TEST REPORT

No. I23Z70138-EMC01

for

Samsung Electronics Co., Ltd.

Tablet with Bluetooth, WLAN

Model Name: SM-X110

with

FCC ID: ZCASMX110

Hardware Version: REV1.0

Software Version: X110.001

Issued Date: 2023-08-09

Note:

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I23Z70138-EMC01	Rev.0	1st edition	2023-08-09

Note: the latest revision of the test report supersedes all previous versions.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

CTTL (BDA)

Address: No. 18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, 100176, P.R. China

1.3. Testing Environment

Normal Temperature: 15-35°C

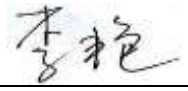
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2023-06-26

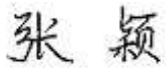
Testing End Date: 2023-07-20

1.5. Signature



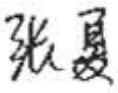
Li Yan

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	19 Chapin Rd.,Building D Pine Brook, NJ 07058
City:	/
Postal Code:	/
Country:	/
Contact Person:	Jenni Chun
Contact Email	j1.chun@samsung.com
Telephone:	+1-201-937-4203
Fax	/

2.2. Manufacturer Information

Company Name:	Samsung Electronics. Co., Ltd.
Address:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
City:	/
Postal Code:	/
Country:	/
Contact Person:	JP KIM
Contact Email	jp426.kim@samsung.com
Telephone:	+82-10-4376-0326
Fax	/

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Tablet with Bluetooth, WLAN
Model name	SM-X110
FCC ID	ZCASMX110

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI/SN	HW Version	SW Version
UT07a	2370136UT07a	REV1.0	/
UT08a	2370136UT08a	REV1.0	/

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Name	Model	Manufacturer
AE1	Battery	HQ-3565S	SCUD(Fujian) Electronics Co., LTD.
AE2	Adapter	EP-T1510	DONGYANG
AE3	Date Cable C-C	EP-DN980BWE	Samsung Electronics Co.,Ltd
AE4	Date Cable A-C	EP-DR140AWE	Samsung Electronics Co.,Ltd
AE5	Headset	ESH61ASFWE	/
AE6	PC	/	/
AE7	SD card	/	/
AE8	MHD	/	/

* The USB cables are shielded.

*AE2, AE4 and AE5 are not the AE for EUT, provided by the client for relevant tests.

*AE6, AE7 and AE8 are not the AE for EUT, provided by the Lab for relevant tests.

3.4. General Description

Equipment under Test (EUT) is a model of Tablet with Bluetooth, WLAN with integrated antenna.

Description	Tablet with Bluetooth, WLAN	
Model name	SM-X110	
Marketing name	Galaxy Tab A9	
Brand name	SAMSUNG	
Cellular Bands	☐GSM	/
	☐CDMA	/
	☐WCDMA	/
	☐LTE	/
	☐5G NR SA	/
	☐5G NR NSA	/
Unlicensed Radio	☒Wi-Fi 2.4GHz	802.11b/g/n(20MHz)
	☒Wi-Fi 5GHz	802.11a/n(20MHz,40MHz)/ac(20MHz,40MHz,80MHz)
	☒Wi-Fi 5.8GHz	802.11a/n(20MHz,40MHz)/ac(20MHz,40MHz,80MHz)
	☒Bluetooth	☒EDR ☐BLE4 ☒BLE5
Other	☒GNSS	☒GPS ☒BDS ☒Gallileo ☒Glonass
	☐FM ☒MP3 ☒MP4 ☒Camera ☒USB ☒External memory	
Temperature	-10-55℃	
Normal Voltage	3.82V	
Extreme Low Voltage	3.6V	
Extreme High Voltage	4.4V	

Manual and specifications of the EUT were provided to fulfil the test.

For more EUT information please refers to the manufacturer's specifications or user's manual.

3.5. EUT set-ups

Set-up

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	UT08a + AE2 + AE3 +AE5	Adapter + cable+ headset
Set.2	UT08a + AE2 + AE3	Adapter + cable
Set.3	UT08a + AE3 + UT07a +AE5	EUT+EUT+ headset
Set.4	UT08a + AE3 + HD+ AE5	EUT+HD+ headset
Set.5	UT08a + AE3 + AE5 +PC	Type C communication with PC
Set.6	UT08a + AE4 + AE5 +PC+SD	USB communication with PC+SD

Test mode

Mode No.	Operating mode	Remarks
mode.1	MP4 Play	RE, CE
mode.2	Front Camera	RE, CE
mode.3	Rear Camera	RE, CE
mode.4	OTG Phone to Phone	RE only
mode.5	OTG + Mobile HD+MP4	RE only
mode.6	USB DATA (TYPE C)	RE, CE
mode.7	USB DATA (USB, SD TO PC)	RE, CE

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters are supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC 47 CFR Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2021
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness Electrical insulation	0.014MHz-1MHz, >60dB; 1MHz－1000MHz, >90dB. > 2 MΩ
Ground system resistance	< 4 Ω
Temperature	Min. = 15 ˚C, Max. = 35 ˚C

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
	BR	Re-use test data from basic model report.

6.1. Summary of Test Results

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	A.1	BR	**CTTL(BDA)**
2	Conducted Emission	15.107(a)	A.2	BR	**CTTL(BDA)**

6.2. Statements

The model SM-X110 is variant product of SM-X115 (FCC ID: ZCASMX115), according to the declaration of changes provided by the applicant and FCC KDB publication 484596 D01 all results are derived from the basic model. The basic model (SM-X115) report number is I23Z70136-EMC01 (FCC ID: ZCASMX115).
For detail differences between two models please refer to the Declaration of Changes document.

7. Test Equipments Utilized

Test Equipment

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURER	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2023-09-22	1 year
2	Test Receiver	ESCI	100766	R&S	2024-02-29	1 year
3	LISN	ENV216	101459	R&S	2024-03-30	1 year
4	BiLog Antenna	VULB9163	01177	Schwarzbeck	2023-08-03	1 year
5	EMI Antenna	3115	00119021	ETS-Lindgren	2024-06-24	1 year
6	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
7	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
8	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
9	PC	M4000e-17	M706RMW2	Lenovo	N/A	N/A
10	PC	T14S	PC-1RP0TY	Lenovo	N/A	N/A

Test Software

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V8.53.0	R&S
Conducted Emission	EMC32 V8.53.0	R&S

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator at distances of 3 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

For the test setup photographs please see the test setup photos document.

A.1.2 EUT Operating Mode

The MS is operating in the USB mode, charging mode, MP3, MP4, CAMERA, OTG and SD mode. All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (μV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance.

A.1.4 Test Condition

Voltage（V）	Frequency（Hz）
120	60

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”. It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

Result = $P_{Mea} + A_{Rpl} = P_{Mea} + G_A + G_{PL}$

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz：5.73dB, 1GHz-18GHz: 5.58dB, *k*=2.

Note: all the set-up and operating mode list in section 3.5 were tested, only the worst test data are showed in this section.

Set.1+Mode3, Adapter+ Rear Camera+ Headset,

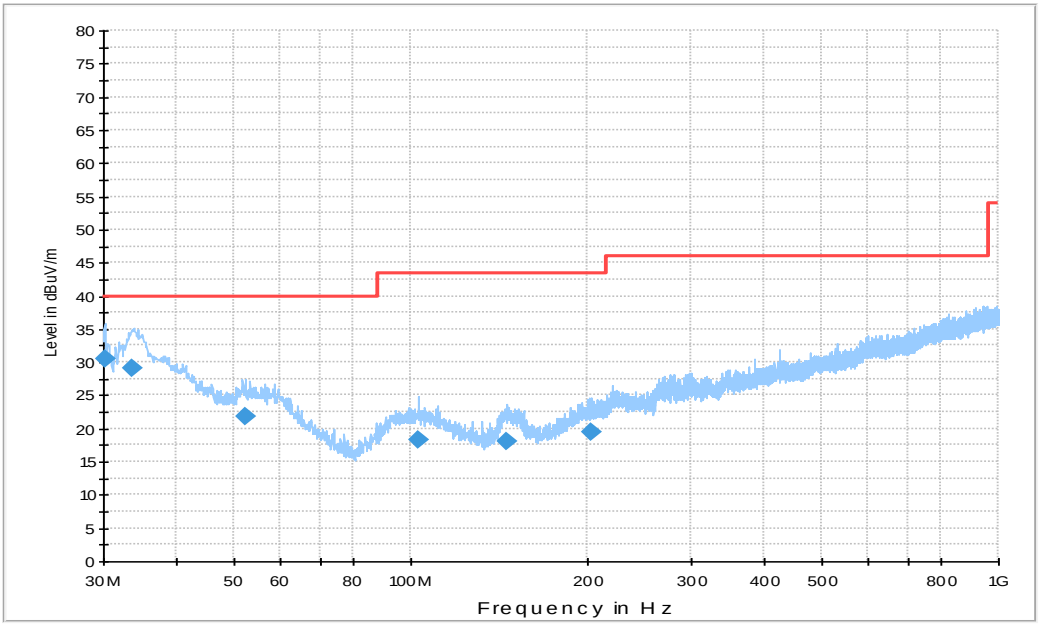


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.194000	30.5	100.0	V	51.0	-3.6	9.5	40.0
33.492000	29.1	100.0	V	128.0	-3.4	10.9	40.0
52.407000	21.8	100.0	V	-13.0	0.0	18.2	40.0
102.84700	18.3	125.0	V	96.0	-1.3	25.2	43.5
146.10900	18.1	100.0	V	211.0	-5.1	25.4	43.5
203.53300	19.6	125.0	H	115.0	-1.4	23.9	43.5

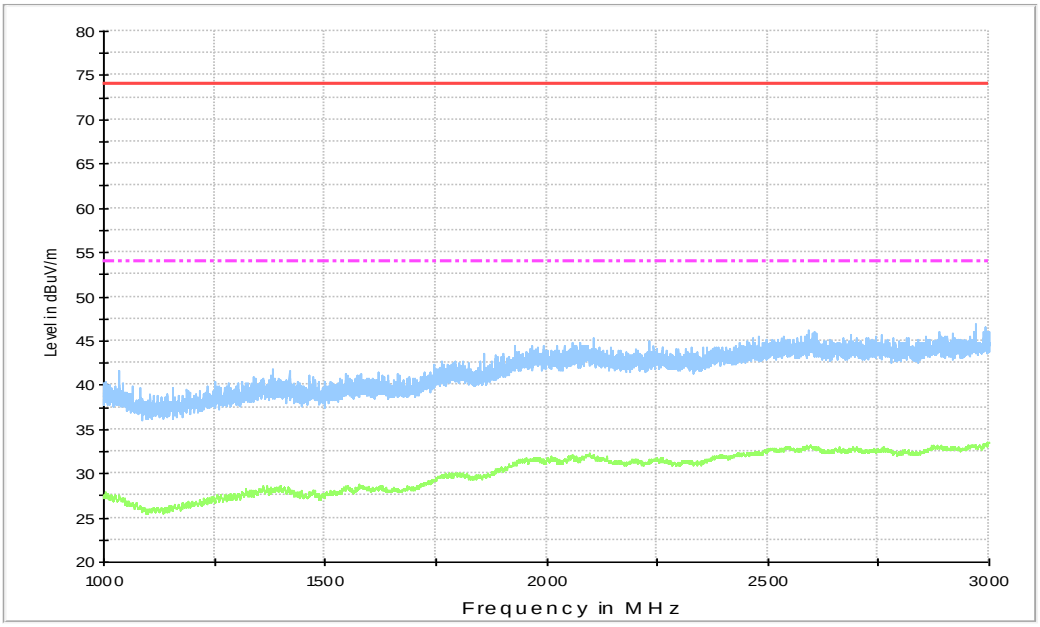


Figure A.2 Radiated Emission from 1GHz to 3GHz

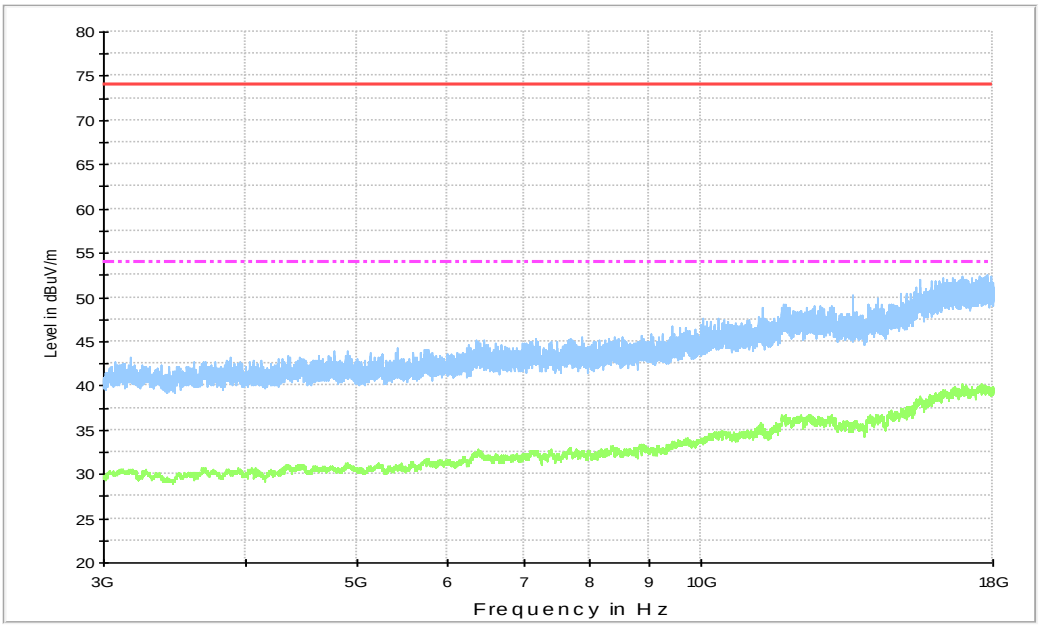


Figure A.3 Radiated Emission from 3GHz to 18GHz

Average detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17617.500	40.20	-23.7	40.6	23.32	54.0	13.8	V
16927.000	40.16	-24.6	41.2	23.56	54.0	13.8	V
16925.000	40.14	-24.6	41.2	23.54	54.0	13.9	V
17607.000	40.14	-23.7	40.6	23.29	54.0	13.9	V
16927.500	40.14	-24.6	41.2	23.53	54.0	13.9	V
16931.500	40.13	-24.6	41.2	23.52	54.0	13.9	V

Peak detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17804.000	52.5	-23.6	40.5	35.68	74.0	21.5	V
17927.500	52.4	-23.4	40.5	35.26	74.0	21.6	V
17506.000	52.4	-24.0	40.6	35.73	74.0	21.6	H
17544.000	52.3	-23.9	40.6	35.63	74.0	21.7	V
16939.000	52.3	-24.6	41.2	35.72	74.0	21.7	V
17729.000	52.3	-23.7	40.6	35.40	74.0	21.7	V

Set.2+Mode1, Adapter+ MP4

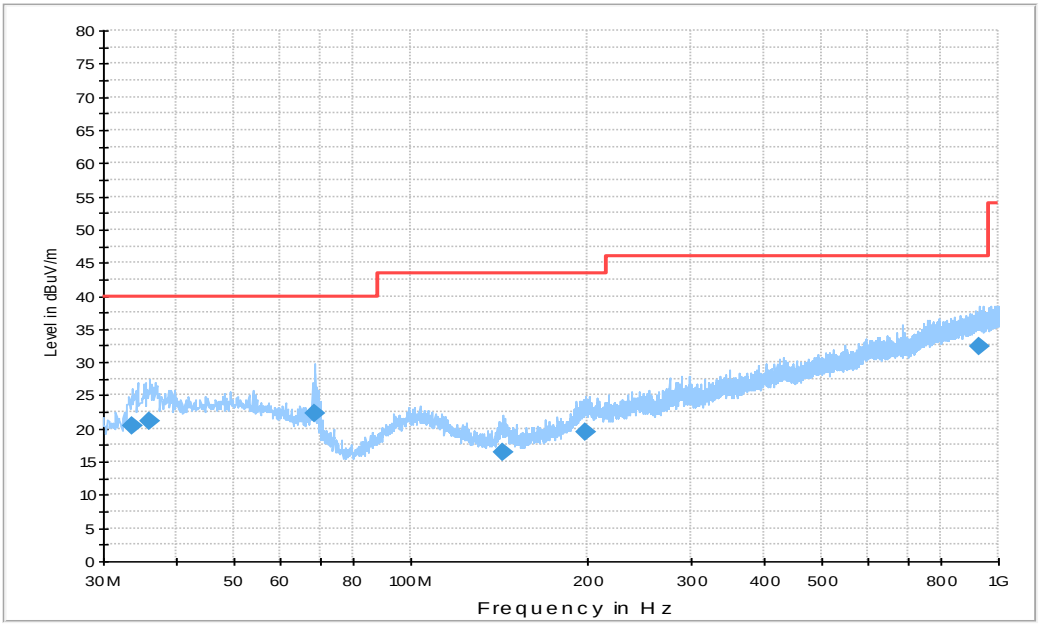


Figure A.4 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
33.589000	20.4	100.0	V	282.0	-3.4	19.6	40.0
35.917000	21.0	100.0	V	25.0	-2.6	19.0	40.0
68.509000	22.2	113.0	V	173.0	-3.7	17.8	40.0
143.58700	16.4	100.0	V	173.0	-5.0	27.1	43.5
198.00400	19.5	100.0	V	-20.0	-0.9	24.0	43.5
930.64500	32.4	113.0	V	-45.0	13.1	13.6	46.0

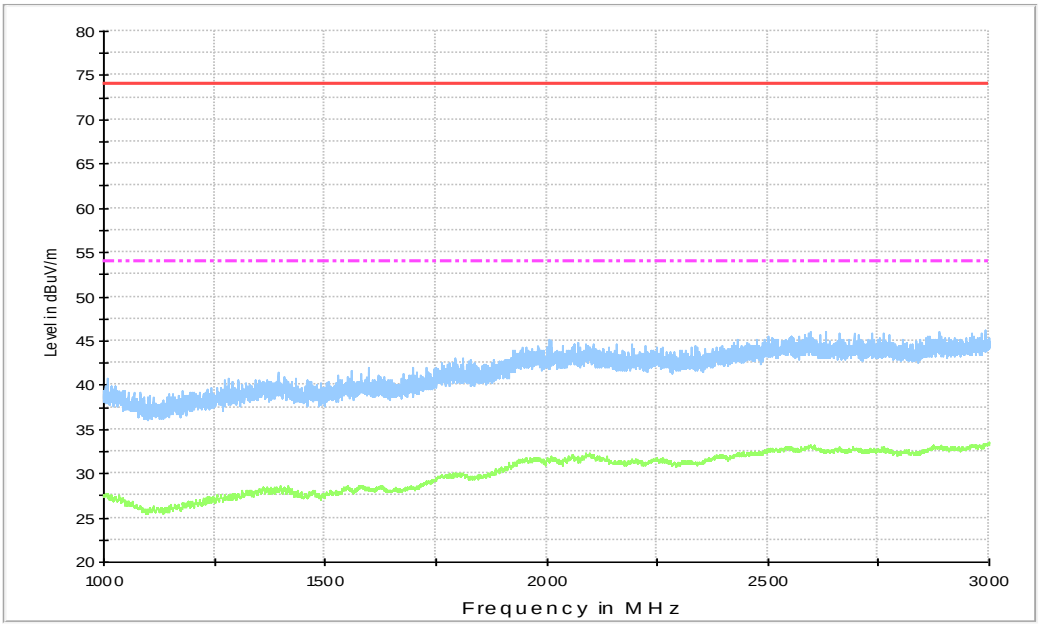


Figure A.5 Radiated Emission from 1GHz to 3GHz

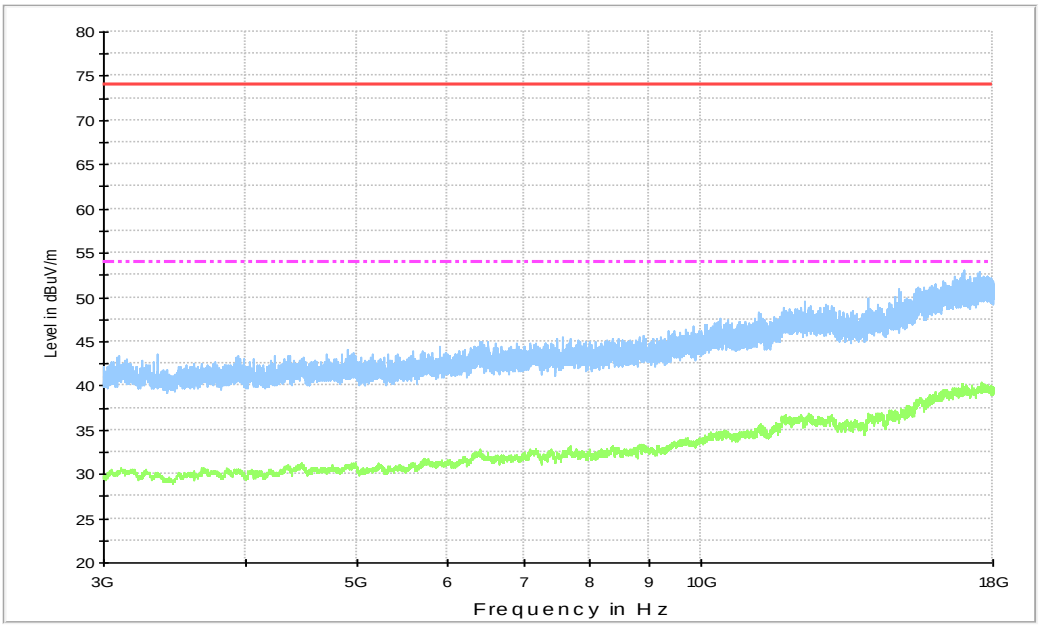


Figure A.6 Radiated Emission from 3GHz to 18GHz

Average detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17606.500	40.37	-23.7	40.6	23.51	54.0	13.6	V
16932.000	40.31	-24.6	41.2	23.70	54.0	13.7	V
16933.500	40.28	-24.6	41.2	23.67	54.0	13.7	V
16931.500	40.27	-24.6	41.2	23.66	54.0	13.7	V
16930.500	40.26	-24.6	41.2	23.65	54.0	13.7	V
17612.500	40.23	-23.7	40.6	23.36	54.0	13.8	V

Peak detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17008.500	53.1	-24.6	41.1	36.59	74.0	20.9	V
17548.000	53.0	-23.9	40.6	36.27	74.0	21.0	V
16928.000	52.8	-24.6	41.2	36.19	74.0	21.2	V
17426.500	52.7	-24.1	40.7	36.13	74.0	21.3	V
17505.000	52.5	-24.0	40.6	35.84	74.0	21.5	V
17176.000	52.3	-24.5	40.8	36.04	74.0	21.7	V

Set.1+Mode2, Adapter + Headset +Front C

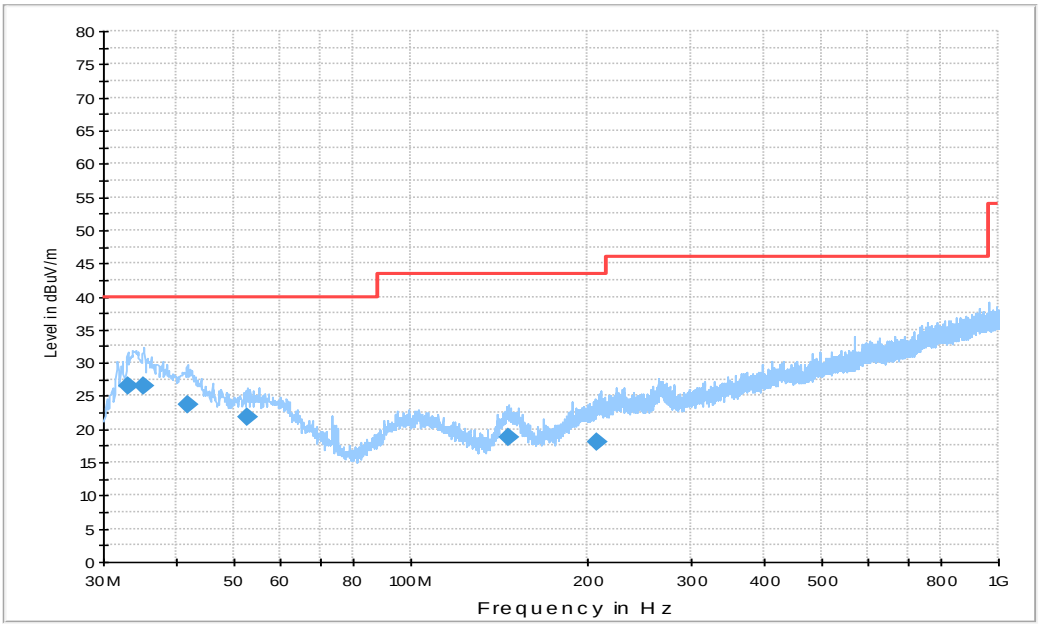


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.291000	27.0	100.0	V	95.0	-3.6	13.0	40.0
32.231000	24.5	100.0	V	121.0	-3.7	15.5	40.0
38.730000	19.8	125.0	H	237.0	-1.6	20.2	40.0
55.511000	24.2	100.0	V	57.0	-0.3	15.8	40.0
111.57700	25.3	125.0	V	269.0	-2.1	18.2	43.5
195.77300	20.0	100.0	V	135.0	-0.9	23.5	43.5

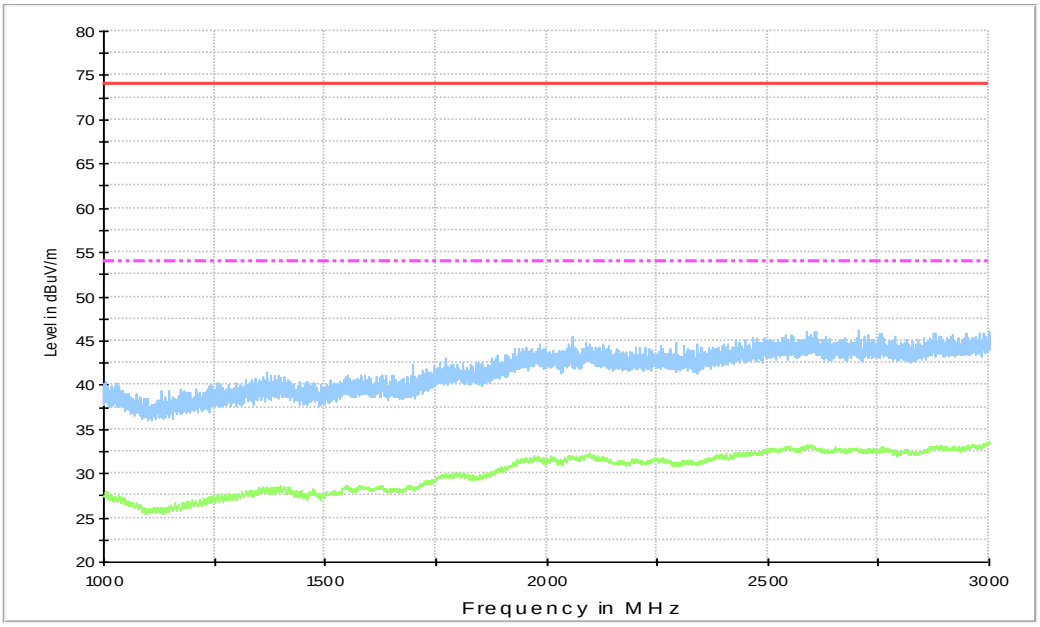


Figure A.8 Radiated Emission from 1GHz to 3GHz

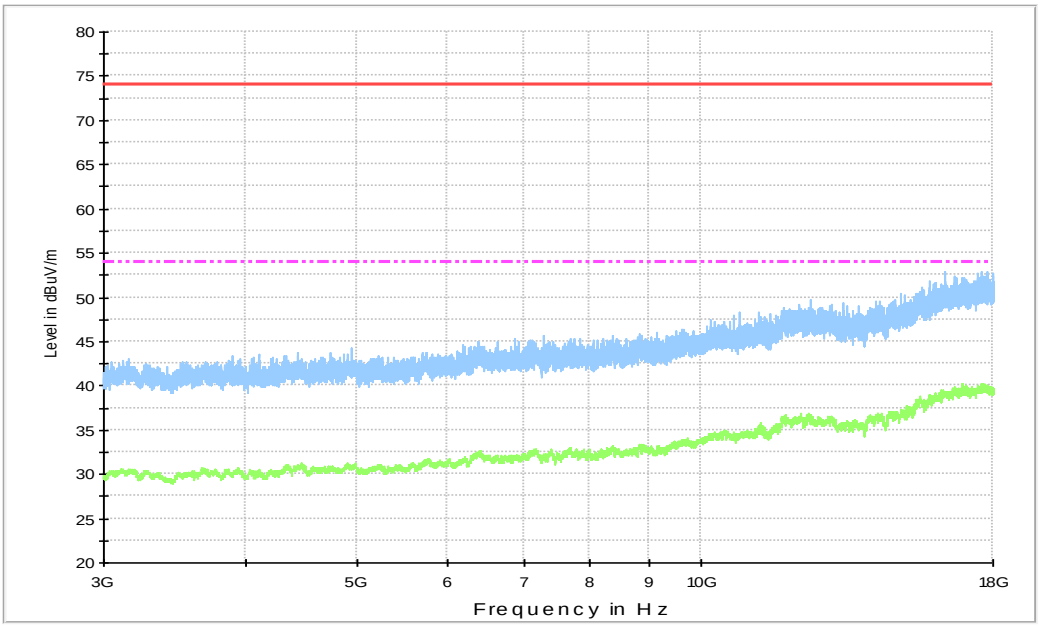


Figure A.9 Radiated Emission from 3GHz to 18GHz

Average detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
16929.500	40.26	-24.6	41.2	23.65	54.0	13.7	V
16932.000	40.25	-24.6	41.2	23.64	54.0	13.7	V
17605.000	40.25	-23.7	40.6	23.39	54.0	13.8	V
16938.500	40.24	-24.6	41.2	23.62	54.0	13.8	V
17612.000	40.18	-23.7	40.6	23.31	54.0	13.8	V
17605.500	40.16	-23.7	40.6	23.31	54.0	13.8	V

Peak detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
16351.000	53.0	-25.4	41.0	37.35	74.0	21.0	V
17780.500	52.9	-23.6	40.5	36.07	74.0	21.1	V
17619.000	52.8	-23.7	40.6	35.93	74.0	21.2	V
17469.500	52.8	-24.1	40.6	36.22	74.0	21.2	V
17985.500	52.7	-23.3	40.6	35.39	74.0	21.3	H
17819.500	52.6	-23.6	40.5	35.72	74.0	21.4	V

Set.4+Mode5, OTG +MP4

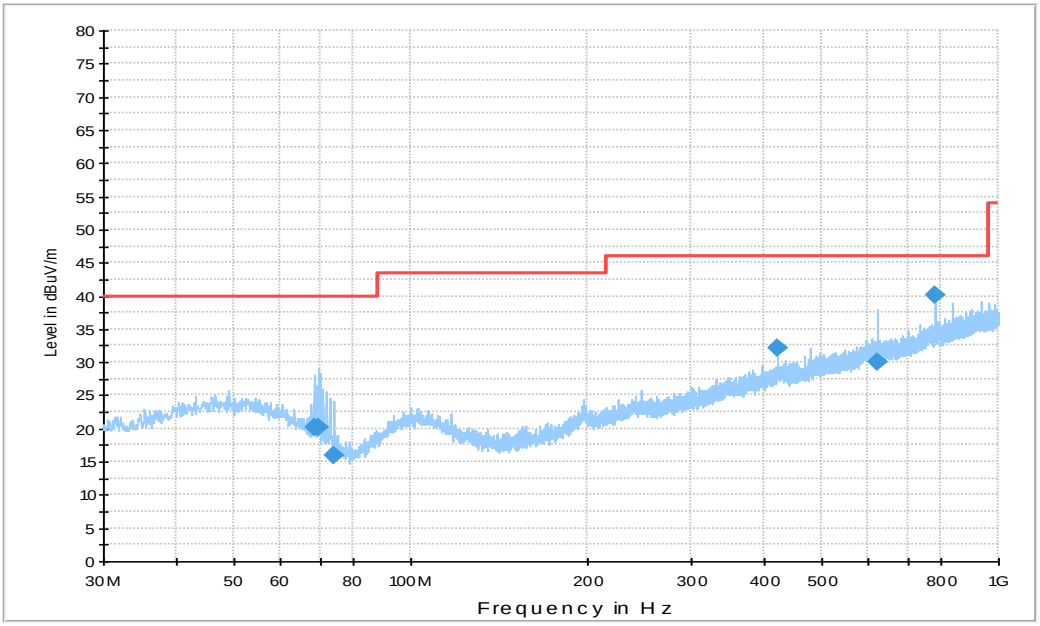


Figure A.10 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
68.412000	20.1	125.0	H	302.0	-3.6	19.9	40.0
69.576000	20.2	100.0	H	96.0	-4.0	19.8	40.0
73.844000	15.8	100.0	H	302.0	-5.6	24.2	40.0
420.03700	32.1	100.0	H	270.0	5.5	13.9	46.0
624.02800	30.0	113.0	V	225.0	9.2	16.0	46.0
780.10100	40.1	113.0	H	70.0	11.2	5.9	46.0

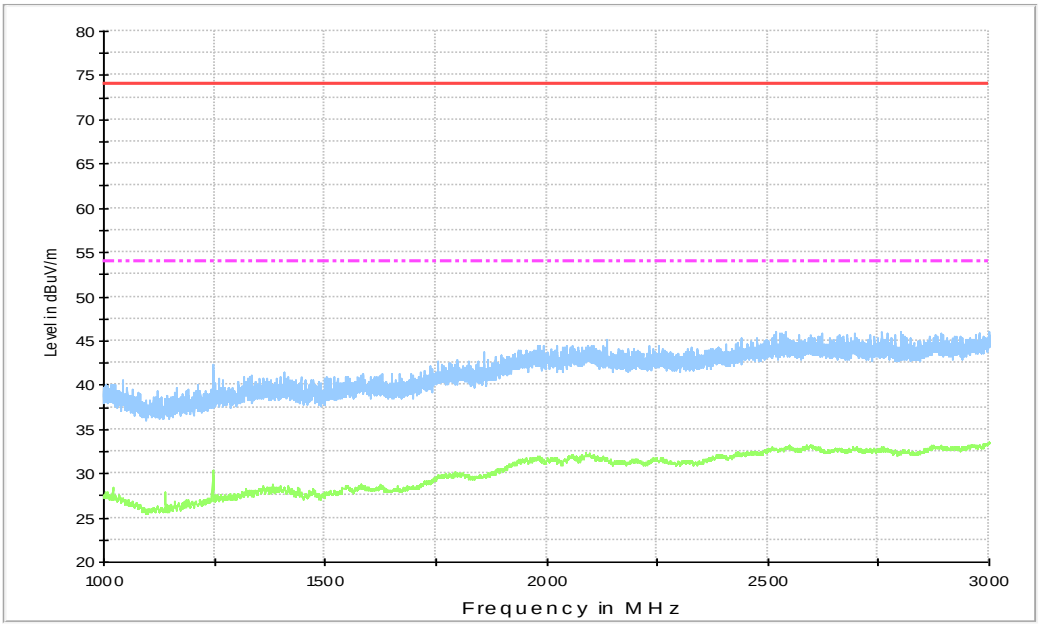


Figure A.11 Radiated Emission from 1GHz to 3GHz

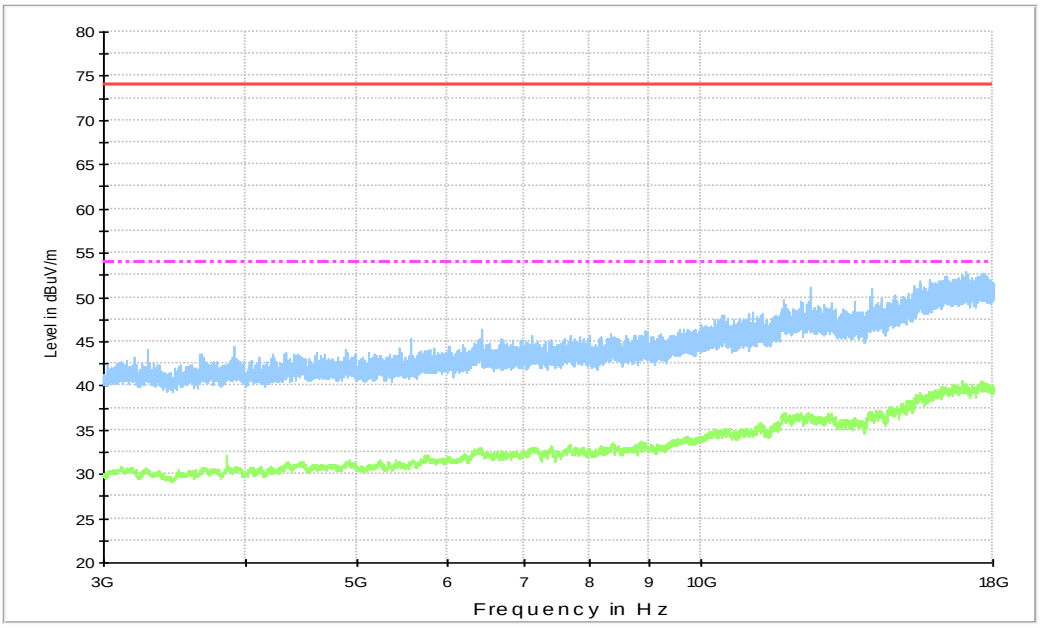


Figure A.12 Radiated Emission from 3GHz to 18GHz

Average detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
16925.000	40.52	-24.6	41.2	23.92	54.0	13.5	V
17620.500	40.50	-23.7	40.6	23.61	54.0	13.5	V
16932.000	40.44	-24.6	41.2	23.83	54.0	13.6	V
16928.500	40.42	-24.6	41.2	23.82	54.0	13.6	V
16926.500	40.40	-24.6	41.2	23.80	54.0	13.6	V
17614.000	40.39	-23.7	40.6	23.52	54.0	13.6	V

Peak detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17019.000	52.8	-24.6	41.1	36.39	74.0	21.2	H
17647.500	52.7	-23.7	40.6	35.73	74.0	21.3	H
17128.500	52.6	-24.6	40.9	36.38	74.0	21.4	V
17642.500	52.6	-23.7	40.6	35.66	74.0	21.4	H
17754.500	52.5	-23.6	40.5	35.64	74.0	21.5	V
17626.000	52.5	-23.7	40.6	35.63	74.0	21.5	V

Set.6+Mode7, USB mode (SD) + Headset

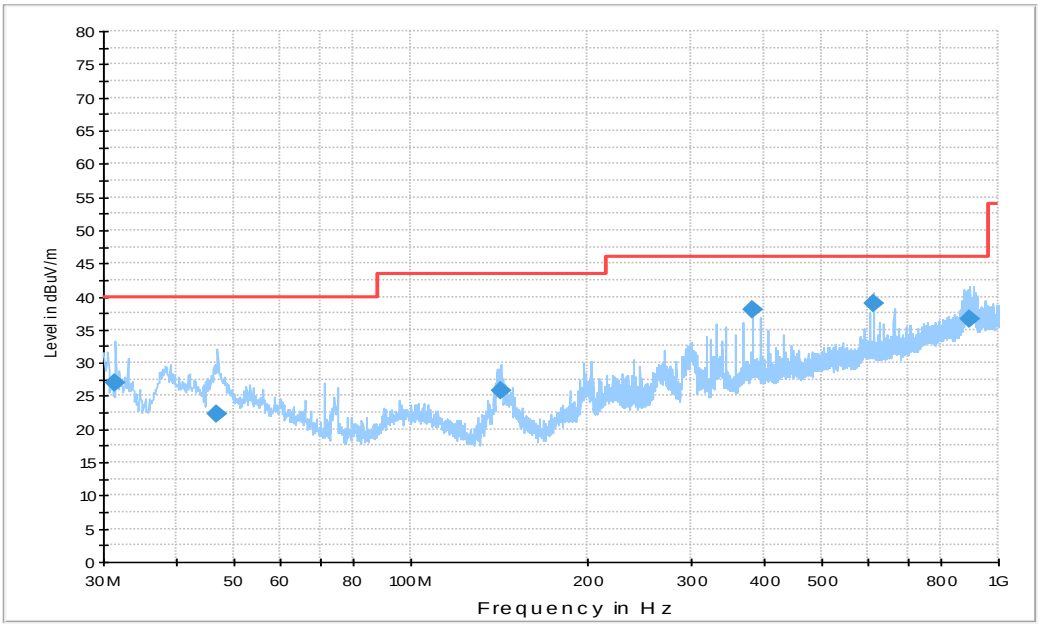


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.455000	27.0	100.0	V	270.0	-3.7	13.0	40.0
46.878000	22.4	125.0	V	301.0	0.0	17.6	40.0
142.42300	25.9	100.0	V	12.0	-5.1	17.6	43.5
380.94600	37.9	100.0	H	250.0	4.4	8.1	46.0
614.42500	39.0	113.0	V	180.0	9.2	7.0	46.0
891.55400	36.5	100.0	V	0.0	12.6	9.5	46.0

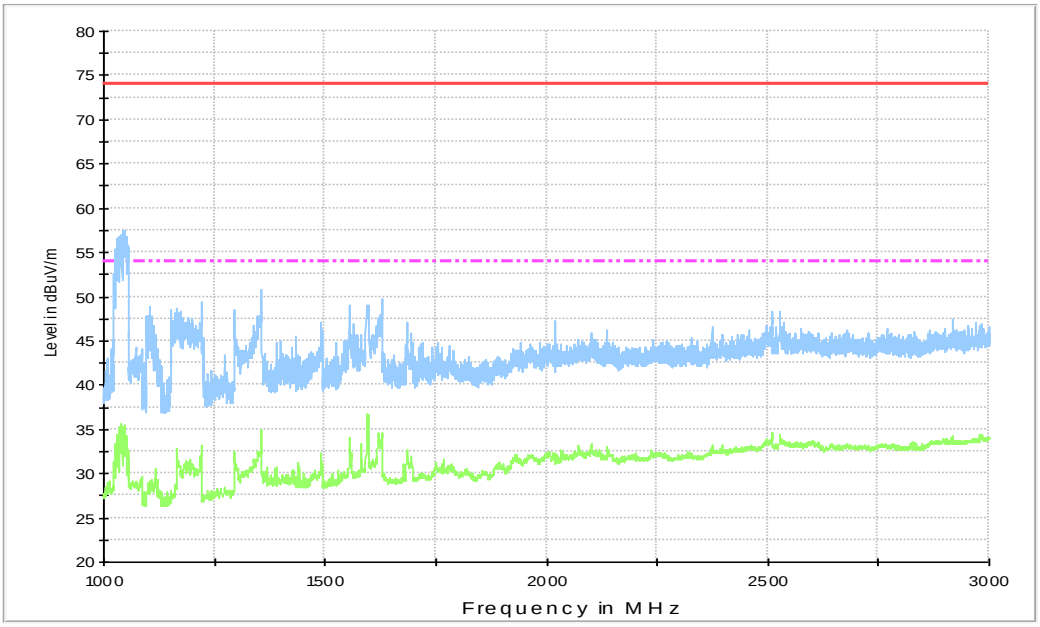


Figure A.14 Radiated Emission from 1GHz to 3GHz

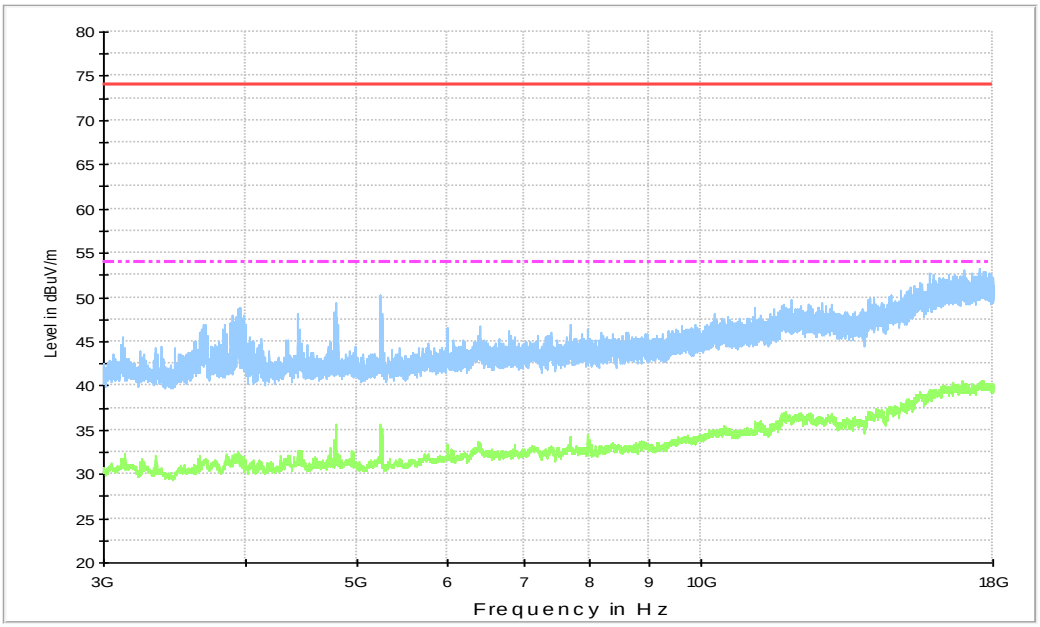


Figure A.15 Radiated Emission from 3GHz to 18GHz

Average detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
1038.400	35.58	0.0	28.6	7.03	54.0	18.4	V
1356.000	34.63	0.0	28.9	5.73	54.0	19.4	V
1597.000	36.75	0.0	28.5	8.24	54.0	17.2	V
3933.000	32.47	-35.2	33.2	34.44	54.0	21.5	V
4789.500	35.68	-35.1	34.0	36.77	54.0	18.3	V
5245.500	35.61	-34.9	34.2	36.37	54.0	18.4	V

Peak detector result

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
1047.200	57.5	0.0	28.4	29.13	74.0	16.5	H
1220.800	49.4	0.0	27.9	21.50	74.0	24.6	V
1356.400	50.9	0.0	28.9	21.97	74.0	23.1	V
3948.500	48.9	-35.2	33.1	50.96	74.0	25.1	V
4789.000	49.4	-35.1	34.0	50.51	74.0	24.6	V
5245.000	50.3	-34.9	34.2	51.05	74.0	23.7	V

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

For the test setup photographs please see the test setup photos document.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode, charging mode, MP3, MP4, CAMERA, OTG and SD mode. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

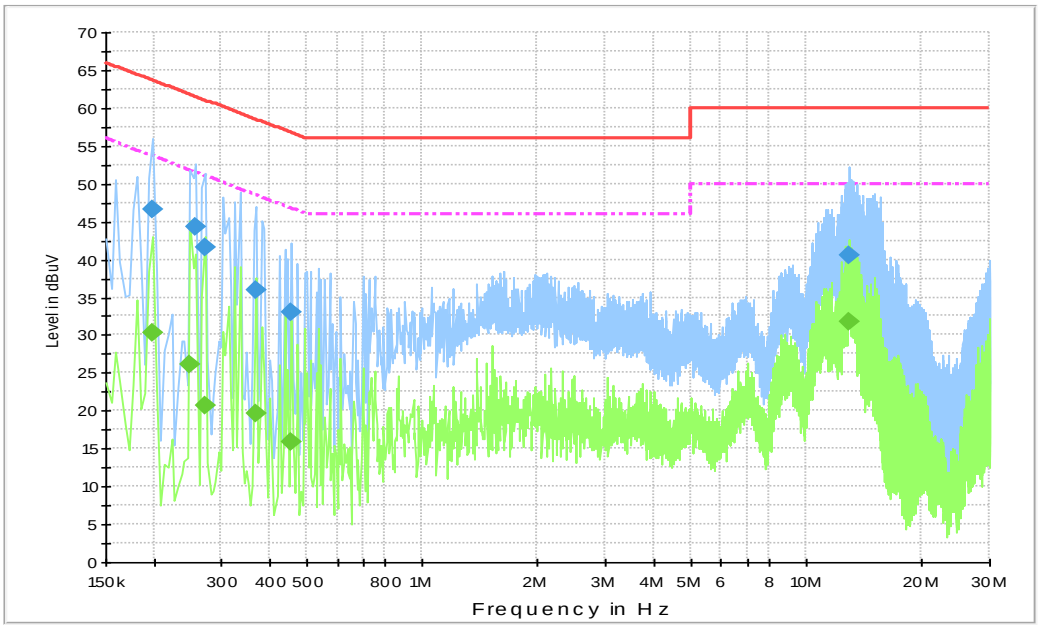
RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: *U*= 3.10 dB, *k*=2.

Note: all the set-up and operating mode list in section 3.5 were tested, only the worst test data are showed in this section.

Set.1+Mode3



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.16 Conducted Emission

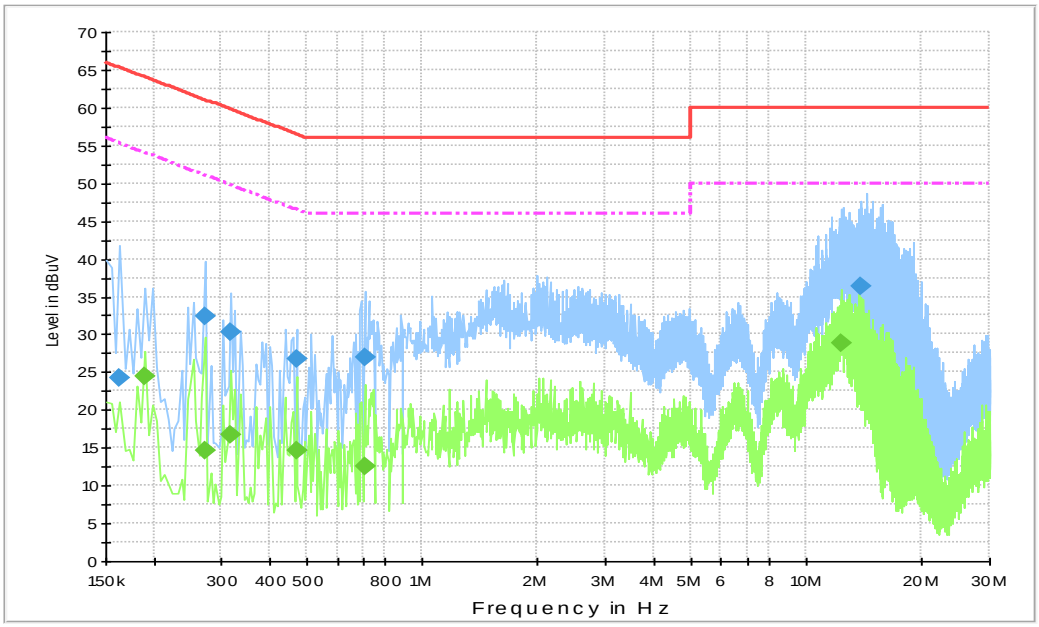
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	46.5	2000.0	9.000	On	N	19.8	17.1	63.6
0.258000	44.2	2000.0	9.000	On	L1	19.7	17.3	61.5
0.271500	41.6	2000.0	9.000	On	L1	19.7	19.5	61.1
0.370500	35.9	2000.0	9.000	On	N	19.8	22.5	58.5
0.456000	33.1	2000.0	9.000	On	L1	19.8	23.7	56.8
12.970500	40.6	2000.0	9.000	On	L1	19.8	19.4	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	30.2	2000.0	9.000	On	L1	19.8	23.4	53.6
0.249000	26.1	2000.0	9.000	On	N	19.7	25.7	51.8
0.271500	20.8	2000.0	9.000	On	L1	19.7	30.3	51.1
0.370500	19.7	2000.0	9.000	On	L1	19.8	28.8	48.5
0.456000	16.0	2000.0	9.000	On	N	19.8	30.8	46.8
12.970500	31.8	2000.0	9.000	On	L1	19.8	18.2	50.0

Set.2+Mode1



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.17 Conducted Emission

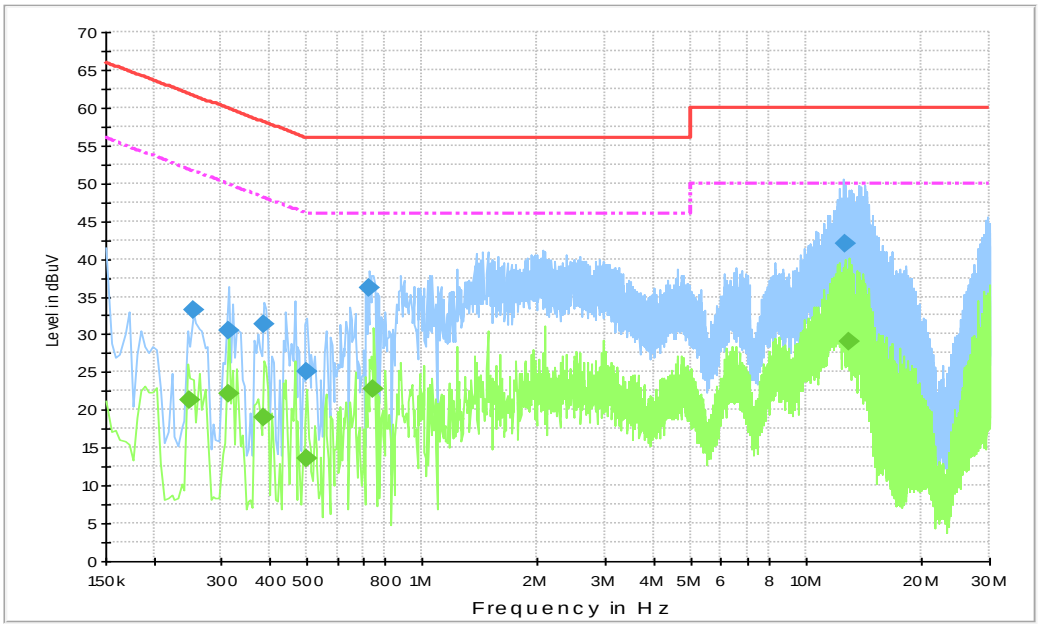
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	24.3	2000.0	9.000	On	N	26.0	41.0	65.3
0.271500	32.4	2000.0	9.000	On	L1	19.7	28.7	61.1
0.316500	30.3	2000.0	9.000	On	N	19.7	29.5	59.8
0.469500	26.7	2000.0	9.000	On	L1	19.8	29.9	56.5
0.708000	26.9	2000.0	9.000	On	L1	19.7	29.1	56.0
13.920000	36.4	2000.0	9.000	On	L1	19.8	23.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190500	24.5	2000.0	9.000	On	N	21.2	29.5	54.0
0.271500	14.7	2000.0	9.000	On	N	19.7	36.4	51.1
0.316500	16.7	2000.0	9.000	On	N	19.7	33.1	49.8
0.469500	14.6	2000.0	9.000	On	L1	19.8	31.9	46.5
0.708000	12.6	2000.0	9.000	On	L1	19.7	33.4	46.0
12.322500	28.8	2000.0	9.000	On	L1	19.8	21.2	50.0

Set.1+Mode2



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.18 Conducted Emission

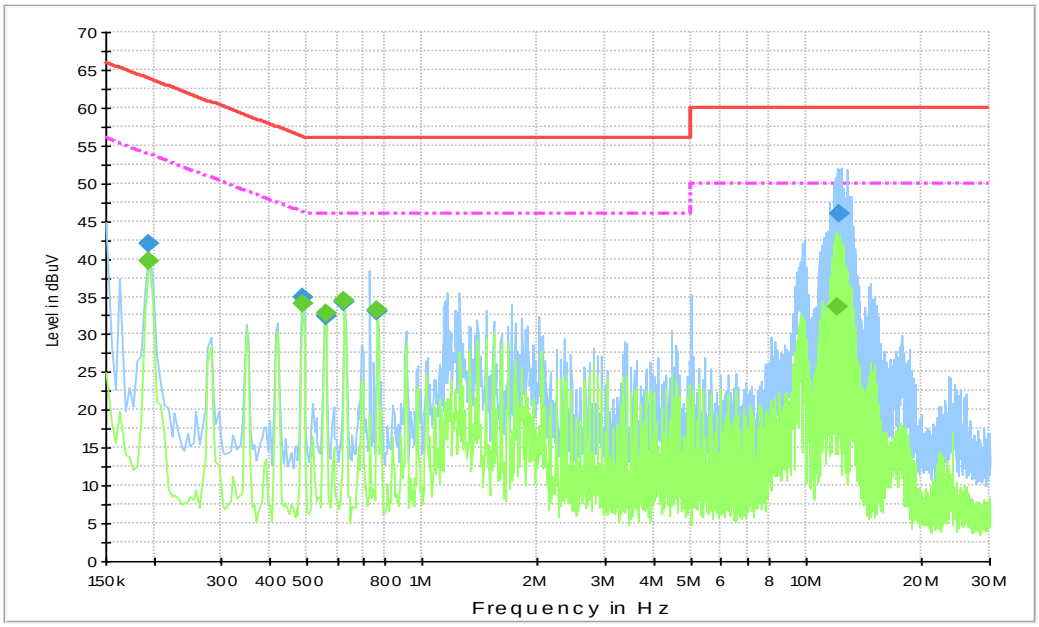
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.253500	33.2	2000.0	9.000	On	N	19.7	28.4	61.6
0.312000	30.5	2000.0	9.000	On	N	19.7	29.4	59.9
0.388500	31.4	2000.0	9.000	On	L1	19.7	26.7	58.1
0.501000	25.1	2000.0	9.000	On	N	19.8	30.9	56.0
0.730500	36.1	2000.0	9.000	On	N	19.7	19.9	56.0
12.561000	42.0	2000.0	9.000	On	N	19.8	18.0	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.249000	21.3	2000.0	9.000	On	N	19.7	30.5	51.8
0.312000	22.1	2000.0	9.000	On	L1	19.7	27.8	49.9
0.388500	19.0	2000.0	9.000	On	L1	19.7	29.1	48.1
0.501000	13.5	2000.0	9.000	On	N	19.8	32.5	46.0
0.748500	22.8	2000.0	9.000	On	L1	19.7	23.2	46.0
12.867000	29.1	2000.0	9.000	On	L1	19.8	20.9	50.0

Set.6+Mode7



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.19 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	41.9	2000.0	9.000	On	L1	20.5	21.9	63.8
0.487500	34.9	2000.0	9.000	On	L1	19.8	21.3	56.2
0.559500	32.4	2000.0	9.000	On	L1	19.8	23.6	56.0
0.627000	34.3	2000.0	9.000	On	N	19.7	21.7	56.0
0.766500	33.0	2000.0	9.000	On	N	19.7	23.0	56.0
12.169500	46.0	2000.0	9.000	On	L1	19.8	14.0	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	39.7	2000.0	9.000	On	N	20.5	14.1	53.8
0.487500	34.0	2000.0	9.000	On	L1	19.8	12.2	46.2
0.559500	32.8	2000.0	9.000	On	N	19.8	13.2	46.0
0.627000	34.6	2000.0	9.000	On	L1	19.7	11.4	46.0
0.766500	33.2	2000.0	9.000	On	L1	19.7	12.8	46.0
11.985000	33.7	2000.0	9.000	On	L1	19.8	16.3	50.0

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ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Zhao Wenhui
Conducted Emission	Guo Qian

*****END OF REPORT*****