



The Testcenter facility 'LoRa[®] Test Lab' within IMST GmbH is recognized by the LoRa[™] Alliance for testing in accordance to the LoRaWAN[™] Specification V1.0

Report for Test of Conformance to LoRaWAN[™] V1.0

for the Device

"OSU"

for the Customer

Abel Delft B.V.

Markus Ridder

Yavuz Turan

28. Jul. 2016

Administrative Summary

Location: IMST GmbH, Test Centre, Kamp-Lintfort, Germany

Responsible Test Engineer: Yavuz Turan, Markus Ridder

Subject: Test of Conformance to LoRaWAN™ Specification V1.0

Company and Contact Information:

Abel Delft B.V., Mr. Ronald Bolijn, Oude Delft 182, 2611HH Delft
The Netherlands

Tested Device: OSU

Firmware version: 1.2.x.x

Hardware version: 01

End-device identifier: 9f02170000ac590001

LoRa Device Class: A

LoRaWAN Specification version: V1.0

Certification requirements: LoRa End Device Certification EU Version 1.1

Frequency band(s) tested: 868 MHz

Test Equipment: Test Software Version: 1.1.5.2

Semtech IOT SX1301 Starter Kit: Gateway software version 3.1.0

Packet forwarder software version 2.1.0

Test Result: PASS

Chief Test Engineer: Markus Ridder
Dept. Test Center

Date: July 28th, 2016

The Test Report, No. 6160338 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility:



Yavuz Turan
Test Engineer

Approved:



Markus Ridder
Quality Engineer

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1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	OSU
Kind of product	Module
Series (if any)	
Hardware Version	01
Firmware Version	1.2.x.x
Type of DUT	<input checked="" type="checkbox"/> Module / End Device <input type="checkbox"/> Gateway / Concentrator
Geographical area of operation	<input checked="" type="checkbox"/> Europe <input type="checkbox"/> USA
Operating frequency	<input type="checkbox"/> 433 MHz <input checked="" type="checkbox"/> 868 MHz <input type="checkbox"/> 915 MHz
Adaptive Data Rate (ADR) supported?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Optional data rates supported?	<input type="checkbox"/> DR6 <input type="checkbox"/> DR7
Activation possibilities	<input type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input checked="" type="checkbox"/> both
Test According LoRaWAN™ Spec	<input checked="" type="checkbox"/> V1.0 <input type="checkbox"/> V1.0.1 (m/o June 2016 earliest)
Output Power	14 dBm
Number / Type of Antenna(s)	1: PCB F-type, 2: external u.fl connector
Antenna Gain	1: -0.6dBi; 2: 0dBi

Table 1 Device Information

1.2 DUT Modes of Operation

During the tests the device operated in the following modes:

- Test mode according to document “LoRa End Device Certification EU V1_1” Chapter 3.

1.3 DUT Setup

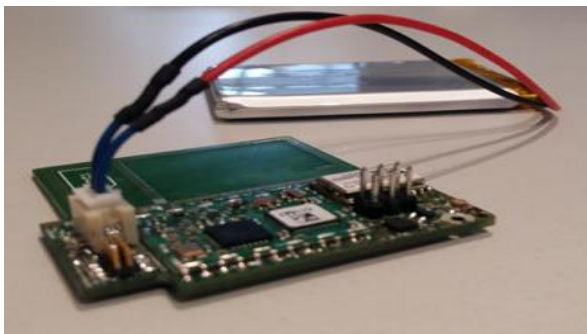


Figure 1 DUT Setup

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0

Detailed Test Results:

Test Mode Activation (Activation by Personalization): **PASS**

Test Mode Activation (Over the Air Activation): **PASS**

Test Application Functionality: **PASS**

Packet Error Rate RX2 SF12: **PASS**

Cryptography: **PASS**

Downlink Window Timing: **PASS**

Frame Sequence Number: **PASS**

Device Status Request: **PASS**

New Channel Request: **PASS**

Confirmed packets: **PASS**

RX Parameter Setup Request: **PASS**

RX Timing Setup Request: **PASS**

Link ADR Request: **PASS**

Packet Error Rate RX1 Window: **PASS**

Packet Error Rate RX2 Window: **PASS**

Supported Optional Features:

Adaptive Data Rate (ADR): Yes

Remarks: None.

Result: The device passed the test without limitations.