

# RF Exposure Evaluation Report

**Product** : BLE Adapter  
**Trade mark** : N/A  
**Model/Type reference** : MBLE-1  
**Serial Number** : N/A  
**Report Number** : EED32I00147602  
**FCCID** : 2AIV3-MB-BLE  
**Date of Issue** : Jun. 29, 2016  
**Test Standards** : 47 CFR Part 1.1307 (2015)  
47 CFR Part 2.1093 (2015)  
KDB447498D01 v06  
**Test result** : PASS

Prepared for:

**Beijing M&B Electronic Instruments Co., LTD**  
**No. 27, Yongwang Road, Beijing Bioengineering and Medicine Industry**  
**Base, Huangcun Town, Daxing district, Beijing, CHINA**

Prepared by:

**Centre Testing International Group Co., Ltd.**  
**Hongwei Industrial Zone, Bao'an 70 District,**  
**Shenzhen, Guangdong, China**  
**TEL: +86-755-3368 3668**  
**FAX: +86-755-3368 3385**

Tested By:

*Tom - chen*

Tom chen (Test Project)

Compiled by:

*Kevin lan*

Kevin lan (Project Engineer)

Reviewed by:

*Emen - Li*

Emen Li (Reviewer)

Approved by:

*Sheek . Luo*

Sheek Luo (Lab supervisor)

Date:

Jun. 29, 2016

Check No.: 2447612696



## 2 Version

Version No.	Date	Description
00	Jun. 29, 2016	Original

### 3 Contents

	Page
<b>1 COVER PAGE.....</b>	<b>1</b>
<b>2 VERSION.....</b>	<b>2</b>
<b>3 CONTENTS.....</b>	<b>3</b>
<b>4 GENERAL INFORMATION.....</b>	<b>4</b>
4.1 CLIENT INFORMATION.....	4
4.2 GENERAL DESCRIPTION OF EUT.....	4
4.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD.....	4
4.4 TEST LOCATION.....	5
4.5 TEST FACILITY.....	5
4.6 DEVIATION FROM STANDARDS.....	6
4.7 ABNORMALITIES FROM STANDARD CONDITIONS.....	6
4.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER.....	6
<b>5 SAR EVALUATION.....</b>	<b>7</b>
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
<b>PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS.....</b>	<b>8</b>

## 4 General Information

### 4.1 Client Information

Applicant:	Beijing M&B Electronic Instruments Co., LTD
Address of Applicant:	No. 27, Yongwang Road, Beijing Bioengineering and Medicine Industry Base, Huangcun Town, Daxing district, Beijing, CHINA
Manufacturer:	Beijing M&B Electronic Instruments Co., LTD
Address of Manufacturer:	No. 27, Yongwang Road, Beijing Bioengineering and Medicine Industry Base, Huangcun Town, Daxing district, Beijing, CHINA
Factory:	Beijing M&B Electronic Instruments Co., LTD
Address of Factory:	No. 27, Yongwang Road, Beijing Bioengineering and Medicine Industry Base, Huangcun Town, Daxing district, Beijing, CHINA

### 4.2 General Description of EUT

Product Name:	BLE Adapter
Mode No.(EUT):	MBLE-1
Trade Mark:	N/A
EUT Supports Radios application:	Bluetooth V4.0

### 4.3 Product Specification subjective to this standard

Frequency Range:	2402MHz~2480MHz
Modulation Type:	GFSK
Number of Channels:	40
Sample Type:	Portable production
Test Power Grade:	N/A(manufacturer declare)
Test Software of EUT:	N/A(manufacturer declare)
Hardware Version:	MB BLE BOARD-V4(manufacturer declare)
Software Version:	V1.10(manufacturer declare)
Power Supply:	Supply by USB port of MSA100: DC 3.0V
Max Conducted Output Power:	-4.476dBm
Antenna Type:	Chip antenna
Antenna Gain:	1.72dBi
Sample Received Date:	May 24, 2016
Sample tested Date:	May 24, 2016 to Jun. 16, 2016
The tested samples and the sample information are provided by the client.	

#### 4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 3368 3668 Fax: +86 (0) 755 3368 3385

No tests were sub-contracted.

#### 4.5 Test Facility

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

**CNAS-Lab Code: L1910**

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

**A2LA-Lab Cert. No. 3061.01**

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**FCC-Registration No.: 886427**

Centre Testing International (Shenzhen) Corporation. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

**IC-Registration No.: 7408A-2**

The 3m Alternate Test Site of Centre Testing International (Shenzhen) Corporation. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

**IC-Registration No.: 7408B-1**

The 10m Alternate Test Site of Centre Testing International (Shenzhen) Corporation., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

**NEMKO-Aut. No.: ELA503**

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

**VCCI**

The Radiation 3 & 10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

#### **4.6 Deviation from Standards**

None.

#### **4.7 Abnormalities from Standard Conditions**

None.

#### **4.8 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  
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  $\leq 50$  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, 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

#### 5.1.3 EUT RF Exposure

The Max Conducted Output Power is -4.476dBm in highest channel(2.402GHz);

The best case gain of the antenna is 1.72dBi.

EIRP= -4.476dBm + 1.72dBi = -2.756dBm

-2.756dBm logarithmic terms convert to numeric result is nearly 0.53mW

According to the formula. calculate the EIRP test result:

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

General RF Exposure =  $(0.53\text{mW} / 5 \text{ mm}) \times \sqrt{2.402\text{GHz}} = 0.16$  ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.

## PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32I00147601 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.