



After the International Marconi Day 2003, I found that I could not contact our club station GB0MBS (Marconi Beam Station) in Dorchester on 3.5 MHz (about 9 miles north from the QTH). Richard (M5RIC) knew that there was a station calling but could not identify me. So the decision was taken to erect an aerial of which could do 14MHz, 7MHz and 3.5 MHz. Looking through the W & S catalogue, I found the 80 Plus-2 dipole. This fitted the specification being short and the 3 bands I use the most. As an added bonus a write up of the aerial in the back of the W & S catalogue by its designer Peter Waters G3OJV. A quick look found I had most of the required bits from buying at ham fest etc. but just required some 450 ohm ladder feeder. Finally all the pieces were assembled and after drilling about 100 holes, the construction started (many thanks to the Wyke Regis Training Centre for the use of their facilities). The wire was threaded through the holes in the 450 ohm feeder and the coils fitted (these are the same ones used to extend the ½ size G5RV to work on 3.5MHz) and all attached to the 1:1 balun. The aerial was erected on the windsurf mast in the garden and a quick test to see what the results were. It worked fine but the resonance was a bit out. Several months later, Phil M0PKB purchased an Antenna Analyser and after I spoke to him decided it would be a good test to tune the aerial with the unit (it also gave me a chance to try out the analyser). Armed with soldering iron cutters etc. Phil and myself set to work tuning. First readings were to assess where the original Centre Frequencies (CF) were located. After these were recorded the aerial had to be changed to find out what would happen the CF. First was to add wire to the bend of the 450ohm feeder. This lowered the 20m (14 MHz). This was removed and the two short wires by the coil (from the original set-up) were removed. This changed the 40m (7 MHz) point. From these two measurements the aerial could now be assessed.

- List of observations when tuning the antenna:
 - The ends of the 450 ohm feeder tunes the 20m (14 MHz) band.

- The length of wire to the coil tunes the 40m (7 MHz) band.
- The overall length does the 80m (3.5 MHz) band

Focusing on the 40m band two lengths of wire were attached to the coil. And the results recorded. This was close to the required frequency so 20m was tackled. When the wire was attached the frequency went down, so removing some should increase the resonant frequency. Six inches was removed and the ends re-soldered. The 14MHz point raised but not enough. So another six inches was removed. All the time the Ariel was measured and results recorded. This was the final adjustment. As the finishing points were very close to the desired frequencies. Nothing was altered to the 80 metre section as the wire was a bit short at the start. The bandwidth on this band is about 80 kHz so in the future I will have to extend this out.

So what are the results? It is performing very similar to the nested dipole I had for 20/40 metres. Now with the added bonus of 3.5 MHz. The objective was achieved as I made contact with the Marconi Station in 2004.



Apex Of Antenna



One antenna Arm



Loading Coil



A image of the top of the antenna. It is 15 feet above the ground and is attached to a wind surf mast. The aerial on top is a 2 metre / 70 cms colinear.

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A image of one of the dipoles arms. It is made of 450 ohm open wire feeder with a single core wire threaded though the holes drilled in the spacers. The end of the feeder is soldered together and this is the location to tune the 14MHz (20m) section of the antenna. Trim feeder off and if you make a mistake just solder a single lenght of wire here and trim back again (a bit like the coil picture)

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Here is the location to tune the 7 MHz (40m) section. When I first made the aerial, I miscalculated the amount of wire taken up by the threading through the feeder. To counteract this I added wire on the end and used this to tune the band.

The end of the aerial is only 12 inches off the ground.

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