Lab 7: LoRa encoding and decoding

Objectives

- To encode and decode LoRa packet using MATLAB

Prerequisites
- Knowledge of LoRa modulation techniques.
- Access to a PC and MATLAB

You will use a LoRa simulator in MATLAB to modulate/encode text messages, then decode/demodulate the encoded message.
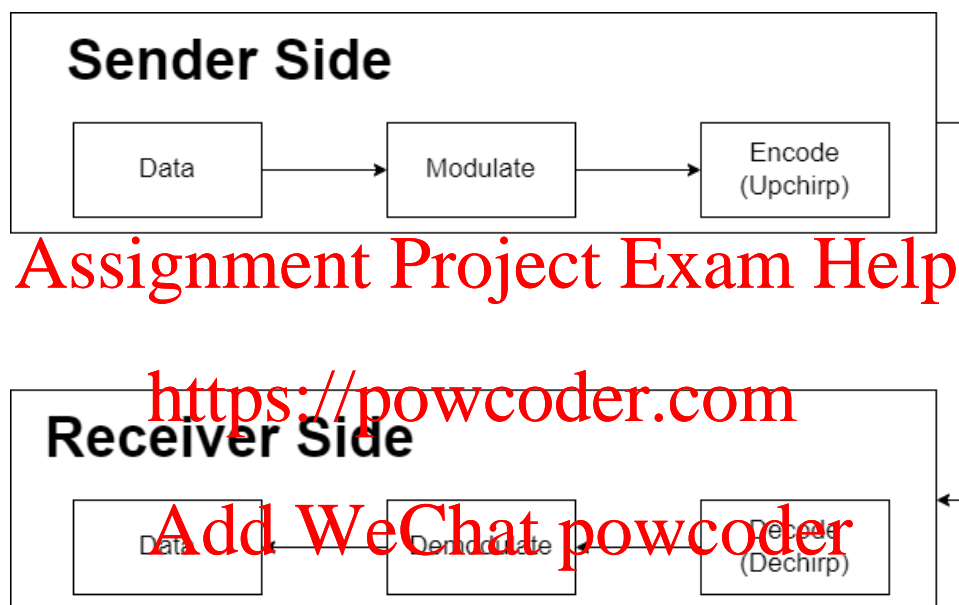

Figure 1: LoRa sender and receiver side process

Task 1: Discover the spectrogram of a LoRa packet

Firstly, install the LoRa simulator in MATHLAB: https://github.com/jkadbear/LoRaPHY
Then try to use the LoRa simulator to encode a message "4336" (you can refer to the example code "save_signal_to_file.m" in the git) and output the signal array as a file. Then generate the spectrogram of the signal (Fogure 2 shows an example of LoRA spectrogram). Include the spectrogram image in your report, while specifying the <u>preamble, Start Frame Delimiter (SFD), and data</u> part in the spectrogram.
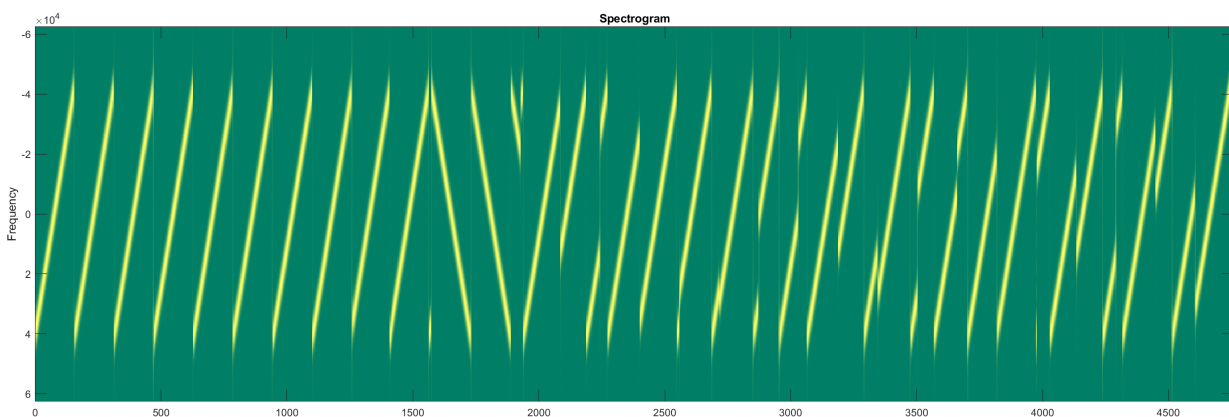
Figure 2: the spectrogram of the message "1234"

Task 2: Decode the LoRa signal

Load the signal from the file generated from Task1, and then convert the signal back to the original text message (you can refer to the example code "load_signal_from_file.m"). Include the output in your report.

Submit your report that includes the outcomes from the two tasks.

Penalty at the rate of 5% for each day late will be strictly enforced for all lab submissions. Allsubmissions will be subject to strict UNSW plagiarism rules.

End of Lab 7 – Hope you enjoyed this lab.

Assignment Project Exam Help

https://powcoder.com

Add WeChat powcoder