TEST REPORT

Product Name : Wireless Charger
Model Number : AXW1
FCC ID : 2A2TC-AXW1

Prepared for	:	Shenzhen Smoore Technology Limited
Address	:	Building 16, Dongcai Industrial Park, Gushu Town, Baoan District, Shenzhen, China
Prepared by	:	EMTEK (DONGGUAN) CO., LTD.
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Report Number	:	EDG2206290145E00501R
Date(s) of Tests	:	June 29, 2022 to July 18, 2022
Date of issue	:	July 18, 2022

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TEST REPORT DESCRIPTION

Applicant	:	Shenzhen Smoore Technology Limited
Address	:	Building 16, Dongcai Industrial Park, Gushu Town, Baoan District, Shenzhen, China
Manufacturer	:	Shenzhen Smoore Technology Limited
Address	:	Building 16, Dongcai Industrial Park, Gushu Town, Baoan District, Shenzhen, China
Factory	:	Mei Shun He Electronic Limited
Address	:	301, 8th Building, No.69 Xikeng Road, Xikeng Community, Fucheng Street, Longhua District, 518110, Shenzhen City, China
EUT	:	Wireless Charger
Model Name	:	AXW1
Trademark	:	N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C	PASS

The above equipment was tested by DONGGUAN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15C

The test results of this report relate only to the tested sample identified in this report.

Date of Test : June 29, 2022 to July 18, 2022

Prepared by : Xia Yang/Editor

Reviewer : Tim Dong/Supervisor

Approve & Authorized Signer : Sam Lv/Manager

Modified Information

Version	Report No.	Revision Data	Summary
Ver.1.0	EDG2206290145E00501R	July 18, 2022	Original Version

1. SUMMARY OF TEST RESULTS

EMISSION		
Description of Test Item	Standard & Limits	Results
Conducted Emission	FCC Part 15, Subpart C- Section 15.207 ANSI C63.10-2013	Pass
Radiated Emission	FCC Part 15, Subpart C- Section 15.209 ANSI C63.10-2013	Pass
Note: N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Wireless Charger
Model Number	:	AXW1
Input	:	DC 5V/3A, DC 9V/2.22A from USB
Output	:	5.0W/7.5W/10.0W/15W
Operation Frequency for WPT	:	111-205kHz
Modulation	:	FSK
Antenna Type:	:	Induction Coil antenna
Temperature Range	:	0° C~+60° C

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	Enclosure	N/E	--	--	None
2	DC IN port	I/O	No	Unshielded	1 port

* Note: For the purposes of the present document, the following symbols apply:

AC	AC Power Port
DC	DC Power Port
N/E	Non-Electrical
I/O	Signal Input or Output Port (Not Involved in Process Control)
TP	Telecommunication Ports

2.3. Independent Operation Modes

A ON
1. Wireless(100% load)
2. Wireless(50% load)
3. Wireless(10% load)

Note: The mode 1 is the worst mode

2.4. Test Manner

Test Items	Test Voltage	Operation Modes
Conducted Emission	AC 120V/60Hz	Mode A.1
Radiated Emission	AC 120V/60Hz	Mode A.1

2.5. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2020.08.27
The certificate is valid until 2024.07.05
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2018
The Certificate Registration Number is L3150

Accredited by FCC
Designation Number: CN1300
Test Firm Registration Number: 945551

Accredited by A2LA, April 05, 2021
The Certificate Registration Number is 4321.02

Accredited by Industry Canada
The Certificate Registration Number is CN0113

Name of Firm : EMTEK(DONGGUAN) CO., LTD.

Site Location : -1&2/F.,Buiding 2,Zone A,Zhongda Marine Biotechnology Research and Development Base,N.9,Xincheng Avenue,Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China

2.6. Test Software

Item		Software
Conducted Emission	:	EMTEK(Ver.CON-03A1)
Radiated Emission	:	EMTEK(Ver.RA-03A1)

2.7. Description of Support Device

No.	Equipment	Trade name	Model	S/N	Power Cord
1.	Wireless Load	N/A	15w	N/A	N/A
2.	Adaptor	/	15W	/	/
3.	USB cable	/	0.5m	/	/

2.8. Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	3.16dB(9k~150kHz Conduction 2#) 2.90dB(150k-30MHz Conduction 2#)
Radiated Emission Uncertainty (3m Chamber)	:	3.78dB (30M~1GHz Polarize: H) 4.27dB (30M~1GHz Polarize: V) 4.46dB (1~6GHz)

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. Conducted Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	DUE CAL.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/20/2022	05/19/2023
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/20/2022	05/19/2023
50Ω Coaxial Switch	Anritsu	MP59B	M20531	05/20/2022	05/19/2023
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	05/20/2022	05/19/2023
Voltage Probe	Rohde & Schwarz	TK9416	N/A	05/20/2022	05/19/2023
I.S.N	Rohde & Schwarz	ENY22	1109.9508.02	05/20/2022	05/19/2023

3.2. For 3m Radiated Emission Measurement 9K-30M (3m chamber 1#)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	DUE CAL.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/20/2022	05/19/2023
Loop Antenna	Schwarzbeck	FMZB 1519	1519-012	05/20/2022	05/19/2023
Cable		3M SF104-26.5	295838/4	05/20/2022	05/19/2023
Cable		6M SF104-26.5	295840/4	05/20/2022	05/19/2023

3.3. For 3m Radiated Emission Measurement 30M-1G (3m chamber 1#)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/20/2022	05/19/2023
Pre-Amplifier	HP	8447F	2944A07999	05/20/2022	05/19/2023
Bilog Antenna	Schwarzbeck	VULB9163	142	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	ACRX1	05/20/2022	05/19/2023
Cable	Rosenberger	N/A	FP2RX2	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	CRPX1	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	CRRX2	05/20/2022	05/19/2023

4. 20DB BANDWIDTH

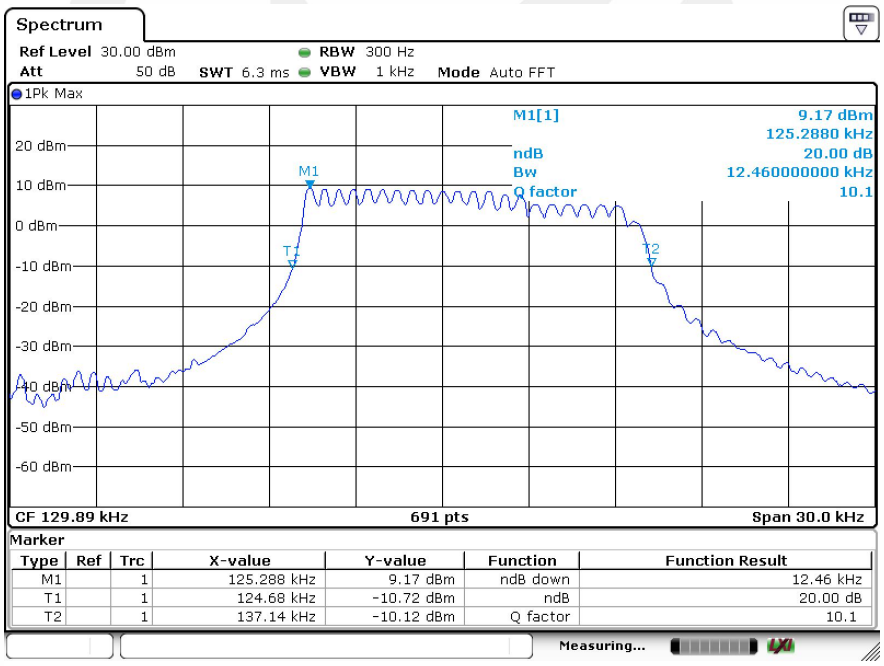
4.1. Test Procedure

Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 1Hz.
Set the video bandwidth (VBW) =3Hz.
Set Span= 10Hz
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
Measure and record the results in the test report.

4.2. Test Results

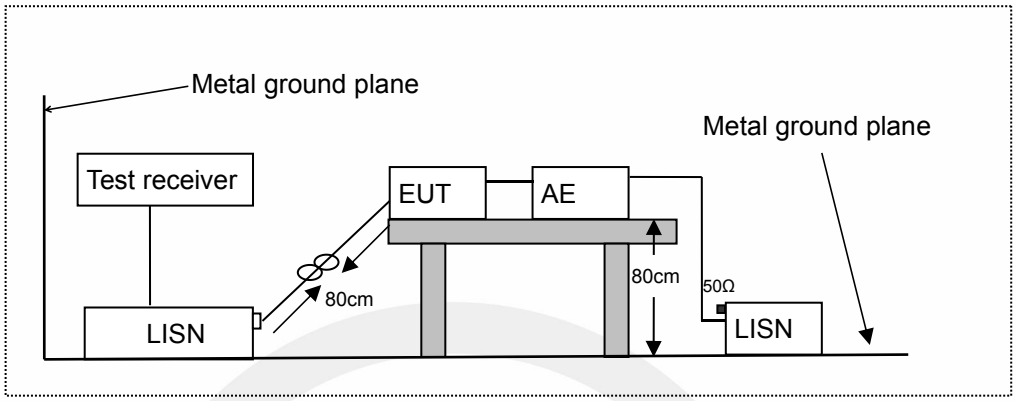
Temperature:	24℃	Test Date:	07/09/2022
Humidity:	53 %	Test By:	Xia

20dB Band=12.46 KHz



5. POWER LINE CONDUCTED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



LISN: Line Impedance Stabilization Network
AE: Associated equipment
EUT: Equipment under test

5.2. Limits

FCC Part 15.207

Frequency (MHz)			Limit (dBμV)	
			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.				

5.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a line impedance stabilization network (LISN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other LISN.

The LISN provides 50 ohm coupling impedance for the measuring instrument.

Both sides of AC line were checked for maximum conducted interference.

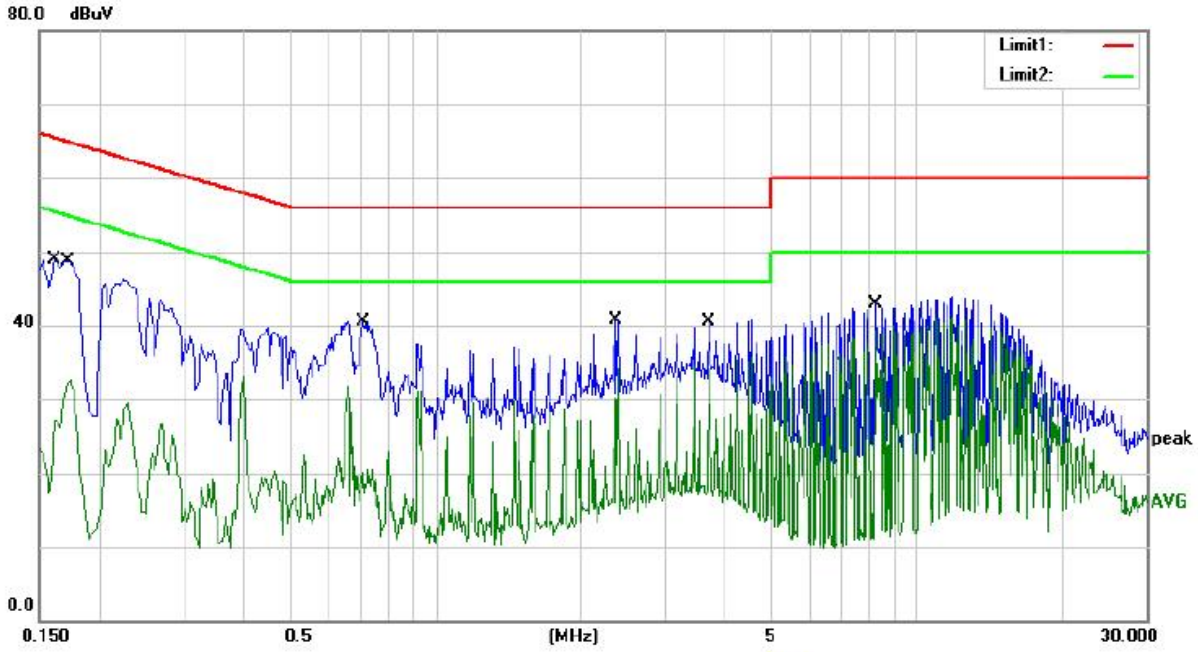
The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation:
Emission Level (dBμV) = LISN Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

5.4. Measuring Results

PASS.



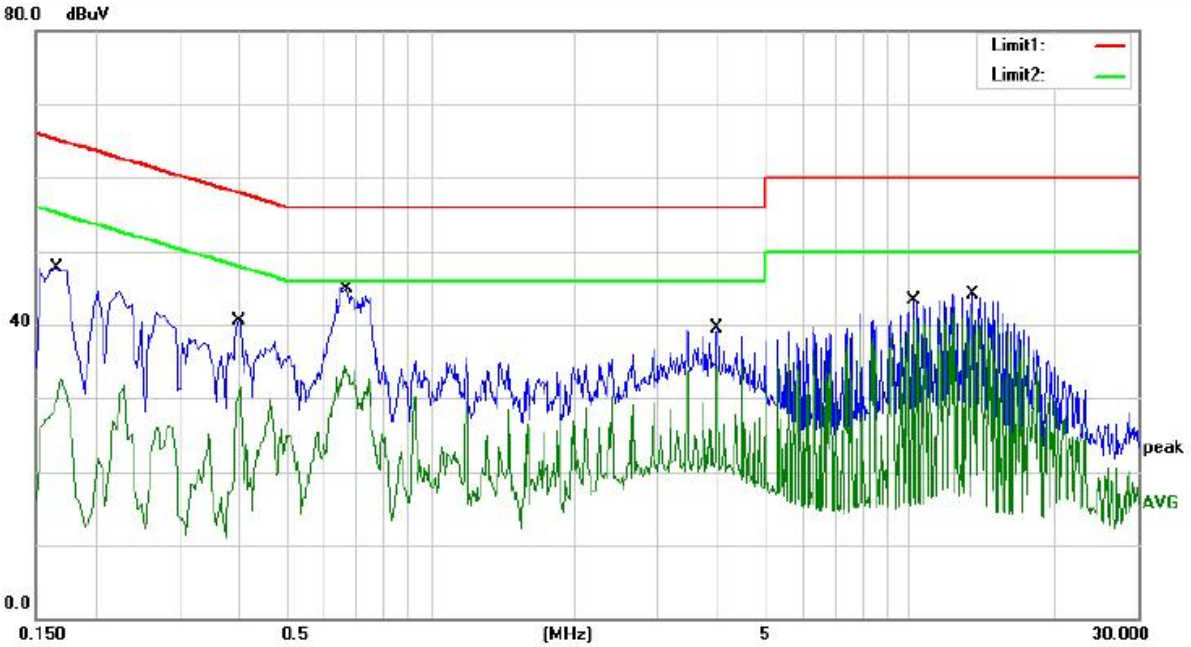
Site site #1 Phase: L1 Temperature: 25.8

Limit: FCC PART 15 C_QP (CE) Power: AC 120V/60Hz Humidity: 52 %

Mode: Wireless Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	38.39	10.52	48.91	65.36	-16.45	QP	
2		0.1740	22.11	10.50	32.61	54.77	-22.16	AVG	
3		0.7100	30.42	10.13	40.55	56.00	-15.45	QP	
4		0.7100	21.59	10.13	31.72	46.00	-14.28	AVG	
5		2.3660	30.51	10.10	40.61	56.00	-15.39	QP	
6		2.3660	19.65	10.10	29.75	46.00	-16.25	AVG	
7		2.3660	22.95	10.10	33.05	46.00	-12.95	AVG	
8		3.7180	30.48	10.07	40.55	56.00	-15.45	QP	
9		3.7180	16.64	10.07	26.71	46.00	-19.29	AVG	
10		8.2340	32.79	10.04	42.83	60.00	-17.17	QP	
11	*	8.2340	29.18	10.04	39.22	50.00	-10.78	AVG	



Site site #1 Phase: N Temperature: 25.8

Limit: FCC PART 15 C_QP (CE) Power: AC 120V/60Hz Humidity: 52 %

Mode: Wireless Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1676	37.02	10.51	47.53	65.08	-17.55	QP	
2		0.1676	21.47	10.51	31.98	55.08	-23.10	AVG	
3		0.3980	30.31	10.25	40.56	57.90	-17.34	QP	
4		0.3980	21.42	10.25	31.67	47.90	-16.23	AVG	
5		0.6700	34.70	10.13	44.83	56.00	-11.17	QP	
6		0.6700	21.32	10.13	31.45	46.00	-14.55	AVG	
7		3.9820	29.47	10.07	39.54	56.00	-16.46	QP	
8		3.9820	24.25	10.07	34.32	46.00	-11.68	AVG	
9		10.2700	33.19	10.04	43.23	60.00	-16.77	QP	
10		10.2700	24.43	10.04	34.47	50.00	-15.53	AVG	
11		13.6180	34.10	10.04	44.14	60.00	-15.86	QP	
12	*	13.6180	31.62	10.04	41.66	50.00	-8.34	AVG	

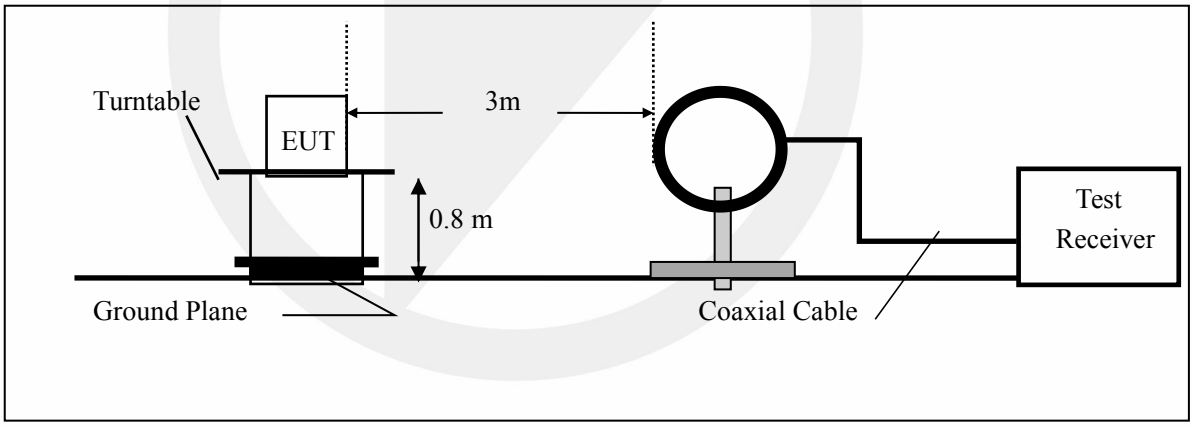
6. RADIATED EMISSION TEST

6.1.Measurement Procedure

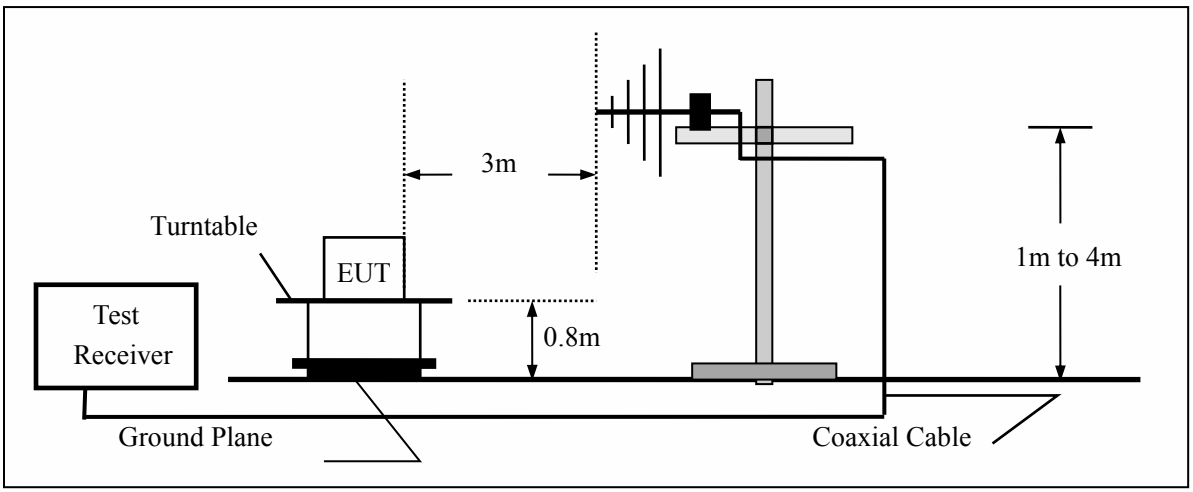
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.
5. Use the following receiver/spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured
   RBW=200Hz for 9KHz to 150KHz,
   RBW=9kHz for 150KHz to 30MHz,
   RBW=120KHz for 30MHz to 1GHz
   VBW ≥ 3*RBW
   Sweep = auto
   Detector function = QP
   Trace = max hold

6.2.Test SET-UP (Block Diagram of Configuration)

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



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



6.3.Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/20/2022	05/19/2023
Pre-Amplifier	HP	8447D	2944A07999	05/20/2022	05/19/2023
Bilog Antenna	Schwarzbeck	VULB9163	142	05/20/2022	05/19/2023
Loop Antenna	ARA	PLA-1030/B	1029	05/20/2022	05/19/2023
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/20/2022	05/19/2023
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	ACRX1	05/20/2022	05/19/2023
Cable	Rosenberger	N/A	FP2RX2	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	CRPX1	05/20/2022	05/19/2023
Cable	Schwarzbeck	AK9513	CRRX2	05/20/2022	05/19/2023

6.4.Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion 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

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

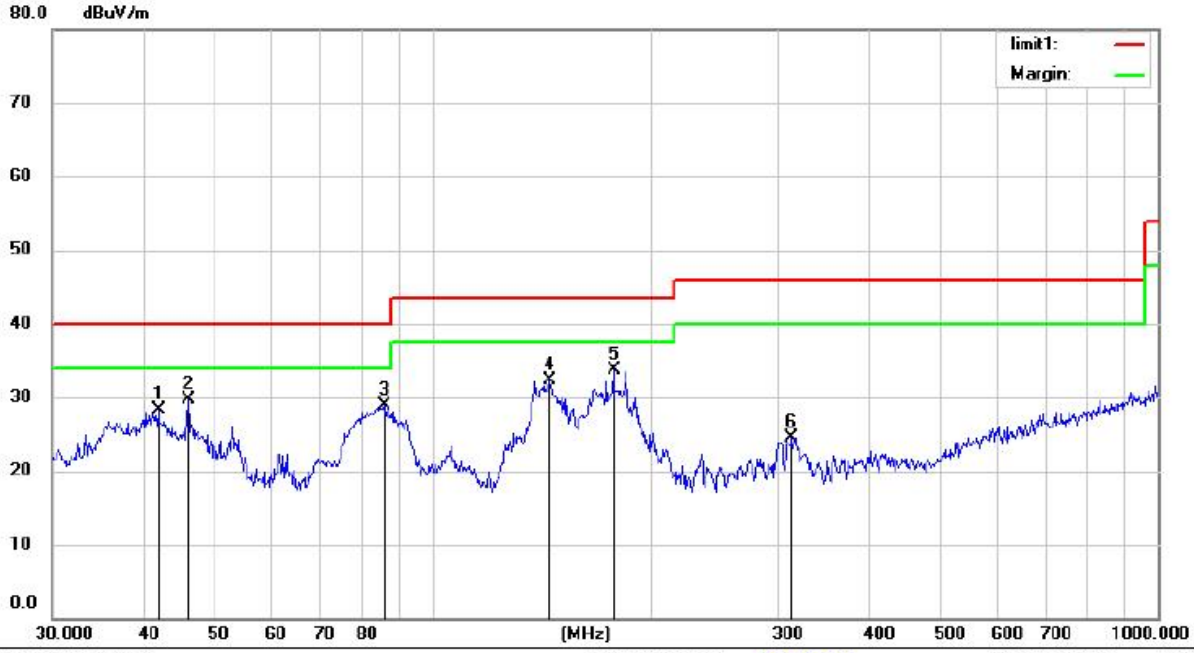
6.5.Measurement Result

Operation Mode:	Low frequency	Test Date :	07/09/2022
Frequency Range:	9KHz~30MHz	Temperature :	25℃
Test Result:	PASS	Humidity :	55 %
Measured Distance:	3m	Test By:	Xia

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
0.12820	H	74.65	105.45	-30.80	PK
0.170	H	67.23	103.00	-35.77	PK
0.261	H	65.19	99.28	-34.09	PK
0.403	H	67.34	95.49	-28.15	PK
0.544	H	64.60	72.89	-8.29	PK
0.12948	V	75.93	105.36	-29.43	PK
0.221	V	66.59	100.73	-34.14	PK
0.344	V	65.49	96.87	-31.38	PK
0.471	V	64.04	94.15	-30.11	PK
0.624	V	65.37	71.70	-6.32	PK

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) EUT lying on the table position is the worst case result in the report.

30MHz-1GHz:



Site Chamber #1 Polarization: *Vertical* Temperature: 22.7

Limit: FCC PART 15 C 3m(RE) Power: AC 120V/60Hz Humidity: 57 %

Mode:Wireless Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		42.0066	44.30	-16.07	28.23	40.00	-11.77	QP			
2		46.1780	45.08	-15.47	29.61	40.00	-10.39	QP			
3		85.8983	49.10	-20.12	28.98	40.00	-11.02	QP			
4		145.3505	52.32	-19.95	32.37	43.50	-11.13	QP			
5	*	178.1327	51.70	-18.03	33.67	43.50	-9.83	QP			
6		313.2760	36.94	-12.37	24.57	46.00	-21.43	QP			

Site Chamber #1 Polarization: *Horizontal* Temperature: 22.7

Limit: FCC PART 15 C 3m(RE) Power: AC 120V/60Hz Humidity: 57 %

Mode:Wireless Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		54.6428	38.04	-15.75	22.29	40.00	-17.71	QP			
2		92.4624	48.26	-18.67	29.59	43.50	-13.91	QP			
3		146.3734	46.82	-19.91	26.91	43.50	-16.59	QP			
4		176.8878	46.90	-18.08	28.82	43.50	-14.68	QP			
5	*	185.1380	47.78	-17.24	30.54	43.50	-12.96	QP			
6		300.3672	39.29	-12.65	26.64	46.00	-19.36	QP			

7. ANTENNA REQUIREMENT

The EUT's antenna, permanent attached antenna, used an Induction coil, The antenna's gain meets the requirement.

*** End of Report ***

声 明
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