FCC Test Report

Applicant	:	**TWELVE SOUTH, LLC**
Address	:	**1503 KING ST STE201 Charleston, SC29405, USA, Charleston, USA Minor Outlying Islands**
Product Name	:	**HiRise 3 Deluxe**
Report Date	:	**Jul. 19, 2023**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	TWELVE SOUTH, LLC
Manufacturer	:	TWELVE SOUTH, LLC
Product Name	:	HiRise 3 Deluxe
Model No.	:	TS-2303
Trade Mark	:	twelvesouth
Rating(s)	:	Input: 12V⎓ 3A MagSafe Wireless Charger Rated Output Power: 5W/7.5W/15W AirPods/iPhone Rated Output Power: 5W/7.5W Apple Watch Rated Output Power: Max 5W (fast charger).
Test Standard(s)	:	**FCC Part 1.1310, 1.1307(b)**
Test Method(s)	:	**KDB680106 D01 RF Exposure Wireless Charging Apps v03**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 1.1307 & KDB680106 D01 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Jun. 19, 2023
Date of Test	Jun. 19 ~ 26, 2023
Prepared By	(TuTu Hong)
Approved & Authorized Signer	(Kingkong Jin)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Jul. 19, 2023

1. General Information

1.1. Client Information

Applicant	:	TWELVE SOUTH, LLC
Address	:	1503 KING ST STE201 Charleston, SC29405, USA, Charleston, USA Minor Outlying Islands
Manufacturer	:	TWELVE SOUTH, LLC
Address	:	1503 KING ST STE201 Charleston, SC29405, USA, Charleston, USA Minor Outlying Islands
Factory	:	TWELVE SOUTH, LLC
Address	:	1503 KING ST STE201 Charleston, SC29405, USA, Charleston, USA Minor Outlying Islands

1.2. Description of Device (EUT)

Product Name	:	HiRise 3 Deluxe
Model No.	:	TS-2303
Trade Mark	:	twelve south
Test Power Supply	:	AC 120V, 60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	Model: DCT36W120300ZZ-D2 Input: 100-240V~50/60Hz 1.0A max. Output: 12V⎓ 3A 36.0W
RF Specification		
Operation Frequency	:	128~360kHz
Modulation Type	:	FSK
Antenna Type	:	Inductive loop coil Antenna
Antenna Gain(Peak)	:	0 dBi (Provided by customer)
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
Wireless charging load	Manufacturer: Shenzhen Ouju Technology Co., Ltd. M/N: CD2577 Power: 5W/7.5W/10W/15W
Apple Watch	M/N: WR-50M
Mobile Phone	iPhone 12

1.4. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Electric and Magnetic field Analyzer	NARDA	EHP-200A	180ZX10202	Oct. 17, 2022	1 Year

1.5. Measurement Uncertainty

Magnetic Field Reading(A/m)	:	+/-0.04282(A/m)
Electric Field Reading(V/m)	:	+/-0.03679(V/m)

1.6. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. 518102

2. Measurement and Result

2.1. Requirements

According to the item 5.b) of KDB 680106 D01v03:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

1) Power transfer frequency is less that 1 MHz

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

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

4) Client device is inserted in or placed directly in contact with the transmitter

5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

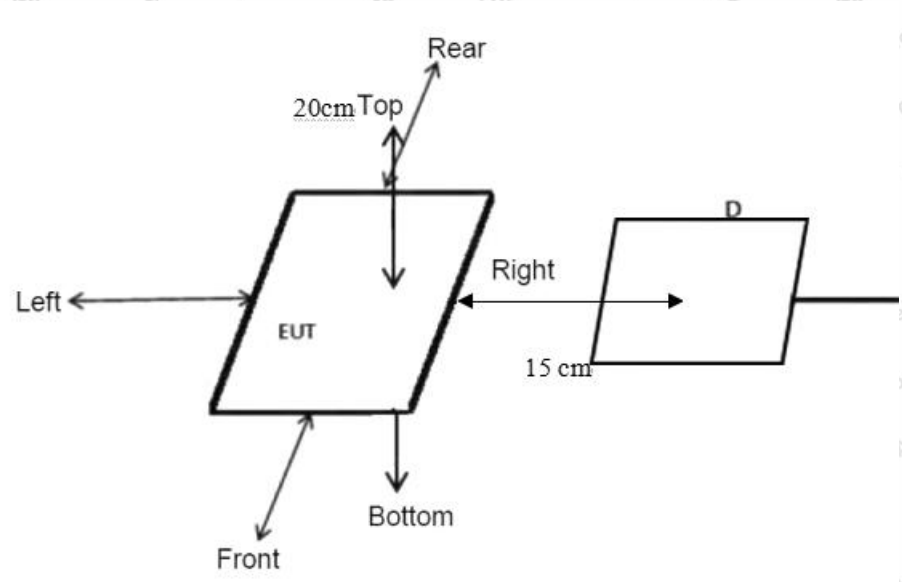
6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

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 Exposures				
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
300-1500	/	/	f/300	6
1500-100,000	/	/	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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density
RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

2.2. Test Setup



Note: Measurements should be made at 15 cm surrounding the EUT and 20cm above the top surface of the EUT.

2.3. Test Procedure

1) The RF exposure test was performed in anechoic chamber.

2) The measurement probe was placed at required test distance which is between the edge of the charger and the geometric center of probe.

3) The highest emission level was recorded and compared with limit as soon as measurement of each points

(A, B, C, D, E) were completed.(A is the right, B is the back, C is the left, D is the front, and E is the top.)

4) The EUT was measured according to the dictates of KDB 680106 D01 v03.

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

2.4. Test Result

2.4.1. Equipment Approval Considerations item 5.b of KDB 680106 D01 v03.

1) Power transfer frequency is less that 1 MHz

- The device operate in the frequency range 128~360kHz.

2) Output power from each primary coil is less than 15 watts

- 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

- The transfer system including a charging system with only single primary coils is to detect and allow only between individual pairs of coils.

4) Client device is inserted in or placed directly in contact with the transmitter

- Client device is placed directly in contact with the transmitter.

5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

- The EUT is a Mobile exposure conditions

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.

- Conducted the measurement with the required distance and the test results please refer to the section 2.4.

2.4.2. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

Temperature:	22.5°C	Relative Humidity:	49 %
Pressure:	1012 hPa	Test Voltage:	AC 120V, 60Hz for adapter

E-Field Strength at 15 cm surrounding the EUT and 20cm above the top surface of the EUT

Battery power	Frequency Range (kHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (V/m)	Limits Test (V/m)
1%	128~360	0.401	0.491	0.441	0.451	0.571	307	614
50%	128~360	1.440	1.880	1.370	1.500	1.670	307	614
99%	128~360	2.403	2.803	2.413	2.363	2.823	307	614
Stand-by	128~360	0.399	0.549	0.389	0.379	0.519	307	614

H-Field Strength at 15 cm surrounding the EUT and 20cm above the top surface of the EUT

Battery power	Frequency Range (kHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	128~360	0.035	0.057	0.063	0.047	0.057	0.815	1.63
50%	128~360	0.315	0.405	0.305	0.305	0.475	0.815	1.63
99%	128~360	0.436	0.616	0.506	0.326	0.316	0.815	1.63
Stand-by	128~360	0.507	0.327	0.427	0.547	0.407	0.815	1.63

Note: All the situation(full load, half load and empty load) has been tested,only the worst situation (full load 27.5W) was recorded in the report.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph_MPE

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

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