TEST REPORT

No. 24T04Z101721-017

for

HMD Global Oy

Mobile Phone

MODEL NAME: TA-1658

FCC ID: 2AJOTTA-1658

with

Hardware Version: V1.0

Software Version: 000T_0_362

Issued Date: 2024-08-30

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:

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
24T04Z101721-017	Rev.0	1st edition	2024-08-30

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

Location 2: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, 100176, P. R. China

1.3. Testing Environment

Normal Temperature: 15-35° C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2024-08-16

Testing End Date: 2024-08-20

1.5. Signature

Zhang Ying

(Prepared this test report)

An Hui

(Reviewed this test report)

Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
City:	/
Contact Person:	Reza Serafat
Contact Email	reza.serafat@hmdglobal.com
Telephone:	+491735287964
Fax:	/

2.2. Manufacturer Information

Company Name:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
City:	/
Contact Person:	Reza Serafat
Contact Email	reza.serafat@hmdglobal.com
Telephone:	+491735287964
Fax:	/

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

3.1. About EUT

Description	Mobile Phone
Model Name	TA-1658

Note: The EUT functions are described in Annex A of this test report. Specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the client. Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL,Telecommunication Technology Labs,CAICT

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT26a	353401640000462/ 353401640000470	V1.0	000T_0_362	2024-07-31

*EUT ID: is used to identify the test sample in the lab internally. The HW and SW version information were provided by the applicant.

3.3. Internal Identification of AE

AE ID*	Description	Note	Manufacturer
AE1-1	Battery	HBA5033AA	Huizhou Highpower Technology Co., Ltd.
AE1-2	Battery	HBA5033AA	HuiZhou GanFeng LiEnergy Battery Technology Co., Ltd.
AE2-1	Charger US	HAD-020U	Shenzhen BaiJunDa Electronic Co.,Ltd.
AE2-2	Charger EU	HAD-020E	Shenzhen BaiJunDa Electronic Co.,Ltd.
AE2-3	Charger UK	HAD-020X	Shenzhen BaiJunDa Electronic Co.,Ltd.
AE2-4	Charger AU	HAD-020A	Shenzhen BaiJunDa Electronic Co.,Ltd.
AE3-1	USB cable	CC-3A	Saibao(jiangxi)Communication industrial Co.,Ltd.
AE3-2	USB cable	CC-3A	Huizhou Juwei Electronics Co.,Ltd
AE4	Headset	JWEP1275-ZN01H	Ju wei electronics co., LTD

*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.4	UT26a + AE1-1 + AE2-1 + AE3-1 + AE4	Charger
Set.5	UT26a + AE1-1 + AE3-1 + PC + AE4	USB1
Set.6	UT26a + AE1-1 + AE3-2 + PC + AE4	USB2

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, were supplied by the client or manufacturer, which is the basis of testing. CAICT is not responsible for the accuracy of customer supplied technical information that may affect the test results (for example, antenna gain and loss of customer supplied cable).

4.2. 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	2023
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. Test Results

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	BR	Re-use test data from basic model report.
	NA	Not applicable
	NM	Not measured

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

6. Test Facilities Utilized

Test instruments list:

huayuan North Road:

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101200	R&S	1 year	2025-05-16
2	Test Receiver	ESCI	100344	R&S	1 year	2025-04-01
3	Test Receiver	ESW44	103023	R&S	2 years	2025-06-08
4	EMI Antenna	VULB 9163	01222	SCHWARZBECK	2 years	2025-01-28
5	Signal Generator	SMBV100A	260613	R&S	2 years	2025-02-14
6	Universal Radio Communication Tester	CMW500	150344	R&S	2 Year	2025-01-03
7	PC	OPTIPLEX 380	DELL	2X1YV2X	/	/
8	Printer	P1606dn	HP	VNC3L52122	/	/
9	Keyboard	L100	DELL	CN0RH659658907ATOI40	/	/
10	Mouse	M-UAE119	Lenovo	LZ935220ZRC	/	/

Test software list:

Test Item	Test Software	Software Vendor
Conducted emission(huayuan North Road)	EMC32 V8.53.0	R&S
Radiated emission(huayuan North Road)	EMC32 V11.50.00	R&S

Semi-anechoic chamber utilized did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
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

Shielded room utilized did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %

Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz－1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

7. Measurement Uncertainty

Where relevant, the following measurement uncertainty(worse case) levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Location 1: CTTL(huayuan North Road)

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	4.72dB(k=2)
	1GHz-6GHz	4.84dB(k=2)
Conducted Emission	150kHz-30MHz	AC Power Line: 3.08dB(*k*=2)

ANNEX A: EUT parameters

Cellular Bands operate between 30MHz-960MHz	√ GSM	Band 850MHz
	□CDMA	Band
	√ WCDMA	Band 5
	√ LTE	Band 12/26/71
	√ L 5G NR SA	Band 26/71
Other FCC Part 15B related features	√ FM √ MP3 √ MP4 √ Camera √ USB data √ NFC	

ANNEX B: Detailed Test Results

B.1. Radiated Emission

Reference: FCC Part 15.109(a).

Method of measurement: The field strength of radiated emissions from the unintentional radiator at distances of 3/10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) were tested. The test was 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 the specified distance from the EUT. During the test, 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.

EUT operating mode: The EUT was operating in the USB data and/or charging mode. During the test, the EUT was 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 Annex A (GSM 850MHz, WCDMA band5, LTE band 5/12/13/26, NR SA n12/26), were investigated. Only the worst case emissions are reported. All equipment was 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.
Note: Add 2/3/4G band 8 and 4G band 28 testing.

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. The limits for 10 meters distance is got by converting: Limit(10m) = Limit(3m) + 20[log(3/10)], which is according to FCC 15.109(g)(2)

Test settings:

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

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.

Note: The measurement results showed as followed are worst cases, and the combinations of different batteries, cables and headsets were considered if applicable.

Function Type:

Setup	Function	Conclusion
Set.4	Charger+Real Camera+ RX GSM 850M	Pass
Set.4	Charger+ Front Camera + RX WCDMA band 5	Pass
Set.4	Charger+MP3 + RX LTE band 12	Pass
Set.4	Charger+MP4 + RX LTE band 26	Pass
Set.4	Charger+MP4 + RX LTE band 71	Pass
Set.4	Charger+ Real Camera + RX NR band 26	Pass
Set.4	Charger+Front Camera + RX NR band 71	Pass
Set.5	USB TO PC	Pass
Set.6	USB TO PC	Pass
Set.4	FM	Pass

Note: Only the worst case emissions are reported.

Charger + Real Camera + RX GSM 850M, Set.4

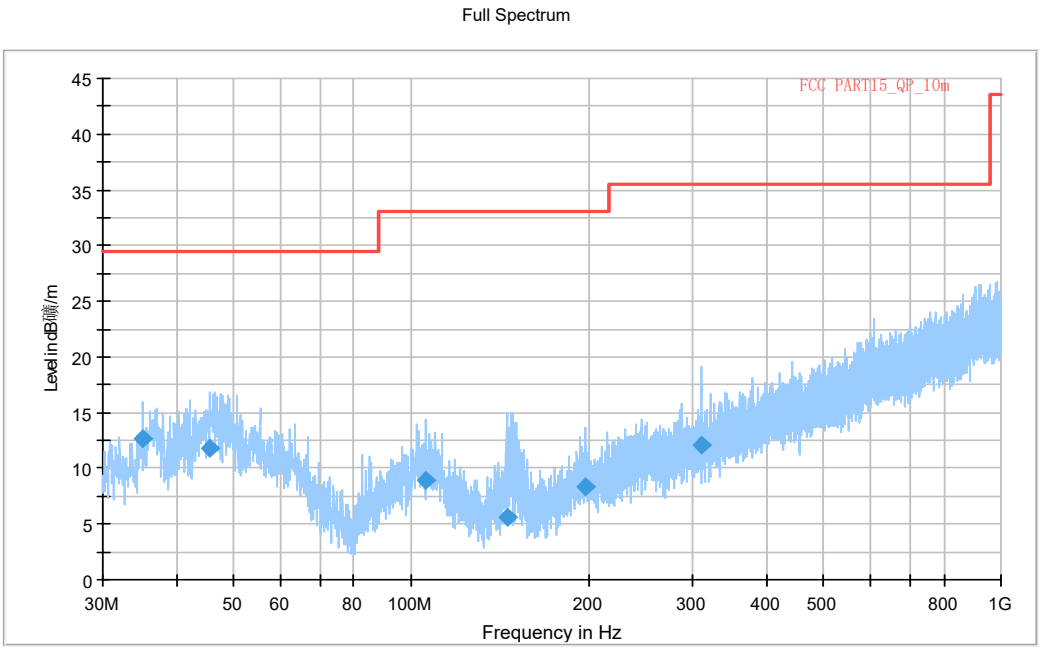

Figure A.1 Radiated Emission from 30MHz to 1GHz

QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
35.044000	12.62	29.54	16.92	104.0	V	91.0
45.568500	11.86	29.54	17.68	115.0	V	-29.0
105.902500	8.90	33.06	24.16	115.0	V	32.0
145.139000	5.64	33.06	27.42	123.0	V	181.0
197.713000	8.34	33.06	24.72	309.0	V	115.0
310.572500	12.01	35.56	23.55	125.0	V	84.0

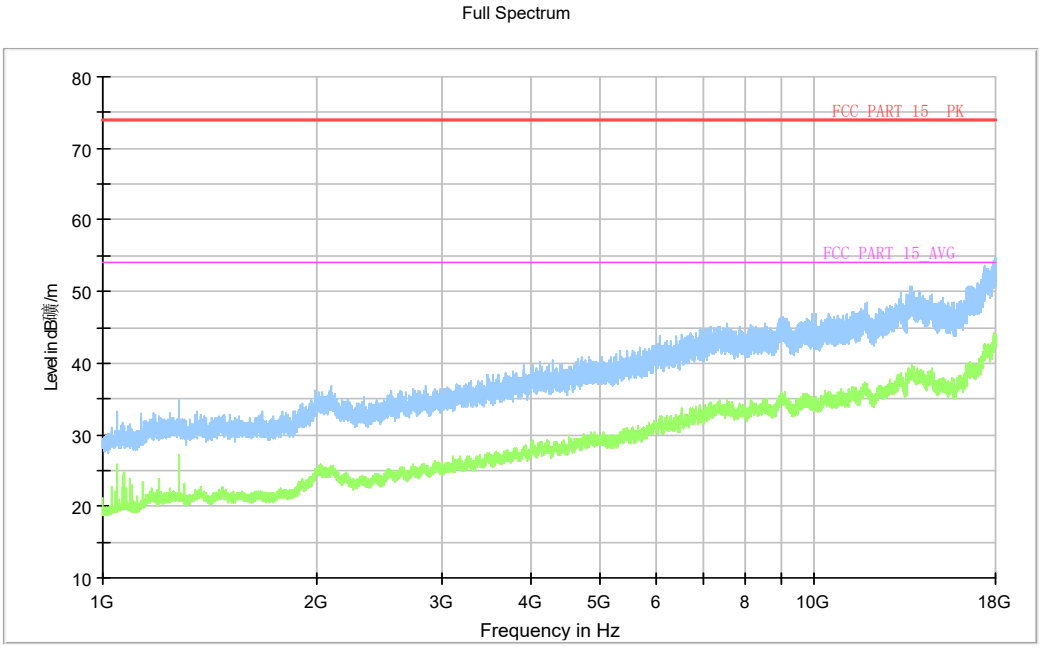

Figure A.2 Radiated Emission from 1GHz to 18GHz

Average detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17977.900	43.90	-27.19	42.33	28.76	54.00	10.10	H
17930.640	43.70	-26.85	42.33	28.22	54.00	10.30	H
17927.240	43.60	-26.85	42.33	28.12	54.00	10.40	H
17993.200	43.50	-27.36	42.33	28.54	54.00	10.50	H
17971.100	43.50	-27.19	42.33	28.36	54.00	10.50	V
17981.980	43.40	-27.36	42.33	28.44	54.00	10.60	H

Peak detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17952.740	54.8	-27.0	42.3	39.491	74.000	19.200	H
17972.460	54.5	-27.2	42.3	39.363	74.000	19.500	V
17923.160	54.3	-26.8	42.3	38.818	74.000	19.700	V
17960.220	54.2	-27.2	42.3	39.063	74.000	19.800	V
17850.060	54.1	-27.4	42.2	39.260	74.000	19.900	H
17950.360	54.1	-27.0	42.3	38.791	74.000	19.900	H

USB connected to PC mode, Set.5

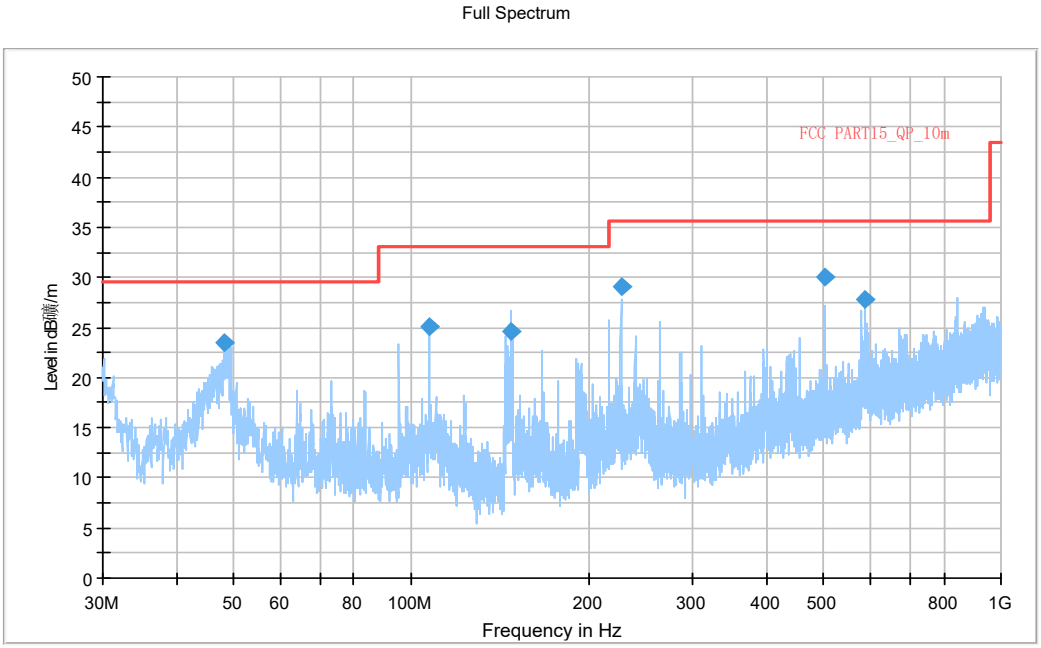

Figure A.5 Radiated Emission from 30MHz to 1GHz

QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
48.187500	23.43	29.54	6.11	190.0	V	150.0
107.406000	25.16	33.06	7.90	100.0	V	82.0
148.000500	24.61	33.06	8.45	120.0	V	-44.0
226.764500	29.07	35.56	6.49	325.0	H	0.0
503.990500	30.11	35.56	5.45	184.0	H	82.0
589.593000	27.81	35.56	7.75	225.0	V	315.0

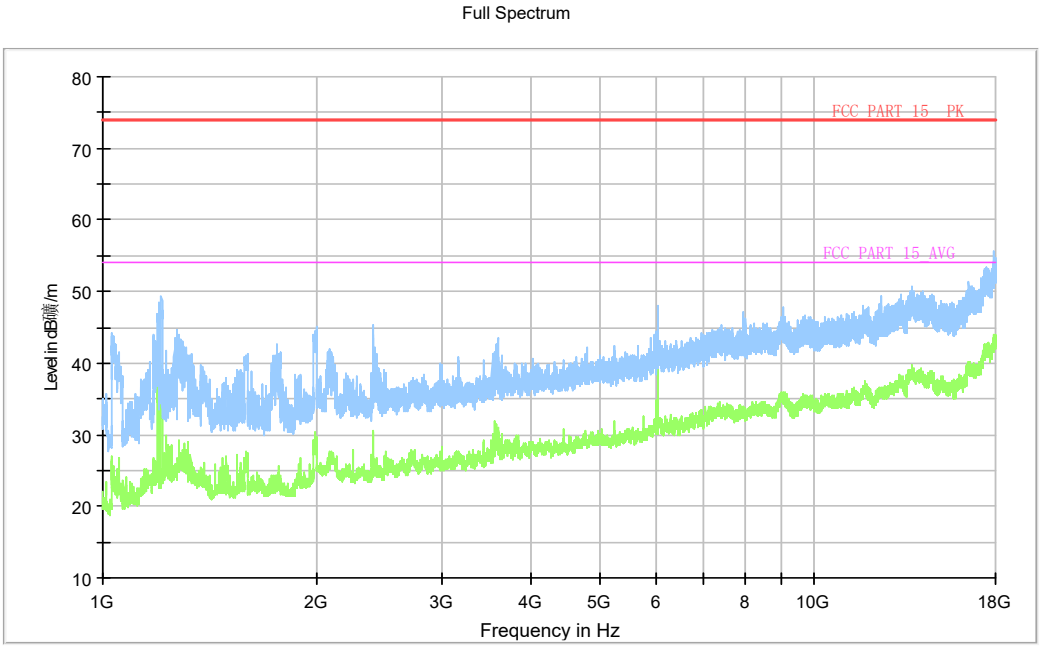

Figure A.6 Radiated Emission from 1GHz to 18GHz

Average detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
6051.040	44.90	-36.36	35.18	46.08	54.00	9.10	H
6050.700	44.60	-36.36	35.18	45.78	54.00	9.40	H
6051.720	43.90	-36.36	35.18	45.08	54.00	10.10	H
17968.040	43.70	-27.19	42.33	28.56	54.00	10.30	V
17996.600	43.50	-27.36	42.33	28.54	54.00	10.50	H
17989.800	43.50	-27.36	42.33	28.54	54.00	10.50	V

Peak detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17894.600	55.6	-27.1	42.2	40.437	74.000	18.400	H
17950.360	54.6	-27.0	42.3	39.291	74.000	19.400	V
17901.060	54.4	-26.9	42.2	39.075	74.000	19.600	H
17954.780	54.3	-27.0	42.3	38.991	74.000	19.700	V
17864.680	54.1	-27.2	42.2	39.098	74.000	19.900	H
17899.360	54.1	-27.1	42.2	38.937	74.000	19.900	H

FM function, Set.4

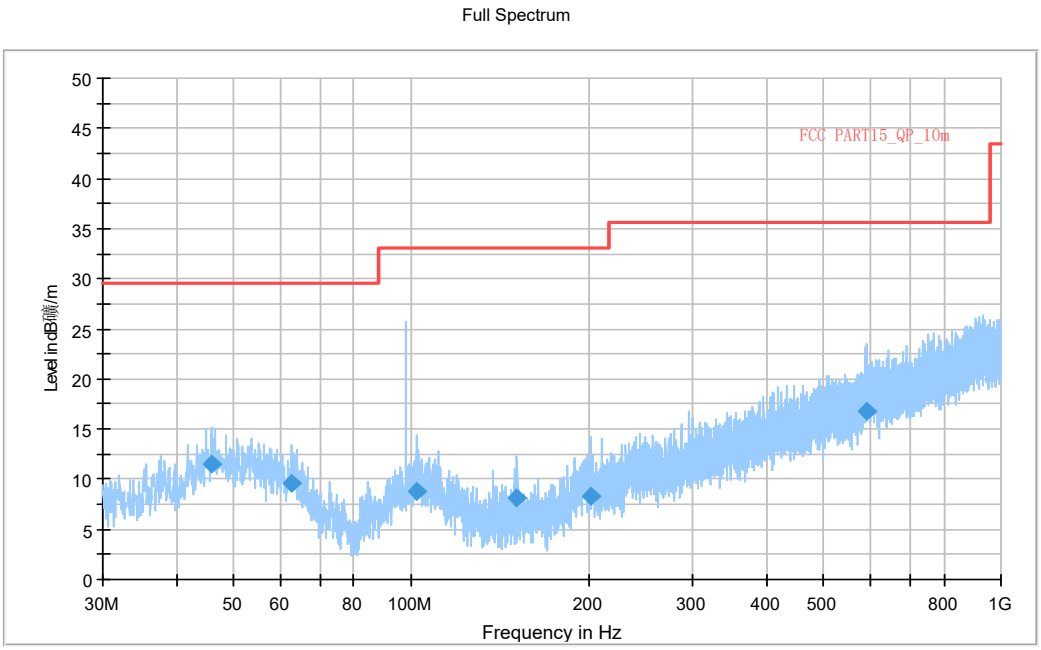

Figure A.5 Radiated Emission from 30MHz to 1GHz

QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
45.762500	11.50	29.54	18.04	125.0	V	-13.0
62.737500	9.61	29.54	19.93	179.0	V	293.0
102.022500	8.86	33.06	24.20	123.0	H	256.0
151.347000	8.18	33.06	24.88	175.0	V	-21.0
202.272000	8.34	33.06	24.72	116.0	V	135.0
593.570000	16.82	35.56	18.74	100.0	V	135.0

B.2. Conducted Emission

Reference: FCC: Part 15.107(a).

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.

EUT operating mode: The EUT is operating in the charging mode and USB data mode if applicable.

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		

Test Settings:

Voltage(V)	Frequency(Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

Measurement results:

The measurement results showed as followed are worst cases, and the combinations of different batteries, cables and headsets were considered if applicable.

Function Type:

Setup	Function	Conclusion
Set.4	Charger+Real Camera+ RX GSM 850M	Pass
Set.4	Charger+ Front Camera + RX WCDMA band 5	Pass
Set.4	Charger+MP3 + RX LTE band 12	Pass
Set.4	Charger+ Real Camera + RX NR band 26	Pass
Set.5	USB TO PC	Pass
Set.6	USB TO PC	Pass
Set.4	FM	Pass

Note: Only the worst case emissions are reported.

Charger + Real Camera + RX GSM 850MHz, Set.4

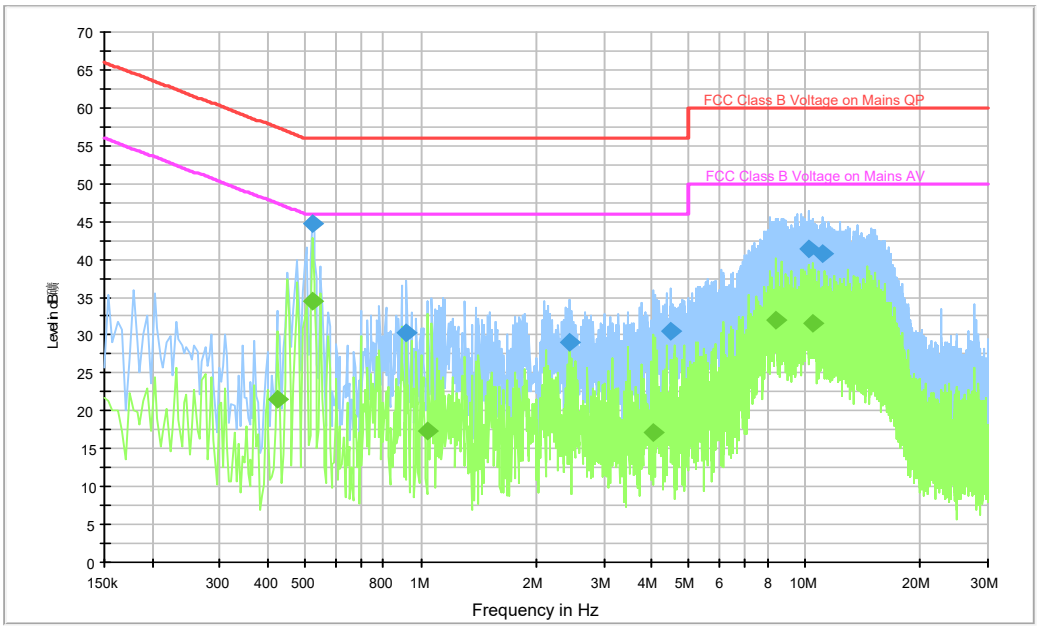

Figure A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.522000	44.8	2000.0	9.000	On	L1	20.0	11.2	56.0
0.918000	30.2	2000.0	9.000	On	L1	19.9	25.8	56.0
2.434000	28.9	2000.0	9.000	On	L1	19.8	27.1	56.0
4.490000	30.6	2000.0	9.000	On	L1	19.8	25.4	56.0
10.266000	41.3	2000.0	9.000	On	L1	19.9	18.7	60.0
11.158000	40.8	2000.0	9.000	On	L1	19.9	19.2	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	21.5	2000.0	9.000	On	L1	20.0	25.9	47.4
0.522000	34.5	2000.0	9.000	On	N	19.9	11.5	46.0
1.042000	17.4	2000.0	9.000	On	L1	19.9	28.6	46.0
4.054000	17.2	2000.0	9.000	On	L1	19.8	28.8	46.0
8.386000	31.9	2000.0	9.000	On	L1	19.9	18.1	50.0
10.482000	31.5	2000.0	9.000	On	L1	19.9	18.5	50.0

USB connected to PC mode, Set.5

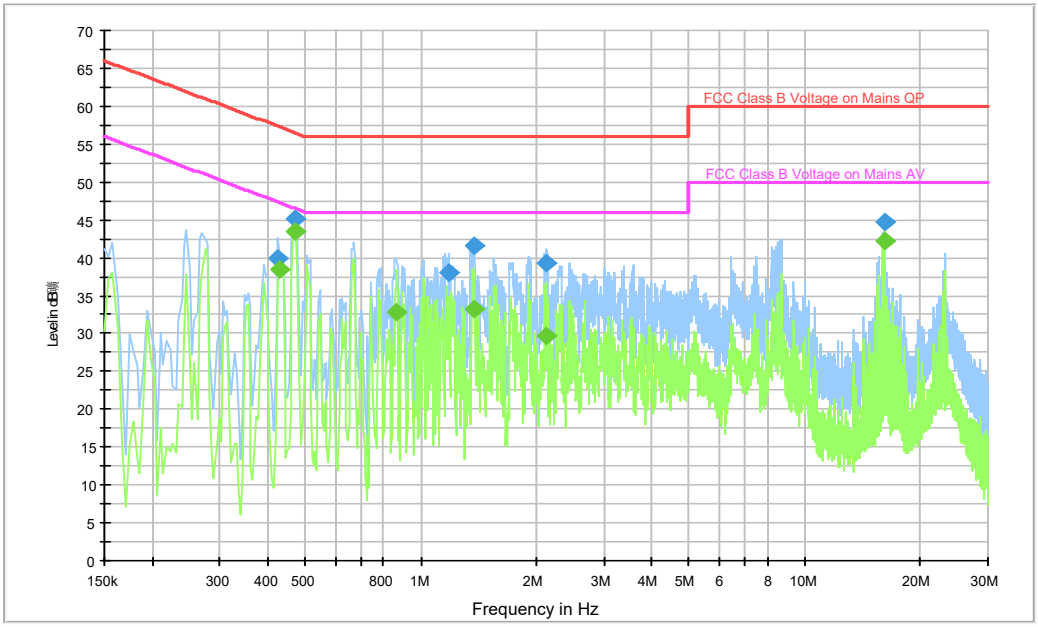

Figure A.11 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	39.8	2000.0	9.000	On	L1	20.0	17.5	57.3
0.470000	45.2	2000.0	9.000	On	N	19.9	11.4	56.5
1.186000	38.1	2000.0	9.000	On	L1	19.9	17.9	56.0
1.378000	41.5	2000.0	9.000	On	L1	19.9	14.5	56.0
2.130000	39.3	2000.0	9.000	On	N	19.6	16.7	56.0
16.166000	44.7	2000.0	9.000	On	L1	20.0	15.3	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	38.4	2000.0	9.000	On	L1	20.0	8.8	47.3
0.470000	43.5	2000.0	9.000	On	N	19.9	3.0	46.5
0.866000	32.8	2000.0	9.000	On	N	19.8	13.2	46.0
1.370000	33.3	2000.0	9.000	On	L1	19.9	12.7	46.0
2.130000	29.6	2000.0	9.000	On	N	19.6	16.4	46.0
16.166000	42.1	2000.0	9.000	On	L1	20.0	7.9	50.0

ANNEX C: Persons involved in this testing

Test Item	Tester
Radiated Emission	Li Pengfei & Yan Hanchen
Conducted Emission	Ding Zai

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