



TESTREPORT

No.I18N00754-EMC

for

Huawei Technologies Co.,Ltd.

LTE CPE

Model Name: B612s-52d

FCC ID: QISB612S-52D

Hardware Version: WL1B612M04

Software Version: B612_UPDATE_11.196.00.00.00

Issued Date: 2018-05-28

Designation Number: CN1210

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 SAICT.

Test Laboratory:

Shenzhen Academy of Information and Communications Technology

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I18N00754-EMC	Rev.0	1st edition	2018-05-28

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1. Test Laboratory

1.1. TestingLocation

Company Name: Shenzhen Academy of Information and Communications Technology
Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China
Postal Code: 518026
Telephone: +86(0)755-33322000
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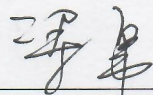
1.2. TestingEnvironment

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

1.3. Project data

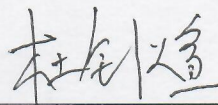
Testing Start Date: 2018-05-23
Testing End Date: 2018-05-28

1.4. Signature



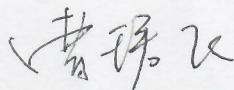
Liang Yong

(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 China

2.2. Manufacturer Information

Company Name: Huawei Technologies Co.,Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co.,
Ltd., Bantian, Longgang District Shenzhen China

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

3.1. About EUT

Description	LTE CPE
Model Name	B612s-52d
IC Number	QISB612S-52D

The Equipment Under Test (EUT)are a model of LTE CPE with integrated antenna.

The EUT supports GPRS service and EGPRS service.

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

Note: The LTE CPE B612s-52d manufactured by Huawei Technologies Co., Ltd . is a variant model based on B612s-51d for conformance test. According to the declaration of changes, Radiated Emission test needs to been performed. else results are cited from the initial model. The report number for initial model is I17N00107.

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI
EUT1	004401721195242

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

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	antenna	/
AE2	Travel charger	/
AE3	net cable	/
AE1		
Model	3dBi antenna	
AE2-1		
Model	HW-120100U01	
Manufacturer	Shenzhen Honor Electronic Co.,Ltd	
SN	A889E6H5K00584	
AE2-2		
Model	HW-120100U01	
Manufacturer	DONGGUAN SHILONG FUHUA ELECTRONIC CO.,LTD	
SN	U88905H5H04450	
AE3		
Model	/	
Manufacturer	/	

*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+AE2-1	Charging mode
Set.2	EUT1+ AE1+AE2-2	Charging mode
Set.3	EUT1+ AE1+AE2-1+AE3	USB mode
Set.4	EUT1+ AE1+AE2-2+AE3	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	10-1-2017 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. = 35°C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω
Normalised site attenuation (NSA)	<±4 dB, 3 m distance, from 30 to 1000 MHz

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. =20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-10000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω

Fully-anechoic chamber 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-18000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω
VoltageStandingWaveRatio (VSWR)	≤ 6 dB, from 1 to 18GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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	ESR7	101676	R&S	2018.11.29	1 year
2.	Spectrum Analyzer	FSV40	101192	R&S	2019.05.22	1 year
3.	BiLog Antenna	VULB9163	9163 329	SCHWARZBE CK	2020.02.27	3 years
4.	Horn Antenna	3117	00066577	ETS-lindgren	2019.04.05	3 years
5.	Universal Radio Communication Tester	CMU200	114545	R&S	2019.05.17	1 year
6.	PC	2OET-A00DC D	PF-010TM1	Lenovo	/	/
7.	Printer	P1008	VNF6C12491	HP	/	/
8.	Mouse	MOEUJUA	44NY517	Lenovo	/	/
9.	Chamber	FACT3-2.0	1285	ETS-Lindgren	2019.11.27	3 years

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:

Charging mode: The MS is synchronized to SS, and able to respond to paging messages and incoming call. An established call has been released. The MS is connected to a charger.

USB mode: The model of the PC is Lenovo 2OET-A00DCD, and the serial number of the PC is PF-010TM1. 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)

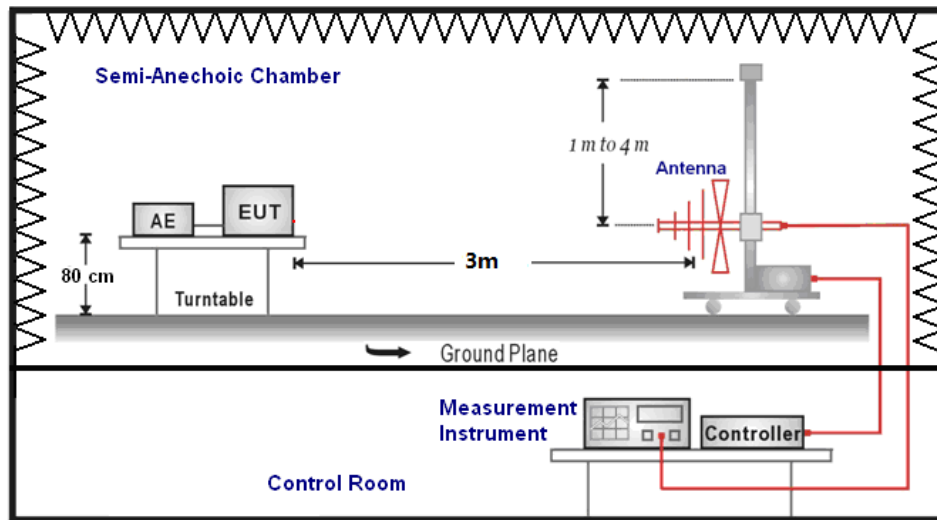
Frequency range (MHz)	Field strength limit (μV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

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

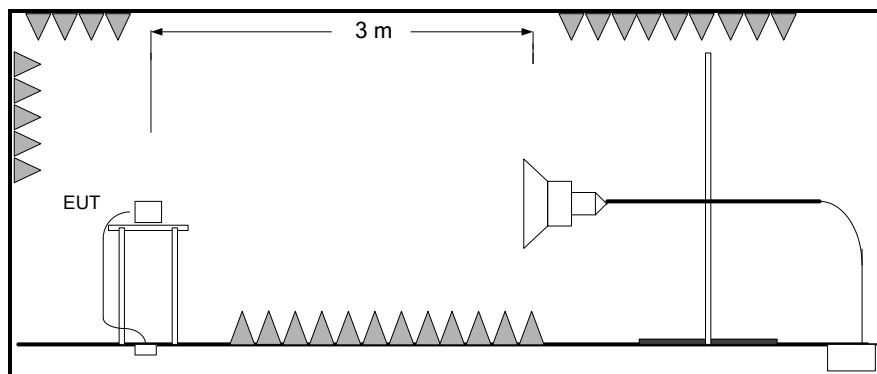
A.1.4 Test Condition

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

**A.1.5 Test set-up:
30MHz-1GHz**



1GHz-18GHz



A.1.6 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} : PathLoss

P_{Mea} : Measurement result on receiver.

Note: the result contains vertical part and Horizontal part

RE Measurement uncertainty: 30M-1GHz: 4.90dB (k=2);
1GHz-18GHz: 5.32 dB (k=2)

Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P_{Mea} (dBμV)
14026.5	56.86	74	17.14	V	19.4	37.46
14685	57.56	74	16.44	V	20.7	36.86
15554	57.81	74	16.19	V	20.8	37.01
15635.5	59.43	74	14.57	H	21.3	38.13
16761.5	59.18	74	14.82	H	22	37.18
17997.5	58.15	74	15.85	V	23	35.15

Set.1 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P_{Mea} (dBμV)
13967.5	45.28	54	8.72	V	19.6	25.68
14573.5	46.45	54	7.55	H	20.5	25.95
15576.5	46.65	54	7.35	H	21.1	25.55
15653.5	47.41	54	6.59	V	21.3	26.11
16648.5	47.3	54	6.7	H	22.4	24.9
17700	46.55	54	7.45	V	22.9	23.65

Set.2 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dBμV)
13957	56.87	74	17.13	H	19.7	37.17
14642	57.87	74	16.13	H	20.6	37.27
15022	57.25	74	16.75	V	20	37.25
15660	58.75	74	15.25	H	21.3	37.45
16584.5	58.8	74	15.2	V	22.7	36.1
17949.5	57.6	74	16.4	H	23.5	34.1

Set.2 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dBμV)
14011	45.25	54	8.75	V	19.5	25.75
14560	46.16	54	7.84	V	20.4	25.76
15575	46.2	54	7.8	H	21	25.2
15649.5	47.28	54	6.72	H	21.3	25.98
16591.5	47.19	54	6.81	H	22.8	24.39
17694	46.37	54	7.63	V	22.9	23.47

Set.3 USB mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dBμV)
13953	56.85	74	17.15	H	19.7	37.15
14594	57.41	74	16.59	H	20.5	36.91
15475	58.05	74	15.95	V	20.2	37.85
15648.5	59.17	74	14.83	V	21.3	37.87
17051	59.82	74	14.18	V	22.2	37.62
17711.5	58.78	74	15.22	V	22.9	35.88

Set.3 USB mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dBμV)
13957	45.16	54	8.84	H	19.7	25.46
14559.5	46.08	54	7.92	H	20.4	25.68
15576.5	46.18	54	7.82	V	21.1	25.08
15676	47.25	54	6.75	H	21.3	25.95
16611.5	47.49	54	6.51	V	22.8	24.69
17702	46.85	54	7.15	V	22.9	23.95

Set.4 USB mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dB μ V/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dB μ V)
13951.5	56.57	74	17.43	H	19.7	36.87
14625	57.45	74	16.55	V	20.6	36.85
15576.5	57.79	74	16.21	H	21.1	36.69
16254.5	58.44	74	15.56	V	22	36.44
16579.5	58.75	74	15.25	H	22.7	36.05
17457	58.65	74	15.35	H	22.1	36.55

Set.4 USB mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dB μ V/m)	Margin(dB)	Polarity	ARpl (dB)	PMea (dB μ V)
13973.5	45.12	54	8.88	H	19.6	25.52
14687.5	46.04	54	7.96	H	20.7	25.34
15575	46.13	54	7.87	H	21	25.13
15646.5	47.04	54	6.96	H	21.3	25.74
16633	47.1	54	6.9	H	22.5	24.6
17700.5	46.36	54	7.64	V	22.9	23.46

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

Charging mode: Set 1

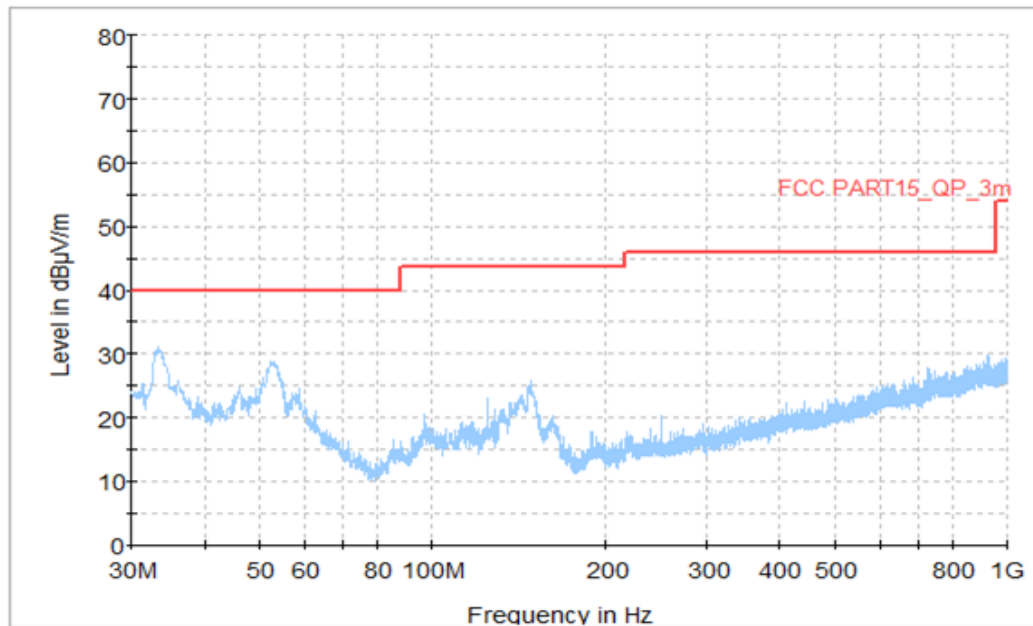


Figure A.1 Radiated Emission from 30MHz to 1GHz

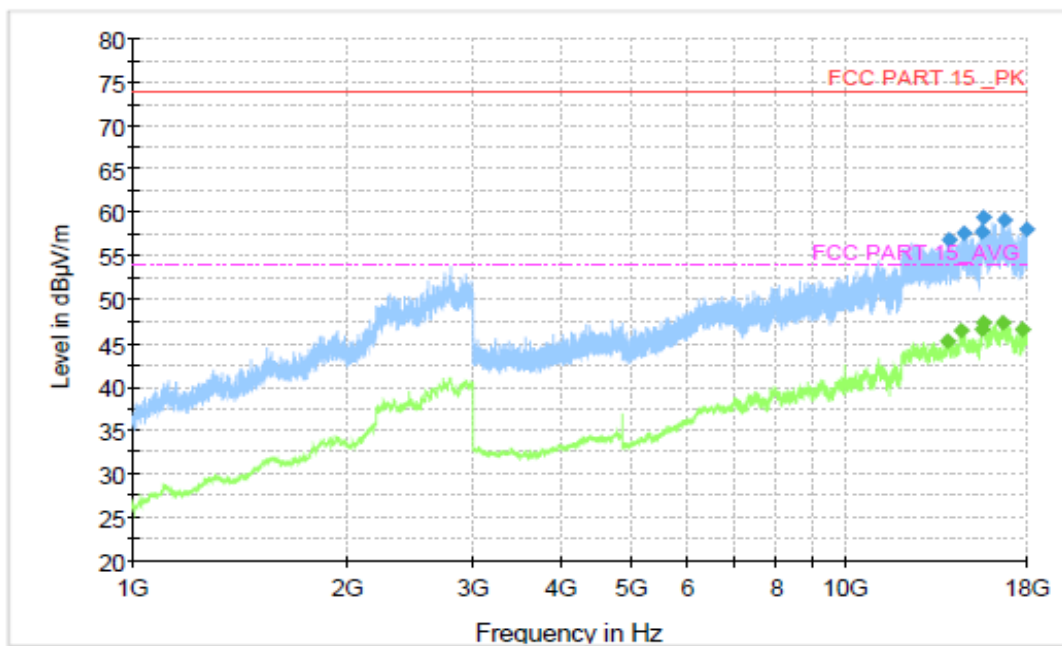


Figure A.2 Radiated Emission from 1GHz to 18GHz

Charging mode: Set 2

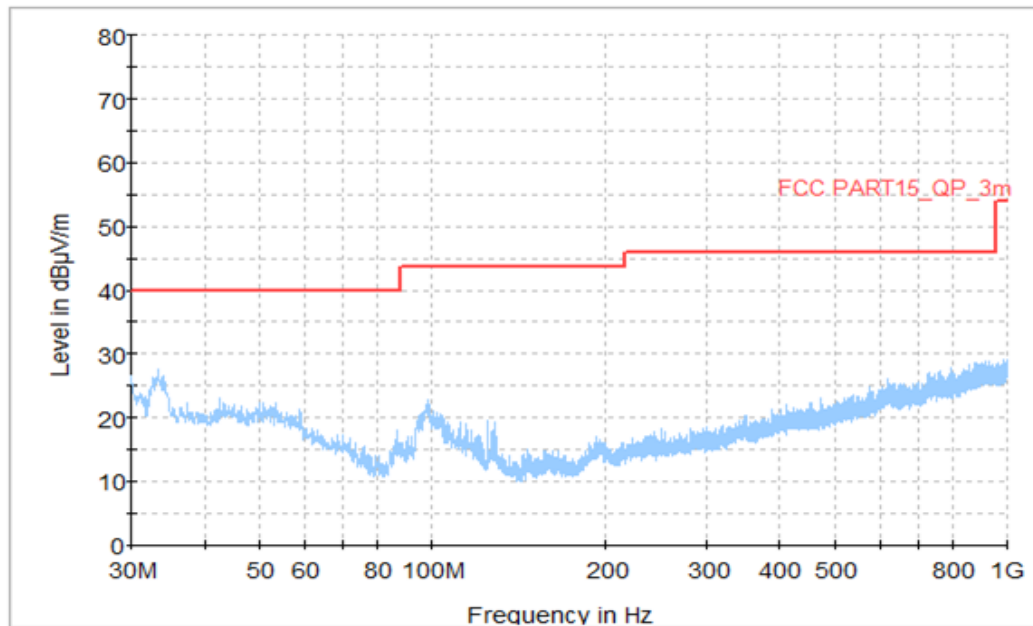


Figure A.3 Radiated Emission from 30MHz to 1GHz

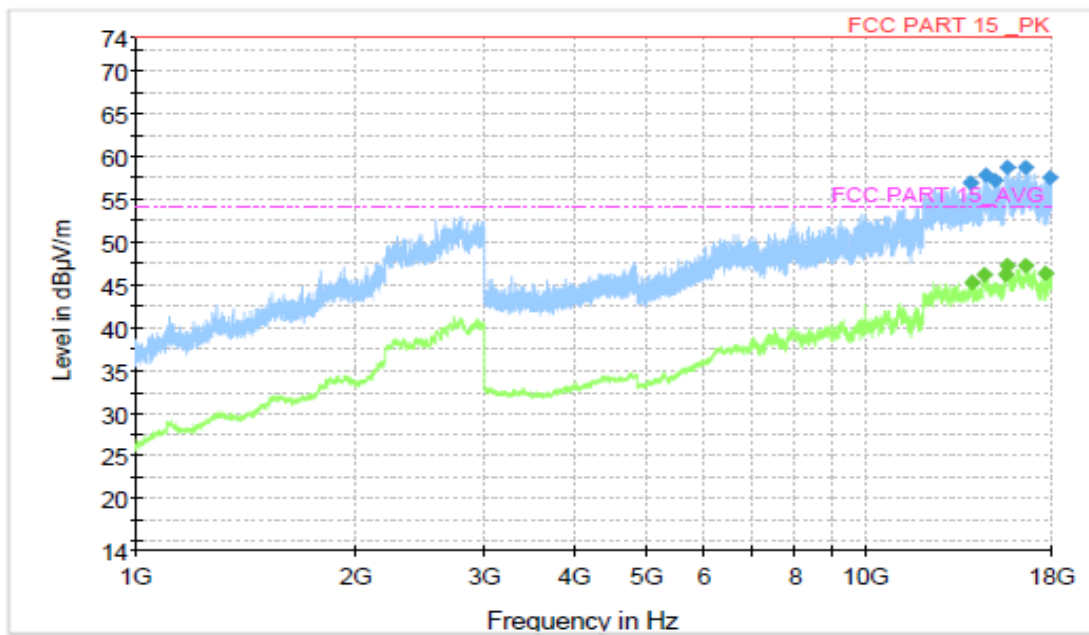


Figure A.4 Radiated Emission from 1GHz to 18GHz

USB mode: Set 3

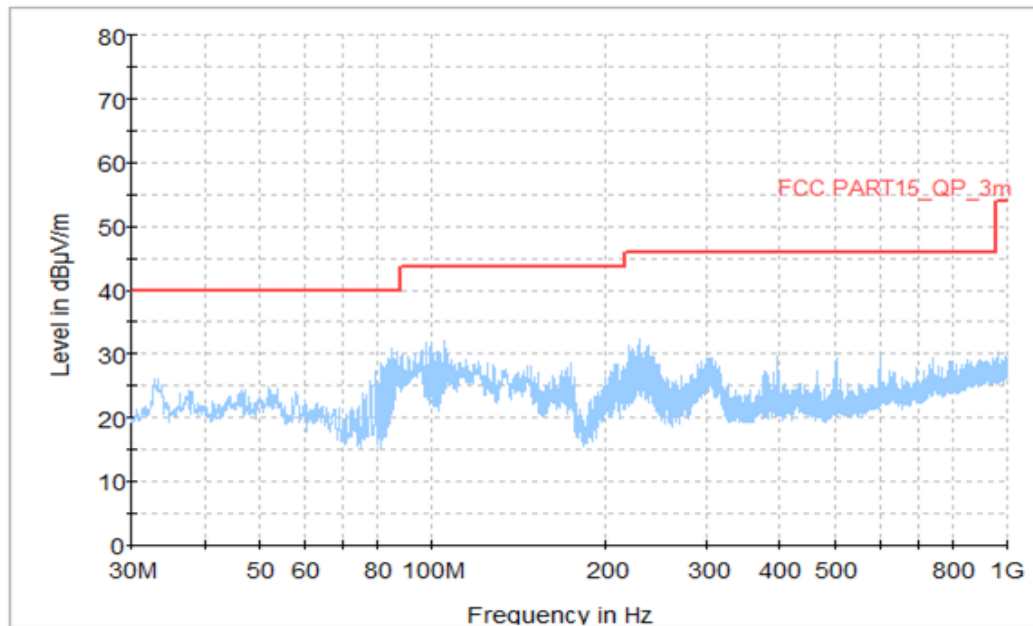


Figure A.5 Radiated Emission from 30MHz to 1GHz

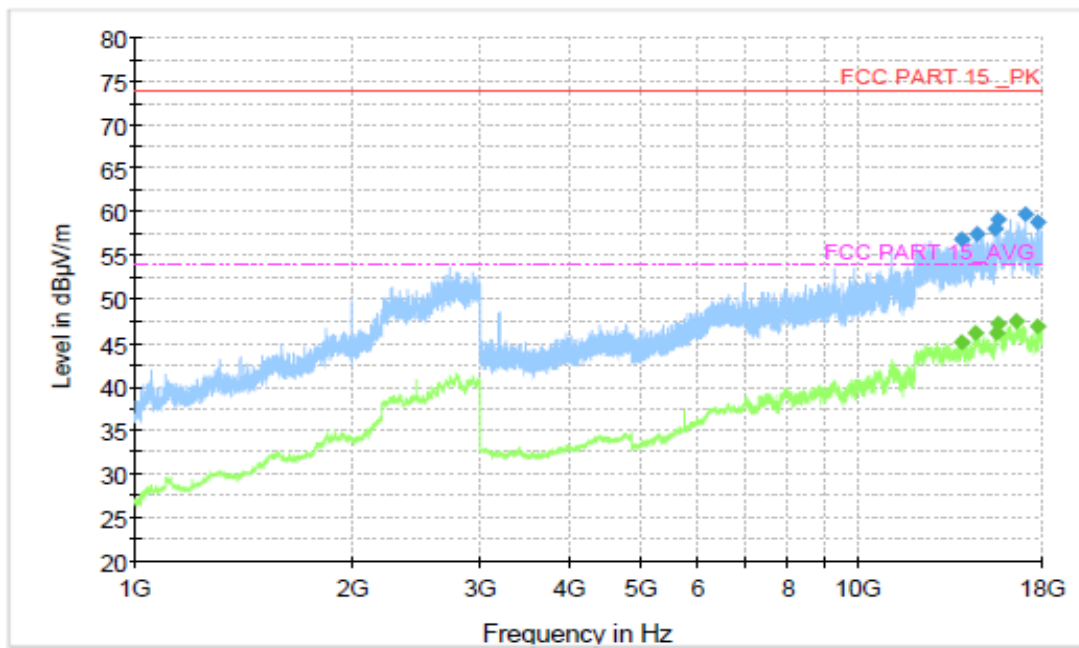


Figure A.6 Radiated Emission from 1GHz to 18GHz

USB mode: Set 4

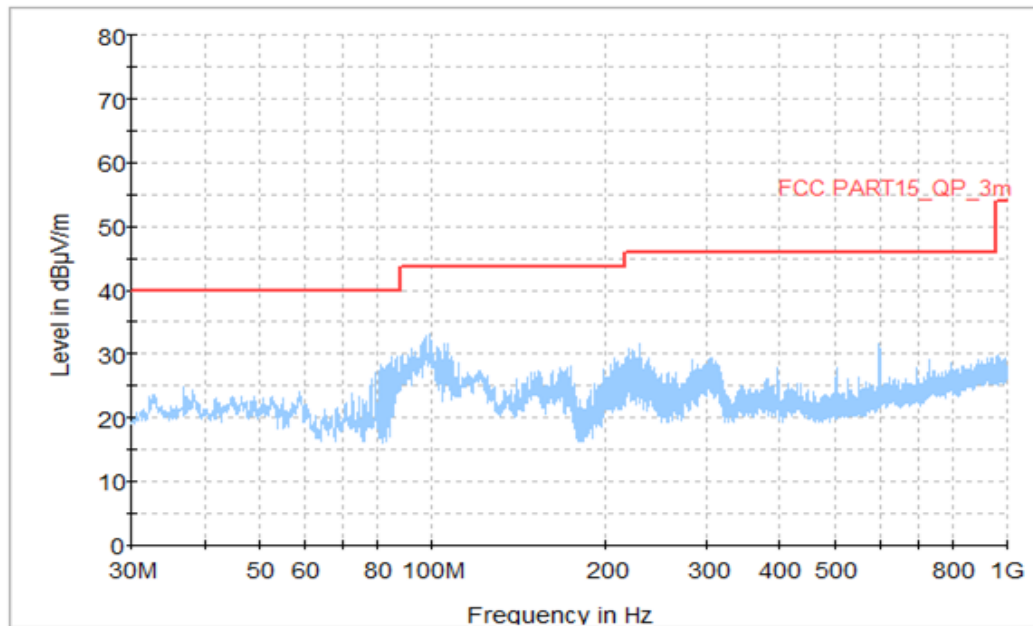


Figure A.7 Radiated Emission from 30MHz to 1GHz

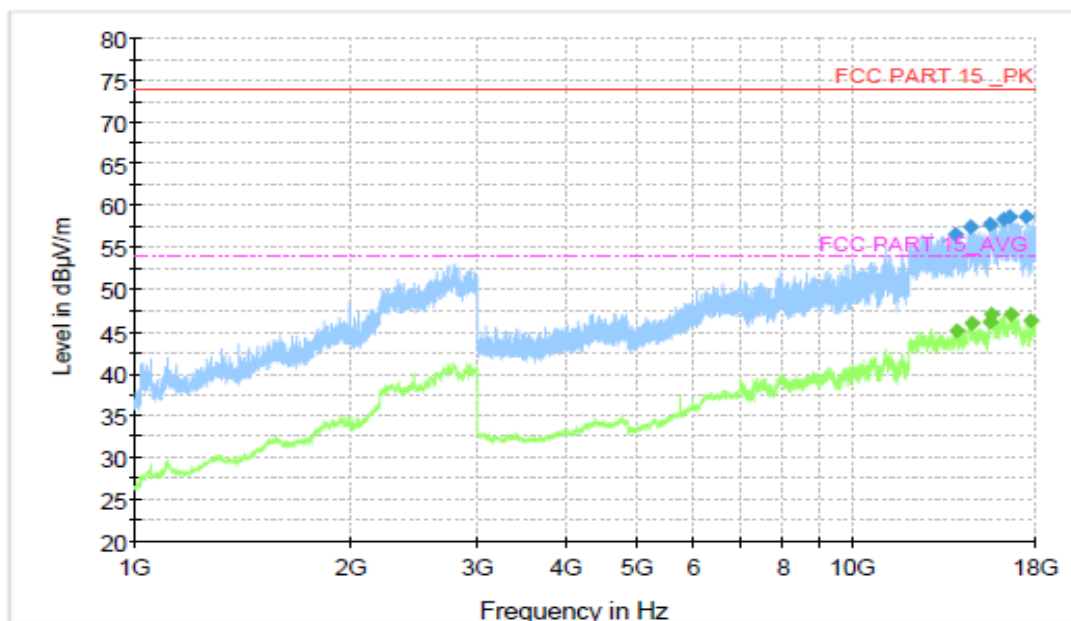


Figure A.8 Radiated Emission from 1GHz to 18GHz

END OF REPORT