Prüfbericht-Nr.: *Test report no.:*	**60379462 012**	**Auftrags-Nr.:** *Order no.*:	168329635	Seite 1 von 14 *Page 1 of 14*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2021-08-03	
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 B ICES-003 Issue 7 October 2020			

Wareneingangsdatum: *Date of sample receipt:*	2021-06-16
Prüfmuster-Nr.: *Test sample no:*	A003001364-001 A003100180-001 A003101479-001
Prüfzeitraum: *Testing period:*	2021-06-16 – 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:* 2021-08-30		**Ausstellungsdatum:** *Issue date:* 2021-08-30	
Stellung / *Position:*	Senior Project Manager	**Stellung** / *Position:*	Reviewer

Sonstiges / *Other:*

1. This test report bases on TÜV Rheinland report 60379462 011 (07 version of ZL-ODIN-V1) adding additional AC/DC adapter (GST18A07), due to this changed, all the EMC is arranged re-test.
2. This version of ZL-ODIN-V1 based on the previous version (07 version), adding two versions of core board (08 version and 09 version) and also additional AC/DC adapter(GST18A07), due to these changed, the EMC is arranged fully re-test on the 08 and 09 version respectively, detail difference refer to section 3.1.

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*

TÜV Rheinland (Shenzhen) Co., Ltd. 1601 R&D Room, 1602-1604, 17-18F, Building 7 Site C, Vanke Cloud City Phase I, Xingke First Street, Xili Street, Xili Community, Nanshan District, Shenzhen 518052, P.R. China
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Test Summary

5.1.1 RADIATED EMISSIONS
RESULT: Pass

5.1.2 CONDUCTED EMISSIONS ON AC MAINS
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: Test Setup Photos

Appendix B: Test results of EMC (07 version).

Appendix C: Test results of EMC (08 version).

Appendix D: Test results of EMC (09 version).

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

Radiated Emissions (10m chamber)				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
10m modified SAC	ETS	SAC10	CT001632-Q1399	2024-03-01
EMI Test Receiver	R&S	ESR7	102022	2022-08-10
EMI Test Receiver	R&S	ESR7	102023	2022-08-10
Bilog Antenna	TESEQ	CBL6112D	51321	2022-08-08
Bilog Antenna	TESEQ	CBL6112D	51322	2022-07-11
Preamplifier	SCHWARZBECK	BBV9745	115	2022-08-13
Preamplifier	EMCI	EMC9135-P	980629	2022-08-13
Preamplifier	FIT	SCU-18F	180076	2022-08-13
Horn Antenna	R&S	HF907	102707	2022-07-10
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A
Conducted Emissions				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
EMI Test Receiver	R&S	ESR3	102428	2022-08-10
Artificial Mains Network	R&S	ENV216	102333	2022-08-10
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

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 for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radiated Emission (10m SAC), 30MHz to 1000MHz	± 4.66 dB
Radiated Emission (10m SAC), above 1000MHz	± 4.35 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C & D 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 and NB-IoT functions.

Note: This product contains transmitter module.
Contains FCC ID：XMR201707BG96
Contains IC: 10224A-201709BG96

The difference between the 07, 08 and 09 versions.

Version / Items	07 version	08 version	09 version
Difference description	1. Adding additional AC/DC adapter to the previous version. 2. No changes in hardware or existing RF relevant portion of the Bluetooth unit and License radio module.	1. Adding additional DC to DC chip to the 07 version and the PCB layout is minor changed. 2. No changes in hardware or existing RF relevant portion of the Bluetooth unit and License radio module.	1. Adding additional DC to DC chip to the 07 version and the PCB layout is slightly changed. 2. No changes in hardware or existing RF relevant portion of the Bluetooth unit and License radio module.

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
Powered by:	1. Internal Battery 2. or AC/DC adapter
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
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 900: Class 4 GPRS1800: Class 1 EGPRS 900/1800: E2
GPRS Class:	Multi-slot:12
EGPRS Class:	Multi-slot:12
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:	R1.0
SW version:	BG96MAR02A02M1G
eMTC	
Wireless Technology:	eMTC
Operation Frequency band(s):	Band 2/4/5/12/13/26
Power Class:	Class 3
Type of Modulation:	QPSK, 16QAM
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	3.8dBi
HW version:	R1.0
SW version:	BG96MAR02A02M1G
NB-IoT	
Wireless Technology:	NB-IoT
Operation Frequency band(s):	Band 2/5/12/13/26
Power Class:	Class 3
Type of Modulation:	BPSK, QPSK
Type of Antenna:	External Antenna
Antenna number:	1
Antenna Gain:	3.8dBi
HW version:	R1.0
SW version:	BG96MAR02A02M1G

3.3 Independent Operation Modes

The basic operation modes are:

A. Normal operation (AC/DC adapter operated)
   1. Bluetooth link + GPRS/EGPRS link + Normal operation + LED on
   2. Bluetooth link + eMTC link + Normal operation + LED on
   3. Bluetooth link + NB-IoT link + Normal operation + LED on

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Block Diagram
- Schematics
- User Manual
- Rating Label

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

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 C63.4: 2014.

4.3 Special Accessories and Auxiliary Equipment

Table 3: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Mobile	HUAWEI	STK-AL00	N/A

4.4 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.

4.5 Test Setup Diagram

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

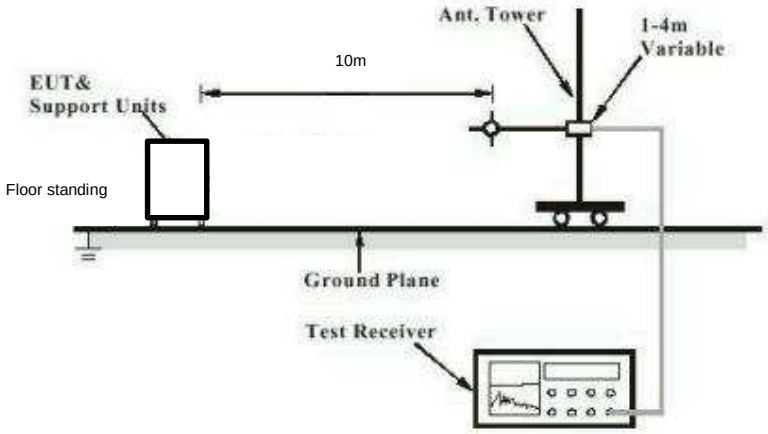


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

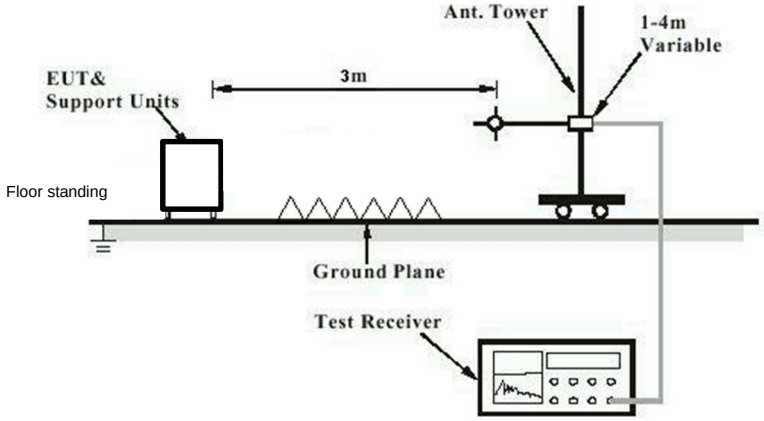
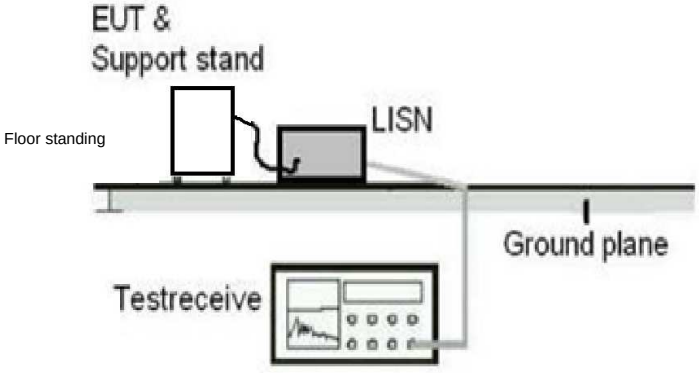


Diagram of Measurement Equipment Configuration for Mains Conduction Measurement



5 Test Results

5.1.1 Radiated Emissions

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.109(a) ICES-003 Issue 7, Clause 3.2.2
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	30MHz to 5th highest fundamental frequency
Classification	:	Class B
Limits	:	FCC Part 15.109(a) ICES-003 Issue 7, Clause 3.2.2
Kind of test site	:	10m Semi-anechoic Chamber & 10m Full-anechoic Chamber

Test Setup

Date of testing	:	2021-06-29 ~ 2021-06-30, 2021-08-11 ~ 2021-08-12
Input voltage	:	AC 120V/60Hz
Operation mode	:	A
Earthing	:	Connected
Ambient temperature	:	23 ℃
Relative humidity	:	51 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C & D.

5.1.2 Conducted Emissions on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.107(a) ICES-003 Issue 7, Clause 3.2.1
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	150KHz to 30MHz
Classification	:	Class B
Limits	:	FCC Part 15.109(a) ICES-003 Issue 7, Clause 3.2.1
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-06-30 ~ 2021-07-15, 2021-08-13
Input voltage	:	AC 120V/60Hz
Operation mode	:	A
Earthing	:	Connected
Ambient temperature	:	23 ℃
Relative humidity	:	51 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C & D.

6 Photographs of the Test Set-Up

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

7 List of Tables