

VK5DJ's YAGI CALCULATOR

Yagi design frequency =144.10 MHz

Wavelength =2080 mm

Parasitic elements fastened to a non-metallic or separated from boom

Folded dipole fully insulated from boom

Director/reflector diam =4 mm

Radiator diam =4 mm

REFLECTOR

1019 mm long at boom position = 30 mm (IT = 497.0 mm)

RADIATOR

Single dipole 990 mm tip to tip, spaced 416 mm from reflector at boom posn 446 mm (IT = 482.5 mm)

Folded dipole 1010 mm tip to tip, spaced 416 mm from reflector at boom posn 446 mm (IT = 492.5 mm)

DIRECTORS

Dir (no.)	Length (mm)	Spaced (mm)	Boom position (mm)	IT (mm)	Gain (dBd)	Gain (dBi)
1	945	156	602	460.0	4.6	6.7
2	937	374	977	456.0	6.4	8.5
3	929	447	1424	452.0	7.7	9.9

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 +/- 6 mm

Boom position is the mounting point for each element as measured from the rear of the boom and includes the 30 mm overhang.

total boom length is 1454 mm including two overhangs of 30 mm

The beam's estimated 3dB beamwidth is 65 deg

A half wave 4:1 balun uses 0.66 velocity factor RG-58C (PE) and is 687 mm long plus leads

FOLDED DIPOLE CONSTRUCTION

Measurements are taken from the inside of bends

Folded dipole length measured tip to tip = 1010mm

Total rod length =2076mm

Centre of rod=1038mm

Distance BC=CD=480mm

Distance HI=GF=480mm

Distance HA=GE=519mm

Distance HB=GD=558mm

Distance HC=GC=1038mm

Gap at HG=0mm

Bend diameter BI=DF=50mm

If the folded dipole is considered as a flat plane (see ARRL Antenna Handbook) then its resonant frequency is 141.2MHz and K is 0.951

