VK5DJ's YAGI CALCULATOR

Yagi design frequency =1296,00 MHz
Wavelength =231 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
126,7 mm long at boom position = 30 mm (IT = 53,5 mm)

RADIATOR
Single dipole 107,2 mm tip to tip, spaced 46 mm from reflector at boom posn 76 mm (IT = 43,5 mm)
Folded dipole 125,4 mm tip to tip, spaced 46 mm from reflector at boom posn 76 mm (IT = 52,5 mm)

DIRECTORS

Dir (no.)	Length (mm)	Spaced (mm)	Boom position (mm)	IT (mm)	Gain (dBd)	Gain (dBi)
1	108,8	17,3	93,6	44,5	4,8	6,9
2	107,3	41,6	135,3	43,5	6,5	8,6
3	105,9	49,7	185,0	43,0	7,8	9,9
4	104,7	57,8	242,8	42,5	8,9	11,0
5	103,5	64,8	307,6	42,0	9,8	11,9
6	102,4	69,4	377,0	41,0	10,5	12,7
7	101,4	72,9	449,8	40,5	11,2	13,3
8	100,5	76,3	526,2	40,0	11,7	13,9
9	99,6	79,8	606,0	40,0	12,2	14,4
10	98,8	83,3	689,3	39,5	12,7	14,9
11	98,1	86,7	776,0	39,0	13,1	15,3
12	97,4	89,1	865,1	38,5	13,5	15,7
13	96,7	90,2	955,3	38,5	13,8	16,0
14	96,2	91,4	1046,7	38,0	14,2	16,3
15	95,6	92,5	1139,2	38,0	14,5	16,6
16	95,1	92,5	1231,7	37,5	14,7	16,9
17	94,6	92,5	1324,2	37,5	15,0	17,1
18	94,2	92,5	1416,8	37,0	15,2	17,4
19	93,8	92,5	1509,3	37,0	15,4	17,6
20	93,4	92,5	1601,8	36,5	15,6	17,8
21	93,1	92,5	1694,4	36,5	15,8	18,0
22	92,7	92,5	1786,9	36,5	16,0	18,2
23	92,4	92,5	1879,4	36,0	16,2	18,3
24	92,2	92,5	1971,9	36,0	16,4	18,5

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 2002 mm including two overhangs of 30 mm

The beam's estimated 3dB beamwidth is 24 deg

A half wave 4:1 balun uses 0,66 velocity factor RG-58 (PE) and is 76 mm long plus leads
FOLDED DIPOLE CONSTRUCTION
Measurements are taken from the inside of bends
Folded dipole length measured tip to tip = 125mm
Total rod length =274mm
Centre of rod=137mm
Distance BC=CD=50mm
Distance HI=GF=48mm
Distance HA=GE=67mm
Distance HB=GD=87mm
Distance HC=GC=137mm
Gap at HG=5mm
Bend diameter BI=DF=25mm

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

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      B               C               D
     /---------------|---------------\
    A                                  E
     \--------------| |--------------/
      I              H G              F
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