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Shenzhen Branch**

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Report No.: SZEM171101209102
Page: 1 of 16

Human Exposure Report

Application No.: SZEM1711012091CR
Applicant/ Manufacturer: Spigen Korea Co., Ltd.
Address of Applicant/ Manufacturer: NO. 1709 STX-V Tower, 128, Gasan digital 1-ro, Geumcheon-gu, Seoul, 08507, Republic of Korea, Seoul, South Korea
Factory: Spigen Korea Co., Ltd.
Address of Factory: NO. 1709 STX-V Tower, 128, Gasan digital 1-ro, Geumcheon-gu, Seoul, 08507, Republic of Korea, Seoul, South Korea

Equipment Under Test (EUT):
EUT Name: Fast Wireless Charger
Model No.: F301W
Trade Mark: Spigen
FCC ID: 2AFKNF301W
Standards: 47 CFR PART 1, Subpart I, Section 1.1310
Date of Receipt: 2017-12-07
Date of Test: 2017-12-07 to 2018-01-29
Date of Issue: 2018-01-29

Test Result :	Pass*
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* This report is just a test result base on the test method and limit requirement shown in the form on the second page. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Moon Zhang
Project Engineer

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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2 Contents

	Page
1 COVER PAGE	1
2 CONTENTS	2
3 GENERAL INFORMATION.....	3
3.1 DETAILS OF E.U.T.	3
3.2 DESCRIPTION OF SUPPORT UNITS.....	3
3.3 TEST LOCATION	4
3.4 TEST FACILITY	4
3.5 DEVIATION FROM STANDARDS.....	4
3.6 ABNORMALITIES FROM STANDARD CONDITIONS	4
4 EQUIPMENTS USED DURING TEST	5
5 TEST RESULTS	6
5.1 RF EXPOSURE TEST	6
5.1.1 <i>E.U.T. Operation</i>	6
<i>Operating Environment:</i>	6
<i>EUT Operation:</i>	6
5.1.2 <i>Measurement Data</i>	7
6 PHOTOGRAPHS	10
6.1 TEST PHOTOS	10-16



3 General Information

3.1 Details of E.U.T.

Power supply: Adaptor:APS-FW018W1-G
Input: 100-240V~50/60Hz 0.5A MAX
Output:DC 5.0V/3A ;9V/2A; 12V/1.5A
Total output: 18W
Fast Wireless Charger F301W
Input: 5V/1A 9V /1.8A
Output: 5V/1A;9V/1A

Cable: USB Cable: 120cm unshielded

EUT Function: wireless charging transmitter

Carrier Frequency 110-205kHz

Antenna Type Loop antenna

Modulation type: Load modulation

3.2 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Serial No.
Full load receiver	Provided by Client	10W	Full load receiver
Adjustable load receiver	Provided by Client	0-10W	Adjustable load receiver
Samsung phone	Provided by Client	SM-G9500	Samsung phone



3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions

None.



4 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2018-06-10
2	Electric Field Meter	Schaffner	EMC20	EMC068	2018-03-27



5 Test Results

5.1 RF Exposure test

Test Requirement: 47 CFR PART 1, Subpart I, Section 1.1310
Measurement Distance: 10cm
Test voltage: AC 120V 60Hz
Limit:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	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				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
F=frequency in MHz *=Plane-wave equivalent power density RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).				

5.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.0 °C Humidity: 52 % RH Atmospheric Pressure: 1015 mbar

EUT Operation:

This device has been tested the worst status of full load and the device has been tested with mobile phone at zero charge, intermediate charge, and full charge.



5.1.2 Measurement Data

1: Output Voltage=DC 5V; The max output current =1A;Calculation of resistor value=4.0Ω

Electric Field Emissions

Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result (V/m)	Limit (V/m)	30% Limit (V/m)
Side 1	120.6	10	2.15	614	184.2
Side 2	120.6	10	2.42	614	184.2
Side 3	120.6	10	2.47	614	184.2
Side 4	120.6	10	2.05	614	184.2
Top	120.6	10	2.06	614	184.2
Bottom	120.6	10	2.25	614	184.2

Magnetic Field Emissions

Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result (A/m)	Limit (A/m)	30% Limit (A/m)
Side 1	120.6	10	0.0051	1.63	0.489
Side 2	120.6	10	0.0048	1.63	0.489
Side 3	120.6	10	0.0045	1.63	0.489
Side 4	120.6	10	0.0068	1.63	0.489
Top	120.6	10	0.0047	1.63	0.489
Bottom	120.6	10	0.0059	1.63	0.489



2: Output Voltage=DC 9V; The max output power =9W;Calculation of resistor value=9Ω

Electric Field Emissions

Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result (V/m)	Limit (V/m)	30% Limit (V/m)
Side 1	122.5	10	2.54	614	184.2
Side 2	122.5	10	2.64	614	184.2
Side 3	122.5	10	2.61	614	184.2
Side 4	122.5	10	2.58	614	184.2
Top	122.5	10	2.14	614	184.2
Bottom	122.5	10	2.69	614	184.2

Magnetic Field Emissions

Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result (A/m)	Limit (A/m)	30% Limit (A/m)
Side 1	122.5	10	0.0075	1.63	0.489
Side 2	122.5	10	0.0064	1.63	0.489
Side 3	122.5	10	0.0019	1.63	0.489
Side 4	122.5	10	0.0058	1.63	0.489
Top	122.5	10	0.0061	1.63	0.489
Bottom	122.5	10	0.0067	1.63	0.489



4: Mobile phone has been charge at zero charge, intermediate charge, and full charge.

Electric Field Emissions

Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result(V/m)			Limit(V/m)/ 30%Limit(V/m)
			zero charge	intermediate charge	full charge	
Side 1	125.2	10	2.16	2.64	2.66	614/184.2
Side 2	125.2	10	2.41	2.67	2.64	614/184.2
Side 3	125.2	10	2.68	2.97	2.67	614/184.2
Side 4	125.2	10	2.79	2.64	2.97	614/184.2
Top	125.2	10	2.16	2.64	2.88	614/184.2
Bottom	125.2	10	2.65	2.64	2.74	614/184.2

Magnetic Field Emissions

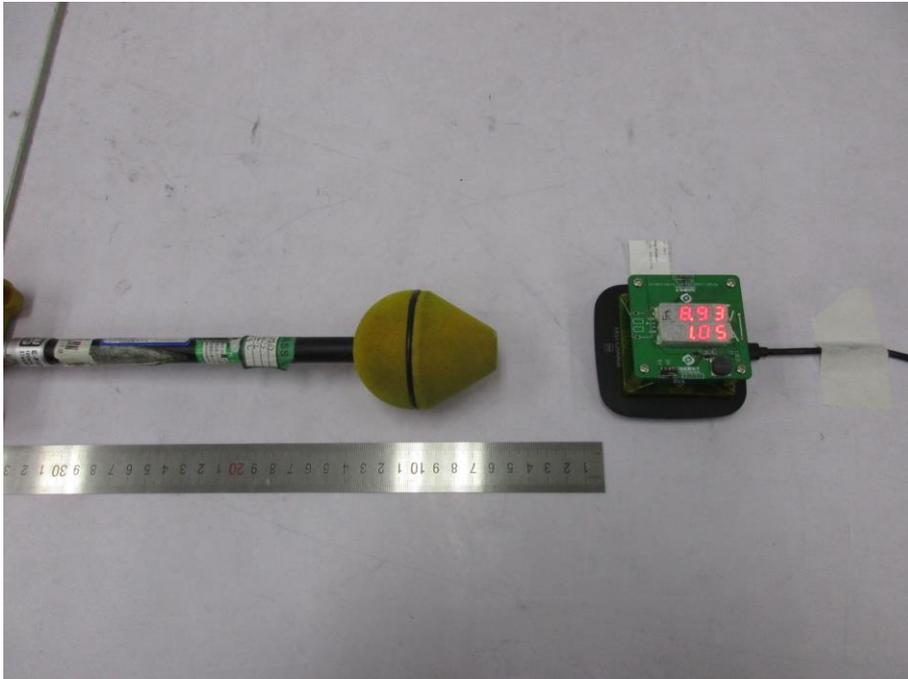
Test Position	Frequency (KHz)	Test Distance (cm)	Probe Measure Result(A/m)			Limit(A/m)/ 30%Limit(A/m)
			zero charge	intermediate charge	full charge	
Side 1	125.2	10	0.0054	0.0094	0.0091	1.63/0.489
Side 2	125.2	10	0.0041	0.0024	0.0086	1.63/0.489
Side 3	125.2	10	0.0061	0.0064	0.0067	1.63/0.489
Side 4	125.2	10	0.0069	0.0075	0.0068	1.63/0.489
Top	125.2	10	0.0025	0.0035	0.0075	1.63/0.489
Bottom	125.2	10	0.0047	0.0061	0.0068	1.63/0.489

6 Photographs

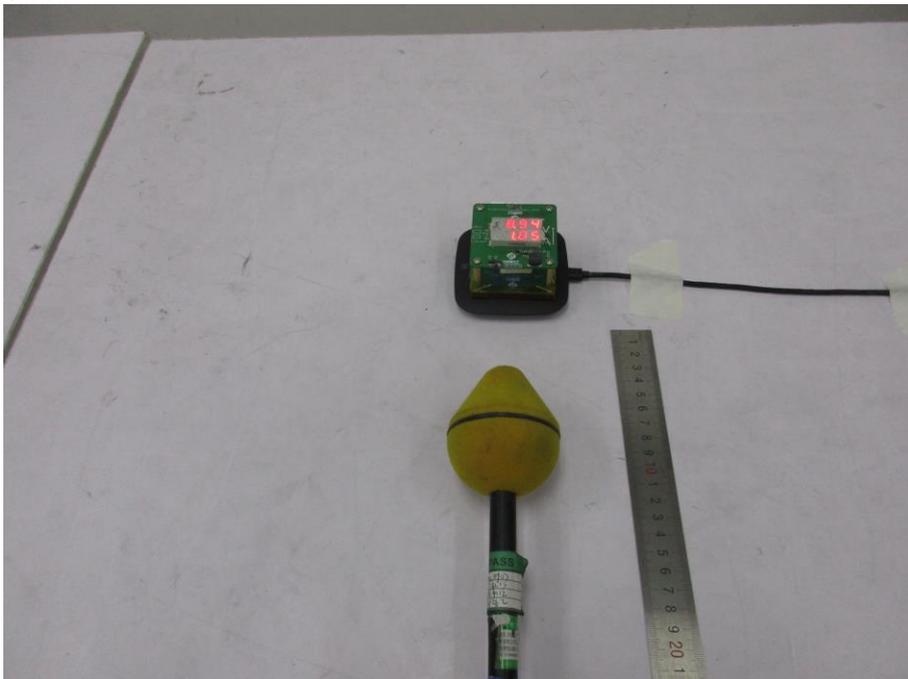
6.1 Test photos

Test with full load

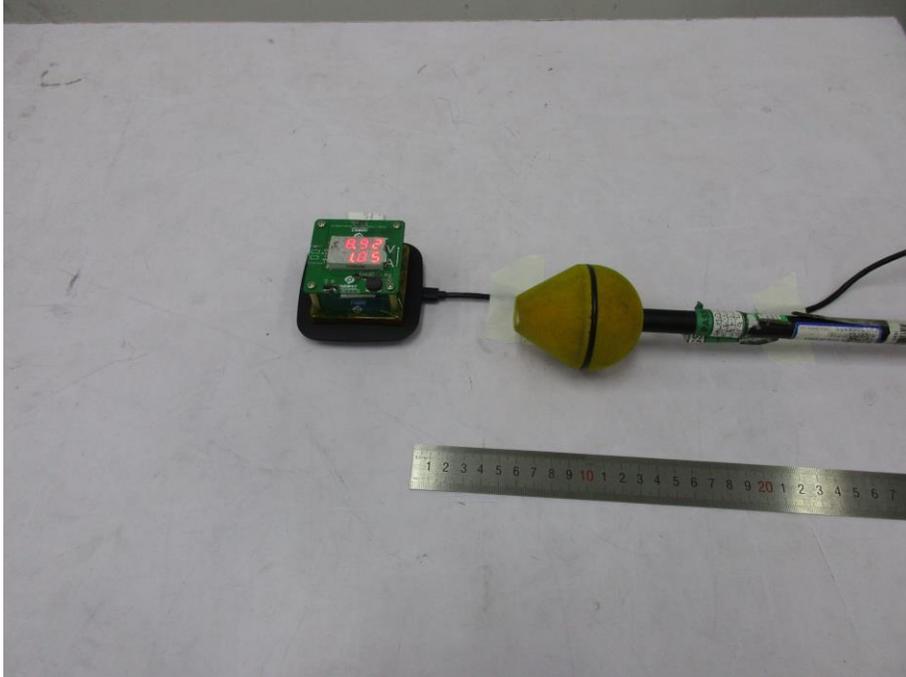
Side 1



Side 2



Side 3



Side 4



Top



Bottom

