

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
INTENTIONAL RADIATOR CERTIFICATION TO  
FCC PART 15 SUBPART C REQUIREMENT**

OF

**BLUETOOTH MONO HEADSET**

**FCC ID: UHTBTH18**

**MODEL No.: BTH-F1**

**LISTED MODELS: BTH-18, BTH-19,  
BTH-20, BTH-21, BELLO**

**BRAND NAME: N/A**

**REPORT NO: WE07040005**

**ISSUE DATE: Apr 23, 2007**

*Prepared for*

**SHENZHEN SKYPOWER INDUSTRY DEVELOPMENT CO., LTD.  
2408A, SEG PLAZA HUAQIANG NORTH RD, SHENZHEN**

*Prepared by*

**SHENZHEN HUATONGWEI INTERNATIONAL  
INSPECTION CO., LTD.**

*d.b.a.*

**SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO., LTD.  
HUATONGWEI BUILDING, KEJI RD. 12 S., HIGH-TECH PARK,  
NANSAN DISTRICT, SHENZHEN,  
GUANGDONG, P.R.CHINA**

**TEL: 86-755-26748099  
FAX: 86-755-26748005**

## VERIFICATION OF COMPLIANCE

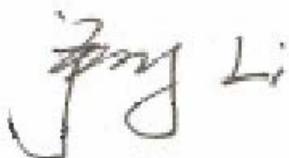
|                      |  |
|----------------------|--|
| Applicant:           | V THREE INTERNATIONAL LIMITED<br>Room 620, Advanced Technology Centre, 2 Choi Fat Street, Sheung Shui, Hong Kong |
| Product Description: | Bluetooth Mono Headset   |
| Brand Name:          | N/A  |
| Model Number:        | BTH-F1(Representative model for test)  |
| Serial Number:       | BTH-18; BTH-19; BTH-20; BTH-21; BELLO  |
| File Number:         | WE07040005   |
| Date of Test:        | Apr 10, 2007 ~ Apr 19, 2007  |

### We hereby certify that:

The above equipment was tested by SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

The test results of this report relate only to the tested sample identified in this report.

#### Approved By



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Jimmy Li / Executive Manager  
SHENZHEN HUA TONG WEI  
INTERNATIONAL INSPECTION CO., LTD.

#### Reviewed By



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Tracy Qi / RF Engineer  
SHENZHEN HUA TONG WEI  
INTERNATIONAL INSPECTION CO., LTD.

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## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

The tested product in the report, Model: BTH-F1 is a Bluetooth Headset.

The EUT is compliance with Bluetooth Standard.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 2402~2480MHz, 79 channels
- B). Modulation type: FHSS
- C). Antenna Designation: Micro-strip Antenna, -1.01 dBi, Non-User Replaceable(Fixed)
- D). Power Supply: DC 3.7 V From Battery
- E). The series models BTH-F1,BTH-18; BTH-19; BTH-20; BTH-21 and BELLO have the same circuit diagram, PCB layout , only the model name are difference intend for market requirement.

### 1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: UHTBTH18 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system (receiver) is compliance with Subpart B is authorized under a Declaration of Conformity procedure.

### 1.3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

### 1.4 TEST FACILITY

The fully anechoic chamber test site and conducted measurement facility used to collect the radiated data is located on the address of SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD Huatongwei Building, Keji Rd. 12 S., High-tech Park, Nanshan District, Shenzhen, Guangdong, P.R.China.

The fully anechoic chamber Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements.

## 1.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

## 1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

## 1.7 LABORATORY ACCREDITATIONS AND LISTINGS

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

### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 1999 General Requirements) for the Competence of Testing and Calibration Laboratories.

### **A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 1999 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is from Aug 24, 2005 to Sept 30, 2007

### **FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date September 12, 2006.

### **IC-Registration No.: 5377**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November 28th, 2005.

### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

**NEMKO-Aut. No.: ELA125**

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

**VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

**IECEE CB**

Shenzhen Huatongwei International Inspection Co Ltd has been assessed and determined to fully comply with the requirements of ISO/IEC 17025: 2005-05, The Basic Rules, IECEE 01: 2006-10 and Rules of Procedure IECEE 02: 2006-10, and the relevant IECEE CB-Scheme Operational Documents.

It is therefore entitled to operate as a CB Testing Laboratory under the responsibility of Nemko A/S. This certificate remains valid until May 25th 2009 at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Program administered by the IECEE CB Scheme.

**DNV**

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until 19 April, 2007.

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT CONFIGURATION

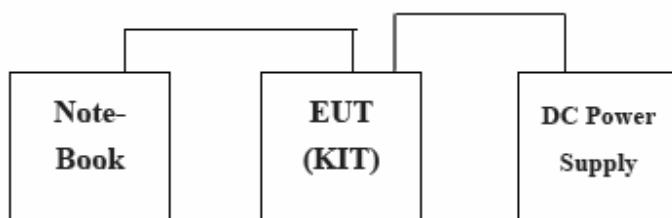
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 2.3 CONFIGURATION OF TESTED SYSTEM

**Fig. 2-1 Configuration of Tested System**



**Tested System (Fixed channel)**

**Table 2-1 Equipment Used in Tested System**

| No. | Product     | Manufacturer | Model No. | Serial No. | FCC ID |
|-----|-------------|--------------|-----------|------------|--------|
| 1   | Notebook PC | IBM          | R50e      | L3-XGMC3   | DoC    |

### 3. SUMMARY OF TEST RESULTS

| FCC Rules                    | Description Of Test                       | Result    |
|------------------------------|---|-----------|
| §15.207(a)                   | Conducted Emission                        | Compliant |
| §15.247(b)(1)                | Peak Output Power                         | Compliant |
| §15.247(a)                   | 20dB Bandwidth                            | Compliant |
| §15.247(c)                   | 100 KHz Bandwidth Of Frequency Band Edges | Compliant |
| §15.209(a) (f)               | Spurious Emission                         | Compliant |
| §15.247(a)(1)                | Frequency Separation                      | Compliant |
| §15.247(a)(1)(iii)           | Number of hopping frequency               | Compliant |
| §15.247(a)(1)(iii)           | Time of Occupancy                         | Compliant |
| §15.247                      | Peak Power Density                        | Compliant |
| §15.203,<br>§15.247(b)(4)(i) | Antenna Requirement                       | Compliant |
| §1.1310                      | RF Exposure                               | Compliant |

### 4. DESCRIPTION OF TEST MODES

1. The EUT has been tested under normal operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.  
Channel low (2402MHz), mid (2441MHz) and high (2480MHz) with highest data rate are chosen for full testing.

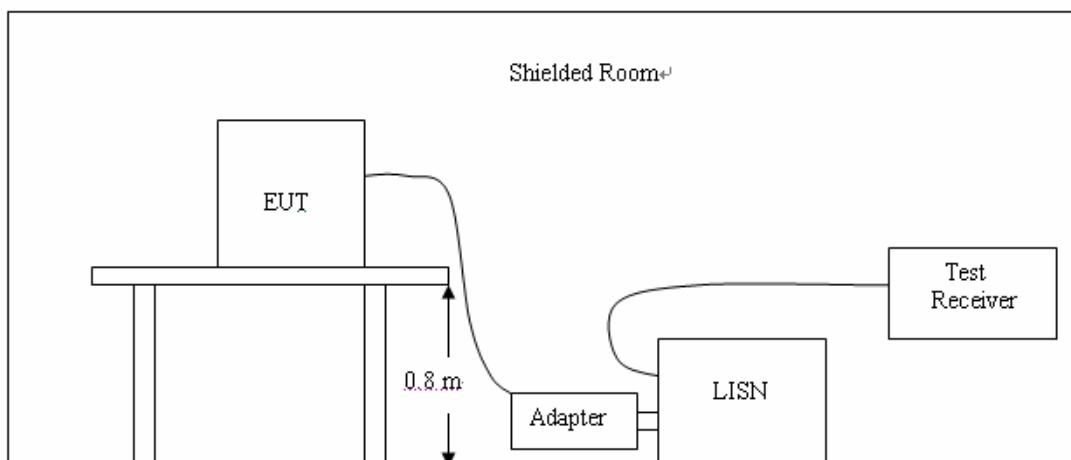
## 5. CONDUCTED EMISSIONS TEST (NOT APPLICABLE TO THIS DEVICE)

### 5.1 MEASUREMENT PROCEDURE:

The EUT was tested according to ANSI C63.4 - 2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u Henry as specified by section 5.1 of ANSI C63.4 - 2003. Cables and peripherals were moved to find the maximum emission levels for each frequency.

**Note:** The EUT will not be operated during charging the battery with the power adapter.

### 5.2 TEST SET-UP (Block Diagram of Configuration)



### 5.3 MEASUREMENT EQUIPMENT USED:

| Conducted Emission Test Site # 3 |                 |              |               |           |          |
|----------------------------------|-----------------|--------------|---------------|-----------|----------|
| EQUIPMENT TYPE                   | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| EMI TEST RECEIVER                | ROHDE & SCHWARZ | ESCS30       | 100038        | 2006/11   | 2007/10  |
| ARTIFICIAL MAINS                 | ROHDE & SCHWARZ | ESH2-Z5      | 100028        | 2006/11   | 2007/10  |
| PULSE LIMITER                    | ROHDE & SCHWARZ | ESHSZ2       | 100044        | 2006/11   | 2007/10  |
| EMI TEST SOFTWARE                | ROHDE & SCHWARZ | ES-K1 1.71   | N/A           | 2006/11   | 2007/10  |

**Note:** Each piece of equipment is scheduled for calibration once a year.

#### 5.4 CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

| Frequency<br>(MHz) | Maximum RF Line Voltage (dB $\mu$ V) |      |         |        |
|--------------------|--------------------------------------|------|---------|--------|
|                    | CLASS A                              |      | CLASS B |        |
|                    | Q.P.                                 | Ave. | Q.P.    | Ave    |
| 0.15 - 0.50        | 79                                   | 66   | 66-56*  | 56-46* |
| 0.50 - 5.00        | 73                                   | 60   | 56      | 46     |
| 5.00 - 30.0        | 73                                   | 60   | 60      | 50     |

\* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

#### 5.5 MEASUREMENT RESULT:

Owing to the DC operation of EUT, this test item is not performed.

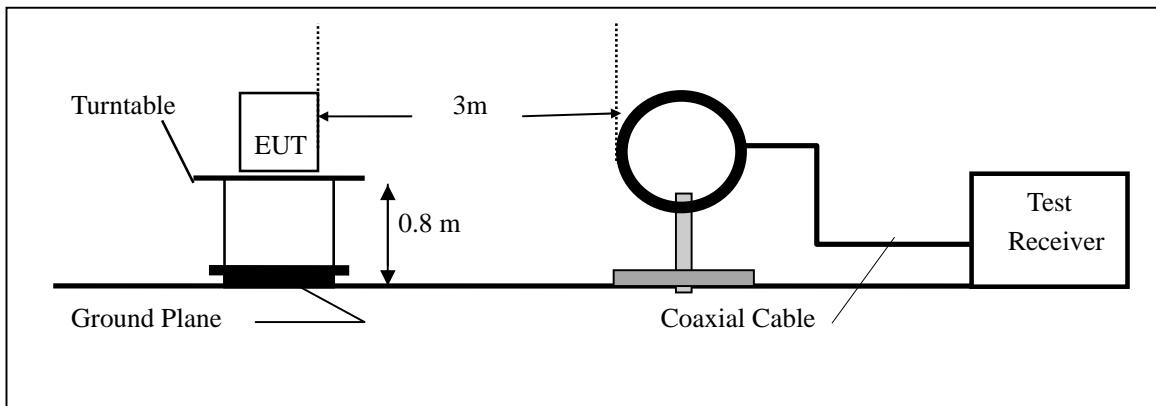
## 6. SPURIOUS RADIATED EMISSION TEST

### 6.1 MEASUREMENT PROCEDURE

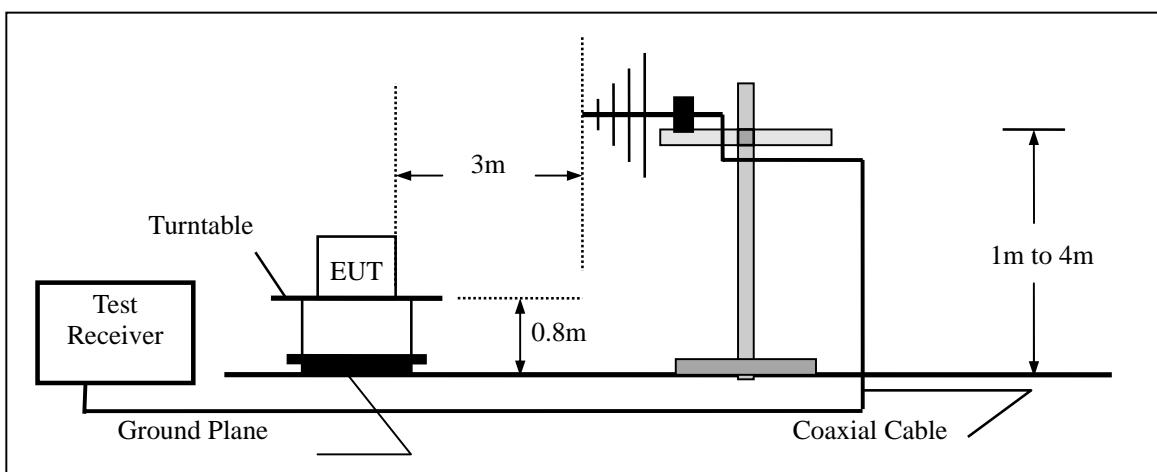
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

### 6.2 TEST SET-UP (Block Diagram of Configuration)

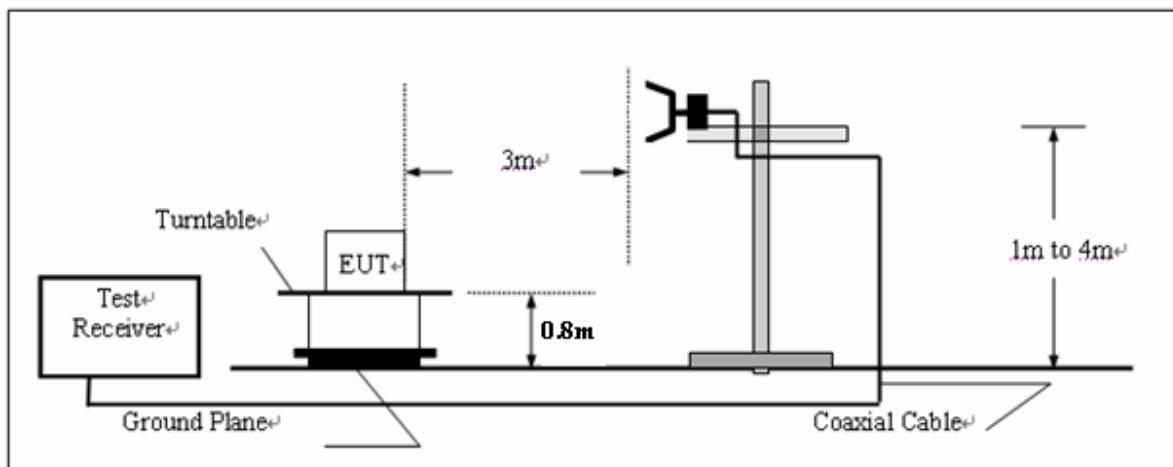
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



## (C) Radiated Emission Test Set-Up, Frequency above 1000MHz



## 6.3 MEASUREMENT EQUIPMENT USED:

| 3/5 Anechoic Chamber Radiation Test Site # 4 |                 |              |               |           |          |
|--|-----------------|--------------|---------------|-----------|----------|
| EQUIPMENT TYPE                               | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| ULTRA-BROADBAND ANTENNA                      | ROHDE & SCHWARZ | HL562        | 100015        | 2006/11   | 2007/10  |
| EMI TEST RECEIVER                            | ROHDE & SCHWARZ | ESI 26       | 100009        | 2006/11   | 2007/10  |
| RF TEST PANEL                                | ROHDE & SCHWARZ | TS / RSP     | 335015/ 0017  | N/A       | N/A      |
| TURNTABLE                                    | ETS             | 2088         | 2149          | N/A       | N/A      |
| HORN ANTENNA                                 | ROHDE & SCHWARZ | HF906        | 100039        | 2006/11   | 2007/10  |
| ANTENNA MAST                                 | ETS             | 2075         | 2346          | N/A       | N/A      |
| EMI TEST SOFTWARE                            | ROHDE & SCHWARZ | ES-K1 1.71   | N/A           | 2006/11   | 2007/10  |

**Note:** Each piece of equipment is scheduled for calibration once a year.

## 6.4 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

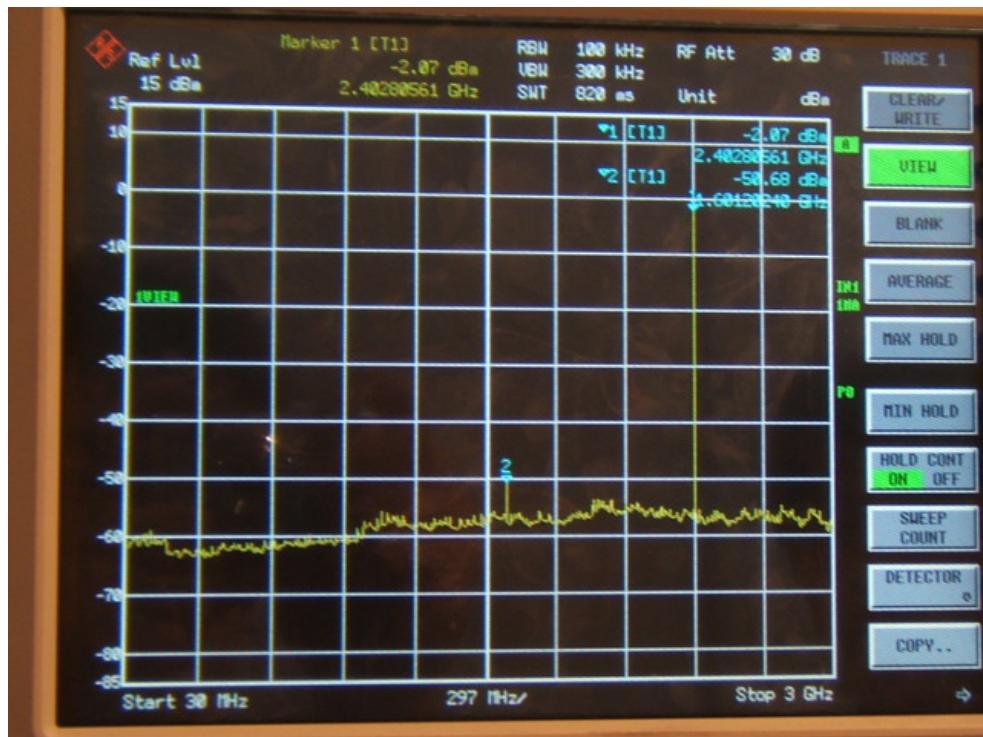
$$FS = RA + AF + CL - AG$$

|                        |                     |  |
|------------------------|---------------------|--|
| Where                  | FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| RA = Reading Amplitude |                     | AG = Amplifier Gain                        |
| AF = Antenna Factor    |                     |  |

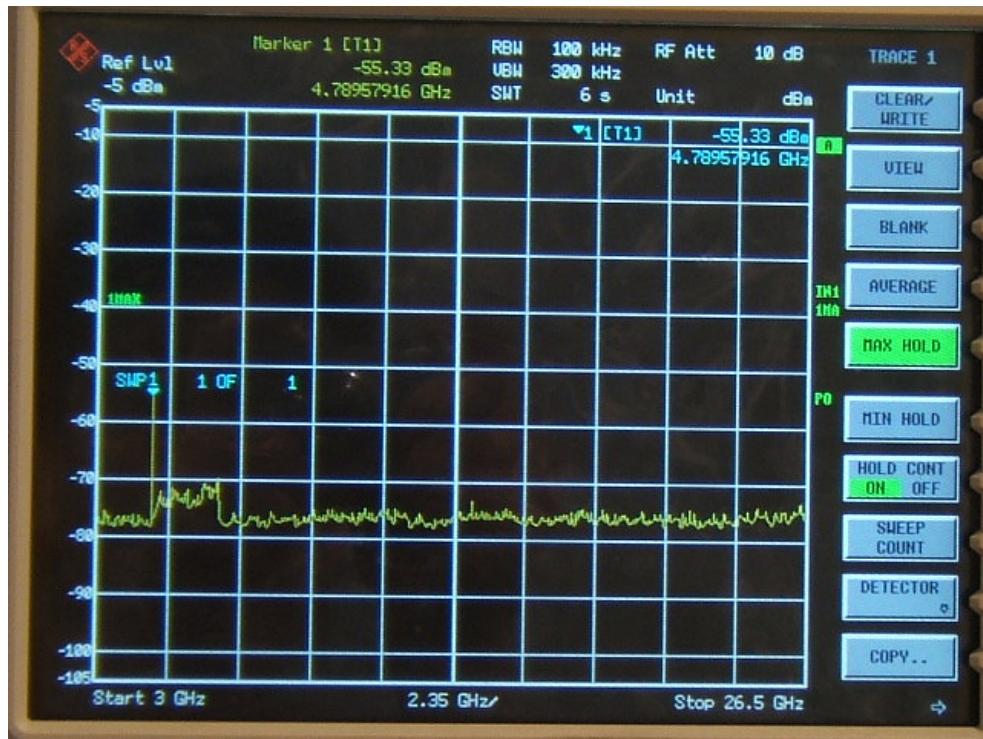
## 6.5 MEASUREMENT RESULT

Refer to attach tabular data sheets.

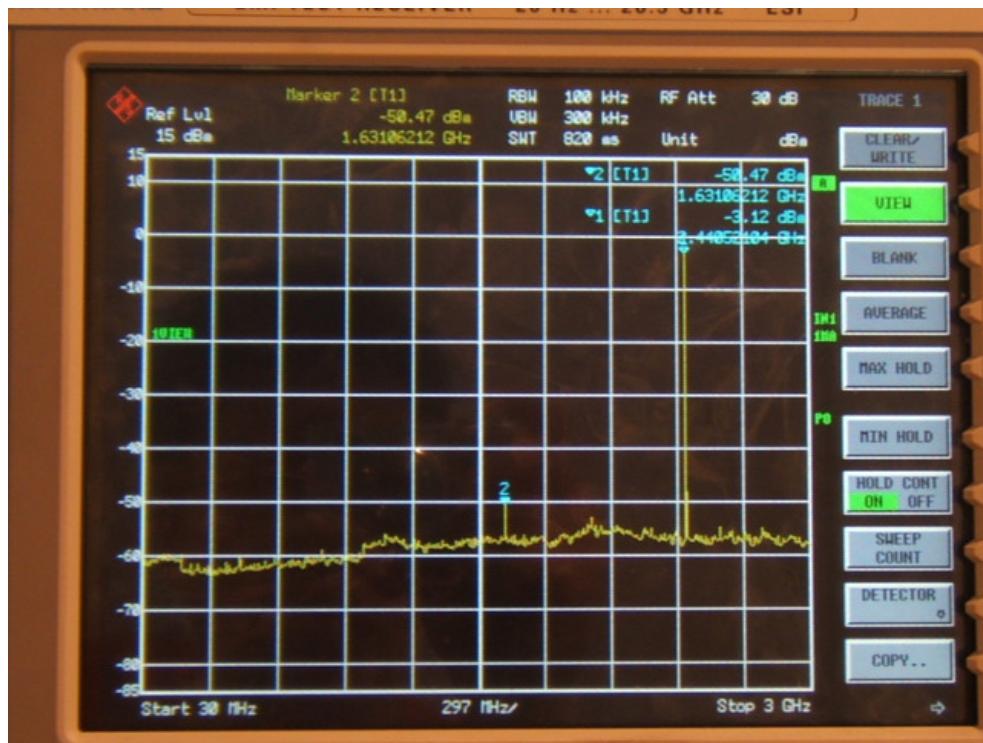
### Conducted Spurious Emission Measurement Results CH Low 30MHz – 3GHz



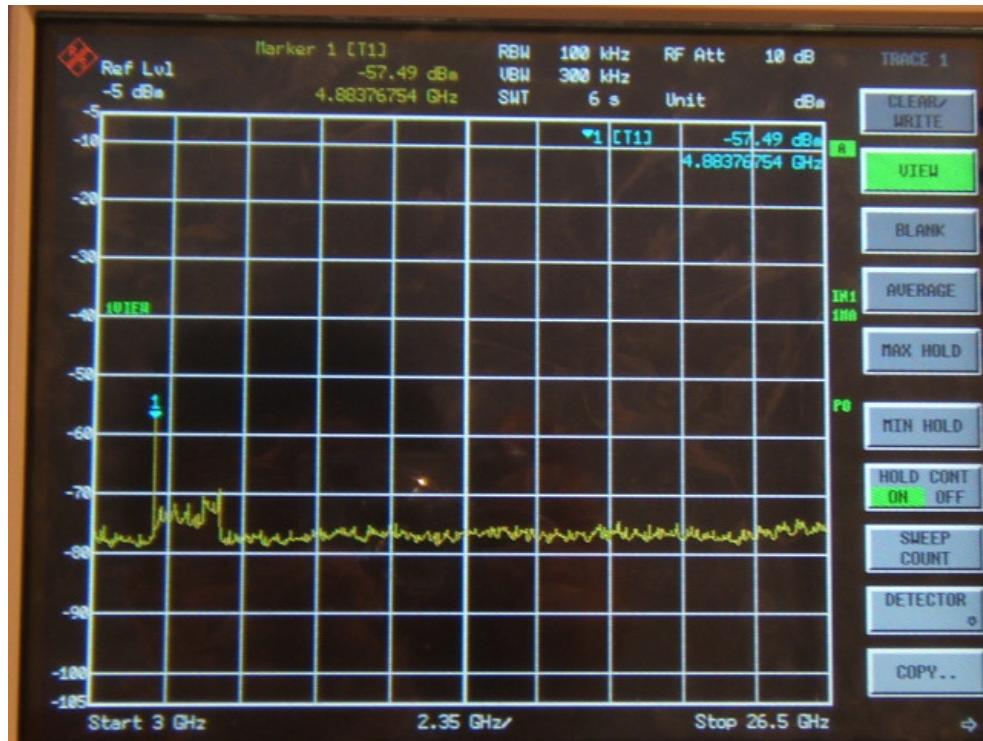
**CH Low 3G Hz – 26.5GHz**



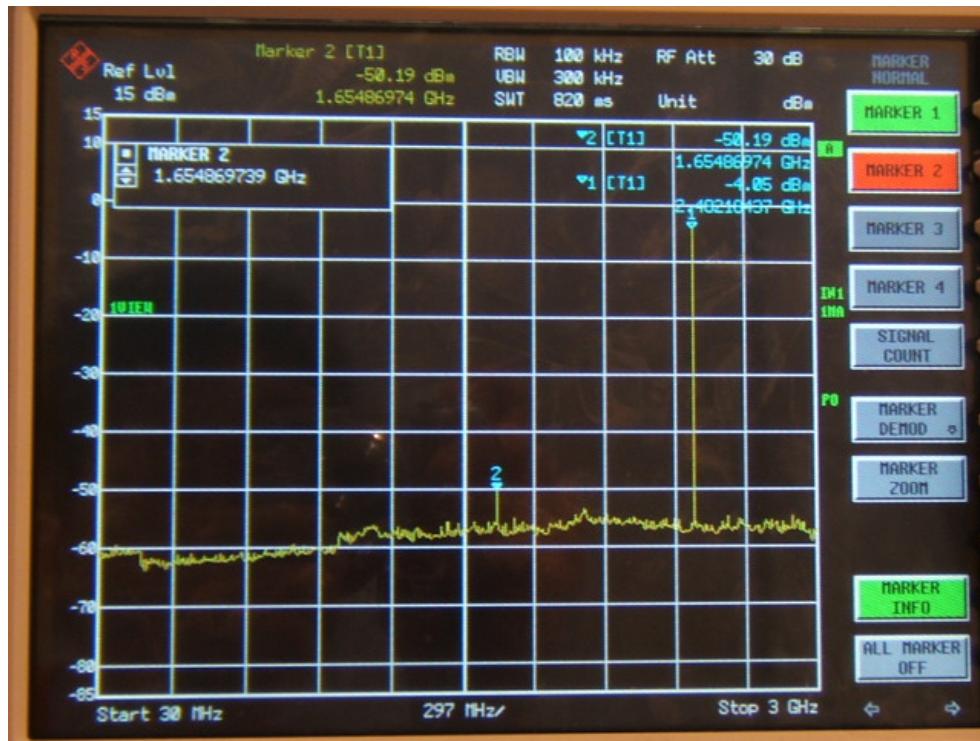
## CH Mid 30MHz – 3GHz



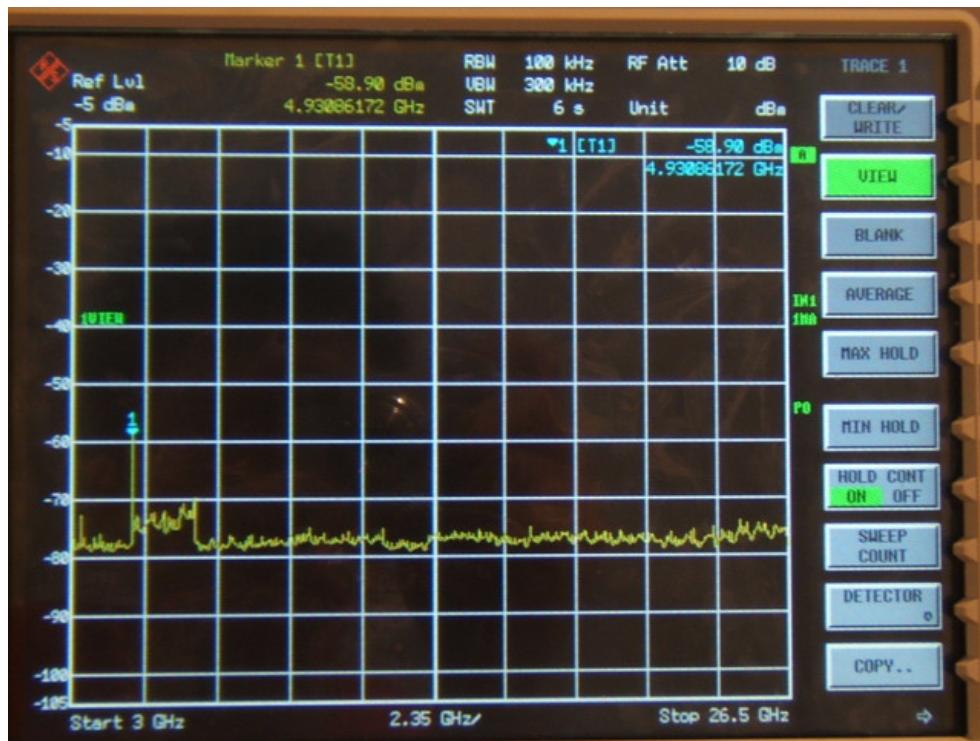
## CH Mid 3G Hz – 26.5GHz



## CH High 30MHz – 3GHz



## CH High 3G Hz – 26.5GHz



**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode: TX CH Low

Test Date: Apr 12, 2007

Fundamental Frequency: 2402 MHz

Test By: Tracy

Temperature: 25 °C

Pol: Ver. /Hor.

Humidity: 55%

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | DetectorMode<br>(PK/AV) | Reading<br>(dBuV) | Ant./CL/<br>Amp. CF(dB) | Actual FS<br>(dBuV/m) | Limit3m<br>(dBuV/m) | Safe Margin<br>(dB) |
|----------------|-----------------|-------------------------|-------------------|-------------------------|-----------------------|---------------------|---------------------|
| 30.00          | V               | Peak                    | 1.40              | 21.20                   | 22.60                 | 40.00               | -17.40              |
| 76.11          | V               | Peak                    | 5.60              | 11.60                   | 17.20                 | 40.00               | -22.80              |
| 171.90         | V               | Peak                    | 20.60             | 10.70                   | 31.30                 | 43.50               | -12.20              |
| 525.69         | V               | Peak                    | 5.30              | 20.80                   | 26.10                 | 46.00               | -19.90              |
| 935.85         | V               | Peak                    | 5.90              | 25.50                   | 31.40                 | 46.00               | -14.60              |
| 30.00          | H               | Peak                    | 1.40              | 21.20                   | 22.60                 | 40.00               | -17.40              |
| 86.37          | H               | Peak                    | 5.70              | 11.80                   | 17.50                 | 40.00               | -22.50              |
| 175.79         | H               | Peak                    | 18.40             | 10.80                   | 29.20                 | 43.50               | -14.30              |
| 549.02         | H               | Peak                    | 4.50              | 21.50                   | 26.00                 | 46.00               | -20.00              |
| 947.52         | H               | Peak                    | 6.50              | 25.50                   | 32.00                 | 46.00               | -14.00              |

**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) Radiated emissions measured in frequency range from 30MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode: TX CH Mid  
 Fundamental Frequency: 2441 MHz  
 Temperature: 25 °C  
 Humidity: 55%

Test Date: Apr 12, 2007  
 Test By: Tracy  
 Pol: Ver. /Hor.

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | DetectorMode<br>(PK/AV) | Reading<br>(dBuV) | Ant./CL/<br>Amp. CF(dB) | Actual FS<br>(dBuV/m) | Limit3m<br>(dBuV/m) | Safe Margin<br>(dB) |
|----------------|-----------------|-------------------------|-------------------|-------------------------|-----------------------|---------------------|---------------------|
| 30.00          | V               | Peak                    | 1.90              | 21.20                   | 23.10                 | 40.00               | -16.90              |
| 77.21          | V               | Peak                    | 5.10              | 11.50                   | 16.60                 | 40.00               | -23.40              |
| 170.27         | V               | Peak                    | 20.60             | 10.60                   | 33.50                 | 43.50               | -10.00              |
| 531.22         | V               | Peak                    | 3.30              | 20.90                   | 24.20                 | 46.00               | -21.80              |
| 911.02         | V               | Peak                    | 5.50              | 25.30                   | 30.80                 | 46.00               | -15.20              |
| 30.00          | H               | Peak                    | 2.2               | 21.20                   | 23.40                 | 40.00               | -16.60              |
| 79.80          | H               | Peak                    | 7.40              | 12.10                   | 19.50                 | 40.00               | -20.50              |
| 174.58         | H               | Peak                    | 16.00             | 10.80                   | 26.80                 | 43.50               | -14.30              |
| 548.25         | H               | Peak                    | 6.80              | 21.50                   | 28.30                 | 46.00               | -20.00              |
| 927.24         | H               | Peak                    | 6.70              | 25.40                   | 32.10                 | 46.00               | -14.00              |

**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) Radiated emissions measured in frequency range from 30MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode: TX CH High  
 Fundamental Frequency: 2480 MHz  
 Temperature: 25 °C  
 Humidity: 55%

Test Date: Apr 12, 2007  
 Test By : Tracy  
 Pol : Ver./Hor.

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | DetectorMode<br>(PK/AV) | Reading<br>(dBuV) | Ant./CL/<br>Amp. CF(dB) | Actual FS<br>(dBuV/m) | Limit3m<br>(dBuV/m) | Safe Margin<br>(dB) |
|----------------|-----------------|-------------------------|-------------------|-------------------------|-----------------------|---------------------|---------------------|
| 30.00          | V               | Peak                    | 5.00              | 21.20                   | 26.20                 | 40.00               | -13.80              |
| 81.25          | V               | Peak                    | 7.00              | 11.80                   | 18.80                 | 40.00               | -21.20              |
| 170.33         | V               | Peak                    | 24.50             | 10.70                   | 35.20                 | 43.50               | -8.30               |
| 542.12         | V               | Peak                    | 5.70              | 21.40                   | 27.10                 | 46.00               | -18.90              |
| 915.38         | V               | Peak                    | 5.80              | 25.30                   | 31.10                 | 46.00               | -14.90              |
| 30.00          | H               | Peak                    | 3.5               | 21.20                   | 24.70                 | 40.00               | -15.30              |
| 74.31          | H               | Peak                    | 6.80              | 12.10                   | 18.90                 | 40.00               | -21.10              |
| 171.28         | H               | Peak                    | 18.70             | 10.70                   | 29.40                 | 43.50               | -14.10              |
| 544.25         | H               | Peak                    | 6.10              | 21.40                   | 27.50                 | 46.00               | -18.50              |
| 925.33         | H               | Peak                    | 6.20              | 25.40                   | 31.60                 | 46.00               | -14.40              |

**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) Radiated emissions measured in frequency range from 30MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH Low

Test Date: Apr 12, 2007

Fundamental Frequency: 2402 MHz

Test By : Tracy

Temperature: 25 °C

Pol : Ver.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               | Actual FS               |                  | Peak           | A V               | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------------------------|------------------|----------------|-------------------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL/<br>Amp. CF(dB) | Peak<br>(dBuV/n) | AV<br>(dBuV/n) | Limit<br>(dBuV/m) |                |
| 1579.16        | 59.00             | --                | -7.40                   | 51.60            | --             | 74.00             | 54.00 -22.40   |
| 3997.99        | 46.20             | --                | 2.10                    | 48.30            | --             | 74.00             | 54.00 -25.70   |
| 4804.00        | ----              |                   |                         |                  |                |                   |                |
| 7206.00        | ----              |                   |                         |                  |                |                   |                |
| 9608.00        | ----              |                   |                         |                  |                |                   |                |
| 12010.00       | ----              |                   |                         |                  |                |                   |                |
| 14412.00       | ----              |                   |                         |                  |                |                   |                |
| 16814.00       | ----              |                   |                         |                  |                |                   |                |
| 19216.00       | ----              |                   |                         |                  |                |                   |                |
| 21618.00       | ----              |                   |                         |                  |                |                   |                |
| 24020.00       | ----              |                   |                         |                  |                |                   |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH Low

Test Date: Apr 12, 2007

Fundamental Frequency: 2402 MHz

Test By: Tracy

Temperature: 25 °C

Pol : Hor.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               | Ant./CL/<br>Amp. CF(dB) | Actual FS        |                | Peak              | A V               | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------------------------|------------------|----------------|-------------------|-------------------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) |                         | Peak<br>(dBuV/n) | AV<br>(dBuV/n) | Limit<br>(dBuV/m) | Limit<br>(dBuV/m) |                |
| 4124.00        | 46.60             | --                | 2.10                    | 48.70            | --             | 74.00             | 54.00             | -25.30         |
| 4804.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 7206.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 9608.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 12010.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 14412.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 16814.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 19216.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 21618.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 24020.00       | ----              |                   |                         |                  |                |                   |                   |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH Mid

Test Date: Apr 12, 2007

Fundamental Frequency: 2441MHz

Test By: Tracy

Temperature: 25 °C

Pol : Hor.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               | Ant./CL/<br>Amp. CF(dB) | Actual FS         |                 | Peak              | A V               | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------------------------|-------------------|-----------------|-------------------|-------------------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) |                         | Peak<br>(dBuV/nr) | AV<br>(dBuV/nr) | Limit<br>(dBuV/m) | Limit<br>(dBuV/m) |                |
| 3997.00        | 41.70             | --                | 2.10                    | 43.80             | --              | 74.00             | 54.00             | -9.80          |
| 4882.00        | ----              |                   |                         |                   |                 |                   |                   |                |
| 7323.00        | ----              |                   |                         |                   |                 |                   |                   |                |
| 9764.00        | ----              |                   |                         |                   |                 |                   |                   |                |
| 12205.00       | ----              |                   |                         |                   |                 |                   |                   |                |
| 14646.00       | ----              |                   |                         |                   |                 |                   |                   |                |
| 17087.00       | ----              |                   |                         |                   |                 |                   |                   |                |
| 19528.00       | ----              |                   |                         |                   |                 |                   |                   |                |
| 21969.00       | ----              |                   |                         |                   |                 |                   |                   |                |
| 24410.00       | ----              |                   |                         |                   |                 |                   |                   |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH Mid

Test Date: Apr 12, 2007

Fundamental Frequency: 2441MHz

Test By: Tracy

Temperature: 25 °C

Pol : Ver.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               |                         | Actual FS        |                | Peak              | AV                | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------------------------|------------------|----------------|-------------------|-------------------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL/<br>Amp. CF(dB) | Peak<br>(dBuV/n) | AV<br>(dBuV/n) | Limit<br>(dBuV/m) | Limit<br>(dBuV/m) |                |
| 1613.23        | 45.50             | --                | -7.20                   | 38.30            | --             | 74.00             | 54.00             | -35.70         |
| 3986.50        | 37.50             | --                | 2.10                    | 39.60            | --             | 74.00             | 54.00             | -34.40         |
| 4882.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 7323.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 9764.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 12205.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 14646.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 17087.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 19528.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 21969.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 24410.00       | ----              |                   |                         |                  |                |                   |                   |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH High

Test Date: Apr 12, 2007

Fundamental Frequency: 2480MHz

Test By: Tracy

Temperature: 25 °C

Pol : Hor.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               |       | Ant./CL/<br>Amp. CF(dB) | Actual FS |    | Peak  | AV    | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------|-------------------------|-----------|----|-------|-------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Peak  |                         | Peak      | AV | Limit | Limit |                |
| 1647.29        | 58.30             | --                | -7.00 | -7.00                   | 51.30     | -- | 74.00 | 54.00 | -22.70         |
| 4202.00        | 41.70             | --                | 2.20  | 2.20                    | 43.90     | -- | 74.00 | 54.00 | -30.10         |
| 4960.00        | ----              |                   |       |                         |           |    |       |       |                |
| 7440.00        | ----              |                   |       |                         |           |    |       |       |                |
| 9920.00        | ----              |                   |       |                         |           |    |       |       |                |
| 12400.00       | ----              |                   |       |                         |           |    |       |       |                |
| 14800.00       | ----              |                   |       |                         |           |    |       |       |                |
| 17360.00       | ----              |                   |       |                         |           |    |       |       |                |
| 19840.00       | ----              |                   |       |                         |           |    |       |       |                |
| 22320.00       | ----              |                   |       |                         |           |    |       |       |                |
| 24800.00       | ----              |                   |       |                         |           |    |       |       |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown "—" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode: TX CH High

Test Date: Apr 12, 2007

Fundamental Frequency: 2480MHz

Test By: Tracy

Temperature: 25 °C

Pol : Ver.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | A V               | Ant./CL/<br>Amp. CF(dB) | Actual FS        |                | Peak              | A V               | Margin<br>(dB) |
|----------------|-------------------|-------------------|-------------------------|------------------|----------------|-------------------|-------------------|----------------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) |                         | Peak<br>(dBuV/n) | AV<br>(dBuV/n) | Limit<br>(dBuV/m) | Limit<br>(dBuV/m) |                |
| 1647.29        | 57.20             | --                | -8.50                   | 50.20            | --             | 74.00             | 54.00             | -23.80         |
| 4066.00        | 41.60             | --                | 2.10                    | 43.70            | --             | 74.00             | 54.00             | -30.30         |
| 4960.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 7440.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 9920.00        | ----              |                   |                         |                  |                |                   |                   |                |
| 12400.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 14800.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 17360.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 19840.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 22320.00       | ----              |                   |                         |                  |                |                   |                   |                |
| 24800.00       | ----              |                   |                         |                  |                |                   |                   |                |

**Remark:**

- (1) Measuring frequencies from 1GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.
- (3) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.  
Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

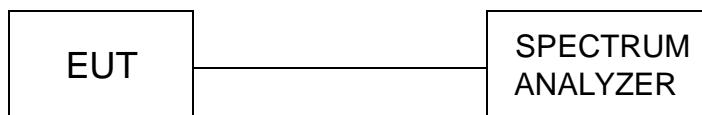
## 7. 20dB BANDWIDTH MEASUREMENT

### 7.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=100 KHz (1% of Bandwidth).Span=1MHz, Sweep=auto
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

**Note:** For frequency hopping systems operating in the 2400MHz-2483.5MHz no limit for 20dB bandwidth.

### 7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 7.3 MEASUREMENT EQUIPMENT USED:

| EQUIPMENT TYPE    | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|-------------------|-----------------|--------------|---------------|-----------|----------|
| EMI TEST RECEIVER | ROHDE & SCHWARZ | ESI 26       | 100009        | 2006/11   | 2007/10  |

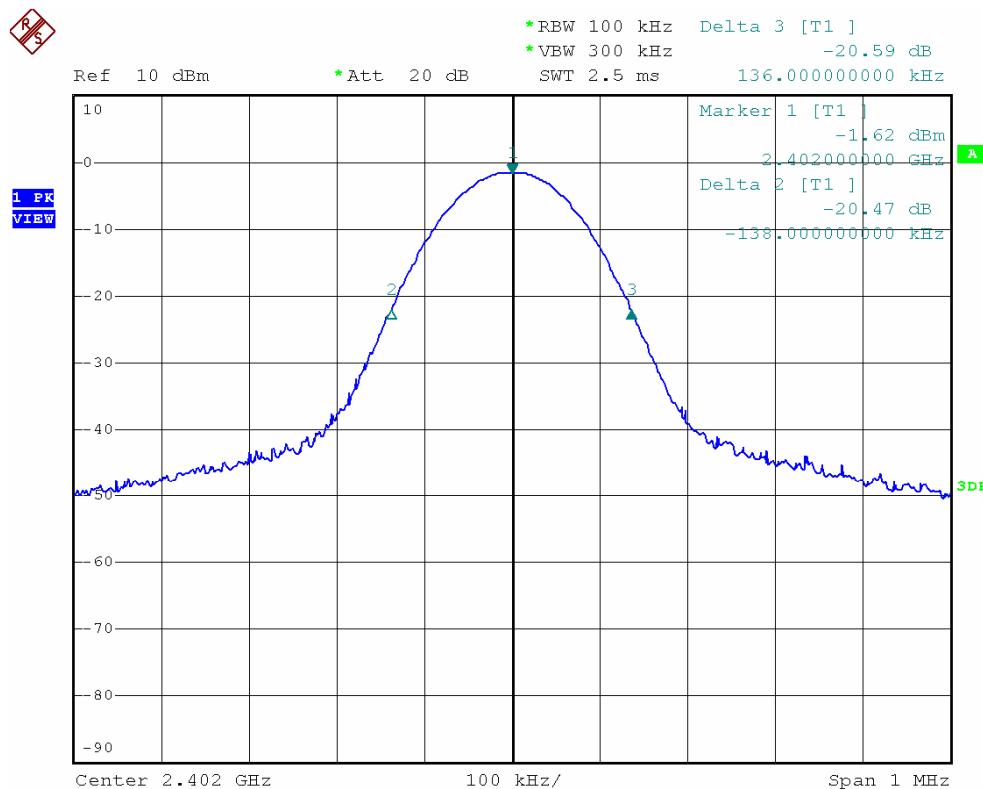
**Note:** Each piece of equipment is scheduled for calibration once a year.

### 7.4 MEASUREMENT RESULTS:

| Channel | 20 dB Bandwidth (MHz) | Pass / Fail |
|---------|-----------------------|-------------|
| Lower   | 0.274                 | PASS        |
| Mid     | 0.272                 | PASS        |
| Higher  | 0.272                 | PASS        |

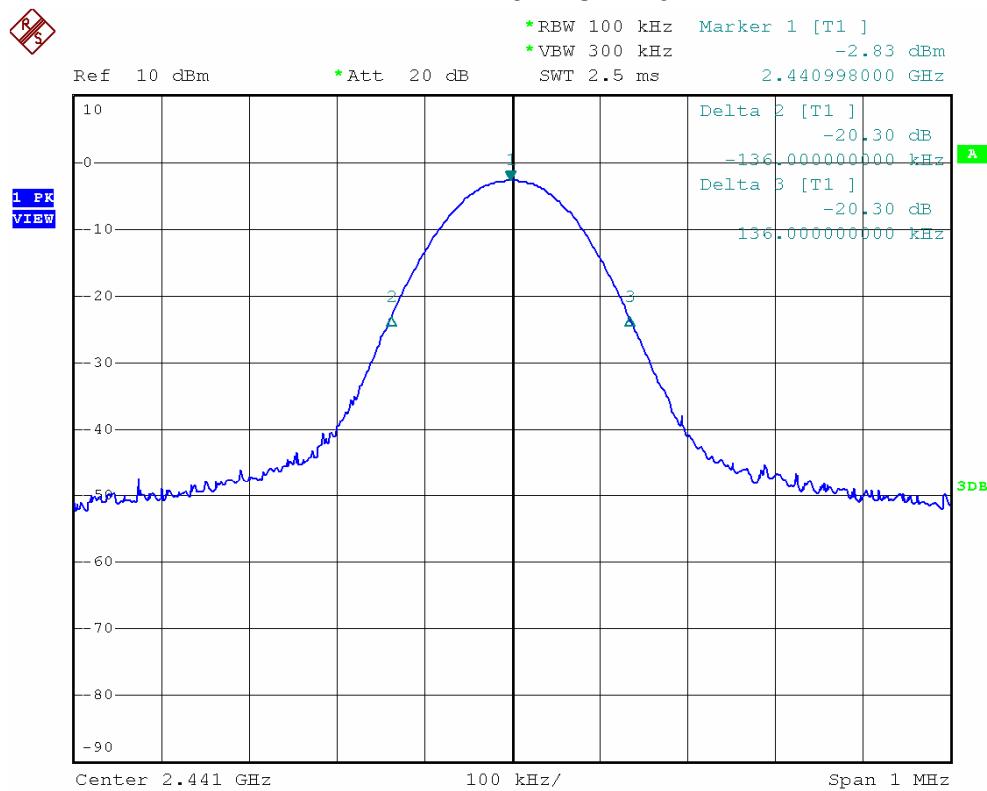
## 20dB Bandwidth Test Plots:

### Channel Low



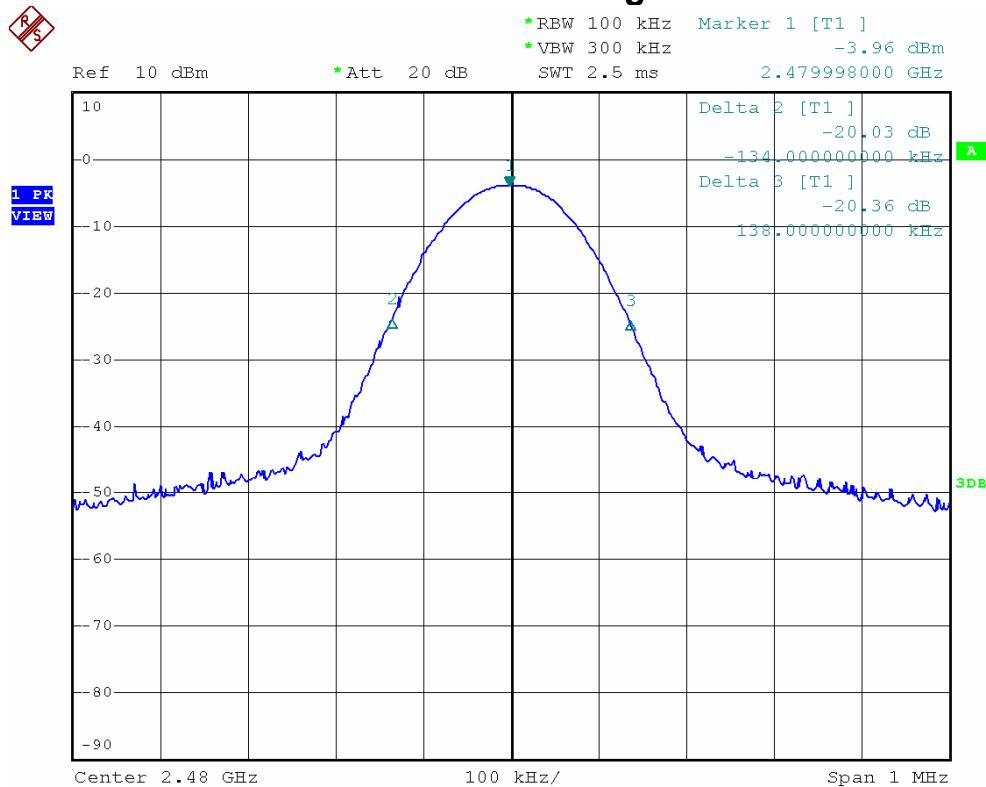
Date: 19.APR.2007 00:25:55

## Channel Mid



Date: 19.APR.2007 00:24:43

## Channel Higher



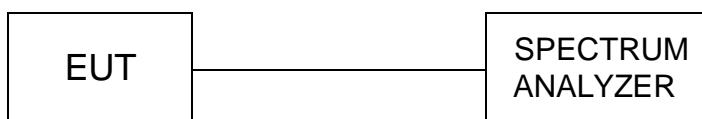
Date: 19.APR.2007 00:22:44

## 8. PEAK OUTPUT POWER MEASUREMENT

### 8.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW, VBW = 1MHz
4. Repeat above procedures until all frequency measured were complete

### 8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 8.3 MEASUREMENT EQUIPMENT USED:

| EQUIPMENT TYPE    | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|-------------------|-----------------|--------------|---------------|-----------|----------|
| EMI TEST RECEIVER | ROHDE & SCHWARZ | ESI 26       | 100009        | 2006/11   | 2007/10  |

*Note: Each piece of equipment is scheduled for calibration once a year.*

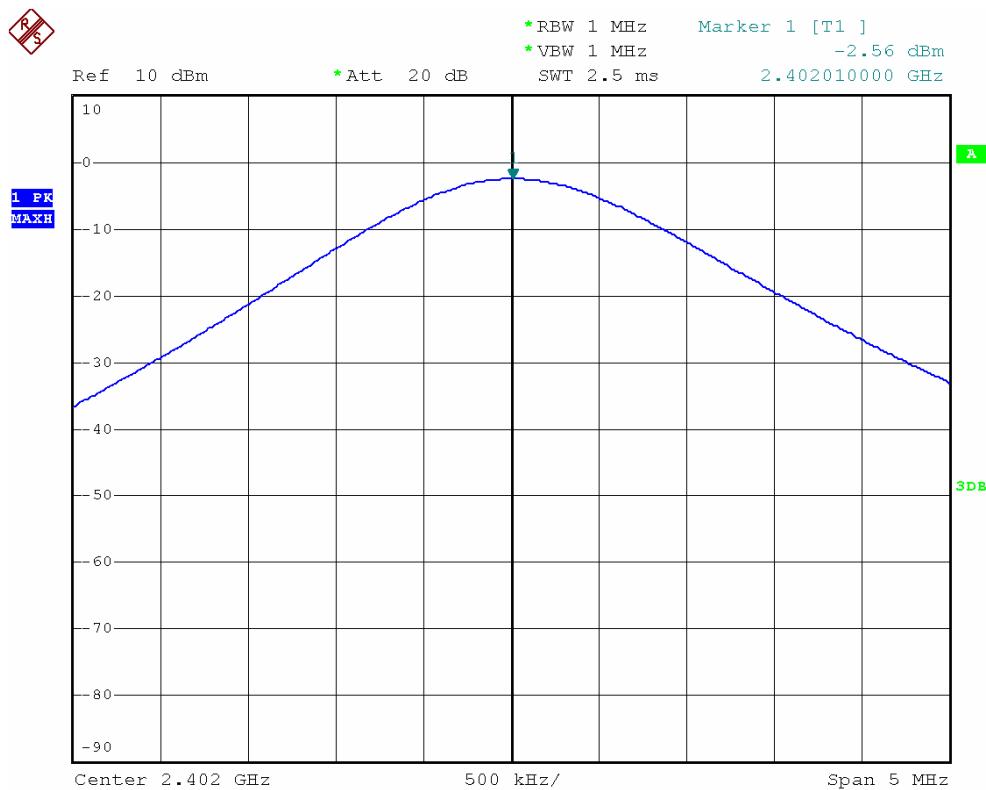
### 8.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER

The Peak Output Power Measurement limits are 30dBm.

### 8.5 MEASUREMENT RESULTS:

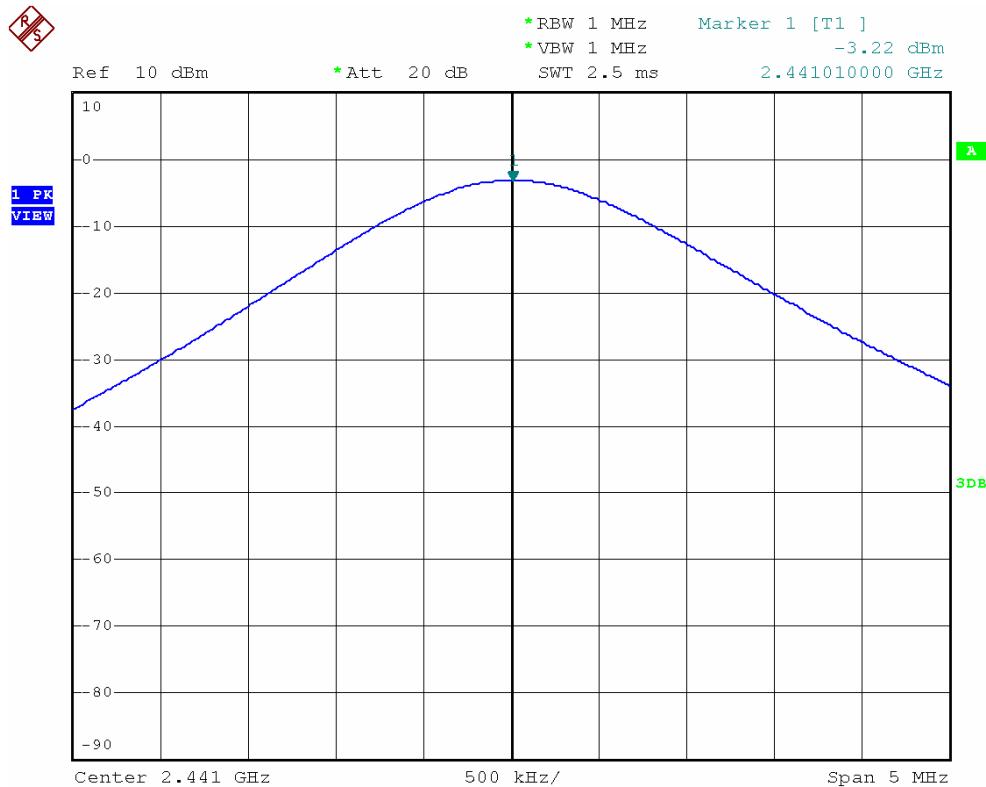
| Channel | Channel Frequency (MHz) | Peak Power Output (dBm) | Peak Power Limit (dBm) | Pass / Fail |
|---------|-------------------------|-------------------------|------------------------|-------------|
| LOW     | 2402.00                 | -2.56                   | 30                     | PASS        |
| MID     | 2441.00                 | -3.22                   | 30                     | PASS        |
| HIGH    | 2480.00                 | -4.50                   | 30                     | PASS        |

## Photo of Peak Output Power Measurement: Channel Low



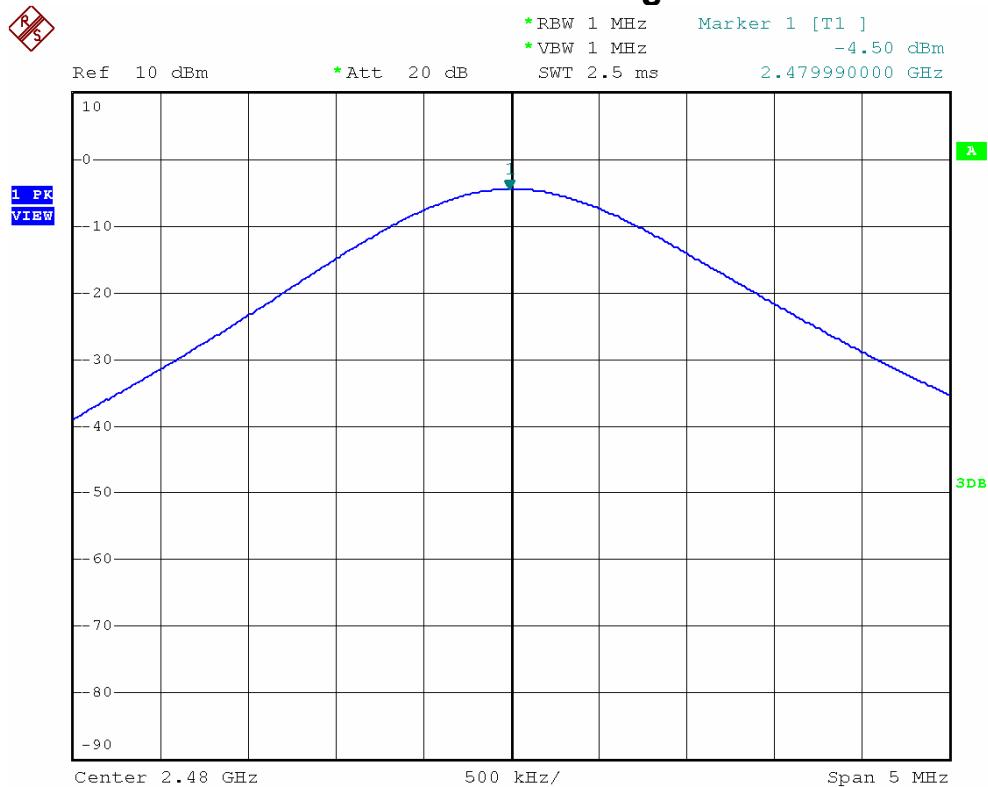
Date: 19.APR.2007 00:17:50

### Channel Mid



Date: 19.APR.2007 00:18:47

### Channel High



Date: 19.APR.2007 00:19:53

## 9. PEAK POWER SPECTRAL DENSITY MEASUREMENT

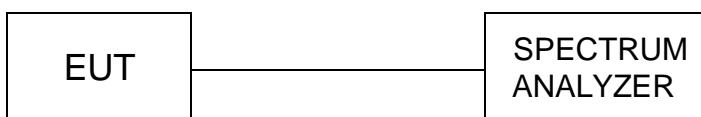
### 9.1 MEASUREMENT PROCEDURE

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3KHz RBW and 30KHz VBW, set sweep time=span / 3KHz.

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3 KHz for a full response of the mixer in the spectrum analyzer.

### 9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 9.3 MEASUREMENT EQUIPMENT USED:

| EQUIPMENT TYPE    | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|-------------------|-----------------|--------------|---------------|-----------|----------|
| EMI TEST RECEIVER | ROHDE & SCHWARZ | ESI 26       | 100009        | 2006/11   | 2007/10  |

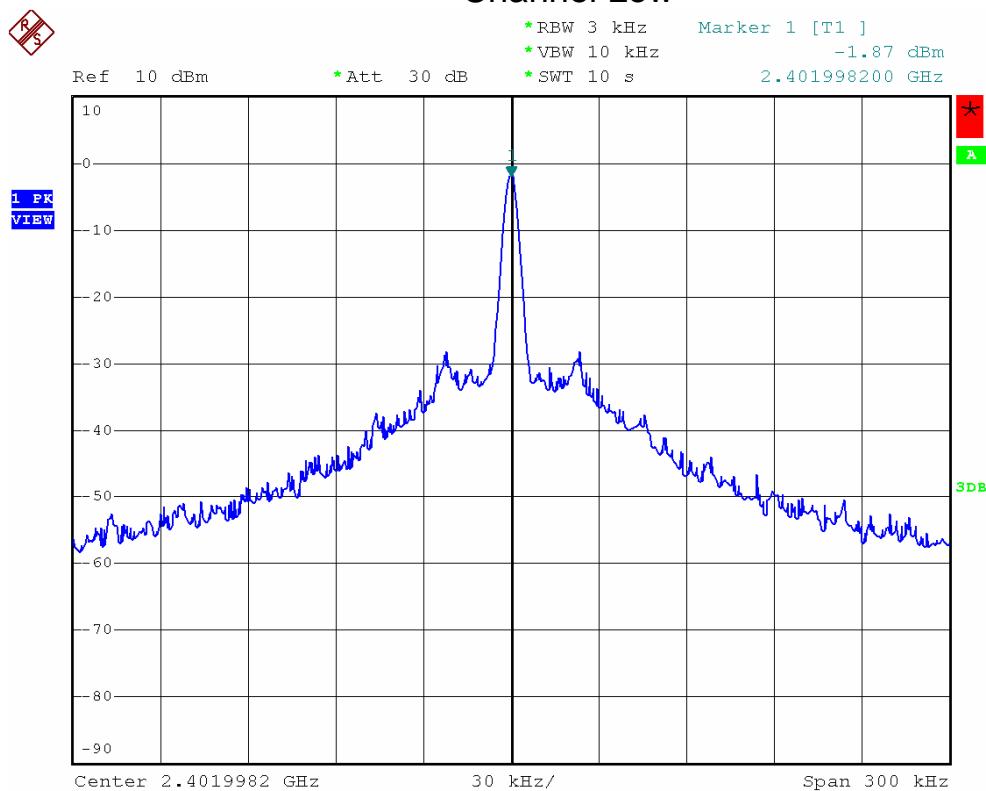
*Note: Each piece of equipment is scheduled for calibration once a year.*

### 9.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER

The Maximum Power Spectral Density Measurement is 8dBm/3KHz.

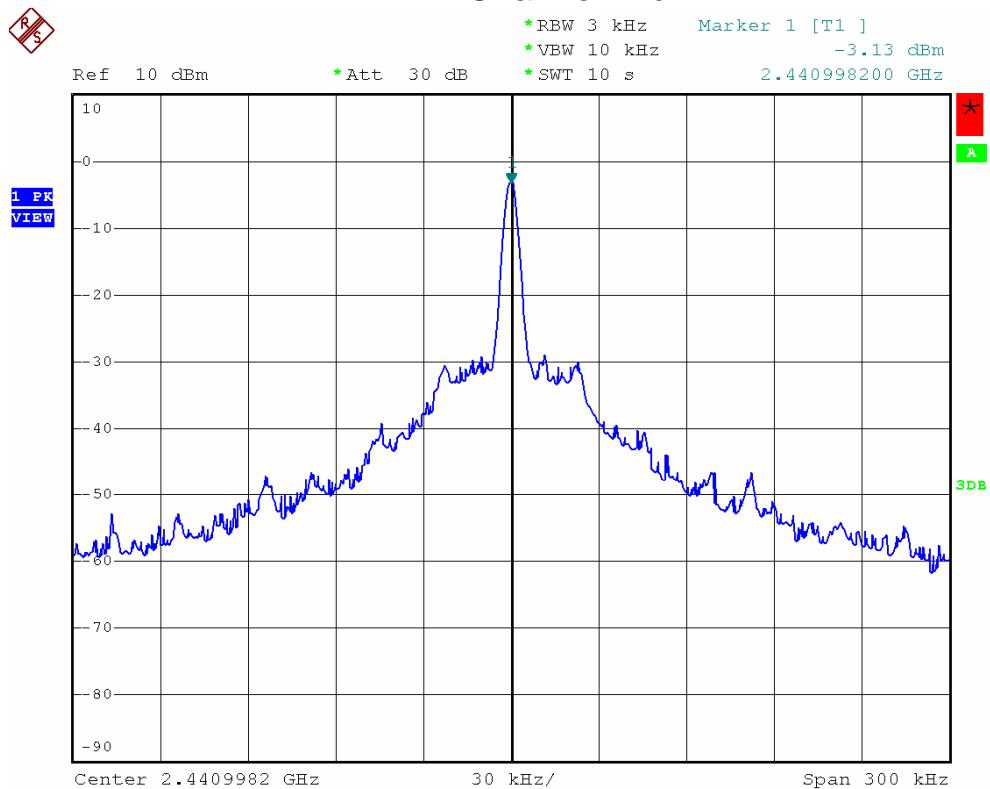
### 9.5 MEASUREMENT RESULTS:

| Channel | Channel Frequency (MHz) | Final RF Power Density Level(dBm) | Maximum Limit (dBm) | Pass / Fail |
|---------|-------------------------|-----------------------------------|---------------------|-------------|
| LOW     | 2402.00                 | -1.87                             | 8                   | PASS        |
| MID     | 2441.00                 | -3.13                             | 8                   | PASS        |
| HIGH    | 2480.00                 | -3.98                             | 8                   | PASS        |

**Photo of Power Spectral Density Measurement****Channel Low**

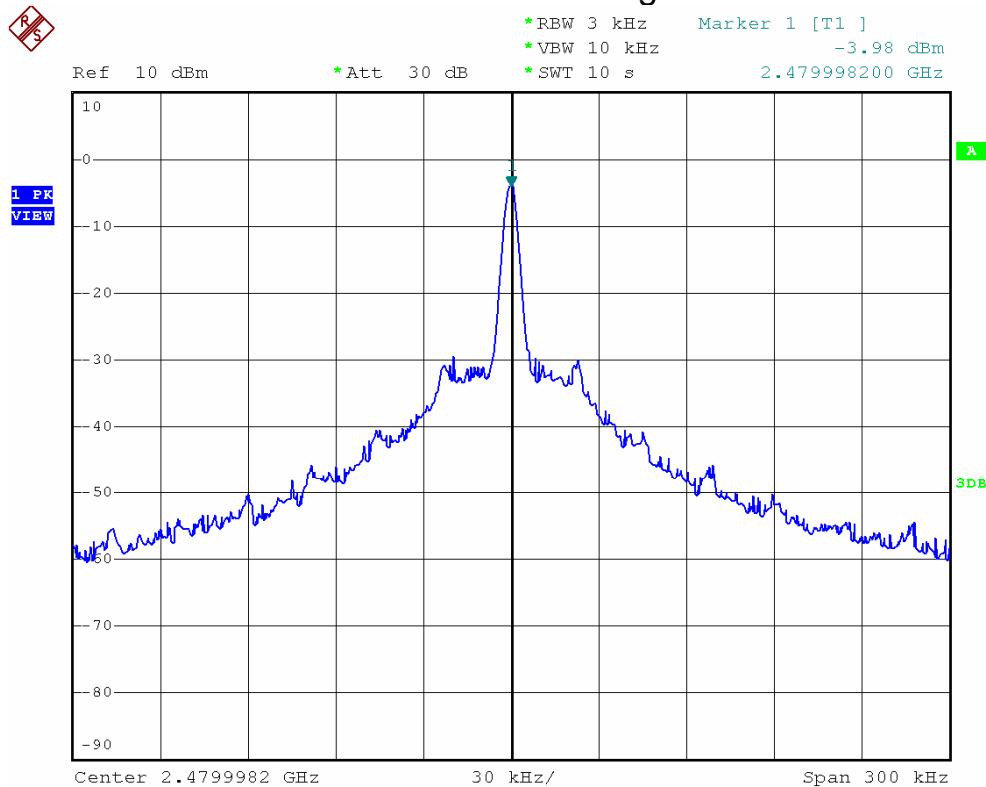
Date: 19.APR.2007 01:05:17

### Channel Mid



Date: 19.APR.2007 01:06:12

## Channel High



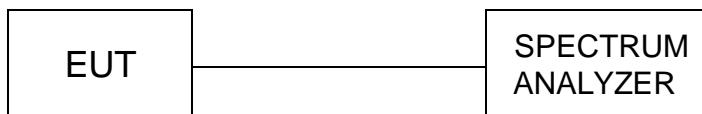
Date: 19.APR.2007 01:07:20

## 10. 100 KHz BANDWIDTH OF BAND EDGES MEASUREMENT

### 10.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW, VBW=100 KHz. Span=25MHz, Sweep=auto
4. Set center frequency of spectrum analyzer = operating frequency.
5. Repeat above procedures until all frequency measured was complete.

### 10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



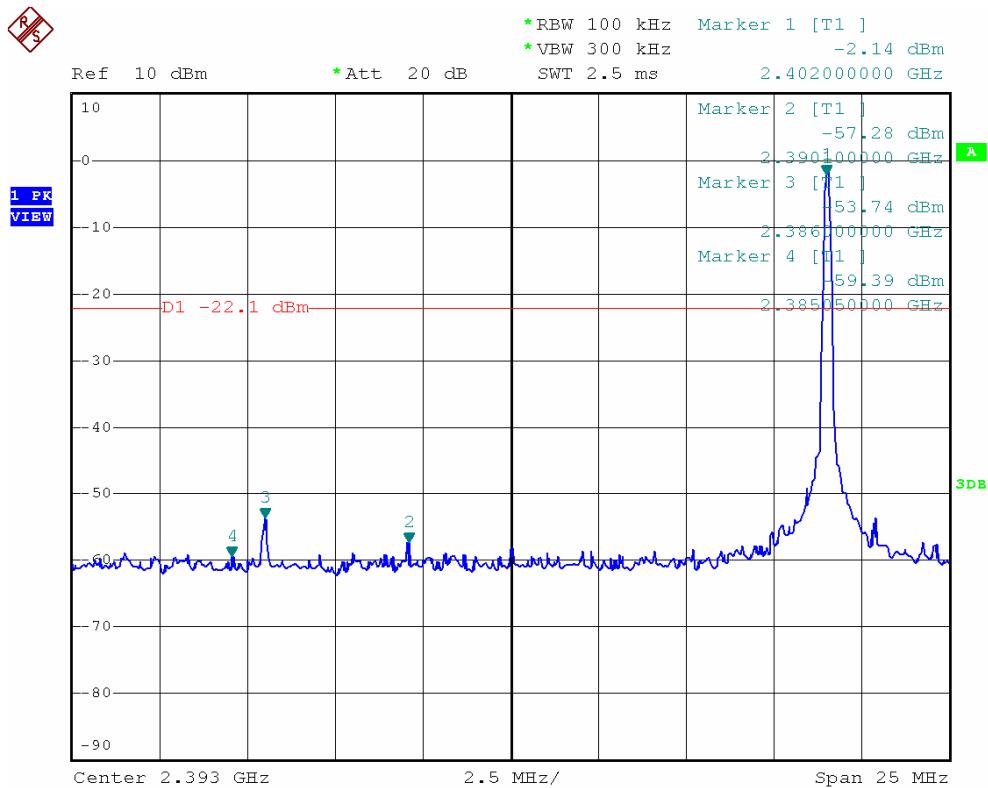
### 10.3 MEASUREMENT EQUIPMENT USED:

| EQUIPMENT TYPE    | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|-------------------|-----------------|--------------|---------------|-----------|----------|
| EMI TEST RECEIVER | ROHDE & SCHWARZ | ESI 26       | 100009        | 2006/11   | 2007/10  |

*Note: Each piece of equipment is scheduled for calibration once a year.*

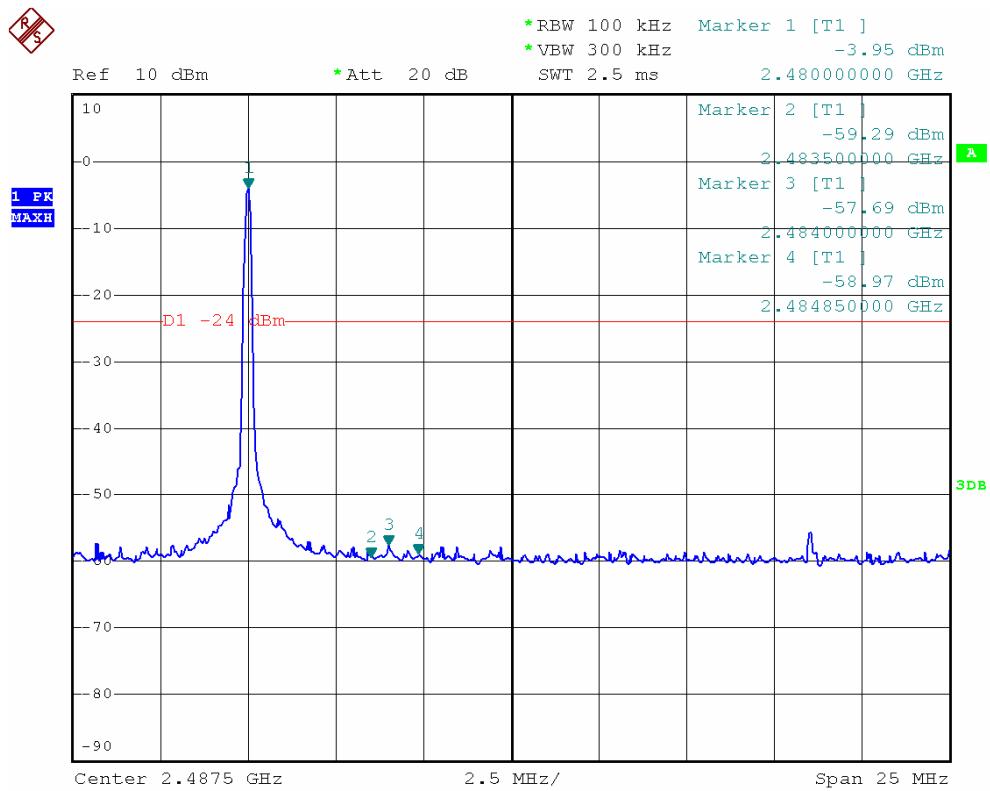
### 10.4 MEASUREMENT RESULTS:

### Conducted Emission: Test Data CH- Low



Date: 19.APR.2007 00:31:28

## Conducted Emission: Test Data CH-High



Date: 19.APR.2007 00:35:23

**Radiated Emission:**

Operation Mode : TX CH Low

Test Date: Apr 12, 2007

Fundamental Frequency: 2402 MHz

Test By : Tracy

Temperature: 25 °C

Pol : Ver.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | AV                | Actual FS         |                  | Peak           | AV                | Margin<br>(dB) | Remark |
|----------------|-------------------|-------------------|-------------------|------------------|----------------|-------------------|----------------|--------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL<br>CF(dB) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Limit<br>(dBuV/m) |                |        |
| 2390.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |
| 2386.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |
| 2384.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |

Operation Mode TX CH Low

Test Date Apr. 06, 2005

Fundamental Frequency 2402 MHz

Test By Willis

Temperature 25 °C

Pol Hor.

Humidity 65 %

| Freq.<br>(MHz) | Peak              | AV                | Actual FS         |                  | Peak           | AV                | Margin<br>(dB) | Remark |
|----------------|-------------------|-------------------|-------------------|------------------|----------------|-------------------|----------------|--------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL<br>CF(dB) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Limit<br>(dBuV/m) |                |        |
| 2390.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |
| 2386.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |
| 2384.0         | ---               |                   |                   |                  | 74.00          | 54.00             |                | Peak   |

**Remark :**

- (1) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column .
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Operation Mode: TX CH High

Test Date: Apr 12, 2007

Fundamental Frequency: 2480 MHz

Test By : Tracy

Temperature: 25 °C

Pol : Ver.

Humidity: 55%

| Freq.<br>(MHz) | Peak              | AV                | Actual FS         |                  | Peak           | AV                | Margin<br>(dB) | Remark |
|----------------|-------------------|-------------------|-------------------|------------------|----------------|-------------------|----------------|--------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL<br>CF(dB) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Limit<br>(dBuV/m) |                |        |
| 2483.6         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |
| 2484.0         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |
| 2484.8         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |

Operation Mode TX CH High

Test Date Apr. 06, 2005

Fundamental Frequency 2480 MHz

Test By Willis

Temperature 25 °C

Pol Hor.

Humidity 65 %

| Freq.<br>(MHz) | Peak              | AV                | Actual FS         |                  | Peak           | AV                | Margin<br>(dB) | Remark |
|----------------|-------------------|-------------------|-------------------|------------------|----------------|-------------------|----------------|--------|
|                | Reading<br>(dBuV) | Reading<br>(dBuV) | Ant./CL<br>CF(dB) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Limit<br>(dBuV/m) |                |        |
| 2483.6         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |
| 2484.0         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |
| 2484.8         | ---               | ---               | ---               | ---              | 74.00          | 54.00             | ---            | Peak   |

## Remark :

- (1) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column .
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

## 11. FREQUENCY SEPARATION

### 11.1 MEASUREMENT PROCEDURE:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW, VBW=10 KHz. Span=3MHz, Sweep=auto.
4. Set center frequency of spectrum analyzer = middle of hopping channel.
5. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

### 11.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in Section 10.2.

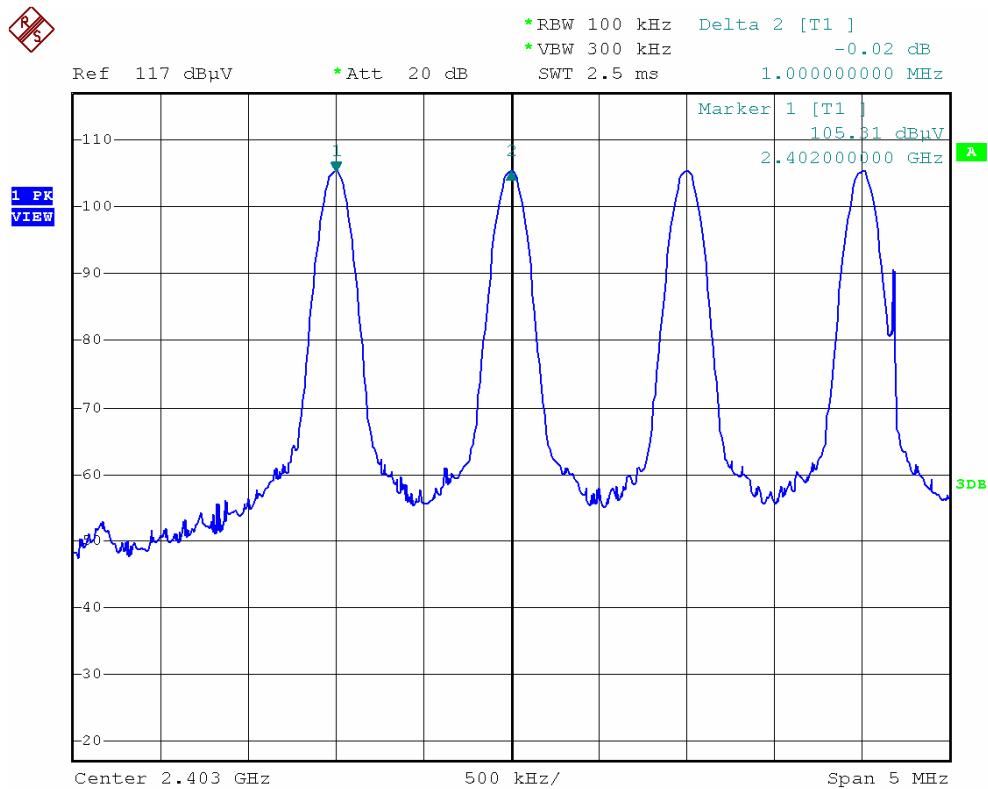
### 11.3 MEASUREMENT EQUIPMENT USED:

The same as described in Section 10.3

### 11.4 LIMITS AND MEASUREMENT RESULT:

| Limits and Measurement Result Of Channel Separation   |                    |          |
|---|--------------------|----------|
| Applicable Limits   | Measurement Result |          |
|   | Test Data          | Criteria |
| Per 15.247 (a)(1)<br>At least 25 KHz or 20 dB bandwidth of<br>the hopping Channel, whichever is greater | 1 MHz              | PASS     |

## Frequency Separation Test Data



Date: 19.APR.2007 00:40:15

## 12. NUMBER OF HOPPING FREQUENCY

### 12.1 MEASUREMENT PROCEDURE:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start=2400MHz, Stop=2483.5MHz, Sweep=auto.
4. Set the spectrum analyzer as RBW, VBW=100 KHz.
5. Max hold. view and count how many channel in the band.

### 12.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in Section 10.2.

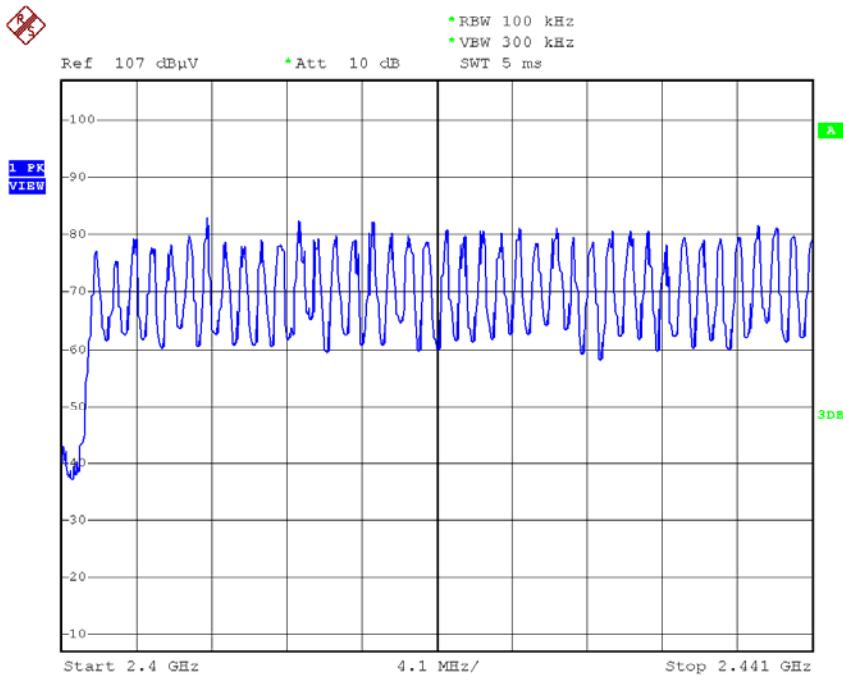
### 12.3 MEASUREMENT EQUIPMENT USED:

The same as described in Section 10.3

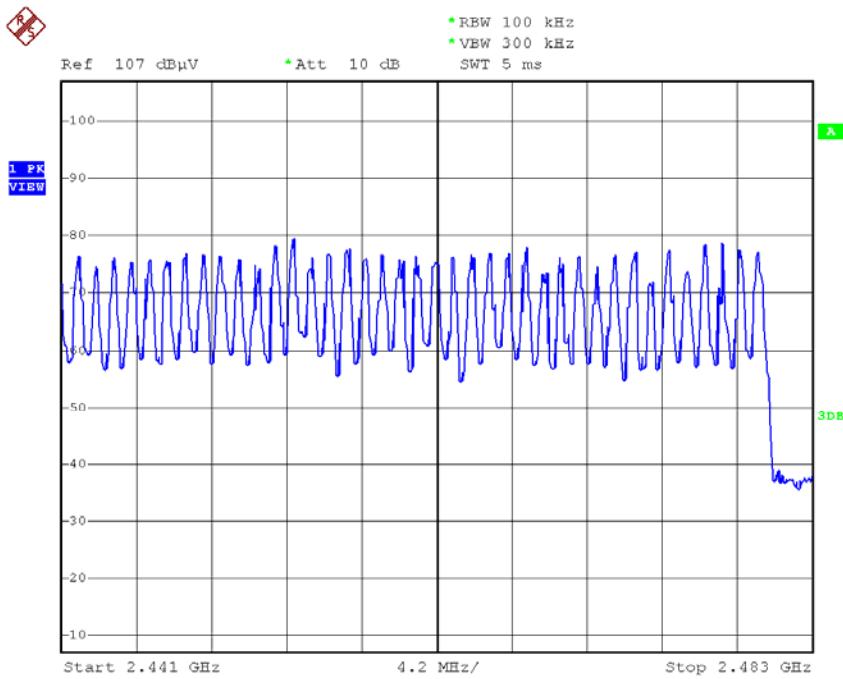
### 12.4 LIMITS AND MEASUREMENT RESULT:

| Limits and Measurement Result Of Hopping Channel          |                    |          |
|---|--------------------|----------|
| Applicable Limits   | Measurement Result |          |
|   | Test Data          | Criteria |
| Per 15.247 (a)(1)(iii)<br>At least 15 hopping Frequencies | Total 79 Channels  | PASS     |

Channel Number



Date: 19.APR.2007 01:16:42



Date: 19.APR.2007 01:18:25

## 13. DWELL TIME

### 13.1 MEASUREMENT PROCEDURE:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW =1 MHz , VBW =3 MHz. Span=0Hz,
4. Set center frequency of spectrum analyzer = operating frequency.
5. Repeat above procedures until all frequency measured was complete.

### 13.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in Section 10.2.

### 13.3 MEASUREMENT EQUIPMENT USED:

The same as described in Section 10.3

### 13.4 LIMITS AND MEASUREMENT RESULT:

A period time = 0.4 (ms) \* 79 = 31.6 (s)

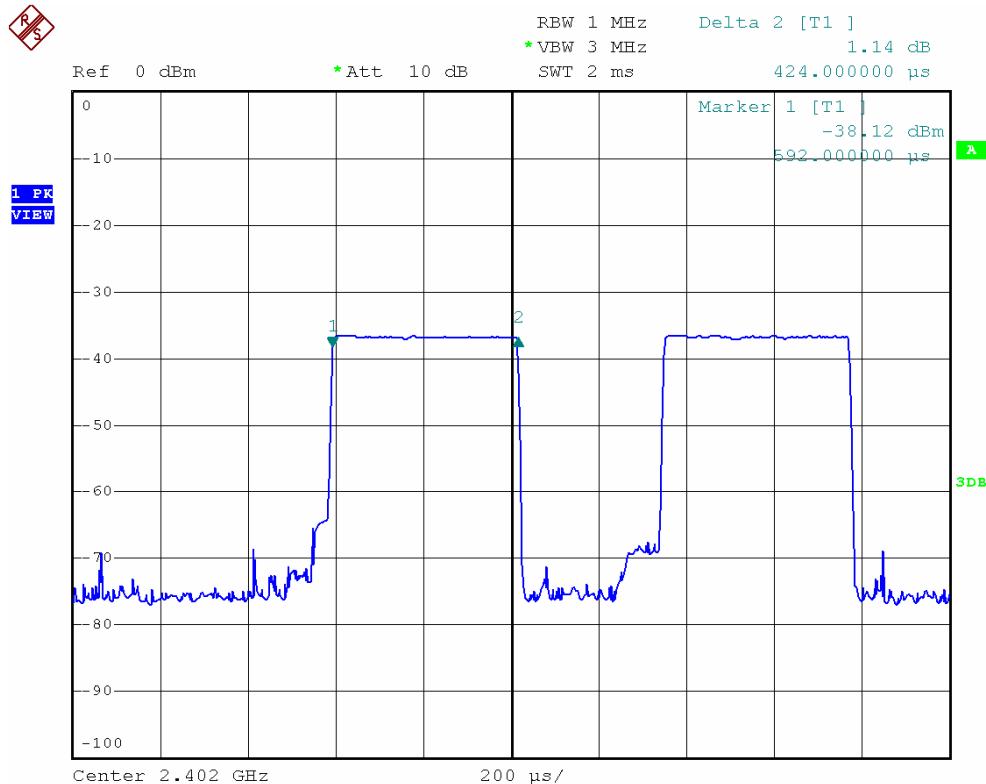
CH Low: Dwell time = 0.424 (ms) \* (1600/ (2\*79))\*31.6 = 135.68 (ms)

CH Mid: Dwell time = 0.424 (ms) \* (1600/ (2\*79))\*31.6 = 135.68 (ms)

CH High: Dwell time = 0.420 (ms) \* (1600/ (2\*79))\*31.6 = 134.40 (ms)

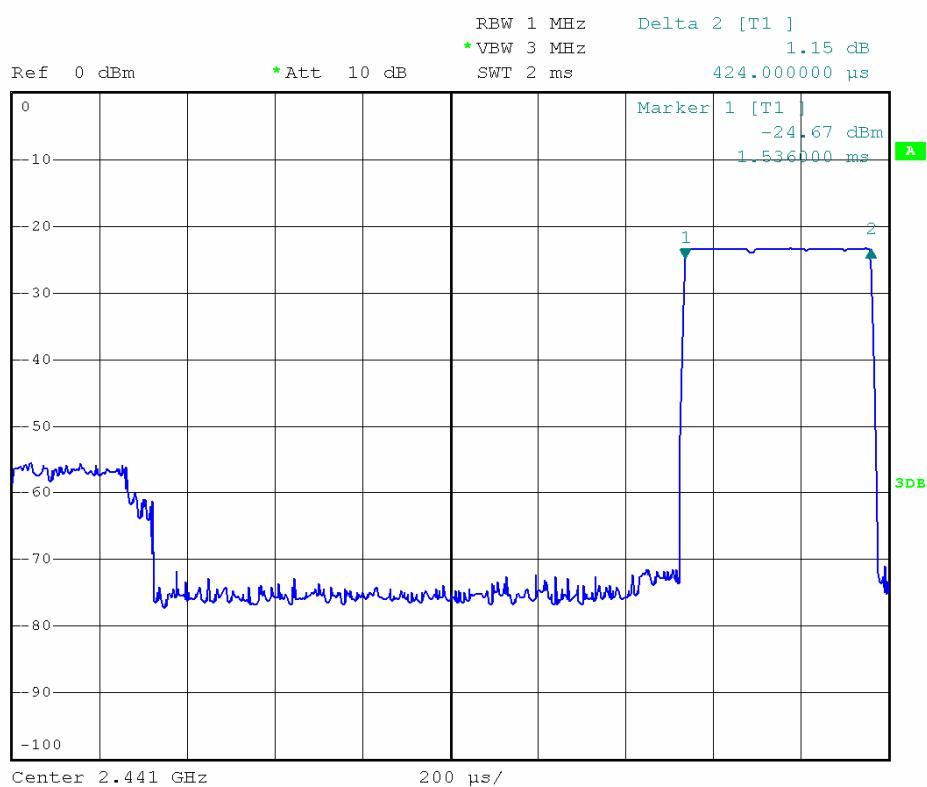
## Dwell Time Test Data

## CH-Low



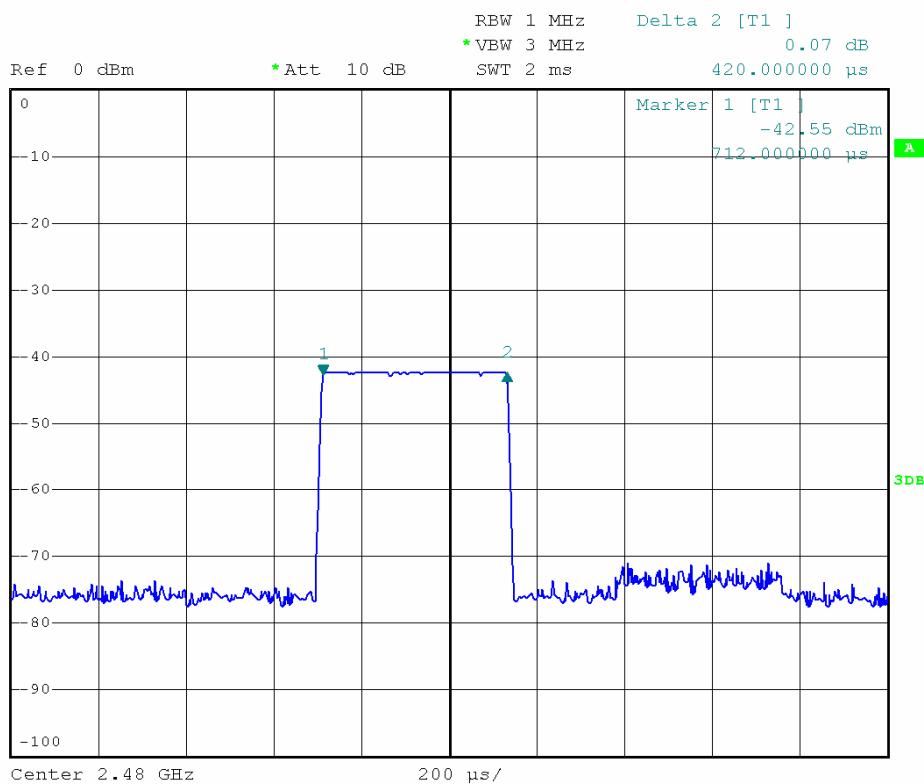
Date: 19.APR.2007 01:36:25

CH-Mid



Date: 19.APR.2007 01:41:46

CH-High



Date: 19.APR.2007 01:43:31

## 14. ANTENNA REQUIREMENT

### 14.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

And according to § 15247 (4)(1), system operation in the 2400-2483.5 MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### 14.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is -1.01 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

## 15. RF EXPOSURE

### 15.1 Standard Applicable

According to §1.1307 (b)(1), system operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device.

### 15.2 Measurement Result

This is a portable device and the Max peak output power is -2.56dBm (0.55 mW) lower than low threshold 60/fGHz mW (24.48 mW),  $d < 2.5\text{cm}$  in general population category.

The SAR measurement is not necessary.

## **APPENDIX 1**

### **PHOTOGRAPHS OF SET UP**

***Radiated Emission Setup Photos***



## **APPENDIX 2**

### **PHOTOGRAPHS OF EUT**

***Top View of EUT***



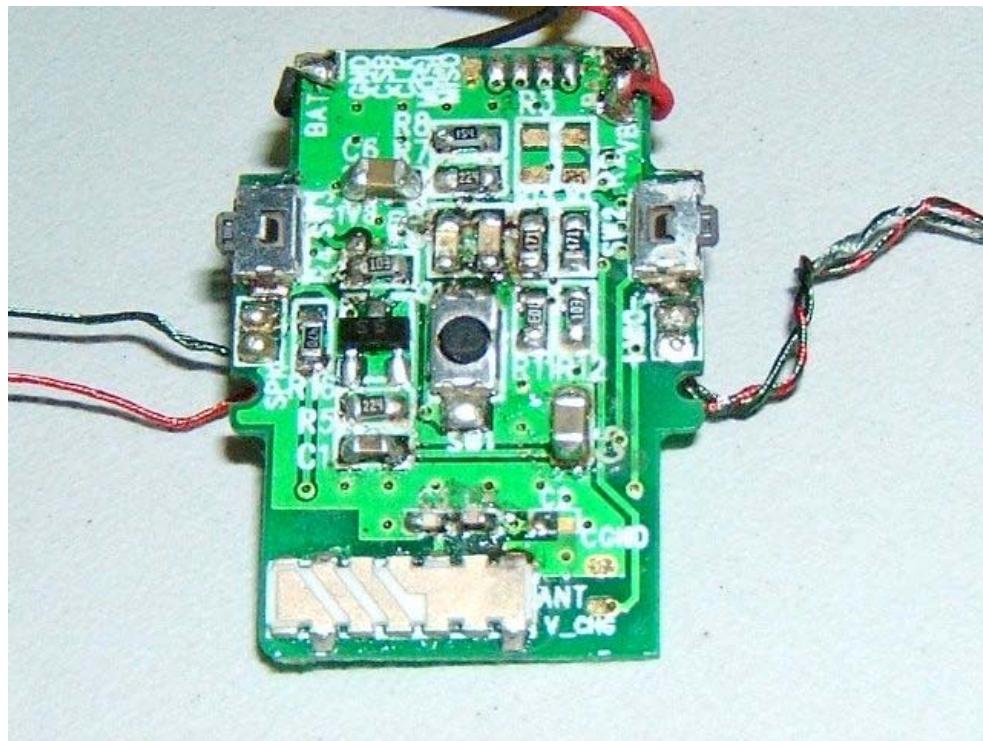
***Bottom View of EUT***



*Internal of EUT- 1*



*Internal of EUT-2*



*Internal of EUT-3*

