



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

Telephone: +86 (0) 755 2601 2053

Fax: +86 (0) 755 2671 0594

Email: sgs\_internet\_operations@sgs.com

**FEDERAL COMMUNICATIONS COMMISSION**

Registration number: 556682

Report No.: SZEMO09080483601

Page: 1 of 22

## **TEST REPORT**

**Application No. :** SZEMO090804836TX

**Applicant:** Zoozen Ltd

**Manufacturer:** SHENZHEN HAIS ELECTONIC CO., LTD.

**FCC ID:** XSFPS33032

**Fundamental Carrier** **Frequency :** 2.410GHz to 2.470GHz

**Equipment Under Test (EUT):**

Name: PS3 Controller

Model: HS-P-3032

**Standards:** FCC PART 15: 2008

**Date of Receipt:** 17 August 2009

**Date of Test:** 17 August to 08 September 2009

**Date of Issue:** 10 September 2009

<b>Test Result :</b>	<b>PASS *</b>
----------------------	---------------

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

Authorized Signature:

Robinson Lo  
Manager

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

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

"This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

## 2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
<b>Conducted Emission</b>	FCC PART 15 : 2008	Section 15.207	PASS
<b>Field Strength of Fundamental</b>	FCC PART 15 : 2008	Section 15.249 (a)	PASS
<b>Field Strength of Harmonics or other Frequency Emission</b>	FCC PART 15 : 2008	Section 15.249 (a) Section 15.209/15.205	PASS
<b>Occupied Bandwidth</b>	FCC PART 15 : 2008	Section 15.249	PASS

### **3 Contents**

	Page
<b>1 COVER PAGE .....</b>	<b>1</b>
<b>2 TEST SUMMARY .....</b>	<b>2</b>
<b>3 CONTENTS .....</b>	<b>3</b>
<b>4 GENERAL INFORMATION.....</b>	<b>4</b>
4.1 CLIENT INFORMATION .....	4
4.2 GENERAL DESCRIPTION OF E.U.T .....	4
4.3 DESCRIPTION OF SUPPORT UNITS .....	4
4.4 STANDARDS APPLICABLE FOR TESTING .....	4
4.5 TEST LOCATION .....	4
4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER.....	4
4.7 TEST FACILITY .....	5
<b>5 TEST RESULTS .....</b>	<b>6</b>
5.1 TEST INSTRUMENTS.....	6
5.2 TEST ENVIRONMENT AND TEST MODES.....	7
5.3 TEST PROCEDURE & MEASUREMENT DATA .....	8
5.3.1 <i>Conducted Emissions</i> .....	8
5.3.2 <i>Radiated Emissions</i> .....	13
5.3.3 <i>Occupied Bandwidth</i> .....	21-22

## 4 General Information

### 4.1 Client Information

Applicant Name: Zoozen Ltd  
Manufacturer: SHENZHEN HAIS ELECTRONIC CO., LTD  
Applicant Address: Unit 811 Cyberport RD Pok Fu Lam  
Manufacturer Address: 14 Building, Chen Tian Industrial Zone, BaoMin 2/R, Bao'an, ShenZhen, China

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

Product Name: PS3 Controller  
Model: HS-P-3032  
Operation Frequency: 2410MHz to 2470MHz  
Channel Number: 61  
Modulation Type: GFSK  
Power Supply: Input: 2X1.5(AA)=3.0V  
Power Cord: N/A-

### 4.3 Description of Support Units

The EUT was tested as an independent unit.

### 4.4 Standards Applicable for Testing

The customer requested FCC tests for a 2.4G wireless product

The standard used was FCC PART 15, SUBPART C (2008) section 15.249.

### 4.5 Test Location

All tests were performed at:

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

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

No tests were sub-contracted.

### 4.6 Other Information Requested by the Customer

None.

## 4.7 Test Facility

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

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

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682, June 27, 2008.

- **Industry Canada (IC)**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

## 5 Test Results

### 5.1 Test Instruments

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2009	15-06-2010
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2008	11-12-2009
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2009	17-06-2010
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2009	11-08-2010
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2009	17-06-2010
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2009	11-08-2010
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2009	11-08-2010
9	Pre-amplifier (1-18GHz)	Rohde & Schwarz	AFS42-00101 800-25-S-42	SEL0081	18-06-2009	17-06-2010
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	18-06-2009	17-06-2010
11	Band filter	Amindeon	82346	SEL0094	18-06-2009	17-06-2010
12	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	15-06-2009	14-06-2010

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	N/A	N/A
2	LISN	ETS-LINDGREN	3816/2	SEL0021	18-06-2009	17-06-2010
3	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	EMC0120	21-02-2009	21-02-2010
4	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	21-02-2009	21-02-2010
5	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	21-02-2009	21-02-2010
6	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	18-06-2009	17-06-2010
7	Coaxial Cable	SGS	N/A	SEL0024	18-06-2009	17-06-2010

## 5.2 Test environment and Test modes

### Operating Environment:

Temperature: 24°C  
Humidity: 50 % RH  
Atmospheric Pressure: 1010 mbar

### Test modes:

Operation mode: Keep the EUT connect to PS3 primary and exchange data.  
PS3 primary charge mode: Primary charge to remote by USB cable (no transmit)  
PC charge mode: PC charge to remote by USB cable (no transmit)

### Verify the Frequency and Channel

Channel	Frequency (MHz)						
1	2410	17	2426	33	2442	49	2458
2	2411	18	2427	34	2443	50	2459
3	2412	19	2428	35	2444	51	2460
4	2413	20	2429	36	2445	52	2461
5	2414	21	2430	37	2446	53	2462
6	2415	22	2431	38	2447	54	2463
7	2416	23	2432	39	2448	55	2464
8	2417	24	2433	40	2449	56	2465
9	2418	25	2434	41	2450	57	2466
10	2419	26	2435	42	2451	58	2467
11	2420	27	2436	43	2452	59	2468
12	2421	28	2437	44	2453	60	2469
13	2422	29	2438	45	2454	61	2470
14	2423	30	2439	46	2455		
15	2424	31	2440	47	2456		
16	2425	32	2441	48	2457		

### 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	2410MHz
The middle channel	2440MHz
The Highest channel	2470MHz

## 5.3 Test Procedure & Measurement Data

### 5.3.1 Conducted Emissions

Test Requirement: FCC Part 15.207  
Test Method: ANSI C63.4: 2003  
Frequency Range: 150KHz to 30MHz  
Class / Severity: Class B  
Detector: Peak for pre-scan (9kHz Resolution Bandwidth)  
Quasi-Peak if maximized peak within 6dB of Quasi-Peak limit  
Test status: PS3 primary charge mode and PC charge mode

#### 5.3.1.1 Measurement Data

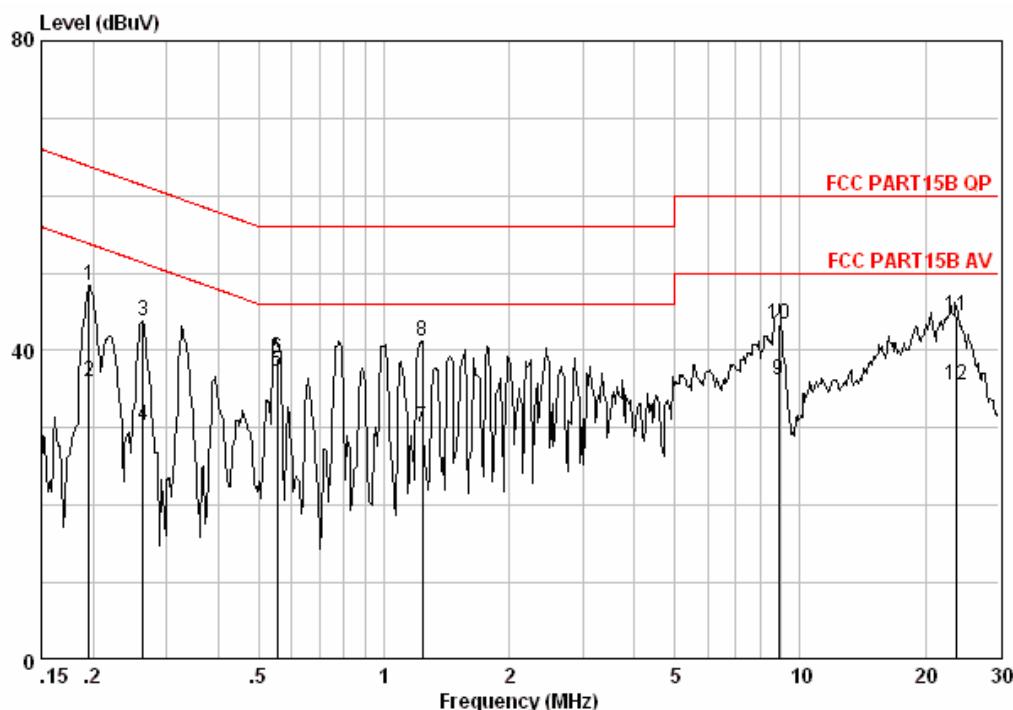
An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT communicating with worst case mode.

**The following Quasi-Peak and Average measurements were performed on the EUT:**

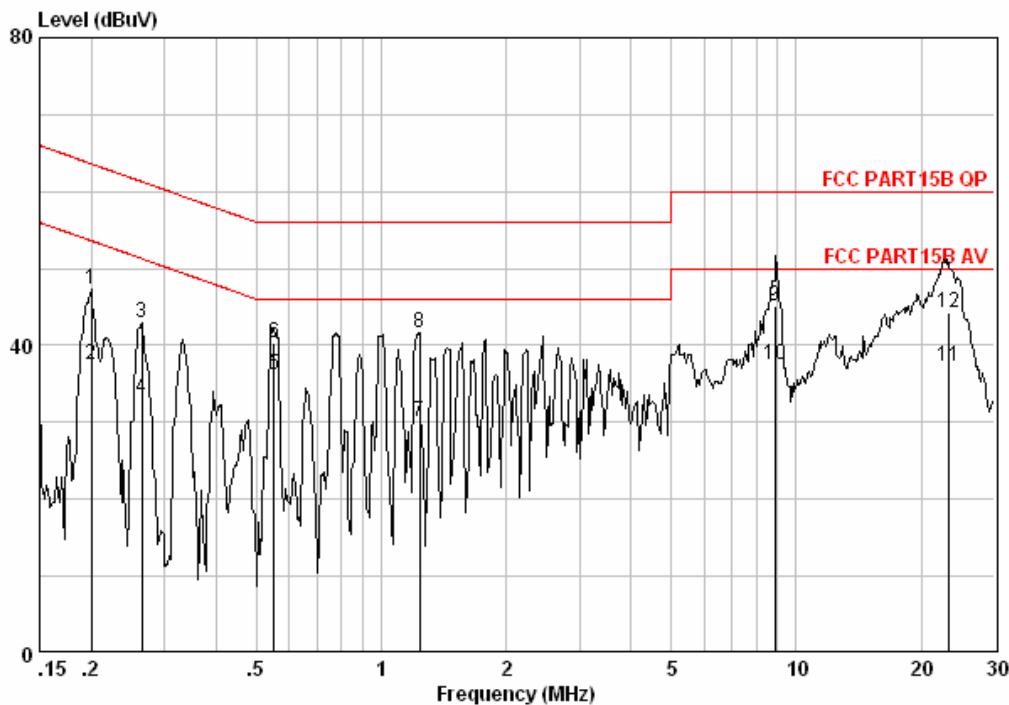
**PS3 primary charge mode:**

**Live line:**



Site : Shielding Room  
 Condition : FCC PART15B QP CE LINE  
 EUT : PS3  
 Job No. : 4836TX  
 MODE : PS3 primary charge mode

Freq	Cable	LISN	Read	Limit	Over	Remark	
	Loss	Factor	Level				
	MHz	dB	dB	dBuV	dBuV	dB	
1 0	0.19550	0.04	-0.05	48.42	48.41	63.80	-15.39 QP
2 0	0.19550	0.04	-0.05	35.90	35.89	53.80	-17.91 Average
3 0	0.26303	0.05	-0.04	43.84	43.85	61.34	-17.49 QP
4 0	0.26303	0.05	-0.04	30.20	30.20	51.34	-21.13 Average
5 0	0.55440	0.06	-0.04	37.30	37.32	46.00	-8.68 Average
6 0	0.55440	0.06	-0.04	39.00	39.02	56.00	-16.98 QP
7 0	1.236	0.09	-0.05	30.10	30.14	46.00	-15.86 Average
8 0	1.236	0.09	-0.05	41.17	41.21	56.00	-14.79 QP
9 0	8.893	0.21	-0.24	36.30	36.27	50.00	-13.73 Average
10 0	8.893	0.21	-0.24	43.50	43.47	60.00	-16.53 QP
11 0	23.670	0.28	-0.73	44.90	44.45	60.00	-15.55 QP
12 0	23.670	0.28	-0.73	35.90	35.45	50.00	-14.55 Average

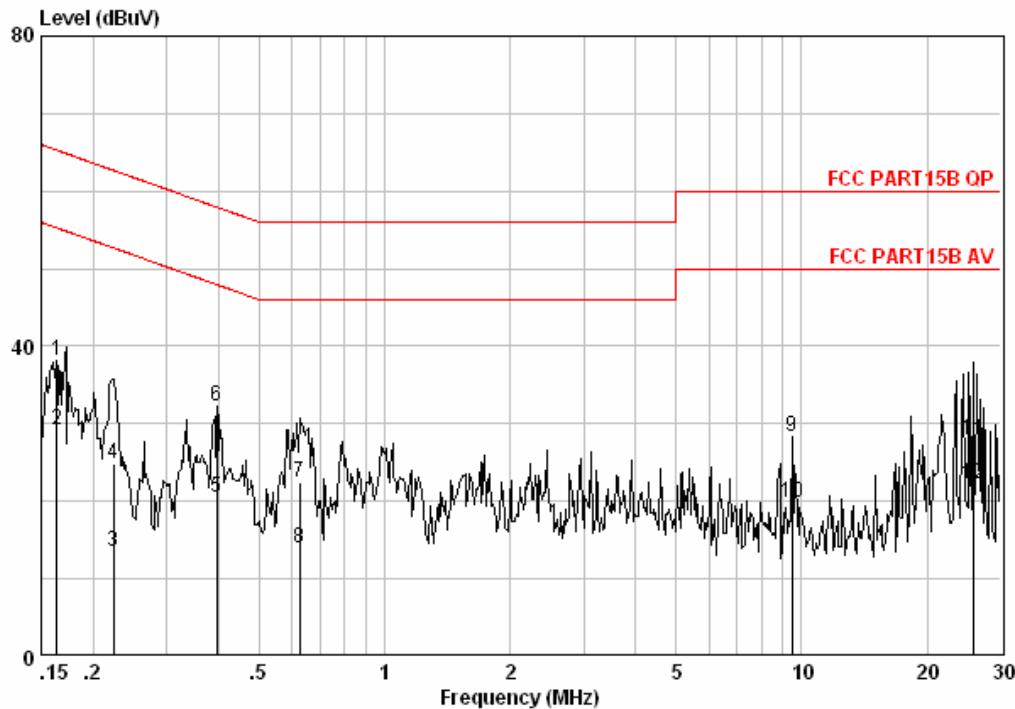
**Neutral line:**


Site : Shielding Room  
 Condition : FCC PART15B QP CE NEUTRAL  
 EUT : PS3  
 Job No. : 4836TX  
 MODE : PS3 primary charge mode

	Freq	Cable	LISN	Read	Limit	Over	Remark
		Loss	Factor	Level			
	MHz	dB	dB	dBuV	dBuV	dBuV	dB
1 @	0.19969	0.04	-0.04	47.27	47.27	63.62	-16.36 QP
2 @	0.19969	0.04	-0.04	37.50	37.50	53.62	-16.12 Average
3 @	0.26442	0.05	-0.04	42.92	42.92	61.29	-18.37 QP
4 @	0.26442	0.05	-0.04	33.20	33.21	51.29	-18.08 Average
5 @	0.55020	0.06	-0.04	36.10	36.12	46.00	-9.88 Average
6 @	0.55020	0.06	-0.04	40.20	40.22	56.00	-15.78 QP
7 @	1.236	0.09	-0.05	30.10	30.14	46.00	-15.86 Average
8 @	1.236	0.09	-0.05	41.66	41.71	56.00	-14.29 QP
9 @	8.871	0.21	-0.27	45.10	45.04	60.00	-14.96 QP
10 @	8.871	0.21	-0.27	37.60	37.54	50.00	-12.46 Average
11 @	23.350	0.28	-0.92	38.00	37.36	50.00	-12.64 Average
12 @	23.350	0.28	-0.92	44.80	44.16	60.00	-15.84 QP

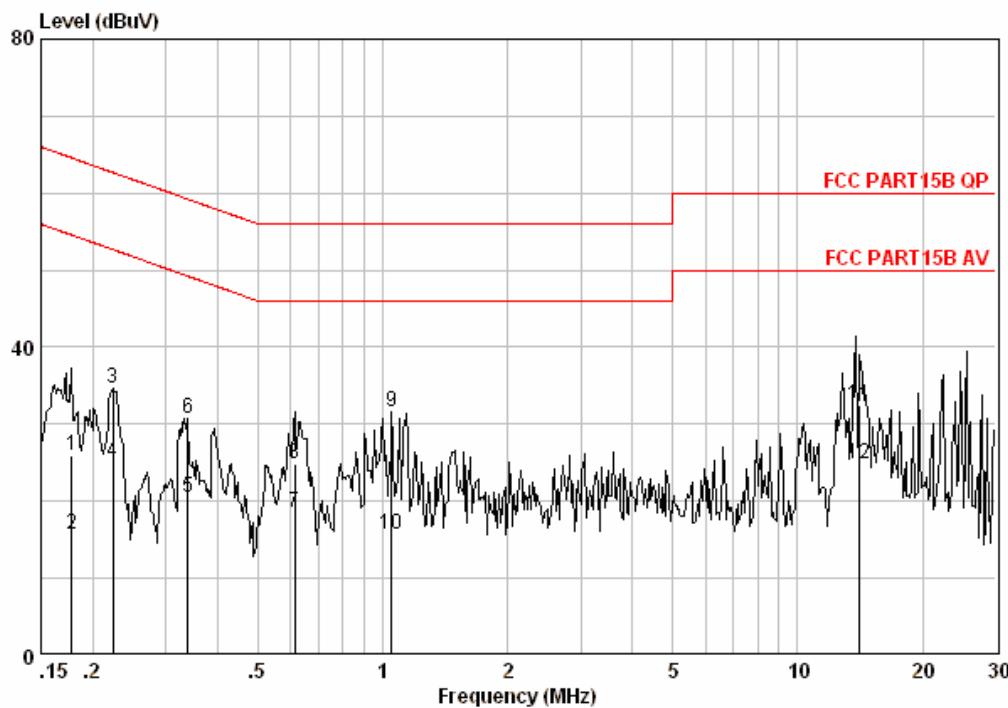
**PC charge mode:**

Live line:



Site : Shielding Room  
 Condition : FCC PART15B QP CE LINE  
 EUT : PS3  
 Job No. : 4836TX  
 MODE : PC CHARGE MODE

Freq	Cable	LISN	Read	Limit	Over	Remark	
	Loss	Factor	Level				
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.16327	0.04	-0.05	38.23	38.22	65.30	-27.07 QP
2	0.16327	0.04	-0.05	29.20	29.19	55.30	-26.11 Average
3	0.22319	0.04	-0.04	13.60	13.60	52.70	-39.10 Average
4	0.22319	0.04	-0.04	24.80	24.80	62.70	-37.90 QP
5	0.39553	0.06	-0.04	20.50	20.51	47.95	-27.43 Average
6	0.39553	0.06	-0.04	32.21	32.22	57.95	-25.72 QP
7	0.62383	0.06	-0.05	22.40	22.41	56.00	-33.59 QP
8	0.62383	0.06	-0.05	13.90	13.91	46.00	-32.09 Average
9	9.502	0.22	-0.27	28.46	28.41	60.00	-31.59 QP
10	9.502	0.22	-0.27	19.80	19.75	50.00	-30.25 Average
11	25.727	0.29	-0.79	28.50	28.00	60.00	-32.00 QP
12	25.727	0.29	-0.79	22.80	22.30	50.00	-27.70 Average

**Neutral line:**


Site : Shielding Room  
 Condition : FCC PART15B QP CE NEUTRAL  
 EUT : PS3  
 Job No. : 4836TX  
 MODE : PC CHARGE MODE

	Freq	Cable	LISN	Read	Limit	Over	Remark
		MHz	Loss	Factor	Level	Level	
1	0.17800	0.04	-0.04	25.90	25.90	64.58	-38.68 QP
2	0.17800	0.04	-0.04	15.80	15.80	54.58	-38.78 Average
3	0.22319	0.04	-0.04	34.69	34.69	62.70	-28.01 QP
4	0.22319	0.04	-0.04	25.10	25.10	52.70	-27.60 Average
5	0.33920	0.05	-0.04	20.50	20.51	49.22	-28.71 Average
6	0.33920	0.05	-0.04	30.78	30.79	59.22	-28.43 QP
7	0.61420	0.06	-0.04	18.60	18.62	46.00	-27.38 Average
8	0.61420	0.06	-0.04	24.90	24.92	56.00	-31.08 QP
9 @	1.049	0.08	-0.05	31.62	31.66	56.00	-24.34 QP
10	1.049	0.08	-0.05	15.70	15.74	46.00	-30.26 Average
11	14.010	0.24	-0.43	32.70	32.51	60.00	-27.49 QP
12 @	14.010	0.24	-0.43	25.10	24.91	50.00	-25.09 Average

### 5.3.2 Radiated Emissions

#### 5.3.2.1 Test in transmitting mode

Test Requirement: FCC Part15.249,15.209 and 15.205

Test Method: ANSI C63.4:2003

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range 30 MHz – 25GHz

Test instrumentation resolution bandwidth

Frequency Range	Detector	RBW/VBW	Remark
30MHz to 1000MHz	Quasi-Peak	120KHz/300KHz	Quasi-Peak
1GHz to 25GHz	Peak	1MHz/3MHz	Peak value
	Peak	1MHz/10Hz	Average value

Operation: Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

The fundamental frequency of the EUT is 2.410GHz to 2.470GHz

The limit for average field strength dBuV/m for the fundamental frequency = 94.0 dB $\mu$ V/m.

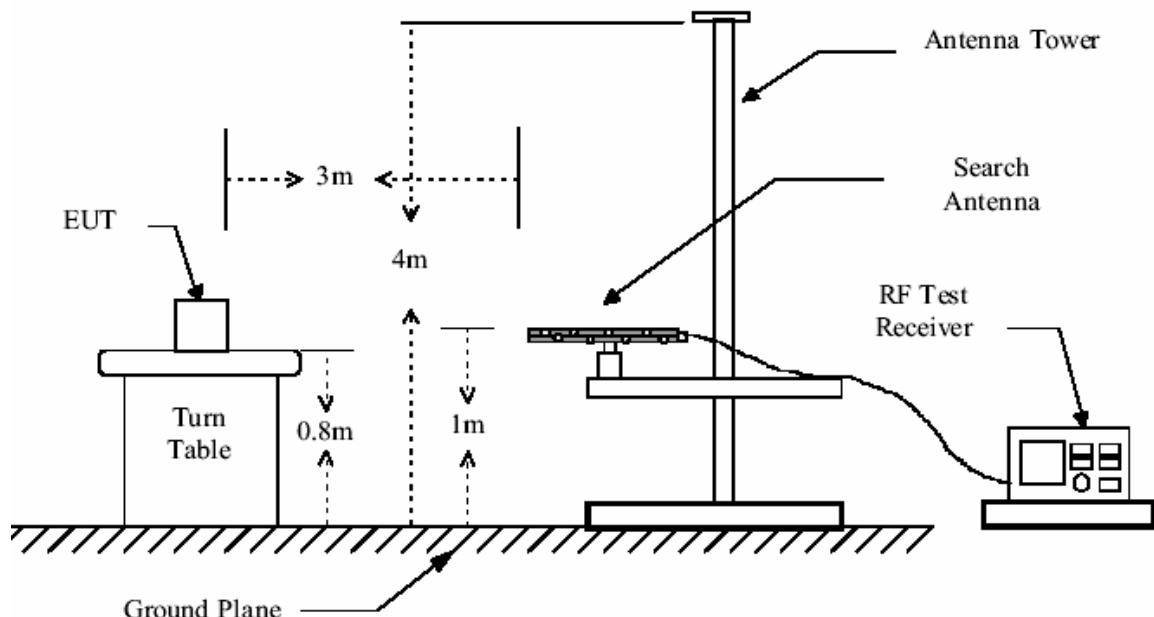
No fundamental is allowed in the restricted bands.

#### Test Procedure:

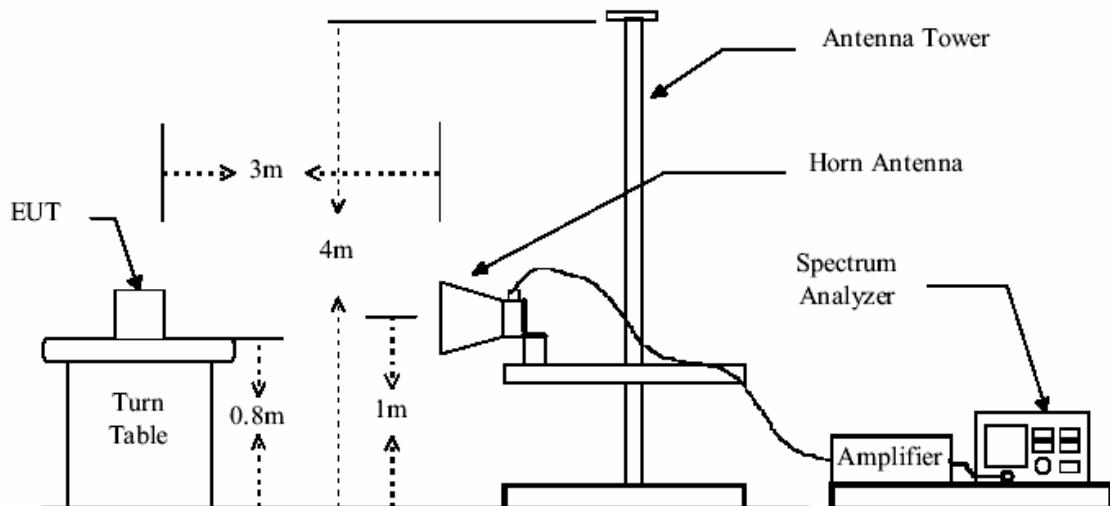
1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
- 7 The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

**Test Configuration:**

Below 1GHz



Above 1GHz



The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

The following test results were performed on the EUT:

1. The following test results were performed at 30MHz—1GHz

Operation mode:

Vertical:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
31.940	0.60	14.43	28.17	45.79	32.65	40.00	-7.35
48.430	0.77	8.47	28.11	46.91	28.04	40.00	-11.96
94.020	1.14	8.87	27.92	51.51	33.60	43.50	-9.90
160.950	1.34	9.59	27.38	52.97	36.52	43.50	-6.98
330.700	2.00	14.95	26.95	38.43	28.43	46.00	-17.57
431.580	2.33	16.52	27.51	38.92	30.26	46.00	-15.74

Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
106.630	1.22	8.77	27.81	48.08	30.26	43.50	-13.24
156.100	1.33	9.39	27.41	52.27	35.58	43.50	-7.92
214.300	1.49	10.93	27.08	47.60	32.94	43.50	-10.56
288.020	1.85	13.40	26.76	43.79	32.28	46.00	-13.72
311.300	1.94	14.33	26.81	43.27	32.73	46.00	-13.27
431.580	2.33	16.52	27.51	41.00	32.34	46.00	-13.66

PS3 primary charge mode

Vertical:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
59.100	0.80	7.27	28.06	47.30	27.31	40.00	-12.69
94.020	1.14	8.87	27.92	49.64	31.73	43.50	-11.77
162.420	1.34	9.58	27.37	53.00	36.55	43.50	-6.95
180.350	1.37	9.91	27.26	49.10	33.12	43.50	-10.38
326.820	1.99	14.86	26.93	37.75	27.67	46.00	-18.33
431.580	2.33	16.52	27.51	38.99	30.33	46.00	-15.67

Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
59.100	0.80	7.31	28.06	43.75	23.80	40.00	-16.20
94.020	1.14	8.87	27.92	44.11	26.20	43.50	-17.30
118.270	1.25	8.02	27.70	51.44	33.01	43.50	-10.49
160.221	1.34	9.59	27.38	52.50	36.05	43.50	-7.45
250.190	1.68	12.30	26.91	45.94	33.01	46.00	-12.99
431.580	2.33	16.52	27.51	39.67	31.01	46.00	-14.99

PC charge mode

Vertical:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
47.460	0.75	8.72	28.11	43.47	24.83	40.00	-15.17
63.950	0.80	7.07	28.03	49.93	29.77	40.00	-10.23
132.002	1.28	7.78	27.59	55.00	36.47	43.50	-7.03
238.550	1.62	11.93	26.96	41.96	28.55	46.00	-17.45
431.580	2.33	16.52	27.51	35.97	27.31	46.00	-18.69
797.270	3.19	22.09	26.95	42.24	40.57	46.00	-5.43

Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
118.270	1.25	8.02	27.70	52.30	33.87	43.50	-9.63
129.910	1.28	7.70	27.61	51.58	32.95	43.50	-10.55
153.190	1.32	9.18	27.43	48.95	32.02	43.50	-11.48
179.380	1.37	9.87	27.26	47.47	31.45	43.50	-12.05
238.550	1.62	11.93	26.96	45.59	32.18	46.00	-13.82
431.580	2.33	16.52	27.51	38.03	29.37	46.00	-16.63

2. The following test results were performed at above 1GHz

2410MHz:

Harmonics & Spurious Emissions

Peak Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2410	6.34	30.03	38.87	85	82.5	114	-31.5	Vertical
2390	6.28	29.98	39.03	40.00	37.23	74.00	-36.77	Vertical
2400	6.34	30.03	38.87	38.00	35.50	74.00	-38.50	Vertical
2122	5.72	28.99	39.55	47.00	42.16	74.00	-31.84	Vertical
3397	7.22	32.42	39.85	46.35	46.14	74.00	-27.86	Vertical
4808	9.36	34.25	41.53	45.73	47.81	74.00	-26.19	Vertical
7222	13.30	37.24	40.88	46.19	55.85	74.00	-18.15	Vertical
9619	13.39	37.99	37.56	41.26	55.08	74.00	-18.92	Vertical
12033	16.77	39.12	39.13	42.92	59.68	74.00	-14.32	Vertical
2410	6.34	30.03	38.87	85.3	82.8	114	-31.2	Horizontal
2390	6.28	29.98	39.03	40.00	37.23	74.00	-36.77	Horizontal
2400	6.34	30.03	38.87	39.00	36.50	74.00	-37.50	Horizontal
2462	6.70	30.25	39.61	44.94	42.28	74.00	-31.72	Horizontal
3346	7.05	32.36	39.47	44.92	44.86	74.00	-29.14	Horizontal
4808	9.36	34.25	41.53	46.19	48.27	74.00	-25.73	Horizontal
7222	13.30	37.24	40.88	45.24	54.90	74.00	-19.10	Horizontal
9619	13.39	37.99	37.56	41.13	54.95	74.00	-19.05	Horizontal
12033	16.77	39.12	39.13	42.80	59.56	74.00	-14.44	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2410	6.34	30.03	38.87	84	81.5	94	-12.50	Vertical
2390	6.28	29.98	39.03	25.00	22.23	54.00	-31.77	Vertical
2400	6.34	30.03	38.87	25.50	23.00	54.00	-31.00	Vertical
2122	5.72	28.99	39.55	37.49	32.65	54.00	-21.35	Vertical
3397	7.22	32.42	39.85	36.80	36.59	54.00	-17.41	Vertical
4808	9.36	34.25	41.53	34.00	36.08	54.00	-17.92	Vertical
7222	13.30	37.24	40.88	35.86	45.52	54.00	-8.48	Vertical
9619	13.39	37.99	37.56	32.00	45.82	54.00	-8.18	Vertical
12033	16.77	39.12	39.13	32.88	49.64	54.00	-4.36	Vertical
2410	6.34	30.03	38.87	85	82.5	94	-11.5	Horizontal
2390	6.28	29.98	39.03	26.00	23.23	54.00	-30.77	Horizontal
2400	6.34	30.03	38.87	26.00	23.50	54.00	-30.50	Horizontal
2462	6.70	30.25	39.61	34.20	31.54	54.00	-22.46	Horizontal
3346	7.05	32.36	39.47	34.61	34.55	54.00	-19.45	Horizontal
4808	9.36	34.25	41.53	37.08	39.16	54.00	-14.84	Horizontal
7222	13.30	37.24	40.88	36.05	45.71	54.00	-8.29	Horizontal
9619	13.39	37.99	37.56	30.87	44.69	54.00	-9.31	Horizontal
12033	16.77	39.12	39.13	32.95	49.71	54.00	-4.29	Horizontal

2440MHz:

## . Harmonics &amp; Spurious Emissions

## Peak Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2440	6.4	30.18	38.59	86	83.99	114	-30.01	Vertical
2955	6.51	31.78	39.19	45.45	44.55	74.00	-29.45	Vertical
4247	8.65	33.46	40.52	45.48	47.07	74.00	-26.93	Vertical
4876	10.36	34.34	39.89	45.90	50.71	74.00	-23.29	Vertical
7324	12.91	37.31	40.40	44.36	54.18	74.00	-19.82	Vertical
9772	13.99	38.04	38.01	42.24	56.26	74.00	-17.74	Vertical
12220	17.95	39.23	39.30	41.50	59.38	74.00	-14.62	Vertical
2440	6.4	30.18	38.59	85	82.99	114	-31.01	Horizontal
2462	6.70	30.25	39.61	45.45	42.79	74.00	-31.21	Horizontal
3091	7.47	32.02	39.86	45.77	45.40	74.00	-28.60	Horizontal
4876	10.36	34.34	39.89	46.11	50.92	74.00	-23.08	Horizontal
7307	12.99	37.30	40.50	44.55	54.34	74.00	-19.66	Horizontal
9738	13.79	38.02	37.86	42.44	56.39	74.00	-17.61	Horizontal
12220	17.95	39.23	39.30	40.83	58.71	74.00	-15.29	Horizontal

## Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2440	6.4	30.18	38.59	85.8	83.79	94	-10.21	Vertical
2955	6.51	31.78	39.19	32.79	31.89	54.00	-22.11	Vertical
4247	8.65	33.46	40.52	35.80	37.39	54.00	-16.61	Vertical
4876	10.36	34.34	39.89	34.60	39.41	54.00	-14.59	Vertical
7324	12.91	37.31	40.40	33.70	43.52	54.00	-10.48	Vertical
9772	13.99	38.04	38.01	31.39	45.41	54.00	-8.59	Vertical
12220	17.95	39.23	39.30	30.80	48.68	54.00	-5.32	Vertical
2440	6.4	30.18	38.59	82.9	80.89	94	-13.11	Horizontal
2462	6.70	30.25	39.61	35.20	32.54	54.00	-21.46	Horizontal
3091	7.47	32.02	39.86	34.90	34.53	54.00	-19.47	Horizontal
4876	10.36	34.34	39.89	36.30	41.11	54.00	-12.89	Horizontal
7307	12.99	37.30	40.50	34.80	44.59	54.00	-9.41	Horizontal
9738	13.79	38.02	37.86	31.50	45.45	54.00	-8.55	Horizontal
12220	17.95	39.23	39.30	29.60	47.48	54.00	-6.52	Horizontal

2470MHz:

## Harmonics &amp; Spurious Emissions

## Peak Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2470	6.45	30.3	39.72	85.9	82.93	114	-31.07	Vertical
2483.5	6.22	30.32	39.53	38.00	35.01	74.00	-38.99	Vertical
2500	5.76	30.37	39.15	37.00	33.98	74.00	-40.02	Vertical
2343	6.11	29.84	39.51	44.16	40.60	74.00	-33.40	Vertical
3550	7.85	32.60	40.17	45.51	45.79	74.00	-28.21	Vertical
4978	11.54	34.46	41.09	44.27	49.18	74.00	-24.82	Vertical
7443	12.72	37.37	40.01	43.74	53.82	74.00	-20.18	Vertical
9925	14.24	38.08	37.78	41.20	55.74	74.00	-18.26	Vertical
12424	17.51	39.37	39.52	42.53	59.89	74.00	-14.11	Vertical
2470	6.45	30.3	39.72	84.5	81.53	114	-32.47	Horizontal
2483.5	6.22	30.32	39.53	37.00	34.01	74.00	-39.99	Horizontal
2500	5.76	30.37	39.15	37.00	33.98	74.00	-40.02	Horizontal
2496	5.99	30.35	39.34	44.66	41.66	74.00	-32.34	Horizontal
3720	7.42	32.80	39.42	44.40	45.20	74.00	-28.80	Horizontal
4961	10.43	34.45	41.03	44.89	48.74	74.00	-25.26	Horizontal
7443	12.72	37.37	40.01	44.83	54.91	74.00	-19.09	Horizontal
9925	14.24	38.08	37.78	42.27	56.81	74.00	-17.19	Horizontal
12373	17.63	39.32	39.45	42.45	59.95	74.00	-14.05	Horizontal

## Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Over limit	Polarization
2470	6.45	30.3	39.72	85.65	82.68	94	-11.32	Vertical
2483.5	6.22	30.32	39.53	25.00	22.01	54.00	-31.99	Vertical
2500	5.76	30.37	39.15	25.00	21.98	54.00	-32.02	Vertical
2343	6.11	29.84	39.51	34.50	30.94	54.00	-23.06	Vertical
3550	7.85	32.60	40.17	35.20	35.48	54.00	-18.52	Vertical
4978	11.54	34.46	41.09	34.21	39.12	54.00	-14.88	Vertical
7443	12.72	37.37	40.01	33.60	43.68	54.00	-10.32	Vertical
9925	14.24	38.08	37.78	30.80	45.34	54.00	-8.66	Vertical
12424	17.51	39.37	39.52	30.60	47.96	54.00	-6.04	Vertical
2470	6.45	30.3	39.72	71.7	68.73	94	-25.27	Horizontal
2483.5	6.22	30.32	39.53	25.00	22.01	54.00	-31.99	Horizontal
2500	5.76	30.37	39.15	25.00	21.98	54.00	-32.02	Horizontal
2496	5.99	30.35	39.34	34.50	31.50	54.00	-22.50	Horizontal
3720	7.42	32.80	39.42	34.21	35.01	54.00	-18.99	Horizontal
4961	10.43	34.45	41.03	32.50	36.35	54.00	-17.65	Horizontal
7443	12.72	37.37	40.01	33.90	43.98	54.00	-10.02	Horizontal
9925	14.24	38.08	37.78	31.80	46.34	54.00	-7.66	Horizontal
12373	17.63	39.32	39.45	30.81	48.31	54.00	-5.69	Horizontal

N/A: refer to remark 1).

Remark:

- 1). For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the fifth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5<sup>th</sup> harmonic.
- 2). According to 15.249 (e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

TEST RESULTS: The unit does meet the FCC requirements.

### 5.3.3 Occupied Bandwidth

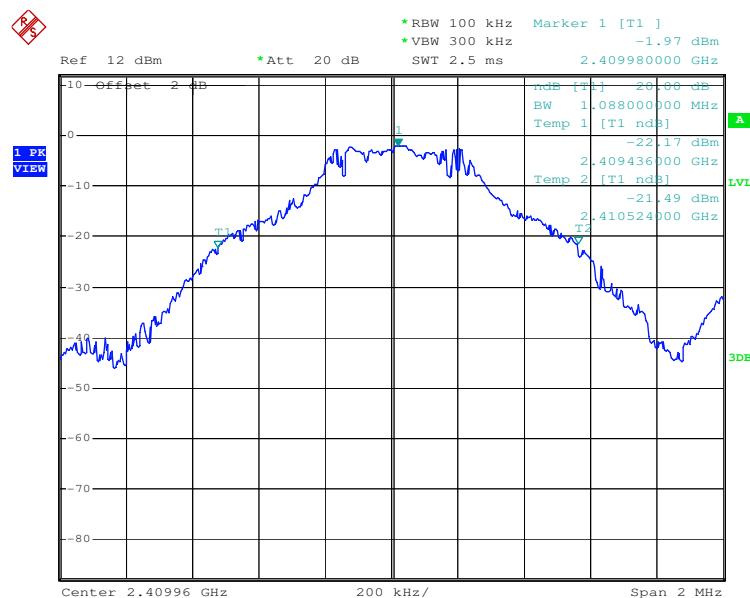
Test Requirement: FCC Part 15.249

Test Method: ANSI C63.4:2003

Operation within the band 2.410 – 2.470GHz

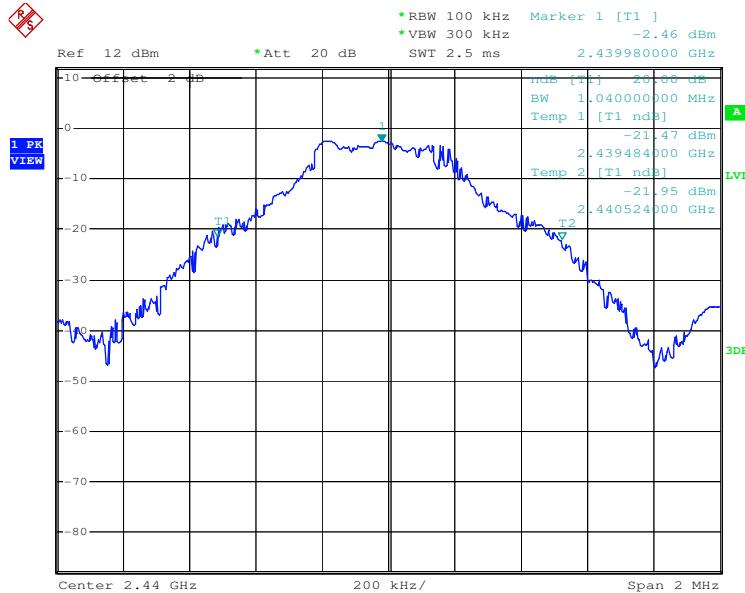
**The occupied bandwidth as below:**

1. For 2410MHz:



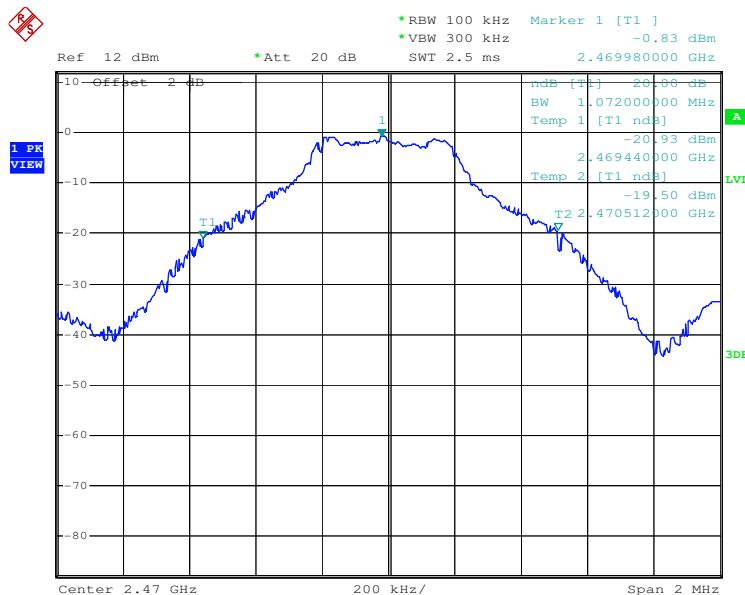
Date: 4.SEP.2009 13:54:28

## 2. For 2440MHz:



Date: 4.SEP.2009 13:55:25

## 3. For 2470MHz:



Date: 4.SEP.2009 13:57:48