The Testcenter facility ‘LoRa® Test Lab’ within IMST GmbH is recognized by the LoRa™ Alliance for testing in accordance to the LoRaWAN™ Specification V1.0.1

Report for Test of Conformance to LoRaWAN™ V1.0.1 for the Device “Coppertheft" for the Customer Omniimpex GmbH

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 V1.0.1

Company and Contact Information:
Omniimpex GmbH, Mr. Stephan Bühler
Waldhof 5, 6300 Zug
Switzerland

Tested Device: Copperthef
t Firmware version: V1.2
Hardware version: V1.0
End-device identifier: 0200f0ff7fd09168
LoRa Device Class: A
LoRaWAN Specification version: V1.0.1
Certification requirements: LoRa End Device Certification EU Version 1.2
Frequency band(s) tested: 868 MHz
Test Equipment: Test Software Version: 1.1.7
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: July 22th, 2016

The Test Report, No. 6160321 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility: Approved:
Yavuz Turan Markus Ridder
Test Engineer Quality Engineer
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>Coppertheft</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>V1.0</td>
</tr>
<tr>
<td>Firmware Version</td>
<td>V1.2</td>
</tr>
<tr>
<td>Type of DUT</td>
<td>☒ Module / End Device ☐ Gateway / Concentrator</td>
</tr>
<tr>
<td>Geographical area of operation</td>
<td>☒ Europe ☐ USA</td>
</tr>
<tr>
<td>Operating frequency</td>
<td>☐ 433 MHz</td>
</tr>
<tr>
<td></td>
<td>☒ 868 MHz</td>
</tr>
<tr>
<td></td>
<td>☐ 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 ☒ V1.0.1 (m/o June 2016 earliest)</td>
</tr>
<tr>
<td>Output Power</td>
<td>14 dBm</td>
</tr>
<tr>
<td>Number / Type of Antenna(s)</td>
<td>2 / 868 Mhz + GPS</td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>0 dB</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_2” Chapter 3.

1.3 DUT Setup

Figure 1 DUT Setup
Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.1

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
- Mac Commands: 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

Remarks: None.

Result: The device passed the test without limitations.