Helpful resources:

- DHT2: https://www.adafruit.com/product/385
- FeatherS2: https://unexpectedmaker.com/shop/feathers2-esp32-s2
- Swarm GitHub: https://github.com/Swarm-Technologies/Getting-Started
- Code with Mu: https://codewith.mu/
- Swarm Developer Tools: https://swarm.space/developertools/

Installation Instructions:

1. Download a copy of "Example-DHT22" from the Swarm's Github repository

2. Remove the cover from the eval kit

3. Carefully remove the stacked FeatherS2 and OLED display from your evaluation kit

4. Carefully remove the OLED display that is stacked on top of the Feather S2

5. Wire up the DHT22 sensor using the following pinout:

   - Pin 1 → FeatherS2 3V pin (3.3V power)
   - Pin 2 → FeatherS2 D19/IO5 (10 kOhm pull-up resistor to 3.3V)
   - Pin 3 → N.C
   - Pin 4 → FeatherS2 GND

6. Connect your FeatherS2 to your computer and open the storage folder

7. Create a backup of all the files stored on the FeatherS2 in case you need to revert back to the previous project that was being used

8. Delete all of the files located on the FeatherS2

9. Copy the contents of the root folder from the "Example-DHT22" repository to the FeatherS2

    a. Please note that the "adafruit_dht.py" library included with this example slightly differs from the version of the library found online. The library file was updated to work with the FeatherS2. The only change that was made was to line 97 where "hi_sig = False" was changed to "hi_sig = True"

10. The code.py file is used to take a measurement of the DHT22 sensor approximately once every 30 minutes. The timestamp of the measurement, temperature (°C), and the humidity (%) is logged and formatted into a $TD message for transmission to the Hive. The frequency of DHT22 measurements can be changed in the code.py file in line 134. The code also uses the RGB LED in the eval kit to display the background RSSI range with the colors red, yellow, and green.

11. Unplug the FeatherS2 from your computer and insert it back into the eval kit without the OLED display

12. Power on your eval kit

13. Connect the FeatherS2 to your PC using the USB-C cable. Start a serial terminal session using the following settings:

Parameter	Value
Baud Rate	115200
Data Bits	8 Bits
Parity	None
Stop bits	1 Bit
Flow Control	None

Note: The FeatherS2's COM port can be found under the device manager.

14. You will see the device's RSSI values printed in the terminal session along with the Swarm Modem startup information. You will also see the datetime values once the Swarm Modem has acquired its date and time value

```
$RT RSSI=-67*2c


$TILE DATETIME*35


$RT RSSI=-70*2a
$DT 20210817141515,V*40
```

15. Unplug the USB-C cable from the FeatherS2

16. Mount the eval kit onto its tripod and place it in an area with a clear view of the sky. Monitor the RGB LED and ensure that it is that it is green

17. The eval kit will send a message to the Swarm Modem every 30 minutes (default) with the DHT22's temperature and humidity readings formatted as "Timestamp: 20210818193604, Temp: 23, Humidity: 53"

18. The messages queued on the Swarm Modem will transmit when a satellite is in range and the device is powered on. Please ensure that the device is placed in a location where it has a clear view of the sky and there are no objects placed close to the antenna. Satellite passes can be seen using Swarm's pass checker

19. Once a message has been transmitted, it will show on the Hive under the device ID for the Swarm Modem that is installed in the eval kit

20. The data can then be pulled from the Hive using Swarm's REST API