



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

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# **Report for Test of Conformance to LoRaWAN<sup>®</sup> V1.0.4 IN865 (Class A & Temporary Class C)**

for the Device

**“MTXDOT-WW1”**

for the Customer

**“Multi-Tech Systems”**

Jens Lerner

Yavuz Turan

8<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 (IN865)

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: 865-867 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 8<sup>th</sup>, 2024

The Test Report, No. 6240115 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	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"/> 865 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

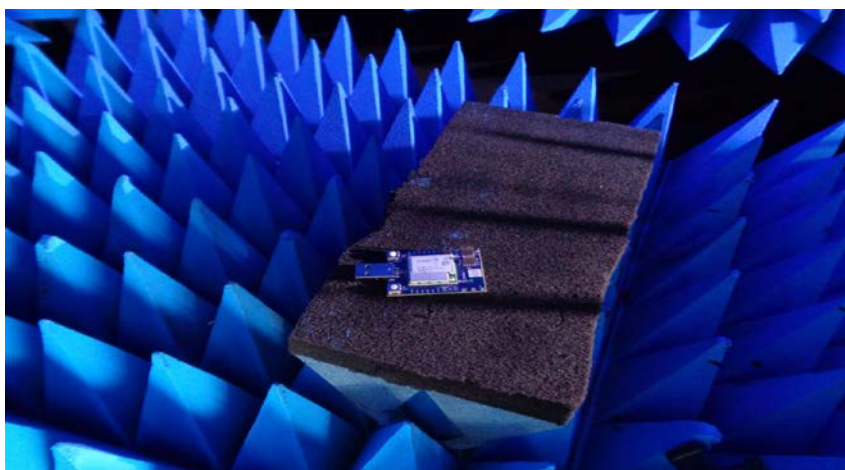
**Table 1 Device Information**

## 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 (IN865)

Detailed Test Results Class A & Temporary Class C:

Test Case ID	Description	Verdict	Date
TP_A_IN865_ED_MAC_104_BV_000	Activation Pre-test	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_001_A	Over the Air Activation	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_001_B	Activation by Personalization	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_002	Cryptography	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_003	Downlink Sequence Number	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_004	Confirmed Frames	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_005	DevStausReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_006	NewChannelReq MAC Command for Dynamic Channel plan devices only	PASS	2024-03-07
TP_A_IN865_ED_MAC_104_BV_007	DIChannelReq for Dynamic Channel plan devices only	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_008	RXParameterSetupReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_009	RXTimingSetupReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_010	TXParamSetupReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_011	LinkCheckReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_012A	LinkADRReq MAC Command (Part 1)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_012B	LinkADRReq MAC Command (Part 2)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_013	DutyCycleReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_014	DeviceTimeReq MAC Command	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_015A	RX1 Receive Window Test (Part 1)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_015B	RX1 Receive Window Test (Part 2)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_016	RX2 Receive Window Test	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_017	RX1 and RX2 simultaneous frames	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_018	RX Oversized Payload	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_019A	Maximum Allowed Payload (Part 1)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_019B	Maximum Allowed Payload (Part 2)	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_020	MAC Command(s) in App-Payload and/or Frame Options	PASS	2024-03-07
TP_A_IN865_ED_MAC_104_BV_021	Multiple MAC Commands prioritization	PASS	2024-03-06
TP_A_IN865_ED_MAC_104_BV_022	FPort 224 Deactivation	PASS	2024-03-06
TP_C_IN865_ED_MAC_104_BV_000	Activation and Usage	PASS	2024-03-07

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.**