TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2AUZ9-ESWL-03	
Test Report No..... :	TCT220811E027	
Date of issue..... :	Aug. 31, 2022	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	East Sky Industry Co., Limited	
Address..... :	Room 503, Building 4, No. 142, Tangxia Lingnan Road, Tangxia Town, Dongguan City, Guangdong Province, China	
Manufacturer's name ... :	Dongguan New Running Electronics Co., Ltd	
Address..... :	Room 503, Building 4, No. 142, Tangxia Lingnan Road, Tangxia Town, Dongguan City, Guangdong Province, China	
Standard(s) ..... :	FCC CFR Title 47 Part 15 Subpart C	
Product Name..... :	Wireless Charger	
Trade Mark ..... :	N/A	
Model/Type reference..... :	ESWL-03, ESWL-01, ESWL-02, ESWL-04, ESWL-05, ESWL-06, ESWL-07, ESWL-08, ESWL-09	
Rating(s) ..... :	Input: DC 5V, 2A/ DC 9V, 2A/ DC 12V, 2A Output: 5W/ 7.5W/ 10W/ 15W (Max)	
Date of receipt of test item ..... :	Aug. 11, 2022	
Date (s) of performance of test..... :	Aug. 11, 2022 - Aug. 31, 2022	
Tested by (+signature) ... :	Rleo LIU	Rleo Liu
Check by (+signature).... :	Beryl ZHAO	Beryl Zhao
Approved by (+signature):	Tomsin	Tomsin

SHENZHEN TONGCE TESTING LAB TCT

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1. General Product Information

1.1. EUT description

Product Name.....:	Wireless Charger
Model/Type reference.....:	ESWL-03
Sample Number.....:	TCT220811E027-0101
Operation Frequency .....:	111.08kHz ~ 141.25kHz
Modulation Technology .....:	Load modulation
Antenna Type.....:	Inductive loop coil Antenna
Rating(s) .....:	Input: DC 5V, 2A/ DC 9V, 2A/ DC 12V, 2A Output: 5W/ 7.5W/ 10W/ 15W (Max)

1.2. Model(s) list

No.	Model No.	Tested with
1	ESWL-03	☒
Other models	ESWL-01, ESWL-02, ESWL-04, ESWL-05, ESWL-06, ESWL-07, ESWL-08, ESWL-09	☐
Note: ESWL-03 is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names. So the test data of ESWL-03 can represent the remaining models.		

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

3. General Information

3.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	25.3 °C	24.1 °C
Humidity:	56 % RH	52 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
Mode:	Wireless Charging (15W Max).	

The sample was placed 0.8m for the measurement below above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	JD-050200	2012010907576735	/	JD
Mobile Phone	SM-G9350	R28HA2ER3GT	/	SAMSUNG

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

4.3. Measurement Uncertainty

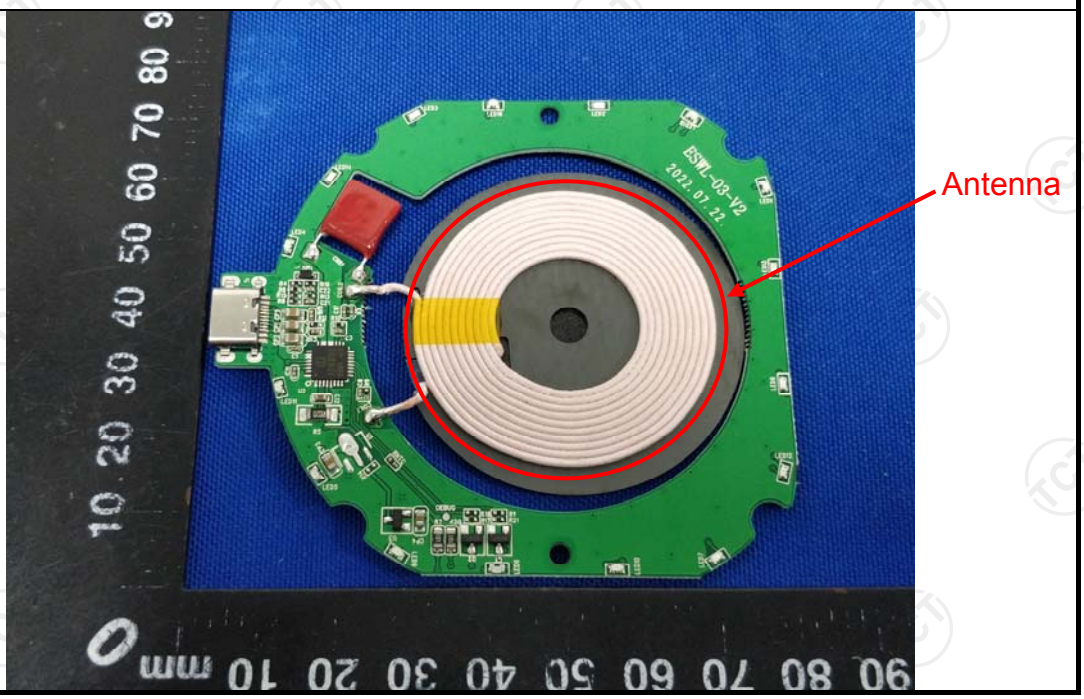
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

5.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The antenna is inductive loop coil antenna which permanently attached.	



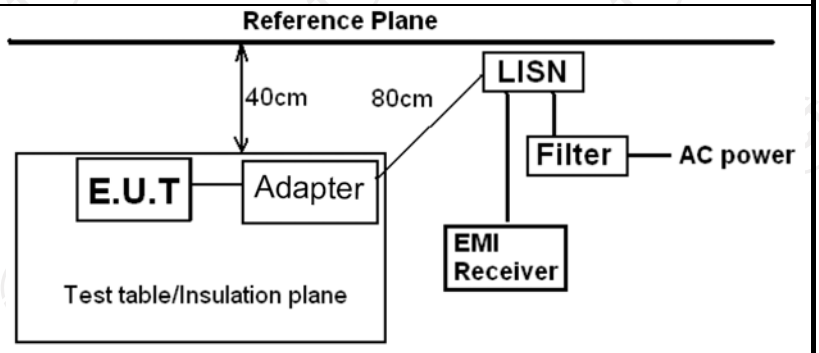
5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10: 2013
Frequency Range:	150 kHz to 30 MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limits:	

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

Test Setup:



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

Test Mode: Refer to item 3.1

Test Procedure:

1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50Uh coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50Uh coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Test Result: PASS

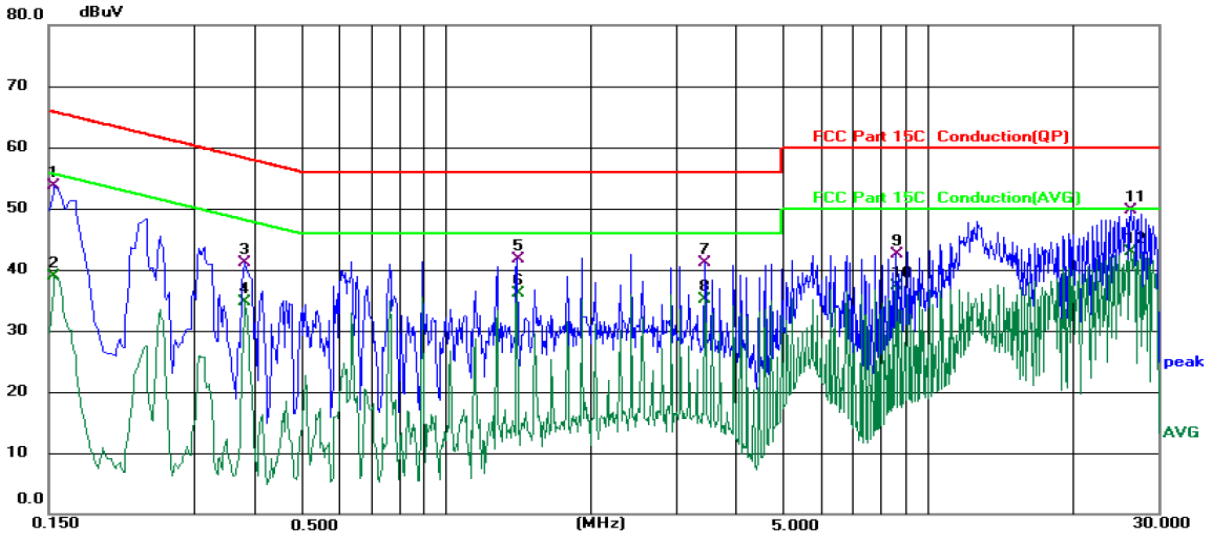
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI3	100898	Jul. 03, 2023
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 24, 2023
Line-5	TCT	CE-05	/	Jul. 03, 2023
EMI Test Software	Shurple Technology	EZ-EMC	/	/

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room | Phase: *L1* | Temperature: 25.3 (℃) | Humidity: 56 %

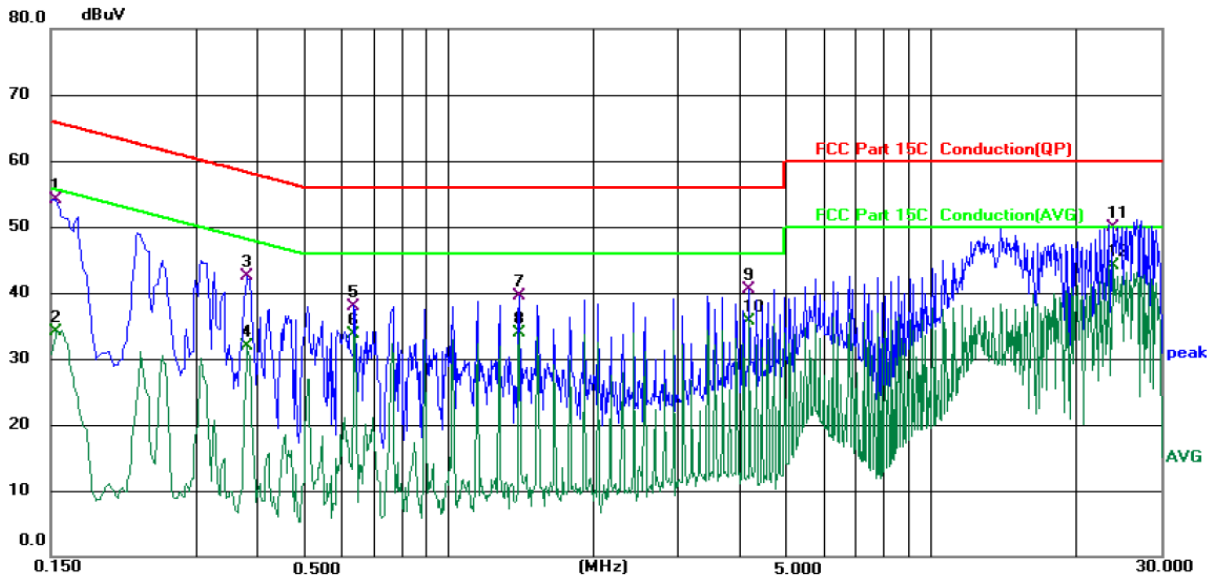
Limit: FCC Part 15C Conduction(QP) | Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	43.16	10.53	53.69	65.79	-12.10	QP	
2		0.1539	28.46	10.53	38.99	55.79	-16.80	AVG	
3		0.3820	30.93	10.21	41.14	58.24	-17.10	QP	
4		0.3820	24.49	10.21	34.70	48.24	-13.54	AVG	
5		1.4060	31.71	10.08	41.79	56.00	-14.21	QP	
6		1.4060	25.94	10.08	36.02	46.00	-9.98	AVG	
7		3.4500	31.07	10.03	41.10	56.00	-14.90	QP	
8		3.4500	25.14	10.03	35.17	46.00	-10.83	AVG	
9		8.5580	32.24	10.18	42.42	60.00	-17.58	QP	
10		8.5580	27.12	10.18	37.30	50.00	-12.70	AVG	
11		26.3100	39.15	10.52	49.67	60.00	-10.33	QP	
12	*	26.3100	32.30	10.52	42.82	50.00	-7.18	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room | Phase: *N* | Temperature: 25.3 (℃) | Humidity: 56 %

Limit: FCC Part 15C Conduction(QP) | Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	43.66	10.44	54.10	65.79	-11.69	QP	
2		0.1539	23.76	10.44	34.20	55.79	-21.59	AVG	
3		0.3820	32.37	10.21	42.58	58.24	-15.66	QP	
4		0.3820	21.74	10.21	31.95	48.24	-16.29	AVG	
5		0.6380	27.90	10.10	38.00	56.00	-18.00	QP	
6		0.6380	23.53	10.10	33.63	46.00	-12.37	AVG	
7		1.4058	29.39	10.12	39.51	56.00	-16.49	QP	
8		1.4058	23.69	10.12	33.81	46.00	-12.19	AVG	
9		4.2179	30.41	10.15	40.56	56.00	-15.44	QP	
10		4.2179	25.55	10.15	35.70	46.00	-10.30	AVG	
11		23.8900	39.53	10.46	49.99	60.00	-10.01	QP	
12	*	23.8900	33.67	10.46	44.13	50.00	-5.87	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBµV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)

Limit (dBµV) = Limit stated in standard

Margin (dB) = Measurement (dBµV) – Limits (dBµV)

Q.P. =Quasi-Peak AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

5.3. Radiated Spurious Emission Measurement

5.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10: 2013
Frequency Range:	9 kHz to 25 GHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical
Operation mode:	Refer to item 3.1
Receiver Setup:	

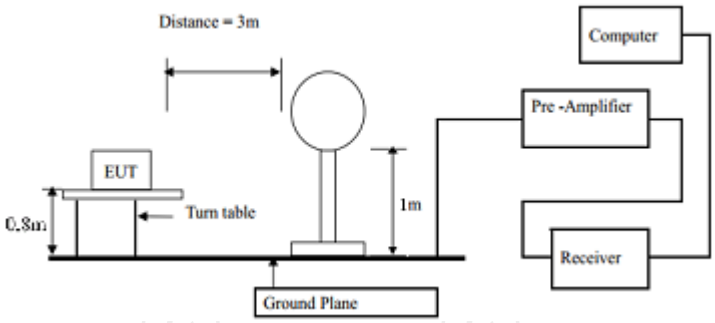
Frequency	Detector	RBW	VBW	Remark
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:

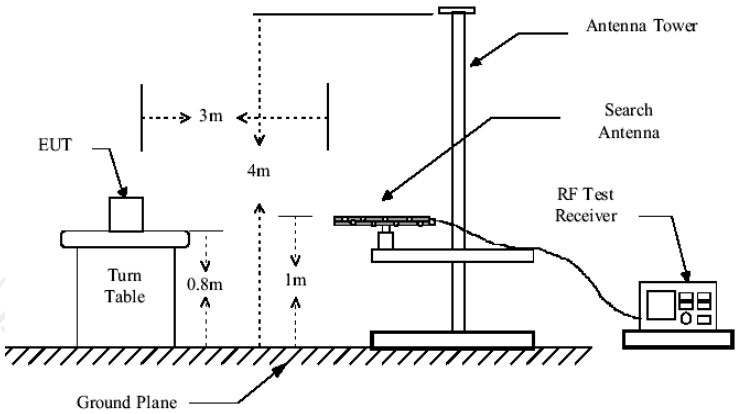
Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test setup:

For radiated emissions below 30MHz



30MHz to 1GHz

	
Test Procedure:	1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=120 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test mode:	Refer to section 3.1 for details
Test results:	PASS

5.3.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESIB7	100197	Jul. 03, 2023
Spectrum Analyzer	R&S	FSQ40	200061	Jul. 03, 2023
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Feb. 24, 2023
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Feb. 24, 2023
Pre-amplifier	HP	8447D	2727A05017	Jul. 03, 2023
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jun. 11, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 05, 2024
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 05, 2024
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Apr. 10, 2023
Antenna Mast	Keleto	RE-AM	/	/
Coaxial cable	SKET	RC-18G-N-M	/	Feb. 24, 2024
Coaxial cable	SKET	RC_40G-K-M	/	Feb. 24, 2024
EMI Test Software	Shurple Technology	EZ-EMC	/	/

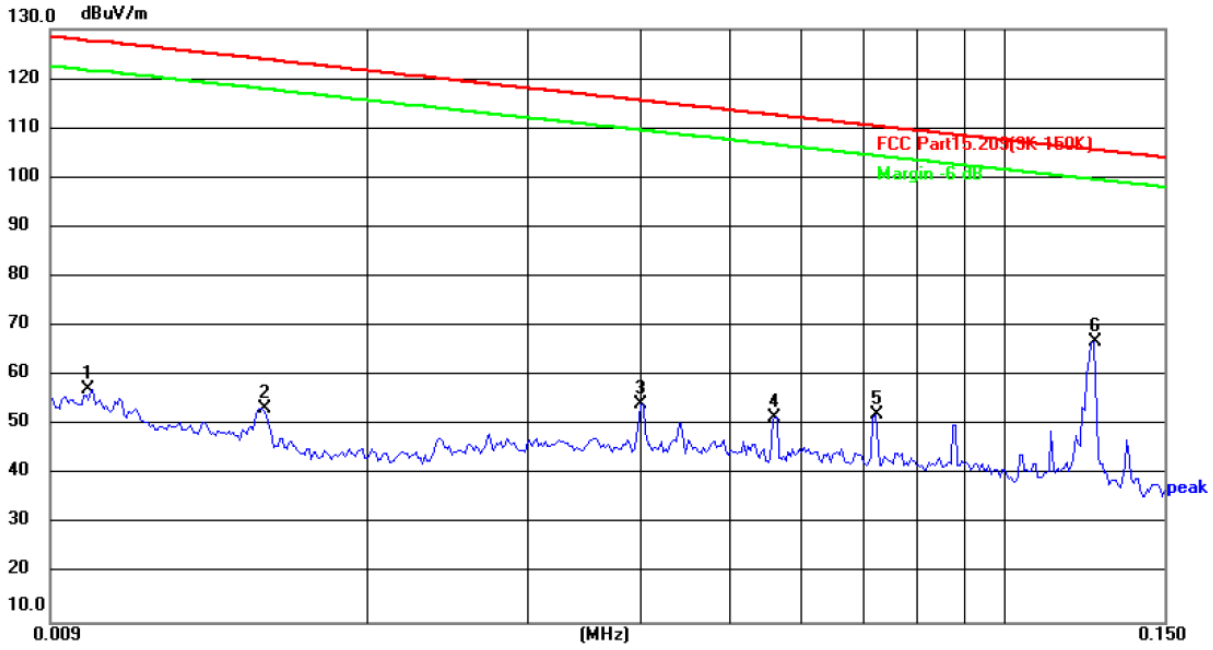
5.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:

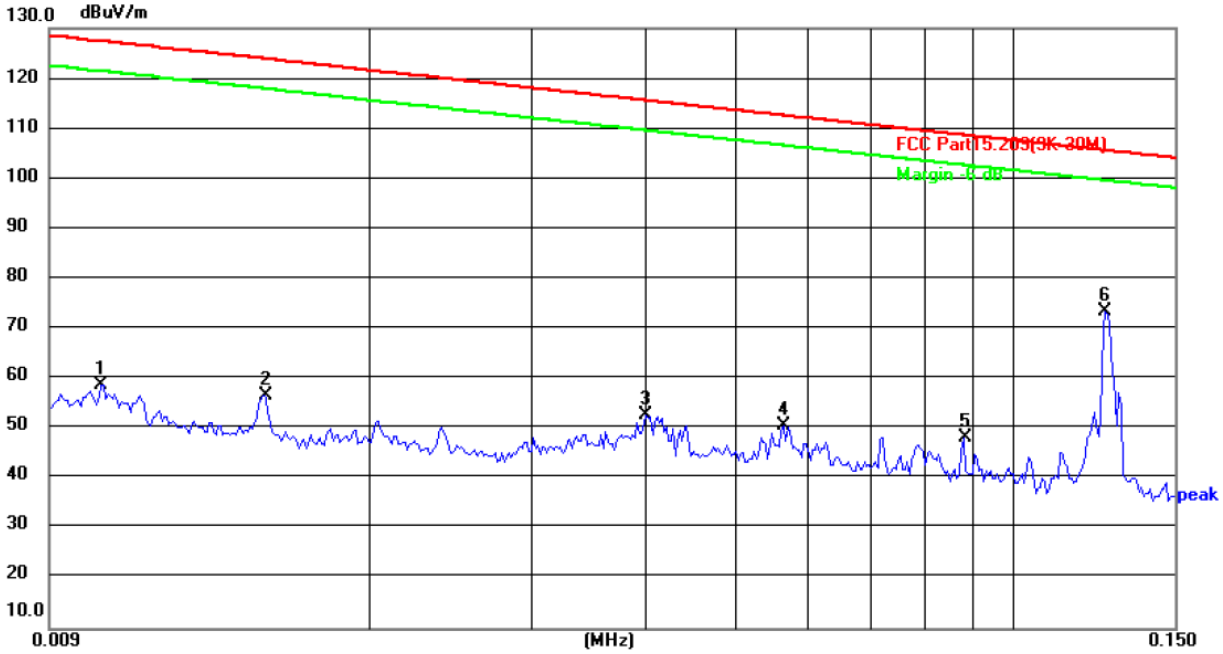
Coaxial:



Site	Polarization: ***Coaxial***	Temperature:	24(℃)
Limit: FCC Part15.209(9K-150K)	Power: DC 5 V(Adapter Input AC 120 V/60 Hz)	Humidity:	52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0100	36.41	20.73	57.14	127.60	-70.46	peak	P	
2	0.0153	32.56	20.67	53.23	123.91	-70.68	peak	P	
3	0.0400	33.71	20.54	54.25	115.56	-61.31	peak	P	
4	0.0560	30.85	20.76	51.61	112.64	-61.03	peak	P	
5	0.0722	30.97	21.05	52.02	110.43	-58.41	peak	P	
6 *	0.1253	46.63	20.34	66.97	105.65	-38.68	peak	P	

Coplanar:



Site

Limit: FCC Part15.209(9K-30M)

Polarization: *Coplanar*

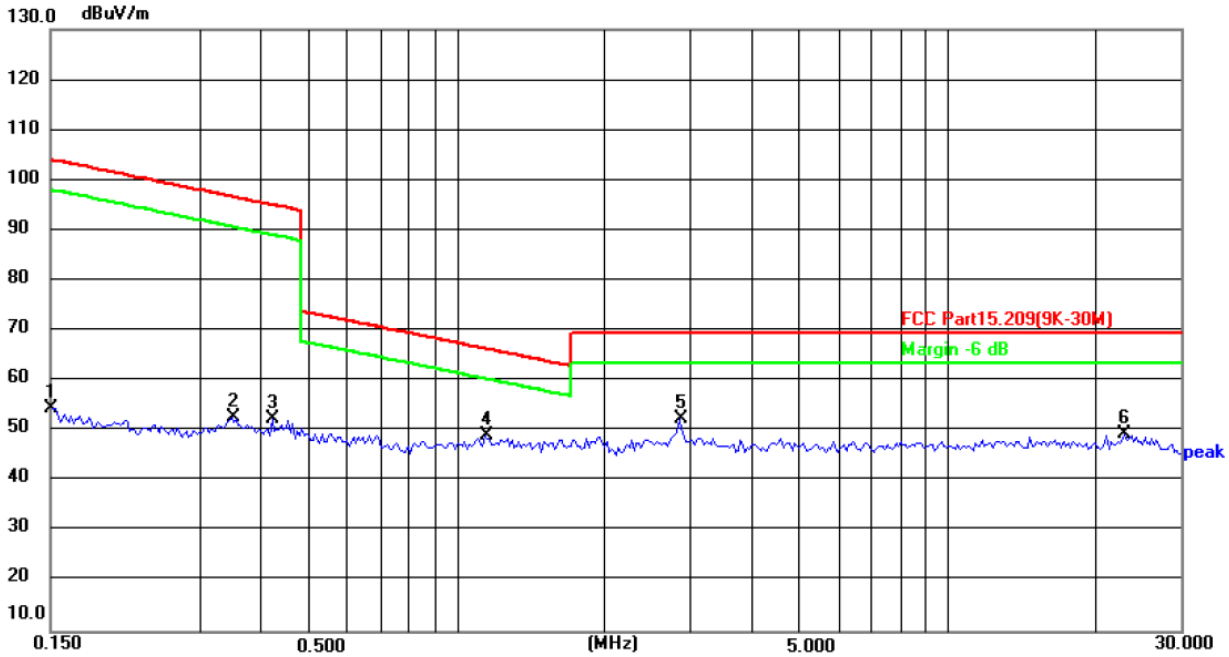
Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

Temperature: 24(℃)

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0102	37.98	20.73	58.71	127.43	-68.72	peak	P	
2	0.0154	36.01	20.67	56.68	123.85	-67.17	peak	P	
3	0.0400	32.27	20.54	52.81	115.56	-62.75	peak	P	
4	0.0563	29.78	20.77	50.55	112.59	-62.04	peak	P	
5	0.0884	27.37	21.01	48.38	108.68	-60.30	peak	P	
6 *	0.1259	53.15	20.31	73.46	105.60	-32.14	peak	P	

150KHz-30MHz:
Coaxial:



Site	Polarization: *Coaxial*	Temperature:	24(℃)
Limit: FCC Part15.209(9K-30M)	Power: DC 5 V(Adapter Input AC 120 V/60 Hz)	Humidity:	52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1500	33.96	20.72	54.68	104.08	-49.40	peak	P	
2	0.3502	31.47	21.19	52.66	96.72	-44.06	peak	P	
3	0.4237	30.96	21.36	52.32	95.06	-42.74	peak	P	
4	1.1473	26.27	22.97	49.24	66.43	-17.19	peak	P	
5 *	2.8541	25.96	26.48	52.44	69.50	-17.06	peak	P	
6	23.0181	30.07	19.46	49.53	69.50	-19.97	peak	P	

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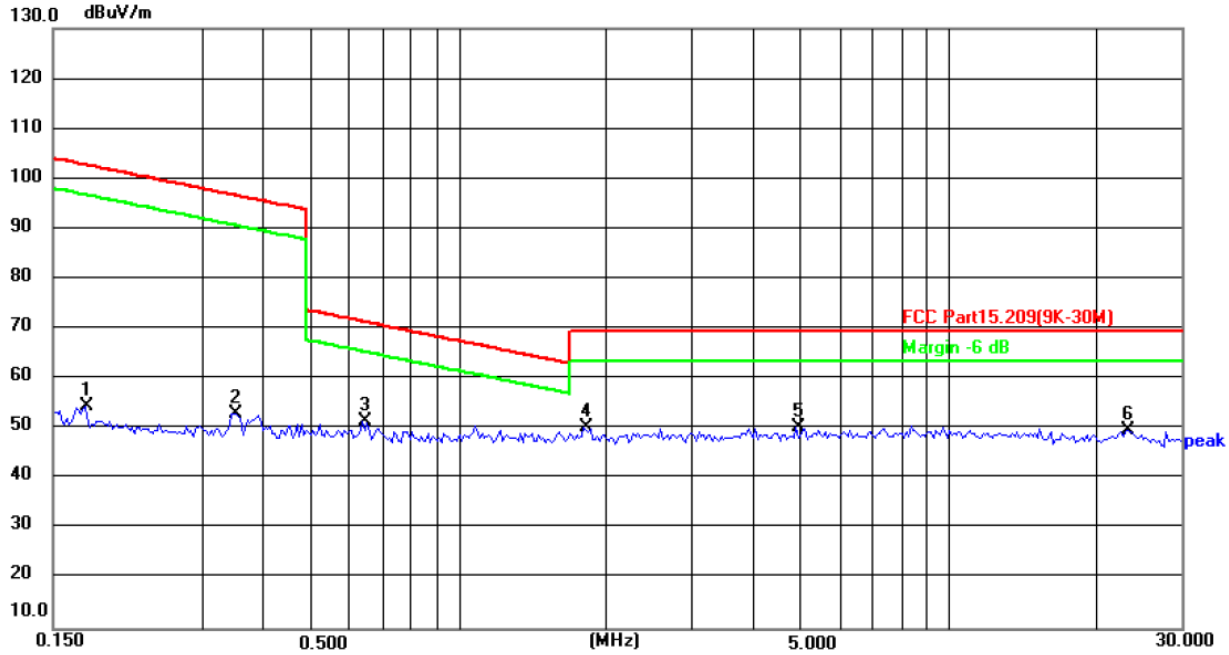
Coplanar:



Site

Limit: FCC Part15.209(9K-30M)

Polarization: *Coplanar*

Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

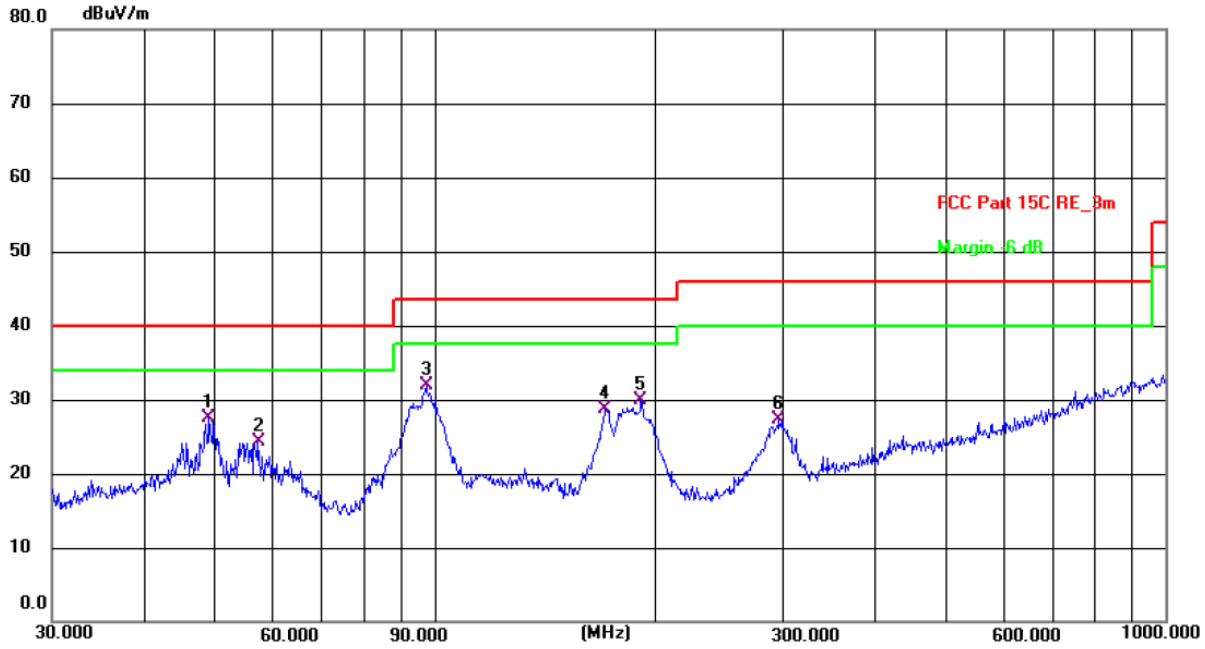
Temperature: 24(℃)

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1740	33.71	20.77	54.48	102.79	-48.31	peak	P	
2	0.3502	31.93	21.19	53.12	96.72	-43.60	peak	P	
3	0.6406	29.62	21.86	51.48	71.48	-20.00	peak	P	
4 *	1.8096	25.91	24.33	50.24	69.50	-19.26	peak	P	
5	4.8997	19.76	30.44	50.20	69.50	-19.30	peak	P	
6	23.2633	30.14	19.50	49.64	69.50	-19.86	peak	P	

30MHz-1GHz

Horizontal:

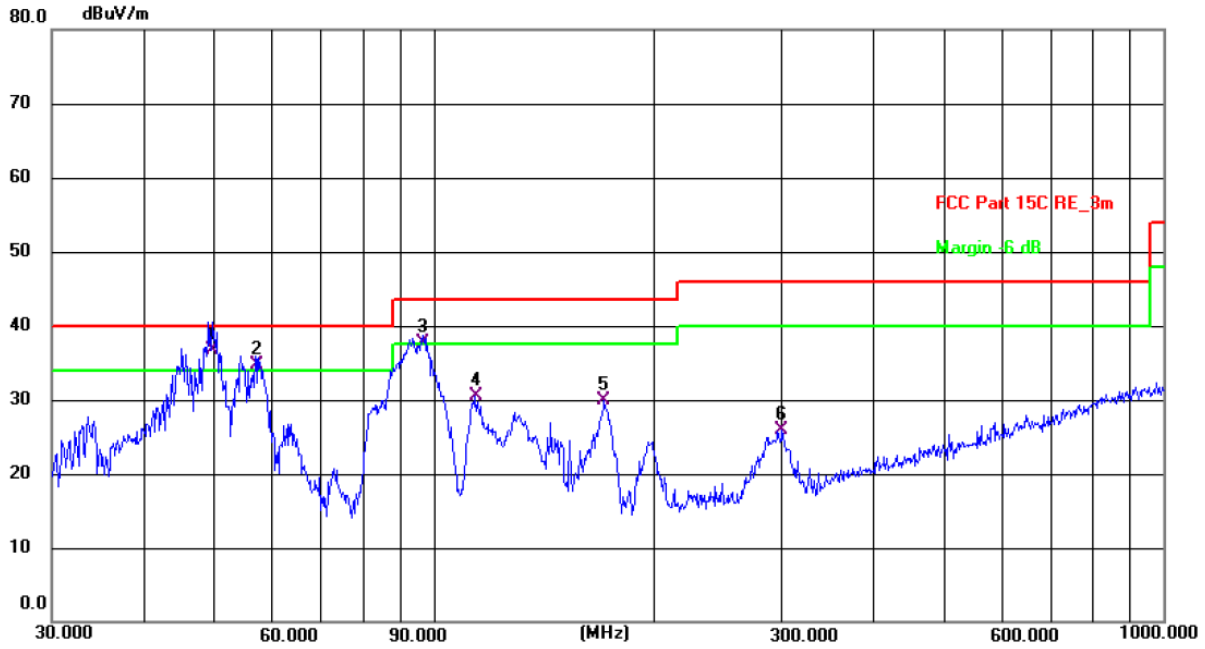


Site #2 3m Anechoic Chamber Polarization: ***Horizontal*** Temperature: 24.1(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m Power: DC 12 V(Adapter Input AC 120V/60Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	49.1865	13.66	13.80	27.46	40.00	-12.54	QP	P	
2	57.3923	11.11	13.29	24.40	40.00	-15.60	QP	P	
3 *	97.4559	21.69	10.12	31.81	43.50	-11.69	QP	P	
4	171.3925	16.48	12.20	28.68	43.50	-14.82	QP	P	
5	191.7450	19.19	10.67	29.86	43.50	-13.64	QP	P	
6	296.1836	13.57	13.79	27.36	46.00	-18.64	QP	P	

Vertical:



Site #2 3m Anechoic Chamber Polarization: *Vertical* Temperature: 24.1(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m Power: DC 12 V(Adapter Input AC 120V/60Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	49.7066	22.91	13.79	36.70	40.00	-3.30	QP	P	
2 !	56.9912	21.48	13.32	34.80	40.00	-5.20	QP	P	
3 !	96.7749	27.58	10.04	37.62	43.50	-5.88	QP	P	
4	114.1137	18.91	11.52	30.43	43.50	-13.07	QP	P	
5	171.3925	17.74	12.20	29.94	43.50	-13.56	QP	P	
6	300.3672	12.16	13.71	25.87	46.00	-20.13	QP	P	

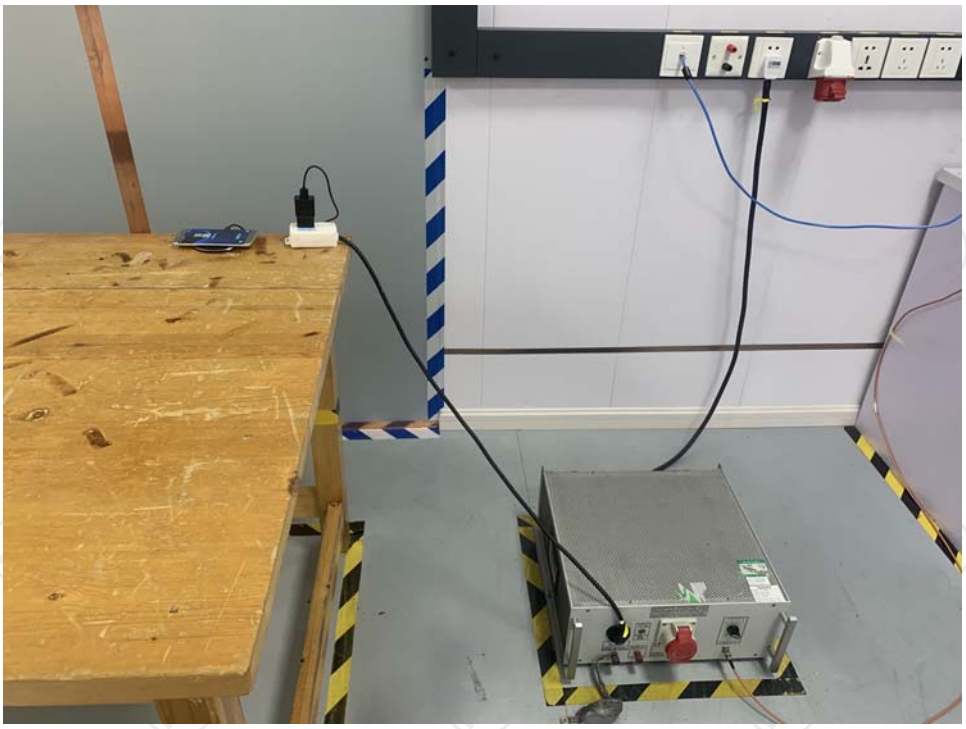
Note:

Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Appendix A: Photographs of Test Setup

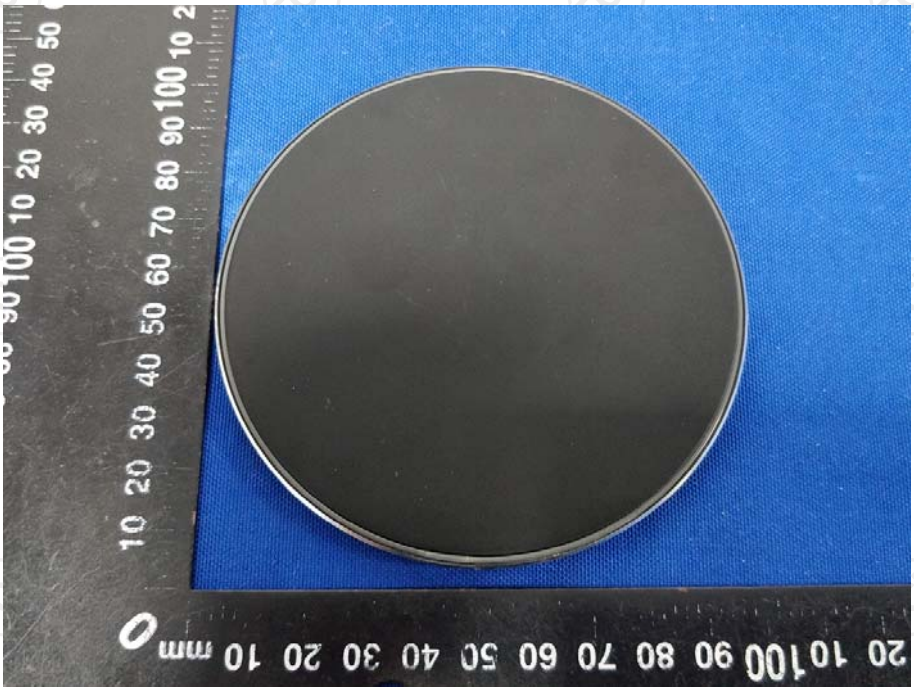
Product: Wireless Charger
Model: ESWL-03
Radiated Emission

Conducted Emission

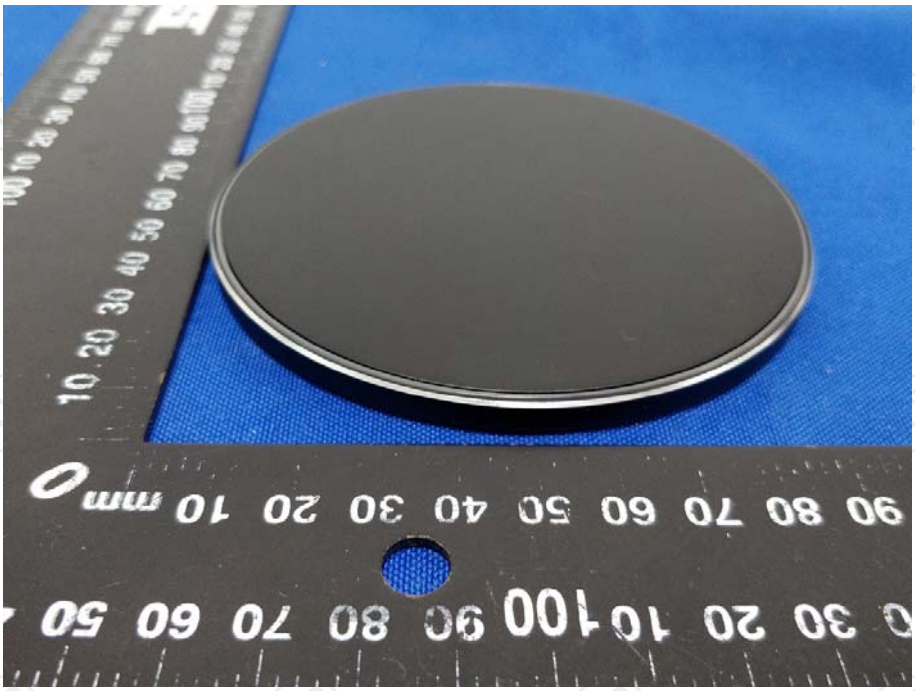


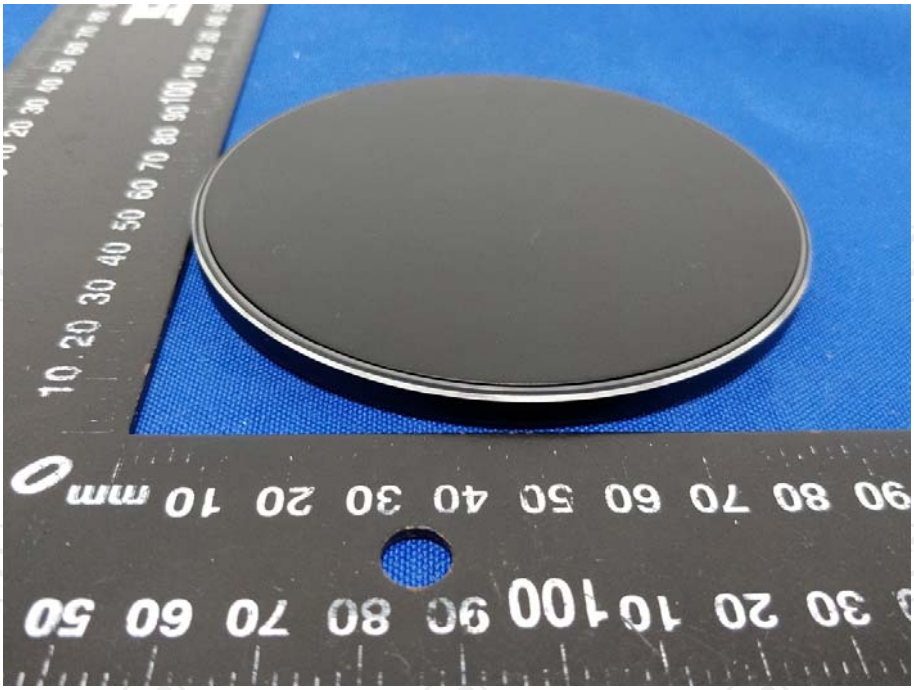
Appendix B: Photographs of EUT

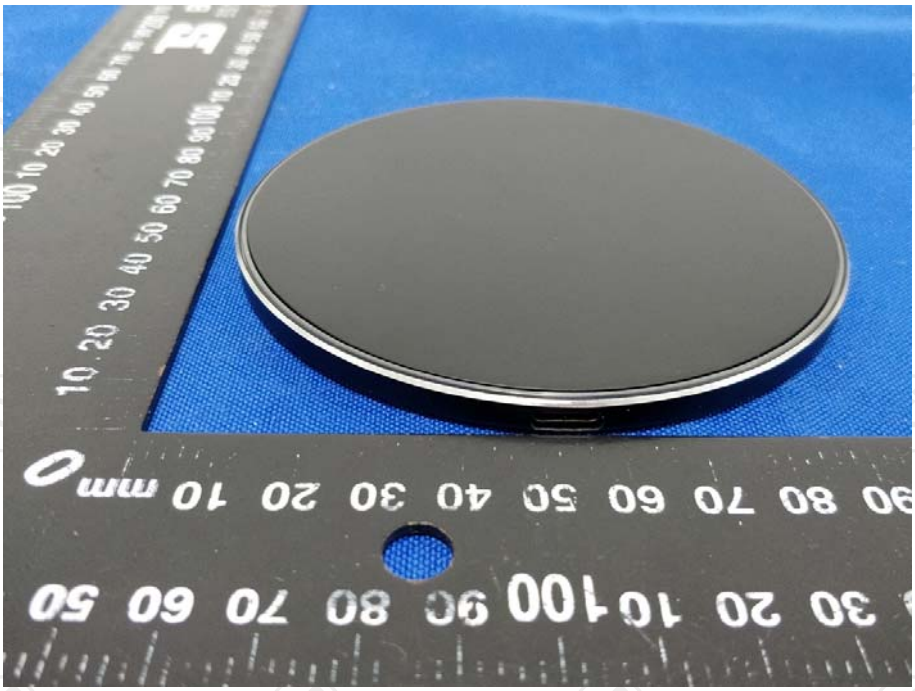
Product: Wireless Charger
Model: ESWL-03
External Photos

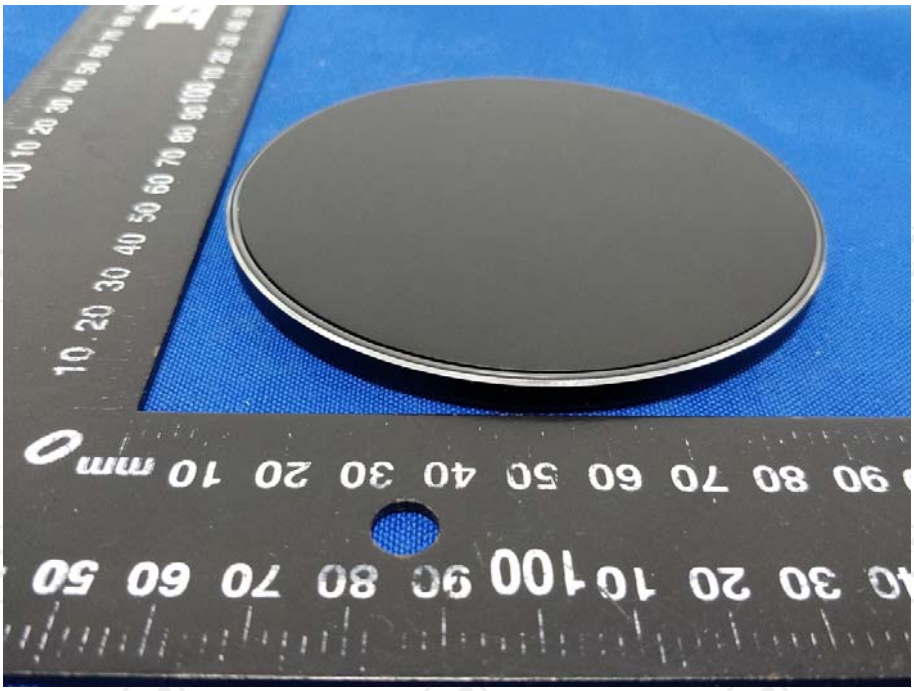


WIRELESS CHARGER
Input: 5V/2A 9V/2A 12V/2A
Output: 5W/7.5W/10W/15W(Max)
Made in China
RoHS

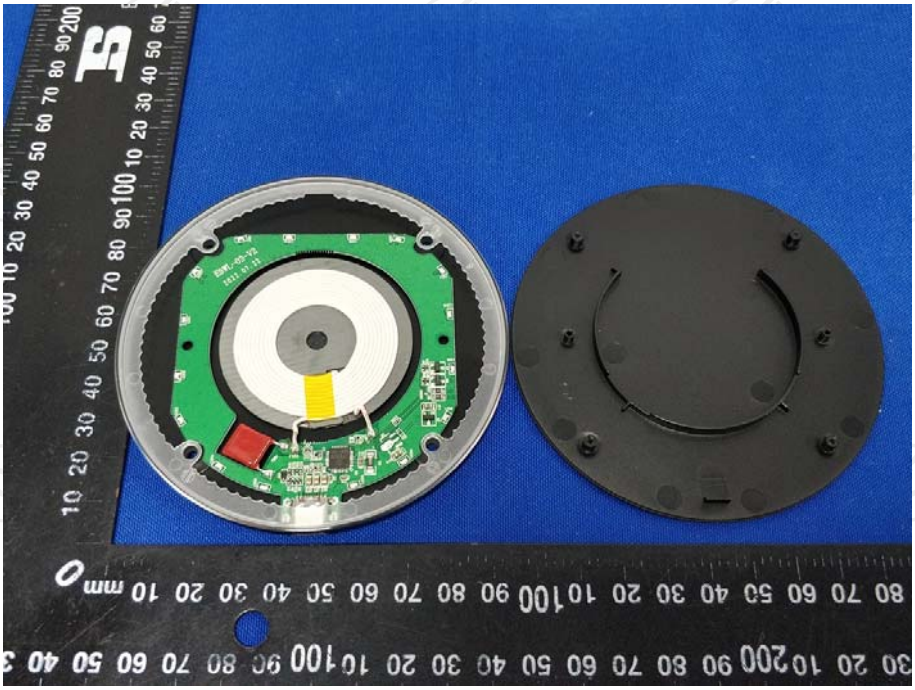


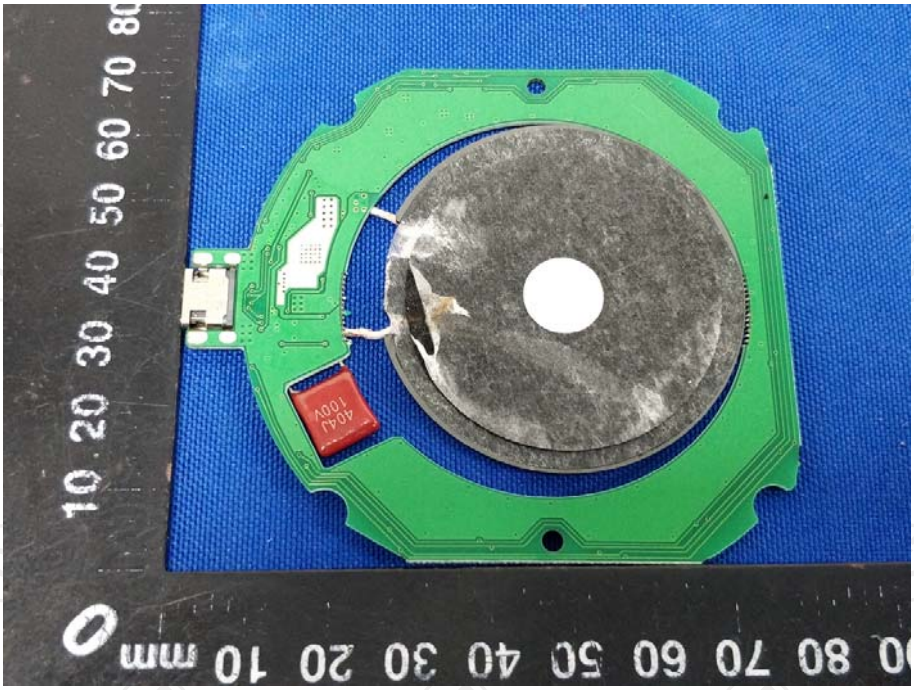






Product: Wireless Charger
Model: ESWL-03
Internal Photos





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