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RF Exposure Evaluation Report

Report No.: **CTC2024106405**

FCC ID.....: **2BCVO-TP-C43**

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

Product Name.....: **Mag Depot 2 In 1 Wireless Charging Pad**

Trade Mark.....: PISEN

Model/Type reference.....: TP-C43

Listed Model(s): /

Standard.....: **47 CFR FCC Part 1.1307**
47 CFR FCC Part 1.1310
KDB680106 D01

Date of receipt of test sample...: May 11, 2024

Date of testing.....: May 11, 2024 to May 24, 2024

Date of issue.....: May 24, 2024

Result.....: **PASS**

Compiled by:
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Jim Jiang

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Eric Zhang

Approved by:
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Totti Zhao

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following 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 Wireless Power Transfer v04](#): RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications.

[FCC CFR 47 Part 1.1307](#): Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

[FCC CFR 47 Part 1.1310](#): Radiofrequency radiation exposure limits.

1.2. Report Version

Revised No.	Report No.	Date of issue	Description
01	CTC2024106405	May 24, 2024	Original



1.3. Test Facility

Address of the report laboratory

CTC Laboratories, Inc.

Add: Room 101 Building B, Room 107, 108, 207, 208, 303 Building A, No. 7, Lanqing 1st Road, Luhuhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China (formerly 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, High-Tech Park, Guanlan Sub-District, Longhua New District, Shenzhen, Guangdong, China)

Laboratory accreditation

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

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.



1.4. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test	Measurement Frequency Range	Uncertainty	Note
Electric Field Strength	100kHz ~ 30MHz	2.8 V/m	/
Magnetic Field Strength	100kHz ~ 30MHz	2.8 A/m	/

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

1.5. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	20~25 °C
Relative Humidity:	50~55 %RH
Atmospheric Pressure:	101 kPa



2. GENERAL INFORMATION

2.1. Client Information

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

2.2. General Description of EUT

Product Name:	Mag Depot 2 In 1 Wireless Charging Pad
Trade Mark:	PISEN
Model/Type reference:	TP-C43
Listed Model(s):	/
Model Differences:	/
Power supply:	Type-C Input: 5V=3A 9V=3A Output: 5W/7.5W/10W/15W(mobile phone), 3W MAX(headset), 2.5W(watch) Total Output: 15W MAX
Hardware version:	/
Software version:	/
Wireless Charger	
Frequency Range:	110kHz ~ 205kHz
Operation Frequency:	ASK
Modulation Type:	Induction Coil
Antenna Type:	0dBi
Exposure category:	General population/uncontrolled environment
Device Type:	Fixed Device



2.3. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
Power Supply	PD0302JC-0301	/	ABP
Intelligent wireless charging full function test module	/	/	/
Cable Information			
Name	Shielded Type	Ferrite Core	Length
Type-C Cable	Unshielded	No	100cm

2.4. Description of Test Modes

As the function of the EUT, test mode selected to test as below to conform this standard.

Test mode	Description
1	Wireless charging (5W)
2	Wireless charging (7.5W)
3	Wireless charging (10W)
4	Wireless charging (15W)

Pre-scan above all test mode, Found below test mode which it was worse case mode. So only show the test data for worse case mode (Test mode 4) on the test report.

2.5. Measurement Instruments List

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Electric and Magnetic Field Analyzer	Narda	EHP-200A	180ZX11013	2024-06-08

Note: The Cal. Interval was one year.



2.6. Equipment Approval Considerations

The EUT does comply with item 5.b of KDB 680106 D01v03 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 - 205.0 kHz
Output power from each primary coil is less than 15 watts	Yes	The maximum output power of the primary coil is less than 15W.
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes	The transfer system includes single coil that is able to detect receiver device.
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).	No	This device is fixed.
The aggregate 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.	Yes	The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are less than 50% the MPE limit.

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.



2.7. RF Exposure

LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation.

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				
0.1-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	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				
0.1-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	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

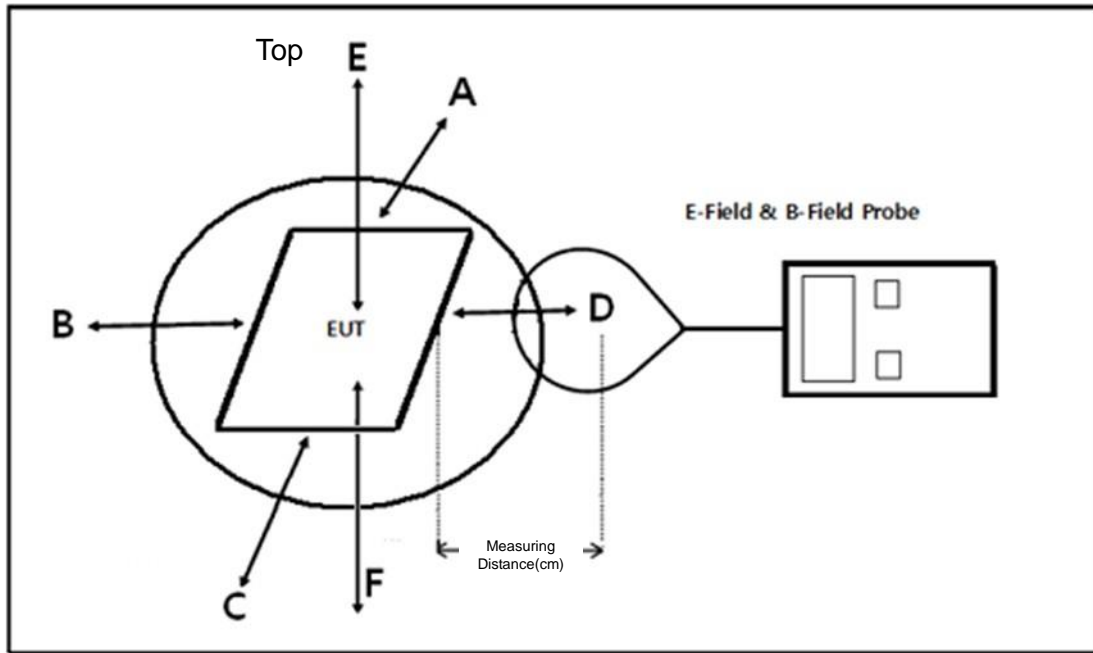
*=Plane-wave equivalent power density

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 – Section 1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-filed	H-filed	B-filed
Frequency	V/m	A/m	uT
0.1 MHz – 1.34 MHz	614	1.63	2.0
1.34 MHz – 30 MHz	824/f(=27.5 _{30MHz})	2.19/f(=0.073 _{30MHz})	--

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

TEST CONFIGURATION



TEST 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 (20cm) which is between the edge of the charger and the geometric center of probe.
- C. The turn table was rotated 360 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.

TEST MODE

Please refer to the clause 2.4.

TEST RESULTS



H-field strengths levels should less than 50% of MPE limit.

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(A/m)	50% Limit (A/m)
148	20	A	0.0398	0.815
		B	0.0387	0.815
		C	0.0324	0.815
		D	0.0355	0.815
		E	0.0381	0.815

E-field strengths levels should less than 50% of MPE limit.

Operation frequency(kHz)	Test Distance (cm)	Test Position	Probe Measure Result(V/m)	50% Limit (V/m)
148	20	A	0.3078	307
		B	0.3163	307
		C	0.3101	307
		D	0.3130	307
		E	0.3175	307

Note: The test data meets the limit requirements. Test result: Pass.

*****THE END*****