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 Class A (US915)

for the Device

"RCM®-H200"

for the Customer

"GWF MessSysteme AG"

Jens Lerner

Yavuz Turan

19th December, 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 V1.0.4 (Class A for US915)

Company and Contact Information:
GWF MessSysteme AG
Lukas Kempf
Obergrundstrasse 119
6005 Luzern
Switzerland
Tested Device: RCM®-H200
Hardware version: 20.1142 V11
Firmware version: V1
End-device identifier: 70b3d53878000617
LoRaWAN® Device Class: A
LoRaWAN Specification version: V1.0.4
Certification requirements: LoRaWAN 1.0.4 End Device Certification Requirements V1.6
Frequency band(s) tested: 915 MHz
Test Equipment: LCTT v3.8.0_R1
8x IMST LGW (iC980A + Raspberry Pi): Gateway software version 4.1.3
Packet forwarder software version 3.1.0

Test Result: PASS

Quality Engineer: Jens Lerner

Date: December 19th, 2022

The Test Report, No. 6220656 has the following conclusion:

The device has PASSED the tests hereunder.

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

1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	RCM®-H200
Product Vertical(s)	N/A
Series (if any)	N/A
Hardware Version	20.1142 V11
Firmware Version	V1
LoRaWAN® Device Class	A
Type of DUT	☐ Module ☒ End Device/Sensor ☐ others
Geographical area of operation	☐ Europe ☒ USA ☐ Australia
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	20 dBm
Number / Type of Antenna(s)	L-shape monopol
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" Chapter 2.
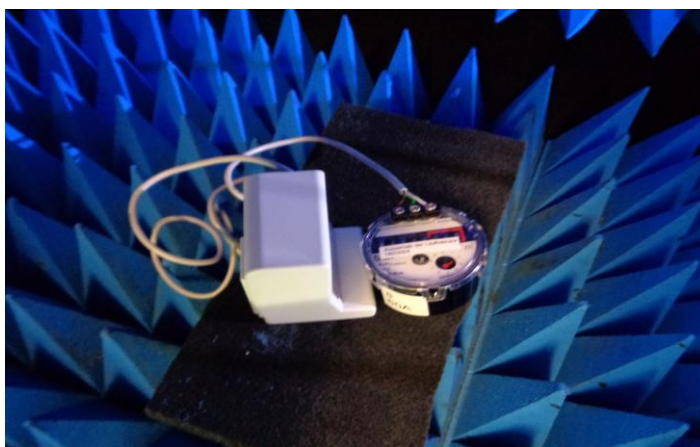
1.3 DUT Setup

Figure 1 DUT Setup

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN® specification V1.0.4 (Class A device for US915)

Detailed Test Results:

Test Mode Activation: **PASS**
Over the Air Activation: **PASS**
Cryptography: **PASS**
Downlink Sequence Number: **PASS**
Confirmed Frames: **PASS**
Device Status Request: **PASS**
New Channel Request Reject**: PASS**
Di Channel Request Reject: **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**
RX1 Window Test: **PASS**
RX2 Window Test: **PASS**
RX1 and RX2 Simultaneous Frames: **PASS**
RX Oversized Payload: **PASS**
Maximum Allowed Payload: **PASS**
Mac Commands: **PASS**
Multiple MAC Commands Prioritization: **PASS**
Device Deactivation: **PASS**

Supported Optional Features:

Adaptive Data Rate (ADR):   Yes
Permanent Class C   No

Remarks: None

Result: The device passed the test without limitations.