TYPE OF ANTENNA	L λ	GAIN (**dBi**)	E (M)	H (M)	Ga (dBi)	Tlos (K)	Ta (K)	< F/R (dB)	H Plane 1st SL (dB)	> 2nd SL (dB)	Z (ohms)	VSWR Bandwidth	G/T (dB)	Feed System	KF2YN Convergence Correction req.
KF2YN Boxkite4	0,44	11,10	1,20	0,85	17,15	5,0	52,9	26,1	21,5	none	52,5	1.10:1	2,07	Dipole	Yes
KF2YN Boxkite 7	1,34	13,50	1,40	1,17	19,42	8,1	42,3	27,6	27,5	21,3	51,7	1.05:1	5,31	Dipole	Yes
KF2YN Boxkite 10	2,37	14,41	1,50	1,30	20,32	8,7	38,3	28,3	19,2	28,0	48,7	1.08:1	6,64	Dipole	Yes
KF2YN Boxkite 13	3,37	15,24	1,63	1,50	21,15	9,3	39,4	28,0	18,0	29,0	50,9	1.09:1	7,35	Dipole	Yes
+DG7YBN 14	4,06	16,38	1,50	1,50	22,30	3,5	30,7	26,9	15,9	20,6	49,4	1.51:1	7,42	Bent Dipole	No
KF2YN Boxkite 16	4,37	15,88	1,74	1,61	21,71	10,2	41,2	27,4	17,0	25,0	49,1	1.06:1	7,71	Dipole	Yes
InnoV 15 LFA-SQ	4,57	15,67	1,22	1,14	21,38	3,5	27,8	30,2	26,1	29,2	49,3	1.40:1	6,95	LFA	Yes
WiMo 15 (YU7EF)	4,89	17,06	1,46	1,30	22,87	4,3	30,0	22,3	17,2	20,8	174,5	3.05:1	8,10	Folded Dipole	Yes
InnoV 16 LFA-SQ	5,04	15,83	1,24	1,16	21,49	3,5	27,9	32,0	24,7	28,8	51,1	1.39:1	7,04	LFA	Yes
+Konni F20 DL6WU	5,94	17,58	1,58	1,51	23,22	4,6	44,1	23,2	14,3	16,0	220,4	1.07:1	6,89	Folded Dipole	No
+DG7YBN 19	5,94	17,80	1,60	1,54	23,68	3,6	29,5	29,6	15,4	20,2	49,3	1.28:1	8,98	Bent Dipole	No
KF2YN Boxkite 22	6,70	17,12	1,99	1,90	23,00	10,8	40,2	29,0	16,2	21,2	52,1	1.17:1	9,11	Dipole	Yes
+DG7YBN 23	7,55	18,65	1,76	1,70	24,51	3,8	27,8	32,3	15,7	21,8	48,4	1.56:1	10,08	Bent Dipole	Yes
DJ9BV OPT70-8.5wl	8,44	18,91	1,80	1,75	24,73	3,7	31,4	25,1	14,8	19,6	35,0	1.12:1	9,79	Dipole	No
InnoV 24 LFA	8,94	19,25	1,89	1,83	25,16	3,1	25,5	34,5	15,3	31,2	50,4	2.06:1	11,26	LFA	Yes
WiMo 27 (YU7EF)	10,43	19,43	1,85	1,80	25,08	4,3	27,5	27,1	20,5	22,6	191,8	2.72:1	10,70	Folded Dipole	Yes
InnoV 30 LFA	11,64	20,45	2,27	2,22	26,42	6,7	30,6	36,6	13,9	20,3	49,6	2.38:1	11,56	LFA	Yes
*YU7EF 32	12,49	19,97	1,94	1,90	25,59	6,6	29,9	27,7	23,1	24,2	51,3	3.44:1	10,84	Dipole	No
*InnoV 33 LFA	13,13	20,77	2,15	2,10	26,50	7,7	29,9	34,4	13,2	20,2	49,7	4.04:1	11,74	LFA	Yes
InnoV 38 LFA	15,41	21,45	2,30	2,35	27,23	6,9	28,9	36,9	12,7	17,0	49,3	1.87:1	12,62	LFA	Yes
*InnoV 38 LFA	15,41	21,45	2,59	2,56	27,30	7,2	30,4	36,9	12,7	17,0	49,3	1.87:1	12,63	LFA	Yes
InnoV 40 LFA	16,23	21,67	2,69	2,66	27,67	7,5	29,4	37,8	12,6	17,2	48,0	2.27:1	12,99	LFA	Yes

Legend:

1. L = Length in Wavelengths

2. Gain = Gain in **dBi** of a single antenna

3. E = E plane (Horizontal) stacking in Meters.

4. H = H plane (Vertical) stacking in Meters.

5. Ga = Gain in **dBi** 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 impedence of a single antenna in free space.

10. VSWR = VSWR Bandwidth is based a single antenna over 432.000 - 435.000 MHz with a reference at 432.100 MHz. This parameter gives an indicator of the antenna "Q" and what to expect with 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*log Ta). The more positive figure the better. G/T is modelled in Tant.exe at 30 degrees elevation.

Notes:

1. The programs used to calculate E/H Stacking,G,Ta,Tlos and G/T are EZNEC 5+ by Roy Lewallen W7EL,4NEC2 by Arie Voors and Tant.exe by Sinisa, YT1NT/VE3EA. This combination of software provides excellent accuracy. Segment Density is 25 segments per half wave.

2. Temperatures used: Tsky=20 degrees;Tearth=350 degrees

3. Dipole Z is measured at 432.1 MHz

4. F/R, 1st and 2nd Side Lobes (SL) have been calculated on a single antenna

5. No stacking harness losses or H frame effects are included in the 4 bay gain figures.

6. All stacking dimensions EXCEPT those marked with a "*" and "#" are calculated from the DL6WU stacking formula:
   D = W/(2* sin(B/2))
   Where:
   D = stacking distance,vertical or horizontal
   W = wavelength, in the same units as D
   B - beamwidth between -3dB points.
   Use vertical beamwidth for vertical stacking (as above),
   Use horizontal beamwidth for horizontal stacking.

7. Antennas marked with a "*" have stacking dimensions recommended by the manufacturer or designer.

8. Antennas marked with a "#" have stacking dimensions for XPOL antennas by VE7BQH.

9. Antennas marked with a "+" have some or all elements over 6mm. All others are 4MM to 6MM.

10. FD = Folded Dipole

Single Click on the Sites with Links.

11. Manufacturer/Designer Legend:

12. Convergence Correction: NEC2 and NEC 4 are incapable of handling complex feed systems accurately like Folded Dipoles, T Matches, LFAs etc. Convergence Correction using the KF2YN Excel program is required. See DUBUS 4/2010 "The Correction of Convergence Errors in Antenna Temperature Calculations by Brian Cake, KF2YN for details.

13. Manufacturer/Designer Legend:

AF9Y = AF9Y
BVO = Eagle/DJ9BV
BQH = VE7BQH
CC = Cushcraft
CC MOD = VE7BQH
CD = CUE DEE
CD MOD = VE7BQH
CT1FFU = CT1FFU
DD0VF = DD0VF
DJ9BV = DJ9BV
DJ9BV OPT = DJ9BV
DK7ZB = DK7ZB
EKM MOD = SM2EKM
F9FT = F9FT
Flexa = FlexaYagi
G0KSC LFA = G0KSC
G4CQM = G4CQM
HG = HYGAIN
I0JXX = I0JXX
IK0BZY = IK0BZY
WiMo = WiMo

K1FO = K1FO
K2GAL = K2GAL
K5GW = Texas Towers/K5GW
KF2YN = KF2YN
M2 = M²
MBI = F/G8MBI/F5VHX
OZ5HF = Vargarda
RA3AQ = RA3AQ
RU1AA = RU1AA
SHARK = SHARK (Italian)
SM2CEW = SM2CEW/VE7BQH
SV = Svenska Antennspecialisten AB
W1JR = VE7BQH (Mininec error)
WB9UWA = WB9UWA
YU7EF = YU7EF
UR5CSZ = UR5CSZ
UA9TC = UA9TC
Vine = G0KSC Design
YU7XL = YU7XL
InnoVAntennas = G0KSC

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) may be the best choice depending on your location. Low sidelobe and F/R antennas with good (G/T) may provide further signifcant 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 1, November 5, 2012

Issue 1: Add YU7EF 32,InnoV 34 LFA,InnoV 38 LFA,InnoV 40 LFA,DG7YBN 19,KF2YN Boxkite 4,KF2YN Boxkite 4,KF2YN Boxkite 7,
Issue 1: Add KF2YN Boxkite 10,KF2YN Boxkite 13,KF2YN Boxkite 16,KF2YN Boxkite 22,WiMo 27 (YU7EF),DG7YBN 14,DG7YBN 23,
Issue 1: InnoV 15 LFA-SQ,InnoV 16 LFA-SQ,DJ9BV OPT70-8.5w,WiMo 15 (YU7EF),InnoV 24 LFA,InnoV30 LFA,