



The Testcenter facility 'LoRa[®] Test Lab' within IMST GmbH is recognized by the LoRa[™] Alliance for testing in accordance to the LoRaWAN[™] Specification V1.0.2

Report for Test of Conformance to LoRaWAN™ V1.0.2

for the Device

"Buttonboard"

for the Customer

"OXON AG"

Jens Lerner Yavuz Turan

29th September, 2020

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Administrative Summary

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

Responsible Test Engineer: Yavuz Turan, Jens Lerner

Subject: Test of Conformance to LoRaWAN™ Specification V1.0.2

Company and Contact Information:

OXON AG

Thomas Garaio

Waldeggstrasse 47

3097 LiebefeldGermany

Tested Device: Buttonboard

Hardware version: 1.5.0

Firmware version: 1.2.8

End-device identifier: 74BC5300000032C

LoRa Device Class: A

LoRaWAN Specification version: V1.0.2

Certification requirements: LoRa End Device Certification EU Version 1.6

Frequency band(s) tested: 868 MHz

Test Equipment: Test Software Version: 1.1.16

IMST LGW (iC880A + Raspberry Pi): Gateway software version 5.0.1

Packet forwarder software version 4.0.1

Test Result: PASS

Quality Engineer: Jens Lerner

Date: September 29th, 2020

The Test Report, No. 6200947 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility:

Yavuz Turan

Approved:

Test Engineer

Quality Engineer

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1 Description of the Device Under Test (DUT)

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1.1 General

Item	Value
Product name	Buttonboard
Product Vertical(s)	Agriculture Buildings, Home/Consumer, Industry,
	utilities, Transport / Logistics
Series (if any)	1
Hardware Version	1.5.0
Firmware Version	1.2.8
Type of DUT	☐ Module ☐ End Device/Sensor ☐ others
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	□ V1.0.1 ⊠ V1.0.2
Output Power	14 dBm
Number / Type of Antenna(s)	1 chip antenna
Antenna Gain	-1.5 dBi

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 Alliance End Device certification Requirements for EU863-870 MHz Version 1.6" Chapter 2.

1.3 DUT Setup

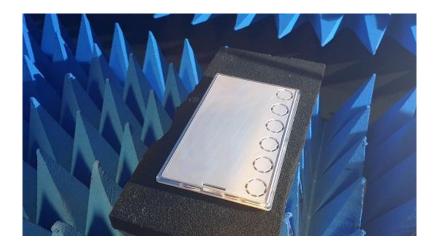


Figure 1 DUT Setup



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Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.2

Detailed Test Results:

Test Mode Activation (Over the Air Activation): PASS

Test Application Functionality: PASS

Channel Plan Usage: PASS

Cryptography: PASS

Packet Error Rate RX2 SF12: **PASS**Downlink Window Timing: **PASS**Frame Sequence Number: **PASS**

Confirmed Packets: PASS
Device Status Request: PASS
New Channel Request: PASS

Di Channel Request Mac Command: PASS

RX Parameter Setup Request: **PASS**RX Timing Setup Request: **PASS**TX Parameter Setup Request: **PASS**

Link Check Request: **PASS**Link ADR Request: **PASS**

Uplink Datarate RX1 DR Offset Mapping: PASS

Packet Error Rate Rx1 MaxSize: **PASS**Packet Error Rate Rx1 MaxSize: **PASS**RX1 And RX2 Simultaneous Frames: **PASS**

RX Oversized Payload: **PASS**Maximum Allowed Payload: **PASS**

Mac Commands: **PASS**Device Deactivation: **PASS**

Supported Optional Features:

Adaptive Data Rate (ADR): Yes
DR6 (SF7BW250): Yes
DR7 (FSK50): No
Link ADR Request Block: Yes
Di Channel Request: Yes
Range 6dB: Yes
Join Synch DevNonce: No

Confirmed Re-transmissions Yes (Max retries 7)

Remarks: None.

Result: The device passed the test without limitations.

