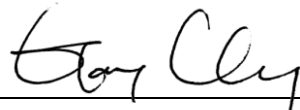


# FCC RF Exposure Report

**FCC ID** : SQGBT800  
**Equipment** : BTv4.0 Dual Mode USB HCI Module  
(Please refer to section 1.1.1 for more details)  
**Model No.** : BT800  
(Please refer to section 1.1.1 for more details)  
**Brand Name** : Laird Technologies  
**Applicant** : Laird Technologies  
**Address** : 11160 Thompson Ave. / Lenexa, Kansas /  
66219 / USA  
**Standard** : 47 CFR FCC Part 2.1093  
**Received Date** : Sep. 03, 2014  
**Tested Date** : Sep. 10 ~ Sep. 11, 2014

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

  
\_\_\_\_\_  
Gary Chang / Manager

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## Release Record

| Report No. | Version | Description   | Issued Date   |
|------------|---------|---------------|---------------|
| FA490301   | Rev. 01 | Initial issue | Sep. 19, 2014 |

# 1 General Description

## 1.1 Information

This report is prepared for FCC class II change.

This report is issued as a duplicate report to original ICC report no. FA362601. The modification is adding external antenna and model name for this change. Therefore the value of MPE is re-calculated in this test report.

### 1.1.1 Product Details

The following models are provided to this EUT. (Additional model was marked in boldface.)

| Model Name      | Description                                                | Difference                                                                                |
|-----------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| BT800           | BTv4.0 Dual Mode USB HCI Module                            | ---                                                                                       |
| BT810           | BTv4.0 Dual Mode USB HCI Module (BG carrier board)         | BT800 module mounted onto a PCB carrier board to change footprint – no other differences. |
| BT820           | BTv4.0 Dual Mode USB Dongle                                | BT800 module mounted onto a carrier board with USB connector.                             |
| <b>BT800-ST</b> | BTv4.0 Dual Mode USB HCI Module – External Antenna variant | BT800 module mounted onto a PCB carrier board with external chip antenna.                 |

### 1.1.2 Specification of the Equipment under Test (EUT)

| RF General Information                                  |                |                 |                |           |
|---------------------------------------------------------|----------------|-----------------|----------------|-----------|
| Frequency Range (MHz)                                   | Bluetooth Mode | Ch. Freq. (MHz) | Channel Number | Data Rate |
| 2400-2483.5                                             | V4.0 LE        | 2402-2480       | 0-39 [40]      | 1 Mbps    |
| Note 1: Bluetooth LE (Low energy) uses GFSK modulation. |                |                 |                |           |

### 1.1.3 Antenna Details

| Ant. No. | Brand | Model               | Type | Connector | Antenna Gain (dBi) | Remark                   |
|----------|-------|---------------------|------|-----------|--------------------|--------------------------|
| 1        | ACX   | AT3216-B2R7HAA_3216 | chip | N/A       | 0.5                | For BT800, BT810 & BT820 |
| 2        | ACX   | AT3216-B2R7HAA      | chip | UFL       | 0.5                | For BT800-ST             |

## 2 EXPOSURE EVALUATION OF PORTABLE OR MOBILE DEVICES

Human exposure to RF emissions from portable devices (47 CFR §2.1093), as defined by the FCC, must be evaluated with respect to the FCC-adopted limits for SAR. Evaluation of mobile devices, as defined by the FCC, may also be performed with respect to SAR limits, but in such cases it is usually simpler and more cost-effective to evaluate compliance with respect to field strength or power density limits. For certain devices that are designed to be used in both mobile and portable configurations similar to those described in 47 CFR §2.1091(d)(4), such as certain desktop phones and wireless modem modules, compliance for mobile configurations is also satisfied when the same device is evaluated for SAR compliance in portable configurations.

### 2.1 SAR TEST EXCLUSION THRESHOLD FOR 100MHz to 6GHz and $\leq 50\text{mm}$

| Frequency (MHz) | 5  | 10 | 15  | 20  | 25  | Separation distance (mm)          |
|-----------------|----|----|-----|-----|-----|-----------------------------------|
| 150             | 39 | 77 | 116 | 155 | 194 | SAR Test Exclusion Threshold (mW) |
| 300             | 27 | 55 | 82  | 110 | 137 |                                   |
| 450             | 22 | 45 | 67  | 89  | 112 |                                   |
| 835             | 16 | 33 | 49  | 66  | 82  |                                   |
| 900             | 16 | 32 | 47  | 63  | 79  |                                   |
| 1500            | 12 | 24 | 37  | 49  | 61  |                                   |
| 1900            | 11 | 22 | 33  | 44  | 54  |                                   |
| 2450            | 10 | 19 | 29  | 38  | 48  |                                   |
| 3600            | 8  | 16 | 24  | 32  | 40  |                                   |
| 5200            | 7  | 13 | 20  | 26  | 33  |                                   |
| 5400            | 6  | 13 | 19  | 26  | 32  |                                   |
| 5800            | 6  | 12 | 19  | 25  | 31  |                                   |

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

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

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- 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.

## 2.2 EVALUATION RESULTS

| Frequency (MHz) | Maximum Conducted Average Power (dBm) | Maximum Conducted Average Power (mW) | Antenna Gain (dBi) |
|-----------------|---------------------------------------|--------------------------------------|--------------------|
| 2480 ( BT EDR ) | 7.91                                  | 6.18                                 | 0.5                |
| 2480 ( BT LE )  | 7.58                                  | 5.73                                 | 0.5                |

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})]$   
 $= 6.18 / 5 * \sqrt{2.48} = 1.95 < 3.0$

SAR Test Exclusion Thresholds is  $< 10\text{mW}$  and  $3.0$  for separation distance  $5\text{mm}$ . Therefore, SAR test is not required.

### 3 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website <http://www.icertifi.com.tw>.

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