# 144 and 432 MHz Loop feed for prime focus dish

Zdenek SAMEK – OK1DFC

# Problematic of dish illumination

**Available feeds:**

**Dual dipoles :**

- More connectors for connection
- Two phasing cables
- Coupler
- Connection to relay and LNA
- To complicate mechanical construction and critical connections

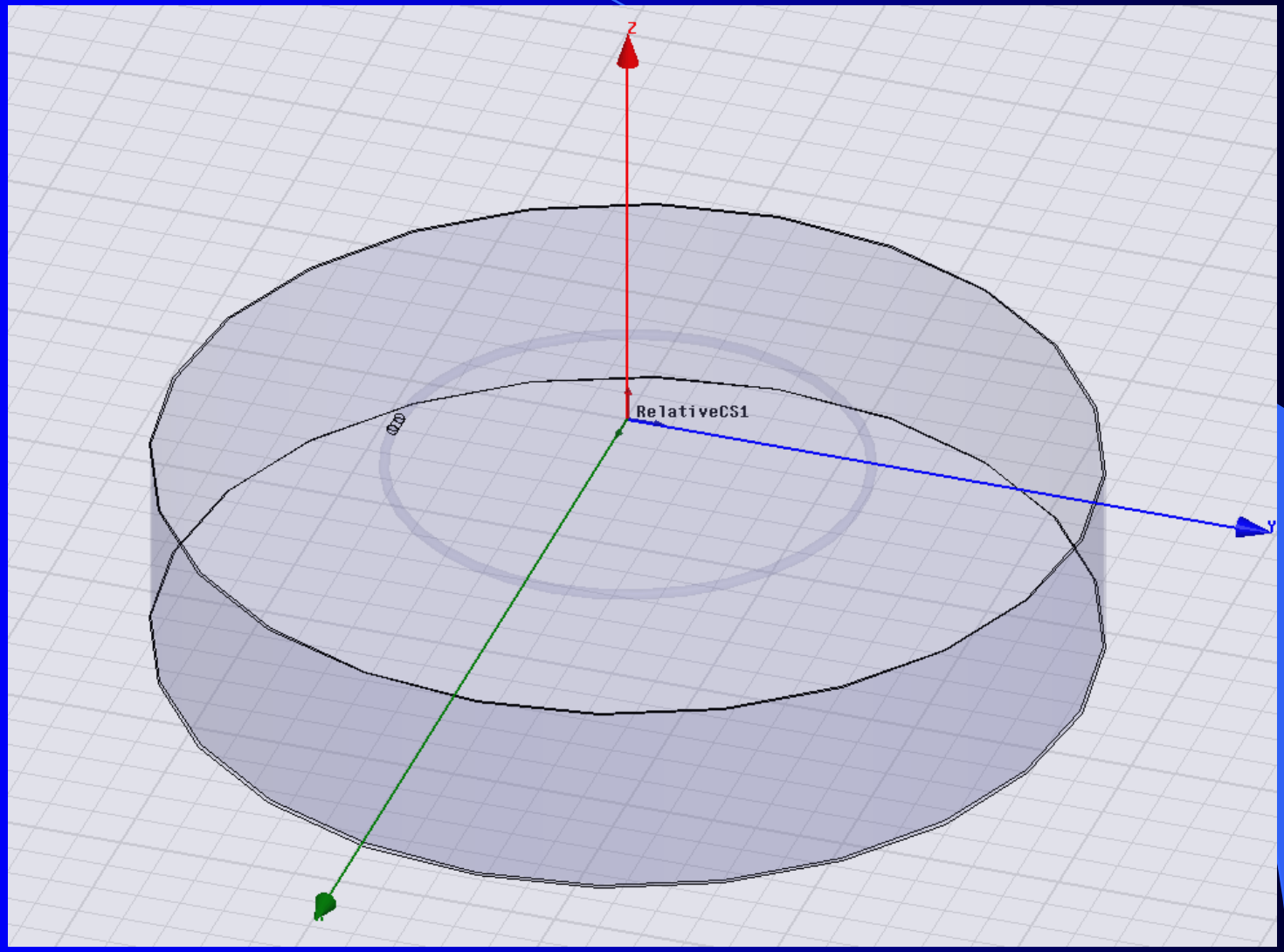
**LOOP FFED :**

- One 50 ohm point
- Wire of loop connected directly in 7/16“ connector
- Simple mechanical solution
- No phasing, no impedance mishmash, no additional losses

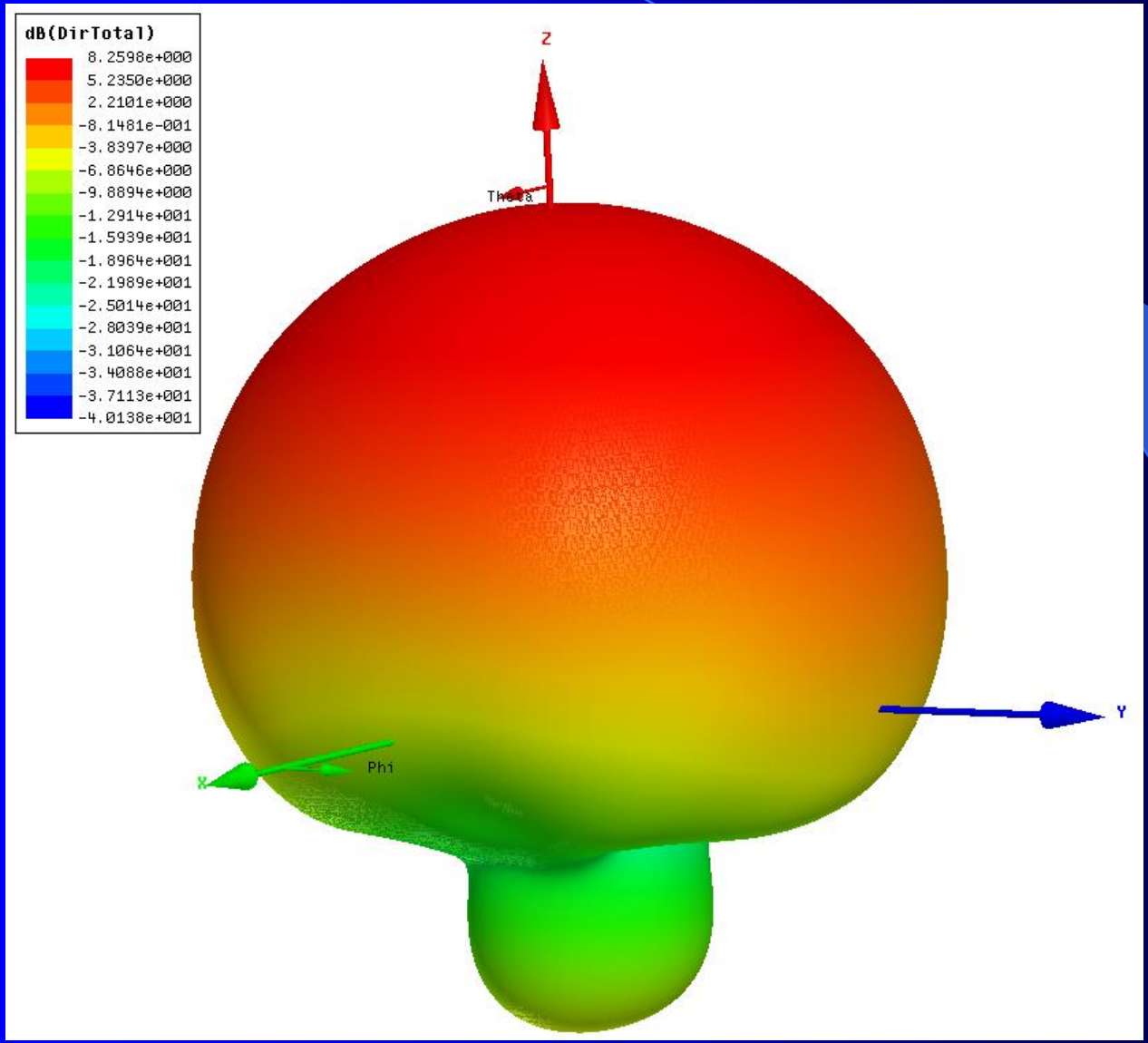
# OK1DFC 432 MHz Loop feed

**SM6FHZ theoretical part of presentation - simulations**

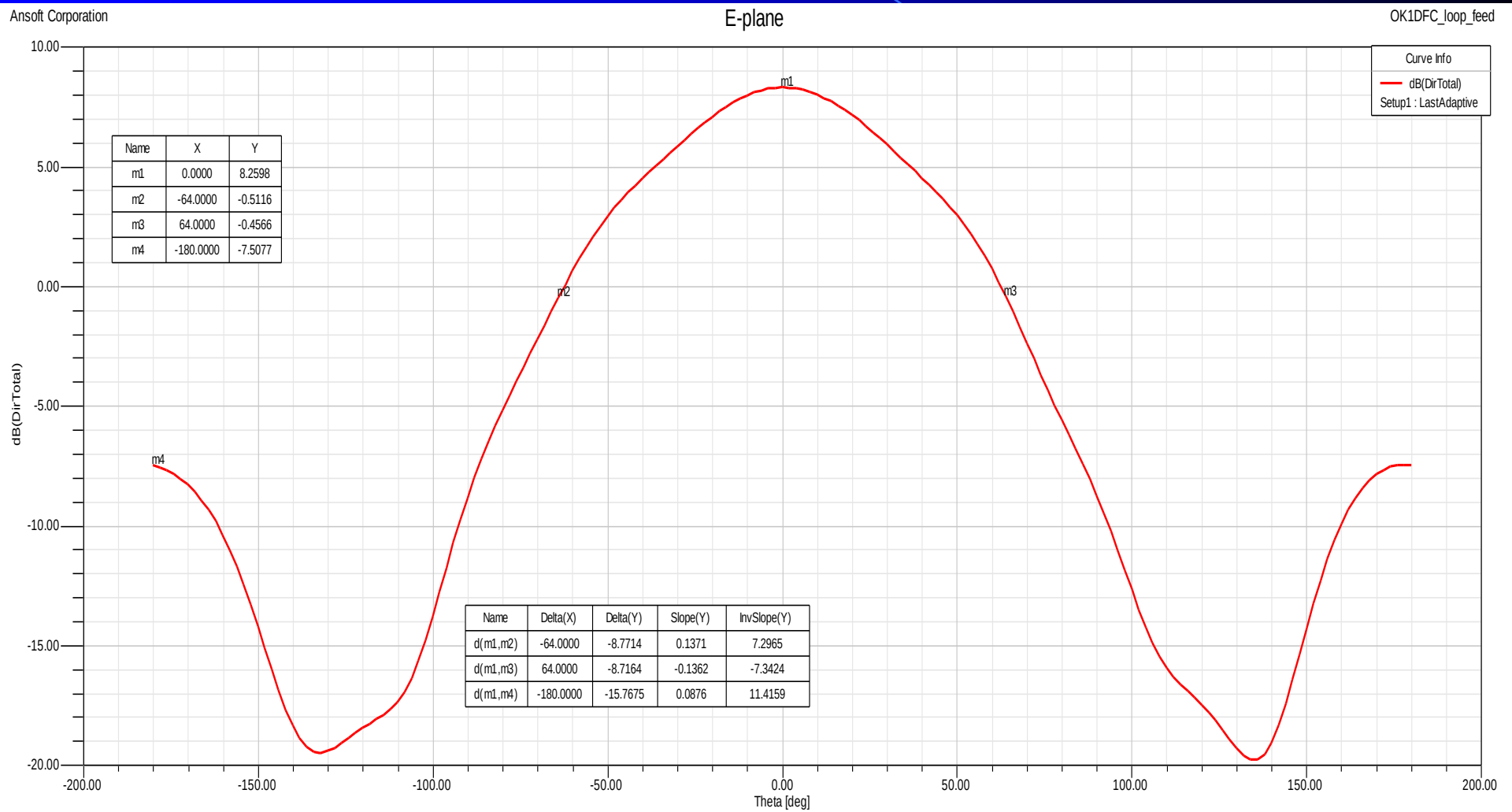
# Model



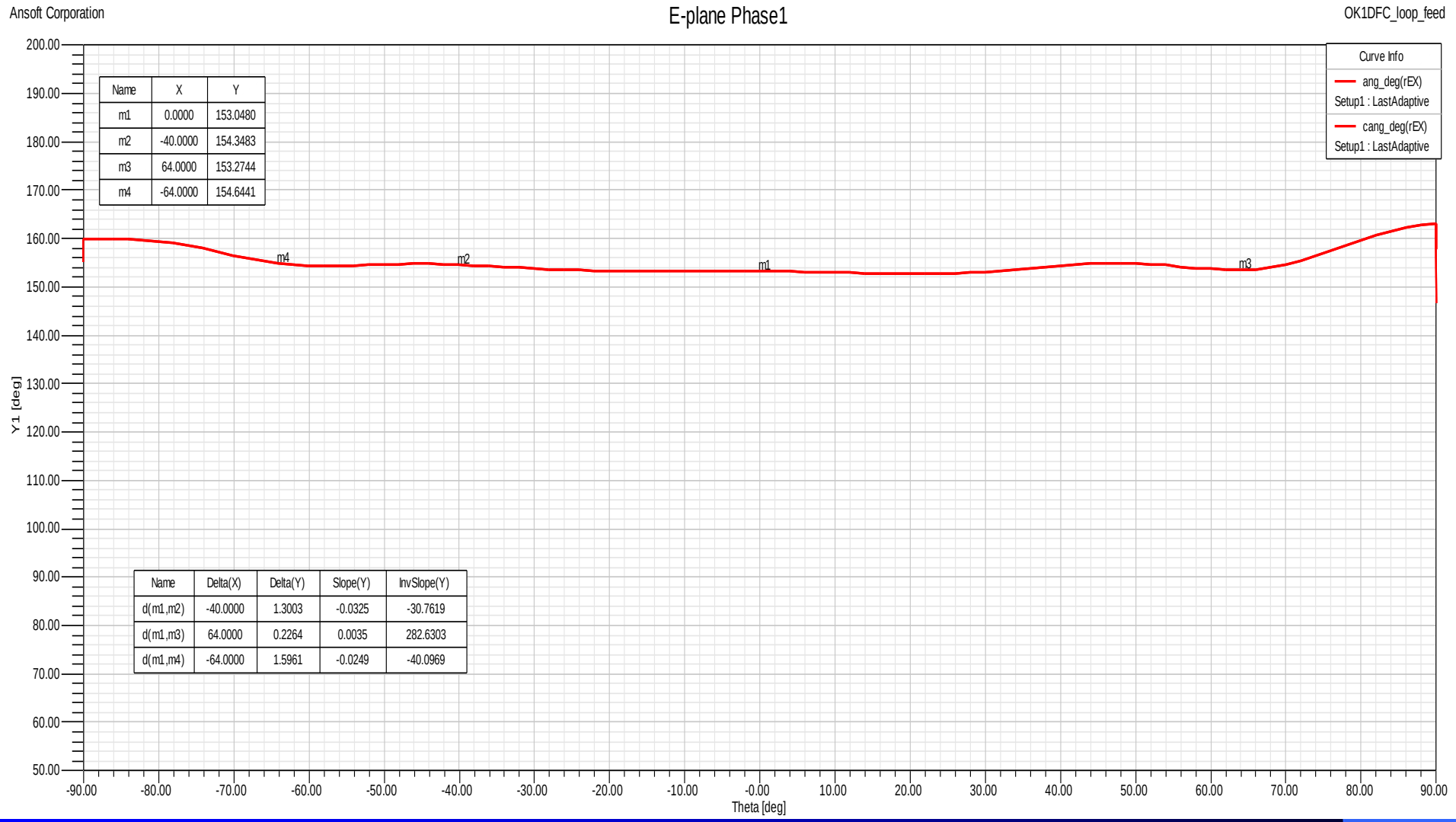
# 3D pattern


dB(DirTotal)
8.2598e+000
5.2350e+000
2.2101e+000
-8.1481e-001
-3.8397e+000
-6.8646e+000
-9.8894e+000
-1.2914e+001
-1.5939e+001
-1.8964e+001
-2.1989e+001
-2.5014e+001
-2.8039e+001
-3.1064e+001
-3.4088e+001
-3.7113e+001
-4.0138e+001
Z
Theta
Y
X
Phi

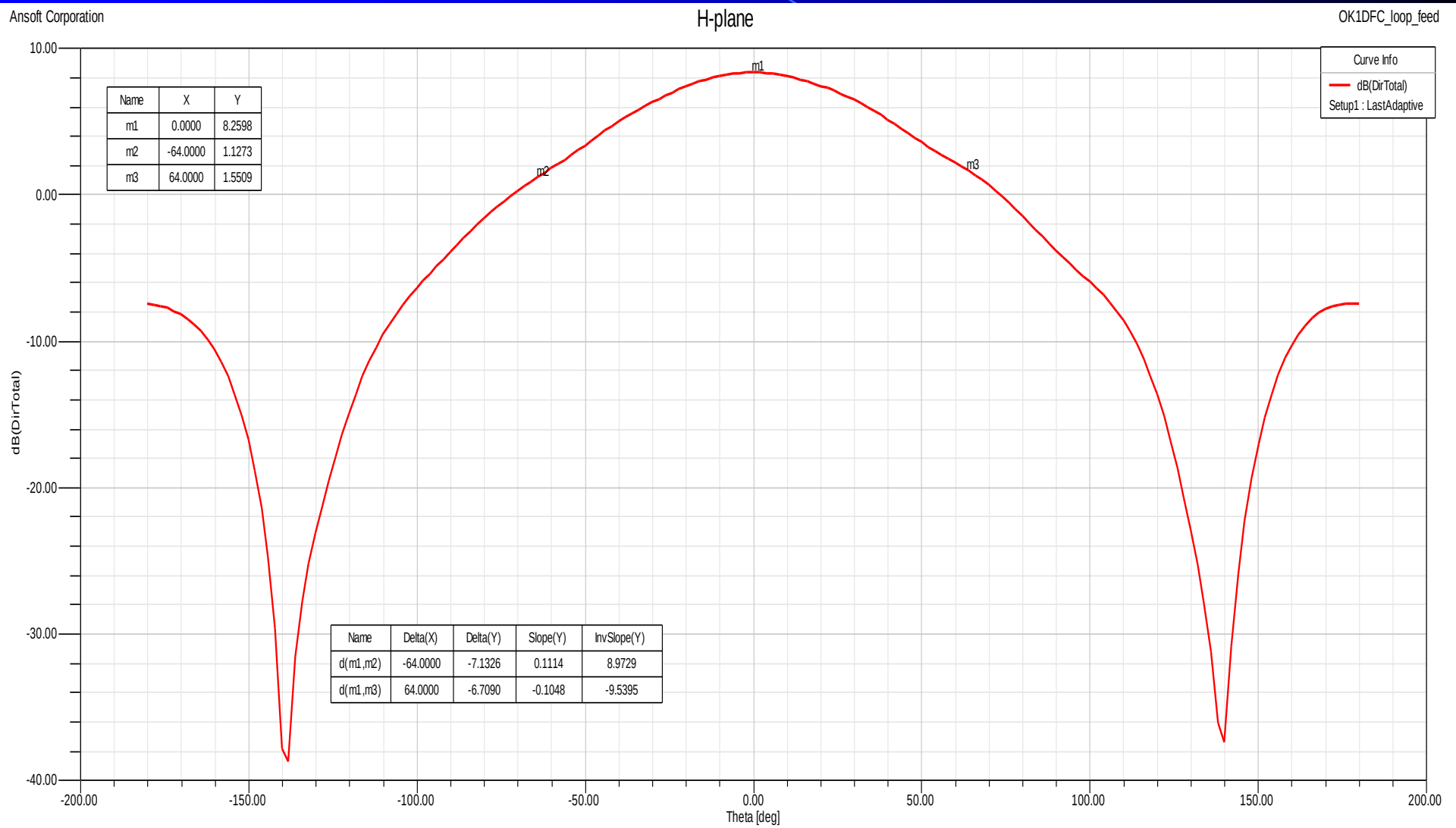
# E-plane pattern



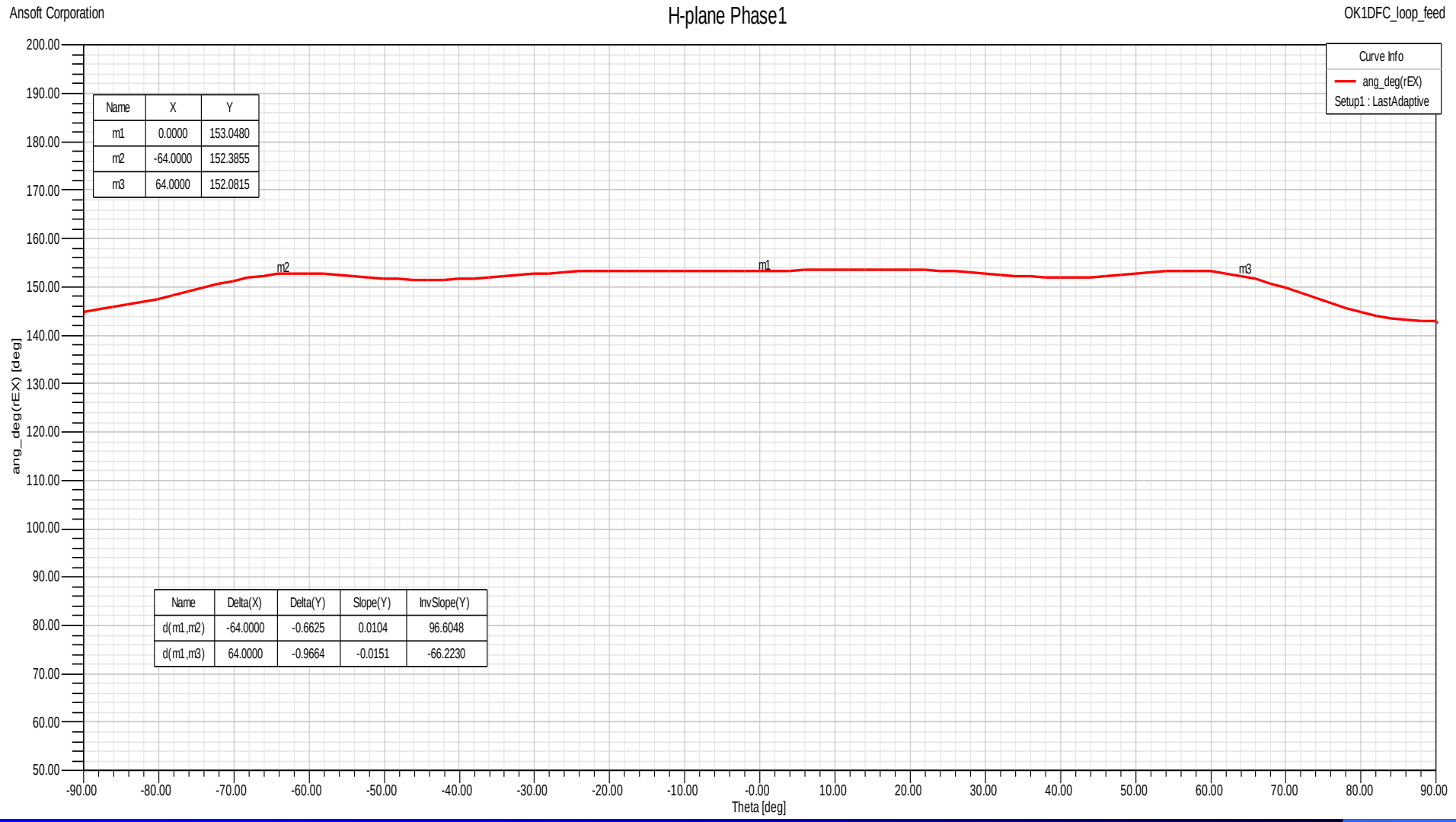
# E-plane phase error



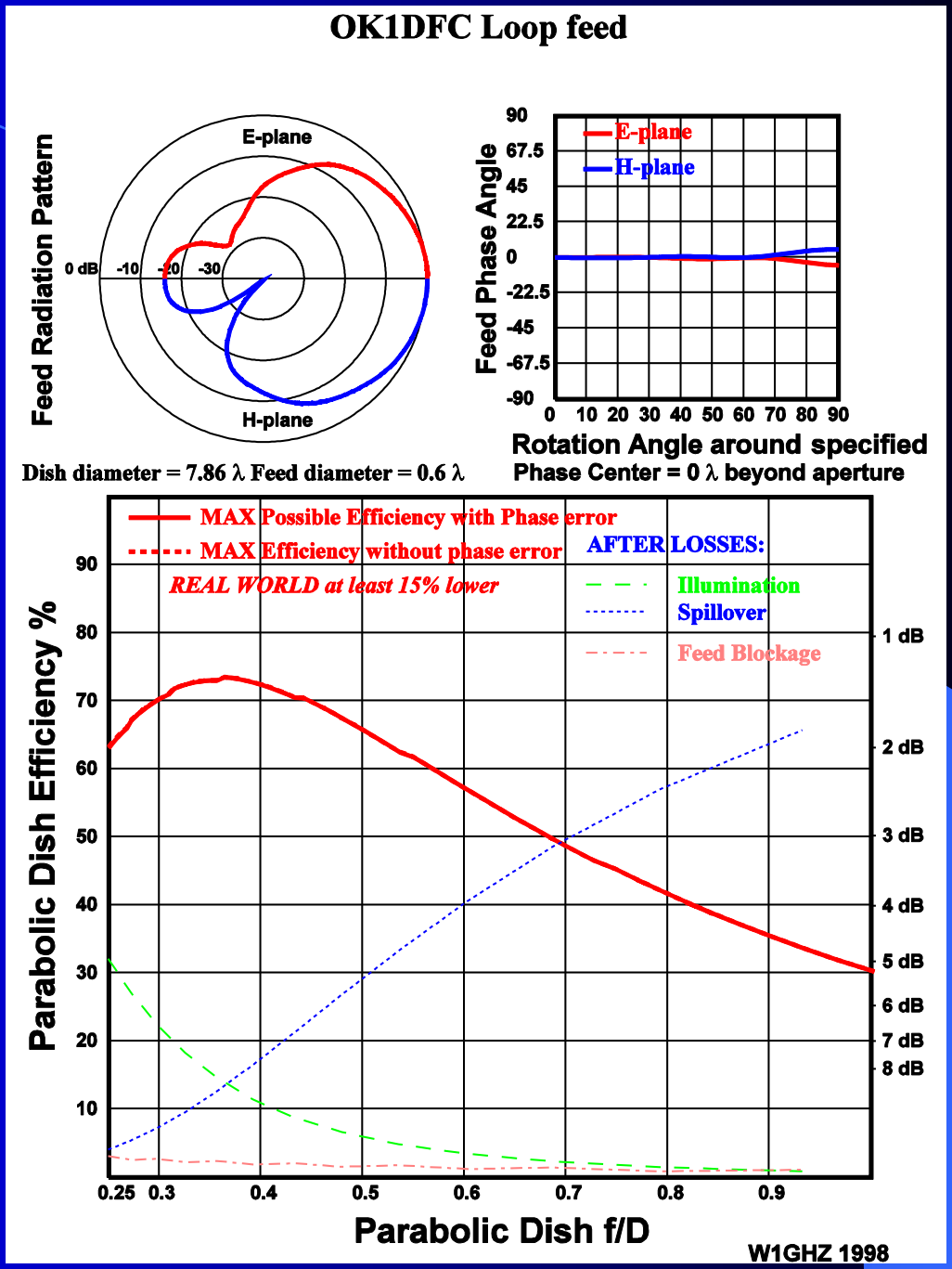
# H-plane pattern



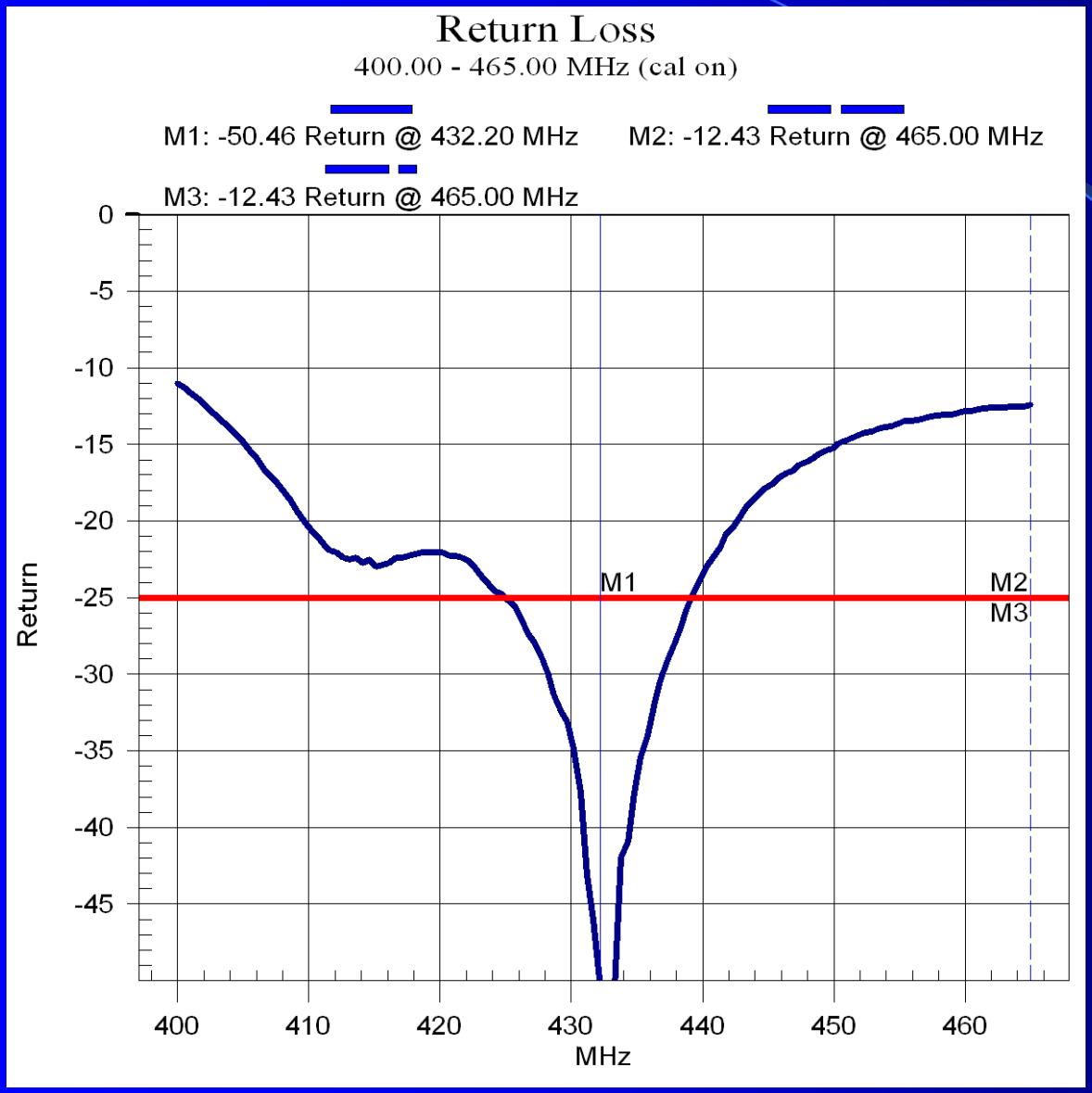
# H-plane phase error



# In dish performance



# SWR diagram



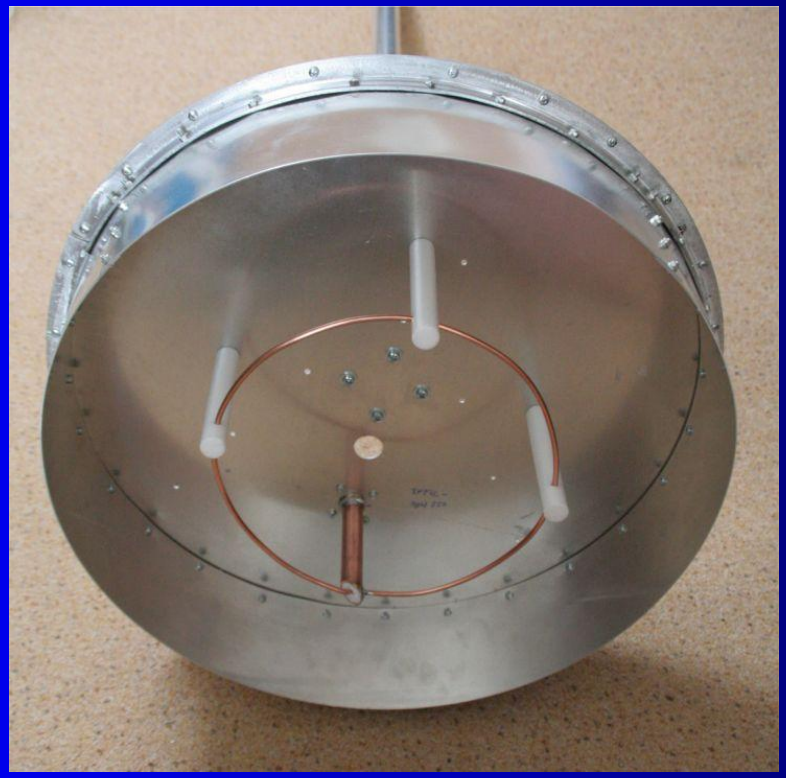

- In open space -30dB
- Phasing point in the focus point – 10m dish F/D 0,4 -50,4dB !!!!
- -25 db SWR for 15MHz broadband

# Prototype

- First application with only N connector, enough to 1,5kW
- Mix of materials, Al – Cu, only for test, not good for long time application, electro corrosion

# Final version of loop feed

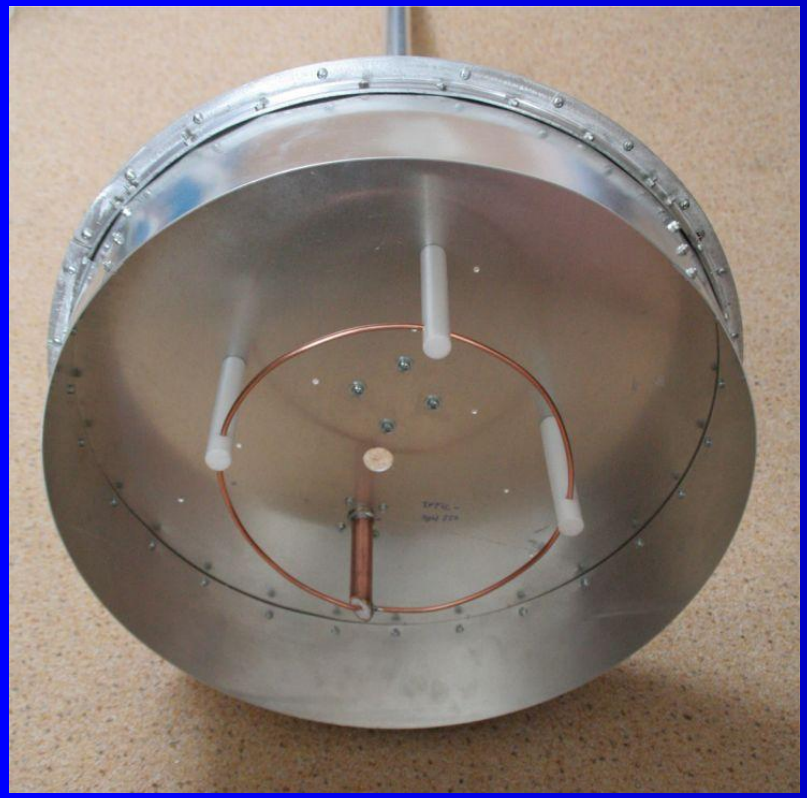
- 7/16“ connector
- Al material for all parts
- Waterproof PVC HD LNA BOX
- Relay
- LNA
- Connectors
- Cavity Filter



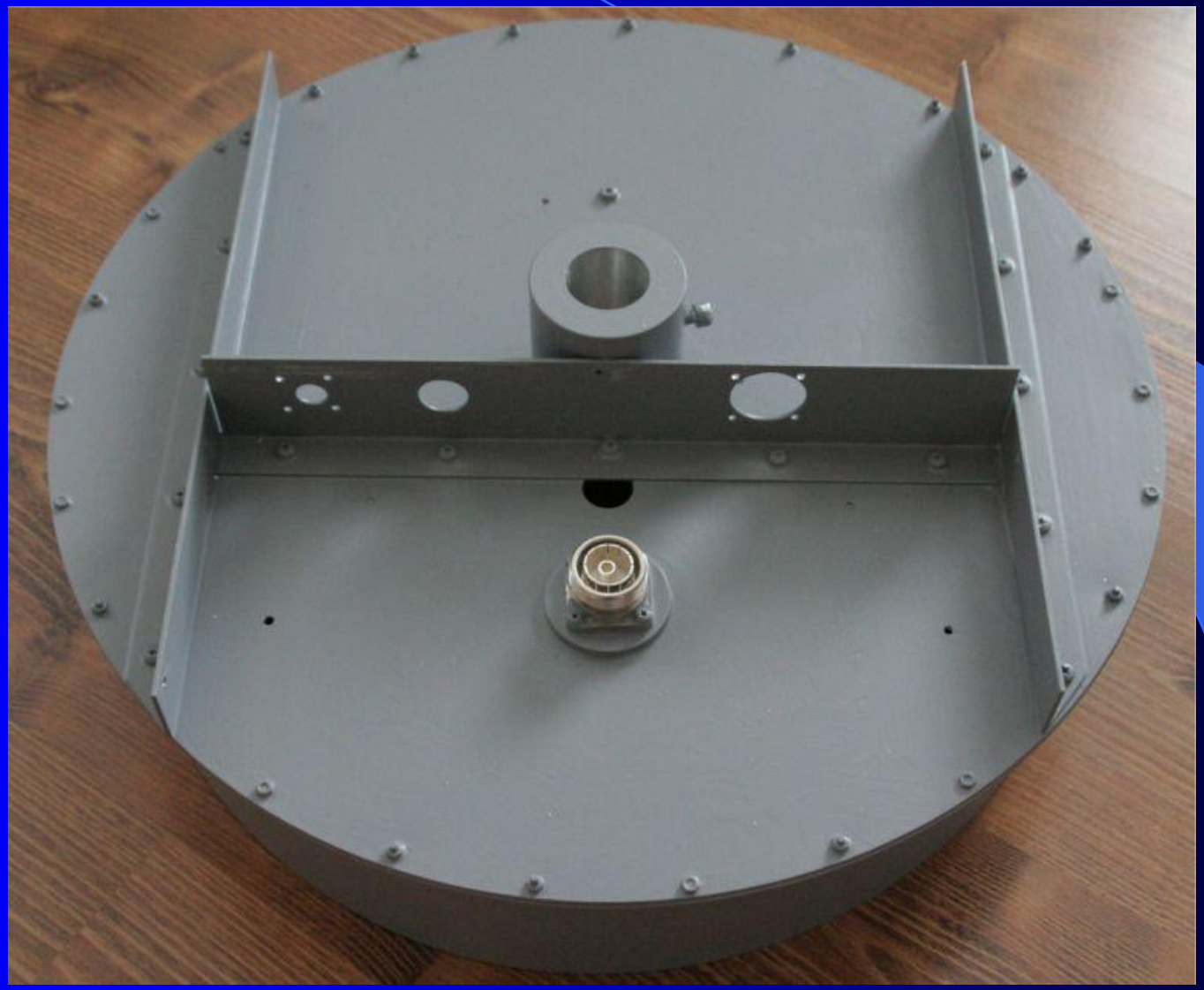
# Mechanical dimensions 432 MHz

- Diameter inside 420mm
- Diameter of loop 212 mm
- Rim – high 90mm
- Distance loop above the plate 86mm
- Three PTFE pillars
- 50 ohm line from 7/16“ connector to the loop

# Details of final solution



# Details



# Details

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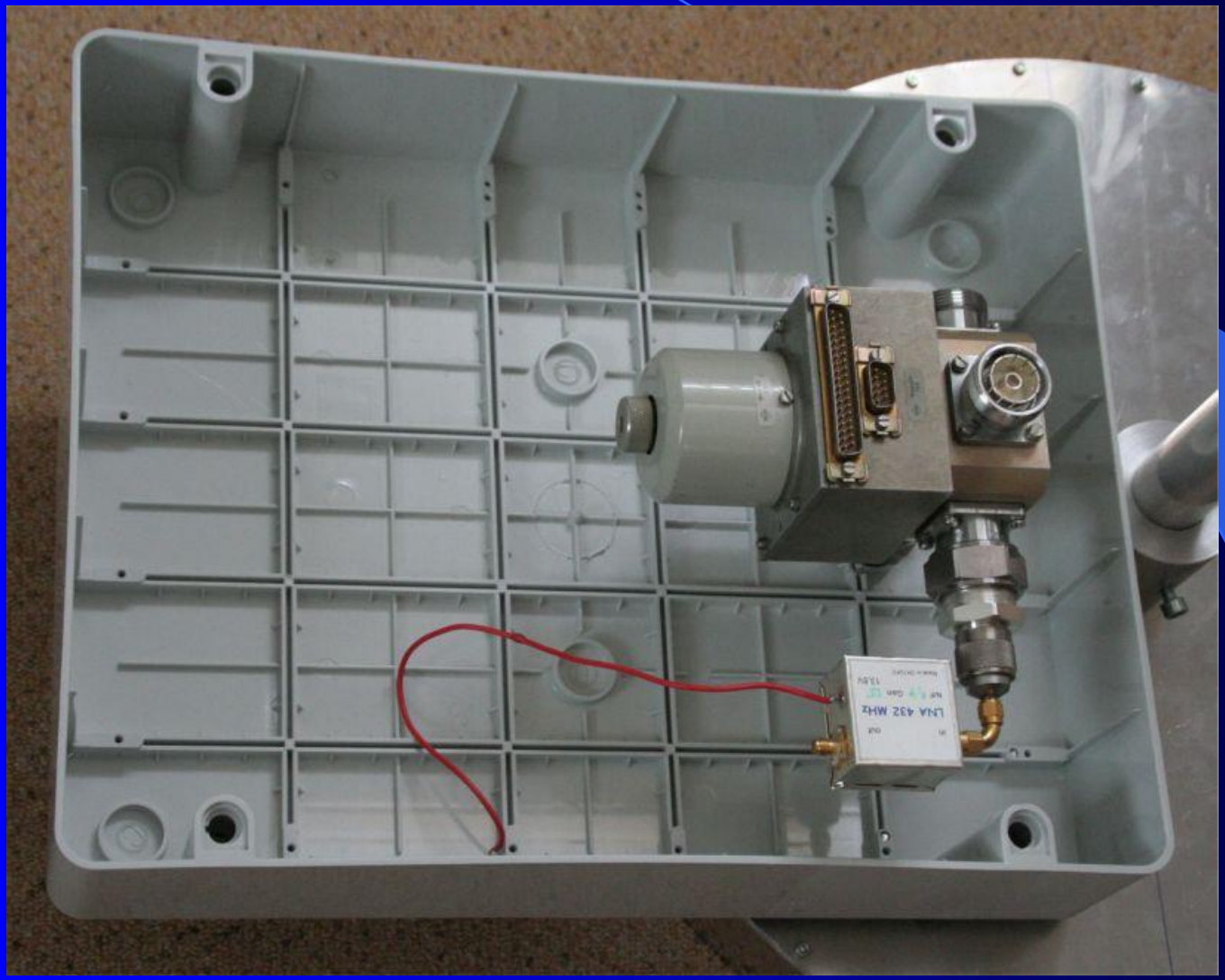
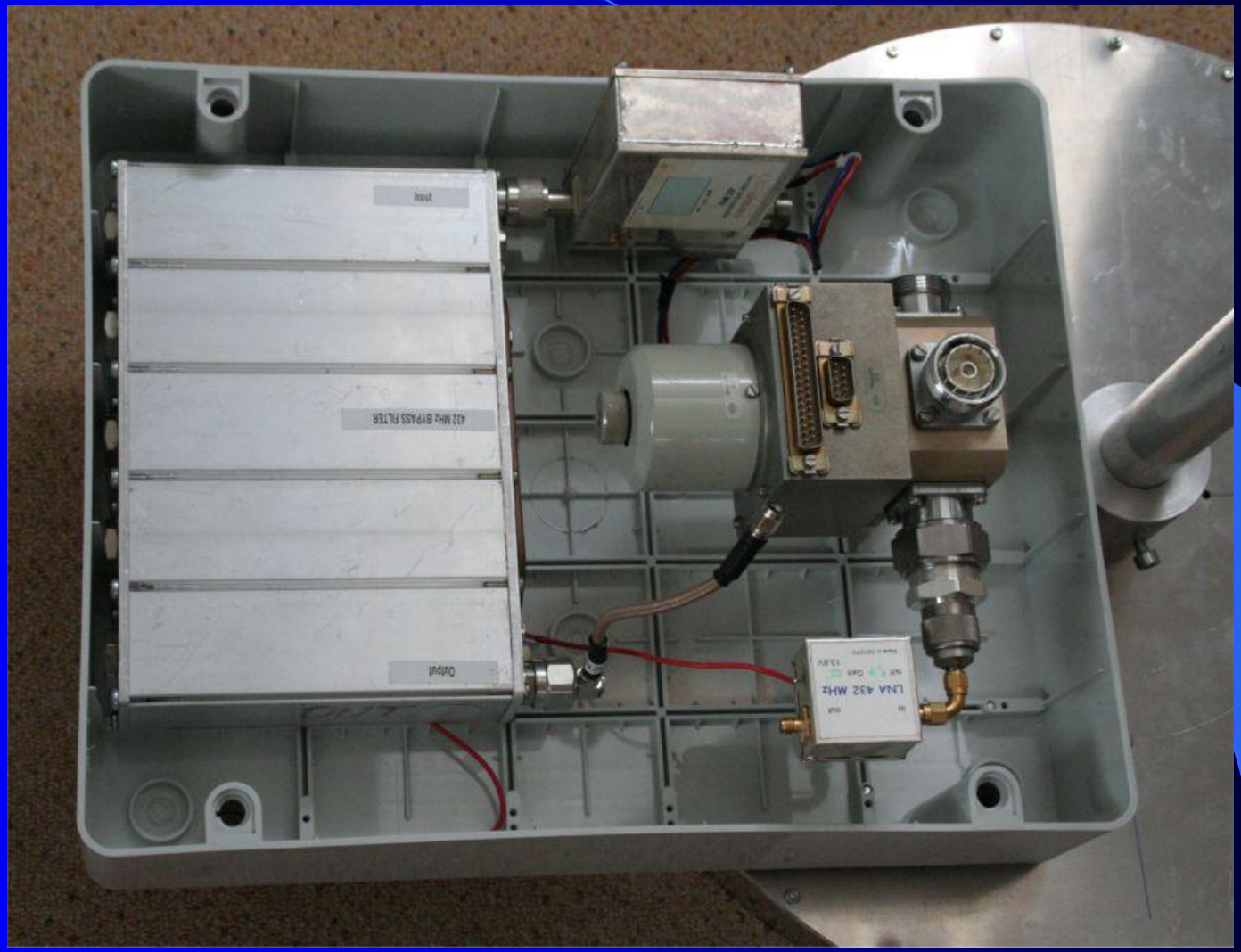
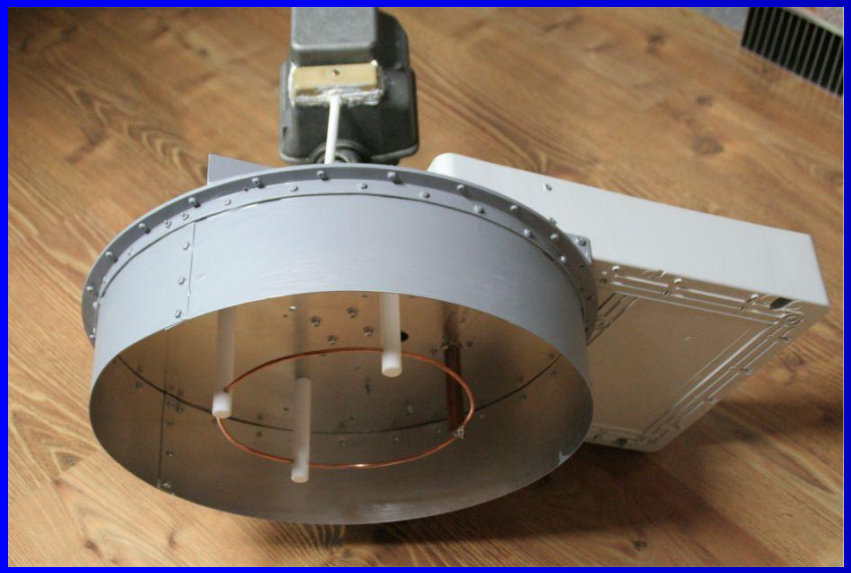
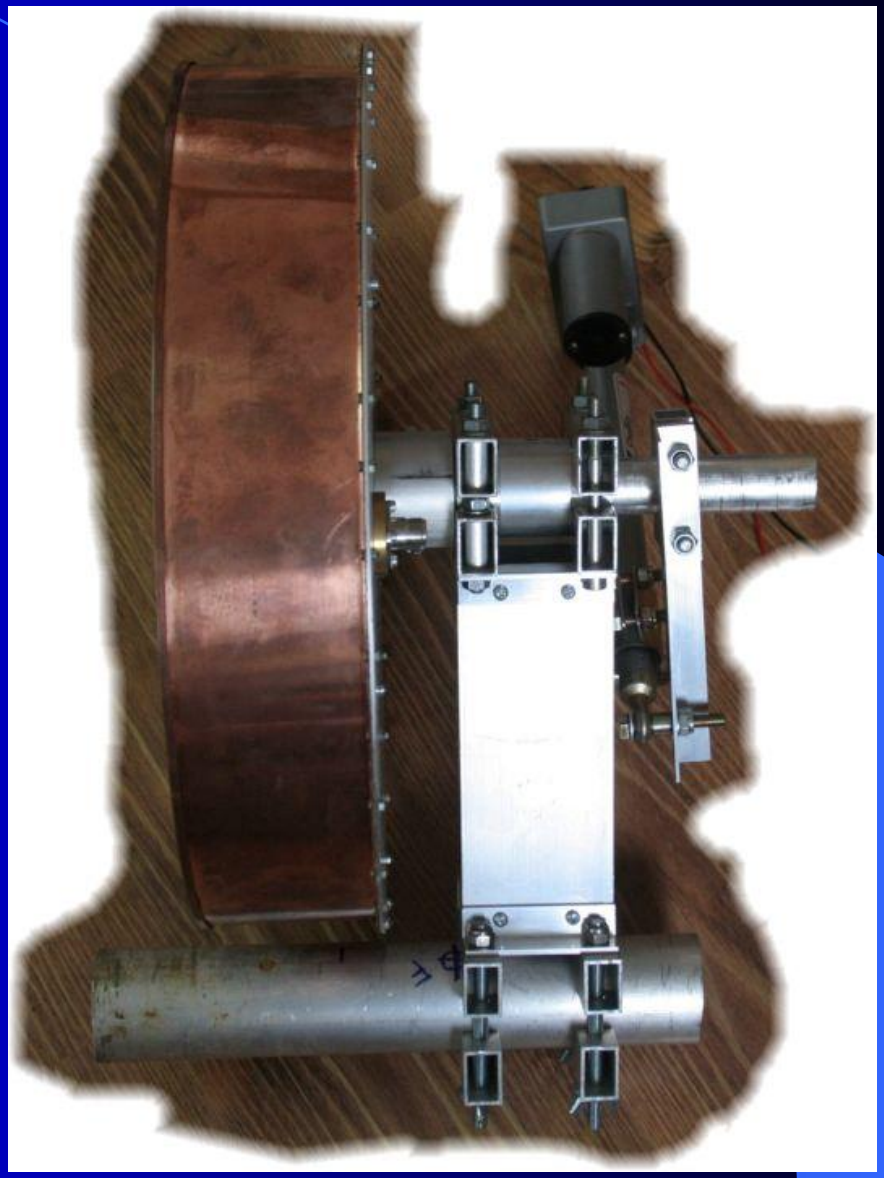


# Details



# Rotor Hirschmann – replaced by SAT Super Jack





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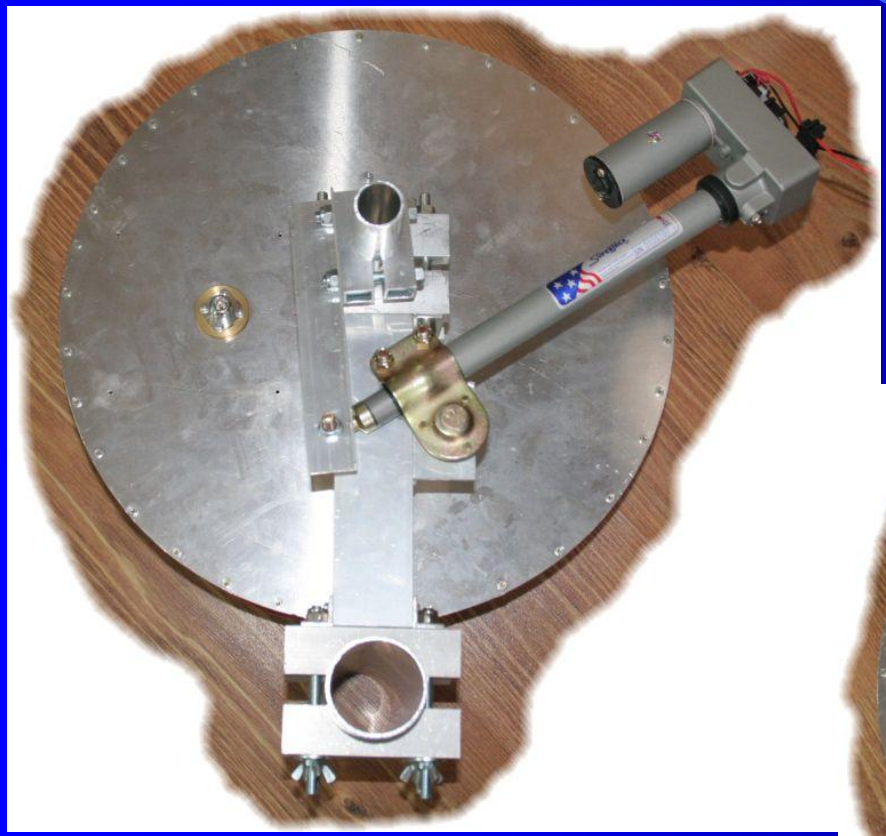
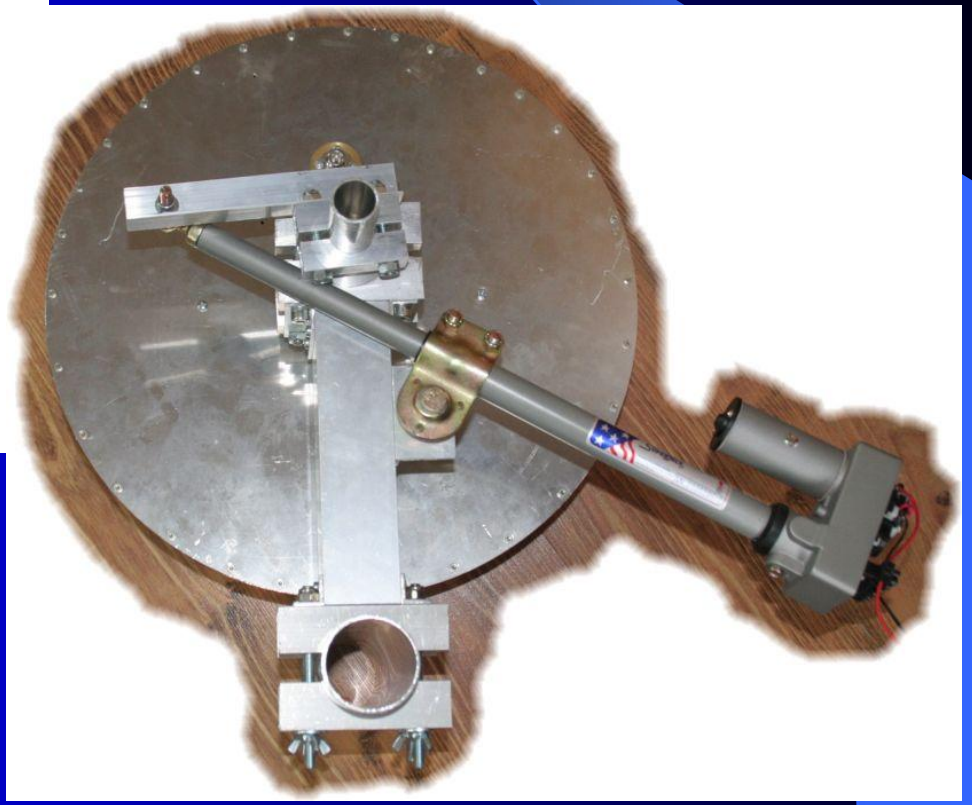


Horizontal polarization



Vertical polarization

# Details in 10m dish at home of OK1DFC

# Details in 3,2m dish at IS0/OK5EME pedition

## Details

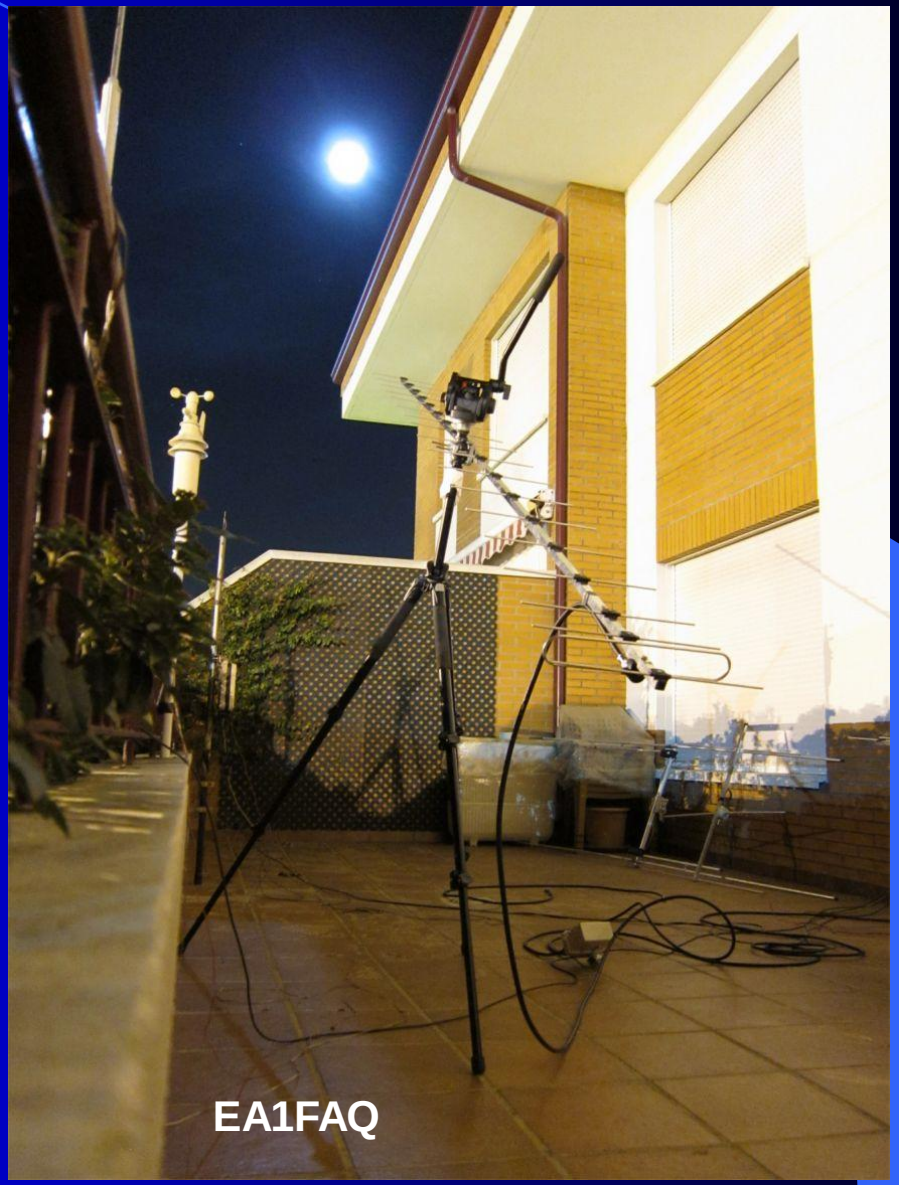
DL3YEE


GI6ATZ


AJ4MW

TI2AEB

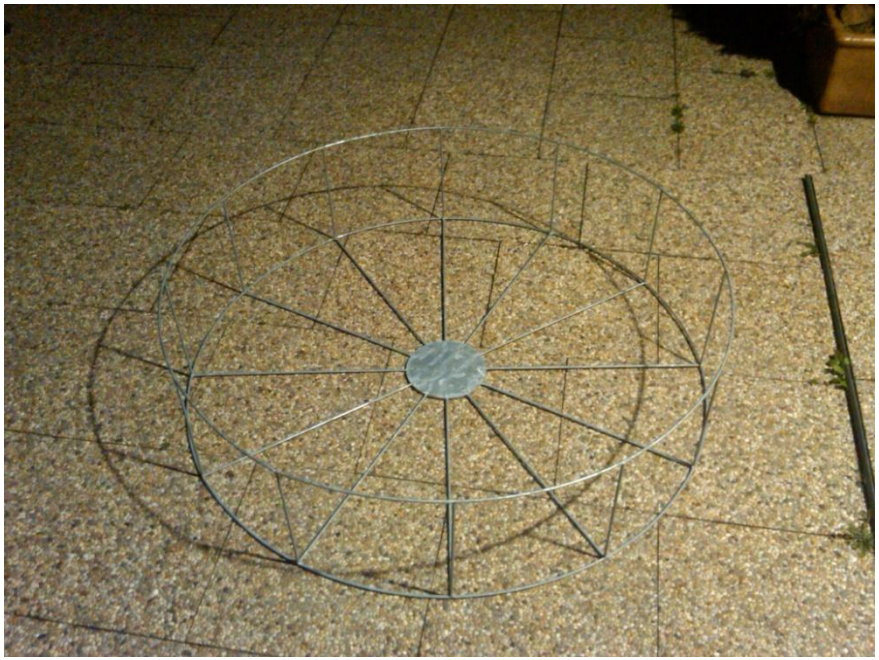
IT9CJC



EA1FAQ

K6LG

# 144 MHz



# 144 final version

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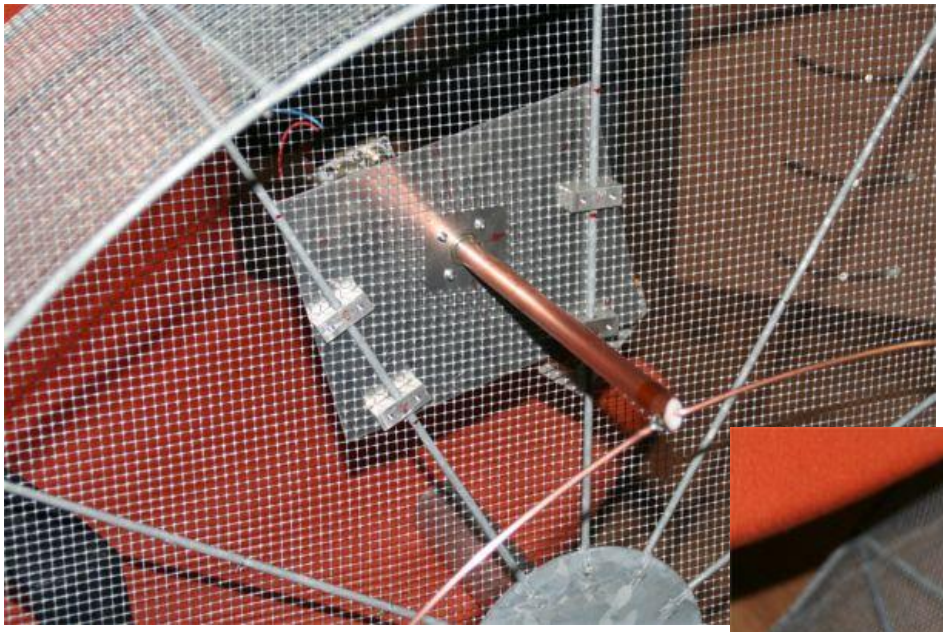
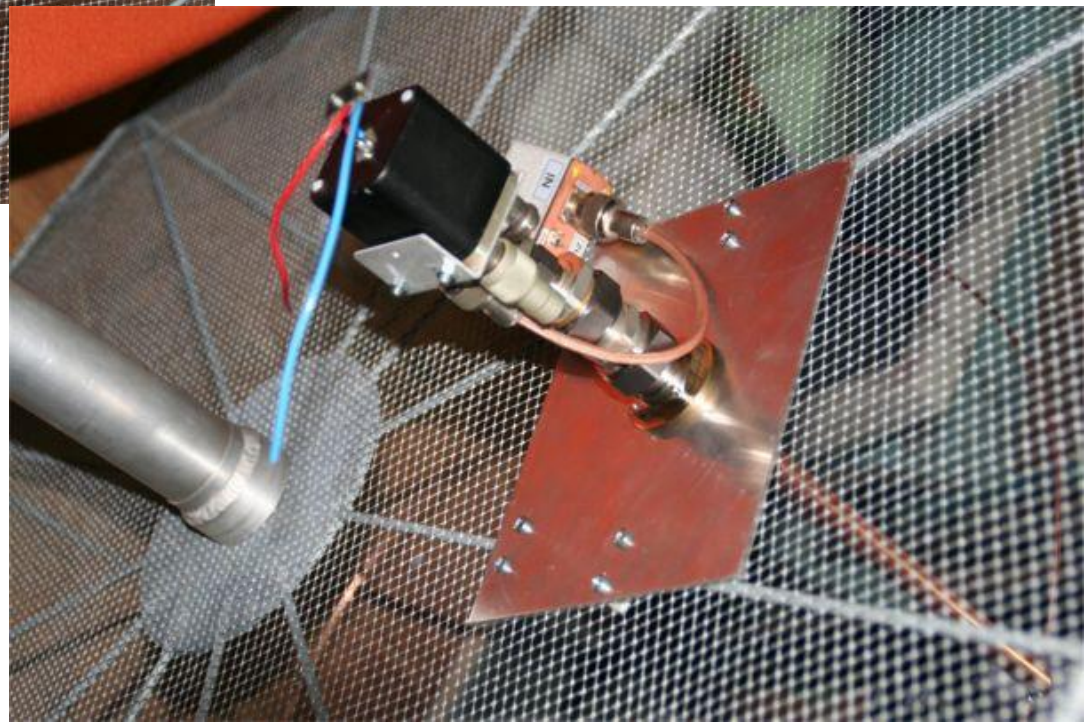


**Open space - 30dB SWR**
**In the dish - 48dB SWR**



**LNA and coaxial relay**

Thank you for attention and see you soon on
432 MHz EME !!!