

WA5VJB "Cheap Yagis"

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Antenna was designed by Kent Britian, WA5VJB, and full credit (and blame) belongs to him on this design! This antenna is ideal for rovers, and is good for a fixed station on a budget. It can be built for around \$15-20 (1999 dollars).

The boom material typically is wood, 1/2" by 3/4" sold in home centers as "flat pine molding". 3/4" x 3/4" solid molding is usable as well. There is little reason why fiberglass tubing wouldn't work as well.

Outdoor varnish, paint or deck stain will work to weatherproof the antenna. Put a dab of RTV over the coax connection after verifying the SWR of the antenna.

Elements can be secured as WA5VJB suggests, with epoxy or RTV, or alternatively as I do: I file a small groove around each element very close to where it protrudes out of the 1/2" wooden boom (on each side), and force on "push-nuts" (also called "speed-nuts") on each side of the element for a positive hold.

On the center conductor, solder a small brass washer or nut onto the "J" shaped side of the element before mounting, and clip the "push-nut" to the other side upon mounting on the boom.

I usually also wind a small loop of the RG-58 coax into a small RF choke under the feedpoint to act as a balun. WA5VJB states that this step is unnecessary, but I'm a purist...

Element Lengths and Spacings in Inches:

144 MHz. This antenna is peaked for 144.2 MHz but performance is still good at 146.52 (emergency use only!) Driven element dimensions are L = 38.5" and H = 1.0" Elements are 1/8" diameter.

144 MHz		Reflector	Driven	Director 1	Director 2	Director 3	Director 4
3 Element	Length	41.00		37.00			
3 Element	Spacing	0.00	8.50	20.00			
4 Element	Length	42.00		37.50	33.00		
4 Element	Spacing	0.00	8.50	19.25	40.50		
6 Element	Length	40.50		37.50	36.50	36.50	32.75
6 Element	Spacing	0.00	7.50	16.50	34.00	52.00	70.00

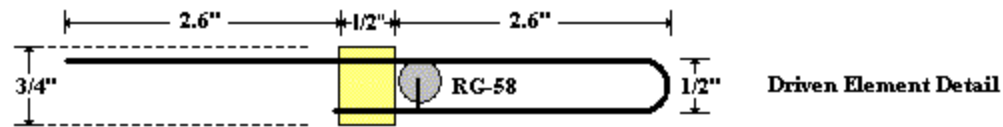
222 MHz. This antenna is peaked for 222.1 MHz but performance barely changes at 223.5 MHz. Driven element dimensions are L = 24.5" and H = 1.0" Elements are 3/16" diameter.

222 MHz		Reflector	Driven	Director 1	Director 2	Director 3	Director 4
3 Element	Length	26.00		23.75			
3 Element	Spacing	0.00	5.50	13.50			
4 Element	Length	26.25		24.10	22.00		
4 Element	Spacing	0.00	5.00	11.75	23.50		
6 Element	Length	26.25		24.10	23.50	23.50	21.00
6 Element	Spacing	0.00	5.00	10.75	22.00	33.75	45.50

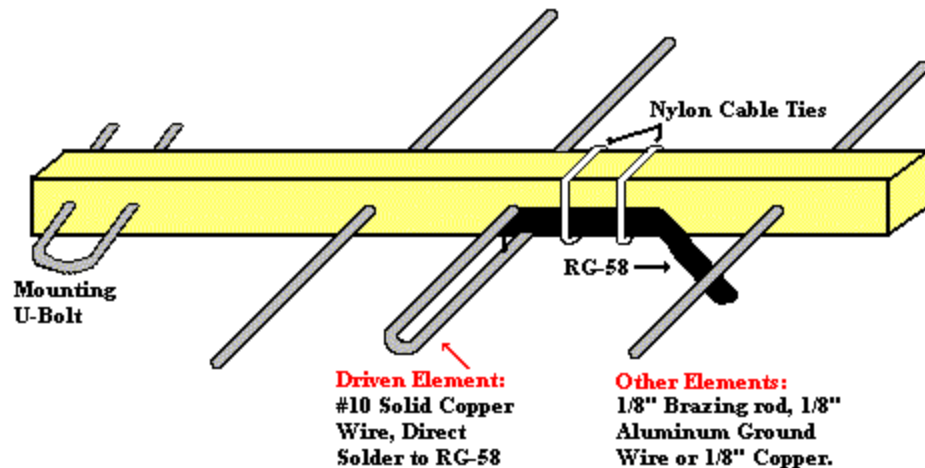
432 MHz. This antenna is peaked for 432.1 MHz. At this frequency, this antenna is getting very practical and easy to build. Driven element dimensions are L = 13.0" and H = 3/8" Elements are 1/8" diameter.

432 MHz		Reflector	Driven	Dir 1	Dir 2	Dir 3	Dir 4	Dir 5	Dir 6	Dir 7	Dir 8	Dir 9
6 Element	Length	13.50		12.50	12.00	12.00	11.00					
6 Element	Spacing	0.00	2.50	5.50	11.25	17.50	24.00					
8 Element	Length	13.50		12.50	12.00	12.00	11.00	12.00	11.25			
8 Element	Spacing	0.00	2.50	5.50	11.25	17.50	24.00	30.75	38.00			
11 Element	Length	13.50		12.50	12.00	12.00	11.00	12.00	12.00	11.75	11.75	11.00
11 Element	Spacing	0.00	2.50	5.50	11.25	17.50	24.00	30.75	38.00	45.50	53.00	59.50

902/903 MHz. This was the first antenna I built using the antenna to control the driven element impedance. The 2 1/2' length has proven practical, so I haven't built any other versions. Driven element dimensions are L = 5.7" and H = 1/2" Elements are 1/8" diameter.



902/903 MHz -- NOT TO SCALE

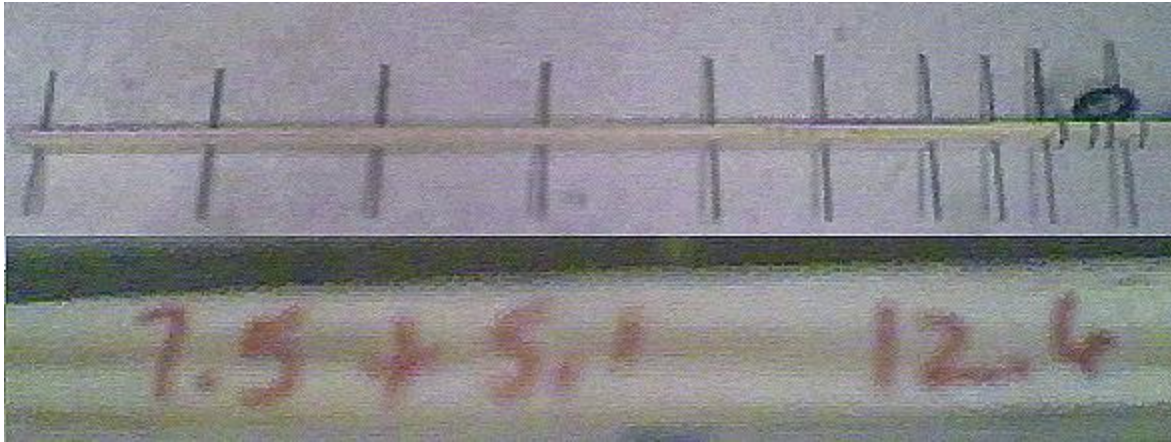


902/903 MHz	Reflector	Driven	Director 1	Director 2	Director 3	Director 4	Director 5	Director 6	Director 7	Director 8
Length	6.2	*	5.6	5.5	5.5	5.4	5.3	5.2	5.1	5.1
Spacing	0	2.4	3.9	5.8	9.0	12.4	17.4	22.4	27.6	33.0

* See diagram above for details. 9.10" Total length.

UPDATE: My antenna was measured at the CSVHF Society 2000 Meeting in Winnipeg, Manitoba, Canada by Kent Britian himself. It made a pretty good account of itself, and *actually would have won an award if they actually would have had some for antennas this year!!*

Here is a picture of the constructed antenna, with a close up of Kent's handwriting (fuzzy but readable-- cheap webcam photo): The measured gain was 12.6 dBd, not bad for a \$10 antenna constructed in about an hour.



1296 MHz. This antenna is the veteran of several "Grid Peditions" but I have yet to actually measure the gain. Dimensions must be followed with great care. The driven element is small enough to allow 0.141 semi-rigid coax to be used instead of RG-58. Silicon Bronze welding rod was used for the elements but any material can be used. Driven element dimensions are L = 4.0" and H = 1/2" Elements are 1/8" diameter.

1296 MHz		Reflector	Driven	Dir 1	Dir 2	Dir 3	Dir 4	Dir 5	Dir 6	Dir 7	Dir 8
10 Element	Length	4.30		3.90	3.80	3.75	3.75	3.65	3.60	3.60	3.50
10 Element	Spacing	0.00	1.70	2.80	4.00	6.40	8.70	12.20	15.60	19.30	23.00

Converted to HTML by Frederick M. Spinner, W0FMS

Last Update: 12 August 2000