EUT Specification

FCC ID: 2BBEH-PW0042

Characteristics	Description
Product Name	Wireless Charger
Model number	PW0042
Power Supply	AC120V/60Hz for adapter
Operating Frequency Range	110-205KHz for Mobile phone charging PAD 133.2KHz for Earphone charging PAD
Modulation Technique	ASK for Earbuds charging, FSK for iphone charging
Antenna Type	Induction coil
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others ___
Exposure classification	☐Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure (S=1mW/cm2)
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(2.1091) and KDB 680106 D01 RF Exposure Wireless Charging Apps v03

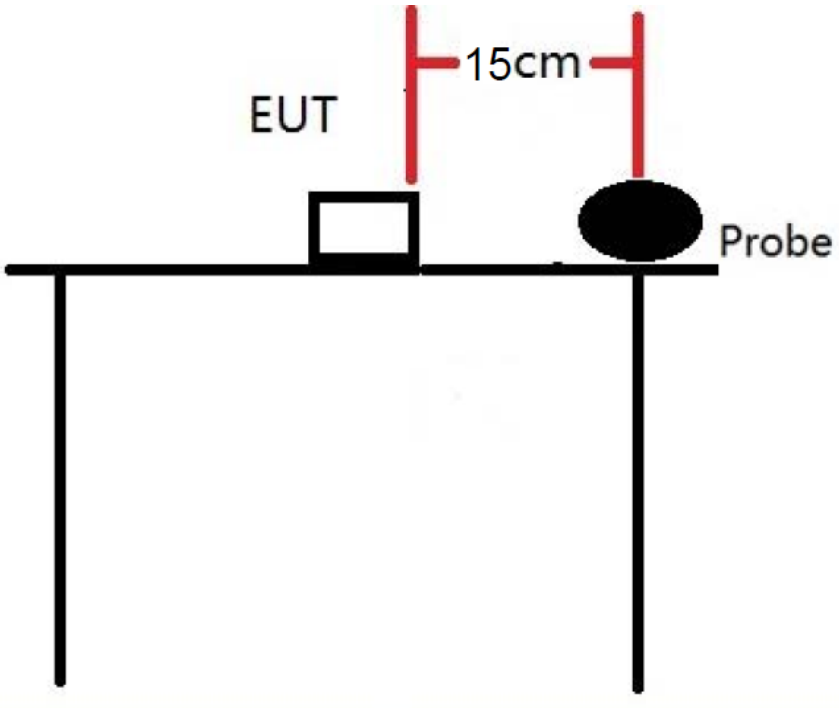
Applicable Requirement:

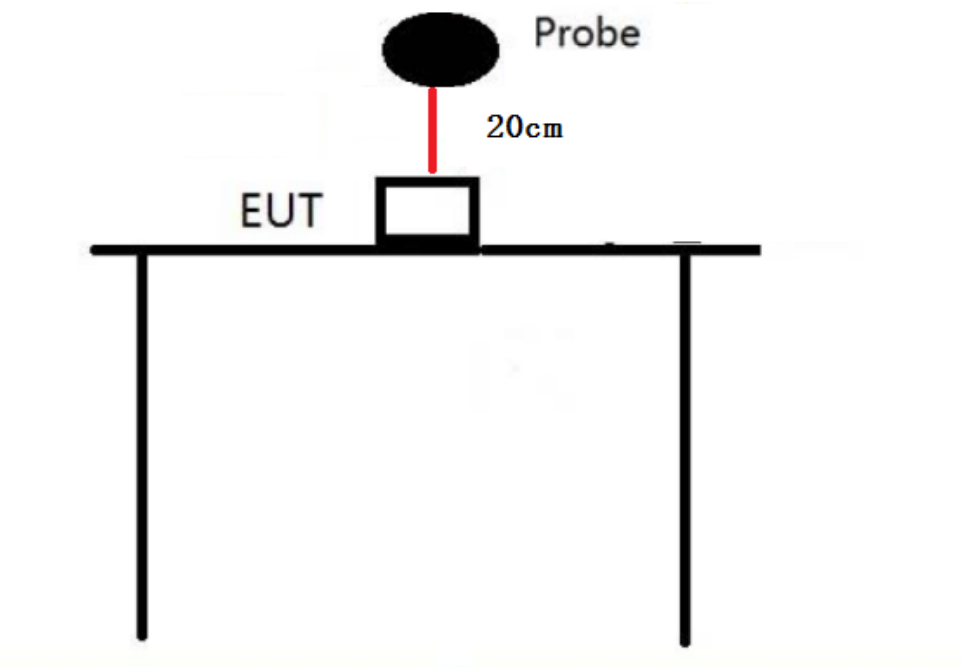
Three different categories of transmitters are defined by the FCC in OET Bulletin 65.

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 oftransient 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 15cm 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 from the top of the EUT to the probe is 20CM, and the distance from other directions is 15cm.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.	**Calibrated until**
☑	Electric and magnetic field analyzer	Narda	EHP-200A	180ZX11012	2024-03-03
☑	Test Software	Narda	EHP-200-TS 2.07	N/A	N/A

Description of Support Device

iPhone	：	Manufacturer: Apple Inc. M/N: A2404 S/N: N/A
Adapter	：	Model number:CD272 Input: AC 100-240V, 50/60Hz Manufacturer: Apple Inc.
Airpods	:	M/N:A2190 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

We pretested four modes (max load, mid load, min load, Standby) for EUT. The worst mode (max load) and worst test frequency(frequency：133.2KHz for iphone, 326.5KHz for iwatch, 133.2KHz for Airpods)test data see the following.

Magnetic Field (H-Field) strength at 15cm from the boundaries of EUT, and 20cm from the top.

Test mode: Wireless Charging for iphone：

Test Mode: Wireless Charging 10w for 1% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0372	0.0186	1.63	0.815
Measurement Point 2	Back	15	0.0368	0.01845		
Measurement Point 3	Left	15	0.0363	0.0181		
Measurement Point 4	Right	15	0.0362	0.0181		
Measurement Point 5	Bottom	15	0.0335	0.01675		
Measurement Point 6	Top	20	0.0389	0.01945		

Test Mode: Wireless Charging 10w for 1% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3421	0.1711	614	307
Measurement Point 2	Back	15	0.3435	0.1718		
Measurement Point 3	Left	15	0.3525	0.1760		
Measurement Point 4	Right	15	0.3362	0.1681		
Measurement Point 5	Bottom	15	0.3104	0.1551		
Measurement Point 6	Top	20	0.3536	0.1768		

Test Mode: Wireless Charging 10w for 50% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0332	0.0166	1.63	0.815
Measurement Point 2	Back	15	0.0334	0.0167		
Measurement Point 3	Left	15	0.0356	0.0178		
Measurement Point 4	Right	15	0.0367	0.0184		
Measurement Point 5	Bottom	15	0.0320	0.0160		
Measurement Point 6	Top	20	0.0345	0.0173		

Test Mode: Wireless Charging 10w for 50% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3424	0.1712	614	307
Measurement Point 2	Back	15	0.3432	0.1716		
Measurement Point 3	Left	15	0.3451	0.1726		
Measurement Point 4	Right	15	0.3326	0.1663		
Measurement Point 5	Bottom	15	0.3216	0.1608		
Measurement Point 6	Top	20	0.3563	0.1782		

Test Mode: Wireless Charging 10w for 100% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0335	0.0168	1.63	0.815
Measurement Point 2	Back	15	0.0345	0.0173		
Measurement Point 3	Left	15	0.0341	0.0171		
Measurement Point 4	Right	15	0.0339	0.0170		
Measurement Point 5	Bottom	15	0.0320	0.0160		
Measurement Point 6	Top	20	0.0323	0.0162		

Test Mode: Wireless Charging 10w for 100% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3421	0.1711	614	307
Measurement Point 2	Back	15	0.3323	0.1662		
Measurement Point 3	Left	15	0.3236	0.1618		
Measurement Point 4	Right	15	0.3369	0.1685		
Measurement Point 5	Bottom	15	0.3203	0.1602		
Measurement Point 6	Top	20	0.3412	0.1706		

Test mode: Wireless Charging for Airpods

Test Mode: Wireless Charging 5w for 1% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0330	0.0165	1.63	0.815
Measurement Point 2	Back	15	0.0326	0.0163		
Measurement Point 3	Left	15	0.0339	0.0170		
Measurement Point 4	Right	15	0.0326	0.0163		
Measurement Point 5	Bottom	15	0.0312	0.0156		
Measurement Point 6	Top	20	0.0339	0.0170		

Test Mode: Wireless Charging 5w for 1% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3458	0.1729	614	307
Measurement Point 2	Back	15	0.3463	0.1732		
Measurement Point 3	Left	15	0.3325	0.1663		
Measurement Point 4	Right	15	0.3247	0.1624		
Measurement Point 5	Bottom	15	0.3136	0.1568		
Measurement Point 6	Top	20	0.3427	0.1714		

Test Mode: Wireless Charging 5w for 50% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0341	0.0171	1.63	0.815
Measurement Point 2	Back	15	0.0345	0.0173		
Measurement Point 3	Left	15	0.0343	0.0172		
Measurement Point 4	Right	15	0.0335	0.0168		
Measurement Point 5	Bottom	15	0.0315	0.0158		
Measurement Point 6	Top	20	0.0346	0.0173		

Test Mode: Wireless Charging 5w for 50% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3232	0.1616	614	307
Measurement Point 2	Back	15	0.3214	0.1607		
Measurement Point 3	Left	15	0.3245	0.1623		
Measurement Point 4	Right	15	0.3242	0.1621		
Measurement Point 5	Bottom	15	0.3152	0.1576		
Measurement Point 6	Top	20	0.3302	0.1651		

Test Mode: Wireless Charging 5w for 100% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0328	0.0164	1.63	0.815
Measurement Point 2	Back	15	0.0330	0.0165		
Measurement Point 3	Left	15	0.0325	0.0163		
Measurement Point 4	Right	15	0.0319	0.0160		
Measurement Point 5	Bottom	15	0.0304	0.0152		
Measurement Point 6	Top	20	0.0339	0.0170		

Test Mode: Wireless Charging 5w for 100% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3103	0.1552	614	307
Measurement Point 2	Back	15	0.3102	0.1551		
Measurement Point 3	Left	15	0.3123	0.1562		
Measurement Point 4	Right	15	0.3141	0.1571		
Measurement Point 5	Bottom	15	0.2932	0.1466		
Measurement Point 6	Top	20	0.3215	0.1608		

Test mode : Wireless Charging for iphone+Apple Watch+Airpods

Test Mode: iphone 10w+ Airpods 5W for 1% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0371	0.0186	1.63	0.815
Measurement Point 2	Back	15	0.0372	0.0186		
Measurement Point 3	Left	15	0.0375	0.0188		
Measurement Point 4	Right	15	0.0379	0.0190		
Measurement Point 5	Bottom	15	0.0347	0.0174		
Measurement Point 6	Top	20	0.0385	0.0193		

Test Mode: iphone 10w+ Airpods 5W for 1% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3532	0.1766	614	307
Measurement Point 2	Back	15	0.3541	0.1771		
Measurement Point 3	Left	15	0.3536	0.1768		
Measurement Point 4	Right	15	0.3535	0.1768		
Measurement Point 5	Bottom	15	0.3232	0.1616		
Measurement Point 6	Top	20	0.3647	0.1824		

Test Mode: iphone 10w+ Airpods 5W for 50% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0342	0.0171	1.63	0.815
Measurement Point 2	Back	15	0.0347	0.0174		
Measurement Point 3	Left	15	0.0352	0.0176		
Measurement Point 4	Right	15	0.0362	0.0181		
Measurement Point 5	Bottom	15	0.0323	0.0162		
Measurement Point 6	Top	20	0.0355	0.0178		

Test Mode: iphone 10w+ Airpods 5W for 50% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3562	0.1781	614	307
Measurement Point 2	Back	15	0.3541	0.1771		
Measurement Point 3	Left	15	0.3436	0.1718		
Measurement Point 4	Right	15	0.3425	0.1713		
Measurement Point 5	Bottom	15	0.3136	0.1568		
Measurement Point 6	Top	20	0.3574	0.1787		

Test Mode: iphone 10w+ Airpods 5W for 100% battery						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.0341	0.0171	1.63	0.815
Measurement Point 2	Back	15	0.0347	0.0174		
Measurement Point 3	Left	15	0.0342	0.0171		
Measurement Point 4	Right	15	0.0343	0.0172		
Measurement Point 5	Bottom	15	0.0323	0.0162		
Measurement Point 6	Top	20	0.0335	0.0168		

Test Mode: iphone 10w+ Airpods 5W for 100% battery						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	15	0.3425	0.1713	614	307
Measurement Point 2	Back	15	0.3432	0.1716		
Measurement Point 3	Left	15	0.3425	0.1713		
Measurement Point 4	Right	15	0.3414	0.1707		
Measurement Point 5	Bottom	15	0.3203	0.1602		
Measurement Point 6	Top	20	0.3514	0.1757		

PHOTOGRAPHS OFTEST SETUP

Signature

Tiger Xu
EMC Director
Date: 2023-05-26