

# RF EXPOSURE EVALUATION REPORT

**Application No.:** FYCR2203000031AT  
**Applicant:** Huizhou Oppen Electronic Technology Co., Ltd  
**Address of Applicant:** Floor 7, 8 and 9 of building 1,2 and 3, No.19 binhe Avenue, Lilin Town, Zhongkai Hightech Zone, Huizhou, Guangdong, China  
**Manufacturer:** SAKAR INTERNATIONAL INC.  
**Address of Manufacturer:** 195 Carter Drive Edison, NJ 08817 USA  
**Factory:** Huizhou Oppen Electronic Technology Co., Ltd  
**Address of Factory:** Floor 7, 8 and 9 of building 1,2 and 3, No.19 binhe Avenue, Lilin Town, Zhongkai Hightech Zone, Huizhou, Guangdong, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Shockwave 200 Wireless Party Speaker  
**Model No.:** IMT7100  
**Trade Mark:** ALTEC LANSING  
**FCC ID:** 2A523S225  
**Standard(s) :** 47 CFR Part 1.1307  
47 CFR Part 1.1310  
47 CFR Part 2.1091  
**Date of Receipt:** 2022-03-22  
**Date of Evaluation:** 2022-03-22 to 2022-04-20  
**Date of Issue:** 2022-04-24

**Evaluation Result:**

**Pass\***

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



Kidd Yang  
EMC Laboratory Manager



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|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2022-04-24 |          | Original |
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|                 |         |            |          |          |

|                          |  |                            |  |  |
|--------------------------|--|----------------------------|--|--|
| Authorized for issue by: |  |                            |  |  |
|                          |  | Tree Zhan                  |  |  |
|                          |  | Tree Zhan/Project Engineer |  |  |
|                          |  | Winkey Wang                |  |  |
|                          |  | Winkey Wang/Reviewer       |  |  |



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Shenzhen Branch

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### 3 General Information

#### 3.1 Details of E.U.T.

|                             |                                           |
|-----------------------------|-------------------------------------------|
| Power supply:               | DC 14.8V by rechargeable Lithium Battery. |
|                             | Adapter model: AD0301-1901500UB           |
|                             | Input: AC 100-240V 50/60Hz 0.8A           |
|                             | Output: DC 19V 1.5A.                      |
| Cable(s):                   | Aux in Cable: 100cm, unshielded           |
| Operation Frequency:        | 2402MHz to 2480MHz                        |
| Bluetooth Version:          | V5.2                                      |
| Modulation Type:            | GFSK, pi/4DQPSK, 8DPSK                    |
| Number of Channels:         | 79                                        |
| Channel Spacing:            | 1MHz                                      |
| Spectrum Spread Technology: | Frequency Hopping Spread Spectrum(FHSS)   |
| Antenna Type:               | PCB Antenna                               |
| Antenna Gain:               | 0dBi                                      |



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### 3.2 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc. Shenzhen branch.

Fuyong lab. Xinlong TechnoPark, Fengtang Road, Fuyong Subdistrict, Bao'an, Shenzhen, China

Tel: +86 755 8866 3988 Fax: +86 755 2671 0594

No tests were sub-contracted.

### 3.3 Test Facility

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

- **A2LA (Certificate No. 6606.01)**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 6606.01.

- **FCC –Designation Number: CN1322**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized as an accredited testing laboratory.

Designation Number: CN1322. Test Firm Registration Number: 718073

- **Innovation, Science and Economic Development Canada**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0129.

IC#: 28189.

### 3.4 Deviation from Standards

None

### 3.5 Abnormalities from Standard Conditions

None



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## 4 Radio Spectrum Technical Requirement

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range<br>(MHz)                                       | Electric field<br>strength<br>(V/m) | Magnetic field<br>strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|----------------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|-----------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                                     |                                     |                                        |                             |
| 0.3–3.0 .....                                                  | 614                                 | 1.63                                | *(100)                                 | 6                           |
| 3.0–30 .....                                                   | 1842/f                              | 4.89/f                              | *(900/f <sup>2</sup> )                 | 6                           |
| 30–300 .....                                                   | 61.4                                | 0.163                               | 1.0                                    | 6                           |
| 300–1500 .....                                                 | .....                               | .....                               | f/300                                  | 6                           |
| 1500–100,000 .....                                             | .....                               | .....                               | 5                                      | 6                           |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                                     |                                     |                                        |                             |
| 0.3–1.34 .....                                                 | 614                                 | 1.63                                | *(100)                                 | 30                          |
| 1.34–30 .....                                                  | 824/f                               | 2.19/f                              | *(180/f <sup>2</sup> )                 | 30                          |
| 30–300 .....                                                   | 27.5                                | 0.073                               | 0.2                                    | 30                          |
| 300–1500 .....                                                 | .....                               | .....                               | f/1500                                 | 30                          |
| 1500–100,000 .....                                             | .....                               | .....                               | 1.0                                    | 30                          |

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

#### 4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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**4.1.3 EUT RF Exposure Evaluation****For BT:**

Antenna Gain: 0dBi

Output Power Into Antenna &amp; RF Exposure Evaluation Distance:

| Frequency<br>(MHz) | Max Conducted<br>Peak Output<br>Power (dBm) | Output Power<br>to Antenna<br>(mW) | Power Density<br>at R = 20 cm<br>(mW/cm <sup>2</sup> ) | Limit | Result |
|--------------------|---------------------------------------------|------------------------------------|--------------------------------------------------------|-------|--------|
| 2480               | 9.92                                        | 9.82                               | 0.0033                                                 | 1.0   | PASS   |

Note: Refer to report No. FYCR220300003102 for EUT test Max Conducted Peak Output Power Value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.



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## 5 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for FYCR2203000031AT

- End of the Report -



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