

Test report No:

2350246R-A332250010S-B

# Test Report

## LoRa Alliance End Device Certification Requirements

Product Name .....	LoRaWAN Module
Type of DUT .....	<input checked="" type="checkbox"/> Module <input type="checkbox"/> End Device/Sensor <input type="checkbox"/> others
Model Name .....	CMWX1ZZABZ-108
Activation possibilities .....	<input type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input checked="" type="checkbox"/> both
Hardware Version .....	MP
Software Version .....	1.1.01
Firmware version .....	1.1.01
Manufacturer .....	Murata Manufacturing Co., Ltd. 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan
Test Method Request: .....	Lora Alliance Certification Program
Test Frequency Bands: .....	US915
LoRaWAN Spec. Version .....	<input checked="" type="checkbox"/> V1.0.2 <input type="checkbox"/> V1.0.4
Test Spec .....	LoRa Alliance End-Device Certification Requirements for US and Canada 902-928 ISM Band v1.5.1
Supported optional features .....	<input checked="" type="checkbox"/> Adaptive Data Rate (ADR) <input type="checkbox"/> SF7BW250 <input type="checkbox"/> FSK50
Summary .....	IN COMPLIANCE
ATH Identifier .....	DEKRA – TWN
Test Engineer .....	Gavin Yang  2023-09-07
Approved by .....	Jimmy Chang Manager  2023-09-07
Date of issue .....	2023-09-07
Report Revision .....	01

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## Competences and guarantees

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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.

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## Uncertainty

N/A

## Usage of samples

Samples undergoing test have been selected by: Murata Manufacturing Co., Ltd.

DUT Control ID	PSR-2043826
Model Name	CMWX1ZZABZ-108
Serial number	NA
Hardware Version	MP
Software Version	1.1.01
Firmware Version	1.1.01
Description	The module, part number CMWX1ZZABZ-108, has been designed to support for operation in 868MHz (EU), 915MHz (USA) and 920MHz (APAC) with a single modem firmware. Modem firmware is pre-flashed, so the module can be utilized as small size modem and require the application to run on an external host.
Date of DUT reception	2023-05-15

## Details of Company requesting LoRaWAN Certification

Company name	Murata Electronics Europe
Contact Person	Samir Hennaoui
Address	18-22, avenue Edouard Herriot - Copernic-6, 92356 Le Plessis-Robinson Cedex, France

## Testing period

Start Date	2023-05-23
Finish Date	2023-08-21

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

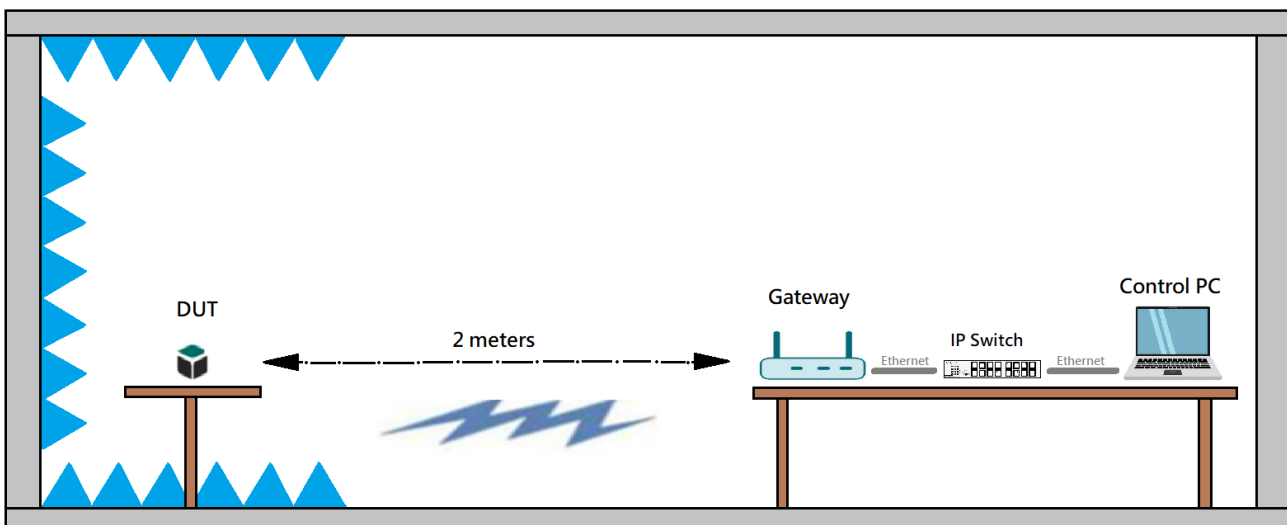
## Means of Testing Identification

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	
	0734	CoreCell Gateway	-	
	0735	CoreCell Gateway	-	
	0736	CoreCell Gateway	-	
	0737	CoreCell Gateway	-	
	0738	CoreCell Gateway	-	
	0739	CoreCell Gateway	-	
	0740	CoreCell Gateway	-	
	0741	CoreCell Gateway	-	
	0559	LoRaWAN LCTT - UI version: 2.5.0 - Technology Package: LCTT v3.9.0_R1 / LCTT v3.10.0_R2		

## 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.

Activation Mode: OTAA

Test Case ID	Description	Verdict	Date	Additional Notes.
TP_A_US915_ED_MAC_BV_000	Test mode activation	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_001	Over The Air activation	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_002	Test application functionality	Pass	2023-08-14	
TP_A_US915_ED_MAC_BV_003	AES encryption and message integrity	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_004	Downlink error rate	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_005	Downlink window timing	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_006	Frame sequence number	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_007	DevStatusReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_008	MAC Commands	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_009	NewChannelReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_010	Confirmed packets	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_011	RXParamSetupReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_012_A	RX1 Receive window test (Part 1)	Pass	2023-08-14	
TP_A_US915_ED_MAC_BV_012_B	RX1 Receive window test (Part 2)	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_013	RX2 Receive window test	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_014	RXTimingSetupReq MAC command	Pass	2023-08-14	
TP_A_US915_ED_MAC_BV_015_A	LinkADRRReq MAC command (Part 1)	Pass	2023-08-14	Waived & tested by LCTT v3.9.0_R1
TP_A_US915_ED_MAC_BV_015_B	LinkADRRReq MAC command (Part 2)	Pass	2023-08-21	
TP_A_US915_ED_MAC_BV_016	RX Oversized payload	Pass	2023-08-21	
TP_A_US915_ED_MAC_BV_017	Maximum allowed payload	Pass	2023-08-10	

Activation Mode: ABP

Test Case ID	Description	Verdict	Date	Additional Notes.
TP_A_US915_ED_MAC_BV_000	Test mode activation	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_002	Test application functionality	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_003	AES encryption and message integrity	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_004	Downlink error rate	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_005	Downlink window timing	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_006	Frame sequence number	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_007	DevStatusReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_008	MAC Commands	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_009	NewChannelReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_010	Confirmed packets	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_011	RXParamSetupReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_012_A	RX1 Receive window test (Part 1)	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_012_B	RX1 Receive window test (Part 2)	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_013	RX2 Receive window test	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_014	RXTimingSetupReq MAC command	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_015_A	LinkADRRReq MAC command (Part 1)	Pass	2023-08-15	Waived & tested by LCTT v3.9.0_R1
TP_A_US915_ED_MAC_BV_015_B	LinkADRRReq MAC command (Part 2)	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_016	RX Oversized payload	Pass	2023-08-10	
TP_A_US915_ED_MAC_BV_017	Maximum allowed payload	Pass	2023-08-10	

## Appendix B – ICS

Item	Name	Value
1	DUT works in USA 915MHz ISM Band Devices)	TRUE
2	DUT implements LoRaWAN v1.0.2rB certification requirements	TRUE
3	DUT implements LoRaWAN v1.0.4 certification requirements	FALSE
4	DUT is a Class A Device (All End Devices)	TRUE
5	DUT supports Adaptive Data Rate (ADR) feature	TRUE
6	DUT supports LinkADRReq block	TRUE
7	DUT supports DChannelReq MAC command	FALSE
8	DUT implements Data Rate Decay	TRUE
9	DUT supports Over-The-Air Activation (OTAA) mechanism	TRUE
10	DUT needs a reset after deactivating Test Mode	FALSE
11	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	192.168.31.221; 192.168.31.222; 192.168.31.223; 192.168.31.224; 192.168.31.225; 192.168.31.226; 192.168.31.227; 192.168.31.228
	Gateway model	CoreCell
	Number of supported channels in Gateway	64 Channels
	Default TX Power	14 dBm
	Gateway Socket Port	1780
	Gateway supports LR-FHSS	FALSE
	Size of the reception window	100
	Number of GWs	8
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

