

## Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCIS14040018301

# FCC REPORT (BLE)

**Applicant:** Shenzhen Vidonn Information Technology Co., Ltd.

Address of Applicant: 7F,China Trade Building ,Zizhu seven Road,Futian District ,

Shenzhen City, P.R. China

**Equipment Under Test (EUT)** 

Product Name: Vidonn Smart Band

Model No.: X5, X6, A4, A6, A8

Trade mark:

**FCC ID:** 2AB62-X5

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 03 Apr., 2014

Date of Test: 04 Apr., to 04 May 2014

Date of report issued: 05 May 2014

Test Result: PASS \*

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

#### Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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.

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## 2 Version

Version No.	Date	Description
00	05 May 2014	Original

Prepared by:

Report Clerk

Date: 05 May 2014

Reviewed by: 05 May 2014

**Project Engineer** 

Shenzhen Zhongjian Nanfang Testing Co., Ltd. No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366



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## 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.



## 5 General Information

## **5.1 Client Information**

Applicant:	Shenzhen Vidonn Information Technology Co., Ltd.
Address of Applicant: 7F,China Trade Building ,Zizhu seven Road,Futian District ,Sh City, P.R. China	
Manufacturer:	Shenzhen Vidonn Information Technology Co., Ltd.
Address of Manufacturer:	7F,China Trade Building ,Zizhu seven Road,Futian District ,Shenzhen City, P.R. China

## 5.2 General Description of E.U.T.

•	
Product Name:	Vidonn Smart Band
Model No.:	X5, X6, A4, A6, A8
Operation Frequency:	2402-2480 MHz
Channel numbers:	40
Channel separation:	2 MHz
Modulation technology:	GFSK
Data speed :	1Mbps
Antenna Type:	Internal Antenna
Antenna gain:	3 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V 45mAh
Remark:	Item No.:X5, X6,A4,A6,A8 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model No. and appearance of colour



Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz



#### 5.3 Test environment and mode

Operating Environment:				
Temperature:	24.0 °C			
Humidity:	54 % RH			
Atmospheric Pressure:	1010 mbar			
Test mode:				
Operation mode	Keep the EUT in continuous transmitting with modulation			

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

## 5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
LENOVO	Notebook	ThinkPad SL510	LR-7Y97D	DoC

## 5.5 Laboratory Facility

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

#### FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. 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 out files. Registration 817957, February 27, 2012.

#### ■ IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

#### CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

## 5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

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Shenzhen Zhongjian Nanfang Testing Co., Ltd.
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Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366



## 5.7 Test Instruments list

Radia	Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date	
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	(mm-dd-yy) June 09 2013	(mm-dd-yy) June 08 2014	
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	May 25 2013	May 24 2014	
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 25 2013	May 24 2014	
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
5	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2014	Mar. 31 2015	
6	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2014	Mar. 31 2015	
7	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2014	Mar. 31 2015	
8	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2014	Mar. 31 2015	
9	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2014	Mar. 31 2015	
10	Amplifier(10kHz- 1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015	
11	Amplifier(1GHz- 18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2013	June 08 2014	
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015	
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015	
14	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A	
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A	
16	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 25 2013	May. 24 2014	
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr 01 2014	Mar. 31 2015	
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2013	Aug. 11 2014	
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	May. 25 2013	May. 24 2014	
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May. 25 2013	May. 24 2014	

Cond	Conducted Emission:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)		
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	June 09 2013	June 08 2014		
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May 24 2014		
3	LISN	CHASE	MN2050D	CCIS0074	Apr 01 2014	Mar. 31 2015		
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2014	Mar. 31 2015		
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		



### 6 Test results and Measurement Data

## **6.1 Antenna requirement:**

#### Standard requirement: FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

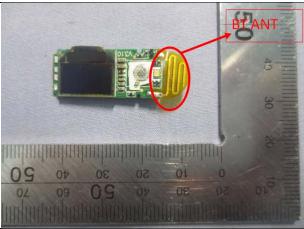
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### E.U.T Antenna:

The antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 3 dBi.





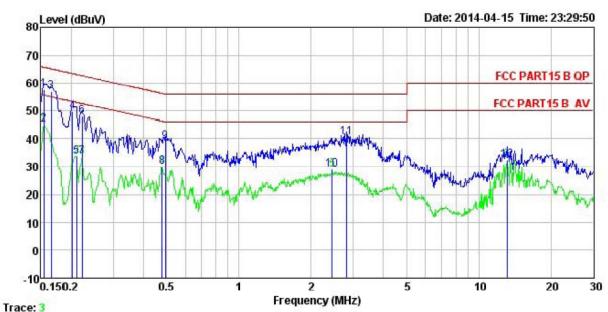
## 6.2 Conducted Emission

Test Requirement:  FCC Part15 C Section 15.207  Test Method:  ANSI C63.4: 2003  Test Frequency Range:  Class / Severity:  Class B  Receiver setup:  RBW=9kHz, VBW=30kHz  Limit:  Frequency range (MHz)  Ouasi-peak Average  0.15-0.5 66 to 56° 56 to 46° 0.5-5 56 46 5-30 60 50  *Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  Reference Plane  Reference Plane  LISN  AUX  EU.T. Equipment Under Test LUSK Line impedence Stabilization Network  Test table Insulation 5.7 for details  Test mode: Refer to section 5.3 for details  Test results: Passed								
Test Frequency Range:  Class / Severity:  Class B  Receiver setup:  RBW=9kHz, VBW=30kHz  Limit:  Frequency range (MHz)  Quasi-peak Average 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50 *Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500nm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 550nm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  LISN 40cm 80cm Filter AC power  LISN Line impedence Stabilization Network Test table/Insulation plane  Remark  EUT Equipment Under Test LISN Line impedence Stabilization Network Test table height=0 limits and the line interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Reference Plane  Test Instruments: Refer to section 5.7 for details  Test mode: Refer to section 5.3 for details	Test Requirement:	FCC Part15 C Section 15.207	7					
Class / Severity:  Receiver setup:  RBW=9kHz, VBW=30kHz  Limit:  Frequency range (MHz)  Quasi-peak Average  0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50  *Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  LISN  Reference Plane  LISN  AUX  EUT: Equipment Under Test LISN Line impedance Stabilization Network Test table Insulation plane  Reference Plane	Test Method:	ANSI C63.4: 2003	ANSI C63.4: 2003					
Receiver setup:  RBW=9kHz, VBW=30kHz  Limit:  Frequency range (MHz)  Quasi-peak Average  0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46  5-30 60 50  *Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  LISN  L	Test Frequency Range:	150 kHz to 30 MHz						
Limit:    Frequency range (MHz)	Class / Severity:	Class B						
Test procedure    Test procedure   O.15-0.5   66 to 56°   56 to 46°	Receiver setup:	RBW=9kHz, VBW=30kHz						
0.15-0.5 66 to 56° 56 to 46° 0.5-5 56 46 5-30 60 50 *Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500nm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500nm/50uH coupling impedance with 500nm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane    LISN	Limit:	Francisco (MILE)	Limit (c	dBuV)				
## Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  ### Reference Plane    LISN		Frequency range (MHZ)	Quasi-peak Average					
Test procedure  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  LISN  AUX  E.U.T. Equipment Under Test LISN Line impedance Stabilization Network Test table height=0 8m  Test Instruments:  Refer to section 5.7 for details  Test mode:  Refer to section 5.3 for details								
* Decreases with the logarithm of the frequency.  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane    LISN								
1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  Regulpment  Regulpment  LISN  Regulpment  LISN  Regulpment  Lisn  Receiver  Test table/Insulation plane  Regulpment Under Test  LISN Line impedence Stabilization Network  Test table height=0 8m  Test Instruments:  Refer to section 5.7 for details  Refer to section 5.3 for details				50				
a line impedance stabilization network (L.I.S.N.), which provides a 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.  Test setup:  Reference Plane  LISN  LISN  LISN  LISN  LISN  Equipment Under Test  LISN Line impedence Stabilization Network  Test table height=0.8m  Test Instruments:  Refer to section 5.7 for details  Refer to section 5.3 for details								
LISN 40cm 80cm Filter AC power  Equipment E.U.T EMI Receiver  Remark EU.T Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m  Test Instruments: Refer to section 5.7 for details  Test mode: Refer to section 5.3 for details		50ohm/50uH coupling im  2. The peripheral devices through a LISN that prowith 50ohm termination. test setup and photograp  3. Both sides of A.C. ling interference. In order to positions of equipment changed according to	<ol> <li>50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted</li> </ol>					
AUX Equipment E.U.T  Test table/Insulation plane  Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m  Test Instruments: Refer to section 5.7 for details  Test mode: Refer to section 5.3 for details	Test setup:	Reference Plane						
Test mode: Refer to section 5.3 for details		AUX Equipment  Test table/Insulation place  Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization	U.T EMI Receiver	er — AC power				
	Test Instruments:	Refer to section 5.7 for details						
Test results: Passed	Test mode:	Refer to section 5.3 for details	Refer to section 5.3 for details					
	Test results:	Passed						

### **Measurement Data**



#### Neutral:



: CCIS Conducted test Site : FCC PART15 B QP LISN NEUTRAL Site Condition

Job. no EUT

smart band X5 Model Test Mode : BLE mode

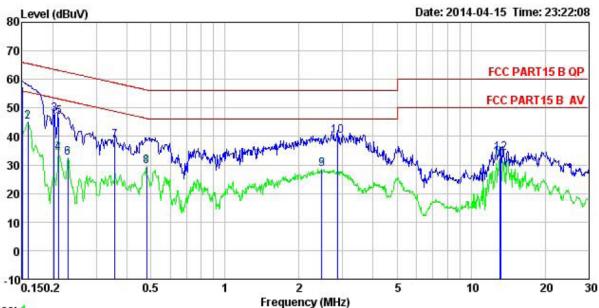
Power Rating : AC 120V/60Hz Environment : Temp: 23 °C Huni:56% Atmos:101KPa

Test Engineer: Garen

Remark	:					202 165			
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark	
	1207.00	300000000000	30333.0.30	YES					
	MHz	dBu∀	dB	dB	dBu∀	dBu∀	dB		
1	0.154	46.86	0.25	10.78	57.89	65.78	-7.89	QP	
1 2 3	0.154	34.06	0.25	10.78	45.09	55.78	-10.69	Average	
	0.166	45.93	0.25	10.77	56.95	65.16	-8.21	QP	
4	0.202	38.91	0.25	10.76	49.92	63.54	-13.62	QP	
5	0.211	22.63	0.25	10.76	33.64	53.18	-19.54	Average	
6	0.222	36.97	0.25	10.75	47.97	62.74	-14.77	QP	
4 5 6 7 8 9	0.222	22.62	0.25	10.75	33.62	52.74	-19.12	Average	
8	0.479	18.68	0.28	10.75	29.71	46.36	-16.65	Average	
9	0.494	27.69	0.29	10.76	38.74	56.10	-17.36	QP	
10	2.448	17.55	0.29	10.94	28.78	46.00	-17.22	Average	
11	2.809	29.39	0.29	10.93	40.61	56.00	-15.39	QP	
12	13.057	21.08	0.25	10.91	32.24	50.00	-17.76	Average	



#### Line:



Trace: 1

Site : CCIS Conducted test Site : FCC PART15 B QP LISN LINE

Condition

Job. no

EIIT smart band Model X5

Test Mode : BLE mode Power Rating : AC 120V/60Hz

Environment : Temp: 23 °C Huni: 56% Atmos: 101KPa

Test Engineer: Garen

Remark

emark	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark	
-	MHz	dBu∀	dB	₫B	dBu₹	dBu∜	dB		
1	0.150	46.40	0.27	10.78	57.45	66.00	-8.55	QP	
2	0.158	33.94	0.27	10.78	44.99	55.56	-10.57	Average	
3	0.202	36.65	0.28	10.76	47.69	63.54	-15.85	QP	
4	0.211	23.22	0.28	10.76	34.26	53.18	-18.92	Average	
4 5 6	0.212	35.85	0.28	10.76	46.89	63.14	-16.25	QP	
6	0.230	21.55	0.27	10.75	32.57	52.44	-19.87	Average	
7	0.358	27.46	0.27	10.73	38.46	58.78	-20.32	QP	
8	0.481	18.60	0.29	10.75	29.64	46.32	-16.68	Average	
9	2.474	17.30	0.27	10.94	28.51	46.00	-17.49	Average	
10	2.869	28.96	0.27	10.92	40.15	56.00	-15.85	QP	
11	13.057	21.12	0.32	10.91	32.35	50.00	-17.65	Average	
12	13.267	22.81	0.32	10.91	34.04	60.00	-25.96	QP	

#### Notes:

- 1. An initial pre-scan was performed on the live and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss



## **6.3 Conducted Output Power**

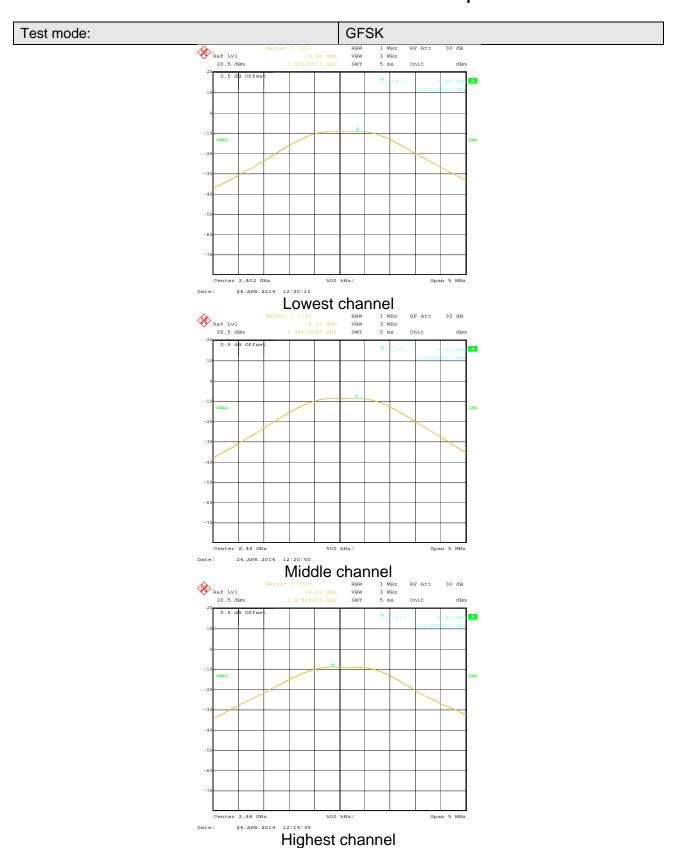
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)				
Test Method:	ANSI C63.4:2003 and KDB558074				
Limit:	30dBm				
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane				
Test Instruments:	Refer to section 5.7 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				
Remark:	Test method refer to KDB558074 v03r01 (DTS Measure Guidance) section 9.2.2.2				

#### Measurement Data

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
Lowest	-9.04		
Middle	-8.52	30.00	Pass
Highest	-8.93		

Test plot as follows:







## 6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)				
Test Method:	ANSI C63.4:2003 and KDB558074				
Limit:	>500kHz				
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane				
Test Instruments:	Refer to section 5.7 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

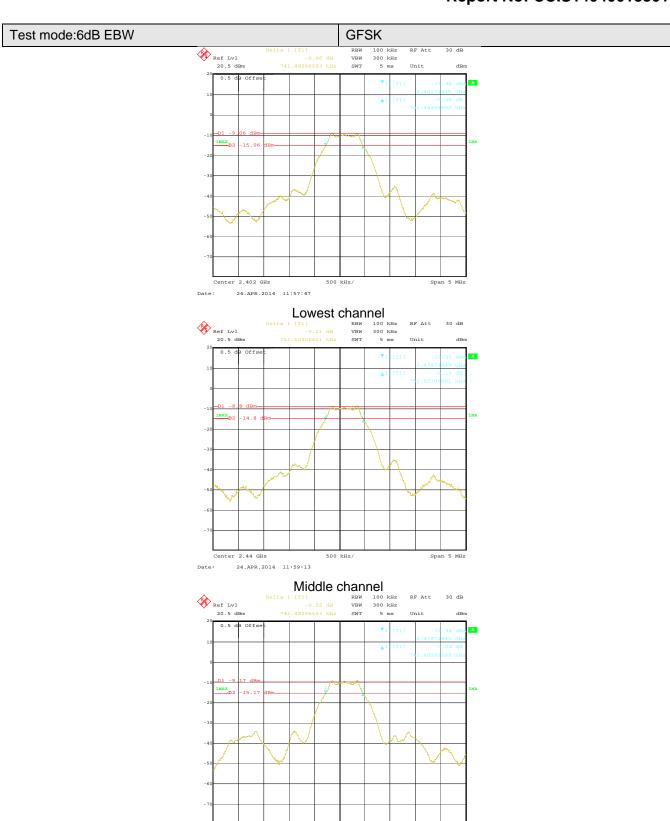
#### Measurement Data

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result
Lowest	0.74		
Middle	0.75	>500	Pass
Highest	0.74		

Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result
Lowest	1.11		
Middle	1.09	N/A	N/A
Highest	1.16		

Test plot as follows:



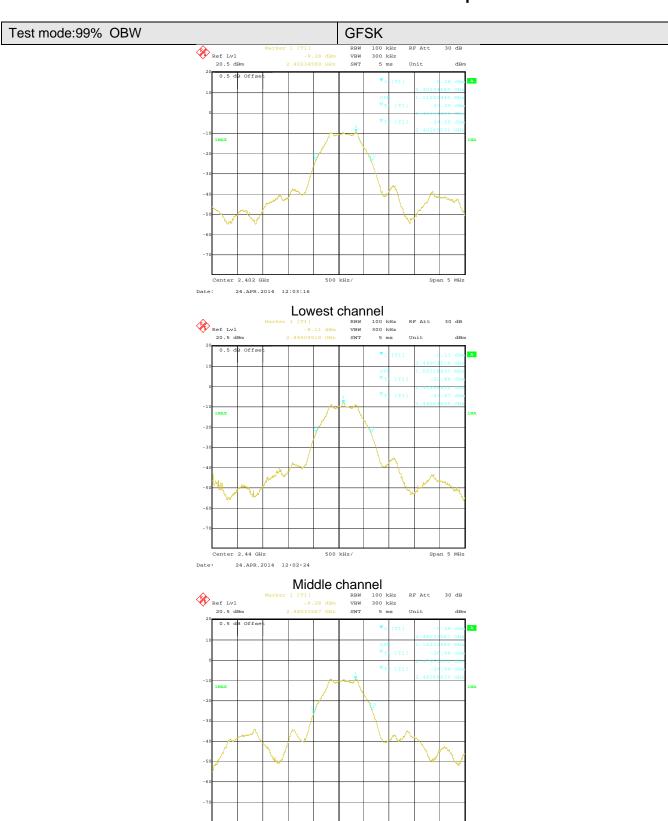


Highest channel

Center 2.48 GHz

24.APR.2014 12:00:27





Highest channel

Center 2.48 GHz

24.APR.2014 12:01:35



## 6.5 Power Spectral Density

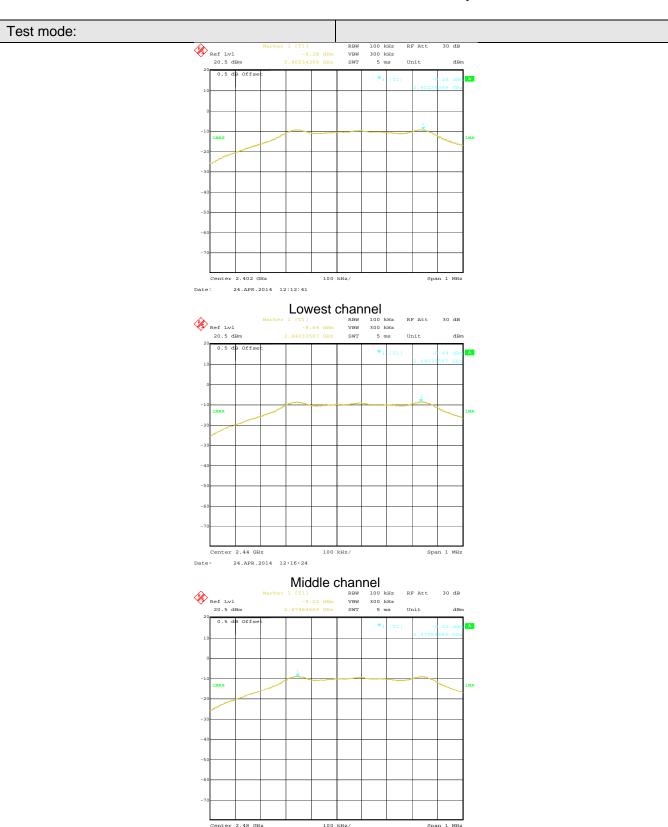
Test Requirement:	FCC Part15 C Section 15.247 (e)				
Test Method:	ANSI C63.4:2003 and KDB558074				
Limit:	8 dBm				
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane				
Test Instruments:	Refer to section 5.7 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

#### Measurement Data

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
Lowest	-9.28		
Middle	-8.64	8.00	Pass
Highest	-9.02		

Test plots as follow:





Highest channel

24.APR.2014 12:17:51



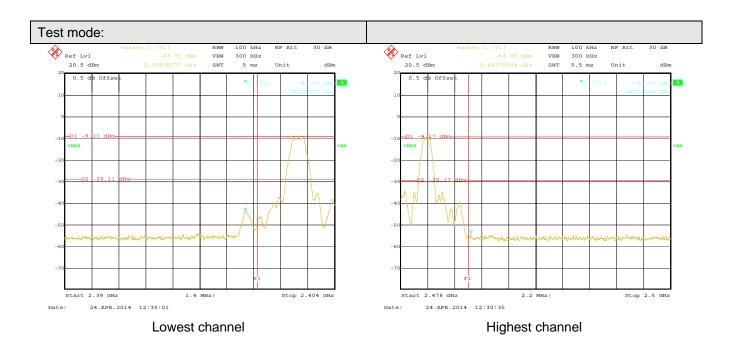
## 6.6 Band Edge

### 6.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)				
Test Method:	ANSI C63.4:2003 and KDB558074				
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.				
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table				
Test Instruments:	Ground Reference Plane  Refer to section 5.7 for details				
Test mode:	Refer to section 5.7 for details				
Test results:	Passed				

Test plots as follow:







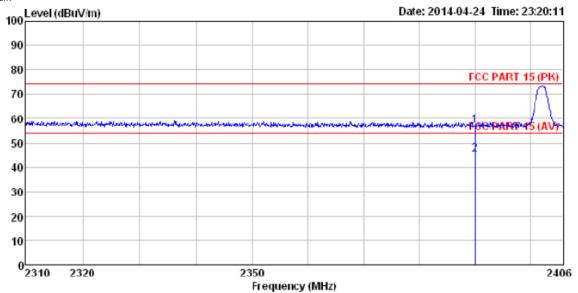
### 6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C S	Section 15 209	9 and 15 205			
Test Method:	ANSI C63.4: 20		3 4114 10.200			
Test Frequency Range:	2.3GHz to 2.5G					
Test site:						
	Measurement D	istance. 3m				
Receiver setup:	Frequency Above 1GHz	Remark Peak Value Average Value				
Limit:	F		Linit (JD A)	/ @0\	Daniel	
	Frequency Limit (dBuV/m @3m) 54.00				Remark	
	Above 1	GHz	74.0		Average Value Peak Value	
Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data</li> </ol>					
Test setup:	Antenna Tower  Horn Antenna  Spectrum Analyzer  Amplifier					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section					
Test results:	Passed					



Test channel: Lowest

Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL Condition

EUT : Smart band

Model

: X5 : BLE TX - L Test mode MODE Power Rating : AC120V/60Hz Environment : Temp:25.5°C

Huni:55%

Test Engineer: Garen

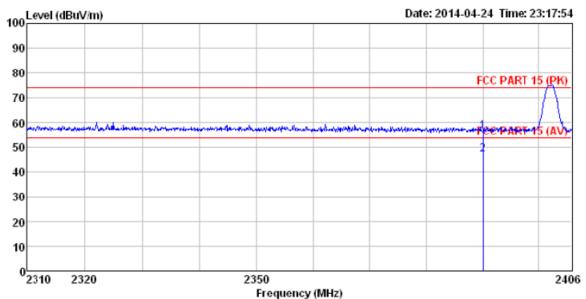
REMARK

	Fr∋q		Antenna Factor						
	MHz	dBu₹	— <u>dB</u> /m	<u>dB</u>	<u>dB</u>	dBuV/m	dBuV/m	<u>d</u> B	
1 2	2390.030 2390.030	23.91 12.24	27.58 27.58	5.67 5.67	0.00 0.00	57.16 45.49	74.00 54.00	-16.84 -8.51	Peak Average



Test channel: Lowest

Vertical:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL Condition

EUT : Smart band

: X5 Model

MODE

Test mode : BLE TX - L Power Rating : AC120V/60Hz Environment : Temp: 25.5°C Huni:55%

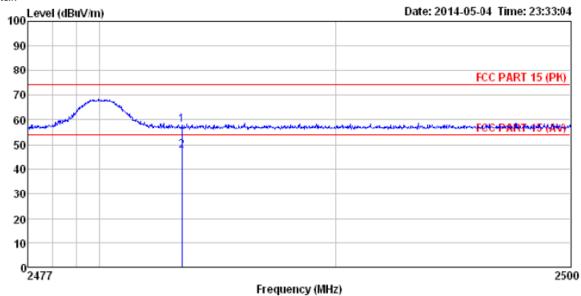
Test Engineer: Garen REMARK :

 Freq		Antenna Factor					Remark
MHz	dBu∜	<u>dB</u> /m	<u>dB</u>	<u>d</u> B	dBuV/m	dBuV/m	 
2390.000 2390.000							



Test channel: Highest

Horizontal:



Site Condition : 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL

EUT : Smart band

: X5 Model

Test mode : BLE TX - H Power Rating : AC120V/60Hz MODE

Environment : Temp: 25.5°C Huni:55%

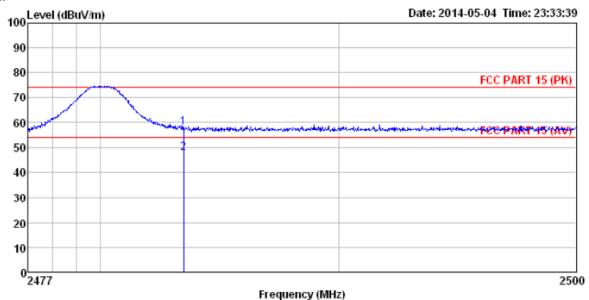
Test Engineer: Garen REMARK

	Freq		Antenna Factor						
	MHz	dBu∜	<u>dB</u> /m	<u>dB</u>	dB	dBuV/m	dBuV/m	<u>dB</u>	
1 2	2483.500 2483.500								



Test channel: Highest

Vertical:



Site Condition EUT : 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

: Smart band

Model : X5

Test mode : BLE TX - H
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C
Test Engineer: Garen MODE

Huni:55%

REMARK

	Freq				Cable Preamp Loss Factor Level				Remark
	MHz	dBu∜	<u>dB</u> /π	<u>dB</u>	<u>d</u> B	dBuV/m	dBuV/m	<u>d</u> B	
1	2483.500 2483.500								



## 6.7 Spurious Emission

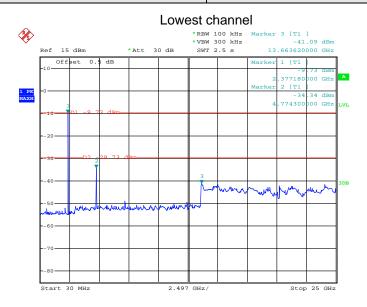
## 6.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)							
Test Method:	ANSI C63.4:2003 and KDB558074							
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.							
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane							
Test Instruments:	Refer to section 5.7 for details							
Test mode:	Refer to section 5.3 for details							
Test results:	Passed							

Test plot as follows:

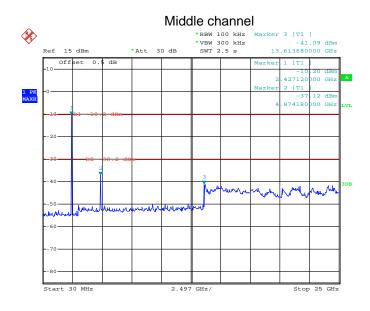


Test mode:



Date: 24.APR.2014 17:32:42

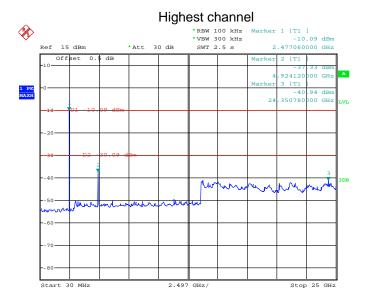
#### 30MHz~25GHz



Date: 24.APR.2014 17:29:46

30MHz~25GHz





Date: 24.APR.2014 17:31:23

30MHz~25GHz



## 6.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205									
Test Method:	ANSI C63.4:2003									
Test Frequency Range:	9KHz to 25GHz									
Test site:	Measurement D	istance: 3m								
Receiver setup:		Frequency Detector RBW VBW Remark								
1.000.101.001.001	Frequency	Frequency Detector RBW VBW Remark								
	30MHz-1GHz	30MHz-1GHz Quasi-peak 120KHz 300KHz Quasi-peak Value								
	Abovo 1GHz	Peak	1MHz	3MHz	Peak Value					
	Above IGHZ	Above 1GHz  Peak  1MHz  10Hz  Average Value								
Limit:										
	Frequency	Frequency Limit (dBuV/m @3m) Remark								
	30MHz-88MHz		40.0		Quasi-peak Value					
	88MHz-216MHz	-	43.5		Quasi-peak Value					
	216MHz-960MH	lz	46.0		Quasi-peak Value					
	960MHz-1GHz		54.0		Quasi-peak Value					
	Above 1GHz	-	54.0 74.0		Average Value					
Test Procedure:	1. The EUT w	as placed on		rotating tab	Peak Value ble 0.8 meters above					
	the ground to determin 2. The EUT antenna, we tower.  3. The antenre the ground Both horizon make the numbers and to find the restrict Specified E.  6. If the emission the EUT have 10 dE	at a 3 meter the the position was set 3 meter the position was set 3 meter the height is valued and verne the the anter the the the anter the the the anter the	camber. The of the highest leters away funted on the trailed from one the maximutical polarizations on the Enna was turned ding.  In Maximum Here EUT in peresting could be corted. Other discretes the contest of the cortest of the c	table was at radiation. from the interpretation of a variation of a variation of the EUT was a and to height from 0 degrated to Peak Dold Mode. The stopped wise the erd one by on	rotated 360 degrees					

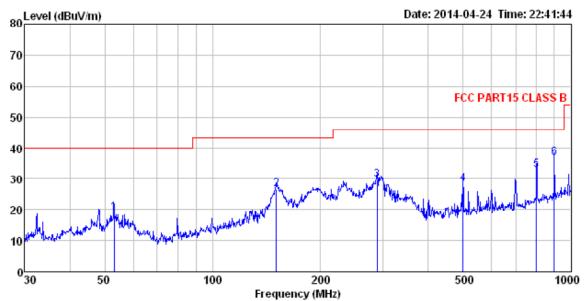


Test setup:	Below 1GHz
	Antenna Tower  Search Antenna  RF Test Receiver  Ground Plane  Above 1GHz  Antenna Tower  Horn Antenna  Spectrum Analyzer  Analyzer
	Table Amplifier Amplifier
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	<ol> <li>Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.</li> <li>9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.</li> </ol>



#### **Below 1GHz**

Horizontal:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL Condition

EUT : Smart band : X5 Model Test mode : BLE MODE Power Rating : AC120V/60Hz

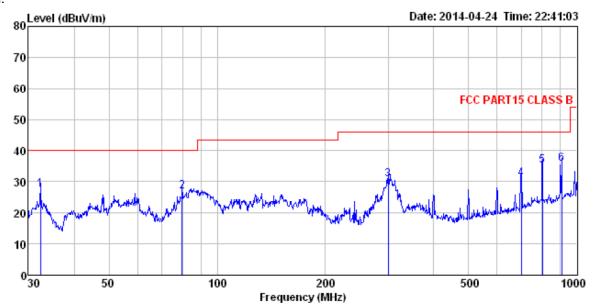
Environment : Temp: 25.5°C Huni:55%

Test Engineer: Garen REMARK :

	•				_			_	
		Read	ReadAntenna		Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
_									
	MHz	dB™	dB/m	dВ	dВ	dBm/m	dBm/m	dВ	
1	E3 131	34.90	13, 12	0.64	29.81	10 0E	40.00	-21 15	OB
1	53.131								•
2	150.538	46.16	8. 29	1.32	29.22	26.55	43.50	-16.95	QP
3	287.990	43.66	12.84	1.74	28.47	29.77	46.00	-16.23	QP
4	499.425	38.38	16.58	2.40	28.95	28.41	46.00	-17.59	QP
5	798.980	38.00	20.06	3.17	28.20	33.03	46.00	-12.97	QP
6	900.147	40.22	21, 09	3, 35	27, 88	36, 78	46, 00	-9.22	ΩP



#### Vertical:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL Condition

EUT : Smart band

Model : X5

: BLE MODE Test mode Power Rating : AC120V/60Hz Environment : Temp:25.5°C

Huni:55%

Test Engineer: Garen

REMARK

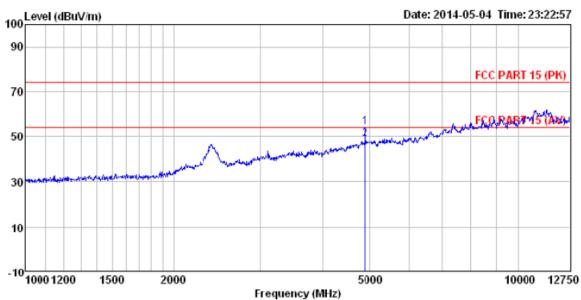
	Freq					Level			Remark
	MHz	dBm	dB/m		<u>ab</u>	_dBm/m	_dBm/m	B	
1	32.406	44.73	12.32	0.45	29.97	27.53	40.00	-12.47	QP
2 3	79.800	47.23	8.54	0.85	29.64	26.98	40.00	-13.02	QP
3	298.268	44.25	13.00	1.76	28.45	30.56	46.00	-15.44	QP
4		37.97	18.80	2.91	28.67	31.01	46.00	-14.99	QP
5		40.05	20.06	3.17	28.19	35.09	46.00	-10.91	QP
6	906.482	38.93	21, 15	3.36	27.86	35, 58	46.00	-10.42	ΘP



#### **Above 1GHz**

Test channel: Lowest

Vertical:



Site : 3m chamber

Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL

EUT : Smart band

Model : X5

: BLE-L MODE Test mode Power Rating : AC120V/60Hz Environment : Temp:25.5°C

Huni:55%

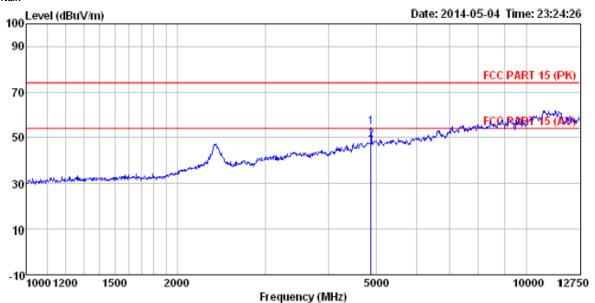
Test Engineer: Garen REMARK :

1 2

IN	: Freq					Level			Remark
	MHz	dBm	<u>dB</u> /m	dB	<u>dB</u>	dBm/m	dBm/m	<u>dB</u>	
			31.58 31.58			54.00 48.97			Peak Average



#### Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL Condition

EUT : Smart band Model : X5 Test mode : BLE-L MODE Power Rating : AC120V/60Hz

Environment : Temp: 25.5°C Huni: 55%

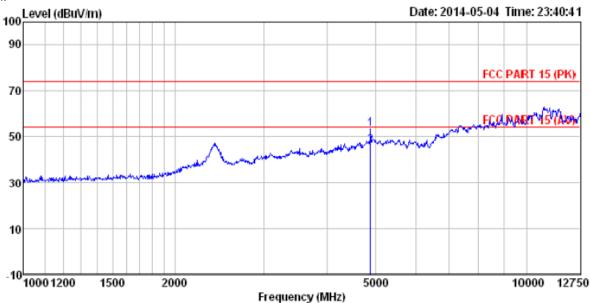
Test Engineer: Garen REMARK :

	-				Preamp Factor				Remark
	MHz	dBm	dB/m	B	dB	dBm/m	dBm/m	dB	
1 2	4883.519 4883.519				40.15 40.15				Peak Average



Test channel: Middle

Vertical:



Site : 3m chamber

: FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL Condition

: Smart band : X5 EUT Model

Test mode : BLE-M MODE Power Rating : AC120V/60Hz Environment : Temp:25.5°C

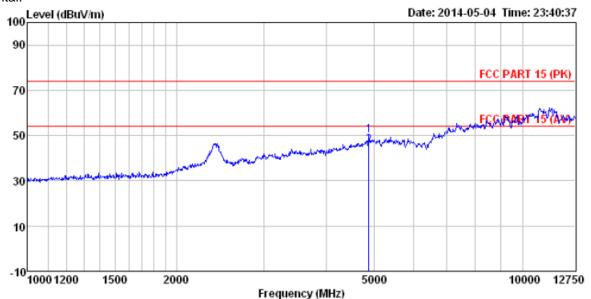
Huni:55%

Test Engineer: Garen REMARK :

	-				Level		Remark	
	MHz	dBm	—dB/m	 dB	dBm/m	dBm/m	 	
2	4883. 519 4883. 519							



#### Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL Condition

EUT : Smart band

: X5 Model

Test mode : BLE-M MODE

Power Rating : AC120V/60Hz Environment : Temp:25.5C Huni:55%

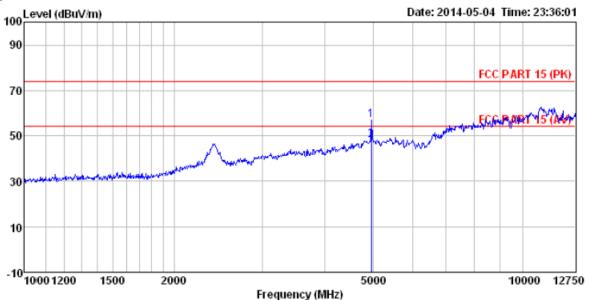
Test Engineer: Garen REMARK :

	Freq		ReadAntenna Level Factor						Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 2	4883.519 4883.519				40.15 40.15				Peak Average



Test channel: Highest

Vertical:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL Condition

EUT : Smart band Model : X5

Test mode : BLE-H MODE Power Rating : AC120V/60Hz

Environment : Temp: 25.5°C Huni:55%

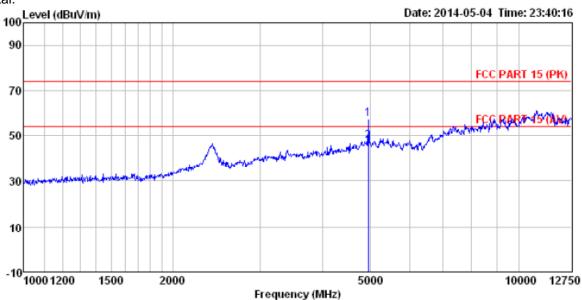
Test Engineer: Garen

REMARK

	Freq					Level			Remark	
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	4958.678 4958.678									



#### Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL Condition

: Smart band EUT

: X5 Model

: BLE-H MODE Test mode Power Rating: AC120V/60Hz Environment: Temp:25.5°C Test Engineer: Garen REMARK:

Huni:55%

MAK			Antenna						
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBm	dB/m	₫B	d₿	dBm/m	dBm/m	dB	
	4958.678 4958.678								