24GHz portable EME

OK1DFC - ZDENĚK SAMEK
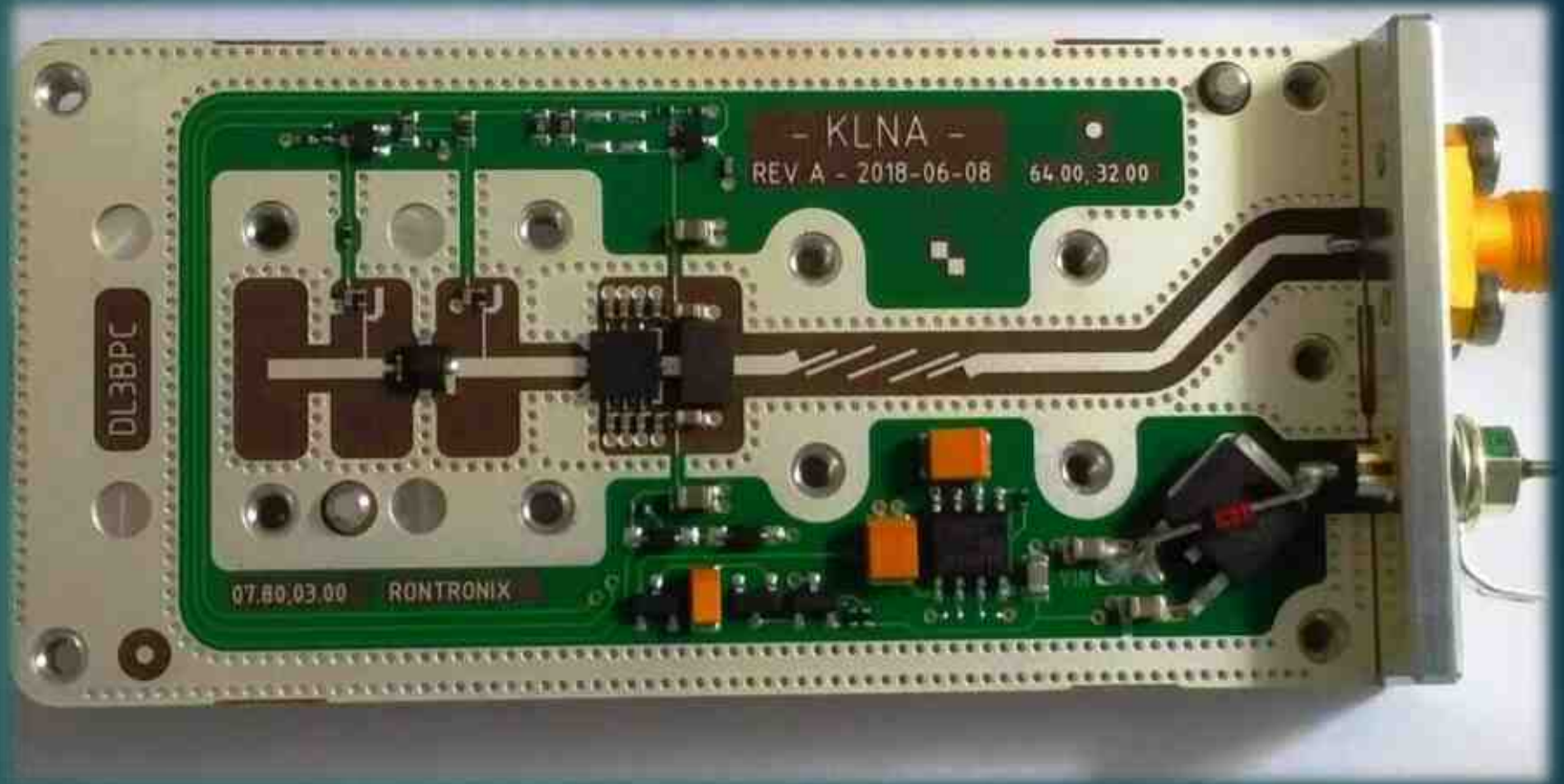
TRV 3rd generation - DB6NT

- Used in TRV 3rd generation too
- TRV DB6NT
- 2,6 W RF out TX
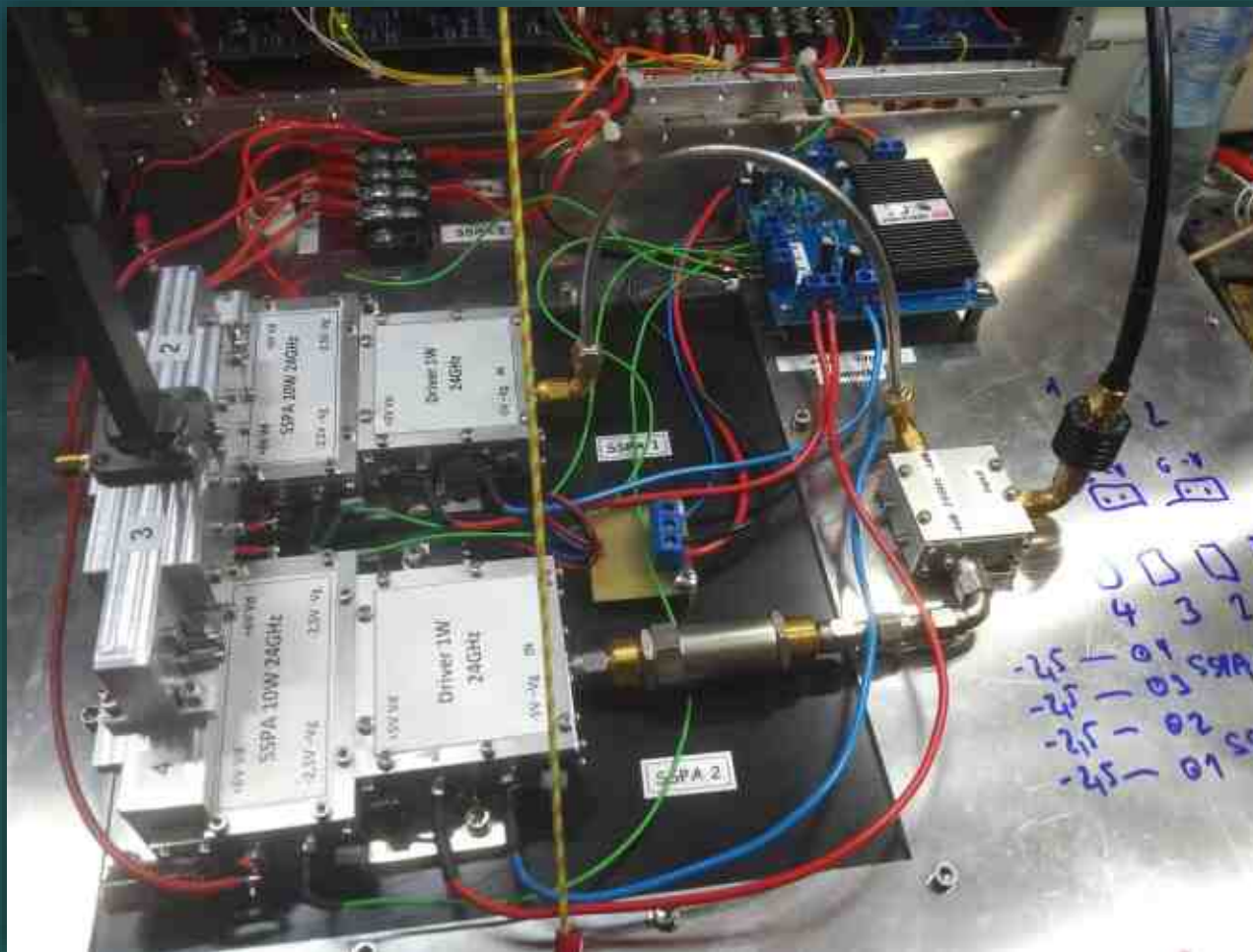- 4 dB N/F RX

TRV 3rd generation – new KLNA

- WR42 KLNA - 1,1dB N/F
- Gain 30dB

TRV 3rd generation – SSPA
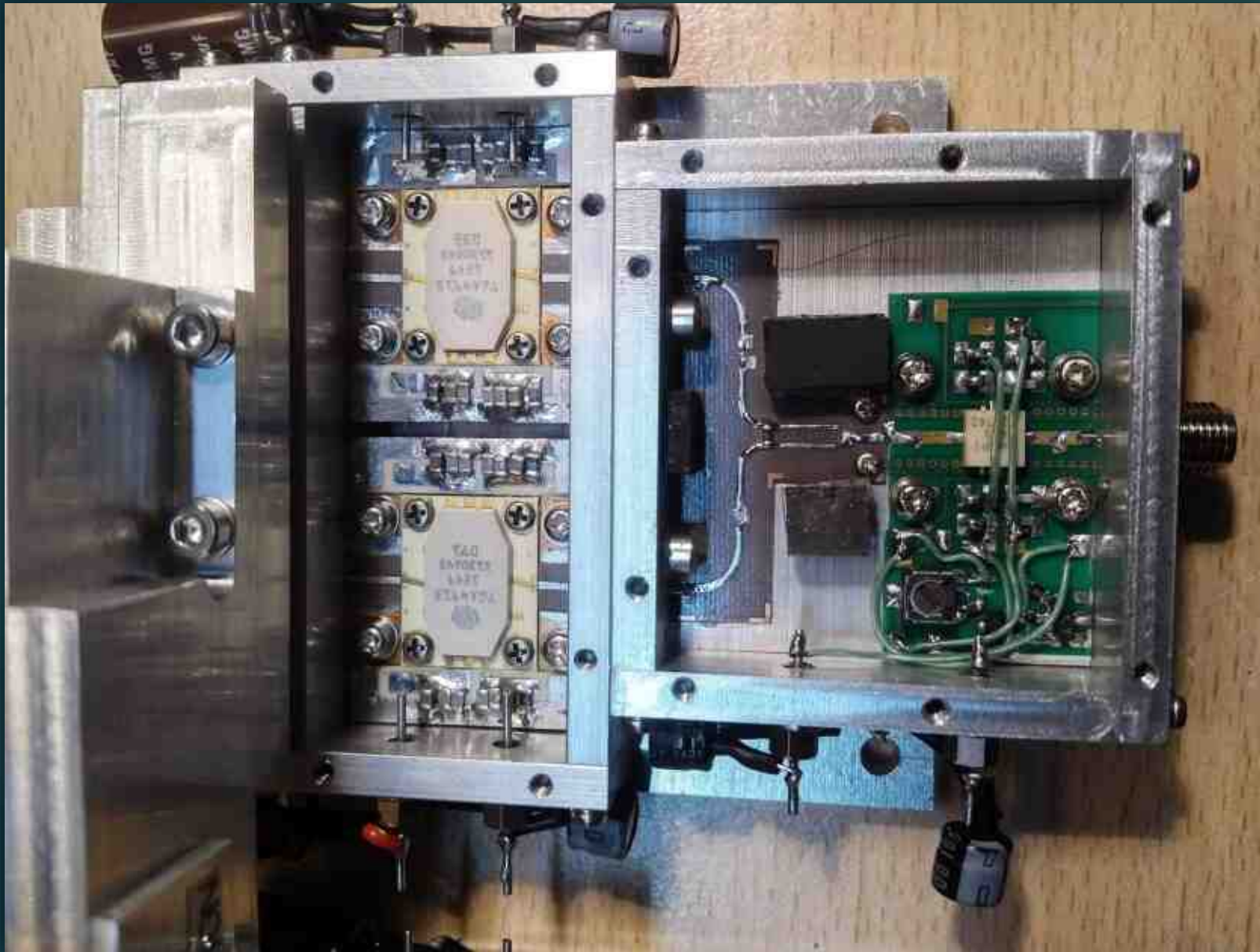

- SSPA 4xTGA4915CP – 23W

TRV 3rd generation

- Build most important part of SSPA
- Power supply 13,8V - 6V-20A and -5V DC gate powering
- PS switching Drain voltage only if -Ug is presented
- Measuring of Id build on PCB
- PTT switch on PCB build

24GHz SSPA

- MMIC Driver 1W AMMP6425
- Willkinson divider 2x4dB
- 2xTGA4915CP
- Waveguide combiner
- 11,5W RF output

24GHz new SSPA

- Waveguide combiner 2x2TGA4915CP – 23W RF

24GHz new SSPA final setup

- Result after fine tuning of all screws in combiners
- Input divider – RF in +11,8dBm
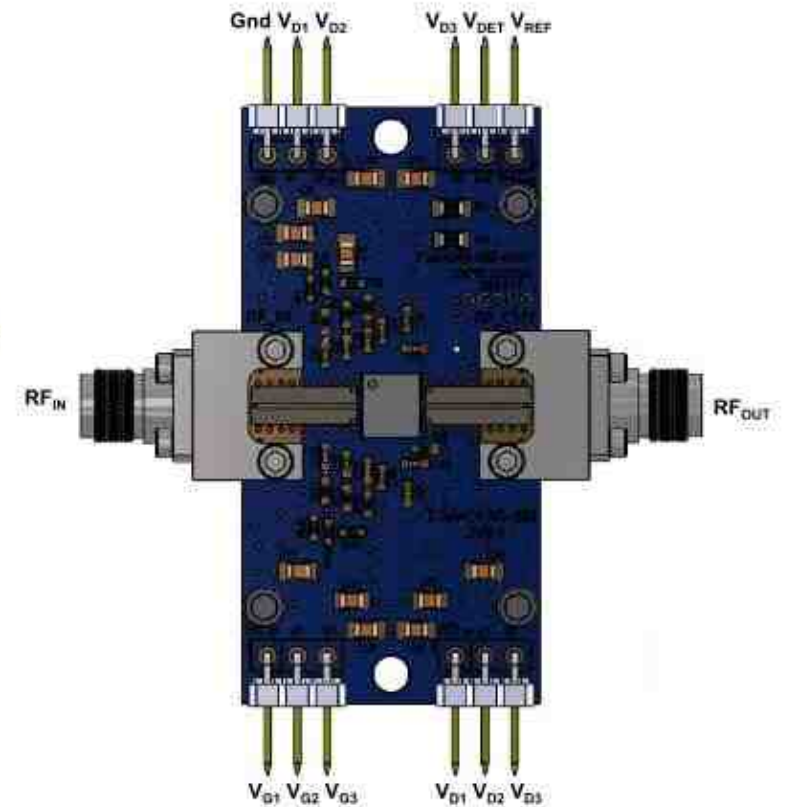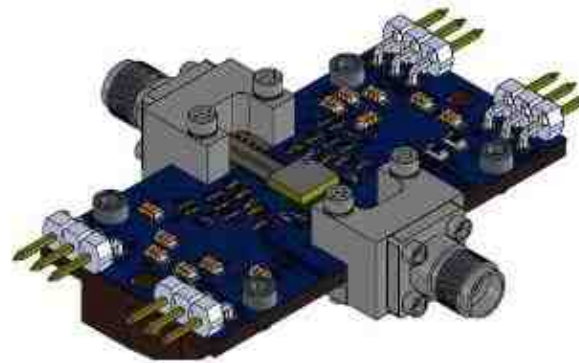- Output +43,51dBm
- Gain 31,7dB

New steps in SSPA

TGA4549-SM

21.2 – 23.6 GHz 10 W GaN Power Amplifier

qorvo
TGA4549-SM

24-Lead 5.0 x 5.5 x 1.7 mm Air Cavity Laminate Package

Application Evaluation Board (EVB)

Gnd V_{D1} V_{D2}   V_{D3} V_{DET} V_{REF}

RF_{IN}   RF_{OUT}

V_{G1} V_{G2} V_{G3}   V_{D1} V_{D2} V_{D3}

Notes:
1. Board Material is RO4003 0.008" thickness with ½ oz. copper cladding
2. Vias under the ground paddle are copper filled.

Feedhorns

Portable tripoid

Portable tripoid

Encoder

24GHz first test and QSOs
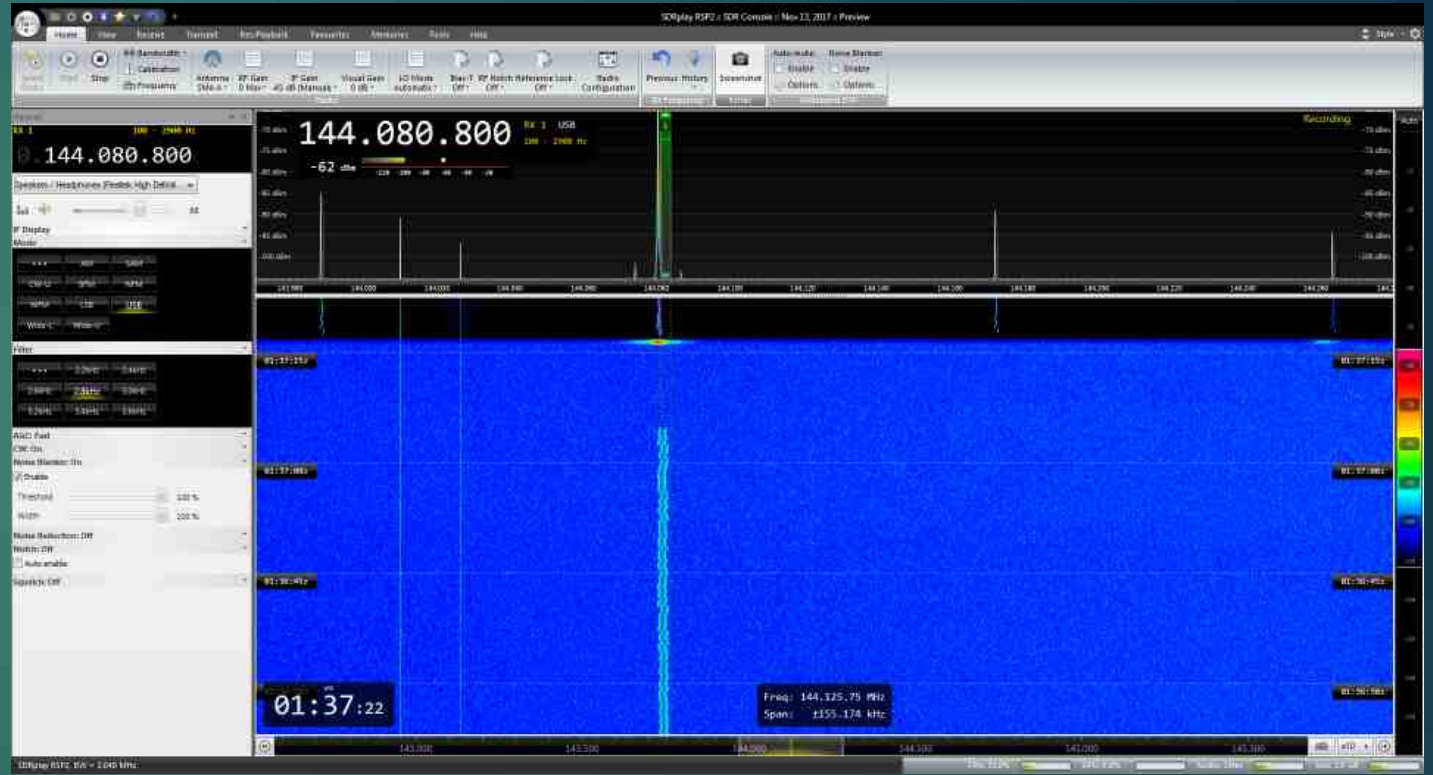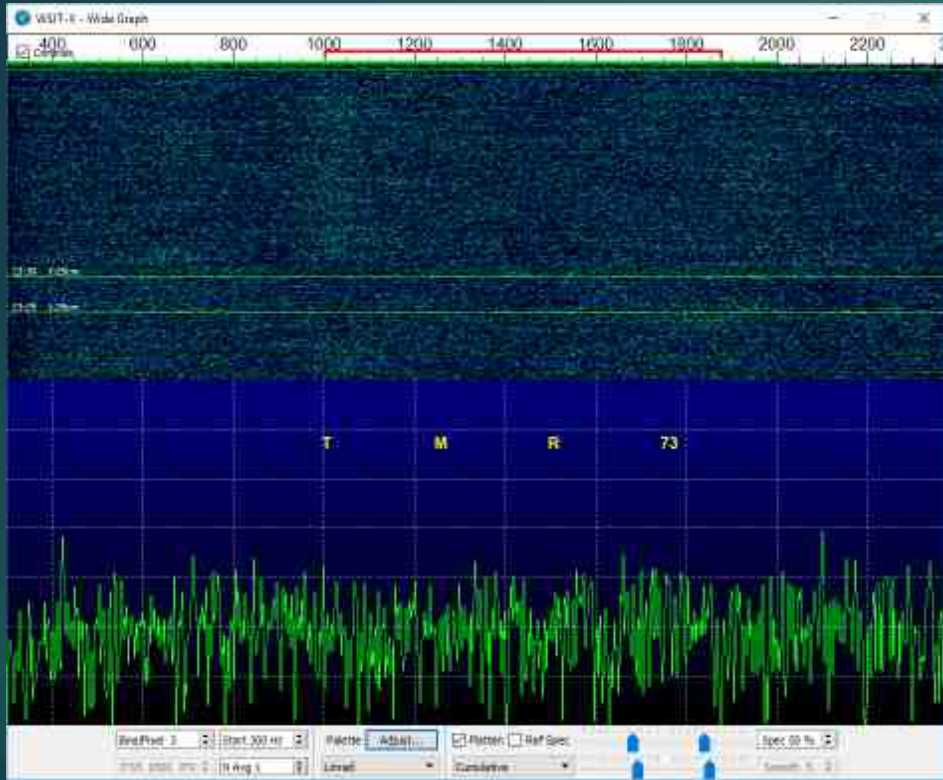
1000 Hz tuning tone OK1KIR – rain
Resulting to NO EME but nice R/S ☺

- R/S signal of OK1KIR during first test when WX does not cooperate well

24GHz 2nd test and QSOs

1000 Hz tuning tone OK1KIR – easy copy
and decoding ☺, but no QSO ☹

24GHz first QSOs ☺

- OK1KIR -17/-19dB 4mdish – 20W
- G3WDG -20/-19dB 3m dish – 10W

24GHz traffic and QSOs in 4U1ITU

- Easy copy and decoding everybody who was calling
- Worked **OK1KIR, G3WDG, OZ1LPR, LX1DB** – **CW !!!**
- Heard and decoded:
- **JA1WQF, PA0BAT, OK1CA, W5LUA, DL7YC,**

CONCLUSION ???? – NEED MORE POWER !!!!

180cm dish

Thank you for attention !!!

Questions ????