

# Certificate of Test

February 2004

## **SAMMI INFORMATION SYSTEMS CO., LTD**

**Product Type** : Industrial PC  
**Model Number** : MiniStation 12  
**Test Report Number** : GTK-0312027  
**Date of Test** : December 01, 2003- February 04, 2004

This Product was tested to the following standards at the laboratory of Global EMC Standard Tech. Corp., and found Compliance.

**Standards:**  
FCC Part 15 Subpart C Paragraph 15.247  
ANSI C63.4: 2001

[http : //www.gestek.com.tw](http://www.gestek.com.tw)



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Date: February 24, 2004





**Test Report  
Application for  
Declaration of Conformity  
On Behalf Of**

**SAMMI INFORMATION SYSTEMS CO., LTD**

**EUT:**  
**Industrial PC**

**Model Number:**  
**MiniStation 12**

**FCC ID:**  
**RQKMINISTATION12**

**Prepared for:**  
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## 1. CERTIFICATION

**Applicant** : SAMMI INFORMATION SYSTEMS CO., LTD

EUT Description : Industrial PC

Model Number : MiniStation 12

Serial Number : N/A

Brade Name : SAMMI

FCC ID : RQKMINISTATION12

Tested Power Supply : 120V/60Hz

### MEASUREMENT PROCEDURES USED:

☒ **CFR 47, Part 15** Radio Frequency Device Subpart C Paragraph 15.247 Intentional Radiators :2000

☒ **ANSI C63.4** Methods of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9kHz To 40GHz. 2001

THE MEASUREMENT SHOWN IN THE ATTACHMENT WAS MADE IN ACCORDANCE WITH THE PROCEDURES INDICATED, AND THE MAXIMUM ENERGY EMITTED BY THE EQUIPMENT WAS FOUND TO BE WITHIN THE ABOVE LIMITS APPLICABLE.



Sample Received Date : December 01, 2003

Final Test Date : February 04, 2004

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

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This test data shown below is traceable to National or international standard such as NIST/USA, etc. The laboratory's NVLAP accreditation in no way constitutes or implies product certification, approval, or endorsement by NVLAP or the United States government.

## 2. GENERAL INFORMATION

## 2.1 PRODUCTION DESCRIPTION

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Product Name    | : Industrial PC                                                      |
| Model Number    | : MiniStation 12                                                     |
| Serial Number   | : N/A                                                                |
| Brade Name      | : SAMMI                                                              |
| FCC ID          | : RQKMINISTATION12                                                   |
| Modulation Type | : DBPSK, DQPSK, CCK, OFDM/ GFSK                                      |
| Antenna Gain    | : Bluetooth: 3dBi<br>WLAN: 2dBi                                      |
| Antenna Type    | : Printed for Bluetooth USB Adapter<br>Connector(MMCX) for WLAN Card |
| Frequencg Range | : 2402-2480MHz for Bluetooth<br>2412-2462MHz for WLAN                |
| Channel Number  | : 11 Channel / 79 Channel                                            |
| Data Rate       | : 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54Mbps/ 1Mbps             |
| Channel Control | : Auto                                                               |
| Working Voltage | : AC 120V/60Hz                                                       |
| Power Cable     | : 1.7m                                                               |

### Frequency of Each Channel:

(1) WLAN :

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|
| 1       | 2412            | 5       | 2432            | 9       | 2452            |
| 2       | 2417            | 6       | 2437            | 10      | 2457            |
| 3       | 2422            | 7       | 2442            | 11      | 2462            |
| 4       | 2427            | 8       | 2447            |         |                 |

## (2) Bluetooth :

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|
| 0       | 2402            | 27      | 2429            | 54      | 2456            |
| 1       | 2403            | 28      | 2430            | 55      | 2457            |
| 2       | 2404            | 29      | 2431            | 56      | 2458            |
| 3       | 2405            | 30      | 2432            | 57      | 2459            |
| 4       | 2406            | 31      | 2433            | 58      | 2460            |
| 5       | 2407            | 32      | 2434            | 59      | 2461            |
| 6       | 2408            | 33      | 2435            | 60      | 2462            |
| 7       | 2409            | 34      | 2436            | 61      | 2463            |
| 8       | 2410            | 35      | 2437            | 62      | 2464            |
| 9       | 2411            | 36      | 2438            | 63      | 2465            |
| 10      | 2412            | 37      | 2439            | 64      | 2466            |
| 11      | 2413            | 38      | 2440            | 65      | 2467            |
| 12      | 2414            | 39      | 2441            | 66      | 2468            |
| 13      | 2415            | 40      | 2442            | 67      | 2469            |
| 14      | 2416            | 41      | 2443            | 68      | 2470            |
| 15      | 2417            | 42      | 2444            | 69      | 2471            |
| 16      | 2418            | 43      | 2445            | 70      | 2472            |
| 17      | 2419            | 44      | 2446            | 71      | 2473            |
| 18      | 2420            | 45      | 2447            | 72      | 2474            |
| 19      | 2421            | 46      | 2448            | 73      | 2475            |
| 20      | 2422            | 47      | 2449            | 74      | 2476            |
| 21      | 2423            | 48      | 2450            | 75      | 2477            |
| 22      | 2424            | 49      | 2451            | 76      | 2478            |
| 23      | 2425            | 50      | 2452            | 77      | 2479            |
| 24      | 2426            | 51      | 2453            | 78      | 2480            |
| 25      | 2427            | 52      | 2454            |         |                 |
| 26      | 2428            | 53      | 2455            |         |                 |

**Note:**

1. This device is an Industrial MiniStation included 802.11b and 802.11g 2.4GHz Wireless LAN Card and Bluetooth USB Adapter . This device is not a portable device.
2. The test is included WLAN and Bluetooth transmit function. Test of channel is included the lowest , middle and highest frequency in highest data rate and to perform the test, then record in this report.
3. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
4. The device is accordance with Part 15 regulations. The function receiving was under Declaration of Conformity and record of measurment in test report that the report number is 0312027FCC DOC.

## 2.2 OPERATIONAL DESCRIPTION

The industrial-grade construction of Ministation allows your system to endure the continuous operation in hostile environments where stability and reliability are basic requirements.

The WLAN transmitter inside EUT is Mini PCI interface and powered by EUT. This device has one antenna and connect in PCB. The other instruction, please look at user manual.

This is a digital transmission system (DTS) and have four type of modulation DBPSK, DQPSK, CCK & OFDM. The data rate are 1,2,5.5,11,6,9,12,18,24,36,48.54 Mbps.

The equipment enables high-speed access without wires to network assets. This adapter uses the IEEE 802.11b & 802.11g protocol to enable wireless communications between the host computer and other computers, in the same way that the computer would use an Ethernet adapter.

The Bluetooth USB Adapter inside EUT is an USB interface with 79 channels.

This device provides wireless technology that revolutionizes personal connectivity. It is the solution for the seamless integration of Bluetooth technology into personal computer enabling short-range wireless connections between desktop/laptop computers, Bluetooth-enabled peripherals (printers, faxes,...), portable handheld devices, and connectivity to the Internet.

## 2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

| EUT: Industril PC, M/N: MiniStation 12 |                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------|
| <b>Processor</b>                       | Intel Celeron Series 1GHz or faster. (socket 370 Type)                             |
|                                        | Intel Pentium III Series 1GHz or faster (socket 370 Type)                          |
| <b>System Memory</b>                   | SDRAM up to 512MB (one DIMM 168 pin socket), 256MB standard                        |
| <b>Operating System Support</b>        | Windows 2000, Windows XP Embedded                                                  |
| <b>Display</b>                         | Color Active Matrix 12.1" TFT LCD, SVGA (800*600) with resistive touch panel       |
| <b>Display Brightness</b>              | 300 NIT, Optional 900 NIT                                                          |
| <b>H.D.D.</b>                          | 2.5" Hard Disk Drive, Optional 2.5" Flash Hard Disk Drive                          |
| <b>System Expansion</b>                | 16/32bit bus Dual PCMCIA Slots (external accessible), mini PCI, Compact Flash card |
| <b>Multi I/O</b>                       | Power, Mouse, Keyboard(PS2), Audio, Parallel, Serial (2), RJ-45 Ethernet, USB (2)  |
| <b>Audio</b>                           | Integrated stereo speakers (2)                                                     |
| <b>Power Adapter</b>                   | LISHIN, M/N: LSE9901B1565<br>110/220V-12Volts DC Output                            |
| <b>Power Cable</b>                     | 1.7m                                                                               |
| <b>Resolution</b>                      | 800 x 600, H-Sync:54KHz, V-Sync:85Hz                                               |

|                  | Mode 1            | Mode 2            | Mode 3    |
|------------------|-------------------|-------------------|-----------|
| <b>Test Mode</b> | WLAN              | WLAN              | Bluetooth |
|                  | (802.11b: 11Mbps) | (802.11g: 54Mbps) |           |

## 2.4 CONFIGURATION OF THE TESTED SYSTEM

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

| Device             | No.     | Configuration                                                                                                                                                                                                                                                                                                    |
|--------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Printer            | P01-016 | Manufacturer : Hewlett Packard<br>Model Number : 2225C<br>Serial Number : 2548S40426<br>BSMI ID : 3892A957<br>FCC ID : BS46XU2225C<br>Data Cable : Shielded, Detachable, 1.2m, Parallel Cable<br>Power Cord : Non-Shielded, Detachable, 1.8m                                                                     |
| Modem              | M03-018 | Manufacturer : ACEEX<br>Model Number : 1414V<br>Serial Number : 0046171<br>BSMI ID : N/A<br>FCC ID : IFAXDM1414<br>Data Cable : T Type:RS232, Shielded, Detachable, 1.2m<br>Power Cord : Non-Shielded, Detachable, 1.5m<br>Line : Type:RJ11(4P2C), Detachable, 1.8m<br>Phone : Type:RJ11(4P2C), Detachable, 1.8m |
| Modem              | M03-010 | Manufacturer : ACEEX<br>Model Number : 1414<br>Serial Number : 960018043<br>BSMI ID : N/A<br>FCC ID : IFAXDM1414<br>Data Cable : Type:RS232, Shielded, Detachable, 1.2m<br>Power Cord : Non-Shielded, Detachable, 1.5m<br>Line : Type:RJ11(4P2C), Detachable, 1.8m<br>Phone : Type:RJ11(4P2C), Detachable, 1.8m  |
| PS2 Keyboard       | K01-061 | Manufacturer : ACER<br>Model Number : 6311-TA<br>BSMI ID : 3882A039<br>FCC ID : N/A<br>Data Cable : Shielded, Undetachable, 1.5 m                                                                                                                                                                                |
| PS2 Mouse          | M02-118 | Manufacturer : Logitech<br>Model Number : M-S48A<br>Serial Number : LZE12800400<br>BSMI ID : 4882A001<br>FCC ID : JNZ201213<br>Data Cable : Shielded, Undetachable, 1.5m                                                                                                                                         |
| Headset & Earphone | E01-052 | Manufacturer : TOKYO<br>Model Number : SX-M1<br>Serial Number : N/A<br>Data Cable : Non-Shielded, Undetachable, 1.8 m<br>Power Cord : N/A<br>Purchase Date : 2/22/1999                                                                                                                                           |

| Device                 | No.     | Configuration                                                                                                                             |
|------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------|
| USB Mouse              | M02-270 | Manufacturer : Logitech<br>Model Number : M-U48A<br>BSMI ID : 4882A177<br>FCC ID : JNZ211360<br>Data Cable : Shielded, Undetachable, 1.5m |
| USB Mouse              | M02-273 | Manufacturer : Logitech<br>Model Number : M-U48A<br>BSMI ID : 4882A177<br>FCC ID : JNZ211360<br>Data Cable : Shielded, Undetachable, 1.5m |
| Bluetooth Adaptor      | ---     | Manufacturer : USI<br>Model Number : UD1200                                                                                               |
| Wireless LAN Card      | ---     | Manufacturer : PESI<br>Model Number : W210Y                                                                                               |
| Notebook PC            | ----    | Manufacturer : DELL COMPUTER<br>Model Number : PP05L<br>BSMI ID : R33002<br>FCC ID : N/A<br>Power Cord : Non-Shielded, Detachable, 1.5m.  |
| Far End Network Server | ----    | Manufacturer : ASUS<br>Model Number : AP160R<br>Power Cord : Non- Shielded, Detachable, 1.8m                                              |

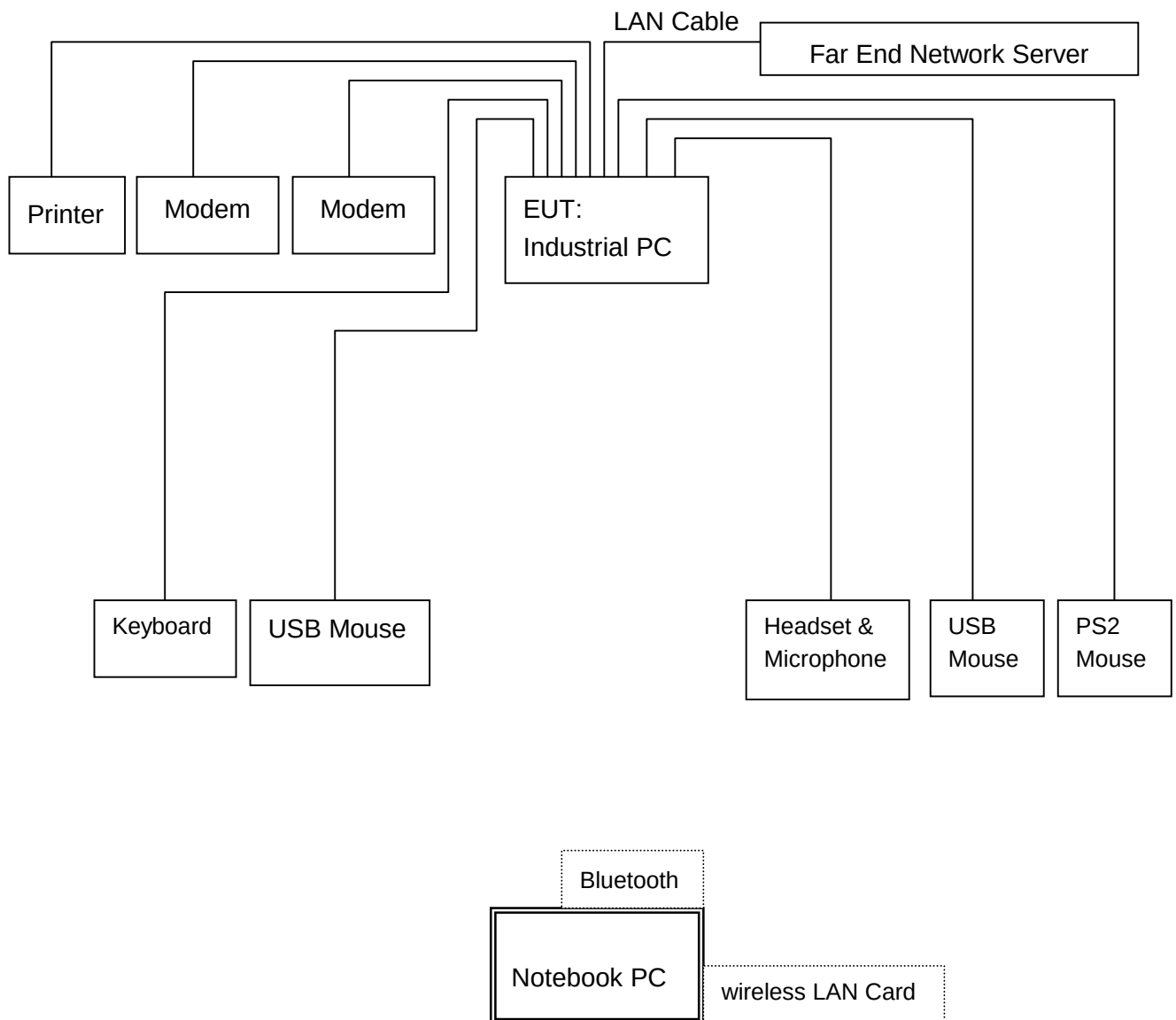
## 2.5 TEST FACILITY

Ambient conditions in the laboratory:

| ITEMS                                                                                                                                                     | REQIORED(IEC 68-1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ACTUAL   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| TEMPERATURE (°C)                                                                                                                                          | 15-35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 24-27    |
| HUMIDITY (%RH)                                                                                                                                            | 25-75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 50-65    |
| BAROMETRIC PRESSURE<br>(mbar)                                                                                                                             | 860-1060                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 950-1000 |
| FCC SITE DESCRIPTION                                                                                                                                      | Aug. 10, 1995 /Aug. 25, 1998 File on<br>FCC Engineering Laboratory<br>Federal Communication Commission<br>7435 Oakland Mills Road<br>Columbia, MD 21046<br>Reference 31040/SIT1300F2                                                                                                                                                                                                                                                                                                                                  |          |
| NVLAP LAB. CODE                                                                                                                                           | 200085-0<br>United States Department of commerce<br>National Institute of Standards and Technology<br>National Voluntary Laboratory Accreditation Program<br>Accreditation on NVLAP effective through Sep. 30,2004<br>For CISPR 22, FCC Method and AS/NZS 3548<br>Measurement.                                                                                                                                                                                                                                        |          |
| Chinese National Laboratory<br>Accreditation Certificate<br>R.O.C.<br> | Recognized by the Council of Chinese National Laboratory<br>Accreditation and confirmed to meet the requirements of<br>ISO/IEC 17025 also has been registered for fifteen items,<br>and meet the requirements of the Article 4 of Measures<br>Governing the Recognition both Approval of Designated<br>Laboratory for Commodities Inspection and has been<br>registered for four items within the field of Electrical<br>Testing.<br>Registration No.: 1082<br>Registration on CNLA effective through April 30, 2006. |          |

## 2.6 TEST SETUP

### 2.6.1 BLOCK DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS



## 2.7 EUT OPERATING CONDITIONS

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1. Setup the EUT and simulators as shown on 2.5.
2. Turn on the power of all equipments.
3. The EUT ping with the wireless LAN card and bluetooth
4. Repeat the above steps.

### 3. CONDUCTION EMISSION DATA

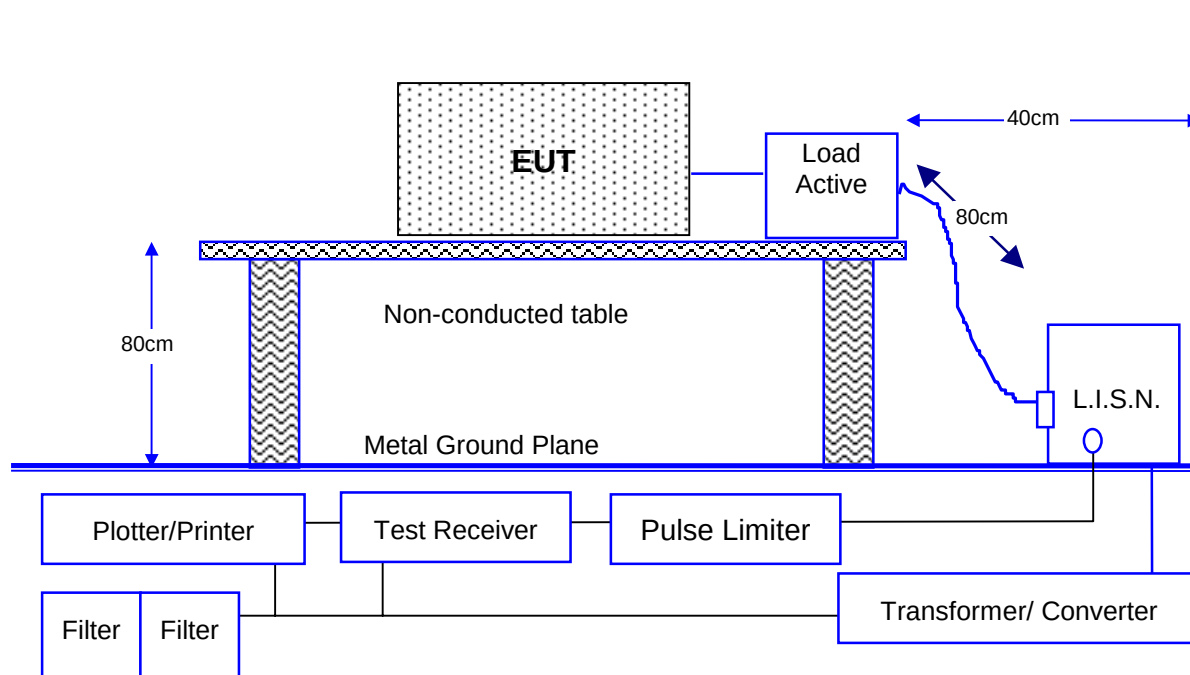
#### 3.1 TEST EQUIPMENTS

The following test equipment are used during the conducted power line tests:

| Item | Instrument        | Manufacturer    | Type    | Serial No.    | Last Cal. |
|------|-------------------|-----------------|---------|---------------|-----------|
| 1    | Test Receiver     | Rohde & Schwarz | ESCS30  | 828109/010    | 01/02/03  |
| 2    | L.I.S.N.          | KYORISTU        | KNW-407 | 8-1345-10     | 11/20/03  |
| 3    | Pulse Limiter     | Rohde & Schwarz | ESH3-Z2 | 357.8810.52   | 08/07/03  |
| 4    | RF CABLE          | GesTek          | N/A     | GTK-E-A154-01 | 12/03/03  |
| 5    | 50 Ohm Terminator | GesTek          | N/A     | GTK-E-A130-01 | 10/11/03  |
| 6    | Shielded Room     | GesTek          | N/A     | B5            | N/A       |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

#### 3.2 BLOCK DIAGRAM OF TEST SETUP



Note: This is a comprehensive setup diagram for Table-top EUT.  
 For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

### 3.3 CONDUCTED EMISSION LIMIT

☒FCC Limit (15.207)

| Frequency    | Conducted Limits dB(μV) |          |
|--------------|-------------------------|----------|
| MHz          | QUASI-PEAK              | AVERAGE  |
| 0.15 to 0.50 | 66 to 56                | 56 to 46 |
| 0.50 to 5.0  | 56                      | 46       |
| 5.0 to 30    | 60                      | 50       |

Remarks : In the Above Table, the tighter limit applies at the band edges.

### 3.4 OPERATING CONDITION OF EUT

Same as section 2.6.

### 3.5 EUT CONFIGURATION ON MEASUREMENT

The equipment, which is listed 3.2, is installed on Conducted Power Line Test to meet the Commission requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equal to 80cm. Powered from one L.I.S.N. which signal output to receiver, and the other peripherals was powered from another L.I.S.N. which signal output was terminated by 50Ω.

### 3.6 CONDUCTED EMISSION DATA

The measurement range of conducted emissions from 0.15 MHz to 30 MHz was investigated. All readings are quasi-peak and average values with a resolution Bandwidth of 9 KHz. The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages.

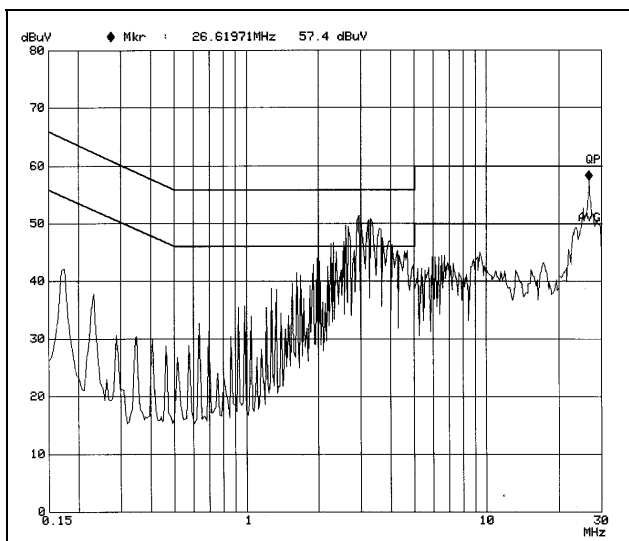
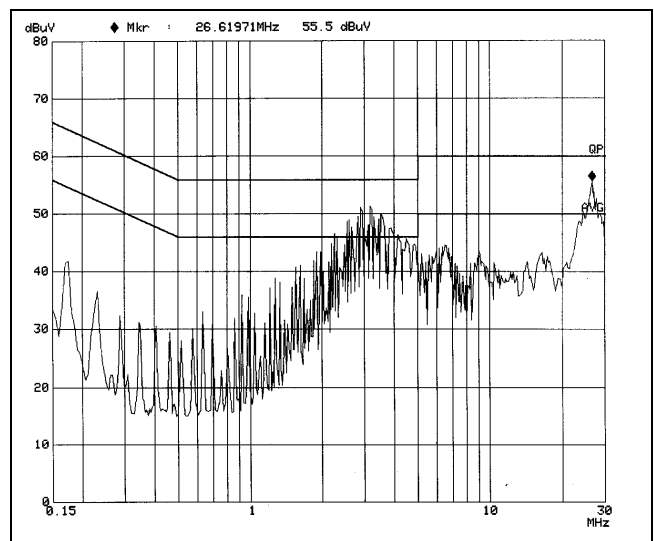
### 3.7 CONDUCTED EMISSIONS MEASUREMENT RESULTS

|              |                  |                 |           |
|--------------|------------------|-----------------|-----------|
| Date of Test | January 28, 2004 | Temperature     | 21 °C     |
| EUT          | Industrial PC    | Humidity        | 61 %      |
| Test Mode    | Tx Mode          | Display Pattern | H Pattern |

| No. | FREQUENCY | READING LEVEL dB $\mu$ V |           |            |           | LIMIT |      |
|-----|-----------|--------------------------|-----------|------------|-----------|-------|------|
|     | MHz       | LINE1 Q.P.               | LINE1 AV. | LINE2 Q.P. | LINE2 AV. | Q.P.  | AV.  |
| 1   | 0.17408   | 41.8                     | 34.1      | 41.1       | 32.8      | 64.7  | 54.7 |
| 2   | 0.22960   | 37.4                     | 31.3      | 36.0       | 28.3      | 62.4  | 52.4 |
| 3   | 0.34568   | 29.8                     | 27.5      | 30.0       | 24.1      | 59.0  | 49.0 |
| 4   | 0.63640   | 31.3                     | 26.0      | 32.2       | 27.2      | 56.0  | 46.0 |
| 5   | **2.94788 | 49.6                     | 44.0      | 50.3       | 45.0      | 56.0  | 46.0 |
| 6   | 26.61950  | 50.3                     | 38.9      | 47.0       | 41.9      | 60.0  | 50.0 |

**Remarks :**

1. All readings are Quasi-peak and Average..
2. " \* " means that the quasi-peak reading level is lower than the average limits; it is not necessary to measure the average level.
3. " \*\* " means that this data is the worse case emission level.
4. Final measurement = (Receiver reading) + (Correction factor if available).

**Line 1**

**Line 2**


## 4. RADIATION EMISSION DATA

### 4.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

Radiated test was performed on: ☐ Site #1 ☐ Site #2 ☒ Site #3 ☐ Site #4

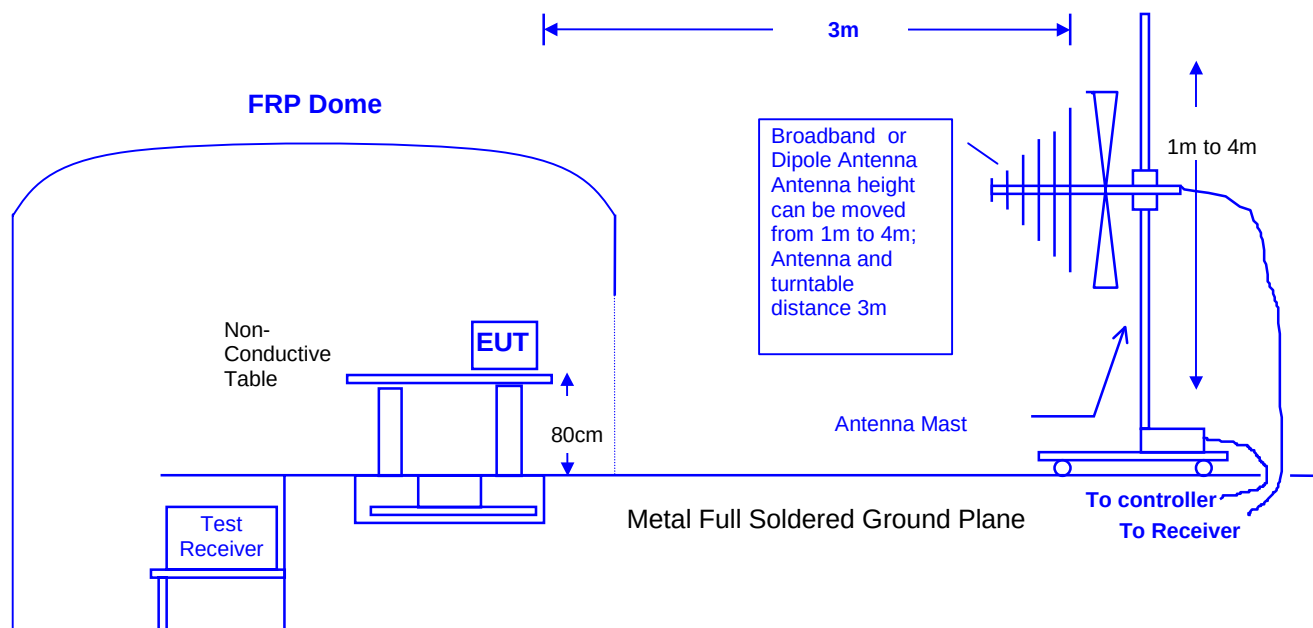
| Item | Instrument            | Manufacturer    | Type          | Serial No.    | Last Cal. |
|------|-----------------------|-----------------|---------------|---------------|-----------|
| 1    | Test Receiver         | Rohde & Schwarz | ESVS30        | 829007/014    | 12/13/03  |
| 2    | Spectrum Analyzer     | ADVANTEST       | R3272         | 82420232      | 02/14/03  |
| 3    | Spectrum Analyzer     | HP              | E4407B        | 39240339      | 08/16/03  |
| 4    | Power Meter           | Rohde & Schwarz | NRVS          | 100666        | 02/26/03  |
| 5    | Power Sensor          | Rohde & Schwarz | NRV-Z32       | 8360191058    | 05/19/03  |
| 6    | Pre-Amplifier         | HP              | 8447F OPT H64 | 3113A04487    | 10/11/03  |
| 7    | BILOG ANTENNA         | SCHAFFNER       | CBL6112B      | 2620          | 12/01/03  |
| 8    | Horn Antenna          | Electro-Metrics | EM-6961       | 103318        | 05/30/03  |
| 9    | Horn Antenna          | Schwarzbeck     | BBHA 9120     | D243          | 12/18/03  |
| 10   | RF Cable              | GesTek          | N/A           | GTK-E-A151-01 | 02/10/03  |
| 11   | Open Site             | GesTek          | N/A           | B1            | 11/25/03  |
| 12   | Test Program Software | GesTek          | N/A           | GTK-E-S001-01 | N/A       |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 4.2 OPEN TEST SITE SETUP DIAGRAM

Note: This is a reprehensive setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



### 4.3 RADIATED EMISSION LIMIT

#### ☒ FCC Class C Limit at 3m

| Frequency  | Distance | Field Strength |        |
|------------|----------|----------------|--------|
| MHz        | Meter    | μV/M           | dBμV/M |
| 30 to 88   | 3        | 100            | 40.0   |
| 88 to 216  | 3        | 150            | 43.5   |
| 216 to 960 | 3        | 200            | 46.0   |
| Above 960  | 3        | 500            | 54.0   |

Note : The frequencies above 1000MHz, as measured using instrumentation with a peak detector function was corresponding to 20dB above the maximum permitted average limit.

### 4.4 EUT CONFIGURATION

The equipment, which is listed on 4.2 was, installed on radiated emission test to meet the commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 4.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

### 4.5 OPERATING CONDITION OF EUT

Same as section 2.6.

### 4.6 RADIATED EMISSION DATA

The measurement range of radiated emissions from [30 MHz to 10 Harminics](#) was investigated. All readings below 1GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Above 1GHz are peak and avg. values with a resolution bandwidth of 1MHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scans of the measurement range for all the test modes and then use test receiver for final measurement. Then the worst modes were reported the following data pages..

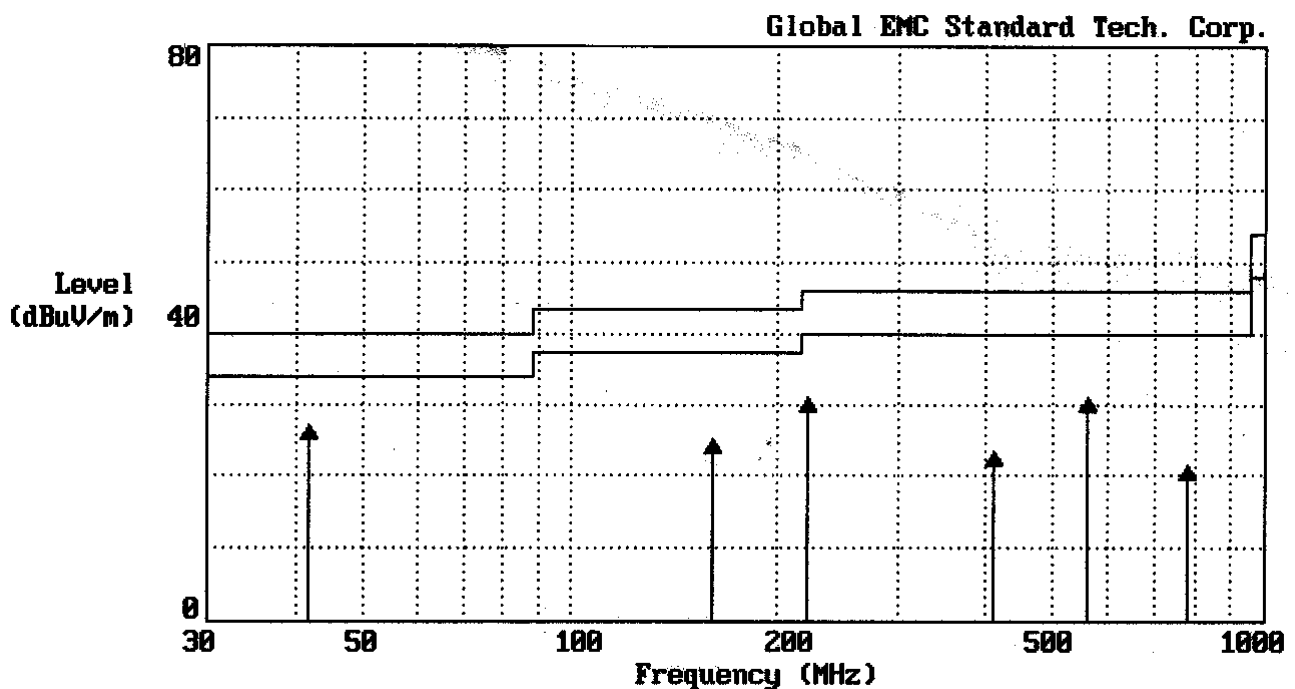
#### 4.7 RADIATED EMISSIONS MEASUREMENT RESULTS

|                  |                   |                 |            |
|------------------|-------------------|-----------------|------------|
| Date of Test     | February 02, 2004 | Temperature     | 25 deg/C   |
| EUT              | Industrial PC     | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 1 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at Horizontal  | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 41.770          | 0.97            | 15.03                 | 11.12                  | 27.12                     | 0.00             | 40.00            | -12.88      |
| 2   | 160.440         | 1.86            | 11.00                 | 12.25                  | 25.11                     | 0.00             | 43.50            | -18.39      |
| 3   | 220.410         | 2.23            | 11.50                 | 17.49                  | 31.22                     | 0.00             | 46.00            | -14.78      |
| 4   | 410.890         | 3.22            | 16.76                 | 3.46                   | 23.44                     | 0.00             | 46.00            | -22.56      |
| 5   | 561.112         | 3.83            | 18.70                 | 8.61                   | 31.14                     | 0.00             | 46.00            | -14.86      |
| 6   | 780.140         | 4.70            | 20.46                 | 3.72                   | 21.44                     | 0.00             | 46.00            | -24.56      |

##### Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

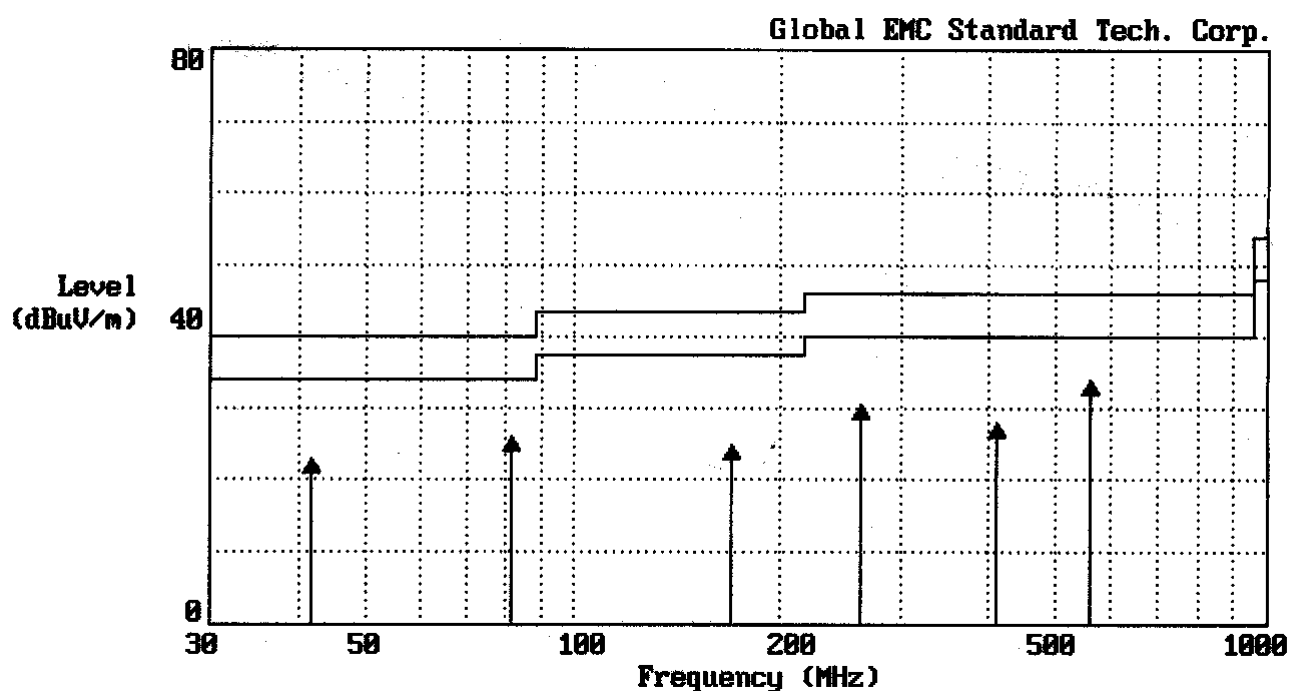


|                  |                       |                 |            |
|------------------|-----------------------|-----------------|------------|
| Date of Test     | February 02, 2004     | Temperature     | 25 deg/C   |
| EUT              | Industrial PC         | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 1 )     | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 41.700          | 0.97            | 15.03                 | 7.11                   | 23.11                     | 0.00             | 40.00            | -16.89      |
| 2   | 81.520          | 1.39            | 8.06                  | 16.66                  | 26.11                     | 0.00             | 40.00            | -13.89      |
| 3   | 169.230         | 1.96            | 10.61                 | 12.32                  | 24.89                     | 0.00             | 43.50            | -18.61      |
| 4   | 260.470         | 2.47            | 13.07                 | 15.23                  | 30.77                     | 0.00             | 46.00            | -15.23      |
| 5   | 410.560         | 3.22            | 16.76                 | 8.13                   | 28.11                     | 0.00             | 46.00            | -17.89      |
| 6   | 560.440         | 3.83            | 18.69                 | 11.59                  | 34.11                     | 0.00             | 46.00            | -11.89      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

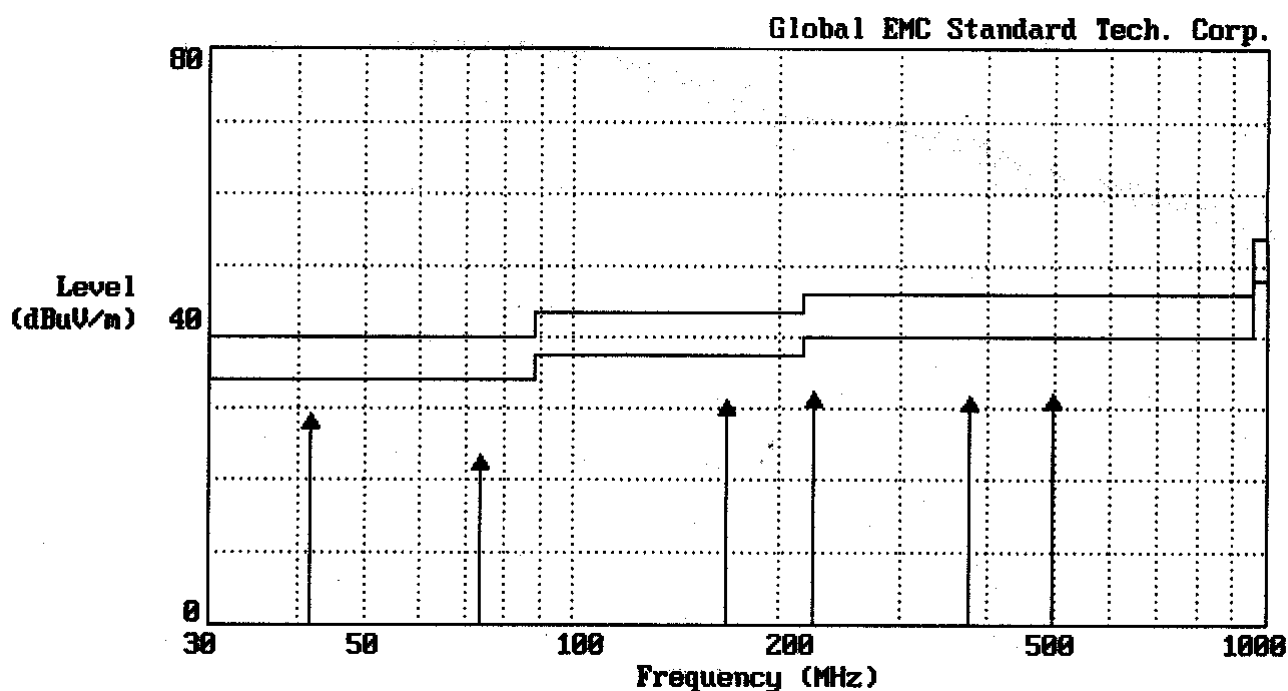


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 6 )       | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Horizontal</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 41.740          | 0.97            | 15.03                 | 13.11                  | 29.11                     | 0.00             | 40.00            | -10.89      |
| 2   | 73.560          | 1.30            | 7.43                  | 14.71                  | 23.44                     | 0.00             | 40.00            | -16.56      |
| 3   | 167.410         | 1.91            | 10.69                 | 18.62                  | 31.22                     | 0.00             | 43.50            | -12.28      |
| 4   | 224.120         | 2.28            | 11.67                 | 18.38                  | 32.33                     | 0.00             | 46.00            | -13.67      |
| 5   | 376.400         | 3.08            | 16.04                 | 12.73                  | 31.85                     | 0.00             | 46.00            | -14.15      |
| 6   | 496.310         | 3.59            | 18.04                 | 10.33                  | 31.96                     | 0.00             | 46.00            | -14.04      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

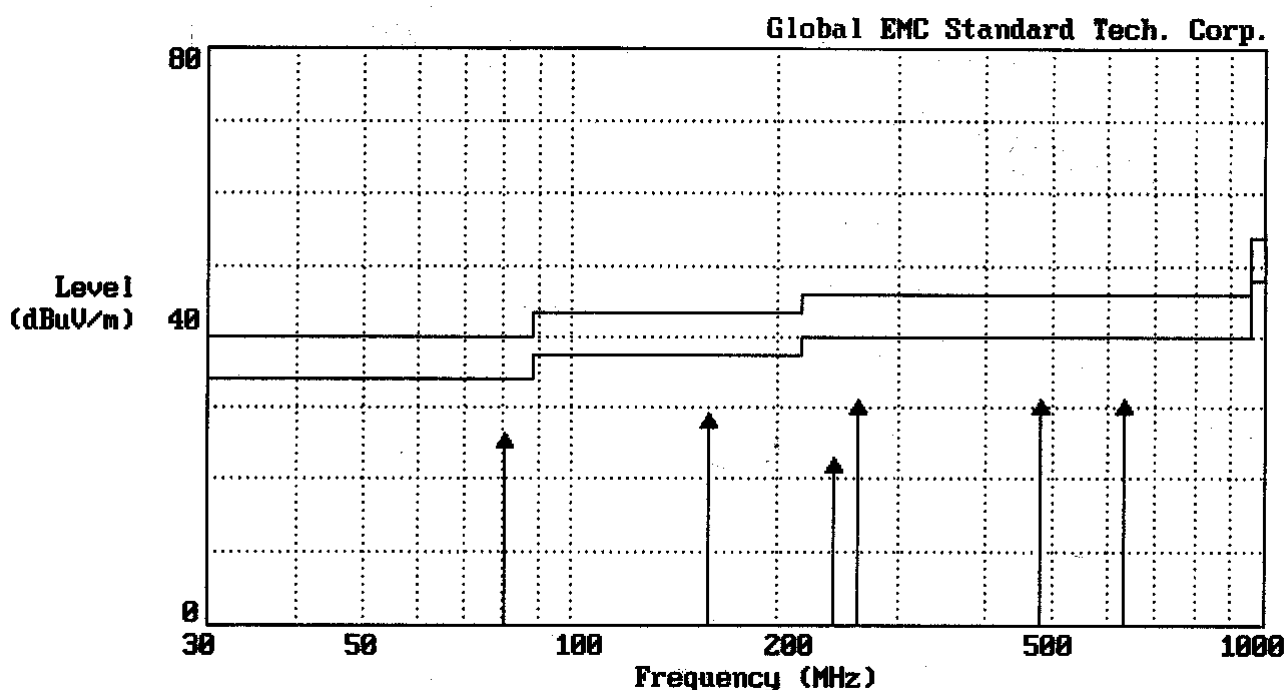


|                  |                       |                 |            |
|------------------|-----------------------|-----------------|------------|
| Date of Test     | February 02, 2004     | Temperature     | 25 deg/C   |
| EUT              | Industrial PC         | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 6 )     | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 80.110          | 1.35            | 7.98                  | 17.11                  | 26.44                     | 0.00             | 40.00            | -13.56      |
| 2   | 159.110         | 1.86            | 11.05                 | 16.20                  | 29.11                     | 0.00             | 43.50            | -14.39      |
| 3   | 241.560         | 2.37            | 12.44                 | 8.30                   | 23.11                     | 0.00             | 46.00            | -22.89      |
| 4   | 260.700         | 2.47            | 13.07                 | 15.68                  | 31.22                     | 0.00             | 46.00            | -14.78      |
| 5   | 480.900         | 3.55            | 17.81                 | 9.86                   | 31.22                     | 0.00             | 46.00            | -14.78      |
| 6   | 631.220         | 4.09            | 19.34                 | 7.68                   | 31.11                     | 0.00             | 46.00            | -14.89      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

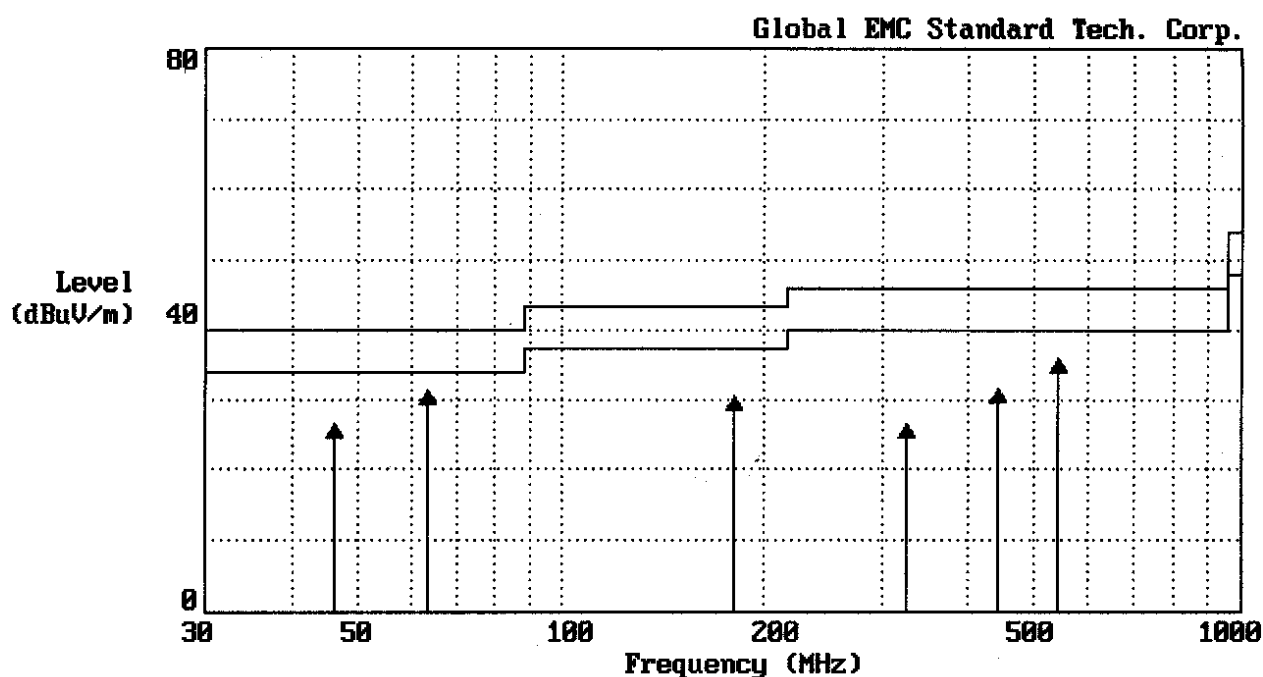


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 11 )      | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Horizontal</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 46.250          | 1.04            | 13.54                 | 12.16                  | 26.74                     | 0.00             | 40.00            | -13.26      |
| 2   | 63.410          | 1.18            | 7.27                  | 22.95                  | 31.40                     | 0.00             | 40.00            | -8.60       |
| 3   | 180.740         | 2.03            | 10.10                 | 18.53                  | 30.66                     | 0.00             | 43.50            | -12.84      |
| 4   | 324.710         | 2.77            | 14.78                 | 9.15                   | 26.70                     | 0.00             | 46.00            | -19.30      |
| 5   | 440.960         | 3.34            | 17.21                 | 11.19                  | 31.74                     | 0.00             | 46.00            | -14.26      |
| 6   | 541.780         | 3.76            | 18.51                 | 13.83                  | 36.10                     | 0.00             | 46.00            | -9.90       |

**Remarks:**

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

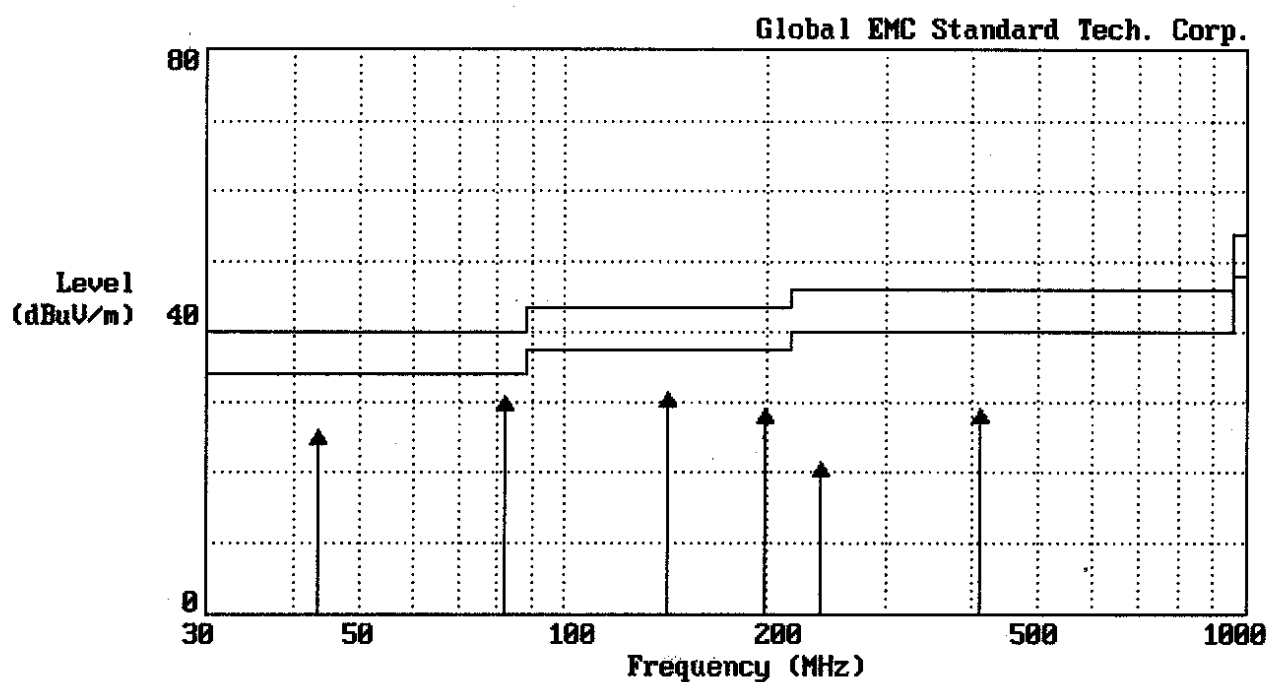


|                  |                       |                 |            |
|------------------|-----------------------|-----------------|------------|
| Date of Test     | February 02, 2004     | Temperature     | 25 deg/C   |
| EUT              | Industrial PC         | Humidity        | 60 %RH     |
| Working Cond.    | WLAN (Channel 11 )    | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 43.520          | 0.97            | 14.80                 | 10.35                  | 26.12                     | 0.00             | 40.00            | -13.88      |
| 2   | 82.150          | 1.39            | 8.06                  | 21.55                  | 31.00                     | 0.00             | 40.00            | -9.00       |
| 3   | 142.560         | 1.79            | 12.45                 | 17.32                  | 31.56                     | 0.00             | 43.50            | -11.94      |
| 4   | 198.230         | 2.13            | 10.54                 | 16.44                  | 29.11                     | 0.00             | 43.50            | -14.39      |
| 5   | 240.130         | 2.34            | 12.35                 | 6.87                   | 21.56                     | 0.00             | 46.00            | -24.44      |
| 6   | 410.230         | 3.20            | 16.75                 | 9.26                   | 29.21                     | 0.00             | 46.00            | -16.79      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

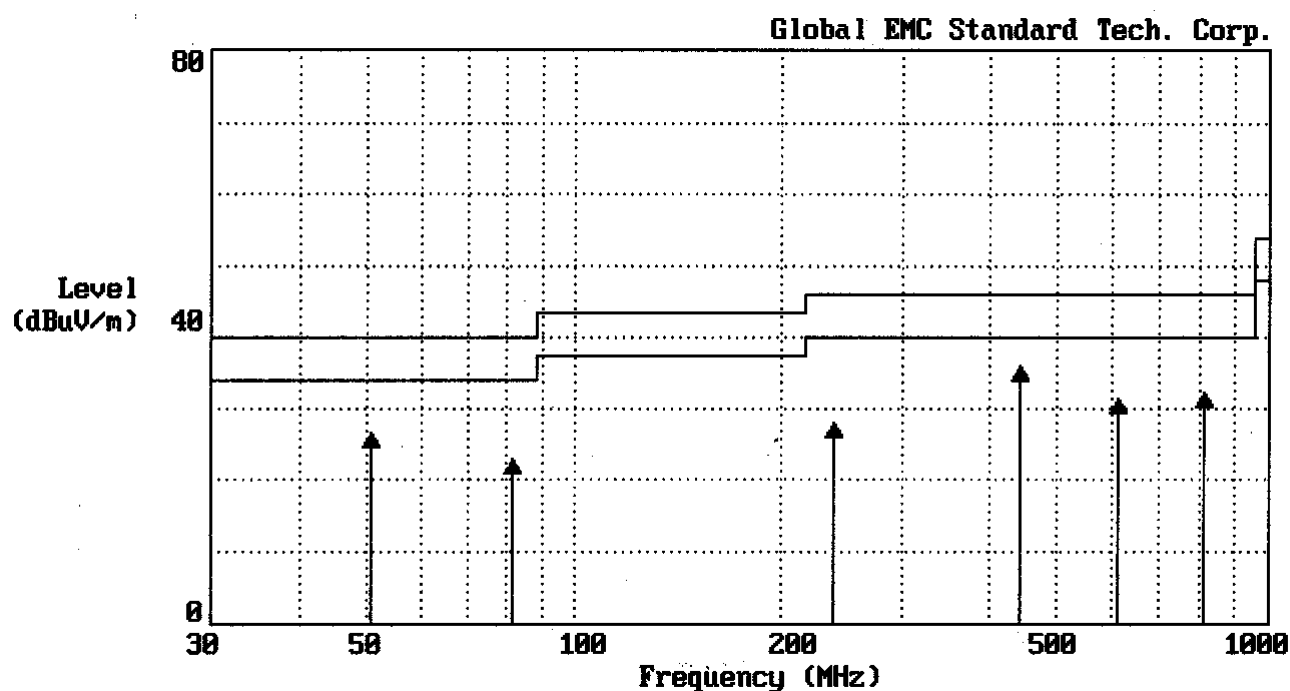


|                  |                        |                 |            |
|------------------|------------------------|-----------------|------------|
| Date of Test     | February 02, 2004      | Temperature     | 25 deg/C   |
| EUT              | Industrial PC          | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 0 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at Horizontal       | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 50.780          | 1.09            | 10.40                 | 15.10                  | 26.59                     | 0.00             | 40.00            | -13.41      |
| 2   | 81.260          | 1.39            | 8.00                  | 13.61                  | 23.00                     | 0.00             | 40.00            | -17.00      |
| 3   | 237.290         | 2.32            | 12.22                 | 13.58                  | 28.12                     | 0.00             | 46.00            | -17.88      |
| 4   | 440.890         | 3.34            | 17.21                 | 15.34                  | 35.89                     | 0.00             | 46.00            | -10.11      |
| 5   | 610.740         | 4.04            | 19.18                 | 8.23                   | 31.45                     | 0.00             | 46.00            | -14.55      |
| 6   | 810.590         | 4.70            | 20.67                 | 7.08                   | 32.45                     | 0.00             | 46.00            | -13.55      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

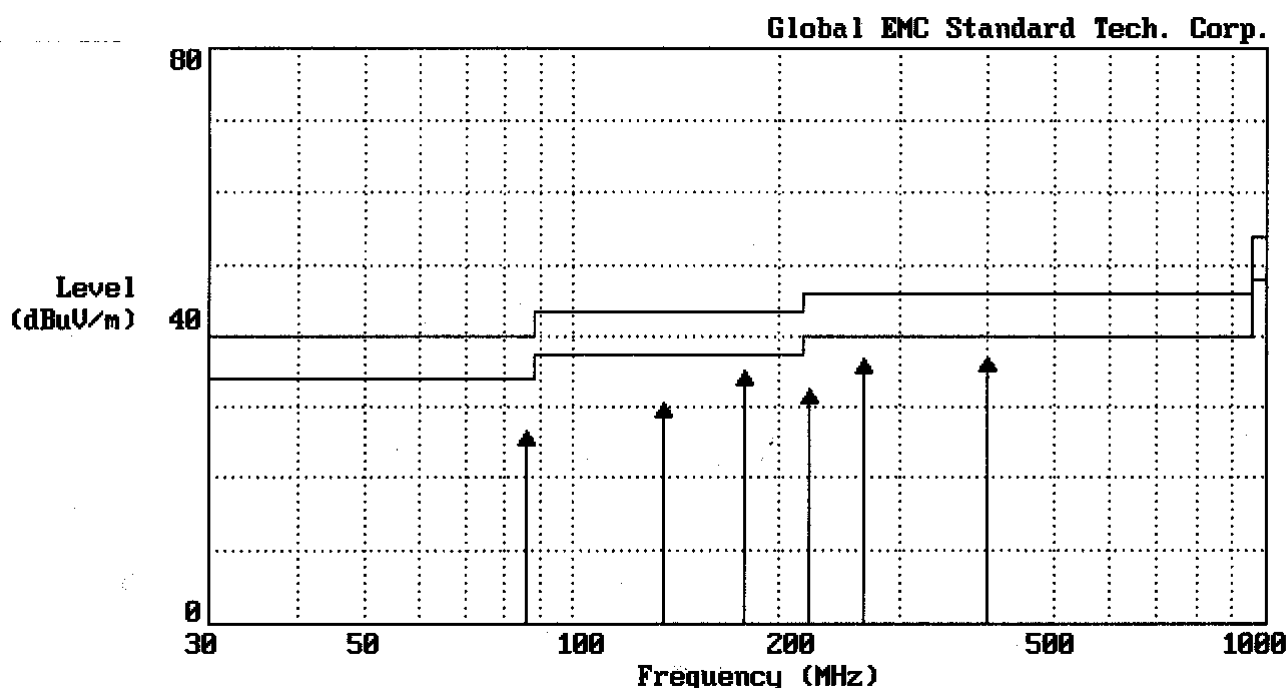


|                  |                        |                 |            |
|------------------|------------------------|-----------------|------------|
| Date of Test     | February 02, 2004      | Temperature     | 25 deg/C   |
| EUT              | Industrial PC          | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 0 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b>  | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 86.150          | 1.39            | 8.29                  | 16.91                  | 26.59                     | 0.00             | 40.00            | -13.41      |
| 2   | 135.440         | 1.75            | 12.75                 | 16.28                  | 30.78                     | 0.00             | 43.50            | -12.72      |
| 3   | 177.580         | 2.01            | 10.21                 | 23.04                  | 35.26                     | 0.00             | 43.50            | -8.24       |
| 4   | 220.140         | 2.23            | 11.50                 | 18.83                  | 32.56                     | 0.00             | 46.00            | -13.44      |
| 5   | 265.140         | 2.48            | 13.21                 | 21.20                  | 36.89                     | 0.00             | 46.00            | -9.11       |
| 6   | 400.450         | 3.15            | 16.60                 | 17.40                  | 37.15                     | 0.00             | 46.00            | -8.85       |

**Remarks:**

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

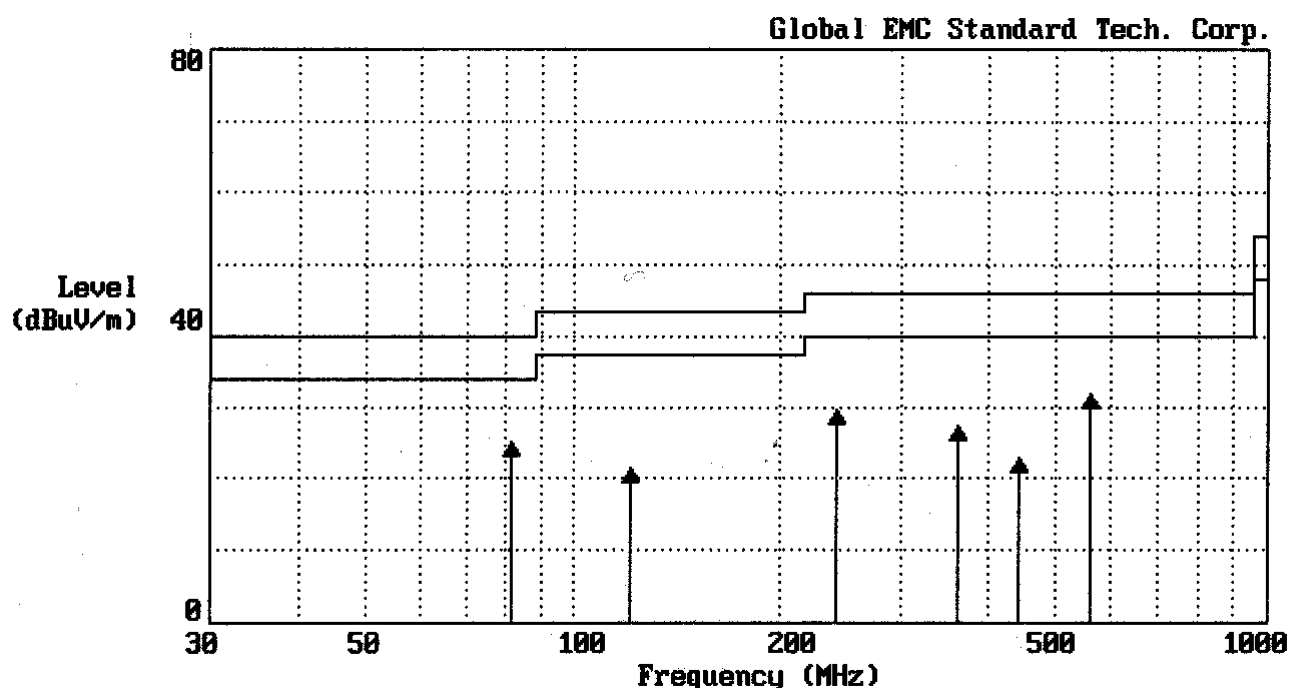


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 39 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Horizontal</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 81.450          | 1.39            | 8.06                  | 15.66                  | 25.11                     | 0.00             | 40.00            | -14.89      |
| 2   | 121.450         | 1.60            | 12.89                 | 6.96                   | 21.45                     | 0.00             | 43.50            | -22.05      |
| 3   | 240.580         | 2.34            | 12.39                 | 14.98                  | 29.71                     | 0.00             | 46.00            | -16.29      |
| 4   | 360.740         | 2.95            | 15.64                 | 8.86                   | 27.45                     | 0.00             | 46.00            | -18.55      |
| 5   | 440.890         | 3.34            | 17.21                 | 2.56                   | 23.11                     | 0.00             | 46.00            | -22.89      |
| 6   | 560.790         | 3.83            | 18.70                 | 9.57                   | 32.10                     | 0.00             | 46.00            | -13.90      |

**Remarks:**

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

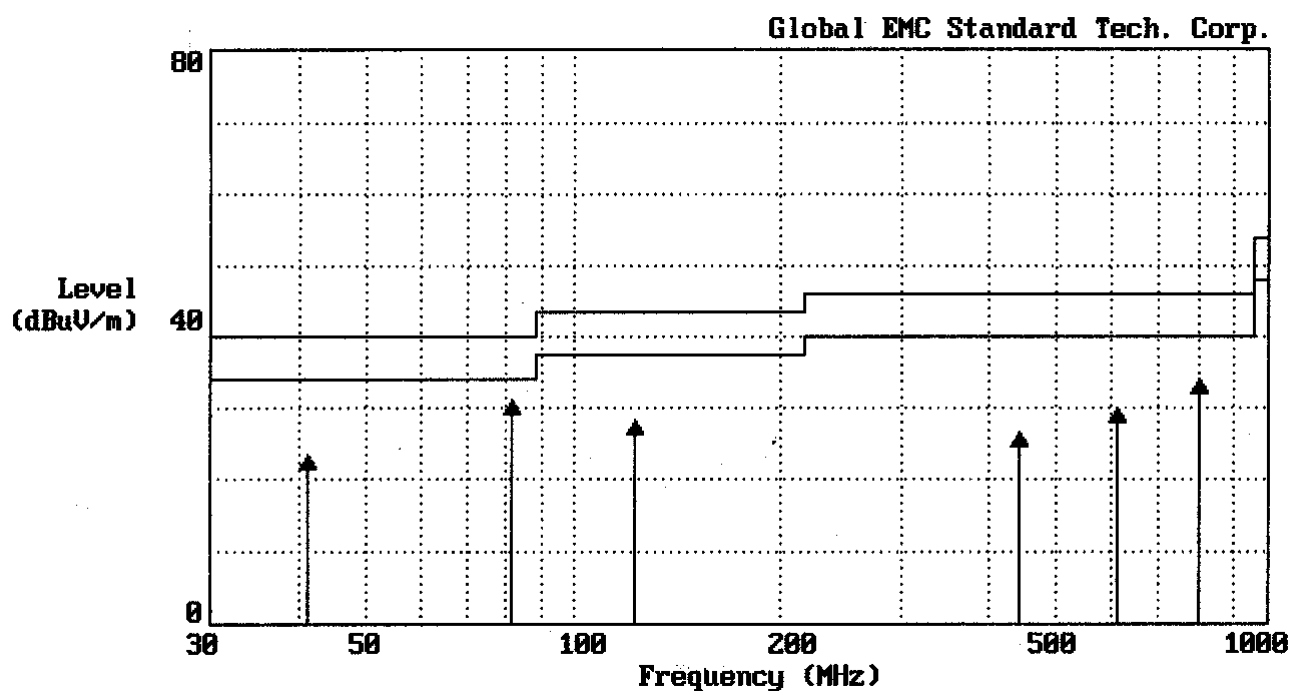


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 39 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b>   | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 41.260          | 0.98            | 15.27                 | 7.31                   | 23.56                     | 0.00             | 40.00            | -16.44      |
| 2   | 81.470          | 1.39            | 8.06                  | 21.66                  | 31.11                     | 0.00             | 40.00            | -8.89       |
| 3   | 122.740         | 1.68            | 12.88                 | 13.88                  | 28.44                     | 0.00             | 43.50            | -15.06      |
| 4   | 442.110         | 3.34            | 17.23                 | 6.21                   | 26.78                     | 0.00             | 46.00            | -19.22      |
| 5   | 610.740         | 4.04            | 19.18                 | 6.89                   | 30.11                     | 0.00             | 46.00            | -15.89      |
| 6   | 799.120         | 4.73            | 20.59                 | 8.78                   | 34.10                     | 0.00             | 46.00            | -11.90      |

**Remarks:**

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

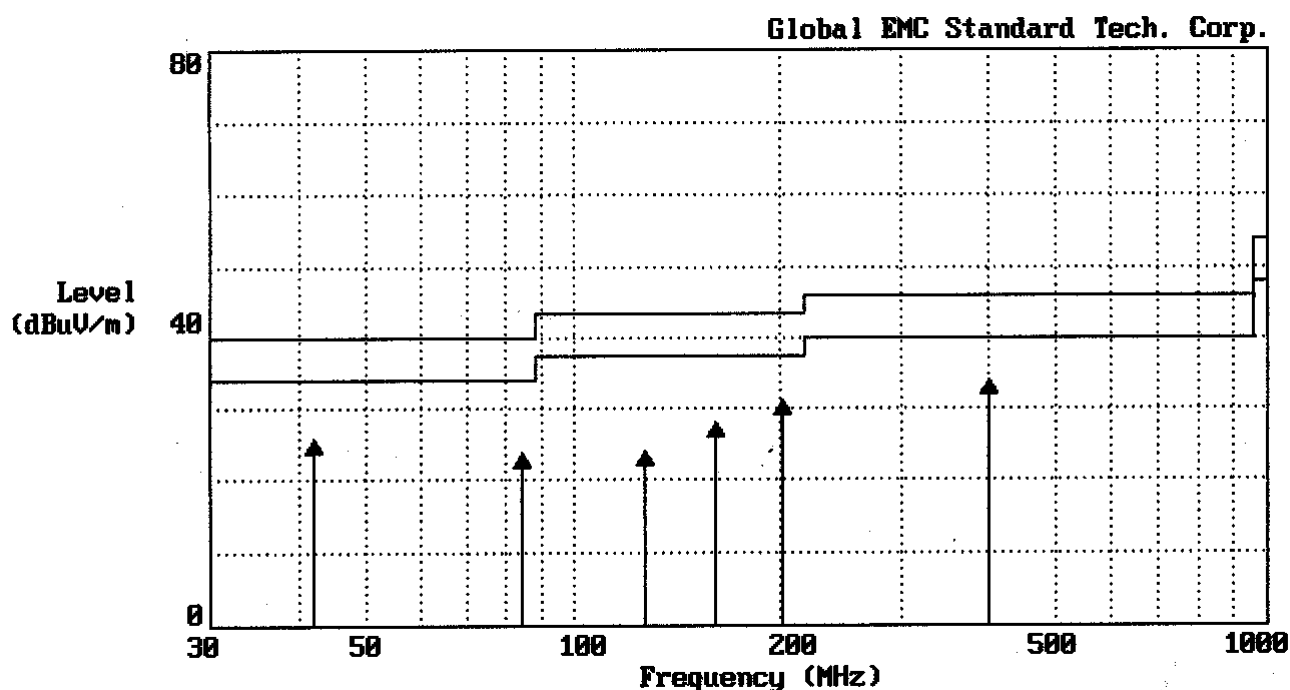


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 78 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Horizontal</b> | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 42.150          | 0.97            | 15.03                 | 9.80                   | 25.80                     | 0.00             | 40.00            | -14.20      |
| 2   | 84.150          | 1.39            | 8.17                  | 14.32                  | 23.88                     | 0.00             | 40.00            | -16.12      |
| 3   | 127.230         | 1.70            | 12.83                 | 9.58                   | 24.11                     | 0.00             | 43.50            | -19.39      |
| 4   | 160.780         | 1.86            | 11.00                 | 15.25                  | 28.11                     | 0.00             | 43.50            | -15.39      |
| 5   | 200.900         | 2.15            | 10.64                 | 18.43                  | 31.22                     | 0.00             | 43.50            | -12.28      |
| 6   | 400.890         | 3.15            | 16.61                 | 14.35                  | 34.11                     | 0.00             | 46.00            | -11.89      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

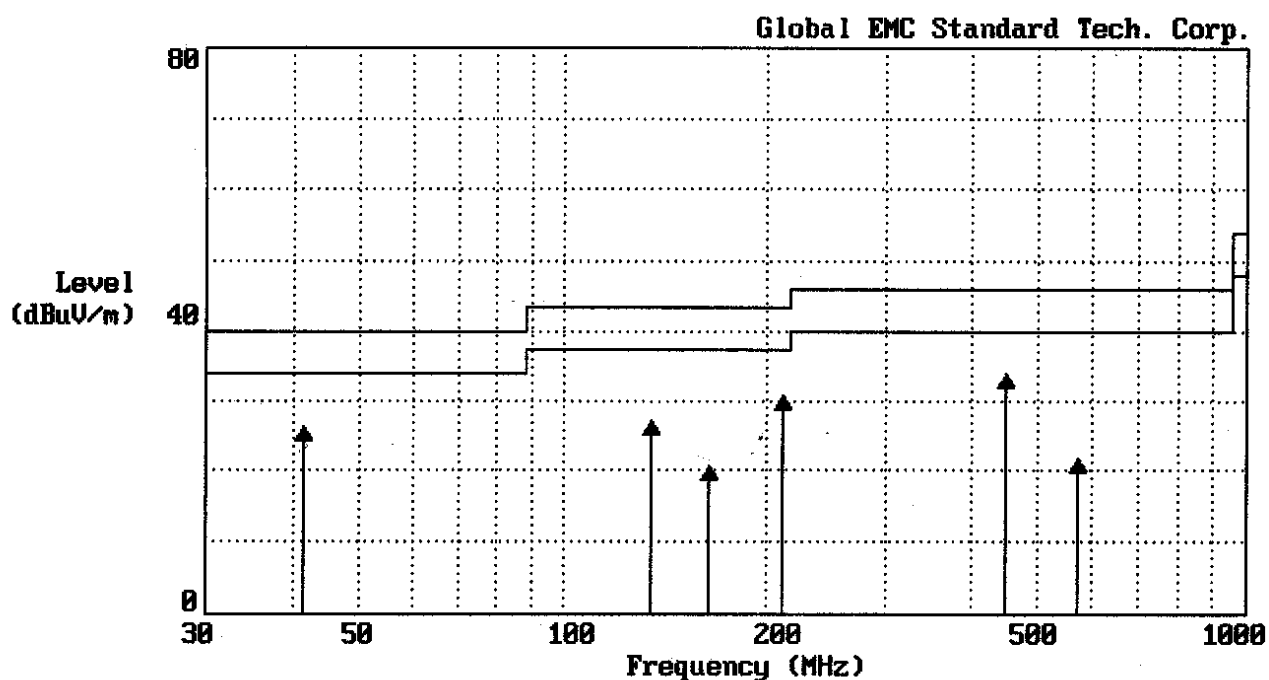


|                  |                         |                 |            |
|------------------|-------------------------|-----------------|------------|
| Date of Test     | February 02, 2004       | Temperature     | 25 deg/C   |
| EUT              | Industrial PC           | Humidity        | 60 %RH     |
| Working Cond.    | Bluetooth (Channel 78 ) | Display Pattern | H Pattern  |
| Antenna distance | 3m at <b>Vertical</b>   | Frequency Range | 30-1000MHz |

| No. | Frequency [MHz] | Cable Loss [dB] | Antenna Factor [dB/m] | Reading Level [dB(uV)] | Emission Level [dB(uV/m)] | Amp. Factor [dB] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|-----------------|-----------------------|------------------------|---------------------------|------------------|------------------|-------------|
| 1   | 41.520          | 0.98            | 15.27                 | 10.15                  | 26.40                     | 0.00             | 40.00            | -13.60      |
| 2   | 135.260         | 1.75            | 12.75                 | 12.61                  | 27.11                     | 0.00             | 43.50            | -16.39      |
| 3   | 164.230         | 1.91            | 10.83                 | 8.04                   | 20.78                     | 0.00             | 43.50            | -22.72      |
| 4   | 210.700         | 2.18            | 11.07                 | 17.75                  | 31.00                     | 0.00             | 43.50            | -12.50      |
| 5   | 447.120         | 3.36            | 17.31                 | 13.43                  | 34.10                     | 0.00             | 46.00            | -11.90      |
| 6   | 571.230         | 3.88            | 18.80                 | -0.72                  | 21.96                     | 0.00             | 46.00            | -24.04      |

## Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.



|                         |                               |                        |            |
|-------------------------|-------------------------------|------------------------|------------|
| <b>Date of Test</b>     | December 23, 2003             | <b>Temperature</b>     | 25 deg/C   |
| <b>EUT</b>              | Industrial PC                 | <b>Humidity</b>        | 60 %RH     |
| <b>Working Cond.</b>    | Mode 1 (802.11b)<br>Channel 1 | <b>Data Rate</b>       | 11Mbps     |
| <b>Antenna distance</b> | 3m at <b>Horizontal</b>       | <b>Frequency Range</b> | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4823.75         | 60.11                  | 2.41                     | 62.52                     | 74.00            | -11.48      |
| 2   | 7236.37         | 56.58                  | -0.46                    | < 56.12                   | 74.00            | -17.88      |
| 3   | 9648.25         | 53.54                  | -0.79                    | < 52.75                   | 74.00            | -21.25      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4824.12         | 49.38                  | 2.41                     | 51.79                     | 54.00            | -2.21       |
| 2   | 7235.75         | 44.84                  | -0.46                    | < 44.38                   | 54.00            | -9.62       |

### Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                               |                 |            |
|------------------|-------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003             | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                 | Humidity        | 60 %RH     |
| Working Cond.    | Mode 1 (802.11b)<br>Channel 1 | Data Rate       | 11Mbps     |
| Antenna distance | 3m at Vertical                | Frequency Range | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4823.87         | 58.62                  | 2.52                     | 61.14                     | 74.00            | -12.86      |
| 2   | 7235.62         | 58.17                  | 0.87                     | < 59.04                   | 74.00            | -14.96      |
| 3   | 9648.25         | 53.28                  | -0.17                    | < 53.11                   | 74.00            | -20.89      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4824.00         | 44.74                  | 2.52                     | 47.26                     | 54.00            | -6.74       |
| 2   | 7236.37         | 44.46                  | 0.88                     | < 45.34                   | 54.00            | -8.66       |

### Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                               |                        |            |
|-------------------------|-------------------------------|------------------------|------------|
| <b>Date of Test</b>     | December 23, 2003             | <b>Temperature</b>     | 25 deg/C   |
| <b>EUT</b>              | Industrial PC                 | <b>Humidity</b>        | 60 %RH     |
| <b>Working Cond.</b>    | Mode 1 (802.11b)<br>Channel 6 | <b>Data Rate</b>       | 11Mbps     |
| <b>Antenna distance</b> | 3m at <b>Horizontal</b>       | <b>Frequency Range</b> | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.00         | 60.37                  | 2.40                     | 62.77                     | 74.00            | -11.23      |
| 2   | 7311.75         | 58.08                  | -0.49                    | < 57.59                   | 74.00            | -16.41      |
| 3   | 9748.25         | 52.39                  | -0.50                    | < 51.89                   | 74.00            | -22.11      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.25         | 49.76                  | 2.40                     | 52.16                     | 54.00            | -1.84       |
| 2   | 7310.87         | 45.57                  | -0.49                    | < 45.08                   | 54.00            | -8.92       |

### Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                               |                 |            |
|------------------|-------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003             | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                 | Humidity        | 60 %RH     |
| Working Cond.    | Mode 1 (802.11b)<br>Channel 6 | Data Rate       | 11Mbps     |
| Antenna distance | 3m at Vertical                | Frequency Range | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.00         | 57.22                  | 2.36                     | 59.58                     | 74.00            | -14.42      |
| 2   | 7311.12         | 57.80                  | 1.22                     | < 59.02                   | 74.00            | -14.98      |
| 3   | 9747.87         | 53.25                  | 0.15                     | < 53.40                   | 74.00            | -20.60      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.00         | 46.91                  | 2.36                     | 49.27                     | 54.00            | -4.73       |
| 2   | 7310.75         | 44.93                  | 1.22                     | < 46.15                   | 54.00            | -7.85       |

### Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                                |                        |                   |
|-------------------------|--------------------------------|------------------------|-------------------|
| <b>Date of Test</b>     | December 23, 2003              | <b>Temperature</b>     | 25 deg/C          |
| <b>EUT</b>              | Industrial PC                  | <b>Humidity</b>        | 60 %RH            |
| <b>Working Cond.</b>    | Mode 1 (802.11b)<br>Channel 11 | <b>Data Rate</b>       | 11Mbps            |
| <b>Antenna distance</b> | 3m at <b>Horizontal</b>        | <b>Frequency Range</b> | <b>Above 1GHz</b> |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4923.87         | 61.80                  | 2.39                     | 64.19                     | 74.00            | -9.81       |
| 2   | 7385.87         | 56.53                  | -0.52                    | < 56.01                   | 74.00            | -17.99      |
| 3   | 9847.62         | 52.34                  | -0.22                    | < 52.12                   | 74.00            | -21.88      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4924.62         | 49.06                  | 2.39                     | 51.45                     | 54.00            | -2.55       |
| 2   | 7386.12         | 44.73                  | -0.52                    | < 44.21                   | 54.00            | -9.79       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                |                 |            |
|------------------|--------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003              | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                  | Humidity        | 60 %RH     |
| Working Cond.    | Mode 1 (802.11b)<br>Channel 11 | Data Rate       | 11Mbps     |
| Antenna distance | 3m at Vertical                 | Frequency Range | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4924.00         | 56.93                  | 2.21                     | 59.14                     | 74.00            | -14.86      |
| 2   | 7386.87         | 57.41                  | 1.58                     | < 58.99                   | 74.00            | -15.01      |
| 3   | 9848.62         | 52.38                  | 0.48                     | < 52.86                   | 74.00            | -21.14      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4924.00         | 46.79                  | 2.21                     | 49.00                     | 54.00            | -5.00       |
| 2   | 7385.75         | 46.64                  | 1.57                     | < 48.21                   | 54.00            | -5.79       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                               |                 |                   |
|------------------|-------------------------------|-----------------|-------------------|
| Date of Test     | December 23, 2003             | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                 | Humidity        | 60 %RH            |
| Working Cond.    | Mode 2 (802.11g)<br>Channel 1 | Data Rate       | 54Mbps            |
| Antenna distance | 3m at <b>Horizontal</b>       | Frequency Range | <b>Above 1GHz</b> |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4825.12         | 58.46                  | 2.41                     | 60.87                     | 74.00            | -13.13      |
| 2   | 7232.75         | 63.33                  | -0.46                    | 62.87                     | 74.00            | -11.13      |
| 3   | 9648.00         | 52.88                  | -0.79                    | < 52.09                   | 74.00            | -21.91      |
| 4   | 12060.00        | 53.94                  | 3.20                     | < 57.14                   | 74.00            | -16.86      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4824.75         | 47.35                  | 2.41                     | 49.76                     | 54.00            | -4.24       |
| 2   | 7235.87         | 45.37                  | -0.46                    | 44.91                     | 54.00            | -9.09       |
| 3   | 12060.25        | 42.08                  | 3.20                     | < 45.28                   | 54.00            | -8.72       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                               |                        |            |
|-------------------------|-------------------------------|------------------------|------------|
| <b>Date of Test</b>     | December 23, 2003             | <b>Temperature</b>     | 25 deg/C   |
| <b>EUT</b>              | Industrial PC                 | <b>Humidity</b>        | 60 %RH     |
| <b>Working Cond.</b>    | Mode 2 (802.11g)<br>Channel 1 | <b>Data Rate</b>       | 54Mbps     |
| <b>Antenna distance</b> | 3m at <b>Vertical</b>         | <b>Frequency Range</b> | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4824.37         | 56.94                  | 2.52                     | 59.46                     | 74.00            | -14.54      |
| 2   | 7246.37         | 66.40                  | 0.93                     | 67.33                     | 74.00            | -6.67       |
| 3   | 9647.75         | 53.56                  | -0.17                    | < 53.39                   | 74.00            | -20.61      |
| 4   | 12059.62        | 55.48                  | 2.05                     | < 57.53                   | 74.00            | -16.47      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4824.00         | 44.35                  | 2.52                     | 46.87                     | 54.00            | -7.13       |
| 2   | 7236.50         | 44.51                  | 0.88                     | 45.39                     | 54.00            | -8.61       |
| 3   | 12060.25        | 41.82                  | 2.05                     | < 43.87                   | 54.00            | -10.13      |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                               |                        |                   |
|-------------------------|-------------------------------|------------------------|-------------------|
| <b>Date of Test</b>     | December 23, 2003             | <b>Temperature</b>     | 25 deg/C          |
| <b>EUT</b>              | Industrial PC                 | <b>Humidity</b>        | 60 %RH            |
| <b>Working Cond.</b>    | Mode 2 (802.11g)<br>Channel 6 | <b>Data Rate</b>       | 54Mbps            |
| <b>Antenna distance</b> | 3m at <b>Horizontal</b>       | <b>Frequency Range</b> | <b>Above 1GHz</b> |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4879.37         | 59.59                  | 2.40                     | 61.99                     | 74.00            | -12.01      |
| 2   | 7309.12         | 66.73                  | -0.49                    | 66.24                     | 74.00            | -7.76       |
| 3   | 9747.62         | 52.20                  | -0.50                    | < 51.70                   | 74.00            | -22.30      |
| 4   | 12185.37        | 55.39                  | 2.48                     | < 57.87                   | 74.00            | -16.13      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.75         | 48.04                  | 2.40                     | 50.44                     | 54.00            | -3.56       |
| 2   | 7311.25         | 46.73                  | -0.49                    | 46.24                     | 54.00            | -7.76       |
| 3   | 12184.75        | 41.99                  | 2.48                     | < 44.47                   | 54.00            | -9.53       |

### Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                               |                        |            |
|-------------------------|-------------------------------|------------------------|------------|
| <b>Date of Test</b>     | December 23, 2003             | <b>Temperature</b>     | 25 deg/C   |
| <b>EUT</b>              | Industrial PC                 | <b>Humidity</b>        | 60 %RH     |
| <b>Working Cond.</b>    | Mode 2 (802.11g)<br>Channel 6 | <b>Data Rate</b>       | 54Mbps     |
| <b>Antenna distance</b> | 3m at <b>Vertical</b>         | <b>Frequency Range</b> | Above 1GHz |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.25         | 56.29                  | 2.36                     | 58.65                     | 74.00            | -15.35      |
| 2   | 7318.00         | 68.77                  | 1.26                     | 70.03                     | 74.00            | -3.97       |
| 3   | 9748.00         | 51.85                  | 0.15                     | < 52.00                   | 74.00            | -22.00      |
| 4   | 12185.87        | 54.68                  | 1.70                     | < 56.38                   | 74.00            | -17.62      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4874.50         | 45.38                  | 2.36                     | 47.74                     | 54.00            | -6.26       |
| 2   | 7312.00         | 47.77                  | 1.23                     | 49.00                     | 54.00            | -5.00       |
| 3   | 12185.37        | 42.29                  | 1.70                     | < 43.99                   | 54.00            | -10.01      |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                |                 |                   |
|------------------|--------------------------------|-----------------|-------------------|
| Date of Test     | December 23, 2003              | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                  | Humidity        | 60 %RH            |
| Working Cond.    | Mode 2 (802.11g)<br>Channel 11 | Data Rate       | 54Mbps            |
| Antenna distance | 3m at <b>Horizontal</b>        | Frequency Range | <b>Above 1GHz</b> |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4931.37         | 60.99                  | 2.39                     | 63.38                     | 74.00            | -10.62      |
| 2   | 7382.00         | 65.55                  | -0.52                    | 65.03                     | 74.00            | -8.97       |
| 3   | 9848.62         | 52.15                  | -0.22                    | < 51.93                   | 74.00            | -22.07      |
| 4   | 12309.00        | 54.31                  | 1.77                     | < 56.08                   | 74.00            | -17.92      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4924.12         | 49.56                  | 2.39                     | 51.95                     | 54.00            | -2.05       |
| 2   | 7386.50         | 45.81                  | -0.52                    | 45.29                     | 54.00            | -8.71       |
| 3   | 12310.37        | 41.13                  | 1.76                     | < 42.89                   | 54.00            | -11.11      |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                |                 |                   |
|------------------|--------------------------------|-----------------|-------------------|
| Date of Test     | December 23, 2003              | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                  | Humidity        | 60 %RH            |
| Working Cond.    | Mode 2 (802.11g)<br>Channel 11 | Data Rate       | 54Mbps            |
| Antenna distance | 3m at <b>Vertical</b>          | Frequency Range | <b>Above 1GHz</b> |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4923.75         | 56.19                  | 2.21                     | 58.40                     | 74.00            | -15.60      |
| 2   | 7383.00         | 66.70                  | 1.56                     | 68.26                     | 74.00            | -5.74       |
| 3   | 9847.62         | 52.33                  | 0.48                     | < 52.81                   | 74.00            | -21.19      |
| 4   | 12310.25        | 52.09                  | 1.36                     | < 53.45                   | 74.00            | -20.55      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4923.87         | 47.98                  | 2.21                     | 50.19                     | 54.00            | -3.81       |
| 2   | 7386.50         | 46.59                  | 1.58                     | 48.17                     | 54.00            | -5.83       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                         |                                           |                        |            |
|-------------------------|-------------------------------------------|------------------------|------------|
| <b>Date of Test</b>     | December 23, 2003                         | <b>Temperature</b>     | 25 deg/C   |
| <b>EUT</b>              | Industrial PC                             | <b>Humidity</b>        | 60 %RH     |
| <b>Working Cond.</b>    | Mode 3 (Bluetooth)<br>Channel 0 (2402MHz) | <b>Frequency Range</b> | Above 1GHz |
| <b>Antenna distance</b> | 3m at <b>Horizontal</b>                   |                        |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4803.95         | 62.92                  | 2.42                     | 65.34                     | 74.00            | -8.66       |
| 2   | 7206.15         | 60.90                  | -0.45                    | 60.45                     | 74.00            | -13.55      |
| 3   | 9608.05         | 54.26                  | -0.91                    | < 53.35                   | 74.00            | -20.65      |
| 4   | 12009.85        | 55.41                  | 3.48                     | < 58.89                   | 74.00            | -15.11      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4804.10         | 50.12                  | 2.42                     | 52.54                     | 54.00            | -1.46       |
| 2   | 7206.05         | 52.08                  | -0.45                    | 51.63                     | 54.00            | -2.37       |
| 3   | 12010.05        | 41.99                  | 3.48                     | < 45.47                   | 54.00            | -8.53       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                           |                 |            |
|------------------|-------------------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003                         | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                             | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 0 (2402MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at Vertical                            |                 |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4804.10         | 58.63                  | 2.59                     | 61.22                     | 74.00            | -12.78      |
| 2   | 7206.10         | 59.74                  | 0.73                     | 60.47                     | 74.00            | -13.53      |
| 3   | 9607.95         | 53.24                  | -0.30                    | < 52.94                   | 74.00            | -21.06      |
| 4   | 12009.95        | 54.33                  | 2.18                     | < 56.51                   | 74.00            | -17.49      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4804.05         | 49.87                  | 2.59                     | 52.46                     | 54.00            | -1.54       |
| 2   | 7206.05         | 51.47                  | 0.73                     | 52.20                     | 54.00            | -1.80       |
| 3   | 12009.95        | 42.03                  | 2.18                     | < 44.21                   | 54.00            | -9.79       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                             |                 |            |
|------------------|---------------------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003                           | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                               | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 39 (2441 MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at <b>Horizontal</b>                     |                 |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4882.00         | 60.00                  | 2.40                     | 62.40                     | 74.00            | -11.60      |
| 2   | 7323.00         | 59.26                  | -0.50                    | 58.76                     | 74.00            | -15.24      |
| 3   | 9764.00         | 52.32                  | -0.46                    | < 51.86                   | 74.00            | -22.14      |
| 4   | 12205.05        | 55.05                  | 2.36                     | < 57.41                   | 74.00            | -16.59      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4882.05         | 50.44                  | 2.40                     | 52.84                     | 54.00            | -1.16       |
| 2   | 7323.05         | 52.18                  | -0.50                    | 51.68                     | 54.00            | -2.32       |
| 3   | 12205.05        | 41.65                  | 2.36                     | < 44.01                   | 54.00            | -9.99       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                             |                 |            |
|------------------|---------------------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003                           | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                               | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 39 (2441 MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at <b>Vertical</b>                       |                 |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4882.05         | 57.28                  | 2.34                     | 59.62                     | 74.00            | -14.38      |
| 2   | 7323.00         | 59.44                  | 1.28                     | 60.72                     | 74.00            | -13.28      |
| 3   | 9764.00         | 51.64                  | 0.21                     | < 51.85                   | 74.00            | -22.15      |
| 4   | 12205.00        | 51.06                  | 1.65                     | < 52.71                   | 74.00            | -21.29      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4882.05         | 50.04                  | 2.34                     | 52.38                     | 54.00            | -1.62       |
| 2   | 7323.00         | 51.13                  | 1.28                     | 52.41                     | 54.00            | -1.59       |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                            |                 |            |
|------------------|--------------------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003                          | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                              | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 78 (2480MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at <b>Horizontal</b>                    |                 |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4959.95         | 58.34                  | 2.38                     | 60.72                     | 74.00            | -13.28      |
| 2   | 7439.95         | 58.80                  | -0.54                    | 58.26                     | 74.00            | -15.74      |
| 3   | 9919.95         | 52.44                  | -0.01                    | < 52.43                   | 74.00            | -21.57      |
| 4   | 12399.95        | 54.20                  | 1.24                     | < 55.44                   | 74.00            | -18.56      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4960.00         | 50.10                  | 2.38                     | 52.48                     | 54.00            | -1.52       |
| 2   | 7440.05         | 52.67                  | -0.54                    | 52.13                     | 54.00            | -1.87       |
| 3   | 12399.05        | 41.90                  | 1.24                     | < 43.14                   | 54.00            | -10.86      |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

|                  |                                            |                 |            |
|------------------|--------------------------------------------|-----------------|------------|
| Date of Test     | December 23, 2003                          | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                              | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 78 (2480MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at <b>Vertical</b>                      |                 |            |

## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4960.20         | 56.99                  | 2.10                     | 59.09                     | 74.00            | -14.91      |
| 2   | 7439.90         | 60.36                  | 1.83                     | 62.19                     | 74.00            | -11.81      |
| 3   | 9920.20         | 53.75                  | 0.71                     | < 54.46                   | 74.00            | -19.54      |
| 4   | 12399.95        | 55.31                  | 1.11                     | < 56.42                   | 74.00            | -17.58      |

## Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Margin [dB] |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|-------------|
| 1   | 4960.05         | 46.45                  | 2.10                     | 48.55                     | 54.00            | -5.45       |
| 2   | 7440.05         | 50.65                  | 1.83                     | 52.48                     | 54.00            | -1.52       |
| 3   | 9920.20         | 51.26                  | 0.71                     | < 51.97                   | 54.00            | -2.03       |
| 4   | 12399.85        | 42.10                  | 1.11                     | < 43.21                   | 54.00            | -10.79      |

## Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHz, Span=100MHz.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

## 5. PEAK POWER OUTPUT

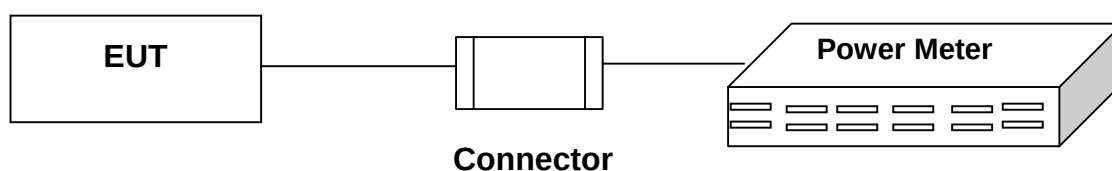
### 5.1 TEST EQUIPMENT

The following test equipments are used during the Conduct tests:

| Item | Instrument        | Manufacturer    | Type    | Serial No. | Last Cal. |
|------|-------------------|-----------------|---------|------------|-----------|
| 1    | Spectrum Analyzer | Advantest       | R3272   | 82420232   | 02/14/03  |
|      | Spectrum Analyzer | HP              | E4407B  | 39240339   | 08/16/03  |
| 2    | Power Meter       | Rohde & Schwarz | NRVS    | 100666     | 02/26/03  |
| 3    | Peak Power Sensor | Rohde & Schwarz | NRV-Z32 | 8360191058 | 05/19/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 5.2 BLOCK DIAGRAM OF TEST SETUP



### 5.3 PEAK POWER OUTPUT LIMIT

The maximum peak power shall be less 1 Watt.

## 5.4 TEST RESULT

|              |                  |
|--------------|------------------|
| Date of Test | January 28, 2004 |
| EUT          | Industrial PC    |
| Test Mode    | Mode 1 (802.11b) |

| Channel No. | Frequency (MHz) | Measurement (dBm) | Required Limit | Result |
|-------------|-----------------|-------------------|----------------|--------|
| 1           | 2412            | 16.31             | 1W(30dBm)      | Pass   |
| 6           | 2437            | 16.02             | 1W(30dBm)      | Pass   |
| 11          | 2468            | 16.24             | 1W(30dBm)      | Pass   |

|              |                  |
|--------------|------------------|
| Date of Test | January 28, 2004 |
| EUT          | Industrial PC    |
| Test Mode    | Mode 2 (802.11g) |

| Channel No. | Frequency (MHz) | Measurement (dBm) | Required Limit | Result |
|-------------|-----------------|-------------------|----------------|--------|
| 1           | 2412            | 21.00             | 1W(30dBm)      | Pass   |
| 6           | 2437            | 20.75             | 1W(30dBm)      | Pass   |
| 11          | 2462            | 20.91             | 1W(30dBm)      | Pass   |

|              |                    |
|--------------|--------------------|
| Date of Test | January 28, 2004   |
| EUT          | Industrial PC      |
| Test Mode    | Mode 3 (Bluetooth) |

| Channel No. | Frequency (MHz) | Measurement (dBm) | Required Limit | Result |
|-------------|-----------------|-------------------|----------------|--------|
| 1           | 2412            | 2.65              | 1W(30dBm)      | Pass   |
| 6           | 2437            | 2.58              | 1W(30dBm)      | Pass   |
| 11          | 2462            | 4.14              | 1W(30dBm)      | Pass   |

## 6. BAND EDGE

### 6.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

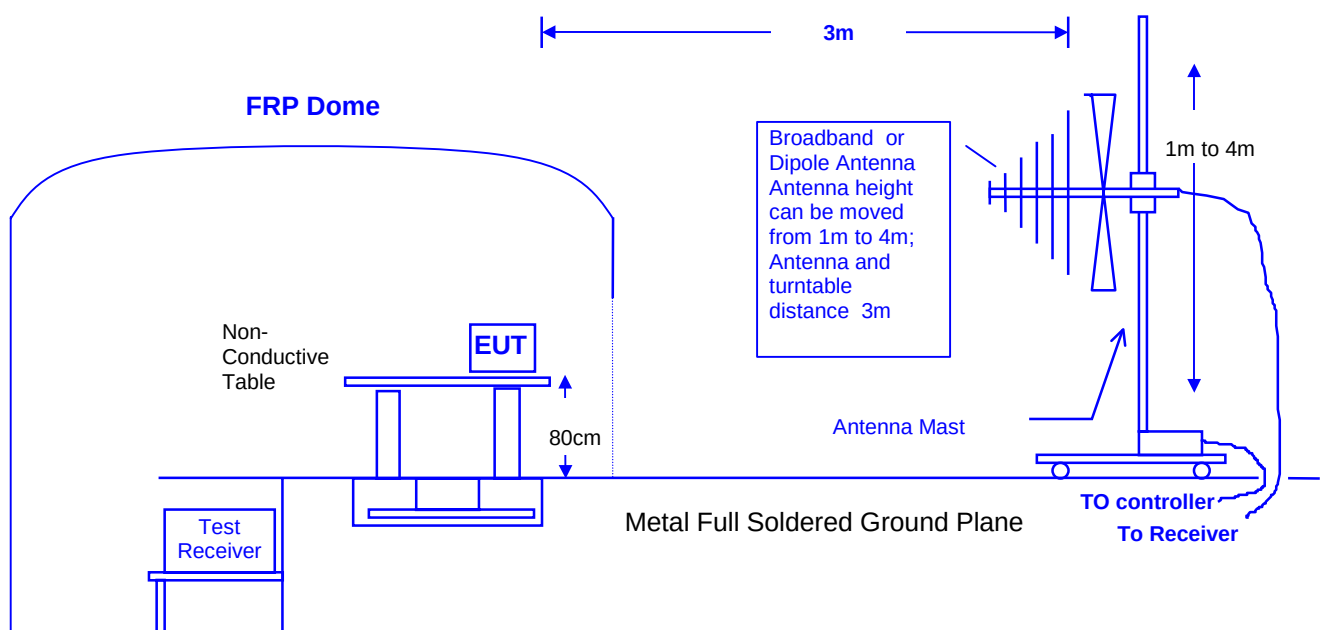
Radiated test was performed on: ☐ Site #1 ☐ Site #2 ☒ Site #3 ☐ Site #4

| Item | Instrument            | Manufacturer    | Type          | Serial No.    | Last Cal. |
|------|-----------------------|-----------------|---------------|---------------|-----------|
| 1    | Test Receiver         | Rohde & Schwarz | ESVS30        | 829007/014    | 12/13/03  |
| 2    | Spectrum Analyzer     | ADVANTEST       | R3272         | 82420232      | 02/14/03  |
| 3    | Spectrum Analyzer     | HP              | E4407B        | 39240339      | 08/16/03  |
| 4    | Power Meter           | Rohde & Schwarz | NRVS          | 100666        | 02/26/03  |
| 5    | Power Sensor          | Rohde & Schwarz | NRV-Z32       | 8360191058    | 05/19/03  |
| 6    | Pre-Amplifier         | HP              | 8447F OPT H64 | 3113A04487    | 10/11/03  |
| 7    | BILOG ANTENNA         | SCHAFFNER       | CBL6112B      | 2620          | 12/01/03  |
| 8    | Horn Antenna          | Electro-Metrics | EM-6961       | 103318        | 05/30/03  |
| 9    | Horn Antenna          | Schwarzbeck     | BBHA 9120     | D243          | 12/18/03  |
| 10   | RF Cable              | GesTek          | N/A           | GTK-E-A151-01 | 02/10/03  |
| 11   | Open Site             | GesTek          | N/A           | B1            | 11/25/03  |
| 12   | Test Program Software | GesTek          | N/A           | GTK-E-S001-01 | N/A       |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 6.2 BLOCK DIAGRAM OF TEST SETUP

#### ● RF Radiated Measurement: ●



### **6.3 BAND EDGE LIMIT**

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209 (a) (see Section 15.205(c)).

### **6.4 EUT CONFIGURATION**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2000 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120KHz, above 1GHz are 1MHz.

### **6.5 OPERATING CONDITION OF EUT**

Same as section 2.6.

## 6.6 TEST RESULT

|               |                  |
|---------------|------------------|
| Date of Test  | January 07, 2004 |
| EUT           | Industrial PC    |
| Working Cond. | Mode 1 (802.11b) |

| Channel No.   | Frequency(MHz) | Required Limit(dBc) | Result |
|---------------|----------------|---------------------|--------|
| 1(Horizontal) | < 2400         | >20                 | Pass   |
| 1(Vertical)   | < 2400         | >20                 | Pass   |

### Horizontal

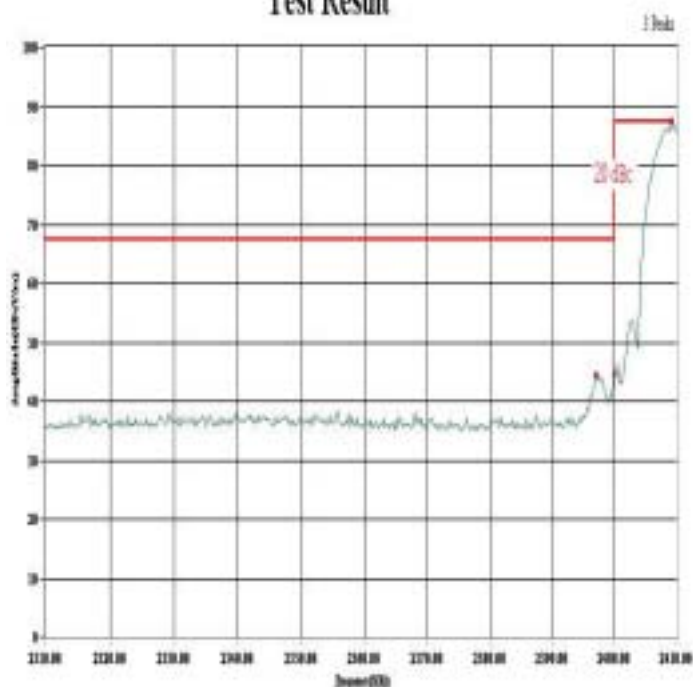
| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2397.00         | 44.21                  | 0.27                     | 44.48                     |
| 2   | 2400.00         | 44.44                  | 0.27                     | 44.71                     |
| 3   | 2409.25         | 87.20                  | 0.26                     | 87.46                     |

### Vertical

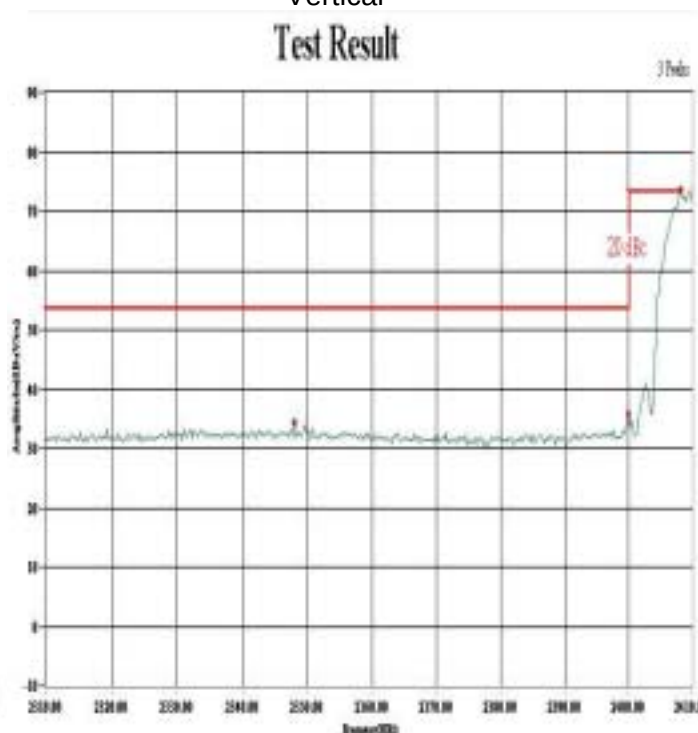
| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2348.00         | 38.85                  | -4.56                    | 34.29                     |
| 2   | 2400.00         | 40.43                  | -4.57                    | 35.86                     |
| 3   | 2408.25         | 78.26                  | -4.58                    | 73.68                     |

Note: RBW=100kHz, VBW=100kHz

Horizontal  
Test Result



Vertical  
Test Result



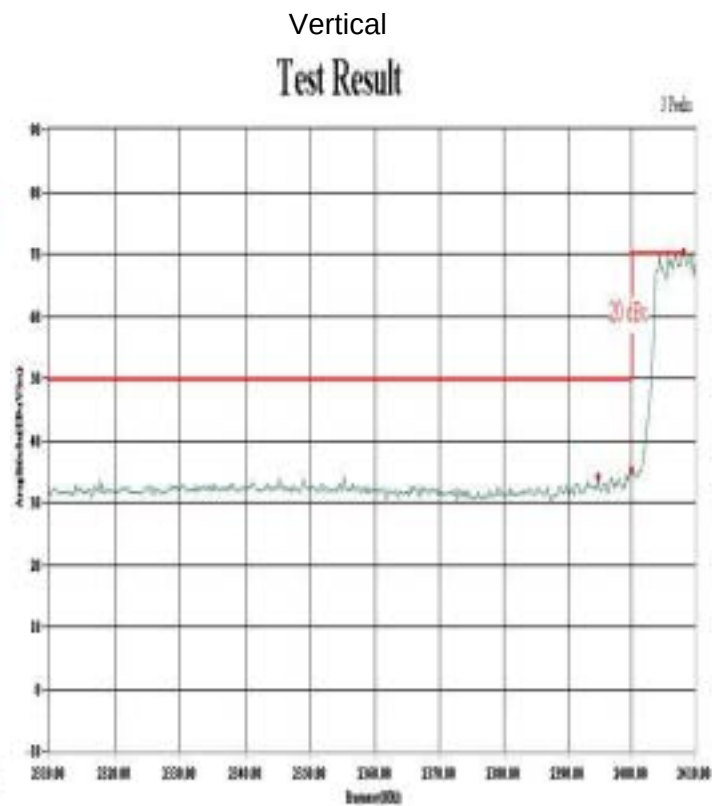
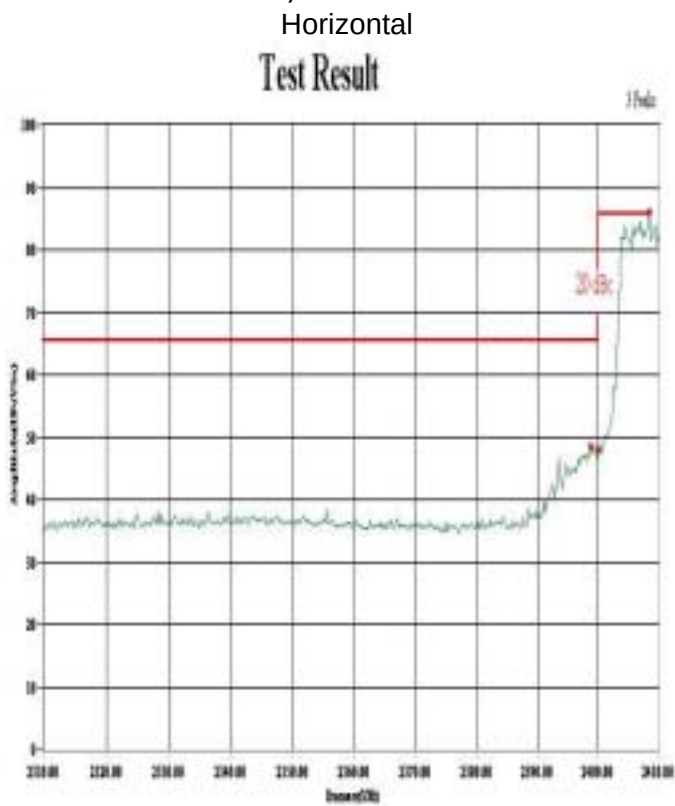
|               |                  |
|---------------|------------------|
| Date of Test  | January 07, 2004 |
| EUT           | Industrial PC    |
| Working Cond. | Mode 2 (802.11g) |

| Channel No.   | Frequency(MHz) | Required Limit(dBc) | Result |
|---------------|----------------|---------------------|--------|
| 1(Horizontal) | < 2400         | >20                 | Pass   |
| 1(Vertical)   | < 2400         | >20                 | Pass   |

| Horizontal |                 |                        |                          |                           |
|------------|-----------------|------------------------|--------------------------|---------------------------|
| No.        | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
| 1          | 2398.75         | 48.35                  | 0.27                     | 48.62                     |
| 2          | 2400.00         | 47.63                  | 0.27                     | 47.90                     |
| 3          | 2408.50         | 85.83                  | 0.26                     | 86.09                     |

| Vertical |                 |                        |                          |                           |
|----------|-----------------|------------------------|--------------------------|---------------------------|
| No.      | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
| 1        | 2394.75         | 38.76                  | -4.57                    | 34.19                     |
| 2        | 2400.00         | 39.64                  | -4.57                    | 35.07                     |
| 3        | 2408.25         | 74.73                  | -4.58                    | 70.15                     |

Note:RBW=100kHz, VBW=100kHz



|               |                    |
|---------------|--------------------|
| Date of Test  | January 06, 2004   |
| EUT           | Industrial PC      |
| Working Cond. | Mode 3 (Bluetooth) |

| Channel No.   | Frequency(MHz) | Required Limit(dBc) | Result |
|---------------|----------------|---------------------|--------|
| 1(Horizontal) | < 2400         | >20                 | Pass   |
| 1(Vertical)   | < 2400         | >20                 | Pass   |

**Horizontal**

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2399.25         | -39.27                 | -4.57                    | -43.84                    |
| 2   | 2400.00         | -39.35                 | -4.57                    | -43.92                    |
| 3   | 2402.25         | 7.91                   | -4.57                    | 3.34                      |

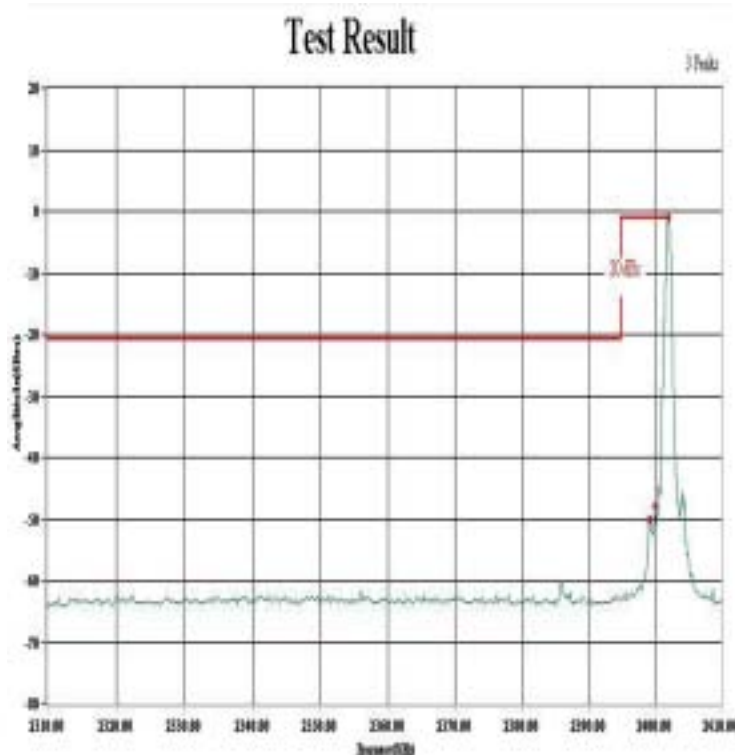
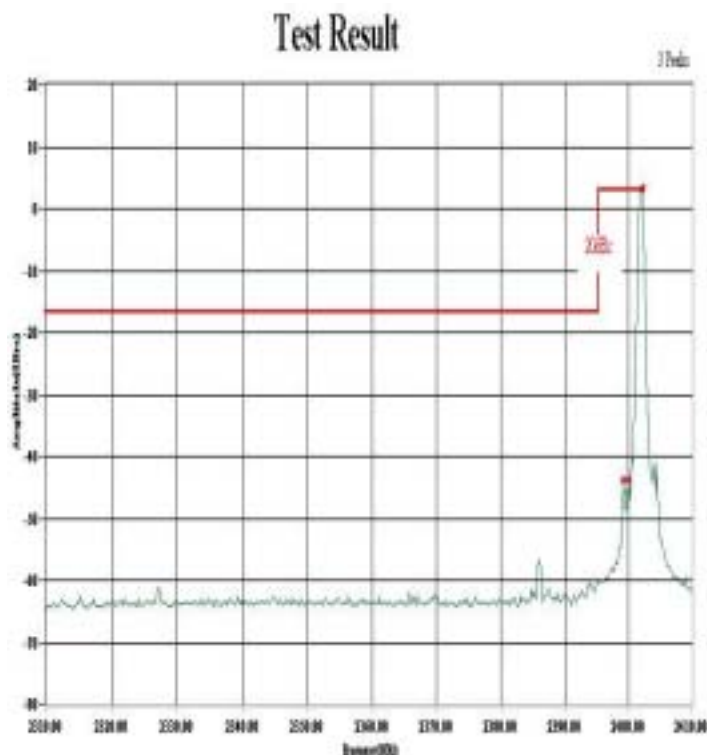
**Vertical**

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2399.25         | -45.54                 | -4.57                    | -50.11                    |
| 2   | 2400.00         | -43.27                 | -4.57                    | -47.84                    |
| 3   | 2402.00         | 3.50                   | -4.57                    | -1.07                     |

**Note: RBW=100kHz, VBW=100kHz**

Horizontal

Vertical



|                  |                                 |                 |                   |
|------------------|---------------------------------|-----------------|-------------------|
| Date of Test     | January 07, 2004                | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                   | Humidity        | 60 %RH            |
| Working Cond.    | Mode 1 (802.11b )<br>Channel 11 | Data Rate       | 11Mbps            |
| Antenna distance | 3m at <b>Horizontal</b>         | Frequency Range | <b>Above 1GHz</b> |

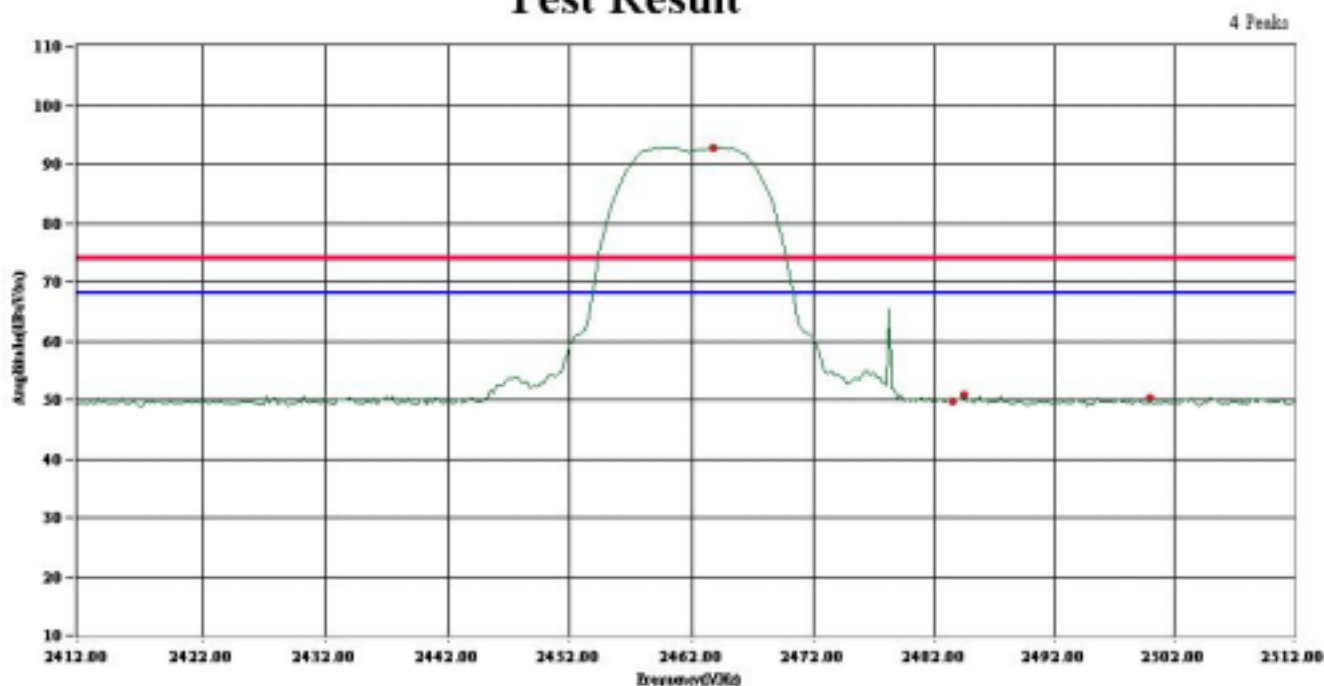
## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Result |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|--------|
| 1   | 2463.75         | 92.53                  | 0.21                     | 92.74                     | 74.00            | N/A    |
| 2   | 2483.50         | 49.45                  | 0.19                     | 49.64                     | 74.00            | PASS   |
| 3   | 2484.50         | 50.66                  | 0.19                     | 50.85                     | 74.00            | PASS   |
| 4   | 2500.00         | 49.96                  | 0.18                     | 50.14                     | 74.00            | PASS   |

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

## Test Result



|                  |                                 |                 |                   |
|------------------|---------------------------------|-----------------|-------------------|
| Date of Test     | January 07, 2004                | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                   | Humidity        | 60 %RH            |
| Working Cond.    | Mode 1 (802.11b )<br>Channel 11 | Data Rate       | 11Mbps            |
| Antenna distance | 3m at <b>Vertical</b>           | Frequency Range | <b>Above 1GHz</b> |

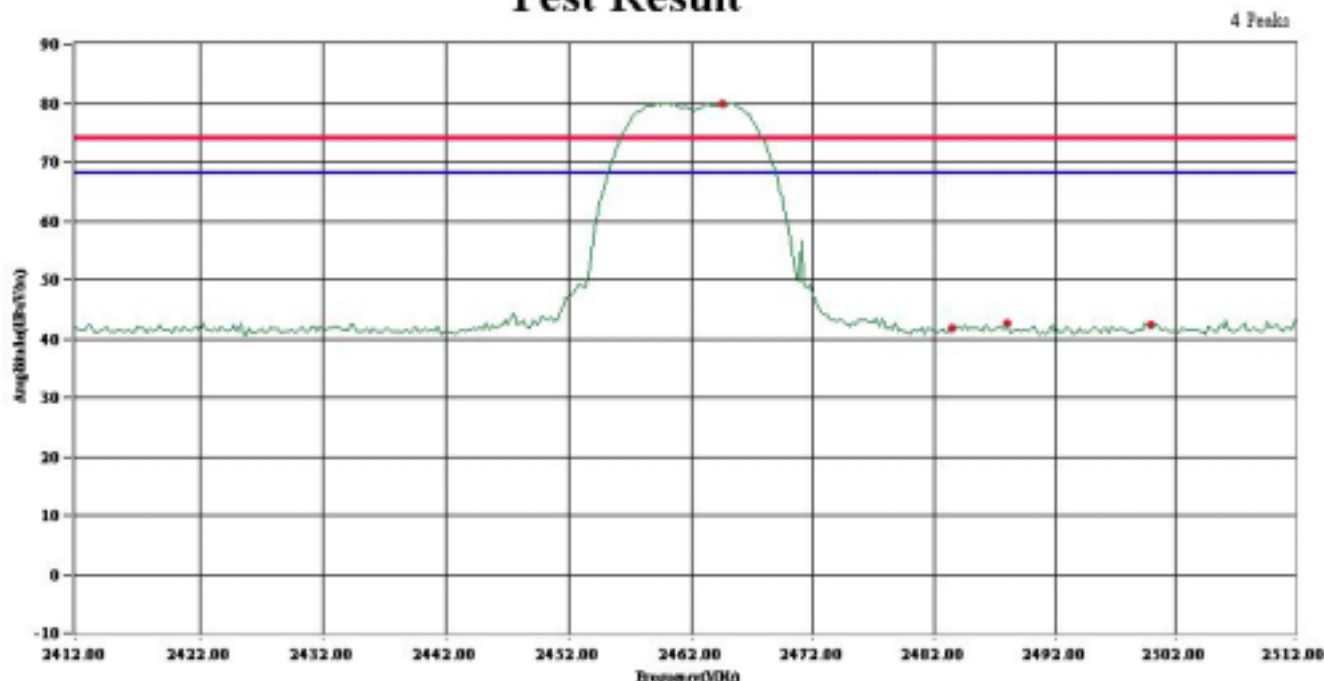
## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Result |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|--------|
| 1   | 2464.50         | 84.50                  | -4.59                    | 79.91                     | 74.00            | N/A    |
| 2   | 2483.50         | 46.47                  | -4.60                    | 41.87                     | 74.00            | PASS   |
| 3   | 2488.00         | 47.14                  | -4.60                    | 42.54                     | 74.00            | PASS   |
| 4   | 2500.00         | 47.06                  | -4.60                    | 42.46                     | 74.00            | PASS   |

### Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

## Test Result



|                  |                                 |                 |                   |
|------------------|---------------------------------|-----------------|-------------------|
| Date of Test     | January 07, 2004                | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                   | Humidity        | 60 %RH            |
| Working Cond.    | Mode 2 (802.11g )<br>Channel 11 | Data Rate       | 11Mbps            |
| Antenna distance | 3m at <b>Horizontal</b>         | Frequency Range | <b>Above 1GHz</b> |

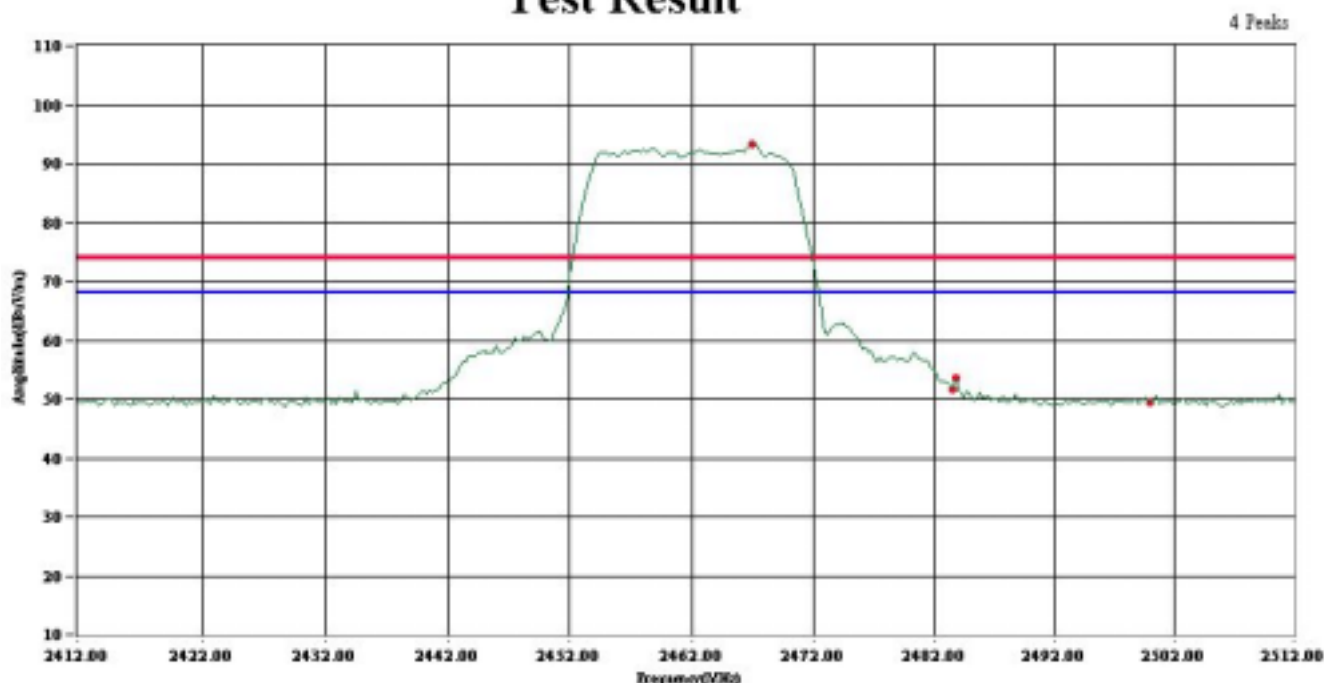
## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Result |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|--------|
| 1   | 2467.00         | 92.96                  | 0.21                     | 93.17                     | 74.00            | N/A    |
| 2   | 2483.50         | 51.40                  | 0.19                     | 51.59                     | 74.00            | PASS   |
| 3   | 2483.75         | 53.45                  | 0.19                     | 53.64                     | 74.00            | PASS   |
| 4   | 2500.00         | 49.32                  | 0.18                     | 49.50                     | 74.00            | PASS   |

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

## Test Result



|                  |                                 |                 |                   |
|------------------|---------------------------------|-----------------|-------------------|
| Date of Test     | January 07, 2004                | Temperature     | 25 deg/C          |
| EUT              | Industrial PC                   | Humidity        | 60 %RH            |
| Working Cond.    | Mode 2 (802.11g )<br>Channel 11 | Data Rate       | 11Mbps            |
| Antenna distance | 3m at <b>Vertical</b>           | Frequency Range | <b>Above 1GHz</b> |

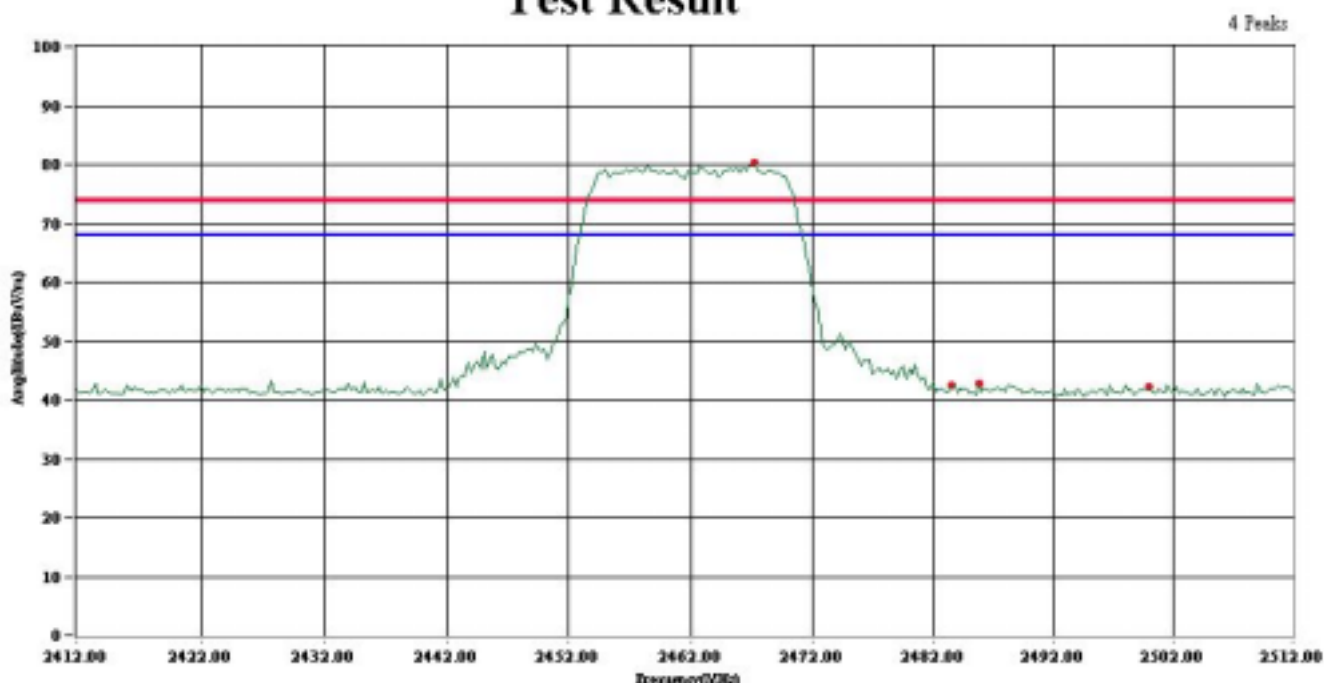
## Peak

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] | Limit [dB(uV/m)] | Result |
|-----|-----------------|------------------------|--------------------------|---------------------------|------------------|--------|
| 1   | 2467.25         | 85.00                  | -4.59                    | 80.41                     | 74.00            | N/A    |
| 2   | 2483.50         | 47.09                  | -4.60                    | 42.49                     | 74.00            | PASS   |
| 3   | 2485.75         | 47.23                  | -4.60                    | 42.63                     | 74.00            | PASS   |
| 4   | 2500.00         | 46.90                  | -4.60                    | 42.30                     | 74.00            | PASS   |

### Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analyzer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

## Test Result



|                  |                                  |                 |            |
|------------------|----------------------------------|-----------------|------------|
| Date of Test     | January 07, 2004                 | Temperature     | 25 deg/C   |
| EUT              | Industrial PC                    | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (Bluetooth)<br>Channel 78 | Frequency Range | Above 1GHz |
| Antenna distance | 3m at <b>Horizontal</b>          |                 |            |

## Radiation Emission of Fundamental

### Peak

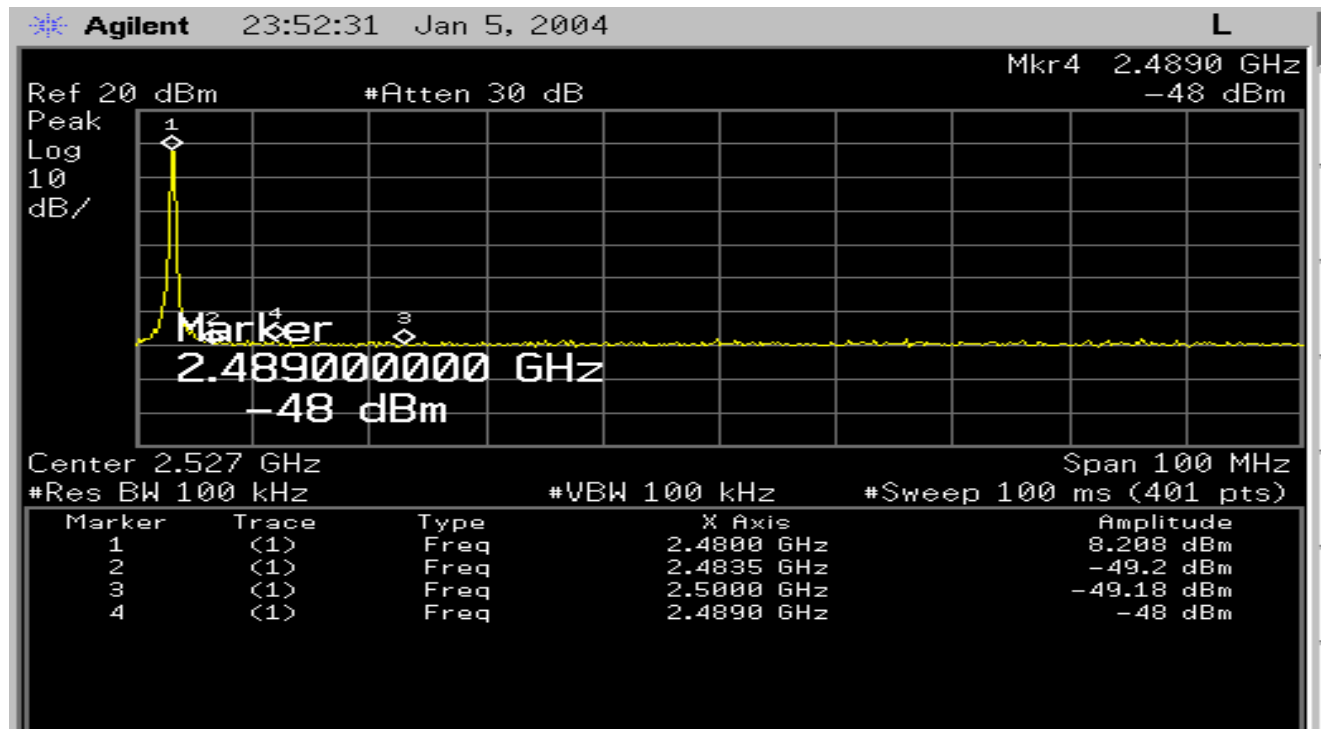
| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2480.25         | 79.03                  | 37.09                    | 116.12                    |

### Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2480.25         | N/A                    | 37.09                    | 86.12                     |

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Average Value= peak value -20log(duty cycle).
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, base upon Bluetooth theory the transmitter is on 0.625\*5 per 247ms per channel. For this reason the duty cycle is  $20\log(3.125/100) = -30\text{dB}$



## TEST RESULT:

The band edge emission plot on above show 56.208dB delta between carry power and maximum emission in restrict band (2489MHz). The emission list of fundamental test result is 86.12dBuV/m, so maximum field strength of 2489MHz is  $86.12 - 56.208 = 29.912\text{dBuV/m}$  which is under 54dBuV/m.

|                  |                     |                 |            |
|------------------|---------------------|-----------------|------------|
| Date of Test     | January 07, 2004    | Temperature     | 25 deg/C   |
| EUT              | Industrial PC       | Humidity        | 60 %RH     |
| Working Cond.    | Mode 3 (2483.5 MHz) | Frequency Range | Above 1GHz |
| Antenna distance | 3m at Vertical      |                 |            |

## Radiation Emission of Fundamental

### Peak

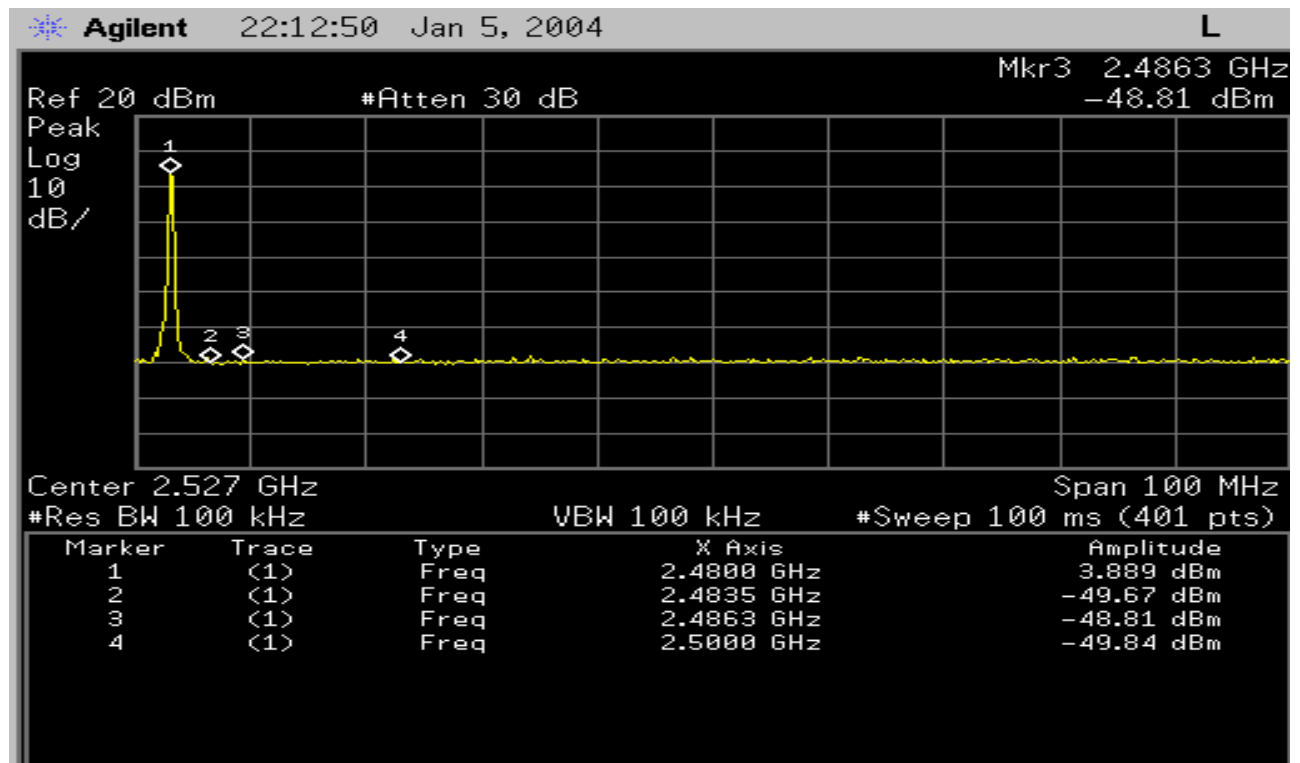
| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2479.87         | 74.33                  | 32.30                    | 106.63                    |

### Average

| No. | Frequency [MHz] | Reading Level [dB(uV)] | Correction Factor [dB/m] | Emission Level [dB(uV/m)] |
|-----|-----------------|------------------------|--------------------------|---------------------------|
| 1   | 2479.87         | N/A                    | 32.30                    | 76.63                     |

#### Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analyzer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Average Value= peak value -20log(duty cycle).
4. Emission Level= Reading + Correction Factor (Could have  $\pm 0.01$  tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, base upon Bluetooth theory the transmitter is on  $0.625 \times 5$  per 247ms per channel. For this reason the duty cycle is  $20\log(3.125/100) = -30\text{dB}$



## TEST RESULT:

The band edge emission plot on above show **52.699dB** delta between carry power and maximum emission in restrict band (**2486.3MHz**). The emission list of fundamental test result is **76.63dBuV/m**, so maximum field strength of 2486.3MHz is  $76.63 - 52.699 = 23.931$  dBuV/m which is under 54dBuV/m.

## 7. OCCUPIED BANDWIDTH

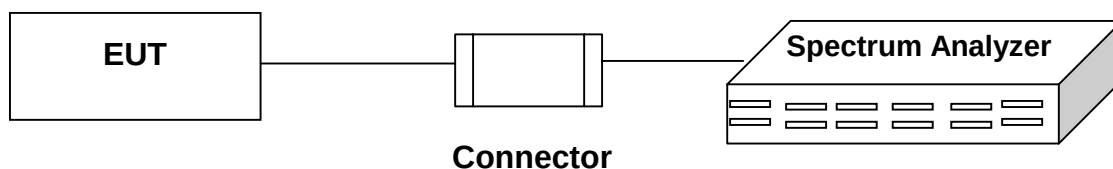
### 7.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

| Item | Instrument        | Manufacturer | Type   | Serial No. | Last Cal. |
|------|-------------------|--------------|--------|------------|-----------|
| 2    | Spectrum Analyzer | Advantest    | R3272  | 82420232   | 02/14/03  |
| 3    | Spectrum Analyzer | HP           | E4407B | 39240339   | 08/16/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 7.2 BLOCK DIAGRAM OF TEST SETUP



### 7.3 LIMIT

WLAN: The minimum 6dB bandwidth shall be at least 500KHz.

Bluetooth: The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

## 7.4 TEST RESULT

|               |                   |
|---------------|-------------------|
| Date of Test  | December 15, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 1 (802.11b)  |

| Channel No. | Frequency<br>(MHz) | Measurement Level<br>(MHz) | Required limit<br>(KHz) | Result |
|-------------|--------------------|----------------------------|-------------------------|--------|
| 1           | 2412               | 10.9                       | >500                    | Pass   |
| 6           | 2437               | 10.9                       | >500                    | Pass   |
| 11          | 2462               | 10.8                       | >500                    | Pass   |

Figure Channel 1:

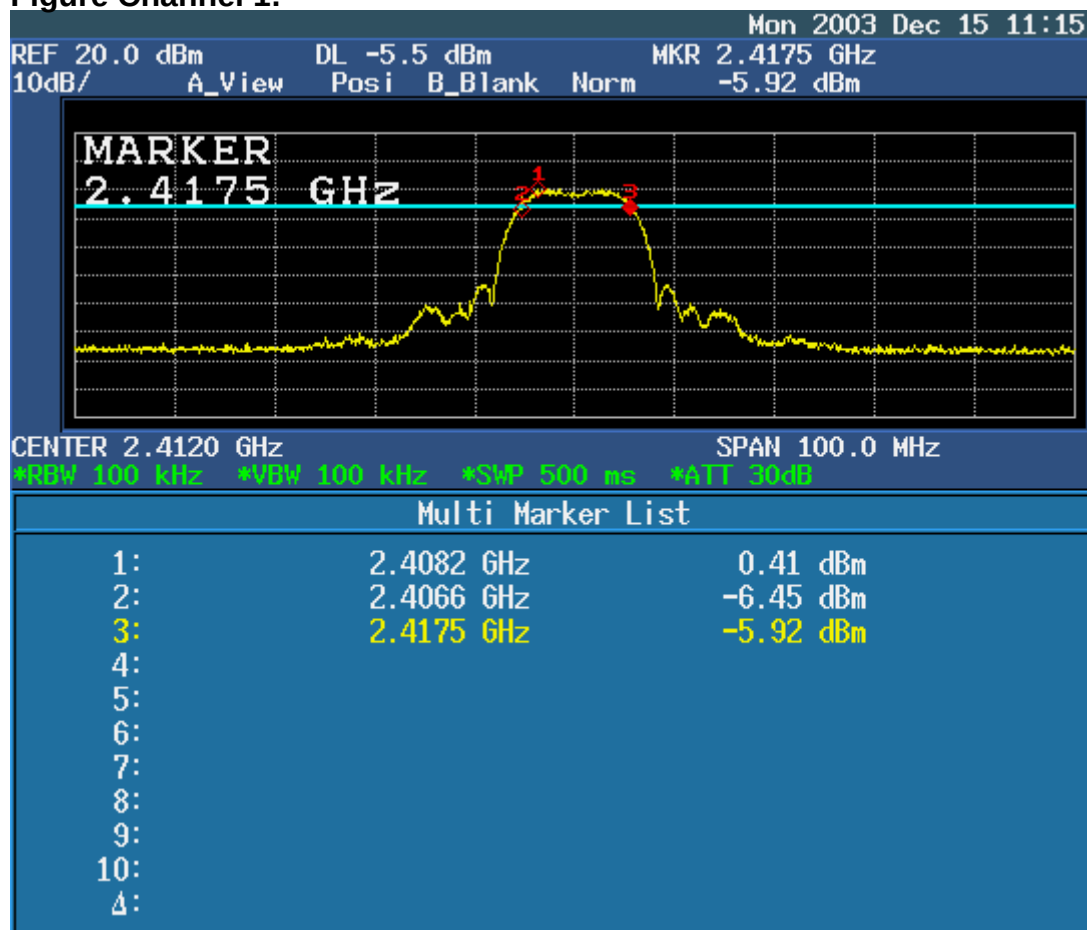


Figure Channel 6:

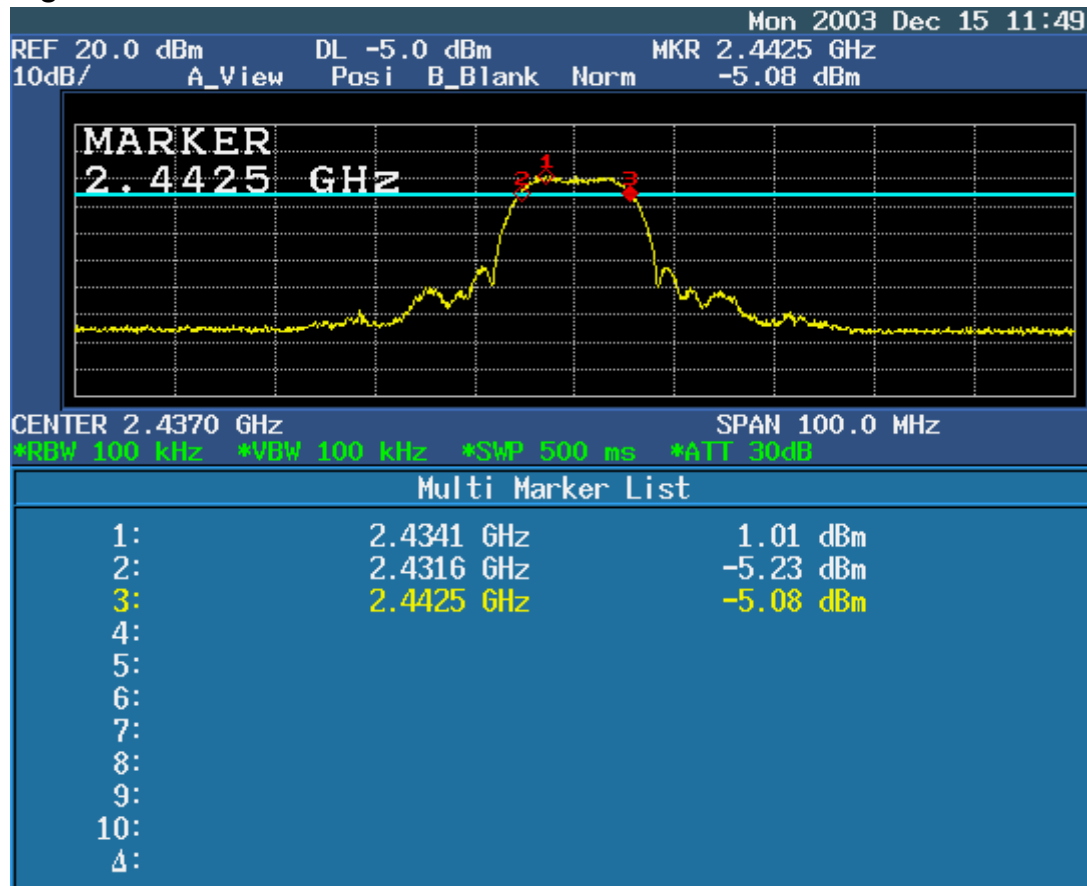
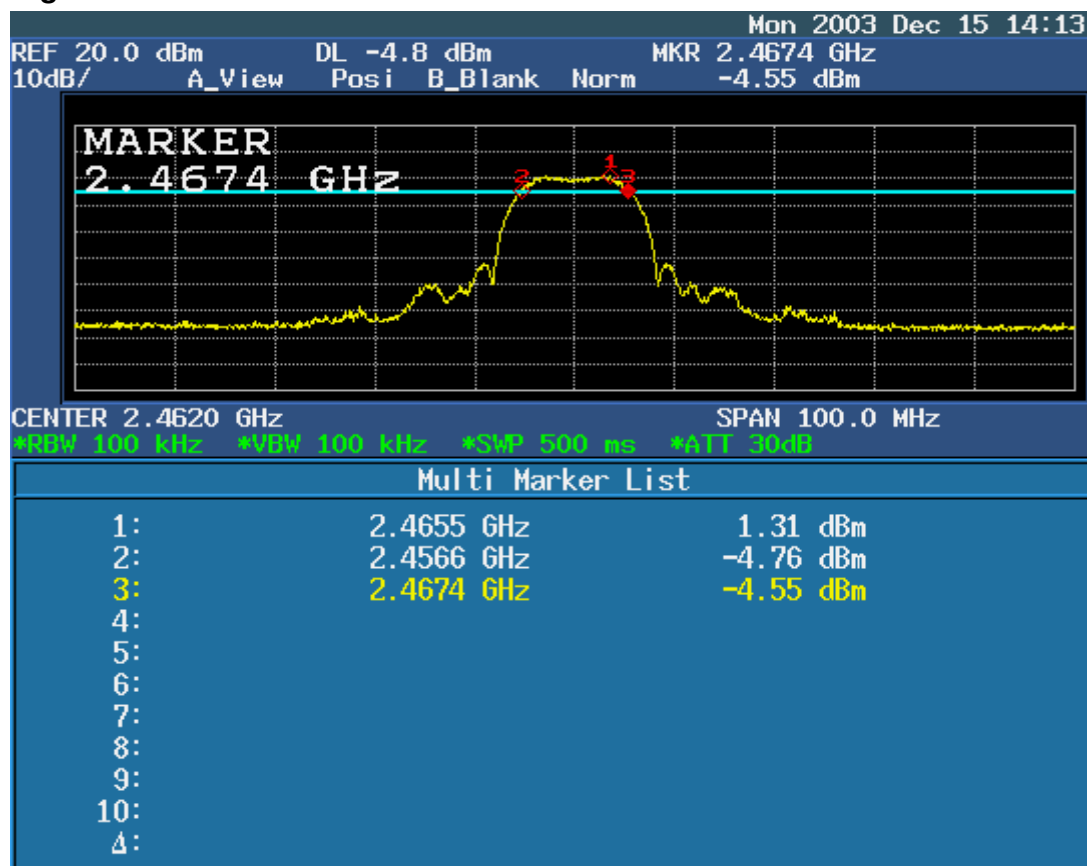


Figure Channel 11:



|               |                   |
|---------------|-------------------|
| Date of Test  | December 15, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 2 (802.11g)  |

| Channel No. | Frequency (MHz) | Measurement Level (MHz) | Required limit (KHz) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1           | 2412            | 16.3                    | >500                 | Pass   |
| 6           | 2437            | 16.1                    | >500                 | Pass   |
| 11          | 2462            | 16.3                    | >500                 | Pass   |

Figure Channel 1:

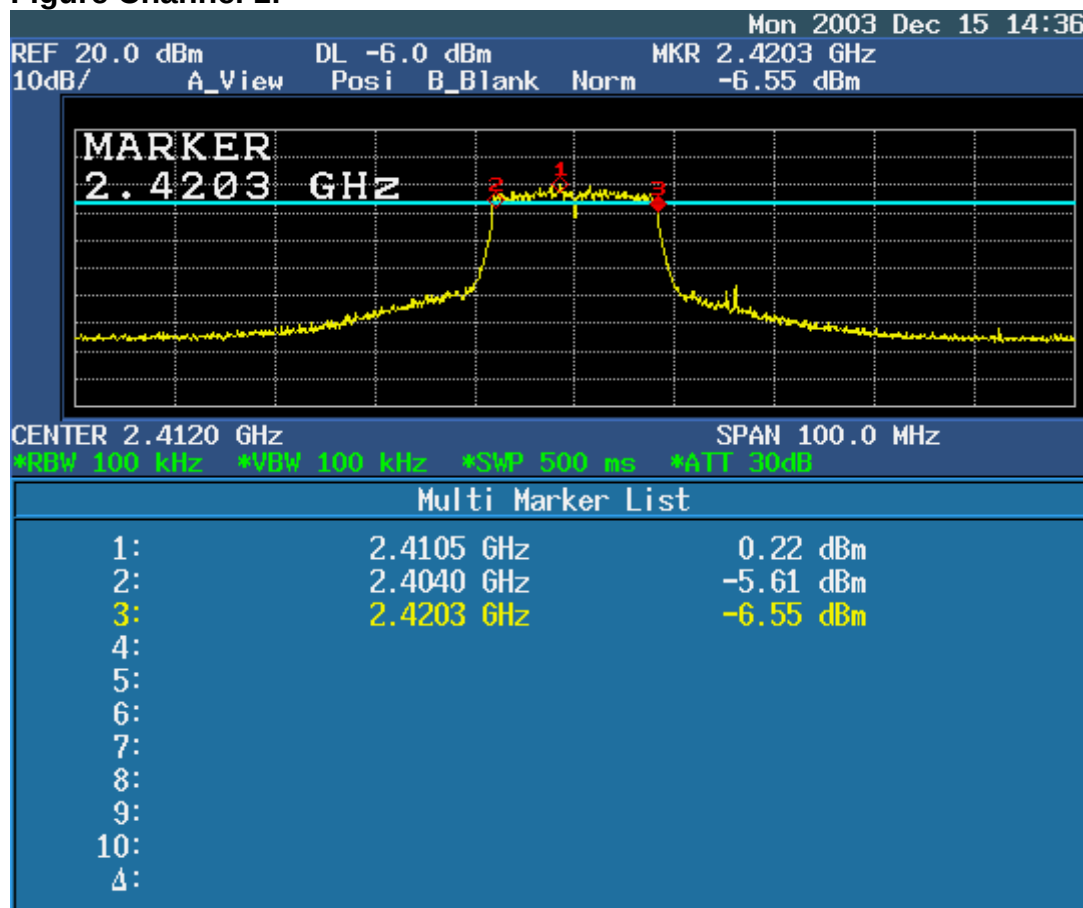


Figure Channel 6:

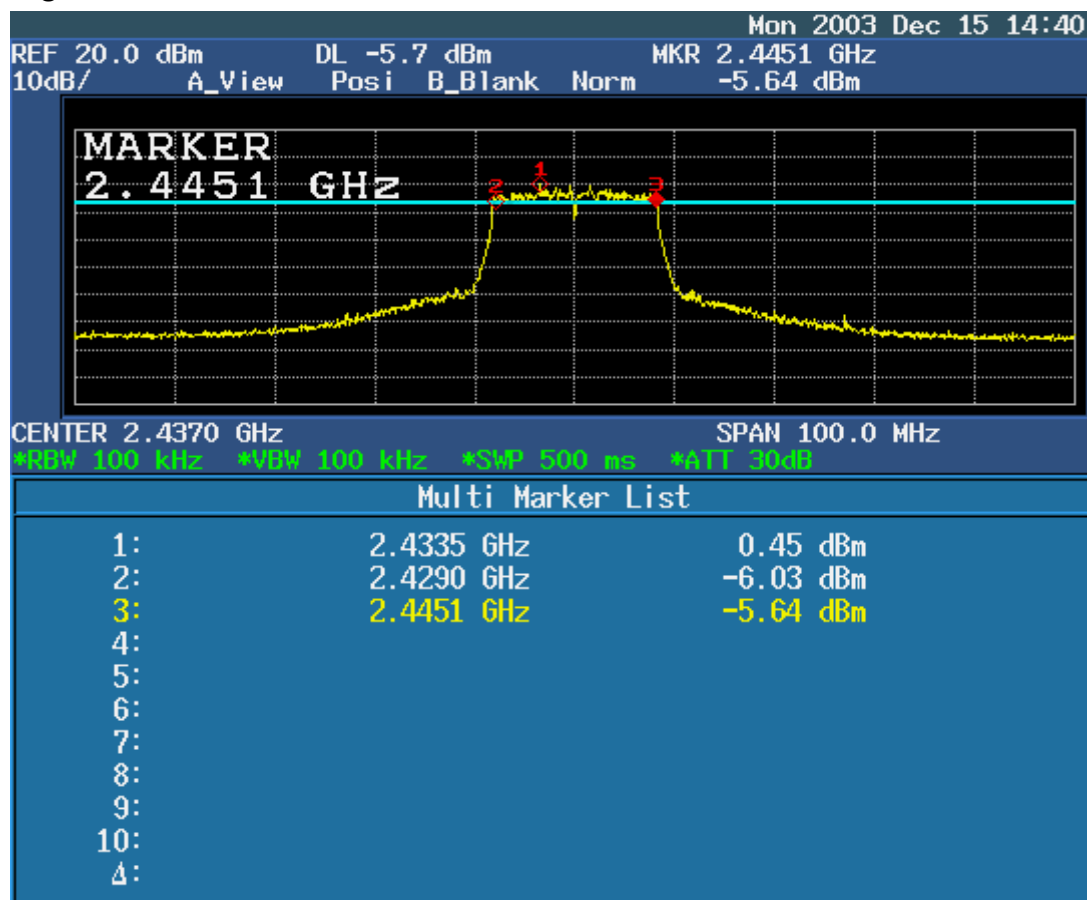
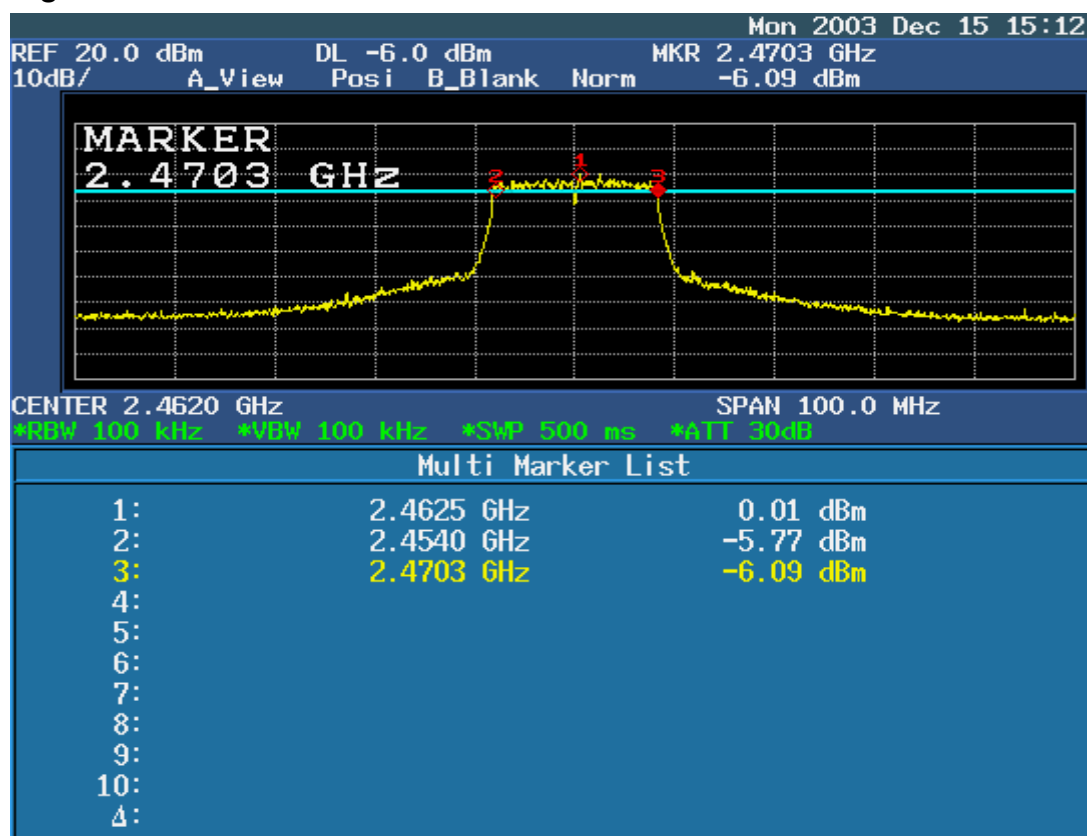


Figure Channel 11:



|               |                   |
|---------------|-------------------|
| Date of Test  | December 15, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 3            |

| Channel No. | Frequency (MHz) | Measurement Level (MHz) | Required limit (MHz) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 0           | 2402            | 0.4                     | < 1                  | Pass   |
| 39          | 2441            | 0.385                   | < 1                  | Pass   |
| 78          | 2480            | 0.395                   | < 1                  | Pass   |

Figure Channel 0:

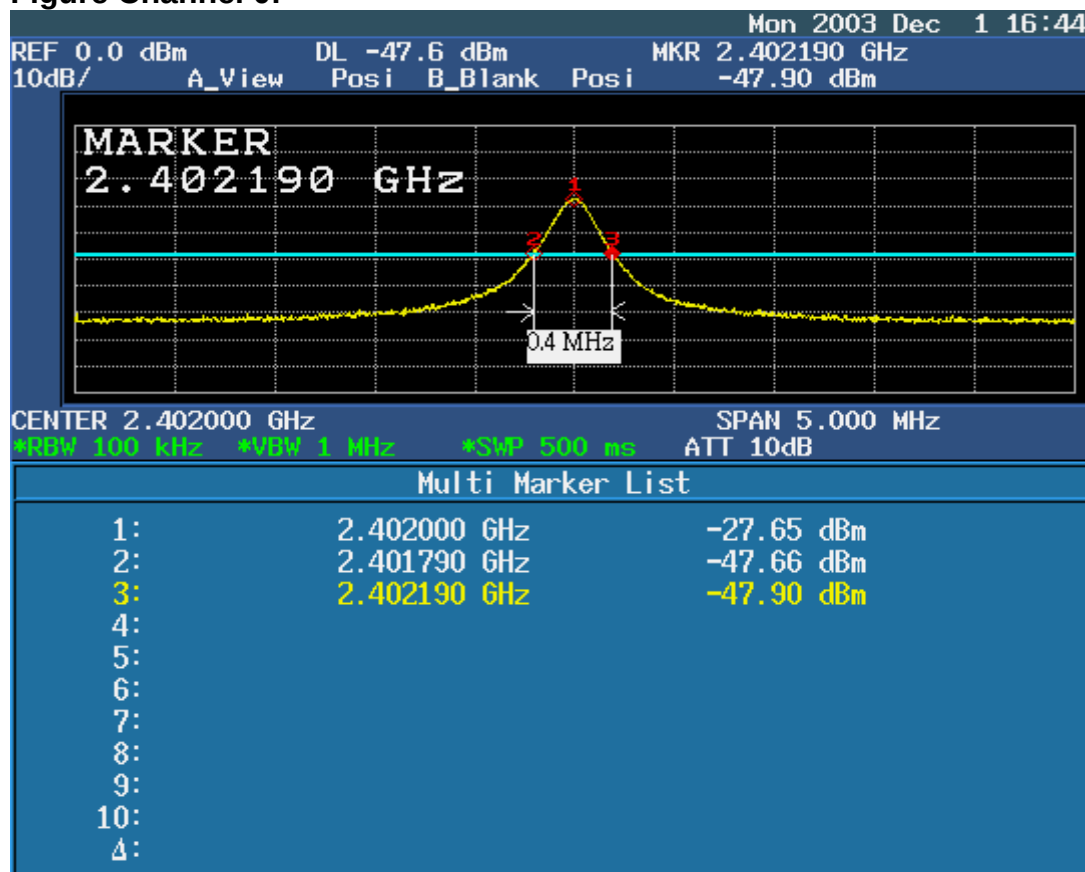


Figure Channel 39:

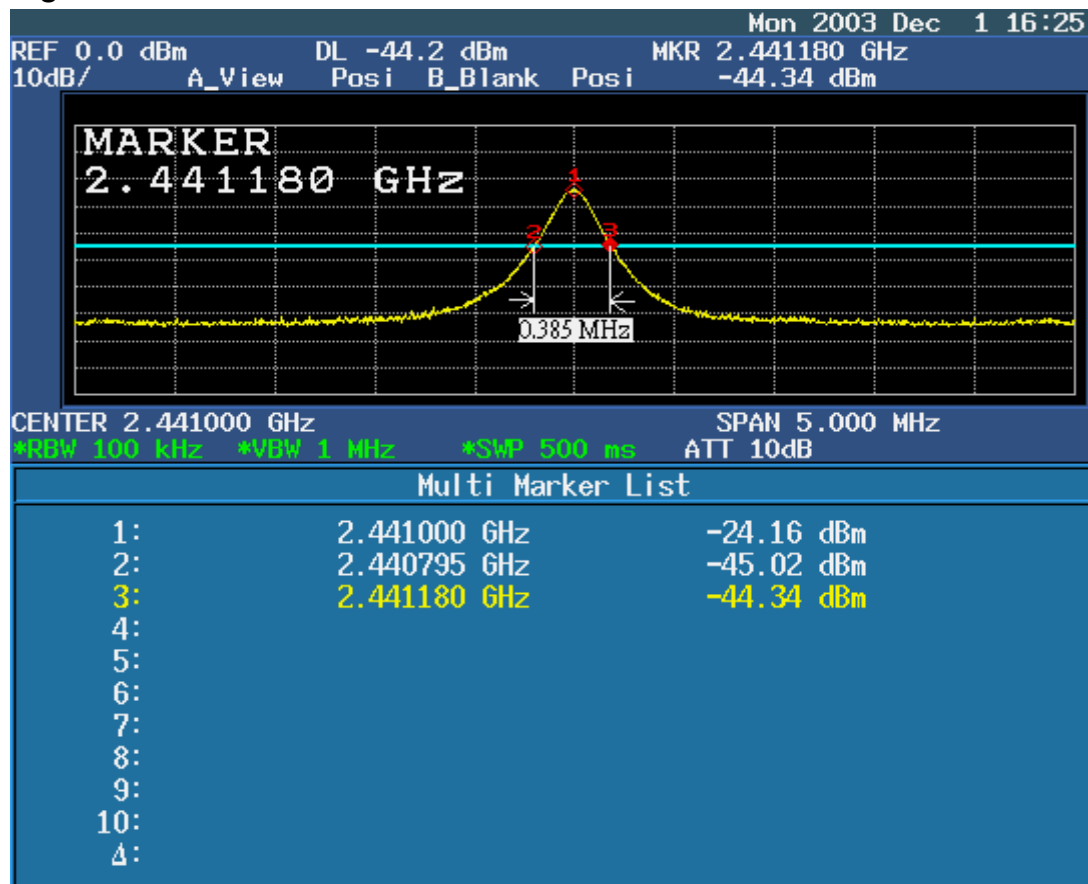
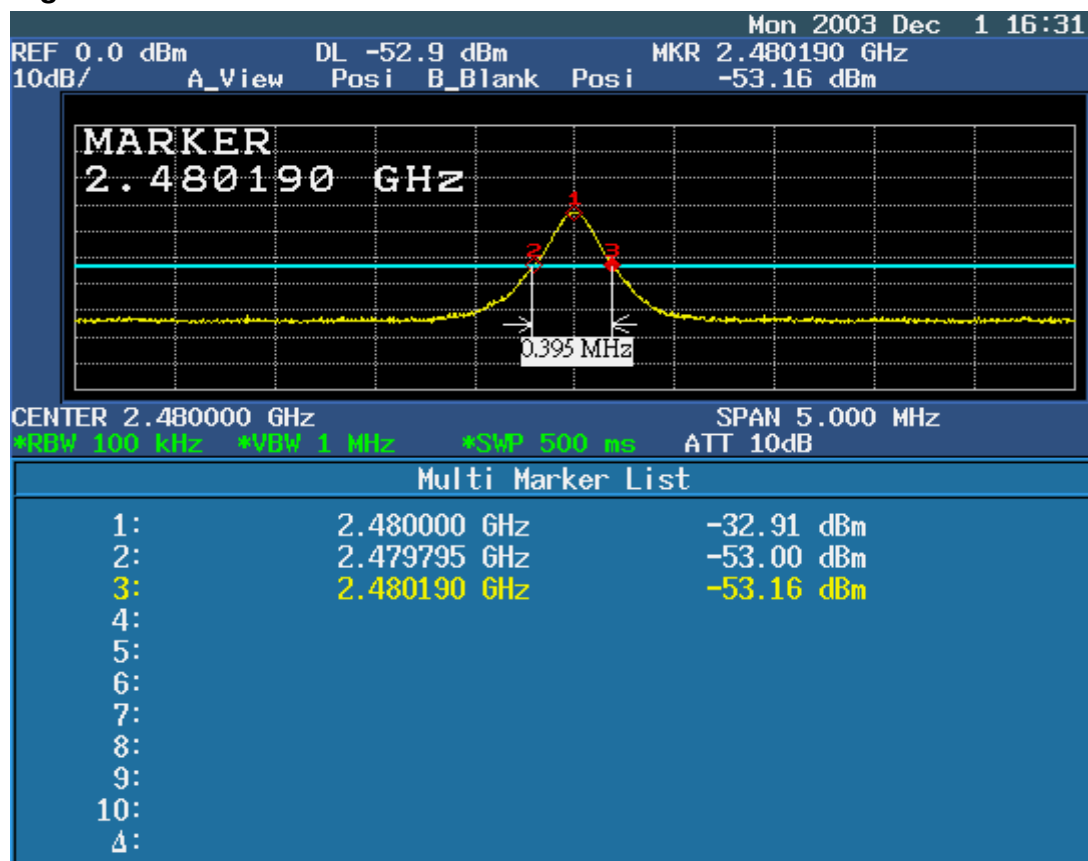


Figure Channel 78:



## 8. POWER DENSITY

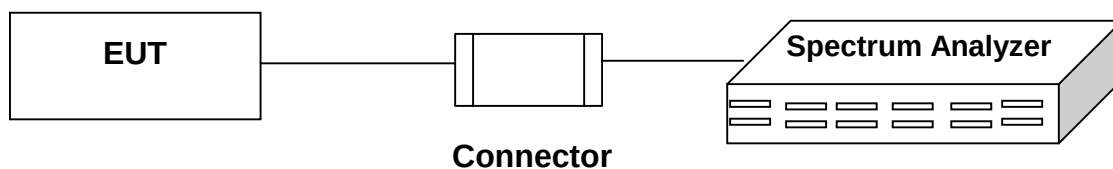
### 8.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

| Item | Instrument        | Manufacturer | Type   | Serial No. | Last Cal. |
|------|-------------------|--------------|--------|------------|-----------|
| 1    | Spectrum Analyzer | Advantest    | R3272  | 82420232   | 02/14/03  |
| 2    | Spectrum Analyzer | HP           | E4407B | 39240339   | 08/16/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 8.2 BLOCK DIAGRAM OF TEST SETUP



### 8.3 LIMIT

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3KHz bandwidth.

## 8.4 TEST RESULT

|               |                   |
|---------------|-------------------|
| Date of Test  | December 15, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 1 (802.11b)  |

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required limit (dBm) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1           | 2411.8749       | -14.88                  | <8dBm                | Pass   |
| 6           | 8436.8755       | -15.07                  | <8dBm                | Pass   |
| 11          | 2461.8764       | -14.79                  | <8dBm                | Pass   |

Figure Channel 1:

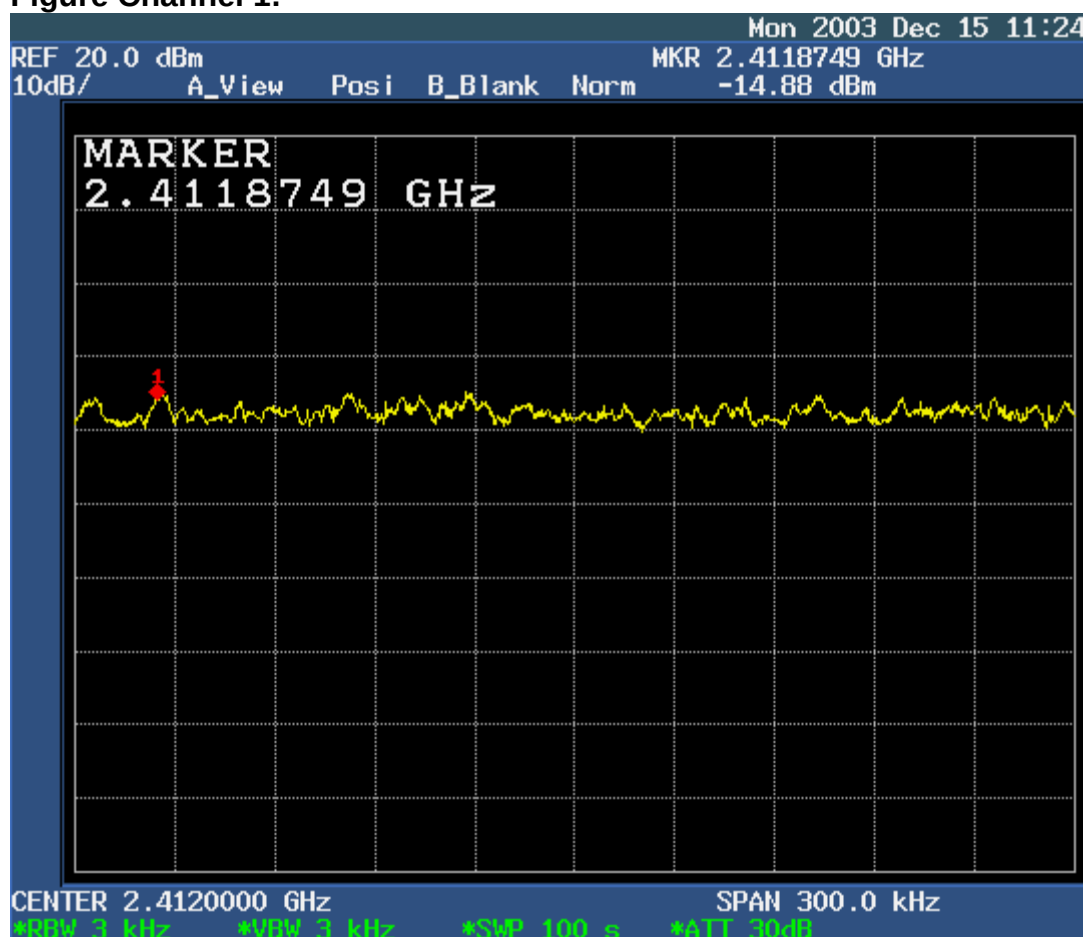


**Figure Channel 6:**

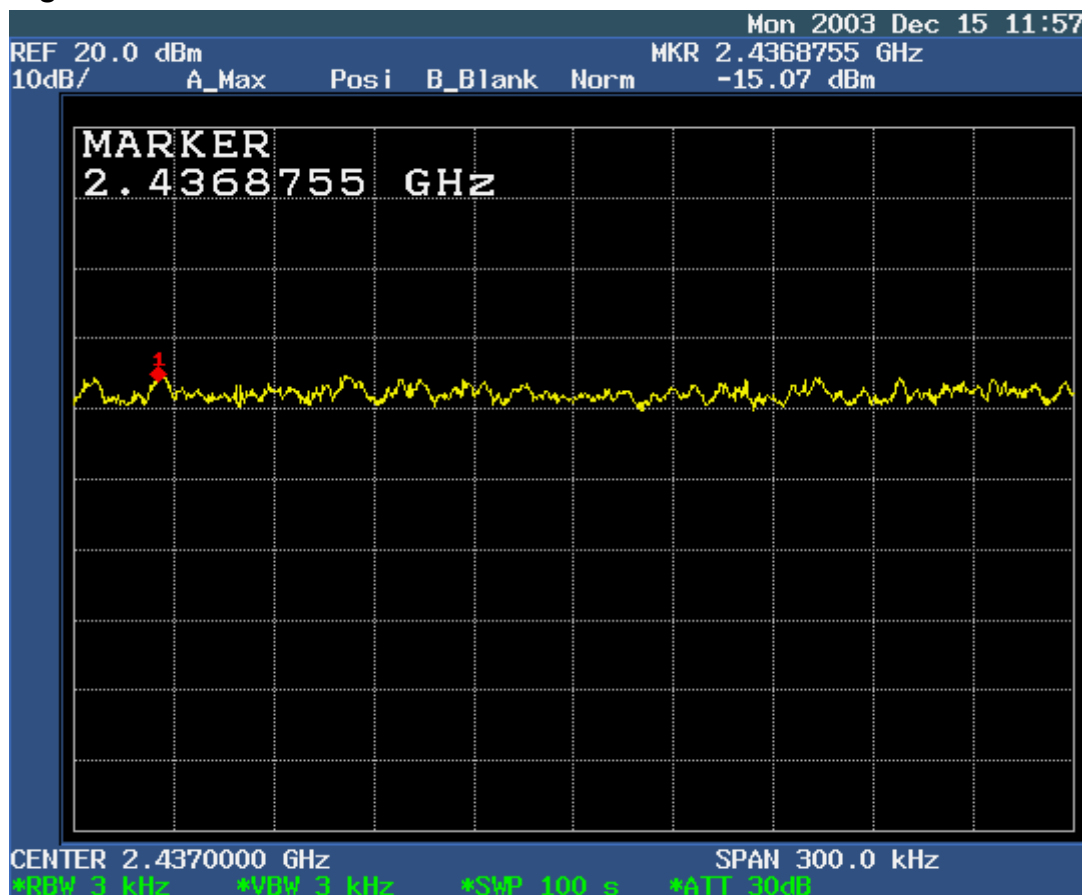
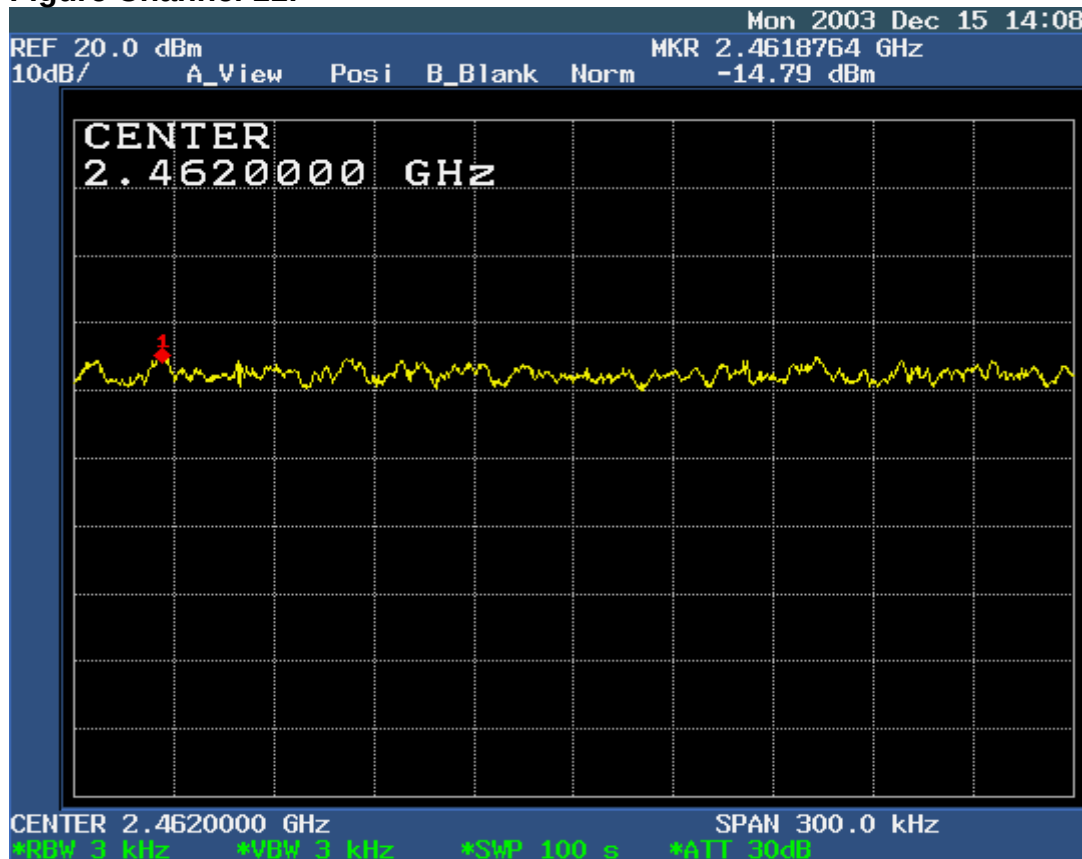


**Figure Channel 11:**



|               |                   |
|---------------|-------------------|
| Date of Test  | December 15, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 2 (802.11g)  |

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required limit (dBm) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1           | 2411.9715       | -21.58                  | <8dBm                | Pass   |
| 6           | 2436.9691       | -22.80                  | <8dBm                | Pass   |
| 11          | 2462.1431       | -22.48                  | <8dBm                | Pass   |

Figure Channel 1:

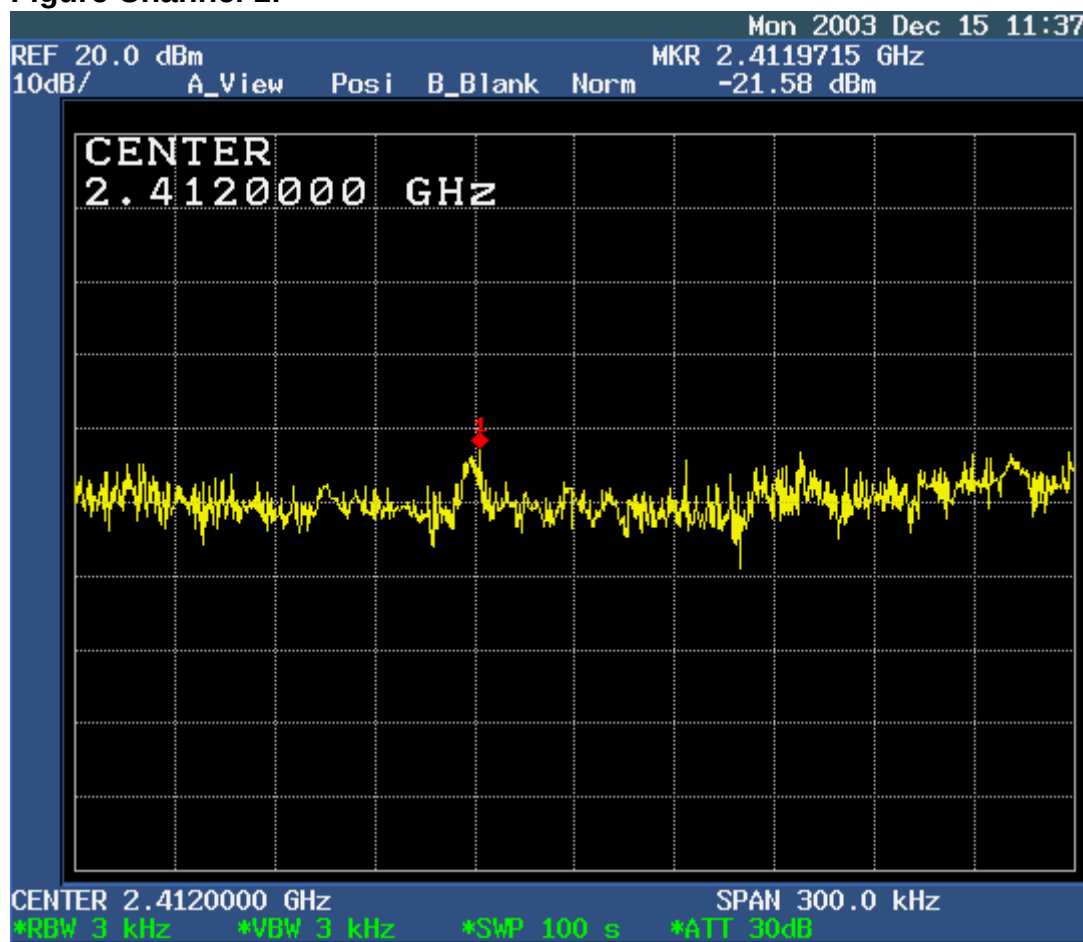


**Figure Channel 6:**

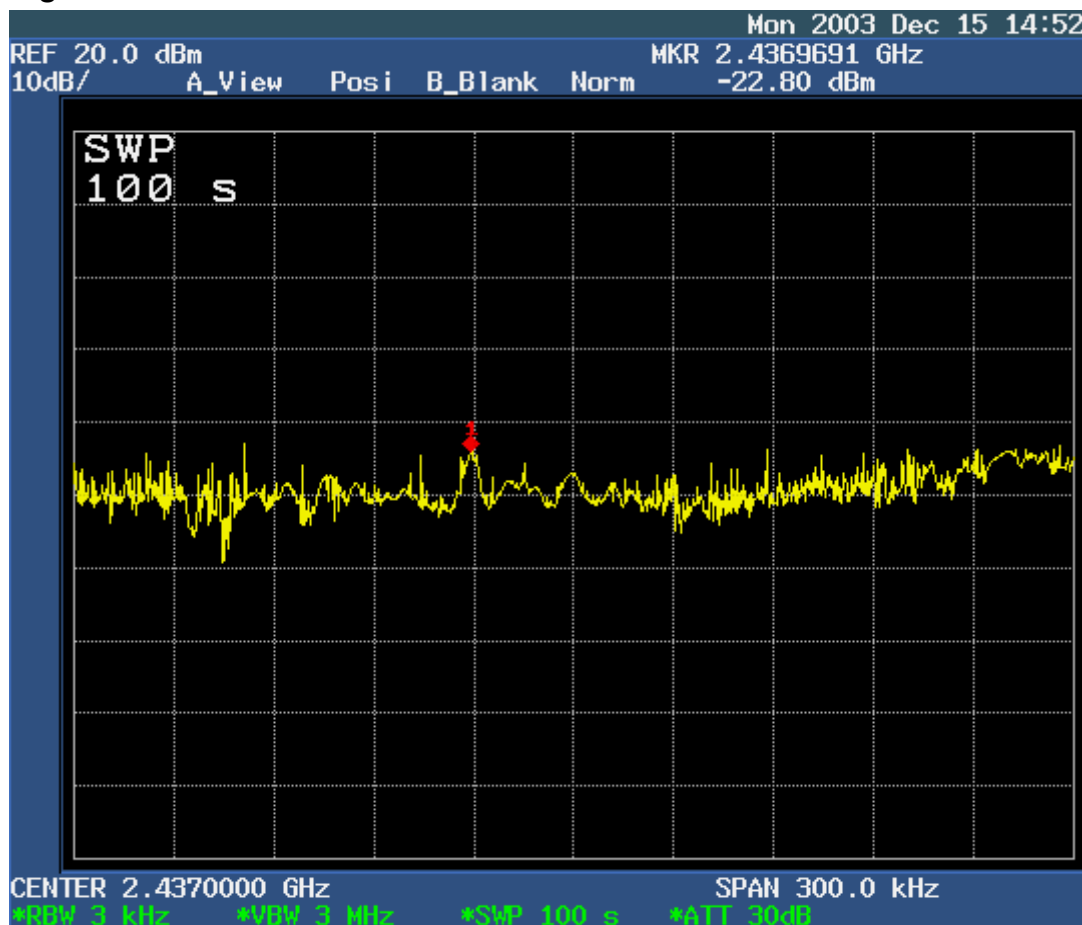
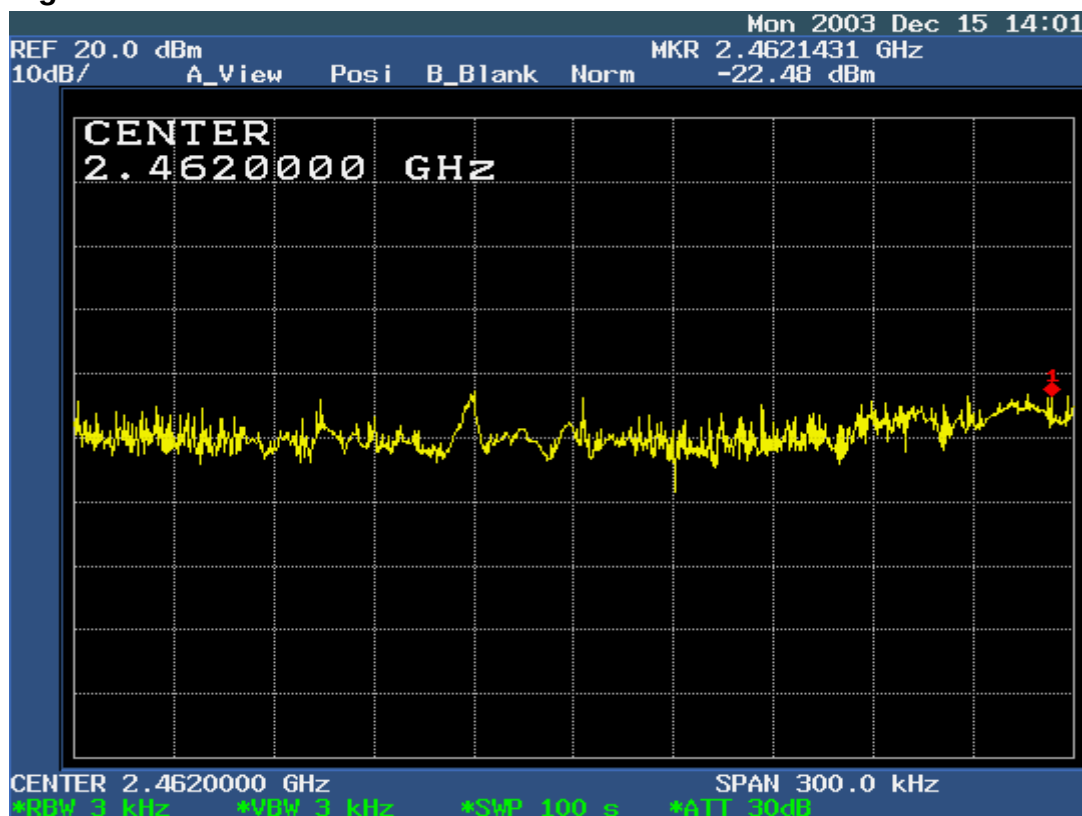


**Figure Channel 11:**



## 9. DWELL TIME

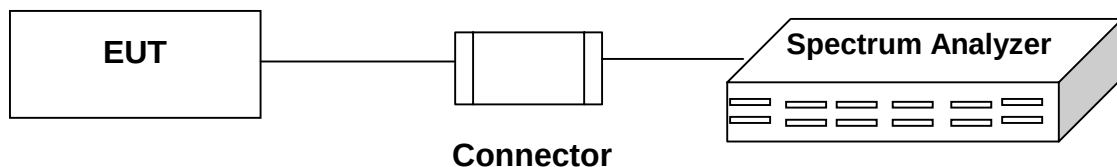
### 9.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

| Item | Instrument        | Manufacturer | Type   | Serial No. | Last Cal. |
|------|-------------------|--------------|--------|------------|-----------|
| 2    | Spectrum Analyzer | Advantest    | R3272  | 82420232   | 02/14/03  |
| 3    | Spectrum Analyzer | HP           | E4407B | 39240339   | 08/16/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 9.2 BLOCK DIAGRAM OF TEST SETUP



### 9.3 Limit

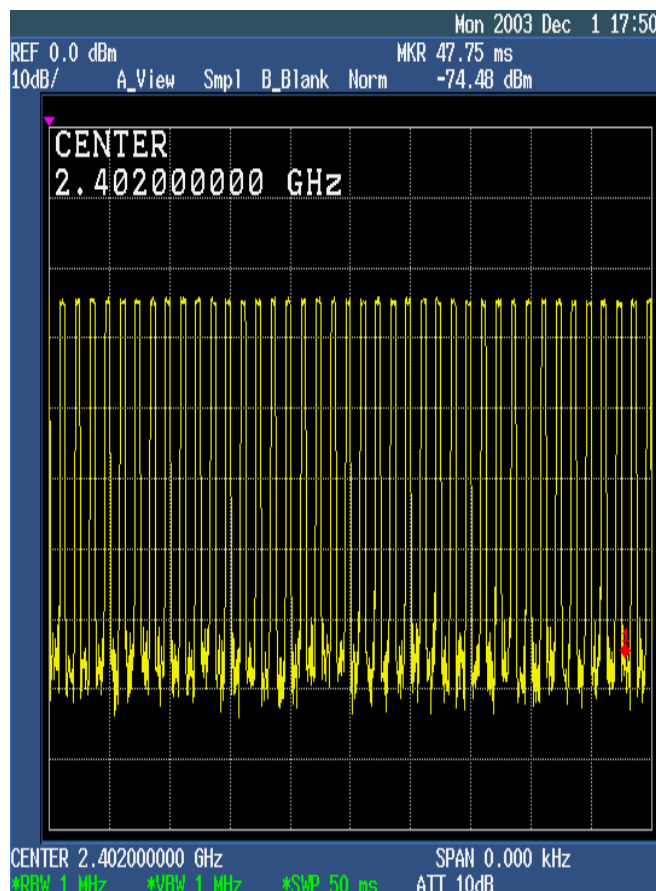
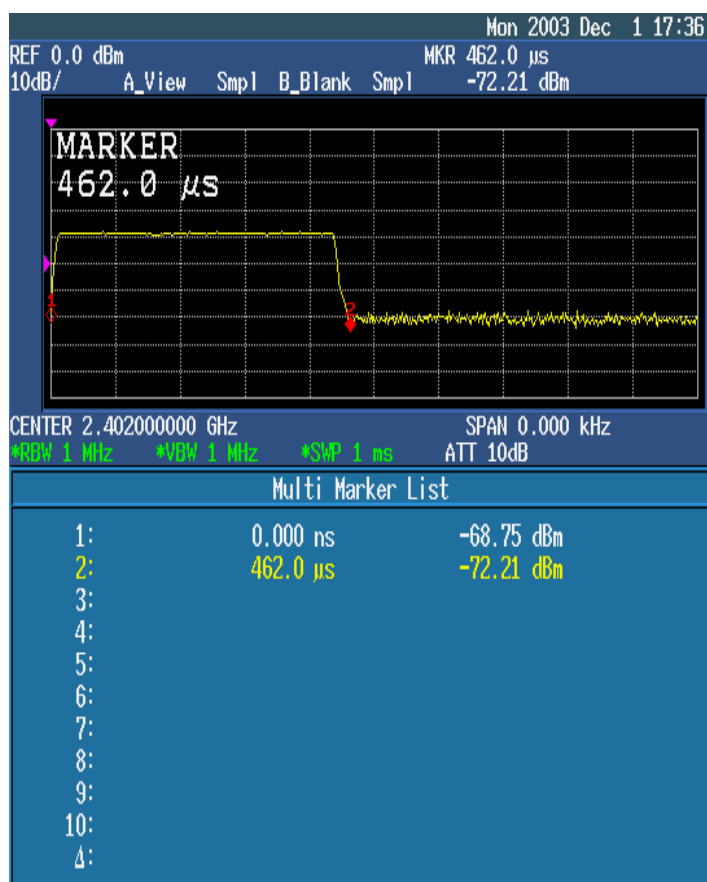
The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

## 9.4 TEST RESULT

|               |                    |
|---------------|--------------------|
| Date of Test  | December 01, 2003  |
| EUT           | Industrial PC      |
| Working Cond. | Mode 3 (Channel 0) |

| Measurement Level (sec)                                          | Required Limit (sec) | Result |
|------------------------------------------------------------------|----------------------|--------|
| (1) Period = 0.4 (sec) * 79 (number of channel)<br>= 31.6 (sec)  | < 0.4                | Pass   |
| (2) Hop rate = 40 / 50 (ms) = 800 / sec                          |                      |        |
| (3) Time slot length = 462 (μs) = 0.000462 (sec)                 |                      |        |
| ※ Dwell Time = 0.000462 * ( 800 / 79 ) * 31.6<br>= 0.14784 (sec) |                      |        |

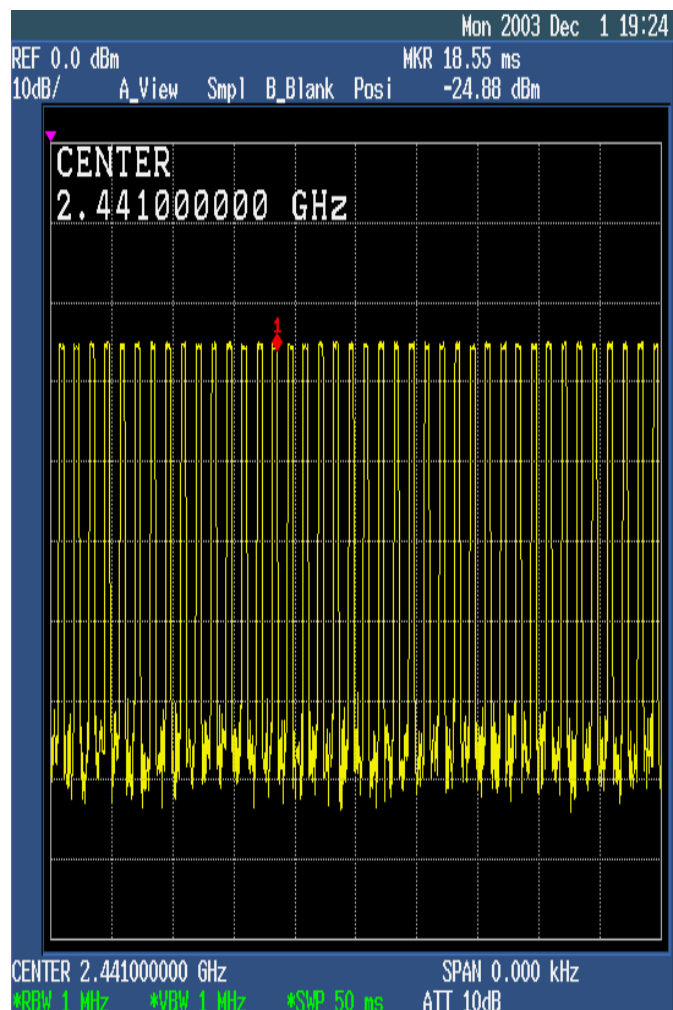
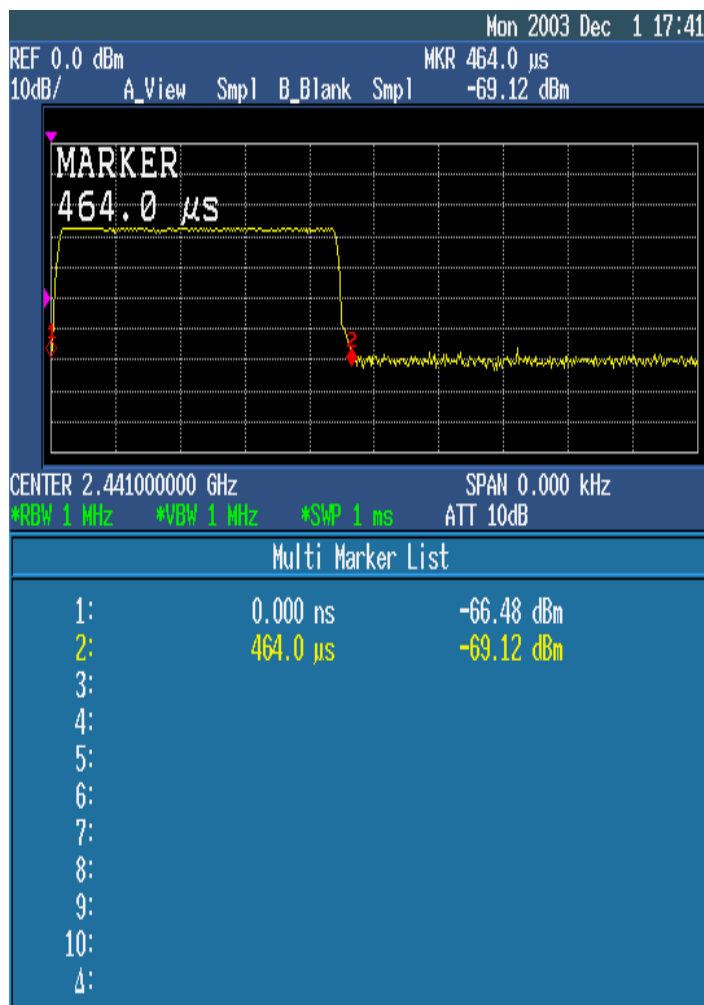
Note: Dwell time = time slot length \* hop rate / number of hopping channels \* period



|               |                     |
|---------------|---------------------|
| Date of Test  | December 01, 2003   |
| EUT           | Industrial PC       |
| Working Cond. | Mode 3 (Channel 39) |

| Measurement Level (sec)                                          | Required Limit (sec) | Result |
|------------------------------------------------------------------|----------------------|--------|
| (2) Period = 0.4 (sec) * 79 (number of channel)<br>= 31.6 (sec)  | < 0.4                | Pass   |
| (2) Hop rate = 40 / 50 (ms) = 800 / sec                          |                      |        |
| (3) Time slot length = 464 (μs) = 0.000464 (sec)                 |                      |        |
| ※ Dwell Time = 0.000464 * ( 800 / 79 ) * 31.6<br>= 0.14848 (sec) |                      |        |

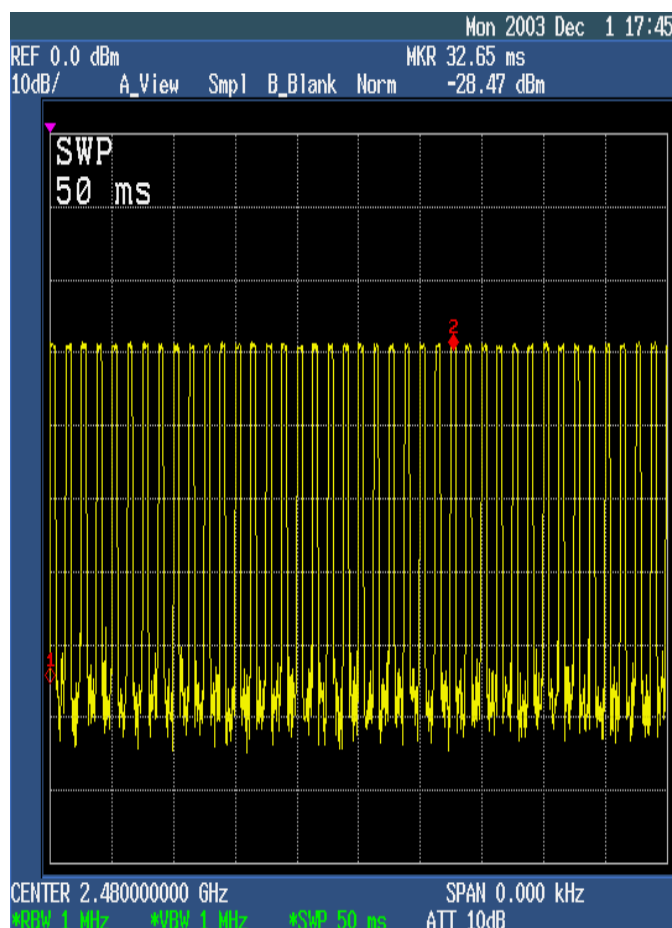
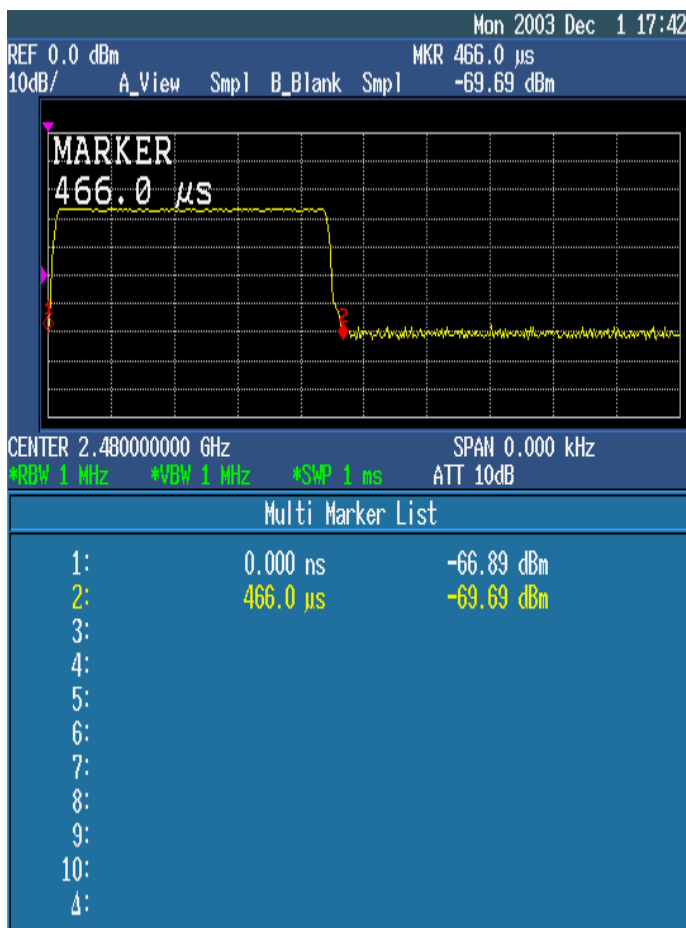
Note: Dwell time = time slot length \* hop rate / number of hopping channels \* period



|               |                     |
|---------------|---------------------|
| Date of Test  | December 01, 2003   |
| EUT           | Industrial PC       |
| Working Cond. | Mode 3 (Channel 79) |

| Measurement Level (sec)                                                                                                                                        | Required Limit (sec) | Result |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------|
| (3) Period = 0.4 (sec) * 79 (number of channel)<br>= 31.6 (sec)<br>(2) Hop rate = 40 / 50 (ms) = 800 / sec<br>(3) Time slot length = 466 (μs) = 0.000466 (sec) | < 0.4                | Pass   |
| ※ Dwell Time = 0.000466 * ( 800 / 79 ) * 31.6<br>= 0.14912 (sec)                                                                                               |                      |        |

Note: Dwell time = time slot length \* hop rate / number of hopping channels \* period



## 10. CHANNEL OF NUMBER

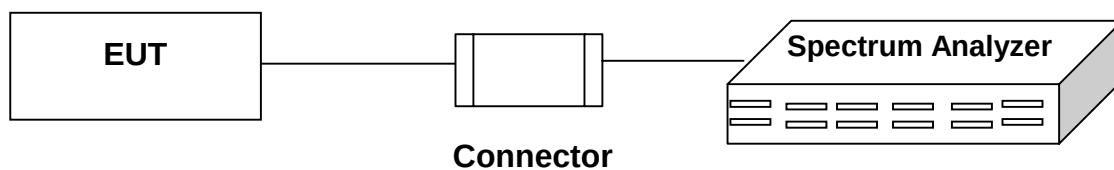
### 10.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

| Item | Instrument        | Manufacturer | Type   | Serial No. | Last Cal. |
|------|-------------------|--------------|--------|------------|-----------|
| 2    | Spectrum Analyzer | Advantest    | R3272  | 82420232   | 02/14/03  |
| 3    | Spectrum Analyzer | HP           | E4407B | 39240339   | 08/16/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 10.2 BLOCK DIAGRAM OF TEST SETUP



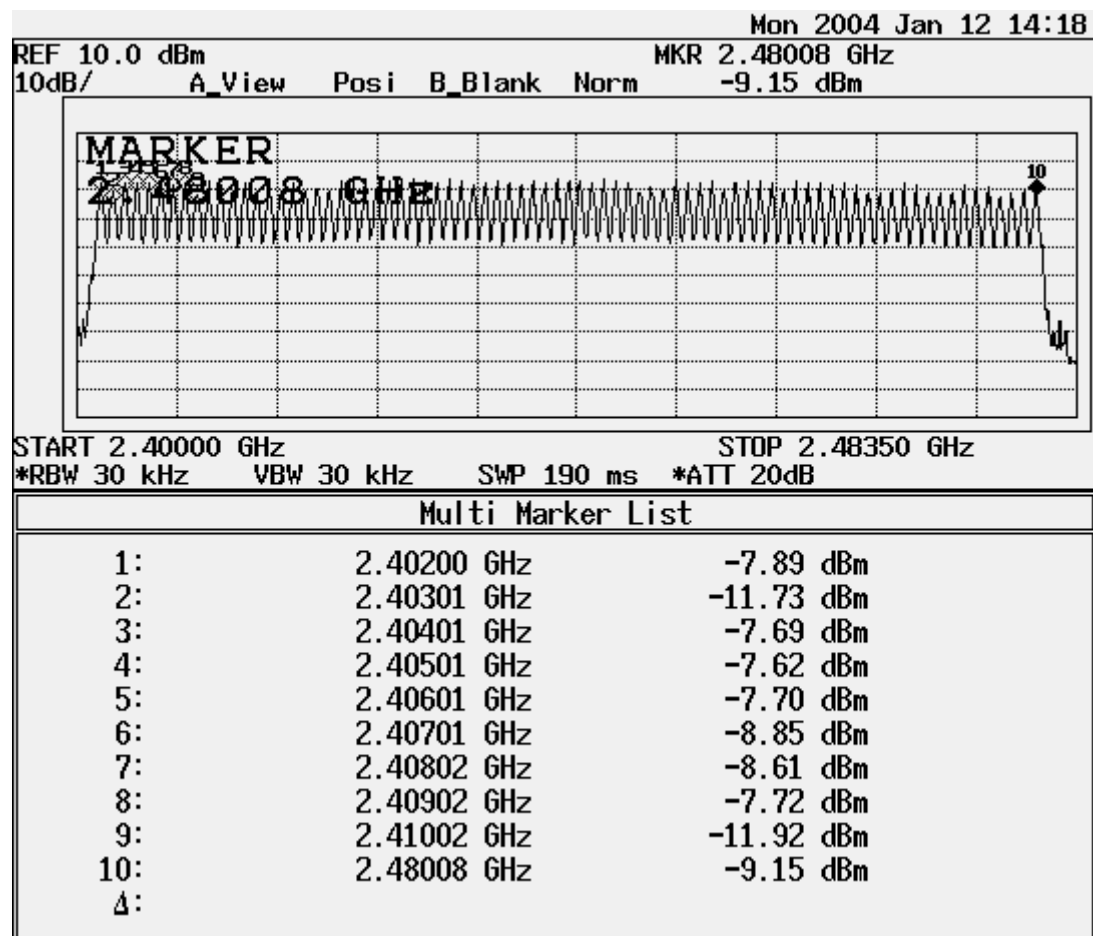
### 10.3 Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

## 10.4 TEST RESULT

|               |                  |
|---------------|------------------|
| Date of Test  | January 12, 2004 |
| EUT           | Industrial PC    |
| Working Cond. | Mode 3           |

| Frequency Range<br>(MHz) | Measurement<br>(Hopping Channel) | Required Limit<br>(Hopping Channel) | Result |
|--------------------------|----------------------------------|-------------------------------------|--------|
| 2402 ~ 2480              | 79                               | >75                                 | Pass   |



## 11. CHANNEL SEPARATION

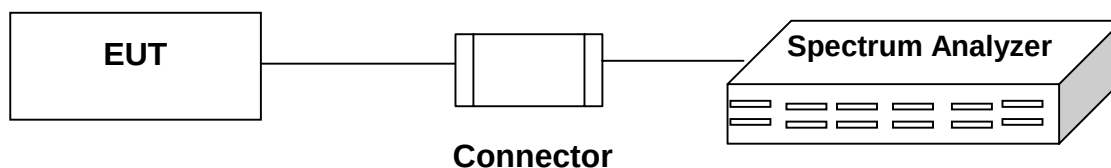
### 11.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

| Item | Instrument        | Manufacturer | Type   | Serial No. | Last Cal. |
|------|-------------------|--------------|--------|------------|-----------|
| 2    | Spectrum Analyzer | Advantest    | R3272  | 82420232   | 02/14/03  |
| 3    | Spectrum Analyzer | HP           | E4407B | 39240339   | 08/16/03  |

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

### 11.2 BLOCK DIAGRAM OF TEST SETUP



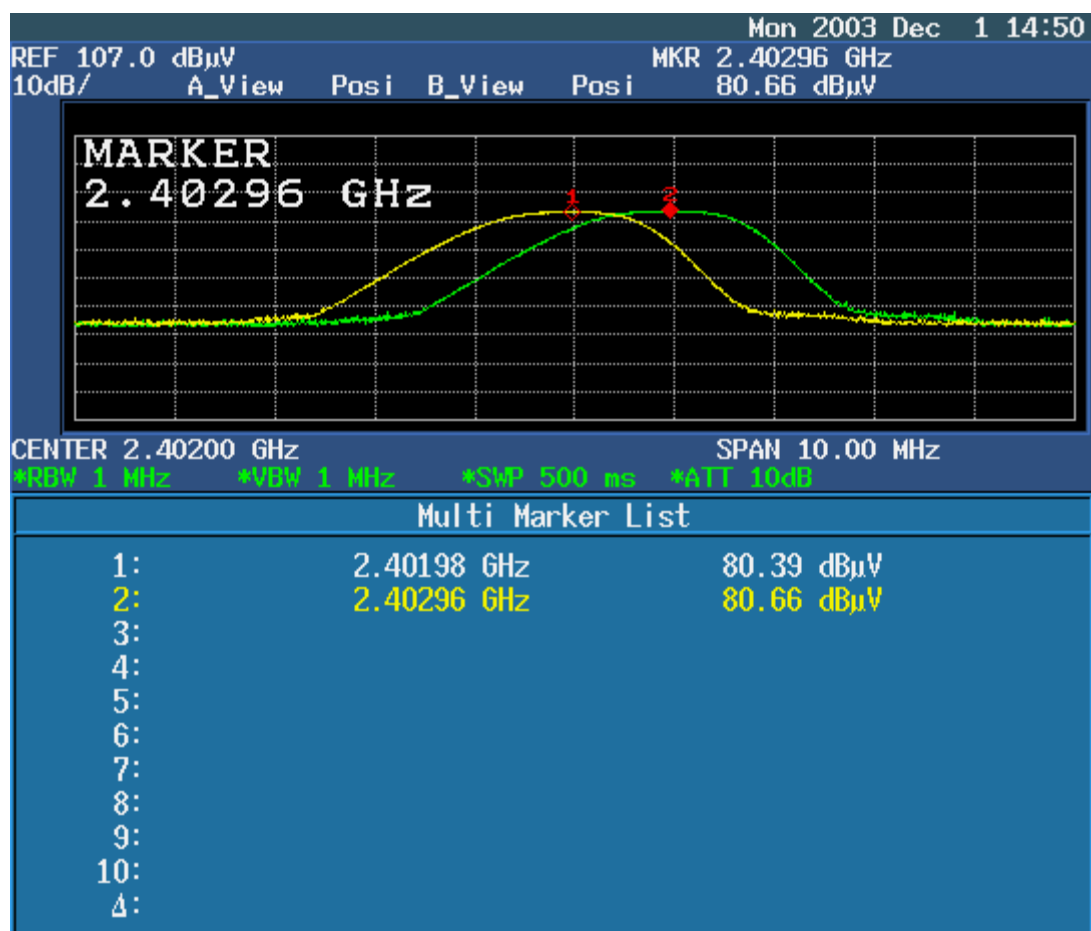
### 11.3 Limit

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

## 11.4 TEST RESULT

|               |                   |
|---------------|-------------------|
| Date of Test  | December 01, 2003 |
| EUT           | Industrial PC     |
| Working Cond. | Mode 3            |

| Measurement Level<br>(MHz) | Required Limit<br>(kHz) | Result |
|----------------------------|-------------------------|--------|
| 0.98                       | >25                     | Pass   |



## 14. EMI REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.

## **Appendix A**

### **Circuit (Block) Diagram**

(Shall be added by Applicant)

## **Appendix B**

## **User Manual**

(Shall be added by Applicant)