

EUT Specification

FCC ID: 2A4B3-A14

Characteristics	Description
Product Name	Magnetic Wireless Power Bank_A14
Model number	A14
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	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> 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:

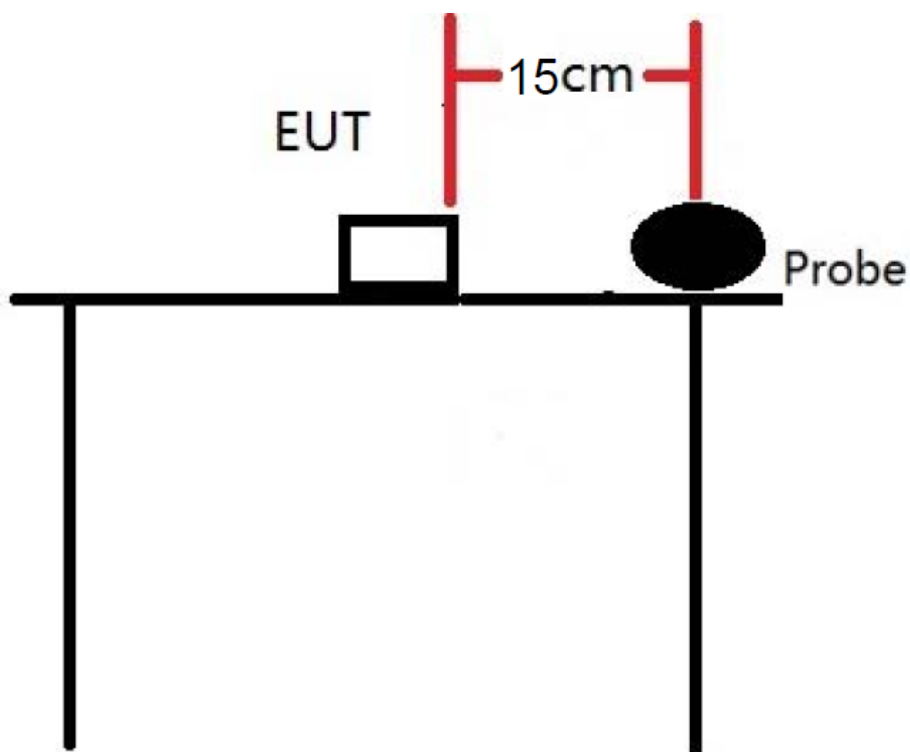
Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations 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 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 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
<input checked="" type="checkbox"/>	E-Field Probe(100kHz-3 GHz)	Narda	EP 601	611WX70311	November 16, 2021	1 Year
<input checked="" type="checkbox"/>	H-Field Probe(300KHz-3 0MHz)	Narda	ELT-400	M-0174	August 04, 2021	1 Year
<input checked="" type="checkbox"/>	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 : Manufacturer: Universal
Module 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

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

Test Mode: Wireless Charging 15W use ipone						
		Measuring Distance(cm)	H-Field(A/m)	50% H-Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	15	0.151	0.0724	1.63	0.815
Measurement Point 2	Back	15	0.154	0.0754		
Measurement Point 3	Left	15	0.159	0.0747		
Measurement Point 4	Right	15	0.154	0.0738		
Measurement Point 5	Bottom	15	0.157	0.0728		
Measurement Point 6	Top	20	0.154	0.0727		

Operation Mode: WPT charging

Test Mode: Wireless Charging 15W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	10% Limit(A/m)
Measurement Point 1	Front	0	0.145	1.63	0.163
Measurement Point 2	Back	0	0.143		
Measurement Point 3	Left	0	0.148		
Measurement Point 4	Right	0	0.144		
Measurement Point 5	Bottom	0	0.141		
Measurement Point 6	Top	0	0.143		

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	2	0.138	1.63	0.815
Measurement Point 2	Back	2	0.134		
Measurement Point 3	Left	2	0.133		
Measurement Point 4	Right	2	0.131		
Measurement Point 5	Bottom	2	0.133		
Measurement Point 6	Top	2	0.132		

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	0.122	1.63	0.815
Measurement Point 2	Back	4	0.126		
Measurement Point 3	Left	4	0.125		
Measurement Point 4	Right	4	0.123		
Measurement Point 5	Bottom	4	0.121		
Measurement Point 6	Top	4	0.122		

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	0.115	1.63	0.815
Measurement Point 2	Back	6	0.111		
Measurement Point 3	Left	6	0.113		
Measurement Point 4	Right	6	0.115		
Measurement Point 5	Bottom	6	0.112		
Measurement Point 6	Top	6	0.113		

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	0.102	1.63	0.815
Measurement Point 2	Back	8	0.109		
Measurement Point 3	Left	8	0.108		
Measurement Point 4	Right	8	0.103		
Measurement Point 5	Bottom	8	0.100		
Measurement Point 6	Top	8	0.104		

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	0.013	1.63	0.815
Measurement Point 2	Back	10	0.021		
Measurement Point 3	Left	10	0.045		
Measurement Point 4	Right	10	0.092		
Measurement Point 5	Bottom	10	0.091		
Measurement Point 6	Top	10	0.083		

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	0.011		
Measurement Point 3	Left	12	0.042		
Measurement Point 4	Right	12	0.081		
Measurement Point 5	Bottom	12	0.083		
Measurement Point 6	Top	12	0.075		

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	0.008	1.63	0.815
Measurement Point 2	Back	14	0.006		
Measurement Point 3	Left	14	0.031		
Measurement Point 4	Right	14	0.065		
Measurement Point 5	Bottom	14	0.061		
Measurement Point 6	Top	14	0.063		

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	0.005	1.63	0.815
Measurement Point 2	Back	16	0.004		
Measurement Point 3	Left	16	0.028		
Measurement Point 4	Right	16	0.061		
Measurement Point 5	Bottom	16	0.055		
Measurement Point 6	Top	16	0.057		

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	0.003	1.63	0.815
Measurement Point 2	Back	18	0.002		
Measurement Point 3	Left	18	0.023		
Measurement Point 4	Right	18	0.051		
Measurement Point 5	Bottom	18	0.043		
Measurement Point 6	Top	18	0.032		

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	0.001		
Measurement Point 3	Left	20	0.016		
Measurement Point 4	Right	20	0.041		
Measurement Point 5	Bottom	20	0.038		
Measurement Point 6	Top	20	0.027		

PHOTOGRAPHS OF TEST SETUP

Internal battery power supply + WPT charging:

