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.

Report for Test of Conformance to LoRaWAN™ V1.0

for the Device

“TLM922S”

for the Customer

Taifatech Inc.

Markus Ridder
Yavuz Turan

Administrative Summary

Location: IMST GmbH, Test Centre, Kamp-Lintfort, Germany
Responsible Test Engineer: Yavuz Turan, Markus Ridder

Subject: Test of Conformance to LoRaWAN™ Specification V1.0

Company and Contact Information:
Taifatech Inc.
Mrs. Pearl Sung
Zhubei City, Hsinchu County 302,
Taiwan

Tested Device: TLM922S
Firmware version: V1.0
Hardware version: V1.1
End-device identifier: 1122334455667788
LoRa Device Class: A
LoRaWAN Specification version: V1.0
Certification requirements: LoRa End Device Certification EU Version 1.1
Frequency band(s) tested: 868 MHz
Test Equipment:
Semtech IOT SX1301 Starter Kit: Gateway software version 3.1.0
Packet forwarder software version 2.1.0

Test Result: PASS

Chief Test Engineer: Markus Ridder
Dept. Test Center

Date: June 14th, 2016

The Test Report, No. 6160235 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility: Markus Ridder
Approved: Annette Schramm
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>TLM922S</td>
</tr>
<tr>
<td>Kind of product</td>
<td>Module</td>
</tr>
<tr>
<td>Series (if any)</td>
<td></td>
</tr>
<tr>
<td>Hardware Version</td>
<td>V1.1</td>
</tr>
<tr>
<td>Firmware Version</td>
<td>V1.0</td>
</tr>
<tr>
<td>Type of DUT</td>
<td>Module / End Device</td>
</tr>
<tr>
<td>Geographical area of operation</td>
<td>Europe, USA</td>
</tr>
<tr>
<td>Operating frequency</td>
<td>433 MHz, 868 MHz, 915 MHz</td>
</tr>
<tr>
<td>Adaptive Data Rate (ADR)</td>
<td>Yes</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, V1.0.1 (m/o June 2016 earliest)</td>
</tr>
<tr>
<td>Output Power</td>
<td>Up to 27 mW</td>
</tr>
<tr>
<td>Number / Type of Antenna(s)</td>
<td>1</td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>-</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 End Device Certification EU V1_1” Chapter 3.

1.3 DUT Setup

Figure 1 DUT Setup
Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0

Detailed Test Results:

Test Mode activation (Activation by Personalization): PASS
Test Mode activation (Over the Air Activation): PASS
Test application functionality: PASS
Packet Error Rate RX2 SF12: PASS
Cryptography: PASS
Downlink Window Timing: PASS
Frame Sequence Number: PASS
Device Status Request: PASS
New Channel Request: PASS
Confirmed packets: PASS
RX Parameter Setup Request: PASS
RX timing setup request: PASS
Link ADR Request: PASS
Packet error rate RX1 Window: PASS
Packet error rate RX2 Window: PASS

Supported Optional Features:

Adaptive Data Rate (ADR): Yes
SF7BW250: Yes

Remarks: None.

Result: The device passed the test without limitations.