



TEST REPORT

No. I15Z42002-EMC01

for

TCL Communication Ltd.

**HSUPA/HSDPA/UMTS quadbands / GSM quadbands/LTE Six -band
mobile phone**

Model Name: 5065W

FCC ID: 2ACCJA006

with

Hardware Version: PIO

Software Version: A5X

Issued Date: 2015-08-24

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15Z42002-EMC01	Rev.0	1st edition	2015-08-24

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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: 2015-08-19

Testing End Date: 2015-08-20

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: TCL Communication Ltd.
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Postal Code: 201203
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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: China
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Fax: 0086-21-61460602

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

3.1. About EUT

Description	HSUPA/HSDPA/UMTS quadbands / GSM quadbands/LTE Six-band mobile phone
Model Name	5065W
FCC ID	2ACCJA006
Extreme vol. Limits	3.5VDC 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
EUT4	014415000000222	PIO	A5X

*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	Travel Charger	51633200004BYD	/
AE3	Travel Charger	51720100033AN	/
AE4	USB Cable	/	/
AE5	USB Cable	/	/
AE6	battery	/	/
AE7	battery	/	/
AE8	Travel Charger	51633200054BYD	/
AE9	Travel Charger	51720100039AN	/

AE1, AE6, AE7

Model	CAC2000027C2
Manufacturer	SCUD
Capacitance	2000mAh
Nominal voltage	3.8V

AE2, AE8

Type	CBA0067AG0C1
Manufacturer	BYD
Length of cable	/

AE3, AE9

Type CBA0067AG0C4
Manufacturer Aohai
Length of cable /

AE4

Type CDA3122002C1
Manufacturer Juwei
Length of cable 110cm

AE5

Type CDA3122002C2
Manufacturer Shenhua
Length of cable 99cm

*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.4	EUT4 + AE1/AE6/AE7 + AE2 + AE4	Charger
Set.5	EUT4 + AE1/AE6/AE7 + AE3 + AE5	Charger
Set.6	EUT4 + AE1/AE6/AE7 + AE4	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
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	Edition 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 FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	1
2	Conducted Emission	15.107(a)	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	CMU500	143008	R&S	2015-12-09	1 Year
7.	PC	OPTIPLEX 380	2X1YV2X	DELL	/	/
8.	Monitor	E1709Wc	CN-OJ672H-6 4180-9BF-1CR L	DELL	/	/
9.	Printer	P1606dn	VNC3L52122	HP	/	/
10.	Keyboard	L100	CN-ORH656-6 5890-03S-041 Y	DELL	/	/
11.	Mouse	M-UAR	LZ013HC1YLV	DELL	/	/

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, 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 and charging mode.

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

For the USB 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 (μ 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:

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

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.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
17964.300	43.6	-17.7	45.6	15.700	V
17984.133	43.5	-17.7	45.6	15.600	H
17969.967	43.5	-17.7	45.6	15.600	H
17996.600	43.5	-17.7	45.6	15.600	V
17958.633	43.4	-17.7	45.6	15.500	V
17975.067	43.4	-17.7	45.6	15.500	V

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
17999.400	55.1	-17.7	45.6	27.200	V
17896.300	54.7	-18.5	45.6	27.600	H
17815.267	54.6	-18.5	45.6	27.500	H
17991.500	54.6	-17.7	45.6	26.700	V
17998.867	54.4	-17.7	45.6	26.500	V
17982.433	54.4	-17.7	45.6	26.500	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
17995.467	43.7	-17.7	45.6	15.800	V
17992.633	43.4	-17.7	45.6	15.500	H
17973.933	43.4	-17.7	45.6	15.500	H
17964.300	43.4	-17.7	45.6	15.500	V
17981.867	43.4	-17.7	45.6	15.500	V
17992.067	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
17994.333	54.7	-17.7	45.6	26.800	V
17992.067	54.7	-17.7	45.6	26.800	V
17988.667	54.5	-17.7	45.6	26.600	H
17983.000	54.4	-17.7	45.6	26.500	V
17815.267	54.3	-18.5	45.6	27.200	H
17934.267	54.2	-17.7	45.6	26.300	H

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

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
17998.300	43.6	-17.7	45.6	15.700	H
17984.133	43.4	-17.7	45.6	15.500	V
17993.200	43.3	-17.7	45.6	15.400	H
17961.467	43.2	-17.7	45.6	15.300	H
17972.233	43.2	-17.7	45.6	15.300	V
17997.167	43.2	-17.7	45.6	15.300	V

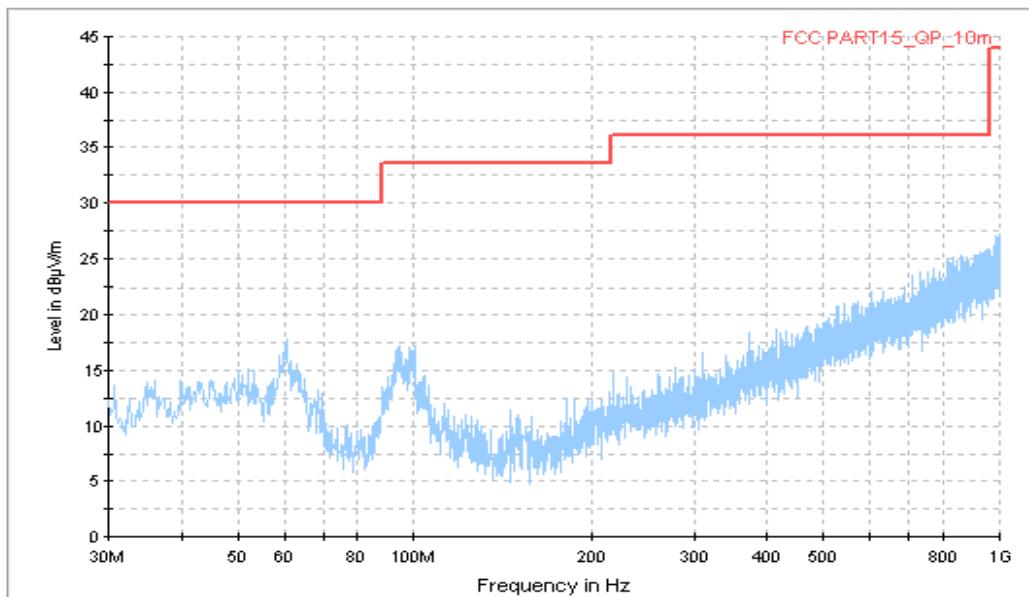
USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
17998.300	55.6	-17.7	45.6	27.700	H
17962.033	55.6	-17.7	45.6	27.700	V
17997.167	55.0	-17.7	45.6	27.100	H
17968.833	54.4	-17.7	45.6	26.500	V
17974.500	54.3	-17.7	45.6	26.400	H
17879.300	54.2	-18.5	45.6	27.100	H

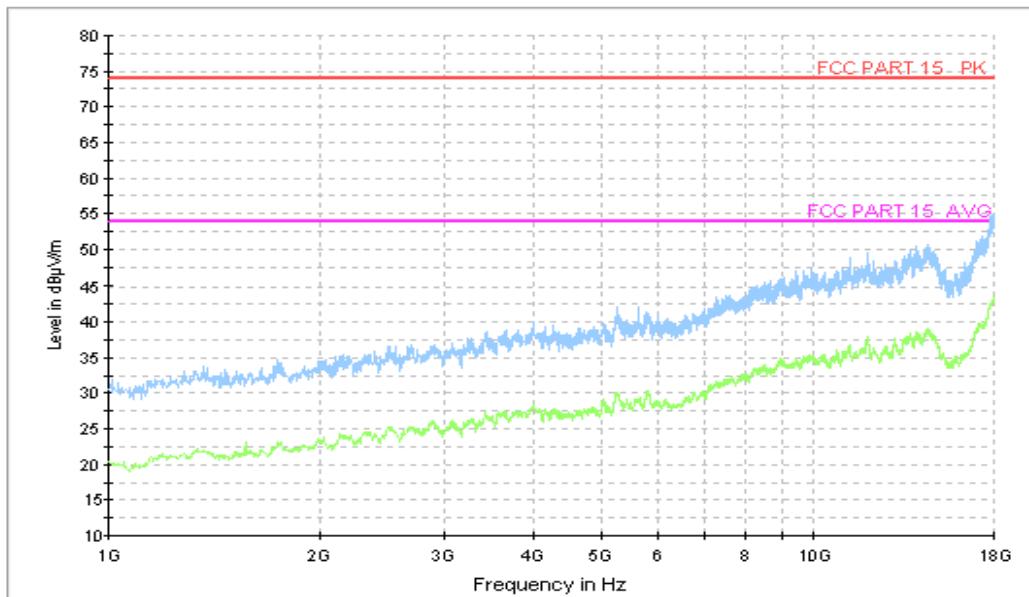
Note: The measurement results of Set.4, Set.5 and Set.6 showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.4

Normal RE_30M-1GHz_10m

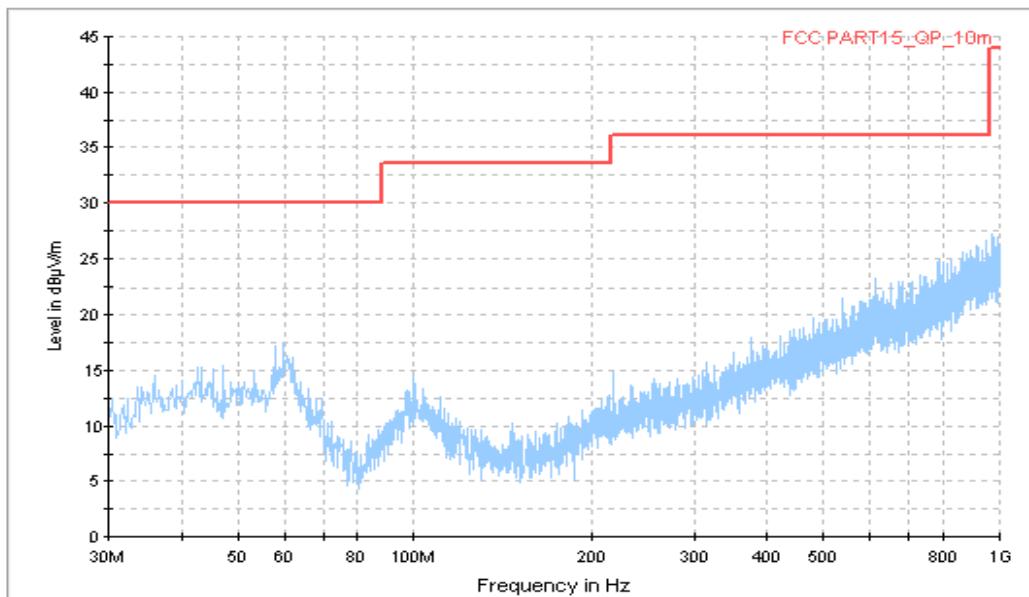
**Figure A.1 Radiated Emission from 30MHz to 1GHz**

Normal RE_1G-18GHz_directly

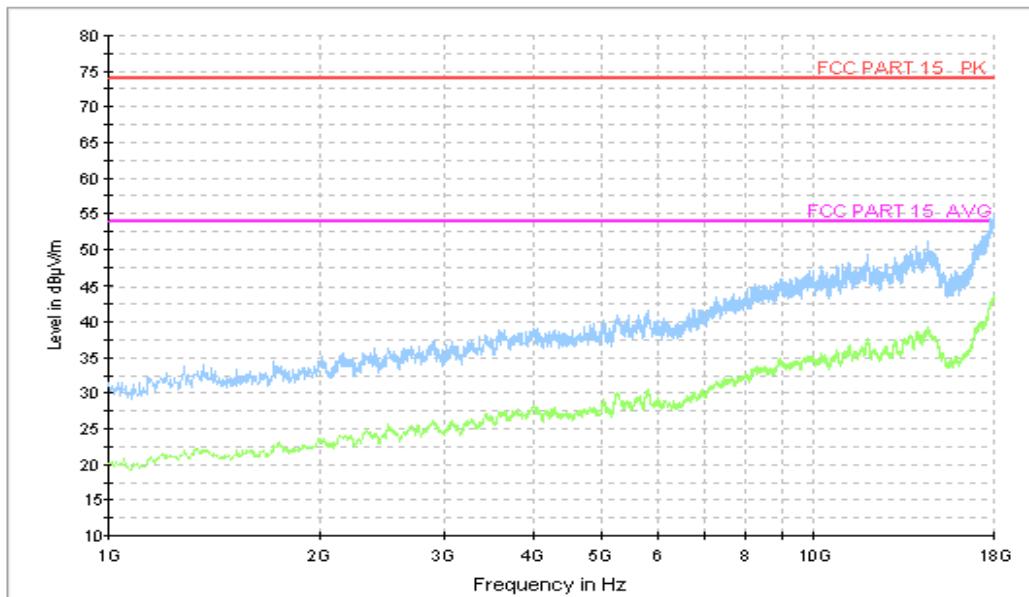
**Figure A.2 Radiated Emission from 1GHz to 18GHz**

Charging Mode, Set.5

Normal RE_30M-1GHz_10m

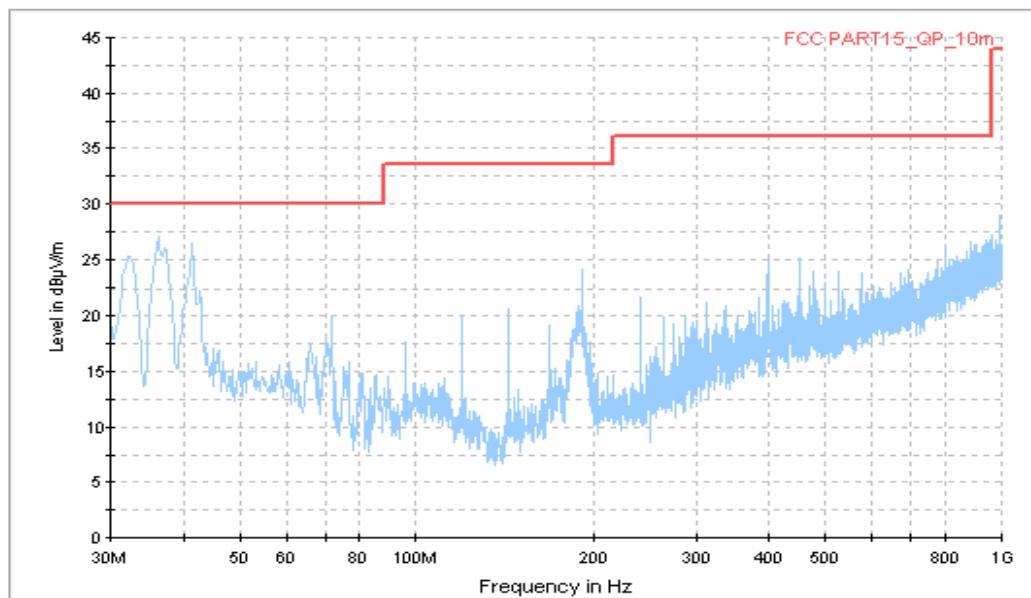
**Figure A.3 Radiated Emission from 30MHz to 1GHz**

Normal RE_1G-18GHz_directly

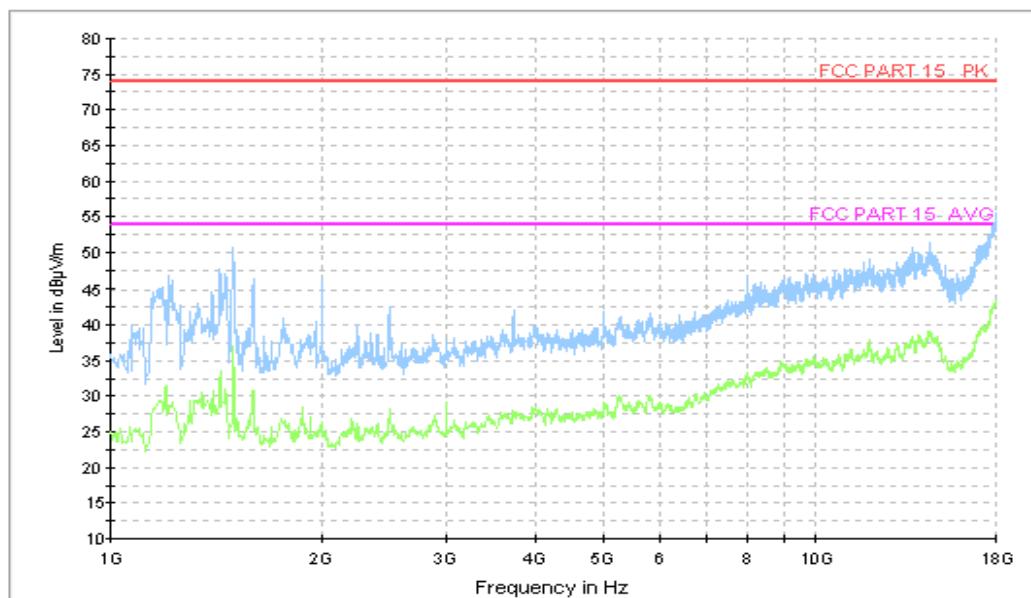
**Figure A.4 Radiated Emission from 1GHz to 18GHz**

USB Mode, Set.6

Normal RE_30M-1GHz_10m

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

Normal RE_1G-18GHz_directly

**Figure A.6 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.

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

For the USB 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 μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

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

Charging Mode, Set.4

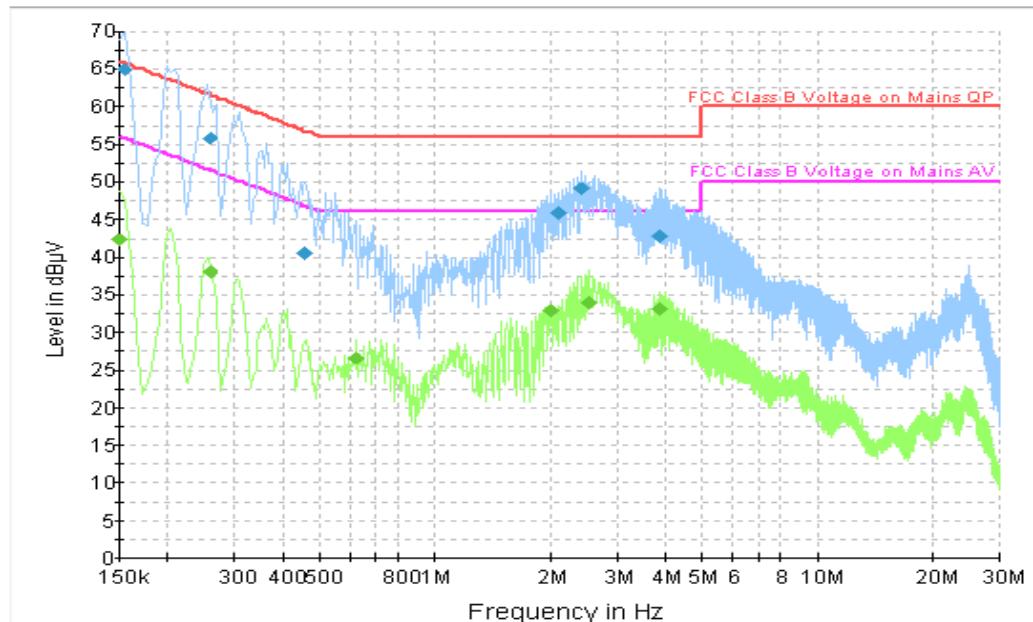


Figure A.7 Conducted Emission

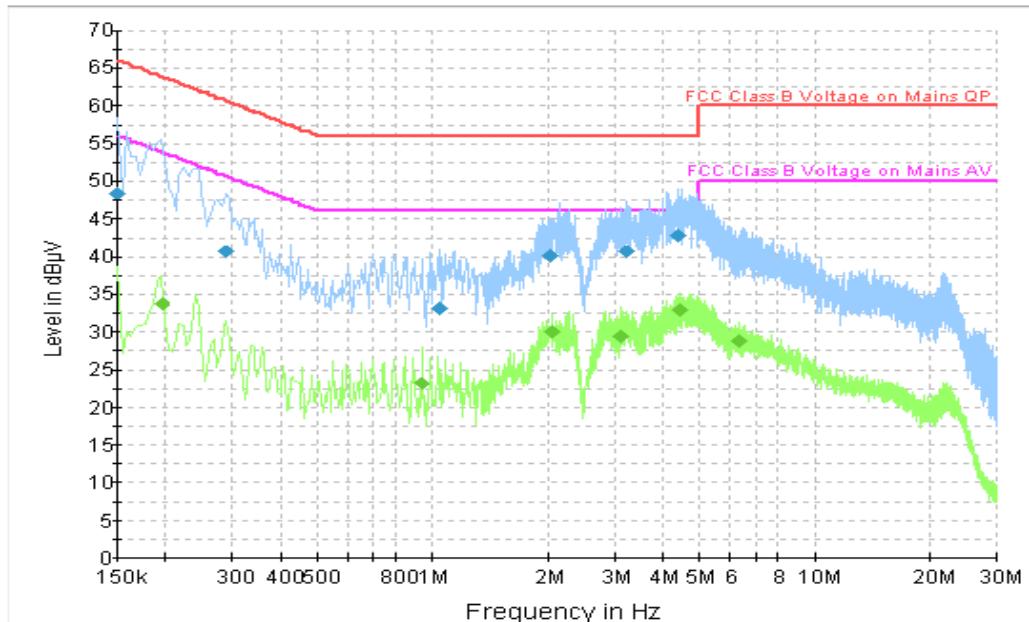
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	64.9	L1	19.9	0.9	65.8
0.258000	55.8	L1	19.8	5.7	61.5
0.456000	40.5	L1	19.8	16.2	56.8
2.103000	45.9	L1	19.6	10.1	56.0
2.418000	49.1	L1	19.6	6.9	56.0
3.853500	42.8	L1	19.7	13.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	42.3	L1	20.1	13.7	56.0
0.258000	38.0	N	19.8	13.5	51.5
0.627000	26.6	N	19.8	19.4	46.0
1.999500	32.9	L1	19.6	13.1	46.0
2.517000	33.9	L1	19.6	12.1	46.0
3.853500	33.1	L1	19.7	12.9	46.0

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

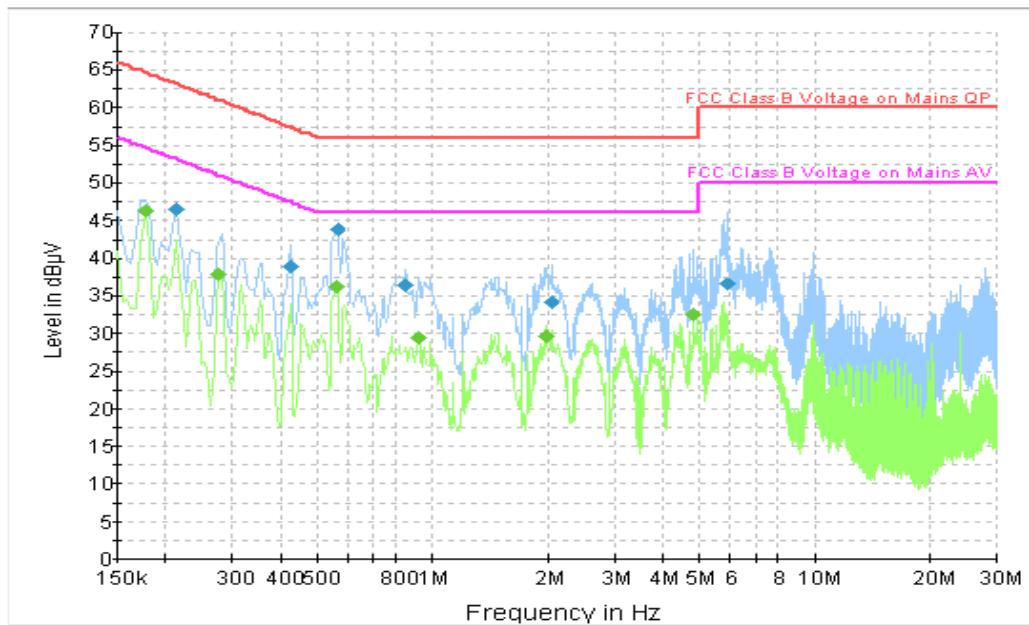
Charging Mode, Set.5

Figure A.8 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	48.3	L1	20.1	17.7	66.0
0.289500	40.7	L1	19.8	19.9	60.5
1.041000	33.0	L1	19.7	23.0	56.0
2.031000	40.1	L1	19.6	15.9	56.0
3.223500	40.7	L1	19.7	15.3	56.0
4.407000	42.7	L1	19.7	13.3	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	33.7	L1	19.8	20.1	53.8
0.937500	23.2	L1	19.7	22.8	46.0
2.067000	30.0	L1	19.6	16.0	46.0
3.133500	29.5	L1	19.6	16.5	46.0
4.434000	32.8	L1	19.7	13.2	46.0
6.310500	28.8	L1	19.7	21.2	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.9 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.213000	46.3	N	19.8	16.7	63.1
0.424500	38.9	N	19.8	18.5	57.4
0.564000	43.7	L1	19.8	12.3	56.0
0.847500	36.4	N	19.8	19.6	56.0
2.049000	34.1	L1	19.6	21.9	56.0
5.896500	36.5	L1	19.7	23.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.177000	46.2	N	19.7	8.5	54.6
0.276000	37.9	N	19.8	13.0	50.9
0.559500	36.1	L1	19.8	9.9	46.0
0.919500	29.3	L1	19.7	16.7	46.0
1.981500	29.5	N	19.6	16.5	46.0
4.821000	32.6	N	19.7	13.4	46.0

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

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