

SIMULATIONS OF A 2 & 4 BAY ARRAY
OF YAGI ANTENNAS ON 6m - 50.150 MHz

TYPE OF ANTENNA	OPTIMAL STACKING							75% STACKING							F/R (dB)	Z (Ohms)	VSWR Band Width
	1 Ant		Spacing		4 Ant	2E ant	2H ant	Spacing		4 Ant	2E ant	2H ant					
	L (WL)	GAIN (dBd)	E (m)	H (m)	Gain (dBd)	Gain (dBd)	Gain (dBd)	E (m)	H (m)	Gain (dBd)	Gain (dBd)	Gain (dBd)					
Cushcraft A50-3S	0.29	5.26	5.55	3.84	9.49	8.32	6.46	4.16	2.87	8.69	7.84	6.21	9	40	1.10:1		
DK7ZB 3 28 ohm	0.31	5.74	5.64	3.82	10	8.76	7.05	4.23	2.86	9.32	8.34	6.9	10.9	28.6	1.11:1		
DK7ZB 3 12.5 ohm	0.31	6.34	5.94	4.11	12.52	9.35	9.45	4.46	3.08	11.47	8.95	8.87	13.7	13.1	1.29:1		
G0KSC 3 1.94m LFA	0.32	6.32	5.87	4.03	12.53	9.34	9.47	4.4	3.02	11.42	8.91	8.88	13.6	49	1.15:1		
M ² 6M3	0.34	6.36	5.98	4.24	12.61	9.38	9.52	4.49	3.18	11.55	8.95	8.98	13.1	17.7	1.26:1		
DK7ZB 4 28 ohm	0.36	6.26	5.84	4.06	11.88	9.27	9.39	4.38	3.04	11.36	8.83	8.82	13.5	28.6	1.02:1		
YU7EF 4	0.39	6.62	5.94	4.23	12.74	9.62	9.68	4.58	3.17	11.68	9.17	9.15	15.5	50	1.05:1		
DK7ZB 3 28 ohm	0.42	6.62	5.91	4.2	12.59	9.59	9.56	4.43	3.15	11.64	9.15	9.12	15	27.7	1.14:1		
DK7ZB 4 12.5 ohm	0.48	7.60	6.54	4.99	13.72	10.59	10.67	4.91	3.74	12.52	10.1	10.05	13.7	11.1	1.39:1		
Telrex 4	0.59	7.53	6.54	5.08	13.4	10.47	10.31	4.91	3.81	12.41	10.02	10.15	11.8	52.3	1.11:1		
HyGain 4 VB-64DX	0.59	7.55	6.59	5.16	13.45	10.5	10.36	4.94	3.87	12.4	10.06	10.16	11.3	55	1.03:1		
Cushcraft A50-5S	0.59	7.60	6.52	5.11	13.53	10.56	10.46	4.89	3.83	12.52	10.09	10.19	14	40.8	1.05:1		
G0KSC 4LFA	0.59	7.72	6.41	4.87	13.7	10.68	10.66	4.81	3.65	12.62	10.22	10.18	18.8	50	1.10:1		
DK7ZB 4 12.5 ohm	0.60	8.15	6.77	5.46	14.21	11.15	11.16	5.08	4.1	13.01	10.69	10.66	13.7	14.7	1.39:1		
Directive 4	0.62	8.17	6.89	5.49	14.23	11.14	11.17	5.17	4.12	13.11	10.71	10.69	12.8	12.9	1.54:1		
G4CQM 5	0.63	8.27	6.87	5.44	14.36	11.27	11.34	5.15	4.08	13.4	10.84	10.88	18.3	58.9	1.57:1		
YU7EF 5C	0.69	7.99	6.52	5.08	13.97	10.96	10.91	4.89	3.81	12.84	10.5	10.47	16.8	50.1	1.03:1		
DK7ZB 5 50 ohm	0.71	8.44	6.92	5.55	14.35	11.39	11.28	5.19	4.16	12.99	10.94	10.75	13	49.3	1.11:1		
OZ3SW 4 (OZ6FRS)	0.73	7.79	6.43	4.97	13.49	10.71	10.43	4.82	3.73	12.67	10.32	10.3	15	31.7	1.10:1		
G0KSC 5 4.4 LFA	0.73	8.47	6.88	5.48	14.55	11.45	11.53	5.16	4.11	13.49	11.01	11.02	21.5	49.9	1.08:1		
DK7ZB 5 28 ohm	0.75	8.60	7.02	5.64	14.53	11.56	11.47	5.27	4.23	13.16	11.11	10.89	13.3	29	1.10:1		
YU7EF 5A	0.75	8.59	6.97	5.64	14.51	11.54	11.12	5.23	4.23	13.07	10.91	10.84	12.9	49.4	1.06:1		
IZ1MYT 5	0.75	8.91	7.27	6	14.89	11.88	11.85	5.45	4.5	13.53	11.42	11.19	14.1	50.7	1.28:1		
N6CA 4	0.76	8.72	7.02	5.76	14.65	11.67	11.6	5.27	4.32	13.25	11.21	11	14	20.1	1.32:1		
G0KSC 5 4.6m LFA	0.76	8.65	6.97	5.6	14.72	11.63	11.7	5.23	4.2	13.62	11.18	10.82	18.9	48.5	1.10:1		
G0KSC 5 4.7m LFA	0.79	8.86	7.08	5.74	14.85	11.82	11.82	5.31	4.3	13.67	11.37	11.29	17.3	50.4	1.02:1		
Telrex 5	0.80	8.88	7.24	5.98	14.82	11.83	11.78	5.43	4.49	13.39	11.37	11.09	13	20.3	1.28:1		
M ² 6M5	0.80	8.93	7.27	6.04	14.91	11.89	11.89	4.54	4.53	13.6	11.41	11.26	13.9	36.1	1.35:1		
I0JXX 5	0.81	9.03	7.53	6.33	14.98	11.98	11.95	5.65	4.24	13.24	11.49	11.11	10.5	18.1	1.37:1		
G0KSC 5 LFA 4.9m	0.81	8.87	7.02	5.69	14.88	11.83	11.87	5.27	4.27	13.72	11.37	11.32	19.5	49.7	1.08:1		
W5WVO CC A50-5S MOD	0.87	9.10	7.35	6.09	15.19	12.07	12.16	5.51	4.57	13.65	11.57	11.34	12.3	16.1	1.36:1		
Directive 5	0.88	8.93	7.02	5.76	14.86	11.87	11.84	5.42	4.32	13.62	11.45	11.24	16.6	23.4	1.09:1		
M ² 6M5X	0.91	9.39	7.59	6.39	15.36	12.35	12.33	5.69	4.79	14.03	11.86	11.7	12.7	13.9	1.48:1		
Create CL6DX 6el	0.94	8.93	7.02	5.72	14.8	11.94	11.78	5.27	4.29	13.36	11.36	11.14	14.8	47.8	1.05:1		
BQH 5	0.94	9.45	7.72	6.54	15.4	12.4	12.35	5.79	4.91	13.9	11.91	11.6	14.8	13.5	1.27:1		
BV 6	0.98	9.47	7.72	6.56	15.45	12.43	12.4	5.79	4.92	14.08	11.96	11.73	15.3	47.6	1.13:1		
YU7EF 6 W1	0.99	9.41	7.59	6.41	15.37	12.37	12.32	5.69	4.81	13.85	11.87	11.58	14.9	50.8	1.02:1		
Cushcraft A50-6S	1.00	8.75	6.92	5.64	14.52	11.66	11.49	5.19	4.23	13.08	11.18	10.9	13.9	38.6	1.02:1		
DK7ZB 5 18 ohm	1.00	9.36	7.65	6.47	15.32	12.32	12.28	5.74	4.86	13.7	11.82	11.37	12.3	17.7	1.35:1		
G4CQM 6	1.00	9.65	7.68	6.5	15.66	12.62	12.64	5.76	4.87	14.57	12.18	12.13	18.9	58.6	1.53:1		
DK7ZB 5 12.5 ohm	1.00	9.53	7.68	6.52	15.5	12.49	12.46	5.76	4.89	13.95	11.99	11.64	14	13.8	1.39:1		
G0KSC 6 6.0m LFA	1.00	9.20	7.13	5.82	15.2	12.16	12.19	5.35	4.37	14.04	11.7	11.63	20.8	50.8	1.10:1		
OptiBeam OB6-6	1.01	9.50	7.53	6.37	15.47	12.45	12.43	5.65	4.78	14.07	11.97	11.75	14.5	26	1.19:1		
M ² 6M5XHG	1.03	9.87	8.05	6.95	15.86	12.84	12.81	6.04	5.21	14.44	12.35	12.05	17.6	11	1.58:1		
*M ² 6M5XHG	1.03	9.87	5.49	5.49	14.35	12.15	12.18	---	---	---	---	---	17.6	11	1.58:1		
WiMo ZX 6-6	1.04	9.30	7.75	6.59	15.32	12.28	12.29	5.81	4.94	14.28	11.86	11.8	15.9	21.4	1.07:1		
G0KSC 6 6.2m LFA	1.04	9.11	7.13	5.87	15.11	12.07	12.12	5.35	4.4	14.08	11.63	11.62	28.8	47.7	1.13:1		
G0KSC 6 6.4m LFA	1.04	9.47	7.38	6.11	15.45	12.43	12.43	5.54	4.58	14.24	11.97	11.86	20.4	48.7	1.24:1		
IZ1MYT 6	1.09	9.90	7.95	6.82	15.89	12.87	12.85	5.96	5.12	14.44	12.37	12.09	17.2	53.3	1.20:1		
YU7EF 6	1.15	9.67	7.62	6.43	15.67	12.63	12.65	5.72	4.82	14.42	12.16	12.04	20.5	48.6	1.11:1		
G0KSC 6 6.8m LFA	1.15	9.72	7.47	6.25	15.69	12.67	12.68	5.6	4.68	14.54	12.21	12.15	26.1	50.3	1.06:1		
K6STI 5	1.15	10.32	8.27	7.24	16.26	13.26	13.25	6.2	5.43	14.85	12.75	12.51	17	12.5	1.67:1		
Create CL6DXX 7el	1.19	9.78	7.5	6.35	15.65	12.7	12.63	5.62	4.76	14.15	12.2	11.93	17.1	89.4	1.08:1		
DK7ZB 6 50 ohm	1.19	9.96	7.85	6.73	15.63	12.88	12.8	5.89	5.04	14.36	12.49	12.1	16.9	45.8	1.20:1		
DK7ZB 6 28 ohm	1.20	10.19	8.12	7.02	16.15	13.15	13.13	6.09	5.27	14.79	12.65	12.44	18	27.2	1.07:1		
HyGain VB-66DX	1.21	8.46	7.02	5.87	14.74	11.74	11.58	5.27	4.41	13.9	11.23	11.36	13.5	47.7	1.05:1		
W1JR 6	1.21	9.47	7.35	6.17	15.39	12.39	11.39	5.51	4.63	13.88	11.89	11.6	17.9	45.1	1.08:1		
Tilton 7	1.22	9.99	7.75	6.82	15.9	12.98	12.88	5.84	5.12	14.33	12.39	12.11	17.4	27	1.20:1		
N6CA 6	1.22	10.08	7.91	6.8	16.05	13.03	13.03	5.94	5.1	14.8	12.55	12.44	18.9	22.1	1.17:1		

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VE7BQH G/T TABLE

G0KSC 6 7.3m LFA	1.22	10.15	7.88	6.77	16.11	13.1	13.1	5.91	5.08	14.86	12.61	12.51	22.1	51.3	1.05:1
I0JXX 6	1.23	10.27	8.66	7.65	16.25	13.23	13.23	6.49	5.74	14.73	12.67	12.36	11.2	15.7	1.52:1
N1DPM 5 Hy-gain mod	1.28	9.75	7.47	6.29	15.5	12.62	12.55	5.6	4.72	14.14	12.15	11.93	14.1	15.4	1.44:1
DK7ZB 7 50 ohm	1.29	10.12	8.05	7	16.09	13.07	13.05	6.04	5.25	14.52	12.55	12.23	20	45.5	1.03:1
N1DPM 7 KLM mod	1.31	10.02	7.91	6.84	15.84	12.9	12.82	5.94	5.13	14.18	12.39	12.04	16.9	205	1.04:1
YU7EF 7X	1.33	10.02	7.78	6.68	15.88	12.94	12.86	5.84	5.01	14.32	12.41	12.16	17.4	51.5	1.02:1
M² 6M7	1.33	10.35	8.09	7.02	16.28	13.29	13.28	6.07	5.27	15.04	12.81	12.71	18.7	31.4	1.26:1
IZ1MYT 7	1.34	10.39	8.38	7.38	16.32	13.33	13.3	6.29	5.54	14.9	12.8	12.6	12.6	52.6	1.22:1
Mosley A507LS	1.42	8.11	6.73	5.43	13.71	11.21	10.99	5.03	4.07	13.22	10.92	11	13.4	41.8	1.07:1
YU7EF 7	1.49	10.58	8.2	7.18	16.49	13.51	13.48	6.15	5.39	15.01	12.99	12.76	19	49.8	1.03:1
G0KSC 7 8.9m LFA	1.49	10.70	8.27	7.24	16.66	13.65	13.66	6.2	5.43	15.54	13.19	13.15	24.9	49.4	1.08:1
Create CL6DXZ 8el	1.53	10.76	8.31	7.29	16.67	13.68	13.64	6.23	5.47	15.08	13.14	12.88	18.3	85.7	1.06:1
Directive 7	1.56	10.92	8.5	7.47	16.86	13.87	13.86	6.37	5.6	15.68	13.4	13.3	20.2	23.8	1.14:1
DK7ZB 7 28 ohm	1.56	10.88	8.58	7.59	16.85	13.83	13.83	6.43	5.69	15.48	13.33	13.14	20.9	27.7	1.15:1
M² 6M7JHV	1.56	10.86	8.42	7.41	16.78	13.79	13.78	6.32	5.56	15.43	13.3	13.13	20.8	30.1	1.32:1
I0JXX 7	1.57	11.38	9.42	8.54	17.37	14.34	14.38	7.07	6.4	16.03	13.8	13.64	13.5	30.2	2.00:1
K6STI 6	1.62	11.17	9.38	7.98	17.13	14.16	14.09	7.03	5.99	15.61	13.62	13.23	17.2	18.1	1.47:1
G0KSC 7 9.7m LFA	1.63	11.02	8.5	7.5	16.94	13.95	13.94	6.38	5.63	15.67	13.46	13.35	23.9	50.3	1.06:1
G0KSC 8 OWL	1.64	11.08	8.96	7.68	17.03	14.06	14	6.72	5.76	15.95	13.61	13.43	19.9	12.4	1.12:1
Cushcraft 617-6B	1.69	10.17	8.99	7.08	15.89	13.01	12.9	6.07	5.31	13.99	12.48	11.95	19.1	33	1.16:1
N1DPM 7 617-6B mod	1.89	10.94	8.94	7.35	16.85	13.87	13.86	6.26	6.31	13.59	13.38	13.29	23.9	20.7	1.28:1
YU7EF 8	1.88	11.29	8.7	7.75	17.2	14.21	14.2	6.53	5.81	15.85	13.7	13.58	21.9	49	1.11:1
K5GW 8	1.96	11.77	9.52	8.7	17.78	14.73	14.76	7.14	6.53	16.26	14.15	13.95	19.8	52.9	1.13:1
BQH 8	2.00	11.95	9.62	8.74	17.94	14.91	14.93	7.22	6.56	16.49	14.36	14.18	21.7	50.1	1.18:1
M² 6M2WLC	2.00	11.76	9.28	8.38	17.67	14.68	14.68	6.96	6.27	16.19	14.14	13.96	20.4	35.8	1.27:1
DK7ZB 8	2.05	11.83	9.33	8.46	17.75	14.76	14.76	7	6.34	16.29	14.21	14.03	23	27.1	1.16:1
K6STI 7	2.05	12.12	9.94	9.14	18.1	15.05	15.11	7.46	6.86	16.52	14.45	14.26	18.7	13.7	1.76:1
N6CA 8	2.07	11.95	9.52	8.66	17.89	14.88	14.91	7.14	6.49	16.53	14.36	14.23	20	21.5	1.20:1
G0KSC 8 12.49m LFA	2.09	11.92	9.33	8.42	17.84	14.86	14.85	7	6.32	16.61	14.37	14.28	24.8	49.9	1.12:1
YU7EF 9	2.16	11.84	9.14	8.27	17.74	14.75	14.76	6.85	6.2	16.44	14.25	14.16	21	48.9	1.08:1
M² 6M8GJ	2.18	12.12	9.68	8.42	17.98	15.05	14.99	7.26	6.32	16.48	14.5	14.27	18.3	16.4	1.15:1
ZL3NW 10	2.20	11.68	9.18	8.34	17.62	14.61	14.66	6.89	6.26	16.22	14.08	13.9	16.4	62.1	1.13:1
BQH 9	2.28	12.19	10.17	9.28	18.24	15.18	15.21	7.63	6.96	16.76	14.59	14.39	22.1	50.9	1.14:1
DK7ZB 9	2.34	12.26	9.94	9.09	18.25	15.22	15.24	7.46	6.82	16.8	14.66	14.5	21	28.3	1.10:1
Create CL613 13 el	2.51	12.54	10.17	9.42	18.53	15.6	15.52	7.63	7.07	16.92	14.86	14.73	20.6	90.2	1.06:1
M² 6M9KHW	2.51	12.72	10.53	9.73	18.72	15.68	15.71	7.9	7.3	17.33	15.12	15.01	20.5	20.7	1.21:1
G0KSC 9 15.02m LFA	2.51	12.35	9.57	8.74	18.22	15.26	15.26	7.18	6.56	16.98	14.77	14.7	23	50.2	1.12:1
K6STI 8	2.54	12.73	10.72	10	18.78	15.67	15.75	8.04	7.5	17.12	15.04	14.89	18	17.5	1.65:1
M² 6m25WLC	2.57	12.63	10.41	9.68	18.65	15.58	15.64	7.8	7.26	17.27	15.04	14.95	20.2	28.8	1.30:1
YU7EF 10	2.59	12.50	10.06	9.14	18.44	15.45	15.45	7.54	6.85	17.36	15	14.94	22.8	50.5	1.07:1
G0KSC 10LFA	2.96	13.05	10.23	9.47	18.93	15.96	15.96	7.67	7.1	17.69	15.47	15.4	26.5	50.3	1.08:1
G0KSC 11 OWL-FD	3.00	13.18	10.5	9.73	19.09	16.11	16.12	7.88	7.3	17.87	15.62	15.55	23.4	50.4	1.11:1
M² 6M11JKV	3.52	13.99	11.94	11.33	19.92	16.92	16.93	8.96	8.5	18.67	16.38	16.36	19.4	27.3	1.25:1
BVO 18 Rope Yagi	5.03	15.01	13.39	12.81	20.95	17.95	17.95	10.05	9.61	19.66	17.39	17.37	25.3	52.4	1.11:1

Notes:

- All antennas are now calculated in Eznec5+ by by W7EL, Roy Lewallen.
- All antennas are in free space and horizontally polarized.
- One wavelength at 50.150 MHz is 5.98M or 19.62'
- "E" represents the horizontal plane; "H" represents the vertical plane.
- F/R is Front to Rear in dB over the rear 180 degrees of an antenna using either E or H plane.
- Z ohms is the natural impedance of a single antenna in free space.
- VSWR Bandwidth is based a single antenna over 50.00 - 50.300 MHz with a reference of 1.00:1 at 50.150 MHz
- G/T is not included in this table as the ratio between cold sky and ground noise is small. ie 2400K cold sky versus 3000 - 4000K ground noise. Therefore, G/T does not produce useful results on this band. Very Low side lobes and F/R on this band produce no specific improvement in G/T based on pure sky noise and ground noise. Assuming reasonable side lobes, F/R and good VSWR bandwidth, Gain is the most critical parameter on 6M.
- Antennas marked with a "*" have stacking dimensions recommended by the manufacturer or designer.
- Force 12 antennas are not included as no data is available from the manufacturer.
- FD = Folded Dipole
- Manufacturer/Designer Legend:

BVO = Eagle/DJ9BV
BQH = VE7BQH

VE7BQH	= VE7BQH
Cushcraft	= Cushcraft
Create	= Create
Directive	= Directive (K1WHS)
DK7ZB	= DK7ZB
G0KSC	= G0KSC
G4CQM	= G4CQM
HyGain	= HyGain
I0JXX	= I0JXX
IZ1MYT	= IZ1MYT
K5GW	= K5GW
K6STI	= K6STI
M ²	= M ²
Mosley	= Mosley
N1DPM	= N1DPM
N6CA	= N6CA
OZ3SW	= OZ3SW
Telrex	= Telrex
Tilton	= Tilton (ARRL Handbook)
W5WVO Mod	= W5WVO
WiMo	= WiMo
YU7EF	= YU7EF
ZL3NW	= ZL3NW

Using this Chart:

While Gain is very important on on this band, other factors like ease of matching and wet weather performance should be considered in the your decision making. Antennas with 50 ohm feed systems and good VSWR bandwidth (Q) may be the best choice depending on your location. Although there is no advantage to low sidelobe and F/R antennas based on sky noise and ground noise (G/T) these antennas may provide significant benefit if you have local man made noise that is in directions where low side lobe antennas provide additional suppression.

Stacking is an issue on this band due to the large optimum spacings. While the longer antennas are very attractive because of there superior gain, if severely understacked, the gain advantage may be quickly lost.

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Issue 14, December 10, 2010

Issue 1: Initial Issue
Issue 2: Add Cushcraft 617-6B and M² 6M25WLC
Issue 3: Add N1DPM 7 617-6b mod, N1DPM 7 KLM mod, N1DPM 5 Hy-gain mod
Issue 4: Add G0KSC 6 6.8m LFA,G0KSC 6 7.3m LFA,G0KSC 7 9.7m LFA,G0KSC 7 8.9m LFA,G0KSC 8 12.49m LFA
Issue 5: Add G4CQM 6, G0KSC 5 4.4m LFA, Add F/R column
Issue 6: Add M² 6M3
Issue 7: Add M² 6M5XHG, IZ1MYT 6
Issue 8: Add G0KSC 8 OWL, IZ1MYT 7,G4CQM 5,Revised G4CQM 6
Issue 9: Add Create CL6DX,Create CL6DXX,Create CL613
Issue 10: Add G0KSC 3LFA,WiMo ZX 6-6,M² 6M5,Create CL6DXZ,
Issue 11: Add G0KSC 4LFA,
Issue 12: Add IZ1MYT 5, G0KSC 10LFA, G0KSC 11OWL
Issue 13: Add G0KSC 5 4.6m LFA,G0KSC 5 4.7m LFA,G0KSC 6 6.0m LFA,G0KSC 6 6.2m LFA,G0KSC 6 6.4m LFA,G0KSC 9 15.02m LFA
Add G0KSC 6 LFA 6.0m updated
Issue 14: Add G0KSC 5 LFA 4.9m,OptiBeam OB6-6

VE7BQH G/T SIMULATIONS OF A 4 BAY ARRAY

OF YAGI ANTENNAS ON 2m - 144.1 MHz

TYPE OF ANTENNA	L (WL)	GAIN (dBd)	E (m)	H (m)	Ga (dBd)	Tlos (K)	Ta (K)	F/R (dB)	Z (ohms)	VSWR Bandwidth	G/T (dB)
G4CQM 6	1	9.46	2.6	2.17	15.44	7.9	249.7	18.9	56.7	1.83:1	-6.38
+KF2YN Boxkite6	1.04	12.47	3.9	3	18.31	1.3	261.7	22.5	49.9	1.20:1	-3.66
Vine 6 FD	1.1	9.69	2.64	2.21	15.67	8.2	238.4	24.1	48.3	1.18:1	-5.65
G0KSC 6LFA	1.13	9.46	2.6	2.17	15.44	3.2	236.4	24.5	49.3	1.04:1	-5.93
G0KSC 7LFA	1.39	10.62	2.84	2.49	16.53	1.8	248.9	20.4	48	1.19:1	-5.28
Vine 7 FD	1.45	10.56	2.83	2.46	16.47	8.2	238.6	22.8	47.9	1.14:1	-5.16
G4CQM 7	1.5	10.76	2.89	2.53	16.69	7.9	239.9	23.5	50.7	2.31:1	-4.96
+CT1FFU 7	1.54	10.82	2.87	2.5	16.7	2.8	237.7	20.3	28	1.02:1	-4.96
DK7ZB 7	1.57	11.11	3.16	2.84	17.13	5.8	272.6	16.9	28.4	1.64:1	-5.07
IK0BZY 6	1.63	11.11	3.1	2.77	17.04	4.8	266.5	17.8	19.5	2.27:1	-5.07
G0KSC 8LFA	1.79	11.06	2.94	2.6	17.01	3.6	231.9	24.8	50	1.24:1	-4.49
*G0KSC 8LFA	1.79	11.06	3.15	2.4	16.95	3.6	222.2	24.8	50	1.24:1	-4.37
W1JR 8 MOD	1.8	11.14	3.07	2.75	16.99	5.3	256.7	17.3	50	1.14:1	-4.95
DJ9BV 1.8	1.8	11.34	3.16	2.8	17.28	5.5	261.2	17.6	77.5	1.34:1	-4.74
K1FO 10	1.84	11.34	3.1	2.78	17.27	4.3	257.7	16.5	29.4	1.44:1	-4.69
Vine 8 FD	1.85	11.18	3	2.63	17.06	8.5	232.3	24.2	51.4	1.12:1	-4.45
YU7EF 8	1.87	11.31	3.04	2.71	17.23	3.8	242.12	20	48.5	1.21:1	-4.46
BQH8B	1.88	11.6	3.28	2.97	17.62	7.2	259.3	18	50	1.29:1	-4.37
+UR5EAZ 9	1.89	11.32	3.07	2.75	17.26	3.6	249.7	18.5	49.2	1.01:1	-4.56
G4CQM 8	1.9	11.61	3.2	2.88	17.56	9.3	242.6	24.1	50.9	2.52:1	-4.14
+CT1FFU 8	1.94	11.28	2.96	2.62	17.1	2.9	232.3	23.6	27.1	1.05:1	-4.41
G0KSC 8OWL	1.95	11.63	3.13	2.82	17.55	4.6	235.7	25.5	12.5	1.26:1	-4.02
+KF2YN Boxkite9	1.95	14.06	4.45	3.7	19.9	4.2	241.6	24.2	46.5	1.19:1	-1.77
I0JXX 8	2.04	12.11	3.44	3.15	18.09	8.2	254.5	20.4	26.5	3.00:1	-3.82
*DG0OPK 9	2.07	11.45	2.95	2.7	17.3	5.7	230.8	24.6	28.4	1.11:1	-4.18
DG0OPK 9	2.07	11.45	3.04	2.72	17.34	5.7	231.9	24.6	28.4	1.11:1	-4.16
DK7ZB 8	2.09	12.01	3.4	3.1	18.02	4.8	253.6	21.6	28	1.26:1	-3.87
G0KSC 9OWA	2.09	11.99	3.33	3.04	17.96	4.9	247	21.3	49.1	1.30:1	-3.82
+RA3AQ 9S	2.12	12.04	3.35	3.06	18.02	4.7	246.5	22.1	47.1	1.08:1	-3.75
*RA3AQ 9S	2.12	12.04	3	3	17.85	4.6	242.8	22.1	47.1	1.08:1	-3.85
M2 9SSB	2.12	11.99	3.33	3.03	17.95	8.1	244	20.7	15	1.32:1	-3.71
DJ9BV 2.1	2.13	11.89	3.33	3.04	17.87	5.8	255.2	20.2	44.9	1.30:1	-4.05
G0KSC 9LFA	2.14	11.97	3.26	2.94	17.88	5.2	235.1	23.5	50.5	1.08:1	-3.68
*G0KSC 9LFA	2.14	11.97	3.1	3	17.86	5.2	235.7	23.5	50.5	1.08:1	-3.75
*OZ5HF 9	2.16	11.52	2.7	2.5	16.65	2.9	275.1	18.2	38	1.15:1	-5.6
OZ5HF 9	2.16	11.52	3.21	2.92	17.47	3	272.6	18.2	38	1.15:1	-4.74
YU7EF 9	2.16	11.84	3.2	2.89	17.74	5.3	236.6	22	49.8	1.17:1	-3.84
F9FT 11	2.17	11.78	3.26	2.97	17.75	5.3	251	22.7	21.5	1.25:1	-4.1
*CC 13B2	2.17	11.79	2.9	2.79	17.47	5.8	249.1	19.6	21.1	1.37:1	-4.34
CC 13B2	2.17	11.79	3.33	3.01	17.78	5.9	257.9	19.6	21.1	1.37:1	-4.18
K1FO 11	2.18	11.97	3.3	3	17.9	4.3	248	17.9	44	1.29:1	-3.89
*CC 215WB	2.19	11.78	3.05	3.05	17.66	6.6	262.5	19.1	17.4	1.47:1	-4.38
CC 215WB	2.19	11.78	3.36	3.07	17.78	6.6	266.6	19.1	17.4	1.47:1	-4.33
Vine 9 FD	2.22	11.93	3.21	2.91	17.8	9.4	230	23.9	50	1.07:1	-3.67
+G0KSC 9OWL	2.28	12.15	3.28	2.97	18	6.4	229.5	24.3	12.4	1.16:1	-3.46
*Flexa 224	2.34	11.52	3.5	3.3	17.66	30.1	259.2	17.7	60.4	1.09:1	-4.33
Flexa 224	2.34	11.52	3.3	3	17.47	29.5	254.6	17.7	60.4	1.09:1	-4.44
+RA3AQ 9	2.35	12.38	3.4	3.13	18.31	5.6	234.3	22.1	49.2	1.10:1	-3.24
#RA3AQ 9	2.35	12.38	3.27	3.27	18.32	5.6	235.7	22.1	49.2	1.10:1	-3.25
+CT1FFU 9	2.38	12.23	3.26	2.97	18.08	3.6	226.8	22.7	28.1	1.15:1	-3.33
ZL1RS 9	2.38	12.24	3.3	3.01	18.13	5.6	227.2	25.2	48.7	2.19:1	-3.28
Eagle 10	2.38	12.28	3.44	3.16	18.27	6	242.96	22	23.6	1.33:1	-3.43
DK7ZB 9	2.39	12.41	3.56	3.3	18.45	6.2	250.5	20.4	27.5	1.23:1	-3.39
Vine 10 FD	2.45	12.27	3.35	3.04	18.17	9.5	226.7	25	47.6	1.08:1	-3.23
DD0VF 9	2.46	12.47	3.48	3.18	18.44	4.4	235.8	20.3	25	1.16:1	-3.14
+YU7EF 10LT	2.49	11.84	3.13	2.82	17.69	5.3	224.3	29.4	45.7	1.13:1	-3.67
K5GW 10	2.49	12.45	3.44	3.16	18.38	7.4	234.6	23.1	37.4	1.41:1	-3.17
#K5GW 10	2.49	12.45	3.3	3.3	18.38	7.3	235.9	37.4	23.1	1.41:1	-3.2
G0KSC 10LFA+2	2.49	12.45	3.39	3.09	18.35	4.1	226.7	23.8	47.4	1.24:1	-3.06
G4CQM 9	2.52	12.63	3.62	3.35	18.68	7.3	244.4	22.2	46.4	2.02:1	-3.05
+G0KSC 10 LFA	2.53	12.61	3.48	3.18	18.54	2.6	229.8	24.3	48.5	1.05:1	-2.92
*G0KSC 10 LFA	2.53	12.61	3.4	3.1	18.48	2.5	228.3	24.3	48.5	1.05:1	-2.95
K1FO 12	2.53	12.49	3.46	3.18	18.42	4.3	240.7	21.6	31.1	1.23:1	-3.25
*YU7EF 10	2.59	12.44	3.38	3.09	18.33	6.9	227.5	23.8	50.3	1.06:1	-3.09
YU7EF 10	2.59	12.44	3.39	3.1	18.34	6.9	227.8	23.8	50.3	1.06:1	-3.08
+G0KSC 10OWL	2.63	12.46	3.4	3.1	18.36	7.2	224.6	26.4	12.3	1.11:1	-3
I0JXX 12	2.68	12.67	3.58	3.3	18.64	6.9	238	25.2	26.9	1.31:1	-2.97
BQH 12J	2.8	12.8	3.67	3.4	18.83	4.3	246.2	20.3	50	1.01:1	-2.93
#BQH 12J	2.8	12.8	3.54	3.54	18.81	4.3	248	20.3	50	1.01:1	-2.99
+CT1FFU 10	2.82	12.74	3.44	3.15	18.81	4.1	220.2	25.2	28.1	1.10:1	-2.60

25.04.2011

VE7BQH G/T TABLE

CT1FFU 10C	2.82	13.04	3.62	3.31	18.93	4.2	222.9	27.2	27.2	1.23:1	-2.4
*M2 12	2.84	12.68	3.05	3.05	18.19	5.4	232.2	19.5	37	1.13:1	-3.32
M2 12	2.84	12.68	3.48	3.2	18.54	5.4	232.5	19.5	37	1.13:1	-2.97
BQH 10	2.86	13.05	3.69	3.43	19	7	232.5	23.9	22.6	1.47:1	-2.51
#BQH 10	2.86	13.05	3.56	3.56	19	6.9	232.8	23.9	22.6	1.47:1	-2.52
WB9UWA 12	2.87	12.73	3.48	3.2	18.61	7	223	25.2	23.9	1.47:1	-2.72
KF2YN Boxkite12	2.87	15.06	5.99	4.4	20.98	5.3	246.6	25.3	46.9	1.18:1	-0.8
DK7ZB 10	2.87	13	3.87	3.6	19.17	6.8	247.5	21.7	25.8	1.61:1	-2.62
Vine 11 FD	2.87	12.78	3.6	3.21	18.67	10	220	27.9	48.4	1.09:1	-2.6
+YU7EF 11B	2.87	12.92	3.58	3.3	18.85	4.7	225.6	25.6	50.2	1.35:1	-2.53
I5MZY 11	2.88	13.21	3.82	3.56	19.21	7.8	238.1	22.8	57.2	2.45:1	-2.41
K1FO 13	2.89	12.94	3.64	3.39	18.88	4.6	239.2	19.7	24.7	1.38:1	-2.76
*M2 20 XPOL	2.97	13.07	3.65	3.65	19.05	7.4	241.7	21.9	21	1.28:1	-2.63
#M2 20 XPOL	2.97	13.07	3.63	3.63	19.03	7.4	241.1	21.9	21	1.28:1	-2.64
M2 20 XPOL	2.97	13.07	3.75	3.5	19.05	7.4	239.5	21.9	21	1.28:1	-2.59
+G0KSC 11 LFA	2.98	13.11	3.61	3.35	19.01	3	221.5	27.7	48.3	1.06:1	-2.33
*G0KSC 11 LFA	2.98	13.11	3.78	3.65	19.14	3	224.9	27.7	48.3	1.06:1	-2.23
+UA9TC 11RS	2.98	13.09	3.66	3.37	19.01	5	223	23.3	50.9	1.10:1	-2.34
+G0KSC 11OWL	3	13.16	3.69	3.44	19.09	7.7	224.6	23	11.9	1.23:1	-2.27
*BVO-3WL	3.01	13.43	3.9	3.7	19.38	8.6	253.1	20.5	52.7	3.08:1	-2.5
BVO-3WL	3.01	13.43	4.03	3.78	19.42	8.6	256.1	20.5	52.7	3.08:1	-2.51
#BVO-3WL	3.01	13.41	3.9	3.9	19.41	8.6	256.6	20.5	52.7	3.08:1	-2.53
+G0KSC 11LFA3R	3.01	13	3.6	3.33	18.92	4	223	25.7	50.1	1.08:1	-2.41
+YU7EF 11	3.04	13.07	3.56	3.3	18.87	4.7	222.6	22.2	49	1.62:1	-2.46
F9FT 16	3.06	12.64	3.54	3.26	18.63	6	241.3	21.1	20.8	1.37:1	-3.05
CD15LQDver2	3.09	12.9	3.58	3.33	18.85	4.4	231.6	26.1	19.1	1.25:1	-2.65
*CD15LQDver2	3.09	12.9	4	3.8	19.02	4.4	238.8	26.1	19.1	1.25:1	-2.61
CD15LQDver1	3.1	12.83	3.6	3.35	18.76	4.1	247.8	20.7	22	1.23:1	-3.03
*CD15LQDver1	3.1	12.83	4	3.8	18.97	4.2	249.9	20.7	22	1.23:1	-2.86
I5MZY 13	3.1	12.97	3.56	3.3	18.83	6	225.9	20.3	49.3	1.50:1	-2.56
MBI ModFT17	3.12	13.29	3.85	3.6	19.27	8.2	239.5	24.3	50.1	1.41:1	-2.37
*F9FT 17	3.14	12.87	3.68	3.5	18.9	5.8	236.4	23	25.8	1.32:1	-2.69
F9FT 17	3.14	12.87	3.59	3.31	18.81	5.7	234.3	23	25.8	1.32:1	-2.74
*CC3219	3.17	12.77	4.27	3.66	18.8	5.7	307.8	14.9	18.3	1.49:1	-3.93
CC3219	3.17	12.77	4.07	3.82	18.79	5.7	308.6	14.9	18.3	1.49:1	-3.95
CC3219 MOD	3.17	13.25	3.87	3.62	19.27	5.1	245.6	24.1	29	1.06:1	-2.48
BQH 13	3.19	13.3	3.85	3.6	19.28	4.3	244.9	20.8	50	1.11:1	-2.46
#BQH 13	3.19	13.3	3.72	3.72	19.27	4.3	246.3	20.8	50	1.11:1	-2.49
DJ9BV 3.2	3.22	13.3	3.85	3.58	19.29	6.5	239.5	21.1	71.8	1.36:1	-2.35
G0KSC 12LFA	3.32	13.44	3.78	3.52	19.36	4	220.5	24.4	49.9	1.07:1	-1.92
G0KSC 12OWA	3.33	13.33	3.85	3.5	19.28	5.7	224.3	25.3	49.3	1.05:1	-2.08
K1FO 14	3.26	13.36	3.8	3.56	19.29	4.7	237.8	18.1	29.6	1.42:1	-2.32
G4CQM 11	3.36	13.55	3.92	3.66	19.5	8.3	232	30.1	46.2	1.94:1	-2.01
DK7ZB 11	3.4	13.6	3.92	3.66	19.52	6.1	233.2	22.5	27.2	1.27:1	-2.01
+UA9TC 12RS	3.4	13.55	3.8	3.56	19.46	5.1	218.2	32.1	51.7	1.09:1	-1.78
+G0KSC 12 LFA	3.41	13.64	4.59	3.6	19.62	4.3	224.1	26.1	50.1	1.18:1	-1.73
*G0KSC 12LFA	3.41	13.64	3.9	3.7	19.58	4.3	221.2	26.1	50.1	1.18:1	-1.72
MBI 3.4	3.42	13.58	3.87	3.62	19.49	9.2	227.7	23	37.7	1.62:1	-1.93
+G0KSC 12LFA 2R	3.43	13.67	3.79	3.52	19.38	3.3	221.2	25	50.3	1.06:1	-2.11
*G0KSC 12LFA 2R	3.43	12.46	3.95	3.75	19.48	4.9	220.5	25	50.3	1.06:1	-1.8
YU7EF 12	3.49	13.67	3.85	3.6	19.55	6.1	221.1	23.6	45.4	1.77:1	-1.75
*SM5BSZ 11	3.51	13.95	3.5	3.5	19.48	6,40	231.8	19.5	54.4	3.06:1	-2.02
+SM5BSZ 11	3.51	13.95	4.05	3.8	19.81	6.3	238.8	19.5	54.4	3.06:1	-1.82
*SM5BSZ 11A	3.53	14.01	4	4	19.92	6.1	245.8	16.7	52.3	3.03:1	-1.84
+SM5BSZ 11A	3.53	14.01	4.13	3.92	19.93	6.1	245.4	16.7	52.3	3.03:1	-1.82
17LQD EKM#1	3.59	13.3	3.75	3.52	19.21	4.2	242.1	20.8	22.2	1.23:1	-2.48
17LQD EKM#2	3.59	13.39	3.75	3.5	19.32	4.5	227.5	25.6	19.5	1.25:1	-2.1
DJ9BV 3.6	3.61	13.67	4	3.78	19.57	5.4	249.7	21.3	53.5	1.30:1	-2.25
K1FO 15	3.64	13.76	3.94	3.71	19.67	4.8	233	20	39.1	1.30:1	-1.85
+G0KSC 13bLFA	3.84	14.1	4.07	3.85	20.02	4.4	221.1	27.4	48.5	1.14:1	-1.28
+G0KSC 13 LFA	3.85	13.97	4	3.75	19.91	6.4	220.1	28.2	48.8	1.20:1	-1.37
*G0KSC 13 LFA	3.85	13.97	4.06	3.9	19.93	6.4	220.5	28.2	48.8	1.20:1	-1.35
YU7EF 13M	3.86	13.85	3.92	3.66	19.73	7	218.8	25.7	49.9	1.05:1	-1.52
DK7ZB 12	3.83	14.17	4.21	4	20.11	6.9	237.4	25.6	26.8	1.46:1	-1.49
+YU7EF 13	3.92	14.12	4.05	3.82	20	6	220.1	22.5	47.9	2.55:1	-1.28
IK0BZY 12	3.95	14.06	4.02	3.78	19.93	6.9	222.5	24.6	99.2	1.44:1	-1.39
BVO2-4WL	3.99	14.17	4.24	4.02	20.14	6.8	241.8	24	45	1.25:1	-1.54
#BVO2-4WL	3.99	14.17	4.13	4.13	20.11	6.8	241.2	24	45	1.25:1	-1.56
DJ9BV 4.0	4.01	14.04	4.16	3.92	19.91	6.5	249.4	22.4	41.5	1.35:1	-1.91
K1FO 16	4.01	14.13	4.16	3.87	20.05	4.7	229.9	23.9	35	1.15:1	-1.42
+SV 2SA13	4.01	14.45	4.38	4.16	20.42	7	239	20	52.2	1.41:1	-1.21
#SV 2SA13	4.01	14.45	4.27	4.27	20.42	7	238.8	20	52.2	1.41:1	-1.21
HG VB-215DX	4.03	14.1	4.21	3.97	20	5.8	250.8	19.6	38.6	1.41:1	-1.84
CC3219 MOD	4.04	14.13	4.27	4.07	20.09	5.1	248.2	24	32.1	1.02:1	-1.71
*CC4218XL	4.19	13.92	4.08	3.85	19.74	11.1	260.2	16.8	14.5	1.72:1	-2.26
CC4218XL	4.19	13.92	4.31	4.07	19.82	11.1	263.6	16.8	14.5	1.72:1	-2.24

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CC4218 MOD	4.17	14.27	4.24	4.02	20.21	5.8	236.9	22	22	1.18:1	-1.39
WB9UWA 15	4.18	13.65	3.75	3.5	19.44	8.3	208.9	34	26	1.51:1	-1.61
+G0KSC 14LFA3R	4.23	14.44	4.19	3.97	20.35	2.4	216.5	27.7	48.8	1.07:1	-0.86
*G0KSC 14LFA3R	4.23	14.44	4.185	4	20.35	2.4	216.5	27.7	48.8	1.07:1	-0.86
YU7EF 14M	4.24	14.23	4.07	3.85	20.08	7	220.1	24.6	48.6	1.07:1	-1.2
+UA9TC 14RS	4.24	14.33	4.13	3.8	20.22	5.2	216.7	25	49.5	1.06:1	-0.99
+G0KSC 14 LFA	4.3	14.52	4.24	4.02	20.43	4.9	219.1	26.8	47.1	1.22:1	-0.81
*G0KSC 14 LFA	4.3	14.52	4.16	3.94	20.39	4.9	217.1	26.8	47.1	1.22:1	-0.83
YU7EF 14	4.37	14.48	4.21	4	20.33	8.8	220	22.8	41	2.30:1	-0.94
YU7EF 14LT	4.37	13.91	3.89	3.64	19.6	11.7	211	29.1	47.8	1.29:1	-1.49
K1FO 17	4.4	14.44	4.24	4.02	20.34	4.9	229.5	22.9	27.7	1.25:1	-1.12
DJ9BV 4.4	4.41	14.32	4.27	4.07	20.18	6.6	251.5	19.6	38.3	1.36:1	-1.68
SHARK 20	4.47	14.34	4.33	4.1	20.19	3.9	258.5	22.4	42.8	1.05:1	-1.79
I0JXX 16	4.47	14.36	4.16	3.94	20.24	8.4	217.6	27.6	30.4	1.05:1	-0.99
#I0JXX 16	4.47	14.36	4.05	4.05	20.24	8.4	217.5	27.6	30.4	1.05:1	-0.98
*CC17B2	4.49	14.52	3.66	3.51	19.93	6.1	223.4	23.4	29.3	1.22:1	-1.41
CC17B2	4.49	14.52	4.27	4.07	20.42	6.2	226.8	23.4	29.3	1.22:1	-0.99
RA3AQ-14	4.61	14.71	4.27	4.07	20.55	5	219.1	28.4	50.8	1.19:1	-0.71
G4CQM 16	4.64	14.55	4.39	4.18	20.47	8.8	234.6	34	50.9	1.78:1	-1.08
YU7EF 15M	4.68	14.59	4.21	4	20.4	7	221.7	25.7	48.6	1.03:1	-0.89
DK7ZB 14	4.73	14.92	4.59	4.39	20.87	6.8	233	26.2	26.9	1.50:1	-0.65
+DG7YBN 16	4.74	15	4.39	4.19	20.91	8.7	217	33.4	46.4	1.18:1	-0.3
*DG7YBN 16	4.74	15	4.2	4.6	20.93	8.7	216.2	33.4	46.4	1.18:1	-0.27
G0KSC 15LFA	4.75	14.72	4.27	4.07	20.59	5.9	213.2	30.3	49.9	1.17:1	-0.55
*G0KSC 15LFA	4.75	14.72	4.6	4.45	20.72	5.9	215	30.3	49.9	1.17:1	-0.45
K1FO 18	4.78	14.72	4.36	4.16	20.61	5	229.3	20.5	27.9	1.32:1	-0.84
*M2 28 XPOL	4.81	15.16	4.5	4.5	20.98	14.5	241.9	21	13.9	4.91:1	-0.71
#M2 28 XPOL	4.81	15.16	4.79	4.79	21.12	14.6	240.6	21	13.9	4.91:1	-0.54
M2 28 XPOL	4.81	15.16	4.89	4.7	21.12	14.7	241.4	20.1	13.9	4.91:1	-0.56
DJ9BV 4.8	4.82	14.63	4.4	4.19	20.48	6.6	242.8	21	49.7	1.29:1	-1.22
*M2 5WL	4.83	14.67	4.15	3.84	20.29	7.9	249.6	20.4	30.7	1.54:1	-1.53
M2 5WL	4.83	14.67	4.56	4.36	20.55	8.1	250.4	20.4	30.7	1.54:1	-1.29
YU7EF 15	4.84	14.89	4.46	4.24	20.78	10.29	218.1	25.6	41.8	3.18:1	-0.46
*SM5BSZ 14A	4.89	15.13	4	4	20.65	7.8	231.5	20.7	55.3	5.63:1	-0.85
+SM5BSZ 14A	4.89	15.13	4.59	4.39	20.98	7.6	237.72	20.7	55.3	5.63:1	-0.63
+RA3AQ 15	4.92	15.16	4.67	4.49	21.11	6.8	232.4	24.4	51.7	1.12:1	-0.4
#RA3AQ 15	4.92	15.16	4.59	4.59	21.11	6.8	231.9	24.4	51.7	1.12:1	-0.39
*SM5BSZ 14	4.95	15.27	5.2	5.2	21.36	5.7	239.7	18.8	49.3	4.37:1	-0.29
+SM5BSZ 14	4.95	15.27	4.73	4.52	21.14	5.7	241.47	18.8	49.3	4.37:1	-0.54
K5GW 17	4.98	14.83	4.43	4.21	20.73	9.8	220.8	25.7	48.5	1.73:1	-0.56
SM2CEW 19	4.99	14.85	4.49	4.27	20.78	11.6	224.2	22.3	20.4	1.81:1	-0.57
#SM2CEW 19	4.99	14.85	4.38	4.38	20.78	11.6	223.9	22.3	20.4	1.81:1	-0.56
+G0KSC OWL FD	4.99	14.75	4.25	4.25	20.63	9	218.8	28.4	51.7	1.10:1	-0.62
*BVO-5WL	5.02	15	4.58	4.4	20.92	6.9	237.2	26.3	47.4	1.26:1	-0.68
#BVO-5WL	5.02	15	4.58	4.58	20.97	6.9	236.16	26.3	47.4	1.26:1	-0.61
BVO-5WL	5.02	15	4.66	4.49	20.96	6.9	236.9	26.3	47.4	1.26:1	-0.64
YU7EF 16M	5.12	14.9	4.36	4.16	20.7	7	221.9	25.1	49.9	1.03:1	-0.61
+G0KSC 16LFA3R	5.14	15.12	4.46	4.24	20.94	4.6	213.7	25.3	49.9	1.10:1	-0.21
+G0KSC 16LFA3R	5.14	15.12	5.1	5.1	21.16	4.8	212	25.3	49.9	1.10:1	0.05
K1FO 19	5.16	15.01	4.49	4.27	20.89	5.1	226.9	21.2	33.9	1.32:1	-0.52
+G0KSC 16LFA	5.21	15.4	4.56	4.33	21.29	11	212.7	28.5	49.2	1.13:1	0.16
*G0KSC 16LFA	5.21	15.4	4.6	4.4	21.31	11	212.8	28.5	49.2	1.13:1	0.18
#RU1AA 15	5.27	15.44	4.78	4.78	21.38	9.2	230.9	25.2	54.6	3.70:1	-0.1
RU1AA 15	5.27	15.44	4.87	4.7	21.37	9.2	231.7	25.2	54.6	3.70:1	-0.13
*M2 18XXX	5.3	14.98	4.27	3.96	20.63	8.2	234.9	22.9	34.9	1.15:1	-0.93
M2 18XXX	5.3	14.98	4.56	4.36	20.89	8.3	232.9	22.9	34.9	1.15:1	-0.63
YU7EF 16	5.42	15.15	4.46	4.27	20.95	7.3	218.89	22.1	43.9	2.50:1	-0.3
+G0KSC 17LFA	5.67	15.43	4.63	4.43	21.3	4.9	212	30.8	48.3	1.23:1	0.19
*G0KSC 17LFA	5.67	15.43	4.7	4.47	21.32	4.9	212.1	30.8	48.3	1.23:1	0.2
*M2 19XXX	5.71	15.32	4.27	4.04	20.86	7.7	230.4	23.9	29	1.55:1	-0.61
M2 19XXX	5.71	15.32	4.7	4.52	21.24	7.9	226.8	23.9	29	1.55:1	-0.17
#M2 32 XPOL	5.74	15.8	5.05	5.05	21.74	14.1	232.9	22.9	12.4	4.84:1	0.22
M2 32 XPOL	5.74	15.8	5.13	4.97	21.76	14.1	233.1	22.9	12.4	4.84:1	0.23
+G0KSC 17OWL-FD	5.77	15.62	5.15	5	21.63	7.3	221.1	22.9	112	1.10:1	0.33
DK7ZB 17	5.82	15.61	5.01	4.85	21.59	8.6	227.8	24.8	26.8	1.19:1	0.16
YU7EF 17	5.88	15.7	4.85	4.63	21.53	9.6	223.8	24	41.2	2.92:1	0.18
#YU7EF 17	5.88	15.7	4.74	4.74	21.53	9.6	223.57	24	41.2	2.92:1	0.19
BVO-6WL	6	15.65	4.77	4.93	21.55	7	227.3	24.9	44.9	1.14:1	0.13
#BVO-6WL	6	15.65	4.85	4.85	21.59	7.1	226.7	24.9	44.9	1.14:1	0.19
+G0KSC 18 LFA	6.12	15.69	4.77	4.56	21.55	5.3	210.5	30.8	47.9	1.33:1	0.47
*G0KSC 18 LFA	6.12	15.69	4.77	4.6	21.56	5.3	210.5	30.8	47.9	1.33:1	0.48
AF9Y 22	6.14	15.73	5.01	4.85	21.66	13.1	221.4	24.9	19.1	2.65:1	0.36
+RA3AQ 18	6.28	16.09	5.13	4.97	22.01	8	223.4	26.9	54.9	1.13:1	0.67
*RA3AQ 18	6.28	16.09	5.3	5.3	22.12	8.1	222.3	26.9	54.9	1.13:1	0.8
#RA3AQ 18	6.28	16.09	5.05	5.05	22.01	8	222.9	26.9	54.9	1.13:1	0.68
MBI 6.6	6.58	16.15	5.5	5.31	22.17	11.5	228.33	26.9	16.3	1.50:1	0.73
#MBI 6.6	6.58	16.15	5.41	5.41	22.17	11.5	228.2	26.9	16.3	1.50:1	0.74

DK7ZB 19	6.59	16.15	5.41	5.22	22.15	8.2	230.2	24	27.7	1.97:1	0.68
BQH 25	7.3	16.38	5.27	5.09	22.28	8.8	217.1	25.5	27.9	1.16:1	1.06
#BQH 25	7.3	16.38	5.18	5.18	22.28	8.9	216.8	25.5	27.9	1.16:1	1.07
K2GAL 21	7.65	16.9	5.71	5.55	22.81	13.3	223.9	26.3	17.2	9.01:1	1.46
M2 8WL(old)	7.72	16.51	5.31	5.13	22.34	9.1	221.9	21.3	16.7	2.21:1	1.03
M2 8WLHLD	8.05	17	6.05	5.88	22.97	13.6	234.3	25.4	18.2	4.48:1	1.42
+G0KSC 22 LFA 3R	8.17	16.38	5.05	4.89	22.44	6.8	207.6	29.6	47.8	1.12:1	1.42

Legend:

1. L = Length in Wavelengths
2. Gain = Gain in dBd of a single antenna
3. E = E plane (Horizontal) stacking in Meters.
4. H = H plane (Vertical) stacking in Meters.
5. Ga = Gain in dBd of a 4 bay array
6. Tlos = The internal resistance of the antenna in degrees Kelvin.
7. Ta = The total temperature of the antenna or array in degrees Kelvin. This includes all the side lobes, rear lobes and internal resistance of the antenna or array.
8. F/R = Front to Rear in dB over the rear 180 degrees of an antenna using either E or H plane.
9. Z ohms = The natural impedance of a single antenna in free space.
10. VSWR = VSWR Bandwidth is based a single antenna over 144.000 - 145.000 MHz with a reference of 1.00:1 at 144.100 MHz. This parameter gives an indicator of the antenna "Q" and what to expect with stacking and wet weather.
11. G/T = Figure of merit used to determine the receive capability of the antenna or array = $(Ga + 2.15) - (10 \cdot \log Ta)$. The more positive figure the better.

Notes:

1. The programs used to calculate E/H Stacking, G, Ta, Tlos and G/T are EZNEC 5+ by Roy Lewallen, W7EL and Tant.exe by Sinisa, YT1NT/VE3EA. This combination of software provides excellent accuracy. Segment Density is as follows: Reflector and Directors = 25 segments. Split Dipole = 29. G0KSC loop = 39,39,7,7.
2. Temperatures used: Tsky=200 degrees; Tearth=1000 degrees
3. Dipole Z is measured at 144.1 MHz
4. No stacking harness losses or H frame effects are included in the 4 bay gain figures.
5. All stacking dimensions EXCEPT those marked with a "*" and "#" are calculated from the DL6WU stacking formula.
6. Antennas marked with a "*" have stacking dimensions recommended by the manufacturer or designer.
7. Antennas marked with a "#" have stacking dimensions for XPOL antennas by VE7BQH.
8. Antennas marked with a "+" have some or all elements over 6mm. All others are 4MM to 6MM.

9. Manufacturer/Designer Legend:

AF9Y = AF9Y	K1FO = K1FO
BVO = Eagle/DJ9BV	K2GAL = K2GAL
BQH = VE7BQH	K5GW = Texas Towers/K5GW
CC = Cushcraft	M2 = M ²
CC MOD = VE7BQH	MBI = F/G8MBI/F5VHX
CD = CUE DEE	KF2YN = KF2YN
CD MOD = VE7BQH	OZ5HF = Vargarda
DJ9BV = DJ9BV	RA3AQ = RA3AQ
DJ9BV OPT = DJ9BV	RU1AA = RU1AA
DK7ZB = DK7ZB	SHARK = SHARK (Italian)
EKM MOD = SM2EKM	SM2CEW = SM2CEW/VE7BQH
F9FT = F9FT	SV = Svenska Antennspecialisten AB
Flexa = FlexaYagi	W1JR = VE7BQH (Mininec error)
G0KSC LFA = G0KSC	WB9UWA = WB9UWA
G4CQM = G4CQM	YU7EF = YU7EF
HG = HYGAIN	UR5CSZ = UR5CSZ
I0JXX = I0JXX	Vine = G0KSC Design
IK0BZY = IK0BZY	

Using this Chart:

While Gain is important, other factors like ease of matching and wet weather performance should be considered in the your decision making. Antennas with 50 ohm feed systems and good VSWR bandwidth (Q)

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may be the best choice depending on your location. Low sidelobe and F/R antennas with good (G/T) may provide further significant benefit if you have local man made noise that is in directions where these kinds of antennas provide additional suppression.

LIONEL H. EDWARDS
VE7BQH
Issue 81 Jan 1,2011

Issue 51: Add YU7EF Antennas
Issue 52: Update all DK7ZB antennas to latest published data. Add DK7ZB 8
Issue 53: Replace BQH8A with BQH8B a 50 ohm antenna
Issue 54: Add YU7EF 8
Issue 55: Add YU7EF 17 & YU7EF 11B
Issue 56: Add YU7EF 16
Issue 57: Add a revised YU7EF 10
Issue 58: Add DK7ZB 19
Issue 59: Add YU7EF 10LT
Issue 60: Add columns of Z and VSWR bandwidth to give indicators of Q and wet weather performance.
Issue 61: Add UA5EAZ 9. Add VSWR bandwidth for folded dipole to RA3AQ 9. Add RA3AQ 14
Issue 62: Revised Note 1 to explain limitations in YA 3.54 and the change to EZNEC 5+ and Tant.exe software
Issue 63: Add new low noise wide VSWR bandwidth YU7EF 13M,14M,15M,16M series antennas
Issue 64: Add YU7EF 14LT;Add G4CQM 8,9,11,16;Add G0KSC 9LFA
Issue 65: Add G0KSC 11LFA,G0KSC 14LFA;Add DK7ZB 7;Add K1FO 10,11,16
Issue 66: Conversion to EZNEC 5+ & Tant.exe completed. Add G0KSC 8LFA, G0KSC 12LFA,G0KSC 13LFA: RA3AQ 9S
Issue 67: Data corrected for RA3AQ 9S
Issue 68: Add G4CQM 8 updated to new version,Add ZL1RS 9,
Issue 69: Add G0KSC 15LFA,G0KSC 17LFA. Segment Density changed to improve impedance accuracy.
Issue 70: Add G0KSC 7LFA, Add Front to Rear column (F/R)
Issue 71: Add G0KSC 9,G4CQM 7,G4CQM 6,8 & 9 updated versions
Issue 72: Add G0KSC 10 LFA;Revised G4CQM 11,
Issue 73: Add G0KSC 9OWL,G0KSC 11,
Issue 74: Add G0KSC 6 LFA,G0KSC 8OWL,Revised G0KSC 9OWL,G0KSC10OWL,
Issue 75: Add CT1FFU 7,CT1FFU 8,CT1FFU 9,CT1FFU 10,CT1FFU 10C
Issue 76: Add G0KSC 16LFA,I5MZY 11,I5MZY 13,G0KSC 11LFA,G0KSC 14LFA 3R,G0KSC 16LFA 3R,G4CQM 16 revised
Issue 77: Add G4CQM 16 Revised,KF2YN Boxkite6,KF2YN Boxkite9,KF2YN Boxkite12,G0KSC 12OWA,G0KSC 17OWA
Issue 78: Add DD0VF 9,G0KSC 12LFA 2R,UA9TC 11RS,UA9TC 12RS, UA9TC 14RS
Issue 79: Add Vine 6 FD,Vine 7 FD,Vine 8 FD,Vine 9 FD,Vine 10 FD,Vine 11 FD,G0KSC 12LFA, G0KSC 22 LFA 3R,
G0KSC 16 OWL FD 6.0M
Issue 80: Add Revised G0KSC 15 LFA,Revised G0KSC 16 LFA,
Issue 81: Add G0KSC 10 LFA,Revised G0KSC 11 LFA,Revised G0KSC 13 LFA,Revised G0KSC 14 LFA,Revised G0KSC 17 LFA,
Add G0KSC 18 LFA,Revised G0KSC 14 LFA 3R,Revised IK0BZY 12,DG7YBN 16,