# EUT Specification

## FCC ID: 2AWCHDS15W-WX

| Characteristics | Description |
|---|---|
| **Product Name** | Wireless charger |
| **Model number** | DS15W-WX |
| **Power Supply** | AC120V/60Hz for adapter |
| **Operating Frequency Range** | 110-205KHz |
| **Modulation Technique** | ASK |
| **Antenna Type** | Induction coil |
| **Device category** | ☐ Portable (<20cm separation)<br>☒ Mobile (>20cm separation)<br>☐ Others ___ |
| **Exposure classification** | ☐ Occupational/Controlled exposure (S = 5mW/cm2)<br>☒ General Population/Uncontrolled exposure (S=1mW/cm2) |
| **Antenna diversity** | ☒ Single antenna<br>☐ Multiple antennas<br>☐ Tx diversity<br>☐ Rx diversity<br>☐ Tx/Rx diversity |
| **Evaluation applied** | ☒ MPE Evaluation<br>☐ SAR Evaluation |

**Applicable Standard:**

FCC Part 1(1.1310) ,Part 2(2.1091) and KDB 680106 D01 RF Exposure Wireless Charging Apps v03

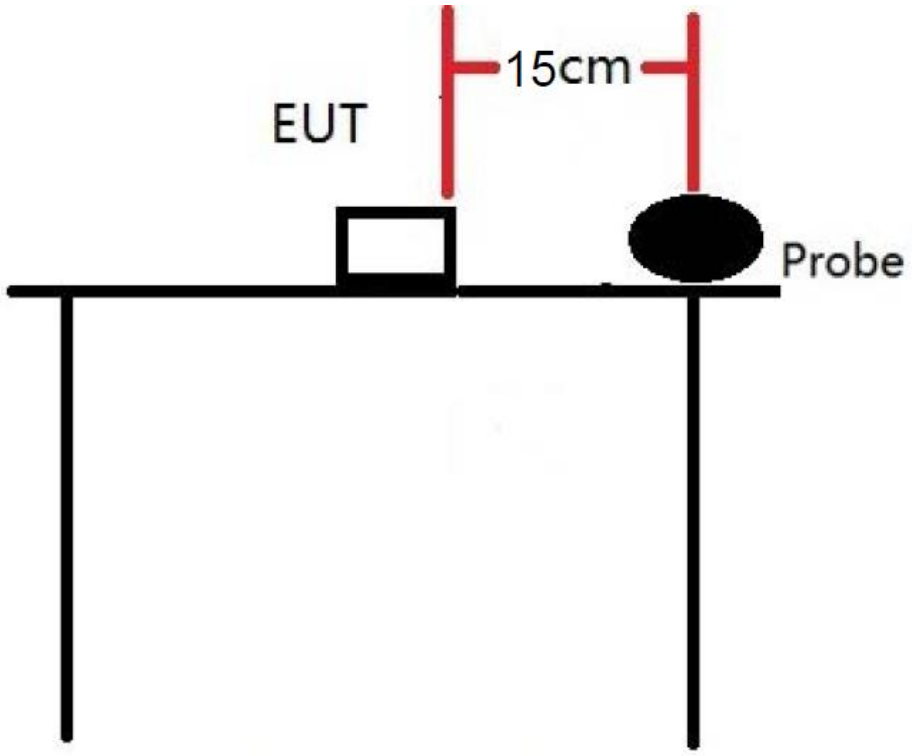
**Applicable Requirement:**

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. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| ☒ | E-Field Probe(100kHz-3 GHz) | Narda | EP 601 | 611WX70311 | November 16, 2019 | 1 Year |
| ☒ | H-Field Probe(300KHz-3 0MHz) | Narda | ELT-400 | M-0174 | August 04, 2019 | 1 Year |
| ☒ | Broadband Field Meter | Narda | ELT-400 | M-0173 | August 04, 2019 | 1 Year |

Description of Support Device

| | | |
|---|---|---|
| iPhone | : | Manufacturer: Apple Inc.<br>M/N: A1524<br>S/N: N/A |
| Wireless Charger Receiver Module | : | Manufacturer: Universal<br>M/N: N/A<br>S/N: N/A |
| Adapter | : | Model number:580245A087<br>Input: AC 100-240V, 50/60Hz<br>Manufacturer: SAMSUNG |
| SAMSUNG S9 | : | M/N:Samsung Galaxy S9<br>S/N: N/A |
| Xiaomi 9 | : | Manufacturer: Xiaomi<br>M/N:Xiaomi 9<br>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：179KHz)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 5W use iphone | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | H-Field(A/m) | 50% H-Field(A/m) | Limit(A/m) | 50% Limit(A/m) |
| Measurement Point 1 | Front | 15 | 0.155 | 0.0775 | 1.63 | 0.815 |
| Measurement Point 2 | Back | 15 | 0.153 | 0.0765 | | |
| Measurement Point 3 | Left | 15 | 0.146 | 0.073 | | |
| Measurement Point 4 | Right | 15 | 0.143 | 0.0715 | | |
| Measurement Point 5 | Bottom | 15 | 0.129 | 0.0645 | | |
| Measurement Point 6 | Top | 20 | 0.175 | 0.0875 | | |

| Test Mode: Wireless Charging 5W use iphone | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | E-Field(V/m) | 50% E-Field(V/m) | Limit(V/m) | 50% Limit(V/m) |
| Measurement Point 1 | Front | 15 | 112.584 | 56.292 | 614 | 307 |
| Measurement Point 2 | Back | 15 | 112.358 | 56.179 | | |
| Measurement Point 3 | Left | 15 | 109.415 | 54.7075 | | |
| Measurement Point 4 | Right | 15 | 108.447 | 54.2235 | | |
| Measurement Point 5 | Bottom | 15 | 100.365 | 50.1825 | | |
| Measurement Point 6 | Top | 20 | 116.387 | 58.1935 | | |

Calculated Electric Field (E-Field) strength at 15cm from the boundaries of the EUT, and 20cm from the top.

| Test Mode: Wireless Charging 10W use Samsung S9 | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | H-Field(A/m) | 50% H-Field(A/m) | Limit(A/m) | 50% Limit(A/m) |
| Measurement Point 1 | Front | 15 | 0.189 | 0.0945 | 1.63 | 0.815 |
| Measurement Point 2 | Back | 15 | 0.182 | 0.091 | | |
| Measurement Point 3 | Left | 15 | 0.176 | 0.088 | | |
| Measurement Point 4 | Right | 15 | 0.174 | 0.087 | | |
| Measurement Point 5 | Bottom | 15 | 0.151 | 0.0755 | | |
| Measurement Point 6 | Top | 20 | 0.230 | 0.115 | | |

| Test Mode: Wireless Charging 10W use Samsung S9 | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | E-Field(V/m) | 50% E-Field(V/m) | Limit(V/m) | 50% Limit(V/m) |
| Measurement Point 1 | Front | 15 | 119.664 | 59.832 | 614 | 307 |
| Measurement Point 2 | Back | 15 | 119.471 | 59.7355 | | |
| Measurement Point 3 | Left | 15 | 118.362 | 59.181 | | |
| Measurement Point 4 | Right | 15 | 117.365 | 58.6825 | | |
| Measurement Point 5 | Bottom | 15 | 110.541 | 55.2705 | | |
| Measurement Point 6 | Top | 20 | 127.546 | 63.773 | | |

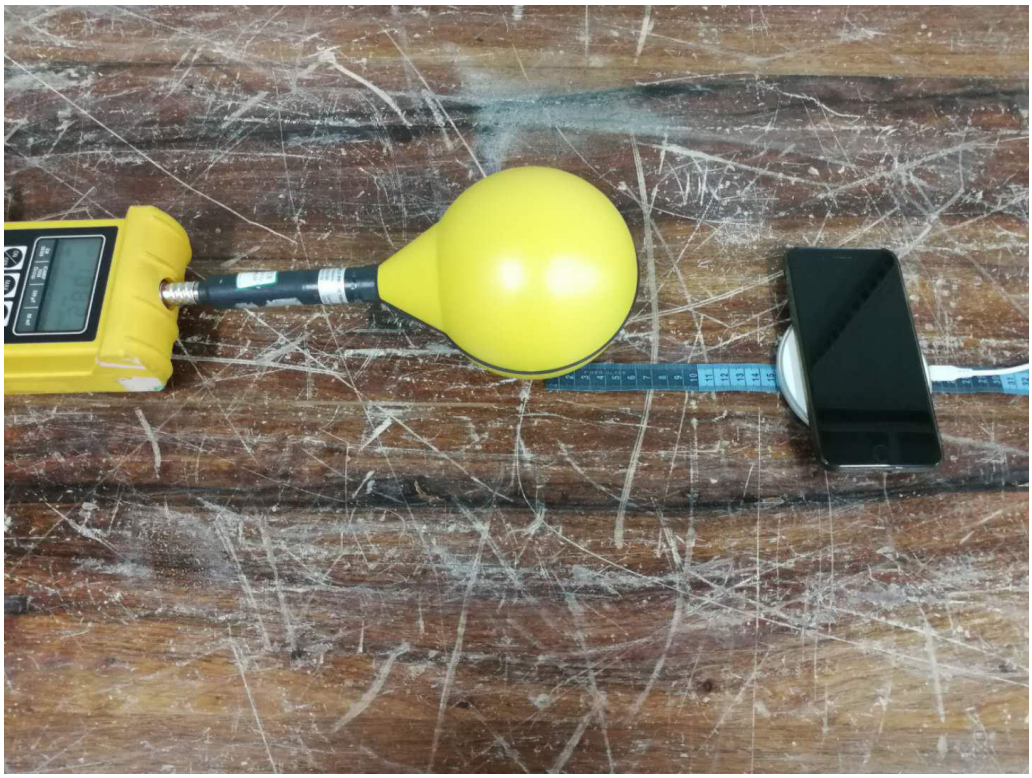
Calculated Electric Field (E-Field) strength at 15cm from the boundaries of the EUT, and 20cm from the top.

| Test Mode: Wireless Charging 15W use Xiaomi 9 | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | H-Field(A/m) | 50% H-Field(A/m) | Limit(A/m) | 50% Limit(A/m) |
| Measurement Point 1 | Front | 15 | 0.196 | 0.098 | 1.63 | 0.815 |
| Measurement Point 2 | Back | 15 | 0.189 | 0.0945 | | |
| Measurement Point 3 | Left | 15 | 0.187 | 0.0935 | | |
| Measurement Point 4 | Right | 15 | 0.192 | 0.096 | | |
| Measurement Point 5 | Bottom | 15 | 0.162 | 0.081 | | |
| Measurement Point 6 | Top | 20 | 0.245 | 0.1225 | | |

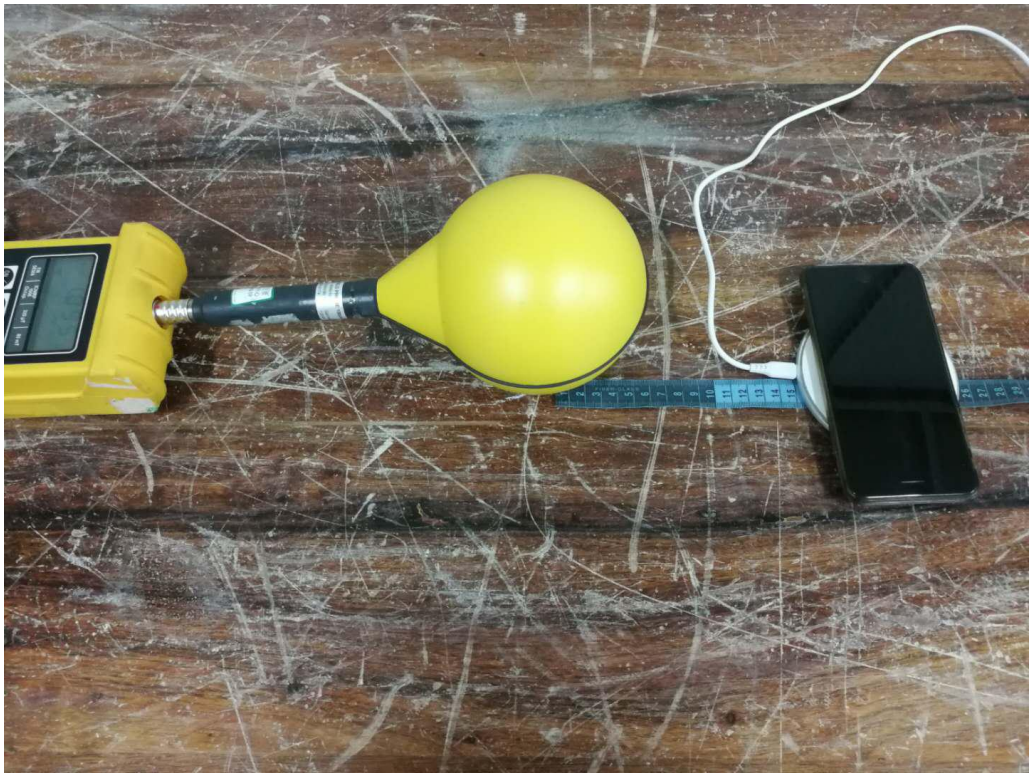
| Test Mode: Wireless Charging 15W use Xiaomi 9 | | | | | | |
|---|---|---|---|---|---|---|
| | | Measuring Distance(cm) | E-Field(V/m) | 50% E-Field(V/m) | Limit(V/m) | 50% Limit(V/m) |
| Measurement Point 1 | Front | 15 | 121.588 | 60.794 | 614 | 307 |
| Measurement Point 2 | Back | 15 | 122.047 | 61.0235 | | |
| Measurement Point 3 | Left | 15 | 120.584 | 60.292 | | |
| Measurement Point 4 | Right | 15 | 120.694 | 60.347 | | |
| Measurement Point 5 | Bottom | 15 | 112.691 | 56.3455 | | |
| Measurement Point 6 | Top | 20 | 129.584 | 64.792 | | |

**PHOTOGRAPHS OFTEST SETUP**

Front:



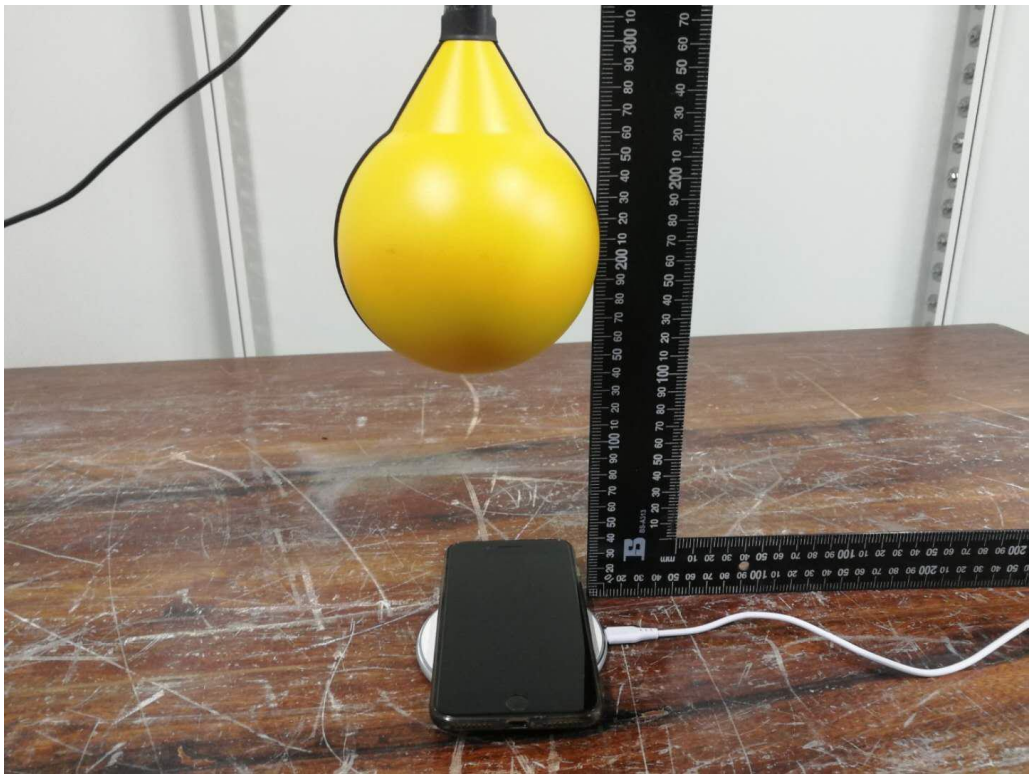
Back:



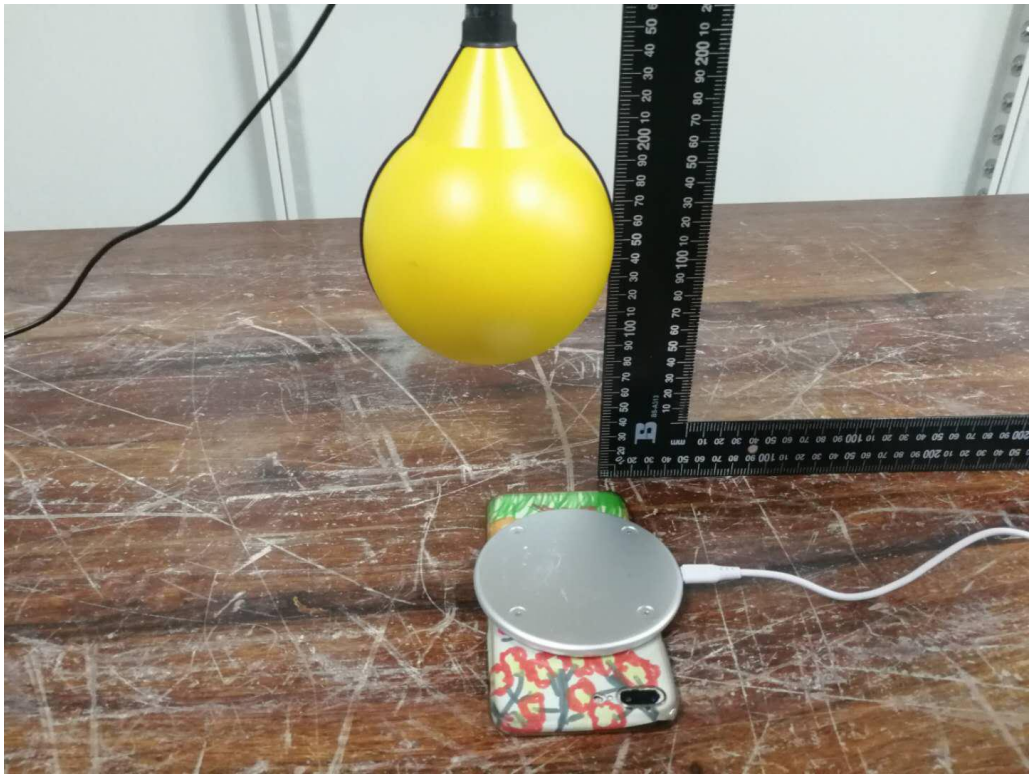
Left:

Right:

Top:



Bottom:



Signature

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Manager
Date: 2020-05-11