

## VK5DJ's YAGI CALCULATOR

Yagi design frequency =195.00 MHz

Wavelength =1537 mm

Parasitic elements contacting a square section metal boom 25.40 mm across.

Folded dipole mounted same as directors and reflector

Director/reflector diam =6.35 mm

Radiator diam =6.35 mm

### ELEMENT LENGTHS AND SPACING

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

#### Reflector

762 mm long at boom position = 30 mm (IT = 368.3 mm)

#### Radiator

Single dipole 726 mm tip to tip at boom posn =337 mm (IT = 350.3 mm)

Folded dipole 752 mm tip to tip at boom posn =337 mm (IT = 363.3 mm)

| Dir (no.) | Length (mm) | Spaced (mm) | Boom position (mm) | IT (mm) | Gain (dBd) | Gain (dBi) |
|-----------|-------------|-------------|--------------------|---------|------------|------------|
| 1         | 691         | 115         | 453                | 332.8   | 5.0        | 7.2        |
| 2         | 684         | 277         | 730                | 329.3   | 6.6        | 8.8        |
| 3         | 678         | 331         | 1060               | 326.3   | 7.9        | 10.0       |
| 4         | 671         | 384         | 1444               | 322.8   | 8.9        | 11.1       |
| 5         | 666         | 430         | 1875               | 320.3   | 9.8        | 12.0       |

Spacings measured centre to centre from previous element

Tolerance for element lengths is +/- 5 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 1905 mm including two overhangs

The beam's estimated 3dB beamwidth is 51 deg

A half wave 4:1 balun uses 0.75 velocity factor RG-6 (foam PE) and is 577 mm long plus leads

Here are some construction details for a folded dipole

Measurements are taken from the inside of bends

Folded dipole length measured tip to tip = 752mm

Total rod length =1549mm

Centre of rod=774mm

Distance HI=GF=344mm

Distance HA=GE=384mm

Distance HB=GD=424mm

Distance HC=GC=774mm

Gap at HG=13mm

Bend diameter BI=DF=51mm

If the dipole is considered as a flat plane (see ARRL Antenna Handbook) then its resonant frequency is 186.4MHz and K is 0.935

