



# TEST REPORT

## No. I16Z40045-EMC01

for

**TCL Communication Ltd**

**LTE / UMTS / GSM mobile phone**

**Model Name: 5045A**

**FCC ID: 2ACCJH036**

with

**Hardware Version: PIO**

**Software Version: 7ED8**

**Issued Date: 2016-02-17**

**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: [ctl\\_terminals@catr.cn](mailto:ctl_terminals@catr.cn), website: [www.chinattl.com](http://www.chinattl.com)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I16Z40045-EMC01	Rev.0	1 <sup>st</sup> edition	2016-02-17

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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℃

Relative Humidity: 20-75%

### **1.3. Project data**

Testing Start Date: 2016-01-25

Testing End Date: 2016-01-25

### **1.4. Signature**



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**Zhang Hui**

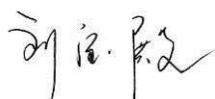
**(Prepared this test report)**



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**Qu Pengfei**

**(Reviewed this test report)**



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**Liu Baodian**

**Deputy Director of the laboratory**

**(Approved this test report)**

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: TCL Communication Ltd  
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China. 201203  
City: Shanghai  
Postal Code: 201203  
Country: P. R. China  
Contact Person: Gong Zhizhou  
Contact Email: zhizhou.gong@tcl.com  
Telephone: 0086-21-31363544  
Fax: 0086-21-61460602

### **2.2. Manufacturer Information**

Company Name: TCL Communication Ltd  
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China. 201203  
City: Shanghai  
Postal Code: 201203  
Country: P. R. China  
Telephone: 0086-21-31363544  
Fax: 0086-21-61460602

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

#### 3.1. About EUT

Description	LTE / UMTS / GSM mobile phone
Model Name	5045A
FCC ID	2ACCJH036
Extreme vol. Limits	3.5VDC to 4.2VDC (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
EUT3	014603000000310	PIO	7ED8

\*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	/	/
AE2	Battery	/	/
AE12	Battery	/	/
AE3	USB Cable	/	15TCT-DC-0137
AE4	USB Cable	/	16TCT-DC-0007
AE5	USB Cable	/	/
AE6	USB Cable	/	/
AE7	Travel charger	/	/
AE8	Travel charger	/	/
AE9	Travel charger	/	/
AE10	Travel charger	/	/
AE11	Travel charger	/	/

#### AE1

Model	CAB2000010C1
Manufacturer	BYD
Capacitance	2000mAh
Nominal voltage	3.8V

#### AE2



Model	CAB2000041C7
Manufacturer	VEKEN
Capacitance	2000mAh
Nominal voltage	3.8V

AE12

Model	CAB2000013C2
Manufacturer	SCUD
Capacitance	2000mAh

AE3

Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	/

AE4

Model	CDA3122005C8
Manufacturer	PUAN
Length of cable	/

AE5

Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	/

AE6

Model	CDA3122002C8
Manufacturer	PUAN
Length of cable	/

AE7

Model	CBA3068AG0C1
Manufacturer	BYD
Length of cable	/

AE8

Model	CBA3068AG0C4
Manufacturer	Aohai
Length of cable	/

AE9

Model	CBA3068AG0C5
Manufacturer	PUAN
Length of cable	/

AE10

Model	CBA0066AG0C1
Manufacturer	BYD
Length of cable	120cm

AE11



Model	CBA0066AG0C3
Manufacturer	YINGJU
Length of cable	124cm

\*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	EUT3 + AE1 + AE3 + AE7	Charging mode
Set.2	EUT3 + AE1 + AE3 + AE8	Charging mode
Set.3	EUT3 + AE1 + AE3 + AE9	Charging mode
Set.4	EUT3 + AE1 + AE10	Charging mode
Set.5	EUT3 + AE1 + AE11	Charging mode
Set.6	EUT3 + AE1 + AE3	USB mode
Set.7	EUT3 + AE1 + AE4	USB mode

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

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

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	10-1-13 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 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	A/B/C/D	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 FCC rules	Clause in IC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	Section 5	B.1	P	A
2	Conducted Emission	15.107(a)	Section 5	B.2	P	A

**7. Test Equipments Utilized**

NO.	Description	TYPE	SERIES NUMBER	MANUFACTUR E	CAL DUE DATE	CALIBRATI ON INTERVAL
1	Test Receiver	ESU26	100235	R&S	2016-03-02	1 year
2	Universal Radio Communication Tester	CMU200	109914	R&S	2016-03-26	1 year
3	Universal Radio Communication Tester	CMW500	143008	R&S	2016-12-09	1 year
4	LISN	ENV216	101200	R&S	2016-07-07	1 year
5	EMI Antenna	VULB 9163	9163-514	Schwarzbeck	2017-11-24	3 years
6	EMI Antenna	3115	6914	ETS-Lindgren	2016-12-15	3 years
7	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
8	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
9	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
10	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

## **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 3/10 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 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 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.

#### **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

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : 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 $\mu\text{V}/\text{m}$ )	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu\text{V}$ )	Polarity
17909.050	51.0	-18.5	45.6	23.900	HORIZONTAL
17997.450	50.6	-17.7	45.6	22.700	HORIZONTAL
17859.750	50.6	-18.5	45.6	23.500	VERTICAL
17915.000	50.5	-17.7	45.6	22.600	VERTICAL
17869.950	50.5	-18.5	45.6	23.400	HORIZONTAL
17843.600	50.4	-18.5	45.6	23.300	HORIZONTAL

##### Charging Mode/Peak detector

Frequency(MHz)	Result(dB $\mu\text{V}/\text{m}$ )	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu\text{V}$ )	Polarity
17935.400	61.1	-17.7	45.6	33.200	HORIZONTAL
17920.950	61.1	-17.7	45.6	33.200	HORIZONTAL
17916.700	61.0	-17.7	45.6	33.100	VERTICAL
17751.800	60.9	-18.5	45.6	33.800	HORIZONTAL
17919.250	60.7	-17.7	45.6	32.800	VERTICAL
17942.200	60.7	-17.7	45.6	32.800	HORIZONTAL

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

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17947.300	51.1	-17.7	45.6	23.200	HORIZONTAL
17953.250	50.6	-17.7	45.6	22.700	VERTICAL
17971.100	50.6	-17.7	45.6	22.700	VERTICAL
17993.200	50.5	-17.7	45.6	22.600	HORIZONTAL
17835.100	50.5	-18.5	45.6	23.400	HORIZONTAL
17955.800	50.4	-17.7	45.6	22.500	HORIZONTAL

**Charging Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17484.050	61.3	-19.2	41.5	39.000	HORIZONTAL
17993.200	60.9	-17.7	45.6	33.000	HORIZONTAL
17637.050	60.8	-18.9	45.6	34.100	VERTICAL
17912.450	60.6	-18.5	45.6	33.500	VERTICAL
17726.300	60.5	-18.9	45.6	33.800	HORIZONTAL
17864.850	60.5	-18.5	45.6	33.400	HORIZONTAL

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

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17989.800	51.4	-17.7	45.6	23.500	HORIZONTAL
17873.350	51.0	-18.5	45.6	23.900	HORIZONTAL
17978.750	50.8	-17.7	45.6	22.900	HORIZONTAL
17956.650	50.6	-17.7	45.6	22.700	HORIZONTAL
17941.350	50.5	-17.7	45.6	22.600	VERTICAL
17974.500	50.5	-17.7	45.6	22.600	VERTICAL

**Charging Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17961.750	61.5	-17.7	45.6	33.600	HORIZONTAL
17989.800	61.3	-17.7	45.6	33.400	HORIZONTAL
17881.000	61.1	-18.5	45.6	34.000	HORIZONTAL
17602.200	61.1	-18.9	45.6	34.400	HORIZONTAL
17799.400	60.9	-18.5	45.6	33.800	VERTICAL
17439.000	60.6	-19.2	41.5	38.300	VERTICAL



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

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17953.250	51.2	-17.7	45.6	23.300	HORIZONTAL
17932.850	51.1	-17.7	45.6	23.200	HORIZONTAL
17997.450	50.9	-17.7	45.6	23.000	VERTICAL
17977.900	50.9	-17.7	45.6	23.000	VERTICAL
17980.450	50.9	-17.7	45.6	23.000	VERTICAL
17983.850	50.8	-17.7	45.6	22.900	HORIZONTAL

**Charging Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17835.950	61.4	-18.5	45.6	34.300	HORIZONTAL
17950.700	60.9	-17.7	45.6	33.000	VERTICAL
17830.000	60.8	-18.5	45.6	33.700	HORIZONTAL
17991.500	60.6	-17.7	45.6	32.700	HORIZONTAL
17799.400	60.5	-18.5	45.6	33.400	VERTICAL
17981.300	60.5	-17.7	45.6	32.600	HORIZONTAL

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

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17960.900	51.0	-17.7	45.6	23.100	VERTICAL
17966.000	50.7	-17.7	45.6	22.800	HORIZONTAL
17886.100	50.6	-18.5	45.6	23.500	VERTICAL
17888.650	50.6	-18.5	45.6	23.500	HORIZONTAL
17997.450	50.6	-17.7	45.6	22.700	VERTICAL
17990.650	50.6	-17.7	45.6	22.700	HORIZONTAL

**Charging Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17503.600	61.4	-19.2	45.6	35.000	HORIZONTAL
17945.600	61.0	-17.7	45.6	33.100	HORIZONTAL
17970.250	60.9	-17.7	45.6	33.000	HORIZONTAL
17960.900	60.8	-17.7	45.6	32.900	VERTICAL
17557.150	60.7	-19.2	45.6	34.300	VERTICAL
17954.100	60.7	-17.7	45.6	32.800	HORIZONTAL

**Measurement results for Set.6:**
**USB Mode/Average detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17876.750	51.3	-18.5	45.6	24.200	HORIZONTAL
17968.550	51.3	-17.7	45.6	23.400	HORIZONTAL
17988.950	50.6	-17.7	45.6	22.700	VERTICAL
17994.050	50.6	-17.7	45.6	22.700	VERTICAL
17959.200	50.5	-17.7	45.6	22.600	HORIZONTAL
17929.450	50.5	-17.7	45.6	22.600	VERTICAL

**USB Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17909.050	61.1	-18.5	45.6	34.000	HORIZONTAL
17886.950	61.0	-18.5	45.6	33.900	HORIZONTAL
17898.000	60.9	-18.5	45.6	33.800	HORIZONTAL
17984.700	60.9	-17.7	45.6	33.000	HORIZONTAL
17885.250	60.8	-18.5	45.6	33.700	VERTICAL
17959.200	60.7	-17.7	45.6	32.800	VERTICAL

**Measurement results for Set.7:**
**USB Mode/Average detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17992.350	51.0	-17.7	45.6	23.100	HORIZONTAL
17982.150	50.9	-17.7	45.6	23.000	HORIZONTAL
17951.550	50.9	-17.7	45.6	23.000	VERTICAL
17988.950	50.7	-17.7	45.6	22.800	HORIZONTAL
17698.250	50.7	-18.9	45.6	24.000	VERTICAL
17960.900	50.6	-17.7	45.6	22.700	VERTICAL

**USB Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17728.850	60.9	-18.9	45.6	34.200	HORIZONTAL
17705.050	60.8	-18.9	45.6	34.100	HORIZONTAL
17969.400	60.7	-17.7	45.6	32.800	HORIZONTAL
17888.650	60.6	-18.5	45.6	33.500	VERTICAL
17934.550	60.6	-17.7	45.6	32.700	VERTICAL
17922.650	60.6	-17.7	45.6	32.700	VERTICAL

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

### Charging Mode, Set.1

Normal RE\_30M-1GHz\_10m

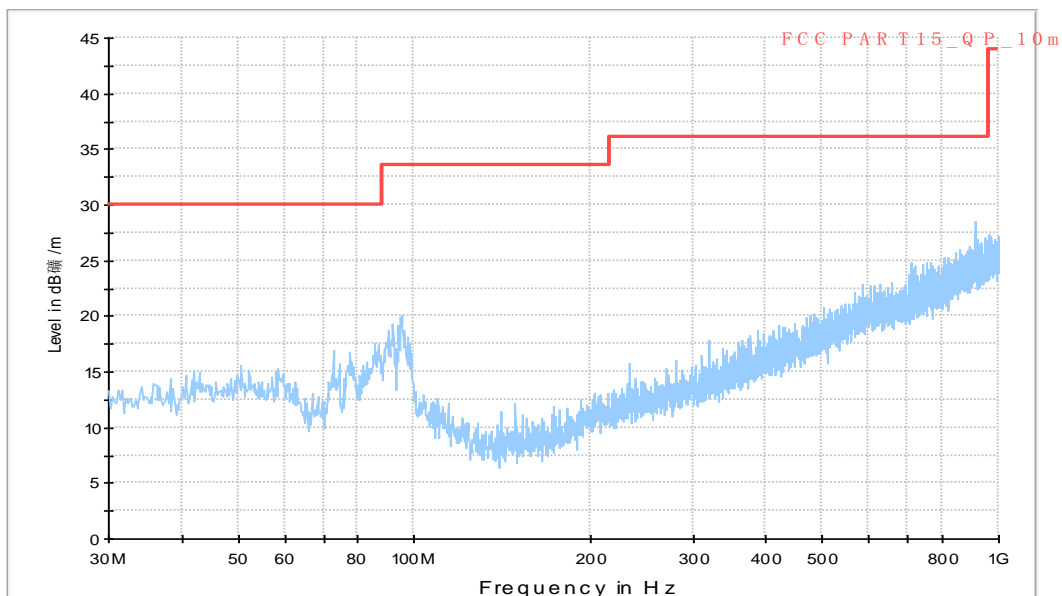


Figure A.1 Radiated Emission from 30MHz to 1GHz

Normal RE\_1G-18GHz

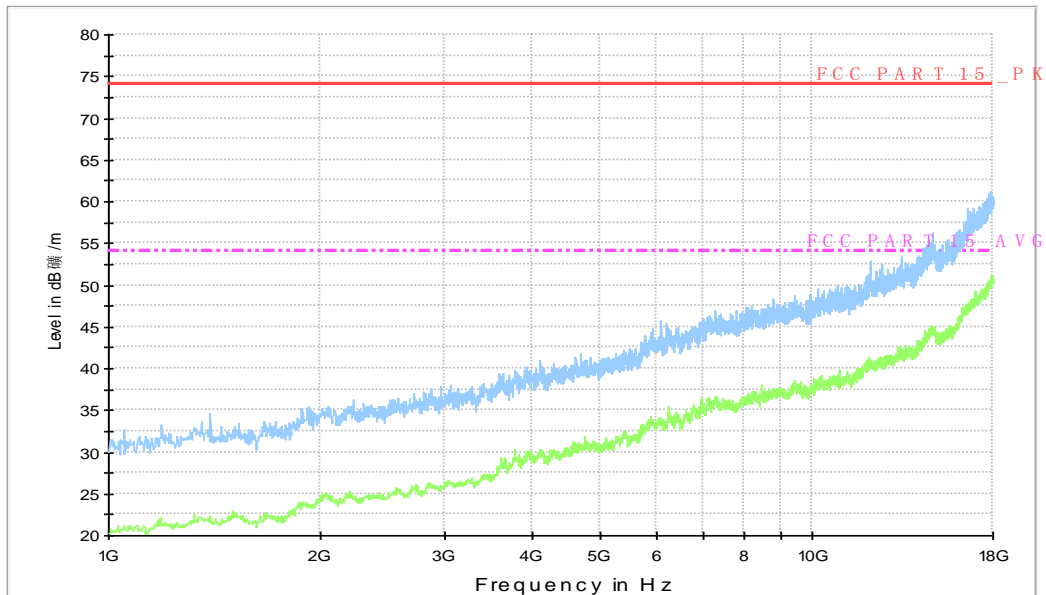


Figure A.2 Radiated Emission from 1GHz to 18GHz

## Charging Mode, Set.2

Normal RE\_30M-1GHz\_10m

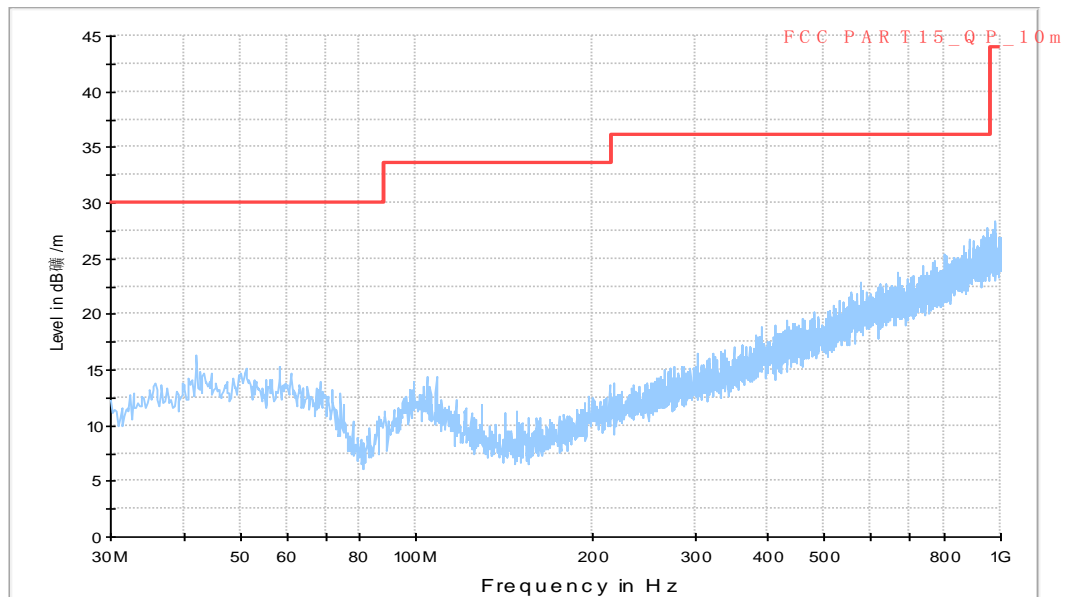


Figure A.3 Radiated Emission from 30MHz to 1GHz

Normal RE\_1G-18GHz

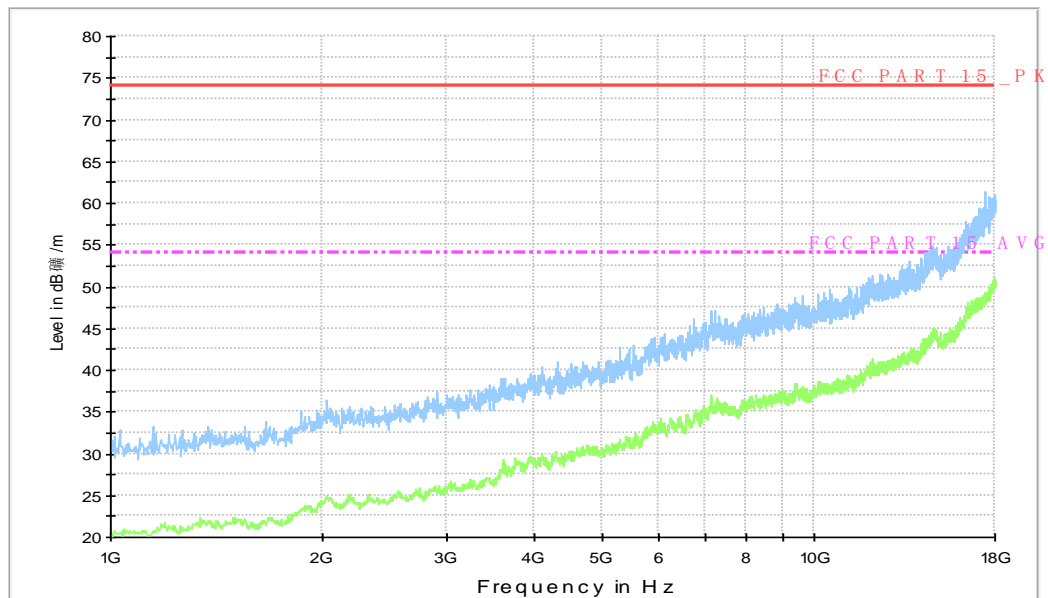


Figure A.4 Radiated Emission from 1GHz to 18GHz

### Charging Mode, Set.3

Normal RE\_30M-1GHz\_10m

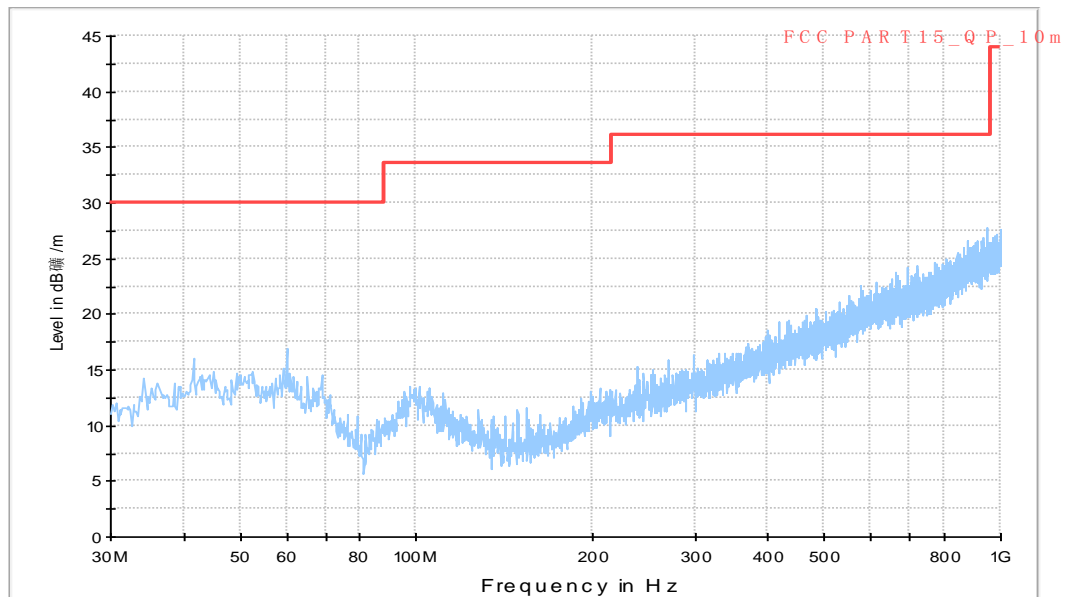


Figure A.5 Radiated Emission from 30MHz to 1GHz

Normal RE\_1G-18GHz

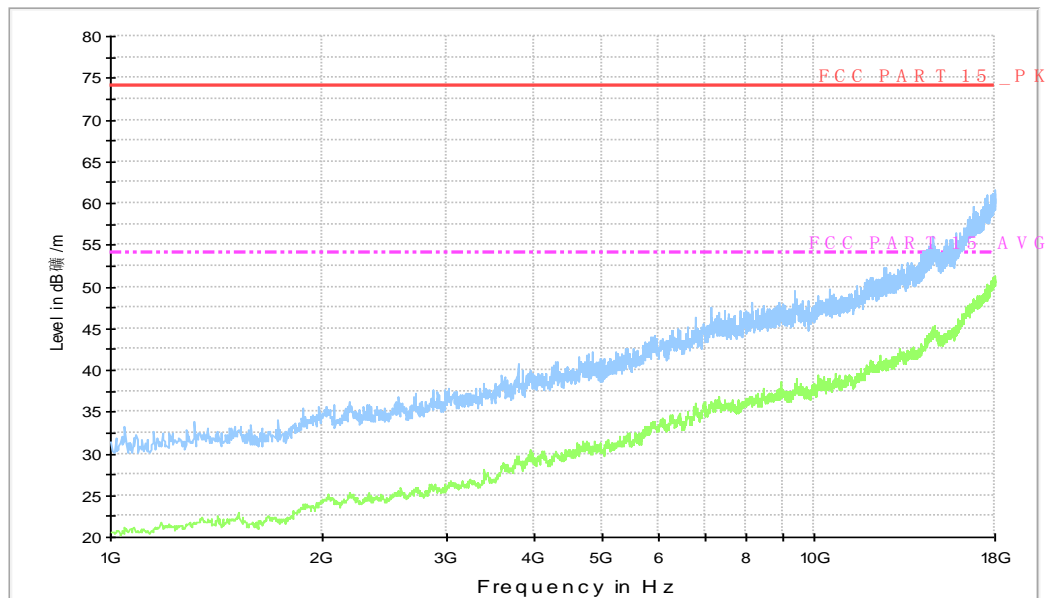
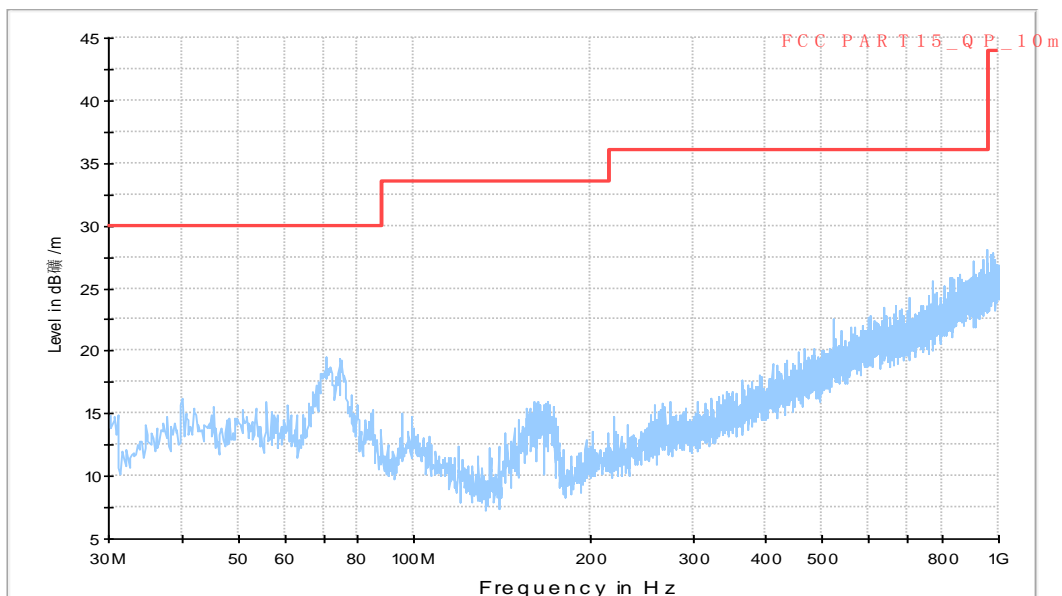


Figure A.6 Radiated Emission from 1GHz to 18GHz

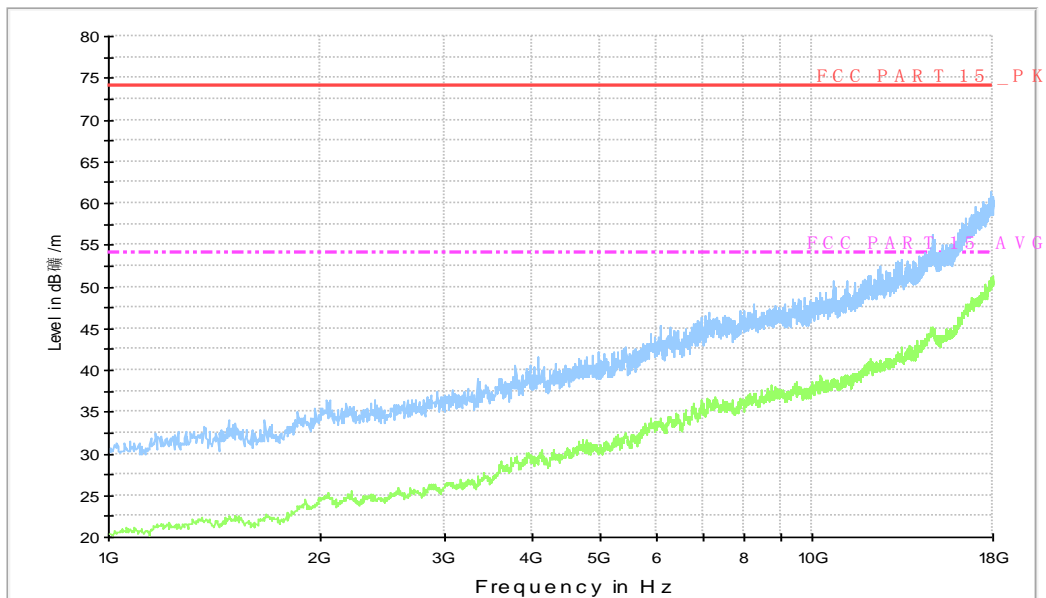
**Charging Mode, Set.4**

Normal RE\_30M-1GHz\_10m



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

Normal RE\_1G-18GHz



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

### Charging Mode, Set.5

Normal RE\_30M-1GHz\_10m

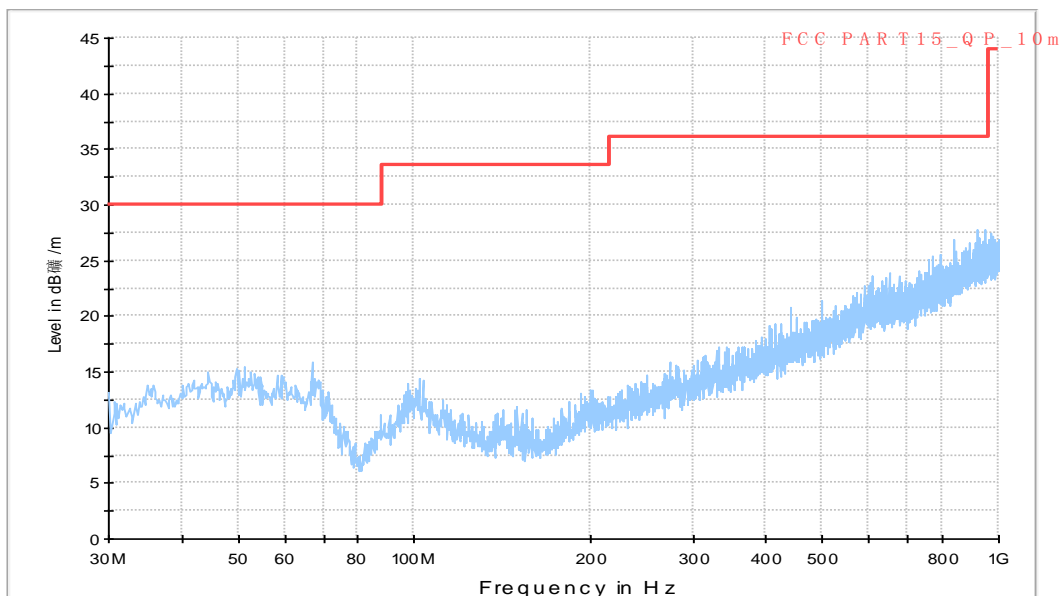


Figure A.9 Radiated Emission from 30MHz to 1GHz

Normal RE\_1G-18GHz

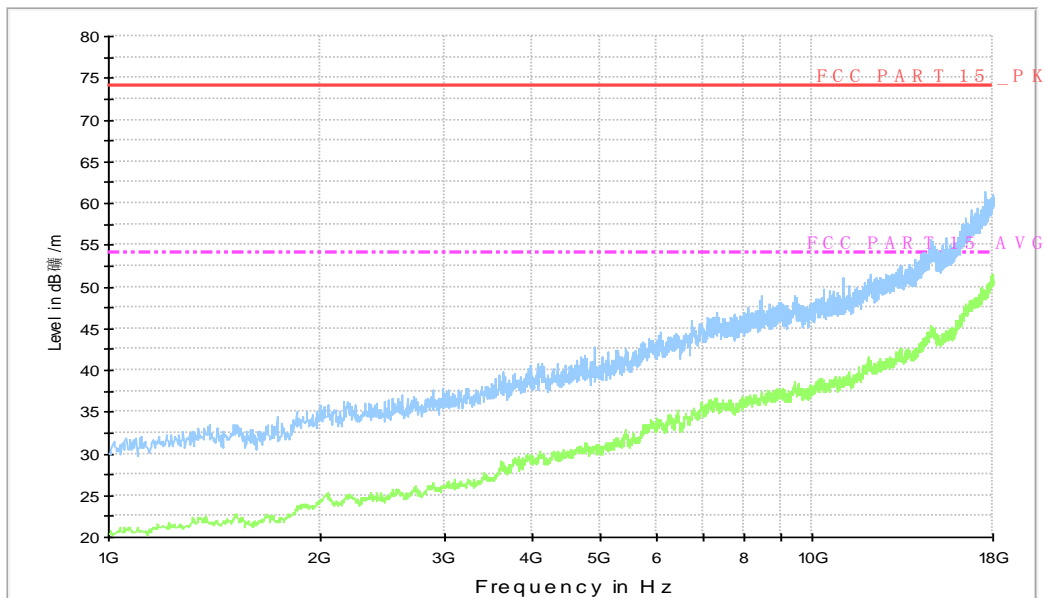


Figure A.10 Radiated Emission from 1GHz to 18GHz

## USB Mode, Set.6

Normal RE\_30M-1GHz\_10m

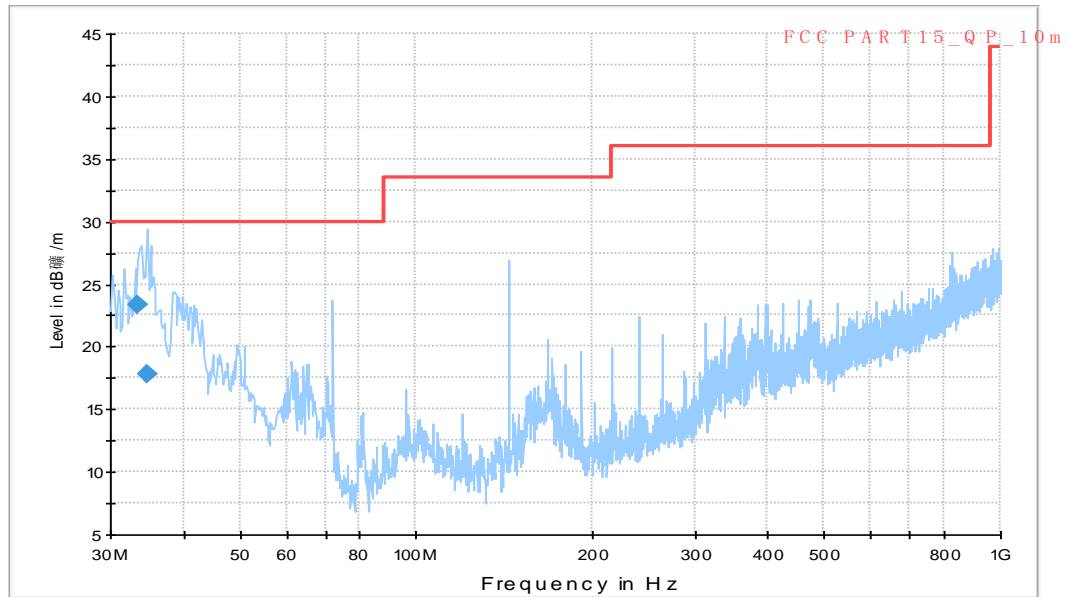


Figure A.11 Radiated Emission from 30MHz to 1GHz

## Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
33.340000	23.3	325.0	V	260.0	-13.5	6.7	30.0
34.801500	17.8	304.0	V	285.0	-13.2	12.2	30.0

Normal RE\_1G-18GHz

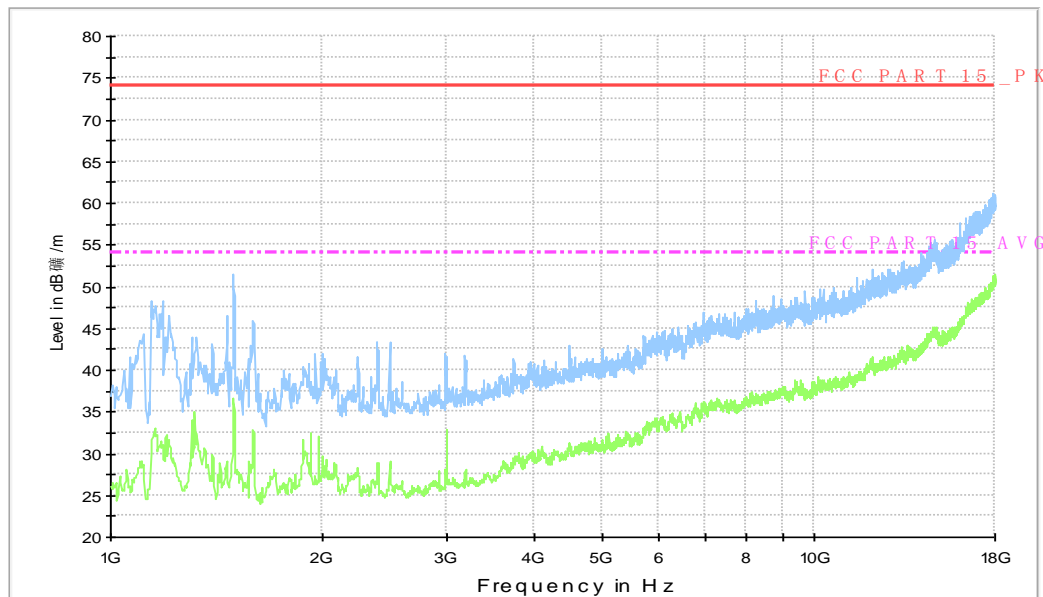


Figure A.12 Radiated Emission from 1GHz to 18GHz



## USB Mode, Set.7

Normal RE\_30M-1GHz\_10m

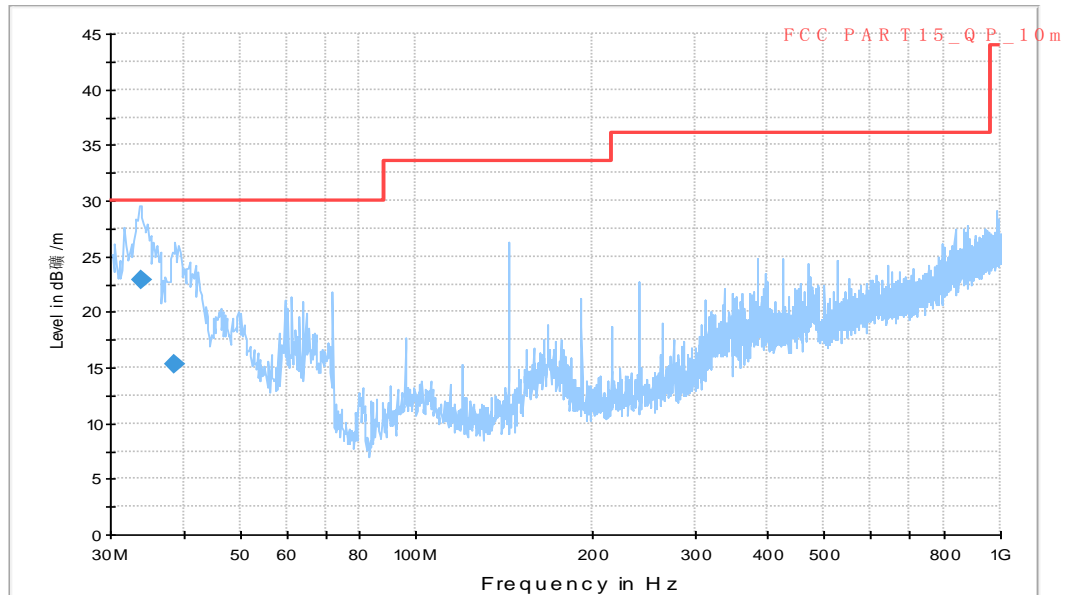


Figure A.13 Radiated Emission from 30MHz to 1GHz

## Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
33.900500	22.9	100.0	V	270.0	-13.3	7.1	30.0
38.621500	15.2	275.0	V	90.0	-12.3	14.8	30.0

Normal RE\_1G-18GHz

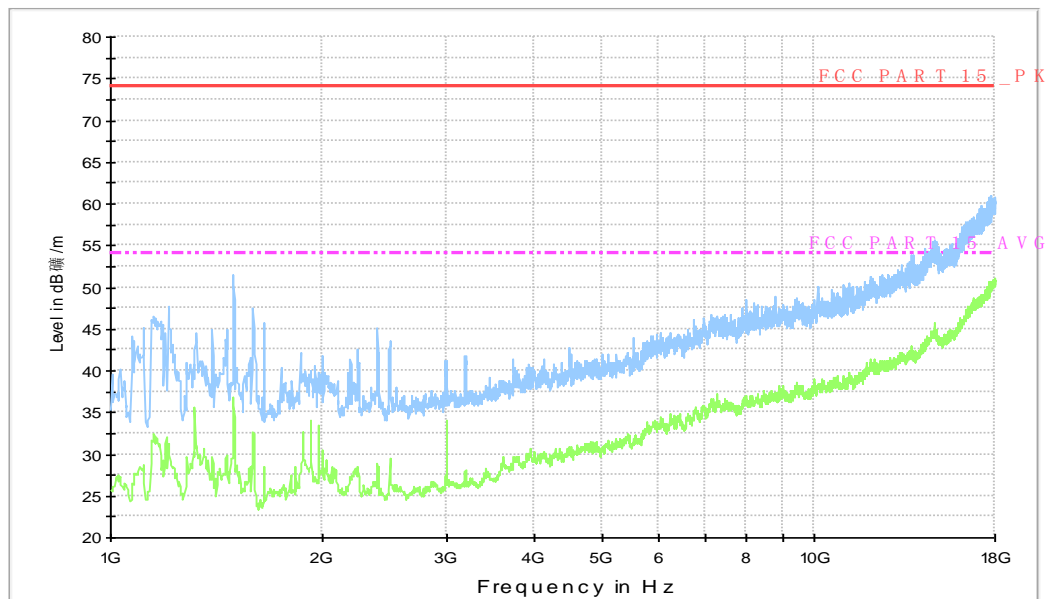


Figure A.14 Radiated Emission from 1GHz to 18GHz

## 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 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 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.

### A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ 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:  $U= 2.9$  dB,  $k=2$ .

#### Charging Mode, Set.1

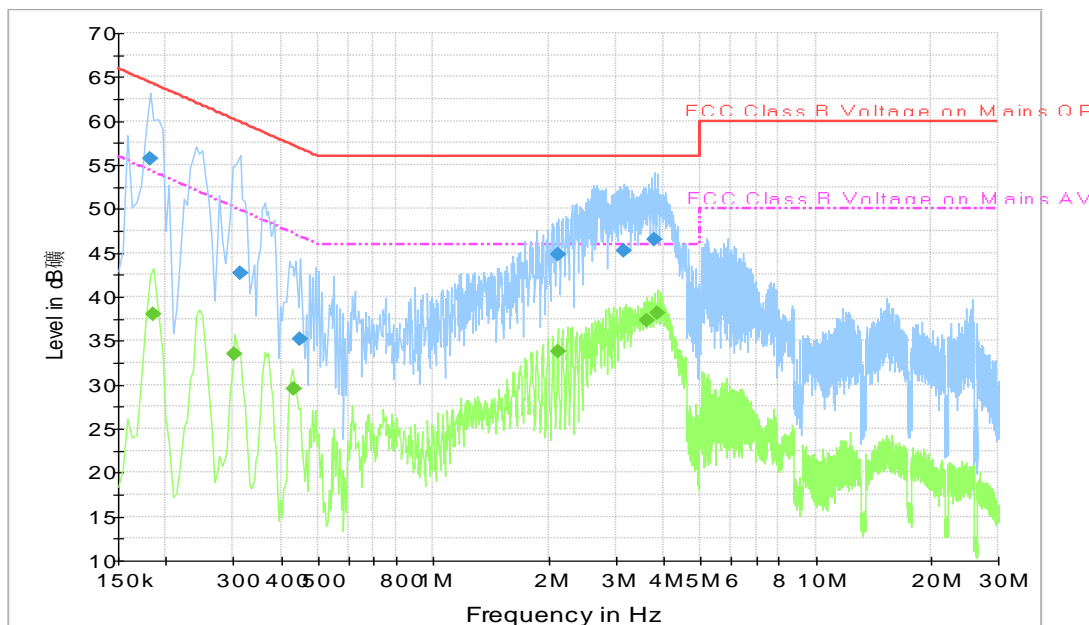


Figure A.15 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.181500	55.8	2000.0	9.000	On	L1	19.8	8.7	64.4
0.312000	42.6	2000.0	9.000	On	L1	19.8	17.3	59.9
0.447000	35.2	2000.0	9.000	On	N	19.9	21.8	56.9
2.112000	44.9	2000.0	9.000	On	L1	19.6	11.1	56.0
3.138000	45.3	2000.0	9.000	On	L1	19.3	10.7	56.0
3.777000	46.6	2000.0	9.000	On	L1	19.5	9.4	56.0

#### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.186000	37.9	2000.0	9.000	On	L1	19.8	16.3	54.2
0.303000	33.5	2000.0	9.000	On	N	19.8	16.7	50.2
0.433500	29.6	2000.0	9.000	On	N	19.9	17.6	47.2
2.112000	33.8	2000.0	9.000	On	L1	19.6	12.2	46.0
3.601500	37.4	2000.0	9.000	On	L1	19.5	8.6	46.0
3.844500	38.2	2000.0	9.000	On	L1	19.5	7.8	46.0

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

## Charging Mode, Set.2

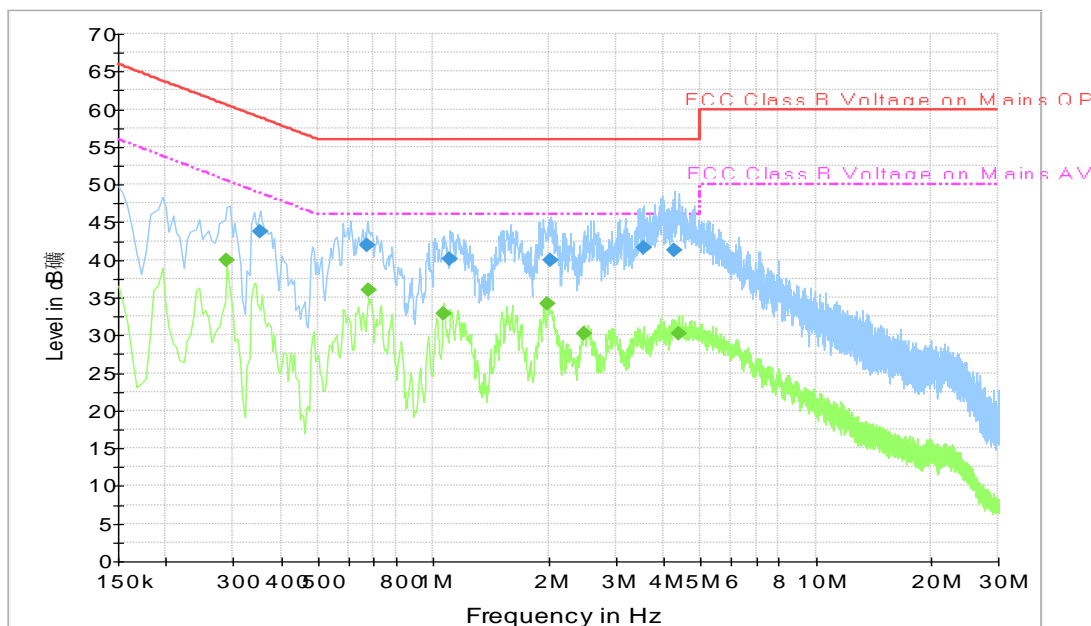


Figure A.16 Conducted Emission

### Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.352500	43.7	2000.0	9.000	On	L1	19.8	15.2	58.9
0.672000	41.9	2000.0	9.000	On	L1	19.8	14.1	56.0
1.104000	40.1	2000.0	9.000	On	L1	19.7	15.9	56.0
2.026500	39.9	2000.0	9.000	On	L1	19.7	16.1	56.0
3.552000	41.6	2000.0	9.000	On	N	19.5	14.4	56.0
4.285500	41.3	2000.0	9.000	On	N	19.6	14.7	56.0

### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.289500	40.0	2000.0	9.000	On	L1	19.8	10.6	50.5
0.676500	36.0	2000.0	9.000	On	L1	19.8	10.0	46.0
1.068000	32.8	2000.0	9.000	On	L1	19.7	13.2	46.0
1.986000	34.2	2000.0	9.000	On	L1	19.7	11.8	46.0
2.485500	30.3	2000.0	9.000	On	L1	19.0	15.7	46.0
4.380000	30.2	2000.0	9.000	On	N	19.6	15.8	46.0

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

### Charging Mode, Set.3

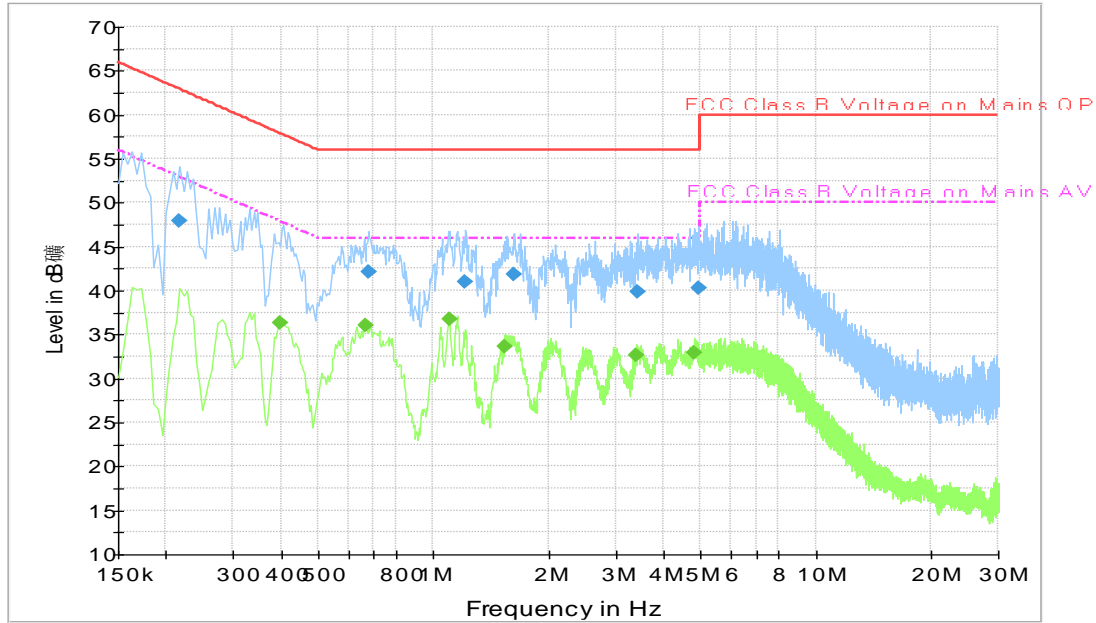


Figure A.17 Conducted Emission

### Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.217500	47.9	2000.0	9.000	On	L1	19.8	15.0	62.9
0.676500	42.1	2000.0	9.000	On	L1	19.8	13.9	56.0
1.212000	41.0	2000.0	9.000	On	N	19.7	15.0	56.0
1.621500	41.9	2000.0	9.000	On	L1	19.7	14.1	56.0
3.435000	39.8	2000.0	9.000	On	L1	19.4	16.2	56.0
4.929000	40.4	2000.0	9.000	On	L1	19.6	15.6	56.0

### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.397500	36.3	2000.0	9.000	On	N	19.9	11.6	47.9
0.667500	36.1	2000.0	9.000	On	L1	19.8	9.9	46.0
1.099500	36.8	2000.0	9.000	On	L1	19.7	9.2	46.0
1.536000	33.7	2000.0	9.000	On	L1	19.7	12.3	46.0
3.403500	32.7	2000.0	9.000	On	L1	19.4	13.3	46.0
4.821000	32.9	2000.0	9.000	On	L1	19.6	13.1	46.0

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

### Charging Mode, Set.4

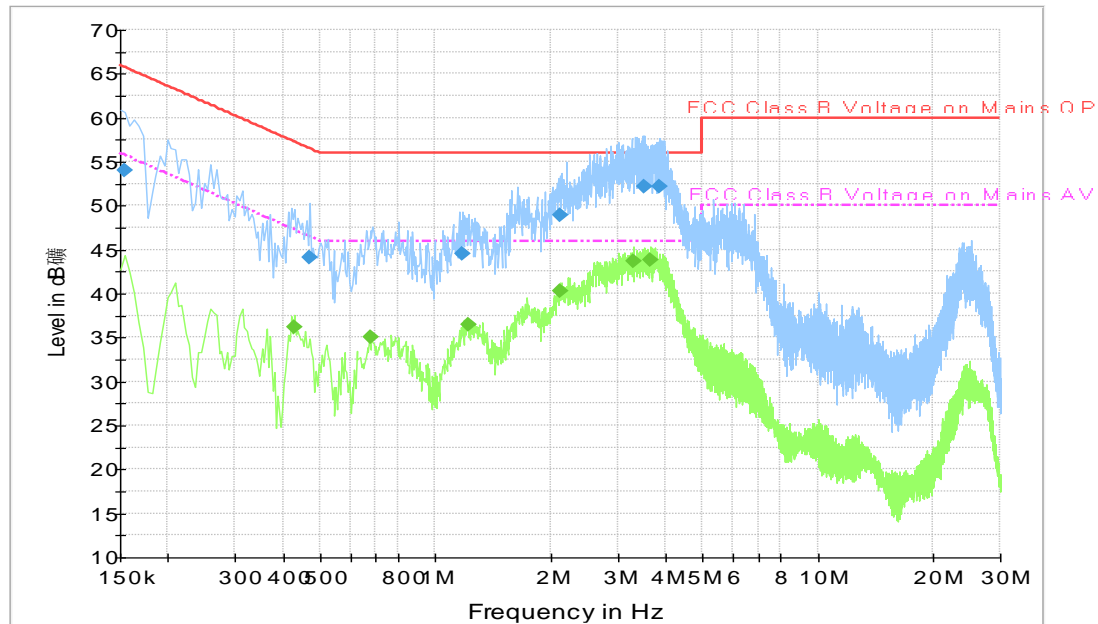


Figure A.18 Conducted Emission

### Final Result 1

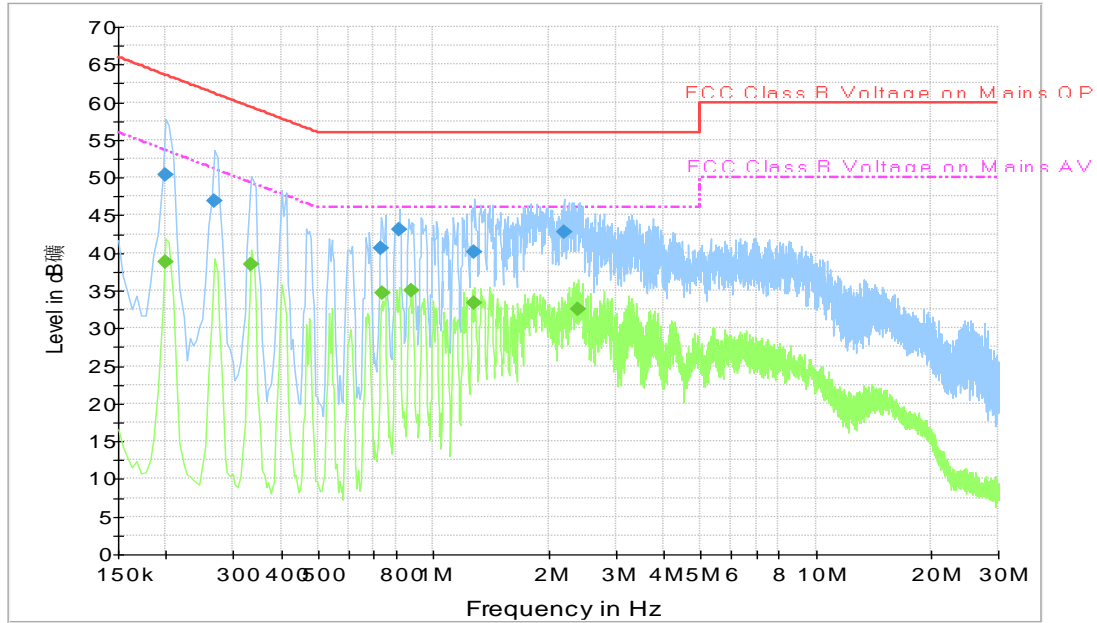
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	54.0	2000.0	9.000	On	L1	20.0	11.7	65.8
0.469500	44.1	2000.0	9.000	On	L1	19.9	12.4	56.5
1.180500	44.5	2000.0	9.000	On	L1	19.7	11.5	56.0
2.112000	48.9	2000.0	9.000	On	L1	19.6	7.1	56.0
3.511500	52.2	2000.0	9.000	On	L1	19.5	3.8	56.0
3.844500	52.2	2000.0	9.000	On	L1	19.5	3.8	56.0

### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.429000	36.2	2000.0	9.000	On	L1	19.9	11.1	47.3
0.681000	35.1	2000.0	9.000	On	L1	19.8	10.9	46.0
1.225500	36.4	2000.0	9.000	On	L1	19.7	9.6	46.0
2.112000	40.3	2000.0	9.000	On	L1	19.6	5.7	46.0
3.286500	43.7	2000.0	9.000	On	L1	19.4	2.3	46.0
3.637500	43.8	2000.0	9.000	On	L1	19.5	2.2	46.0

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)
0.199500	50.3	2000.0	9.000	On	L1	19.8	13.3	63.6
0.267000	46.9	2000.0	9.000	On	L1	19.8	14.4	61.2
0.730500	40.7	2000.0	9.000	On	L1	19.8	15.3	56.0
0.816000	43.1	2000.0	9.000	On	L1	19.8	12.9	56.0
1.284000	40.1	2000.0	9.000	On	L1	19.7	15.9	56.0
2.193000	42.8	2000.0	9.000	On	L1	19.3	13.2	56.0

### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.199500	38.7	2000.0	9.000	On	L1	19.8	14.9	53.6
0.334500	38.5	2000.0	9.000	On	L1	19.9	10.9	49.3
0.735000	34.7	2000.0	9.000	On	L1	19.8	11.3	46.0
0.879000	35.0	2000.0	9.000	On	L1	19.8	11.0	46.0
1.284000	33.4	2000.0	9.000	On	L1	19.7	12.6	46.0
2.386500	32.5	2000.0	9.000	On	L1	19.2	13.5	46.0

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

## USB Mode, Set.6

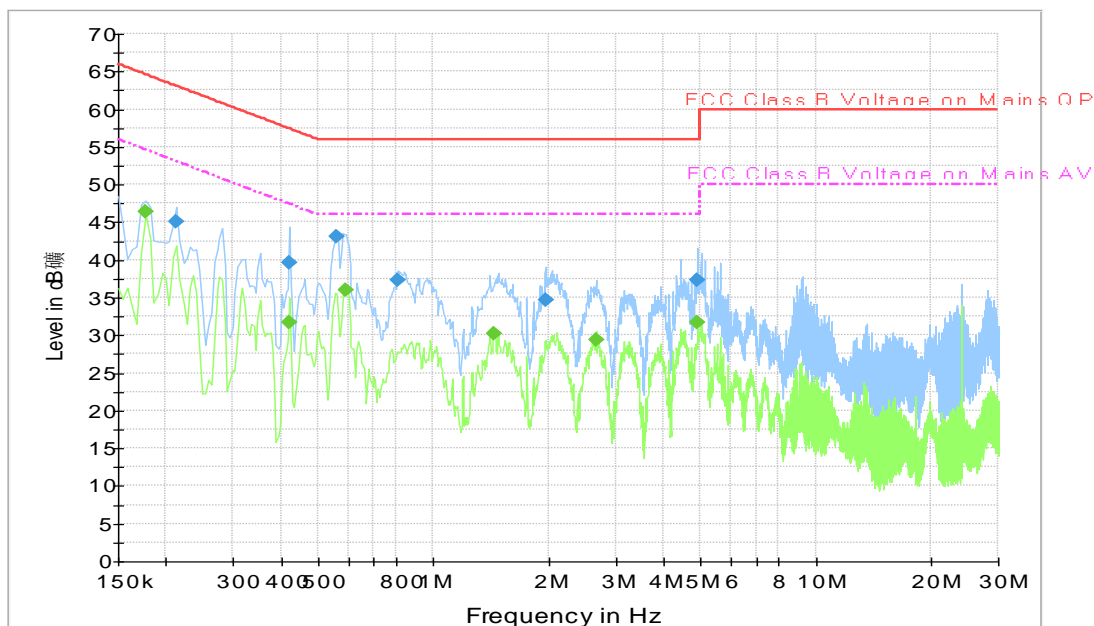


Figure A.20 Conducted Emission

### Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.213000	45.0	2000.0	9.000	On	N	19.8	18.1	63.1
0.420000	39.7	2000.0	9.000	On	L1	19.9	17.8	57.4
0.559500	43.1	2000.0	9.000	On	N	19.9	12.9	56.0
0.807000	37.3	2000.0	9.000	On	N	19.8	18.7	56.0
1.963500	34.6	2000.0	9.000	On	L1	19.7	21.4	56.0
4.915500	37.3	2000.0	9.000	On	L1	19.6	18.7	56.0

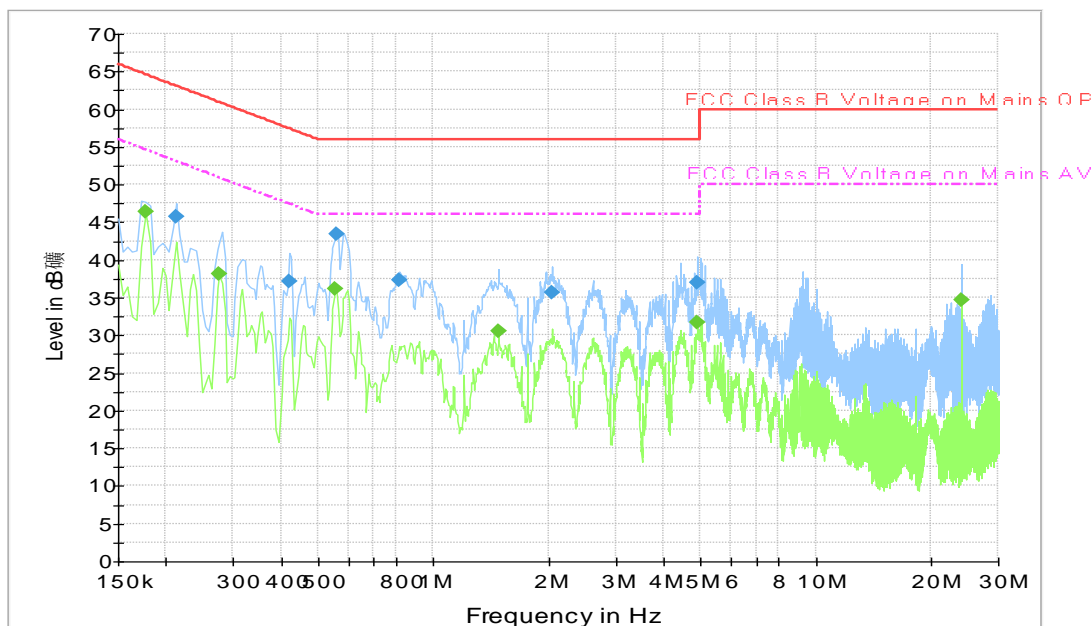
### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	46.4	2000.0	9.000	On	N	19.8	8.2	54.6
0.420000	31.8	2000.0	9.000	On	L1	19.9	15.7	47.4
0.591000	36.1	2000.0	9.000	On	L1	19.8	9.9	46.0
1.437000	30.2	2000.0	9.000	On	N	19.7	15.8	46.0
2.665500	29.3	2000.0	9.000	On	L1	19.4	16.7	46.0
4.915500	31.8	2000.0	9.000	On	L1	19.6	14.2	46.0

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



## USB Mode, Set.7



**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)
0.213000	45.8	2000.0	9.000	On	N	19.8	17.3	63.1
0.420000	37.1	2000.0	9.000	On	L1	19.9	20.3	57.4
0.559500	43.4	2000.0	9.000	On	L1	19.9	12.6	56.0
0.816000	37.3	2000.0	9.000	On	N	19.8	18.7	56.0
2.049000	35.7	2000.0	9.000	On	N	19.7	20.3	56.0
4.915500	37.0	2000.0	9.000	On	L1	19.6	19.0	56.0

### Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	46.5	2000.0	9.000	On	N	19.8	8.2	54.6
0.276000	38.1	2000.0	9.000	On	N	19.8	12.9	50.9
0.555000	36.2	2000.0	9.000	On	N	19.9	9.8	46.0
1.482000	30.5	2000.0	9.000	On	N	19.7	15.5	46.0
4.915500	31.7	2000.0	9.000	On	L1	19.6	14.3	46.0
23.995500	34.7	2000.0	9.000	On	L1	20.0	15.3	50.0

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

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