

RF EXPOSURE REPORT FOR CERTIFICATION
On Behalf of

ZAGG Inc.

HALO Powerstation 100

Model Number: HALO-PS-100

FCC ID: QTG-PS100

Applicant:	ZAGG Inc.
Address:	910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA.
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
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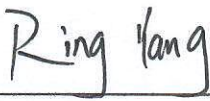
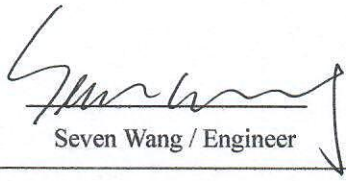
Report Number:	ESTE-R2202224
Date of Test:	Feb. 08~26, 2022
Date of Report:	Feb. 28, 2022

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Address:	910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA.		
Manufacturer:	ZAGG Inc.		
Address:	910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA.		
E.U.T:	HALO Powerstation 100		
Model Number:	HALO-PS-100		
Power Supply:	Input: USB C: 5V---3A, 9V---3A, 12V---3A, 15V---3A or 20V ---2.25A Charging Temp: 0°C~45°C Discharging Temp: -10°C~40°C Output: USB-A: 5V---2.4A USB C: 5V---3A, 9V---3A, 12V---3A, 15V---3A or 20V---2.25A		
Trade Name:		Serial No.:	-----
Date of Receipt:	Feb. 08, 2022	Date of Test:	Feb. 08~26, 2022
Test Specification:	FCC CFR 47 Part 1.1307(b)&1.1310 KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC CFR 47 Part 1.1307(b)&1.1310 requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.		
Prepared by:	Reviewed by:	Date: Feb. 28, 2022	
 Ring Wang / Assistant	 Seven Wang / Engineer	Approved by:  Iceman Hu / Manager	
Other Aspects:	None.		
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			

1. SUMMARY OF TEST

1.1. Summary of test result

Report Section	Description of Test Item	FCC Standard Section	Results
3	Maximum Permissible Exposure	Part 1.1307(b)&1.1310	PASS

1.2. Test Mode

Test Item	Test Mode
Maximum Permissible Exposure	Wireless Charging with Empty Load
	Wireless Charging with Half Load
	Wireless Charging with Full Load
Note: The worst Full Load status is recorded in the report	

1.3. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Electric and Magnetic Field Probe-Analyzer	Narda S.T.S./PMM	EHP-200A	EST-E106	June 13,21	1 Year
Simulated load(Full)	/	/	EST-306	N/A	N/A
Simulated load(Half)	/	/	EST-307	N/A	N/A
Mobile phone	apple	A2404	N/A	N/A	N/A
Test Software	Narda	EHP200-TS	Rel 1.92	N/A	N/A

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Limit

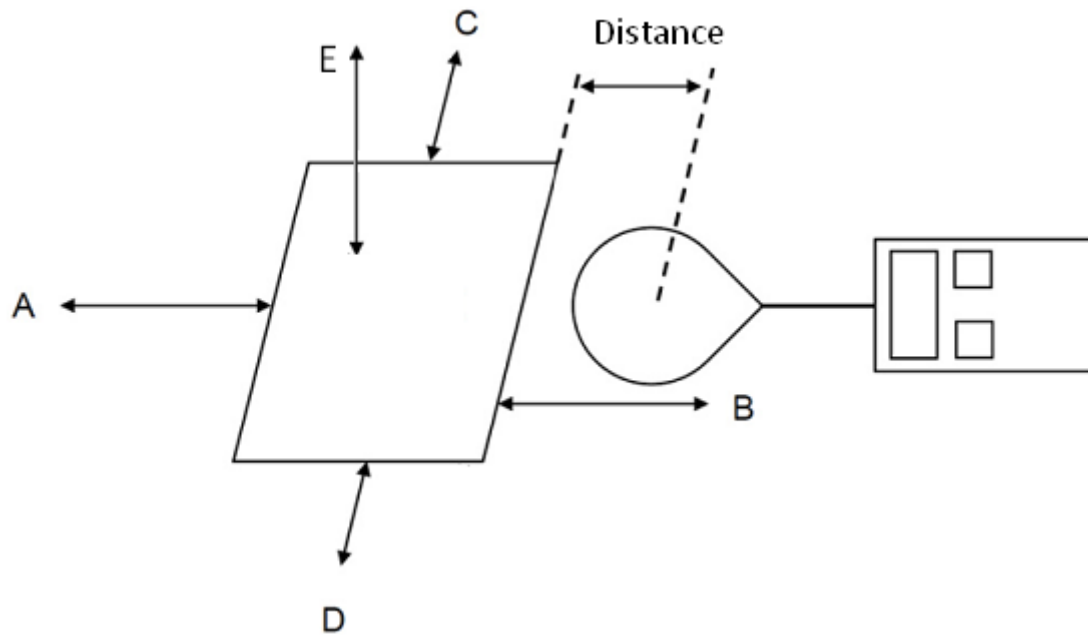
Limits for Maximum Permissible Exposure (MPE)

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 Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

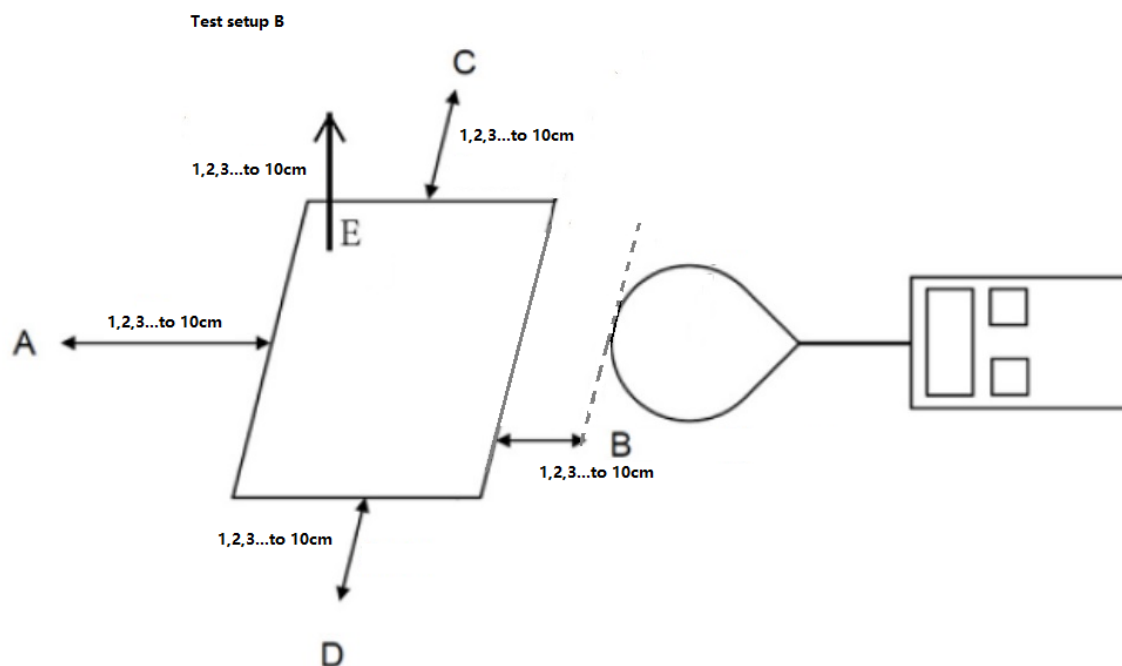
Note:

1. f = frequency in MHz * = Plane-wave equivalent power density.
2. For devices designed for typical desktop applications, such as wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

2.2. Test Setup A



2.3. Test Setup B



2.4. Test Procedure

- The test was performed on 360 degree turn table in anechoic chamber.
- The probe was placed at 15 cm surrounding the device and 20 cm above the top of the charger and the geometric centre of the probe, for test setup A.
- Measure magnetic and electrical field strength at a distance 10cm to 1cm at 1cm iteration, Which is between the edge of the charger and the edge of of probe, for test setup B.
- The highest emission level was recorded and compared with limit as soon as measurement of each point; A, B, C, D, E were completed.
- The EUT was measured according to the dictates of KDB680106D01v03r01; TCB Workshop, October 2018, 5.2 RF Exposure Procedures.

2.5. Equipment Approval Considerations

Inductive wireless power transfer applications with supporting field strength results and meeting all of the following requirements are not required to submit a KDB inquiry for devices approved using SDoC or a PAG for equipment approved using certification to address RF exposure compliance.

1	Power transfer frequency is less than 1 MHz
	YES; the device operated in the frequency range from 110.5-205KHz.
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 10W.
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 and secondary 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).
	No.
6	The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
	YES; The EUT field strength levels are 50% x MPE limits.

2.6. Test Result for Test setup A:

E-field strength	
Frequency range (KHz)	110.5 to 205
Test Mode	Full Load
Position A(V/m)	1.537
Position B(V/m)	1.456
Position C(V/m)	1.601
Position D(V/m)	1.235
Position E(V/m)	3.357
Limits (V/m)	614
50% Limits(V/m)	307

H-field strength			
Frequency range (KHz)	110.5 to 205		
Test Mode	Full Load	Half Load	Empty Load
Position A(A/m)	0.235		
Position B(A/m)	0.222		
Position C(A/m)	0.217		
Position D(A/m)	0.201		
Position E(A/m)	0.189		
Limits (A/m)	1.630		
50% Limits (A/m)	0.815		

2.7. Test Result for Test setup B:

E-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 10cm, 9cm, 8cm, 1cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (V/m)

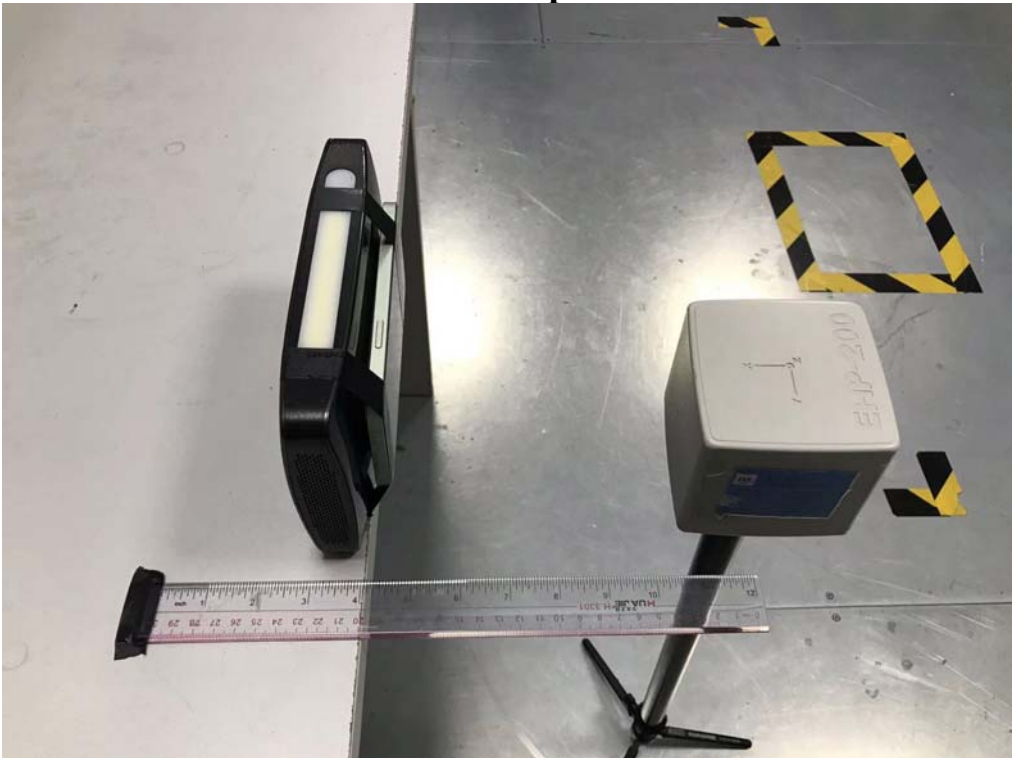
Test distance (cm)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	Limits (V/m)
1	12.401	13.355	13.501	13.551	20.441	614
2	12.351	12.855	12.501	12.441	18.557	614
3	11.501	11.551	11.558	11.559	17.511	614
4	10.235	10.666	10.478	10.561	15.407	614
5	9.257	8.953	9.036	9.375	13.501	614
6	8.547	6.559	7.857	8.537	10.557	614
7	6.551	4.543	5.543	6.551	8.534	614
8	4.351	3.221	3.544	4.337	6.335	614
9	2.151	2.089	2.141	3.201	3.011	614
10	1.559	1.651	1.800	2.011	2.033	614

H-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 10cm, 9cm, 8cm, 1cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)

Test distance (cm)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	Limits (A/m)
1	0.441	0.357	0.455	0.441	0.611	1.63
2	0.351	0.351	0.441	0.437	0.800	1.63
3	0.255	0.311	0.401	0.401	0.755	1.63
4	0.248	0.288	0.357	0.359	0.657	1.63
5	0.201	0.255	0.355	0.357	0.611	1.63
6	0.187	0.248	0.289	0.288	0.581	1.63
7	0.180	0.201	0.261	0.255	0.457	1.63
8	0.156	0.156	0.257	0.168	0.355	1.63
9	0.154	0.151	0.189	0.156	0.301	1.63
10	0.148	0.148	0.157	0.151	0.289	1.63

3. TEST SETUP PHOTO

Test setup A



Test setup B



End of Test Report