All- Metall Three Element Antennas for the 145- MHz Band

Credit Line: Forum at www.qrz.ru

All- Metal Antennas are very often used at VHF. The antennas have advantages compare to some other antenna designs. All- Metal antennas are easy to make because very often such antennas are made from one length of a thick strand wire. For some design of the All- Metal Antennas it is possible to use metal traverse that is grounded to the main mast. It is conveniently for design and safety for the lighting strike. Several designs of the All- Metal Antennas for the 145- MHz Band are described below.

UA0SNM All- Metal Three Element Antenna for the 145- MHz Band

Valery Suchenkin, UA0SNM

Design of the All- Metal Three Element Antenna is shown on the **Figure 1.** The antenna may be made of copper tube or stranded aluminum wire. Diameter of the tube or wire may be 6… 12- mm. **Figure 2** shows mast with HF-Antennas where the All- Metal Three Element Antenna is installed. **Figure 3** shows close view of the antenna.

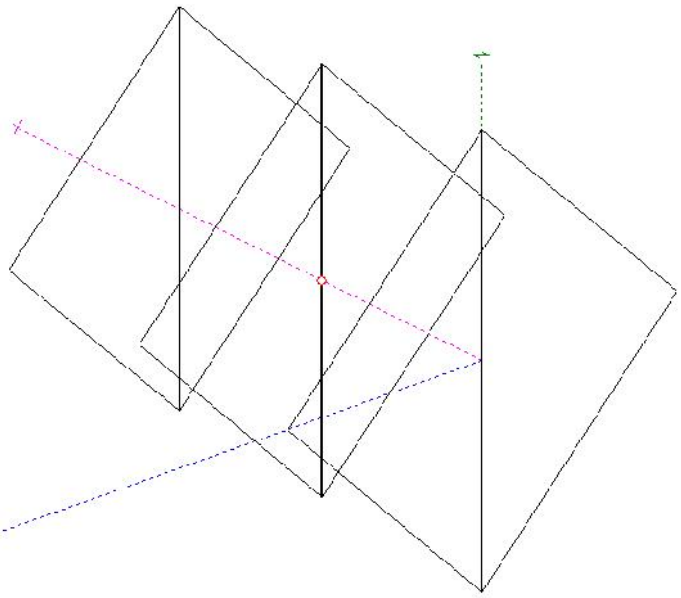


Figure 1 Design of the All- Metal Three Element Antenna

A. 3-D View

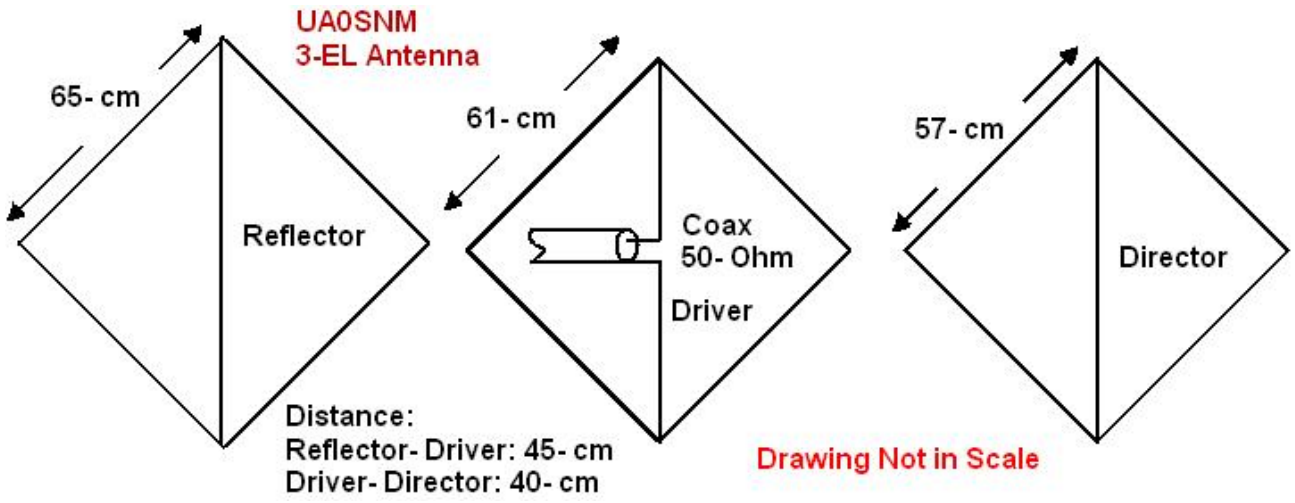


Figure 1 Design of the All- Metal Three Element Antenna

B. Each Element Design

Figure 2 Antenna Mast with the All- Metal Three Element Antenna

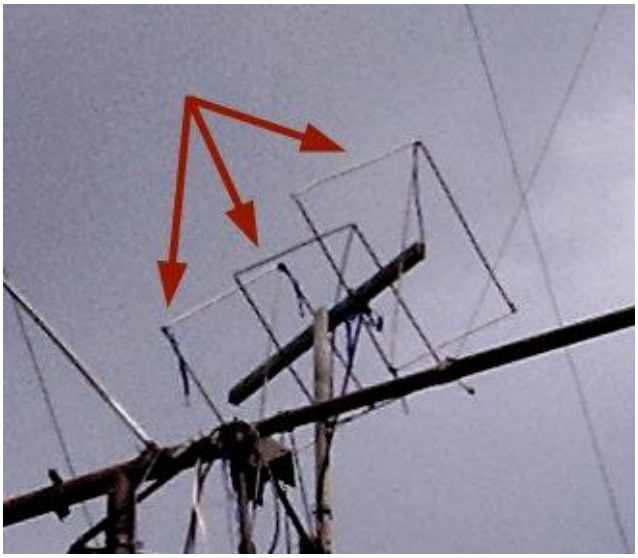


Figure 3 Close View of the All- Metal Three Element Antenna on the Mast

UA0SNM states that in his case the antenna has input impedance close to 50- Ohm. It allows feed the antenna with 50- Ohm coaxial cable. Gain of the antenna was 11- dB. Antenna radiates radio wave with both vertical and horizontal polarization. It allows make QSOs with radio stations where used to antennas with vertical or horizontal polarization.

Igor, RW4HFN, made a file MMANA for the antenna. The file was simulated in the MMANA. **Figure 4** shows input impedance of the All- Metal Three Element Antenna. **Figure 5** shows SWR of the All- Metal Three Element Antenna. **Figure 6** shows DD of the All- Metal Three Element Antenna.

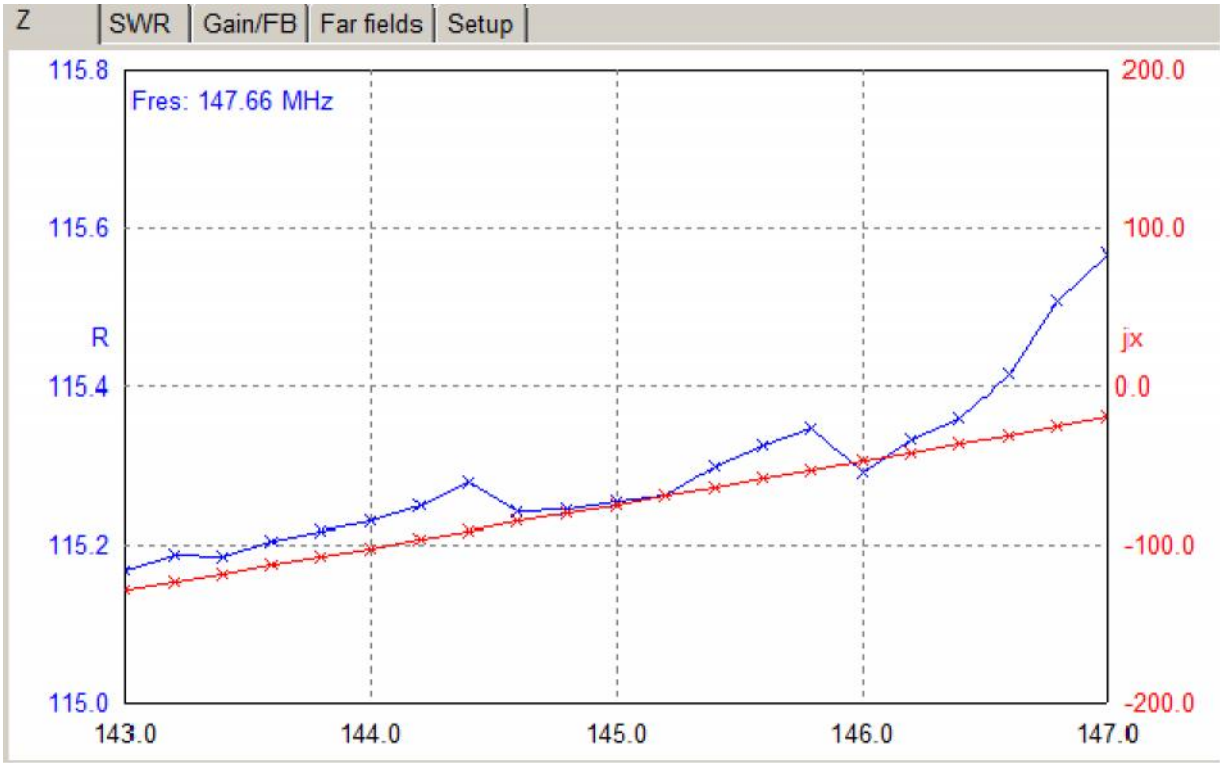


Figure 4 Input Impedance of the All- Metal Three Element Antenna

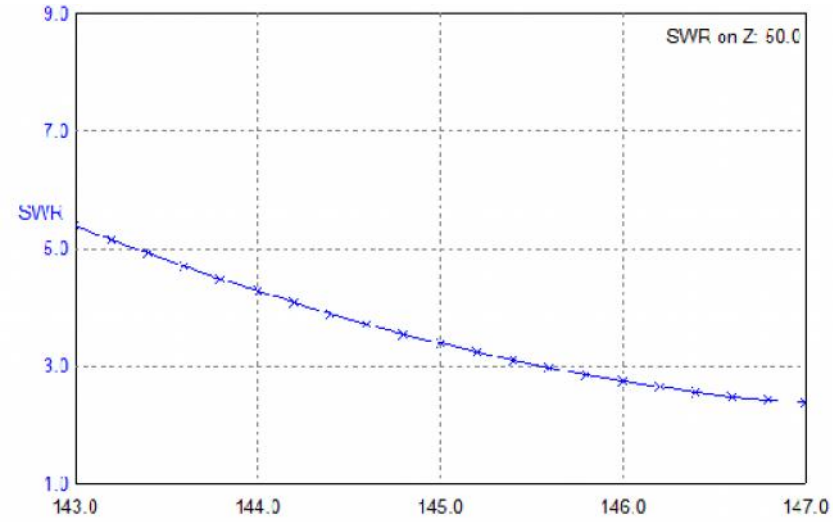
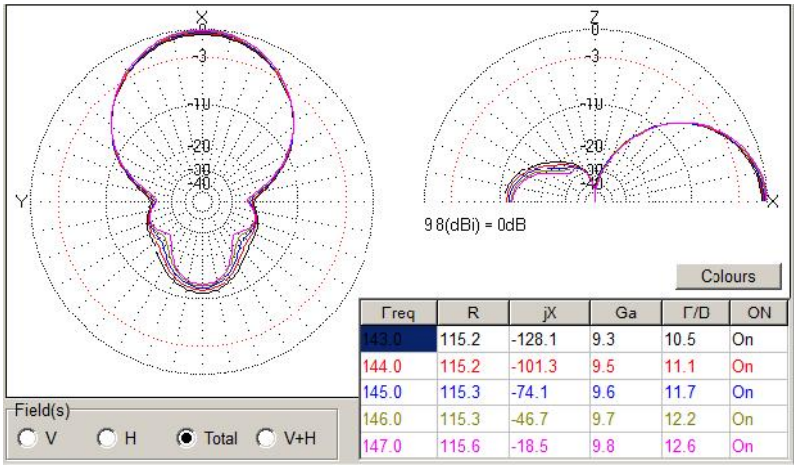


Figure 5 SWR of the All- Metal Three Element Antenna



Freq	R	jX	Ga	Γ/D	ON
143.0	115.2	-128.1	9.3	10.5	On
144.0	115.2	-101.3	9.5	11.1	On
145.0	115.3	-74.1	9.6	11.7	On
146.0	115.3	-46.7	9.7	12.2	On
147.0	115.6	-18.5	9.8	12.6	On

Figure 6 DD of the All- Metal Three Element Antenna

As you can see, MMANA shows different data compare to the stated by UA0SNM. However, the differences may be explained by the influences of the nearest subjects to the antenna. Coaxial cable of the proper length also could be transformed the antenna impedance to the 50- Ohm at transmitter side.

File MMANA for the All- Metal Three Element Antenna could be downloaded at:
http://www.antentop.org/017/all_metal_017.htm

RW4HFN All- Metal Three Element Antennas for the 145- MHz Band

Igor Vakhreev, RW4HFN

Igor gives modified by him files MMANA with all- metal three element antennas for the 145- MHz Band.

One of the files contained a wide known Twin Delta Antenna. The antenna is not sensitive to nearest objects. Antenna elements maybe make from a length of a strand aluminum wire or a copper tube. Parameters of the Twin Delta Antenna are better compare to the antenna UA0SNM.

Figure 7 shows design of the antenna. The antenna may be made of a copper tube or stranded aluminum wire. Diameter of the tube or wire may be 6… 12- mm. **Figure 8** shows impedance of the Three Element Twin Delta Antenna for the 145- MHz Band. **Figure 9** shows SWR of the Three Element Twin Delta Antenna for the 145- MHz Band. **Figure 10** shows DD of the Three Element Twin Delta Antenna for the 145- MHz Band.

File MMANA for the All- Metal Three Element Twin Delta Antenna could be downloaded at:
http://www.antentop.org/017/all_metal_017.htm

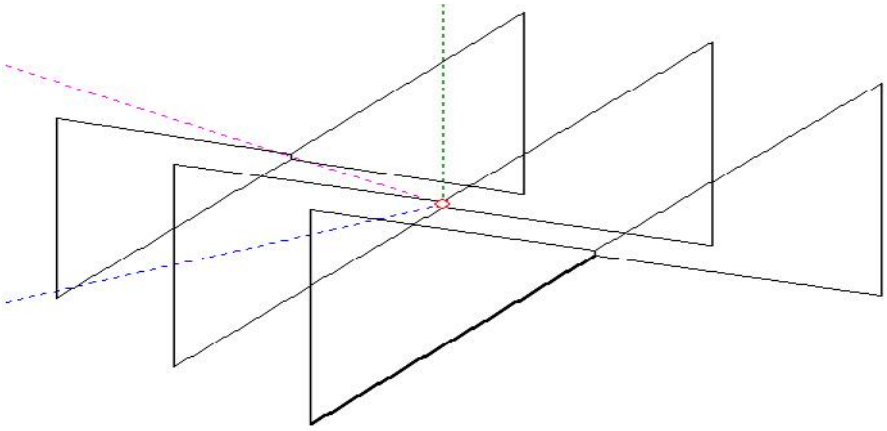


Figure 7 Design of the Three Element Twin Delta Antenna for the 145- MHz Band
A: 3D View

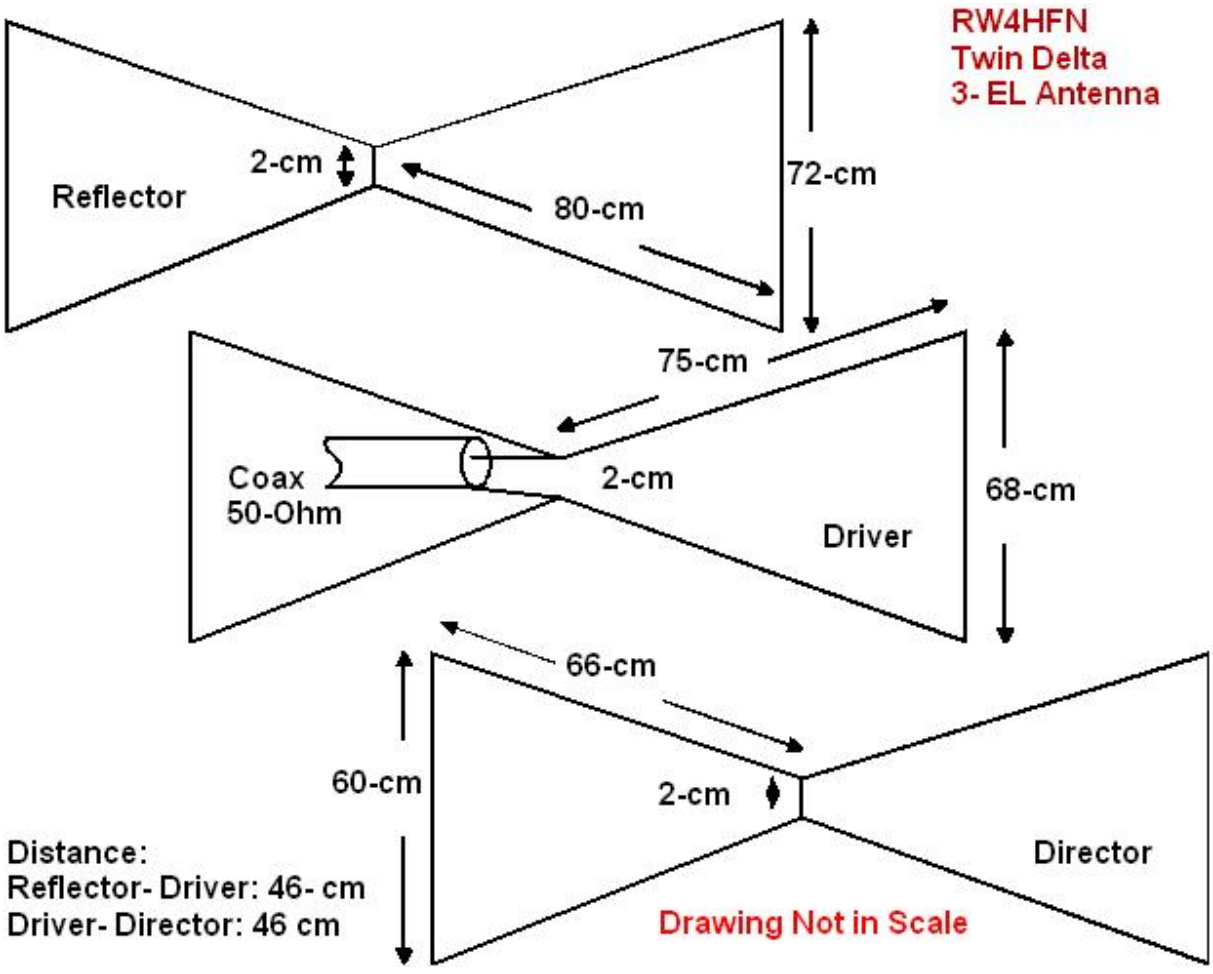


Figure 7 Design of the Three Element Twin Delta Antenna for the 145- MHz Band

B: Each Element Design

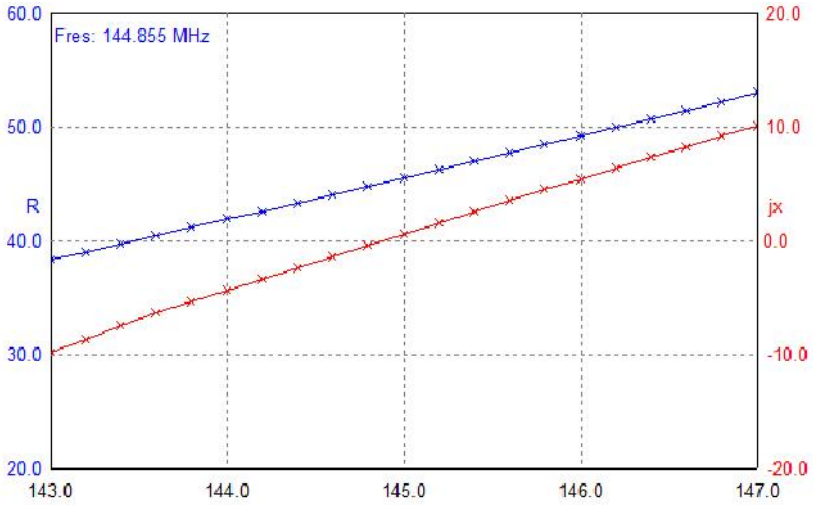


Figure 8 Impedance of the Three Element Twin Delta Antenna for the 145- MHz Band

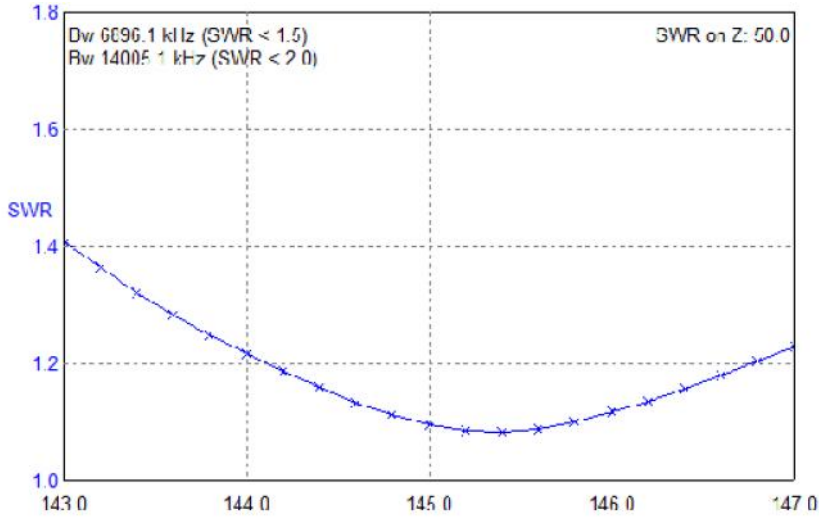


Figure 9 SWR of the Three Element Twin Delta Antenna for the 145- MHz Band

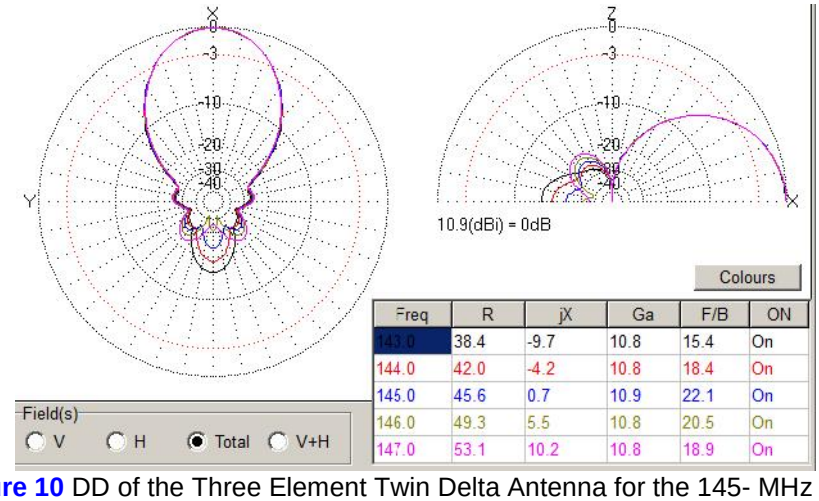


Figure 10 DD of the Three Element Twin Delta Antenna for the 145- MHz Band

Second of the files contained a wide known Hentenna Antenna. The antenna is not sensitive to nearest objects. Antenna elements maybe make from a length of a strand aluminum wire or a copper tube. Parameters of the Hentenna Antenna are better compare to the antenna UA0SNM.

Figure 11 shows design of the antenna. The antenna may be made of a copper tube or stranded aluminum wire. Diameter of the tube or wire may be 6… 12- mm. **Figure 12** shows impedance of the Three Element Hentenna Antenna for the 145- MHz Band. **Figure 13** shows SWR of the Three Element Hentenna Antenna for the 145- MHz Band. **Figure 14** shows DD of the Three Element Hentenna Antenna for the 145- MHz Band.

File MMANA for the Three Element Hentenna Antenna could be downloaded at:
http://www.antentop.org/017/all_metal_017.htm

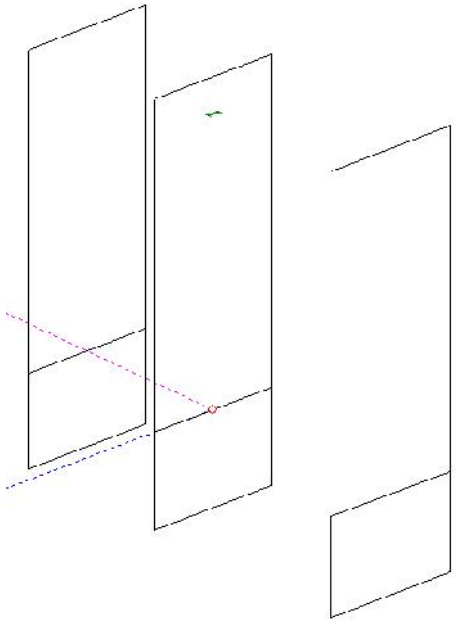


Figure 11 Design of the Three Element Hentenna Antenna for the 145- MHz Band
A: 3D View

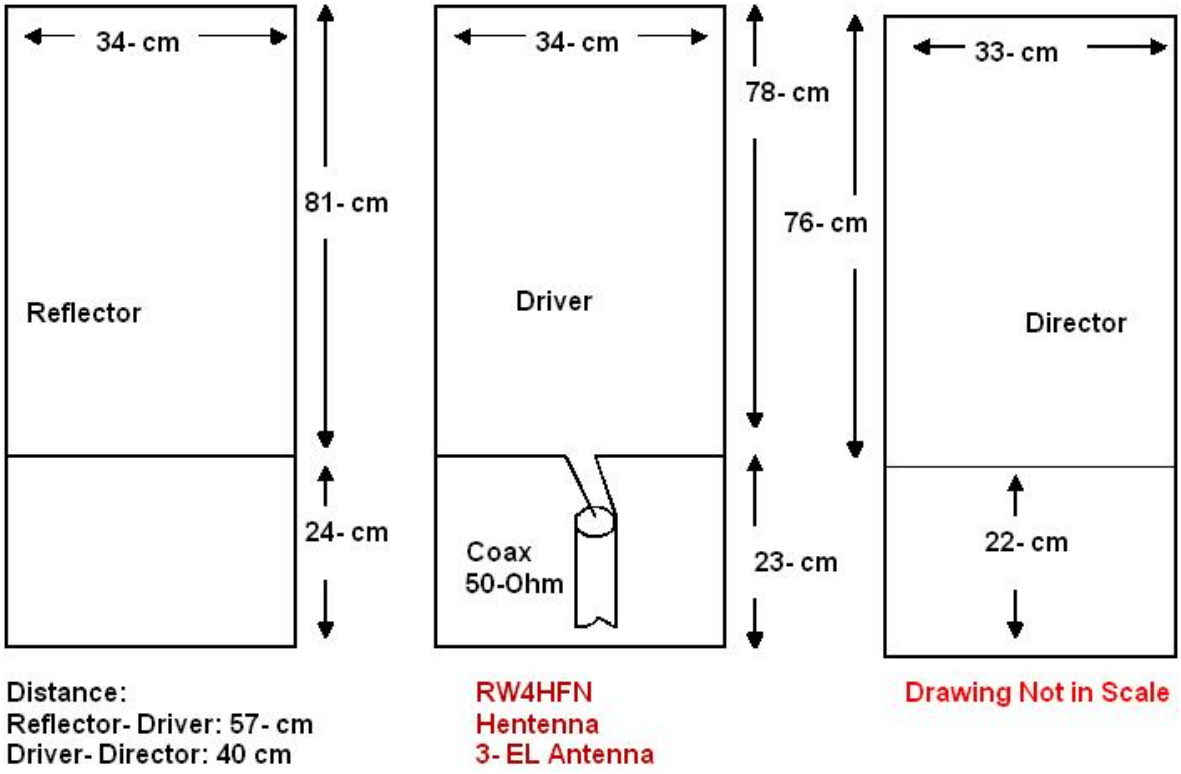


Figure 11 Design of the Three Element Hentenna Antenna for the 145- MHz Band
B: Each Element Design

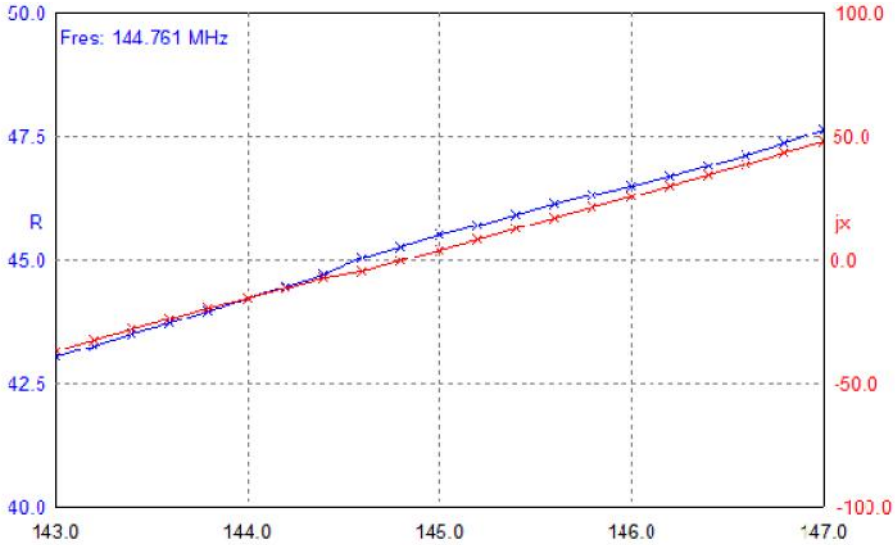


Figure 12 Impedance of the Three Element Hentenna Antenna for the 145- MHz Band

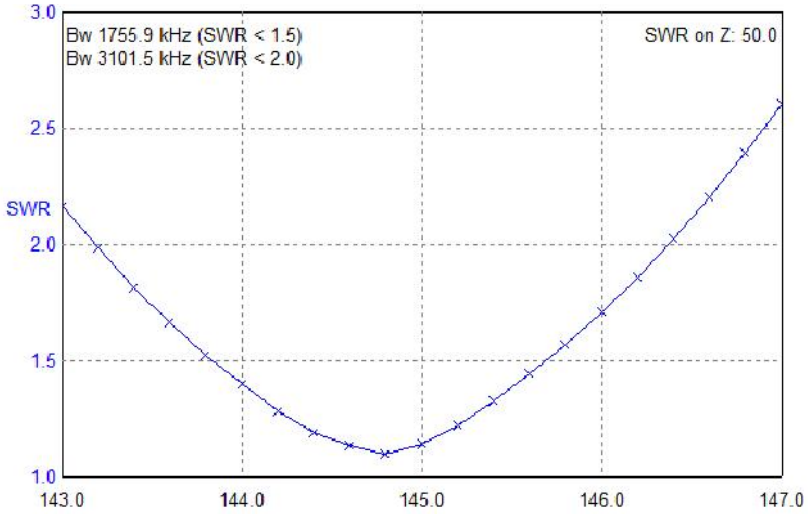


Figure 13 SWR of the Three Element Hentenna Antenna for the 145- MHz Band

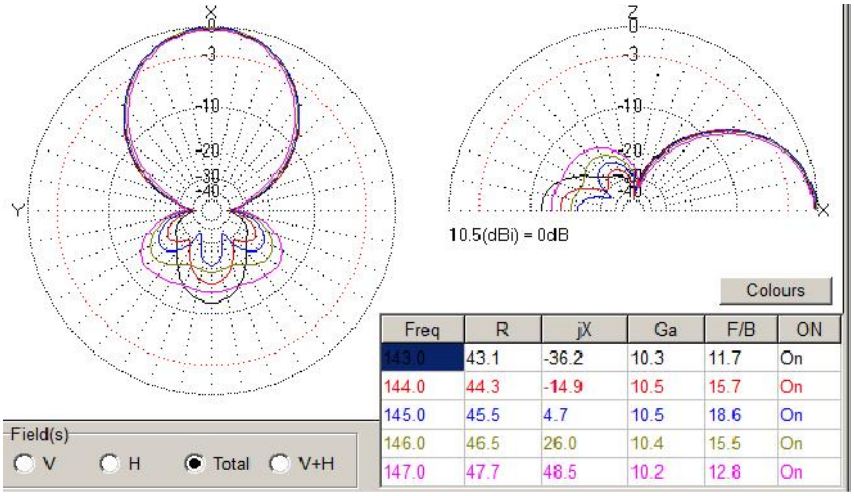


Figure 14 DD of the Three Element Hentenna Antenna for the 145- MHz Band