



EMC Test Report

Product Name: Smart Phone

Product Model: EVE-LX3

Report Number: SYBH(Z-EMC)20221017002001

ISED (ID) certification number: 2ATEYEVE

Reliability Laboratory of Huawei Technologies Co., Ltd.

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

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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: 2022-09-13
Start Date of Test: 2022-09-16
End Date of Test: 2022-09-24

Test Result: Pass

Prepared by
(Test Engineer)

2022-09-25
Date

Chen Shuang
Name

Chen Shuang

Signature

Reviewed by
(Test Engineer)

2022-09-26
Date

Rao Legian
Name

Rao Legian

Signature

Approved By
(Lab Manager)

2022-09-26
Date

He Hao
Name

He Hao

Signature



Modification Record

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



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1 General Information

1.1 EUT Description

EVE-LX3 is subscriber equipment in the GSM/WCDMA/LTE system. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/WCDMA and GSM protocol processing, voice, video MMS service, GPS, AGPS, Wi-Fi etc. Externally it provides earphone port (to provide voice service), and dual SIM/single SIM card interface. EVE-LX3 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	EVE-LX3
Input voltage	3.87V
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 13: 777MHz to 787MHz LTE BAND 26: 824MHz to 849MHz LTE BAND 38: 2570MHz to 2620MHz LTE BAND 66: 1710MHz to 1780MHz 2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz
RX Frequency	GSM 850: 869MHz to 894MHz PCS 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 13: 746MHz to 756MHz LTE BAND 26: 859MHz to 894MHz LTE BAND 38: 2570MHz to 2620MHz LTE BAND 66: 2110MHz to 2200MHz 2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz FM: 87.5MHz to 108MHz BDS: 1561.098MHz GPS/Galileo: 1575.42MHz GLONASS: 1597MHz -1607MHz
S/N	9STBB22824000036

HW Version	HL1EVEM
SW Version	6.0.0.115(C603E2R2P1)
EUT Accessory	
Data Cable	Data Cable USB A Male to USB Type C, 1m, Shielded Model: L99UC154-CS-H Manufacturer: Luxshare Precision industry Co., Ltd.
Data Cable	Data Cable USB A Male to USB Type C, 1m, Shielded Model: WA0072 Manufacturer: NingBo Broad Telecommunication Co., Ltd.
Data Cable	Data Cable USB A Male to USB Type C, 1m, Shielded Model: CUDU01B-HC450-EH Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED
Data Cable	Data Cable USB A Male to USB Type C, 1m, Shielded Model: AU2-CHO013HF Manufacturer: FREEPORT JI AN ELECTRONICS CO.,LTD
Data Cable	Data Cable USB A Male to USB Type C, 1m, Shielded Model: 213-01374-0 Manufacturer: MING JI ELECTRONICS CO., LTD.
Adapter	Manufacturer: Huawei Device Co., Ltd. Model: HW-100225E00 Input: 100V-240V~50/60Hz, 0.75A Output voltage: 5V --- 2A OR 9V --- 2A OR 10V --- 2.25A MAX SN: HC79E6N5D33135
Adapter	Manufacturer: Huawei Device Co., Ltd. Model: HW-100225E00 Input: 100V-240V~50/60Hz, 0.75A Output voltage: 5V --- 2A OR 9V --- 2A OR 10V --- 2.25A MAX SN: BC6865N6N00487
Adapter	Manufacturer: Huawei Device Co., Ltd. Model: HW-100225B00 Input: 100V-240V~50/60Hz, 0.75A Output voltage: 5V --- 2A OR 9V --- 2A OR 10V --- 2.25A MAX SN: BC6915N5L00644
Adapter	Manufacturer: Huawei Device Co., Ltd. Model: HW-100225U00 Input: 100V-240V~50/60Hz, 0.75A Output voltage: 5V --- 2A OR 9V --- 2A OR 10V --- 2.25A MAX SN: HC81E2N5624560



Adapter	Manufacturer: Huawei Device Co., Ltd. Model: HW-100225A00 Input: 100V-240V~50/60Hz, 0.75A Output voltage: 5V $\overline{\overline{=}}$ 2A OR 9V $\overline{\overline{=}}$ 2A OR 10V $\overline{\overline{=}}$ 2.25A MAX
Rechargeable Li-ion	Manufacturer: Huawei Device Co., Ltd. (NVT) Battery Model: HB496590EFW-F Rated capacity: 4900 mAh Nominal Voltage: 3.87V Charging Voltage: 4.45V
Rechargeable Li-ion	Manufacturer: Huawei Device Co., Ltd. (Desay) Battery Model: HB496590EFW-F Rated capacity: 4900 mAh Nominal Voltage: 3.87V Charging Voltage: 4.45V
Rechargeable Li-ion	Manufacturer: Huawei Device Co., Ltd. (SCUD) Battery Model: HB496590EFW-F Rated capacity: 4900 mAh Nominal Voltage: 3.87V Charging Voltage: 4.45V
Earphone	Manufacturer: Boluo County Quancheng Electronic Co.,ltd. Model: 1293-3283-3.5MM-339
Earphone	Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED Model: EPAB542-2WH05-DH

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-100225B00, HW-100225U00 and HW-100225A00 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	Mode1~ Mode 6	CLASS B	Pass	Site 1
<u>Conducted Emissions</u> <input type="checkbox"/> DC Power Port <input checked="" type="checkbox"/> AC Power Port	Mode1~ Mode 6	CLASS B	Pass	Site 1
Note: 1, Measurement taken is within the uncertainty of test system. 2, <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> 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:	USB Copy (EUT with PC) + earphone
Mode 6:	Charging+ FM+ earphone
Note: 'Traffic*' it includes GSM/DCS/UTRA/E-UTRA traffic modes. GSM, DCS, UTRA and E-UTRA traffic mode were tested. Only the worse mode data is showed on this report.	

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

USB Copy(EUT With PC) the result is the worst (30MHz-40GHz).

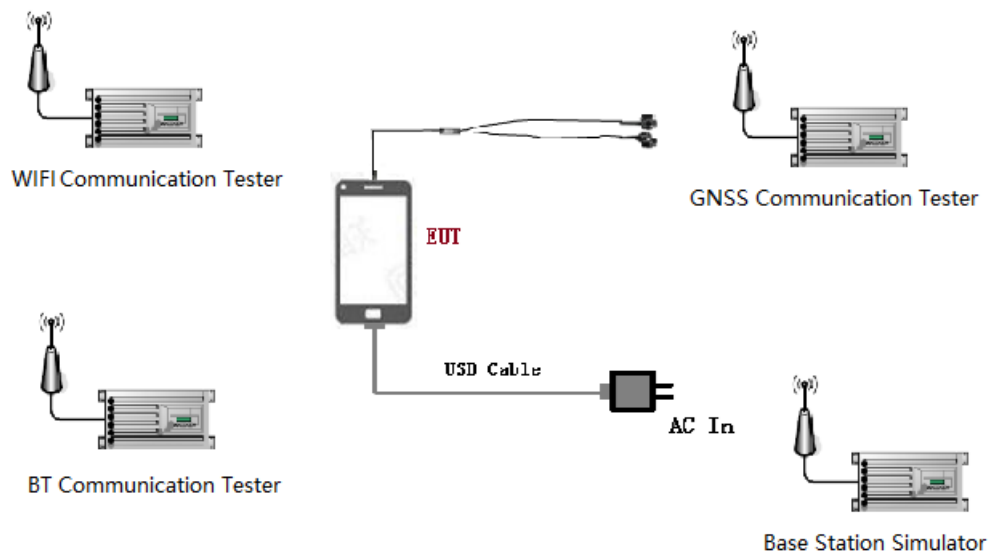
- 2) Conducted Emission

Charging(Adapter Model: HW-100225E00,SN: BC6865N6N00487)+ music playing+ earphone the result is the worst.

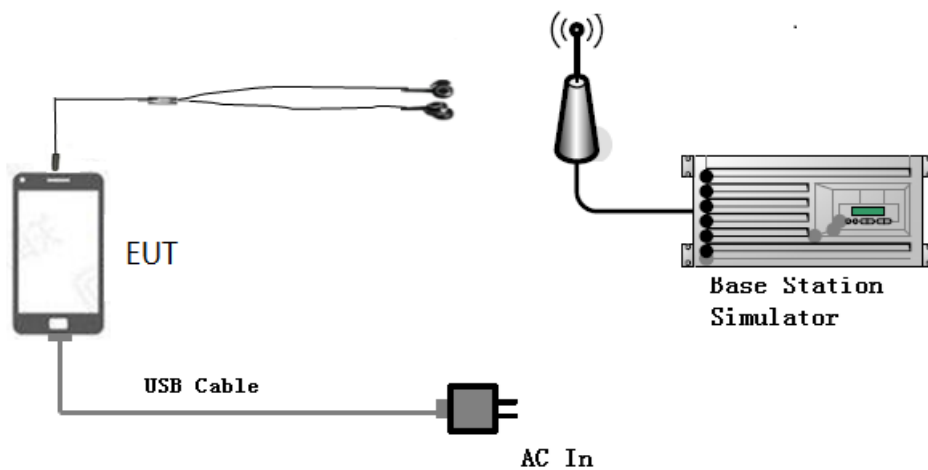


3.2 Test System Configuration

Connection Diagram (Mode 1)

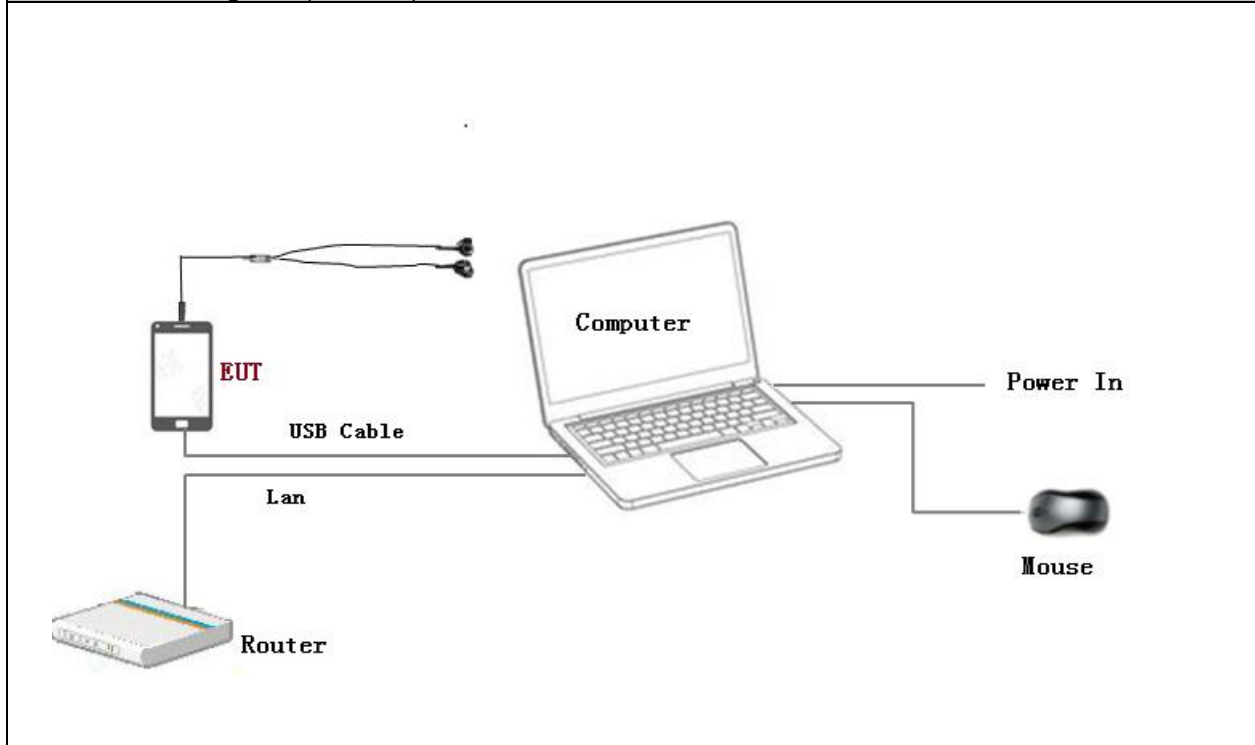


Connection Diagram (Mode 2-4&mode 6)





Connection Diagram (Mode 5)





3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB cable	5	<3m	Shielded
Earphone	2	N/A	N/A

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline	Cal interval (month)
GSS7000 Signal Generator	GSS7000	Spirent	108	Nov.10, 2022	12
Radio Communication Tester	CMU200	R&S	117057	Nov.11, 2022	12
Radio Communication Tester	MT8820C	Anritsu	6200971028	Nov.11, 2022	12
WLAN Tester	8862A	Anritsu	6261782432	Jul.05, 2023	12
Notebook	X270	ThinkPad	A171010066	N/A	N/A
Mouse	MS111-P	DELL	6913XT1014605	N/A	N/A
WLAN AP	B6125-51d	HUAWEI	J6Y7S18419000311	N/A	N/A
Router	D268G	MERCURY	6950941605823	N/A	N/A
Bluetooth Earphone	CM-SHK00	HUAWEI	#1	N/A	N/A



4 Electromagnetic Interference (EMI)

4.1 Radiated Emission 30MHz to 40GHz

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 40 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 40000 MHz: 1MHz;

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

4.1.2 Test setup

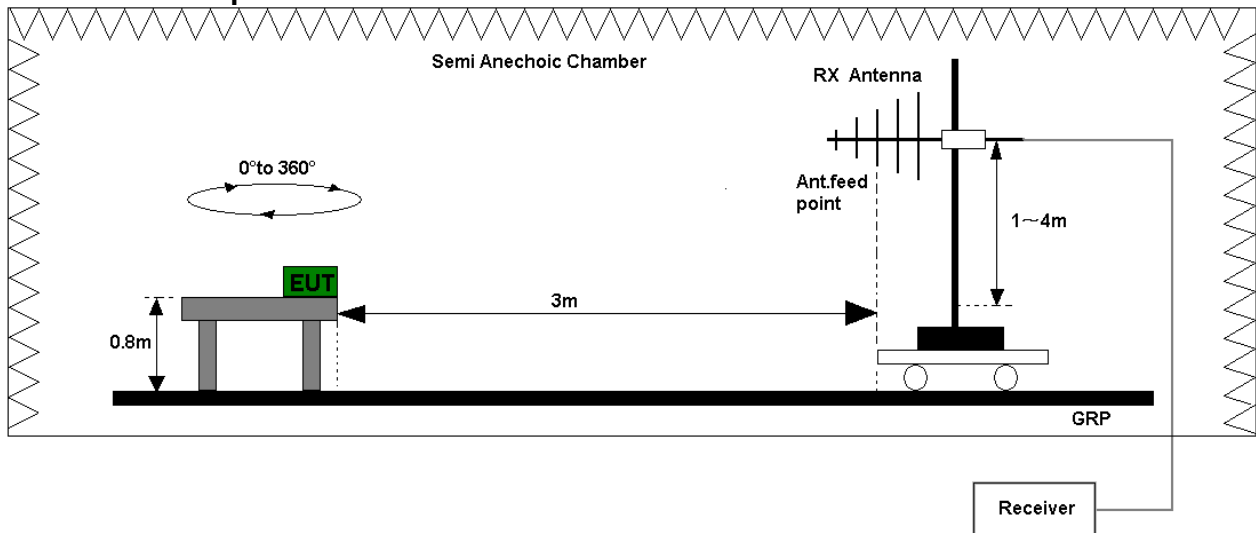


Figure 1. Test set-up of radiated emission (30MHz-1GHz)

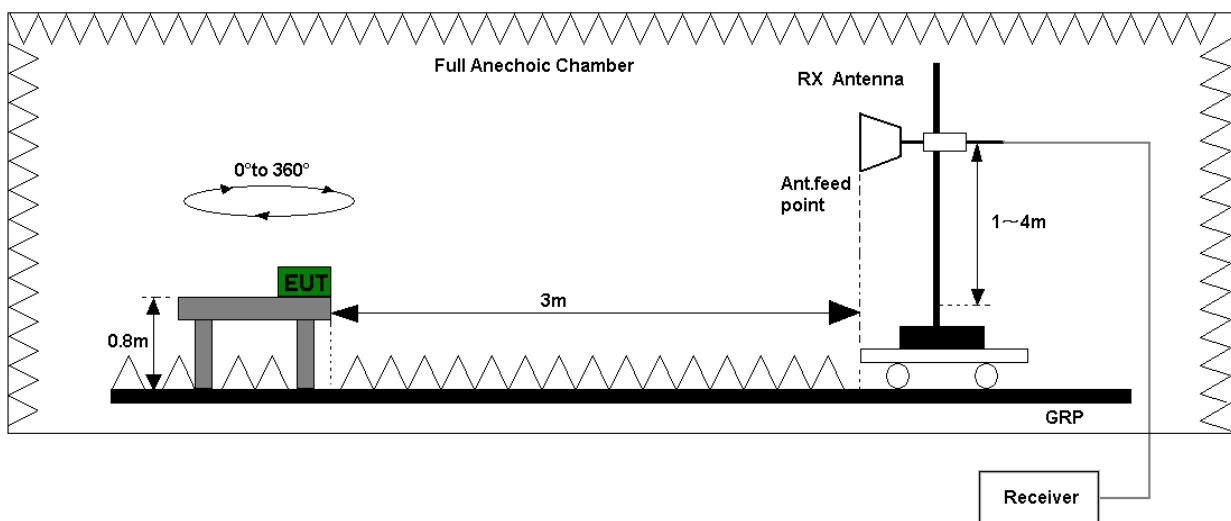


Figure 2. Test set-up of radiated emission (above 1GHz)



4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
Refer to the section 7.1 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 Emission 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

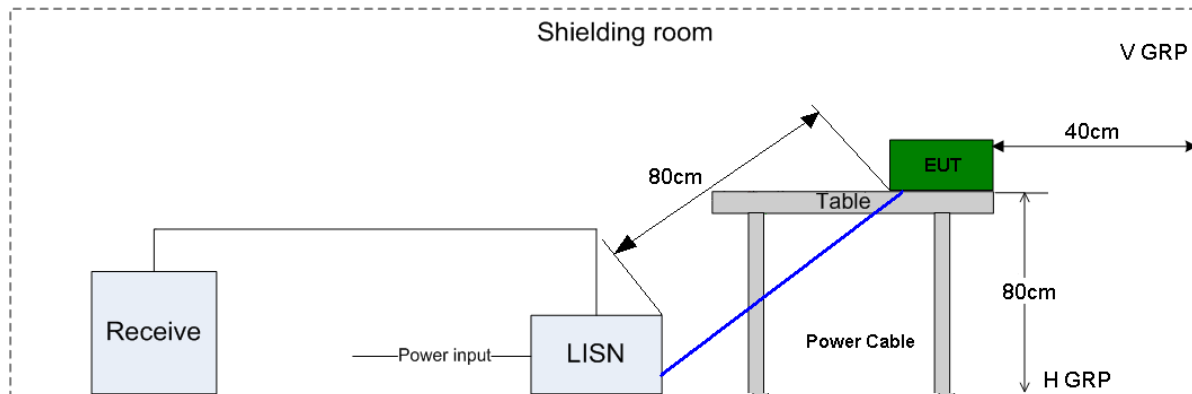


Figure 3. Test Set-up of conducted emission

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance Emission of power lines.

Refer to the section 7.2 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 Equipment						
Test item	Test Instrument	Model	S/N	Manufacturer	Calibrated Deadline	Cal interval
RE-2 (30M-1G)	EMI Test receiver	ESW44	101878	R&S	Nov.12,2022	12
	Broadband Antenna	VULB 9163	01303	SCHWARZ BECK	May.08,2023	24
RE1 (1G-40G)	Horn Antenna (1 to 18G)	HF906	100683	R&S	May.01, 2023	24
	Amplifier	SCA-SCU 18	10162	R&S	Nov.12, 2022	12
	Horn antenna (18 to 40G)	BBHA9170	BBHA917 0644	SCHWARZ BECK	Nov.12, 2022	12
	Amplifier	TPA-184050	P180012	Tonscend	Nov.12,2022	12
	EMI Test receiver	ESW44	101879	R&S	Nov.12, 2022	12
CE	EMI Test receiver	ESU26	100150	R&S	Nov.10, 2022	12
	Artificial Mains Network	ENV216	101176	R&S	Jul.05, 2023	12
Software Information						
Test Item	Software Name	Manufacturer		Version		
RE1	EMC32	R&S		V10.60.20		
RE2	EMC32	R&S		V10.60.20		
CE	EMC32	R&S		V10.60.20		



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
RE(18GHz-40GHz)	Field strength (dB μ V/m)	U=4.52dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.3dB; k=2



7 Test Data and Graph

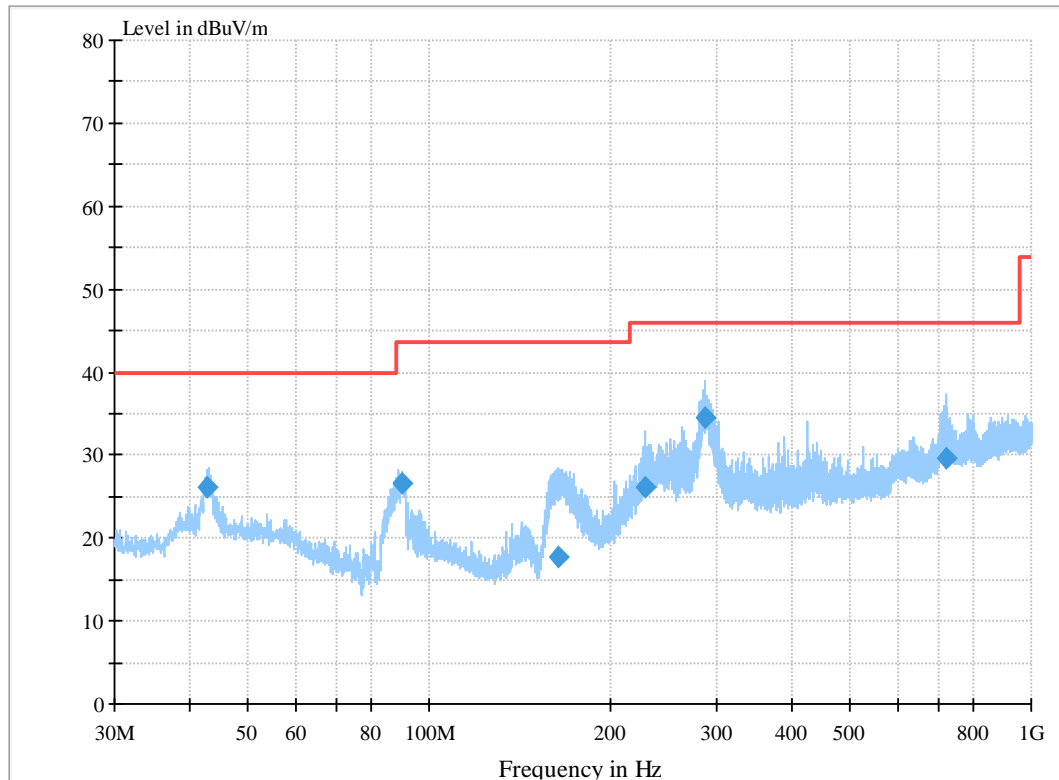
Only the worst test results were shown

7.1 Radiated Emission

7.1.1 30MHz~1GHz

Test Mode 5: USB Copy(EUT With PC)

Full Spectrum



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dB μ V/ m	Transd dB	Limit dB μ V/ m	Margin dB	Height cm	Azimuth deg	Polarisation
42.836420	26.17	19.8	40.00	13.83	350.0	295.0	H
89.824160	26.66	16.3	43.50	16.84	350.0	170.0	H
163.832860	17.75	15.3	43.50	25.75	207.0	256.0	H
228.889660	26.14	18.6	46.00	19.86	100.0	328.0	H
287.968220	34.60	20.0	46.00	11.40	100.0	32.0	H
720.093540	29.65	27.5	46.00	16.35	168.0	8.0	H

Note:

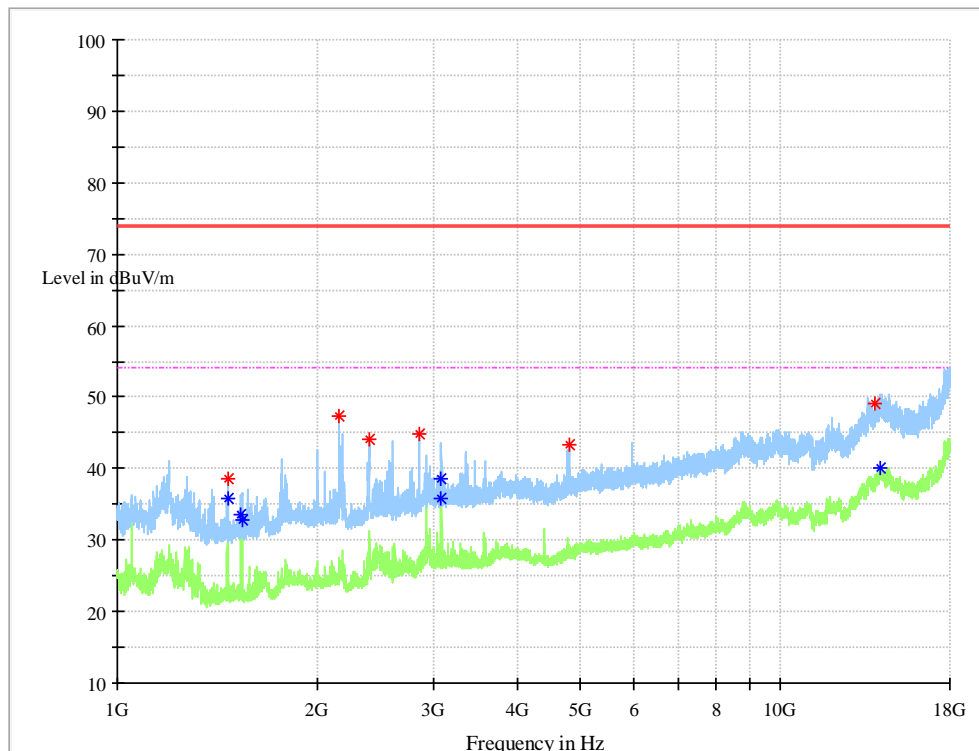
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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



7.1.2 1GHz~18GHz

Test Mode 5: USB Copy(EUT With PC)



MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dB μ V/ m	Transd dB	Limit dB μ V/ m	Margin dB	Height cm	Azimuth deg	Polarisation
1465.23333	38.52	-14.5	74	35.48	100	113	V
2155.43333	47.3	-11.2	74	26.7	100	0	V
2395.13333	44.2	-10.5	74	29.8	200	0	V
2849.6	44.75	-8.6	74	29.25	100	218	V
4792.13333	43.41	-4.7	74	30.59	100	95	V
13847.4667	49.13	11.2	74	24.87	200	316	H

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dB μ V/ m	Transd dB	Limit dB μ V/ m	Margin dB	Height cm	Azimuth deg	Polarisation
1465.23333	35.74	-14.5	54	18.26	100	113	V
1536.63333	33.44	-14.2	54	20.56	200	350	H
1540.6	32.91	-14.2	54	21.09	200	34	H
3074	35.83	-7.2	54	18.17	200	299	H
3081.36667	38.46	-7.2	54	15.54	200	144	H
14167.0667	40.2	13	54	13.8	100	180	H

Note:

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

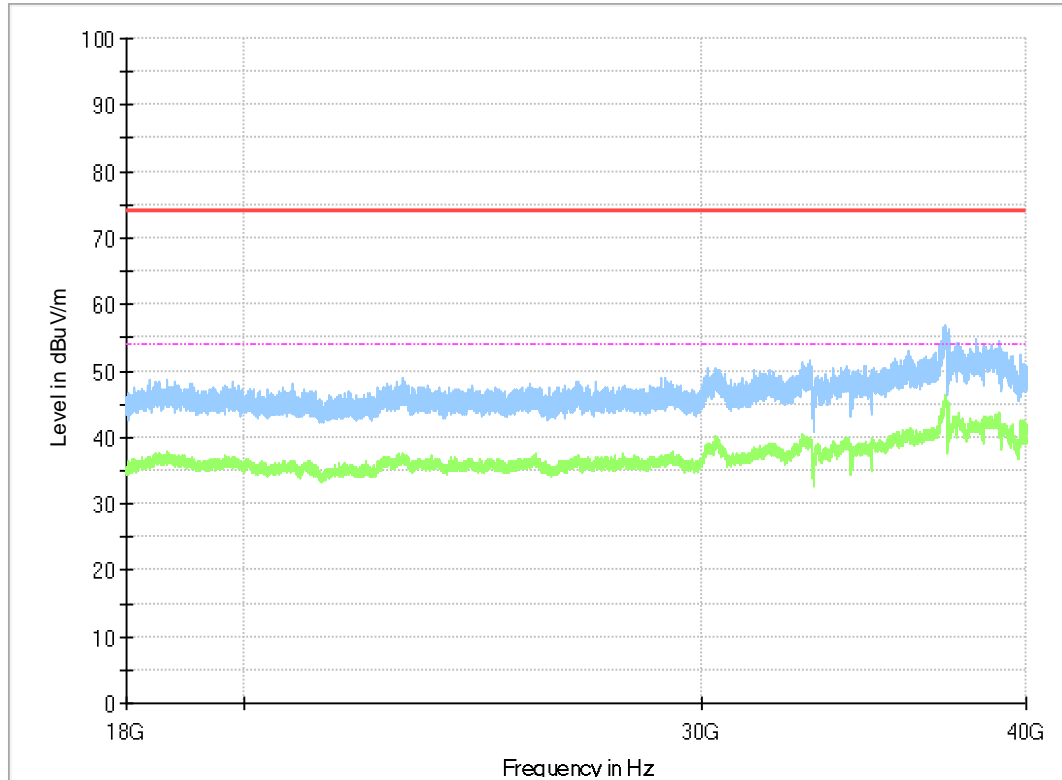
The reading level is calculated by software which is not shown in the sheet.



7.1.3 18GHz~40GHz

Test Mode 5: USB Copy(EUT With PC)

Full Spectrum



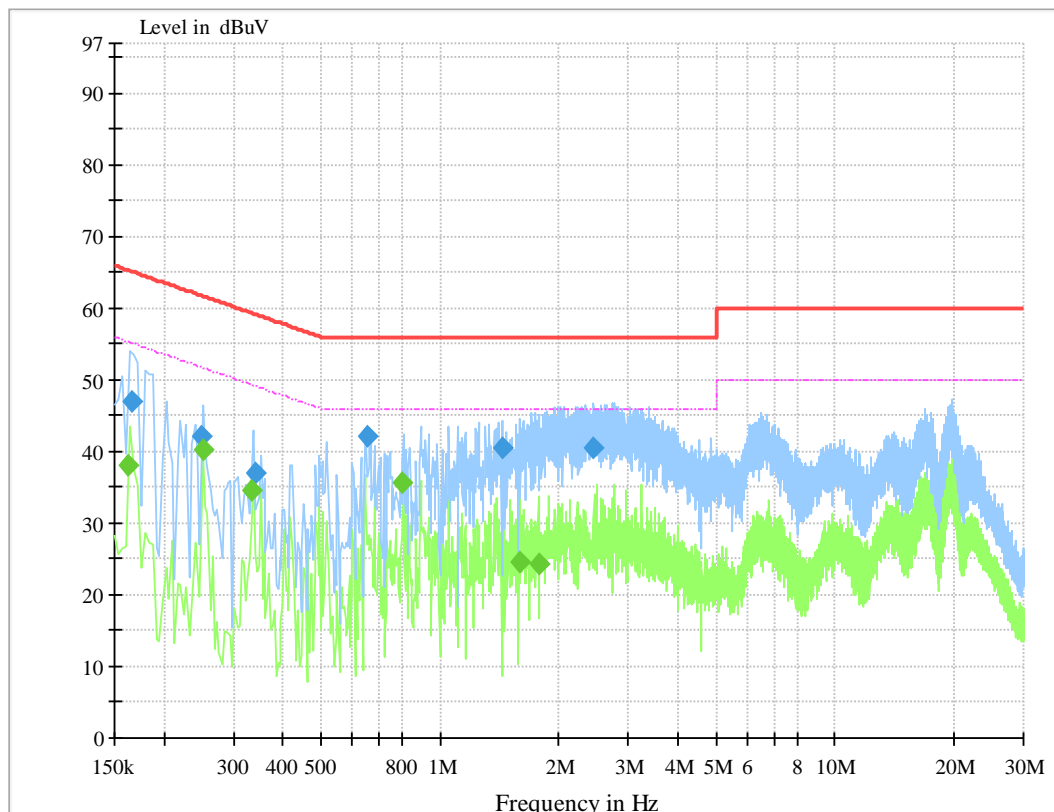
Note: The emission is less than the measurement system noise floor, so no peak found in the Test Range of "18 GHz to 40 GHz".



7.2 Conducted Emission

7.2.1 AC Port Test Data

Test Mode 4: Charging(Adapter Model: HW-100225E00,SN: BC6865N6N00487)+ music playing+ earphone



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.165578	47.12	N	9.6	18.06	65.18	FLO
0.248163	42.28	N	9.7	19.54	61.82	FLO
0.340266	37.05	N	9.7	22.15	59.20	FLO
0.654154	42.08	N	9.7	13.92	56.00	FLO
1.437876	40.58	N	9.7	15.42	56.00	FLO
2.447737	40.61	N	9.8	15.39	56.00	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.16272	38.13	N	9.6	17.19	55.32	FLO
0.253021	40.39	N	9.7	11.27	51.66	FLO
0.333131	34.48	N	9.7	14.89	49.37	FLO
0.804978	35.61	N	9.7	10.39	46.00	FLO
1.588541	24.50	N	9.7	21.50	46.00	FLO
1.774812	24.28	N	9.8	21.72	46.00	FLO



Note:

Level= Reading level+ Transd (cable loss + correction factor)

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

-----END-----