Tan Ton

CS 373

Lab 3 Report

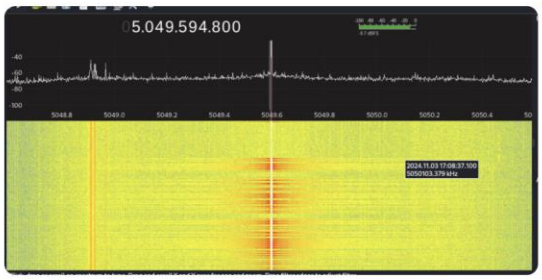
Lab 3

This Lab was super difficult. There were not a lot of instructions to begin with, even inputting the file into GQRX takes me 2 hours to figure out how to insert the file in.

In working with this lab, I used ChatGPT as a tool to give me some hints and insight on what to do next.

After successfully inserting the file into GQRX, I took a screenshot and asked ChatGPT to analyze it like below. One of thintsint it gave me was “Morse Code”.

Since Morse Code could be a solution, I then use a morse code translator and start input the code in.
https://morsecode.world/international/translator.html



Analyze this

The screenshot shows an SDR (Software Defined Radio) interface, likely from GQRX or a similar application, with a spectrum and waterfall display centered around 5049.6 kHz.

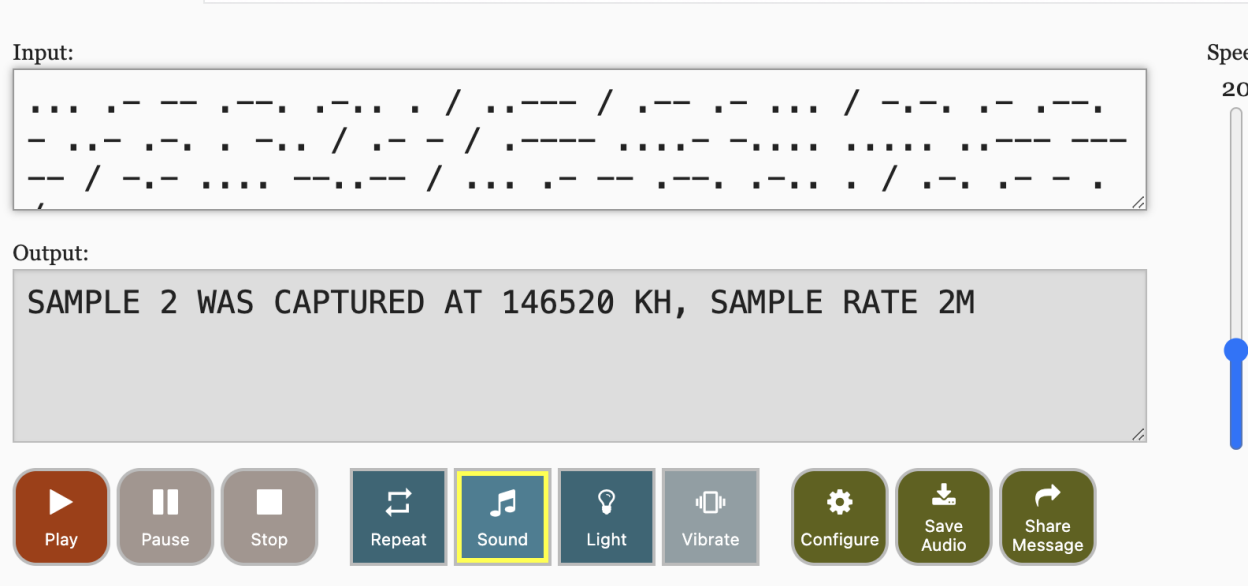
Here's a breakdown of what this data might indicate:

1. **Frequency Range and Center Frequency**:
   - The display is centered at **5049.6 kHz** with a visible range around it.
   - You're working within the HF (High Frequency) range, where shortwave signals like amateur radio, military, and certain types of broadcast transmissions are often found.
2. **Signal Strength and Spectrum Display**:
   - The top part shows a spectrum ana[illegible]er, with frequency peaks around **5049.6 kHz**.

3. **Waterfall Display**:
    - The waterfall display shows a consistent vertical line in bright yellow, indicating a narrow, continuous transmission at around 5049.6 kHz.
    - The bright colors (yellow and red) denote high signal strength, while surrounding green/yellow areas represent noise or weaker signals.
4. **Possible Interpretation**:
    - This continuous narrow signal suggests it could be a carrier wave or a single-frequency transmission, possibly CW (Morse Code) or AM (Amplitude Modulation).
    - If it's not producing audio, it might require AM demodulation to decode. Try switching to AM mode in your SDR software and adjust the filter bandwidth to closely match the width of the signal.
    - If it's a digital mode, consider using tools like **FLDigi** to decode digital transmissions (e.g., RTTY, PSK31) if AM or CW doesn't produce results.
5. **Timestamp Information**:
    - The overlay in the waterfall shows a timestamp, possibly indicating when the signal was

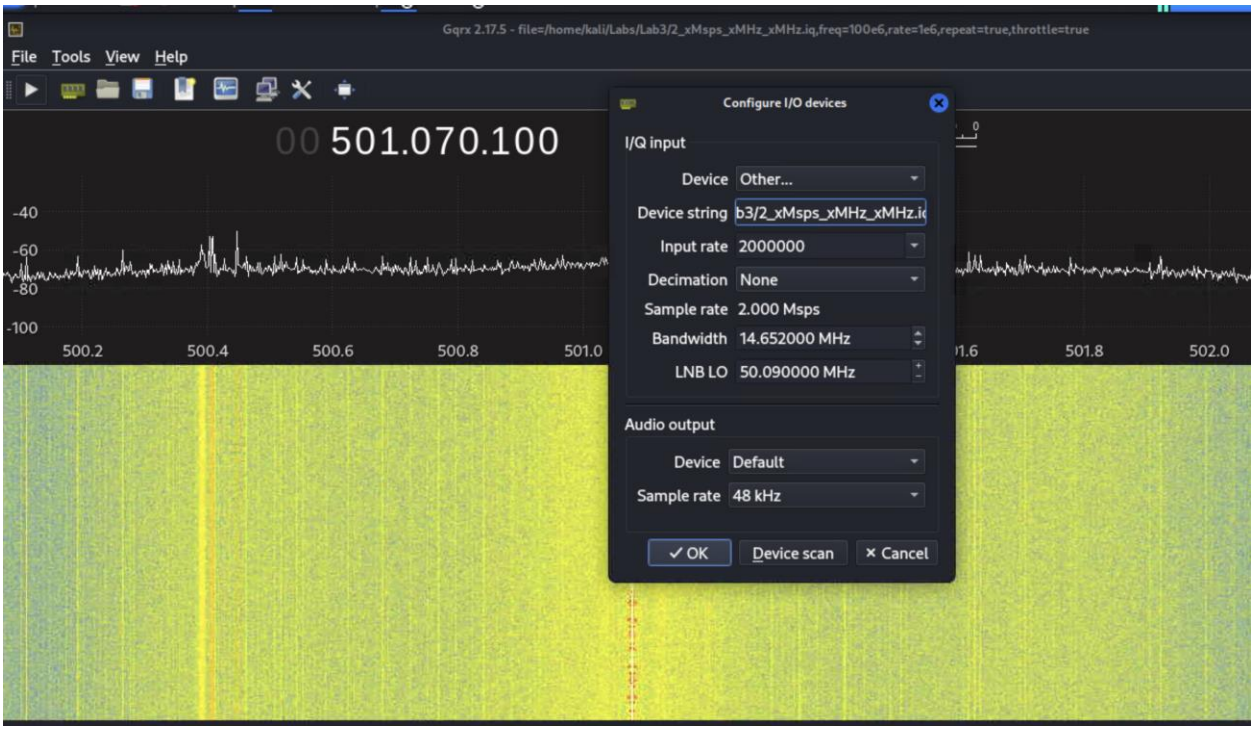
After trying multiple attempts on decoding the morse code, I get a message :

"Sample 2 was captured at 146520 kh, sample rate 2m"



Since our 2nd files does not have as much information as the first file, I use the decode from the morse code to insert in my 2nd file configuration.

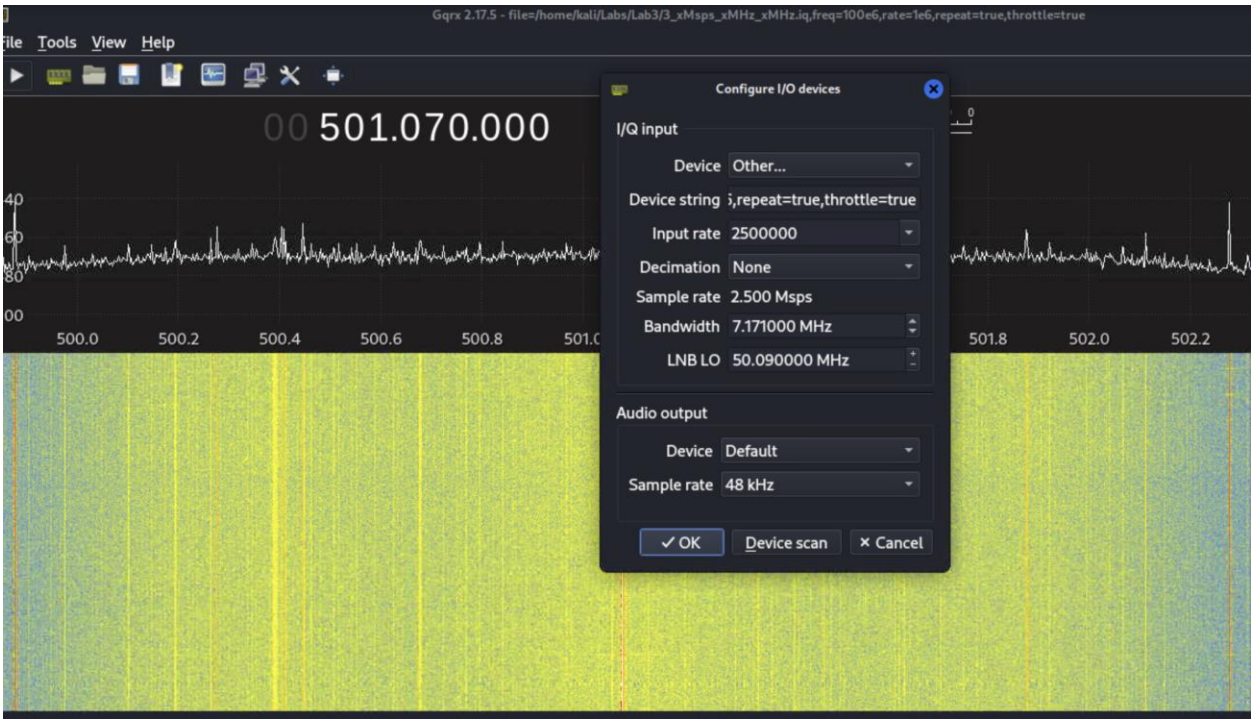
Below is the configuration of 2nd file.



The output for the 2nd file was a lot different than the first file. There was not much heat sound moving, and it was pretty much steady.

After listen to the 2nd files for a while, it appeared to be a man voice that said “The third file was captured at 7.171MHz at 2.5Msps”

Same to the clue from file 1, it must be used for 3rd file, which I will input as below

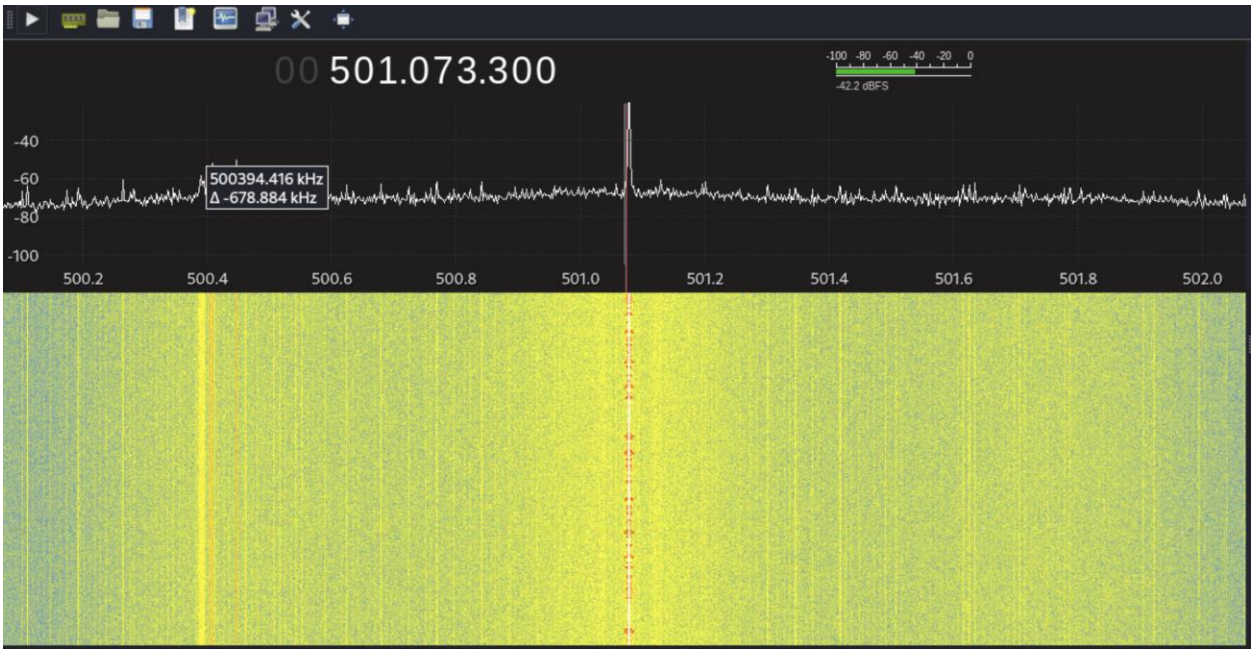


Below is the data after successfully insert 3rd files.

It seems like there is not a lot of wave, the signal are pretty much steady.

There was nothing much beside some cranky noise that pretty much similar to radio signal that got jammed.

At this point I am pretty much lost, the information was not enough. I will have to visit office hours.


00 501.073.300
-100 -80 -60 -40 -20 0
-42.2 dBFS
-40
-60
-80
-100
500394.416 kHz
Δ -678.884 kHz
500.2
500.4
500.6
500.8
501.0
501.2
501.4
501.6
501.8
502.0