Human Exposure Report

Application No.:	SZEM1908017544CR
Applicant:	Spigen Korea Co., Ltd.
Address of Applicant:	Spigen HQ-A, 446, Bongeunsa-ro, Gangnam-gu, Seoul, 06153, South Korea
Manufacturer:	Spigen Korea Co., Ltd.
Address of Manufacturer:	446, Bongeunsa-ro, Gangnam-gu, Seoul, 06153, South Korea.
Factory:	ShenZhen Fangxin Technology Co., Ltd.
Address of Factory:	Rm 503, 5F, Hengbo Innovation Science and Technology Park, No.33, Qingning Rd, Longhua St, Longhua Dist, Shenzhen, China
Equipment Under Test (EUT):	
EUT Name:	Flex Wireless Charger
Model No.:	F316W
Trade mark:	Spigen, Steadiboost
FCC ID:	2AFKNF316W
Standards:	47 CFR PART 1, Subpart I, Section 1.1310
Date of Receipt:	2019-08-15
Date of Test:	2019-08-17 to 2019-08-20
Date of Issue:	2019-08-26
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above

Keny Xu
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2019-08-26		Original

Authorized for issue by:				
		Damon Su **Damon Su /Project Engineer**		
		Eric Fu **Eric Fu /Reviewer**		

2 Contents

3 General Information

3.1 Details of E.U.T.

Power supply:	Input: DC5V, 3A or 9V, 2A or 12V, 1.5A, Output: 5W/7.5W/10W/15W Adapter Model: TY0U01QC Input: AC 100-240V, 50/60Hz 0.8A Output: DC (3.6V-6.5V), 3A or (6.5V-9V), 2A or (9V-12V), 1.5A
Cable:	USB Cable(Unshielded, 120cm)
Operation Frequency:	113.30kHz to 137.66kHz
Modulation Type:	Load Modulation
Antenna Type:	Loop Antenna
Remark:	This device has been tested the worst status of intermediate load and horizontal placement, vertical placement had been tested and only the worst vertical placement had been recorded in the report. The device has been tested with mobile phone at zero charge, intermediate charge, and full charge.

3.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Smart charger	Toye	TY0U01QC	N/A
iPhone 8	Apple	A1863	F4GVQ656JC6D
Mobile Phone	SAMSUNG	SM-G9500	R28J9140LPB

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.

• **Innovation, Science and Economic Development Canada**

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

CAB identifier: CN0006.
IC#: 4620C.

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions

None.

4 Equipments Used during Test

Item	Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
1	Electric Field Probe (100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
2	EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

5 Test Results

5.1 RF Exposure test

Test Requirement: 47 CFR PART 1, Subpart I, Section 1.1310

Measurement Distance: 15cm

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: 24.0 °C Humidity: 52% RH Atmospheric Pressure: 1015 mbar

EUT Operation:

This device has been tested with mobile phone at zero charge, intermediate charge, and full charge.

5.1.2 Measurement Data

All three load modes were conducted and the worst case(10W) is reported only.

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

Electric Field Emissions

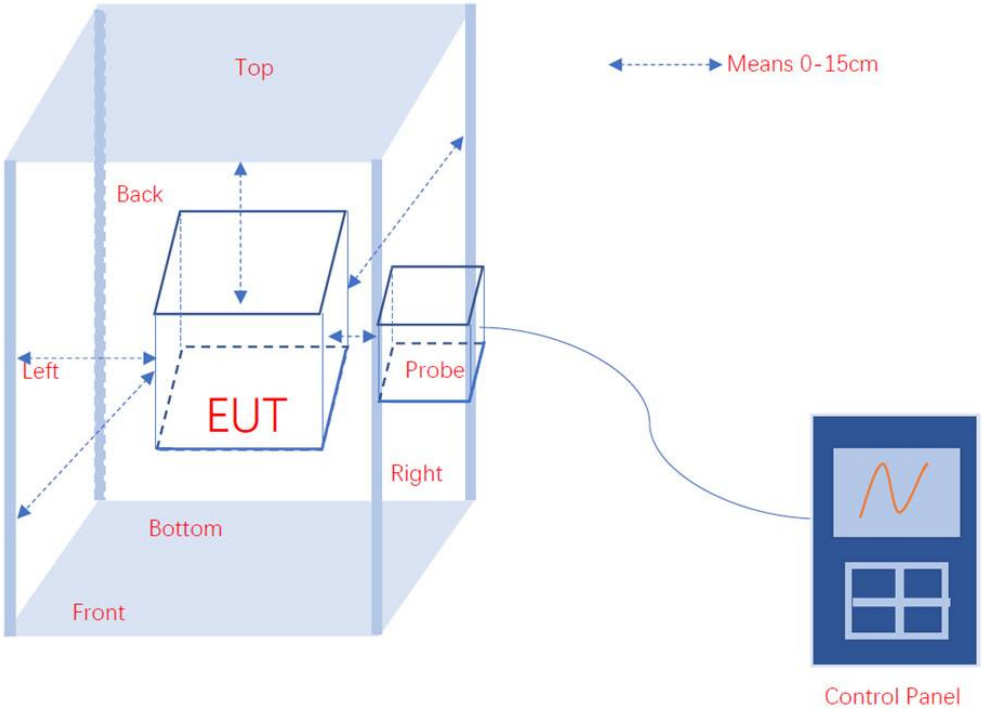
Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50%Limit (V/m)
			zero charge	intermediate charge	full charge	
114 kHz	15	Side 1	2.13	1.91	1.66	307
		Side 2	3.78	3.58	3.37	307
		Side 3	1.7	1.39	1.21	307
		Side 4	1.22	0.99	0.77	307
		Top	0.83	0.62	0.44	307

Magnetic Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			zero charge	intermediate charge	full charge	
114 kHz	15	Side 1	0.1507	0.1384	0.1239	0.815
		Side 2	0.2598	0.2491	0.2343	0.815
		Side 3	0.1291	0.1183	0.1045	0.815
		Side 4	0.0975	0.0874	0.0739	0.815
		Top	0.0527	0.0421	0.0292	0.815

6 Photographs

6.1 Test setup photos



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- End of the Report -