

FCC MPE TEST REPORT

FCC ID: 2BGD3-NOVAWAVE

Sample : NovaWave 3Way

Trade Mark : CIO

Main Model : CIO-3WAY-MGAPRG-BK

Additional Model : CIO-3WAY-MGAPRG-WH

Report No. : UNIA24042910ER-62

Prepared for

Shuopu Electronics(Dongguan) Co., Ltd.

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Prepared by

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TEST RESULT CERTIFICATION

Applicant.....: Shuopu Electronics(Dongguan) Co., Ltd.

Address.....: 4F, A Bldg, Hesheng Science Park, Nanshe Rd, Dongfeng Comm, Humen Tn, Duangguan, China

Manufacturer.....: Shuopu Electronics(Dongguan) Co., Ltd.

Address.....: 4F, A Bldg, Hesheng Science Park, Nanshe Rd, Dongfeng Comm, Humen Tn, Duangguan, China

Product description

Product: NovaWave 3Way

Trade Mark.....: CIO

Model Name.....: CIO-3WAY-MGAPRG-BK, CIO-3WAY-MGAPRG-WH

Standards: FCC KDB680106 D01 Wireless Power Transfer v04

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., 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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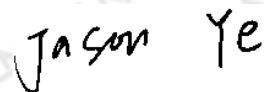
Date of Test

Date (s) of performance of tests: May 07, 2024 ~ May 14, 2024

Date of Issue: May 15, 2024

Test Result: Pass

Prepared by:



Jason Ye

Editor

Reviewer:



Kelly Cheng

Supervisor

Approved & Authorized Signer:



Liuze

Manager

Table of Contents

	Pages
1 TEST SUMMARY	4
1.1 TEST PROCEDURES AND RESULTS	4
1.2 TEST FACILITY	5
1.3 MEASUREMENT UNCERTAINTY	6
1.4 ENVIRONMENTAL CONDITIONS	6
2 GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 CARRIER FREQUENCY OF CHANNELS	8
2.3 TEST MODE	8
2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL	8
2.4 TEST INSTRUMENTS	9
3 MAXIMUM PERMISSIBLE EXPOSURE	10
3.1 MAXIMUM PERMISSIBLE EXPOSURE	10
3.2 TEST PROCEDURE	11
3.3 TEST SETUP	11
3.4 RESULT OF MAXIMUM PERMISSIBLE EXPOSURE	12
3.5 TEST PHOTO	13

1 TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

FCC KDB680106 D01 Wireless Power Transfer v04

FCC CFR 47			
Standard Section	Test Item	Result	Remark
FCC CFR 47 part1, 1.1310 KDB680106 D01 v04	Electric Field Strength (E) (V/m)	N/A	--
	Magnetic Field Strength (H) (A/m)	PASS	--

Note: "N/A" denotes test is not applicable in this Test Report.

Compliant with FCC KDB680106 D01 Wireless Power Transfer v04 section 5.2:

1) The power transfer frequency is below 1MHz.

Yes, the working frequency is: 110-205kHz.

2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

Yes, the maximum output power is 15 watts.

3) A client device providing the maximum permitted load is placed in physical contact with the transmitter(i.e. , the surfaces of the transmitter and client device enclosures need to be in physical contact)

Yes, the maximum permitted load is placed in physical contact with the transmitter.

4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

Yes, this provision does not cover § 2.1093-Portable exposure conditions.

5) The H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios(i.e. , the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

Yes, The H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit ; coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

6) 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, 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.

1.2 TEST FACILITY

Test Firm : Shenzhen United Testing Technology Co., Ltd.
Address : D101&D401, No. 107, Kaicheng High-Tech Park, Taoyuan Community, Dalang Sub-District, Longhua District, Shenzhen, Guangdong, China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

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

A2LA Certificate Number: 4747.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 31584

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

1.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, 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	Uncertainty
1	Radiated Measurement (9KHz-30MHz)	$\pm 2.50\text{dB}$
2	Temperature	$\pm 0.5^\circ\text{C}$
3	Humidity	$\pm 2\%$

1.4 ENVIRONMENTAL CONDITIONS

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

Temperature:	15~35 °C
Relative Humidity:	30~60 %
Air Pressure:	950~1050 hPa

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product:	NovaWave 3Way
Trade Mark:	CIO
Main Model:	CIO-3WAY-MGAPRG-BK
Additional Model:	CIO-3WAY-MGAPRG-WH
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: CIO-3WAY-MGAPRG-BK.
FCC ID:	2BGD3-NOVAWAVE
Operation Frequency:	110-205kHz
Number of Channels:	2CH
Modulation Type:	ASK
Wireless Charging Output Power:	2.5W/7.5W/10W/15W(MAX)
Antenna Type:	Coil Antenna
Antenna Gain:	0dBi
Battery:	N/A
Adapter:	N/A
Power Source:	DC 5V or 9V by adapter

2.2 CARRIER FREQUENCY OF CHANNELS

Test List			
ANT	Frequency (KHz)	ANT	Frequency (KHz)
01	127.8	02	134.2

2.3 TEST MODE

NO.	TEST MODE DESCRIPTION
1	ANT 1 + Full load (Connect to adapter)
2	ANT 1 + Half load (Connect to adapter)
3	ANT 1 + Null load (Connect to adapter)
4	ANT 2 + Full load (Connect to adapter)
5	ANT 2 + Half load (Connect to adapter)
6	ANT 2 + Null load (Connect to adapter)
7	ANT 1 + ANT 2 + Full load (Connect to adapter)
8	ANT 1 + ANT 2 + Half load (Connect to adapter)
9	ANT 1 + ANT 2 + Null load (Connect to adapter)

Note:

The mode 7 was the worst case and only the data of the worst case record in this report.

2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E-1	NovaWave 3Way	CIO	CIO-3WAY-MGAPRG-BK	EUT
E-2	Adapter	Xiaomi	MDY-11-EX	AE
E-3	WPT Station (15W/10W/7.5W/2.5W)	N/A	N/A	AE
E-4	Apple Watch	APPLE	N/A	AE

Note:

1. The support equipment was authorized by Declaration of Confirmation.
2. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

2.4 TEST INSTRUMENTS

Description	Brand	Model No.	Frequency Range	Calibrated Until
Broadband Field Meter	NARDA	NBM-550	—	Jan. 01, 2025
Magnetic Field Meter	NARDA	ELT-400	1–400kHz	Jan. 01, 2025
Magnetic Probe	NARDA	HF-3061	300kHz–30MHz	Jan. 01, 2025
Magnetic Probe	NARDA	HF-0191	27–1000MHz	Jan. 01, 2025
Broadband Field Meter	NARDA	NBM-550	—	Jan. 01, 2025
Electric Field Meter	COMBINOVA	EFM 200	5Hz–400kHz	Jan. 01, 2025
E-Field Probe	NARDA	EF-0391	100kHz–3GHz	Jan. 01, 2025
E-Field Probe	NARDA	EF-6091	100MHz–60GHz	Jan. 01, 2025

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

3 MAXIMUM PERMISSIBLE EXPOSURE

3.1 MAXIMUM PERMISSIBLE EXPOSURE

Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

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

Note 1: f = frequency in MHz ; *Plane-wave equivalent power density.

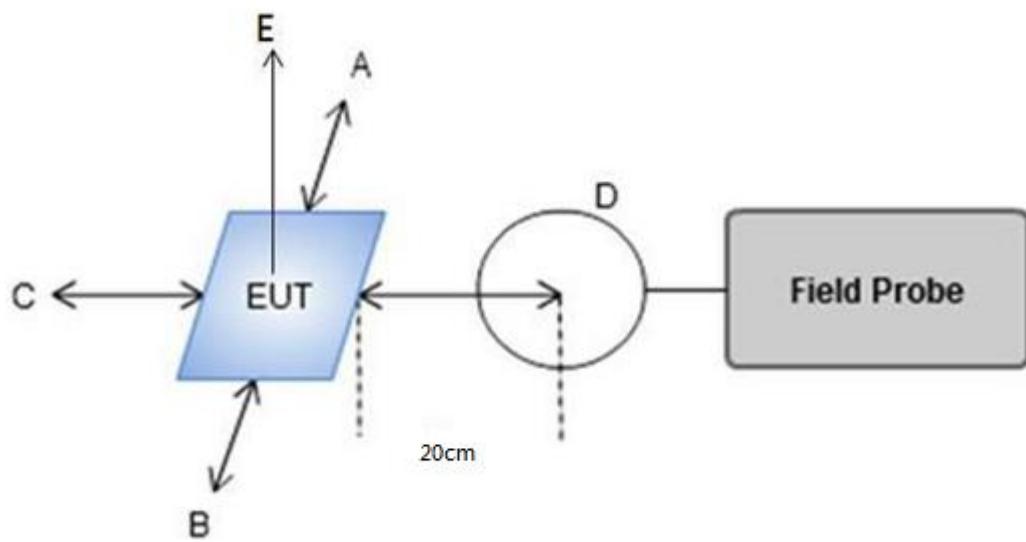
2: For the applicable limit, see FCC 1.1310, 680106 D01 RF Exposure Wireless Charging Apps v04.

3: 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.

3.2 TEST PROCEDURE

For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be at 20 cm surrounding the device and 20 cm above the top surface. 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 at 20 cm surrounding the device and 20 cm above the top surface.

3.3 TEST SETUP



Note: Position A: Front of EUT; Position B: Left of EUT; Position C: back of EUT; Position D: Right of EUT; Position E: Top of EUT(20 cm measure distance)

3.4 RESULT OF MAXIMUM PERMISSIBLE EXPOSURE

For ANT 1 + ANT 2 + Full load mode:

H-Filed Strength at 20 cm surrounding the device and 20 cm above the top surface (A/m)

Filed Strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
uT	0.18	0.16	0.17	0.20	0.19	/	/
A/m	0.14	0.13	0.14	0.16	0.15	0.815	1.63

Note: Calculation: A/m=uT/1.25

For ANT 1 + ANT 2 + Half load mode:

H-Filed Strength at 20 cm surrounding the device and 20 cm above the top surface (A/m)

Filed Strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
uT	0.16	0.17	0.16	0.18	0.19	/	/
A/m	0.13	0.14	0.13	0.14	0.15	0.815	1.63

Note: Calculation: A/m=uT/1.25

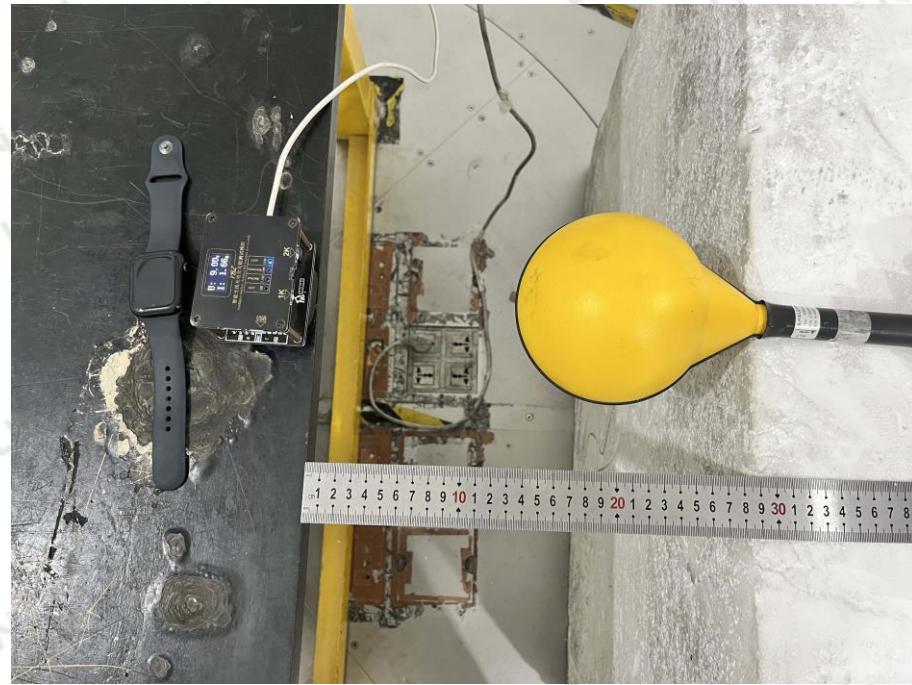
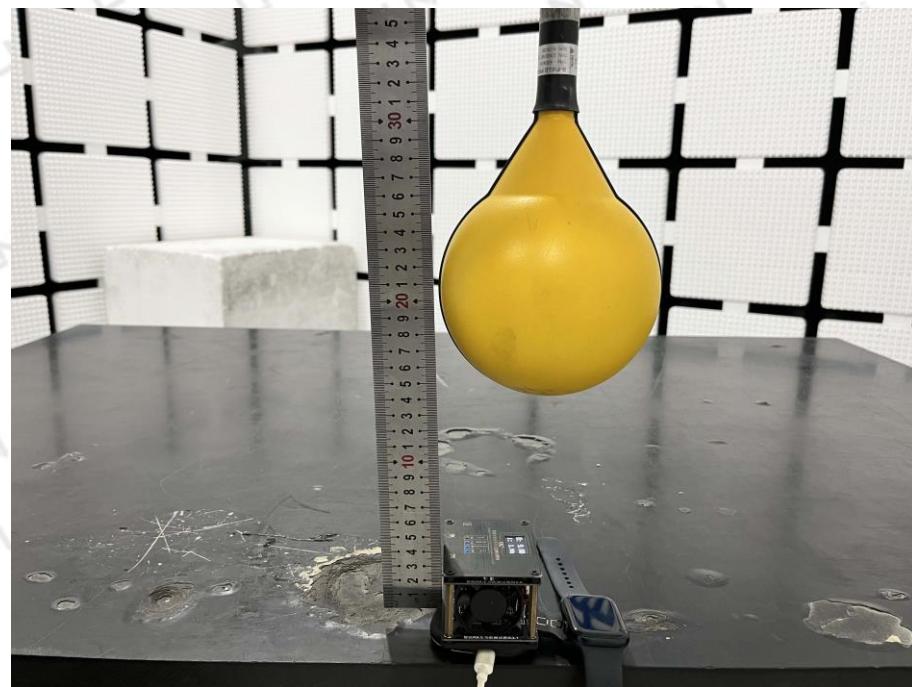
For ANT 1 + ANT 2 + No load mode:

H-Filed Strength at 20 cm surrounding the device and 20 cm above the top surface (A/m)

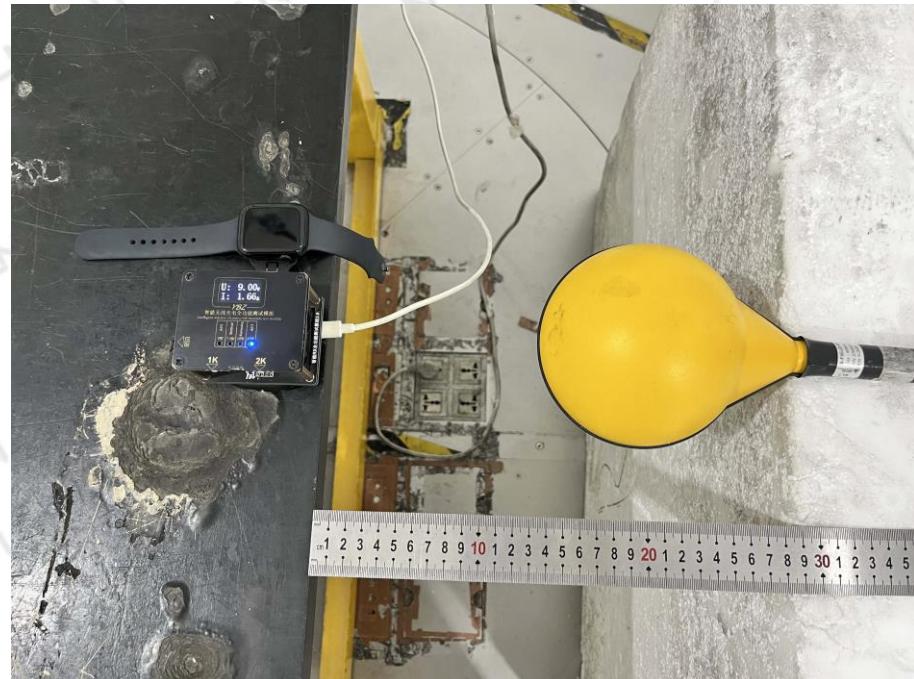
Filed Strength	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
uT	0.17	0.19	0.18	0.21	0.18	/	/
A/m	0.14	0.15	0.14	0.17	0.14	0.815	1.63

Note: 1. Calculation: A/m=uT/1.25

3.5 TEST PHOTO







End of Report