BeanDevice®

Version 1.1

BEANAIR®	FROM MQTT TO FTP - TECHNICAL NOTE

BeanAir

Rethinking Sensing Technology

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DOCUMENT

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1.0	23/07/2020	Seddik ATTIG	• First version of the document
1.1	28/08/2020	Seddik ATTIG	• Configuration restriction • DAQ mode examples

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1. TECHNICAL SUPPORT

For general contact, technical support, to report documentation errors and to order manuals, contact *Beanair Technical Support Center* (BTSC) at:

tech-support@Beanair.com

For detailed information about where you can buy the Beanair equipment/software or for recommendations on accessories and components visit:

www.Beanair.com

To register for product news and announcements or for product questions contact Beanair's Technical Support Center (BTSC).

Our aim is to make this user manual as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Beanair appreciates feedback from the users of our information.

2. VISUAL SYMBOLS DEFINITION

| Symbols	Definition
	Caution or Warning – Alerts the user with important information about Beanair wireless sensor networks (WSN), if this information is not followed, the equipment /software may fail or malfunction.
	Danger – This information MUST be followed if not you may damage the equipment permanently or bodily injury may occur.
	Tip or Information – Provides advice and suggestions that may be useful when installing Beanair Wireless Sensor Networks.

3. ACRONYMS AND ABBREVIATIONS

AES	Advanced Encryption Standard
CCA	Clear Channel Assessment
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance
GTS	Guaranteed Time-Slot
kSps	Kilo samples per second
LLC	Logical Link Control
LQI	Link quality indicator
LDCDA	Low duty cycle data acquisition
MAC	Media Access Control
PAN	Personal Area Network
PER	Packet error rate
RF	Radio Frequency
SD	Secure Digital
WSN	Wireless sensor Network

4. OVERVIEW

The File Transfer Protocol (FTP) is a set of rules that computers on a network use to communicate with one another.

Now users can transfer the data from the MQTT broker to an FTP server.

The following document explains how to use and transfer the data to the FTP Servers.
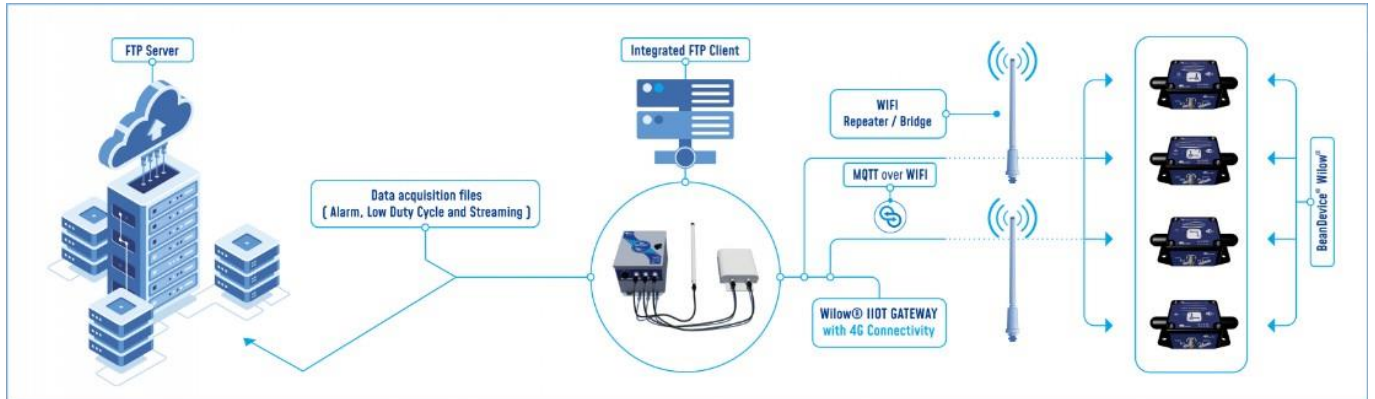
Figure 1: System Architecture using FTP server

5. THE FTP SERVER CONFIGURATION

For user who want to use a local FTP server, it's possible to use FileZilla and setup a Server configuration.

1. Download FileZilla Server from the web, follow the installation instructions then lunch the application by double clicking on the application icon. Choose the default settings and click on connect.
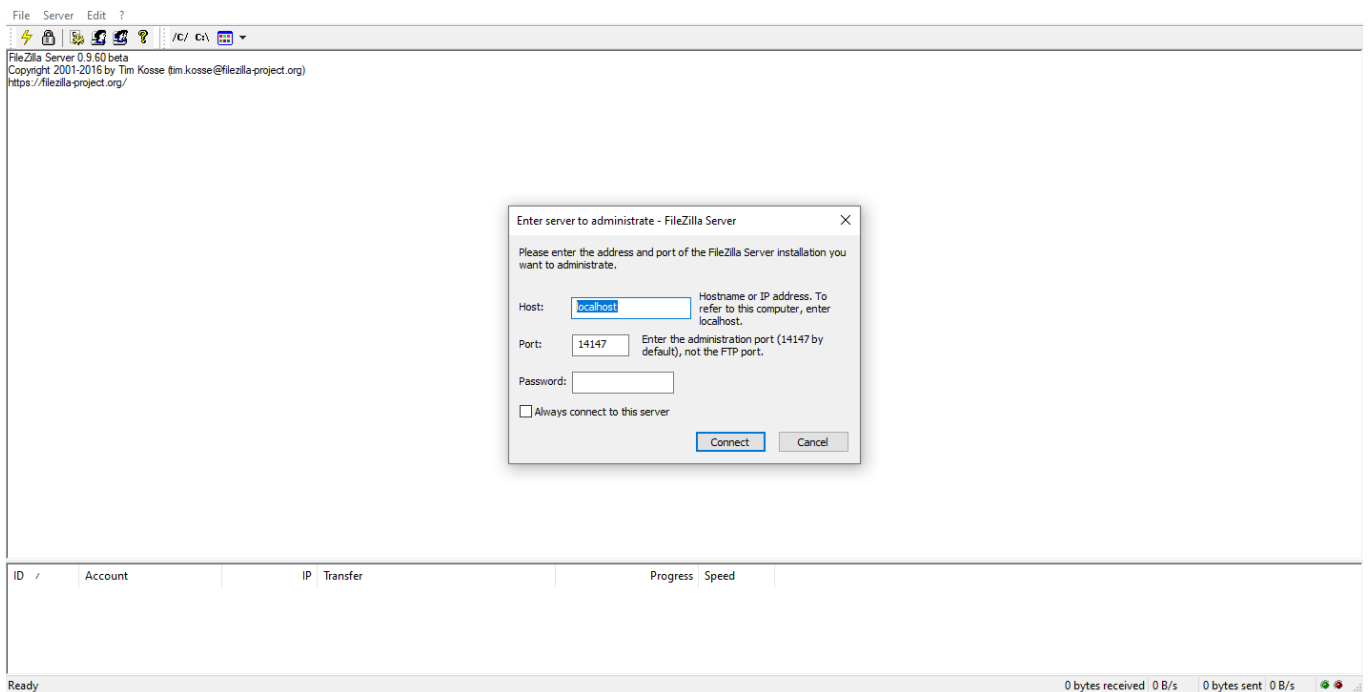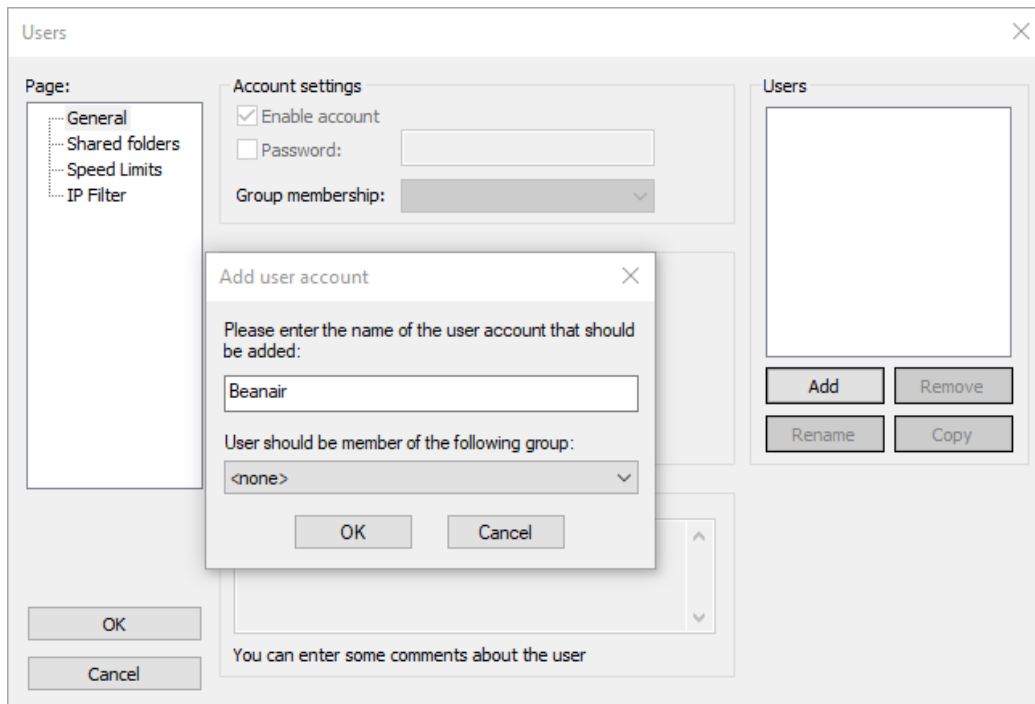

Figure 2: Connect to the Host

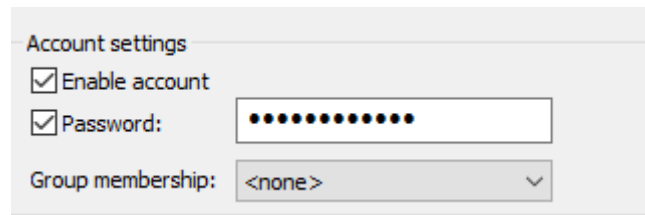2. Click on Edit tab and select Users in order to create a user
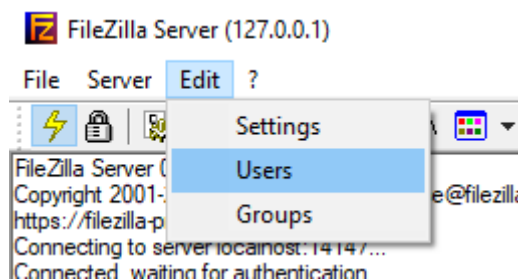
Figure 3: Create new user
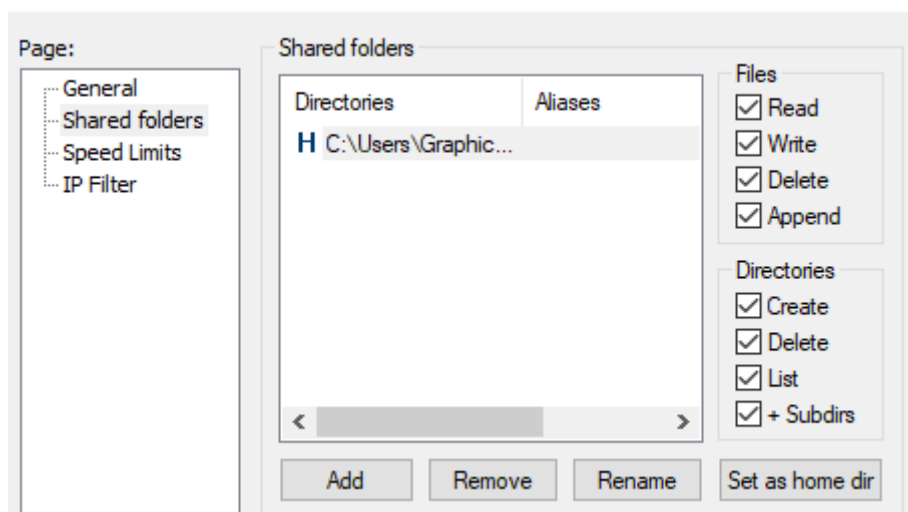
Choose General, then click on Add and enter a user name

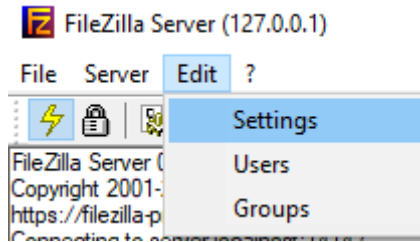*Figure 4: Add new user*

Add a password to the account

Figure 5: Add password

Go to Sharped folders to add the path where the data will be stored.

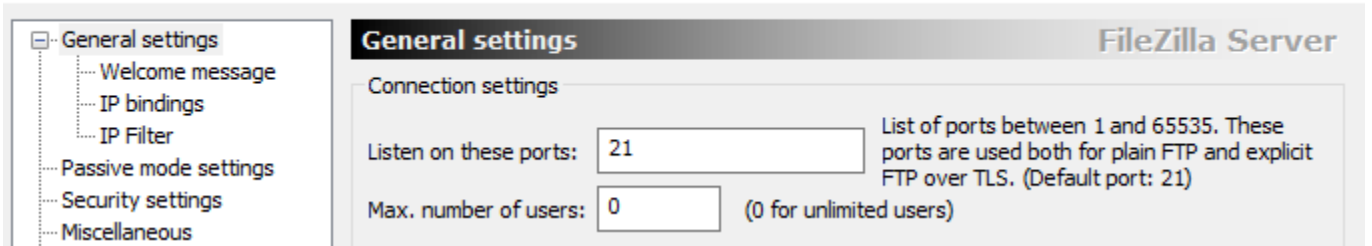Click on add and choose the path then select all the available options.

Figure 6: Add the folder path

From Settings option you can know the FTP listen port, you can change it.

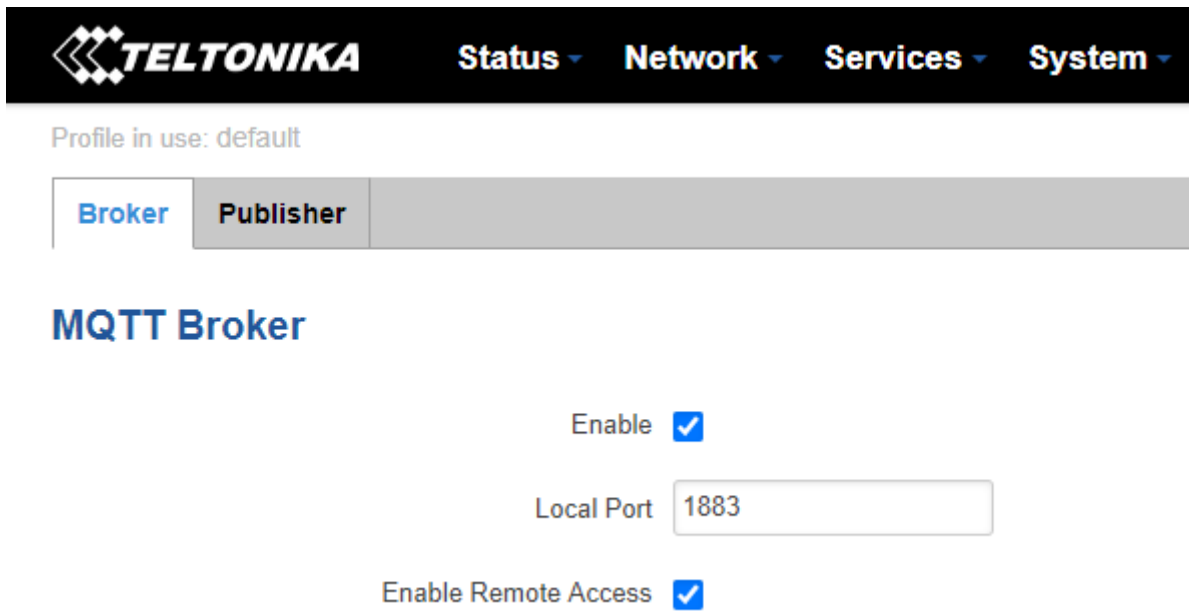*Figure 7: FTP listen port*

6. ROUTER CONFIGURATION

1. Tap the router IP address in the browser search tap then enter the User name and password

Figure 8: Router access page

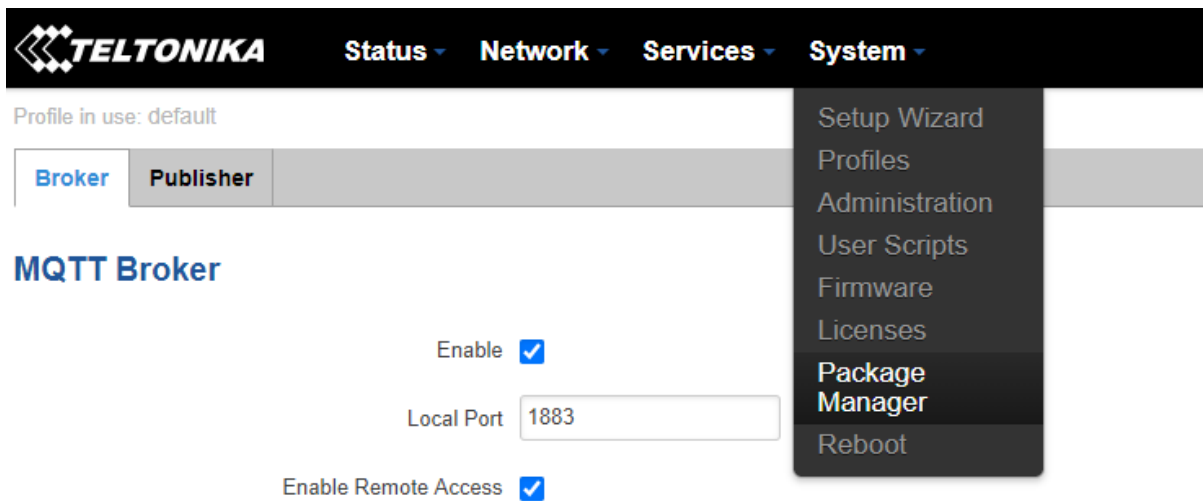2. Go to Services tab and click on MQTT then Enable the MQTT option.

Figure 9: MQTT option

Check Enable MQTT service and also Enable the remote access option

Figure 10: Enable the MQTT service

3. Now, go to System and click on Package Manager

Figure 11: Package Manager option

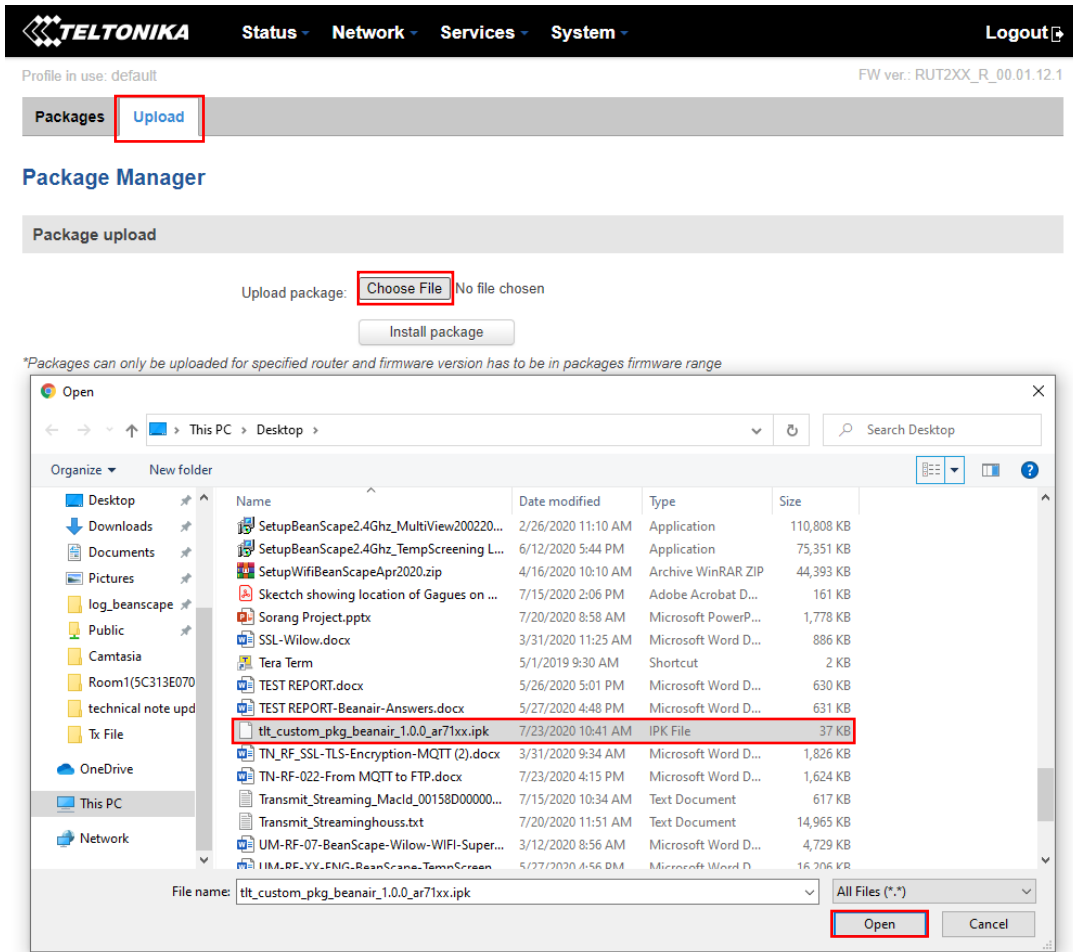Switch to Upload tab, choose your file location then install the package.
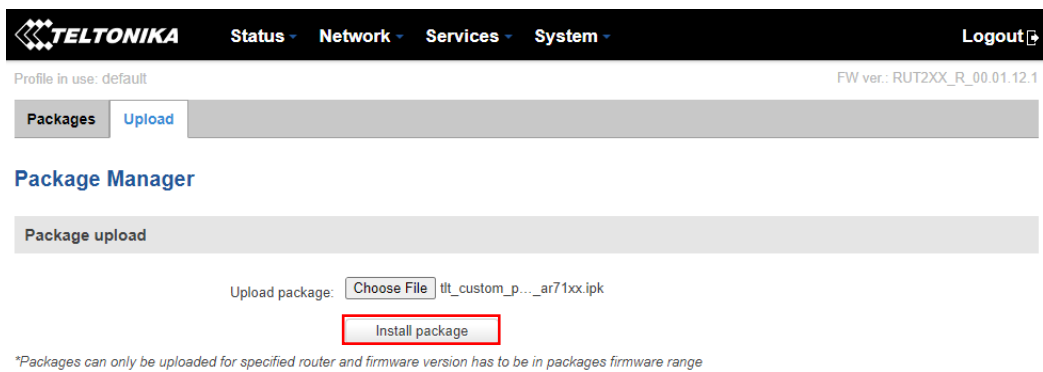
Figure 12: Package installation process

Figure 13: Installing the package

Once the installation is finished, a notification message will be displayed saying that the package was successfully installed
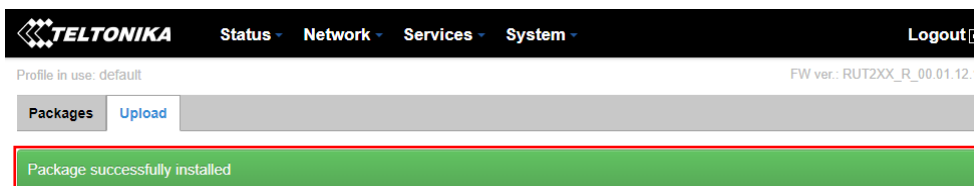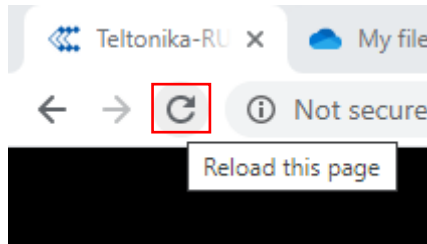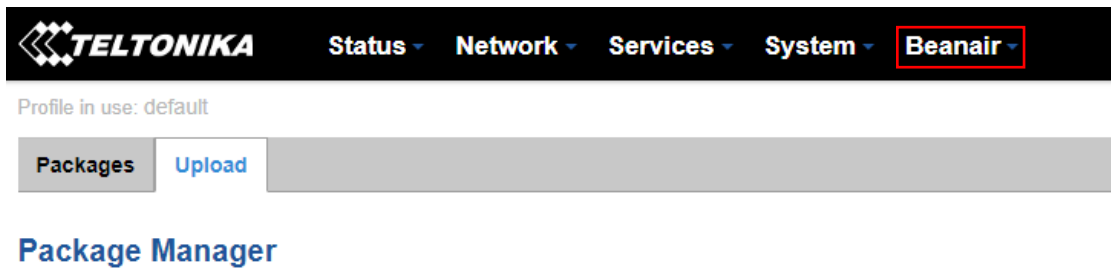

Figure 14: Installation notification message

Now, Refresh the web page and you can notice that new tab named Beanair was added to the router menu
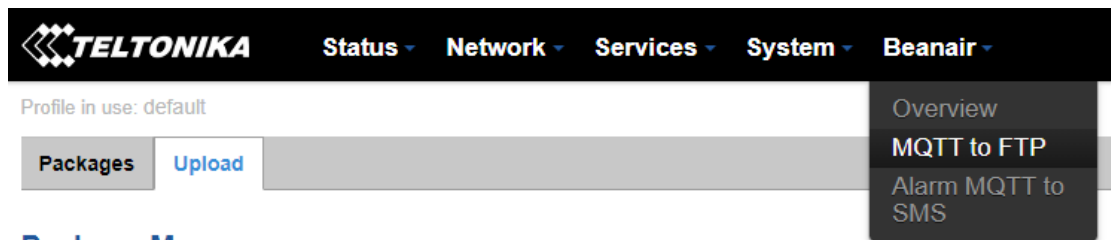

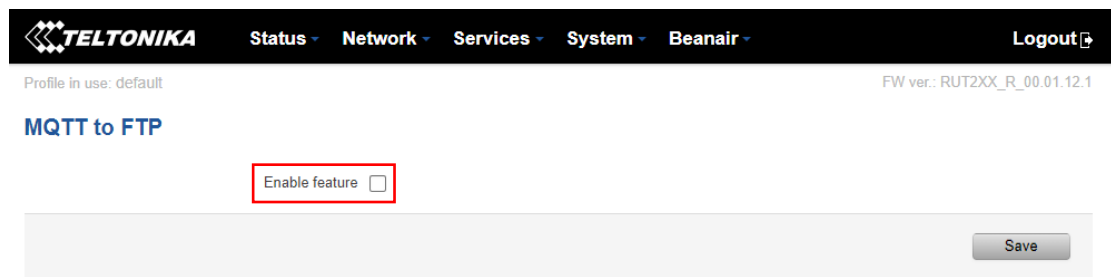*Figure 15: Refresh tab*

Figure 16: Beanair package Tab

4. Click on Beanair tab and select MQTT to FTP

Figure 17: Beanair menu

5. Check Enable feature box

Figure 18: Enabling the feature

Once you enable the option, bunch of settings will be available to configure

Figure 19: The FTP settings

Figure 20: the FTP settings description

In this example we're going to use a local FTP server with the following settings

- Default Broker IP address and port number

Broker ip address | 127.0.0.1
Broker port | 1883

Figure 21: Broker Configuration

- For the FTP Server address enter your PC IP Address with the right FTP port number

FTP server address | 192.168.1.75
FTP server port | 21

Figure 22: FTP Server configuration

- Enter the FTP user name and password created before

FTP username | Beanair
FTP password | hellobeanair

Figure 23: FTP User settings

- Keep the default number of samples per file and the file will be transferred to the FTP server when gathering 100 data, you may disable this option and with that the file will be transmitted to the FTP server when the size file reach 2Mo.

Enable "Number of samples per file" for Low Duty Cycle mode ☑
Number of samples per file | 100

Figure 24: Number of samples

- Add your BeanDevice's list with a description

List of BeanDevices | 5C313E07049A0000/Flr1 ➕
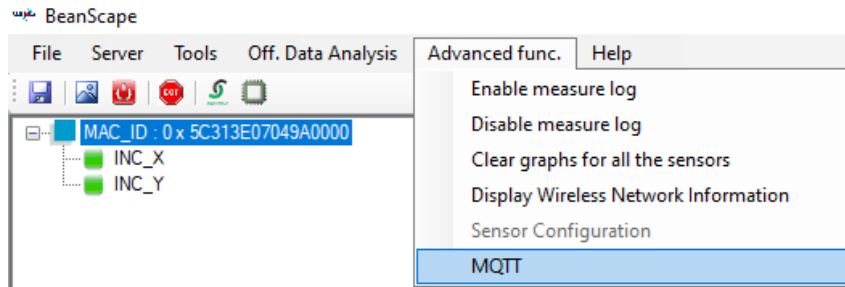
BeanDevice MAC ID   Label (description)

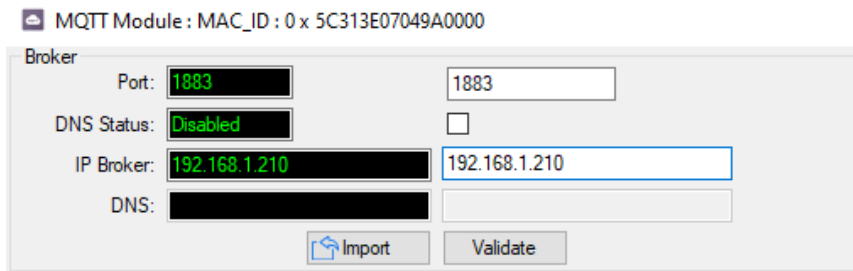*Figure 25: Add BeanDevice®*

7. BEANDEVICE® CONFIGURATION

7.1 MQTT CONFIGURATION

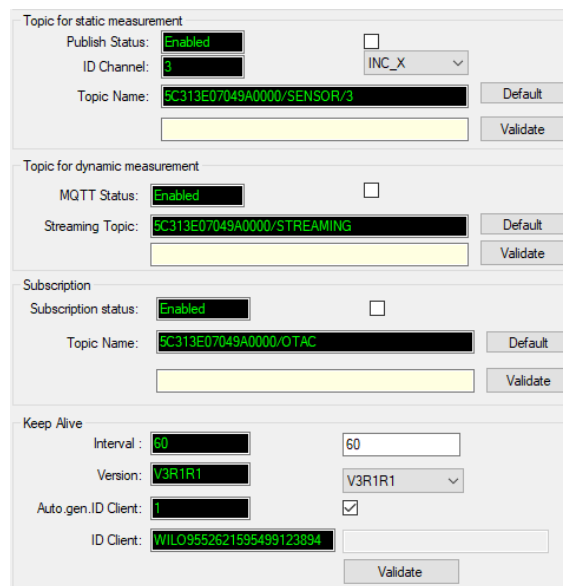1. Click on the BeanDevice® profile, go to Advanced func. And click on MQTT

Figure 26: MQTT feature

2. Enter Teltonika router IP address in the IP Broker config with the right port number

Figure 27: Broker configuration

3. Configure the static/dynamic measurement topic

Figure 28: Topic configuration

4. Lunch the MQTT server

Figure 29: Start the MQTT server

7.2   FROM MQTT TO FTP

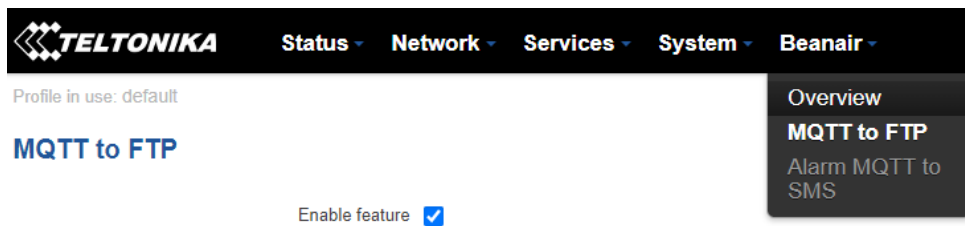From Teltonika web page, navigate to Beanair tab then click on Overview.

Figure 30: Overview option

In the overview window, you can find different information related to the server status, list of devices with the current data acquisition mode etc....
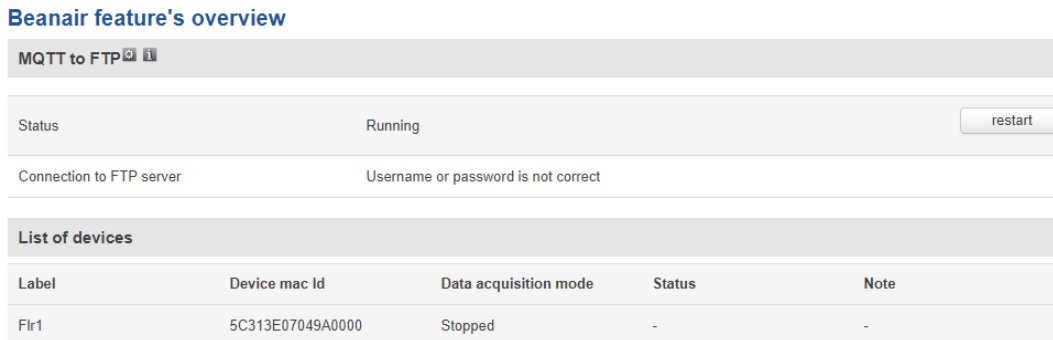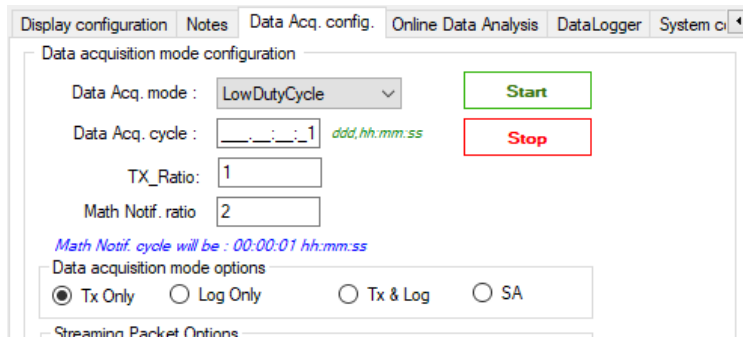

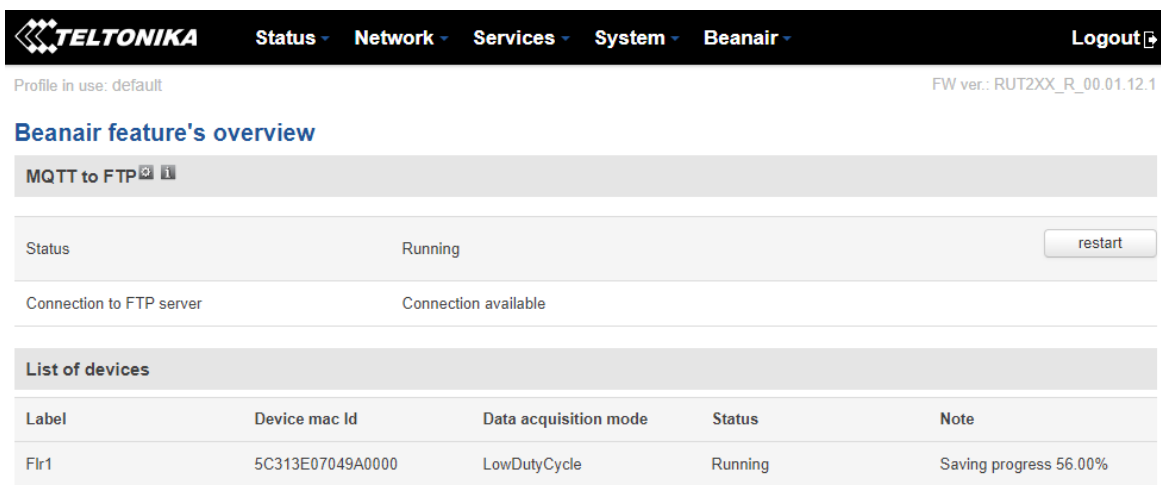
Figure 31: Beanair feature overview

7.2.1   Example with Low Duty Cycle

1. Start LowDutyCycle data acquisition mode

Figure 32: LowDutyCycle DAQ mode

2. Go to Beanair Overview and you can notice that the current DAQ mode status was updated

Figure 33: BeanDevice® status

At the End of the saving process the file will be transmitted to the FTP Server and allocated in the directory already configured before.
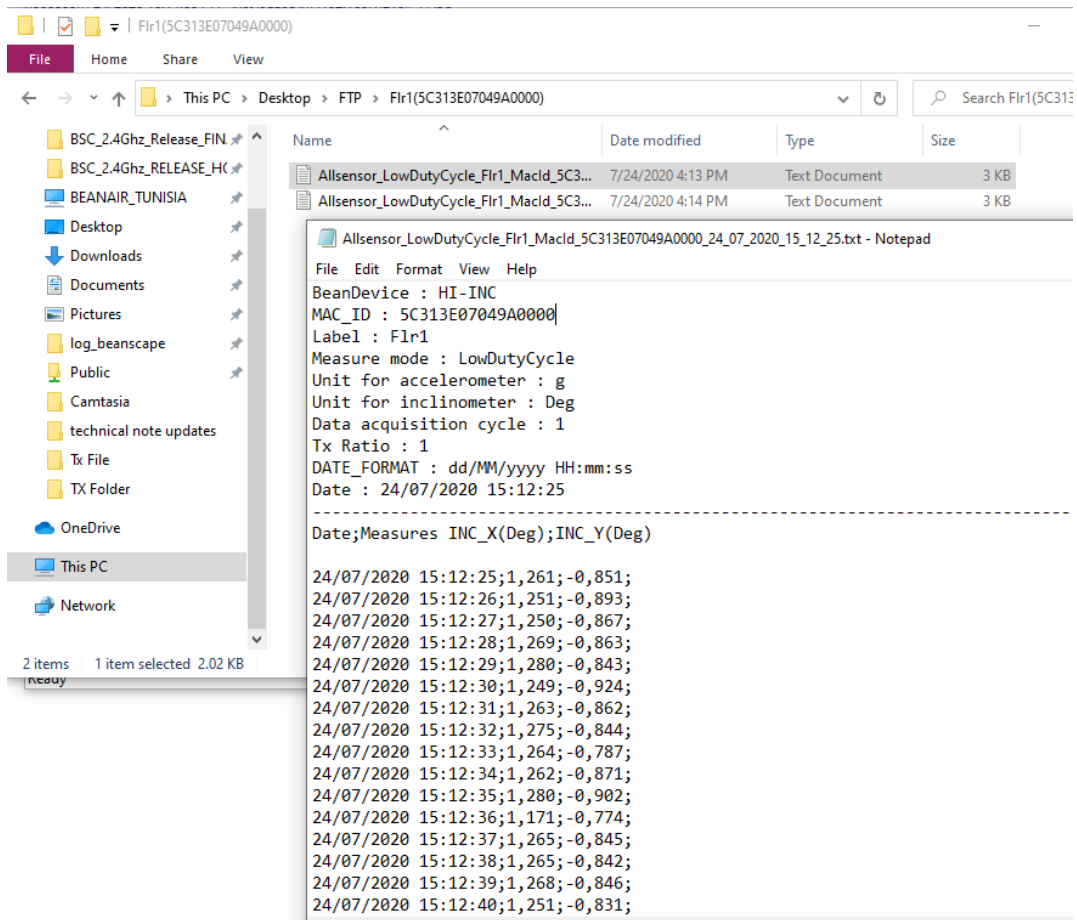
Figure 34: FTP server logfile

7.2.2   Example with Alarm mode

Configure the BeanDevice® Alarm mode after configuring the 3 threshold levels.
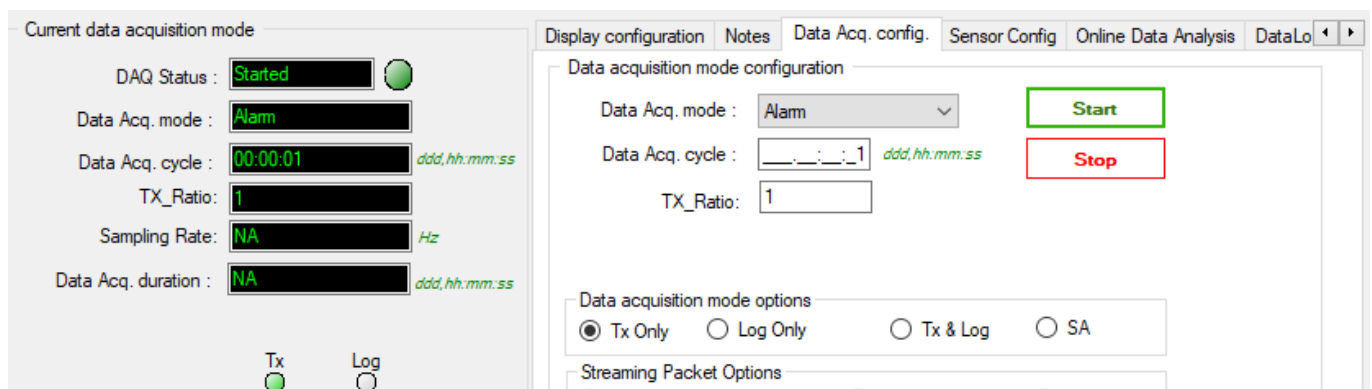

Figure 35: Alarm mode

Click on overview to see the BeanDevice® current status

Beanair feature's overview

MQTT to FTP ⚙ ℹ

Status	Running	restart
Connection to FTP server	Connection available	

List of devices

Label	Device mac Id	Data acquisition mode	Status	Note
Room1	5C313E06A9A70000	Alarm	Running	-

Figure 36: BeanDevice® actual status

In this Case we have 3 possibilities

- There was no detected Alarm and all the measurements were OK

Here the file will be generated after reaching the file maximum seize which is 2Mo and it will contain all the measurement during the recording duration.
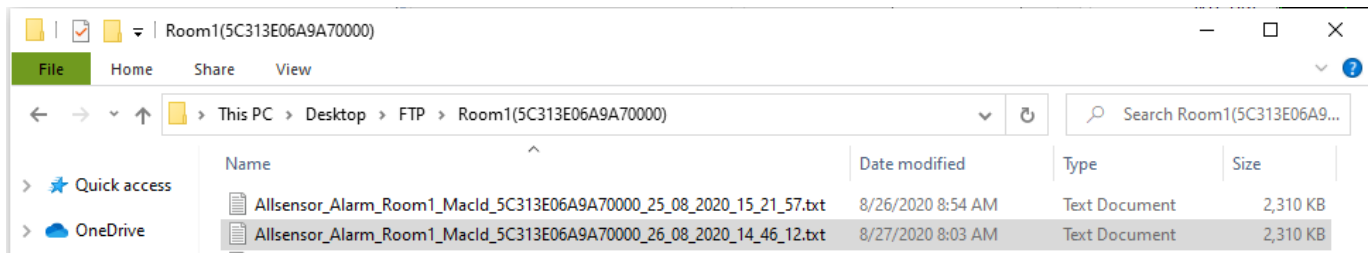
Figure 37: Alarm log file

- There was an event occurred

You will receive an Alarm notification immediately with the current time and Alarm value, then the file will be generated automatically when reaches its maximum size 2Mo
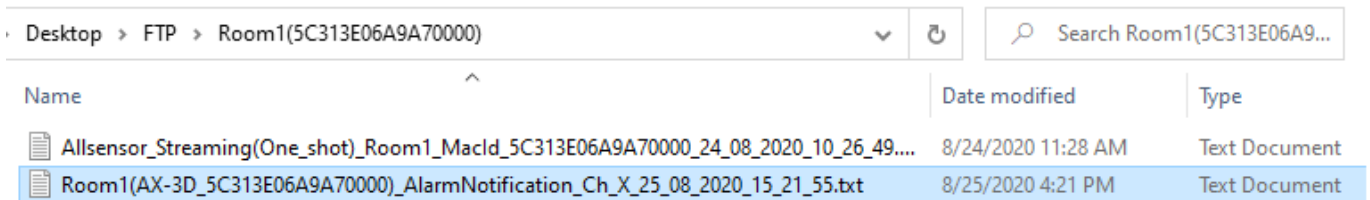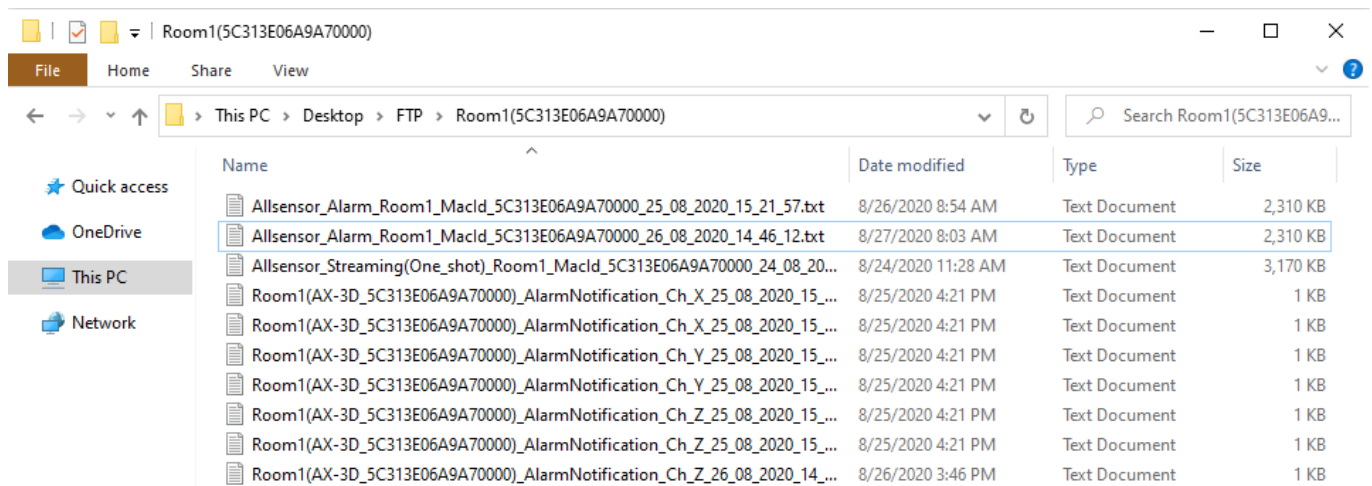
Figure 38: Alarm notification file

Figure 39: The Alarm notification content

- There are successive events occurred

You will receive an immediate successive Alarm notification log files, then the log file which contains all the measurement will be generated automatically once the seize reach 2 Mo.

Figure 40: Alarm log files

7.2.3   Example with shock detection mode

Configure the BeanDevice® Alarm mode after configuring the 3 threshold levels.

Figure 41: Shock detection mode

Click on overview to see the BeanDevice® current status

Figure 42: BeanDevice current status

Once the data acquisition duration is finished, the file will be generated and transmitted directly through the FTP.

Figure 43: File uploading process

The file will be saved in the folder location
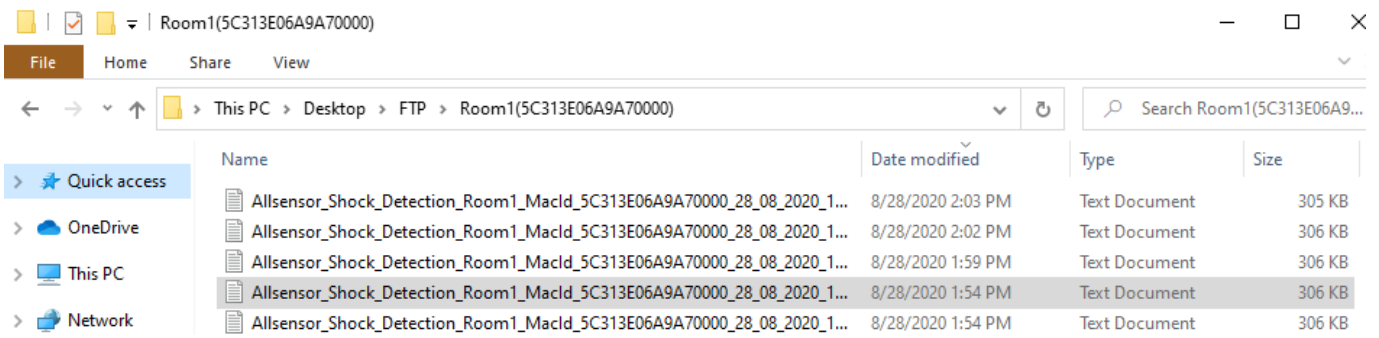
Figure 44: Shock detection file

All the measurements are saved in the file

Figure 45: Shock detection measurement data

7.2.4   Example with streaming burst

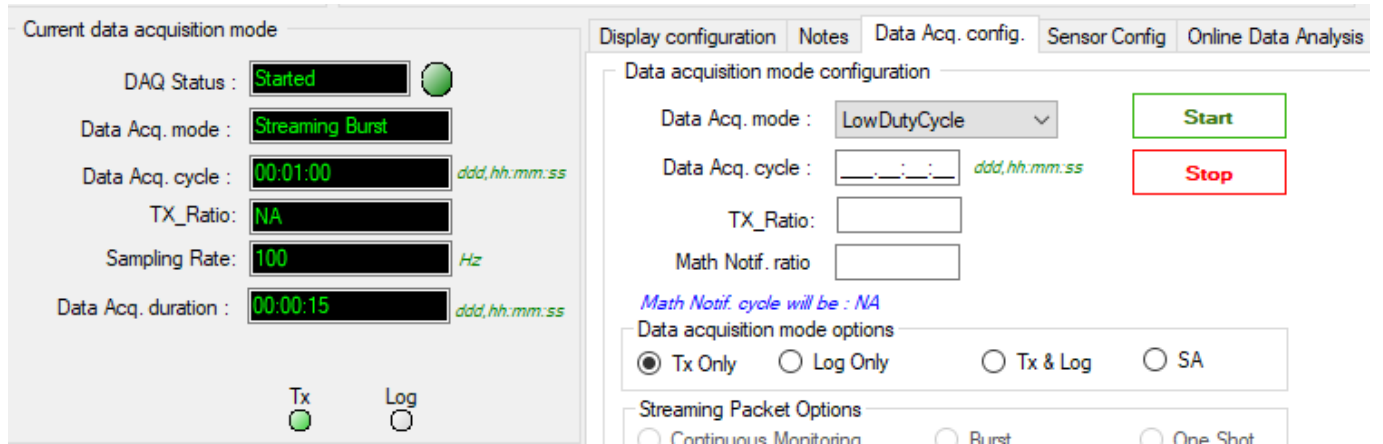Configure the BeanDevice® streaming mode after with burst option.

Figure 46: Streaming burst

Once the BeanDevice is started the current status will be updated

Figure 47: BeanDevice current status
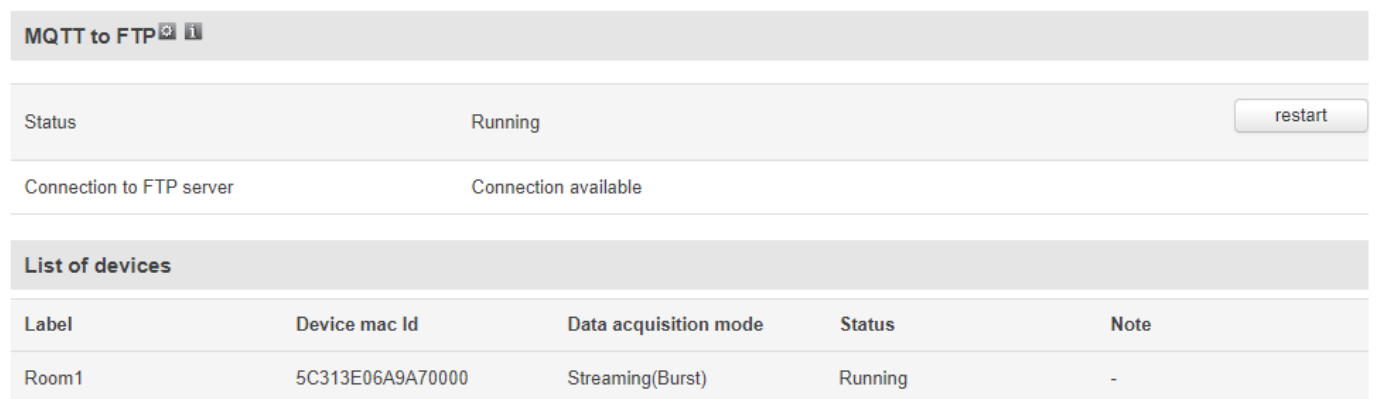
The file will be generated and transmitted after the data acquisition duration

Figure 48: Uploading process
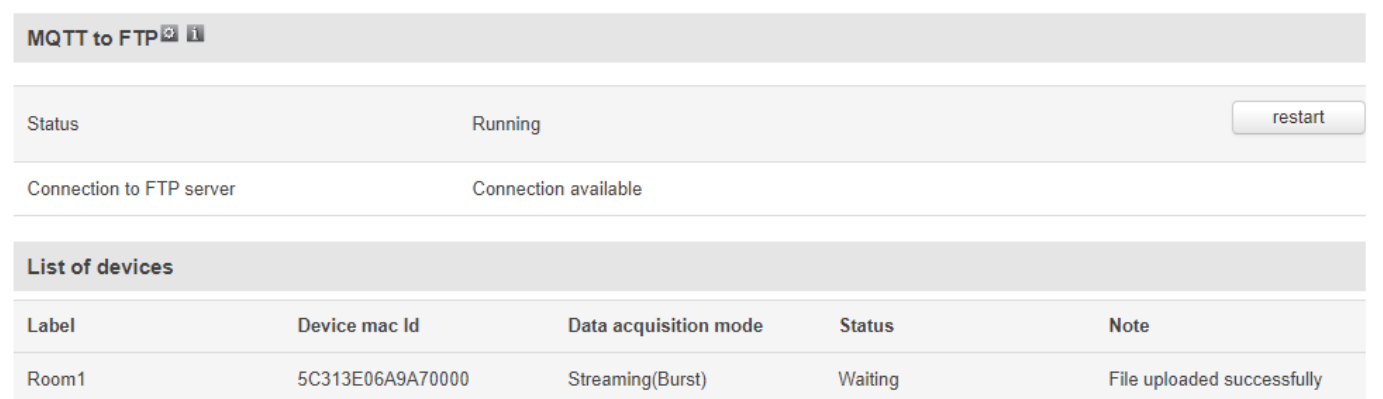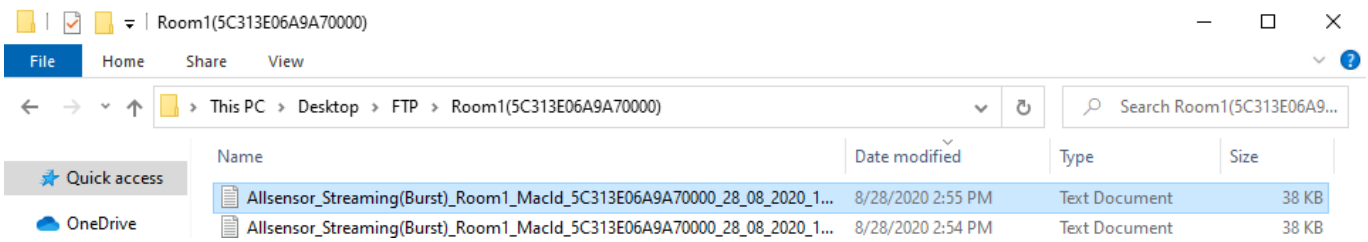
Figure 49: Streaming burst log file

BeanDevice : AX-3D
Mac Id : 5C313E06A9A70000
Label : Room1
Measure mode : Streaming
Streaming Options : Burst
Unit for accelerometer : g
Unit for inclinometer : Deg
DATE_FORMAT : dd/MM/yyyy HH:mm:ss.fff
Date : 28/08/2020 13:55:31.19
Sampling rate : 100
Data acquisition cycle : 60
Data acquisition duration : 15
Missing measurements : 0.00%

TimeStamp;Measure Ch_Z(g);Ch_X(g);Ch_Y(g)

0;0,775;-0,007;-0,016;
1;0,779;-0,006;-0,012;
2;0,774;-0,005;-0,013;
3;0,780;-0,002;-0,013;
4;0,781;-0,004;-0,013;
5;0,780;-0,005;-0,013;
6;0,778;-0,006;-0,015;
7;0,782;-0,004;-0,015;
8;0,779;-0,004;-0,015;
9;0,781;-0,004;-0,014;

Figure 50: measurement data