



Report No.: SZEM190101076904

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# **SAR Evaluation Report**

**Application No.:** SZEM1901010769CR(GZEM1901010434TX)

**Applicant:** Harman International Industries, Inc.

Address of Applicant: 8500 Balboa Boulevard, Northridge, California, 91329, United States

**Manufacturer:** Harman International Industries, Inc.

Address of Manufacturer: 8500 Balboa Boulevard, Northridge, California, 91329, United States

Factory: Minami Acoustics Limited

Address of Factory: Shangou Industrial Park GongJiang Town, Yudu County Ganzhou City

Jiangxi 342300 China

**Equipment Under Test (EUT):** 

**EUT Name:** Bluetooth Headset

Model No.: LIVE220BT

Trade mark: JBL

FCC ID: APILIVE220BT

Standards: 47 CFR Part 1.1307

47 CFR Part 2.1093

KDB447498D01 General RF Exposure Guidance v06

**Date of Receipt:** 2019-01-28

**Date of Test:** 2019-02-15 to 2019-02-26

**Date of Issue:** 2019-02-27

Test Result : PASS\*

Keny Xu EMC Laboratory Manager



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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## 2 Version

	Revision Record							
Version	Chapter	Date	Modifier	Remark				
01		2019-02-27		Original				

Authorized for issue by:		
	Bonson Wang	
	Benson Wang /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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### 4 General Information

## 4.1 General Description of EUT

Power supply:	Rechargeable battery: 3.7V 220mAh (Charged by adapter)	
Cable:	USB cable: 28.5cm unshielded	
For BT		
Operation Frequency:	2402MHz to 2480MHz	
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)	
Bluetooth Version:	V4.2 Dual mode	
Channel Spacing:	1MHz	
Modulation Type:	GFSK, π/4DQPSK, 8DPSK	
Number of Channels:	79	
Antenna Type:	Chip Antenna	
Antenna Gain:	2.09dBi	
For BLE		
Operation Frequency:	2402MHz to 2480MHz	
Bluetooth Version:	V4.2 Dual mode	
Channel Spacing:	2MHz	
Modulation Type:	GFSK	
Number of Channels:	40	
Antenna Type:	Chip Antenna	
Antenna Gain:	2.09dBi	



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#### 4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

### 4.3 Test Facility

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

#### • CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

#### VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

#### • FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

#### • Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



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#### 4.4 Deviation from Standards

None.

#### 4.5 Abnormalities from Standard Conditions

None.

### 4.6 Other Information Requested by the Customer

None.



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### 5 SAR Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### **5.1.2 Limits**

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]  $\cdot [\sqrt{f(GHz)}] \le 3.0$  for 1-g SAR and  $\le 7.5$  for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq$  50 mm and for transmission frequencies between 100 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

#### 5.1.3 EUT RF Exposure

For BT/BLE

The Max. power (including tune-up tolerance) is	4.00	dBm on the highest channel	2.48	GHz (*)
4.00 dBm logarithmic terms convert to numeric result is nearly 2.51 mW				
According to the formula. calculate the test excl	resholds:			
[(max. power of channel, including tune-up tol [vf(GHz)]	erance,	mW)/(min. test separation o	istance,	mm)]·
General RF Exposure = $(2.51 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}} = 0.79$ SAR requirement:			(1)	
S = 3.0 (1) < (2)			(2)	
So the SAR report is not required.				

#### - End of the Report -



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