Antenna relay 1:4

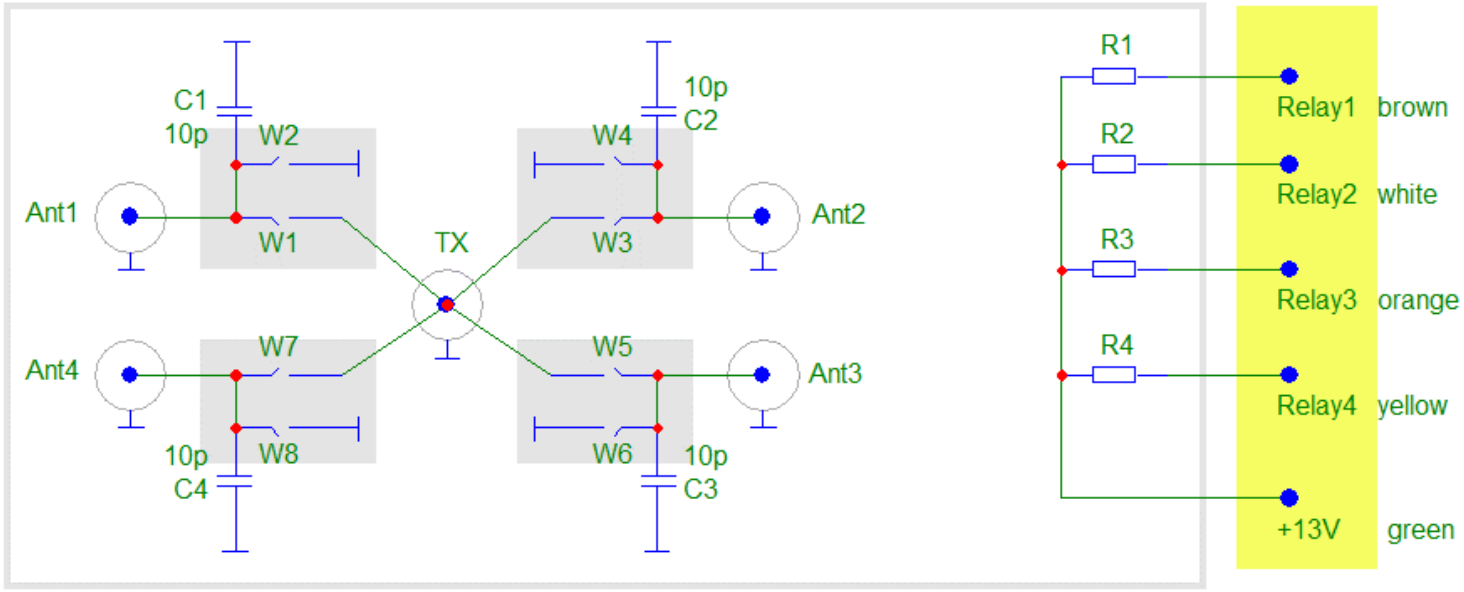
Frequency range 0-52MHz

Return Loss > 30dB

Antenna relay 1:4

- This relay box was originally built for club station OH1AJ, when its antenna system was renovated in 2018. As multiple copies have been built by other amateurs after that, I publish it also here.
- There is no printed circuit board. The relays are fixed to the box cover plate with double sided tape. Wiring is made with dia 1mm copper wire. The layout is important as stray inductance is the challenge. Additional inductance is compensated with abt 10pF capacitors in the half way between input and output connectors. The capacitors are made out of double sided PCB.
- Good matching is achieved. But it requires trimming of those capacitors. Accurate 50ohm termination is connected to the input terminal (TX). SWR / return loss is measured with network analyzer at each output (Ant). SWR of each output (Ant) is trimmed to minimum by cutting pieces away from the PCB capacitor. See pictures.
- Power capability is the full legal 1.5kW

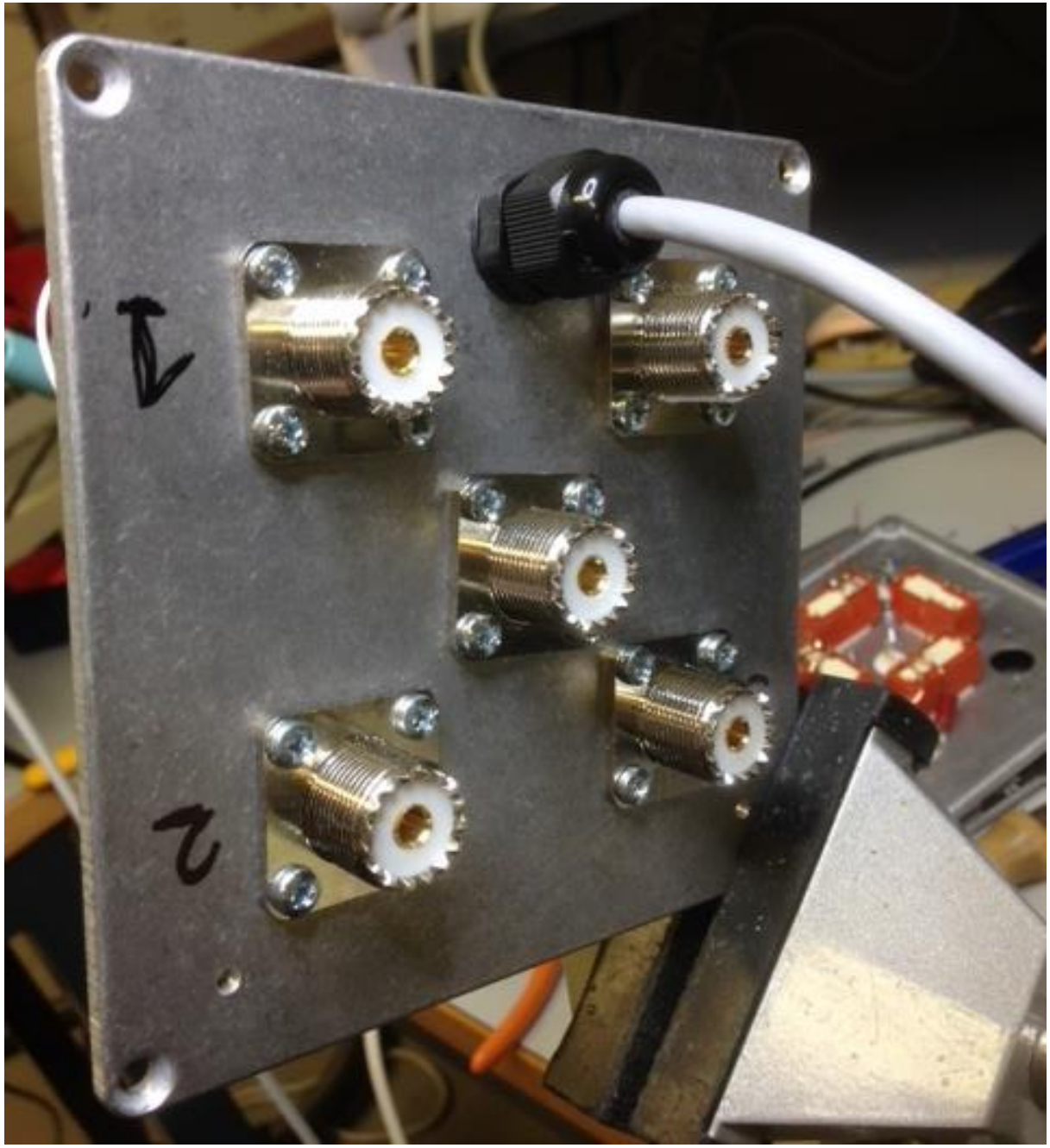
Antenna relay 1:4,
0-52MHz, RL >30dB



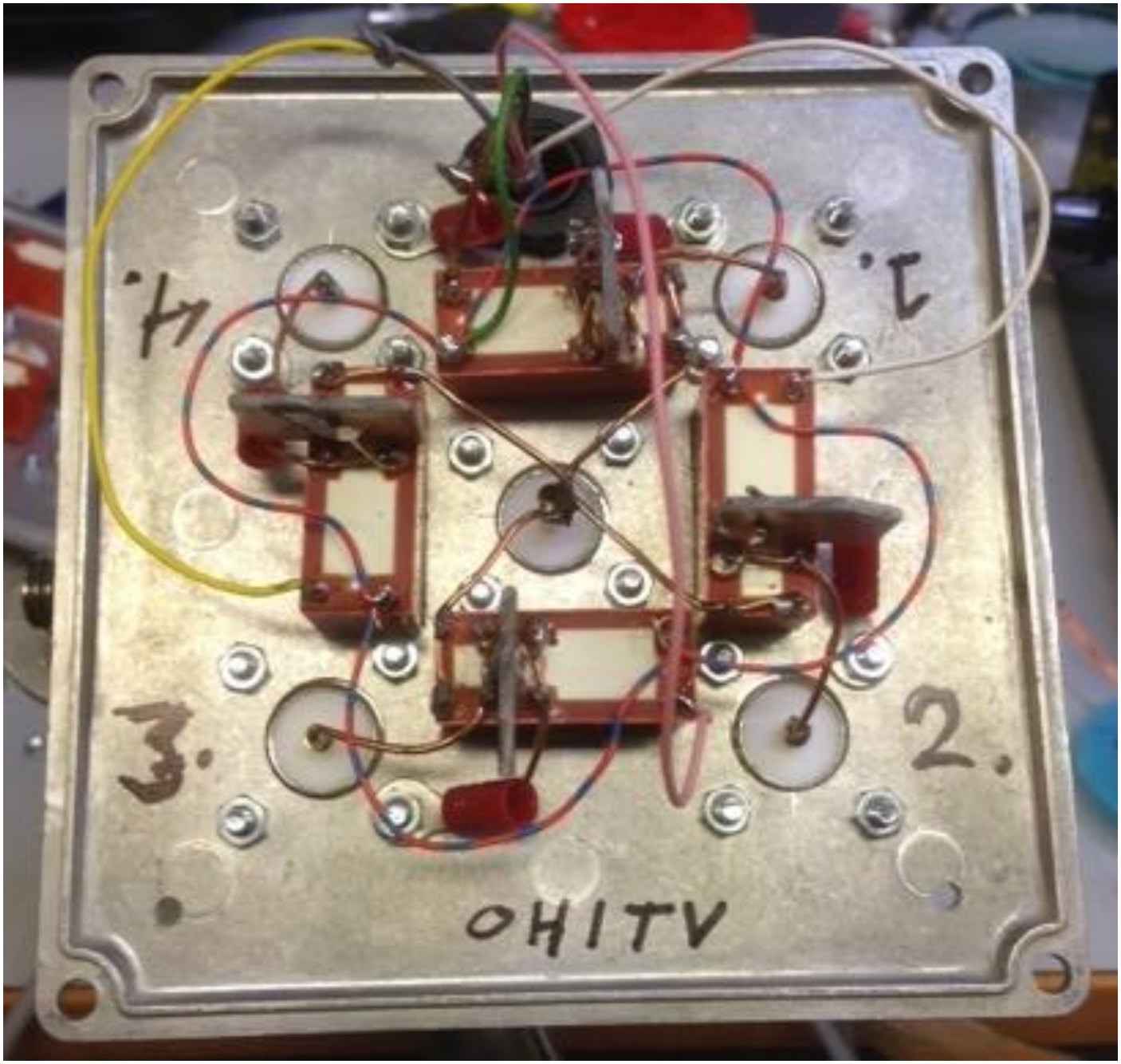
W1-W2 = SPDT
W2, W4, W6, W8 on when relays off

Housing Hammong 1590U, 120x120x55mm, aluminium
Relays SPDT 16A 250V 12VDC like Schrack RT314-12
Capacitors C1-C4 = double sided printed circuit board, 1.5mm glas fiber, size 17x20mm

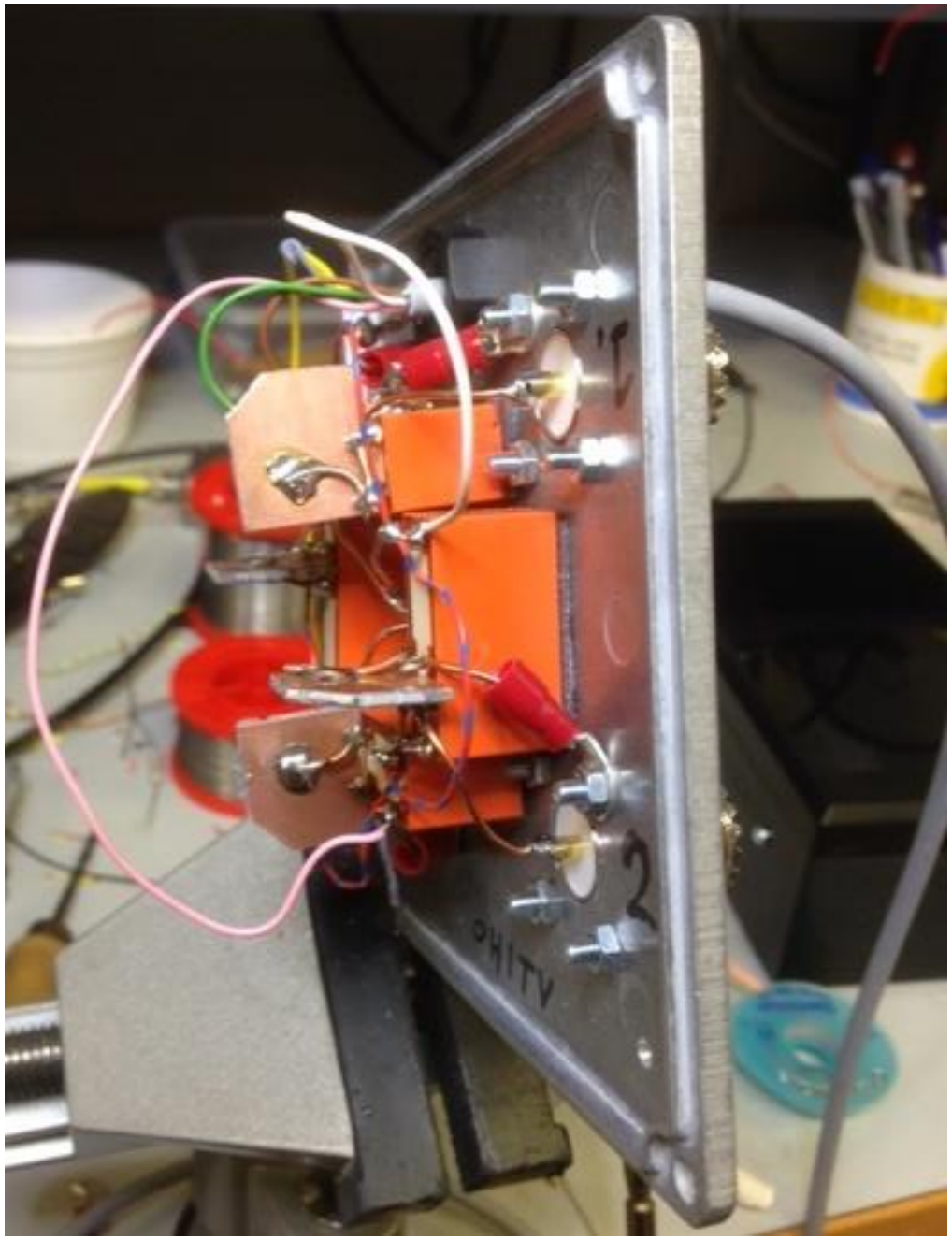
26.9.2018
OH1TV



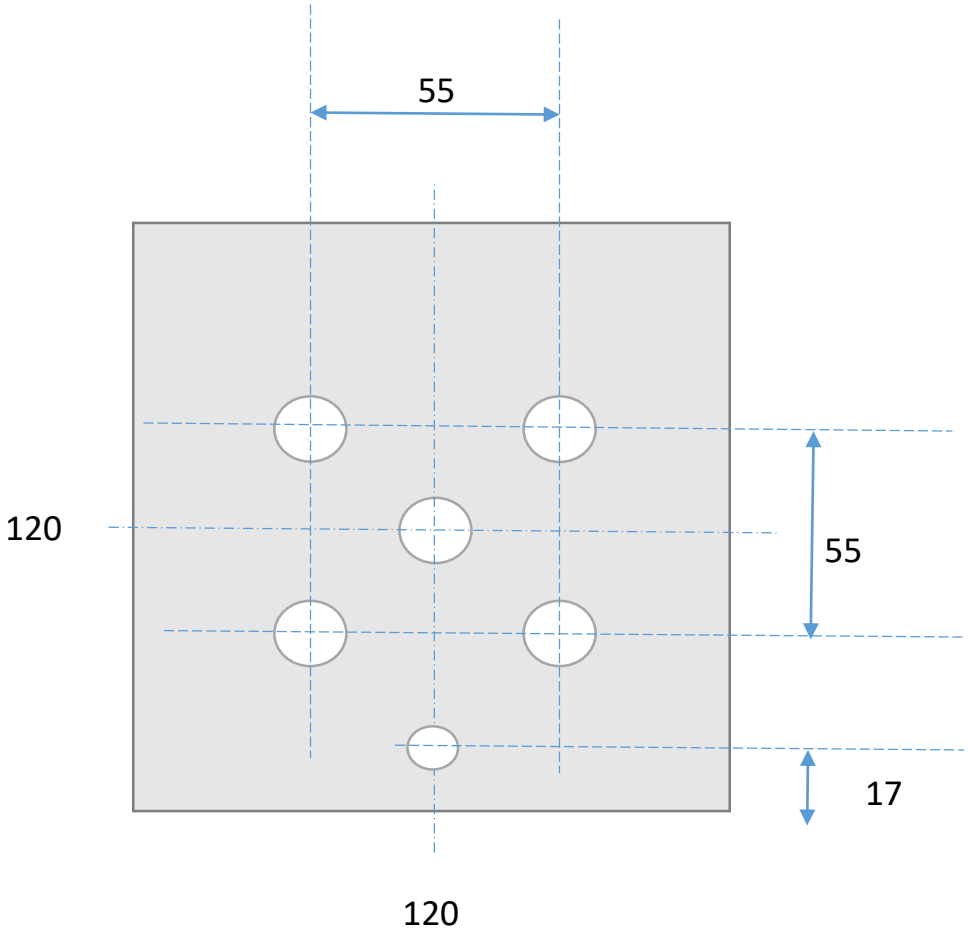
Pigtail cable 2m long



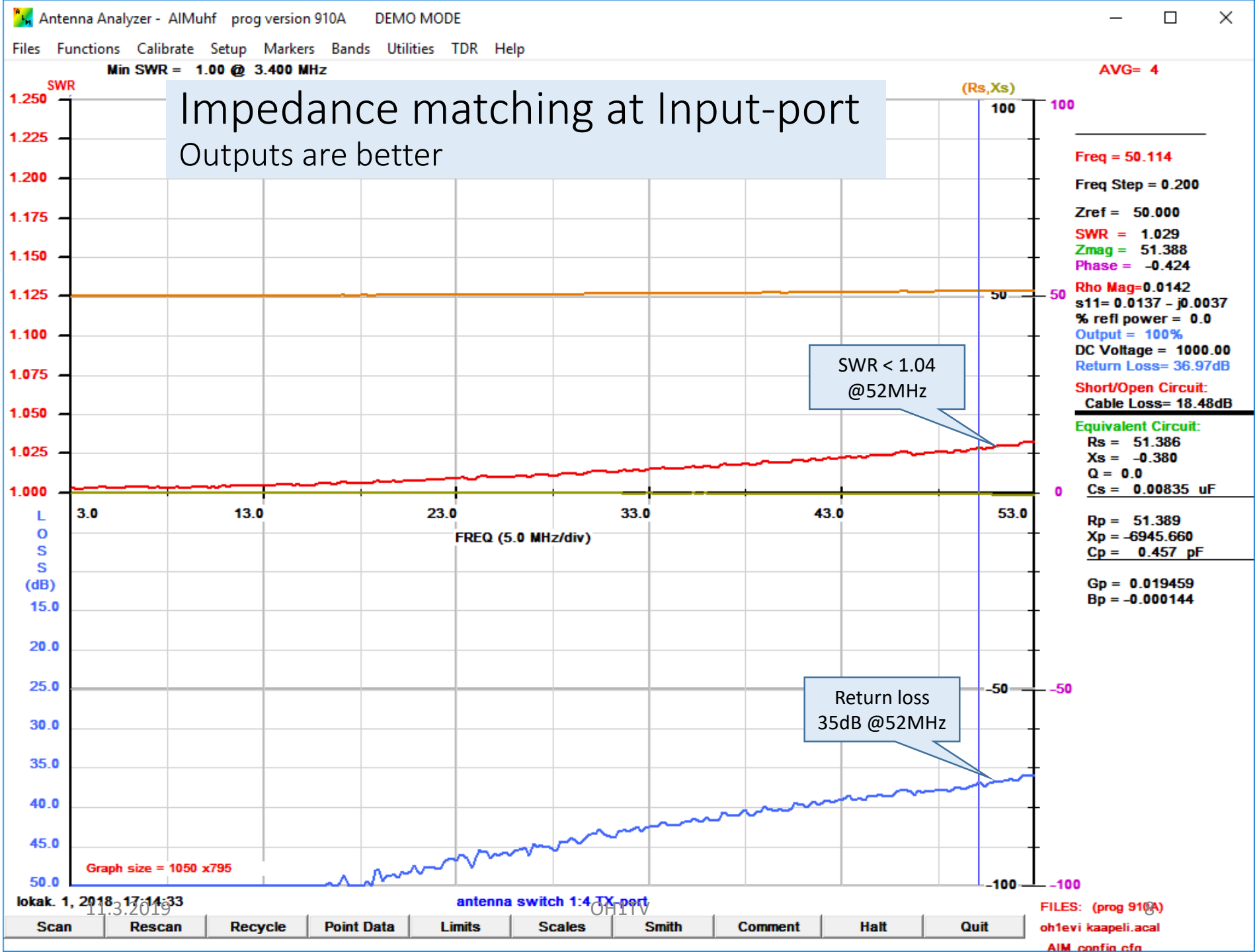
Wire dia 1mm CU non emaled clear


OH1TV

Antenna relay box 1:4



- The box is Hammond 1590U
- All components are mounted on the cover plate
- 5pcs UHF female connectors, flange mount


Antenna Analyzer - AlMuhf prog version 910A DEMO MODE
Files Functions Calibrate Setup Markers Bands Utilities TDR Help
Min SWR = 1.00 @ 3.400 MHz
AVG= 4
Impedance matching at Input-port
Outputs are better
SWR
(Rs,Xs)
SWR < 1.04 @52MHz
Return loss 35dB @52MHz
FREQ (5.0 MHz/div)
LOSS (dB)
Freq = 50.114
Freq Step = 0.200
Zref = 50.000
SWR = 1.029
Zmag = 51.388
Phase = -0.424
Rho Mag=0.0142
s11= 0.0137 - j0.0037
% refl power = 0.0
Output = 100%
DC Voltage = 1000.00
Return Loss= 36.97dB
Short/Open Circuit:
Cable Loss= 18.48dB
Equivalent Circuit:
Rs = 51.386
Xs = -0.380
Q = 0.0
Cs = 0.00835 uF
Rp = 51.389
Xp = -6945.660
Cp = 0.457 pF
Gp = 0.019459
Bp = -0.000144
Graph size = 1050 x795
lokak. 1, 2018 17:14:33
antenna switch 1:4 TX-port
FILES: (prog 910A)
oh1evi kaapeli.acal
AIM_config.cfg
Scan Rescan Recycle Point Data Limits Scales Smith Comment Halt Quit