

# RF EXPOSURE REPORT



Report No.: 15050020-FCC-H

|                                                                                                                                      |                                                                        |  |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--|
| Applicant                                                                                                                            | b mobile HK Limited                                                    |  |
| Product Name                                                                                                                         | Mobile phone                                                           |  |
| Model No.                                                                                                                            | AX680                                                                  |  |
| Serial No.                                                                                                                           | AX670                                                                  |  |
| Test Standard                                                                                                                        | FCC 2.1093                                                             |  |
| Test Date                                                                                                                            | June 04 to June 16, 2015                                               |  |
| Issue Date                                                                                                                           | June 17, 2015                                                          |  |
| 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>Winnie Zhang</i>                                                                                                                  | <i>Chris You</i>                                                       |  |
| Winnie Zhang<br>Test Engineer                                                                                                        | Chris You<br>Checked By                                                |  |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                                                                        |  |

Issued by:

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## 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    |
|----------------|----------------|-------------|---------------|
| 15050020-FCC-H | NONE           | Original    | June 17, 2015 |
|                |                |             |               |
|                |                |             |               |
|                |                |             |               |
|                |                |             |               |
|                |                |             |               |

## 2. Customer information

|                  |                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------|
| Applicant Name   | b mobile HK Limited                                                                                            |
| Applicant Add    | Flat 18; 14/F Block 1; Golden Industrial Building;16-26 Kwai Tak Street; Kwai Chung;New Territories; Hong Kong |
| Manufacturer     | b mobile HK limited                                                                                            |
| Manufacturer Add | Flat 18; 14/F Block 1; Golden Industrial Building;16-26 Kwai Tak Street; Kwai Chung;New Territories; Hong Kong |

## 3. Test site information

|                      |                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES                                                                                                         |
| Lab Address          | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park<br>South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong<br>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: Mobile phone

Main Model: AX680

Serial Model: AX670

Date EUT received: June 04,2015

Test Date(s): June 04 to June 16, 2015

Antenna Gain:

GSM850: -1.87 dBi  
 PCS1900: -0.75dBi  
 UMTS-FDD Band V: -0.62dBi  
 UMTS-FDD Band II: -0.62dBi  
 Bluetooth/BLE: -0.7dBi  
 WIFI: -0.7dBi

Type of Modulation:

GSM / GPRS: GMSK  
 EGPRS: GMSK, 8PSK  
 UMTS-FDD: QPSK, 16QAM  
 802.11b/g/n: DSSS, OFDM  
 Bluetooth: GFSK,  $\pi/4$ DQPSK, 8DPSK  
 BLE: GFSK  
 GPS:BPSK

RF Operating Frequency (ies):

GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz  
 PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz  
 UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz  
 UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz;  
 RX: 1932.4 ~ 1987.6 MHz  
 WIFI:802.11b/g/n(20M): 2412-2472 MHz  
 WIFI:802.11n(40M): 2422-2462 MHz  
 Bluetooth& BLE: 2402-2480 MHz  
 GPS RX:1575.42 MHz

Number of Channels: GSM 850: 124CH  
PCS1900: 299CH  
UMTS-FDD Band V : 102CH  
UMTS-FDD Band II : 277CH  
WIFI :802.11b/g/n(20M): 13CH  
WIFI :802.11n(40M): 9CH  
Bluetooth: 79CH  
BLE: 40CH

Port: Power Port, Earphone Port, USB Port

Input Power: Battery:  
Model: T-41  
Spec: 3.7V 1500mAh 5.55Wh  
Adapter:  
Input: AC 100-240V; 150mA  
Output: DC 5.0V; 500mA

Trade Name : Bmobile

GPRS/EGPRS Multi-slot class 8/10/12

FCC ID: ZSW-30-006

## 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*  $\leq 50$  mm are determined by:

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

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   | Freq (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|---------------|------|------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK          | Low  | 2402       | 6.829                 | 7.0±1               | 8                       | 6.310                  | 1.96   | 3     |
|               | Mid  | 2441       | 7.414                 | 7.0±1               | 8                       | 6.310                  | 1.97   | 3     |
|               | High | 2480       | 7.582                 | 7.0±1               | 8                       | 6.310                  | 1.99   | 3     |
| $\pi/4$ DQPSK | Low  | 2402       | 6.666                 | 7.0±1               | 8                       | 6.310                  | 1.96   | 3     |
|               | Mid  | 2441       | 7.248                 | 7.0±1               | 8                       | 6.310                  | 1.97   | 3     |
|               | High | 2480       | 7.350                 | 7.0±1               | 8                       | 6.310                  | 1.99   | 3     |
| 8-DPSK        | Low  | 2402       | 6.694                 | 7.0±1               | 8                       | 6.310                  | 1.96   | 3     |
|               | Mid  | 2441       | 7.331                 | 7.0±1               | 8                       | 6.310                  | 1.97   | 3     |
|               | High | 2480       | 7.474                 | 7.0±1               | 8                       | 6.310                  | 1.99   | 3     |

### WIFI Mode:

| Modulation    | CH   | Freq (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|---------------|------|------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| 802.11b       | Low  | 2412       | 8.91                  | 8.5±1               | 9.5                     | 8.91                   | 2.77   | 3     |
|               | Mid  | 2437       | 9.22                  | 8.5±1               | 9.5                     | 8.91                   | 2.78   | 3     |
|               | High | 2462       | 8.99                  | 8.5±1               | 9.5                     | 8.91                   | 2.80   | 3     |
| 802.11g       | Low  | 2412       | 9.14                  | 8.5±1               | 9.5                     | 8.91                   | 2.77   | 3     |
|               | Mid  | 2437       | 8.85                  | 8.5±1               | 9.5                     | 8.91                   | 2.78   | 3     |
|               | High | 2462       | 8.95                  | 8.5±1               | 9.5                     | 8.91                   | 2.80   | 3     |
| 802.11n (20M) | Low  | 2412       | 8.78                  | 8.5±1               | 9.5                     | 8.91                   | 2.77   | 3     |
|               | Mid  | 2437       | 8.86                  | 8.5±1               | 9.5                     | 8.91                   | 2.78   | 3     |
|               | High | 2462       | 8.89                  | 8.5±1               | 9.5                     | 8.91                   | 2.80   | 3     |
| 802.11n (40M) | Low  | 2422       | 9.00                  | 8.5±1               | 9.5                     | 8.91                   | 2.77   | 3     |
|               | Mid  | 2437       | 9.16                  | 8.5±1               | 9.5                     | 8.91                   | 2.78   | 3     |
|               | High | 2452       | 9.13                  | 8.5±1               | 9.5                     | 8.91                   | 2.80   | 3     |

### BLE Mode:

| Modulation | CH   | Freq (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK       | Low  | 2402       | -3.625                | -3±1                | -2                      | 0.631                  | 0.20   | 3     |
|            | Mid  | 2440       | -2.924                | -3±1                | -2                      | 0.631                  | 0.20   | 3     |
|            | High | 2480       | -3.239                | -3±1                | -2                      | 0.631                  | 0.20   | 3     |

**Result:** Compliance

No SAR measurement is required.