S T S L A B

MPE TEST REPORT

Report No:STS2212159H01

Issued for

Microwoo Electronic Technology Co., Ltd

NO.13, Hengrui 2nd Road, Tangxiayong Community, Yan Luo Street, Baoan District, Shenzhen, China.

Product Name:	10000mAh Magsafe wireless power bank
Brand:	N/A
Model Number:	REF-TRAVEL001
Series Model(s):	MW-T009, MW-T009S
FCC ID:	2A9XL-REF
Test Standard:	FCC CFR 47 part 1, 1.1310

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TEST RESULT CERTIFICATION

Applicant's Name ..... :	Microwoo Electronic Technology Co., Ltd
Address ..... :	NO.13, Hengrui 2nd Road, Tangxiayong Community, Yan Luo Street, Baoan District, Shenzhen, China.
Manufacturer's Name ..... :	Microwoo Electronic Technology Co., Ltd
Address ..... :	NO.13, Hengrui 2nd Road, Tangxiayong Community, Yan Luo Street, Baoan District, Shenzhen, China.

Product Description

Product Name ..... :	10000mAh Magsafe wireless power bank
Brand..... :	N/A
Model Number..... :	REF-TRAVEL001
Series Model(s) ..... :	MW-T009, MW-T009S
Standards ..... :	FCC CFR 47 part 1, 1.1310
Test Procedure ..... :	680106 D01 RF Exposure Wireless Charging Apps v03

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test ..... :	
Date of receipt of test item ..... :	30 Dec. 2022
Date of performance of tests .. :	30 Dec. 2022 ~ 05 Jan. 2023
Date of Issue ..... :	05 Jan. 2023
Test Result..... :	**Pass**

Testing Engineer : Chris Chen

(Chris Chen)

Technical Manager : Sean She

(Sean She)

Authorized Signatory : Bovey Yang

(Bovey Yang)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	05 Jan. 2023	STS2212159H01	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
FCC KDB 680106 D01 RF Exposure Wireless Charging Apps v03

FCC CFR 47			
Standard Section	Test Item	Judgment	Remark
FCC CFR 47 part1, 1.1310 KDB680106 D01v03	Electric Field Strength (E) (V/m)	PASS	
	Magnetic Field Strength (H) (A/m)	PASS	

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
FCC test Firm Registration Number: 625569
IC test Firm Registration Number: 12108A
A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainly
1	H-filed	±0.83dB
2	E-filed	±0.91dB

1.3 GENERAL DESCRIPTION OF THE EUT

Product Name	10000mAh Magsafe wireless power bank
Brand	N/A
Model Number	REF-TRAVEL001
Series Model(s)	MW-T009, MW-T009S
Model Difference	Only different in model name and colors
Equipemnt Category	Non-ISM frequency
Antenna Type	Please refer to the Note 2.
Operating frequency	110.5-205KHz
Modulation Type	ASK
Rating	Input: 5V-3A ,9V-2.22A,12V-1.67A Output: wireless Output Power/ 5W/7.5W/10W/15Wmax Type C output：5V/3A, 9V/2A USB -A Output: 5V/4.5A
Battery	Rated Voltage: 3.85V Charge Limit Voltage: 4.4V Capacity: 10000mah
Hardware version number	V1.0
Software version number	V1.0
Connecting I/O Port(s)	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	NOTE
1	N/A	REF-TRAVEL001	Coil	NA	Antenna

The EUT antenna is Coil Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

1.4 EQUIPMENTS LIST FOR ALL TEST ITEMS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Electric and Magnetic field Probe - Analyzer	Narda	EHP 200A	180ZX10220	2022.03.02	2023.03.01

1.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
/	Mobile Phone	Apple	iPhone 8 Plus	N/A	N/A

Note:

(1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
(2) “YES” is means “with core”; “NO” is means “without core”.

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1 MAXIMUM PERMISSIBLE EXPOSURE

Limit of 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/ cm²)	Averaging Time |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
1500-100,000			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/ cm²)	Averaging Time |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)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1	30

Note 1: f = frequency in MHz ; *Plane-wave equivalent power density

Note 2: For the applicable limit, see FCC 1.1310, 680106 D01 RF Exposure Wireless Charging Apps v03

Note 3: 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.

Note 4: 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.

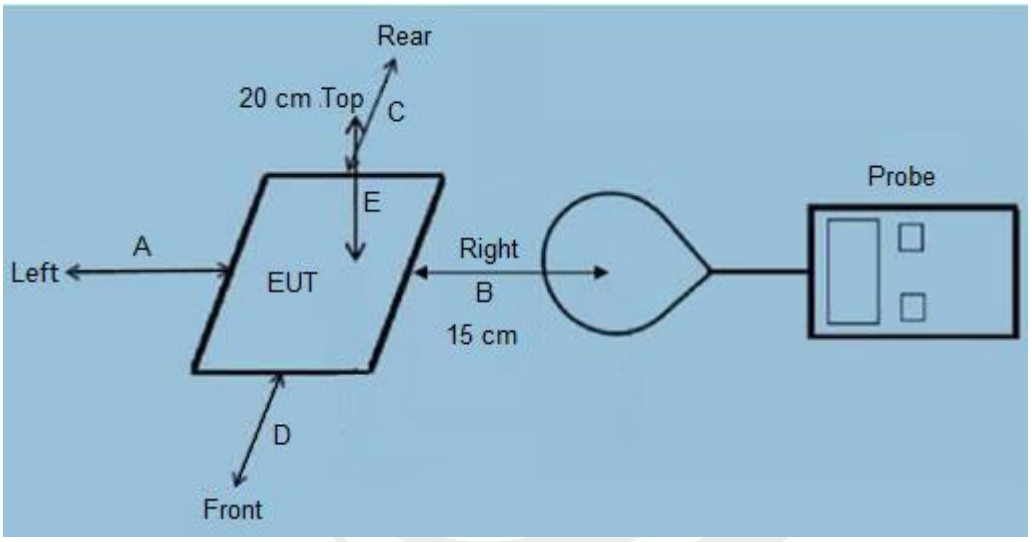
2.2 TEST PROCEDURE

1) The RF exposure test was performed in an echoic chamber;
2) The measurement probe was placed at test distance(15 cm from edges, 20 cm from top) Which is between the edge of the charger and the geometric center of probe, for test setup A;
3) In addition to what is described in KDB 680106 D01, please measure and provide magnetic and electrical field strength at a distance 20cm to 0cm at 1cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, ……. 0cm. Which is between the edge of the charger and the edge of of probe, for test setup B;
4) The highest emission leve laws recorded and compared with limit as soon as measurement of each points (A,B, C,D, E)were completed;
5) The EUT was measured according to the dictates of KDB680106D01v03; And KDB Tracking Number 671578 ; TCB Workshop, October 2018, 5.2 RF Exposure Procedures

Remark：The EUT’s test position A, B,C, D and E is valid for the E and H field measurements.

2.3 TEST SETUP

A:



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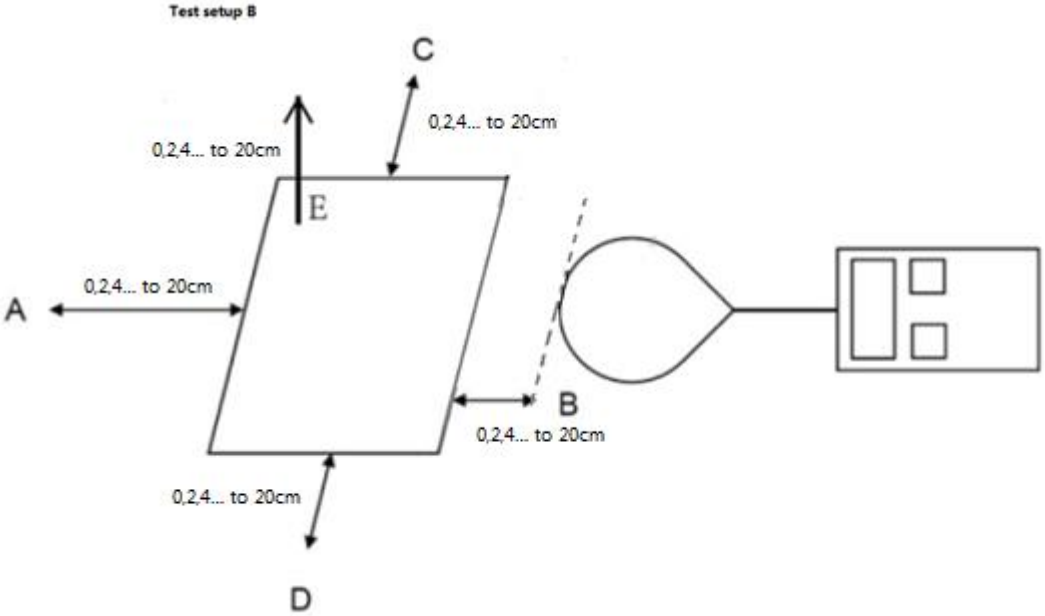


Remark: The E300 probe antenna diameter is 11.5cm.

2.4 TEST RESULTS

The EUT does comply with item 5 KDB680106 D01 v03.

(1) Power transfer frequency is less than 1 MHz.
(Conform)

(2) Output power from each primary coil is less than or equal to 15 watts.
(Conform)

(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.
(Conform)

(4) Client device is placed directly in contact with the transmitter.
(Conform)

(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.
(Conform)

2.5 MAXIMUM PERMISSIBLE EXPOSURE

Test Result for Test setup A:
E-Filed Strength at (15 cm from edges A,B,C,D, 20 cm from top E) surrounding the EUT (V/m)

Charging Load Worse case	Test Position A(V/m)	Test Position B(V/m)	Test Position C(V/m)	Test Position D(V/m)	Test Position E(V/m)	Limits (V/m)
<5%	4.292	4.347	4.221	4.320	4.207	614
50%	4.267	4.482	4.388	4.286	4.312	614
>90 %	4.481	4.516	4.536	4.498	4.459	614

H-Filed Strength at (15 cm from edges A,B,C,D, 20 cm from top E) surrounding the EUT (A/m)

Charging Load Worse case	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Limits (A/m)
<5%	0.694	0.692	0.416	0.782	0.551	1.63
50%	0.781	0.622	0.589	0.698	0.730	1.63
>90 %	0.776	0.801	0.748	0.723	0.713	1.63

Note: Both the mode with AC power and the internal battery operating mode have been tested. The worst case is the internal battery operating mode, only report the worst case.

Test Result for Test setup B:

E-Filed Strength at (distance 20cm to 0cm at 2cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, … 0cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (V/m)

Test distance (cm)	Test Position A(V/m)	Test Position B(V/m)	Test Position C(V/m)	Test Position D(V/m)	Test Position E(V/m)	Limits (V/m)
0	5.232	5.196	5.239	5.189	5.178	614
2	5.153	5.063	5.141	5.073	5.068	614
4	5.024	5.041	4.981	4.990	5.144	614
6	5.037	4.979	5.107	4.907	4.993	614
8	4.983	4.881	4.779	4.799	5.060	614
10	5.085	5.020	4.787	5.126	5.148	614
12	4.956	5.109	4.795	5.094	4.700	614
14	4.966	4.610	4.895	4.544	5.109	614
16	4.424	4.946	4.795	4.601	4.656	614
18	4.445	4.518	5.149	4.656	4.556	614
20	4.444	4.516	5.148	4.642	4.551	614

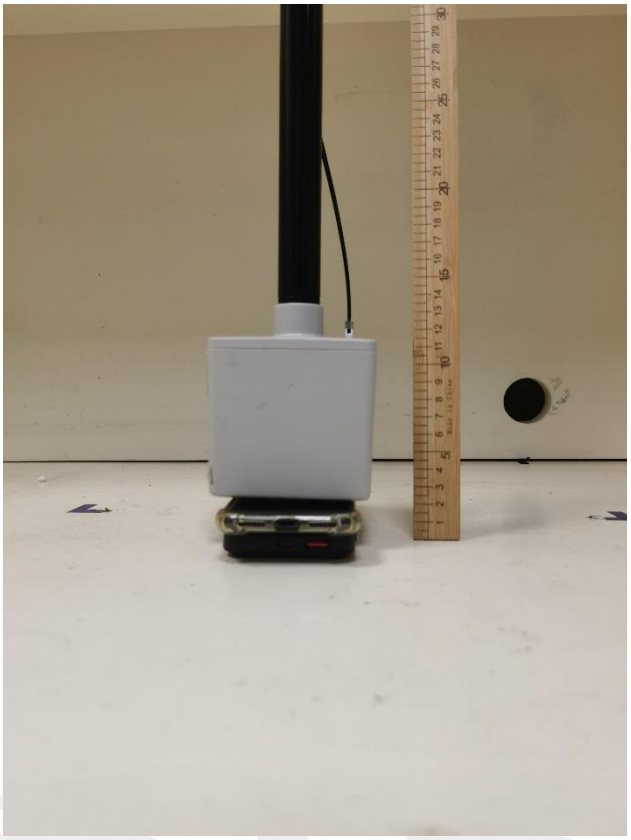
H-Filed Strength at (distance 10cm to 1cm at 1cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, … 0cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Limits (A/m)
0	1.466	1.448	1.428	1.479	1.484	1.63
2	1.397	1.391	1.394	1.366	1.322	1.63
4	1.273	1.369	1.253	1.260	1.294	1.63
6	1.323	1.251	1.226	1.257	1.248	1.63
8	1.345	1.104	1.219	1.311	1.365	1.63
10	1.397	0.982	1.374	1.330	1.340	1.63
12	1.117	1.371	0.930	0.970	1.080	1.63
14	1.069	0.755	1.386	1.161	0.971	1.63
16	0.945	0.555	1.394	0.570	0.869	1.63
18	0.933	0.542	1.352	0.563	0.858	1.63
20	0.932	0.521	1.326	0.498	0.798	1.63

Note:

1. Both the mode with AC power and the internal battery operating mode have been tested. The worst case is the internal battery operating mode, only report the worst case.
2. <5%, 50%, >90% load all have been tested, only worse case Max load <5% is reported.

MPE SETUP PHOTO



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