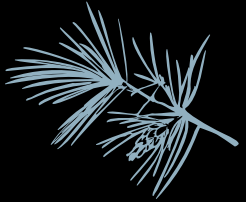# JS8 & JS8Call

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.

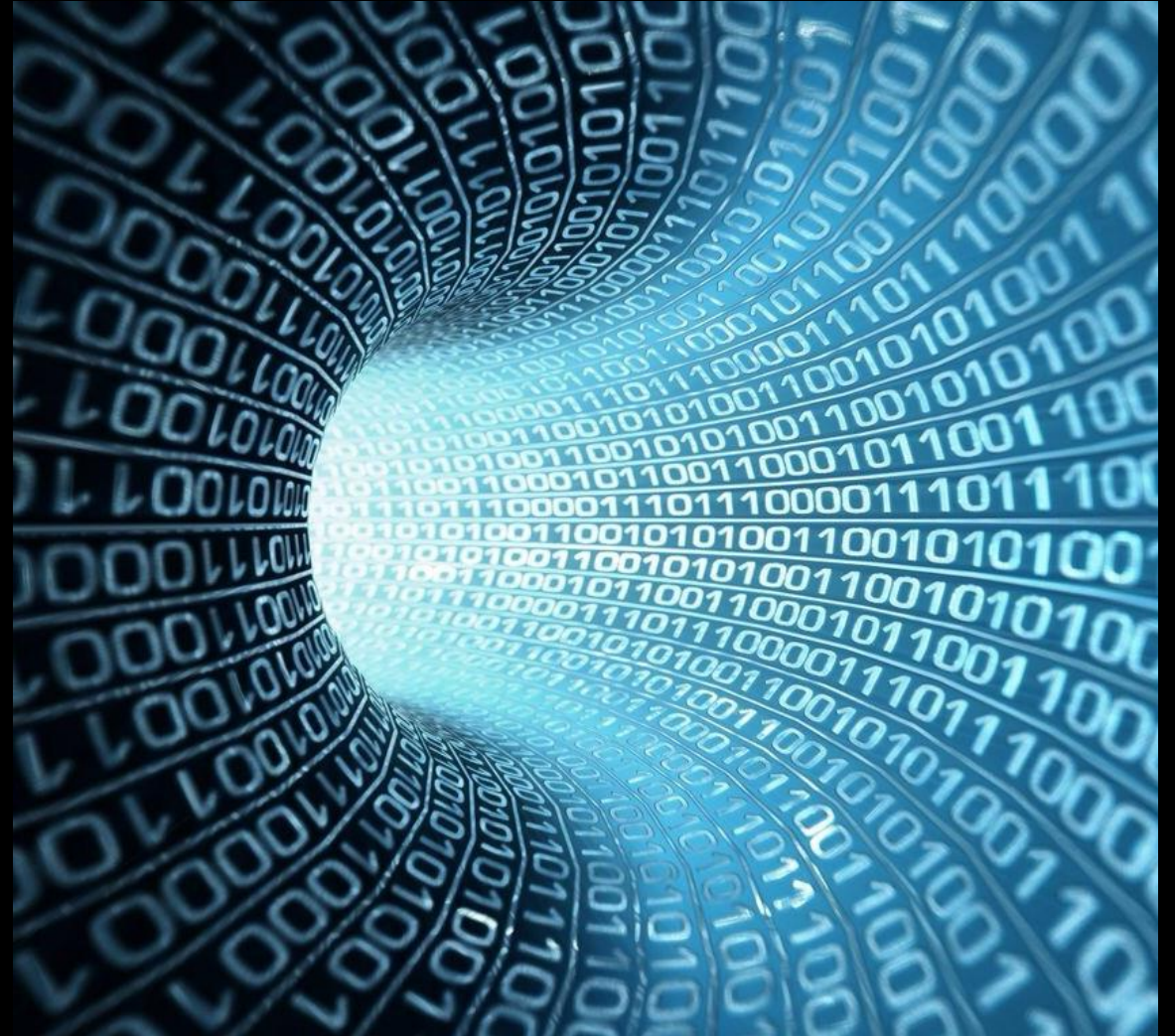BLAH BLAH BLAH!!! Old ppl, remember BBS? Young ppl, want to have chat that's NOT using the Internet?

Who's used JS8Call before?

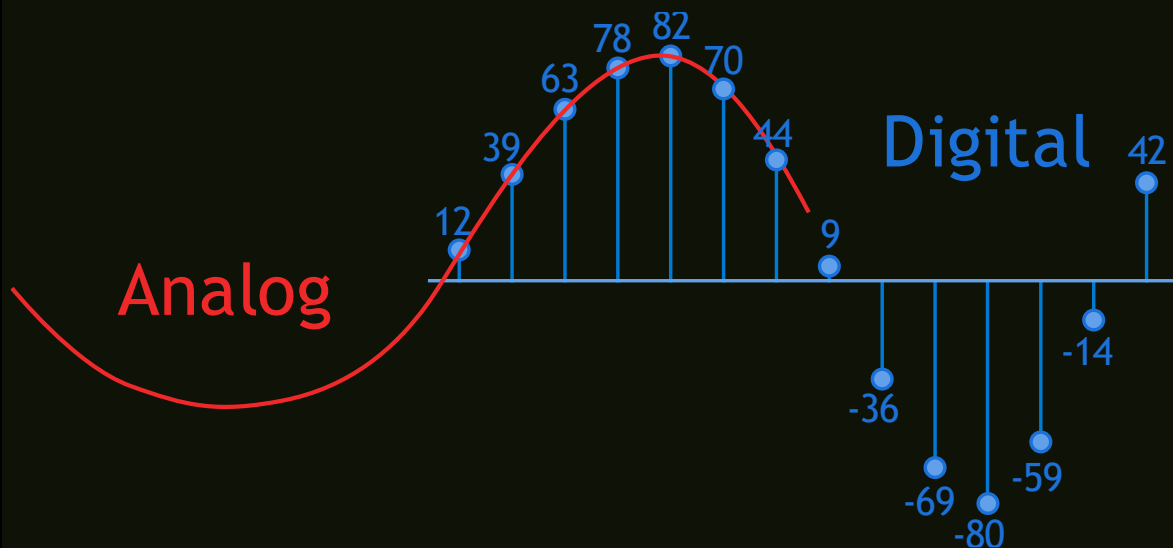Who has digital modes setup with their computer and radio?
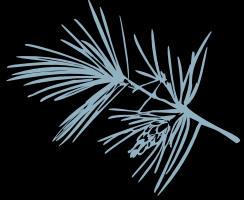
What is digital?
1s and 0s right?
How do you send that in an analog medium?

Anyone want to explain this?
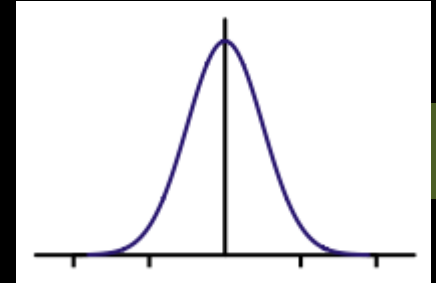
Analog vs Digital

The same... but different
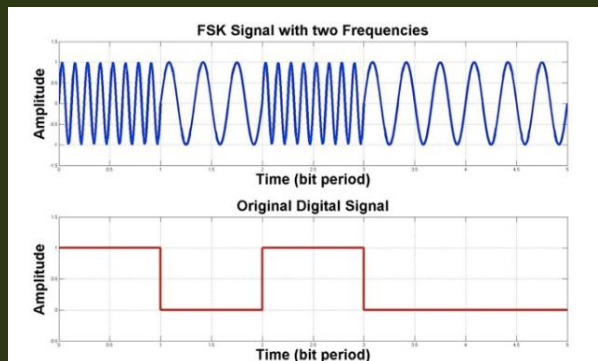

Let's get nerdy for a bit

- 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
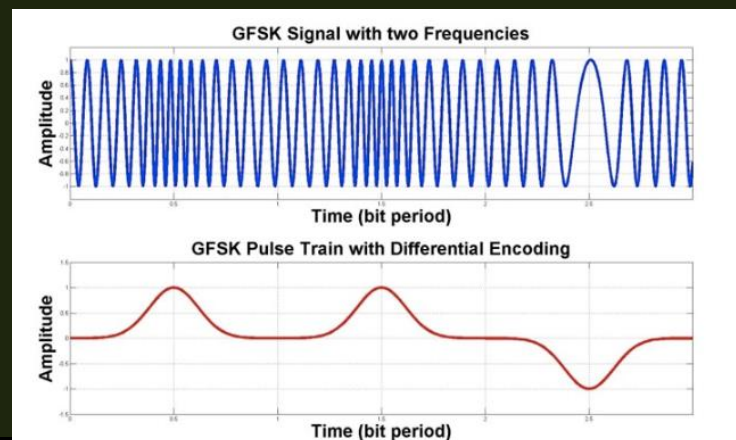

FSK: Frequency Shift Keying

- 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.
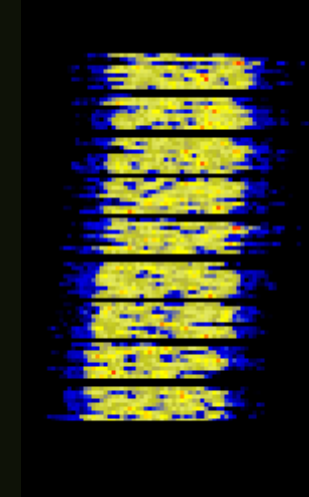

GFSK

- 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

Bonus points if you know which GFSK it uses

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: KC5CW>KE0HZ>K0TRD MSG THANKS FOR SETTING THIS UP LML

Relay

You'll get an ACK if it was accepted and decoded.

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

APRS
Email
SMS

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

Get your COM port

Watch this LIE!!!

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
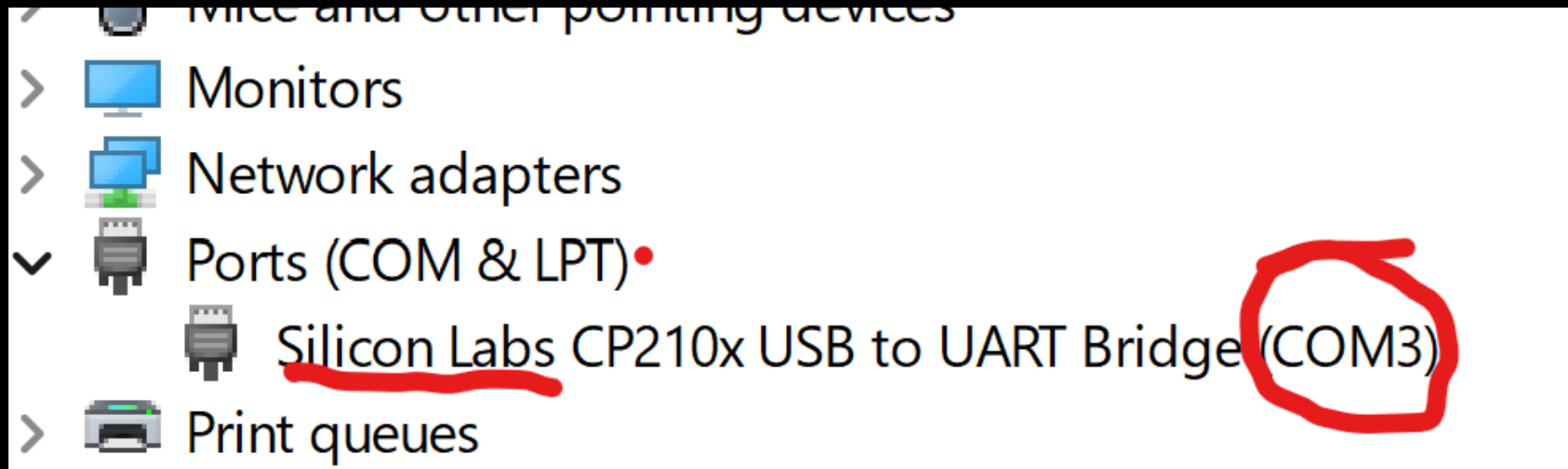
Make sure your serial speed matches your radio ci-v

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

From https://js8call.com/js8call-getting-started/
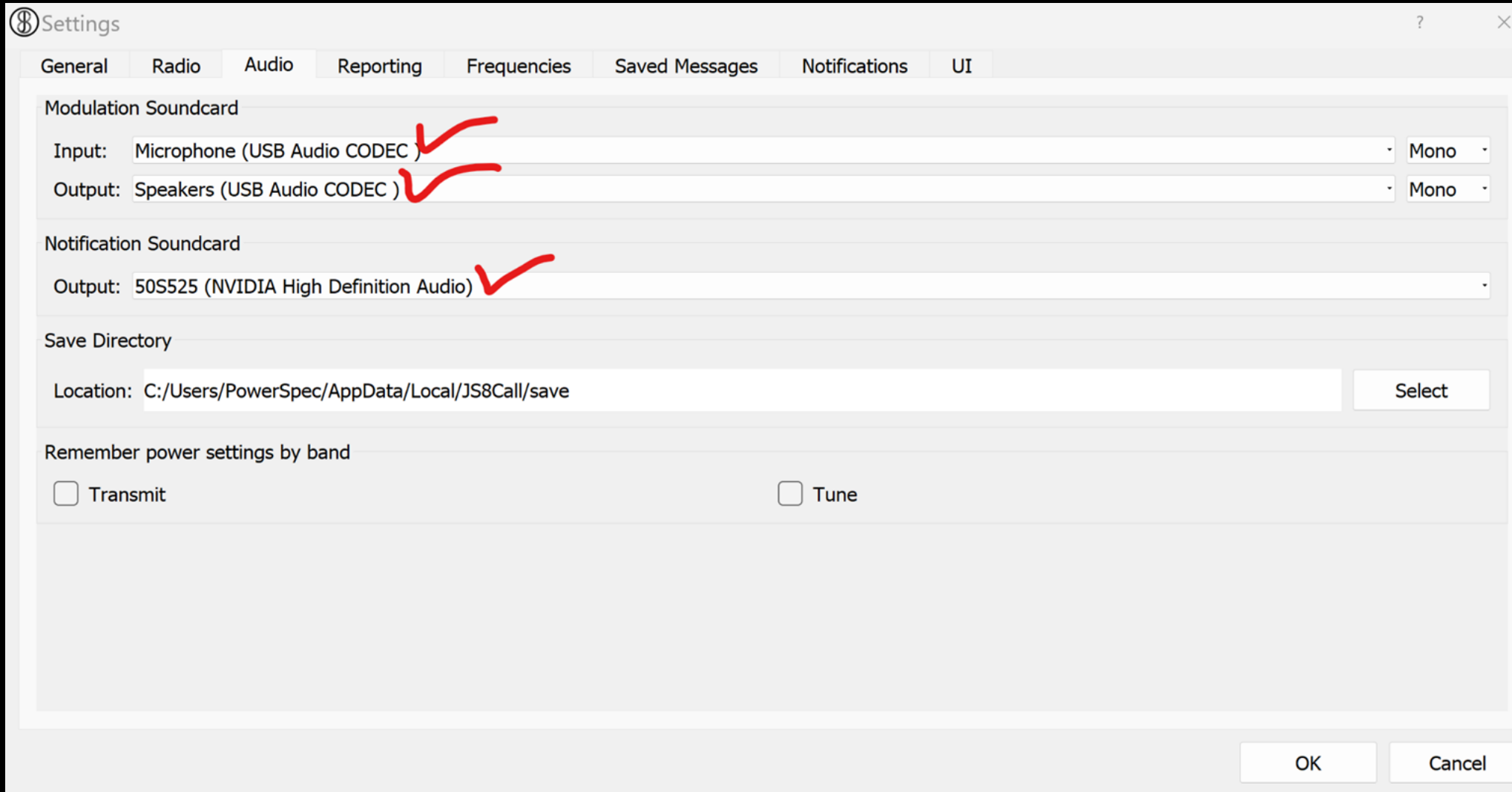
This is how I have my Icom 7300 settings to control the Radio over the USB connection from a Computer for digital mode software such as JS8Call, Hamradio Deluxe and FLDigi.

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?