

RF EXPOSURE REPORT

FOR

Applicant	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Multi-Channel Soundbar with wireless subwoofer
Model No.	:	BAR 500
Trade Mark	:	JBL
FCC ID	:	APIBAR500
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park,
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REPORT

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Test Report Declare

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Standard Used: KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is assessed by Dongguan 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 Dongguan 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-R21123009-2E16		
Date of Receipt:	Feb. 18, 2022	Date of Test:	Feb. 18, 2022 ~ Apr. 25, 2022

Prepared By:

Ella Gong

Ella Gong/Engineer

Approved By:



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 Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Apr. 25, 2022	

1. General Information

1.1. Description of equipment

EUT* Name	: Multi-Channel Soundbar with wireless subwoofer
Model Number	: BAR 500
EUT function description	: Please reference user manual of this device
Power supply	: AC 100-240V-50/60Hz 65W
Radio Specification	: Bluetooth V5.2, IEEE802.11b/g/n/a/ac/ax
Operation frequency	: Bluetooth: 2402MHz-2480MHz IEEE802.11b/g/n/a/ac/ax: 2412MHz-2462MHz, 5180MHz-5350MHz, 5500MHz-5700MHz, 5745MHz-5850MHz
Modulation	: Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK IEEE 802.11b: DSSS (CCK, QPSK, BPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: VHT20, VHT40, VHT80: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: HE20, HE40, HE80: OFDM (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: Bluetooth: 1Mbps, 2Mbps, 3Mbps IEEE 802.11b: up to 11 Mbps IEEE 802.11g/a: up to 54 Mbps IEEE 802.11n HT20: up to 144.4 Mbps IEEE 802.11n HT40: up to 300 Mbps IEEE 802.11ac VHT20: up to 173.4 Mbps IEEE 802.11ac VHT40: up to 400 Mbps IEEE 802.11ac VHT80: up to 866.6 Mbps IEEE 802.11ax HE20: up to 286.8 Mbps IEEE 802.11ax HE40: up to 573.5 Mbps IEEE 802.11ax HE80: up to 1201 Mbps
Antenna Gain	: Bluetooth Antenna: maximum PK gain: 2.27 dBi Antenna 1: 2.4G band maximum PK gain: 2.27 dBi, 5G band maximum PK gain: 3.81 dBi Antenna 2: 2.4G band maximum PK gain: 2.34 dBi, 5G band maximum PK gain: 2.84 dBi 2.4GHz SRD FPC antenna, maximum PK gain: 1.10 dBi
Sample Type	: Series production
Sample Number	: S21123009-01 for radiation S21123009-02 for conductive

Antenna information			
	Ant1 gain	Ant2 gain	MIMO
IEEE 802.11b	2.27	2.34	/
IEEE 802.11g	2.27	2.34	/
IEEE 802.11n HT20	2.27	2.34	5.32
IEEE 802.11n HT40	2.27	2.34	5.32
IEEE 802.11ax HE20	2.27	2.34	5.32
IEEE 802.11ax HE40	2.27	2.34	5.32

Antenna information			
	Ant1 gain	Ant2 gain	MIMO
IEEE 802.11a	3.81	2.84	/

IEEE 802.11n HT20	3.81	2.84	6.36
IEEE 802.11n HT40	3.81	2.84	6.36
IEEE 802.11ac VHT20	3.81	2.84	6.36
IEEE 802.11ac VHT40	3.81	2.84	6.36
IEEE 802.11ac VHT80	3.81	2.84	6.36
IEEE 802.11ax HE20	3.81	2.84	6.36
IEEE 802.11ax HE40	3.81	2.84	6.36
IEEE 802.11ax HE80	3.81	2.84	6.36

1.2. Assess laboratory

Dongguan Dongdian Testing Service Co., Ltd.

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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, 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

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

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	PK Output power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm ²)	MPE Limit (mW/cm ²)
BT	12.17	13	19.95	2.27	1.69	0.0067	1
BLE	7.08	8	6.31	2.27	1.69	0.0021	1
SRD	7.26	8	6.31	1.1	1.29	0.0016	1
2.4G WIFI	23.62	24	251.19	5.32	3.4	0.1699	1
5G WIFI	17.8	19	79.43	6.36	4.33	0.0684	1

Simultaneous:

$$BT+SRD+WIFI=0.0067/1+0.0016/1+0.1699/1=0.1782<1$$

Note: The estimation distance is 20 cm

Conclusion: The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

END OF REPORT