

# Test Report

**Report No.:** MTi240312014-01E2  
**Date of issue:** 2024-03-22  
**Applicant:** Chug Inc.  
**Product:** 3-in-1 multi-charger  
**Model(s):** QIC37, HKWP2993-25  
**FCC ID:** 2AO23-QIC37

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

## Instructions

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2. The test results in this test report are only responsible for the samples submitted
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5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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<b>Test Result Certification</b>	
<b>Applicant:</b>	<b>Chug Inc.</b>
Address:	7157 Shady Oak Road, Eden Prairie, MN 55344, USA
<b>Manufacturer:</b>	<b>Chug Inc.</b>
Address:	7157 Shady Oak Road, Eden Prairie, MN 55344, USA
<b>Factory:</b>	<b>PYS VIETNAM TECHNOLOGY COMPANY LTD</b>
Address:	CN-06,Thuanthanh II Industrial Zone, Mao Dien Commune, Thuanthanh District, Bacninh, Vietnam
<b>Product description</b>	
Product name:	3-in-1 multi-charger
Trademark:	heyday
Model name:	QIC37
Series Model:	HKWP2993-25
Standards:	FCC CFR 47 PART 1, § 1.1310 FCC CFR 47 PART 2, § 2.1091
Test method:	KDB 680106 D01 Wireless Power Transfer v04
<b>Date of Test</b>	
Date of test:	2024-03-15 ~ 2024-03-22
Test result:	Pass

Note: The report is updated the test method, added the information of factory, changed the adapter and the internal cable color of EUT photos on the basis of MTi220829009-02E2 .After evaluation, MPE are retested.

**Test Engineer :**

*Yanice Xie*

(Yanice.Xie)

**Reviewed By: :**

*Leon Chen*

(Leon Chen)

**Approved By: :**

*Tom Xue*

(Tom Xue)

## 1 General Description

### 1.1 Description of the EUT

Product name:	3-in-1 multi-charger
Model name:	QIC37
Series Model:	HKWP2993-25
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Input: DC 12V/2.5A, 15V/2A Output: MagSafe Output: 15W, iWatch Output: 5W, Earphone Output: 5W
Accessories:	1. Adapter: Model: PYS-WAC21030-01 Input: 100-240V-50/60Hz 0.8A Output: 5V=3A, 9V=3A, 12V=2.5A, 15V=2A, 20V=1.5A  2.Cable: Type-C to Type-C cable 1.8m
Hardware version:	V10
Software version:	V1.0
Test sample(s) number:	MTi240312014-01S1001
<b>RF specification:</b>	
Operation frequency:	Transmitter 1(Earphone): 115 kHz – 205 kHz Transmitter 2(Phone): 115 kHz – 205 kHz&360 kHz Transmitter 3(Watch): 326.5 kHz
Modulation type:	ASK
Antenna type:	Coil Antenna

### 1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Emission test modes
Mode 1	Wireless MagSafe Output(5W)+iWatch(5W)+Earphone(5W)
Mode 2	Wireless MagSafe Output(7.5W)+iWatch(5W)+Earphone(5W)
Mode 3	Wireless MagSafe Output(15W)+iWatch(5W)+Earphone(5W)
Mode 4	Wireless MagSafe Output(5W)+iWatch(5W)
Mode 5	Wireless MagSafe Output(7.5W)+iWatch(5W)
Mode 6	Wireless MagSafe Output(15W)+iWatch(5W)
Mode 7	Wireless MagSafe Output(5W)+Earphone(5W)
Mode 8	Wireless MagSafe Output(7.5W)+Earphone(5W)
Mode 9	Wireless MagSafe Output(15W)+Earphone(5W)

Mode 10	Wireless iWatch(5W)+Earphone(5W)
Mode 11	Wireless MagSafe Output(5W)
Mode 12	Wireless MagSafe Output(7.5W)
Mode 13	Wireless MagSafe Output(15W)
Mode 14	Wireless iWatch(5W)
Mode 15	Wireless Earphone(5W)
Mode 16	Standby

### 1.3 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.

Support equipment list			
Description	Model	Serial No.	Manufacturer
iphone 12	A2404	F17DLCK70DYN	Apple
Air Pods	/	/	Apple
Earphone	/	/	Xiaomi

Support cable list			
Description	Length (m)	From	To
/	/	/	/

## 2 Measurement uncertainty

Parameter	Expanded Uncertainty
Magnetic field measurement (9kHz~30MHz)	±18.6%
Electric field measurements (9kHz~30MHz)	±18.6%

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

### 3 Test facilities and accreditations

#### 3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573



#### 4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTi-E115	Electric and Magnetic Field Probe – Analyzer	Narda	EHP-200A	101166	2023/08/15	2026/08/14

## 5 Test result

### 5.1.1 Requirement

§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 as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

**Table 1 to §1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(i) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<6
30-300	61.4	0.163	1.0	<6
300-1500			f/300	<6
1500-100000			5	<6
<b>(ii) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<30
30-300	27.5	0.073	0.2	<30
300-1500			f/1500	<30
1500-100000			1.0	<30

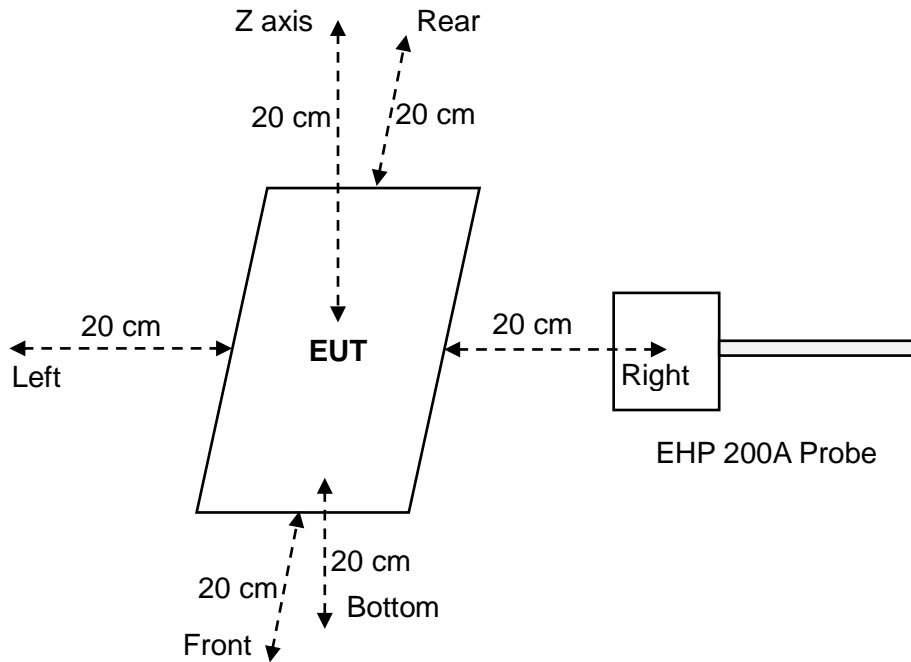
f = frequency in MHz

\* = Plane-wave equivalent power density

**Note 1:** Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

**Note 2:** General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

## 5.2 Test setup



## 5.3 Test Procedures

- a. The RF exposure test was performed in anechoic chamber.
- b. E and H-field measurements should be made with these devices considered to meet the § 2.1091-Mobile conditions (“generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and [the nearest person]”).
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

#### 5.4 Equipment Approval Considerations

Requirement	Device
1. The power transfer frequency is below 1 MHz.	Yes. The operating frequencies are: Transmitter 1(Earphone): 115 kHz – 205 kHz Transmitter 2(Phone): 115 kHz – 205 kHz&360 kHz Transmitter 3(Watch): 326.5 kHz
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: Transmitter 1(Earphone): 5W Transmitter 2(Phone): 15W Transmitter 3(Watch): 5W
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 client device is placed directly in 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. Mobile exposure conditions only.
5. The E-field and 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. See the test result in item 5.5.
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. The EUT has three radiating structures and all scenarios have been tested.

**5.5 Test results**
**Test condition 1: Mode 3 operating mode with client device (1 % battery status of client device)**

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	2.1077	613	0.58%	0.6678	1.63	43.95%
Left	1.0265			0.7164		
Right	3.5627			0.1835		
Front	1.6867			0.111		
Rear	2.8257			0.199		
bottom	1.4964			0.1215		

**Test condition 2: Mode 3 operating mode with client device (50 % battery status of client device)**

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
Z axis	1.9864	613	0.53%	0.5975	1.63	40.07%
Left	0.9671			0.6531		
Right	3.2264			0.1563		
Front	1.4635			0.1034		
Rear	2.7142			0.1671		
Bottom	1.0931			0.1034		

**Test condition 3: Mode 3 operating mode with client device (99 % battery status of client device)**

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	1.6321	613	0.45%	0.5892	1.63	39.5%
Left	0.7658			0.6439		
Right	2.7364			0.1475		
Front	1.2391			0.0986		
Rear	2.3470			0.1582		
bottom	0.8647			0.0966		

## Photographs of the Test Setup

See the Appendix - Test Setup Photos.

## Photographs of the EUT

See the Appendix - EUT Photos.

**----End of Report----**