

EUT Specification

FCC ID: 2BBYY-TW1012

Characteristics	Description
Product Name	All-in-one power bank
Model number	TW1012
Series number	N/A
Power Supply	AC 100V-240V
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 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 of transient persons, this phrase also means that an exposed person has received appropriate training

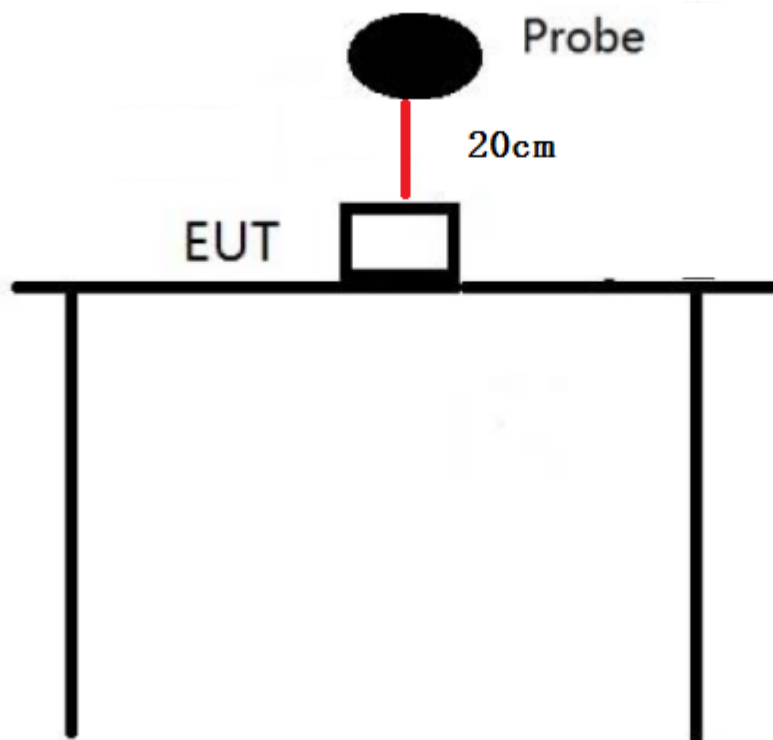
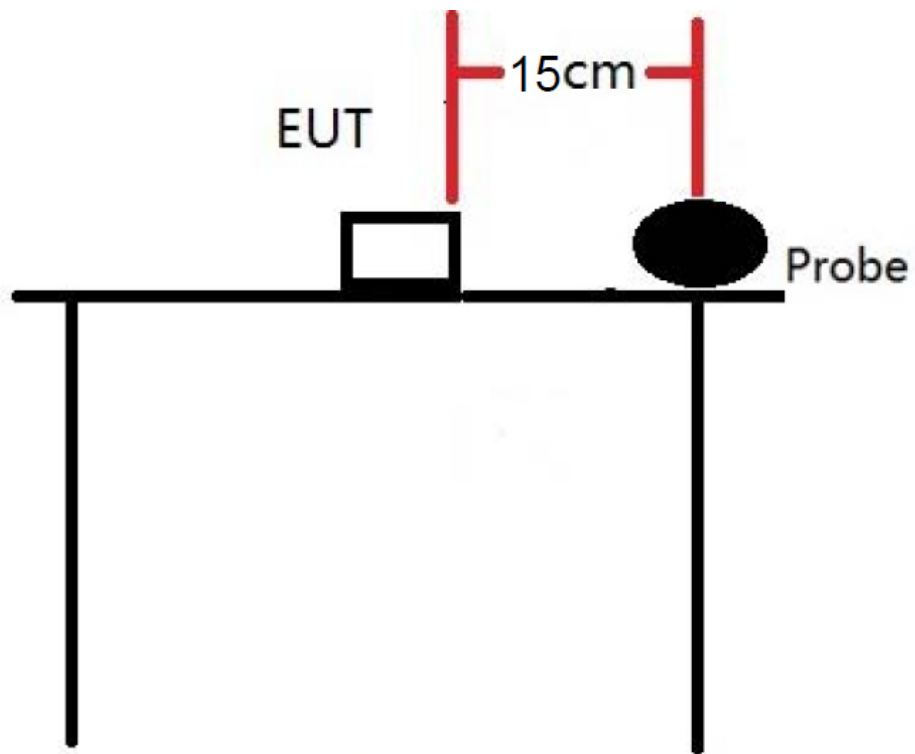
regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available 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 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.	Last Cal.	Cal. Interval
☒	E&H-Field Probe(9kHz-30MHz)	Narda	EHP-200A	180ZX11012	Sep. 21, 2024	1 Year

Description of Support Device

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

The data of Probe's X,Y and Z axes were tested respectively, and only the worst data recorded in the report.

Magnetic Field (H-Field) strength at 0cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	0	0.9155	0.4578	1.63	0.815
Measurement Point 2	Back	0	0.5059	0.2529		
Measurement Point 3	Left	0	0.3185	0.1592		
Measurement Point 4	Right	0	0.3514	0.1757		
Measurement Point 5	Bottom	0	0.1601	0.0800		
Measurement Point 6	Top	0	0.2239	0.1119		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	0	14.469	7.235	614	307
Measurement Point 2	Back	0	13.478	6.739		
Measurement Point 3	Left	0	12.876	6.438		
Measurement Point 4	Right	0	13.060	6.530		
Measurement Point 5	Bottom	0	13.163	6.582		
Measurement Point 6	Top	0	14.308	7.154		

Magnetic Field (H-Field) strength at 2cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	2	0.1421	0.0711	1.63	0.815
Measurement Point 2	Back	2	0.8299	0.4150		
Measurement Point 3	Left	2	0.1904	0.0952		
Measurement Point 4	Right	2	0.7378	0.3689		
Measurement Point 5	Bottom	2	0.0668	0.0334		
Measurement Point 6	Top	2	0.5061	0.2531		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	2	11.588	5.794	614	307
Measurement Point 2	Back	2	13.858	6.929		
Measurement Point 3	Left	2	11.681	5.841		
Measurement Point 4	Right	2	13.188	6.594		
Measurement Point 5	Bottom	2	13.091	6.546		
Measurement Point 6	Top	2	12.430	6.215		

Magnetic Field (H-Field) strength at 4cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	4	0.2025	0.1012	1.63	0.815
Measurement Point 2	Back	4	0.8389	0.4195		
Measurement Point 3	Left	4	0.1948	0.0974		
Measurement Point 4	Right	4	0.6530	0.3265		
Measurement Point 5	Bottom	4	0.0598	0.0299		
Measurement Point 6	Top	4	0.0052	0.0026		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	4	11.046	5.523	614	307
Measurement Point 2	Back	4	11.838	5.919		
Measurement Point 3	Left	4	12.299	6.150		
Measurement Point 4	Right	4	11.384	5.692		
Measurement Point 5	Bottom	4	12.722	6.361		
Measurement Point 6	Top	4	13.212	6.606		

Magnetic Field (H-Field) strength at 6cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	6	0.0089	0.0044	1.63	0.815
Measurement Point 2	Back	6	0.6774	0.3387		
Measurement Point 3	Left	6	0.2035	0.1018		
Measurement Point 4	Right	6	0.4533	0.2267		
Measurement Point 5	Bottom	6	0.6386	0.3193		
Measurement Point 6	Top	6	0.6110	0.3055		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	6	11.416	5.708	614	307
Measurement Point 2	Back	6	11.757	5.879		
Measurement Point 3	Left	6	11.681	5.841		
Measurement Point 4	Right	6	12.049	6.025		
Measurement Point 5	Bottom	6	11.746	5.873		
Measurement Point 6	Top	6	12.916	6.458		

Magnetic Field (H-Field) strength at 8cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	8	0.5192	0.2596	1.63	0.815
Measurement Point 2	Back	8	0.7595	0.3798		
Measurement Point 3	Left	8	0.5680	0.2840		
Measurement Point 4	Right	8	0.7807	0.3904		
Measurement Point 5	Bottom	8	0.7472	0.3736		
Measurement Point 6	Top	8	0.2340	0.1170		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	8	10.896	5.448	614	307
Measurement Point 2	Back	8	11.395	5.698		
Measurement Point 3	Left	8	11.958	5.979		
Measurement Point 4	Right	8	12.534	6.267		
Measurement Point 5	Bottom	8	11.913	5.957		
Measurement Point 6	Top	8	13.327	6.664		

Magnetic Field (H-Field) strength at 10cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	10	0.2931	0.1465	1.63	0.815
Measurement Point 2	Back	10	0.4215	0.2108		
Measurement Point 3	Left	10	0.5469	0.2735		
Measurement Point 4	Right	10	0.1896	0.0948		
Measurement Point 5	Bottom	10	0.2890	0.1445		
Measurement Point 6	Top	10	0.8503	0.4251		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	10	10.936	5.468	614	307
Measurement Point 2	Back	10	12.749	6.375		
Measurement Point 3	Left	10	10.716	5.358		
Measurement Point 4	Right	10	11.551	5.776		
Measurement Point 5	Bottom	10	11.981	5.991		
Measurement Point 6	Top	10	12.828	6.414		

Magnetic Field (H-Field) strength at 12cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	12	0.5625	0.2812	1.63	0.815
Measurement Point 2	Back	12	0.6837	0.3419		
Measurement Point 3	Left	12	0.1711	0.0855		
Measurement Point 4	Right	12	0.6793	0.3397		
Measurement Point 5	Bottom	12	0.7900	0.3950		
Measurement Point 6	Top	12	0.4361	0.2180		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	12	11.406	5.703	614	307
Measurement Point 2	Back	12	12.332	6.166		
Measurement Point 3	Left	12	11.063	5.532		
Measurement Point 4	Right	12	10.291	5.146		
Measurement Point 5	Bottom	12	11.861	5.931		
Measurement Point 6	Top	12	13.087	6.544		

Magnetic Field (H-Field) strength at 14cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	14	0.7758	0.3879	1.63	0.815
Measurement Point 2	Back	14	0.4605	0.2302		
Measurement Point 3	Left	14	0.5259	0.2629		
Measurement Point 4	Right	14	0.1801	0.0901		
Measurement Point 5	Bottom	14	0.2932	0.1466		
Measurement Point 6	Top	14	0.4398	0.2199		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	14	10.041	5.021	614	307
Measurement Point 2	Back	14	12.482	6.241		
Measurement Point 3	Left	14	10.921	5.461		
Measurement Point 4	Right	14	10.526	5.263		
Measurement Point 5	Bottom	14	11.481	5.741		
Measurement Point 6	Top	14	12.897	6.449		

Magnetic Field (H-Field) strength at 16cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	16	0.6453	0.3227	1.63	0.815
Measurement Point 2	Back	16	0.4174	0.2087		
Measurement Point 3	Left	16	0.1842	0.0921		
Measurement Point 4	Right	16	0.3925	0.1963		
Measurement Point 5	Bottom	16	0.1739	0.0869		
Measurement Point 6	Top	16	0.3600	0.1800		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	16	10.680	5.340	614	307
Measurement Point 2	Back	16	10.333	5.167		
Measurement Point 3	Left	16	11.100	5.550		
Measurement Point 4	Right	16	10.506	5.253		
Measurement Point 5	Bottom	16	10.509	5.255		
Measurement Point 6	Top	16	12.697	6.349		

Magnetic Field (H-Field) strength at 18cm from the boundaries of EUT.

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	18	0.5831	0.2916	1.63	0.815
Measurement Point 2	Back	18	0.4347	0.2174		
Measurement Point 3	Left	18	0.6094	0.3047		
Measurement Point 4	Right	18	0.5547	0.2774		
Measurement Point 5	Bottom	18	0.4472	0.2236		
Measurement Point 6	Top	18	0.0401	0.0201		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	18	10.839	5.420	614	307
Measurement Point 2	Back	18	10.911	5.456		
Measurement Point 3	Left	18	10.231	5.116		
Measurement Point 4	Right	18	9.965	4.983		
Measurement Point 5	Bottom	18	10.132	5.066		
Measurement Point 6	Top	18	10.073	5.037		

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

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	20	0.0312	0.0156	1.63	0.815
Measurement Point 2	Back	20	0.5331	0.2666		
Measurement Point 3	Left	20	0.4453	0.2226		
Measurement Point 4	Right	20	0.5346	0.2673		
Measurement Point 5	Bottom	20	0.4442	0.2221		
Measurement Point 6	Top	20	0.3443	0.1721		

Test Mode: Wireless Charging 15W						
		Measuring Distance(cm)	E-Field(V/m)	50% E-Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	20	9.742	4.871	614	307
Measurement Point 2	Back	20	9.34	4.670		
Measurement Point 3	Left	20	8.006	4.003		
Measurement Point 4	Right	20	9.739	4.870		
Measurement Point 5	Bottom	20	9.667	4.834		
Measurement Point 6	Top	20	8.269	4.135		

PHOTOGRAPHS OF TEST SETUP







Signature

Shawn Wen
General Manager
Date: 2023-11-02