Test Report on

Cyble 5 v1.2 for AS923 MHz Band

Test Report Reference: VDE_ITRON_2102#LoRa01

Date: 2021-07-12

Test Laboratory:
7layers GmbH
Borsigstraße 11
40880 Ratingen
Germany

Table of Contents

1 Administrative Data

1.1 Project Information

Project Name:	VDE_ITRON_2102
Responsible for Testing and Report:	Mohamed El-Fikri
Date of Report:	2021-07-12
Testing Time Frame:	2021-07-09 - 2021-07-09

1.2 Applicant Information

Company Name:	Itron France
Address:	2 Rue de Paris / Immeuble les Montalets 92190 Meudon France
Contact Person:	Vincent Roger
Phone:	+33 3 85 29 33 49
Email:	vincent.roger@itron.com

1.3 Test Laboratory Information

The following list shows all Locations and Test Resources involved in the generation of test results:

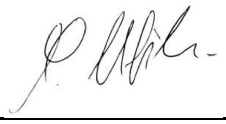
7layers DE, Ratingen, Germany

Company Name	7layers GmbH
Address	Borsigstr. 11 40880 Ratingen NRW Germany
Contact	Michael Albert
Phone	+49 2102 749 201
Email	Michael.Albert@7layers.com

List of Test Resources

ID	Name	Responsible	Accreditation Info
1	InterLab LoRa Compliance AS923 Test Solution	Mohamed El-Fikri	

1.4 Signature of the Testing Responsible



(Responsible for Testing and Report)
Mohamed El-Fikri

1.5 Signature of the Accreditation Responsible(s)

(Responsible Accreditation Scope)
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2 Test Object Data

2.1 Object Under Test (OUT) Description(s)

The following section lists all Objects Under Test (OUTs) involved during testing.

Object Under Test: Cyble 5

Description:	Cyble 5 v1.2
Type / Model:	End Device

Manufacturer:

Company Name:	Itron France
Address:	2 Rue de Paris / Immeuble les Montalets 92190 Meudon France
Contact Person:	Vincent Roger
Phone:	+33 3 85 29 33 49
Email:	vincent.roger@itron.com
Address:	2 Rue de Paris / Immeuble les Montalets 92190 Meudon France

For further details see Annex.

2.2 Sample Description(s)

Sample Name: DE1461000aa01

Object Under Test:	Cyble 5
Description:	Cyble 5 v1.2
Serial Number:	000781370001053E
Hardware Version:	2.0
Firmware Version:	1.3
Code:	aa01

For further details see Annex.

3 Results

3.1 General

Documentation of tested devices: Available at the test laboratory.

Interpretation of the test results: The results of the inspection are described on the following pages, where 'Conformity' or 'Passed' means that the certification criteria were verified and that the tested device is conform to the applied standard.

In cases where 'Declaration' is stated, the required documents are available in the manufacturer's product documentation.

In cases where 'not applicable' is stated, the test case requirements are not relevant to the specific equipment implementation.

Notes:

1. This report contains the abbreviated information content pertaining to services rendered. Supporting documentation not included herein is maintained and available at the test laboratory.

2. All tests are performed under environmental conditions within the requirements of the specifications. Environmental condition records are available at the test laboratory.

3.2 Applicable Test Specification(s)

Test Specification:	LoRa Alliance End-Device Certification Requirements for AS923MHz ISM Band Devices
Date / Version:	August 07, 2017 / v1.1
Description:	LoRa Alliance End Device Certification Requirements for AS923 MHz ISM Band devices, v1.1 (LoRaWAN™ core spec. 1.0.2 & LoRaWAN™ Regional Parameters Version 1.0.2rB)

3.3 Result Statistics

Test Specification	Total	Result Verdict			Pass Ratio
		Pass	Fail	Declaration	
LoRa End Device Certification AS v1.1	18	18	0	0	100.00 %

Note: Pass, Declaration, Fail and Inconclusive results are regarded for the Pass Ratio calculation.
Pass and Declaration are summarized as Pass results. Fail and Inconclusive are summarized as Fail results. All are summarized as Total count (Pass + Declaration + Fail + Inconclusive).
The Pass Ratio is calculated by the number of Pass results divided by the number of Total results.
All other results like Error or Not Tested are not regarded for the calculation.

3.4 Result Summary

Test Case Name / Description Test (Condition)	Verdict	Date
TC_MAC_AS_001: Test Mode Activation (Activation by Over- the-Air activation)	Passed	2021-07-09
TC_MAC_AS_002: Test application functionality	Passed	2021-07-09
TC_MAC_AS_003: Over The Air Activation	Passed	2021-07-09
TC_MAC_AS_004: Downlink error rate (Packet Error Rate RX1/RX2 SF10BW125)	Passed	2021-07-09
TC_MAC_AS_005: Cryptography	Passed	2021-07-09
TC_MAC_AS_006: Downlink Window Timing	Passed	2021-07-09
TC_MAC_AS_007: Frame Sequence Number	Passed	2021-07-09
TC_MAC_AS_008: Device Status Request MAC command	Passed	2021-07-09
TC_MAC_AS_009: MAC Commands	Passed	2021-07-09
TC_MAC_AS_010: New Channel Request MAC command	Passed	2021-07-09
TC_MAC_AS_011: DIChannelReq MAC command	Passed	2021-07-09
TC_MAC_AS_012: Confirmed packets	Passed	2021-07-09
TC_MAC_AS_013: RX Parameter Setup Request MAC command	Passed	2021-07-09
TC_MAC_AS_014: RX timing setup request MAC command	Passed	2021-07-09
TC_AS_AS_015: Link ADR Request MAC command	Passed	2021-07-09
TC_MAC_AS_016: Packet Error Rate Rx1 Window	Passed	2021-07-09
TC_MAC_AS_017: Packet Error Rate Rx2 Window	Passed	2021-07-09
TC_MAC_AS_018: TxParamSetupReq	Passed	2021-07-09

4 Test Equipment Details

4.1 List of Test Equipment

The information shown below is valid for the testing time frame of this test report.

1 7Layers LoRa Compliance Test Environment for LoRa Alliance End-Device Certification Requirements for AS923MHz ISM Band Devices Version 1.1

Ref. No.	Device Name	Description
1.1	7Layers LoRa Control PC	• 7Layers LoRa AS923MHz Compliance Test Suite SW v2.4 • 7Layers LoRa GW SW v2.0
1.2	Semtech IOT922STK1-8 (922MHZ IOT STARTER KIT W 8-CH)	• Radio Interface SX1301 • Lora Gateway SW (Driver HAL) v4.0.0-3 • Packet forwarder v2.2.1

5 Annex

5.1 Object Under Test (OUT) Features

Supported Features for Object Under Test: Cyble 5

Name	Mnemonic
LoRa End Device Certification AS923 v1.1	
Band 868 MHz	No
Band US902-928	No
Band EU433	No
Band AU915-928	No
Band CN470-510	No
Band AS923	Yes
Band KR920-923	No
Class A Device	Yes
Class C Device	No
LoRaWAN v1.0.2rB certification requirements	Yes
DUT supports the Lorawan-1.0.x-join-synch-issues-remedies-v1.0.0	No
data rate SF7BW250 (DR6)	Yes
data rate FSK (DR7)	Yes
OTAA	Support of optional over-the-air feature
ABP	No Support of optional activation-by-personalization
ADR	Support of Adaptive Data Rate
JOIN	Support of allow to trigger join request on port 224
DIChannelReq	Yes
Block of LinkADRReq command processing	Yes
Data Rate Decay	Yes
uplink re-transmissions for Confirmed frames	Yes
Output Power Range	14dBm

5.2 Sample DE1461000aa01 Extra Information Parameters

Sample Name: DE1461000aa01	
Object Under Test:	Cyble 5
Description:	Cyble 5 v1.2
Serial Number:	000781370001053E
Code:	aa01
End Device Identifier (DevEUI)	00-07-81-37-00-01-05-3E
Application Identifier (AppEUI)	00-07-81-00-00-00-00-00
Application key (AppKey)	E6-E5-7A-F1-94-03-A2-28-7D-B3-E5-C1-47-CB-CF-61
Maximum number of uplinks re-transmission	7
Frame counter size	32

5.3 Additional Documentation for Samples

The following documents have been attached to Sample definitions as supporting documentation.

Object Under Test: Cyble 5

Sample Name: DE1461000aa01

Front view:

End of Test Report