Antenna "Strela"

UA4SZ Valery F. Kiselev

Credit Line: Forum at:
www.cqham.ru and www.qrz.ru

Antenna Strela (in transcription from Russian it means “Arrow”) is a modification of the well-known dipole antenna Bazooka that is widely used by hams. **Figure 1** shows classical antenna “Bazooka.” (Credit Line: http://www.amateur-radio-wiki.net/images/1/18/Bazooka.jpg) Some parameters of the antenna Strela are even better compare to antenna Bazooka. Antenna Strela (similar to the Bazooka) is short- circuited through the stub.

However antenna Strela is contained less stuff for manufacture, antenna Strela is lighter then antenna Bazooka. Antenna Strela has good matching with the coaxial cable and SWR of the antenna on the working Band looks like better then Bazooka could provide there. **Figure 2** shows design of the antenna Strela.

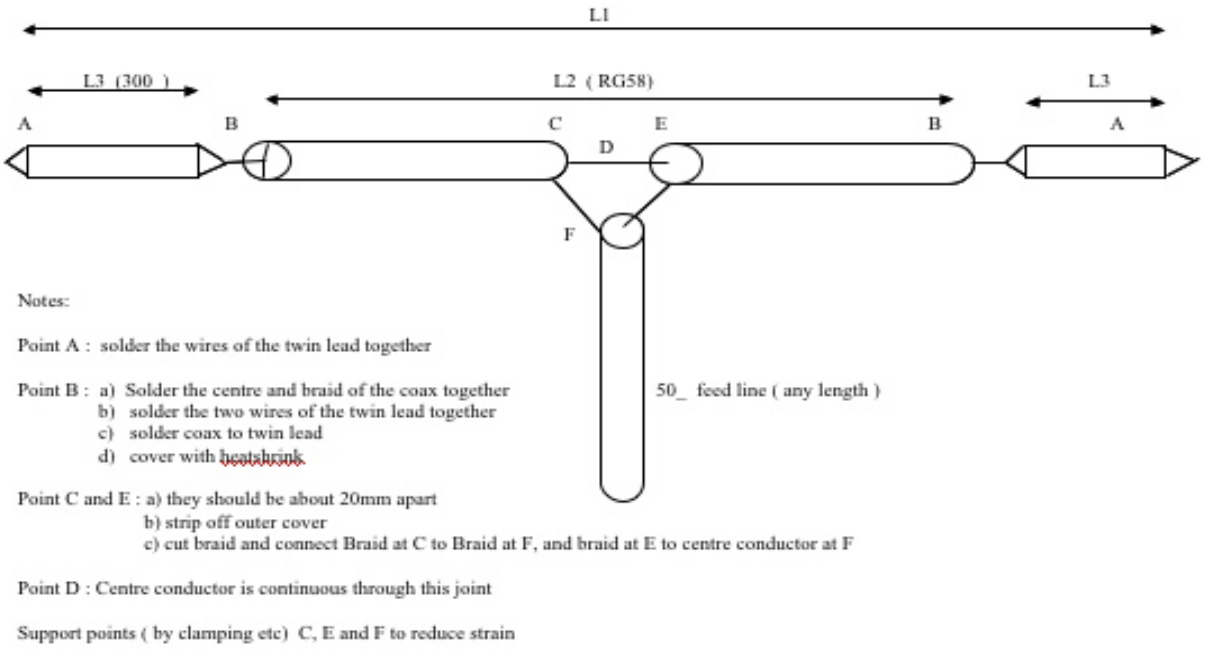

Figure 1 Classical antenna “Bazooka”

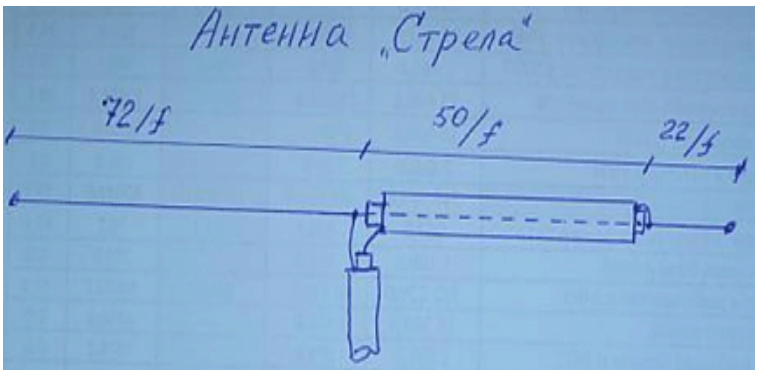

Figure 2 Antenna Strela

Figure 2 shows formulas to find the dimensions of the parts of the antenna. To find the dimensions (in meters) it needs the digit shown on the antenna parts to divide to the central working frequency (in MHz). It works for coaxial with shortening coefficient 0.66. For example, dimensions for antenna for the 40- meter Band (central frequency= 7.09- MHz) should be: 72/7.09= 10.15- meter, 50/7.09= 7.05- meter, 22/7.09= 3.1- meter.

Antenna Strela may be placed horizontally (preferably at height more the 0.25 lambda from the ground), may be installed vertically or at some angle to the ground. Antenna Strela may be installed similar to I.V. antenna. Stub for the antenna should be made from the coaxial cable that is used for feeding of the antenna. It is possible to use 50 or 75- Ohm coaxial cable for the antenna.

Antenna is tuned to the resonance by shorten of the left part and lengthen of the right part of the antenna.

R3EC
Credit Line for Photo:
http://ric.cqham.ru/bigphoto.php?c=R3EC

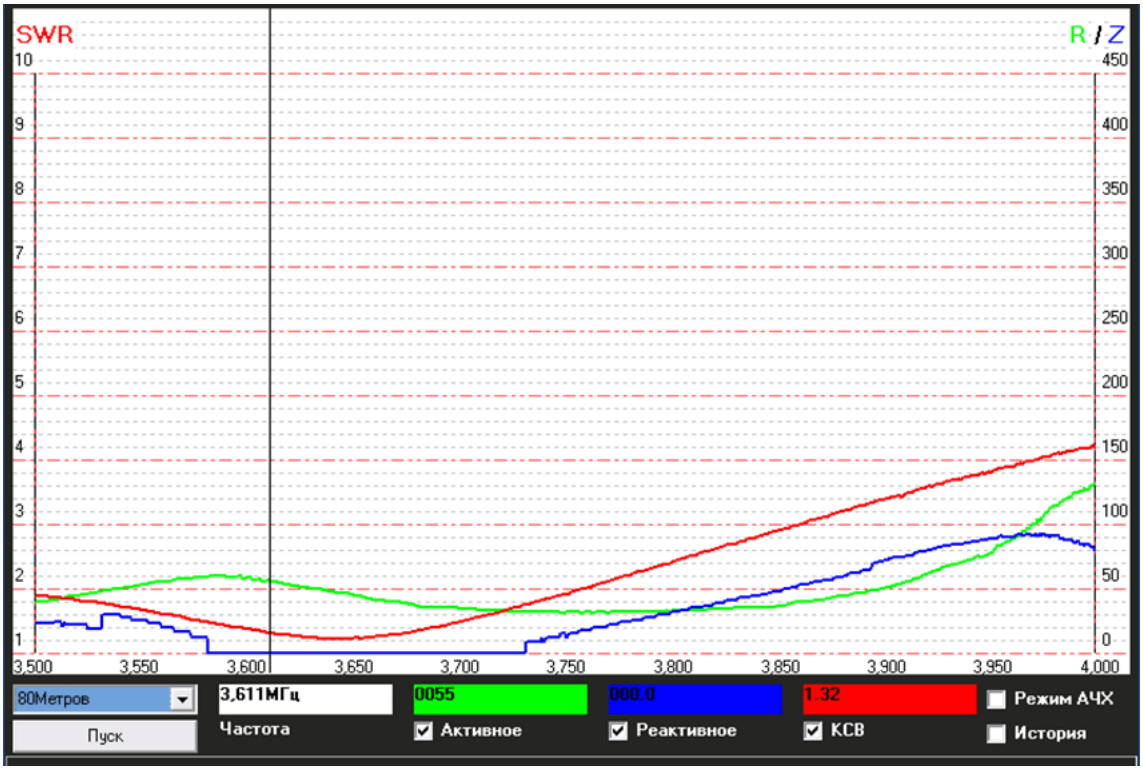

Figure 3 Parameters of the Antenna Strela at the frequencies from 3.5 up to 4.0- MHz

Prototype of the antenna was made by UA4SZ for 2- meter Band. Dimensions of the antenna: 49.5- 34.0- 15.0- cm. Antenna was installed vertically at a window. The antenna worked great!

R3EC made the antenna for the 80- meter Band. The antenna Strela was low- noise and very effective compare to usual dipole. **Figure 3** shows parameters of the antenna at the frequencies from 3.5 up to 4.0- MHz. At the figure Red color shows SWR Green color shows R Blue color shows Z.

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UA3NFI, Sergey, made antenna Strela for the 15-meter Band. **Figure 4** shows the antenna before installation**. Figure 5** shows the antenna on the roof.

Figure 4 Antenna Strela before installation

UA3NFI

Credit Line for Photo:
http://www.qrz.ru/callsign.phtml?callsign=UA3NFI

Figure 5 Antenna Strela on the roof

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The dimensions of the 15- meter Band antenna Strela were calculated with formulas from the **Figure 2**. It has got: 341.0- 237.0- 104.0- cm. However the real antenna did not shot the resonance. **Figure 6** shows parameters of the antenna at the frequencies from 1 up to 30- MHz. At the figure Red color shows SWR Green color shows R Blue color shows Z. The real Antenna had resonance at 20- MHz. Input impedance of the antenna was near 30- 40- Ohm at the frequency. The resonance frequency of the antenna was lowered due to the low height of the installation of the antenna.

The antenna was tuned in to resonance by shortening of the antenna parts. The right dimensions (at UA3NFI installation) were: 325.0- 225.0- 100.0- cm. **Figure 7** shows parameters of the antenna at the frequencies from 1 up to 30- MHz. Input impedance of the antenna was 60- 75- Ohm.

The antenna worked fine. However UA3NFI could compare the antenna only with dipole for the 10- meter Band that was tuned to the 15- meter band with ATU. Antenna Strela gives +10- dB over the 10- meter dipole.

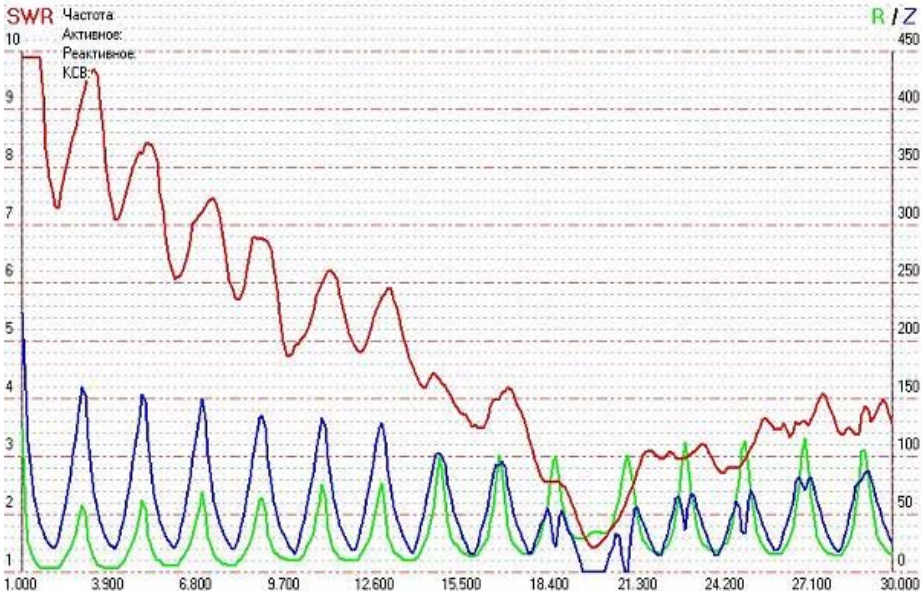

Figure 6 Parameters of the Antenna Strela at the frequencies from 1 up to 30- MHz before tuning in to resonance

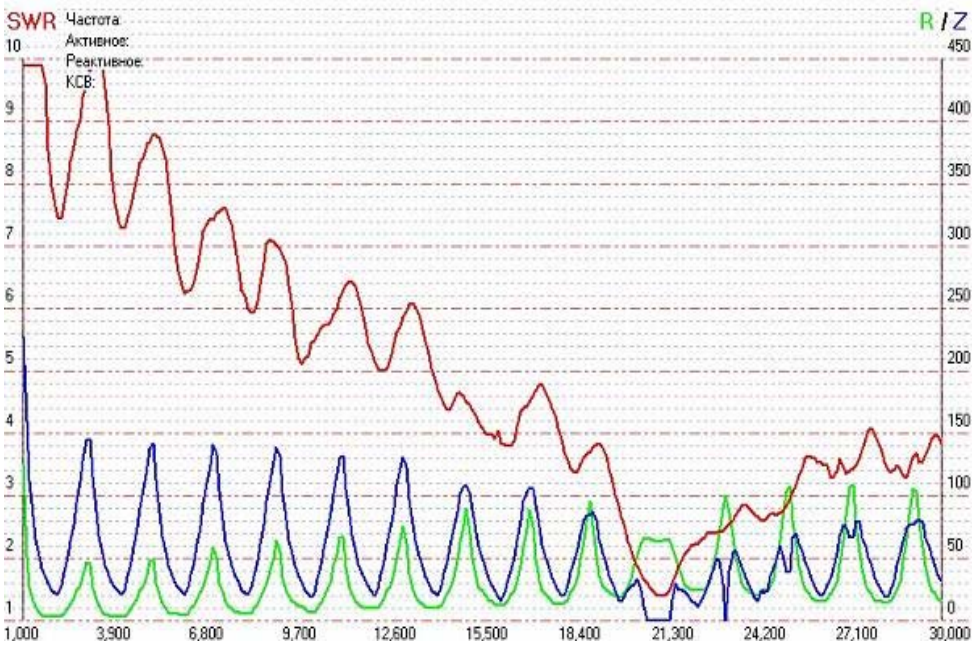

Figure 7 Parameters of the Antenna Strela at the frequencies from 1 up to 30- MHz after set up to the resonance