

1. GENERAL INFORMATION**1.1 CLIENT INFORMATION**

Applicant:	ThinkGeek, Inc.
Address of Applicant:	625 Westport Parkway, Grapevine, TX 76051, United States
Manufacturer:	ThinkGeek, Inc.
Address of Manufacturer:	625 Westport Parkway, Grapevine, TX 76051, United States

1.2 EUT INFORMATION

Product Name:	Iron Man Arc Reactor Wireless Charger - With AC Adapter
Model No.:	LJSL-MV-IRN
Trade Mark:	N/A
DUT Stage:	<i>Identical Prototype</i>
Operating Frequency Range:	110KHz -205KHz
Antenna Type:	Coil antenna
Power Supply	100-240V~50/60Hz
Sample Received Date:	October 24, 2019
Sample Tested Date:	October 24, 2019 to November 4, 2019

1.3 OTHER INFORMATION**Support Equipment**

Description	Manufacturer	Model No.	Input/ Output
Mobile phone	XIAOMI	M1803D5XA	N/A

1.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.5 DEVIATION FROM STANDARDS

None.

1.6 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.7 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☑	Broadband Field meter	STT	SEM-600	D-1044	May 28, 2019	May 27, 2020
☑	Probe	STT	LF-04	I-1044	May 28, 2019	May 27, 2020
☑	Probe holder	STT	TR-01	N/A	N/A	N/A
☑	Optical fiber line	STT	L=5M	N/A	N/A	N/A

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

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 Times 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
1500-100000	/	/	5	6

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 Times 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 ²	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

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

3.2.2 Test Procedure

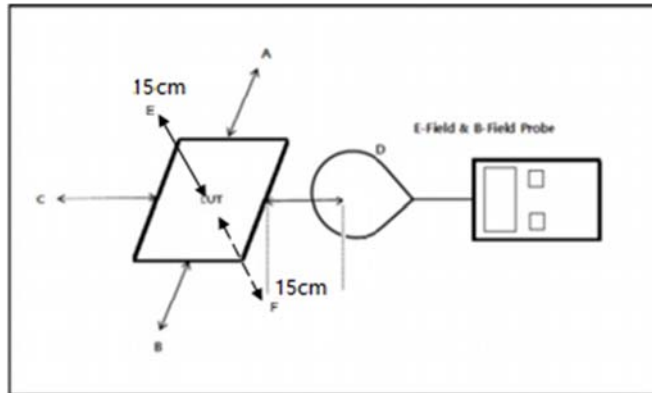
Enabled the EUT to transmit and receive data continue

a. The field strength of both E-field and H-field was measured at 15 cm surrounding the device and 15 cm above the top surface using the equipment list above for determining compliance with the MPE requirements of FCC Part 1.1310.

b. The RF power density was measured with the battery at 3 different charge conditions: battery at less than 1 % , battery at 50% charger, battery at 99% charger,.

- c. Maximum E-field and H-field measurements were made 15cm from each side of the EUT. Along the side of the EUT and still 15cm away from the edge of the EUT, the field probes were positioned at the location where there is maximum field strength. The maximum E-field and H-field is reported below.
- d. This device uses a wireless charging circuit for power transfer operating at the frequency of 110-205 kHz. Thus, the 300 kHz limits were used: E-field Limit = 614 (V/m); H-field limit = 1.63 (A/m).

3.2.3 Test setup



Note

- The RF exposure test is performed in the shield room
- The test distance is between the edge of the charger and the geometric center of probe
- The aggregate at 15 cm surrounding the device and 15 cm above the top surface from all simultaneous transmitting coils are demonstrate

3.3 TEST DATA

Test Mode	Battery status	Probe Position (V/m) right	Probe Position (V/m) left	Probe Position (V/m) after	Probe Position (V/m) before	Probe Position (V/m) Top	Probe Position (V/m) down	Limits (V/m)
Mode 1	<1% Battery status	1.53	1.23	0.73	1.33	4.43	1.89	614
Mode 2	50% Battery status	1.59	1.28	0.84	1.39	4.78	1.43	614
Mode 3	99% Battery status	1.69	1.36	0.87	1.19	5.27	1.96	614

E-Field Strength

Test Mode	Battery status	Probe Position (A/m) right	Probe Position (A/m) left	Probe Position (A/m) after	Probe Position (A/m) before	Probe Position (A/m) Top	Probe Position (A/m) down	Limits (A/m)
Mode 1	<1% Battery status	0.0171	0.0215	0.0111	0.0145	0.0174	0.0436	1.63
Mode 2	50% Battery status	0.0194	0.0218	0.0119	0.0158	0.0178	0.0447	1.63
Mode 3	99% Battery status	0.0179	0.0218	0.0122	0.0148	0.0176	0.0474	1.63

H-Field Strength

Remark:

The device meets the mobile RF exposure limit at a 15cm and 15cm separation distance as specified in &2.1091 of the FCC Rules.

All simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.