TEST REPORT

No. I15Z41055-EMC01

for

TCL Communication Ltd.

HSDPA/HSUPA/UMTS quad band / GSM quad band /LTE 6 bands mobile phone

Model Name: 5017A

FCC ID: 2ACCJH020

with

Hardware Version: PIO2

Software Version: vBD2

Issued Date: 2015-06-02

Note:

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

Test Laboratory:

FCC 2.948 Listed: No. 525429

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

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

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

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

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15Z41055-EMC01	Rev.0	1st edition	2015-06-02

CONTENTS

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℃

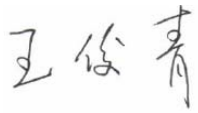
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-05-11

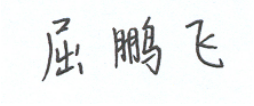
Testing End Date: 2015-05-14

1.4. Signature



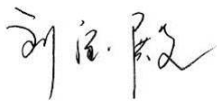
Wang Junqing

(Prepared this test report)



Qu Pengfei

(Reviewed this test report)



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.
City:	Shanghai
Postal Code:	201203
Country:	China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-21-51798260
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.
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-51798260
Fax:	0086-21-61460602

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

3.1. About EUT

Description	HSDPA/HSUPA/UMTS quad band / GSM quad band /LTE 6 bands mobile phone
Model Name	5017A
FCC ID	2ACCJH020
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 Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	014379000101883	PIO2	vBD2

*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	/	15TCT-BA-0192
AE2	Battery	/	15TCT-BA-0194
AE3	Battery	/	15TCT-BA-0219
AE4	Battery	/	15TCT-BA-0212
AE7	Travel charger	/	15TCT-CH-0175
AE8	Travel charger	/	15TCT-CH-0169
AE9	Travel charger	/	15TCT-CH-0138
AE10	Travel charger	/	15TCT-CH-0121
AE11	Travel charger	/	15TCT-CH-0104
AE12	Travel charger	/	15TCT-CH-0099
AE13	USB cable	/	15TCT-DC-0047
AE14	USB cable	/	15TCT-DC-0038
AE15	USB cable	/	/
AE16	USB cable	/	/
AE17	USB cable	/	/

AE1, AE2

Model	CAB1780002C1
Manufacturer	BYD
Capacitance	1780mAh
Nominal voltage	3.8V

AE3, AE4

Model	CAB1780000C2
Manufacturer	SCUD
Capacitance	1780mAh
Nominal voltage	3.8V

AE7, AE8

Model	CBA0066AG0C1
Manufacturer	BYD
Length of cable	122cm

AE9, AE10

Model	CBA3068AG0C1
Manufacturer	BYD
Length of cable	/

AE11, AE12

Model	CBA3068AG0C4
Manufacturer	Aohai
Length of cable	/

AE13, AE14

Model	CDA3122002C2
Manufacturer	Shenghua
Length of cable	98cm

AE15

Model	CDA3122002C1
Manufacturer	JUWEI
Length of cable	98cm

AE16

Model	CDA3122005C2
Manufacturer	Shenghua
Length of cable	/

AE17

Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	/

*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/AE3 +AE7	Charger
Set.3	EUT1 +AE1/AE3 +AE9 +AE13/AE15	Charger
Set.4	EUT1 +AE1/AE3 +AE11 +AE13/AE15	Charger
Set.5	EUT1 +AE1/AE3 +AE13/AE15	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	10-1-13 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	2009

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not excee d following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
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 ℃, Max. = 35 ℃
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 1, 2, 3 or 4 which are described in section 1.1 of this report

Clause	List	Clause in FCC rules	Verdict	Location
1	Radiated Emission	15.109(a)	P	1
2	Conducted Emission	15.107(a)	P	1

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI	100344	R&S	2016-03-03	1 year
2	Test Receiver	ESCI 7	100948	R&S	2015-07-16	1 year
3	Universal Radio Communication Tester	CMU200	109914	R&S	2016-03-26	1 year
4	Test Receiver	FSV	101047	R&S	2015-06-27	1 year
5	LISN	ESH2-Z5	829991/012	R&S	2016-04-12	1 year
6	EMI Antenna	VULB 9163	9163-234	Schwarzbeck	2016-09-16	3 years
7	EMI Antenna	3115	9906-5827	ETS-Lindgren	2016-11-19	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Monitor	E178FPc	CN-OWR979-64180 -7AJ-D2MS	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH659658907 ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§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 - 2009, 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 (μV/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:

Result = P_{Mea} + A_{Rpl} = P_{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 dB, k=2.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
8936.500	35.0	-26.7	38.0	23.700	H
9848.200	35.0	-24.8	38.0	21.800	V
9876.100	34.9	-24.9	38.0	21.800	V
8927.200	34.9	-26.7	38.0	23.600	H
9858.700	34.9	-24.8	38.0	21.700	H
8941.300	34.9	-26.7	38.0	23.600	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9845.800	47.6	-24.8	38.0	34.400	H
8932.000	47.4	-26.7	38.0	36.100	H
9844.300	47.3	-24.8	38.0	34.100	V
9714.700	47.3	-24.5	38.0	33.800	H
8883.700	47.2	-26.6	38.0	35.800	H
9664.300	47.1	-25.4	38.0	34.500	V

Measurement results for Set.3:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
8924.800	35.0	-26.6	38.0	23.600	H
8931.700	34.9	-26.7	38.0	23.600	V
9879.400	34.9	-24.9	38.0	21.800	V
8936.800	34.8	-26.7	38.0	23.500	H
8940.400	34.8	-26.7	38.0	23.500	H
8935.000	34.8	-26.7	38.0	23.500	V

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9716.800	47.6	-24.5	38.0	34.100	H
9665.200	47.4	-25.4	38.0	34.800	V
9674.200	47.4	-24.5	38.0	33.900	V
9665.800	47.1	-25.4	38.0	34.500	V
9768.100	47.1	-24.8	38.0	33.900	H
8897.500	47.1	-26.6	38.0	35.700	V

Measurement results for Set.4:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
8940.700	35.0	-26.7	38.0	23.700	V
8939.500	35.0	-26.7	38.0	23.700	V
8922.100	35.0	-26.6	38.0	23.600	H
8953.000	34.9	-26.7	38.0	23.600	H
8928.400	34.9	-26.7	38.0	23.600	H
9856.900	34.8	-24.8	38.0	21.600	V

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9605.200	47.7	-25.4	38.0	35.100	V
9810.700	47.4	-24.8	38.0	34.200	V
9667.900	47.3	-24.5	38.0	33.800	V
9716.500	47.3	-24.5	38.0	33.800	H
9711.100	47.2	-24.5	38.0	33.700	H
9145.900	47.2	-26.1	38.4	34.900	V

Measurement results for Set.5:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9310.600	35.1	-26.3	38.4	23.000	H
9356.800	35.0	-26.3	38.4	22.900	V
9365.200	34.9	-26.3	38.4	22.800	V
9378.700	34.9	-26.3	38.4	22.800	V
9970.000	34.9	-24.2	38.0	21.100	V
9974.500	34.9	-24.2	38.0	21.100	H

USB Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
8980.000	47.8	-26.7	38.0	36.500	H
9321.100	47.7	-26.3	38.4	35.600	V
9369.400	47.5	-26.3	38.4	35.400	V
9317.800	47.5	-26.3	38.4	35.400	H
9959.200	47.4	-24.9	38.0	34.300	V
9448.000	47.3	-25.6	38.4	34.500	H

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

Charging Mode, Set.1

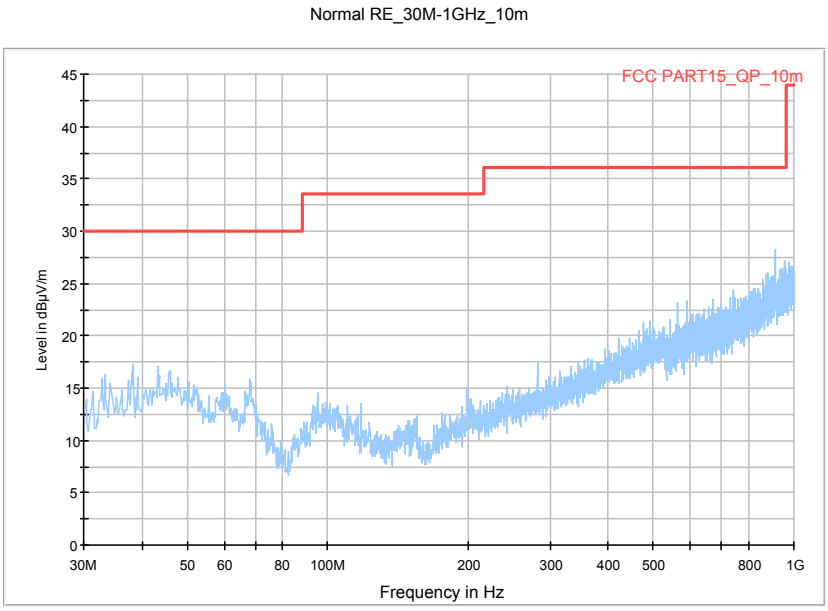


Fig.1 Radiated Emission from 30MHz to 1GHz

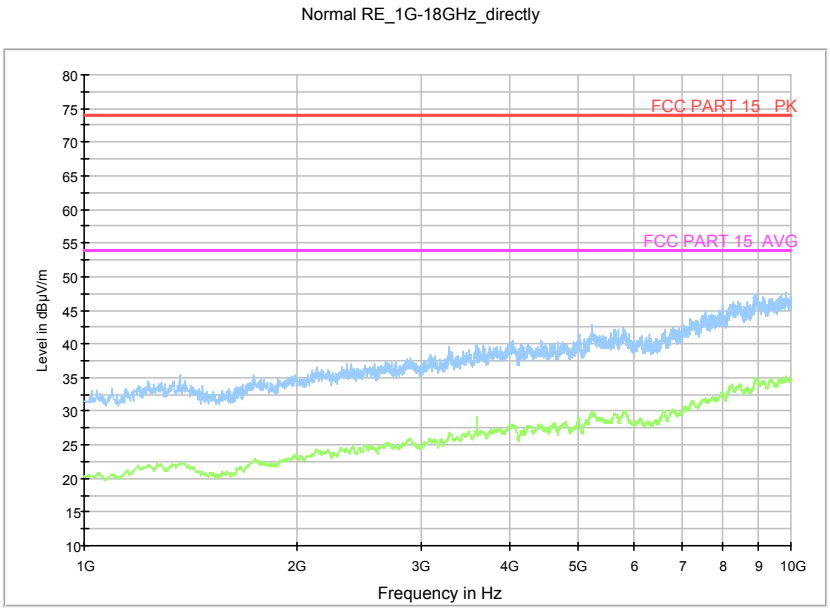


Fig.2 Radiated Emission from 1GHz to 10GHz

Charging Mode, Set.3

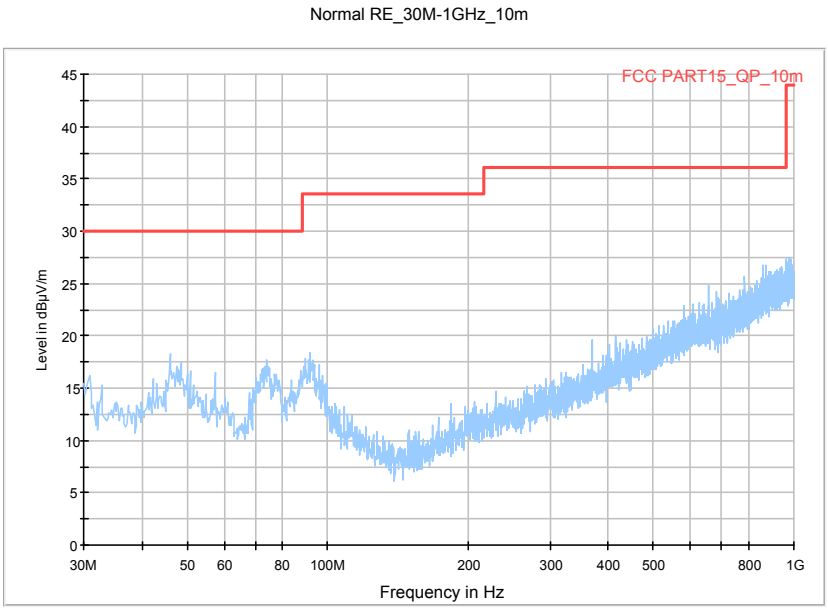


Fig.3 Radiated Emission from 30MHz to 1GHz

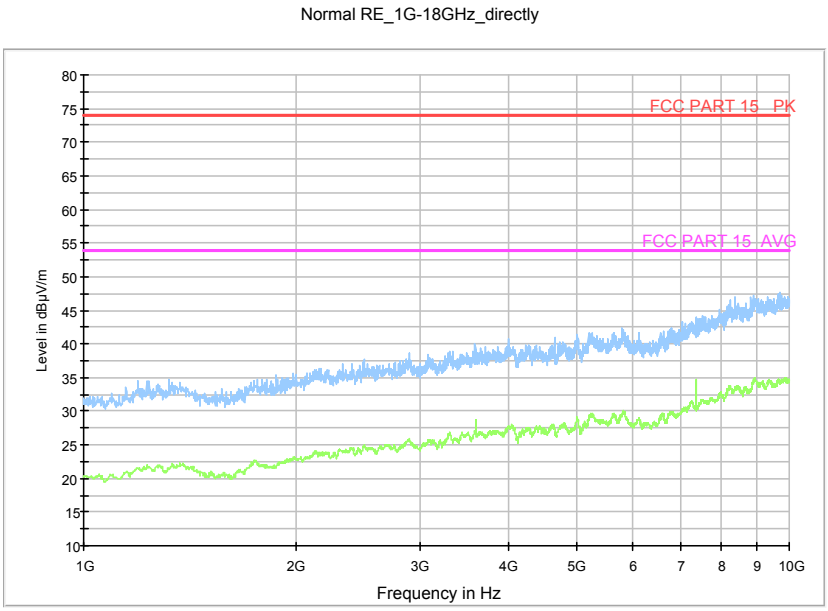


Fig.4 Radiated Emission from 1GHz to 10GHz

Charging Mode, Set.4

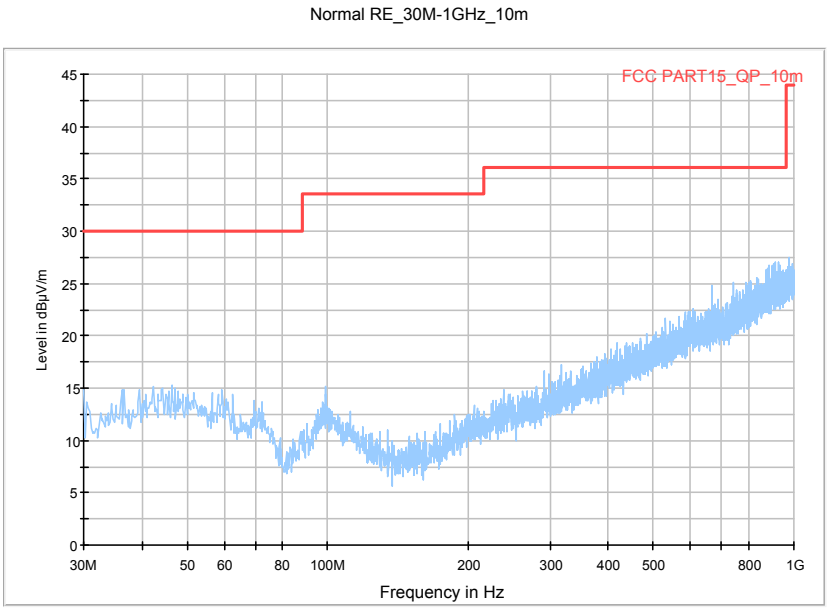


Fig.5 Radiated Emission from 30MHz to 1GHz

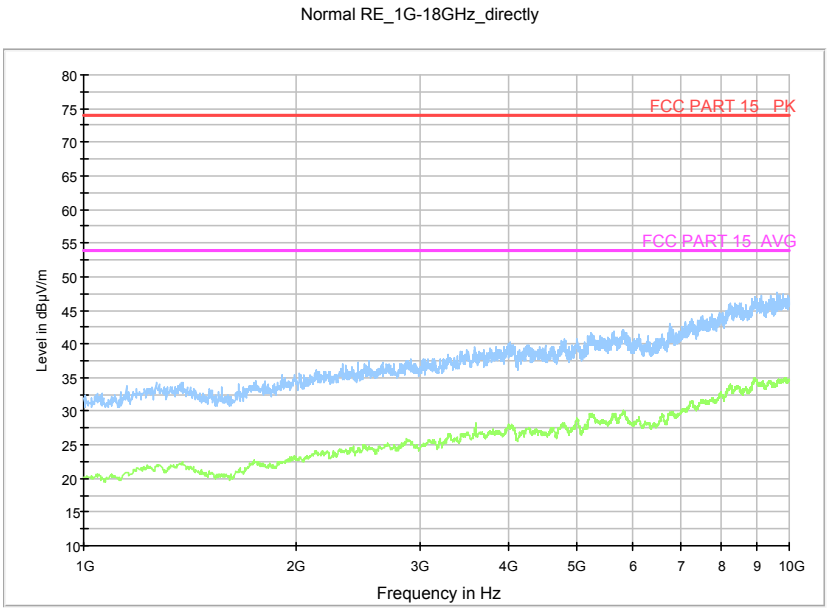


Fig.6 Radiated Emission from 1GHz to 10GHz

USB Mode, Set.5

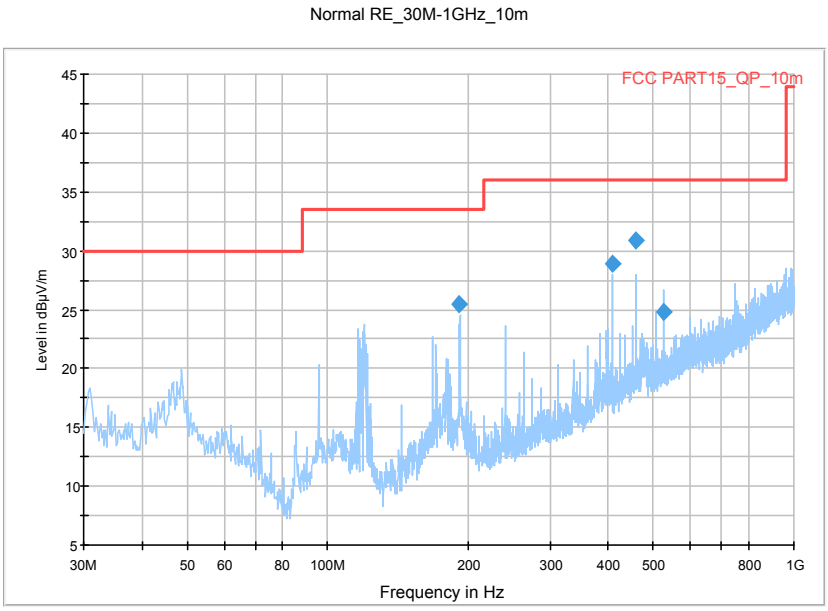


Fig.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
191.992500	25.5	395.0	H	182.0	-13.6	8.0	33.5
408.542500	28.9	200.0	H	194.0	-7.0	7.1	36.0
456.606000	30.8	175.0	H	201.0	-6.0	5.2	36.0
524.979500	24.8	275.0	V	78.0	-4.6	11.2	36.0

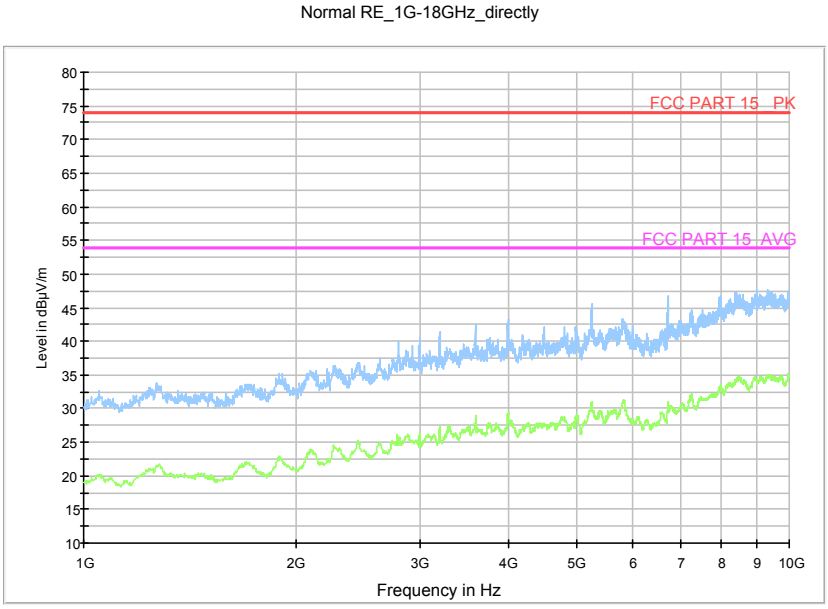


Fig.8 Radiated Emission from 1GHz to 10GHz

A.2 Conducted Emission (§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 - 2009, section 7.2.

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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

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

A.2.5 Measurement Results

Measurement uncertainty: *U*= 2.9 dB, *k*=2.

Charging Mode, Set.1

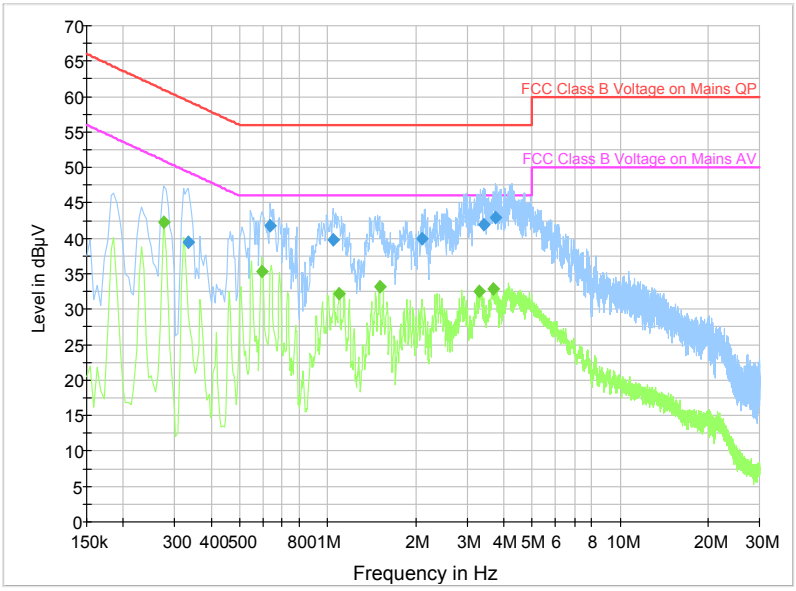


Fig.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.334500	39.4	GND	N	19.8	19.9	59.3
0.636000	41.7	GND	L1	19.8	14.3	56.0
1.041000	39.7	GND	L1	19.7	16.3	56.0
2.103000	40.0	GND	N	19.6	16.0	56.0
3.421500	42.0	GND	L1	19.7	14.0	56.0
3.745500	42.8	GND	N	19.7	13.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.276000	42.3	GND	L1	19.8	8.6	50.9
0.595500	35.3	GND	L1	19.8	10.7	46.0
1.095000	32.1	GND	N	19.7	13.9	46.0
1.504500	33.3	GND	N	19.6	12.7	46.0
3.286500	32.5	GND	N	19.6	13.5	46.0
3.687000	32.9	GND	N	19.7	13.1	46.0

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

Charging Mode, Set.3

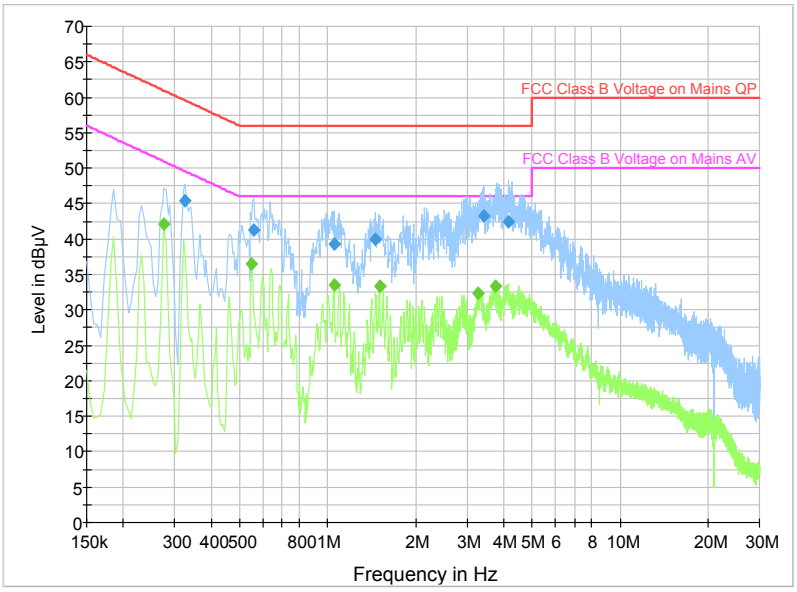


Fig.10 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.325500	45.4	GND	N	19.8	14.2	59.6
0.559500	41.3	GND	L1	19.8	14.7	56.0
1.050000	39.3	GND	N	19.7	16.7	56.0
1.455000	40.0	GND	N	19.7	16.0	56.0
3.430500	43.3	GND	L1	19.7	12.7	56.0
4.159500	42.4	GND	N	19.7	13.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.276000	42.2	GND	N	19.8	8.8	50.9
0.550500	36.6	GND	L1	19.8	9.4	46.0
1.050000	33.6	GND	N	19.7	12.4	46.0
1.504500	33.3	GND	N	19.6	12.7	46.0
3.277500	32.3	GND	N	19.6	13.7	46.0
3.736500	33.3	GND	L1	19.7	12.7	46.0

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

Charging Mode, Set.4

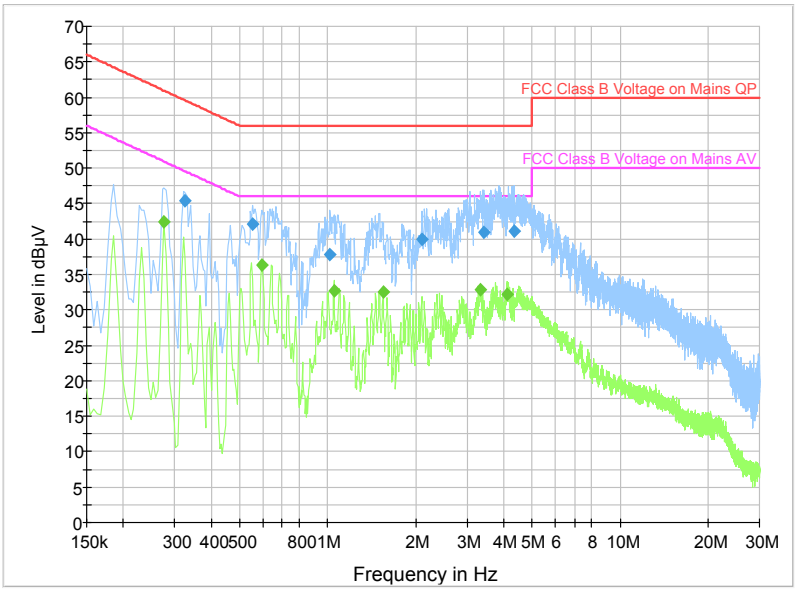


Fig.11 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.325500	45.4	GND	L1	19.8	14.2	59.6
0.555000	42.1	GND	N	19.8	13.9	56.0
1.018500	37.9	GND	L1	19.7	18.1	56.0
2.098500	39.9	GND	N	19.6	16.1	56.0
3.412500	40.9	GND	N	19.7	15.1	56.0
4.348500	41.1	GND	L1	19.7	14.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.276000	42.4	GND	L1	19.8	8.6	50.9
0.595500	36.3	GND	L1	19.8	9.7	46.0
1.050000	32.8	GND	N	19.7	13.2	46.0
1.549500	32.6	GND	L1	19.7	13.4	46.0
3.331500	32.9	GND	N	19.7	13.1	46.0
4.114500	32.2	GND	L1	19.7	13.8	46.0

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

USB Mode, Set.5

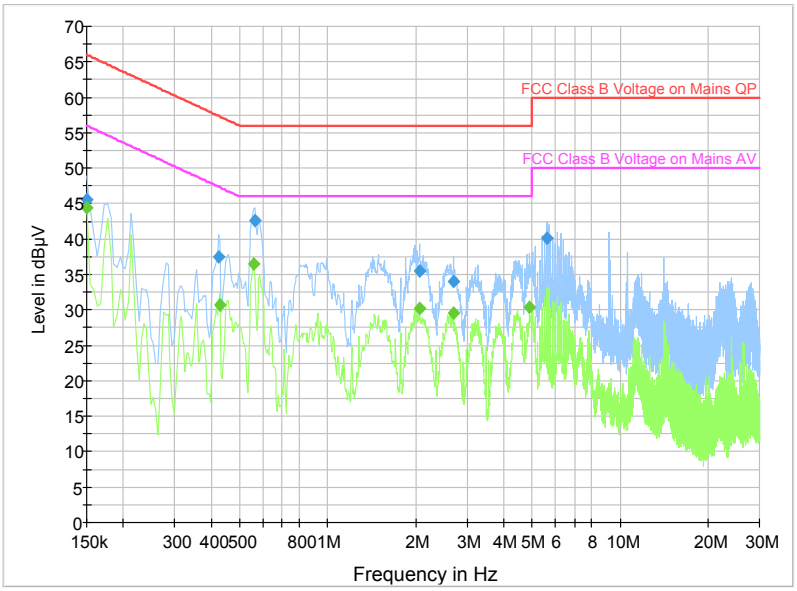


Fig.12 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.6	GND	N	20.1	20.4	66.0
0.424500	37.5	GND	L1	19.8	19.9	57.4
0.564000	42.5	GND	N	19.8	13.5	56.0
2.062500	35.5	GND	N	19.6	20.5	56.0
2.701500	34.0	GND	L1	19.6	22.0	56.0
5.604000	40.1	GND	L1	19.7	19.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.5	GND	N	20.1	11.5	56.0
0.429000	30.8	GND	N	19.8	16.5	47.3
0.559500	36.4	GND	N	19.8	9.6	46.0
2.062500	30.3	GND	L1	19.6	15.7	46.0
2.701500	29.6	GND	N	19.6	16.4	46.0
4.915500	30.4	GND	N	19.7	15.6	46.0

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

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