



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

“CMi4110Int”

for the Customer

“Elvaco AB”

Jens Lerner

Yavuz Turan

23rd June, 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 V1.0.2

Company and Contact Information:

Elvaco AB

Andréas Johansson

Kabelgatan 2T

434 37 Kungsbacka

Sweden

Tested Device: CMI4110Int

Hardware version: 2B

Firmware version: 1.0.7

End-device identifier: fe500001013a1994

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: May 23rd, 2021

The Test Report, No. 6210470 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 | CMi4110Int |
| Product Vertical(s) | Buildings, Utilities |
| Product Version | 2C |
| Series (if any) | N/A |
| Hardware Version | 2B |
| Firmware Version | 1.0.7 |
| Type of DUT | <input checked="" type="checkbox"/> Module <input type="checkbox"/> End Device/Sensor <input type="checkbox"/> others |
| 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 checked="" 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 type="checkbox"/> V1.0.1 <input checked="" type="checkbox"/> V1.0.2 |
| Output Power | 14 dBm |
| Number / Type of Antenna(s) | 1 Internal antenna (external antenna option available) |
| Antenna Gain | 0 dB |

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

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.2

Detailed Test Results:

Device Activation (Activation by Personalization): **PASS**
Test Mode Activation (Over the Air Activation): **PASS**
Test Application Functionality: **PASS**
New Channel Request: **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**
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.