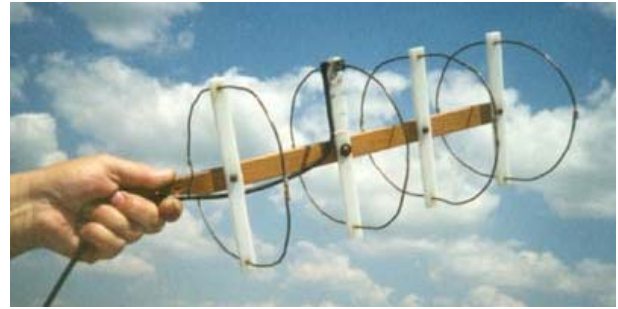


## 4-OVALS ANTENNA FOR 430-440 MHZ

Igor,  
[UA6HJQ, ua6hjq@mail.ru](mailto:ua6hjq@mail.ru)

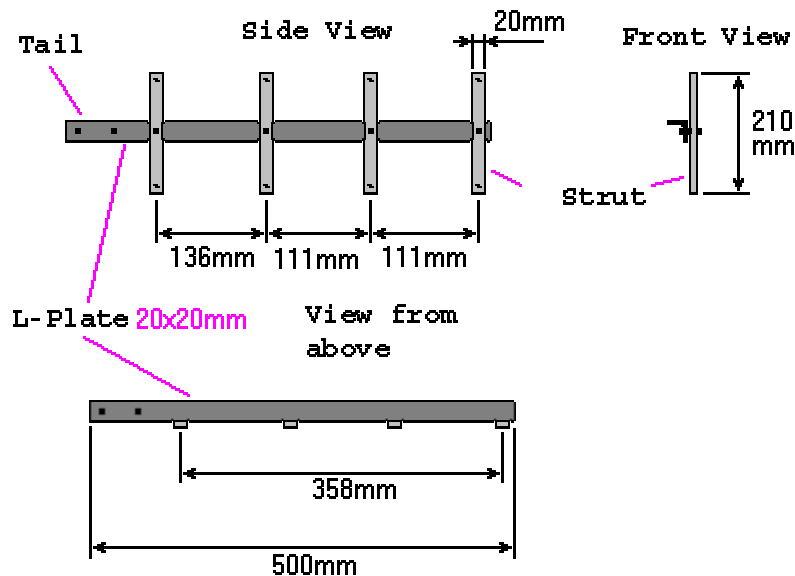
I need a good universal antenna for repeaters working at the 70-cm range, packet radio and for routine work. Such an antenna must satisfy the following characteristics:



1. Real Gain 9-10-dB.
2. Low SWR at 430-440- MHz.
3. Wide forward lobe.
4. Unpretentiousness to close located subjects.
5. Simplicity in manufacturing and adjustments.
6. Possibility to create phased антенные systems on the basis of the antennas.
7. 50 - Ohm coaxial cable feeding.
8. Stability to heavy icing and to winds in 10-20 meters per second..

4 Ovals Antenna responded all of the conditions. Why an oval? At first, from the antenna theory we know that an oval radiates energy a little bit more effectively than a square. At the second, in practical, it is more easy to do an oval then a square.. So choose the OVAL! **Figure 1** shows a design of the

Figure 1



antenna. Boom is made of iron L-plate 25x25-mm. All the four ovals are fastened to the boom by struts made of insulation stuff such as tree, hetinax, etc. Antenna is fastened by the tail, that is behind the struts.

Director-I- 649-mm. (-20MM).

Director- II - 639-mm. (-20-mm).

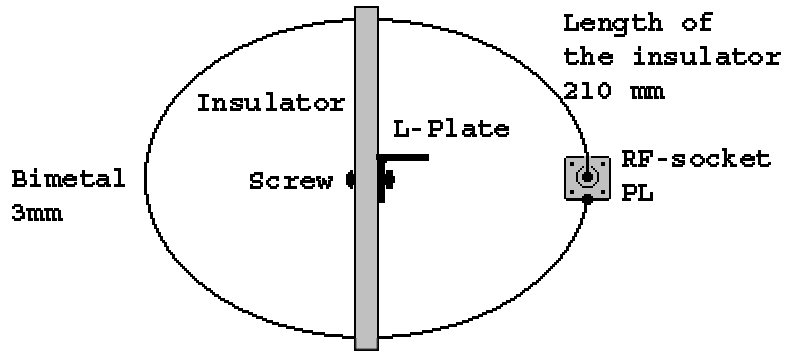
Perimeter of elements (ovals):

Reflector- 727-mm. (-20-mm for soldering).

Driven Element- 653-mm (+10-mm distance for a RF socket).

**Figure 2** shows the design of the Driven Element. RF socket is soldered directly by the ends of the oval. Three holes is drilled at each strut. One holes is in the center for fastened the strut to the boom, two holes are at the ends for bimetal oval. Antenna reflectors and directors have the same design as the Driven Element only difference is its ends soldered together.

Figure 2



Antenna has weight of 900 gram. SWR is: at 430-MHz =1.2:1, at 435-MHz =1:1, at 440-MHz=1.3:1 SWR was metered by device SWR-121. If you will use boom

made of iron L-plate having not the same dimensions you would do correction lengths of antenna elements. I want to pay attention, that the antenna is more laborious than YAGI, but it work much better.

## 4-OVALS ANTENNA FOR 430-440 MHZ FOR MOUNTAINS

*Igor, UA6HJG, [ua6hjq@mail.ru](mailto:ua6hjq@mail.ru)*

When an antenna is intended for mountains it must follow such additional requirements as:

1. Light weight.
2. To have folding design and to take a little place in a backpack.
3. Antenna should be conveniently to hold in a hand, to fasten to a tree or stick. .
4. Tolerance to a dirty, water and snow.
5. Possibility to repair in field conditions.
- 6.

So, the boom of the trip antenna is made of a wooden

strip drying by oil. Perimeter of all ovals is increased on 20-mm compare to previous design. All struts are made from un- foiled PC-board. Antenna elements are made of 2-mm diameter soft copper wire (# 12 AWG). Soldered parts must be protected from the weather.

Antenna has weight 400 gram. Other characteristics are as the previous design has. The antenna is tested at 1997 and at 2000 in the mountain Elbrus and the antenna shows good result. I made QSOs in distance of 200-300 kms with 59 for both ends!



*Igor, UA6HJG, on Elbrus*



*Elbrus*

