

VK5DJ's YAGI CALCULATOR

Yagi design frequency =433,00 MHz

Wavelength =692 mm

Parasitic elements contacting a square section metal boom 20 mm across.

Folded dipole mounted same as directors and reflector

Director/reflector diam =6 mm

Radiator diam =3 mm

REFLECTOR

349,4 mm long at boom position = 30 mm (IT = 164,5 mm)

RADIATOR

Single dipole 326,6 mm tip to tip, spaced 138 mm from reflector at boom posn 168 mm (IT = 153,5 mm)

Folded dipole 346,6 mm tip to tip, spaced 138 mm from reflector at boom posn 168 mm (IT = 163,5 mm)

DIRECTORS

Dir (no.)	Length (mm)	Spaced (mm)	Boom position (mm)	IT (mm)	Gain (dBd)	Gain (dBi)
1	309,4	51,9	220,4	144,5	4,8	6,9
2	305,8	124,6	345,0	143,0	6,5	8,6
3	302,4	148,9	493,9	141,0	7,8	9,9
4	299,4	173,1	667,0	139,5	8,9	11,0
5	296,5	193,9	860,8	138,0	9,8	11,9
6	293,8	207,7	1068,5	137,0	10,5	12,7
7	291,4	218,1	1286,6	135,5	11,2	13,3
8	289,1	228,5	1515,1	134,5	11,7	13,9
9	286,9	238,9	1754,0	133,5	12,2	14,4
10	285,0	249,2	2003,2	132,5	12,7	14,9
11	283,2	259,6	2262,9	131,5	13,1	15,3

COMMENTS

The abbreviation "IT" means "Insert To", it is the construction distance from the element tip to the edge of the boom for through boom mounting

Spacings measured centre to centre from previous element

Tolerance for element lengths is +/- 2 mm

Boom position is the mounting point for each element as measured from the rear of the boom and includes the 30 mm overhang. The total boom length is 2293 mm including two overhangs of 30 mm

The beam's estimated 3dB beamwidth is 35 deg

A half wave 4:1 balun uses 0,66 velocity factor RG-58 (PE) and is 228 mm long plus leads

FOLDED DIPOLE CONSTRUCTION

Measurements are taken from the inside of bends

Folded dipole length measured tip to tip = 347mm

Total rod length =712mm

Centre of rod=356mm

Distance BC=CD=161mm

Distance HI=GF=156mm

Distance HA=GE=175mm

Distance HB=GD=195mm

Distance HC=GC=356mm

Gap at HG=10mm

Bend diameter BI=DF=25mm

If the folded dipole is considered as a flat plane (see ARRL Antenna Handbook) then its resonant frequency is 403,1MHz and K is 0,932

