

# TEST REPORT

of

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

FCC ID: 2ADXS-WFM50-SFP2501

Equipment Under Test : Wifi module  
Model Name : WFM50-SFP2501  
Applicant : I&C Technology Co., Ltd.  
Manufacturer : I&C Technology Co., Ltd.  
Date of Test(s) : 2016.04.28 ~ 2016.06.01  
Date of Issue : 2016.06.03

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

Tested By:



Date:

2016.06.03

Jinhyoung Cho

Approved By:



Date:

2016.06.03

Hyunchae You

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

RTT5041-20(2015.10.01)(3)

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

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 : I&C Technology Co., Ltd

Address : I&C Building, 24, Pangyo-ro 255beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13486, Korea

Contact Person : Lee, Gil-Ju

Phone No. : +82 31 260 2714

### 1.3. Description of EUT

Kind of Product	Wifi module
Model Name	WFM50-SFP2501
Power Supply	DC 3.60 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20), 5 745 MHz ~ 5 825 MHz (Band 3: 11a/n_HT20), 5 180 MHz ~ 5 240 MHz (Band 1: 11a/n_HT20), 5 260 MHz ~ 5 320 MHz (Band 2A: 11a/n_HT20), 5 500 MHz ~ 5 720 MHz (Band 2C: 11a/n_HT20)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channels (11b/g/n_HT20), 5 channels (Band 3: 11a/n_HT20), 4 channels (Band 1: 11a/n_HT20), 4 channels (Band 2A: 11a/n_HT20), 9 channels (Band 2C: 11a/n_HT20)
Antenna Type	PCB antenna
Antenna Gain	2 412 MHz ~ 2 462 MHz: 1.98 dB i, 5 180 MHz ~ 5 320 MHz: 3.50 dB i, 5 500 MHz ~ 5 720 MHz: 3.34 dB i, 5 745 MHz ~ 5 825 MHz: 3.01 dB i

### 1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL009915	2016.06.03	Initial

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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
300 – 1 500	-	-	f/1500	30
<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****WLAN (2.4G)****- Maximum tune up tolerance**

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> )
2 412 – 2 462	12	1.98	0.004 974	1

**WLAN (5G)****- Maximum tune up tolerance**

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> )
5 180 – 5 320	12	3.50	0.007 059	1
5 500 – 5 720	12	3.34	0.006 803	1
5 745 – 5 825	10.5	3.01	0.004 464	1

Note :

1. 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>.

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