Integrating Cayenne on TTN

RS1xx Series

Application Note *v1.0*

1 Introduction

Cayenne is an IoT data processing system that can display transmitted data in visualized form with drag-and-drop configuration. You can configure a LoRaWAN network server (e.g. The Things Network) to receive data from end-devices and forward that data to an external application server in a format that the application server can understand. For this application note, our data was captured on an RS186 and then transmitted to the Cayenne server to present the data in icon or tabular format.

2 Requirement

The following hardware is required for this integration:

- RS1xx module with firmware version 4.0 or later
- Version 2.7 or later, of the Sentrius Mobile App
- LoRaWAN gateway (e.g. Laird Sentrius RG1xx)

3 Overview

This application note demonstrates that the RS1xx captures data and transmits it over a LoRa network to a Cayenne application server. As such, the gateway is set up as the packet forwarder pointing to TTN as the destination. Also, the TTN network server is configured to redirect data from end-devices to Cayenne MyDevice so that it can be displayed in widgets on a browser.

4 Test Setup

To configure TTN and Cayenne, complete the following:

1. Register for an account on cayenne https://cayenne.mydevices.com/cayenne/dashboard/start and verify your account.
2. Sign up for a TTN account and login on https://console.thethingsnetwork.org/
3. Set up your gateway, application and end-devices on TTN. See the Configuration sections of Laird's TTN and NodeRED Setup Guide.
4. Add a new device on Cayenne by navigating to *LoRa > The Things Network > Cayenne LPP*. Paste the dev EUI here from TTN and add it.
5. On TTN, navigate to *Application > Integrations* and click Add Integration.

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6. Select Cayenne, then enter the process ID you get from the Cayenne page URL after the /lora/ part of the URL. For example, if the URL is:
   https://cayenne.mydevices.com/cayenne/dashboard/lora/3e795080-xxxx-xxxx-xxxx-51a105d3afc2
   Enter: 3e795080-xxxx-xxxx-xxxx-51a105d3afc2

To configure the RS1xx to transmit data to the Cayenne Application server, complete the following steps:

1. Ensure Bluetooth is enabled on your mobile device and open the Sentrius Mobile app.
2. Press the Bluetooth button on the RS1xx so that it starts advertising (the blue LED will start flashing). The RS1xx will become visible (Figure 1).
3. Select the correct RS1xx from the list of Bluetooth devices. If there are multiple devices then match the correct device with the Device EUI printed on the sticker on the reverse of the sensor) and the device will connect to the sensor (Figure 2).

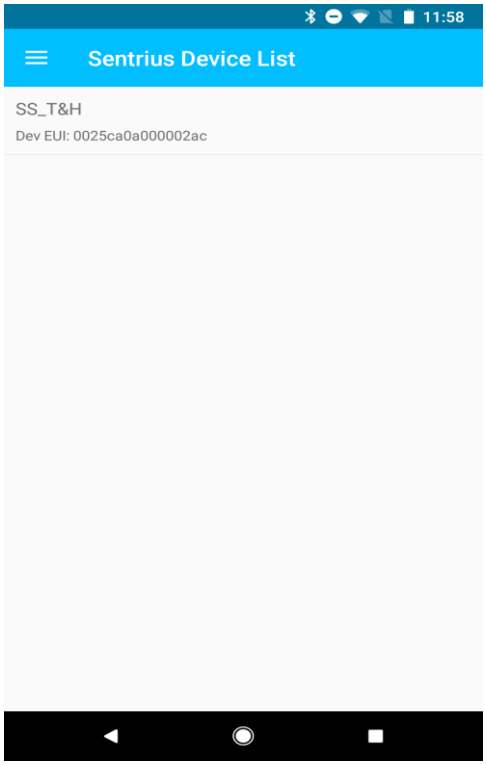

Figure 1: Showing available sensors

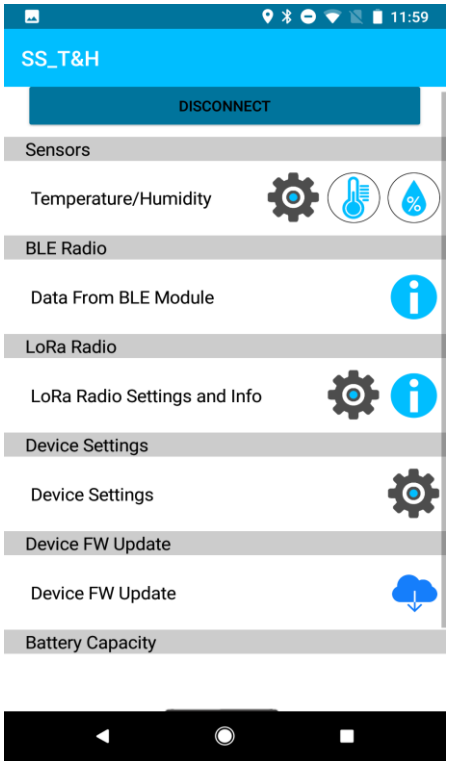

Figure 2: Connected to the sensor

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7. Select the configuration wheel next to **LoRa Radio Settings and Info** to see the available LoRa configuration options (Figure 3).

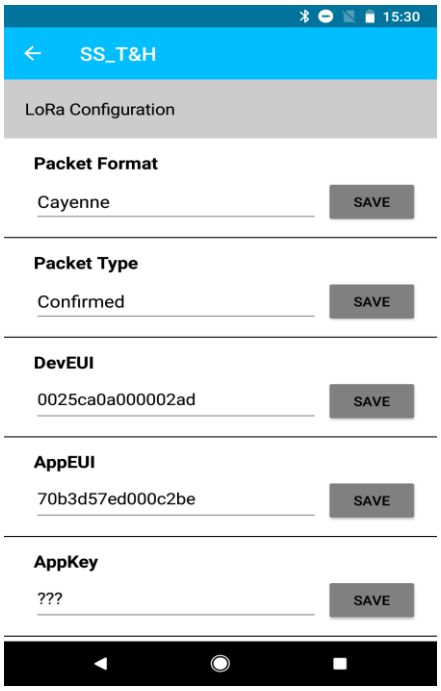

Figure 3: Listing the LoRa Configuration

8. Tap the Packet Format option and select **Cayenne** from the list (Figure 4), then tap Packet Type and select Confirmed or Unconfirmed as desired from the list (Figure 5).

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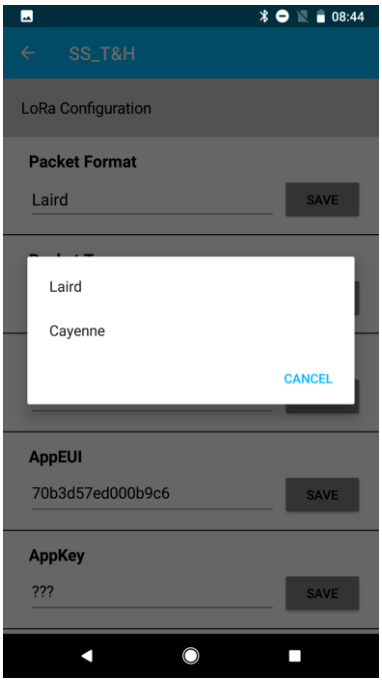


Figure 4: Selecting Cayenne

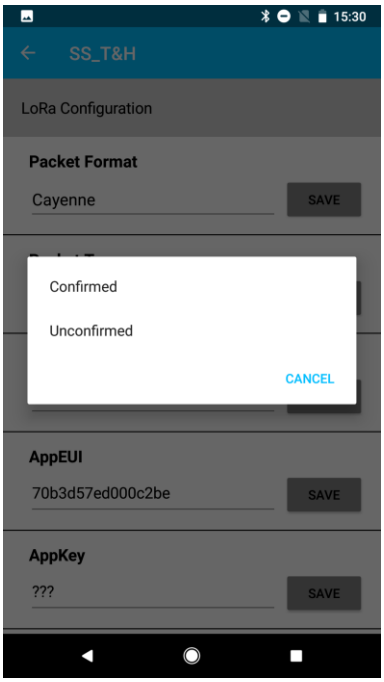
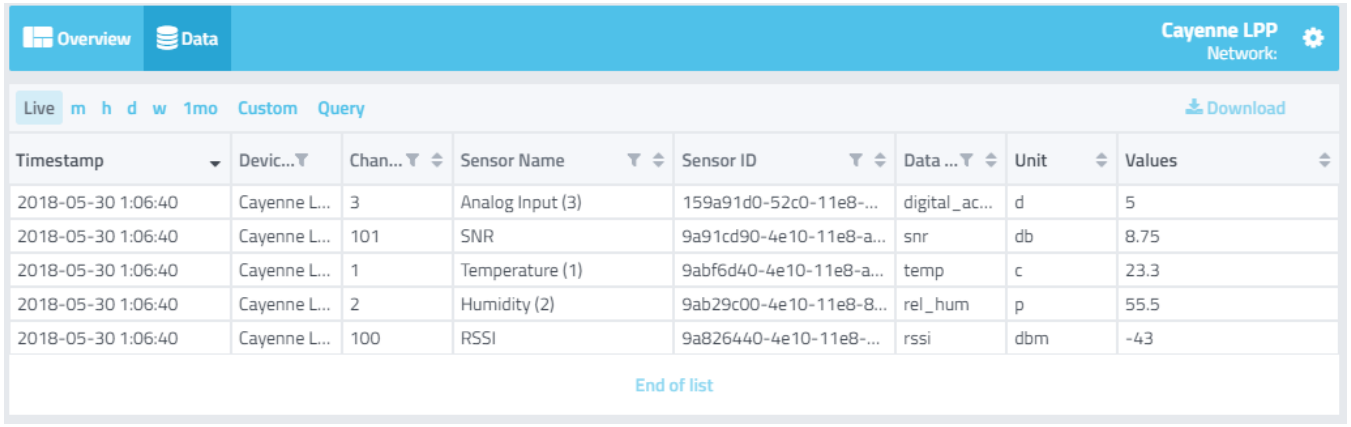


Figure 5: Selecting Confirmed or Unconfirmed

9. Return to the Cayenne dashboard. You can view the data in a tabular format on the Data tab, or as a series of icon boxes in the Overview tab.



Timestamp	Devic...	Chan...	Sensor Name	Sensor ID	Data ...	Unit	Values
2018-05-30 1:06:40	Cayenne L...	3	Analog Input (3)	159a91d0-52c0-11e8-...	digital_ac...	d	5
2018-05-30 1:06:40	Cayenne L...	101	SNR	9a91cd90-4e10-11e8-a...	snr	db	8.75
2018-05-30 1:06:40	Cayenne L...	1	Temperature (1)	9abf6d40-4e10-11e8-a...	temp	c	23.3
2018-05-30 1:06:40	Cayenne L...	2	Humidity (2)	9ab29c00-4e10-11e8-8...	rel_hum	p	55.5
2018-05-30 1:06:40	Cayenne L...	100	RSSI	9a826440-4e10-11e8-...	rssi	dbm	-43

End of list

Figure 6: Data tab

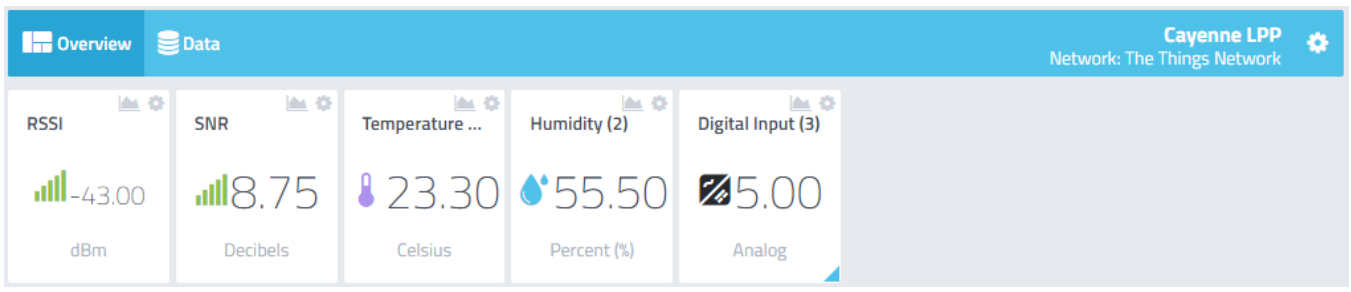


Figure 7: Overview tab

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5 Resources

- Cayenne Payload Structure – https://mydevices.com/cayenne/docs/lora/#lora-cayenne-low-power-payload
- RS1xx Setup Guides – https://www.lairdtech.com/products/rs1xx-lora-sensors#documentation

6 Revision History

Version	Date	Notes	Approver
1.0	22 Oct 2018	Initial Release	Jonathan Kaye

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