
RF Exposure Report

Report No.: AGC05803240312FH01

FCC ID : ZBC-WD290B

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : Wireless charger

BRAND NAME : DNS

MODEL NAME : WD-290B

APPLICANT : SHENZHEN DNS INDUSTRIES CO., LTD.

DATE OF ISSUE : May 11, 2024

STANDARD(S) : KDB680106 D01 RF Exposure Wireless Charging Base App v04

REPORT VERSION : V1.0



Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May 11, 2024	Valid	Initial Release

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1. General Information

Applicant	SHENZHEN DNS INDUSTRIES CO., LTD.
Address	23/F Building A, Shenzhen International Innovation Center, No. 1006 Shennan Road, Futian, Shenzhen, 518026, China
Manufacturer	SHENZHEN DNS INDUSTRIES CO., LTD.
Address	23/F Building A, Shenzhen International Innovation Center, No. 1006 Shennan Road, Futian, Shenzhen, 518026, China
Factory 1	HUIZHOU DNS TECHNOLOGY CO., LTD.
Address 1	5 Dongshun South Road, Dongjiang Hi-tech Industrial Park, Zhongkai Hi-tech Zone, Huizhou City, Guangdong, China
Factory 2	D AND S INDUSTRIES (PHILIPPINES) CORPORATION
Address 2	1 to 5 Orient Goldcrest Suntrust Ecotown Building 2, Lot 8 Block 8, Sahud Ulan, Suntrust Ecotown Tanza, Region IV-A, Cavite, Philippines
Product Designation	Wireless charger
Brand Name	DNS
Test Model	WD-290B
Series Model(s)	N/A
Difference Description	N/A
Date of receipt of test item	Mar. 27, 2024
Date of Test	Mar. 27, 2024 to May 11, 2024
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-RF Exposure (WPT_MPE)-V1


Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By 

 Cici Li
 (Project Engineer) May 11, 2024

Reviewed By 

 Calvin Liu
 (Reviewer) May 11, 2024

Approved By 

 Max Zhang
 Authorized Officer May 11, 2024

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2. Product Information

2.1 Product Technical Description

Equipment Specification	WPT
Operation Frequency Band	WPT_1: 110.5kHz-205kHz or 360kHz-365kHz WPT_2: 110.5kHz-205kHz
Test Frequency	128.1kHz, 360.0kHz, 175.4kHz
Hardware Version	V2.3
Software Version	V1.0
Modulation Type	WPT_1: ASK or FSK WPT_2: ASK
Field Strength of Fundamental	63.30dBuV/m (Max)
Antenna Designation	Coil Antenna
Antenna Gain	0dBi
Power Supply	Input(PD): 5V \pm 3A,9V \pm 3A Output 1: 5W/7.5W/15W(for iPhone) Output 2: 5W(for AirPods) Total Output: 20W(max)
Adapter Information	N/A

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3. Test Environment

3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

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

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to FOLLOW CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. 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 with Registration 975832.

IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

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3.3 Environmental Conditions

	Normal Conditions
Temperature range (°C)	15 - 35
Relative humidity range	20% - 75%
Pressure range (kPa)	86 - 106
Power supply	DC 5V or DC 9V

3.4 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%.

Item	Measurement Uncertainty
E-Field Strength(0.003-0.4MHz)	$\pm 1.5\text{dB}$
E-Field Strength(0.4-10MHz)	$\pm 1.3\text{dB}$
H-Field Strength(0.003-0.4MHz)	$\pm 1.3\text{dB}$
H-Field Strength(0.4-10MHz)	$\pm 1.2\text{dB}$

3.5 List of Equipment Used

Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input checked="" type="checkbox"/>	AGC-RF-011	Broadband Field Meter	WAVECONTROL	SMP2	J-0004	2023-02-24	2025-02-23
<input checked="" type="checkbox"/>	AGC-RF-012	Probe FHP	WAVECONTROL	WP400	J-0015	2023-02-24	2025-02-23

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4. Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

Test Accessories Come From The Laboratory

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1	Iphone13 Phone	--	Apple	--	--
2	Earphone	EF1160	final	--	--
3	Iphone 8 Phone	--	Apple	--	--

Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1	Adapter	AQ031AD	UL	--	--
2	Charging cable	--	--	1.83m unshielded	--

5. Description of Test Modes

NO.	Test Mode Description	Exposure Conditions
1	Mode 1: AC/DC Adapter + EUT + Mobile Phone (Battery Status: <1%)	Mobile
2	Mode 2: AC/DC Adapter + EUT + Mobile Phone (Battery Status: <50%)	Mobile
3	Mode 3: AC/DC Adapter + EUT + Mobile Phone (Battery Status: 100%)	Mobile
4	Mode 4: AC/DC Adapter + EUT + Earphone (Battery Status: <1%)	Mobile
5	Mode 5: AC/DC Adapter + EUT + Earphone (Battery Status: <50%)	Mobile
6	Mode 6: AC/DC Adapter + EUT + Earphone (Battery Status: 100%)	Mobile
7	Mode 7: AC/DC Adapter + EUT + Mobile Phone+ Earphone (Battery Status: <1%)	Mobile
8	Mode 8: AC/DC Adapter + EUT + Mobile Phone+ Earphone (Battery Status: <50%)	Mobile
9	Mode 9: AC/DC Adapter + EUT + Mobile Phone+ Earphone (Battery Status: <100%)	Mobile

Note: All test modes were pre-tested, but we only recorded the worst case in this report.

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6. RF Exposure Measurement

6.1 Refer Evaluation Method

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

FCC KDB publication KDB680106 D01 RF Exposure Wireless Charging Apps v04: RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices.

FCC CFR 47 part 18.107: Industrial, Scientific, and Medical Equipment.

6.2 Measurement Limits

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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

F=frequency in MHz

*=Plane-wave equivalent power density

According to FCC KDB 680106 D01v04 Section 3. RF Exposure Requirements clause 3.2 the Emission-Limits in the frequency range from 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of CFR 47 – Section 1.1310 as following:

	E-Field	*/*	B-Field
Frequency	V/m	A/m	uT
0.3 MHz – 3.0 MHz	614	1.613	2.0
3.0 MHz – 30 MHz	824/f (=27.5 _{30MHz})	2.19/f (=0.073 _{30MHz})	--

A KDB inquire was required to determine/confirm the applicable limits below 100kHz.

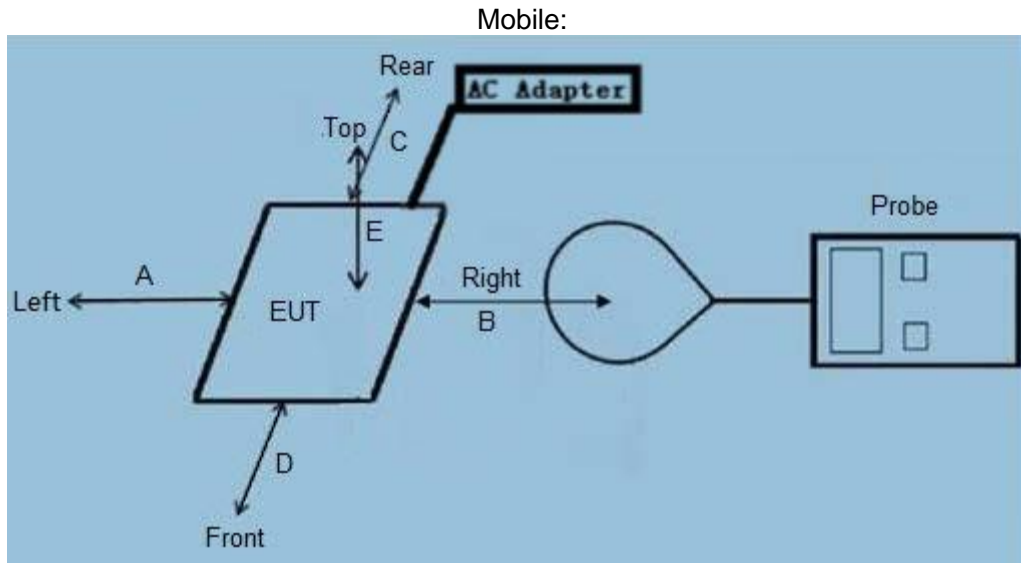
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6.3 Measurement Setup



Note:

- RF exposure assessment tests are conducted in a shielded room.
- Refer to the following test method description for the test distance between the edge of the charger and the measuring probe.
- As shown in the above picture, the test layout is not for the real object, only the requirements of the test layout listed in the standard requirements are presented, for reference only.
- The actual test EUT distinguishes the test type according to the requirements as shown in the figure above.

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6.4 Measurement Procedure

6.4.1 For mobile RF exposure:

- a) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- b) E-field and H-field measurements should be taken with the probe geometric center located 20cm around the EUT and 20cm above the top surface of the master/client pair.
- c) The highest emission level was recorded and compared with limit as soon as measurement of each point (A, B, C, D, E) were completed.
- d) The EUT were measured according to the dictates of KDB 680106 D01v04

✚ Equipment Approval Considerations of KDB 680106 D01v04

Requirements of KDB 680106	Yes or No	Description
The power transfer frequency is below 1 MHz	Yes	The device operate in the frequency range 110.5kHz-205kHz,360kHz-365kHz..
Output power from each primary coil is less than 15 watts	Yes	The maximum output power of the primary coil is 15W.
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	The system consist of two source primary coils that charge each of the two clients
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	Device can be used in Mobile conditions.
The aggregate H-field strengths at 20 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 H-field strengths at 20 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.
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.	Yes	The device has two radiating structures and are tested at full load

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6.5 Measurement Results

Mobile devices are evaluated as follows:

Operate Mode	Field Strength	Measured H-Field Strength Values (A/m) Measured E-Field Strength Values (V/m)					FCC Limit	50%_FCC limit
		Position A	Position B	Position C	Position D	Position E		
Mode 7	nT	851.36	912.54	813.8	941.9	914.8	--	--
Mode 7	A/m	0.678	0.726	0.648	0.750	0.728	1.63	0.815
Mode 7	V/m	0.684	0.635	0.714	0.708	0.732	614	307

Note 1: Unit conversion formula: $1A/m = 1250 \cdot nT$

Note 2: a 1/d (inverse distance from the emitter structure) field strength decay is observed beyond 20 cm per axis, A field strength decay proportional to 1/d (d is the distance from the emitter).

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Appendix I: Photographs of Test Setup
Refer to the Report No.: AGC05803240312AP02
-----End of Report-----

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1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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