



**SGS-CSTC Standards Technical Services Co., Ltd.**  
**Shenzhen Branch**

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## RF Exposure Evaluation Report

**Application No.:** SZEM1612010384R (SHME1611000144ME-01)  
**Applicant:** GE Medical Systems Information Technologies, Inc.  
**Manufacturer:** GE Medical Systems Information Technologies, Inc.  
**Factory:** GE Medical Systems (China) Co., Ltd.  
**Product Name:** B1X5 Wi-Fi Module  
**Model No.(EUT):** B1X5-01  
**FCC ID:** OU5B1X501  
**Standards:** 47 CFR Part 1.1307 (2015)  
47 CFR Part 1.1310 (2015)  
**Date of Receipt:** 2016-12-05  
**Date of Test:** 2016-12-09 to 2016-12-13  
**Date of Issue:** 2016-12-15

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang  
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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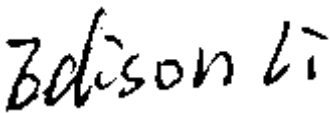
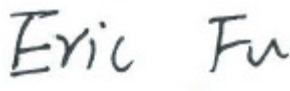


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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-12-15		Original

Authorized for issue by:			
			
			2016-12-13
Tested By		(Edison Li) /Project Engineer	Date
			
			2016-12-15
Checked By		(Eric Fu) /Reviewer	Date



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## 4 General Information

### 4.1 Client Information

Applicant:	GE Medical Systems Information Technologies, Inc.
Address of Applicant:	8200 West Tower Avenue Milwaukee, WI 53223 USA
Manufacturer:	GE Medical Systems Information Technologies, Inc.
Address of Manufacturer:	8200 West Tower Avenue Milwaukee, WI 53223 USA
Factory:	GE Medical Systems (China) Co., Ltd.
Address of Factory:	No. 19, ChangJiang Road, Wuxi National Hi-tech Development Zone, Jiangsu, P.R.China

### 4.2 General Description of EUT

Product Name:	B1X5 Wi-Fi Module			
Model No.:	B1X5-01			
Sample Type:	Fixed product			
Power Supply:	DC 5V from test board			
For 2.4G Wifi				
Type of Modulation:	IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)			
Operating Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz			
Channel Number:	IEEE 802.11b/g, IEEE 802.11n(HT20): 11 Channels IEEE 802.11n(HT40): 7 Channels			
Channels Step:	Channels with 5MHz step			
Antenna Type:	PIFA Antenna			
Smart System:	MIMO for 802.11n HT20;			
Antenna Gain:	Antenna1/Antenna2: 2.2dBi Note: Both antennas does not have correlated;			
For 5G Wifi				
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	UNII Band I	IEEE 802.11a	5180-5240	4
		IEEE 802.11n 20MHz	5180-5240	4
		IEEE 802.11n 40MHz	5190-5230	2
	UNII Band II-A	IEEE 802.11a	5260-5320	4
		IEEE 802.11n 20MHz	5260-5320	4
		IEEE 802.11n 40MHz	5270-5310	2



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	UNII Band II-C	IEEE 802.11a	5500-5700	11
		IEEE 802.11n 20MHz	5500-5700	11
		IEEE 802.11n 40MHz	5510-5670	5
	UNII Band III	IEEE 802.11a	5745-5825	5
		IEEE 802.11n 20MHz	5745-5825	5
		IEEE 802.11n 40MHz	5755-5795	2
Type of Modulation:	IEEE 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM)			
DFS mode:	Slave without radar detection			
Antenna Type:	PIFA Antenna			
Antenna Gain:	Antenna1:4.5dBi			



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### 4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China  
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

### 4.4 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC

Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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**4.5 Deviation from Standards**

None.

**4.6 Abnormalities from Standard Conditions**

None.

**4.7 Other Information Requested by the Customer**

None.



## 5 RF Exposure Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

**TABLE 1—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> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
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
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
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
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

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

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

$P_d$  is 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 r where the MPE limit is reached.

#### 5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.





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#### **4.1.3 EUT RF Exposure Evaluation**

##### **For 2.4G Wifi**

Antenna1/Antenna2 Gain: 2.2dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.66 in linear scale.

Note: Both antennas does not have correlated;

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
Lowest	2402	18.71	74.30	0.0245	1.0	PASS

Note: Refer to report No. SZEM161201038401 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

##### **For 5G Wifi**

Antenna Gain: 4.5dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.82 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
5600	13.70	23.44	0.013	1.0	PASS

Note: Refer to report No. SZEM161201038402 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.