



TEST REPORT

No. I15Z41179-EMC01

for

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

Smartphone

Model Name: Coolpad3320A

FCC ID: R38YL3320A

with

Hardware Version: P2

Software Version: 5.1.155.00.T2.150617.3320A

Issued Date: 2015-07-13

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
I15Z41179-EMC01	Rev.0	1 st edition	2015-07-13

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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℃

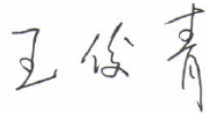
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-07-04

Testing End Date: 2015-07-12

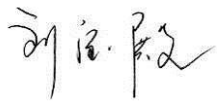
1.4. Signature



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: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address /Post: Coolpad Information Harbor, 2nd Mengxi Road, Hi-Tech Industrial
Park(North), Nanshan district, Shenzhen, P.R.C
City: Shenzhen
Postal Code: /
Country: P. R. China
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Telephone: +86 13410415799
Fax: /

2.2. Manufacturer Information

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address /Post: Coolpad Information Harbor, 2nd Mengxi Road, Hi-Tech Industrial
Park(North), Nanshan district, Shenzhen, P.R.C
City: Shenzhen
Postal Code: /
Country: P. R. China
Telephone: +86 13410415799
Fax: /

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

3.1. About EUT

Description	Smartphone
Model Name	Coolpad 3320A
FCC ID	R38YL3320A
Extreme vol. Limits	3.6VDC 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	867441020002315	P2	5.1.155.00.T2.150617.3320A

*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	/	1541179BA031
AE7	USB cable	/	1541179CH035
AE11	Travel charge	/	1541179DC036

AE1

Model	CPLD-365
Manufacturer	ZHUHAI COSLIGHT BATTERY CO.,LTD
Capacitance	1600 mAh
Nominal voltage	3.8 V

AE7

Model	/
Manufacturer	/
Length of cable	95 cm

AE11

Model	CYSK05-050100
Manufacturer	JIANGSU CHENYANG ELECTRON CO.,LTD
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	EUT4 + AE1 + AE7 + AE11	Charger
Set.2	EUT4 + AE1 + AE7	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	MANUFACTUR E	CAL DUE DATE	CALIBRATI ON 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	2016-07-07	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
17992.067	43.6	-17.7	45.6	15.700	HORIZONTAL
17983.567	43.6	-17.7	45.6	15.700	HORIZONTAL
17994.900	43.6	-17.7	45.6	15.700	VERTICAL
17991.500	43.6	-17.7	45.6	15.700	VERTICAL
17985.267	43.6	-17.7	45.6	15.700	VERTICAL
17985.833	43.6	-17.7	45.6	15.700	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
17986.400	55.3	-17.7	45.6	27.400	HORIZONTAL
17993.767	54.8	-17.7	45.6	26.900	VERTICAL
17983.000	54.7	-17.7	45.6	26.800	VERTICAL
17847.000	54.6	-18.5	45.6	27.500	HORIZONTAL
17984.133	54.4	-17.7	45.6	26.500	VERTICAL
17943.333	54.4	-17.7	45.6	26.500	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
17998.300	43.6	-17.7	45.6	15.700	HORIZONTAL
17994.900	43.6	-17.7	45.6	15.700	HORIZONTAL
17956.933	43.5	-17.7	45.6	15.600	VERTICAL
17984.700	43.5	-17.7	45.6	15.600	HORIZONTAL
17975.067	43.4	-17.7	45.6	15.500	VERTICAL
17987.533	43.4	-17.7	45.6	15.500	VERTICAL

USB 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	55.2	-17.7	45.6	27.300	HORIZONTAL
17959.200	54.8	-17.7	45.6	26.900	HORIZONTAL
17974.500	54.8	-17.7	45.6	26.900	VERTICAL
17989.800	54.8	-17.7	45.6	26.900	HORIZONTAL
17918.967	54.7	-17.7	45.6	26.800	VERTICAL
17958.067	54.5	-17.7	45.6	26.600	VERTICAL

Charging Mode, Set.1

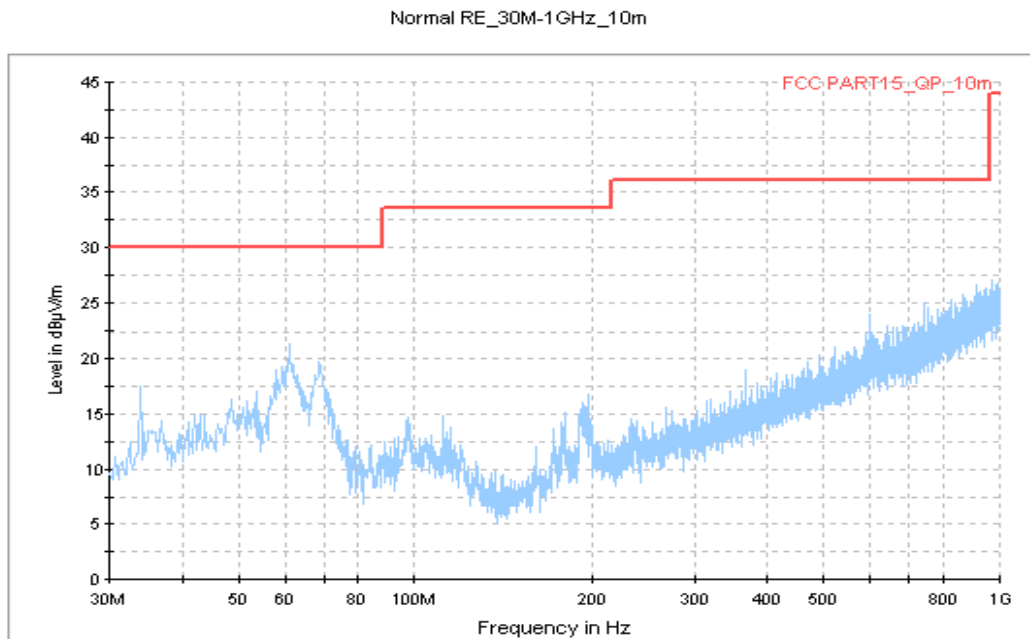


Figure A.1 Radiated Emission from 30MHz to 1GHz

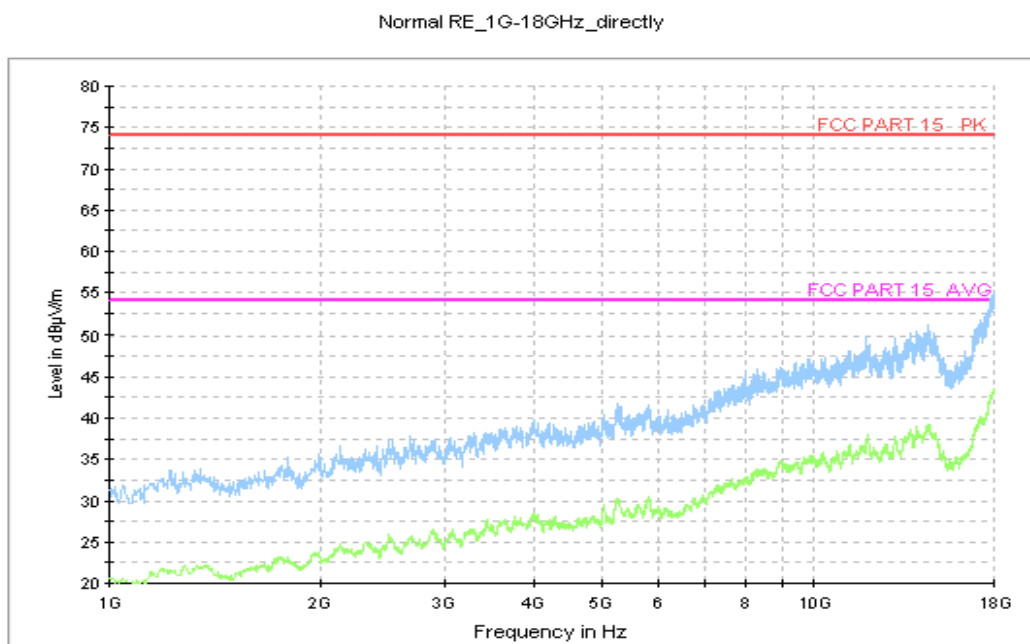


Figure A.2 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.2

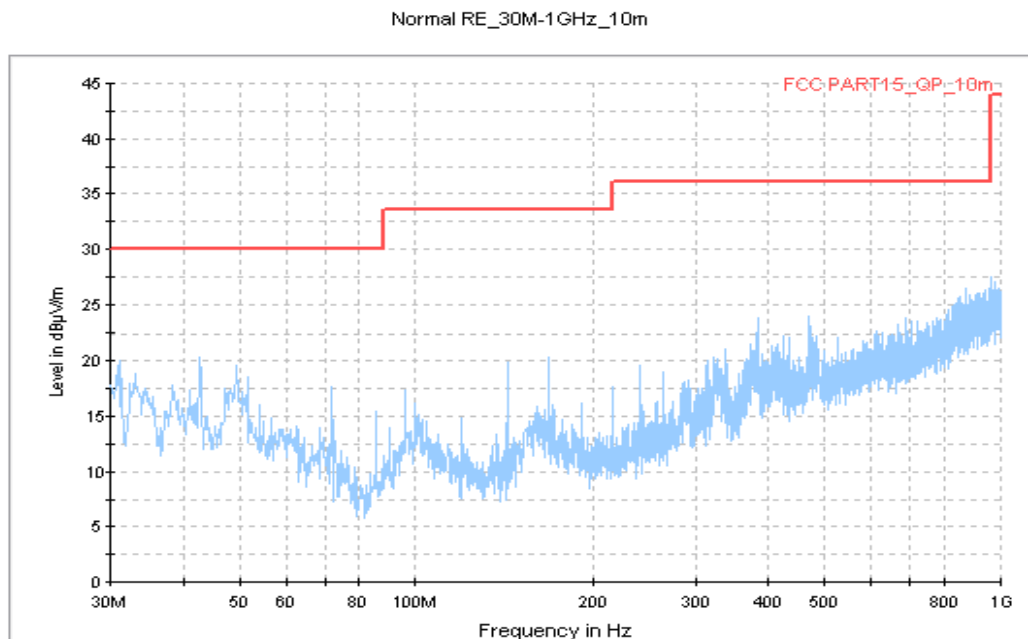


Figure A.3 Radiated Emission from 30MHz to 1GHz

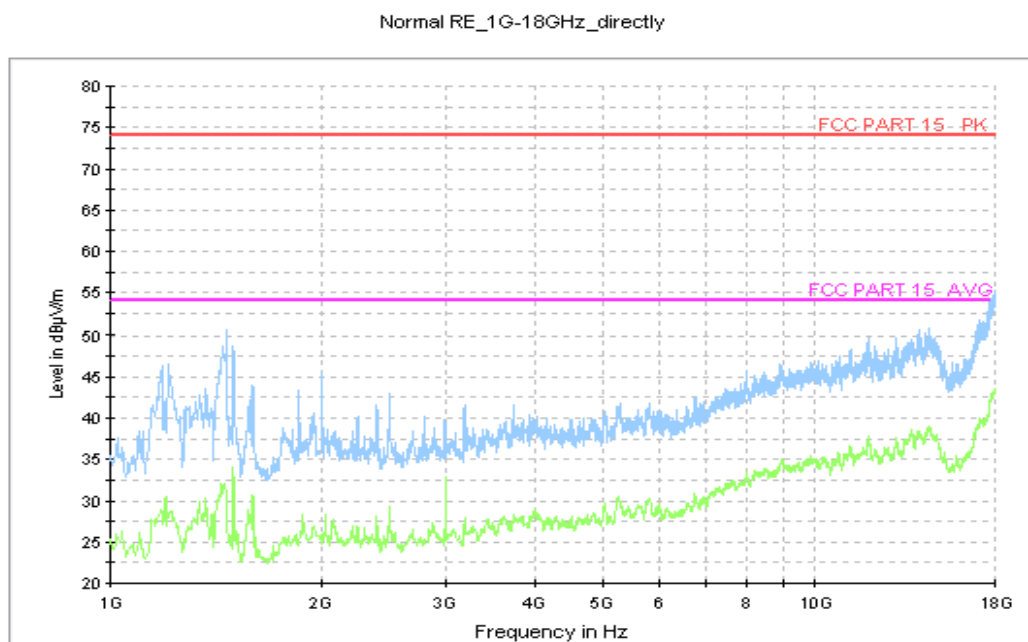


Figure A.4 Radiated Emission from 1GHz to 18GHz

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

Charging Mode, Set.1

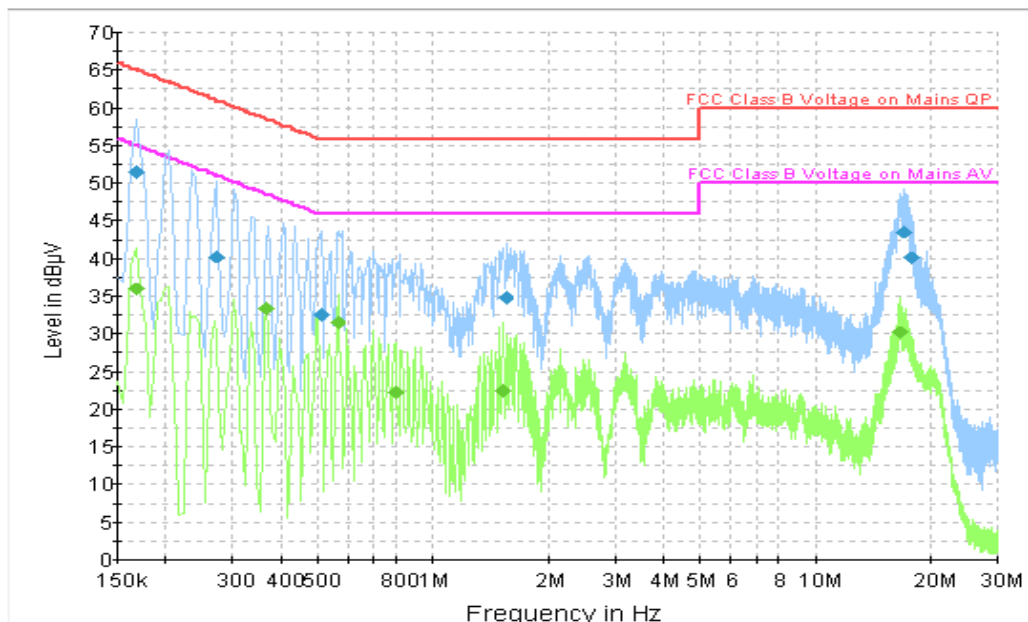


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	51.4	2000.0	9.000	On	L1	10.2	13.6	65.1
0.271500	40.3	2000.0	9.000	On	L1	10.2	20.8	61.1
0.510000	32.5	2000.0	9.000	On	L1	10.2	23.5	56.0
1.558500	34.8	2000.0	9.000	On	N	10.1	21.2	56.0
16.912500	43.6	2000.0	9.000	On	N	10.9	16.4	60.0
17.682000	40.0	2000.0	9.000	On	N	10.9	20.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	36.0	2000.0	9.000	On	N	10.0	19.0	55.1
0.366000	33.4	2000.0	9.000	On	N	10.0	15.2	48.6
0.564000	31.5	2000.0	9.000	On	N	10.1	14.5	46.0
0.798000	22.3	2000.0	9.000	On	N	10.1	23.7	46.0
1.522500	22.4	2000.0	9.000	On	N	10.1	23.6	46.0
16.579500	30.3	2000.0	9.000	On	N	10.8	19.7	50.0

USB Mode, Set.2

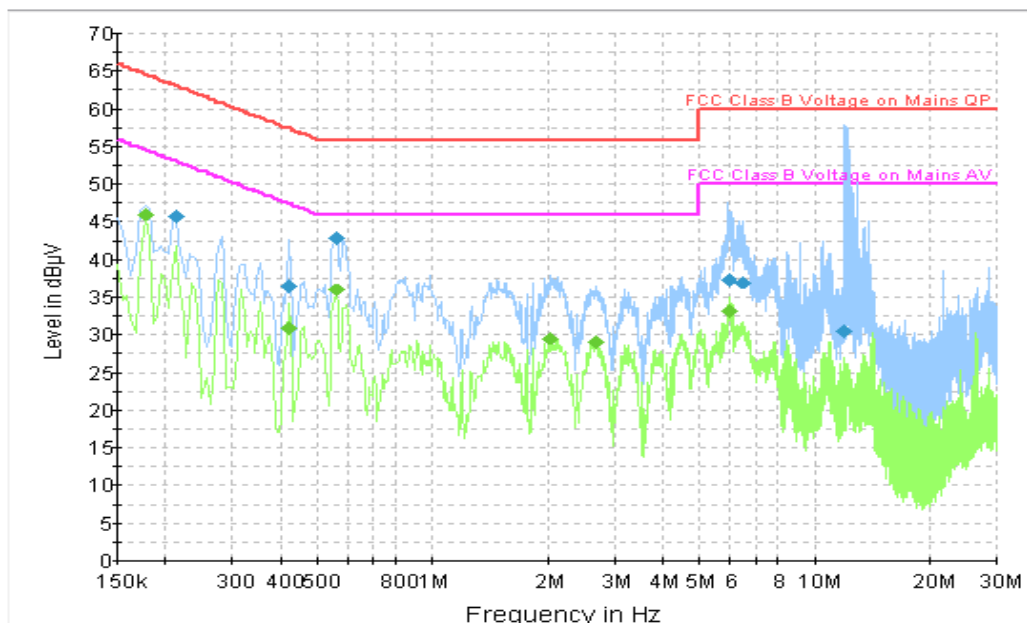


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	45.7	2000.0	9.000	On	N	10.1	17.4	63.1
0.420000	36.4	2000.0	9.000	On	L1	10.2	21.0	57.4
0.559500	42.9	2000.0	9.000	On	L1	10.2	13.1	56.0
5.937000	37.3	2000.0	9.000	On	L1	10.5	22.7	60.0
6.486000	37.0	2000.0	9.000	On	N	10.3	23.0	60.0
11.953500	30.5	2000.0	9.000	On	N	10.6	29.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time(ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	46.0	2000.0	9.000	On	N	10.0	8.6	54.6
0.420000	30.8	2000.0	9.000	On	L1	10.2	16.6	47.4
0.559500	36.1	2000.0	9.000	On	L1	10.2	9.9	46.0
2.031000	29.5	2000.0	9.000	On	L1	10.3	16.5	46.0
2.665500	29.0	2000.0	9.000	On	L1	10.3	17.0	46.0
6.000000	33.2	2000.0	9.000	On	N	10.3	16.8	50.0

END OF REPORT