VersaTee 60m,80m vertical

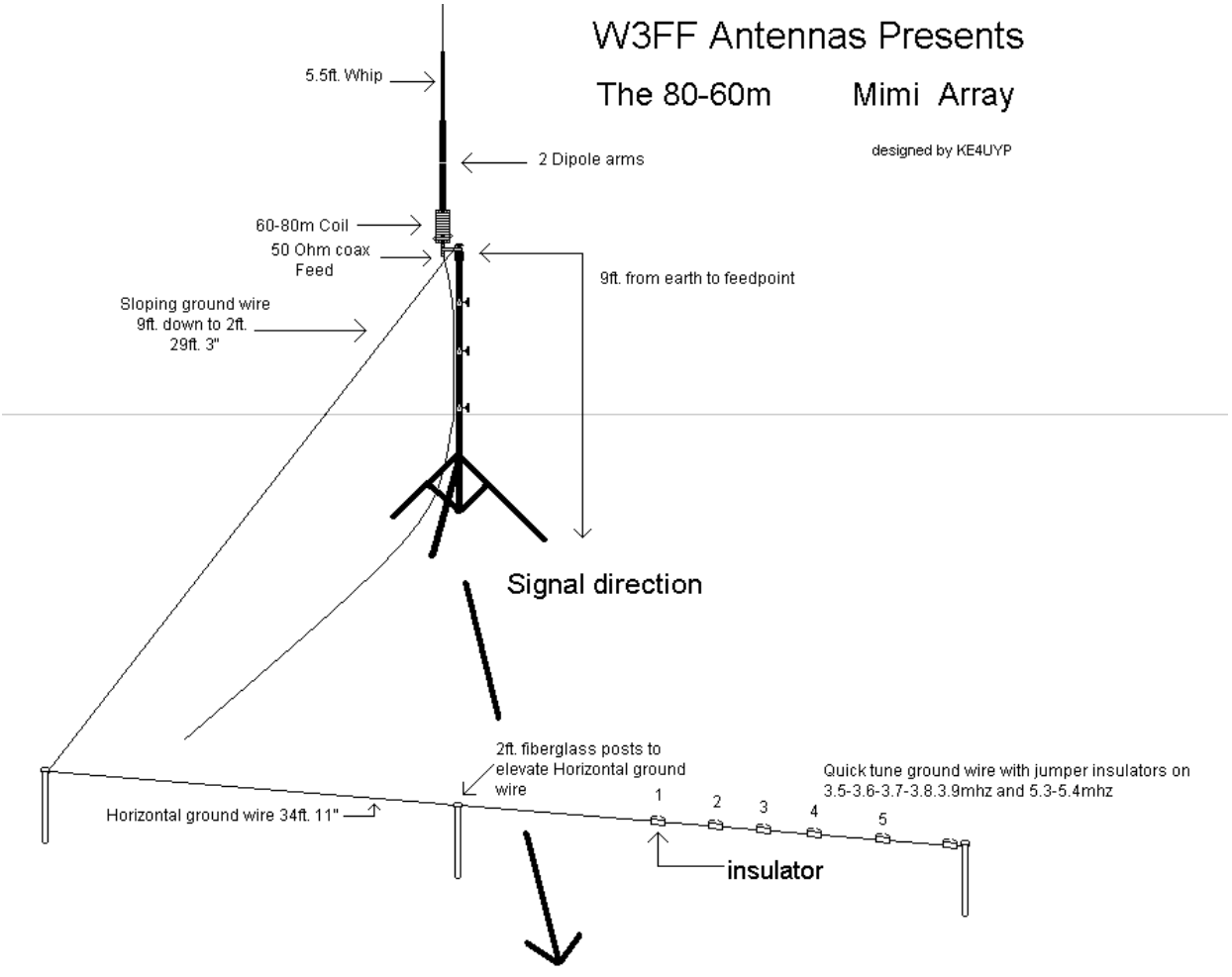
Page 1

To the best of my knowledge I am the inventor of this antenna design, now formally known as the VersaTee 60m,80m vertical which incorporates a elevated feedpoint and one elevated sloping radial wire for use on 80 or 60m. I first presented this design to Budd W3FF at the Orlando Hamm fest back in February of 2003. I actually had a working model of this antenna in October of 2002. Initially tests were conducted using the standard red and black 40 m coils. It became obvious immediately that this had a major disadvantage, the total amount of inductance of the two coils were only capable of resonating the antenna at approximately 3.9Mhz.

Red and black 40m coils.

It was then determined that a much larger coil was needed both in terms of inductance and physical diameter initially the first 80 m coil had 48 turns. But this still did not deliver enough inductance to reach 3.5Mhz. So the next prototype coil was increased to 52 turns and this supplied more than enough inductance.

Prototype 80 meter coils 48 turn coil on the left 52 turn coilon right.



The number one challenge of making this design successful was discovering the optimum configuration of the sloping elevated radial wire to obtain maximum radiation resistance and optimum antenna efficiency. After about 100 plus hours of modeling in Eznec antenna modeling software I was able to verify the optimal length and angle for best performance.

I was also able to determine the optimum overall length of the sloping elevated radial wire. According to Eznec computer modeling of the present configuration, and from actual field test measurements the average input impedance of the antenna is approximately 28 ohms or a 1.72 to 1 SWR.

Using the **TRSB (Triple Ratio Switch Balun)**
This is a device that has a current balun which dramatically reduces common mode current on the coax. It also has a multi tapped impedance matching transformer. The purpose of the multi tapped impedance matching transformer is to assist in matching the antennas input impedance to the coax impedance. I highly recommend this device for anyone using this antenna design or any other configuration of the Buddipole modular antenna system the link below will take you directly to this product.

http://www.buddipole.com/trraswbat.html

Adjusting for a precise tap point on the coil and setting the proper length of the elevated radial will be all that is necessary to operate efficiently over a 50kHz segment of the band. Changing the length of the elevated radial and readjusting the tap point on the coil you can operate over the entire 75m to 80m band.
When you consider that the elevated radial represents the majority of the total length of the antenna, it also develops the majority of the radiation for the antenna. Raising the coil one arm or even two arms above the feedpoint has very little impact on the overall performance of the antenna. So I recommend leaving the coil at the base of the vertical element.

Here are the coil tap points and radial wire lengths for each major segment of the 75/80m band use these tap points to start with they should be fairly close.
The antenna feedpoint should be at 9 to 10 feet above the ground The wire slopes down from the feedpoint 29ft. 3" inches at this point it is 2ft. above the ground and connected to a nonconductive support.

It then makes a 90 degree turn and the end of the wire is also supported 2ft. above the ground.

NOTE---Coil Tap points:
When Using two 22" aluminum arms and the new 9 1/2ft. telescopic whip

3.5Mhz=40 1/4 turns from Top of coil
Radial wire length=35ft. 0" measuring from 90 degree bend back to the kite winder.
For a Total wire length of 64ft. 3"

3.6Mhz=38 1/4 turns from Top of coil
Radial wire length=33ft. 0" measuring from 90 degree bend back to the kite winder.
For a Total wire length of 62ft. 3"

3.7Mhz=36 3/8 turns from Top of coil
Radial wire length=31ft. 6" measuring from 90 degree bend back to the kite winder.
For a Total wire length of 60ft. 9"

3.8mhz=35 1/8 turns from Top of coil
Radial wire length=30ft. 0" measuring from 90 degree bend back to the kite winder.
For a Total wire length of 59ft. 3"

3.9mhz=33 5/8 turns from Top of coil
Radial wire length=28ft. 6" measuring from 90 degree bend back to the kite winder.
For a Total wire length of 57ft. 6"

The 60-meter band
Tap point is 16 turns from Top of coil only one tap point is needed
Measure 20ft. 6" from the tripod end of the wire to first fiberglass post
Measure from the 90 degree bend back to the kite winder 21ft. 5"
For a Total wire length of 41ft. 11"

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