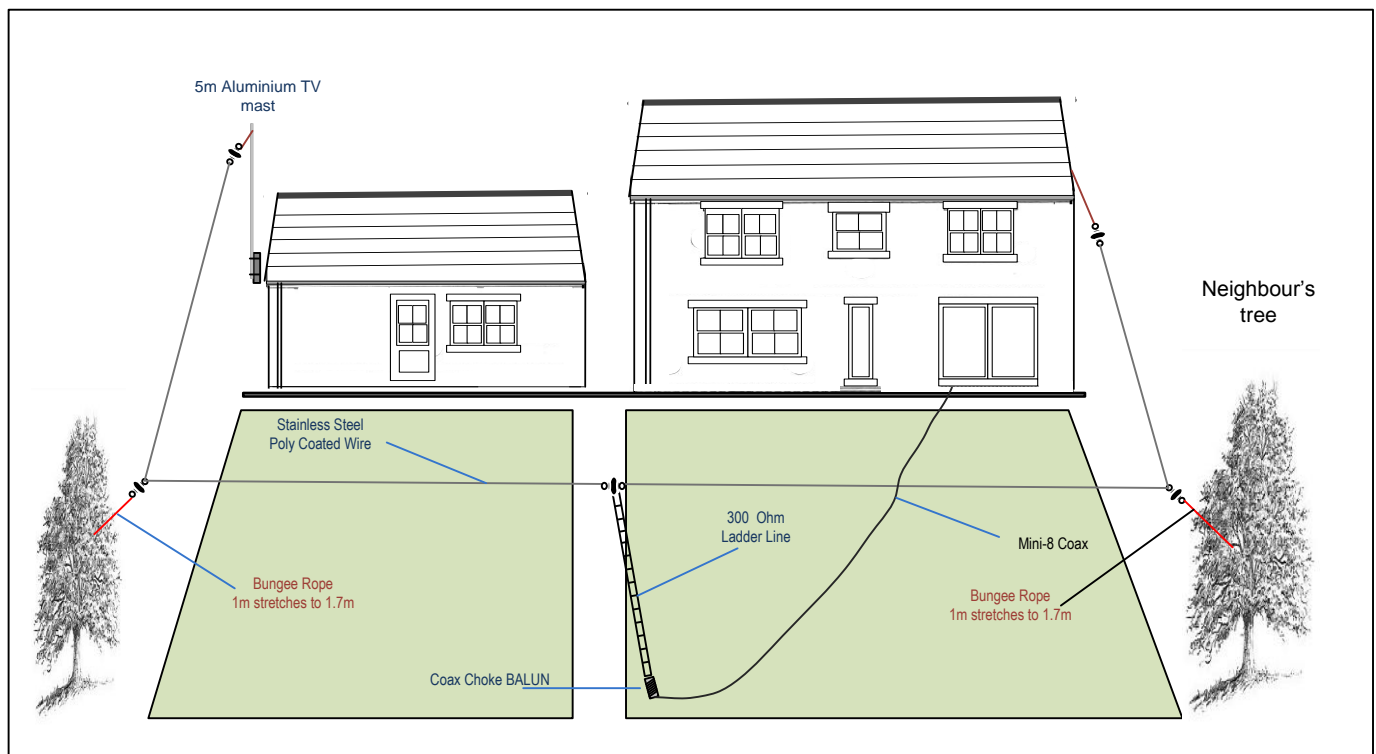
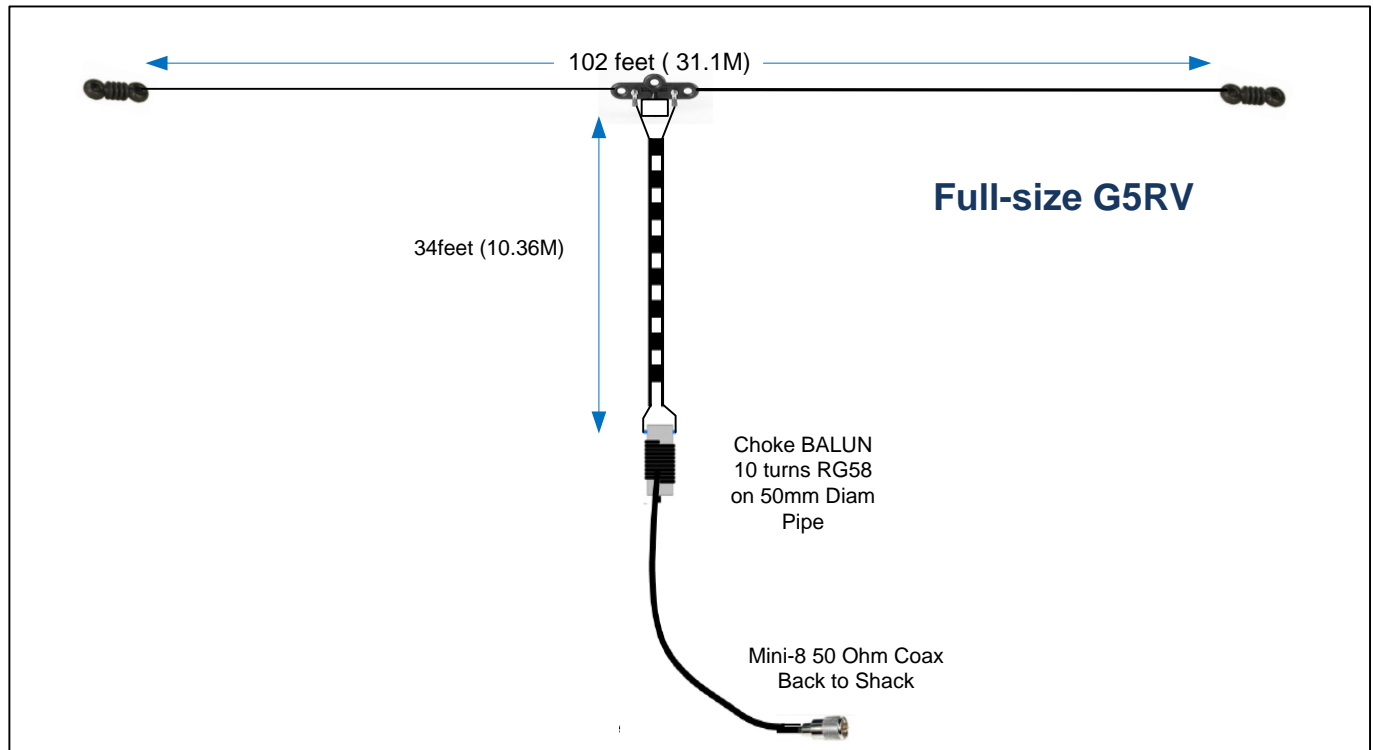


The G5RV Multi-band HF antenna

Designed by RSARS member Louis Varney G5RV (SK)

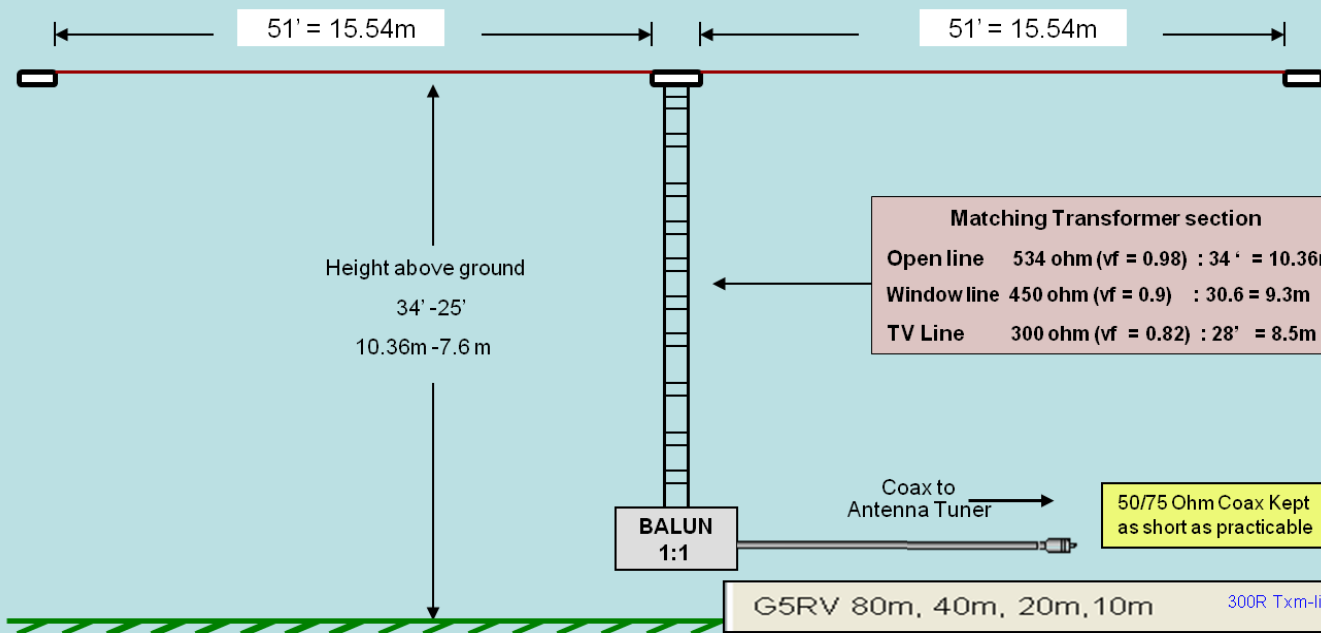


The Garden is fairly small, being 57ft wide, the LHS is 30Feet deep and the RHS is 35ft deep i.e. too short for an in-line full-sized G5RV. Hence it is erected as an open square. The average height is about 9 metres, but part that slopes to the house gutter is 6.5 metres high. This arrangement affects the radiation pattern as one would expect, and I modelled the antenna using MMAN-GAL program (see pages 3&4). My kind neighbours allowed me to attach bungees to their trees braches using a "grappling" hooks with my 10m fishing pole, but the antenna wire is within my garden boundary. The Choke Balun improved the SWR that was presented to the ATU in the shack, see page 5 for measurements taken using an Autek VA1 Antenna Analyser

The G5RV Multi-band HF antenna



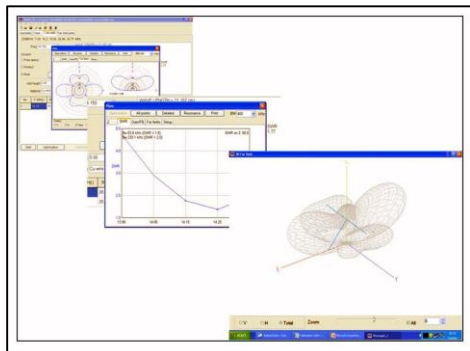
Classic G5RV - Louis Varney



Note : Table on the Right are MMANA-GAL Model results

G5RV 80m, 40m, 20m, 10m											300R Txm-line	
No.	F (MHz)	R (Ohm)	jX (Ohm)	SWR 50	Gh dBd	Ga dBi	F/B dB	Elev.	Ground	Add H.	Polar.	
6	3.75	13.88	78.29	12.6	---	7.25	-1.12	90.0	Real	0.0	hori.	
5	7.15	57.53	-20.27	1.49	---	6.04	---	50.0	Real	0.0	hori.	
4	14.15	74.6	-0.747	1.49	---	7.6	---	24.1	Real	0.0	hori.	
3	18.12	48.47	-93.93	5.46	---	9.39	-25.6	18.9	Real	0.0	hori.	
2	24.94	147.0	112.8	4.8	---	10.09	-3.66	13.8	Real	0.0	hori.	
1	28.5	95.41	-287.8	19.7	---	9.72	-2.82	12.1	Real	0.0	hori.	

Drawn by G8ODE RSARS 1691



MMANA GAL - (MMANA)

The Multilingual Method of Moments ANTenna Analyzer)

By **JE3HHT** - Makoto Mori

DL1PBD - Alex Schewelew & **DL2KQ** - Igor Gontcharenko

This is available free to be down loaded from the following web link.:-

<http://mmhamsoft.amateur-radio.ca/>

NOTES:-

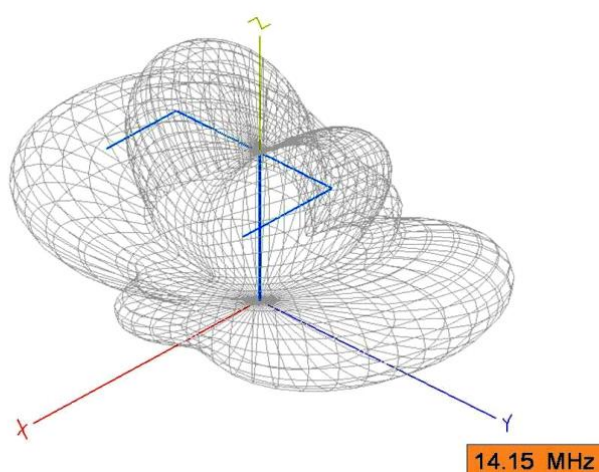
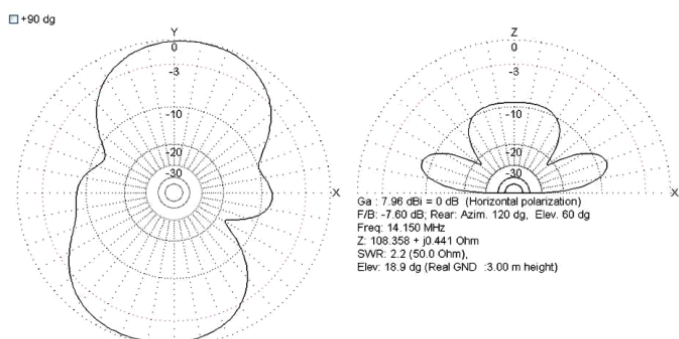
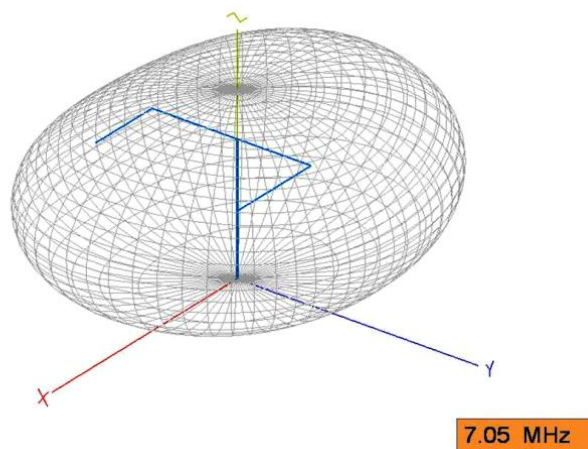
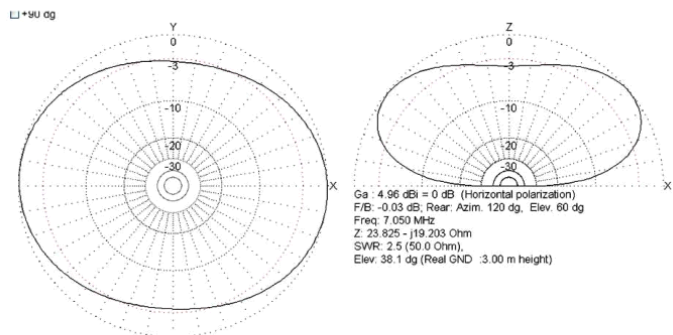
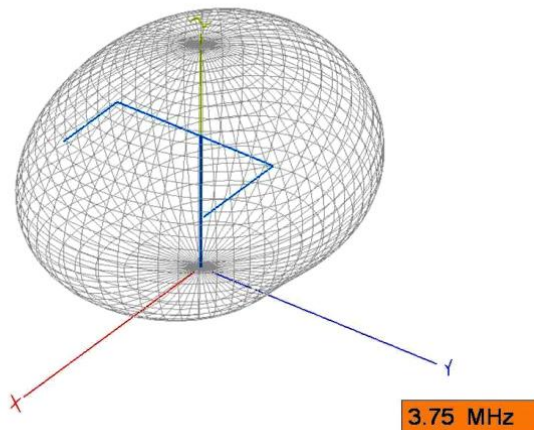
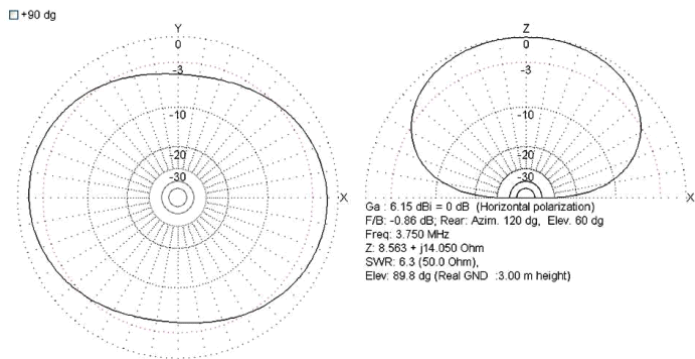
The radiation patterns on the following pages were produced using this free program, but it is important to note a number of its limitations, two of which are that :-

- It does not cope with very closely spaced conductors,
- It cannot model coaxial cable or dielectric other than air.

It can however model 300 ohm open wire ladder line, and this was used to produce the following G5RV diagrams. There is also a feature to add extra height to the antenna, and this was used to elevate the end of the ladder line by 1 metre in so that the models ground did not affect the results.



FAR FIELD- Total Radiation



Notes : The antenna was modelled using MMANA GAL V.1.2.0.20 see <http://mmhamsoft.amateurradio.ca/>
 The antenna wire is 2mm diameter, and the matching 300R transmission line is 11,8 metres long .
 Using a "REAL" ground 6mS conductivity, with an overall antenna height of 12.8 metres
 i.e. 11.8m for the ladder line & 1m extra elevation.

N.B. MMANA-GAL cannot not model dielectric losses, the line is thus modeled as a longer open wire feeder

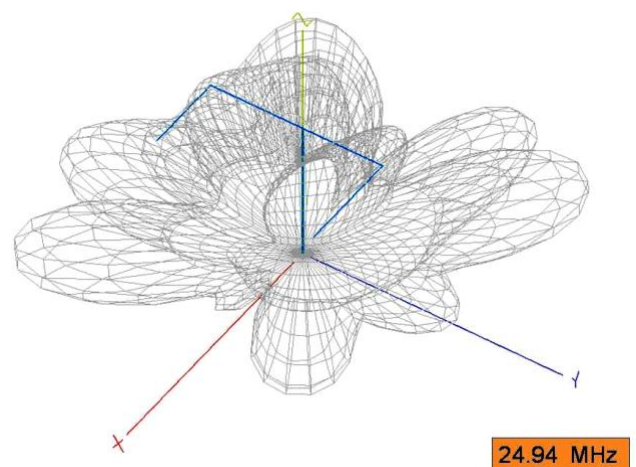
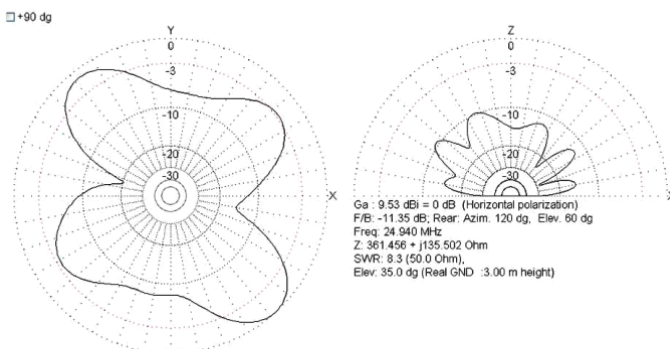
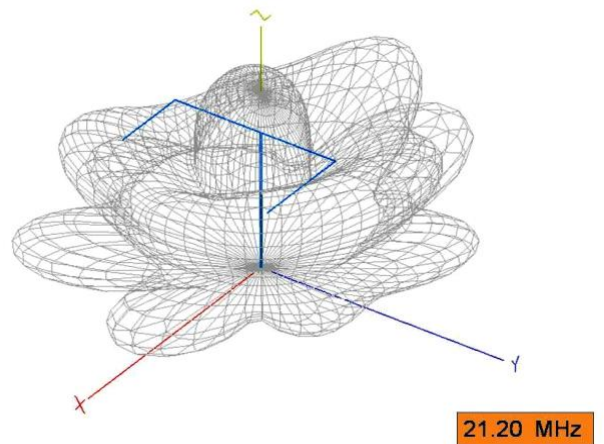
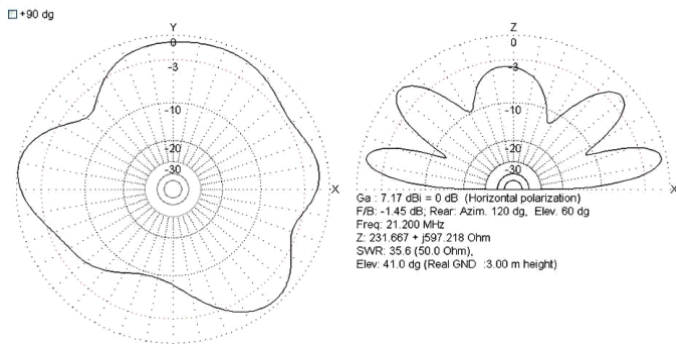
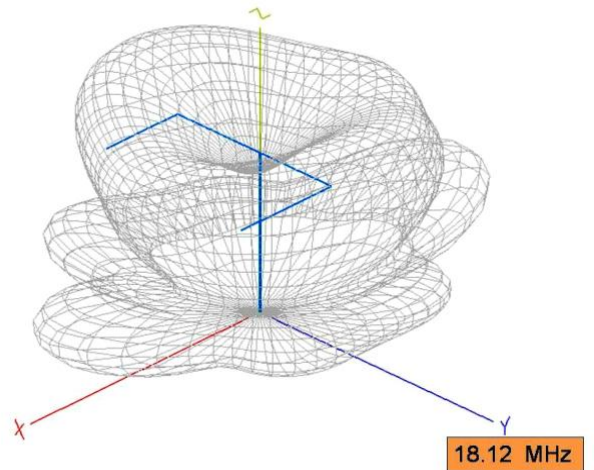
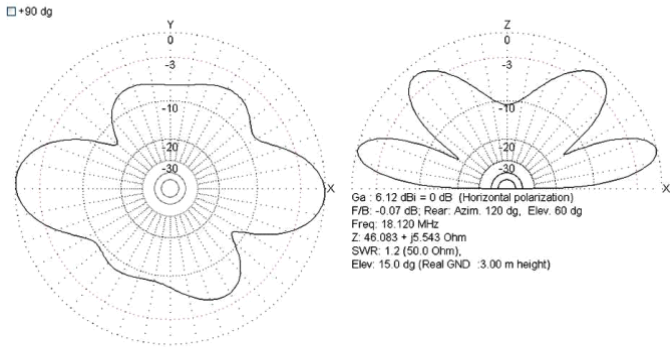
G5RVU- SHAPE RADIATION

REAL GROUND

PATTERNS



FAR FIELD- Total Radiation



Notes : The antenna was modelled using MMANA GAL V.1.2.0.20 see <http://mmhamsoft.amateurradio.ca/>
 The antenna wire is 2mm diameter, and the matching 300R transmission line is 11,8 metres long .
 Using a "REAL" ground 6mS conductivity, with an overall antenna height of 12.8 metres
 i.e. 11.8m for the ladder line & 1m extra elevation.

N.B. MMANA-GAL cannot not model dielectric loses, the line is thus modeled as a longer open wire feeder



The Coiled Coax BALUN



Not the prettiest BALUN, but just as effective and very easy to construct.

8-Turns RG58 200mm Diam

The table shows the effect of adding the simple Coax Balun at the bottom of the G5RV's 300 Ohm twin line.

G8ODE's U-Shaped G5RV approx 8-9 Metres above ground		
MHz	50R Coax connected direct to 300R Ladder Line	50R Coax Via 8 turn Coax Balun to 300 R Ladder line
3.75	3.33 : 1	2.24 : 1
7.05	2.71 : 1	2.78 : 1
10.12	HIGH	12.3 : 1
14.15	8.4 : 1	3.93 : 1
18.12	7.8 : 1	2.49 : 1
21.2	8.8 : 1	5.2 : 1
24.9		
28.5		

The 8 turns BALUN made from 15m of RG58 Improves SWR at Transceiver - measured with an Autex VA1 Antenna Analyser analyser

