



ARRL International EME Contest

2012 Results

by Rick Rosen, K1DS

Have You Been Touched by a Moonbeam?

As with many radio contests, those who show up in the winners' listings have invested much time, energy and often significant funds over years to make their stations highly competitive. Yet there have been dozens of demonstrations showing how even basic stations with moderate power and modest antennas can catch a piece of the action. What's needed is the knowledge and the will to do it.

As many who are successful moonbounce neophytes can attest, there is a great thrill and sense of satisfaction in completing a VHF QSO via reflection by the Moon. Three weekends of moonbounce make this contest an opportunity for all those capable of EME (Earth-Moon-Earth). Seventy-two hours across three weekends

is a big time commitment for radio contesting. The activities were held on the weekends of October 6-7 for bands 2.3 GHz and up, and for 50 MHz-1.2 GHz on November 3-4 and December 1-2.

There were 107 logs submitted, down from the 130 entries last year, but equal to the number of logs for 2010. Eighty-nine (83%) of the entries were single-operator and the other 18 (17%) were multioperator. Forty-one were submitted for single-band 144 MHz, 37 single-op and 4 multiop. Nine stations, including 1 multiop, operated single-band on 432 MHz. Twenty-three stations operated single-band on 1296 MHz, including 3 multi-ops. Only 4 stations had single-band entries on 2.3, 3.4 or 5.7 GHz. The rest of the entries participated on two to six bands.

One log missing from this year's submissions is that of long-time EME operator Philippe, F2TU who suffered an unfortunate fall and substantial injuries while changing a feed at his dish antenna. Our wishes for a full recovery go out to him and his family.

As with many other radio contests, less than half of the operators submit logs. There were 231 stations in the 144 MHz multiop log of RX1AS! In a review of the EME reflector

postings, many stations listed planned activities and results but their calls did not show up in submitted logs. What can we do to get more of the participants to submit their logs? When the dates of the contest weekends were announced, there was some concern expressed that those moon passes were not optimal, yet most operators gave their best efforts to maximize their contacts. Having several entry categories, including single- and multioperator, and CW or All Mode, operators could decide

how best to use their station and time to satisfy their goals.

Zdenek, OK1DFC homebrewed this 10 meter dish and feed. (Photo OK1DFC)



Regarding entries and scoring, there were concerns on the part of both the entrants and the staff regarding the recognition of the winners of various categories. As a result of the feedback from the EME contest community, beginning this year stations entering multi-band categories are eligible for single-band awards as well,

making it possible to receive multiple awards. According to the revised ARRL contest rules for Awards, "Certificates will be awarded to the top three stations worldwide in each of the following categories where significant effort or competition is evident:

- 8.1 Single operator, Multi-band, All Mode
- 8.2 Single operator, Multi-band, CW Only
- 8.3 Single operator, All Mode, for each single band.
- 8.4 Single operator, CW, for each of the single bands 144, 432, and 1296 MHz.
- 8.5 Multioperator, Multi-band, All Mode
- 8.6 Multioperator, Multi-band, CW Only
- 8.7 Multioperator, All Mode, for each single band.
- 8.8 Multioperator, CW, for each of the single bands 144, 432, and 1296 MHz.

Multiband entrants will also be listed in the single band tables, and are eligible for those awards.” In previous years, stations entering a multi-band category were only allowed to receive multi-band awards.

Additional tables show who won the top three places in the four major categories (single- and multiop, CW and All Mode) and also the single-band winners. A major category winner may also be the winner of a single-band award.

The Bands and Modes

There were no reports of activity on 50 MHz for this contest. There were 56 logs entered with 144 MHz contacts. CW operators were concerned about the diminishing number of available CW contacts as the majority of activity on this band was using WSJT. We had 30 logs with contacts on 432 MHz and many comments regarding the paucity of CW activity. A suggestion to increase CW activity is to allow a station to be worked once on CW and once on digital modes for credit on a band.

Activity on 1296 MHz was marked by 49 logs. The popularity of this band continues to increase with greater availability of low noise and high gain preamplifiers, surplus dishes and high power SSPAs (solid-state power amplifiers). The absence of Faraday rotation with the use of circularly polarized signals enhances reception. The ONØEME beacon has also been a valuable tool for those who are testing the capabilities of their set-up on this band.

On 2.3 GHz there were 19 logs submitted, but this understates the activity, as there were 39 CW contacts alone in the SV1BTR entry. With different band allocations around the world, a band-scope was very useful. Only 5 logs had 3.4 GHz contacts for a total of 15 QSOs. Considering the growing use of combiners with SSPAs, the expectations are that the numbers of logs and contacts on this band will grow. There were 10 logs with 5.7 GHz entries with a total of 108 contacts reported. The only log on 10 GHz was from OK1CA with 2 contacts.

Of all the logs reviewed, 43 of the entrants were CW only and 38 were digital only. The remaining 26 logs showed use of both modes. With the first weekend devoted to bands 2.3 GHz and up, it was a challenge for participants with several bands available to decide which bands to operate and when. Unless you had multiple dishes, feeds and band scopes, you had to balance band and feed changes with operating time, moon position and any pre-arranged schedules.

Stresses and Successes

There were many comments about the conditions and the troublesome effects of moon libration. Jimmy, SV1BTR had the problems of a damaged elevation encoder and PA flashover (both repaired). He also reported some RF burn to his eye while checking the dish alignment with the Moon. Although the injury was slight and healed, it is a warning to be mindful as we increase power on the microwaves with focused energy in front of and through the dish.

Gerald, K5GW, had his 2 meter amplifier fail on the last day of the contest but that gave him more time to operate on 432 MHz. Wolfgang, DL5MAE reported the outdoor temperature of -10° C and everything full of ice. Cowles, K4EME was busy rebuilding his station after a storm in July. Simon, ZL4PLM lost his complete system and came home to twisted metal on the last contest weekend. Herb, K2LNS was readying the station at WA2FGK when Hurricane Sandy came along and broke the newly mounted dish right off its setting. At LU1C, Adrian reported that a tree fell and much to their advantage opened a greater Moon visibility window. Several European stations experienced problems with interference from the terrestrial VHF-UHF contest which was scheduled for the same weekend.

Table 1: Top Three Scores by Category

Single-Operator	Station	Bands	QSOs	Mults	Score
All Mode	K5GW	BDEFGH	274	159	4,356,600
	UA3PTW	BDE	293	126	3,691,800
	LZ1DX	BDEF	147	100	1,470,000
CW Only	SV1BTR	BDEFH	196	120	2,352,000
	G3LTF	DEFGH	153	90	1,377,000
	OZ4MM	BDEF	134	84	1,125,600
Multioperator	Operators				
	All Mode	K1JT	BDEFGH	362	167
CW Only	W6YX	BDE	143	79	1,129,700 (K2YY, KJ6SDF, AA6XV, W6TCP, KG6NUB, W6RK, N7MH, AD6FP, AD6IW, ops)
	LU1C	BDE	101	62	626,200 (LU1AEE, LU1AGR, LU1CGB, ops)
	SP7DCS	BDE	103	62	638,600 (+ SP7MC)
	S59DCD	EF	80	45	360,000 (S570 & S5ØX, ops)
	WD5AGO	EF	66	46	303,600 (+ KF5NTV & KF5SYP)

Despite these difficulties, we had some outstanding results as demonstrated in Table 1. In first place Single-op, Multiband, CW Only, operator Jimmy, SV1BTR repeated his success of top score for the past several years. Using 5 bands (BDEFH) he scored 2.352 million points. He also made the top CW Only scores for a single-op entry on bands BDFH. Second place in the CW Only category is Peter, G3LTF with 1.377 million points on 5 bands (DEFGH). Taking third place in CW Only, Stig, OZ4MM had 1.125 million points on 4 bands (BDEF). The top honors for a Single-op, Multiband, All Mode entry goes to Gerald, K5GW who posted a super score of 4.536 million points on 6 bands (BDEFGH). Dmitry, UA3PTW was not far behind in second place for All Mode, using only 3 bands (BDE) to score 3.691 million. Third place was won by Ned, LZ1DX with 1.470 million points on 4 bands (BDEF).

In the Multioperator, Multiband, CW Only category, the top honors go to Krzysztof, SP7DCS who with his son Maciek, SP7MC scored 638K points on 3 bands (BDE). One of their significant station improvements was placing the 432 SSPA closer to the antenna and elimination of a long run of coax. Second place went to S59DCD with operators Franc, S570 and Silvo, S5ØX scoring 360K points using bands EF. Rounding out the top three in Multiop, Multiband, CW Only is Tommy, WD5AGO who together with Travis, KF5NTV and Bob, KF5SYP posted 303K points on bands EF. In first place in the Multioperator, Multiband, All Mode category with 6.045 million points was the K1JT team with operators K1DS, K2BMI, K2QM, K2TXB, K2UYH, NE2U, K3TUF, and

W9IP. They used 6 bands (BDEFGH) to keep up their winning streak of the past few years in this category. The nine operators at W6YX used bands BDE for 1.129 million points and second place. At LU1C, the three operators LU1AEE, LU1AGR and LU1CGB turned in a 3rd place score of 626K points, also on bands BDE.

Several participants had single-band entries. Some had only one band for EME, while others focused on a single band to try and catch new initials and others planned maximize one band's score in search of a certificate. The top scorers in each of the single-band entries are listed in Table 2. Stations in the multiband categories whose score on a single band eclipsed that of a single-band entry are the actual winners of the top scoring awards for that single band as noted in Table 3.

Table 2: Top Single-band Entries

These are listed only for score comparison purposes.

Single-Operator	Station	QSOs	Mults	Score
CW Only 144 MHz	YO2AMU	8	8	6,400
	YO5BIN	5	5	2,500
	VK5APN	4	4	1,600
All Mode 144 MHz	KB8RQ	213	76	1,618,800
	RK3FG	198	70	1,386,000
	OK1DIX	150	58	870,000
CW Only 432 MHz	KØRZ	25	19	47,500
	I2FHW	20	13	26,000
	JA9BOH	13	12	15,600
All Mode 432 MHz	K3MF	24	20	48,000
	PAØPLY	20	17	34,000
	UT2EG	12	11	13,200
CW Only 1.2 GHz	I1NDP	99	42	415,800
	IK1MTZ	83	37	307,100
	G4CCH	82	37	303,400
All Mode 1.2 GHz	OK1DFC	111	45	499,500
	IK3COJ	60	30	180,000
	PA3FXB	60	29	174,000
All Mode 2.4 GHz	R3YA	29	23	667,000
All Mode 3.4 GHz	PY1KK	6	5	3,000
Multioperator	Operators			
	All Mode 144 MHz	RX1AS	231	76
All Mode 432 MHz	(+ RU1AA)			
	DKØKK	202	75	1,515,000
	(DM1CG, DM1AC, DF7KF, ops)			
All Mode 1.2 GHz	IK1UWL	125	57	712,500
	(+ IZ1CGT)			
	OH2PO	86	34	292,400
CW Only 1.2 GHz	(+ OH2BGR, OH2HYT, OH6DD)			
	SP6JLW	81	38	307,800
	(+ SP6OPN & SQ6OPG)			
All Mode 1.2 GHz	UA5Y	83	36	298,800
	(R3YA, RA3Y, UA3YY, ops)			
	IK5VLS	28	17	47,600
All Mode 2.4 GHz	(IK5AMB, IZ5AXB, IZ5OYP, ops)			
	SP6OPN	32	28	89,600
	(+ SP6JLW)			
All Mode 5.7 GHz	OK1KIR	17	12	20,400
	(OK1DAI & OK1DAK, ops)			
	SQ6OPG	10	9	9,000
	(+ SP6OPN & SP6JLW)			

If you have ever considered making a moonbounce contact, there is useful information on the web, a chapter in the *ARRL Handbook*, and web-based EME newsletters for both 144 MHz (www.df2zc.de/newsletter) and for 432 MHz and Up (www.nitehawk.com/rasmit/em70cm.html). There is also an EME net each Saturday and Sunday morning on 14.345 MHz at 1500Z.

Contacts between smaller stations with 100 watts and a single Yagi on 144 MHz or 432 MHz are often made with other larger and more powerful stations. On 1296 MHz there have been many stations with a 10-foot dish and 100 watts at the feed making multiple EME QSOs. Many of the regional VHF conferences have talks and demonstrations of EME and the 432 MHz and Up group has an International EME meeting

every other year; the next conference will be held in France in the summer of 2014.

The three weekends scheduled for the ARRL EME contest in 2013 are September 28-29 (2.3 GHz and up), October 26-27 (50-1296 MHz) and November 16-17 (50-1296 MHz). Personally, I am waiting for warmer weather in order to get my portable EME gear on the air. I hope to be able to work you off the Moon soon!

Table 3: Top Three Band-Score Winners

Single-Operator	Station	QSOs	Mults	Score
All Mode 144MHz	KB8RQ	213	76	1,618,800
	RK3FG	198	70	1,386,000
	UA3PTW	170	64	1,088,000
CW only 144MHz	SV1BTR	29	18	28,500
	SM2CEW	10	9	9,000
	N4GJV	10	9	9,000
All Mode 432MHz	LZ1DX	63	40	252,000
	UA3PTW	62	32	198,400
	K5GW	45	34	153,000
CW only 432MHz	SV1BTR	36	23	82,800
	OZ4MM	31	21	65,100
	KØRZ	25	19	47,500
All Mode 1.2GHz	OK1DFC	111	45	499,500
	K5GW	78	34	265,200
	UA3PTW	61	30	183,000
CW only 1.2GHz	I1NDP	99	42	415,800
	IK1MTZ	83	37	307,100
	G4CCH	82	37	303,400
All Mode 2.3GHz	SV1BTR	39	30	117,000
	G3LTF	34	26	88,400
	OZ4MM	35	25	87,500
All Mode 3.4GHz	PY1KK	6	5	3,000
All Mode 5.7GHz	SV1BTR	19	13	24,700
	OK1CA	14	12	16,800
	K5GW	10	8	8,000
All Mode 10.3GHz	OK1CA	2	2	400
Multioperator	Operators			
	All Mode 144MHz	RX1AS	231	76
All Mode 432MHz	DKØKK	202	75	1,515,000
	K1JT	182	68	1,237,600
	SP7DCS	19	15	28,500
CW only 432MHz	OH2PO	86	34	292,400
	K1JT	59	29	171,100
	K4EME	35	24	84,000
All Mode 1.2GHz	SP7DCS	18	16	28,800
	K1JT	82	37	303,400
	UA5Y	83	36	298,800
CW only 1.2GHz	W6YX	60	32	192,000
	S59DCD	80	45	360,000
	SP6JLW	81	38	307,800
All Mode 2.3GHz	SP7DCS	66	31	204,600
	SP6OPN	32	28	89,600
	WD5AGO	26	22	57,200
All Mode 3.4GHz	K1JT	24	20	48,000
	K1JT	4	4	1,600
	OK1KIR	17	12	20,400
All Mode 5.7GHz	OK1KIR	4	4	1,600
	K1JT	11	9	9,900
	SQ6OPG	10	9	9,000

Thanks to my XYL Jani for her proofreading and support of my radio activities. Many thanks as well to all those EME operators who have managed to get me this far in making QSOs via the Moon.