



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 C

for the Device

“iM980A-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 C for US)

Company and Contact Information:

IMST GmbH

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Germany

Tested Device: iM980A-L

Hardware version: A

Firmware version: V3.0

End-device identifier: 70B3D58FFFFFFFFF

LoRa Device Class: C

LoRaWAN Specification version: V1.0.4

Certification requirements: LoRaWAN 1.0.4 End Device Certification Requirement V1.1

Frequency band(s) tested: 915 MHz

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
Test Engineer

Approved: 
Jens Lerner
Quality Engineer

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1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	iM980A-L
Product Vertical(s)	
Series (if any)	
Hardware Version	A
Firmware Version	V3.0
Type of DUT	<input checked="" type="checkbox"/> Module <input type="checkbox"/> End Device/Sensor <input type="checkbox"/> others
Geographical area of operation	<input type="checkbox"/> Europe <input checked="" type="checkbox"/> USA <input type="checkbox"/> Australia
Operating frequency	<input type="checkbox"/> 433 MHz <input type="checkbox"/> 868 MHz <input checked="" 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 checked="" type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input type="checkbox"/> both
Test According LoRaWAN™ Spec	<input type="checkbox"/> V1.0.1 <input type="checkbox"/> V1.0.2 <input checked="" type="checkbox"/> V1.0.4
Output Power	max. 17.5dBm
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

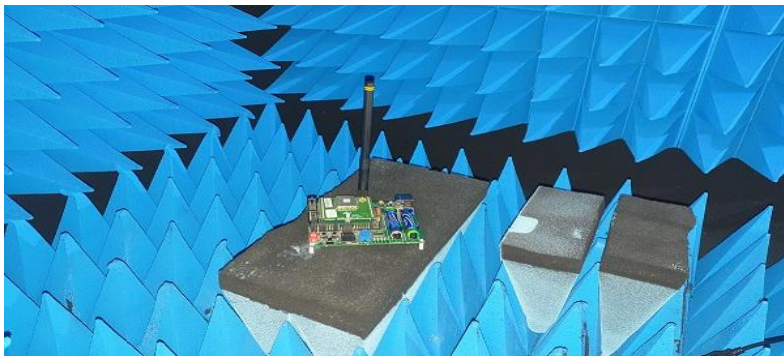


Figure 1 DUT Setup

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.4 (Class C device for US915)

Detailed Test Results Class A:

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**

Detailed Test Results Class C:

Test Mode Activation (Over the Air Activation): **PASS**
RXC Reception Part 1: **PASS**
RXC Reception Part 2: **PASS**
RXC Packet Error Rate: **PASS**
RXC Confirmed Uplinks: **PASS**
Over The Air Activation: **PASS**
Switch Class A: **PASS**
Device Deactivation: **PASS**

Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
Min TX Power:	Yes
Permanent Class C	Yes

Remarks: None

Result: The device passed the test without limitations.