APPLICATION FOR VERIFICATION
On Behalf of
Shenzhen Jihezaowu Technology Co., Ltd.

Wireless Charger
Model No.: CW310

FCC ID: 2AX6N-CW310

Prepared for	:	Shenzhen Jihezaowu Technology Co., Ltd.
Address	:	Room 208, Building 5, Nanke Chuangyuan Valley, Gaofeng Community, Dalang Street, Longhua District, Shenzhen
Prepared by	:	Shenzhen Accurate Technology Co., Ltd.
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Report No.	:	RTZ201123007-RF
Date of Test	:	Nov. 23, 2020 to Dec. 21, 2020
Date of Report	:	Dec. 27, 2020

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Test Report Declaration

Applicant	:	Shenzhen Jihezaowu Technology Co., Ltd.
Address	:	Room 208, Building 5, Nanke Chuangyuan Valley, Gaofeng Community, Dalang Street, Longhua District, Shenzhen
Manufacturer	:	Shenzhen Jihezaowu Technology Co., Ltd.
Address	:	Room 208, Building 5, Nanke Chuangyuan Valley, Gaofeng Community, Dalang Street, Longhua District, Shenzhen
Product	:	Wireless Charger
Model No.	:	CW310
Trade name	:	n.a.

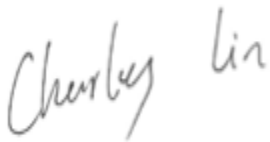
Measurement Procedure Used:

FCC CFR47 Part 15 Subpart C Section 15.205, 15.207 and 15.209
ANSI C63.10: 2013

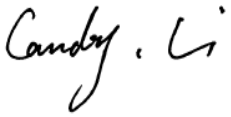
The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test :	Nov. 23, 2020 to Dec. 21, 2020
Date of Report :	Dec. 27, 2020

Prepared by : 

(Charley Lin, Engineer)

Approved & Authorized Signer : 

(Candy Li, RF Engineer)

1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
Power Line Conducted Emission	FCC Part 15.207	Pass
Radiated Emission	FCC Part 15.205, 15.209	Pass
Antenna Requirement	FCC Part 15.203	Compliance

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product Name	:	Wireless Charger
Frequency	:	110-205kHz
Modulation Type	:	ASK
Type of Antenna	:	Coil Antenna
Rating	:	DC 5V or 9V
Antenna Gain	:	0dBi

2.2.Special Accessory and Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
Unknown	Wireless Load	Unknown	WirelessLoad01
Unknown	Wireless Load	Unknown	WirelessLoad02
APPLE	Airpods charging box	Airpods2	Unknown
HUAWEI	Adapter	HW-059200CHQ	Unknown

2.3.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Subcontracted Items: Maximum Permissible Exposure(MPE)
Subcontractor: Bay Area Compliance Labs Corp.(Shenzhen)
Site Location: 6/F, the 3rd Phase of Wan Li Industrial Bldg., Shihua Rd., FuTian Free Trade Zone, Shenzhen, China

2.4.Measurement Uncertainty

Conducted emission expanded uncertainty (Mains ports, 9kHz-30MHz)	:	U=2.72dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	:	U=2.66dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	:	U=4.28dB, k=2

3. MEASURING DEVICE AND TEST EQUIPMENT

Conducted Emissions Test/ RF Conducted Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan.04, 2020	1 Year
2.	L.I.S.N.	Schwarzbeck	NSLK8126	8126431	Jan.04, 2020	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan.04, 2020	1 Year
4.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan.04, 2020	1 Year
5	RF Coaxial Cable	Schwarzbeck	N-2m	No.2	Jan. 04, 2020	1 Year
Conducted Emission Measurement Software: ES-K1 V1.71						

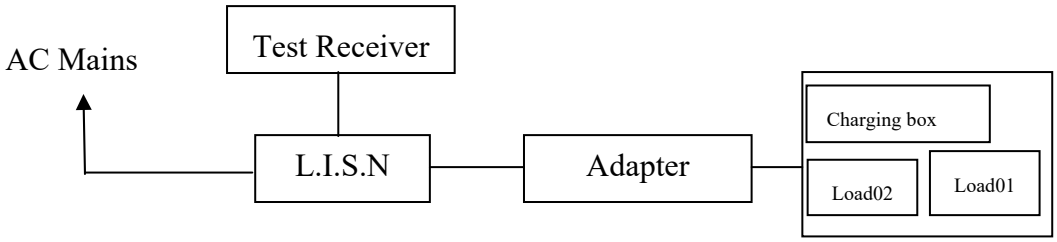
Radiated Emissions Test

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 04, 2020	Jan. 03, 2021
Pre-Amplifier	Agilent	8447D	294A10619	Jan. 04, 2020	Jan. 03, 2021
LOOP ANTENNA	SCHWARZBECK	FMZB1516	1516131	Jan. 05, 2020	Jan. 04, 2021
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 05, 2020	Jan. 04, 2021
RF Coaxial Cable	Schwarzbeck	N-5m	No.1	Jan. 04, 2020	Jan. 03, 2021
RF Coaxial Cable	Schwarzbeck	N-1m	No.6	Jan. 04, 2020	Jan. 03, 2021
RF Coaxial Cable	SUHNER	N-6m	No.10	Jan. 04, 2020	Jan. 03, 2021
RF Coaxial Cable	SUHNER	N-0.5m	No.15	Jan. 04, 2020	Jan. 03, 2021
Radiated Test Software: EZ_EMC V1.1.4.2					

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

4. POWER LINE CONDUCTED MEASUREMENT

4.1.Block Diagram of Test Setup



(EUT: Wireless Charger)

4.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.4.Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in test mode and measure it.

4.5. Test Procedure

The EUT is put on the plane 0.8 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

4.6. Data Sample

Frequency (MHz)	QuasiPeak Level (dBμv)	Average Level (dBμv)	Transducer value (dB)	QuasiPeak Result (dBμv)	Average Result (dBμv)	QuasiPeak Limit (dBμv)	Average Limit (dBμv)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	29.4	18.3	11.1	40.5	29.4	56.0	56.0	15.5	16.6	Pass

Transducer value = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Level/Average Level + Transducer value
Limit = Limit stated in standard

Calculation Formula:

Margin = Limit – Result

4.7. Power Line Conducted Emission Measurement Results

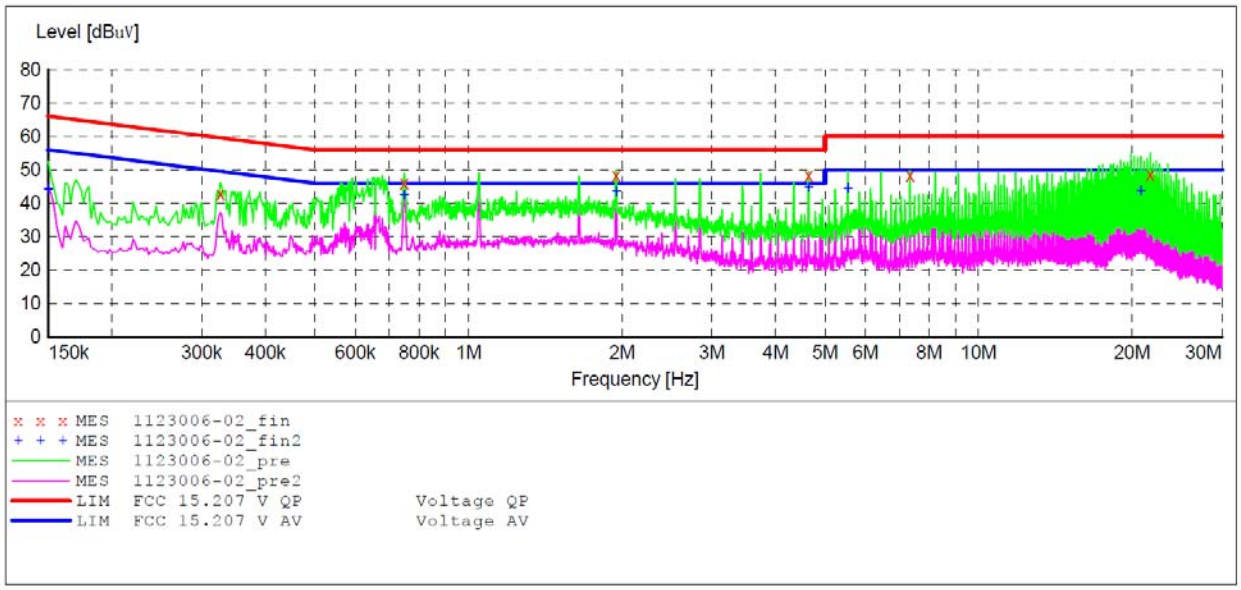
PASS.
Test Lab: Shielding room

The frequency range from 150kHz to 30MHz is checked.

Emissions attenuated more than 20 dB below the permissible value are not reported.
Worst case (Full Load) was recorded in the report.

The spectral diagrams are attached as below.

EUT Operation mode：Full load (worst case)



MEASUREMENT RESULT: "1123006-02_fin"

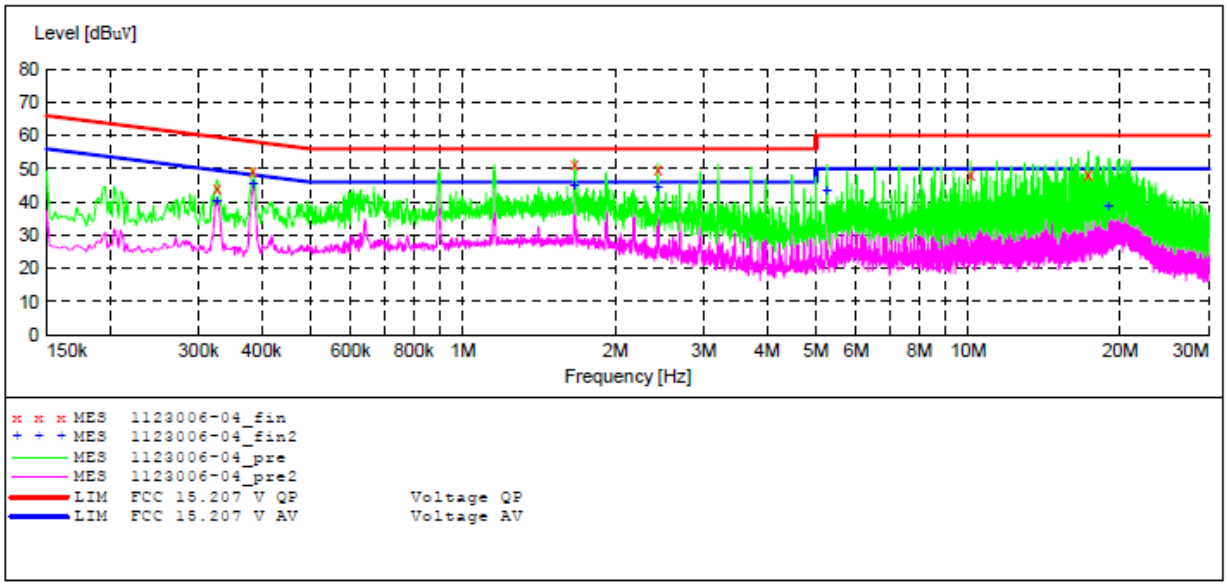
2020-12-21 15:55

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.326000	42.80	10.9	60	17.2	QP	N	GND
0.748000	46.00	11.1	56	10.0	QP	N	GND
1.946000	48.20	11.3	56	7.8	QP	N	GND
4.640000	48.30	11.4	56	7.7	QP	N	GND
7.335000	48.30	11.5	60	11.7	QP	N	GND
21.715000	48.50	11.7	60	11.5	QP	N	GND

MEASUREMENT RESULT: "1123006-02_fin2"

2020-12-21 15:55

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	44.30	10.8	56	11.7	AV	N	GND
0.748000	42.60	11.1	46	3.4	AV	N	GND
1.948000	43.60	11.3	46	2.4	AV	N	GND
4.640000	44.90	11.4	46	1.1	AV	N	GND
5.540000	44.40	11.5	50	5.6	AV	N	GND
20.805000	43.80	11.7	50	6.2	AV	N	GND



MEASUREMENT RESULT: "1123006-04_fin"

2020-12-21 16:59

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.326000	44.20	10.9	60	15.8	QP	L1	GND
0.384000	49.10	10.9	58	8.9	QP	L1	GND
1.664000	51.60	11.2	56	4.4	QP	L1	GND
2.430000	50.00	11.3	56	6.0	QP	L1	GND
10.110000	48.30	11.6	60	11.7	QP	L1	GND
17.275000	48.10	11.7	60	11.9	QP	L1	GND

MEASUREMENT RESULT: "1123006-04_fin2"

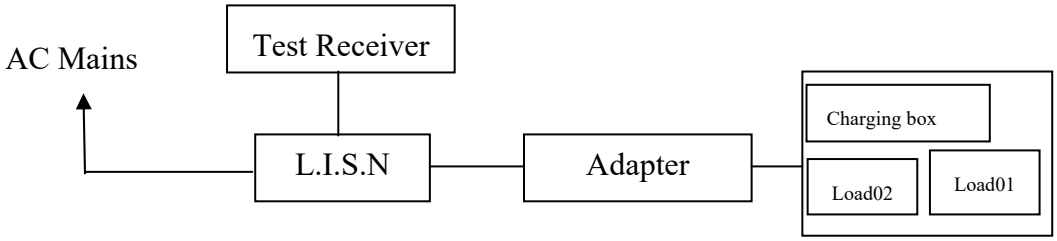
2020-12-21 16:59

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.326000	40.60	10.9	50	9.4	AV	L1	GND
0.384000	45.90	10.9	48	2.1	AV	L1	GND
1.664000	45.00	11.2	46	1.0	AV	L1	GND
2.430000	44.80	11.3	46	1.2	AV	L1	GND
5.250000	43.30	11.4	50	6.7	AV	L1	GND
18.945000	39.10	11.7	50	10.9	AV	L1	GND

5. RADIATED EMISSION MEASUREMENT

5.1.Block Diagram of Test

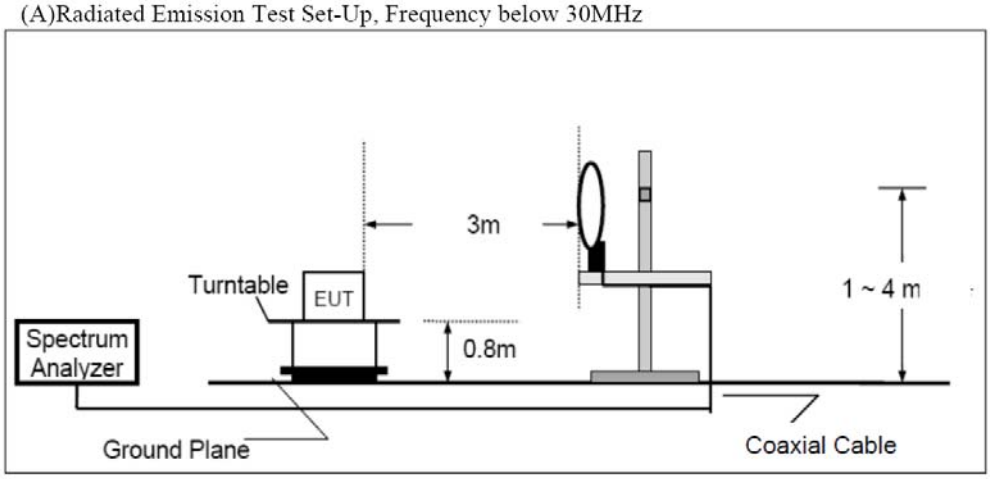
5.1.1.Block diagram of connection between the EUT and simulators



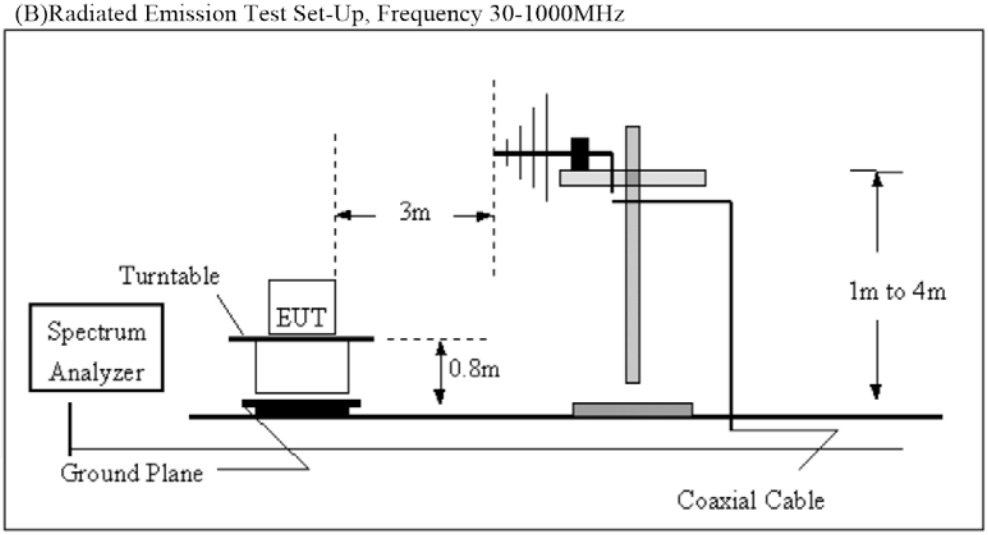
(EUT: Wireless Charger)

5.1.2.Block diagram of test setup (In chamber)

(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30-1000MHz



5.1.3.Radiated Emission Limit {FCC Part 15.209(a) }

Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

For Example:
Limit: 2400/125=19.2uV/m@300m
Distance Correction Factor = 40log(test distance/specific distance)

5.2.EUT Configuration on Measurement

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.2.1.Wireless Charger (EUT)

Model Number **:** CW310
Manufacturer **:** Shenzhen Jihezaowu Technology Co., Ltd.

5.3.Operating Condition of EUT

5.3.1. Setup the EUT and simulator as shown as Section 5.1.

5.3.2. Turn on the power of all equipment.

5.3.3. Let the EUT work in test mode and measure it.

5.4. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement.

From 9kHz to 30MHz at distance 3m The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

From 30MHz to 1000MHz at distance 3m The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

The final measurement will be performed with an EMI Receiver set to Quasi Peak detector for the frequency bands 9kHz to 90kHz and 110 kHz to 490 kHz where an average detector will be used according to Section 15.209(d)(2).

The final level, expressed in dBuV/m, is arrived at by taking the reading from the EMI receiver(Level dBuV) and adding the antenna correction factor and cable loss factor(Factor dB) to it. This result then has to be compared with the relevant FCC limit.The resolution bandwidth during the measurement is as follows:
9kHz – 150kHz: ResBW: 200Hz
150kHz – 30MHz: ResBW: 9kHz

The bandwidth of the EMI test receiver is set at 120kHz from 30MHz to 1000MHz.

5.5.Data Sample

Frequency(MHz)	Reading (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	49.83	-22.03	27.80	43.50	15.70	QP

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m)= Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading + Factor
Limit (dBμv/m)= Limit stated in standard

Margin (dB) = Limit (dBμv/m) - Result(dBμv/m)
Calculation Formula:

Margin (dB) = Limit (dBμv/m) - Result(dBμv/m)
Result(dBμv/m)= Reading(dBμv)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit.

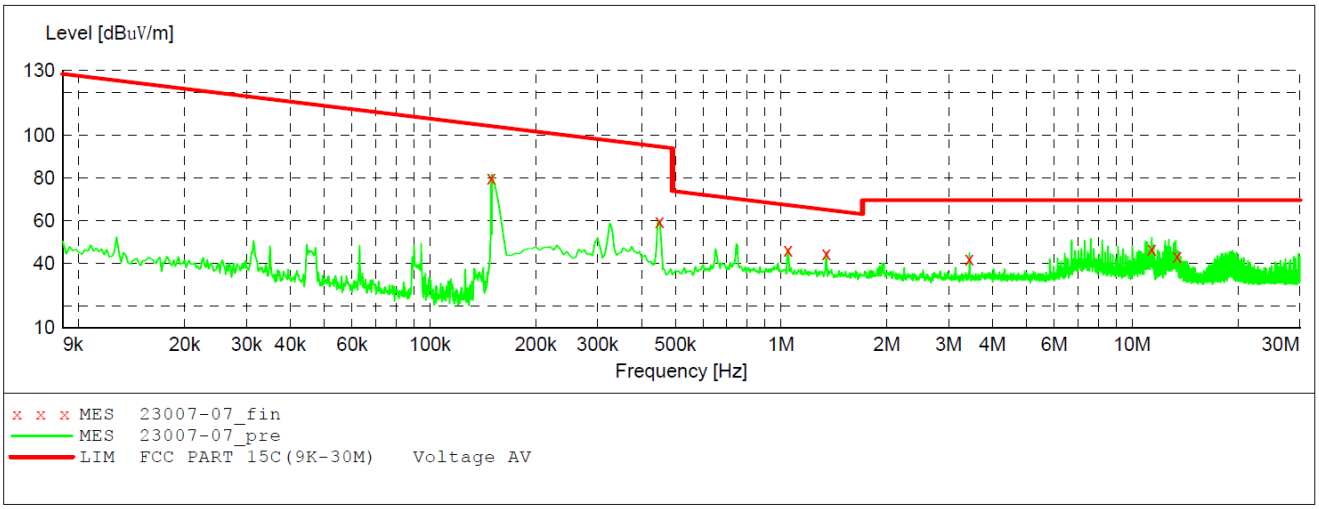
5.6.Radiated Emission Measurement Result

PASS.

Test Lab: 3m Anechoic chamber

From 9kHz to 30MHz

We pretest all the mode and worst case (Full load, X) was recorded in the report.



MEASUREMENT RESULT: "23007-07_fin"

2020-12-16 03:06

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.149300	80.00	20.1	104.1	24.1	PK	105.0	0.00	X
0.450000	59.30	20.3	94.5	35.2	PK	105.0	0.00	X
1.045000	46.40	20.4	67.2	20.8	QP	105.0	0.00	X
1.345000	44.70	20.4	65.0	20.3	QP	105.0	0.00	X
3.435000	41.90	20.5	69.5	27.6	QP	105.0	0.00	X
11.350000	46.50	20.7	69.5	23.0	QP	105.0	0.00	X
13.435000	43.40	20.9	69.5	26.1	QP	105.0	0.00	X

Part 15 Section 15.31(f)(2) (9kHz-30MHz)

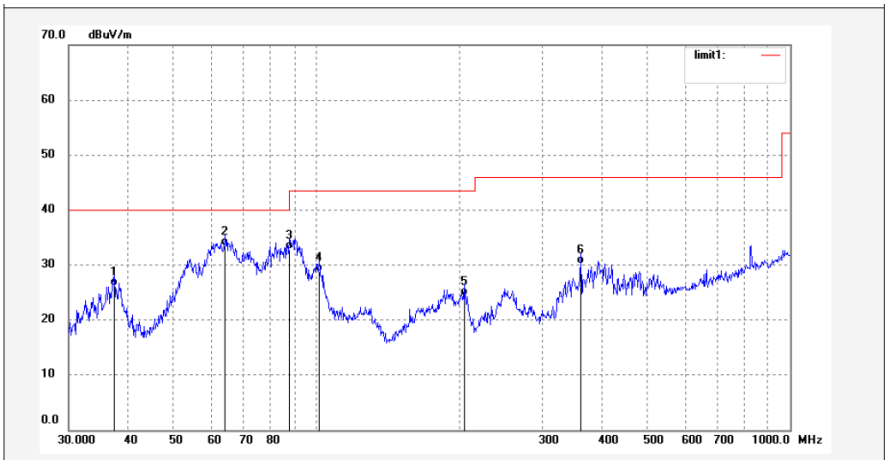
Limit at 3m=Limit at 300m-40*log(3(m)/300(m))

Limit at 3m=Limit at 30m-40*log(3(m)/30(m))

From 30MHz to 1000MHz

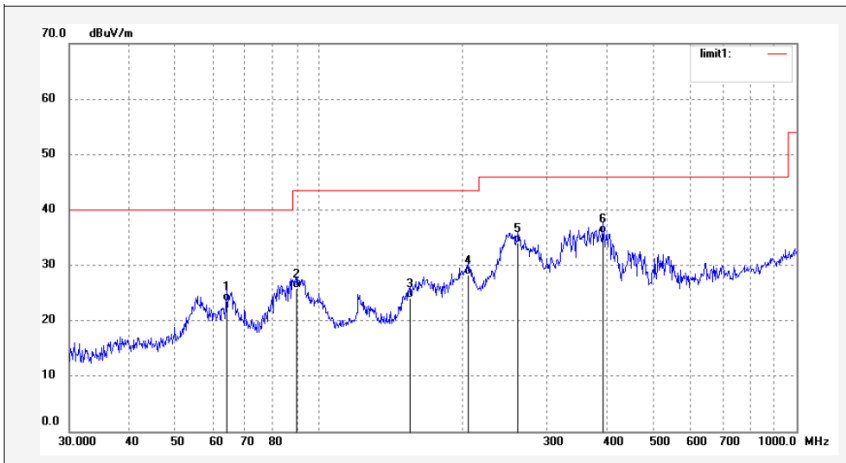
Worst case (Full Load) recorder in the report.

Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.4164	39.15	-12.98	26.17	40.00	-13.83	QP			
2	64.2074	46.44	-12.93	33.51	40.00	-6.49	QP			
3	87.7248	47.82	-14.92	32.90	40.00	-7.10	QP			
4	101.2883	40.74	-12.00	28.74	43.50	-14.76	QP			
5	204.9551	35.80	-11.30	24.50	43.50	-19.00	QP			
6	361.7139	36.75	-6.56	30.19	46.00	-15.81	QP			

Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	63.9828	36.42	-12.93	23.49	40.00	-16.51	QP			
2	89.5899	40.23	-14.37	25.86	43.50	-17.64	QP			
3	154.8204	38.14	-14.11	24.03	43.50	-19.47	QP			
4	204.9550	39.48	-11.30	28.18	43.50	-15.32	QP			
5	261.0583	44.11	-10.02	34.09	46.00	-11.91	QP			
6	393.4723	41.83	-6.01	35.82	46.00	-10.18	QP			

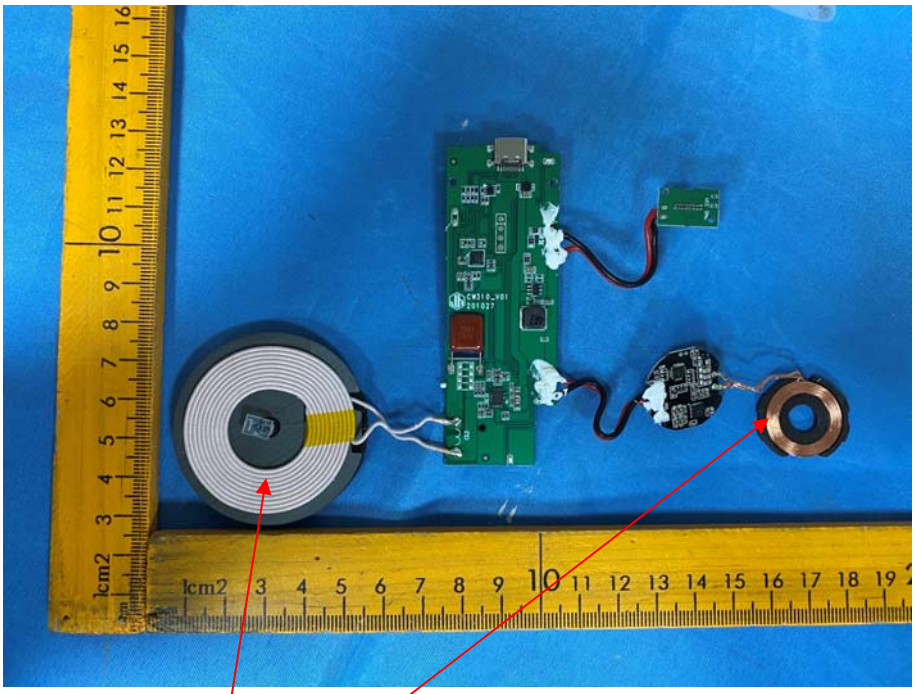
ANTENNA REQUIREMENT

5.7.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.8.Antenna Construction

Device is equipped with permanent attached two coil antennas, which are not displaced by other antenna. The max Antenna gain of EUT is 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



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