

# SDRC and Multi-Channel Reception

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*Modern software allows for reception, recording and decoding of many channels in parallel. This step-to-step guide give some examples.*

Software-defined receivers (SDR) provide large HF bandwidth of many tens of MHz, covering e.g., the whole HF spectrum – see *Figure 1*.

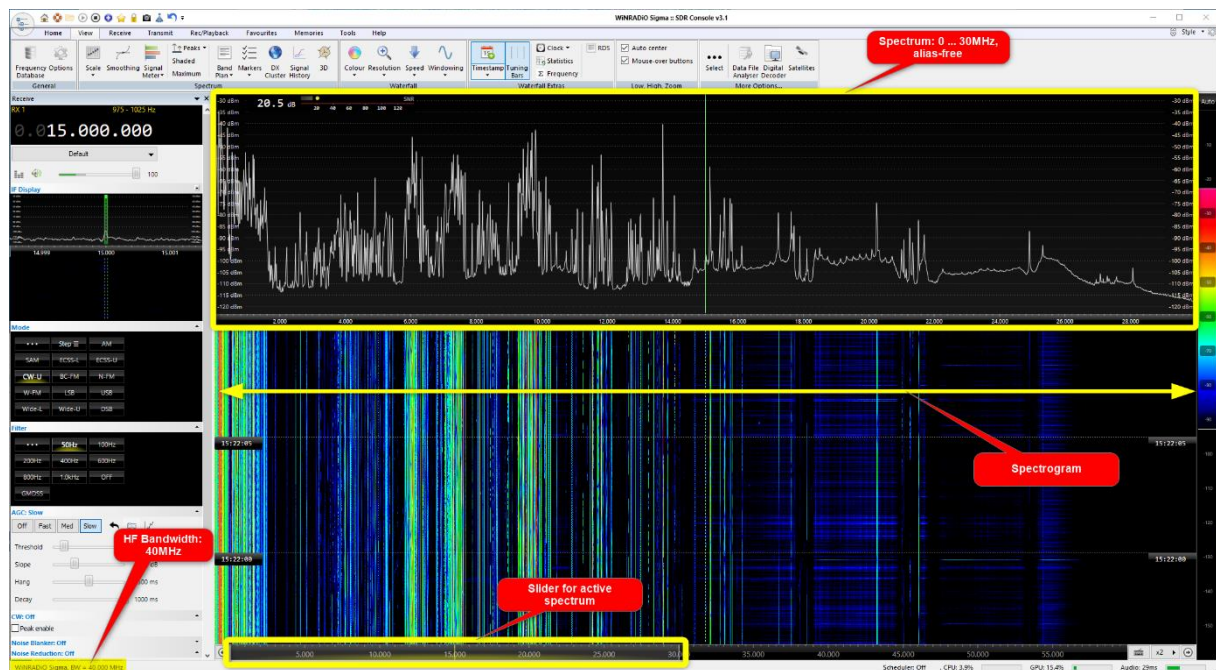


Figure 1: SDRC's view onto Winradio's Sigma SDR with 40MHz HF bandwidth, providing 0 ... 30MHz alias-free.

With free software [SDRC](#) you can place up to 24 decoders (RX1 ... RX24) within this bandwidth. Each of those RX can have different data concerning frequency, mode, AGC etc.

With each of those up to 24 RX, you can feed up to 24 software decoders/recorders. They may provide multi-instances (e.g.: MultiPSK 1 ... 24, installed in each different folders) or multi input, like [Black Cat ALE](#) decoder with up to 24 input channels.

For proper decoding, you must connect the audio output of SDRC's RX1 ... RX24 to the sound input of Black Cat ALE 1 ... 24.

This is done by a virtual audio cable, or [VAC software](#) as follows – see *Figure 2*:

- RX1 -> VAC1 -> Sound Input 1
- RX2 -> VAC2 -> Sound Input 2
- .
- .
- RX23 -> VAC23 -> Sound Input 23
- RX24 -> VAC24 -> Sound Input 24

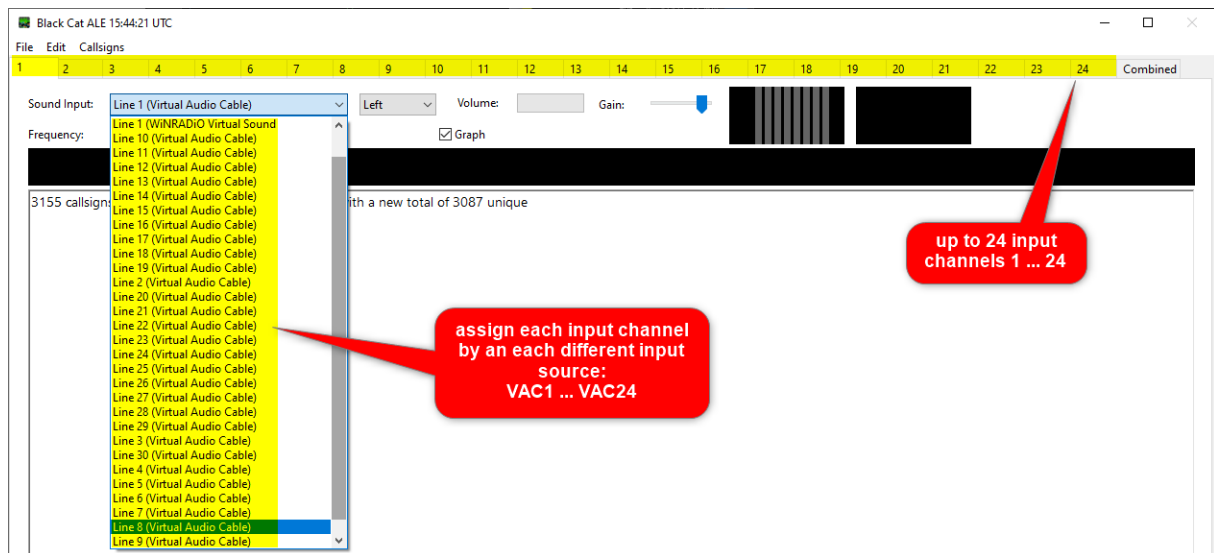


Figure 2: Black Cat ALE decoder, prepared for 24 decoding channels.

## SDRC: RX1 ... RX24 and Favourites

After this introduction into the general multi-channel setup of SDR and Black Cat ALE decoder to the setup of SDRC software.

Of course, you want to set your up to 24 RX channels only once and save them for later recall.

For clarity's sake I will give an example of just six GMDSS channels – as input for [Black Cat's GMDSS](#) decoder.

So, we must program six channels with each different frequency and VAC output, plus their identical mode, bandwidth and AGC:

- RX1: 2187.5kHz -> VAC1 [CW-U, bandwidth 1500 ... 1900Hz, AGC Fast]
- RX6: 16804.5kHz -> VAC6 [CW-U, bandwidth 1500 ... 1900Hz, AGC Fast]

Those channels cover a HF bandwidth of nearly 15MHz. In tur, we must use a bandwidth covering this range alias-free. I choose 20MHz.

Start SDRC with this bandwidth, see *Figure 3*:

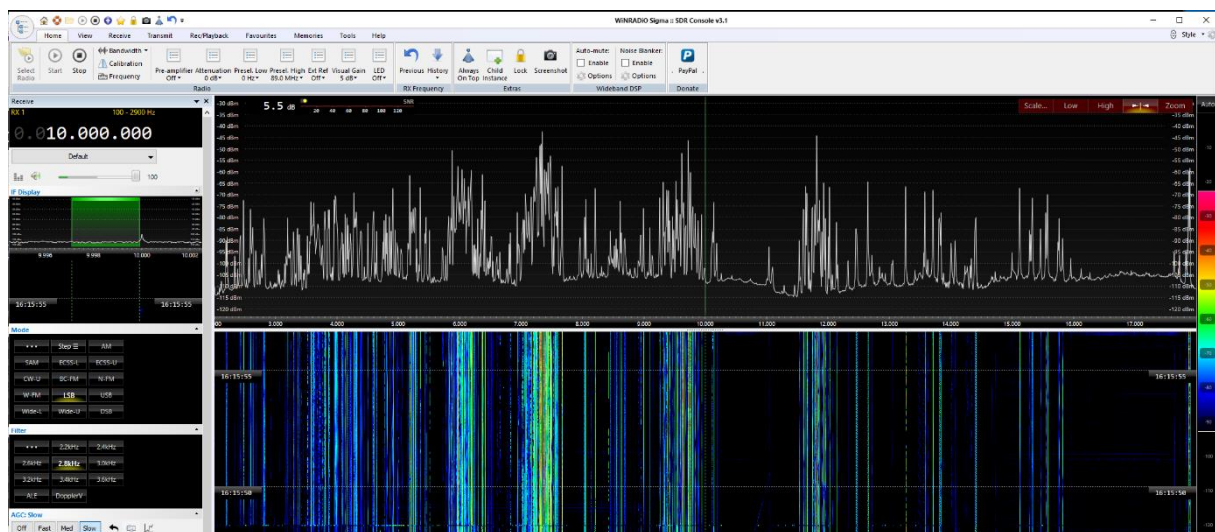


Figure 3: Start SDRC software with, e.g., 20MHz bandwidth.

Now program your six channels:

- Click tab “Receive” – *Figure 4:*

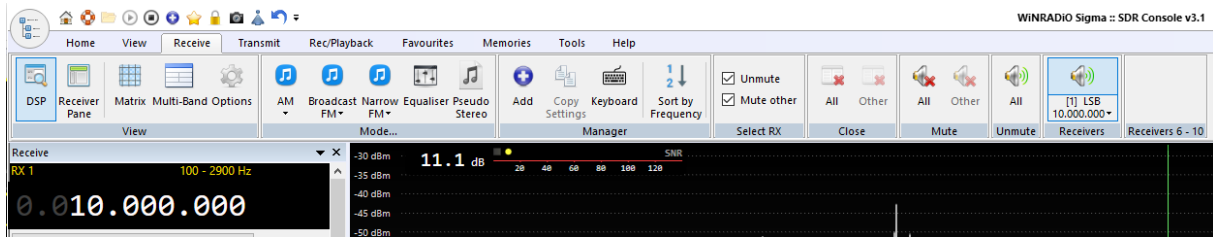


Figure 4: Part of the SDR Console GUI, with “Receive” tab clicked.

Do all the changes needed for programming the first channel

- RX1: 2187.5kHz -> VAC1 [CW-U, bandwidth 1500 ... 1900Hz, AGC Fast], see *Figure 5:*

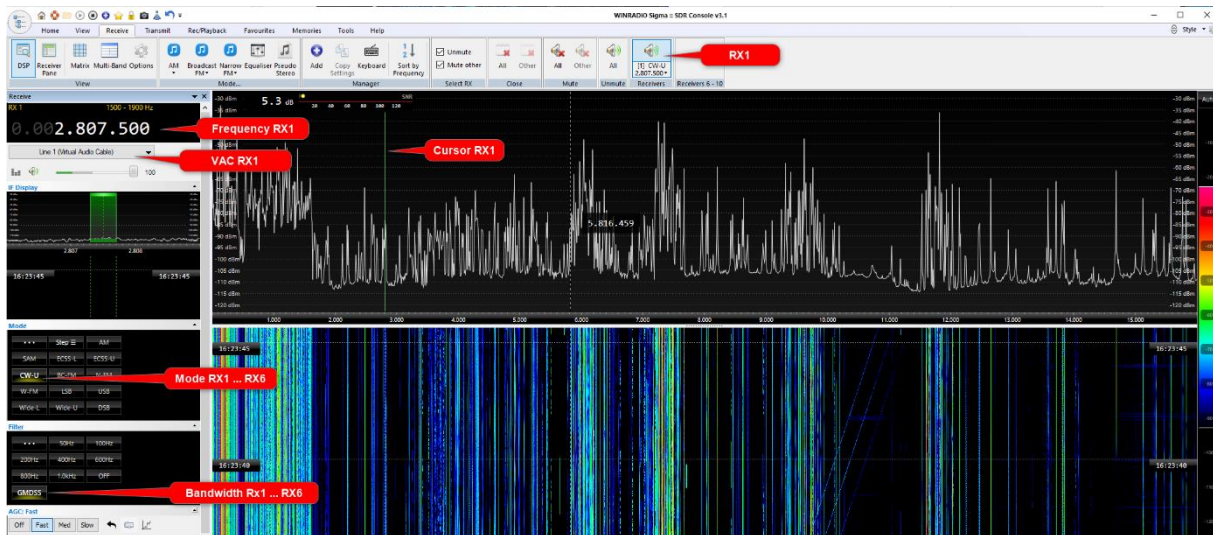


Figure 5: RX1 has been set.

- For the following GMDSS channels RX2 ... RX6 you now must add RX2 ... RX6 [click into the **+ Add** icon and change for each of them just frequency and VAC2 ... VAC6 – see *Figure 6.*

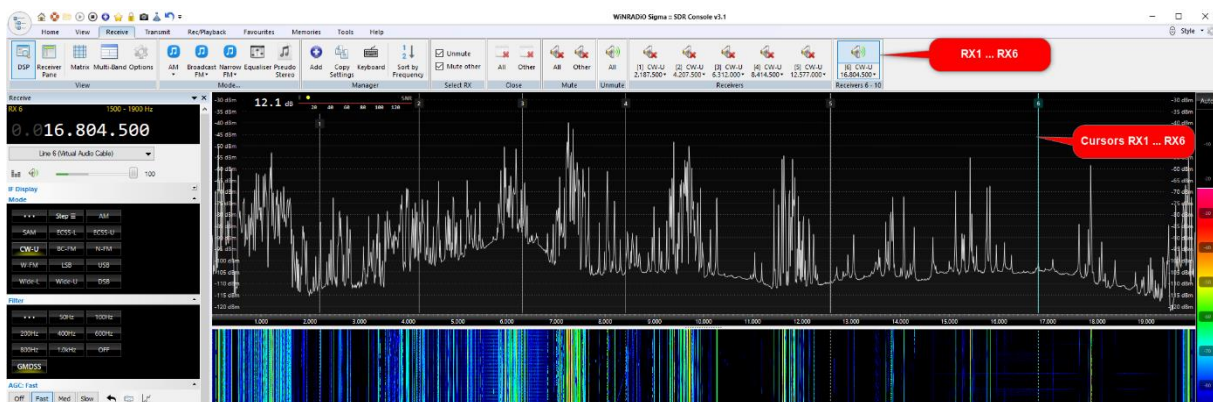


Figure 6: All six GMDSS channels programmed. Only RX6 delivers output.

To save this setting as “Favourites”:

- Click tab “Favourites” – *Figure 7:*

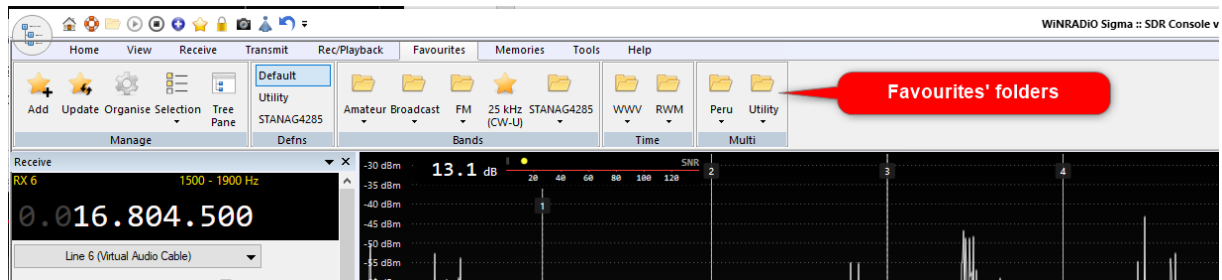


Figure 7: Favourites are organized in folders. Here, already some folders exist.

To save RX1 ... RX6 into a folder “GMDSS”:

- Click “Add”.  
Window “Add Favourite” appears with all the channels you just have programmed – *Figure 8.*

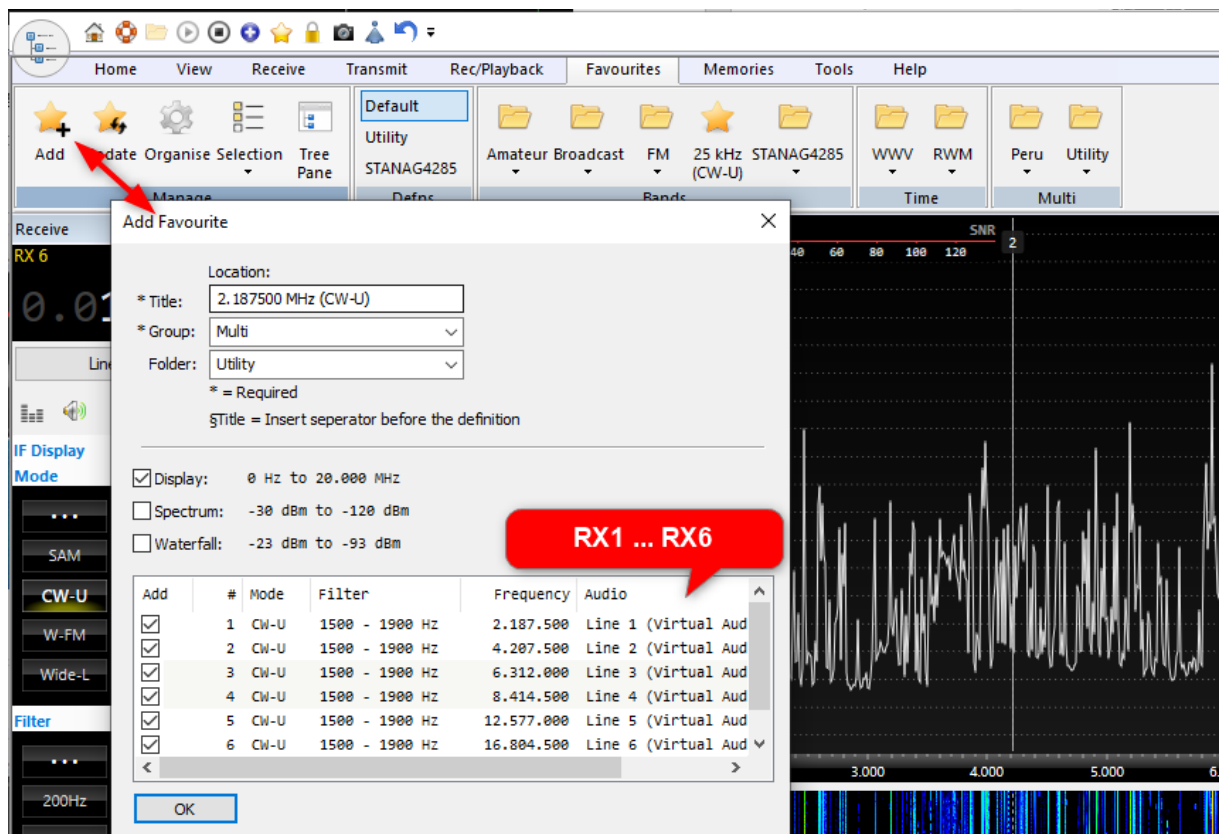


Figure 8: Add Favourites – showing all channels RX1 ... RX6 just programmed.

- Change “Title” – carrying date of RX1 as default – to “GMDSS”
- Change/create a “Group” [here: “Multi” for a group for multi-channel decoders]
- Change/create a “Folder” [here: “Utility” for utility DXing]

Done this, all should show up in folder “Utility”, see *Figure 9* on the following page.



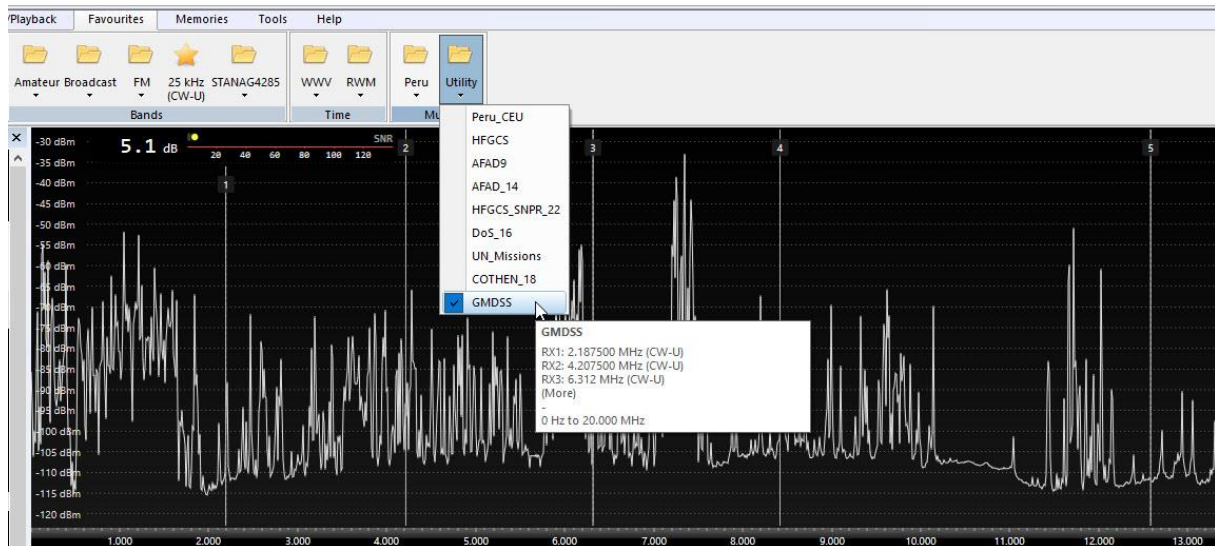


Figure 9: The result of saving six GMDSS channels in Group “Multi”, Folder “Utility”, Favourite “GMDSS”. You see here also other Favourites having been programmed.

To recall the those “Favourites” and activate all channels RX1 ... RX6 for receive:

Start SDRC with a matching bandwidth (here: 20MHz).

- Go to tab “Favourites”.
- Click Folder “Utility”, click “GMDSS”.  
All six GMDSS should appear as in Figure 9.  
But: only one channel is activated!

To activate all channels:

- Click tab “Receive” – Figure 10.  
Here you see which channels are producing audio output (RX6) and which not (RX1 ... RX5)
- Click “All” to activate the output of all channels – Figure 11.  
Then, the output of all channels is activated, and RX1 ... RX6 can feed the six decoder’s channels – see Figure 12.

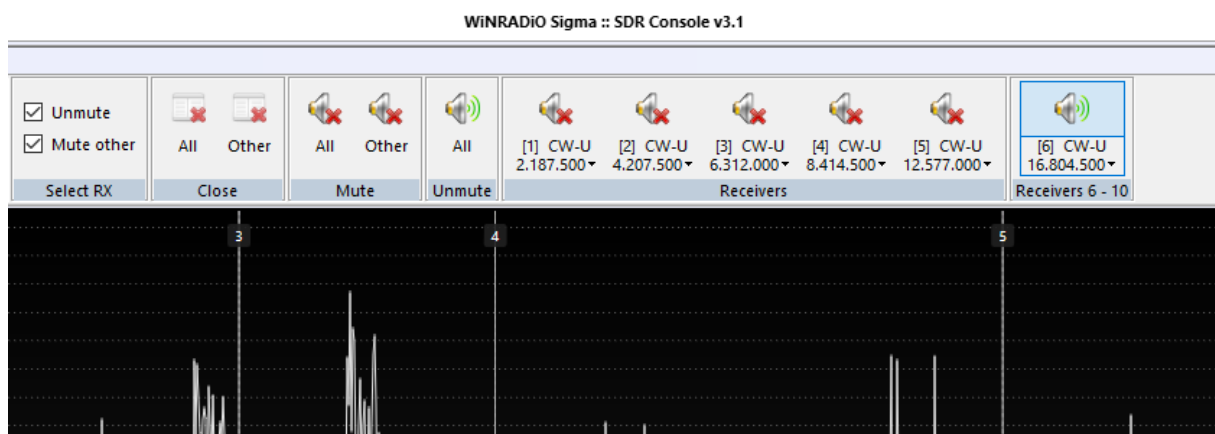


Figure 10: First, the output of only one channel is activated.

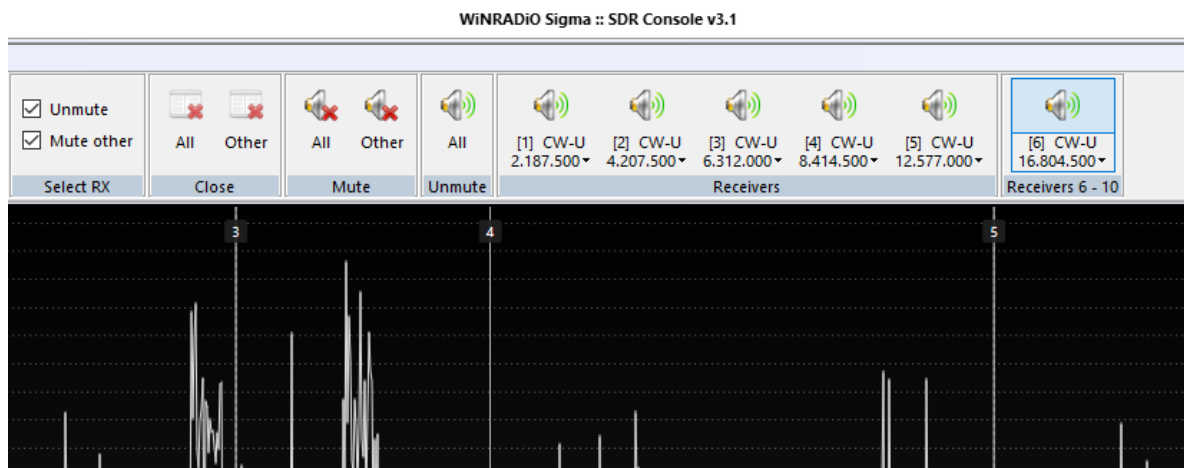


Figure 11: After having clicked into the loudspeaker icon “All”, all RX1 ... RX6 are activated.

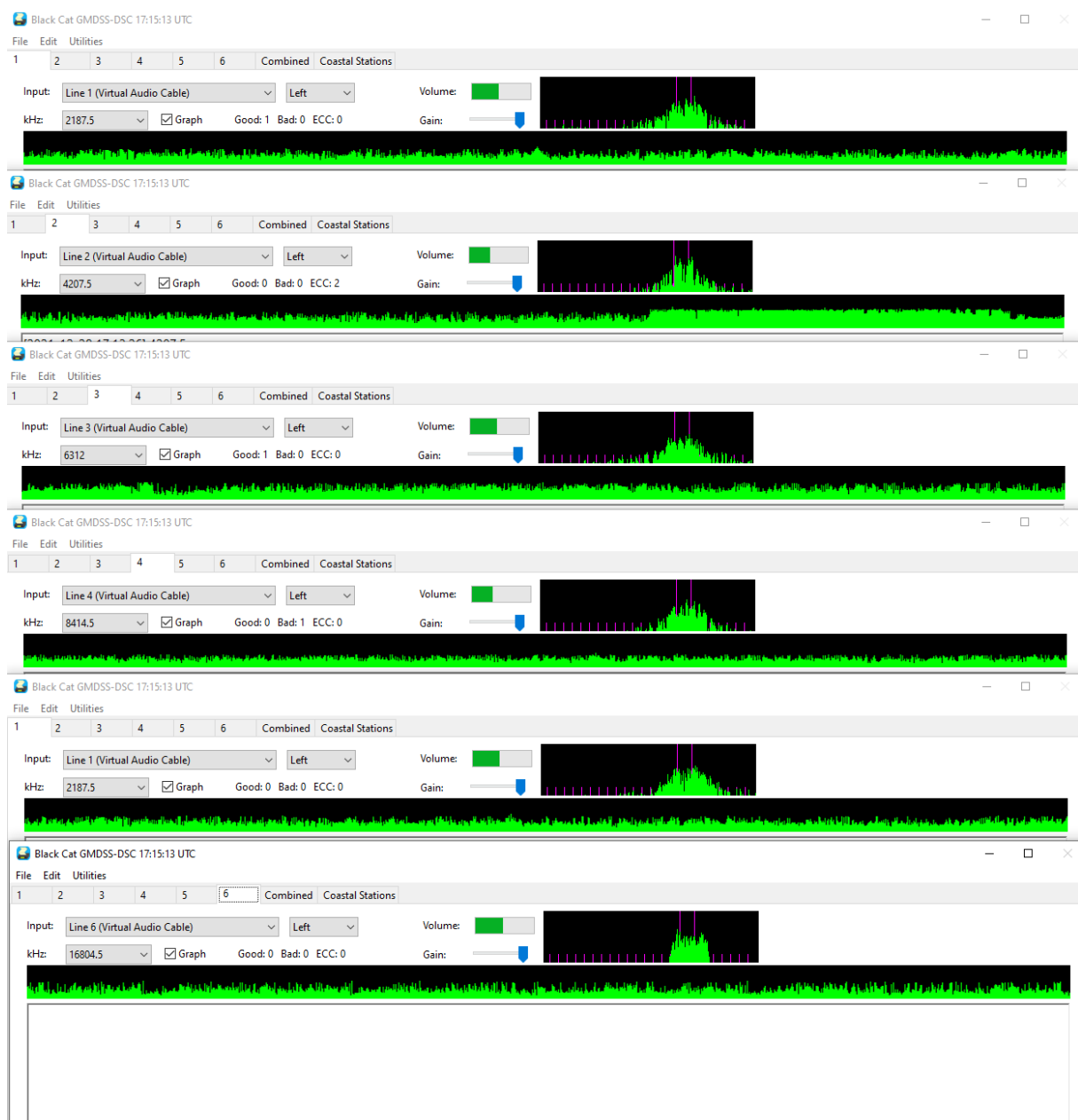


Figure 12: All six RX1 ... RX6 deliver their output to the matching decoder's input. Black Cat GMDSS decoder has been opened here in six instances, just to illustrate this. Normally only one GUI must be opened.

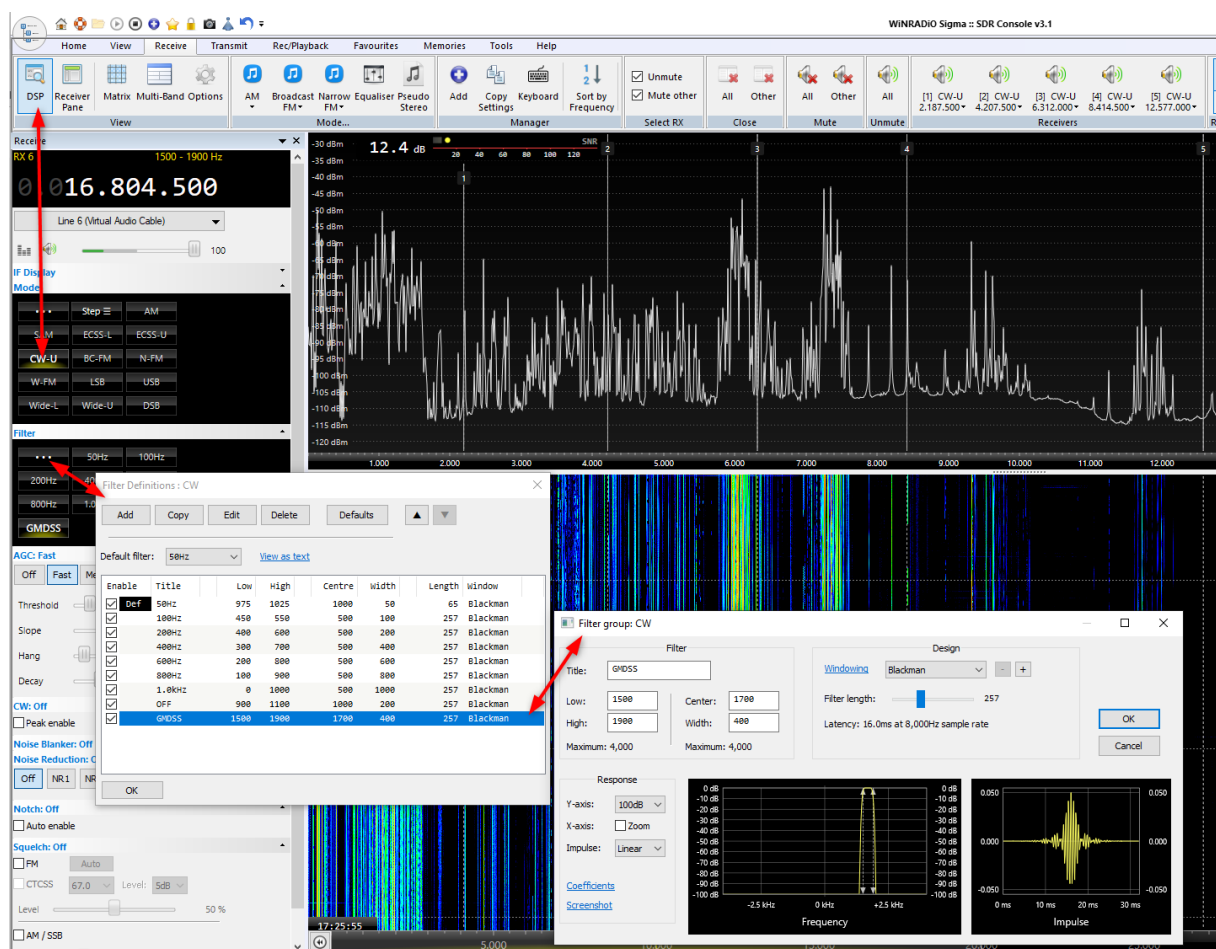
## Addendum: Filter Definitions in SDR software

Mode and Filter of SDRC should match the waveform (ALE, GMDSS ...).

In this GMDSS case, I choose CW-U as Mode and 1500Hz – 1900Hz (center: 1700Hz) as bandwidth. Filter length is 257, a good balance of steep filters and low ripple:

- Click “CW-U” in the Mode DSP display.
- Click “•••” in the Filter window.  
A “Definitions” window comes up.
- Click “Add”.  
A “Filter Group” window pops up.
- Make your choices and give it a title (here: “GMDSS”).
- Click OK in this and the first window.  
Under “Filter” now “GMDSS” should appear.

See Figure 13.



## Caveats:

- The decoder’s input must match the receiver’s/VAC’s output!
- All receivers must produce (enough) audio – “All” under tab “Receive”, plus checking the volume slider of SDR GUI!
- Don’t overdrive the decoder!