



# Bravo Evaluation Board Getting started with OneEdge

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**TELIT**  
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## APPLICABILITY TABLE

### PRODUCTS

■ ■ BRAVO EVALUATION KIT

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# 1. INTRODUCTION

## 1.1. Scope

Scope of this document is to provide a quick getting start guide for Bravo Evaluation Kit and OneEdge.

## 1.1. Overview

With Telit Bravo board evaluation kit and OneEdge you will be able to develop a full IoT solution consisting of: data delivery for telemetry applications, triggers for alerting and monitoring, commands for remote control of the device.

In addition to that, OneEdge features a fully-fledged Data management solution enabling developers to onboard new devices, control their operational status and connectivity performances, decommission faulty devices and manage software upgrades.

## 1.2. Audience

This document is intended for Telit Bravo Kit users.

## 1.3. Contact Information, Support

For general contact, technical support services, technical questions and report documentation errors contact Telit Technical Support at:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com

Alternatively, use:

<http://www.telit.com/support>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

## 1.4. Text Conventions

---



Danger – This information **MUST** be followed or catastrophic equipment failure or bodily injury may occur.

---

---



Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

---

---



Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

---

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.



## 1.5. Related Documents

- [1] Bravo Board resource page <https://www.telit.com/developer-zone/telit-bravo-evaluation-kit/>
- [2] Bravo EVK HW User Guide, 1VV0301646
- [3] Bravo EVK Quick Start Guide 1VV0301650
- [4] ME910C1 HW User Guide, 1VV0301351
- [5] ME910C1 Quick Start Guide, 80529NT11661A
- [6] ME910C1 AT Reference Guide 80529ST10815A
- [7] OneEdge getting started Guide 1VV0301585
- [8] xE910 Global Form Factor Application Note, 80000NT10060A
- [9] OneEdge for Bravo portal <https://oneedge.devicewise.net/app/login>

## 2. PREREQUISITES

### 2.1. Bravo Board

Make sure you have a Bravo Board evaluation kit. For full information please browse <https://www.telit.com/developer-zone/telit-bravo-evaluation-kit/> and request an evaluation kit.



Bravo Board Evaluation Kit comes with different manuals and user guides to help developers to get familiar with the board and build a full IoT solution.

**It is highly recommended to read the Bravo Quick Start Guide first.**

---

### 2.2. A browser

To connect your Bravo evaluation kit to OneEdge you will need a browser.

### 2.3. A host PC

Any host PC with a serial terminal tool (i.e. Tera Term) and UART/USB connection to the module. Telit AT Controller (TATC) is recommended, please download it here [1]

### 2.4. Bravo documentation

The board comes with various documents and contains a 3.7V linear power supply. It can be powered:

- Through the native USB port, using the supplied USB cable
- By connecting an external 5V DC power supply to the coaxial connector marked "+5V".



Powering the board through the USB port relies on the host device (eg PC or USB hub) capability to provide at least 500 mA.

Using 2G connectivity requires 5V DC power supply, see below.

**It is highly recommended to use either an external DC power supply or a battery pack.**

---

Please check carefully that the external power supply:

- Provides **5V DC** (while not exceeding 7V at most)
- Can provide **at least 600 mA** continuously

Or connect a 3.7 V battery pack to the connector marked "Li-Po 3.7V".



Please read carefully the battery pack and charging requirements described in the Bravo EVK HW Manual.

---

### 3. CREATE YOUR ACCOUNT ON ONEEDGE

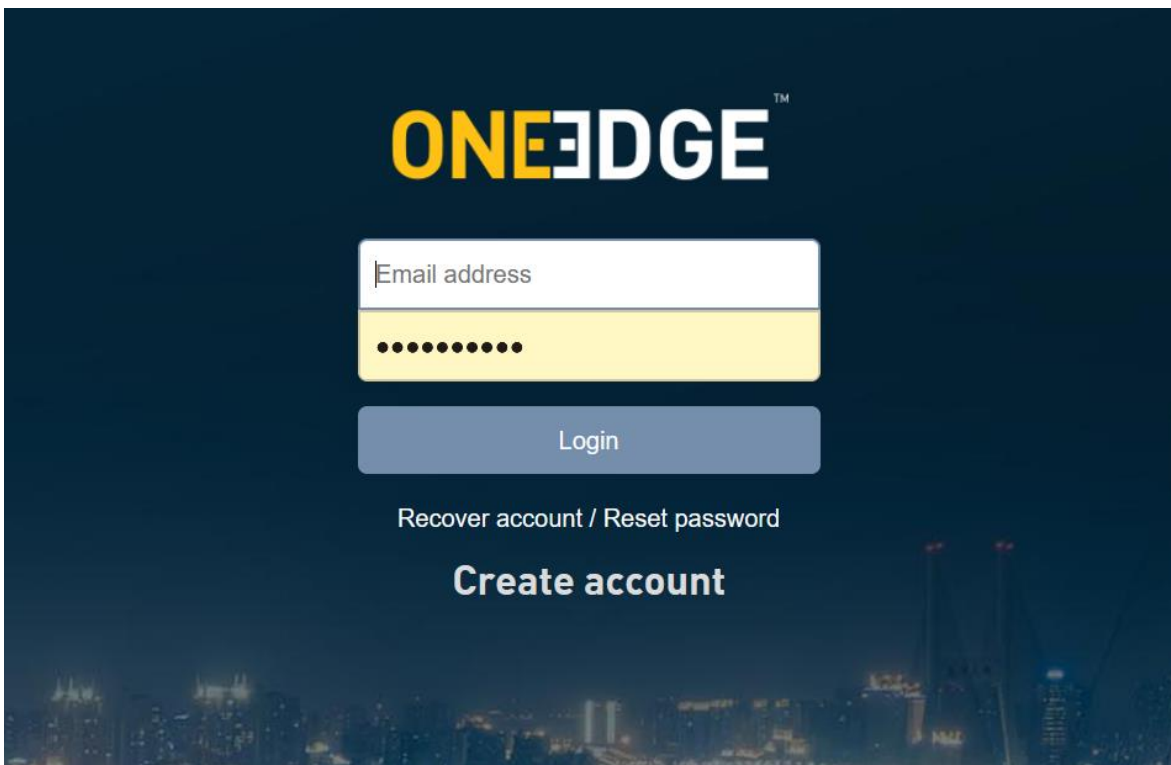
---



Warning – OneEdge for Bravo is a custom version of OneEdge with all services available. Regular OneEdge accounts are not suitable for the following Bravo onboarding process: please create a new account.

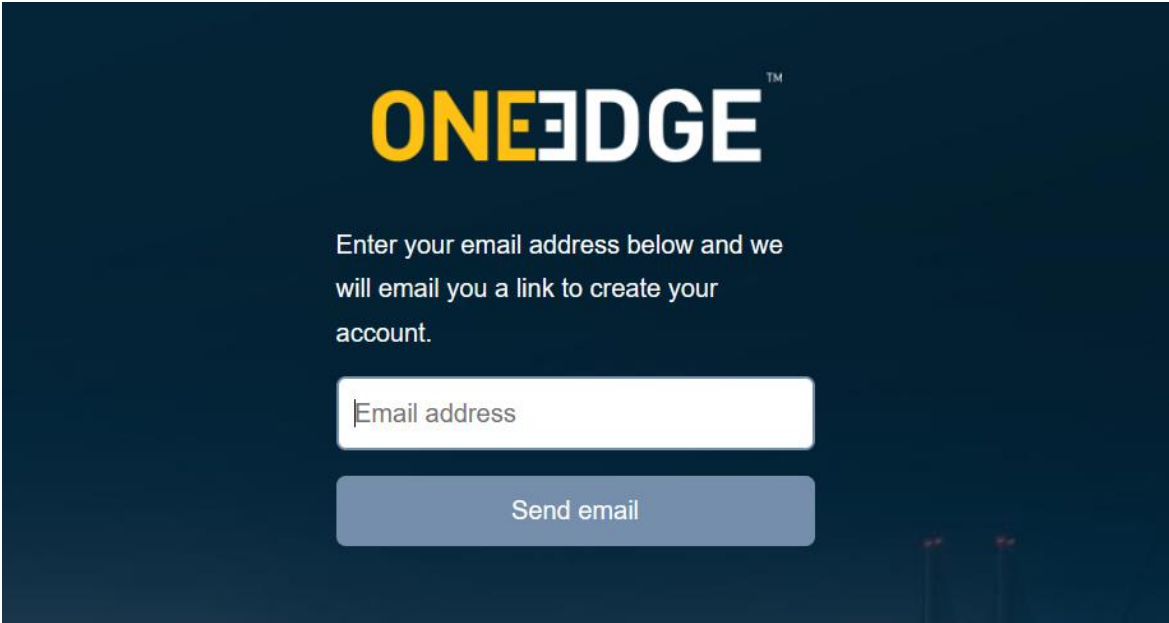
If you already have a Bravo Evaluation kit onboarded and, therefore, a OneEdge for Bravo account, please log in with your existing account and proceed to §4 to onboard your new Bravo Board.

---



#### 3.1. Register your account

Go to <https://oneedge.devicewise.net/app/login>



**ONEEDGE™**

Enter your email address below and we will email you a link to create your account.

Click on “Create Account” and look for an activation link in your email folder

Complete your Telit IoT Portal account registration >



**deviceWISE IoT Platform** <noreply@devicewise.com>



Thank you for requesting a new Telit IoT Portal user account.  
 To complete the registration process, please click on [this link](#) or copy and paste this URL [<https://oneedge.devicewise.net/app/signup/>] into your browser.  
 Upon submitting the completed registration form, you will receive a welcome email and be ready to start creating your own solutions for m2m and the Internet of Things.

# ONEEDGE™

Account creation for

## Password rules

The password must be at least 8 characters long.

The password must contain at least:

one alpha character (a-z and A-Z)

one numeric character (0-9)

one special character from this set: ` ! @ \$ % ^ & \* ( ) - \_ = + [ ] ; : ' " , < . > / ?

The password must not:

contain spaces

begin with an exclamation ( ! ) or a question mark ( ? )

contain your login ID

contain your registered email address

The password cannot contain repeating character strings of 3 or more identical characters.

E.g. "1111" or "aaa".

The sequence of the first 3 characters cannot be in your login ID.

Passwords are treated as case sensitive.

**Password \***

**Password \***

**Password verification \***

**First name \***

**Last name \***

**Timezone \***

All fields marked with asterisk are mandatory. Please make sure all fields are correctly filled.



Warning – Organization names may be duplicated. Organization keys are unique, please choose a different key value.

That organization key may not be used. Please try again.



Figure 1 - The organization key is reserved or in use, please create a new one

#### 3.1.1. Accept privacy policy and Terms and Conditions

ONEEDGE™

Download PDF Download text file

These Terms of Service (the “Terms”) apply to and govern the use of Telit’s IOT Portal (the “Service”).

1. Your relationship with Telit

These Terms are an agreement between you and Telit.

2. Accepting the Terms

Please read these Terms carefully as you will be deemed to have agreed to these Terms upon the earlier of clicking the “I Agree” button or accessing or using the Service. If you do not agree to these Terms, do not click “I Agree” and do not access or use the Service.

3. Applicability of the Terms

These Terms will apply even if you have signed another agreement with Telit which would otherwise limit the applicability of these Terms to you through an “Entire Agreement” or similar clause.

References to “you” in these Terms include the legal entity on whose behalf you are acting (the

### 3.2. Setup the thing definition and device profiles

Thing definition and device profiles define which capabilities are provided by the device.

Specifically, the device profile provides all the information to bind the LwM2M object to the real properties, events and commands - the device data model.

#### 3.2.1. Download the thing definition and device profile files

Please visit [1] and download the zip file containing OneEdge Demo resources, named Bravo Sample Apps 1.0.3.

Into the archive you can find all the required JSON files for the available demos:

bravo\_sample\_apps\_1.0.3\BRAVO\_Environment\_BSEC\_Demo\json\bravo\_Environmenta  
IDemo\_device\_profile.json

bravo\_sample\_apps\_1.0.3\BRAVO\_Environment\_BSEC\_Demo\json\bravo\_Environmenta  
IDemo\_thing\_def.json

bravo\_sample\_apps\_1.0.3\BRAVO\_Rotation\_Demo\json\bravo\_3D-RotationDemo\_device\_profile.json

bravo\_sample\_apps\_1.0.3\BRAVO\_Rotation\_Demo\json\bravo\_3D-RotationDemo\_thing\_def.json

bravo\_sample\_apps\_1.0.3\BRAVO\_Tampering\_Demo\json\bravo\_TamperDemo\_thing\_def.json

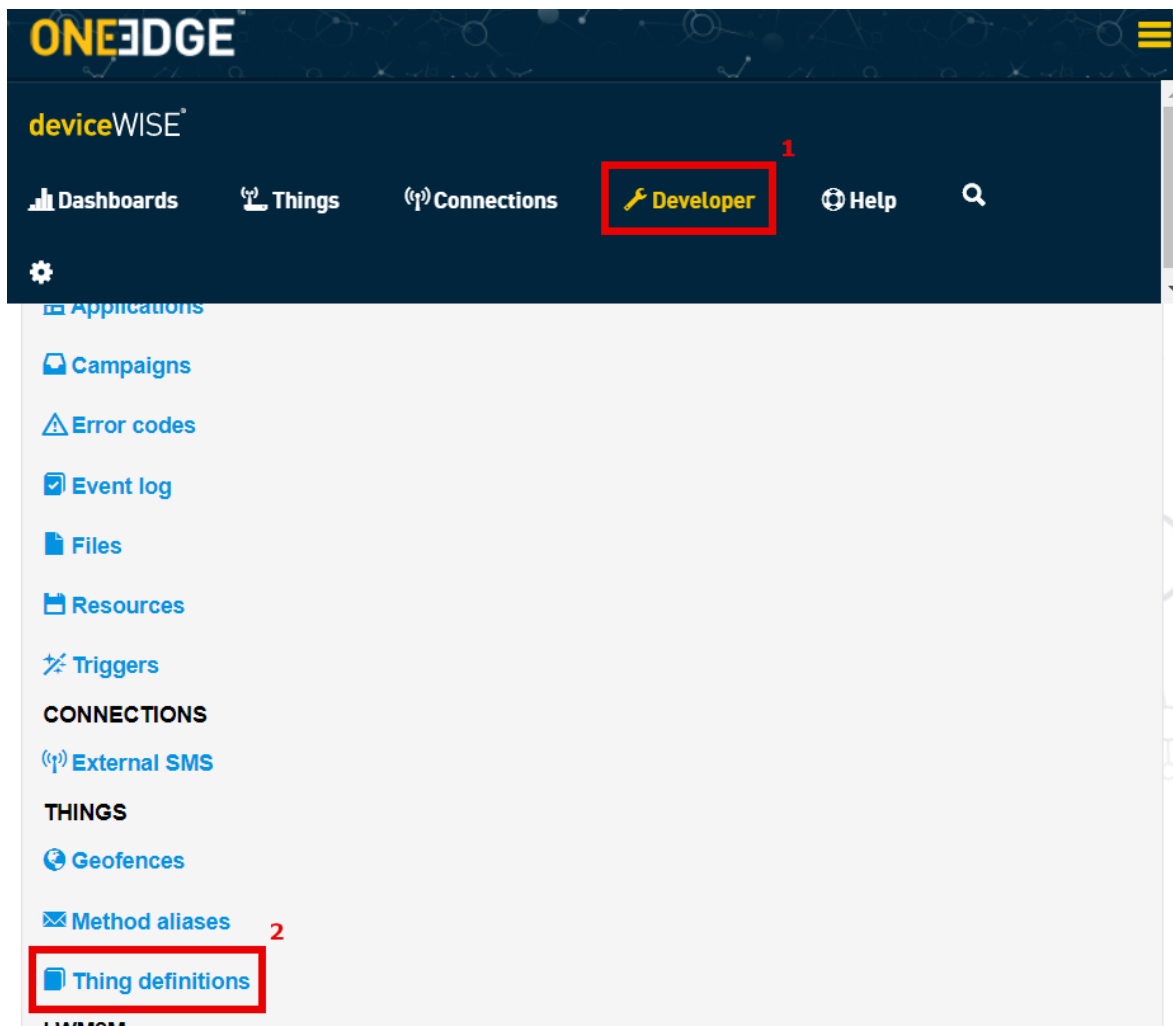
bravo\_sample\_apps\_1.0.3\BRAVO\_Tampering\_Demo\json\bravo\_TamperDemo\_device\_profile.json

bravo\_sample\_apps\_1.0.3\BRAVO\_Tampering\_Demo\json\bravo\_TamperDemo\_triggers.json

### 3.2.2. Import the Thing definitions

Select the three lines menu icon (hamburger menu), choose “Developer” then, under “Things” section, “Things definition”.

Select “Import”



ONEEDGE

Developer ▶ Thing definitions

## Thing definitions

20 ▼

1 thing definition found.

| Name ↓ | Default |
|--------|---------|
| Key    | default |
|        |         |

20 ▲

1 thing definition found.

ONEEDGE Dashboards Things Connections Developer

Developer ▶ Thing definitions ▶ Thing definitions import

## Thing definitions import

Attach File

Import Cancel

Click “Attach file” and select the “bravo\_EnvironmentalDemo\_thing\_def.json”

ONEEDGE Dashboards Things Connections Developer Help

Developer ▶ Thing definitions

1 of 1 thing definitions imported.

## Thing definitions

20 ▼ 2 thing definitions found.

|  | Name ↓                                       | Key                          |  |
|--|--|------------------------------|--|
|  | Bravo Board - Environmental thing definition | bravo_environmental_thingdef |  |



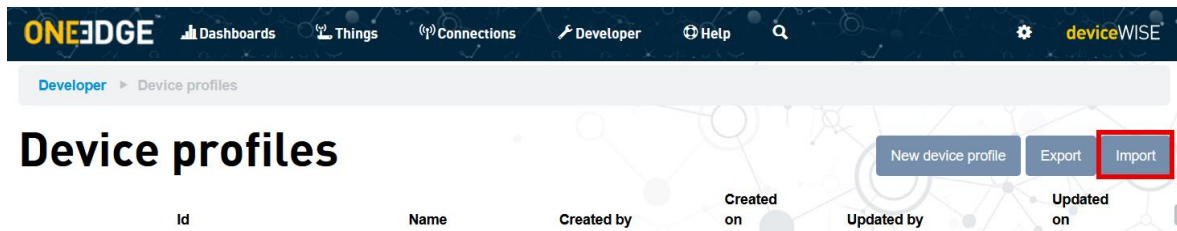
Note – Please make sure that the JSON file imported on the thing definition is reporting “thing definition” and not “device profile” in the name.



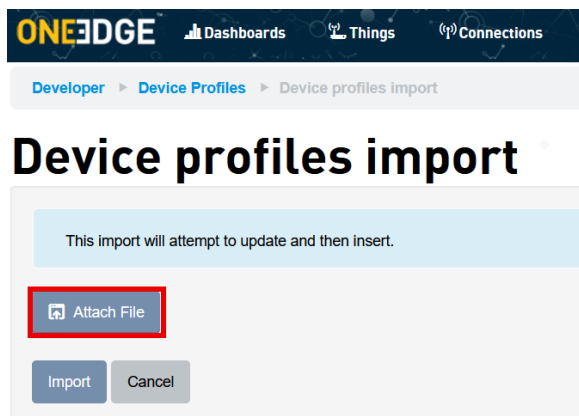
Import all the other \*\_thing\_def.json files for the other apps repeating the steps above.

### 3.2.3. Import the Device profiles

Go back on the “Developer” section and select “Device Profiles”.



Here, click on “Import” in the top right corner and upload the “bravo\_EnvironmentalDemo\_device\_profile.json”



After the import procedure, a new device profile populates the list






ONEEDGE Dashboards Things Connections Developer Help

Developer ▶ Device profiles

1 of 1 device profile(s) imported.

## Device profiles

New device profile Export

|   | Id | Name   | Created by | Created on                | Updated by |
|---|----|--|------------|---------------------------|------------|
|    |    | Device Management Profile - Basic (Global)           |            | 2020-08-05 15:38:45 +0000 |            |
|    |    | Device Management Profile - Troubleshooting (Global) |            |                           |            |
|    |    | Minimal FOTA Profile (Global)                        |            |                           |            |
|   |    | Bravo Board - Environmental device profile           |            | 2020-08-05 15:38:45 +0000 |            |



Note – Make sure that the new item contains “device profile” and not “thing definition”

After importing the device profile, click on the “edit” icon (marked in green in the above screen) and make sure that the device profile objects are properly registered. See the message in the screen below.

ONEEDGE Dashboards Things Connections Developer

Developer ▶ Device profiles ▶ Bravo Board - Environmental device profile ▶

Device profile contains unregistered objects. [26251] [Click here to register.](#)

## Editing Bravo Board - Enviro

### 3.2.4. Import the object definitions (XML)

Go back on the “Developer” section and select “object registry”

**Object registry**

| Name           | Object ID | Description  |
|----------------|-----------|--|
| LWM2M Security | 0         | This LwM2M Object provides the keying material of a LwM2M Client appropriate to access a specified LwM2M Server. One Object Instance SHOULD address a LwM2M Bootstrap-Server. These LwM2M Object Resources MUST only be changed by a LwM2M |

[New object](#)

Click on New object

Open the object\_26251.xml file and paste the content into the text box as shown below

## New object

**Paste your LWM2M object definition here:\***

```
<!--
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restriction,
including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and
to do so, subject to the following conditions:
The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
USE OR OTHER DEALINGS IN THE SOFTWARE.
-->
<?xml version="1.0" encoding="utf-8"?>
<LWM2M xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="http://www.openmobilealliance.org/
<Object ObjectType="MODefinition">
  <Name>Bravo Board Environmental data</Name>
  <Description1>Environmental data coming from Bravo Board Rev C and above</Description1>
  <ObjectID>26251</ObjectID>
</Object>
```

[Add](#) [Cancel](#)

**Object registry**

Object registered.

## Object registry

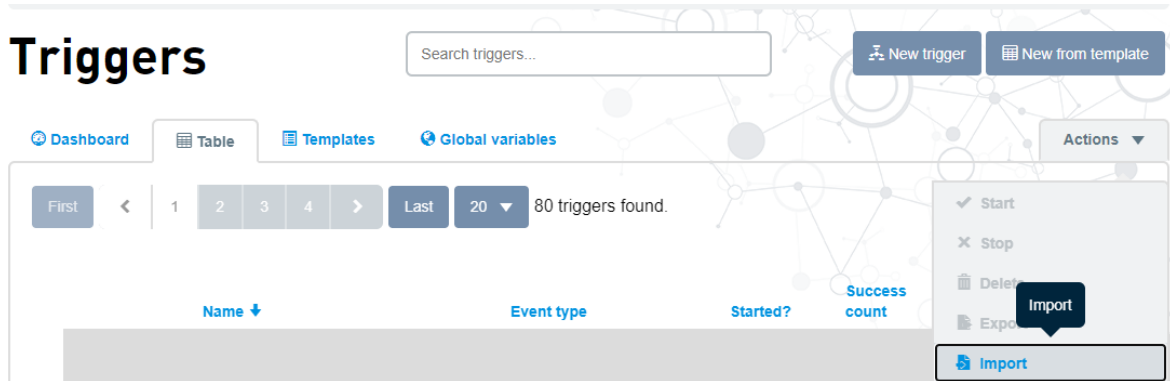
Object

After submitting the code, make sure that the top page is showing the "object registered" confirmation.

Import all the other \*\_device\_profile.json files and related object XML files for the other apps repeating the steps above.

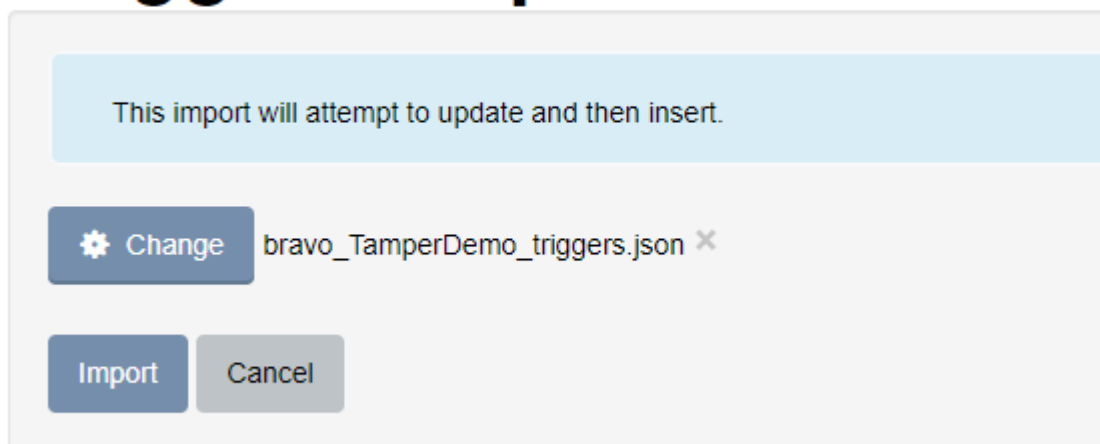
### 3.2.5. Import the Triggers definition

Go back on the “Developer” section and select “Triggers”, then on the Actions Button on the right, choose “Import”



Click “Attach file” and select the “bravo\_TamperDemo\_triggers.json”, then press Import

## Triggers import



In the Triggers Table, identify the newly created trigger and press the “start” icon to make it run.

## Triggers

Search triggers...

Dashboard

Table

Templates

Global variables

First

<

1

2

3

4

5


>

Last

20

82 triggers found.

|  | Name ↓                         | Event type            |
|--|--------------------------------|-----------------------|
| <div> <div>👁</div> <div>✎</div> <div>🗑</div> <div>🔗</div> <div>📄</div> <div>✅</div> </div> | bravo_TamperDemo_state_trigger | lwm2m.resource.change |

The icon will change to an  notifying the trigger is now running.

Import all the other \*\_triggers.json files for the other apps repeating the steps above.

## 4. ONBOARD YOUR BRAVO BOARD

### 4.1. Get the Telit ID

Please refer to the Bravo EVK Quick Start Guide [3] for information on how to communicate with Bravo Board via AT commands through a serial connection.

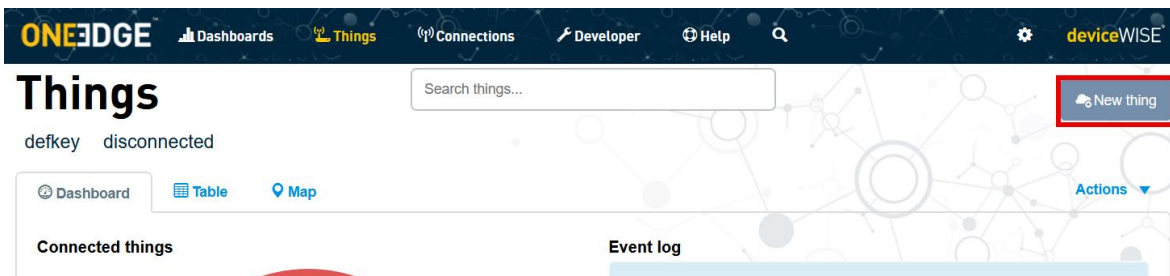
To retrieve the Telit ID data, issue

- **AT#TID** to get the Telit ID. The command response will be similar to  
**#TID: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx,1**  
**OK**

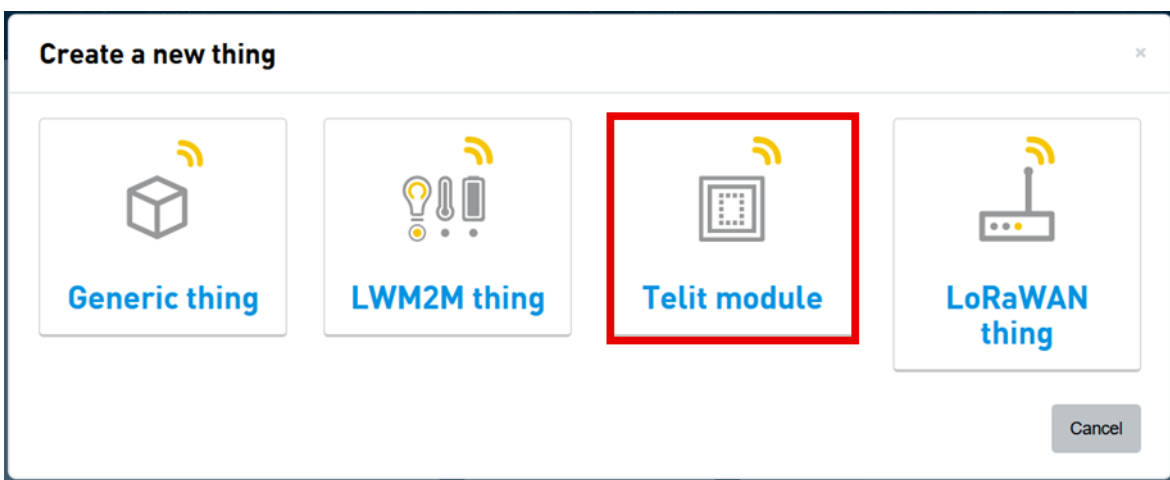
Take note of the Telit ID highlighted in **red** above (or copy it on a text editor): this ID it will be needed for the onboarding process.

### 4.2. Create a new thing

On “Things” section, click “New Thing” button in the top right corner.



In the Create a new thing dialog, select “Telit Module”



A dialog appears: select “Bravo Board” thing definition

## Create a new thing

Select a thing definition

**Bravo Board - Environmental thing definition**

bravo\_environmental\_thingdef

**Default**
  
default

List of attributes, alarm

### Configuration

Auto-defined properties

#### Type

properties

properties

properties

properties

In the following screen, provide the Telit ID as “Identifier”

### Create a new thing

Setup

LWM2M

Identification

VAR

Other

#### Setup

Identifier\*

Find

Model

Firmware

Click on “Find” and make sure that model, firmware and the other details are properly populated.

Click on lwm2m tab and set the device profile previously imported as shown in the screenshot below

Create a new thing

Setup

**LWM2M**

Identification

VAR

Other

**LWM2M**

Device profile

Bravo Board - Environmental device profile

Back

Add

Cancel

Click “Add” to complete the new thing creation procedure

## 5. CONNECT BRAVO BOARD TO ONEEDGE

### 5.1. Use simWISE connectivity

**simWISE** is Telit embedded software-based SIM card. The SIM card operating system is integrated directly in the modem system and enables device makers reducing the final device BOM, optimize form-factor design and save on onboarding processes.

No need to install SIM trays, plug-in SIM cards or chip-based SIMs.

simWISE acts as a normal SIM card and therefore doesn't require special integration with the device, simWISE can even coexist with an external physical SIM card: that is why Bravo Evaluation Kit is equipped with a physical SIM tray.

#### 5.1.1. Set simWISE profile

Unless a physical SIM is inserted into the tray, you need to select simWISE profile. Type the following AT command after a serial connection with the Bravo is established:

**AT#VSIMSETPROF=1**

If you want to use the physical SIM:

**AT#VSIMSETPROF=0**

You can check what profile is active with:

**AT#VSIMSETPROF?**

**#VSIMSETPROF: 0**

In this case the physical SIM is selected

#### 5.1.2. List available profiles

If you have a physical SIM or multiple profiles in your Bravo Evaluation kit this command is useful to get the ICCIDs

**AT#VSIMLISTPROF**

**#VSIMLISTPROF: #ICCIDs**

### 5.2. Disable WWAN connection in Windows



Windows 10 users: by default, the OS is detecting and taking control of ME910 cellular connection. Please ensure this option is disabled as described in the following paragraph.

---

Whenever the Bravo Board is set up with a valid APN, Windows 10 network manager is able to detect this valid configuration and can automatically start a Dial-up connection as soon as the module is connected to the PC.

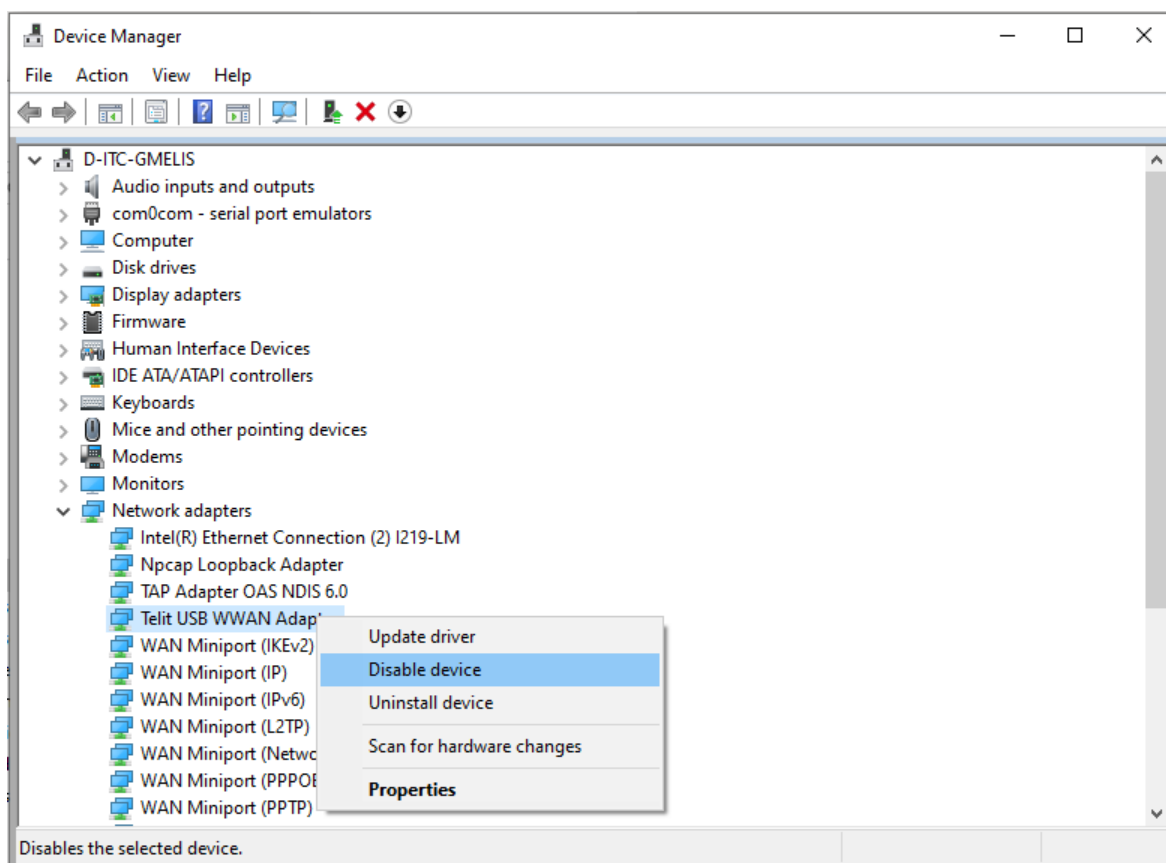
In this scenario the context is already enabled by Windows, the agents inside the module will get an error when trying to perform any connection using the same PDP context.

To avoid this scenario, it's necessary to disable the network adapter at runtime or change the default setting in the Windows registry.



### 5.2.1. Disable network adapter at runtime

- Open the Device Manager Windows tool
- Open “Network adapters” section
- Search for “Telit USB WWAN Adapter” element
- Right-click and disable the device



Please note that this setting is applied only to the device currently connected to the computer, so the user should repeat this procedure for all new devices connected to the computer. If permanent setting is needed please check [7]

## 5.3. Connect the module

The LwM2M client requires an active connection in order to be able to start the LwM2M handshake with the server and perform following interactions.

In case the LwM2M client is enabled before having an active connection, it will stay on hold until a data connection is active.

To manually connect the module and then enable the LwM2M connection please follow the steps:

1. Set the PDP context to be used by the LwM2M client (by default PDP 1 is used):  
**AT+CGDCONT=1, "IP", "YOUR\_APN".**

For simWISE, the setting shall be:

**AT+CGDCONT=1, "IP", "NXT17.NET"**

Refer to [6] §3.6.4 for further information

2. Quickly test that connectivity is working. Issue

**AT#PING="www.telit.com"** and wait for response like this **#PING:**

**01,"35.202.235.194",4,4**

3. Let the LwM2M client handle the connection and the PDP context startup by issuing:

**AT#SGACT=1,0**

This sets the connection in inactive state.

#### 5.4. Test LwM2M agent

1. Run the **AT#LWM2MENA=1** (refer to the AT definition: **AT#LWM2MENA=<en>**).
2. The LwM2M client will perform the Bootstrap (only the first time or when forced) and the terminal will receive the following URC:

```
LWM2M-TLT: "BOOTSTRAPPING", SSID=0, "coaps://bs.telit.io"
```

```
LWM2M-TLT: "BOOTSTRAPPED", SSID=0, "coaps://bs.telit.io"
```

3. After the Bootstrap, the LwM2M client will perform the registration on the DM server, and if the service is enabled through **AT#LWM2MW=0,33211,0,0,1,1** command, the following URC are received:

```
LWM2M-TLT: "REGISTERING", SSID=99, "coaps://api-dev.devicewise.com"
```

```
LWM2M-TLT: "REGISTERED", SSID=99, "coaps://api-dev.devicewise.com"
```

At this point, as soon as the bootstrap phase has been completed, the user must check on the IoT Portal if the registration has been completed correctly, on the IoT Portal > Things > Overview the "Last seen" field reports:

- Lifetime expired/not expired (green/red clip)
- Elapsed time since the last Registration Update

To make sure that the connection is up, it is recommended to check that the PDP context settings are correct. After enabling LwM2M, context should be active: this can be verified by running **AT+COPS?** and **AT+CGACT?**

The following examples show an active PDP context is present on slot 1

**AT+CGACT?**

```
+CGACT: 1,1
```

```
+CGACT: 2,0
```

```
+CGACT: 3,0
```

```
+CGACT: 4,0
```

```
+CGACT: 5,0
```

```
+CGACT: 6,0
```

OK).

**at+cops?**

```
+COPS: 0,0,"vodafone IT",0
```

OK

For more details about the Lifetime parameter check [7] §5.3.2 Adjust the Lifetime parameter

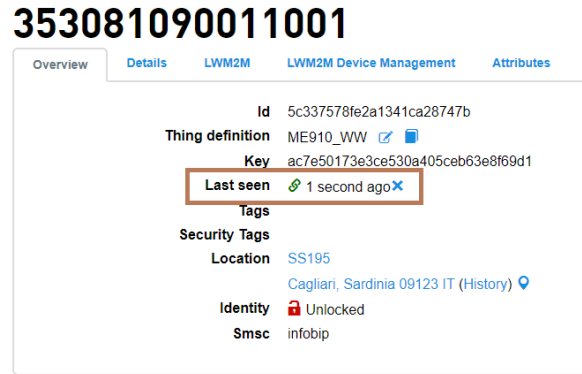


Figure 5-2



Well Done – Your onboarding is done. Please proceed with the next steps to set up the module with the environmental demo application

## 5.5. Deploy and run Environmental demo

To run the application, it is required to load two files on the Bravo board:

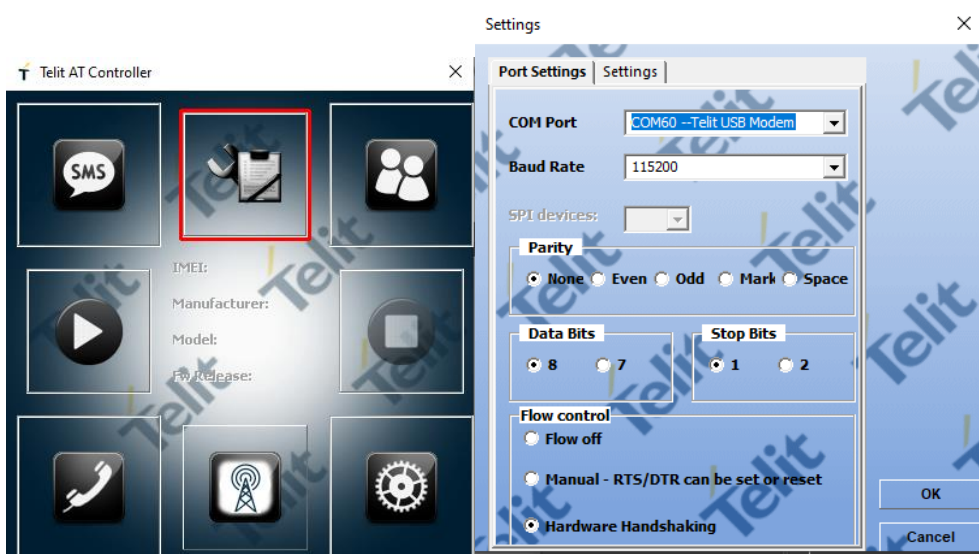
- m2mapz.bin (the application proper binary file)
- object\_26251.xml the LwM2M object definition (please refer to §3.2.4 for the XML)

Files are available in “Bravo Sample Apps SDK” archive file hosted on [1]. Files are in  
bravo\_sample\_apps\_1.0.3\BRAVO\_Environment\_BSEC\_Demo\bin\m2mapz.bin  
bravo\_sample\_apps\_1.0.3\BRAVO\_Environment\_BSEC\_Demo\object\_26251.xml

In this section, Telit AT Controller tool (TATC from now on) will be used to send the commands and store the files content. It can be downloaded from [1]

Please follow the steps below to deploy the files and start the application.

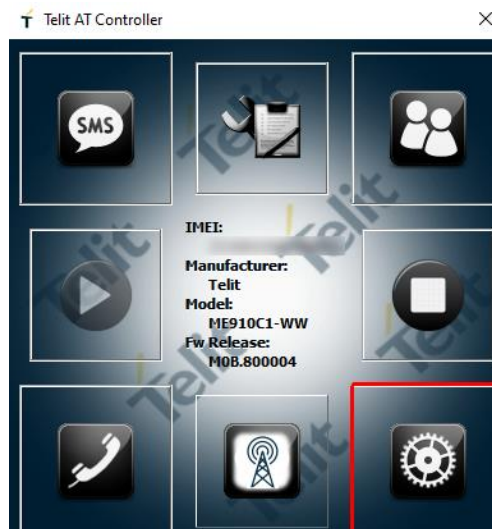
1. Be sure to have both m2mapz.bin and object\_26251.xml files available locally
2. Turn the Bravo Board ON by pressing the ON\_OFF button for at least 5 seconds
3. Open Telit AT Controller and set the COM port number and parameters from the Settings button



4. Press the connect button



5. The device will reply with some details (IMEI, models, FW release). Press the AT Terminal button



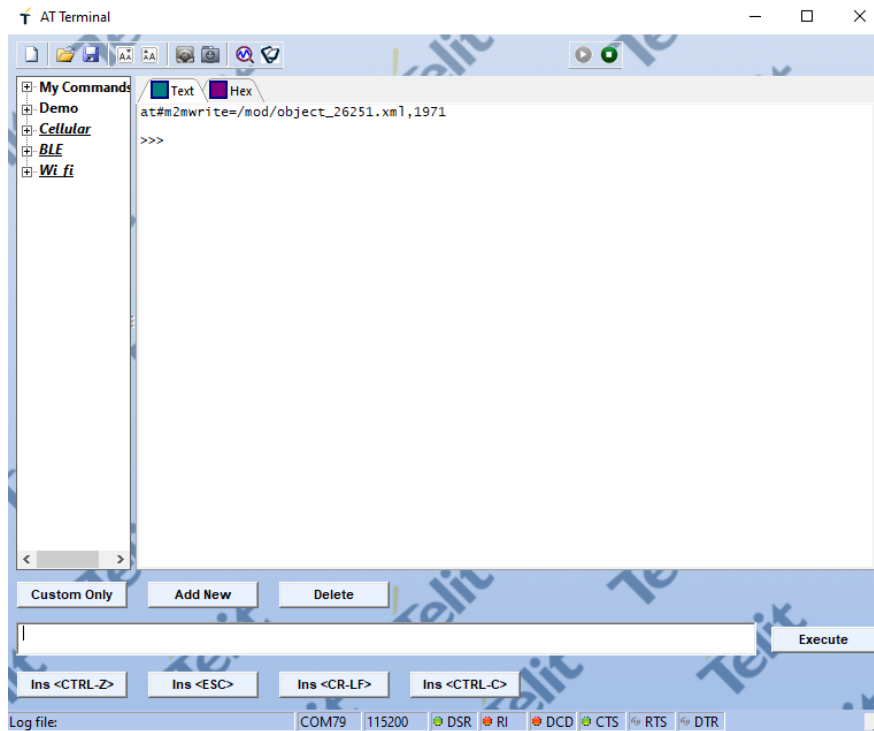
6. Send the command

**AT#M2MWRITE=/mod/object\_26251.xml,1971**

Where “1971” is the file size in bytes.

The device will reply with a prompt

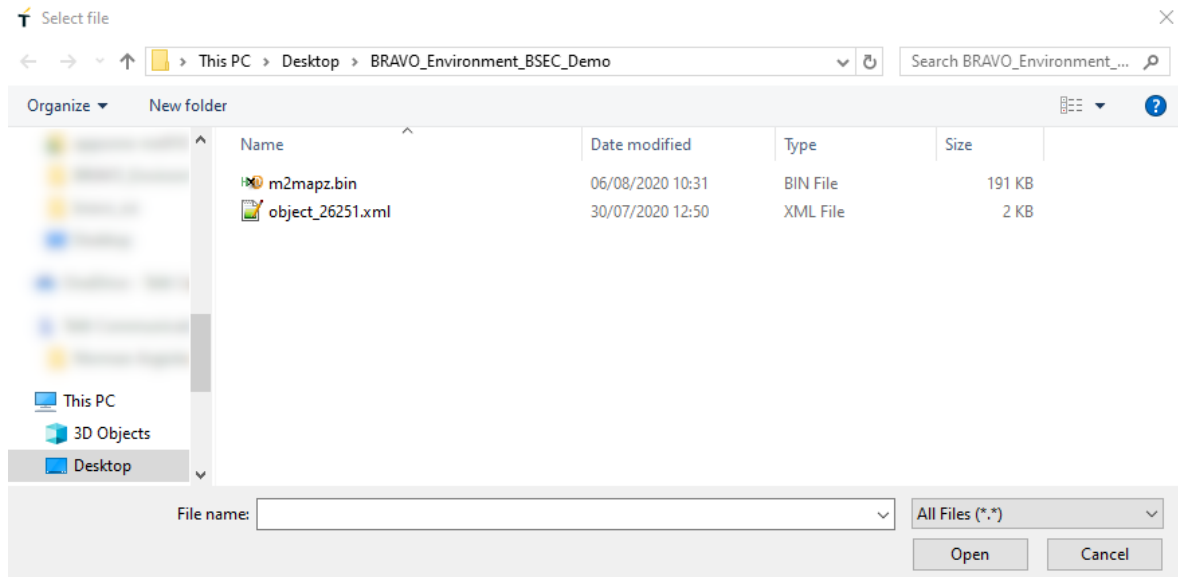
>>>



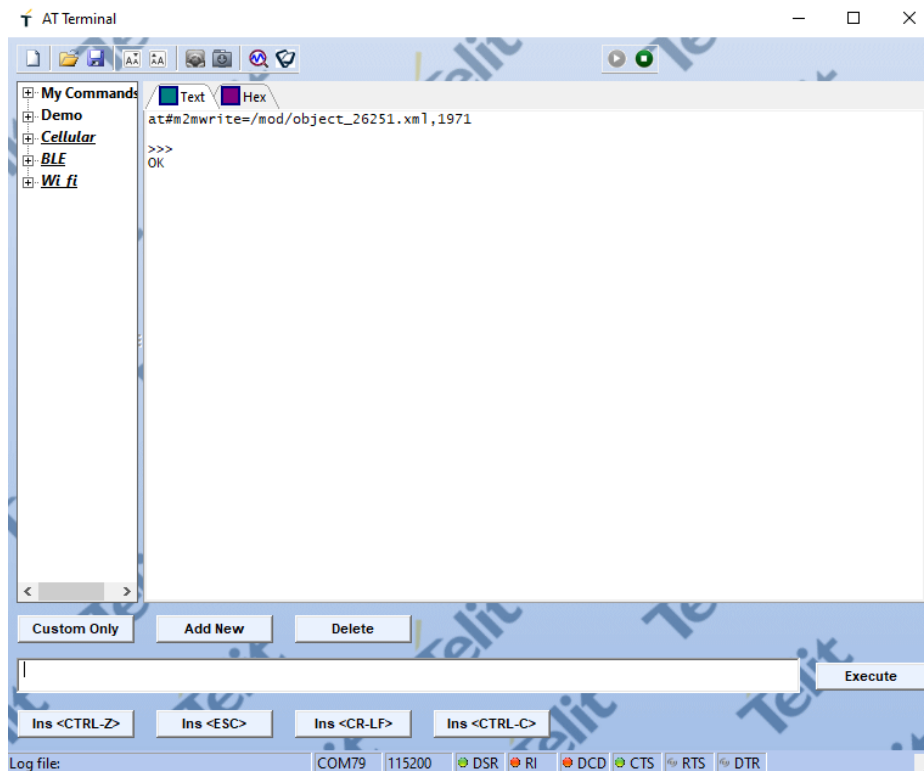
7. Now send the file content by pressing the Transfer Data button



A popup window will allow to browse and select the proper file



The file content will be uploaded into the module. An OK is received on the terminal.



8. Repeat the same procedure for the binary file, using the command below  
**AT#M2MWRITE=m2mapz.bin,194208,1**
9. Configure the application to be executed from next boot-up  
**AT#M2MRUN=2,m2mapz.bin**
10. Restart the module and run the application  
**AT+M2M=4,10**
11. The application will start and print the output on USB 1 (FTDI) port. AT the first boot, it will check for the xml file and properly load it, then automatically reboot.

```
Starting Environmental BSEC Demo. This is v1.0.0 built on Aug 6 2020 10:31:16.
[DEBUG] 18.68 demo_utils/lwm2m.c:390 - check_xml_file{M2M_DamsStart}$ Looking for </XML/object_26251.xml> file..
[WARN ] 18.68 demo_utils/lwm2m.c:403 - check_xml_file{M2M_DamsStart}$ File not found.
[DEBUG] 18.68 demo_utils/lwm2m.c:446 - copy_xml_file{M2M_DamsStart}$ /XML/object_26251.xml output file opened
[DEBUG] 18.68 demo_utils/lwm2m.c:456 - copy_xml_file{M2M_DamsStart}$ File size: 1971
[DEBUG] 18.69 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.69 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.69 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.69 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.70 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.70 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 256 bytes written into output file.
[DEBUG] 18.70 demo_utils/lwm2m.c:483 - copy_xml_file{M2M_DamsStart}$ 179 bytes written into output file.
[DEBUG] 18.70 demo_utils/lwm2m.c:493 - copy_xml_file{M2M_DamsStart}$ file written.
[DEBUG] 18.70 M2MB_main.c:301 - M2MB_main{M2M_DamsStart}$ Rebooting to apply xml file
```

At the next boot, the application will run the proper environmental demo, reading data from the sensor and sending them to the OneEdge portal.

```
Starting Environmental BSEC Demo. This is v1.0.1 built on Aug 6 2020 10:31:16.
[DEBUG] 18.95 demo_utils/lwm2m.c:390 - check_xml_file{M2M_DamsStart}$ Looking for </XML/object_26251.xml> file..
[DEBUG] 18.96 demo_utils/lwm2m.c:394 - check_xml_file{M2M_DamsStart}$ File is present, continue...

Configuring the Bosch device...
Opening channel /dev/I2C-80
[DEBUG] 19.02 demo_utils/lwm2m.c:94 - lwm2mIndCB{pubTspt_0}$ LWM2M enable result OK
[DEBUG] 19.38 demo_utils/lwm2m.c:305 - oneedge_init{M2M_DamsStart}$ Waiting LWM2M Registering (60 seconds)...
[DEBUG] 33.58 demo_utils/lwm2m.c:172 - lwm2mIndCB{pubTspt_0}$ resp->info == M2MB_LWM2M_CL_STATE_REGISTERING
[DEBUG] 39.01 demo_utils/lwm2m.c:175 - lwm2mIndCB{pubTspt_0}$ resp->info == M2MB_LWM2M_CL_STATE_REGISTERED
BSEC Version 1 4 7 4

Configuring the Bosch BME680 device...
Opening channel /dev/I2C-236
T 28.290001 H 39.235004 P 1014.540000 IAQ 25.000000
T 28.273346 H 39.071949 P 1014.520000 IAQ 25.000000
T 28.333679 H 38.813103 P 1014.520000 IAQ 25.000000
----->T 28.383680 H 38.596207 P 1014.540000 IAQ 25.000000
[DEBUG] 37.87 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 37.87 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 37.88 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 38.45 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
T 28.403345 H 38.451088 P 1014.560000 IAQ 25.000000
T 28.403679 H 38.394672 P 1014.540000 IAQ 25.000000
T 28.403679 H 38.354240 P 1014.560000 IAQ 25.000000
----->T 28.383680 H 38.364243 P 1014.560000 IAQ 25.000000
[DEBUG] 49.78 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 49.79 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 49.80 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 50.36 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
T 28.383680 H 38.463013 P 1014.560000 IAQ 25.000000
T 30.484011 H 40.300610 P 1014.800000 IAQ 25.000000
T 30.743345 H 55.776440 P 1014.850000 IAQ 25.000000
----->T 30.294666 H 70.332970 P 1014.820000 IAQ 25.000000
[DEBUG] 61.91 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 61.92 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 61.93 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 62.49 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
T 31.693346 H 73.085258 P 1014.970000 IAQ 25.000000
T 31.904011 H 77.167305 P 1015.010000 IAQ 25.000000
T 29.703680 H 87.506111 P 1014.820000 IAQ 25.000000
----->T 29.244011 H 87.916199 P 1014.800000 IAQ 25.000000
[DEBUG] 73.80 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 73.81 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 73.82 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 74.39 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
T 29.744341 H 86.366806 P 1014.850000 IAQ 25.000000
T 29.474342 H 87.295021 P 1014.780000 IAQ 25.000000
T 29.284012 H 87.471481 P 1014.780000 IAQ 25.000000
----->T 29.073679 H 87.403336 P 1014.800000 IAQ 25.000000
[DEBUG] 85.71 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 85.72 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 85.73 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
[DEBUG] 86.30 demo_utils/lwm2m.c:108 - lwm2mIndCB{pubTspt_0}$ LWM2M set result OK
```



### 5.5.1. Browse data on the portal

After deploying the Environmental demo and connecting to OneEdge, it is possible to observe the data transferred to the portal.

To check for detailed information, please go to LwM2M - object browser as shown in the picture below.



| Object                  | Instance | Value           | Unit | Attributes | Details |
|-------------------------|----------|-----------------|------|------------|---------|
| Location                | 0        |                 |      |            |         |
| Connectivity Statistics | 0        |                 |      |            |         |
| Cellular connectivity   | 0        |                 |      |            |         |
| APN connection profile  | 0        |                 |      |            |         |
| Environmental data      | 0        |                 |      |            |         |
| Temperature             | 0        | 25.431270599365 | °C   |            |         |
| Pressure                | 0        | 988.09002685547 | hPa  |            |         |
| Humidity                | 0        | 29.040782928467 | %    |            |         |
| Index Of Air Quality    | 0        | 0               |      |            |         |
| Telit Application Data  | 0        |                 |      |            |         |
| Telit AT Command        | 0        |                 |      |            |         |
| Telit IDs               | 0        |                 |      |            |         |

## 5.6. Deploy and run Tampering demo

To run the application, it is required to load two files on the Bravo board:

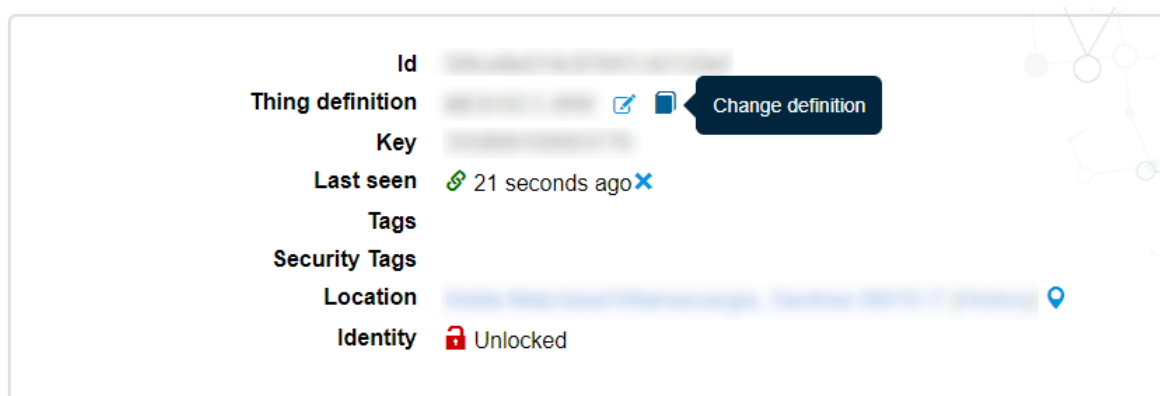
- m2mapz.bin (the application proper binary file)
- object\_26242.xml the LwM2M object definition (please refer to §3.2.4 for the XML)

Files are available in “Bravo Sample Apps SDK” archive file hosted on [1] . Files are in  
bravo\_sample\_apps\_1.0.3\BRAVO\_Tampering\_Demo\bin\m2mapz.bin

bravo\_sample\_apps\_1.0.3\BRAVO\_Tampering\_Demo\object\_26242.xml

To run this demo, the same thing from the Environmental demo will be reused. This requires changing the thing definition and the device profile for the thing.

From the thing Overview, press on the Change definition button, then select Bravo Board – TamperDemo thing definition from the list.





Press Change Definition button.

## Change definition

Thing definition

Bravo Board - TamperDemo thing definition

Change definition

The portal will prompt to accept the changes, as existing properties/alarms or other definitions will be replaced with the new schema. Press Submit to accept.

> tamper\_attr

> tamper state

### Alarms

| Key            | Name           | States   |
|----------------|----------------|--|
| > tamper_state | > tamper state | <div> <div></div> <div>WALKING</div> <div>RUNNING</div> <div>ON BICYCLE</div> <div>IN VEHICLE</div> <div>TILTING</div> <div>TAMPERING</div> </div> |

### Methods

| Key | Name | Notification Variables |
|-----|------|------------------------|
|-----|------|------------------------|

Submit Cancel

To change the device profile, from the thing Overview press Actions button, then Edit.

Overview Details LWM2M LWM2M Device Management Firmware Attributes Remote AT Events Files

API usage

Id

Thing definition

Key

Last seen 21 seconds ago

Tags

Security Tags

Location

Identity Unlocked

Actions

- Add to campaign
- API log
- Delete
- Discover module
- Edit**
- Mailbox
- Property record count
- Replicate
- Sharing
- View JSON

### Properties

Battery\_level 100

auto:conn\_data\_rx 0

auto:conn\_data\_tx 0

In the Editing view, change the device profile to Bravo Board – TamperDemo profile, then press Update.

### Editing XXXXXXXXXXXX

Lwm2m

Identification

VAR

Other

### Lwm2m

**Endpoint\***

Device profile

Bravo Board - TamperDemo profile
▼

**Connection\***

Bootstrap with DTLS
▼

Identity

Pre-shared key

Confirm pre-shared key

Leave pre-shared key blank to have it remain the same.

Follow the same steps shown in §5.5 to load the files into the module, then start the application.

After it starts, in the Alarms tab the “STILL” state will be shown.

### Alarms

|  | Name         | State |
|--|--------------|-------|
|  | tamper state | STILL |

As soon as the board is moved, the device will recognize the tampering event and update the portal:

### Alarms

|  | Name         | State     |
|--|--------------|-----------|
|  | tamper state | TAMPERING |

Additional states will be shown depending on the computed status:

### Alarms



|  | Name         | State   | Message         |
|--|--------------|---------|-----------------|
|  | tamper state | WALKING | started to walk |

The same values are also provided in attributes tab with a numeric value for each event.

[Overview](#)
[Details](#)
[LWM2M](#)
[LWM2M Device Management](#)
[Attributes](#)
[Remote AT](#)

tamper state 0

## Alarms

|   | Name         | State     |
|---|--------------|-----------|
|   | tamper state | TAMPERING |

### 5.7. Deploy and run 3D vector demo

To run the application, it is required to load two files on the Bravo board:

- m2mapz.bin (the application proper binary file)
- object\_26250.xml the LwM2M object definition (please refer to §3.2.4 for the XML)

Files are available in “Bravo Sample Apps SDK” archive file hosted on [1] . Files are in  
bravo\_sample\_apps\_1.0.3\BRAVO\_Rotation\_Demo\bin\m2mapz.bin  
bravo\_sample\_apps\_1.0.3\BRAVO\_Rotation\_Demo\object\_26250.xml

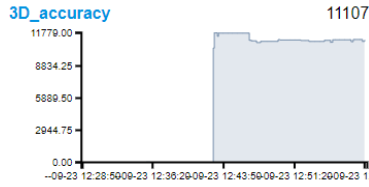
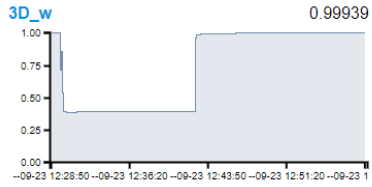
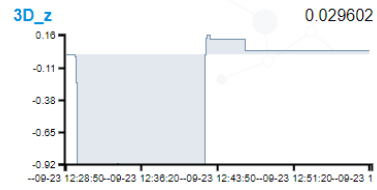
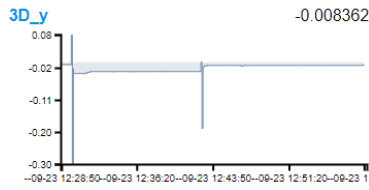
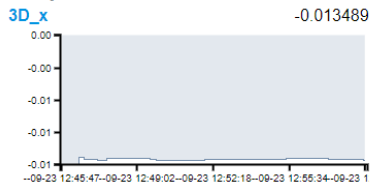
To run this demo, the same thing from the previous demos will be reused. This requires changing the thing definition and the device profile for the thing.

Follow the same steps shown in §5.6 to change thing definition and device profile for the thing to 3D RotationDemo profiles.

Follow the same steps shown in §5.5 to load the files into the module.

Once the app starts, it will constantly provide the read values for X, Y, Z and W values, as well as the computed accuracy. These values can be seen in the Properties tab on the Thing page.

## Properties



## 6. GLOSSARY AND ACRONYMS

|       | Description   |
|-------|---|
| APN   | Access Point Name – it is the name of a gateway between a GSM, GPRS, 3G or 4G mobile network and another computer network (usually the Internet)  |
| DC    | Direct Current  |
| GPIO  | General Purpose Input Output  |
| IMEI  | International Mobile Equipment Identity – it is a unique number that is associated with all 2G-5G devices   |
| IMSI  | International Mobile Subscriber Identity – it is a unique number that is associated with all SIM cards  |
| I/O   | Input Output  |
| JSON  | JavaScript Object Notation. It is a text-based data interchange format designed for transmitting and storing structured data, both human readable and machine readable.   |
| LwM2M | Lightweight Machine To Machine – IoT Application Protocol designed for bidirectional communication between devices and a central server   |
| PC    | Personal Computer   |
| PCB   | Printed Circuit Board   |
| PDP   | Packed Data Protocol – Often used in conjunction with “context” to define a specific data structure that allows the device to communicate using the Internet Protocol   |
| RTC   | Real Time Clock   |
| SIM   | Subscriber Identification Module  |
| SPI   | Serial Peripheral Interface   |
| UART  | Universal Asynchronous Receiver Transmitter   |
| USB   | Universal Serial Bus  |
| URC   | Unsolicited Result Code – it is the message returned by the mobile equipment (the modem) that is not a direct result of an AT command. It could be a soft interrupt or the response of an AT asynchronous command |
| XML   | eXtensible Markup File. It is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable   |
| WWAN  | Wireless wide area network (WWAN), is a form of wireless network usually associated to mobile broadband connection.   |

## 7. DOCUMENT HISTORY

| Revision | Date       | Changes   |
|----------|------------|---|
| 1        | 2020-09-07 | Initial Revision  |
| 2        | 2020-09-20 | Cosmetic review   |
| 3        | 2020-10-01 | Environmental demo description  |
| 4        | 2020-10-21 | Added all samples description   |
| 5        | 2020-12-11 | Added simWISE connectivity section, added APN configuration, improved the connectivity step |



# SUPPORT INQUIRIES

Link to [www.telit.com](http://www.telit.com) and contact our technical support team for any questions related to technical issues.

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