

## 4m 450Ω Ladder Line SlimJim For G7CRQ - By G4FKK

Fig. 1: Dimensions of Aerial

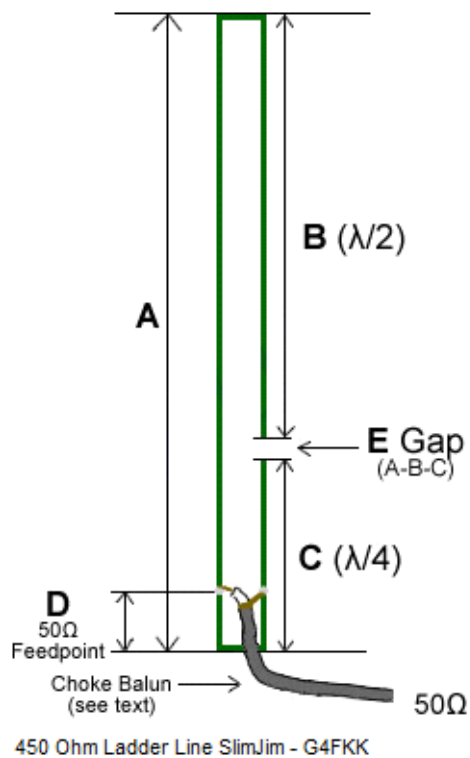
$$A = 3175\text{mm}$$

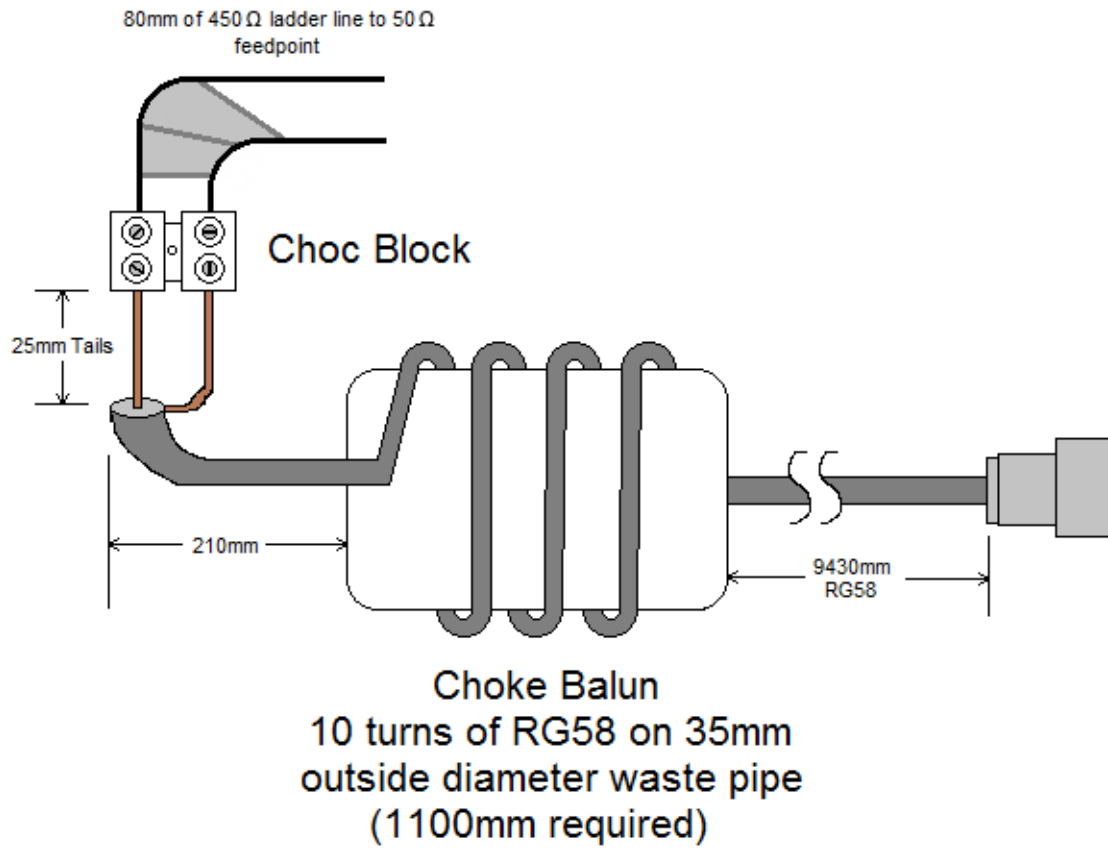
$$B = 2230\text{mm}$$

$$C = 900\text{mm}$$

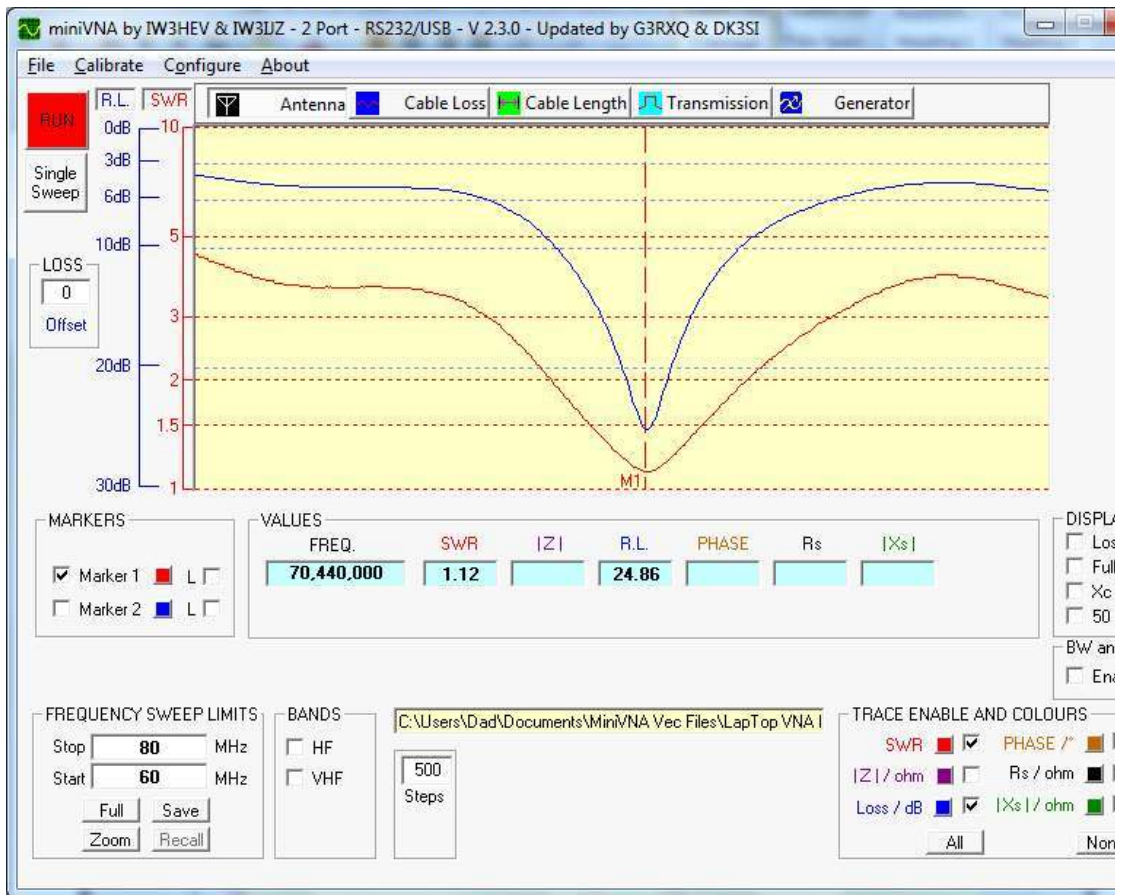
$$D = 200\text{mm}$$

$$E = 45\text{mm}$$

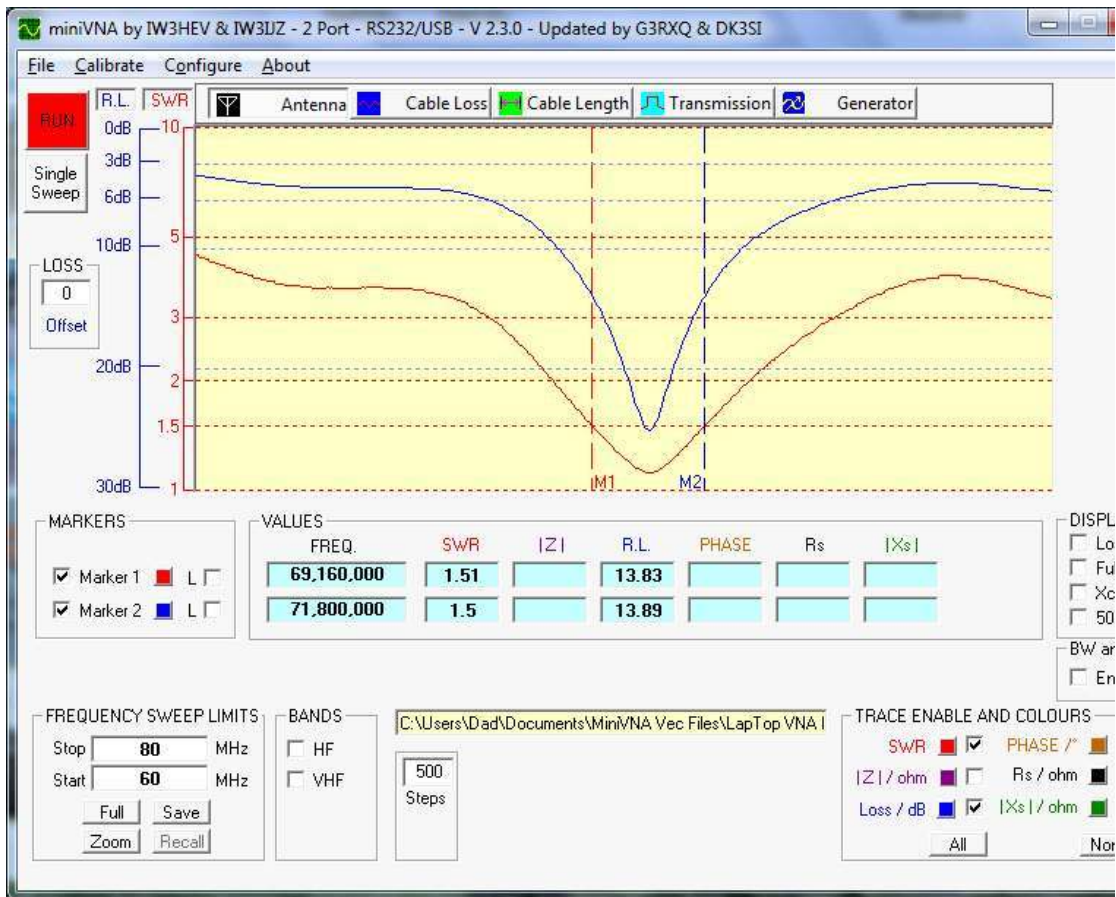




**Fig. 2: Feeder System Including Choke Balun**



**Fig. 3: Minimum SWR at 70.44MHz**



**Fig. 4: 1.5:1 SWR Bandwidth: 69.16 to 71.8MHz**

## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna

These notes have been put together by G4FDN based on his first attempt using the G4FKK diagram.

### You should have the following items

1. Diagram titled *"4m 450Ω Ladder Line SlimJim for G7CRQ 0 By G4FKK"*
2. Approx 3.5m (12.6' )of 450 Ohm ladder line
3. 6 inch length of 32mm (1 ¼") white PVC pipe
4. Choc Block
5. Approx 1.5m (5')length (or longer) of RG58 or RG8X 50 ohm coax.
6. Coax connector (your choice) to fix above coax
7. A 300mm (12") cable tie

### You should have the following tools and materials:

1. Small wire cutters
2. Pointed nose pliers
3. Wire strippers
4. Modelling knife or scalpel
5. Soldering iron and solder
6. Heat shrink tubing or PVC or self-amalgamating tape

### Procedure:

1. In the diagram, notice that connection arrangements in Fig. 2 replace the direct coax connection shown in Fig, 1
2. Strip approx. 10mm (0.4") of insulation off each wire at one end of the ladder line.
3. If the top join is to be insulated with heath shrink tubing slide a length (approx. 20mm) over one of the wire ends.



## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna

4. Bend each wire towards each other, The bend should be approx. 16mm from the end
5. Solder the two wire ends together, tied if necessary to keep them in place with a piece of thin tinned copper wire.



6. Slide the heat shrink tubing over the joined wires or wrap with PVC or self-amalgamating tape.



## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna

7. Measure 2230mm (7' 3.8") from the joined end and mark the RHS of the ladder line at this point
8. Measure 45mm (1.8") from this marked point and mark the ladder line again. This marks the gap "E"
9. Using a modelling knife or scalpel cut the insulation at each marked point approx. half way around to just where it meets the inner stranded wire
10. On the outer RHS edge cut a line between marked points to just where it meets the inner stranded wire



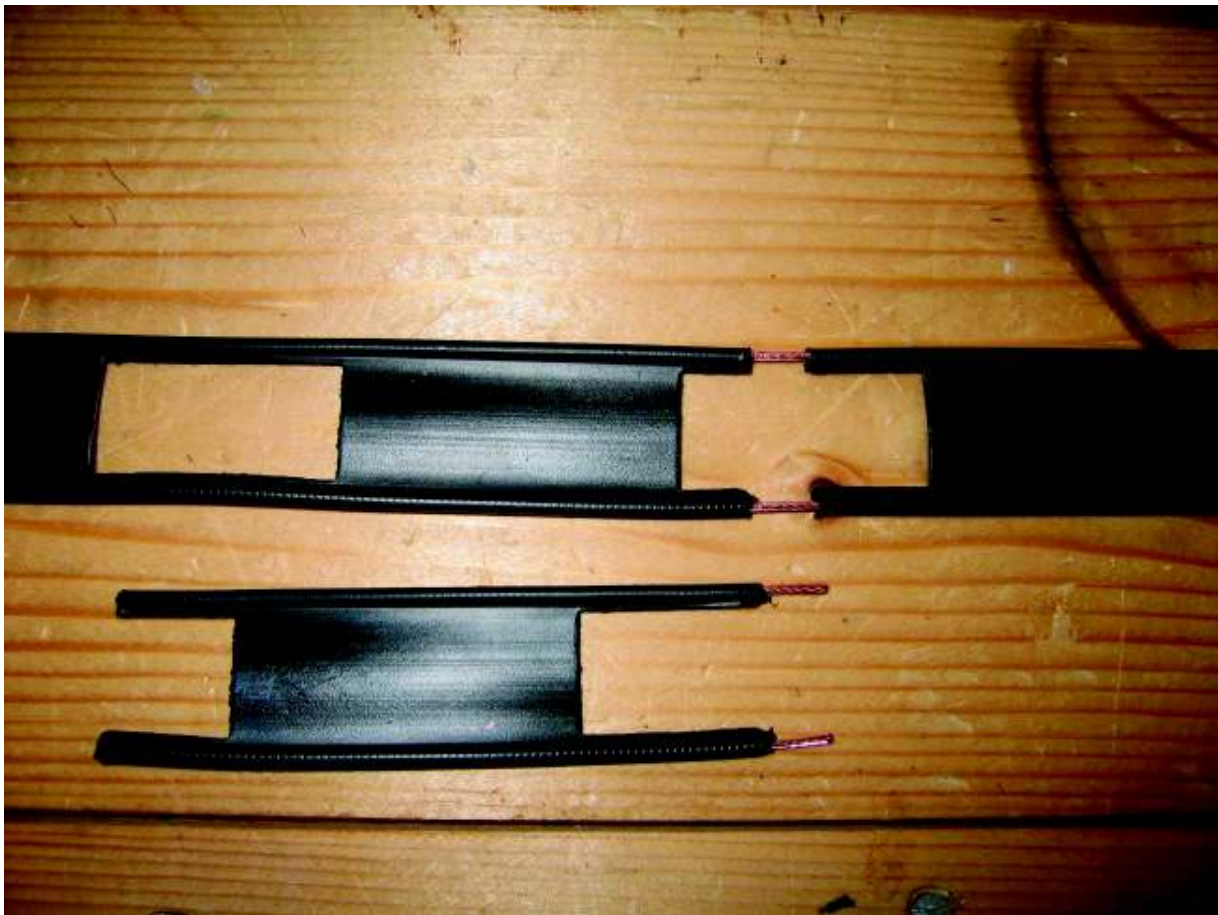
11. Peel away the insulation to expose the wire.
12. Cut the wire through at the marked points and remove the wire.



13. Push the cuts insulation back into place and then use a hot soldering iron with a flat edge tip to melt the insulation along the cuts so it is re-joined.

## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna

14. Measure 700mm (2' 3.6") from the lower edge of "E" and mark both sides of the ladder line. This is "D"
15. Using a scalpel or modelling knife remove approx. 1cm of insulation (towards the top) completely around each wire without cutting the stranded wire underneath.
16. From the bottom edge of the ladder line cut a 90mm (3 ½") length that will form the stepped off feeder connection.
17. Strip approx. 10mm (0.4") of insulation off each wire from the top and bottom ends of the 90mm length.



18. Solder the 90mm (3 ½") piece of ladder line to the main ladder line at point "D", tied if necessary to keep them in place with a piece of thin tinned copper wire.



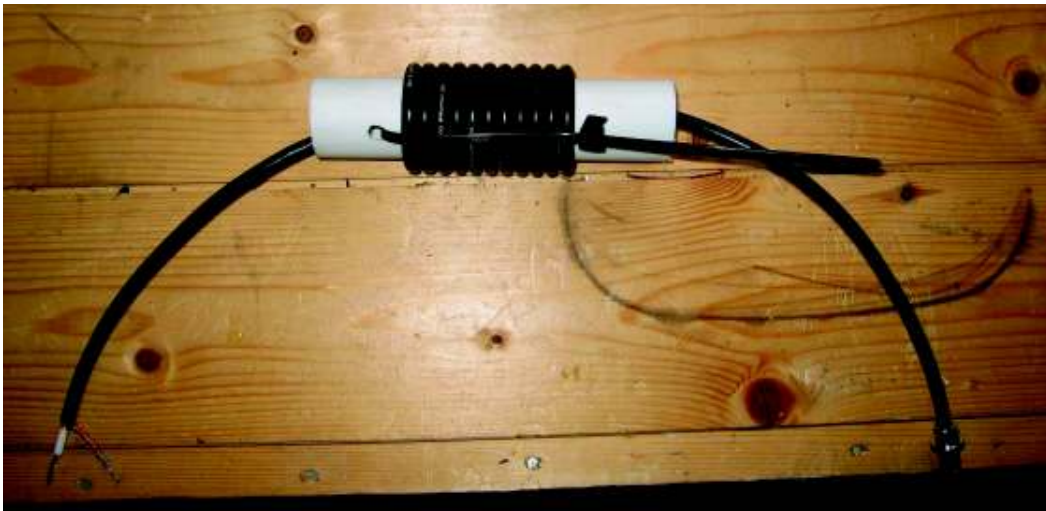


## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna

19. Measure 225mm (8.9") from "D" (or 3180mm (10' 5.2") from "A") and mark the ladder line on both sides
20. Cut through the ladder line at the marked points.
21. If the bottom join is to be insulated with heat shrink tubing, slide a length (approx. 20mm (0.8")) over one of the wire ends -see first picture above.
22. Bend each wire towards each other 20mm (0.8") from "D".
23. Remove insulation from each bended wire approx. 3mm (1/8") after the bend.
24. Trim the exposed wire ends so each overlaps the other but not the other's insulation.
25. Solder the two wire ends together, tied if necessary to keep them in place with a piece of thin tinned copper wire -see second picture above.
26. Slide the heat shrink tubing over the joined wires or wrap with PVC or self-amalgamating tape.
27. -see third picture above.
28. Taking the length of PVC pipe drill 7mm (1/4") holes through both sides approx. 25mm (1") from each end.

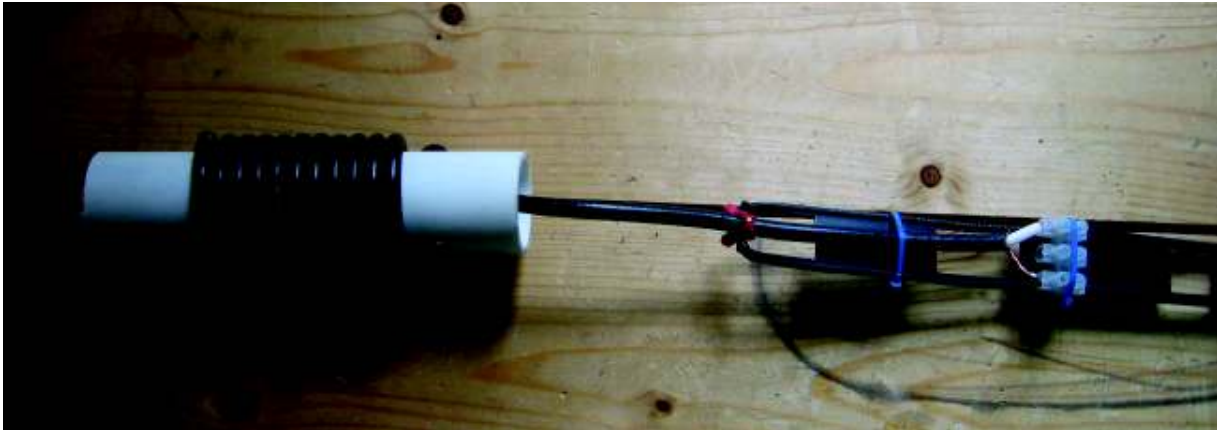


29. Make the Choke Balun as per Fig.2. using the holes on one side of the pipe for entry/exits points for the coax and on the other side for a cable tie to keep the coiled coax in place.



30. Join the end of the coax to the stepped off ladder line as per Fig. 2 in the diagram.

## Suggested Construction Approach for the G4FKK 4 Metre Slim Jim Antenna



Now you are ready for testing. You will either need to tie the SJ to a non-conductive pole or suspend from a non-conductive wire. In either case the bottom of the SJ should be at least 1 wavelength (i.e. 4 metres) above ground. SWR should be in the order of 1:1.1.