The W5UN 2 Meter QUAGI 97

W5UN Quagi97 Antenna

dir9 dir8 dir7 dir6 dir5 dir4 dir3 dir2 dir1 driven reflector

For non-conducting boom and supports, use sealed wood or fiberglass.

non-conducting supports

non-conducting boom

reflector
dir1 driven
dir2
dir3
dir4
dir5
dir6
dir7
dir8
dir9

|-20.61"-|
|-20.61"-|

50 ohm coax

DE - driven el

|- 21.09"-|
|-21.09"-|

REF - reflector

driven and reflector loops are formed from #12 AWG, TW insulated solid copper wire. The total wire lengths are:
driven: 82.43 inches
reflector: 84.37 inches

Directors are made from solid aluminum rods, 3/16" diameter. Refer to the Quagi97 measurement table for length of each element, and spacing between elements.
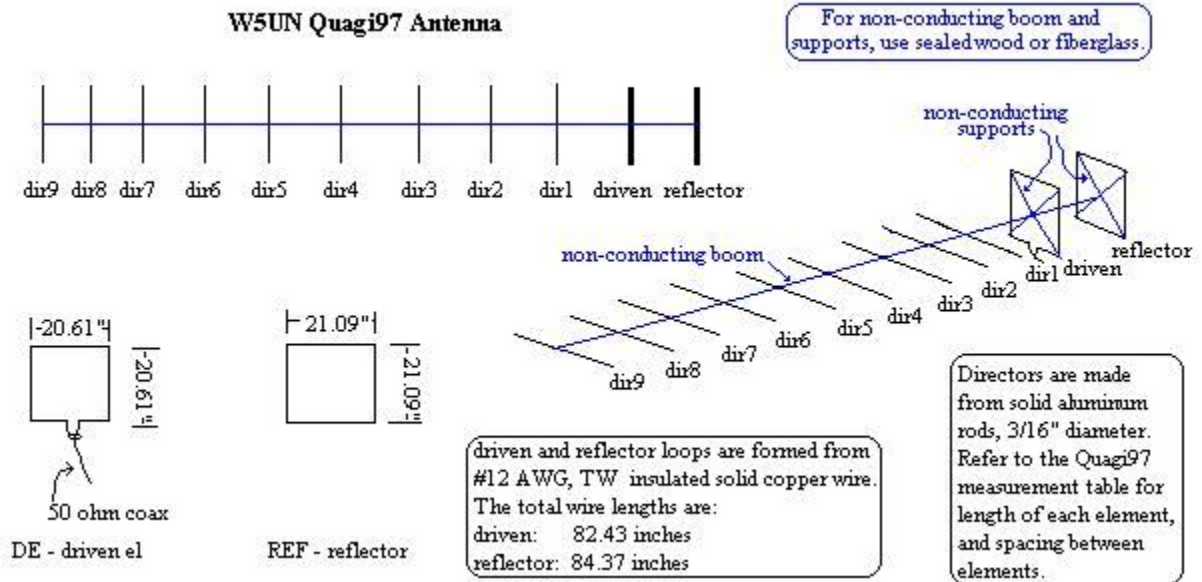
The W5UN Quagi 97 is a computer optimized quagi derived from the original W5UN Quagi of the early 1980s. The length of the 1997 model has been deliberately shortened to allow it fit on a 24 foot boom. Performance is substantially higher than that of the original antenna. It now compares favorably with yagis of the same length. The two programs used to optimize the updated antenna were AO6 and NEC 2.

This antenna has not been verified by actual construction. Gain and front to back will be as stated below. The only component of the antenna that needs verification is the 50 ohm match. *Who would like to be the FIRST to build the actual prototype model??* Full consultation will be available to the prototype builder during construction. Contact w5un@wt.net if you wish to be the first!

Antenna Characteristics: 23' 9"
11 Element Gain: 13.56 dBd at 144.100 Mhz
F/B : 23 dB

Stacking:

Optimum: E Plane: 13.73'
Optimum: H Plane: 12.86'

Stacking can be reduced up to 90 percent of optimum and still achieve acceptable stacking gain.

Optimum stacking is recommended, however.

W5UN QUAGI 97 Dimensions in FREE SPACE:

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Element       Boom Pos.     El. Length     Material
Reflector      0.0000"      84.37" loop.   #12 solid INSULATED copper wire
*
Driven        16.2500"      82.43" loop.   #12 solid INSULATED copper wire
*
Dir 1          37.1875"     36.168"        3/16" aluminum rod
Dir 2          70.1875"     36.052"        3/16" aluminum rod
Dir 3         102.5000"     35.817"        3/16" aluminum rod
Dir 4         135.8125"     35.475"        3/16" aluminum rod
Dir 5         169.0625"     35.179"        3/16" aluminum rod
Dir 6         202.8125"     35.090"        3/16" aluminum rod
Dir 7         234.2500"     35.324"        3/16" aluminum rod
Dir 8         264.8750"     35.617"        3/16" aluminum rod
Dir 9         285.0000"     35.108"        3/16" aluminum rod
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* #12 TW insulated solid copper wire is common house wire, found at most hardware and building supply stores. Do not strip the insulation.

The above dimensions may be used for non metallic booms like wood or fiberglass.

If you wish to use a metal boom with through the boom insulated elements, please apply the following correction to the directors only.

The reflector and driven quad elements must remain insulated from the boom.

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Boom Diameter              Correction           Add
0.750" or 19.050MM          10.56%           .0792" or  2.02MM
0.875" or 22.225MM          12.14%           .1062" or  2.70MM
1.000" or 25.400MM          13.66%           .1366" or  3.47MM
1.125  or 28.575MM          15.13%           .1702" or  4.32MM
1.250" or 31.750MM          16.54%           .2068" or  5.25MM
1.375" or 34.925MM          17.90%           .2462" or  6.25MM
1.500" or 38.100MM          19.21%           .2882" or  7.32MM
1.750" or 44.450MM          21.67%           .3792" or  9.63MM
2.000" or 50.800MM          23.91%           .4783" or 12.15MM
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Further information concerning use of metallic booms with insulated 'thru-the boom' mounted elements follows:

PROVEN ACCURATE FOR BOOM DIAMETERS SMALLER THAN .055 WAVELENGTHS.
MEASUREMENTS BY DL6WU.FORMULA BY G3SEK.

FORMULA: C = 12.5975B - 114.5B^2
C = CORRECTION FACTOR AS A FRACTION OF THE BOOM DIA.
B = BOOM DIA IN WAVELENGTHS
B^2 MEANS B SQUARED

2 METERS BOOM DIAMETER CORRECTION ADD 2 METERS.

```
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0.750" OR 19.050MM      10.56% .0792" OR 2.02MM
0.875" OR 22.225MM      12.14% .1062" OR 2.70MM
1.000" OR 25.400MM      13.66% .1366" OR 3.47MM
1.125 OR 28.575MM       15.13% .1702" OR 4.32MM
1.250" OR 31.750MM      16.54% .2068" OR 5.25MM
1.375" OR 34.925MM      17.90% .2462 OR 6.25MM
1.500" OR 38.100MM      19.21% .2882" OR 7.32MM
1.750" OR 44.450MM      21.67% .3792 OR 9.63MM
2.000" OR 50.800MM      23.91% .4783" OR 12.15MM
20.000MM                11.04% 2.21MM 28.000MM
14.87% 4.16MM 30.000MM
15.78% 4.73MM 32.000MM
16.66% 5.33MM  38.000MM
19.17% 7.29MM
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Insulators can be commercial shoulder insulators and keepers or as simple asheat shrink tubing with the element held in place by hot melt glue or epoxy glue.