

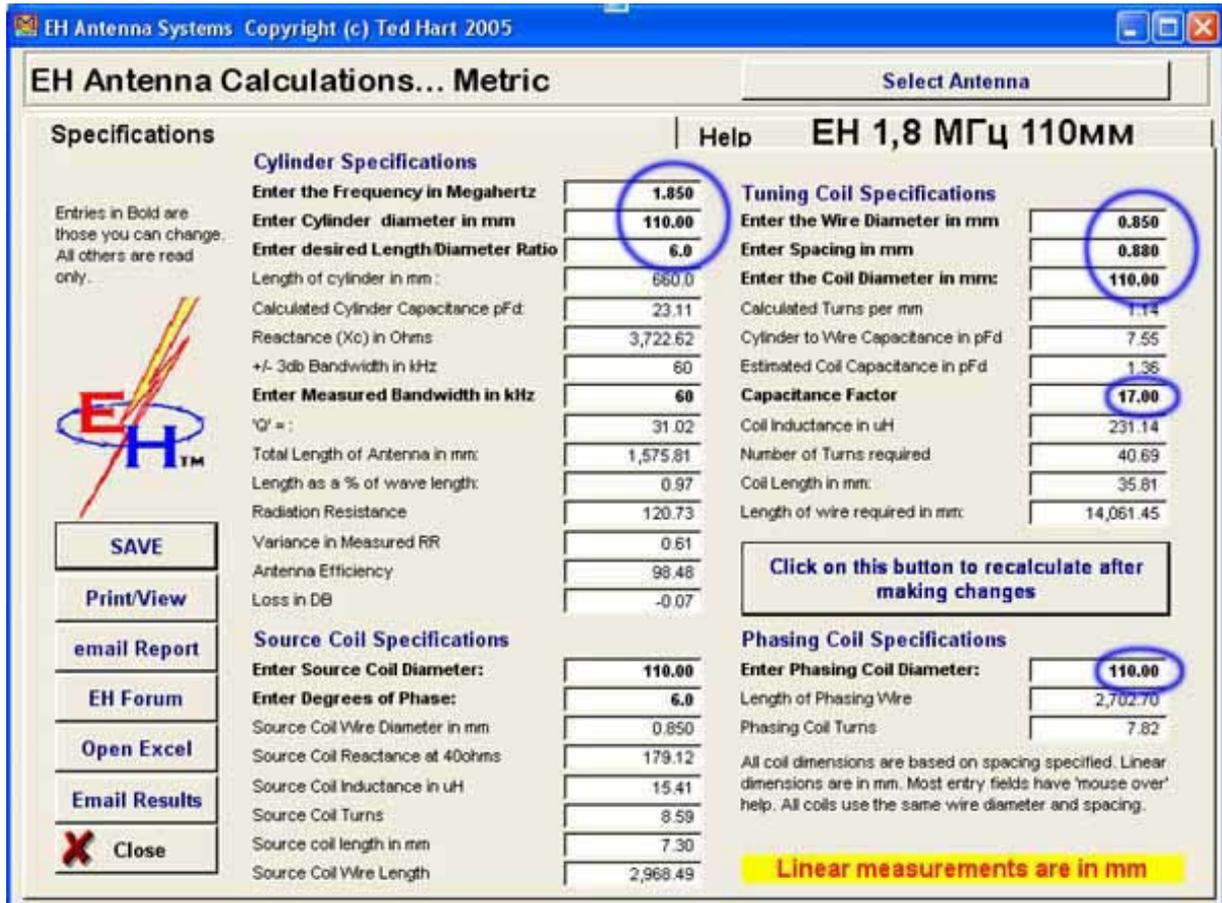
# EH- Antenna for the 160- meter Band

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Credit Line: [http://ehant.grz.ru/exp\\_eh33.htm](http://ehant.grz.ru/exp_eh33.htm)

The antenna has diameter 110- mm and is 2 meter in length. The sizes are without protected enclosure (indoor variant).

Antenna was calculated with help of program VK4ANW. **Figure 1** shows the calculation.



**Figure 1** Calculation EH-Antenna for 160 meter with help VK4ANW program

Here are some explanations about the antenna data.

1. Diameter plastic tube for the antenna is 110- mm.

Standard row for the tube is: 75, 110, 165, 215- mm. If we take tube with smaller diameter 75- mm we get twice decreased Pass Band and twice increased turns in the inductor (so, losses in the inductor also highly increased). If we take tube with bigger diameter 215- mm we get twice increased Pass Band and twice decreased turns in the inductor (so, losses in the inductor also decreased). Good parameters, but antenna is too bulky!

2. Diameter of the wire in the inductor is 0.85- mm (20- AWG). It is compromise variant that depends on power (10- Wtts allowed in Russia) allowed for using and losses in the inductor. For bigger power it needs to use wire with bigger diameter.

3. Copper foil is 0.05- mm in the thickness. Thickness of the using copper foil for the EH antenna depends on power going into antenna and to mechanical strength of the foil. 0.05- mm foil should be enough for the antenna.

4. Length to the cylinder diameter is 6. I took the digit from my experience. If the digit less the 6 the Pass Band is decreased. If the digit more the 6 the antenna design going to be complicated.

Figure 2 shows design of the EH-Antenna for the 160- meters.

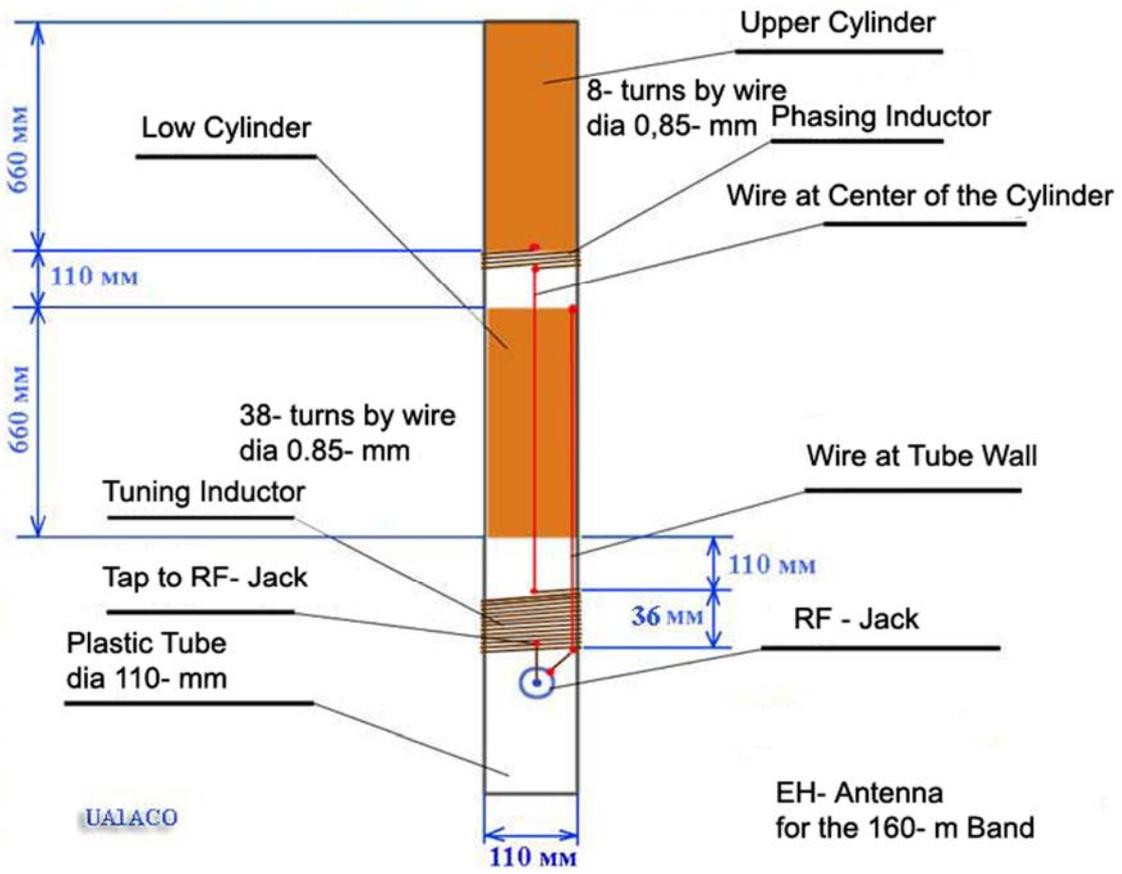


Figure 2 Design of the EH-Antenna for the 160- meters

Red dots are marked the solder places. Tuning coil should be coiled with gap between the turns at the beginning and at the end.

It needs for antenna tuning. Figure 3 shows the design of the coil.

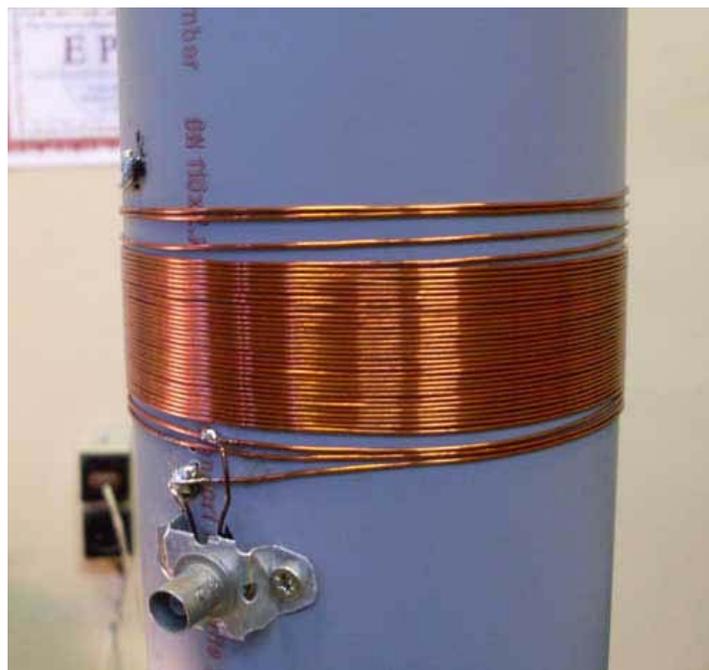


Figure 3 Design of the Tuning Coil

Resonance frequency of the antenna is adjusting by moving coils between together at the upper part of the coil. SWR is changed by moving coils between together at the lower part at the coil. Both of the tuning is influenced to each other. In my case the tap for SWR 1:1.02 was taken from second turn.

**Be careful! The antenna has no protected enclosure! At the parts of the antenna is high RF that is dangerous for live!**

*Note from I.G.*

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**You use all these information of your own risk.**



Antenna was tuned to the 160- meter band according to routine tuning for the EH-Antennas.

Figure 4 shows parameters of the antenna obtained with "miniVNA."

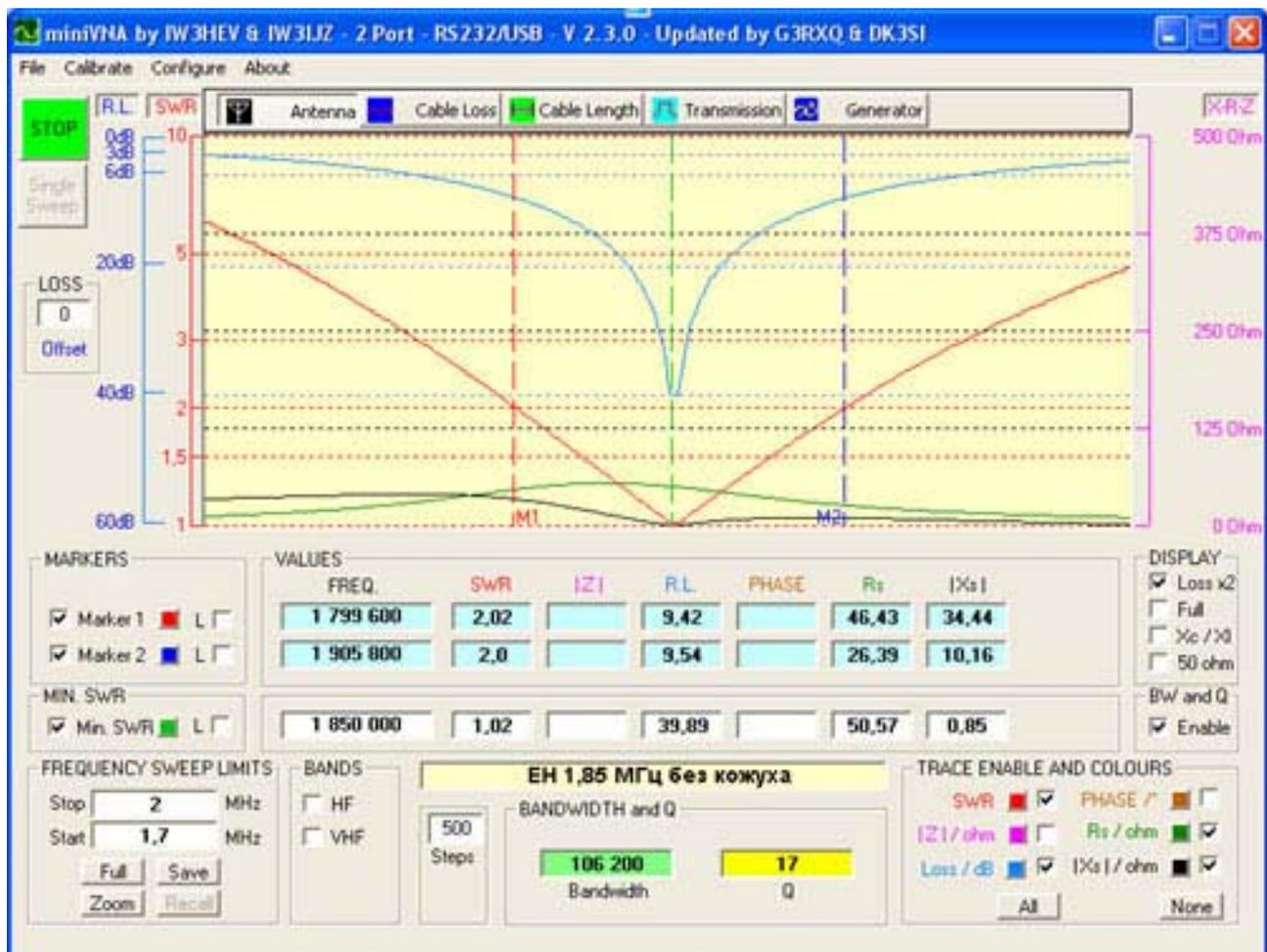


Figure 4 Parameters of the EH- Antenna

## ANTENTOP- 02- 2010, # 014

## EH- Antenna for the 160- meter Band

Parameters of the antenna are really good. At the frequency 1.85- MHz it is Pass Band more the 100- kHz at SWR 1.0: 1.02. The antenna has big sizes so tune the antenna at its working position. Remember, that all objects near the antenna could influence to the parameters of the antenna. Try to keep space near the antenna at radius 2...- 3 length of the antenna free from anything.

However, above stated is not about me. I have no free place for the EH- Antenna. The antenna was installed at my workplace at the ground floor. Near the antenna there are lots objects that hindered the antenna operation. At the background it is showed a EH- Antenna for the 40-meter (25- cm in length). **Figure 5** shows the installation. **Do not repeat my installation of the EH-antenna because it is dangerous for life!**

I turn on the EH- Antenna to my transceiver through a 1.5- meter coaxial cable. Near the antenna an RF- Choke is installed. It is six coils coiled by the coaxial cable around a ferrite ring. I turn on my transceiver and take my straight key. Time is near 13.00- GMT, not good time for QSO on the 160- meter. However, I hear several stations and first QSO with RK3PA is done!

Next week (I have no lots time to work in the Air) I made QSO with UR4LPQ, LA6YEA, RU4SU, OZ1LXJ... All QSOs were made at EH- Antenna in 2- meter height and 10- 15 Watts going into the antenna!

Final test the EH- Antenna was made when I installed the antenna at 1.5- meter above the roof of my house, that is near 8- meter above the ground. **Figure 6** shows the antenna on the roof.



**Figure 5** EH- Antenna for the 160- meter on the table



**Figure 6** EH- Antenna for the 160- meters on the roof of the house

## ANTENTOP- 02- 2010, # 014

I decided take part in the CQ- WWW 160-m DX CONTEST in class CW. For the test I used my ICOM-7000 and 80 Watts going to the EH- Antenna.

Before the contest lots stations do training in the Air. I have QSO with OH8X, UA1ANA, RV2FZ, RU3BB, OK1AXB, SM6VJA/p, OM8LA, UA3UDE, RX3APM, OH4XX, LY3W, UT4UJ, UY2UA, OM3BH, RV9YZ, RW9TR, RN3GM/2, RV9CX, EN1IFF/p, RN3QY, RU4PU, SP2LNW, S56P, DK2OY, UP2L, OM5KM, LY1CM, HA1TJ, UW5U, OK1DSZ, UA3QDX...

## EH- Antenna for the 160- meter Band

It is 22.00- GMT, contest is started. EH-Antenna works well and I already have QSO with UA3BS, UZ1H, UA2FL, LY6A, LY2OU, YL9T, UA1QM, LY9A, EW6GF, YR5N, RG3K... **Figure 7** shows pages from the contest. Log in Cabrillo may be downloaded from: <http://ehant.qrz.ru/ua1aco.cbr>

I made 200 QSOs with 32- WAZ- zones and got near 27000 points.

Номер	Время	Позывной	Примечание
156	22-07		
157	22-08		
158	23-00		
159	23-02		
160	23-07		
161	23-19		
162	23-32		
163	23-36		
164	23-32		
165	23-33		
166	00-0		
167	00-		
168	00-		
169	00-		
170	01		
171	0		
172	0		
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Figure 7 Pages from the contest

I proved by my routine work in the Air and by the contest that my EH- Antenna for 160-m worked and it is worked not bad. Off course, it is not a "Mamont" antenna that is installed by the hams from Finland

But the antenna works and I believe that is good variant for those who cannot install traditional antennas at the 160-m.



Figure 8 "Mamont" from Finland



UA1ACO tested the EH-Antenna in Russian PSK WWW DX- CONTEST- 2010

**73 and DX from UA1ACO!**