Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

TEST REPOR

Report Reference No.....:	**CTA24110501602**
FCC ID.....	**2BCVOTP-C24QI2**
Compiled by (position+printed name+signature)..:	File administrators Jinghua Xiao
Supervised by (position+printed name+signature)..:	Test Engineer Lushan Kong
Approved by (position+printed name+signature)..:	Manager Eric Wang
Date of issue.....:	Oct.18, 2024
Representative Laboratory Name.:	**Shenzhen CTA Testing Technology Co., Ltd.**
Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name.....:	**Guangdong Pisen Electronics Co., Ltd.**
Address .....:	Building 5, 1st Floor, No. 9, Qinfu 1st Street, Liuyue Nan Community, Henggang Town, Longgang District, Shenzhen City, Guangdong Province, China
Test specification .....**:**	
Standard .....:	FCC KDB 680106 D01

Test item description .....:	**Pisen - 3-in-1 Wireless Charging Stand Qi2 Version (Night Light Toothbrush)**
Trade Mark .....:	PISEN
Manufacturer .....:	Guangdong Pisen Electronics Co., Ltd.
Model/Type reference.....:	TP-C24(qi2)
List Model .....:	N/A
Modulation Type .....:	ASK
Operation Frequency.....:	110-205KHz, 205-360KHz
Ratings .....:	Input: DC 9.0V/3.0A, DC 12.0V/3.0A Wireless Output 1: 15W(Max) Wireless Output 2: 5W (Max) Wireless Output 3: 2.5W(Max) USB-A Output : 10W(5V2A)
Result.....:	**PASS**

T E S T R E P O R T

Test Report No. :	**CTA24110501602**	Oct.18, 2024 Date of issue

Equipment under Test	:	Pisen - 3-in-1 Wireless Charging Stand Qi2 Version (Night Light Toothbrush)
Model /Type	:	TP-C24(qi2)
Listed Models	:	N/A
Applicant	:	**Guangdong Pisen Electronics Co., Ltd.**
Address	:	Building 5, 1st Floor, No. 9, Qinfu 1st Street, Liuyue Nan Community, Henggang Town, Longgang District, Shenzhen City, Guangdong Province, China
Manufacturer		**Guangdong Pisen Electronics Co., Ltd.**
Address	:	Building 5, 1st Floor, No. 9, Qinfu 1st Street, Liuyue Nan Community, Henggang Town, Longgang District, Shenzhen City, Guangdong Province, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. SUMMARY

1.1. General Remarks

Date of receipt of test sample	:	Sep.27, 2024
Testing commenced on	:	Sep.27, 2024
Testing concluded on	:	Oct.17, 2024

1.2. Product Description

Product Name:	Pisen - 3-in-1 Wireless Charging Stand Qi2 Version (Night Light Toothbrush)
Trade Mark:	PISEN
Model/Type reference:	TP-C24(qi2)
List Model:	N/A
Model Declaration	N/A
Power supply:	Input: DC 9.0V/3.0A, DC 12.0V/3.0A Wireless Output 1: 15W(Max) Wireless Output 2: 5W (Max) Wireless Output 3: 2.5W(Max) USB-A Output : 10W(5V2A)
Hardware Version	N/A
Software Version	N/A
WPT	
Frequency Range	110-205KHz, 205-360KHz
Modulation Type	ASK (Continuous Wave)
Load Sensing	Contact transmission
Antenna Type	Coil Antenna 1: 110-205KHz, 205-360KHz Coil Antenna 2: 110-205KHz Coil Antenna 3: 327.449KHz
Antenna gain	0dBi

1.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		●	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

DC 12.0V

Description of the test mode

Mode	AC mode
Mode 1	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 5W(Wireless Output 2) +Wireless Charging 2.5W(Wireless Output 3)
Mode 2	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 5W(Wireless Output 2)
Mode 3	Wireless Charging 15W(Wireless Output 1) +Wireless Charging 2.5W(Wireless Output 3)
Mode 4	Wireless Charging 5W(Wireless Output 2) +Wireless Charging 2.5W(Wireless Output 3)
Mode 5	Wireless Charging 5W(Wireless Output 2)
Mode 6	Wireless Charging 2.5W(Wireless Output 3)
Mode 7	Wireless Charging 5W(Wireless Output 1)
Mode 8	Wireless Charging 7.5W(Wireless Output 1)
Mode 9	Wireless Charging 10W(Wireless Output 1)
Mode 10	Wireless Charging 15W(Wireless Output 1)

Note :1. EUT has one Type-C port and one USB port, The Type-C supports wireless charging in AC mode.
2. All the modes have been tested and recorded worst mode in the report(Mode 1).
3. All modes were tested for load states less than 1%, less than 50%, and less than 99%.

1.4. Modifications

No modifications were implemented to meet testing criteria.

1.5. Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

1.6. Test Facility

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

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

1.7. Statement of the measurement uncertainty

Test Item	Frequency Range	Uncertainty
H-Field Strength Uncertainty	1Hz~400KHz	3.12dB, k=2
F-Field Strength Uncertainty	1Hz~400KHz	2.68dB, k=2

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.8. TEST STANDARDS

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
FCC KDB publication 680106 D01 RF Exposure Wireless Charging Apps v04: RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications
FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.
FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices
FCC CFR 47 part 18.107:Indusial, Scientific, and Medical Equipment

1.9. Equipments Used during the Test

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Magnetic Field Meter	NARDA	ELT-400	1 – 400kHz	Apr. 02, 2024	Apr. 01, 2025
E-Field Probe	NARDA	ELT-400	1 – 400kHz	Apr. 10, 2024	Apr. 09, 2025

NOTE: 1. The calibration interval of the above test instruments is 12 months .

2. TEST CONDITIONS AND RESULTS

2.1. Evaluation Method

Per KDB 680106 D01 Section 3. RF Exposure Requirements;
1. Consumer wireless power transfer devices approved under Part 18 in some cases have to demonstrate compliance with RF exposure requirements. The potential for exposure must be assessed according to the operating configurations of the wireless system and the exposure conditions of users and bystanders. RF exposure must be evaluated with the client device(s) being charged by the primary at maximum output power. The RF exposure requirements must be determined in conjunction with the device operating characteristics, according to the mobile and portable exposure requirements in Section 2.1091 and Section 2.1093 of the rules. SAR and MPE limits do not cover the frequency range for wireless power transfer applications which operate below 100 kHz and 300 kHz respectively; therefore, RF exposure compliance needs to be determined with respect to 1.1307 (c) and (d) of the FCC rules.

2. Based on the design and implementation of the power transfer application, it must be clearly identified if mobile or portable RF exposure conditions apply. Devices that are installed to provide separation of at least 20 cm from users and bystanders may qualify for mobile exposure conditions. For some conditions where users and bystanders may be exposed at closer than 20 cm, section 2.1091(d) (4) of the rules may apply.

3. For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

4. Portable exposure conditions from 100 kHz to 6 GHz are determined with respect to SAR requirements. Existing SAR systems and test procedures are generally intended for measurements above 100 MHz. While numerical modeling can be an alternative, the constraints of substantial computational resources at low frequencies could introduce further limitations. Under these circumstances, including operations below 100 kHz, the Commission may consider a combination of analytical analysis, field strength, radiated and conducted power measurements, in conjunction with some limited numerical modeling to assess compliance.

5. Depending on the operating frequency, existing SAR and MPE measurement procedures may be adapted to evaluate wireless power transfer devices for compliance with respect to mobile or portable exposure conditions. If the grantee or its test lab have any questions regarding RF exposure evaluation they should contact the FCC Laboratory with sufficient system operating configuration details to determine if RF exposure evaluation is necessary and, if required, how to apply specific test procedures. Below 100 MHz, when SAR testing is required and the device is operating at close proximity to persons, information on device design, implementation, operating configurations, exposure conditions of users and bystanders are needed to determine the evaluation and testing requirements. In addition, the influence of nearby objects may also need consideration according to the wireless power transfer system implementation; for example, the effects of placing the device, its coils or radiating elements on or near metallic surfaces

6. According to April 2018 TCB Workshop, No need to report E-field measurements. Only H-field required.

2.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f2	6
30-300	61.4	0.163	1.0	6
300-1,500	/	/	f/300	6
1,500-100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

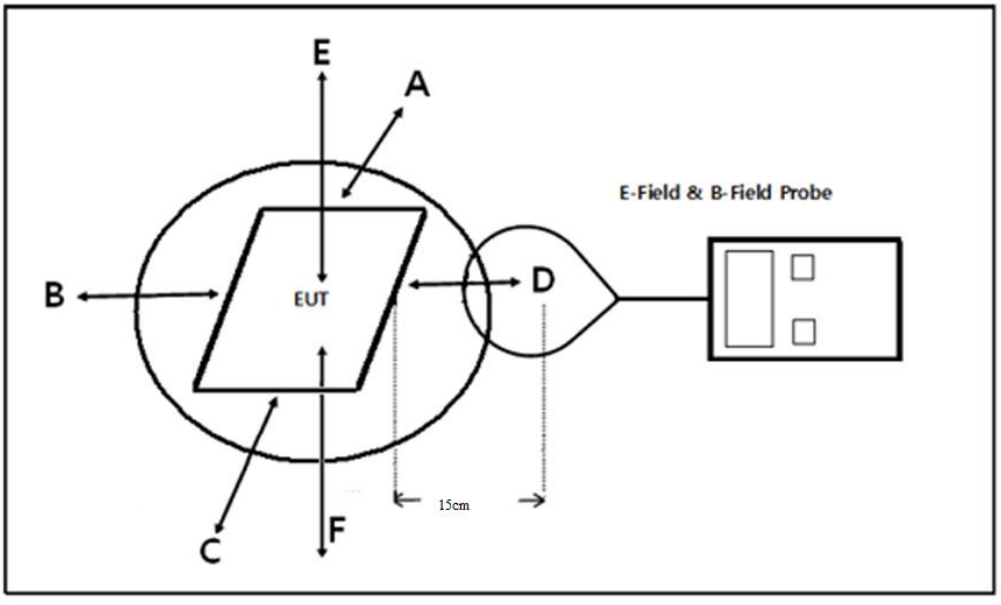
Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f2	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density
According to FCC KDB 680106 D01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 – Section1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-Field	*/*	B-Field
Frequency	V/m	A/m	uT
0.3 MHz – 3.0 MHz	614	1.613	2.0
3.0 MHz – 30 MHz	824/f (=27.530MHz)	2.19/f (=0.07330MHz)	--

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.

2.3. Test Setup Diagram



For mobile RF exposure condition, due to installation limitations no tests from the underside of the charging device are required.

2.4. Measurement Procedure

a) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
b) The measurement probe was placed at test distance (15cm and 20cm) which is between the edges of the charger and the geometric center of probe.
c) The turn table was rotated 360d degree to search of highest strength.
d) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
e) The EUT were measured according to the dictates of KDB 680106D01v04.

2.5. Equipment Approval Considerations

The EUT does comply with item 5.2 of KDB 680106 D01v04 as follows table;

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range 110.0 KHz - 360 KHz
Output power from each primary coil is less than or equal to 15 watts.	Yes	The maximum output power of the each primary coil is 15W.
The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	Yes	The transfer system includes three primary coils and clients that are able to detect and allow coupling three of coils.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes	Mobile exposure conditions only
The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	Yes	The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested	Yes	There were three radiation structures, and each radiation structure was tested

In all other cases, unless excluded above, an RF exposure evaluation report must be reviewed and accepted through a KDB or PBA inquiry to enable authorization of the equipment. When evaluation is required to show compliance; for example, using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation.

2.6. Symbols

For the purpose of the present document, the following symbols apply;
B: Magnetic flux
E: Filed strength
H: Magnetic field strength
EAVG = Spatial average of Filed strength
HAVG = Spatial average of Magnetic field strength
B1: Magnetic flux of wireless charge port 1 (Wireless Output 1)
E1: Filed Strength of wireless charge port 1 (Wireless Output 1)
H1: Magnetic field strength of wireless charge port 1 (Wireless Output 1)
B2: Magnetic flux of wireless charge port 1 (Wireless Output 2)
E2: Filed Strength of wireless charge port 1 (Wireless Output 2)
H2: Magnetic field strength of wireless charge port 1 (Wireless Output 2)
B3: Magnetic flux of wireless charge port 1 (Wireless Output 3)
E3: Filed Strength of wireless charge port 1 (Wireless Output 3)
H3: Magnetic field strength of wireless charge port 1 (Wireless Output 3)

2.7. Test Results

The three charge ports are same for rated power, tested at charge together and measure each five points;
Test mode: Normal Operation (Charging mode)

B-filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Measured B-filed Strength Values (uT)					FCC E-Field Strength 50% Limits (uT)	FCC E-Field Strength Limits (uT)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
B1+B2+B3	1%	0.445	0.434	0.443	0.442	0.437	-	-
	50%	0.444	0.441	0.436	0.435	0.442	-	-
	99%	0.448	0.437	0.441	0.436	0.438	-	-
B1+B2+B3	1%	0.441	0.450	0.442	0.437	0.444	-	-
	50%	0.442	0.441	0.443	0.441	0.451	-	-
	99%	0.434	0.435	0.442	0.448	0.446	-	-

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Measured E-Field Strength Values (V/m)					FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
E1+E2+E3	1%	133.753	130.479	133.155	132.858	131.416	307.0	614.0
	50%	133.380	132.705	131.067	130.773	132.967	307.0	614.0
	99%	134.731	131.325	132.505	131.151	131.651	307.0	614.0
E1+E2+E3	1%	132.593	135.351	132.761	131.273	133.534	307.0	614.0
	50%	132.860	132.705	133.203	132.696	135.723	307.0	614.0
	99%	130.545	130.738	132.818	134.811	134.187	307.0	614.0

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Measured H-Field Strength Values (A/m)					FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
H1+H2+H3	1%	0.356	0.347	0.354	0.353	0.350	0.815	1.63
	50%	0.355	0.353	0.349	0.348	0.354	0.815	1.63
	99%	0.358	0.349	0.353	0.349	0.350	0.815	1.63
H1+H2+H3	1%	0.353	0.360	0.353	0.349	0.355	0.815	1.63
	50%	0.354	0.353	0.354	0.353	0.361	0.815	1.63
	99%	0.347	0.348	0.353	0.359	0.357	0.815	1.63

B-filed Strength at 20cm from the top surface of the EUT

Charge Port	Charging Battery Level	Measured B-filed Strength Values (uT)	FCC E-Field Strength 50% Limits (uT)	FCC E-Field Strength Limits (uT)
		Test Position E		
B1+B2+B3	1%	0.410	-	-
	50%	0.407	-	-
	99%	0.403	-	-
B1+B2+B3	1%	0.418	-	-
	50%	0.411	-	-
	99%	0.410	-	-

E-Filed Strength at 20cm from the top surface of the EUT

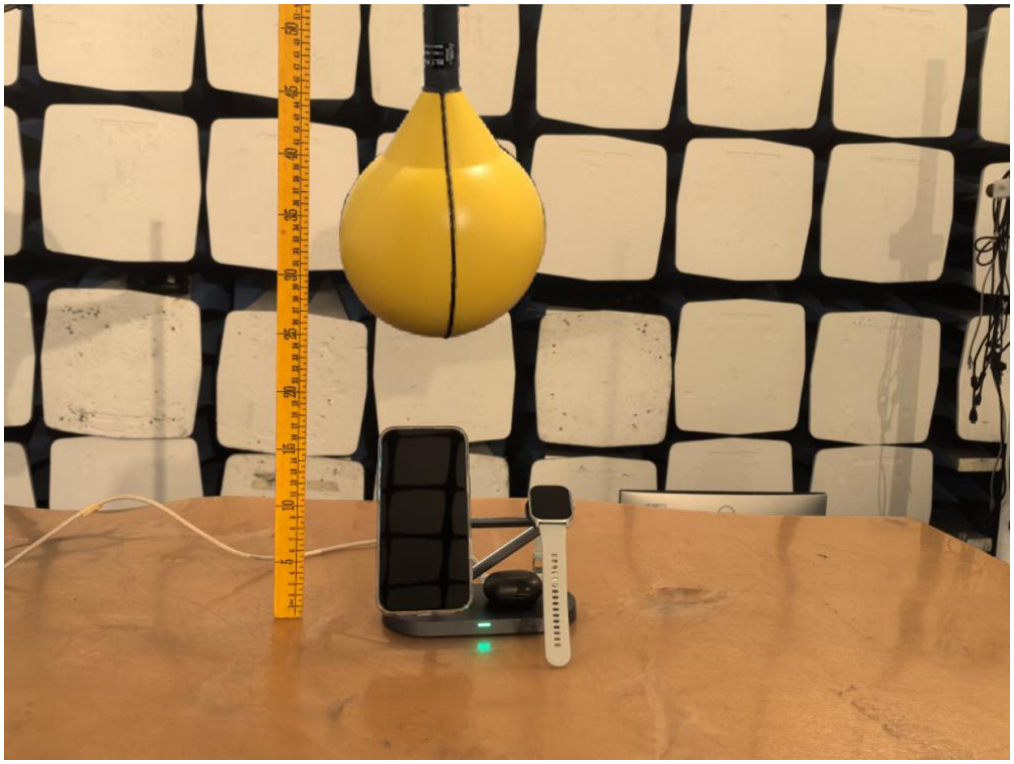
Charge Port	Charging Battery Level	Measured E-Field Strength Values (V/m)	FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
		Test Position E		
E1+E2+E3	1%	123.409	307.0	614.0
	50%	122.400	307.0	614.0
	99%	121.262	307.0	614.0
E1+E2+E3	1%	125.555	307.0	614.0
	50%	123.684	307.0	614.0
	99%	123.286	307.0	614.0

H-Field Strength at 20cm from the top surface of the EUT

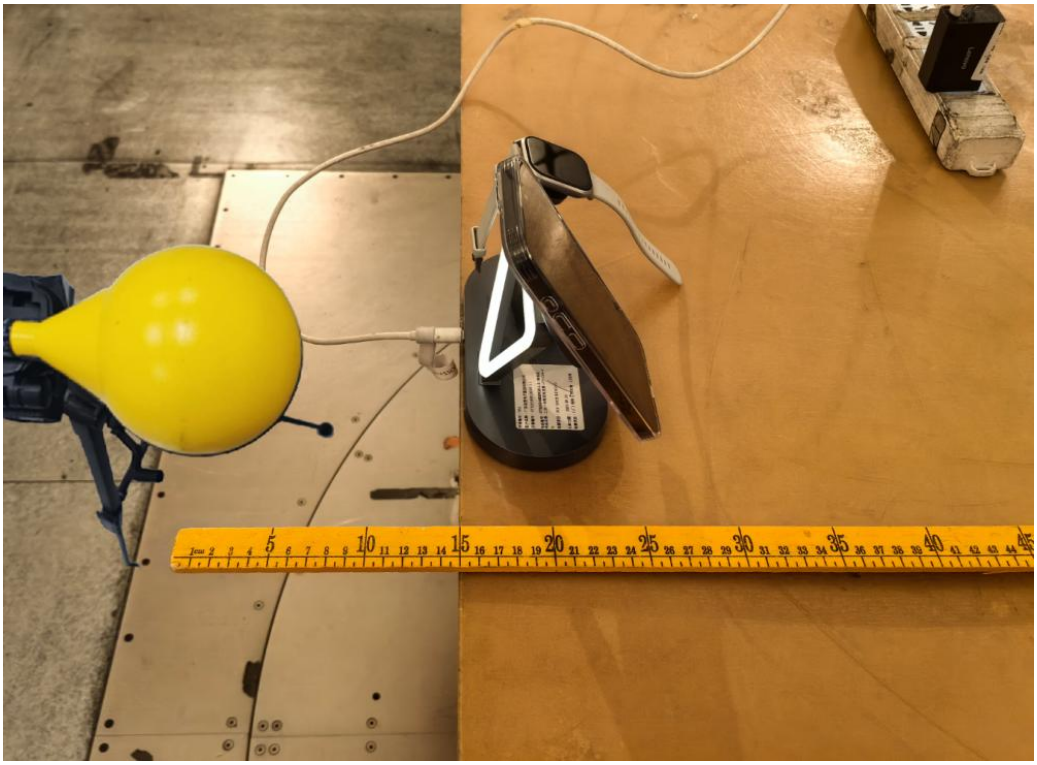
Charge Port	Charging Battery Level	Measured H-Field Strength Values (A/m)	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
		Test Position E		
H1+H2+ H3	1%	0.328	0.815	1.63
	50%	0.326	0.815	1.63
	99%	0.323	0.815	1.63
H1+H2+ H3	1%	0.334	0.815	1.63
	50%	0.329	0.815	1.63
	99%	0.328	0.815	1.63

Note:
$V/m=10^{(((dBuV/m)-120)/20}=10^{(((dBuA/m+51.5)-120)/20}=10^{(((20lg(A/m*10^6)+51.5)-120)/20}$
A/m= uT/1.25

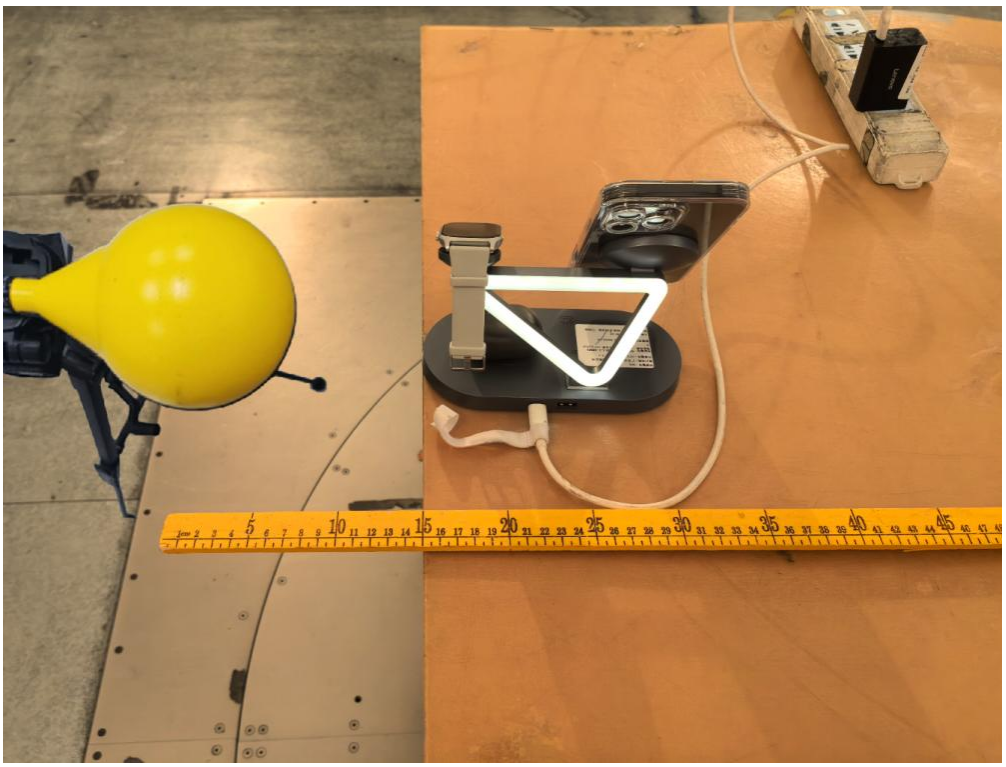
3. Test Setup Photos of the EUT



Test Position A - Exposure photo from top surface (TM1) - 20 cm

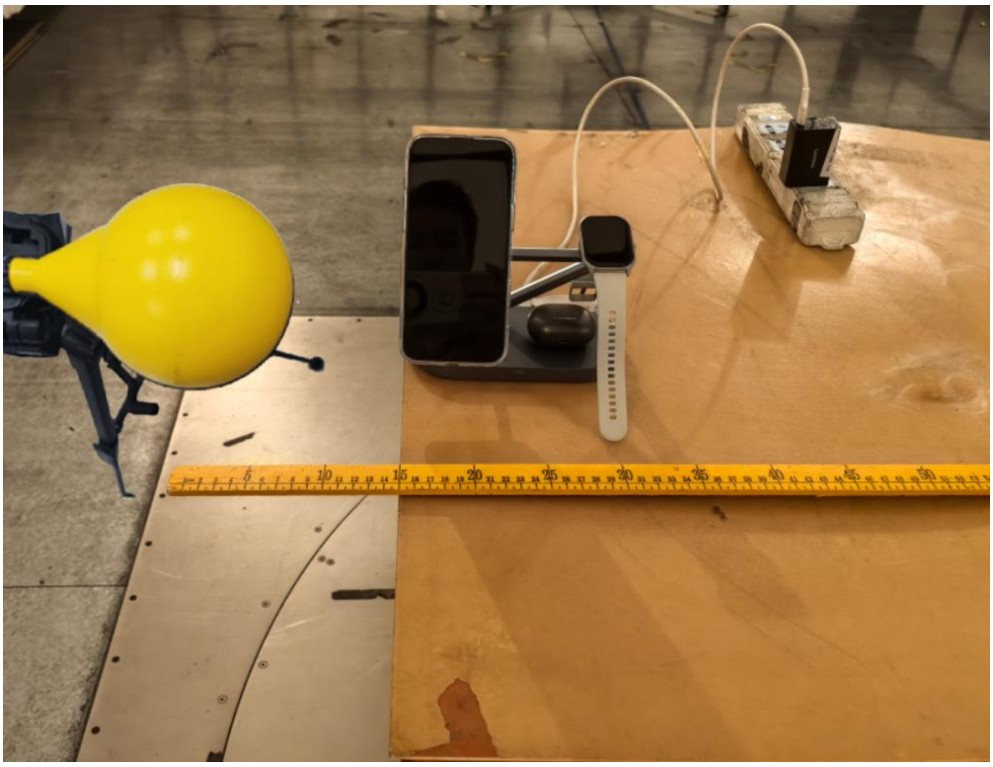


Test Position B - Exposure photo from side edge surface-Rear(TM1) - 15 cm



Test Position C - Exposure photo from side edge surface-Left(TM1) - 15 cm

Test Position D - Exposure photo from side edge surface-Front(TM1) - 15 cm



Test Position E - Exposure photo from side edge surface-Right(TM1) - 15 cm

4. Conclusion

A minimum safety distance of at 15 cm surrounding the device and 20 cm above the top surface of the device is required when the device is charging a smart phone. The detected emissions with a distance of 15 cm surrounding the device and 20 cm above the top surface of the device are below the limitations according to FCC KDB 680106 D01 Section 3. RF Exposure Requirement Clause 3.

.....End of Report.....