

# UA6AGW Antenna with Vertical Radiators for the 20- meter Band

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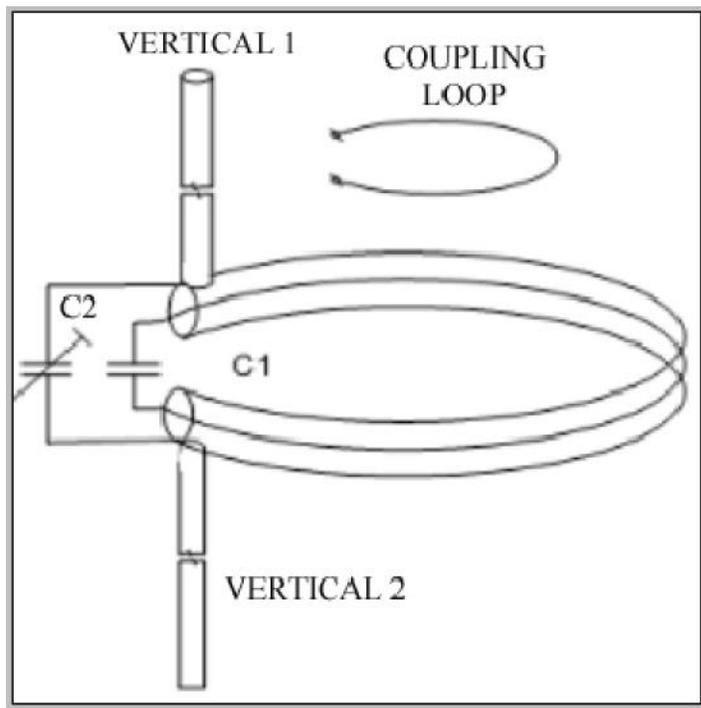
The antenna, made on the base of UA6AGW Antenna ([see References](#)), was designed and build in 2017, at first at all for fixed and field operation. Author is very appreciated to Andrey, IP50AA, for his very useful advices on the antenna design.

### Design of the Antenna:

**Figure 1** shows design of the antenna. It is a modification of UA6AGW antenna where horizontal radiators are placed in vertical plane. To increase efficiency of the antenna the main loop made of copper tube in diameter of 20- mm. Diameter of the main loop is 800- mm. Variable capacitor C2 in 3- 30- pF with air dielectric and gap between plates in 1.5- mm is switched to bridge of the loop. Inside of the loop is placed a length of a coaxial cable RK-75 in diameter of 10- mm.

(**Note from I.G.:** It is possible to use any coaxial cable with outer diameter of 10- mm).

The braid of the cable is connected to C1. Central core is not connected. The capacitor intended for initial tuning of the loop to the 20 meters. In author design it was used high voltage fixed capacitor in 10- pF. Vertical radiators of the antenna made of aluminum tube in diameter of 20- mm and length of 2 meter each. Capacitors were installed in waterproof plastic electrical box. **Figure 2** shows the capacitors in the box. **Figure 3** shows main loop with capacitors' box. **Figure 4** shows installed UA6AGW Antenna with Vertical Radiators in tested position.



**Figure 1** Design of the UA6AGW Antenna with Vertical Radiators



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**Figure 2** Capacitors Inside of Waterproof Electrical Box

The antenna is fed through a Coupling Loop in diameter of 430- mm. **Figure 5** shows the coupling loop at the main loop. **References** give your information how to make the coupling loop. It is possible use just several pieces of wire instead of the lower vertical radiator.

**Tuning of the Antenna:**

The antenna is tuned to the resonance frequency with help of capacitors C1 and C2. To the minimum SWR in coaxial cable the antenna tuned by changing distance between coupling and main loop and may be by changing the form of the coupling loop. **Figure 6** shows SWR and Z of the UA6AGW Antenna with Vertical Radiators installed at distance of 0.5 meter between the ground and the end of the lower vertical radiator.

**DD of the UA6AGW Antenna with Vertical Radiators:**

As you can see from **Figure 6** the antenna has SWR no more the 2.0:1.0 at all 20- meter Band. Practice shows that the antenna has almost circle diagram directivity in horizontal plane with low radiation angle in vertical plane. Antenna may be placed at small height above the ground.



**Figure 3** Main Loop with Capacitors' Box



**Figure 4** Installed UA6AGW Antenna with Vertical Radiators in tested position

Ever at distance of 0.5 meter between the ground and the end of the lower vertical radiator the antenna would work good.

**Test of the UA6AGW Antenna with Vertical Radiators:**

Antenna was tested in the Air at RF Power 40- 250- W. Antenna worked perfect in receiving and transmitting mode. As usual all stations in the first skip area were answered from the first calling. There were made hundreds QSOs with Europe and Asia.

**Conclusion:**

Antenna maybe scaled for any other amateur band. Author is appreciated to R4AAV, RZ3ZM, UN7AR, RU3Q, UA6GB, UA9XG, UE80IR, LZ105PBP, UA2FI, RV3EW, UA0SQV, RN3QRC, IZ2KLV, UT4XU, R5RR and OK1VPY. All of them helps test the antenna on the Air.

**73! De RA9MAI**



Figure 5 Coupling Loop at the Main Loop

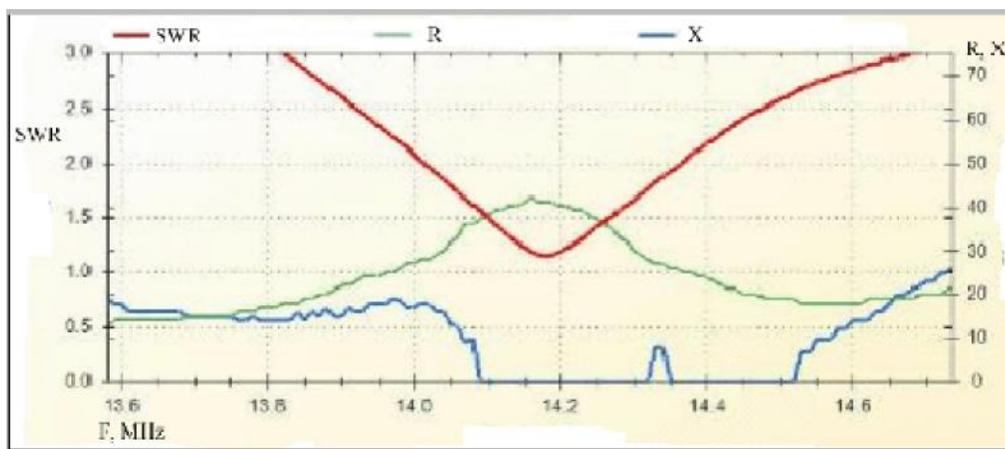


Figure 6 SWR and Z of the UA6AGW Antenna with Vertical Radiators

**References:**

1. **UA6AGW Antennas. Modification and Development**  
[http://www.antentop.org/017/ua6agw\\_md\\_017.htm](http://www.antentop.org/017/ua6agw_md_017.htm)
2. **Directional UA6AGW Antenna V. 7.00**  
[http://www.antentop.org/018/ua6agw\\_018.htm](http://www.antentop.org/018/ua6agw_018.htm)

3. **UA6AGW Antenna V.40.20**  
[http://www.antentop.org/018/ua6agw\\_02\\_018.htm](http://www.antentop.org/018/ua6agw_02_018.htm)
4. **UA6AGW Field Antenna V.40.21**  
[http://www.antentop.org/018/ua6agw\\_field\\_018.htm](http://www.antentop.org/018/ua6agw_field_018.htm)
5. **UA6AGW Antenna V. 20-10.51 (14.0- 29.5- MHz)**  
[http://www.antentop.org/020/ua6agw\\_020.htm](http://www.antentop.org/020/ua6agw_020.htm)