



TESTREPORT

No.I16Z40645-EMC01

for

Reliance Communications, LLC

GSM/WCDMA/LTE Android phone

Model Name:RC500L

IC: 20994-RC500L

FCC ID: 2ABGH-RC500L

with

Hardware Version: RC500L

Software Version: Orbic-rc500L_v1.0.5

Issued Date: 2016-06-02

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:

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

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
I16Z40645-EMC01	Rev.0	1st edition	2016-06-02

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1. Test Laboratory

1.1. TestingLocation

Location 1: CTTL(huayuan North Road)

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

1.2. TestingEnvironment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2016-04-07

Testing End Date: 2016-04-28

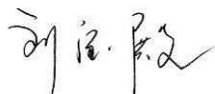
1.4. Signature



Zhang Hui
(Prepared this test report)



Qu Pengfei
(Reviewed this test report)



Liu Baodian
Deputy Director of the laboratory
(Approved this test report)



2. ClientInformation

2.1. Applicant Information

Company Name: Reliance Communications LLC
Address: 555 Wireless Blvd,Hauppauge, NY 11788,United States.

2.2. Manufacturer Information

Company Name: Reliance Communications, LLC
Address: 555 Wireless Blvd 555 Wireless Blvd.Hauppauge, NY

3. Equipment UnderTest (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/WCDMA/LTE Android phone
Model Name	RC500L
FCC ID:	2ABGH-RC500L
IC:	20994-RC500L

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
EUT	868356029000102	RC500L	Orbic-rc500L_v1.0.5

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Travel charger	/
AE3	USB cable	/

AE1

Model	RC500L
Manufacturer	NALON BATTERY Co.,Ltd
Capacitance	/
Nominal voltage	/

AE2

Model	RC500L
Manufacturer	Shenzhen Tailing Technology Co.,LTD.
Length of cable	/
SN	/

AE3

Model	RC500L
Manufacturer	YONGZHOU FKY ELECTRONIC CO.,LTD
Length of cable	96cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) are a model of GSM/WCDMA/LTE Android phone with integrated antenna.

The EUT supports GPRS service and EGPRS service. It has MP3, camera, USB memory, FM radio, GPS receiver, Bluetooth and WLAN functions.

Remark: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed information.

It includes normal options: Travel Charger and USB cable.

Manual and specifications of the EUT were provided to fulfill the test.

Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT+ AE1 + AE2 + AE3	Charging mode
Set.2	EUT+ AE1 + AE3	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	10-1-2015 Edition
ICES-003	Information Technology Equipment(ITE)-Limits and methods of measurement	Issue 6
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

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-2(10 meters×6.7meters×6.1meters) 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	< 4Ω
Normalised site attenuation (NSA)	<±4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio(S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
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	>2MΩ
Ground system resistance	<4Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in IC rules	Section in this report	Verdict
1	Radiated Emission	Section 5	A.1	P
2	Conducted Emission	Section 5	A.2	P

7. Test Facilities Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CALDUE DATE	CAL PERIOD
1.	EMI Antenna	VULB 9163	9163-301	Schwarzbeck	2017-12-09	3 Years
2.	Test Receiver	ESCI 7	100948	R&S	2016-07-07	1 Year
3.	EMI Antenna	3115	6914	ETS-Lindgren	2016-12-15	3 Years
4.	Test Receiver for Conducted Emission	ESU26	100235	R&S	2017-03-02	1 Year
5.	LISN	ENV216	101200	R&S	2016-07-07	1 Year
6.	Universal Radio Communication Tester	CMW500	143008	R&S	2016-12-09	1 Year
7.	PC	OPTIPLEX 380	2X1YV2X	DELL	/	/
8.	Monitor	E1709Wc	CN-OJ672H-6 4180-9BF-1C RL	DELL	/	/
9.	Printer	P1606dn	VNC3L52122	HP	/	/
10.	Keyboard	L100	CN-ORH656- 65890-03S-04 1Y	DELL	/	/
11.	Mouse	M-UAR	LZ013HC1YL V	DELL	/	/

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

Reference

FCC: CFR Part 15.109(a).

IC:ICES-003 section 6.2

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS, charging mode of MS) at distances of 3 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.

For the charging mode, the EUT is keeping on playing MP3 file.

For the USB 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 of emission (MHz)	RBW/VBW	Sweep Time(s)	Detector
30-1000	120kHz (IF bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	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.

Note: the result contains vertical part and Horizontal part

Measurement uncertainty (worst case): $U = 4.3 \text{ dB}$, $k=2$.

Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A_{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14192.500000	58.5	V	13.4	15.5	74.0
15163.500000	58.9	V	14.3	15.1	74.0
15679.000000	60.4	H	14.4	13.6	74.0
16188.500000	61.2	H	15.0	12.8	74.0
16771.500000	61.2	H	15.6	12.8	74.0
17451.500000	61.5	V	16.1	12.5	74.0

Set.1 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A_{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14135.000000	46.3	H	13.3	7.7	54.0
15175.500000	47.3	V	14.3	6.7	54.0
15700.500000	48.6	H	14.4	5.4	54.0
16205.000000	49.3	V	14.9	4.7	54.0
16839.500000	49.9	H	15.9	4.1	54.0
17416.500000	49.6	V	16.2	4.4	54.0

Set.2USB mode/ Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14306.500000	58.4	H	13.4	15.6	74.0
14764.000000	58.9	V	14.0	15.1	74.0
15684.500000	61.1	V	14.4	12.9	74.0
16230.500000	61.0	H	14.9	13.0	74.0
16869.500000	62.2	H	16.1	11.8	74.0
17412.500000	61.4	H	16.2	12.6	74.0

Set.2USB mode/ Average detector

Frequency(MHz)	Result(dBuV/m)	Polarity	A _{Rpl} (dB)	Margin(dB)	Limit (dB μ V/m)
14138.500000	46.2	H	13.3	7.8	54.0
15147.000000	47.4	H	14.3	6.6	54.0
15677.000000	48.8	H	14.4	5.2	54.0
16201.500000	49.4	V	15.0	4.6	54.0
16841.000000	50.0	H	16.0	4.0	54.0
17407.500000	49.5	H	16.2	4.5	54.0

Charging mode: Set 1

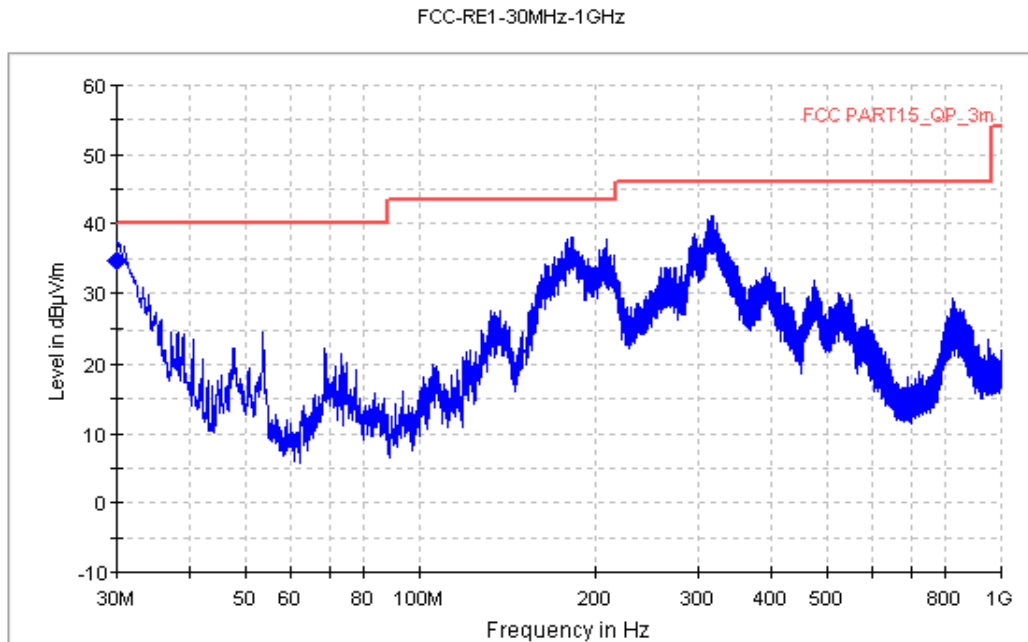


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
30.000000	34.7	120.000	V	167.0	-36.5	5.3

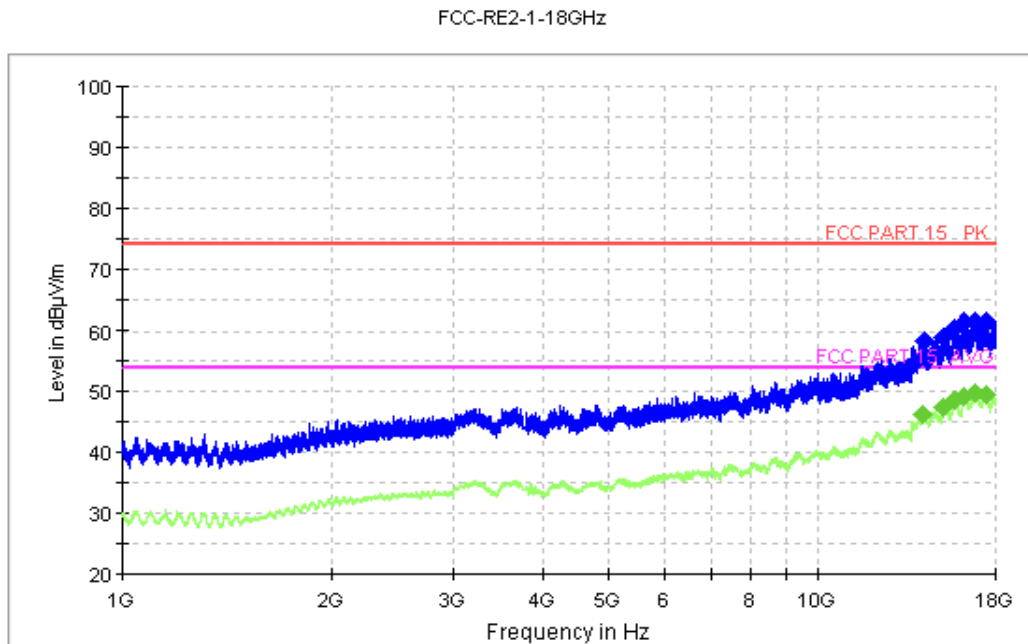


Figure A.2 Radiated Emission from 1GHz to 18GHz

USB mode: Set 2

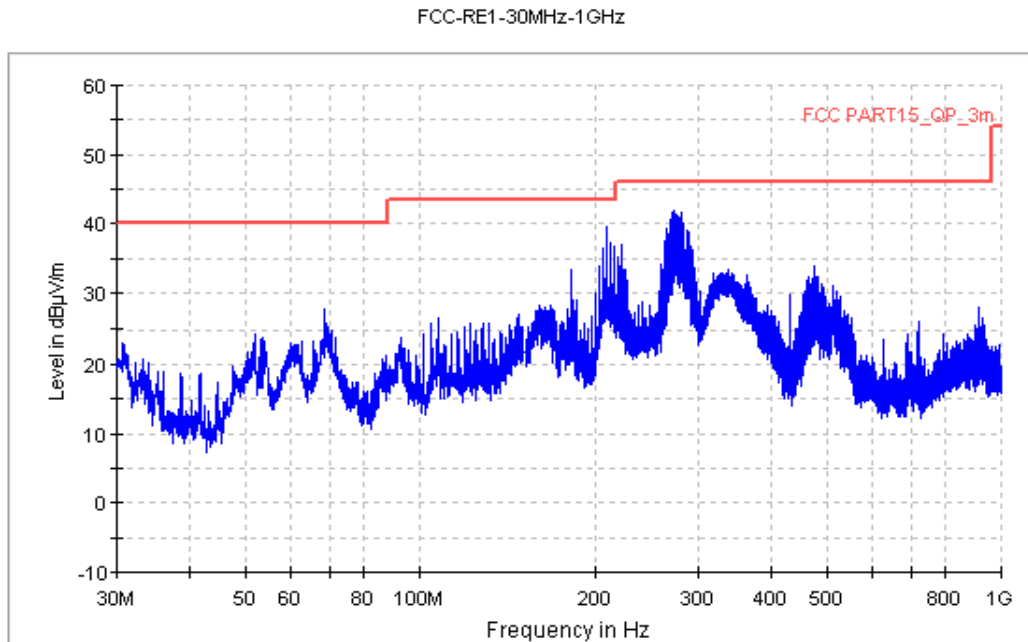


Figure A.3 Radiated Emission from 30MHz to 1GHz

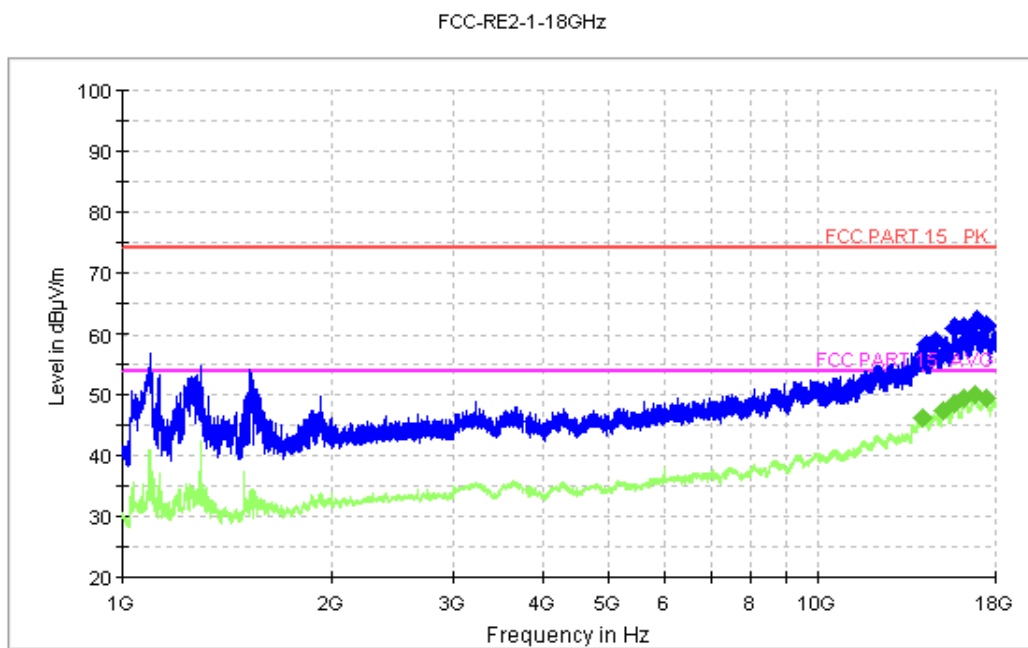


Figure A.4 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission (§15.107(a))**Reference**

FCC: CFR Part 15.107(a).

IC: ICES-003 section 6.1.

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.

For the charging mode, the EUT is keeping on playing MP3 file.

For the USB 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	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

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

Charging mode: Set.1

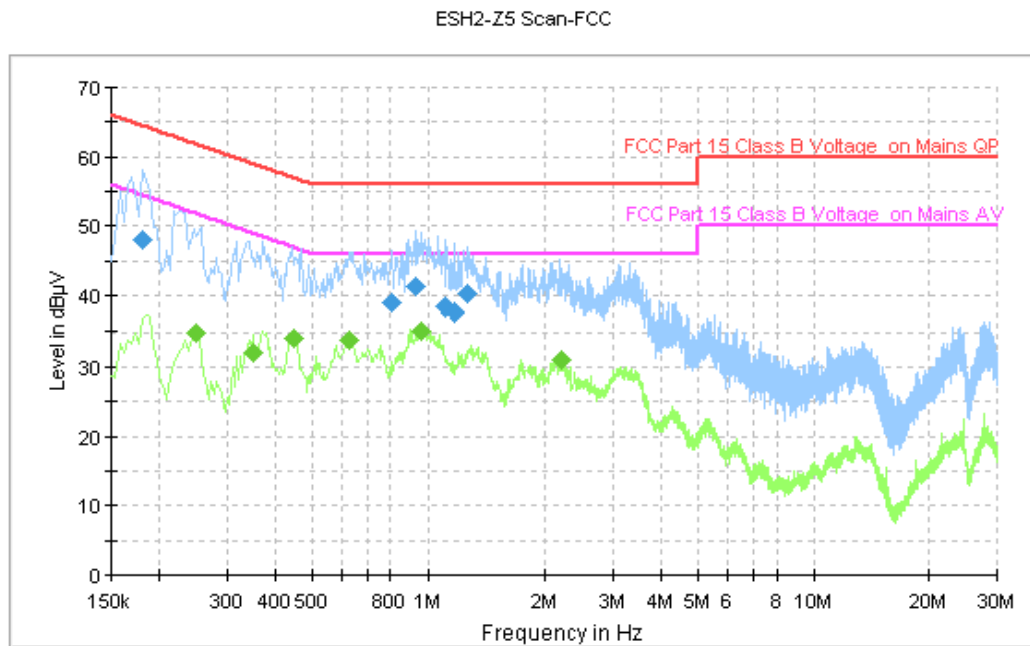


Figure A.5 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	48.1	GND	N	10.1	16.3	64.4
0.810000	38.9	GND	L1	10.1	17.1	56.0
0.934000	41.4	GND	L1	10.1	14.6	56.0
1.114000	38.6	GND	N	10.1	17.4	56.0
1.174000	37.7	GND	N	10.1	18.3	56.0
1.270000	40.4	GND	L1	10.1	15.6	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.250000	35.0	GND	N	10.1	16.8	51.8
0.350000	32.1	GND	N	10.1	16.9	49.0
0.450000	34.1	GND	N	10.1	12.8	46.9
0.622000	33.8	GND	N	10.0	12.2	46.0
0.962000	35.1	GND	N	10.1	10.9	46.0
2.202000	31.0	GND	N	10.2	15.0	46.0

USB mode:Set.2

ESH2-Z5 Scan-FCC

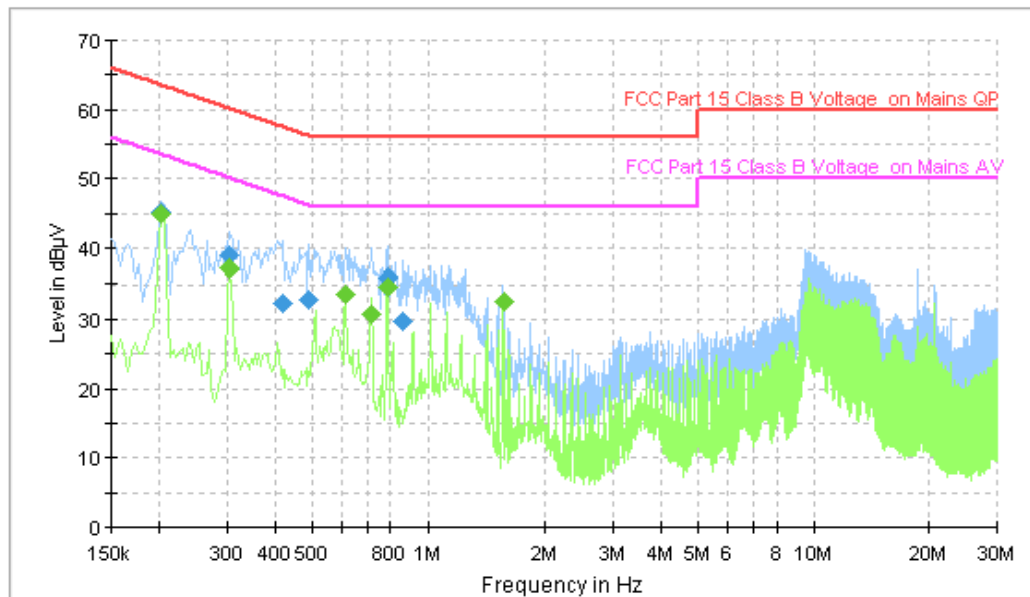


Figure A.6 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.202000	45.3	GND	L1	10.0	18.3	63.5
0.306000	39.1	GND	L1	10.0	21.0	60.1
0.418000	32.3	GND	L1	10.0	25.2	57.5
0.490000	32.9	GND	N	10.1	23.3	56.2
0.786000	36.0	GND	N	10.1	20.0	56.0
0.858000	29.8	GND	N	10.1	26.2	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.202000	44.8	GND	L1	10.0	8.7	53.5
0.306000	37.3	GND	L1	10.0	12.8	50.1
0.610000	33.5	GND	L1	10.0	12.5	46.0
0.710000	30.7	GND	L1	10.0	15.3	46.0
0.786000	34.5	GND	N	10.1	11.5	46.0
1.570000	32.6	GND	N	10.1	13.4	46.0

END OF REPORT