

Inverted V And Linear Horizontal Wire Arrays, Revised

Dallas Lankford, 8/9/2011, rev. 8/10/2011

...these arrays are ... unsuitable for state of the art splatter reducing MW receiving antenna arrays.

When I wrote this yesterday, I was referring to inverted V and linear horizontal wire arrays which were not ground terminated. The original inverted V array article had been in The Dallas Files since 7/18/2011 and the original linear horizontal wire array article had been in The Dallas Files for less than 24 hours. Both were deleted immediately and a brief explanation of why they were deleted containing the statement in italics above was added to The Dallas Files, namely, both were discovered to have negative resistance sources which implied they contained antenna elements with mutual impedance issues.

Yesterday evening while waiting for the temperature to drop below 100 degrees so that I could run some errands, I wistfully re-simulated the inverted V array with EZNEC. Maybe I was mistaken. Maybe the array did not have negative resistance sources. Nope. The negative resistance sources were still there. For no particular reason I ground terminated the far ends of the inverted V antenna elements, and did another EZNEC FFT of the quad 100 foot spaced inverted V array.

To my surprise, there were no negative resistance sources!

The ground terminated QIVA had about 6 dB less dBi gain than the unterminated QIVA, but the ground terminated QIVA had a slightly narrower beam width and a slightly wider null aperture. And the RDF of the ground terminated QIVA improved about 0.2 dB to 11.1 dB.

Next I ground terminated the far ends of the linear horizontal wire antenna elements, and did another EZNEC FFT of the quad 100 foot spaced linear horizontal wire array. Again, there were no negative resistance sources.

Thus both types of arrays with ground terminated antenna elements are again candidates for high performance splatter reducing MW receiving antenna arrays.

I have yet to implement either a ground terminated 100 foot spaced quad active inverted V array or a ground terminated quad active linear horizontal active wire array, so their performances remain to be measured.