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

"ED1608"

for the Customer

1M2M BV

Markus Ridder

Yavuz Turan.

31. Mar. 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:
1M2M BV
Mr. Ruud Schellekens
3453 MJ De Meern
NETHERLANDS

Tested Device: ED1608
Firmware version: V1.07
Hardware version: V4.35
End-device identifier: 0x00001152
LoRa Device Class: A
LoRaWAN Specification version: V1.0
Certification requirements: LoRa End Device Certification EU Version1.1
Frequency band(s) tested: 868 MHz
Test Equipment:
Test Software Version: 1.1.5, 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: March 31st, 2016

The Test Report, No. 6160084 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility: Markus Ridder, Test Engineer

Approved: Annette Schramm, Quality Engineer

1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	ED 1608
Kind of product	Smart Sensor
Series (if any)	-
Hardware Version	V4.35
Firmware Version	V1.07
Type of DUT	☒ Module / End Device ☐ Gateway / Concentrator
Geographical area of operation	☒ Europe ☒ USA
Operating frequency	☐ 433 MHz ☒ 868 MHz ☒ 915 MHz
Adaptive Data Rate (ADR) supported?	☒ Yes ☐ No
Optional data rates supported?	☐ DR6 ☐ DR7
Activation possibilities	☐ Over the air ☐ by personalization ☒ both
Test According LoRaWAN™ Spec	☒ V1.0 ☐ V1.1 (b/o June 2016 earliest)
Output Power	14dB
Number / Type of Antenna(s)	1
Antenna Gain	-

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

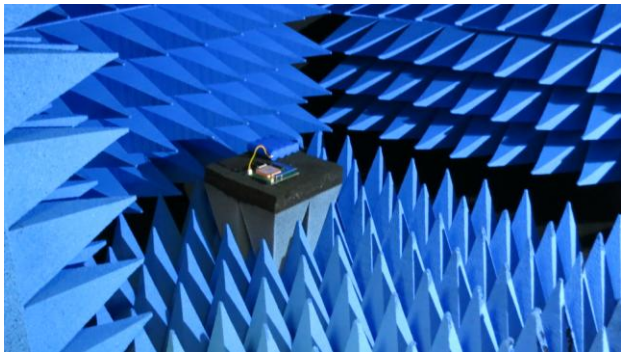

Figure 1 DUT Setup

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.