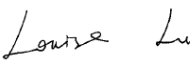


**FCC PART 15.247**  
**EMI MEASUREMENT AND TEST REPORT**  
For  
**LAYON International Electronic & Telecom Co., Ltd**

No.32, BaoHeRoad, NanZhou Street, GuangZhou, China

**FCC ID: TNBUNI03**

November 4, 2005

|                                                                                                                                                                                                                                                     |                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| <b>This Report Concerns:</b><br><input checked="" type="checkbox"/> Original Report                                                                                                                                                                 | <b>Equipment Type:</b><br>Bluetooth Headset |
| <b>Test Engineer:</b> <u>Louise Lu</u>                                                                                                                           |                                             |
| <b>Report No.:</b> <u>RSZ05102701</u>                                                                                                                                                                                                               |                                             |
| <b>Test Date:</b> <u>November 1, 2005</u>                                                                                                                                                                                                           |                                             |
| <b>Reviewed By:</b> <u>Chris Zeng</u>                                                                                                                            |                                             |
| <b>Prepared By:</b> Bay Area Compliance Lab Corp. (ShenZhen)<br>6/F, the 3rd Phase of WanLi Industrial Building, ShiHua<br>Road, FuTian Free Trade Zone, ShenZhen, Guangdong<br>518038, P.R.China<br>Tel: +86-755-33320018<br>Fax: +86-755-33320008 |                                             |

**Note:** The test report is specially limited to the above company and this particular sample only.  
It may not be duplicated without prior written consent of Bay Area Compliance Lab Corp.  
(ShenZhen). This report **must not** be used by the client to claim product certification,  
approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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## GENERAL INFORMATION

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### Product Description for Equipment Under Test (EUT)

The *LAYON International Electronic & Telecom Co., Ltd*'s product, model number: U&I-03 or the "EUT" as referred to in this report is a Bluetooth Headset . The EUT is measured approximately 5.8 cm L x 2.3 cm W x 2.0 cm H, rated input voltage: DC 3.7V battery.

*\* The test data gathered are from production sample, serial number: 59123B003C26, provided by the manufacturer, we receive the EUT 2005-10-27.*

### Objective

The following test report is prepared on behalf of *LAYON International Electronic & Telecom Co., Ltd* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209, and 15.247 rules.

### Related Submittal(s)/Grant(s)

No related submittal(s).

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Lab Corp. (ShenZhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### Test Facility

The Test site used by Bay Area Compliance Lab Corp. (ShenZhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab Corp. (ShenZhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Lab Corp. (ShenZhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

## **SYSTEM TEST CONFIGURATION**

---

### **Description of Test Configuration**

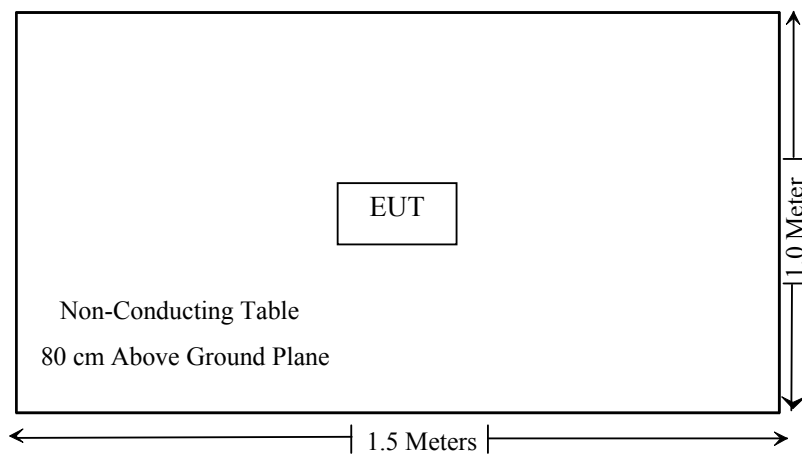
The system was configured for testing in a typical fashion (as normally used by a typical user).

### **Equipment Modifications**

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

**Configuration of Test Setup**

EUT

**Block Diagram of Test Setup**

**SUMMARY OF TEST RESULTS**

| FCC RULES              | DESCRIPTION OF TEST               | RESULT      |
|------------------------|-----------------------------------|-------------|
| §15.203                | Antenna Requirement               | Compliant   |
| §15.205&§15.209        | Radiated Emission                 | Compliant * |
| §15.247(a)(1)          | Channel Separation Test           | Compliant   |
| §15.247(a)(1)(iii)     | Time of occupancy (Dwell Time)    | Compliant   |
| §15.247(a)(1)(iii)     | Quantity of hopping channel Test  | Compliant   |
| §15.247(b)(1)          | Peak Output Power Measurement     | Compliant   |
| §15.247(d)             | Band edges testing                | Compliant   |
| §15.247(b)(5) § 2.1093 | RF Safety Requirements            | Compliant   |
| § 2.1051               | Spurious Emission at Antenna Port | Compliant   |

\* Within measurement uncertainty

**§15.203 - ANTENNA REQUIREMENT**

---

**Applicable Standard**

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 shall be considered sufficient to comply with the provisions of this section.

This product has a permanent antenna, fulfill the requirement of this section, Antenna Gain: 1.5dBi.

Test Result: Pass

## §15.205, §15.209, §15.247 - RADIATED EMISSION

### Applicable Standard

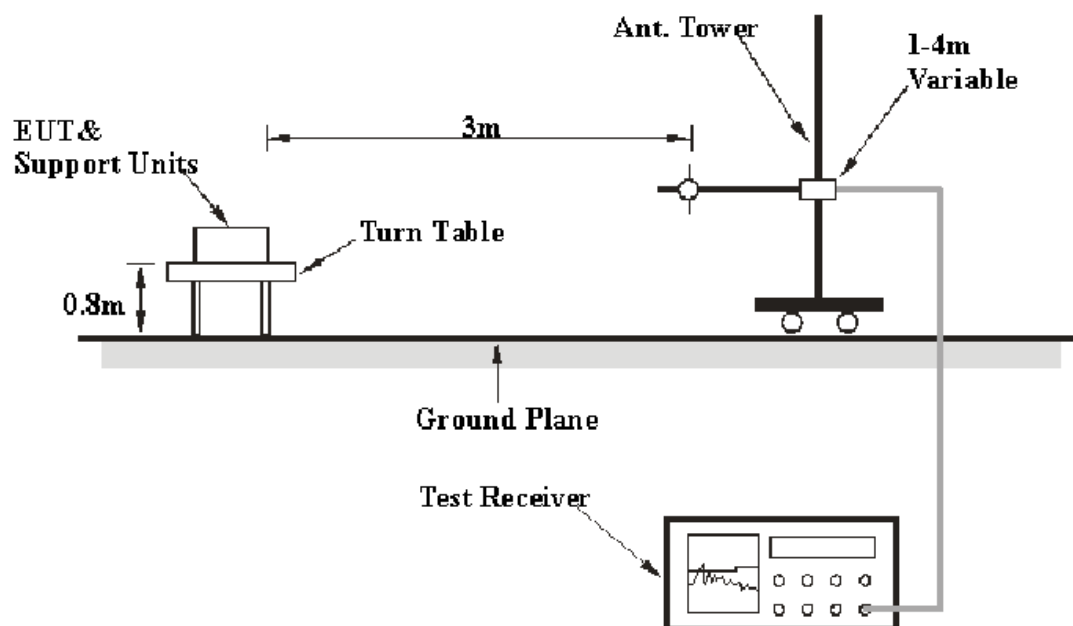
According to FCC §15.247 (d)

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is  $\pm 4.0$  dB.

### EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209 and FCC 15.247 limits.

## EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

| <i>Frequency Range</i> | <i>RBW</i> | <i>Video B/W</i> |
|------------------------|------------|------------------|
| 30MHz – 1000 MHz       | 100 kHz    | 300 kHz          |
| 1000 MHz – 25 GHz      | 1 MHz      | 3 MHz            |

## Test Equipment List and Details

| Manufacturer    | Description       | Model       | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------------|---------------|------------------|----------------------|
| A.H. System     | Horn Antenna      | SAS-200/571 | 135           | 2005-4-28        | 2006-4-28            |
| HP              | Amplifier         | HP8447D     | 2944A09795    | 2005-8-17        | 2006-8-17            |
| HP              | Preamplifier      | 8449B       | 3008A00277    | 2005-8-17        | 2006-8-17            |
| Rohde & Schwarz | Spectrum Analyzer | FSEM30      | 849720/019    | 2004-11-10       | 2005-11-10           |
| Rohde&Schwarz   | EMI Test Receiver | ESCI        | 100035        | 2005-8-17        | 2006-8-17            |
| Sunol Sciences  | Broadband Antenna | JB1         | A040904-1     | 2005-4-28        | 2006-4-28            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the PK&AV detection mode.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Standard Limit}$$

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.207, and 15.247, with the worst margin reading of:

**-2.5 dB at 12010 MHz** in the **Horizontal** polarization, Low Channel

**-2.3 dB at 12205 MHz** in the **Vertical** polarization, Middle Channel

**-2.7 dB at 9920 MHz** in the **Vertical** polarization, High Channel

## Test Data

### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

The testing was performed by Louise Lu on 2005-11-1.

Test mode: Transmitting

| INDICATED               |               |                  | TABLE  | ANTENNA |       | CORRECTION FACTOR |            |           | CORRECTED AMPLITUDE | FCC 15.209 & FCC 15.247 |        |
|-------------------------|---------------|------------------|--------|---------|-------|-------------------|------------|-----------|---------------------|-------------------------|--------|
| Frequency               | Meter Reading | Comments         | Angle  | Height  | Polar | Antenna Loss      | Cable Loss | Amp. Gain | Corr. Ampl.         | Limit                   | Margin |
| MHz                     | dBμV/m        |                  | Degree | Meter   | H/ V  | dB                | dB         | dB        | dBμV/m              | dBμV/m                  | dB     |
| Low Channel, 1GHz-25GHz |               |                  |        |         |       |                   |            |           |                     |                         |        |
| 2402                    | 92.82         | PK (Fundamental) | 180    | 1.2     | H     | 28.1              | 3.7        | 35.00     | 89.6                |                         |        |
| 2402                    | 91.45         | AV (Fundamental) | 90     | 1.0     | H     | 28.1              | 3.7        | 35.00     | 88.3                |                         |        |
| 2402                    | 91.46         | PK (Fundamental) | 60     | 1.2     | V     | 28.1              | 3.7        | 35.00     | 88.3                |                         |        |
| 2402                    | 90.38         | AV (Fundamental) | 270    | 1.0     | V     | 28.1              | 3.7        | 35.00     | 87.2                |                         |        |
| 12010                   | 38.12         | AV (Harmonics)   | 90     | 1.2     | H     | 40.5              | 7.9        | 35.00     | 51.5                | 54                      | -2.5 * |
| 12010                   | 36.23         | AV (Harmonics)   | 45     | 1.2     | V     | 40.5              | 7.9        | 35.00     | 49.6                | 54                      | -4.4   |
| 12010                   | 42.54         | PK (Harmonics)   | 90     | 1.2     | H     | 40.5              | 7.9        | 35.00     | 55.9                | 74                      | -18.1  |
| 12010                   | 41.27         | PK (Harmonics)   | 45     | 1.2     | V     | 40.5              | 7.9        | 35.00     | 54.7                | 74                      | -19.3  |
| 7206                    | 43.82         | PK (Harmonics)   | 90     | 1.2     | H     | 36.8              | 6.0        | 33.50     | 53.1                | 74                      | -20.9  |
| 9608                    | 43.28         | PK (Harmonics)   | 45     | 1.2     | V     | 36.7              | 7.0        | 34.72     | 52.3                | 74                      | -21.7  |
| 7206                    | 42.69         | PK (Harmonics)   | 270    | 1.0     | V     | 36.8              | 6.0        | 33.50     | 52.0                | 74                      | -22.0  |
| 9608                    | 42.19         | PK (Harmonics)   | 60     | 1.2     | H     | 36.7              | 7.0        | 34.72     | 51.2                | 74                      | -22.8  |
| 4804                    | 44.68         | PK (Harmonics)   | 60     | 1.2     | H     | 33.8              | 5.2        | 33.00     | 50.7                | 74                      | -23.3  |
| 4804                    | 44.31         | PK (Harmonics)   | 60     | 1.0     | V     | 33.8              | 5.2        | 33.00     | 50.3                | 74                      | -23.7  |

| INDICATED                  |                            |                  | TABLE           | ANTENNA         |               | CORRECTION FACTOR     |                     |                    | CORRECTED<br>AMPLITUDE | FCC 15.209 &<br>FCC 15.247 |              |
|----------------------------|----------------------------|------------------|-----------------|-----------------|---------------|-----------------------|---------------------|--------------------|------------------------|----------------------------|--------------|
| Frequency<br>MHz           | Meter<br>Reading<br>dBμV/m | Comments         | Angle<br>Degree | Height<br>Meter | Polar<br>H/ V | Antenna<br>Loss<br>dB | Cable<br>Loss<br>dB | Amp.<br>Gain<br>dB | Corr. Ampl.<br>dBμV/m  | Limit<br>dBμV/m            | Margin<br>dB |
| Middle Channel, 1GHz-25GHz |                            |                  |                 |                 |               |                       |                     |                    |                        |                            |              |
| 2441                       | 91.24                      | PK (Fundamental) | 180             | 1.2             | H             | 28.1                  | 3.7                 | 35.00              | 88.0                   |                            |              |
| 2441                       | 90.50                      | AV (Fundamental) | 90              | 1.0             | H             | 28.1                  | 3.7                 | 35.00              | 87.3                   |                            |              |
| 2441                       | 89.30                      | PK (Fundamental) | 60              | 1.2             | V             | 28.1                  | 3.7                 | 35.00              | 86.1                   |                            |              |
| 2441                       | 87.80                      | AV (Fundamental) | 270             | 1.0             | V             | 28.1                  | 3.7                 | 35.00              | 84.6                   |                            |              |
| 12205                      | 38.29                      | AV (Harmonics)   | 60              | 1.2             | V             | 40.5                  | 7.9                 | 35.00              | 51.7                   | 54                         | -2.3 *       |
| 12205                      | 42.06                      | PK (Harmonics)   | 60              | 1.2             | V             | 40.5                  | 7.9                 | 35.00              | 55.5                   | 74                         | -18.5        |
| 9764                       | 42.88                      | PK (Harmonics)   | 60              | 1.2             | V             | 38.0                  | 7.0                 | 34.72              | 53.2                   | 74                         | -20.8        |
| 12205                      | 39.20                      | PK (Harmonics)   | 45              | 1.2             | H             | 40.5                  | 7.9                 | 35.00              | 52.6                   | 74                         | -21.4        |
| 7323                       | 42.95                      | PK (Harmonics)   | 60              | 1.0             | H             | 35.8                  | 6.1                 | 33.50              | 51.4                   | 74                         | -22.7        |
| 9764                       | 40.23                      | PK (Harmonics)   | 60              | 1.0             | H             | 38.0                  | 7.0                 | 34.72              | 50.5                   | 74                         | -23.5        |
| 7323                       | 41.65                      | PK (Harmonics)   | 270             | 1.0             | V             | 35.8                  | 6.1                 | 33.50              | 50.1                   | 74                         | -24.0        |
| 4882                       | 43.27                      | PK (Harmonics)   | 45              | 1.2             | V             | 33.8                  | 5.2                 | 33.00              | 49.3                   | 74                         | -24.7        |
| 4882                       | 43.24                      | PK (Harmonics)   | 45              | 1.2             | H             | 33.8                  | 5.2                 | 33.00              | 49.2                   | 74                         | -24.8        |
| High Channel, 1GHz-25GHz   |                            |                  |                 |                 |               |                       |                     |                    |                        |                            |              |
| 2480                       | 91.42                      | PK (Fundamental) | 180             | 1.2             | H             | 28.1                  | 3.7                 | 35.00              | 88.2                   |                            |              |
| 2480                       | 90.03                      | AV (Fundamental) | 90              | 1.0             | H             | 28.1                  | 3.7                 | 35.00              | 86.8                   |                            |              |
| 2480                       | 90.07                      | PK (Fundamental) | 60              | 1.2             | V             | 28.1                  | 3.7                 | 35.00              | 86.9                   |                            |              |
| 2480                       | 88.63                      | AV (Fundamental) | 270             | 1.0             | V             | 28.1                  | 3.7                 | 35.00              | 85.4                   |                            |              |
| 9920                       | 40.92                      | AV (Harmonics)   | 45              | 1.2             | V             | 37.6                  | 7.3                 | 34.50              | 51.3                   | 54                         | -2.7 *       |
| 12400                      | 36.54                      | AV (Harmonics)   | 45              | 1.0             | V             | 41.2                  | 7.9                 | 34.58              | 51.1                   | 54                         | -2.9 *       |
| 12400                      | 35.86                      | AV (Harmonics)   | 45              | 1.2             | H             | 41.2                  | 7.9                 | 34.58              | 50.4                   | 54                         | -3.6 *       |
| 12400                      | 40.69                      | PK (Harmonics)   | 45              | 1.0             | V             | 41.2                  | 7.9                 | 34.58              | 55.2                   | 74                         | -18.8        |
| 12400                      | 40.35                      | PK (Harmonics)   | 45              | 1.2             | H             | 41.2                  | 7.9                 | 34.58              | 54.9                   | 74                         | -19.1        |
| 9920                       | 43.81                      | PK (Harmonics)   | 45              | 1.2             | V             | 37.6                  | 7.3                 | 34.50              | 54.2                   | 74                         | -19.8        |
| 9920                       | 41.28                      | PK (Harmonics)   | 90              | 1.2             | H             | 37.6                  | 7.3                 | 34.50              | 51.7                   | 74                         | -22.3        |
| 4960                       | 45.64                      | PK (Harmonics)   | 60              | 1.2             | H             | 33.8                  | 5.2                 | 33.00              | 51.6                   | 74                         | -22.4        |
| 7440                       | 43.82                      | PK (Harmonics)   | 60              | 1.2             | H             | 35.8                  | 6.1                 | 34.11              | 51.6                   | 74                         | -22.4        |
| 7440                       | 42.65                      | PK (Harmonics)   | 60              | 1.0             | V             | 35.8                  | 6.1                 | 34.11              | 50.4                   | 74                         | -23.6        |
| 4960                       | 44.32                      | PK (Harmonics)   | 60              | 1.0             | V             | 33.8                  | 5.2                 | 33.00              | 50.3                   | 74                         | -23.7        |

\* Within measurement uncertainty

**§15.247(a)(1)-CHANNEL SEPARATION TEST****Applicable Standard**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB Bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

**Test Equipment List and Details**

| Manufacturer    | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Procedure**

1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another truce.
3. Measure the channel separation.

**Test Data****Environmental Conditions**

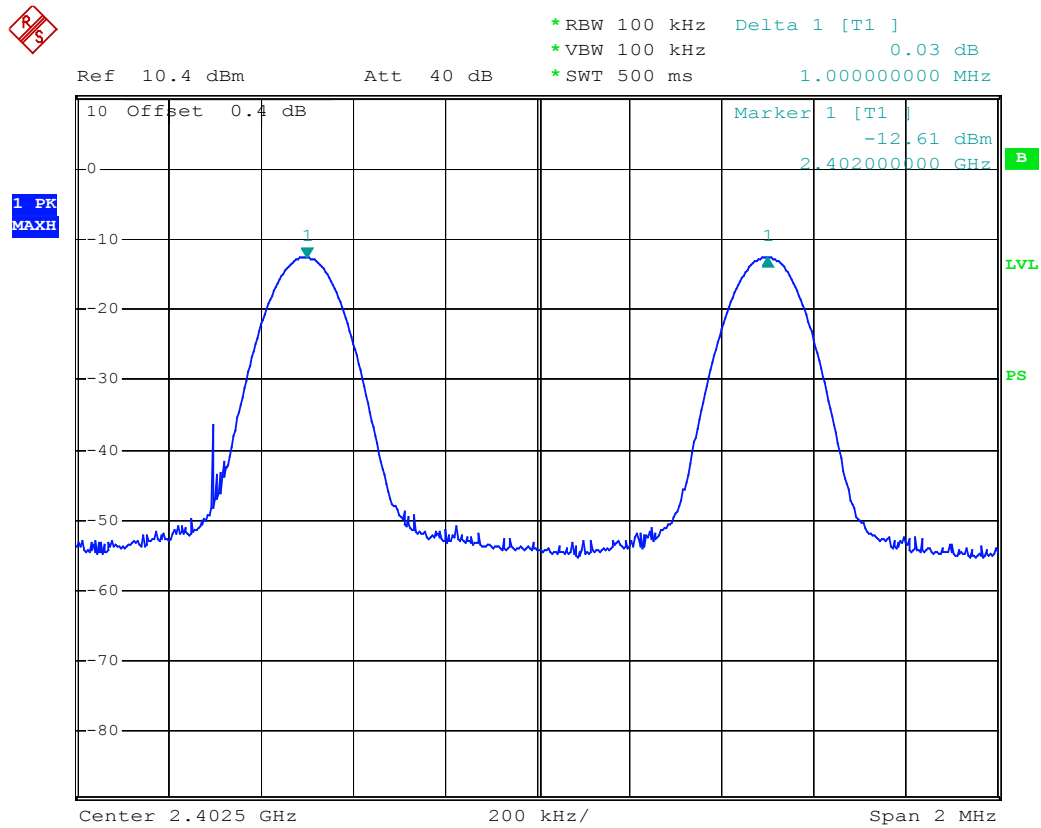
|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

*The testing was performed by Louise Lu on 2005-11-1.*

Test Result: Pass

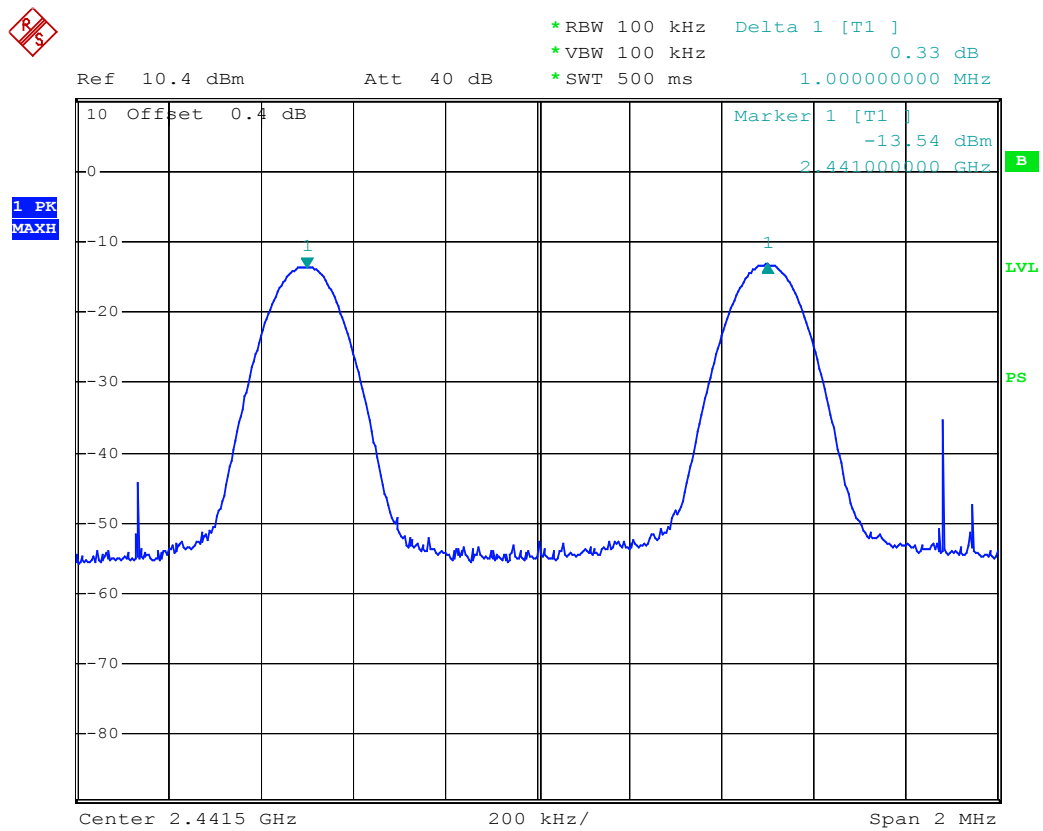
Test mode: Transmitting

| CHANNEL           | CHANNEL FREQUENCY (MHz) | SEPARATION READ VALUE (kHz) |
|-------------------|-------------------------|-----------------------------|
| Low Channel       | 2402                    | 1000                        |
| Adjacency Channel | 2403                    |                             |
| Middle Channel    | 2441                    | 1000                        |
| Adjacency Channel | 2442                    |                             |
| High Channel      | 2480                    | 1000                        |
| Adjacency Channel | 2479                    |                             |



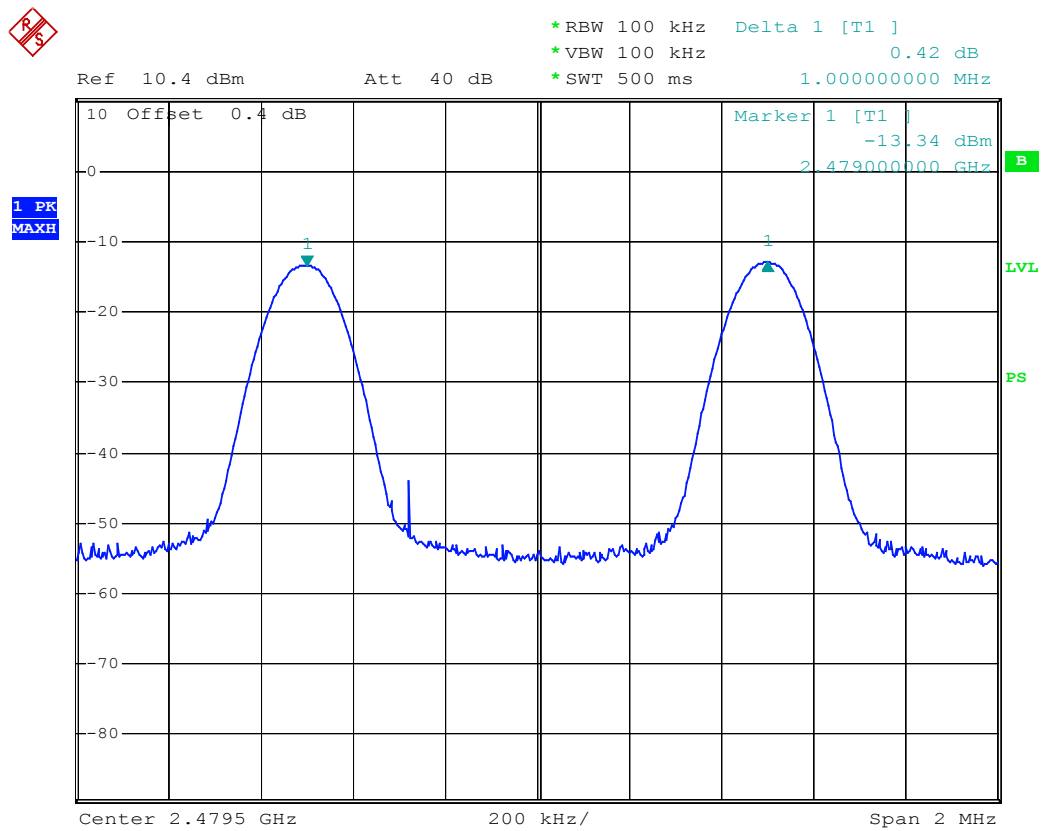
Channel seperation low

Date: 1.NOV.2005 13:32:04



Channel seperation mid

Date: 1.NOV.2005 13:34:08



Channel separation high

Date: 1.NOV.2005 13:35:30

**§15.247(a)(1) 20dB BANDWIDTH TESTING****Applicable Standard**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB Bandwidth of the hopping channel, whichever is greater.

**Test Equipment List and Details**

| Manufacturer    | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Procedure**

1. Check the calibration of the measuring instrument using a known signal from an external generator.
2. Position the EUT without connection to the tunable table. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

**Test Data****Environmental Conditions**

|                    |          |
|--------------------|----------|
| Temperature:       | 25 ° C   |
| Relative Humidity: | 50%      |
| ATM Pressure:      | 1032mbar |

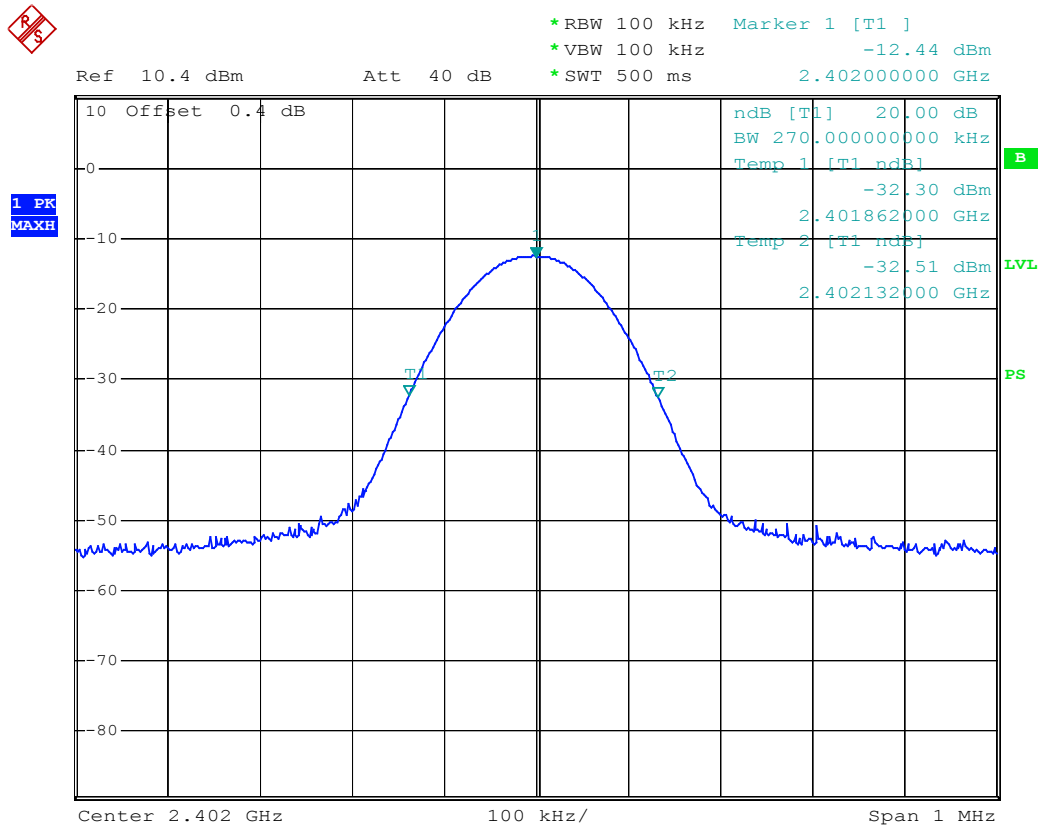
*The testing was performed by Louise Lu on 2005-11-1.*

Test Result: Pass

*Test mode: Transmitting*

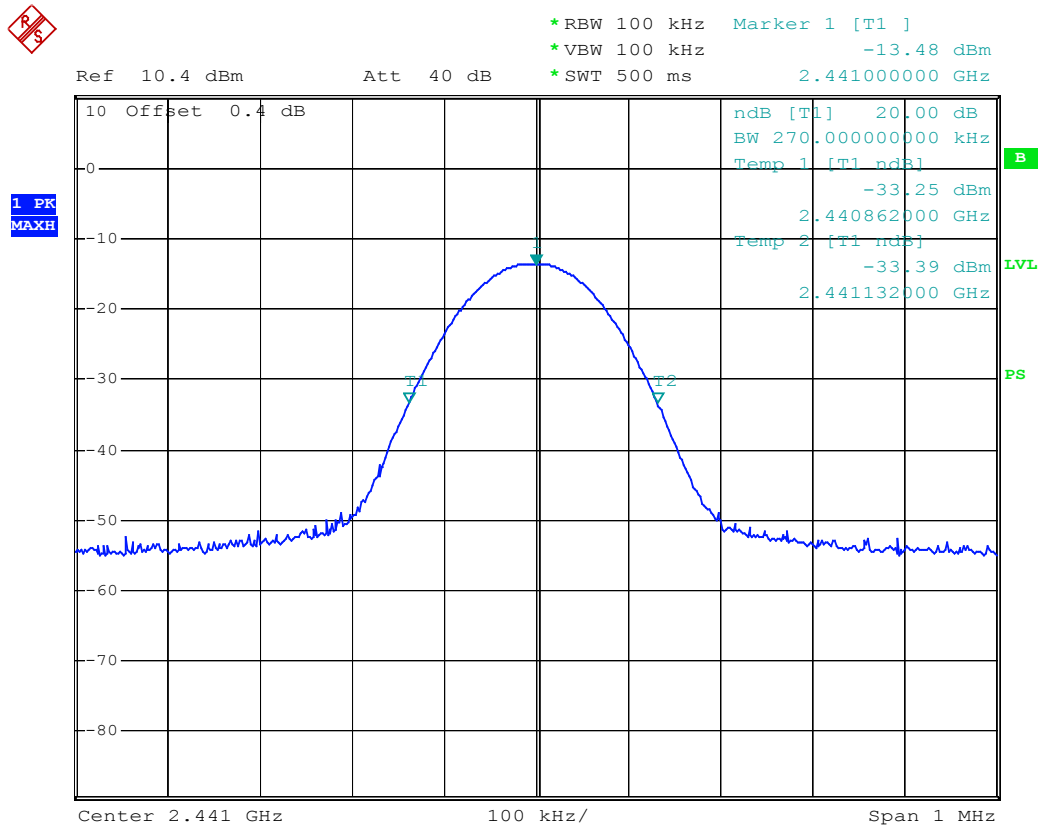
The result has been complied with the §15.247(a)(1), see the following plot:

| Channel        | Channel frequency (MHz) | 20dB Bandwidth (KHz) |
|----------------|-------------------------|----------------------|
| Low channel    | 2402                    | 270                  |
| Middle channel | 2441                    | 270                  |
| High channel   | 2480                    | 272                  |



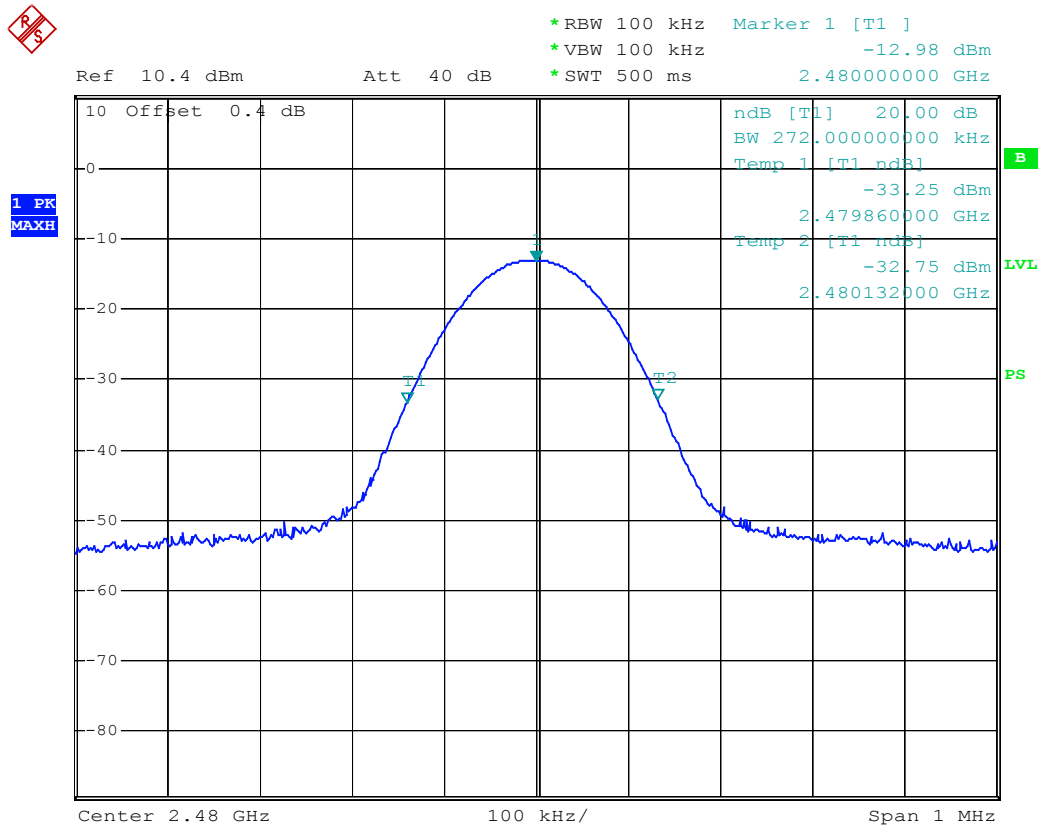
20dB BW low CH

Date: 1.NOV.2005 13:29:00



20dB BW mid CH

Date: 1.NOV.2005 13:23:15



20dB BW high CH

Date: 1.NOV.2005 13:28:10

**§15.247(a)(1)(iii)-QUANTITY OF HOPPING CHANNEL TEST****Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

**Test Equipment List and Details**

| Manufacturer    | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Procedure**

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Set the EUT in transmitting mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Limit

FCC Part 15, Subpart C Section 15.247

| FREQUENCY RANGE (MHz) | Limit (Quantity of Hopping Channel) |                          |                        |                        |
|-----------------------|-------------------------------------|--------------------------|------------------------|------------------------|
|                       | 20 dB bandwidth <250 kHz            | 20 dB bandwidth >250 kHz | 20 dB bandwidth <1 MHz | 20 dB bandwidth >1 MHz |
| 902-928               | 50                                  | 25                       | N/A                    | N/A                    |
| 2400-2483.5           | N/A                                 | N/A                      | 15                     | 15                     |
| 5725-5850             | N/A                                 | N/A                      | 75                     | N/A                    |

**Test Data****Environmental Conditions**

|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

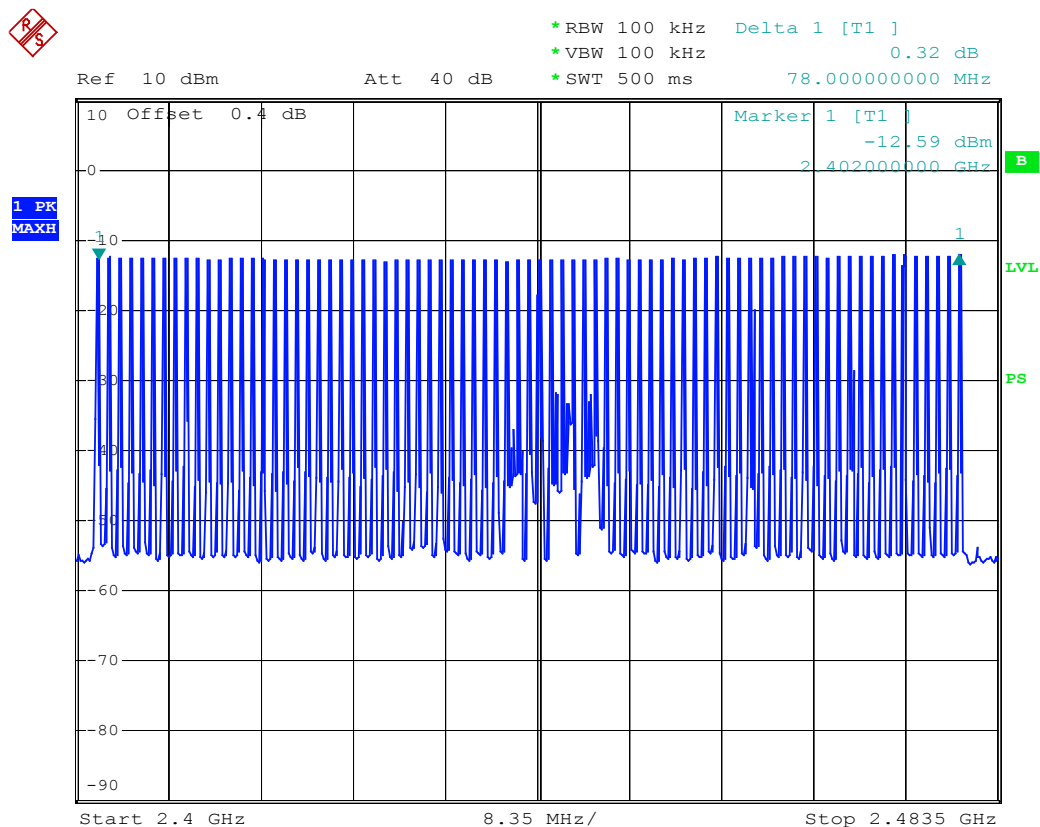
The testing was performed by Louise Lu on 2005-11-1.

Test Result: Pass

Test mode: Transmitting

The frequency hopping systems operating in 2.4~2.4835 GHz band employ 79 nonoverlapping channels.

| Hopping Channel Frequency Range (MHz) | Quantity OF hopping Channel Read Value (Channel) | Quantity Of Hopping channel limit (Channel) |
|---------------------------------------|--------------------------------------------------|---------------------------------------------|
| 2402 ~ 2480                           | 79                                               | >15                                         |



Quantity of Hopping Channel

Date: 1.NOV.2005 15:02:55

**§15.247(a)(1)(iii) - TIME OF OCCUPANCY (DWELL TIME)****Applicable Standard**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

**Test Equipment List and Details**

| Manufacturer    | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Procedure**

The EUT was worked in channel hopping; Spectrum SPAN was set as 0 Hz, Sweep was set as 0.4 X channel no.(s), The quantity of False was get from single sweep. In addition, the time of single Pluses was tested.

Limit

FCC Part 15, Subpart C Section 15.247.

| FREQUENCY RANGE<br>(MHz) | LIMIT (ms)                             |                                        |                                       |
|--------------------------|----------------------------------------|----------------------------------------|---------------------------------------|
|                          | 20dB bandwidth<br><250kHz (50 Channel) | 20dB bandwidth<br>>250kHz (50 Channel) | 20dB bandwidth<br><1 MHz (79 Channel) |
| 902-928                  | 400(20s)                               | 400(10s)                               | N/A                                   |
| 2400-2483.5              | N/A                                    | N/A                                    | 400(31.6s)                            |
| 5725-5850                | N/A                                    | N/A                                    | 400(30s)                              |

**Test Data****Environmental Conditions**

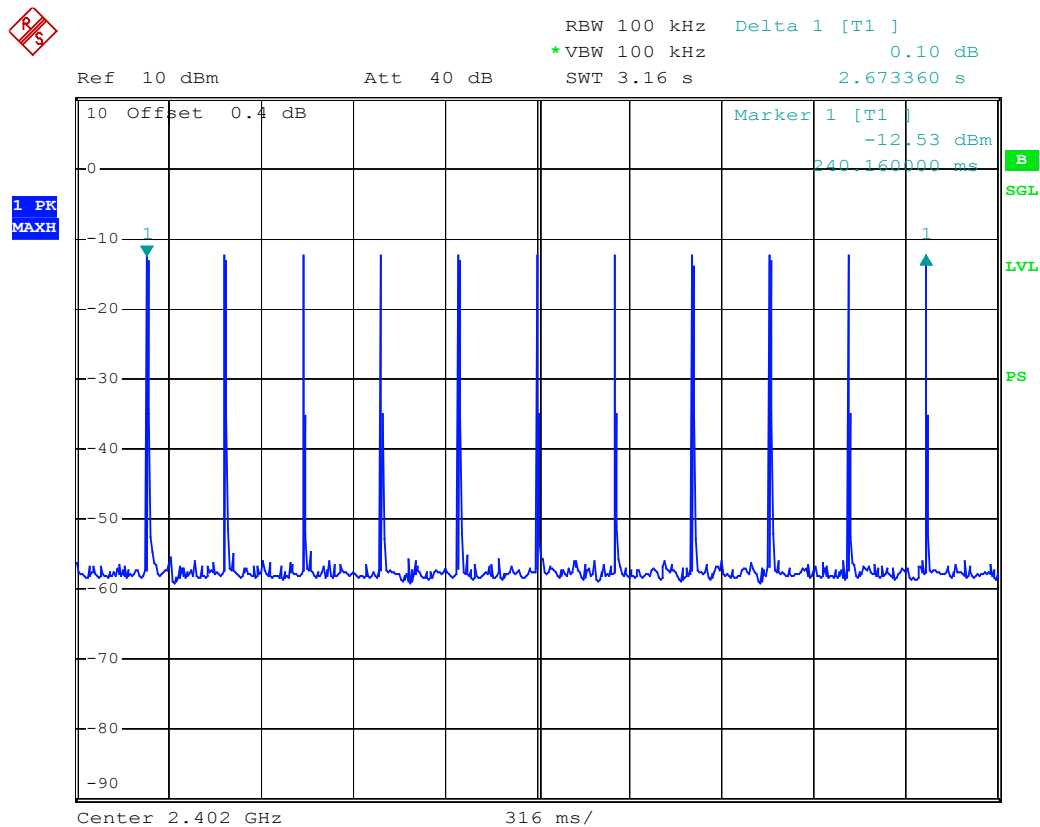
|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

*The testing was performed by Louise Lu on 2005-11-1.*

Test Result: Pass

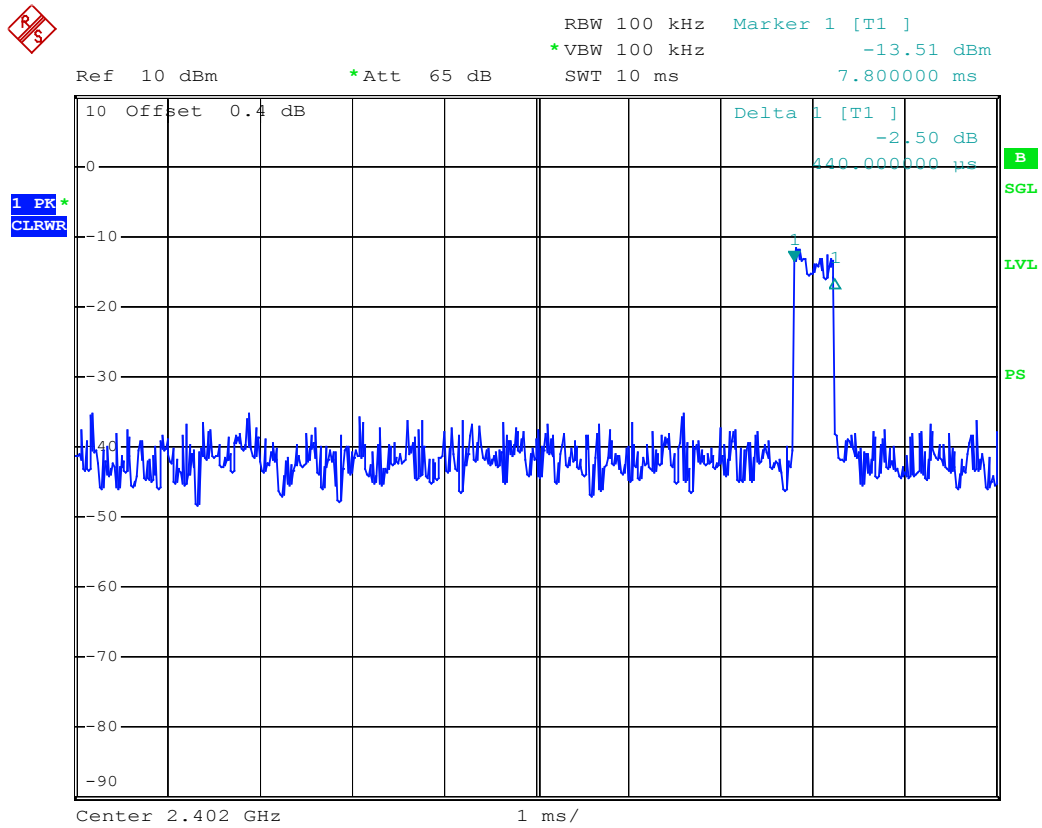
*Test mode: Transmitting*

| Channel      | Pulse wide (msec) | 0.4 s *hopping channel | Dwell time (sec) | Limit (sec) |
|--------------|-------------------|------------------------|------------------|-------------|
| Low Channel  | 0.44              | 120                    | 0.0528           | 0.4         |
| Mid Channel  | 0.44              | 120                    | 0.0528           | 0.4         |
| High Channel | 0.44              | 120                    | 0.0528           | 0.4         |



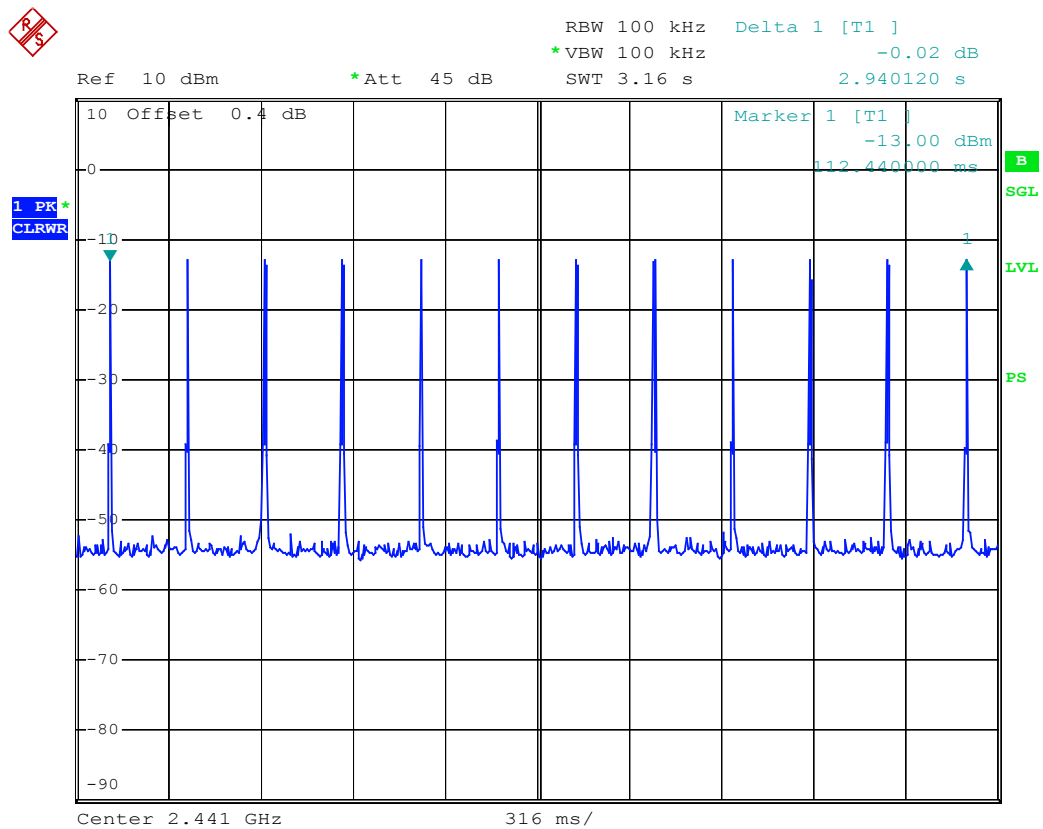
No. of pluses low CH

Date: 1.NOV.2005 14:17:05



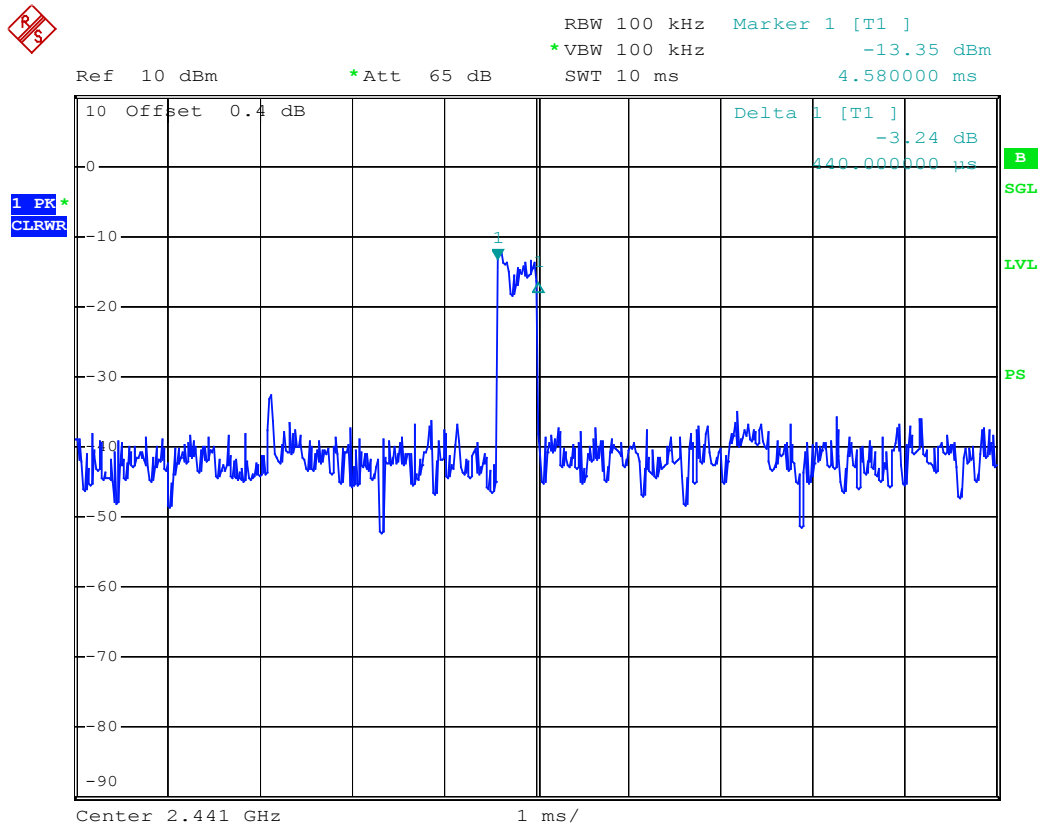
Pluses wide low CH

Date: 1.NOV.2005 14:41:58



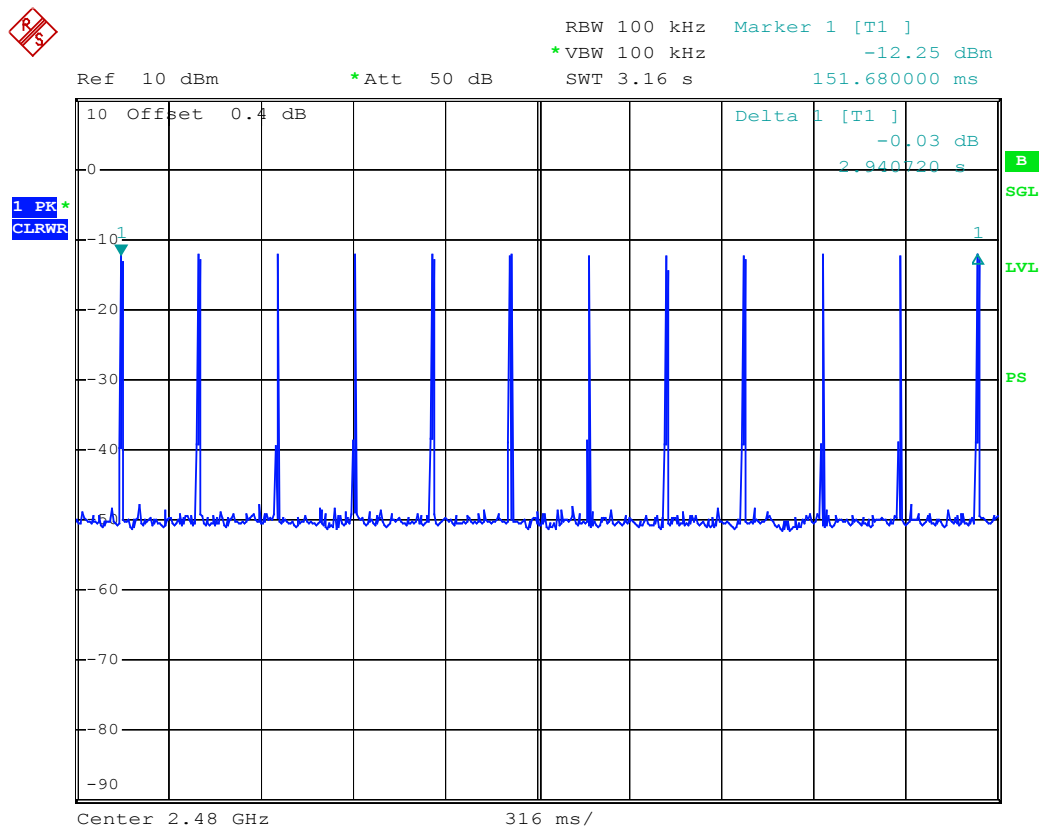
NO. of pluses mid CH

Date: 1.NOV.2005 14:33:04



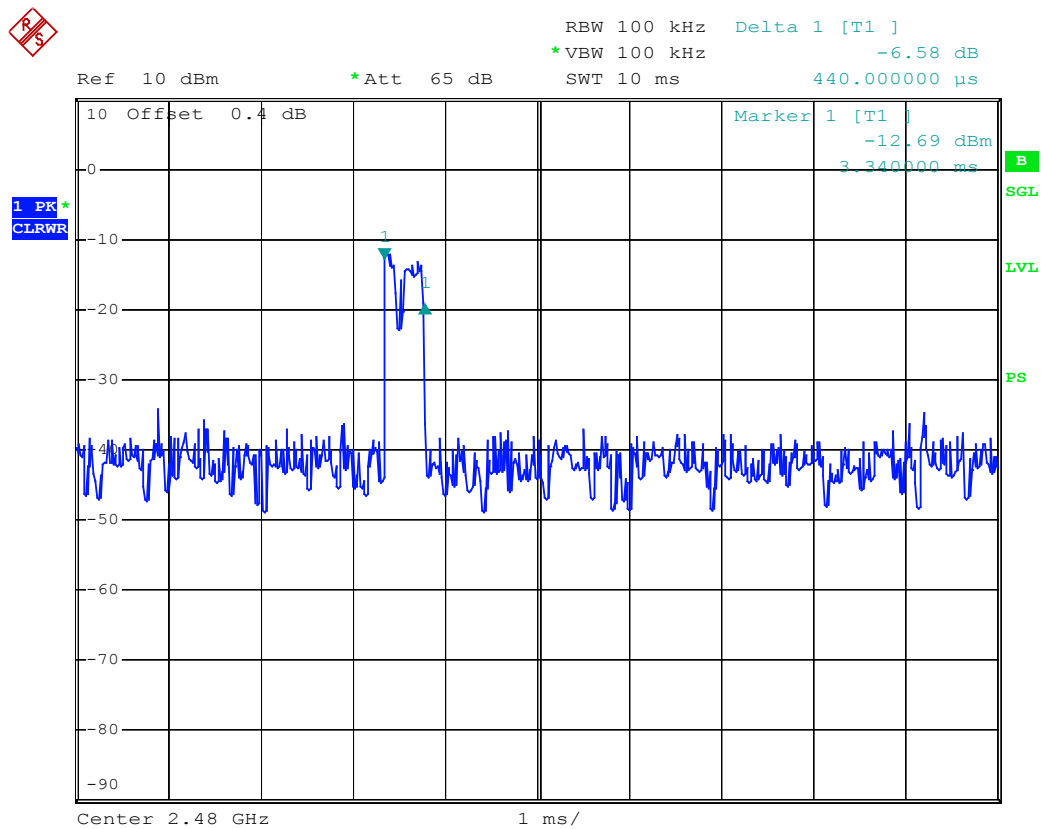
Pluses wide mid CH

Date: 1.NOV.2005 14:39:22



NO of Pluses high CH

Date: 1.NOV.2005 14:54:29



Pluses wide high CH

Date: 1.NOV.2005 14:40:25

**§15.247(b)(1) - PEAK OUTPUT POWER MEASUREMENT****Applicable Standard**

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

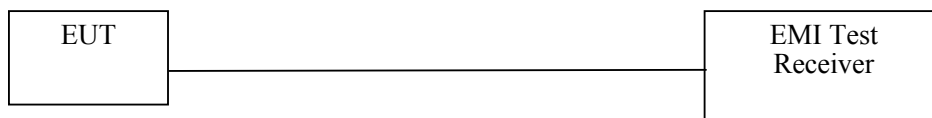
**Test Equipment List and Details**

| Manufacturer  | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|---------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde&Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Procedure**

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the UFL port of EUT to a Peak Power Meter.

**Test Data****Environmental Conditions**

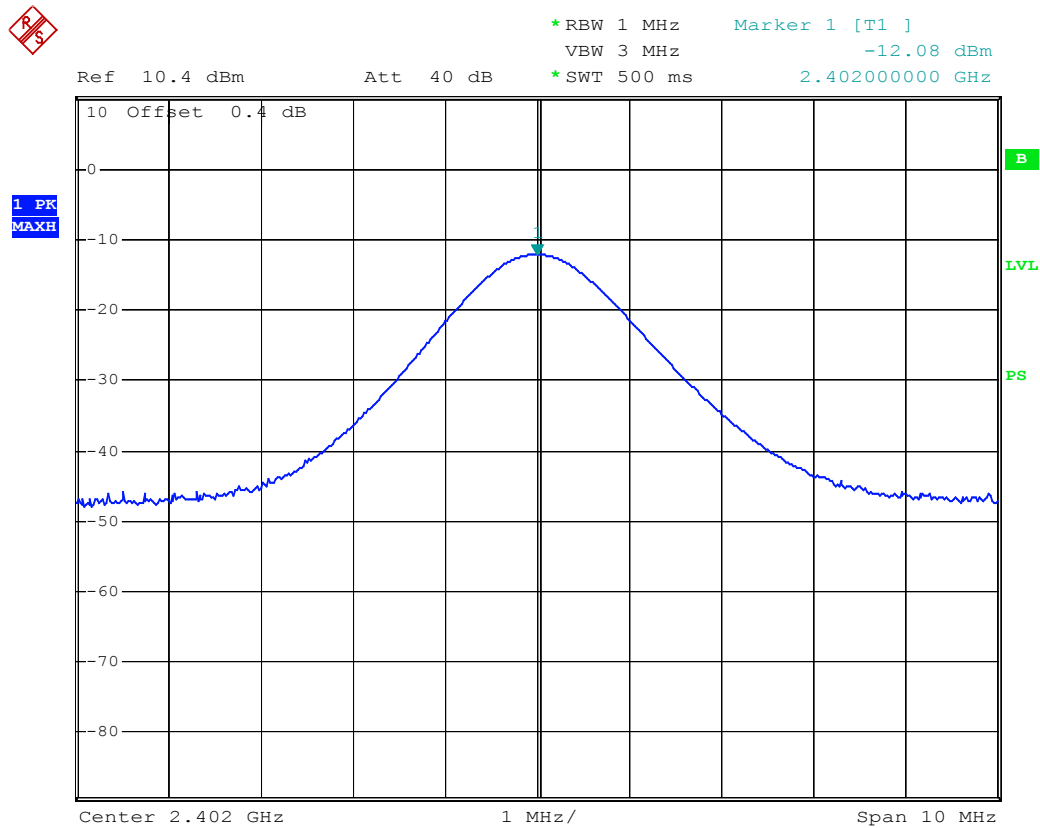
|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

*The testing was performed by Louise Lu on 2005-11-1.*

Test Result: Pass

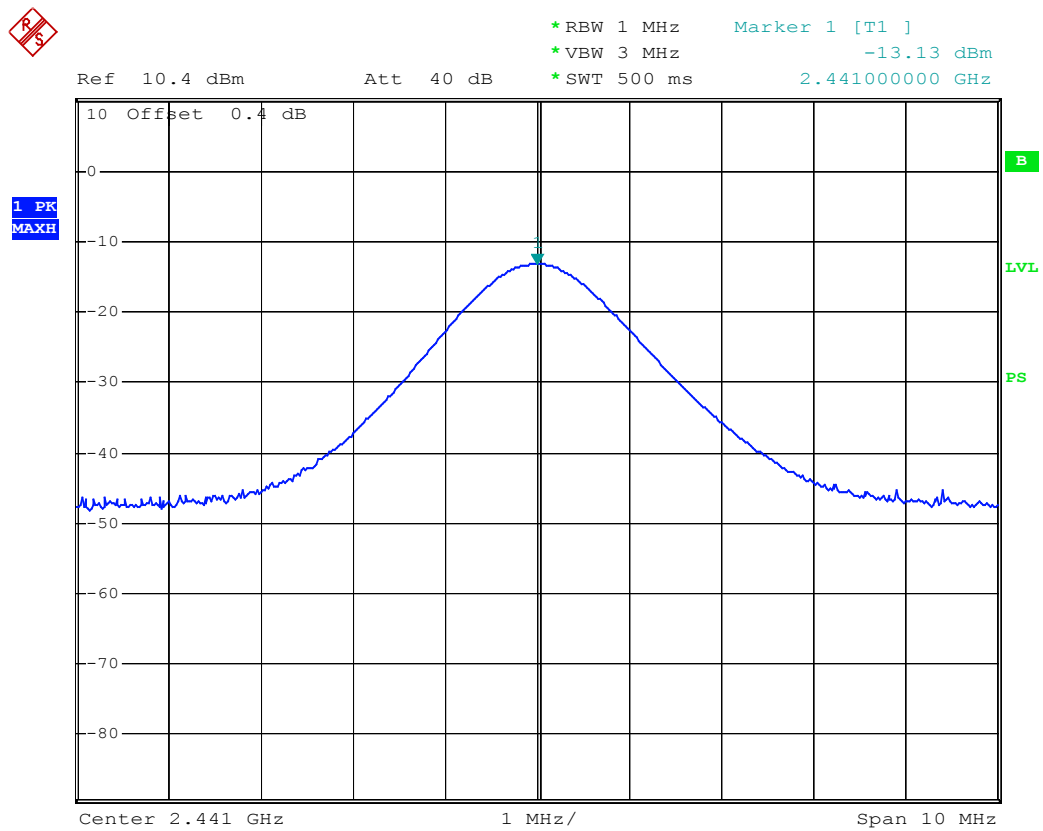
Test mode: Transmitting

| Channel        | Channel Frequency (MHz) | Reading Power (dBm) | Cable Loss (dB) | Power Output (w)        | Limit (w) |
|----------------|-------------------------|---------------------|-----------------|-------------------------|-----------|
| Low Channel    | 2402                    | -12.08              | /               | $0.0619 \times 10^{-3}$ | 0.125     |
| Middle Channel | 2441                    | -13.13              | /               | $0.0486 \times 10^{-3}$ | 0.125     |
| High Channel   | 2480                    | -12.92              | /               | $0.0511 \times 10^{-3}$ | 0.125     |



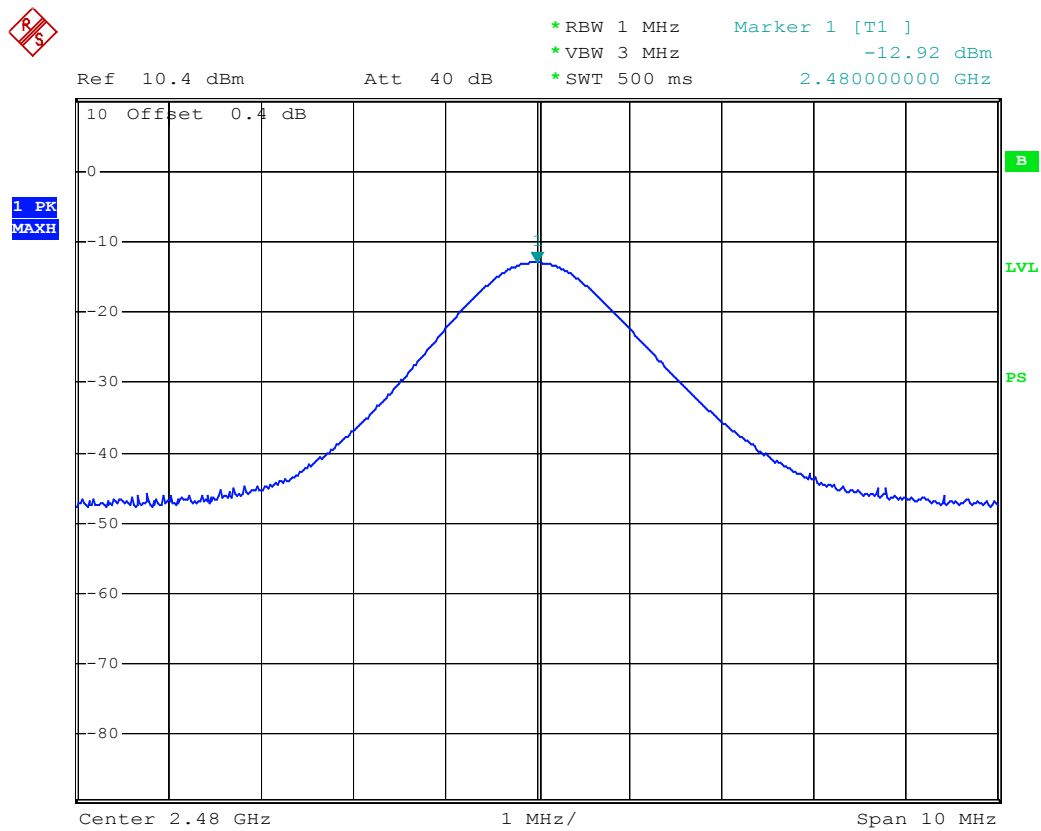
Peak output power low CH

Date: 1.NOV.2005 13:11:36



Peak output power mid CH

Date: 1.NOV.2005 13:19:36



Peak output power high CH

Date: 1.NOV.2005 13:18:29

## §15.247(d)- BAND EDGES TESTING

### Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### Test Equipment List and Details

| Manufacturer    | Description       | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |

\* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

### Test Procedure

1. Check the calibration of the measuring instrument using a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Start 2.4 G Hz, stop 2.4835 GHz, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the frequency edge point amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the edge frequency.

### Test Data

#### Environmental Conditions

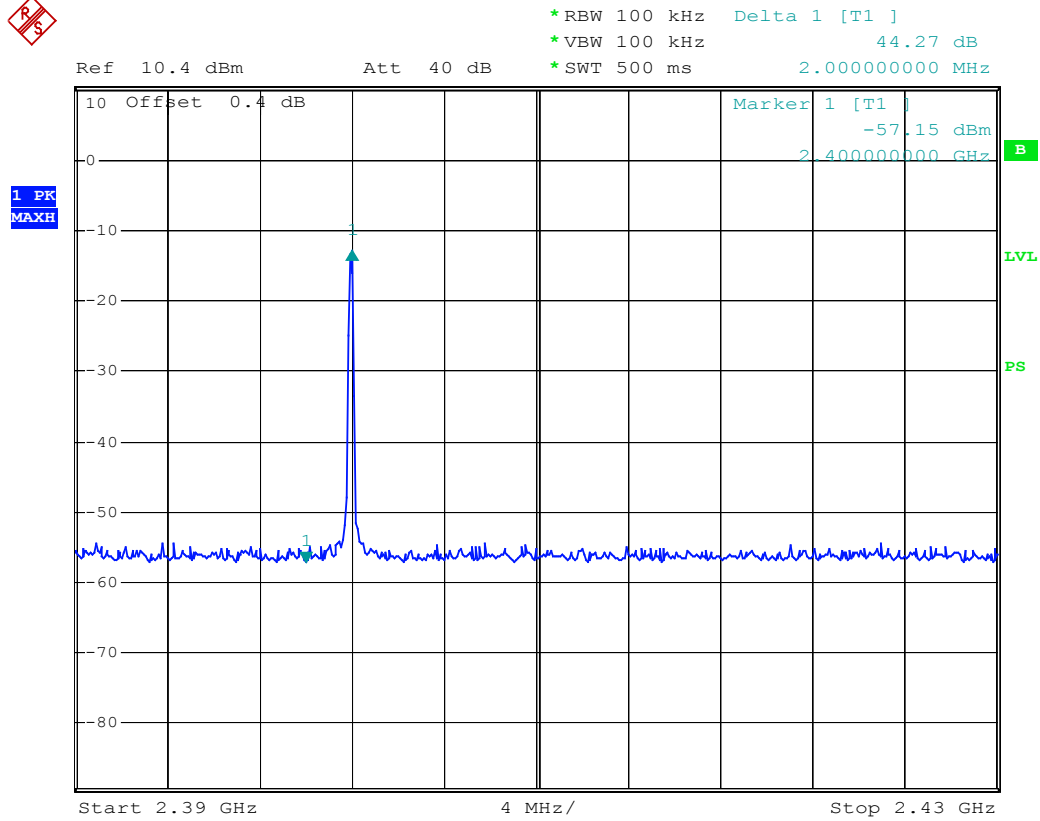
|                    |           |
|--------------------|-----------|
| Temperature:       | 27 °C     |
| Relative Humidity: | 50 %      |
| ATM Pressure:      | 1009 mbar |

*The testing was performed by Louise Lu on 2005-11-1.*

Test Result: Pass

Test mode: Transmitting

| Frequency (MHz) | Delta of Peak to Edge Point | Limit  |
|-----------------|-----------------------------|--------|
| 2400.0          | 44.27                       | >20 dB |
| 2438.5          | 42.26                       | >20 dB |



Band edge low

Date: 1.NOV.2005 13:40:44

