TEST REPORT

No. I15Z41313-EMC01

for

TCL Communication Ltd.

HSUPA/HSDPA/UMTS Quad-band/GSM Quad-band mobile phone

Model Name: 5016J

FCC ID: 2ACCJH026

with

Hardware Version: PIO

Software Version: v1A1D

Issued Date: 2015-07-02

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15Z41313-EMC01	Rev.0	1st edition	2015-07-02

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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℃

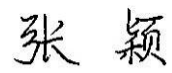
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-06-17

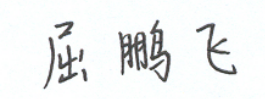
Testing End Date: 2015-06-23

1.4. Signature



Zhang Ying

(Prepared this test report)



Qu Pengfei

(Reviewed this test report)



Liu Baodian

(Approved this test report)

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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

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

3.1. About EUT

Description	HSUPA/HSDPA/UMTS Quad-band/GSM Quad-band mobile phone
Model Name	5016J
FCC ID	2ACCJH026
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
EUT1	/	PIO	v1A1D

*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-0418
AE2	Battery	/	14TCT-BA-1898
AE3	Battery	/	14TCT-BA-0067
AE4	Battery	/	14TCT-BA-0372
AE5	Battery	/	14TCT-BA-1330
AE6	Battery	/	15TCT-BA-0401
AE7	USB cable	/	14TCT-DC-0379
AE8	USB cable	/	14TCT-DC-0617
AE9	USB cable	/	14TCT-DC-0789
AE10	USB cable	/	14TCT-DC-0783
AE11	Travel charger	/	15TCT-CH-0295
AE12	Travel charger	/	15TCT-CH-0300
AE13	Travel charger	/	15TCT-CH-0378
AE14	Travel charger	/	15TCT-CH-0384
AE15	USB cable	/	/
AE16	USB cable	/	/

AE1, AE2, AE3, AE4,

Model	CAB1800011C1
Manufacturer	BYD
Capacitance	1800mAh
Nominal voltage	3.8V

AE5,AE6

Model	CAB1800011C2

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Manufacturer	SCUD
Capacitance	1800mAh
Nominal voltage	3.8V

AE7,AE8

Model	CDA3122002C1
Manufacturer	JUWEI
Length of cable	100cm

AE9,AE10

Model	CDA3122002C2
Manufacturer	Shenghua
Length of cable	98cm

AE11,AE12

Model	CBA0067AG0C1
Manufacturer	BYD
Length of cable	/

AE13,AE14

Model	CBA0067AG0C4
Manufacturer	Aohai
Length of cable	/

AE15

Model	CDA3122005C1
Manufacturer	JUWE
Length of cable	/

AE16

Model	CDA3122005C2
Manufacturer	Shenghua
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 + AE7 + AE11	Charger
Set.2	EUT1+ AE1 + AE7 + AE13	Charger
Set.3	EUT1+ AE1 + AE7	USB

Note:
HSUPA/HSDPA/UMTS Quad-band/GSM Quad-band mobile phone 5016J manufactured by TCL Communication Ltd is a variant model based on 5015A for conformance test. According to the declaration of changes, the results are inherited from the initial model. The report number of initial model is I15Z41294-EMC01.

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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 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

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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

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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	Clause in IC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	Section 5	B.1	P	1
2	Conducted Emission	15.107(a)	Section 5	B.2	P	1

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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	ESU26	100235	R&S	2016-03-02	1 year
3	Universal Radio Communication Tester	CMW500	143008	R&S	2015-12-09	1 year
4	Universal Radio Communication Tester	CMW500	150344	R&S	2015-11-16	1 year
5	LISN	ENV216	101200	R&S	2015-07-07	1 year
6	EMI Antenna	VULB 9163	9163-301	Schwarzbeck	2017-12-16	3 years
7	EMI Antenna	3115	6914	ETS-Lindgren	2016-12-15	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	CN0RH659658907ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

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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 - 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

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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
17967.700	44.0	-17.7	45.6	16.100	HORIZONTAL
17963.167	43.9	-17.7	45.6	16.000	HORIZONTAL
17970.533	43.8	-17.7	45.6	15.900	VERTICAL
17966.567	43.8	-17.7	45.6	15.900	HORIZONTAL
17987.533	43.8	-17.7	45.6	15.900	HORIZONTAL
17972.233	43.8	-17.7	45.6	15.900	HORIZONTAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17953.533	56.2	-17.7	45.6	28.300	HORIZONTAL
17907.067	56.0	-18.5	45.6	28.900	HORIZONTAL
17964.300	55.4	-17.7	45.6	27.500	VERTICAL
17959.767	55.4	-17.7	45.6	27.500	HORIZONTAL
17956.933	55.3	-17.7	45.6	27.400	HORIZONTAL
17976.767	55.1	-17.7	45.6	27.200	HORIZONTAL

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Measurement results for Set.2:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17971.100	44.0	-17.7	45.6	16.100	HORIZONTAL
17989.800	43.9	-17.7	45.6	16.000	HORIZONTAL
17972.800	43.8	-17.7	45.6	15.900	VERTICAL
17954.667	43.8	-17.7	45.6	15.900	HORIZONTAL
17963.167	43.8	-17.7	45.6	15.900	HORIZONTAL
17963.733	43.8	-17.7	45.6	15.900	HORIZONTAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17977.333	55.7	-17.7	45.6	27.800	HORIZONTAL
17942.767	55.6	-17.7	45.6	27.700	HORIZONTAL
17997.167	55.6	-17.7	45.6	27.700	VERTICAL
17987.533	55.4	-17.7	45.6	27.500	HORIZONTAL
17966.000	55.1	-17.7	45.6	27.200	HORIZONTAL
17995.467	55.1	-17.7	45.6	27.200	HORIZONTAL

Measurement result for Set.3:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBμV)	Polarity
17997.167	43.6	-17.7	45.6	15.700	HORIZONTAL
17966.567	43.6	-17.7	45.6	15.700	HORIZONTAL
17968.267	43.5	-17.7	45.6	15.600	VERTICAL
17986.967	43.5	-17.7	45.6	15.600	HORIZONTAL
17996.033	43.5	-17.7	45.6	15.600	HORIZONTAL
17962.600	43.4	-17.7	45.6	15.500	HORIZONTAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBμV)	Polarity
1194.367	56.0	-41.2	24.1	73.100	HORIZONTAL
17969.400	55.0	-17.7	45.6	27.100	HORIZONTAL
17988.667	54.8	-17.7	45.6	26.900	VERTICAL
17937.667	54.7	-17.7	45.6	26.800	HORIZONTAL
17935.967	54.6	-17.7	45.6	26.700	HORIZONTAL
17949.000	54.4	-17.7	45.6	26.500	HORIZONTAL

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

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Charging Mode, Set.1

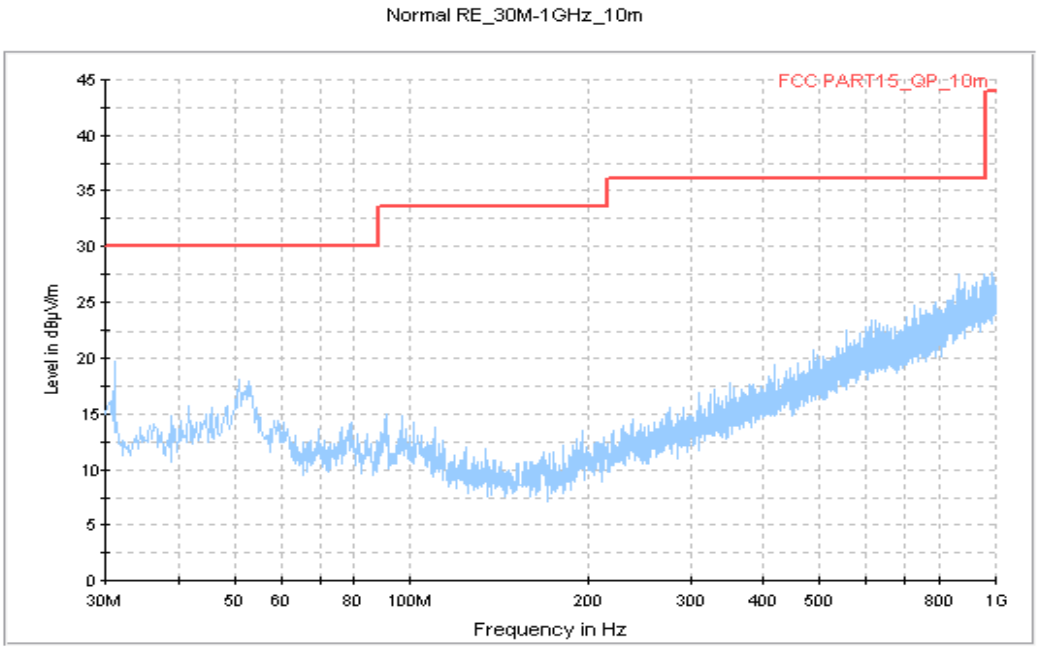


Figure A.1 Radiated Emission from 30MHz to 1GHz

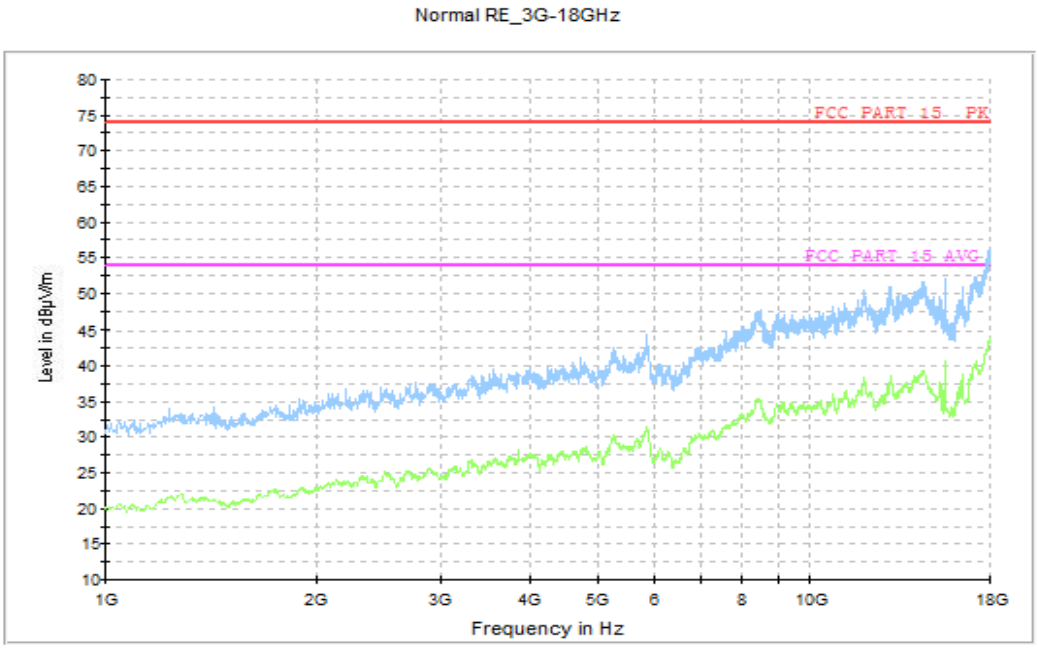


Figure A.2 Radiated Emission from 1GHz to 18GHz

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Charging Mode, Set.2

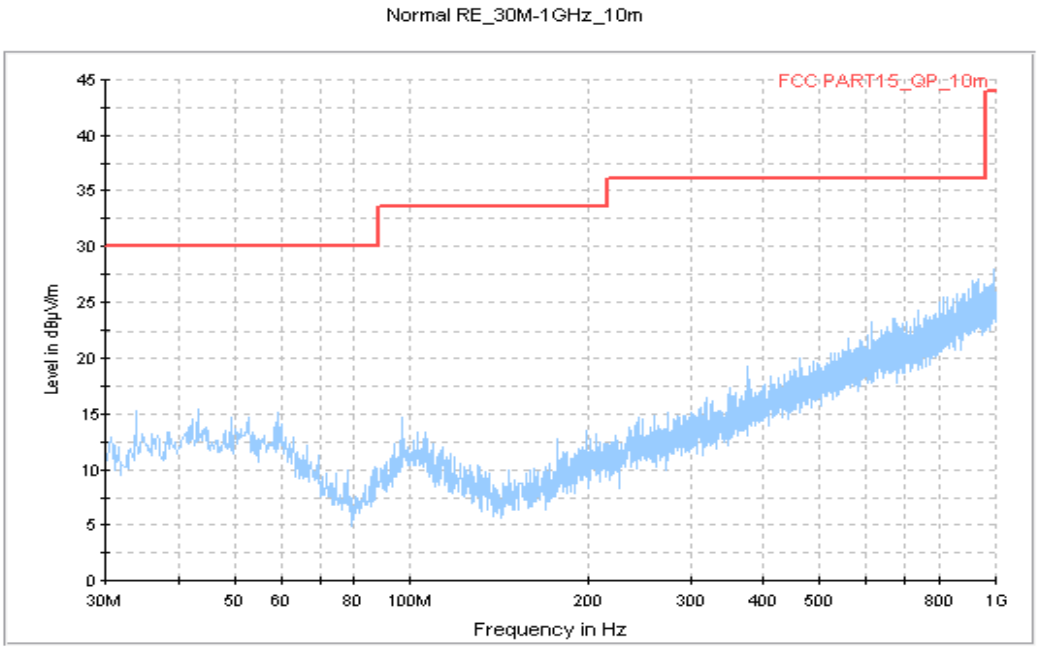


Figure A.3 Radiated Emission from 30MHz to 1GHz

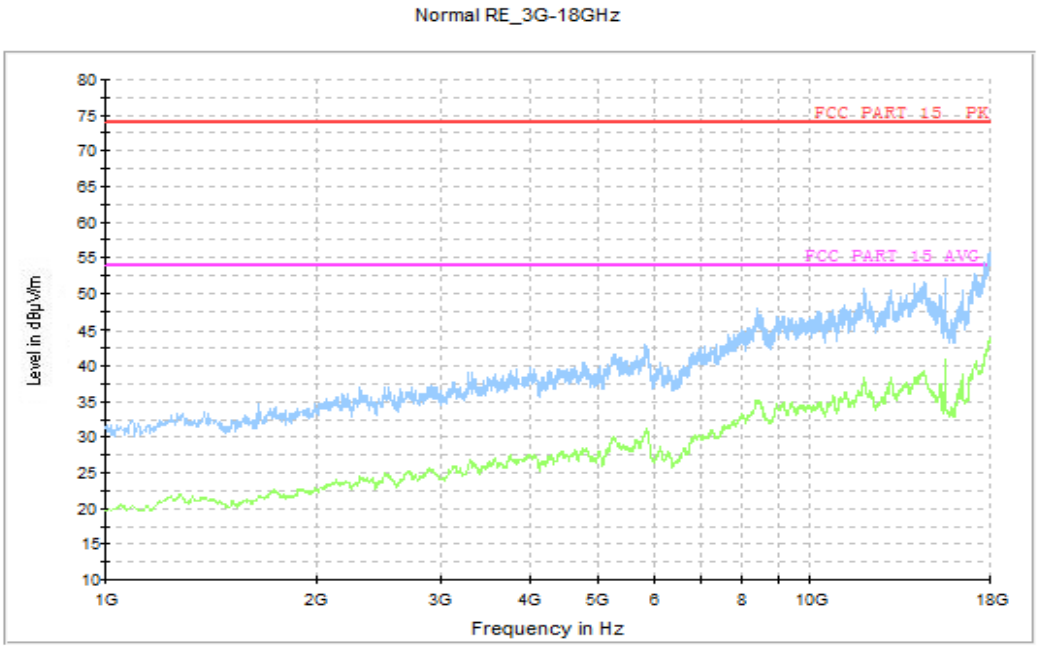


Figure A.4 Radiated Emission from 1GHz to 18GHz

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USB Mode, Set.3

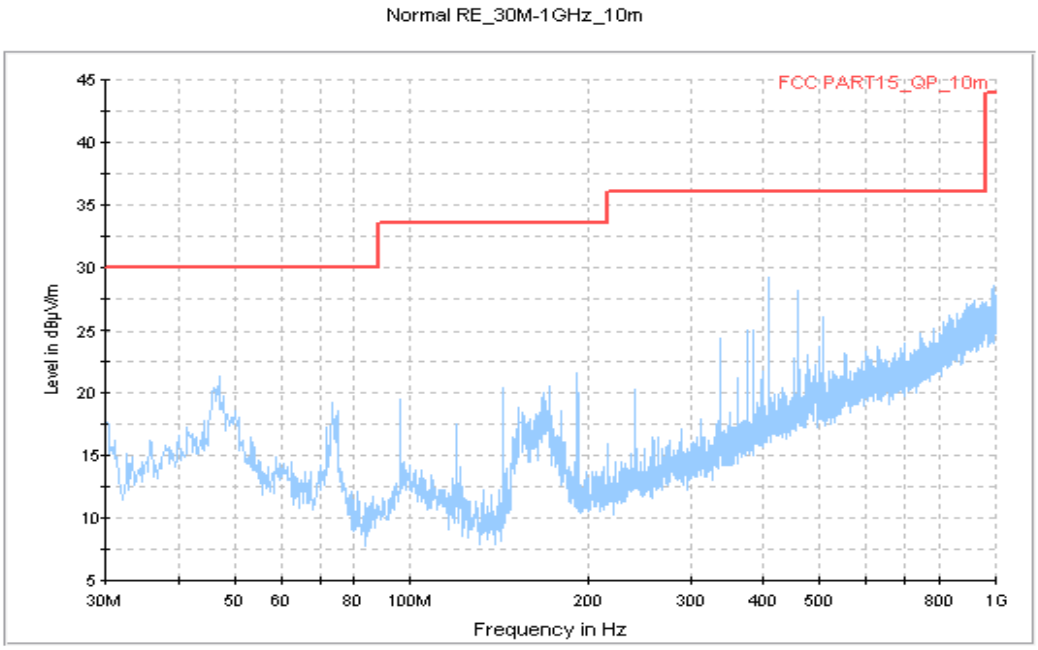


Figure A.5 Radiated Emission from 30MHz to 1GHz

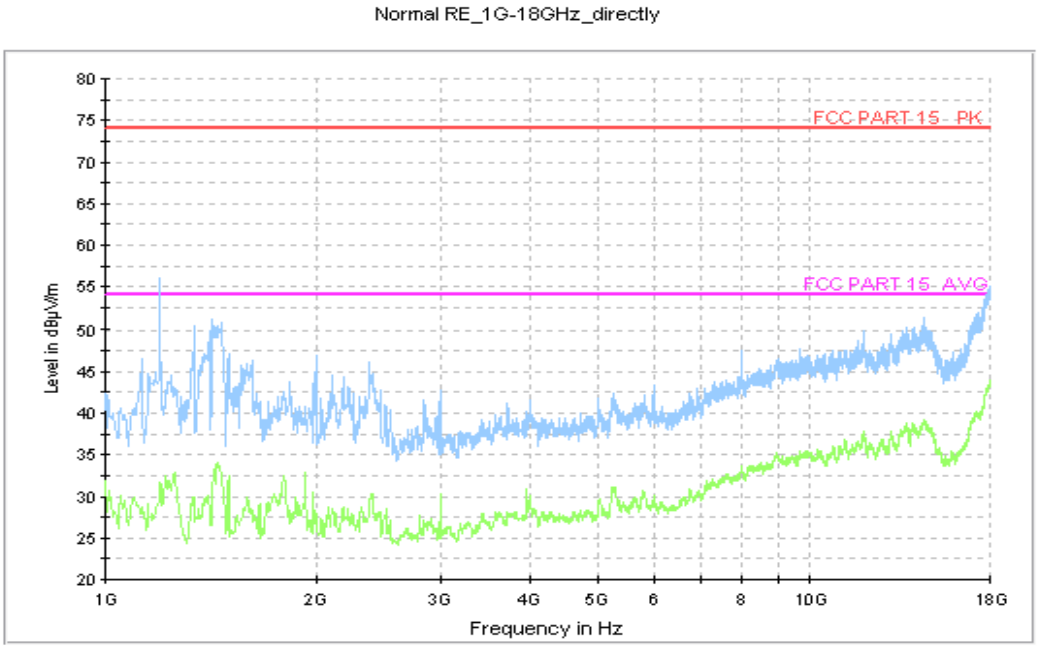


Figure A.6 Radiated Emission from 1GHz to 18GHz

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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 - 2009, 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 (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

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A.2.5 Measurement Results

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

Charging Mode, Set.1

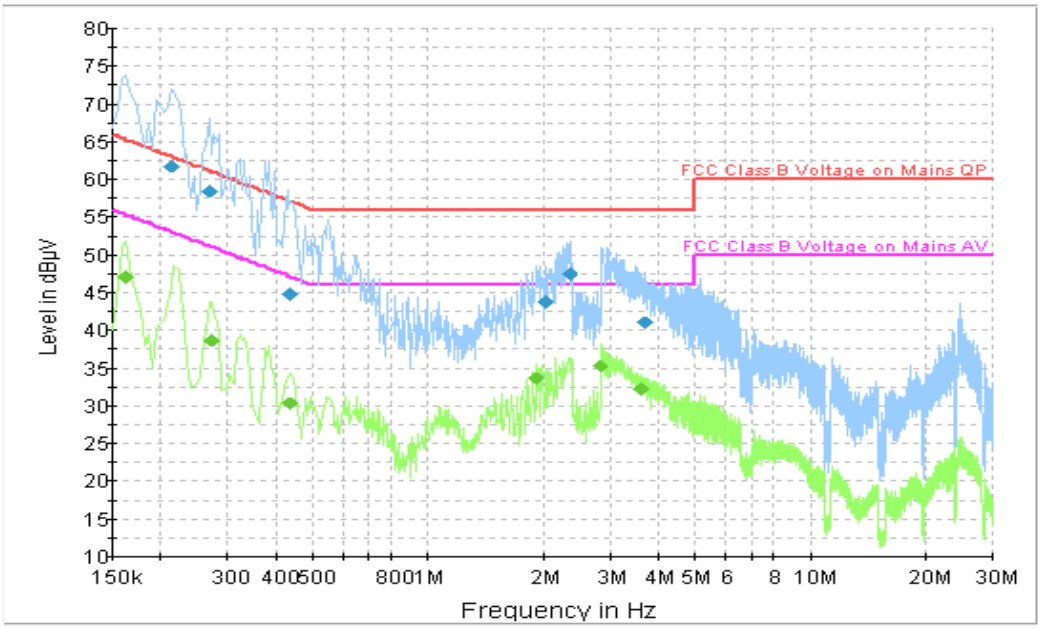


Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	61.8	2000.0	9.000	On	L1	19.8	1.3	63.1
0.267000	58.5	2000.0	9.000	On	L1	19.7	2.7	61.2
0.438000	44.9	2000.0	9.000	On	L1	19.8	12.2	57.1
2.026500	43.9	2000.0	9.000	On	L1	19.6	12.1	56.0
2.350500	47.5	2000.0	9.000	On	L1	19.6	8.5	56.0
3.682500	41.1	2000.0	9.000	On	L1	19.7	14.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	47.1	2000.0	9.000	On	L1	19.7	8.2	55.3
0.271500	38.8	2000.0	9.000	On	L1	19.8	12.3	51.1
0.438000	30.4	2000.0	9.000	On	L1	19.8	16.7	47.1
1.923000	33.7	2000.0	9.000	On	L1	19.6	12.3	46.0
2.827500	35.3	2000.0	9.000	On	L1	19.7	10.7	46.0
3.628500	32.4	2000.0	9.000	On	L1	19.7	13.6	46.0

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

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Charging Mode, Set.2

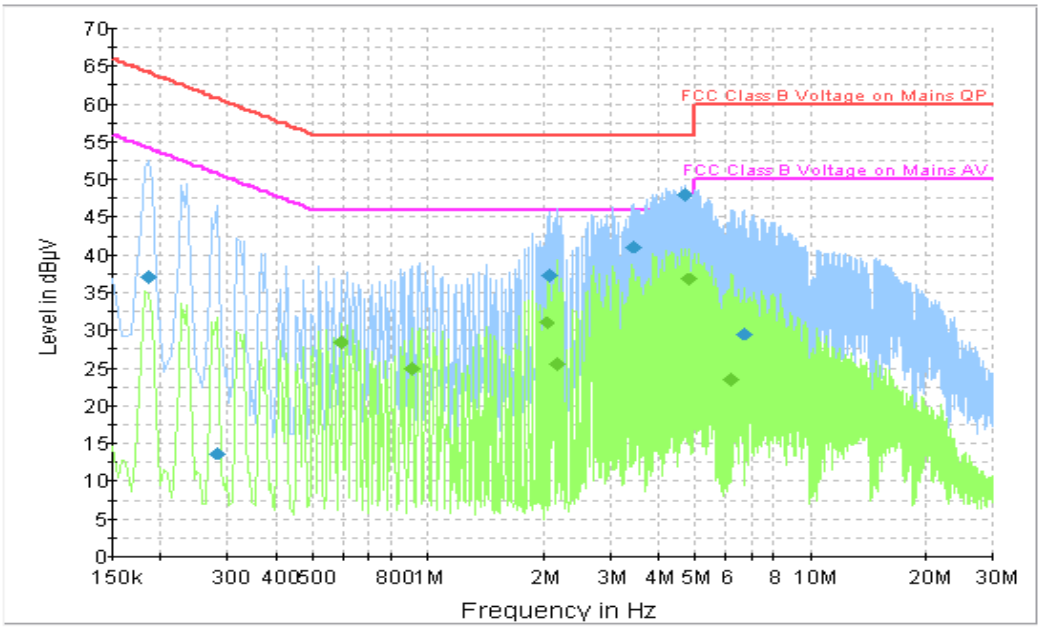


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	37.1	2000.0	9.000	On	N	19.8	27.1	64.2
0.280500	13.7	2000.0	9.000	On	N	19.7	47.1	60.8
2.089500	37.4	2000.0	9.000	On	L1	19.6	18.6	56.0
3.439500	41.1	2000.0	9.000	On	N	19.6	14.9	56.0
4.659000	48.0	2000.0	9.000	On	L1	19.6	8.0	56.0
6.688500	29.6	2000.0	9.000	On	L1	19.7	30.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.591000	28.5	2000.0	9.000	On	L1	19.8	17.5	46.0
0.910500	24.9	2000.0	9.000	On	L1	19.7	21.1	46.0
2.049000	31.1	2000.0	9.000	On	L1	19.6	14.9	46.0
2.175000	25.6	2000.0	9.000	On	L1	19.6	20.4	46.0
4.794000	36.8	2000.0	9.000	On	L1	19.7	9.2	46.0
6.180000	23.4	2000.0	9.000	On	L1	19.7	26.6	50.0

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

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USB Mode, Set.3

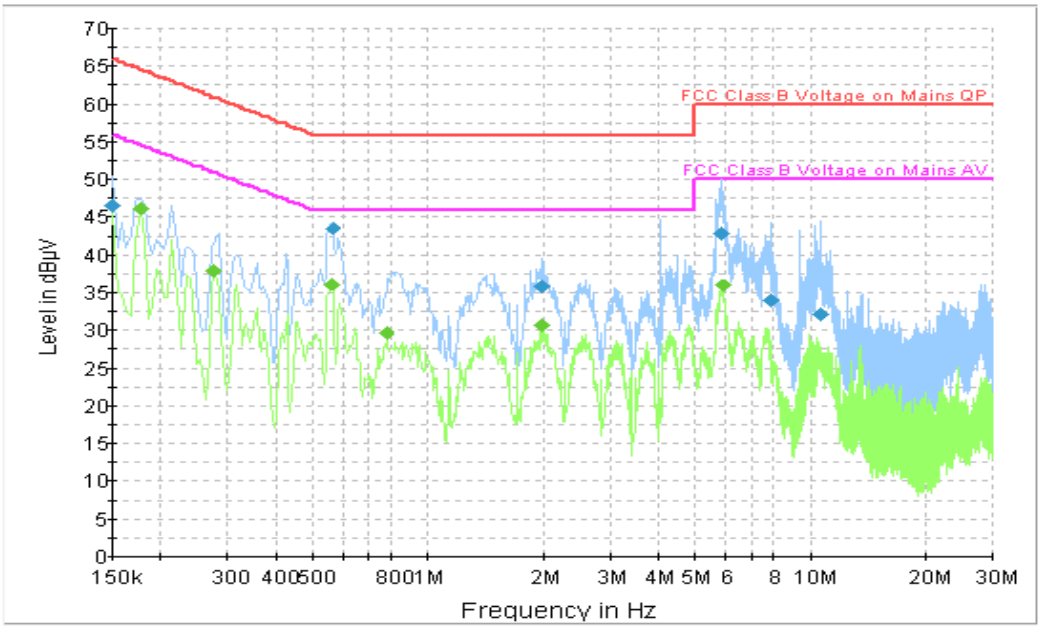


Figure A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.6	2000.0	9.000	On	N	20.1	19.4	66.0
0.564000	43.5	2000.0	9.000	On	L1	19.8	12.5	56.0
1.995000	35.8	2000.0	9.000	On	N	19.6	20.2	56.0
5.811000	42.9	2000.0	9.000	On	L1	19.7	17.1	60.0
7.890000	33.9	2000.0	9.000	On	N	19.7	26.1	60.0
10.594500	32.1	2000.0	9.000	On	N	19.9	27.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	46.3	2000.0	9.000	On	N	19.7	8.3	54.6
0.276000	38.0	2000.0	9.000	On	N	19.8	13.0	50.9
0.559500	36.2	2000.0	9.000	On	L1	19.8	9.8	46.0
0.780000	29.7	2000.0	9.000	On	N	19.8	16.3	46.0
1.995000	30.7	2000.0	9.000	On	N	19.6	15.3	46.0
5.905500	36.0	2000.0	9.000	On	N	19.7	14.0	50.0

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

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

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