



The Testcenter facility 'LoRa<sup>®</sup> Test Lab' within IMST GmbH is recognized by the LoRa<sup>®</sup> Alliance for testing in accordance to the LoRaWAN<sup>®</sup> Specification V1.0.4

---

# **Report for Test of Conformance to LoRaWAN<sup>®</sup> V1.0.4 EU868 (Class A & Temporary Class C)**

for the Device

**“MTXDOT-WW1”**

for the Customer

**“Multi-Tech Systems”**

Jens Lerner

Yavuz Turan

6<sup>th</sup> March, 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 V1.0.4 (EU868)

Company and Contact Information:

Multi-Tech Systems

Tim Gunn

2205 Woodale Drive

Mounds View, MN 55112

USA

Tested Device: MTXDOT-WW1

Hardware version: A

Firmware version: 4.2.x

End-device identifier: 0080000000000001

LoRa Device Class: A & Temporary Class C

LoRaWAN Specification version: V1.0.4

Certification requirements:

LW1.0.4 End Device Certification V1.6.1

Frequency band(s) tested: 863-870 MHz

Test Equipment: LCTT v3.12.0\_R1

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: March 6<sup>th</sup>, 2024

The Test Report, No. 6240115 has the following conclusion:

**The device has PASSED the tests hereunder.**

Responsibility:  Approved: 

Yavuz Turan

Test Engineer

Jens Lerner

Quality Engineer

Copyright Notice & Disclaimer: No part of this test report may be reproduced without written permission of IMST GmbH. The test results herein only refer to the tested sample. IMST GmbH cannot be made responsible for any generalizations or conclusions drawn from the test results presented herein concerning further samples of the tested device. Modification of the tested sample(s) is prohibited and leads to invalidity of this report.

# 1 Description of the Device Under Test (DUT)

## 1.1 General

Item	Value
Product name	MTXDOT-WW1
Product Vertical(s)	Buildings, Cities, Industry
Series (if any)	N/A
Hardware Version	A
Software Version	N/A
Firmware Version	4.2.x
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 <input type="checkbox"/> Australia
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 type="checkbox"/> V1.0.2 <input checked="" type="checkbox"/> V1.0.4
Output Power	21dbm max
Number / Type of Antenna(s)	Single UFL or trace
Antenna Gain	N/A

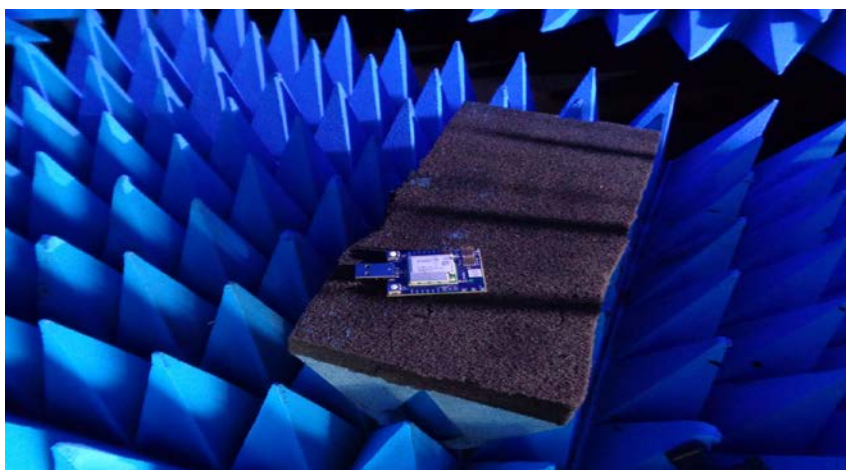
**Table 1 Device Information**

## 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 All Regions Version 1.6.1” 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 (EU868)

Detailed Test Results Class A & Temporary Class C:

Test Case ID	Description	Verdict	Date
TP_A_EU868_ED_MAC_104_BV_000	Activation Pre-test	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_001_A	Over the Air Activation	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_001_B	Activation by Personalization	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_002	Cryptography	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_003	Downlink Sequence Number	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_004	Confirmed Frames	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_005	DevStausReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_006	NewChannelReq MAC Command for Dynamic Channel plan devices only	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_007	DIChannelReq for Dynamic Channel plan devices only	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_008	RXParameterSetupReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_009	RXTimingSetupReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_010	TXParamSetupReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_011	LinkCheckReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_012A	LinkADRRReq MAC Command (Part 1)	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_012B	LinkADRRReq MAC Command (Part 2)	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_013	DutyCycleReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_014	DeviceTimeReq MAC Command	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_015A	RX1 Receive Window Test (Part 1)	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_015B	RX1 Receive Window Test (Part 2)	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_016	RX2 Receive Window Test	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_017	RX1 and RX2 simultaneous frames	PASS	2024-02-27
TP_A_EU868_ED_MAC_104_BV_018	RX Oversized Payload	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_019A	Maximum Allowed Payload (Part 1)	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_019B	Maximum Allowed Payload (Part 2)	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_020	MAC Command(s) in App-Payload and/or Frame Options	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_021	Multiple MAC Commands prioritization	PASS	2024-02-28
TP_A_EU868_ED_MAC_104_BV_022	FPort 224 Deactivation	PASS	2024-02-28
TP_C_EU868_ED_MAC_104_BV_000	Activation and Usage	PASS	2024-02-28

Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
SF7BW250 (DR6)	No
FSK50 (DR7)	No
Class C	Yes (temporary)

Additional Tests By The Manufacturer:

Retransmission Back-Off for OTA devices only: **PASS**

Remarks: None

**Result: The device passed the test without limitations.**