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Report No.: SZEM170400372406

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# SAR Evaluation Report

**Application No.:** SZEM1704003724CR  
**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:** Acoustic Innovation (Huizhou) CO.,LTD.  
**Address of Factory:** Xiangshuihe Industrial Area,Dayawan Development District,Huizhou City, GuangDong Province,China  
**Equipment Under Test (EUT):**  
**Product Name:** Bluetooth Earphone  
**Model No.(EUT):** DUET MINI  
**Trade mark:** JBL  
**FCC ID:** APIJBLDUETMINI  
**Standards:** 47 CFR Part 1.1307 (2016)  
 47 CFR Part 2.1093 (2016)  
 KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2017-04-26  
**Date of Test:** 2017-05-03 to 2017-05-09  
**Date of Issue:** 2017-09-18

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

This report supersedes our previous report SZEM170400372403, issued on 2017-05-18, which is hereby deemed null and void.



Jack Zhang  
 EMC Laboratory Manager

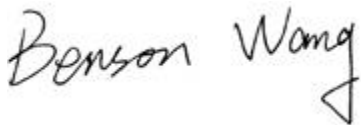

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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## 2 Version

<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
01		2017-05-18		Original
02		2017-09-18		New

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



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## 4 General Information

### 4.1 Client Information

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:	Acoustic Innovation (Huizhou) CO.,LTD.
Address of Factory:	Xiangshuihe Industrial Area,Dayawan Development District,Huizhou City, GuangDong Province,China

### 4.2 General Description of EUT

Product Name:	Bluetooth Earphone
Model No.:	DUET MINI
Power supply:	Lithium Ion Battery: 3.7V 120mAh (Charge by usb)
Cable:	USB cable: 22cm unshielded
<b>For BT:</b>	
Bluetooth version	BT 4.1 Dual mode
Operation Frequency:	2402MHz~2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Portable production
Antenna Type:	Chip antenna
Antenna Gain:	2dBi
<b>For BLE:</b>	
Bluetooth version	BT 4.1 Dual mode
Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	Portable production
Antenna Type:	Chip antenna
Antenna Gain:	2dBi



### 4.3 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.

### 4.4 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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

### 4.5 Deviation from Standards

None.

### 4.6 Abnormalities from Standard Conditions

None.

### 4.7 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:

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

$f(\text{GHz})$  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:

The normal conducted power is 2dBm (+/-2)

The Max Conducted Peak Output Power is 4 dBm in highest channel(2.480GHz);

4dBm logarithmic terms convert to numeric result is nearly 2.51mW

According to the formula. calculate the test exclusion thresholds:

$$\left[ \frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \cdot \sqrt{f(\text{GHz})} \right]$$

General RF Exposure =  $(2.51\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 0.79$  ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.



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## For BLE:

The normal conducted power is -2dBm (+/-2)

The Max Conducted Peak Output Power is 0 dBm in highest channel(2.480GHz);

0dBm logarithmic terms convert to numeric result is nearly 1mW

According to the formula. calculate the test exclusion thresholds:

$$\left[ \frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \cdot \sqrt{f(\text{GHz})} \right]$$

General RF Exposure =  $(1\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 0.31$  ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required