

VUSHF 2016

**38th Nordic VUSHF
meeting, Sappee, Finland**



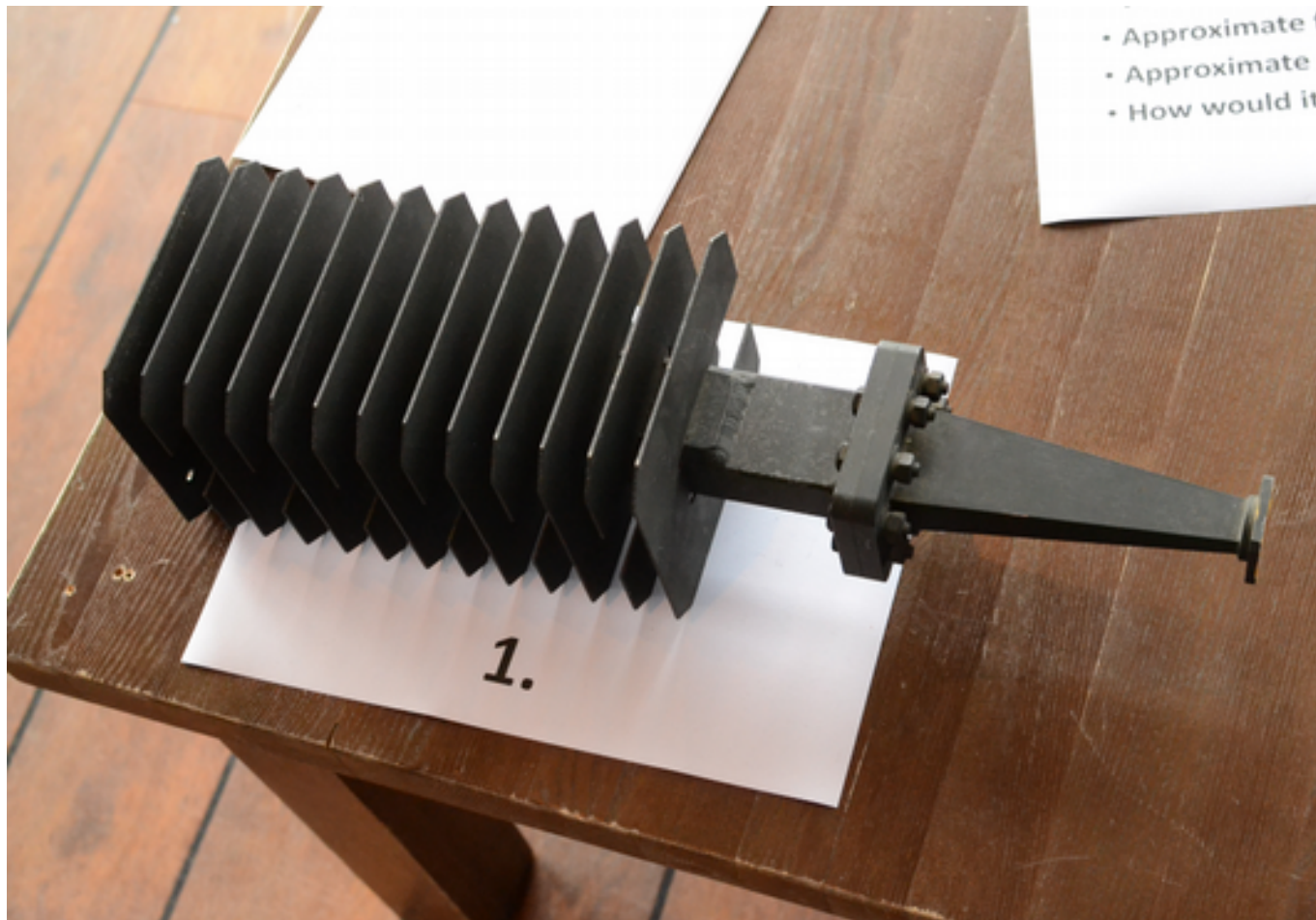
Competition



- What is it?
- Approximate frequency or band?
- Approximate power?
- How would it be used?



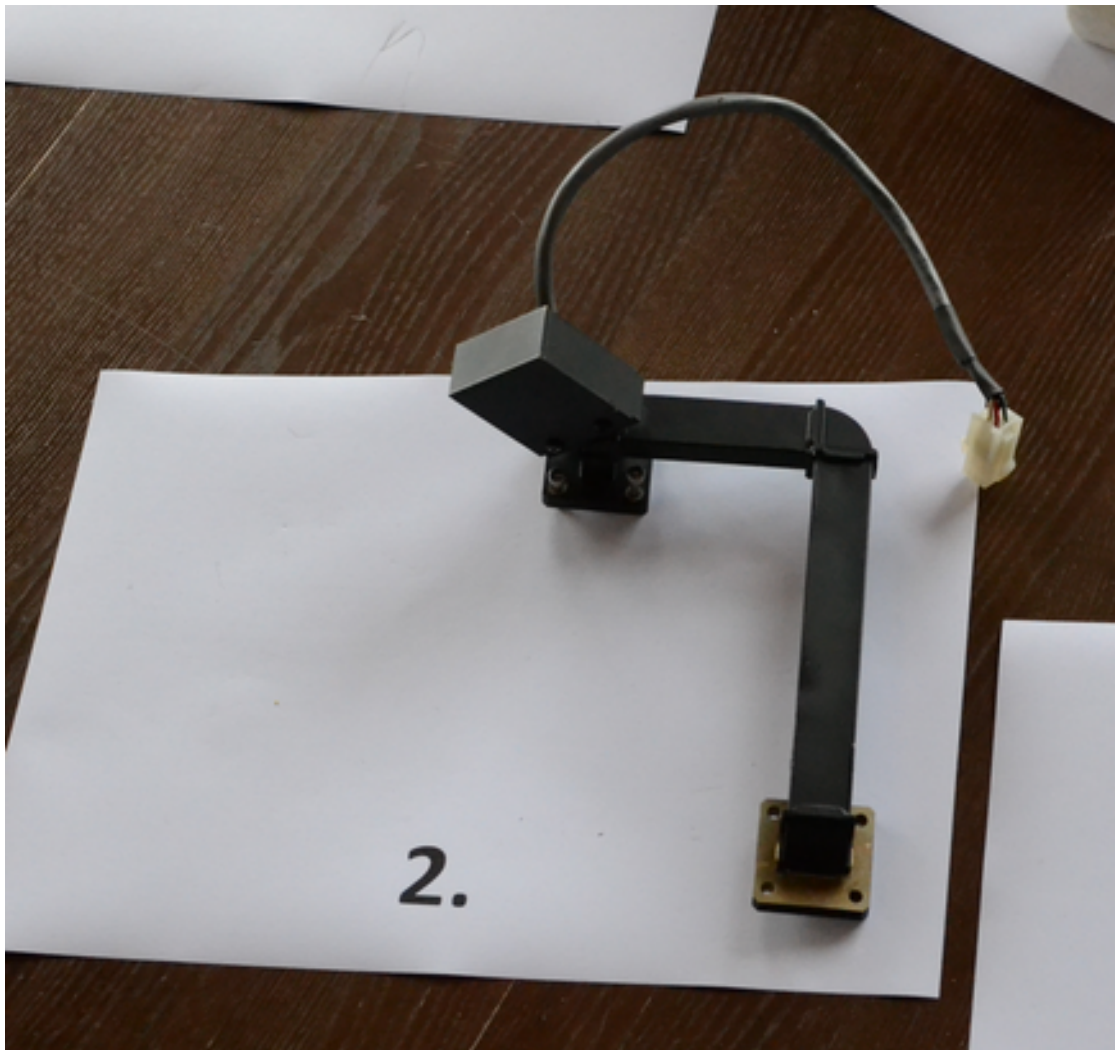
ITEM #1



6 GHz
waveguide
dummy load
used at 18
GHz using
*mode
conversion*

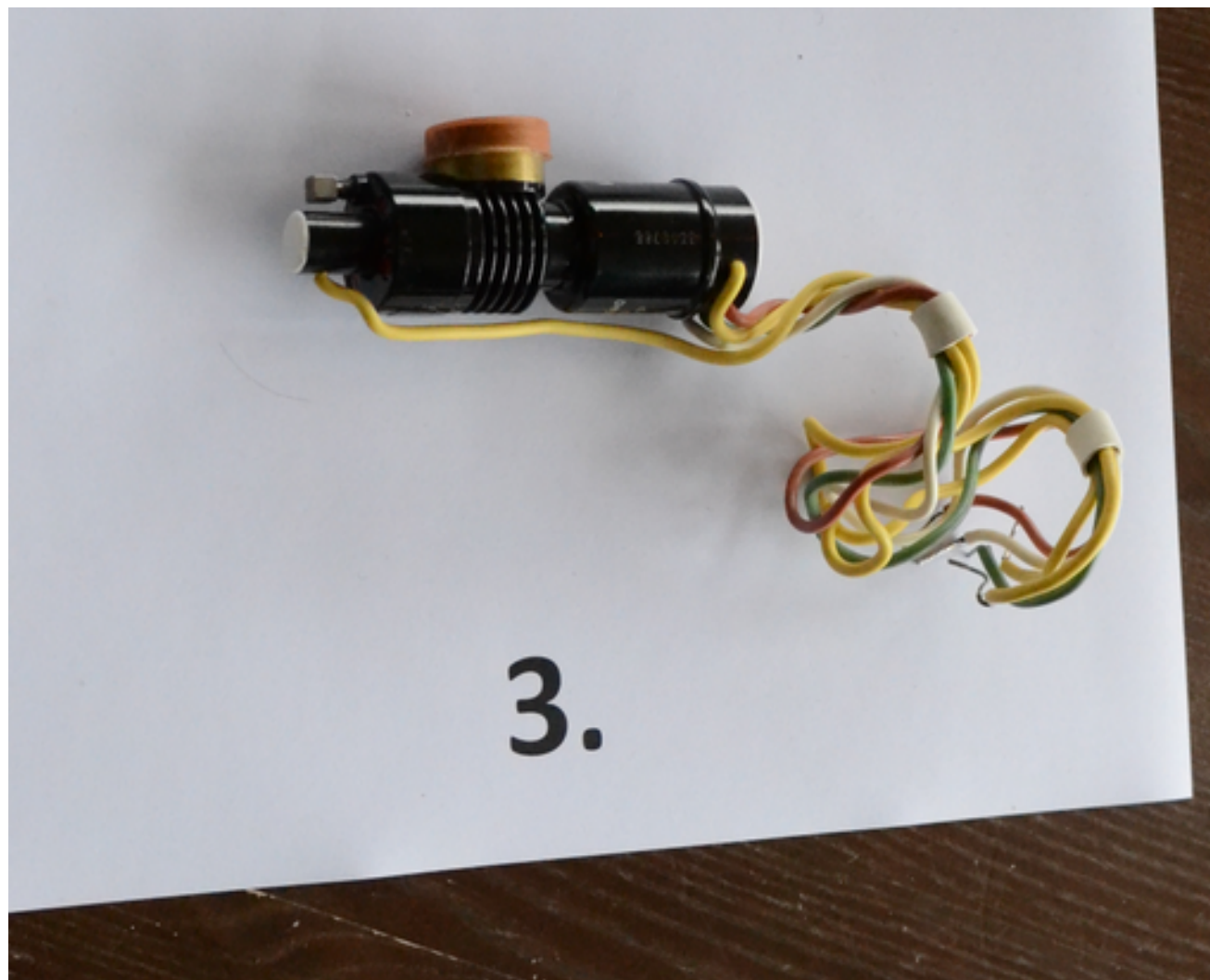
SAT-com
1,5kW uplink
klystron
testing

ITEM #2



**18 GHz
waveguide
arcing infrared
detector**, used
for detecting
arcing in
waveguide and
shutting down
multi-cavity
linear klystron
amplifier (SAT
uplink).

ITEM #3



CCCP
reflection
klystron
(oscillator)
(LO, link
transmitter,
phase locked
multiplier
source etc..) -
60 GHz,
~40mW

ITEM #4



Did not exist, but it would have been
**variable -80 .. -193 dBm crystal
controlled VHF test source at
144.200 MHz**

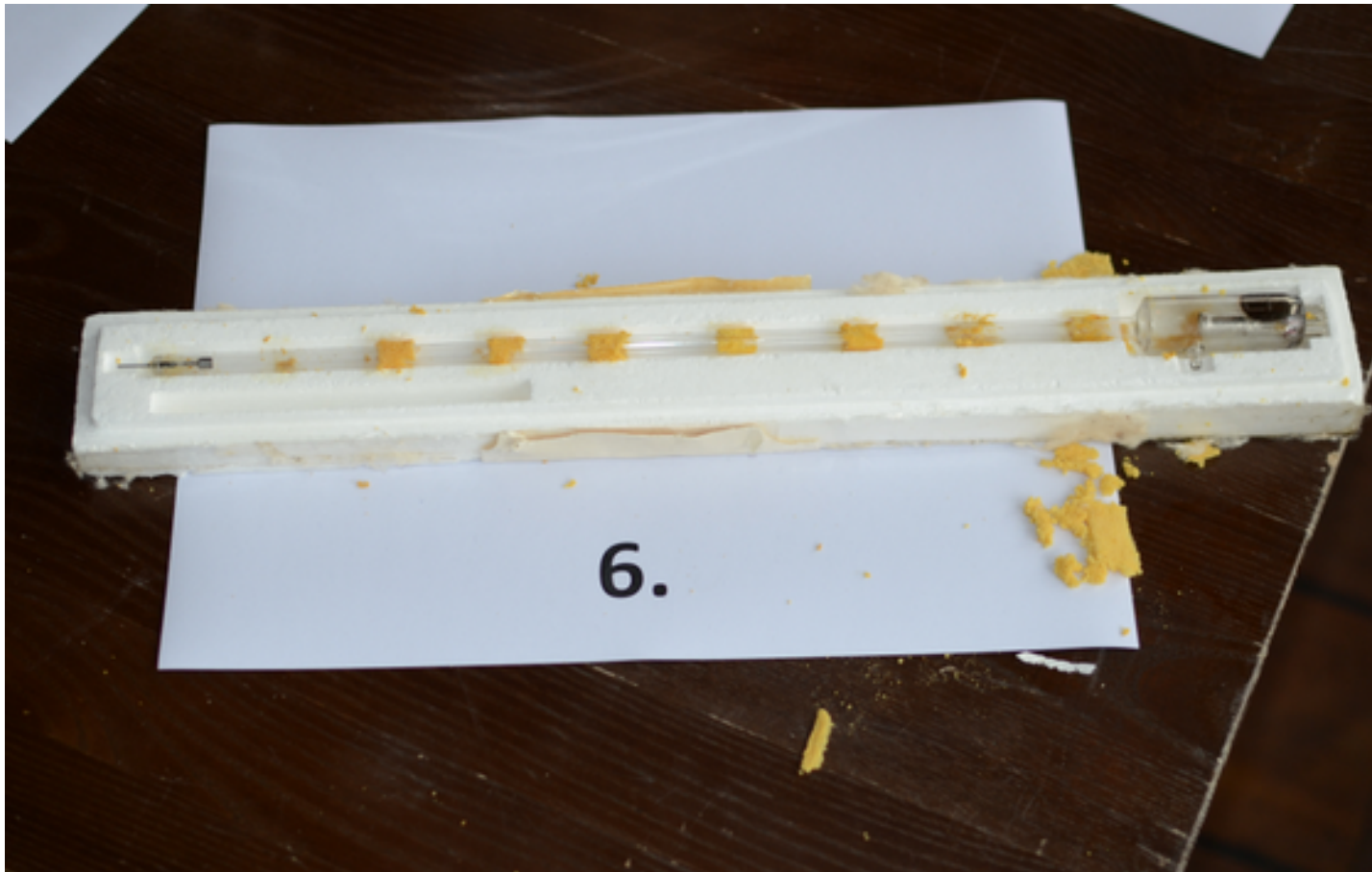
Unfortunately no-one guessed that,
but that didn't affect to scores..

ITEM #5



CCCP UV-1020 **TWT** (Travelling Wave Tube) , used as **preamplifier** in CCCP radar. **7.3 ... 9.7 GHz.** ~**20mW**, (gain 27..32 dB), NF approx 10 dB

ITEM #6



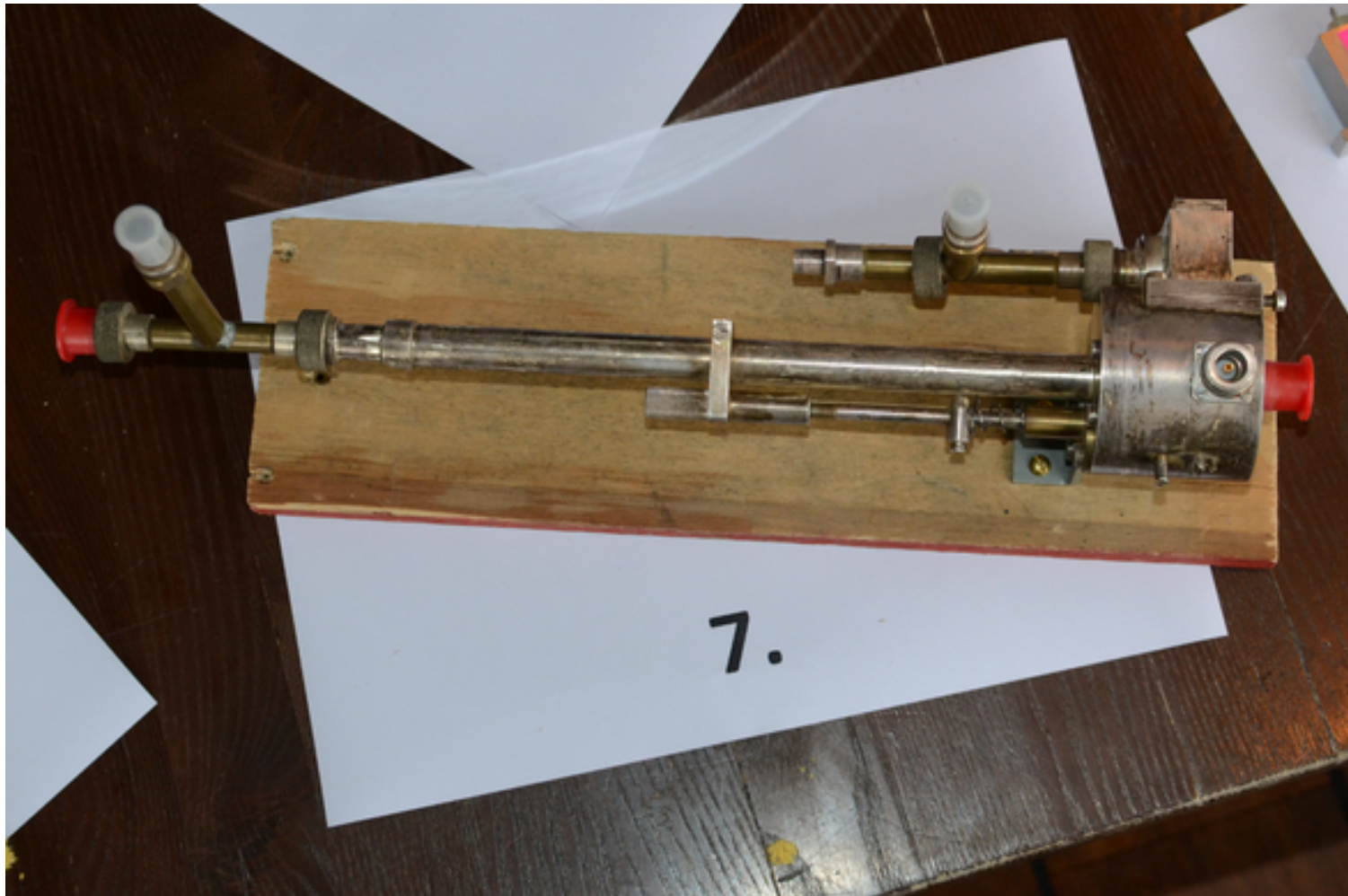
Noise tube,
GS2 **neon**
filled noise
tube

– used in
receiver
testing.

7.5 ... 10.3
GHz.

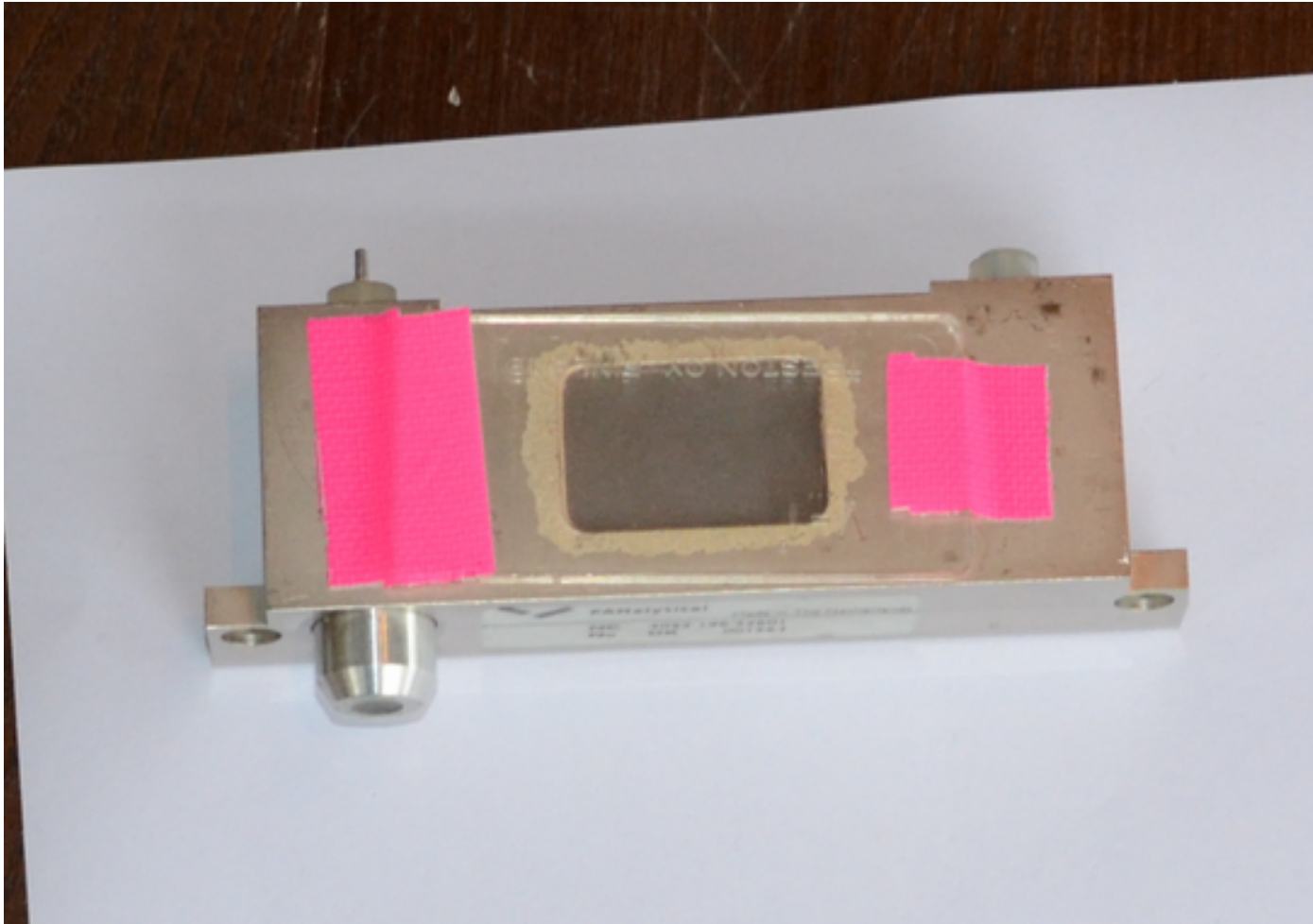
59...70 kT₀

ITEM #7



**Parametric
amplifier,**
used in radio
astronomy.
Signal freq
1,2 GHz,
pump freq.
About 6 GHz.
NF ~1dB

ITEM #8



X-ray tube,
used e.g. X-
ray
fluorescence
material
analysis

Peta-Hz

Power:
several kW
peak

ITEM #9



Did not exist, but **high-power magnetron 2MW**, water cooled (btw. Anode peak voltage 46 kV – X-ray warning!)

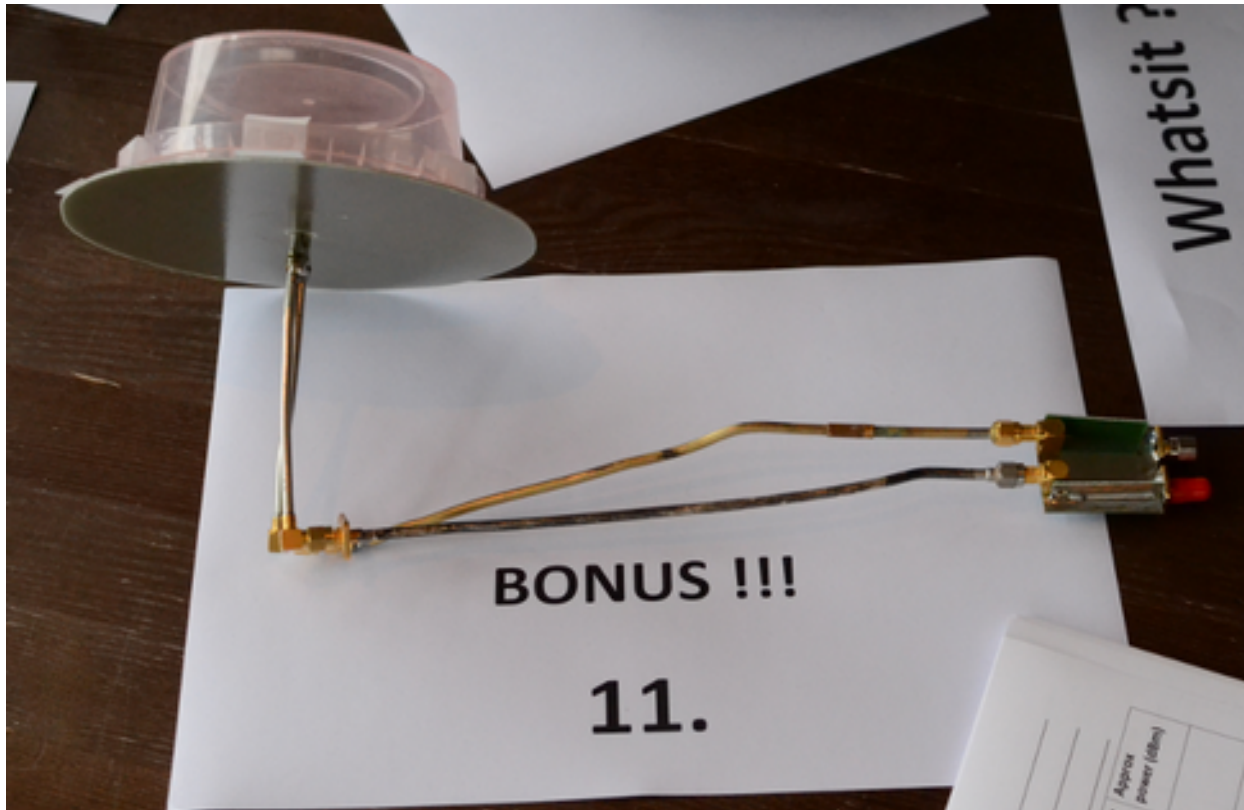
ITEM #10



High-power triode,
used as amplifier or
oscillator – Marconi
used this tube type for
High Efficiency Class-F
1 MHz amplifier
experiments in 1958,
achieving 93,8% anode
efficiency!

Up to 50 MHz
~75kW typical

Bonus, #11

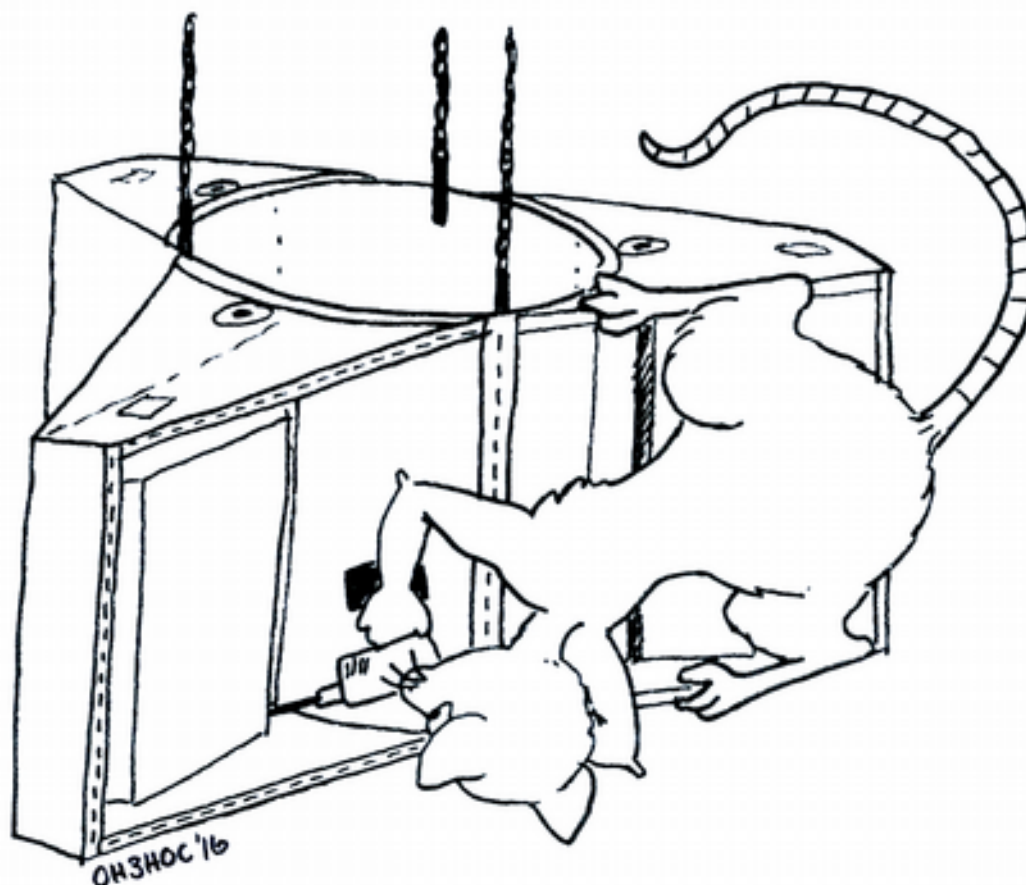


**Tripole (three-phase) antenna
(parasitically fed).**

S-band, 2.4 GHz.

**Extremely
powerful ;)**

The winner is...



Thanks



- Competition items, descriptions and arrangements by Michael OH2AUE
- Photos by Veli-Matti OH7JEV
- Thanks for attending!