This message is a summary of the model patterns based on what I hope is the final iteration of the model. Hope you find it interesting…

Lot of junk attached here as I wanted this mail to serve as an email backup of the work – and it serves as a snapshot of what hopefully will divide the "planning and simulation" phase from the "let's go do it" phase. All of the antennas exist now and are wired. So the only part remaining of the "let's go do it" is the relocation of the 10/15/17m beam and then trimming.

After that, it will be up to the VNA/RVM application to judge just how far reality matches theory. Thanks Greg.

On this email, also cc to some of the guys who provided assistance and support – Jack, Bill, Bill, Rob.

73/jeff/ac0c

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Array summary:

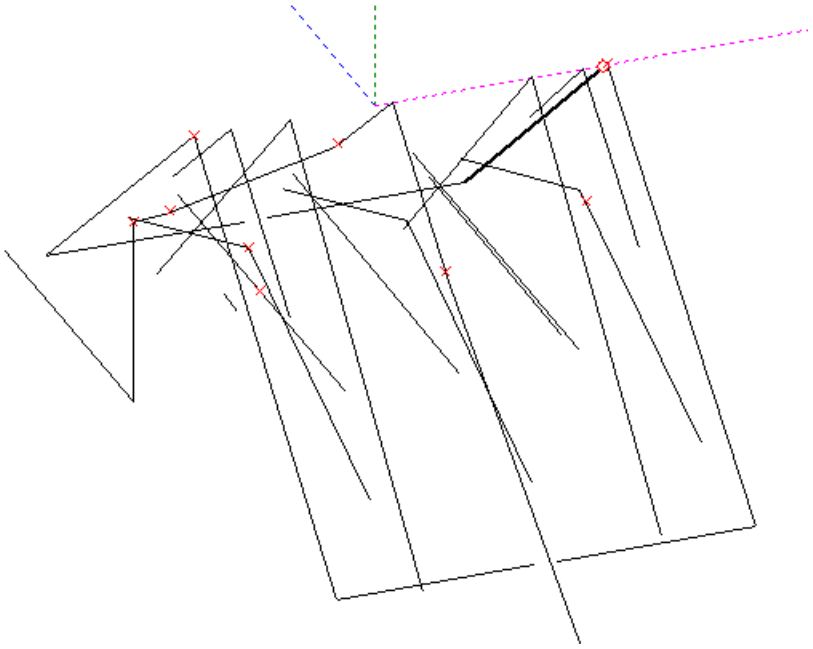
Integration and control features:

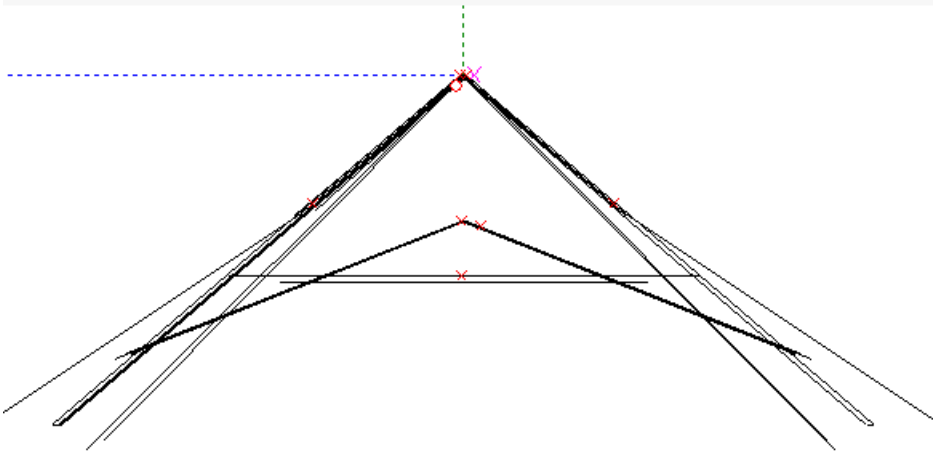
- Microprocessor controlled antenna selection tied to rig's band data.
- Automatic direction setting via DXLABS DXVIEW (thanks Dave). Fully integrated with CWSKIMMER sessions (thanks Dick).

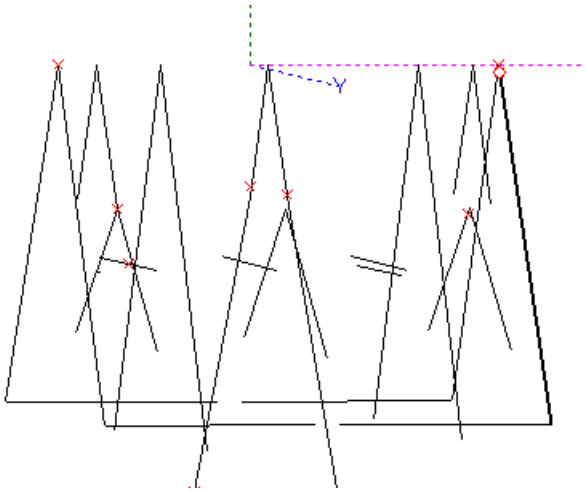
- Full size 80m dipole, with traps for 12m (serving as the DE) and 160m (serving as a dipole)
- 40m – full size 2-element electrically reversible v-yagi
- 30m – full sized 2-element v-yagi fixed east – optional electrical bidirectional control pending 40m performance verification
- 20m – full sized 3-element electrically reversible v-yagi
- 17/15/10 3-element horizontal yagi, electrically reversible
- 12m 3-element v-yagi fixed east

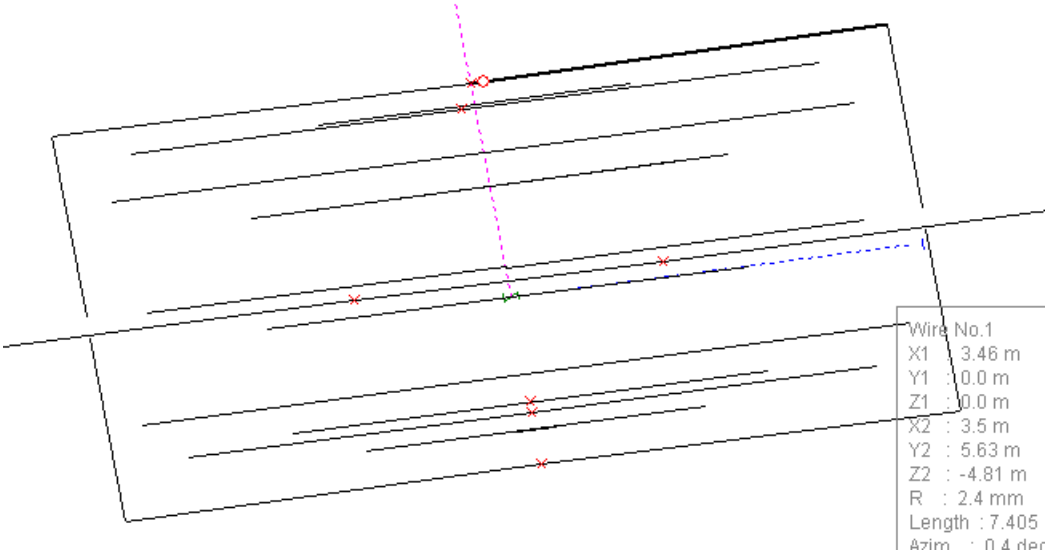
- OTHER: 6M – a project for another day. But the elements and infrastructure exists to try later…

Prespective views:






Y



Interactions table – depending on the band, the MCU control head makes on-the-fly adjustments of the settings to get maximum detuning possible. This is what all the switching, relay and MCU hardware is needed for.

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BAND SEG E/W Configure for best results on this band - 80/40/30/20/15 - ALL ITEMS SHORTED - ITEMS BELOW **OPEN**

160	18	1.825	DIP 40e 40w 30e 30w 20e 20c 12e
80	18	3.550	DIP 40E 40W 30e 30w 20e 20c 12e
40	1/5	7.025	40E 40w 30w 30e 20e 20c
30	9(11)	10.120	DIP 40E 30E 30W
20	31	14.050	20C
17	28	18.080	DIP 17m 12m 40w
15	28	21.050	15m DIP 12m 40E 40w
12E	18	24.900	DIP 40e 40w - 15m, WEST - assumes 15m split in middle of DE (open)
10E	28	24.200	15m 30E 30W 20E 12m - 15m, WEST

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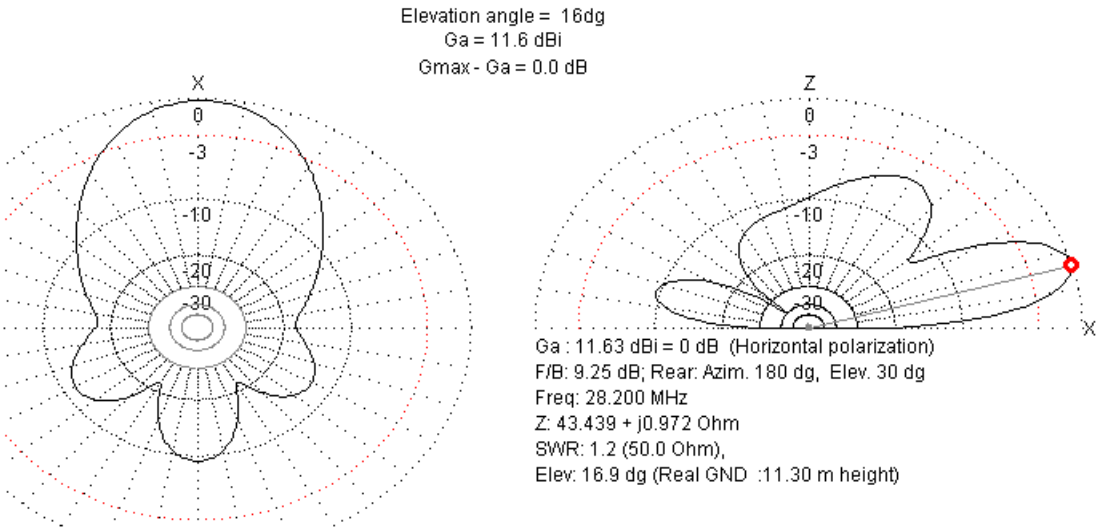
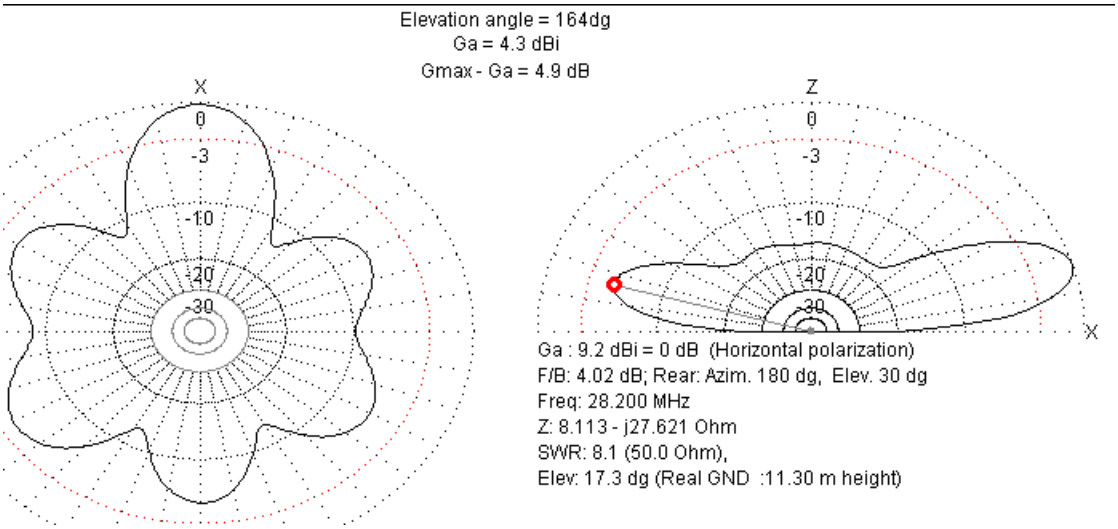
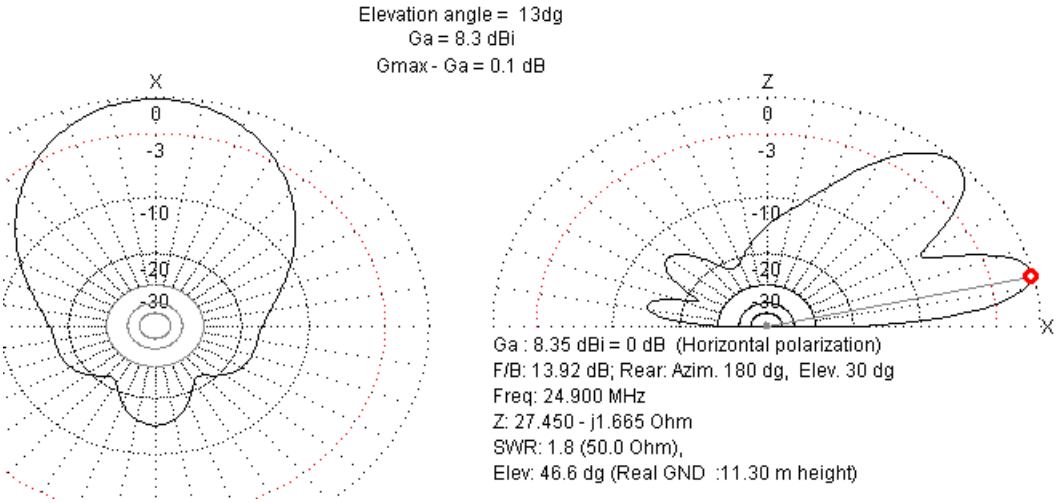
10M EAST



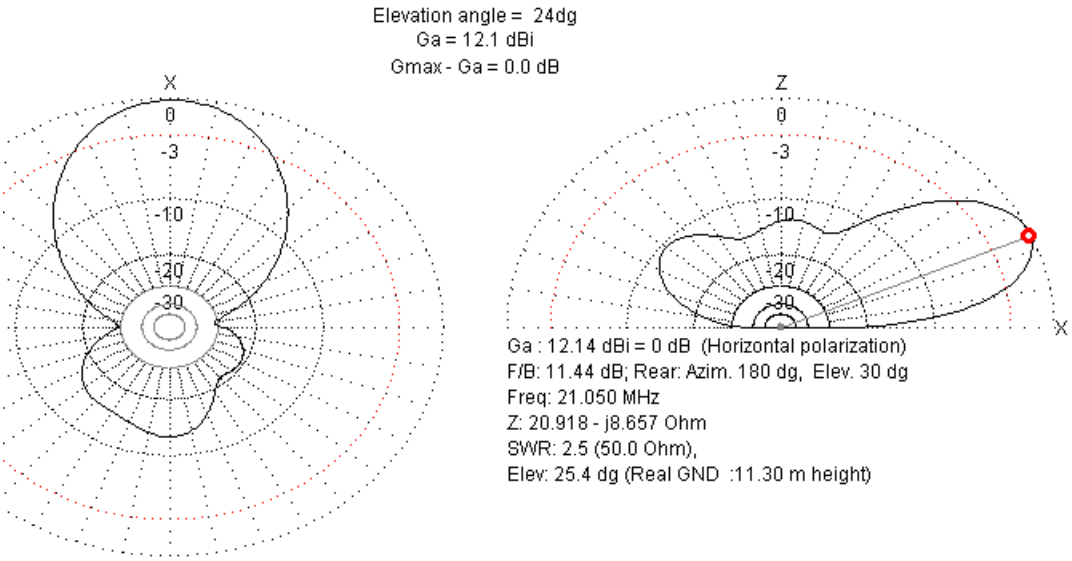
10M-WEST – this beam is designed as a fixed-EAST but by toggling some elements the parasitic effects offer a slight benefit for non-east traffic



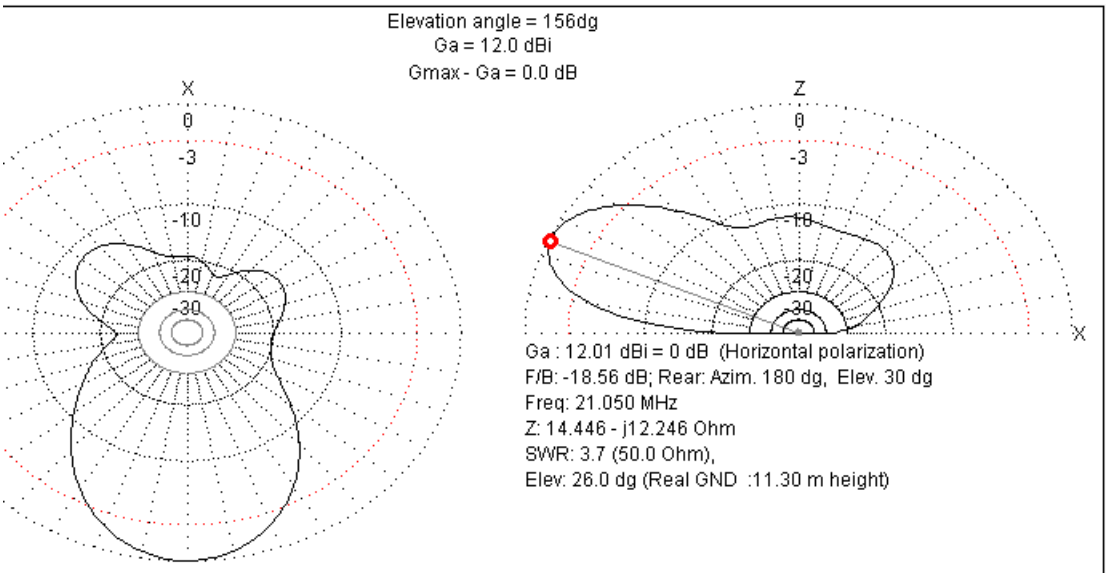
12m EAST



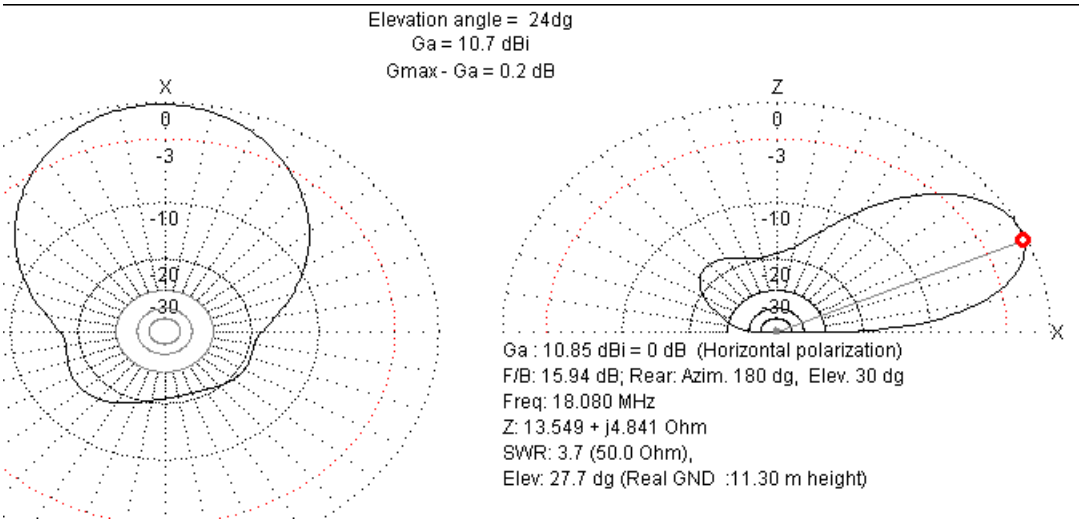
15m EAST



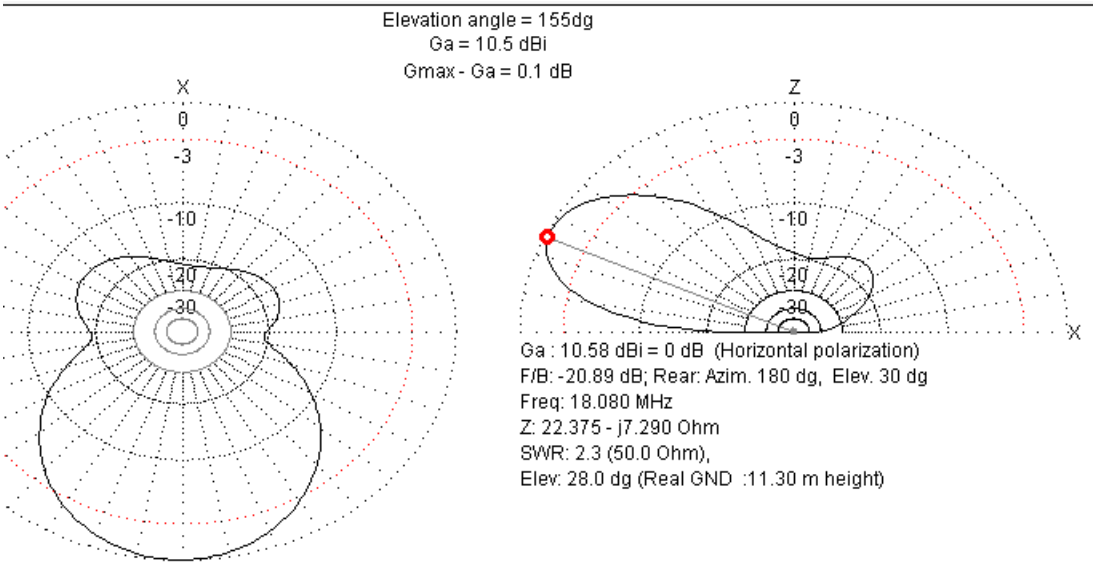
15M – WEST



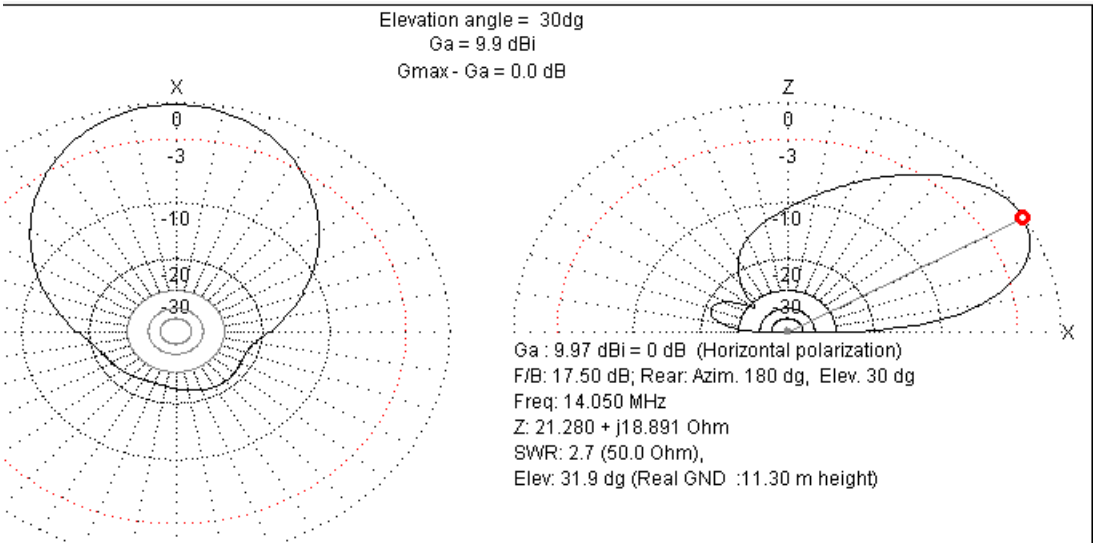
17M EAST



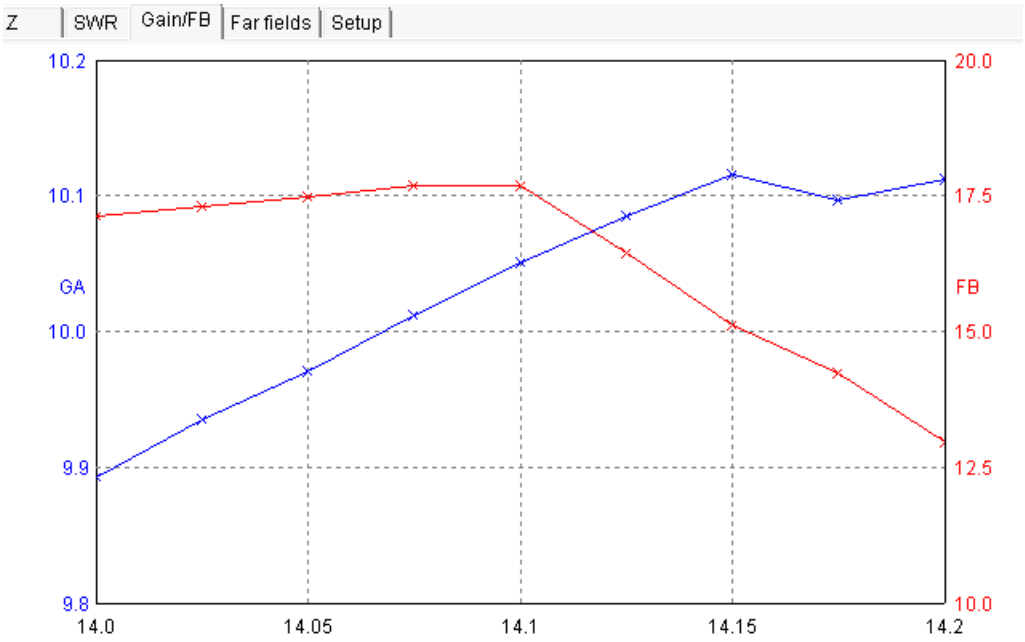
17M WEST



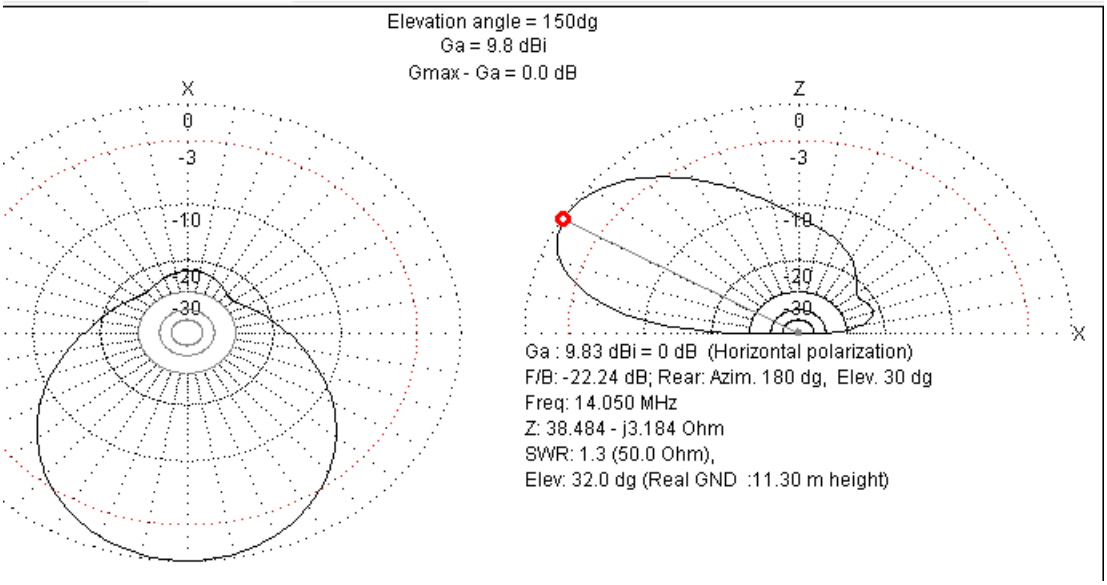
20M EAST



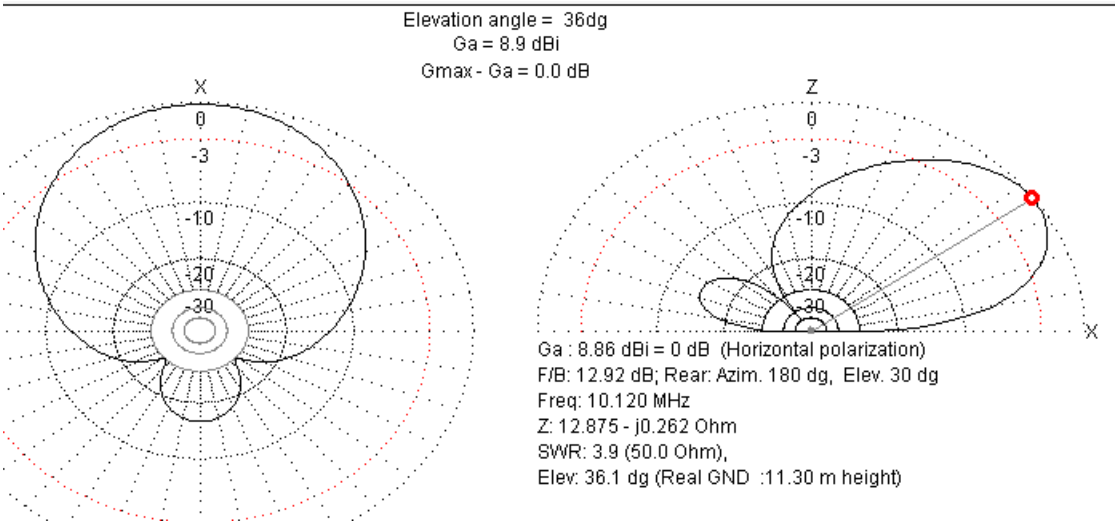
FB should be consistent along the first 100 khz of the band where I perform most of my work…



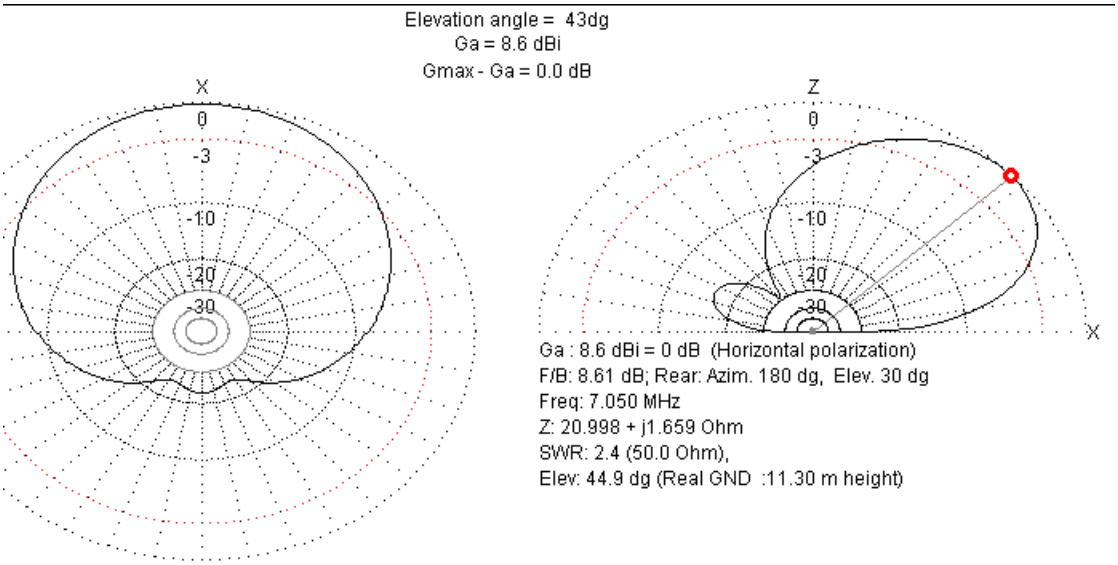
20M WEST



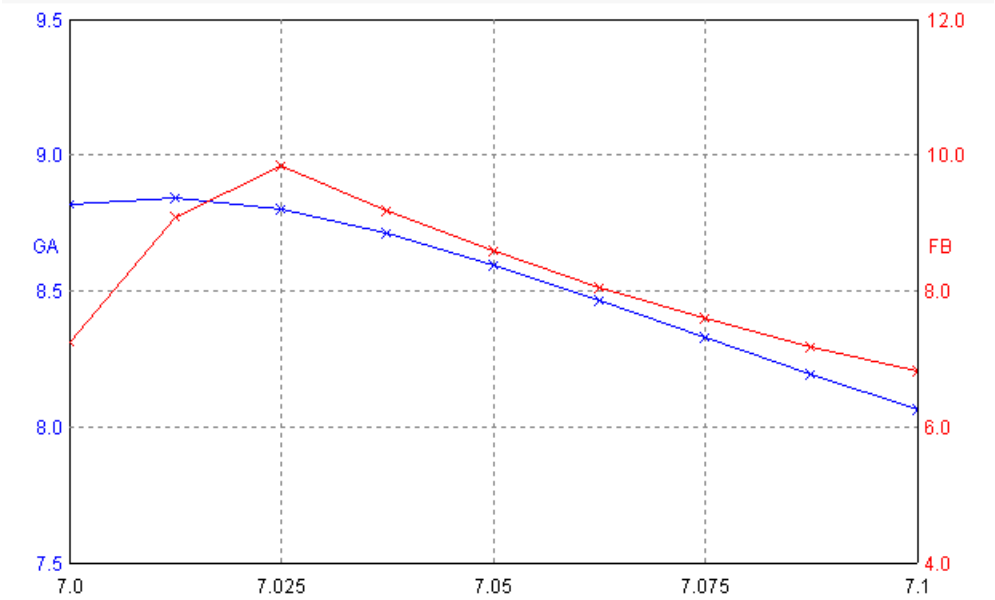
30M EAST – currently fixed as hardware is not built yet for reversible operation. After 40m is proven to show high F/B, then I will add that on.



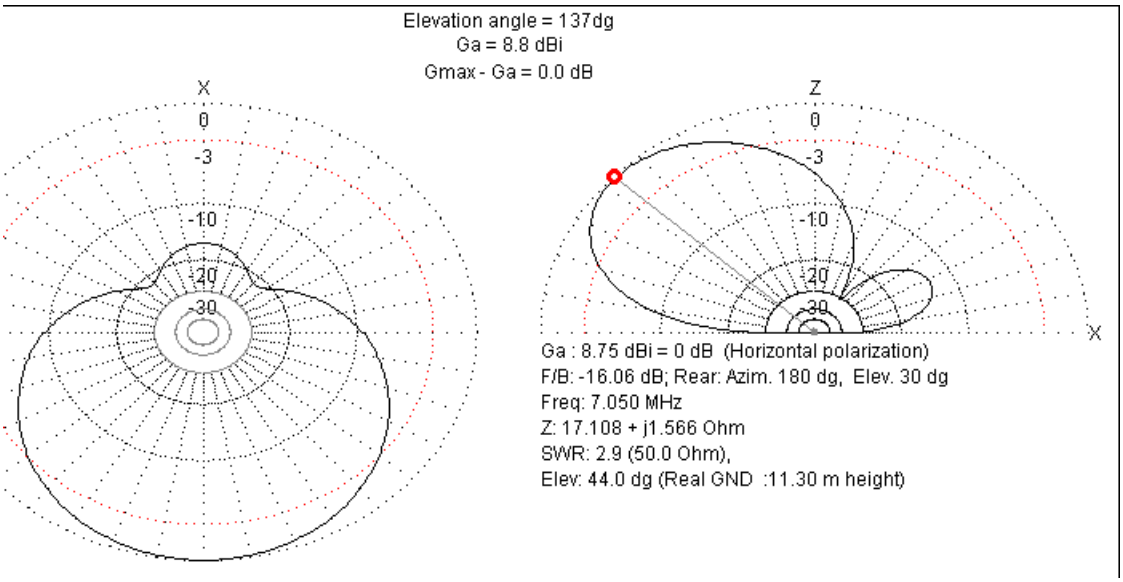
40M EAST



Gain and FB is pretty sensitive in this array with the folded ends. The absolute F/B will be better than this as the backside rejection is very sensitive to the reflector frequency setting.

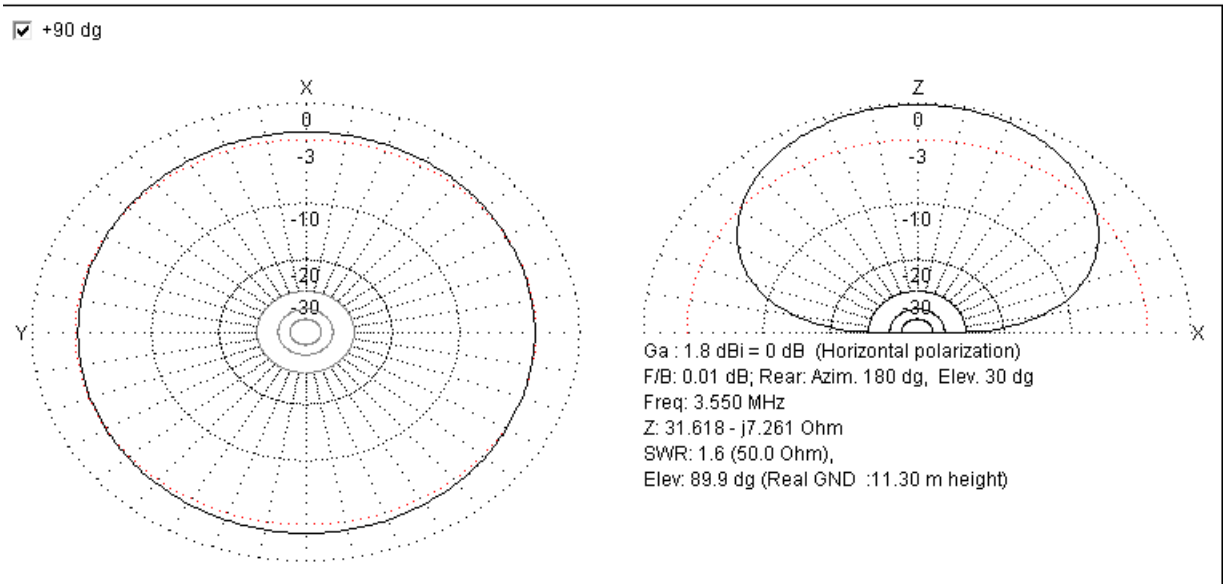


40M WEST

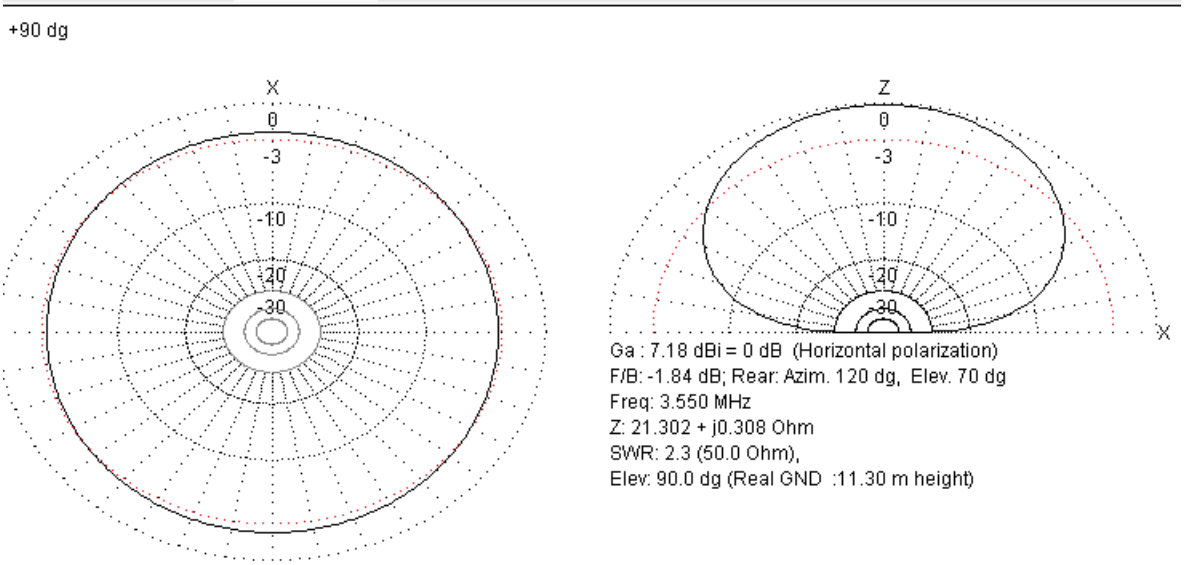


80M DIPOLE – THE MODEL AND PHYSICAL BUILD DIFFER DUE TO THE CLOSE PROXIMITY OF THE HOUSE STUCCO SCREEN TO THE ANTENNA. So I have low confidence that this gain figure is accurate.

THE HIGH CURRENT POINTS NEAR THE TOP REMAIN UNENCUMBERED DOWN TO ABOUT 30’ OF LENGTH ON EACH SIDE OF THE V. This new version of the antenna should be improved by about 3db over the prior one simply due to it’s full size nature where the prior version was heavily loaded with lossy coax traps.

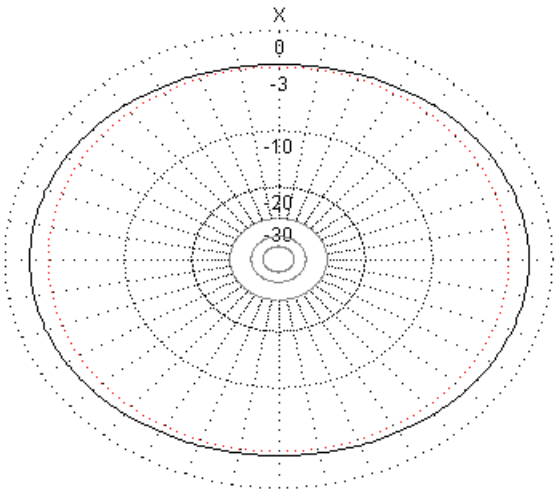


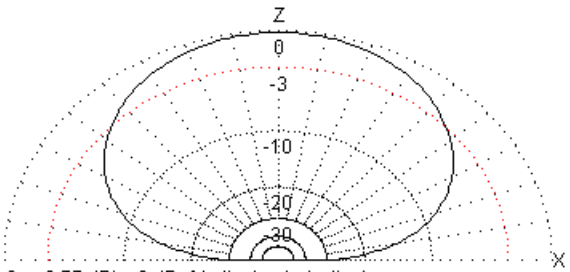
BELOW IS A FULL SIZE 80M INVERTED V – stand alone - AT SAME HEIGHT FOR COMPARISON. THE MODEL OF THE ATTIC DIPOLE from the array IS ABOUT 6DB DOWN FROM THIS.



160M DIPOLE

+90 dg

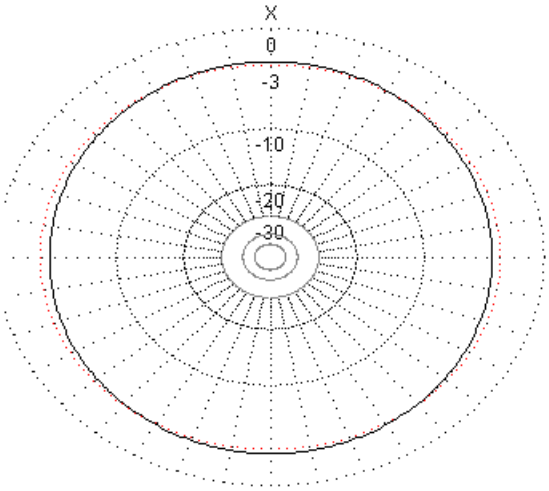


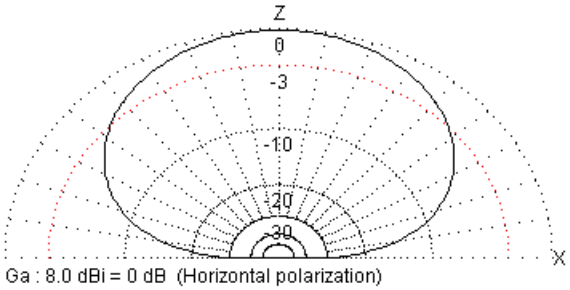


Ga : 0.77 dBi = 0 dB (Vertical polarization)
F/B: -1.07 dB; Rear: Azim. 180 dg, Elev. 30 dg
Freq: 1.825 MHz
Z: 6.747 - j3.979 Ohm
SWR: 7.5 (50.0 Ohm),
Elev: 90.0 dg (Real GND :11.30 m height)

Comparison 160m dipole – based on full-size 80m dipole with loading coil/traps identical to that actually built. This suggests the as-built is about 7db down from the free-standing version. 7db is quite a hit, but based on the pretty good success I have working stateside Q's on 80, and limited DX, this performance level should be completely adequate for causual 160m operation. Especially in target rich periods like QSO parties or the domestic CW contests.

+90 dg





Ga : 8.0 dBi = 0 dB (Horizontal polarization)
F/B: -2.14 dB; Rear: Azim. 120 dg, Elev. 70 dg
Freq: 1.825 MHz
Z: 8.824 - j3.010 Ohm
SWR: 5.7 (50.0 Ohm),
Elev: 90.0 dg (Real GND :12.00 m height)