

Test Report

Group 13

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1 Specification

- Based on our chosen carrier frequencies which are 4k and 5k, we plotted the PSD to make sure that the data is separated in frequency domain and clustered around the carrier frequencies.
- Half duplex transmission was tested and it gave the expected results without errors. Full duplex also gave the expected results when the transmission in both sides was timed perfectly, but when there is a small delay some errors arise.
- The bandwidth was plotted and it was around 128 Hz to achieve good samples per symbol which was 120 samples per symbol using sampling frequency 22050 Hz and roll-off factor 0.4, this is based on what is better for the hardware. It should be noted that the achieved bandwidth is less than the smallest specified bandwidth mask.
- The packet loss percentage is closer to 0%, this was tested by multiple transmissions.
- The RRT in diagnostic mode test was around 3 sec which is less than 4.5 sec which is specified in the RFP.
- The system assures that the whole data is captured before processing starts so it is guaranteed that 432 data bits are received.
- QPSK modulation was used which is equivalent to 4-QAM and it is was tested by plotting the constellation diagram using the scatter-plot.

2 Operation Manual

To start operating the following must be followed :

1. Install the program files on two different machines (CH-PC-A & CH-PC-B) and connect one headset to each machine and put them in opposite directions.
2. Launch the GUI inside the folder which is called (launch-Windows.bat), a TX-RX interface will appear which consists of 4 windows:
 - Window for transmitting data with two places to enter data one for carrier frequency and one for the message.
 - Window for receiving data where the carrier frequency must be specified with a sub-window for viewing the data.
 - Console window for receiver.
 - Console window for transmitter.
3. Choose the chat mode tab in one of the machines and type the message in the text window, then choose the carrier frequency for both machine, use the same carrier frequency at each side for half duplex transmission.
4. Full-duplex is done as the half-duplex but with two different frequencies (4 KHz, 3 KHz or 5 KHz).
5. Send the message using the send button and receive it at the other side.