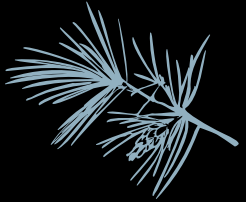




JS8 & JS8Call

Curtis Hays II

AGENDA



- NOT BE BORING
(audience participation)
- Get Nerdy
- What Can This Do?
- What Do You Need?
- Summary
- Questions



INTRODUCTION

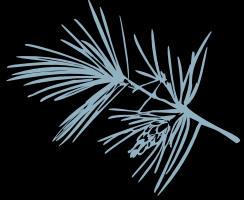
JS8 is the Digital mode built on the robustness of FT8 to provide weak signal communication on HF for a keyboard-to-keyboard interface. JS8Call is the software used to interface with the JS8 mode.

BLAH BLAH BLAH!!! Old ppl, remember BBS? Young ppl, want to have chat that's NOT using the Internet?



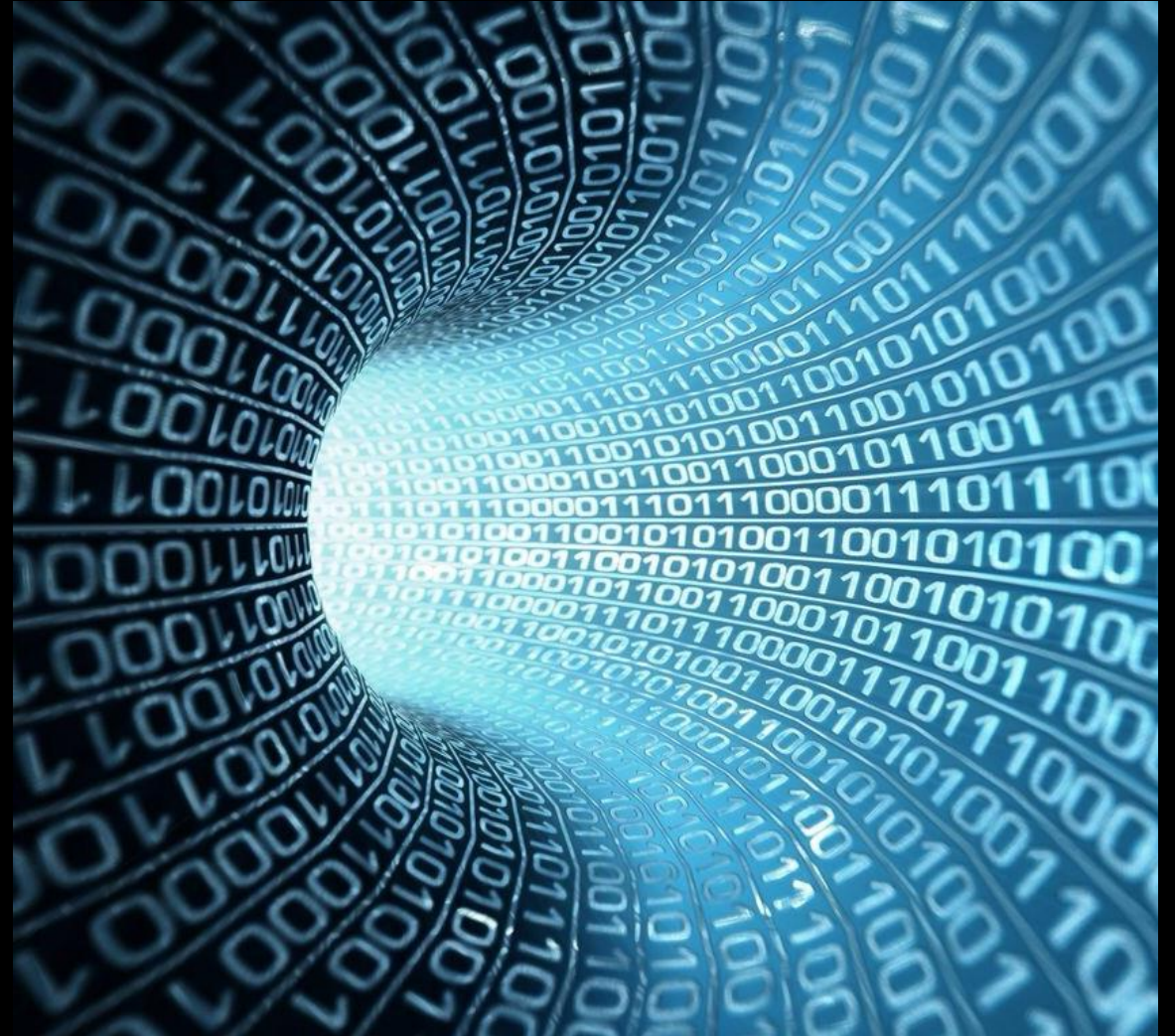
Who's used JS8Call before?

Who has digital modes setup with their computer and radio?



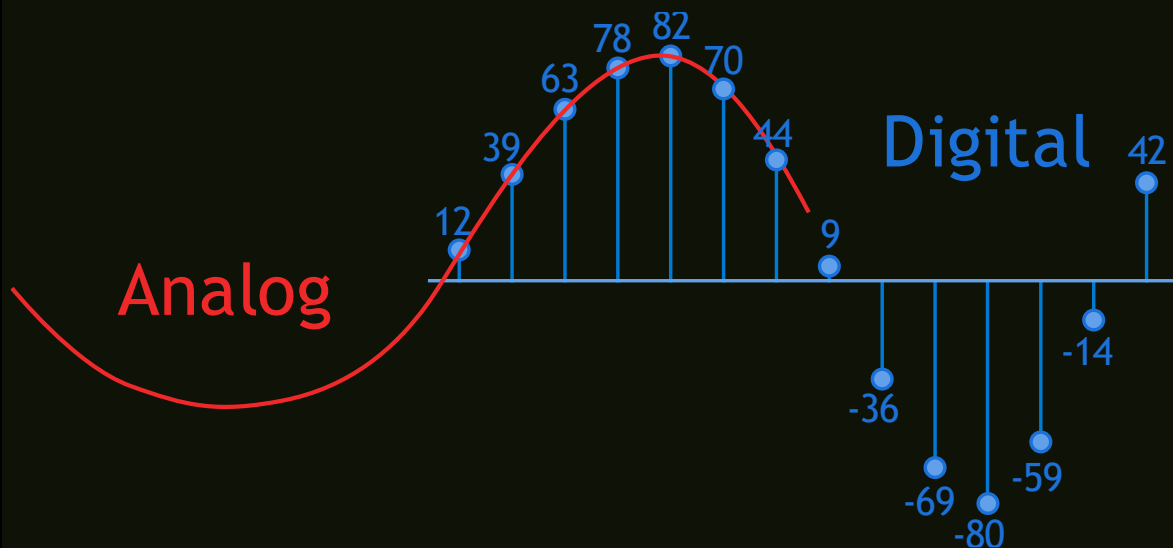
What is digital?
1s and 0s right?
How do you send that
in an analog medium?

Anyone want to explain this?



Analog vs Digital

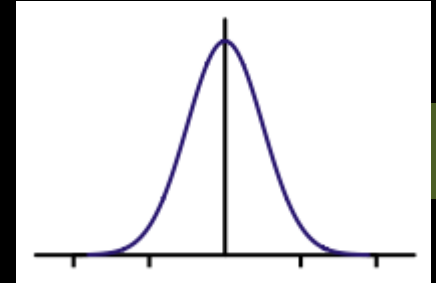
The same... but different



Let's get nerdy for a bit

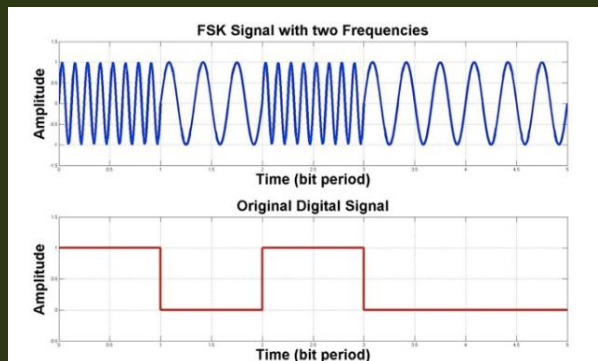
- D to A and A to D
 - Sound Card MODULATE DE-MOD
 - MODEM
 - Quantizing
 - 50 Hz so not much to Encode
- Modulation
 - Wiggle the “things” freq, amplitude, phase, constellations

Huh? Gaussian Frequency Shift Keying



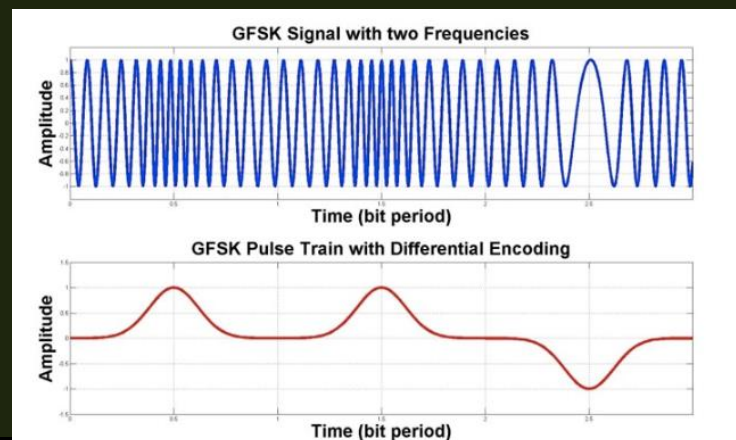
FSK: Frequency Shift Keying

- Freq 1 = 0 Freq 2 = 1
- It's very abrupt with a lot of room for error due to phases of the carrier being different when it is shifted.



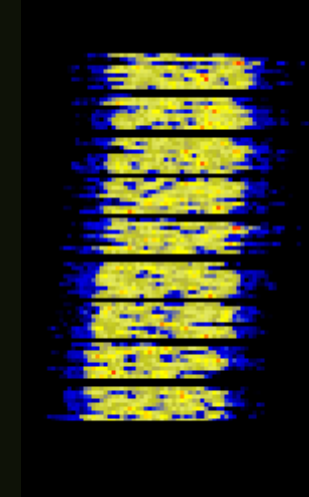
GFSK

- The input signal is put through a filter, in our case, a software filter managed by JS8 Call
- This is called pulse shaping



What else uses this?

- Bluetooth
- Z-wave
- GMSK is what GSM Phones use



We're Sending Bits! Did you see them?

FEC, I don't know?

Let me do some Fast Fourier Transformation, then cycle through my redundancy checks and chat with the Berlekamp-Massey people and let you know!

OK, OK, you can send data but **what can I do** with it?

Chat, 1:1 or group chats over VHF/UHF/HF

When would you use VHF/UHF?

When would you use HF?

Message Types

DM DM: K0TRD MSG THANKS FOR SETTING THIS UP LML
You'll get an ACK if it was accepted and decoded.

Relay RELAY: KC5CW>KE0HZ>K0TRD MSG THANKS FOR SETTING THIS UP LML
You'll get an ACK if it was accepted and decoded.

APRS
Email
SMS

Black flags mean you have a message waiting. Right click and go to Inbox.

Has anyone heard of X.25? This will work like that... yup, dial-up is back baby!



Download from:

<https://js8call.com/>

Add your deets

Ⓢ Settings

General Radio Audio Reporting Frequencies Saved Messages Notifications UI

Station Behavior Networking & Autoreply

Station Details

My Callsign: KC5CW

My Maidenhead Grid Locator: DM79NJ

Callsign Groups (comma separated): @GROUP1, ...

Do not participate in the @ALLCALL group

Station Messages

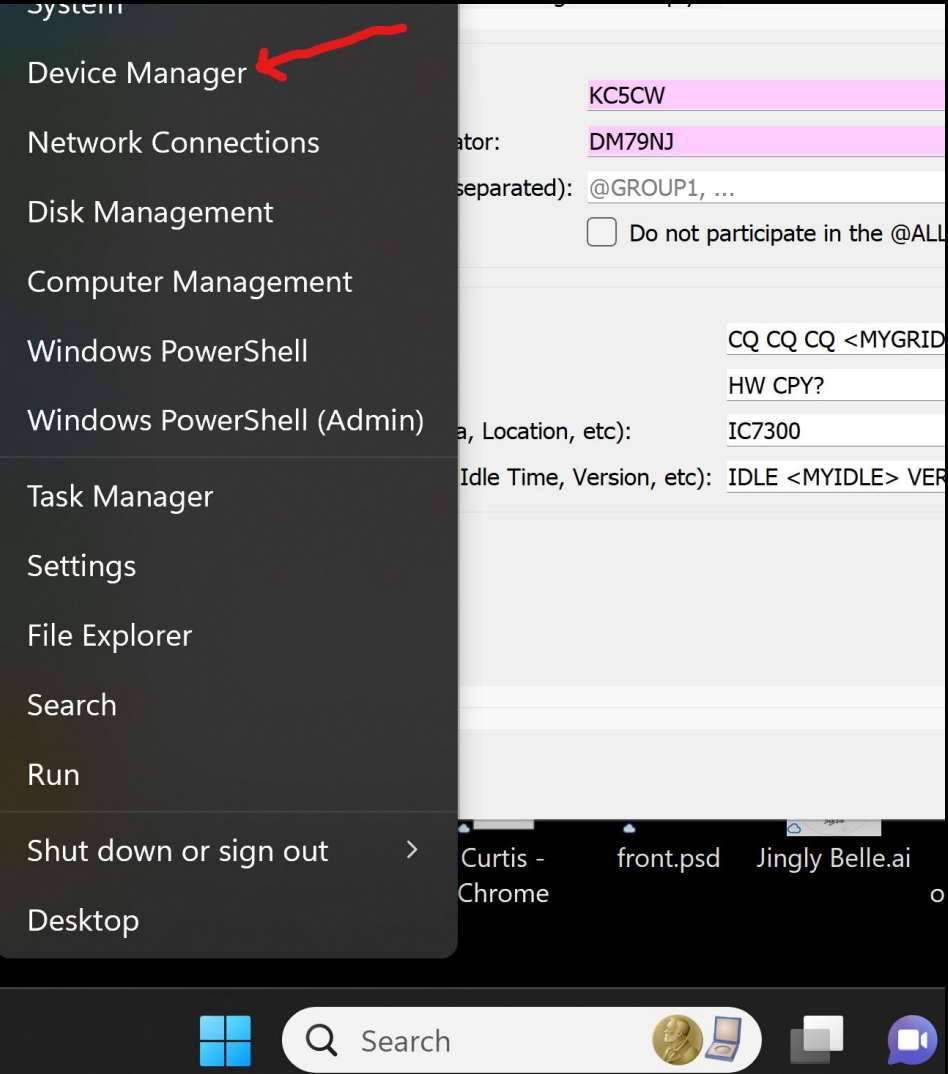
CQ Message: CQ CQ CQ <MYGRID4>

Reply Message: HW CPY?

Station Info (Rig, Antenna, Location, etc): IC7300

Station Status (Weather, Idle Time, Version, etc): IDLE <MYIDLE> VERSION <MYVERSION>

Get your COM port



The image shows a Windows Start menu search result for 'Device Manager', which is highlighted with a red arrow. In the background, a window displays a list of COM ports. The first two ports, 'KC5CW' and 'DM79NJ', are highlighted in pink. Below the list, there are fields for 'Name', 'Manufacturer', and 'Location, etc.', with values 'IC7300' and 'IDLE <MYIDLE> VER' visible. The Windows taskbar at the bottom shows the Start button, a search bar, and several open applications: 'Curtis - Chrome', 'front.psd', and 'Jingly Belle.ai'.

- System
- Device Manager
- Network Connections
- Disk Management
- Computer Management
- Windows PowerShell
- Windows PowerShell (Admin)
- Task Manager
- Settings
- File Explorer
- Search
- Run
- Shut down or sign out
- Desktop

Device Manager window content:

- KC5CW
- DM79NJ
- @GROUP1, ...
- Do not participate in the @ALL
- CQ CQ CQ <MYGRID
- HW CPY?
- IC7300
- IDLE <MYIDLE> VER

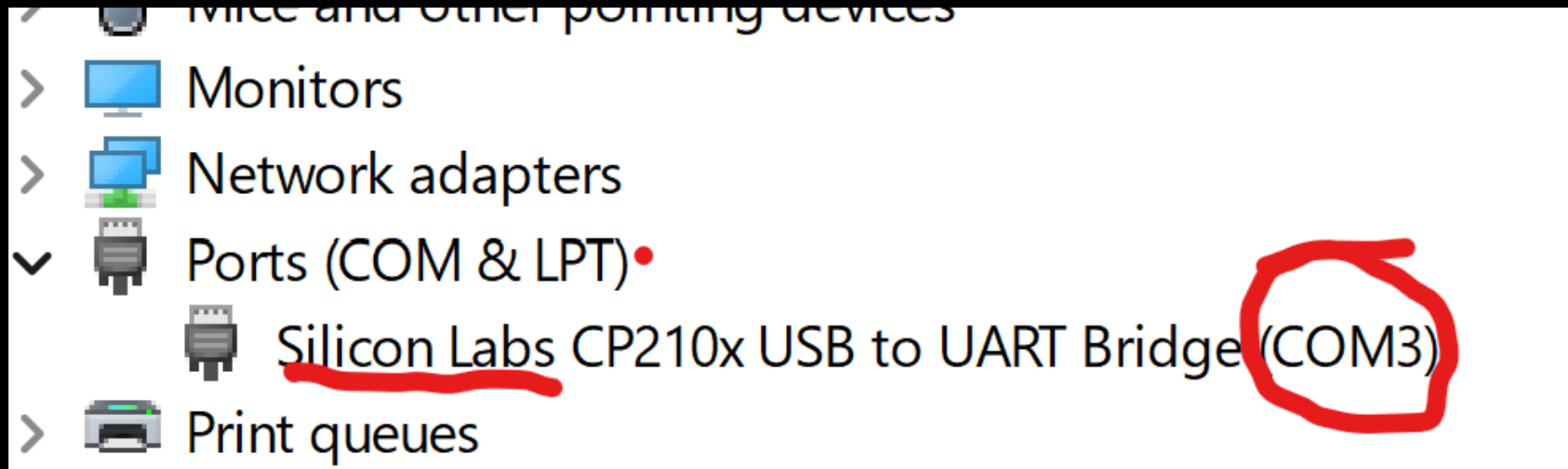
Taskbar applications: Curtis - Chrome, front.psd, Jingly Belle.ai

Watch this LIE!!!

- > Mice and other pointing devices
- > Monitors
- > Network adapters
- ▼ Ports (COM & LPT)•
 - ▶ Silicon Labs CP210x USB to UART Bridge (COM3)
- > Print queues

No worky, I had to go search for 7300 usb driver, get it

Now it sees my USB COM3 port for real; NOTHING CHANGED IN DEVICE MANAGER



Make sure your serial speed matches your radio ci-v

The screenshot shows the 'Settings' dialog box for an Icom IC-7300 radio. The 'Rig' is set to 'Icom IC-7300' and the 'Poll Interval' is '1 s'. The 'CAT Control' tab is active, showing the 'Rig Options' section. The 'Serial Port' is set to 'COM3'. Under 'Parameters', the 'Baud Rate' is set to '115200'. The 'Data Bits' are set to 'Default', 'Stop Bits' to 'Default', and 'Handshake' to 'Default'. There are also options for 'None', 'Hardware', 'Seven', 'Eight', 'One', and 'Two'. At the bottom, there are buttons for 'Test CAT', 'Test PTT', 'OK', and 'Cancel'.

Settings

General Radio Audio Reporting Frequencies Saved Messages Notifications UI

Rig: Icom IC-7300 Poll Interval: 1 s

CAT Control Rig Options

Serial Port: COM3

Parameters

Baud Rate: 115200

Data Bits

Default Seven Eight

Stop Bits

Default One Two

Handshake

Default None Hardware

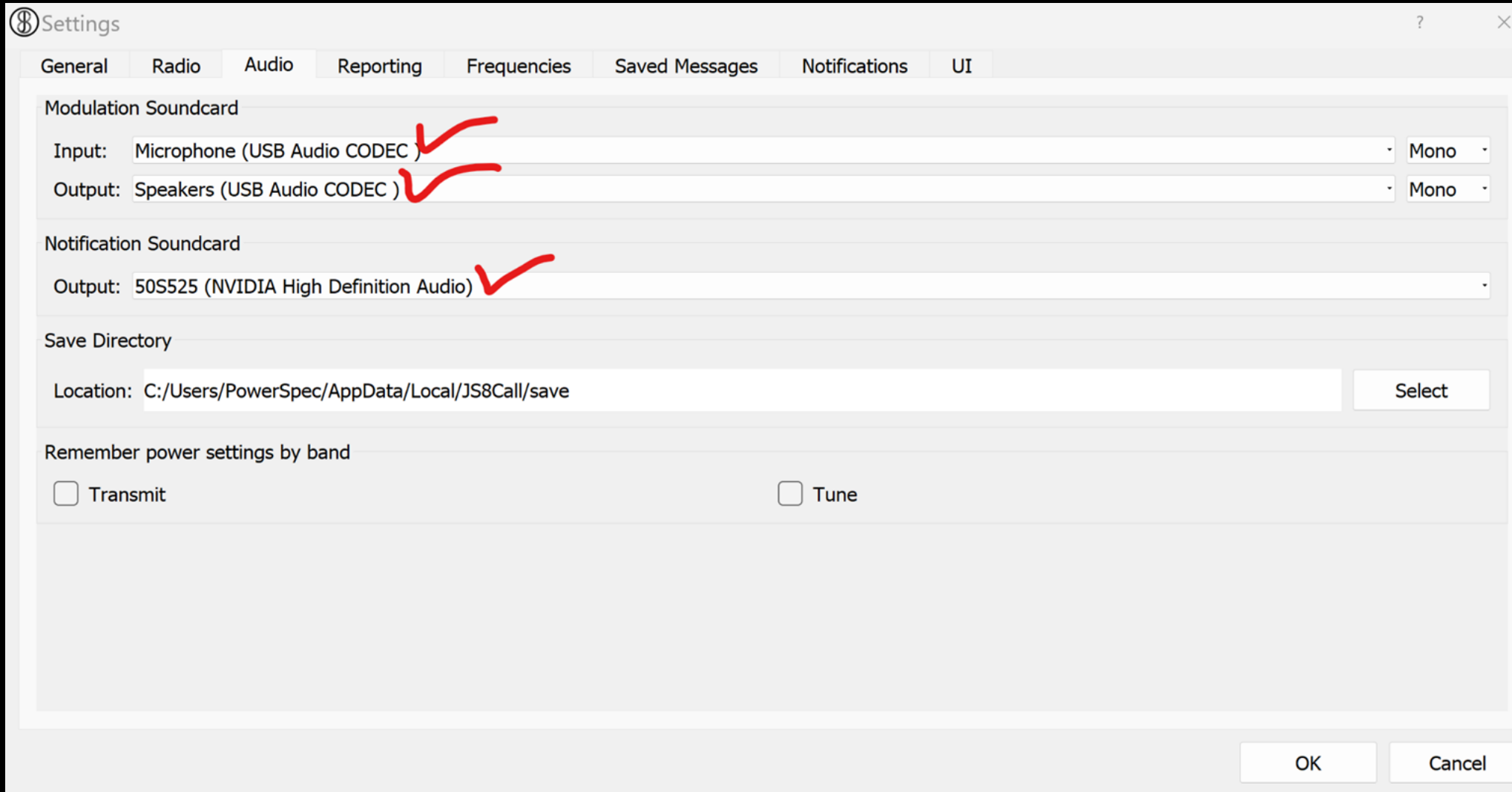
XON/XOFF

Force Control Lines

Test CAT Test PTT

OK Cancel

USB for I/O but keep Notifications off of your USB



From <https://js8call.com/js8call-getting-started/>

This is how I have my Icom 7300 settings to control the Radio over the USB connection from a Computer for digital mode software such as JS8Call, Hamradio Deluxe and FLDigi.

Open settings screen and tap Connectors. Then set up each entry to match mine (adjust your levels options accordingly, but my settings work so they are a good start point:

ACC/USB Output Select	AF
ACC/USB Output Level.	42%
ACC/USB AF SQL.	Off (Open)
ACC/USB AF Beep/Speech output.	OFF
ACC/USB IF Output Level.	50%
ACC MOD Level.	50%
USB MOD Level.	50%
DATA OFF MOD.	MIC/ACC
DATA MOD.	USB
External Keypad (No need to change)	
CI-V. (No need to change)	
USB Serial Function.	CI-V
USB SEND.	OFF
USB Keying (CW).	OFF
USB Keying (RTTY)	OFF

And make sure that you select MODE to be USB-D on the main screen.

Yaesu FT-891

These settings work for CAT control VIA the USB cable port on the rear of the FT-891, and the Audio interface Connected to the 6 pin port.

CAT RATE **4800**
CAT TOT **1000ms**
CAT RTS **DISABLE**
DATA MODE. **OTHERS**
DATA IN SELECT **REAR**
DATA PTT SELECT **DAKY**
DATA BFO **USB**

Tune up on a frequency

JS8Call Frequencies

From version . 0.5.x the default calling frequencies set up in JS8Call are listed below, but please note these are not set in stone and can easily be changed in your settings, or you can simply manually retune your radio to another frequency.

1.842Mhz	3.578Mhz	7.078Mhz
10.130Mhz	14.078Mhz	18.104Mhz
21.078Mhz	24.922Mhz	28.078Mhz
	50.318Mhz	

Summary

- It is s l o w
- This is not what you use when conditions are great or VHF FM/SSB works
- This is what you use when conditions are terrible
- This is what you use when you want to communicate using something new
- They could use your help in writing documentation/videos/coding the UI to be more intuitive
- It runs on a pi, a Mac, Windows, and doesn't take much more than a USB port and a sound card or USB sound card/control link to your radio much like any other digital mode/software

FAQ



Do I need to be on the Internet? YES! You need to be within 2 seconds of the other station

Isn't 10-20 WPM too slow to have a conversation?

If propagation is good enough for a faster mode, you should be using it instead! But, with poor conditions like we have experienced at solar minimum, JS8Call might just be the best balance.

It may seem really slow (and it is, relatively speaking). However, FT8 modulation is able to decode (theoretically) down to -24dB below the noise floor. Not many modes can say this, especially those which transmit at faster speeds. What does this mean? JS8Call may work when other modes cannot

Questions?

- Who's going to try it?