



ARRL EME Contest

2015 Results

By Rick Rosen, K1DS (rick1ds@hotmail.com)

New Rules, New Tools, New Views — More Qs!

Tommy WD5AGO had 20 CW and phone moonbounce contacts on 2304 MHz. It was interesting to hear him and Bruce PY2BS chatting on SSB during the contest. Chatting? On SSB? Off the Moon? Yes! You can do this — read on for more.

EME has never been more accessible to the amateur than it is today and you needn't have an enormous dish in the backyard — although that certainly helps! You might think that it takes a brobdingnagian station to work others via lunar echoes but EME is surprisingly accessible to

modest stations using the digital mode JT65, one of the modes included in the *WSJT* software suite created by Joe Taylor, K1JT (physics.princeton.edu/pulsar/k1jt). You may already have most of the necessary equipment if you have an all-mode 2 meter radio, a pair of long-boom Yagis which are also straightforward to build yourself, and a linear amplifier “brick.” K1JT has written an extensive guide to moonbounce available in the Space Communications chapter on the CD-ROM distributed with the ARRL Handbook. Once you get some experience, building up your capabilities to try for an “ear-to-ear” CW or SSB contact will surely follow.

Online Microwave Matchmaking

New for 2015 and beyond, ARRL VHF+ contest rules now allow the use of spotting assistance or nets to identify stations available for contacts and to announce (self-spot) their availability. The new capability was used and lauded by many. Some were vehemently opposed to this option and a few long-term EME operators simply refused to participate in a contest that allowed self-spotting and QSO coordination. Others simply continued contesting in the traditional fashion of

calling CQ, responding to callers, or using the MAP65 program from the *WSJT* suite to locate digital stations on the bands.

While change always results in various degrees of controversy, what was the outcome? Three weekends for EME action was just not enough! With so many stations adding and improving their microwave capabilities, there was a request to add more weekends for the bands at 2304 MHz (13 cm) and above in order to have more time to operate the five (or more) microwave bands popular for EME activity.



Looking at the business end of the “feed turret” shows how HB9Q puts the big 10-meter diameter dish to work. In the center is the 1296 MHz feed with the 2.3 GHz feed underneath. On top is the 3.4 GHz feed, at the right is the 5.76 GHz feed, and 10 GHz is on the left. (Photo by HB9CRQ)

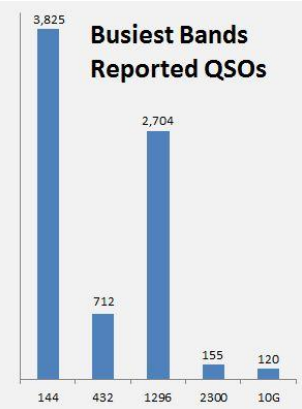
Several stations announced their microwave band selection and timing prior to the first weekend of the contest. Others simply operated on the bands for which their equipment was configured. Certainly, there was some frustration as stations found themselves selecting different bands than others. As Manfred, DL7YC wrote, “According to Murphy, everybody who can change bands decided for the ‘wrong’ band...but we found each other (online)!”

Changing bands for competitive EME stations is not simply a matter of pressing a button and selecting a different antenna. Their large dish antennas require a different feed antenna for each band, sometimes many feet above ground. Thus, safety is a concern for stations operating during the night when feed changes are required. Dan at HB9Q has this issue resolved with a turret full of feeds for the 13 cm and up bands. Others have designed and built work platforms to be able to get to the dish feeds in relative safety.

Activity Report

Following the contest's three weekends, more than 7500 QSOs were submitted for scoring. There were 131 logs

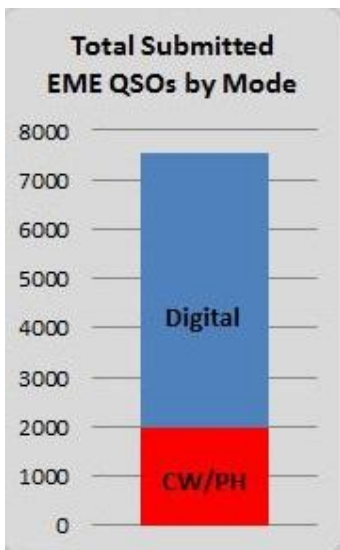
submitted, an increase of 7 over last year. Of those, 66 reported QSOs on 2 meters. Considering the 270 stations worked on 2 meters by DL25UNION, and the 498 stations cumulatively reported by W2LPL and HB9Q to be on 2 meter *WSJT* modes, only 14% of the stations active on the ARRL EME contest weekend submitted log reports.



In speaking with some of the most active contest stations that did not submit a log, there appears to be many different reasons. Some were chasing small stations, initial contacts or DX entities. Others participated without log submission as a protest

against the new rule, while several others just forgot about timely log submission, or had no desire to be part of a competition.

The cumulative *WSJT* reports showed there were 109 stations using *WSJT* modes on 432 MHz and 117 stations on 1296 MHz. Some will be excited and positive about the use of smaller antennas, less power, and the use of computer tools and spotting assistance to facilitate EME communications. Others will express dismay about the demise of the use of CW and phone contacts and the traditional ways of calling CQ and searching for callers to make contest QSOs.



Nevertheless, for the first microwave weekend, many found the online “loggers” useful for coordinating band changes and cross-band operation, especially when participants had different frequency allocations from country to country.

The use of the Internet enabled me to arrange my two CW QSOs on this band, as it was my first attempt to make contact off the Moon on 2304 MHz. I learned that steering the dish gets more difficult as the wavelength gets smaller!

Single Operator, All Band Scores

In the Single Operator, CW/Phone Only, All Band, category we had 7 entries, topped by Franta OK1CA netting 111 QSOs for a score of 754K points on 5 bands; 432 MHz, 1296 MHz, 2304 MHz, 5.6 GHz, and 10 GHz. In second place, Philippe F5JWF had a 3-band entry with 364K points. Paul WA6PY was third with 363K points, using 5 bands, and a few QSOs ahead but 2 multipliers behind our second-place winner.

Dmitry, UA3PTW produced a prodigious Single Op, All Mode, All Band score of over 5 million points with activity on 144 MHz and 432 MHz and three additional microwave bands. He has been increasing his score by about a million points per year and appears to have set a new record for this category of operation.

Gunars, YL2GD produced a score of 2.2 million using 144 MHz, 432 MHz and 1296 MHz. Karl, DF3RU compiled almost 1 million points with a 2-band effort on 432 MHz and 1296 MHz. There were 15 logs submitted in the Single-Op, All Mode, All Band category.

Top Three Scores in Main Categories

A=50 MHz, B=144 MHz, D=432 MHz, E=1296 MHz, F= 2.3 GHz, G=3.4 GHz, H=5.7 GHz, I=10 GHz

Call Sign *Score* *QSOs* *Mults*

Single Operator, All Mode, All Band			
UA3PTW	5,088,700	337	151
YL2GD	2,273,600	203	112
DF3RU	986,700	143	69

Single Operator, CW/Phone Only, All Band

OK1CA	754,800	111	68
F5JWF	364,800	64	57
WA6PY	363,000	66	55

Multioperator, All Mode, All Band

W6YX	6,434,400	383	168
PJ7/PE1L	1,170,400	154	76
YL3CT	457,600	88	52

Multioperator, CW/Phone Only, All Band

SP6JLW	418,300	89	47
SP7DCS	328,500	73	45

Single Operator, Single Band Scores

There were 45 entries in the Single Operator, All Mode, 144 MHz group. This was the most popular category and although it is designated as All Mode, only one operator, Christo, LZ1DP had two CW QSOs, the rest making exclusively digital contacts. Top scorer was Gary, KB8RQ with 258 contacts and 97 multipliers for a score of 2.37 million. He has a huge 24-Yagi array to enhance his received and transmitted signals which can be seen on his QRZ.com page. Alexander, operating UT5ZN/P, was second with 1.069 million points, 3 QSOs more than Alex, RU1AA in third place with a score of 1.065 million.

Stan, OK1MS and Helge, DL8UCC had the sole log entries in the 144 MHz, CW Only group, reporting 10 and 4 QSOs respectively. You can draw your own conclusions about the future of this mode of operation on 144 MHz EME, as the use of CW on this band continues to fade in favor of the *WSJT* modes.

Marshall, K5QE promoted the use of 222 MHz and made 4 digital contacts, with 3 other stations reporting a single QSO on that band.

Four stations sent in their logs with CW Only contacts on 432 MHz. Top scorer in that category was Franco, I2FHW with a score of 50K based on 28 contacts and 18 multipliers. Another five stations operated All Mode on 432 MHz and the best score was 85K points by Nikolay, UXØFF based on 34 contacts and 25 multipliers.

The activity on 1296 did dip from last year, with nine stations submitting logs using CW and phone exclusively. Anatoly, RA3EC had the high score of 352K based on 88 contacts and 40 multipliers. Chris, DL3EBJ was next with 334K points and in third place was Franck F5SE/P with a 302K score. All of them had great signals and were easy copy from my portable 3-meter dish.

Twenty-one stations submitted logs for All Mode, 1296 MHz. Ned, LZ1DX topped the group with 746K points. In second place was Marek, OK2DL with 655K points. Both top scorers had 131 contacts, but Ned had 7 more multipliers. Third place in this group went to Jan, PA3FXB with 90 QSOs and a 405K score.

Peter, OZ1LPR and Kjeld, OZ1FF submitted logs for All Mode contacts on 10 GHz. Between them there were 25 CW/Phone QSOs and 7 digital QSOs. Peter was the higher scorer with 36K points.

Multioperator Scores

There were 16 Multioperator team logs submitted in 6 different categories. The Stanford team at W6YX made a

great effort as an All Mode station with activity on 5 bands including the most active ones; 144 MHz, 432 MHz, 1296 MHz, 2304 MHz, and 10 GHz. With a total of 383 QSOs and 168 multipliers, their score of 6.43 million comes close to the 6.64 million point record set in 2011 by the K1JT multiop group.



The antenna farm at HB9Q enables them to have great EME activity. It consists of a 15 m mesh dish for 144 and 432 MHz, a 10 m solid dish for 1296, 23xx, 3400, 5760, and 10xxx MHz, 8x19xxx M2 Yagis for 144 MHz, and 1x2.5wl M2 Yagi for 50 MHz, on top of the HF beam, 24 m above ground. (Photo by HB9CRQ)

The PJ7/PE1L team from French Saint Maarten helped many add a new DX entity to their logs with 5 CW contacts and 149 digital contacts across 3 bands; 144 MHz, 432 MHz, and 1296 MHz. The teams of SP6JLW and SP7DCS battled for first place in the All Band, CW/Phone Only category. With 89 QSOs and 47 multipliers, the 3-man team at Andrzej, SP6JLW station beat the SP7DCS father-and-son competitors by 16 contacts and 2 multipliers.

The DL25UNION team made 270 digital QSOs on 144 MHz for a Single Band, All Mode score of 2.16 million points. The HA1VHF team had 1 CW QSO and 204 digital contacts to place second in this category.

The OH2PO and LU8ENU groups were active in All Mode on 432 MHz. Using their 15-meter dish, the OH2PO station managed to work about everyone who put a signal on that band, finishing with 106 QSOs and a final score of 424K points.

Three multiop teams entered the All Mode, 1296 MHz category. The VA7MM group was the leader with 28 CW and 37 digital contacts for a 260K final score. The 2-man team at OK1KIR made 22 CW and 7 digital contacts on 10 GHz as the leader and only single-band 10 GHz log.

Other Stations

Although they don't always show up in the listings and are not award winners, it's often the small stations that have the most satisfaction, using limited antennas and power to eke out a few contacts off the Moon with the larger and more powerful moonbouncers.



Even the smaller stations can have success in the EME contest. This single 12-element Yagi was hand-positioned on the balcony by DK1KW to make several digital EME QSOs. (Photo by DK1KW)

Werner, DK1KW used the antenna system seen above. With a 250-watt amplifier, he made a handful of QSOs using *JT65* and copied several others on CW.

Mike, K7ULS used a single 28-element, 9-wavelength Yagi with only 70 watts to make 9 digital QSOs that added 4 new DX entities to his log.

The PJ7/PE1L DXpedition team used a single 9-wavelength Yagi on 432 MHz. Being rare DX, they were very busy during their moon time. They were also operational on 1296 MHz and 2320 MHz, using a 1.8-meter diameter dish and modest power to work dozens of QSOs. Although they did not submit a contest log, their activity boosted the results of many of those who sent in their logs and scores. The operation of these DXpeditions underscores the ability to work stations via moon-

bounce, even with limited antennas, power and technology.

What Next

So many of the EME "regulars" were active during the three weekends of the ARRL contest, but few of them submitted logs. Participation, station improvements and activity, rather than strict competition seemed to be the order of the contest.

Many active stations report their EME activity through alternate outlets such as the *144 MHz EME News* (www.df2zc.de/newsletter) and the *432 and Above EME News* (www.nitehawk.com/rasmit/em70cm.html).

There are several other moonbounce contests and activity weekends during the year sponsored by DUBUS and the Italian Amateur Radio Association (ARI) that occupy the "lunatics" attention. The global impact of the new rules is difficult to discern from the submitted logs and comments. This will likely be a topic of conversation at the XVII International EME Conference, scheduled for August 19-21, 2016 in Venice, Italy. (www.eme2016.org)

Start Getting Ready for 2016

The 2016 ARRL EME weekends are currently scheduled for 2.3 GHz and up on September 24-25, and 50 MHz-1296 MHz on the weekends of October 22-23 and November 19-20. Find a good Elmer to help you and you might just make your first EME QSO. And speaking of Elmers, Thanks to my XYL Jani for editing assistance!

2015 ARRL EME Contest - Scores and QSO/Multiplier Breakdown by Band																														
Call	Score	Category Name	QSOs	Mults	144 Q	144 M	144 Score	222 Q	222 M	222 Score	432 Q	432 M	432 Score	1296 Q	1296 M	1296 Score	2304 Q	2304 M	2304 Score	3456 Q	3456 M	3456 Score	5760 Q	5760 M	5760 Score	10G Q	10G M	10G Score	Operator Calls	
LZ1DX	746,700	Single Operator All Mode 1.2 GHz	131	57	0	0	0	0	0	0	0	0	0	131	57	7467	0	0	0	0	0	0	0	0	0	0	0	0	0	
OK2DL	655,000	Single Operator All Mode 1.2 GHz	131	50	0	0	0	0	0	0	0	0	0	131	50	6550	0	0	0	0	0	0	0	0	0	0	0	0	0	
PA3FXB	405,000	Single Operator All Mode 1.2 GHz	90	45	0	0	0	0	0	0	0	0	0	90	45	4050	0	0	0	0	0	0	0	0	0	0	0	0	0	
RA3AUB	327,600	Single Operator All Mode 1.2 GHz	78	42	0	0	0	0	0	0	0	0	0	78	42	3276	0	0	0	0	0	0	0	0	0	0	0	0	0	
IK3COJ	295,200	Single Operator All Mode 1.2 GHz	72	41	0	0	0	0	0	0	0	0	0	72	41	2952	0	0	0	0	0	0	0	0	0	0	0	0	0	
I5YDI	165,000	Single Operator All Mode 1.2 GHz	55	30	0	0	0	0	0	0	0	0	0	55	30	1650	0	0	0	0	0	0	0	0	0	0	0	0	0	
SP5GDM	147,900	Single Operator All Mode 1.2 GHz	51	29	0	0	0	0	0	0	0	0	0	51	29	1479	0	0	0	0	0	0	0	0	0	0	0	0	0	
ES6FX	123,200	Single Operator All Mode 1.2 GHz	44	28	0	0	0	0	0	0	0	0	0	44	28	1232	0	0	0	0	0	0	0	0	0	0	0	0	0	
OK1YK	105,300	Single Operator All Mode 1.2 GHz	39	27	0	0	0	0	0	0	0	0	0	39	27	1053	0	0	0	0	0	0	0	0	0	0	0	0	0	
VE3KRP	99,900	Single Operator All Mode 1.2 GHz	37	27	0	0	0	0	0	0	0	0	0	37	27	999	0	0	0	0	0	0	0	0	0	0	0	0	0	
WA3GFZ	69,600	Single Operator All Mode 1.2 GHz	29	24	0	0	0	0	0	0	0	0	0	29	24	696	0	0	0	0	0	0	0	0	0	0	0	0	0	
VE4SA	66,000	Single Operator All Mode 1.2 GHz	30	22	0	0	0	0	0	0	0	0	0	30	22	660	0	0	0	0	0	0	0	0	0	0	0	0	0	
RWØLDF	51,300	Single Operator All Mode 1.2 GHz	27	19	0	0	0	0	0	0	0	0	0	27	19	513	0	0	0	0	0	0	0	0	0	0	0	0	0	
YL3AEV	43,200	Single Operator All Mode 1.2 GHz	24	18	0	0	0	0	0	0	0	0	0	24	18	432	0	0	0	0	0	0	0	0	0	0	0	0	0	
W3HMS	39,600	Single Operator All Mode 1.2 GHz	22	18	0	0	0	0	0	0	0	0	0	22	18	396	0	0	0	0	0	0	0	0	0	0	0	0	0	
YO2LEL	29,400	Single Operator All Mode 1.2 GHz	21	14	0	0	0	0	0	0	0	0	0	21	14	294	0	0	0	0	0	0	0	0	0	0	0	0	0	
SV1CAL	26,600	Single Operator All Mode 1.2 GHz	19	14	0	0	0	0	0	0	0	0	0	19	14	266	0	0	0	0	0	0	0	0	0	0	0	0	0	
SQ7D	18,700	Single Operator All Mode 1.2 GHz	17	11	0	0	0	0	0	0	0	0	0	17	11	187	0	0	0	0	0	0	0	0	0	0	0	0	0	
EA1RJ	14,300	Single Operator All Mode 1.2 GHz	13	11	0	0	0	0	0	0	0	0	0	13	11	143	0	0	0	0	0	0	0	0	0	0	0	0	0	
W2LPL	12,100	Single Operator All Mode 1.2 GHz	11	11	0	0	0	0	0	0	0	0	0	11	11	121	0	0	0	0	0	0	0	0	0	0	0	0	0	
SP9AF	3,000	Single Operator All Mode 1.2 GHz	6	5	0	0	0	0	0	0	0	0	0	6	5	30	0	0	0	0	0	0	0	0	0	0	0	0	0	
WD5AGO	32,000	Single Operator All Mode 2.4 GHz	20	16	0	0	0	0	0	0	0	0	0	0	0	0	20	16	320	0	0	0	0	0	0	0	0	0	0	
OZ1LPR	36,000	Single Operator All Mode 10 GHz	24	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	15	360	
OZ1FF	5,600	Single Operator All Mode 10 GHz	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	7	56	
UA3PTW	5,088,700	Single Operator All Mode All Band	337	151	152	53	8056	0	0	0	71	33	2343	76	40	3040	31	18	558	0	0	0	7	7	49	0	0	0		
YL2GD	2,273,600	Single Operator All Mode All Band	203	112	104	51	5304	0	0	0	28	22	616	71	39	2769	0	0	0	0	0	0	0	0	0	0	0	0	0	
DF3RU	986,700	Single Operator All Mode All Band	143	69	0	0	0	0	0	0	48	28	1344	95	41	3895	0	0	0	0	0	0	0	0	0	0	0	0	0	
RA9LR	530,100	Single Operator All Mode All Band	93	57	81	46	3726	0	0	0	12	11	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JA6AHB	439,900	Single Operator All Mode All Band	83	53	0	0	0	0	0	0	30	21	630	53	32	1696	0	0	0	0	0	0	0	0	0	0	0	0	0	
KL7UW	370,000	Single Operator All Mode All Band	74	50	51	35	1785	0	0	0	0	0	0	23	15	345	0	0	0	0	0	0	0	0	0	0	0	0	0	
I1NDP	294,000	Single Operator All Mode All Band	70	42	0	0	0	0	0	0	16	15	240	54	27	1458	0	0	0	0	0	0	0	0	0	0	0	0	0	
W1PV	279,500	Single Operator All Mode All Band	65	43	59	37	2183	0	0	0	6	6	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PA2CHR	176,400	Single Operator All Mode All Band	49	36	23	19	437	0	0	0	26	17	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
VK4CDI	147,200	Single Operator All Mode All Band	46	32	5	5	25	0	0	0	2	2	4	38	24	912	0	0	0	1	1	1	0	0	0	0	0	0	0	
KNØWS	136,400	Single Operator All Mode All Band	44	31	0	0	0	0	0	0	11	9	99	33	22	726	0	0	0	0	0	0	0	0	0	0	0	0	0	
K1DS	68,200	Single Operator All Mode All Band	31	22	0	0	0	0	0	0	1	1	1	28	19	532	2	2	4	0	0	0	0	0	0	0	0	0	0	
YO2BCT	52,500	Single Operator All Mode All Band	25	21	0	0	0	0	0	0	16	13	208	0	0	0	0	0	0	0	0	0	0	0	0	0	9	8	72	
OK2AQ	11,000	Single Operator All Mode All Band	11	10	0	0	0	0	0	0	11	10	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K3GNC	6,400	Single Operator All Mode All Band	8	8	1	1	1	0	0	0	7	7	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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OK1CA	754,800	Single Operator CW Only All Band	111	68	0	0	0	0	0	0	13	8	104	55	30	1650	26	18	468	0	0	0	2	2	4	15	10	150	
F5JWF	364,800	Single Operator CW Only All Band	64	57	0	0	0	0	0	0	0	0	0	41	36	1476	17	16	272	0	0	0	0	0	0	6	5	30	
WA6PY	363,000	Single Operator CW Only All Band	66	55	0	0	0	0	0	0	4	4	16	41	32	1312	11	11	121	0	0	0	1	1	1	9	7	63	
YK3UM	334,400	Single Operator CW Only All Band	76	44	0	0	0	0	0	0	14	13	182	62	31	1922	0	0	0	0	0	0	0	0	0	0	0	0	
KL6M	261,300	Single Operator CW Only All Band	67	39	0	0	0	0	0	0	0	0	0	53	27	1431	14	12	168	0	0	0	0	0	0	0	0	0	
JA4BLC	184,800	Single Operator CW Only All Band	56	33	0	0	0	0	0	0	0	0	0	42	22	924	8	6	48	0	0	0	0	0	0	6	5	30	
LZ2US	138,000	Single Operator CW Only All Band	46	30	10	7	70	0	0	0	0	0	0	36	23	828	0	0	0	0	0	0	0	0	0	0	0	0	
SP3XBO	44,200	Single Operator CW Only All Band	26	17	2	2	4	0	0	0	0	0	0	24	15	360	0	0	0	0	0	0	0	0	0	0	0	0	
OK1MS	6,000	Single Operator CW Only 144 MHz	10	6	10	6	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DL8UCC	1,200	Single Operator CW Only 144 MHz	4	3	4	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
I2FHW	50,400	Single Operator CW Only 432 MHz	28	18	0	0	0	0	0	0	28	18	504	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
F6HLC	6,400	Single Operator CW Only 432 MHz	8	8	0	0	0	0	0	0	8	8	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JA9BOH	1,600	Single Operator CW Only 432 MHz	4	4	0	0	0	0	0	0	4	4	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JH4JLV	400	Single Operator CW Only 432 MHz	2	2	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RA3EC	352,000	Single Operator CW Only 1.2 GHz	88	40	0	0	0	0	0	0	0	0	0	88	40	3520	0	0	0	0	0	0	0	0	0	0	0	0	
DL3EJ	319,200	Single Operator CW Only 1.2 GHz	84	38	0	0	0	0	0	0	0	0	0	84	38	3192	0	0	0	0	0	0	0	0	0	0	0	0	
F5SE/P	302,400	Single Operator CW Only 1.2 GHz	84	36	0	0	0	0	0	0	0	0	0	84	36	3024	0	0	0	0	0	0	0	0	0	0	0	0	
SM3AKW	226,300	Single Operator CW Only 1.2 GHz	73	31	0	0	0	0	0	0	0	0	0	73	31	2263	0	0	0	0	0	0	0	0	0	0	0	0	
S53MM	105,600	Single Operator CW Only 1.2 GHz	44	24	0	0	0	0	0	0	0	0	0	44	24	1056	0	0	0	0	0	0	0	0	0	0	0	0	
S59DCD	74,800	Single Operator CW Only 1.2 GHz	44	17	0	0	0	0	0	0	0	0	0	44	17	748	0	0	0	0	0	0	0	0	0	0	0	0	
F6ETI	16,500	Single Operator CW Only 1.2 GHz	15	11	0	0	0	0	0	0	0	0	0	15	11	165	0	0	0	0	0	0	0	0	0	0	0	0	
SP2HMR	15,000	Single Operator CW Only 1.2 GHz	15	10	0	0	0	0	0	0	0	0	0	15	10	150	0	0	0	0	0	0	0	0	0	0	0	0	
UA3XCR	400	Single Operator CW Only 1.2 GHz	2	2	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	

2015 ARRL EME Contest - Scores and QSO/Multiplier Breakdown by Band																													
Call	Score	Category Name	QSOs	Mults	144 Q	144 M	144 Score	222 Q	222 M	222 Score	432 Q	432 M	432 Score	1296 Q	1296 M	1296 Score	2304 Q	2304 M	2304 Score	3456 Q	3456 M	3456 Score	5760 Q	5760 M	5760 Score	10G Q	10G M	10G Score	Operator Calls
KB8RQ	2,373,600	Single Operator All Mode 144 MHz	258	92	258	92	23736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
UT5ZN/P	1,069,200	Single Operator All Mode 144 MHz	162	66	162	66	10692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RU1AA	1,065,300	Single Operator All Mode 144 MHz	159	67	159	67	10653	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W3SZ	661,200	Single Operator All Mode 144 MHz	116	57	116	57	6612	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7K3LGC	591,600	Single Operator All Mode 144 MHz	116	51	116	51	5916	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K11T	560,000	Single Operator All Mode 144 MHz	112	50	112	50	5600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K3RWR	550,800	Single Operator All Mode 144 MHz	108	51	108	51	5508	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NTØV	548,800	Single Operator All Mode 144 MHz	112	49	112	49	5488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LZ1DP	450,000	Single Operator All Mode 144 MHz	100	45	100	45	4500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
WØXG	446,500	Single Operator All Mode 144 MHz	95	47	95	47	4465	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W5ZN	306,600	Single Operator All Mode 144 MHz	73	42	73	42	3066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W2DBL	264,600	Single Operator All Mode 144 MHz	54	49	54	49	2646	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RZ6DD	258,300	Single Operator All Mode 144 MHz	63	41	63	41	2583	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
YL2AJ	261,300	Single Operator All Mode 144 MHz	67	39	67	39	2613	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W4YTB	255,300	Single Operator All Mode 144 MHz	69	37	69	37	2553	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
L8BKV	219,600	Single Operator All Mode 144 MHz	61	36	61	36	2196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KAØRYT	185,500	Single Operator All Mode 144 MHz	53	35	53	35	1855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RU3GX	169,600	Single Operator All Mode 144 MHz	53	32	53	32	1696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K45QC	160,000	Single Operator All Mode 144 MHz	50	32	50	32	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
I2SVA	123,200	Single Operator All Mode 144 MHz	44	28	44	28	1232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DK7ME	79,200	Single Operator All Mode 144 MHz	33	24	33	24	792	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KB5WIA	77,700	Single Operator All Mode 144 MHz	37	21	37	21	777	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EB1DNK	60,800	Single Operator All Mode 144 MHz	32	19	32	19	608	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LZ2FO	59,400	Single Operator All Mode 144 MHz	27	22	27	22	594	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EA3NE	52,500	Single Operator All Mode 144 MHz	25	21	25	21	525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PA5MS	52,000	Single Operator All Mode 144 MHz	26	20	26	20	520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
UT2EG	41,800	Single Operator All Mode 144 MHz	22	19	22	19	418	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K8DIO	41,400	Single Operator All Mode 144 MHz	23	18	23	18	414	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KD7UO	39,600	Single Operator All Mode 144 MHz	22	18	22	18	396	0	0	0	0	0	0	0	18	2	0	0	0	0	0	0	0	0	0	0	0	0	
UA10EJ	32,500	Single Operator All Mode 144 MHz	25	13	25	13	325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LZ1VPV	28,900	Single Operator All Mode 144 MHz	17	17	17	17	289	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LZ4OC	25,500	Single Operator All Mode 144 MHz	17	15	17	15	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SM5EPO	18,000	Single Operator All Mode 144 MHz	15	12	15	12	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KG7P	16,200	Single Operator All Mode 144 MHz	18	9	18	9	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
UAØLW	15,000	Single Operator All Mode 144 MHz	15	10	15	10	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KBØPPQ	14,000	Single Operator All Mode 144 MHz	14	10	14	10	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W1FKF	13,000	Single Operator All Mode 144 MHz	13	10	13	10	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N1EYE	6,300	Single Operator All Mode 144 MHz	9	7	9	7	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RWØJC	4,200	Single Operator All Mode 144 MHz	7	6	7	6	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
YO6XK	3,600	Single Operator All Mode 144 MHz	6	6	6	6	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KJ7OG	2,500	Single Operator All Mode 144 MHz	5	5	5	5	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
KUBL	2,400	Single Operator All Mode 144 MHz	6	4	6	4	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
YL2FZ	2,000	Single Operator All Mode 144 MHz	5	4	5	4	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
WA4MYO	100	Single Operator All Mode 144 MHz	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K5QE	1,600	Single Operator All Mode 222 MHz	4	4	0	0	0	4	4	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K9KNW	100	Single Operator All Mode 222 MHz	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N2EME	100	Single Operator All Mode 222 MHz	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N9HF	100	Single Operator All Mode 222 MHz	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
UXØFF	85,000	Single Operator All Mode 432 MHz	34	25	0	0	0	0	0	0	34	25	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
YK4EME	51,300	Single Operator All Mode 432 MHz	27	19	0	0	0	0	0	0	27	19	513	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W4ZST	20,400	Single Operator All Mode 432 MHz	17	12	0	0	0	0	0	0	17	12	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
OK2POI	19,500	Single Operator All Mode 432 MHz	15	13	0	0	0	0	0	0	15	13	195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
K7ULS	7,200	Single Operator All Mode 432 MHz	9	8	0	0	0	0	0	0	9	8	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

2015 ARRL EME Contest - Scores and QSO/Multiplier Breakdown by Band																																
Call	Score	Category Name	QSOS	Mults	144 Q	144 M	144 Score	222 Q	222 M	222 Score	432 Q	432 M	432 Score	1296 Q	1296 M	1296 Score	2304 Q	2304 M	2304 Score	3456 Q	3456 M	3456 Score	5760 Q	5760 M	5760 Score	10G Q	10G M	10G Score	Operator Calls			
SP6JLW	418,300	Multi Operator CW Only All Band	89	47	0	0	0	0	0	0	6	6	36	83	41	3403	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+SP6OPN, SQ6OPG)	
SP7DCS	328,500	Multi Operator CW Only All Band	73	45	6	5	30	0	0	0	10	8	80	50	25	1250	7	7	49	0	0	0	0	0	0	0	0	0	0	0	(+SP7MC)	
VA7MM	260,000	Multi Operator All Mode 1.2 GHz	65	40	0	0	0	0	0	0	0	0	0	65	40	2600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(VE7CMK, VE7CNF,ops)	
IK5VLS	195,000	Multi Operator All Mode 1.2 GHz	78	25	0	0	0	0	0	0	0	0	0	78	25	1950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+IK5AMB, IZ5DIY, IZ5OVP)	
K6JEY	9,000	Multi Operator All Mode 1.2 GHz	10	9	0	0	0	0	0	0	0	0	0	10	9	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+W6SZ, N6NM, KJ6HZ, N6EV)	
OK1KIR	49,300	Multi Operator All Mode 10 GHz	29	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	17	493	(OK1DAI, OK1DAK,ops)		
W6YX	6,434,400	Multi Operator All Mode All Band	383	168	196	67	13132	0	0	0	41	24	984	113	51	5763	19	16	304	0	0	0	0	0	0	0	14	10	140	(AD6FP, KG4UHM, KJ6SDF, K6PR, KG6NUB, KK6QYP, N6SPP, AD6IW, K6KLY, KK6TFY, N9JIM, K6TJ, K2YY,ops)		
PJ7/PE1L	1,170,400	Multi Operator All Mode All Band	154	76	93	37	3441	0	0	0	27	19	513	34	20	680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+K5QE, PA3FPQ, PE1LWT)	
YL3CT	457,600	Multi Operator All Mode All Band	88	52	73	41	2993	0	0	0	15	11	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+YL2OW, YL2NX)	
LU1CGB	395,000	Multi Operator All Mode All Band	79	50	55	31	1705	0	0	0	0	0	0	24	19	456	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+LU8ENU, LU1AGR, LU9DO, LU1FAM, LU1AEE)	
K4EME	209,000	Multi Operator All Mode All Band	55	38	1	1	1	0	0	0	28	19	532	26	18	468	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+AD4TJ)
DL25UNION	2,160,000	Multi Operator All Mode 144 MHz	270	80	270	80	21600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(DF7KF, DM1CG, DM1AC,ops)
HA1VHF	1,353,000	Multi Operator All Mode 144 MHz	205	66	205	66	13530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(HA1YA, HA1WA,ops)
FG6EO	197,500	Multi Operator All Mode 144 MHz	79	25	79	25	1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+FOEUI, FSUNH)
OH2PO	424,000	Multi Operator All Mode 432 MHz	106	40	0	0	0	0	0	0	106	40	4240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+OH2BGR, OH2HYT, OH6DD)
LU8ENU	28,500	Multi Operator All Mode 432 MHz	19	15	0	0	0	0	0	0	19	15	285	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(+LU1CGB, LU1AGR, LU9DO, LU1FAM, LU1AEE)