The Testcenter facility 'LoRa® Test Lab' within IMST GmbH is recognized by the LoRa™ Alliance for testing in accordance to the LoRaWAN™ Specification V1.0.4

Report for Test of Conformance to LoRaWAN™ V1.0.4 Class A

for the Device

"iM880B-L"

for the Customer

"IMST GmbH"

Jens Lerner

Yavuz Turan

5th July, 2021

Administrative Summary

Location: IMST GmbH, Test Centre, Kamp-Lintfort, Germany
Responsible Test Engineer: Yavuz Turan, Jens Lerner

Subject: Test of Conformance to LoRaWAN™ Specification V1.0.4 (Class A for EU)

Company and Contact Information:
IMST GmbH
Heinz Syrzisko
Carl-Friedrich-Gauss-Str. 2-4
47475 Kamp-Lintfort
Germany
Tested Device: iM880B-L
Hardware version: B
Firmware version: V3.0
End-device identifier: 70B3D58FFFFFFFFF
LoRa Device Class: A
LoRaWAN Specification version: V1.0.4
Certification requirements: LoRaWAN 1.0.4 End Device Certification Requirement V1.1
Frequency band(s) tested: 868MHz
Test Equipment: Test Software Version: 1.2
8x IMST LGW (iC980A + Raspberry Pi): Gateway software version 4.1.3
Packet forwarder software version 3.1.0

Test Result: PASS

Quality Engineer: Jens Lerner

Date: July 5th, 2021

The Test Report, No. 6210238 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility: Yavuz Turan   Approved: Jens Lerner
                    Test Engineer   Quality Engineer

LoRa® Alliance

1 Description of the Device Under Test (DUT)

1.1 General

| Item	Value
Product name	iM880B-L
Product Vertical(s)	
Series (if any)	
Hardware Version	B
Firmware Version	V3.0
Type of DUT	☒ Module ☐ End Device/Sensor ☐ others
Geographical area of operation	☒ Europe ☐ USA ☐ Australia
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 ☒ V1.0.4
Output Power	max. 19dBm
Number / Type of Antenna(s)	
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 Alliance End Device certification Requirements for All Regions Version 1.1" Chapter 2.

1.3 DUT Setup

Figure 1 DUT Setup

![LoRa Alliance]
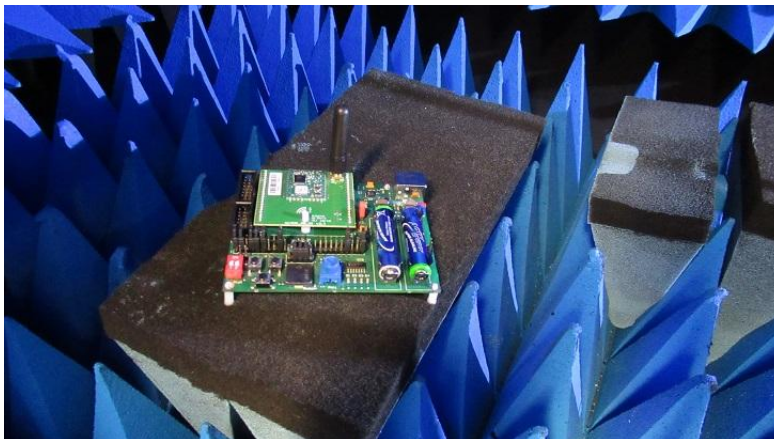
Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.4 (Class A device for EU868)

<u>Detailed Test Results:</u>

Device Activation (Activation by Personalization): **PASS**
Test Mode Activation (Over the Air Activation): **PASS**
Cryptography: **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**
Duty Cycle Request: **PASS**
Device Time 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**
Mac Commands Buffer: **PASS**
Device Deactivation: **PASS**

<u>Supported Optional Features:</u>

Adaptive Data Rate (ADR):   Yes
Min TX Power: Yes
SF7BW250 (DR6)   Yes
FSK50 (DR7)   Yes
Permanent Class C   No

<u>Remarks:</u> None

Result: The device passed the test without limitations.