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

for the Device

"LST module"

for the Customer

"Shenzhen Dragino Technology Development co. LTD"

Jens Lerner
Yavuz Turan

21st 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 V1.0.4

Company and Contact Information:
Shenzhen Dragino Technology Development co. LTD
Edwin Chen
No.8 CaiYunRoad, LongCheng Street, LongGang District
518116,Shenzhen
China
Tested Device: LST module
Hardware version: V1.1
Firmware version: LSN50 v1.8.0
End-device identifier: 0x0182f2f6
LoRa Device Class: A
LoRaWAN Specification version: V1.0.4
Certification requirements: LoRa End Device Certification Requirements Version 1.1
Frequency band(s) tested: 868 MHz
Test Equipment: Test Software Version: 1.2
2x 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: June 21st, 2021

The Test Report, No. 6210412 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	LST module
Product Vertical(s)	Agriculture, Buildings, Cities, Environment, Home/Customer, Industry, Infostructure, Utilities, Transport/Logistics
Product Version	LST v1.1
Series (if any)	N/A
Hardware Version	V1.1
Firmware Version	LSN50 v1.8.0
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 ☒ V1.0.4
Output Power	14 dBm
Number / Type of Antenna(s)	Spring Antenna or Sticker Antenna
Antenna Gain	2.0dB

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

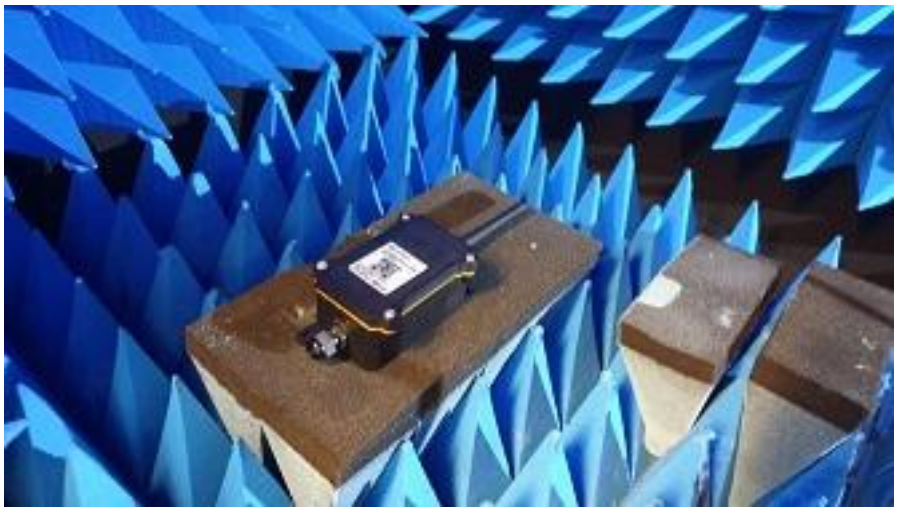

Figure 1 DUT Setup

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Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.4

Detailed Test Results:

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**

Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
DR6 (SF7BW250):	No
DR7 (FSK50):	No
Min TX Power:	Yes (Tx Power Id = 7)

Remarks: None

Result: The device passed the test without limitations.