FCC 15B TEST REPORT

No. I22Z60785-EMC01

for

Wingtech Group (Hong Kong) Limited

5G Mobile Phone

Model Name: CELERO5G

FCC ID: 2APXW-CELERO5G

with

Hardware Version: V2.0

Software Version: Celero5G_0.01.01

Issued Date: 2022-06-29

Note:

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z60785-EMC01	Rev.0	1st edition	2022-06-29

CONTENTS

1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2022-05-30

Testing End Date: 2022-06-29

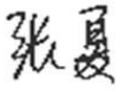
1.4. Signature

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:	Wingtech Mobile Communications Co.,Ltd.
Address /Post:	4F-6F,Building 4 of Juxin Yuan,No.188 Pingfu Road, Xuhui District,Shanghai,China.
Contact:	moxiaoling
Email:	moxiaoling@wingtech.com
Telephone:	/
Fax:	/

2.2. Manufacturer Information

Company Name:	Wingtech Group (Hong Kong) Limited
Address /Post:	Flat/RM 1802 18/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL, HK
Contact:	sharui
Email:	/
Telephone:	/
Fax:	/

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

3.1. About EUT

Description	5G Mobile Phone
Model Name	CELERO5G
FCC ID	2APXW-CELERO5G

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	863401060011331	V2.0	Celero5G_0.01.01

*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	Note
AE1	Battery	AE1	Battery
AE2	Charger	AE2	Charger
AE3	USB Cable	AE3	USB Cable

AE1

Model	RE001
Manufacturer	SUNWODA ELECTRONIC CO ., LTD
Capacitance	4500mAh
Nominal voltage	3.85V

AE2

Model	BLJ-QC06HU
Manufacturer	Zhongshan Baolijin Electronic Co., Ltd
Length of cable	/

AE3

Model	USB AM TO TYPE-C2.0
Manufacturer	ShenZhen BRL Technology 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	EUT1 + AE1+AE2+AE3	Charger+Real Camera+ RX GSM850
Set.2	EUT1 + AE1+AE2+AE3	Charger+mp4
Set.3	EUT1 + AE2+AE3	SD TO PC + Front Camera

Note：

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM 850MHz,WCDMA Band5, LTE Bands B12/13/26/71/29, 5G NR n5/71. The measurement results showed here are worst cases of different bands.

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	2020
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	Test Receiver	ESCI	100344	R&S	2023-02-21	1 year
2	LISN	ENV216	101200	R&S	2023-05-30	1 year
3	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 year
4	Test Receiver	ESW44	103015	R&S	2022-09-03	1 Year
5	EMI Antenna	VULB 9163	483	SCHWARZBECK	2022-08-24	1 year
6	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year
7	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
8	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
9	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
10	PC	M4000e-17	M706RMW2	Lenovo	N/A	N/A

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) 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.

Limit(10m)=Limit(3m)+20[log(3/10)]

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：5.40dB, 1GHz-18GHz：4.32dB, *k*=2.

Note： The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note:The measurement results showed here are worst cases.

Measurement results for Set.1:

EUT1 Charger + Back Camera +GSM 850MHz idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
52.892000	18.14	29.54	11.40	125.0	V	0.0
56.287000	19.88	29.54	9.66	100.0	V	0.0
84.902000	19.27	29.54	10.27	125.0	V	36.0
122.247000	20.45	33.06	12.61	108.0	V	0.0
144.072000	23.75	33.06	9.31	100.0	V	196.0
158.040000	24.85	33.06	8.21	108.0	V	268.0

EUT1 Charger + Back Camera +GSM 850MHz 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)
17556.980	42.6	-29.5	44.4	27.7	H	54.0	11.4
17793.280	42.5	-29.9	46.0	26.4	V	54.0	11.5
17650.140	42.3	-29.6	45.2	26.7	H	54.0	11.7
17817.420	42.2	-29.6	46.0	25.9	V	54.0	11.8
17852.100	42.2	-29.3	46.0	25.6	V	54.0	11.8
17548.140	42.2	-29.5	44.4	27.3	V	54.0	11.8

EUT1 Charger + Back Camera +GSM 850MHz 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)
17628.040	52.9	-29.4	45.2	37.1	H	74.0	21.1
17789.540	52.8	-29.9	46.0	36.7	H	74.0	21.2
17259.140	52.8	-30.0	43.4	39.5	V	74.0	21.2
17686.520	52.7	-30.0	45.2	37.4	V	74.0	21.3
17875.900	52.6	-29.4	46.0	36.0	H	74.0	21.4
17673.600	52.5	-29.9	45.2	37.1	H	74.0	21.5

Measurement results for Set.2:

EUT1 Charger+MP4 Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
55.026000	19.50	29.54	10.04	100.0	V	74.0
58.809000	17.39	29.54	12.15	325.0	V	358.0
80.537000	20.25	29.54	9.29	175.0	V	178.0
138.446000	22.73	33.06	10.33	107.0	V	109.0
145.624000	22.98	33.06	10.08	125.0	V	358.0
160.271000	25.79	33.06	7.27	100.0	V	178.0

EUT1 Charger+MP4 Mode/Average detector

Frequency (MHz)	Result (dBµV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBµV)	Polarity	Limit (dBµV/m)	Margin (dB)
17900.040	43.2	-29.3	46.0	26.6	V	54.0	10.8
17884.060	42.6	-29.5	46.0	26.2	H	54.0	11.4
17800.760	42.6	-29.6	46.0	26.3	V	54.0	11.4
17894.940	42.5	-29.5	46.0	26.1	V	54.0	11.5
17605.940	42.4	-29.5	45.2	26.7	V	54.0	11.6
17981.300	42.3	-29.1	46.7	24.7	H	54.0	11.7

EUT1 Charger+MP4 Mode/Peak detector

Frequency (MHz)	Result (dBµV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBµV)	Polarity	Limit (dBµV/m)	Margin (dB)
17596.8	53.1	-29.7	45.2	37.5	H	74.0	20.9
17792.3	53.0	-29.9	46.0	36.9	V	74.0	21.0
17545.4	52.7	-29.5	44.4	37.8	V	74.0	21.3
17328.5	52.7	-29.7	43.4	39.0	V	74.0	21.3
17539.6	52.7	-29.3	44.4	37.7	V	74.0	21.3
17690.3	52.5	-30.0	45.2	37.2	H	74.0	21.5

Measurement results for Set.3:

EUT1 USB + Front Camera Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
59.488000	17.06	29.54	12.48	281.0	V	196.0
96.930000	21.20	33.06	11.86	121.0	V	185.0
125.642000	19.39	33.06	13.67	100.0	V	24.0
137.670000	24.98	33.06	8.08	312.0	H	66.0
230.596000	22.79	35.56	12.77	125.0	V	166.0
544.585000	24.57	35.56	10.99	275.0	V	297.0

EUT1 USB+Front Camera Mode/Average detector

Frequency (MHz)	Result (dBµV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBµV)	Polarity	Limit (dBµV/m)	Margin (dB)
17655.580	42.6	-29.6	45.2	27.0	H	54.0	11.4
17651.160	42.3	-29.6	45.2	26.7	H	54.0	11.7
17552.560	42.3	-29.5	44.4	27.4	H	54.0	11.7
17915.340	42.3	-29.3	46.7	25.0	H	54.0	11.7
17679.040	42.3	-29.9	45.2	26.9	V	54.0	11.7
17796.340	42.3	-29.9	46.0	26.2	H	54.0	11.7

EUT1 USB+Front Camera Mode/Peak detector

Frequency (MHz)	Result (dBµV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBµV)	Polarity	Limit (dBµV/m)	Margin (dB)
17723.240	53.7	-29.7	45.2	38.1	H	74.0	20.3
17799.400	52.8	-29.9	46.0	36.7	H	74.0	21.2
17947.980	52.8	-28.9	46.7	35.1	V	74.0	21.2
17883.040	52.8	-29.5	46.0	36.4	H	74.0	21.2
17808.240	52.7	-29.6	46.0	36.4	V	74.0	21.3
17807.560	52.7	-29.6	46.0	36.4	V	74.0	21.3

EUT1 Charger+Back Camera+GSM 850MHz idle Mode, Set.1

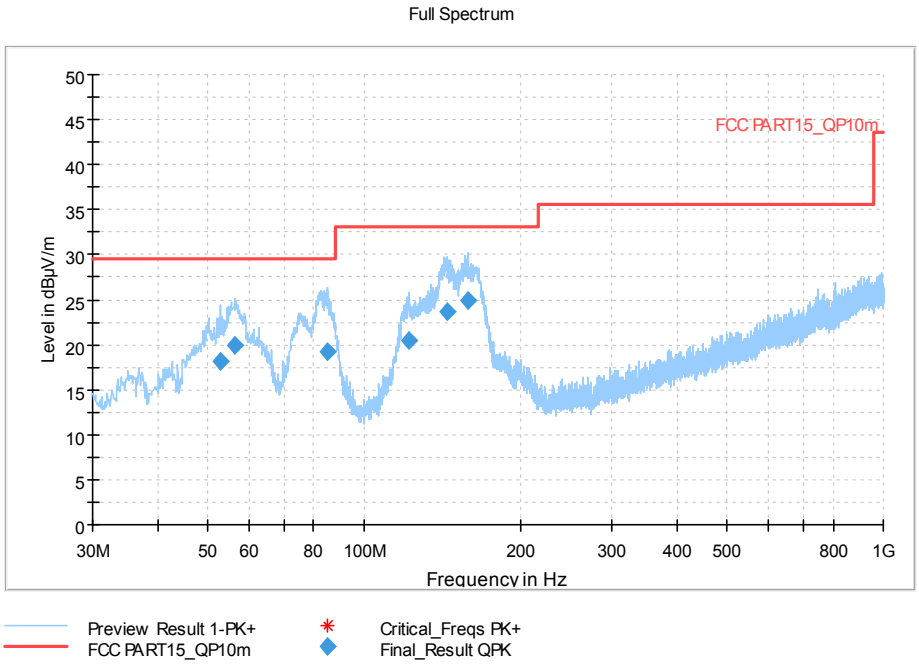


Figure A.1 Radiated Emission from 30MHz to 1GHz

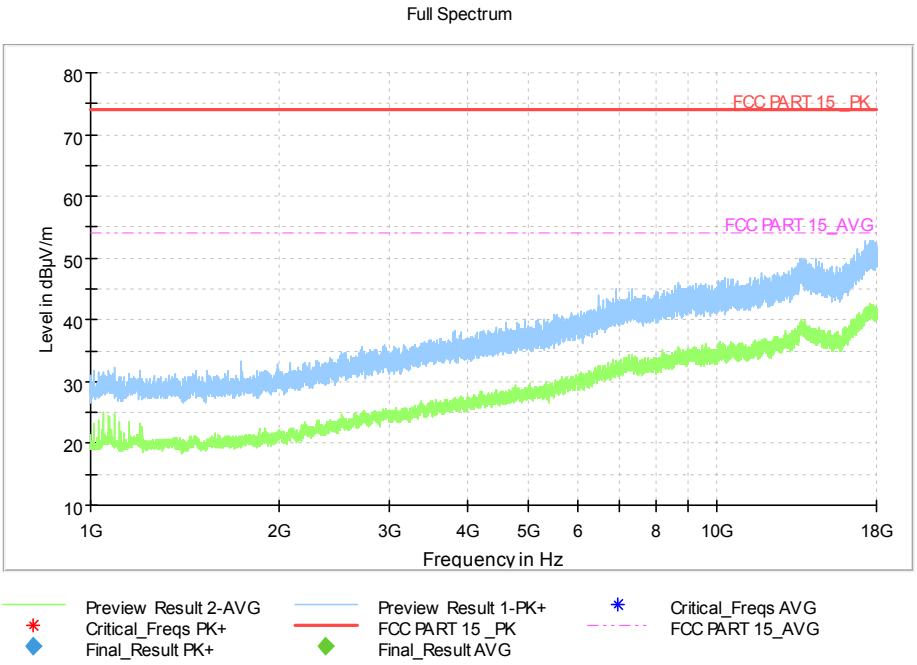


Figure A.2 Radiated Emission from 1GHz to 18GHz

EUT1 Charger+MP4 Mode, Set.2

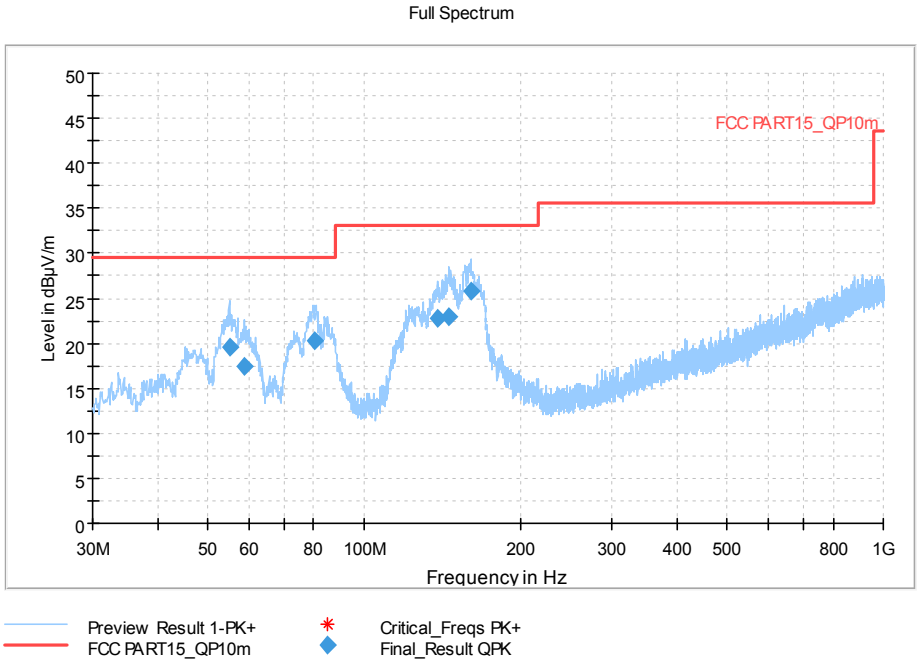


Figure A.3 Radiated Emission from 30MHz to 1GHz

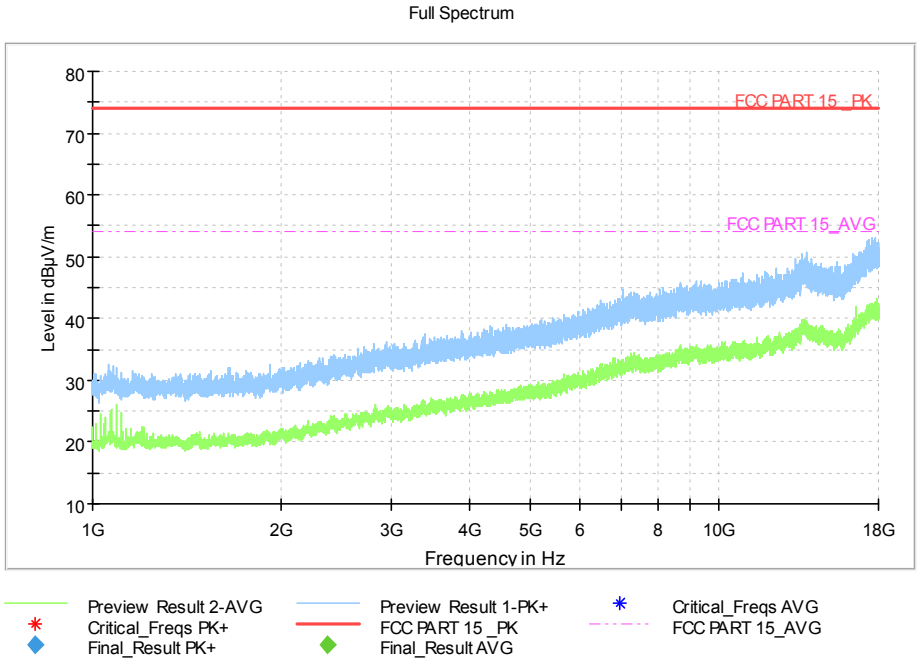


Figure A.4 Radiated Emission from 1GHz to 18GHz

EUT1 USB+Front Camera Mode, Set.3

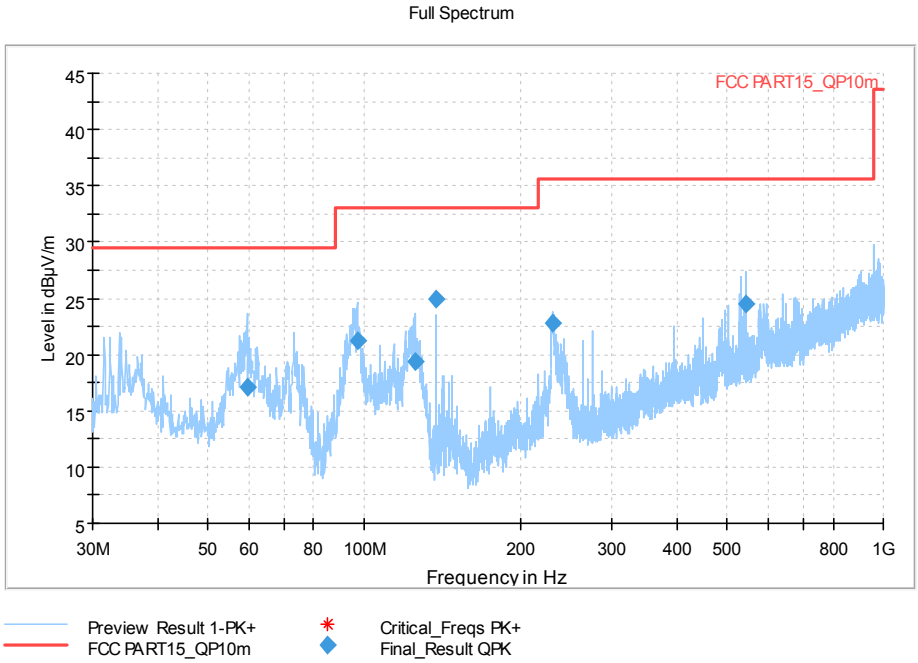


Figure A.5 Radiated Emission from 30MHz to 1GHz

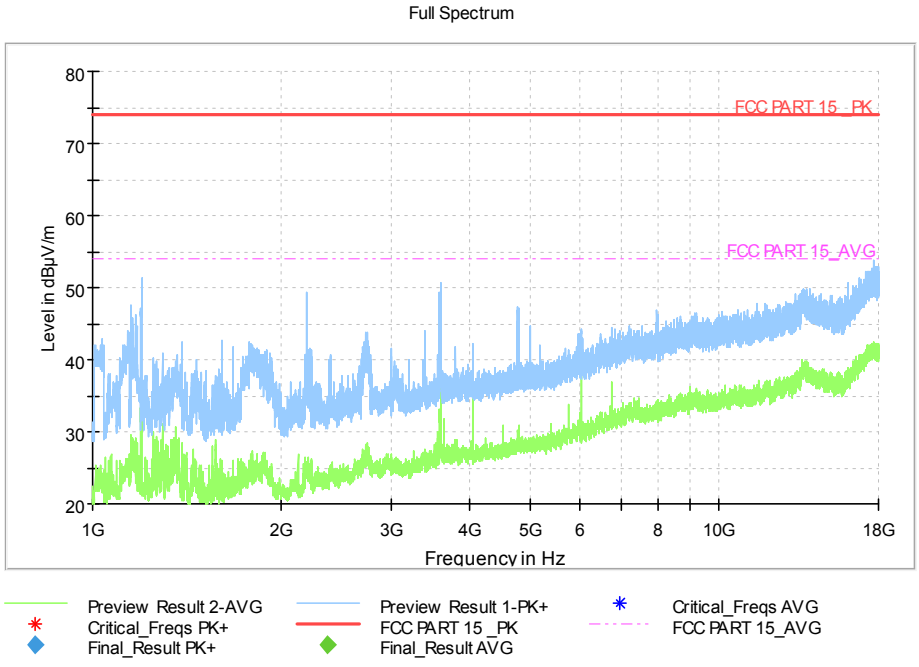


Figure A.6 Radiated Emission from 1GHz to 18GHz

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*=3.10dB, *k*=2.

Note： The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note:The measurement results showed here are worst cases.

EUT1 Charger+Back Camera+GSM 850MHz Idle Mode, Set.1

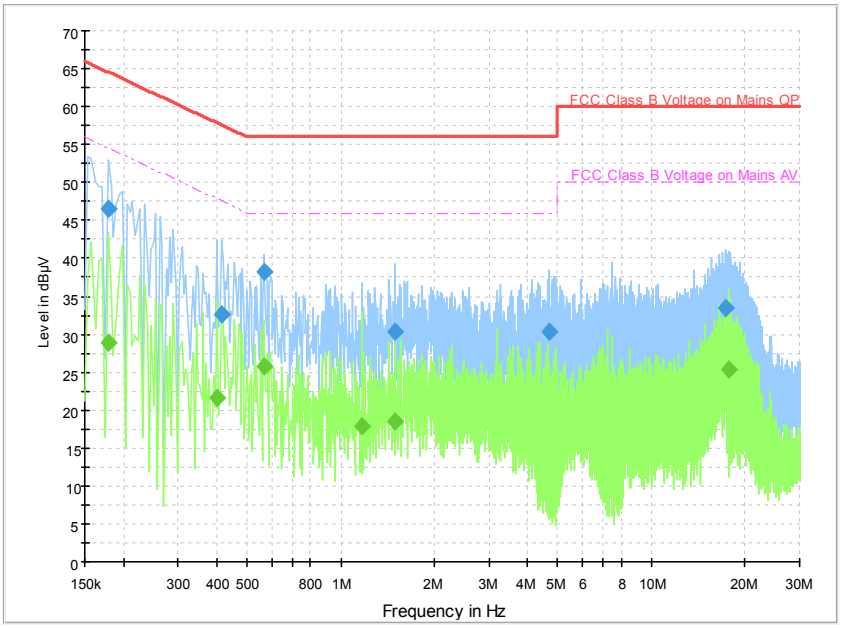


Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	46.6	5000.0	9.000	On	N	19.6	18.0	64.6
0.414000	32.6	5000.0	9.000	On	L1	19.7	25.0	57.6
0.566000	38.3	5000.0	9.000	On	L1	19.7	17.7	56.0
1.494000	30.3	5000.0	9.000	On	L1	19.7	25.7	56.0
4.710000	30.3	5000.0	9.000	On	L1	19.6	25.7	56.0
17.306000	33.4	5000.0	9.000	On	L1	19.7	26.6	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	28.9	5000.0	9.000	On	N	19.6	25.6	54.6
0.398000	21.6	5000.0	9.000	On	N	19.8	26.3	47.9
0.566000	25.7	5000.0	9.000	On	L1	19.7	20.3	46.0
1.174000	17.9	5000.0	9.000	On	L1	19.8	28.1	46.0
1.494000	18.5	5000.0	9.000	On	L1	19.7	27.5	46.0
17.782000	25.4	5000.0	9.000	On	L1	19.7	24.6	50.0

EUT1 Charger+MP4 Mode, Set.2

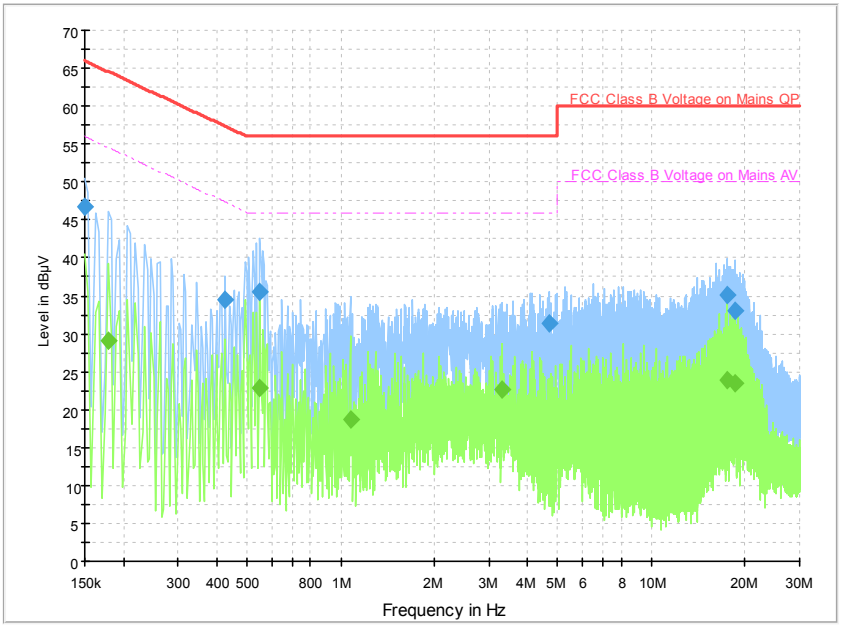


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	46.8	5000.0	9.000	On	L1	20.0	19.2	66.0
0.426000	34.5	5000.0	9.000	On	N	19.8	22.8	57.3
0.550000	35.4	5000.0	9.000	On	L1	19.7	20.6	56.0
4.690000	31.4	5000.0	9.000	On	L1	19.6	24.6	56.0
17.610000	35.1	5000.0	9.000	On	L1	19.7	24.9	60.0
18.562000	33.0	5000.0	9.000	On	L1	19.7	27.0	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	29.1	5000.0	9.000	On	N	19.6	25.5	54.6
0.550000	23.0	5000.0	9.000	On	L1	19.7	23.0	46.0
1.074000	18.6	5000.0	9.000	On	L1	19.8	27.4	46.0
3.302000	22.6	5000.0	9.000	On	L1	19.6	23.4	46.0
17.610000	24.0	5000.0	9.000	On	L1	19.7	26.0	50.0
18.562000	23.5	5000.0	9.000	On	L1	19.7	26.5	50.0

EUT1 USB+Front Camera Mode, Set.3

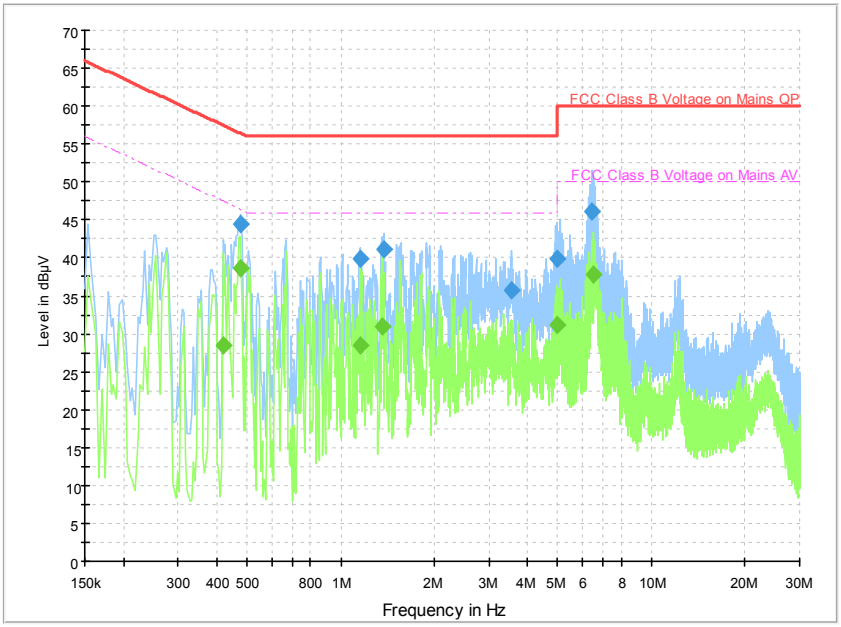


Figure A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.474000	44.4	5000.0	9.000	On	N	19.8	12.1	56.4
1.150000	39.9	5000.0	9.000	On	L1	19.8	16.1	56.0
1.378000	41.1	5000.0	9.000	On	L1	19.7	14.9	56.0
3.538000	35.7	5000.0	9.000	On	N	19.6	20.3	56.0
4.990000	39.8	5000.0	9.000	On	L1	19.6	16.2	56.0
6.438000	46.2	5000.0	9.000	On	L1	19.7	13.8	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.418000	28.4	5000.0	9.000	On	L1	19.7	19.1	47.5
0.474000	38.6	5000.0	9.000	On	N	19.8	7.8	46.4
1.150000	28.5	5000.0	9.000	On	L1	19.8	17.5	46.0
1.354000	30.9	5000.0	9.000	On	L1	19.7	15.1	46.0
4.978000	31.2	5000.0	9.000	On	N	19.5	14.8	46.0
6.538000	37.8	5000.0	9.000	On	L1	19.7	12.2	50.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Chen Tianwei
Radiated Continuous Emission	Ding Zai, Li Pengfei

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