



TEST REPORT

No. I14Z45273-EMC01

for

TCT Mobile Limited

HSDPA/HSUPA/HSPA+/UMTS Bi-bands / GSM quad bands/LTE 2

bands mobile phone

Model Name: A995L

Marketing Name: A995L

FCC ID: RAD472

with

Hardware Version: PIO

Software Version: v8F1K

Issued Date: Apr. 04th, 2014

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 TMC Beijing.

Test Laboratory:

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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

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1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

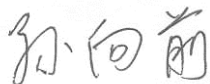
1.3. Project data

Testing Start Date: Mar. 16th, 2014
Testing End Date: Apr. 02nd, 2014

1.4. Signature



Qu Pengfei
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(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.
City: Shanghai
Postal Code: 201203
Country: China
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Telephone: 0086-21-61460890
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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.
City: Shanghai
Postal Code: 201203
Country: China
Telephone: 0086-21-61460890
Fax: 0086-21-61460602

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

3.1. About EUT

Description	HSDPA/HSUPA/HSPA+/UMTS Bi-bands / GSM quad bands/LTE 2 bands mobile phone
Model Name	A995L
Marketing Name	A995L
FCC ID	RAD472
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.9VDC)

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	014057000100010	PIO	v8F1K

*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	/	Inbuilt
AE2	Travel charger	/	TCT-CHR-1666
AE3	USB cable	/	/
AE4	USB cable	/	/

AE1

Model	CAC3380001C2
Manufacturer	SCUD
Capacitance	3400 mAh
Nominal voltage	3.8 V

AE2

Model	CBA0015AG1C1
Manufacturer	BYD
Length of cable	99 cm (length of USB cable)

AE3

Model	CDA0000024C1
Manufacturer	Shenghua
Length of cable	99 cm

AE4

Model	CDA0000024C2
Manufacturer	Juwei
Length of cable	99 cm

*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 + AE2 + AE3/AE4	Charger
Set.2	EUT1+ AE1 + AE3/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	10-1-13 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 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

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

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1.	Test Receiver	ESCI 7	100948	R&S	2014-07-18
2.	Spectrum Analyzer	FSV	101047	R&S	2014-06-30
3.	Universal Radio Communication Tester	CMU200	109914	R&S	2014-04-21
4.	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
5.	EMI Antenna	VULB 9163	9163-234	Schwarzbeck	2016-09-15
6.	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-16
7.	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A
8.	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
9.	Printer	P1606dn	VNC3L52122	HP	N/A
10.	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
11.	Mouse	M-UAE119	LZ935220ZRC	Lenovo	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

Limit from CFR Part 15.109(a)

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

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/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
9945.719	48.4	-24.9	38.0	35.3	Horizontal
9920.969	47.5	-24.9	38.0	34.4	Vertical
8103.531	47.3	-27.5	37.7	37.1	Horizontal
8119.563	47.1	-27.5	37.7	36.9	Horizontal
8072.031	47.1	-27.9	37.7	37.3	Vertical
9926.875	47.1	-24.9	38.0	34.0	Horizontal

Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
9952.469	35.2	-24.9	38.0	22.1	Vertical
9953.031	35.2	-24.9	38.0	22.1	Vertical
8108.594	35.1	-27.5	37.7	24.9	Horizontal
9936.719	35.1	-24.9	38.0	22.0	Vertical
9964.563	35.1	-24.2	38.0	21.3	Horizontal
8104.094	35.0	-27.5	37.7	24.8	Vertical

Measurement result for Set.2:

USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
1994.781	54.0	-35.7	25.3	64.4	Vertical
1882.281	47.7	-35.6	25.3	58.0	Horizontal
1862.875	47.4	-35.9	25.3	58.0	Vertical
8002.281	47.3	-27.9	37.7	37.5	Horizontal
9947.125	47.2	-24.9	38.0	34.1	Horizontal
9901.281	47.1	-24.9	38.0	34.0	Vertical

USB Mode/ Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
9949.375	35.1	-24.9	38.0	22.0	Vertical
9920.969	35.0	-24.9	38.0	21.9	Vertical
9966.531	35.0	-24.2	38.0	21.2	Horizontal
9943.750	35.0	-24.9	38.0	21.9	Horizontal
9101.688	35.0	-26.7	38.4	23.3	Vertical
9983.688	35.0	-24.2	38.0	21.2	Vertical

Charging Mode, Set.1

Normal RE_30M-1GHz_10m

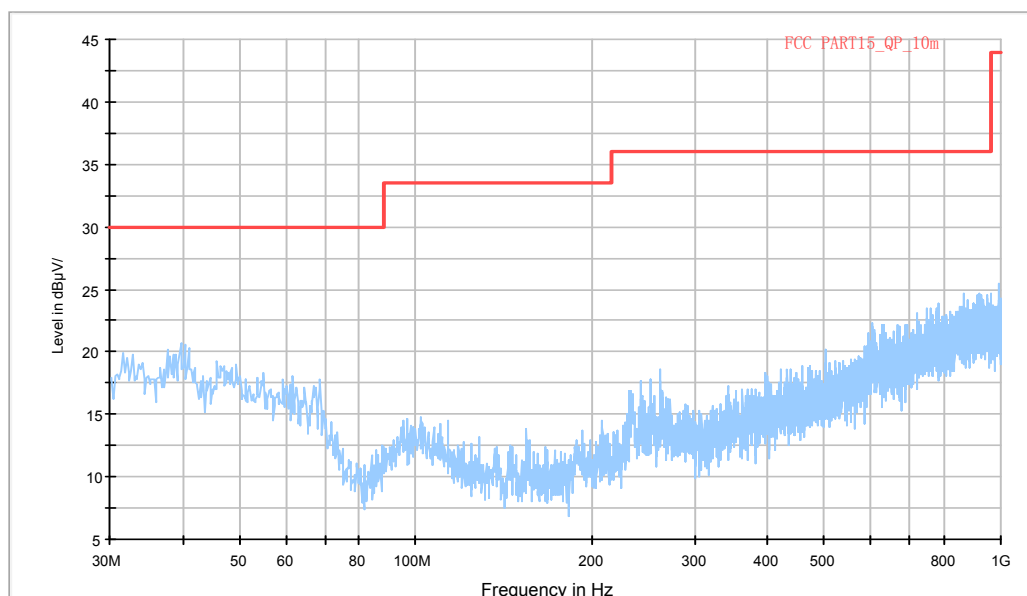


Figure A.1 Radiated Emission from 30MHz to 1GHz

RE_1G-6GHz

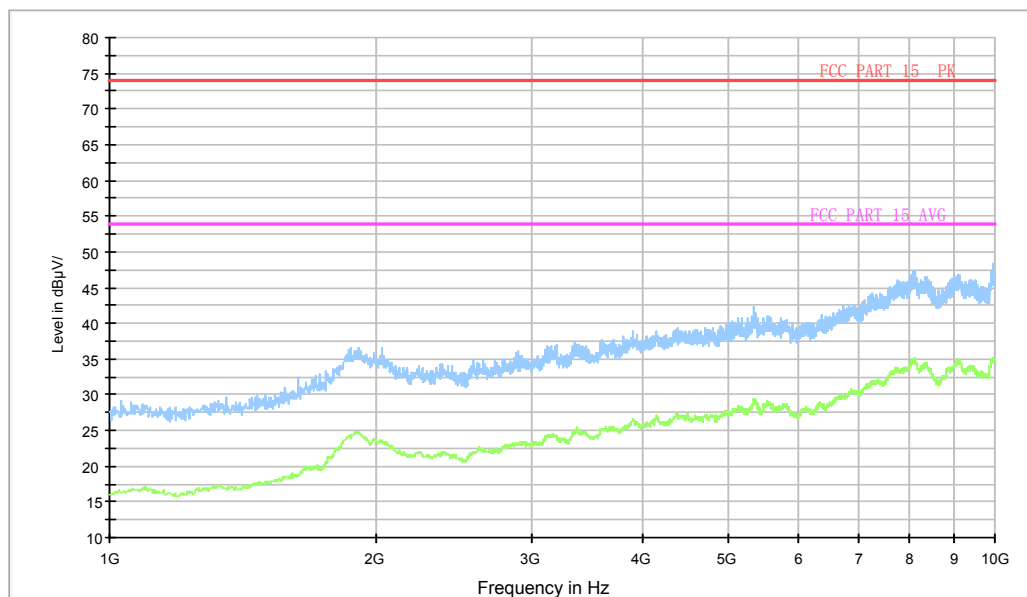


Figure A.2 Radiated Emission from 1GHz to 8GHz

USB Mode, Set.2

Normal RE_30M-1GHz_10m

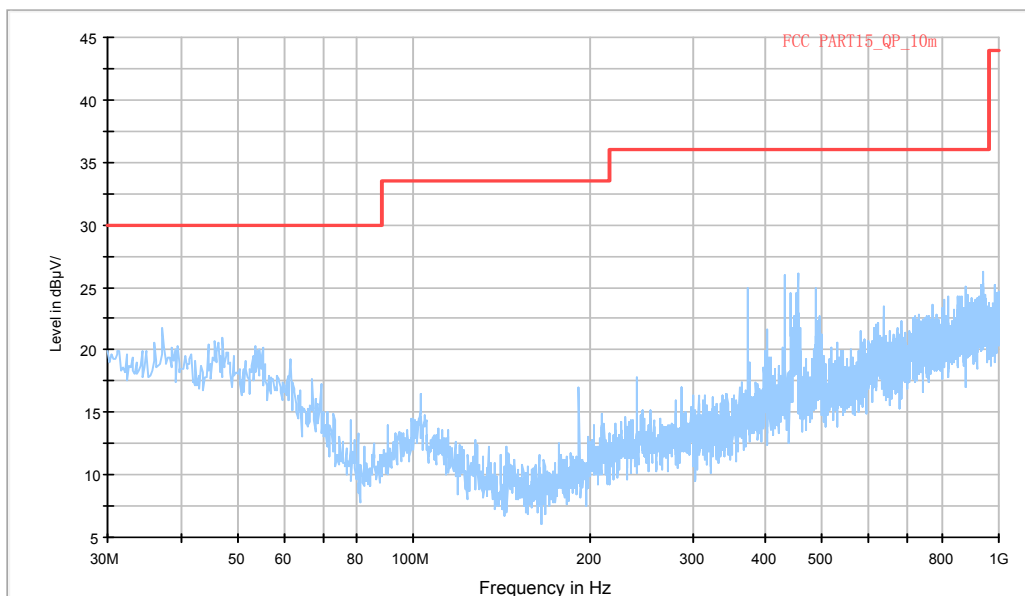


Figure A.3 Radiated Emission from 30MHz to 1GHz

RE_1G-6GHz

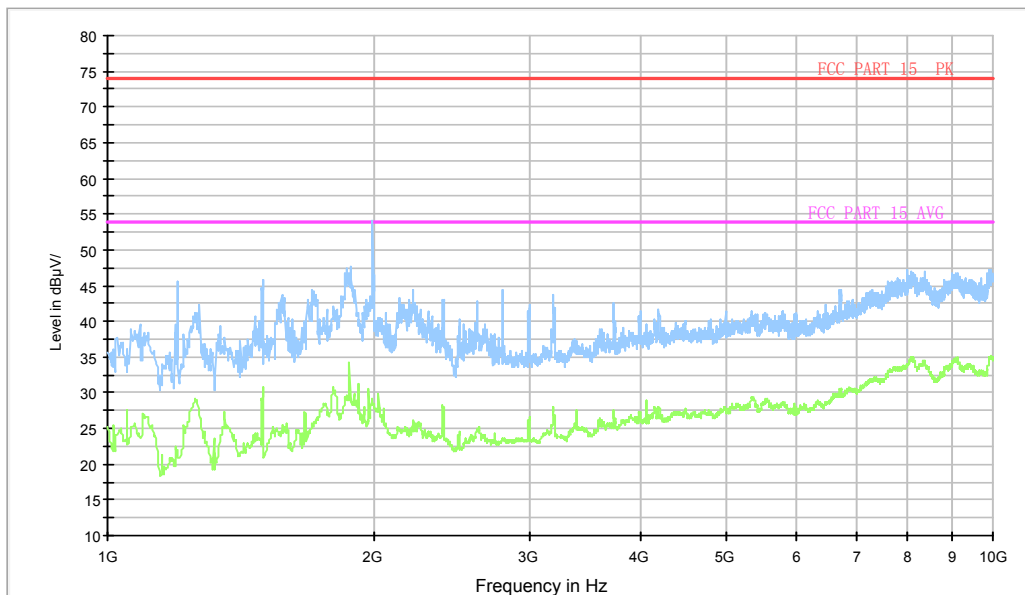


Figure A.4 Radiated Emission from 1GHz to 8GHz

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 7.3.

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

Charging Mode, Set.1

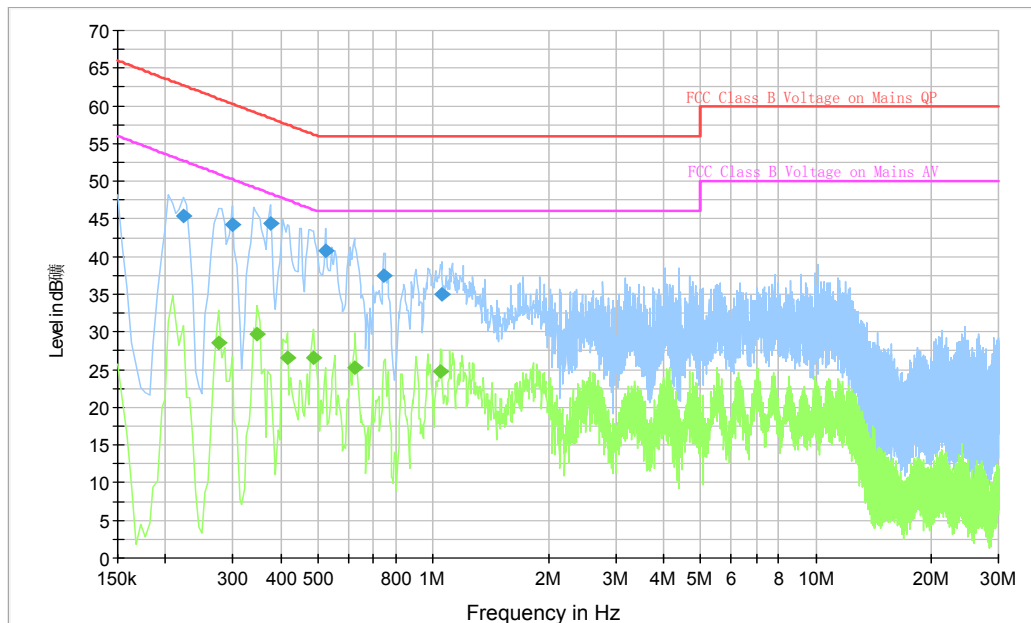


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.222000	45.4	GND	N	9.8	17.3	62.7
0.298500	44.2	GND	N	9.8	16.1	60.3
0.375000	44.4	GND	N	9.8	14.0	58.4
0.523500	40.8	GND	L1	9.8	15.2	56.0
0.744000	37.5	GND	N	9.8	18.5	56.0
1.054500	34.9	GND	L1	9.7	21.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.276000	28.6	GND	N	9.8	22.4	50.9
0.348000	29.7	GND	L1	9.8	19.4	49.0
0.415500	26.6	GND	N	9.8	20.9	47.5
0.487500	26.6	GND	L1	9.8	19.6	46.2
0.627000	25.3	GND	L1	9.8	20.7	46.0
1.045500	24.8	GND	N	9.7	21.2	46.0

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

USB Mode, Set.2

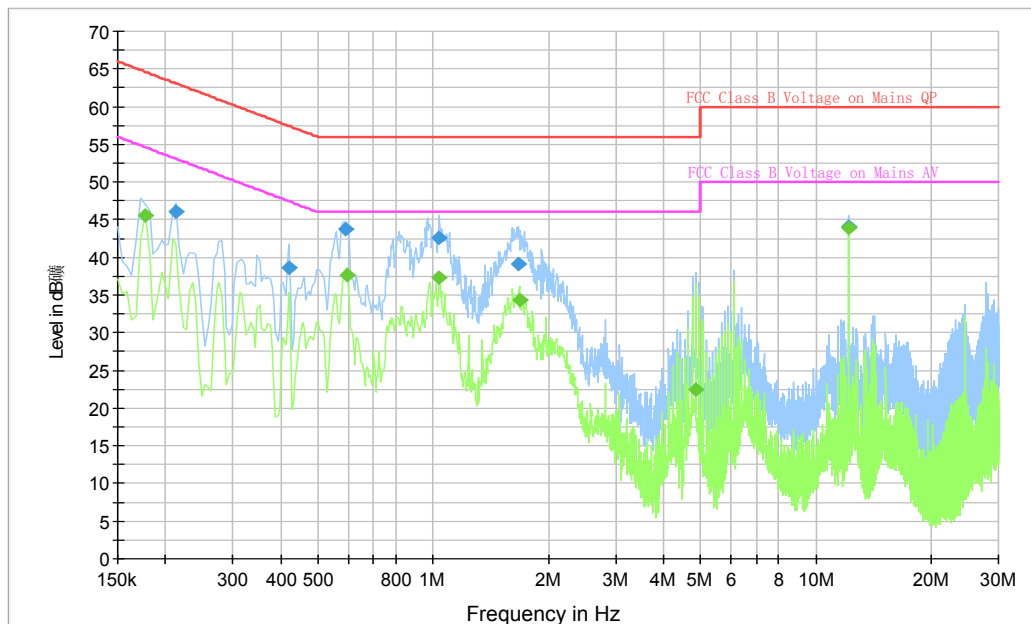


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.213000	46.1	GND	N	9.8	17.0	63.1
0.420000	38.6	GND	L1	9.8	18.8	57.4
0.591000	43.8	GND	N	9.8	12.2	56.0
1.036500	42.5	GND	N	9.7	13.5	56.0
1.671000	39.2	GND	N	9.7	16.8	56.0
12.205500	44.0	GND	L1	9.5	16.0	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	45.6	GND	N	9.8	9.0	54.6
0.595500	37.6	GND	N	9.8	8.4	46.0
1.036500	37.3	GND	N	9.7	8.7	46.0
1.680000	34.3	GND	L1	9.7	11.7	46.0
4.852500	22.5	GND	L1	9.8	23.5	46.0
12.205500	43.9	GND	L1	9.5	6.1	50.0

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

END OF REPORT