FCC TEST REPORT

FCC ID: 2A7J6-TCB1-CHARGER

Product Name	:	TCB1 Electric Toothbrush charging base
Model Name	:	TCB1 Electric Toothbrush
Additional Model	:	N/A
Brand Name	:	N/A
Report No.	:	PTC22061602501E-FC01

Prepared for

GUANGDONG ACE-TEC CO., LTD

No.420, Jinxing Road, Xixi Industrial Park, Liaobu Town, DongGuan City

Prepared by

Precise Testing & Certification Co., Ltd

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

1 TEST RESULT CERTIFICATION

Applicant's name	:	GUANGDONG ACE-TEC CO., LTD
Address	:	No.420, Jinxing Road, Xixi Industrial Park, Liaobu Town, DongGuan City
Manufacture's name	:	GUANGDONG ACE-TEC CO., LTD
Address	:	No.420, Jinxing Road, Xixi Industrial Park, Liaobu Town, DongGuan City
Product name	:	TCB1 Electric Toothbrush charging base
Model name	:	TCB1 Electric Toothbrush
Standards	:	FCC CFR47 Part 18
Test procedure	:	MP-5
Test Date	:	Jun.17 , 2022 to Jun. 27, 2022
Date of Issue	:	Jun. 27, 2022
Test Result	:	Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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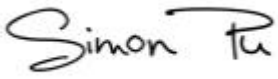
Test Engineer:



Simon Pu / Engineer

Technical Manager:

Ronnie Liu / Manager

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2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	18.307	PASS
Field Strength	18.305	PASS

3 TEST FACILITY

Precise Testing & Certification Co., Ltd

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

A2LA Certificate No.: 4408.01

FCC Registration Number: 790290

FCC Designation Number：CN1219

IC Registration Number: 12191A

CAB identifier: CN0080

4 General Information

4.1 General Description of E.U.T.

Product Name	:	TCB1 Electric Toothbrush charging base
Model Name	:	TCB1 Electric Toothbrush
Operating frequency	:	125kHz
Antenna Type	:	Coil Antenna
Power supply	:	Iutput:5V/1A DC
Max Wireless Charging output Power	:	5W
Antenna Gain	:	0 dBi
Hardware Version	:	N/A
Software Version	:	N/A

4.2 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode or test configuration mode mentioned above was evaluated respectively.
This EUT is tested with a adapter, the adapter are checked and only worst case is record with the adaptor GaN Mini I.

Pretest Mode	Description
Mode 1	Wireless Charging

5 Equipment During Test

5.1 Equipments List

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.
Radiated Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 21, 2021	Aug. 22, 2022	1 year
Loop Antenna	Schwarzbeck	FMZB 1519	012	Aug. 21, 2021	Aug. 22, 2022	1 year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	Aug. 21, 2021	Aug. 22, 2022	1 year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	Aug. 21, 2021	Aug. 22, 2022	1 year
Cable	Schwarzbeck	PLF-100	549489	Aug. 21, 2021	Aug. 22, 2022	1 year
Spectrum Analyzer	Agilent	E4407B	MY45109572	Aug. 21, 2021	Aug. 22, 2022	1 year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	Aug. 21, 2021	Aug. 22, 2022	1 year
Power Amplifier	LUNAR EM	LNA1G18-40	J1010000008 1	Aug. 21, 2021	Aug. 22, 2022	1 year
Horn Antenna	SCHWARZBECK	BBHA 9170	9170-181	Aug. 21, 2021	Aug. 22, 2022	1 year
Amplifier	SCHWARZBECK	BBV 9721	9721-205	Aug. 21, 2021	Aug. 22, 2022	1 year
Cable	H+S	CBL-26	N/A	Aug. 21, 2021	Aug. 22, 2022	1 year
RF Cable	R&S	R204	R21X	Aug. 21, 2021	Aug. 22, 2022	1 year

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period

EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 21, 2021	Aug. 22, 2022	1 year
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	Aug. 21, 2021	Aug. 22, 2022	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	Aug. 21, 2021	Aug. 22, 2022	1 year

5.2 Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±2.54dB
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	

5.3 Description of Support Units

Equipment	Model No.	Series No.
Adapter	GaN Mini I	N/A
Load	TCB1	/

6 Conducted Emission

Test Requirement:	:	FCC CFR 47 Part 18 Section 18.307
Test Method:	:	MP-5: 1986
Test Result:	:	PASS
Frequency Range:	:	150kHz to 30MHz
Class/Severity:	:	Class B
Detector:	:	QP,AV

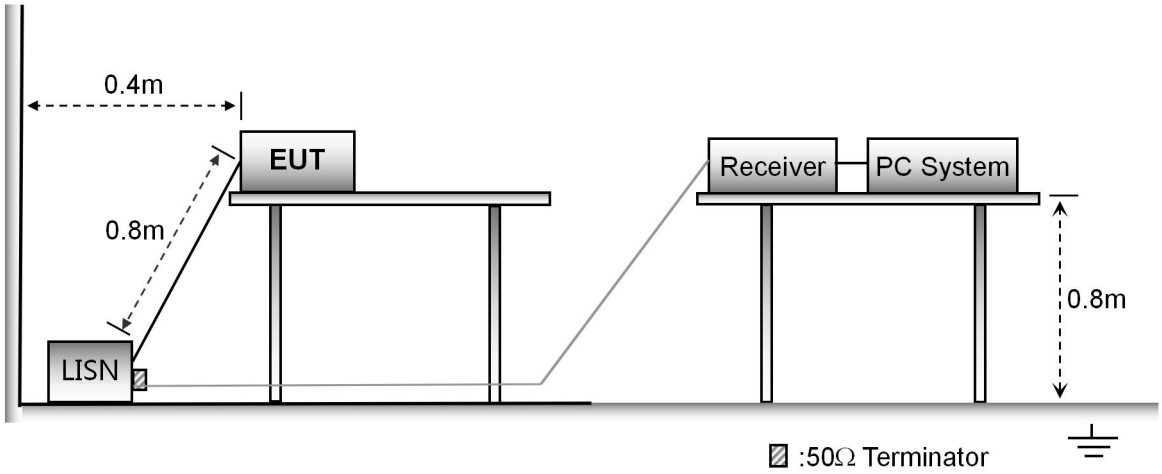
6.1 E.U.T. Operation

Operating Environment **:**

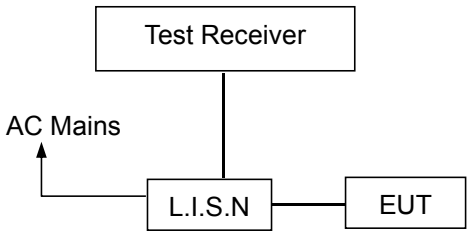
Temperature:	:	25.5 °C
Humidity:	:	51 % RH
Atmospheric Pressure:	:	101.2kPa
Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013



6.3 Test SET-UP (Block Diagram of Configuration)



6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

6.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies

2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

6.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

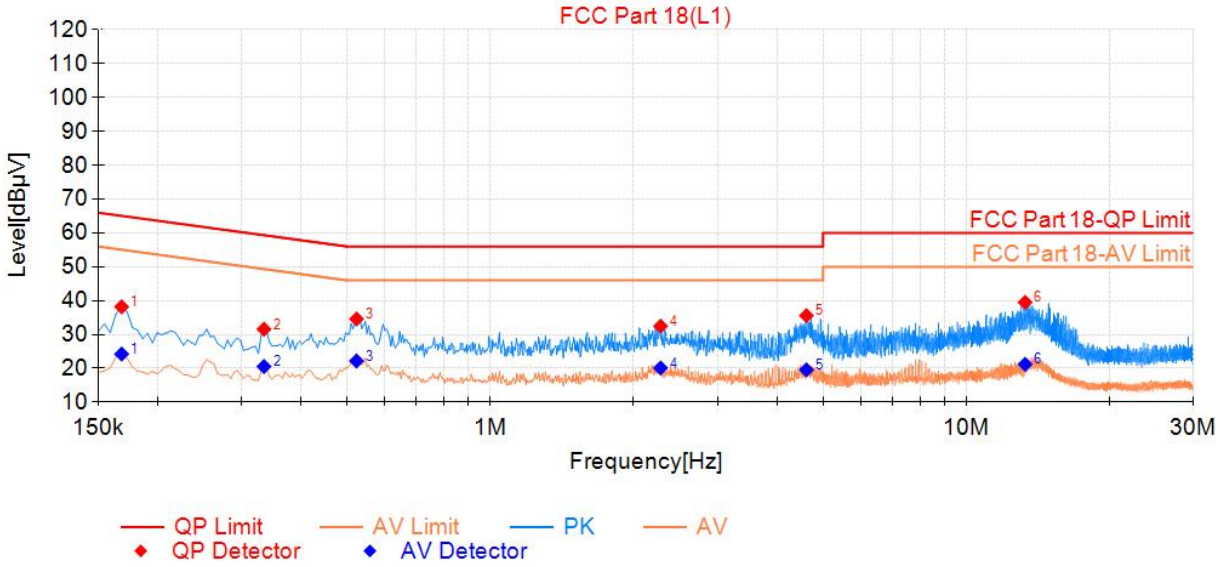
6.7 Conducted Emission Test Result

Pass.

EUT is Keeping TX+Charging mode.All the modes were tested with AC120V 60Hz, the data of the worst mode (AC 120V/60Hz) are recorded in the following pages and the others modulation methods do not exceed the limits.

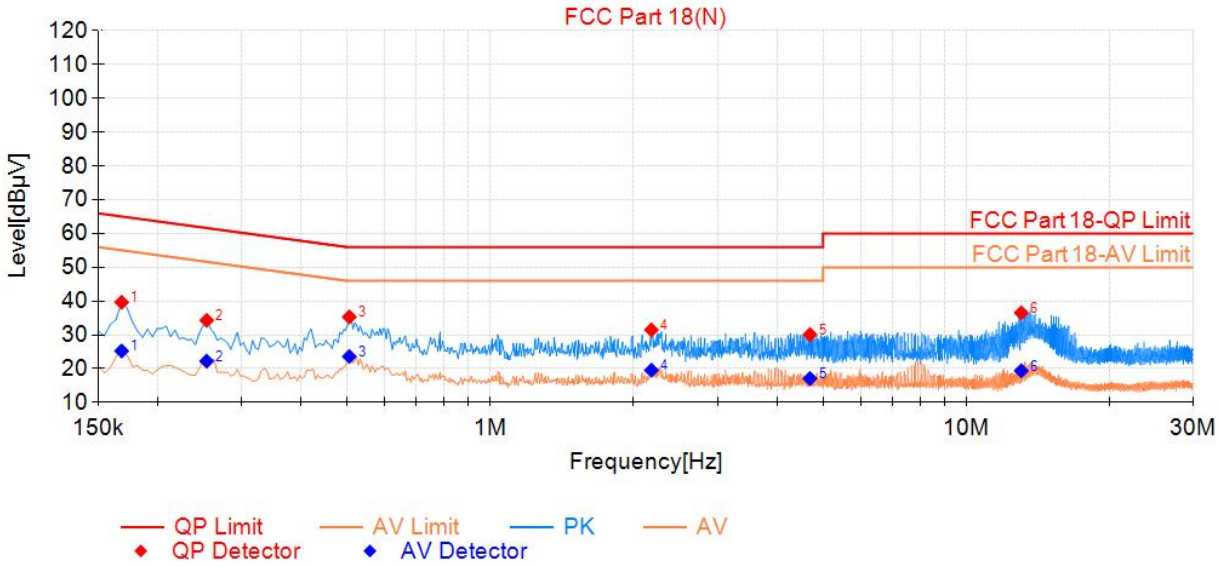
Test mode(mode1_wireless charging)

Line -120V/60Hz:



Final Data List								
NO.	Freq. [MHz]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.168	38.18	65.06	26.88	24.23	55.06	30.83	PASS
2	0.335	31.57	59.34	27.77	20.54	49.34	28.80	PASS
3	0.524	34.58	56.00	21.42	22.18	46.00	23.82	PASS
4	2.279	32.48	56.00	23.52	20.11	46.00	25.89	PASS
5	4.614	35.58	56.00	20.42	19.57	46.00	26.43	PASS
6	13.290	39.49	60.00	20.51	21.20	50.00	28.80	PASS

Neutral -120V/60Hz:



Final Data List								
NO.	Freq. [MHz]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.168	39.66	65.06	25.40	25.23	55.06	29.83	PASS
2	0.254	34.31	61.64	27.33	22.24	51.64	29.40	PASS
3	0.506	35.34	56.00	20.66	23.61	46.00	22.39	PASS
4	2.180	31.48	56.00	24.52	19.55	46.00	26.45	PASS
5	4.695	30.11	56.00	25.89	17.07	46.00	28.93	PASS
6	13.047	36.52	60.00	23.48	19.39	50.00	30.61	PASS

7 Field strength

Test Requirement	:	FCC CFR47 Part 18 Section 18.305
Test Method	:	FCC MP- 5
Test Result	:	PASS
Measurement Distance	:	3m
Limit	:	See the follow table

7.1 EUT Operation

Operating Environment :

Temperature	:	23.5 °C
Humidity	:	51.1 % RH
Atmospheric Pressure	:	101.2kPa

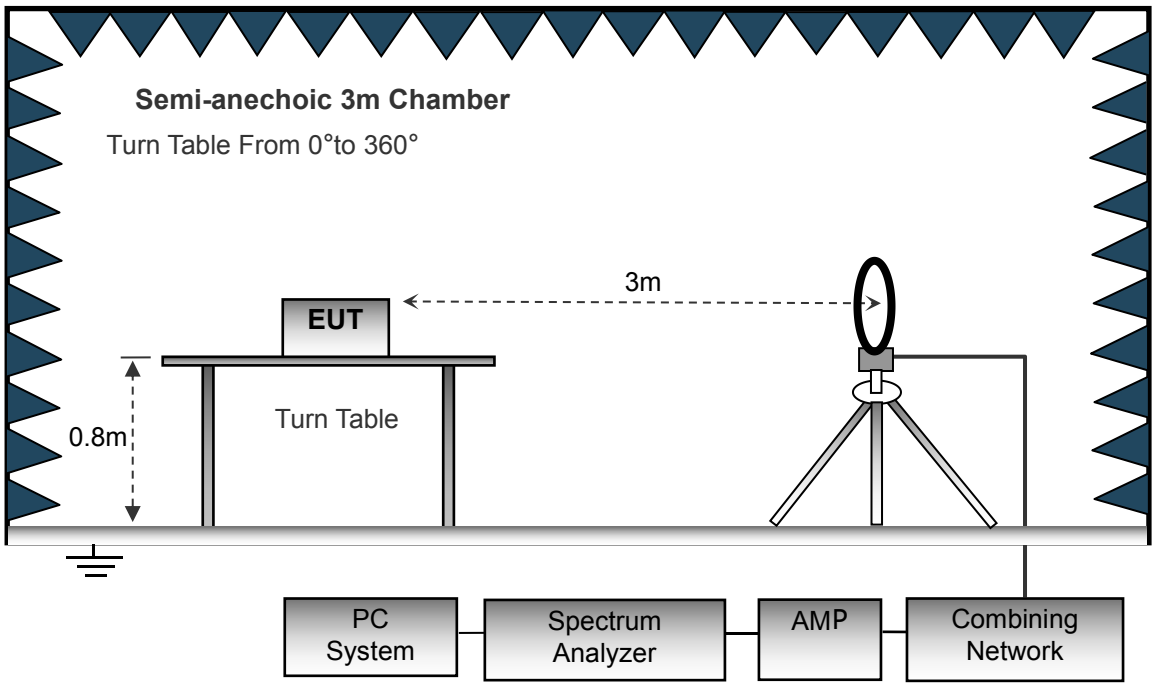
Limit:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 × SQRT(power/500)
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 (2)
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz) × SQRT(power/500)
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300 1,500 300

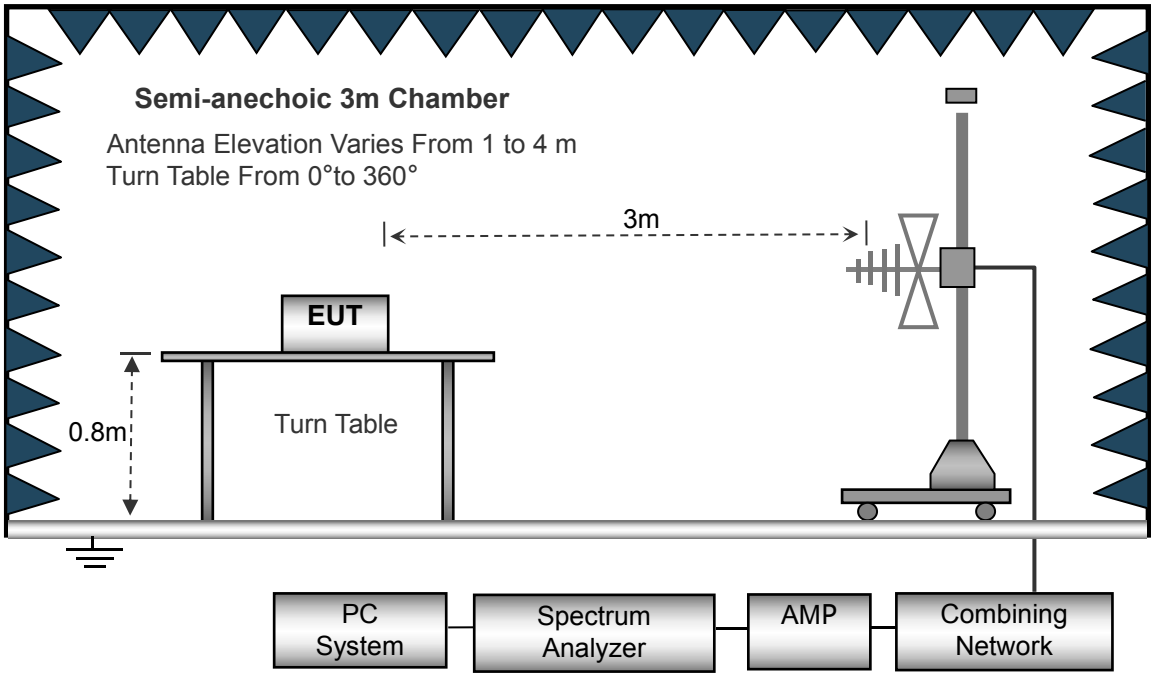
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



7.3 Spectrum Analyzer Setup

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP

7.4 Test Procedure

1. The testing follows the guidelines in MP-5.

2. Below 30MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also is positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 2 m above the ground .

7.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Test Mode(Mode 1_Wireless Charging):

Frequency(125KHz):

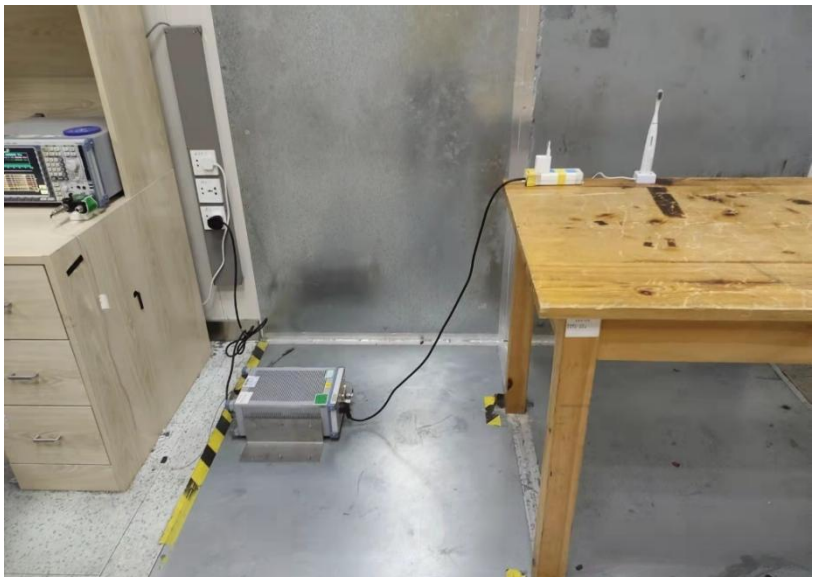
Frequency (MHz)	Read Level (dBuV)	Polar	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector
0.110	14.60	Loop	19.28	2.53	0	36.41	103.52	-67.11	QP
0.125	46.17	Loop	19.3	2.53	0	68.00	103.52	-35.52	QP
0.2459	13.88	Loop	19.3	2.54	0	35.72	103.52	-67.80	QP
0.506	5.99	Loop	19.53	2.59	0	28.11	103.52	-75.41	QP
0.9495	1.95	Loop	19.53	2.59	0	24.07	103.52	-79.45	QP
3.5659	1.65	Loop	19.53	2.59	0	23.77	103.52	-79.75	QP

Note: 1.The radiation limits (3m distance) = 20*log(15)+40*log (300/3)= 103.52.

Remark: Final Level=Receiver level+Factor.

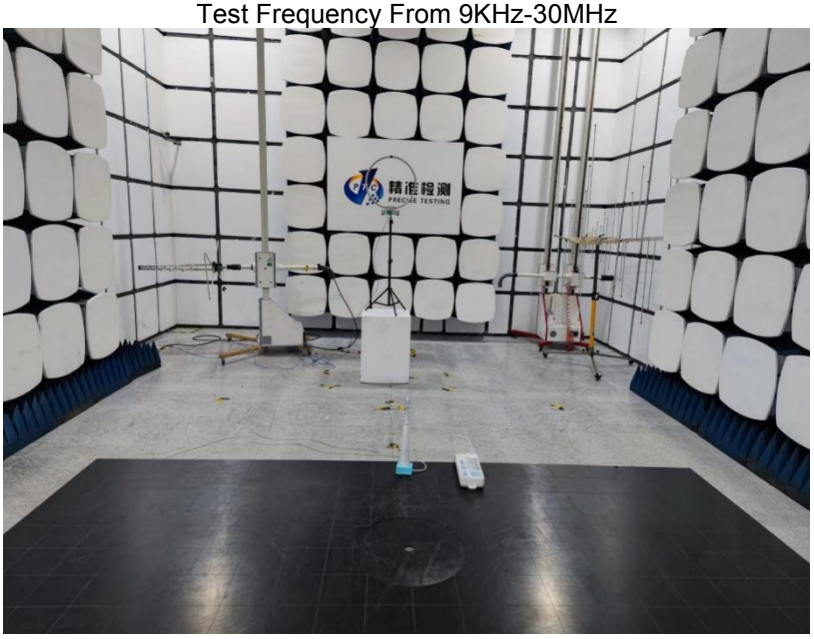
8 TEST PHOTOS

Conducted Emissions

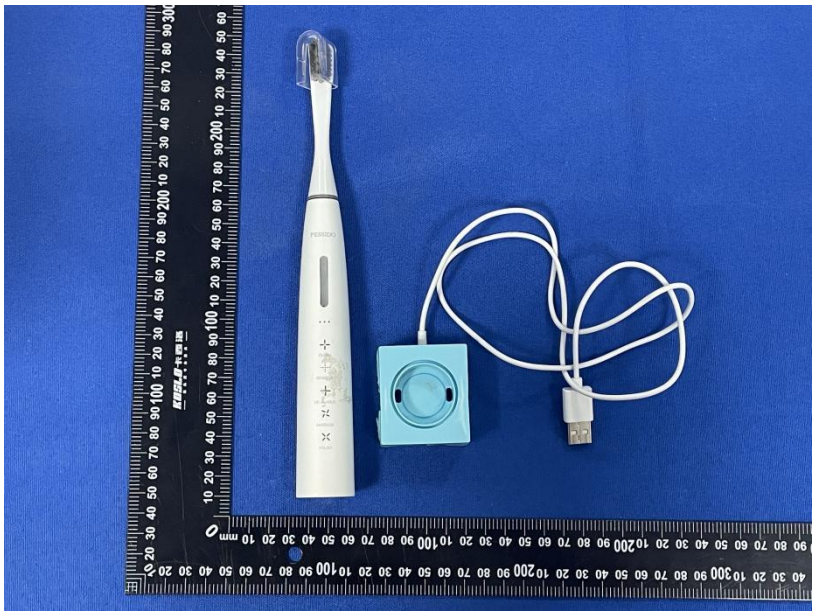


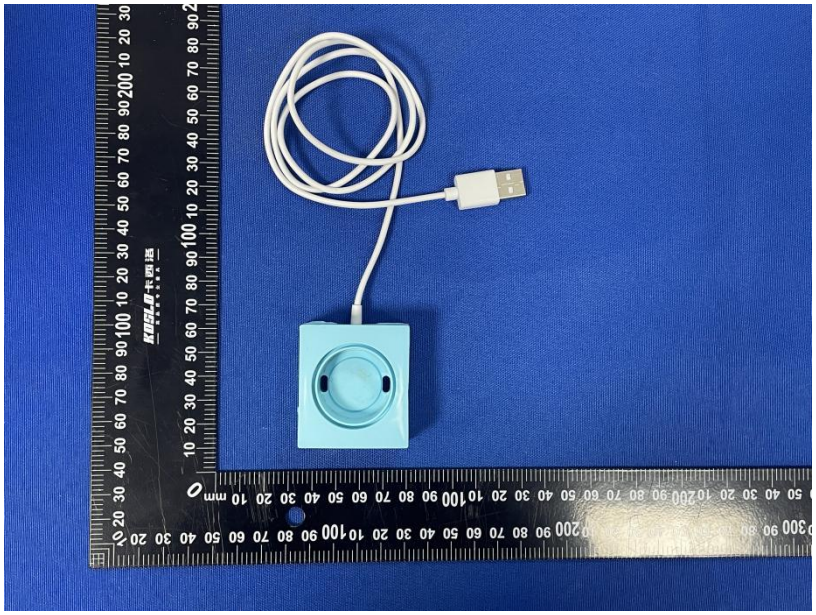
Radiated Spurious Emissions

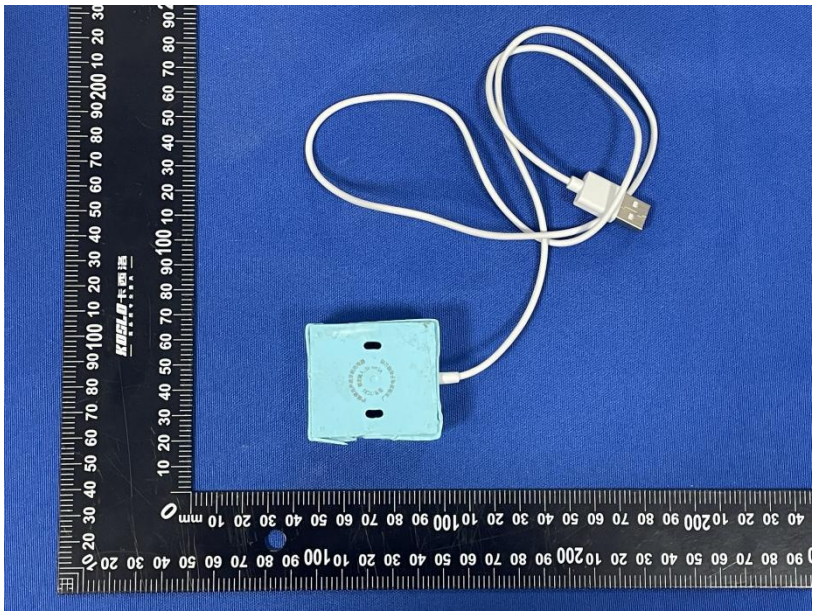
Test Frequency From 9KHz-30MHz

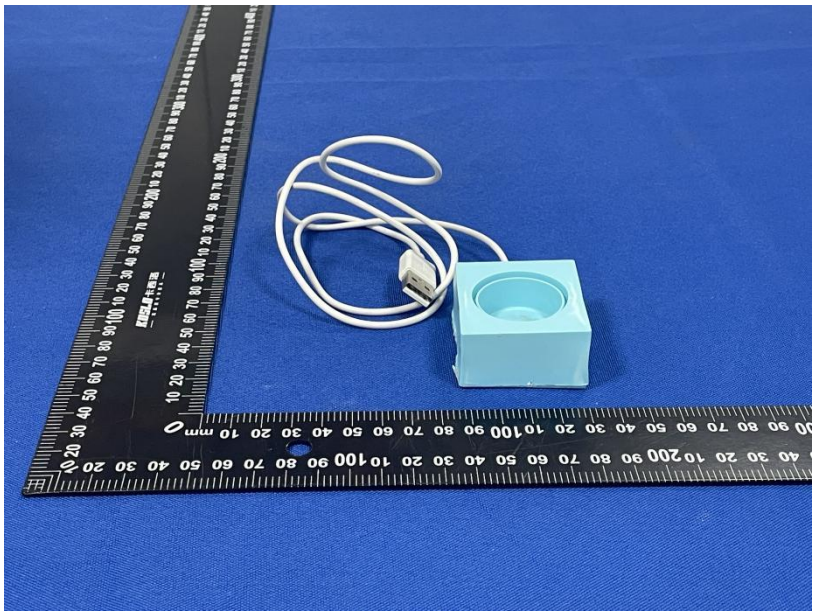


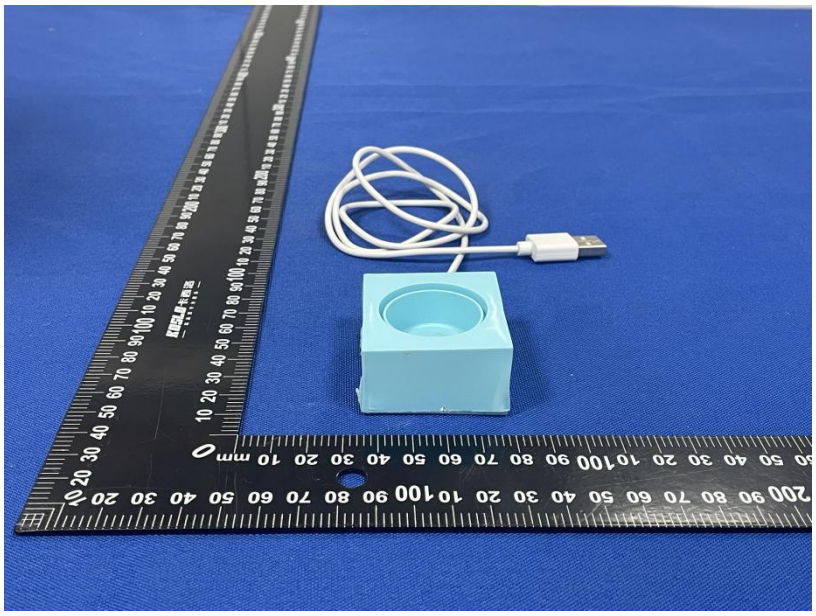
9 EUT PHOTOS

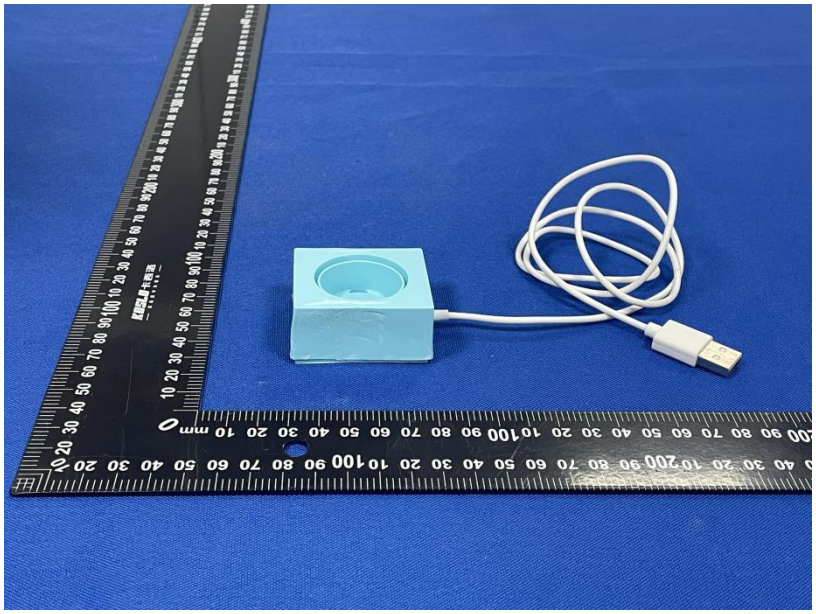


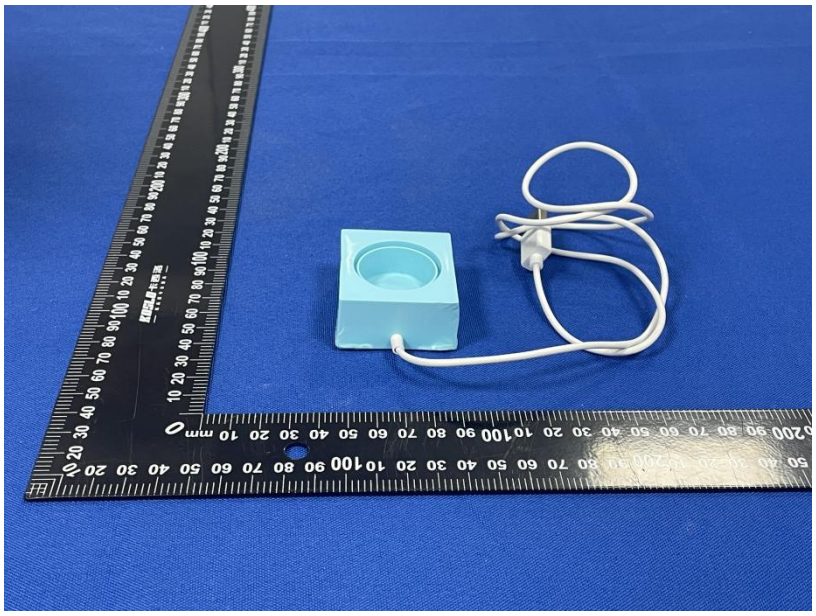


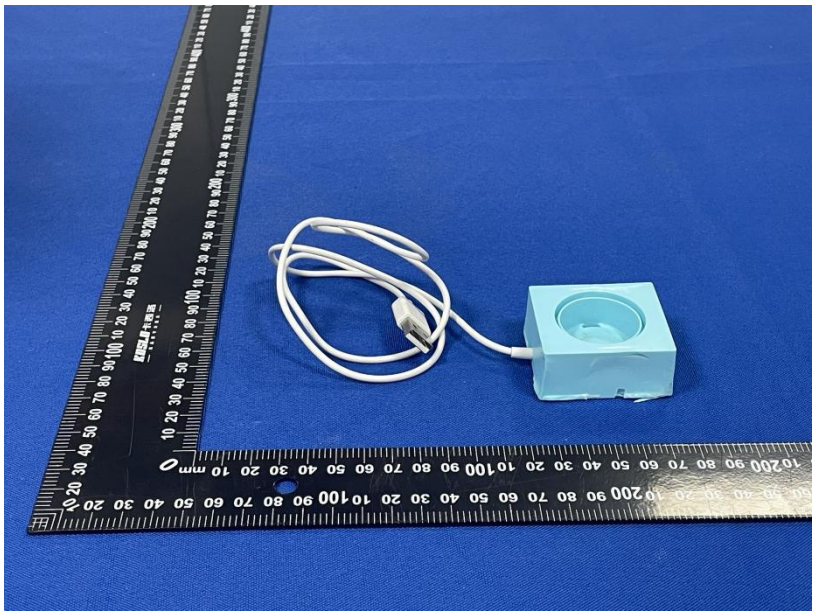


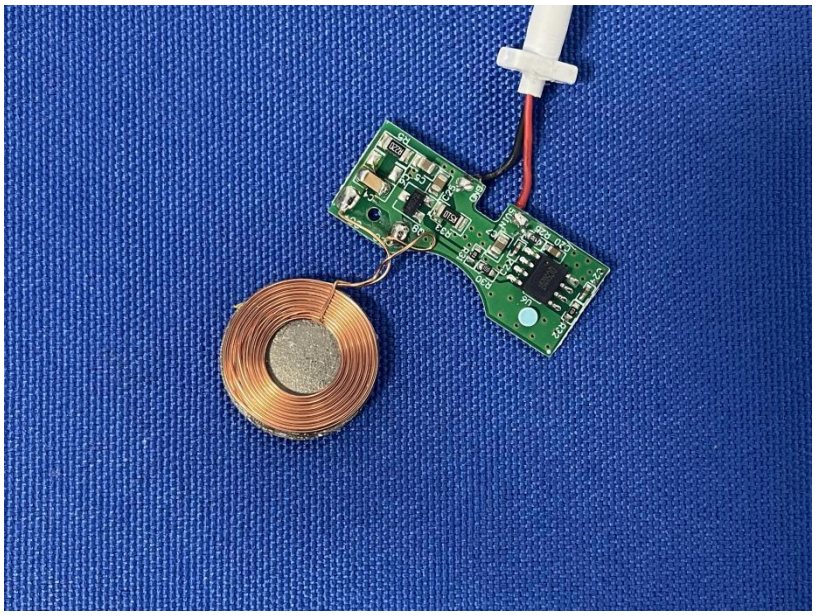


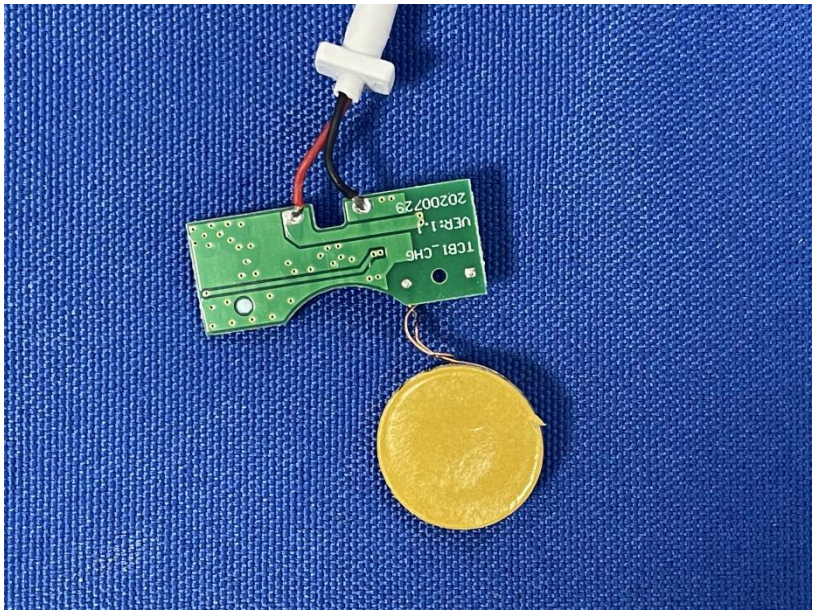












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