



NFC TEST REPORT

No.I19Z62195-EMC02

for

Xiaomi Communications Co., Ltd.

Mobile Phone

Model Name: M2001J2G/M2001J1G

FCC ID: 2AFZZJAG

with

Hardware Version: P2.2

Software Version: MIUI 11

Issued Date: 2020-05-07

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z62195-EMC02	Rev.0	1st edition	2020-02-22
I19Z62195-EMC02	Rev.1	Add the test condition of charging in P15. Add Operating frequency (110kHz-148kHz) in P7.	2020-03-03
I19Z62195-EMC02	Rev.2	add brand name as client request	2020-05-07

CONTENTS

1. TEST LABORATORY	5
1.1. INTRODUCTION & ACCREDITATION.....	5
1.2. TESTING LOCATION	5
1.3. TESTING ENVIRONMENT	6
1.4. PROJECT DATA	6
1.5. SIGNATURE.....	6
2. CLIENT INFORMATION.....	7
2.1. APPLICANT INFORMATION.....	7
2.2. MANUFACTURER INFORMATION.....	7
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	8
3.1. ABOUT EUT	8
3.2. INTERNAL IDENTIFICATION OF EUT	8
3.3. INTERNAL IDENTIFICATION OF AE	8
4. REFERENCE DOCUMENTS.....	9
4.1. EUT SET-UPS.....	9
4.2. DOCUMENTS SUPPLIED BY APPLICANT	10
4.3. REFERENCE DOCUMENTS FOR TESTING.....	10
5. TEST RESULTS	11
5.1. SUMMARY OF TEST RESULTS	11
5.2. STATEMENTS	11
6. TEST FACILITIES UTILIZED	12
7. MEASUREMENT UNCERTAINTY	13
ANNEX A: DETAILED TEST RESULTS.....	14
A.1. TRANSMITTER RADIATED EMISSIONS	14
A.2. AC CONDUCTED EMISSION.....	21
ANNEX B: PERSONS INVOLVED IN THIS TESTING	24
TEST ITEM.....	24
TESTER.....	24
TRANSMITTER RADIATED EMISSION.....	24
LI PENGFEI	24
CONDUCTED EMISSIONS.....	24



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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

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

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35°C
Extreme Temperature: -20/+50°C
Normal Relative Humidity: 20-75%
Normal Air Pressure 86Kpa-106Kpa

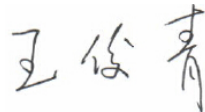
1.4. Project data

Testing Start Date: 2019-12-31
Testing End Date: 2020-01-06

1.5. Signature

Zhang Ying

(Prepared this test report)



Wang Junqing

(Reviewed this test report)



Liu Baodian

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Xiaomi Communications Co., Ltd.
Address /Post: #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District,
Beijing, China, 100085
City: /
Postal Code: 100085
Country: China
Contact Person jiaoxiaogang
Contact Email mi-compliance@xiaomi.com
Telephone: 010-60606666-8088
Fax: /

2.2. Manufacturer Information

Company Name: Xiaomi Communications Co., Ltd.
Address /Post: #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District,
Beijing, China, 100085
City: /
Postal Code: 100085
Country: China
Contact Person jiaoxiaogang
Contact Email mi-compliance@xiaomi.com
Telephone: 010-60606666-8088
Fax: /

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

3.1. About EUT

Description	Mobile Phone
Model name/HVIN	M2001J2G/M2001J1G
Brand name	MI
FCC ID	2AFZZJAG
Operating frequency	110kHz-148kHz
Nominal Voltage	3.85V/3.87 V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1(M2001J2G)	860211040039614	P2.2	MIUI 11

*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	battery	/
AE3	Travel charger	/
AE4	Travel charger	/
AE5	USB Cable	/
AE6	USB Cable	/
AE7	USB Cable	/
AE9	30W wireless charger	/

AE1

Model	BM4N
Manufacturer	/
Capacitance	4680 mAh
Nominal voltage	3.85V

AE2

Model	BM4M
Manufacturer	/
Capacitance	4400 mAh
Nominal voltage	3.87V

AE3

Model	MDY-09-EL
Manufacturer	Xiaomi Communications Co., Ltd.
Length of cable	/



AE4

Model MDY-11-EC
 Manufacturer Huizhou BYD Electronic Co.,Ltd.
 Length of cable /

AE5

Model L63512
 Manufacturer LUXSHARE Precision Industry Co., Ltd.
 Length of cable /

AE6

Model L63312
 Manufacturer LUXSHARE Precision Industry Co., Ltd.
 Length of cable /

AE7

Model K63312
 Manufacturer SU ZHOU KELI SCIENCE&TECHNOLOGY DEVELOPMENT CO.,LTD.
 Length of cable /

AE9

Model MDY-11-EG
 Manufacturer Xiaomi Communications Co., Ltd.
 Length of cable /

*AE ID: is used to identify the ancillary equipment in the lab internally.

4. Reference Documents

4.1. EUT Set-ups

Table 1: Eut Set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set.WPT1	EUT1 + AE1 + AE3 + AE6 + AE9	Wireless charger traffic
Set.WPT2	EUT1 + AE1 + AE3 + AE6 + phone	Phone wireless charger traffic

4.2. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, are supplied by the client or manufacturer, which are the bases of testing.

4.3. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
CFR 47 Part 2	Part 2 — Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.	2018
CFR 47 Part 15	Part 15 — Radio Frequency Devices. Subpart C — Intentional Radiators. § 15.35 Measurement detector functions and bandwidths. § 15.207 Conducted limits. § 15.209 Radiated emission limits, general requirements. § 15.215 Additional provisions to the general radiated emission limitations. § 15.225 Operation within the band 13.110–14.010 MHz.	2018
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

5. Test Results

5.1. Summary of Test Results

No	Test Cases	Clause in Regulation	Section in This Report	Verdict
1	Transmitter Radiated Emission	CFR 47 § 15.209	A.1	P
2	AC Power-line Conducted Emissions	CFR 47 § 15.207	A.2	P

The measurement is carried out according to ANSI C63.10. See **ANNEX A** for details.

Test Conditions:

For this report, all the test cases listed above were tested under normal Temperature, Voltage, humidity and Air Pressure except the Frequency Tolerance test case.

See Table 3 for terms for result verdict:

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

5.2. Statements

The test cases listed in Section 5.1 of this report for the EUT specified in Section 3 were performed by CTTL according to the reference documents in Section 4.

The EUT meets all applicable requirements of the regulations and standards in Section 4.2.



6. Test Facilities Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL. DUE DATE	CAL. INTERVAL
1.	H-field Antenna	HFH2-Z2	829324/007	R&S	2020-12-03	1 Year
2.	BiLog Antenna	VULB9163	9163-1222	Schwarzbeck	2020-03-14	1 Year
3.	Test Receiver	ESU26	100235	Rohde & Schwarz	2020-03-01	1 Year
4.	Test Receiver	ESCI	100344	Rohde & Schwarz	2020-03-14	1 Year
5.	LISN	ENV216	101200	Rohde & Schwarz	2020-04-27	1 Year

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.00	R&S
Conducted Emission	EMC32 V8.51	R&S

7. Measurement Uncertainty

Table 2: Measurement Uncertainty

Item	Uncertainty
Radiated Emissions (<1GHz)	$U = 4.86$ dB, $k=2$
Radiated Emissions (>1GHz)	$U = 5.26$ dB, $k=2$
Conducted emission	$U = 3.38$ dB, $k=2$

ANNEX A: Detailed Test Results

A.1. Transmitter Radiated Emissions

A.1.1. Reference

See Clause 6.4, 6.5 of ANSI C63.10-2013 generally.

A.1.2. Measurement Methods

At frequencies below 30MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the ear field. Pending the development of an appropriate measurement procedure for measurements performed below 30MH, when performing measurements at a closer distance than specified, the results shall be following below methods. The results shall be by using the square of an inverse linear distance extrapolation factor (10 dB/decade).

For radiated measurement, Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

The any unwanted emissions level shall not exceed the fundamental emission level.

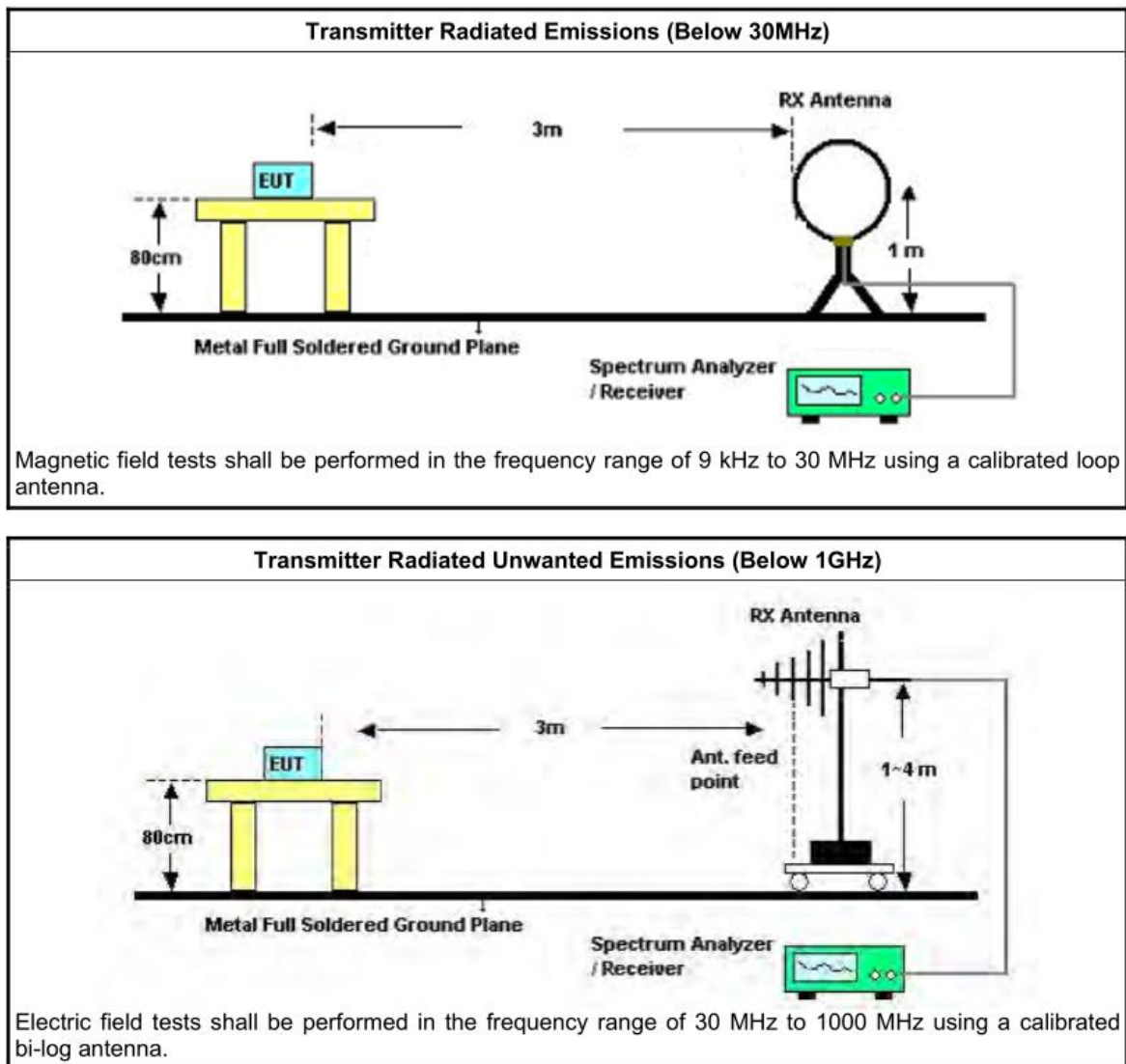


Figure A-1: Measurement Setup

A.1.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state WPT.

The EUT is powered by a travel adapter.

During the measurements, the ambient temperature of the electromagnetic anechoic chamber is in the range of 15 ~ 25 °C.

Using wireless charger mode: At the beginning of measurement, the battery is discharged to 0%-50%, the EUT is charged by the wireless charger.

Using Phone mode: Using the EUT as a wireless charger and the EUT is charged to 80% or more. The battery of another phone is discharged to 0%-50%. Another phone is charged by the EUT.

A.1.4. Limits

Transmitter Radiated Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

A.1.5. Measurement Results

Conclusions: Set.WPT01, Set.WPT02 **PASS**.

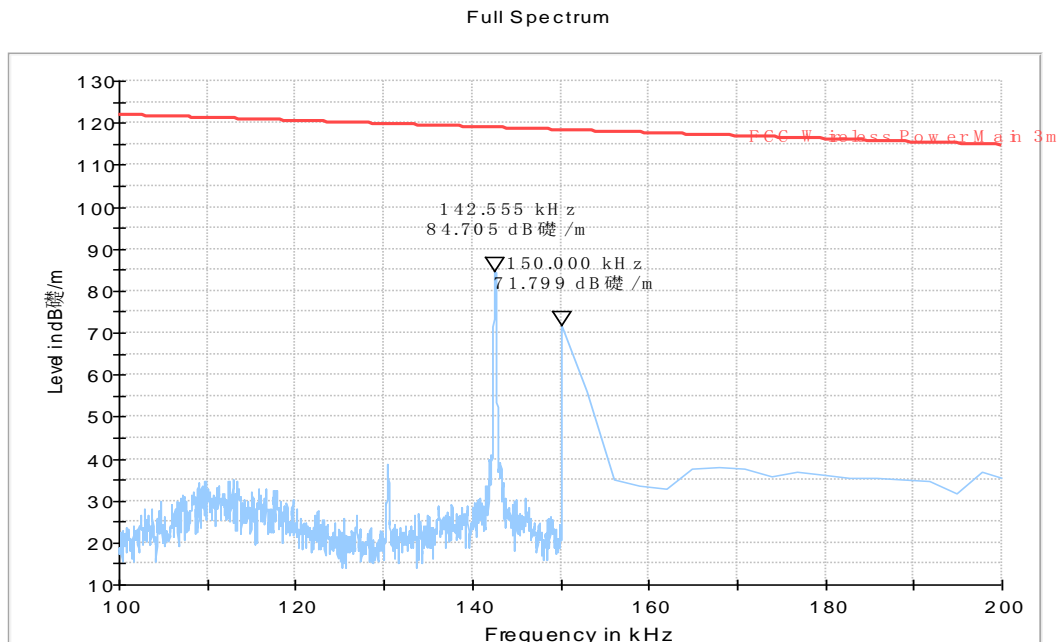


Figure A-2: Traffic Mode(distance = 3m, Using wireless charger)

Full Spectrum

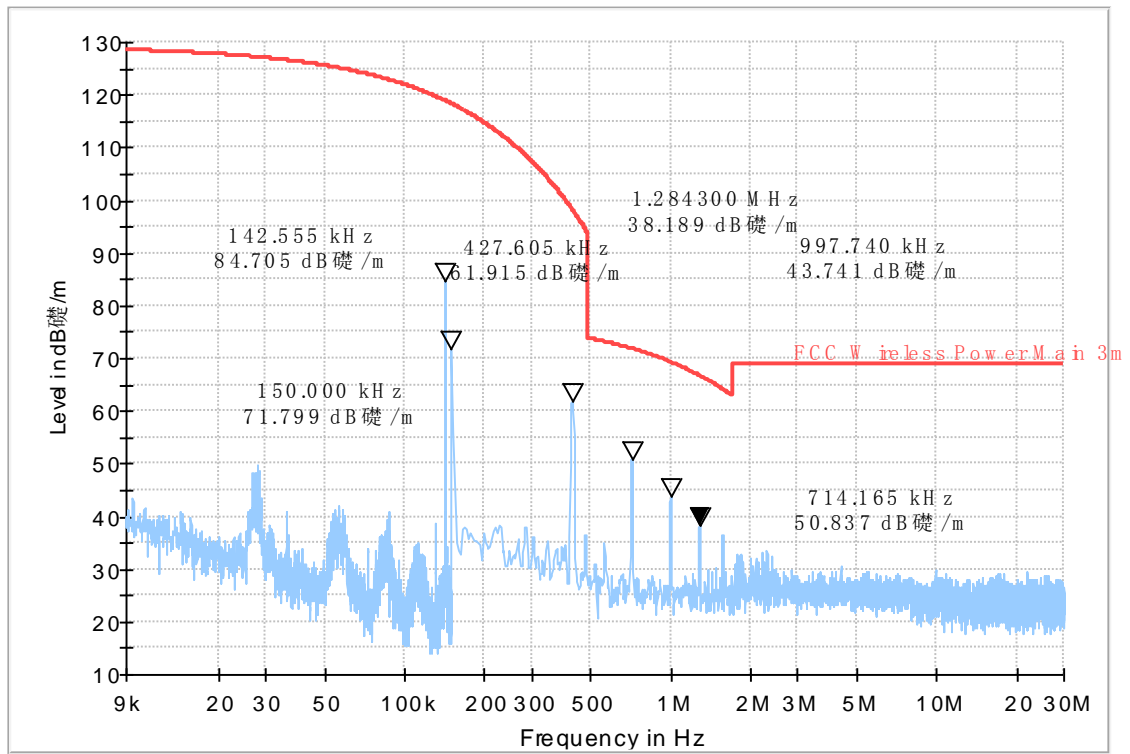


Figure A-3: Traffic Mode(distance = 3m, Using wireless charger, 9kHz-30MHz)

Full Spectrum

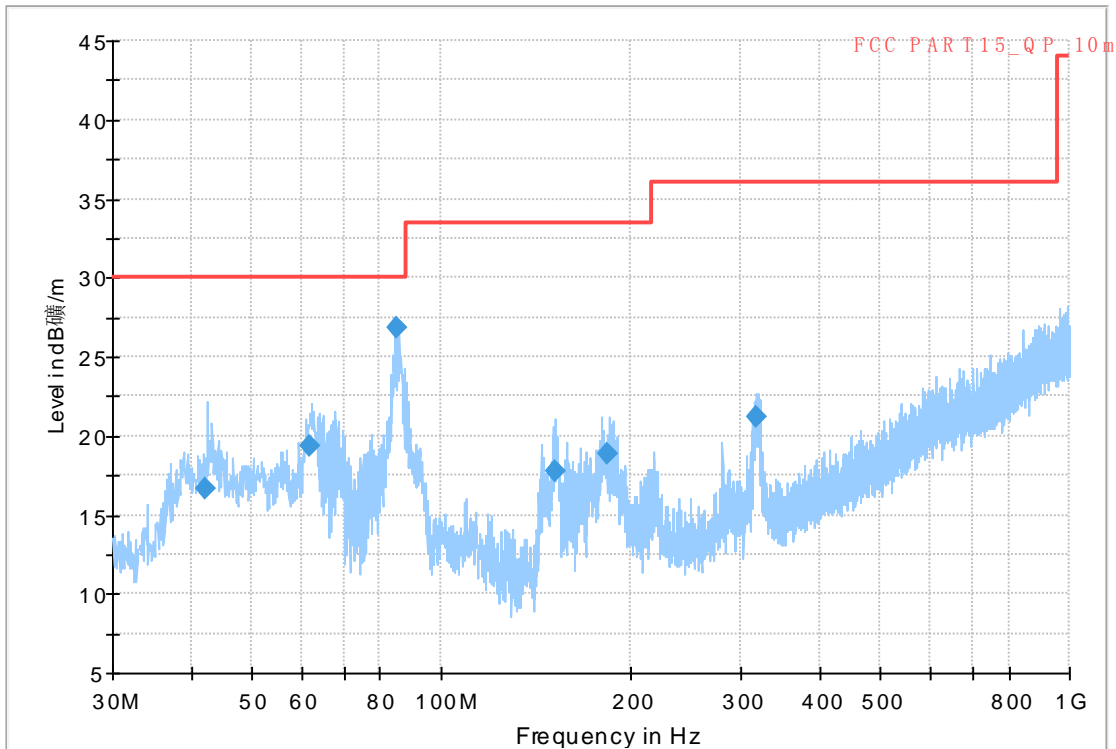
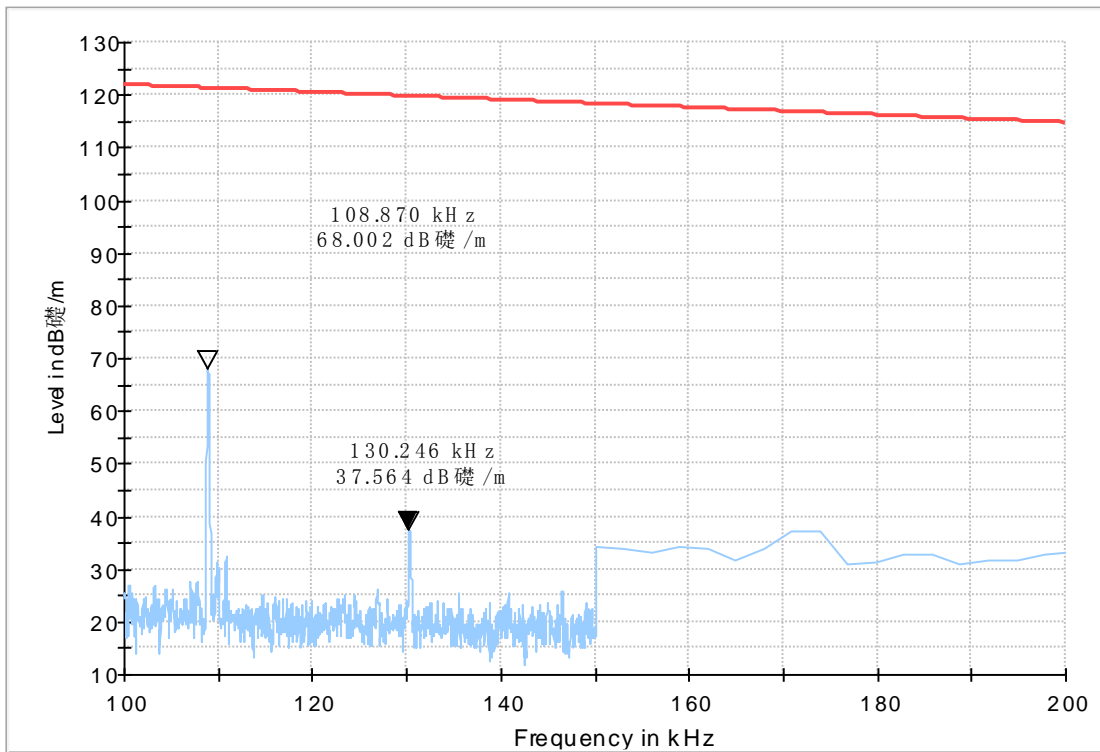


Figure A-4: Traffic Mode(distance = 10m, Using wireless charger, 30MHz-1GHz)

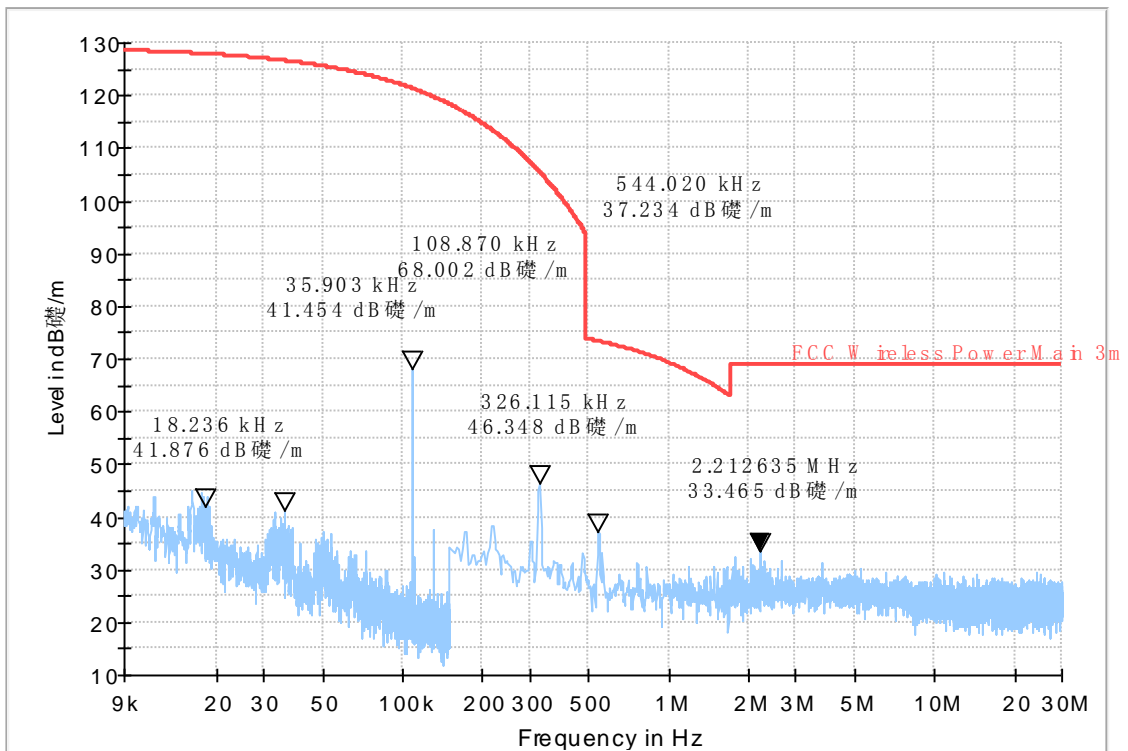
Final_Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
42.296000	16.65	30.00	13.35	1000.0	120.000	325.0	V	16.0
62.001000	19.36	30.00	10.64	1000.0	120.000	120.0	V	-28.0
85.068000	26.79	30.00	3.21	1000.0	120.000	181.0	V	241.0
151.795000	17.80	33.50	15.72	1000.0	120.000	101.0	V	78.0
184.563000	18.89	33.50	14.63	1000.0	120.000	118.0	V	120.0
318.136000	21.21	36.00	14.81	1000.0	120.000	181.0	H	284.0

Full Spectrum


Figure A-5: Traffic Mode (distance = 3m, Using Phone)

Full Spectrum


Figure A-6: Traffic Mode (distance = 3m, Using Phone, 9kHz-30MHz)

Full Spectrum

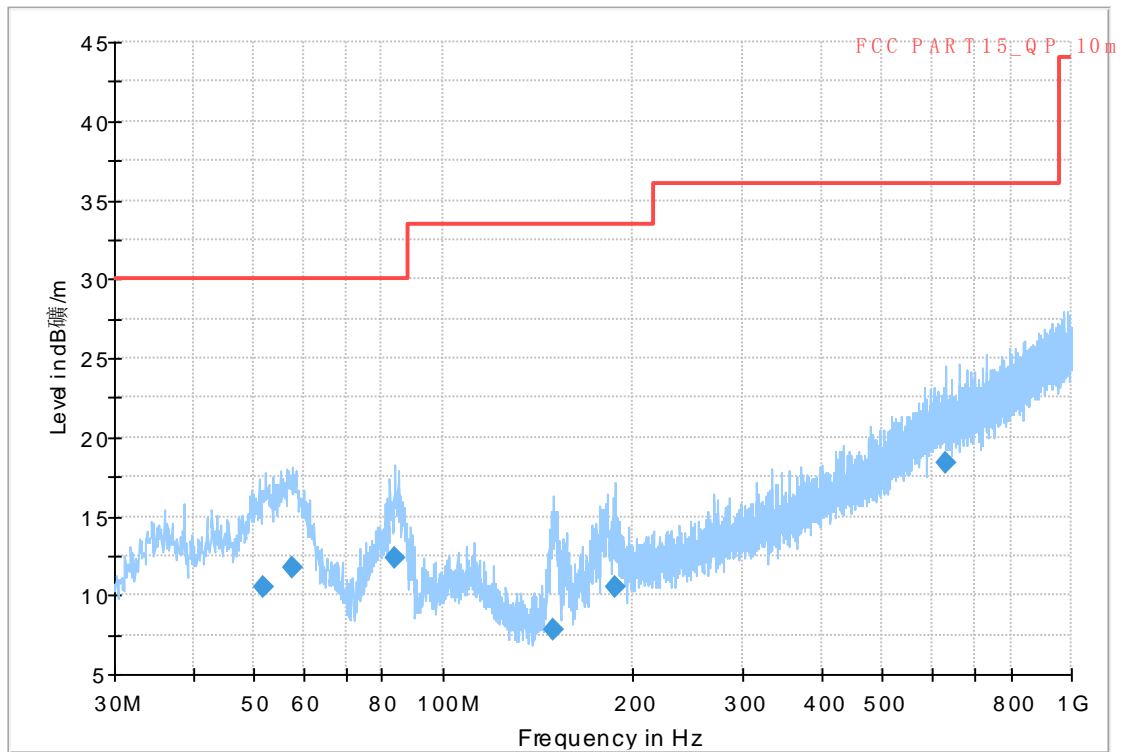


Figure A-7: Traffic Mode(distance = 10m, Using Phone, 30MHz-1GHz)

Final_Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
51.936000	10.48	30.00	19.52	1000.0	120.000	117.0	V	160.0
57.728000	11.74	30.00	18.26	1000.0	120.000	303.0	V	194.0
83.992000	12.38	30.00	17.62	1000.0	120.000	198.0	V	259.0
149.495000	7.82	33.50	25.70	1000.0	120.000	124.0	V	98.0
188.087000	10.55	33.50	22.97	1000.0	120.000	225.0	V	120.0
631.021000	18.40	36.00	17.62	1000.0	120.000	225.0	V	-12.0

A.2. AC Conducted emission

A.2.1. Reference

See Clause 6.2 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

A.2.2. Measurement Methods

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

The measurement bandwidth is:

Table B-1: Measurement Bandwidth

Frequency of Emission (MHz)	RBW/VBW
0.15-30	9kHz

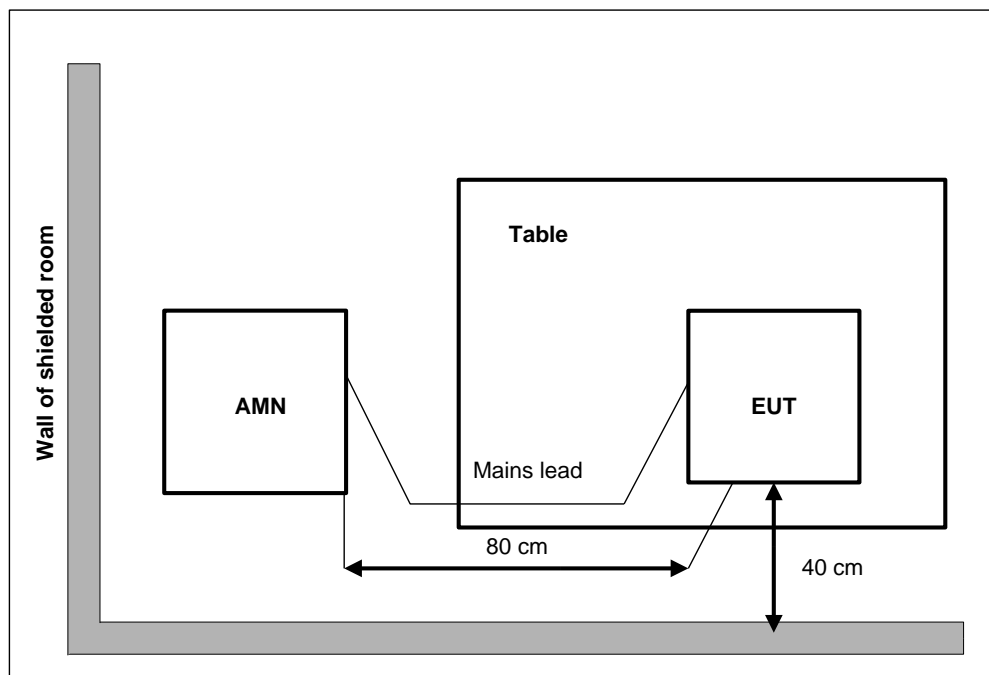


Figure A-8: Measurement Setup

A.2.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of WPT(See 3.4).

The EUT is powered by a travel adapter.

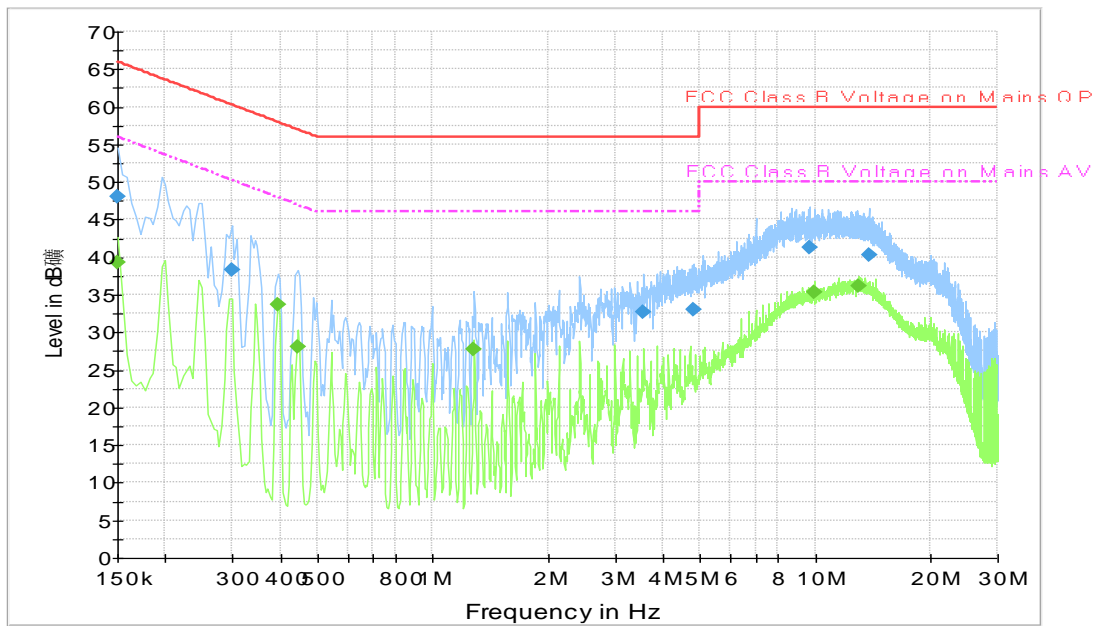
During the measurements, the ambient temperature is in the range of 15 ~ 25 °C.

A.2.4. Limits

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

A.2.5. Measurement Results

Conclusions: Set.WPT01, WPT02 **PASS.**



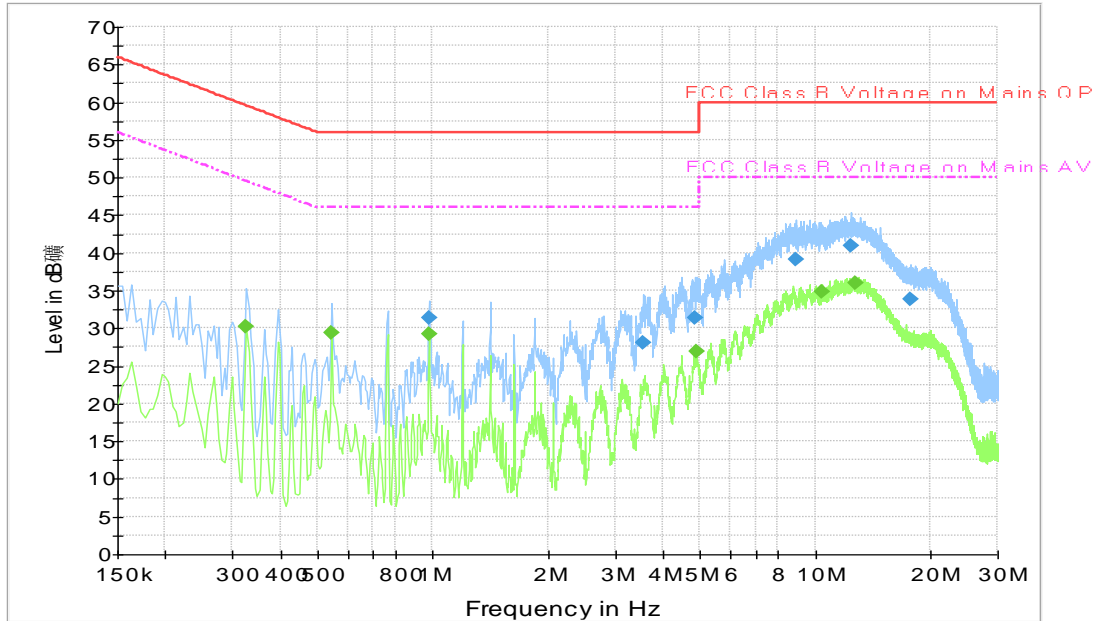
Traffic Mode(Using wireless charger)

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Line	Margin (dB)	Limit (dB μ V/)
0.150000	48.0	L1	18.0	66.0
0.298500	38.3	L1	22.0	60.3
3.565500	32.7	N	23.3	56.0
4.821000	33.0	N	23.0	56.0
9.712500	41.3	N	18.7	60.0
13.794000	40.2	N	19.8	60.0

Final Result 2

Frequency (MHz)	Average (dB μ V/m)	Line	Margin (dB)	Limit (dB μ V/)
0.150000	39.3	L1	16.7	56.0
0.393000	33.6	L1	14.4	48.0
0.442500	28.0	N	19.0	47.0
1.284000	27.7	L1	18.3	46.0
9.978000	35.4	N	14.6	50.0
12.952500	36.2	N	13.8	50.0



Traffic Mode(Using phone wireless charger)

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV/m)	Line	Margin (dB)	Limit (dBuV/)
0.978000	31.3	L1	24.7	56.0
3.547500	28.0	N	28.0	56.0
4.870500	31.4	N	24.6	56.0
8.898000	39.1	N	20.9	60.0
12.448500	40.9	N	19.1	60.0
17.745000	33.8	L1	26.2	60.0

Final Result 2

Frequency (MHz)	Average (dBuV/m)	Line	Margin (dB)	Limit (dBuV/)
0.325500	30.3	L1	19.3	49.6
0.541500	29.4	L1	16.6	46.0
0.978000	29.2	L1	16.8	46.0
4.888500	26.9	N	19.1	46.0
10.378500	34.8	N	15.2	50.0
12.709500	36.0	N	14.0	50.0

**ANNEX B: Persons involved in this testing**

Test Item	Tester
Transmitter Radiated Emission	Li Pengfei
Conducted Emissions	Yan Hanchen

END OF REPORT