Ningbo WeiJia Electronics Technology Co., Ltd.

RF TEST REPORT

Report Type:
FCC Part 15C RF report

Model:
JF2117

REPORT NUMBER:
230400031HAN-001

ISSUE DATE:
April 27, 2023

DOCUMENT CONTROL NUMBER:
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TEST REPORT

Report no.: 230400031HAN-001

Applicant	:	Ningbo WeiJia Electronics Technology Co., Ltd. Simen Town, Yuyao City, Zhejiang 315470, P. R. China
Manufacturer	:	Ningbo WeiJia Electronics Technology Co., Ltd. Simen Town, Yuyao City, Zhejiang 315470, P. R. China
Factory	:	Ningbo WeiJia Electronics Technology Co., Ltd. Simen Town, Yuyao City, Zhejiang 315470, P. R. China
FCC ID	:	2BAZE-JF2117

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
47CFR Part 15 (2020): Radio Frequency Devices (Subpart C) **ANSI C63.10 (2013):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

PREPARED BY:	**REVIEWED BY:**
Project Engineer Offa Zhou	Reviewer Wakeyou Wang

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Content

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Revision History

Report No.	Version	Description	Issued Date
230400031HAN-001	Rev. 01	Initial issue of report	April 27, 2023

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Measurement result summary

TEST ITEM	FCC REFERANCE	RESULT
Radiated emissions	15.209	Pass
Conducted emissions	15.207	Pass

Notes: 1: NA =Not Applicable

2: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

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1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Wireless Charger
Type/Model:	JF2117
Description of EUT:	The EUT covered in the report is wireless charger and has only one model.
Rating:	Input: 5-12VDC, 20W Output: Max. 10W+5W
Category of EUT:	Class B
EUT type:	☒ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	April 3, 2023
Sample identification No.:	1230329-16-005
Date of test:	April 10, 2023 ~ April 20, 2023

1.2 Technical Specification

Frequency Range:	110kHz – 205kHz

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1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	A2LA Accreditation Lab Certificate Number: 3309.02

2 TEST SPECIFICATIONS

2.1 Standards or specification

47CFR Part 15 (2017)
ANSI C63.10 (2013)

2.2 Mode of operation during the test

Within this test report, EUT was tested under all available operation modes and tested under its rating voltage and frequency. Other voltage and frequency is specified if used.

2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	EMC-I	SKET	V1.3.0.2
Radiated emission	EMC-I	SKET	V1.3.0.2

2.4 Test peripherals list

Item No.	Name	Band and Model	Description
1	wireless load	/	100% power level
2	wireless load	/	50% power level
3	wireless load	/	0% power level
4	Adaptor	?????	/
5	USB-C TO USB-C cable	/	/

2.5 Test environment condition:

Test items	Temperature	Humidity
Radiated emission	24°C	46% RH
Power line conducted emission	24°C	45% RH

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2.6 Instrument list

Conducted Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Test Receiver	R&S	ESR7	EC 6194	2023-12-07
☑	A.M.N.	R&S	ESH2-Z5	EC 3119	2023-11-09
☑	Shielding room	Zhongyu	-	EC 2838	2024-01-11
Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Test Receiver	R&S	ESIB 26	EC 3045	2023-07-18
☑	Bilog Antenna	TESEQ	CBL 6112B	EC 6411	2023-08-23
☑	Active loop antenna	Schwarzbeck	FMZB1519	EC 5345	2023-06-15
☑	Semi-anechoic chamber	Albatross project	-	EC 3048	2023-07-08
Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Thermo-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3783	2024-03-24
☑	Thermo-Hygrograph	ZJ1-2A	S.M.I.F.	EC 5844	2024-03-08

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2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Frequency	Expanded Uncertainty (k=2)
Conducted emission at mains ports	9kHz ~ 150kHz	3.52 dB
	150kHz ~ 30MHz	3.19 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.90 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.02 dB
	6GHz ~ 18GHz	5.28 dB

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3 Radiated emissions

Test result: PASS

3.1 Limit

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

3.2 Measurement Procedure

For Radiated emission below 30MHz:

a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c) Both X and Y axes of the antenna are set to make the measurement.
d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz:

a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

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d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

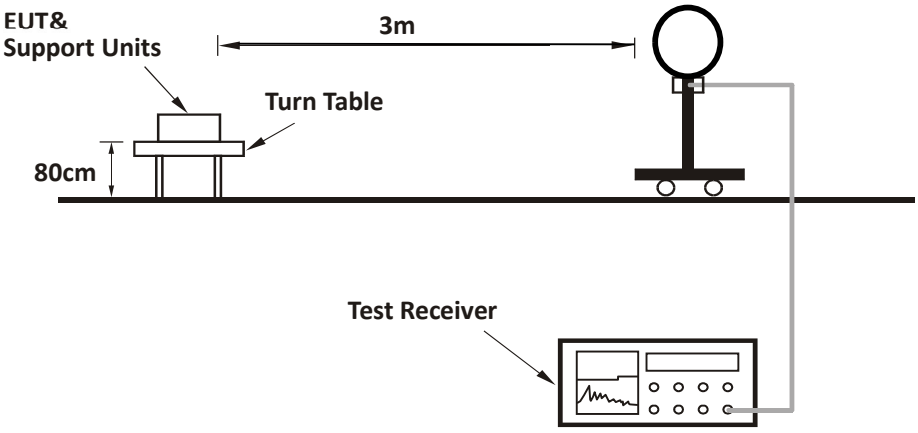
f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. All modes of operation were evaluated and the worst-case emissions were reported

3.3 Test Configuration

For Radiated emission below 30MHz:



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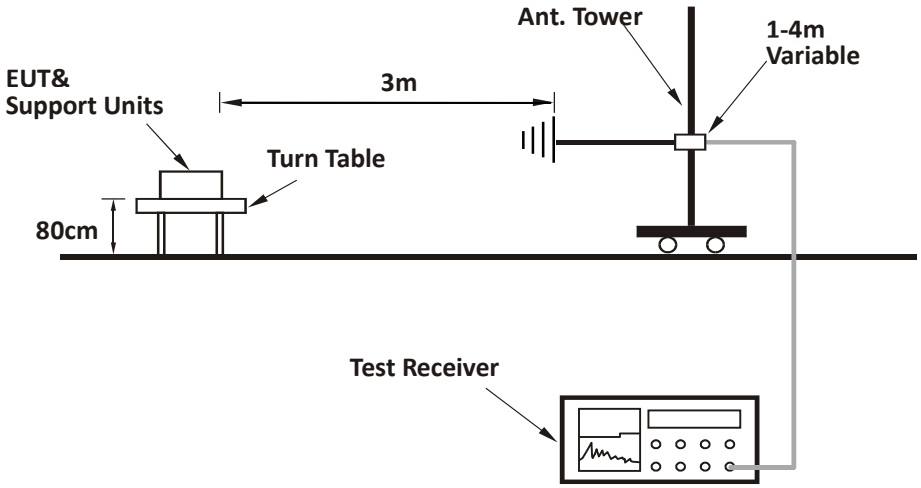
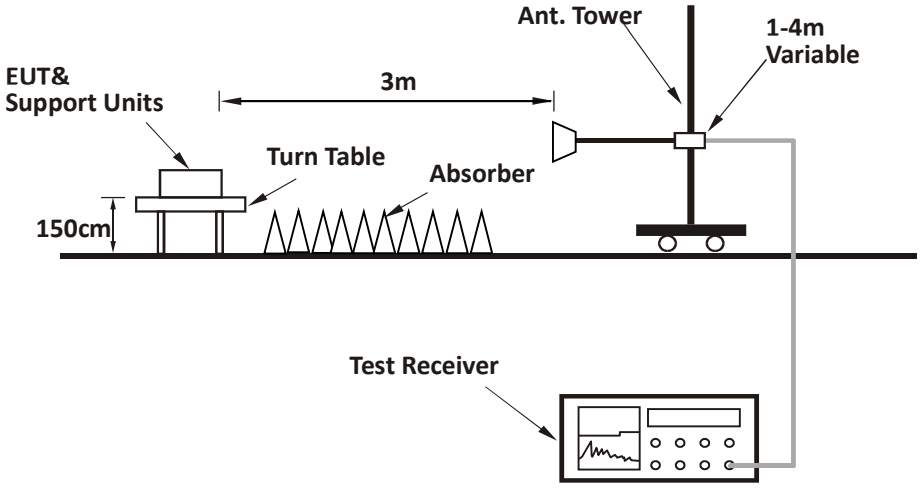
For Radiated emission 30MHz to 1GHz:



For Radiated emission above 1GHz:



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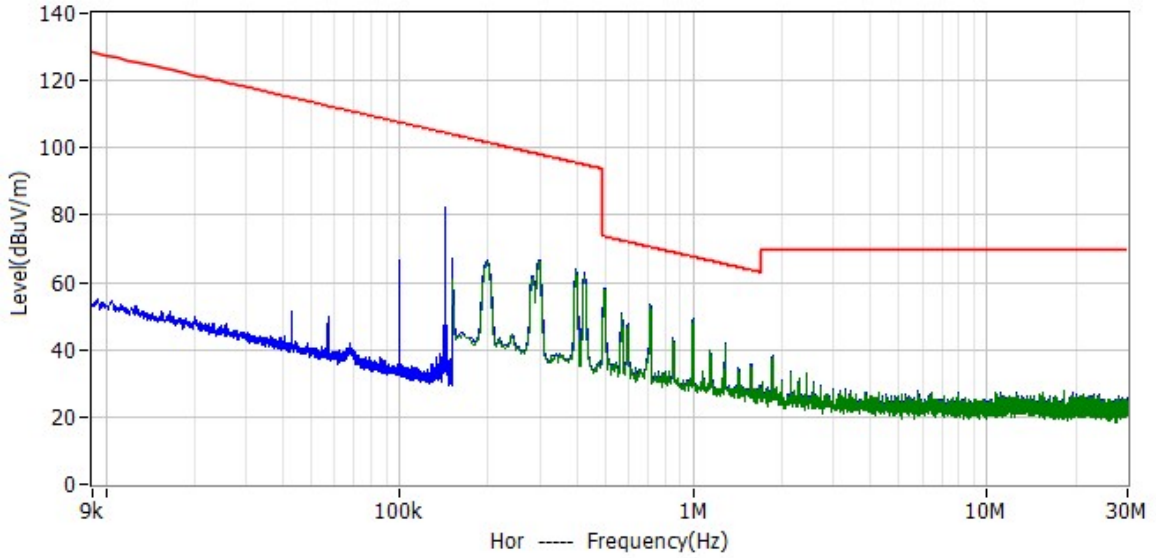
3.4 Test Results of Radiated Emissions

EUT was tested with 0% load, 50% load and 100% load, the 100% load is the worst case and we listed the results in the report.

Test data below 30MHz:

X Polarization



Antenna Polarization	Frequency	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin	Detector	Remark
X	99.903kHz	66.8	20.2	107.6	-40.8	PK	Spurious
X	142.753kHz	82.4	20.1	104.5	-22.1	PK	Fundamental
X	197.760kHz	66.6	20.1	101.7	-35.1	PK	Fundamental
X	296.265kHz	66.8	20.1	98.2	-31.3	PK	Spurious
X	397.755kHz	63.7	20.0	95.6	-31.9	PK	Spurious
X	427.605kHz	62.8	20.0	95.0	-32.2	PK	Spurious
X	496.260kHz	58.4	20.1	73.7	-15.3	PK	Spurious
X	711.180kHz	53.4	20.2	70.6	-17.2	PK	Spurious
X	997.740kHz	49.1	20.2	67.6	-18.5	PK	Spurious

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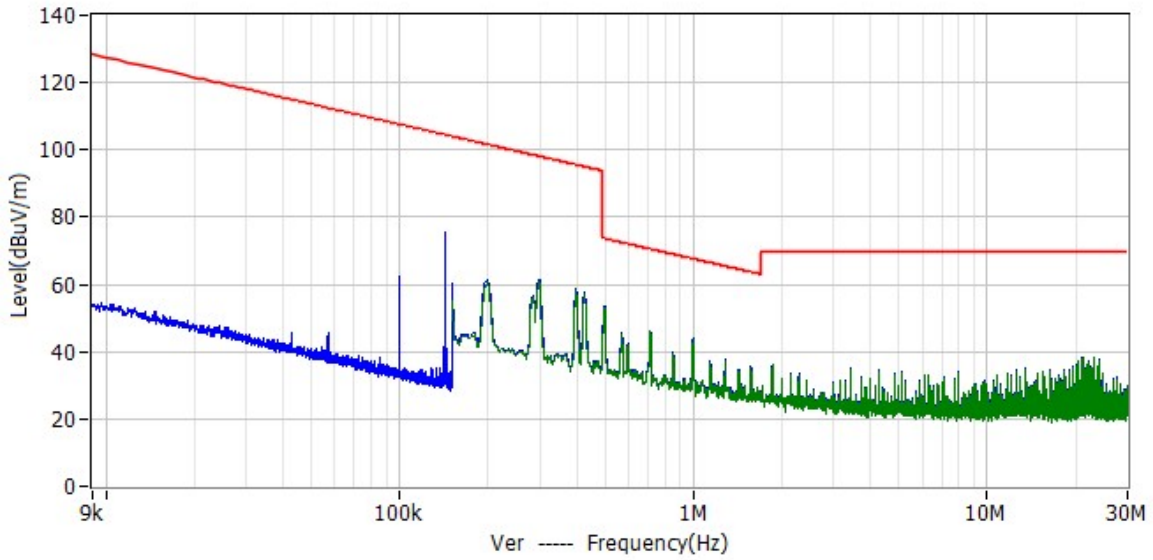
Y Polarization



Antenna Polarization	Frequency	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin	Detector	Remark
Y	99.903kHz	62.2	20.2	107.6	-45.4	PK	Spurious
Y	142.781kHz	75.4	20.1	104.5	-29.1	PK	Fundamental
Y	197.760kHz	61.3	20.1	101.7	-40.3	PK	Fundamental
Y	296.265kHz	61.5	20.1	98.2	-36.7	PK	Spurious
Y	394.770kHz	57.9	20.0	95.7	-37.8	PK	Spurious
Y	427.605kHz	57.7	20.0	95.0	-37.2	PK	Spurious
Y	496.260kHz	53.7	20.1	73.7	-20.0	PK	Spurious
Y	21.132MHz	38.5	20.4	69.5	-31.0	PK	Spurious

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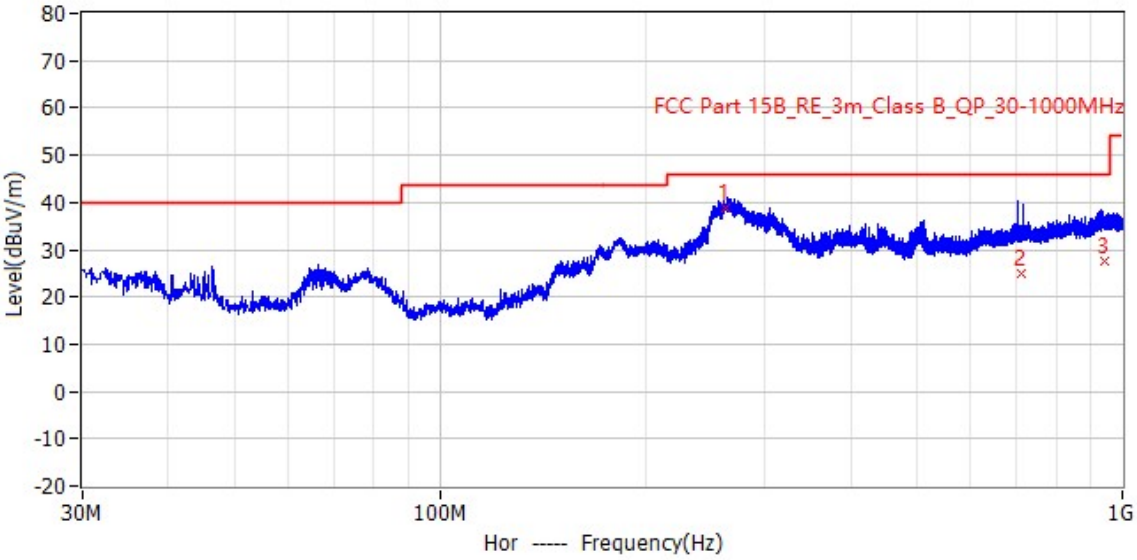
Test data from 30MHz to 1000MHz:

Horizontal Polarization



Antenna Polarization	Frequency (MHz)	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin	Detector
H	262.699	38.7	14.4	46.0	-7.3	QP
H	710.810	25.0	24.2	46.0	-21.0	QP
H	939.586	27.7	26.8	46.0	-18.3	QP

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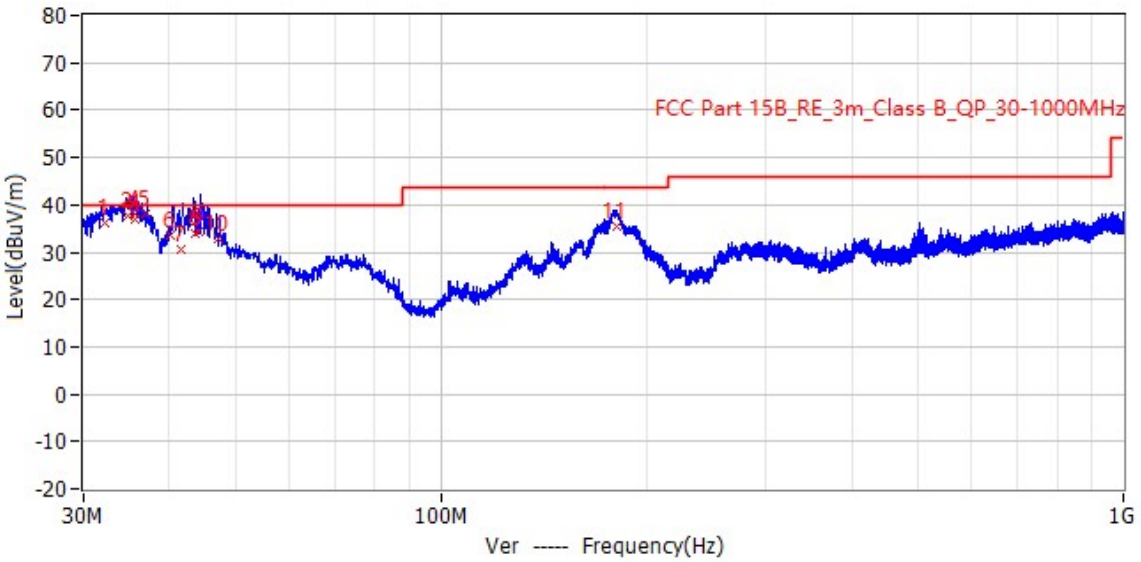
Vertical Polarization



Antenna Polarization	Frequency (MHz)	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin	Detector
V	32.220	36.2	14.9	40.0	-3.8	QP
V	34.921	37.7	13.3	40.0	-2.3	QP
V	35.710	37.1	13.0	40.0	-2.9	QP
V	35.738	38.1	13.0	40.0	-1.9	QP
V	37.073	38.0	12.2	40.0	-2.0	QP
V	40.305	33.6	10.3	40.0	-6.4	QP
V	41.643	30.7	9.7	40.0	-9.3	QP
V	43.798	34.1	8.9	40.0	-5.9	QP
V	44.350	34.4	8.6	40.0	-5.6	QP
V	47.202	32.8	7.8	40.0	-7.2	QP
V	180.618	35.6	10.8	43.5	-7.9	QP

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = Limit - Corrected Reading
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,
Limit = 40.00dBμV/m.
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Corrected Reading = 10dBuV + 0.20dB/m = 10.20 dBμV/m;
Margin = 40.00 dBμV/m - 10.20 dBμV/m = 29.80dB.

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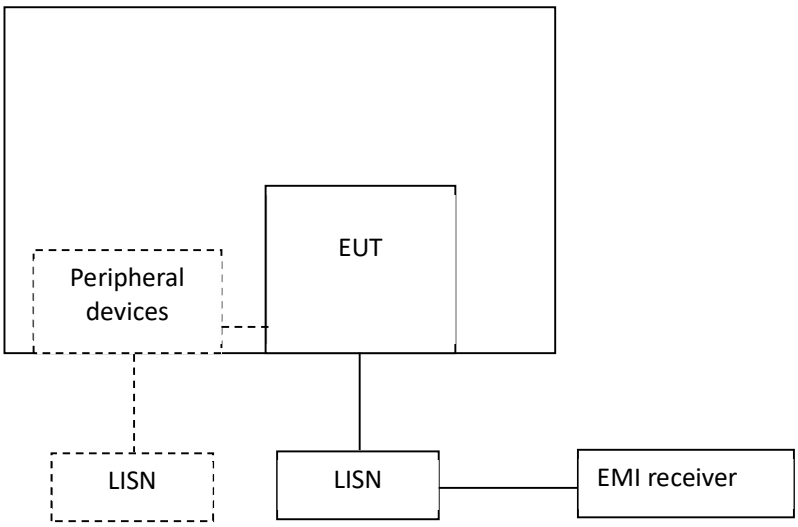
4 Conducted emissions

Test result: PASS

4.1 Limit

Frequency of Emission (MHz)	Conducted Emissions Limit (dBµV)	
	QP	AV
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.		

4.2 Test Configuration



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4.3 Measurement Procedure

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

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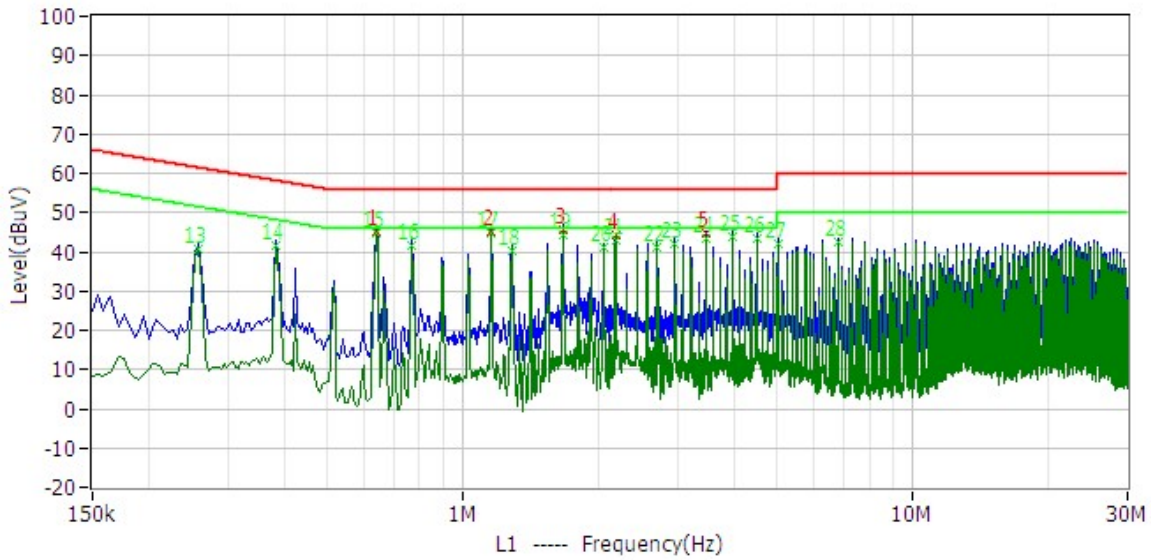
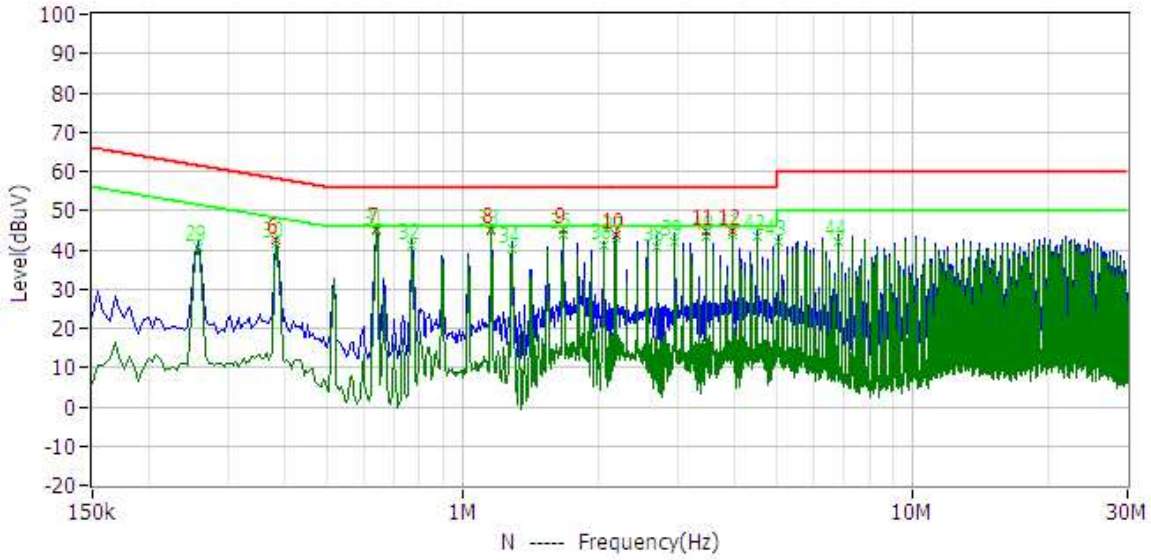
4.4 Test Results of Conducted Emissions

EUT was tested with 0% load, 50% load and 100% load, the 100% load is the worst case and we listed the results in the report.

L-Line



N-Line



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No.	Frequency	Limit dBμV	Level dBμV	Delta dB	Factor dB	Detector	Phase
1	640.500kHz	56.0	45.2	-10.8	10.3	QP	L1
2	1.154MHz	56.0	45.3	-10.7	10.3	QP	L1
3	1.671MHz	56.0	45.4	-10.6	10.3	QP	L1
4	2.184MHz	56.0	44.1	-11.9	10.3	QP	L1
5	3.467MHz	56.0	44.6	-11.4	10.4	QP	L1
6	384.000kHz	58.2	42.3	-15.9	10.3	QP	N
7	640.500kHz	56.0	45.1	-10.9	10.3	QP	N
8	1.154MHz	56.0	45.3	-10.7	10.3	QP	N
9	1.671MHz	56.0	45.0	-11.0	10.3	QP	N
10	2.184MHz	56.0	43.8	-12.2	10.4	QP	N
11	3.467MHz	56.0	44.6	-11.4	10.4	QP	N
12	3.980MHz	56.0	44.8	-11.2	10.4	QP	N
13	258.000kHz	51.5	40.8	-10.7	10.2	CAV	L1
14	384.000kHz	48.2	41.4	-6.8	10.3	CAV	L1
15	640.500kHz	46.0	44.6	-1.4	10.3	CAV	L1
16	771.000kHz	46.0	41.4	-4.6	10.3	CAV	L1
17	1.154MHz	46.0	44.6	-1.4	10.3	CAV	L1
18	1.284MHz	46.0	40.3	-5.7	10.3	CAV	L1
19	1.671MHz	46.0	44.4	-1.6	10.3	CAV	L1
20	2.054MHz	46.0	41.0	-5.0	10.3	CAV	L1
21	2.184MHz	46.0	43.0	-3.0	10.3	CAV	L1
22	2.697MHz	46.0	41.1	-4.9	10.3	CAV	L1
23	2.954MHz	46.0	42.2	-3.8	10.3	CAV	L1
24	3.467MHz	46.0	43.4	-2.6	10.4	CAV	L1
25	3.980MHz	46.0	43.6	-2.4	10.4	CAV	L1
26	4.493MHz	46.0	43.4	-2.6	10.4	CAV	L1
27	5.006MHz	50.0	41.9	-8.1	10.4	CAV	L1
28	6.806MHz	50.0	42.3	-7.7	10.5	CAV	L1
29	258.000kHz	51.5	40.7	-10.8	10.3	CAV	N
30	384.000kHz	48.2	41.6	-6.6	10.3	CAV	N
31	640.500kHz	46.0	44.5	-1.5	10.3	CAV	N
32	771.000kHz	46.0	41.3	-4.7	10.3	CAV	N
33	1.154MHz	46.0	44.5	-1.5	10.3	CAV	N
34	1.284MHz	46.0	40.2	-5.8	10.3	CAV	N
35	1.671MHz	46.0	44.0	-2.0	10.3	CAV	N
36	2.054MHz	46.0	40.9	-5.1	10.4	CAV	N
37	2.184MHz	46.0	42.7	-3.3	10.4	CAV	N
38	2.697MHz	46.0	40.8	-5.2	10.4	CAV	N
39	2.954MHz	46.0	42.0	-4.0	10.4	CAV	N
40	3.467MHz	46.0	43.3	-2.7	10.4	CAV	N
41	3.980MHz	46.0	43.7	-2.3	10.4	CAV	N
42	4.493MHz	46.0	43.5	-2.5	10.4	CAV	N
43	5.006MHz	50.0	42.1	-7.9	10.4	CAV	N
44	6.806MHz	50.0	42.1	-7.9	10.5	CAV	N

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Remark: 1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = Limit - Corrected Reading
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

********** END **********