

EUT Specification

FCC ID: 2AOAF-361

Characteristics	Description
Product Name	Power Hub
Model number	PWRHUB100W-T
Power Supply	120V/60Hz
Operating Frequency Range	110-205KHz
Modulation Technique	ASK
Antenna Type	Coil Antenna
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others ____
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

Applicable Standard:

FCC Part 1(1.1310), Part 2(2.1093) and KDB 680106 D01 RF Exposure
Wireless Charging Apps v04

Applicable Requirement:

Three different categories of transmitters are defined by the FCC in OET Bulletin 65.

These categories are fixed installation, mobile, and portable and are defined as follows:

Fixed Installations: fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans from the antenna is maintained to at least 2 meters.

Mobile Devices: a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located, such as a wireless modem operating in a laptop computer, are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR §2.1091.

Portable Devices: a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR§2.1093).

The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/ Controlled Exposure and General Population/Uncontrolled Exposure.

These two categories are defined as follows:

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. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training

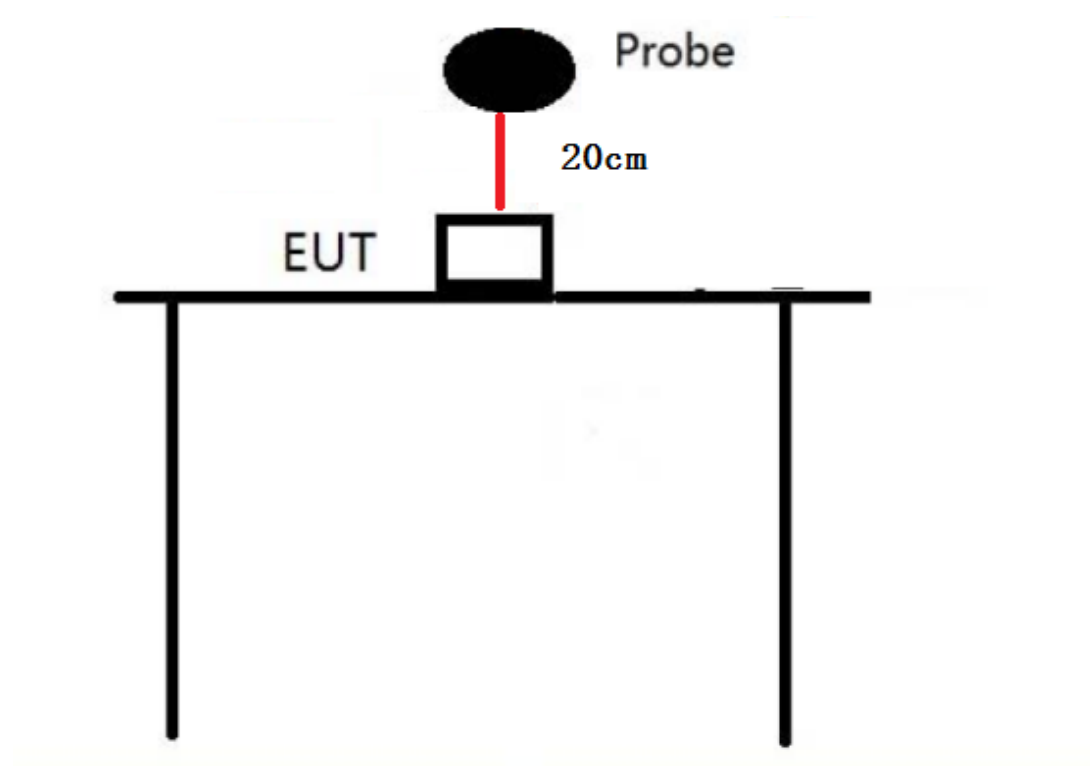
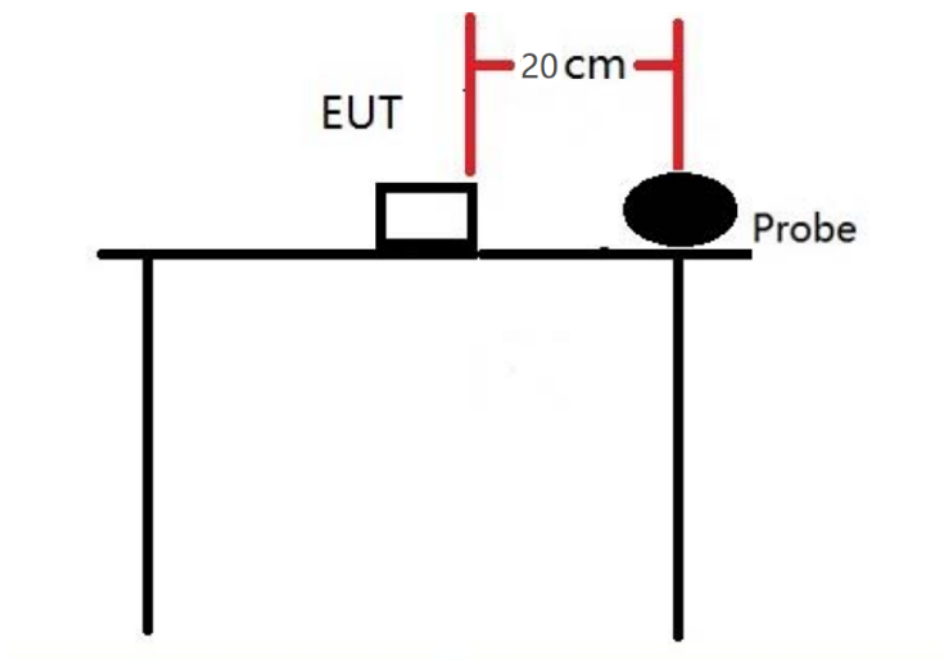
regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase exercise control means that an exposed person is allowed to and knows how to reduce or avoid exposure by administrative or engineering controls and work practices, such as use of personal protective equipment or time averaging of exposure.

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.

Licensees and applicants are responsible for compliance with both the occupational/controlled exposure limits and the general population/uncontrolled exposure limits as they apply to transmitters under their jurisdiction. Licensees and applicants should be aware that the occupational/controlled exposure limits apply especially in situations where workers may have access to areas in very close proximity to antennas and access to the general public may be restricted.

In lieu of evaluation with the general population/uncontrolled exposure limits, amateur licensees authorized under part 97 of this chapter and members of his or her immediate household may be evaluated with respect to the occupational/controlled exposure limits in this section, provided appropriate training and information has been provided to the amateur licensee and members of his/her household. Other nearby persons who are not members of the amateur licensee's household must be evaluated with respect to the general population/uncontrolled exposure limits.

Test Setup Block



Test Procedure

- 1.Connect the EUT and equipment as above diagram of test configuration.
- 2.EUT was placed on a table, and the measure probe was placed at a measurement distance of 20cm from the EUT to the center of the probe.
- 3.Power on the measuring probe, the EUT was set at the maximum field strength emission state.
- 4.The EUT was put in different directions (Left, Right, Front, Rear, Top and Bottom) toward to the measure probe, the distance 20cm, 22cm and 24cm need to be tested. Measure the value of field strength.
- 5.Record the worst data of the different directions.

Measuring Device And Test Equipment

Used	Equipment	Manufacturer	Model No.	Serial No.	Next Cal.	Cal. Interval
☒	E&H-Field Probe(9kHz-30M Hz)	Narda	EHP-200A	180ZX11012	Sep. 21, 2024	1 Year

Description of Support Device

Phone : Manufacturer: Apple Inc.
M/N: A2176
S/N: N/A

Adapter : Manufacturer: XIAOMI
M/N: MDY-11-EX
S/N: N/A

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
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
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
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
1500-100000	--	--	1	30

Note: f denotes for frequency in MHz.

* denotes for plane-wave equivalent power density.

Measurement Result

(1) The power transfer frequency is below 1 MHz.

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 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, 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; 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.

We tested four modes (15W load, 10W load, 7.5W load, 5W load) for EUT. test data see the following.

The EUT was put in different directions (Left, Right, Front, Rear, Top and Bottom) toward to the measure probe, the distance 20cm, 22cm and 24cm were tested, only the worst case results (20cm) were recorded in this report.

Test Mode: Wireless Charging 5W					
		Measuring Distance(cm)	H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Point 1	Front	20	0.109	1.63	0.815
Point 2	Back	20	0.111		
Point 3	Left	20	0.106		
Point 4	Right	20	0.110		
Point 5	Bottom	20	0.102		
Point 6	Top	20	0.137		

Test Mode: Wireless Charging 5W					
		Measuring Distance(cm)	E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Point 1	Front	20	3.612	614	307
Point 2	Back	20	3.614		
Point 3	Left	20	3.609		
Point 4	Right	20	3.622		
Point 5	Bottom	20	1.879		
Point 6	Top	20	3.868		

Test Mode: Wireless Charging 7.5W					
		Measuring Distance(cm)	H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Point 1	Front	20	0.123	1.63	0.815
Point 2	Back	20	0.125		
Point 3	Left	20	0.128		
Point 4	Right	20	0.131		
Point 5	Bottom	20	0.112		
Point 6	Top	20	0.156		

Test Mode: Wireless Charging 7.5W					
		Measuring Distance(cm)	E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Point 1	Front	20	3.638	614	307
Point 2	Back	20	3.646		
Point 3	Left	20	3.629		
Point 4	Right	20	3.633		
Point 5	Bottom	20	1.895		
Point 6	Top	20	3.891		

Test Mode: Wireless Charging 10W					
		Measuring Distance(cm)	H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Point 1	Front	20	0.145	1.63	0.815
Point 2	Back	20	0.147		
Point 3	Left	20	0.131		
Point 4	Right	20	0.142		
Point 5	Bottom	20	0.120		
Point 6	Top	20	0.183		

Test Mode: Wireless Charging 10W					
		Measuring Distance(cm)	E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Point 1	Front	20	3.693	614	307
Point 2	Back	20	3.694		
Point 3	Left	20	3.689		
Point 4	Right	20	3.695		
Point 5	Bottom	20	2.108		
Point 6	Top	20	4.027		

Test Mode: Wireless Charging 15W					
		Measuring Distance(cm)	H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Point 1	Front	20	0.168	1.63	0.815
Point 2	Back	20	0.165		
Point 3	Left	20	0.154		
Point 4	Right	20	0.161		
Point 5	Bottom	20	0.146		
Point 6	Top	20	0.207		

Test Mode: Wireless Charging 15W					
		Measuring Distance(cm)	E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Point 1	Front	20	3.723	614	307
Point 2	Back	20	3.738		
Point 3	Left	20	3.736		
Point 4	Right	20	3.744		
Point 5	Bottom	20	2.167		
Point 6	Top	20	4.425		

PHOTOGRAPHS OF TEST SETUP



Signature

Shawn Wen

Shawn Wen
General Manager

Date: April 20, 2024