RF EXPOSURE REPORT FOR CERTIFICATION
On Behalf of

mophie LLC

mophie 3-in-1travel charger with MagSafe

Model Number: WRLS-TRIFOLD-MS-WATCH-A

FCC ID: 2ACWB-TRIFOLDA

Applicant:	mophie LLC
Address:	6244 Technology Ave.Kalamazoo.MI49009 United States of America.
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R2111142
Date of Test:	Nov. 02-15, 2021
Date of Report:	Nov. 16, 2021

TABLE OF CONTENTS

Description Page

EST Technology Co., Ltd.

Applicant: **Address:**	mophie LLC 6244 Technology Ave.Kalamazoo.MI49009 United States of America.
Manufacturer: **Address:**	mophie LLC 6244 Technology Ave.Kalamazoo.MI49009 United States of America.
Factory 1: **Address:**	WANGZI(THAILAND)COMPANY LIMITED 7/489 Moo.6 Map Yang Porn Sub-District,Pluak Daeng District, RAYONG 21140, THAILAND
Factory 2: **Address:**	DongGuan iRice Electronics Development Co., Ltd. Building 1, No.17,Hudie 1st Road, Tianxin Village,Huangjiang Town, DONGGUAN GUANGDONG 523750,CHINA
E.U.T:	mophie 3-in-1travel charger with MagSafe
Model Number:	WRLS-TRIFOLD-MS-WATCH-A
Power Supply:	Iutput: 5V⎓3A, 9V⎓3A Output :Apple Watch Module: 5W Apple MagSafe Module: 15W Wireless Charging Pad (AirPods/ AirPods Pro): 3W
Trade Name:	mophie Serial No.: ------
Date of Receipt:	Nov. 02, 2021 Date of Test: Nov. 02-15, 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. **Date:** Nov. 16, 2021

Prepared by:	Reviewed by:	Approved by:
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 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
Test Software	Narda	EHP200-TS	Rel 1.92	N/A	N/A

Test uncertainty: ±1.62 dB (H-field);±1.64 dB (E-field) at a level of confidence of 95%.

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Limit

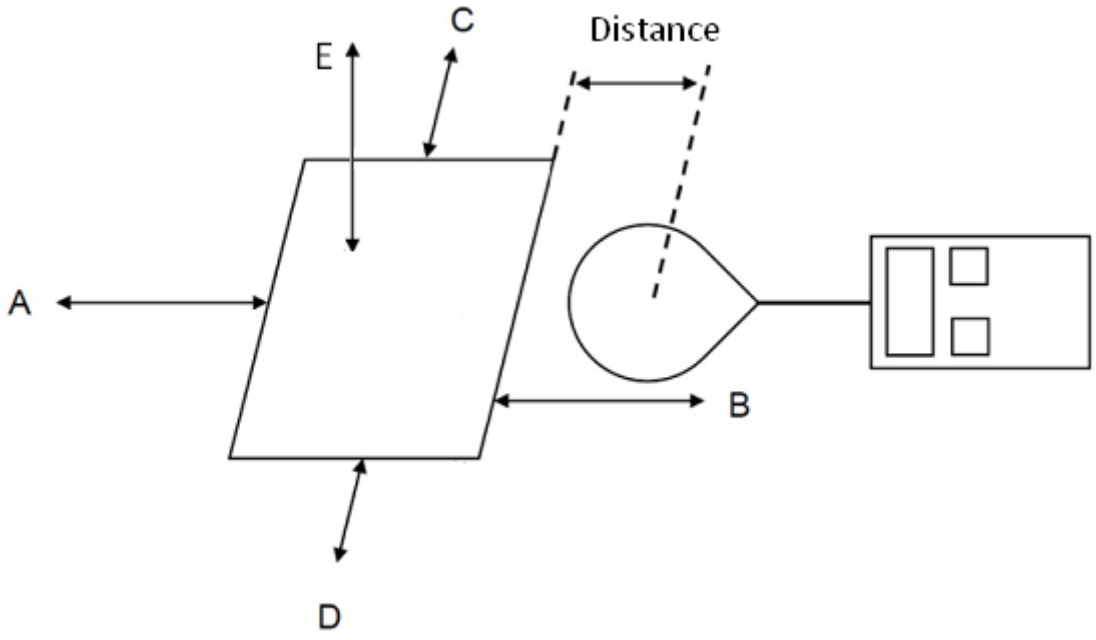
Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	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

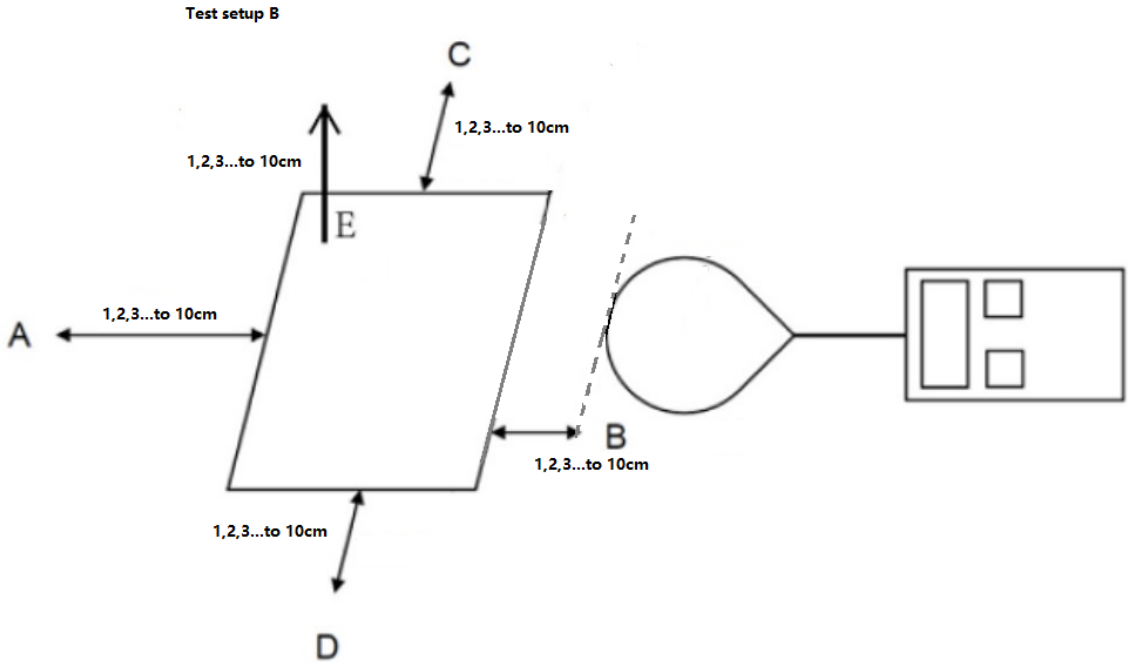
Note:

1. f = frequency in MHz * = Plane-wave equivalent power density.
2. For devices designed for typical desktop applications, such a 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

a. The test was performed on 360 degree turn table in anechoic chamber.
b. 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.
c. 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.
d. The highest emission level was recorded and compared with limit as soon as measurement of each point; A, B, C, D, E were completed.
e. The EUT was measured according to the dictates of KDB680106D01v03; And KDB Tracking Number 671578; 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 that 1 MHz
	YES; the device operated in the frequency range from 110.5-360KHz.
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, They all add up to 23W
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.
	YES.
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.
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 limts.

2.6. Test Result for Test setup A:

E-field strength	
Frequency range (KHz)	110.5 to 360
Test Mode	Full Load
Position A(V/m)	1.547
Position B(V/m)	1.658
Position C(V/m)	1.668
Position D(V/m)	1.215
Position E(V/m)	3.562
Limits (V/m)	614
50% Limits(V/m)	307

H-field strength	
Frequency range (KHz)	110.5 to 360
Test Mode	Full Load
Position A(A/m)	0.038
Position B(A/m)	0.048
Position C(A/m)	0.022
Position D(A/m)	0.024
Position E(A/m)	0.065
Limits (A/m)	1.630
50% Limits (A/m)	0.815

2.7. Test Result for Test setup B:

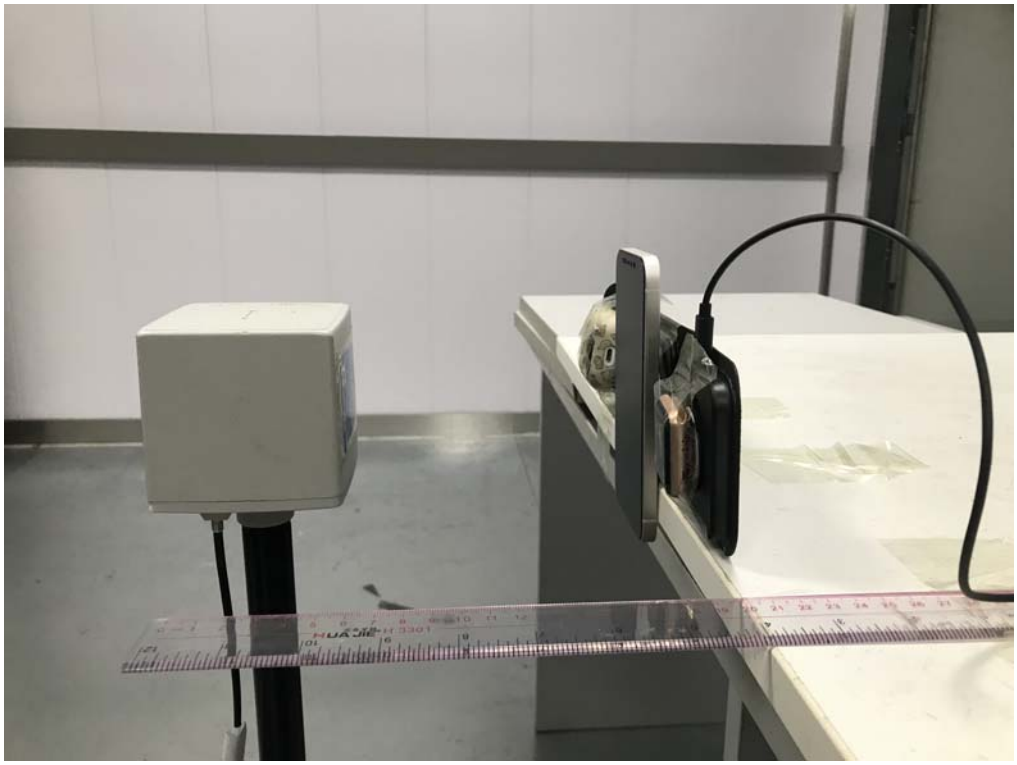
E-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 10cm, 9cm, 8cm, ……. 1cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (V/m)

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	12.358	13.587	13.748	13.265	25.478	614
2	11.548	12.525	11.254	11.524	23.254	614
3	10.124	11.521	10.541	10.859	22.521	614
4	9.214	10.555	9.521	8.551	21.521	614
5	8.521	9.254	7.385	6.521	16.528	614
6	5.895	7.521	6.958	5.857	16.254	614
7	4.658	5.689	6.289	4.587	12.358	614
8	2.254	4.411	4.875	3.587	10.647	614
9	2.521	2.547	3.854	2.589	8.254	614
10	1.514	1.547	2.125	1.521	5.547	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	0.387	0.238	0.454	0.447	0.789	1.63
2	0.285	0.207	0.420	0.319	0.687	1.63
3	0.157	0.149	0.384	0.254	0.566	1.63
4	0.155	0.155	0.224	0.125	0.389	1.63
5	0.079	0.068	0.187	0.099	0.226	1.63
6	0.054	0.066	0.089	0.074	0.169	1.63
7	0.051	0.034	0.061	0.065	0.157	1.63
8	0.043	0.039	0.044	0.045	0.095	1.63
9	0.033	0.037	0.033	0.033	0.069	1.63
10	0.028	0.022	0.021	0.019	0.067	1.63

3. TEST SETUP PHOTO



End of Test Report