

# Test Report

**Report No.:** MTi211206019-01E2

**Date of issue:** Dec. 25, 2021

**Applicant:** Chug, Inc.

**Product:** MagSafe Pad

**Model(s):** QIC42, HKWP2681-15EL

**FCC ID:** 2AO23-QIC42

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

## Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.
2. The test results in this test report are only responsible for the samples submitted
3. This test report is invalid without the seal and signature of the laboratory.
4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.
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>HANK ELECTRONICS VIETNAM LTD</b>
Address:	No.7, 11 Street VSIP Tu Son, 16353 Bac Ninh Province, Vietnam
<b>Factory:</b>	<b>HANK ELECTRONICS VIETNAM LTD</b>
Address:	No.7, 11 Street VSIP Tu Son, 16353 Bac Ninh Province, Vietnam
<b>Product description</b>	
Product name:	MagSafe Pad
Trademark:	Heyday
Model name:	QIC42
Serial Model:	HKWP2681-15EL
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 v03r01
<b>Date of Test</b>	
Date of test:	2021-12-08 ~ 2021-12-22
Test result:	Pass

**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:	MagSafe Pad
Model name:	QIC42
Series Model:	HKWP2681-15EL
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Input: Type-C 9V/2.22A Output: MagSafe Charger 15W
Accessories:	Adapter: Model: HKAP3231S-20US Input: 100V-240V~50/60Hz 600mA(Max) Output: 5.0V=3.0A, 9.0V=2.22A, 12.0V=1.67A
<b>RF specification:</b>	
Operation frequency:	127 kHz(5W/7.5W) 360 kHz(15W)
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	Stand-by mode
Mode 2	Wireless charger (5W)
Mode 3	Wireless charger (7.5W)
Mode 4	Wireless charger (15W)

**The test data only show worst test mode: Mode 4**

### 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.

<b>Support equipment list</b>			
Description	Model	Serial No.	Manufacturer
Mobile Phone	iPhone 12	/	Apple
<b>Support cable list</b>			
Description	Length (m)	From	To
/	/	/	/

## 2 Test facilities and accreditations

### 2.1 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

## 3 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	2021/06/02	2022/06/01

## 4 Test result

### 4.1.1 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

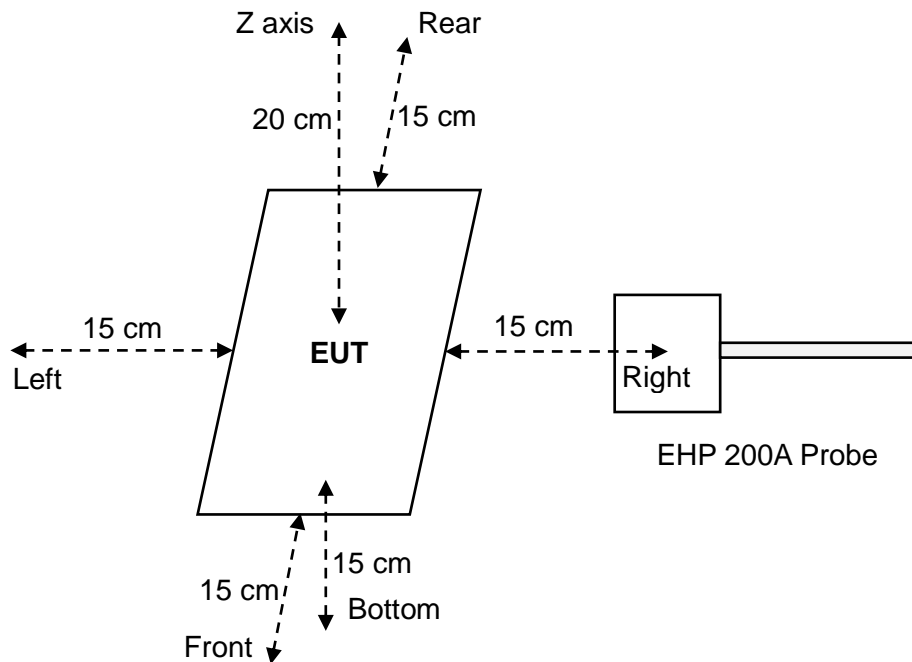
\* = Plane-wave equivalent power density

**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.



## 4.2 Test setup



## 4.3 Test Procedures

### For mobile exposure conditions:

- The RF exposure test was performed in anechoic chamber.
- E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair.
- The highest emission level was recorded and compared with limit.
- The EUT was measured according to the dictates of KDB 680106 v03r01.

**4.4 Equipment Approval Considerations item 5 b) of KDB 680106 D01 v03r01**

Requirement	Device
1. Power transfer frequency is less than 1 MHz.	Yes. The operating frequencies: 360 kHz(15W) 127 kHz(5W/7.5W)
2. Output power from each primary coil is less than or equal to 15 watts	Yes. The output power:15W/7.5W/5W
3. 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 EUT have one source primary coils.
4. Client device is placed directly in contact with the transmitter.	Yes. The client device is placed directly in contact with the transmitter.
5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes. Mobile exposure conditions only.
6. 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. See the test result in item 4.5.

**4.5 Test results**
**Test condition 1: Mode 4 operating mode with client device (1 % battery status of client device)**

Antenna	Probe Position	E -field (V/m)			H-field (A/m)		
		Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
1	Z axis	0.3727	614	0.06%	0.0505	1.63	3.24%
	Left	0.3651			0.0513		
	Right	0.3617			0.0505		
	Front	0.3525			0.0505		
	Rear	0.3894			0.0528		
	Bottom	0.3740			0.0505		

**Test condition 2: Mode 4 operating mode with client device (50 % battery status of client device)**

Antenna	Probe Position	E -field (V/m)			H-field (A/m)		
		Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
1	Z axis	0.3725	614	0.06%	0.0504	1.63	3.25%
	Left	0.3652			0.0515		
	Right	0.3614			0.0506		
	Front	0.3527			0.0503		
	Rear	0.3896			0.0529		
	bottom	0.3743			0.0505		

**Test condition 3: Mode 4 operating mode with client device (99 % battery status of client device)**

Antenna	Probe Position	E -field (V/m)			H-field (A/m)		
		Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
1	Z axis	0.3728	614	0.06%	0.0505	1.63	3.23%
	Left	0.3650			0.0516		
	Right	0.3615			0.0501		
	Front	0.3528			0.0505		
	Rear	0.3896			0.0527		
	bottom	0.3742			0.0506		

## Photographs of the Test Setup

See the Appendix - Test Setup Photos.

## Photographs of the EUT

See the Appendix - EUT Photos.

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