

VARA A High Speed Data Mode

Presented by Bud Semon, N7CW ARES/RACES With credit and thanks to Oliver, K6OLI and Scott, NS7C

Amateur Radio is the Hobby;

Emergency Communications is the *Commitment*

ARRRGH! Why do I need to learn another complicated mode?

- ARES/RACES goal is fast, accurate information transfer
 - We started with voice
 - Inaccurate and very slow
 - We moved to packet on VHF and Pactor on HF
 - Accurate and slow
 - Both required complicated hardware between the computer and the radio
 - As computers got faster and software got better, we were able to simplify the interface and move the work to the computer



Some BRIEF History

- Packet was developed for computer networks (early 1960's)
 - Accurate information transfer was critical
 - Used for VHF communications by hams (late 1970's)
- AMTOR was developed by hams to improve HF radioteletype (RTTY) communications (1970's)
- Pactor incorporates some of the best features of both (1990's)
 - Requires a modem between the radio and the computer



Last of the BRIEF History

- Sound card modes started with PSK-31 (late 1990's)
 - Dozens of modes now FT8 is the current big one
- "Perfect" copy requires exchanging information about what was sent and received - called Automatic Repeat Request or ARQ
- Development of sound card modes with ARQ and advanced Digital Signal Processing (DSP) continues today
- Winmor developed by the Winlink Development Team (WDT) (beta testing in 2009)
 - Obsolete now
- VARA is the latest very fast, relatively inexpensive mode



Some Details about VARA

- VARA comes in 2 separate programs: VARA FM and VARA HF
 - VARA FM specifically designed for use with an FM Radio on VHF/UHF
 - VARA HF to be used with (surprise!) your HF radio
- Due to radio limitations at VHF/UHF and for propagation/interference reasons at HF, each program has 2 modes
 - VARA FM 9600 and VARA FM 1200
 - VARA HF 2300 and VARA HF 500



A Few More Details about VARA

VARA FM 9600 is also called VARA FM Wide

- 9600 is not the speed, but it must be connected to the 9600 baud port on your radio
- It is REALLY fast!
- VARA FM 1200 is also called VARA FM Narrow
 - 1200 is not the speed, but it can be connected to either the 1200 baud or 9600 baud port of your radio
 - Licensed versions of VARA FM 1200 are roughly $1\!\!\!/_2$ the speed of VARA FM 9600



Some More Details about VARA

- Use both programs for free, but their incredible speed is deliberately slowed. Buy a full speed license for a 1 time fee of \$69 (single license) or \$55 (>10 group purchase)
 - The slow speed is about 10% of maximum speed
- VARA installations on gateways will run at full speed without a license fee
- Audio level set up procedures for both programs are very similar



Even More Details about VARA

- Support for VARA is built into Winlink Express
- Published documentation of the VARA specifications does not keep up with the software releases
 - It's difficult to compare performance
- Very roughly, for very strong signals, VARA FM Narrow is 18 times faster than packet.
- Very roughly, for very strong signals, VARA HF 2300 is 5 times faster than ARDOP/Winmor



Done with Details about VARA











- Only Signalinks manufactured since June 2018 will allow you to use VARA FM 9600 (compare your Signalink PC board here: https://www.tigertronics.com/slusbbrd.htm)
- The connection labeled 1 is a USB A to USB B cable and is supplied with both the Signalink and the DRA-XX.
- The connection labeled 2 may be unique to your radio



Purchase the cable for your radio from Tigertronics (Signalink)

OR

- Determine the data connector type on your radio and decide which cable to use between the radio and DRA-XX. The XX in the model number determines the output connector type and audio level.
- Most recent radios have standardized on the 6 pin Mini DIN and they all use the same pin connections internally to the radio. A 3' male to male 6 pin Mini DIN cable is available on Amazon for \$5. Search for Kentek 3 Feet FT Mini DIN6 MDIN6 PS/2. The matching sound card is the DRA-36 or DRA-50 (has higher audio output).





Adjust Sound Levels through Control Panel, Sound Adjust Sound Levels through Front Panel (Signalink) or internal resistors (DRA-XX) If available, Adjust Sound Levels through Radio Menu





- Sound Card (DRA-XX)
 - For the computer set up procedure on slide 16
 - If you are using a DRA-36 or equivalent, all 3 screwdriver-adjust potentiometers (pots) on the PCB should be set fully or almost fully clockwise
 - If you are using a DRA-50 or equivalent, all 3 screwdriver-adjust potentiometers (pots) on the PCB should be set approximately at mid-range



- Sound Card (DRA-36)
 - For the computer set up procedure on slide 16
 - To set the <u>RX</u> signal level to an optimum level, you may have to make adjustments back and forth between the large pot R12, the Windows Sound sliders and the radio menu
 - To set the <u>TX</u> signal level to an optimum level, you may have to make adjustments back and forth between small pot R14, Windows Sound sliders and the radio menu



- Computer
 - From winlink.org, down load and follow this document
 - https://winlink.org/sites/default/files/RMSE_FORMS/quic k_setup_guide_for_winlink_sound_card_packet_for_vhf-uh f_on_windows_v1.2.pdf
 - Except for the changes on the following page, follow these instructions precisely!!!
 - This procedure will allow you to use your sound card with packet



EMERGENCY

- Computer
 - Soundmodem main panel,
 Settings, Devices also
 check TX Rotation and
 Color Waterfall
 - Soundmodem main panel,
 Settings, Modems set or
 leave the TXDelay at 250
 msec
 - Adjust the receive level so that the waterfall looks like this





- Computer
 - From https://rosmodem.wordpress.com/ download
 - VARA FM v.4.0.5 (or latest version number)
 - Install this program (carefully follow the instructions right click on the unzipped VARA FM setup.exe file and select Run as administrator)
 - If you are interested in VARA HF, download and install that program also.
 - Download the Quick Setup Guide for VARA FM 3.0.5 and Higher.....
 - This program and setup will allow you to use VARA FM through a Signalink



- Final Set Up
 - The packet settings should get you very close to the best settings for VARA FM
 - For a different perspective on the set up procedure, see
 - http://www.masterscommunications.com/products/radioadapter/dra/vara-primer.html
 - If you have a VARA license, enter your callsign and license code in VARA, Settings, VARA Set Up.
 - If you have a VARA FM station near you, set your radio to the correct frequency and go to VARA, Settings, Soundcard and select Auto Tune









- Final Set Up
 - Enter the callsign of the station near you
 - Select the "Plug"
 - Your station will send signals at different levels and if the other station is close enough, it will return calibration information to your station which will automatically set your output level.
 - This setting is optimum only for this station but is usually accurate





- Final Set Up
 - You should see this:
 - If not, follow the instructions that appear in this window and re-test until you see this





READ THIS FIRST!

- Your computer, Signalink, VARA HF and your radio may have 4 adjustments for setting the transmit and receive levels.
 - The sound outputs from the computer
 - The RX and TX potentiometers (pots) on the front of the Signalink
 - VARA HF has a transmit level slider built in to it
 - Your radio may have menu settings to set the levels
- You may have to adjust all 4 in order to get the levels set properly



- READ THIS FIRST! (cont'd)
 - If your radio covers both HF and 2 Meters and you have set your Signalink for VARA FM, do not adjust the Signalink or computer sound levels except as a last resort
 - If you must adjust the Signalink or computer sound levels, try setting the VARA HF drive level or the radio menu settings to the maximum or minimum level (depending on which way you need to go) and making very small adjustments to the Signalink or the computer sound levels



Start VARA HF

- Select Settings, VARA Setup
 - If you have a license code, enter your callsign and the code
 - Select Allow VARA check for Updates via Internet
 - Leave all the default settings and select Close
- Select Settings, SoundCard
 - Using the drop down menu, choose USB Audio Codec for both the Device Input and Output
 - Select Close
- Ensure your radio and SignaLink are connected and the radio is on



- RX Sound Level Setting
 - Ensure your radio is set up in Data mode and the filters are set Wide. Read the Manual!
 - If there are radio menu settings to adjust the sound levels (they are probably called something other than sound levels), leave them at the default level or set them for mid-range



- RX Sound Level Setting
 - If you have set the sound levels for VARA FM in this radio, skip ahead to slide 35
 - Click on the Windows Icon 🔳
 - When the Start window opens, type Control Panel and select Control Panel, Sound (see slides 32 - 34)



- RX Sound Level Setting
 - In the Sound window, select the Recording tab and highlight the USB Audio Codec. Select Properties
 - In the Properties window, select the Levels tab. Adjust the slider so the VARA VU meter is approximately at the 2:30 o'clock position or not quite to the red area





	↑ ▲ Control Panel > A ⁱ	II Control !	Panel Items		5				
Adjus	st your computer's settings					v	/iew by:	Large icons 🔻	
1	Administrative Tools		AutoPlay	*	Backup and Restore (Windows 7)				
1	Color Management		Credential Manager	P	Date and Time				
6	Default Programs	2	Device Manager		Devices and Printers				
	Dolby Digital Plus Advanced Audio	٩	Ease of Access Center		File Explorer Options				
6	File History	£	Flash Player (32-bit)	A	Fonts				
6	HD Audio Manager	R	Indexing Options	(intel)	Intel(R) Computing Improvement Program				
•	Intel(R) Rapid Storage Technology	P:	Internet Options	4	Keyboard				
69	Lenovo - System Health and Diagnostic	9	Mouse	ų	Network and Sharing Center				
۵	Phone and Modem	1	Power Options	õ	Programs and Features				
P	Recovery	9	Region	-	RemoteApp and Desktop Connections				
p	Security and Maintenance	0	Sound	Ŷ	Speech Recognition				
Ì	Storage Spaces	0	Sync Center		System				
*	Taskbar and Navigation		Troubleshooting	82	User Accounts				
	Windows Defender Firewall		Work Folders						





Playbac	k Recording Sounds Communications
Se	Microphone Properties
	General Linten Levels Advanced
	Microphone
	Controller Information
	(Generic USB Audio)
	Jack Information No Jack Information Available
	Device usage: Use this device (enable) \checkmark
	OK Cancel Apply

Dia dia di	Pecording	Counda	C			
Ріаураск	Recording	Sounds	Communication	ns		
Se	Microphon	e Properti	es			
Ge	eneral Lister	n Levels	Advanced			
	Microphyne	-				
4				0.0 dB	•	
-						



- RX Sound Level Setting
 - If your VU meter is not between 12 and 3 o'clock, adjust the sound level settings in your radio menu to set the VU meter between 12 and 3 o'clock
 - If you cannot set the VU meter to the correct range, you must re-adjust either the computer sound levels or the Signalink levels, plus the radio menu settings
 - Continue to the next slide when you get the levels set properly



- RX Sound Level Setting
 - Select OK in the Properties window and the Sound window
 - Your waterfall should look approximately like this
 - If there is more dark area on the left, ignore it for now





- TX Sound Level Settings
 - Open Winlink Express, choose a VARA HF Session
 - Select Settings, VARA TNC Setup (see next slide)
 - Make sure the TNC host address/name is 127.0.0.1, the TNC Command Port is 8300 and the Session Bandwidth is 2300. Do not select Enable 2750 Hz channels
 - Enter the VARA Modem Location. If you put it in the default folder it is C:\VARA\Vara.exe
 - Select Automatically Launch Vara TNC.... And Update
 - The session will re-start









- TX Sound Level Settings
 - Select Settings, Radio Setup (see next slide)
 - Leave the Radio Model at Manual, but select whether your radio is using USB or USB Data (read the manual!)
 - Ensure the PTT Port is set to External, select Update and Close
 - Set your radio to monitor the ALC level (read the manual!)
 - Open VARA HF, select Settings, Sound Card
 - Verify the frequency you have chosen is clear
 - Set the Drive Level slider at -15 dB and select Tune



😫 Va	ra Winlink Session - N7CW			
Exit	Settings Switch to Peer-to-Peer	Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort		
1.	Vara TNC Setup	3591.500 Dial Freq. (kHz): 3590.000 Bearing: 309 Quality: 49		
Fax	Radio Setup	Select Add to favorites		
hanne	Transmic Lever Test	Disconnected		
nanne	DSP Speed Test			
Laun	Best channel setup			^
* Vara	signal bandwidth is 2300 Hz.			
•				
* Using * Read	y Manual, NONE, 9600 baud y			
Using Read This i) Manual, NONE, 9600 baud ly s a registered version of Vara TNC tha	at can operate at full speed.		
* Using * Read * This i	, Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		
Using Read This i	Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		
* Using Read * This i	Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		
* Using * Read * This i	Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		
* Using * Read * This i	Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		
* Usin <u>o</u> * Read * This i	Manual, NONE, 9600 baud s a registered version of Vara TNC th≀	at can operate at full speed.		
* Using * Read * This i	Manual, NONE, 9600 baud s a registered version of Vara TNC th≀	at can operate at full speed.		
* Using * Read * This i	Manual, NONE, 9600 baud s a registered version of Vara TNC th	at can operate at full speed.		
* Using * Read * This i	Manual, NONE, 9600 baud y s a registered version of Vara TNC tha	at can operate at full speed.		

Select Madio Model	Manual	- Ant	enna Selection	Default
Icom Address 00	USB 🖲	USB Digital		Use Internal Tuner
Codan login and o	ptionl password:			
Radio Control Port				
Serial Port to Use No	one 🗸 Baud	9600 \sim	Enable RTS 🗹	Enable DTR 🗹 🛛 TTL
TT Port (Optional)				
TT For (Optional)				
Cardel Destrict Har E. C.	nal /v	Baud 9600	 Enab 	e RTS I∕∕I Enable DTR



- TX Sound Level Settings
 - The Signalink PTT LED should light
 - The radio should go into transmit. Adjust the Drive Level slider for Zero or the smallest indication on the ALC meter on Yaesu and Kenwood radios and 1/3 ALC on Icom radios
 - If you can see the power output of the radio, ensure it remains at 100 watts as you adjust the TX level
 - You may have to use the Signalink TX Level pot, but try not to since it is set up for VARA FM!
 - Select Stop when the levels are set properly



- TX Sound Level Settings
 - If you can see the power output of the radio, ensure it remains at 100 watts as you adjust the TX level
 - If you still cannot set the ALC properly, select Stop in the VARA HF window
 - Click on the Windows Icon 🔳
 - When the Start window opens, type Control Panel and select Control Panel
 - If necessary, change the Control Panel View to Large Icons
 - Select Sound





	✓ ↑ Solution → Control Panel → Al	I Control i	Panel Items		د5 /			
Aine	t your computer's settings					View bus	I man isons 1	_
Aujus	t your computer's setungs					View by.	Large icons	-
5	Administrative Tools		AutoPlay	3	Backup and Restore (Windows 7)			
1	Color Management		Credential Manager	Ľ	Date and Time			
6	Default Programs	-	Device Manager		Devices and Printers			
	Dolby Digital Plus Advanced Audio		Ease of Access Center		File Explorer Options			
6	File History	£	Flash Player (32-bit)	A	Fonts			
6	HD Audio Manager	R	Indexing Options	(intel)	Intel(R) Computing Improvement Program			
Ð	Intel(R) Rapid Storage Technology	¢	Internet Options	4	Keyboard			
69	Lenovo - System Health and Diagnostic	9	Mouse	ų,	Network and Sharing Center			
3	Phone and Modem	1	Power Options	Ĩ	Programs and Features			
	Recovery	9	Region	-	RemoteApp and Desktop Connections			
p	Security and Maintenance	0	Sound	Q	Speech Recognition			
F	Storage Spaces	0	Sync Center		System			
3	Taskbar and Navigation		Troubleshooting	82	User Accounts			
1	Windows Defender Firewall		Work Folders					



- TX Sound Level Settings
 - In the Sound window, select the Playback tab and <u>highlight</u> the Speakers USB PnP Sound Device. Select Properties
 - Select the Levels tab
 - Set the Drive Level slider at -15 dB









- TX Sound Level Settings
 - Select Tune
 - The radio should go into transmit. Adjust the Speakers Drive Level slider for Zero ALC on Yaesu and Kenwood radios and 1/3 ALC on Icom radios
 - If you can see the power output of the radio, ensure it remains at 100 watts as you adjust the TX level
 - You may have to modify all 4 adjustments to get the ALC set properly
 - Select Stop when the levels are set properly



- Radio Control Setup
 - If you wish to control your radio frequency with Winlink Express, start Winlink Express and open a VARA HF Winlink session
 - Select Settings, Radio Setup. Next to Select Radio Model, use the drop down menu to select your radio model.
 - If you have an Icom radio, enter the Icom address.
 - Select the Serial Port where your radio is connected and the baud rate. Select the proper levels for RTS and DTR
 - Select Update.





READ THIS FIRST!

- Your computer, DRA-XX, VARA HF and your radio may have
 4 adjustments for setting the transmit and receive levels.
 - The sound outputs from the computer
 - The RX and TX potentiometers (pots) in the DRA-XX
 - VARA HF has a transmit level slider built in to it
 - Your radio may have menu settings to set the levels
- You may have to adjust all 4 in order to get the levels set properly



- READ THIS FIRST! (cont'd)
 - If your radio covers both HF and 2 Meters and you have set your DRA-XX for VARA FM, do not adjust the DRA-XX or computer sound levels except as a last resort



- Start VARA HF (not Winlink Express!)
 - Select Settings, VARA Setup
 - If you have a license code, enter your callsign and the code
 - Select Allow VARA check for Updates via Internet
 - Select RA-Board PTT
 - Leave all the other default settings and select Close
 - Select Settings, SoundCard
 - Using the drop down menu, choose USB PnP Sound Device for both the Device Input and Output
 - Select Close



- RX Sound Level Setting
 - Ensure your radio and DRA-XX are connected and the radio is on
 - Ensure your radio is set up in Data mode and the filters are set Wide. Read the Manual!
 - If there are radio menu settings to adjust the sound levels (they are probably called something other than sound levels), leave them at the default level or set them for mid-range



- RX Sound Level Setting
 - If you have set the sound levels for VARA FM in this radio, skip ahead to slide 53
 - Click on the Windows Icon 🔳
 - When the Start window opens, type Control Panel and select Control Panel, Sound (see slides 50 - 52)



- RX Sound Level Setting
 - In the Sound window, select the Recording tab and highlight the USB Audio Codec. Select Properties
 - In the Properties window, select the Levels tab. Adjust the slider so the VARA VU meter is approximately at the 2:30 o'clock position or not quite to the red area





	🗠 🛧 🔛 > Control Panel > Al	I Control I	Panel Items	`	ڻ -			
Adjus	st your computer's settings					View	by: Large icons	•
1	Administrative Tools		AutoPlay	*	Backup and Restore (Windows 7)			
1	Color Management		Credential Manager	P	Date and Time			
6	Default Programs		Device Manager		Devices and Printers			
	Dolby Digital Plus Advanced Audio		Ease of Access Center		File Explorer Options			
6	File History	£	Flash Player (32-bit)	A	Fonts			
6)	HD Audio Manager	R	Indexing Options	(intel)	Intel(R) Computing Improvement Program			
9	Intel(R) Rapid Storage Technology		Internet Options	4	Keyboard			
69	Lenovo - System Health and Diagnostic	9	Mouse	ų,	Network and Sharing Center			
4	Phone and Modem	1	Power Options	N	Programs and Features			
_	Recovery	P	Region	-	RemoteApp and Desktop Connections			
p	Security and Maintenance	0	Sound	Ą	Speech Recognition			
Y	Storage Spaces	0	Sync Center		System			
¥.	Taskbar and Navigation		Troubleshooting	88	User Accounts			
	Windows Defender		Work Folders					



Sound ×	Sound ×
Playbark Recording Sounds Communications	Playback Recording Sounds Communications
Select a playback device below to modify its settings:	Microphone Properties
NVIDIA Output NVIDIA High Definition Audio Not plugged in NVIDIA Output NVIDIA High Definition Audio NVIDIA High Definition Audio NVIDIA High Definition Audio Not plugged in	General Litten Levels Advanced Microphone Change Icon Controller Information
T24C550 NVIDIA High Definition Audio Ready	USB Audio CODEC Properties (Generic USB Audio)
Speakers Realtek High Definition Audio Default Device	Jack Information
Microphone USB PnP Sound Device Ready	No Jack Information Available
Configure Set Default Properties	Device usage:
OK Cancel Apply	
	OK Cancel Apply
	LAPAI COUR

COMMUNICATIONS

Sound	×	
Playback Recording Sounds Commu	unications	
Se Microphone Properties	17 11 11	×
General Listen Levels Advar	nced	
Microphone		
	0.0 dB ())	
NC HOLE		
	OK Cancel Appl	ly



- RX Sound Level Setting
 - If your VU meter is not between 12 and 3 o'clock, adjust the sound level settings in your radio menu
 - If you cannot set the VU meter to the correct range, you must re-adjust either the computer sound levels or the DRA-XX levels, plus the radio menu settings



- RX Sound Level Setting
 - Your waterfall should look approximately like this
 - Close VARA

Audio Input45 db		
BX	2300 PUBLIC 🗢 LISTEN 🗢 TCP 🗢 BUSY 🤇	



- TX Sound Level Settings
 - Open Winlink Express, open a VARA HF Session
 - Select Settings, VARA TNC Setup (see next slide)
 - Make sure the TNC host address/name is 127.0.0.1, the TNC Command Port is 8300 and the Session Bandwidth is 2300. Do not select Enable 2750 Hz channels
 - Enter the VARA Modem Location. If you put it in the default folder it is C:\VARA\Vara.exe
 - Select Automatically Launch Vara TNC.... And Update
 - The session will re-start



Exit Seture Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort Favor Vara TNC Setup 3591.500 Dial Freq. (kHz): 3590.000 Bearing: 309 Quality: 49 Favor Transmit Level Test DSP Speed Test Disconnected Disconnected Disconnected *** Succ Best channel setup *** Using Manual, NONE, 9600 baud *** Yara signal bandwidth is 2300 Hz. *** Using Manual, NONE, 9600 baud *** *** Ready *** This is a registered version of Vara TNC that can operate at full speed. *** Yara TNC size ***	🗱 Vara Winlink Session - N7CW		—	×
	Vara Winnink Session - NVCW Exit Senter KK Vara TNC Setup Favor Senter Channe Defe Setur Sector Select Add to favorites R DSP Speed Test Disconnected Succonnected Disconnected *** Vara signal bandwidth is 2300 Hz. *** *** Using Manual, NONE, 9600 baud ** *** Ready *** This is a registered version of Vara TNC that can operate at full speed.	Best chan. Next chan. Start Stop Abort 90.000 Bearing: 309 Quality: 49 temove from favorites		

0	
Vara Setup	×
Virtual TNC host address/name: 127.0.0.1	
Virtual TNC Command Port: 8300 🔶 Data Port: 83	301
Session Bandwidth: 2300 V	_
Automatically launch Vara TNC when session is o	pened
✓ Identify with Morse code at end of session	
Update Cancel	
•	
	X



- TX PTT Set Up
 - Start Winlink Express and open a VARA HF Winlink session
 - Select Settings, Radio Setup. Leave the Radio Model as Manual. Select whether your radio is using USB or USB Data (read the manual!)
 - Under PTT Port, use the drop down menu to select External
 - Select Update. The VARA HF session will re-start



Select Radio Mod	lel Manual	~	Antenna Selection	Default
Icom Address	00 USB	USB Dig	ital 🔿 🛛 FM 🔿	Use Internal Tuner
Codan login a	ind optionl password:			
Radio Control Port -				
Serial Port to Use	None \vee B	aud 9600 ~	Enable RTS 🗹	Enable DTR 🗹 🛛 TTL
PTT Port (Optional)				
		David C	C00	LI- DTC Z ELI- DTD



- TX Sound Level Settings
 - Select Settings, Radio Setup
 - Set your radio to monitor the ALC level
 - Open the VARA HF window (it starts minimized)
 - Select Settings, Sound Card
 - Check that the frequency you have chosen is clear
 - Set the Drive Level slider at -15 dB and select Tune
 - The radio should go into transmit. Adjust the Drive Level slider for Zero ALC on Yaesu and Kenwood radios and 1/3 ALC on Icom radios



- TX Sound Level Settings
 - If you can see the power output of the radio, ensure it remains at 100 watts as you adjust the TX level
 - If you cannot set the ALC properly, select Stop in the VARA HF window
 - Click on the Windows Icon 🔳
 - When the Start window opens, type Control Panel and select Control Panel
 - If necessary, change the Control Panel View to Large Icons
 - Select Sound



- TX Sound Level Settings
 - In the Sound window, select the Playback tab and <u>highlight</u> the Speakers USB PnP Sound Device. Select Properties
 - Select the Levels tab
 - Set the Drive Level slider at -15 dB and select Tune
 - The radio should go into transmit. Adjust the Speakers Drive Level slider for Zero ALC on Yaesu and Kenwood radios and 1/3 ALC on Icom radios
 - If you can see the power output of the radio, ensure it remains at 100 watts as you adjust the TX level



- TX Sound Level Settings
 - If you cannot set the ALC properly, you may have to use the small pot inside the DRA-XX, but try not to if you it set up for VARA FM!
 - If you must use the small pot in the DRA-XX, set the VARA HF slider and the Speakers, Levels tab to midway in their range
 - You may have to modify all 4 adjustments to get the ALC set properly
 - Select Stop when the levels are set properly



Radio Control Setup

- If you wish to control your radio frequency with Winlink Express, start Winlink Express and open a VARA HF Winlink session
- Select Settings, Radio Setup. Next to Select Radio Model, use the drop down menu to select your radio model.
- After reading the manual! Select whether your radio should be in USB or USB Data. If you have an Icom radio, enter the Icom address.
- Select the Serial Port where your radio is connected and the baud rate. Select the proper levels for RTS and DTR
- Select Update.

