Prüfbericht-Nr.: *Test report no.:*	**60379462 014**	**Auftrags-Nr.:** *Order no.:*	168324514	Seite 1 von 14 *Page 1 of 14*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2021-06-28	
Auftraggeber: *Client:*	**Amazon.com Services LLC** 410 Terry Ave N, Seattle, Washington 98109, United States Of America			
Prüfgegenstand: *Test item:*	AMAZON LOCKER			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	ZL-ODIN-V1			
Auftrags-Inhalt: *Order content:*	Test Report			
Prüfgrundlage: *Test specification:*	*CFR47 FCC Part 15: Subpart C Section 15.247 *CFR47 FCC Part 22 *CFR47 FCC Part 24 *CFR47 FCC Part 27 *CFR47 FCC Part 90		*RSS-247 Issue 2 *RSS-130 Issue 2 *RSS-132 Issue 3 *RSS-133 Issue 6 *RSS-139 Issue 3	

Wareneingangsdatum: *Date of sample receipt:*	2021-07-09	Please refer to photo documents
Prüfmuster-Nr.: *Test sample no:*	A003080711-001~003,005	
Prüfzeitraum: *Testing period:*	2021-07-26 – 2021-08-20	
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von: *tested by:*	Lin Lin	**genehmigt von:** *authorized by:*	Hardy Suo
Datum: *Date:* 2021-09-09		**Ausstellungsdatum:** *Issue date:* 2021-09-09	
Stellung / *Position:*	Senior Project Manager	**Stellung** / *Position:*	Reviewer

Sonstiges / *Other:*

* The BG95-M3 module with Bluetooth unit are combination in a new host, the co-located radiated spurious emission is arrange re-assessment.
** This report based on the previous report 60379462 005, 60379462 006 and 60379462 009 adding additional transmitter module BG95-M3.
*** This product contains transmitter module (Contains FCC ID：XMR201910BG95M3; Contains IC: 10224A-2019BG95M3).

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Summary

5.1.1 CO-LOCATED RADIATED SPURIOUS EMISSIONS

RESULT: Pass

5.1.2 RADIATED SPURIOUS EMISSIONS

RESULT: Pass

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Co-Located Radiated Spurious Emissions

Appendix C: Test Results of Radiated Spurious Emissions

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.
362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

FCC Accreditation Designation No.: CN1260
ISED wireless device testing laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Unwanted Emission Testing (TS9975)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
EMI Test Receiver	R&S	ESR 7	102021	2022-08-10
Signal Analyzer	R&S	FSV 40	101439	2022-08-09
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2022-08-09
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2022-08-09
Amplifier	R&S	SCU-18F	180070	2022-08-09
Amplifier	R&S	SCU40A	100475	2022-08-09
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-08
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-08
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-08
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-09-13
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty as below table.

Parameter	Uncertainty
Radiated Emission (3m SAC), 30MHz to 1000MHz	± 4.52 dB
Radiated Emission (3m SAC), above 1000MHz	± 4.37 dB
Temperature	±1 °C
Humidity	±5 %
Voltage (DC)	±1 %
Voltage (AC, <10kHz)	±2 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd.. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is an Amazon Locker which supports Bluetooth LE, GPRS/EGPRS/eMTC/NB-IoT functions.

Note1: This product contains transmitter module.
Contains FCC ID：XMR201910BG95M3
Contains IC: 10224A-2019BG95M3

Note2: This report based on the previous report 60379462 005, 60379462 006 and 60379462 009 adding additional transmitter module BG95-M3 and new adapter(GST18A07), due to these changed, the Radiated Spurious Emissions of GPRS, EGPRS, eMTC and NB-IoT and Co-Located of Bluetooth LE with License radio was re-test.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	AMAZON LOCKER
Type Designation	ZL-ODIN-V1
FCC ID	2AWCC-5677
IC	24273-5677
HVIN	ZL-ODIN-V1
Battery Specification	Model: 26S1024 Nominal Voltage: 6Vdc Typical Capacity: 40.8Ah
AC/DC adapter:	Model: GST18A07 Input: 100-240Vac, 50/60Hz Output: 7.5Vdc, 2A
Testing Voltage	6Vdc
Work Temperature	-20°C ~ +55°C
Equipment Class	Class B
Bluetooth	
Bluetooth Version:	V5.0
Frequency Range:	2402-2480MHz
Type of Modulation:	GFSK
Data Rate:	1Mbps
Quantity of Channels	40
Channel Separation:	2MHz
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	2.1dBi
GPRS/EGPRS	
Wireless Technology:	GPRS, EGPRS
Operation Frequency band(s)	GPRS/EGPRS: 850/1900
Power Class:	GPRS 850: Class 4

	GPRS1900: Class 1 EGPRS 850/1900: E2
GPRS Class	Multi-slot:33
EGPRS Class	Multi-slot:33
Type of Modulation:	GPRS: GMSK EGPRS: GMSK, 8PSK
Channel separation	200KHz
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	3.8dBi
HW version:	R2.1
SW version:	BG95M3LAR02A03
eMTC	
Wireless Technology:	eMTC
Operation Frequency band(s)	Band 2/4/5/12/13/25/26/66/85
Power Class:	Class 5
Type of Modulation:	QPSK, 16QAM
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	3.8dBi
HW version:	R2.1
SW version:	BG95M3LAR02A03
NB-IoT	
Wireless Technology:	NB-IoT
Operation Frequency band(s)	Band 2/4/5/12/13/25/66/71/85
Power Class:	Class 5
Type of Modulation:	BPSK, QPSK
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	3.8dBi
HW version:	R2.1
SW version:	BG95M3LAR02A03

3.3 Independent Operation Modes

The basic operation modes are:

A. GPRS/EGPRS, eMTC, NB-IoT with Bluetooth LE mode Co-located radiated spurious emissions

B. GPRS/EGPRS, eMTC, NB-IoT Radiated spurious emissions

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- FCC/IC Label and Location Info
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10 and ANSI C63.26.

According to clause 3.1, all tests were performed on model ZL-ODIN-V1 in this report.

4.3 Test Environment, Test Channel and Frequency

Table 3: Test environments

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
TNVN	25°C±2°C	Fully charged battery	Ambient

Table 4: Test channel and frequency

Modes	Test Channels (MHz)	Remark
GPRS/EGPRS /eMTC/NB-IoT	Based on the report R2003A0152-R1, R2003A0152-R2, R2003A0152-R3, R2003A0152-R4, R2003A0152-R5, R2003A0152-R6, R2003A0152-R7, R2003A0152-R8, R2004A0249-R1, R2004A0249-R2, R2004A0249-R3, R2004A0249-R4, R2004A0249-R5, R2004A0249-R6, R2004A0249-R7, worst case modes	Issued by TA Technology (Shanghai) Co., Ltd.

4.4 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	166305	N/A

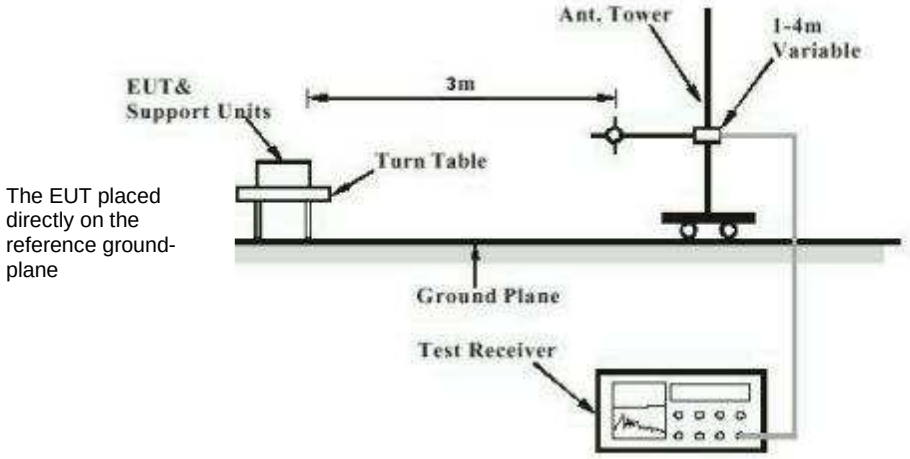
4.5 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

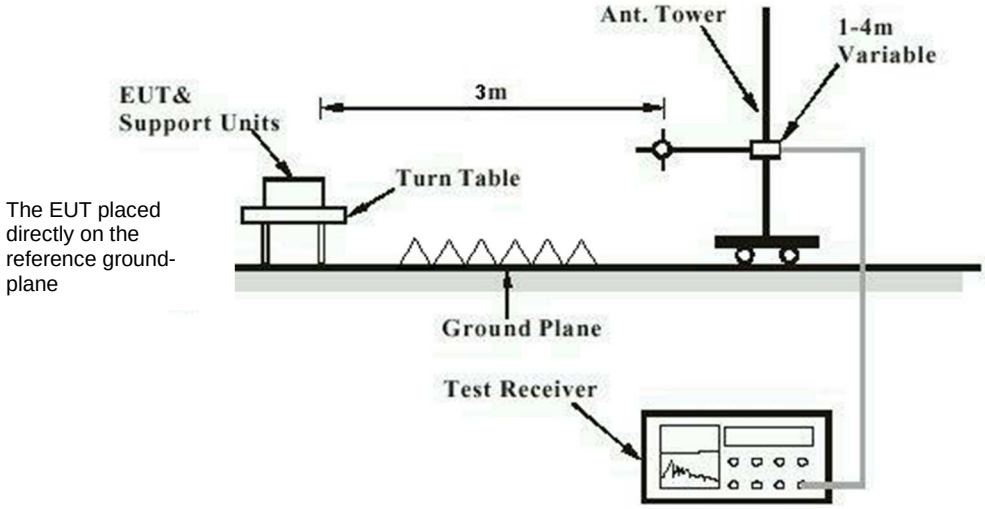
4.6 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)



The EUT placed directly on the reference ground-plane

Diagram of Measurement Configuration for Radiation Test (Above 1GHz)



The EUT placed directly on the reference ground-plane

5 Test Results

5.1 Radio Test

5.1.1 Co-Located Radiated Spurious Emissions

RESULT: **Pass**

Test Specification

Test standard	:	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 22 CFR47 FCC Part 24 CFR47 FCC Part 27 CFR47 FCC Part 90 RSS-247 Issue 2 RSS-130 Issue 2 RSS-132 Issue 3 RSS-133 Issue 6 RSS-139 Issue 3
Basic standard	:	ANSI C63.10 & ANSI C63.26
Limits	:	KDB 996369 D04 The emissions not exceed the highest limit.
Kind of test site	:	3m Full-anechoic Chamber

Test Setup

Date of testing	:	2021-07-26 to 2021-08-20
Input voltage	:	6Vdc
Operation mode	:	A
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix B
Relative humidity	:	Refer to Appendix B
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

Note: The test plots of Co-located radiated spurious emissions beyond the limit are the fundamental radio frequency of Bluetooth with GPRS/EGPRS/eMTC/NB-IoT.

5.1.2 Radiated Spurious Emissions

RESULT: **Pass**

Test Specification

Test standards : CFR47 FCC Part 22
CFR47 FCC Part 24
CFR47 FCC Part 27
CFR47 FCC Part 90
RSS-130 Issue 2
RSS-132 Issue 3
RSS-133 Issue 6
RSS-139 Issue 3

Basic standard : ANSI C63.10 & ANSI C63.26

Limits :

Operating band	FCC Limit	ISED Limit
GPRS/EGPRS850	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz	< - 13 dBm / 100 kHz
GPRS/EGPRS1900	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Band 2	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Band 4	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Band 5	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz	< - 13 dBm / 100 kHz
Band 12	< - 13 dBm /100kHz	< - 13 dBm /100kHz
Band 13	< - 13 dBm /100kHz	< - 13 dBm /100kHz
Band 25	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Band 26 Lower Band	< - 13 dBm /100kHz	N/A
Band 26 Upper Band	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz	< - 13 dBm / 100 kHz
Band 66	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Band 71	< - 13 dBm /100kHz	< - 13 dBm /100kHz
Band 85	< - 13 dBm /100kHz	< - 13 dBm /100kHz

Kind of test site : 3m Full-anechoic Chamber

Test Setup

Date of testing : 2021-07-26 to 2021-08-20
Input voltage : 6Vdc
Operation mode : B
Earthing : Not connected
Ambient temperature : Refer to Appendix C
Relative humidity : Refer to Appendix C
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix C.

Note: The test plots of Radiated spurious emissions beyond the limit are the fundamental radio frequency of GPRS/EGPRS/eMTC/NB-IoT.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

7 List of Tables