WIRES-X

Wide-Coverage Internet Repeater Enhancement System

along with a short discussion about

System Fusion

and the new..

145.270 Wires-X Repeater

LARC
Lakeland Amateur Radio Club

POLK COUNTY PUBLIC SCHOOLS
W4PSR
RADIO SOCIETY

ARRL
LWRA
Lake Wales Radio Amateurs

SPURIOUS EMISSIONS

Updated February 2025

The Bartow repeater is now LIVE on WiRES-X

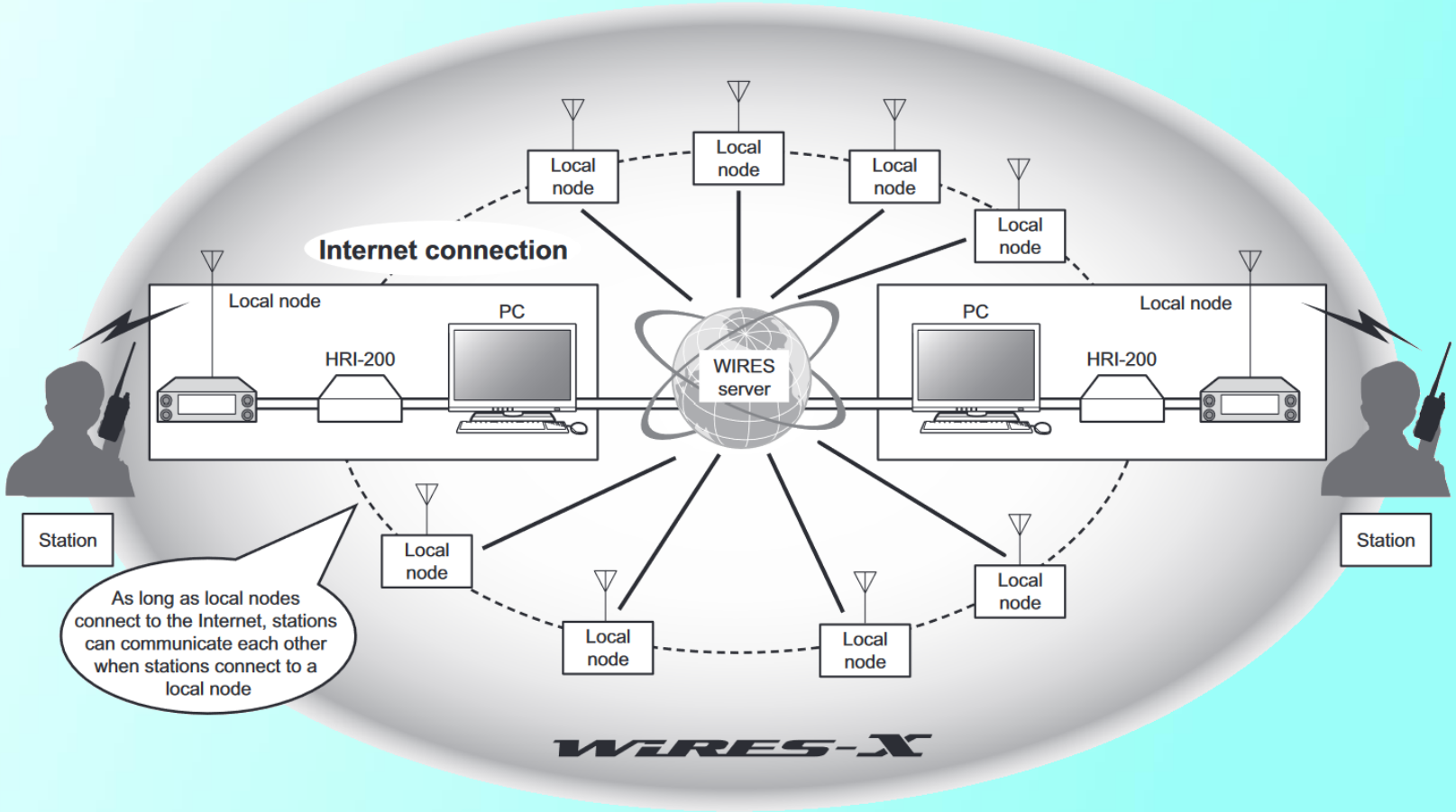
- The Bartow Fusion repeater went live on Wires-X on Monday, January 27th, 2025

Wires-X Node
94102

Thank you to Richard Sharp for getting WIRES-X online.

Let’s move on from the all-radio (RF) signal world to…

WIRES-X



WiRES-X

- WiRES-X is an acronym for “**Wide-coverage Internet Repeater Enhancement System.**”
- The system was developed by Yaesu for the further interest of Amateur Radio.
- It uses a form of VOIP (Voice Over Internet Protocol) to connect distant Amateur Radio stations utilizing the Internet as the backbone.

How it Works

(continued)

- A radio amateur operator connects to a local node/repeater, which in turn, is connected to an Internet thru a PC.
- The local node/repeater relays the amateur's transmission to the Internet via the PC
- The PC relays the transmission to another node's PC that is also connected to the Internet, and then on to that node's radio.
- The local node/repeater radio then relays the transmission to the receiving Amateur Radio Station.

Wires-X allows you to ...

(continued)

- Like Fusion, **Wires-X** also supports **digital data and text**, along with audio on the global network. (Beyond the scope of this presentation).
- This is NOT a new idea, other networks such as D-Star, IRLP and others have similar functionality.
- Although accessing Wires-X through a repeater is nice, many radios can act as Nodes, allowing you to access the Wires-X system directly
- Using Wires-X can be an easy way to link repeaters.
- Call signs, QSL info, distances, etc. can be included along with the digital signal.

What is a node?

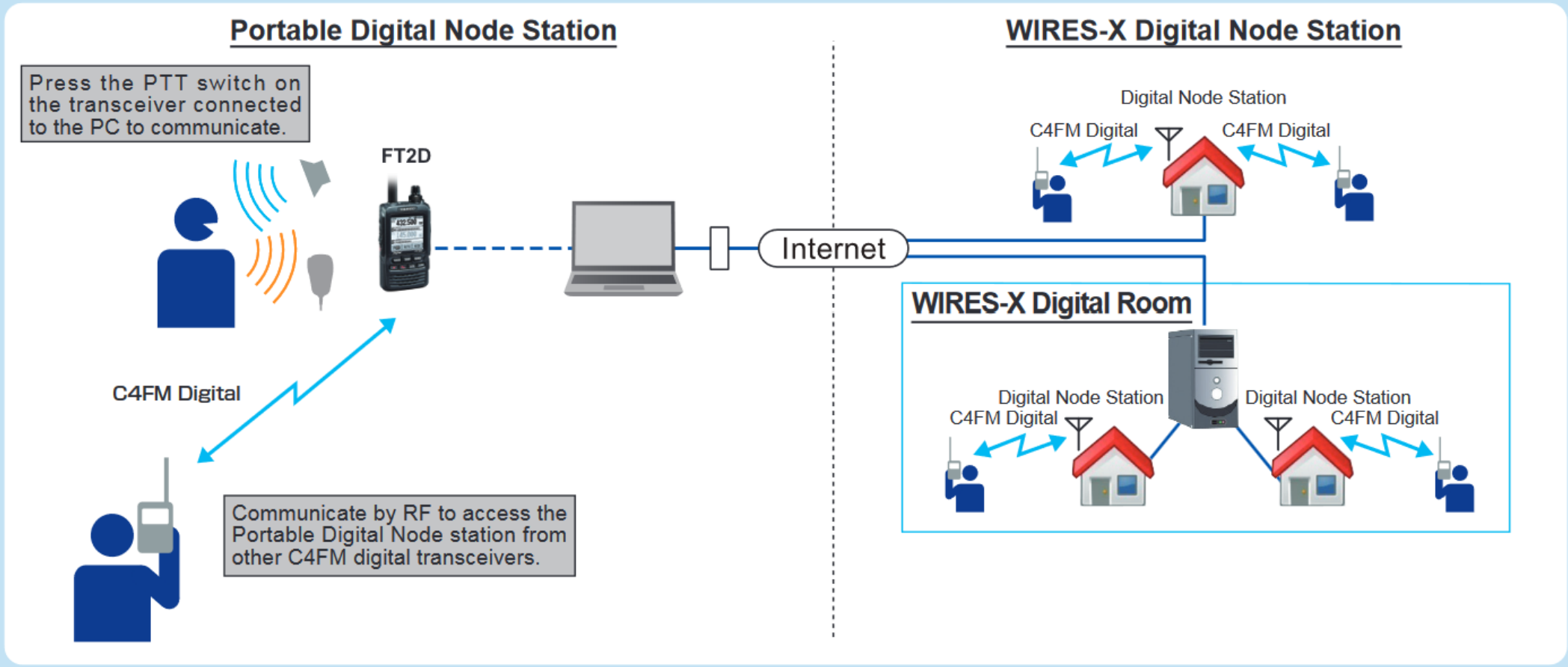
- A **Node** is a radio (**repeater or local radio**) connected to the Internet via a PC, which repeats communications of an Amateur Radio station as an access point
- A **Local Node** (or Portable Digital Node **PDN**)is a **personal radio station** operating on a VHF or UHF frequency connected to the Internet through a linked PC.

A Yaesu FTM-400 configured as a PDN NODE, using a PC with Wires-X software, being accessed via RF on the FT-70D.

WIRES-X

(continued)

Access Point Illustration



WiRES-X

(continued)

Yaesu System Fusion repeater with a n HRI-200 WiRES-X interface, a PC, and an Internet connection

But how can I access WiRES-X using the new Bartow 145.270 repeater?

WiRES-X (continued)

- First, know that unlike the LARC of LWRA repeaters, this repeater is 100% digital at all times.
- You'll need to program your Yaesu System Fusion radio to receive on **145.270** and transmit on 144.670.
- Although the repeater supports VW (voice wide) audio with better quality, set your memory by default to **DN (Digital Narrow)** as that WiRES-X rooms use.
- Setting a "tone" like a PL tone is not necessary when using the repeater as you will be accessing it digital only.

How can I access the WiRES-X Rooms on the Bartow 145.270 Repeater

WiRES-X

(continued)

- First of all, you don't need to know anything about nodes and rooms to use WiRES-X
- The repeater may (or may not) be connected to a WiRES-X room. The only way you can find out is by pressing the **WiRES-X button** on your radio.
- No one will have an issue with you pressing the **WiRES-X button**. (Do when no signal present)
- All data communication is muted so there are no annoying data bursts to hear and you won't break anything.

How to access WiRES-X through a repeater

(continued)

When you long press the WiRES-X button,

several things happen:

- Your radio sends a handshake request to the repeater.
- If the repeater is NOT a connected node, your WiRES-X request will timeout and your radio will be returned to normal operation. You will then know that the repeater is NOT connected to a node, therefore it is not connected to a room.
- If the repeater IS connected as a node, the node will respond and send a data stream back to your radio via the repeater.
- The information you see will depend on the type of radio you have.

How can I access the WiRES-X Rooms on the Bartow 145.270 Repeater

WiRES-X

(continued)

When you long press the WiRES-X button,

several things happen:

- Radios such as the FT-991A, and FTM-400 have larger screens, while radios such as the FTM-100, FTM-200, FTM-300, FTM-400, and smaller handhelds display a little less information.
- But what you will see on all of them is the name of the room the repeater is connected to and how many nodes are connected to the room .

How can I access the Wires-X Rooms on the Bartow 145.270 Repeater

WiRES-X

(continued)

When you long press the WiRES-X button,

several things happen:

- At this point there are several things you can do. Having satisfied your curiosity, you can simply take your radio out of Wires-X mode and return to normal use
- You could at this point choose to connect to a Wires-X room.
- If you don’t know what room to connect to, you can request a list of rooms from the repeater (node)
- The list will display on your radio and you can select the one to connect to (depending on the radio).

WiRES-X Tip

(continued)

- Just like some of our local linked-repeater systems, you should key your microphone, wait at least a second and a half, and then begin talking.
- Also, hold the mic PTT for a good second or two at the end of your transmission.
- One reason is that some WiRES-X rooms are not only on Wires-X, but tied in via bridges to DMR, D-Star, P-25, NXDN, Echolink, and more.

WiRES-X

(continued)

Radio Specific WiRES-X Commands

Radio Specific WiRES-X Commands

WiRES-X

(continued)

- **To enter WiRES-X mode**, Press the <F> key, release, and then press the <AMS> key. Your radio will communicate with the repeater and you'll be ready to send WiRES-X commands. (Note: If you try and enter WiRES-X mode and it keeps flashing WIRES, you may not have a good signal connection with the repeater. Should you end up on the Cn (connecting/connected room ID screen), your connection on WiRES-X has been established and you can move forward).

Yaesu FT-70DR

** note: When a local node can not be found, the word *WIRES* will continue to flash and timeout after 20 seconds

Radio Specific WiRES-X Commands

WiRES-X

(continued)

Now that you're connected to WiRES-X, you can **turn the dial and select from the following modes**:

- **Lc – Node ID screen** – this tells you what node (repeater) are connected to. For the Bartow WiRES-X repeater, it will say WC4PEM.
- **Cn – Connecting/connected Room ID screen –** if the repeater (node) is connected to a WiRES-X room, you will see that displayed on this screen.
- **C0 –** The **most recently connected to node/room** screen.
- **C1-C5 –** Your room/node stored (favorites) locations
- **En –** Direct entry screen, where you will enter a room to connect. This will let you key in the five digit room/node ID to connect to.

Yaesu FT-70DR

** note: When a local node can not be found, the word *WIRES* will continue to flash and timeout after 20 seconds

Radio Specific WiRES-X Commands

WiRES-X

(continued)

- **CONNECT to a stored room (favorite)** – Turn the Dial to C1-C5 where the room is stored, then press the <AMS> key, and you will be connected to the room.
- **CONNECT to a non-stored room**, simply turn the dial to the En position, type in the room number, then press the <AMS> key.
- To **STORE a number** in your registered/stored list (**favorite**) , **while you are connected to the room**, simple **press and HOLD** down the number of the location you would like the room stored to.
- To **DISCONNECT** from a room, **press and HOLD** down the <BAND> Key.
- **DONE with WiRES-X?** Simply **press and HOLD** down the <MODE> key and you will be restored to normal radio operation.

Yaesu FT-70DR

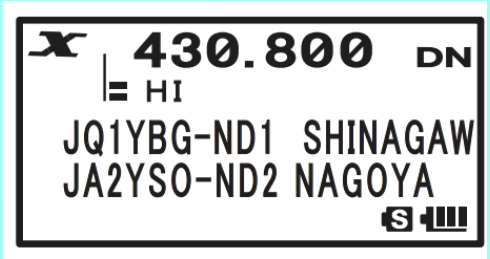
** note: When a local node can not be found, the word *WIRES* will continue to flash and timeout after 20 seconds

Radio Specific WiRES-X Commands

WiRES-X

(continued)

- Rotate the dial and set the **A band** to the frequency of the node you wish to connect to. It can only be on the A band.
- **Access WiRES-X** – Press and **HOLD** the Wires-X **[DX]** button
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room in one of the following ways
  - Selecting an accessible node or room from the list
  - Specifying the node name or room name
  - Selecting the most recently connected node or room
  - Specifying the DTMF ID of the node or room you want to connect to
- **Disconnect from a Room** – Press and **HOLD** the scope bnd dn **[BAND]** button for one second or more
- **Disconnect from WiRES-X** – Press and **HOLD** the Wires-X **[DX]** button for more than one second



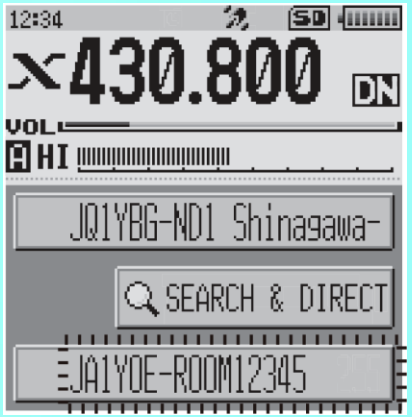
Yaesu FT1D

** note: When a local node can not be found, the ***X*** will disappear after 5 minutes.

Radio Specific WiRES-X Commands

(continued)

- Rotate the dial and set the **A band** to the frequency of the node you wish to connect to. It can only be on the A band.
- **Access WiRES-X** – Press the **[X]** button
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room in one of the following ways
  - Selecting an accessible node or room from the list
  - Specifying the node name or room name
  - Selecting the most recently connected node or room
  - Specifying the DTMF ID of the node or room you want to connect to
- **Disconnect from a Room** – Press and **HOLD** the **[BAND] button** on the keypad
- **Disconnect from WiRES-X** – Press and **HOLD** the **[X]** button for more than one second



Yaesu FT2DR

** note: When a local node can not be found, the ***X*** will disappear after 30 seconds.

Radio Specific WiRES-X Commands

- WiRES-X can only be used on the **A band** on the FT3DR
- **Access WiRES-X** – Press and **HOLD** the **[X]** button for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room in one of the following ways
  - Selecting an accessible node or room from the list
  - Specifying the node name or room name
  - Selecting the most recently connected node or room
  - Specifying the DTMF ID of the node or room you want to connect to
- **Disconnect from a Room** – Press and **HOLD** the **[BAND] button** on the keypad
- **Disconnect from WiRES-X** – Press and **HOLD** the **[X]** button for more than one second

WiRES-X

(continued)

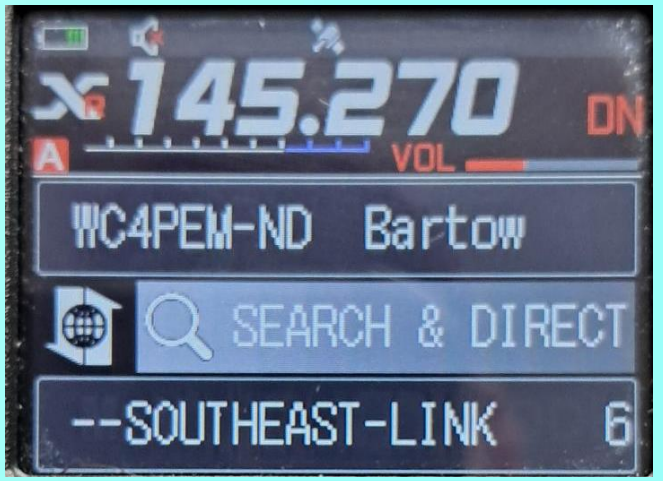
Yaesu FT3DR

** note: When a local node can not be found, the ***X*** will disappear after 30 seconds.

Radio Specific WiRES-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the **A band** on the FT5DR
- **Access WiRES-X** – Press and **HOLD** the **[GM/X]** button for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room in one of the following ways
  - Selecting an accessible node or room from the list
  - Specifying the node name or room name
  - Selecting the most recently connected node or room
  - Specifying the DTMF ID of the node or room you want to connect to
- **Disconnect from a Room** – Press and **HOLD** the **[BAND] button** on the keypad
- **Disconnect from WiRES-X** – Press and **HOLD** the **[GM/X]** button for more than one second



Yaesu FT5DR

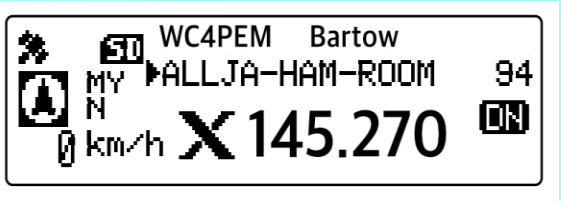
** note: When a local node can not be found, the ***X*** will disappear after 30 seconds.

Radio Specific WiRES-X Commands

WiRES-X

(continued)

- WiRES-X can only be used on the operating band
- **Access WiRES-X** – Press and **HOLD** the [D X] button on the top of the radio for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.



- **Join a Room –** You can select a node or room:
  - To search the node & room lists, press and HOLD the [BAND] button for more than a second.
  - Rotate the DIAL to select [ALL], then press [DISP/SETUP]
  - Rotate the DIAL to select the node or room you want to connect to, then press the [DISP/SETUP] button

Yaesu FTM-100DR

- **Disconnect from a Room** – Press and hold the * key on the microphone
- **Disconnect from Wires-X** – Press and **HOLD** the [D X] button for more than one second

Radio Specific WiRES-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the A band
- **Access WiRES-X** – Press and **HOLD** the [D X] button on the top of the radio for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room:
  - Select an accessible node or room from the list
  - Specify the node name or room name
  - Select the most recently connected node or room
  - Specify the DTMF ID of the node or room to connect
- **Disconnect from a Room** – Press and hold the * key on the microphone
- **Disconnect from WiRES-X** – Press and **HOLD** the [D X] button

Yaesu FTM-200DR

** note: When a local node can not be found, the ***X*** will disappear after 20 seconds.

Radio Specific WiRES-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the A band
- **Access WiRES-X** – Press and **HOLD** the [D X] button on the top of the radio for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room:
  - Select an accessible node or room from the list
  - Specify the node name or room name
  - Select the most recently connected node or room
  - Specify the DTMF ID of the node or room to connect
- **Disconnect from a Room** – Press and hold the * key on the microphone
- **Disconnect from WiRES-X** – Press and **HOLD** the [D X] button

Yaesu FTM-300DR

** note: When a local node can not be found, the ***X*** will disappear after 30 seconds.

Radio Specific WiRES-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the A band
- **Access WiRES-X** – Press and **HOLD** the [D X] button on the top of the radio for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room:
  - Select an accessible node or room from the list
  - Specify the node name or room name
  - Select the most recently connected node or room
- **Disconnect from a Room** – Press and hold the * key on the microphone
- **Disconnect from WiRES-X** – Press and **HOLD** the [D X] button

Yaesu FTM-400DR

** note: When a local node can not be found, the ***X*** will disappear after 20 seconds.

Radio Specific Wires-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the A band
- **Access WiRES-X** – Press and **HOLD** the [D X] button on the top of the radio for more than one second.
  - When a local node is found, ***X*** is lit solid, and the node name and city name appear on the bottom part of the screen.
- **Join a Room –** You can select a node or room:
  - Select an accessible node or room from the list
  - Specify the node name or room name
  - Select the most recently connected node or room
  - Specify a DTMF ID of the node or room to connect
- **Disconnect from a Room** – Press and hold the * key on the microphone
- **Disconnect from WiRES-X** – Press and **HOLD** the [D X] button

Yaesu FTM-500DR

** note: When a local node can not be found, the ***X*** will disappear after 20 seconds.

Radio Specific WiRES-X Commands

WiRES-X (continued)

- WiRES-X can only be used on the A band
- **Access WiRES-X** – Press the F/M-List button. Then touch the ***X*** button. When the local node is found, the ***X*** will be lit solid in the upper left hand corner.
- **Join a Room –** You can select a node or room:
  - Press the ALL button and select from a list sent by the node.
  - Use the SEARCH & DIRECT button to find a room by partial name or specify a DTMF ID of the room to connect to.
  - Select the most recently connected node or room, which is displayed at the bottom of the screen slightly grayed out.
- **Disconnect from a Room** – Press and hold the * key on the microphone or press the DISCNCT button.
- **Disconnect from WiRES-X** – Press the BACK button.

Yaesu FT-991A

** note: When a local node can not be found, the ***X*** will disappear after 20 seconds.

Once you understand your radio's specific WiRES-X access, what "rooms" are available?

WiRES-X (continued)

- There are popular WiRES-X rooms such as **America Link** (21080), which hosts the Saturday night International Wires-X Fusion Net, but where can you see and/or search for other active WiRES-X rooms?
  - Yaesu has an active room list at **https://yaesu.com/jp/en/wires-x/id/active_room.php**
  - There I was able to search and found N4DLW (21036), the callsign used for the node that connects to the Brandon (Lithia) WiRES-X repeater. You can sort the list such as by state, where I found a number of rooms specific to Florida.

Active WiRES-X Room List

(continued)

LATEST WIRES-X ACTIVE ROOM ID LIST

Update every 20 min 08 Oct 2023 14:13:55 GMT

ROOM ID	DTMF ID	Act	Room Name	City	State▲	Country	Comment
W2TR-ROOM	68179	001		THE VILLAGES	Florida	USA	
TGIF-ROOM	28418	000	TGIF	Spring Hill	Florida	USA	
NM2V-ROOM2	64898	000	CQ-FRATERNITY	Maitland	Florida	USA	
ND1C-ROOM3	80751	006	Daytona North	Bunnell	Florida	USA	The 145.390 Machine Flagler County Fl USA Also On YSF Daytona-North 80751
N7MUE-ND1	43110	001	N7MUE HOME	Jacksonville	Florida	USA	
N4DLW-ROOM	21036	000		Brandon	Florida	USA	
MIAMI/COLOMBIA	80825	000	Miami/Colombia	Hollywood	Florida	USA	The Best.
LAGRANDE-RCB	62622	005	LA GRANDE RADIO CLUB	CLEWISTON	Florida	USA	LA GRANDE RADIO CLUB
KX4LEO-ROOM	43138	001	KX4LEO-ROOM	Webster	Florida	USA	KX4LEO Room, Webster Florida
KW4G-ROOM	83115	000	Highlands Co Fl Room	Sebring	Florida	USA	
KN4HYG-ROOM	00122	002	Miami Hams 2	HOMESTEAD	Florida	USA	Miami YSF 07580

Guidelines for WiRES-X Use

(continued)

- Press the WiRES-X button on your radio to connect to the node.
- Use the search features of your radio to find a room or node to connect to.
- Due to latency on the internet, it is good practice to wait a second or two after pressing the PTT button before speaking, and to hold the PTT for a second or two after finished speaking.
- Also not a bad idea to say “over” or similar when done speaking.
- When done with QSO – disconnect from the node or room. Varies by radio, but press the * button on an FTM-400DR to disconnect the node, or on an FT-70DR, press and hold the [BAND] button.

WiRES-X Etiquette on a Repeater

- If the repeater is connected to another room or node, DO NOT CHANGE TO ANOTHER ROOM. It is where it is for a reason. Somebody is using it.
- If connecting to another room, make contacts as desired, and DISCONNECT from the room when done.
- Do not tie up the repeater so you can just listen to other rooms/repeaters in other areas. If you just want to listen, use/get a radio that supports PDN mode. Or, most popular rooms and repeaters have broadcastify support, you can listen all you want there.
- The WiRES-X node is usually on a timeout timer, so don’t be surprised if it disconnects after some preset time (in our case, one hour).
- If you are connected to a WiRES-X room, but not involved in a QSO, and local users start using the repeater, disconnect from any rooms so local users can conduct their QSOs.

Local/Popular Nets on WiRES-X

(continued)

EPARS C4FM Fusion Net

Thursday, February 13 · 8:00 – 9:00pm

Dade City, FL, U

We, East Pasco
started a Fusion
Please come joi
#81609. Hope

The International Wires X Fusion NET in Room —America-Link- (21080) reminder

When: Saturday, 25 March 2017 09:00 PM to 10:00 PM

(GMT-05:00) Eastern Time (US & Canada)

Where: America-Link- (21080)

Notes: Saturday Night 9 PM Eastern / Sund
DV4Mini FCS 2-90 (America Link Network)
Join us and check in! Listen, learn, interact,
community living the Wires X Fusion exper

Access Point Illustration

Portable Digital Node Station

Press the PTT switch on the transceiver connected to the PC to communicate.

FT2D

C4FM Digital

Communicate by RF to access the Portable Digital Node station from other C4FM digital transceivers.

WIRES-X Digital Node Station

Digital Node Station
C4FM Digital
C4FM Digital

Internet

WIRES-X Digital Room

Digital Node Station
C4FM Digital
Digital Node Station
C4FM Digital

What I like about Fusion and WiRES-X (continued)

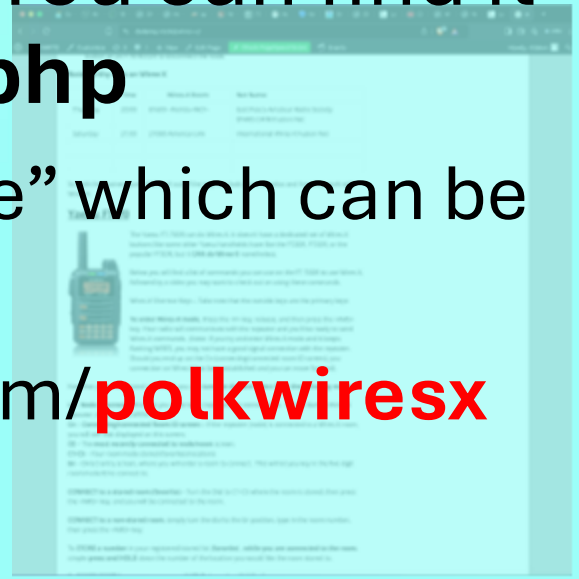
- To switch from FM analog to Digital Voice, it's as simple as pressing one button.
- When it comes to WiRES-X it's simple… **not spending hours on a codeplug** as when using DMR.
  - You simply enter one frequency, that of the node/ repeater, then use the "WiRES-X" button and either choose through the menus, or perhaps one of your stored favorites.
  - Basically, **the repeater (node) does all the work.**

Resources Online

WiRES-X

(continued)

- Separate from the standard operating manual that came with the rig, Yaesu also has created Wires-X editions of their users manuals that focus specifically on using the rig for WiRES-X.
- Yaesu has a Web site dedicated to WiRES-X. You can find it at **https://yaesu.com/jp/en/wires-x/index.php**
- There is a nice document titled “WiRES X – The Bible” which can be found at https://tinyurl.com/**wiresxbible**
- Local Web page with resources at https://tinyurl.com/**polkwiresx**



Common Questions

WiRES-X

(continued)

If I am not in WiRES-X mode and the node is already connected to a WiRES-X room, will I still be heard in that room or node?

- Answer: **Yes, if you are in DN Fusion mode, but not in WiRES-X, you can still participate with the room/node.**

Do I need to disconnect with a room/node when I am done using it?

- Answer: **Yes, if you are no longer going to be transmitting on the node you are connected to, you should disconnect.**

What happens if I forget to disconnect from a room/node.

- Answer: **The repeater will automatically disconnect from the room/node 1 hour after you connected to it.**

Common Questions

(continued)

What happens when I switch to WiRES-X mode?

Answer: **A WiRES-X Handshake takes place – This was designed for two purposes with the first one being to control the node. This would be for changing rooms, disconnecting rooms, uploading/downloading data, etc.**

The second purpose was to be able to have your radio switch to the correct operating frequency. (This is WHY your radio goes to VFO mode when a successful handshake is completed.)

Common Questions

(continued)

Do I need to register on the WiRES-X system to use WiRES-X?

- Answer: **No, you do not.**

When would I have to register to use the Wires-X system?
Answer: **Only in the case that you are going to have a device, such as radio acting as a PDN, or an HRI-200, on the Wires-X system as a node.**

You need to know it can take 5 to 7 business days, Japan time, for a DTMF Node/Room ID to be issued. Even longer if the information cannot be verified or we have a backlog. Recently we were doing some updates and optimization dealing with WiRES-X. This is why the websites (registration and active nodes/rooms) were offline recently.

Common Questions

Why the delay to register a PDN ID?

(continued)

**I spoke with John Kruk, N9UPC, at Yaesu about this. His response was "*ALL applications are manually reviewed to ensure the information is legit. Then after confirmation it is entered into the system. At that point, the system is updated and notifications sent out.*

I cannot begin to tell you how many applications incomplete, wrong information, or a slew of other things. This helps keep WiRES-X an amateur network for free usage."**

In person he mentioned simple things such as if your name on QRZ is your legal name, but you go by something else, use your legal name.

Common Questions

(continued)

If I am traveling and using a WiRES-X repeater elsewhere, how can I connect up to our Bartow WiRES-X repeater and have a QSO with folks using our Bartow repeater?

Answer: **This is very easy to do. Using your radio on WiRES-X, simply connect the local repeater node you are using to the DTMF ID of the Bartow repeater which is 94102. Same thing if you are using your radio as a PDN to access the WiRES-X network. Simply connect to DTMF ID 94102 and you will then be heard on the air from the Bartow repeater.**

WiRES-X

(continued)

Questions?