

VARA HF 4.0 QUICK GUIDE

Rev, December 3th 2020

VARA LICENSE

The VARA license is valid for the callsign and his 15 suffixes: CALLSIGN, CALLSIGN-1, CALLSIGN-2.....CALLSIGN-15 and CALLSIGN-T, CALLSIGN-R and CALLSIGN-X.

There is not hardware restrictions. You can use your VARA license in several computers. In the case of Gateway operation, no license is necessary to get full speed.

The registration Key is inserted in VARA Setup menu:



The image shows a screenshot of the 'VARA Setup' dialog box. The window title is 'VARA Setup' with a close button (X) in the top right corner. The dialog is divided into two main sections: 'TCP Ports' and 'VARA License'.
In the 'TCP Ports' section, there are three input fields: 'Command' with the value '8300', 'Data' with the value '8301', and 'Retries' with a dropdown menu set to '10'.
The 'VARA License' section contains a table of registration information. The first row has 'Callsign: PA3GJM' and 'Registration Key: AAAAAAAAAAAAAAAAAA'. The following three rows have empty 'Callsign' and 'Registration Key' fields.
At the bottom center of the dialog is a 'Close' button.

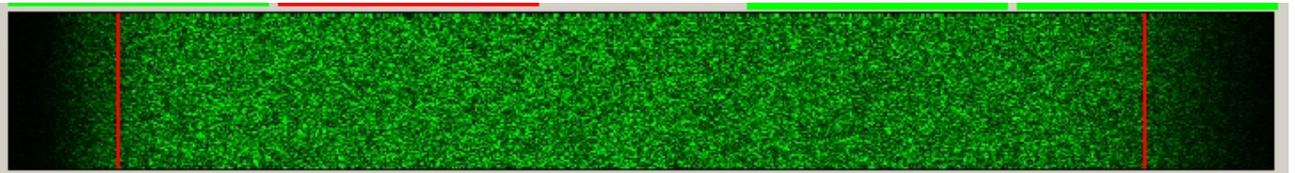
VARA FOLDER

By default, VARA is installed in C:\VARA folder. If you need to use more than one VARA instance in a same PC, you will need to create another VARA folder.

RIG SETTINGS

Open filters from 0-3000Hz, even in the case of VARA 500. VARA uses a specific internal filter for VARA 2300 or 500, which is not visible in the waterfall.

In the waterfall, VARA signal covers the space between the red lines, so ideally, your rig filter should exceed this threshold, like in this picture:



VARA GATEWAYS CENTER FREQUENCY

Center Frequency = USB dial + 1500Hz

Center Frequency (KHz)	BW	Start Hour	Stop Hour	P3/4	P1/2	W	A	Vara	Rp	Dwell (sec)	Callsign	Service Code
10131.500	W	0	23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7	EA5HVK	PUBLIC
0.000	W	0	23	<input type="checkbox"/>	<input type="checkbox"/>	0	EA5HVK	PUBLIC				

USB Dial: 10130 <http://www.winlink.org/RMSChannels>

WINDOWS DEFENDER

Some antivirus, like Windows Defender, give a false positive in VARA.exe file, removing the file even without asking you. I recommend to add an exclusion to C:\VARA folder.

How Add an exclusion to Windows Security:

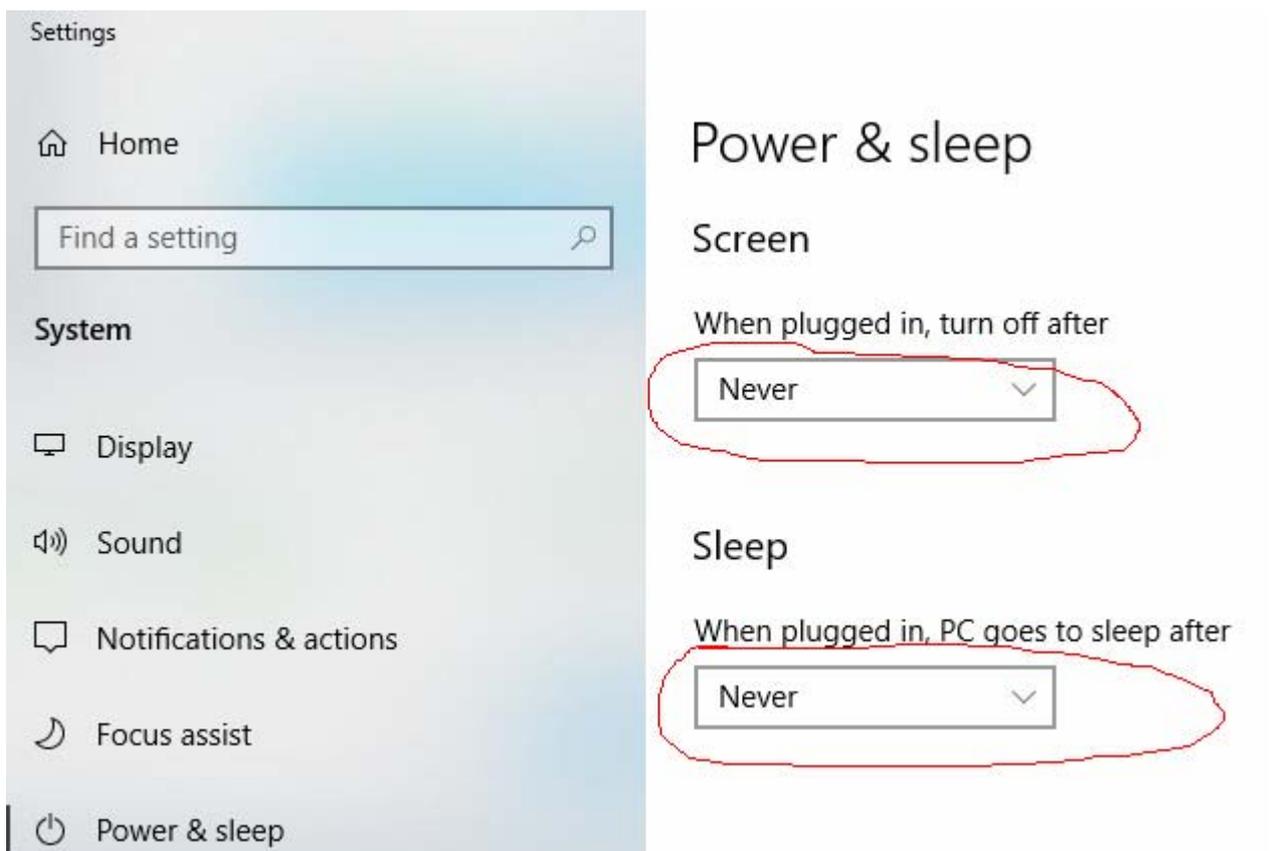
Go to Start > Settings > Update & Security > Windows Security > Virus & thread protection.

Under Virus & threat protection settings, select Manage settings, and then under Exclusions, select Add or remove exclusions.

Select Add an exclusion, and then select C:\VARA folder

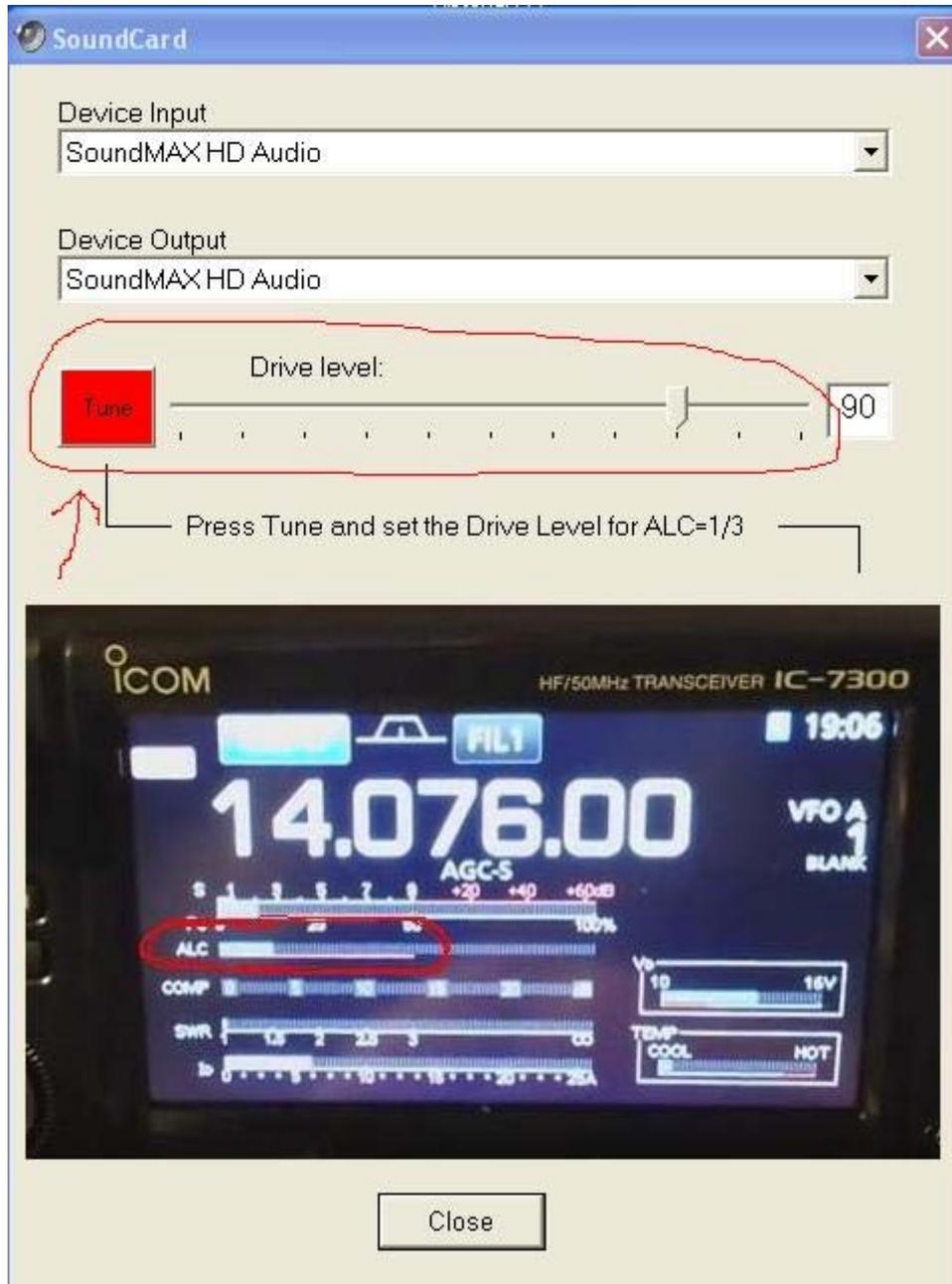
WIN10 POWER & SLEEP SETTINGS

To avoid a possible VARA locked-up with Win10, go to /Settings/System/Power & Sleep, and set the Screen and Sleep option to “**NEVER**”.



TUNE BUTTON

The **TUNE** button plays a test tone, useful for the power/ALC settings. Using the **drive level** slider, you can adjust the audio level out. Your **ALC** meter should be about 1/3 or 1/2 of scale.

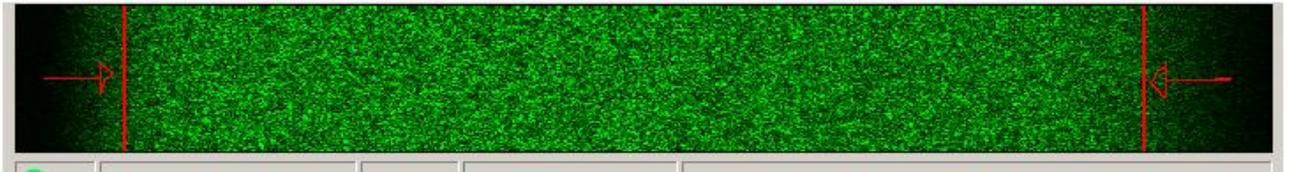


SOUNDCARD INTERFACES

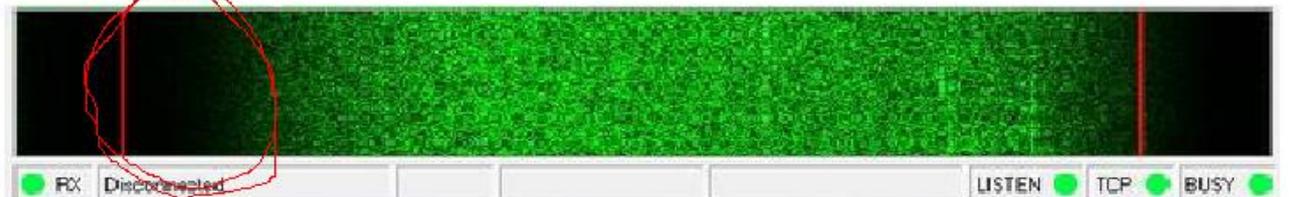
An ideal soundcard interface should not limit the wideband available of your rig. However, some interfaces filter a good part of the signal. By the robust nature of VARA, the modem continue working with a good performance, but obviously this not help. As Alfredo Di Stefano told his goalkeeper: “Do not ask you to stop the balls going inward, but at least not goals balls going out”

Here there are two different noise waterfalls:

PERFECT SOUNDCARD INTERFACE



BAD SOUNDCARD INTERFACE



In the first case there is not signal filtered between the red lines (300-2700 Hz). This waterfall was recorded with a built-in IC-7300 interface.

In the second case the low frequencies are filtered, reducing the performance.

Some new radios have a built-in interface, which is ideal. Anyway, if you need buy a soundcard interface I recommend you something similar to this, which not filter the signal, easy to set up, simple, and without any button:

PTT SOUNDCARD INTERFACE



<https://www.astroradio.com/en/302018>

Additionally, if you want frequency control, you need the CAT cable:

ICOM CAT CABLE



<https://www.astroradio.com/en/502002>

YAESU CAT CABLE



<https://www.astroradio.com/en/502001>

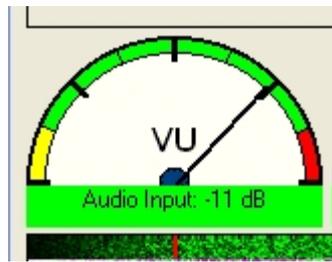
KENWOOD CAT CABLE



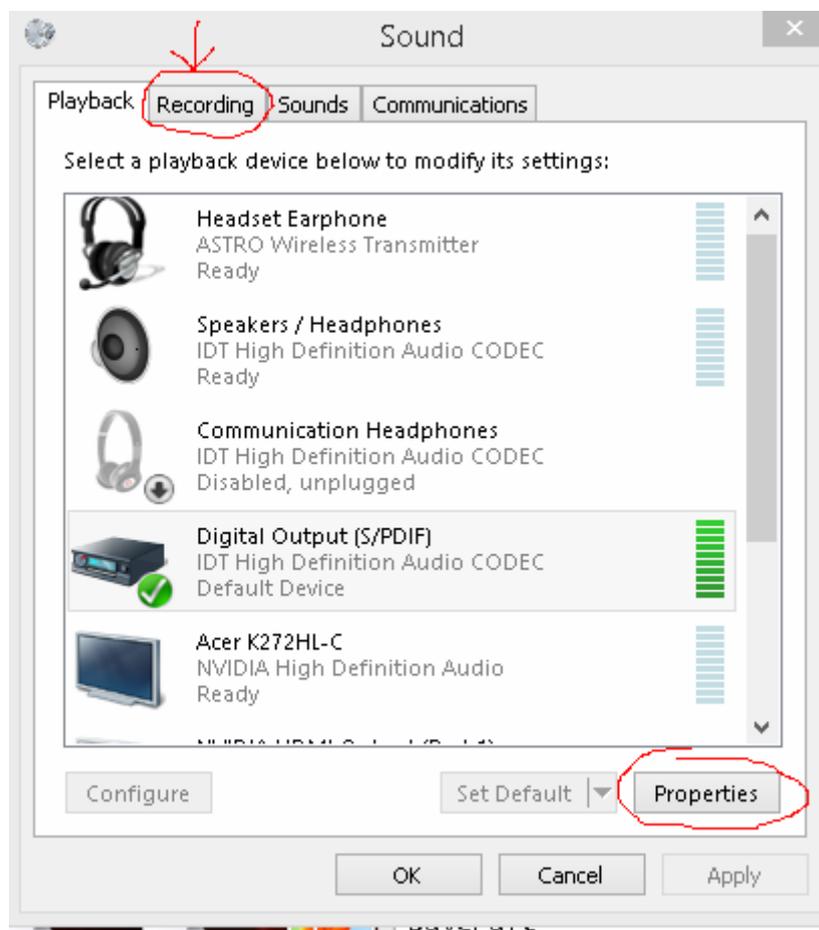
<https://www.astroradio.com/en/502008>

VU METER

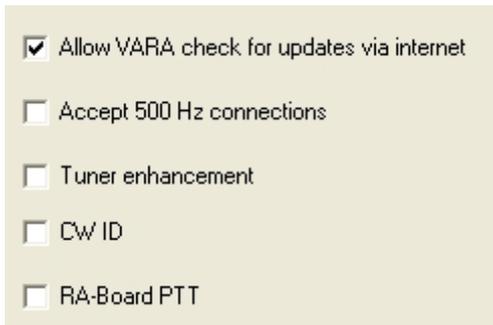
The VU meter measures the input audio level in the soundcard. **Avoid the Red Zone.**



For adjusting the RX Audio level, use the Windows Recording Audio Slider (Recording → Properties).



Setup Options



Allow VARA check for updates via internet

Accept 500 Hz connections

Tuner enhancement

CW ID

RA-Board PTT

Allow VARA check for updates via internet

VARA will connect with a VARA server to check if a new version is available.

Accept 500 Hz connections

Your VARA Gateways accept incoming connections on VARA HF 500, even if your station has not selected 500 mode. I recommend disable this option, as the 500Hz mode is slower than Wide modes.

Tuner enhancement

Select Tuner enhancement in your VARA HF Gateway only if you have problems with your ATU scanning bands. This option requires 2 additional retries by client users.

CW ID

For USA calls, the CW ID is forced. The rest of the world can enable/disable it

RA Board PTT

Select RA Board PTT if you are using a RA-Board interface with VARA HF. Then, in Winlink Express Port PTT select "External"

SmartSDR

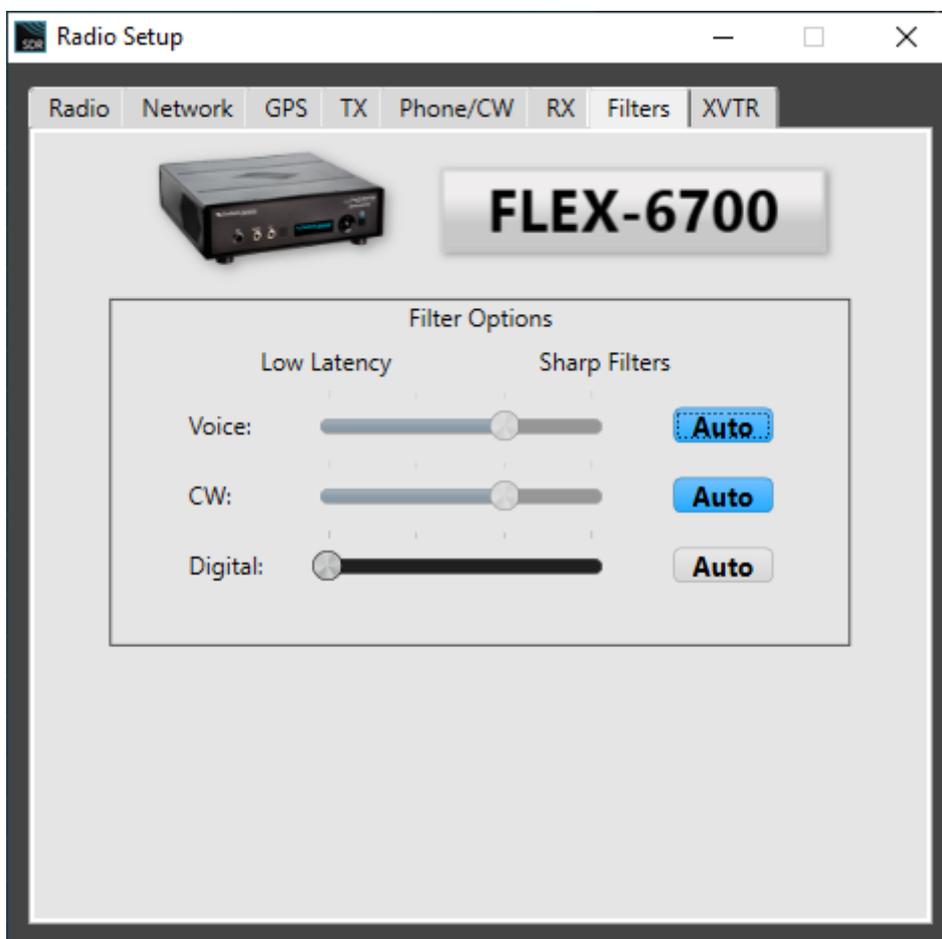
A feature of SDR transceivers is the high latency caused by VAC (Virtual audio cables). This latency is about 470 ms as minimum. In case of connection between two SDR's, the latency is double: $2 \times 470 = 940$ ms minimum.

For EMMCOM, I recommend to use conventional Radios (0 latency), to have a better throughput performance.

VARA supports a single SDR connected to a conventional radio station, but it does not support the connection between two SDR's.

Here a typical configuration for SDR's:

In Filters Option set Digital to the left (minimum latency)



Select **DIGU** and **3.0K** wideband:



Winlink Radio Setup Configuration:

Vara HF Winlink Settings

Radio Selection

Select Radio Model: Flex radios Antenna Selection: Default

Icom Address: 00 USB USB Digital FM Use Internal Tuner

Codan login and optional password: _____

Radio Control Port

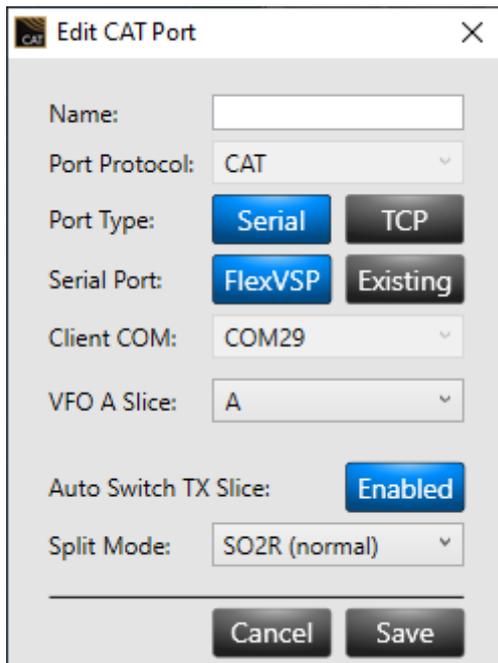
Serial Port to Use: COM29 Baud: 9600 Enable RTS Enable DTR TTL

PTT Port (Optional)

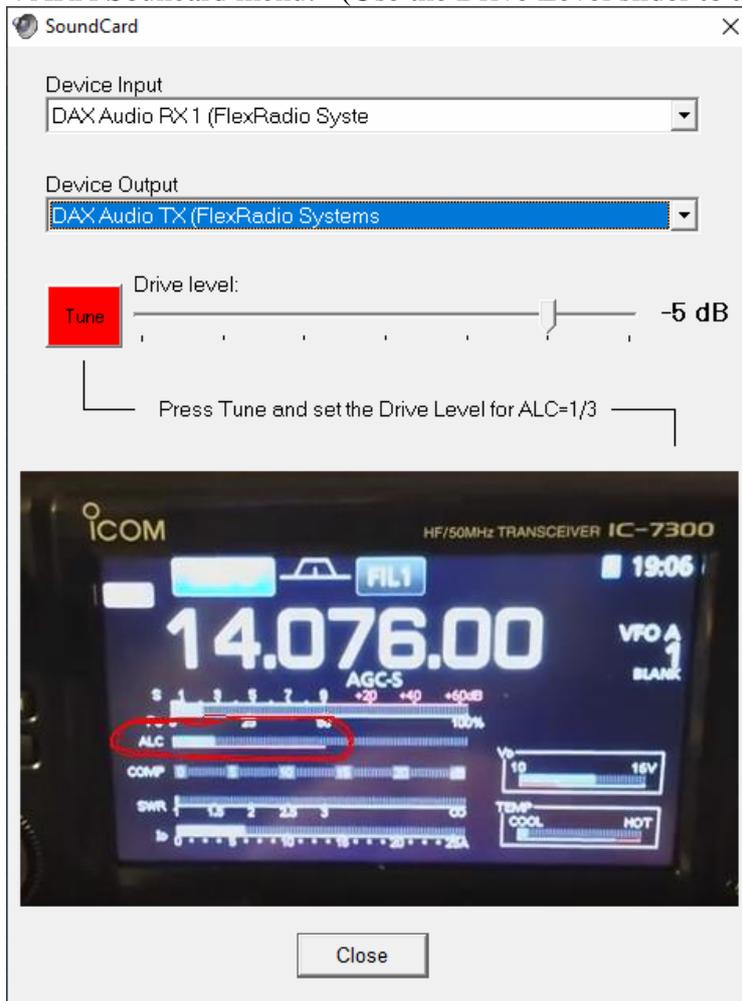
Serial Port to Use: Flex Baud: 9600 Enable RTS Enable DTR

Update Close

CAT port:



VARA Souncard menu: (Use the Drive Level slider to adjust the ALC)



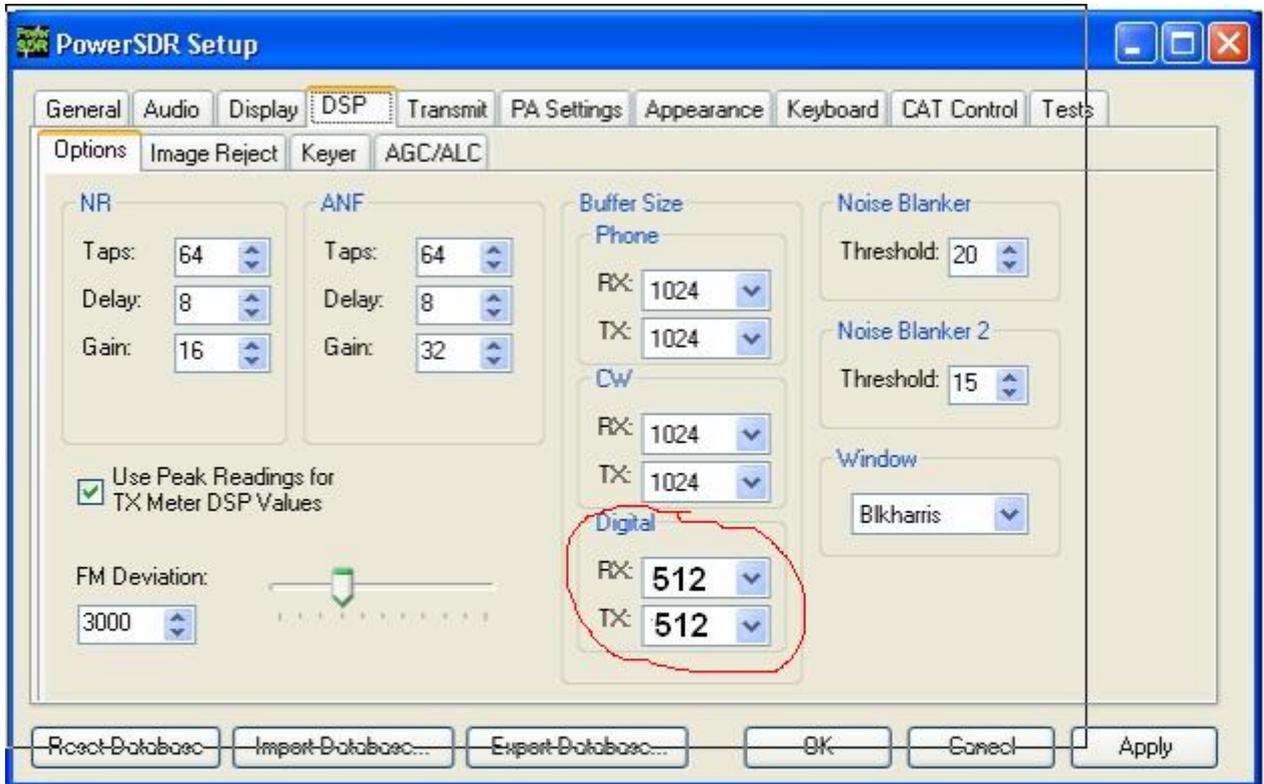
DAX Control

The screenshot displays the DAX Control Panel v3.1.1... interface. At the top, the radio model is identified as FLEX-6700 with two N4CZ licenses. The station is set to LATITUDEEE5570-1. The interface is organized into several sections:

- TX Stream:** Features a 'TX Streaming' button and a 'TX Gain' slider. The gain is currently set to -60dB.
- Mic Stream:** Features an 'On Streaming' button and a 'Mic Record Gain' slider. The gain is currently set to -60dB.
- RX Streams:** A list of eight slices, each with an 'RX Gain' slider and a status indicator:
 - 1 Slice A Streaming: RX Gain -60dB, status highlighted in blue.
 - 2 Slice - No Slice: RX Gain -60dB, status highlighted in yellow.
 - 3 Slice - Off: RX Gain -60dB, status highlighted in black.
 - 4 Slice - Off: RX Gain -60dB, status highlighted in black.
 - 5 Slice - Off: RX Gain -60dB, status highlighted in black.
 - 6 Slice - Off: RX Gain -60dB, status highlighted in black.
 - 7 Slice - Off: RX Gain -60dB, status highlighted in black.
 - 8 Slice - Off: RX Gain -60dB, status highlighted in black.
- IQ Streams:** A section at the bottom, currently collapsed.

PowerSDR

To reduce the latency, set the DSP Buffer size to 512.



VARA APPLICATIONS

Currently, VARA have been incorporated to BPQ32, RMS express, RMS Trimode, RMS packet, VARA Chat, VARA Terminal and vARIM. The communication between VARA and these external applications is done using two TCP ports (8300, 8301 by default).

I recommend you to create a different VARA folder for every application, using different TCP ports.

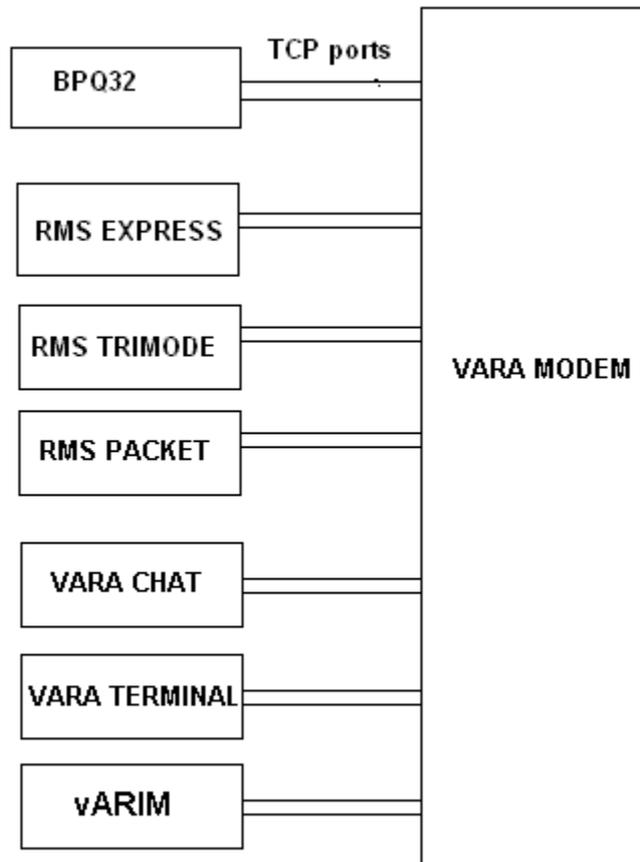
For example:

Winlink Express C:\VARA (TCP 8300-8301)

VARA Chat C:\VARA2 (TCP 8310-8311)

VARA Terminal C:\VARA3 (TCP 8320-8321)

etc....



LINUX

For using VARA under Linux S.O go to this link:

<http://k6eta.com/linux/installing-rms-express-on-linux-with-wine>

For using VARA in a Raspberry Pi with Win10 go to this link:

<https://www.tomshardware.com/how-to/install-windows-10-raspberry-pi>

For more information, ask to Rafael PU2UIT, or Steve K6ETA .

rafael@riseup.net

steve@sfischerdesign.com

TECHNICAL SUPPORT

If you have problems or doubts with the installation, write to nietoros@hotmail.com

Jose, EA5HVK
nietoros@hotmail.com