EUT Specification

FCC ID: 2A4B3-A15

Characteristics	Description
Product Name	Magnetic Wireless Power Bank_A15
Model number	A15
Power Supply	TYPE-C: DC 5V, 3A, DC 9V, 2A Type-C OUT: DC 5V2A, 9V2.22A, 12V1.67A from battery
Operating Frequency Range	110-148KHz
Modulation Technique	ASK
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.

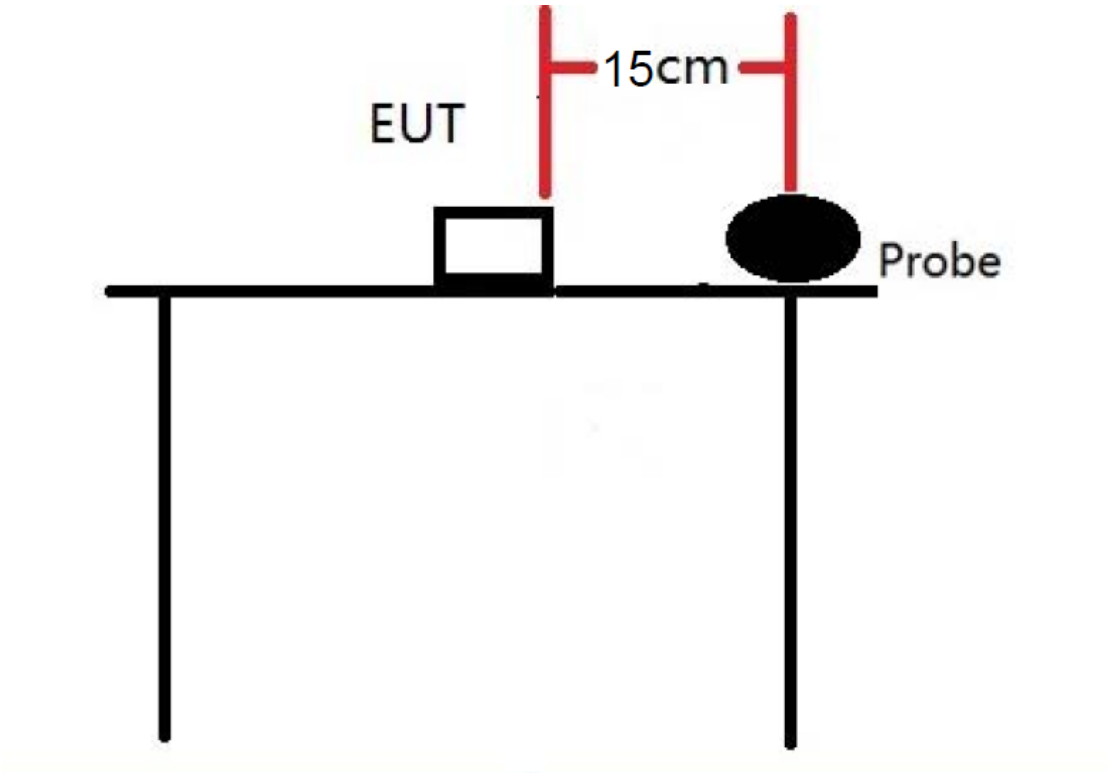
These two categories are defined as follows:

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 for mobile device

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.

Test Procedure for protable device

1.EUT was placed on a table, and the measure probe was placed at a measurement distance of 0~10cm from the EUT to the center of the probe.
2.Power on the measuring probe, the EUT was set at the maximum field strength emission state.
3.The EUT was put in different directions (Left, Right, Front, Rear, Top and Bottom) toward to the measure probe.The distance from the EUT to the probe starts from 0cm, and measures every 2cm until the distance is 10cm.
4.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-Field Probe(100kHz-3 GHz)	Narda	EP 601	611WX70311	November 16, 2021	1 Year
☑	H-Field Probe(300KHz-3 0MHz)	Narda	ELT-400	M-0174	August 04, 2021	1 Year
☑	Broadband Field Meter	Narda	ELT-400	M-0173	August 04, 2021	1 Year

Description of Support Device

iPhone	：	Manufacturer: Apple Inc. M/N: A1524 S/N: N/A
Wireless Charger Receiver Module	：	Manufacturer: Universal M/N: N/A S/N: N/A
Adapter	：	Model number:580245A087 Input: AC 100-240V, 50/60Hz

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：110KHz)test data see the following.

Operation Mode：Internal battery power supply + WPT charging

Test Mode: Wireless Charging 15W use ipone					
		estimated Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	0	0.487	1.63	0.815
Measurement Point 2	Back	0	0.503		
Measurement Point 3	Left	0	0.493		
Measurement Point 4	Right	0	0.491		
Measurement Point 5	Bottom	0	0.484		
Measurement Point 6	Top	0	0.487		

Test Mode: Wireless Charging 15W use ipone					
		estimated Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	2	0.243	1.63	0.815
Measurement Point 2	Back	2	0.251		
Measurement Point 3	Left	2	0.247		
Measurement Point 4	Right	2	0.246		
Measurement Point 5	Bottom	2	0.241		
Measurement Point 6	Top	2	0.243		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	4	0.121	1.63	0.815
Measurement Point 2	Back	4	0.125		
Measurement Point 3	Left	4	0.123		
Measurement Point 4	Right	4	0.121		
Measurement Point 5	Bottom	4	0.120		
Measurement Point 6	Top	4	0.121		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	6	0.113	1.63	0.815
Measurement Point 2	Back	6	0.110		
Measurement Point 3	Left	6	0.112		
Measurement Point 4	Right	6	0.111		
Measurement Point 5	Bottom	6	0.112		
Measurement Point 6	Top	6	0.112		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	8	0.101	1.63	0.815
Measurement Point 2	Back	8	0.106		
Measurement Point 3	Left	8	0.105		
Measurement Point 4	Right	8	0.101		
Measurement Point 5	Bottom	8	0.102		
Measurement Point 6	Top	8	0.103		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	10	0.011	1.63	0.815
Measurement Point 2	Back	10	0.019		
Measurement Point 3	Left	10	0.038		
Measurement Point 4	Right	10	0.086		
Measurement Point 5	Bottom	10	0.082		
Measurement Point 6	Top	10	0.081		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	12	0.010	1.63	0.815
Measurement Point 2	Back	12	0.013		
Measurement Point 3	Left	12	0.031		
Measurement Point 4	Right	12	0.067		
Measurement Point 5	Bottom	12	0.081		
Measurement Point 6	Top	12	0.073		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	14	0.007	1.63	0.815
Measurement Point 2	Back	14	0.011		
Measurement Point 3	Left	14	0.029		
Measurement Point 4	Right	14	0.061		
Measurement Point 5	Bottom	14	0.060		
Measurement Point 6	Top	14	0.065		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	16	0.004	1.63	0.815
Measurement Point 2	Back	16	0.010		
Measurement Point 3	Left	16	0.025		
Measurement Point 4	Right	16	0.057		
Measurement Point 5	Bottom	16	0.053		
Measurement Point 6	Top	16	0.052		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	18	0.002	1.63	0.815
Measurement Point 2	Back	18	0.008		
Measurement Point 3	Left	18	0.021		
Measurement Point 4	Right	18	0.050		
Measurement Point 5	Bottom	18	0.049		
Measurement Point 6	Top	18	0.047		

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	20	0.001	1.63	0.815
Measurement Point 2	Back	20	0.005		
Measurement Point 3	Left	20	0.013		
Measurement Point 4	Right	20	0.042		
Measurement Point 5	Bottom	20	0.043		
Measurement Point 6	Top	20	0.038		

PHOTOGRAPHS OFTEST SETUP

Internal battery power supply + WPT charging: