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 EU868

for the Device

“BREEZE”

for the Customer

“TEKTELCIC Communications Inc.”

Jens Lerner
Yavuz Turan

24th October, 2023
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:
TEKTELIC Communications Inc.  
David Tholl  
7657 10th street NE  
T2E 8X2, Calgary  
Canada

Tested Device: BREEZE
Hardware version: T0007938
Firmware version: Application FW v2.2.6 and LoRaMAC FW v4.7.0
LoRa Device Class: Temporary Class C
LoRaWAN Specification version: V1.0.4
Certification requirements:
LW1.0.4 End Device Certification V1.6
Frequency band(s) tested: 868MHz
Test Equipment:LCTT v3.11.0_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: October 24th, 2023

The Test Report, No. 6230601 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>BREEZE</td>
</tr>
<tr>
<td>Product Vertical(s)</td>
<td>Buildings, Cities, Environment, Home/Consumer, Industry</td>
</tr>
<tr>
<td>Series (if any)</td>
<td>STM</td>
</tr>
<tr>
<td>Hardware Version</td>
<td>T0007938</td>
</tr>
<tr>
<td>Software Version</td>
<td>N/A</td>
</tr>
<tr>
<td>Firmware Version</td>
<td>Application FW v2.2.6 and LoRaMAC FW V4.7.0</td>
</tr>
<tr>
<td>Type of DUT</td>
<td>Module ✗ End Device/Sensor ☐ others</td>
</tr>
<tr>
<td>Geographical area of operation</td>
<td>✗ Europe ☐ USA ☐ Australia</td>
</tr>
<tr>
<td>Operating frequency</td>
<td>☑ 433 MHz ☐ 868 MHz ☐ 915 MHz</td>
</tr>
<tr>
<td>Adaptive Data Rate (ADR) supported?</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>Optional data rates supported?</td>
<td>☑ DR6 ☑ DR7</td>
</tr>
<tr>
<td>Activation possibilities</td>
<td>☑ Over the air ☑ by personalization ☐ both</td>
</tr>
<tr>
<td>Test According LoRaWAN® Spec</td>
<td>☑ V1.0.1 ☑ V1.0.2 ☑ V1.0.4</td>
</tr>
<tr>
<td>Output Power</td>
<td>0 to 14 dBm</td>
</tr>
<tr>
<td>Number / Type of Antenna(s)</td>
<td>1 / ceramic SMD antenna</td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>2.2 dBi</td>
</tr>
</tbody>
</table>

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](image-url)
Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN® specification V1.0.4 (EU868)

Detailed Test Results Class A:

Activation Pre-test: PASS
Over the Air Activation: PASS
Cryptography: PASS
Downlink Sequence Number: PASS
Confirmed Frames: PASS
Device Status Request: PASS
New Channel Request: PASS
Di Channel Request Mac Command: 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
FPort 224 Deactivation: PASS

Supported Optional Features:

Adaptive Data Rate (ADR): Yes
SF7BW250 (DR6): Yes
FSK50 (DR7): Yes

Additional Tests By The Manufacturer:

Retransmission Back-Off for OTA devices only: PASS

Remarks: None

Result: The device passed the test without limitations.