FCC 15B TEST REPORT

No. I20Z61861-EMC04

for

Hoyos Integrity Corporation

smart phone

Model Name: H1U

FCC ID: 2AXQJH1U

with

Hardware Version: V1.2

Software Version: P612BNV03.12.10

Issued Date: 2020-12-22

Note:

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z61861-EMC04	Rev.0	1st edition	2020-12-22

CONTENTS

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: 2020-10-29

Testing End Date: 2020-11-30

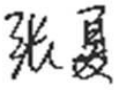
1.4. Signature

An Hui

(Prepared this test report)

Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Hoyos Integrity Corporation
Address:	1975 E. Sunrise Blvd, Suite 400, Fort Lauderdale, Florida, USA
Contact:	Juan Alvarez
Email:	juan.alvarez@hoyosintegrity.com
Telephone:	9546008131
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2.2. Manufacturer Information

Company Name:	Hoyos Integrity Corporation
Address:	1975 E. Sunrise Blvd, Suite 400, Fort Lauderdale, Florida, USA
Contact:	Juan Alvarez
Email:	juan.alvarez@hoyosintegrity.com
Telephone:	9546008131
Fax:	8557488051

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

3.1. About EUT

Description	smart phone
Model Name	H1U
FCC ID	2AXQJH1U

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	350311290000934/350311290003573	V1.2	P612BNV03.12.10

*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	Charger	/	/
AE2	USB Cable	/	
AE3	Headset	/	
AE4	Battery		

AE1

Model	LX150331R
Manufacturer	Shenzhen Kosun Industial Co.,Ltd
Length of cable	/

AE2

Model	STN-A114A
Manufacturer	Saibao（jiangxi）Communication Industrial Co., Ltd
Length of cable	/

AE3

Model	NLD-EM303H-11SF
Manufacturer	HUIZHOU NEW LEADER INDUSTRY CO., LTD
Length of cable	/

AE4

Model	386786
Manufacturer	Ningbo Veken Battery Co., Ltd.
Capacitance	3900mAh
Nominal voltage	3.85v

*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 + AE4	Charger+MP4+GNSS+GSM850
Set.2	EUT1 + AE1 + AE2 + AE4	Charger+CAMERA + WCDMA850 idle
Set.3	EUT1 + AE2	USB mode +FM + LTE FDD Bands5/12 idle

Note：

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA850, LTE Band 5, LTE Band 12.

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	2019
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

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
	BR	Re-use test data from basic model report.

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	A.1	P	**CTTL(huayuan North Road)**
2	Conducted Emission	15.107(a)	A.2	P	**CTTL(huayuan North Road)**

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	LISN	ENV216	101200	Rohde & Schwarz	2021-05-19	1 Year
2	Test Receiver	ESCI 7	100344	Rohde & Schwarz	2021-02-26	1 Year
3	Test Receiver	ESU26	100235	Rohde & Schwarz	2021-03-03	1 Year
4	BiLog Antenna	VULB9163	9163-1223	Schwarzbeck	2021-03-18	1 Year
5	Dual-Ridge Waveguide Horn Antenna	3115	6914	ETS-Lindgren	2021-01-14	1 Year
6	Universal Radio Communication Tester	CMW500	116588	R&S	2020-12-05	1 Year
7	Signal Generator	SMBV100A	102063	R&S	2021-02-26	1 Year
8	PC	M4000e-17	M706GWXD	Lenovo	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.0	R&S
Conducted Emission	EMC32 V8.52.0	R&S

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 (charging mode and FM 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 charging mode. During the test MS is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in Section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

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

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): 30MHz-1GHz：5.16dB, 1GHz-18GHz：5.44dB, *k*=2.

Measurement results for Set.1:

EUT1 Charger+MP4+GNSS+GSM850 idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
57.474000	22.00	30.00	8.00	1000.0	120.000	293.0
83.521000	14.26	30.00	15.74	1000.0	120.000	178.0
123.762000	12.74	33.50	20.78	1000.0	120.000	176.0
163.897000	13.19	33.50	20.33	1000.0	120.000	125.0
243.280000	9.94	36.00	26.08	1000.0	120.000	309.0
392.300000	13.23	36.00	22.79	1000.0	120.000	321.0

EUT1 Charger+MP4+GNSS+GSM850 idle Mode /Average detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17888.933	49.5	-5.7	43.4	11.838	H	54	4.5
17996.033	49.3	-5.4	33.8	20.916	H	54	4.7
17967.133	48.9	-5.4	43.4	10.916	V	54	5.1
17991.500	48.8	-5.4	43.4	10.816	H	54	5.2
17988.667	48.7	-5.4	43.4	10.716	H	54	5.3
17971.667	48.5	-5.4	43.4	10.516	H	54	5.5

EUT1 Charger+MP4+GNSS+GSM850 idle Mode /Peak detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17895.167	57.6	-5.7	43.4	19.938	H	74	16.4
17948.433	57.5	-5.4	33.8	29.116	H	74	16.5
17992.633	57.2	-5.4	43.4	19.216	V	74	16.8
17860.033	57.1	-5.7	43.4	19.438	H	74	16.9
18000.000	57.1	-6.5	46.4	17.241	H	74	16.9
17949.000	57.0	-5.4	43.4	19.016	H	74	17

Measurement results for Set.2:

EUT1 Charger+CAMERA + WCDMA850 idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
58.019000	22.29	30.00	7.71	1000.0	120.000	284.0
60.172000	19.06	30.00	10.94	1000.0	120.000	183.0
84.990000	10.13	30.00	19.87	1000.0	120.000	221.0
123.762000	15.41	33.50	18.11	1000.0	120.000	191.0
169.186000	8.46	33.50	25.06	1000.0	120.000	113.0
375.496000	12.64	36.00	23.38	1000.0	120.000	301.0

EUT1 Charger+CAMERA + WCDMA850 idle Mode/Average detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17992.633	48.3	-5.4	43.4	10.316	H	54	5.7
17967.700	48.2	-5.4	33.8	19.816	H	54	5.8
17997.733	48.2	-5.4	43.4	10.216	V	54	5.8
17988.100	48.1	-5.4	43.4	10.116	H	54	5.9
17938.233	48.1	-5.4	43.4	10.116	H	54	5.9
17859.467	48.0	-5.7	43.4	10.338	H	54	6

EUT1 Charger+CAMERA + WCDMA850 idle Mode/Peak detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17990.367	57.0	-5.4	43.4	19.016	H	74	17
17954.100	56.9	-5.4	33.8	28.516	H	74	17.1
17971.667	56.8	-5.4	43.4	18.816	V	74	17.2
17844.167	56.7	-5.7	43.4	19.038	H	74	17.3
17999.433	56.6	-5.4	43.4	18.616	H	74	17.4
17789.200	56.6	-5.7	43.4	18.938	H	74	17.4

Measurement results for Set.3:

EUT1 USB mode +FM + LTE FDD Bands5 idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
36.578000	8.94	30.00	21.06	1000.0	120.000	325.0
44.342000	10.10	30.00	19.90	1000.0	120.000	106.0
53.899000	10.13	30.00	19.87	1000.0	120.000	109.0
102.584000	8.50	33.50	25.02	1000.0	120.000	125.0
192.789000	9.82	33.50	23.70	1000.0	120.000	120.0
578.974000	17.45	36.00	18.57	1000.0	120.000	291.0

EUT1 USB mode +FM + LTE FDD Bands5 idle Mode /Average detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17973.367	48.9	-5.4	43.4	10.916	H	54	5.1
17971.667	48.2	-5.4	33.8	19.816	H	54	5.8
17998.300	48.1	-5.4	43.4	10.116	V	54	5.9
17930.867	47.8	-5.4	43.4	9.816	H	54	6.2
17954.667	47.8	-5.4	43.4	9.816	H	54	6.2
17947.300	47.7	-5.4	43.4	9.716	H	54	6.3

EUT1 USB mode +FM + LTE FDD Bands5 idle Mode /Peak detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17971.667	57.4	-5.4	43.4	19.416	H	74	16.6
17935.967	57.1	-5.4	33.8	28.716	H	74	16.9
17913.867	57.0	-5.7	43.4	19.338	V	74	17
17935.400	56.9	-5.4	43.4	18.916	H	74	17.1
18000.000	56.9	-6.5	46.4	17.041	H	74	17.1
17978.467	56.9	-5.4	43.4	18.916	H	74	17.1

EUT1 Charger+MP4+GNSS+GSM850 IDLE,Set.1

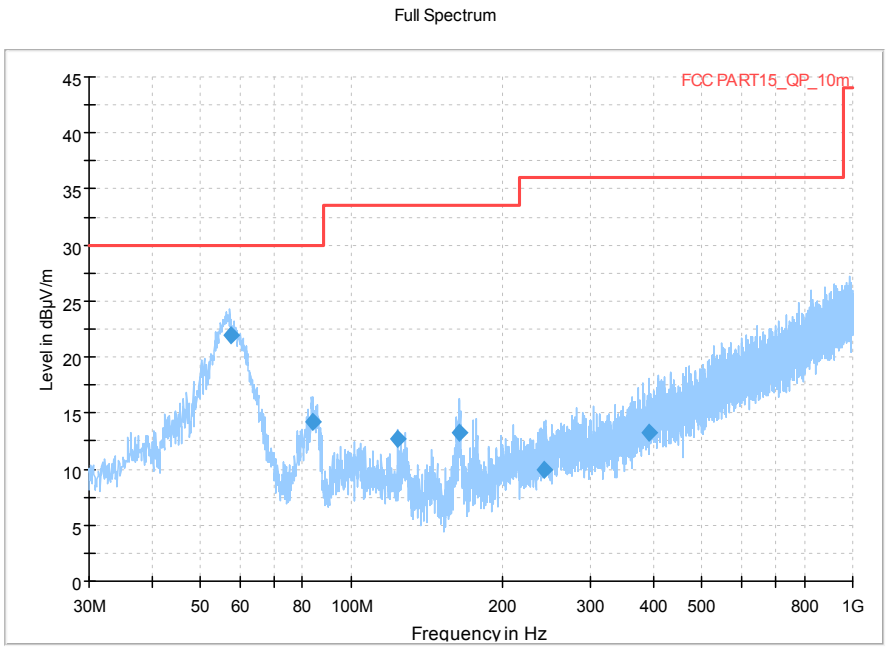

Figure A.1 Radiated Emission from 30MHz to 1GHz

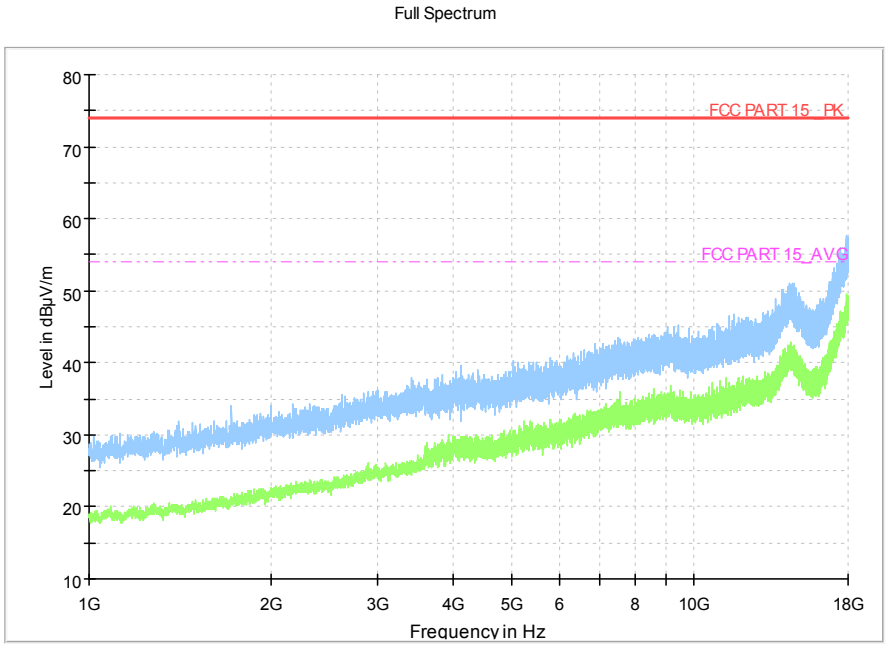

Figure A.2 Radiated Emission from 1GHz to 18GHz

EUT1 Charger+CAMERA + WCDMA850 IDLE,Set.2

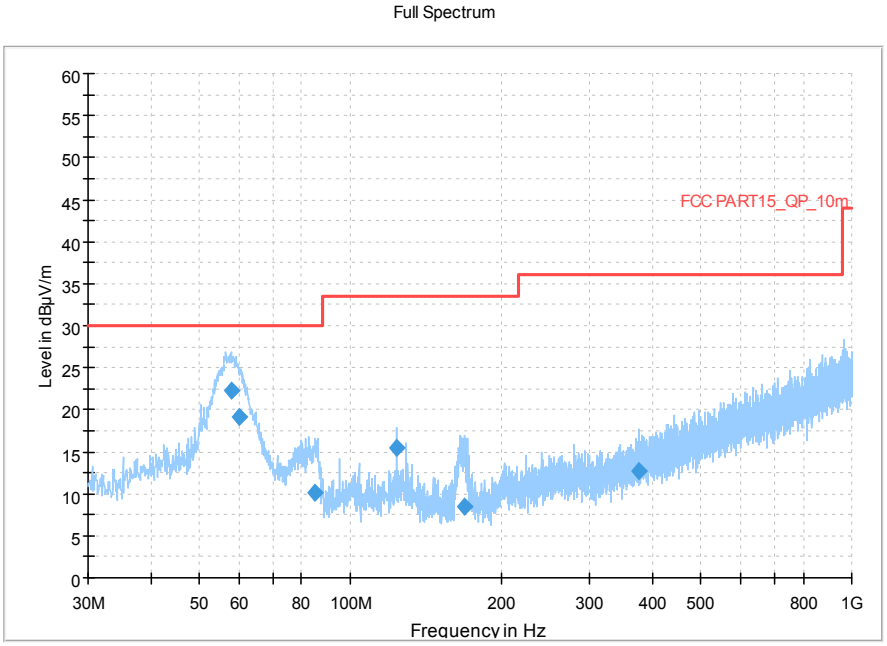

Figure A.3 Radiated Emission from 30MHz to 1GHz

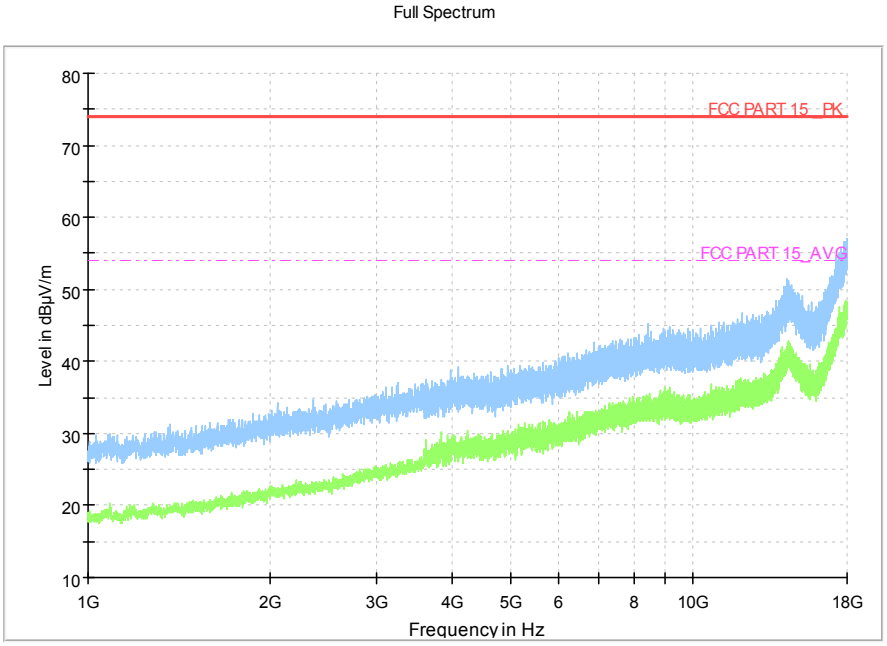

Figure A.4 Radiated Emission from 1GHz to 18GHz

EUT1 USB mode +FM + LTE FDD Bands 5 IDLE,Set.3

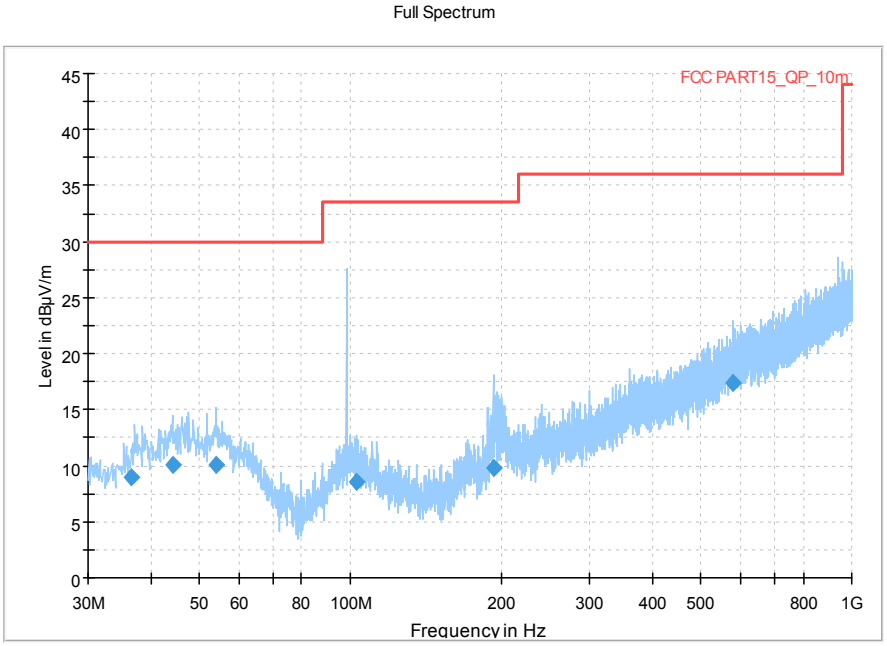

Figure A.5 Radiated Emission from 30MHz to 1GHz

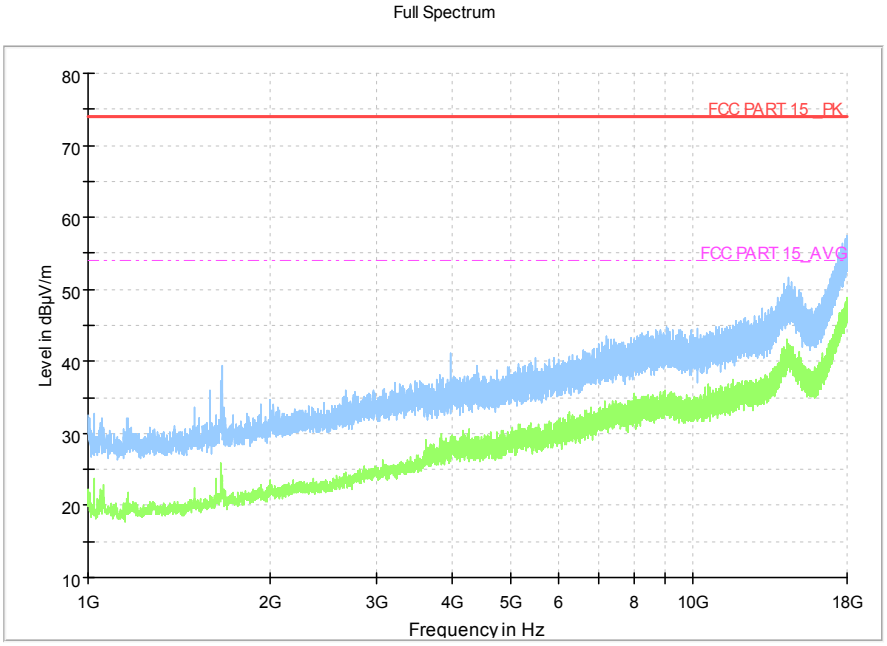

Figure A.6 Radiated Emission from 1GHz to 18GHz

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 – 2014, section 7.3.

A.2.2 EUT Operating Mode

The MS is operating in the charging mode. During the test MS is connected to a charger in the case of charging mode.

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

A.2.5 Measurement Results

Measurement uncertainty: *U*=3.08dB, *k*=2.

EUT1 Charger+MP4+GNSS+GSM850 IDLE,Set.1

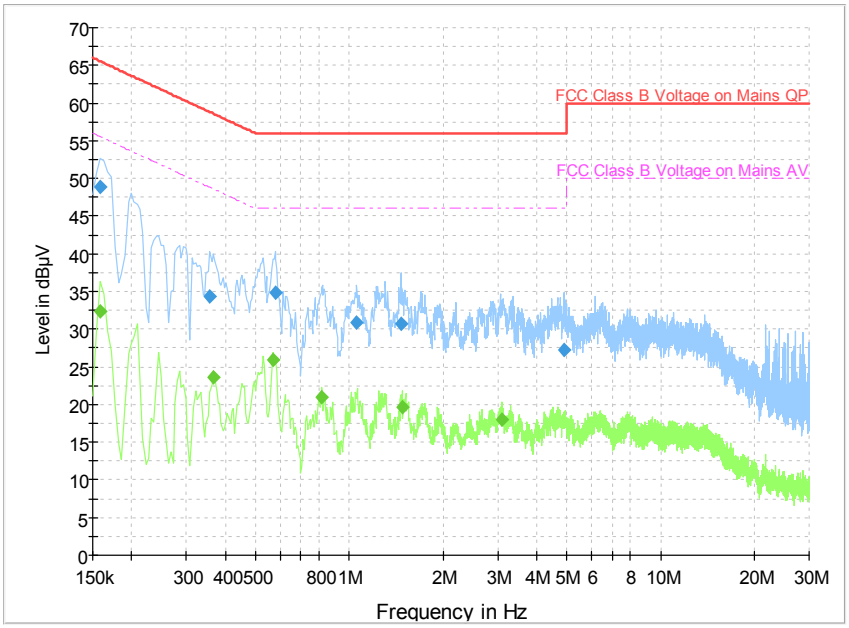

Figure A.13 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	48.9	L1	19.7	16.6	65.5
0.357000	34.3	L1	19.6	24.5	58.8
0.577500	34.9	L1	19.6	21.1	56.0
1.059000	30.8	N	19.6	25.2	56.0
1.464000	30.7	N	19.6	25.3	56.0
4.906500	27.3	L1	19.8	28.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	32.3	L1	19.7	23.2	55.5
0.366000	23.6	L1	19.6	25.0	48.6
0.568500	25.9	L1	19.6	20.1	46.0
0.816000	21.0	L1	19.6	25.0	46.0
1.482000	19.6	L1	19.6	26.4	46.0
3.084000	18.0	L1	19.6	28.0	46.0

EUT1 Charger+CAMERA + WCDMA850 IDLE,Set.2

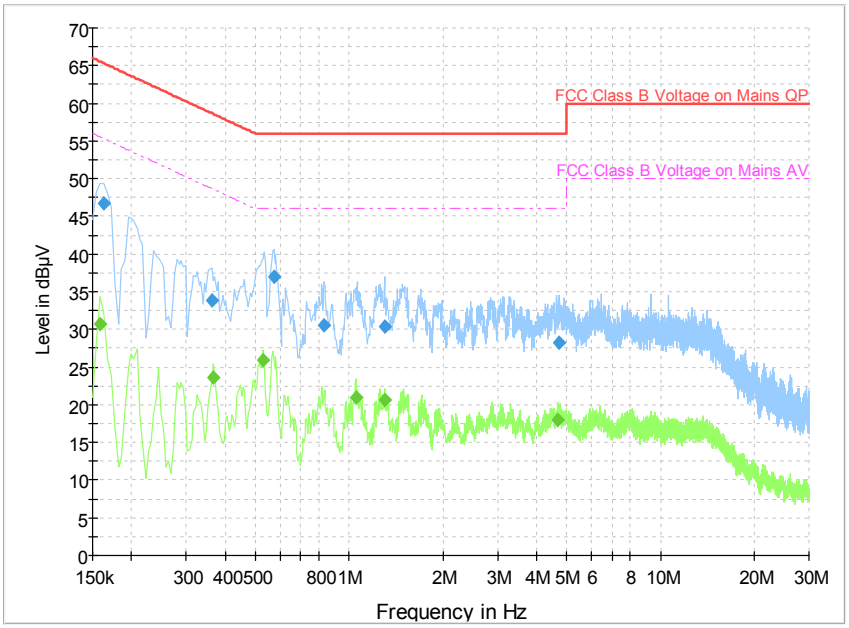

Figure A.14 Conducted Emission

Final Result 1

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	46.8	L1	19.7	18.5	65.3
0.361500	33.9	N	19.6	24.8	58.7
0.573000	36.9	N	19.5	19.1	56.0
0.829500	30.5	N	19.5	25.5	56.0
1.297500	30.4	N	19.6	25.6	56.0
4.740000	28.2	L1	19.8	27.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	30.7	N	19.4	24.8	55.5
0.366000	23.6	L1	19.6	25.0	48.6
0.528000	25.9	L1	19.6	20.1	46.0
1.050000	20.9	N	19.6	25.1	46.0
1.297500	20.7	N	19.6	25.3	46.0
4.663500	18.0	L1	19.8	28.0	46.0

EUT2 USB mode +FM + LTE FDD Bands5 IDLE ,Set.3

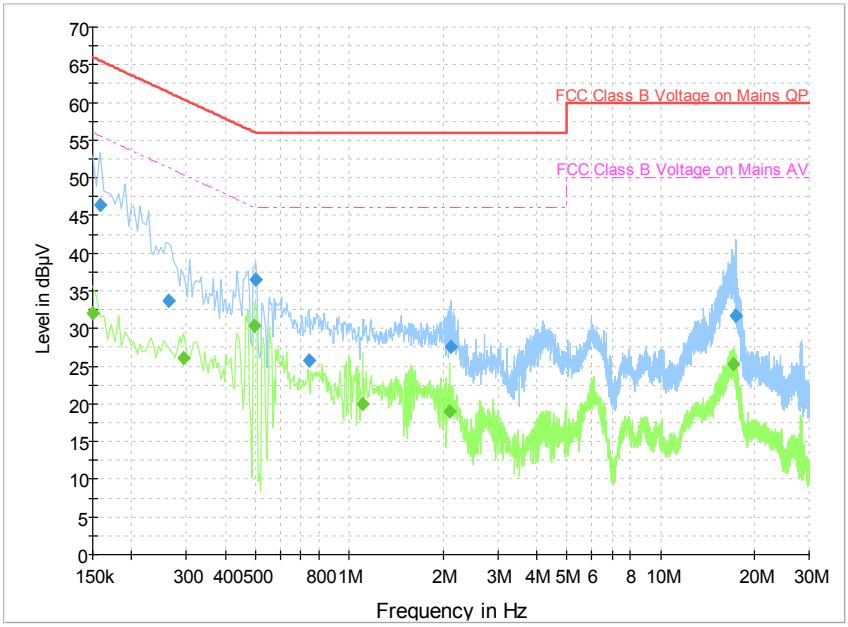

Figure A.15 Conducted Emission

Final Result 1

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	46.3	L1	19.7	19.2	65.5
0.262500	33.7	L1	19.6	27.7	61.4
0.501000	36.6	N	19.6	19.4	56.0
0.744000	25.8	N	19.5	30.2	56.0
2.112000	27.6	L1	19.5	28.4	56.0
17.443500	31.7	L1	19.8	28.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	32.0	N	19.5	24.0	56.0
0.294000	26.1	L1	19.6	24.3	50.4
0.496500	30.3	N	19.6	15.7	46.1
1.104000	20.0	N	19.6	26.0	46.0
2.103000	19.1	L1	19.5	26.9	46.0
17.106000	25.2	N	19.9	24.8	50.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Wang Huan
Radiated Continuous Emission	Yan Hanchen

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