



TEST REPORT

No. I15Z41883-EMC02

for

Huawei Technologies Co., Ltd.

Smart Phone

Model Name: HUAWEI SCL-L04, SCL-L04

IC number: 6369A-SCLL04

with

Hardware Version: HL3SCALEM

Software Version: SCL-L04V100R001C900B007

Issued Date: 2015-08-25

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

FCC 2.948 Listed: No.525429

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

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

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: cttl_terminals@catr.cn, website: www.chinattl.com



REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15Z41883-EMC02	Rev.0	1st edition	2015-07-31
I15Z41883-EMC02	Rev.1	2st edition	2015-08-18
I15Z41883-EMC02	Rev.2	3st edition	2015-08-25

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1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: 15-35 °C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-07-24

Testing End Date: 2015-07-26

1.4. Signature



Zhang Ying
(Prepared this test report)



Qu Pengfei
(Reviewed this test report)



Liu Baodian
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Huawei Technologies Co., Ltd.
Address /Post: Administration Building, Headquarters of Huawei Technologies Co.,
Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
City: Shenzhen
Postal Code: 518129
Country: China
Contact Person: zhangyanfang
Contact Email: zhangyanfang1@huawei.com
Telephone: 029-89282965
Fax: /

2.2. Manufacturer Information

Company Name: Huawei Technologies Co., Ltd.
Address /Post: Administration Building, Headquarters of Huawei Technologies Co.,
Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
City: Shenzhen
Postal Code: 518129
Country: China
Telephone: 029-89282965
Fax: /

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

3.1. About EUT

Description	Smart Phone
Model Name	HUAWEI SCL-L04, SCL-L04
IC number	6369A-SCLL04
Extreme vol. Limits	3.6VDC to 4.35VDC (nominal: 3.8VDC)

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

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	867974020001150	HL3SCALEM	SCL-L04V100R001C900B00 7

*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	battery	1834ACF602G002DC	1541883BA001
AE2	battery	XXXXUIF509X10555	1541883BA003
AE3	Travel charger	HWBYATE42305796	1541883CH003
AE4	Travel charger	H432LGEBL22121	1541883CH002
AE5	Travel charger	HWHKALE50401225	1541883CH001
AE6	Travel charger	HWBYASE61108478	1541883CH004
AE7	Travel charger	H433LCEB6	1541883CH005
AE8	USB Cable	/	1541883DC005
AE9	USB Cable	/	1541883DC004
AE10	USB Cable	/	1541883DC006
AE11	USB Cable	/	1541883DC003
AE12	USB Cable	/	1541883DC002
AE13	USB Cable	/	1541883DC001
AE20	battery	1834ACF602G00312	1541883BA004
AE21	battery	XXXXUIF509X10830	1541883BA002
AE22	Travel charger	/	/
AE23	Travel charger	/	/
AE24	Travel charger	/	/

AE1, AE20

Model	HB4342A1RBC
Manufacturer	Sunwoda Electronic Co., LTD.
Capacitance	2200mAh
Nominal voltage	3.8V



AE2, AE21

Model	HB4342A1RBC
Manufacturer	SCUD (FUJIAN) Electronics Co., Ltd.
Capacitance	2200mAh
Nominal voltage	3.8V

AE3

Model	HW-050100U2W
Manufacturer	BYD Company Limited
Length of cable	/

AE4

Model	HW-050100U2W
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/

AE5

Model	HW-050100E2W
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/

AE6

Model	HW-050100E2W
Manufacturer	BYD Company Limited
Length of cable	/

AE7

Model	HW-050100A2W
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/

AE8

Model	H09-000473
Manufacturer	SHEN ZHEN PANG NGAI INDUSTRIAL CO., LTD.
Length of cable	100cm

AE9

Model	02450989
Manufacturer	CONNREX (SHEN ZHEN) INDUSTRIAL.,LTD.
Length of cable	100cm

AE10

Model	130-25076
Manufacturer	CHANGSHU HONGLIN TECHNOLOGY CO.,LTD
Length of cable	100cm

AE11

Model	H09-000369
Manufacturer	SHEN ZHEN PANG NGAI INDUSTRIAL CO., LTD.
Length of cable	100cm

AE12

Model	130-41040
Manufacturer	CHANGSHU HONGLIN TECHNOLOGY CO.,LTD
Length of cable	100cm

AE13

Model	LSA00570
Manufacturer	Unirise Communication Technology Co Ltd.
Length of cable	100cm

AE22

Model	HW-050100A2W
Manufacturer	BYD Company Limited
Length of cable	/

AE23

Model	HW-050100B2W
Manufacturer	BYD Company Limited
Length of cable	/

AE24

Model	HW-050100B2W
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/

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

3.4. General Description

The Equipment Under Test (EUT) are a model of Smart Phone with integrated antenna.

The EUT supports GSM 850/1900MHz bands, WCDMA FDD bands 2/5 and LTE FDD bands 2/4/5/7/12/17. It supports GPRS service with multi-slots class 12 and EGPRS service with multi-slots class 12. The HSDPA, HSUPA, USAT and DC-HSDPA features are also supported.

It has MP3, camera, USB memory, FM radio, GPS receiver, Bluetooth (EDR and Bluetooth 4.1) and WLAN (802.11 b/g/n) functions.

It includes normal options: Travel Charger and USB cable.

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

Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1 + AE3 + AE8	Charger
Set.2	EUT1 + AE1 + AE4 + AE9	Charger
Set.3	EUT1 + AE1 + AE5 + AE10	Charger
Set.4	EUT1 + AE1 + AE6 + AE11	Charger
Set.5	EUT1 + AE1 + AE7 + AE12	Charger
Set.6	EUT1 + AE1 + AE13	USB

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	10-1-14 Edition
ICES-003	Information Technology Equipment (ITE) – Limits and methods of measurement	Issue 5
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low - Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) 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, 10 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 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
Location Column	1/2/3/4	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

Items	Test Name	Clause in IC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	Section 5	B.1	P	1
2	Conducted Emission	Section 5	B.2	P	1

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL. DUE DATE	CAL. INTERVAL
1.	EMI Antenna	VULB 9163	9163-301	Schwarzbeck	2017-12-09	3 Years
2.	Test Receiver	ESCI 7	100948	R&S	2016-07-07	1 Year
3.	EMI Antenna	3115	6914	ETS-Lindgren	2016-12-15	3 Years
4.	Test Receiver for Conducted Emission	ESU26	100235	R&S	2016-03-02	1 Year
5.	LISN	ENV216	101200	R&S	2016-07-07	1 Year
6.	Universal Radio Communication Tester	CMW500	143008	R&S	2015-12-09	1 Year
7.	Vector Signal Generator	SMBV100A	260613	R&S	2016-01-28	1 Year
8.	PC	OPTIPLEX 380	2X1YV2X	DELL	/	/
9.	Monitor	E1709Wc	CN-OJ672H-6 4180-9BF-1CR L	DELL	/	/
10.	Printer	P1606dn	VNC3L52122	HP	/	/
11.	Keyboard	L100	CN-ORH656-6 5890-03S-041 Y	DELL	/	/
12.	Mouse	M-UAR	LZ013HC1YLV	DELL	/	/

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

IC: ICES-003 section 6.2

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS, charging mode of MS and GPS 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 3/10 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. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The MS is operating in the USB mode, charging mode and GPS mode.

For the charging mode, the EUT is keeping on playing MP3 file.

For the USB mode, the MS is operating in the USB mode, charging mode and GPS mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

For the GPS mode, during the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of GPS mode. A vector signal generator is used to provide the simulated GPS signal, and the frequency is set to 1575.42 MHz. Before the test starts, the integrated GPS application in MS is started up and locked to the simulated GPS signal. Meanwhile, the EUT is synchronized to universal radio communication tester, and able to respond to paging messages and incoming call. An established call has been released.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit ($\mu\text{V/m}$)		
	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.

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/1MHz	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): $U = 4.3 \text{ dB}$, $k=2$.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
17977.333	43.8	-17.7	45.6	15.900	H
17985.833	43.7	-17.7	45.6	15.800	V
17969.967	43.6	-17.7	45.6	15.700	H
17982.433	43.6	-17.7	45.6	15.700	V
17974.500	43.6	-17.7	45.6	15.700	V
17989.800	43.5	-17.7	45.6	15.600	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
17973.367	55.6	-17.7	45.6	27.700	H
17990.367	55.3	-17.7	45.6	27.400	V
17989.233	55.2	-17.7	45.6	27.300	H
17973.933	55.1	-17.7	45.6	27.200	V
17952.400	55.0	-17.7	45.6	27.100	V
17913.300	54.9	-18.5	45.6	27.800	H

Measurement results for Set.2:
Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17975.633	43.8	-17.7	45.6	15.900	H
17987.533	43.6	-17.7	45.6	15.700	V
17967.133	43.5	-17.7	45.6	15.600	V
17992.067	43.5	-17.7	45.6	15.600	H
17996.033	43.4	-17.7	45.6	15.500	V
17998.867	43.4	-17.7	45.6	15.500	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17960.900	55.6	-17.7	45.6	27.700	H
17994.900	55.0	-17.7	45.6	27.100	H
17969.400	55.0	-17.7	45.6	27.100	V
17984.700	54.8	-17.7	45.6	26.900	H
17945.033	54.8	-17.7	45.6	26.900	V
17960.333	54.8	-17.7	45.6	26.900	H

Measurement results for Set.3:
Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17990.367	43.6	-17.7	45.6	15.700	H
17981.867	43.5	-17.7	45.6	15.600	H
17974.500	43.5	-17.7	45.6	15.600	V
17989.800	43.5	-17.7	45.6	15.600	H
17993.767	43.4	-17.7	45.6	15.500	V
17996.033	43.4	-17.7	45.6	15.500	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17991.500	55.4	-17.7	45.6	27.500	H
17998.867	55.3	-17.7	45.6	27.400	V
17941.067	55.2	-17.7	45.6	27.300	V
17992.633	55.1	-17.7	45.6	27.200	H
17874.200	54.8	-18.5	45.6	27.700	V
17980.167	54.7	-17.7	45.6	26.800	H

Measurement results for Set.4:
Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17986.400	43.6	-17.7	45.6	15.700	H
17997.167	43.6	-17.7	45.6	15.700	V
17992.067	43.5	-17.7	45.6	15.600	H
17987.533	43.4	-17.7	45.6	15.500	V
17986.967	43.4	-17.7	45.6	15.500	H
17985.833	43.4	-17.7	45.6	15.500	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17997.733	54.9	-17.7	45.6	27.000	H
17983.000	54.8	-17.7	45.6	26.900	V
17954.667	54.8	-17.7	45.6	26.900	H
17982.433	54.7	-17.7	45.6	26.800	V
17975.633	54.7	-17.7	45.6	26.800	H
17912.733	54.7	-18.5	45.6	27.600	H

Measurement results for Set.5:
Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17994.333	43.6	-17.7	45.6	15.700	H
17998.867	43.5	-17.7	45.6	15.600	H
18000.000	43.5	-45.6	44.5	44.566	V
17975.633	43.5	-17.7	45.6	15.600	H
17980.167	43.5	-17.7	45.6	15.600	V
17983.000	43.4	-17.7	45.6	15.500	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
17997.733	54.9	-17.7	45.6	27.000	H
17828.867	54.8	-18.5	45.6	27.700	H
17986.967	54.8	-17.7	45.6	26.900	V
17964.867	54.6	-17.7	45.6	26.700	H
17970.533	54.5	-17.7	45.6	26.600	V
17889.500	54.5	-18.5	45.6	27.400	H

Measurement result for Set.6:
USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dBμV)	Polarity
17997.167	43.4	-17.7	45.6	15.500	H
17958.633	43.4	-17.7	45.6	15.500	V
17984.133	43.3	-17.7	45.6	15.400	V
17964.867	43.3	-17.7	45.6	15.400	H
17996.600	43.3	-17.7	45.6	15.400	V
17996.033	43.3	-17.7	45.6	15.400	H

USB Mode/ Peak detector

Frequency(MHz)	Result(dBμV/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dBμV)	Polarity
17947.300	55.5	-17.7	45.6	27.600	H
17981.867	55.4	-17.7	45.6	27.500	V
17977.333	54.9	-17.7	45.6	27.000	V
17945.033	54.9	-17.7	45.6	27.000	H
17990.367	54.7	-17.7	45.6	26.800	V
17940.500	54.7	-17.7	45.6	26.800	H

Measurement result for Set.1:
GPS Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dBμV)	Polarity
17998.867	44.0	-17.7	45.6	16.100	H
17981.867	43.7	-17.7	45.6	15.800	H
17976.200	43.7	-17.7	45.6	15.800	V
17979.033	43.6	-17.7	45.6	15.700	H
17977.333	43.6	-17.7	45.6	15.700	V
17962.033	43.5	-17.7	45.6	15.600	H

GPS Mode/ Peak detector

Frequency(MHz)	Result(dBμV/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dBμV)	Polarity
17989.800	55.6	-17.7	45.6	27.700	H
17751.233	55.4	-18.5	45.6	28.300	H
17807.333	55.1	-18.5	45.6	28.000	V
17988.667	55.0	-17.7	45.6	27.100	H
17865.700	54.8	-18.5	45.6	27.700	V
17953.533	54.6	-17.7	45.6	26.700	H

Note: The measurement results of Set.1, Set.2, Set.3, Set.4, Set.5 and Set.6 showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.1

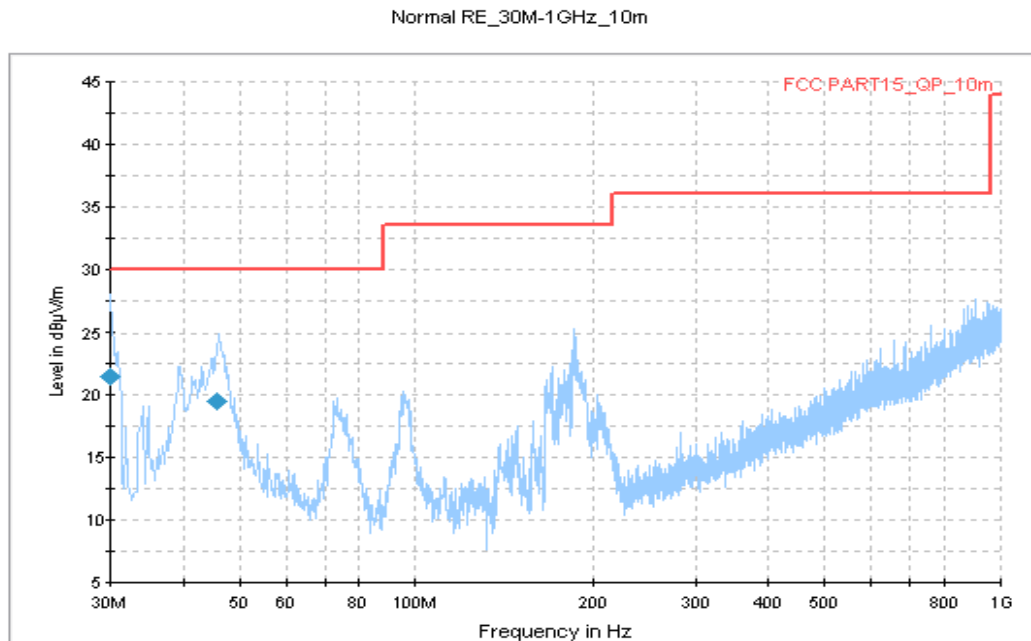


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.000000	21.6	325.0	V	210.0	-14.0	8.4	30.0
45.608000	19.6	303.0	V	210.0	-11.7	10.4	30.0

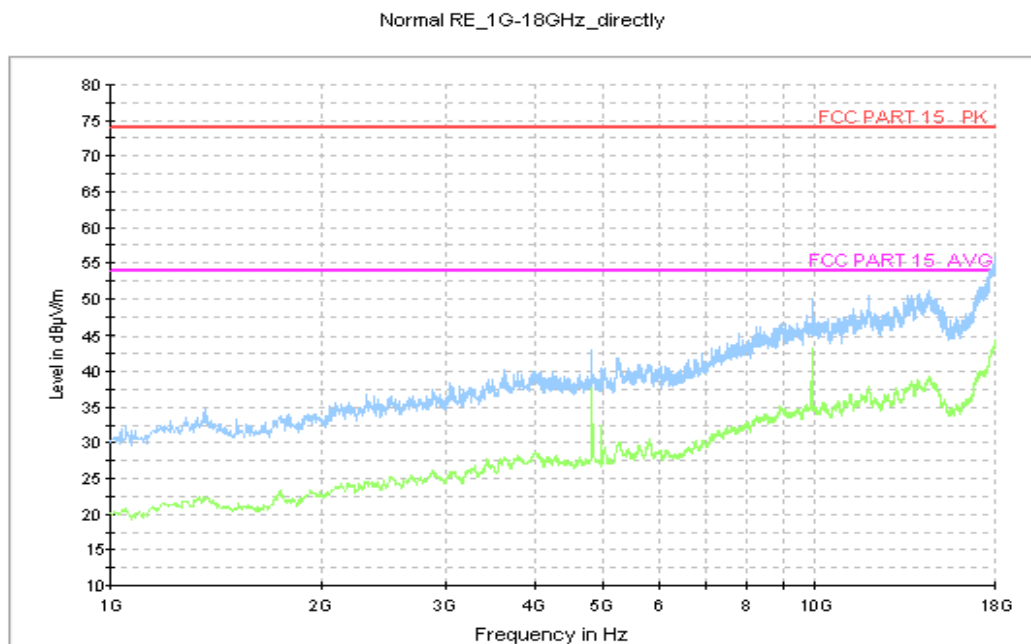


Figure A.2 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.2

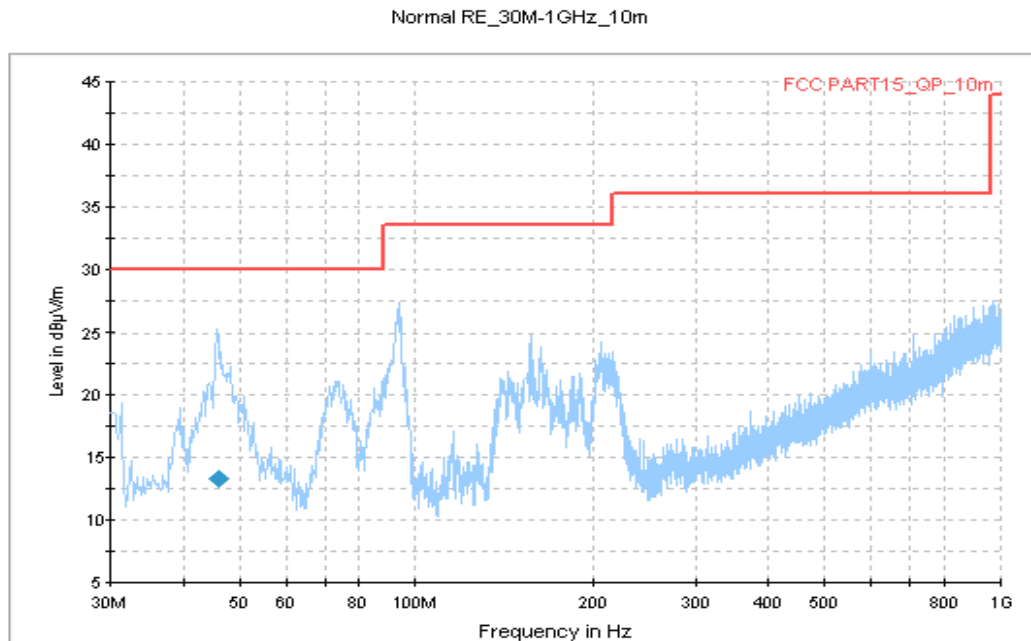


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
45.919500	13.3	100.0	V	8.0	-11.7	16.7	30.0

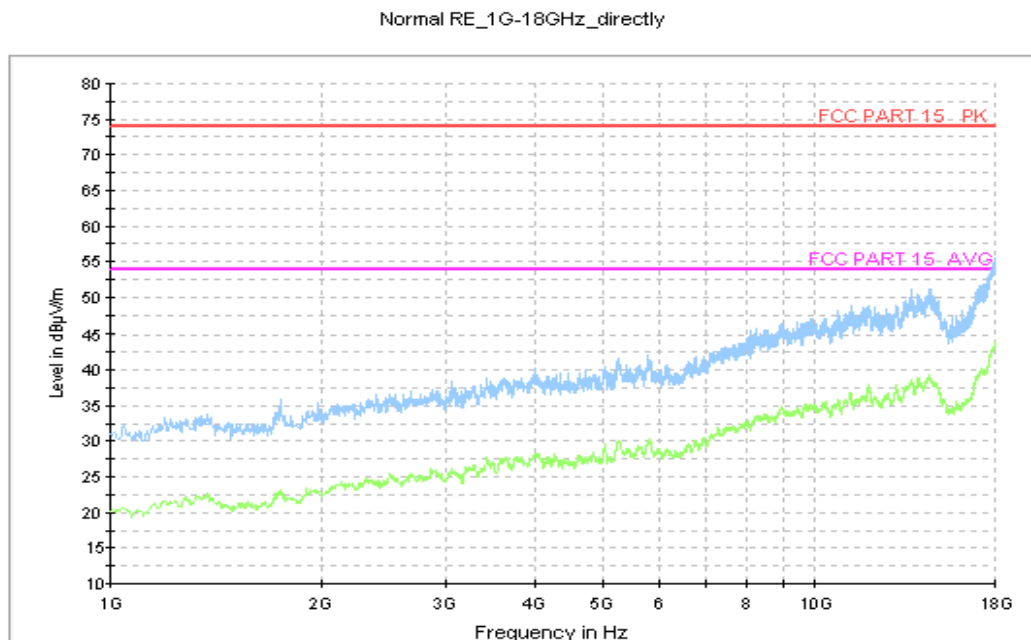


Figure A.4 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.3

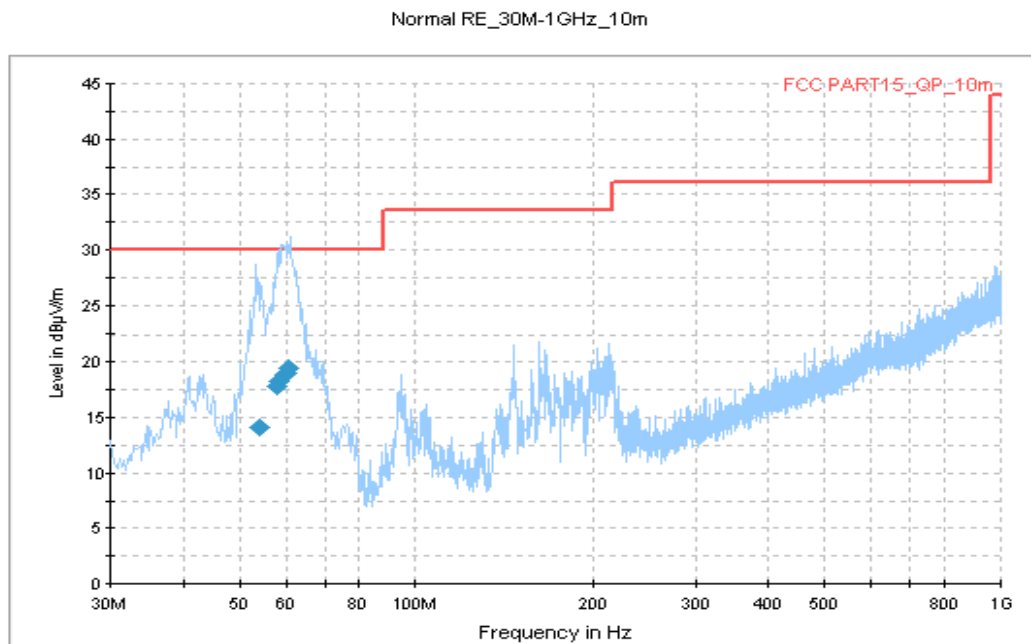


Figure A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
53.954000	14.0	125.0	V	13.0	-11.7	16.0	30.0
58.081500	17.8	209.0	V	30.0	-11.9	12.2	30.0
58.451500	18.3	275.0	V	-10.0	-11.9	11.7	30.0
59.762500	18.9	275.0	V	-23.0	-12.0	11.1	30.0
60.190000	19.0	325.0	V	-10.0	-12.1	11.0	30.0
60.488500	19.5	100.0	V	-30.0	-12.1	10.5	30.0

Normal RE_1G-18GHz_directly

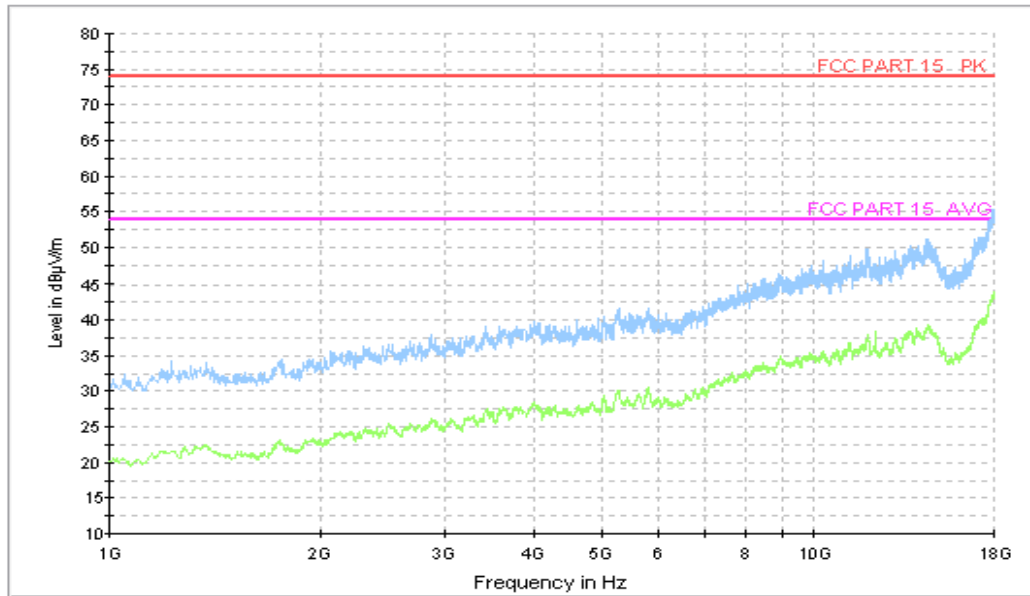


Figure A.6 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.4

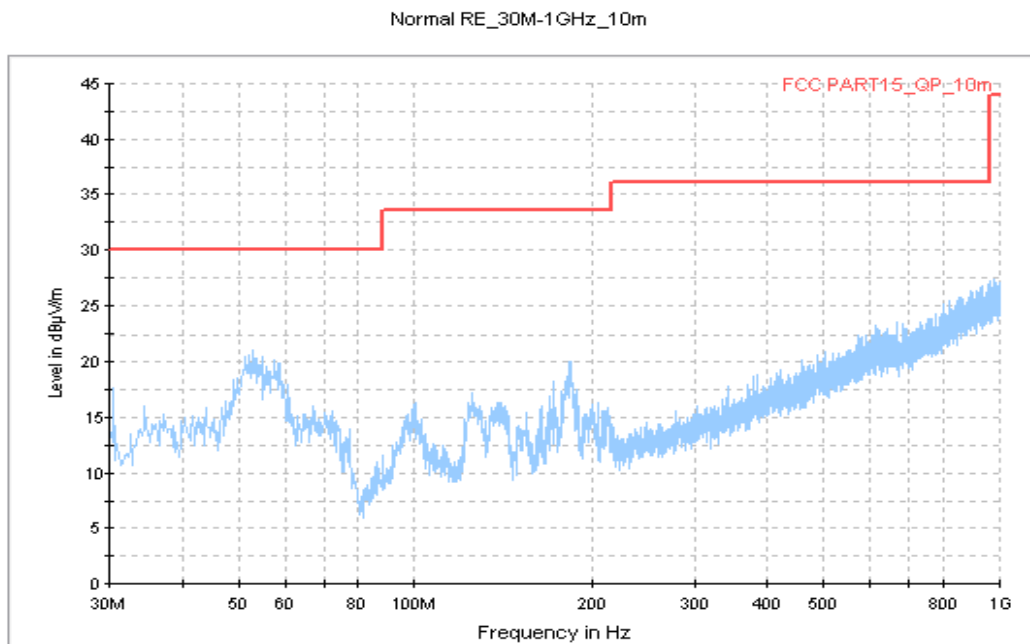


Figure A.7 Radiated Emission from 30MHz to 1GHz

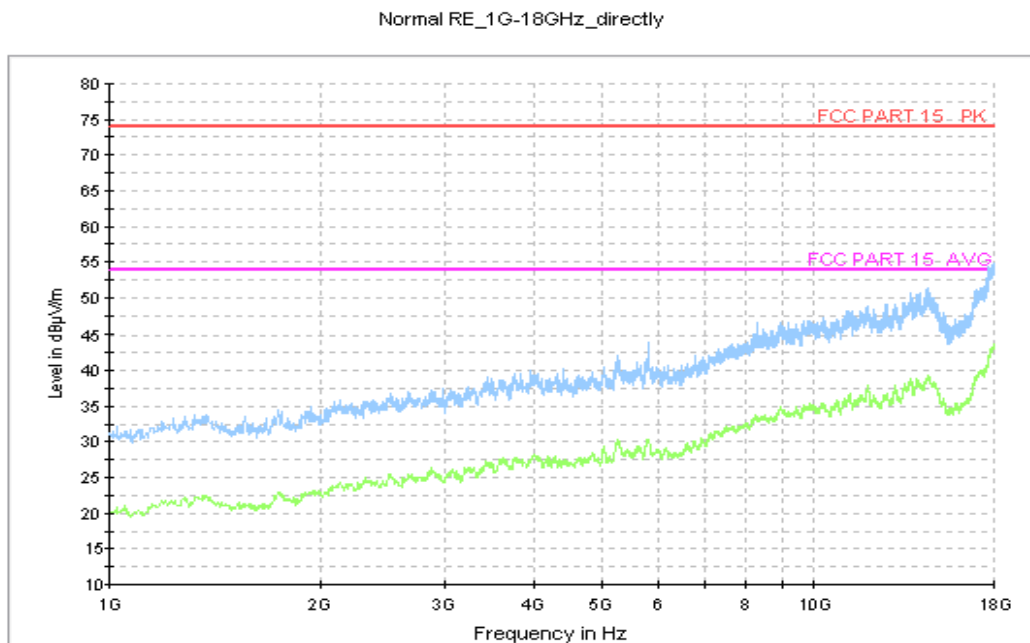


Figure A.8 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.5

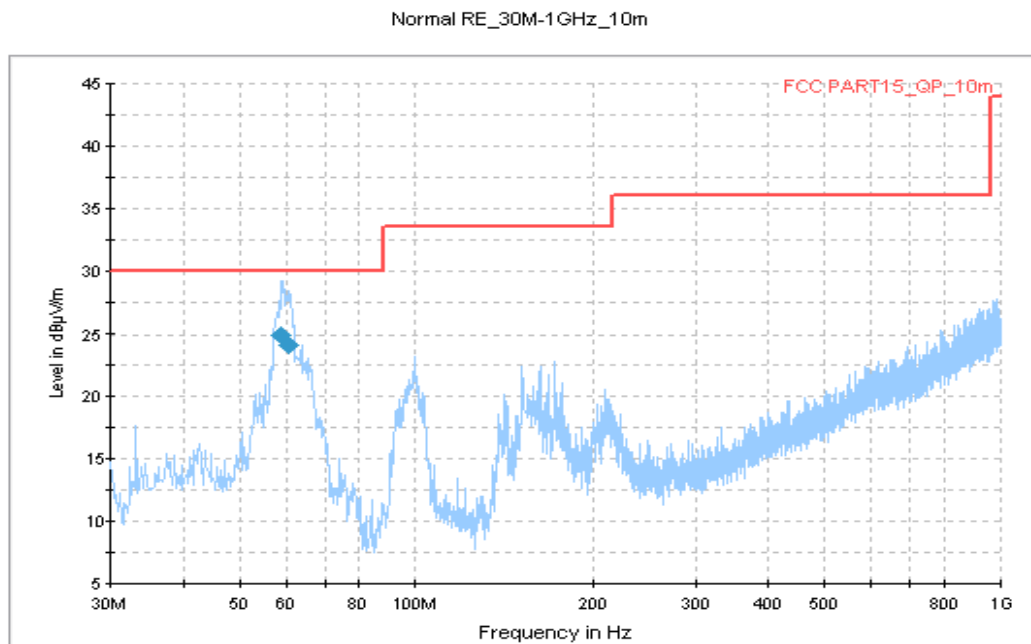


Figure A.9 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
58.657000	25.0	100.0	V	-30.0	-11.9	5.0	30.0
60.629000	24.1	325.0	V	-11.0	-12.2	5.9	30.0

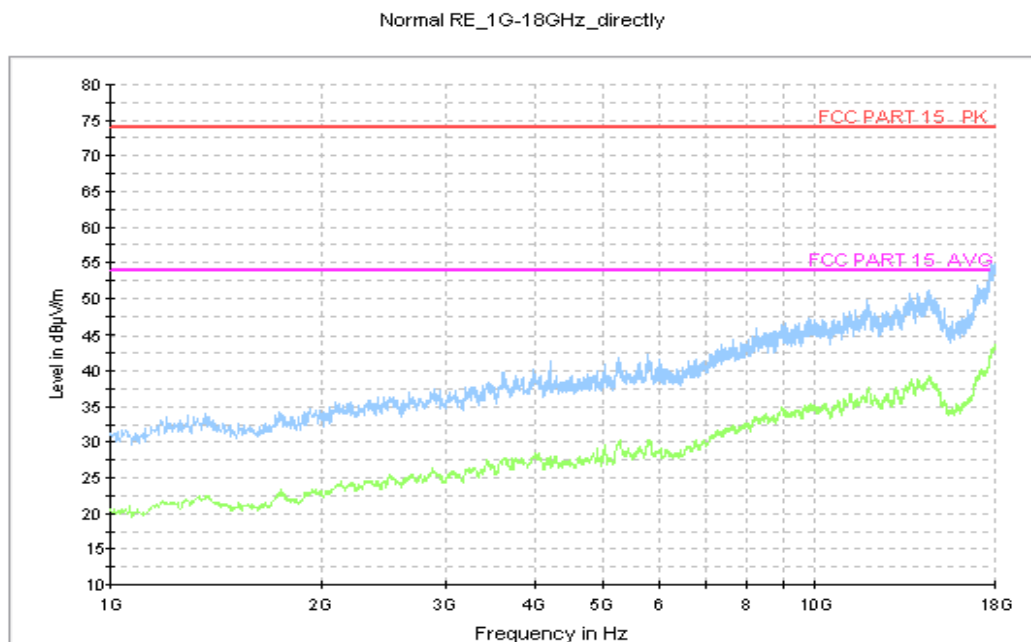


Figure A.10 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.6

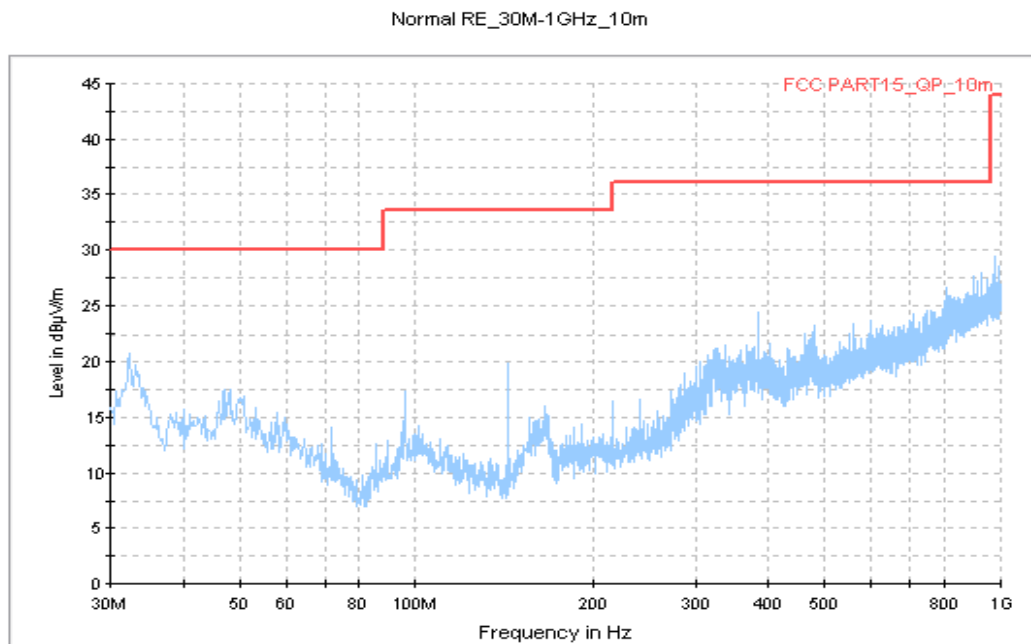


Figure A.11 Radiated Emission from 30MHz to 1GHz

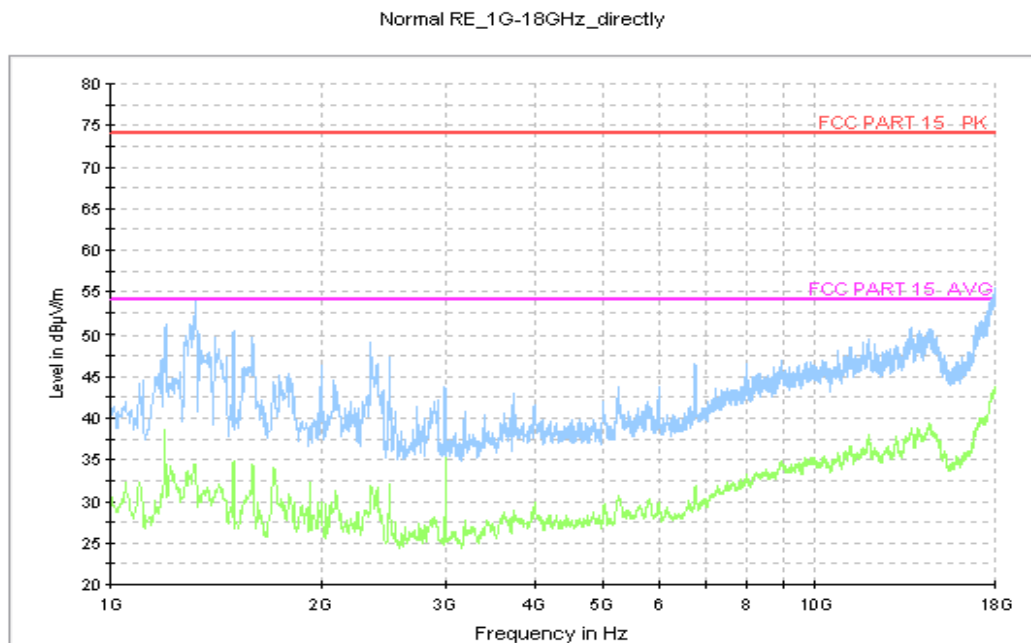


Figure A.12 Radiated Emission from 1GHz to 18GHz

GPS Mode, Set.1

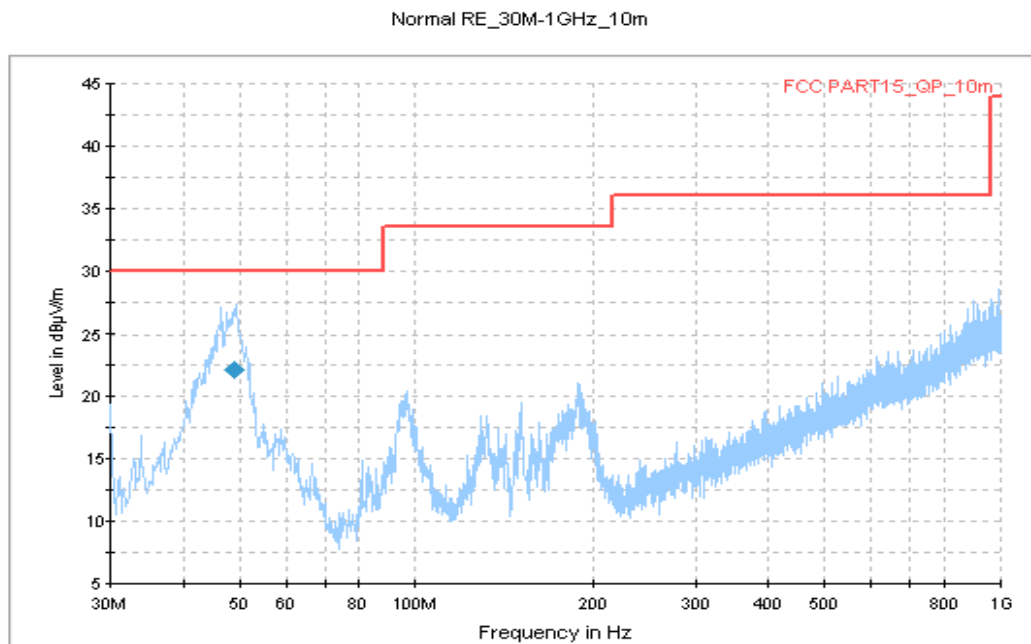


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
48.917500	22.1	125.0	V	173.0	-11.5	7.9	30.0

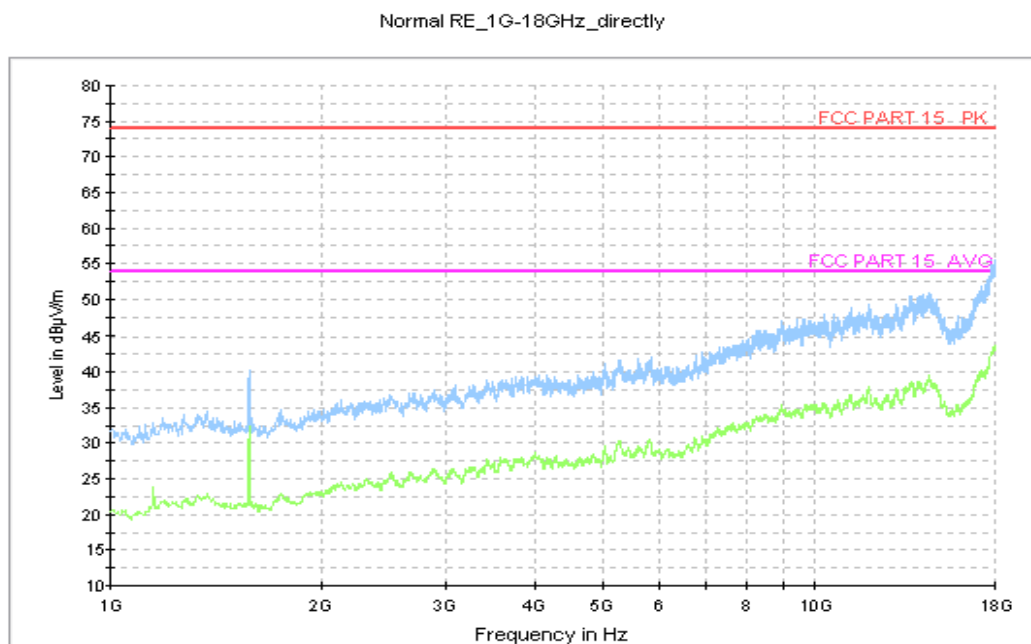


Figure A.14 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

IC: ICES-003 section 6.1.

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 and GPS mode.

For the charging mode, the EUT is keeping on playing MP3 file.

For the USB mode, the MS is operating in the USB mode, charging mode and GPS mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

For the GPS mode, during the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of GPS mode. A vector signal generator is used to provide the simulated GPS signal, and the frequency is set to 1575.42 MHz. Before the test starts, the integrated GPS application in MS is started up and locked to the simulated GPS signal.

Meanwhile, the EUT is synchronized to universal radio communication tester, and able to respond to paging messages and incoming call. An established call has been released.

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: $U = 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.1

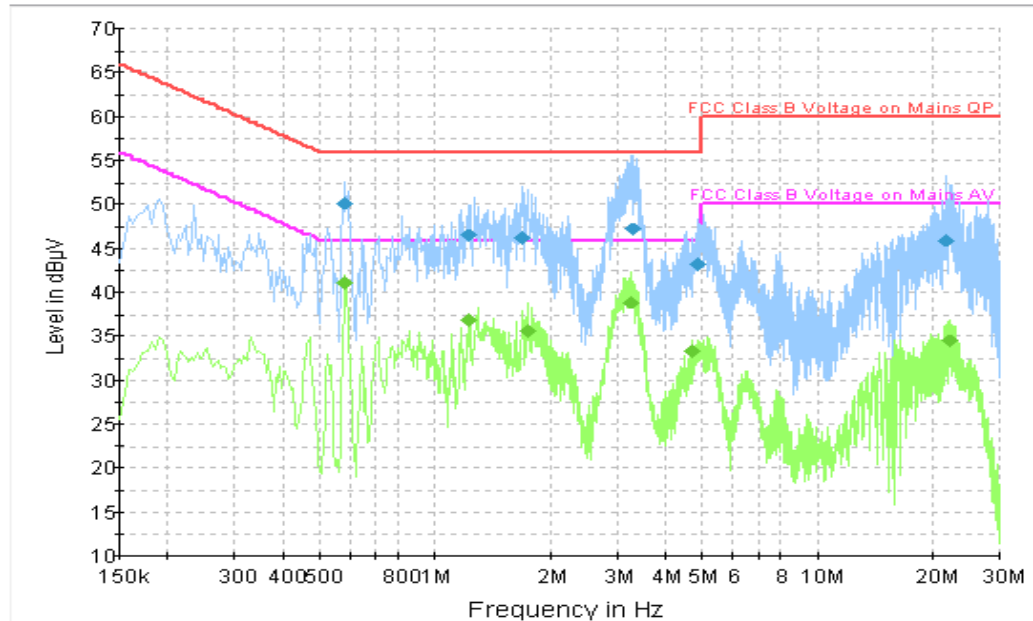


Figure A.15 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.582000	50.2	2000.0	9.000	On	L1	19.8	5.8	56.0
1.221000	46.5	2000.0	9.000	On	L1	19.7	9.5	56.0
1.689000	46.2	2000.0	9.000	On	L1	19.6	9.8	56.0
3.313500	47.2	2000.0	9.000	On	L1	19.6	8.8	56.0
4.848000	43.2	2000.0	9.000	On	L1	19.7	12.8	56.0
21.772500	46.0	2000.0	9.000	On	L1	20.0	14.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.582000	41.2	2000.0	9.000	On	L1	19.8	4.8	46.0
1.225500	36.9	2000.0	9.000	On	L1	19.7	9.1	46.0
1.752000	35.6	2000.0	9.000	On	L1	19.7	10.4	46.0
3.255000	38.8	2000.0	9.000	On	L1	19.6	7.2	46.0
4.713000	33.4	2000.0	9.000	On	L1	19.7	12.6	46.0
22.101000	34.5	2000.0	9.000	On	L1	20.1	15.5	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.2

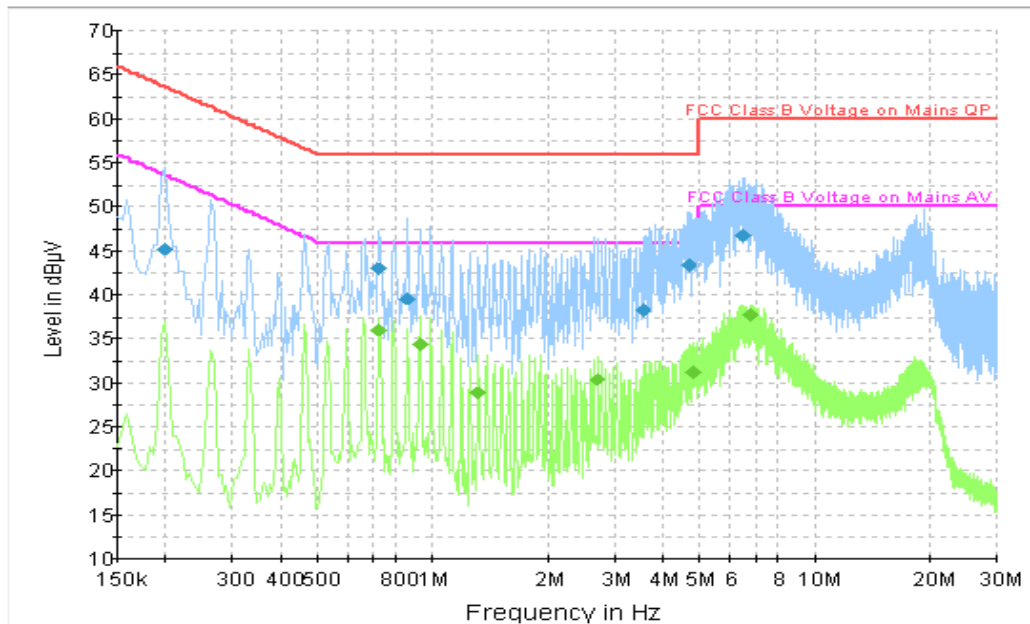


Figure A.16 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.199500	45.3	2000.0	9.000	On	L1	19.8	18.4	63.6
0.726000	43.0	2000.0	9.000	On	L1	19.8	13.0	56.0
0.861000	39.6	2000.0	9.000	On	N	19.7	16.5	56.0
3.561000	38.2	2000.0	9.000	On	L1	19.7	17.8	56.0
4.668000	43.3	2000.0	9.000	On	L1	19.6	12.7	56.0
6.459000	46.7	2000.0	9.000	On	L1	19.7	13.3	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.726000	36.0	2000.0	9.000	On	L1	19.8	10.0	46.0
0.924000	34.4	2000.0	9.000	On	L1	19.7	11.6	46.0
1.320000	28.8	2000.0	9.000	On	L1	19.6	17.2	46.0
2.701500	30.4	2000.0	9.000	On	L1	19.6	15.6	46.0
4.816500	31.2	2000.0	9.000	On	L1	19.7	14.8	46.0
6.787500	37.8	2000.0	9.000	On	L1	19.7	12.2	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.3

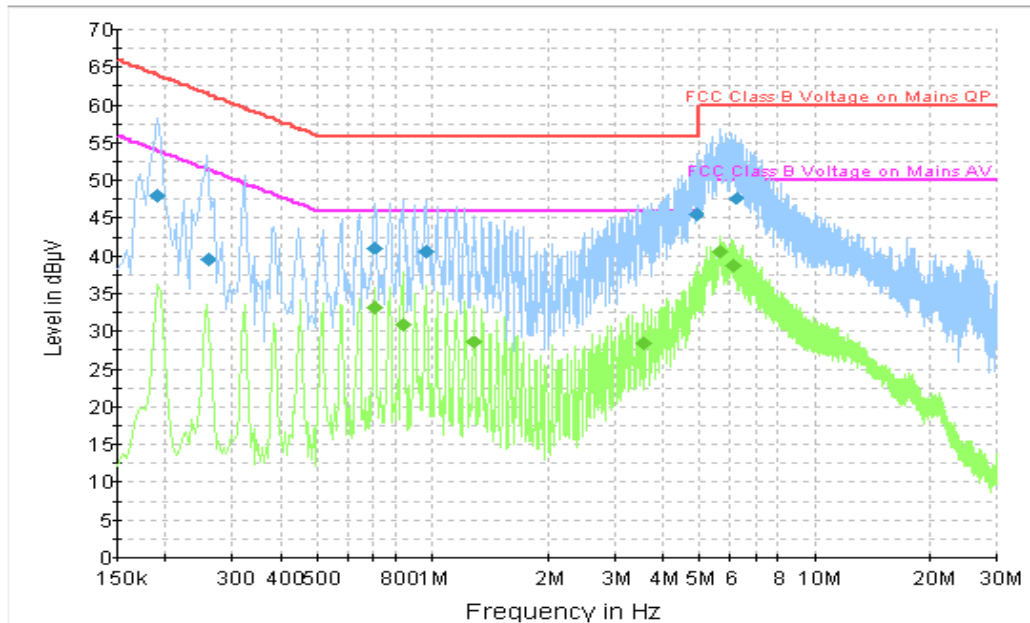


Figure A.17 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190500	48.1	2000.0	9.000	On	L1	19.7	15.9	64.0
0.258000	39.7	2000.0	9.000	On	L1	19.8	21.8	61.5
0.703500	41.1	2000.0	9.000	On	L1	19.8	14.9	56.0
0.960000	40.6	2000.0	9.000	On	L1	19.7	15.4	56.0
4.920000	45.5	2000.0	9.000	On	L1	19.7	10.5	56.0
6.198000	47.7	2000.0	9.000	On	L1	19.7	12.3	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.703500	33.2	2000.0	9.000	On	L1	19.8	12.8	46.0
0.834000	30.9	2000.0	9.000	On	L1	19.8	15.1	46.0
1.279500	28.5	2000.0	9.000	On	L1	19.7	17.5	46.0
3.579000	28.4	2000.0	9.000	On	L1	19.7	17.6	46.0
5.622000	40.6	2000.0	9.000	On	L1	19.7	9.5	50.0
6.130500	38.9	2000.0	9.000	On	L1	19.7	11.1	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.4

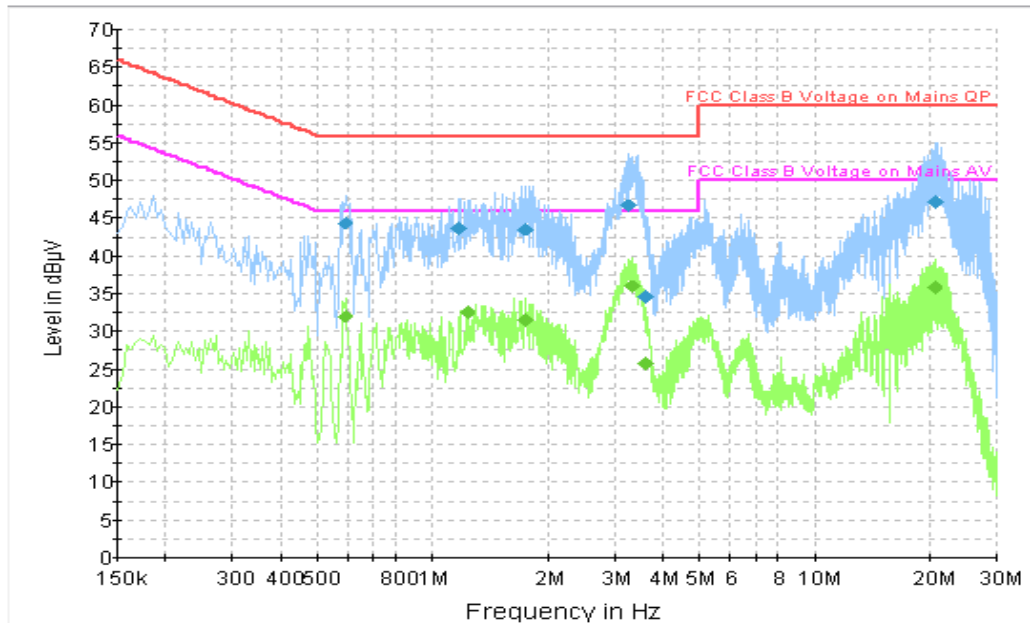


Figure A.18 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.591000	44.4	2000.0	9.000	On	L1	19.8	11.6	56.0
1.167000	43.8	2000.0	9.000	On	L1	19.6	12.2	56.0
1.752000	43.6	2000.0	9.000	On	L1	19.7	12.4	56.0
3.255000	46.7	2000.0	9.000	On	L1	19.6	9.3	56.0
3.624000	34.8	2000.0	9.000	On	L1	19.7	21.2	56.0
20.764500	47.3	2000.0	9.000	On	L1	20.0	12.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.591000	32.0	2000.0	9.000	On	L1	19.8	14.0	46.0
1.230000	32.6	2000.0	9.000	On	L1	19.7	13.4	46.0
1.752000	31.5	2000.0	9.000	On	L1	19.7	14.5	46.0
3.322500	35.9	2000.0	9.000	On	L1	19.7	10.1	46.0
3.606000	25.8	2000.0	9.000	On	L1	19.7	20.2	46.0
20.575500	35.9	2000.0	9.000	On	L1	20.1	14.1	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.5

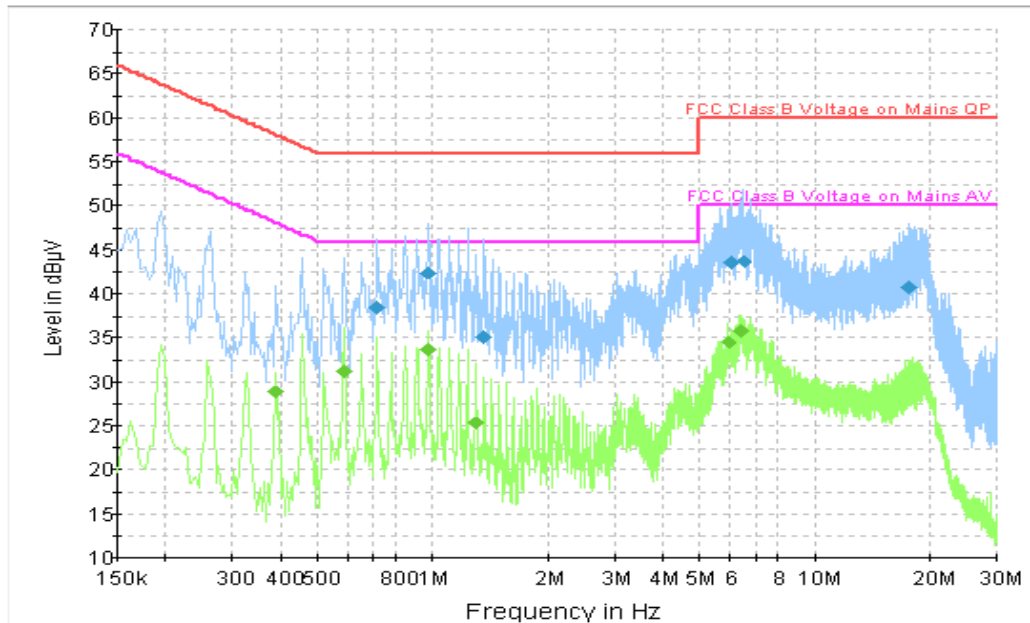


Figure A.19 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.717000	38.5	2000.0	9.000	On	L1	19.8	17.5	56.0
0.973500	42.4	2000.0	9.000	On	L1	19.7	13.6	56.0
1.369500	35.1	2000.0	9.000	On	N	19.7	20.9	56.0
6.076500	43.5	2000.0	9.000	On	L1	19.7	16.5	60.0
6.508500	43.7	2000.0	9.000	On	L1	19.7	16.3	60.0
17.592000	40.7	2000.0	9.000	On	L1	20.1	19.3	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.388500	28.8	2000.0	9.000	On	L1	19.8	19.3	48.1
0.586500	31.3	2000.0	9.000	On	L1	19.8	14.7	46.0
0.973500	33.6	2000.0	9.000	On	L1	19.7	12.4	46.0
1.302000	25.2	2000.0	9.000	On	L1	19.6	20.8	46.0
5.968500	34.4	2000.0	9.000	On	L1	19.7	15.6	50.0
6.400500	35.7	2000.0	9.000	On	L1	19.7	14.3	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

USB Mode, Set.6

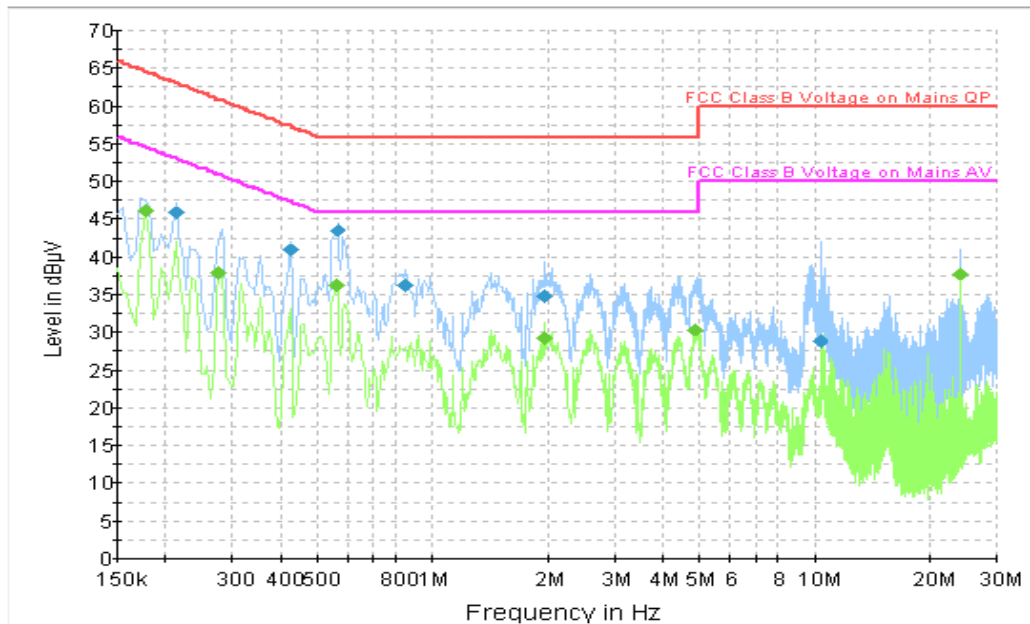


Figure A.20 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.213000	45.9	2000.0	9.000	On	N	19.8	17.2	63.1
0.424500	41.0	2000.0	9.000	On	L1	19.8	16.4	57.4
0.564000	43.5	2000.0	9.000	On	L1	19.8	12.5	56.0
0.847500	36.4	2000.0	9.000	On	N	19.8	19.6	56.0
1.977000	34.9	2000.0	9.000	On	L1	19.6	21.1	56.0
10.306500	29.0	2000.0	9.000	On	N	19.9	31.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	46.2	2000.0	9.000	On	N	19.7	8.4	54.6
0.276000	38.0	2000.0	9.000	On	N	19.8	12.9	50.9
0.559500	36.3	2000.0	9.000	On	L1	19.8	9.7	46.0
1.977000	29.2	2000.0	9.000	On	N	19.6	16.8	46.0
4.875000	30.4	2000.0	9.000	On	N	19.7	15.6	46.0
24.000000	37.9	2000.0	9.000	On	N	20.2	12.1	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

GPS Mode, Set.1

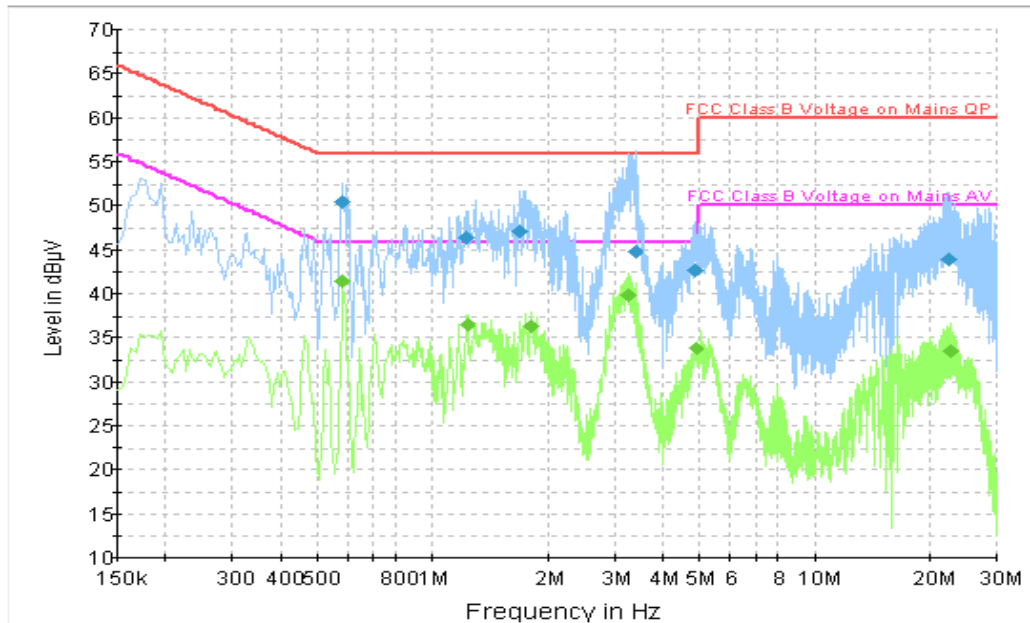


Figure A.21 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.582000	50.4	2000.0	9.000	On	L1	19.8	5.6	56.0
1.221000	46.4	2000.0	9.000	On	L1	19.7	9.6	56.0
1.689000	47.1	2000.0	9.000	On	L1	19.6	8.9	56.0
3.381000	44.9	2000.0	9.000	On	L1	19.7	11.1	56.0
4.866000	42.7	2000.0	9.000	On	L1	19.7	13.3	56.0
22.371000	44.0	2000.0	9.000	On	L1	20.1	16.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.582000	41.3	2000.0	9.000	On	L1	19.8	4.7	46.0
1.230000	36.4	2000.0	9.000	On	L1	19.7	9.6	46.0
1.810500	36.3	2000.0	9.000	On	L1	19.6	9.7	46.0
3.255000	39.8	2000.0	9.000	On	L1	19.6	6.2	46.0
4.884000	33.8	2000.0	9.000	On	L1	19.7	12.2	46.0
22.762500	33.5	2000.0	9.000	On	L1	20.1	16.5	50.0

Note: The measurement results showed here are worst cases of the combinations of different batteries and USB cables.

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