

EUT Specification

FCC ID: 2BAN4DKWL002

Characteristics	Description
Product Name	Wireless charger
Model number	DK-WL-002
Power Supply	5Vdc from AC/DC Adapter (Provided by the laboratory)
Operating Frequency Range	110-205KHz
Modulation Technique	ASK
Antenna Type	Induction coil
Device category	<input checked="" type="checkbox"/> Portable (<20cm separation) <input 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:

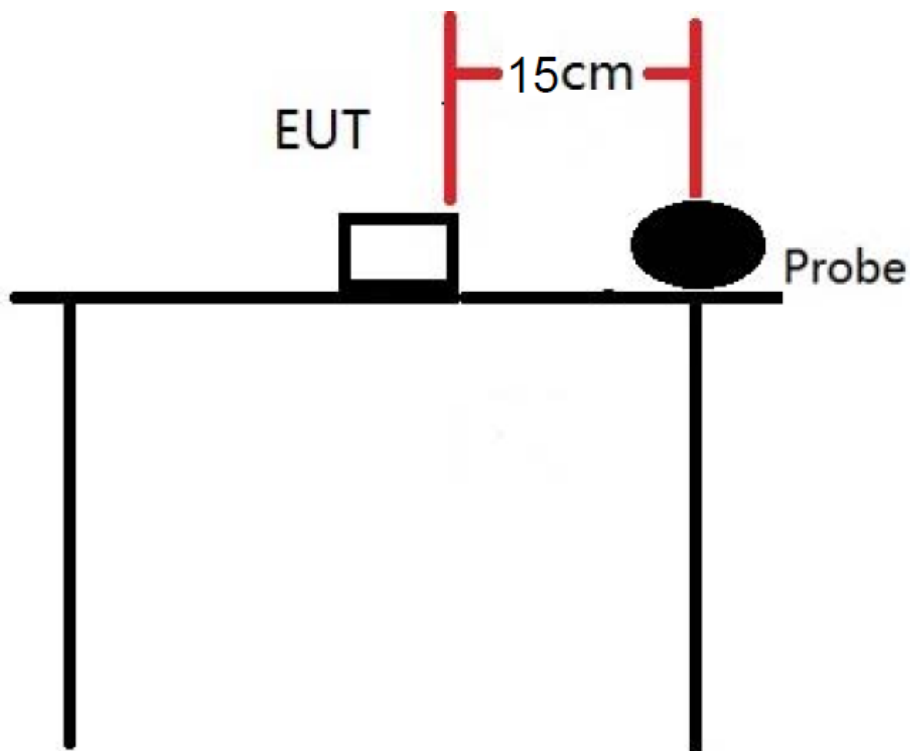
Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations 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, 2022	1 Year
<input checked="" type="checkbox"/>	H-Field Probe(300KHz-30MHz)	Narda	ELT-400	M-0174	August 04, 2022	1 Year
<input checked="" type="checkbox"/>	Broadband Field Meter	Narda	ELT-400	M-0173	August 04, 2022	1 Year

Description of Support Device

iPhone : Manufacturer: Apple Inc.
(Provided by the laboratory) M/N: A2176
S/N: N/A

AC/DC Adapter : Model number: CX65UC001
(Provided by the laboratory) 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: WPT charging

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	0	0.189	1.63	0.815
Measurement Point 2	Back	0	0.183		
Measurement Point 3	Left	0	0.186		
Measurement Point 4	Right	0	0.180		
Measurement Point 5	Bottom	0	0.181		
Measurement Point 6	Top	0	0.185		
Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	2	0.153	1.63	0.815
Measurement Point 2	Back	2	0.147		
Measurement Point 3	Left	2	0.156		
Measurement Point 4	Right	2	0.148		
Measurement Point 5	Bottom	2	0.149		
Measurement Point 6	Top	2	0.150		
Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	4	0.125	1.63	0.815
Measurement Point 2	Back	4	0.128		
Measurement Point 3	Left	4	0.123		
Measurement Point 4	Right	4	0.119		
Measurement Point 5	Bottom	4	0.126		
Measurement Point 6	Top	4	0.121		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	6	0.097	1.63	0.815
Measurement Point 2	Back	6	0.102		
Measurement Point 3	Left	6	0.095		
Measurement Point 4	Right	6	0.101		
Measurement Point 5	Bottom	6	0.099		
Measurement Point 6	Top	6	0.105		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	8	0.073	1.63	0.815
Measurement Point 2	Back	8	0.069		
Measurement Point 3	Left	8	0.066		
Measurement Point 4	Right	8	0.075		
Measurement Point 5	Bottom	8	0.071		
Measurement Point 6	Top	8	0.068		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	10	0.046	1.63	0.815
Measurement Point 2	Back	10	0.043		
Measurement Point 3	Left	10	0.043		
Measurement Point 4	Right	10	0.051		
Measurement Point 5	Bottom	10	0.048		
Measurement Point 6	Top	10	0.050		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	12	0.027	1.63	0.815
Measurement Point 2	Back	12	0.021		
Measurement Point 3	Left	12	0.026		
Measurement Point 4	Right	12	0.031		
Measurement Point 5	Bottom	12	0.028		
Measurement Point 6	Top	12	0.033		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	14	0.015	1.63	0.815
Measurement Point 2	Back	14	0.018		
Measurement Point 3	Left	14	0.013		
Measurement Point 4	Right	14	0.020		
Measurement Point 5	Bottom	14	0.017		
Measurement Point 6	Top	14	0.015		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	16	0.012	1.63	0.815
Measurement Point 2	Back	16	0.007		
Measurement Point 3	Left	16	0.006		
Measurement Point 4	Right	16	0.009		
Measurement Point 5	Bottom	16	0.012		
Measurement Point 6	Top	16	0.010		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	18	0.007	1.63	0.815
Measurement Point 2	Back	18	0.005		
Measurement Point 3	Left	18	0.010		
Measurement Point 4	Right	18	0.006		
Measurement Point 5	Bottom	18	0.005		
Measurement Point 6	Top	18	0.009		

Test Mode: Wireless Charging 5W use ipone					
		Measuring Distance(cm)	H- Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	20	0.002	1.63	0.815
Measurement Point 2	Back	20	0.006		
Measurement Point 3	Left	20	0.009		
Measurement Point 4	Right	20	0.003		
Measurement Point 5	Bottom	20	0.007		
Measurement Point 6	Top	20	0.06		

PHOTOGRAPHS OF TEST SETUP

WPT charging:

