

Daviteq Sigfox Sensor on SDR Dongle Gateway

1. Download the Sigfox Network Emulator.

You can download **SNE** for the software and drivers from the link: <https://support.sigfox.com/products#sdr>

Software and drivers

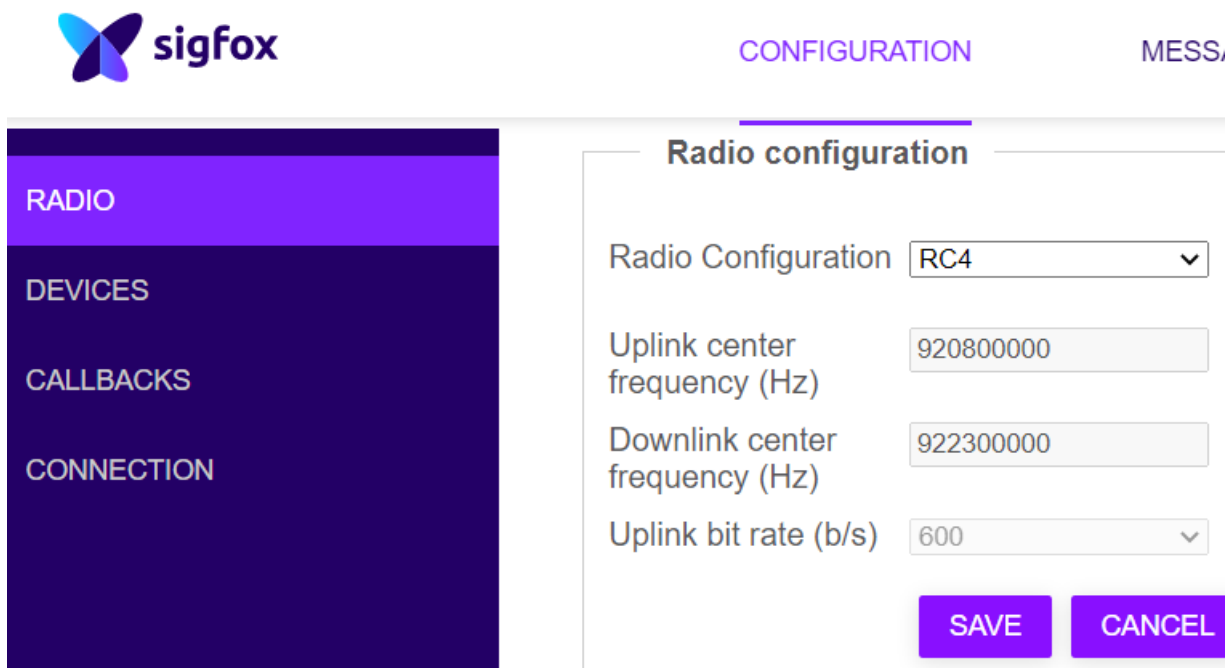
- ↓ **SNE** Sigfox Network Emulator for Windows (Win 7, Win 10)
- ↓ **SNE** Sigfox Network Emulator for Ubuntu Linux (16.04)
- ↓ **RSA** Radio Signal Analyzer (bootable iso)

2. Register the device on the Sigfox Network Emulator of your local webpage.

Click **CONFIGURATION > RADIO**.

From the left side of the local web page, select **RADIO** for your Radio Configuration.

For example, choose **RC4** from the Radio Configuration's dropdown menu if you want to connect to the device in RC4.



The screenshot shows the Sigfox Network Emulator web interface. On the left is a dark blue sidebar with the Sigfox logo at the top and four menu items: RADIO, DEVICES, CALLBACKS, and CONNECTION. The RADIO menu item is highlighted in a lighter blue. The main content area has a light blue header with 'CONFIGURATION' and 'MESSAGING' tabs, with 'CONFIGURATION' being the active tab. Below the header is a 'Radio configuration' section. It contains four fields: 'Radio Configuration' (a dropdown menu set to 'RC4'), 'Uplink center frequency (Hz)' (a text input field with '920800000'), 'Downlink center frequency (Hz)' (a text input field with '922300000'), and 'Uplink bit rate (b/s)' (a dropdown menu set to '600'). At the bottom right of this section are two buttons: 'SAVE' and 'CANCEL'.

After completing your registration page, please click **SAVE**.

Next, click **DEVICES**.

✓ Note: You can find the value for **Identifier (hex!)** which is the **ID** located on the label of the sensor.

For example, Device 1 has the digits of ID as **02A30DAD**.

RADIO

DEVICES

CALLBACKS

CONNECTION

Devices configuration

- Device 1 Identifier (hex!)

- Device 2 Identifier (hex!)

- Device 3 Identifier (hex!)

- Device 4 Identifier (hex!)

- Device 5 Identifier (hex!)

After completing your registration page, please click **SAVE**.

3. Manage your view for the payload of the device.


Click **MESSAGES**.

| Device ID | Time | Sequence number |
|-----------|-------------------------|-----------------|
| 2A30D8A | Jun 17, 2022 1:46:23 PM | 319 |

- The device has 2 modes of operation which are **Configuration mode** and **Power mode**. In order to be able to send data during the power supply provided, the power source should last after 60 seconds to enter the power mode.

1. **Configuration mode** allows you to read or write the parameter's value which is the property of R/W of your device such as *CURRENT_CONFIGURATION*, *RADIO_CONFIG*, *SERVER_CONFIG*, etc.
2. **Power mode** allows your device to transmit uplink or receive downlink data. This is when the sensor is ready to communicate with the Sigfox network.

- If your device operates with a period of time to send data, the device will send uplink data in every cycle.
- If your device sends the uplink data intentionally, you can draw the Magnet key to the Contact point as below.

 The device provides means to force an uplink transmission in one time.



In both cases, the data packet will be sent to your SDR Dongle gateway. Measuring data is formed in several specific payloads.

Sigfox Network Emulator

CONFIGURATION
MESSAGES
ABOUT

| Device ID | Time | Sequence number | Data / Decoding |
|-----------|--------------------------|-----------------|--------------------------|
| 2A30D8C | Jun 20, 2022 10:19:36 AM | 257 | 50b0005a007c5a7c06b306d0 |
| 2A30D8C | Jun 20, 2022 10:17:36 AM | 256 | 020241a00000008b7900 |

Sigfox Frame-2022.06.08

Sensor: Sigfox People Counter IMPORT EXPORT

Uplink Downlink

| | UPLINK FRAME | EVENT_ID | HW_ERROR | ALARM | BATTERY_LEVEL | NRC_PEOPLE_IN | NRC_PEOPLE_OUT | RC_PEOPLE_IN | RC_PEOPLE_OUT | DISTANCE_FRONT_ZONE |
|-----|----------------------|------------|----------|-------|---------------|---------------|----------------|--------------|---------------|---------------------|
| ▶ 1 | 020241a00000008b7900 | 0 START_UP | - | - | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - | - | - | - | - |
| * 3 | | | | | | | | | | |

For the meaning of every uplink message or downlink data, please refer to the next section in the hint below:

[Use of the Daviteq SigfoxFrame software](#)

4. Send Downlink to the device

As your device communicates with the SDR Dongle, you can prepare downlink data in advance to meet the schedule right after one of the uplink frame transmissions from the device on the Sigfox network.

The downlink data is added to the device downlink queue, downlinks may be sent only after an uplink from the device.

1. Click **CONFIGURATION** > **CALLBACKS**, select **DIRECT** in Downlink mode field

RADIO
DEVICES
CALLBACKS

Downlink data

Downlink mode

DIRECT

DIRECT

CALLBACK

NO DOWNLINK

Downlink data in hexadecimal

- If you plan to create the downlink data for your device, please follow the instruction below.

| Parameter | PRM_ADDRESS | PRM_LENGTH | PRM_FORMAT | PRM_VALUE | DOWNLINK_TYPE | Full Downlink |
|--------------------|-------------|------------|------------|---|---------------|---------------|
| (bytes) | 1 | 1 | | 4 | 2 | 8 |
| DISTANCE_THRESHOLD | 0x32 | 0x02 | unit16 | <i>Example:</i> 10 ==> 0x000A0000 | 0x0005 | |

For the Sigfox People Counter sensor, a parameter "DISTANCE_THRESHOLD" that supports the downlink property should only calculate the value according to that PRM_VALUE format. The **Example** of a Decimal number "10" and a Hex number "000A0000" are shown, Full Downlink = 3202000A00000005. This indicates the value of the DISTANCE_THRESHOLD parameter is set to 10 if you write this downlink data into the device.

For example, your newly-calculated DISTANCE_THRESHOLD's value is 1600, Full Downlink = 3202064000000005.

- For ease of calculation, you should identify a Decimal number, then convert it to a Hex number.

- Enter your desired downlink data, **3202064000000005**.

Downlink data

Downlink mode

DIRECT

Response must include exactly 8 hexadecimal bytes (ex: {time}0102{rssi}) including the following variables : {time} on 4 bytes, {tapid} on 4 bytes, {rssi} on 2 bytes











Downlink data in hexadecimal

3202064000000005

After completing your setting, please click **SAVE**.

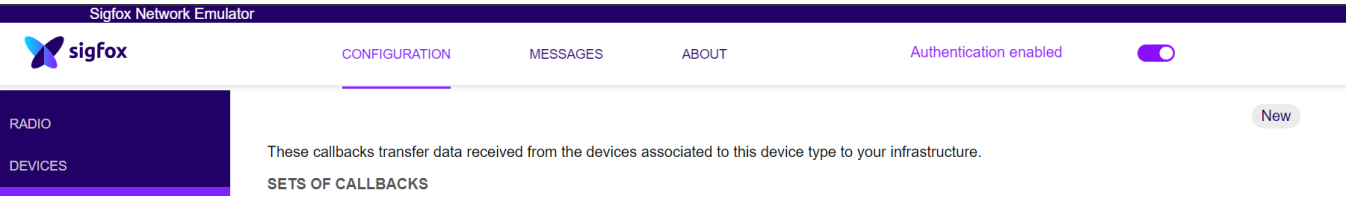
- Enable your SET OF CALLBACKS.

SETS OF CALLBACKS

| Downlink | Enable | Channel | Subtype | Batch | Information | Edit | Delete |
|----------|-------------------------------------|---|---------|--------------------------|--|---|---|
| | <input checked="" type="checkbox"/> |  | UPLINK | <input type="checkbox"/> | http://192.168.10.177:1880/sigfox/uplink-message | | |
| | <input checked="" type="checkbox"/> |  | ACK | <input type="checkbox"/> | http://localhost:8085/staticv234/index.html |  |  |
| | <input checked="" type="checkbox"/> |  | STATUS | <input type="checkbox"/> | http://localhost:8085/staticv234/index.html | | |
| | <input type="checkbox"/> |  | UPLINK | <input type="checkbox"/> | | | |
| | <input type="checkbox"/> |  | ACK | <input type="checkbox"/> | http://localhost:8085/staticv234/index.html |  |  |
| | <input type="checkbox"/> |  | STATUS | <input type="checkbox"/> | http://localhost:8085/staticv234/index.html | | |

5. Configure Callbacks to forward payloads to Microsoft Teams

1. Click **CONFIGURATION > CALLBACKS > New**.



2. Navigate to the dashboard of **Callbacks - DATA**.

3. Select **Type > UPLINK**.

4. Select **Channel > URL**.

5. Select **Use HTTP Method > POST**.

Callbacks - DATA

Type

DATA

UPLINK

Channel

URL

Send duplicate

☐

Custom payload:

Url pattern

URL syntax: **http://host/path?id={device}&time={time}&key1={var1}&key2={var2}...**
Available variables: **device,time,duplicate,snr,station,data,avgSnr,rssi,seqNumber,LQI**
Custom variables:

Use HTTP Method

POST

POST

PUT

GET

Headers

header

value

ADD

Content type

Body

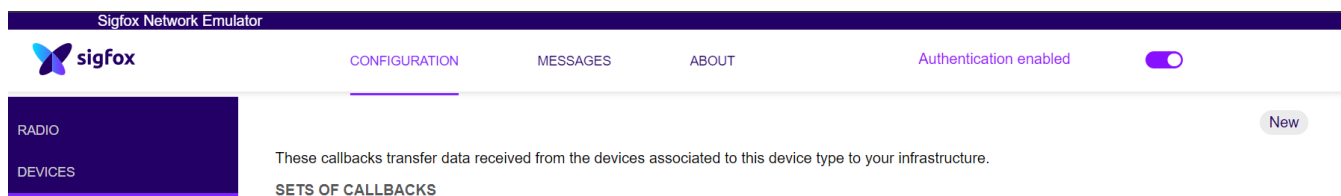
6. Fill out the form according to the following table:

| Field | Input field |
|--------------|--|
| URL pattern | http://192.168.10.177:1880/sigfox/uplink-message |
| Header | Authorization |
| value | BasicYXBwLWtleS05MWE2Y2FjMi03YzFhLTQ2Y2U0YUJhNS1jNWJjNmU2N2U |
| Content type | application/json |

| | |
|------|---|
| Body | <pre>{ "device": "{device}", "time": "{time}", "seqNumber": "{seqNumber}", "device": "{device}", "station": "{station}", "rssi": "{rssi}", "snr": "{snr}", "data": "{data}" }</pre> |
|------|---|

6. Configure Callbacks to forward payload to Daviteq Globiots platform

1. Click **CONFIGURATION > CALLBACKS > New**.



2. At the section **Downlink data**, select **CALLBACK** at **Downlink mode** field

3. Navigate to the dashboard of **Callbacks - DATA**.

4. Select **Type > BIDIR**

4. Select **Channel > URL**.

5. Select **Use HTTP Method > POST**.

6. Fill out the form according to the following table:

| Field | Input field |
|--------------|---|
| URL pattern | https://resources.globiots.com/rest/api/v1/sigfox-service/process-messages |
| Header | Authorization |
| value | Copy this value from Globiots: Login Globiots, click the Sigfox sensor name, click tab Sigfox Network Server Config, copy Header value and paste to value field on Callbacks-DATA section |
| Content type | application/json |
| Body | <pre>{ "device": "{device}", "time": "{time}", "seqNumber": "{seqNumber}", "device": "{device}", "station": "{station}", "rssi": "{rssi}", "snr": "{snr}", "data": "{data}" }</pre> |

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★ Created Thu, Jun 16, 2022 8:45 PM by [Trần Việt Hoàng](#)

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