

RF EXPOSURE REPORT



Report No.: 17070487-FCC-H

Supersede Report No.: N/A

| | | |
|---|--|--|
| Applicant | KINGRAY ELECTRONICS Co., LTD | |
| Product Name | Bluetooth earphone | |
| Model No. | BB487 | |
| Serial No. | BB488 BB492 MG507 MG508 BB959 BB960 MG509 BB489 BB490 BB499 BB485 BB486 BB487 BB429 BB430 | |
| Test Standard | FCC 2.1093:2016 | |
| Test Date | June 22 to 29, 2017 | |
| Issue Date | June 30, 2017 | |
| Test Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | |
| Equipment complied with the specification | <input checked="" type="checkbox"/> | |
| Equipment did not comply with the specification | <input type="checkbox"/> | |
| <i>Vera Zhang</i> | <i>David Huang</i> | |
| Vera Zhang Test Engineer | David Huang Checked By | |
| <p>This test report may be reproduced in full only</p> <p>Test result presented in this test report is applicable to the tested sample only</p> | | |

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

| Country/Region | Scope |
|----------------|------------------------------------|
| USA | EMC, RF/Wireless, SAR, Telecom |
| Canada | EMC, RF/Wireless, SAR, Telecom |
| Taiwan | EMC, RF, Telecom, SAR, Safety |
| Hong Kong | RF/Wireless, SAR, Telecom |
| Australia | EMC, RF, Telecom, SAR, Safety |
| Korea | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan | EMI, RF/Wireless, SAR, Telecom |
| Singapore | EMC, RF, SAR, Telecom |
| Europe | EMC, RF, SAR, Telecom, Safety |

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1. Report Revision History

| Report No. | Report Version | Description | Issue Date |
|----------------|----------------|-------------|---------------|
| 17070487-FCC-H | NONE | Original | June 30, 2017 |
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| | | | |

2. Customer information

| | |
|------------------|--|
| Applicant Name | KINGRAY ELECTRONICS Co., LTD |
| Applicant Add | Building B, Ge Tailong Industrial Park , No.445, Bulong Rd , BanTian , LongGang , Shenzhen , China |
| Manufacturer | KINGRAY ELECTRONICS Co., LTD |
| Manufacturer Add | Building B, Ge Tailong Industrial Park , No.445, Bulong Rd , BanTian , LongGang , Shenzhen , China |

3. Test site information

| | |
|----------------------|--|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES |
| Lab Address | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108 |
| FCC Test Site No. | 718246 |
| IC Test Site No. | 4842E-1 |
| Test Software | Radiated Emission Program-To Shenzhen v2.0 |

4. Equipment under Test (EUT) Information

| | |
|-------------------------------|--|
| Description of EUT: | Bluetooth earphone |
| Main Model: | BB487 |
| Serial Model: | BB488 BB492 MG507 MG508 BB959 BB960 MG509 BB489 BB490 BB499 BB485 BB486 BB487 BB429 BB430 |
| Date EUT received: | June 22, 2017 |
| Test Date(s): | June 22 to 29, 2017 |
| Antenna Gain: | 0dBi |
| Antenna Type: | PCB antenna |
| Type of Modulation: | GFSK, π /4DQPSK |
| RF Operating Frequency (ies): | 2402-2480 MHz |
| Number of Channels: | 79CH |
| Port: | USB Port |
| Input Power: | Battery: Model: 350926 Spec: 3.7Vdc,55mAh Charge Limit: 5Vdc USB Port: DC 5V |
| Trade Name : | KINGRAY |
| FCC ID: | 2AML6BB430 |

5. FCC §2.1093 - Radiofrequency radiation exposure evaluation: portable devices.

5.1 RF Exposure

Standard Requirement:

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission' s guidelines.

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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,¹⁶ where

- $f_{(\text{GHz})}$ 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.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

$$\text{result} = P \sqrt{F} / D$$

P= Maximum turn-up power in mW

F= Channel frequency in GHz

D= Minimum test separation distance in mm

5.2 Test Result

Bluetooth Mode:

| Modulation | CH | Frequency (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|-----------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK | Low | 2402 | -6.662 | -6±1 | -5 | 0.316 | 0.10 | 3 |
| | Mid | 2441 | -6.790 | -6±1 | -5 | 0.316 | 0.10 | 3 |
| | High | 2480 | -6.968 | -6±1 | -5 | 0.316 | 0.10 | 3 |
| π /4 DQPSK | Low | 2402 | -6.110 | -6±1 | -5 | 0.316 | 0.10 | 3 |
| | Mid | 2441 | -5.547 | -6±1 | -5 | 0.316 | 0.10 | 3 |
| | High | 2480 | -5.768 | -6±1 | -5 | 0.316 | 0.10 | 3 |

Result: Compliance

No SAR measurement is required.