



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

“HygroTemp’O”

for the Customer

“Watteco”

Jens Lerner

Yavuz Turan

4th July, 2024

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:

Watteco

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Tested Device: HygroTemp'O

Hardware version: 70-10-750

Firmware version: v3.5.2

End-device identifier: 70b3d5e75e02624a

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 v3.13.0_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 4th, 2024

The Test Report, No. 6240477 has the following conclusion:

The device has PASSED the tests hereunder.

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

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1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	HygroTemp'o
Product Vertical(s)	Buildings, Home / Consumer
Series (if any)	
Hardware Version	70-10-750
Firmware Version	V3.5.2
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 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	None - Battery only
Number / Type of Antenna(s)	1 internal antenna
Antenna Gain	0dBi

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

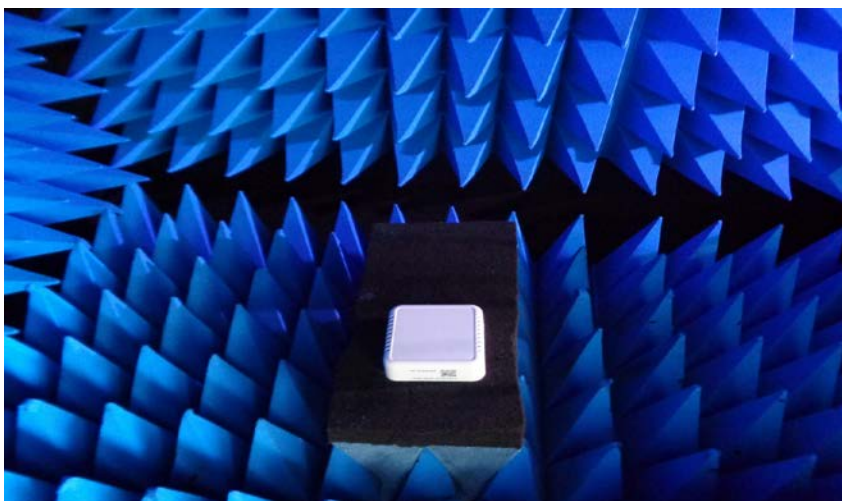


Figure 1 DUT Setup

Applied Methods of Measurement

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

Detailed Test Results:

Test Case ID	Description	Verdict	Date
TP_A_EU868_ED_MAC_BV_000	Device Activation	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_001_A	Over the Air Activation	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_001_B	Activation by Personalization	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_002	Test Application Functionality	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_003	AES Encryption and Message Integrity	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_004	Downlink Error Rate	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_005	Downlink Window Timing	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_006	Frame Sequence Number	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_007	DevStatusReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_008	MAC Commands	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_009	NewChannelReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_011	Confirmed Packets	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_012	RXParamSetupReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_013	RXTimingSetupReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_014A	LinkADRReq MAC Command (Part 1)	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_014B	LinkADRReq MAC Command (Part 2)	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_015A	RX1 Receive Window Test (Part 1)	PASS	2024-07-04
TP_A_EU868_ED_MAC_BV_015B	RX1 Receive Window Test (Part 2)	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_016	RX2 Receive Window Test	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_017	RX1 and RX2 Simultaneous Frames	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_018	TXParamSetupReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_019	LinkCheckReq MAC Command	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_020	RX Oversized Payload	PASS	2024-07-03
TP_A_EU868_ED_MAC_BV_021	Maximum Allowed Payload	PASS	2024-07-04

Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
DR6 (SF7BW250):	No
DR7 (FSK50):	No
Link ADR Request Block:	No
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.