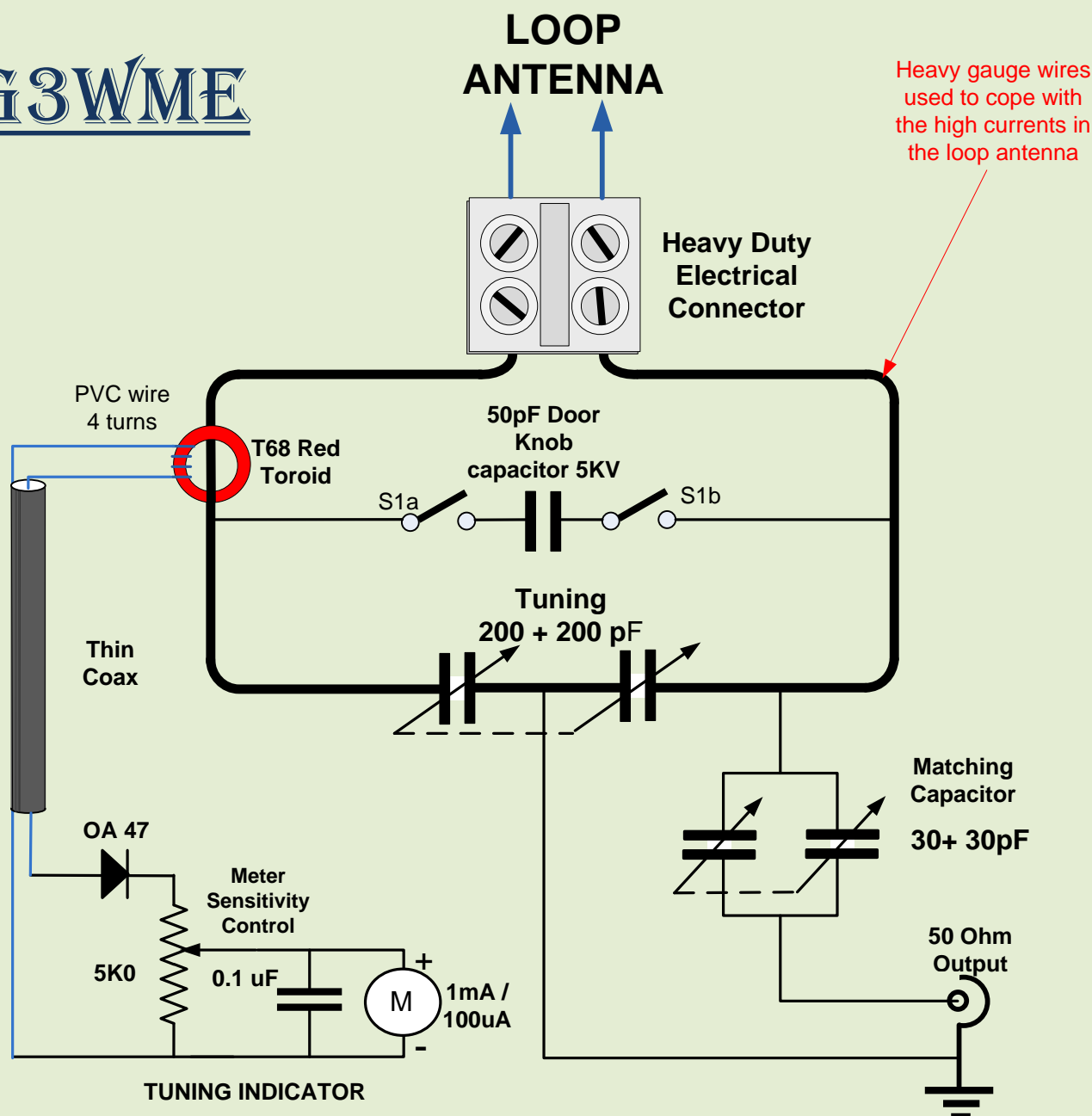


SMALL HF MAG-LOOP ANTENNA TUNER

(For 40m-17m Bands)



G3WME



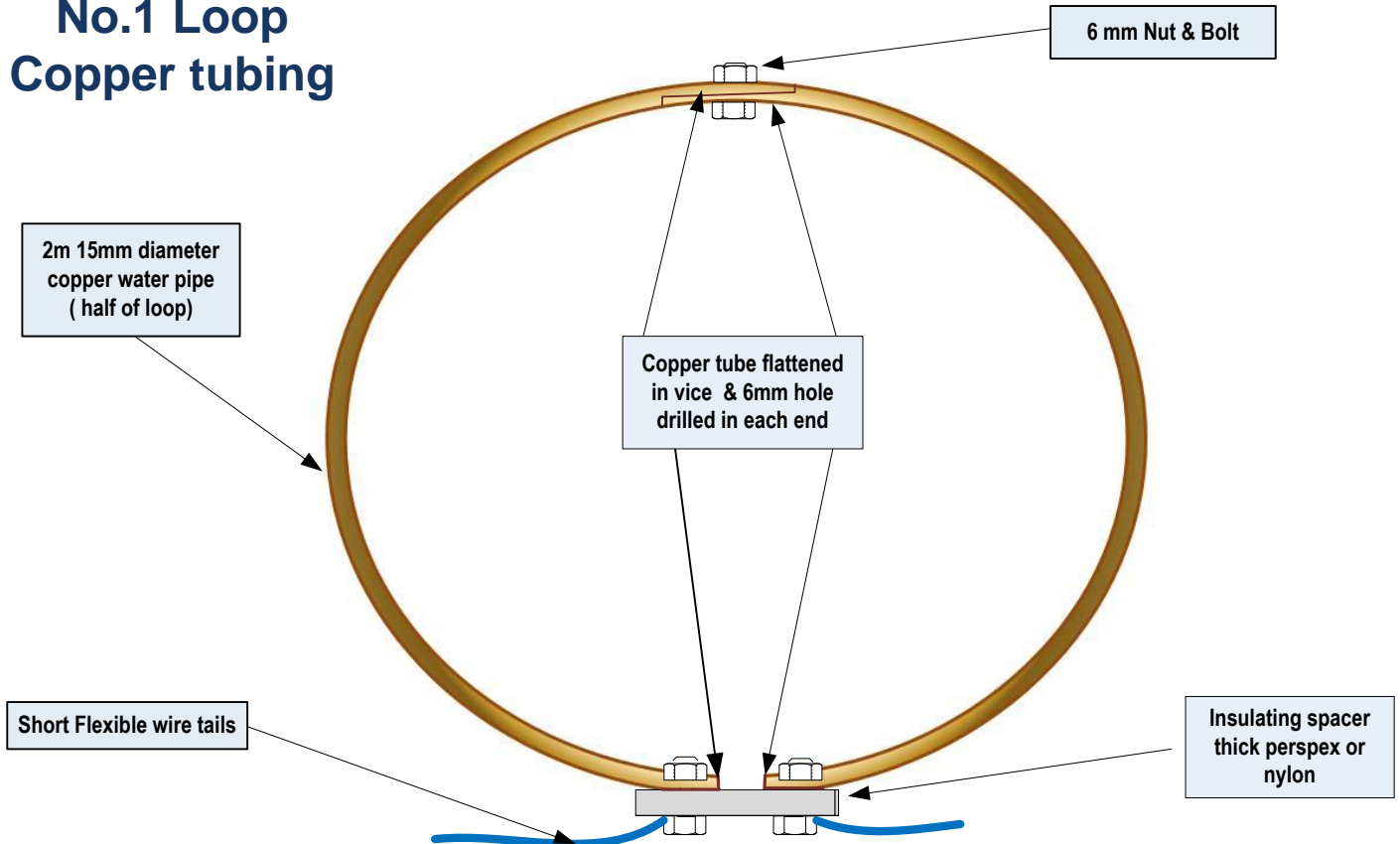
Notes:

- Two Loops have been used with this Tuner, both described further on in this document.
Loop No. 1 : 4 metre loop made from 15mm diameter copper water pipe
Loop No. 2 : 3-4 metre loop made from either 3 or 4 one metre length of 20m wide aluminium strips.
- The loop tuning capacitor is a TX type with a 1.5mm vane spacing and the matching capacitor is an air spaced receiver type.
- The heavy duty electrical connector block is essential because of the very high voltage that develop across the loop ends.
- The tuner circuit should be housed in a protective box

SMALL HF MAG-LOOP ANTENNAS – G3WME (40m-17m)



No.1 Loop Copper tubing



NOTES:

CONSTRUCTION:-

This loop requires two lengths of 2metre x15mm copper water pipe, each length is formed into a half circle by bending around a tree trunk or post.

The pipe ends are flattened for approx 3 cms in a vice or by hammering flat and then drilled to take a 6mm steel bolt with washers. The two sections are bolted together at the top to form a circle with a gap of approx 5cms at the bottom."

The two semi-circular pipe sections are bolted together at one end and a thick Perspex or Nylon spacer is used to secure the other end. Two short wire tails of about 7 or 8 cms made from heavy duty flexible insulated wire are used to connect to the heavy duty mains block on the tuning unit" The loop is mounted vertically and can be fixed to a wooden pole or a nail on a wall or hook in the ceiling

PERFORMANCE:-

This loop will tune 20,30 and 40 metre bands. An advantage with this type of tuner is that when one band has been tuned and matched you will find that the other two bands need only to be tuned as the matching capacitor adjustment stays the same . Tuning is normally done with 5 watts RF and then 100 watts can be used satisfactorily.

The 4metre loop has been used in the shack,

but for SAFETY was hooked on the far wall away from the operating position .

As 20 metres propagation has been poor since the loop was constructed, just Europe has been covered. Some of the stations worked were YO9,US0,IK2,IQ4&RM2.

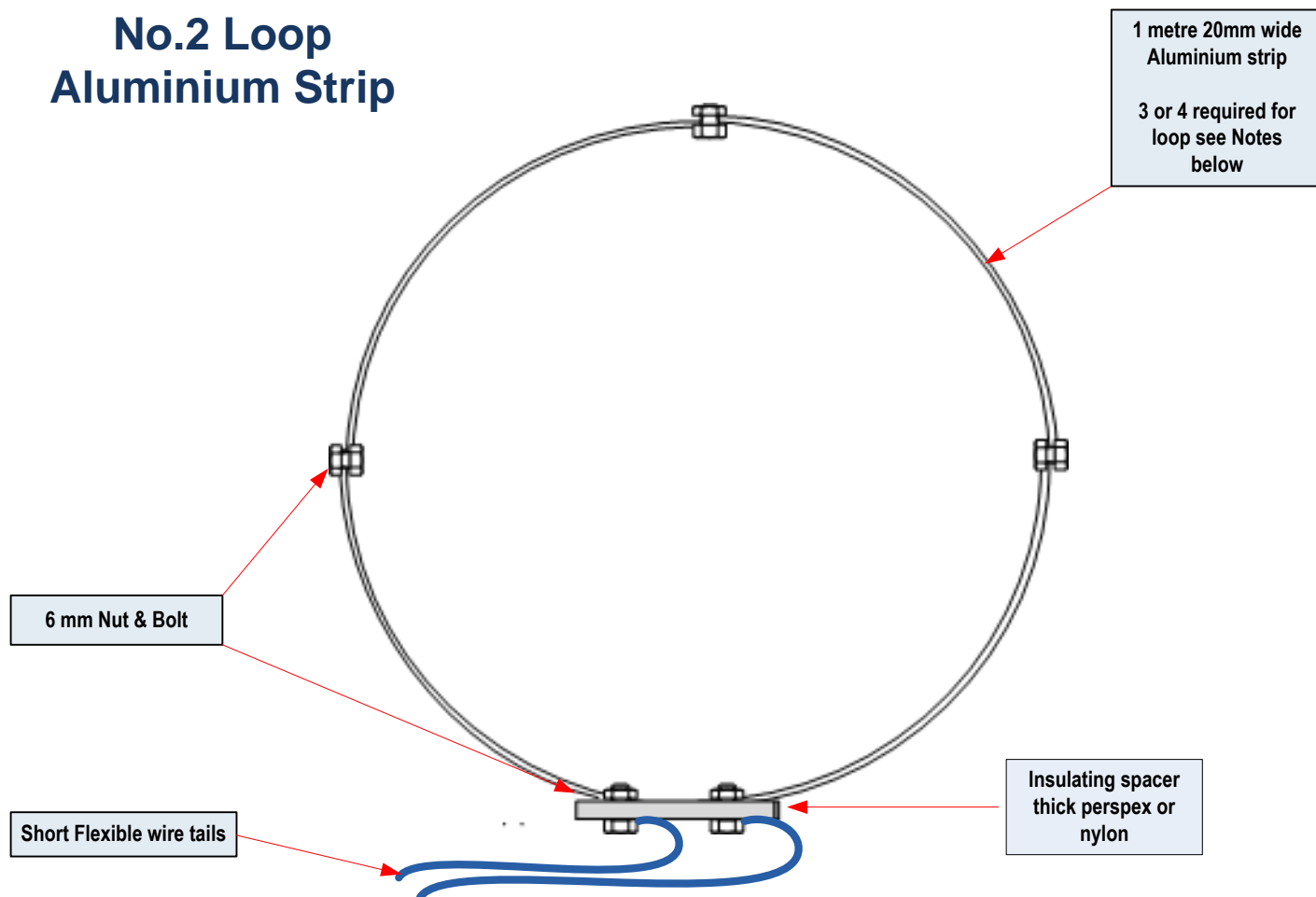
On 40 metres GM4FOZ RSARS Net control has given 5+9 reports on this loop and most of Europe worked, with QSO with DL5, IZ1, YO9,EI5, CT1, OK1, EA2, PA2, GJ , YU7.

Mike G3WME

SMALL HF MAG-LOOP ANTENNAS – G3WME (40m-17m)



No.2 Loop Aluminium Strip



Notes.

CONSTRUCTION:

This loop requires 4 lengths of aluminium strip each 20mm wide and 1.5mm thick.

The flat aluminium strip used for this loop was anodised, therefore 5cms used for the mating surfaces had the anodising removed with a file and greased. The strips were then drilled to take a 6mm steel bolt and bolted together in a straight line .

To form the loop the two ends are bent round, and secured to a perspex or thick plastic spacer with bolts. The loop will form a perfect circle. Two heavy duty flexible insulated wire tails are required, and these fasten to the heavy duty mains block on the tuning unit

PERFORMANCE:

The aluminium loop has been used inside the shack,

but for SAFETY hooked on the far wall away from the operating position.

The aluminium strip loop worked as well as the pipe loop as far as performance goes, but has the advantage of being more suitable for portable work because it packs away into a smaller space.

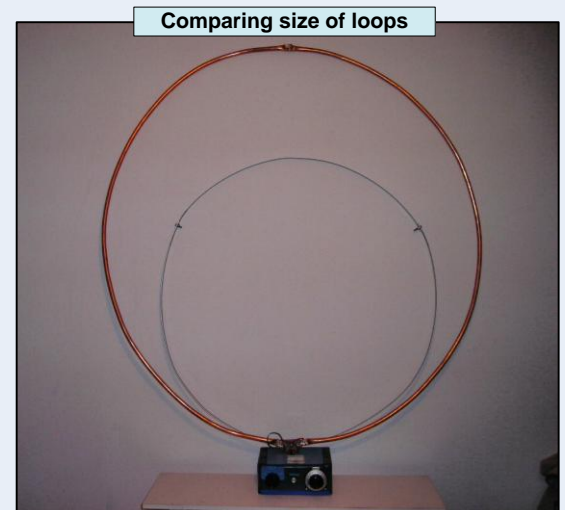
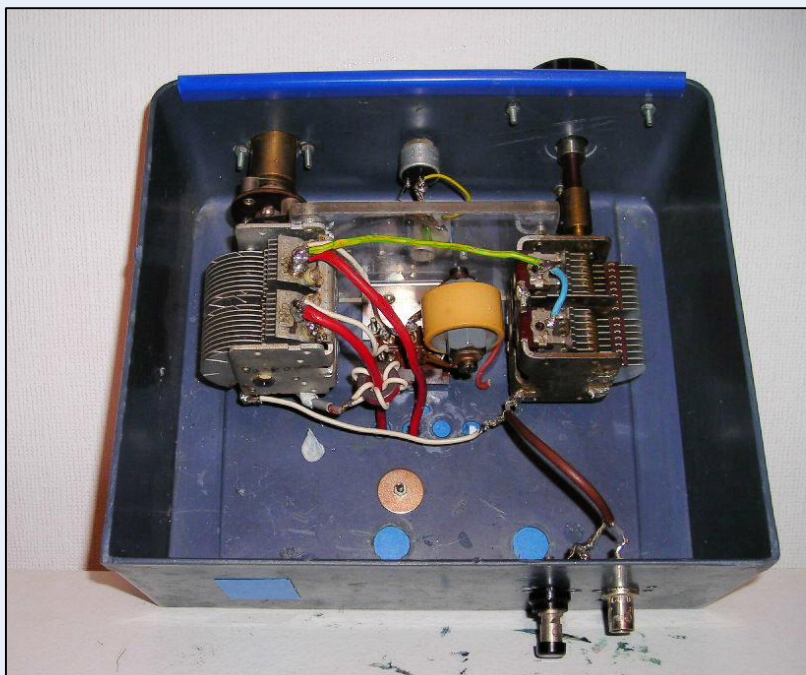
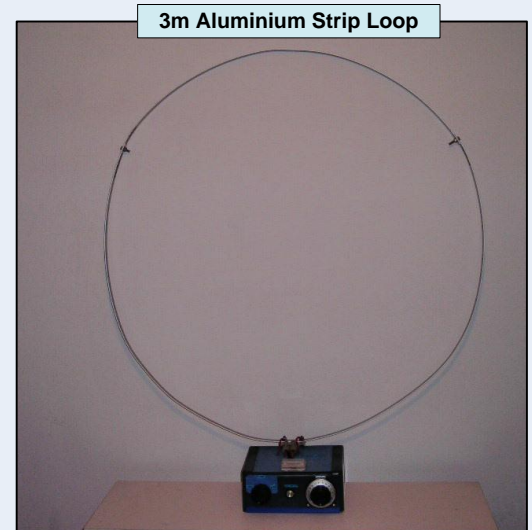
A single 1 metre section of the loop was removed and the antenna was found to tune 17m , 20, & 30m, but it has not been tried on air. More room here for experiment.

Mike G3WME

SMALL HF MAG-LOOP ANTENNAS – G3WME (40m-17m)



Photographs of the small HF Loop Tuner and the two loops



Notes:- Photograph of the inside of the Loop tuner

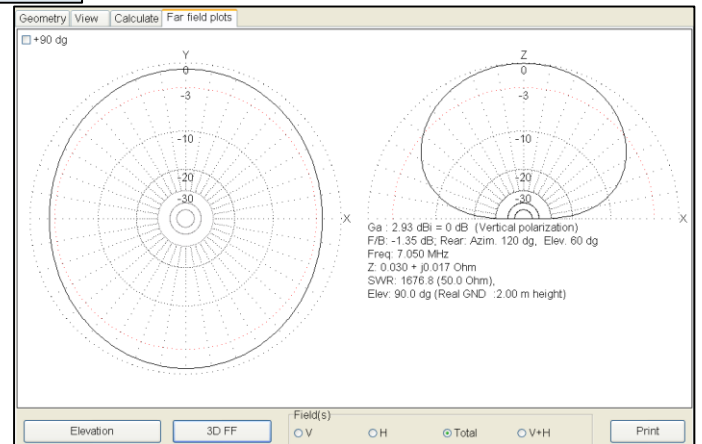
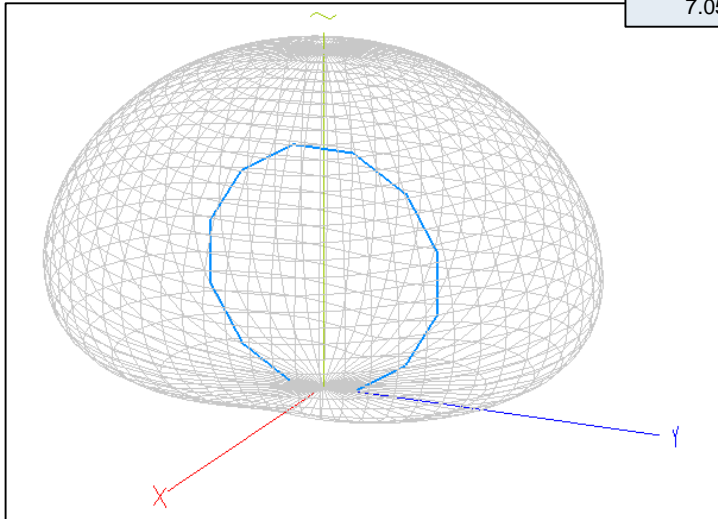
1. Tuner is housed in a large plastic box with removable bottom.
2. Large yellow doorknob 50pF 5KV capacitor is in the centre of the photo.
3. Two red Coloured heavy gauge wires are used to connected to main loop tuning capacitor on the left hand side, The wires exit through two holes in the box to connect to the heavy duty electrical terminal block.
4. The T68 red toroid used for the tuning indicator can be identified by the white wire used for the coupling winding.
5. The matching capacitor has a slow motion drive with a vernier dial.
6. Copper Loop tunes 20,30 & 40m bands, and Smaller aluminium loop tunes 17m, 20, & 30m bands.

SMALL HF MAG-LOOP ANTENNAS – G3WME (40m-17m)

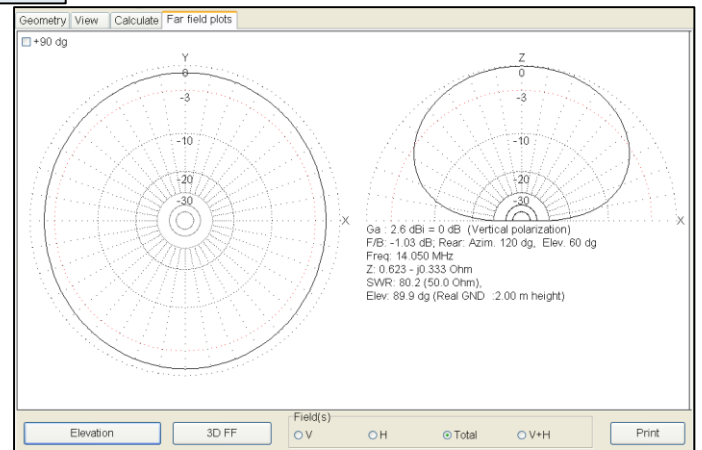
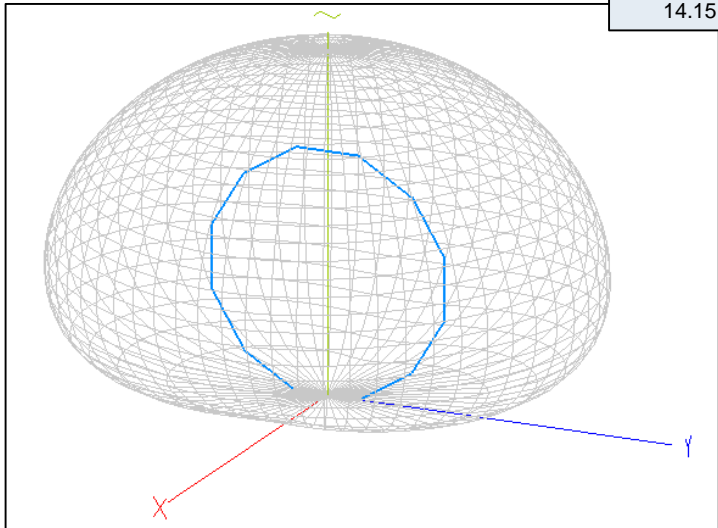
Results produced using MMANA-GAL Antenna Analysis Program



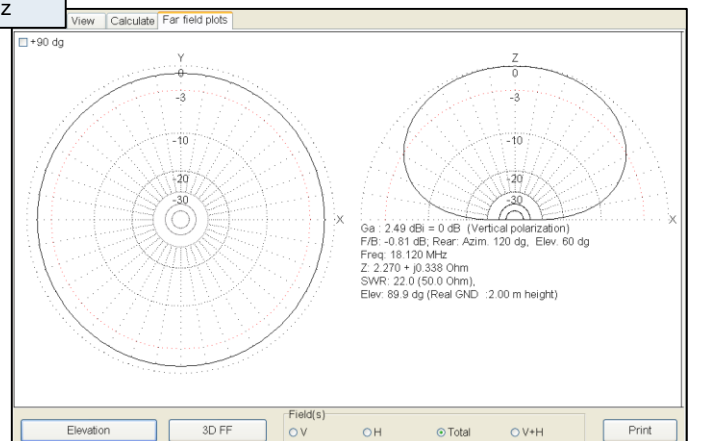
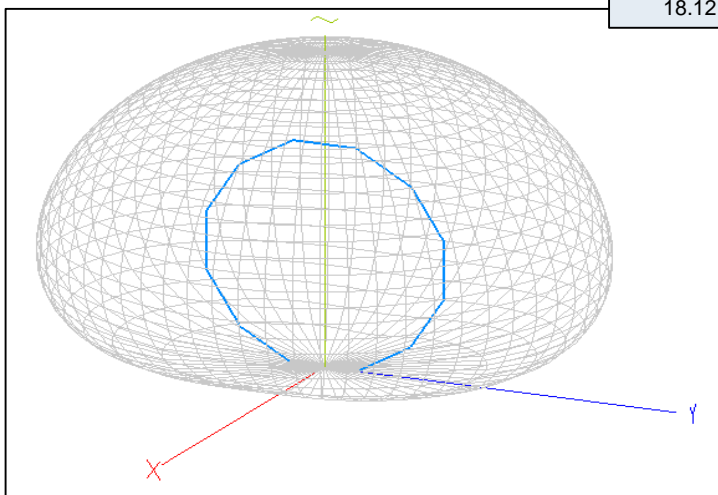
7.05 MHz



14.15 MHz



18.12 MHz



In each case I bought the loop to resonance with a capacitor close to the source in the bottom wire
7.05 MHz required 141.6 pF
14.15MHz required 31.0 pF
18.12 MHz required 16.9 pF

Not sure how I "connect the matching capacitor in on the model though?