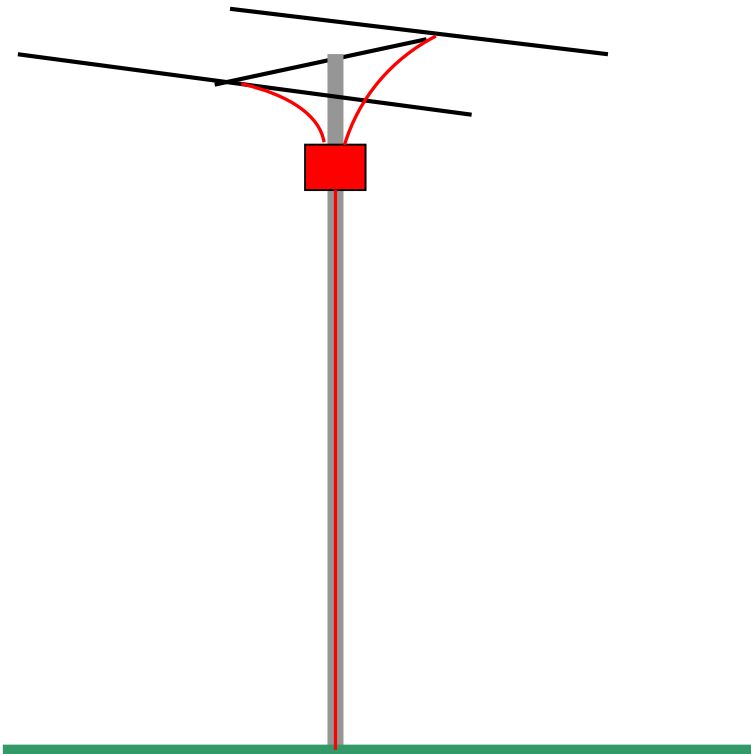


# Model 12LC-30m

## 2-el OVF-yagi for 30m at OH1AJ

Version 1.2

## 2-el phased array for 30m at OH1AJ

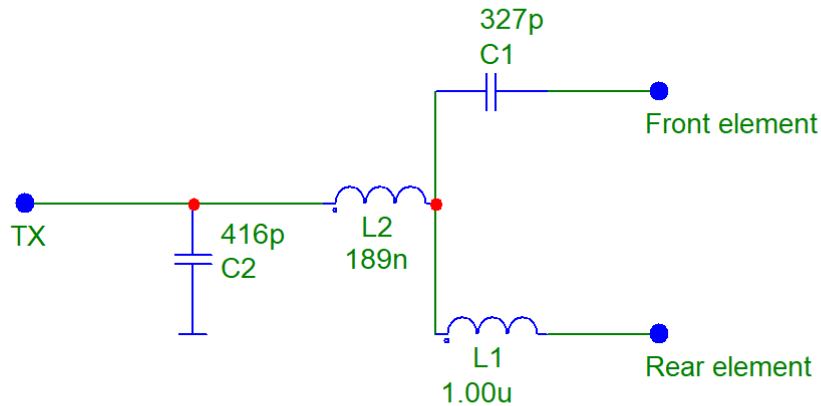


- Antenna up 28m
  - Full size elements, abt 15m long
  - Spacing 4.2m
- Opposite-voltage feed system
  - both elements are tuned to 10125kHz
  - $\frac{1}{2}$  wavelength cables from both element to the phasing box
  - opposite cable polarities in front and rear elements
  - current balun on both cables
  - equal current amplitudes in both elements
- Instant 180 degree direction switching

# Tapering plan for one half element

• Dia/mm	Length/mm	wall/mm	Cumulative/mm
• 40	1500 (from ele center)	2	1500
• 35	1000	2	2500
• 30	1000	1.5	3500
• 25	1000	1.5	4500
• 19	1000	1.5	5500
• 15	1000	1	6500
• 12	960	1	7460

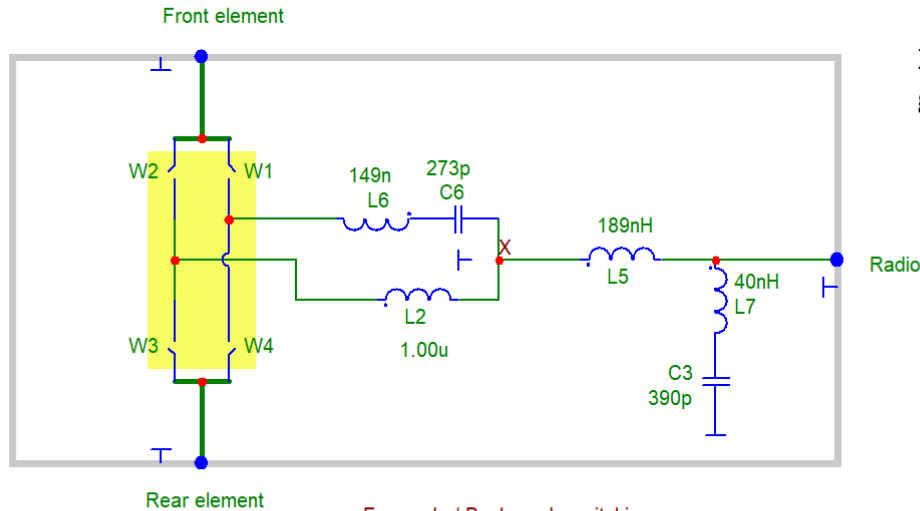
30m OVF-array at OH1AJ  
Antenna height 28m  
Elements tuned to 10125kHz  
Electrical length of feed cables is 14.80m @  $v=1.00$   
Element spacing 4.2m  
Center frequency 10125kHz



17.42019  
OH1TV

# Phasing box for 2el 30m array at OH1AJ

Tuning targets, when X grounded:  
Front element:  $327\text{pF}$  @  $10.125\text{MHz} = -j 48.07 \text{ ohm}$   
Rear element:  $1.00\mu\text{H}$  @  $10.125\text{MHz} = +j 63.62 \text{ ohm}$



X = low inductance short circuit to ground during alignment process

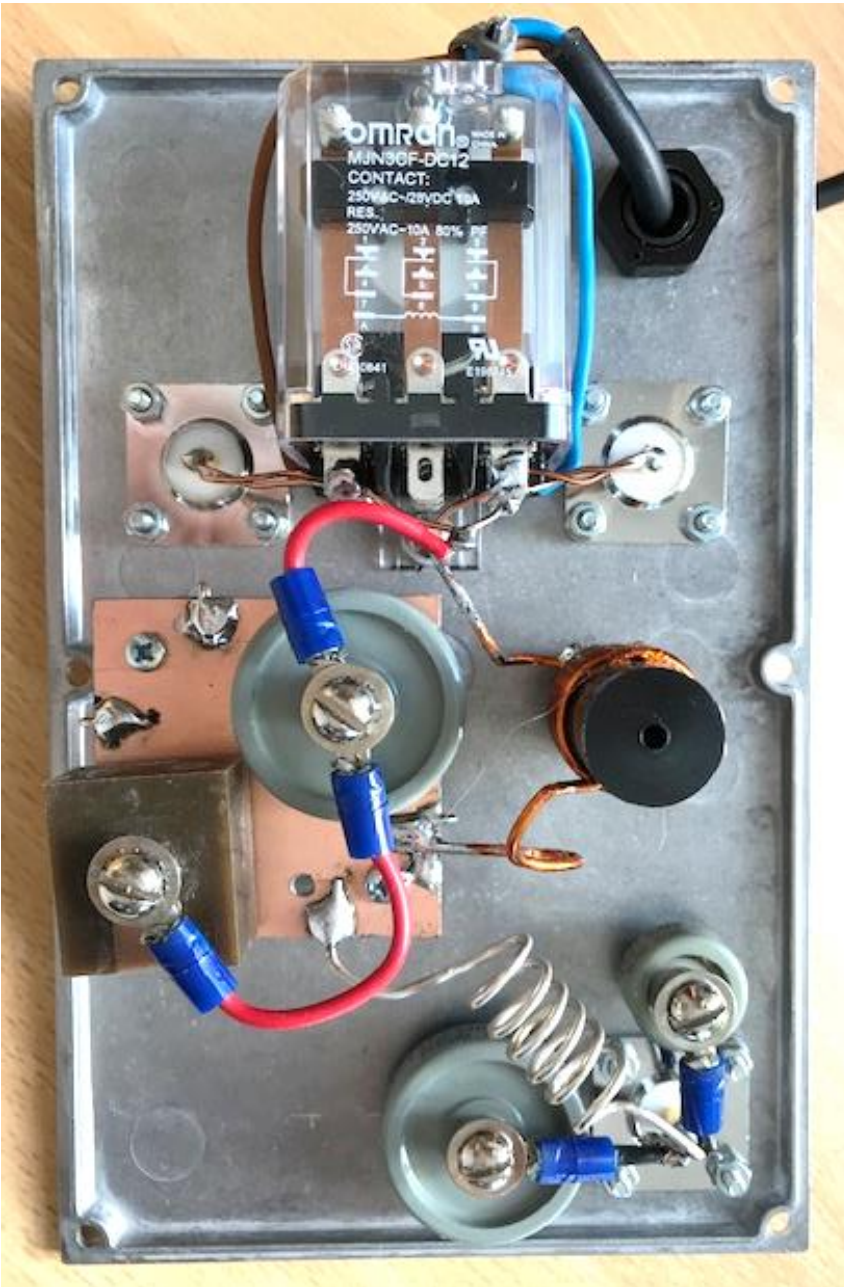
Forwards / Backwards switching

Forward: W1, W3 are on  
Backwards : W2, W4 are on

18.4.2019  
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## Box lay-out

- accurate capacitance values achieved by using two parallel capacitors and their wire lengths adjusted.
- The box is Hammond 120x180x60mm
- All components are mounted on the cover plate
- 3pcs UHF female connectors, flange mount
- Relay Omron mjn3cf-dc12 250v 10A ac
- The capacitor board is insulated with plastic stand-offs



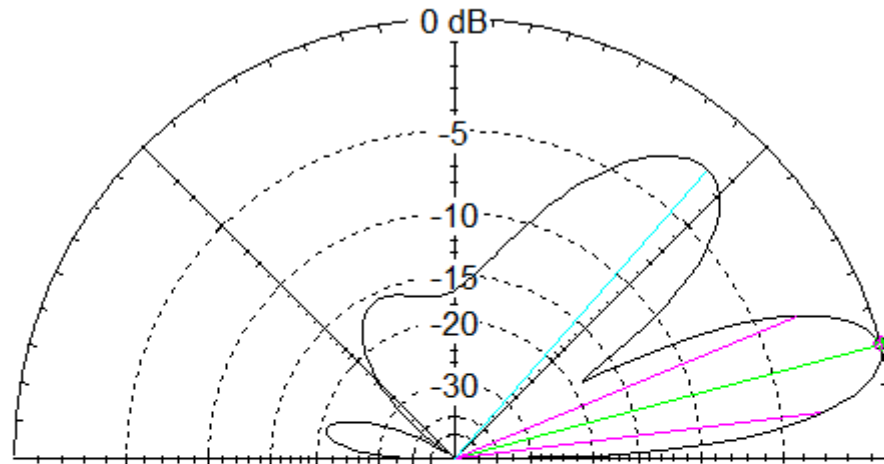
The phasing box  
upside-down



# 10125kHz, height 28m, vertical pattern

Total Field

EZNEC Pro/4



10.125 MHz

Elevation Plot  
Azimuth Angle 0.0 deg.  
Outer Ring 11.61 dBi

Cursor Elev 15.0 deg.  
Gain 11.61 dBi  
0.0 dBmax

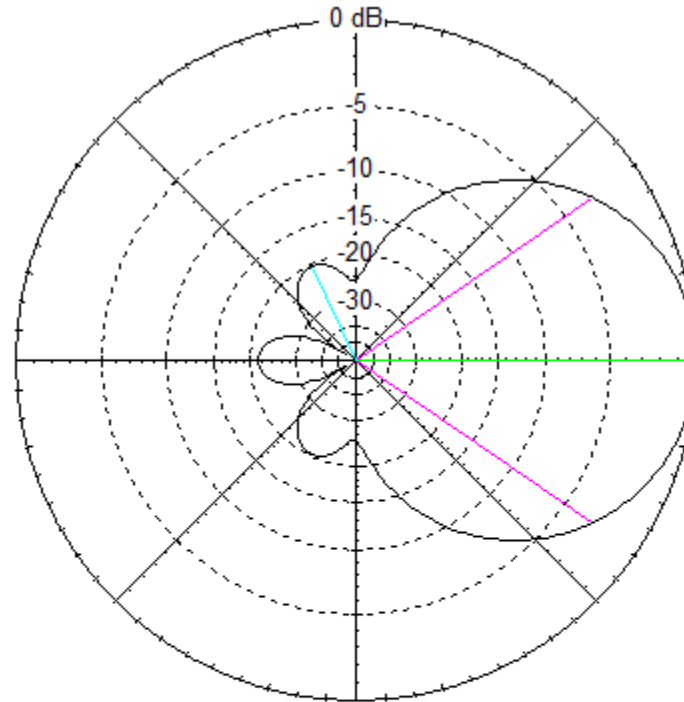
Slice Max Gain 11.61 dBi @ Elev Angle = 15.0 deg.  
Beamwidth 15.4 deg.; -3dB @ 7.1, 22.5 deg.  
Sidelobe Gain 9.22 dBi @ Elev Angle = 49.0 deg.  
Front/Sidelobe 2.39 dB



# 10125kHz, height 28m, horizontal at elevation 15 deg

Total Field

EZNEC Pro/4



10.125 MHz

Azimuth Plot  
Elevation Angle 15.0 deg.  
Outer Ring 11.6 dBi

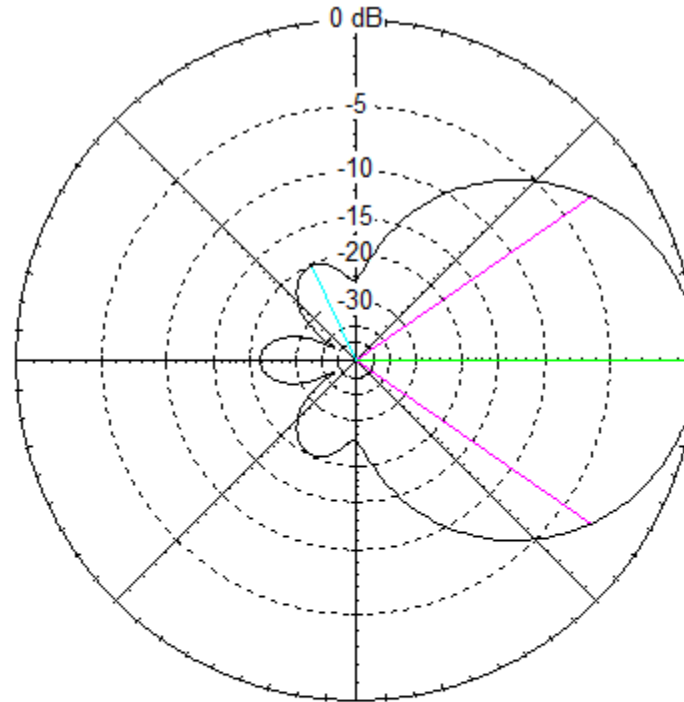
Cursor Az 0.0 deg.  
Gain 11.6 dBi  
0.0 dBmax

Slice Max Gain 11.6 dBi @ Az Angle = 0.0 deg.  
Front/Back 21.45 dB  
Beamwidth 69.4 deg.; -3dB @ 325.3, 34.7 deg.  
Sidelobe Gain -8.84 dBi @ Az Angle = 115.0 deg.  
Front/Sidelobe 20.44 dB

# 10100kHz, height 28m, horizontal at elevation 15 deg

Total Field

EZNEC Pro/4



10.1 MHz

Azimuth Plot  
Elevation Angle 15.0 deg.  
Outer Ring 11.58 dBi

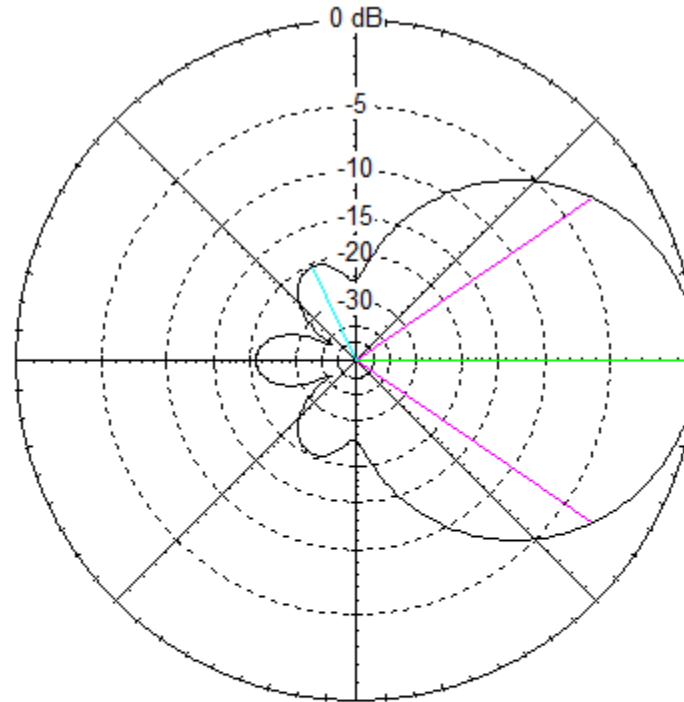
Cursor Az 0.0 deg.  
Gain 11.58 dBi  
0.0 dBmax

Slice Max Gain 11.58 dBi @ Az Angle = 0.0 deg.  
Front/Back 21.74 dB  
Beamwidth 69.6 deg.; -3dB @ 325.2, 34.8 deg.  
Sidelobe Gain -8.77 dBi @ Az Angle = 115.0 deg.  
Front/Sidelobe 20.35 dB

# 10150kHz, height 28m, horizontal at elevation 15 deg

Total Field

EZNEC Pro/4



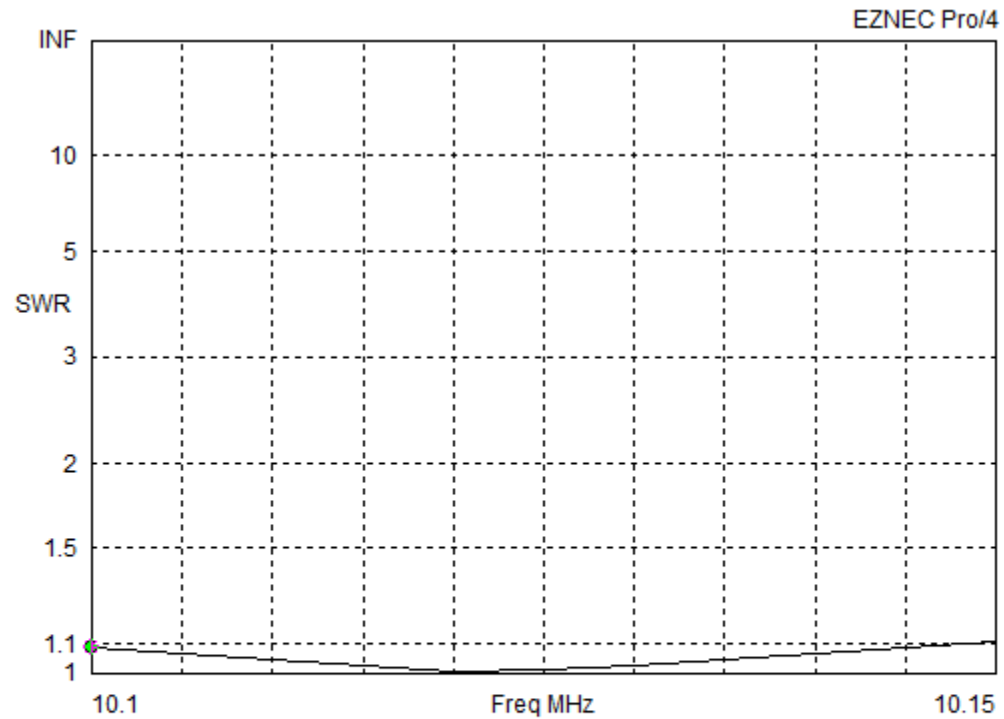
10.15 MHz

Azimuth Plot  
Elevation Angle 15.0 deg.  
Outer Ring 11.61 dBi

Cursor Az 0.0 deg.  
Gain 11.61 dBi  
0.0 dBmax

Slice Max Gain 11.61 dBi @ Az Angle = 0.0 deg.  
Front/Back 21.02 dB  
Beamwidth 69.4 deg.; -3dB @ 325.3, 34.7 deg.  
Sidelobe Gain -8.92 dBi @ Az Angle = 115.0 deg.  
Front/Sidelobe 20.53 dB

# SWR



Freq	10.1 MHz	Source #	1
SWR	<b>1.085</b>	Z0	50 ohms
Z	46.27 at 1.51 deg. = 46.26 + j 1.218 ohms		
Refl Coeff	0.0409 at 161.26 deg. = -0.03873 + j 0.01314		
Ret Loss	27.8 dB		

## Going up

40m 2-el on top  
30m antenna was  
installed to the point  
where OH1ND is  
standing is



21.4.2019

OH1TV

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