

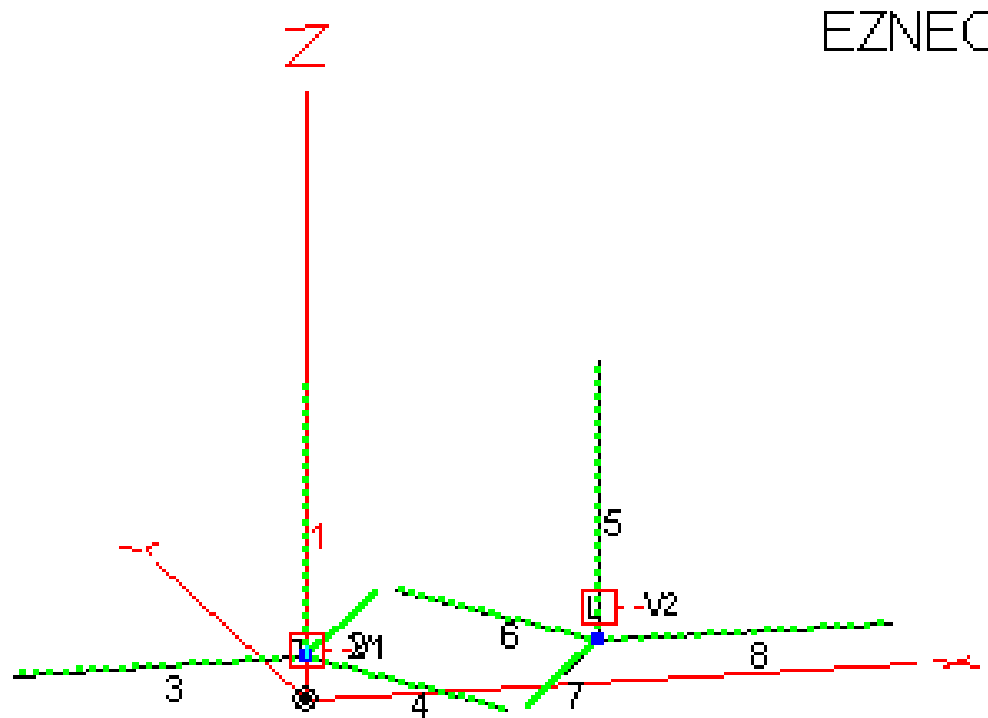
2-el phased array for 40m DX-pedition special

This is an easy to build and erect antenna for DX-peditions and field days.
In a permanent installation one might use more radials and thicker radiator. In such a case dimensions will be a bit different. Also altering radial network height has some influence to optimum dimensions.

V1.1

Eznec file: 2vert7075-5d-wire.EZ

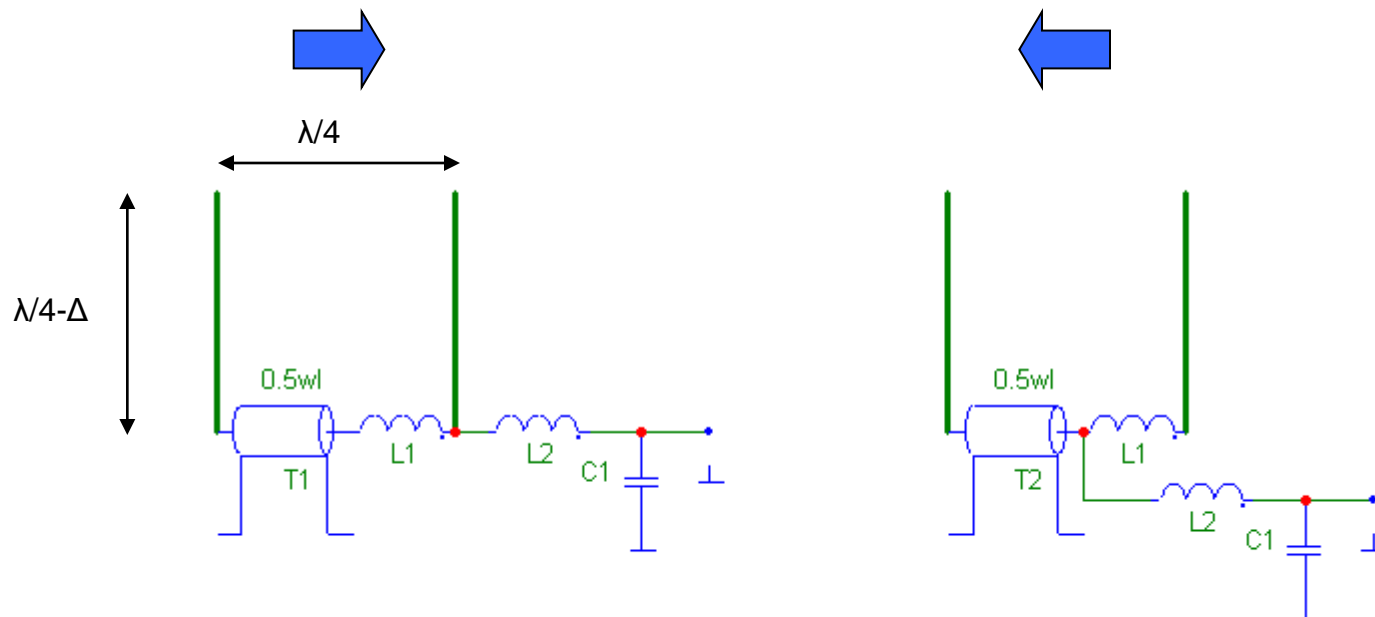
2-el phased vertical array for 40m



The concept

Opposite voltage feed-system

- Equal current amplitudes
- Current phase difference 107 deg



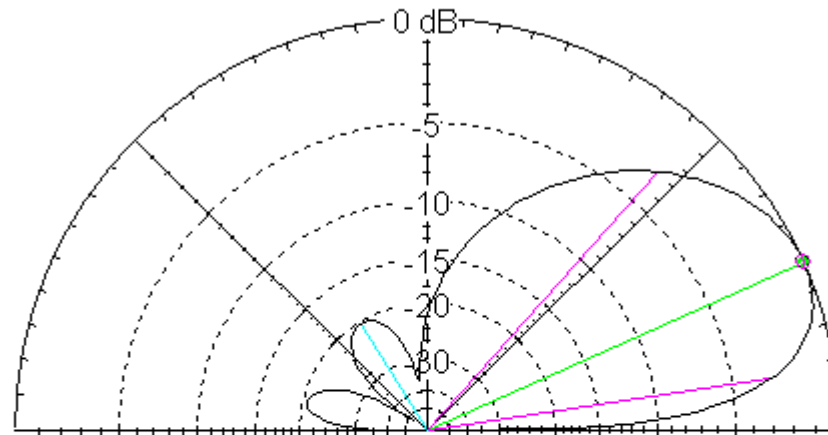
Radials are not shown here

Vertical pattern 7075kHz

Total Field

EZNEC

Normal ground
0.005S, 13



7.075 MHz

Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 3.45 dBi

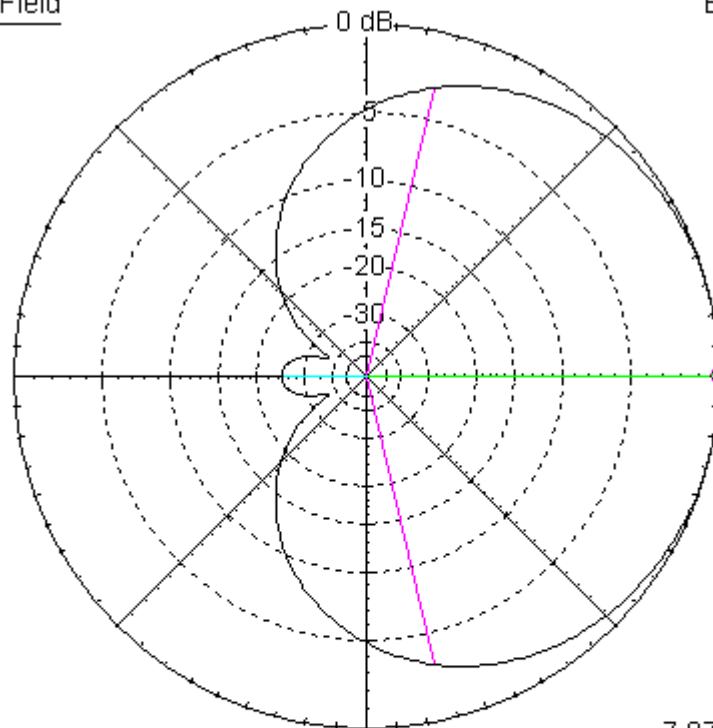
Cursor Elev 24.0 deg.
Gain 3.45 dBi
0.0 dBmax

Slice Max Gain 3.45 dBi @ Elev Angle = 24.0 deg.
Beamwidth 40.0 deg., -3dB @ 8.5, 48.5 deg.
Sidelobe Gain -16.88 dBi @ Elev Angle = 122.0 deg.
Front/Sidelobe 20.33 dB

Horizontal pattern on 24deg elevation

Total Field

EZNEC



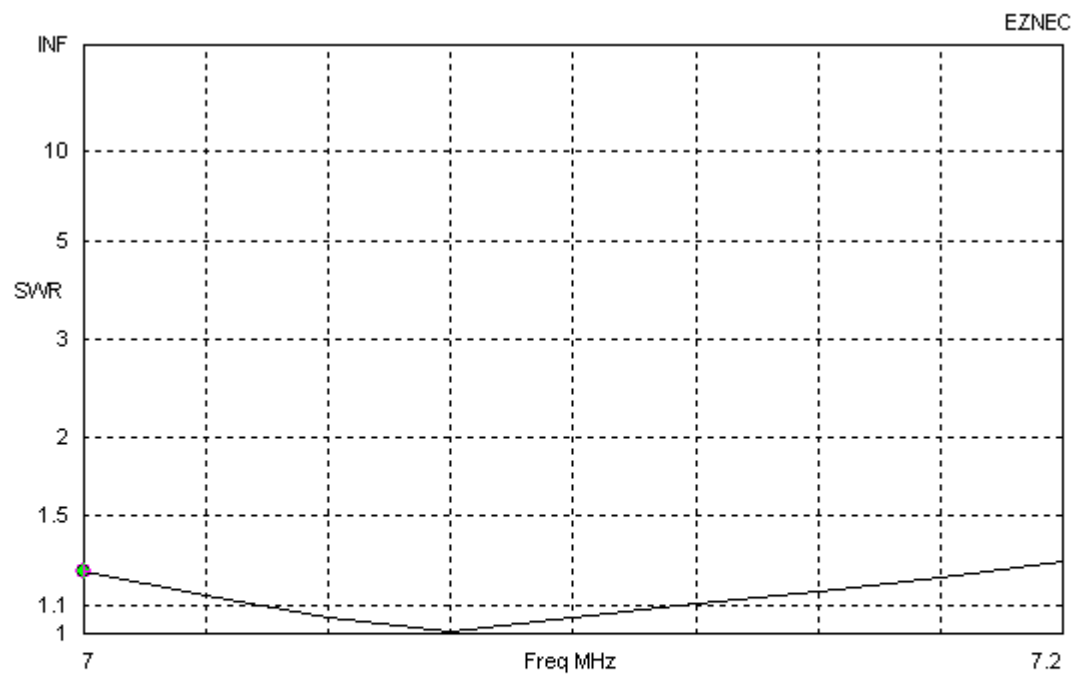
7.075 MHz

Azimuth Plot
Elevation Angle 24.0 deg.
Outer Ring 3.45 dBi

Cursor Az 0.0 deg.
Gain 3.45 dBi
0.0 dBmax

Slice Max Gain 3.45 dBi @ Az Angle = 0.0 deg.
Front/Back 24.46 dB
Beamwidth 153.2 deg.; -3dB @ 283.4, 76.6 deg.
Sidelobe Gain -21.01 dBi @ Az Angle = 180.0 deg.
Front/Sidelobe 24.46 dB

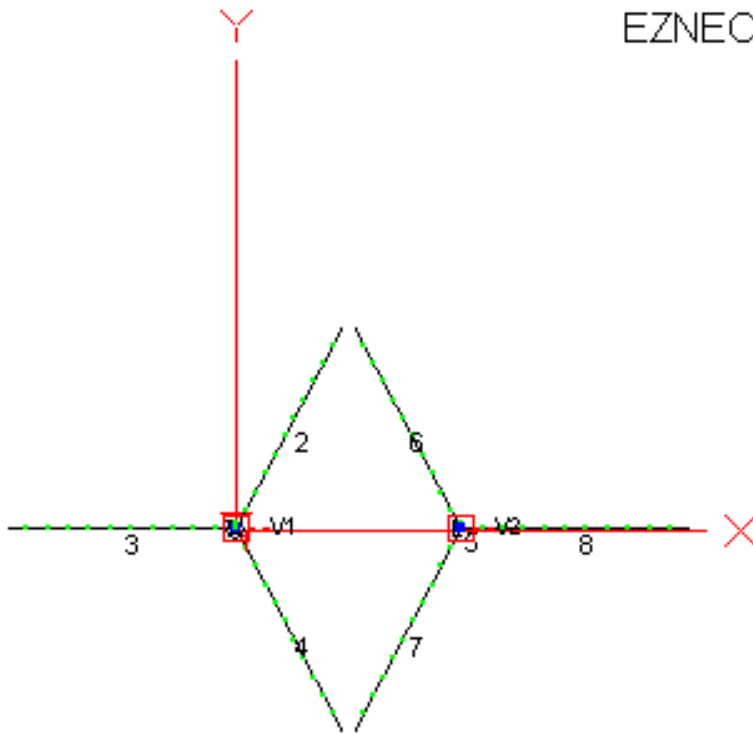
SWR



Freq 7 MHz
SWR 1.23
 Z 41.55 at 5.6 deg.
 = 41.35 + j 4.052 ohms
 Refl Coeff 0.1044 at 152.35 deg.
 = -0.09249 + j 0.04846
 Ret Loss 19.6 dB

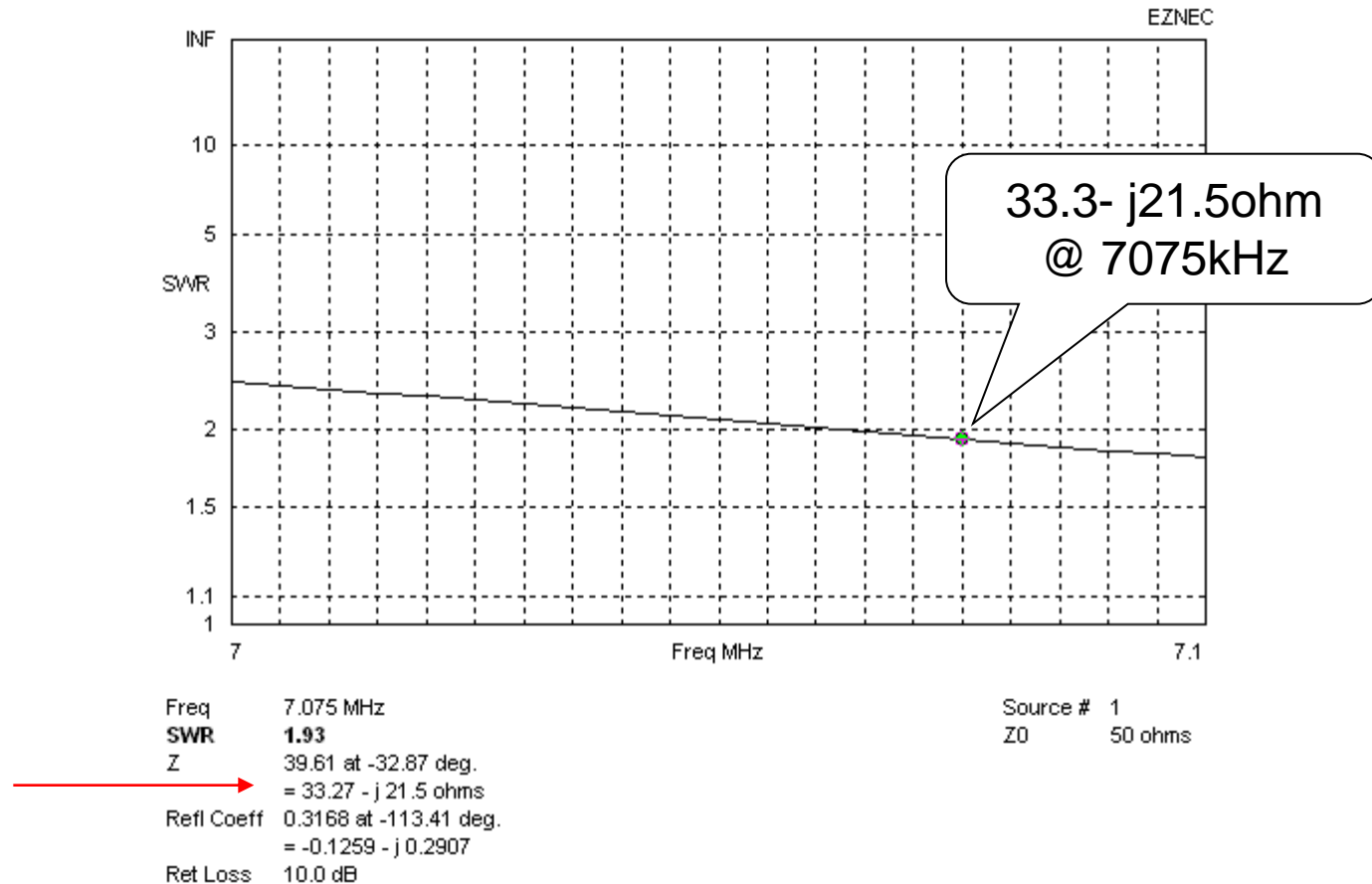
Source # 1
 Z0 50 ohms

Dimensions

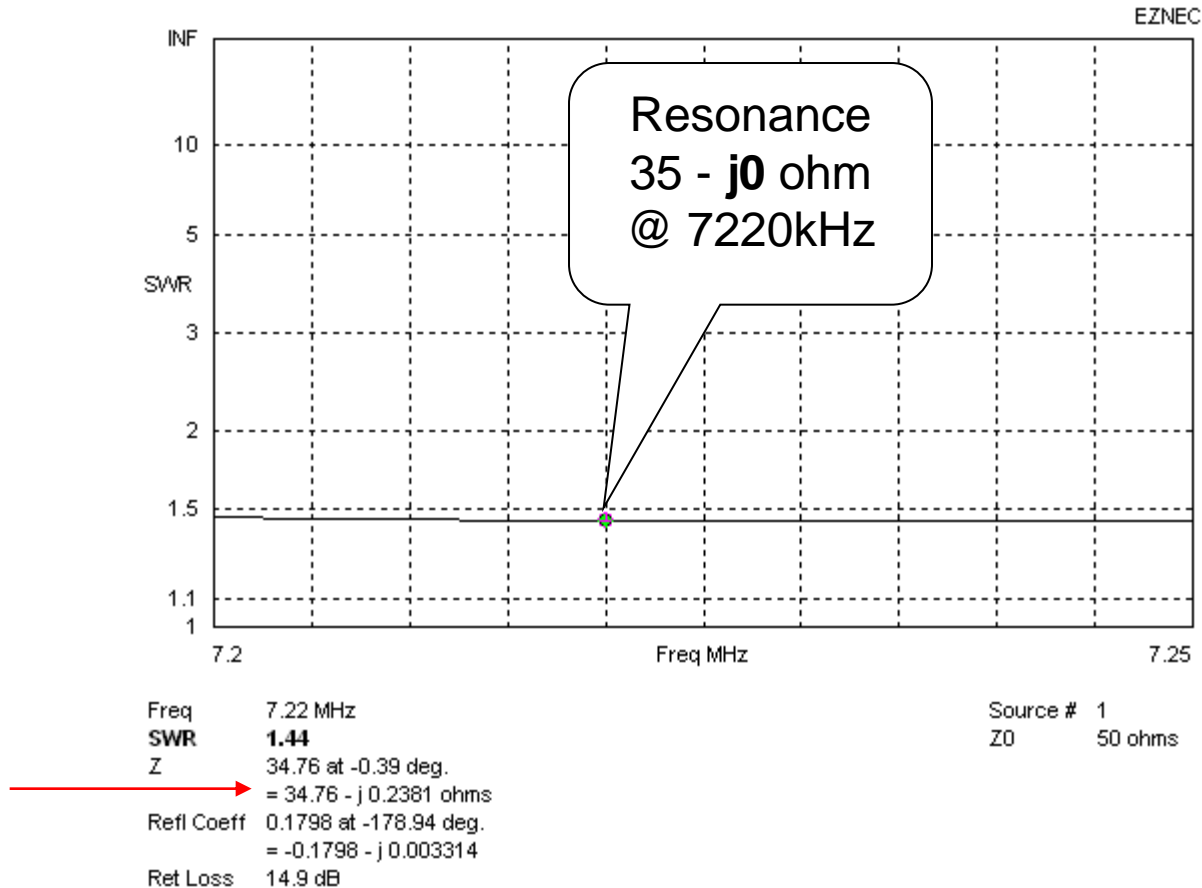


- Element spacing 10.50m
- Radial material dia 2mm cu
- 6 radials, 3 for each element
- Radial length 10.70m
- Spacing between radial 2 and 6 tips 0.50m
- Spacing between radial 4 and 7 tips 0.50m
- Radial height 1.5m
- Radiator length 10.24m dia 2mm wire
- Single element impedance on 7075kHz
33 - j21.5ohm
 - Single element resonance 7220kHz

Impedance when one element alone or the other open



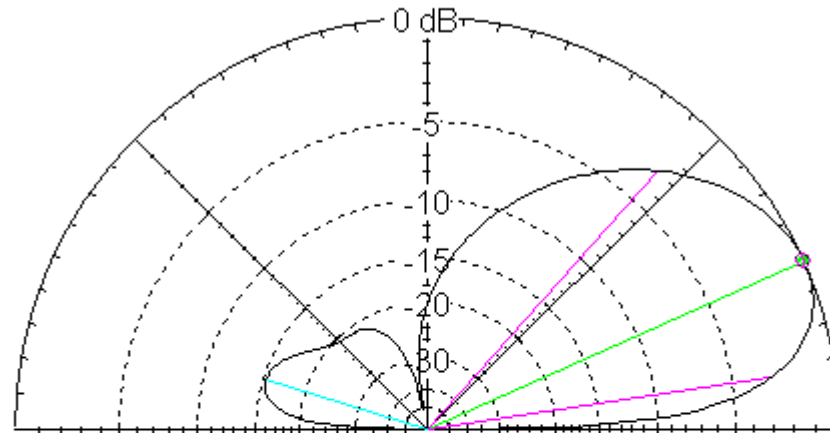
Impedance when one element alone or the other open



Vertical 7000kHz

Total Field

EZNEC



7 MHz

Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 3.47 dBi

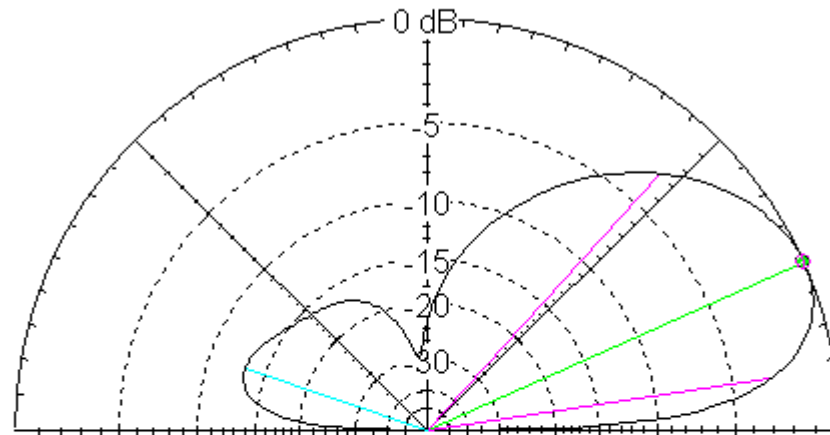
Cursor Elev 24.0 deg.
Gain 3.47 dBi
0.0 dBmax

Slice Max Gain 3.47 dBi @ Elev Angle = 24.0 deg.
Beamwidth 39.9 deg.; -3dB @ 8.5, 48.4 deg.
Sidelobe Gain -11.85 dBi @ Elev Angle = 163.0 deg.
Front/Sidelobe 15.32 dB

Vertical 7200KHz

Total Field

EZNEC



7.2 MHz

Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 3.31 dBi

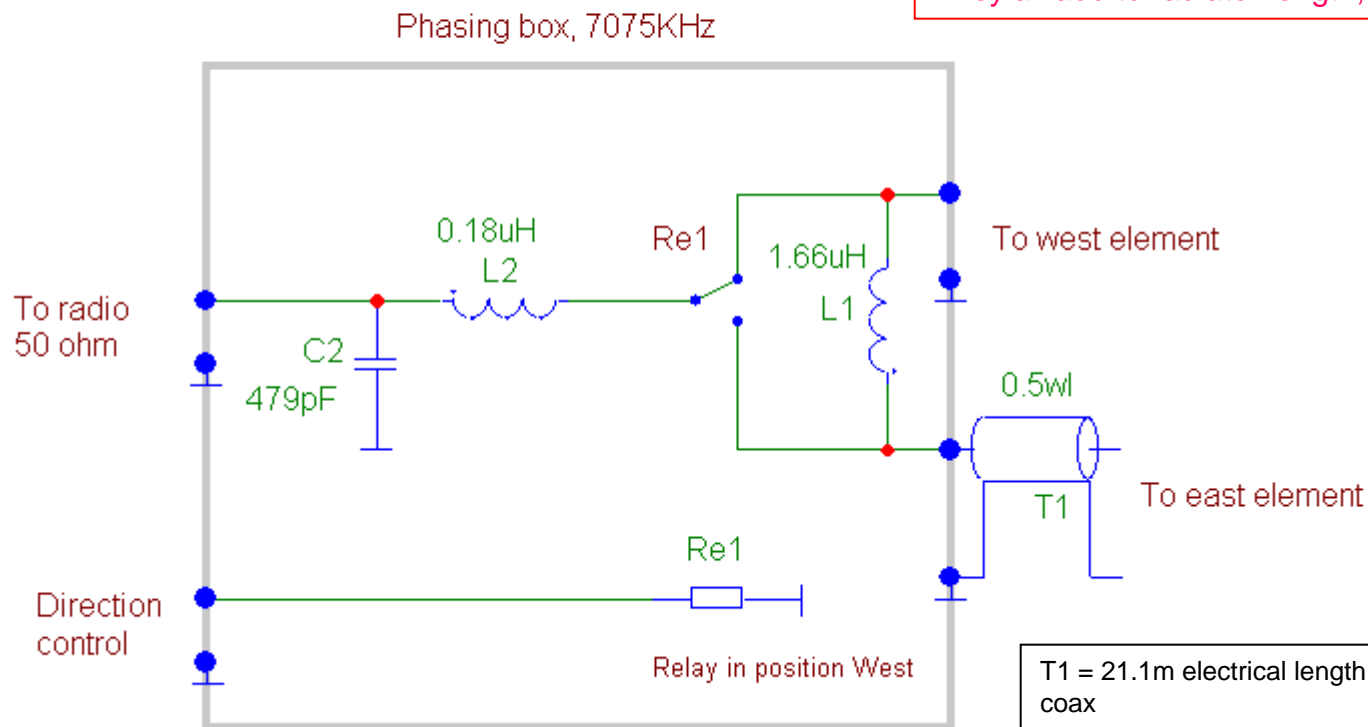
Cursor Elev 24.0 deg.
Gain 3.31 dBi
0.0 dBmax

Slice Max Gain 3.31 dBi @ Elev Angle = 24.0 deg.
Beamwidth 39.5 deg.; -3dB @ 8.5, 48.0 deg.
Sidelobe Gain -9.78 dBi @ Elev Angle = 161.0 deg.
Front/Sidelobe 13.09 dB

Phasing box, 2-el verticals 7075kHz

Related Eznec:2vert7075-5d-wire.EZ

Very short wires shall be used on RF path
They all add to radiator length, change tuning



T1 = 21.1m electrical length, 50 ohm coax
If $v=0.66$, length = 13.925m
Current baluns with ferrite beads in both ends of the cable