ARRL 10-Meter Contest 2021 Full Results

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"Maybe next year" – Ed, VE4VT and Pete, N4ZR

Soapbox comments from operators about the 49th running of the ARRL 10-Meter Contest expressed a wide variety of emotions. Mostly in various flavors of disappointment. Held December 11 – 12, 2021, the band offered moments of contesting joy but relative to expectations fell short more often than not. While the 2020 edition showed, at least for a few hours in North America, how much fun the 10-meter band can be, 2021 returned us to more typical bottom of the solar cycle conditions. As commented by Rick, N1RM, "Having a single band as capricious as 10M required lots of attention!"

The Emotional Roller Coaster

Now that the contest is in the books, we can look back at these soapbox comments. Most were made immediately after the contest was over with memories still raw from the experience. But, what really happened? Was the contest as bad as many operators thought? Lee, W8WA said it more strongly than most: "Horrible conditions. It would be more fun watching traffic lights change!!!!! 4 hours was enough for me!!!" Ray, WQ5L was a bit less harsh: "Seems Cycle 25 saw its shadow and went back into its hole for a while, leaving us with another feast-or-famine Es fest." Let's dive into the results to see what actually happened.

What it all that bad? Probably not. As an overall measure let's look at the total QSOs reported in submitted logs. In this view, 2021 was the second-best year since 2015 when we entered the bottom part of the last solar cycle. Similarly, the average QSOs per submitted log was the second best over that time period. Operators who got on did make a healthy number of QSOs. At least relative to 2016 through 2019. Gary, W9XT summarized it more objectively than most: "I think it was slightly above a typical sunspot minimum event, with a bit more DX." So, why the poor grades by many? There are two reasons behind them. Both are related to the old saying "But, what did you do for me lately"?

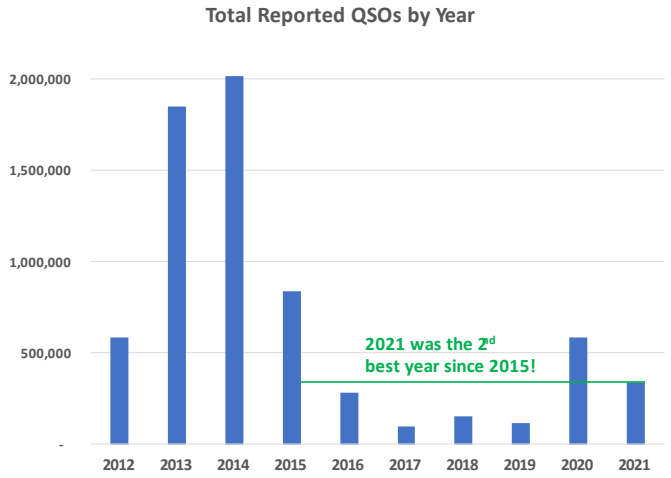

Figure 1 – Total Reported QSOs by year

First, though 2021 was the second best since 2015, it was not as good as 2020 overall. Larry, K4AB captured this angle perfectly with his comment: "Last year was so good. Had high hopes going into this one." With the new solar cycle another 12 months along operators just expected conditions to be better than 2020. And they also remembered the amazing opening at the start of the 2020 contest.

When that didn't repeat itself, disappointment reigned. To make matters worse 2017, 2018, 2019, and 2020 all began with strong e-skip openings in North America at the start of the contest. Though just a coincidence, after four straight years operators may just have assumed this was the standard way 10 meters behaves. As Ron, N4XD said: "Was hoping for a repeat of last year when Friday was hopping. Was not to be."

Ben, NJ8J reminisced: "Didn't do near as well as I did last year, but we didn't seem to have anything like the Friday night opening of last year…" Yes, the 2021 contest got off to a slow start relative to the prior 4 years.

By the way, for 2021, it turned out that the better evening opening was on Saturday night. Many operators caught that opening. Some missed it. Proving again that you just don't know what 10 meters is going to do – you better keep an eye on it.

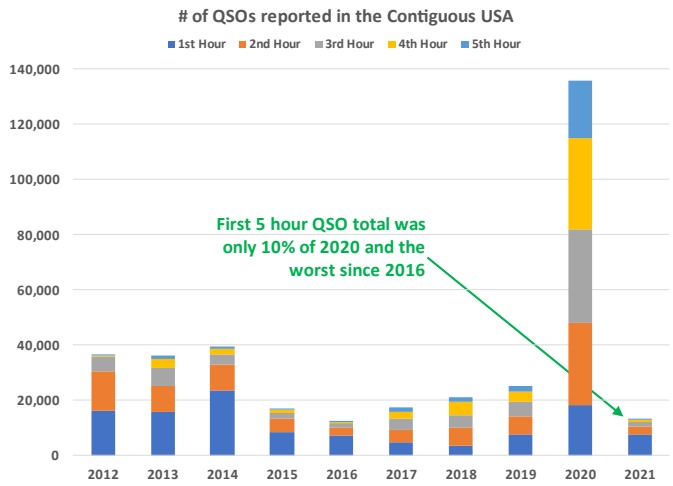

Figure 2 – QSOs during the first 5 hours

The second factor behind the poor grades is that 10 meters was in pretty good shape for the six weeks or so leading up to the contest. Many operators experienced the good conditions and were naturally disappointed when they did not continue during the contest. Geoff, WØCG said it for the PJ2T team: "Our dreams of repeat 10-meter conditions like in CQ WW SSB were not realized…" Holger, ZL3IO, similarly observed: "This year conditions were extremely poor with a clear declining trend since WW DX SSB." The chart below is one way to look at what happened.

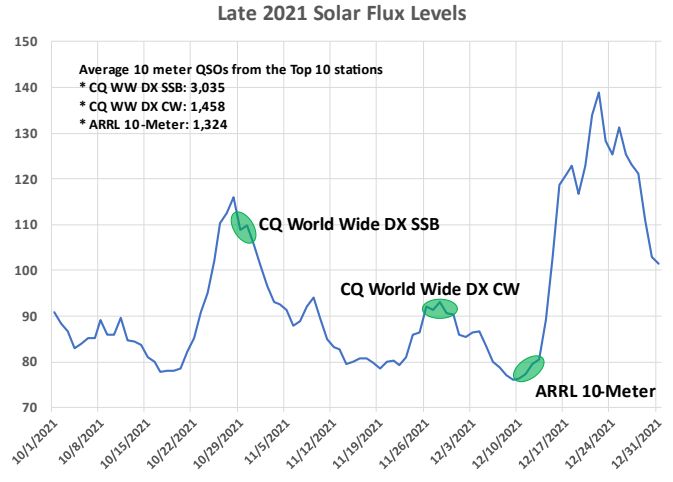

Figure 3 – Late 2021 Flux and impact on 10-meter QSOs

Immediately prior to the CQ World Wide DX SSB contest flux climbed up rapidly to a daily peak of 116 just before the contest. It fell slightly to the 110 range during the contest. However, that was enough to support strong 10-meter openings and high QSO counts by the top stations. The average of the ten highest 10-meter QSO totals was over 3,000. Considering that CQ World Wide is a multi-band contest and only the multioperator multi-transmitter stations could dedicate a station to 10 meters for the whole contest, this is a testament to how good the band was. A month later for the CQ World Wide DX CW contest flux levels were in the 90 range, though had been in the 80 range for the week prior to the contest. This was enough to support some 10-meter openings though not to the extent seen during CQ WW DX SSB.

The average of the ten highest 10-meter QSO totals was 1,458, about half that logged during CQ WW DX SSB. The ARRL 10-Meter Contest was next, two weeks after CQ WW DX CW. Immediately after CQ WW DX CW daily flux levels dropped, ending up at 76 for the first day of the 10-Meter Contest. The lower flux levels and shorter days in the northern hemisphere relative to both CQ WW DX contests resulted in poorer 10-meter propagation.

The average of the ten highest 10-meter QSO totals was 1,324, even lower than CQ WW DX CW – which again is a multi-band contest. During the 10-Meter Contest stations are totally dedicated to the band. You would expect they would squeeze every last possible QSO out of the band. But conditions just would not let operators approach QSO levels seen in both CQ WW DX contests.

Looking at the chart you can see that unfortunately the 2021 10-Meter Contest happened during the lowest flux levels of the last three months of the year. As Chip, N2YO, dreamed "I wish this contest was at the end of October 2021". Or, now looking at the chart, even better would have been two weeks afterwards when daily flux values approached 140 just before Christmas.

In 2020 contest operators were lucky enough to be the beneficiaries of a short term upward solar flux "blip". Unfortunately, as has been said, luck runs both ways. And in 2021 it turned against operators,

and we were unlucky to be impacted by a short term downward “blip”.

Worldwide Perspectives

Because 2020 was so good in North America they suffered the most relatively in 2021 with overall QSOs made dropping 48%. What about the rest of the world?

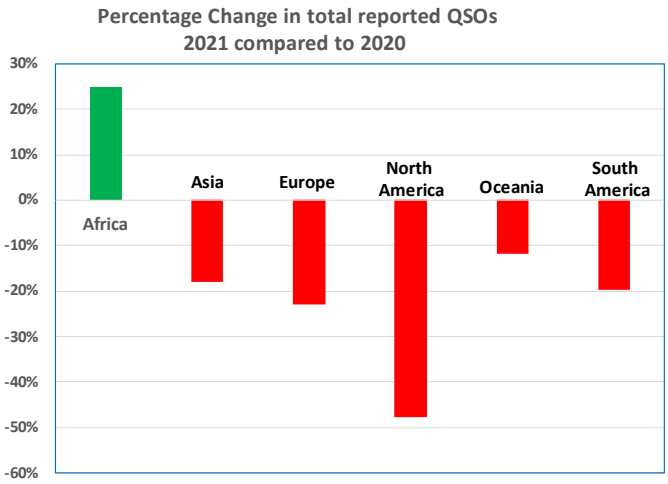

Figure 4– QSO increases & decreases around the world

Other than Africa, all continents saw QSO reductions in 2021 versus 2020. However, the reductions were much less than North America. Ranging from only 12% in Oceania to 23% for Europe. Africa was the bright spot for 2021. African stations who submitted logs reported an overall 25% increase in QSOs. Even larger, stations outside of Africa reported making 53% more QSOs with Africa than in 2020. How could that be? There are usually just a few operations from Africa. During 2016 to 2020 only an average of 18 logs were submitted from the whole continent. So, the addition of just a few very active stations can change the whole continent’s QSO total. And this is what happened in 2021. There were 24 logs submitted with a few notable operations. FR4KR was a rare multioperator high power station and made 942 QSOs. FR4PF was also on the air along with maybe one other FR station. V51YJ was active as usual and in 2021 was joined by V55Y who made almost 400 QSO. ZD7BG was also active, turning in over 500 QSOs. So, Africa was more active than usual. There was good north to south propagation. Many operators in the northern hemisphere mentioned working one or more of these stations as the highlight of their weekend. One of the more interesting comments came from Dave, NN1N, “On Sunday, late morning, my wife asked me what I could hear. My answer: Colorado and Reunion Island.”

Gunter Hartmann, V51WH, operating as V55Y in Namibia, had to drive from his operating position to the antenna to activate his “armstong” rotator. [Gunter Hartmann, V51WH, photo]

Category Winners, New Records, and Other Accomplishments

Here are the overall worldwide category winners for 2021.

Single Operator, Mixed Mode, High Power	
LU8DPM (LU5WW, op)	915,560
Single Operator, Mixed Mode, Low Power	
PY3YD	393,472
Single Operator, Mixed Mode, QRP	
AC5O	21,700
Single Operator, Phone Only, High Power	
PX2A (PY2LED, op)	295,550
Single Operator, Phone Only, Low Power	
K1KNQ	51,414
Single Operator, Phone Only, QRP	

PY2NB	3,752
Single Operator, CW Only, High Power	
N4XD	283,008
Single Operator, CW Only, Low Power	
CX2AQ	293,436
Single Operator, CW Only, QRP	
WC7S	11,556
Single Operator Unlimited, Mixed Mode, High Power	
WO4O	688,984
Single Operator Unlimited, Mixed Mode, Low Power	
PY2RSA	234,976
Single Operator Unlimited, Mixed Mode, QRP	
KK4BZ	1,500
Single Operator Unlimited, Phone Only, High Power	
ZZ5K (PP5RT, op)	120,302
Single Operator Unlimited, Phone Only, Low Power	
PU5FJR	116,622
Single Operator Unlimited, Phone Only, QRP	
N2KW	2,592
Single Operator Unlimited, CW Only, High Power	
NN7CW	543,320
Single Operator Unlimited, CW Only, Low Power	
LW5HR	177,776
Single Operator Unlimited, CW Only, QRP	
NØUR	21,624
Multioperator, Single Transmitter, High Power	
LW7DX	815,596
Multioperator, Single Transmitter, Low Power	
FY5KE	617,700

Note the number of South American stations as category winners. With the lack of a strong North American e-skip period as seen in 2020 and prior years, this gave chance for South American stations to regain category titles. Their 11 category wins in 2021 compares with just 7 in 2020 and 8 in 2018 and 2019. Back in 2017 they collected 14 wins from the 20 available categories. I fully expect when long distance propagation returns in a 2022 for South America to continue to win the most categories.

Special mention goes out to three operators who were repeat winners in the same category they won in 2020. They were:

- LU5WW operating at LU8DPM in the Single Operator, Mixed Mode, High Power category
- NØUR in the Single Operator Unlimited, CW Only, QRP category. This makes it three in a row for Jim!
- FY5KE in the Multioperator, Single Transmitter, Low Power category

Looking at these top category scores as compared to last year's demonstrates the impact the poorer conditions in 2021. The average winning category score was 23% below those in 2020. For the QRP categories the average winning category score was 73% below those in 2020. 2021 was a tough year for the QRP fans.

These same conditions made it next to impossible to set any new All-Time Records in 2021. At the W-VE-XE level there was only one new Division record and 44 new Section records. In 2020 the comparable numbers were 5 and 87. Congratulations to:

- N2KW for setting the New England Division record in the Single Operator Unlimited, Phone Only, QRP category

At the DX Entity level there was similarly just one new Continent record set versus 2 in 2020. There were also 37 new DXCC Entity records set versus 66 in 2020. Congratulations to:

- YD9UW for setting the Oceania record for the Single Operator Unlimited, Mixed Mode, QRP category. This was the first ever entry for this category in Oceania.

For a searchable database of ARRL 10 Meter Contest All-Time Records select "Records" on the 10-Meter Contest page at contests.arrl.org

In the "Other Accomplishments" area, unlike in 2020 when 12 stations managed to Work All States that was accomplished by just one station in 2021 – LS2D who was a low power multioperator station. A total of 5 stations managed to work the 48 contiguous US states. This also was well down from the 26 that did it in 2020. Remember when conditions are good Worked All States is very doable. 183 stations did it in 2014. When will be the next year when you do it? Maybe 2022!

Tony, YV5RAB, takes time out for a photo-op on the first day of the 2021 ARRL 10-Meter Contest. He placed in the Top Ten in South America in the SOULP Category. [Antonio Rabadao, YV5RAB, photo]

Club Competition - 2021

Club competition continues to be a popular and fun aspect of this contest. Operators get a chance to be part of a team while still operating from their home QTH. For many operators it is motivating to get on the air to make some points for their club or to compete for honors against rival club members. Many operators mention in their soapbox comments something similar to: "Wanted to get on the air to make some points for our club." Just a way to have some fun on a December weekend.

In 2021 a total of 1,021 operators submitted logs that were also credited towards ARRL Affiliated Club Competition. This means about 56% of the W/VE operators were part of one of the 71 different clubs that participated. This is the highest participation level in the 11 years I have authored this results article. As always, club organizers were key in organizing and motivating their members to get on the air. Way to go club organizers!

In the Local category, The Villages Amateur Radio Club (TVARC) took top honors among the 16 participating clubs. Total entries were up a bit from the 15 clubs in 2020. TVARC, the winner in 2019, took back their crown from 2020 winner, Iowa DX and Contest Club who dropped to 8th place in 2021. TVARC's winning club score was over three times that of the second place Central Virginia Contest Club. TVARC's success formula was having high-scoring entrants, the highest of any club in this category and almost double that of their next closest competitor. TVARC certainly took advantage of the propagation advantage Florida stations had in 2021. Florida clubs won two of the three club competitions in 2021.

In the always popular and competitive Medium category, 49 clubs fought it out. Repeating their win in 2020, the Northern California Contest Club (NCCC) ended on top by a healthy margin when it was all over. NCCC's success factor was member turnout. They had the second highest number of entrants in the Medium category. Even though their score per entrant was middle of the pack, their member turnout led them to victory. This was the exact same success formula from 2020.

In the Unlimited category six clubs fought it out in 2021, the same six as entered in 2020. The big news in this category, and 2021 club competition overall, was the victory of the Florida Contest Group (FCG) over perennial winners the Potomac Valley Radio Club (PVRC). It is not often the PVRC does not come out victorious in this competition. They won it 8 of the prior 9 years. Their last loss was in 2015 to the Yankee Clipper Contest Club. But in 2021 the FCG leveraged Florida stations' propagation advantage. FCG members had over double the score per member as the PVRC and this was a big part of what led to victory. FCG also recruited 4 more members to submit entries than in 2020. FCG's steady recruitment has resulted in 50% more scores submitted for their club than in 2018. On the other hand, the PVRC, uncharacteristically, had 15 fewer entrants in 2021 than in 2020. If the PVRC had matched their 2020 number of entrants, and if each of those entrants had the average score of the rest of the club, then they would have been just 1% behind FCG's winning score. And if the PVRC had recruited 4 more members in 2021 than in 2020, as FCG did, they might have claimed victory once more. This is where and how club organizers make a difference in results.

Affiliated Club Competition

Club	*Score*	*Entries*
Unlimited Category		
Florida Contest Group	6,640,760	56
Potomac Valley Radio Club	5,629,034	105
Yankee Clipper Contest Club	2,383,848	62
Frankford Radio Club	2,200,322	58

Minnesota Wireless Assn	1,782,362	89
Society of Midwest Contesters	1,664,674	65

Medium Category

Northern California Contest Club	1,608,786	33
South East Contest Club	1,192,390	19
Central Texas DX and Contest Club	1,185,636	26
Alabama Contest Group	1,015,892	12
Southern California Contest Club	957,434	36
Arizona Outlaws Contest Club	752,076	28
Grand Mesa Contesters of Colorado	581,350	19
Tennessee Contest Group	531,938	24
North Coast Contesters	514,806	4
Willamette Valley DX Club	467,316	17
Kentucky Contest Group	465,386	11
Swamp Fox Contest Group	425,650	10
Carolina DX Association	412,964	11
Western Washington DX Club	379,122	15
Contest Club Ontario	331,096	26
DFW Contest Group	313,962	11
Deep Dixie Contest Club	281,362	4
Northeast Maryland Amateur Radio Contest Society	268,904	11
Texas DX Society	260,412	8
Mother Lode DX/Contest Club	250,866	12
Great Places Contest Club	180,828	4
Kansas City Contest Club	170,886	9
Orca DX and Contest Club	167,782	8
Mad River Radio Club	150,826	16
Arkansas DX Assn	124,406	10
599 DX Association	121,212	4
Big Sky Contesters	116,280	4
Niagara Frontier Radiosport	110,680	10
Rochester (NY) DX Assn	110,452	9
Order of Boiled Owls of New York	110,290	6
Driftless Zone Contesters	83,912	7
Candlewood ARA	68,860	4
Heartland DX Association	60,706	6
Hudson Valley Contesters and DXers	46,234	11
South Jersey Radio Assn	44,140	5
Granite State ARA	41,000	4
Louisiana Contest Club	40,488	3
Oklahoma City Autopatch Association	38,420	3
Radiosport Manitoba	37,444	3
Pacific Northwest VHF Society	34,668	6
Spokane DX Association	28,210	5
Saskatchewan Contest Club	27,324	4
Contoocook Valley Radio Club	25,426	3
Bay Area DXers	24,802	4
New Providence ARC	19,084	4
Maritime Contest Club	17,964	4
Northern Arizona DX Assn	17,866	7
Fort Smith ARC	5,194	3
Sierra Nevada ARS	3,018	3

Local Category

The Villages Amateur Radio Club	401,194	6
Central Virginia Contest Club	128,702	7
Hilltop Transmitting Assn	110,920	3
Redwood Empire DX Assn	110,164	6
CTRI Contest Group	106,878	8
Silver Springs Radio Club	99,196	7
Hampden County Radio Association	99,048	6
Iowa DX and Contest Club	87,832	3
Bristol (TN) ARC	82,948	5
Nashoba Valley ARC	69,444	5
Silver Comet Amateur Radio Society	22,964	6
OH-KY-IN ARS	22,210	5
Cape Fear ARS	5,140	4
North Fulton ARL	4,604	3
Athens County ARA	2,592	3
Alexandria Radio Club	1,938	3

Having Fun in 2022 (And beyond!)

The 50th annual ARRL 10-Meter Contest will be held on December 10 – 11, 2022. What might we expect this year? Who knows? We are now well into the new solar cycle. But, by how much? As they say, “Forecasting is difficult, especially when it is about the future”! Conditions leading up to and during the 2021 contest showed us how fickle the 10-meter band can be.

The ARRL 10-Meter Contest, more than just about any other ARRL contest, is influenced by the solar cycle. As sunspots and solar flux increase, 10-meter propagation improves, the opportunity to make long distance QSOs goes up, operators get on the air, total QSOs in the contest explode, etc. Propagation is everything. During the 2021 contest, Solar Radio flux was in the 76 range, which was lower than the levels seen in 2020 and also lower than during the weeks leading up to the contest. The contest unfortunately fell into a short-term bottom of solar conditions. In addition, for the first year in many,

there was not a strong evening e-skip opening in North America at the start of the contest. This led to lower results in 2021 versus 2020 and the general disappointment in operating conditions expressed by many operators. Historically we need solar flux levels closer to 100 for the band to open widely and for long periods. That is when you can make QSOs on the long-distance East-to- West paths like North America to Europe, Europe to Asia, and Asia to North America.

At this time last year, the National Oceanic and Atmospheric Administration's Space Weather Prediction Center forecast showed a radio flux of 79 for the 2021 contest. So, as hard is it may be to accept, their forecast was pretty good as compared to actual levels. Looking ahead to the 2022 contest what is the forecast?

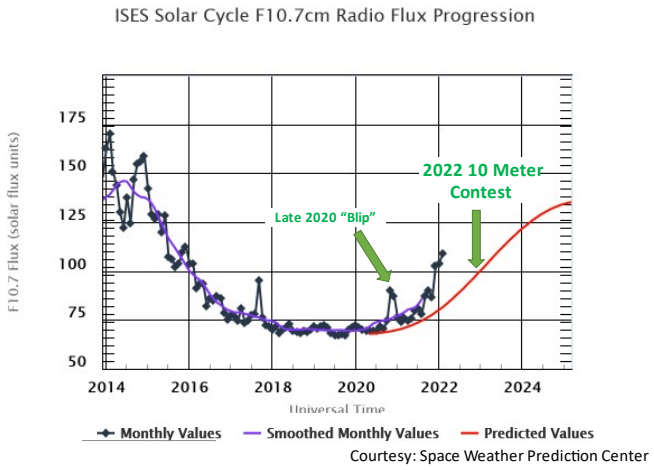

Figure 5 – Solar Flux forecast, courtesy of NOAA/SWPC

There are a several things to note in this chart. First, looking back we can see the "blip" in late 2020 that led to a pretty good contest. We can also see that the overall flux during December 2021 could have led to an amazing contest. But the contest days fell on the days with the lowest flux during not only the month but the last three months of the year. You can also see that the current monthly average flux levels are well above the forecast for the 2022 contest. In fact, NOAA's forecast for December 2022 of flux of 99 is the same as it was this time last year. The progression of the solar cycle over the last 12 months, though consistently showing flux levels above forecasts, has not led them to change their official forecast. But two things are clear. One – current solar flux is at or above the magic 100 level. Second, the official forecast for December 2022 is also at the magic 100 level. So, it seems to me that 2022 should have the best conditions since 2015 and in fact might match 2015. If so, the contest will see an explosion of inter-continental QSOs with intra-continental QSOs matching or exceeding those seen during 2020. (Inter-continental meaning that the two stations in the contact were located on different continents. An Intra-continental contact would be when both stations are located on the same continent.)

With this outlook let me offer some thoughts on maximizing your fun during the 2022 contest. Rather than my standard thoughts of the last few years related to squeezing whatever QSOs were possible out of a uncooperative band - it is time to consider the opposite. How to maximize QSOs when 10 meters is wide open. Which is a lot more fun.

Since the contest is going to be a lot more fun this year than the past 7 years now is the time to clear your calendar for the weekend of December 10 and 11. Don't commit to any holiday season events during the high run rate hours. (If you are wondering what those might be, see the "Additional Analysis and Insights" section of the 2019 Expanded Results article which can be found at contests.arrl.org.) We only get 3 or 4 good 10-Meter Contests every solar cycle. You want as many "Butt in chair" hours as you can. Speaking of high run rate, it is now time to polish your skills at copying and logging stations at high rate. It is no longer about 'pulling out the weak ones". It is about getting everyone in the log. Practice and improve your CW copying skills. Track down and listen to recordings of high run rate CW and Phone operators. It is now time to make all the station improvement you have been thinking of that will improve your 10-meter signal. Convert your dipole to a small beam. If you have a small beam – get a bigger one. If you have a big beam – put up a stack. Run lower loss feed lines from your radio to the antenna. Eliminate all the nasty local noise sources that you can. If you have or are thinking of getting a panadapter it now has two uses. In addition to showing you where there are stations to work – it will also will tell you where they are not. Why would you want to know that? So you can find clear run frequencies on a crowded band. Study up on

those states you need for Worked All States or countries for DXCC – you are going to get a chance to work a bunch of them. Heck, set a goal of Working All States in the contest. Likewise, take a look at the All-Time Records for your continent, country, division, section, state, etc. Many of you will have a chance to set a new record – do it and get your call recorded in history. As Mike, NE8P said in his soapbox: "Definitely looking forward to next year's contest". You should too.

Additional Analysis and Insights

In the ten prior years I have written about the ARRL 10-Meter Contest, I have provided additional in-depth analysis beyond the results and people. The intent being to provide insight into contest strategy and planning, how the 10-meter band behaves, or just something to satisfy my, and hopefully your, curiosity. In past years I examined the following topics.

These articles can be found on the ARRL web site in the 10-Meter Contest Expanded Results Articles at contests.arrl.org.

2011

- A Skimmer View of the Contest -- looking at Europe, Asia, and South America openings
- Skimmer Spots Counts as a way to Predict Scores?
- Phone versus CW Mix -- A magic formula?
- A Bit of Contest History

2012

- A Skimmer View of the Contest -- looking at the North America to Europe Opening as well as some perspectives on skimmer spot quality and usage.
- Contest Planning Insights -- characterizing the locations and activity levels in the US by state.

2013

- A look into the North America to Europe opening
- Contest logging program usage

2014

- Breakthrough animated movies of propagation from the US to major contest areas.
- A look at late evening activity in the US and its impact on three close races
- An updated look at contest logging program usage
- New world records established in 2014
- So how many stations really were on the air and how many QSOs were made?

2015

- An updated look at contest logging program usage
- New world records established in 2015
- Total contest activity – how many stations were on the air and how many QSOs did they make?
- Investigating propagation differences in the US between 2014 and 2015

2016

- A very deep dive into 10-meter propagation and how both E-skip and F2 propagation played roles during the contest with visual QSO "movies" to demonstrate.
- An update on entry category usage three years into the Unlimited Category era.
- Updated World, W/VE/XE, and DX records. (News flash for 2017! There were no changes in these.)
- My annual update on logging program usage.

2017

- My annual update on logging program usage.
- An in-depth study of Log Check Reports to develop recommendations on how to improve your logging accuracy.

2018

- My annual update on logging program usage.
- A look at how North America propagation and state-to-state QSOs changed from 2014 to 2018.

2019

- Insight into choosing times to operate for maximum potential QSOs – if you have a choice of times to operate.
- My annual update on logging program usage.

2020

- A historical view of the best US states to operate from between 2012 and 2020
- My annual update on logging program usage.

This year I will again provide my annual update on logging program usage and present some analysis of frequency usage during the contest.

While reading soapbox comments submitted by operators, I came across this one by Jamie, NS3T: "I was just looking over my log from 2014, when I was making phone contacts above 28,800". This got me thinking about frequency usage during the contest under different conditions for both CW and Phone modes. The Cabrillo file format includes a field to record the frequency of the QSO.

If the operator has their station setup for computerized radio control typically they will record the frequency of the QSO. Or it is also possible to manually set the QSO frequency in logging programs. Though not commonly done, there are likely a few operators that do it that way. If recorded, the frequency entered into the Cabrillo file is the kHz portion of the full frequency. So, if a QSO was made at 28013.45 kHz then what shows up is 28013. If operators don't have their station setup for computerized radio control, then when generating the Cabrillo file, the frequency defaults to 28000. So, all I had to do was to create a little Python program to read through all the Cabrillo files and tally up the frequencies used. I looked at three years: 2014 which was the best year of the last solar cycle, 2017 which was the worst year of the last solar cycle, and 2021 the most recent contest. And, to simplify the investigation I looked just at stations from North America.

First let's look at CW frequencies. About 80% of the logs with CW QSOs also reported their QSO frequency. This makes sense as many operators have their stations setup to use a computer to generate the CW messages. If you have your computer connected to your radio to do this, then recording the QSO frequency is not much extra work. Also, because CW has a narrow bandwidth and uses up less of the band I was able to look at QSOs made in each 1 kHz segment. So, what did the data show?

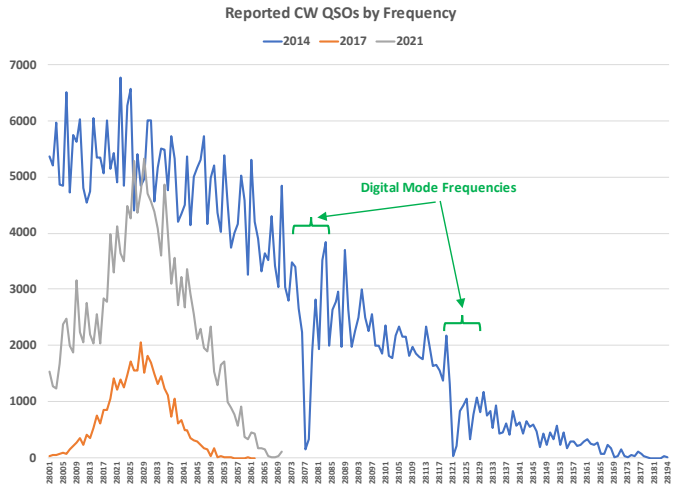

Figure 6 – Frequency of Reported CW QSOs by Count

There are a couple of ways of looking at the data. First is just by a total of the QSOs made in each 1 kHz segment. It is easy to see that in really good years like 2014 frequencies used cover a much wider range than in poor years like 2017. In 2014 QSOs were reported up to and above 28170! In 2017 there were no QSOs reported above 28062. In years of relatively low activity like 2017 and 2021 you can also see that there is a relatively uniform distribution of frequencies used with a peak just above 28025. In really good years this peak disappears. What I conjecture is happening is that because of so much activity and thus QRM, after a certain point operators start QSYing up the band to find a clearer frequency. You can see in the chart that there looks like a maximum of about 5,500 to 6,000 QSOs for a 1 kHz segment. This exists up to about 28030, then the QSOs for each frequency tails off. Eventually with QSOs being made well above 28100. In fact, in 2014, about 13% of total reported QSOs were made above 28100.

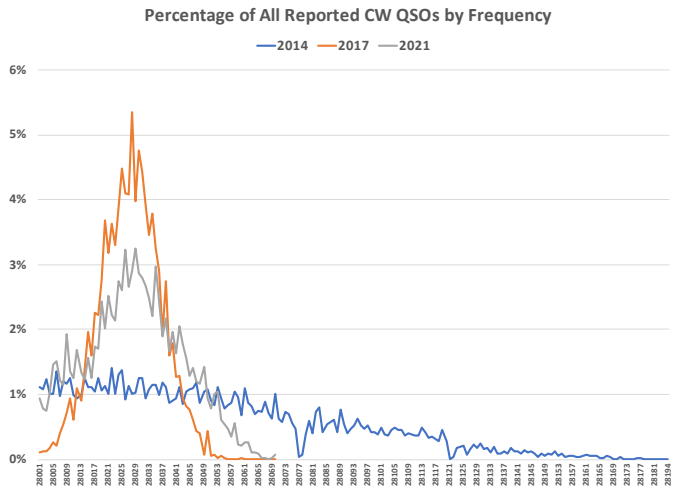

Figure 7 – Frequency of Reported CW QSOs by Percentage

The second way to look at that data is by a % of the total QSOs reported in each 1 khz segment. This view even more clearly shows the concentrated peaks in the low activity years like 2017 and 2021. In these years the challenge for operators is finding people to work. There are not many operators on the air. Propagation is likely very spotlight to small geographic areas, and it moves around rapidly. So, it makes sense to operate in a narrow range of frequencies.

In a year like 2017, 50% of the QSOs were made between 28019 and 28031. If you call CQ far away from the activity center just above 28025 you might not be found by listening stations. In a year like 2014 the challenge is finding a frequency to be heard or with low enough QRM to hear the other station. So, frequencies used spread out – they spread way out! In 2014 you could have called CQ likely up to 28100 and not risked being missed by listening stations.

Next let's look at Phone frequencies. A smaller percentage of Phone operators report their QSO frequency, though it is increasing. In 2014 64% of North America stations making Phone QSOs reported their frequency. By 2021 this had increased to 71%. So, over time operators appear to be computerizing their stations. Because Phone QSOs take up more bandwidth, and the frequencies used cover a much broader range, it is not practical to look at 1 kHz segments. I used 5 kHz segments instead. So, for example, on a chart a frequency of 28420 represent QSOs made from 28420 through 28424.

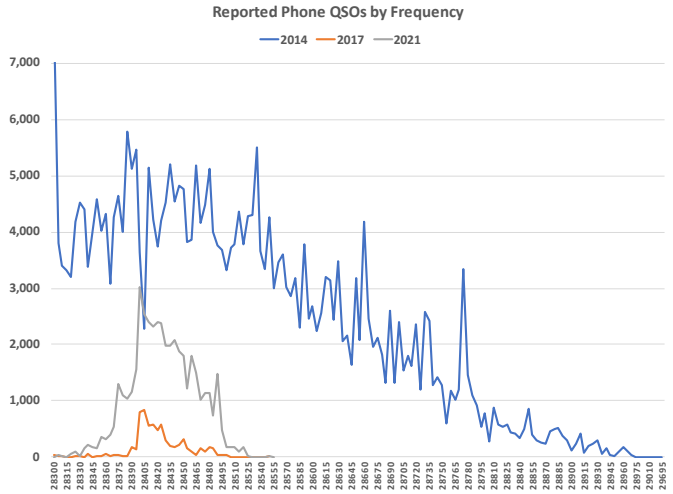

Figure 8 – Frequency of Reported Phone QSOs by Count

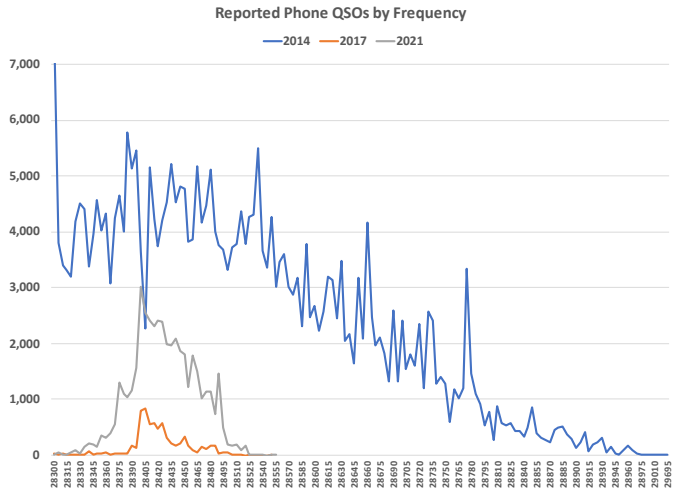

Figure 9 – Frequency of Reported Phone QSOs by Percentage

Looking at the Phone data in the same two ways, there are very similar patterns. In low activity years like 2017 and 2021 there are reported QSO peaks clustered around 28400. Applying the same logic just mentioned where in low activity years the challenge is finding people to work, it makes sense to look around 28400. This is a common calling frequency. There are couple of nuances, however.

First is that more QSOs are made above 28400 than below. There are three times the number of QSOs reported above 28400 than below. So, in a low activity year, if you are looking for people to work or where to call the approach seems to be "28400 and up". Second is that there are few QSOs made above 28500. This is likely driven by the 10-meter

band plan that restricts Novice and Technician operators to the range of 28300 to 28500. If you call CQ above 28500 you will miss your chance to work these operators. And in low activity years you need every chance you can get.

For years of high activity like 2014, frequencies used looks totally different and match the pattern seen for CW frequencies. There is no peak around 28400. Within the 28300 to 28500 range about half the QSOs are below 28400 and half above. Again, there seems to be a natural maximum number of QSOs for a frequency segment, in this case about 4,500 or so in each 5 kHz segment.

When frequencies get that busy, QRM forces operators to QSY up looking for a clearer frequency. The one notable exception is the 28300 segment which had over 7,000 QSOs. What is happening here are the contest super stations, who can make a lot of QSOs based on their skills and station capabilities, fight it out for the bottom available Phone frequency. This one frequency will have reduced QRM because there are no stations operating below them from North America.

On the other end of the distribution, frequencies used extended all the way up to 29000 and beyond. To Jamie, NS3T's, comment – yes there were QSOs made above 28800 in 2014! Though not many. Only a bit more than 3% of QSOs were made above 28800. However over 10% of QSOs were made above 28715 and almost half were made above 28500. In high activity years the challenge and objective for operators is to find a relatively clear frequency. Don't be afraid of QSYing up the band.

To wrap up this year's article let's take my annual look at logging program usage. With access to Cabrillo log files, it is easy to investigate. One of the standard Cabrillo tags is "CREATED-BY:" which is followed by the name of the logging program. A simple Python program looks through all the logs tallying the programs everyone used.

For the 2021 ARRL 10-Meter Contest logging program usage looked like this:

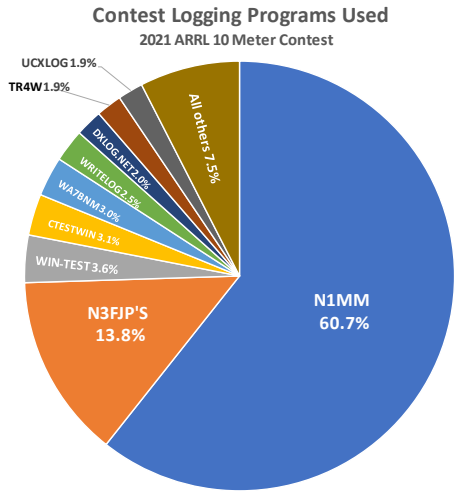

Figure 10 – Contest Loggers Used in 2021

There are a few programs on this list you may not be familiar with. The ARRL 10-Meter Contest is a worldwide event and there are several countries with a logging program that is popular just in their country or region. For example, *CTESTWIN* is popular in Japan and *UcxLog* is popular in central and eastern Europe.

There are also a substantial number of operators, 91 in 2021, who still log by hand and then use WA7BNM's Cabrillo Web Form to create their Cabrillo log file. In 2020 there were 58 different logging programs used by someone. Overall, though, the *N1MM* family is used by far more contesters than any other logging program. It is used by more than four times as many contesters as the second most popular logging program, *N3FJP*.

To observe longer term trends in program usage I compared the usage of the top logging programs used in 2013 to their usage in 2021. Among these programs, the *N1MM* family, *N3FJP*, and *DXLog*, are the only ones to show growth. N1MM family usage has increased from 45.4% of logs in 2013 to 60.7% of logs in 2020. *Win-Test*, *TR4W*, and *WriteLog* usage have declined over the same period by 3 to 4% each. Though some of these changes are being driven by changes in the geographic mix of logs, the overall story is really one about continued consolidation around one major logging platform — *N1MM+*.

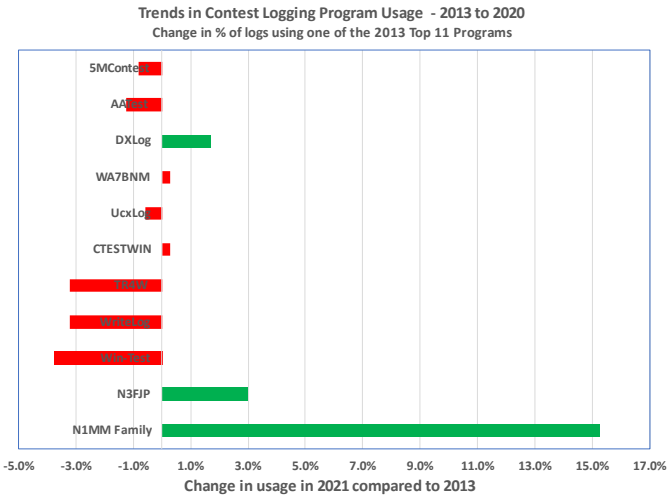

Figure 11 – Trends in Logging Program Usage

Another perspective about contest logging program that I have heard discussed is "What do serious contesters use?" Using a metric of "Average size of log submitted" seems at least plausible to provide this insight. Serious contesters usually make more QSOs than the casual ones. Using this metric, the view looks as follows:

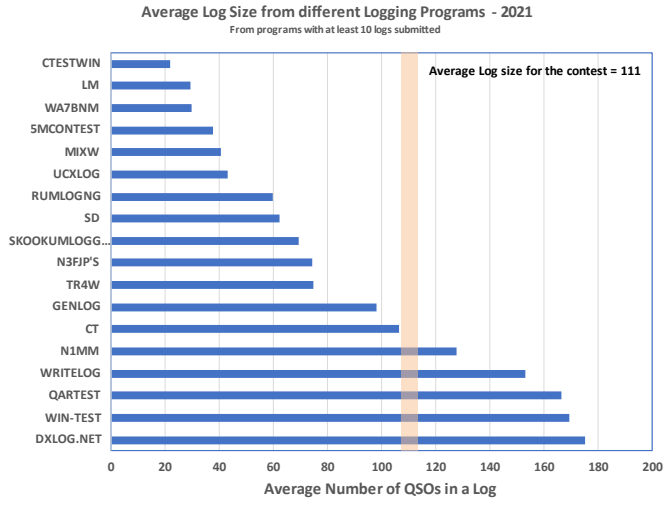

Figure 12 – Log size by logging program

For 2021, *DXLOG.NET* users reported the largest average log size at 175 QSOs. This is the first year in a long time that *WIN-TEST* didn't hold down the top spot. *DXLOG.NET*'s log size was about 60% bigger than the average log of 111 QSO.

By comparison, *N1MM* logs are just a little above average at 127 QSOs. It's hard for it to be much different than average since it is used by over 60% of the contesters. Also interesting is that *N3FJP*, which is the second most popular program, has relatively small logs at around 2/3rds the average log size. It would thus seem to appeal to more casual contesters.

And looking at WA7BNM's *Cabforms*, the tool operators use to create Cabrillo logs from paper logs, the average log size there is just 29 QSOs. Just 1/4 of the average. I wonder if some of these operators would make more QSOs if they started with a computer logging program, knowing it would save them time in the paper to computer log conversion process.

Top Ten Scores

United States

Single Operator, Mixed Mode, High Power

WB9Z	414,480
N4OX	403,216
K4ZW	389,376
W6YX (N7MH, op)	366,800
WX4G	312,332
K3ZO	303,850
KØTT	207,480
K4BAI	199,980
K6XX	199,800
K7RL	193,460

Single Operator, Mixed Mode, Low Power

K2PS	377,706
WQ5L	260,960
N8II	206,580
K6AM	158,240
K8MR	140,024
K5TS	130,340
W4DAN	81,738
WA8ZBT	75,486
KFØUR	72,128
W4SPR	63,562

Single Operator, Mixed Mode, QRP

AC5O	21,700
NDØC	15,600
WA6FGV	15,054
W5JAY	12,844
WB2AMU	9,170
K2EKM	4,800
AA5KD	3,306
WU2M	1,496
AF9J	1,210
KD7WPJ	550

Single Operator, Phone Only, High Power

K5TR (WM5R, op)	111,540
KØJU	90,312
W4DD	84,864
N8RA	67,100
WBØTEV	38,480
K4ISV	29,240
WU2X	26,064
K8DJR	12,660
KE6GFI	11,248
N4MM	9,768

Single Operator, Phone Only, Low Power

K1KNQ	51,414
WZ8T	11,584
W6BS	10,428
N6OKU	8,568
NF7E	7,888
WBØULX	7,300
W5RJJ	5,656
K1MWH	4,928
KS2G	4,620
KO4SGC	4,600

Single Operator, Phone Only, QRP

WWØWB	1,656
KF7KTC	1,160
W6QU (W8QZA, op)	992
KS4GW	728
N1MT	416
K2GMY	192
KD9LVQ	72
KC1MBQ	70
KM4NNE	42
KD9OKX	2

Single Operator, CW Only, High Power

N4XD	283,008
K5PI	253,376
WØUA	248,608
KU8E	228,528
K5NA	223,964
WJ9B	215,808
K3UA	197,064
NN4X	175,868
N4KS	164,400
AA6AA	162,800

Single Operator, CW Only, Low Power

N4TB	273,280
K1TO	255,852
WB4TDH	155,916
N4AO (WC4E, op)	92,620
N4IJ	82,896
K5XU	70,784
N7VM	67,940
W1QK	66,640
N5EE	66,432
N4EK	58,056

Single Operator, CW Only, QRP

WC7S	11,556
N8AP	10,080
KC3NDU	8,008
KS4YX	7,680
WI4T	7,200
WB4GHZ	6,864
NQ2W	6,600
AC6YY	4,480
N7GR	4,248
K5OT	3,600

Single Operator Unlimited, Mixed Mode, High Power

WO4O	688,984
N4UU	566,244
K5KG	444,132
K3MM	361,298
K4AB	327,726
N4RV	306,464
K3ZU	253,302
N4WW	249,260
W5TN	182,002
K9RS	172,592

Single Operator Unlimited, Mixed Mode, Low Power

K9OM	151,470
W4EE	126,592
KØKX	61,320
NS3T	59,276
WR2G	42,400
NF3R	32,946
W2FDJ	30,846
AAØAW	29,670
KE3K	28,560
AEØDX	27,846

Single Operator Unlimited, Mixed Mode, QRP

KK4BZ	1,500
K8ZT	1,410

Single Operator Unlimited, Phone Only, High Power

W5PR	92,268
W5LO	47,170
W2RD	39,786
KA1ZD	39,528
K3QH	37,966
KD3ANX	35,052
WB4WXE	27,244
W9NY	25,026
WØLSD	23,360
K9MU	14,504

Single Operator Unlimited, Phone Only, Low Power

K2DRH	57,072
KK4AND	9,856
KM4OZ	7,178
K3GWK	4,488
W1JGM	2,016
K6KS	1,680
WXØZ	1,380
W9TCV	1,260
KD9GY	1,260
N8VZ	704

Single Operator Unlimited, Phone Only, QRP

N2KW	2,592
K6MI	56

Single Operator Unlimited, CW Only, High Power

NN7CW	543,320
NR4M	297,040
W1KM	242,360
K3EST	233,480
N2MM	212,480
AA3B	193,952
K3RA	190,704
N4BP	187,404
K5LG	180,880
KØLUZ	177,672

Single Operator Unlimited, CW Only, Low Power

K7SV	124,024
KG9X	108,300
K6KM	94,080
K3IE	83,056
W9XT	80,740
WT9Q	69,156
K2DFC	53,784
K2MK	40,800
W3KB	34,692
AA4NP	31,476

Single Operator Unlimited, CW Only, QRP

NØUR	21,624
N6AN	1,820
K4DZR	1,820
WØBF	1,800
KR7RK	1,364
WØKI	1,040
KI4MZC	168
KU4A	64

Multioperator, Single Transmitter, High Power

AD4ES	636,660
KC1XX	631,072
WA1T	466,980
NX5M	423,120
WW4LL	410,520
N4SVC	399,924
KY7M	310,416
N4SS	302,162
K8AZ	298,908
K3AJ	294,036

Multioperator, Single Transmitter, Low Power

WA1F	161,088
KT4XA	63,616
NC1CC	16,800
K6EI	14,000
KE8SUP	13,680
W9FZ	12,996
K5LRW	4,704
W1JSR	3,192
N1ICE	2,322
N4QX	1,836

Canada

Single Operator, Mixed Mode, High Power

VE4VT	27,542
VE3UZ	22,344
VE3BR	3,960

Single Operator, Mixed Mode, Low Power

VE3OIL	13,680
VE3WG	12,654
VE7ZR	5,952
VA3EON	2,684
VA7EU	2,560
VE6SH	2,508
VE2HEW	888
VE7BGP	840
VA6RCN (VE3RCN, op)	380
VA3IJK	160

Single Operator, Phone Only, High Power

VA7IR	2,904

Single Operator, Phone Only, Low Power

VE2HIT	598
VE7YAH	154
VE3BKM	40
VA7EGZ	8

Single Operator, CW Only, High Power

VA7MM	54,180
VE6BBP	19,560
VE9AA	15,520
VE7JKZ	7,020
VE3MDX	840
VE3TW	792

Single Operator, CW Only, Low Power

VE3DZ	76,380
VE3CWP	15,312
VA7ST	14,500
VE5GC	12,636
VE3TM	8,960
VE5SF	8,232
VE3OI	6,132
VE3MA	4,560
VE3FH	3,200
VE3AQ	3,180

Single Operator, CW Only, QRP

VE3CBK	16

Single Operator Unlimited, Mixed Mode, High Power

VA3DF	78,584
VA7DX	65,880
VE3JI	9,100
VE4EA	2,678

Single Operator Unlimited, Mixed Mode, Low Power

VE7ZX	3,504
VE3KTB	2,730
VE3XAT	1,530
VA3ROC	1,300
VO1HP	1,248
VA2VT	1,232
VE3PJ	434

Single Operator Unlimited, Phone Only, High Power

VA3PC	858
VE3BFU	720

Single Operator Unlimited, Phone Only, Low Power

VE7AHT	182

Single Operator Unlimited, CW Only, High Power

VE3EJ	55,328
VE7XF	21,440
VA3TNM	19,008
VE6RST	13,328
VE3RZ	9,476
VA2WA	7,344
VE2FK	7,280
VE5MX	5,976
VE3FU	5,440
VE3VN	2,560

Single Operator Unlimited, CW Only, Low Power

VE3MV	2,856
VA2CZ	1,196
VE9VIC	476

Single Operator Unlimited, CW Only, QRP

VE6EX	720
VA3AMX	576

Multioperator, Single Transmitter, Low Power

VE9ML	720

Mexico

Single Operator, Mixed Mode, Low Power

XE2AU	860
XE1H	368

Single Operator, Phone Only, High Power

XE2SSN	20

Single Operator, Phone Only, Low Power

4C1ØM (XE3N, op)	8,308
XE1MYO	768
XE1ACA	522
XE2EM	90
XE1CL	60
XE2N	18

Single Operator, CW Only, High Power

XE2S	1,188

Single Operator, CW Only, Low Power

XE3A	3,024
XE1AY	640
XE2W	16

Single Operator, CW Only, QRP

XE1CT	360
XE2MWY	4

Single Operator Unlimited, Mixed Mode, High Power

XE1HG	18,336

Single Operator Unlimited, Mixed Mode, Low Power

XE2B	18,800
XE2OK	3,240

DX

Single Operator, Mixed Mode, High Power

LU8DPM (LU5WW, op)	915,560
ZD7BG	178,790
KP4AA	129,688
ZF2WF (W9KKN, op)	115,782
OA4SS	88,088
LX5MF	40,334
EA8ZS	35,344
EA8RM	34,200
YT8A	32,856
PY3TD	29,784

Single Operator, Mixed Mode, Low Power

PY3YD	393,472
PY2EX	286,200
PU2UAF	82,256
PU2SZK	50,540
PY4ARS	41,808
LZ6E (LZ1GU, op)	36,722
3G3O (XQ3OP, op)	30,960
PU2MST	29,260
PY1AX	28,336
M5W	25,536

Single Operator, Mixed Mode, QRP

PU2YMH	21,670
PY2NY	19,008
CO6EC	6,798
HG6C (HA6IAM, op)	4,704
JH7UJU	1,326
NP2Q	1,044
HK4KM	496
HA1TI	476
JR2EKD	476
DG3T (DF5RF, op)	468

Single Operator, Phone Only, High Power

PX2A (PY2LED, op)	295,550
CX7SS	132,660
CE6CGX	90,136
LP7D (LW3DN, op)	24,486

HK3C	13,572
M6T (GØAEV, op)	11,520
PY3PA	9,204
PY3PDR	8,320
FG5GP	5,960
F5LIW	5,150

Single Operator, Phone Only, Low Power

PZ2YT	48,708
LU8VLE	46,872
CE4JZO	40,600
CX2BAH	26,728
LW4EF	26,460
LW8DXR	24,252
PU2WDX	14,600
LU7DUE	13,668
PY3EW	13,416
LW2HAB	12,772

Single Operator, Phone Only, QRP

PY2BN	3,752
PY3PS	2,596
CA1EBQ	2,460
TI2YO	1,830
PU2MBO	1,188
CE3GRU	576
PA2TMS	342
PY2TTN	304
JI1NZA/1	230
PU2KMM	224

Single Operator, CW Only, High Power

KP2M (KT3Y, op)	186,916
CE3CT	102,108
LW1D (LW1EUD, op)	86,620
LU6D	85,400
PY2MC	49,728
PV8DX	41,412
F6KOP (F6FJE, op)	23,392
DK2GZ	15,984
DL1VDL	13,440
YO9RIJ	10,120

Single Operator, CW Only, Low Power

CX2AQ	293,436
PP5AX	100,240
CX9AU	33,908
PY2AXH	32,148
VR2EH (VR2ZQZ, op)	27,224
HC2GRC (HC2AO, op)	23,584
PY2ARY	19,888
F5PLC	16,416
YU1YV	14,400
LZ7X	13,932

Single Operator, CW Only, QRP

8P1W	6,400
CO8RH	3,096
JQ1NGT	2,916
US5VX	2,516
OK1CZ	1,440
VR2T (VR2ZQZ, op)	1,176
JR1NKN	1,120
DL1DXA	720
DL2TM	720
DL2AOM	504

Single Operator Unlimited, Mixed Mode, High Power

PY5AMF	449,400
DL2ARD	227,460
PY2KJ	177,156
9A5D (9A3ID, op)	90,768
HG8W (HA8ZO, op)	54,606
ZL3IO	54,340
EA7X	50,616
HA3NU	50,046
DK2OY	48,888
HA3LN	47,946

Single Operator Unlimited, Mixed Mode, Low Power

PY2RSA	234,976
9Z4Y	141,368
PY2QT	79,904
PY4LH	75,198
LQ3D (LW3DG, op)	71,760
DK5DQ	39,600
PX1C (PY1JR, op)	31,388
L77D (LU6DC, op)	20,768
PY1KB	19,836
HA8BE	18,870

Single Operator Unlimited, Mixed Mode, QRP

GW5P	960

JK1TCV	954
JH3DMQ	756
PY1CMT	460
YD9UW	208
VK4XU	60

Single Operator Unlimited, Phone Only, High Power

ZZ5K (PP5RT, op)	120,302
PV2K (PY2KNK, op)	52,416
V55Y (V51WH, op)	52,126
PY5QW	47,880
PT4A (PY4AZ, op)	42,340
CE5NK	40,698
ZV1T (PP1WW, op)	37,674
PY1FI	20,304
LU3DX	18,528
IK2YCW	8,062

Single Operator Unlimited, Phone Only, Low Power

PU5FJR	116,622
LU4DJB	67,452
PU5DPL	50,700
LO7H (LU7HW, op)	46,872
PY5FO	26,460
PT1K (PP1KV, op)	18,768
PU4MMZ	16,072
PP5DZ	14,852
YV5RAB	14,726
PU3FKW	13,248

Single Operator Unlimited, Phone Only, QRP

PY2CP	1,290
BD4RHV	2

Single Operator Unlimited, CW Only, High Power

PY5ZHP	452,132
LR1E	443,112
PY1ZV	184,788
NP2X	127,008
L33M	125,120
S57Q	99,792
V51YJ	91,104
IV3SKB	90,880
DH8BQA	82,960
EB7A	79,328

Single Operator Unlimited, CW Only, Low Power

LW5HR	177,776
PY2KC	95,448
PY4XX	72,896
ZZ1M (PY1SAD, op)	56,792
PY1MK	28,000
YV4ABR	26,460
XQ4CW	18,544
YT2RX	13,700
EA6SX	13,192
DL6RAI	12,804

Single Operator Unlimited, CW Only, QRP

PS8CW	2,640
OK1QM	2,368
HA3HX	1,276
SN5R (SP5XMU, op)	616
JH4CES	560
JH1VIX	440
PE2K	432
UD2F	80

Multioperator, Single Transmitter, High Power

LW7DX	815,596
FR4KR	432,880
PJ2T	274,316
PS2T	243,072
ZF5T	181,720
LV4V	155,578
LZ5R	137,460
VJ4K	76,244
IQ2MI	53,558
F8KGM	35,754

Multioperator, Single Transmitter, Low Power

FY5KE	617,700
LS2D	478,950
PX5M	369,720
PR2E	103,356
PU2VLI	88,620
CA1NAK	49,416
LU1WUD	36,946
F4KLW	17,390
ZW1P	14,076
CE3PCG	11,070

Continental Winners

Africa

Single Operator, Mixed Mode, High Power	ZD7BG	178,790
Single Operator, Mixed Mode, Low Power	EA8BQM	23,128
Single Operator, Phone Only, High Power	EA8DGO	4,788
Single Operator, Phone Only, Low Power	EA8DDJ	2,400
Single Operator, CW Only, Low Power	EA8CN	9,856
Single Operator Unlimited, Mixed Mode, Low Power	EA8OM	14,274
Single Operator Unlimited, Phone Only, High Power	V55Y (V51WH, op)	52,126
Single Operator Unlimited, Phone Only, Low Power	EC8AQQ	1,242
Single Operator Unlimited, CW Only, High Power	V51YJ	91,104
Single Operator Unlimited, CW Only, Low Power	CN8KD	4,320
Multioperator, Single Transmitter, High Power	FR4KR	432,880

Asia

Single Operator, Mixed Mode, High Power	JA5FDJ	9,650
Single Operator, Mixed Mode, Low Power	JF3IYW	3,780
Single Operator, Mixed Mode, QRP	JH7UJU	1,326
Single Operator, Phone Only, High Power	JA7OWD	3,456
Single Operator, Phone Only, Low Power	JR1AKD	744
Single Operator, Phone Only, QRP	JI1NZA/1	230
Single Operator, CW Only, High Power	4X1MM	2,652
Single Operator, CW Only, Low Power	VR2EH (VR2ZQZ, op)	27,224
Single Operator, CW Only, QRP	JQ1NGT	2,916
Single Operator Unlimited, Mixed Mode, High Power	JH4UTP	21,840
Single Operator Unlimited, Mixed Mode, Low Power	JH6WHN	7,348
Single Operator Unlimited, Mixed Mode, QRP	JK1TCV	954
Single Operator Unlimited, Phone Only, Low Power	BU2EV	4
Single Operator Unlimited, Phone Only, QRP	BD4RHV	2
Single Operator Unlimited, CW Only, High Power	P3X (5B4AMM, op)	20,196
Single Operator Unlimited, CW Only, Low Power	JA2KVB	3,692
Single Operator Unlimited, CW Only, QRP	JH4CES	560
Multioperator, Single Transmitter, High Power	JF2QNM	14,352
Multioperator, Single Transmitter, Low Power	JK2VOC	1,220

Europe

Single Operator, Mixed Mode, High Power	LX5MF	40,334
Single Operator, Mixed Mode, Low Power	LZ6E (LZ1GU, op)	36,722
Single Operator, Mixed Mode, QRP	HG6C (HA6IAM, op)	4,704
Single Operator, Phone Only, High Power	M6T (GØAEV, op)	11,520
Single Operator, Phone Only, Low Power	IK4RQJ	2,686
Single Operator, Phone Only, QRP	PA2TMS	342
Single Operator, CW Only, High Power	F6KOP (F6FJE, op)	23,392
Single Operator, CW Only, Low Power	F5PLC	16,416
Single Operator, CW Only, QRP	US5VX	2,516
Single Operator Unlimited, Mixed Mode, High Power	DL2ARD	227,460
Single Operator Unlimited, Mixed Mode, Low Power	DK5DQ	39,600
Single Operator Unlimited, Mixed Mode, QRP	GW5P	960
Single Operator Unlimited, Phone Only, High Power	IK2YCW	8,062

Single Operator Unlimited, Phone Only, Low Power	IK2TDM	1,900
Single Operator Unlimited, CW Only, High Power	S57Q	99,792
Single Operator Unlimited, CW Only, Low Power	YT2RX	13,700
Single Operator Unlimited, CW Only, QRP	OK1QM	2,368
Multioperator, Single Transmitter, High Power	LZ5R	137,460
Multioperator, Single Transmitter, Low Power	F4KLW	17,390

North America

Single Operator, Mixed Mode, High Power	KP4AA	129,688
Single Operator, Mixed Mode, Low Power	HI7/YT3M	432
Single Operator, Mixed Mode, QRP	CO6EC	6,798
Single Operator, Phone Only, High Power	FG5GP	5,960
Single Operator, Phone Only, Low Power	TI2CC	8,576
Single Operator, Phone Only, QRP	TI2YO	1,830
Single Operator, CW Only, High Power	KP2M (KT3Y, op)	186,916
Single Operator, CW Only, Low Power	CO2CW	6,480
Single Operator, CW Only, QRP	8P1W	6,400
Single Operator Unlimited, Mixed Mode, Low Power	HP1XT	2,304
Single Operator Unlimited, Phone Only, Low Power	TI2WMP	1,856
Single Operator Unlimited, CW Only, High Power	NP2X	127,008
Multioperator, Single Transmitter, High Power	ZF5T	181,720

Oceania

Single Operator, Mixed Mode, High Power	FK8IK	13,120
Single Operator, Mixed Mode, Low Power	DX1SPC	3,806
Single Operator, Mixed Mode, QRP	DW3TRZ	136
Single Operator, Phone Only, High Power	FK4QX	1,036
Single Operator, Phone Only, Low Power	VK2NSS	1,440
Single Operator, Phone Only, QRP	DX4EVM (DV4ZAR, op)	216
Single Operator, CW Only, High Power	VL2N (VK2PN, op)	8,632
Single Operator, CW Only, Low Power	VK2IG	4,360
Single Operator, CW Only, QRP	YC1KFQ	96
Single Operator Unlimited, Mixed Mode, High Power	ZL3IO	54,340
Single Operator Unlimited, Mixed Mode, Low Power	4F3BZ	18,788
Single Operator Unlimited, Mixed Mode, QRP	YD9UW	208
Single Operator Unlimited, Phone Only, High Power	VL4R	2,178
Single Operator Unlimited, Phone Only, Low Power	DV1DLX	348
Single Operator Unlimited, CW Only, High Power	VK4SN	29,600
Single Operator Unlimited, CW Only, Low Power	ZM4G (ZL2IFB, op)	1,628
Multioperator, Single Transmitter, High Power	VJ4K	76,244

South America

Single Operator, Mixed Mode, High Power	LU8DPM (LU5WW, op)	915,560
Single Operator, Mixed Mode, Low Power	PY3YD	393,472
Single Operator, Mixed Mode, QRP	PU2YMH	21,670
Single Operator, Phone Only, High Power	PX2A (PY2LED, op)	295,550
Single Operator, Phone Only, Low Power	PZ2YT	48,708
Single Operator, Phone Only, QRP	PY2BN	3,752
Single Operator, CW Only, High Power	CE3CT	102,108
Single Operator, CW Only, Low Power	CX2AQ	293,436
Single Operator, CW Only, QRP	PR7AR	112

Single Operator Unlimited, Mixed Mode, High Power	PY5AMF	449,400
Single Operator Unlimited, Mixed Mode, Low Power	PY2RSA	234,976
Single Operator Unlimited, Mixed Mode, QRP	PY1CMT	460
Single Operator Unlimited, Phone Only, High Power	ZZ5K (PP5RT, op)	120,302
Single Operator Unlimited, Phone Only, Low Power	PU5FJR	116,622
Single Operator Unlimited, Phone Only, QRP	PY2CP	1,290
Single Operator Unlimited, CW Only, High Power	PY5ZHP	452,132
Single Operator Unlimited, CW Only, Low Power	LW5HR	177,776
Single Operator Unlimited, CW Only, QRP	PS8CW	2,640
Multioperator, Single Transmitter, High Power	LW7DX	815,596
Multioperator, Single Transmitter, Low Power	FY5KE	617,700

Division Winners

Single Operator, Mixed Mode, High Power

Atlantic	K3ZO	303,850
Central	WB9Z	414,480
Dakota	KØTT	207,480
Delta	KD5J	112,338
Great Lakes	KW8N	17,856
Hudson	W2OIB	76,590
Midwest	NØGN	7,182
New England	K5ZD	85,120
Northwestern	K7RL	193,460
Pacific	W6YX (N7MH, op)	366,800
Roanoke	K4ZW	389,376
Rocky Mountain	WØETT	112,176
Southeastern	N4OX	403,216
Southwestern	N6KN	127,540
West Gulf	N5TJ	45,492
Canada	VE4VT	27,542

Single Operator, Mixed Mode, Low Power

Atlantic	NS3X	36,736
Central	ND9G	29,400
Dakota	WØPI	47,488
Delta	WQ5L	260,960
Great Lakes	K4YJ	46,272
Hudson	WA2JQK	14,194
Midwest	AI6O	44,408
New England	K1TR	18,420
Northwestern	WB6OEE	13,600
Pacific	W6DT	13,640
Roanoke	N8II	206,580
Rocky Mountain	KFØUR	72,128
Southeastern	K2PS	377,706
Southwestern	K6AM	158,240
West Gulf	WA8ZBT	75,486
Canada	VE3OIL	13,680
México	XE2AU	860

Single Operator, Mixed Mode, QRP

Central	AF9J	1,210
Dakota	NDØC	15,600
Delta	AC5O	21,700
Hudson	WB2AMU	9,170
Roanoke	K2EKM	4,800
Southeastern	N4AU	192
Southwestern	WA6FGV	15,054
West Gulf	AA5KD	3,306

Single Operator, Phone Only, High Power

Atlantic	4U1WB (AJ3M, op)	5,888
Central	N9RJM	9,196
Dakota	KØSIX	8,478
Great Lakes	K4ISV	29,240
Hudson	WU2X	26,064
New England	N8RA	67,100
Northwestern	W7BJN	7,812
Pacific	W6LP (NC6R, op)	6,768
Roanoke	N4MM	9,768
Rocky Mountain	KØJU	90,312
Southeastern	W4DD	84,864
Southwestern	KE6GFI	11,248
West Gulf	K5TR (WM5R, op)	111,540
Canada	VA7IR	2,904
México	XE2SSN	20

Single Operator, Phone Only, Low Power

Atlantic	N2OMD	924
Central	N9PQJ	3,952
Dakota	WBØULX	7,300
Delta	K1MWH	4,928
Great Lakes	N8BV	3,848
Hudson	KS2G	4,620

Midwest	KFØGYQ	1,760
New England	KA1AMR	3,050
Northwestern	WZ8T	11,584
Pacific	W6BS	10,428
Roanoke	KM4ODS	4,428
Rocky Mountain	W5RJJ	5,656
Southeastern	K1KNQ	51,414
Southwestern	N6OKU	8,568
West Gulf	W5ITC	2,280
Canada	VE2HIT	598
México	4C1ØM (XE3N, op)	8,308

Single Operator, Phone Only, QRP

Central	KD9LVQ	72
New England	KC1MBQ	70
Pacific	KF7KTC	1,160
Roanoke	KM4NNE	42
Rocky Mountain	WWØWB	1,656
Southeastern	KS4GW	728
Southwestern	W6QU (W8QZA, op)	992

Single Operator, CW Only, High Power

Atlantic	K3UA	197,064
Central	NN1N	99,348
Dakota	WDØT	109,632
Delta	W4NZ	24,048
Great Lakes	N8LJ	33,440
Hudson	KR2Q	7,296
Midwest	KTØK	142,320
New England	W1WEF	62,820
Northwestern	WJ9B	215,808
Pacific	AA6AA	162,800
Roanoke	N4XD	283,008
Rocky Mountain	WØUA	248,608
Southeastern	KU8E	228,528
Southwestern	N7GP	125,984
West Gulf	K5PI	253,376
Canada	VA7MM	54,180
México	XE2S	1,188

Single Operator, CW Only, Low Power

Atlantic	W3BGN	47,696
Central	W9RE	43,428
Dakota	K7BG	22,400
Delta	K5XU	70,784
Great Lakes	KM6Z	30,888
Hudson	N2CJ	16,560
Midwest	KØHX	23,236
New England	W1QK	66,640
Northwestern	K7JF	19,840
Pacific	N7YK	51,264
Roanoke	N4IJ	82,896
Rocky Mountain	KCØV	42,744
Southeastern	N4TB	273,280
Southwestern	N7VM	67,940
West Gulf	KG5U	14,652
Canada	VE3DZ	76,380
México	XE3A	3,024

Single Operator, CW Only, QRP

Atlantic	KC3NDU	8,008
Central	WB9AYW	2,720
Dakota	KØUU	1,152
Delta	WB4GHZ	6,864
Great Lakes	N8AP	10,080
Hudson	NQ2W	6,600
Midwest	WI4T	7,200
New England	WB2CPU	1,508
Northwestern	N7GR	4,248
Pacific	AC6YY	4,480
Roanoke	KS4YX	7,680
Rocky Mountain	WC7S	11,556
Southeastern	KJ4LEN	2,664
Southwestern	W6MZ	1,584
West Gulf	K5OT	3,600
Canada	VE3CBK	16
México	XE1CT	360

Single Operator Unlimited, Mixed Mode, High Power

Atlantic	K3MM	361,298
Central	NE9U	115,464
Dakota	KØMD	110,084
Delta	NJ4P (WV4P, op)	124,478
Great Lakes	W8BI (KB8UEY, op)	16,994
Hudson	WO2T	51,740
Midwest	K3PA	81,760
New England	W3EP	110,160
Northwestern	K9PY	4,440
Pacific	N6WM	133,056
Roanoke	N4RV	306,464
Rocky Mountain	KØEU	103,984
Southeastern	WO4O	688,984
Southwestern	KK6P (KC1KUG, op)	112,000
West Gulf	W5TN	182,002
Canada	VA3DF	78,584

México	XE1HG	18,336

Single Operator Unlimited, Mixed Mode, Low Power

Atlantic	NS3T	59,276
Central	W9TC	23,010
Dakota	KØKX	61,320
Delta	K4DXV	10,530
Great Lakes	KE3K	28,560
Hudson	WR2G	42,400
Midwest	AEØDX	27,846
New England	W1DYJ	16,464
Northwestern	KA7T	22,896
Pacific	W7TR (KH2TJ, op)	6,720
Roanoke	WN4AFP	18,396
Rocky Mountain	NS7B	13,816
Southeastern	K9OM	151,470
Southwestern	NØBK	5,800
West Gulf	WA5RR	23,712
Canada	VE7ZX	3,504
México	XE2B	18,800

Single Operator Unlimited, Mixed Mode, QRP

Great Lakes	K8ZT	1,410
Roanoke	KK4BZ	1,500

Single Operator Unlimited, Phone Only, High Power

Atlantic	KD3ANX	35,052
Central	W9NY	25,026
Dakota	KEØNWG	2,166
Delta	W4KW	5,452
Hudson	W2RD	39,786
Midwest	AEØMO	132
New England	KA1ZD	39,528
Northwestern	N7MGW	5,510
Roanoke	W4JJF	2,244
Rocky Mountain	WØLSD	23,360
Southeastern	K3QH	37,966
Southwestern	KC1BB	9,600
West Gulf	W5PR	92,268
Canada	VA3PC	858

Single Operator Unlimited, Phone Only, Low Power

Central	K2DRH	57,072
Dakota	WXØZ	1,380
Great Lakes	N8VZ	704
New England	W1JGM	2,016
Northwestern	K7VAP	26
Pacific	K6KS	1,680
Roanoke	W9TCV	1,260
Southeastern	KK4AND	9,856
West Gulf	KJ4EBE	616
Canada	VE7AHT	182

Single Operator Unlimited, Phone Only, QRP

New England	N2KW	2,592
Pacific	K6MI	56

Single Operator Unlimited, CW Only, High Power

Atlantic	N2MM	212,480
Central	KT9L	47,560
Dakota	KØIR	43,200
Delta	K5LG	180,880
Great Lakes	W8AV	68,608
Hudson	W2CG	37,824
Midwest	NØAV	42,240
New England	W1KM	242,360
Northwestern	KA6BIM	78,016
Pacific	K3EST	233,480
Roanoke	NR4M	297,040
Rocky Mountain	KØZX	32,136
Southeastern	NN7CW	543,320
Southwestern	NT6X	114,852
West Gulf	N5RZ	150,948
Canada	VE3EJ	55,328

Single Operator Unlimited, CW Only, Low Power

Atlantic	W3KB	34,692
Central	KG9X	108,300
Dakota	W6GMT	4,320
Delta	K3IE	83,056
Great Lakes	K3DMG	19,668
Hudson	K2DFC	53,784
Midwest	AAØAI	5,040
New England	W1ARY	14,976
Northwestern	W7ZRC	29,356
Pacific	K6KM	94,080
Roanoke	K7SV	124,024
Rocky Mountain	WY7M	29,820
Southeastern	K2MK	40,800
Southwestern	W7RV	28,800
West Gulf	K5LY	15,120
Canada	VE3MV	2,856

Single Operator Unlimited, CW Only, QRP

Dakota	NØUR	21,624
Delta	K4DZR	1,820
Great Lakes	KU4A	64
Rocky Mountain	WØKI	1,040
Southeastern	KI4MZC	168
Southwestern	N6AN	1,820
Canada	VE6EX	720

Multioperator, Single Transmitter, High Power

Atlantic	K3AJ	294,036
Central	K9YY	131,376
Delta	KM4TYV	29,886
Great Lakes	N4SS	302,162
Hudson	W2KV	43,956
New England	KC1XX	631,072
Pacific	NH6JC	2,736
Roanoke	W8ZN	250,240
Southeastern	AD4ES	636,660
Southwestern	KY7M	310,416
West Gulf	NX5M	423,120

Multioperator, Single Transmitter, Low Power

Atlantic	K2AA	1,430
Dakota	W9FZ	12,996
Great Lakes	KE8SUP	13,680
New England	NC1CC	16,800
Pacific	K6EI	14,000
Roanoke	N4QX	1,836
Rocky Mountain	K5LRW	4,704
Southeastern	WA1F	161,088
West Gulf	N1ICE	2,322
Canada	VE9ML	720

Region Leaders

West Coast Region
(Pacific, Northwestern and Southwestern Divisions; Alberta, British Columbia and NT Sections)

W6YX (N7MH, op)	366,800	SO-MIX-HP
K6XX	199,800	SO-MIX-HP
K7RL	193,460	SO-MIX-HP
N6KN	127,540	SO-MIX-HP
K7ZS	102,336	SO-MIX-HP
K6AM	158,240	SO-MIX-LP
K6RO	53,298	SO-MIX-LP
WN6K	27,962	SO-MIX-LP
W6DT	13,640	SO-MIX-LP
WB6OEE	13,600	SO-MIX-LP
WA6FGV	15,054	SO-MIX-QRP
KD7WPJ	550	SO-MIX-QRP
KE6GFI	11,248	SO-PH-HP
W7BJN	7,812	SO-PH-HP
W6LP (NC6R, op)	6,768	SO-PH-HP
VA7IR	2,904	SO-PH-HP
KR7LD	2,640	SO-PH-HP
WZ8T	11,584	SO-PH-LP
W6BS	10,428	SO-PH-LP
N6OKU	8,568	SO-PH-LP
NF7E	7,888	SO-PH-LP
N6PGQ	2,080	SO-PH-LP
KF7KTC	1,160	SO-PH-QRP
W6QU (W8QZA, op)	992	SO-PH-QRP
K2GMY	192	SO-PH-QRP
WJ9B	215,808	SO-CW-HP
AA6AA	162,800	SO-CW-HP
N7GP	125,984	SO-CW-HP
K4XU	105,264	SO-CW-HP
W7YAQ	98,136	SO-CW-HP
N7VM	67,940	SO-CW-LP
N7YK	51,264	SO-CW-LP
N3ZZ	40,112	SO-CW-LP
N6GP	29,232	SO-CW-LP
W6ZL	23,240	SO-CW-LP
AC6YY	4,480	SO-CW-QRP
N7GR	4,248	SO-CW-QRP
WD6DX	2,048	SO-CW-QRP
W6MZ	1,584	SO-CW-QRP
N6HI	1,480	SO-CW-QRP
N6WM	133,056	SOU-MIX-HP
KK6P (KC1KUG, op)	112,000	SOU-MIX-HP
N6KI	97,460	SOU-MIX-HP
VA7DX	65,880	SOU-MIX-HP
W1RH	61,600	SOU-MIX-HP

KA7T	22,896	SOU-MIX-LP
WN6W	15,436	SOU-MIX-LP
W7TR (KH2TJ, op)	6,720	SOU-MIX-LP
NØBK	5,800	SOU-MIX-LP
KE6QR	5,720	SOU-MIX-LP
KC1BB	9,600	SOU-PH-HP
N7MGW	5,510	SOU-PH-HP
K7STO	1,598	SOU-PH-HP
K6KS	1,680	SOU-PH-LP
VE7AHT	182	SOU-PH-LP
KN6MQT	48	SOU-PH-LP
K7VAP	26	SOU-PH-LP
K6MI	56	SOU-PH-QRP
K3EST	233,480	SOU-CW-HP
N6US (KH7Y, op)	116,280	SOU-CW-HP
NT6X	114,852	SOU-CW-HP
KA6BIM	78,016	SOU-CW-HP
K6AW	75,060	SOU-CW-HP
K6KM	94,080	SOU-CW-LP
W7ZRC	29,356	SOU-CW-LP
W7RV	28,800	SOU-CW-LP
K6WSC	21,420	SOU-CW-LP
WQ6X	20,400	SOU-CW-LP
N6AN	1,820	SOU-CW-QRP
WØBF	1,800	SOU-CW-QRP
KR7RK	1,364	SOU-CW-QRP
VE6EX	720	SOU-CW-QRP
KY7M	310,416	MSHP
NH6JC	2,736	MSHP
W1FM	1,060	MSHP
K6EI	14,000	MSLP

Midwest Region
(Dakota, Midwest, Rocky Mountain and West Gulf Divisions; Manitoba and Saskatchewan Sections)

KØTT	207,480	SO-MIX-HP
WØPR	113,364	SO-MIX-HP
WØETT	112,176	SO-MIX-HP
WAØMHJ	88,324	SO-MIX-HP
NCØB	50,280	SO-MIX-HP
WA8ZBT	75,486	SO-MIX-LP
KFØUR	72,128	SO-MIX-LP
WØPI	47,488	SO-MIX-LP
WA7YAZ	46,116	SO-MIX-LP
AI6O	44,408	SO-MIX-LP
NDØC	15,600	SO-MIX-QRP
AA5KD	3,306	SO-MIX-QRP
KEØWPA	72	SO-MIX-QRP
K5TR (WM5R, op)	111,540	SO-PH-HP
KØJU	90,312	SO-PH-HP
WBØTEV	38,480	SO-PH-HP
KØSIX	8,478	SO-PH-HP
WE6EZ	5,460	SO-PH-HP
WBØULX	7,300	SO-PH-LP
W5RJJ	5,656	SO-PH-LP
W5ITC	2,280	SO-PH-LP
KFØGYQ	1,760	SO-PH-LP
WB5R	1,152	SO-PH-LP
WWØWB	1,656	SO-PH-QRP
K5PI	253,376	SO-CW-HP
WØUA	248,608	SO-CW-HP
K5NA	223,964	SO-CW-HP
KTØK	142,320	SO-CW-HP
WDØT	109,632	SO-CW-HP
KCØV	42,744	SO-CW-LP
KA7PNH	28,368	SO-CW-LP
KØHX	23,236	SO-CW-LP
K7BG	22,400	SO-CW-LP
K9OR	16,048	SO-CW-LP
WC7S	11,556	SO-CW-QRP
WI4T	7,200	SO-CW-QRP
K5OT	3,600	SO-CW-QRP
WA9YEE	1,408	SO-CW-QRP
NØJK	1,200	SO-CW-QRP
W5TN	182,002	SOU-MIX-HP
KØMD	110,084	SOU-MIX-HP
KØEU	103,984	SOU-MIX-HP
K3PA	81,760	SOU-MIX-HP
NØXR	78,888	SOU-MIX-HP

KØKX	61,320	SOU-MIX-LP
AAØAW	29,670	SOU-MIX-LP
AEØDX	27,846	SOU-MIX-LP
KØRC	26,800	SOU-MIX-LP
WA5RR	23,712	SOU-MIX-LP
W5PR	92,268	SOU-PH-HP
W5LO	47,170	SOU-PH-HP
WØLSD	23,360	SOU-PH-HP
K2KR	6,380	SOU-PH-HP
KK4JI	3,132	SOU-PH-HP
WXØZ	1,380	SOU-PH-LP
KJ4EBE	616	SOU-PH-LP
N5LPT	520	SOU-PH-LP
KØTJT	450	SOU-PH-LP
K5LGX	70	SOU-PH-LP
N5RZ	150,948	SOU-CW-HP
W5KU	118,104	SOU-CW-HP
W5GN	67,620	SOU-CW-HP
KØIR	43,200	SOU-CW-HP
NØAV	42,240	SOU-CW-HP
WY7M	29,820	SOU-CW-LP
W2UP	21,352	SOU-CW-LP
K5LY	15,120	SOU-CW-LP
KIØJ	14,880	SOU-CW-LP
AAØAI	5,040	SOU-CW-LP
NØUR	21,624	SOU-CW-QRP
WØKI	1,040	SOU-CW-QRP
NX5M	423,120	MSHP
WA5PFJ	1,568	MSHP
W9FZ	12,996	MSLP
K5LRW	4,704	MSLP
N1ICE	2,322	MSLP
KB5ZSK	306	MSLP

Central Region
(Central and Great Lakes Divisions; Ontario East, Ontario North, Ontario South, and Greater Toronto Area Sections)

WB9Z	414,480	SO-MIX-HP
VE3UZ	22,344	SO-MIX-HP
K9LA	20,910	SO-MIX-HP
KW8N	17,856	SO-MIX-HP
W8MJ	16,440	SO-MIX-HP
K4YJ	46,272	SO-MIX-LP
ND9G	29,400	SO-MIX-LP
N9LYE	24,960	SO-MIX-LP
N7ZZ	23,490	SO-MIX-LP
KB9OWD	19,656	SO-MIX-LP
AF9J	1,210	SO-MIX-QRP
K4ISV	29,240	SO-PH-HP
K8DJR	12,660	SO-PH-HP
N9RJM	9,196	SO-PH-HP
K9UC	5,184	SO-PH-HP
N4ZY	5,076	SO-PH-HP
N9PQJ	3,952	SO-PH-LP
N8BV	3,848	SO-PH-LP
WD8SCV	1,408	SO-PH-LP
KD9KNJ	1,288	SO-PH-LP
N8PPF	1,222	SO-PH-LP
KD9LVQ	72	SO-PH-QRP
KD9OKX	2	SO-PH-QRP
NN1N	99,348	SO-CW-HP
N8LJ	33,440	SO-CW-HP
K9BGL	31,668	SO-CW-HP
KG9N	28,800	SO-CW-HP
K8MM	21,492	SO-CW-HP
VE3DZ	76,380	SO-CW-LP
W9RE	43,428	SO-CW-LP
N9JF	36,504	SO-CW-LP
KM6Z	30,888	SO-CW-LP
K8RDJ	19,668	SO-CW-LP
N8AP	10,080	SO-CW-QRP
WB9AYW	2,720	SO-CW-QRP
KØEMT	1,728	SO-CW-QRP
K2YAZ	800	SO-CW-QRP
WD8RIF	480	SO-CW-QRP
NE9U	115,464	SOU-MIX-HP
VA3DF	78,584	SOU-MIX-HP
AC9S	49,560	SOU-MIX-HP

KBØV	44,800	SOU-MIX-HP
WB8BZK	34,310	SOU-MIX-HP
KE3K	28,560	SOU-MIX-LP
W9TC	23,010	SOU-MIX-LP
KF8VS	12,692	SOU-MIX-LP
N9VPV	8,092	SOU-MIX-LP
KØPG	5,900	SOU-MIX-LP
K8ZT	1,410	SOU-MIX-QRP
W9NY	25,026	SOU-PH-HP
K9MU	14,504	SOU-PH-HP
K9TI	2,656	SOU-PH-HP
VA3PC	858	SOU-PH-HP
VE3BFU	720	SOU-PH-HP
K2DRH	57,072	SOU-PH-LP
KD9GY	1,260	SOU-PH-LP
N8VZ	704	SOU-PH-LP
WA9PND	500	SOU-PH-LP
W8AV	68,608	SOU-CW-HP
VE3EJ	55,328	SOU-CW-HP
KE4KY	53,100	SOU-CW-HP
KT9L	47,560	SOU-CW-HP
KA9FOX	45,684	SOU-CW-HP
KG9X	108,300	SOU-CW-LP
W9XT	80,740	SOU-CW-LP
WT9Q	69,156	SOU-CW-LP
K9PW	24,768	SOU-CW-LP
K3DMG	19,668	SOU-CW-LP
VA3AMX	576	SOU-CW-QRP
KU4A	64	SOU-CW-QRP
N4SS	302,162	MSHP
K8AZ	298,908	MSHP
K9YY	131,376	MSHP
W8PR	122,636	MSHP
KE8SUP	13,680	MSLP

Southeast Region
(Delta, Roanoke and Southeastern Divisions)

N4OX	403,216	SO-MIX-HP
K4ZW	389,376	SO-MIX-HP
WX4G	312,332	SO-MIX-HP
K4BAI	199,980	SO-MIX-HP
N4YDU	126,324	SO-MIX-HP
K2PS	377,706	SO-MIX-LP
WQ5L	260,960	SO-MIX-LP
N8II	206,580	SO-MIX-LP
K8MR	140,024	SO-MIX-LP
K5TS	130,340	SO-MIX-LP
AC5O	21,700	SO-MIX-QRP
W5JAY	12,844	SO-MIX-QRP
K2EKM	4,800	SO-MIX-QRP
N4AU	192	SO-MIX-QRP
W4DD	84,864	SO-PH-HP
N4MM	9,768	SO-PH-HP
W4SLT	8,580	SO-PH-HP
WA9TTC	1,932	SO-PH-HP
AK4QR	1,886	SO-PH-HP
K1KNQ	51,414	SO-PH-LP
K1MWH	4,928	SO-PH-LP
KO4SGC	4,600	SO-PH-LP
KM4ODS	4,428	SO-PH-LP
AC2N	3,444	SO-PH-LP
KS4GW	728	SO-PH-QRP
N1MT	416	SO-PH-QRP
KM4NNE	42	SO-PH-QRP
N4XD	283,008	SO-CW-HP
KU8E	228,528	SO-CW-HP
NN4X	175,868	SO-CW-HP
N4KS	164,400	SO-CW-HP
N1TO	118,800	SO-CW-HP
N4TB	273,280	SO-CW-LP
K1TO	255,852	SO-CW-LP
WB4TDH	155,916	SO-CW-LP
N4AO (WC4E, op)	92,620	SO-CW-LP
N4IJ	82,896	SO-CW-LP
KS4YX	7,680	SO-CW-QRP
WB4GHZ	6,864	SO-CW-QRP
KJ4LEN	2,664	SO-CW-QRP
K6RM	912	SO-CW-QRP

K4PQC	392	SO-CW-QRP
WO4O	688,984	SOU-MIX-HP
N4UU	566,244	SOU-MIX-HP
K5KG	444,132	SOU-MIX-HP
K4AB	327,726	SOU-MIX-HP
N4RV	306,464	SOU-MIX-HP
K9OM	151,470	SOU-MIX-LP
W4EE	126,592	SOU-MIX-LP
WA3RHW	26,790	SOU-MIX-LP
KZ1O	20,670	SOU-MIX-LP
WN4AFP	18,396	SOU-MIX-LP
KK4BZ	1,500	SOU-MIX-QRP
K3QH	37,966	SOU-PH-HP
WB4WXE	27,244	SOU-PH-HP
NA4DA	7,080	SOU-PH-HP
K4SHW	6,930	SOU-PH-HP
W4KW	5,452	SOU-PH-HP
KK4AND	9,856	SOU-PH-LP
KM4OZ	7,178	SOU-PH-LP
K3GWK	4,488	SOU-PH-LP
W9TCV	1,260	SOU-PH-LP
AC4MG	672	SOU-PH-LP
NN7CW	543,320	SOU-CW-HP
NR4M	297,040	SOU-CW-HP
N4BP	187,404	SOU-CW-HP
K5LG	180,880	SOU-CW-HP
KØLUZ	177,672	SOU-CW-HP
K7SV	124,024	SOU-CW-LP
K3IE	83,056	SOU-CW-LP
K2MK	40,800	SOU-CW-LP
AA4NP	31,476	SOU-CW-LP
K4WI	25,676	SOU-CW-LP
K4DZR	1,820	SOU-CW-QRP
KI4MZC	168	SOU-CW-QRP
AD4ES	636,660	MSHP
WW4LL	410,520	MSHP
N4SVC	399,924	MSHP
W8ZN	250,240	MSHP
W4RN	158,486	MSHP
WA1F	161,088	MSLP
KT4XA	63,616	MSLP
N4QX	1,836	MSLP
K4GSO	32	MSLP

Northeast Region
(New England, Hudson and Atlantic Divisions; Maritime and Quebec Sections)

K3ZO	303,850	SO-MIX-HP
N2YB	98,724	SO-MIX-HP
K5ZD	85,120	SO-MIX-HP
W2OIB	76,590	SO-MIX-HP
KR2AA	45,080	SO-MIX-HP
NS3X	36,736	SO-MIX-LP
WR3R	29,784	SO-MIX-LP
N2EM	27,880	SO-MIX-LP
N1NQD	22,372	SO-MIX-LP
K1TR	18,420	SO-MIX-LP
WB2AMU	9,170	SO-MIX-QRP
WU2M	1,496	SO-MIX-QRP
N8RA	67,100	SO-PH-HP
WU2X	26,064	SO-PH-HP
4U1WB (AJ3M, op)	5,888	SO-PH-HP
NY1E	5,824	SO-PH-HP
WB2VVV	4,738	SO-PH-HP
KS2G	4,620	SO-PH-LP
KA1AMR	3,050	SO-PH-LP
WX2N	2,552	SO-PH-LP
WA1TAC	2,210	SO-PH-LP
N1WRK	1,204	SO-PH-LP
KC1MBQ	70	SO-PH-QRP
K3UA	197,064	SO-CW-HP
K3TC	110,016	SO-CW-HP
W1WEF	62,820	SO-CW-HP
K1KI	61,640	SO-CW-HP
W1AN	56,320	SO-CW-HP
W1QK	66,640	SO-CW-LP
K1XM	50,372	SO-CW-LP
W3BGN	47,696	SO-CW-LP

K3DE	16,724	SO-CW-LP
N2CJ	16,560	SO-CW-LP
KC3NDU	8,008	SO-CW-QRP
NQ2W	6,600	SO-CW-QRP
WB2CPU	1,508	SO-CW-QRP
K2YG	960	SO-CW-QRP
WO2N	864	SO-CW-QRP
K3MM	361,298	SOU-MIX-HP
K3ZU	253,302	SOU-MIX-HP
K9RS	172,592	SOU-MIX-HP
N2PP	166,152	SOU-MIX-HP
K3WW	135,432	SOU-MIX-HP
NS3T	59,276	SOU-MIX-LP
WR2G	42,400	SOU-MIX-LP
NF3R	32,946	SOU-MIX-LP
W2FDJ	30,846	SOU-MIX-LP
W1DYJ	16,464	SOU-MIX-LP
W2RD	39,786	SOU-PH-HP
KA1ZD	39,528	SOU-PH-HP
KD3ANX	35,052	SOU-PH-HP
N1RP	1,632	SOU-PH-HP
W3MAM	1,456	SOU-PH-HP
W1JGM	2,016	SOU-PH-LP
N1FI	638	SOU-PH-LP
N1FTP	150	SOU-PH-LP
N2KW	2,592	SOU-PH-QRP
W1KM	242,360	SOU-CW-HP
N2MM	212,480	SOU-CW-HP
AA3B	193,952	SOU-CW-HP
K3RA	190,704	SOU-CW-HP
W2GD	111,872	SOU-CW-HP
K2DFC	53,784	SOU-CW-LP
W3KB	34,692	SOU-CW-LP
KA2D	22,464	SOU-CW-LP
W3RGA	21,760	SOU-CW-LP
W1ARY	14,976	SOU-CW-LP
KC1XX	631,072	MSHP
WA1T	466,980	MSHP
K3AJ	294,036	MSHP
AA1JD	284,416	MSHP
W3ZGD	107,536	MSHP
NC1CC	16,800	MSLP
W1JSR	3,192	MSLP
K2AA	1,430	MSLP
VE9ML	720	MSLP