**STM32 interaction with LORA**



*By: Johnson Domacasse (#4471709)*

*Iskren Zhechev(#)*

*To: Firas Ousta*

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# Introduction:

Lora was one of the discussed topics during the smart industry and IoT specialization in semester 4. This topic was experimented with by connecting two boards together and connecting to the things network. This was all done on an ESP32. The goal of this research is to do exactly what was done in the researches that were conducted but this time on a professional development board. Additionally, an extra step must be taken to further increase the credibility of this research. An example of this is connecting a sensor to the board and having the board send the received data to node-red.

All of the steps to get the results will be documented as this research can be used later on to further develop ones skills on these boards. This research was based on the first lora as well as the things network researches**[1][2].**

# Methods:

Additional materials were used/included to perform this research as best as possible. The location this research was conducted at was the Fontys University of Applied science R10 building located in Eindhoven. In order to connect to the things network, a gateway needs to be configured. There is an already configured gateway on site. There are tutorials online on how to set up and configure your own personal gateway **[3].** This research assumes that you have a gateway ready for use.

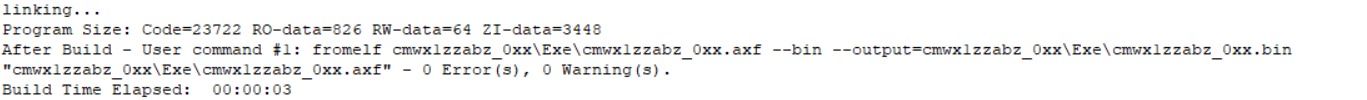
The following were used to conduct this research:

* 2x STM32 B-L072Z-LRWAN1
* 1x Lora WAN gateway
* 1x The things network account.
* DHT22 sensor (with added library)
* Keil IDE

## Lora Packets Interchanged:

This implementation serves as a proof of concept to confirm that our lora devices are working and are able to send and receive packets. The required packages and software is installed by following the documentation available**[4].** What is important here is that the we need to make An ST account, traverse to and download the LRWAN SDK and then unzip this in the repository located in the “STM32Cube” directory. This directory should be available to you once you installed the cube workbench. From there by following the available documentation and tutorials online, the project is opened in the Keil IDE, built and uploaded on both boards**[5]**. See figure 1 for a successful build and figure 2 for upload.

**\\**



***Figure 1:*** *Built successfully.*

A screenshot of a computer

Description automatically generated

***Figure 2****: Uploaded successfully.*

If done correctly, the RSSI value along with the role of the device can be seen in your serial monitor. See figure 3 in the results section.

## Connection to the things network:

## Connection with environmental sensor:

# Results:

**(what answer was found to the research question, what did the study fine)**

# Discussion:

**(What might the answer imply and why does it matter. How does it fit in with what other researchers found)**

**The cube IDE doesn’t work properly.**

# Bibliography:

[1] – lora assignment

[2] – lorawan assignment

[3] – how to setup Lora gateway

[4] – blue circle

[5] – yellow icon