



RF Exposure Evaluation Report

Application No.: DNT240707R1215-2128
Applicant: Zhongshan Haoshi Electronics Co., LTD
Address of Applicant: No.5-8 card,2nd floor,Building 9, No. 33-35, East Jucheng Avenue,
Xiaolan Town, Zhongshan City
EUT Description: Musical instrument speaker
Model No.: X20
FCC ID: 2BF5H-X20
Power supply: DC 7.4V From Battery; DC 5V From Adapter Input AC 100-240V,50/60Hz
Charging Voltage: DC 5V/0.5A
Standards: 47 CFR Part 2.1093
FCC KDB 447498 D04 v01
Trade Mark: /
Date of Receipt: 2024/4/19
Date of Test: 2024/4/20 to 2024/4/25
Date of Issue: 2024/4/26
Test Result: **PASS ***

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pencils Chen (Project Engineer)

Approved By: Wick Peng (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V2.0	/	Apr.26, 2024	Valid	Original Report



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1 General Information

1.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

1.2 General Description of EUT

Manufacturer:	Zhongshan Haoshi Electronics Co., LTD
Address of Manufacturer:	No.5-8 card,2nd floor,Building 9, No. 33-35, East Jucheng Avenue, Xiaolan Town, Zhongshan City
EUT Description:	Musical instrument speaker
Test Model No.:	X20
Additional Model(s):	/
Chip Type:	AB5301A
Serial number:	PR240707R1215
Power Supply:	DC 7.4V From Battery; DC 5V From Adapter Input AC 100-240V,50/60Hz
Charging Voltage:	DC 5V/0.5A
Trade Mark:	/
Hardware Version:	V1.0
Software Version:	V1.0
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module, <input type="checkbox"/> Mobile Device
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated
Antenna Gain:	<input checked="" type="checkbox"/> Provided by applicant -0.58dBi

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information, DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

Human exposure to RF emissions from portable devices (47 CFR §2.1093), as defined by the FCC, must be evaluated with respect to the FCC-adopted limits for SAR. Evaluation of mobile devices, as defined by the FCC, may also be performed with respect to SAR limits, but in such cases it is usually simpler and more cost-effective to evaluate compliance with respect to field strength or power density limits. For certain devices that are designed to be used in both mobile and portable configurations similar to those described in 47 CFR §2.1091(d)(4), such as certain desktop phones and wireless modem modules, compliance for mobile configurations is also satisfied when the same device is evaluated for SAR compliance in portable configurations.

Refer to 47 CFR §2.1093:

A portable device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that the RF source's radiating structure(s) is/are within 20 centimeters of the body of the user.

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for portable devices having single RF sources with more than an available maximum time-averaged power of 1 mW, more than the ERP listed in Table 1 to § 1.1307(b)(3)(i)(C), or more than the P_{th} in the following formula, whichever is greater. The following formula shall only be used in conjunction with portable devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 0.5 centimeters to 20 centimeters and frequencies from 0.3 GHz to 6 GHz.



$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad \text{(B.2)}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 300 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.



2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Mode	Fre (MHz)	Peak Conducted output Power (dBm)	Target power (dBm)	Antenna Gain (dBi)	Max. E.R.P (dBm)	Max. Target power (mW)	SAR Test Exemption Limit (mW)
GFSK	2402	-3.33	-3±1	-0.58	-4.73	0.337	3
	2441	-4.45	-4±1	-0.58	-5.73	0.267	3
	2480	-5.31	-5±1	-0.58	-6.73	0.212	3
π/4-DQPSK	2402	-1.23	-1±1	-0.58	-2.73	0.533	3
	2441	-2.41	-2±1	-0.58	-3.73	0.424	3
	2480	-3.3	-3±1	-0.58	-4.73	0.337	3
8DPSK	2402	-0.73	0±1	-0.58	-1.73	0.671	3
	2440	-1.95	-1±1	-0.58	-2.73	0.533	3
	2480	-2.78	-2±1	-0.58	-3.73	0.424	3

Note:

1. E.R.P=Conducted output Power+Antenna Gain -2.15.
2. SAR Test Exclusion Thresholds is 3mW for separation distance 5mm. Therefore, SAR test is not required.

The End Report