

# TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: 2AOIKEM-AK100

Equipment Under Test : MY DONGLE  
Model Name : EM-AK100  
Applicant : Changwon branch, EM-Tech. Co., Ltd.  
Manufacturer : Changwon branch, EM-Tech. Co., Ltd.  
Date of Receipt : 2017.11.27  
Date of Test(s) : 2017.12.06 ~ 2017.12.28  
Date of Issue : 2018.01.25

In the configuration tested, the EUT complied with the standards specified above.

Tested By:

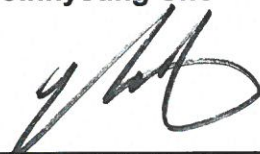


Date:

2018.01.25

Jinhyoung Cho

Technical  
Manager:



Date:

2018.01.25

Harim Lee

*The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.*

SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Phone No. : +82 31 688 0901

Fax No. : +82 31 688 0921

### 1.2. Details of applicant

Applicant : Changwon branch, EM-Tech. Co., Ltd.

Address : 40, Changwon-daero 1144beon-gil, Seongsan-gu, Changwon-si,  
Gyeongsangnam-do, South Korea

Contact Person : Kwon, Joon-Ki

Phone No. : +82 10 2046 4039

### 1.3. Details of manufacturer

Company : Same as applicant

Address : Same as applicant

### 1.4. Description of EUT

Kind of Product	MY DONGLE
Model Name	EM-AK100
Power Supply	DC 5.0 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth)
Modulation Technique	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels	79 channels
Antenna Type	PCB Patten Antenna
Antenna Gain	2.05 dB i

### 1.5. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL012252	2018.01.09	Initial
1	F690501/RF-RTL012252-1	2018.01.25	Revised FCC ID, applicant's name

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## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational/Controlled Exposure				
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 – 1 500	-	-	f/300	6
1 500 – 100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
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
<b><u>300 – 1 500</u></b>	-	-	<b><u>f/1500</u></b>	<b><u>30</u></b>
<b><u>1 500 – 100 000</u></b>	-	-	<b><u>1.0</u></b>	<b><u>30</u></b>

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

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

$P_d$  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 where the MPE limit is reached.

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## 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
Test Mode : Normal Operation

## 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

### Bluetooth

#### - Maximum tune up tolerance

Operating Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 402 ~ 2 480	5	2.05	0.001 009	1

Note :

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

**- End of the Test Report -**

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