**439**	**40**	**94**
7S5C	"	101,388	365	31	88
			(OP: SM5CBM)		
SM5CEU	**21**	**160,524**	**468**	**35**	**121**
SM6E	7	6,726	64	15	44
***SM7E**	**A**	**603,930**	**807**	**110**	**300**
			(OP: SM7BHM)		
*SM6MVE	"	152,771	427	58	169
*SA3V	"	131,859	322	62	145
			(OP: SA3ARL)		
*SAØBJL	"	106,088	381	50	128
*SM6XUZ	"	7,313	118	17	54
*SE3K	"	4,380	54	19	41
			(OP: SA3ARK)		
***SE5S**	**28**	**131,634**	**433**	**37**	**105**
*SM6LPF	"	1,176	20	10	11
Switzerland					
*HB9SVT	A	11,322	96	29	82
Ukraine					
UT2UU	**A**	**1,988,136**	**2210**	**126**	**395**
UXØFF	**"**	**1,753,136**	**1622**	**141**	**475**
UR5E	"	366,630	635	84	246
			(OP: UR5EDX)		
UT1AA	"	163,680	418	61	179
UR5EPG	"	135,082	299	69	205
UZ5ZV	"	119,119	365	60	127
USØZZ	"	97,020	170	83	162
UR5MBA	"	81,021	199	69	170
UT2UB	"	24,354	114	39	60
UT1KWA	"	10,152	116	20	52
UX3IO	"	6,954	59	27	30
UR5UCJ	"	15	3	2	3
UW1M	**28**	**1,138,000**	**2833**	**40**	**160**
			(OP: UR5MW)		
UT2PX	"	479,322	1028	38	148
UW5ZM	"	272,970	820	39	123
UZ5Q	"	105,696	384	36	108
			(OP: UY5QZ)		
UVØI	**21**	**537,549**	**1742**	**39**	**138**
UX1UF	**"**	**321,315**	**989**	**34**	**121**
UR6IJ	"	63,979	238	35	102
UR5AS	**1.8**	**47,960**	**495**	**17**	**71**
***UZØU**	**A**	**992,124**	**986**	**125**	**433**
			(OP: UY5ZZ)		
***URØHQ**	**"**	**523,770**	**738**	**103**	**287**
*UT8EL	"	354,063	765	80	241
*UR5FEL	"	258,700	453	85	240
*UR5IFB	"	213,300	421	67	233
*UV5EEO	"	209,250	511	69	210
*UT8IM	"	134,469	400	56	145
*UVØIX	"	41,004	197	37	116
*UV5ENW	"	20,925	122	33	60
*UR5LCZ	"	18,032	80	41	57
*US2WU	"	9,250	52	29	45
*US7IM	"	4,656	77	12	36
***UT7EZ**	**28**	**325,076**	**881**	**39**	**142**
***UT5LO**	**21**	**171,190**	**498**	**38**	**132**
*UR6MX	"	100,326	307	34	104
*UX7LL	"	16,245	87	26	69
***UT7Y**	**14**	**248,575**	**1080**	**37**	**126**
			(OP: USØYW)		
***UT9MZ**	**7**	**147,980**	**686**	**32**	**108**
***UT7X**	**3.7**	**64,159**	**738**	**15**	**68**
			(OP: UT7XX)		
***UT5UGR**	**1.8**	**13,338**	**283**	**8**	**49**
*UT2AB	"	962	43	4	22
Wales					
GW9T	**28**	**1,525,665**	**3402**	**40**	**153**
			(OP: MWØZZK)		
GW4OH	"	727,825	1708	40	135
			(OP: MWØJZE)		
***MWØMAU**	**A**	**109,769**	**496**	**51**	**136**
***GW9X**	**28**	**230,888**	**803**	**36**	**97**
			(OP: MW1LCR)		

OCEANIA

Australia

VK4QH	**A**	**1,962,688**	**2122**	**100**	**237**
VK2BCQ	"	226,872	433	71	136
VK3GK	"	210,824	508	52	100
VK6DXI	**28**	**337,155**	**1115**	**23**	**82**
VI6XX	"	163,285	528	26	87
			(OP: VK6HZ)		
***VK1OO**	**A**	**58,464**	**165**	**61**	**83**
***VK8DX**	**28**	**1,276,366**	**2486**	**40**	**142**
*VK6DU	"	27,576	175	20	52
East Malaysia					
9M8Z	**21**	**1,280,748**	**2866**	**38**	**120**
			(OP: 9M6DXX)		
Guam					
NH2T	**A**	**1,612,160**	**1610**	**130**	**222**
KG6DX	**28**	**1,449,000**	**2901**	**40**	**135**
Hawaii					
WH7M	**A**	**5,757,338**	**4036**	**151**	**352**
				(OP: K1YR)	
***AH6RR**	**7**	**31,050**	**192**	**29**	**46**
Indonesia					
YB3OX	**A**	**398,542**	**844**	**61**	**117**
YBØBCU	"	55,970	210	57	88
YBØCOX	**21**	**43,602**	**217**	**22**	**64**
YB3XM	"	29,151	135	23	56
YC1BTJ	**7**	**38,142**	**195**	**23**	**55**
***YBØMWM**	**A**	**209,984**	**449**	**64**	**129**
***YC8AHH**	**21**	**3,815**	**42**	**14**	**21**
***YB2UTX**	**7**	**3,344**	**61**	**17**	**21**

New Zealand

ZM4M	**A**	**473,796**	**800**	**73**	**141**
ZL1XX	"	400,392	580	89	179
ZL5ØGH	"	193,325	375	69	140
ZL3TE	**28**	**546,174**	**1685**	**31**	**83**
*ZL2HAM	14	6,578	63	18	28

Northern Mariana Islands

NHØS	**A**	**4,213,300**	**4315**	**104**	**246**
				(OP: JF2SKV)	

Philippines

DU1IVT	**A**	**1,018,710**	**1463**	**85**	**160**
DU1AV	"	243,804	744	54	78
*DU7HF	21	1,056	26	9	13

SOUTH AMERICA

Argentina

LW3EWZ	**A**	**79,744**	**273**	**47**	**81**
LU6QI	"	3,403	29	16	25
LU1FL	**14**	**20,739**	**126**	**30**	**63**
***LU3DX**	**A**	**457,066**	**1000**	**67**	**106**
***LU7BTO**	**28**	**20,368**	**134**	**16**	**51**
*LU6EBY	"	14,796	121	20	34
Aruba					
P4ØA	**A**	**14,268,432**	**7470**	**156**	**513**
				(OP: KK9A)	
***P4ØP**	**A**	**8,105,244**	**4329**	**151**	**507**
				(OP: W5AJ)	
Brazil					
ZX2B	**A**	**6,729,084**	**4112**	**134**	**430**
				(OP: PY2MNL)	
ZV2K	"	1,010,025	1235	100	235
				(OP: PY2SHF)	
PY2NZ	"	845,328	1194	79	185
PY3APY	"	159,430	413	44	105
PP5JY	"	121,368	326	52	104
PY3PA	"	103,334	328	50	72
PR2P	**28**	**1,468,948**	**3384**	**36**	**128**
				(OP: PY2OE)	
PP5BS	"	436,740	1333	26	90
PY2WB	"	208,050	532	36	110
PV8AA	"	1,568	24	10	18
				(OP: PV8DX)	
PY4OG	**21**	**560,340**	**1131**	**37**	**143**
PY2MR	"	35,763	195	29	62
PW5G	**14**	**966,006**	**2029**	**40**	**138**
				(OP: PP5WG)	
PR7AR	"	304,304	1017	28	84
PX2V	"	213,522	678	34	80
				(OP: PY2KJ)	
PV8ABC	**7**	**35,040**	**163**	**15**	**65**
PV8DX	1.8	16	2	2	2
***PY1ZV**	**A**	**256,464**	**707**	**45**	**92**
***PY1SX**	**"**	**187,776**	**370**	**53**	**139**
*PY9MM	"	170,864	259	57	179
*PY5ZW	"	110,370	339	42	88
*PY3OPP	"	92,208	262	48	88
*PY1GQ	"	90,443	274	57	92
*PY1NS	"	59,400	266	48	84
*PY2IQ	"	8,320	60	22	30
*PY2COY	"	6,313	79	29	30
*PY2JCM	"	513	23	9	10
***PY3OZ**	**28**	**435,200**	**1143**	**31**	**105**
***PU1TMT**	**"**	**410,720**	**1125**	**29**	**107**
*PY2DN	"	262,280	1154	19	60
*PU1KGG	"	247,020	631	35	103
*PU5ATX	"	143,622	747	26	53
*PY2XV	"	116,388	436	28	78
*PY2TKB	"	107,814	430	26	76
*PY3FOX	"	90,480	540	18	42
*PY2HT	"	88,290	505	27	63
*PY2XC	"	58,014	320	20	46
*PP5AX	"	24,840	153	22	50
*PY3NZ	"	19,800	189	18	27
*PU2VGS	"	18,150	136	22	53
*PY2KEY	"	13,000	91	15	50
*PP5AMP	"	9,509	103	15	22
*PP5FMM	"	7,917	111	13	16
*PU3CAL	"	6,903	75	17	22
***PY2TDX**	**21**	**40,836**	**205**	**23**	**60**
*PY4XX	"	2,820	44	12	18
Chile					
CE3P	**A**	**298,516**	**740**	**42**	**106**
CE3OPE	"	71,553	416	34	35
*XQ7UP	28	4,089	60	14	15
Colombia					
***HK3JJB**	**A**	**258,826**	**373**	**73**	**181**
Trinidad & Tobago					
9Y4D	**14**	**2,291,352**	**4372**	**38**	**146**
Uruguay					
CX5TR	**A**	**1,009,323**	**1428**	**81**	**178**
CX3AL	**28**	**1,323,472**	**2550**	**38**	**143**
CX4BW	**14**	**268,560**	**699**	**39**	**105**
Venezuela					
YV8AD	**A**	**610,056**	**683**	**95**	**238**
***YY7OMF**	**28**	**64,125**	**335**	**26**	**49**
*YV4BCD	"	25,920	168	17	47

QRP ASSISTED

RT4W	**A**	**683,439**	**1048**	**100**	**309**
DL8LR	**"**	**425,776**	**692**	**84**	**272**
EA3FF	**"**	**246,052**	**508**	**74**	**200**
IV3AOL	**"**	**206,064**	**404**	**64**	**179**
YO8WW	**"**	**193,290**	**377**	**82**	**173**
HG6C	**"**	**188,768**	**548**	**64**	**208**
				(OP: HA6IAM)	
UR5XFQ	**"**	**140,392**	**416**	**60**	**158**
CT1ELF	**"**	**126,060**	**358**	**54**	**166**
NN7SS	**"**	**61,776**	**125**	**55**	**121**
				(OP: K6UFO)	
UX8IX	**"**	**56,472**	**256**	**40**	**116**
IZ8EWD	**"**	**53,856**	**233**	**39**	**105**
HA5BA	**"**	**50,400**	**266**	**36**	**104**
RX3DIS	**"**	**28,290**	**193**	**24**	**91**
ER3AU	**"**	**28,175**	**162**	**35**	**80**
RW9AW	**"**	**20,868**	**97**	**26**	**68**
RL3DZ	"	15,876	72	44	64
LY7Z	**"**	**14,168**	**100**	**27**	**61**
JA1KEB	**"**	**13,780**	**80**	**30**	**35**
UT5EO	"	13,699	123	23	80
UTØEO	"	12,549	133	23	66
BA6QR	**"**	**11,340**	**90**	**24**	**46**
IZ8FDG	"	8,370	68	24	30
SQ9FCH	**"**	**4,505**	**49**	**20**	**33**
IK3OII	"	2,695	38	20	29
UR5LAM	"	1,681	24	18	23
IV3XNF	"	864	14	11	13
IØUZF	**28**	**243,040**	**671**	**38**	**117**
LU7HZ	**"**	**152,280**	**539**	**26**	**82**
R7NA	**"**	**116,490**	**660**	**28**	**82**
YO8DDP	**"**	**76,230**	**396**	**29**	**61**
R2AD	**"**	**70,585**	**418**	**25**	**70**
K2FWA/4	**"**	**63,105**	**220**	**26**	**79**
				(OP: RV2FW)	
RA3FY	"	29,436	195	19	47
DU1AJ	**"**	**3,360**	**54**	**11**	**13**
HA6NN	**"**	**2,691**	**41**	**10**	**13**
RM2M	"	2,304	40	11	25
ON4MW	**21**	**46,830**	**232**	**28**	**77**
HG1X	**14**	**77,561**	**434**	**30**	**91**
				(OP: HA1RS)	
EA1HFI	**"**	**6,060**	**95**	**11**	**49**
VE3XD	**"**	**12**	**2**	**2**	**1**
IZ1DGG	**3.7**	**3,430**	**108**	**5**	**30**
DD9WG	**"**	**2,176**	**65**	**4**	**30**

MULTI-OPERATOR SINGLE TRANSMITTER

NORTH AMERICA

United States

K1LZ	**12,256,067**	**4944**	**185**	**714**
N1MM	2,575,413	1579	144	459
NM1C	1,006,140	877	95	314
K1VTR	889,266	776	105	329
W1QK	233,772	349	71	182
W1TM	212,741	361	58	171
N1TA	120,152	240	49	135
W1AF	19,800	107	49	61
KA1HVR	504	12	8	10
W2FU	**8,601,138**	**3836**	**178**	**641**
K2OAK	607,750	619	97	277
W2CG	478,040	527	73	250
AB2DE	400,372	434	98	264
WA3AFS/2	280,450	322	103	252
AI2I	232,328	391	48	178
AK2D	63,666	148	50	112
K9RS/3	**5,884,470**	**2862**	**169**	**586**
W3MF	**3,001,150**	**1750**	**147**	**475**
W3SQ	737,693	815	78	259
K3OQ	143,616	330	47	140
N4WW	**7,555,275**	**3726**	**180**	**639**
WW4LL	**5,988,357**	**3026**	**171**	**600**
K5KG/4	4,672,412	2411	162	536
K1PT/4	3,344,990	1923	152	495
AD4ES	2,062,632	1413	144	428
W4NC	896,550	817	111	319
W4YCC	689,416	709	97	267
KO4DI	541,674	572	116	262
WA3OFC/4	76,636	186	46	115
KA4OTB	53,520	192	40	80
KF4WXD	13,090	74	25	45
N5DX	**10,865,855**	**4851**	**190**	**655**
K5TR	**6,454,500**	**3327**	**175**	**575**
K5UA	2,765,628	1722	144	468
W5RTA	152,274	292	88	158
W6YI	**6,630,967**	**3492**	**177**	**550**
W6YX	**3,075,305**	**1813**	**158**	**477**
W7DR/6	2,205,814	1556	153	406
W1CU/6	1,834,014	1223	145	401
K6MMM	1,832,798	1458	125	329
W6KA	147,387	358	78	141
K6RWL	14,700	89	33	42
W6OAT	280	7	7	7
K7RL	**5,731,482**	**3263**	**172**	**505**
W7IV	**3,252,060**	**2139**	**149**	**431**
W7WJ	**3,105,170**	**2118**	**156**	**434**
W7IJ	1,432,728	1129	136	350
WX7P	867,260	804	126	286
WY7SS	786,046	890	103	276
W7TVC	765,440	692	127	289
N7VF	754,977	857	103	256
K7ZB	517,588	588	84	248
WC7WB	357,864	429	87	225
KX7YT	124,623	273	65	118
W7RN	117,648	256	45	126
K8AZ	**8,987,264**	**3866**	**181**	**651**
NOØBZ/8	178,047	327	62	157
K9CT	**3,864,960**	**2290**	**155**	**505**
KD9ST	**3,048,984**	**1753**	**152**	**484**
WN9O	2,512,890	1546	143	472
KØJA	**561,425**	**504**	**105**	**320**
NØMA	560,986	636	101	257
Alaska				
KL7AIR	**307,467**	**452**	**86**	**183**
Canada				
VC2Z	**2,534,934**	**1677**	**129**	**413**
VE2NGH	**1,918,208**	**1479**	**121**	**387**
VA2TG	1,030,776	1243	90	258
VE2CUA	7,808	63	22	39
VE3EJ	**17,467,516**	**7081**	**192**	**721**
VE6SV	**7,342,110**	**4716**	**173**	**537**
VE6AO	1,403,179	2141	89	224
VE7GL	**4,931,573**	**3302**	**164**	**455**
VA7ZT	440,768	675	84	200
Cayman Islands				
ZF2OE	**1,076,750**	**1773**	**66**	**184**
Costa Rica				
TI5N	**4,095,000**	**4280**	**122**	**328**
Cuba				
T46A	**5,385,240**	**5144**	**126**	**378**
El Salvador				
HU1YS	**1,187,796**	**1473**	**98**	**274**
Mexico				
XE1RCS	**2,330,482**	**2813**	**121**	**286**
XE2AU	349,650	642	73	152
Turks & Caicos				
VP5DX	**12,238,516**	**7070**	**171**	**593**
VQ5X	6,164,319	4982	133	394
U.S. Virgin Islands				
NP2B	**4,770,206**	**4226**	**127**	**370**
KP2B	1,878,660	2571	108	247

AFRICA

Cape Verde

D4C	**25,519,464**	**9623**	**202**	**754**
Madeira Islands					
CR3A	**27,928,302**	**10648**	**189**	**733**
Morocco					
CN3A	**25,054,428**	**9499**	**188**	**734**
CN1C	4,182,038	3617	103	310
South Africa					
ZS5NK	**690,816**	**987**	**74**	**183**
Sudan					
ST2UOK	**562,068**	**909**	**58**	**176**
Tunisia					
TS2A	**18,676,876**	**7752**	**175**	**669**
3V8ST	262,269	556	44	137

ASIA

Asiatic Russia

RT9J	**4,650,160**	**3188**	**136**	**456**
RK9CYA	**3,085,049**	**2176**	**123**	**428**
RK9LWA	770,616	1088	50	202
RC9JWR	607,893	761	87	240
RK9SWF	442,400	672	73	207
RW9OWD	167,310	387	39	130
RWØA	**10,057,455**	**4989**	**170**	**595**
RWØCWA	**7,927,691**	**5215**	**181**	**466**
RKØSXR	561	12	7	10
Asiatic Turkey					
YM7KA	**5,913,782**	**4027**	**129**	**424**
TC3EC	1,336,032	1667	65	223
China					
BY5CD	**3,232,546**	**3001**	**139**	**375**
B3C	**2,212,008**	**2247**	**117**	**327**
BY4QA	**2,067,478**	**2156**	**117**	**296**
B7M	1,892,885	2562	99	248
BY4IO	1,435,304	2069	93	203
BD6KW	928,824	1433	89	223
BY4SA	693,234	998	103	239
BY1OK	533,852	1197	78	164
BY1CW	447,928	1023	76	160
B4S	440,910	781	95	175
BY4SHX	419,494	704	92	182
BY6LY	373,212	849	78	174
BY2AA	326,838	974	59	124
BY8DX	170,940	432	64	158
B1C	147,488	415	63	113
BY1CQ	95,206	297	67	114
BY5HB	92,204	288	69	109
Cyprus					
P33W	**24,172,854**	**9349**	**191**	**743**
P39P	245,672	809	27	80
Hong Kong					
VR2EH	**2,234,400**	**2963**	**121**	**279**
VR2XMC	99,165	303	52	113
Israel					
4Z4DX	**2,756,412**	**2529**	**92**	**322**
Japan					
JM1LPN	**3,597,189**	**2634**	**138**	**381**
JH1YIE	1,160	21	14	15
JI2ZJS	**4,066,953**	**3184**	**136**	**355**
JA2ZJW	1,305,850	1446	114	236
JI2ZEY	1,195,678	1721	97	181
JE7YSS	**413,972**	**633**	**81**	**166**
JA8RWU	**6,404,530**	**3639**	**165**	**505**
Kazakhstan					
UO5L	**5,106,310**	**3144**	**140**	**470**
Mongolia					
JT5DX	**9,437,311**	**5844**	**152**	**491**
Thailand					
E2E	**4,109,391**	**4208**	**113**	**316**
West Malaysia					
9M2SM	**427,901**	**767**	**81**	**182**
9M4CPD	325,892	766	68	158
9M4CMN	26,877	122	30	63
9M2JKL	20,516	139	36	56

EUROPE

Albania

ZA2ØQA	**5,147,667**	**5319**	**158**	**549**
Balearic Islands					
EB6AOK	**435,342**	**822**	**75**	**243**
Belarus					
EW4WE	91,258	338	58	148
EW8ZO	40,186	277	33	109
Belgium					
OP4K	**3,736,800**	**2999**	**145**	**455**
ON6BR	1,970,202	2410	126	381
OQ5A	338,024	728	68	164
Bosnia-Herzegovina					
E7DX	**16,976,648**	**8207**	**191**	**765**
E71AVW	214,760	612	60	200
Bulgaria					
LZ5K	**3,680,162**	**4354**	**121**	**381**
LZ26ZA	184,228	615	55	157
Croatia					
9A7A	**13,435,680**	**6723**	**183**	**737**
9A1A	**13,216,870**	**6623**	**187**	**735**
9A8M	9,334,100	5710	168	607
9A6B	2,692,735	1933	149	536
9A3W	771,580	1050	101	345
9A1CIG	161,916	458	75	187
9A3ØCB	89,505	289	61	134
9A7B	65,440	350	26	54
9A7P	23,912	201	29	93
9A7DRI	4,444	107	7	37
Czech Republic					
OK5W	**11,720,800**	**5488**	**189**	**731**
OL7T	**4,821,218**	**3550**	**154**	**540**
OK7O	4,240,880	3731	130	430
OL5T	3,417,475	2693	144	469
OL1C	2,816,352	2489	128	400
OK2KOJ	1,395,238	1328	127	394
OK1KQH	713,070	1178	98	319
OK2KJI	527,850	986	82	263
OL2U	381,120	832	76	244
OK5SWL	1,600	33	12	28
Denmark					
5Q1A	**1,414,744**	**1882**	**94**	**262**
OZ5BAL	74,290	207	46	124
OZ5THY	22,600	153	34	79
England					
G6PZ	**14,635,352**	**6870**	**189**	**718**
G5W	**6,258,000**	**4112**	**164**	**581**
G4ANT	2,489,760	2644	121	347
G3B	1,396,135	1359	143	468
M4U	1,369,720	1486	110	330
G1T	515,124	935	82	287
G5FZ	452,277	1144	62	127
G3PIA	87,007	292	49	118
European Russia					
RL3A	**14,814,776**	**7914**	**199**	**762**
RU1A	**12,893,658**	**6586**	**197**	**754**
RM5A	9,019,290	5752	180	690
RT6A	8,955,940	6015	188	713
UA5A	7,394,040	4916	189	685
RT4F	6,527,235	4868	160	555
RZ4FWW	3,039,660	2579	160	542
RC3W	2,399,040	2723	130	430
RM3Q	2,155,685	2486	133	462
RU5TT	1,330,665	1448	122	429
RK3VWA	974,624	1404	111	347
RK4HYT	657,600	1144	91	320
RZ1AWZ	334,776	801	72	224
RK3CQ	64,676	283	43	105
RT3F	13,122	126	14	40
RK3AWB	792	24	8	16
Finland					
OG1M	**2,778,712**	**2095**	**157**	**567**
OH6K	1,058,064	1310	122	347
OH2BAH	904,280	1206	115	255
France					
TM6M	**20,282,290**	**8630**	**196**	**759**
TM2B	**10,199,037**	**5681**	**171**	**678**
TM2T	6,990,684	4265	169	617
TM2S	4,525,470	3047	165	590
F8FKJ	2,111,844	1631	147	504
F8KCF	1,345,247	1184	132	397
F5KIN	733,953	1479	73	180
F6KFV	627,126	978	95	286
F5KAR	564,200	1369	86	264
F6KRK	515,871	679	104	283
F5KED	354,252	856	81	237
Germany					
DR2W	**4,613,160**	**3931**	**137**	**418**
DP6A	**4,061,262**	**2391**	**172**	**614**
DAØCA	2,714,754	2114	143	511
DJØA	2,372,860	1900	137	458
DKØXB	2,298,780	2629	119	397
DP9I	2,265,777	2276	121	410
DL1M	1,213,322	1357	108	313
DL2A	1,192,613	1042	128	375
DD1A	1,155,658	1099	126	392
DL5ZBA	1,064,404	1377	86	288
DLØK	890,010	1248	111	384
DM4G	274,096	588	71	225
DKØRX	172,490	520	55	180
DLØRUS	163,240	386	76	189
DN5KID	120,520	365	59	171
DLØTY	98,430	399	45	148
DKØMN	81,536	260	52	130
DLØESA	80,115	360	35	112
DKØSU	65,065	222	44	99
DFØKF	45,695	224	51	134
DFØMG	5,850	67	17	28
Greece					
SZ1A	**2,018,128**	**3079**	**120**	**398**
Hungary					
HG6N	**12,873,341**	**6623**	**184**	**727**
HA3KHB	114,036	389	61	143
Iceland					
TF3W	37,950	256	30	45
Ireland					
EI7M	**18,036,480**	**8593**	**184**	**712**
EI9E	**9,688,843**	**6231**	**165**	**592**
EIØPL	878,809	1117	102	329
Isle of Man					
GT8IOM	**595,158**	**1062**	**83**	**270**
GDØAMD	197,358	619	54	168
Italy					
IR2C	**11,540,548**	**5659**	**185**	**726**
IO5O	**10,357,756**	**5331**	**173**	**668**
IO1T	7,574,580	4344	160	620
IR8C	6,642,966	4135	163	639
IR5A	5,549,151	3795	157	582
IR3Z	3,314,844	2408	169	618
IR8M	2,365,990	2162	151	534
IO7T	1,936,330	2107	135	472
IQ1CN	1,874,500	2418	120	340
IR3Y	1,666,611	1626	147	512
IZ2PDR	134,936	377	57	145
IR7R	35,518	478	18	68
Jersey					
GJ2A	**3,440,704**	**3168**	**130**	**462**
Latvia					
YL1S	**465,260**	**594**	**100**	**330**
YL1XN	214,528	639	59	197

Luxembourg				
LXØRL	**1,132,535**	**1557**	**108**	**307**
Macedonia				
Z3/E73ESP	4,080	81	14	46
Netherlands				
PA6V	**1,970,368**	**1913**	**134**	**410**
PI4TIL	96,016	357	34	102
Northern Ireland				
GIØRQK	**3,082,294**	**2778**	**117**	**434**
Norway				
LN3Z	**11,131,692**	**5653**	**180**	**678**
LA7H	474,369	895	86	257
LA3T	261,478	549	83	183
LA1UKA	21,210	140	33	72
Poland				
SN3R	**13,500,432**	**6480**	**184**	**707**
SN2B	**12,669,318**	**5942**	**189**	**729**
SN7H	1,494,935	2007	124	421
SP2KPD	1,225,614	1490	114	380
SP6PCL	530,750	717	102	284
SP3POZ	497,200	902	110	330
Portugal				
CS2P	**3,711,240**	**3277**	**136**	**449**
CQ7A	**3,367,890**	**2845**	**149**	**541**
CR6P	2,676,297	2740	110	379
CR5R	1,441,194	1457	138	461
CSØRCL	66,218	479	25	88
Romania				
YR2X	**453,189**	**948**	**87**	**254**
YO5KER	200,982	627	58	188
San Marino				
T7ØA	**12,832,388**	**7477**	**179**	**687**
Scotland				
GM7R	**4,226,853**	**2656**	**155**	**544**
GMØEGI	1,188,684	1388	99	272
GM7A	692,038	974	101	357
GM4AGG	47,034	240	38	96
Serbia				
YT2T	**8,248,294**	**5403**	**161**	**608**
YT7W	2,354,288	2397	125	422
YU3ZA	1,528,618	1820	118	400
Sicily				
IR9Y	**10,623,570**	**5702**	**176**	**694**
II9K	**4,866,960**	**3436**	**178**	**662**
IF9A	2,486,115	3026	122	425
Slovak Republic				
OM8A	**15,989,163**	**7386**	**193**	**758**
OM7M	**13,040,058**	**6552**	**186**	**720**
OM5M	6,966,559	4728	170	647
OMØM	1,281,436	1260	135	359
OM3RRC	863,214	1156	111	340
OM3KZA	14,529	151	21	66
Slovenia				
S53M	**10,032,750**	**5481**	**174**	**645**
S53I	826,218	1265	109	357
S59DGO	128,616	387	47	137
S59T	1,344	32	9	23
Spain				
EE2W	**12,035,540**	**6132**	**185**	**723**
ED5T	**7,968,968**	**4820**	**171**	**641**
ED1C	2,736,000	2653	112	388
ED1T	2,616,856	3315	105	349
ED5O	2,560,350	2849	138	468
EA3HCY	1,490,841	1856	104	303
ED1WW	1,186,581	1498	106	345
ED2W	966,787	1440	100	259
ED1G	966,370	1349	97	313
EA5URV	663,325	1333	80	245
ED2A	565,068	982	88	284
EA4URJ	532,644	803	90	283
EE4T	19,594	129	30	67
EA4EUW	30	4	3	3
Svalbard				
JW5E	**2,389,434**	**2628**	**123**	**351**
Sweden				
SJ2W	**14,429,320**	**7462**	**187**	**718**
SK7OA	2,755,683	3012	125	402
SI9AM	1,833,705	2984	99	324
SK6HD	491,929	842	79	244
SKØQO	101,568	418	51	133
SM3SJN	58,302	249	49	109
SK7A	49,982	229	41	93
SK7CA	36,848	168	32	66
Switzerland				
HB9H	**5,145,660**	**3217**	**170**	**610**
HB9FR	1,861,262	1989	123	319
HB9ZZ	288,135	582	98	239
HB9LL	21,576	122	34	90
Ukraine				
UZ2M	**12,446,460**	**6949**	**200**	**772**
UT7L	2,745,250	2420	158	537
UTØAZA	2,536,960	3314	122	390
UT5IZO	1,002,261	1783	94	309
EOØUD	251,712	800	69	207
UU3J	187,782	629	64	199
UR4PWC	38,760	226	28	92
OCEANIA				
Australia				
VK4KW	**7,654,473**	**5310**	**146**	**367**
VK2GGC	1,160,700	1448	97	203
Brunei				
V84SCQ	**695,704**	**1357**	**61**	**138**
Hawaii				
KH6MB	**10,114,524**	**5820**	**172**	**440**
Indonesia				
YB1C	**1,553,280**	**1850**	**94**	**226**
YE1ZAW	**940,704**	**1087**	**102**	**226**
YE3J	213,400	452	64	130
Marquesas Islands				
TX5A	**7,818,074**	**5497**	**156**	**361**
Philippines				
DU1VHY	**472,551**	**892**	**78**	**123**
DX1ACE	90,048	259	51	83
SOUTH AMERICA				
Argentina				
LS1D	**6,360,618**	**4274**	**139**	**422**
LU1MA	**4,544,306**	**3456**	**116**	**378**
LO7H	2,195,181	2230	109	260
LU1UM	1,233,708	1823	87	179
LT4S	844,858	1381	79	180
LQ4D	413,618	1021	61	85
LT5D	246,264	464	88	160
Brazil				
PT5T	**13,421,258**	**6670**	**172**	**550**
PQ5B	**7,709,180**	**4642**	**146**	**464**
PW2D	7,171,128	4627	135	413
PX7C	2,311,232	2189	109	283
ZW8T	2,066,544	3110	70	184
PY3AA	92,718	267	56	97
PY2RH	52,318	217	36	65
Chile				
CE2LS	**847,798**	**1148**	**89**	**198**

MULTI-OPERATOR TWO TRANSMITTER NORTH AMERICA

United States				
KB1H	**8,220,322**	**3919**	**168**	**593**
K2LE/1	**6,240,256**	**3327**	**158**	**546**
W1KM	2,402,950	2027	102	323
KØTV/1	1,429,320	953	137	417
W1AN	1,071,174	899	110	333
K2AX	**5,536,452**	**2943**	**159**	**547**
W2YC	**3,354,260**	**1842**	**156**	**523**
W2XL	3,288,600	2296	135	405
N3RS	**5,453,052**	**2642**	**167**	**591**
WA3EKL	**3,674,520**	**2034**	**158**	**534**
N1LN/4	**8,746,095**	**4637**	**168**	**585**
W4YK	342,144	493	85	212
AJ4IR	96,876	281	40	116
W5RU	**5,775,350**	**2982**	**169**	**556**
N5YA	2,008,720	1333	141	419
N7AT	**4,409,460**	**2639**	**169**	**486**
W8BI	208,080	311	92	180
NØIJ/9	**4,084,655**	**2316**	**160**	**525**
K9LA	695,604	747	98	266
WS9I	11,154	75	33	45
WØAA	**2,081,414**	**1509**	**128**	**375**
KØGEO	1,064,808	1008	110	304
Alaska				
KL7RA	**14,207,765**	**9380**	**157**	**484**
KL2R	864,000	1305	101	199
Antigua & Barbuda				
V26B	**12,390,926**	**7988**	**154**	**492**
Bermuda				
AA4V/VP9	**10,514,336**	**7683**	**140**	**444**
Canada				
VE9ML	**2,551,100**	**1806**	**113**	**413**
VE2DXY	**3,833,060**	**3459**	**120**	**404**
VE3RM	**8,278,349**	**4469**	**169**	**558**
VE3DC	1,232,910	2126	88	221
VE3SAO	35,700	148	29	71
VE7SV	**9,697,038**	**6341**	**167**	**496**
Costa Rica				
TI8M	**7,151,040**	**5796**	**143**	**433**
Montserrat				
VP2MDG	**12,950,238**	**8964**	**150**	**463**
St. Eustatius & Saba				
PJ6T	**589,064**	**973**	**71**	**197**
AFRICA				
Ceuta and Melilla				
EE9Z	**17,916,525**	**9532**	**145**	**530**
ASIA				
Asiatic Russia				
RKØW	**1,303,533**	**1564**	**92**	**271**
China				
B1Z	**3,170,574**	**3004**	**127**	**351**
Saudi Arabia				
7Z1SJ	**7,987,382**	**5298**	**135**	**443**
EUROPE				
Austria				
OE5T	**4,612,620**	**4117**	**127**	**463**
Bulgaria				
LZ5R	**9,542,380**	**6787**	**174**	**661**
Croatia				
9A2L	**2,012,724**	**2042**	**125**	**364**
Czech Republic				
OL1X	**11,405,466**	**6442**	**171**	**678**
OK7K	**9,744,834**	**6189**	**172**	**646**
Denmark				
OZ5GX	**1,120,668**	**3429**	**64**	**218**
England				
M4A	**8,562,456**	**5348**	**162**	**594**
G5O	**5,596,083**	**4001**	**149**	**552**
M4F	969,696	1433	80	284
European Russia				
RN3F	**9,189,740**	**6988**	**174**	**646**
RZ4CWW	4,005,063	3604	155	556
France				
TM1O	**3,322,618**	**3919**	**140**	**471**

The PI4DX M2 crew, left to right: PD1DX, PC5Z, PA3EVY, PD2R, PD2DX.

Germany				
DQ4W	**11,053,400**	**6311**	**170**	**680**
DJ8OG	**8,001,792**	**4494**	**168**	**660**
DKØOG	4,954,224	3828	160	566
DP3E	3,213,413	2650	156	547
DLØWH	1,179,801	1257	130	419
DLØMER	62,370	262	48	117
Hungary				
HG1S	**13,468,912**	**7880**	**183**	**689**
HG7T	**12,565,502**	**8039**	**173**	**624**
Italy				
IR4X	**20,929,708**	**9721**	**192**	**764**
IR8A	2,330,025	2382	146	515
IR8W	285,785	668	73	232
Latvia				
YL7X	**5,526,600**	**4419**	**161**	**571**
Lithuania				
LY2W	**7,386,736**	**4902**	**172**	**636**
Market Reef				
OJØX	**12,354,363**	**9306**	**172**	**635**
Netherlands				
PI4DX	**15,157,233**	**8375**	**175**	**662**
PI4W	1,288,320	1659	114	366
PA6Y	462,070	999	73	249
Poland				
SP9PDF	**2,040,636**	**1987**	**139**	**479**
SP5PAU	1,364	33	13	18
Portugal				
CR5T	**2,523,220**	**2999**	**114**	**424**
Romania				
YP7P	**3,230,084**	**3806**	**129**	**443**
Sardinia				
IIØM	326,193	708	79	238
Scotland				
GM2T	**5,579,725**	**4658**	**156**	**571**
Sicily				
II9P	**1,922,684**	**2542**	**111**	**347**
IQ9PA	3,363	50	18	41
Slovenia				
S52ZW	**8,632,794**	**5415**	**166**	**603**
Spain				
ED1R	**15,058,862**	**8555**	**183**	**670**
EE2K	6,057,673	4459	144	529
EA5URT	4,436,079	3614	157	560
Sweden				
SGØX	**3,950,641**	**3788**	**143**	**524**
Ukraine				
UT7E	**2,636,744**	**2816**	**155**	**509**
UY7C	900,360	1477	96	314
UU5J	293,220	396	110	295
OCEANIA				
Australia				
VI6NC	**6,294,225**	**5060**	**131**	**344**
Hawaii				
KH7CW	**7,038,512**	**5172**	**149**	**345**
Indonesia				
YEØX	**7,416,705**	**5089**	**138**	**397**
YE2S	1,391,655	1554	120	241
New Zealand				
ZM4T	**8,824,016**	**6572**	**132**	**356**
Northern Mariana Islands				
AHØBT	**11,542,878**	**7679**	**141**	**390**
Philippines				
DX1M	**2,237,816**	**2249**	**114**	**242**

SOUTH AMERICA

Bonaire				
PJ4T	**24,858,249**	**12320**	**168**	**541**
Brazil				
PW7T	**25,286,144**	**10821**	**178**	**654**
PS2T	16,462,080	8450	165	555
PT2CM	5,692,372	4138	131	395
ZY6Z	4,410,289	3494	126	355
PR5D	2,671,886	2705	115	291
Chile				
CE4CT	**10,328,571**	**6585**	**144**	**417**
CE1Z	412,912	822	87	175
Uruguay				
CV5K	**3,157,665**	**3041**	**112**	**315**
Venezuela				
YV5AM	**12,758,960**	**6890**	**163**	**525**

MULTI-OPERATOR MULTI-TRANSMITTER NORTH AMERICA

United States				
K3LR	**35,923,380**	**13297**	**202**	**818**
KC1XX	**28,639,954**	**11390**	**195**	**743**
W3LPL	**27,605,530**	**10867**	**200**	**771**
WE3C	**19,909,728**	**8341**	**191**	**685**
W2PV/1	**15,823,116**	**7163**	**183**	**655**
NQ4I	**15,183,708**	**7252**	**190**	**686**
W4RM	**13,847,504**	**6442**	**180**	**628**
NK7U	**11,031,468**	**5743**	**185**	**586**
WØAIH/9	**10,408,692**	**5379**	**180**	**608**
WX3B	8,169,651	4203	159	562
NE3F	4,847,535	2692	161	532
W5CT	**4,751,390**	**3265**	**174**	**547**
K7ZSD	**4,402,890**	**2923**	**163**	**458**
K1KP	3,992,335	2400	140	459
AK7AZ	2,253,816	2090	146	406
NA2U	**1,867,425**	**1272**	**128**	**397**
W1CSM	866,503	814	94	313
K3MJW	672,607	753	117	286
W4CAR	208,260	408	71	189
W9H	140,298	291	68	133
Canada				
VE5PV	**7,063,738**	**5685**	**151**	**427**
VE7IO	**219,336**	**496**	**96**	**132**
VA3UG	**33,677**	**143**	**43**	**76**
Puerto Rico				
NP3PR	20,900	162	33	43
Turks & Caicos				
VP5T	**8,049,555**	**5800**	**136**	**429**
U.S. Virgin Islands				
WP2Z	**15,707,706**	**9555**	**168**	**553**

AFRICA

Gambia				
C5A	**44,901,680**	**17507**	**195**	**709**
Guinea				
3XY1D	**357,714**	**1073**	**28**	**91**
Madeira Islands				
CR3L	**31,406,340**	**12818**	**176**	**684**

ASIA

Japan				
JA5FDJ	**19,235,152**	**9231**	**177**	**595**
JA3YBK	**16,930,560**	**8296**	**177**	**591**
JA7YRR	**9,065,403**	**6120**	**153**	**426**
JA1YPA	**5,867,316**	**4018**	**161**	**436**
JA7YCQ	39,744	159	40	56
JA2YGP	13,120	77	37	43
JA2YKA	3,608	62	18	23
Qatar				
A73A	**27,026,489**	**11424**	**186**	**703**
Taiwan				
BV1OO	**1,343,816**	**2344**	**97**	**231**

EUROPE

Andorra				
C37N	**21,123,688**	**14984**	**166**	**631**
Belgium				
OT5A	**20,416,726**	**12073**	**184**	**699**
Bulgaria				
LZ9W	**18,052,748**	**11076**	**188**	**750**
Croatia				
9A1P	**24,237,360**	**13774**	**187**	**758**
Germany				
DR1A	**32,937,369**	**15569**	**197**	**814**
DFØHQ	**19,224,054**	**10609**	**197**	**757**
DP6T	12,096,007	8026	171	676
DR2P	287,990	686	77	233
Italy				
IQ8MD	**4,754,728**	**4361**	**155**	**606**
Liechtenstein				
HBØ/HB9AON	**6,976,970**	**6362**	**165**	**605**
Lithuania				
LY7A	**12,426,188**	**9346**	**176**	**626**
Norway				
LA1TPK	87,768	364	58	149
Poland				
SN6F	**4,613,182**	**3917**	**160**	**601**
SP9KDA	2,741,949	2414	137	502
SNØWFF	1,003,168	1946	87	281
Spain				
EB1WW	**12,871,782**	**9654**	**164**	**589**
EA3CCN	7,278,420	5307	161	544
EE5R	4,121,361	3623	144	513
Ukraine				
UT5U	**1,272,820**	**2101**	**108**	**352**

OCEANIA

Australia				
VK1CC	**1,433,905**	**1608**	**109**	**232**
Guam				
WH2DX	**4,280,081**	**4276**	**117**	**260**
Hawaii				
KH7X	**31,670,464**	**14493**	**194**	**590**
Indonesia				
YE2R	**7,581,615**	**4792**	**154**	**447**
Philippines				
DX1DBT	**492,590**	**982**	**85**	**132**
South Cook Islands				
E51Z	**13,414,795**	**8519**	**163**	**402**

SOUTH AMERICA

Argentina				
LP1H	**18,825,855**	**9782**	**163**	**522**
LU4FM	7,905,600	5689	138	411
Chile				
CE1A	**8,111,170**	**4959**	**153**	**457**
Curacao				
PJ2T	**23,994,356**	**12502**	**164**	**530**

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2EØWDX, 3A2MG, 5C5W, 8P6ER, 9A4W, 9K2K, 9L1BTB, AC8AG, AH2R, B4R, B7P, BA4DW, BD2OB, CE3PCG, CT1CDP, CT3CD, CU2JT, CX8BR, DG3NCZ, DH5MM, DK2CF, DK5CF, DL1KUR, DL2DTL, DL2DXA, DL2RUG, DL5MX, DL6AP, DL7VEE, DL8CX, DL8MBS, DM5DX, E73TTT, EA1AKS, EA1OK, EA2CAR, EA2GR, EA2MH, EA3BCK, EA3EGB, EA3EXP, EA3GBU, EA3HEK, EA3HLJ, EA3WD, EA4AFP, EA4GB, EA7AHA, EA7GTJ, EA7GV, EA7HHV, EA7HXQ, EA7IXN, EA7LS, EB3FIS, EC7DTQ, EF8F, ER4A, ES2EZ, ET3AA, EU6RO, EW6DX, F6FGZ, F8AKC, FM5DN, G3UEG, G3XMM, G5N, G8JYV, GM4ZUK, HAØGK, HA1RS, HA2QW, HA9SU, HB9EE, HB9FBM, HB9MXY, HF1K, HG3UHU(HA3MQ), HP1/IZ6BRN, IG9R, IK3QAR, IN3EJD, IV3VBM, IZØNRG, IZ1SCF, IZ2DPX, IZ6TSA, JA1ZGP, JA2DGQ, JA6ZPR, JF2IWL, JG3WCZ, JT1CS, K1OC, K2EUH, K6BUM, K6UW, K7BX, KC1EL, KD8PHI, KJ6HBY, KJ6MBW, KM4AF, KM5TY, LA1BJA, LA5KO, LA6DW, LA7FJA, LA8AJA, LA8HGA, LA9Z, LU1BJW, LU7EC, LU7WW, LX1TI, LY1CT, LY2CO, LZ1GU, LZ1KSP, LZ8E, N1WQ, N3RR, N7TM, OG7X, OH2HSJ, OH4XX, OH5TS, OH6BG, OK1DMP, OK1ES, OK1FAI, OK1HGM, OK1MP, OK1VKC, OK2PAY, OK2RN, OK2SG, OK6Y, OK7GU, OK8YD, OM2XW, OM4EX, ON4LDP, OO9O, PAØJED, PAØJHS, PAØRRA, PA2MI, PA3ANN, PE2HD, PE5EDW, PU4HUD, PY2DY, PY2EL, PY2UDX, PY3DX, PY3YD, R1AP, R3BM, R5OE, R6GA, R7FK, R9OQ, R9UT, RA3EG, RA3XDX, RA6GW, RA6YDX, RA9YN, RC9O, RD3AN, RG3K, RK1AO, RK3LO, RN1A, RN6DR, RN7G, RT3G, RT5Z(RA3CW), RU3EJ, RU3VV, RU4CS, RV3ID, RV6AAA, RV6ALI, RV6ASU, RW2L, RX9WN, RZ3BW, RZ3DOT, RZ6FA, RZ6HWA, S5ØU, S56WRT, S59D, SMØQ, SM2OAN, SM2Z, SM7ASN, SN6G, SN9U, SP1MVW, SP2FOV, SP2WGB, SP3CFM, SP3DV, SP3QYQ, SP3RNZ, SP3SLU, SP3UQG, SP3UY, SP4BRH, SP4GDC, SP5APW, SP5GDY, SP5NVX, SP5PX, SP5XO, SP6ECA, SP6GNJ, SP6NVK, SP6NVN, SP7AWG, SP7CXV, SP7HOV, SP7JQQ, SP7NMR, SP7PTK, SP7QHR, SP8HKT, SP8JMA, SP8NTH, SP9CXN, SP9FTJ, SP9GKJ, SP9IKS, SP9ODY, SP9QD, SQ1OD, SQ5ASR, SQ5M, SQ5STS, SQ7MHN, SQ8IFG, SQ8MXS, TU2T, UAØCW, UA1AJW, UA1AKE, UA3FX, UA3ICU, UA4ALT, UA4PCM, UA4SJS, UA4UAR, UA4WLI, UA6FJ, UA6GE, UA6GK, UA6GU, UA7F, UA9CEP, UA9JLL, UH8A, UN1F, UN7ECA, UN7LAN, UR4IOR, UR5AMJ, UR8IDX, US1I, US1IW, UTØEA, UT2VC, UT2XX, UT3UA, UT4WA, UT4ZG, UT5UEG, UT5ZA, UT7MD, UUØJC, UU5WW, UU7JM, UW7W, VA3VU, VA5DX, VE3DSH, VE3JSQ, VE5AE, VU2MUD, VU2NXM, VU2SGW, W6HYI, WS7L, XE1/DM3DL, YL2PJ, YL2TD, YO2CMI, YO2LZA, YO2MKL, YO3HA, YO4BTB, YO6OAF, YO9CSM, YO9DL, YO9FNP, YO9HBL, YR1C, YT3H, YT7AA, ZL1TM.

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Get your license or upgrade. W5YD Mississippi State University Club VEs. Bring government photo ID and $15 cash, Oct. 6, 4:00 p.m.

Thank You!

Dear Fellow Ham,

MFJ humbly started in a small downtown hotel room in Starkville, Mississippi in October of 1972. The original product, a CW Filter Kit, CWF-2, sold for $9.95.

Today, MFJ Enterprises, Inc. is a total of six different ham radio companies and manufactures over 2000 different products. More than 90% are made right here in Starkville, Mississippi, the *United States of America.*

October, 2012 will mark the *40th Anniversary* of our ham radio adventure and I am deeply grateful for the incredible support we have had from our fellow hams.

Without the support of our fellow hams, the hard work and dedication of our employees and the tremendous support from our countless friends, this 40th Anniversary milestone could not have been achieved.

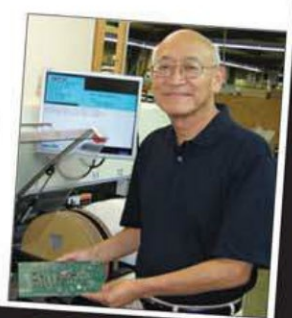
I want to thank each one of you for making this American dream come true.

Thank you, thank you very much . . .

Sincerely,

Martin F. Jue, K5FLU

Martin F. Jue, K5FLU
President and Founder
MFJ Enterprises, Inc.



Special Event Station

K5MFJ

FREQ: 3.862, 7.245, 14.245, 21.350, 28.345, 146.52 MHz
Operating time: *8am-2pm CST,* Oct. 6, 2012,

MFJ ENTERPRISES, INC. 1972 40TH ANNIVERSARY 2012 STARKVILLE, MS

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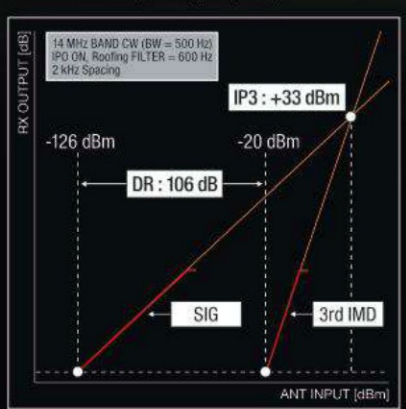

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