

# FCC REPORT

**Applicant:** Shenzhen Quick Zoom Technology Co.,Ltd

**Address of Applicant:** Blid A8, Silicon Valley Power, Guiyue Road, Guanlan Long Hua New Dist, Shenzhen China

## Equipment Under Test (EUT)

**Product Name:** Digital IP Network Camera

**Model No.:** IPA01-725, IPB01-725N, IPB01-633W, IPB02-633W, IPB04-633W, IPB06-633W, IPC01-633W, PIC02-633W, IPC03-633W, IPD01-633W

**FCC ID:** SMB-IPA01-725

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247:2012

**Date of sample receipt:** April 01, 2013

**Date of Test:** April 01-11, 2013

**Date of report issued:** April 11, 2013

**Test Result :** PASS \*

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

Authorized Signature:

A handwritten signature of Robinson Lo is written over a circular blue official seal. The seal contains the text "GTS" in the center, surrounded by "GLOBAL TECHNOLOGY SERVICES CO." and "TESTING" at the bottom.

Robinson Lo  
**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 GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

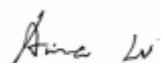
This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

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## 2 Version

Version No.	Date	Description
00	April 11, 2013	Original

Prepared By:



Date:

April 11, 2013

Project Engineer

Check By:



Date:

April 11, 2013

Reviewer

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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
Channel 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 Quick Zoom Technology Co.,Ltd
Address of Applicant:	Blid A8, Silicon Valley Power, Guiyue Road, Guanlan Long Hua New Dist, Shenzhen China
Manufacturer:	Shenzhen Quick Zoom Technology Co.,Ltd
Address of Manufacturer:	Blid A8, Silicon Valley Power, Guiyue Road, Guanlan Long Hua New Dist, Shenzhen China

### 5.2 General Description of EUT

Product Name:	Digital IP Network Camera
Model No.:	IPA01-725, IPB01-725N, IPB01-633W, IPB02-633W, IPB04-633W, IPB06-633W, IPC01-633W, PIC02-633W, IPC03-633W, IPD01-633W
Remark:	The series products, model name: IPA01-725, IPB01-725N, IPB01-633W, IPB02-633W, IPB04-633W, IPB06-633W, IPC01-633W, PIC02-633W, IPC03-633W, IPD01-633W have the same circuit diagram, PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select IPA01-725 to test.
Operation Frequency:	802.11b: 2412MHz~2462MHz
Channel numbers:	802.11b: 11
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS)
Antenna Type:	Integral Antenna
Antenna gain:	0dBi (declare by Applicant)
Power supply:	Model No.: CW1201000 Input: AC 100-240V 50/60Hz 0.4A MAX Output: DC 12V 1A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz	X	

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:

Test channel	Frequency (MHz)
	802.11b
Lowest channel	2412MHz
Middle channel	2437MHz
Highest channel	2462MHz

### 5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

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:
Per-scan all kind of data rate in lowest channel, and found 1Mbps which it was worst case.

### 5.4 Description of Support Units

None.
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## 5.5 Test Facility

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

- **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 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.

- **FCC —Registration No.: 600491**

Global United Technology 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 files. Registration 600491, July 20, 2010.

- **Industry Canada (IC)**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-1.

## 5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

Tel: 0755-27798480

Fax: 0755-27798960

## 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	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 29 2013	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 6, 2012	Dec. 5, 2013
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 03 2012	Jul. 02 2013
5	Loop Antenna	ZHINAN	ZN30900A	GTS220	Feb. 24 2013	Feb. 23 2014
6	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 24 2013	Feb. 23 2014
7	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2012	June 28 2013
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 29 2013	Mar. 28 2014
9	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
10	Coaxial Cable	GTS	N/A	GTS213	Mar. 30 2013	Mar. 29 2014
11	Coaxial Cable	GTS	N/A	GTS211	Mar. 30 2013	Mar. 29 2014
12	Coaxial cable	GTS	N/A	GTS210	Mar. 30 2013	Mar. 29 2014
13	Coaxial Cable	GTS	N/A	GTS212	Mar. 30 2013	Mar. 29 2014
14	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2012	Jul. 02 2013
15	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 03 2012	Jul. 02 2013
16	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2012	June 28 2013
17	Band filter	Amindeon	82346	GTS219	Mar. 30 2013	Mar. 29 2014
18	Power Meter	Rohde & Schwarz	NRVD	SEL0069	Mar. 30 2013	Mar. 29 2014
19	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0071	Mar. 30 2013	Mar. 29 2014

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 08 2011	Sep. 07 2013
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 03 2012	Jul. 02 2013
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 03 2012	Jul. 02 2013
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 03 2012	Jul. 02 2013
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 03 2012	Jul. 02 2013
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 03 2012	Jul. 02 2013
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

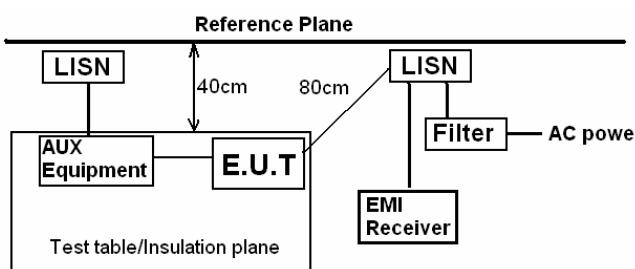
## 7 Test results and Measurement Data

### 7.1 Antenna requirement:

<b>Standard requirement:</b>	FCC Part15 C Section 15.203 /247(c)
<b>15.203 requirement:</b> 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.	
<b>15.247(c) (1)(i) requirement:</b> (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.	
<b>E.U.T Antenna:</b> <i>The antenna is Integral Antenna, the best case gain of the antenna is 0dBi</i>	

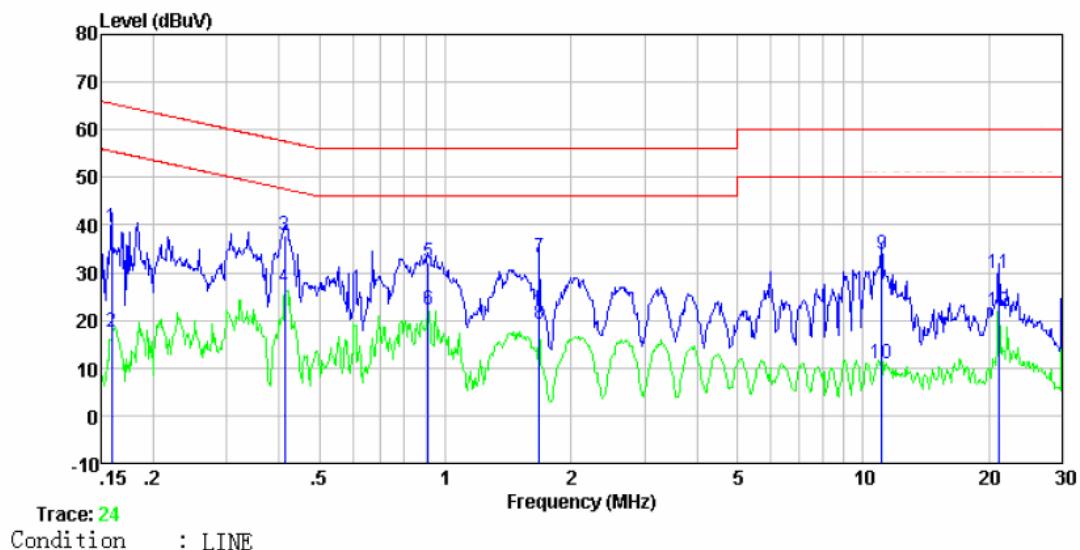


## 7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.4:2003																
Test Frequency Range:	150KHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>			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
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															
	<small>* Decreases with the logarithm of the frequency.</small>																
Test setup:	 <p><i>Remark:</i>  <i>E.U.T: Equipment Under Test</i>  <i>LISN: Line Impedance Stabilization Network</i>  <i>Test table height=0.8m</i></p>																
Test procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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).</li> <li>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.</li> </ol>																
Test Instruments:	Refer to section 6.0 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

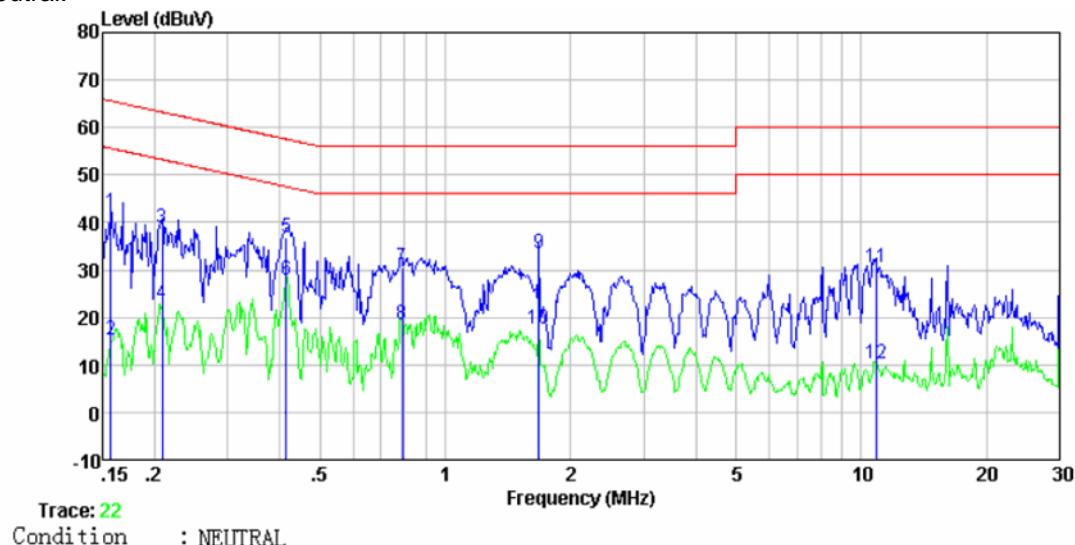
**Measurement data**

Line:



Freq	Read	LISN	Cable	Limit	Over	Remark
	Level	Factor	Loss			
MHz	dBuV	dB	dB	dBuV	dBuV	dB
1	0.159	39.71	-0.26	0.10	39.55	65.52 -25.97 QP
2	0.159	17.71	-0.26	0.10	17.55	55.52 -37.97 Average
3	0.413	37.95	-0.22	0.10	37.83	57.59 -19.76 QP
4	0.413	26.95	-0.22	0.10	26.83	47.59 -20.76 Average
5	0.909	32.42	-0.21	0.10	32.31	56.00 -23.69 QP
6	0.909	22.42	-0.21	0.10	22.31	46.00 -23.69 Average
7	1.680	33.28	-0.23	0.10	33.15	56.00 -22.85 QP
8	1.680	19.28	-0.23	0.10	19.15	46.00 -26.85 Average
9	11.080	34.05	-0.43	0.20	33.82	60.00 -26.18 QP
10	11.080	11.05	-0.43	0.20	10.82	50.00 -39.18 Average
11	21.147	30.43	-0.65	0.21	29.99	60.00 -30.01 QP
12	21.147	22.43	-0.65	0.21	21.99	50.00 -28.01 Average

Neutral:

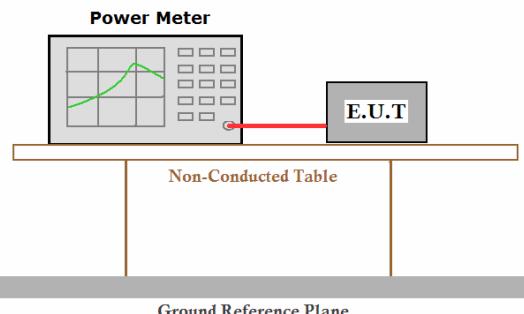


Freq	Read	LISN	Cable	Limit	Over	Remark	
	MHz	Level	Factor				
	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.157	42.25	-0.13	0.10	42.22	65.60	-23.38 QP
2	0.157	15.25	-0.13	0.10	15.22	55.60	-40.38 Average
3	0.208	38.81	-0.09	0.10	38.82	63.27	-24.45 QP
4	0.208	22.81	-0.09	0.10	22.82	53.27	-30.45 Average
5	0.415	36.96	-0.08	0.10	36.98	57.55	-20.57 QP
6	0.415	27.96	-0.08	0.10	27.98	47.55	-19.57 Average
7	0.788	30.52	-0.08	0.10	30.54	56.00	-25.46 QP
8	0.788	18.52	-0.08	0.10	18.54	46.00	-27.46 Average
9	1.680	33.44	-0.10	0.10	33.44	56.00	-22.56 QP
10	1.680	17.44	-0.10	0.10	17.44	46.00	-28.56 Average
11	10.847	30.47	-0.30	0.20	30.37	60.00	-29.63 QP
12	10.847	10.47	-0.30	0.20	10.37	50.00	-39.63 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

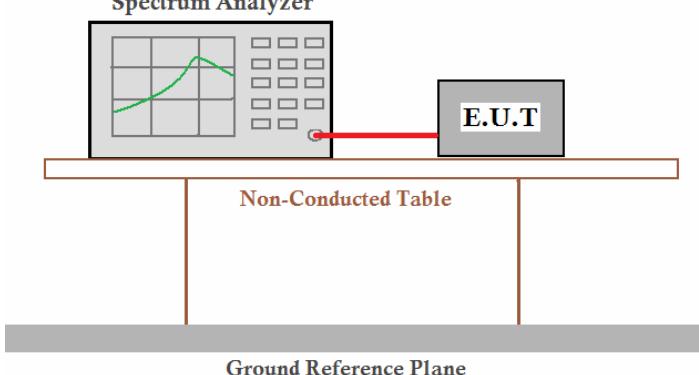
## 7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance v03r01
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

### Measurement Data

Test CH	Peak Output Power (dBm) 802.11b	Limit(dBm)	Result
Lowest	8.23	30.00	Pass
Middle	8.12		
Highest	7.32		

## 7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance v03r01
Limit:	>500KHz
Test setup:	<p style="text-align: center;"><b>Spectrum Analyzer</b></p>  <p style="text-align: center;">Non-Conducted Table</p> <p style="text-align: center;">Ground Reference Plane</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

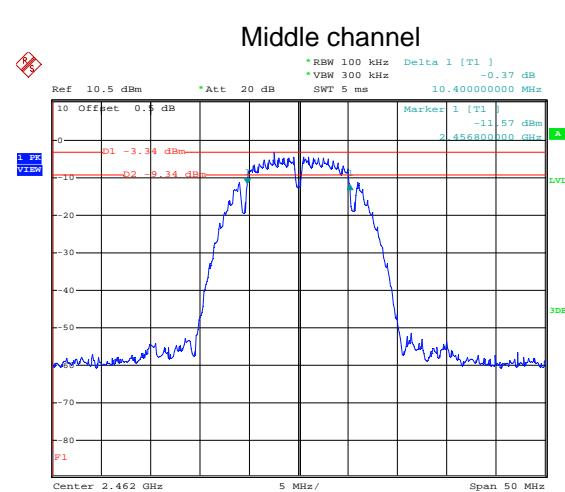
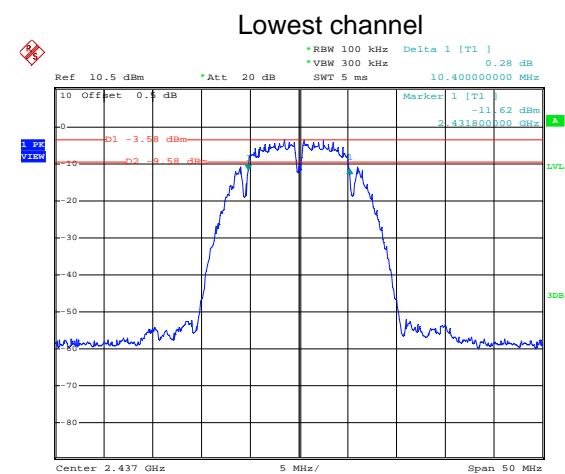
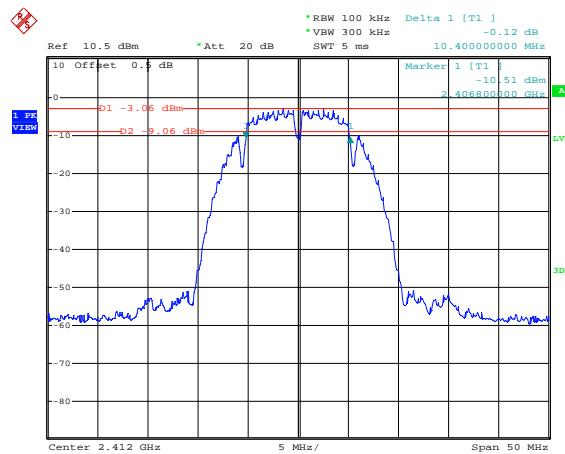
### Measurement Data

Test CH	Channel Bandwidth (MHz)	Limit(KHz)	Result
	802.11b		
Lowest	10.40	>500	Pass
Middle	10.40		
Highest	10.40		

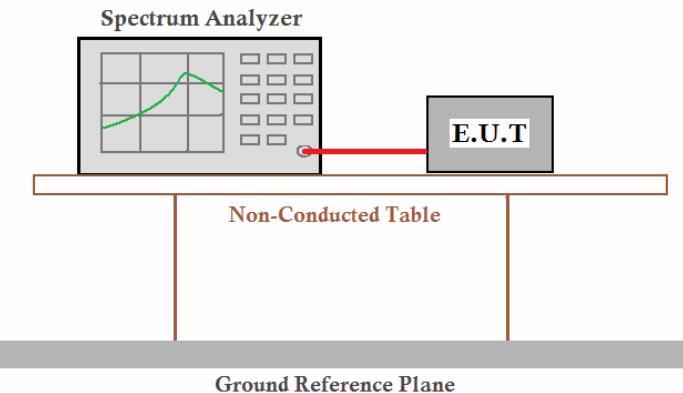
Test plot as follows:

Test mode:

802.11b



## 7.5 Power Spectral Density

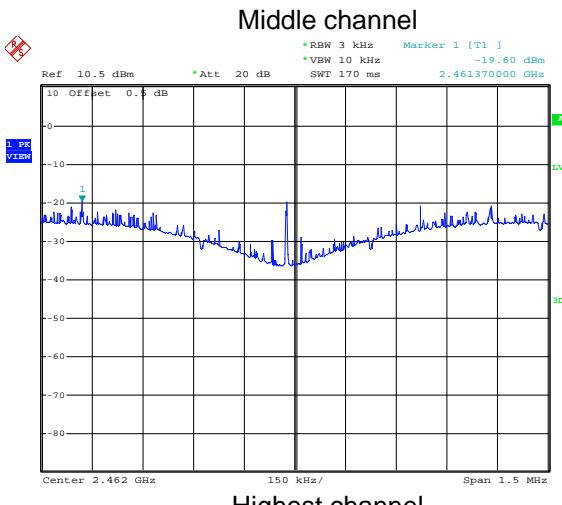
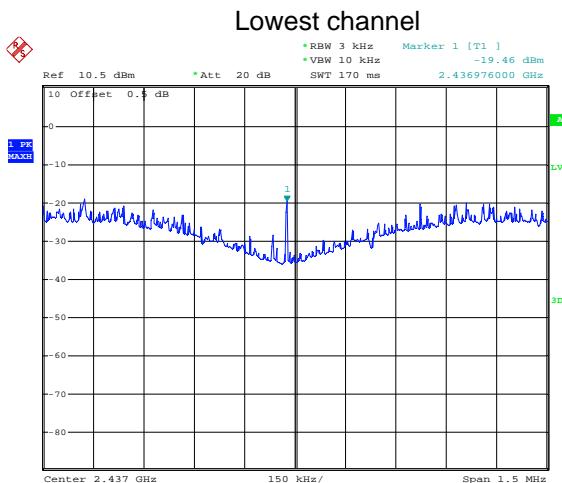
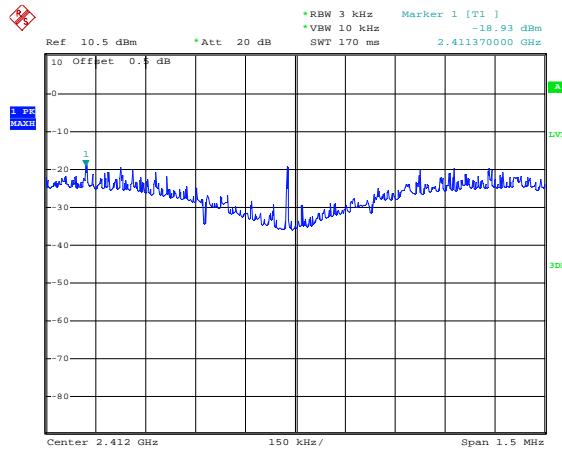
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance v03r01
Limit:	8dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

### Measurement Data

Test CH	Power Spectral Density (dBm)	Limit(dBm/3kHz)	Result
	802.11b		
Lowest	-18.93		
Middle	-19.46		
Highest	-19.60	8.00	Pass

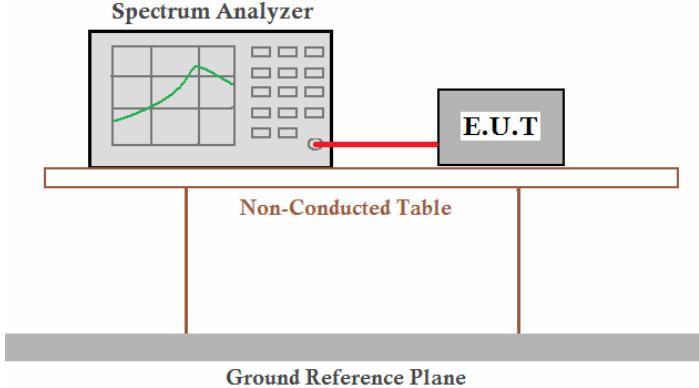
Test plot as follows:

Test mode:	802.11b
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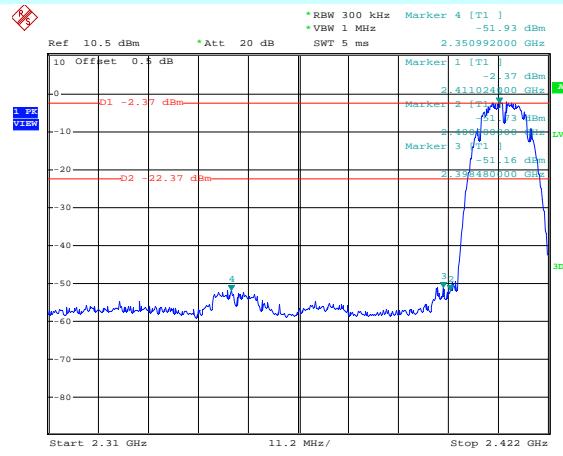
## 7.6 Band edges

### 7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance v03r01
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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

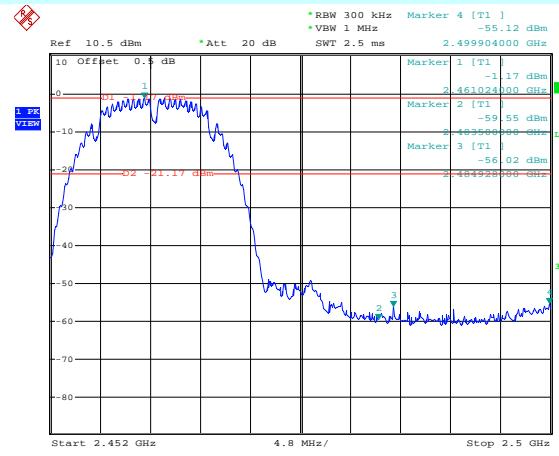
#### Test plot as follows:

##### Test mode:



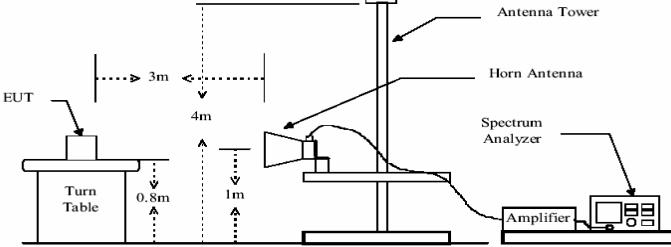
Lowest channel

##### 802.11b



Highest channel

## 7.6.2 Radiated Emission Method

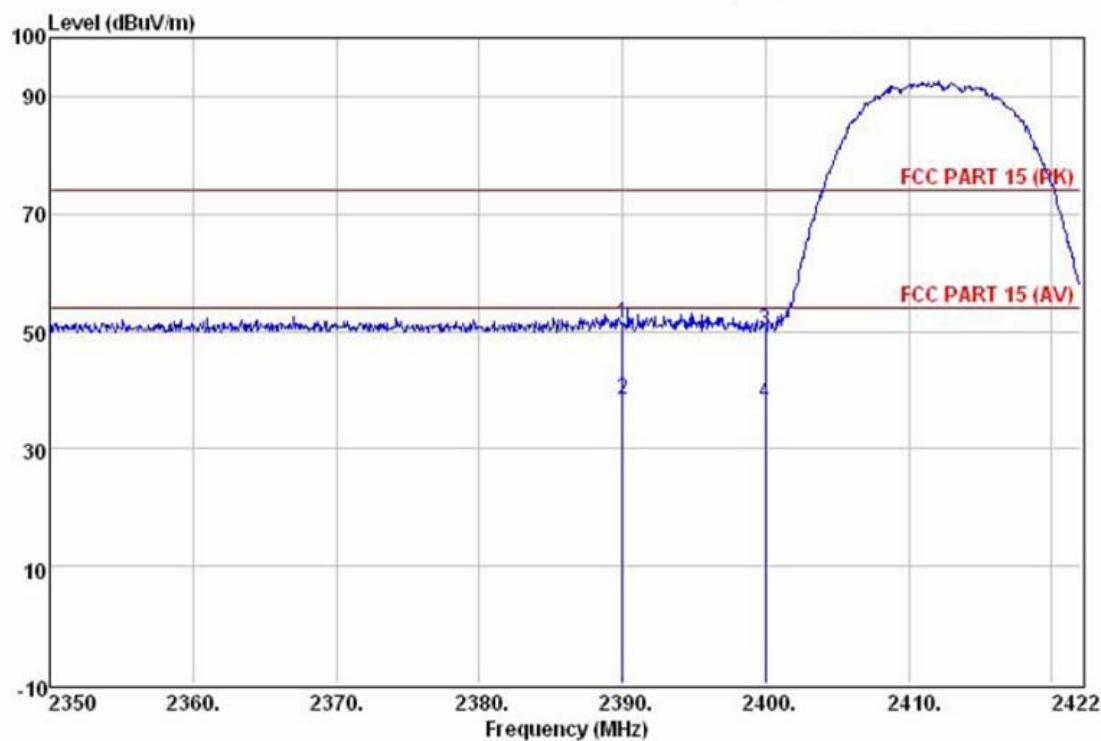
Test Requirement:	FCC Part15 C Section 15.209 and 15.205						
Test Method:	ANSI C63.4: 2003						
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
	Above 1GHz	Peak	1MHz	3MHz	Peak		
		Peak	1MHz	10Hz	Average		
Limit:	Frequency		Limit (dBuV/m @3m)		Value		
	Above 1GHz		54.00		Average		
			74.00		Peak		
Test setup:							
Test Procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> <li>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</li> </ol>						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.3 for details						
Test results:	Pass						

## Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Test mode:	802.11b	Test channel:	Lowest
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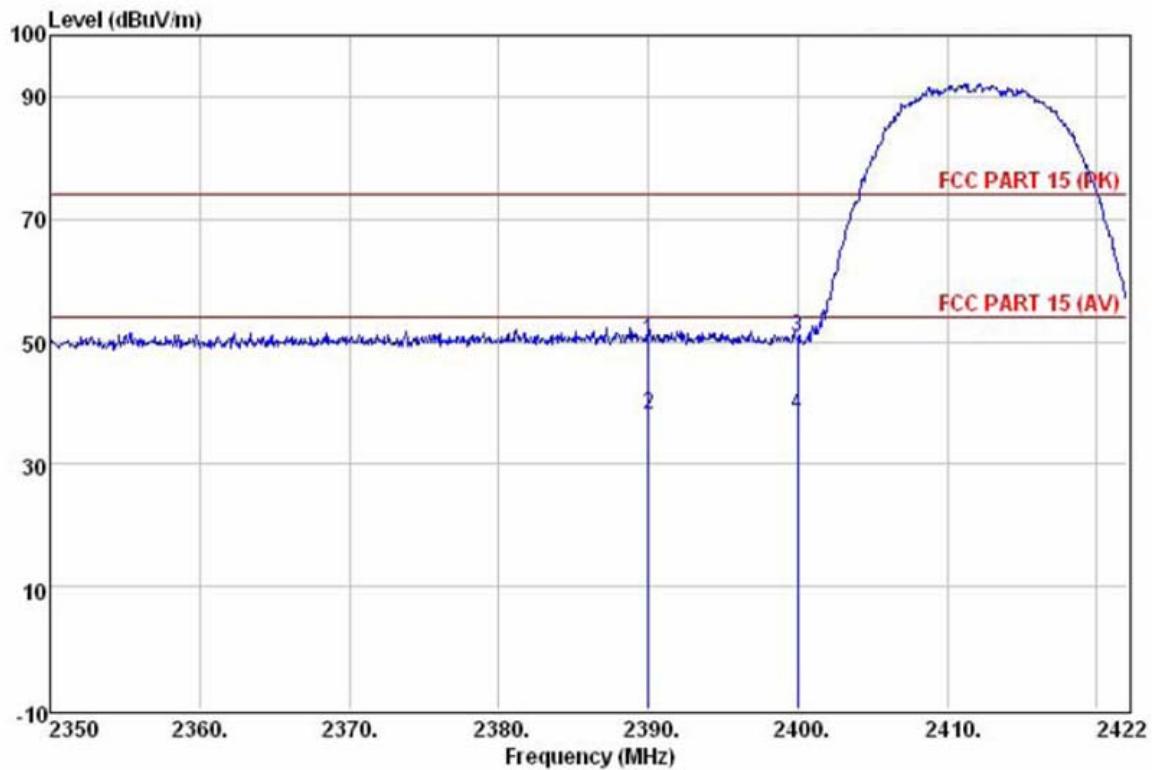
## Horizontal:



Site : 3m chamber

Condition : HORIZONTAL

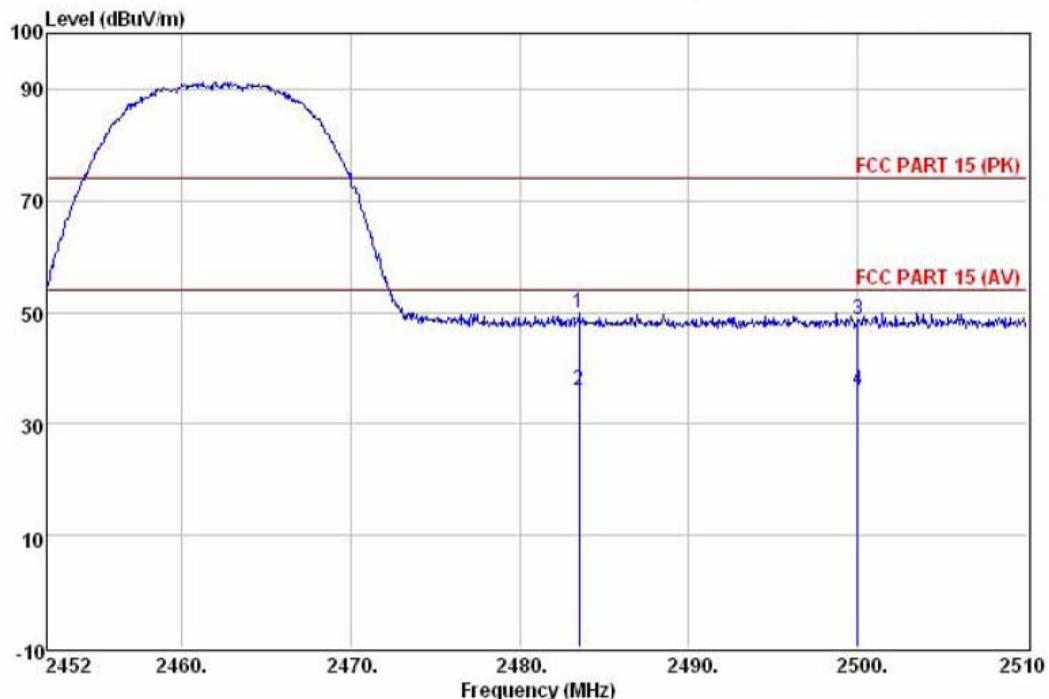
Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Remark
	Freq	Level	Antenna	Loss	Preamp		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 2390.000	50.12	27.58	3.81	30.10	51.41	74.00	-22.59 Peak
2 2390.000	36.95	27.58	3.81	30.10	38.24	54.00	-15.76 Average
3 2400.000	48.86	27.58	3.83	30.10	50.17	74.00	-23.83 Peak
4 2400.000	36.44	27.58	3.83	30.10	37.75	54.00	-16.25 Average

**Vertical:**


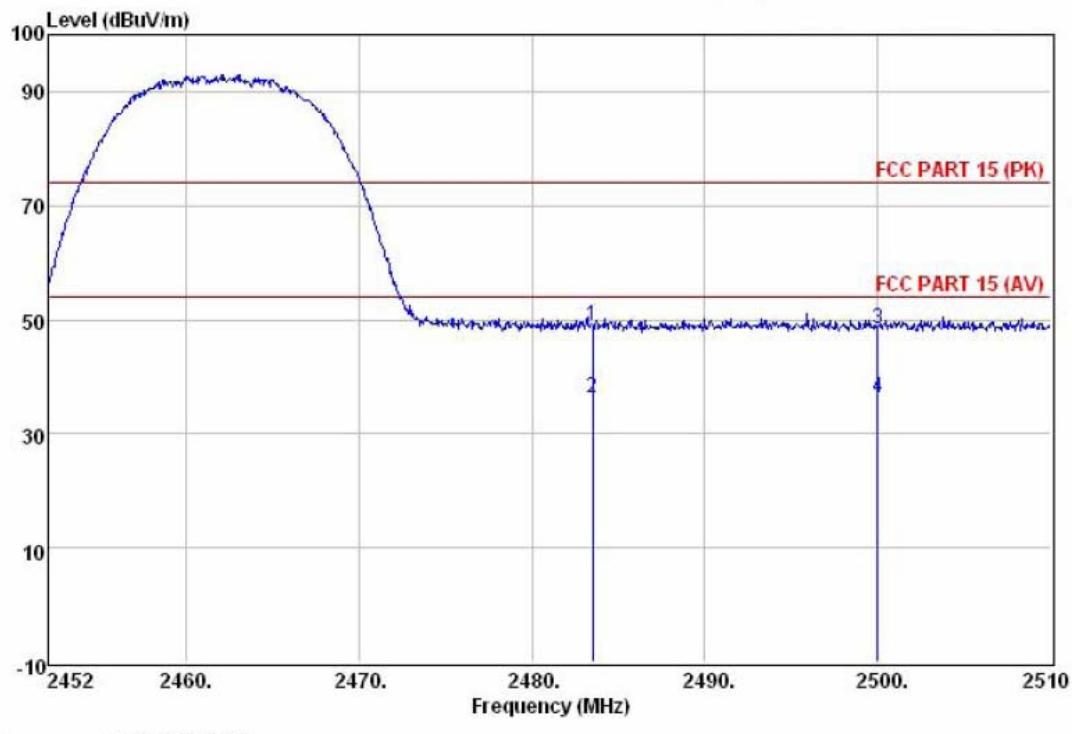
Site : 3m chamber  
 Condition : VERTICAL

Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	Remark
	Level	Factor	Loss	Factor	dBuV	dBuV/m	dB	
1 2390.000	48.73	27.58	3.81	30.10	50.02	74.00	-23.98	Peak
2 2390.000	36.82	27.58	3.81	30.10	38.11	54.00	-15.89	Average
3 2400.000	49.35	27.58	3.83	30.10	50.66	74.00	-23.34	Peak
4 2400.000	36.72	27.58	3.83	30.10	38.03	54.00	-15.97	Average

Test mode:	802.11b	Test channel:	Highest
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**Horizontal:**


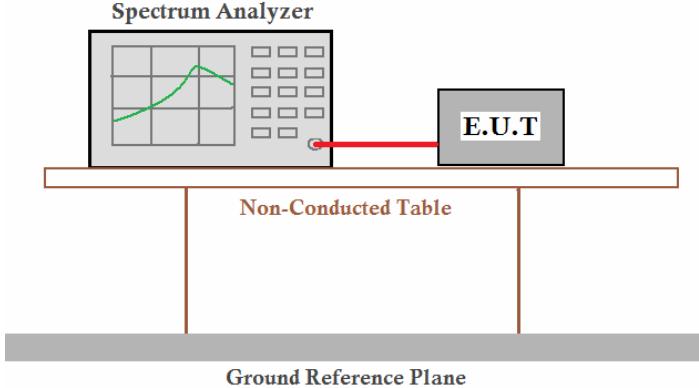
Site	:	3m chamber						
Condition	:	HORIZONTAL						
	ReadAntenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	49.16	27.52	3.89	30.60	49.97	74.00	-24.03 Peak
2	2483.500	35.19	27.52	3.89	30.60	36.00	54.00	-18.00 Average
3	2500.000	47.94	27.55	3.90	30.70	48.69	74.00	-25.31 Peak
4	2500.000	35.21	27.55	3.90	30.70	35.96	54.00	-18.04 Average

**Vertical:**


Site	: 3m chamber					
Condition	: VERTICAL					
	ReadAntenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	2483.500	48.12	27.52	3.89	30.60	48.93
2	2483.500	35.57	27.52	3.89	30.60	36.38
3	2500.000	47.55	27.55	3.90	30.70	48.30
4	2500.000	35.65	27.55	3.90	30.70	36.40

## 7.7 Spurious Emission

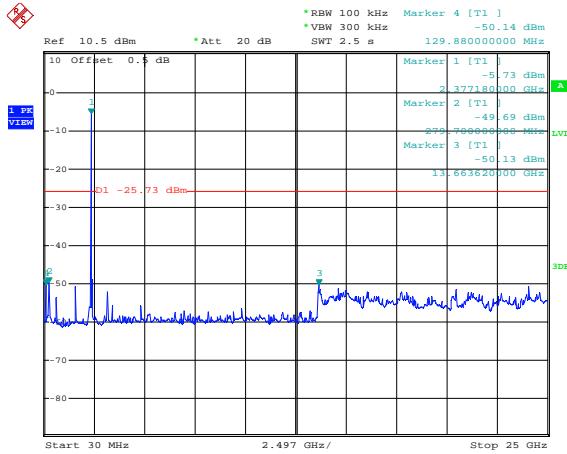
### 7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074 D01 DTS Meas Guidance v03r01
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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

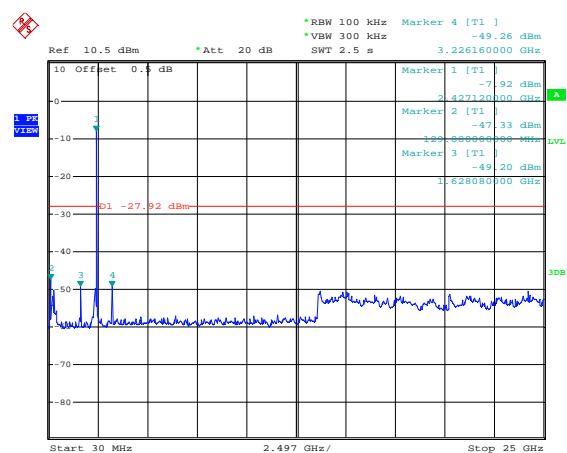
**Test plot as follows:**

Test mode:	802.11b
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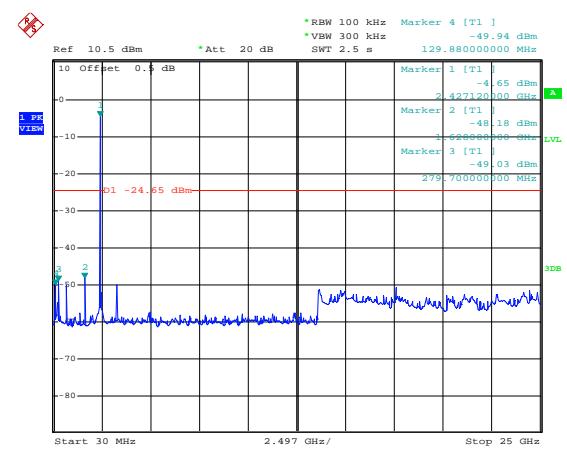
Lowest channel



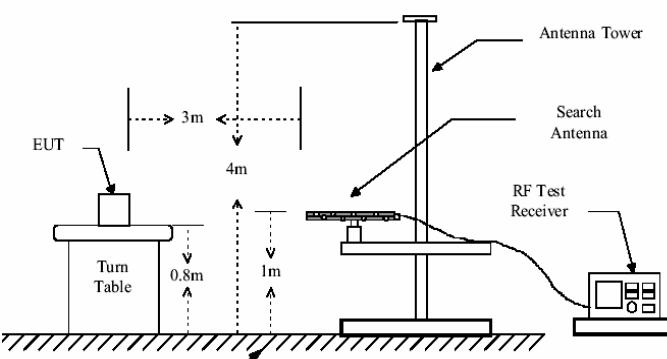
Middle channel

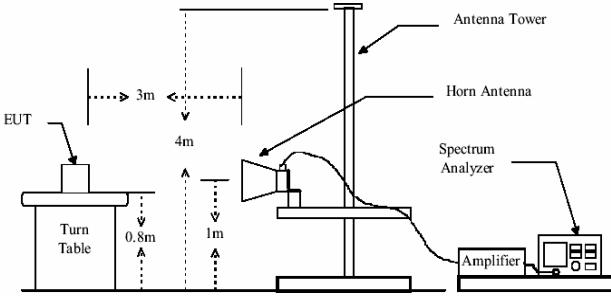


Highest channel



## 7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	9KHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
	AV	1MHz	10Hz	Average	
Limit:	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-1.705MHz	2400/F(KHz)	QP	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	300m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP		
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Above 1GHz	500	Average	3m	
	AV	5000	Peak		
Test setup:	Below 1GHz				
					
	Above 1GHz				

	
Test Procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> <li>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</li> </ol>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

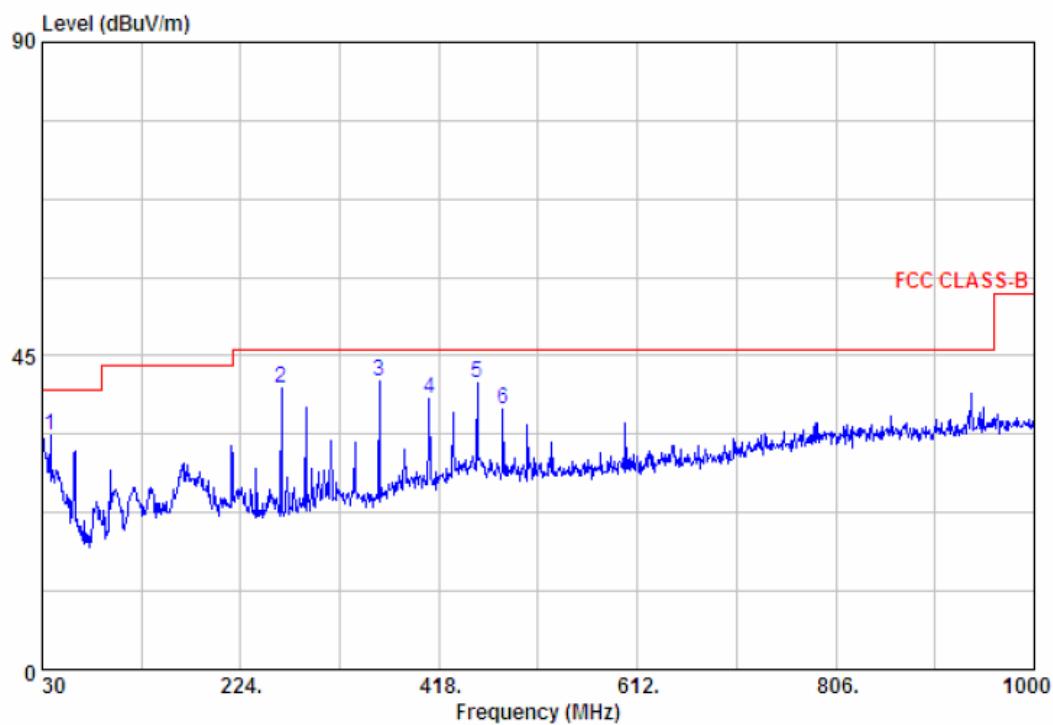
#### Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis which it is worse case.
2. The measured signal level of frequency below 30MHz are attenuated more than 20 dB below the limits, so the data not exhibited in the report.

## Measurement Data

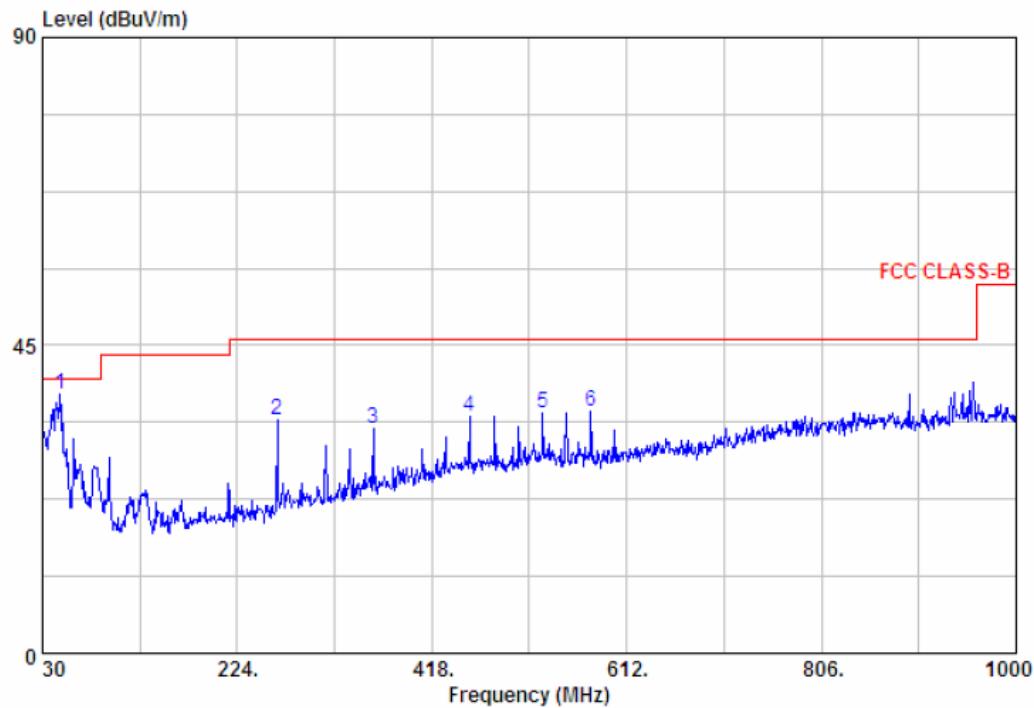
### ■ Below 1GHz

Horizontal:



Condition	FCC CLASS-B 3m HORIZONTAL					Remark
	RBW:100.000KHz VBW:300.000KHz SWT:Auto					
Freq	Level	Line	Limit	Over	Remark	Pol/Phase
			dBuV/m	dBuV/m		
MHz	dBuV/m	dBuV/m	dB	dB		
1	37.76	33.50	40.00	-6.50	QP	HORIZONTAL
2	263.77	40.24	46.00	-5.76	QP	HORIZONTAL
3 max	359.80	41.25	46.00	-4.75	QP	HORIZONTAL
4	408.30	38.81	46.00	-7.19	QP	HORIZONTAL
5	455.83	41.16	46.00	-4.84	QP	HORIZONTAL
6	480.08	37.28	46.00	-8.72	QP	HORIZONTAL

Vertical:



Condition : FCC CLASS-B 3m VERTICAL  
 : RBW:100.000KHz VBW:300.000KHz SWT:Auto

Freq MHz	Level dBuV/m	Limit		Remark	Pol/Phase
		Line	Over dB		
1 max	47.46	37.79	40.00	-2.21 QP	VERTICAL
2	263.77	34.18	46.00	-11.82 QP	VERTICAL
3	359.80	32.73	46.00	-13.27 QP	VERTICAL
4	455.83	34.65	46.00	-11.35 QP	VERTICAL
5	528.58	35.13	46.00	-10.87 QP	VERTICAL
6	576.11	35.25	46.00	-10.75 QP	VERTICAL

## ■ Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
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**Peak value:**

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)	polarization
4824.00	42.72	34.10	5.20	33.00	49.02	74.00	-24.98	Vertical
7236.00	47.62	37.40	6.10	33.50	57.62	74.00	-16.38	Vertical
4824.00	43.47	34.10	5.20	33.00	49.77	74.00	-24.23	Horizontal
7236.00	50.14	37.40	6.10	33.50	60.14	74.00	-13.86	Horizontal

**Average value:**

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)	polarization
4824.00	34.63	34.10	5.20	33.00	40.93	54.00	-13.07	Vertical
7236.00	34.56	37.40	6.10	33.50	44.56	54.00	-9.44	Vertical
4824.00	35.37	34.10	5.20	33.00	41.67	54.00	-12.33	Horizontal
7236.00	36.50	37.40	6.10	33.50	46.50	54.00	-7.50	Horizontal

Test mode:	802.11b	Test channel:	Middle
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**Peak value:**

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)	polarization
4874.00	42.26	34.10	5.20	33.00	48.56	74.00	-25.44	Vertical
7311.00	47.86	37.40	6.10	33.50	57.86	74.00	-16.14	Vertical
4874.00	42.47	34.10	5.20	33.00	48.77	74.00	-25.23	Horizontal
7311.00	49.55	37.40	6.10	33.50	59.55	74.00	-14.45	Horizontal

**Average value:**

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)	polarization
4874.00	34.63	34.1	5.2	33.0	40.93	54.00	-13.07	Vertical
7311.00	33.56	37.4	6.1	33.5	43.56	54.00	-10.44	Vertical
4874.00	35.05	34.1	5.2	33.0	41.35	54.00	-12.65	Horizontal
7311.00	36.05	37.4	6.1	33.5	46.05	54.00	-7.95	Horizontal

Test mode:	802.11b	Test channel:	Highest
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**Peak value:**

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)	polarization
4924.00	41.90	34.10	5.20	33.00	48.20	74.00	-25.80	Vertical
7386.00	37.59	37.40	6.10	33.50	47.59	74.00	-26.41	Vertical
4924.00	41.06	34.10	5.20	33.00	47.36	74.00	-26.64	Horizontal
7386.00	38.31	37.40	6.10	33.50	48.31	74.00	-25.69	Horizontal

**Average value:**

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)	polarization
4924.00	33.82	34.1	5.2	33.0	40.12	54.00	-13.88	Vertical
7386.00	33.58	37.4	6.1	33.5	43.58	54.00	-10.42	Vertical
4924.00	33.93	34.1	5.2	33.0	40.23	54.00	-13.77	Horizontal
7386.00	34.61	37.4	6.1	33.5	44.61	54.00	-9.39	Horizontal

**Remark:**

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*