FCC RF EXPOSURE REPORT

Applicant	:	Harman International Industries, Inc.
Address of Applicant	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Manufacturer	:	Harman International Industries, Inc.
Address of Manufacturer	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	3.1CH Soundbar with Virtual Dolby Atmos and Wireless Subwoofer
Model No.	:	CINEMA SB580, CINEMA SB581, CINEMA SB582, CINEMA SB583, CINEMA SB584, CINEMA SB585, CINEMA SB586, CINEMA SB587, CINEMA SB588, CINEMA SB589, CINEMA SB590, CINEMA SB591, CINEMA SB592, CINEMA SB593, CINEMA SB594, CINEMA SB595, CINEMA SB596, CINEMA SB597, CINEMA SB598, CINEMA SB599
FCC ID	:	APIJBLSB580
Test Standard(s)	:	KDB447498 D01 General RF Exposure Guidance v06
Report No.	:	DDT-RE23071316-2E09
Issue Date	:	2023/11/20
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd.
Address of Laboratory	:	Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

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Test Report Declare

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Manufacturer	:	Harman International Industries, Inc.
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Standard Used: KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is assessed by Guangdong Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above. The assessed results are contained in this report and Guangdong Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

After evaluation, our opinion is that the equipment In Accordance with above standard.

Report No.:	DDT-RE23071316-2E09		
Date of Receipt:	Jul. 25, 2023	**Date of Test:**	Jul. 25, 2023 ~ Oct. 21, 2023

Prepared By: ***Approved By:***

Bobo Chen

Bobo Chen/Engineer

Damon Hu

Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2023/11/20	

1. General Information

1.1. Description of equipment

EUT Name	:	3.1CH Soundbar with Virtual Dolby Atmos and Wireless Subwoofer
Model Number	:	CINEMA SB580, CINEMA SB581, CINEMA SB582, CINEMA SB583, CINEMA SB584, CINEMA SB585, CINEMA SB586, CINEMA SB587, CINEMA SB588, CINEMA SB589, CINEMA SB590, CINEMA SB591, CINEMA SB592, CINEMA SB593, CINEMA SB594, CINEMA SB595, CINEMA SB596, CINEMA SB597, CINEMA SB598, CINEMA SB599
Difference of models	:	Above models are identical in schematic and structure, only the model number are different, therefore the test performed on the model CINEMA SB580.
EUT function description	:	Please reference user manual of this device
Power Supply	:	AC 100-240V~ 50/60Hz 30W
Radio Technology	:	Bluetooth V5.3 2.4G SRD
Operation frequency	:	Bluetooth: 2402 MHz - 2480 MHz 2.4G SRD: 2402 - 2481 MHz
Modulation	:	Bluetooth: GFSK, π/4-DQPSK, 8DPSK 2.4G SRD: GFSK
Antenna Type	:	Bluetooth: FPC antenna, maximum PK gain: 2.34 dBi 2.4G SRD: PCB antenna, maximum PK gain:1.70 dBi
Sample Number	:	S23071316-03

Note: EUT is the abbreviation of equipment under test.

1.2. Assess laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2. RF Exposure Evaluation

2.1. Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(B) 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 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			1.0	30

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

2.2. Calculation method

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } S(mW/cm^2) = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (mW)
G = EUT Antenna numeric gain (numeric)=
d = Separation distance between radiator and human body (m)
The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation result

Mode	Output power (dBm)	Output power (mW)	tune up power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm^2)	MPE Limit (mW/cm^2)
BT	0.17	1.04	1.5	2.34	1.71	0.00051	1
2.4G SRD	7.81	6.04	6.5	1.70	1.48	0.00191	1

Simultaneous:
BT+2.4G SRD =0.00051/1+0.00191/1=0.00242＜1

Note: The estimation distance is 20 cm

Conclusion: MPE evaluation required since transmitter power is below FCC threshold

END OF REPORT