



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 LoRaWAN[®] V1.0.2 (EU868)

for the Device

“Heat cost allocator”

for the Customer

“Sontex SA”

Jens Lerner

Yavuz Turan

5th July, 2022

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 (EU868)

Company and Contact Information:

Sontex SA

Valentin Nicolet

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2605 Sonceboz

Switzerland

Tested Device: Heat cost allocator

Hardware version: 1.1

Firmware version: V1.0.0

End-device identifier: F80DF1000000647F

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: LCTT v3.7.0_R1

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: July 5th, 2022

The Test Report, No. 6220310 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	Heat cost allocator
Product Vertical(s)	Buildings, Industry
Series (if any)	
Hardware Version	1.1
Firmware Version	V1.0.0
Type of DUT	<input type="checkbox"/> Module <input checked="" 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 checked="" 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 checked="" type="checkbox"/> V1.0.2
Output Power	0-14dBm
Number / Type of Antenna(s)	1 internal pcb antenna
Antenna Gain	N/A

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

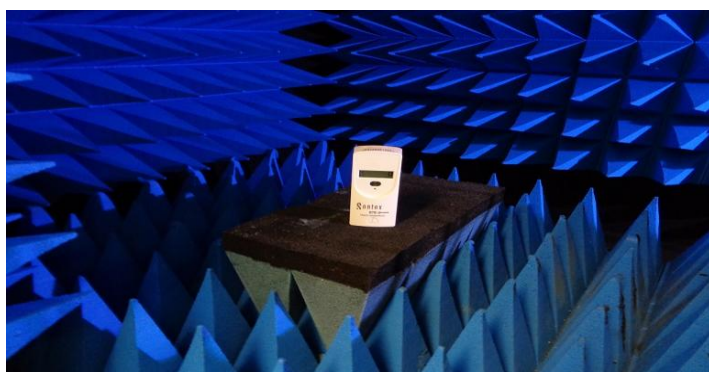


Figure 1 DUT Setup

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN® specification V1.0.2 (EU868)

Detailed Test Results:

Device Activation: **PASS**
Over the Air Activation: **PASS**
Test Application Functionality: **PASS**
AES Encryption and Message Integrity: **PASS**
Downlink Error Rate: **PASS**
Downlink Window Timing: **PASS**
Frame Sequence Number: **PASS**
Device Status Request: **PASS**
Mac Commands: **PASS**
New Channel Request: **PASS**
Di Channel Request: **PASS**
Confirmed Packets: **PASS**
RX Parameter Setup Request: **PASS**
RX Timing Setup Request: **PASS**
Link ADR Request: **PASS**
RX1 Receive Window: **PASS**
RX2 Receive Window: **PASS**
RX1 and RX2 Simultaneous Frames: **PASS**
TX Parameter Setup Request: **PASS**
Link Check Request: **PASS**
RX Oversized Payload: **PASS**
Maximum Allowed Payload: **PASS**

Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
DR6 (SF7BW250):	Yes
DR7 (FSK50):	Yes
Link ADR Request Block:	Yes
Di Channel Request:	Yes
Join Synch DevNonce:	No
Confirmed Re-transmissions	Yes (Max retries 7)

Remarks: None

Result: The device passed the test without limitations.