

## UR5WCA Balcony Antenna for 7, 10 and 14 MHz

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As I am an urban resident I have not a sufficient place for my antenna. My balcony placed at 2- floor at 5- store building is my sole antenna polygon. So, I have done a balcony antenna for my favorite 7, 10 and 14 MHz- ranges. It is a helical vertical that can be matched for these bands. **Figure 1** shows the view of the antenna. **Figure 2** shows the schematic of the antenna.

### Design of the antenna:

- Two verticals were made from PVC tube in 5 centimeters diameter.
- On length of 1.35 meter of each tube were coiled 11.5 meters of insulated copper wire in 1- mm (18 AWG) diameter
- Distance between the verticals is 1 meter

At antenna clips an ATU (see **References 1**) was used with the antenna. **Figure 3** shows the picture of the ATU. ATU (between coax and transceiver) is a must for the antenna.



**Figure 1** UR5WCA Balcony Antenna



SWR at 7, 10 and 14 MHz was near 1:1,1. While two weeks running the antenna on the bands I did a hundred CW QSO with practically of all the European countries and some district of Asia of the former USSR. I have received 569... 599. The antenna works with low SWR at 80- meters, however only local QSO was done. At 18 MHz the antenna has SWR 1:2. For testing the antenna I used a home- brew transceiver made on the base of old Russian receiver R-250 and ATU MFJ- 945E.

**Modification of the UR5WCA Balcony Antenna for 7, 10 and 14- MHz**

Figure 4 shows modification of the antenna that increases it performance. Inductors L1 and L2 were coiled by insulated copper wire in 1.5-mm (15- AWG) diameter, spacing between turns is 2-mm. Form diameter is 35- mm (was used PVC tape tubes), numbers of turns are 29, tap from 9 turn from cold end. FSM (Field Strength Meter) displayed increasing of electromagnetic field to 30% compare to antenna without matching coils.

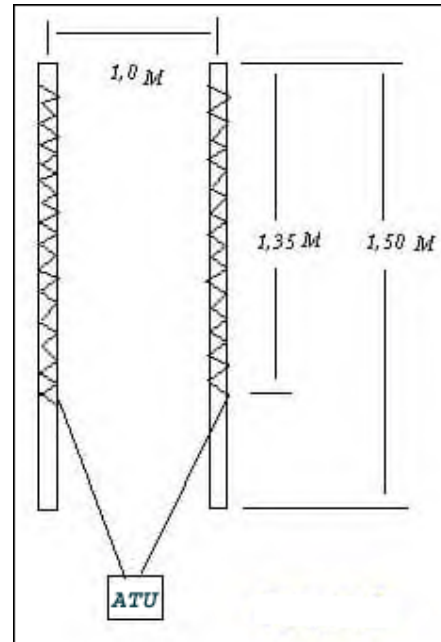


Figure 2 Schematic of the UR5WCA Balcony Antenna

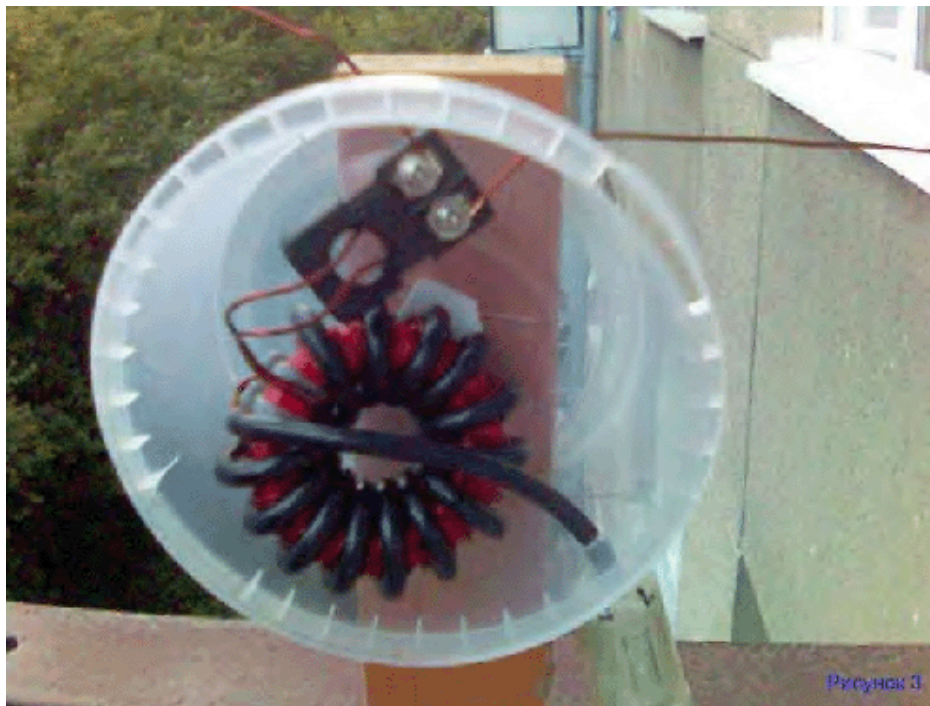


Figure 3 ATU of the UR5WCA Balcony Antenna



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The measurement was made at distance 5 meter far the antenna. At antenna clips an ATU (see [References 1](#)) was used with the antenna. ATU (between coax and transceiver) is a must for the antenna.

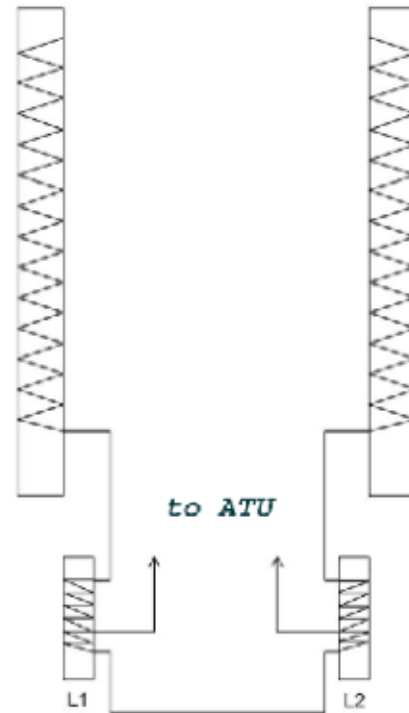
After numbers tests I did another modification.

1. Each vertical contains 20.2 meters of insulated copper wire in 1.5-mm (15- AWG) diameter.
  2. The coils (see [Figure 4](#)) were deleted and verticals were connected straight away to pre ATU (see [Figure 5](#)).
  3. A counterpoise (I used metal balcony hand-rail) was used with the antenna.
- After this modification noise level decreased, SWR was not changed. ATU (between coax and transceiver) is a must for the antenna. With the antenna I did some DX QSOs, for example, with KH0DQ (10-MHz, 589 to me) and 5Z4LS (14-MHz, 599 to me).

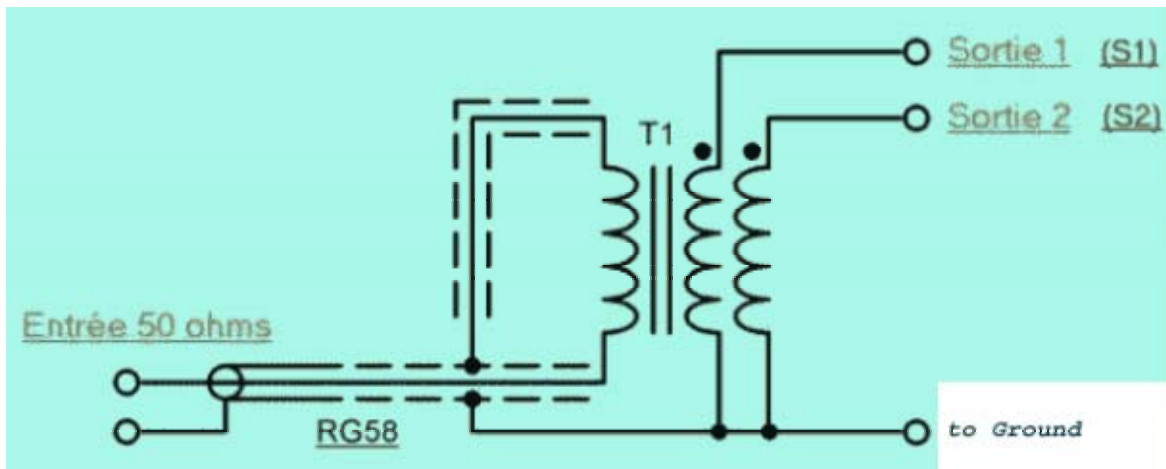
**Conclusion:** Of course, it is only a surrogate antenna, but the antenna is worked, and works not bad.

**References:**

<http://www.qsl.net/gw6hmj/antenna.htm>



**Figure 4** Modification of the UR5WCA Balcony Antenna



**Figure 5** ATU of the UR5WCA Balcony Antenna

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