

RF EXPOSURE Test Report

Product: mophie WRLS-3-in-1-Qi2 charging stand

Trade Mark: mophie

Model Number: WRLS-3IN1-QI2-STND

FCC ID: 2ACWB-Q2STND3R

Prepared for

mophie LLC

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Prepared by

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1 General Description

1.1 Description of EUT

Product name:	mophie WRLS-3-in-1-Qi2 charging stand
Model name:	WRLS-3IN1-QI2-STND
Series Model:	N/A
Different of series model:	N/A
Operation frequency:	Watch: 326.5kHz Phone: 110.5kHz~205kHz, 360kHz AirPods: 110.5kHz~205kHz
Operational mode:	Wireless charging
Modulation type:	FSK
Antenna type:	Coil Antenna
Hardware version:	V4.0
Software version:	V3.0
Battery:	N/A
Power supply:	Input: DC 12V/3A Wireless Output (Phone): 5W, 7.5W, 15W (Max) Wireless Output (AirPods): 5W (Max) Wireless Output (Watch): 3.5W (Max)
Adapter information:	Model: CHG-WALL-PD-36W-GAN-AU Input: 100-240V~50/60Hz, 0.9A Output: DC 5V/3A, 9V/3A, 12V/3A, 15V/2.4A

1.2 Test Mode

Pretest Test Mode	Description of Mode
1	Wireless Output (Phone:5W+AirPods:5W+Watch:3.5W)
2	Wireless Output (Phone:7.5W+AirPods:5W+Watch:3.5W)
3	Wireless Output (Phone:15W+AirPods:5W+Watch:3.5W)

1.3 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary Equipment

Equipment	Model	S/N	Manufacturer
AirPods	A2031	H04F3NS0L X2Y	Apple Inc.
Watch	NYYK2CH/A	H4HFR0ZHQ 1N2	Apple Inc.
Phone	iPhone 12 Pro	DNPF9UL20 D9L	Apple Inc.
Phone	iPhone 15 Pro Max	VJ9HQY39Q J	Apple Inc.

2 Test Facilities and Accreditations

2.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

2.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

2.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2×10^{-5}	
E-field	± 2.5 dB	
H-field	± 4.2 dB	
Temperature	± 1 degree	
Humidity	± 5 %	

2.4 Test Software

Software name	Manufacturer	Model	Version
MAGPy V2.0	Schmid & Partner Engineering AG	MAGPy V2.0	V2.0

3 List of Test Equipment

Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	/	Magnetic Amplitude and Gradient Probe System	Schmid & Partner Engineering AG	MAGPy V2.0	3061	2023-04-13	2024-04-12

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4 RF Exposure

4.1 Maximum Permissible Exposure

4.1.1. Limit

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	6
300-1500	/	/	f/300	6
1500-100000	/	/	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
300-1500	/	/	f/1500	30
1500-100000	/	/	1	30
f = frequency in MHz * = Plane-wave equivalent power density				

4.1.2. Test Procedures

E and H-field measurements should be made with the center of the probe at a distance of 20 cm surrounding the device and 20 cm above the top surface of the primary/client pair.

These measurements should be repeated for three different client battery levels, 1%, 50%, and 99%.

Record the test results.

KDB 680106 D01 Wireless Power Transfer v04

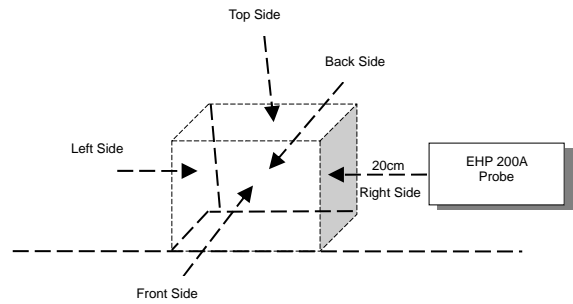
- (1) The power transfer frequency is below 1 MHz.
- (2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.
- (3) A client device providing the maximum permitted load is placed in physical contact with the transmitter(i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)
- (4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).
- (5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios (i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.
- (6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the

design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.

4.1.3. Equipment Approval Considerations item 5 b) of KDB 680106 D01 Wireless Power Transfer v04

Requirement	Device
1. Power transfer frequency is less than 4 MHz.	Yes. The operating frequencies are: Watch: 326.5kHz Phone: 110.5kHz~205kHz, 360kHz AirPods: 110.5kHz~205kHz
2. Output power from each primary coil is less than or equal to 15 watts	Yes. The maximum output power is: Wireless Output (Phone): 5W, 7.5W, 15W Wireless Output (AirPods): 5W Wireless Output (Watch): 3.5W
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 EUT has three source primary coils.
4. Client device is placed directly in contact with the transmitter.	Yes. The 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. Mobile exposure conditions only.
6. The aggregate H-field strengths anywhere at or beyond 20 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. See the test result in item 4.1.5

4.1.4. Test Setup



4.1.5. Test Result

Test condition: Mode 3 operating mode with client device (1 %, 50%, 99% battery status of client device)

-test distance: 20cm

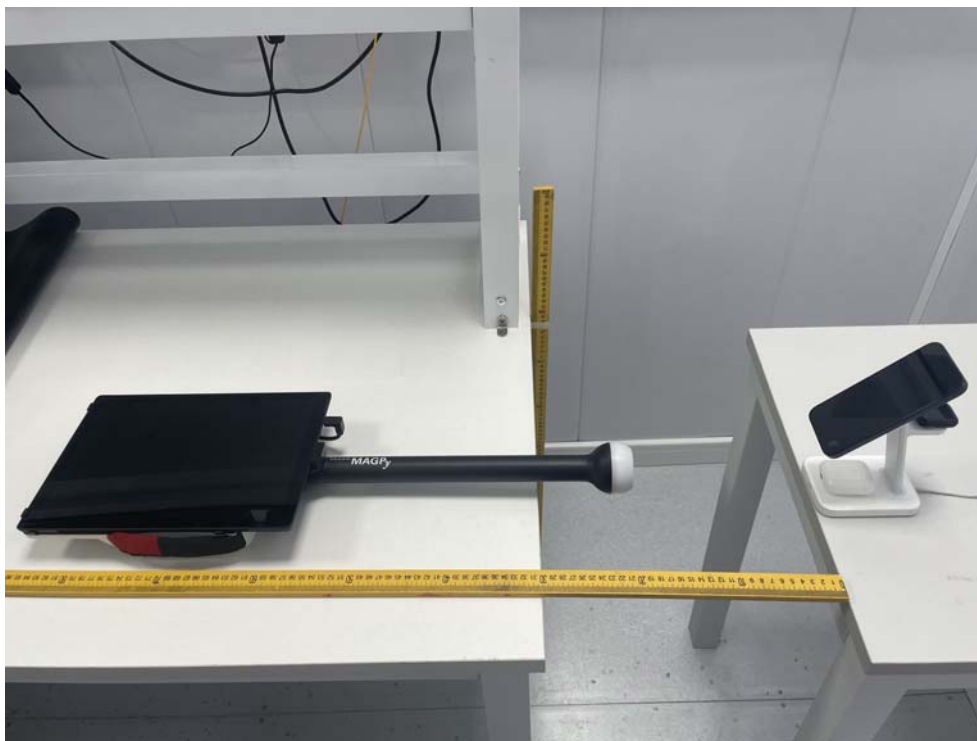
Maximum permissible Exposure				
Battery levels	Test sides	Test distance(cm)	E -field(V/m)	H-field(A/m)
<1%	Top	20	0.65	0.01
<1%	Left	20	0.65	0.02
<1%	Right	20	0.65	0.03
<1%	Front	20	0.82	0.03
<1%	Back	20	0.55	0.02
Limit			614	1.63
Margin Limit (%)			0.13%	1.84%

Maximum permissible Exposure				
Battery levels	Test sides	Test distance(cm)	E -field(V/m)	H-field(A/m)
<50%	Top	20	0.62	0.01
<50%	Left	20	0.62	0.02
<50%	Right	20	0.63	0.02
<50%	Front	20	0.74	0.02
<50%	Back	20	0.51	0.02
Limit			614	1.63
Margin Limit (%)			0.12%	1.23%

Maximum permissible Exposure				
Battery levels	Test sides	Test distance(cm)	E -field(V/m)	H-field(A/m)
<99%	Top	20	0.54	0.02
<99%	Left	20	0.52	0.02
<99%	Right	20	0.59	0.02
<99%	Front	20	0.66	0.02
<99%	Back	20	0.57	0.01
Limit			614	1.63
Margin Limit (%)			0.11%	1.23%

5 Photographs of the Test Setup

MPE



***** END OF REPORT *****