



SAR Evaluation Report

Application No.: SZEM2006005605CR
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: Kingstate Electronics(Dongguan)Co., Ltd
Address of Factory: Shi Chong Industrial Park, Shi Chong Avenue, Xiang Xi Village, Shi Pai Town, Dong Guan City, Guang Dong Province, China.

Equipment Under Test (EUT):
EUT Name: BLUETOOTH HEADSET
Model No.: LIVE FREE NC+ TWS
FCC ID: APILIVEFREENTP
Trade mark: JBL
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2020-06-24
Date of Test: 2020-07-02 to 2020-07-04
Date of Issue: 2020-07-15

| | |
|----------------------|--------------|
| Test Result : | PASS* |
|----------------------|--------------|



* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager



2 Version

| <i>Revision Record</i> | | | | |
|------------------------|----------------|-------------|-----------------|---------------|
| <i>Version</i> | <i>Chapter</i> | <i>Date</i> | <i>Modifier</i> | <i>Remark</i> |
| 01 | | 2020-07-15 | | Original |
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|---------------------------------|--|---|--|
| Authorized for issue by: | | | |
| | |  | |
| | | <hr/> Benson Wang /Project Engineer | |
| | |  | |
| | | <hr/> Eric Fu /Reviewer | |



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: | Left earbuds: Li-Ion Polymer Battery 3.7V 50mAh (Charge by travel case) Right earbuds: Li-Ion Polymer Battery 3.7V 50mAh (Charge by travel case) travel case with backup battery: Li-Ion Polymer Battery 3.7V 300mAh (Charged by type-C port or Wireless charging) |
| Cable: | Type-c cable: 25.5cm unshielded |
| For BT: | |
| Operation Frequency: | 2402MHz to 2480MHz |
| Spectrum Spread Technology: | Frequency Hopping Spread Spectrum(FHSS) |
| Bluetooth Version: | V5.1 Dual mode |
| Channel Spacing: | 1MHz |
| Modulation Type: | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Number of Channels: | 79 |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | Left earbuds: 0.55dBi; Right earbuds: 0.3dBi |
| For BLE: | |
| Operation Frequency: | 2402MHz to 2480MHz |
| Bluetooth Version: | V5.1 Dual mode |
| Channel Spacing: | 2MHz |
| Modulation Type: | GFSK |
| Number of Channels: | 40 |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | Left earbuds: 0.55dBi; Right earbuds: 0.3dBi |



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:

- **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 ≤ 50 mm are determined by:

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR and ≤ 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 calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 and BLE:

The Max. power (including tune-up tolerance) is 9.7 dBm on the lowest channel 2.48 GHz (*)

9.70 dBm logarithmic terms convert to numeric result is nearly 9.33 mW

According to the formula. calculate the test exclusion thresholds:

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

$$\text{General RF Exposure} = (9.33 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}} = 2.94 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

(1) < (2)

So the SAR report is not required.

- End of the Report -

