

TEST REPORT

FCC ID. :	2AQ2W-BQ12	
Test Report No..... :	TCT230911E043	
Date of issue..... :	Sep. 20, 2023	
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..... :	Shenzhen Doageas Technology Co., Ltd.	
Address..... :	5/F, 4th Bldg, Hedian Industrial Park, Guanlan, Longhua, Shenzhen, Guangdong 518110, China.	
Manufacturer's name ... :	Shenzhen Doageas Technology Co., Ltd.	
Address..... :	5/F, 4th Bldg, Hedian Industrial Park, Guanlan, Longhua, Shenzhen, Guangdong 518110, China.	
Standard(s)	FCC CFR Title 47 Part 15 Subpart C	
Product Name..... :	Digital Clock & Bluetooth Speaker & Phone Stand & Wireless Charger	
Trade Mark	DOAGEAS	
Model/Type reference..... :	BQ12	
Rating(s)..... :	DC 9V or Rechargeable Li-ion Battery DC 3.7V	
Date of receipt of test item	Sep. 11, 2023	
Date (s) of performance of test..... :	Sep. 11, 2023 - Sep. 20, 2023	
Tested by (+signature) ... :	Ronaldo LUO	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

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1. General Product Information

1.1.EUT description

Product Name.....:	Digital Clock & Bluetooth Speaker & Phone Stand & Wireless Charger
Model/Type reference.....:	BQ12
Sample Number.....:	TCT230911E011-0101
Operation Frequency	119.87kHz – 173.72kHz
Modulation Technology	Load modulation
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	DC 9V or Rechargeable Li-ion Battery DC 3.7V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2.Model(s) list

None.

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:	23.5 °C	24.9 °C
Humidity:	52 % RH	52 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
Engineering mode:	Mode 1: Wireless Charging (Full Load)	
	Mode 2: Wireless Charging (Half Load)	
	Mode 3: Wireless Charging (Null Load)	
Remark	All modes were tested, and the worse mode (Mode 1) is reported only.	

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
Mobile Phone	SM-G9350	R28HA2ER3GT	/	SAMSUNG
Adapter	EP-TA200	R37R55T6KL2SE3	/	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.

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 $y \pm U$, where expanded 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:

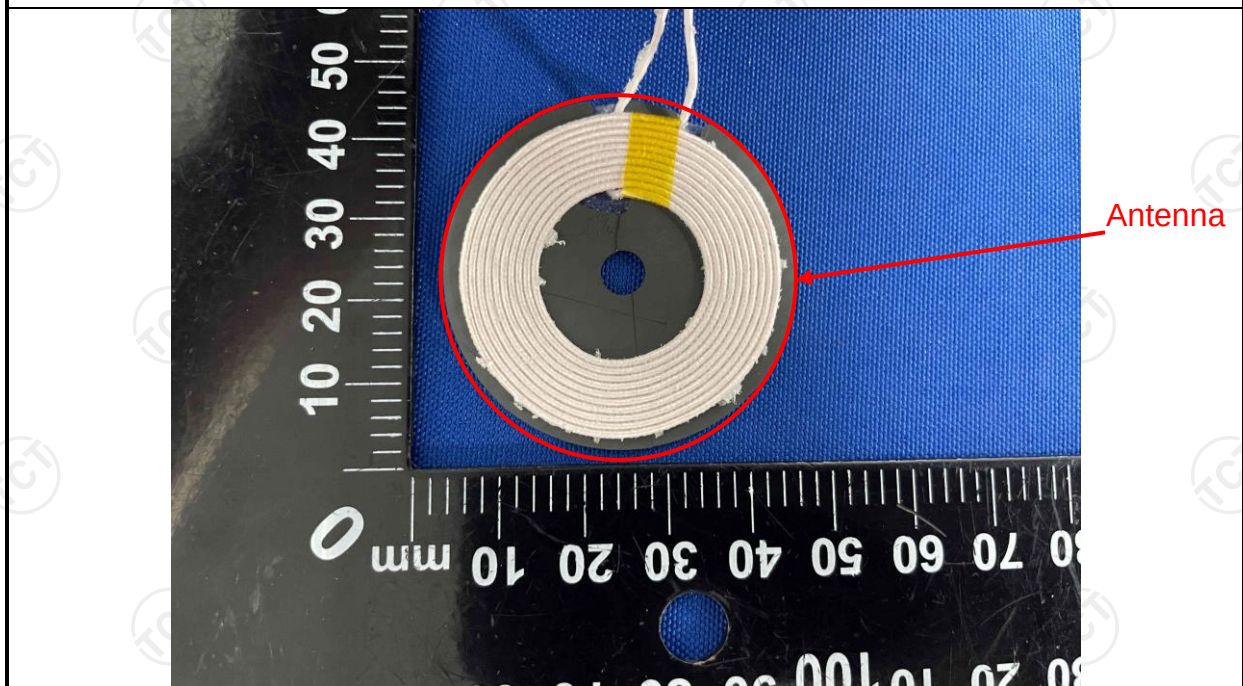
FCC Part15 C Section 15.203

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 antennas are 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:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	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
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:	Reference Plane 40cm E.U.T AC power 80cm LISN Filter AC power EMI Receiver Test table/Insulation plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Refer to section 3.1 for details														
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														

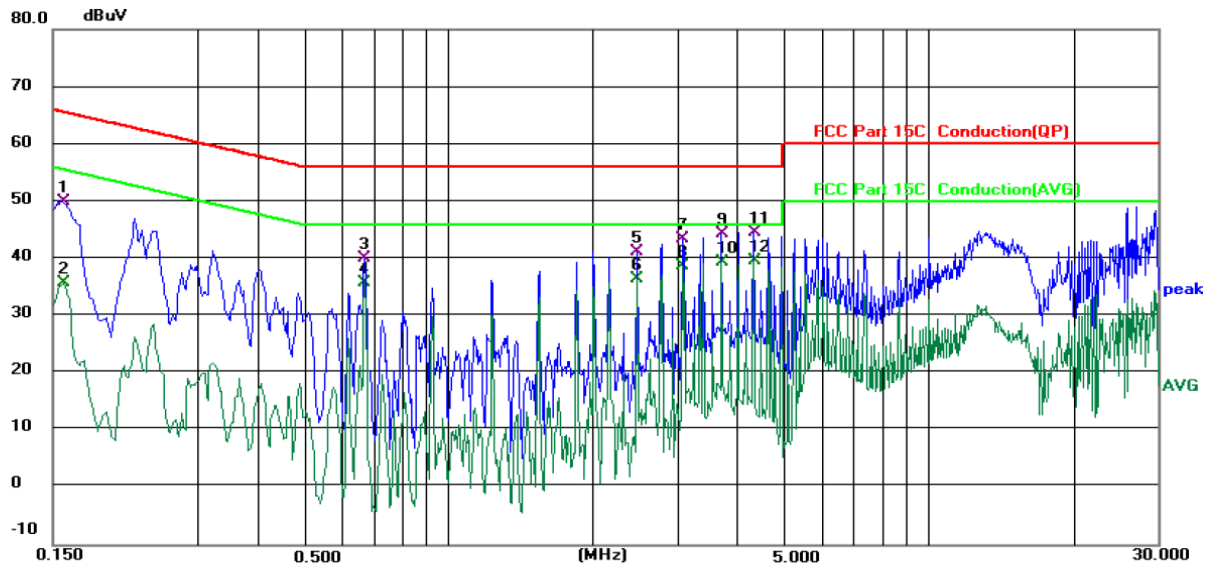
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI3	100898	Jun. 29, 2024
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 20, 2024
Line-5	TCT	CE-05	/	Jul. 03, 2024
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: 23.5 (°C)

Humidity: 52 %

Limit: FCC Part 15C Conduction(QP)

Power: DC 9 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.1580	39.86	10.12	49.98	65.57	-15.59	QP	
2		0.1580	25.71	10.12	35.83	55.57	-19.74	AVG	
3		0.6700	30.73	9.29	40.02	56.00	-15.98	QP	
4		0.6700	26.49	9.29	35.78	46.00	-10.22	AVG	
5		2.4700	31.19	10.03	41.22	56.00	-14.78	QP	
6		2.4700	26.36	10.03	36.39	46.00	-9.61	AVG	
7		3.0900	33.35	10.04	43.39	56.00	-12.61	QP	
8		3.0900	28.57	10.04	38.61	46.00	-7.39	AVG	
9		3.7060	34.24	10.07	44.31	56.00	-11.69	QP	
10		3.7060	29.27	10.07	39.34	46.00	-6.66	AVG	
11		4.3260	34.43	10.07	44.50	56.00	-11.50	QP	
12	*	4.3260	29.50	10.07	39.57	46.00	-6.43	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

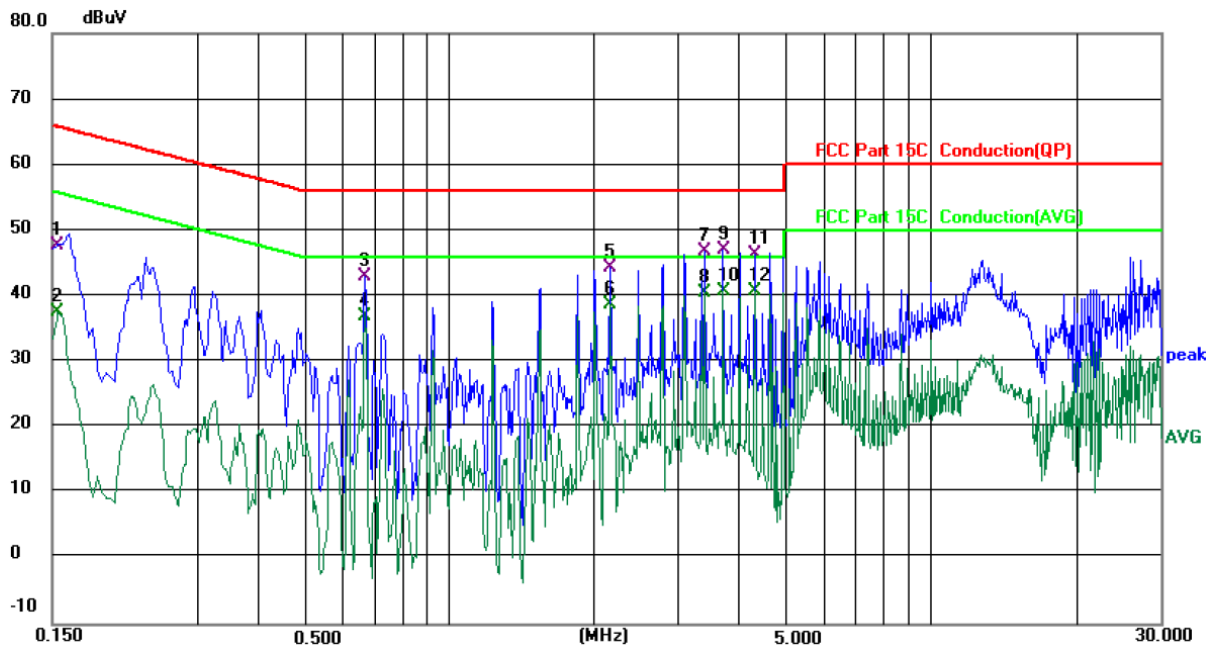
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

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: 23.5 (°C)

Humidity: 52 %

Limit: FCC Part 15C Conduction(QP)

Power: DC 9 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.1539	37.68	10.09	47.77	65.79	-18.02	QP	
2		0.1539	27.49	10.09	37.58	55.79	-18.21	AVG	
3		0.6700	33.72	9.30	43.02	56.00	-12.98	QP	
4		0.6700	27.53	9.30	36.83	46.00	-9.17	AVG	
5		2.1619	34.25	10.02	44.27	56.00	-11.73	QP	
6		2.1619	28.59	10.02	38.61	46.00	-7.39	AVG	
7		3.3980	36.72	10.06	46.78	56.00	-9.22	QP	
8		3.3980	30.43	10.06	40.49	46.00	-5.51	AVG	
9		3.7060	37.04	10.08	47.12	56.00	-8.88	QP	
10		3.7060	30.58	10.08	40.66	46.00	-5.34	AVG	
11		4.3220	36.32	10.09	46.41	56.00	-9.59	QP	
12	*	4.3220	30.75	10.09	40.84	46.00	-5.16	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

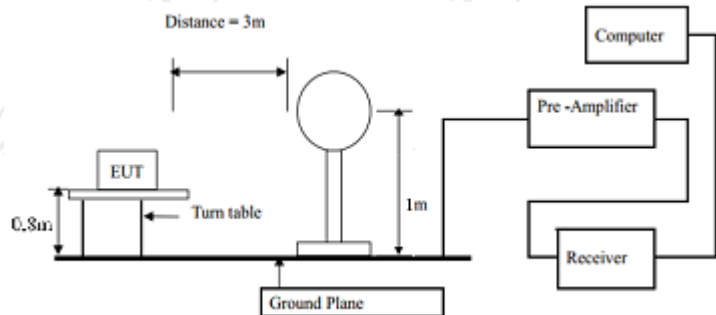
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak AVG =average

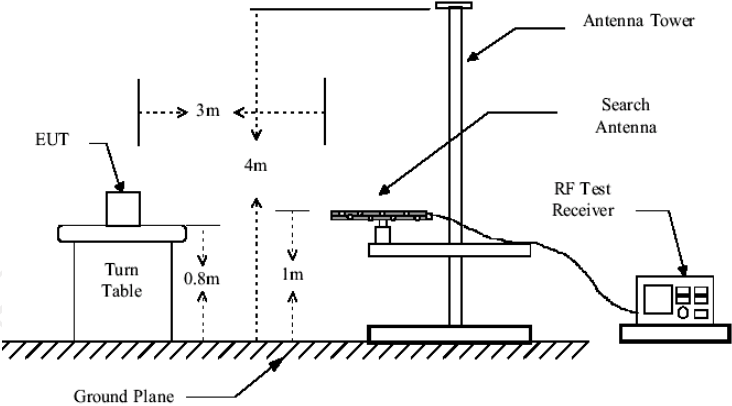
* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz

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
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				

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 $f < 1\text{ GHz}$; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
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	Jun. 29, 2024
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 29, 2024
Pre-amplifier	HP	8447D	2727A05017	Jun. 27, 2024
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jul. 02, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 01, 2024
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	/	/

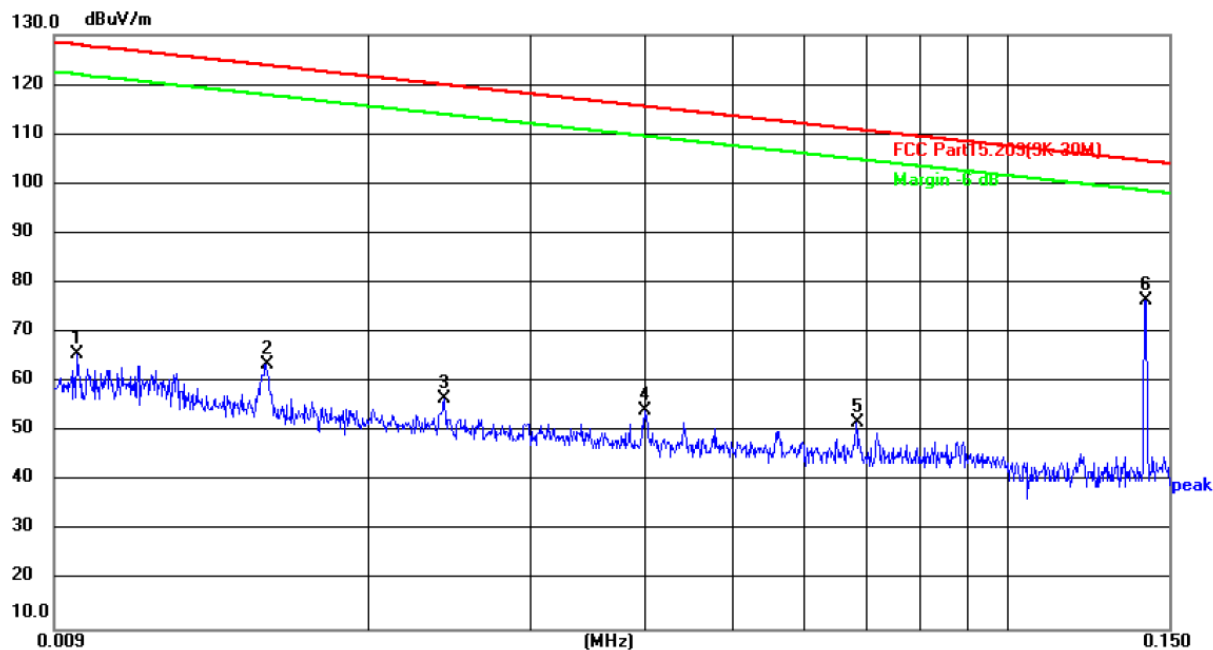
5.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:

Coaxial:



Site: #3 3m Anechoic Chamber

Polarization: **Coaxial**

Temperature: 25.3(°C)

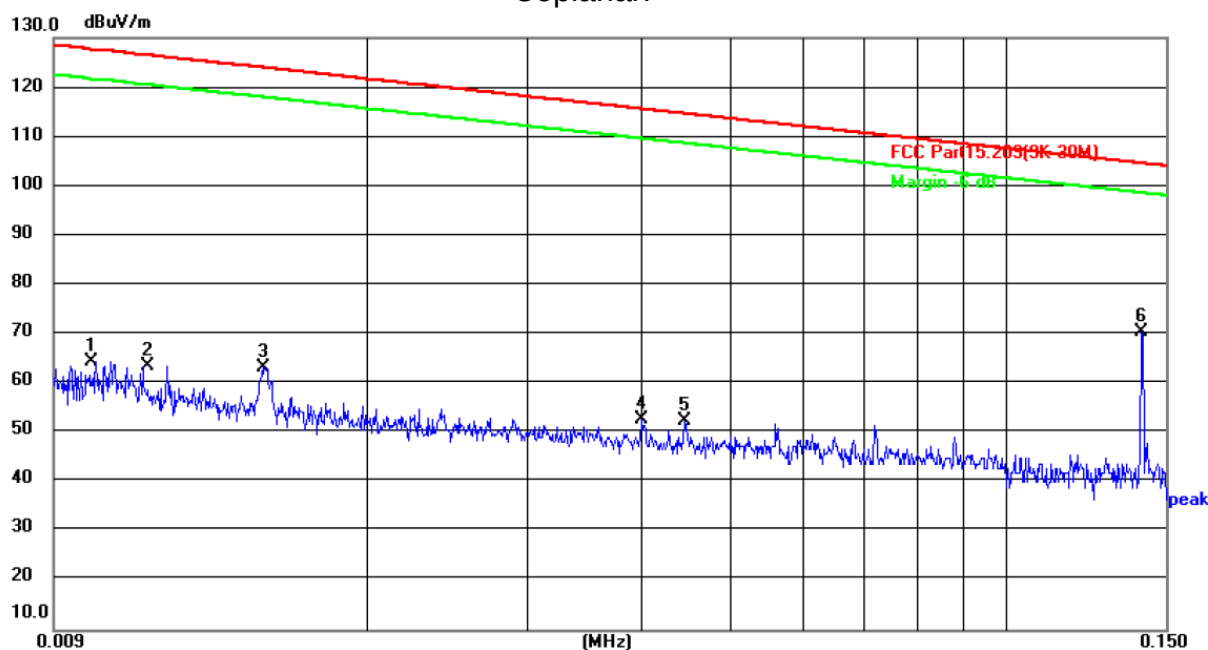
Humidity: 50 %

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

Power:DC 9V(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	0.0095	44.80	20.85	65.65	128.05	-62.40	peak	P	
2	0.0154	42.94	20.67	63.61	123.85	-60.24	peak	P	
3	0.0241	36.23	20.54	56.77	119.96	-63.19	peak	P	
4	0.0400	33.58	20.54	54.12	115.56	-61.44	peak	P	
5	0.0682	30.89	21.02	51.91	110.93	-59.02	peak	P	
6 *	0.1414	55.89	20.44	76.33	104.60	-28.27	peak	P	

Coplanar:



Site: #3 3m Anechoic Chamber

Polarization: **Coplanar**

Temperature: 25.3(°C)

Humidity: 50 %

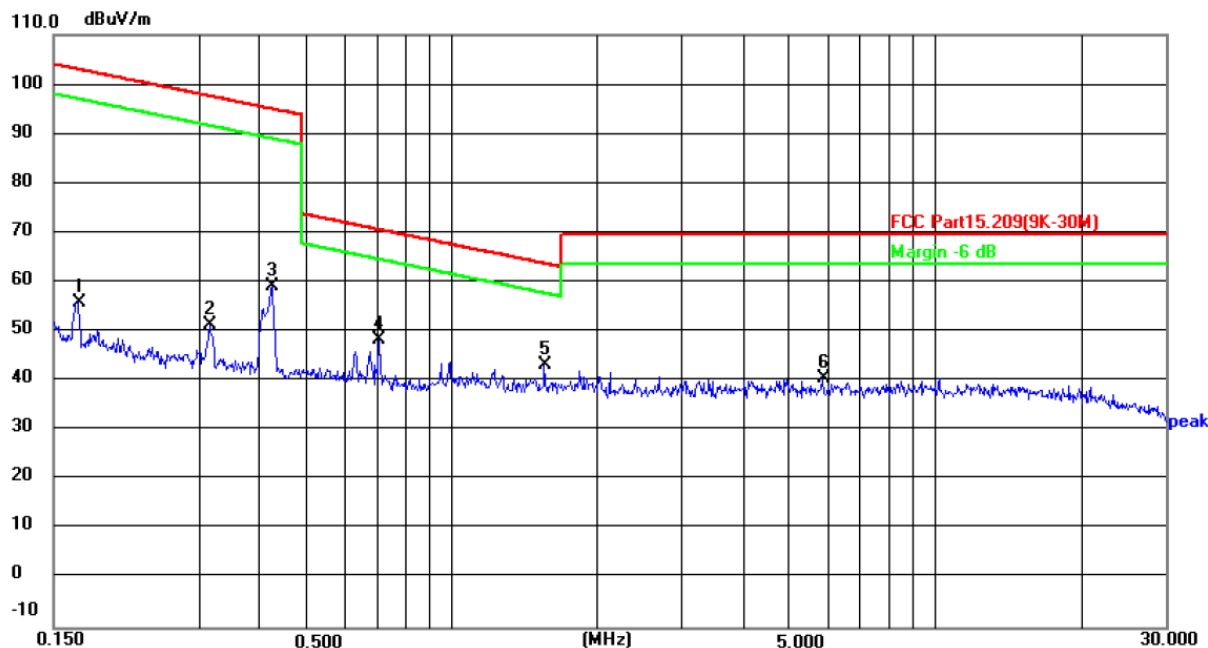
Limit: FCC Part15.209(9K-30M)

Power:DC 9V(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	0.0100	43.87	20.73	64.60	127.60	-63.00	peak	P	
2	0.0113	42.78	20.71	63.49	126.54	-63.05	peak	P	
3	0.0152	42.73	20.67	63.40	123.97	-60.57	peak	P	
4	0.0400	32.20	20.54	52.74	115.56	-62.82	peak	P	
5	0.0444	31.86	20.56	52.42	114.66	-62.24	peak	P	
6 *	0.1413	50.14	20.44	70.58	104.60	-34.02	peak	P	

150KHz-30MHz:

Coaxial:



Site: #3 3m Anechoic Chamber

Polarization: **Coaxial**

Temperature: 25.3(°C)

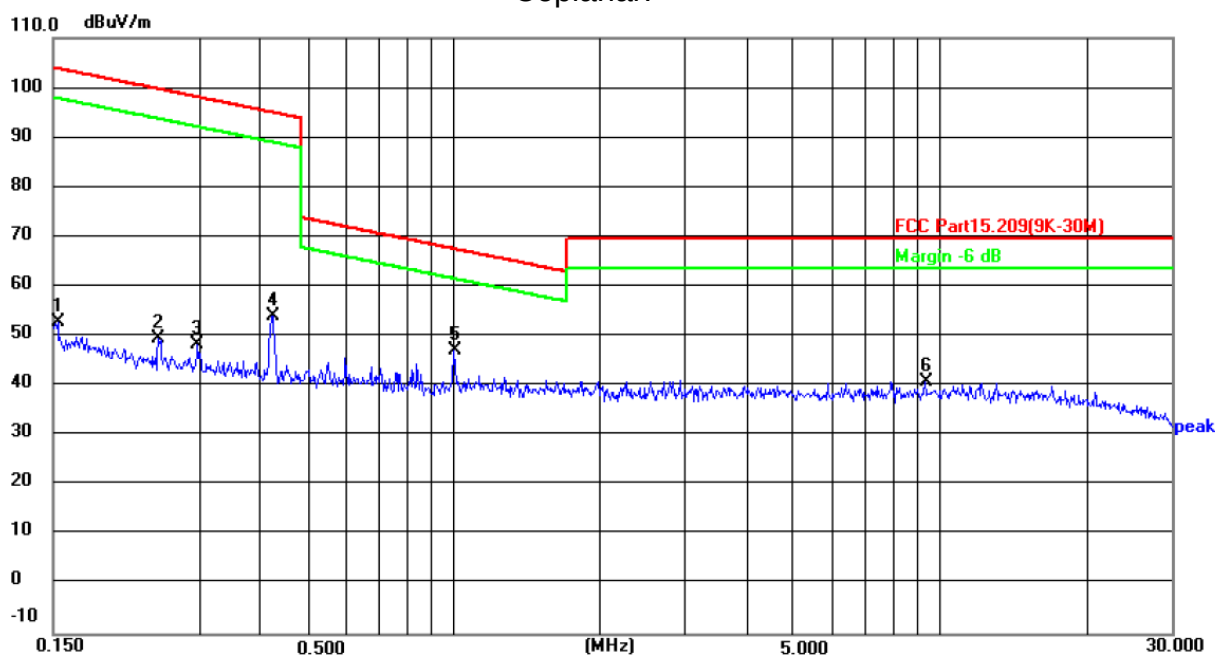
Humidity: 50 %

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

Power:DC 9V(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	0.1686	35.16	20.77	55.93	103.07	-47.14	peak	P	
2	0.3158	30.17	21.12	51.29	97.62	-46.33	peak	P	
3	0.4242	37.75	21.36	59.11	95.05	-35.94	peak	P	
4	0.7077	26.28	22.01	48.29	70.62	-22.33	peak	P	
5 *	1.5551	19.48	23.82	43.30	63.80	-20.50	peak	P	
6	5.8420	8.29	32.24	40.53	69.50	-28.97	peak	P	

Coplanar:



Site: #3 3m Anechoic Chamber

Polarization: **Coplanar**

Temperature: 25.3(°C)

Humidity: 50 %

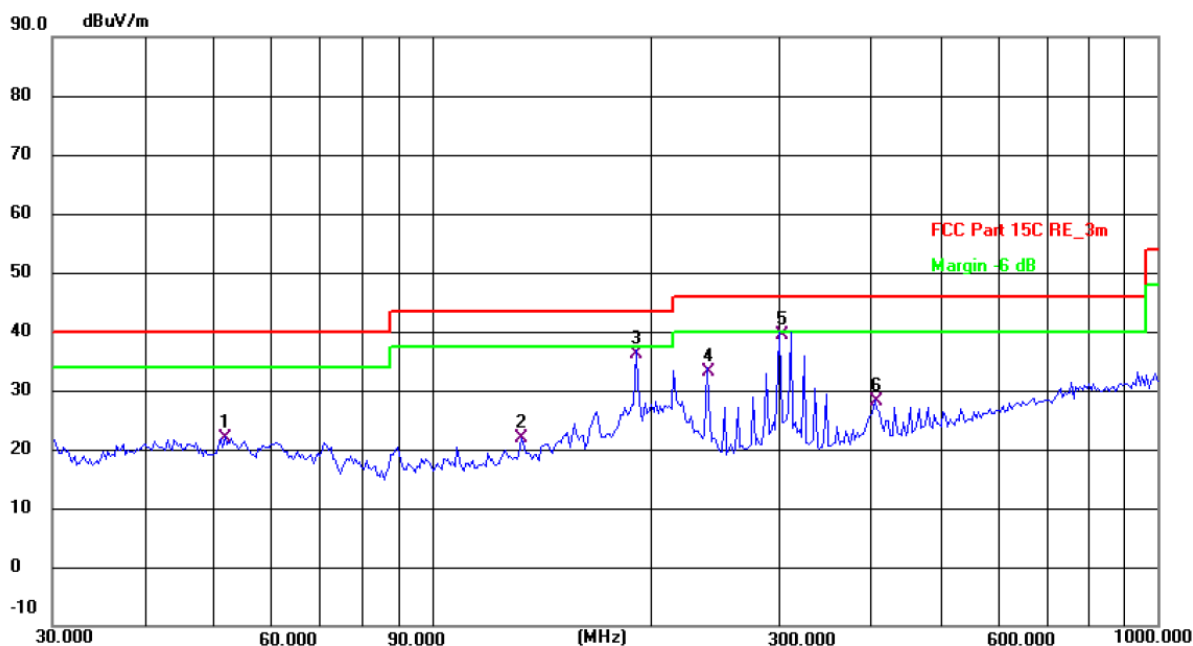
Limit: FCC Part15.209(9K-30M)

Power:DC 9V(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	0.1533	32.20	20.72	52.92	103.89	-50.97	peak	P	
2	0.2476	28.51	20.96	49.47	99.73	-50.26	peak	P	
3	0.2977	27.30	21.07	48.37	98.13	-49.76	peak	P	
4	0.4237	32.59	21.36	53.95	95.06	-41.11	peak	P	
5 *	1.0034	24.50	22.66	47.16	67.59	-20.43	peak	P	
6	9.3419	1.50	39.23	40.73	69.50	-28.77	peak	P	

30MHz-1GHz

Horizontal:



Site: #1 3m Anechoic Chamber

Polarization: **Horizontal**

Temperature: 24.9(C)

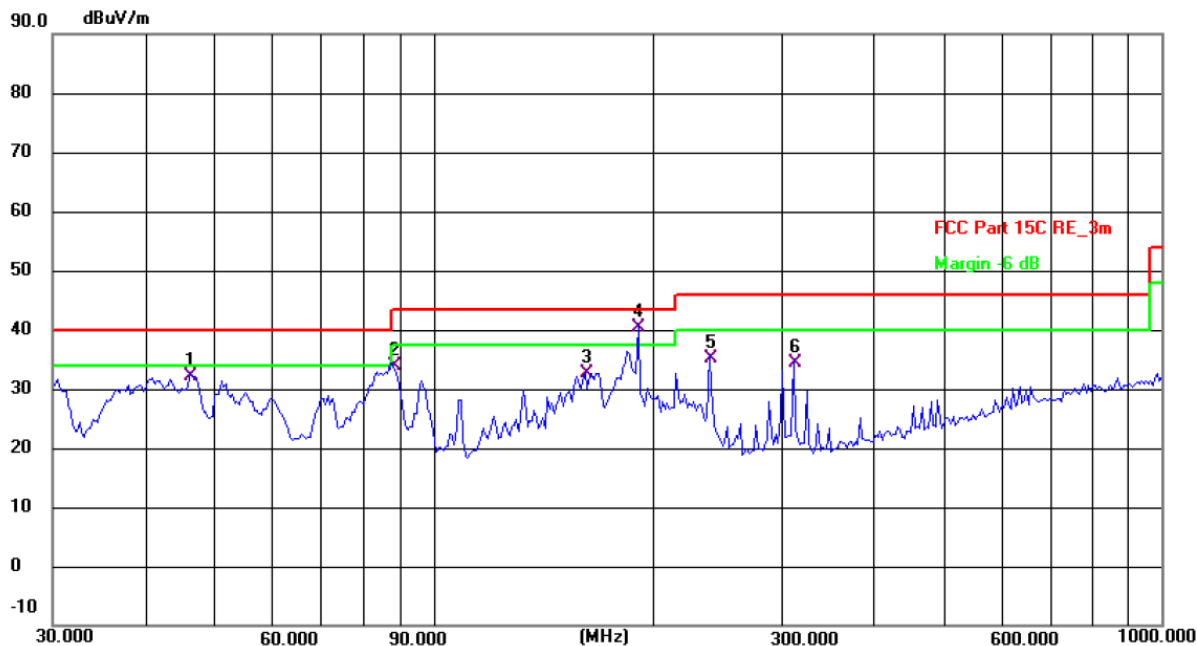
Humidity: 52 %

Limit: FCC Part 15C RE_3m

Power: DC 9V(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	51.8430	8.47	13.39	21.86	40.00	-18.14	QP	P	
2	132.6850	8.52	13.33	21.85	43.50	-21.65	QP	P	
3	191.0738	25.39	10.83	36.22	43.50	-7.28	QP	P	
4	239.1473	20.92	12.20	33.12	46.00	-12.88	QP	P	
5 *	301.4224	25.33	14.04	39.37	46.00	-6.63	QP	P	
6	407.5145	11.50	16.51	28.01	46.00	-17.99	QP	P	

Vertical:



Site: #1 3m Anechoic Chamber

Polarization: **Vertical**

Temperature: 24.9(C)

Humidity: 52 %

Limit: FCC Part 15C RE_3m

Power: DC 9V(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	46.3402	18.19	13.82	32.01	40.00	-7.99	QP	P	
2	87.7246	24.18	9.68	33.86	40.00	-6.14	QP	P	
3	161.4740	18.12	14.49	32.61	43.50	-10.89	QP	P	
4 *	191.0738	29.68	10.82	40.50	43.50	-3.00	QP	P	
5	239.1472	22.81	12.20	35.01	46.00	-10.99	QP	P	
6	312.1794	19.91	14.36	34.27	46.00	-11.73	QP	P	

Note:

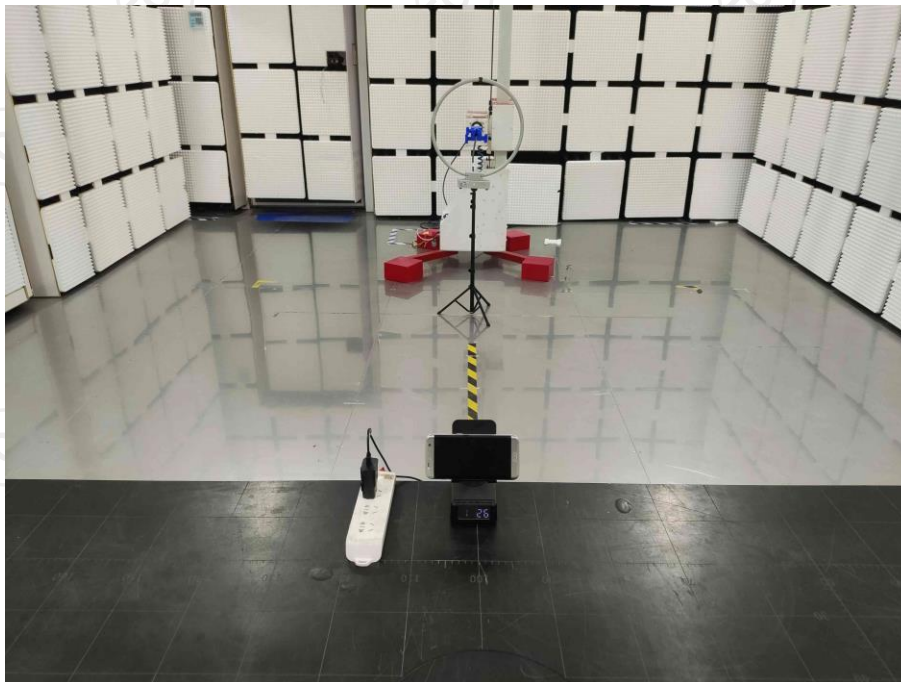
Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
Wireless charging power supply can only be adapter power supply, not battery power supply.

Appendix A: Photographs of Test Setup

Product: Digital Clock & Bluetooth Speaker & Phone Stand & Wireless Charger

Model: BQ12

Radiated Emission



Conducted Emission



Appendix B: Photographs of EUT

Refer to the test report No. TCT230911E011

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