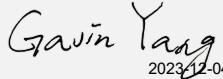


 <p>LoRa accredited Test Lab</p>	Test report No: <b>2380932R-A332250010-A</b>
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## Test Report

# LoRa Alliance End Device Certification Requirements

Product Name .....	LXC ultrasonic water meter
Type of DUT .....	<input type="checkbox"/> Module <input checked="" type="checkbox"/> End Device/Sensor <input type="checkbox"/> others
Model Name .....	LXC
Activation possibilities .....	<input checked="" type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input type="checkbox"/> both
Hardware Version .....	V1.0
Software Version .....	V1.0
Firmware version .....	V1.0
Manufacturer .....	Willfar Information Technology Company Limited 468 Tongzipo West Road, Changsha Hi-Tech Industrial Development Zone, Changsha City, Hunan Province 410205, China
Test Method Request: .....	Lora Alliance Certification Program
Test Frequency Bands: .....	EU868
LoRaWAN Spec. Version .....	<input type="checkbox"/> V1.0.2 <input checked="" type="checkbox"/> V1.0.4
Test Spec .....	LoRaWAN 1.0.4 End Device Certification Requirements for All Regions - Version 1.6
Supported optional features .....	<input checked="" type="checkbox"/> Adaptive Data Rate (ADR)
	<input checked="" type="checkbox"/> SF7BW250
	<input type="checkbox"/> FSK50
Summary .....	IN COMPLIANCE
ATH Identifier .....	DEKRA – TWN
Test Engineer .....	Gavin Yang  2023-12-04
Approved by .....	Jimmy Chang Manager  2023-12-04
Date of issue .....	2023-12-04
Report Revision .....	01

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## Competences and guarantees

DEKRA Testing and Certification, Co., Ltd. is a testing laboratory 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, Co., Ltd. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification, Co., Ltd. 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, Co., Ltd. at the time of performance of the test.

DEKRA Testing and Certification, Co., Ltd. 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.
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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, Co., Ltd. and the Accreditation Bodies.

## Uncertainty

N/A

## Usage of samples

Samples undergoing test have been selected by: Willfar Information Technology Company Limited

DUT Control ID	PSR-2052909
Model Name	LXC
Serial number	NA
Hardware Version	V1.0
Software Version	V1.0
Firmware Version	V1.0
Description	LXC is a smart ultrasonic water meter dedicated to residential user.
Date of DUT reception	2023-08-31

## Details of Company requesting LoRaWAN Certification

Company name	Willfar Information Technology Company Limited
Contact Person	Walt.Hu
Address	468 Tongzipo West Road, Changsha Hi-Tech Industrial Development Zone, Changsha City, Hunan Province 410205, China

## Testing period

Start Date	2023-09-05
Finish Date	2023-11-21

The tests have been performed at DEKRA Testing and Certification, Co., Ltd. (Taiwan)

## Test Environmental conditions

The testing has been performed within the following limits:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 80 %

## Report Revision History

Revision	Modification Date	Description
01	NA	Initial Report

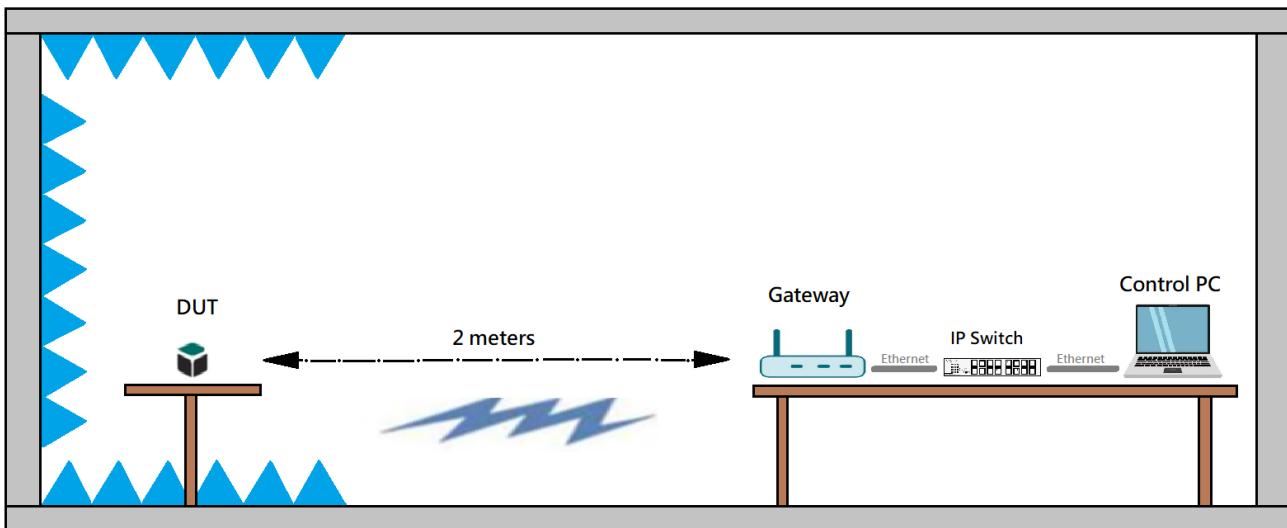
## Means of Testing Identification

Following equipment was used to perform the testing:

Test System	LoRaWAN Certification Test System		
Hardware:	Control No.	Equipment	Serial No.
	0742	Control PC with LCTT installed	GANXCV193086433
	0738	CoreCell Gateway	-
	0739	CoreCell Gateway	-
Software:	0559	LoRaWAN LCTT - UI version: 2.6.0 - Technology Package: LCTT v3.11.0_R1	

## Test setup

The configuration used for Test Cases in nominal temperature conditions was the following one:



## Appendix A – Test result

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

Test Case ID:	Test case identifier.
Description:	Test case description, as it can be found on the referred standard.
Date:	Date of the beginning of the execution.
Verdict:	Records the verdict assigned to each Test case run to completion. Following verdicts are possible: <b>Pass:</b> If the Test case passed. <b>Fail:</b> If the Test case failed. <b>NA:</b> Not applicable. <b>NM:</b> Not measured.
Additional Note.:	Provides a reference to additional information relevant to the test presented in “Test Setup” section.

Test Case ID	Description	Verdict	Date	Additional Notes.
TP_A_EU868_ED_MAC_104_BV_000	Activation Pre-test	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_001_A	Over the Air Activation	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_002	Cryptograpy	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_003	Downlink Sequence Number	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_004	Confirmed Frames	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_005	DevStatusReq MAC Command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_006	NewChannelReq MAC command for Dynamic Channel plan devices only	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_007	DIChannelReq for Dynamic Channel plan devices only	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_008	RXParameterSetupReq MAC command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_009	RXTimingSetupReq MAC Command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_010	TXParamSetupReq MAC command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_011	LinkCheckReq MAC Command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_012_A	LinkADRRReq MAC Command (Part 1)	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_012_B	LinkADRRReq MAC Command (Part 2)	NA	-	Waived
TP_A_EU868_ED_MAC_104_BV_013	DutyCycleReq MAC command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_014	Device TimeReq MAC Command	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_015_A	RX1 Window Test (Part 1)	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_015_B	RX1 Window Test (Part 2)	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_016	RX2 Receive Window Test	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_017	RX1 and RX2 simultaneous frames	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_018	RX Oversized Payload	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_019A	Maximum Allowed Payload (Part 1)	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_019B	Maximum Allowed Payload (Part 2)	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_020	MAC Command(s) in App-Payload and/or Frame Options	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_021	Mutiple MAC commands prioritization	Pass	2023-11-21	
TP_A_EU868_ED_MAC_104_BV_022	FPort 224 Deactivation	Pass	2023-11-21	

## Appendix B – ICS

Item	Name	Value
1	DUT works in EU 868MHz ISM Band	TRUE
2	DUT implements LoRaWAN v1.0.2rB certification requirements	FALSE
3	DUT implements LoRaWAN v1.0.4 certification requirements	TRUE
4	DUT is a Class A Device (All End Devices)	TRUE
5	DUT is a Class B Device (Beacon Mode)	FALSE
6	DUT is a Class C Device (Continuously Listening)	FALSE
7	DUT supports Adaptive Data Rate (ADR) feature	TRUE
8	DUT supports LinkADRReq block	TRUE
9	DUT supports uplink re-transmissions for Confirmed frames	TRUE
10	DUT supports DiChannelReq MAC command	TRUE
11	DUT supports the Lorawan-1.0.x-join-synch-issues-remedies-v1.0.0	FALSE
12	DUT supports Over-The-Air Activation (OTAA) mechanism	TRUE
13	DUT permanently enabled Class C	FLASE
14	DUT needs a reset after deactivating Test Mode	FLASE
15	DUT supports SCHC	FLASE
16	DUT supports Trigger Join Request command in Test Mode	TRUE

## Appendix C – General Parameters

Item	Name	Value
GW	Default TX Antenna	0
	List of IP address of the GWs	192.168.31.225; 192.168.31.226
	Gateway model	CoreCell
	Number of supported channels in Gateway	16 Channels
	Default TX Power	14 dBm
	Gateway Socket Port	1780
	Gateway supports LR-FHSS	FALSE
	Size of the reception window	100
	Number of GWs	2
TM	General Timer	90 min
	Network Server IP Address	192.168.31.16
	Verbosity level for Logs	TRUE



## Appendix D - Photo of Sample Under Testing

