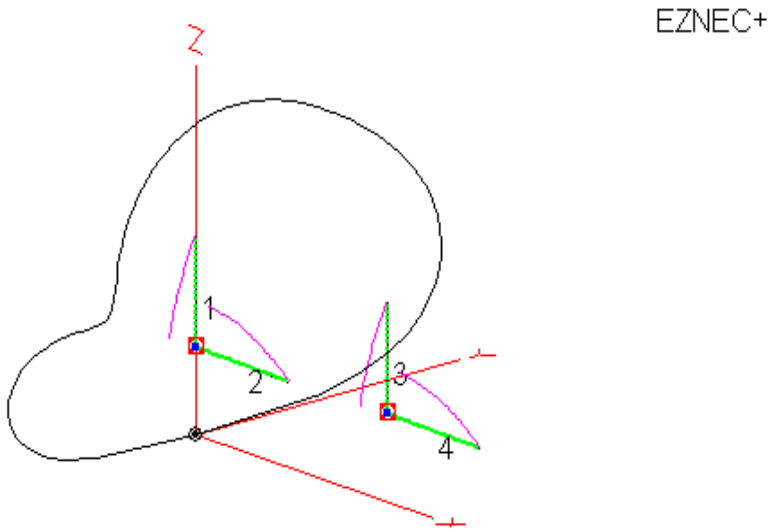
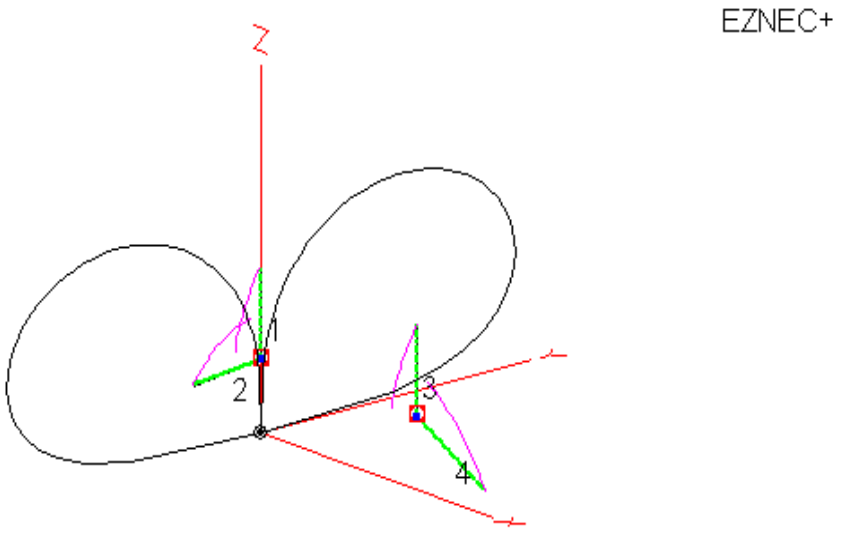
20m VersaTee vertical array

When setting up the two verticals the height above ground at the feed point / VersaTee equals 10 feet for both verticals. The elevated radials for example would both slope down to the north, If you want the array to be unidirectional and pointing to the North. The second vertical would be either East or west of the first one.





If you want the array to be bidirectional have one radial slope down to the East and the other slope to the West. The second vertical would again be either East or west of the first one. This will create a bidirectional pattern to the north and south.

When assembling the verticals start at the VersaTee with either the red or black coil. The initial Tap Point is 4 turns from the top of the coil. This Tap Point can change depending on your location. Next you have two 22" arms and then finally the new longer whips that are 9ft. 6" long there is no improvement in efficiency raising the coil one arm above the VersaTee I have verified this using computer antenna modeling software EZNEC+5. In fact on 17m backup to 10m the gain actually goes down.

So the overall length from the VersaTee to the top of the vertical measures 162" 1/2" or 13ft. 6" 1/2" remember the coil adds 4 1/2" to the overall length. The elevated radials measure 16ft. 6". This is a full 1/4 wavelength on 20 m. When adjusting the antennas start with the coil if the coils that you have are three grooves take advantage of that and adjust their first. If you have the old version coils that only have one groove Set the tap Point at 4 turns from the top of the coil and make your final adjustment by lengthening or shortening the elevated radial.

The angle between the vertical element and the elevated radial should equal 115 degrees. If you have the VersaTee at 10 feet above the ground, and the elevated radial is 16 feet 6" long, with the kite winder end of the wire mounted 3Ft. above ground, this will equal the required 115 degree angle between the vertical element and the elevated radial.

If you have the VersaTee at 9 feet above the ground and the elevated radial is 16 feet 6" long, with the kite winder end of the wire mounted 2Ft. above ground, this will also equal the required 115 degree angle between the vertical element and the elevated radial. At this height there will be a slight reduction in gain. The spacing between the verticals equals 34ft. when connecting the coax to the verticals I recommend using a TRSB at each vertical.

The array will still work without the TRSB's but you will have some common mode current on the outside diameter of the coax braided shield. You can have any length of coax to the verticals the only requirement is they both have to be the same length. Join the coax from each vertical with a AMPHENOL-83-1 T UHF T-connector (Coax Tee) AVAILABLE at Amateur Electronic Supply and a (AMPHENOL-83-1 J- UHF (double female connector) going back to the radio with any length of coax.

The input impedance at the VersaTee equals 45 ohms when the apex angle between the vertical element and the elevated radial equals 115 degrees this translates to a 1.09:1 VSWR which is about as good as it gets. The 2:1 VSWR bandwidth equals 14.00Mhz to 14.350Mhz Forward

gain equals 4dBi over average ground when the array is configured for unidirectional pattern. The Forward gain equals 2.45dBi over average ground when the array is configured for bidirectional pattern.

I honestly cannot think of anything else that anyone would need to know to set up this array except that on 17 meters and above you do not need to use a coil just arms and the 9ft. 6" whip. On these bands each vertical is a full-size dipole 1/4 wavelength on each side.

Lou KE4UYP