

MPE REPORT

For

Shenzhen Muweisan Technology Co. Ltd

Wireless Charging Transmitter

Model No.: CFS011

Trademark: N/A

FCC ID: 2AI98-CFS011

Prepared for : Shenzhen Muweisan Technology Co. Ltd
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Report Number : ES160704026E
Date of Test : June 03, 2016 to November 30, 2016
Date of Report : December 01, 2016

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TEST REPORT DESCRIPTION

Applicant : Shenzhen Muweisan Technology Co. Ltd
Manufacturer : Shenzhen Muweisan Technology Co. Ltd
Trade Mark : N/A
EUT : Wireless Charging Transmitter
Model No. : CFS011

Measurement Procedure Used:

FCC Part 1(1.1310) and Part 2(2.1091)

The device described above is tested by EMTEK (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (SHENZHEN) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (SHENZHEN) CO., LTD.

Date of Test : June 03, 2016 to November 30, 2016

Prepared by :



Joe Xia/Editor

Reviewer :



Yaping Shen /Supervisor

Approve & Authorized Signer :



Lisa Wang/Manager

1. SUMMARY OF TEST RESULT

EMISSION		
Description of Test Item	Standard & Limits	Results
MPE	FCC Part 1(1.1310) and Part 2(2.1091)	Pass
Note: N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Wireless Charging Transmitter

Model Number : CFS011

Test Voltage : DC15V from adapter

AC adapter : Model: HJ-AD24-150150
Input: AC 100-240V 50/60Hz 0.7A
Output: DC 15V, 1500mA

Applicant : Shenzhen Muweisan Technology Co. Ltd

Address : Room 923, Baoyuan Building, Baoyuan Road, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

Manufacturer : Shenzhen Muweisan Technology Co. Ltd

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Date of Received : June 02, 2016

Date of Test : June 03, 2016 to November 30, 2016

Apply to the following mobile phone:

Mobile phone model	FCC ID Number
Iphone 5	BCG-E2599A
Iphone 5C	BCG-E2644A
Iphone 5S	BCG-E2643A
Iphone 6	BCG-E2816A
Iphone 6Plus	BCG-E2817A
Iphone 6S	BCG-E2946A
Iphone 6S Plus	BCG-E2944A
Iphone SE	BCG-E3042A
SAMSUNG S6	A3LSM9200

2.2. Description of Test Facility

Site Description

EMC Lab.

- : Accredited by CNAS, 2013.10.28
The certificate is valid until 2016.10.29
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01: 2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L229
- : Accredited by TUV Rheinland Shenzhen, 2015.4
The Laboratory has been assessed according to the requirements ISO/IEC 17025.
- : Accredited by FCC, April 17, 2013
The Certificate Registration Number is 406365.
- : Accredited by FCC, July 24, 2013
The Certificate Registration Number is 709623.
- : Accredited by Industry Canada, November 29, 2012
The Certificate Registration Number is 4480A.

2.3. Measurement Uncertainty

- | | | |
|-------------------------------|---|--|
| Radiated Emission Uncertainty | : | 3.3dB (30M~1GHz Polarize: H)
3.2dB (30M~1GHz Polarize: V)
3.7dB (1~18GHz Polarize: H)
3.6dB (1~18GHz Polarize: V) |
|-------------------------------|---|--|

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For MPE Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	E-Field Probe(100kHz-3G Hz)	Narda	EF0391	2304/03	May 15, 2016	1 Year
☒	H-Field Probe(300KHz-30 MHz)	Narda	HF3061	245633	May 15, 2016	1 Year
☒	Broadband Field Meter	Narda	NBM-550	232421	May 15, 2016	1 Year

3.2. Test Mode

Test Mode	Description
Mode 1	The Wireless Power Transmission Test Mode The EUT configuration of the emission tests is EUT + Wireless Power Transmission Load(Two Iphones) + Charger. During the measurement, the EUT is connected with the Wireless Power Transmission load. The EUT is also connected with the charger and working normally.
Mode 2	The Wireless Power Transmission Test Mode The EUT configuration of the emission tests is EUT + Wireless Power Transmission Load(Two Android Phones) + Charger. During the measurement, the EUT is connected with the Wireless Power Transmission load. The EUT is also connected with the charger and working normally.

4. RF EXPOSURE

4.1. Measuring Standard

FCC Part 1(1.1310) and Part 2(2.1091)

4.2. Requirments

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:

- o **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.
- o **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.
- o **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:

- o **Occupational/Controlled Exposure:** In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.
- o **General Population/Uncontrolled Exposure:** The general population / uncontrolled exposure limits are applicable to 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 made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

4.3. Test configuration

The field strength of both E-field and H-field was measured at 10cm using the equipment list above for determining compliance with the MPE requirements of FCC Part 1.1310. Measurement was made from all sides with 10cm measure from the center of the probe to the edge of the device. During measurements, the Wireless Charging Transmitter (CFS011) FCC ID: 2AI98-CFS011 was wirelessly charging a battery housed inside two iPhones (FCC ID: BCG-E2643A and BCG-E2816A). The iPhone portable handset was equipped with the Wireless Charging Receiver (2AI98-MJT111). During testing, the Wireless Charging Transmitter (CFS011) 2AI98-CFS011 was powered by an AC Adapter Model: HJ-AD24-150150.

The Wireless Charging Transmitter operating with a fully charged battery was determined to be the worst case that produced maximum E-field and H-field. The MPE data in the table below is from this test configuration.

During testing, the Wireless Charging Transmitter was placed on a non-conductive (composite plastic) table top, and the handset with the Wireless Charging Receiver was placed on the Wireless Charging Transmitter for charging. Maximum E-field and H-field measurements were made 10cm from each side of the EUT. Along the side of the EUT and still 10cm away from the edge of the EUT, the field probes were positioned at the location where there is maximum field strength. The probe was allowed to measure field strength at that location for 30 minutes. The maximum E-field and H-field is reported below. The Wireless Charging Transmitter uses a wireless charging circuit for power transfer operating at the ISM frequency of 6.78MHz. Thus, the E-field Limit = $824/f$ (f is in MHz) so $824/6.78\text{MHz} = 121.5$ (V/m). The H-field limit = $2.19/f$, so $2.19/6.78 = 0.323$ (A/m).

4.4. Limits

The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1. According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

4.5. Measuring Results

Table 1. E-Field MPE Data

E-Field Measurement (10cm)						
Test Mode	EUT Side	Left	Righ	Top	Bottom	Z-Axis(above)
Mode 1	Max E-field(V/m)	13.56	4.87	11.32	8.57	13.65
	Limit 824/f (V/m)	121.5	121.5	121.5	121.5	121.5
	Margin (V/m)	-107.94	-116.63	-110.18	-112.93	-107.85
Mode 2	Max E-field(V/m)	13.87	5.21	12.35	8.93	14.21
	Limit 824/f (V/m)	121.5	121.5	121.5	121.5	121.5
	Margin (V/m)	-107.63	-116.29	-109.15	-112.57	-107.29

Table 2. H-Field MPE Data

H-Field Measurement (10cm)						
Test Mode	EUT Side	Left	Righ	Top	Bottom	Z-Axis(above)
Mode 1	Max H-field (A/m)	0.045	0.018	0.041	0.028	0.044
	Limit 2.19/f (A/m)	0.323	0.323	0.323	0.323	0.323
	Margin (A/m)	-0.278	-0.305	-0.282	-0.295	-0.279
Mode 2	Max H-field (A/m)	0.052	0.023	0.053	0.037	0.055
	Limit 2.19/f (A/m)	0.323	0.323	0.323	0.323	0.323
	Margin (A/m)	-0.271	-0.30	-0.27	-0.286	-0.268

Note:

1) E-field Limit = $824/f$, f in MHz

2) H-field Limit = $87/f^{1/2}$, f in MHz

3) Measurement was made from all sides with 10cm measure from the center of the probe to the edge of the device. The maximum level was recorded.

5. PHOTOGRAPHS OF TEST SETUP

