

# SAR Evaluation Report

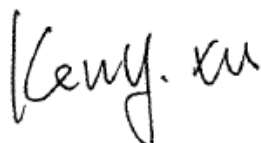
**Application No.:** SZEM1901010769CR(GZEM1901010434TX)  
**Applicant:** Harman International Industries, Inc.  
**Address of Applicant:** 8500 Balboa Boulevard, Northridge, California, 91329, United States  
**Manufacturer:** Harman International Industries, Inc.  
**Address of Manufacturer:** 8500 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

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.





Keny Xu  
 EMC Laboratory Manager



## 2 Version

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

<b>Authorized for issue by:</b>			
			
		<hr/> <b>Benson Wang /Project Engineer</b>	
			
		<hr/> <b>Eric Fu /Reviewer</b>	





### 3 Contents

	Page
1 COVER PAGE .....	1
2 VERSION .....	2
3 CONTENTS .....	3
4 GENERAL INFORMATION .....	4
4.1 GENERAL DESCRIPTION OF EUT .....	4
4.2 TEST LOCATION .....	5
4.3 TEST FACILITY .....	5
4.4 DEVIATION FROM STANDARDS .....	6
4.5 ABNORMALITIES FROM STANDARD CONDITIONS .....	6
4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER .....	6
5 SAR EVALUATION .....	7
5.1 RF EXPOSURE COMPLIANCE REQUIREMENT .....	7
5.1.1 Standard Requirement .....	7
5.1.2 Limits .....	7
5.1.3 EUT RF Exposure .....	7



## 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, $\pi/4$ DQPSK, 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



## 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.





#### 4.4 Deviation from Standards

None.

#### 4.5 Abnormalities from Standard Conditions

None.

#### 4.6 Other Information Requested by the Customer

None.



## 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  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  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 exclusion thresholds:				
$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$				
General RF Exposure =	$(2.51 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}}$	=	0.79	(1)
SAR requirement:				
$S = 3.0$				
(1) < (2)				
So the SAR report is not required.				

- End of the Report -

