By **Dan Henderson, N1ND**
Contest Manager

1998 ARRL International EME Competition Results

As a young ham many years ago, I sat in wonderment and awe at the marvels this exciting hobby offered. Maybe it was a product of growing up in the '60s, but nothing fascinated me more than the fact that hams actually used the Moon to make contacts. Bouncing signals off the Moon seemed an unattainable goal to me, especially after visiting the NASA satellite tracking station located deep in the mountains of western North Carolina. Seeing the giant dish that was used to talk through outer space, I knew this was something I wanted to try. Making EME (Earth-Moon-Earth, otherwise known as *moonbounce*) contacts was a goal I set for myself in this hobby after that visit to the tracking station.

Well, 30 years later I still need that first EME contact, but 212 of the brethren used the 1998 ARRL International EME Competition to polish their skills in what continues to be one of the most captivating and challenging aspects of our hobby. Because of their refinement in equipment and operating techniques, "newbies" to EME need not be intimidated if they decide to tackle the challenges that this unique mode offers.

Reaction was mixed regarding the fact that the two competition weekends were separated by 2 months. Some didn't find this to be a problem, but for others the later weekend in December brought winter storm conditions. Yet overall participation remained high, and a smattering of newcomers to the EME ranks emerged, as did most of the reliable EME "big guns."

The top single-op multiband winner was OE5EYM. No stranger to being on the leaderboard, Ernst led the pack with 1,757,299 points and 191 QSOs on 3 bands. Dave, W5UN, led all single-op scorers with an outstanding 330 QSOs worth 1,815,000 points on 144 MHz. Close on his heels was SM5FHR, only 4 QSOs behind. Single-band leaders included DL9KR's 524,000 point effort on 432 MHz, K5JL with 291,600 on 1296 MHz, and OE9ERC with 18,200 on 2304 MHz.

Gerald, K5GW, and company blew away the competition for Multiop Multiband with a score of 2,888,400. The Multiop Single-band score leaders included the crew at KB8RQ with 1,162,800, the ops at OH2PO with 552,000, and the gang at OH2AXH with 195,300 points on 144, 432 and 1296 MHz respectively. There were 113 single band entries on 144-MHz, making it the most popular band. A special tip-o'the-hat to W5LUA for completing a contact on 10 GHz, a great accomplishment under any circumstances. Entries were received from 33 entities on the DXCC list, making this a truly international event.

Because of the split nature of the 1998 contest, an additional noncompetitive microwave EME weekend was held November 7-8 1998. This experiment seemed to attract a great deal of interest. Read the sidebar by Joel Harrison, W5ZN, for an

My First Moonbounce Experience

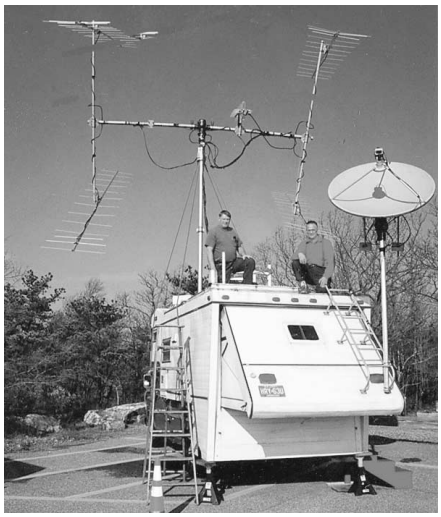
I heard F3VS, SM5FRH and IK3MAC during Moonrise and tried to contact them. But alas, I was not running much power. Saturday during Moonset I concentrated on W5UN. Lo and behold he came back to me after a few attempts but he didn't have my call sign correct. I tried again but time ran out. Frustrated, yet encouraged, I vowed to try again the following day.

Dave was there again at Moonset. I noticed I could hear him when the Moon was lower than 15° (no elevation control here). His signal started to come up below 12° Moon elevation. As luck would have it, Dave was ending a contact just as ground gain was increasing for me. Gosh, Dave was a full S2 on my meter. It was now or never.

I called him and—bang!—he came back! (There *is* a God!) He sent me his Os and I sent RSs. He sent me Rs and 73 and that was that. Unbelievable! I measured the output on my FT-847 with my Bird wattmeter and it was only 45 W. EME *can* be done with low power! Thanks to WA9KRT and K6MYC whose advice helped me get hooked on this mode. And thanks to Dave for your dedication to EME. It was truly a dream come true for me.— *Rees W. Roberts, K9UUT*

DJ5MN obviously doesn't have to deal with deed restrictions or zoning ordinances.

The KB4CNI antenna system has the target in its sights.



John, N2PBY, and Al, NX2Q, trying to get the shuttle from the Starship Enterprise ready for operation in the EME contest.

account of this noncontest weekend.

Start planning now for the 1999 ARRL International EME Competition. Check the ARRL Contest Branch home page on the Web at **http://www.arrl.org/contests** for rules and information. Maybe this will be the year I am able to make my trip to the Moon via Amateur Radio!

The Microwave EME Noncompetitive Weekend

The first ARRL-sponsored Microwave EME weekend was a great success. The event took place on November 7 and 8 and concentrated on EME activity at 2300 MHz and higher. Entries indicated that about 30 stations from 15 countries participated. Twenty stations were active on 13 cm, 11 on 6 cm and 8 on 3 cm. Two stations were active on 9 cm but no two-way QSOs were recorded. Two days is not enough time to operate four microwave amateur bands on EME!

Participating stations included: CT1DMK, F1ANH, F2TU, G3LTF, HB9SV, I6PNN, IK2RTI, JA4BLC, JA8IAD, JA7BMB, NU7Z, OE9ERC, OE9PMJ, OE9XXI, OE9YTV, OH2AXH, OH2DG, OK1KIR, OZ4MM, S57UUU, SM3AKW, SM4DHN, VE4MA, VE7CLD, W4HHK, W5LUA, WA7CJO, WA8WZG, WD5AGO (SWL report), and ZS6AXT

The first/second/third place single-band, single-operator entries on each band are as follows: on 13 cm, OE9ERC/ZS6AXT/W5LUA, on 6 cm, OE9PMJ/OE9ERC/W5LUA and on 3 cm, WA7CJO/W5LUA/VE4MA. OK1KIR was on top as the only multioperator entry. First/second/third place multiband entries went to W5LUA/OE9ERC/VE4MA.—*Joel Harrison, W5ZN*

Soapbox

Operating without polarity control on 432 MHz is like having both hands tied behind your back and one foot in a cast (K1FO)… I must be the weakest signal on the band (WO9Z)… The weather was no problem at all this year, but high return loss on the 70 cm dipoles limited me to 23 cm the first weekend. After too many cokes, brownies and cookies, I had a great time (N2IQU)… It's nice to see how my results improved with a better receive system and improved operating practices (PE1LWT)… Conditions were bad for small system owners (WW2R/5)… I still enjoy EME but it's getting harder every year as the "village" becomes more crowded (PE1OGF)… Today I could recognize 2 call signs listening to the morning shower, a QRZ made my car's door open, and at least 3 complete CQs were heard from the car engine (CT1DMK)… Two meters sounded like 20 on the first day of the contest (W4AD)… Even my own echoes were moving the S meter, which is something I seldom have seen (HO3A)… These were my first EME QSOs ever. I am very excited and can't wait until next year (9A3PA)… We did pretty well this year, as we had more power and new coax (VE2JWH)… Brutal winter weather conditions gave us severe problems in the 2nd part of the contest (DJ5MN)… I am building a 4-bay antenna with elevation for 144. It will be ready for 1999 (W9JN)… Absolutely fantastic contest. Station improvements over last year were rewarded. Bigger and better next year (VE3KDH)… Having polarity flexibility is definitely an advantage (K6MYC)… Kiruna is at 68° N, about 100 km north of the Arctic Circle. Guess that makes me the northernmost station active on EME at the present (SM2BYA)… I had made only 12 EME contacts before the contest. Doubled that over the weekend without much effort. What a rush! (N3FA).

Scores

Each line score lists call sign, score, stations worked, multipliers, and band (A= 50 MHz, B = 144 MHz, C = 222 MHz, D = 432 MHz, 9 = 902 MHz, E = 1296 MHz, F = 2304 MHz, I = 10 GHz).

Single Operator, Multiband

OE5EYM	1,757,200	68	35	B
		65	29	D
		58	28	E
OZ5MM	1,081,600	110	34	D
		59	30	E
N2IQU	967,200	95	32	D
		61	30	E
SM3AKW	966,000	12	9	B
		70	28	D
		58	32	E
VE1ZJ	825,500	73	31	B
		12	11	D
		42	23	E
F6CGJ	765,600	20	13	B
		30	18	D
		66	35	E
CT1DMK	542,800	40	26	B
		19	16	D
		33	17	E
W7HAH	480,200	77	34	B
		21	15	D
VE1ALQ	469,800	31	25	D
		50	33	E
G3LTF	469,200	42	21	D
		49	29	E
		1	1	F
F5AQC	436,800	29	20	D
		55	32	E
KD4LT	396,900	33	21	D
		48	28	E
EA3DXU	313,900	53	28	B
		20	15	D
WD5AGO	289,800	27	17	D
		42	25	E
OZ6OL	222,000	17	15	D
		43	22	E
OH2DQ	163,200	26	16	D
		24	15	E
		1	1	F
JA4BLC	151,800	25	16	B
		18	14	D
		3	3	F
W5LUA	134,400	33	17	E
		30	3	F
		1	1	I
JA5NNS	105,000	8	8	B
		34	17	C
WA8WZG	48,600	4	4	B
		23	14	E
YO2IS	47,500	10	7	B
		15	12	D
K9BCT	41,800	12	10	E
		10	9	D
S51ZO	27,200	5	5	B
		12	11	D
WL7U	400	1	1	B
		1	1	D

Single Operator, 144 MHz

W5UN	1,815,000	330	55	B
SM5FRH	1,793,000	326	55	B
SM5BSZ	930,000	186	50	B
VE3KDH	614,900	143	43	B
K2GAL	396,000	99	40	B
K6MYC	356,400	99	36	B
I3DLI	329,000	94	35	B
LZ2US	321,900	87	37	B
EA2LU	316,200	93	34	B
WØHP	298,800	83	36	B
PA2CHR	268,800	84	32	B
OZ9AAR	250,800	76	33	B
WA6PEV	227,200	71	32	B
7K3LGC	210,000	70	30	B
EA6VQ	204,800	64	32	B
F6BSJ	180,000	60	30	B
JH2COZ	162,400	56	29	B
K8BHZ	156,600	54	29	B
IV3GBO	150,800	52	29	B
N2WK	147,900	51	29	B
KØFF	145,600	52	28	B
EA2AGZ	142,800	51	28	B
UA3PTW	139,200	48	29	B
NØAKC	115,000	46	25	B
IK2DDR	112,500	45	25	B
WA1JOF	105,600	44	24	B
I1ANP	103,500	45	23	B
AA7A	78,200	34	23	B
W4AD	78,200	34	23	B
JH5FOQ	70,400	32	22	B
PE1LCH	69,000	30	23	B
UA4AAV	69,000	30	23	B
9A9B	65,100	31	21	B
GM4JJJ	63,800	29	22	B
SP7DCS	54,000	27	20	B
K1CA	53,300	41	13	B
SM2BYA	52,000	26	20	B
WB4JEM	46,000	23	20	B
DJ3WA	42,500	25	17	B
Z3ØB(Z31RQ,op)	36,800	23	16	B
KC7YVZ	36,800	23	16	B
WØPT	36,000	20	18	B
F9HS	33,600	21	16	B
JHØISW	30,000	20	15	B
SM7SJR	29,900	23	13	B
EA1ABZ	28,600	22	13	B
PE1OGF	26,600	19	14	B
YO2AMU	24,000	20	12	B
KJ7F	22,100	17	13	B
WA7TDU	17,600	16	11	B
PE1LWT	17,600	16	11	B
EA1YV	15,000	15	10	B
JHØWJF	14,400	16	9	B
JK1HIX	14,000	14	10	B
UA3DJG	12,600	14	9	B
N3FA	10,800	12	9	B
WØEKZ	9,900	11	9	B
W1AIM	9,000	10	9	B
F9DO	8,400	14	6	B
KO6RD	7,000	10	7	B
9A3PA	6,300	9	7	B
W7OE	4,200	7	6	B
K7MAC	4,200	7	6	B
JR3REX	3,600	6	6	B
SM4HFI	3,500	7	5	B
K5AM	3,000	6	5	B
NØKQY	3,000	6	5	B
W8TN	3,000	6	5	B
WA3BZT	2,500	5	5	B
WA1OUB	2,400	6	4	B
W9JN	2,000	5	4	B
WØRT	2,000	5	4	B
W5UWB	2,000	5	4	B
JHØBBE	2,000	5	4	B
YO2DM	1,600	4	4	B
VE3EQQ	1,600	4	4	B
W8/NP4C	1,200	4	3	B
N4CNN	1,200	4	3	B
W3SZ	900	3	3	B
G4BRK	900	3	3	B
LY2SA	600	3	2	B
N8XA	400	2	2	B
IZ5BXF	400	2	2	B
N6ZE	400	2	2	B
K9DTB	400	2	2	B
KB9MLA	400	2	2	B
SV4BGY	100	1	1	B
PA3BUT	100	1	1	B
W9JJ	100	1	1	B
N8ZAT	100	1	1	B
NØUK	100	1	1	B
W8GP	100	1	1	B
WA8RJF	100	1	1	B
K9UUT	100	1	1	B
WO9Z	100	1	1	B

Single Operator, 432 MHz

DL9KR	524,000	131	40	D
DJ6MB	414,200	109	38	D
UR5LX	381,600	106	36	D
K1FO	346,800	102	34	D
N4GVZ	346,500	105	33	D
N9AB	279,000	90	31	D
JA5OVU	252,300	87	29	D
HA1YA	210,000	70	30	D
G4ERG	170,100	63	27	D
KØRZ	141,600	59	24	D
DL4MEA	81,400	37	22	D
W7QX	77,900	41	19	D
JH1XUJ	76,000	38	20	D
7M2PDT	74,100	39	19	D
K5WXN	69,700	41	17	D
W8MQW	62,900	37	17	D
ON5OF	50,400	28	18	D
DL3EAG	43,200	27	16	D
W7FN	43,200	27	16	D
JH4JLV	43,200	27	16	D
JS3SIM	31,200	24	13	D
IK5QLO	30,400	19	16	D
K1OR	28,000	20	14	D
I5TDJ	27,000	18	15	D
KV6J	26,600	19	14	D
JJ1NNJ	22,000	20	11	D
S52CW	20,400	17	12	D
JA2TY	16,500	15	11	D
HO3A	15,400	14	11	D
N7LQ	15,000	15	10	D
W7KK/6	14,400	12	12	D
UT3LL	14,300	13	11	D
SV1BTR	13,200	12	11	D
WB2VVV	11,000	11	10	D
IK5WJD	6,400	8	8	D
JJ3JHP	3,600	6	6	D
WW2R/5	3,000	6	5	D
ZS6PT	900	3	3	D

Single Operator, 1296 MHz

K5JL	291,600	81	36	E
HB9BBD	258,400	76	34	E
OK1DFC	204,000	60	34	E
F5PAU	150,000	60	25	E
K4QI	148,200	57	26	E
JH5LUZ	122,400	51	24	E
W2UHI	119,600	46	26	E
F2TU	110,400	48	23	E
K2DH	103,500	45	23	E
DF4PV	103,400	47	22	E
JA6CZD	80,000	40	20	E
HA5SHF	78,200	34	23	E
EA3UM	76,000	38	20	E
DC6UW	70,300	37	19	E
W7CS	68,400	38	18	E
F5PL	58,800	28	21	E
W6HD	54,000	30	18	E
K3HZO	51,000	30	17	E
JF3HUC	12,000	15	8	E
K9ZZH	100	1	1	E

Single Operator, 2304 MHz

OE9ERC	18,200	14	13	F
ZS6AXT	8,000	10	8	F

Multioperator, Multiband

K5GW (K5GW,K5PW,WD5AGO)				
	2,888,400	234	53	B
		98	34	D
JL1ZCG (JH1DYV, JR4ENY, JE8IVF)				
	881,600	100	38	B
		52	20	D
DJ5MN (DL5MAE, DJ3MY, DL2MHS, HA1BC, DK5MV, DH5MFD, DJ5MN)				
	828,000	105	36	B
		25	17	D
		8	7	E
GD4IOM (GDØTEP,GD4GNH,G4XUM, G4VUO,G1GEY)				
	336,000	60	27	B
		20	15	D
N2HLT (N2HLT, NS9E, N2JDQ,KB2DMK, N2OLB)	6,400	2	2	B
		6	6	D

Multioperator, 144 MHz

KB8RQ (N8DFN)				
	1,162,800	228	51	B
F5VS (F5JTA, FB1PKC)				
	1,087,800	222	49	B
IK3MAC (IK3MAC, I3YXQ)				
	1,078,000	220	49	B
HB9Q (HB9CRQ, HB9DBM)				
	704,000	160	44	B
I2FAK (I2FAK, IK2LZT)				
	697,500	155	45	B
RU1A (RU1AA, RW1AC, RN1AM)				
	686,400	156	44	B
W1XE (W1XE, NØKE)				
	137,800	53	26	B
S52LM (S52LM, S53VV)				
	113,400	42	27	B
VE2JWH (VE2JWH, VE2AAY, VE2GUQ, VE2PSU)	52,000	26	20	B
S53J (S51XO, S52VE)				
	25,200	21	12	B
KK5IH (KK5KK, W5AL)				
	11,700	13	9	B
W6YX (KV3H, N3EEN, AC6TR)				
	7,000	10	7	B
SM2LKW (SM2LKW, SM2ELN)				
	5,600	8	7	B
SM7UFW (SM7UFW,SM7THS)				
	5,600	8	7	B
I2RV (I2RV, IW2MNU)				
	2,000	10	2	B
N2PBY (N2PBY, NX2Q, NG2N, KC2AIU)				
	1,600	4	4	B
WD5AGO/5 (WD5AGO, KC5LHH, KD5APJ)	900	3	3	B

Multioperator, 432 MHz

OH2PO (OH2PO, OH6DD)				
	552,000	138	40	D
F5FLN (F5FLN, F4ARU)				
	178,200	66	27	D
KB4CNI (K2VJ,KB4CNI)				
	42,500	25	17	D
F5KDK (F5IVP, F4SDD, F1CH, F4CJV)				
	6,000	15	4	D

Multioperator, 1296 MHz

OH2AXH (OH2BNH, OH2BSH, OH2LCT)				
	195,300	63	31	E
S59DCD (S54X, S5ØX, S57RTH)				
	132,600	51	26	E
ON5RR (ON5RR,ON7EH)				
	76,000	38	20	E
W4JSS (W4JSS, KB4FEM, N4SZ, KJ4X, KK4SO, N4AK)	3,000	6	5	E