



EMC Test Report

Product Name: Smart Phone

Product Model: WKG-LX9

Report Number: SYBH(Z-EMC)20210525030001-2

FCC ID: 2ATEYWKG-LX9

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd.)

No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C

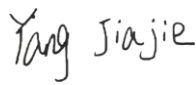
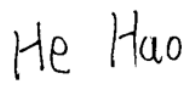
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2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01
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11. If any question about this report, please contact the laboratory (PublicGCTC@huawei.com).



Applicant: Huawei Device Co., Ltd.
Address: No.2 of Xincheng Road, Songshan Lake Zone,
Dongguan, Guangdong 523808, People's Republic of
China
Date of Receipt Test Item: 2021-06-15
Start Date of Test: 2021-06-16
End Date of Test: 2021-07-14
Test Result: Pass

Prepared by (Test Engineer)	<u>2021-07-15</u>	<u>Yang Jiajie</u>	
	Date	Name	Signature
Reviewed by (Test Engineer)	<u>2021-07-15</u>	<u>Zheng Ke</u>	
	Date	Name	Signature
Approved By (Lab Manager)	<u>2021-07-15</u>	<u>He Hao</u>	
	Date	Name	Signature



Modification Record

No.	Last Report No.	Modification Description
1	NA	First report

TABLE OF CONTENT

1	General Information.....	6
1.1	EUT Description	6
1.2	Test Site Information.....	9
1.3	Applied Standards.....	9
2	Summary of Results	10
3	System Configuration during EMC Test	11
3.1	Test Mode	11
3.2	Test System Configuration	12
3.3	Cables Used during Test.....	14
3.4	Associated Equipment Used during Test	14
4	Electromagnetic Interference (EMI)	15
4.1	Radiated Disturbance 30MHz to 18GHz.....	15
4.2	Conducted Disturbance 0.15 MHz to 30MHz.....	17
5	Main Test Instruments	18
6	System Measurement Uncertainty	18
7	Test Data and Graph.....	19
7.1	Radiated Disturbance	19
7.2	Conducted Disturbance.....	21

1 General Information

1.1 EUT Description

WKG-LX9 is subscriber equipment in the GSM/WCDMA/LTE system. The GSM frequency bands include GSM850, GSM900, DCS1800 and PCS1900. The UMTS frequency band includes band I, band II, band IV, band V and band VIII. The LTE frequency bands include band 1, band 2, band3, band 4, band 5, band 7, band 8, band 20, band 28, band 38, band 40, band 41, band 66 and band 26. But only GSM850 and PCS1900, UMTS frequency band II, band IV and band V, LTE frequency band 2, band 4, band 5, band 7, band 26, band 38, band 41 and band 66 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, Wi-Fi etc. Externally it provides earphone port (to provide voice service), one micro SD card interface, and dual SIM/single SIM card interface. WKG-LX9 is dual/single SIM smart phone. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

EUT Description	
Product Name	Smart Phone
Model Number	WKG-LX9
Input voltage	3.85V
TX Frequency	GSM 850: 824MHz to 849MHz PCS 1900: 1850MHz to 1910MHz WCDMA Band II: 1850MHz to 1910MHz WCDMA Band IV: 1710MHz to 1755MHz WCDMA Band V: 824MHz to 849MHz LTE BAND 2: 1850MHz to 1910MHz LTE BAND 4: 1710MHz to 1755MHz LTE BAND 5: 824MHz to 849MHz LTE BAND 7: 2500MHz to 2570MHz LTE BAND 26: 814MHz to 849MHz LTE BAND 38: 2570MHz to 2620MHz LTE BAND 41: 2535MHz to 2675MHz LTE BAND 66: 1710MHz to 1780MHz 2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz
RX Frequency	GSM 850: 869MHz to 894MHz GSM 1900: 1930MHz to 1990MHz WCDMA Band II: 1930MHz to 1990MHz WCDMA Band IV: 2110MHz to 2155MHz WCDMA Band V: 869MHz to 894MHz LTE BAND 2: 1930MHz to 1990MHz LTE BAND 4: 2110MHz to 2155MHz LTE BAND 5: 869MHz to 894MHz LTE BAND 7: 2620MHz to 2690MHz LTE BAND 26: 859MHz to 894MHz LTE BAND 38: 2570MHz to 2620MHz LTE BAND 41: 2535MHz to 2675MHz LTE BAND 66: 2110MHz to 2200MHz 2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz FM: 87.5MHz to 108MHz BDS: 1561.098MHz GLONASS: 1597MHz to 1607MHz



	GPS: 1575.42MHz
S/N	TJH0121513000382
HW Version	HL1WKGM
SW Version	11.0.1.109(C900E43R1P1)
EUT Accessory	
Data cable(04071773)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: L99UC131-CS-H Manufacturer: Luxshare Precision Industry Co., Ltd.
Data cable(04071773)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: CUDU01B-HC295-EH Manufacturer: Foxconn Precision Component(ShenZhen)CO., LTD.
Data cable(04071773)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: 203-1572-0 Manufacturer: Guangdong Mingji Hi-Tech Electronics Co., Ltd.
Data cable(04071773)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: WA0020 Manufacturer: Guangxi broad Telecommunication Co., Ltd.
Data cable(04071773)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: 18-93C2CHO-001HF Manufacturer: Freeport Ji an Electronics Co., Ltd.
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-050200E02 Input: 100-240V~50/60Hz, 0.5A Output voltage: 5V $\overline{\text{---}}$ 2A SN: P95407LBM00076 SN: K95412K1J02018 SN: H954K8K3N00135 SN: B95433L1801182
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-050200U02 Input: 100-240V~50/60Hz, 0.5A Output voltage: 5V $\overline{\text{---}}$ 2A SN: K95508K5A02957 SN: H955K2K4K08039 SN: B95541KAL05124
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-050200B02 Input: 100-240V~50/60Hz, 0.5A Output voltage: 5V $\overline{\text{---}}$ 2A
Rechargeable Li-ion	Huawei Technologies Co., Ltd. (Desay/SCUD/ATL) Battery Model: HB526489EEW Rated capacity: 4900 mAh Nominal Voltage: 3.85V Charging Voltage: 4.43V
Earphone(22040339)	Model: MEND1532B528A11 Manufacturer:

	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.
Earphone(22040339)	Model: 1293-3283-3.5mm-339 Manufacturer: Boluo County Quancheng Electronic Co., Ltd.
Earphone(22040339)	Model: EPAB542-2WH05-DH Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED.

Remark 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed information.

Remark 2: HW-050200B02 and HW-050200U02 have the same PCB circuit.



1.2 Test Site Information

Test Site 1:	Reliability Laboratory of Huawei Technologies Co., Ltd. Global Compliance and Testing Center of Huawei Technologies Co., Ltd.
Test Site Location:	No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15, Subpart B

2 Summary of Results

Summary of Results				
Test Items	Test Mode	Performance Class & Required Performance Criteria	Result	Site
<u>Radiated Emissions</u> Enclosure Port	Mode 1~ Mode 6	CLASS B	Pass	Site1
<u>Conducted Emissions</u> ☐ DC Power Port ☒ AC Power Port ☐ Telecommunication Ports	Mode 1~ Mode 6	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the uncertainty of test system. 2, ☒ The item has been tested; ☐ The item has not been tested.				

During the measurement, the environmental conditions complied with the range listed as below.

Item	Required
Ambient temperature	15°C ~ 35°C
Relative humidity	25% ~ 75%
Atmospheric pressure	86kPa ~ 106kPa

3 System Configuration during EMC Test

3.1 Test Mode

The EUT was configured, installed, arranged and operated in a manner consistent with typical application. The following mode(s) were applied during the compliance test.

Test Mode	
Mode 1:	Charging+ Traffic+ WIFI+ BT+ GNSS+ Earphone
Mode 2:	Charging+ Camera On+ Earphone+ idle
Mode 3:	Charging+ Video Playing+ Earphone+ idle
Mode 4:	Charging+ Music Playing+ Earphone+ idle
Mode 5:	Charging+ FM+ Earphone+ idle
Mode 6:	USB Copy (EUT with PC)+ Earphone

Remark:

- 1) If there is one kind of accessories with different models, each one should be applied throughout the compliance test respectively, however, only the worst case will be recorded in this report.
- 2) If EUT has more than one typical operation, only the worst test mode will be recorded in this report.

Traffic Mode:

When the EUT state is switched on and with Radio Resource Control (RRC) connection established.

Idle Mode:

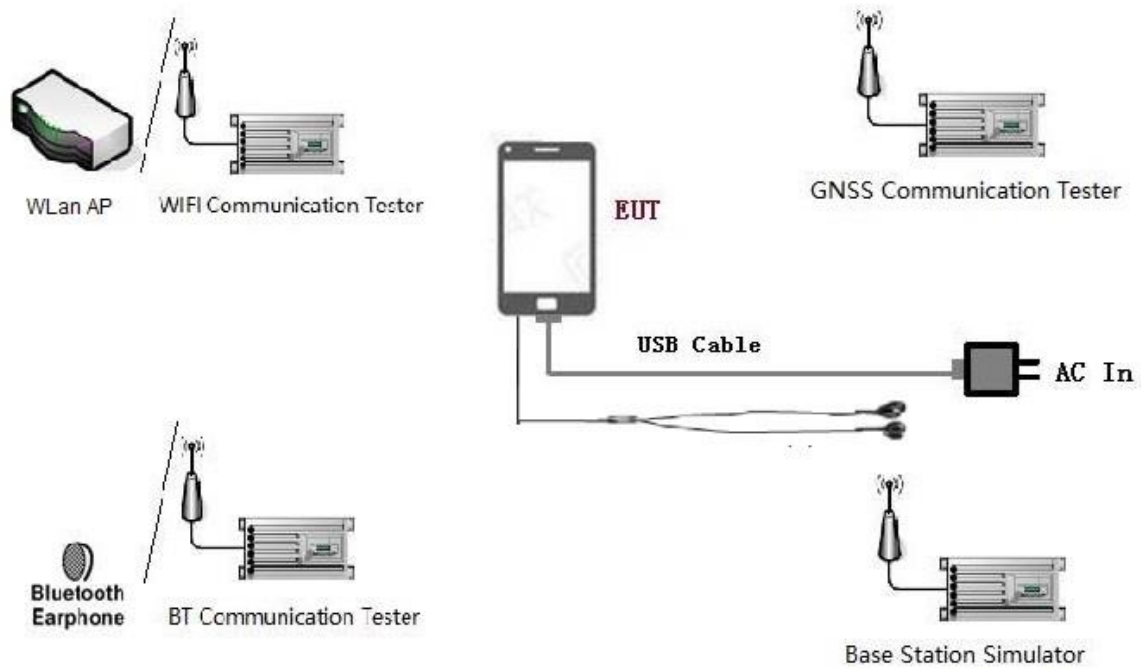
When the EUT state is switched on but without Radio Resource Control (RRC) connection.

Worst Case:

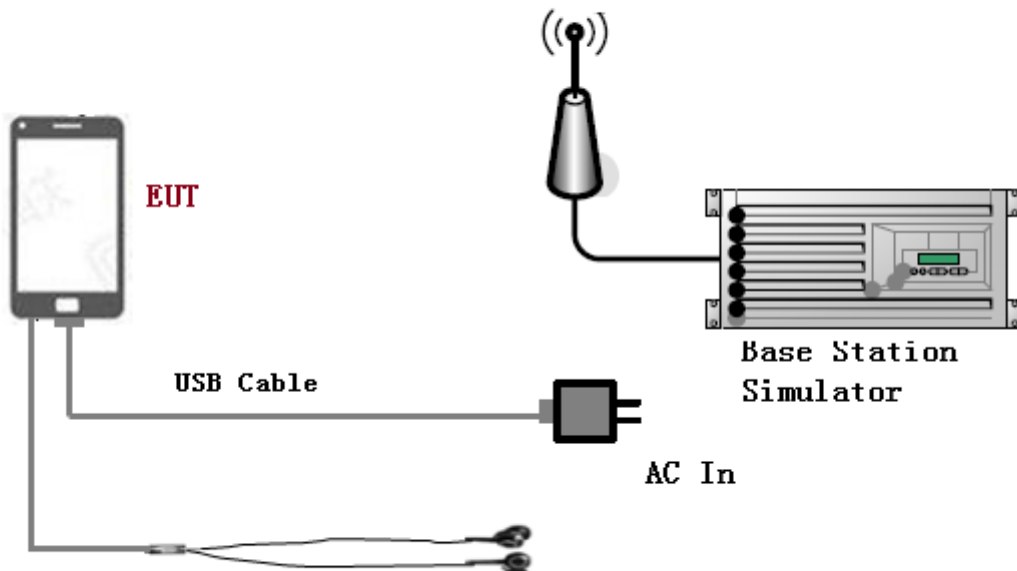
- 1) Radiated Emission
Mode 4: Charging (Model: HW-050200E02, SN: K95412K1J02018) + Music Playing+ Earphone+ idle this result is the worst case. (30MHz~1GHz)
Mode 6: USB Copy (EUT with PC)+ Earphone this result is the worst case. (1GHz~18GHz)
- 2) Conducted Emission
Mode 4: Charging (Model: HW-050200U02, SN: H955K2K4K08039) + Music Playing+ Earphone+ idle this result is the worst case.

3.2 Test System Configuration

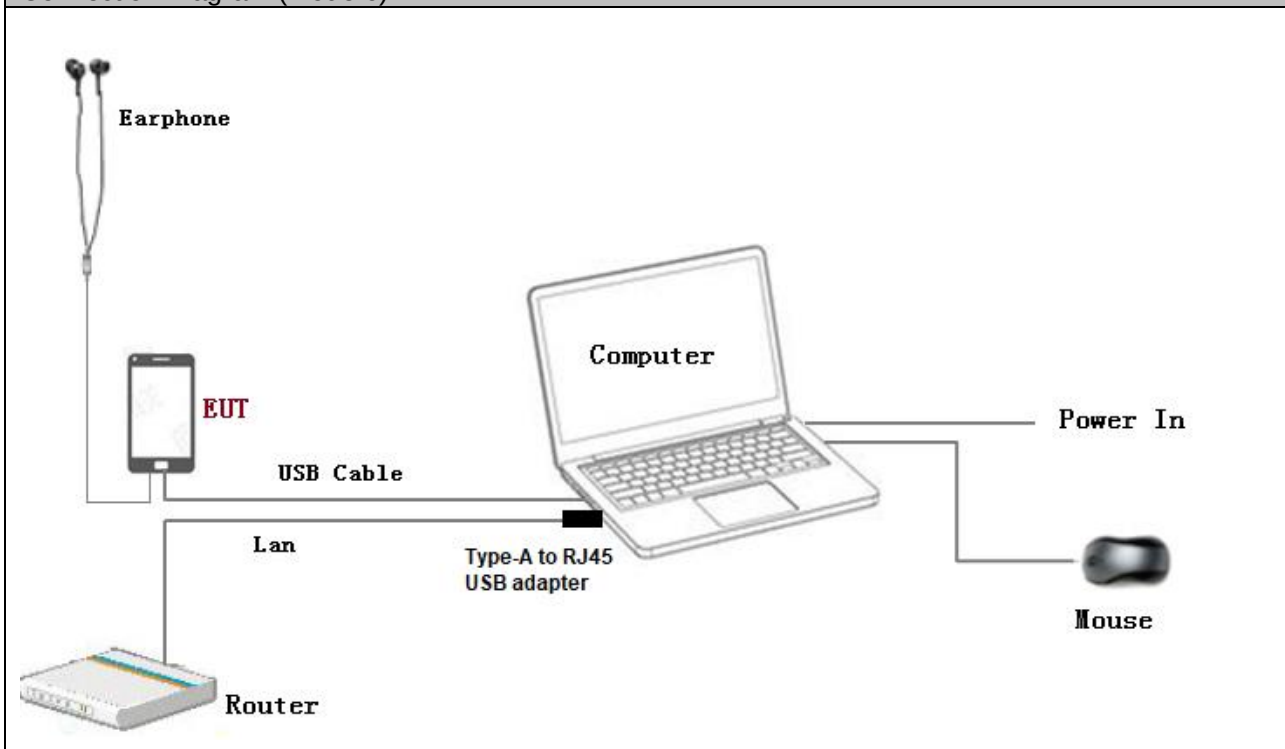
Connection Diagram (Mode 1)



Connection Diagram (Mode 2-5)



Connection Diagram (Mode 6)



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	5	<3m	shielded
Earphone	3	<3m	Unshielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline	Cal interval (month)
Radio Communication Tester	CMU200	R&S	117057	Jan. 29, 2022	12
Radio Communication Tester	MT8820C	Anritsu	6200971028	Jan. 12, 2022	12
WLAN Tester	MT8862A	Anritsu	6261782432	Jul. 02, 2022	12
GSS7000 Signal Generator	GSS7000	Spirent	108	Nov. 10, 2021	12
Notebook	VIT-W50	HUAWEI	AQYPM18B01000004	N/A	N/A
Mouse	M3111-P	DELL	6913XT1014605	N/A	N/A
WLAN AP	B6125-51d	HUAWEI	J6Y7S18419000311	N/A	N/A
Bluetooth Earphone	CM-SHK00	HUAWEI	#1	N/A	N/A
USB Type-A to RJ45 adapter	UWH10	SAMZHE	#1	N/A	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

4.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4-2014. The test distance was 3m. The set-up and test methods were according to ANSI C63.4-2014.

A preliminary scan and a final scan of the emissions were made from 30 MHz to 18 GHz by using test script of software; The emissions were measured using Quasi-Peak Detector (30MHz~1GHz) and AV/PK detector (above 1GHz). The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m. The azimuth range of turntable was 0° to 360°. The receiving antenna has two polarizations V and H.

Measurement bandwidth (RBW) for 30MHz to 1000 MHz: 120 kHz;

Measurement bandwidth (RBW) for 1000MHz to 18000 MHz: 1MHz;

EUT was configured in idle mode and the test performed at worst emission state.

4.1.2 Test setup

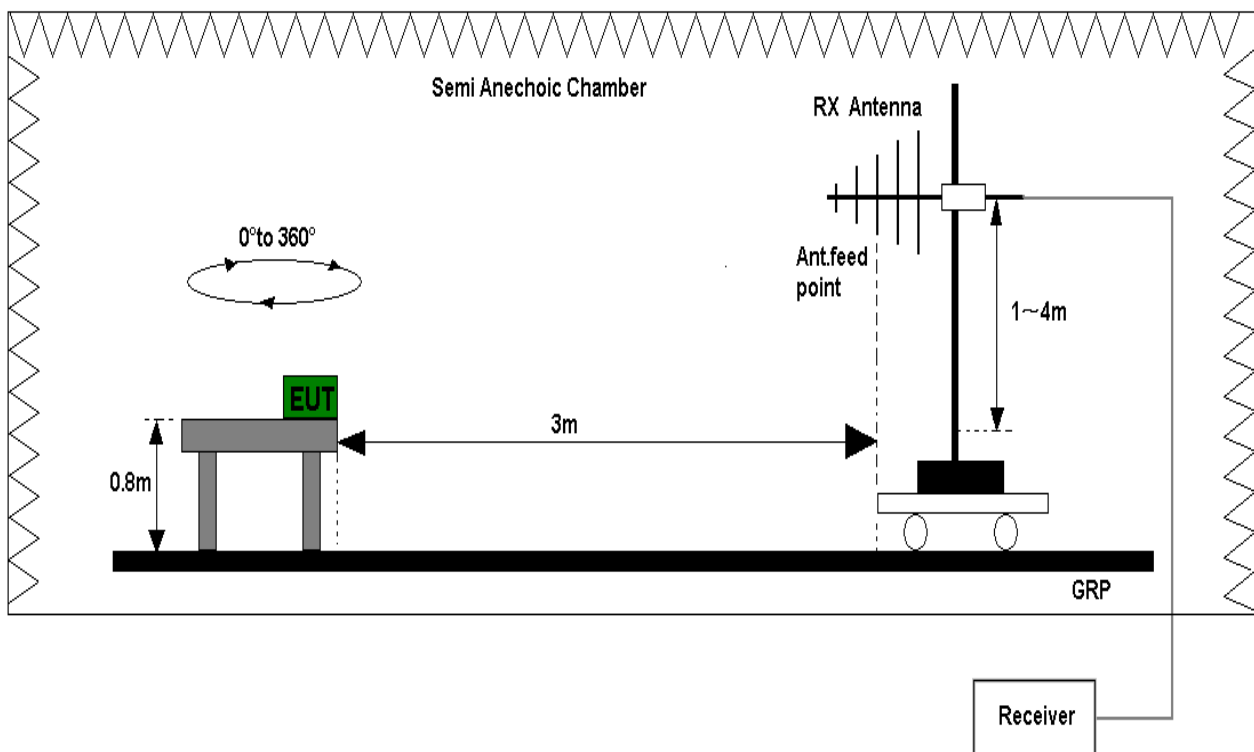


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

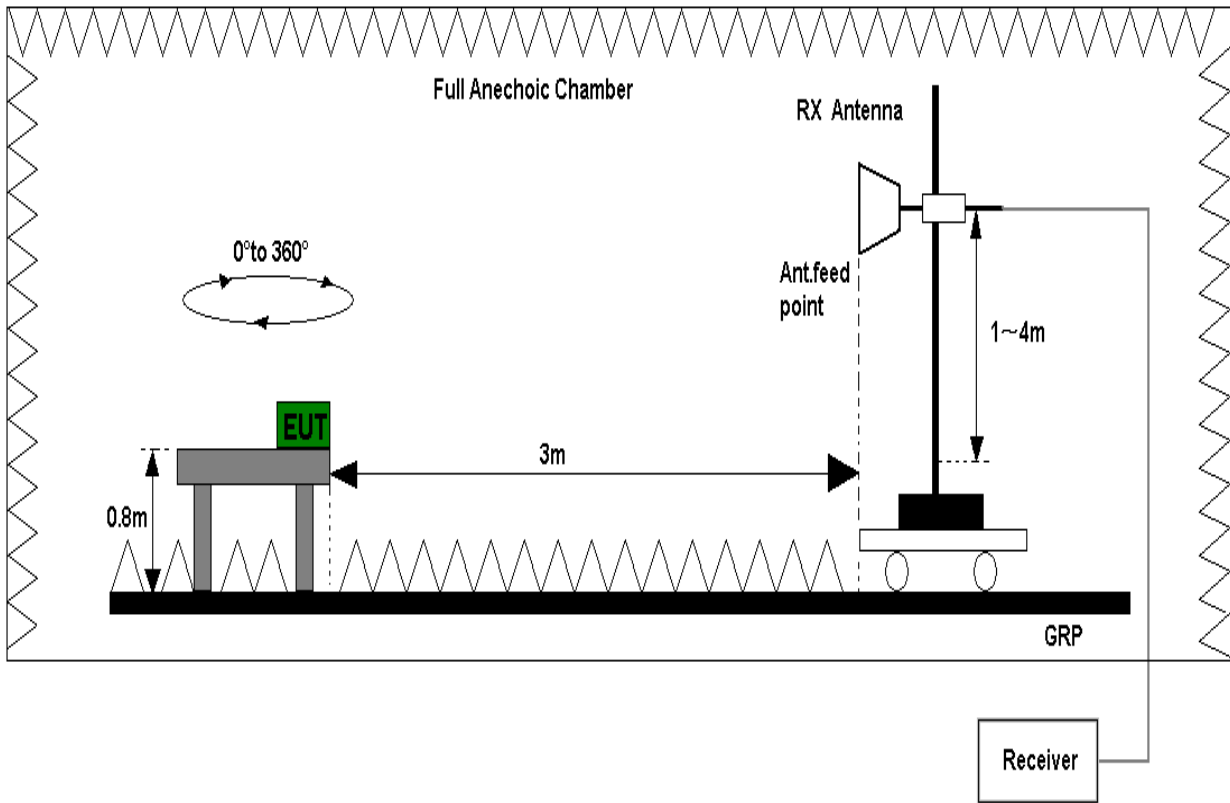


Figure 2. Test set-up of radiated disturbance(above 1GHz)

4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
Refer to the section 7 of this report for test data.

FCC Test Limits (Class B)				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μ V/m) Quasi-peak		Unit(dB μ V/m) Quasi-peak	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	Unit(μ V/m)AV	Unit(μ V/m)PK	Unit(dB μ V/m)AV	Unit(dB μ V/m)PK
	500	5000	54	74

4.2 Conducted Disturbance 0.15 MHz to 30MHz

4.2.1 Test Procedure

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm away from LISN. The set-up and test methods were according to ANSI C63.4-2014. Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

EUT was communicated with the simulator through Air interface, the simulator controls the EUT to transmitter the maximum power which defined in specification of product. The EUT operated on the typical channel.

Measurement bandwidth (RBW) for 150 kHz to 30 MHz: 9 kHz;

The EUT was set in the shielded chamber and operated under nominal conditions.

4.2.2 Test Setup

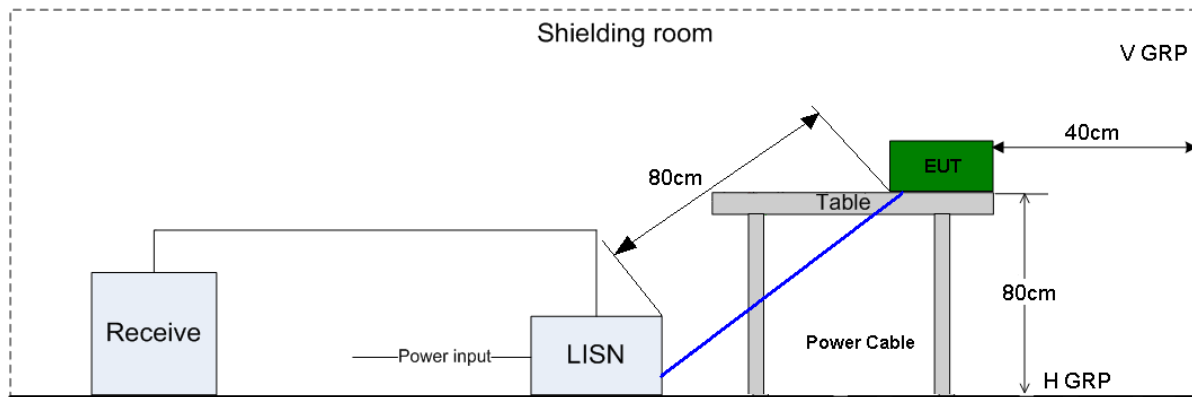


Figure 3. Test Set-up of conducted disturbance

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance of power lines.
Refer to the section 7 of this report for test data.

Test Limit of AC Power Port		
Frequency range	150kHz ~ 30MHz	
Frequency	Voltage limits	
	QP (dBμV)	AV (dBμV)
0.15MHz~0.5MHz	66-56	56-46
0.5MHz-5MHz	56	46
5MHz~30MHz	60	50



5 Main Test Instruments

Main Test Equipments						
Test item	Test Instrument	Model	S/N	Manufacturer	Calibrated Deadline	Cal interval
RE1	Horn Antenna	HF907	100391	R&S	Oct. 15, 2021	24
	EMI Test receiver	ESW44	101879	R&S	Jan. 30, 2022	12
RE2	Broadband Antenna	VULB 9163	9163-1330	SCHWARZB ECK	Aug. 10, 2022	24
	EMI Test receiver	ESW44	101878	R&S	Jan. 30, 2022	12
CE	EMI Test receiver	ESU26	100150	R&S	Nov. 05, 2021	12
	Artificial Mains Network	ENV216	100382	R&S	Jul. 20, 2021	12
Software Information						
Test Item	Software Name	Manufacturer		Version		
RE1	EMC32	R&S		V10.60.10		
RE2	EMC32	R&S		V10.60.20		
CE	EMC32	R&S		V9.25.0		

6 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty		
Items		Extended Uncertainty
RE(30MHz-1GHz)	Field strength (dB μ V/m)	U=5.24dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=4.68dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.3dB; k=2

7 Test Data and Graph

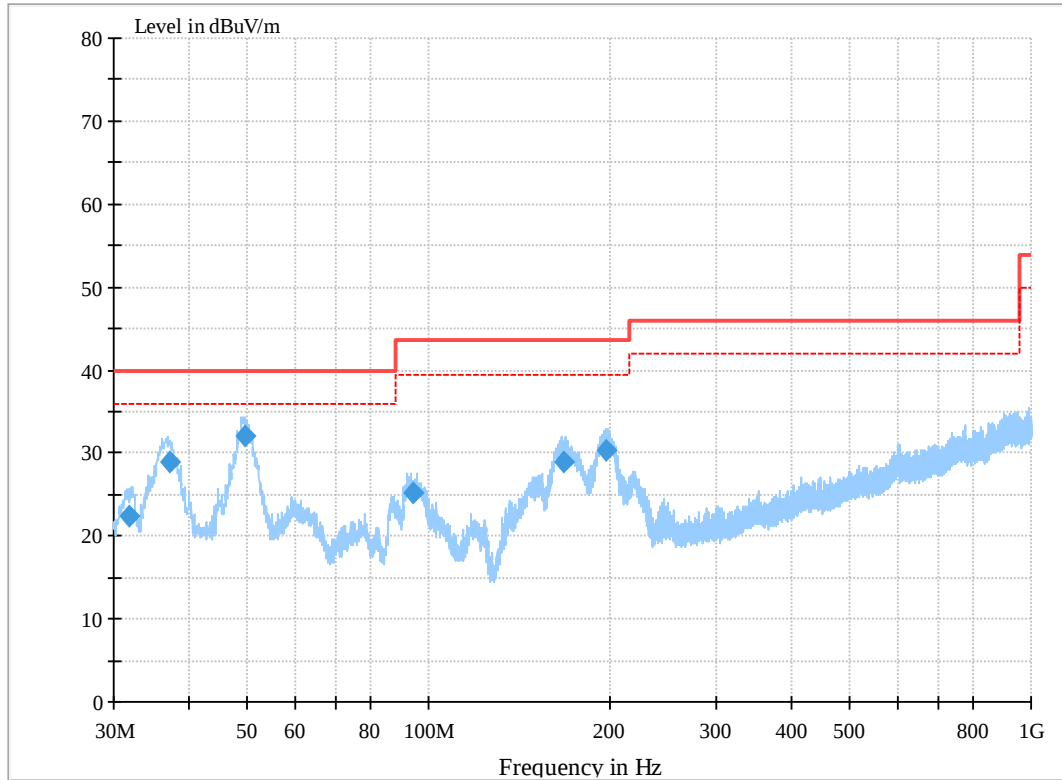
Only the worst test results were shown

7.1 Radiated Disturbance

7.1.1 30MHz~1GHz

Test Mode: Charging+ Music Playing+ Earphone+ idle

Full Spectrum



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisati on
31.725940	22.48	16.40	40.00	17.52	100.0	205.0	V
37.205940	28.81	18.30	40.00	11.19	100.0	324.0	V
49.437340	33.60	20.50	40.00	6.40	101.0	76.0	V
94.471620	25.17	17.80	43.50	18.33	100.0	218.0	V
167.243140	28.97	15.70	43.50	14.53	102.0	146.0	V
196.762480	30.41	18.10	43.50	13.09	100.0	131.0	V

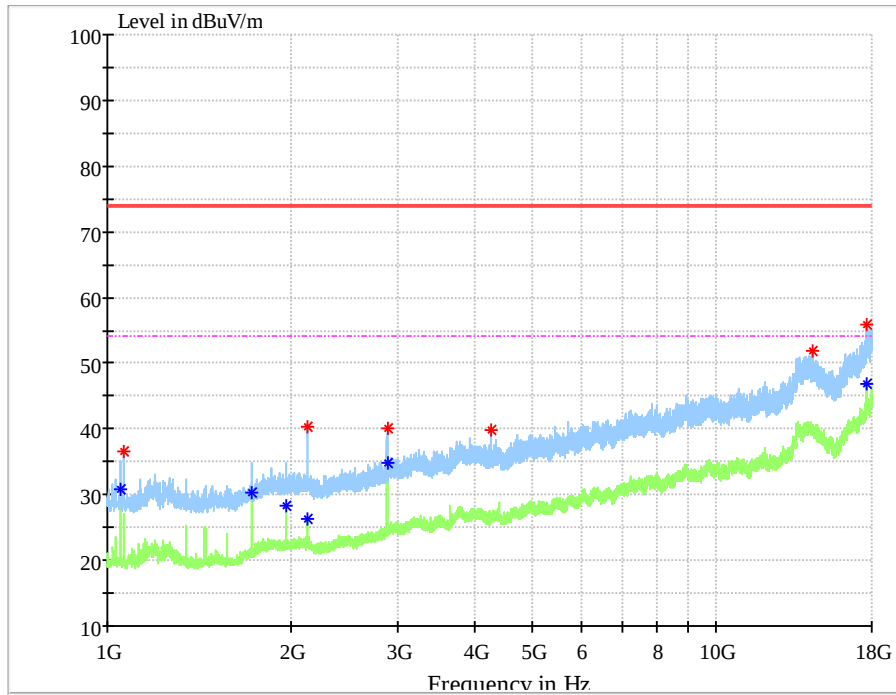
Note:

Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

7.1.2 1GHz~18GHz

Test Mode: USB Copy (EUT with PC)+ Earphone



MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
1065.166667	36.65	-16.3	74	37.35	100	275	H
2128.233333	40.33	-12.5	74	33.67	100	18	V
2879.633333	40.16	-10.2	74	33.84	100	1	H
4265.133333	39.91	-7.1	74	34.09	100	359	V
14381.26667	51.75	11.2	74	22.25	100	249	V
17667.93333	55.84	13.6	74	18.16	100	165	H

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
1049.866667	30.71	-16.6	54	23.29	100	0	V
1727.600000	30.38	-13.8	54	23.62	100	165	H
1961.633333	28.29	-12.5	54	25.71	100	55	H
2128.233333	26.22	-12.5	54	27.78	100	18	V
2879.633333	34.76	-10.2	54	19.24	100	1	H
17674.16667	46.74	13.6	54	7.26	100	0	H

Note:

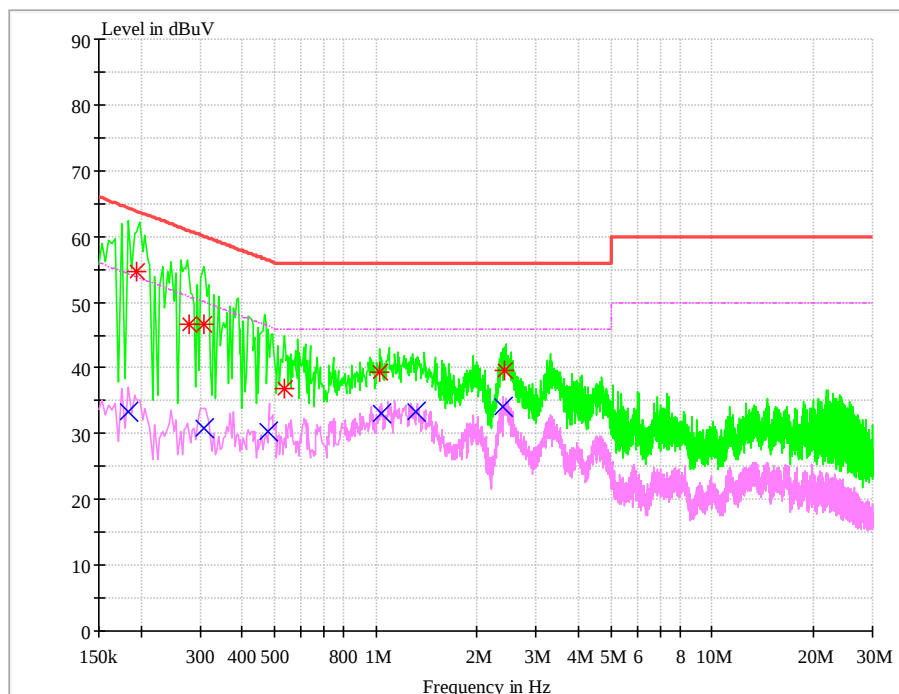
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

7.2 Conducted Disturbance

7.2.1 AC Port Test Data

Test Mode: Charging+ Music Playing+ Earphone+ idle



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.194594	54.63	N	9.7	9.21	63.84	FLO
0.279499	46.63	N	9.7	14.20	60.83	FLO
0.308173	46.55	L1	9.7	13.47	60.02	FLO
0.533508	36.92	N	9.7	19.08	56.00	FLO
1.030713	39.25	N	9.7	16.75	56.00	FLO
2.419054	39.72	N	9.8	16.28	56.00	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.182770	33.42	N	9.7	20.94	54.36	FLO
0.306988	30.87	L1	9.7	19.18	50.05	FLO
0.479365	30.37	N	9.7	15.98	46.35	FLO
1.038608	33.19	N	9.7	12.81	46.00	FLO
1.322152	33.23	N	9.7	12.77	46.00	FLO
2.397682	34.00	N	9.8	12.00	46.00	FLO

-----END-----