QRP with the QMX+ 160m-6m multimode radio by QRPLABS

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What is QRP?

QRP radio operations involve amateur radio transmissions using low power, generally 5 watts or less for CW (Morse code) and up to 10 watts for SSB. Derived from the Q-code "reduce power“ (QRP), this, specialized, often portable, hobby focuses on:

- maximizing range with minimal energy,
- enhancing skills in antenna design, and
- operating from remote locations with lightweight, battery-powered gear.

QRP Operations

Key Characteristics

- **Power Limits**
  - **CW (Morse Code)**: 5 watts or less
  - **SSB (Single Sideband)**: Up to 10 watts peak envelope power (PEP)
- **Challenges**
  - Operating at low power presents unique challenges, including:
  - Weaker signals that can be difficult to receive.
  - Variability in radio propagation conditions.
- **Techniques for Success**
  - **Optimized Antennas**: Using efficient antenna systems to maximize signal strength.
  - **Enhanced Operating Skills**: Developing skills to improve communication effectiveness.
  - **Special Modes**: Utilizing modes like QRSS (very slow Morse code) to improve reception or FT8

QMX+ Features

- Full 160m to 6m band coverage
- CW, FSK Digi, and SSB (USB/LSB) modes
- All features of QCX+ (VFO A/B/Split, RIT, Message and frequency memories, beacon, keyer, etc)
- 3-5W output at 12V supply (can be built for 3-5W at 9V supply)
- SWR bridge built in
- Internal RTC powered by the common CR2032 coin cell battery (battery not included)
- Single signal digi mode transmission (zero unwanted sideband, zero residual carrier, zero intermodulation distortion)

QMX+ Features (cont)

- Solid-state band switching and transmit/receive switching under CAT control
- High performance embedded SDR SSB receiver with 60-70dB of unwanted sideband cancellation
- Built-in 24-bit 48ksps USB sound card
- Built-in USB Virtual COM Serial port for CAT control
- Si5351A Synthesized VFO with 25MHz TCXO as standard
- Easy to build single-board design, Professional quality 6-layer, through-hole plated, silk-screen printed PCBs
- All SMD components factory assembled

QMX+ Features (cont)

- Connectors: 2.1mm power barrel connector, USB-C (for audio and CAT control), BNC RF input/output, 3.5mm jacks for audio out, paddle/GPS/mic/PTT in, and PTT out
- Built-in test signal generator and testing tools
- GPS interface for frequency calibration, real time clock and location (internal WSPR beacon)
- IQ output mode for use with SDR software
- Switched mode regulators Receive current 80mA, Transmit current 1.0-1.1A for 5W output with 9V supply (around 0.7A for 5W with 12V supply).
- Internal microphone ready for the future SSB firmware
- Optional aluminum extruded cut/drilled/laser-etched black anodized enclosure
- Weight: 578 grams including enclosure

QMX+


QRP Labs
QMX+ Transceiver
VOL
-Pwr
.Mode
..Band
TUNE
Rate
Message
.Keyer
..RIT
-Menu
.VFO A/B
Preset
-A<->B
Mic/
Paddle
Ear

QMX+

QMX+power

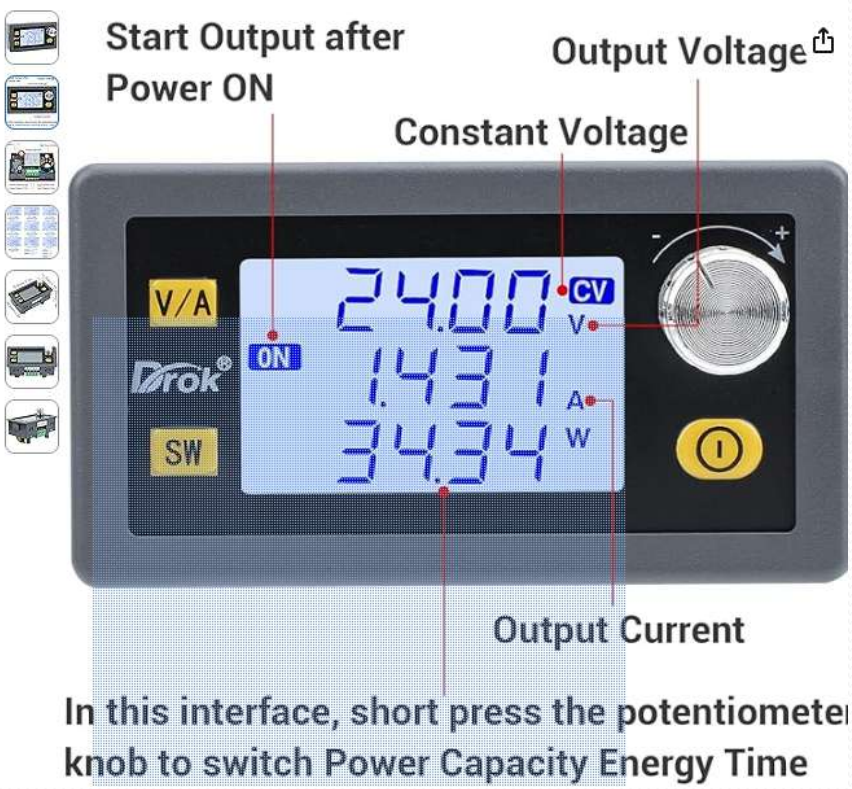
- **12v NOT 13.8v VERY IMPORTANT**
- Two options
- Battery pack with trigger cable
- Buck/Boost converter

Battery pack and Trigger cable

- Thanks to Jerry (N5SGM)
- Works great for CW and SSB

Buck/Boost converter

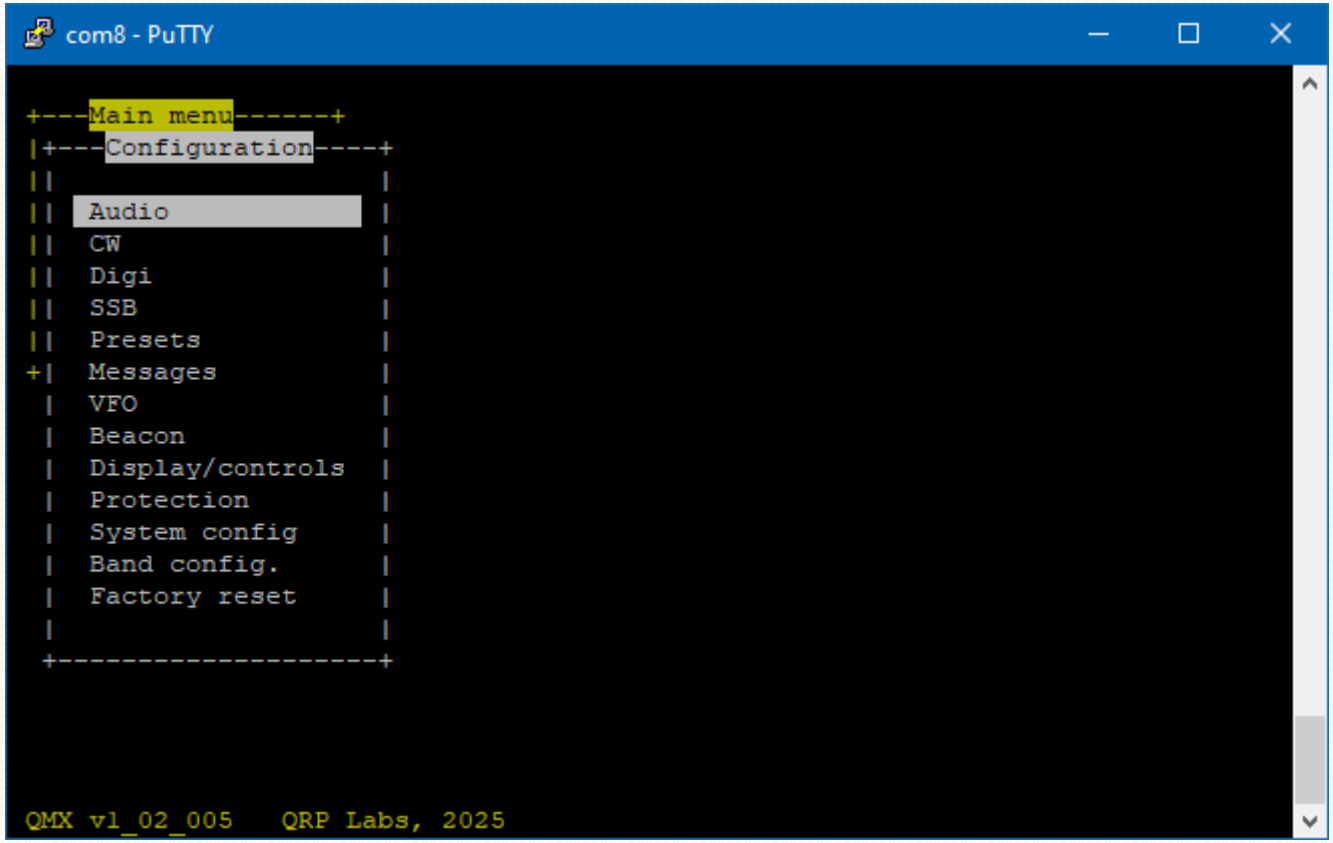
https://www.amazon.com/dp/B0BQC163CW?ref_=ppx_hzsearch_conn_dt_b_fed_asin_title_1&th=1



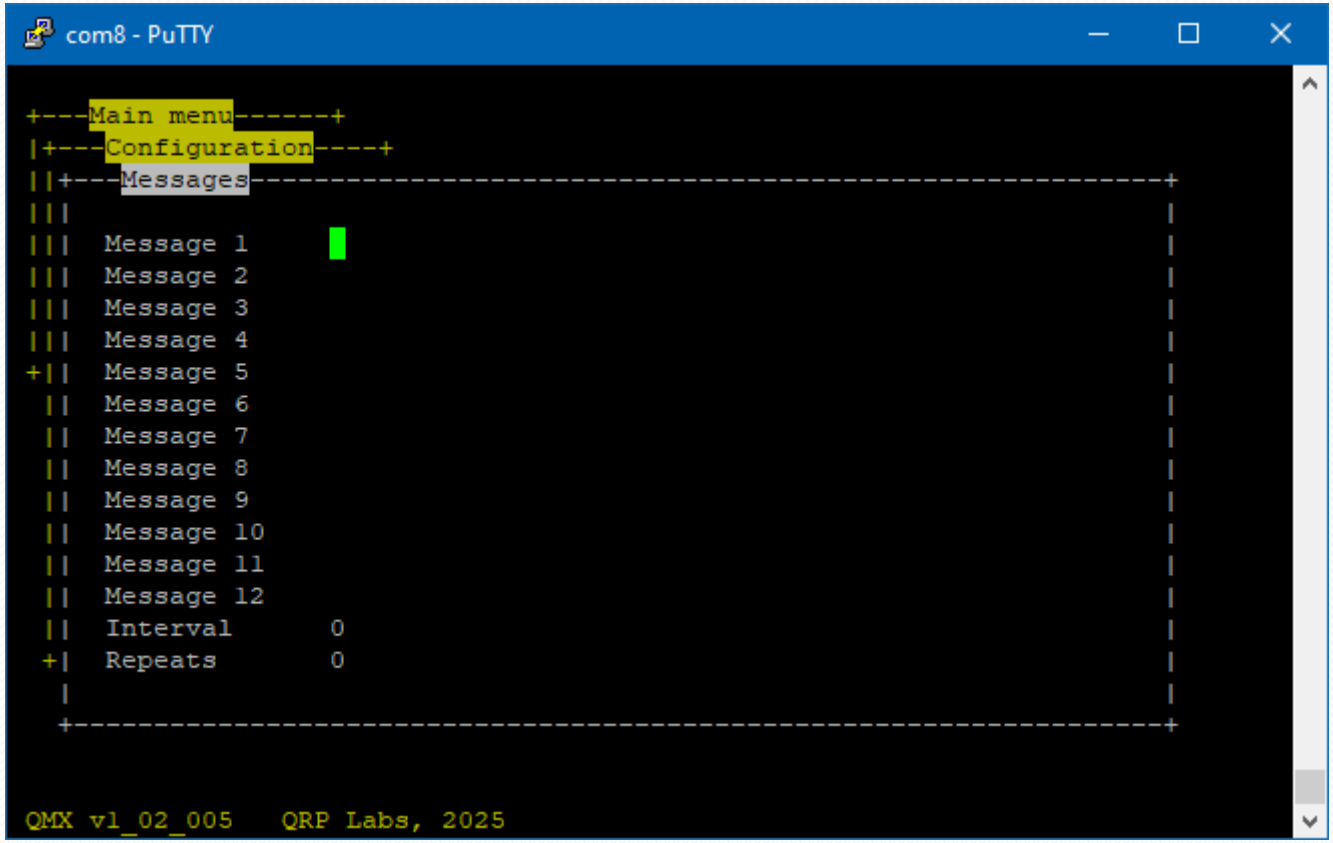
Connection to PC

- Single USB-C cable
- Use terminal emulation to access menus
- QMX+ has 24bit soundcard and CAT control for digital modes

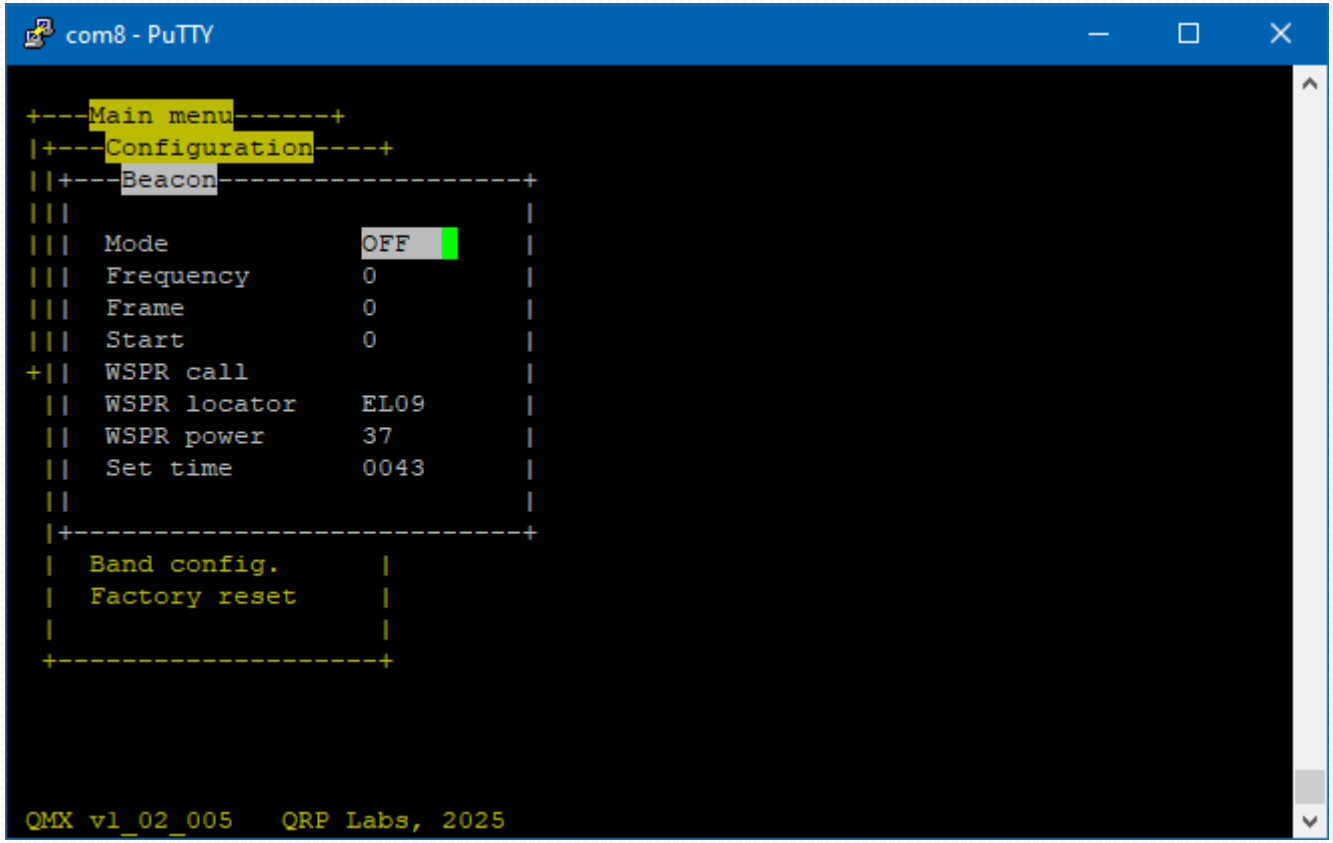
Menus


com8 - PuTTY
+---Main menu------+
|+---Configuration----+
	Audio
	CW
	Digi
	SSB
	Presets
+	Messages
VFO
Beacon
Display/controls
Protection
System config
Band config.
Factory reset
 +--------------------+
QMX v1_02_005   QRP Labs, 2025

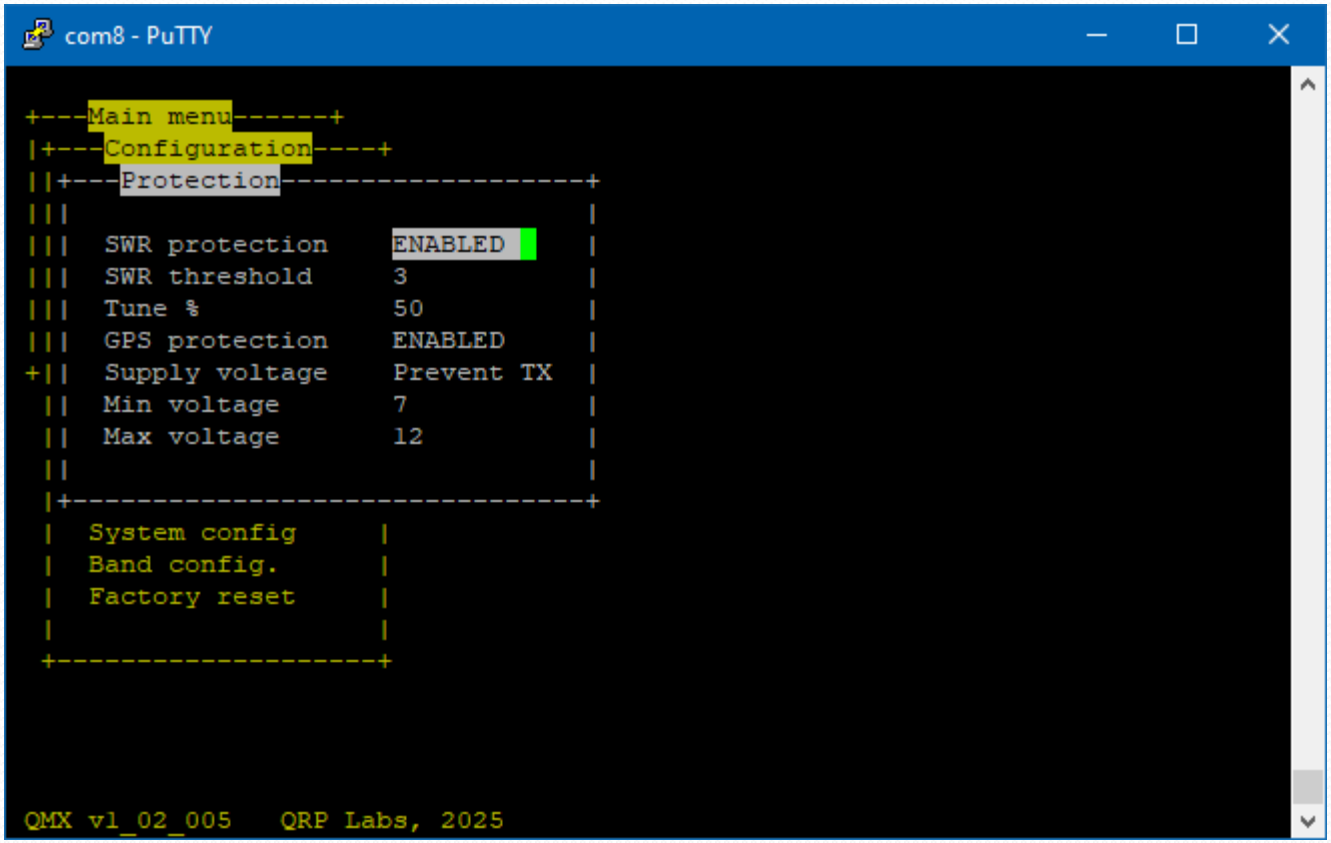
Preset Messages/Beacons



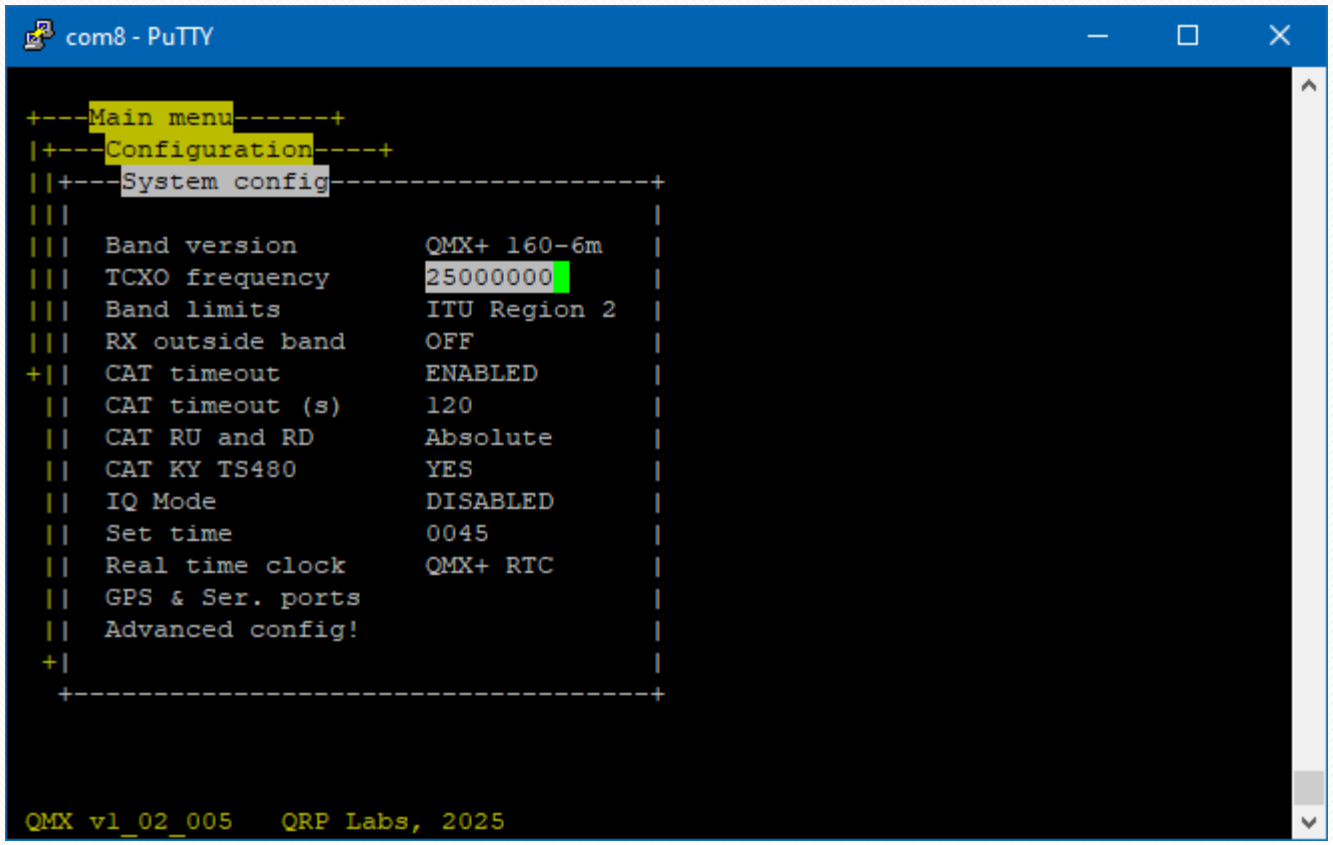
Beacon/WSPR settings



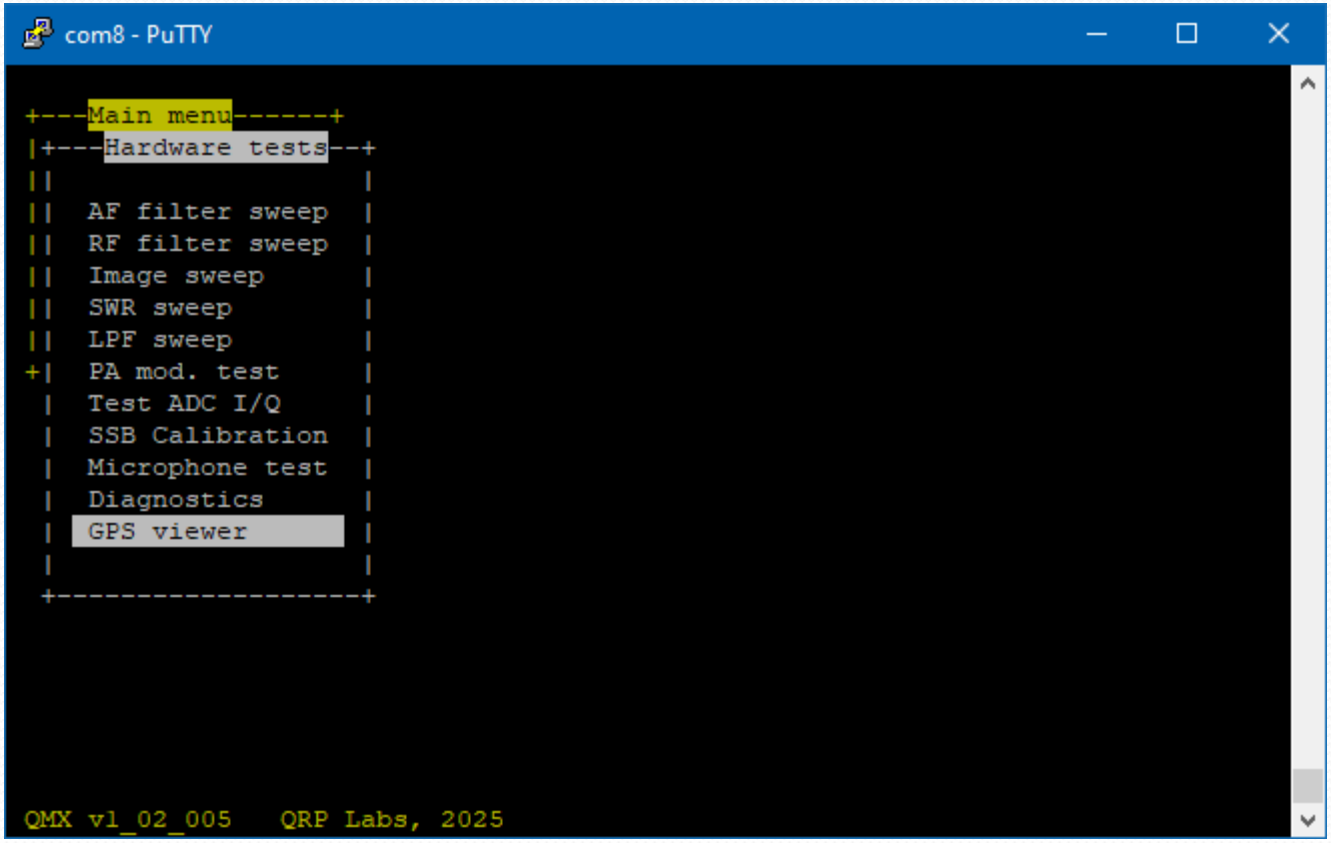
Protection menu



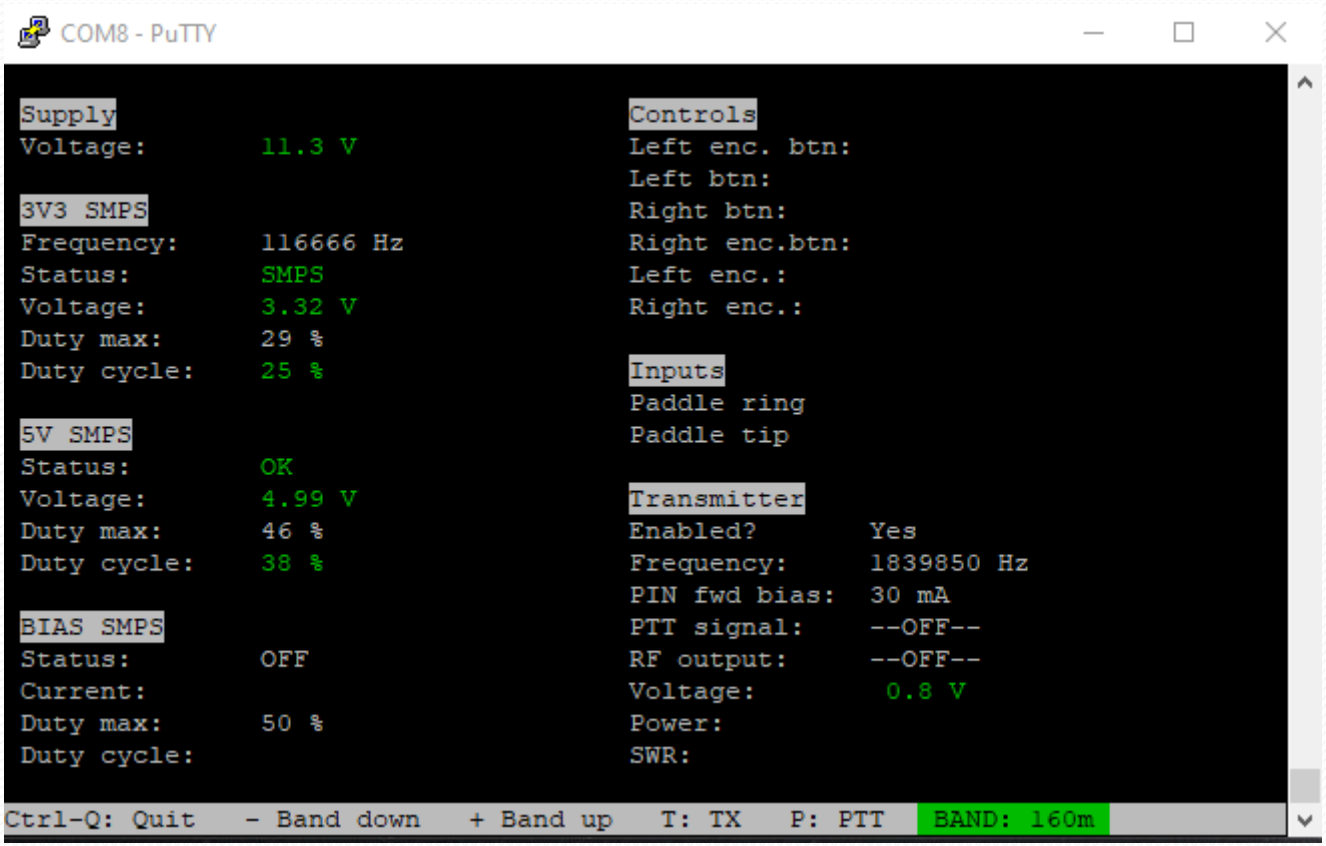
System Configuration menu



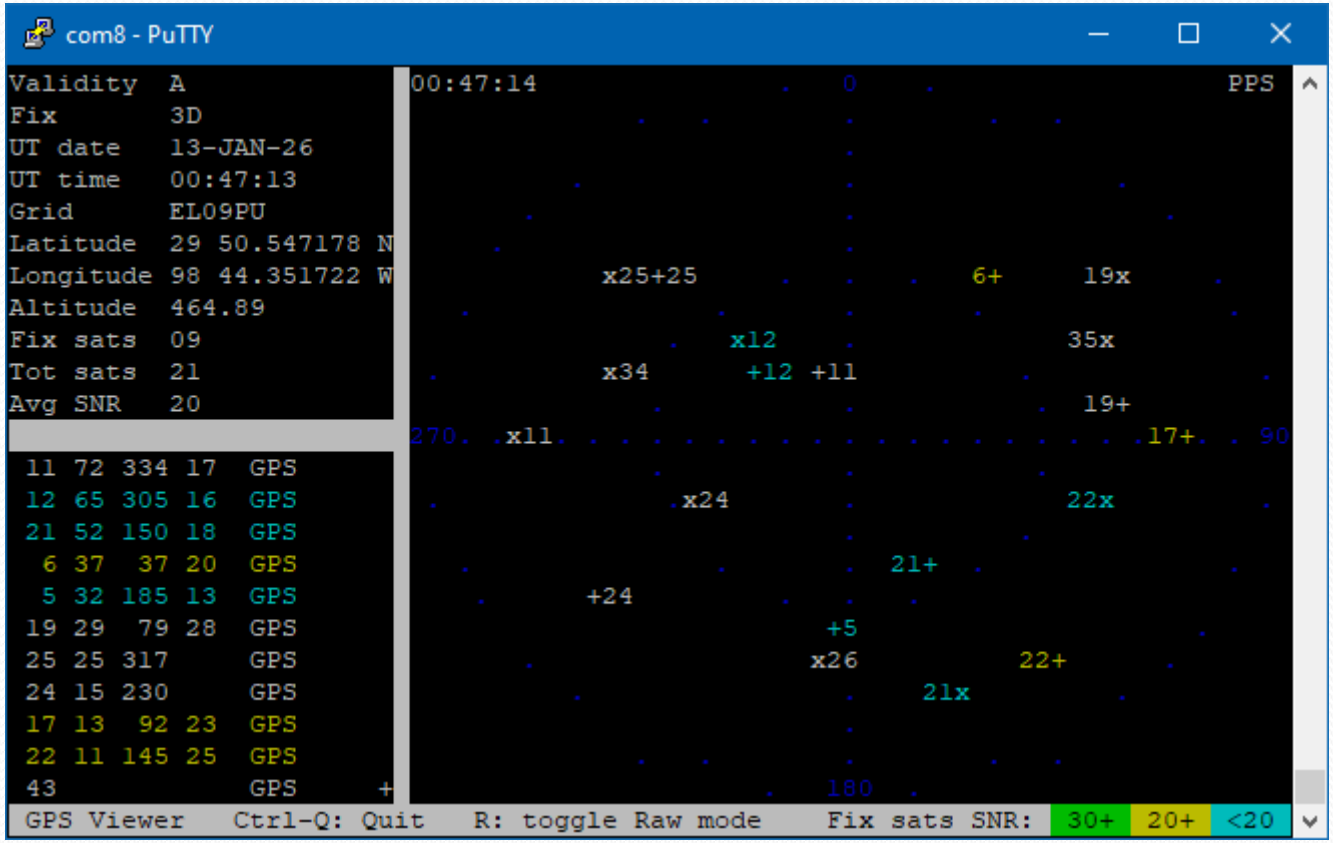
Hardware test menu



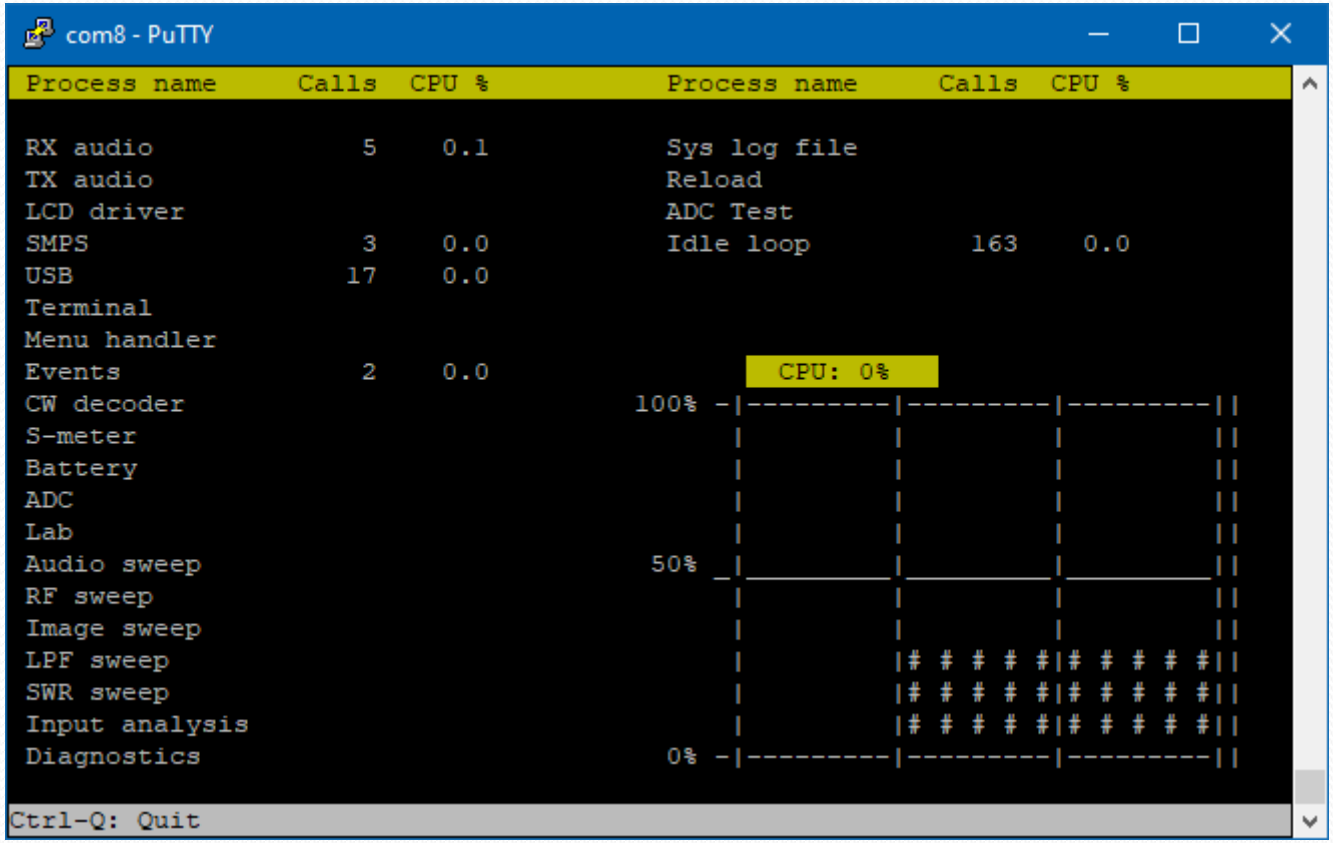
Diagnostics



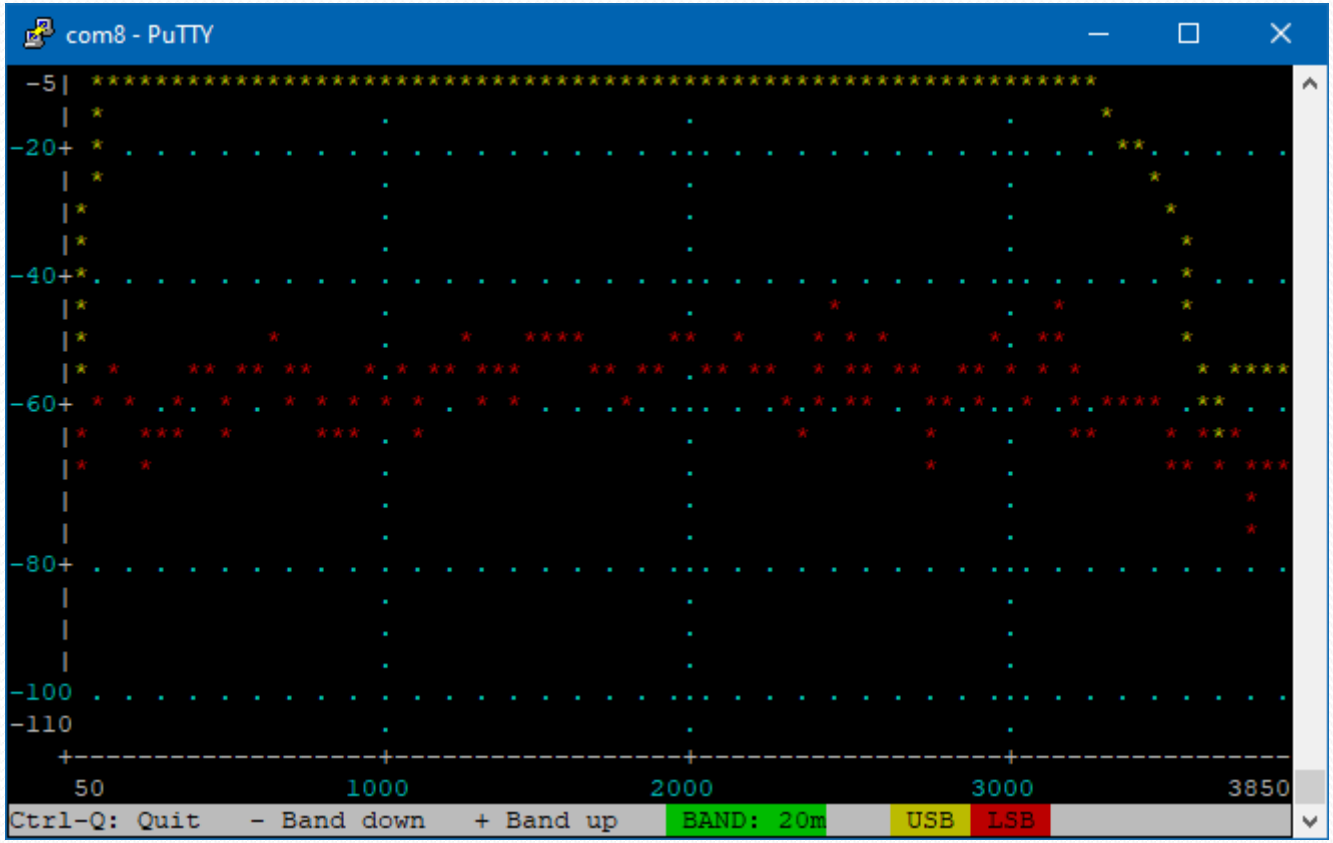
GPS menu


com8 - PuTTY
Validity A
Fix 3D
UT date 13-JAN-26
UT time 00:47:13
Grid EL09PU
Latitude 29 50.547178 N
Longitude 98 44.351722 W
Altitude 464.89
Fix sats 09
Tot sats 21
Avg SNR 20
11 72 334 17 GPS
12 65 305 16 GPS
21 52 150 18 GPS
6 37 37 20 GPS
5 32 185 13 GPS
19 29 79 28 GPS
25 25 317 GPS
24 15 230 GPS
17 13 92 23 GPS
22 11 145 25 GPS
43 GPS +
00:47:14
PPS
GPS Viewer Ctrl-Q: Quit R: toggle Raw mode Fix sats SNR: 30+ 20+ <20

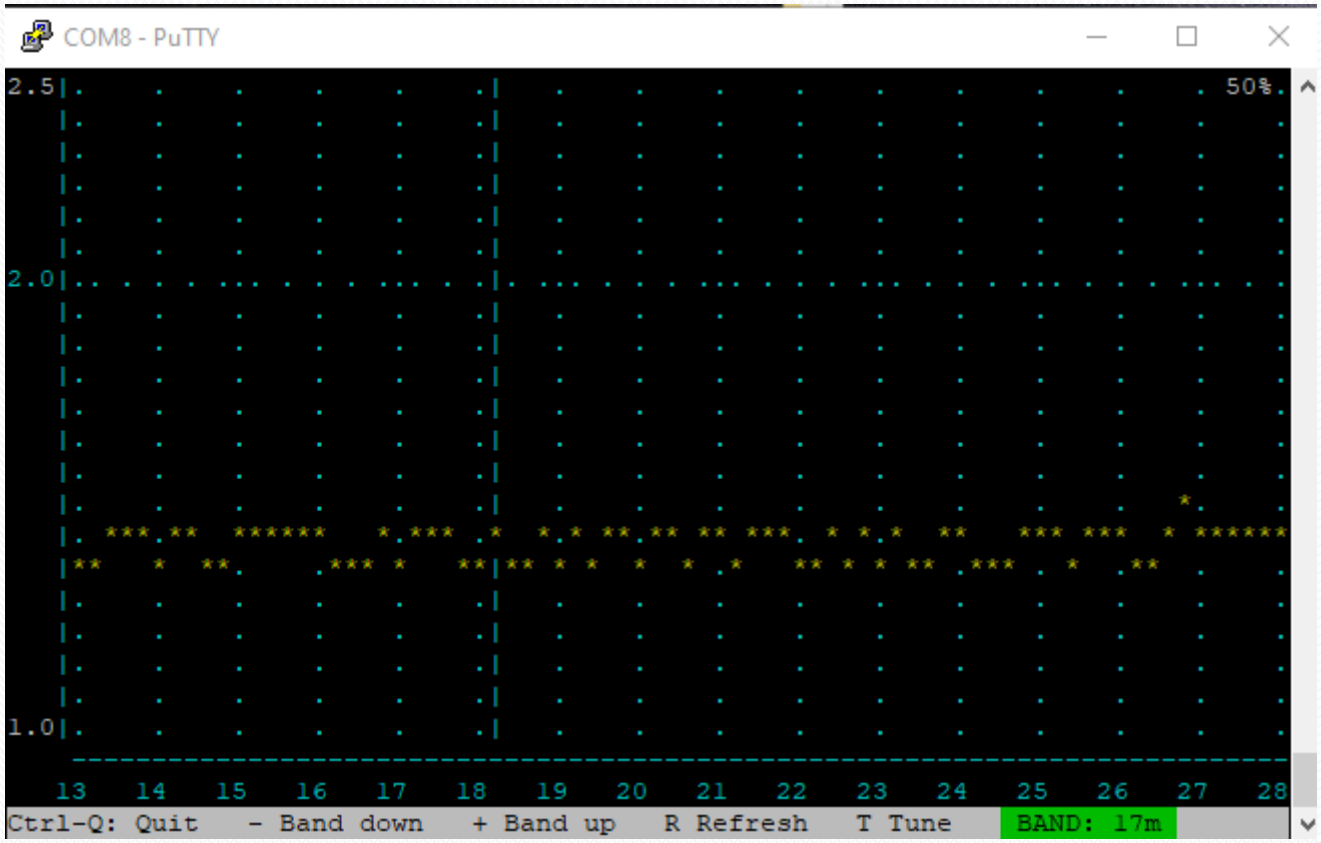
CPU activity



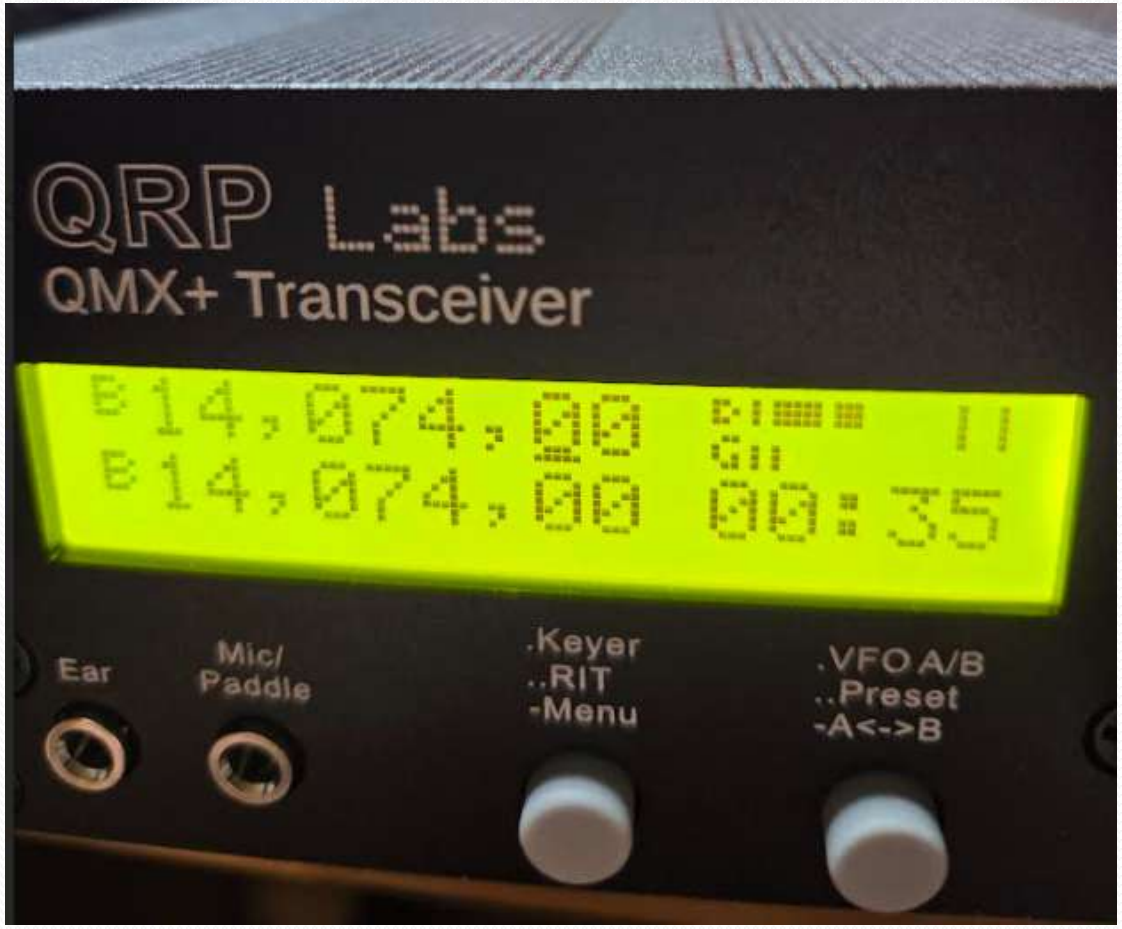
LPF Sweep


com8 - PuTTY
-5
-20
-40
-60
-80
-100
-110
50
1000
2000
3000
3850
Ctrl-Q: Quit
- Band down
+ Band up
BAND: 20m
USB
LSB

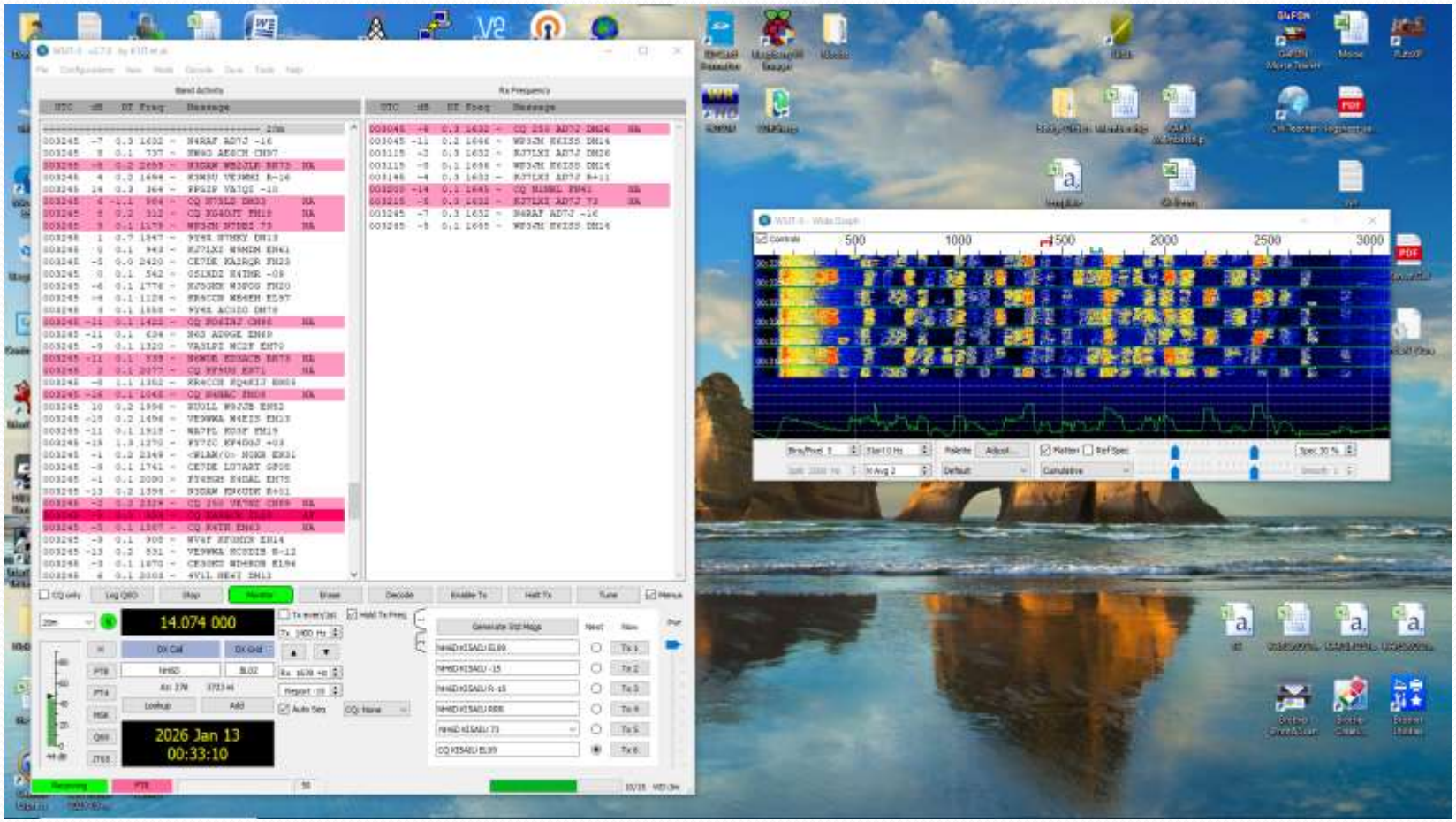
SWR sweep


COM8 - PuTTY
2.5
50%
2.0
1.0
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Ctrl-Q: Quit - Band down + Band up R Refresh T Tune BAND: 17m

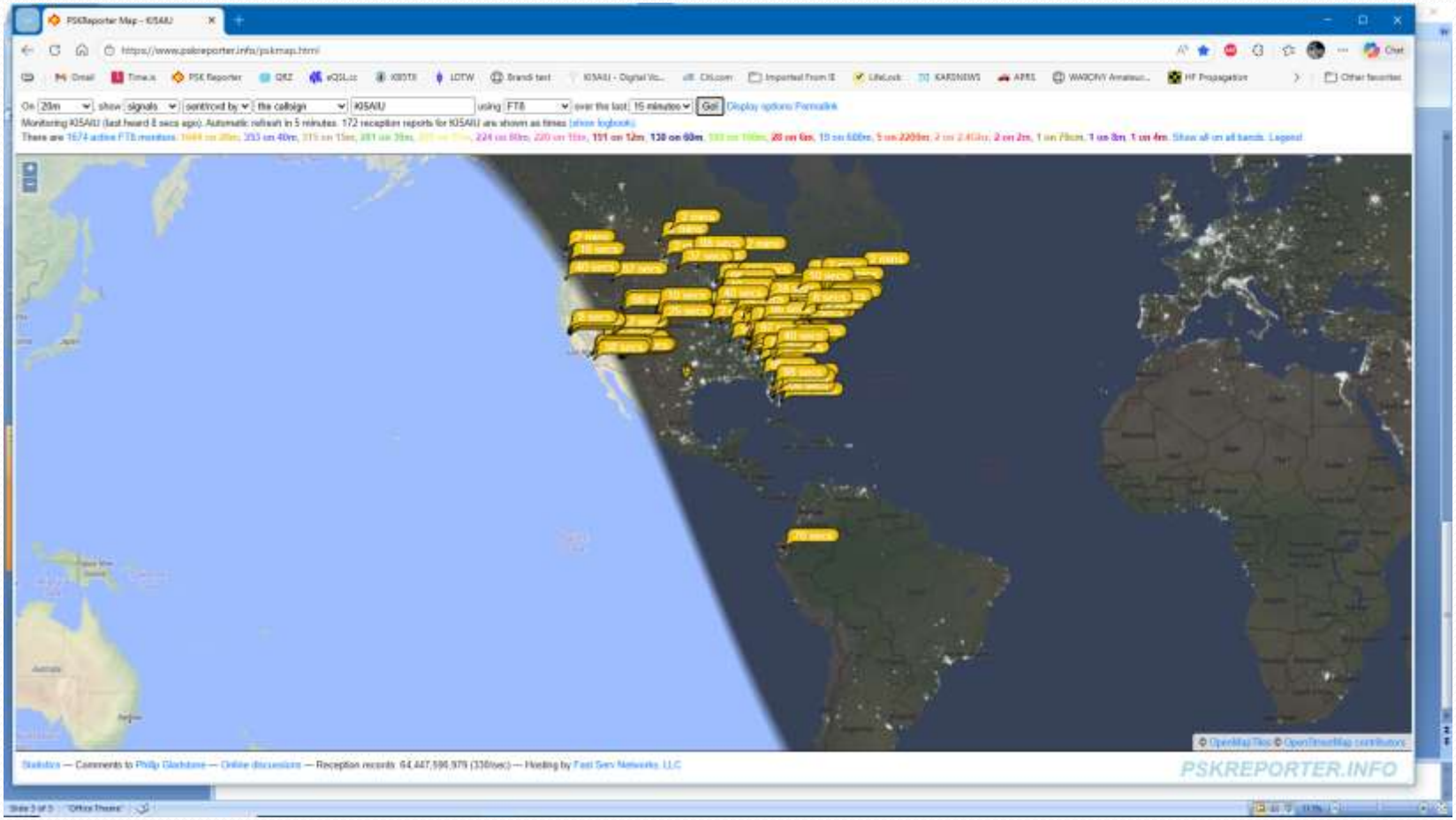
Display


QRP Labs
QMX+ Transceiver
B 14,074,00
B 14,074,00
00:35
Ear
Mic/
Paddle
.Keyer
..RIT
-Menu
.VFO A/B
..Preset
-A<->B

Running FT8



PSK Reporter



Interested?

- https://qrp-labs.com/
- $125 kit; $185 assembled
- $25 for optional case
- $21 for optional GPS receiver
- When I ordered, the wait was 3 months. Getting better.