

# RW4HFN Limited Space Balcony Dipole Antennas

By: Igor Vakhreev, RW4HFN

If your antenna room is limited by balcony or attic you need think about a small antenna. Below you find a description of small antennas for HF amateur Bands 40- 10- meter.

There is a family of shortened dipole antennas with spiral loads on the ends. However the antennas can provide good result on the bands.

Figure 1 shows design of the shortened dipole antenna with spiral loads for the 10 meter band. MMANA file for the antenna you may download at: [http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm)

Figure 2 shows SWR of the antenna. Figure 3 shows DD of the antenna. As you can see DD of the shortened antenna is almost similar to DD usual dipole antenna, so it is not shown for others antennas.

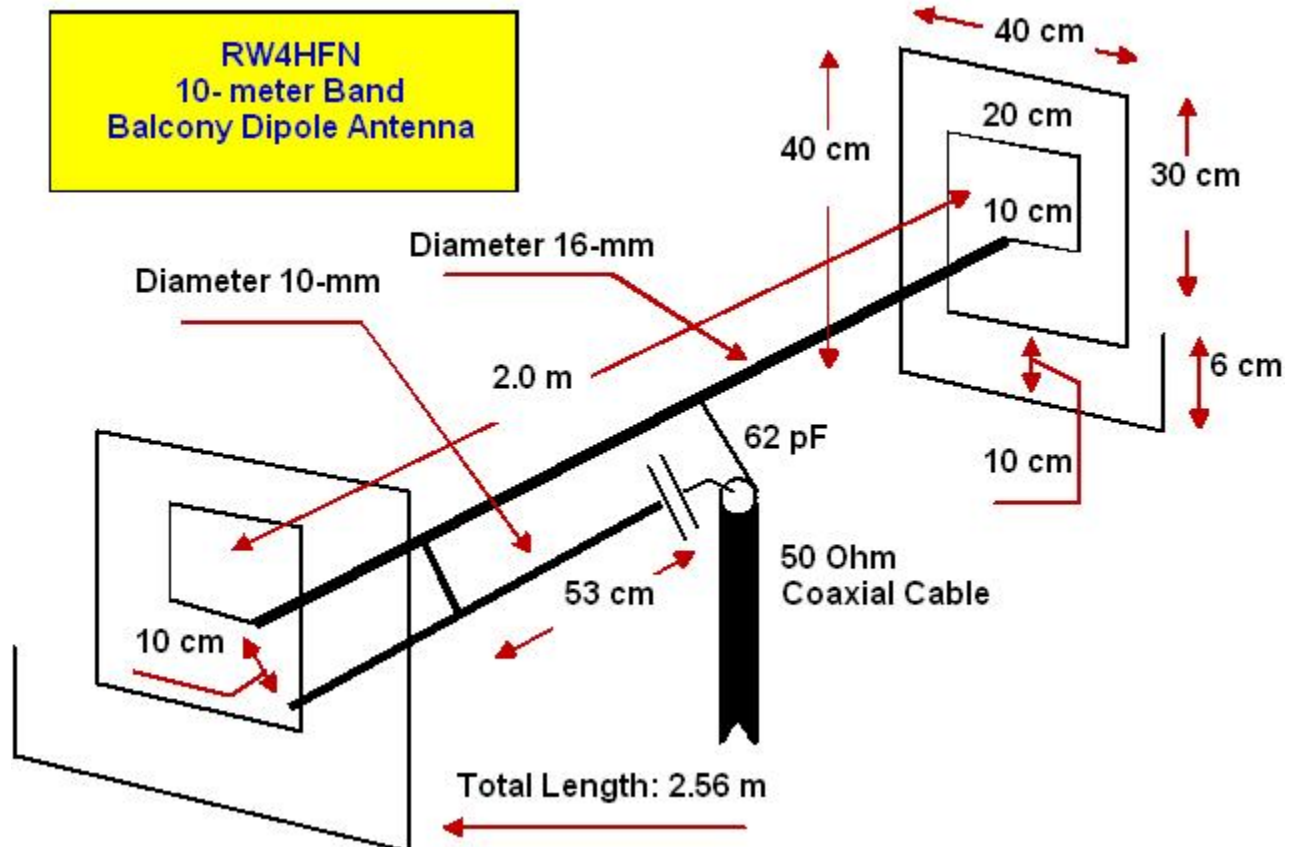


Figure 1 Design of the Shortened Dipole Antenna with Spiral Loads for the 10 meter Band

Spiral loads of the antenna made like a rectangle, distance between sides is 10- cm, first horizontal and vertical side is 10 cm long, then sides grow according to winding. Antennas for 30- 10- meter Band were simulated with length in 2- meter, main vibrator was simulated from aluminum tube in diameter of 16- mm, gamma match simulated from aluminum tube in diameter of 10- mm. Distance between vibrator and gamma match is 10- cm.

Spiral loads may be made from aluminum or copper wire in 1- 2- mm diameter. Antenna may be tuned in usual way- with length of gamma match and capacitors (match the input impedance) and with length of the spiral load (tune to resonance).

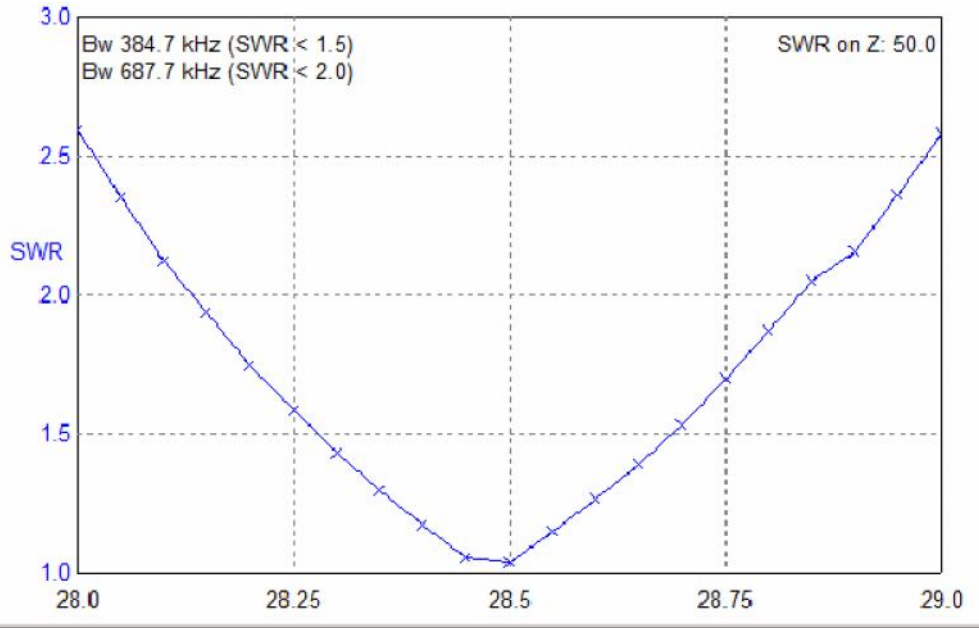


Figure 2 SWR of the Shortened Dipole Antenna with Spiral Loads for the 10 meter Band

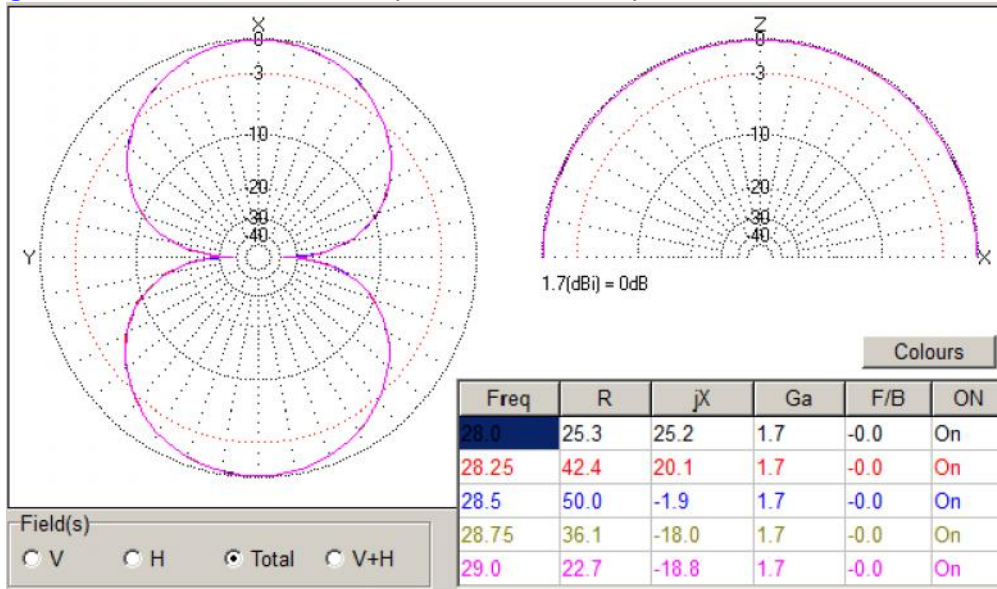


Figure 3 DD of the Shortened Dipole Antenna with Spiral Loads for the 10 meter Band

Figure 4 shows design of the shortened dipole antenna with spiral loads for the 11 meter band. MMANA file for the antenna you may download at:

[http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm)

Figure 5 shows SWR of the antenna.

Figure 6 shows design of the shortened dipole antenna with spiral loads for the 12 meter band. MMANA file for the antenna you may download at:

[http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm)

Figure 7 shows SWR of the antenna.

Figure 8 shows design of the shortened dipole antenna with spiral loads for the 15 meter band. MMANA file for the antenna you may download at:

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Figure 9 shows SWR of the antenna.

Figure 10 shows design of the shortened dipole antenna with spiral loads for the 17 meter band. MMANA file for the antenna you may download at:

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Figure 11 shows SWR of the antenna.

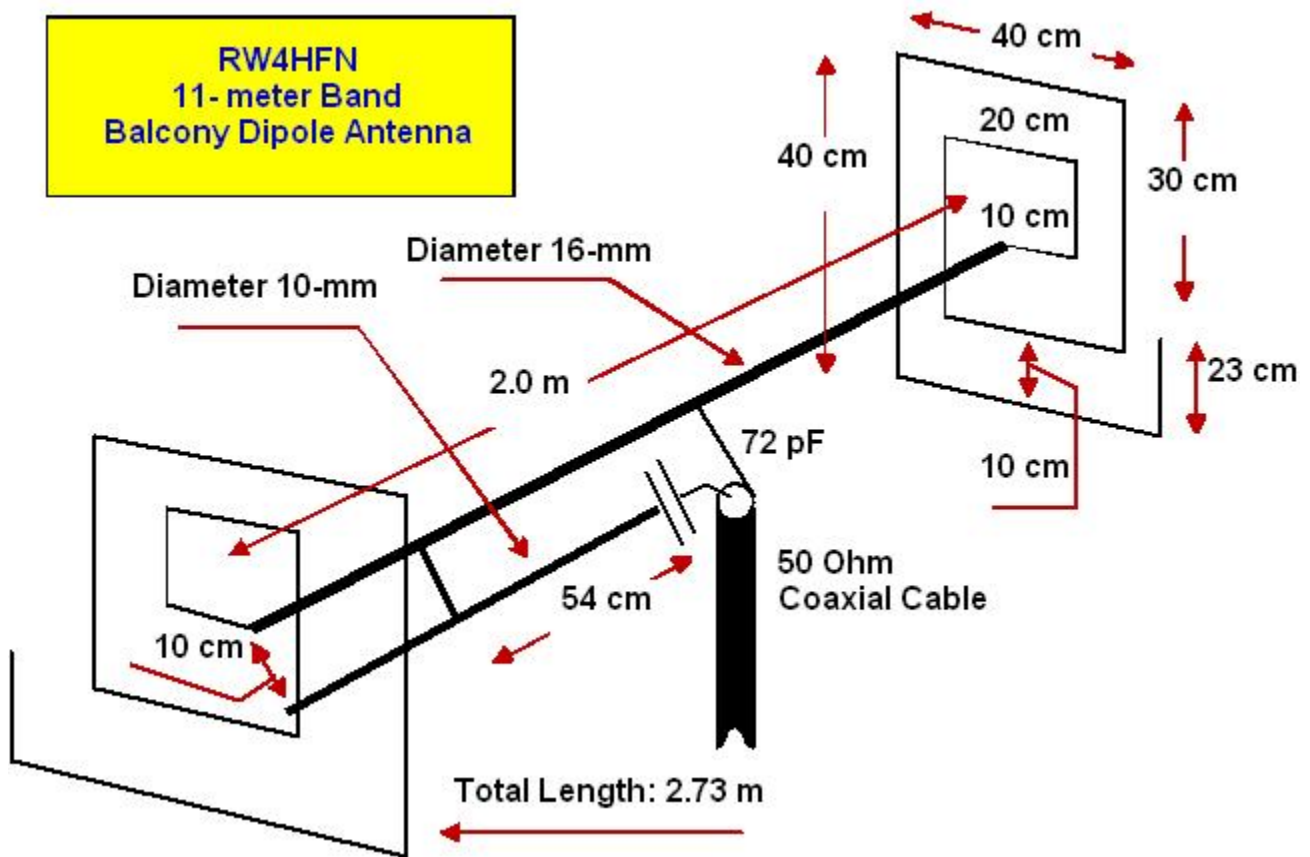


Figure 4 Design of the Shortened Dipole Antenna with Spiral Loads for the 11 meter Band

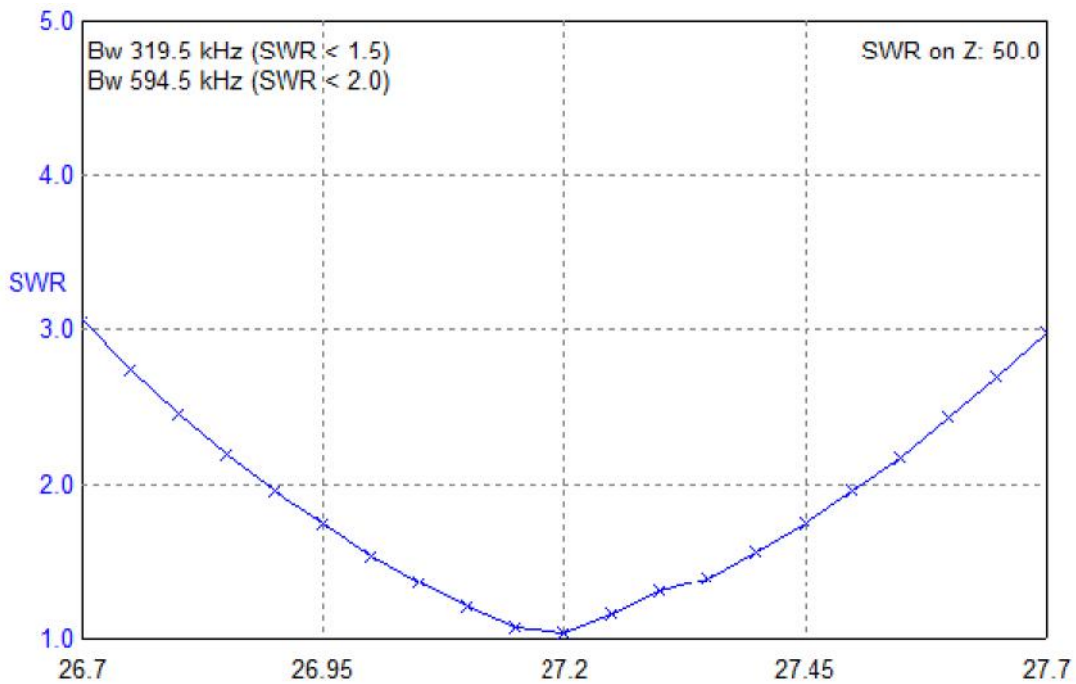


Figure 5 SWR of the Shortened Dipole Antenna with Spiral Loads for the 11 meter Band

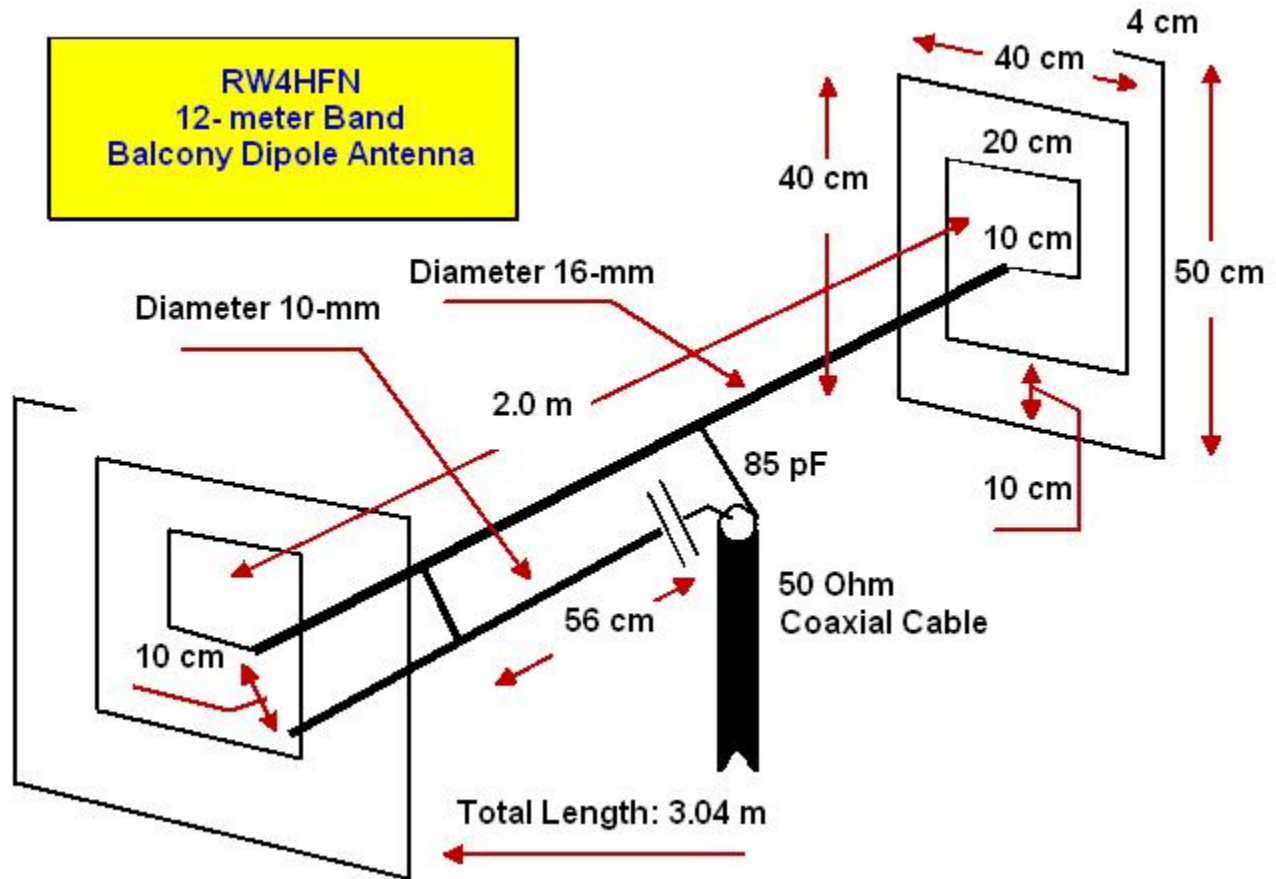


Figure 6 Design of the Shortened Dipole Antenna with Spiral Loads for the 12 meter Band

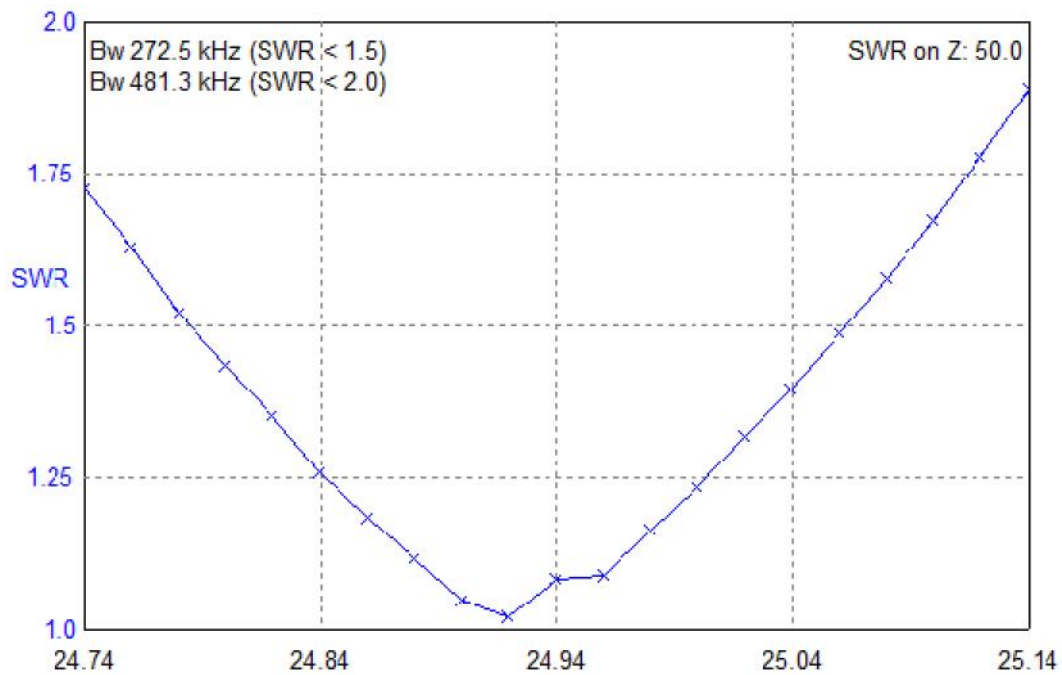


Figure 7 SWR of the Shortened Dipole Antenna with Spiral Loads for the 12 meter Band

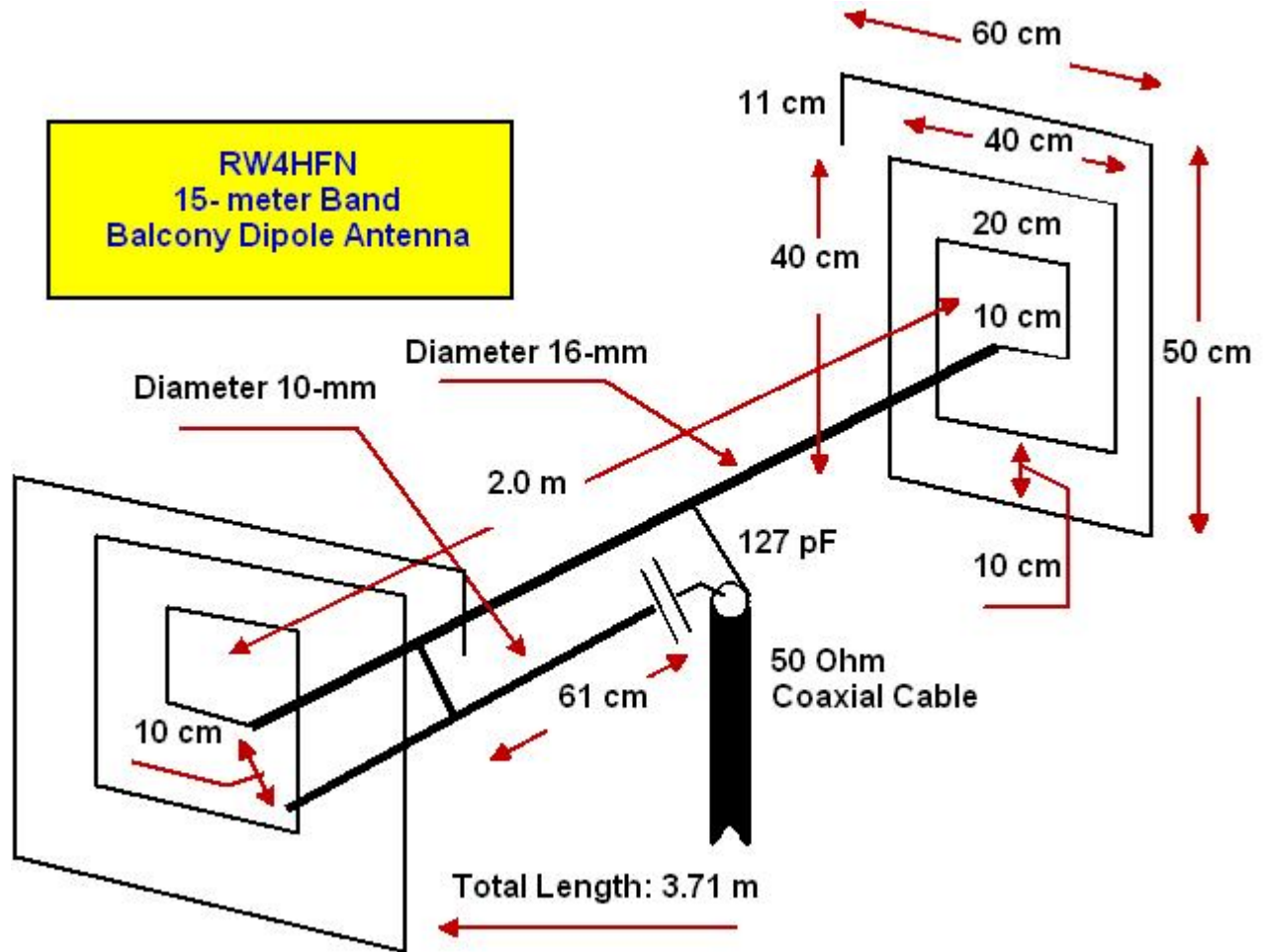


Figure 8 Design of the Shortened Dipole Antenna with Spiral Loads for the 15 meter Band

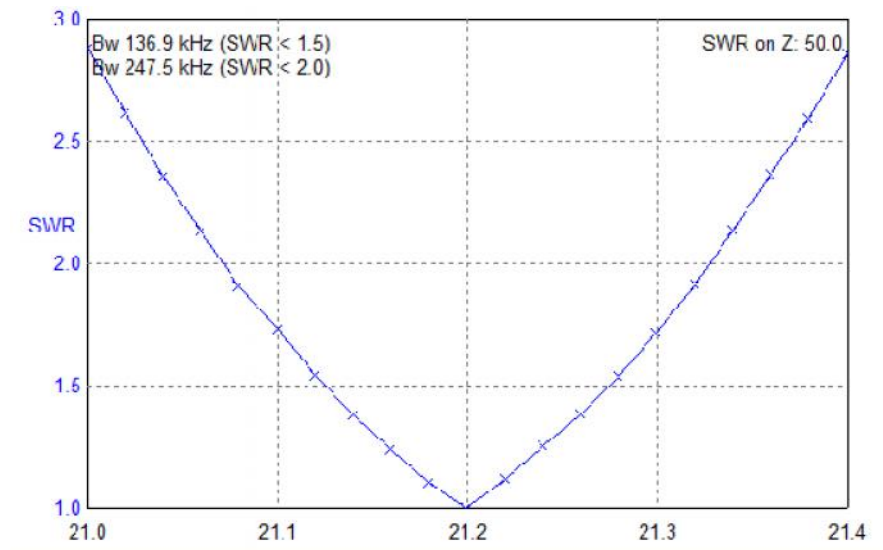


Figure 9 SWR of the Shortened Dipole Antenna with Spiral Loads for the 15 meter Band

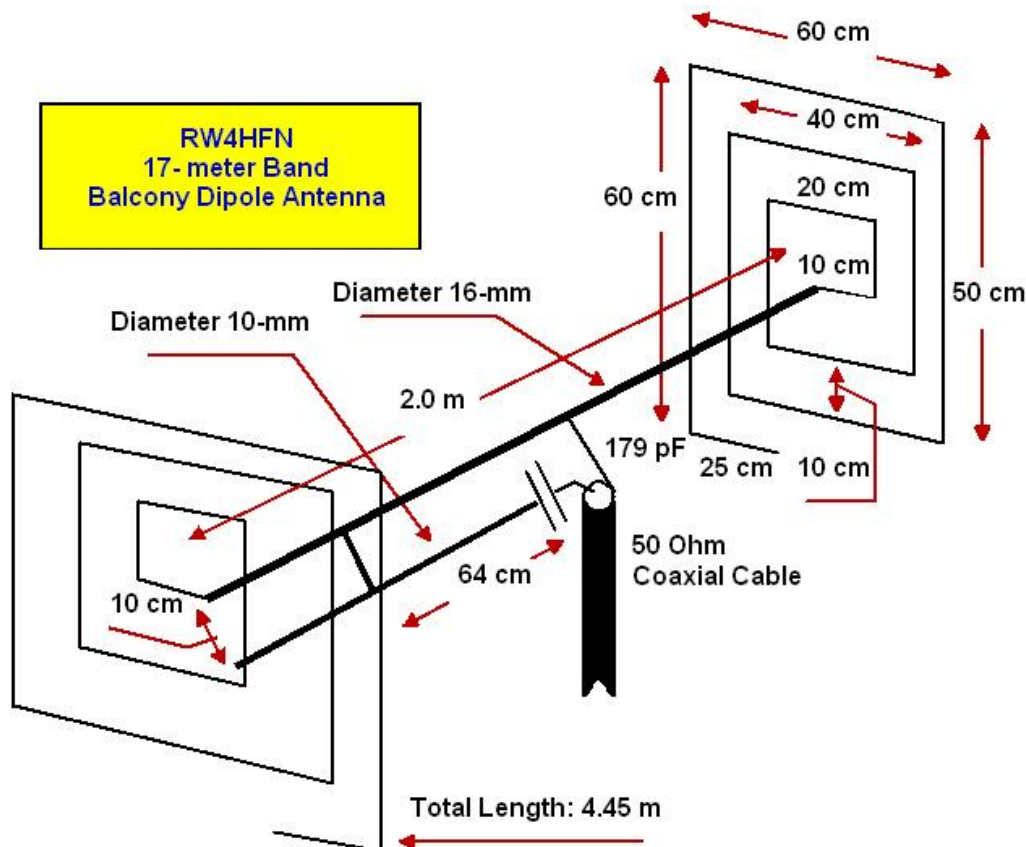


Figure 10 Design of the Shortened Dipole Antenna with Spiral Loads for the 17 meter Band

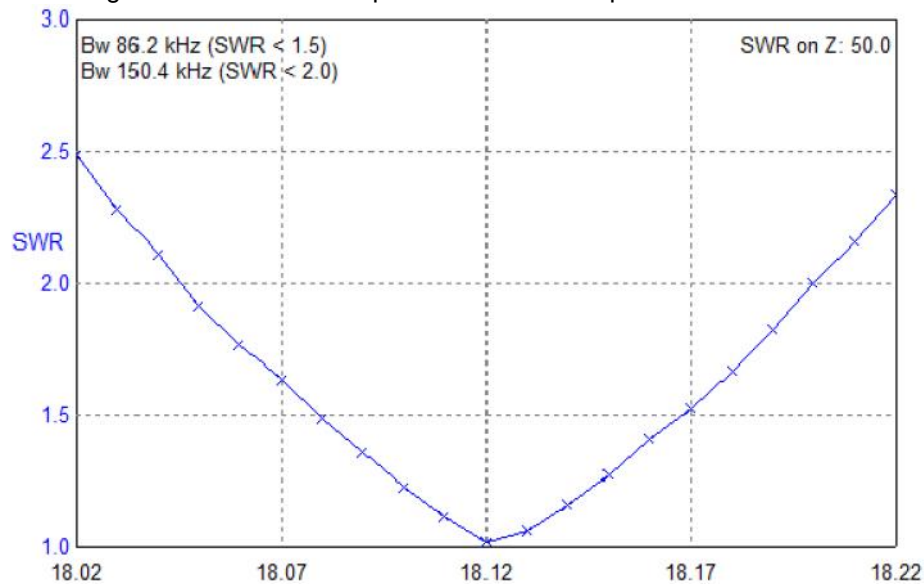


Figure 11 SWR of the Shortened Dipole Antenna with Spiral Loads for the 17 meter Band

Figure 12 shows design of the shortened dipole antenna with spiral loads for the 20 meter band. MMANA file for the antenna you may download at:

[http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm)

Figure 13 shows SWR of the antenna.

Figure 14 shows design of the shortened dipole antenna with spiral loads for the 30 meter band. MMANA file for the antenna you may download at:

[http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm)

Figure 15 shows SWR of the antenna.

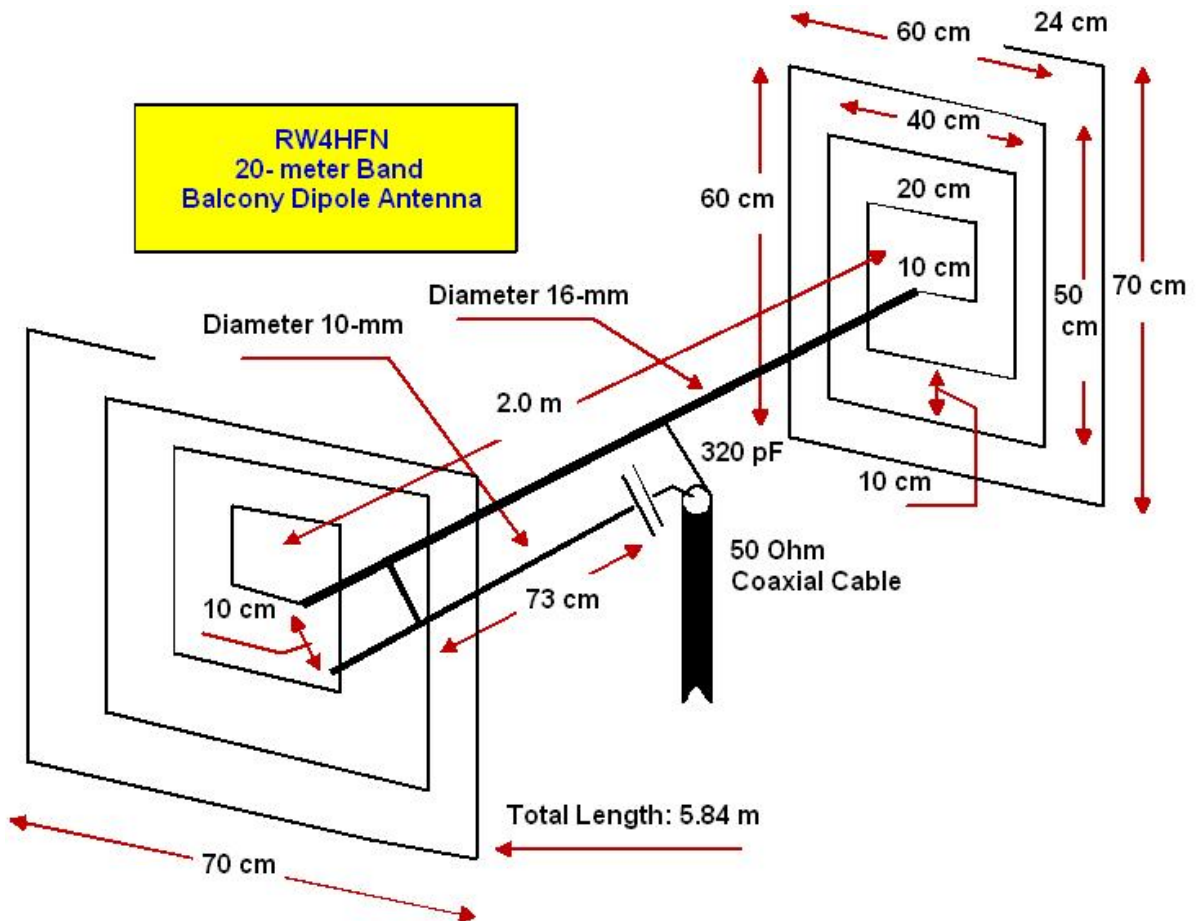


Figure 12 Design of the Shortened Dipole Antenna with Spiral Loads for the 20 meter Band

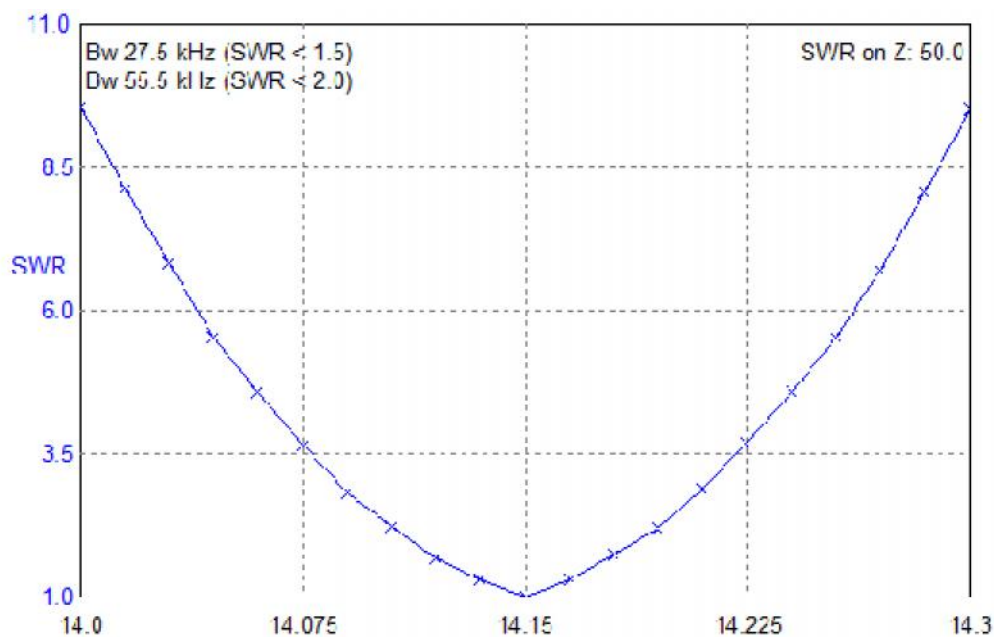


Figure 13 SWR of the Shortened Dipole Antenna with Spiral Loads for the 20 meter Band

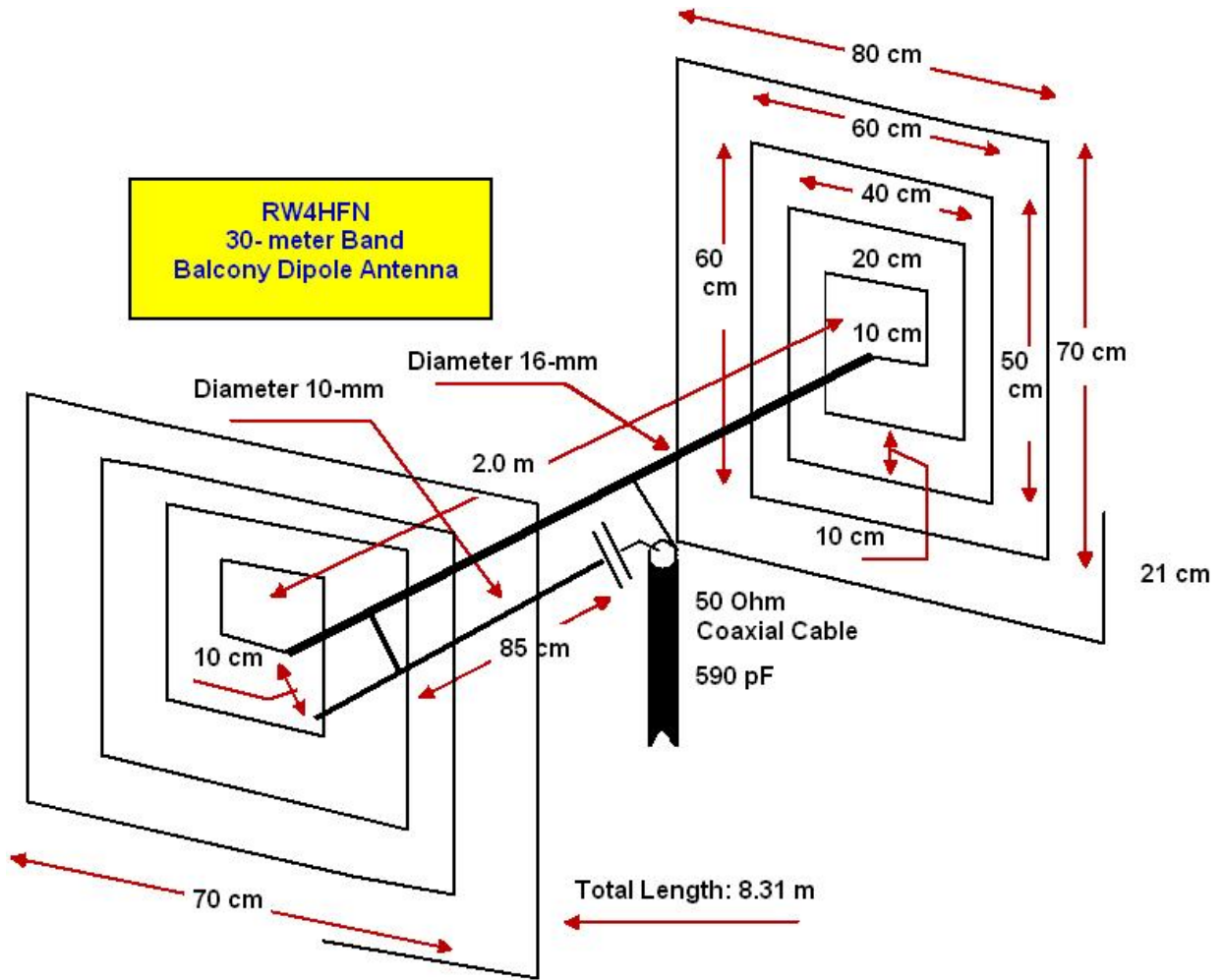


Figure 14 Design of the Shortened Dipole Antenna with Spiral Loads for the 30 meter Band

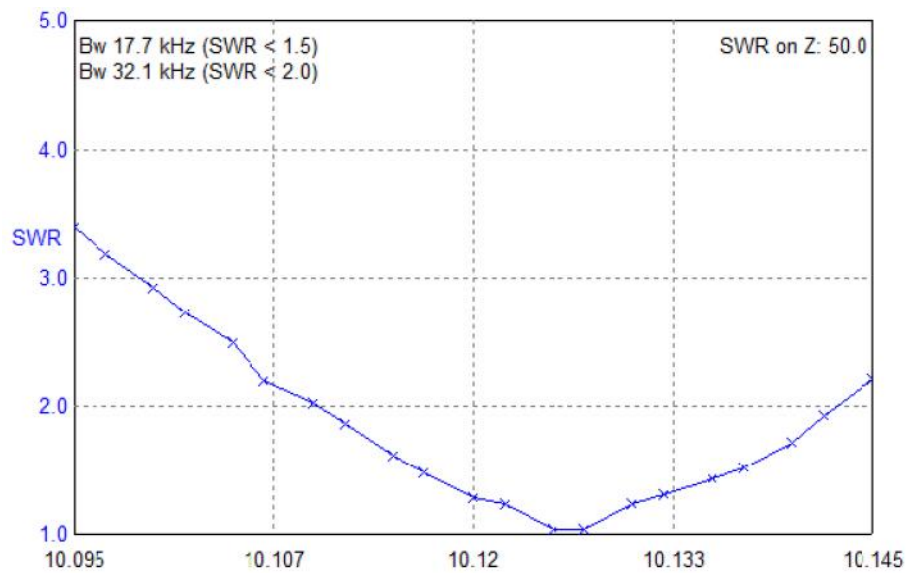


Figure 15 SWR of the Shortened Dipole Antenna with Spiral Loads for the 30 meter Band



Figure 16 shows two designs of the shortened dipole antenna with spiral loads for the 40 meter band. Spiral loads of the both antennas made like a rectangle, distance between sides is 10- cm, first horizontal and vertical side is 10 cm long, then sides grow according to winding.

First antenna was simulated with length in 3- meter, main vibrator was simulated from aluminum tube in diameter of 25- mm, gamma match simulated from aluminum tube in diameter of 12- mm. Distance between vibrator and gamma match is 10- cm.

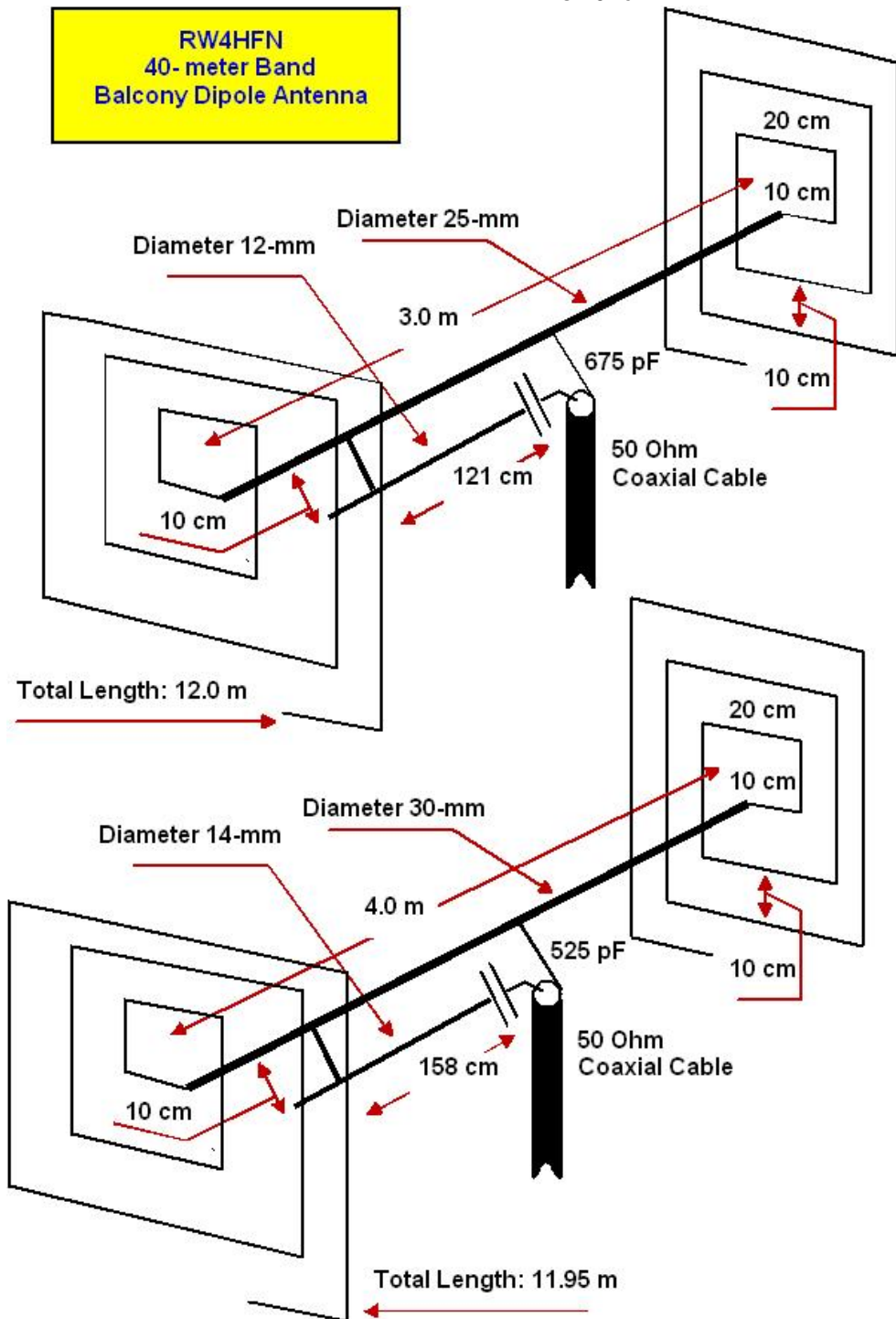


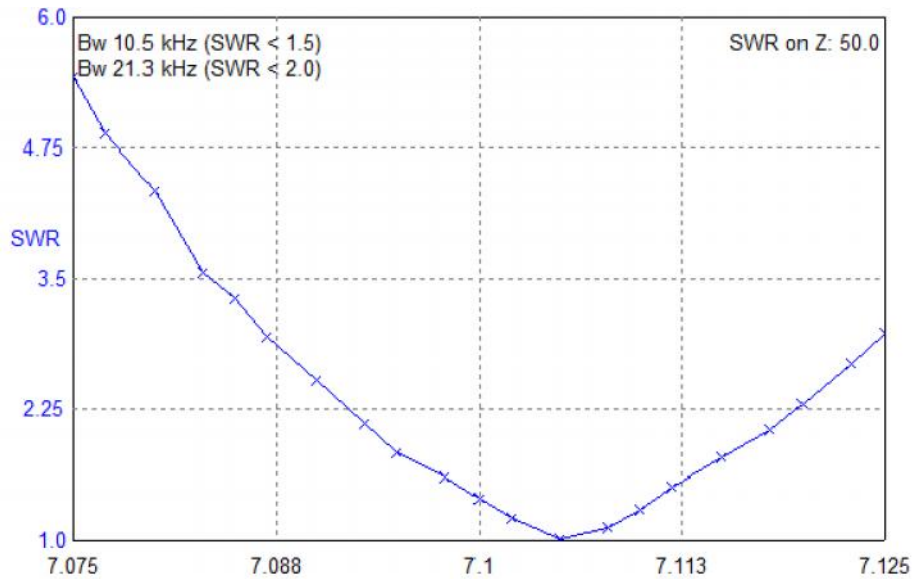
Figure 16 Design of the Shortened Dipole Antenna with Spiral Loads for the 40 meter Band

Second antenna was simulated with length in 4- meter, main vibrator was simulated from aluminum tube in diameter of 30- mm, gamma match simulated from aluminum tube in diameter of 14- mm. Distance between vibrator and gamma match is 10- cm.

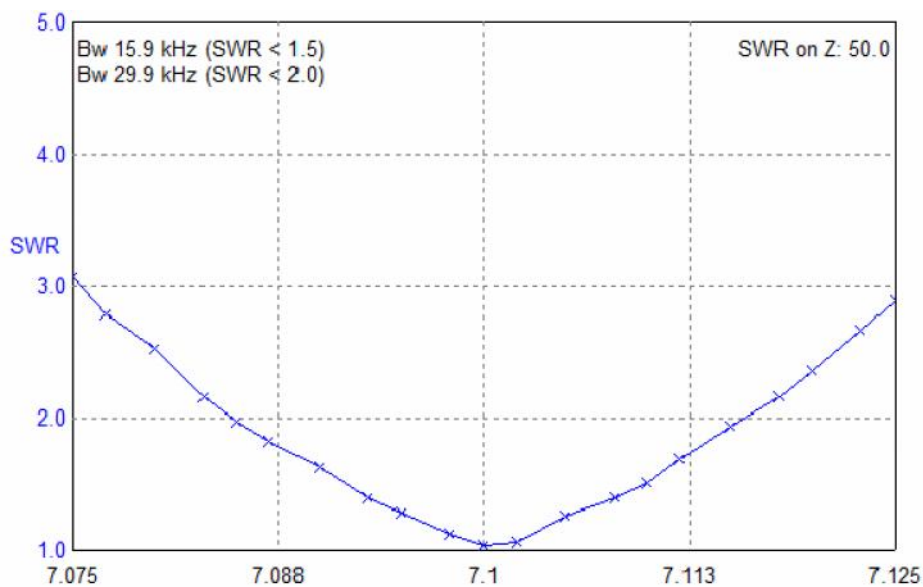
Antenna may be tuned in usual way- with length of gamma match and capacitors (match the input impedance) and with length of the spiral load (tune to resonance).

Spiral loads may be made from aluminum or copper wire in 1- 2- mm diameter.

MMANA file for the antenna you may download at: [http://www.antentop.org/023/RW4HFN\\_023.htm](http://www.antentop.org/023/RW4HFN_023.htm) **Figure 17** shows SWR for the 3- m length antenna. **Figure 18** shows SWR for the 4- m length antenna.



**Figure 17** SWR of the Shortened 3- meter Length Dipole Antenna with Spiral Loads for the 40 meter Band



**Figure 18** SWR of the Shortened 4- meter Length Dipole Antenna with Spiral Loads for the 40 meter Band