ARRL September VHF Contest 2020 Full Results

By Ralph "Gator" Bowen, N5RZ (wb5aar@gmail.com)

Another Great September Event!

Needless to say, it has been a very different type of year. The COVID 19 situation. The fires out West. Record participation in the September 2020 VHF Contest – what?? At least there's something positive to take note of!

The events of the year allowed many folks to get back on the air for the first time in years. There were a number of comments from people making their first foray onto the VHF bands – and they were welcomed with open arms. Unfortunately, conditions do not care what is happening in the world – they will be what they will be, and other than a smidgen of 6M E-Skip out west, conditions were pretty flat, with essentially no enhancement on the higher bands. Meteor Scatter and EME (for those capable) were about the only avenues to work any distance in this running

Activity Levels

The 831 logs submitted (plus the two check logs) set another record, up even 20% more over 2019's record. Thanks to all for your participation!

Multioperator and Rover entries were both slightly down mainly due to COVID 19 issues. Some of the perennial Multi Op groups either could not participate, or had very lean staffs. Rover plans were curtailed to an extent due to COVID travel restrictions and the fires out West. Some multiop groups were able to operate their club stations remotely. Whatever it takes to get on the air!

Total Logs submitted by Year	
Year	*Number*
2015	516
2016	504
2017	473
2018	569
2019	691
2020	833

As was the case last year the Single Op Low Power, High Power and 3-Band categories were the main contributors to the increase. Most other categories were pretty much level, though the Single Op FM category was back up again. Unlimited Multioperator participation was down.

Count by Category	
Single Operator, Low Power	300
Single Operator, High Power	197
Single Operator 3 Band	174
Single Operator FM	26
Limited Multioperator	21
Unlimited Multioperator	12
Single Operator, Portable	22
Classic Rover	34
Limited Rover	35
Unlimited Rover	10
Checklogs	2
Total	**833**

Total QSO's generated this year were up to 69,075 this year compared to 51,411 in 2019. See chart below.

The number of QSO's on 50, 144, and 432 were up significantly even with no significant propagation enhancement. 222 was about the same, 1296 was up a little, but 902 and the other microwave bands were down dramatically. To hear it from the stalwarts, FT8 QSO's on 6M and 2M limit the chances to move folks to other bands, and the higher bands suffer the most. Another possibility is that many of the new players only have gear for 6M 2M and 70cm since those types of transceivers are easy to obtain.

Total QSO's by Band				
Band	**2020**	**2019**	**2018**	**2017**
50	**31587**	20426	13649	10305
144	**22230**	15914	13893	11455
222	**4245**	4404	4582	3738
432	**7483**	6255	6653	5447
902	**971**	1234	805	962
1296	**1665**	1581	1047	1229
2304+	**894**	1597	871	1551
	69075	**51411**	**41500**	**34687**

This year, we have been able to generate a new chart showing QSO's by mode on each band. Since Cabrillo does not recognize the distinct Digital modes, they are all considered one mode. The Legacy modes (CW, FM and Phone) are detailed. Of note is that on 6M, over 70% of the QSO's are via Digital modes. On 2M, that number is over 36%. Many Rover stations are now employing FT8 and Meteor Scatter capabilities on 2M and 6M. Seems when conditions are poor on 6M and 2M, even during non-contest times, there always seems to be activity on the Digital modes. The times are a-changin'.

QSOs by Band and Mode							
Band	**Legacy (CW,FM.PH)**	**Digital (All Types)**	**CW**	**FM**	**Phone**	**Digi**	**Total**
50	29.13%	70.87%	538	221	8441	22387	**31587**
144	63.93%	36.07%	502	1357	12352	8019	**22230**
222	95.34%	4.66%	161	474	3412	198	**4245**
432	93.13%	6.87%	314	739	5916	514	**7483**
902	99.79%	0.21%	152	36	781	2	**971**
1.2G	97.60%	2.40%	211	25	1389	40	**1665**
2.3G	100.00%	0.00%	84	6	281	0	**371**
3.4G	100.00%	0.00%	59	3	123	0	**185**
5.7G	100.00%	0.00%	35	4	79	0	**118**
10G	97.22%	2.78%	31	6	103	4	**144**
24G	100.00%	0.00%	1	11	11		**23**
47G	100.00%	0.00%			3		**3**
75G	100.00%	0.00%			2		**2**
123G	100.00%	0.00%	7	4	12		**23**
Light	100.00%	0.00%	19		6		**25**
Total	**54.88%**	**45.12%**	**2114**	**2886**	**32911**	**31164**	**69075**

Random Observations

Digital modes are here to stay. New strategies are being developed by many entrants to utilize the digital modes in the process. A number of contenders have agreed that many QSO's that may not have been possible in the past are able to be completed via the digital modes.

It is also great to see the promotion of VHF activity in areas of the country that have in the past been absent from the scene. There is a lot of equipment out there, and it only takes a few folks to utilize it, man a few rovers to make things really fun in these "off peak time" contests (i.e. September and January). And a lot can be done with small antennas, especially when there is a lot of local activity.

Category Abbreviations

Single-Op HP/LP – SOHP/SOLP
Single-Op Portable – SOP
Single-Op 3 Bands Only – SO3B
Single-Op FM Only – SOFM
Multiop Limited/Unlimited – LM/UM
Rovers Classic/Limited/Unlimited – R/RL/RU

Band Nomenclature

In order to keep VHF+ contest tables and listings brief, the ARRL uses the following table of abbreviations and single-character designators to indicate band.

Band Name	Abbr	Des.	Band Name	Abbr	Des.
6meters	6M	A	10 GHz	10G	I
2meters	2M	B	24 GHz	24G	J
222Mhz	222	C	47 GHz	47G	K
432MHz	432	D	75 GHz	75G	L
902 MHz	902	9	119 GHz	119G	M
1.2GHz	1.2G	E	142 GHz	142G	N
2.3GHz	2.3G	F	241 GHz	241G	O
3.4GHz	3.4G	G	Light	Light	P
5.7 GHz	5.7G	H			

Single Operator Category Results

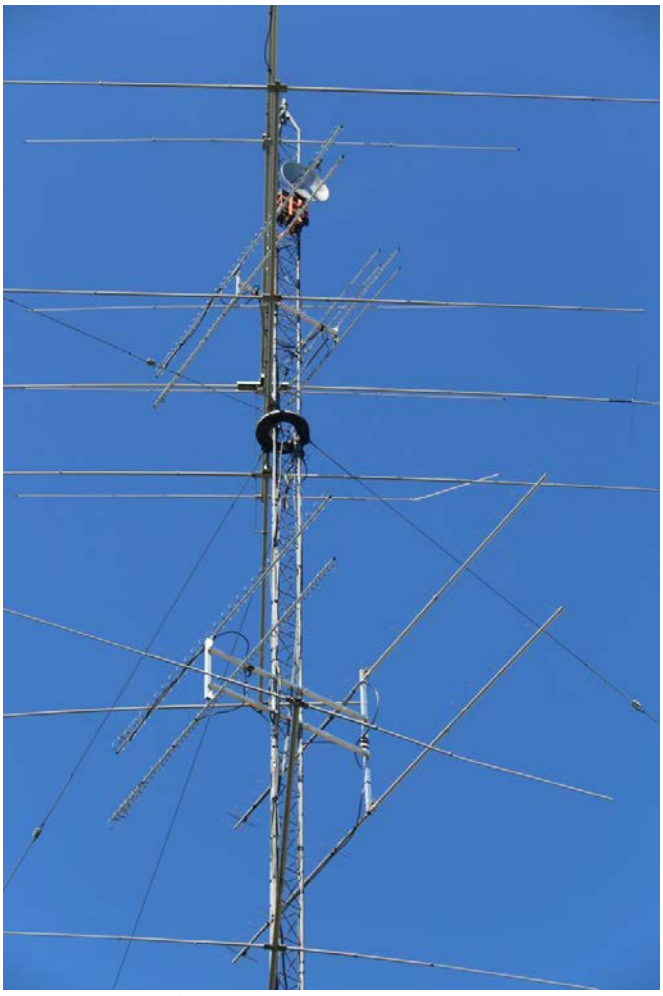
The Single Op Low Power category was again the most popular category with a sizeable increase to 300 entrants, up from 261 in 2019. Single Op High Power entries were 197, up from 152, and Single Op 3 Band entries were up to 174 from 122 last year.

Top Ten, Single Operator, Low Power

Call	*Scores*	*QSO*	*Mult*	*Bands*
WB1GQR (W1SJ)	126,195	672	141	ABCD9EFG
AF1T	124,509	476	147	ABCD9EFGHIJML
K2DRH	80,908	341	179	ABCD9EFG
N2WK	66,679	345	131	ABCD9EFGH
KG6IYN	46,986	377	82	ABCD9EFI
VE3DS	33,614	207	98	ABCD9EFGHM

WA3EOQ	30,805	197	101	ABCD9E
WA2VNV	30,450	250	87	ABCD9E
W3EKT	25,800	203	86	ABCD9EFGHI
WB2JAY	24,050	199	74	ABCD9EFG

After placing in second, third or fourth place for over 10 years, WB1GQR (Mitch, W1SJ, Op) in FN33 notched a win in 2020. His 200 QSO advantage over second place AF1T allowed Mitch to win the victory by a nose in spite of the AF1T microwave advantage. Third and fourth places went to Illinoisan K2DRH and N2WK in FN03. Placing fifth and setting a new Pacific Division Record of almost 47K from the San Diego section was Bruce, KG6IYN. Utilizing bands from 50MHz – 10 GHz, a nice mix of digital and phone QSO's, and apparently working every station that was active in his area allowed him to make this great achievement. VHF contests are not all about winning, but all about activity. There were 249 SOLP entries with 100 QSO's or less, and 186 with 50 or less – thanks to all for getting on!



The N2WK UHF/SHF Rotating tower array – all bands from 432 MHz – 10 GHz – nice! (Photo Courtesy: Ronald Craig, N5BNO, from QRZ.com)

Top Ten, Single Operator, High Power

Call	*Scores*	*QSO's*	*Mults*	*Bands*
K1TEO	397,488	941	273	ABCD9EFGHI
K1RZ	259,700	639	245	ABCD9EFGHI
W3IP	133,037	502	173	ABCD9EFG
W5ZN	123,714	397	237	ABCD9E
WZ1V	86,028	484	134	ABCDE
K1KG	69,402	333	129	ABCD9EFGHI
N3RG	64,320	292	134	ABCD9EFGHI
N1AV	60,600	296	120	ABCD9EFG
K1GX	55,564	304	116	ABCD9EFGHI
KE8FD	50,490	289	153	ABCDE

Jeff, K1TEO returned to the top this year in the Single Op High Power category with a comfortable lead. K1RZ repeated in second place and W3IP moved up from sixth to third. Aided by 103 Rover QSO's and 44 2M EME QSO's, Joel, W5ZN took fourth this year. Jay, N1AV, from Arizona, parlayed 146 Rover QSO's and twenty-five 2M & 23cm EME QSO's into another fine 8th place showing. Jay and Tom, N7GP have really promoted VHF/UHF activity in Arizona. With 260 of his 289 QSO's being digital, KE8FD took tenth place from Ohio.

Top Ten, Single Operator, 3 Band

Call	*Scores*	*QSO's*	*Mults*	*Bands*
N3AAA	28,356	266	102	ABD
KO9A	26,132	257	94	ABD
K1HC	11,872	195	56	ABD
NU6S	8,925	206	35	ABD
K3TEF	8,900	169	50	ABD
W3FAY	8,010	180	45	ABD
KT9L	7,735	126	65	AB
WA4LDU	7,598	114	58	ABD
KA2BPP	7,579	130	53	ABD
WB9TFH	7,524	127	57	ABD

Art, N3AAA, bested Jim, KO9A in a very close race for top spot in the SO3B category. Reviewing their logs, both utilized similar strategies with heavy digital use. 88% of N3AAA's QSO's and 81% of KO9A's QSO's were digital. Both are the owners of new Division records.

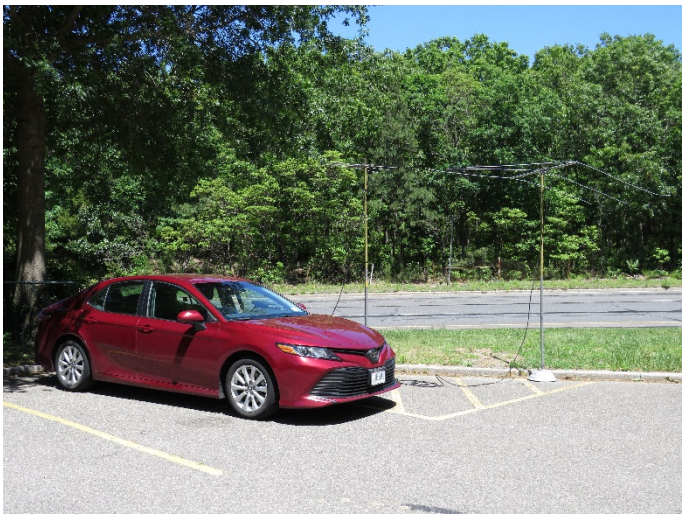
With the proliferation of "off the shelf" transceivers including 6M, 2M and 70cm, this has become a very popular category. Easy to get set up.

Other top ten stations who are new Division record holders are #3 K1HC, #4 NU6S, #8 WA4LDU, and #9 KA2BPP. Congratulations to all!

Top Ten, Single Operator Portable

Call	*Scores*	*QSO's*	*Mults*	*Bands*
WB2AMU	2,835	71	35	ABCD
WD5AGO	1,120	32	20	ABDEFG
NA1KW (N1SPX)	437	25	19	ABD
WK9U	378	25	18	A
VA3TO	360	10	9	IJKM
AG1A	357	35	7	ABDE
K2CZH	351	25	13	ABE
W9SZ	242	11	11	BCDEFG
KR6TOM	155	27	5	BCD
VE3IPS	120	11	5	DE

There were 22 entries in the Single Operator Portable category this year. Ken, WB2AMU, operated from FN30 in central Long Island on a hill at 250' ASL for just under 5 hours Sunday morning to win the category utilizing 6M, 2M, 222 and 432 CW SSB and FM only. Second Place WD5AGO set a new West Gulf Division record operating for a few hours on Saturday, early Sunday Morning and a while Sunday evening from a EM26 hilltop.



WB2AMU operating Portable from Bald Hill, Long Island, NY in FN30 at 250' ASL. Ken was only able to operate five hours Sunday Morning – good enough for #1 in the Single Op Portable Category (Photo Courtesy: Ken Neubeck, WB2AMU)

WD5AGO – Single Op Portable (front) meets NØLD/R – Unlimited Rover in Oklahoma (Photo Courtesy: Tommy Henderson, WD5AGO)

Top Ten, Single Operator, FM Only

Call	*Scores*	*QSO's*	*Mults*	*Bands*
K6LMN	3,366	131	18	ABCD
W6HIP	980	49	14	BCD
N6UTC	882	50	14	ABCD
KC9PCP	720	46	12	ABCD
KW6RON	517	32	11	BCD
KC1MXI	304	37	8	ABD
K6QCB	288	28	8	BD
WG4I	198	18	9	ABCD
KA6KEN	182	19	7	BD
N9HRT	162	28	6	ABD

Roger, K6LMN, led a field of 25 entries in the SOFM category using 6M, 2M, 222 and 432, setting a Southwestern Division record in the process. #6 KC1MXI and #8 WG4I also set new Division records.

Multioperator Category

Continuing the trend from the past few years, many of the established multi-operator groups were active again this year. Limited Category entries were the same at 22, and Unlimited Category entries increased by two to 17.

Top Ten, Limited Multioperator

Call	*Scores*	*QSO's*	*Mults*	*Bands*
N2NT	142,800	707	168	ABCD
AA4ZZ	100,555	519	169	ABCD
N8GA	73,179	384	173	ABCD
K5QE	47,142	253	162	ABCD

WD9EXD	39,634	249	149	ABCD
W9VW	27,018	236	114	ABDE
W1QK	23,430	320	71	ABCD
WA3EKL	14,580	254	60	AB
VE3MIS	6,400	109	50	ABCD
WB4WXE	4,640	97	40	ABCD

N2NT repeated in #1 position this year in the Limited MultiOp category, with a cooler shack having found a new fan arrangement in the basement operating area. Returning to second place was AA4ZZ, albeit with only a two man crew. Their story:

"In response to COVID we operated with just two operators, Roger, W4MW on six and myself (AA4ZZ) on 144, 222 and 432. Because of the significantly reduced number of operators, we reduced the complexity of our station somewhat as well. We used one TS-2000 on 144, 432 and on 222 with a new Q5 Signal transverter. This was the first contest where a number of stations successfully asked us to QSY on FT8. Hopefully these FT8 QSYs become a regular part of VHF Contesting. We largely missed out on the big opening to that was happening in the NE. We had no Es on six." (*from 3830scores.com*)

N8GA downsized from the Unlimited Category to place 3rd this year in LM, with a bigger score to boot. Over 90% of their contacts were digital. K5QE endured poor condx in Texas to return to fourth place.

Top Ten, Unlimited Multioperator

Call	*Scores*	*QSO's*	*Mults*	*Bands*
W2SZ	213,624	652	216	ABCD9EFGHIJ
W2EA	136,136	621	154	ABCD9EFGHIP
W4IY	65,919	426	129	ABCDE
N4SVC	42,723	248	141	ABCD9E
KV1J	30,800	293	88	ABCD9EF
KD2LGX	30,345	227	105	ABCD9E
W4ZST	24,255	211	99	ABCDE
KE1LI	12,354	192	58	ABCD
N2BJ	11,524	161	67	ABCDE
W3KWH	5,253	90	51	ABDE

W2SZ and W2EA again placed #1 and #2 respectively in the Unlimited Multi Operator category. The W4IY who placed #6 in the Limited Multiop category last year, joined the big boys for a respectable 3rd place showing this year.

The N4SVC team placed 4th from the Florida Panhandle. Per operator N2CEI (from 3830scores.com):

"Not a Fun Contest but still honing our Skills! No rovers in Florida since Sandra and I have parked the Trailer last January. Three Storms forced us to shut the station down with a near strike in the woods. Many Locals have not got back on the air since the first Hurricane threat back in Aug. Won't expect them back on the air until next spring. And that's a maybe.

6M was horrible and many insisted on sitting on FT-8 making countless busted QSO's. Where a shorter exchange format such as SSB (remember that mode?) or FT-4 would have worked better. The ones that knew this were on MSK144 making QSO's but you do run out of stations to run with this capability. With those that were on and we ran with, we had a 100% success rate on 6M and near perfect on 2M. Anymore, what would we do without the chat pages, the phone calls, the e-mails and the digital formats we use on the air. And yet with all of this, the QSO counts are still declining. What a Hobby!"

Here is the annual picture of the W2EA (#2 Unlimited MultiOp) crew (It's all about the picture!). South Jersey Mountain Toppers ARC, aka W2EA -- Left to right: Ken K2WB, Holden KD2JPV, Al KB3SIG, Bill KD2MPC, Michael KB1JEY, Fran AA2AW, Bob W2SJ, Ted N8MP, and Al N3AVT (Photo courtesy Ken Botterbrodt, K2WB)

The Rovers

This year, the total number of rovers was about the same as 2019. More and more it seems there are organized "swarms" of rovers hitting the road. Not only do they help each other, but also those fixed stations in their general area. Some pretty good swarms in Texas, Oklahoma, Ontario and Arizona.

Top Ten, Classic Rover

Call	*Scores*	*QSO's*	*Mults*	*Grids*
K8GP/R	198,488	768	172	4
N7GP/R	79,918	645	62	4
VE3OIL/R	70,551	291	117	7
VE3SMA/R	40,502	259	77	6
KJ7JC/R	33,456	317	51	4
AG4V/R	31,668	205	91	6
W3ICC/R	30,355	273	65	5
N7OW/R	28,557	281	57	10
W5VY/R	20,097	146	87	4
W2EV/R	15,084	216	36	4

In the Classic Rover category, Terry, W8ZN and Andy, K1RA put the revamped K8GP/R machine on the road for the first time in several years. The setup is amazing – they are able to erect a fine two tower station in less than 10 minutes! Operating from 4 grids, they snagged the top spot in this category Check out their write up in the Soapbox section: https://contests.arrl.org/sepvhf/soaps/2020/.

Tom, N7GP/R activated four grids in Arizona to move up to second place with over 600 QSO's in the log. With equipment from 50 MHz – 3.4 GHz, he was able to make 220 QSO's with a swarm of 4 rovers plus many QSO's with the burgeoning VHF/UHF populace in the area as there was essentially no propagation enhancement.

#3 VE3OIL/R (7 grids) and #4 VE3SMA/R (6 Grids) made many folks happy.

Top Ten, Limited Rover

Call	*Scores*	*QSO's*	*Mults*	*Grids*
NF2RS/R	56,499	481	111	8
KJ2G/R	17,524	247	52	4
N6RH/R	14,042	278	34	6
N6GP/R	14,022	248	41	5
AE5P/R	12,710	281	31	6
K5ND/R	7,110	153	45	10
W5TN/5	6,808	148	37	4
KX6A/R	6,275	208	25	2
WB8LYJ/R	6,072	102	44	4
AF1R/R	5,600	146	28	6

Limited Rover NG2E/R operated on 2M from FM08 and FM18 (Photo courtesy John Haefner, NG2E)

The NF2RS/R crew (K2QO and K2ZR) again took the top spot in the Limited Rover category. Not without some issues, though – their 222 radio had RX problems and they could only eek out a few QSO's with some big guns on that band..

KJ2G/R moved up to second, followed by several rovers from CA and TX placing 3rd thru 8th.

Top Ten, Unlimited Rover

Call	*Scores*	*QSO's*	*Mults*	*Grids*
N2SLN/R	32,718	299	82	6
NØLD/R	28,329	247	71	7
K6VHF/R	12,441	210	39	8
KD5IKG/R	8,550	126	45	4
K9JK/R	8,494	193	31	4
W9YOY/R	2,898	92	23	4
KJ1K/R	1,426	38	23	3
KG6CIH/R	1,185	25	15	2
VE7AFZ/R	1,037	57	17	3
KD6RMS/R	420	22	15	2

NØLD/R at Mt. Scott in SW Oklahoma, grid square EM04. (ed. they were loud in central Texas from here!) (Photo courtesy Harvey Jones, WØHGJ)

In the Unlimited Rover Class, N2SLN/R (with W2BDN), activated six grids and moved up from second place last year to a win this year. Randy, NØLD/R (with KD9DUK and WØHGJ) activated 7 grids from OK this year to place second. Randy is really drumming up rover activity in the Oklahoma and North Texas area. From his 3830 scores post:

"Due to Covid-19, we decided to stay at home instead of a hotel. This limited us to Oklahoma - so we operated from the NE part of OK on Saturday and the SW portion on Sunday. We normally operate as part of a rover pack, but one of the rovers had other plans. Indeed, the other rover could only operate for a portion of Saturday. Initially, we were going to operate CLASSIC with two people per rover, but due to the changing plans, we decided to operate 3 people which put us firmly back in UNLIMITED territory. We operated from some unique hilltops this trip, since it was initially a CLASSIC rover plan. We truly enjoyed working people from all over - instead of focusing on rover to rover activity. Memorable points were the highway overpass west of EL RENO, OK and Mt Scott near LAWTON, OK."

Randy has a great website: www.okrover.info

In-depth Stories and Features

Be sure to read the detailed discussions and blow-by-blow reports of the contest provided by several of the top stations; Single Op, Multiop, and Rovers. They give a detailed look at what the contest was like in their area and in their categories.

The Texas Rover Swarm – L-R KD5IKG/R, W5TN/R, K2EZ/R and KA5D/R near Lago Vista, in grid square EM10. (Photo courtesy David Douglas, W5TN)

Affiliated Club Competition

Thirty-seven clubs entered the Affiliated Club competition, up from 30 in 2019. No club had the requisite number of entries for the Unlimited category.

Twenty nine clubs had team efforts in the Medium category. The Mt. Airy VHF Radio Club (Pack Rats) again took the top position. The Potomac Valley Radio Club placed second and the North East Weak Signal Group placed third.

There were eight clubs competing in the Local category. With five entries, Orleans (NY) County Amateur Radio Club took first place. Niagara Frontier Radiosport placed second.

Affiliated Club Competition

Club	*Score*	*Entries*
Unlimited		
No Entries		
Medium		
Mt Airy VHF Radio Club	724,870	29
Potomac Valley Radio Club	522,060	44
North East Weak Signal Group	355,518	13
The Ontario VHF Association	297,261	28
Arizona VHF Society	235,065	12
Society of Midwest Contesters	177,501	25
Carolina DX Association	104,361	8
Pacific Northwest VHF Society	98,608	36
Southern California Contest Club	89,613	19
Northern Lights Radio Society	75,910	11
Yankee Clipper Contest Club	61,642	10

Roadrunners Microwave Group	58,709	4
Fourlanders Contest Team	55,486	14
Arizona Outlaws Contest Club	43,391	12
Michigan VHF-UHF Society	43,168	6
Badger Contesters	36,355	9
Northern California Contest Club	34,615	10
Frankford Radio Club	26,536	11
South Jersey Radio Assn	24,700	11
Hudson Valley Contesters and DXers	12,128	5
Northeast MD Amateur Radio Contest Soc	11,565	3
North Texas Microwave Society	9,610	4
DFW Contest Group	8,964	3
Wayne County Amateur Radio Club	6,044	5
Grand Mesa Contesters of Colorado	5,378	4
Contest Club Ontario	4,882	3
New Mexico VHF Society	1,791	4
Minnesota Wireless Assn	923	4
Florida Contest Group	103	5

Local

Orleans (NY) County Amateur Radio Club	138,494	5
Niagara Frontier Radiosport	57,004	4
Eastern Connecticut ARA	28,740	3
Chippewa Valley VHF Contesters	25,788	3
CTRI Contest Group	22,240	3
Stoned Monkey VHF ARC	11,590	3
Bristol (TN) ARC	6,026	3
Bergen ARA	4,081	5

Soapbox!

Don't miss the compilation of comments - see https://contests.arrl.org/sepvhf/soaps/2020/ for some great stories and photos.

Summary

It is great to see the increased participation in this running of the September VHF Contest in spite of the poor conditions that prevail this time of the year. The huge number of entrants have 50 QSO's or less and still take the time to submit a log. We are very appreciative of every log received no matter what the size. Thank You!

Time for me to turn the article over to a number of entrants who took the time to tell us about their adventures in the contest – so please read ahead for a number of cool stories.

Also, be sure to check out the soapbox comments and photos at https://contests.arrl.org/sepvhf/soaps/2020/

Hope to see everyone in the 2021 running!

73, Gator, N5RZ

KG6IYN (#5 USA Single Operator Low Power) QTH: San Diego DM12 *By Bruce Kripton, KG6IYN*

With all of the Covid-19 related restrictions, my usual hilltop locations as well as other public locations were gated and closed. I resorted to setting up what would have been a moderate hilltop deployment in my backyard (similar to the June 2010 QST Cover) with two separate rotating masts carrying the Yagis in a much less than optimally spaced configuration due to lack of real estate to spread out as I would have been able on a hilltop. The omnidirectional verticals were already up at the home QTH. Note - "much less than optimally spaced" meant actual antenna elements from rotating masts "banging" into each other when the wind was higher than 20 MPH and or tearing leaves off of the surrounding trees - so no, I won't be doing this again in January if I'm stuck at home due to closures and Covid restrictions.

About seven years ago we started to leverage the VHF contests for our local ARES, RACES, CERT, REACT and other amateur radio disaster and emergency support teams as an "activity weekend" to allow them the opportunity to see how far whatever radio gear they might own would work in a "non-repeater" environment. This afforded operators the ability to learn were they could communicate reliably, on what bands, with FM but also SSB where many of the folks had that capability but had never used it on their "DC to Daylight" rigs.

Overall, it's now a reoccurring "test" or simulation event for new operators and to keep the more experienced ones in practice, both in learning how to operate on congested frequencies and the "joy" of many FM stations stacked one on top of another when it's busy. Many folks are reporting their first contacts using SSB and most return for future events.

We have been successful in getting other regional emcomm groups engaged and now we usually have a significant population of users in and around southern

California, but also extending into Mexico to the south, and Arizona and Nevada to the east.

Conditions for the "Lower Left Coast" wasn't great on 6 Meters for most folks - lack of grid squares on my side certainly affected my score where those multipliers in a June event really stand out. If it wasn't for FT8 and the handful of grid squares gained by some very sporadic "one timers" that came and went quickly, there would have been almost no 6 Meter score at all.

As expected, 2 meters and 70 cm were the better bands, as mentioned due to a large turnout of emcomm folks plus the usual contest contingent, rovers and travelers heading out of town for the weekend. I was pleased that an increasing number of folks are bringing their 220 FM and SSB gear back on the air for these events, as well as folks on 1296. We had a modest inversion layer that persisted until mid-Sunday afternoon that afforded many folks in San Diego contacts 150-250 miles plus along the California coast - and many thanks to the Rovers and Portable Operators that were on the other side of those contacts for grid squares not normally seen in the recent VHF contests.

Looking forward to January 2021!

The "aluminum inventory" pressed in to service if there's interest:

2X - M2 6M5X's Horizontal (at less overall height and less stacking distance than recommended)

2X - Cushcraft 13B2's Horizontal

1X - Cushcraft 147-11 Vertical

1X - M2 222-10EZ Vertical

1X - M2 432-9WL Horizontal

1X - Cushcraft 719B Vertical

12' Loopers for 902 and 1296

Vertical Omni's for 6, 2, 220, 446, 900, 1296

Microwave stuff was DB6NT transverter "close in gear" with small yagis and 12" dual feed dish's to work KM6ZBE at about a four block distance for the extra couple of bands

73 - Bruce KG6IYN

WD5AGO – #2 USA Single Op Portable
Oklahoma EM26 *By Tommy Henderson, WD5AGO*

First time out for the September VHF in years. Usually because School (my work) has started up and is also a Drag Racing weekend so time is an issue. This year with COVID, most courses was on-line so giving me some free time to get the antennas mounted on the truck and head for a hill top as we live in an HOA w/o VHF antennas now going on 17 years. We get by on microwave EME at the house because we use a small dish and they (HOA) tolerate or does not know about it. That is one reason we run QRP.
No band openings on 6m meant we had to work harder on the microwave bands. Here is the setup: IC706MII for 6-2-70cm at 10 W, DEMI Transverter with HB amps/preamps on 23 (10W), 13 (4W) and 6cm (1W). Antennas 6m vertical or Moxon., 2m 7ele M2, 70cm HB 10ele, 23cm HB 25ele, 13cm and 6cm used two different HB Horns. The rovers really helped out as tropo band conditions was fair at best.

Was only able to work a few hours total on Sunday.

WD5AGO Single Op Portable (Photo Courtesy Thomas Henderson, WD5AGO)

N2NT #1 Limited Multi Operator from FN20si
By John Golomb, N2NC, from 3830scores.com

Biggest improvement -- finding a fan arrangement to better cool the N2NT VHF shack. All that equipment in a 12' x 10' basement room generates a lot of heat. Nice to hit the 100 QSO mark on 432 again. It's been a while.

We had good periods of tropo, especially up the NE coast Sunday morning. VE1SKY was in on 2m FT8 for hours. A random QSO on 2m SSB with VA2BN (400 miles) was a highlight. Our FT8 QSO with AA4ZZ on 432 was cool too. Amazing to see the mere whisper on the waterfall decode.

We're all still adapting to the FT8 "disruption" that started a few years ago, but it is undeniable that it enables us to make more random DX QSOs > 250 miles.

Great to hear K8GP/R on the road again. Thanks to all the rovers.

Thanks to Andy, N2NT and his XYL Bonnie for being such great hosts.

KØBAK/R – Classic Rover FM19, FM29, FN20

By KØBAK, reprinted with permission from October 2020 Pack Rats Cheese Bits Newsletter

Since I was in the middle of working on my van's mast system all I could do for the September contest was use my old walk-up mast and a 6m halo, in a token effort in a few local grids just to submit a log. Saturday's plan was to activate FN20, FM29, FM19, and FN10. The first two grids would be from POTA parks to get park activation credits, and the last two would be in the Gap PA area at a township park and school that has been used often by me and other rovers.

I installed the walk-up mast system pivot into the hitch receiver at the front of the van, so I wouldn't have to remove my screwdriver antenna that's installed on the back hitch. The walk-up mast sections barely fit in the back of the van on a diagonal from floor to ceiling, and I recalled that the smaller minivan I used to use as a rover had no problem with having those mast sections on the floor since there was a 10' space from the rear hatch to the front. It's ironic that the much larger TV van has less room for big objects. I tested the system at home, using two coax cables linked together with a couple adapters.

Arriving at a crowded Valley Forge Park a little late, I set up in the less-used and locally high NPS parking lot at Washington Chapel. Parking with the nose of the van against a grassy area gave me enough room to build and raise the mast and antenna. An 18-foot run of coax ran down the mast, and a 10-foot run with a strain-relief loop on my vehicle radio antenna continued to my fairly new 6m amplifier and 50v power system. I wrote about that in a previous Cheese Bits article.

Using the radio's SWR readout showed a disappointing reading of about 1.7, barely good enough to use especially since I didn't want to waste time at the beginning of the contest trying to make it better. My intention with the amp was to use it when necessary, but otherwise use barefoot power from the Flex 6500 radio. After checking for SSB and CW signals and finding {heavy sigh} nothing, I fired up WSJT. Even without an obvious opening, there was plenty of activity on FT8, and I was busy making or attempting to make contacts leaving little time for CQing. When I couldn't get a response from a weak signal, even after finding an (apparently) open spot near the other station to transmit, I turned on the amplifier to put out about 400-500w. I was happy that this succeeded in getting a response about half the time I tried it.

After about a half hour, when I made quite a number of attempts to get a new grid using power, I smelled something burning. Of course, I turned off the amp, but then tried again a bit later. Again, I smelled something when I exceeded 6-8 transmissions in a row. When I first parked, I saw what I assumed were wedding guests arriving based on how they were dressed. So, I hoped that maybe there was outdoor cooking that I smelled, however unlikely. When I got out of the van and stretched my olfactory sensors as much as I could, I couldn't smell anything burning. The source was my new 6m higher power system {another heavy sigh}. For the rest of my rove, I still used the amplifier when necessary, but stopped after four unanswered attempts.

After seemingly exhausting the available FT8 stations, I checked down band and made 3 SSB contacts—ah, good old SSB with human voices. I then packed up the mast system and antenna and proceeded to Ridley Creek State Park in FM29. I drove to my standard POTA operating location, somewhat out of the way and featuring low branches over the narrow park road that require me to drive a 3-dimensional route. Despite being a nice day, I was glad to see that most of an entire tier of parking was open, so I had plenty of space to raise my mast again. My initial SWR was the same as at Valley Forge. There was a little less activity on 6m FT8, but the drop-off from the initial 2 hours of the contest wasn't bad.

After failing to make several contacts that I thought ought to have been easy based on received signal strength, I noticed very low power out and high SWR on the Flex GUI. I figured I'd first try re-doing the connections, starting with the connection between my 10-foot and 18-foot coax that includes both N-to-UHF and female-to-female adapters. After reconnecting, the SWR was back to the meh level from before. Since there were only a couple new grids available with weak signals, I didn't have to run the amplifier much to make those weak contacts. After having a couple conversations with park visitors curious about what I was doing, I took advantage of a comfort station that's another advantage of this park location and packed up again for FM19.

The drive to Salisbury Township Park was most of an hour. I arrived as sunset was starting, and again found a mostly empty parking lot to set up. Activity was down, but I stayed busy chasing stations whether they were CQing or not. I did resort to CQing myself a bit more but didn't

have to call for long before getting or trying for another contact. During one of the attempts that required the amplifier, I noticed that the high temp / high SWR indicator light was on. After turning off the amp, again my radio showed high SWR, and I reconnected my adapters as before. This time reconnecting a couple times didn't solve the problem.

At this point, it was almost fully dark, so I gave up on fixing the problem. Considering the SWR problem and feeling quite tired and sore partly stemming from the morning's bicycle ride, I gave up on setting up at the FN10 location. The good news is that I spent more time than expected at the first three grids because I was well engaged with trying to make contacts.

The next day I found that one of the two tuning bars for the antenna was loose, which very well could have caused the SWR problems. I have to say, the mechanical design of the M² halo is pretty poor for a mobile install with lots of shaking and stress—expecting small set screws to hold a part of the antenna that's also used for mounting isn't realistic. In my defense, this was one of my first two VHF antennas, so I knew next to nothing about what to look for in a mobile horizontal antenna. With a rotator and gain antennas, I'd use my 6m Moxon as many rovers do.

The sudden SWR problems I experienced reinforced the need to monitor, alarm, and automatically react to high SWR in operation. I already have a digital SWR/power meter with remote probes that I will install on the 4 low bands. One feature of that meter I intend to implement is a high-SWR signal that could be used as a

RF safety cut-off. (As far as I can determine, there is no real transmit inhibit input to the Flex that could cut off transmit once begun.) This SWR monitoring and hopefully safety is even more important for my 3 TE Systems amplifiers, which famously have no protection circuitry of their own.

The more serious problem of a burning smell after consecutive amplifier usage was not solved. Naturally I assumed my wiring was faulty, so I removed the rack shelf that contains the current monitoring, fuse, switches, and inrush limiting resistor box. I expected to find some melted insulation or a burn mark on the wood I used for the rack shelf; the wood of course makes burning smells scarier. I couldn't see anything, and all connections were tight; I smelled everything closely and didn't detect anything. Either I couldn't find the problem on my rack shelf, or the burning was coming from somewhere else—the amplifier, the battery, the RF connections? The only way to reproduce the problem is to use the amplifier hard while I try to sniff around to identify the source before heat damage or a fire. Not looking forward to working on this.

Contest summary: My reason for going out on a mini rove was just to have a log to submit, even if I knew my score would be noncompetitive. I had to enter as a Classic Rover rather than a Limited Rover due to using more than 200 watts sometimes, so my score will look even worse within my category. I had 72 QSOs to 15 grids; including 3 bonus grids my claimed score was 1296. Pretty bad, but better than sitting out the contest.

KØBAK/R (Photo courtesy October 2020 Pack Rats Cheese Bits Newsletter)

K2TXB Single Operator High Power from FN20

By K2TXB, reprinted with permission from October 2020 Pack Rats Cheese Bits Newsletter

Well, as usual, it was a fun contest. But things did not go as planned. I had an hour of moon time right at the start of the contest, so my first contact was with JHØBBE in Japan, PM97, right at 1800z. That was followed by EN50, DM03 (a new one for me), and DM42 on 2 meters. By then the moon was in the trees here so I went to 2 meter SSB. After working all the stations I could find, I went to six meter SSB. But I could not find anyone actually running the contest – 4 or 5 stations were chatting but that was all. So I sighed and proceeded to six meter FT8. Boy, the band was hopping with activity. In fact, six meter FT8 showed a lot of activity throughout the contest. I did hear some activity on 50.318 as I tuned by, but by the time I got set up for FT4 there was no one there. I didn't try FT4 for the rest of the contest. The FT8 activity on six kept me going until 0200z when I finally found things slowing down. So at 0200z I decided to go back to 2 meters for a while. My plan was to operate until about midnight and then get some sleep. Then get up early in the morning (0400 local) and work 2 meter EME through the European window, and then go back to terrestrial operation. Well when I switched to 2 there were no stations heard! Then I noticed the s-meter was at zero. Something was wrong on the tower. I never did figure out why my preamp stopped working – later I will take it apart and see, but that was a big blow to my plans. Instead of 4 hours sleep, I took 8. Then worked six for a while until I finally decided to "bite the bullet" and see if I could fix the 2 meter rig. I have an

injured foot and I'm supposed to stay sock-footed and be careful with it, but I decided to be careful and attempt the repair work anyway. After cranking the tower down, it became obvious that the preamp was blown. Fortunately, I had a new spare that I bought last month from WA2ODO. It tested good so I went back out to the tower, preamp in hand, but there was a problem. The new preamp box had a pair of nice 'ears' sticking out on each end, for purposes of bolting or screwing it down. Unfortunately, that meant that it would not fit in my weatherproof box. After taking a hacksaw to the preamp and fixing another small problem in the tower box, raising the tower, and all with trying to be careful of my injured big toe, I finally got done with the repair. At 1551z, I worked PA5Y in JO21 just as his moon dropped below the horizon. I had lost the whole European window! But I stayed with the EME, working US stations and others, until local moonset at around 2000z. In all I made 17 EME contacts, in 17 grids, including 4 in Japan, one in New Zealand, and one in Guadeloupe! For the rest of the contest I alternated between six and two meter FT8. With my small, and low six meter antenna, and no e-skip, I was not going to get a lot of dx, but the high activity level made up for that. For six meters I had 111 Q's in 28 grids. On two meters my final count was 98 and 47 grids. A nice surprise on 2 meter terrestrial was being called by VE1SKY in FN74. I was also surprised on six by having AA4ZZ respond to my CQ. I usually have to work them on meteor scatter. I never heard them on 2 meters though. Total score for the 2 band contest entry ended up being 15,675. Not great but considering my difficulties and lack of any band openings, I guess it's not so bad, either.

The ops who run the Rover machines L-R KA5D, KB5PRZ, KD5IKG and W5TN, all from the Austin, TX Area (photo courtesy David Douglas, W5TN)

Regional Leaders

West Coast Region

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

N7GP/R	79,918	R
KJ7JC/R	33,456	R
N7OW/R	28,557	R
N7DSX/R	11,388	R
N6ZE/R	4,370	R
N6GP/R	14,022	RL
KX6A/R	6,275	RL
KA7RRA/R	5,044	RL
KG6BXW/R	3,007	RL
WB6HUM/R	2,304	RL
K6VHF/R	12,441	RU
VE7AFZ/R	1,037	RU
KD6RMS/R	420	RU
N1AV	60,600	SOHP
W7MRF	24,024	SOHP
KE7SW	13,566	SOHP
N7VD	11,505	SOHP
N7EPD	11,400	SOHP
KG6IYN	46,986	SOLP
K6MI	8,900	SOLP
WZ8T	8,534	SOLP
K2GMY	8,330	SOLP
N7RK	5,070	SOLP
KR6TOM	155	SOP
KK4BZ	36	SOP
KN6BXC	2	SOP
KF7KTC	2	SOP
NU6S	8,925	SO3B
N7IR	6,840	SO3B
N7QOZ	2,728	SO3B
WB6HYH	2,124	SO3B
W6NCB	1,960	SO3B
K6LMN	3,366	SOFM
W6HIP	980	SOFM
N6UTC	882	SOFM
KW6RON	517	SOFM
K6QCB	288	SOFM
WO1S	1,121	LM

W6FM	231	LM

Midwest Region

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

K2EZ/R	13,494	R
KT5TE/R	12,030	R
KBØYHT/R	6,231	R
KCØP/R	5,053	R
NØHZO/R	4,960	R
N6RH/R	14,042	RL
K5ND/R	7,110	RL
W5TN/R	6,808	RL
KI5FIQ/R	5,520	RL
KA5D/R	3,250	RL
NØLD/R	28,329	RU
KD5IKG/R	8,550	RU
K5TR	30,780	SOHP
K5LLL	17,871	SOHP
WQ5S	7,178	SOHP
WØGHZ	7,172	SOHP
KØAWU	5,856	SOHP
ABØRX	7,772	SOLP
NØLL	4,332	SOLP
KAØPQW	3,570	SOLP
N5CXX (K3NT,op)	3,069	SOLP
AA5AM	1,440	SOLP
WD5AGO	1,120	SOP
NA1KW (N1SPX,op)	437	SOP
NØJK	42	SOP
NØUR	3,960	SO3B
KØVG	1,221	SO3B
WBØNRV	429	SO3B
K5TA	425	SO3B
N5KS	399	SO3B
KG7AZY	44	SOFM
KJ5T	2	SOFM
K5QE	47,142	LM
WQØP	3,710	LM
K5LRW	783	LM
KC5MVZ	1,300	UM

Central Region

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

VE3OIL/R	70,551	R
VE3SMA/R	40,502	R
VE3WJ/R	11,656	R
K9TMS/R	7,672	R
VA3ELE/R	2,100	R
N9REP/R	3,840	RL
VE3RKS/R	1,464	RL
K9JK/R	8,494	RU
W9YOY/R	2,898	RU
KE8FD	50,490	SOHP
WØUC	41,750	SOHP
KB8U	27,600	SOHP
N8LRG	22,325	SOHP
VE3ZV	17,794	SOHP
K2DRH	80,908	SOLP
VE3DS	33,614	SOLP
K9MU	20,020	SOLP
W9GA	15,604	SOLP
KF8QL	7,497	SOLP
WK9U	378	SOP
VA3TO	360	SOP
W9SZ	242	SOP
VE3IPS	120	SOP
W9CY	42	SOP
KO9A	26,132	SO3B
KT9L	7,735	SO3B
WB9TFH	7,524	SO3B
N9TF	7,260	SO3B
WB8BZK	5,856	SO3B
KC9PCP	720	SOFM
N9HRT	162	SOFM
KD9OIN	2	SOFM
N8GA	73,179	LM
WD9EXD	39,634	LM
W9VW	27,018	LM
VE3MIS	6,400	LM
K9KLD	4,134	LM
N2BJ	11,524	UM

Southeast Region

(Delta, Roanoke and Southeastern Divisions)

K8GP/R	198,488	R
AG4V/R	31,668	R
W5VY/R	20,097	R
AE5P/R	12,710	RL
WB8LYJ/R	6,072	RL
W4YN/R	1,150	RL
WD5HJF/R	352	RL
K3XY/R	195	RL
W3IP	133,037	SOHP
W5ZN	123,714	SOHP
N4QWZ	37,530	SOHP
K1HTV	31,680	SOHP
W4NF	11,088	SOHP
W4EUH	6,149	SOLP
KG5CCI	5,980	SOLP
KC7RW	3,115	SOLP
N4RA	2,706	SOLP
AA4DD	2,691	SOLP
KO4ELL	84	SOP
WA4LDU	7,598	SO3B
K4MY	4,753	SO3B
KV4ZY	3,444	SO3B
K4FJW	3,320	SO3B
W4WWQ	2,910	SO3B
WG4I	198	SOFM
N4QX	18	SOFM
K4NRT	15	SOFM
K3TW	8	SOFM
KG5FHU	6	SOFM
WB2FKO	6	SOFM
AA4ZZ	100,555	LM
WB4WXE	4,640	LM
W4IY	65,919	UM
N4SVC	42,723	UM
W4ZST	24,255	UM

Northeast Region

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

W3ICC/R	30,355	R
W2EV/R	15,084	R
KV2X/R	5,376	R
AE2DM/R	4,480	R
WB2VVQ/R	1,896	R
NF2RS/R	56,499	RL
KJ2G/R	17,524	RL
AF1R/R	5,600	RL
WB2SIH/R	3,549	RL
N1QDQ/R	2,325	RL
N2SLN/R	32,718	RU
KJ1K/R	1,426	RU
KG6CIH/R	1,185	RU
K1TEO	397,488	SOHP
K1RZ	259,700	SOHP
WZ1V	86,028	SOHP
K1KG	69,402	SOHP
N3RG	64,320	SOHP
WB1GQR (W1SJ, op)	126,195	SOLP
AF1T	124,509	SOLP
N2WK	66,679	SOLP
WA3EOQ	30,805	SOLP
WA2VNV	30,450	SOLP
WB2AMU	2,835	SOP
AG1A	357	SOP
K2CZH	351	SOP
W3MEO	25	SOP
K2PHD	24	SOP
N3AAA	28,356	SO3B
K1HC	11,872	SO3B
K3TEF	8,900	SO3B
W3FAY	8,010	SO3B
KA2BPP	7,579	SO3B
KC1MXI	304	SOFM
WB2AIV	1	SOFM
N2NT	142,800	LM
W1QK	23,430	LM
WA3EKL	14,580	LM
W1FM	2,133	LM
N1NW	1,392	LM
W2SZ	213,624	UM

W2EA	136,136	UM
KV1J	30,800	UM
KD2LGX	30,345	UM
KE1LI	12,354	UM

Division Winners

Classic Rover

Atlantic	W3ICC/R	30,355
Central	K9TMS/R	7,672
Dakota	KCØP/R	5,053
Delta	AG4V/R	31,668
Great Lakes	WB8TGY/R	48
Hudson	NJ1F/R	1,558
Midwest	WAØCNS/R	1,330
New England	WB2VVQ/R	1,896
Pacific	W2TAR/R	686
Roanoke	K8GP/R	198,488
Southwestern	N7GP/R	79,918
West Gulf	K2EZ/R	13,494
Canada	VE3OIL/R	70,551

Limited Rover

Atlantic	NF2RS/R	56,499
Central	N9REP/R	3,840
Delta	AE5P/R	12,710
Hudson	WB2SIH/R	3,549
New England	KJ2G/R	17,524
Northwestern	KA7RRA/R	5,044
Pacific	KG6BXW/R	3,007
Roanoke	W4YN/R	1,150
Rocky Mountain	ABØYM/R	1,078
Southeastern	WB8LYJ/R	6,072
Southwestern	N6GP/R	14,022
West Gulf	N6RH/R	14,042
Canada	VE3RKS/R	1,464

Unlimited Rover

Atlantic	N2SLN/R	32,718
Central	K9JK/R	8,494
New England	KJ1K/R	1,426
Southwestern	K6VHF/R	12,441
West Gulf	NØLD/R	28,329
Canada	VE7AFZ/R	1,037

Single Operator, High Power

Atlantic	K1RZ	259,700
Central	WØUC	41,750
Dakota	WØGHZ	7,172
Delta	W5ZN	123,714
Great Lakes	KE8FD	50,490
Hudson	W2KV	31,248
Midwest	KØTPP	4,756
New England	K1TEO	397,488
Northwestern	KE7SW	13,566
Pacific	K6KLY	10,535
Roanoke	W3IP	133,037
Rocky Mountain	W9RM	3,780
Southeastern	WA4GPM	10,480
Southwestern	N1AV	60,600
West Gulf	K5TR	30,780
Canada	VE3ZV	17,794

Single Operator, Low Power

Atlantic	N2WK	66,679
Central	K2DRH	80,908
Dakota	KAØPQW	3,570
Delta	KG5CCI	5,980
Great Lakes	KF8QL	7,497
Hudson	WA2VNV	30,450
Midwest	ABØRX	7,772
New England	WB1GQR (W1SJ,op)	126,195
Northwestern	WZ8T	8,534
Pacific	K6MI	8,900
Roanoke	N4RA	2,706
Rocky Mountain	NJ7A	299
Southeastern	W4EUH	6,149
Southwestern	KG6IYN	46,986
West Gulf	N5CXX (K3NT,op)	3,069
Canada	VE3DS	33,614

Single Operator, Portable

Atlantic	W3MEO	25
Central	WK9U	378
Hudson	WB2AMU	2,835
Midwest	NA1KW (N1SPX,op)	437
New England	AG1A	357
Pacific	KR6TOM	155
Roanoke	KO4ELL	84
Southwestern	KK4BZ	36
West Gulf	WD5AGO	1,120
Canada	VA3TO	360

Single Operator, 3 Band

Atlantic	N3AAA	28,356
Central	KO9A	26,132
Dakota	NØUR	3,960
Delta	K5OLV	1,073
Great Lakes	N9AGC	740
Hudson	KA2BPP	7,579
Midwest	KØPHP	324
New England	K1HC	11,872
Northwestern	N7QOZ	2,728
Pacific	NU6S	8,925
Roanoke	WA4LDU	7,598
Rocky Mountain	WBØNRV	429

Southeastern	K4MY	4,753
Southwestern	N7IR	6,840
West Gulf	N5KS	399
Canada	VE3PJ	3,420

Single Operator, FM Only

Atlantic	WB2AIV	1
Central	KC9PCP	720
Delta	K4NRT	15
New England	KC1MXI	304
Northwestern	K7IMA	56
Pacific	N9VM (N1VM,op)	135
Roanoke	N4QX	18
Rocky Mountain	KG7AZY	44
Southeastern	WG4I	198
Southwestern	K6LMN	3,366
West Gulf	KJ5T	2

Limited Multioperator

Atlantic	WA3EKL	14,580
Central	WD9EXD	39,634
Great Lakes	N8GA	73,179
Hudson	N2NT	142,800
Midwest	WQØP	3,710
New England	W1QK	23,430
Roanoke	AA4ZZ	100,555
Rocky Mountain	K5LRW	783
Southeastern	WB4WXE	4,640
Southwestern	WO1S	1,121
West Gulf	K5QE	47,142
Canada	VE3MIS	6,400

Unlimited Multioperator

Atlantic	W2EA	136,136
Central	N2BL	11,524
Hudson	W2SZ	213,624
New England	KV1J	30,800
Roanoke	W4IY	65,919
Southeastern	N4SVC	42,723
West Gulf	KC5MVZ	1,300

QSO/Mult Leaders

Classic Rover	
50 MHz QSOs	
K8GP/R	246
N7GP/R	105
KØBAK/R	70
VE3OIL/R	70
AG4V/R	67
KT5TE/R	67
50 MHz Mults	
K8GP/R	45
AG4V/R	26
W5VY/R	19
VE3OIL/R	18
KØBAK/R	15
144 MHz QSOs	
K8GP/R	256
N7GP/R	119
W3ICC/R	81
N7OW/R	74
VE3SMA/R	70
144 MHz Mults	
K8GP/R	48
W5VY/R	33
AG4V/R	17
VE3OIL/R	16
W3ICC/R	15
222 MHz QSOs	
N7GP/R	90
K8GP/R	68
KT5TE/R	67
W3ICC/R	46
KJ7JC/R	38
222 MHz Mults	
K8GP/R	21
VE3OIL/R	12
AG4V/R	10
VE3SMA/R	10
W3ICC/R	10

432 MHz QSOs	
N7GP/R	117
K8GP/R	92
N7OW/R	75
KT5TE/R	69
KJ7JC/R	62
432 MHz Mults	
K8GP/R	19
AG4V/R	13
N7OW/R	13
W3ICC/R	13
VE3OIL/R	10
VE3SMA/R	10
W5VY/R	10
902 MHz QSOs	
N7GP/R	81
KJ7JC/R	31
N7OW/R	28
W2EV/R	24
K8GP/R	23
902 MHz Mults	
N7GP/R	8
K8GP/R	7
VE3OIL/R	7
AG4V/R	6
KJ7JC/R	6
1.2 GHz QSOs	
N7GP/R	101
KJ7JC/R	47
N7OW/R	42
K8GP/R	35
W2EV/R	30
1.2 GHz Mults	
K8GP/R	12
N7GP/R	8
VE3OIL/R	8
KJ7JC/R	7
W3ICC/R	7

2.3 GHz QSOs	
KJ7JC/R	20
N7GP/R	19
W3ICC/R	18
K8GP/R	16
VE3OIL/R	15
2.3 GHz Mults	
VE3OIL/R	7
K8GP/R	5
VE3WJ/R	5
W3ICC/R	5
KJ7JC/R	4
N7GP/R	4
VE3SMA/R	4
3.4 GHz QSOs	
KJ7JC/R	14
N7GP/R	13
K8GP/R	11
VE3SMA/R	9
VE3OIL/R	8
3.4 GHz Mults	
K8GP/R	4
KJ7JC/R	4
N7GP/R	4
VE3OIL/R	4
VE3SMA/R	4
5.7 GHz QSOs	
VE3OIL/R	12
K8GP/R	10
VE3SMA/R	7
VE3WJ/R	6
AG4V/R	2
VA3ELE/R	2
W2EV/R	2
W5VY/R	2

5.7 GHz Mults	
VE3OIL/R	7
VE3WJ/R	5
K8GP/R	4
VE3SMA/R	4
AG4V/R	2
10 GHz QSOs	
K8GP/R	11
VE3OIL/R	11
VE3SMA/R	10
VE3WJ/R	6
VA3ELE/R	5
10 GHz Mults	
VE3OIL/R	7
VE3WJ/R	5
VE3SMA/R	4
K8GP/R	3
AF4JF/R	2
AG4V/R	2
VA3ELE/R	2
WAØCNS/R	2
24 GHz QSOs	
VE3OIL/R	6
VE3SMA/R	6
VA3ELE/R	2
NJ1F/R	1
24 GHz Mults	
VE3OIL/R	4
VE3SMA/R	4
NJ1F/R	1
VA3ELE/R	1
47 GHz QSOs	
VA3ELE/R	1
47 GHz Mults	
VA3ELE/R	1
75 GHz QSOs	
WB8TGY/R	1

Classic Rover	
75 GHz Mults	
WB8TGY/R	1
123 GHz QSOs	
VE3OIL/R	6
VE3WJ/R	5
VA3ELE/R	3
WB8TGY/R	2
123 GHz Mults	
VE3OIL/R	5
VE3WJ/R	5
VA3ELE/R	1
WB8TGY/R	1
Light QSOs	
VE3OIL/R	5
VE3WJ/R	5
Light Mults	
VE3OIL/R	5
VE3WJ/R	5
Limited Rover	
50 MHz QSOs	
NF2RS/R	169
K5ND/R	103
KX6A/R	72
KJ2G/R	71
N6RH/R	70
50 MHz Mults	
NF2RS/R	33
K5ND/R	19
AA5PR/R	15
W5TN/R	15
KJ2G/R	11
144 MHz QSOs	
NF2RS/R	220
N6GP/R	89
KX6A/R	88
KJ2G/R	84
AE5P/R	73

144 MHz Mults	
NF2RS/R	39
WB8LYJ/R	20
KJ2G/R	17
WB2SIH/R	13
K5ND/R	12
N6GP/R	12
222 MHz QSOs	
AE5P/R	69
N6RH/R	68
KI5FIQ/R	47
KJ2G/R	42
N6GP/R	32
222 MHz Mults	
KJ2G/R	9
NF2RS/R	9
WB2SIH/R	9
N6GP/R	7
N6RH/R	7
WB8LYJ/R	7
432 MHz QSOs	
NF2RS/R	74
AE5P/R	70
N6RH/R	70
N6GP/R	66
KJ2G/R	50
432 MHz Mults	
NF2RS/R	22
WB8LYJ/R	13
KJ2G/R	11
N1QDQ/R	9
N6GP/R	9
Unlimited Rover	
50 MHz QSOs	
N2SLN/R	88
NØLD/R	64
K6VHF/R	59
K9JK/R	55
VE7AFZ/R	38

50 MHz Mults	
N2SLN/R	20
NØLD/R	14
KD5IKG/R	10
K6VHF/R	7
K9JK/R	6
VE7AFZ/R	6
144 MHz QSOs	
N2SLN/R	103
NØLD/R	71
K9JK/R	62
K6VHF/R	46
KD5IKG/R	38
144 MHz Mults	
N2SLN/R	24
NØLD/R	18
K9JK/R	9
KD5IKG/R	8
K6VHF/R	6
222 MHz QSOs	
N2SLN/R	50
K9JK/R	24
NØLD/R	23
K6VHF/R	20
KD5IKG/R	19
222 MHz Mults	
N2SLN/R	16
NØLD/R	9
KD5IKG/R	5
K6VHF/R	4
K9JK/R	4
KJ1K/R	4
W9YOY/R	4
432 MHz QSOs	
N2SLN/R	58
NØLD/R	50
K9JK/R	47
K6VHF/R	45
KD5IKG/R	22

432 MHz Mults	
N2SLN/R	16
NØLD/R	11
K6VHF/R	7
K9JK/R	7
KD5IKG/R	6
902 MHz QSOs	
NØLD/R	16
K9JK/R	5
KD5IKG/R	5
KJ1K/R	4
K6VHF/R	3
902 MHz Mults	
KD5IKG/R	4
NØLD/R	4
KJ1K/R	3
K6VHF/R	2
K9JK/R	1
KG6CIH/R	1
VE7AFZ/R	1
W9YOY/R	1
1.2 GHz QSOs	
K6VHF/R	37
NØLD/R	21
KD5IKG/R	4
KG6CIH/R	2
W9YOY/R	2
1.2 GHz Mults	
NØLD/R	6
K6VHF/R	5
KD5IKG/R	4
W9YOY/R	2
KD6RMS/R	1
KG6CIH/R	1
KJ1K/R	1
2.3 GHz QSOs	
KD5IKG/R	4
KG6CIH/R	2
NØLD/R	1

Unlimited Rover	
2.3 GHz Mults	
KD5IKG/R	4
KG6CIH/R	1
NØLD/R	1
3.4 GHz QSOs	
KG6CIH/R	2
3.4 GHz Mults	
KG6CIH/R	1
5.7 GHz QSOs	
KG6CIH/R	2
NØLD/R	1
5.7 GHz Mults	
KG6CIH/R	1
NØLD/R	1
10 GHz QSOs	
KG6CIH/R	2
10 GHz Mults	
KG6CIH/R	1
24 GHz QSOs	
KG6CIH/R	2
24 GHz Mults	
KG6CIH/R	1
123 GHz QSOs	
KG6CIH/R	2
123 GHz Mults	
KG6CIH/R	1
Light QSOs	
KG6CIH/R	2
Light Mults	
KG6CIH/R	1

Single Operator, High Power	
50 MHz QSOs	
K1TEO	286
W3LL	203
WZ1V	189
K1HTV	167
K3AJ	157
50 MHz Mults	
W5ZN	74
W9FF	65
KE8FD	63
K1TEO	59
KB8U	58
144 MHz QSOs	
K1TEO	281
K1RZ	236
W2KV	183
W3IP	175
W5ZN	171
144 MHz Mults	
W5ZN	101
KB8U	57
W1VD	55
K1RZ	54
K1TEO	54
222 MHz QSOs	
K1TEO	97
K1RZ	66
WZ1V	52
W3IP	48
K1TR	46
222 MHz Mults	
K1TEO	34
K1RZ	31
WZ1V	25
W3IP	22
K1TR	21

432 MHz QSOs	
K1TEO	142
K1RZ	102
W3IP	70
W2KV	65
WZ1V	60
432 MHz Mults	
K1RZ	43
K1TEO	42
W3IP	27
WZ1V	26
W2KV	24
902 MHz QSOs	
K1TEO	28
K1RZ	27
N1AV	19
W5ZN	18
K1GX	14
N7VD	14
902 MHz Mults	
K1RZ	19
K1TEO	19
W5ZN	13
K1GX	10
K1KG	10
N3RG	10
1.2 GHz QSOs	
K1TEO	55
N1AV	48
K1RZ	42
W3IP	33
W7MRF	27
1.2 GHz Mults	
N1AV	26
K1TEO	23
K1RZ	21
W3IP	17
WZ1V	14

2.3 GHz QSOs	
K1TEO	22
K1RZ	17
W3IP	14
K1KG	10
K3TUF	10
2.3 GHz Mults	
K1TEO	15
K1RZ	11
W3IP	10
K1KG	8
K3TUF	7
W2FU	7
3.4 GHz QSOs	
K1TEO	13
K1KG	9
K1RZ	9
K5LLL	7
N1AV	6
3.4 GHz Mults	
K1TEO	12
K1KG	8
K1RZ	8
K5LLL	6
K3TUF	5
5.7 GHz QSOs	
K1TEO	8
K1RZ	7
K1KG	6
N3RG	5
K3TUF	4
5.7 GHz Mults	
K1TEO	7
K1RZ	6
K1KG	5
K3TUF	4
N3RG	4

Single Operator, High Power	
10 GHz QSOs	
W3IP	11
K1TEO	9
K1RZ	8
N3RG	7
K1KG	5
10 GHz Mults	
K1TEO	8
W3IP	7
K1RZ	6
N3RG	5
K1GX	4
K1KG	4
24 GHz QSOs	
W1FKF	1
24 GHz Mults	
W1FKF	1
47 GHz QSOs	
W1FKF	1
47 GHz Mults	
W1FKF	1
75 GHz QSOs	
W1FKF	1
75 GHz Mults	
W1FKF	1
123 GHz QSOs	
W1FKF	1
123 GHz Mults	
W1FKF	1

Single Operator, Low Power	
50 MHz QSOs	
WB1GQR (W1SJ, op)	250
KZ2I	192
W3KM	160
K2DRH	144
NR2C	128
50 MHz Mults	
K2DRH	70
KG5CCI	57
NR2C	44
K9MU	39
W9GA	39
144 MHz QSOs	
WB1GQR (W1SJ, op)	233
AF1T	130
KG6IYN	126
K2DRH	110
N2WK	108
144 MHz Mults	
K2DRH	53
WB1GQR (W1SJ, op)	38
N2JMH	37
N2WK	37
W9GA	37
222 MHz QSOs	
AF1T	62
WB1GQR (W1SJ, op)	58
KG6IYN	46
N2WK	41
WB2JAY	33
222 MHz Mults	
WB1GQR (W1SJ, op)	23
AF1T	21
WA3EOQ	19
VE3DS	18
K2DRH	16

432 MHz QSOs	
KG6IYN	110
WB1GQR (W1SJ, op)	94
AF1T	84
K6RO	56
K6FGV	46
432 MHz Mults	
WB1GQR (W1SJ, op)	24
AF1T	23
K2DRH	20
WA3EOQ	18
N2WK	17
902 MHz QSOs	
AF1T	24
N2WK	14
VE3DS	13
KG6IYN	11
WB1GQR (W1SJ, op)	11
902 MHz Mults	
AF1T	13
KG6IYN	9
K2DRH	8
WA3EOQ	8
N2WK	7
VE3DS	7
WB1GQR (W1SJ, op)	7
1.2 GHz QSOs	
AF1T	32
N7RK	19
WB1GQR (W1SJ, op)	18
N2WK	17
VE3DS	15
1.2 GHz Mults	
AF1T	13
WA3EOQ	9
K2DRH	8
KG6IYN	8
N2WK	8
WB2JAY	8

2.3 GHz QSOs	
AF1T	13
N2WK	8
WB2JAY	5
W3EKT	4
WB1GQR (W1SJ, op)	4
2.3 GHz Mults	
AF1T	8
N2WK	6
WB1GQR (W1SJ, op)	4
WB2JAY	4
W3EKT	3
3.4 GHz QSOs	
AF1T	7
VE3DS	4
WB1GQR (W1SJ, op)	4
WB2JAY	4
W3EKT	3
3.4 GHz Mults	
AF1T	6
WB1GQR (W1SJ, op)	4
W3EKT	3
WB2JAY	3
K2DRH	2
N2WK	2
VE3DS	2
5.7 GHz QSOs	
AF1T	8
W3EKT	3
N2WK	2
VE3DS	1
5.7 GHz Mults	
AF1T	5
W3EKT	3
N2WK	2
VE3DS	1

Single Operator, Low Power	
10 GHz QSOs	
AF1T	9
W3EKT	4
KG6IYN	1
10 GHz Mults	
AF1T	6
W3EKT	3
KG6IYN	1
24 GHz QSOs	
AF1T	2
24 GHz Mults	
AF1T	1
123 GHz QSOs	
AF1T	2
VE3DS	1
123 GHz Mults	
AF1T	1
VE3DS	1
Light QSOs	
W2MC	3
AF1T	2
Light Mults	
AF1T	1
W2MC	1
Single Operator, Portable	
50 MHz QSOs	
WB2AMU	25
WK9U	25
NA1KW (N1SPX, op)	23
AG1A	11
K2CZH	11

50 MHz Mults	
WK9U	18
NA1KW (N1SPX, op)	17
WB2AMU	14
NØJK	7
K2CZH	5
W3MEO	5
144 MHz QSOs	
WB2AMU	33
KR6TOM	20
K2CZH	13
W9CY	12
WD5AGO	12
144 MHz Mults	
WB2AMU	15
K2CZH	7
WD5AGO	7
KO4ELL	5
W9SZ	5
222 MHz QSOs	
WB2AMU	4
KR6TOM	3
KN6BXC	1
W9SZ	1
222 MHz Mults	
WB2AMU	2
KN6BXC	1
KR6TOM	1
W9SZ	1
432 MHz QSOs	
AG1A	10
VE3IPS	9
WB2AMU	9
WD5AGO	7
KR6TOM	4

432 MHz Mults	
WD5AGO	5
WB2AMU	4
VE3IPS	3
AG1A	2
KK4BZ	2
KO4ELL	2
W9SZ	2
1.2 GHz QSOs	
WD5AGO	4
AG1A	3
VE3IPS	2
K2CZH	1
W9SZ	1
1.2 GHz Mults	
WD5AGO	3
VE3IPS	2
AG1A	1
K2CZH	1
W9SZ	1
2.3 GHz QSOs	
WD5AGO	2
W9SZ	1
2.3 GHz Mults	
W9SZ	1
WD5AGO	1
3.4 GHz QSOs	
W9SZ	1
3.4 GHz Mults	
W9SZ	1
5.7 GHz QSOs	
WD5AGO	2
5.7 GHz Mults	
WD5AGO	1
10 GHz QSOs	
VA3TO	6

10 GHz Mults	
VA3TO	5
24 GHz QSOs	
VA3TO	2
24 GHz Mults	
VA3TO	2
47 GHz QSOs	
VA3TO	1
47 GHz Mults	
VA3TO	1
123 GHz QSOs	
VA3TO	1
123 GHz Mults	
VA3TO	1
Single Operator, 3 Band	
50 MHz QSOs	
K2UT	144
KO9A	144
N3AAA	134
N2NF	129
N3ALN	117
50 MHz Mults	
KO9A	53
N3AAA	48
KT9L	42
VE3PJ	36
N2NF	31
144 MHz QSOs	
N3AAA	117
KO9A	90
NU6S	73
W3FAY	63
K1HC	61
W1DYJ	61

Single Operator, Portable	
144 MHz Mults	
N3AAA	46
KO9A	32
KT8O	31
KA2BPP	26
K4MY	25
WB8BZK	25
WB9TFH	25
432 MHz QSOs	
NU6S	51
N7IR	43
N7QOZ	31
WB6HYH	27
XE2CQ	25
432 MHz Mults	
WA4LDU	13
K1HC	11
KC2THQ	9
KO9A	9
WB2EOD	9
WB9TFH	9

Single Operator, FM Only	
50 MHz QSOs	
K6LMN	14
N9HRT	6
KC9PCP	4
WG4I	4
K7IMA	2
KC1MXI	2
N6UTC	2
N9VM (N1VM, op)	2
50 MHz Mults	
K6LMN	3
KC1MXI	2
KC9PCP	2
N6UTC	2
N9HRT	2
N9VM (N1VM, op)	2
WG4I	2

144 MHz QSOs	
K6LMN	56
KC1MXI	33
N6UTC	31
KC9PCP	26
K6QCB	20
144 MHz Mults	
K6LMN	6
K6QCB	5
KW6RON	5
N6UTC	5
W6HIP	5
222 MHz QSOs	
K6LMN	28
W6HIP	16
N6UTC	10
KC9PCP	5
K7IMA	3
222 MHz Mults	
K6LMN	4
N6UTC	4
W6HIP	4
KC9PCP	3
KN6FKQ	2
432 MHz QSOs	
K6LMN	33
W6HIP	16
KW6RON	14
KC9PCP	11
K6QCB	8
432 MHz Mults	
K6LMN	5
KW6RON	5
W6HIP	5
K6QCB	3
KA6KEN	3
KC9PCP	3
N6UTC	3
N9VM (N1VM, op)	3

Limited Multioperator	
50 MHz QSOs	
AA4ZZ	261
N2NT	259
N8GA	197
W1QK	190
WD9EXD	149
50 MHz Mults	
N8GA	85
WD9EXD	80
AA4ZZ	63
K5QE	57
N2NT	52
W9VW	52
144 MHz QSOs	
N2NT	283
AA4ZZ	179
N8GA	140
W1QK	113
K5QE	112
WA3EKL	112
144 MHz Mults	
K5QE	70
N2NT	59
W9VW	58
N8GA	57
AA4ZZ	55
222 MHz QSOs	
N2NT	72
AA4ZZ	35
N8GA	18
K5QE	16
VE3MIS	16
222 MHz Mults	
N2NT	27
AA4ZZ	25
N8GA	12
K5QE	11
WD9EXD	11

432 MHz QSOs	
N2NT	93
AA4ZZ	44
K5QE	40
N8GA	29
VE3MIS	19
432 MHz Mults	
N2NT	30
AA4ZZ	26
K5QE	24
N8GA	19
WD9EXD	10
1.2 GHz QSOs	
WO1S	3
W9VW	2
1.2 GHz Mults	
W9VW	2
WO1S	2
10 GHz QSOs	
W3SZ	4
10 GHz Mults	
W3SZ	4

Unlimited Multioperator	
50 MHz QSOs	
W2SZ	270
W2EA	223
W4IY	172
KV1J	152
N4SVC	131
50 MHz Mults	
N4SVC	69
W2SZ	55
W4ZST	52
W4IY	50
KV1J	37

Unlimited Multioperator	
144 MHz QSOs	
W2EA	205
W2SZ	167
W4IY	162
KD2LGX	117
KV1J	92
144 MHz Mults	
KD2LGX	58
W2SZ	41
W2EA	38
W4IY	37
N4SVC	34
222 MHz QSOs	
W2SZ	57
W2EA	56
W4IY	34
KV1J	17
N4SVC	17
222 MHz Mults	
W2SZ	27
W2EA	22
W4IY	15
N4SVC	12
W4ZST	10
432 MHz QSOs	
W2EA	77
W2SZ	72
W4IY	51
KD2LGX	28
N4SVC	25
W4ZST	25
432 MHz Mults	
W2SZ	30
W2EA	29
W4IY	21
N4SVC	18
W4ZST	15

902 MHz QSOs	
W2SZ	19
W2EA	9
KD2LGX	5
N4SVC	4
KV1J	3
902 MHz Mults	
W2SZ	12
W2EA	8
KD2LGX	3
N4SVC	3
KV1J	2
1.2 GHz QSOs	
W2EA	23
W2SZ	22
KV1J	7
N4SVC	7
W4IY	7
1.2 GHz Mults	
W2EA	15
W2SZ	14
W4IY	6
N4SVC	5
KD2LGX	4
KV1J	4
W3KWH	4
2.3 GHz QSOs	
W2SZ	15
W2EA	6
KV1J	2
2.3 GHz Mults	
W2SZ	11
KV1J	2
W2EA	1
3.4 GHz QSOs	
W2SZ	14
W2EA	6

3.4 GHz Mults	
W2SZ	11
W2EA	1
5.7 GHz QSOs	
W2SZ	9
W2EA	6
5.7 GHz Mults	
W2SZ	9
W2EA	1
10 GHz QSOs	
W2SZ	6
W2EA	2
10 GHz Mults	
W2SZ	5
W2EA	2
24 GHz QSOs	
W2SZ	1
24 GHz Mults	
W2SZ	1
Light QSOs	
W2EA	8
Light Mults	
W2EA	1