

Field Antenna UA6AGW V. 40.21

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The antenna was designed for installation in a field conditions or limited space. Antenna may be installed at a low- height mast. Antenna does not required guys and takes small room for installation. **Figure 1** shows schematic of the antenna.

At first experimenters the two horizontal wires were bended (prototype Antenna UA6AGW V.40. 20, **ANTENTOP 01, 2014, p.: 42**). Then to reduce the occupied room the loop of the antenna was curved. **Picture 1** shows the Loop.

Two traverses for horizontal wires made from plastic fishing poles in 4- meter length of each. The horizontal wires made from audio cord in 1-mm diameter (18- AWG). **Picture 2** shows the traverse. Classical antenna insulators do not use in the antenna design. Fishing cord and plastic ties are used instead of those ones. The hook made from thick bare wire is installed at some ends of the fishing cord. Capacitor C1 is a high- voltage capacitor. Variable capacitor C2 is usual tuning capacitor 12- 495- pF from an old tube receiver.

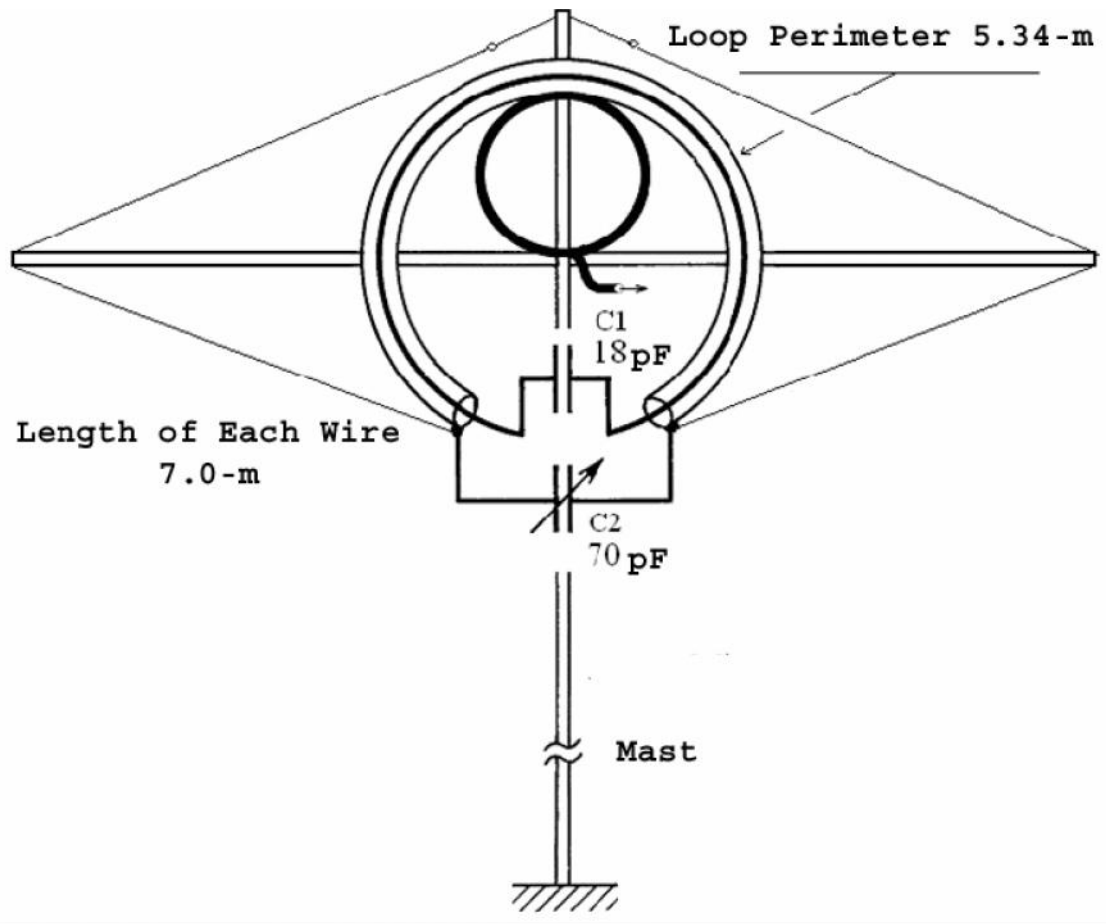


Figure 1 Schematic of the Field Antenna UA6AGW V.40.21

However every next plates of the capacitor are removed (to increase the working voltage). The capacitor connected to the loop only by two stator sections



Picture 1 Loop of the Field Antenna UA6AGW V.40.21

Picture 3 shows ends of the fishing cord. Picture 4 shows connection box of the antenna. Picture 5 shows horizontal wires at the connection box.



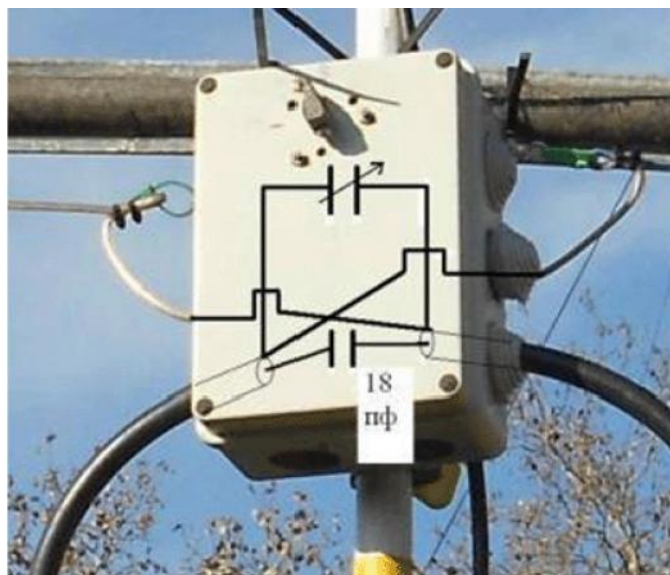
Picture 2 Traverse of the Field Antenna UA6AGW V.40.21



Picture 3 Ends of the Fishing Cord

Figure 2 shows the coupling loop before it is circulated to loop. Length of the coaxial cable to be used for the coupling loop is 200- mm. Plastic from the length of the coaxial cable is removed on to 10- mm in the center and from two ends. Then braid of the coaxial cable is removed at the center. Inner conductor is soldered to the braid at the far (right) end of the length. Then the cable is turned to loop. Far end of the length is soldered to the first (left) side of the prepared cable. The coupling loop is fastened to the upper part of the antenna's loop with help of a Scotch and ties. Below there are several simple rules how to install the coupling loop.

At first, find on the antenna loop a point that is equidistance from left and right side of the C2. It is the point of symmetry of the antenna.



Picture 4 Connection box



Picture 5 Horizontal Wires at Connection Box



Figure 2 Preparation of the Coupling Loop

At second, find the point of symmetry of the coupling loop. The coupling loop is mounted in the top of the antenna loop. Point of symmetry of the coupling loop should concur with the point of symmetry of the antenna.

At third, to fasten with help of the cable ties the coupling loop to the antenna loop at the distance of 6-8- cm from the point of symmetry of the antenna loop.

Picture 6 shows the Field Antenna UA6AGW V.40.21. Antenna UA6AGW V.7.01 (horizontal wires are down) is seen on the background.

Antenna tuned to the resonance by capacitor C2. In receiving mode the antenna is tuned by maxima reception. In transmitting mode the antenna is tuned by maxima RF- Voltage at a horizontal wire. **Picture 7** shows parameters of the antenna measured by Antenna Analyzer AA-330M. Pass Band of the antenna at SWR 2.0: 1.0 is 90- kHz. However in the field conditions when capacitor C2 is accessible the antenna may be easy to retune.

Field Antenna UA6AGW V.40.21 was tested in the Air at height 6 and 4- meters above the ground. The antenna was compared with Antenna UA6AGW v.40.02 (**Reference 1**) installed on 7- meter mast. Antenna UA6AGW V.40.21 was tuned to 7120- kHz. Antenna UA6AGW V.40.02 was tuned to 7110- kHz.



Picture 6 Field Antenna UA6AGW V.40.21

Test at 6-meters height.

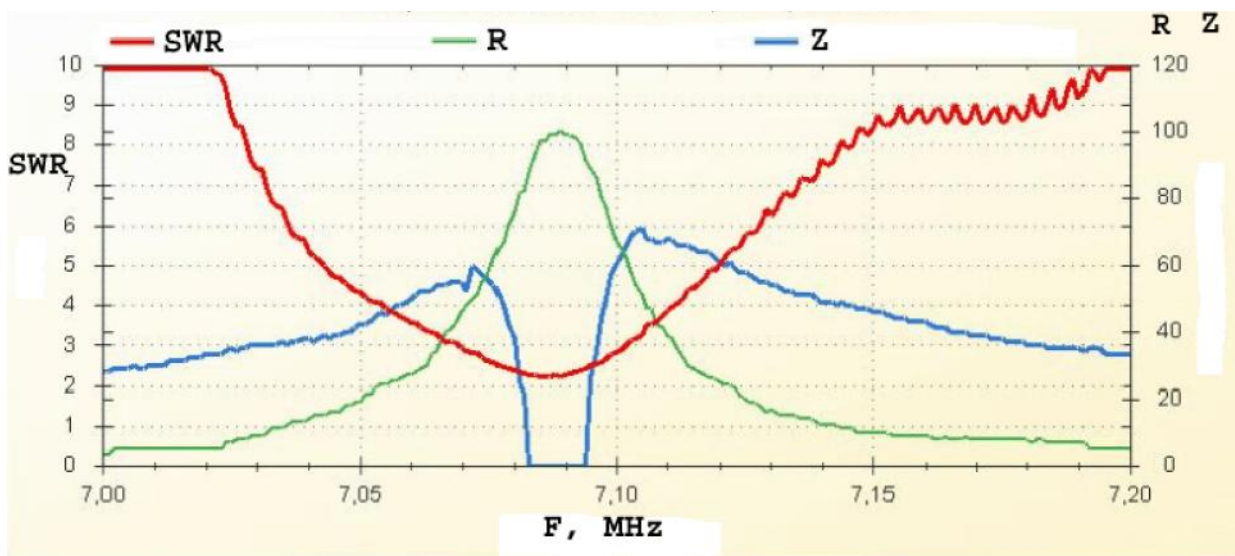
Antenna UA6AGW V.40.21 is low noise compare to Antenna UA6AGW v.40.02. **Picture 8** shows screen shot SDR transceiver with Antenna UA6AGW V.40.02. Receiving signal is near minus 120- dB. Ratio S/N is near 10- dB. **Picture 9** shows screen shot SDR transceiver with Antenna UA6AGW V.40.21. Receiving signal is near minus 120- dB. Ratio S/N is near 15- dB. The picture is taken at day light time with minimal time tag.



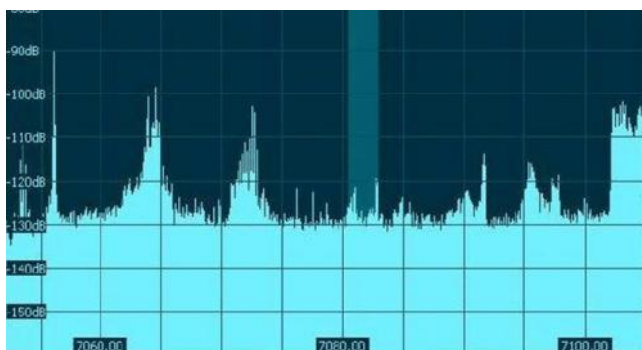
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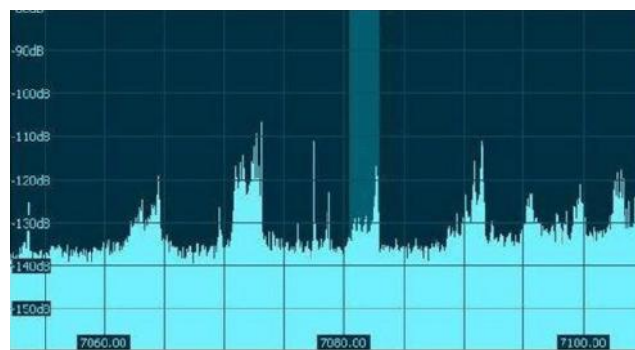
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Picture 7 Parameters of the Field Antenna UA6AGW V.40.21



Picture 8 Screen Shot SDR Transceiver with Antenna UA6AGW V.40.02



Picture 9 Screen Shot SDR Transceiver with Antenna UA6AGW V.40.21

Noise difference between the two antennas was from 5 up to 10- dB. Noise increased when Antenna UA6AGW V.40.21 was rotated in direction to the central part of the city. Then antenna UA6AGW V.40.21 was oriented to minimum of the noise. At the position the Antenna UA6AGW V.40.21 (compare to Antenna UA6AGW V.40.02) gives advantage at reception of weak signals.

Test at 4-meters height.

At height 4- meters above the ground antenna UA6AGW V.40.21 worked in the same way as at 6- meter height above the ground. No detuning in the resonance frequency was found. Antenna provided reception with low noise at day time period.

It was found very interesting property of the antenna UA6AGW V.40.21. At evening time the antenna provided reception of the nearest stations with lower level compare with Antenna UA6AGW V.40.02.

Stations, placed at radius 400- 500- km, were received lower then 10- dB. Stations, placed at radius 400- 800- km, were received lower then 5- dB. Stations placed at distance 1000- km and more from the antenna was received with the same level as with Antenna UA6AGW V.40.02.

Summary

Antenna UA6AGW V.40.21 could work at a small height. The antenna takes small room. Antenna made from low-cost materials. Antenna is easy to tuning and installations.

Reference

1. http://www.antentop.org/017/ua6agw_md_017.htm

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