

RF EXPOSURE REPORT FOR CERTIFICATION
On Behalf of

mophie LLC

mophie Snap + wireless charger

Model Number: SNP-WRLS-CHGR

FCC ID: 2ACWB-SNAP15

Prepared for:	mophie LLC
	6244 Technology Ave.Kalamazoo.MI49009 United States of America.
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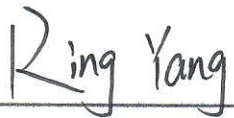
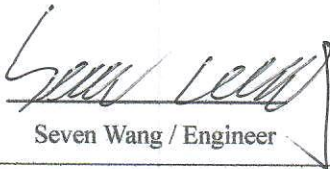
Report Number:	ESTE-R2103064
Date of Test:	Jan. 21~Mar. 04, 2021
Date of Report:	Mar. 05, 2021

TABLE OF CONTENTS

Description	Page
TEST REPORT VERIFICATION.....	3
1. SUMMARY OF TEST	4
1.1. Summary of test result.....	4
1.2. Test Mode.....	4
1.3. Test Equipment List	4
2. MAXIMUM PERMISSIBLE EXPOSURE	5
2.1. Limit	5
2.2. Test Setup A	6
2.3. Test Setup B	6
2.4. Test Procedure.....	6
2.5. Equipment Approval Considerations	7
2.6. Test Result for Test setup A:	8
2.7. Test Result for Test setup B:	10
1. TEST SETUP PHOTO	12



EST Technology Co., Ltd.

Applicant:	mophie LLC		
Address:	6244 Technology Ave.Kalamazoo.MI49009 United States of America.		
Manufacturer:	mophie LLC		
Address:	6244 Technology Ave.Kalamazoo.MI49009 United States of America.		
E.U.T:	mophie Snap + wireless charger		
Model Number:	SNP-WRLS-CHGR		
Power Supply:	Input: 5V===1.5A, 9V===2A, 12V===1.67A Output: 15W Max		
Trade Name:	mophie	Serial No.:	-----
Date of Receipt:	Jan. 21, 2021	Date of Test:	Jan. 21~Mar. 04, 2021
Test Specification:	FCC CFR 47 Part 1.1307(b)&1.1310 KDB 680106 D01 RF Exposure Wireless Charging Apps v03		
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: Mar 05, 2021	
			
Ring Wang / Assistant	Seven Wang / Engineer	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

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	Mar.02,21	1 Year
Simulated load(Full)	/	/	EST-306	N/A	N/A
Simulated load(Half)	/	/	EST-307	N/A	N/A
Test Software	Narda	EHP200-TS	Rel 1.92	N/A	N/A

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Limit

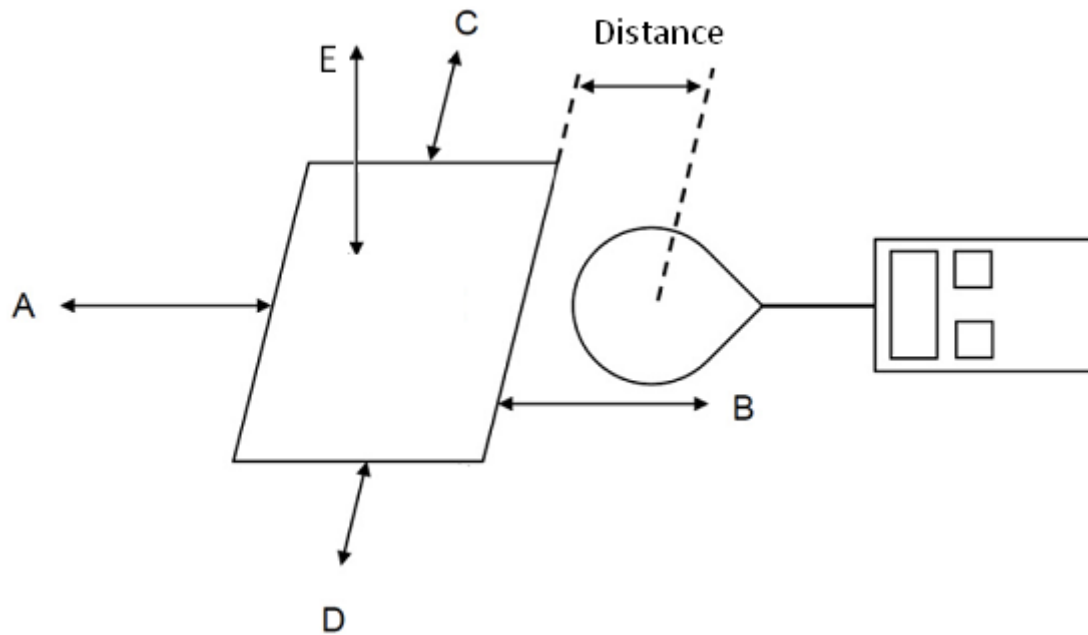
Limits for Maximum Permissible Exposure (MPE)

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

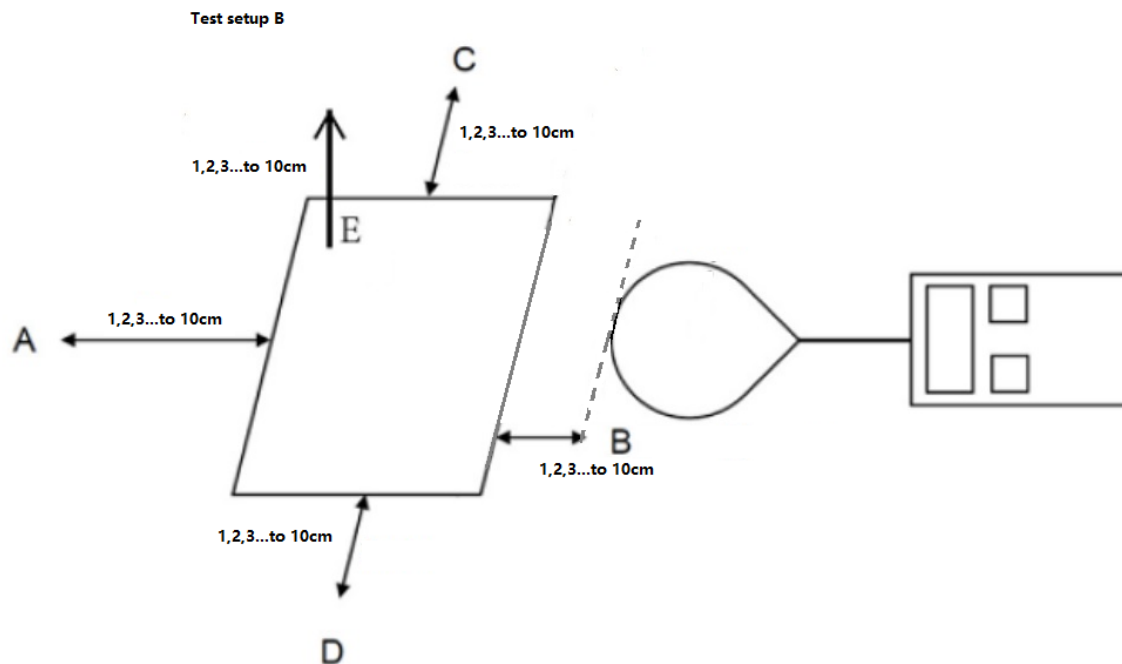
Note:

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 turn table in anechoic chamber with a dummy load.
- The dummy load must be placed horizontal of the EUT at the top (Parallel to the coil).
- Setup A :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. Setup B: Distance from 10cm to 1cm
- The highest emission level was recorded and compared with limit as soon as measurement of each point; A, B, C, D, E were completed.
- Setup A distance means edge of WPT to center of probe.
- Setup B distance means edge of WPT to edge of probe.

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 15W.
3	The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.
	No.
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:

Battery

E-field strength			
Frequency range (KHz)	110.5 to 205 kHz		
Test Mode	Full Load	Half Load	Empty Load
Position A(V/m)	3.314	3.141	2.764
Position B(V/m)	2.412	2.201	2.074
Position C(V/m)	2.964	2.753	2.414
Position D(V/m)	3.021	2.894	2.772
Position E(V/m)	4.215	4.051	3.740
Limits (V/m)	614		
50% Limits(V/m)	307		

H-field strength			
Frequency range (KHz)	110.5 to 205 kHz		
Test Mode	Full Load	Half Load	Empty Load
Position A(A/m)	0.0438	0.0425	0.0401
Position B(A/m)	0.0402	0.0394	0.0390
Position C(A/m)	0.0433	0.0421	0.0420
Position D(A/m)	0.0411	0.0408	0.0402
Position E(A/m)	0.0465	0.0443	0.0434
Limits (A/m)	1.630		
50% Limits (A/m)	0.815		

Adapter

E-field strength			
Frequency range (KHz)	110.5 to 205 kHz		
Test Mode	Full Load	Half Load	Empty Load
Position A(V/m)	2.836	2.628	2.585
Position B(V/m)	1.786	1.724	1.677
Position C(V/m)	3.746	3.601	3.526
Position D(V/m)	3.269	3.194	3.123
Position E(V/m)	3.824	3.704	3.605
Limits (V/m)	614		
50% Limits(V/m)	307		

H-field strength			
Frequency range (KHz)	110.5 to 205 kHz		
Test Mode	Full Load	Half Load	Empty Load
Position A(A/m)	0.0411	0.0408	0.0405
Position B(A/m)	0.0394	0.0391	0.0387
Position C(A/m)	0.0415	0.0412	0.0410
Position D(A/m)	0.0406	0.0404	0.0400
Position E(A/m)	0.0419	0.0415	0.0413
Limits (A/m)	1.630		
50% Limits (A/m)	0.815		

2.7. Test Result for Test setup B:

Battery

Empty , Half , Full load all have been tested ,only worse case Max load (Full) is reported.

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	35.126	30.914	37.58	38.675	56.69	614
2	29.216	27.723	31.135	33.321	47.40	614
3	19.945	17.313	21.344	28.732	34.32	614
4	12.746	10.313	13.03	14.132	20.110	614
5	7.879	6.542	8.382	8.450	11.756	614
6	6.755	5.013	7.211	7.234	8.130	614
7	5.014	4.245	5.710	5.841	6.144	614
8	4.523	3.771	4.902	5.032	5.433	614
9	3.955	2.920	4.021	4.112	4.830	614
10	3.205	2.501	2.875	3.132	4.151	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	0.139	0.0440	0.058	0.062	0.263	1.63
2	0.115	0.0426	0.054	0.058	0.184	1.63
3	0.101	0.0414	0.052	0.055	0.121	1.63
4	0.0714	0.0403	0.0496	0.053	0.098	1.63
5	0.050	0.040	0.049	0.052	0.086	1.63
6	0.045	0.0391	0.0464	0.048	0.071	1.63
7	0.043	0.0384	0.0453	0.046	0.055	1.63
8	0.040	0.0383	0.0431	0.045	0.049	1.63
9	0.039	0.0379	0.0422	0.043	0.045	1.63
10	0.0382	0.0371	0.042	0.040	0.043	1.63

Adapter

Empty , Half , Full load all have been tested ,only worse case Max load (Full) is reported.

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)

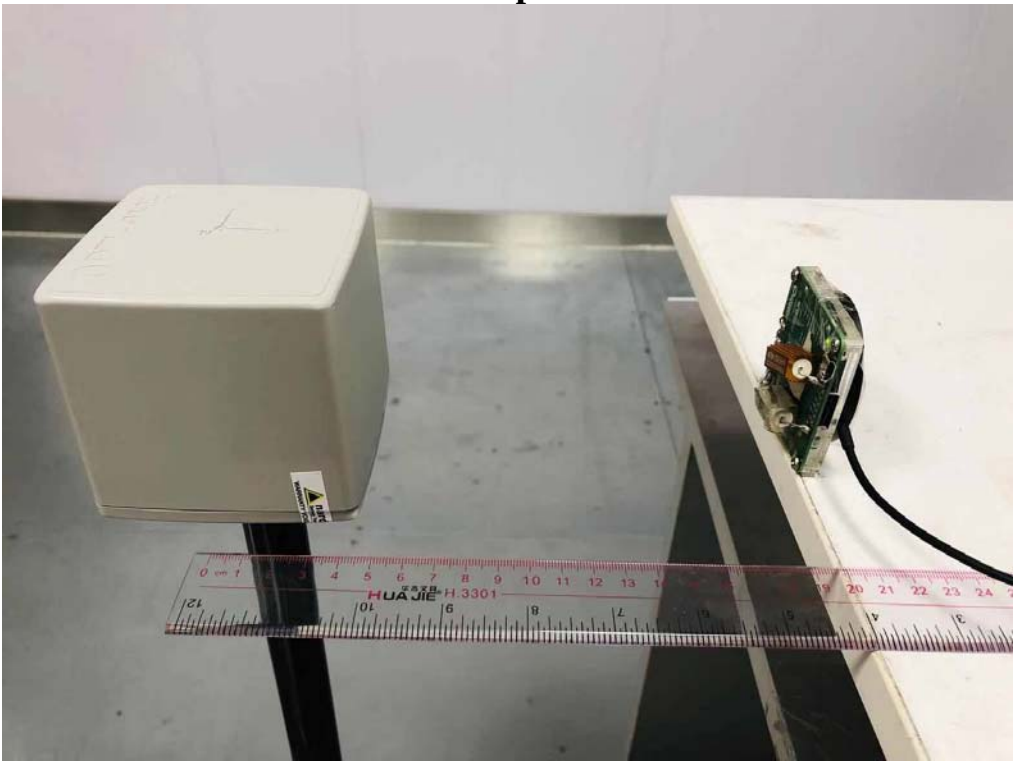
Test distance (cm)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	Limits (V/m)
1	21.724	17.872	18.147	19.681	34.211	614
2	20.124	16.046	17.943	18.577	32.354	614
3	17.485	13.445	13.347	13.640	19.945	614
4	13.424	10.242	11.468	11.634	15.342	614
5	7.712	6.873	7.001	7.193	8.672	614
6	5.712	4.783	5.814	6.033	7.412	614
7	4.645	3.923	5.301	5.521	6.472	614
8	3.545	3.155	4.641	4.874	5.265	614
9	3.143	2.615	4.243	4.436	4.783	614
10	2.965	1.768	3.796	3.309	4.035	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)

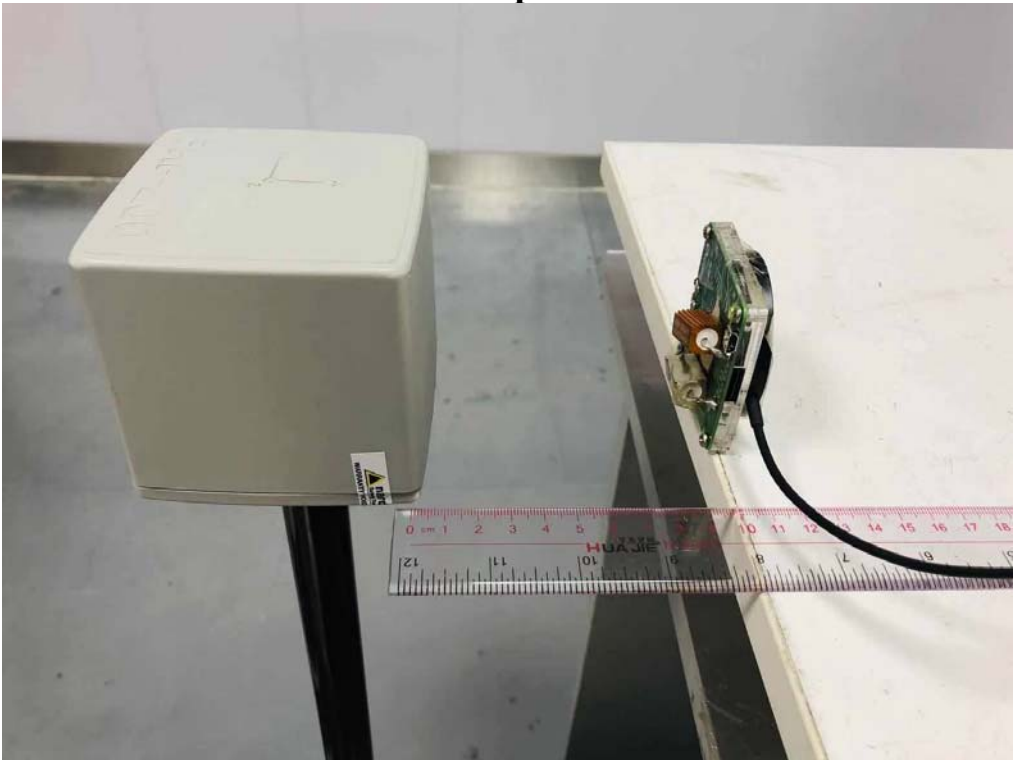
Test distance (cm)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	Limits (A/m)
1	0.13	0.063	0.12	0.123	0.542	1.63
2	0.123	0.0594	0.104	0.110	0.525	1.63
3	0.109	0.0553	0.078	0.084	0.314	1.63
4	0.077	0.0503	0.055	0.069	0.108	1.63
5	0.050	0.045	0.047	0.054	0.066	1.63
6	0.0452	0.0432	0.0445	0.048	0.059	1.63
7	0.0437	0.0418	0.0432	0.0443	0.0511	1.63
8	0.0404	0.0406	0.0423	0.0425	0.0463	1.63
9	0.0398	0.0395	0.0414	0.0418	0.0434	1.63
10	0.0391	0.039	0.041	0.0402	0.042	1.63

1. TEST SETUP PHOTO

Setup A



Setup B



End of Test Report