

LoRa accredited Test Lab



Test report No:
 NIE: 63161RLR.001

Test report

LoRa Alliance End Device Certification Requirements

(*) Identification of item tested	Smart Ultrasonic Water Meter, with LoRa-WAN connectivity
(*) Trademark	Sonata
(*) Model and /or type reference tested	Sonata LoRa
(*) Derived model not tested	HW: 2.0
Other identification of the product	LoRa-WAN connectivity as end-device/sensor on LoRa-WAN physical channel EU863-870
(*) Features	WaterTECH S.p.A. Passaggio Duomo, 2, 20123 Milano, Italy
Manufacturer	Smart Ultrasonic Water Meter, with LoRa-WAN connectivity
Test method requested, standard	Lora Alliance Certification Program
Standard.....:	LoRaWAN V1.0.2
Test Specification	LoRaWAN® European EU 863-870MHz Region End Device Certification Requirements document V1.5
LoRa_Certification_Questionnaire	LoRaCertificationQuestionnaireV2.0
Test procedure(s).....:	PELR000_00 LoRa Alliance Testing Procedure
Supported Optional Features	
Adaptive Data Rate (ADR)	Yes
SF7BW250.....:	No
FSK50	No
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Noemí Pérez Dans IoT Lab Manager
Date of issue	2019-11-13
Report template No	FLR001_03 (* "Data provided by the client")

Index

Competences and guarantees	3
General conditions	3
Uncertainty	3
Data provided by the client.....	3
Usage of samples	4
Test sample description	4
Identification of the client.....	4
Testing period and place.....	4
Document history	4
Environmental conditions	4
Remarks and comments	5
Means of testing identification.....	5
Test setup	5
Testing verdicts.....	5
Appendix A: Test results	6
Test campaign report	6
Appendix B: ICS	7
Implementation Conformance Statement (ICS).....	7
Appendix C: Photographs	8

Competences and guarantees

DEKRA Testing and Certification S.A.U is a LoRa Alliance accredited Test Lab competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U at the time of performance of the test.

DEKRA Testing and Certification S.A.U is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U and the Accreditation Bodies.

Uncertainty

N/A

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
3. The ICS provided by the customer via the LoRa Certification Questionnaire V2.0 and used for testing are indicated in Annex B.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Sample M/01 is composed of the following elements:

Control Nº	Description	Model	S/N	Date of reception
63161B/005	Water Meter	Sonata LoRa	2506198066	2019-11-11

1. Sample M/01 has undergone the test(s) specified in subclause "Test method requested".

Test sample description

The Sonata is an advanced and highly accurate ultrasonic water meter and data end-point for residential applications.

The Sonata's robust design ensures reliable and long-lasting precision.

The Sonata is a data rich end-point. By exploiting the performances of LoRa-WAN connectivity, it allows a reliable communication with the MDM system and it's ready to meet the challenges of tomorrow's smart water networks.

Identification of the client

Company name: WATERTECH S.P.A.

Postal Address: Passaggio Duomo, 2, 20123 Milano, Italy

Contact Person: Umberto Manzoli

Telephone/e-mail: +39 335 594 7766 / umbertomanzoli@wtmeters.it

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2019-11-12
Date (finish)	2019-11-12

Document history

Report number	Date	Description
63161RLR.001	2019-11-13	First release (test report without logs to be uploaded to the public area of LoRa Alliance website)

Environmental conditions

The following limits were not exceeded during the test:

Relative temperature	Min= 15 °C Max= 35 °C
Relative humidity	Min= 25 % Max= 75 %

Remarks and comments

Testing was performed by: José Gómez

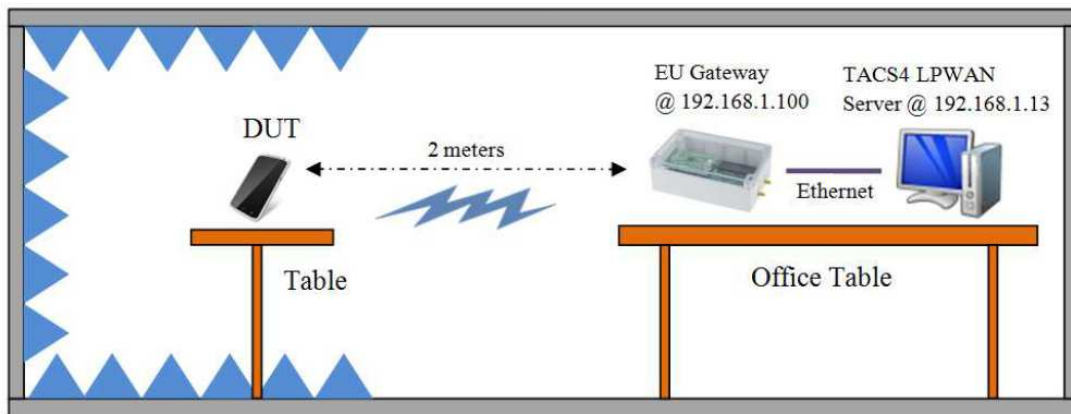
Means of testing identification

TEST SYSTEM	BANCO LORA EU		
Control Number	5866		
Control PC	Control No.	Equipment	Serial No.
	7218	Control PC with TACS4 version 1.13.0 and Technology Packet Version v5.14.0_R1	-
LoRa Gateway	7342	Semtech GW	-
RF Shielded box	5387	RF Shielded Test Enclosure	0001114
Test Setup:	See "Test Setup" section.		

Test setup

TS1: The following Test Setup was used for EU testing:

SEMTECH EUROPEAN GATEWAY AND TACS4 LPWAN CONFIGURATION:



Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Appendix A: Test results

Test campaign report

The abbreviations used in the header row of the test campaign report tables are:

Test Case ID :	As it can be found on the standard
Verdict:	Records the verdict assigned to each Test Case run to completion (<u>Testing verdicts</u>)
Date:	Date of the beginning of the execution.
Observations:	Provides a reference to additional information relevant to the test presented in “Test Setup” section.
Logs:	See test report ‘63161LRL.002.pdf’

Test Case ID	Description	Date	Verdict	Observations
TC_A_EU868_ED_MAC_BV_000_a	Device Activation	2019-11-12	P	ABP
TC_A_EU868_ED_MAC_BV_000_b	Device Activation	2019-11-12	P	OTA
TC_A_EU868_ED_MAC_BV_001	Test application functionality	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_002	Over The Air Activation	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_003	Packet Error Rate Part 1	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_004	AES encryption and message integrity	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_005	Downlink window timing	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_006	Frame sequence number	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_007	DevStatusReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_008	MAC commands	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_009	NewChannelReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_010	DIChannelReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_011	Confirmed packets	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_012	RXParamSetupReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_013	RXTimingSetupReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_014_A	LinkADDRReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_014_B	LinkADDRReq MAC command	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_015	Packet Error Rate RX1	2019-11-12	P	
TC_A_EU868_ED_MAC_BV_016	Packet Error Rate RX2	2019-11-12	P	

Appendix B: ICS

Implementation Conformance Statement (ICS)

C_ISM_AS923	DUT works in Asia 923MHz ISM Band	Band	FALSE
C_ISM_EU868	DUT works in EU 868MHz ISM Band	Band	TRUE
C_ISM_IN865	DUT works in India 865-867MHz ISM Band	Band	FALSE
C_ISM_KR920	DUT works in South Korea 920MHz ISM Band	Band	FALSE
C_ISM_US915	DUT works in USA 915MHz ISM Band	Band	FALSE
C_CERT_101	DUT implements LORAWAN v1.0.1 certification requirements	CERT	FALSE
C_CERT_102rB	DUT implements LORAWAN v1.0.2rB certification requirements	CERT	TRUE
C_CLASS_A	DUT is a Class A Device (All End Devices)	CLASS	TRUE
C_CLASS_B	DUT is a Class B Device (Beacon Mode)	CLASS	FALSE
C_CLASS_C	DUT is a Class C Device (Continuously Listening)	CLASS	FALSE
C_ED_ADR	DUT supports Adaptative Data Rate (ADR) feature	ED	TRUE
C_ED_ADR_BLOCK	DUT supports LinkADDRReq block	ED	TRUE
C_ED_CW	DUT supports Continuous Wave command	ED	FALSE
C_ED_DL_CHAN	DUT supports DChannelReq MAC command	ED	TRUE
C_ED_OTAA	DUT supports Over-The-Air Activation (OTAA) mechanism	ED	TRUE
C_ED_RESET	DUT supports a reset after deactivating Test Mode	ED	TRUE
C_ED_TM_TRI	DUT supports Trigger Join Request command in Test Mode	ED	FALSE

Appendix C: Photographs

Front view

