



TEST REPORT

No.I15N00918-EMC

for

Huawei Technologies Co., Ltd.

Smart Phone

Model Name: HUAWEI Y560-L01,Y560-L01

FCC ID: QISY560-L01

with

Hardware Version: Ver.A

Software Version: Y560-L01V100R001C577B015

Issued Date: 2015-08-19

Test Laboratory:

FCC 2.948 Listed: No.342690

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:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15N00918-EMC	Rev.0	1st edition	2015-08-19

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1. Test Laboratory

1.1. TestingLocation

Address: TCL International E city No. 1001 Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong, China
Postal Code: 518048
Telephone: +86(755)33322000
Fax: +86(755)33322000

1.2. TestingEnvironment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-08-12
Testing End Date: 2015-08-17

1.4. Signature

Liang Yong

(Prepared this test report)

Du Zhaoxuan

(Reviewed this test report)

Cao Junfei

Director of the laboratory

(Approved this test report)



2. ClientInformation

2.1. Applicant Information

Company Name: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

2.2. Manufacturer Information

Company Name: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

3. Equipment UnderTest (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Smart Phone
Model Name	HUAWEI Y560-L01,Y560-L01
FCC ID	QISY560-L01
TX Band	GSM900/1900,LTE Band 7
RX Band	GSM900/1900,LTE Band 7

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

The EUT supports GPRS service with multi-slots class 12 and EGPRS service with multi-slots class 12.It has MP3,camera,USB memory, FM radio, GPS receiver ,Bluetooth(EDR and Bluetooth 4.1) and WLAN(802.11 b/g/n)functions.

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

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI
N0.1	004401722674807

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

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Travel charger	/
AE3	USB cable	/

AE1-1

Model	HB474284RBC
Manufacturer	SCUD (FUJIAN) Electronics Co., Ltd.
Capacitance	2000mAh
Nominal voltage	3.8V

AE1-2

Model	HB474284RBC
Manufacturer	BYD Lithium Battery Company Limited
Capacitance	2000mAh
Nominal voltage	3.8V

AE2-1

Model	HW-050100U01
Manufacturer	Dongguan City YingJu Electronics Co., Ltd.
Length of cable	/
SN	Y66601F3L00037



AE2-2

Model	HW-050100A01
Manufacturer	Dongguan City YingJu Electronics Co., Ltd.
Length of cable	/
SN	/

AE2-3

Model	HW-050100E01
Manufacturer	Dongguan City YingJu Electronics Co., Ltd.
Length of cable	/
SN	Y66801F3J00031

AE2-4

Model	HW-050100B01
Manufacturer	Dongguan City YingJu Electronics Co., Ltd.
Length of cable	/
SN	/

AE2-5

Model	HW-050100U01
Manufacturer	BYD Company Limited
Length of cable	/
SN	B66660F4100056

AE2-6

Model	HW-050100A01
Manufacturer	BYD Company Limited
Length of cable	/
SN	/

AE2-7

Model	HW-050100E01
Manufacturer	BYD Company Limited
Length of cable	/
SN	B66799F4200406

AE2-8

Model	HW-050100B01
Manufacturer	BYD Company Limited
Length of cable	/
SN	/

AE2-9

Model	HW-050100U01
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/
SN	H666LGF4M07310

AE2-10

Model	HW-050100A01
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/



SN	/
AE2-11	
Model	HW-050100E01
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/
SN	H667LGF4723264
AE2-12	
Model	HW-050100B01
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
Length of cable	/
SN	/
AE2-13	
Model	HW-050100U01
Manufacturer	Dongguan Phitek Electronics Co., Ltd
Length of cable	/
SN	P66606F4906702
AE2-14	
Model	HW-050100A01
Manufacturer	Dongguan Phitek Electronics Co., Ltd
Length of cable	/
SN	/
AE2-15	
Model	HW-050100E01
Manufacturer	Dongguan Phitek Electronics Co., Ltd
Length of cable	/
SN	P66707F3Z00269
AE2-16	
Model	HW-050100B01
Manufacturer	Dongguan Phitek Electronics Co., Ltd
Length of cable	/
SN	/
AE3-1	
Model	130-41040
Manufacturer	CHANGSHU HONGLIN TECHNOLOGY CO.,LTD.
Length of cable	94cm
AE3-2	
Model	H09-000473
Manufacturer	SHEN ZHEN PANG NGAI INDUSTRIAL CO., LTD.
Length of cable	94cm

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1-1 + AE2-1 + AE3-1	Charging mode
Set.2	EUT1+ AE1-2 + AE2-3 + AE3-2	Charging mode
Set.3	EUT1+ AE1-1 + AE2-5 + AE3-1	Charging mode
Set.4	EUT1+ AE1-2 + AE2-7 + AE3-2	Charging mode
Set.5	EUT1+ AE1-1 + AE2-9 + AE3-1	Charging mode
Set.6	EUT1+ AE1-2 + AE2-11 + AE3-2	Charging mode
Set.7	EUT1+ AE1-1 + AE2-13 + AE3-1	Charging mode
Set.8	EUT1+ AE1-2+ AE2-15 + AE3-2	Charging mode
Set.9	EUT1+ AE1-1 + AE3-1	USB mode

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	10-1-2014 Edition
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 did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-1000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz
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. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-1000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-1000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 6 GHz, 3 m distance

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

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

7. Test Facilities Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CALDUE DATE	CAL PERIOD
1.	Test Receiver	ESCI	100701	R&S	2016.08.10	1 year
2.	Test Receiver	ESCI	100702	R&S	2016.05.30	1 year
3.	Spectrum Analyzer	FSP 40	100378	R&S	2015.12.19	1 year
4.	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2017.01.20	3 years
5.	LISN	ESH2-Z5	100196	R&S	2016.01.13	1 year
6.	Horn Antenna	3117	00066577	ETS-Lindgren	2016.04.01	3 years
7.	Universal Radio Communication Tester	E5515C	GB44051324	Agilent	2016.05.19	1 year
8.	PC	M4099t	SA08850737	Lenovo	/	/
9.	Monitor	L1710d	0M04340B10 01010	Lenovo	/	/
10.	Printer	P1008	VNF6C12491	HP	/	/
11.	Keyboard	KB-0225	0723779	Lenovo	/	/
12.	Mouse	MO28UOL	44B39412	Lenovo	/	/

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

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 a distance of 3 meters 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 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 and charging 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 Measurement Limit

Limit from CFR Part 15.109(a)

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 original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

A.1.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

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.

Note: the result contains vertical part and Horizontal part

RE Measurement uncertainty: 30M-1GHz: 5.08dB (K=2);
1GHz-18GHz: 4.56 dB (K=2)

Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A_{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14516.000000	54.9	H	11.7	19.1	74.0
15076.000000	56.0	H	12.0	18.0	74.0
15672.000000	57.9	H	12.8	16.1	74.0
16309.000000	57.3	V	13.5	16.7	74.0
16604.000000	58.0	V	13.8	16.0	74.0
17353.000000	58.6	V	14.2	15.4	74.0

Set.1 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A_{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14515.000000	43.1	V	11.7	10.9	54.0
15136.000000	44.3	V	12.1	9.7	54.0
15779.000000	45.8	H	13.0	8.2	54.0
16204.000000	45.8	H	13.3	8.2	54.0
16789.000000	46.1	H	14.0	7.9	54.0
17381.000000	45.8	H	14.3	8.2	54.0

Set.2 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14526.000000	54.4	V	11.7	19.6	74.0
15092.000000	56.2	V	12.0	17.8	74.0
15796.000000	57.5	V	13.0	16.5	74.0
16323.000000	57.1	V	13.5	16.9	74.0
16801.000000	57.4	H	14.0	16.6	74.0
17972.000000	57.5	V	14.7	16.5	74.0

Set.2 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14172.000000	42.9	V	11.3	11.1	54.0
15154.000000	43.7	H	12.1	10.3	54.0
15786.000000	45.5	V	13.0	8.5	54.0
16230.000000	45.3	V	13.3	8.7	54.0
16781.000000	45.7	H	14.0	8.3	54.0
17391.000000	45.4	H	14.3	8.6	54.0

Set.3 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14160.000000	54.8	V	11.2	19.2	74.0
15149.000000	55.6	V	12.1	18.4	74.0
15777.000000	57.2	H	12.9	16.8	74.0
16501.000000	57.3	H	13.8	16.7	74.0
16871.000000	57.7	V	14.1	16.3	74.0
17350.000000	57.8	V	14.2	16.2	74.0

Set.3 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14152.000000	43.0	H	11.2	11.0	54.0
15109.000000	43.9	H	12.1	10.1	54.0
15751.000000	45.5	V	12.9	8.5	54.0
16227.000000	45.4	H	13.3	8.6	54.0
16830.000000	45.7	H	14.0	8.3	54.0
17435.000000	45.5	H	14.3	8.5	54.0

Set.4 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14190.000000	55.4	V	11.3	18.6	74.0
15093.000000	55.4	V	12.0	18.6	74.0
15705.000000	57.1	H	12.8	16.9	74.0
16256.000000	57.3	H	13.3	16.7	74.0
16830.000000	58.0	H	14.0	16.0	74.0
17339.000000	57.7	V	14.2	16.3	74.0

Set.4 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14507.000000	43.0	H	11.7	11.0	54.0
15133.000000	44.0	V	12.1	10.0	54.0
15758.000000	45.6	V	12.9	8.4	54.0
16204.000000	45.4	V	13.3	8.6	54.0
16797.000000	45.9	V	14.0	8.1	54.0
17304.000000	45.6	V	14.2	8.4	54.0

Set.5 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14312.000000	55.4	V	11.4	18.6	74.0
15142.000000	56.0	V	12.1	18.0	74.0
15786.000000	58.2	H	13.0	15.8	74.0
16199.000000	57.6	H	13.3	16.4	74.0
16840.000000	57.5	V	14.0	16.5	74.0
17430.000000	57.9	H	14.3	16.1	74.0

Set.5 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14520.000000	43.5	H	11.7	10.5	54.0
15123.000000	44.3	H	12.1	9.7	54.0
15738.000000	45.8	H	12.9	8.2	54.0
16227.000000	45.8	H	13.3	8.2	54.0
16802.000000	46.2	H	14.0	7.8	54.0
17340.000000	46.0	H	14.2	8.0	54.0

Set.6 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14166.000000	55.0	H	11.3	19.0	74.0
15113.000000	56.3	H	12.1	17.7	74.0
15653.000000	58.0	V	12.7	16.0	74.0
16289.000000	57.4	H	13.4	16.6	74.0
16747.000000	58.5	H	14.0	15.5	74.0
17370.000000	58.3	H	14.3	15.7	74.0

Set.6 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14528.000000	43.6	V	11.7	10.4	54.0
15141.000000	44.2	H	12.1	9.8	54.0
15781.000000	45.8	V	13.0	8.2	54.0
16196.000000	45.9	V	13.3	8.1	54.0
16731.000000	46.3	V	13.9	7.7	54.0
17386.000000	46.0	V	14.3	8.0	54.0

Set.7 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14239.000000	54.7	H	11.3	19.3	74.0
14602.000000	56.0	H	11.8	18.0	74.0
15746.000000	57.4	V	12.9	16.6	74.0
16235.000000	57.6	H	13.3	16.4	74.0
16776.000000	58.2	V	14.0	15.8	74.0
17371.000000	58.1	V	14.3	15.9	74.0

Set.7 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14533.000000	43.4	V	11.8	10.6	54.0
15083.000000	44.1	H	12.0	9.9	54.0
15738.000000	45.8	H	12.9	8.2	54.0
16227.000000	45.6	H	13.3	8.4	54.0
16789.000000	46.1	V	14.0	7.9	54.0
17422.000000	45.9	H	14.3	8.1	54.0

Set.8 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14550.000000	55.1	V	11.8	18.9	74.0
14937.000000	56.0	V	11.9	18.0	74.0
15708.000000	57.6	V	12.8	16.4	74.0
16183.000000	57.3	H	13.3	16.7	74.0
16818.000000	58.4	V	14.0	15.6	74.0
17339.000000	57.6	H	14.2	16.4	74.0

Set.8 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14536.000000	43.1	H	11.8	10.9	54.0
15146.000000	44.0	V	12.1	10.0	54.0
15774.000000	45.5	H	12.9	8.5	54.0
16312.000000	45.3	H	13.5	8.7	54.0
16763.000000	45.8	H	14.0	8.2	54.0
17350.000000	45.5	V	14.2	8.5	54.0

Set.8 GPS mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
17956.367	55.9	V	27.9	18.1	74.0
17977.333	55.3	H	27.9	18.7	74.0
17994.900	55.2	V	27.9	18.8	74.0
17958.633	55.1	H	27.9	18.9	74.0
17947.867	55.0	H	27.9	19.0	74.0
17984.133	55.0	V	27.9	19.0	74.0

Set.8 GPS mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
17983.000	43.6	H	27.9	10.4	54.0
17990.933	43.5	V	27.9	10.5	54.0
17983.567	43.5	V	27.9	10.5	54.0
17995.467	43.4	V	27.9	10.6	54.0
17994.900	43.3	H	27.9	10.7	54.0
17988.100	43.3	H	27.9	10.7	54.0

Set.9 USB mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14236.000000	55.3	V	11.3	18.7	74.0
15066.000000	56.7	H	12.0	17.3	74.0
15726.000000	57.7	V	12.9	16.3	74.0
16105.000000	57.5	H	13.3	16.5	74.0
16884.000000	58.0	H	14.1	16.0	74.0
17270.000000	58.1	V	14.1	15.9	74.0

Set.9 USB mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dBμV/m)
14512.000000	43.3	V	11.7	10.7	54.0
15068.000000	44.3	H	12.0	9.7	54.0
15692.000000	45.8	H	12.8	8.2	54.0
16230.000000	45.7	V	13.3	8.3	54.0
16781.000000	46.4	V	14.0	7.6	54.0
17270.000000	46.0	H	14.1	8.0	54.0

Note: The measurement result of Set.1,Set.2,Set.3,Set.4,Set.5,Set.6,Set.7,Set.8 and Set.9 showed here are worst cases of combinations of different batteries and USB cables.

Charging mode: Set 1

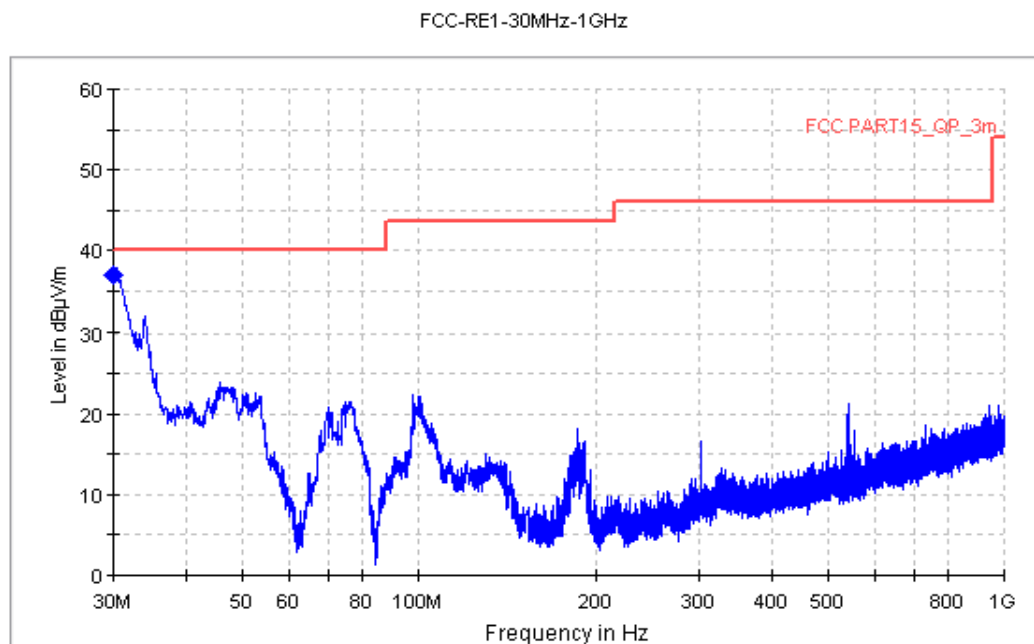


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.061250	37.0	V	-36.5	3.0	40.0

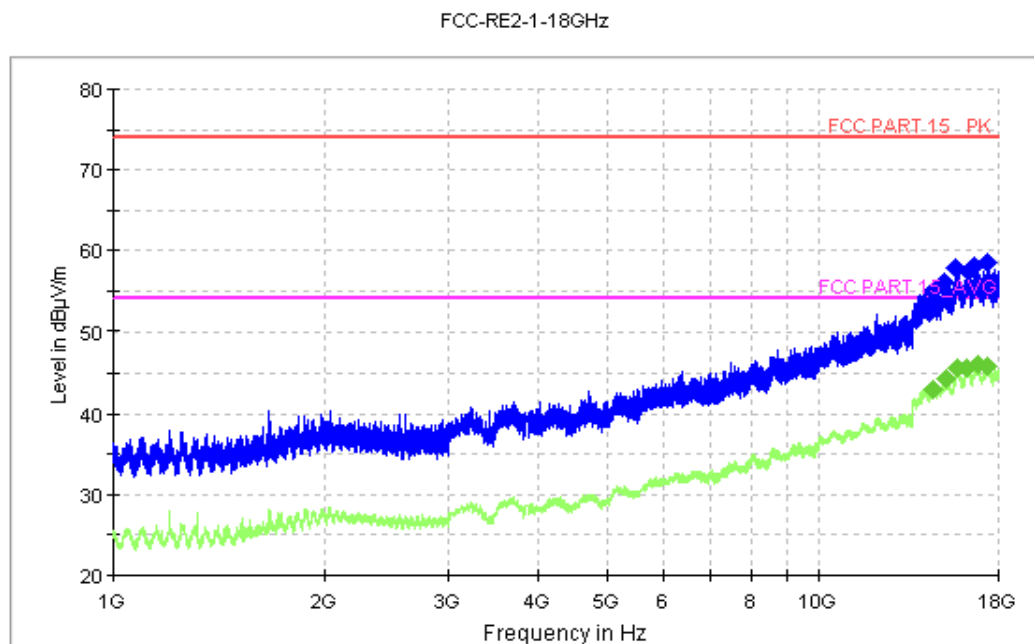


Figure A.2 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 2

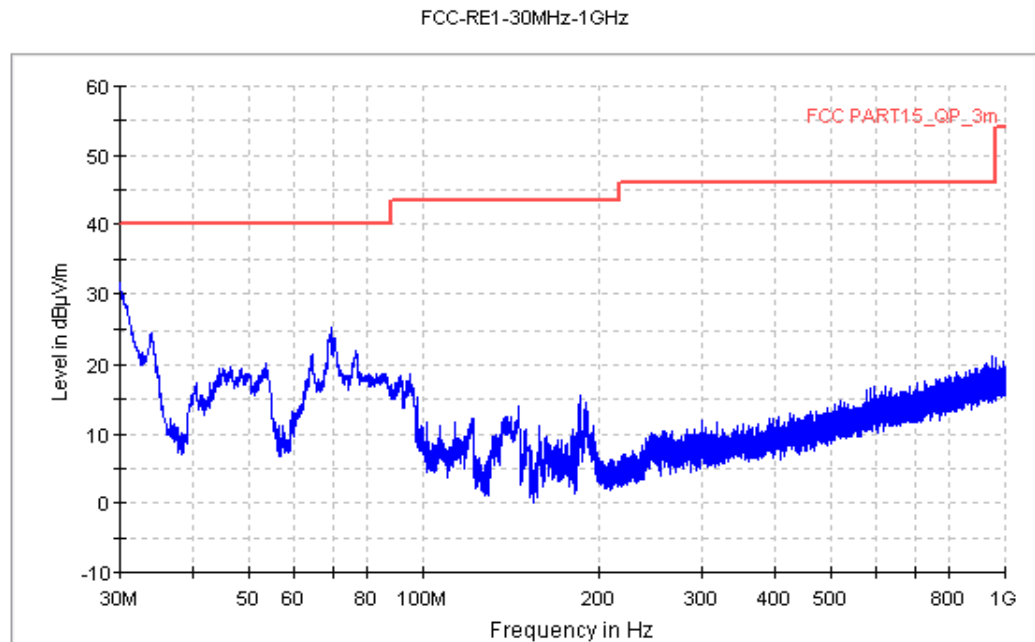


Figure A.3 Radiated Emission from 30MHz to 1GHz

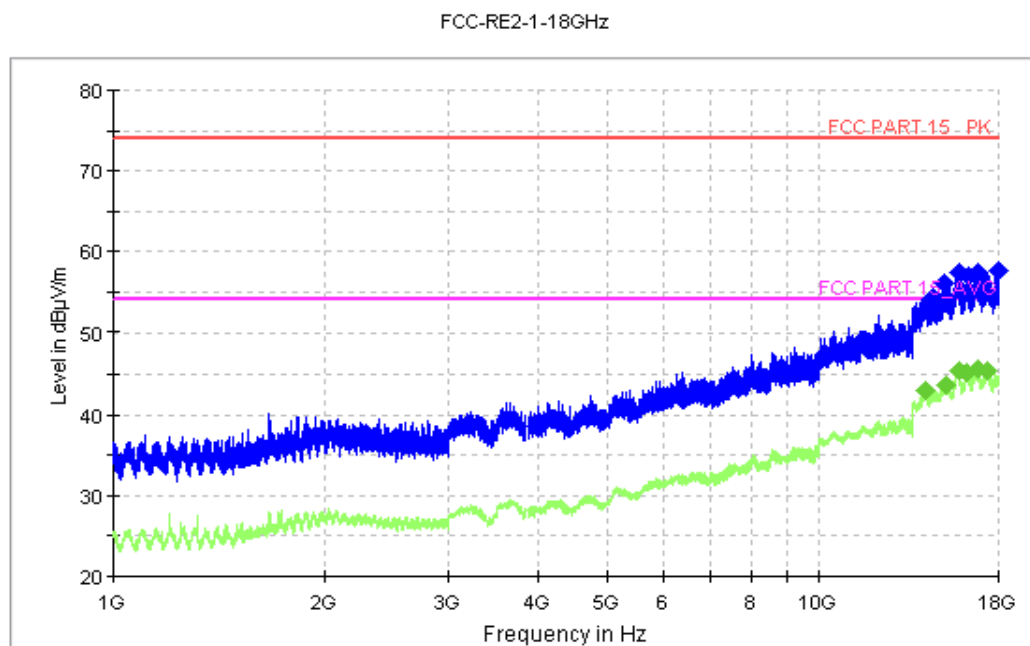


Figure A.4 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 3

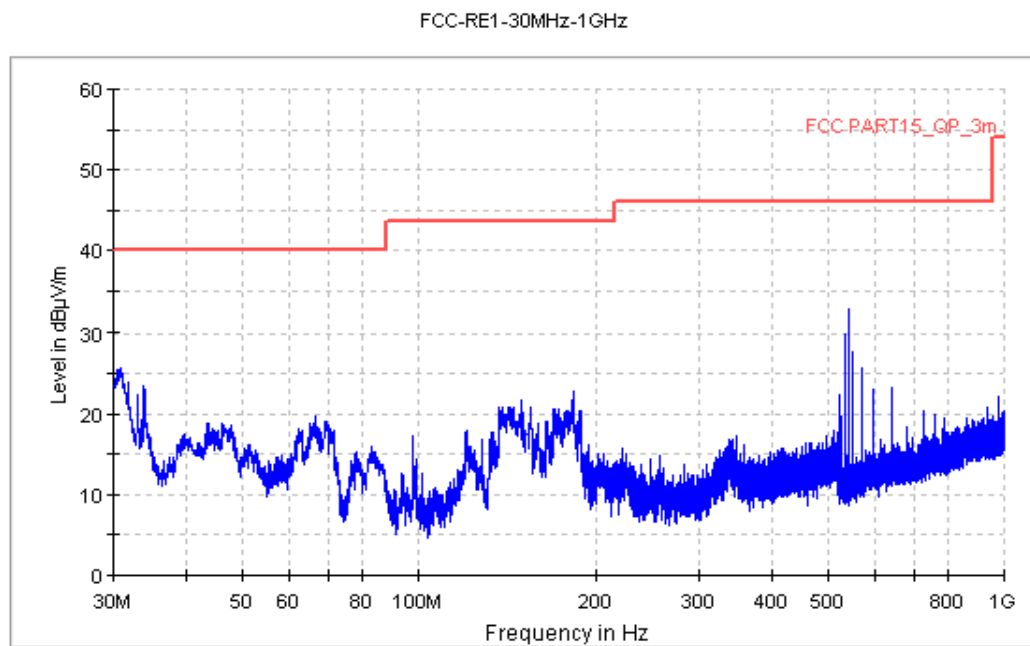


Figure A.5 Radiated Emission from 30MHz to 1GHz

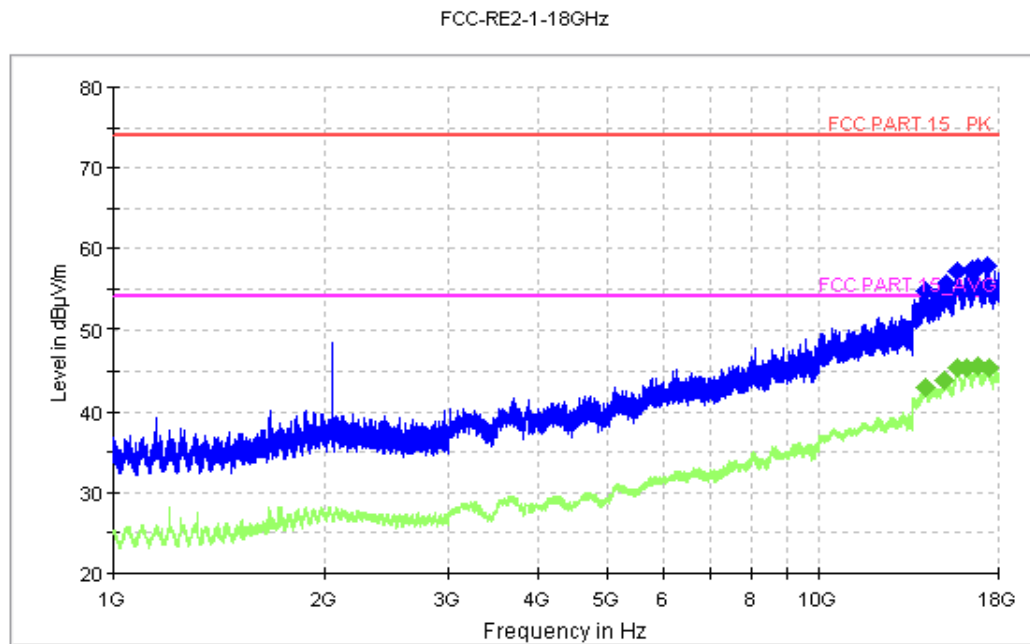


Figure A.6 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 4

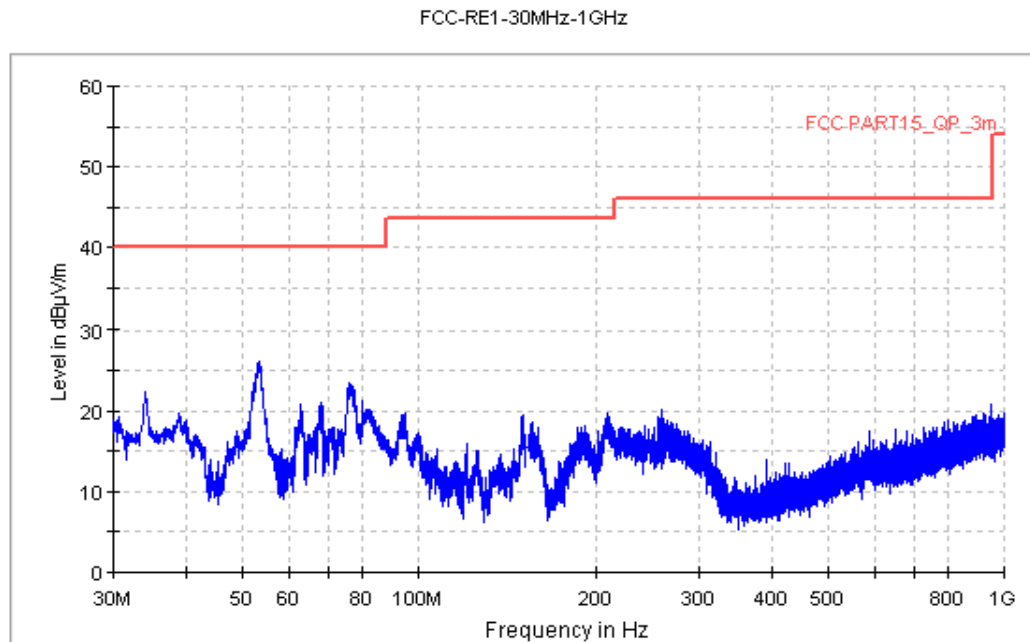


Figure A.7 Radiated Emission from 30MHz to 1GHz

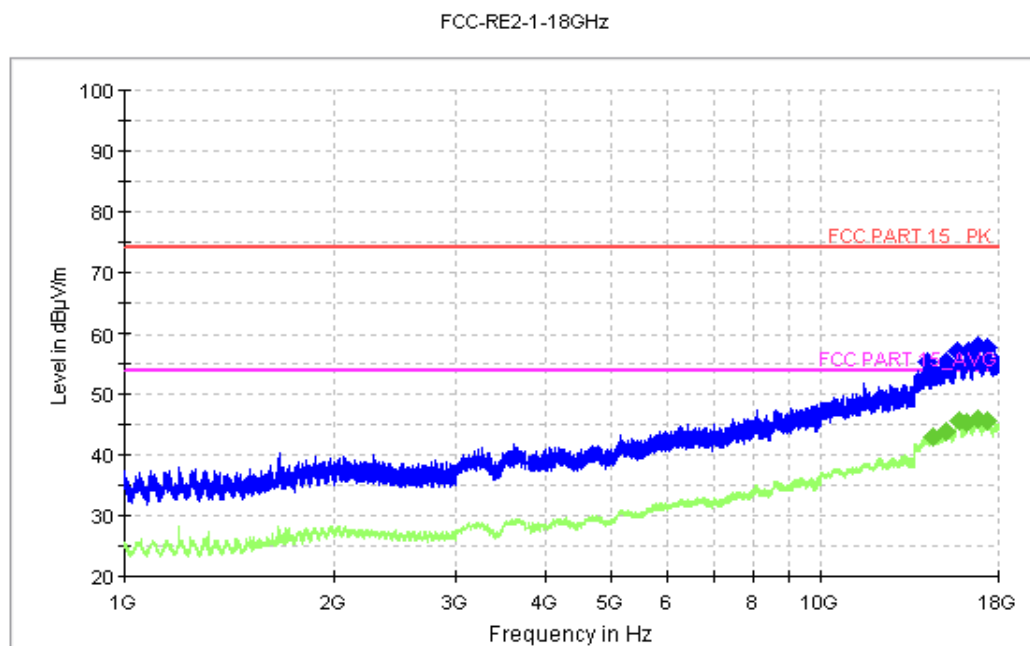


Figure A.8 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 5

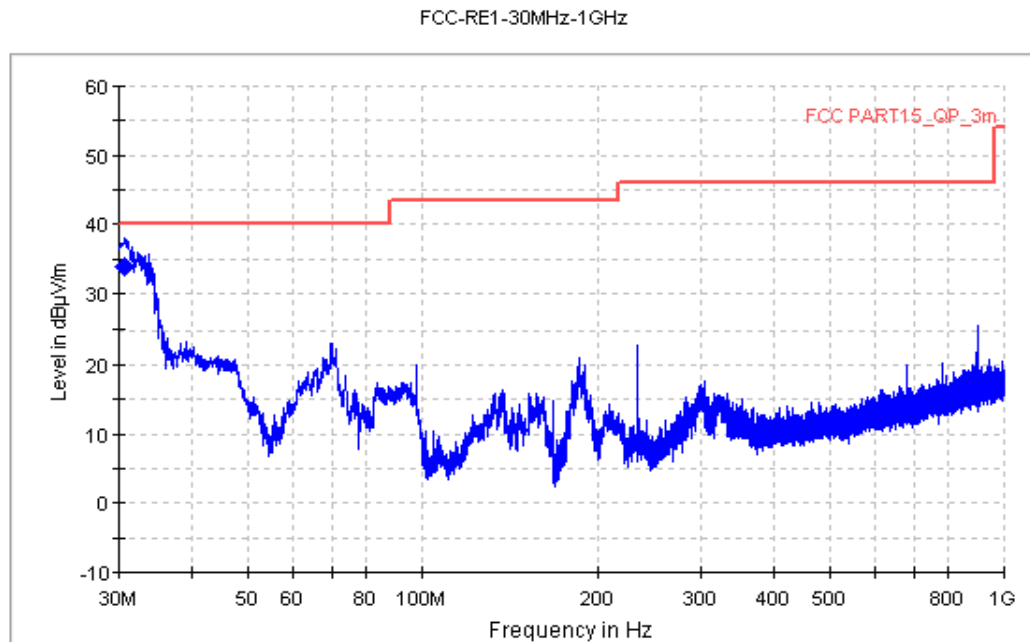


Figure A.9 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.673750	33.8	V	-36.7	6.2	40.0

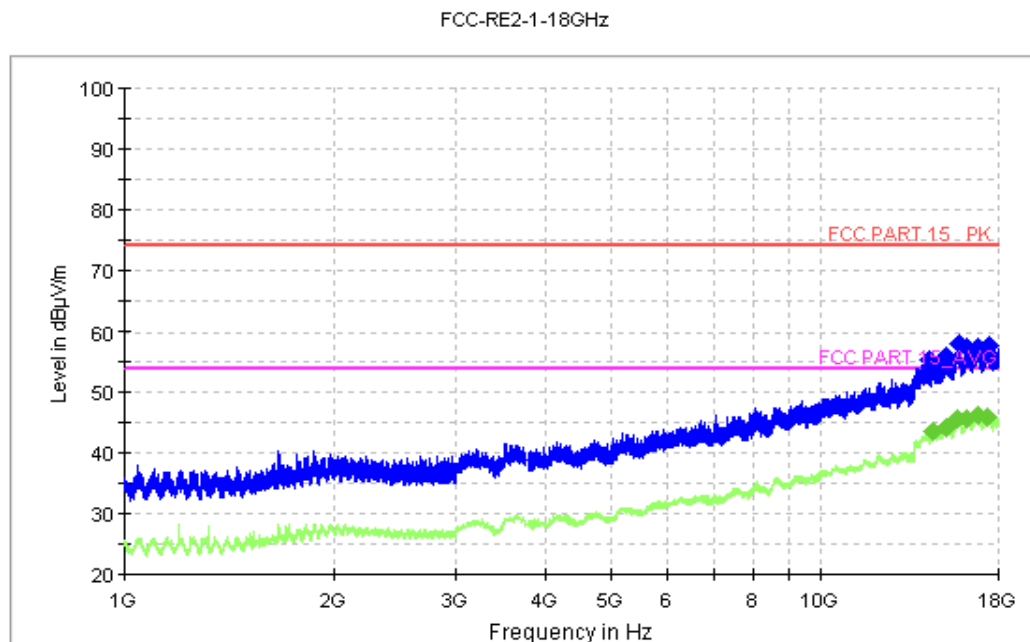


Figure A.10 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 6

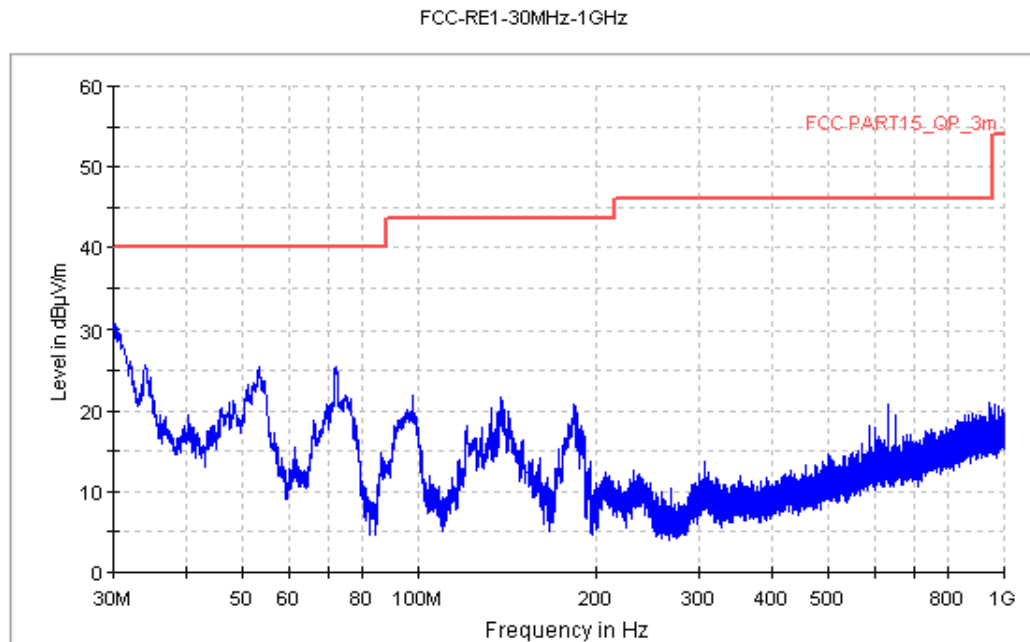


Figure A.11 Radiated Emission from 30MHz to 1GHz

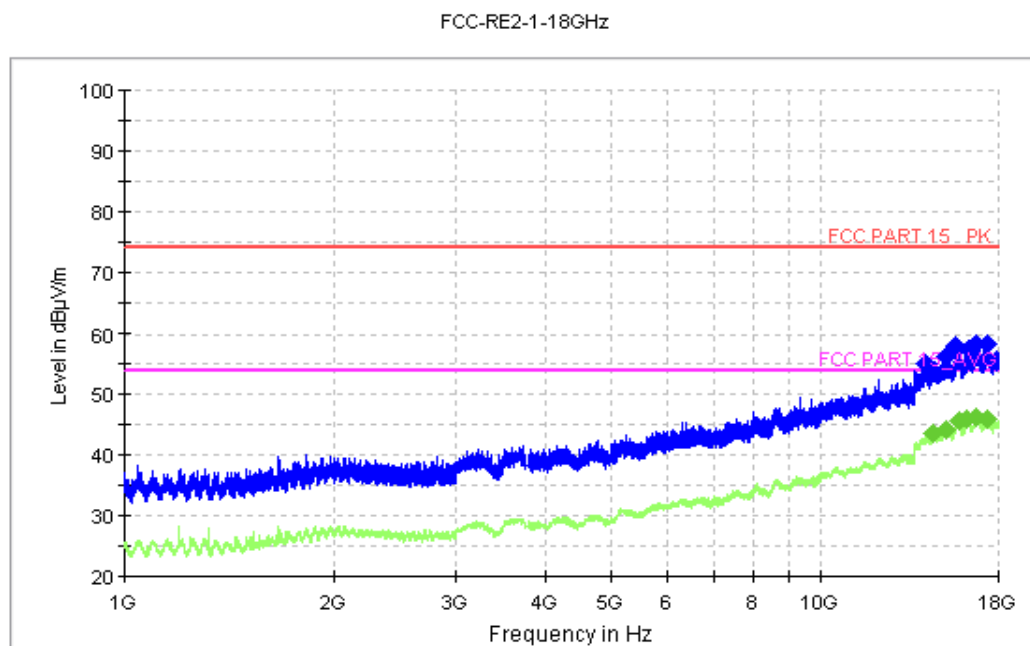


Figure A.12 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 7

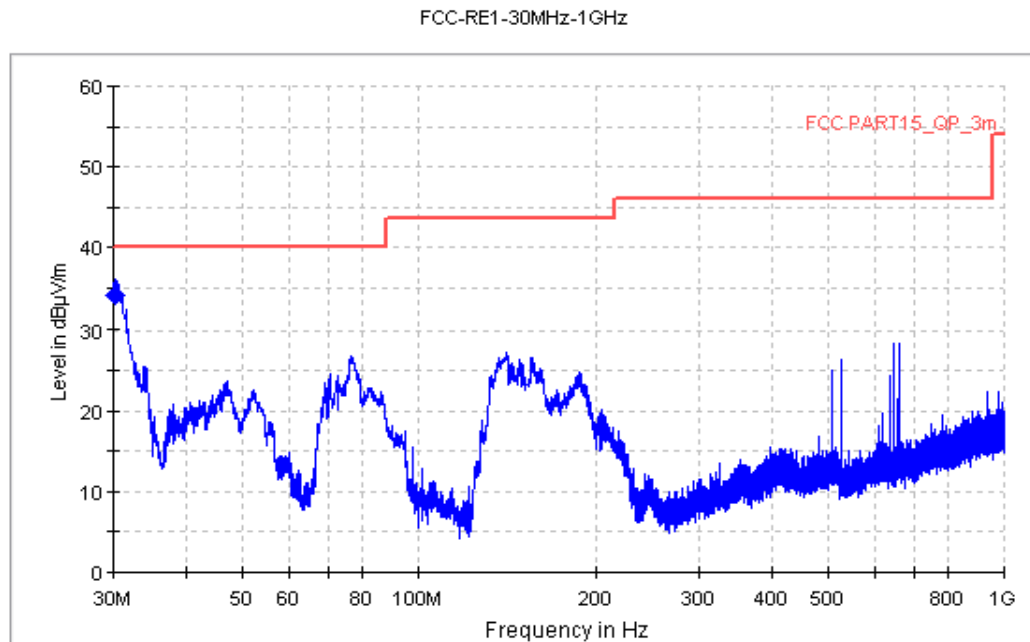


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.183750	34.0	V	-36.5	6.0	40.0

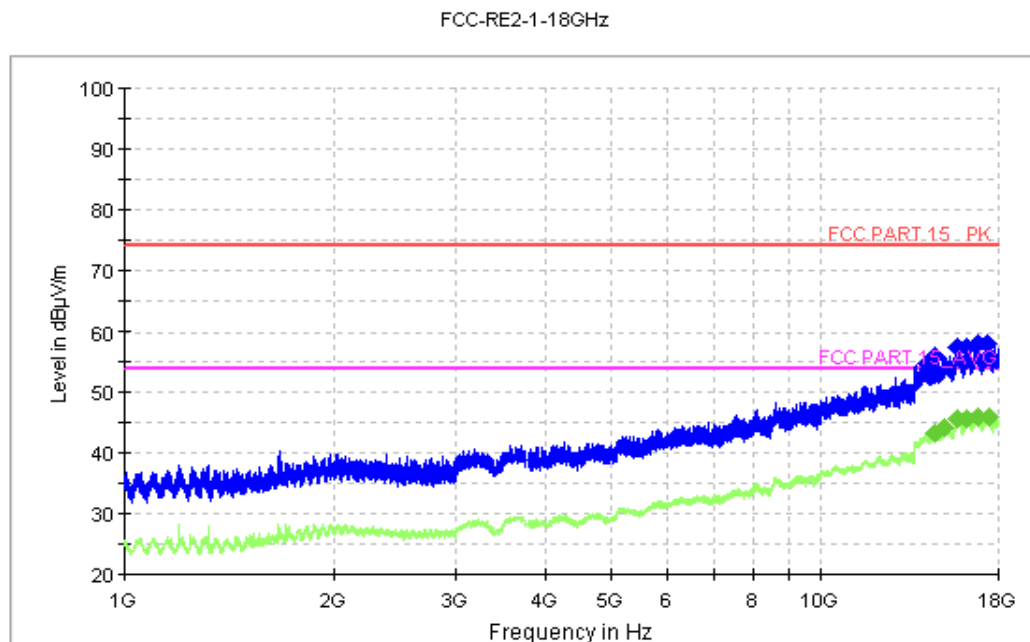


Figure A.14 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 8

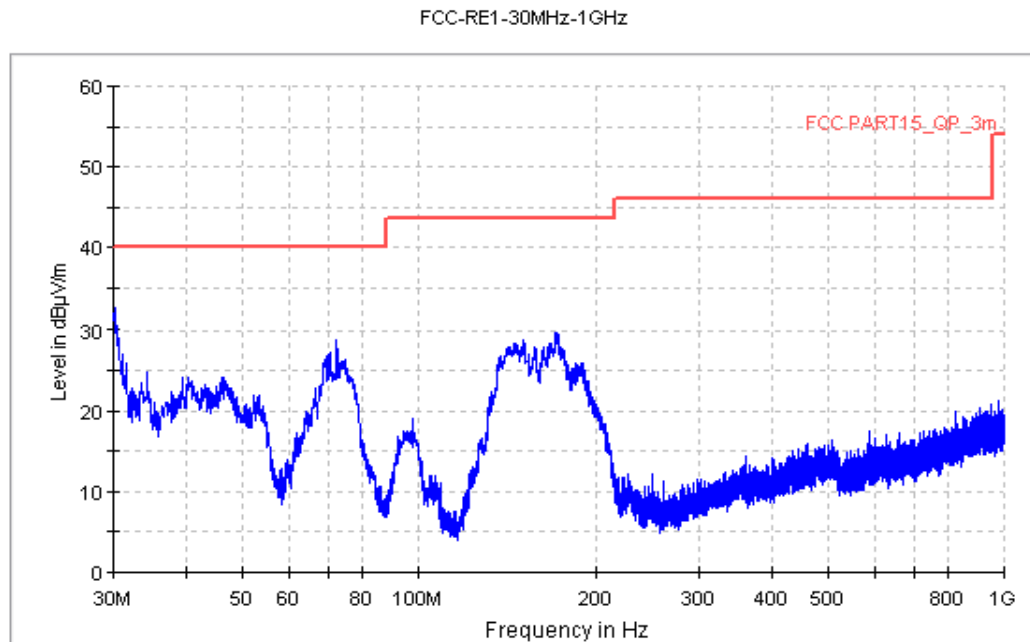


Figure A.15 Radiated Emission from 30MHz to 1GHz

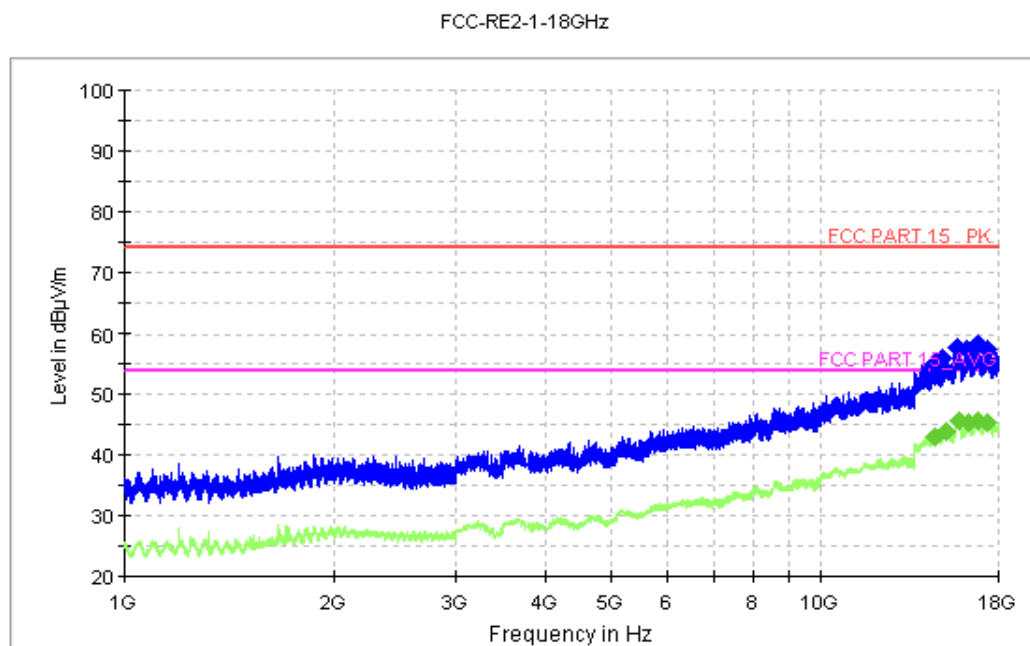


Figure A.16 Radiated Emission from 1GHz to 18GHz

GPS mode: Set 8

Normal RE_30M-1GHz_10m

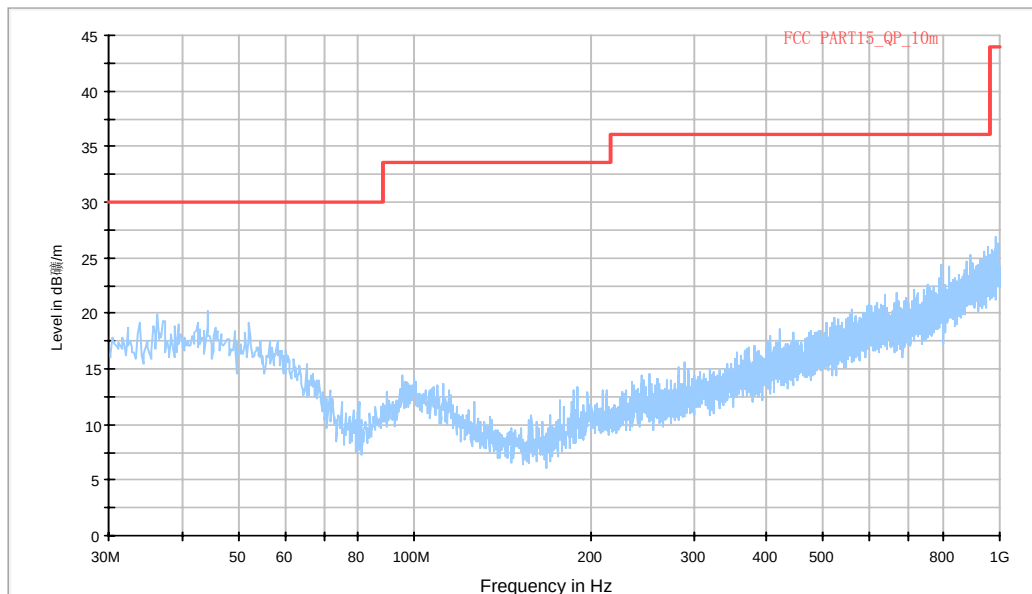


Figure A.17 Radiated Emission from 30MHz to 1GHz

Normal RE_1G-18GHz_directly

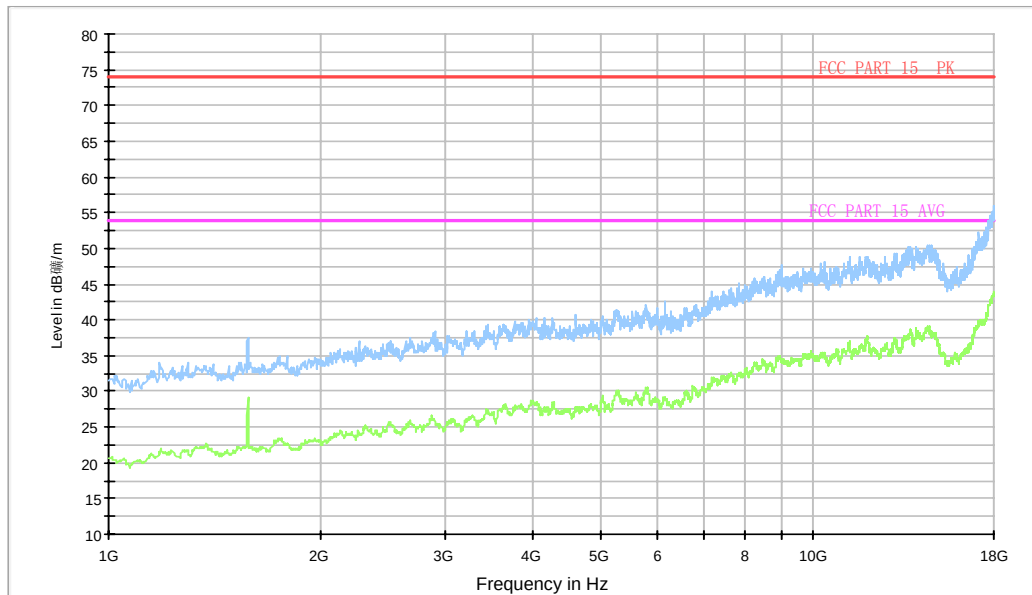


Figure A.18 Radiated Emission from 1GHz to 18GHz

USB mode: Set.9

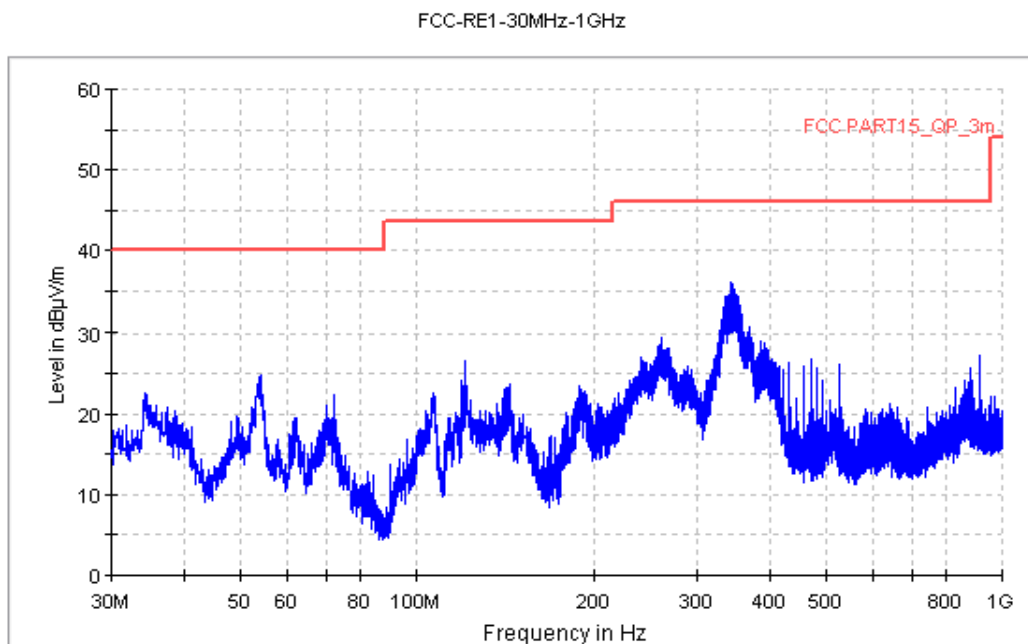


Figure A.19 Radiated Emission from 30MHz to 1GHz

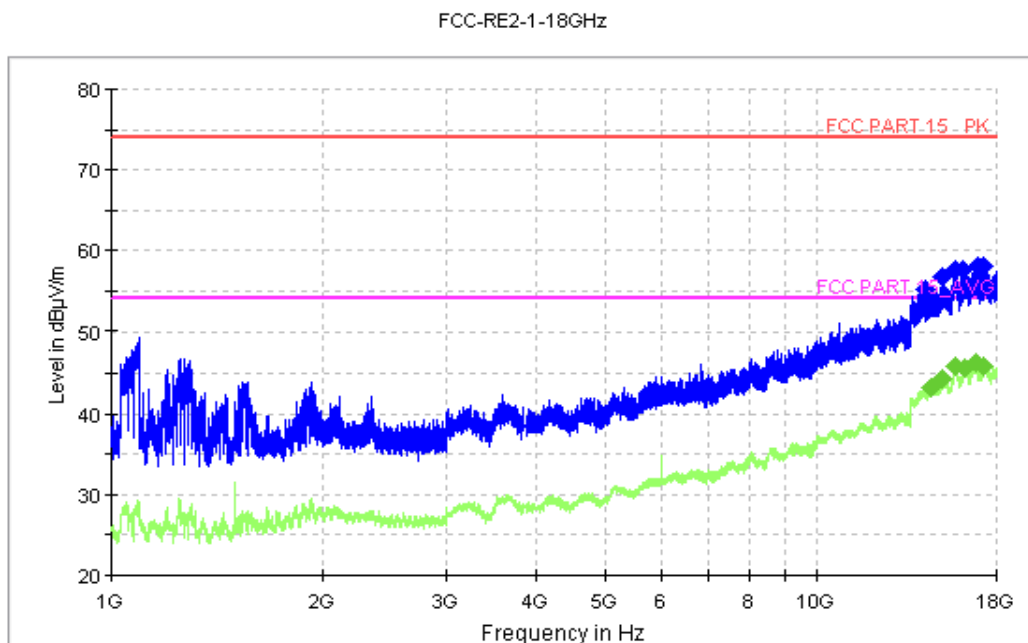


Figure A.20 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission (§15.107(a))**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 and charging 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

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	Sweep Time(s)
9kHz	1

CE Measurement uncertainty: 2.7 dB (K=2)

A.2.5 Measurement Results

Charging mode:Set.1

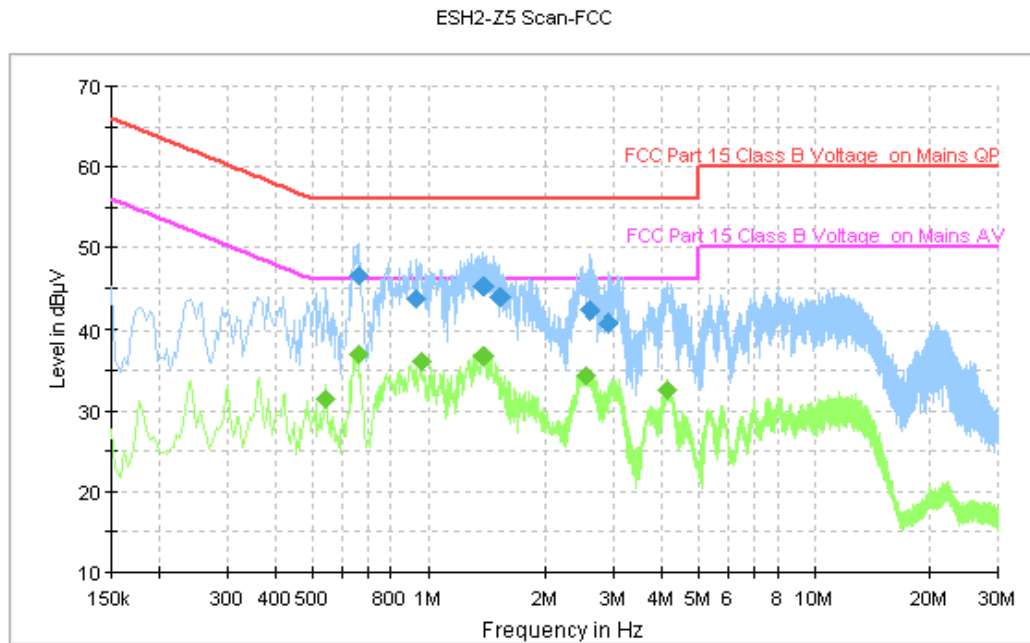


Figure A.21 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.658000	46.6	GND	L1	10.0	9.4	56.0
0.934000	43.7	GND	L1	10.1	12.3	56.0
1.386000	45.3	GND	L1	10.1	10.7	56.0
1.538000	43.9	GND	L1	10.1	12.1	56.0
2.606000	42.2	GND	L1	10.2	13.8	56.0
2.898000	40.8	GND	L1	10.1	15.2	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.542000	31.6	GND	L1	10.1	14.4	46.0
0.658000	37.0	GND	L1	10.0	9.0	46.0
0.958000	36.0	GND	L1	10.1	10.0	46.0
1.386000	36.8	GND	L1	10.1	9.2	46.0
2.538000	34.3	GND	L1	10.2	11.7	46.0
4.126000	32.6	GND	L1	10.2	13.4	46.0

Charging mode:Set.2

ESH2-Z5 Scan-FCC

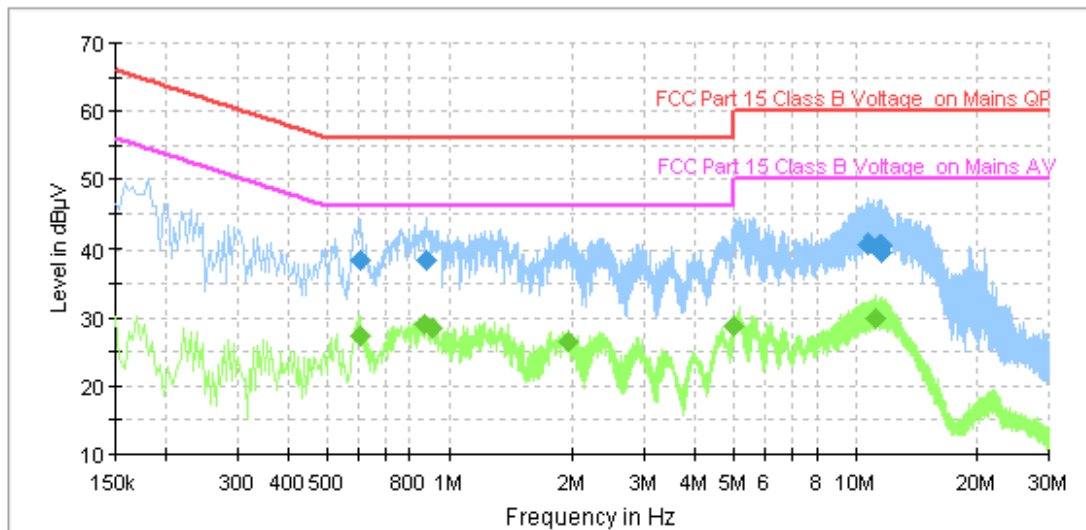


Figure A.22 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.606000	38.5	GND	L1	10.0	17.5	56.0
0.882000	38.5	GND	L1	10.1	17.5	56.0
10.770000	40.8	GND	L1	10.3	19.2	60.0
11.406000	40.5	GND	L1	10.3	19.5	60.0
11.530000	40.5	GND	L1	10.3	19.5	60.0
11.610000	39.6	GND	L1	10.3	20.4	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.606000	27.4	GND	L1	10.0	18.6	46.0
0.874000	29.0	GND	L1	10.1	17.0	46.0
0.914000	28.4	GND	L1	10.1	17.6	46.0
1.954000	26.5	GND	L1	10.1	19.5	46.0
4.998000	28.7	GND	L1	10.2	17.3	46.0
11.270000	29.9	GND	L1	10.3	20.1	50.0

Charging mode:Set.3

ESH2-Z5 Scan-FCC

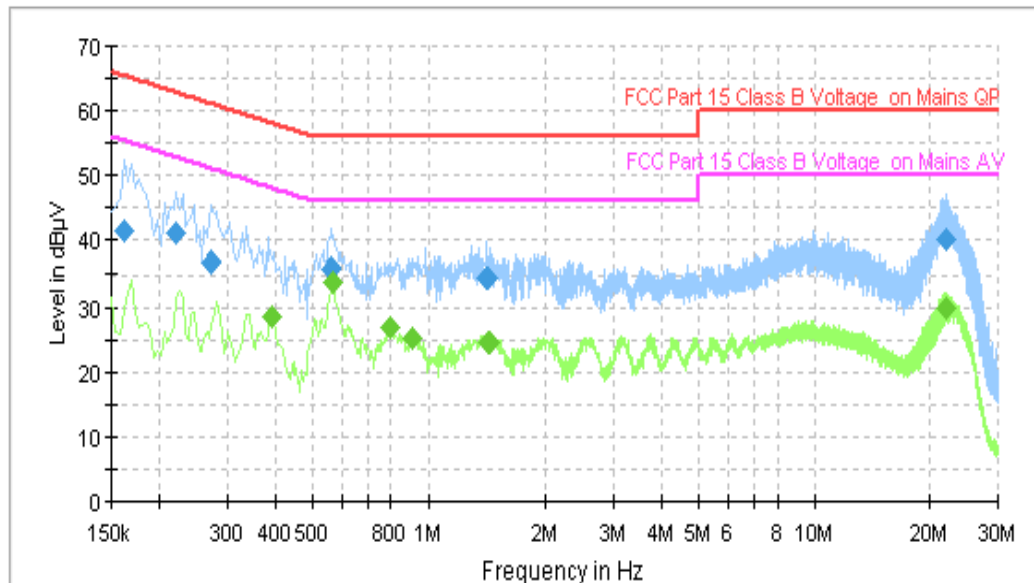


Figure A.23 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.162000	41.6	GND	L1	10.0	23.7	65.4
0.222000	41.0	GND	L1	10.0	21.7	62.7
0.274000	36.9	GND	L1	10.0	24.1	61.0
0.562000	35.7	GND	L1	10.1	20.3	56.0
1.414000	34.4	GND	L1	10.1	21.6	56.0
21.906000	40.1	GND	L1	10.6	19.9	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.394000	28.6	GND	N	10.0	19.3	48.0
0.566000	33.9	GND	N	10.1	12.1	46.0
0.794000	27.0	GND	N	10.1	19.0	46.0
0.914000	25.2	GND	N	10.1	20.8	46.0
1.426000	24.4	GND	N	10.1	21.6	46.0
22.122000	30.0	GND	L1	10.6	20.0	50.0

Charging mode:Set.4

ESH2-Z5 Scan-FCC

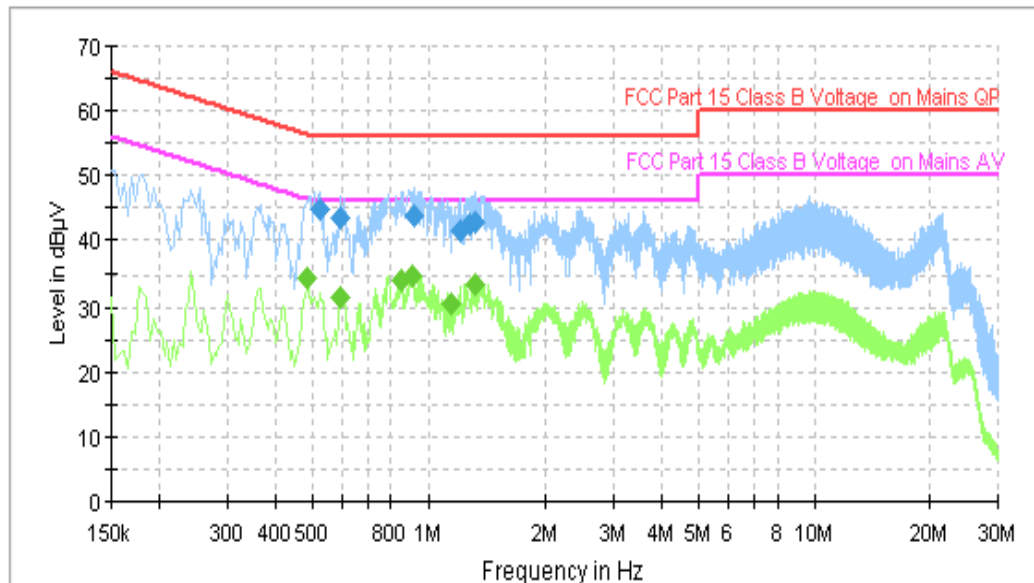


Figure A.24 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.526000	44.9	GND	L1	10.0	11.1	56.0
0.590000	43.5	GND	L1	10.1	12.5	56.0
0.918000	43.8	GND	L1	10.1	12.2	56.0
1.218000	41.5	GND	L1	10.1	14.5	56.0
1.278000	42.4	GND	L1	10.1	13.6	56.0
1.326000	42.9	GND	L1	10.1	13.1	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.486000	34.5	GND	L1	10.0	11.8	46.2
0.590000	31.6	GND	L1	10.1	14.4	46.0
0.850000	34.2	GND	L1	10.0	11.8	46.0
0.910000	34.9	GND	L1	10.1	11.1	46.0
1.150000	30.4	GND	L1	10.1	15.6	46.0
1.326000	33.4	GND	L1	10.1	12.6	46.0

Charging mode:Set.5

ESH2-Z5 Scan-FCC

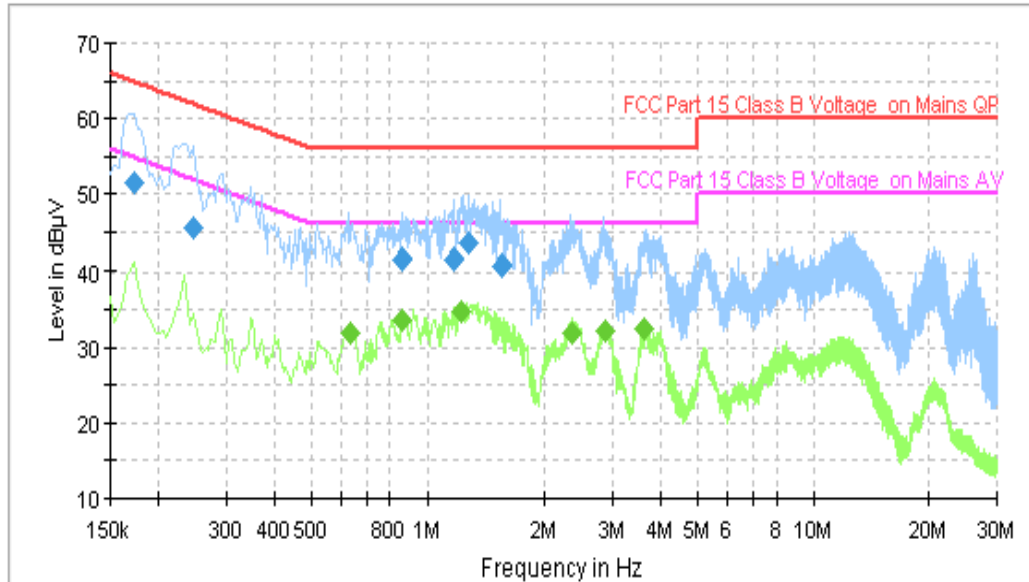


Figure A.25 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	51.6	GND	L1	10.0	13.1	64.8
0.246000	45.7	GND	L1	10.0	16.2	61.9
0.862000	41.4	GND	N	10.1	14.6	56.0
1.170000	41.5	GND	N	10.1	14.5	56.0
1.286000	43.5	GND	N	10.1	12.5	56.0
1.542000	40.8	GND	N	10.1	15.2	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.630000	32.0	GND	N	10.0	14.0	46.0
0.862000	33.7	GND	N	10.1	12.3	46.0
1.230000	34.7	GND	N	10.1	11.3	46.0
2.362000	32.0	GND	N	10.2	14.0	46.0
2.866000	32.2	GND	N	10.1	13.8	46.0
3.618000	32.5	GND	N	10.2	13.5	46.0

Charging mode:Set.6

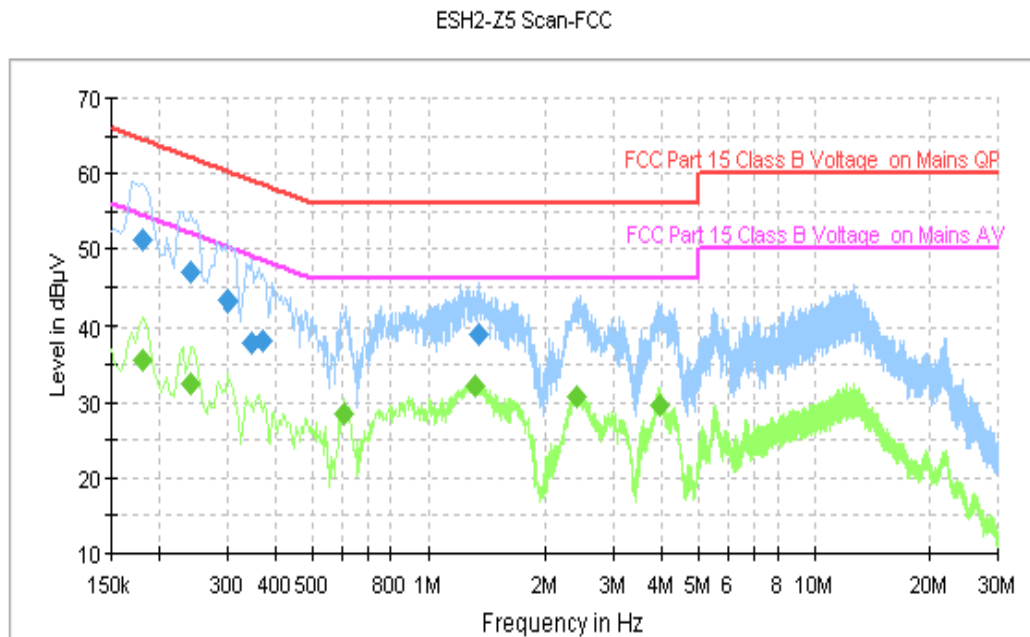


Figure A.26 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	51.2	GND	L1	10.0	13.2	64.4
0.242000	47.1	GND	L1	10.0	14.9	62.0
0.302000	43.2	GND	L1	10.0	17.0	60.2
0.346000	37.8	GND	L1	10.0	21.2	59.1
0.370000	38.2	GND	L1	10.0	20.3	58.5
1.354000	39.0	GND	L1	10.1	17.0	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	35.5	GND	L1	10.0	18.9	54.4
0.242000	32.5	GND	L1	10.0	19.5	52.0
0.606000	28.5	GND	L1	10.0	17.5	46.0
1.326000	32.1	GND	L1	10.1	13.9	46.0
2.402000	30.7	GND	L1	10.1	15.3	46.0
3.958000	29.7	GND	L1	10.2	16.3	46.0

Charging mode:Set.7

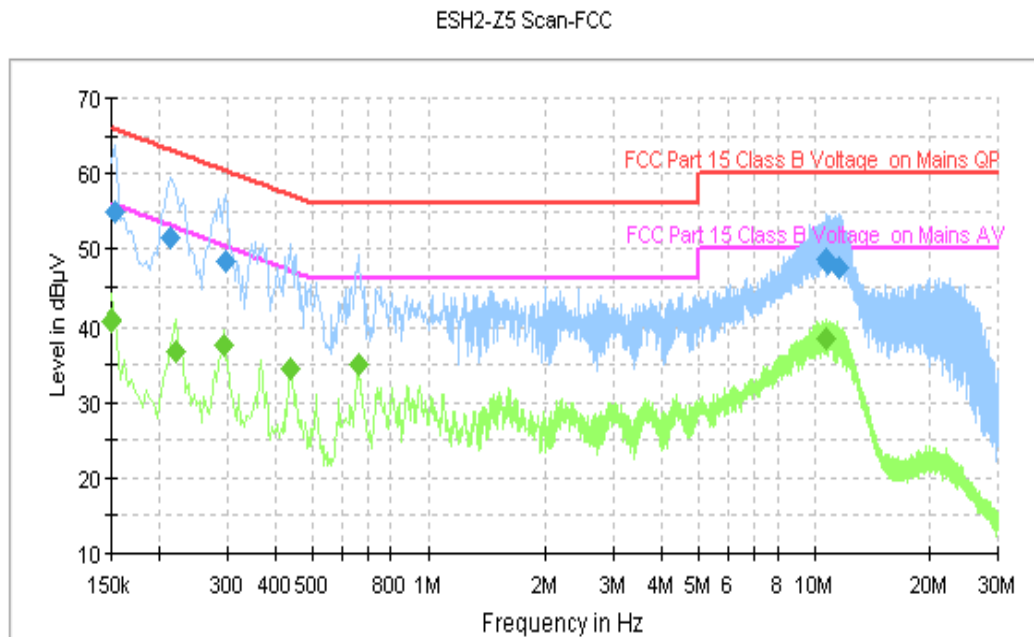


Figure A.27 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	54.9	GND	L1	10.0	10.9	65.8
0.214000	51.5	GND	L1	10.0	11.6	63.0
0.298000	48.5	GND	L1	10.0	11.8	60.3
10.670000	48.6	GND	L1	10.4	11.4	60.0
10.870000	48.1	GND	L1	10.3	11.9	60.0
11.602000	47.4	GND	L1	10.3	12.6	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	40.7	GND	L1	10.0	15.3	56.0
0.222000	36.9	GND	L1	10.0	15.9	52.7
0.294000	37.6	GND	L1	10.0	12.8	50.4
0.438000	34.4	GND	L1	10.0	12.7	47.1
0.658000	35.1	GND	L1	10.0	10.9	46.0
10.770000	38.4	GND	L1	10.3	11.6	50.0

Charging mode:Set.8

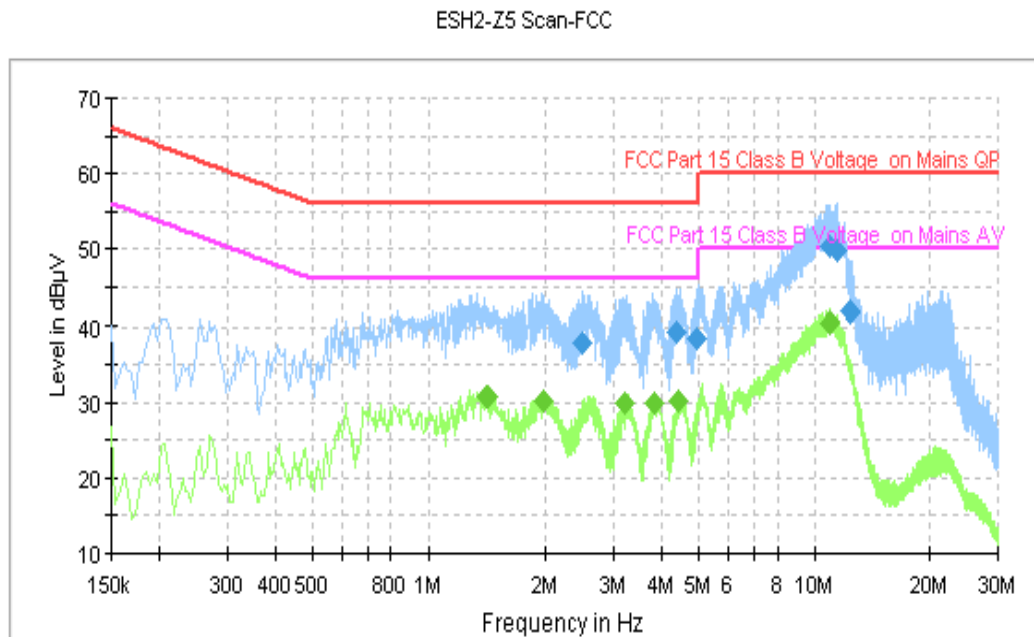


Figure A.28 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.502000	37.9	GND	L1	10.2	18.1	56.0
4.378000	39.3	GND	L1	10.2	16.7	56.0
4.934000	38.5	GND	L1	10.2	17.5	56.0
10.914000	50.5	GND	L1	10.3	9.5	60.0
11.402000	49.9	GND	L1	10.3	10.1	60.0
12.414000	41.9	GND	L1	10.4	18.1	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.414000	30.9	GND	L1	10.1	15.1	46.0
1.974000	30.1	GND	L1	10.1	15.9	46.0
3.210000	29.9	GND	L1	10.2	16.1	46.0
3.826000	30.0	GND	L1	10.2	16.0	46.0
4.438000	30.1	GND	L1	10.2	15.9	46.0
10.922000	40.5	GND	L1	10.3	9.5	50.0

GPS mode:Set.8

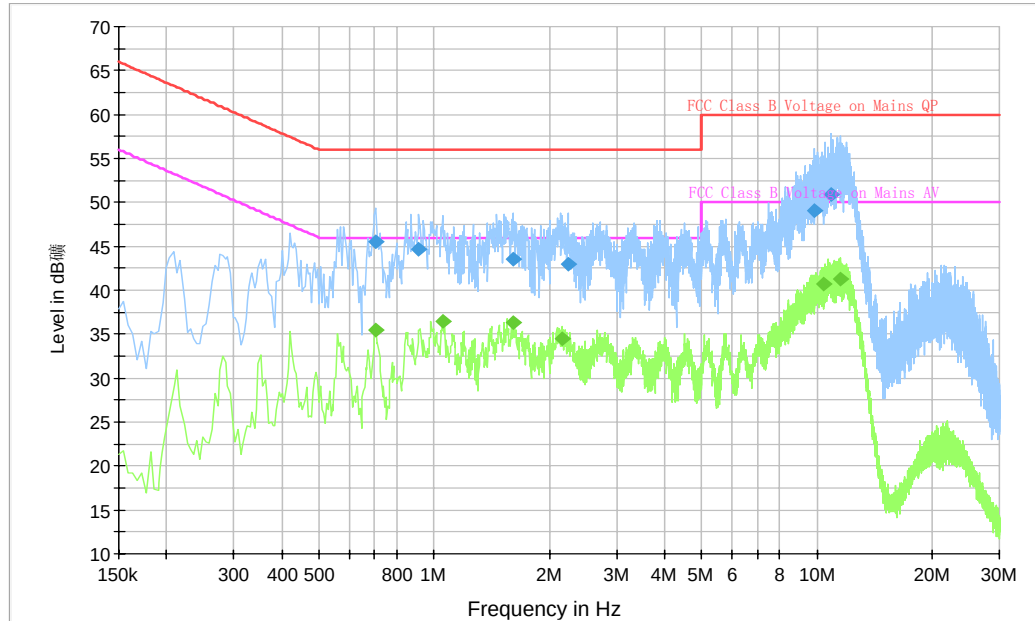


Figure A.29 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.703500	45.5	GND	L1	19.8	10.5	56.0
0.910500	44.6	GND	L1	19.7	11.4	56.0
1.608000	43.5	GND	L1	19.7	12.5	56.0
2.242500	42.9	GND	L1	19.6	13.1	56.0
9.825000	49.1	GND	L1	19.8	10.9	60.0
10.905000	50.9	GND	L1	19.8	9.1	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.703500	35.4	GND	L1	19.8	10.6	46.0
1.050000	36.5	GND	L1	19.7	9.5	46.0
1.617000	36.3	GND	L1	19.7	9.7	46.0
2.152500	34.5	GND	L1	19.6	11.5	46.0
10.396500	40.7	GND	L1	19.8	9.4	50.0
11.548500	41.3	GND	L1	19.9	8.7	50.0

USB mode: Set.9

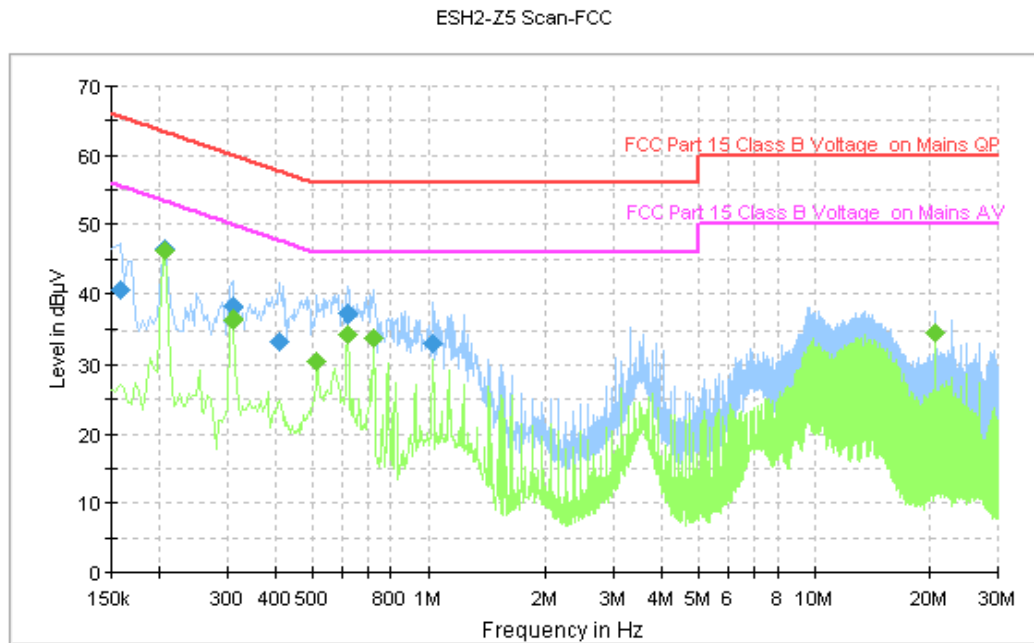


Figure A.30 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	40.6	GND	N	10.1	25.0	65.6
0.206000	46.5	GND	N	10.1	16.8	63.4
0.310000	38.2	GND	N	10.1	21.8	60.0
0.410000	33.4	GND	N	10.1	24.3	57.6
0.618000	37.3	GND	N	10.0	18.7	56.0
1.030000	33.1	GND	N	10.1	22.9	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.206000	46.2	GND	N	10.1	7.1	53.4
0.310000	36.5	GND	N	10.1	13.4	50.0
0.514000	30.6	GND	N	10.1	15.4	46.0
0.618000	34.4	GND	N	10.0	11.6	46.0
0.722000	33.7	GND	N	10.0	12.3	46.0
20.630000	34.6	GND	L1	10.6	15.4	50.0

END OF REPORT