

SAR TEST EXCLUSION EVALUATION REPORT



Certificate #4312.01

Product Name: Magnetic 3-in-1 Wireless Charger
Trade Mark: NEXT
Model No: N-2201
Add. Model No.: N-2201W
Report Number: 220525001RFC-2
Test Standards: FCC 47 CFR Part 1 Subpart I
FCC ID: WP8N-2201
Test Result: PASS
Date of Issue: June 20, 2022

Prepared for:

ZEN FACTORY GROUP (ASIA) LIMITED
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CASTLE PEAK ROAD, KOWLOON, HONG KONG

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Version

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V1.0	June 20, 2022	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	ZEN FACTORY GROUP (ASIA) LIMITED
Address of Applicant:	A5-B, 12/F, BLOCK A, HONG KONG INDUSTRIAL CENTRE, 489-491 CASTLE PEAK ROAD, KOWLOON, HONG KONG
Manufacturer:	ZEN FACTORY GROUP (ASIA) LIMITED
Address of Manufacturer:	A5-B, 12/F, BLOCK A, HONG KONG INDUSTRIAL CENTRE, 489-491 CASTLE PEAK ROAD, KOWLOON, HONG KONG

1.2 EUT INFORMATION

Product Name:	Magnetic 3-in-1 Wireless Charger
Model No. / HVIN:	N-2201
Add. Model No:	N-2201W
Trade Mark:	NEXT
DUT Stage:	Production Unit
EUT Supports Function:	Wireless Power Transfer: 127.7kHz
Sample Received Date:	May 25, 2022
Sample Tested Date:	June 7, 2022 to June 7, 2022
Note: The additional model N-2201W is identical with the test model N-2201 except the model number for marketing purpose.	

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For Wireless Power Transfer	
Nominal Operating Frequency:	127.7kHz
Type of Modulation:	ASK
Number of Channels:	1
Antenna Type:	Coil antenna
Normal Test Voltage:	120Vac

1.4 OTHER INFORMATION

Test channels for Wireless Power Transfer	
Frequency	Test RF Channel
127.7kHz	Channel 1
	127.7kHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.6 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

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Description	Manufacturer	Model No.	Serial Number	Supplied by
Mobile phone	Apple	iphone12	N/A	UnionTrust
Apple watches	Apple	WR-50M	N/A	Client
Cement load	N/A	N/A	N/A	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	USB Cable	USB Port	0.30 Meter	UnionTrust

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.9 MEASUREMENT UNCERTAINTY

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

No.	Item	Measurement Uncertainty
1	electromagnetic field	5%

2. EQUIPMENT LIST

Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	Electric and magnetic field analyzer	narda	EHP-50F	510WY90119	July 20, 2021	July 20, 2022
☒	Probe holder	STT	TR-01	N/A	N/A	N/A
☒	Optical fiber line	STT	L=5M	N/A	N/A	N/A

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3. SAR TEST EXCLUSION EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 EXEMPTION LIMITS FOR ROUTINE EVALUATION – SAR EVALUATION

3.2.1 SAR Test Exclusion Threshold

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to 47 CFR §1.1310, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for 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/cm ²)	Averaging Times 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
1500-100000	/	/	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/cm ²)	Averaging Times 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 ²	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

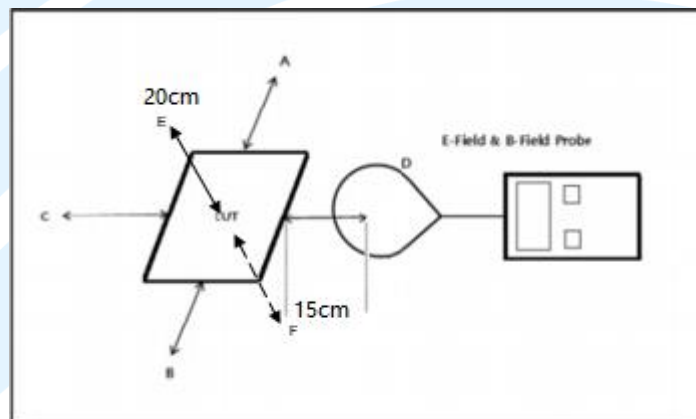
Note: f = frequency in MHz: * = Plane-wave equivalents power density.

Testing Procedure

Enabled the EUT to transmit and receive data continue

- The field strength of both E-field and H-field was measured at 15 cm surrounding the device and 20 cm above the top surface using the equipment list above for determining compliance with the MPE requirements of FCC Part 1.1310.
- The RF power density was measured with the battery at 3 different charge conditions: battery at less than 1 % , battery at 50% charger, battery at 99% charger,.
- Maximum E-field and H-field measurements were made 15cm from each side of the EUT. Along the side of the EUT and still 15cm away from the edge of the EU T, the field probes were positioned at the location where there is maximum field strength. The maximum E-field and H-field is reported below.
- This device uses a wireless charging circuit for power transfer operating at the frequency of X kHz. Thus, the 300 kHz limits were used: E-field Limit = 614 (V/m); H-field limit = 1.63 (A/m).

Test setup



Note

The RF exposure test is performed in the shield room

The test distance is between the edge of the charger and the geometric center of probe

The aggregate at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated.

3.3 TEST RESULT

3.3.1 Result for 47 CFR §1.1310

worst case test data:

Test Mode 3

E-Field Strength

Test Position	Test distance (cm)	Test result (V/m)			Limit (V/m)	Result (Pass/Fail)
		<1% Battery status	<50% Battery status	<99% Battery status		
A: Right	15	0.8082	0.7835	0.7798	614	Pass
B: Left	15	1.0847	1.0562	1.0464	614	Pass
C: Front	15	0.8350	0.8251	0.8305	614	Pass
D: Back	15	0.8445	0.8245	0.8408	614	Pass
E: Top	20	0.5880	0.5789	0.5849	614	Pass
F: Bottom	15	0.1356	0.1286	0.1162	614	Pass

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H-Field Strength

Test Position	Test distance (cm)	Test result (A/m)			Limit (A/m)	Result (Pass/Fail)
		<1% Battery status	<50% Battery status	<99% Battery status		
A: Right	15	0.1245	0.1196	0.1193	1.63	Pass
B: Left	15	0.0851	0.0841	0.0822	1.63	Pass
C: Front	15	0.1778	0.1746	0.1767	1.63	Pass
D: Back	15	0.1758	0.1741	0.1743	1.63	Pass
E: Top	20	0.0160	0.0109	0.0111	1.63	Pass
F: Bottom	15	0.0379	0.0331	0.0341	1.63	Pass

Note:

1. Test with 15cm distance from the center of the probe(s) to the edge of the device, 20 cm for top (Position E) test
2. All simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
3. All possible modes of operation were investigated, only the worst-case emissions reported.

Equipment Approval Considerations

Requirements of section 5 of KDB680106 D01 RF Exposure Wireless Charging App v03	Yes/No	Description
Power transfer frequency is less than 1 MHz.	Yes	The device operates in the frequency 127.7KHz
Output power from each primary coil is less than or equal to 15 watts.	Yes	The maximum output power of the primary coil is 7.5W
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 transmission system consists of two coils, it can work simultaneously.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes	Product is not a portable device.
The aggregate H-field strengths anywhere at or beyond 15 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 data in section 2.4 of this report

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APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 1 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

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