

## COMP4336/9336 Mobile Data Networking

### 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.

## Assignment Project Exam Help

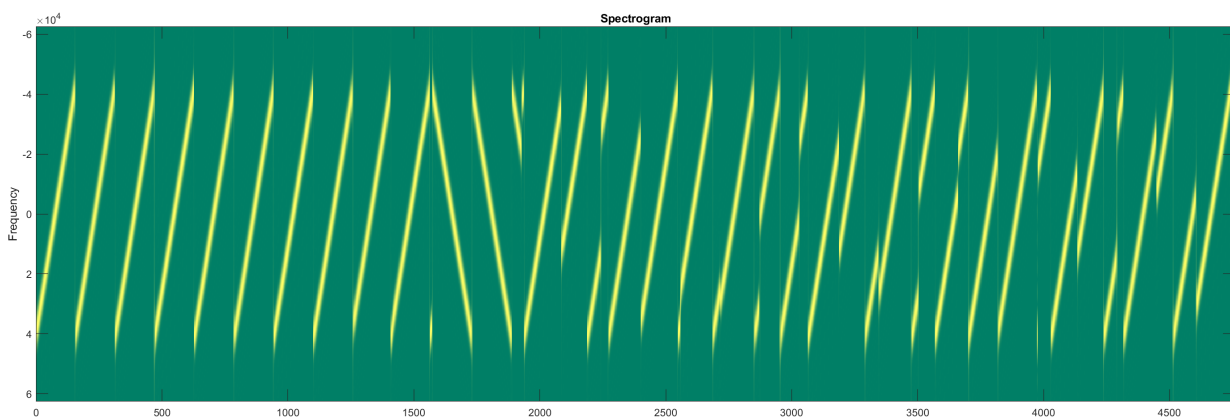
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*Figure 1: LoRa sender and receiver side process*

#### 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 preamble, Start Frame Delimiter (SFD), and data 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. All submissions will be subject to strict UNSW plagiarism rules.**

**End of Lab 7 – Hope you enjoyed this lab.**

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