Test Report on

HYDRODIGIT-S1

Test Report Reference: VDE_BMETERS_2101_LoRa01

Date: 2022-01-11

Test Laboratory:
7layers GmbH
Borsigstraße 11
40880 Ratingen
Germany

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1   Administrative Data

1.1   Project Information

Project Name: VDE_BMETERS_2101#LORA

Responsible for Testing and Report: Mohamed El-Fikri

Date of Report: 2022-01-11

Testing Time Frame: 2022-01-10 - 2022-01-10

1.2   Applicant Information

Company Name: B METERS S.R.L

 Address: VIA FRIULI 3 33050 ITALY
Contact Person: MARIO PARONI
 Phone: +39 0432 931415
 Email: mario.paroni@bmeters.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	LCTT LoRa Compliance Test Tool	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: HYDRODIGIT-S1

Description:	**HYDRODIGIT-S1**
Type / Model:	**HYDRODIGIT-S1**

Manufacturer:

Company Name:	B METERS S.R.L
Address:	VIA FRIULI 3 33050 ITALY
Contact Person:	MARIO PARONI
Phone:	+39 0432 931415
Email:	mario.paroni@bmeters.com
Address:	VIA FRIULI 3 33050 ITALY

For further details see Annex.

2.2 Sample Description(s)

Sample Name: DE1413001aa01

Object Under Test:	**HYDRODIGIT-S1**
Description:	**HYDRODIGIT-S1**
Serial Number:	E41E0A9000003AA5
Hardware Version:	01
Firmware Version:	FWHydrodigit_1508_118t_v2.mot
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 End Device Certification EU v1.6
Date / Version:	March, 2020 / v1.6
Description:	LoRa Alliance End Device Certification Requirements for EU 863-870 MHz ISM Band devices, v1.6 (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 EU v1.6	25	25	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 ID	Sample	Date	Verdict	Observations
TP_A_EU868_ED_MAC_BV_000 / "Device Activation (OTAA)"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_001_A / "Over the air activation"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_001_B / "Activation By Personalization"	DE1413001ab01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_002 / "Test application functionality"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_003 / "AES encryption and message integrity"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_004 / "Downlink error rate"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_005 / "Downlink window timing"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_006 / "Frame sequence number"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_007 / "DevStatusReq MAC command"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_008 / "MAC commands"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_009 / "NewChannelReq MAC command"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_010 / "DlChannelReq MAC command"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_011 / "Confirmed packets"	DE1413001aa01	2022-01-10	**PASS**	
TP_A_EU868_ED_MAC_BV_012 / "RXParamSetupReq MAC command"	DE1413001aa01	2022-01-10	**PASS**	

Test Case ID	Sample	Date	Verdict	Observations
TP_A_EU868_ED_MAC_BV_013 / "RXTimingSetupReq MAC command"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_014_A / "LinkADRReq MAC command (Part 1)"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_014_B / "LinkADRReq MAC command (Part 2)"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_015_A / "RX1 Receive windows test (Part 1)"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_015_B / "RX1 Receive windows test (Part 2)"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_016 / "RX2 Receive window test"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_017 / "RX1 and RX2 simultaneous frames"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_018 / "TXParamSetupReq MAC command"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_019 / "LinkCheckReq MAC command"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_020 / RX "Oversized payload"	DE1413001aa01	2022-01-10	PASS	
TP_A_EU868_ED_MAC_BV_021 / "Maximum Allowed payload"	DE1413001aa01	2022-01-10	PASS	

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.

Test Resource 1: LCTT LoRaWAN Compliance Test Tool
Description: for LoRaWAN Specification and LoRa Compliance Testspec

Test System LCTT LoRaWAN Compliance Test Environment of Test Resource LCTT LoRa Compliance Test Environment

Test System:	**LCTT LoRaWAN Compliance Test Environment**
Description:	Location: 7layers Conformance Lab
Manufacturer:	LoRa Alliance

Software Component and Version	Start Date	End Date
LCTT LoRa Compliance Test Tool User Interface v1.10		
LCTT Technology Package v3.4.0_R2	2022-01-04	

Single Devices of Test System 7layers LoRa Compliance Test Environment

Name	Serial Number	Manufacturer	
7Layers LoRa Control PC	DSCM004667	Fujitsu	
Semtech SX1301 LoRa 8-Channel Gateway for EU 868MHz	IOTSX1301	Semtech	
	Software Version	*Start Date*	*End Date*
	Lora Gateway SW (Driver HAL) v3.2.0; Packet forwarder v2.2.0	2017-01-01	
Kerlink Wirnet iBTS compact LoRa 16-Channel Gateway for EU 868MHz	703BCc030016	Kerlink	
	Software Version	*Start Date*	*End Date*
	pkt_forwarder 3.3.1-klk3 +hal_libloragw2-3.5.0-klk5	2017-01-01	

5   Annex

5.1   Object Under Test (OUT) Features

Supported Features for Object Under Test: **HYDRODIGIT-S1**

Name	Mnemonic
LoRa End Device Certification EU v1.6	
Band 868 MHz	Yes
Band US902-928	No
Band EU433	No
Band AU915-928	No
Band CN470-510	No
Band AS923	No
Band KR920-923	No
Class A Device	Yes
Class C Device	No
LoRaWAN v1.0.2rB certification requirements	Yes
data rate SF7BW250 (DR6)	YES
data rate FSK (DR7)	Yes
OTAA	Support of optional over-the-air feature
ABP	Support of optional activation-by-personalization
ADR	Support of Adaptive Data Rate
JOIN	allow to trigger join request on port 224
DlChannelReq	Yes
Block of LinkADRReq command processing	Yes
Data Rate Decay	Yes
uplink re-transmissions for Confirmed frames	Yes
Output Power	Support 2 dBm to 10 dBm

5.2   Sample DE1413001aa01 Extra Information Parameters

Sample Name: DE1413001aa01	
Object Under Test:	HYDRODIGIT-S1
Description:	HYDRODIGIT-S1
End Device Address (DevAddr)	302A85CC
Application Session Key (AppSKey)	84921BD40EBD0FAD7F2264E6CF72AB8F
Network Session Key (NwkSKey)	61AA20D0301748806563CF9317AC8319
Serial Number:	E41E0A9000003AA5
Code:	aa01
End Device Identifier (DevEUI)	E41E0A9000003AA5
Application Identifier (AppEUI)	E41E0A90000FFFFF
Application key (AppKey)	D2B06F00EA000F410206772E10FFD193
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: HYDRODIGIT-S1

Sample Name: DE1413001aa01

Front view:

Side view:

End of Test Report