

## VK5DJ's YAGI CALCULATOR

Yagi design frequency =787.00 MHz

Wavelength =381 mm

Parasitic elements contacting a round section metal boom 18 mm across.

Folded dipole fully insulated from boom

Director/reflector diam =2.1 mm

Radiator diam =2.1 mm

### REFLECTOR

197.6 mm long at boom position = 30 mm (IT = 90.0 mm)

### RADIATOR

Single dipole 179.1 mm tip to tip, spaced 76 mm from reflector at boom posn 106 mm (IT = 80.5 mm)

Folded dipole 182.7 mm tip to tip, spaced 76 mm from reflector at boom posn 106 mm (IT = 82.5 mm)

### DIRECTORS

Dir (no.)	Length (mm)	Spaced (mm)	Boom position (mm)	IT (mm)	Gain (dBd)	Gain (dBi)
1	178.3	28.6	134.8	80.0	4.8	6.9
2	176.5	68.6	203.3	79.5	6.5	8.6
3	174.8	81.9	285.2	78.5	7.8	9.9
4	173.3	95.2	380.5	77.5	8.9	11.0
5	171.8	106.7	487.1	77.0	9.8	11.9
6	170.4	114.3	601.4	76.0	10.5	12.7
7	169.2	120.0	721.4	75.5	11.2	13.3
8	168.0	125.7	847.1	75.0	11.7	13.9
9	167.0	131.4	978.5	74.5	12.2	14.4
10	166.0	137.1	1115.7	74.0	12.7	14.9
11	165.0	142.8	1258.5	73.5	13.1	15.3
12	164.2	146.7	1405.2	73.0	13.5	15.7

### 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 +/- 1 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 1435 mm including two overhangs of 30 mm

The beam's estimated 3dB beamwidth is 34 deg

### FOLDED DIPOLE CONSTRUCTION

Measurements are taken from the inside of bends

Folded dipole length measured tip to tip = 183mm

Total rod length =403mm

Centre of rod=201mm

Distance BC=CD=73mm

Distance HI=GF=70mm

Distance HA=GE=99mm

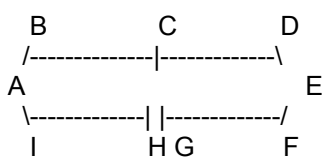
Distance HB=GD=128mm

Distance HC=GC=201mm

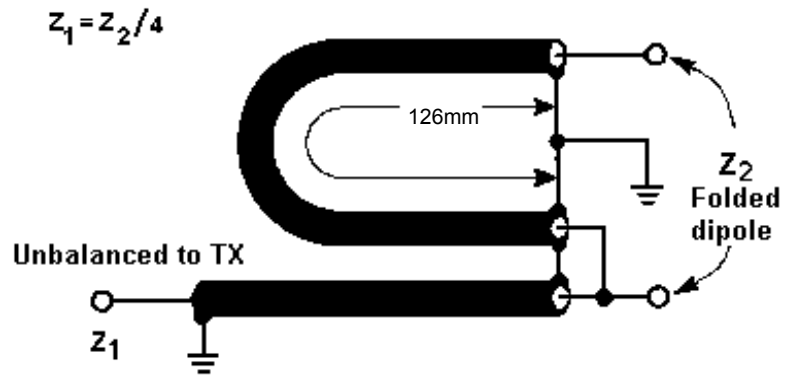
Gap at HG=5mm

Bend diameter BI=DF=37mm

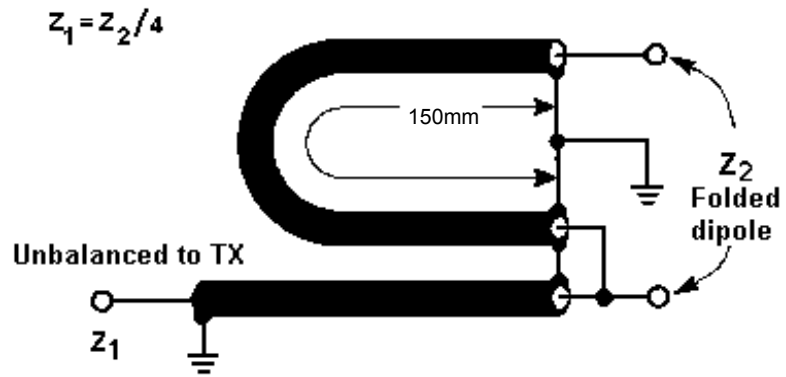
If the folded dipole is considered as a flat plane (see ARRL Antenna Handbook) then its resonant frequency is less than the flat plane algorithm's range of 10:1



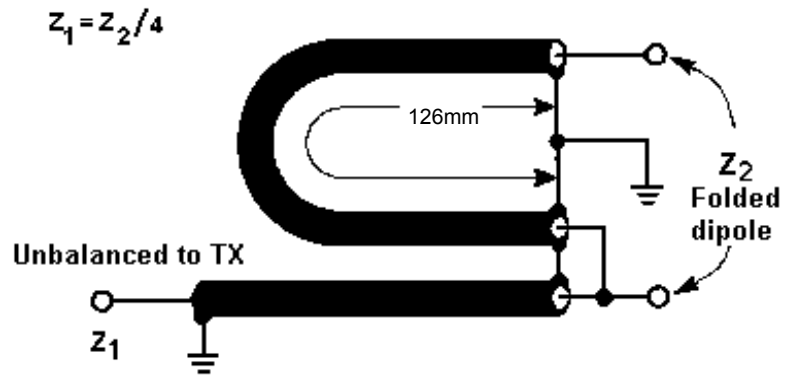
Balun for 787 MHz using 126 mm loop of RG-58 (PE)



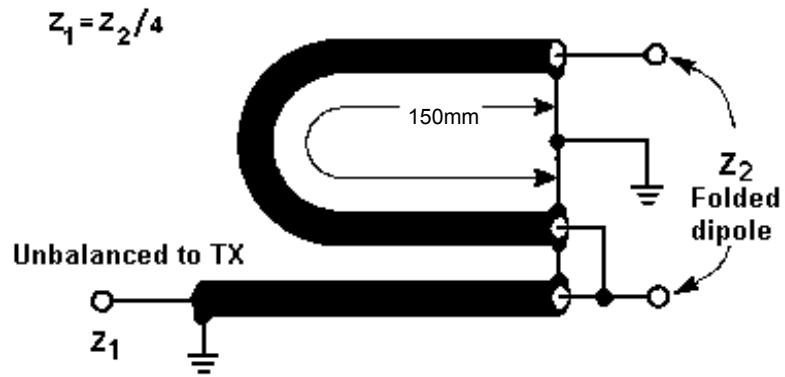
Balun for 787 MHz using 150 mm loop of RG-58 (foam PE)



Balun for 787 MHz using 126 mm loop of RG-59 (PE)



Balun for 787 MHz using 150 mm loop of RG-59 (foam PE)



Balun for 787 MHz using 143 mm loop of RG-6 (foam PE)

