



Test report No:

2350385R-A332250010S-A

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	LBAA0QB1SJ-977
Activation possibilities	<input type="checkbox"/> Over the air <input type="checkbox"/> by personalization <input checked="" type="checkbox"/> both
Hardware Version.....	MP
Software Version.....	1.0.03
Firmware version.....	1.0.00
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 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 type="checkbox"/> SF7BW250 <input type="checkbox"/> FSK50
Summary	IN COMPLIANCE
ATH Identifier	DEKRA – TWN
Test Engineer	Gavin Yang  2023-07-12
Approved by	Jimmy Chang Manager  2023-07-12
Date of issue.....	2023-07-12
Report Revision.....	01

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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-2043831
Model Name	LBAA0QB1SJ-977
Serial number	NA
Hardware Version	MP
Software Version	1.0.03
Firmware Version	1.0.00
Description	The module, part number LBAA0QB1SJ-977, 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	2023-06-07
Finish Date	2023-07-05

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

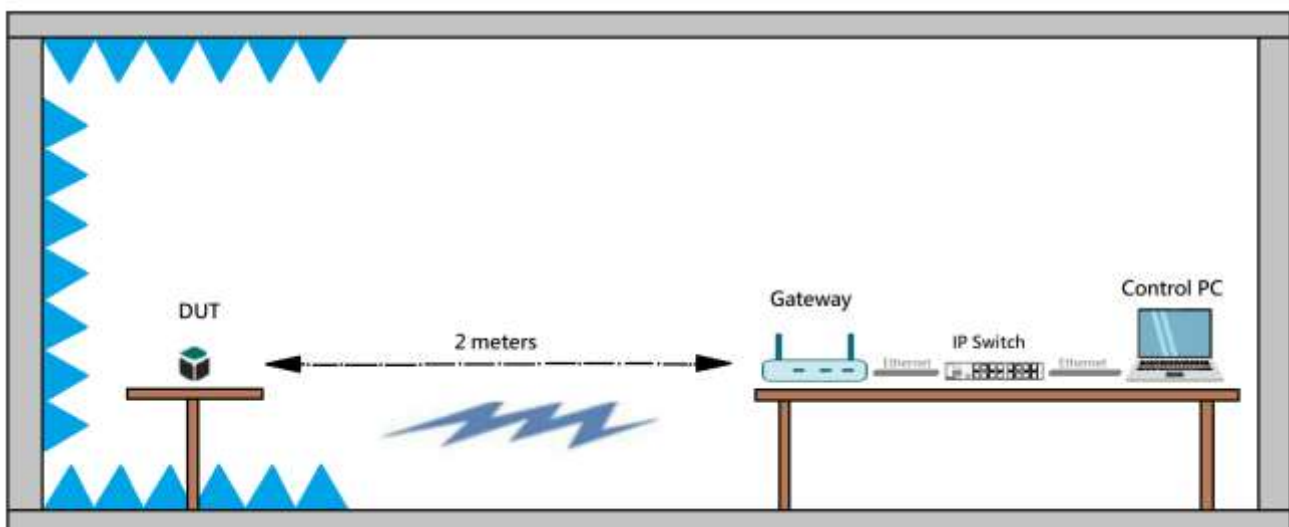
Means of Testing Identification

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	-
Software:	0559	LoRaWAN LCTT - UI version: 2.5.0	
	0560	Technology Package: LCTT v3.9.0_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: Pass: If the Test case passed. Fail: If the Test case failed. NA: Not applicable. NM: 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_US915_ED_MAC_104_BV_000	Activation Pre-test	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_001_A	Over the Air Activation	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_001_B	Activation by Personalization	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_002	Cryptograpy	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_003	Downlink Sequence Number	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_004	Confirmed Frames	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_005	DevStatusReq MAC Command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_006	NewChannelReq MAC command for Fixed Channel plan devices only	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_007	DIChannelReq for Fixed Channel plan devices only	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_008	RXParameterSetupReq MAC command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_009	RXTimingSetupReq MAC Command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_010	TXParamSetupReq MAC command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_011	LinkCheckReq MAC Command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_012_A	LinkADDRReq MAC Command (Part 1)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_012_B	LinkADDRReq MAC Command (Part 2)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_013	DutyCycleReq MAC command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_014	Device TimeReq MAC Command	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_015_A	RX1 Receive Window Test (Part 1)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_015_B	RX1 Receive Window Test (Part 2)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_016	RX2 Receive Window Test	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_017	RX1 and RX2 simultaneous frames	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_018	RX Oversized Payload	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_019A	Maximum Allowed Payload (Part 1)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_019B	Maximum Allowed Payload (Part 2)	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_020	MAC Command(s) in App-Payload and/or Frame Options	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_021	Mutiple MAC commands prioritization	Pass	2023-07-05	
TP_A_US915_ED_MAC_104_BV_022	FPort 224 Deactivation	Pass	2023-07-05	

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	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 DChannelReq MAC command	FALSE
10	DUT implements Data Rate Decay	TRUE
11	DUT supports Over-The-Air Activation (OTAA) mechanism	TRUE
12	DUT permanently enabled Class C	FALSE
13	DUT needs a reset after deactivating Test Mode	FALSE
14	DUT supports SCHC	FALSE
15	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

