



OL-SDR project

Lucca – 14 marzo 2025

I2SUH Mauro

OL-SDR Project History

- On-going Community Project
- To develop a HAM radio RTX based on SDR technology
- Kicked-off in 2019
- Impacted by component shortage during Covid
- HW, firmware and software has been extensively redesigned since then

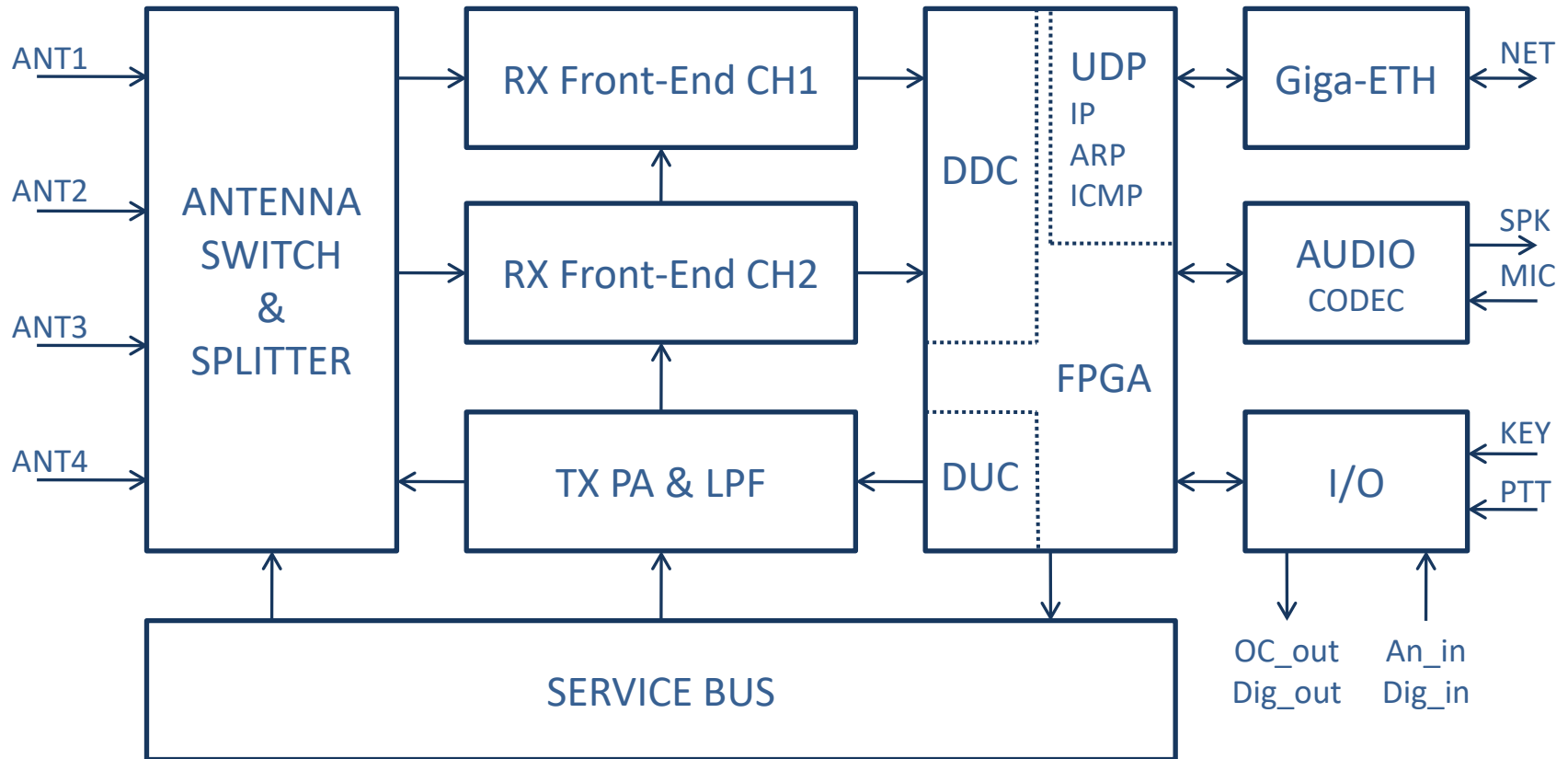
OL-SDR Project Overview

- Direct sampling SDR with 15Wrms or 300Wrms output power from 160m to 6m
- 2 direct sampling rx channels
- 16 bit RX ADC
- 16 bit TX DAC
- 4 fully independent SW RX, each one with sub-rx
- Visible RX spectrum up to 1.5MHz
- Wideband full-spectrum overview window
- Ultra-low noise master oscillator (122.88MHz)
- Very stable reference oscillator (10MHz)
- GigaEthernet to allow hw installation away from PC
- Adaptive MOSFET protection base on SWR and temperature
- Complete set of functionalities to reduce needs of external boxes
- Easy-to-use ergonomic user interface
- Support for OTRSP protocol (SO2R) and MTTQ protocol
- Look Ahead VOX, to preserve first syllable
- Look Ahead ALC, to avoid PA overdriving
- Clean TX spectrum using Pre-Distorsion (PureSignal) technology
- Build using WDSP library by Dott. Warren Pratt NR0V

OL-SDR Target Specification

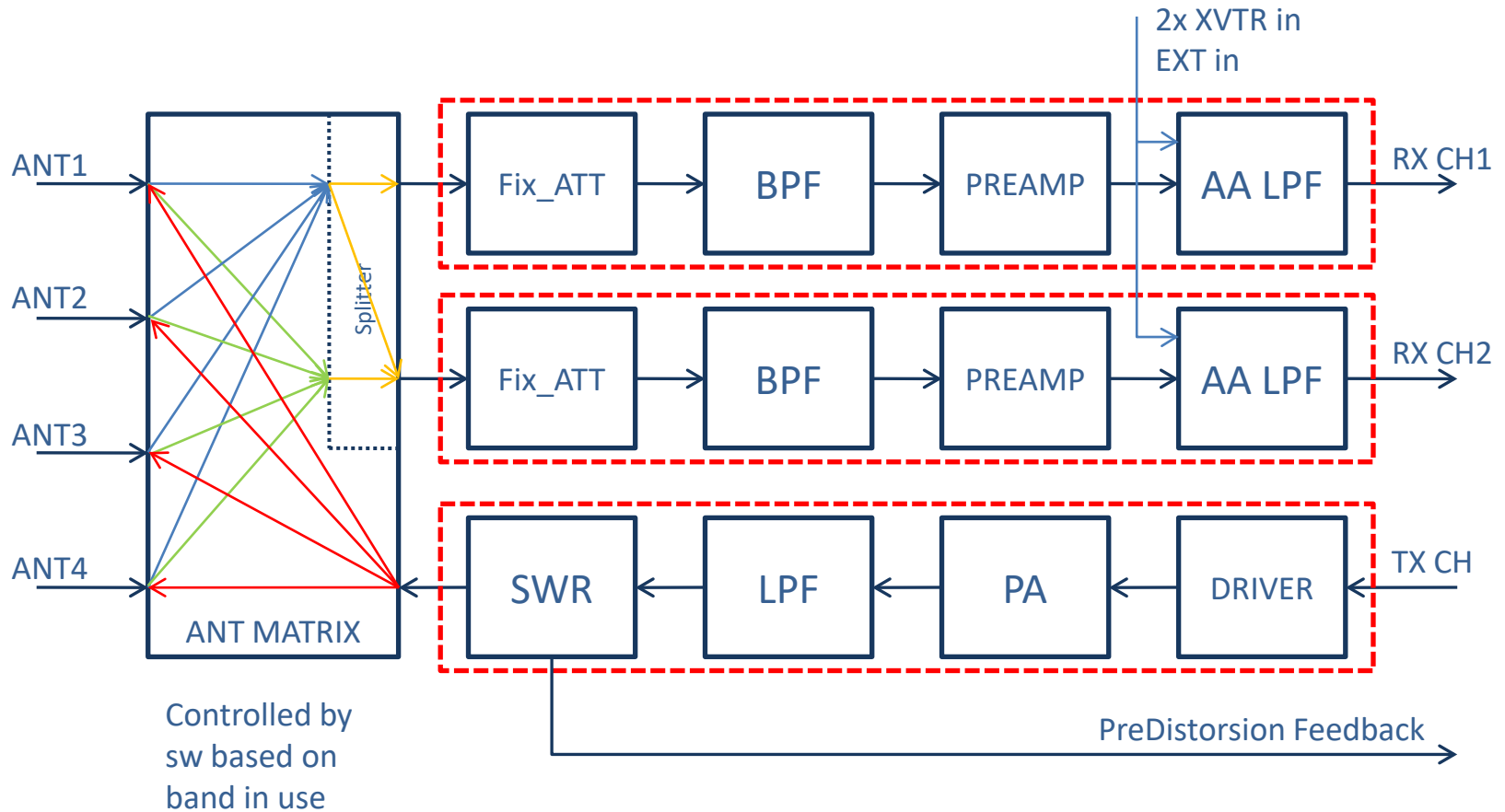
- 100KHz - 55MHz continuous coverage
- Noise Floor: -130 dBm (0.07 uV @2.4 KHz di banda)
- Noise Figure: 12 dB
- RMDR (Reciprocal Mixing Noise): 107 dB (@2.4KHz di banda)
- Ultra-low noise LVPECL differential Master Clock:
 - @10KHz: -155 dBc/Hz
 - Ultimate: -162 dBc/Hz
- Reference TCXO: <50 ppb over 0°-70°C temperature range (<0.7Hz@14MHz)
- 10MHz input for GPS reference clock
- TX output power: 15Wrms (10W on 6m) or 300Wrms (275W on 10m and 6m)
- HiFi audio amplifier: 7+7Wrms
- Availability of digital and analog input and output
 - 8 Open Collector Output to directly control external devices (i.e. relays)
 - 8 Digital LVCMOS Output (3.3V or 5V settable)
 - 8 Analog Input (max 3.3V)
 - 8 Digital Input/Output (3.3V or 5V settable)

HW Architecture

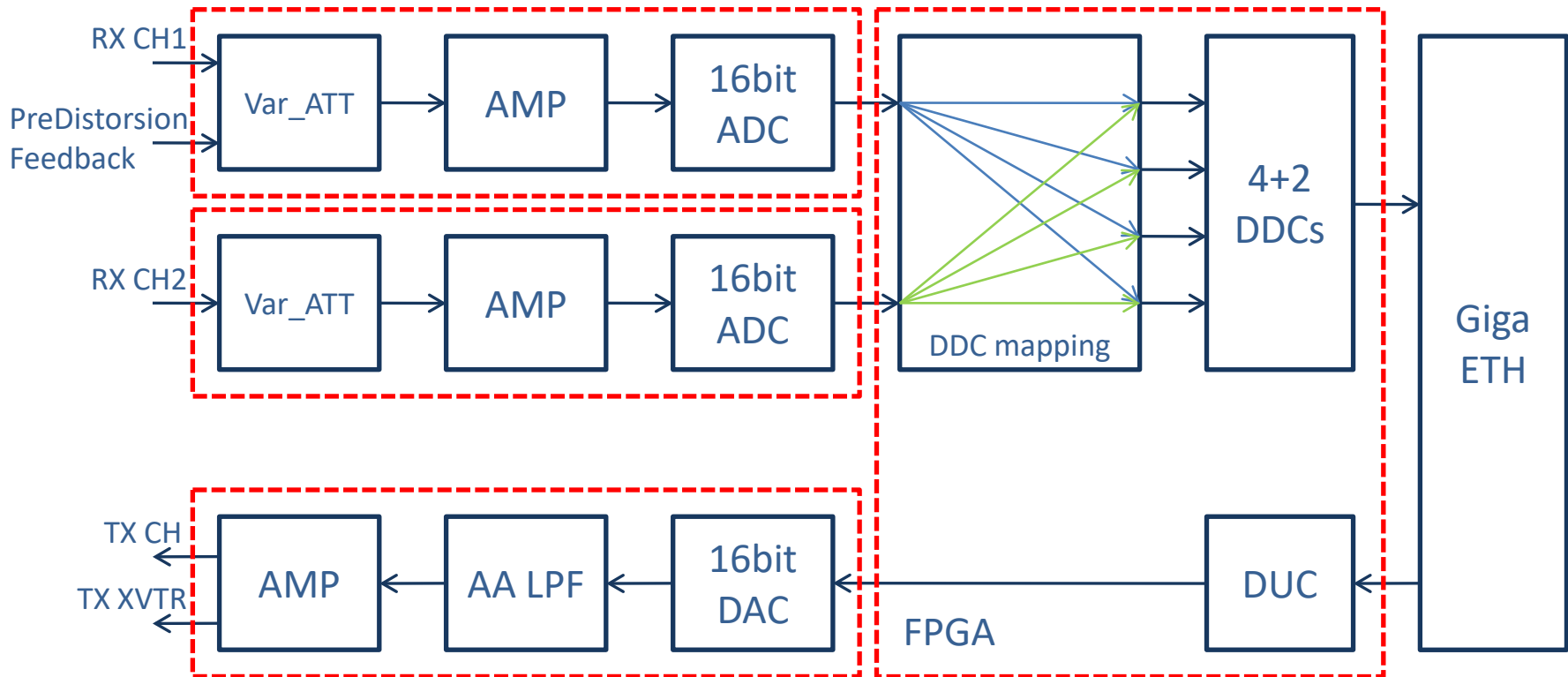


DDC = Digital Down Converter
DUC = Digital Up Converter

RX and TX Filter Boards



SDR Board



AA LPF = Anti Aliasing Low Pass Filter
DDC = Digital Down Converter
DUC = Digital Up Converter

Each DDC sends a stream to peer RX in OL-Master sw

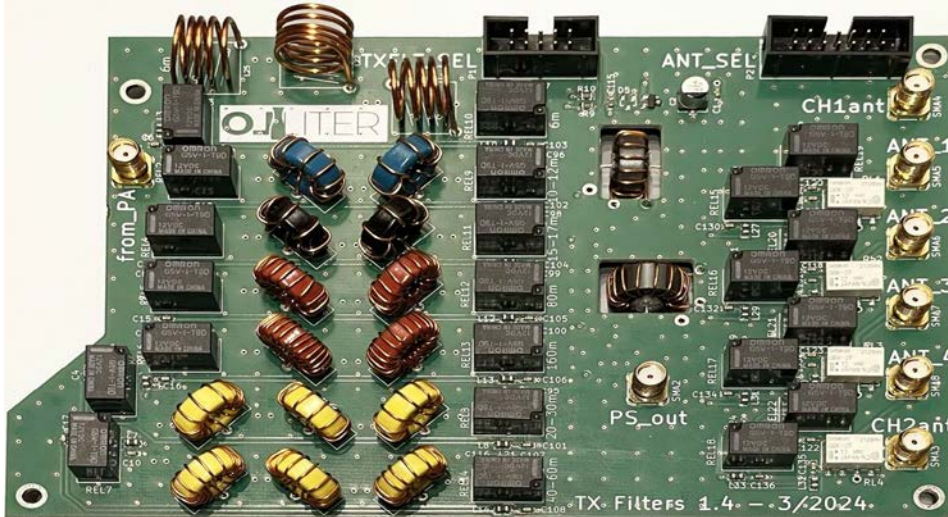
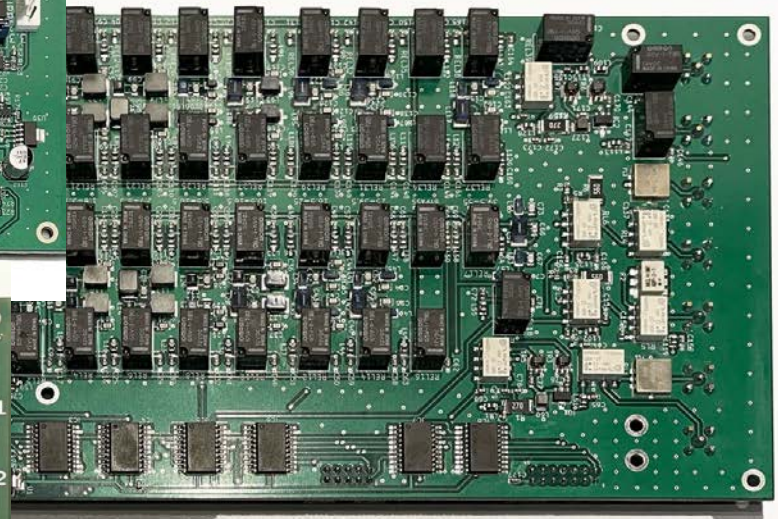
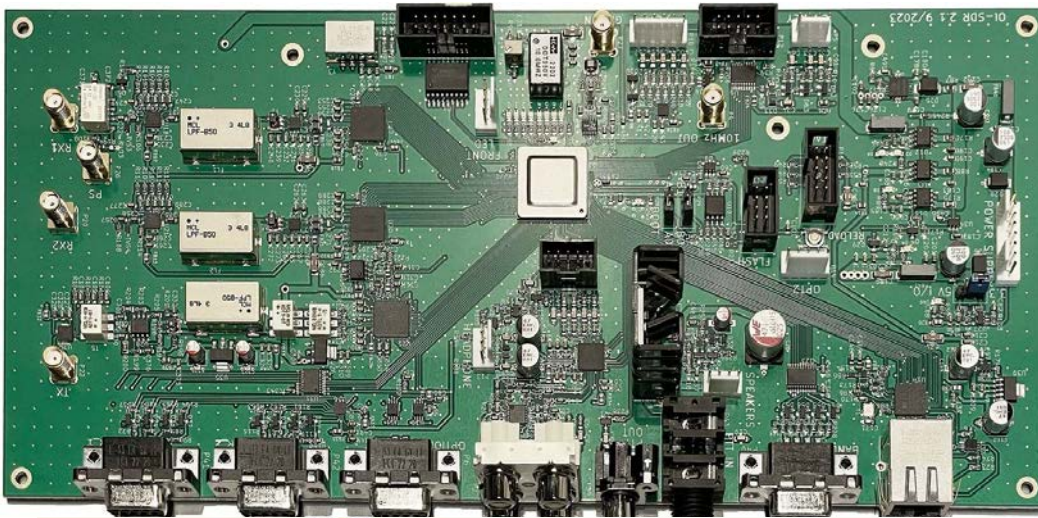
Front Panel



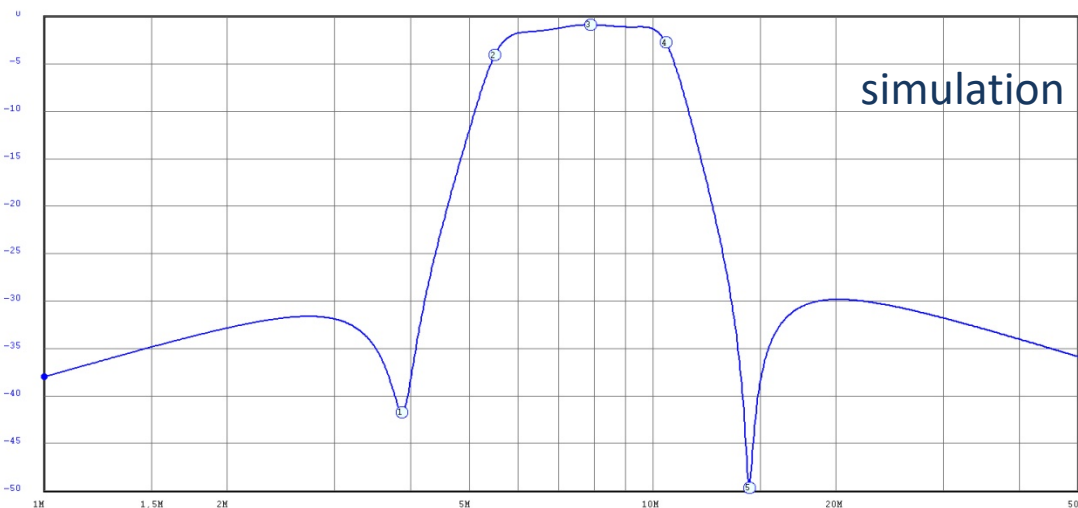
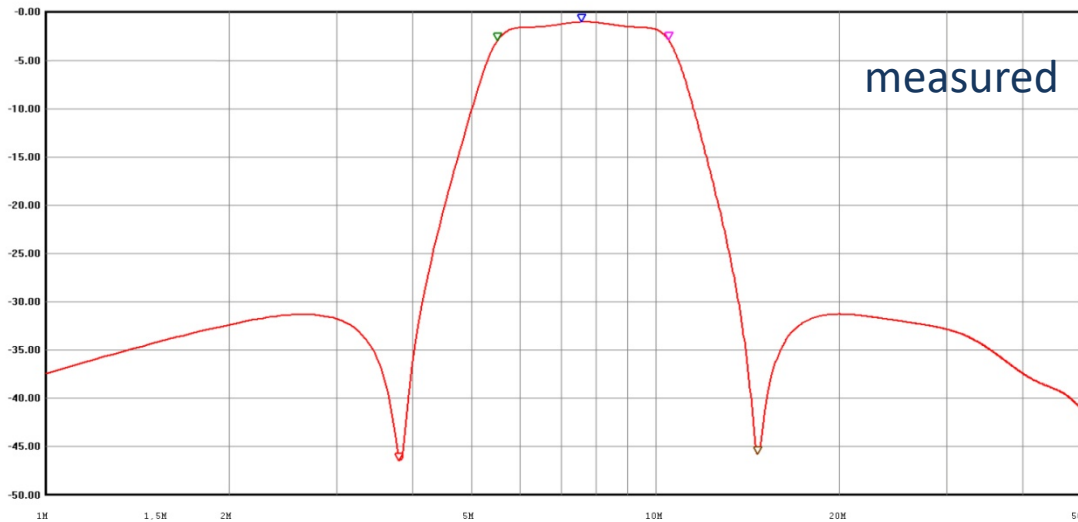
Rear Panel



Boards

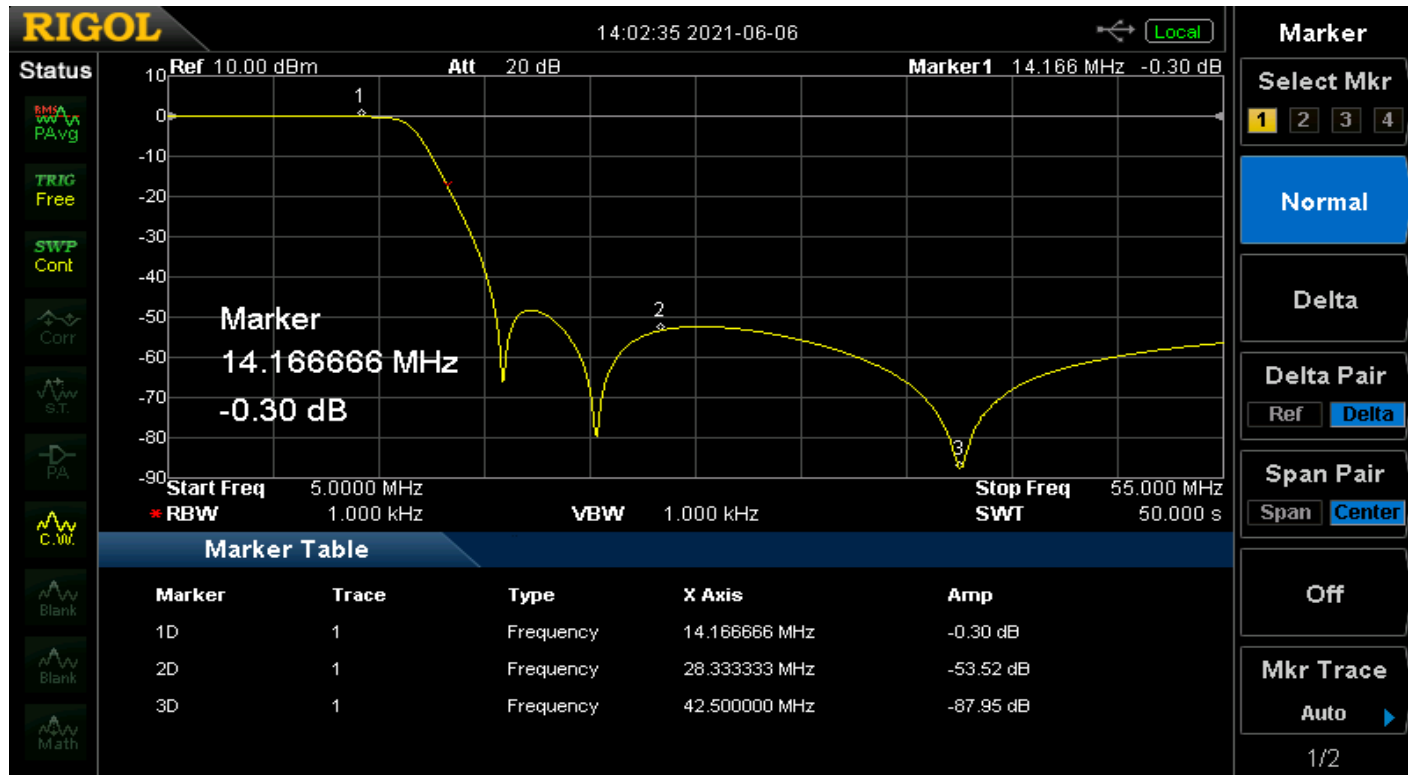


RX BandPass Filter Example



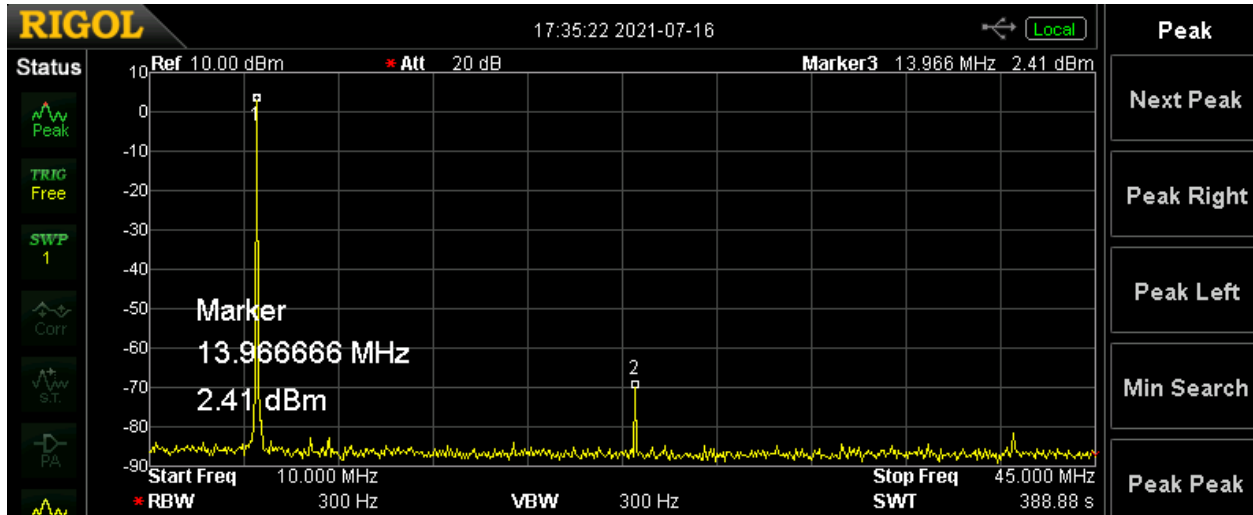
- insertion loss <1.5dB (including relay's)
- stop-band attenuation >30dB
- “zero’s” inserted on adjacent contest bands to increase IMD tolerance
- monotonic slope after zero’s
- high Q smd inductor
- careful design
- filter bypass available for special needs/situations

TX LowPass Filter Example

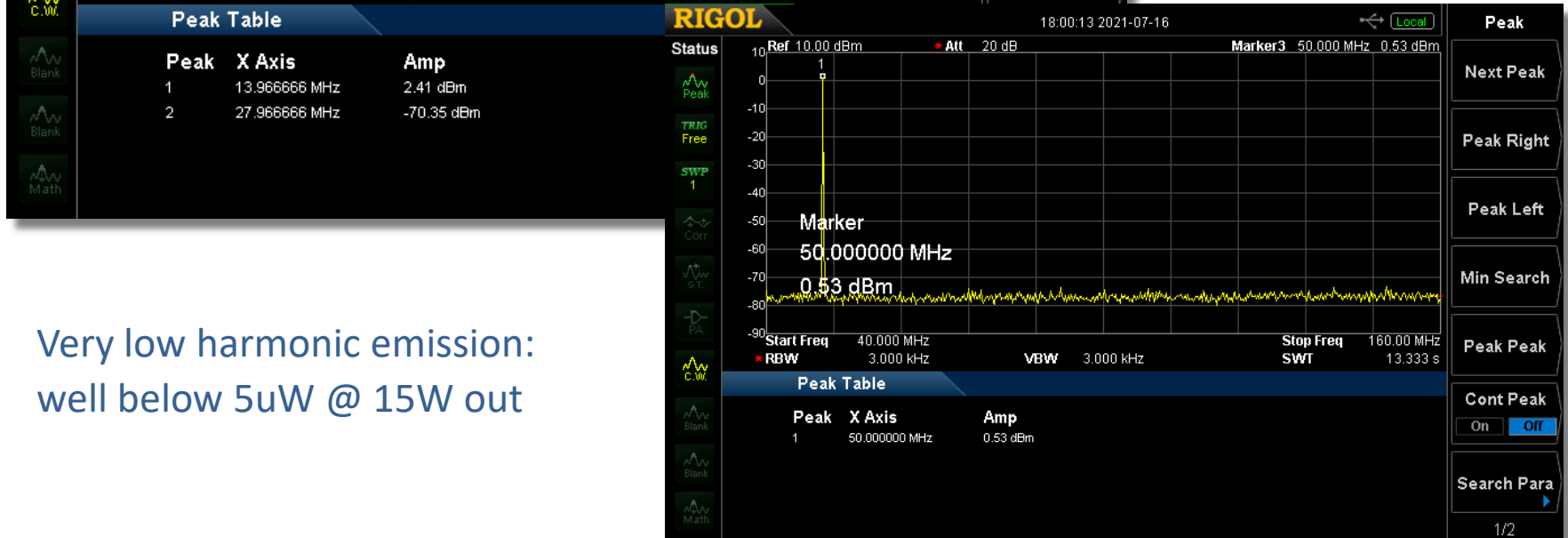


- Insertion loss <0.5dB (SDR20A) or <0.2dB (SDR300A) including RTX relay's, antenna matrix and SWR bridge
- Stop-band attenuation >50dB
- “zero” inserted around 3rd harmonic to improve response on classic bands
- Very low harmonic emission

TX Spectrum

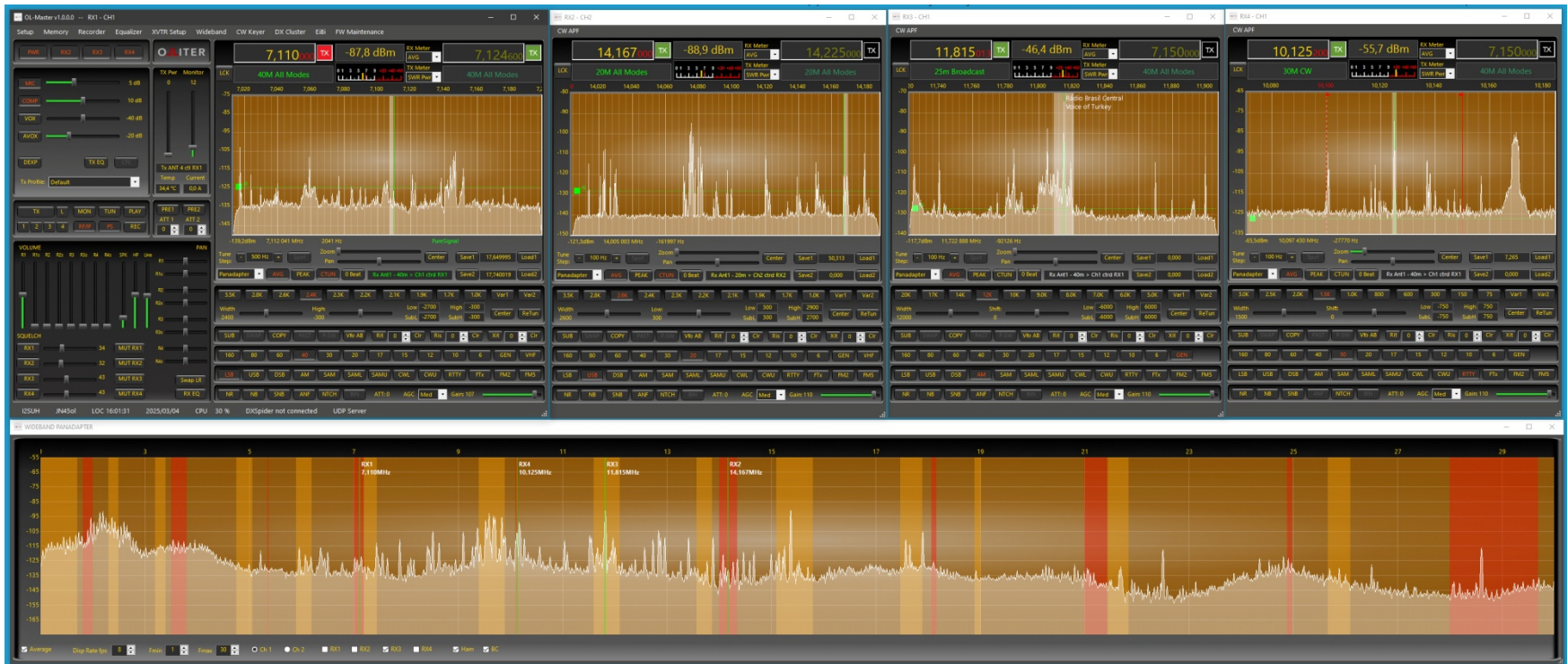


Where is the
3rd harmonic?



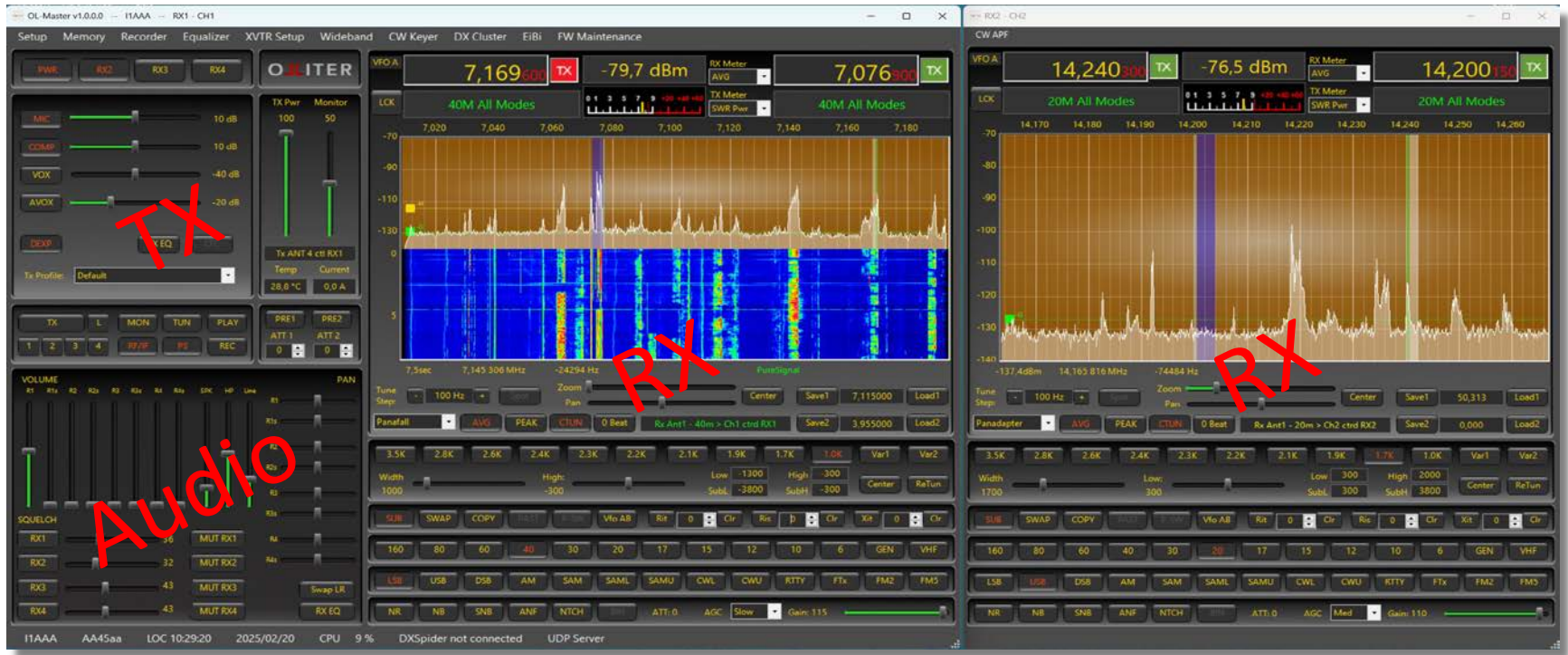
Very low harmonic emission:
well below 5uW @ 15W out

OL-Master



- 4 full-featured independent Receivers with one sub-Receiver each
- Wideband Panadaptor
- And a lot more....

OL-Master



- 4 full-featured independent Receivers with one sub-Receiver each
- Each Receiver can be connected to HW Channel 1 or HW Channel 2
- Each RX or sub-RX VFO can be selected as TX VFO
- “One Function, One Click” approach for fast action and easy operation
- Primary functions directly available in each window, based on frequency of use

OL-Master Key Points

- 10 pre-defined band-pass filters, based on mode in use
- 2 custom band-pass filters plus manual setting (slider or drag)
- Additional low frequency narrow BPF for digital tones and cw
- 8 channels audio mixer, with individual panning, mute and squelch
- Independent volume control for Speakers, Headphone and Output Line
- Full control of antennas, digital outputs and Open Collector outputs
- Noise Reduction, Noise Blanker, Spectral Noise Blanker, Automatic Notch Filter
- Unlimited number of multiple persistent Notch Filters
- Country Band Plan info box (implemented with CSV customizable files)
- 4 + 1 Virtual Audio Cable to distribute audio & I/Q to other applications
- 4 CAT connections to external app (i.e. N1MM, WSJT, CW Skimmer, Fldigi, HRD,)

OL-Master Key Points

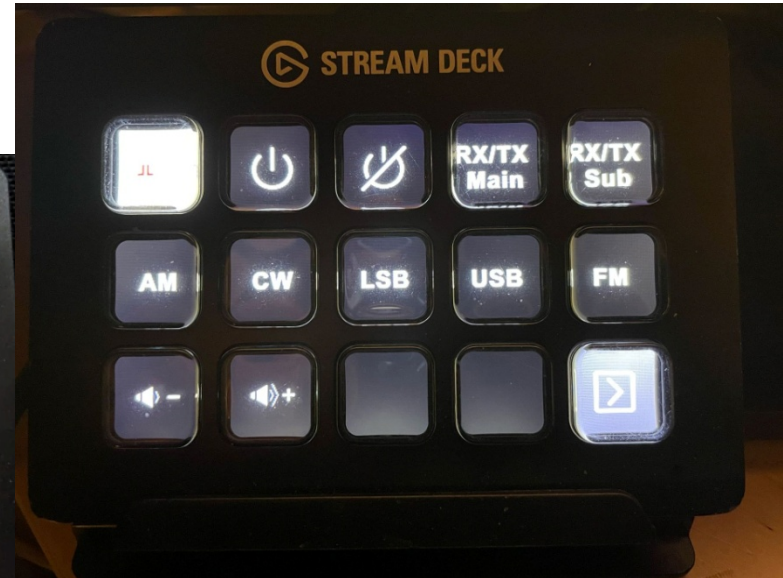
- OTRSP (Open Two Radio Switching Protocol) native protocol support (SO2R)
- MTTQ (Message Queuing Telemetry Transport) protocol
- UDP server to transmit streams
- External accessories support (Keyboards and Rotary controls)
- 10 bands RX and TX Equaliser
- Classic and CFC TX Compressor
- CW generation at firmware level
 - No latency on local monitor
 - Optimally shaped transition for glitch free transmission
- “Look Ahead” ALC & VOX
- Multiple tuning styles
- Customizable interface colors and skins to match user’s taste
- Automatic backup of last 10 Configuration DB and Memory DB
- Easy-to-Use, Ergonomic user interface

Multiple Tuning Style



- Keep tuned station at panadapter center, drag panadapter to tune (or Double-Click)
- Keep panadapter fixed, “Click2Tune” at mouse position (Ctrl+Click to SubRX)
- Drag tune cursor on fixed panadapter (Ctrl+Drag on SubRX)
 - if at panadapter limit, optionally scroll panadapter
- Mouse wheel to tune, while on panadapter (Ctrl+Wheel to SubRX) or frequency display
- Selectable mouse wheel tune step
- Optionally “snap to step” on mouse click
- Direct frequency input on display (Esc, digits, Enter)
- Filters and vertical scale can be moved and adjusted with mouse drag

External Controls



- Native support of selected external USB control devices
- Customizable functions
- Tuning knob, Fine tuning, Volume
- Band, mode and filters switching, RX/TX,

CH/RX and Antenna Mapping

General Audio DSP Transmit PureSignal Display Appearance Keyboard COM Tests

Hrdw Config Options Ant & CH Mapping OC Out Digital Out CW Key/Keyer DXSpider EiBi RX Calibration

Antenna Selection Antenna & Channel Options

CH1 Ant: RX1 RX3 CH2 Ant: RX2 RX4 TX Antenna CH->RX Mapping

| ANT-> | 1 | 2 | 3 | 4 |
|-------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| 160m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 80m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 60m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 40m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 12m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 10m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 6m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Copy CH1 Ant to CH2

| ANT-> | 1 | 2 | 3 | 4 |
|-------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| 160m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 80m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 60m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 40m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20m | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 12m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 10m | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 6m | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Copy CH2 Ant to CH1

| ANT-> | 1 | 2 | 3 | 4 |
|-------|-----------------------|-----------------------|-----------------------|----------------------------------|
| 160m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 80m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 60m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 40m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 30m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 20m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 17m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 15m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 12m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 10m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 6m | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

| | CH1 | CH2 |
|-----|----------------------------------|----------------------------------|
| RX1 | <input checked="" type="radio"/> | <input type="radio"/> |
| RX2 | <input type="radio"/> | <input checked="" type="radio"/> |
| RX3 | <input checked="" type="radio"/> | <input type="radio"/> |
| RX4 | <input type="radio"/> | <input checked="" type="radio"/> |

Antenna Control Lock

Antenna Splitter OFF

☒ Change Antenna Halfway between bands ☐ Force CH1 RX Antenna also for CH2

Export DB Import DB Reset DB Cancel Save Save+Close

Full control on antenna mapping by band and by RX/TX

Open Collector Mapping

OLMaster Setup

General Audio DSP Transmit PureSignal Display Appearance Keyboard COM Tests

Hrdw Config Options Ant & CH Mapping OC Out Digital Out CW Key/Keyer DXSpider EiBi RX Calibration

Pin Managed By

| Pin | RX1 | RX2 | RX3 | RX4 |
|-----|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1 | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2 | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3 | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4 | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5 | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6 | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 7 | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| 8 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

HF Reset

VHF Reset **Enable**

Pins On Receive

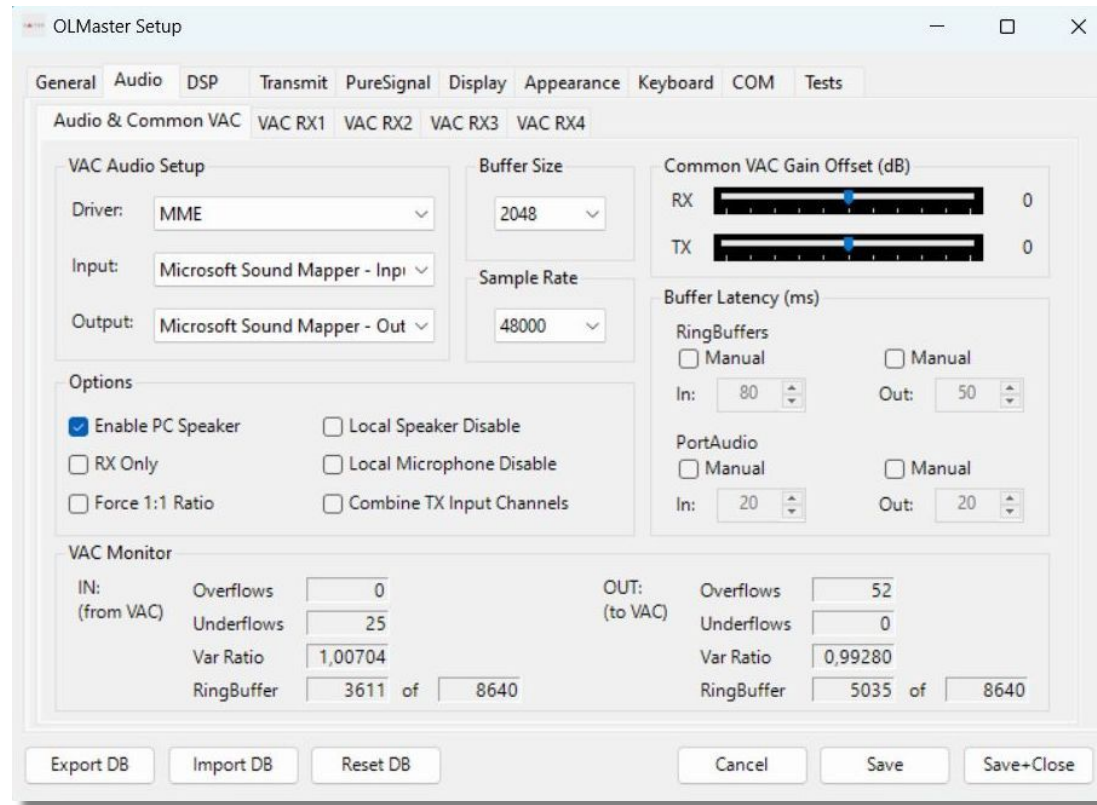
| Band | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 160m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 80m | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 60m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 40m | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 30m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20m | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6m | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| GEN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| VHF0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| VHF1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| VHF2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| VHF3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| VHF4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| VHF5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Pins On Transmit

Export DB Import DB Reset DB Cancel Save Save+Close

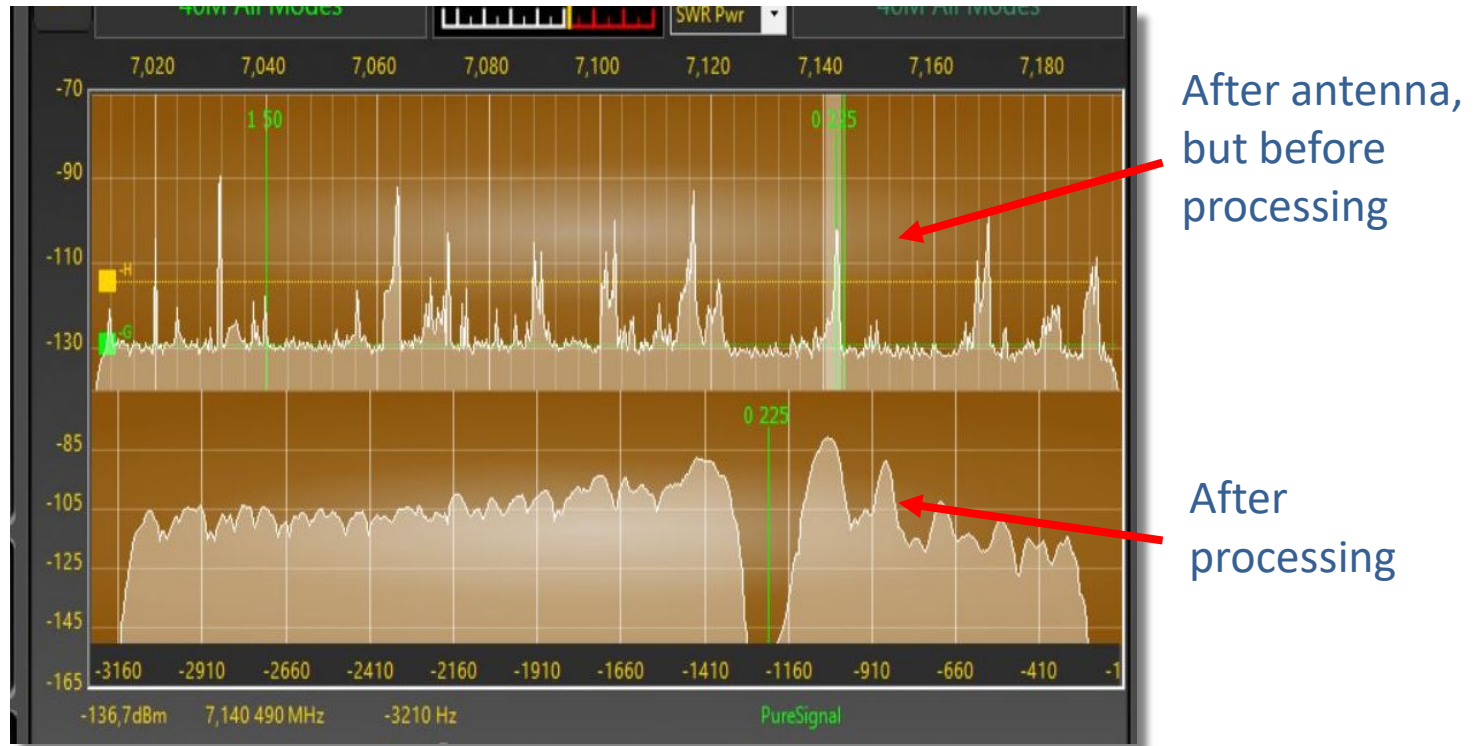
- Full control on external devices by band and by RX/TX
- Alternatively OC can be driven by OTRSP commands (SO2R)
- Same setup on Digital Output

Virtual Audio Cable Configuration



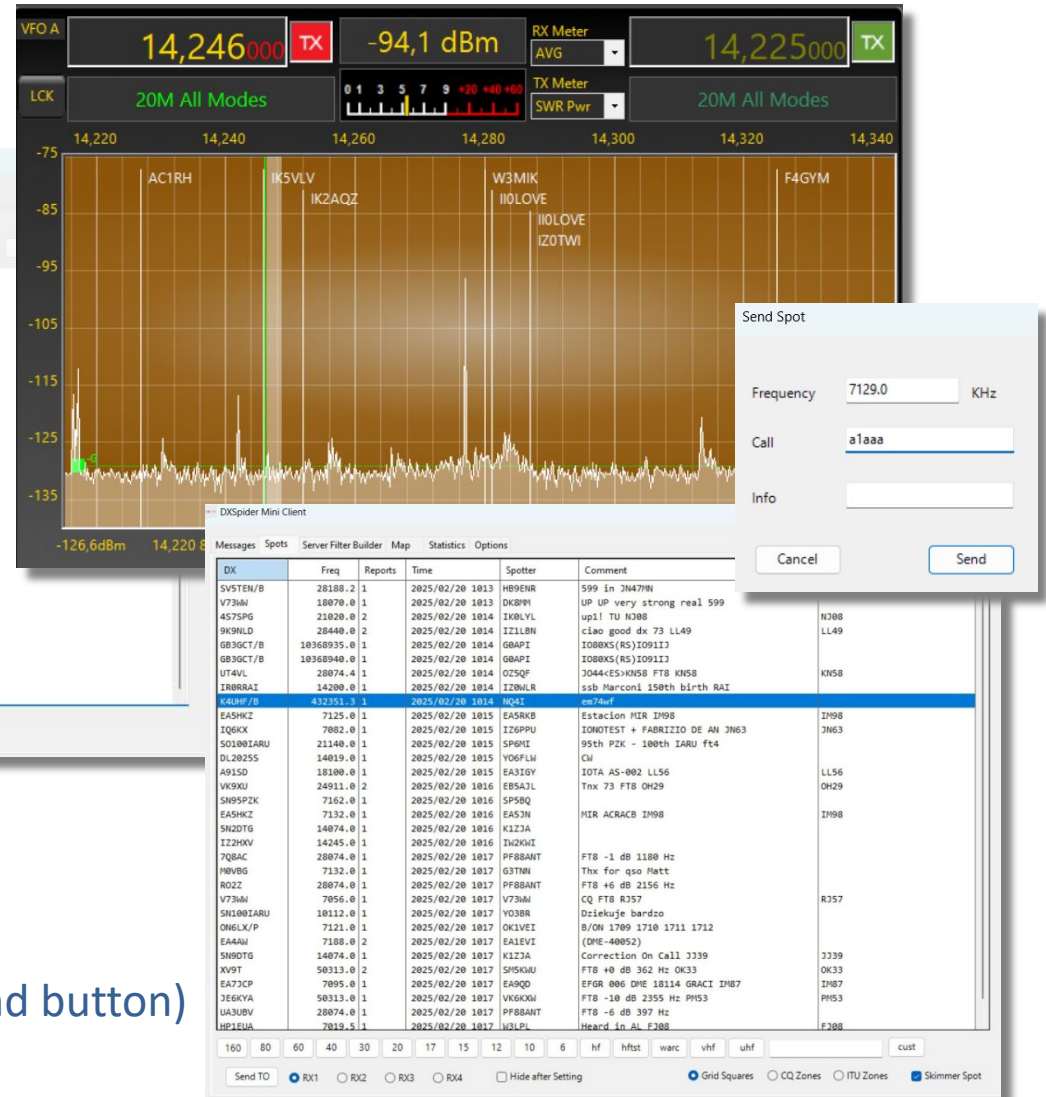
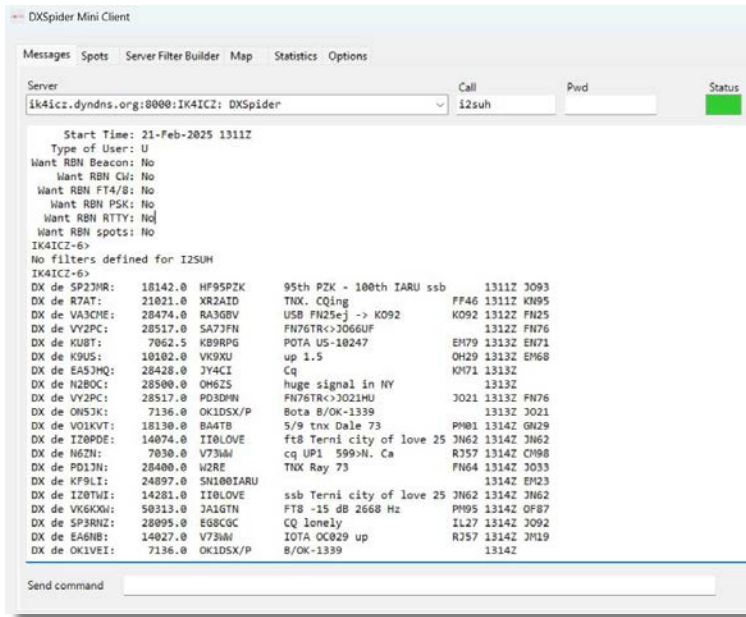
- 1 Common VAC for mixed audio
 - For SDR installed away from PC (i.e. attic, antenna proximity, ...)
- 4 independent VACs, Dedicated to each RX, to interface external applications
- I/Q samples direct output on Dedicated VAC

Multiple Notch Filter



- Mouse Right Click to create/enable/disable
- Mouse Double Right Click to delete
- Mouse Wheel to control notch bandwidth
- Can be defined/managed in both panadapter and spectrum windows
- Persistent, if out of received spectrum or after power-off

DXSpider Mini Client



- Simple but rich of features
- Fully customizable
- Quick client-side filtering on Band
- Double Click on list to tune (or Send button)
- Selection of RX to tune on spot

DXSpider Mini Client

The screenshot displays the DXSpider Mini Client interface, which is divided into several sections:

- Filter Builder:** A table with columns for Filter, Band, SubBnd, Operator, Pattern, Value, Operator, Pattern, and Value. It includes a list of filters (reject 0, accept 0, reject 1, etc.) and a dropdown menu for the SubBnd column.
- Map:** A world map showing the locations of stations and their connections. A legend on the left indicates the color coding for different bands: 10m (blue), 12m (green), 15m (yellow), 17m (orange), 20m (red), 23m (purple), 24m (brown), and 28m (pink).
- Statistics:** A table showing the number of spots per band for the last 60 minutes. The table has columns for Band, Spots count, and Percent.
- Options:** A section for configuring the client, including a range radius (km) and a list of stations spotted near the QTH.

Statistics: Spots count per band

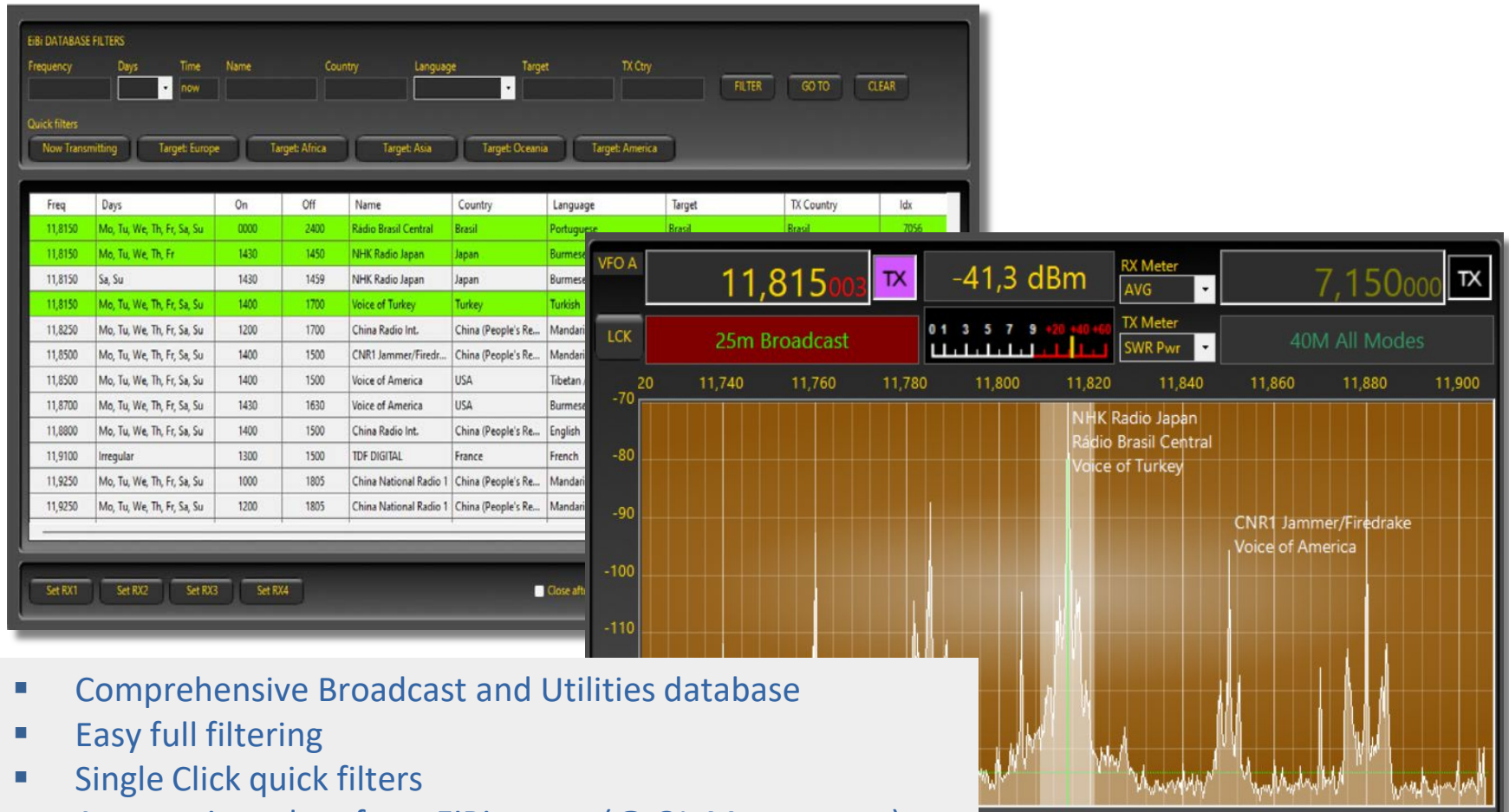
| Band | Spots count | Percent |
|------|-------------|---------|
| 10m | 265 | 27.89 |
| 20m | 171 | 18.00 |
| 15m | 157 | 16.53 |
| 12m | 114 | 12.00 |
| 17m | 94 | 9.89 |
| 40m | 85 | 8.95 |
| 30m | 58 | 6.11 |
| 80m | 6 | 0.63 |

Options: DX spotted by stations near your QTH

| Frequency (KHz) | Callsign | Distance (Km) | Locator | Spotter | Spotter distance (Km) | Timestamp (UTC) | Spot age (min) |
|-----------------|----------|---------------|---------|----------|-----------------------|-----------------|----------------|
| 21074 | DO7TIR | 2563 | JN58 | OEGVH-# | 2446 | 2025/02/26 1409 | 8 |
| 14074 | F1TRF | 2674 | JN39 | HA8TKS-# | 2499 | 2025/02/26 1409 | 8 |
| 21074 | DK0BWW | 2674 | JN59 | OEGVH-# | 2446 | 2025/02/26 1411 | 6 |
| 21074 | WB2UBW | 8863 | EM67 | OEGVH-# | 2446 | 2025/02/26 1412 | 5 |
| 28074 | YB1UUN | 11139 | OI33 | SSOU-# | 2362 | 2025/02/26 1412 | 5 |
| 14080 | EA1EE | 2588 | IN53 | SSOU-# | 2362 | 2025/02/26 1412 | 5 |
| 18100 | KBYC | 8447 | EM95 | OEGVH-# | 2446 | 2025/02/26 1412 | 5 |
| 14074 | VK2LAW | 16227 | QF56 | SSOU-# | 2362 | 2025/02/26 1412 | 5 |
| 18100 | R2ST | 4065 | KO94 | OEGVH-# | 2446 | 2025/02/26 1412 | 5 |
| 21140 | 9A3GDR | 2395 | JN76 | SSOU-# | 2362 | 2025/02/26 1412 | 5 |
| 28074 | SS2D | 2395 | JN76 | OEGVH-# | 2446 | 2025/02/26 1412 | 5 |
| 18100 | M6YJB | 3224 | IO93 | HA8TKS-# | 2499 | 2025/02/26 1412 | 5 |
| 18100 | 4XSPB | 2649 | KM72 | OEGVH-# | 2446 | 2025/02/26 1412 | 5 |
| 14074 | SP9UPH | 2910 | JO90 | DL1AMQ-# | 2785 | 2025/02/26 1413 | 4 |
| 24896.8 | LZ3IQE | 2510 | KN32 | ON6ZQ-# | 2801 | 2025/02/26 1413 | 4 |
| 18104 | OKTDL | 2691 | JN69 | SSOU-# | 2362 | 2025/02/26 1413 | 4 |

- Server-side filtering: Accept/Reject
- Filter Builder with pull-down editor
- Map and Statistics available
- Filtering based on spotter distance

EiBi Client



- Comprehensive Broadcast and Utilities database
- Easy full filtering
- Single Click quick filters
- Automatic update from EiBi server (@ OL-Master start)
- On-the-fly display (Alt+Mouse Move)
- Immediate tuning from Panadapter
- Immediate tuning from List (Double Left Click or Set Btn)

CW Keyer



- Automatic switch to CW on opening
- Easy to use
- 24 macros available
- QSO counter that increments at # in text (i.e. at qso end)
- Insert DX call at #C in text, DX OM name at #N in macro, RST at #R
- CW parameters directly on Main Panel

Wideband Panadapter



- Quick perception of propagation (and band noise.....)
- Selectable Fmin and Fmax
- Ham Band and Broadcast Band (based on selected Country Band Plan)
- Double Click to tune the selected RXs

Memory Organization

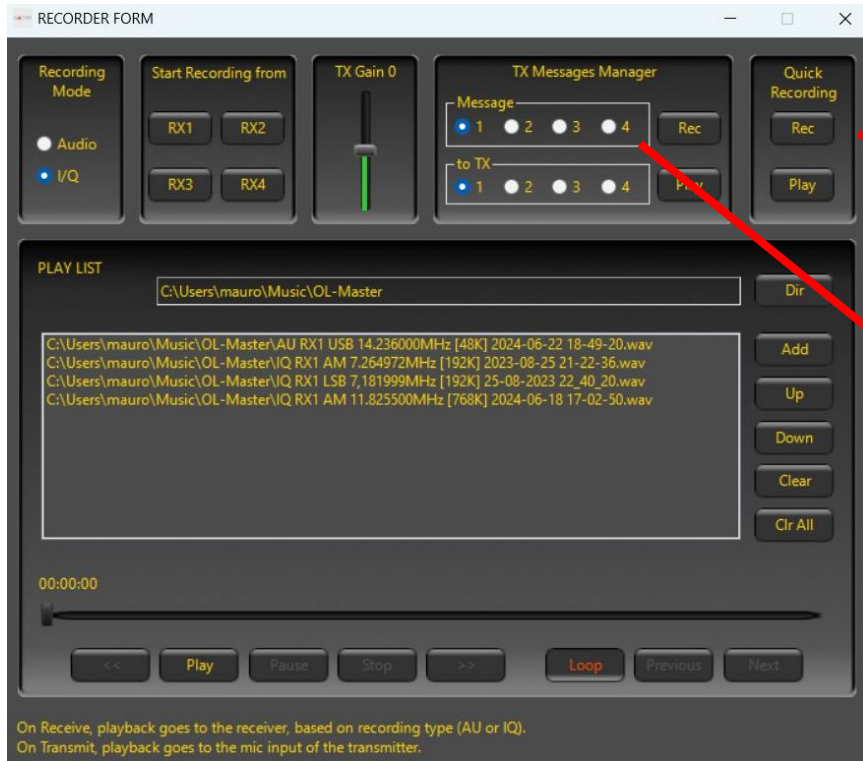
The screenshot displays the 'MEMORY FORM' application window. At the top, there is a 'Filter and Group Management' section with a dropdown menu set to 'All' and buttons for 'Filter', 'Add', and 'Delete'. To the right is a 'Sort' section with two columns: one for 'Name' (sorted Ascending) and one for 'RX Freq' (sorted Ascending), each with 'Asc' and 'Des' checkboxes and a 'Sort' button. A search bar is also present. The main area is a table with columns: Id, Group, Name, RX Freq, RX Sub Freq, Mod, Mode, TuneStep, AGC, AGC Lvl, Power, RPTR Mode, RPTR Offset, Tone, Tone_Freq, and Note. The table contains five entries, with the first one highlighted in blue. A context menu is open over the first row, showing options: Id, Group, Name, RX Freq, RX SubFreq, and Mode. At the bottom, there is a 'RESTORE To' section with radio buttons for RX1, RX2, RX3, and RX4, and buttons for 'ADD From', 'Close after Restore', 'Edit', 'Dup', and 'Add'.

Below the screenshot, a list of features is provided:

- Fast and easy ADD/RESTORE from/to selectable active RXs
- Context sensitive Edit Form
- Common repository for all RXs
- User defined Groups
- Sort on two keys and free search
- Unlimited size

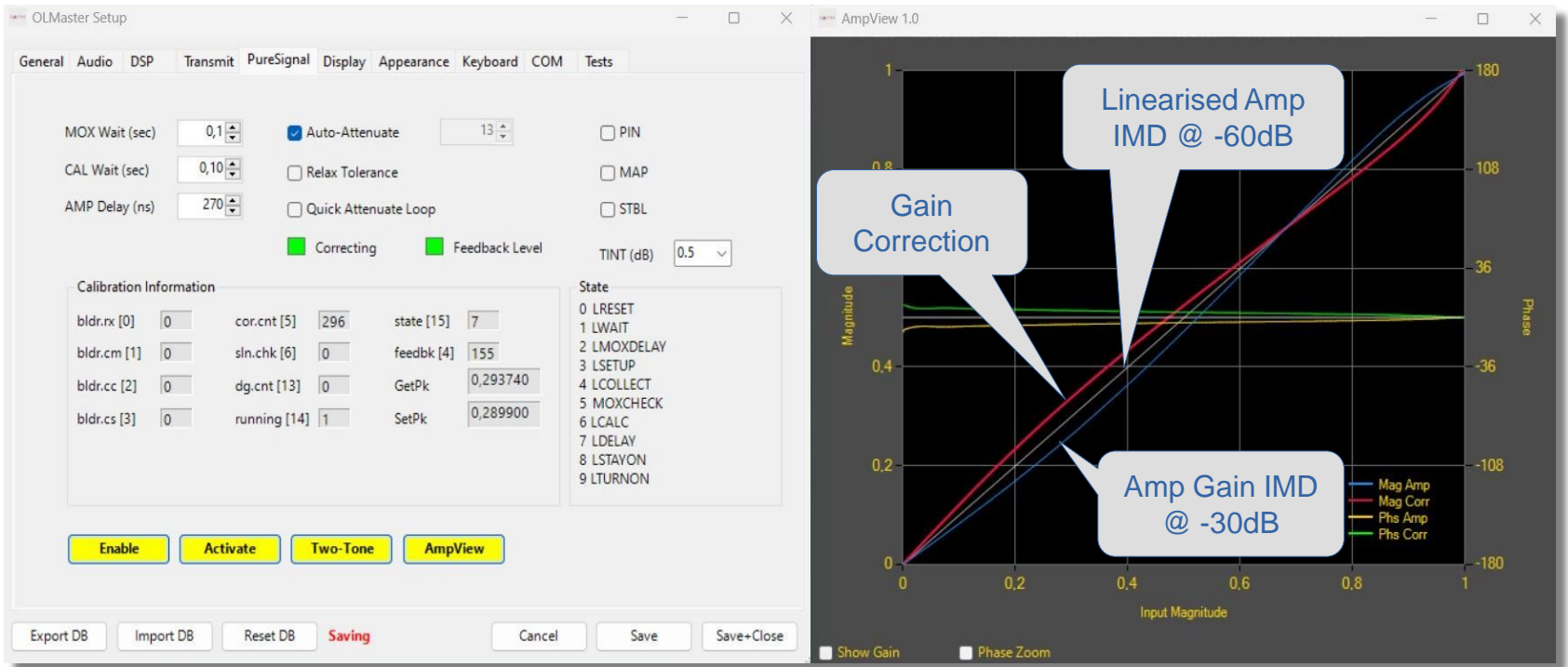
The 'MEMORY EDIT FORM' dialog box is also shown, containing fields for Group (VHF_FM), Name (R1), Frequency (MHz) (145.025), SubFrequency (MHz) (145.050), Mode (FM5), Filter (15K), Tune Step (12.5 kHz), AGC Mode (MED), AGC Level (111), Power % (100), Filter Low (Hz), Filter High (Hz), Repeter Mode (High), Rptr TX Offset (KHz) (600), Tone (On), Tone Frequency (Hz) (88,5), and a Note field. It has 'Cancel' and 'SAVE' buttons at the bottom.

Recorder



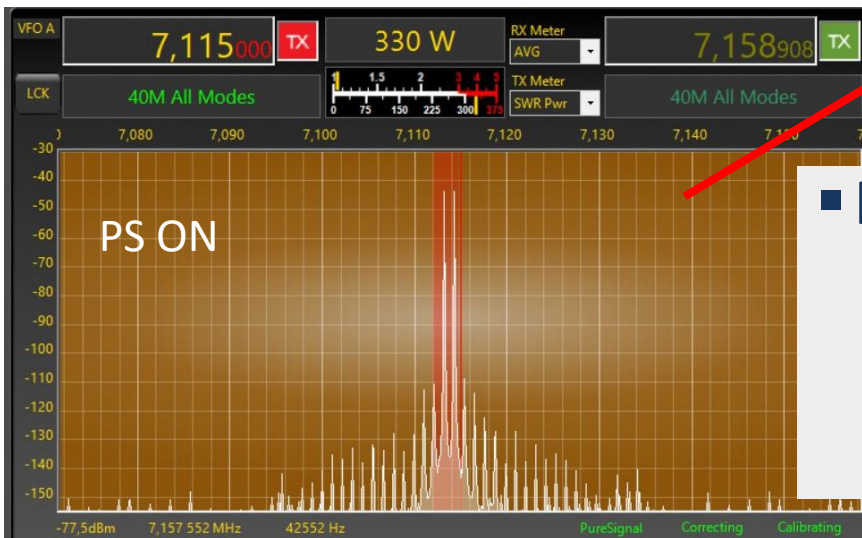
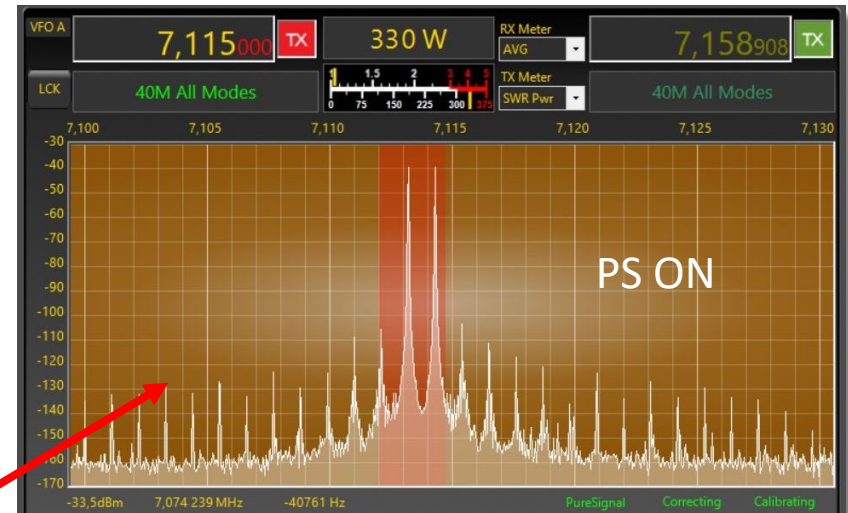
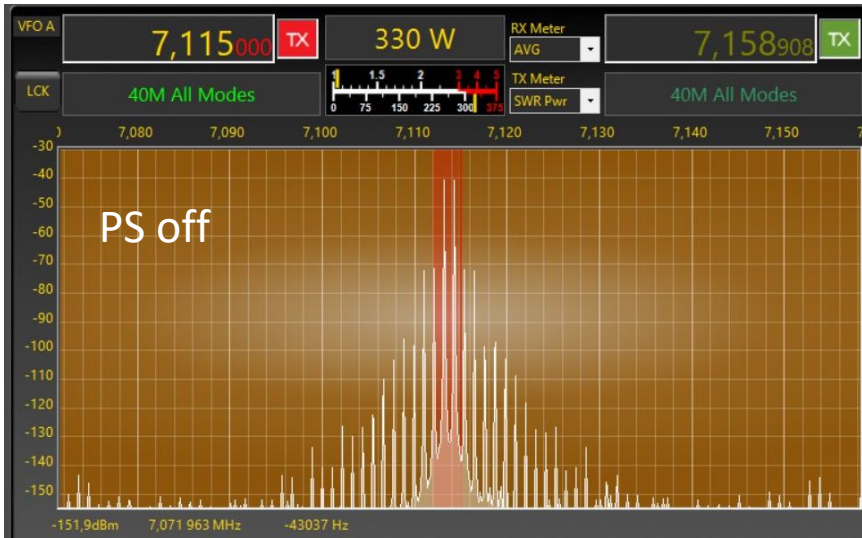
- Record/Play Audio or RAW IQ data, extended WAV format
- Simultaneous recording from selected RXs
- Unlimited recording time (670MByte/h audio recording, 11GB/h IQ recording @ 768KHz)
- During RAW IQ playback, possibility to tune (CTUN) different frequency/mode/filter
- 4 TX message per each RX windows
- Quick Recorder/Player for RX1 (accessible also from Main Window)

Pre-Distorsion - PureSignal



- Improve amplifier linearity through signal pre-distorsion
- IMD can be improved by more than 20dB
- Clean TX spectrum
- Avoid disturbing nearby stations
- Designed by Dott. Warren Pratt, NR0V

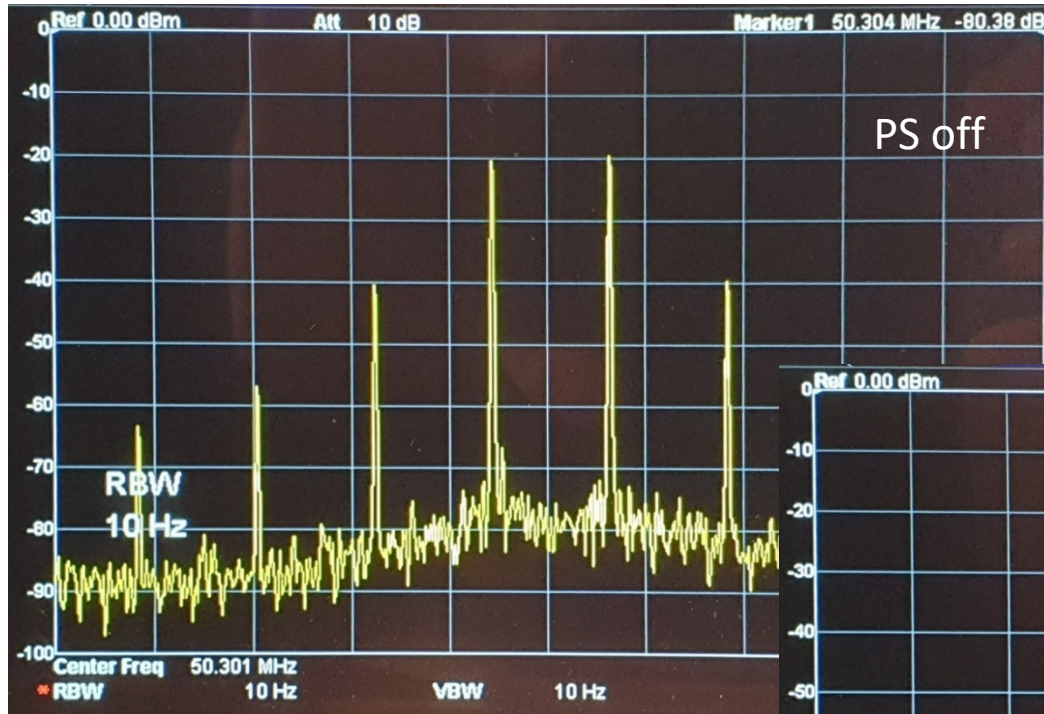
PureSignal Measurements



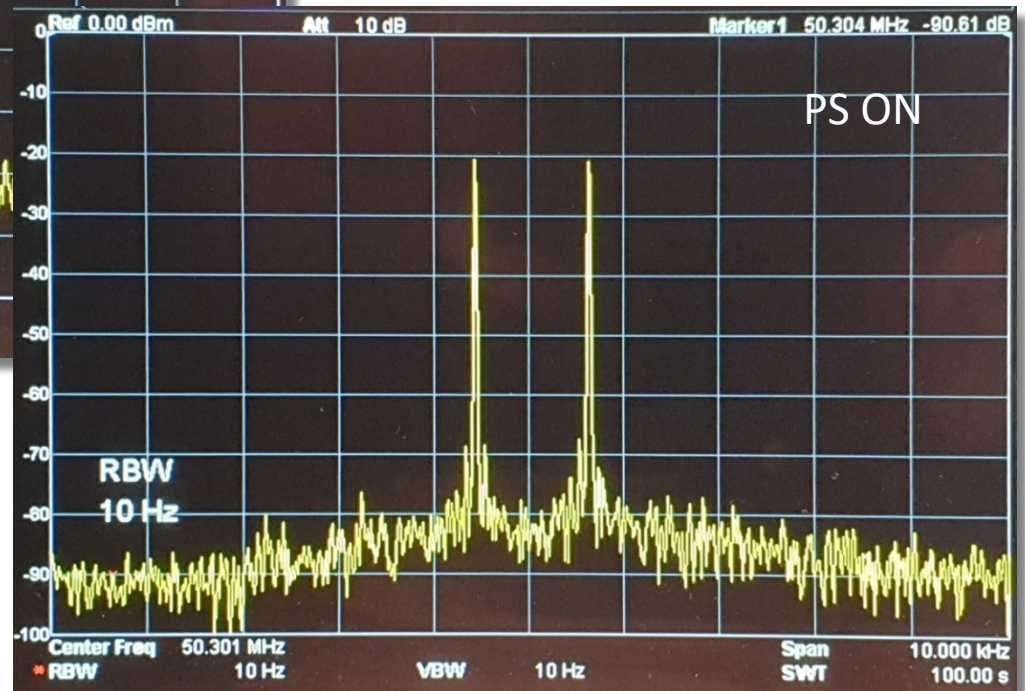
■ IMD @ 300W out

- PS off: -30dB (300mW)
- PS ON: -60dB (300uW)
- Floor: < -110dB (3nW)

PureSignal Measurements



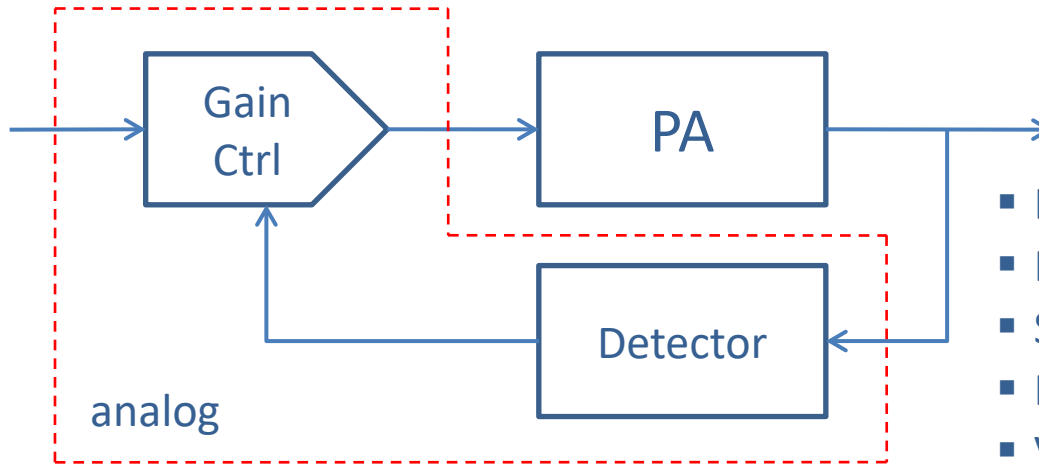
Bias adjusted (reduced) @15W
to get IMD visible @ -20dB



But PureSignal does a great job
even @ 50MHz!

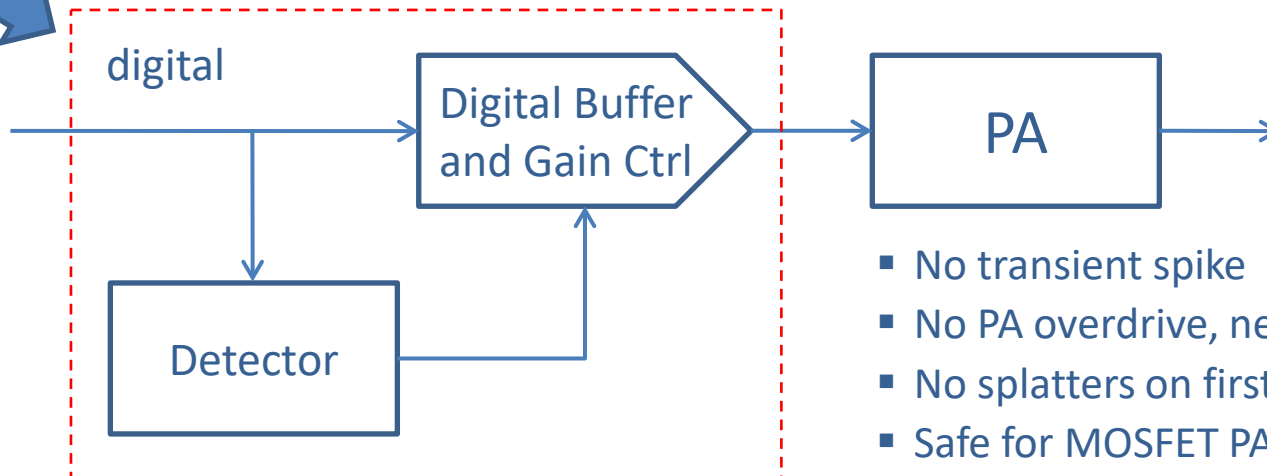
ALC and VOX Look Ahead

Traditional ALC



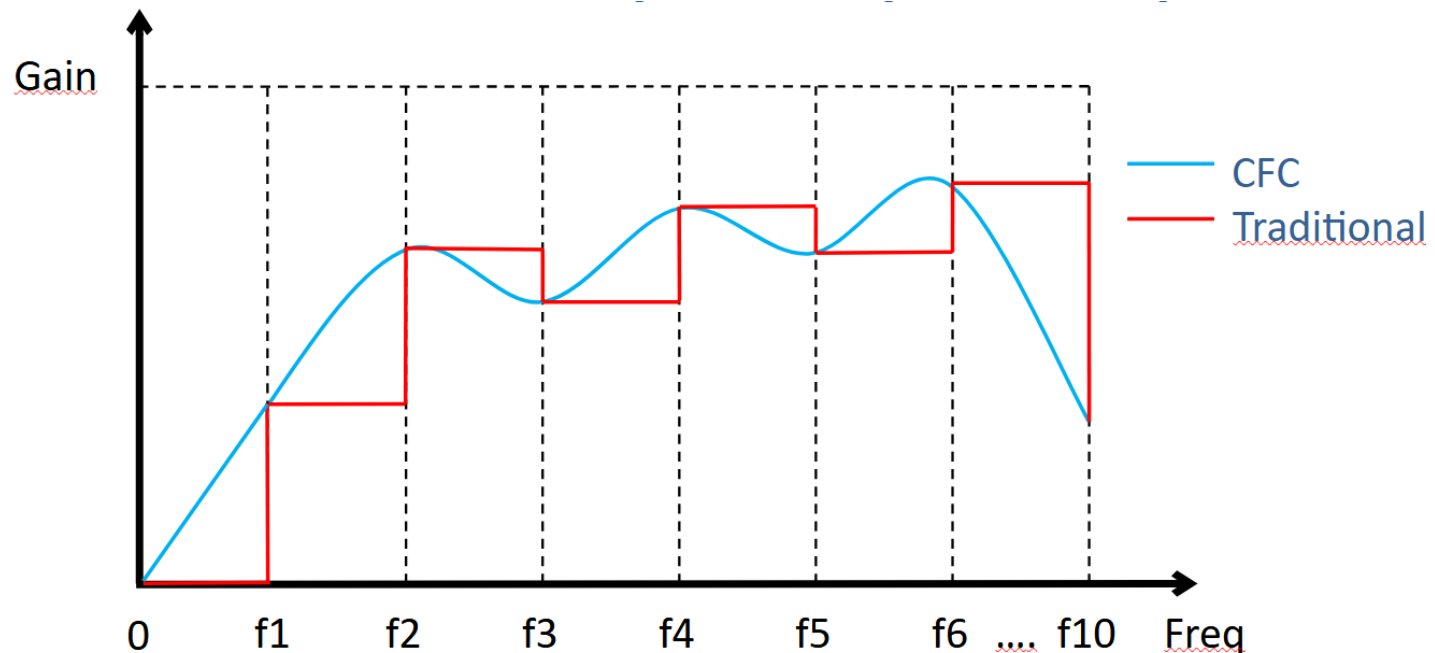
- Likely transient spike
- PA overdrive possible
- Splatters on first syllable
- MOSFET PA at risk
- VOX: first syllable lost

Look Ahead ALC



- No transient spike
- No PA overdrive, never
- No splatters on first syllable
- Safe for MOSFET PA
- VOX: first syllable transmitted

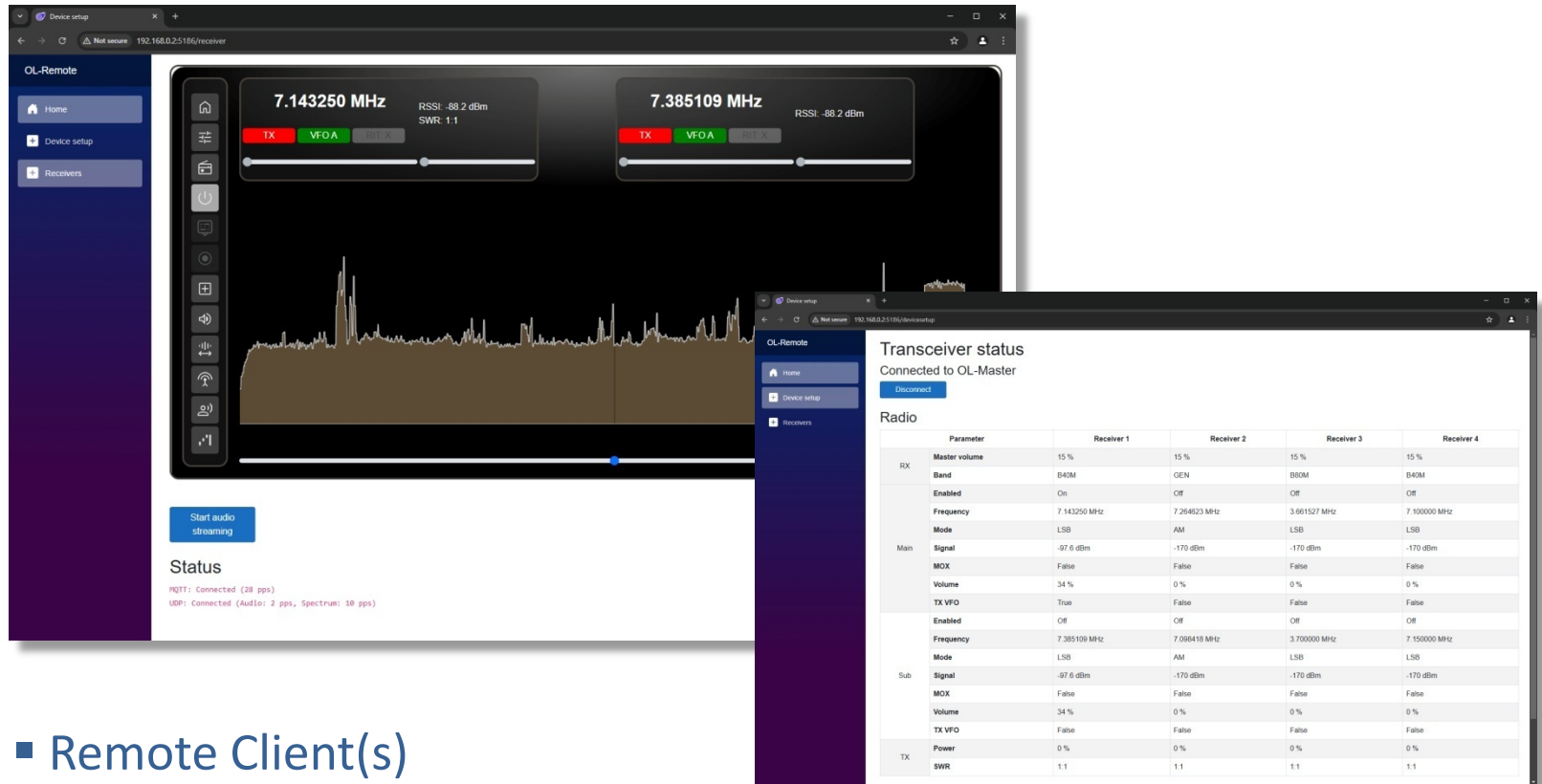
Continuous Frequency Compressor



No step change of gain -> Optimal compression with no artifacts

- Total control on band frequencies and compression level
- Compression level interpolated between bands
- Efficient increase of average power and intelligibility without artifacts
- Designed by Dott. Warren Pratt NR0V

What Next



- Remote Client(s)
- 1000+ Wrms water cooled PA
- SWL RX only version?
-

Thank you for your time

www.olliter.com