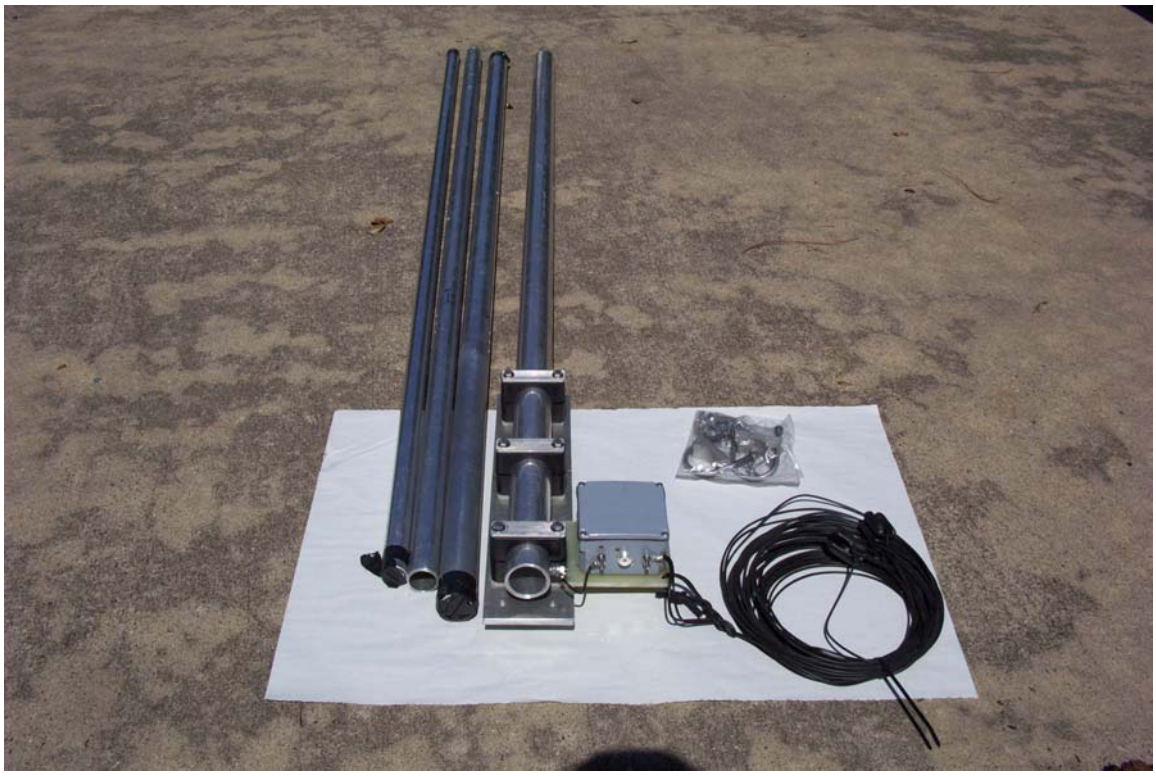
# ASVD41-FS Quick Set up Guide

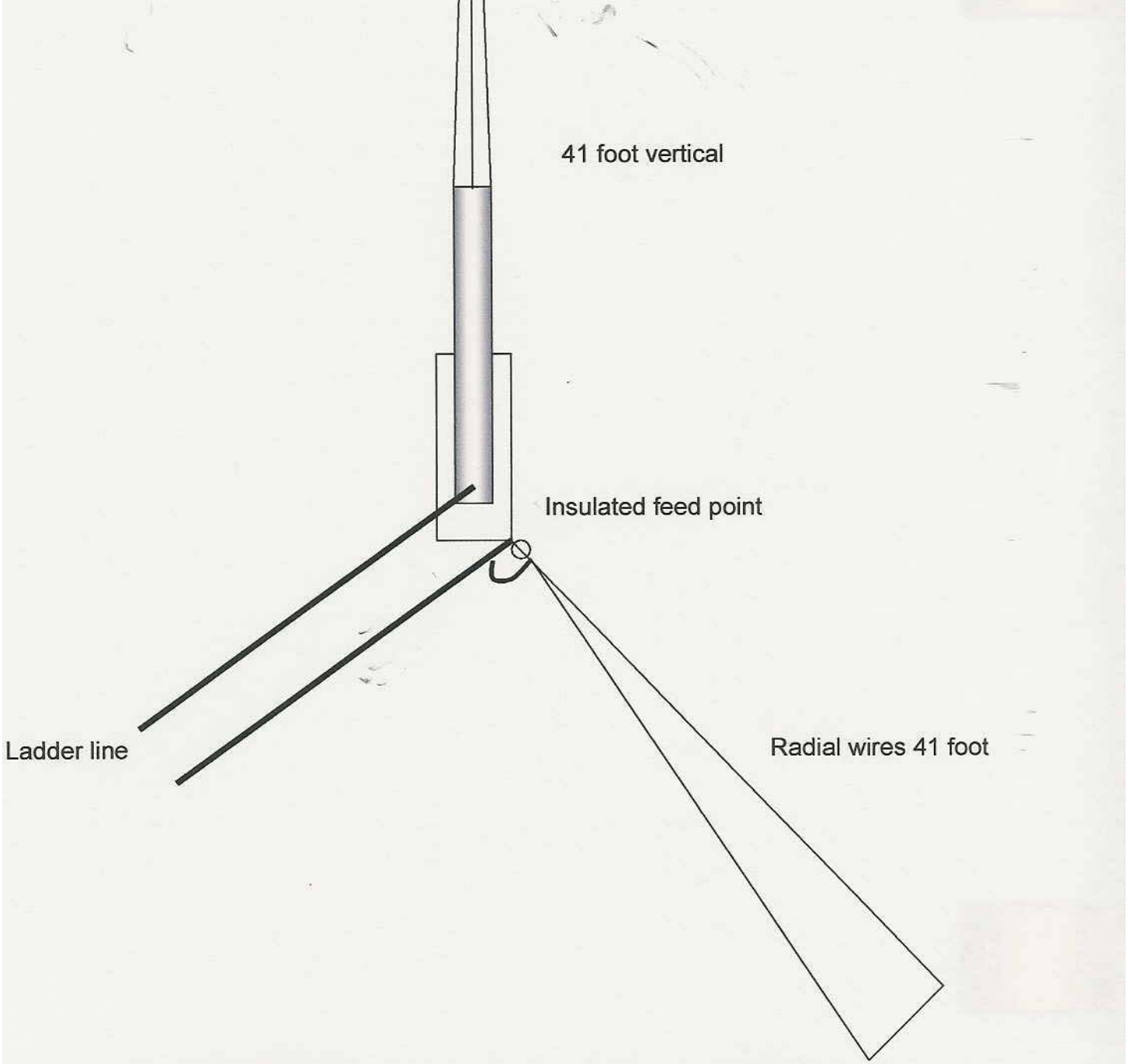
Thank you for your purchase of this vertical dipole multi-band antenna system.

The antenna is basically nested tubes which rivet together, and mounting plate, and one radial, “triangular shaped” made from wire.



Parts: (shown unpacked from box) 4 tubes with nested tubes inside, mounting plate, Balun mounted (optional), wire radial, hardware bag.

**Detail of Balun hookup.**




ASVD410FS set up for ladder line balanced feed

To assemble you will need some basic hand tools and a rivet gun.

Simply align the tubes that have their ends marked alphabetically matching the arrows point-to-point. Place in the proper size rivet and pull them with the rivet gun. **Before you secure the tubes smear some NOALOX™ or other anti-oxidant compound on the tubes so you can take them apart years from now. This will also maintain a good electrical conductivity between sections**

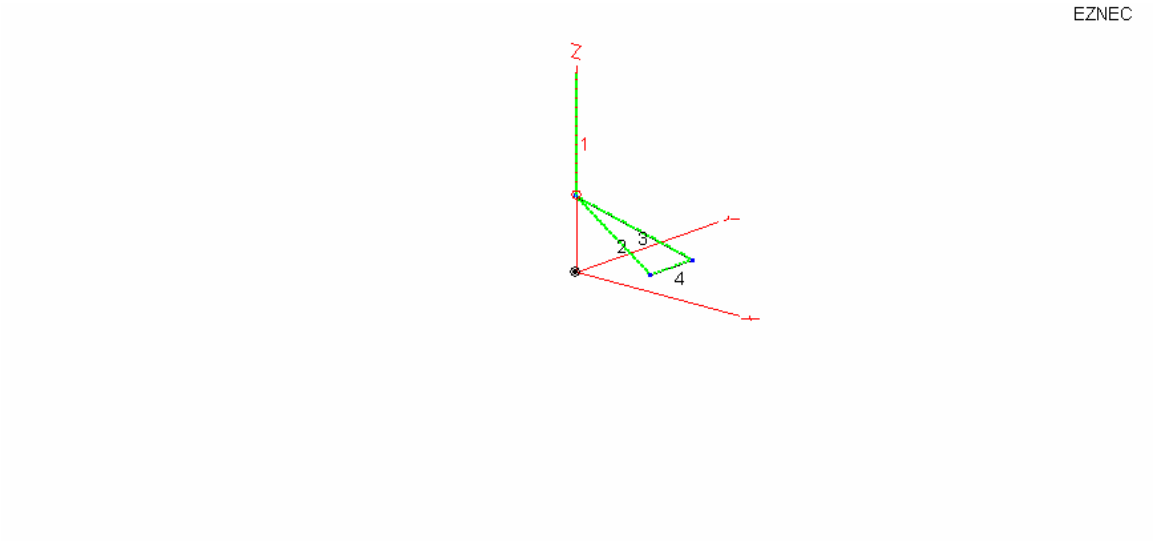

Here we see that the tube marked end A will allow the smaller A tube to be inserted inside. The two A arrows are then just turned to match. The rivets should fit inside the holes predrilled for them. Use the rivet gun to secure them.

Once it is fully assembled use the supplied U-bolts and saddles to mount the mast plate to your mast.

**Done!**

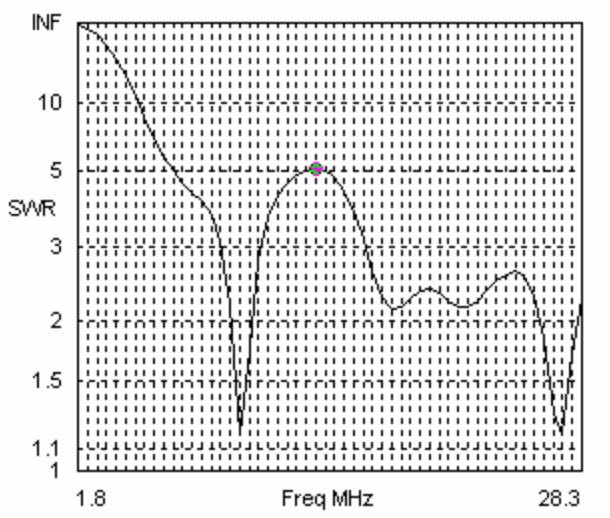
# AS VD41-FS  Free standing 82 foot vertical dipole

A typical installation for the vertical dipole would look as modeled below. The vertical would be placed on a roof top, or pushup pole and raised 15-20 feet above ground. The higher the better for vertical omni directional pattern.



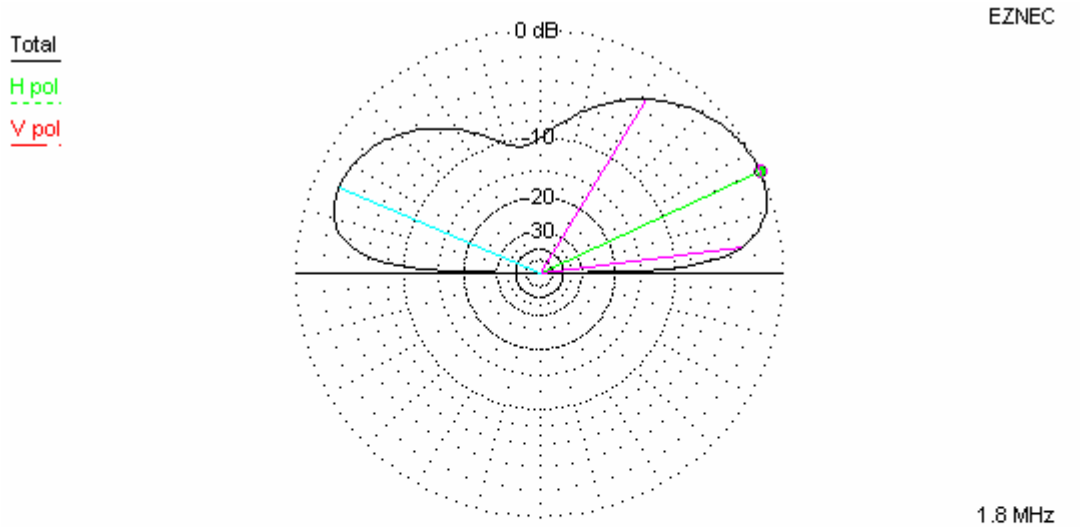

This vertical feedpoint is placed 25 feet above average ground. The single wide radial is sloped in the X direction for max gain to occur in that direction this is zero degrees azimuth for our model.

A VSWR curve run at 450 ohms match displays the VSWR that typically will result from feeding this antenna with 450 ohm ladder line to a tuner. Of course the tuner will flatten this to 50 ohms for the exciter or amplifier.




| | | | |
|---|---|---|---|
| Freq | 14.3 MHz | Source # | 1 |
| SWR | 5.12 | Z0 | 450 ohms |
| Z | 136.9 - j 325.5 ohms | | |
| Refl Coeff | 0.673 at -104.87 deg. | | |

Gain at the ham bands are as follows for this configuration of the antenna
The following plots are at all of the existing ham bands. The gain will not change from band edge to band edge

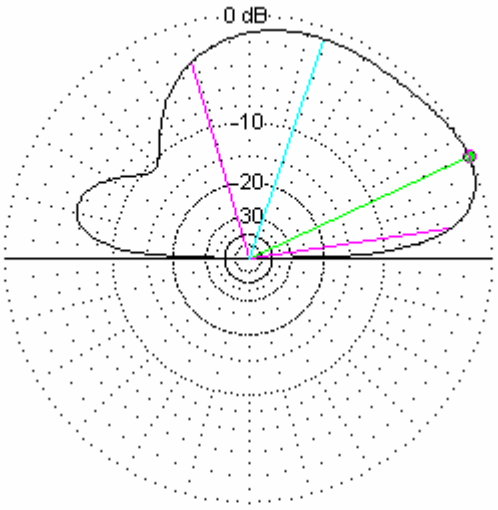



| | | | |
|---|---|---|---|
| Elevation Plot | | | |
| Azimuth Angle | 0.0 deg. | Cursor Elev | 25.0 deg. |
| Outer Ring | 0.56dBi | Gain | 0.56 dBi |
| | | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 0.56 dBi @ Elev Angle = 25.0 deg. |
| Beamwidth | 50.8 deg.; -3dB @ 7.4, 58.2 deg. |
| Sidelobe Gain | -1.33 dBi @ Elev Angle = 157.0 deg. |
| Front/Sidelobe | 1.89 dB |

EZNEC

Total
H pol
V pol



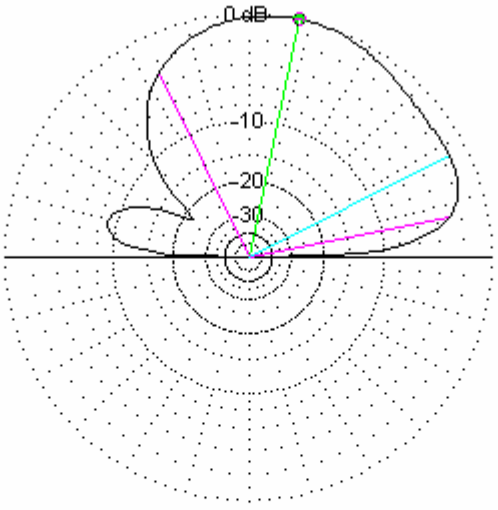

5.5 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 25.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 1.47 dBi |
| Outer Ring | 1.47dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 1.47 dBi @ Elev Angle = 25.0 deg. |
| Beamwidth | 97.8 deg.; -3dB @ 8.3, 106.1 deg. |
| Sidelobe Gain | 0.65 dBi @ Elev Angle = 71.0 deg. |
| Front/Sidelobe | 0.83 dB |

EZNEC

Total
H pol
V pol



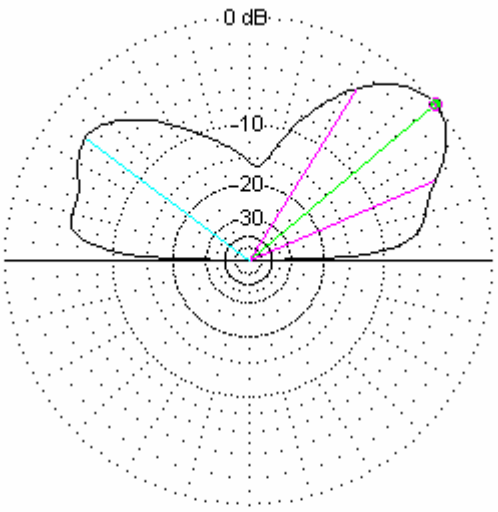

7.15 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 78.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 2.89 dBi |
| Outer Ring | 2.89dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 2.89 dBi @ Elev Angle = 78.0 deg. |
| Beamwidth | 104.8 deg.; -3dB @ 11.3, 116.1 deg. |
| Sidelobe Gain | 1.56 dBi @ Elev Angle = 27.0 deg. |
| Front/Sidelobe | 1.32 dB |

EZNEC

Total
H pol
V pol



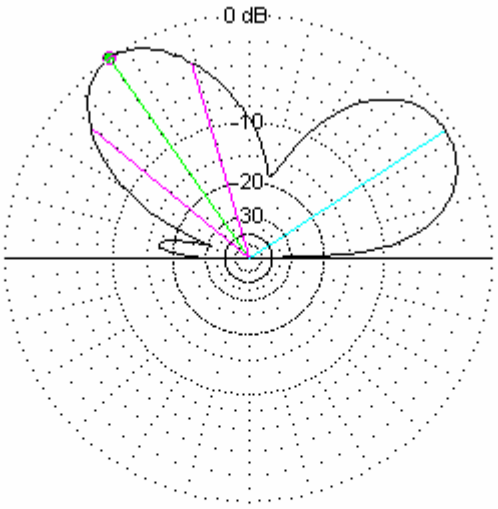

14.2 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 40.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 6.15 dBi |
| Outer Ring | 6.15dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 6.15 dBi @ Elev Angle = 40.0 deg. |
| Beamwidth | 34.2 deg.; -3dB @ 23.2, 57.4 deg. |
| Sidelobe Gain | 3.07 dBi @ Elev Angle = 143.0 deg. |
| Front/Sidelobe | 3.07 dB |

EZNEC

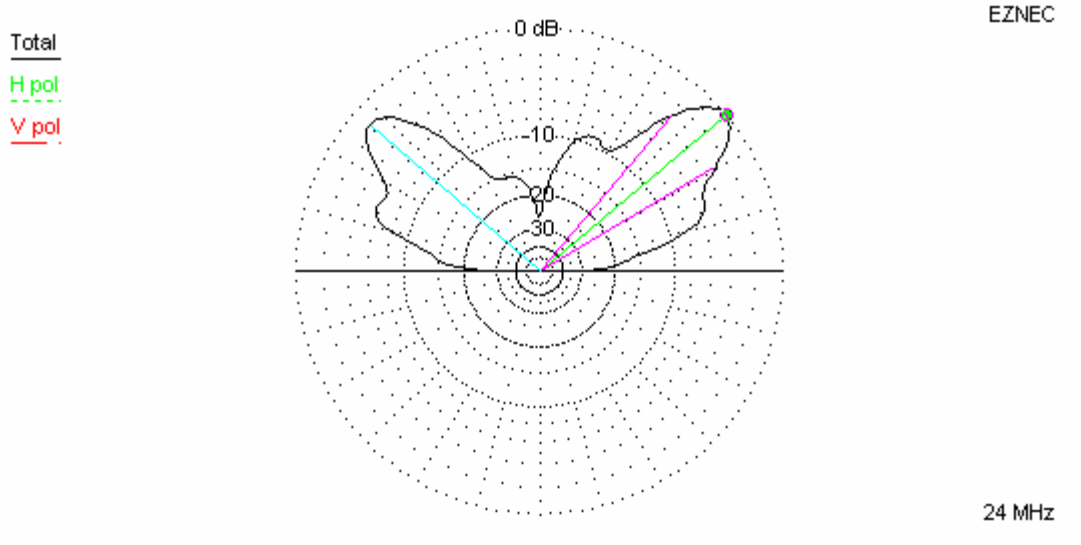
Total
H pol
V pol

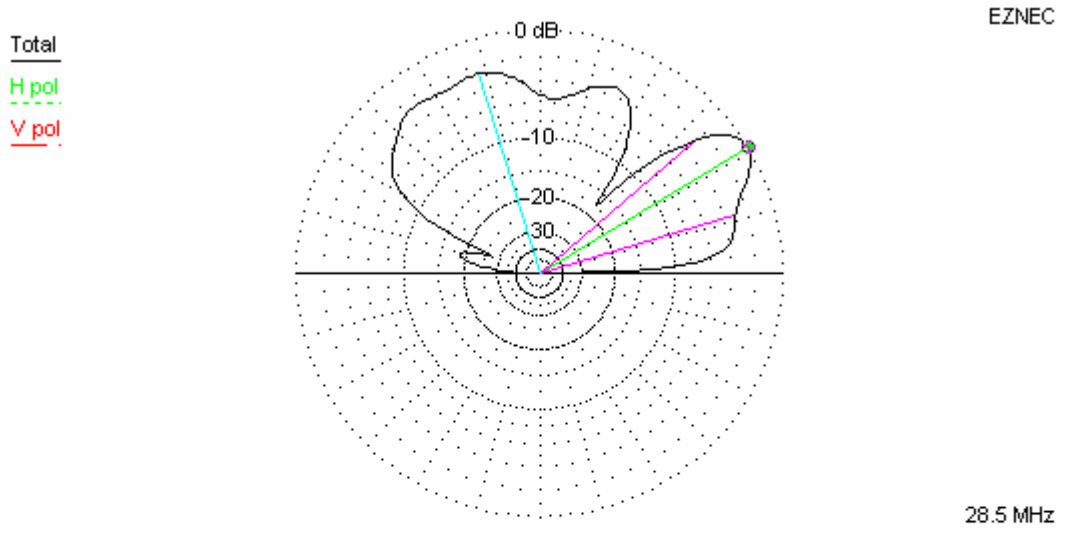



18.86 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 125.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 5.96 dBi |
| Outer Ring | 5.96dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 5.96 dBi @ Elev Angle = 125.0 deg. |
| Beamwidth | 33.9 deg.; -3dB @ 106.5, 140.4 deg. |
| Sidelobe Gain | 5.34 dBi @ Elev Angle = 33.0 deg. |
| Front/Sidelobe | 0.62 dB |



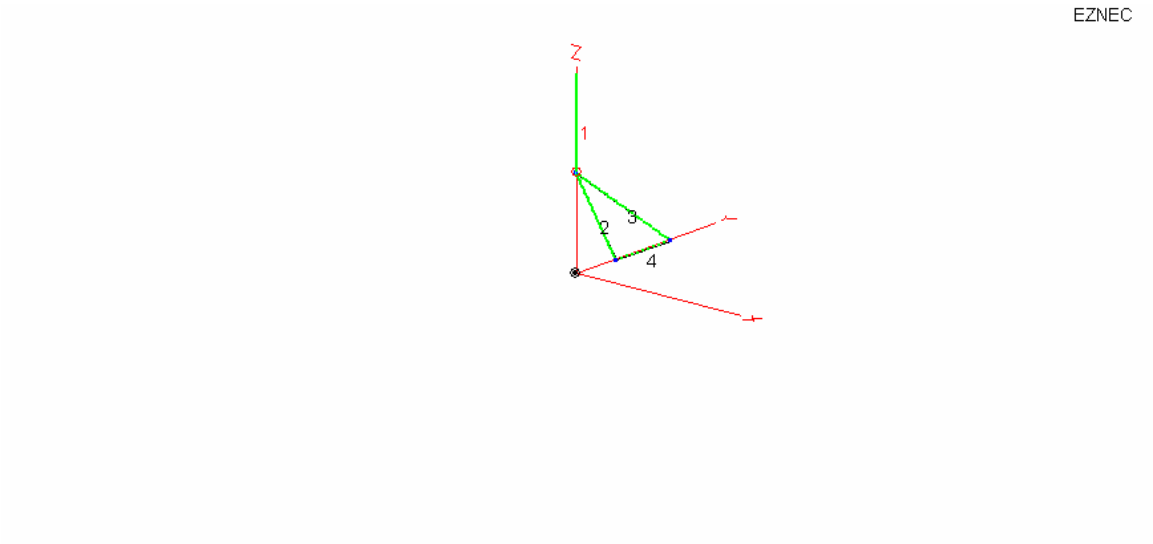




| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 31.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 5.96 dBi |
| Outer Ring | 5.96dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 5.96 dBi @ Elev Angle = 31.0 deg. |
| Beamwidth | 24.1 deg.; -3dB @ 16.3, 40.4 deg. |
| Sidelobe Gain | 3.3 dBi @ Elev Angle = 107.0 deg. |
| Front/Sidelobe | 2.66 dB |

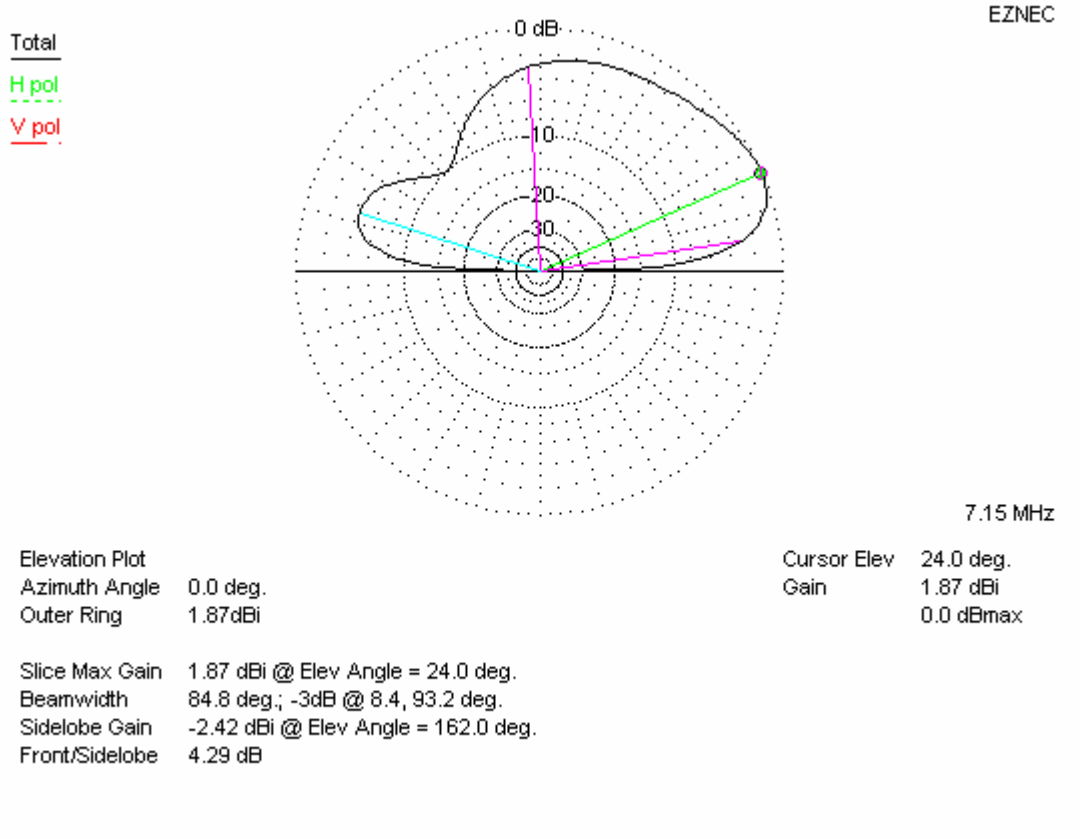
Placing the vertical near salt water will increase gain and lower take off angles. If higher band coverage is only required shortening the length of the vertical and the radial will improve its higher frequency coverage as well. For instance if 7-30 Mhz c overage is only required shortening the length from 41 feet to 25 feet would be recommended. The curves would look very much like the ones above from 3.8 – 14 Mhz.

Lets examine them in detail shortening the vertical and radial to 25 feet.



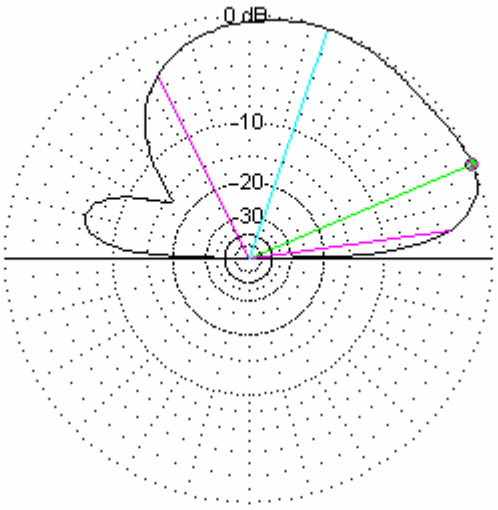

The shortened free standing vertical is located 25 feet above ground at the feedpoint

The following curves are from 7-28.5 mhz.



EZNEC

Total
H pol
V pol



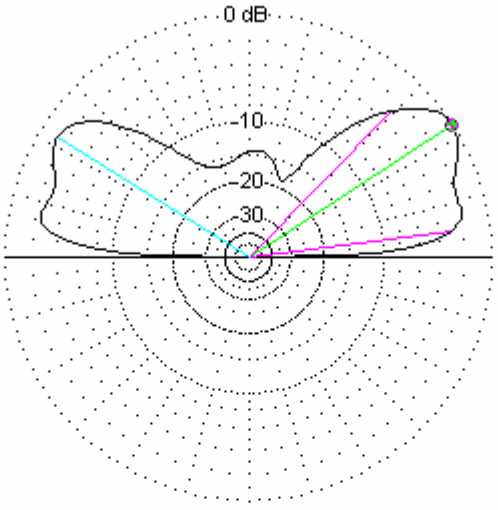

10.11 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 23.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 2.28 dBi |
| Outer Ring | 2.28dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 2.28 dBi @ Elev Angle = 23.0 deg. |
| Beamwidth | 108.3 deg.; -3dB @ 8.0, 116.3 deg. |
| Sidelobe Gain | 2.2 dBi @ Elev Angle = 71.0 deg. |
| Front/Sidelobe | 0.08 dB |

EZNEC

Total
H pol
V pol



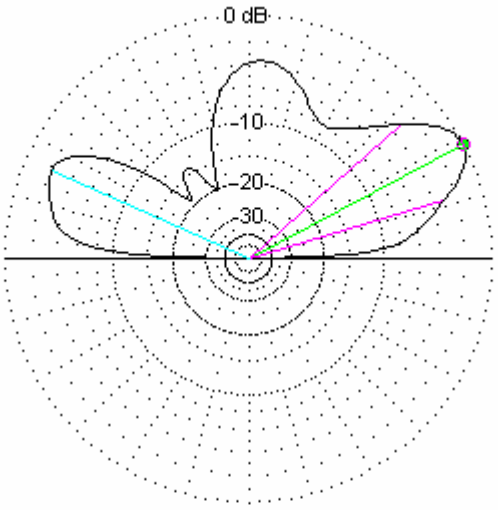

21.25 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 33.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 4.97 dBi |
| Outer Ring | 4.97dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 4.97 dBi @ Elev Angle = 33.0 deg. |
| Beamwidth | 38.4 deg.; -3dB @ 7.3, 45.7 deg. |
| Sidelobe Gain | 3.66 dBi @ Elev Angle = 148.0 deg. |
| Front/Sidelobe | 1.31 dB |

EZNEC

Total
H pol
V pol



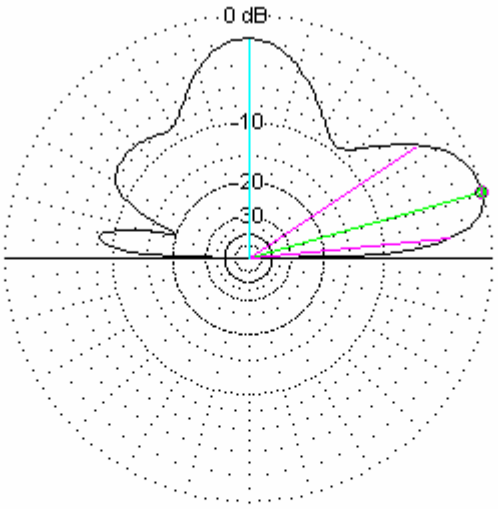

24 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 28.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 5.75 dBi |
| Outer Ring | 5.75dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 5.75 dBi @ Elev Angle = 28.0 deg. |
| Beamwidth | 24.6 deg.; -3dB @ 16.5, 41.1 deg. |
| Sidelobe Gain | 3.65 dBi @ Elev Angle = 156.0 deg. |
| Front/Sidelobe | 2.1 dB |

EZNEC

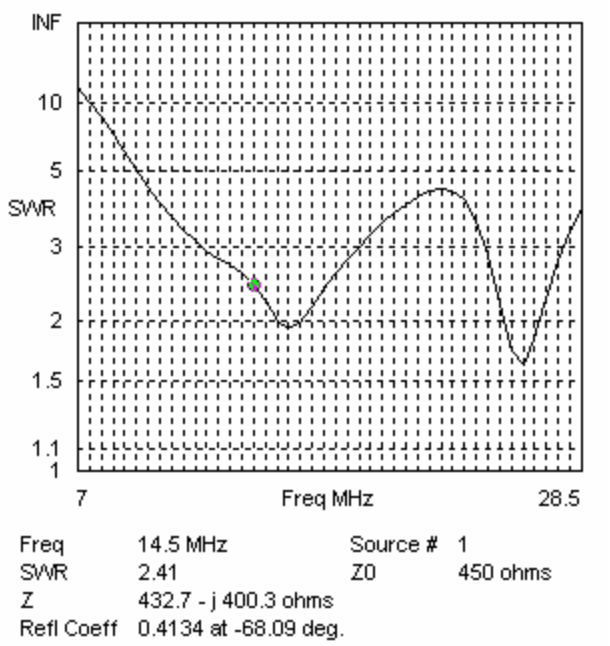
Total
H pol
V pol




28.5 MHz

| | | | |
|---|---|---|---|
| Elevation Plot | | Cursor Elev | 16.0 deg. |
| Azimuth Angle | 0.0 deg. | Gain | 4.46 dBi |
| Outer Ring | 4.46dBi | | 0.0 dBmax |

| | |
|---|---|
| Slice Max Gain | 4.46 dBi @ Elev Angle = 16.0 deg. |
| Beamwidth | 27.8 deg.; -3dB @ 5.8, 33.6 deg. |
| Sidelobe Gain | 2.7 dBi @ Elev Angle = 90.0 deg. |
| Front/Sidelobe | 1.76 dB |




| | | | |
|---|---|---|---|
| Freq | 14.5 MHz | Source # | 1 |
| SWR | 2.41 | Z0 | 450 ohms |
| Z | 432.7 - j 400.3 ohms | | |
| Refl Coeff | 0.4134 at -68.09 deg. | | |

The VSWR curve for 450 ohm ladder line looks like the above graph. Again a tuner would have no problems with these values.