FCC REPORT

Applicant:	Shenzhen Elink-IOT Technology Co.Ltd.
Address of Applicant:	Rm 13A06, Huafeng international commercial building, No. 4018 Xixiang Bao'an Shenzhen city, China

Equipment Under Test (EUT)

Product Name:	Watcher
Model No.:	EK-W1001
Trade mark:	Elinkiot
FCC ID:	2AD3AEKW1001
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	07 Jan., 2015
Date of Test:	08 Jan., to 26 Jan., 2015
Date of report issued:	27 Jan., 2015
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	*27 Jan., 2015*	*Original*

Prepared by: Luna Gao ***Date:*** *27 Jan., 2015*

Report Clerk

Reviewed by: Abomb Yang ***Date:*** *27 Jan., 2015*

Project Engineer

3 Contents

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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	N/A
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth 99% Occupied 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 Elink-IOT Technology Co.,Ltd.
Address of Applicant:	Rm 13A06, Huafeng international commercial building, No. 4018 Xixiang Baoan Shenzhen city, China
Manufacturer:	Antai Electronic Technology Co.Ltd.
Address of Manufacturer:	Room 1221, Hongyu Building, Longuang East Road, Longhua New District, Shenzhen 518109, China
Factory:	Antai Electronic Technology Co.Ltd.
Address of Manufacturer:	Building E, 22, Yuhua Street, 138 Industrial Park, Tangxia Town, Dongguang 523710, China

5.2 General Description of E.U.T.

Product Name:	Watcher
Model No.:	EK-W1001
Operation Frequency:	2430MHz~2460MHz
Channel numbers:	31
Channel separation:	1MHz
Modulation technology:	GFSK
Data speed:	250kbps, 1Mbps, 2Mbps
Antenna Type:	Internal Antenna
Antenna gain:	1.3 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V-230mAh

Operation Frequency each of channel For 2.4G Transmitter							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2430MHz	9	2438MHz	17	2446MHz	25	2454MHz
2	2431MHz	10	2439MHz	18	2447MHz	26	2455MHz
3	2432MHz	11	2440MHz	19	2448MHz	27	2456MHz
4	2433MHz	12	2441MHz	20	2449MHz	28	2457MHz
5	2434MHz	13	2442MHz	21	2450MHz	29	2458MHz
6	2435MHz	14	2443MHz	22	2451MHz	30	2459MHz
7	2436MHz	15	2444MHz	23	2452MHz	31	2460MHz
8	2437MHz	16	2445MHz	24	2453MHz		

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:

2.4G Transmitter

Channel	Frequency
The lowest channel	2430MHz
The middle channel	2445MHz
The Highest channel	2460MHz

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.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Mode	Data rate
2.4G	250kbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 250kbps. Duty cycle setting during the transmission is 100% with maximum power setting for modulation.

5.4 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.

5.5 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
Tel: +86-755-23118282
Fax: +86-755-23116366

5.6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	04-19-2014	04-19-2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	04-19-2014	04-19-2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2014	04-01-2015
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	06-09-2014	06-08-2015
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2014	03-31-2015
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	03-30-2014	03-29-2015
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	04-19-2014	04-19-2015
12	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	04-01-2014	03-31-2015
13	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2014	03-31-2015
14	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	05-29-2014	05-28-2015
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-19-2014	04-19-2015

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	10-10-2012	10-09-2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	04-10-2014	04-10-2015
3	LISN	CHASE	MN2050D	CCIS0074	04-10-2014	04-10-2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2014	03-31-2015
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	Laptop	INSPIRON M4010	B1LMVP1	DoC

6 Test results and Measurement Data

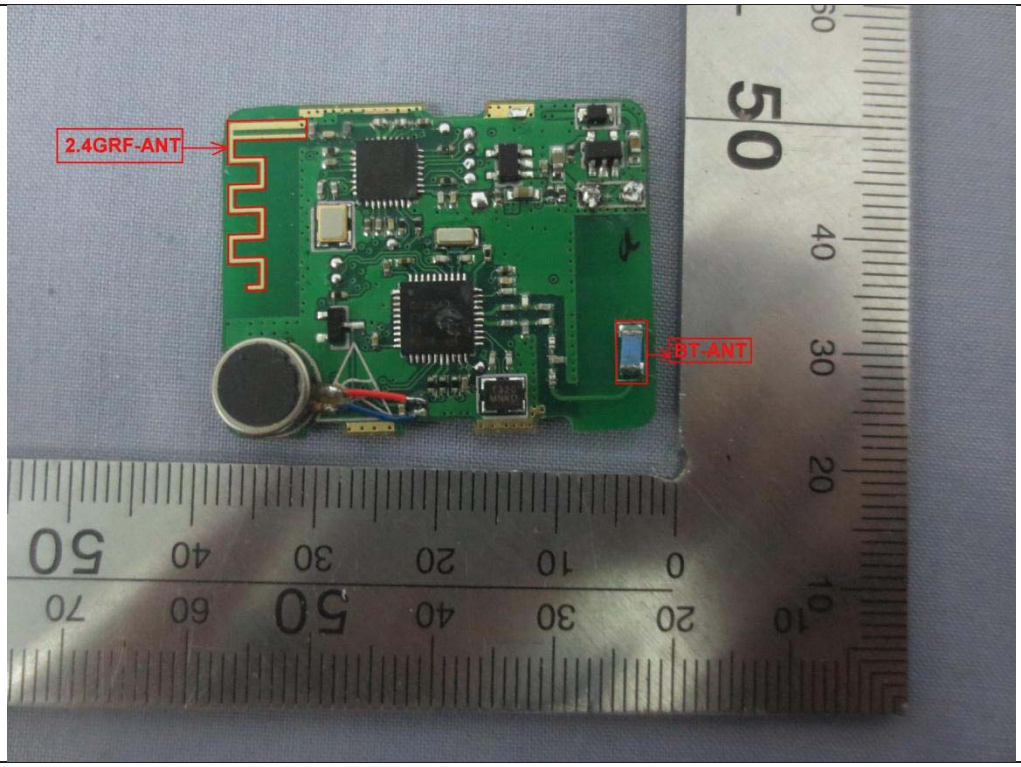
6.1 Antenna requirement:

Standard requirement:	FCC Part 15 C Section 15.203 /247(c)

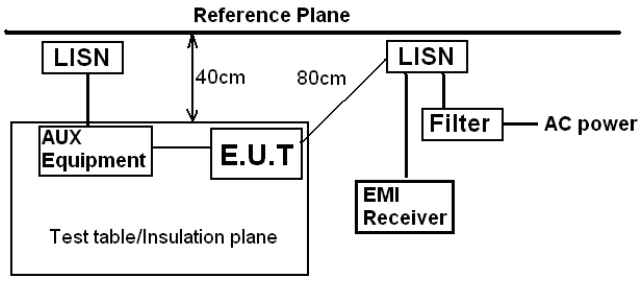
15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer 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 WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 1.3 dBi.

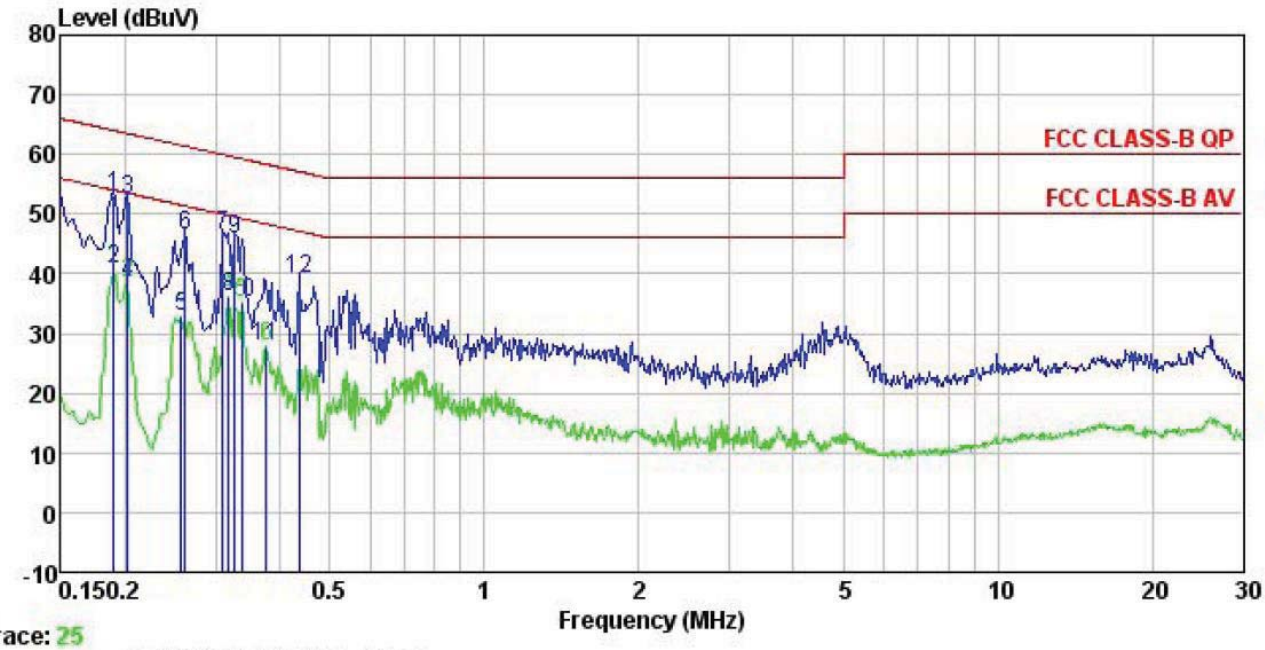


6.2 Conducted Emissions

Test Requirement:	FCC Part 15 C Section 15.207
Test Method:	ANSI C63.4:2003
Test Frequency Range:	150 kHz to 30 MHz
Class / Severity:	Class B
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): 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.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
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.). This 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 Instruments:	Refer to section 5.7 for details
Test mode:	Bluetooth (Continuous transmitting) mode
Test results:	Pass

Measurement Data

Line:

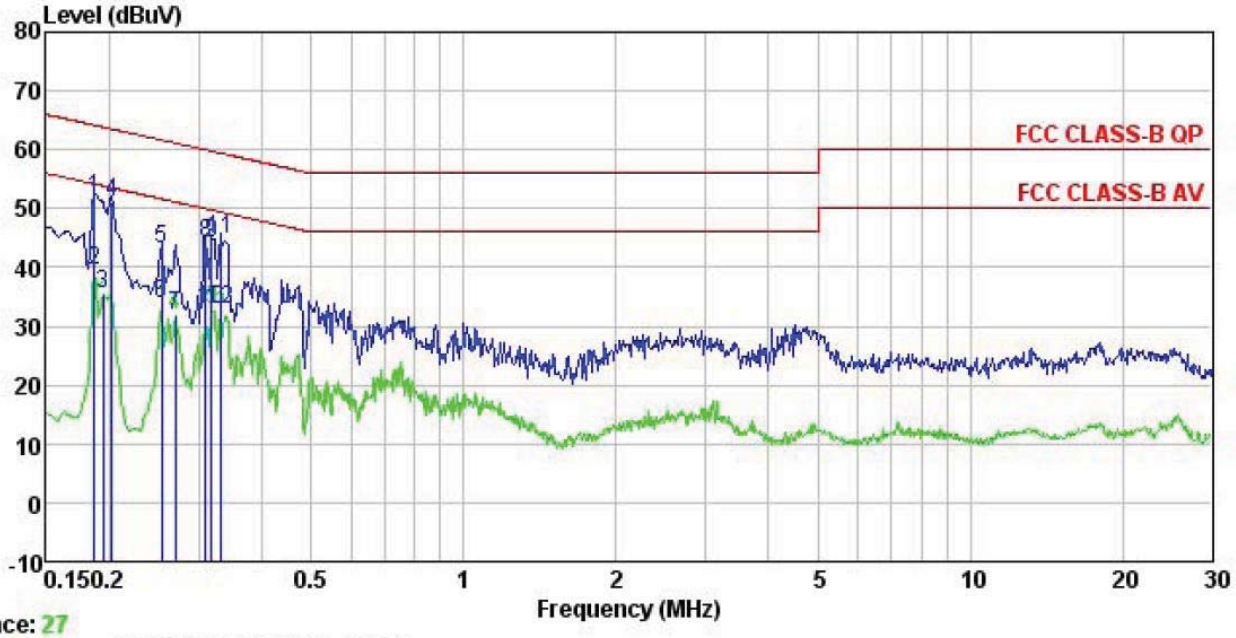


Trace: 25

Site : CCIS Shielding Room
Condition : FCC CLASS-B QP LISN LINE
Pro : 009RF
EUT : Watcher
Model : EK-W1001
Test Mode : 2.4G-Transmitter Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 'C Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.190	42.12	0.28	10.76	53.16	64.02	-10.86	QP
2	0.190	29.82	0.28	10.76	40.86	54.02	-13.16	Average
3	0.202	41.48	0.28	10.76	52.52	63.54	-11.02	QP
4	0.202	27.34	0.28	10.76	38.38	53.54	-15.16	Average
5	0.258	21.76	0.27	10.75	32.78	51.51	-18.73	Average
6	0.262	35.31	0.27	10.75	46.33	61.38	-15.05	QP
7	0.310	35.45	0.26	10.74	46.45	59.97	-13.52	QP
8	0.318	25.14	0.26	10.74	36.14	49.75	-13.61	Average
9	0.327	34.88	0.27	10.73	45.88	59.53	-13.65	QP
10	0.337	24.08	0.27	10.73	35.08	49.27	-14.19	Average
11	0.377	16.95	0.28	10.72	27.95	48.34	-20.39	Average
12	0.435	28.13	0.28	10.73	39.14	57.15	-18.01	QP

Neutral:



Trace: 27

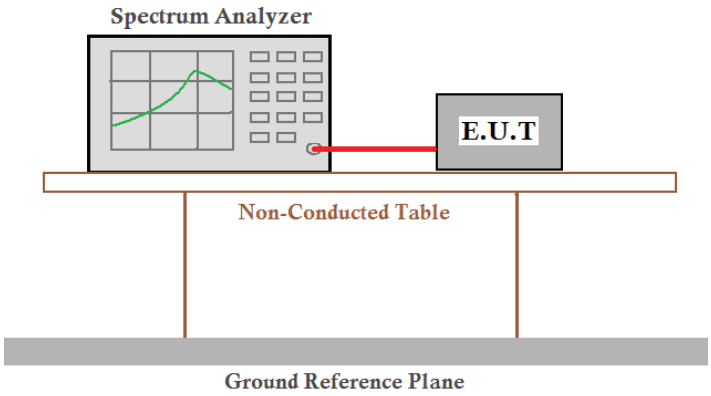
Site : CCIS Shielding Room
Condition : FCC CLASS-B QP LISN NEUTRAL
Pro : 009RF
EUT : Watcher
Model : EK-W1001
Test Mode : 2.4G-Transmitter Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.186	40.83	0.25	10.76	51.84	64.20	-12.36	QP
2	0.186	28.43	0.25	10.76	39.44	54.20	-14.76	Average
3	0.194	24.48	0.25	10.76	35.49	53.84	-18.35	Average
4	0.202	40.20	0.25	10.76	51.21	63.54	-12.33	QP
5	0.253	32.13	0.26	10.75	43.14	61.64	-18.50	QP
6	0.253	22.86	0.26	10.75	33.87	51.64	-17.77	Average
7	0.270	20.91	0.26	10.75	31.92	51.12	-19.20	Average
8	0.310	33.26	0.26	10.74	44.26	59.97	-15.71	QP
9	0.318	33.11	0.26	10.74	44.11	59.75	-15.64	QP
10	0.318	21.70	0.26	10.74	32.70	49.75	-17.05	Average
11	0.330	33.85	0.26	10.73	44.84	59.44	-14.60	QP
12	0.330	22.02	0.26	10.73	33.01	49.44	-16.43	Average

Notes:

1. An initial pre-scan was performed on the line 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

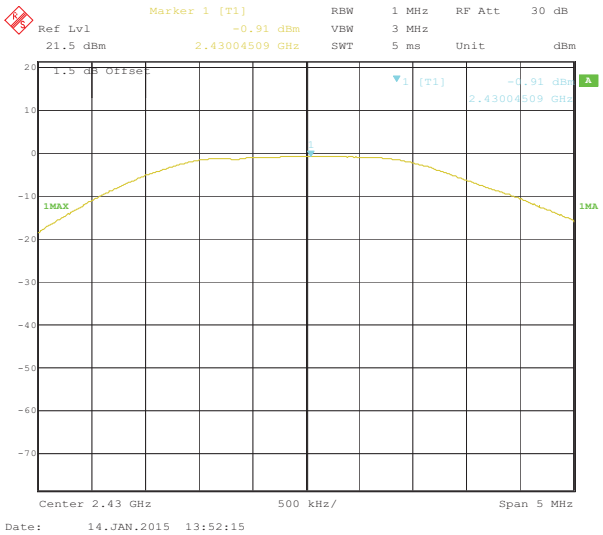
6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	Test method refer to KDB558074 (DTS Measure Guidance) section 8.2, option 1.

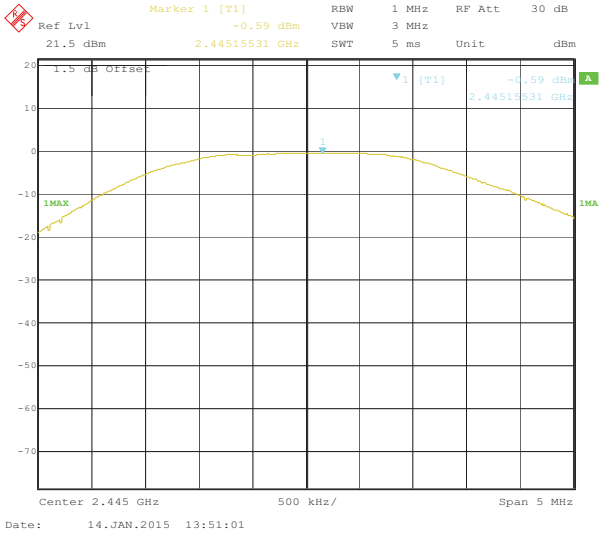
Measurement Data

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
Lowest	-0.91	30.00	Pass
Middle	-0.59		
Highest	-0.38		

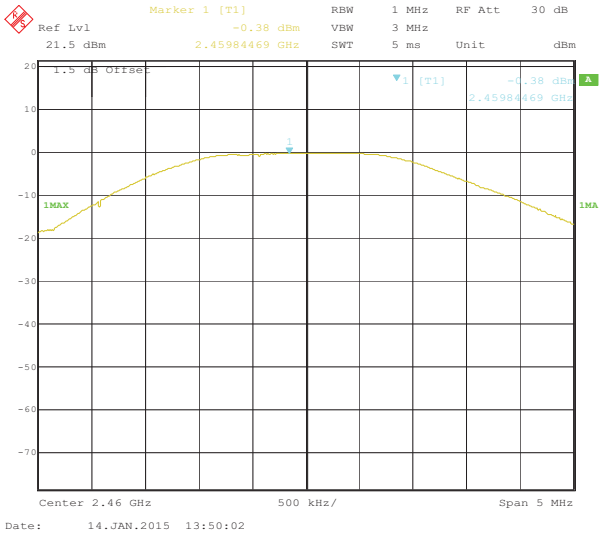
Test plot as follows:



Lowest channel

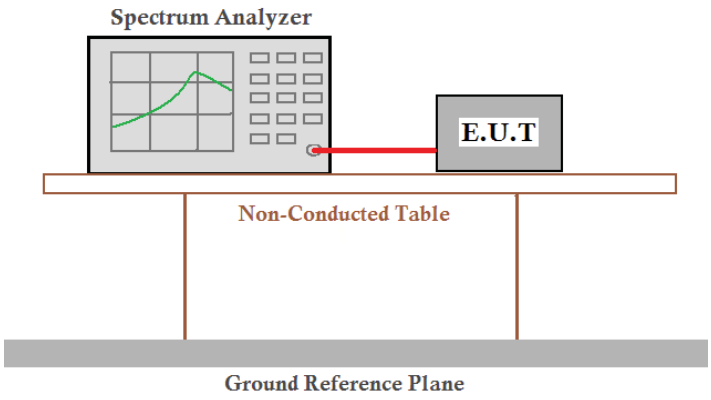


Middle channel



Highest channel

6.4 Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500kHz
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

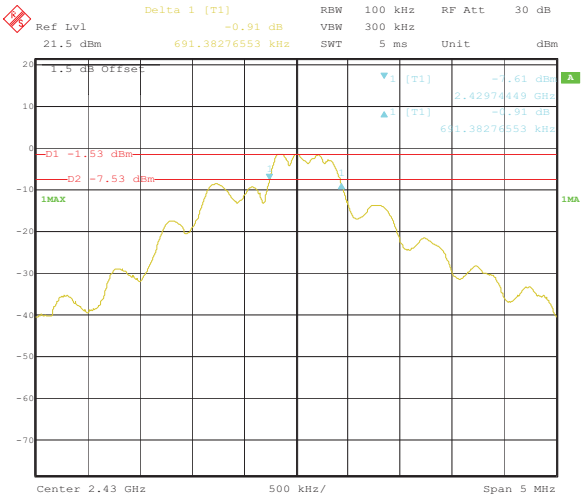
Measurement Data

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result
Lowest	0.691	>500	Pass
Middle	0.661		
Highest	0.641		

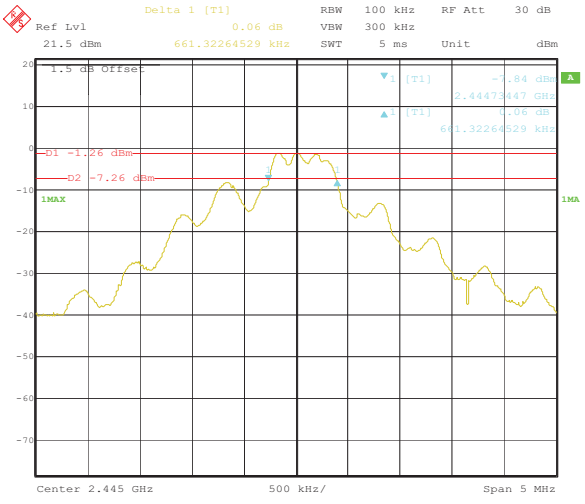
Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result
Lowest	2.335	N/A	N/A
Middle	2.224		
Highest	1.994		

Test plot as follows:

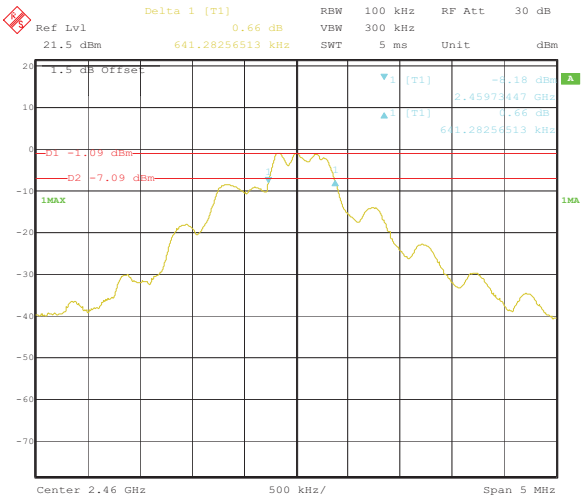
6dB EBW



Lowest channel

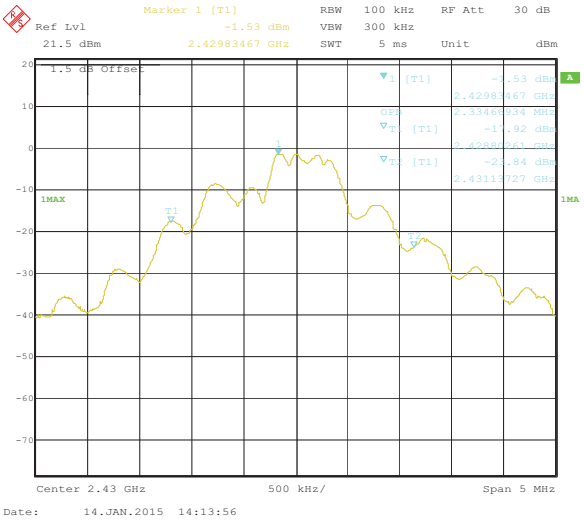


Middle channel

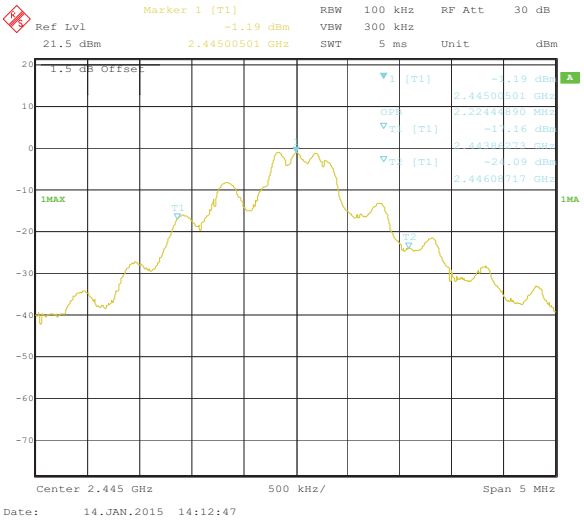


Highest channel

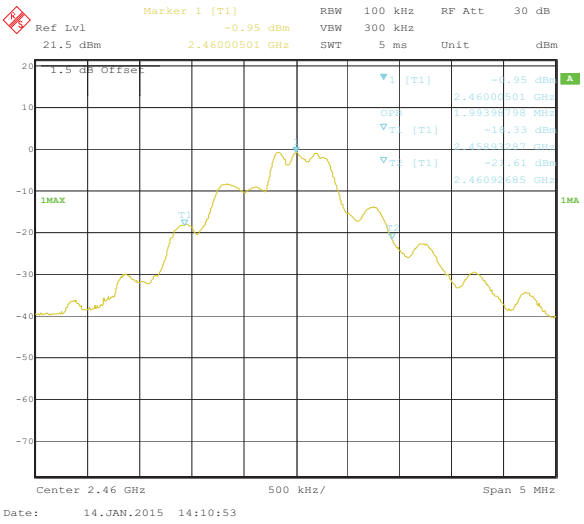
99% OBW



Lowest channel

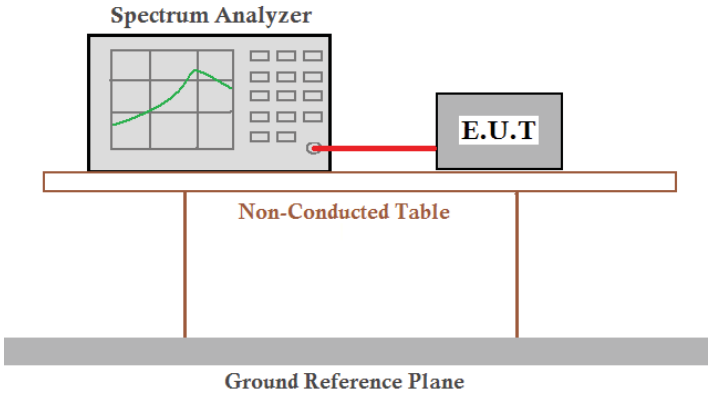


Middle channel



Highest channel

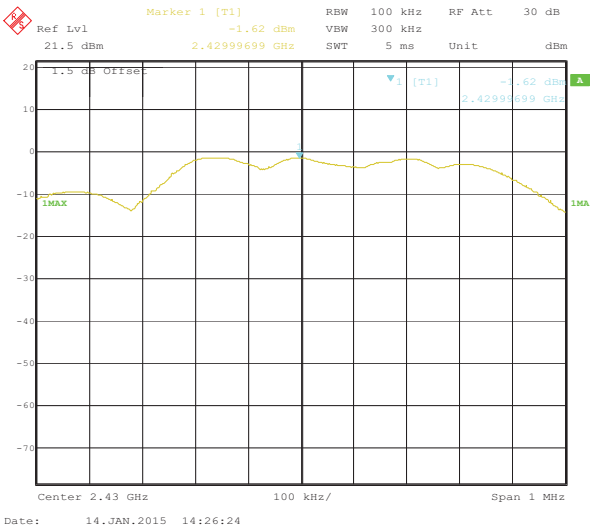
6.5 Power Spectral Density

Test Requirement:	FCC Part 15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

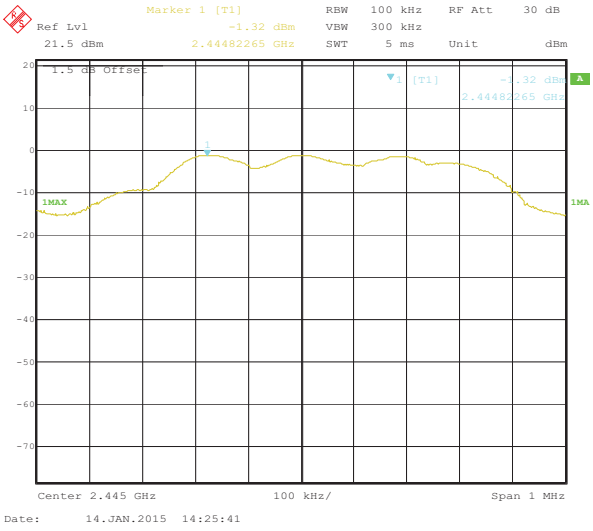
Measurement Data

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
Lowest	-1.62	8.00	Pass
Middle	-1.32		
Highest	-1.11		

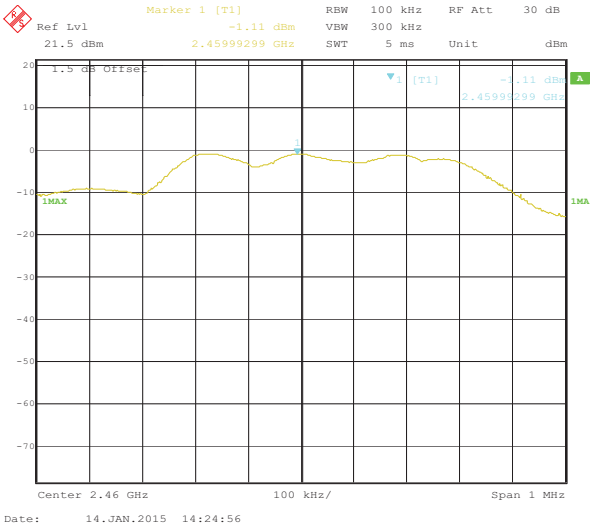
Test plot as follows:



Lowest channel



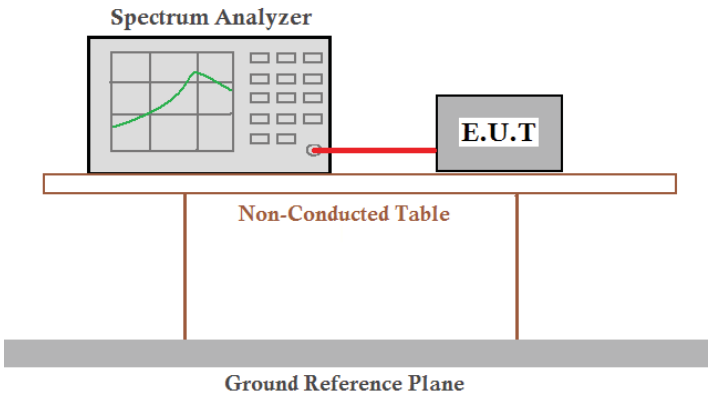
Middle channel



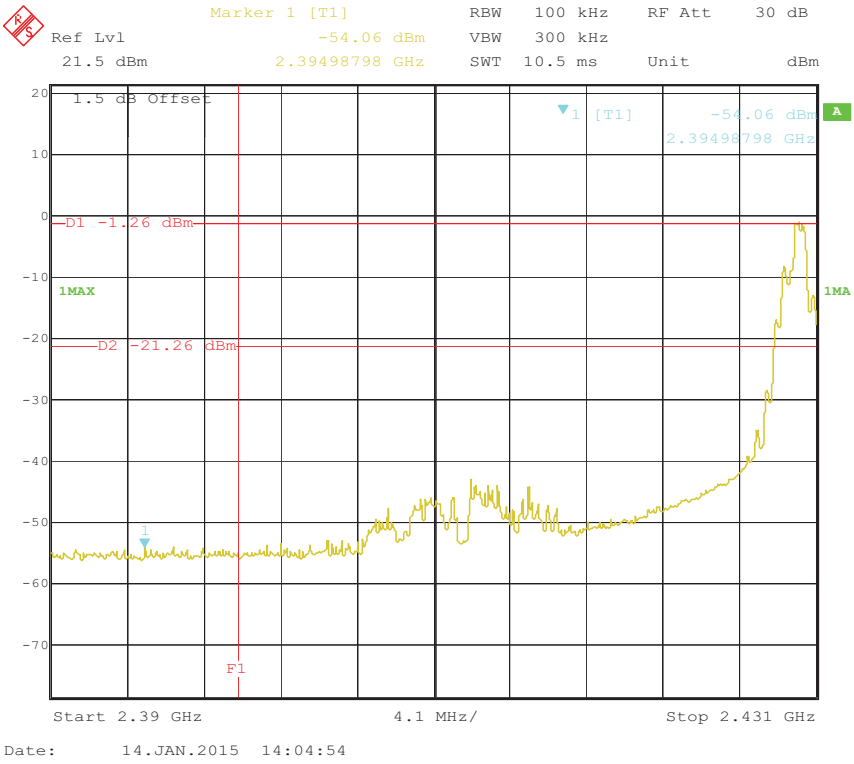
Highest channel

6.6 Band Edge

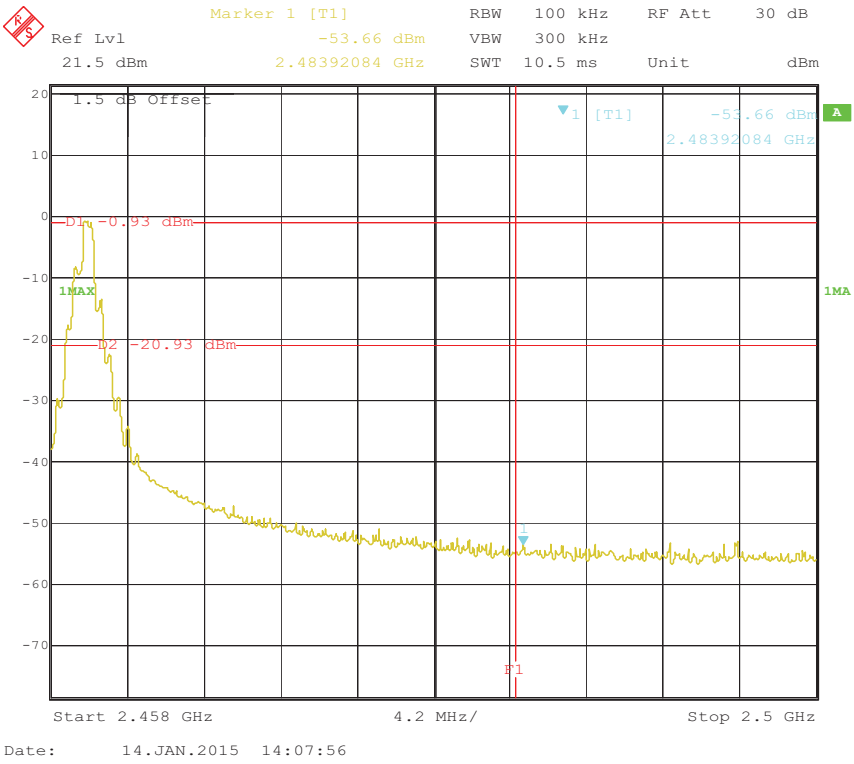
6.6.1 Conducted Emission Method

Test Requirement:	FCC Part 15 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 30 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:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

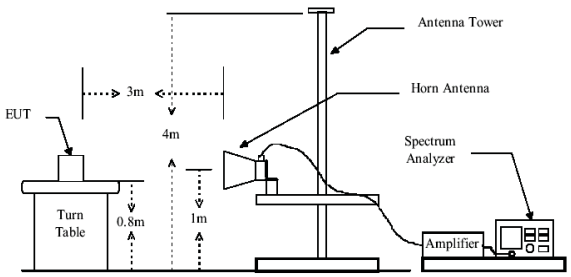


Lowest channel



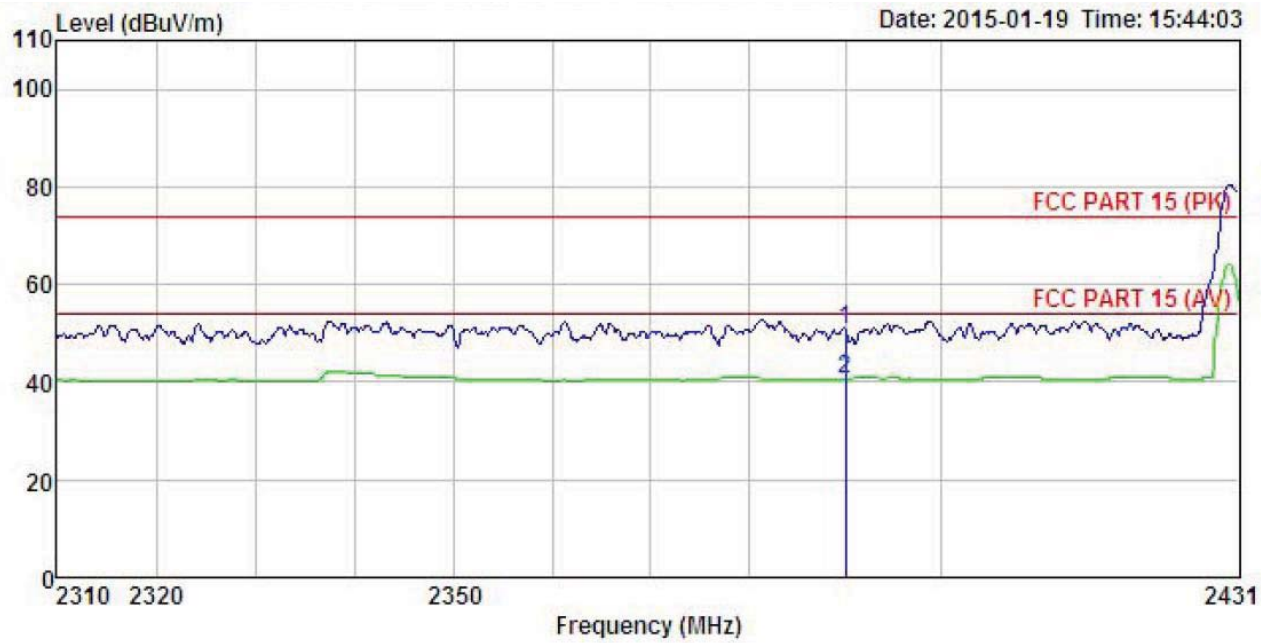
Highest channel

6.6.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part 15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4: 2003</td></tr>
<tr><td>Test Frequency Range:</td><td>2.3GHz to 2.5GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr>
<tr><td>74.00</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>1. 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.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. 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.
4. 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.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 5.6 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.3 for details</td></tr>
<tr><td>Test results:</td><td>Passed</td></tr>
</table>

Test channel: Lowest

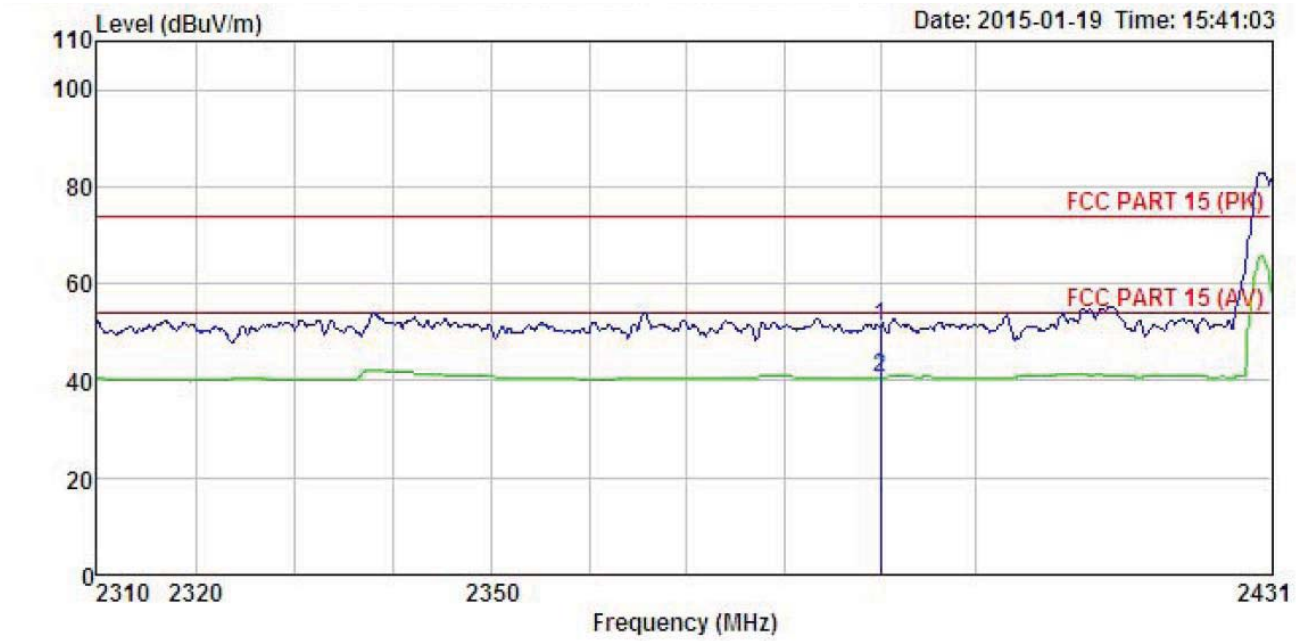
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Watcher
Model : EK-W1001
Test mode : 2.4G-L Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	17.55	27.58	5.67	0.00	50.80	74.00	-23.20	Peak
2	2390.000	7.29	27.58	5.67	0.00	40.54	54.00	-13.46	Average

Vertical:

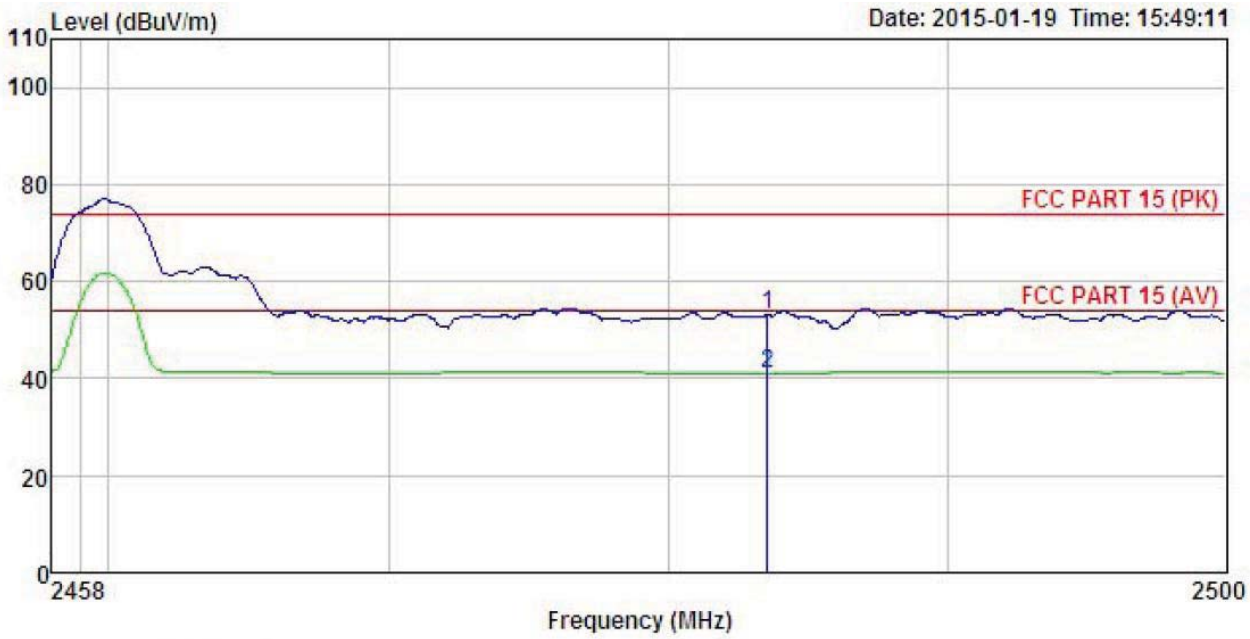


Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Watcher
Model : EK-W1001
Test mode : 2.4G-L Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	17.90	27.58	5.67	0.00	51.15	74.00	-22.85	Peak
2	2390.000	7.31	27.58	5.67	0.00	40.56	54.00	-13.44	Average

Test channel: Highest

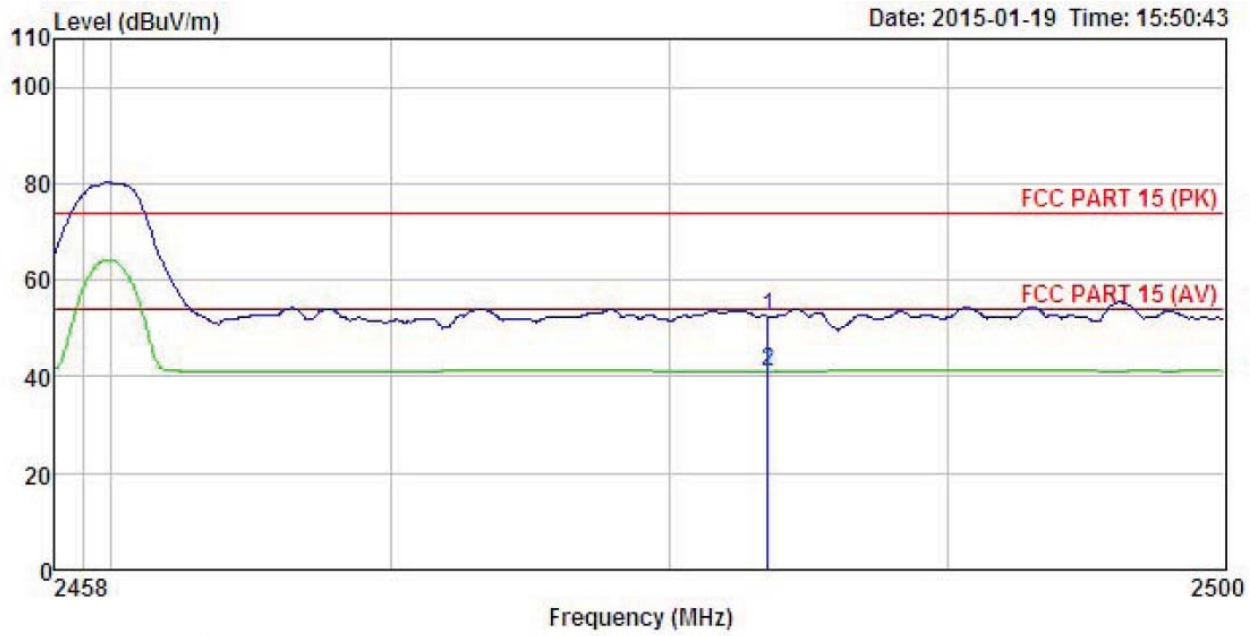
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Watcher
Model : EK-W1001
Test mode : 2.4G-H Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	19.79	27.52	5.70	0.00	53.01	74.00	-20.99	Peak
2	2483.500	7.92	27.52	5.70	0.00	41.14	54.00	-12.86	Average

Vertical:

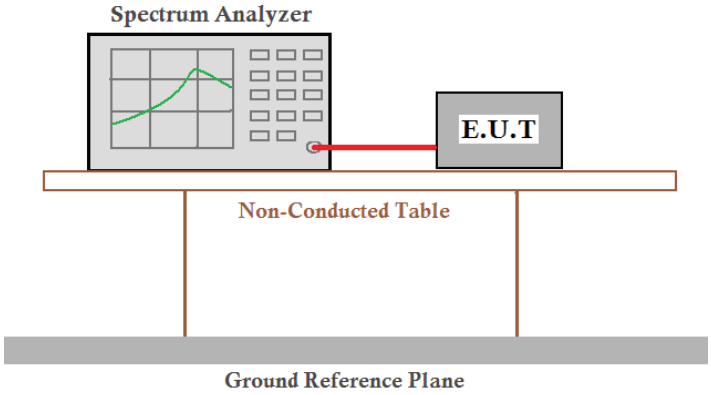



```
Site          : 3m chamber
Condition     : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT           : Watcher
Model         : EK-W1001
Test mode     : 2.4G-H Mode
Power Rating  : AC120V/60Hz
Environment   : Temp:25.5'C  Huni:55%
Test Engineer: Carey
REMARK        :
```

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	19.26	27.52	5.70	0.00	52.48	74.00	-21.52	Peak
2	2483.500	7.91	27.52	5.70	0.00	41.13	54.00	-12.87	Average

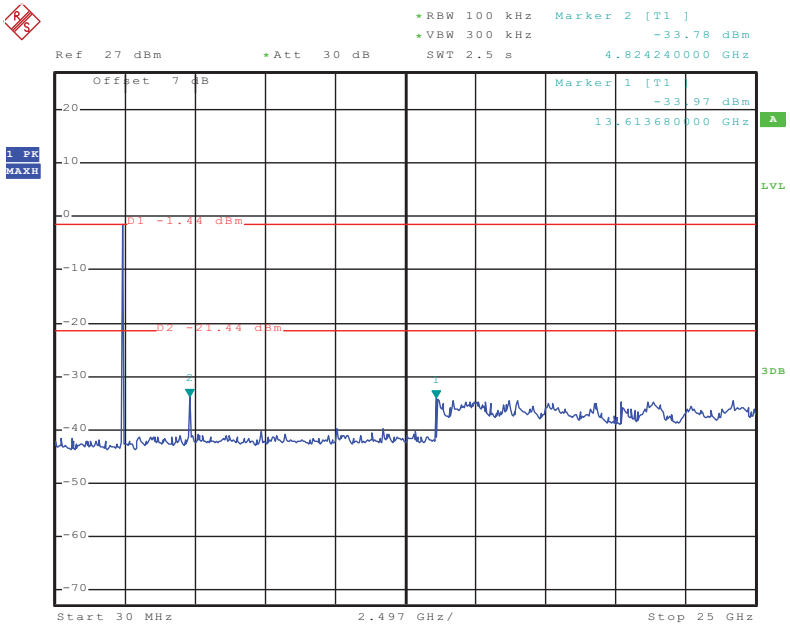
6.7 Spurious Emission

6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 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:	
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

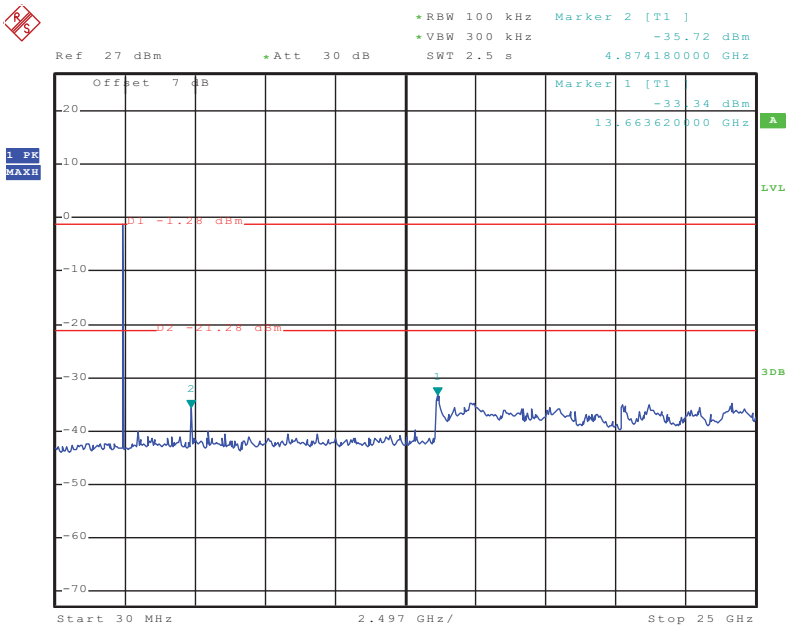
Lowest channel



Date: 15.JAN.2015 16:14:21

30MHz~25GHz

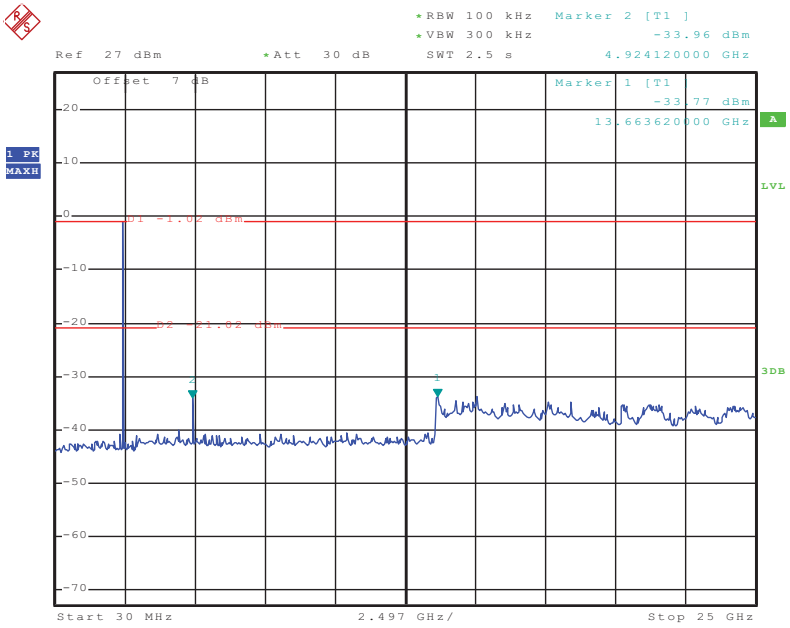
Middle channel



Date: 15.JAN.2015 16:14:54

30MHz~25GHz

Highest channel

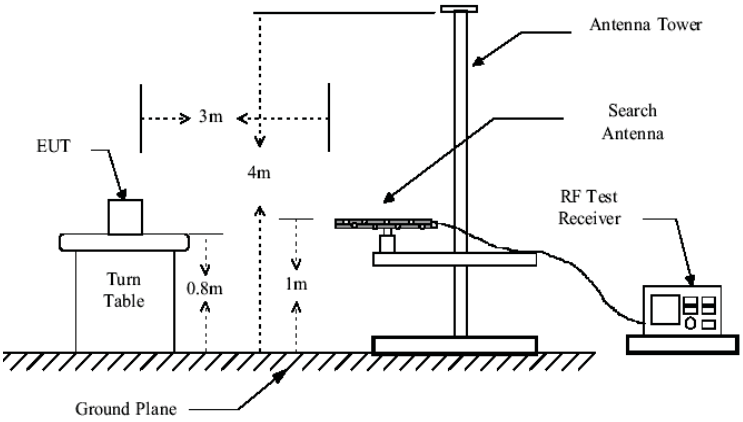
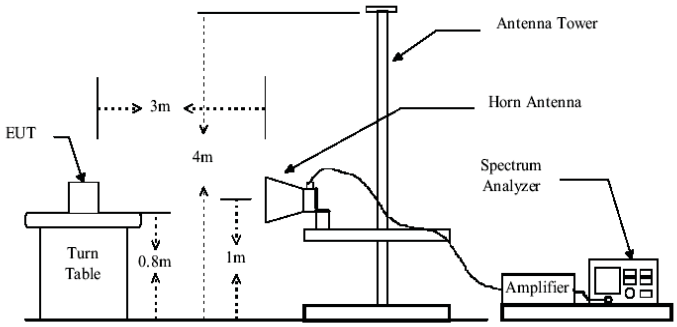


Date: 15.JAN.2015 16:15:27

30MHz~25GHz

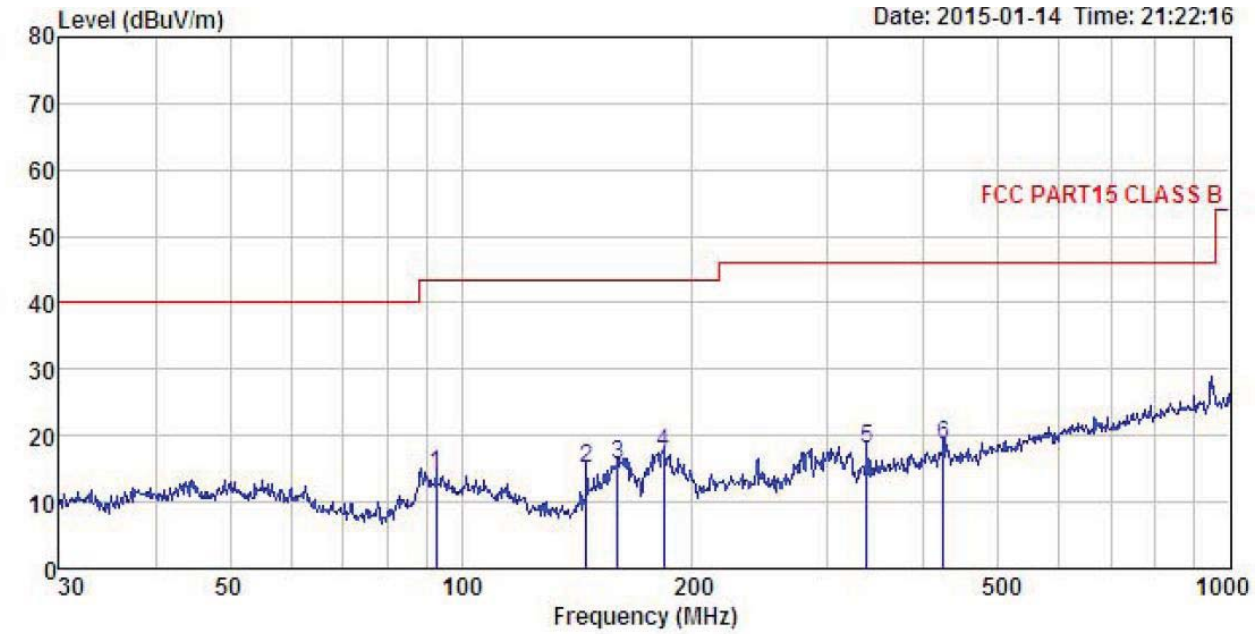
6.7.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part 15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4:2003</td></tr>
<tr><td>Test Frequency Range:</td><td>9KHz to 25GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>74.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>
1. 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.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. 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.
4. 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.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
</td></tr>
</table>

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.6for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Below 1GHz

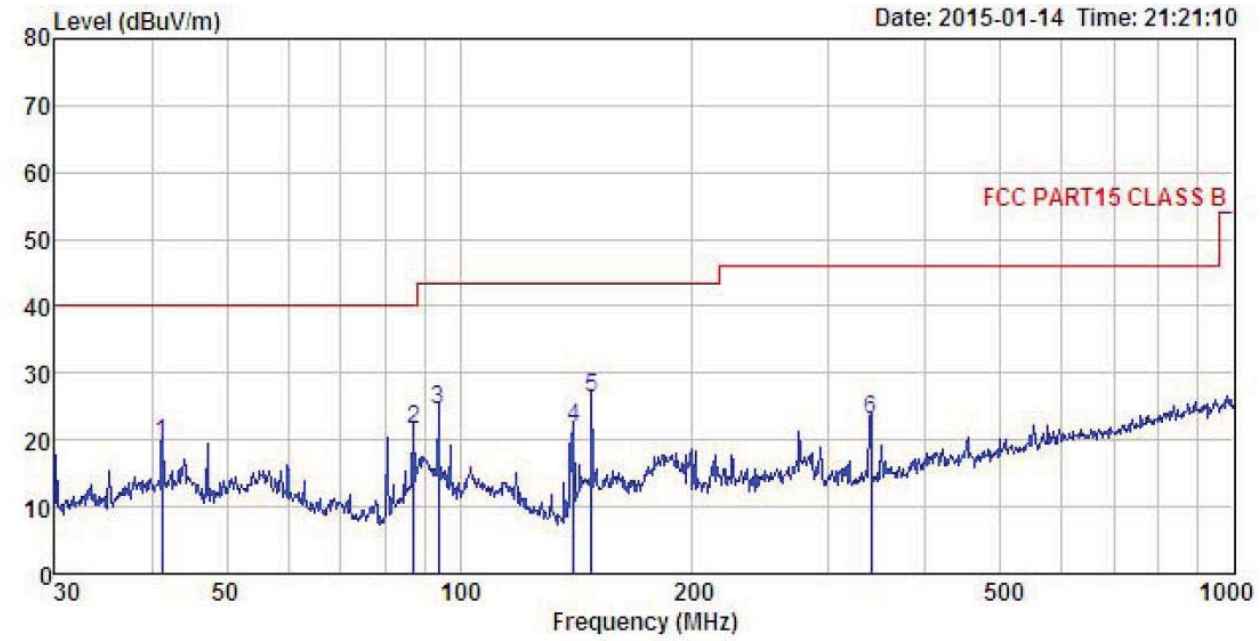
Horizontal：



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
EUT : Watcher
Model : EK-W1001
Test mode : 2.4G- Transmitter Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	92.787	30.43	12.41	0.92	29.56	14.20	43.50	-29.30	QP
2	145.351	34.86	8.23	1.29	29.24	15.14	43.50	-28.36	QP
3	159.784	34.86	8.64	1.33	29.13	15.70	43.50	-27.80	QP
4	183.201	34.99	9.92	1.36	28.95	17.32	43.50	-26.18	QP
5	337.216	30.70	14.05	1.90	28.53	18.12	46.00	-27.88	QP
6	423.540	29.89	15.49	2.18	28.82	18.74	46.00	-27.26	QP

Vertical：



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
EUT : Watcher
Model : EK-W1001
Test mode : 2.4G- Transmitter Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	41.277	35.24	13.57	0.53	29.89	19.45	40.00	-20.55	QP
2	87.112	39.19	11.03	0.89	29.59	21.52	40.00	-18.48	QP
3	93.768	40.55	12.58	0.93	29.56	24.50	43.50	-19.00	QP
4	140.342	41.68	8.19	1.26	29.27	21.86	43.50	-21.64	QP
5	147.921	46.04	8.24	1.31	29.23	26.36	43.50	-17.14	QP
6	339.589	35.65	14.12	1.91	28.54	23.14	46.00	-22.86	QP

Above 1GHz

Test channel: Lowest						Remark: Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4860.00	49.56	31.57	8.96	40.17	49.92	74.00	-24.08	Vertical
4860.00	46.48	31.57	8.96	40.17	46.84	74.00	-27.16	Horizontal
Test channel: Lowest						Remark: Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4860.00	39.48	31.57	8.96	40.17	39.84	54.00	-14.16	Vertical
4860.00	36.04	31.57	8.96	40.17	36.40	54.00	-17.60	Horizontal

Test channel: Middle						Remark: Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4890.00	48.82	31.58	8.98	40.15	49.23	74.00	-24.77	Vertical
4890.00	46.84	31.58	8.98	40.15	47.25	74.00	-26.75	Horizontal
Test channel: Middle						Remark: Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4890.00	38.46	31.58	8.98	40.15	38.87	54.00	-15.13	Vertical
4890.00	36.73	31.58	8.98	40.15	37.14	54.00	-16.86	Horizontal

Test channel: Highest						Remark: Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4920.00	48.42	31.61	9.04	40.08	48.99	74.00	-25.01	Vertical
4920.00	47.72	31.61	9.04	40.08	48.29	74.00	-25.71	Horizontal
Test channel: Highest						Remark: Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4920.00	38.97	31.61	9.04	40.08	39.54	54.00	-14.46	Vertical
4920.00	37.87	31.61	9.04	40.08	38.44	54.00	-15.56	Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

7 Test Setup Photo

Radiated Spurious Emission