



The Testcenter facility 'LoRa[®] Test Lab' within IMST GmbH is recognized by the LoRa[™] Alliance for testing in accordance to the LoRaWAN[™] Specification V1.0.2

Report for Test of Conformance to LoRaWAN[™] V1.0.2

for the Device

"CRTM 3000 LoRa"

for the Customer

"Alflex Products BV"

Markus Ridder

Yavuz Turan

11. Oct. 2017

Administrative Summary

Location: IMST GmbH, Test Centre, Kamp-Lintfort, Germany

Responsible Test Engineer: Yavuz Turan, Markus Ridder

Subject: Test of Conformance to LoRaWAN™ Specification V1.0.2

Company and Contact Information:

Afflex Products BV

Mr. Fred Lucas

Blauw-roodlaan 300, 2718 SK Zoetermeer

Netherlands

Tested Device: CRTM 3000 LoRa

Firmware version: 1.0.1

Hardware version: 1.1

End-device identifier: 52000000003c2300

LoRa Device Class: A

LoRaWAN Specification version: V1.0.2

Certification requirements: LoRa End Device Certification EU Version 1.5

Frequency band(s) tested: 868 MHz

Test Equipment: Test Software Version: 1.1.11

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: October 11th , 2017

The Test Report, No. 6171566 has the following conclusion:

The device has PASSED the tests hereunder.

Responsibility: 
Yavuz Turan
Test Engineer

Approved: 
Markus Ridder
Quality Engineer

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1 Description of the Device Under Test (DUT)

1.1 General

Item	Value
Product name	CRTM 3000 LoRa
Kind of product	Temperature and movement sensor
Series (if any)	
Hardware Version	1.0.1
Firmware Version	1.1
Type of DUT	<input checked="" type="checkbox"/> Module / End Device <input type="checkbox"/> Gateway / Concentrator
Geographical area of operation	<input checked="" type="checkbox"/> Europe <input type="checkbox"/> USA
Operating frequency	<input type="checkbox"/> 433 MHz <input checked="" type="checkbox"/> 868 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 checked="" type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input type="checkbox"/> both
Test According LoRaWAN™ Spec	<input type="checkbox"/> V1.0 <input checked="" type="checkbox"/> V1.0.2
Output Power	14 dBm
Number / Type of Antenna(s)	1 / Internal
Antenna Gain	0 dBm

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_5” Chapter 3.

1.3 DUT Setup



Figure 1 DUT Setup

Applied Methods of Measurement

1.4 Protocol Testing according to LoRaWAN™ specification V1.0.2

Detailed Test Results:

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

DR6 (SF7BW250): No

DR7 (FSK50): No

Link ADR Request Block: Yes

Di Channel Request: No

Range 6 dB: Yes

Remarks: None.

Result: The device passed the test without limitations.