



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

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# Report for Test of Conformance to LoRaWAN™ V1.0.2

for the Device

**"iM980A"**

for the Customer

**"IMST GmbH"**

Dietmar Krebs

Yavuz Turan

September 11<sup>th</sup>, 2019

## Administrative Summary

Location: IMST GmbH, Test Centre, Yavuz Turan, Dietmar Krebs

Subject: Test of Conformance to LoRaWAN™ Specification V1.0.2 for AS923

Company and Contact Information:

IMST GmbH

Heinz Syrzisko

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Germany

Tested Device: iM980A

Firmware version: V2.0

Hardware version: B1

End-device identifier: 3132333435363738

LoRa Device Class: A

LoRaWAN Specification version: V1.0.2

Certification requirements: LoRa End Device Certification Asia Version 1.1

Frequency band(s) tested: 923 MHz

Test Equipment: Test Software Version: 1.1.16

IMST LGW (iC980A + Raspberry Pi): Gateway software version 4.1.3

Packet forwarder software version 3.1.0

Test Result: PASS

Chief Test Engineer: Dietmar Krebs  
Dept. Test Centre

Date: September 11<sup>th</sup>, 2019

The Test Report, No. 6191178 has the following conclusion:

**The device has PASSED the tests hereunder.**

Responsibility: *Yavuz Turan* Approved: *Dietmar Krebs*  
Yavuz Turan Dietmar Krebs  
Test Engineer Quality Engineer

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# 1 Description of the Device Under Test (DUT)

## 1.1 General

Item	Value
Product name	iM980A
Kind of product	Radio Module
Series (if any)	
Hardware Version	B1
Firmware Version	V2.0
Type of DUT	<input checked="" type="checkbox"/> Module / End Device <input type="checkbox"/> Gateway / Concentrator
Geographical area of operation	<input type="checkbox"/> Europe <input type="checkbox"/> USA <input type="checkbox"/> India <input checked="" type="checkbox"/> Asia
Operating frequency	<input type="checkbox"/> 865 MHz <input checked="" type="checkbox"/> 923 MHz <input 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 checked="" type="checkbox"/> DR6 <input checked="" type="checkbox"/> DR7
Activation possibilities	<input type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input checked="" type="checkbox"/> both
Test According LoRaWAN™ Spec	<input type="checkbox"/> V1.0 <input type="checkbox"/> V1.0.1 <input checked="" type="checkbox"/> V1.0.2
Output Power	max. 17.5dBm
Number / Type of Antenna(s)	
Antenna Gain	

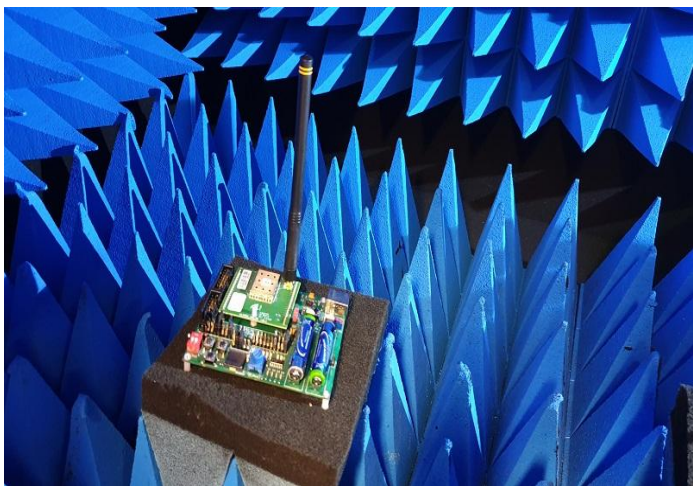
**Table 1 Device Information**

## 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 AS V1\_1”.

## 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:

Device Activation (ABP): **PASS**  
Test Application Functionality: **PASS**  
Over The Air Activation: **PASS**  
Channel Plan Usage: **PASS**  
Packet Error Rate RX2 Default: **PASS**  
Cryptography: **PASS**  
Downlink Window Timing: **PASS**  
Frame Sequence Number: **PASS**  
Device Status Request: **PASS**  
New Channel Request: **PASS**  
Di Channel request: **PASS**  
Confirmed packets: **PASS**  
RX Parameter Setup Request: **PASS**  
RX Timing Setup Request: **PASS**  
Link ADR Request: **PASS**  
Maximum Allowed Payload: **PASS**  
Rx Oversized Payload: **PASS**  
Mac Commands: **PASS**  
Uplink Data Rate Rx1Droffset Mapping: **PASS**  
Packet Error Rate RX1 Window max Size: **PASS**  
Packet Error Rate RX2 Window max Size: **PASS**  
TX Parameter Setup MAX Command: **PASS**

### Supported Optional Features:

Adaptive Data Rate (ADR):	Yes
DR6 (SF7BW250):	Yes
DR7 (FSK50):	Yes
Link ADR Request Block:	Yes
Di Channel Request:	Yes
Range 6dB	Yes
Frame Counter Size: 32 bits	Yes
Max. Retransmission for Confirmed Uplinks: 7	Yes

Remarks: None

**Result: The device passed the test without limitations.**