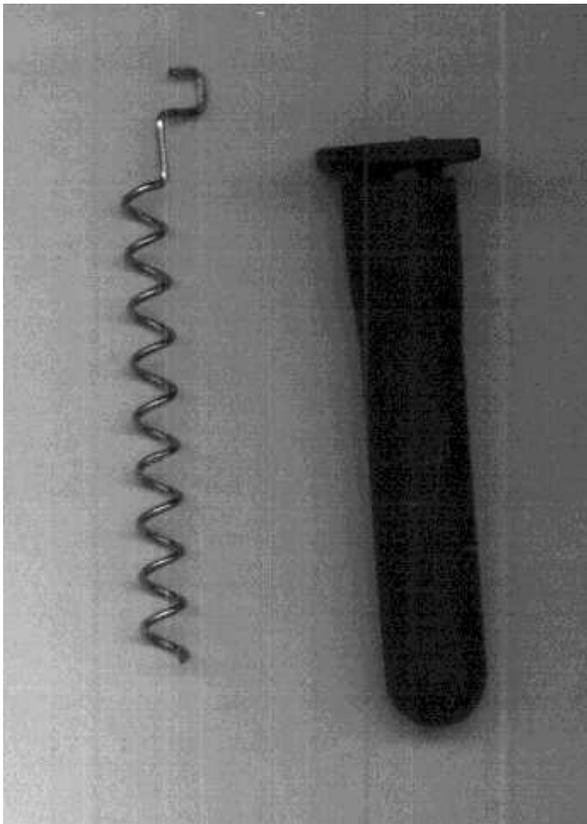


ANTENNA FOR 900- MHZ

I have got a radio telephone DAEWOO DWP-5000 working in a range 900-MHz at the radio market in Kiev (see [Figure DAEWOO DWP-5000](#)). I checked up the phone with its antennas. I could reach only 300- 350 meters when the phone saw the radio base. I need 2 kms communication range. I decided to increase the communication range of my radio phone by using an effective antennas. By the way, the antenna placed at the base was made as a steel spiral, located into a rubber tube (see [photo Base Antenna](#)). The length of the antenna was 4 centimeters.

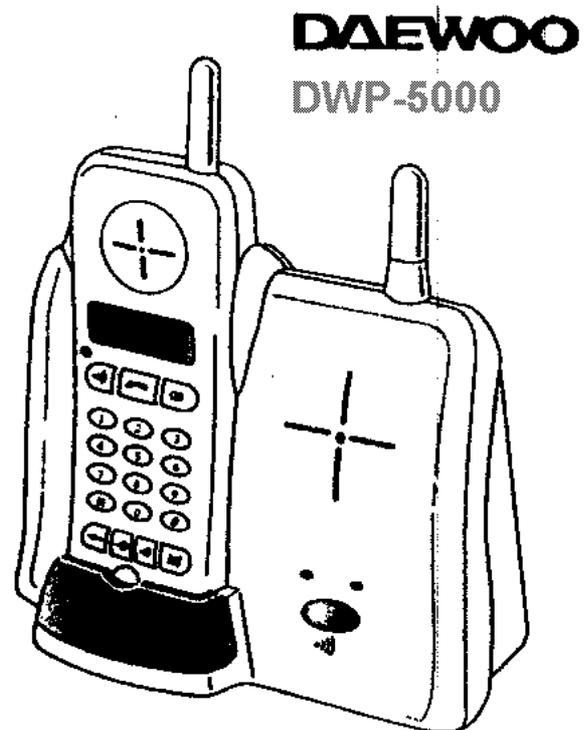
So, for my phone I decided to use well known in the former USSR so-called antenna Harchenko. The antenna has a wide range and can work at the range of 886 – 931- MHz with a low SWR.

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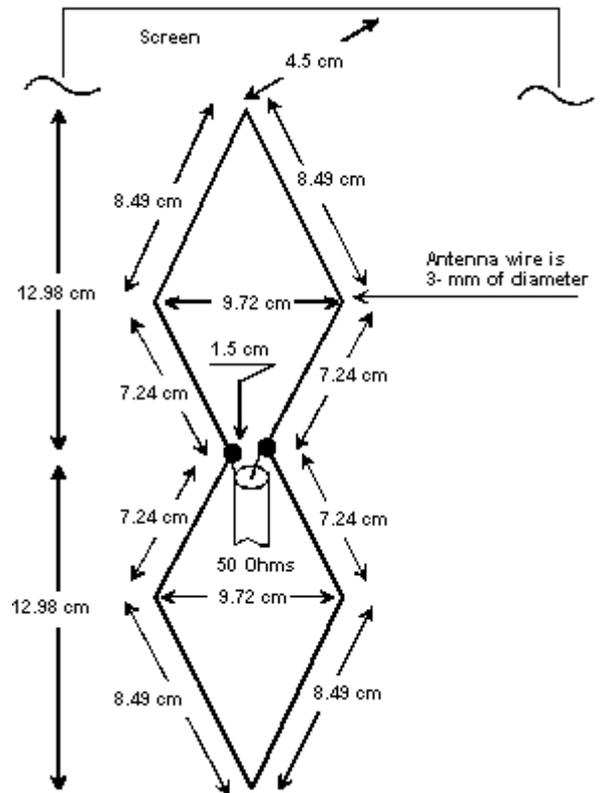
Base Antenna

Do not forget, transmitting and receiving frequencies differ each other to 45- MHz at the 900- MHz phones. Antenna Harchenko was calculated by [Free Antenna Simulation Program MMANA](#). Parameters of the antenna are shown below. Left diagram is a section of the volumetric diagram directivity of plane X-Y at a zenith corner of the maximum radiation.



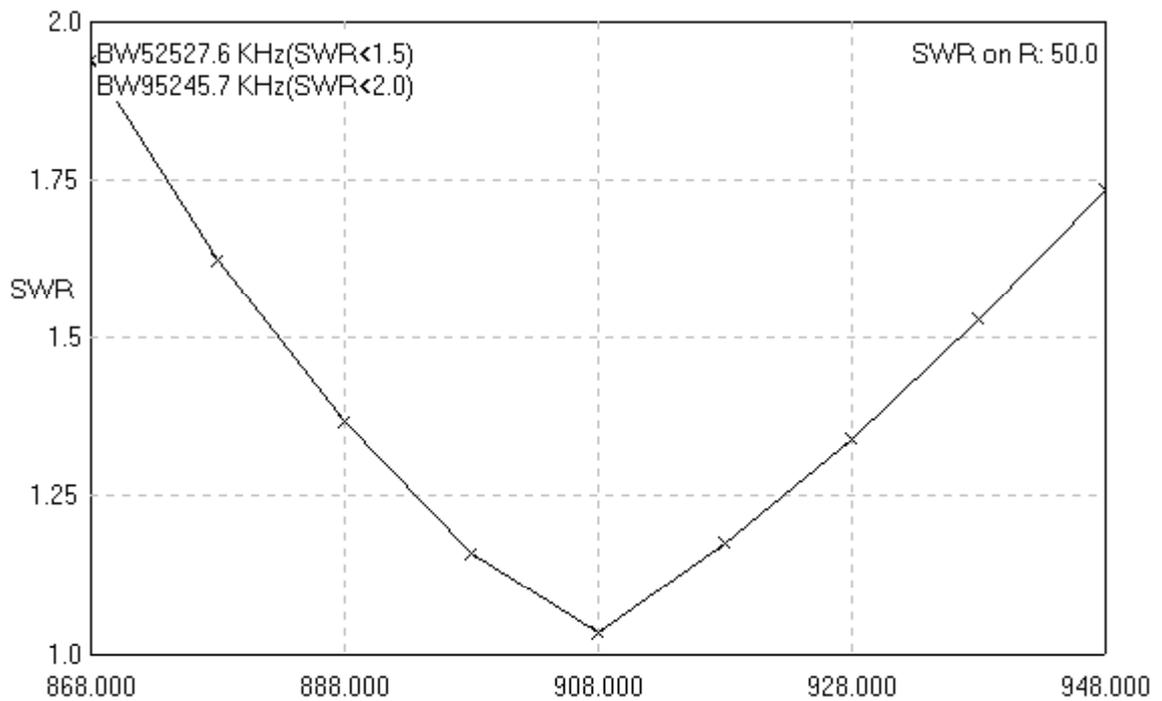
DAEWOO DWP-5000

The right diagram is section of the volumetric diagram directivity of plane X- Z. Also at the right down corner of the pictures is a table with antenna impedance. (see [Figures: Schematic of the Antenna, Antenna Z, Antenna SWR, Antenna Pattern](#))



Antenna on the Roof

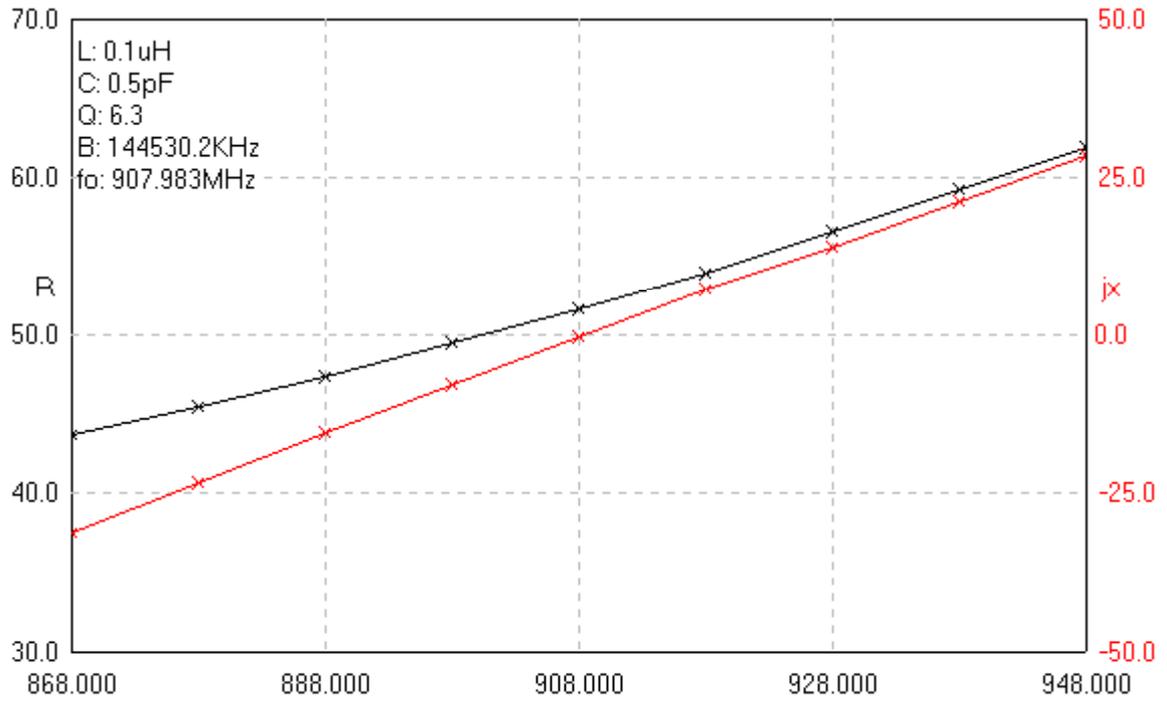
Schematic of the Antenna



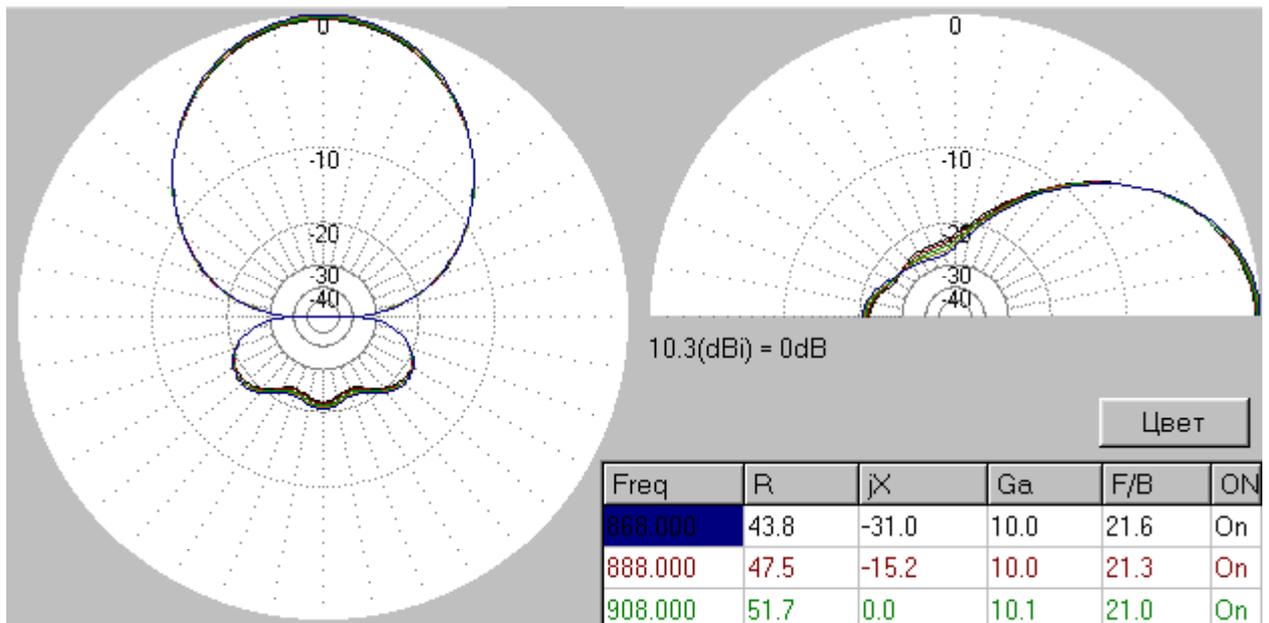
Antenna SWR

The antenna was placed on a plate made of a Plexiglas. The plate was installed by Plexiglas rods above the aluminum reflector.

The aluminum reflector was attached to a wooden mast. The antenna was connected to the base by a 5 meters length of a RG-58 coax cable.



Antenna Z



Antenna Pattern

The steel spiral antenna and antenna Harchenko were compared by means a commercial made UHF FSM. The steel spiral antenna lighted one LED on the FSM, the antenna Harchenko lighted five LEDs on the FSM.

communication range, too. Certainly, to increase the communication range ever more is possible to make an external antenna for the phone too, but it is possible only for stationary placement of the hand-held phone.

Test of the antenna Harchenko with the base gives the communication range more then 2 kms when phone saw the antenna. Away from the main lobe the communication range is decreased. Buildings screening the antenna essentially weak the

73! Petr, US1REO