

# RF EXPOSURE REPORT

## FOR

<b>Applicant</b>	:	Spigen Korea Co., Ltd.
<b>Address</b>	:	446, Bongeusa-ro, Gangnam-gu, Seoul, Rep. of Korea
<b>Equipment under Test</b>	:	Spigen PowerArc ArcField™
<b>Model No.</b>	:	PF2004
<b>Trade Mark</b>	:	Spigen
<b>FCC ID</b>	:	2AFKNPF2004
<b>Manufacturer</b>	:	Spigen Korea Co., Ltd.
<b>Address</b>	:	446, Bongeusa-ro, Gangnam-gu, Seoul, Rep. of Korea

**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

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# REPORT

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## Test Report Declare

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**Assess Standard Used:** FCC CFR 47 part1, 1.1307(b), 1.1310; KDB680106 DR03-44118

### We Declare:

The equipment described above is assessed by Dongguan Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above.

The assessed results are contained in this report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

**After evaluation, our opinion is that the equipment In Accordance with above standard.**

<b>Report No.:</b>	DDT-R21030115-2E7		
<b>Date of Receipt:</b>	Mar. 02, 2021	<b>Date of Test:</b>	Mar. 02, 2021 ~ Mar. 23, 2021

**Prepared By:**

*Talent Zhang*  
**Talent Zhang/Engineer**

**Approved By:**

  
**Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

## Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Mar. 23, 2021	

## 1. General Information

### 1.1. Description of equipment

EUT* Name	: Spigen PowerArc ArcField™
Model Number	: PF2004
EUT function description	: Please reference user manual of this device
Power supply	: DC 5V, 9V, 12V power by external PD power adapter
Wireless charging Operation frequency	: 110 kHz - 145 kHz
Antenna Type	: Inductive loop coil antenna

Note: EUT is the abbreviation of equipment under test.

### 1.2. Assistant equipment used for test

Description of Accessories	Manufacturer	Model number	Serial No.	Other
Dummy load	N/A	N/A	N/A	N/A

### 1.3. Assess laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: [ddt@dgddt.com](mailto:ddt@dgddt.com)

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, G-20118

## 2. Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Electric and Magnetic Field Analyzer	narda	EHP-200A	170WX91016	Jan. 06, 2021	1 Year

### 3. Method of Measurement

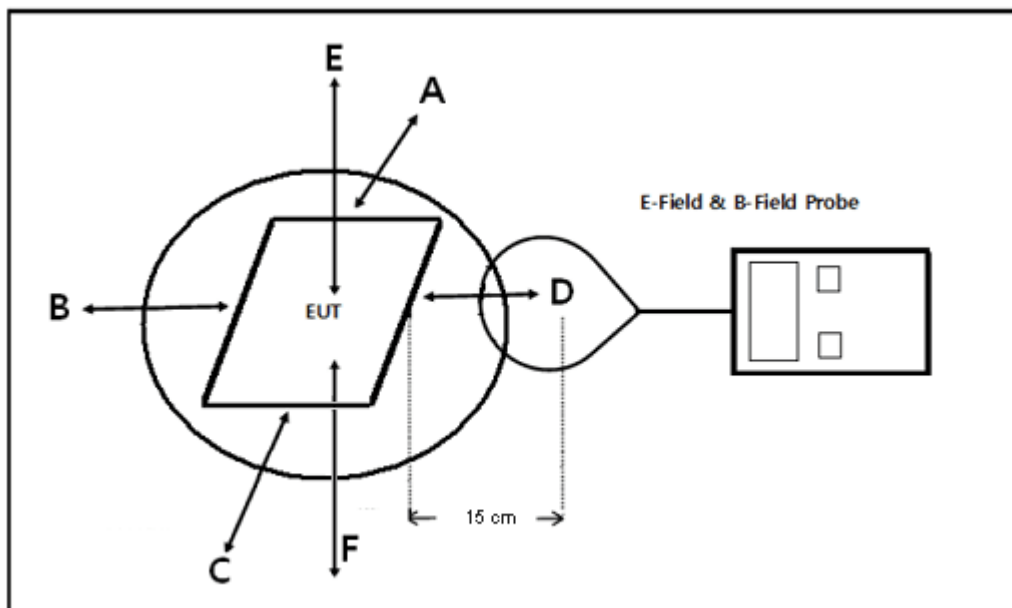
#### 3.1. Applicable standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

According KDB680106 DR03-44118: RF Exposure Wireless Charging Apps v04.

#### 3.2. Block diagram of test setup



Note: Due to installation limitations no tests from the underside of the charging device (Test Position F) are required.

#### 3.3. Test procedure

- The RF exposure test was performed in shielded chamber.
- The measurement probe was placed at test distance (15 cm) which is between the edge of the charger and the geometric centre of probe.
- The measurement probe used to search of highest strength.
- The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- The EUT were measured according to the dictates of KDB680106 DR03-44118.

### 3.4. Equipment approval considerations:

The EUT does comply with section 5 b) of KDB680106 DR03-44118 RF Exposure Wireless Charging Apps v04

(1) Power transfer frequency is less than 1 MHz.

Yes, the device operates in the frequency range from 110 kHz ~ 145 kHz

(2) Output power from each primary coil is less than or equal to 15 watts

Yes, the maximum output power of the primary coil is 15 W.

(3) The system may consist of more than one source primary coils, charging one or more clients.

If more than one primary coil is present, the coil pairs may be powered on at the same time.

Yes, the transfer system includes only single primary coils.

(4) Client device is placed directly in contact with the transmitter.

Yes, client device is placed directly in contact with the transmitter.

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

Yes, the EUT is for mobile exposure conditions only.

(6) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

Yes, the EUT H-field strengths levels are less than 50% of MPE limit.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density



### 3.5. E and H Field Strength

Test mode for wireless charger:

Dummy load: 15W load, 10W load, 5W load mode

E-Filed Strength at 15 cm from the edges surrounding the EUT and 20 cm above the top surface of the EUT (V/m)

Test Position	Probe Measure Result(V/m)			Limits Test (V/m)
	15W load	10W load	5W load	
A	2.1615	3.9677	2.2490	614
B	2.2542	2.0933	2.3366	614
C	1.9551	1.6885	2.1327	614
D	2.6051	1.9594	2.0981	614
E	3.2879	4.0866	2.8715	614

H-Filed Strength at 15 cm from the edges surrounding the EUT and 20 cm above the top surface of the EUT (A/m)

Test Position	Probe Measure Result(A/m)			Limits Test (A/m)
	15W load	10W load	5W load	
A	0.2167	0.1689	0.2855	1.63
B	0.1313	0.1076	0.1265	1.63
C	0.1813	0.1123	0.1315	1.63
D	0.2178	0.3111	0.1190	1.63
E	0.1734	0.2120	0.2892	1.63