



TEST REPORT

No. I22Z70331-EMC01

for

Samsung Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN

Model Name: SM-A146U

FCC ID: ZCASMA146U

with

Hardware Version: REV1.0

Software Version: A146U.001

Issued Date: 2022-11-18

Note:

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z70331-EMC01	Rev.0	1 st edition	2022-11-11
I22Z70331-EMC01	Rev.1	Deleted FM description in A.1.2 Deleted information of battery2	2022-11-18

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

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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 (huayuan North Road)

Address: No. 52 Huayuan North Road, Haidian District, Beijing 100191, P.R. China

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2022-09-20

Testing End Date: 2022-10-30

1.5. Signature



Li Yan

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Shi Suolan

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

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Postal Code: /
Country: /
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Email: j1.chun@samsung.com
Telephone: +1-201-937-4203

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: Sunghoon Cho
Email: ggobi.cho@samsung.com
Telephone: +82-10-2722-4159

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

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN
Model Name	SM-A146U
FCC ID	ZCASMA146U

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*	IME/SNI	HW Version	SW Version	Date of receipt
UT28a	2270331UT28a	REV1.0	A146U.001	2022.09.20
UT29a	2270331UT29a	REV1.0	A146U.001	2022.09.20

*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*	Description	SN	Remarks
AE1	Adapter	/	/
AE2	USB Cable1	/	Type-C
AE3	USB Cable2	/	Type-C
AE4	USB Cable3	/	Type-C
AE5	USB Cable4	/	Type-C
AE6	Headset	/	/
AE7	Battery1	/	/
AE9	USB Cable	/	USB
AE10	Mobile HD	/	/

AE1

Model	EP-T1510
Manufacturer	HAEM Co.,Ltd
Length of cable	/

AE2

Model	EP-DT725BWE
Manufacturer	RFTECH Co., Ltd..
Length of cable	/

AE3

Model	EP-DN980BWZ
Manufacturer	RFTECH Co., Ltd.
Length of cable	/

AE4

Model	EP-DT725BWE
Manufacturer	CRESYN HANOI Co., Ltd
Length of cable	/

AE5



Model	EP-DN980BWE
Manufacturer	Guangxi Broad Telecommunication Co.,Ltd.
Length of cable	/
AE6	
Model	EHS61ASFWE
Manufacturer	Shenzhen Grandsound Electronics Co.,Ltd
Length of cable	/
AE7	
Model	WT-S-W1
Type	Secondary Li-ion Polymer Battery
Manufacturer	SCUD (Fujian) Electronics CO.,LTD

Note:

1. The USB cables are shielded.
2. AE9 and AE10 are not the AE of EUT, which are provided by Lab for relevant testing.

3.4. General Description

The Equipment under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN with integrated antenna and inbuilt battery.

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

Samples undergoing test were selected by the client.

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA Band 5, LTE Band 5, LTE Band 12, LTE Band 13, LTE Band 14, LTE Band26, LTE Band29, LTE Band71, NR n5 and NR n71.

3.5. EUT set-ups

Set-up

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	UT28a + AE1 + AE2/AE3/AE4/AE5+AE6	Adapter1 + cable+ headset
Set.2	UT28a + AE1 + AE2/AE3/AE4/AE5	Adapter1 + cable
Set.3	UT28a + AE2/AE3/AE4/AE5 +UT29a+AE6	EUT+EUT
Set.4	UT28a + AE10 + AE6	EUT+HD
Set.5	UT28a + AE2/AE3/AE4/AE5 + AE6	Type C communication with PC
Set.6	UT28a + AE9 + AE6	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+MP3	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
mode.8	CXX RX mode	GSM850, WCDMA B5, LTE B5, LTE B2, LTE B13, LTE B14, LTE B26, LTE B29, LTE B71, NR n5 and NR n71.

4. Reference Documents

4.1. Reference Documents for testing

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

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2020
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	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

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.

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	A.1	P	CTTL(huayuan North Road)
2	Conducted Emission	15.107(a)	A.2	P	CTTL(huayuan North Road)

7. Test Equipment Utilized

Test Equipment

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURER	CAL DUE DATE	CALIBRATION INTERVAL
1	LISN	ENV216	101200	R&S	2023-06-29	1 year
2	Test Receiver	ESCI3	100344	R&S	2023-02-21	1 year
3	Test Receiver	ESU26	100235	R&S	2023-03-08	1 year
4	Test Receiver	ESW 44	103015	R&S	2023-01-23	1 year
5	EMI Antenna	3115	00167250	R&S	2023-06-20	1 year
6	BiLog Antenna	VULB9163	9163-01223	Schwarzbeck	2023-07-25	1 year
7	Universal Radio Communication Tester	E7515B	MY60102215	Keysight	2023-06-09	1 Year
8	Universal Radio Communication Tester	CMW500	150344	R&S	2022-12-20	1 Year
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
11	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
12	PC	M4000e-17	M706RMW2	Lenovo	N/A	N/A

Test Software

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V10.60.20	R&S
Conducted Emission	EMC32 V10.60.20	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 (USB mode of MS and charging mode of MS) at distances of 10 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. The measurement antenna was placed at a distance of 3 meters from the EUT. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept.

A.1.2 EUT Operating Mode

The MS is operating in the USB mode, charging mode, MP4, MP3, CAMERA, OTG and SD mode. The WIFI and BT function was on and worked in receiving mode.

The EUT was tested while operating in licensed band RX mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in the Section 3.4, are investigated. Only the worst case emissions are reported.

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. 10 meters' limit is got by converting.

Ten meters' limit is got by converting: Limit (10m) = limit (3m) + 20(log (3/10))

A.1.4 Test Condition

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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.15dB, 1GHz-18GHz: 5.54dB, $k=2$.

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.

Measurement results for Set.1+Mode1:

Adapter+MP4 + Headset /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17888.140	41.7	-29.5	46.0	25.280	54.0	12.3	V
17524.680	41.7	-29.3	44.4	26.667	54.0	12.3	H
17547.800	41.6	-29.5	44.4	26.734	54.0	12.4	H
17566.840	41.6	-29.8	45.2	26.146	54.0	12.4	V
17585.880	41.6	-29.7	45.2	26.049	54.0	12.4	H
17540.320	41.6	-29.5	44.4	26.734	54.0	12.4	H

Adapter+MP4 + Headset /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17538.620	52.1	-29.3	44.4	37.067	74.0	21.9	V
17978.580	51.9	-29.1	46.7	34.301	74.0	22.1	H
17450.900	51.8	-29.9	44.4	37.317	74.0	22.2	V
17574.660	51.8	-29.8	45.2	36.346	74.0	22.2	V
17474.360	51.7	-30.1	44.4	37.405	74.0	22.3	V
17449.540	51.7	-29.9	44.4	37.217	74.0	22.3	H

Measurement results for Set.2+Mode2
Adapter +F camera /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17505.980	41.6	-29.3	44.4	26.503	54.0	12.4	H
17617.840	41.6	-29.5	45.2	25.872	54.0	12.4	V
17539.300	41.4	-29.3	44.4	26.367	54.0	12.6	H
17473.340	41.4	-30.1	44.4	27.105	54.0	12.6	V
17524.680	41.4	-29.3	44.4	26.367	54.0	12.6	H
17538.280	41.3	-29.3	44.4	26.267	54.0	12.7	V

Adapter +F camera /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17996.9	52.7	-29.1	46.7	35.098	74.0	21.3	V
17497.1	52.2	-29.8	44.4	37.617	74.0	21.8	V
17462.5	51.7	-30.1	44.4	37.405	74.0	22.3	H
17593.7	51.6	-29.7	45.2	36.049	74.0	22.4	V
17516.5	51.6	-29.3	44.4	36.503	74.0	22.4	H
17890.2	51.6	-29.5	46.0	35.180	74.0	22.4	H

Measurement results for Set.4+Mode4+Mode8
OTG + Headset+ RX GSM850MHz /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17783.080	41.3	-29.9	46.0	25.232	54.0	12.7	V
17640.960	40.6	-29.6	45.2	24.953	54.0	13.4	V
17662.720	40.5	-29.9	45.2	25.150	54.0	13.5	H
17575.340	40.5	-29.8	45.2	25.046	54.0	13.5	H
17883.380	40.4	-29.5	46.0	23.980	54.0	13.6	H
17510.740	40.4	-29.3	44.4	25.303	54.0	13.6	H

OTG + Headset + RX GSM850MHz /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17527.060	51.9	-29.3	44.4	36.867	74.0	22.1	V
17905.820	51.5	-29.3	46.0	34.872	74.0	22.5	H
17904.800	51.3	-29.3	46.0	34.672	74.0	22.7	H
17649.120	51.3	-29.6	45.2	35.653	74.0	22.7	H
17816.740	51.0	-29.6	46.0	34.676	74.0	23.0	H
17805.860	51.0	-29.6	46.0	34.676	74.0	23.0	H

Measurement results for Set.6+Mode7+Mode8
USB mode (SD) + Headset + RX LTE Band5 /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17645.040	41.3	-29.6	45.2	25.653	54.0	12.7	V
17530.800	40.6	-29.3	44.4	25.567	54.0	13.4	H
17616.140	40.6	-29.5	45.2	24.872	54.0	13.4	V
17885.080	40.5	-29.5	46.0	24.080	54.0	13.5	V
17465.520	40.5	-30.1	44.4	26.205	54.0	13.5	H
17921.800	40.4	-29.4	46.7	23.139	54.0	13.6	H

USB mode (SD) + Headset + RX LTE Band5 /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17901.400	51.4	-29.3	46.0	34.772	74.0	22.6	H
17628.380	50.8	-29.4	45.2	34.952	74.0	23.2	V
17453.280	50.7	-29.9	44.4	36.217	74.0	23.3	H
17486.940	50.5	-29.8	44.4	35.917	74.0	23.5	V
17629.060	50.5	-29.4	45.2	34.652	74.0	23.5	V
17571.600	50.5	-29.8	45.2	35.046	74.0	23.5	H

Adapter+MP4 + Headset, Set.1+Mode1

Full Spectrum

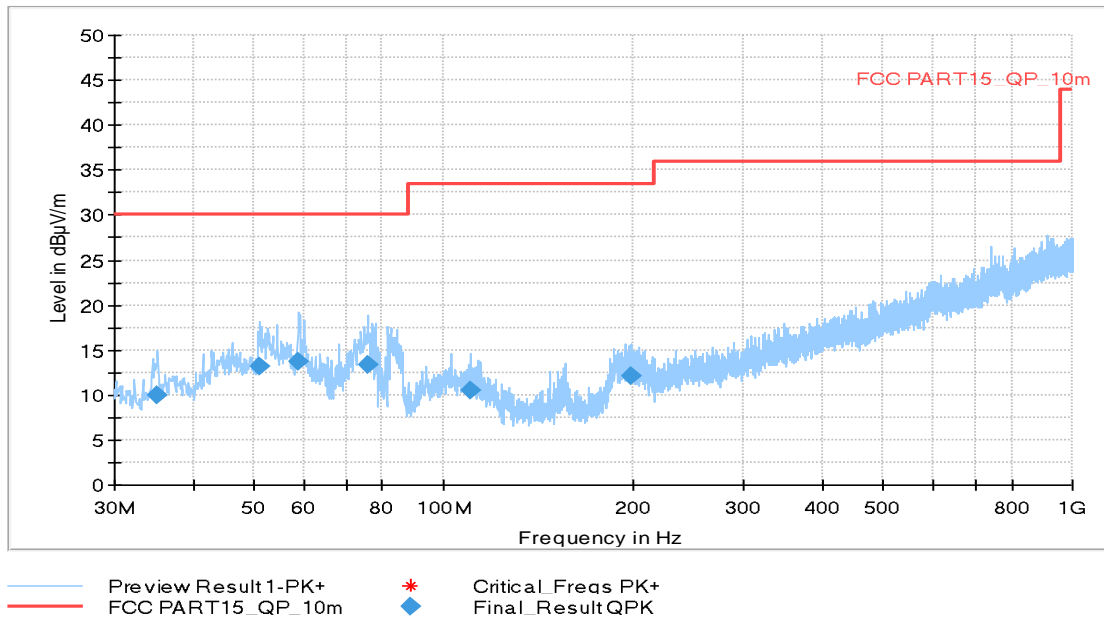


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
35.141000	9.90	125.0	V	225.0	-14.2	20.10	30.00
50.952000	13.12	100.0	V	252.0	-11.0	16.88	30.00
59.003000	13.66	100.0	V	315.0	-11.7	16.34	30.00
75.881000	13.30	125.0	V	252.0	-17.2	16.70	30.00
110.21900	10.50	125.0	V	-32.0	-12.8	23.02	33.52
199.26500	12.02	100.0	V	315.0	-11.5	21.50	33.52

Full Spectrum

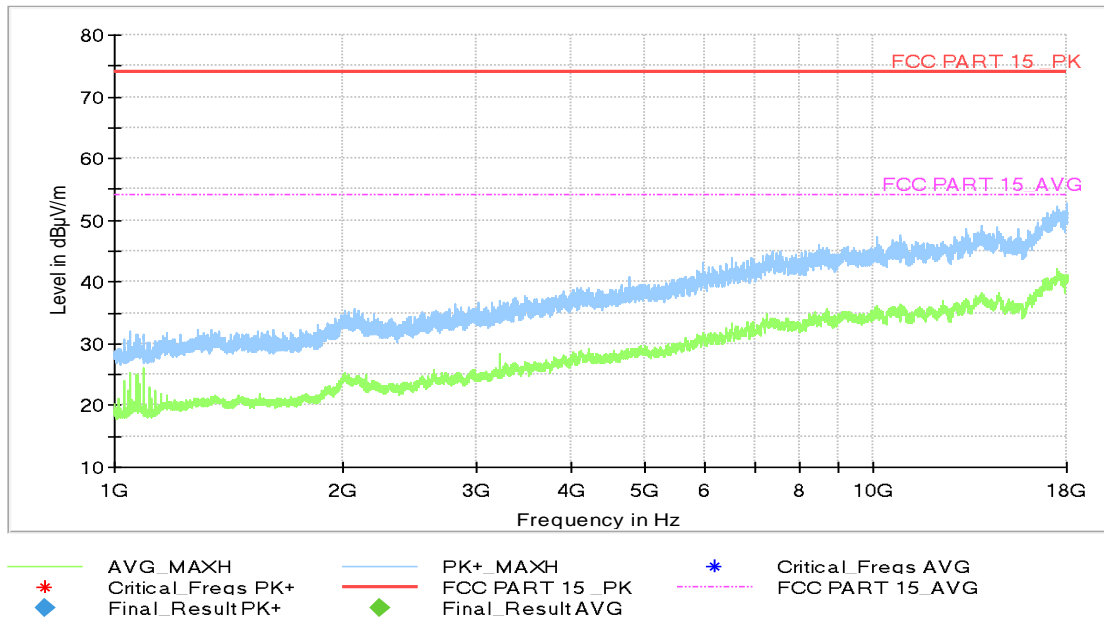


Figure A.2 Radiated Emission from 1GHz to 18GHz

Adapter +F camera, Set.2+Mode2

Full Spectrum

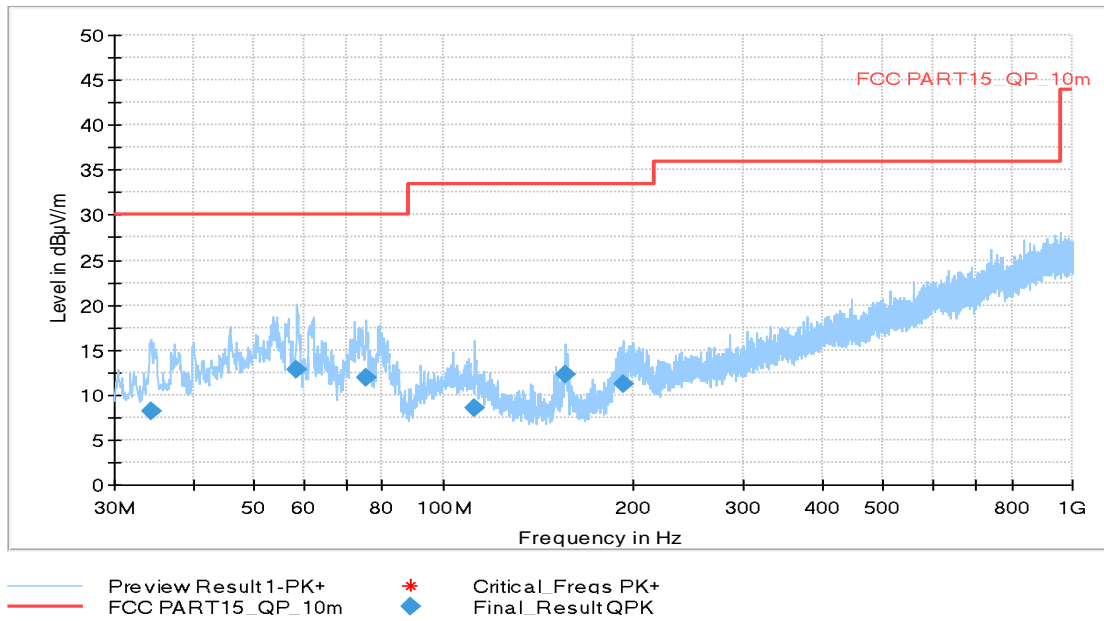


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
34.268000	8.13	275.0	V	22.0	-14.4	21.87	30.00
58.421000	12.73	283.0	V	12.0	-11.5	17.27	30.00
75.396000	11.98	203.0	V	-45.0	-17.1	18.02	30.00
111.77100	8.61	125.0	V	8.0	-13.0	24.91	33.52
156.39100	12.20	175.0	V	-6.0	-15.1	21.32	33.52
193.25100	11.18	209.0	V	97.0	-12.2	22.34	33.52

Full Spectrum

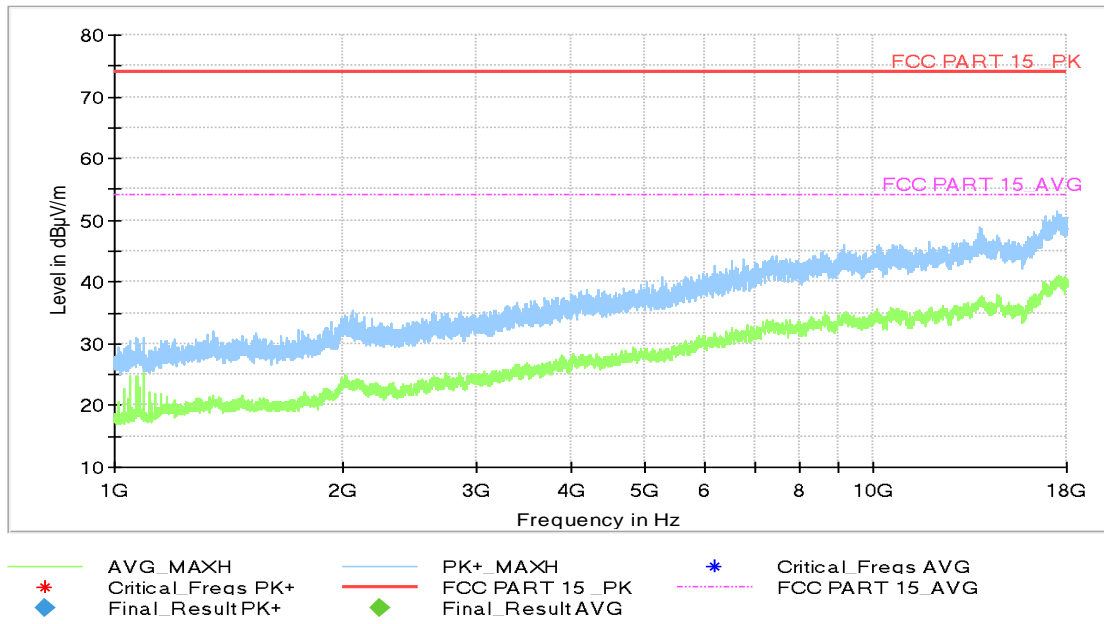


Figure A.4 Radiated Emission from 1GHz to 18GHz

OTG + Headset+ RX GSM850MHz, Set.4+Mode4+Mode8

Full Spectrum

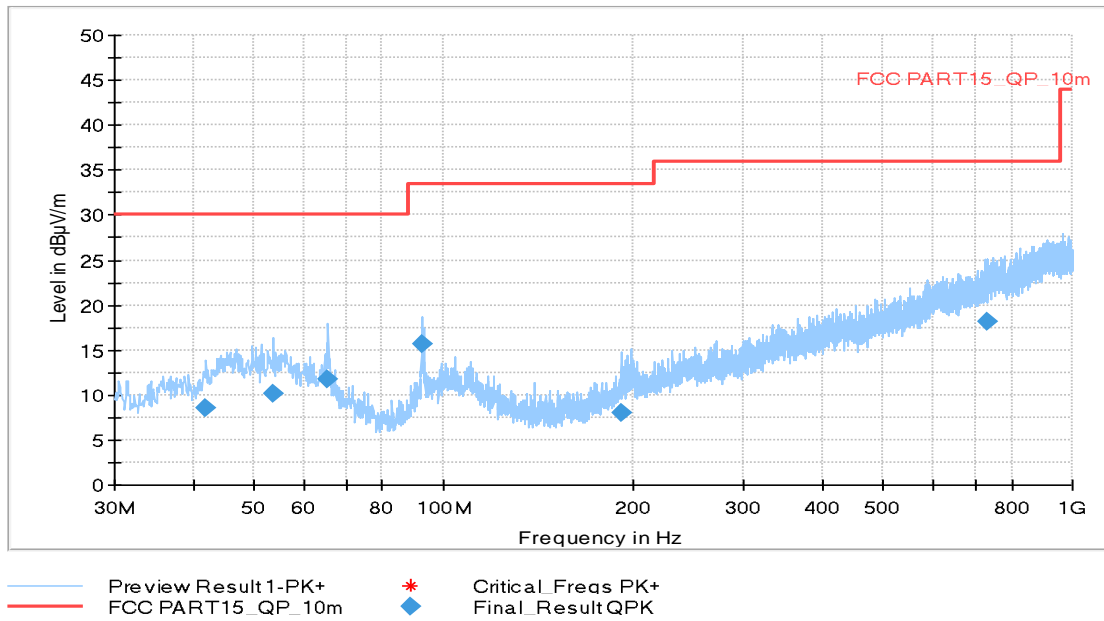


Figure A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
41.931000	8.50	100.0	H	188.0	-11.5	21.50	30.00
53.668000	10.21	283.0	H	124.0	-11.1	19.79	30.00
65.599000	11.69	108.0	V	202.0	-13.6	18.31	30.00
92.468000	15.59	175.0	V	86.0	-13.8	17.93	33.52
191.408000	7.95	125.0	V	-6.0	-12.4	25.57	33.52
730.049000	18.19	125.0	H	85.0	1.1	17.83	36.02

Full Spectrum

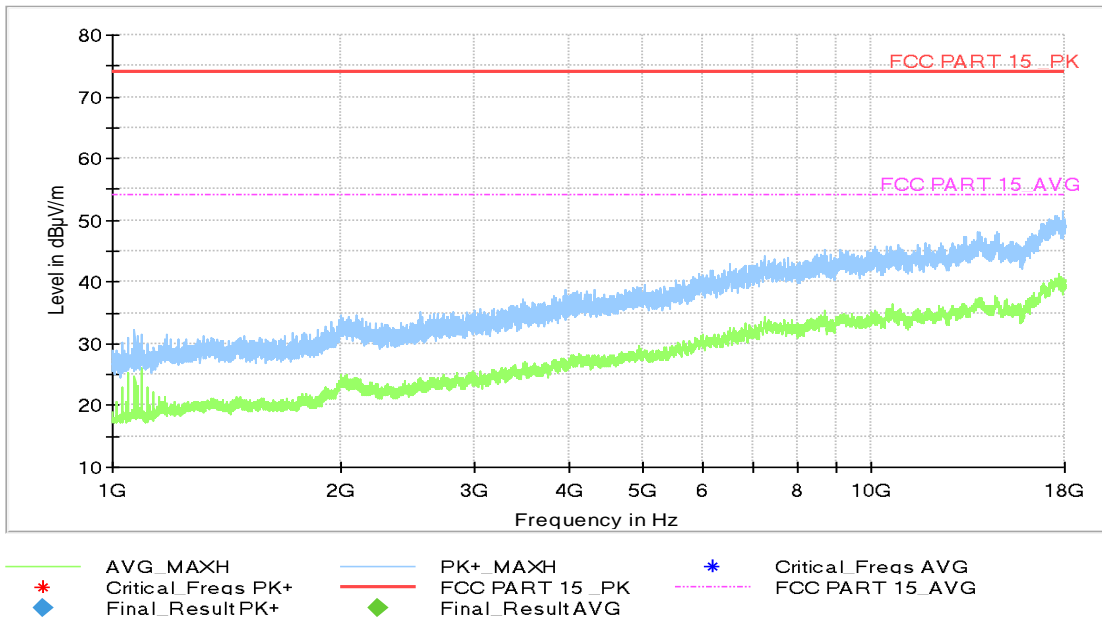


Figure A.6 Radiated Emission from 1GHz to 18GHz

USB mode (SD) + Headset + RX LTE Band5, Set.6+Mode7+Mode8

Full Spectrum

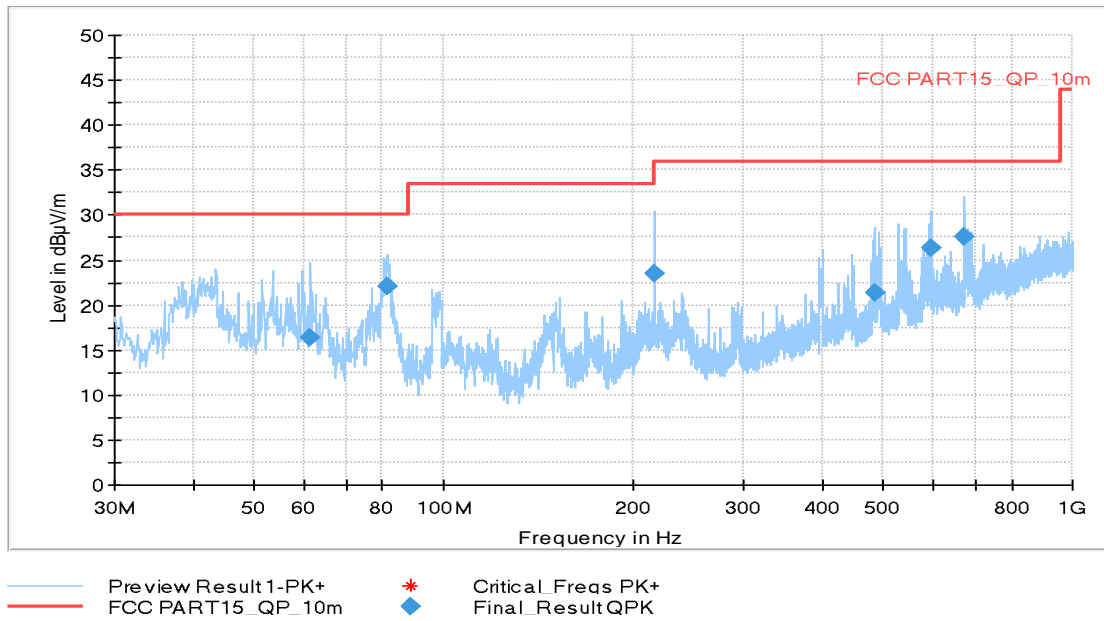


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
61.525000	16.43	222.0	V	-45.0	-12.3	13.57	30.00
81.313000	22.09	224.0	V	71.0	-17.4	7.91	30.00
215.94900	23.50	322.0	H	189.0	-11.9	10.02	33.52
483.86300	21.31	302.0	V	8.0	-3.6	14.71	36.02
594.54000	26.37	224.0	V	-19.0	-1.1	9.65	36.02
672.43100	27.65	175.0	V	-4.0	0.0	8.37	36.02

Full Spectrum

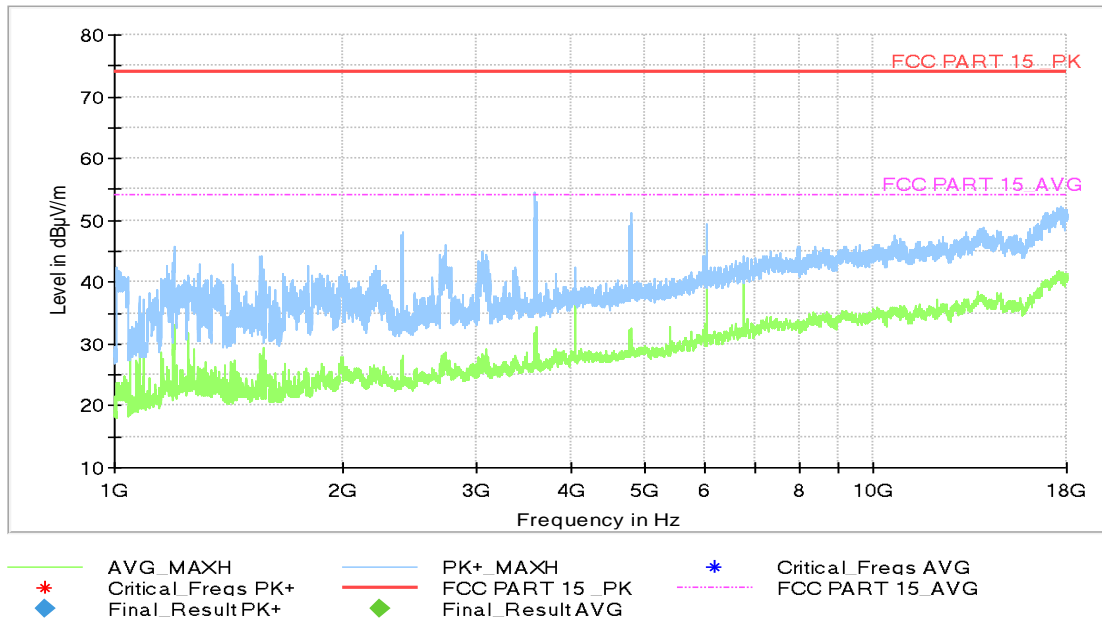


Figure A.8 Radiated Emission from 1GHz to 18GHz

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.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode, charging mode, MP4, MP3, CAMERA 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 (dB μ V)	
	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: $U= 3.08\text{dB}$, $k=2$.

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+Mode1

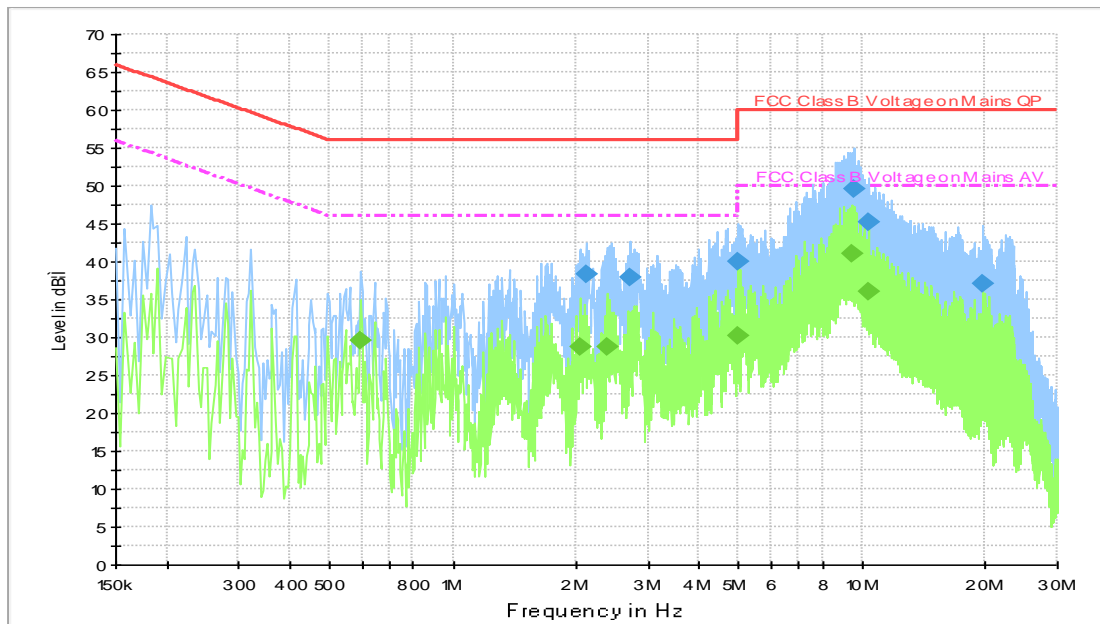


Figure A.9 Conducted Emission

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

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
2.110000	38.3	9.000	On	L1	19.6	17.7	56.0
2.722000	38.0	9.000	On	L1	19.6	18.0	56.0
4.978000	40.0	9.000	On	L1	19.6	16.0	56.0
9.534000	49.7	9.000	On	L1	19.7	10.3	60.0
10.406000	45.3	9.000	On	L1	19.7	14.7	60.0
19.702000	37.0	9.000	On	L1	19.8	23.0	60.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.594000	29.6	9.000	On	L1	19.7	16.4	46.0
2.054000	28.8	9.000	On	L1	19.6	17.2	46.0
2.374000	28.8	9.000	On	L1	19.6	17.2	46.0
4.978000	30.1	9.000	On	L1	19.6	15.9	46.0
9.502000	41.0	9.000	On	L1	19.7	9.0	50.0
10.406000	36.1	9.000	On	L1	19.7	13.9	50.0

Set.2+Mode2

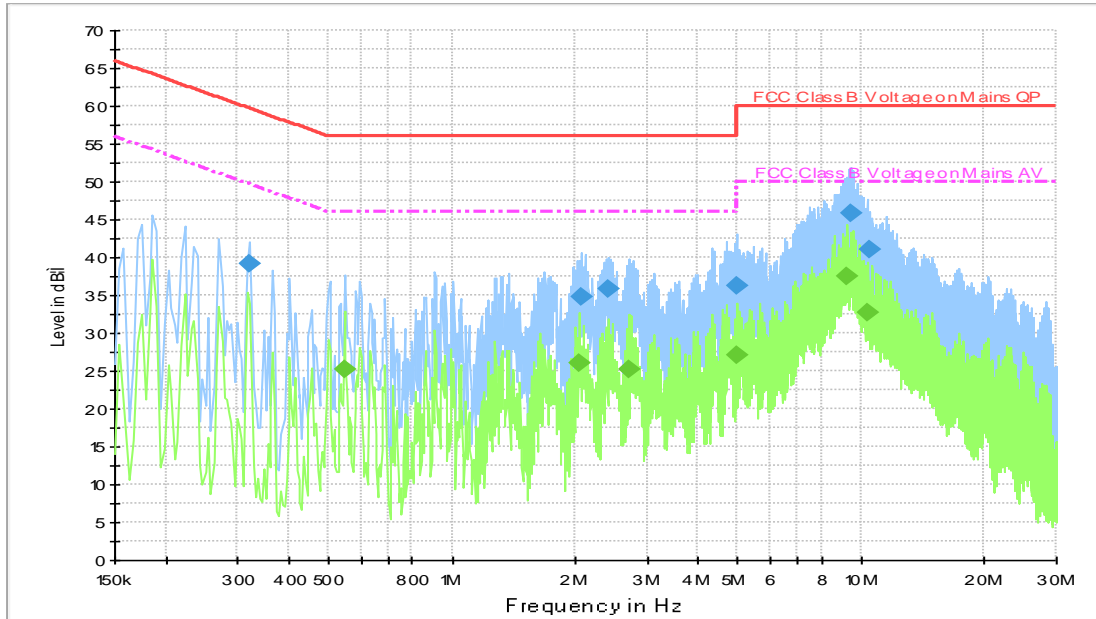


Figure A.10 Conducted Emission

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.322000	39.2	9.000	On	N	19.7	20.4	59.7
2.066000	34.8	9.000	On	L1	19.6	21.2	56.0
2.418000	35.7	9.000	On	L1	19.6	20.3	56.0
4.946000	36.3	9.000	On	L1	19.6	19.7	56.0
9.410000	45.9	9.000	On	L1	19.7	14.1	60.0
10.482000	41.0	9.000	On	L1	19.7	19.0	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.546000	25.1	9.000	On	L1	19.7	20.9	46.0
2.054000	26.1	9.000	On	L1	19.6	19.9	46.0
2.710000	25.2	9.000	On	L1	19.6	20.8	46.0
4.978000	27.0	9.000	On	L1	19.6	19.0	46.0
9.282000	37.6	9.000	On	L1	19.7	12.4	50.0
10.414000	32.6	9.000	On	L1	19.7	17.4	50.0

Set.6+Mode7+Mode3, USB (SD) mode

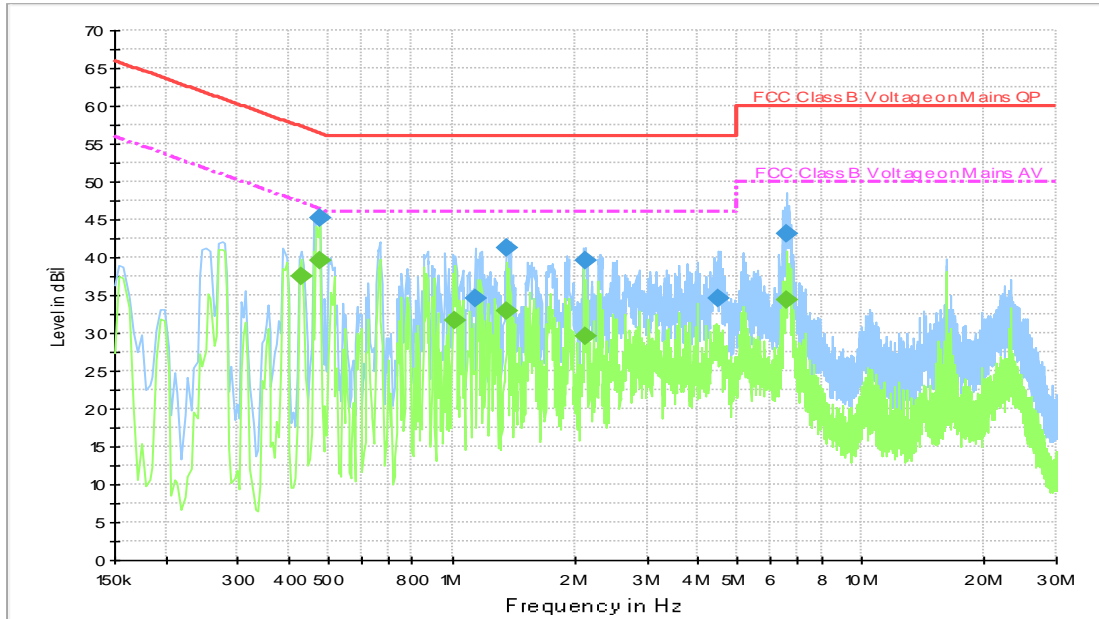


Figure A.11 Conducted Emission

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.474000	45.2	9.000	On	L1	19.7	11.3	56.4
1.138000	34.5	9.000	On	N	19.6	21.5	56.0
1.362000	41.3	9.000	On	L1	19.6	14.7	56.0
2.126000	39.6	9.000	On	N	19.6	16.4	56.0
4.478000	34.6	9.000	On	L1	19.6	21.4	56.0
6.574000	43.1	9.000	On	N	19.6	16.9	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.430000	37.6	9.000	On	L1	19.7	9.7	47.3
0.474000	39.7	9.000	On	L1	19.7	6.8	46.4
1.022000	31.7	9.000	On	L1	19.7	14.3	46.0
1.358000	33.0	9.000	On	L1	19.6	13.0	46.0
2.130000	29.5	9.000	On	L1	19.6	16.5	46.0
6.574000	34.3	9.000	On	N	19.6	15.7	50.0



ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Ding Zai, Li Pengfei
Conducted Emission	Zhang Tianli

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