



TEST REPORT

No. I15Z41184-EMC01

for

TCT Mobile Limited

GSM Quadband / UMTS Triband mobile phone

Model Name: ALCATEL A392T

FCC ID: RAD552

with

Hardware Version: CA7

Software Version: 02

Issued Date: 2015-05-28

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

IC O.A.T.S listed: No.12389A-1

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
I15Z41184-EMC01	Rev.0	1 st edition	2015-05-28



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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: 2015-05-15

Testing End Date: 2015-05-21

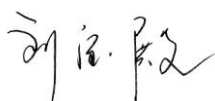
1.4. Signature



Zhang Hui
(Prepared this test report)



Qu Pengfei
(Reviewed this test report)



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(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCT Mobile Limited
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
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2.2. Manufacturer Information

Company Name: TCT Mobile Limited
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
Telephone: +86 21 51798260
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM Quadband / UMTS Triband mobile phone
Model Name	ALCATEL A392T
FCC ID	RAD552
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
EUT5	014420000010938	02	CA7

*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-0048
AE2	Battery	/	15TCT-BA-0042
AE3	Battery	/	14TCT-BA-1735
AE4	Battery	/	15TCT-BA-0043
AE5	USB cable	/	14TCT-DC-0831
AE6	USB cable	/	14TCT-DC-0830
AE7	Travel charger	/	14TCT-CH-1051
AE8	Travel charge	/	14TCT-CH-1911

AE1, AE2, AE3, AE4

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850 mAh
Nominal voltage	3.7 V

AE5, AE6

Model	CDA3122005C2
Manufacturer	Shenghua
Length of cable	100 cm

AE7, AE8

Model	CBA3002AG0C1
Manufacturer	BYD
Length of cable	122cm

*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	EUT5 + AE1 + AE7	Charger
Set.2	EUT5 + AE1 + AE5	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 - 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
ICES-003	Information Technology Equipment (ITE) – Limits and methods of measurement	Issue 5

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	MANUFACTURER	CAL DUE DATE	CALIBRATION 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	2015-12-09	1 year
4	LISN	ENV216	101200	R&S	2015-07-07	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).

IC: ICES-003 Section 5.

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_{PL} : Path Loss

P_{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_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μV)	Polarity
17984.700	43.5	-17.7	45.6	15.600	HORIZONTAL
15293.600	43.4	-21.6	39.4	25.600	HORIZONTAL
17981.867	43.4	-17.7	45.6	15.500	VERTICAL
17979.033	43.4	-17.7	45.6	15.500	HORIZONTAL
17989.800	43.4	-17.7	45.6	15.500	HORIZONTAL
17996.033	43.3	-17.7	45.6	15.400	HORIZONTAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dB $\mu\text{V}/\text{m}$)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μV)	Polarity
17979.600	55.5	-17.7	45.6	27.600	HORIZONTAL
17907.633	55.1	-18.5	45.6	28.000	HORIZONTAL
17997.167	55.0	-17.7	45.6	27.100	VERTICAL
17972.233	54.9	-17.7	45.6	27.000	HORIZONTAL
17975.067	54.8	-17.7	45.6	26.900	HORIZONTAL
17962.033	54.8	-17.7	45.6	26.900	HORIZONTAL

Measurement results for Set.2:

USB Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
4294.667	30.4	-36.0	33.2	33.200	HORIZONTAL
4293.500	30.4	-36.0	33.2	33.200	HORIZONTAL
4190.167	30.3	-35.9	33.2	33.000	VERTICAL
4196.833	30.3	-36.2	33.2	33.300	HORIZONTAL
4189.000	30.3	-35.9	33.2	33.000	HORIZONTAL
4190.667	30.3	-36.2	33.2	33.300	HORIZONTAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
1325.167	48.5	-40.8	24.1	65.200	HORIZONTAL
1198.000	48.1	-41.3	24.1	65.300	HORIZONTAL
1324.500	47.4	-40.8	24.1	64.100	VERTICAL
1325.333	47.3	-40.8	24.1	64.000	HORIZONTAL
1324.167	46.8	-40.8	24.1	63.500	HORIZONTAL
1324.667	46.8	-40.8	24.1	63.500	HORIZONTAL

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

Charging Mode, Set.1

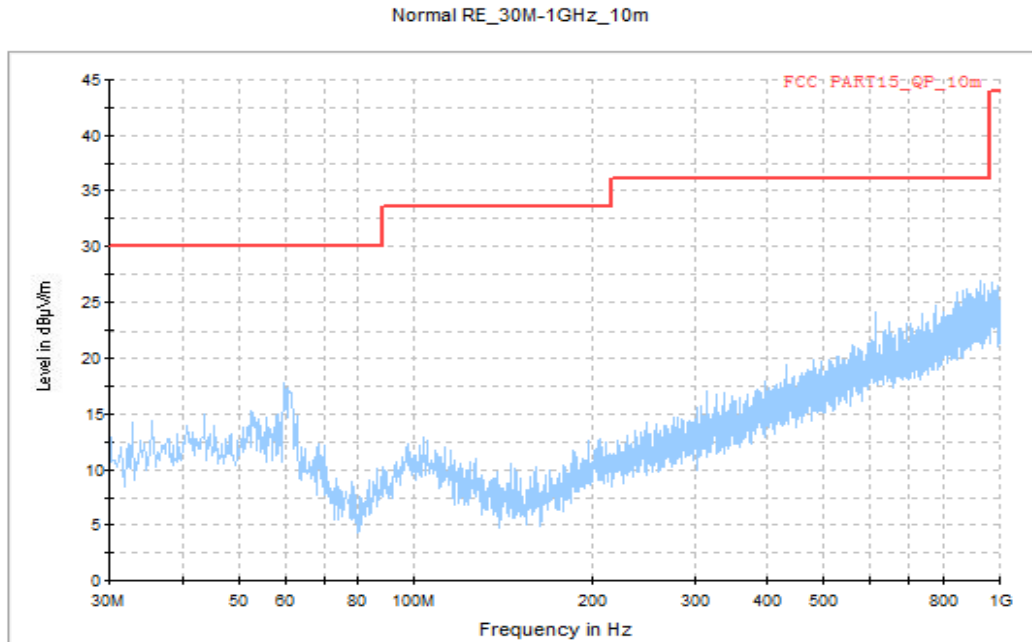


Figure A.1 Radiated Emission from 30MHz to 1GHz

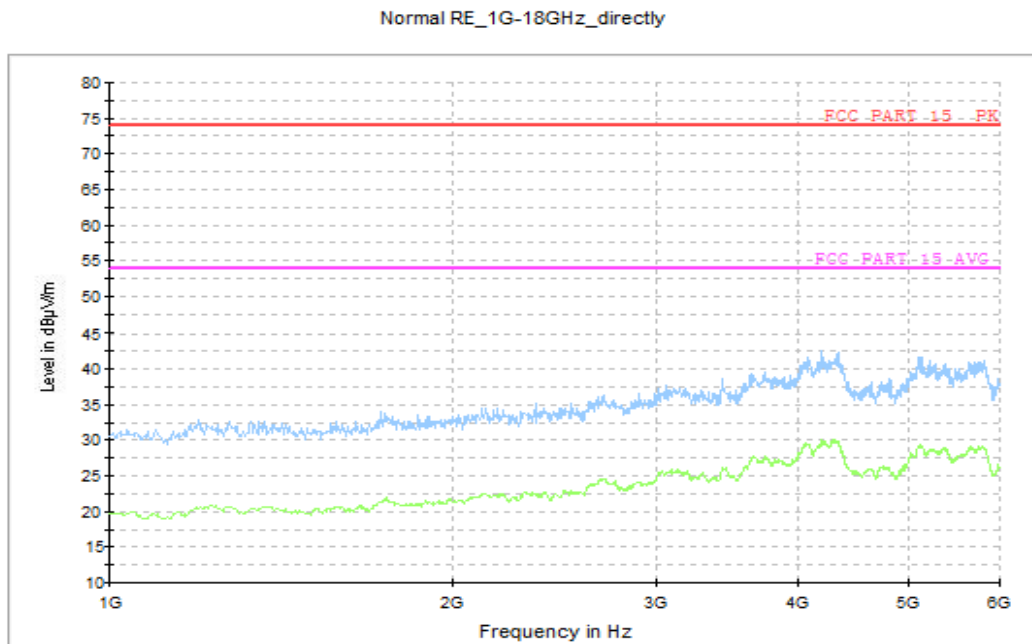


Figure A.2 Radiated Emission from 1GHz to 6GHz

USB Mode, Set.2

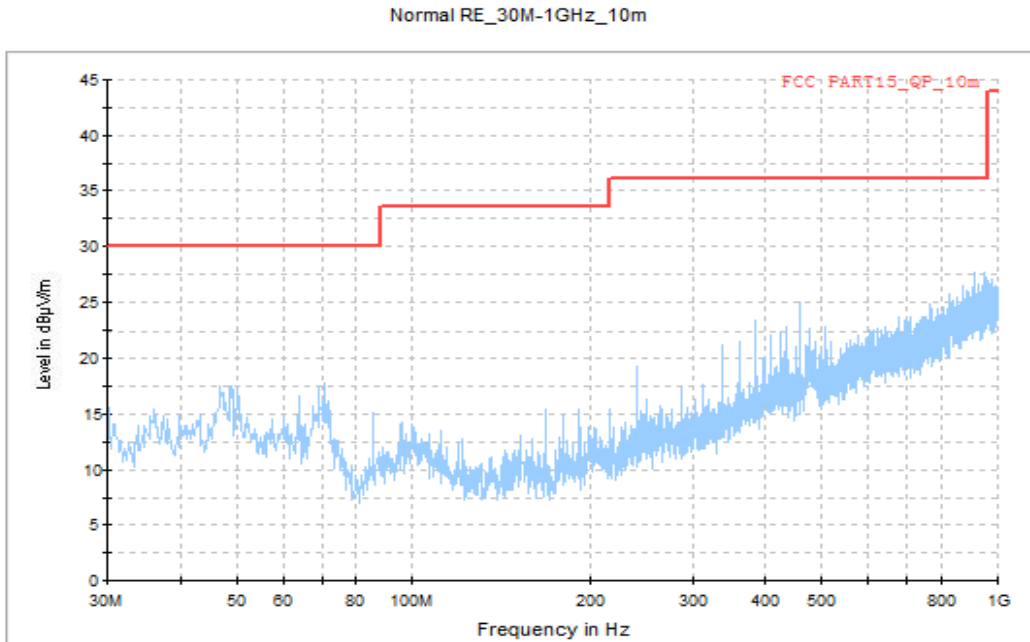


Figure A.3 Radiated Emission from 30MHz to 1GHz

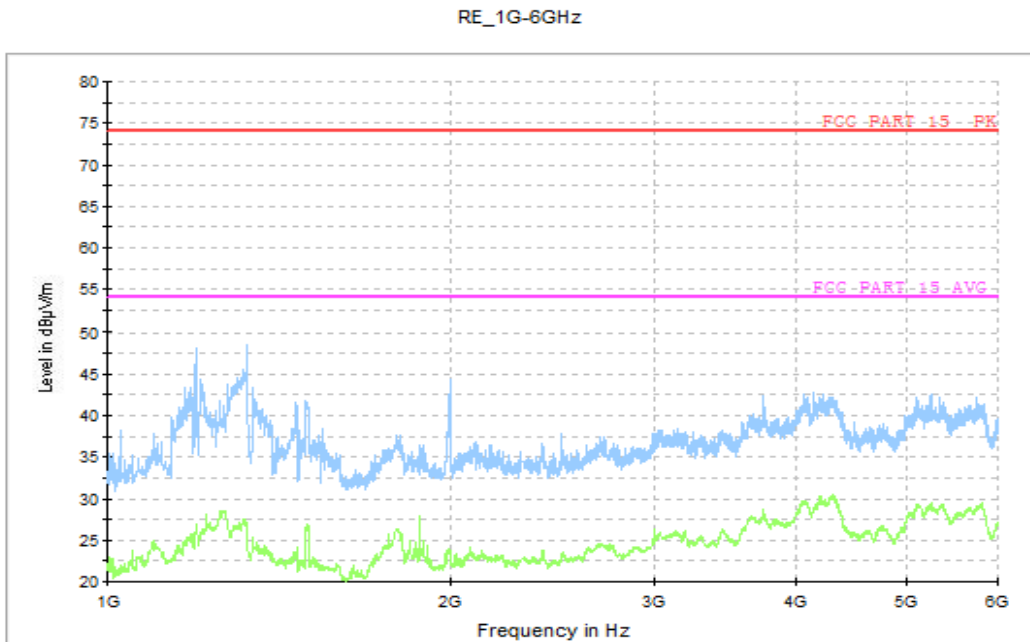


Figure A.4 Radiated Emission from 1GHz to 6GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

IC: ICES-003 Section 5.

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 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: $U= 2.9$ dB, $k=2$.

Charging Mode, Set.1

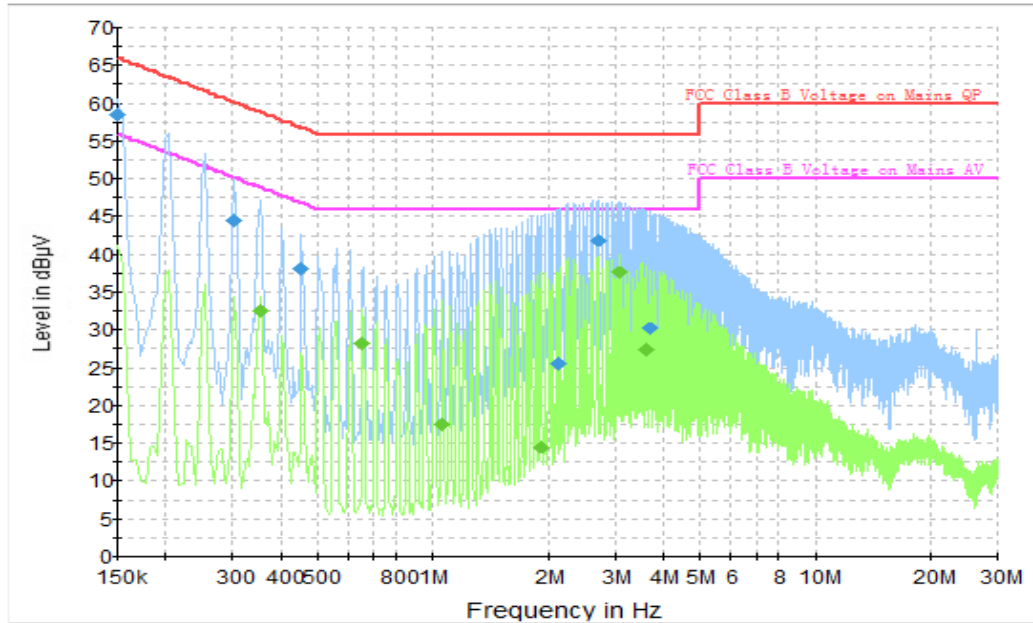


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	58.6	2000.0	9.000	On	L1	20.1	7.4	66.0
0.303000	44.5	2000.0	9.000	On	L1	19.8	15.6	60.2
0.451500	38.2	2000.0	9.000	On	L1	19.8	18.7	56.8
2.116500	25.5	2000.0	9.000	On	L1	19.6	30.5	56.0
2.719500	41.9	2000.0	9.000	On	N	19.6	14.1	56.0
3.687000	30.2	2000.0	9.000	On	L1	19.7	25.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.352500	32.6	2000.0	9.000	On	L1	19.8	16.3	48.9
0.654000	28.2	2000.0	9.000	On	L1	19.8	17.8	46.0
1.059000	17.5	2000.0	9.000	On	L1	19.7	28.5	46.0
1.914000	14.5	2000.0	9.000	On	L1	19.6	31.5	46.0
3.052500	37.6	2000.0	9.000	On	L1	19.7	8.4	46.0
3.628500	27.3	2000.0	9.000	On	N	19.7	18.7	46.0

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

USB Mode, Set.2

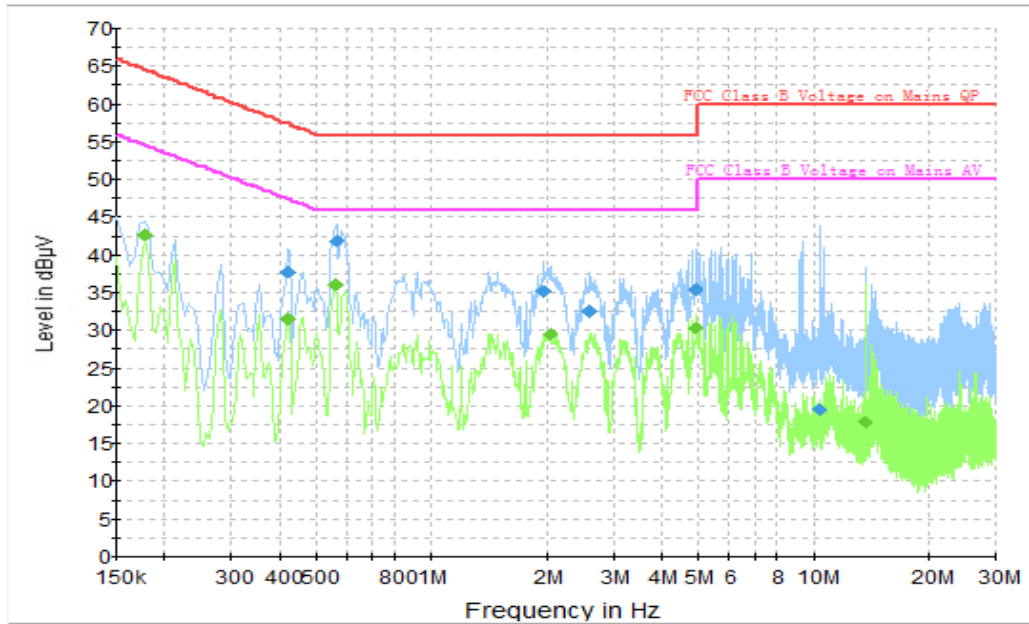


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.420000	37.8	2000.0	9.000	On	N	19.8	19.7	57.4
0.564000	41.9	2000.0	9.000	On	N	19.8	14.1	56.0
1.968000	35.2	2000.0	9.000	On	L1	19.6	20.8	56.0
2.607000	32.6	2000.0	9.000	On	N	19.7	23.4	56.0
4.915500	35.6	2000.0	9.000	On	L1	19.7	20.4	56.0
10.288500	19.5	2000.0	9.000	On	N	19.9	40.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	42.7	2000.0	9.000	On	N	19.7	11.9	54.6
0.420000	31.6	2000.0	9.000	On	N	19.8	15.9	47.4
0.559500	36.2	2000.0	9.000	On	L1	19.8	9.8	46.0
2.044500	29.5	2000.0	9.000	On	N	19.6	16.5	46.0
4.915500	30.4	2000.0	9.000	On	L1	19.7	15.6	46.0
13.560000	17.9	2000.0	9.000	On	N	20.0	32.1	50.0

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

END OF REPORT