# RF TEST REPORT

| | | |
|---|---|---|
| Test item | : | ConnectLine Microphone |
| Model No. | : | MIC-110 |
| Order No. | : | 1011-01027 |
| Date of receipt | : | 2010-10-11 |
| Test duration | : | 2010-11-16 ~ 2010-11-26 |
| Date of issue | : | 2010-11-26 |
| Use of report | : | FCC & IC Original Grant |

Applicant : Oticon A/S
Kongebakken 9, 2765, Smorum, DK-Denmark

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Kyunggi-Do, 449-080, Korea

| | | |
|---|---|---|
| Test specification | : | FCC Part 15.247 Subpart C<br>RSS-210 |
| Test environment | : | See appended test report |
| Test result | : | ☒ Pass ☐ Fail |



| Tested by: | Witnessed by: | Reviewed by: |
|---|---|---|
| Engineer<br>D.C. Cha | N/A | Manager<br>W.J. Lee |

# CONTENTS

# 1. Equipment information

## 1.1 Equipment description

| | |
|---|---|
| FCC Equipment Class | Part 15 Spread Spectrum Transmitter(DSS) |
| Equipment type | ConnectLine Microphone |
| Equipment model name | MIC-110 |
| Equipment add model name | N/A |
| Equipment serial no. | 1010-01027 |
| Frequency band | 2402 ~ 2480 MHz |
| Spread Spectrum | Frequency Hopping |
| Modulation type | GFSK, π/4-DQPSK |
| Transmission rate | 1Mbps, 2Mbps |
| Channel Spacing | 1.0 MHz |
| Power | Lithium Battery: DC 3.7 V |
| Antenna type | Internal Type: PIFA Antenna (Max. Peak Gain: 0.8 dBi) |

## 1.2 Ancillary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|---|---|---|---|---|
| - | - | - | - | - |
| - | - | - | - | - |

# 2. Information about test items

## 2.1 Test mode & EUT Position

This device was tested in maximum duty mode at maximum power of hopping enable / disable mode.

| | |
|---|---|
| **Test Case 1** | - |
| **Test Case 2** | - |
| **Test Case 3** | - |

EUT position: refer to Test photo file.

## 2.2 Auxiliary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|---|---|---|---|---|
| - | - | - | - | - |
| - | - | - | - | - |

## 2.3 Tested frequency

- Hopping Function: Enable

| | TX Frequency (MHz) | RX Frequency (MHz) |
|---|---|---|
| **Hopping Band** | 2402 ~ 2480 | 2402 ~ 2480 |

- Hopping Function: Disable

| | TX Frequency (MHz) | RX Frequency (MHz) |
|---|---|---|
| **Lowest Channel** | 2402 | 2402 |
| **Middle Channel** | 2441 | 2441 |
| **Highest Channel** | 2480 | 2480 |

## 2.4 Tested environment

| | | |
|---|---|---|
| **Temperature** | : | 21 ~ 24 °C |
| **Relative humidity content** | : | 22 ~ 59 % R.H. |
| **Details of power supply** | : | DC 3.7 V |

## 2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing
→ None

# 3. Test Report

## 3.1 Summary of tests

| FCC Part RSS-210 & GEN | Parameter | Limit (Using in 2400 ~ 2483.5MHz) | Test Condition | Status (note 1) |
|---|---|---|---|---|
| **I. Transmit mode (Tx)** | | | | |
| 15.247(a) RSS-210(A8.1) | Carrier Frequency Separation | >= 20dB BW or >= Two-Thirds of the 20dB BW | Conducted | C |
| | Number of Hopping Frequencies | >= 15 hops | | C |
| | 20 dB Bandwidth | None | | C |
| | Dwell Time | =< 0.4 seconds | | C |
| 15.247(b) RSS-210(A8.4) | Transmitter Output Power | =< 1Watt , if CHs >= 75 Others =<0.125W | | C |
| 15.247(d) RSS-210(A8.5) | Band-edge /Conducted | The radiated emission to any 100 kHz of outband shall be at least 20dB below the highest inband spectral density. | | C |
| | Conducted Spurious Emissions | | | C |
| 15.205,15.209 RSS-210(A8.5) | Radiated Emissions | FCC 15.209 | Radiated | C Note 2 |
| 15.207 RSS-Gen(7.2.4) | AC Conducted Emissions | FCC 15.207 | AC Line Conducted | NA Note 3 |
| RSS Gen Issue 3 | Occupied Bandwidth (99%) | RSS-Gen(4.6.1) | Conducted | C |
| 15.203 RSS-Gen(7.1.2) | Antenna Requirements | FCC 15.203 | - | C |
| **II. Receive mode (Rx)** | | | | |
| RSS-Gen(7.2.4) | AC Conducted Emissions | RSS-Gen(7.2.4 Table 4) | Line Conducted | C |
| RSS-Gen(6) | Receiver Spurious Emissions | RSS-Gen(6 Table 2) | Radiated | C |

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable
Note 2: This test item was performed in each axis. And the worst case data were reported.
Note 3: When this device is in the charging mode, the Bluetooth function is disabled.

The sample was tested according to the following specification:
ANSI C-63.4-2003, DA00-705, RSS-Gen Issue 3

## 3.2 Transmitter requirements

### 3.2.1 Carrier Frequency Separation

**- Procedure:**

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = wide enough to capture the peaks of two adjacent channels

RBW = 1% of the span Sweep = auto

VBW = ≥ RBW Detector function = peak

Trace = max hold

**- Measurement Data: Comply**

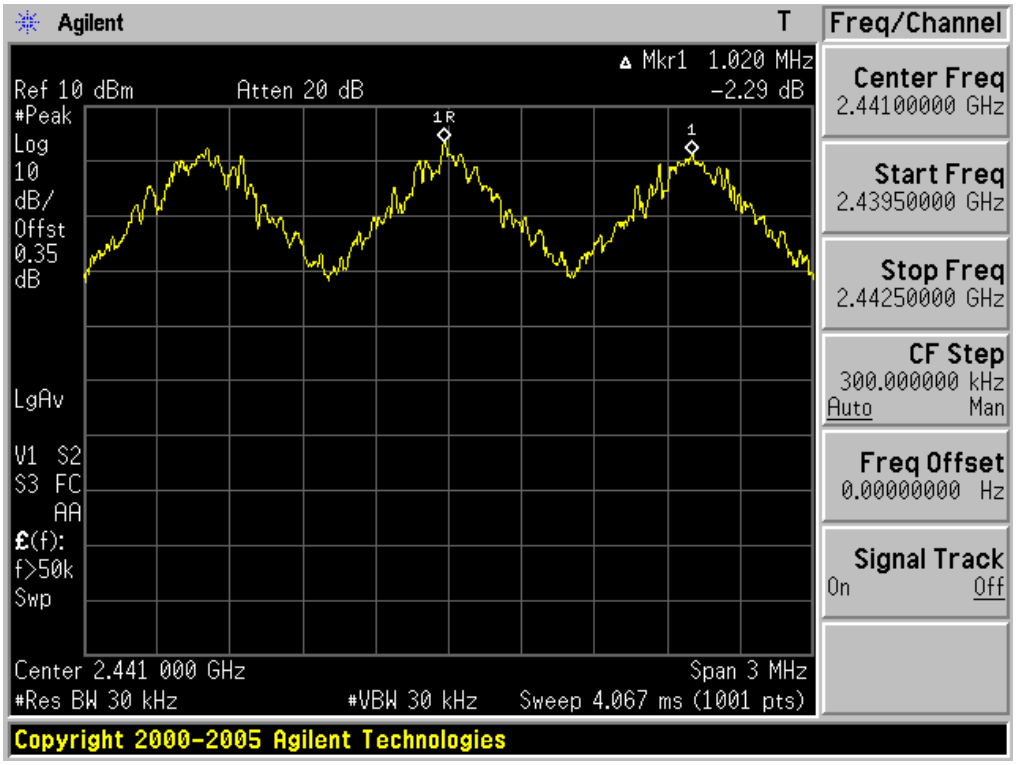
| Hopping Mode | Test Mode | Peak of center channel (MHz) | Peak of adjacent Channel (MHz) | Test Result (MHz) |
|---|---|---|---|---|
| Enable | Data rate:1Mbps | 2440.982 | 2442.002 | 1.020 |
| | Data rate: 2Mbps | 2439.986 | 2441.000 | 1.014 |

Note 1: See next pages for actual measured spectrum plots.

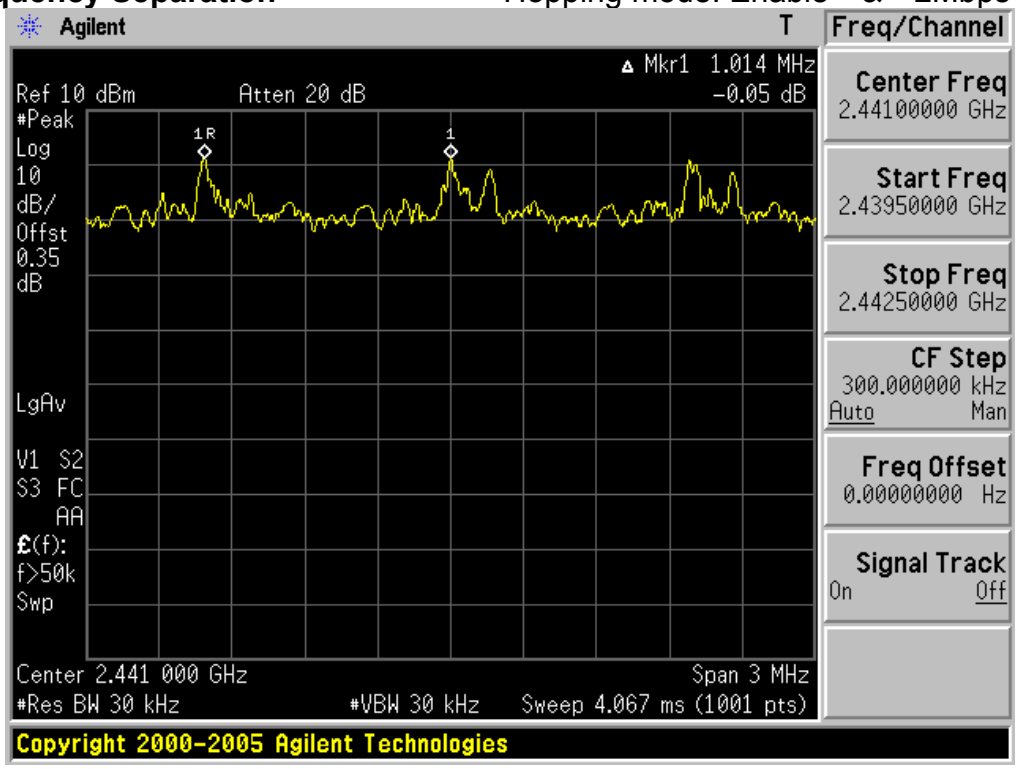
**- Minimum Standard:**

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

**Carrier Frequency Separation** Hopping mode: Enable & 1Mbps




**Carrier Frequency Separation** Hopping mode: Enable & 2Mbps



### 3.2.2 Number of Hopping Frequencies

**- Procedure:**

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.
To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz FH band were examined.

The spectrum analyzer is set to:

Span = 25MHz
Plot 1: Start Frequency = 2389.5MHz, Stop Frequency = 2414.5 MHz
Plot 2: Start Frequency = 2414.5MHz, Stop Frequency = 2439.5 MHz
Plot 3: Start Frequency = 2439.5MHz, Stop Frequency = 2464.5 MHz
Plot 4: Start Frequency = 2464.5MHz, Stop Frequency = 2489.5 MHz

RBW = 1% of the span or more
Sweep = auto
VBW = ≥ RBW
Detector function = peak
Trace = max hold

- **Measurement Data: Comply**

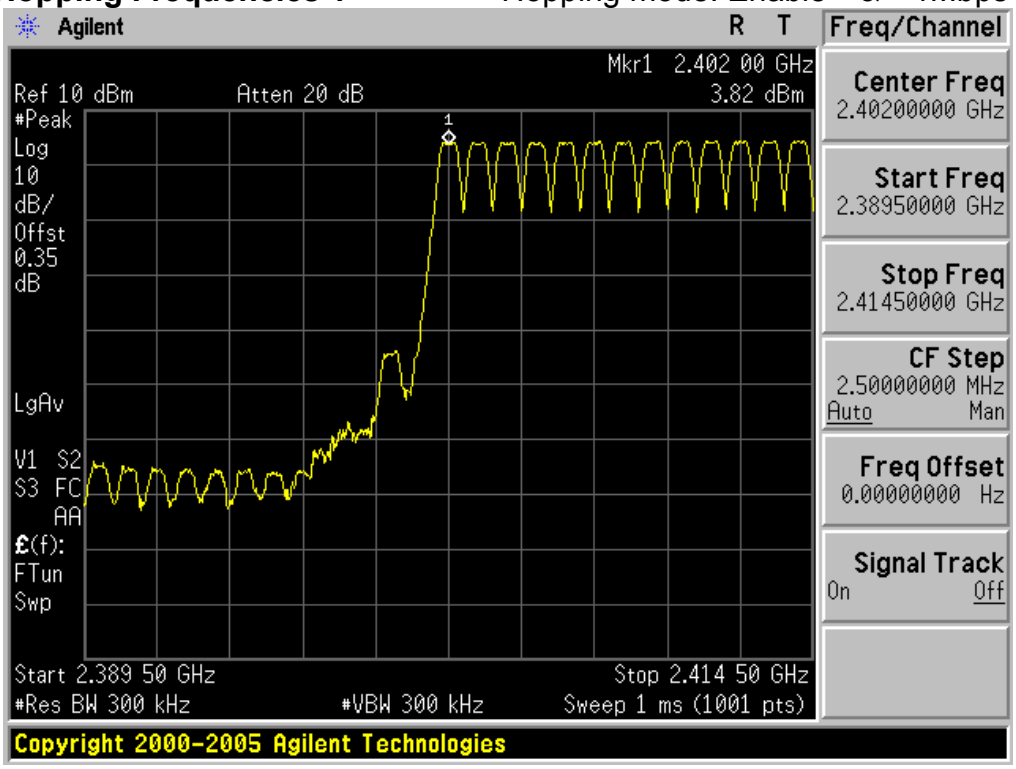
| Hopping mode | Test mode | Test Result (Total Hops) |
|---|---|---|
| Enable | Data rate: 1Mbps | 79 |
| | Data rate: 2Mbps | 79 |

Note 1: See next pages for actual measured spectrum plots.

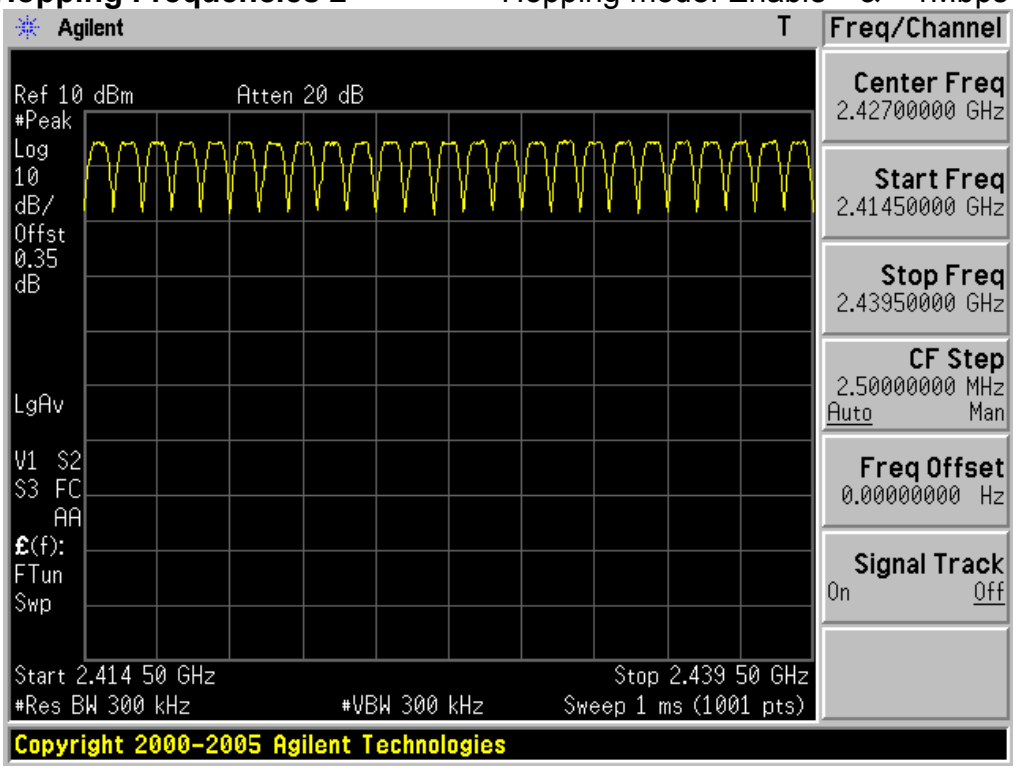
**- Minimum Standard:**

| |
|---|
| At least 15 hopes |

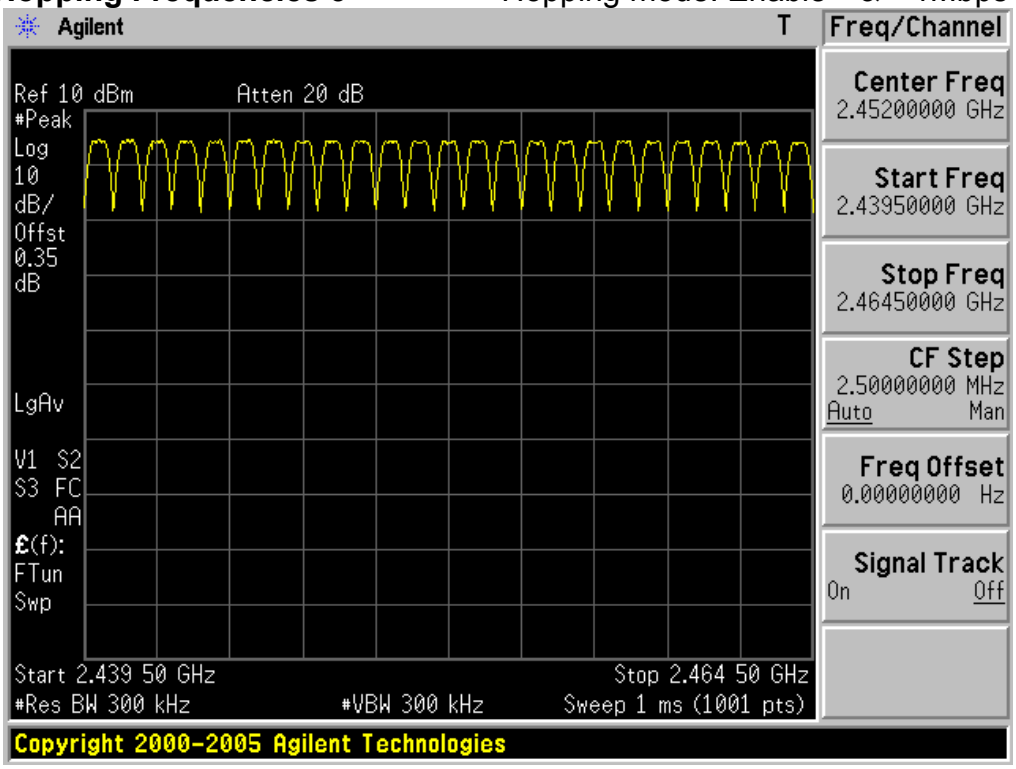
**Number of Hopping Frequencies 1** Hopping mode: Enable & 1Mbps



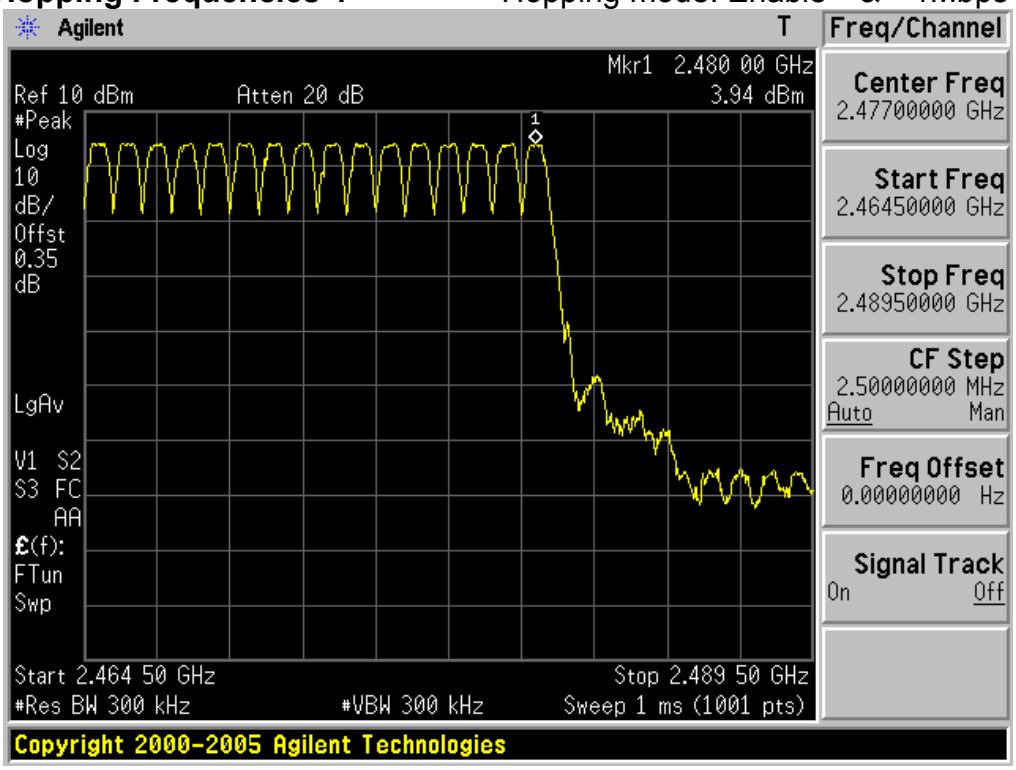

**Number of Hopping Frequencies 2** Hopping mode: Enable & 1Mbps



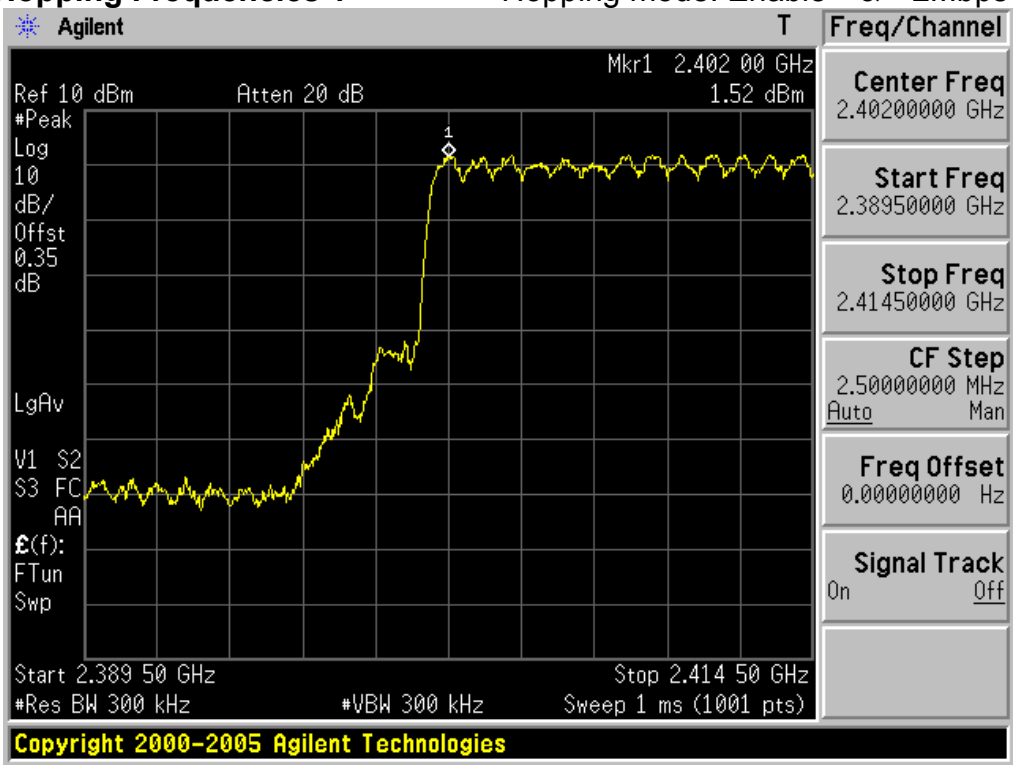
**Number of Hopping Frequencies 3** Hopping mode: Enable & 1Mbps



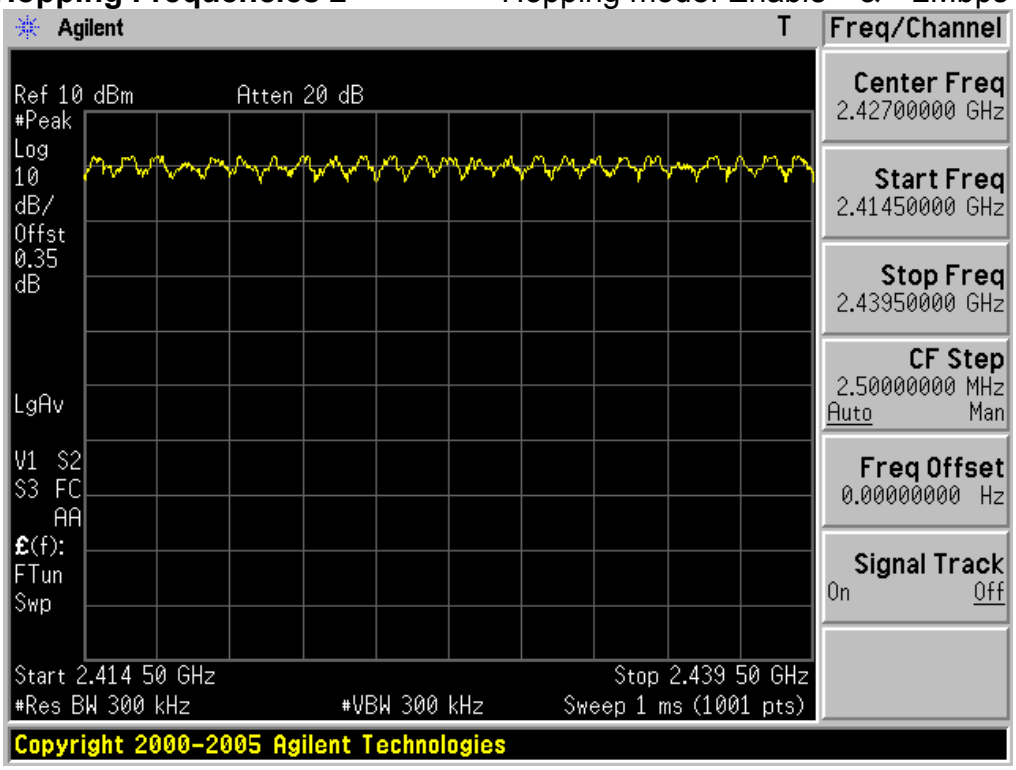

**Number of Hopping Frequencies 4** Hopping mode: Enable & 1Mbps



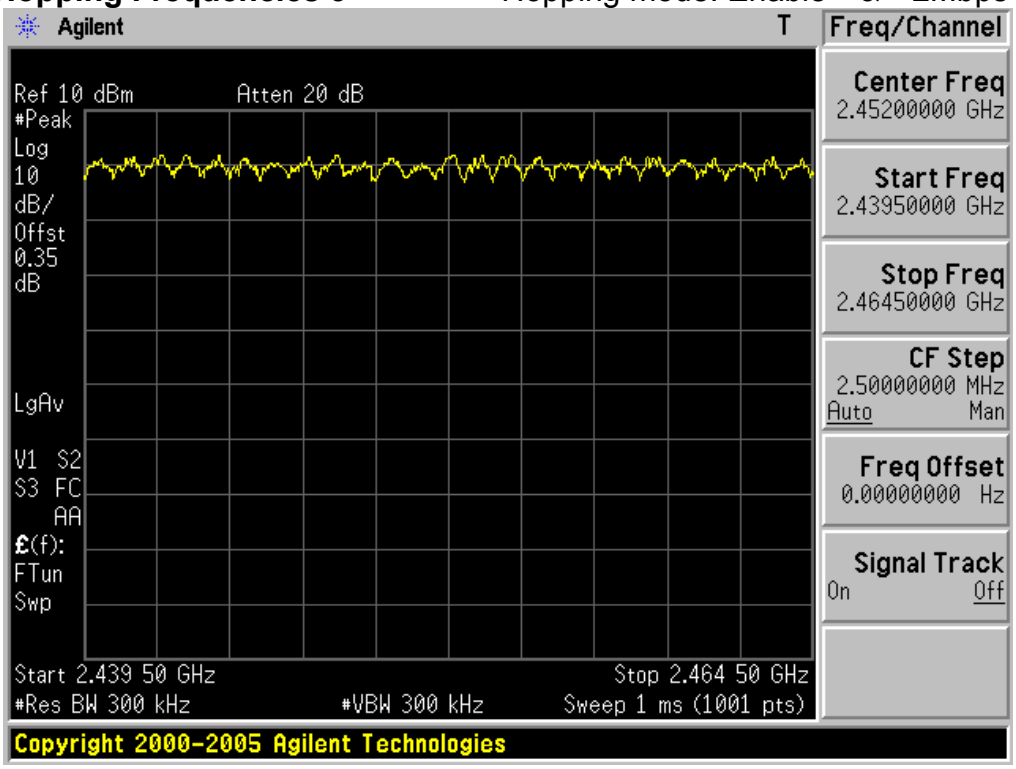
**Number of Hopping Frequencies 1** Hopping mode: Enable & 2Mbps



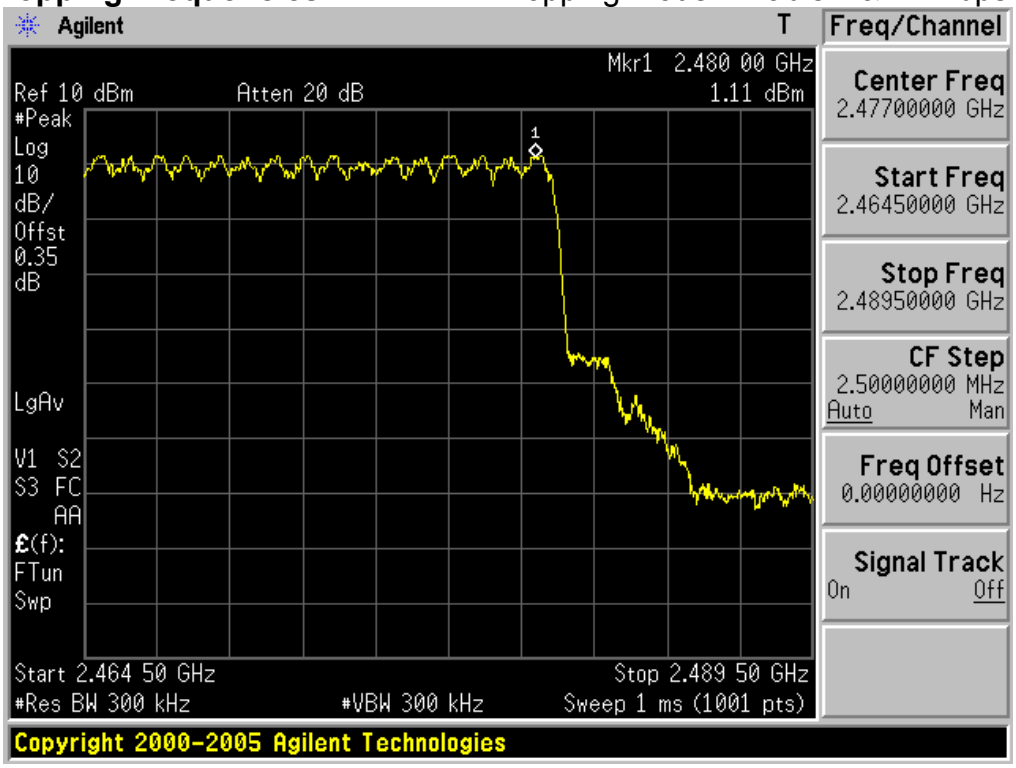

**Number of Hopping Frequencies 2** Hopping mode: Enable & 2Mbps



**Number of Hopping Frequencies 3** Hopping mode: Enable & 2Mbps




**Number of Hopping Frequencies 4** Hopping mode: Enable & 2Mbps



### 3.2.3 20 dB Bandwidth

**- Procedure:**

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest Frequencies

Span = approximately 2 or 3 times of the 20 dB bandwidth

RBW = 1% of the 20dB bandwidth or more

VBW = ≥ RBW

Trace = max hold

Sweep = auto

Detector function = peak

**- Measurement Data: Comply**

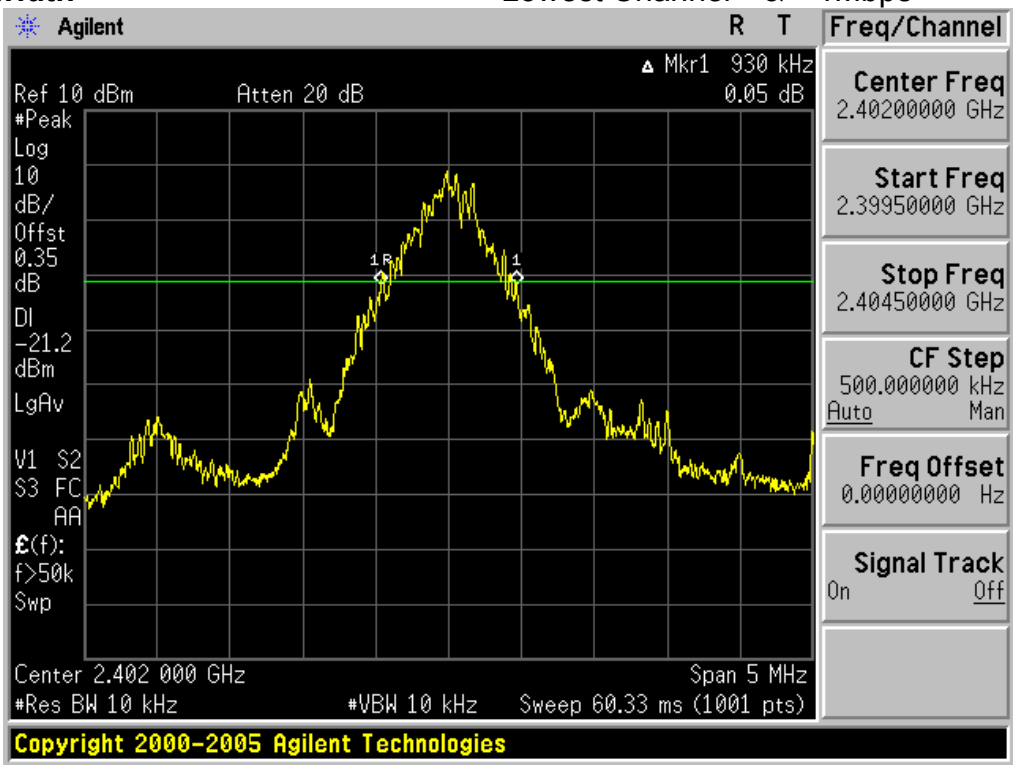
| Hopping mode | Test mode | Tested Channel | Test Results (MHz) |
|---|---|---|---|
| Disable | Date rate: 1Mbps | Lowest | 0.930 |
| | | Middle | 0.940 |
| | | Highest | 0.940 |
| | Date rate: 2Mbps | Lowest | 1.265 |
| | | Middle | 1.245 |
| | | Highest | 1.240 |

Note 1: See next pages for actual measured spectrum plots.

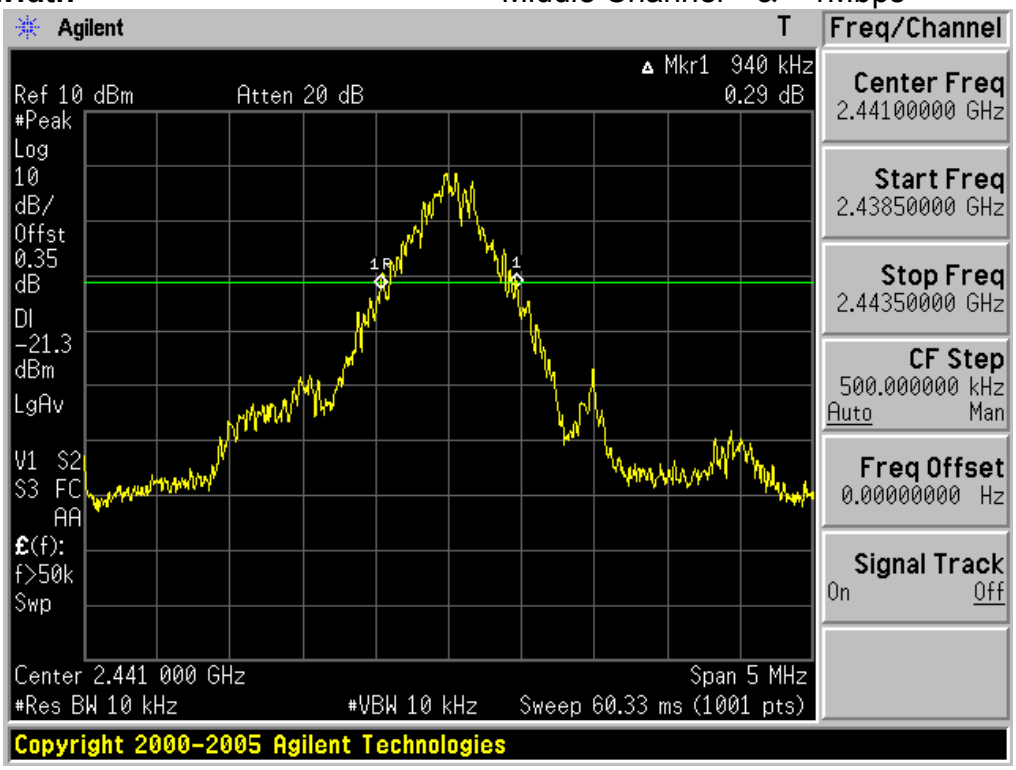
**- Minimum Standard:**

| |
|---|
| None |

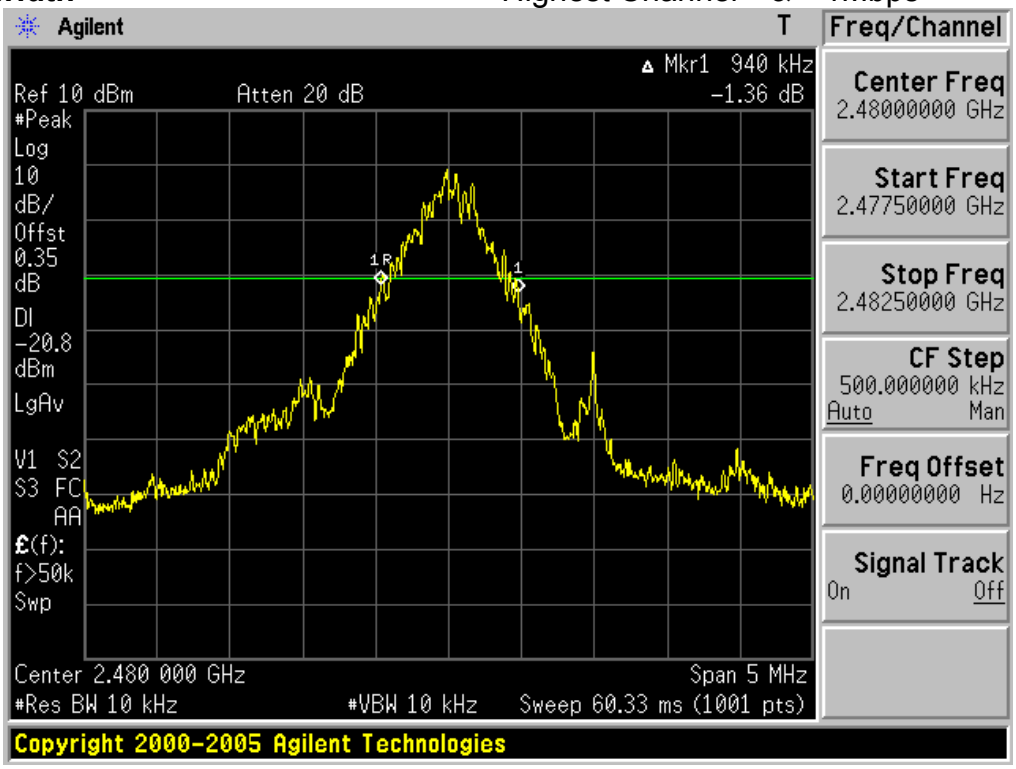
**20dB Bandwidth** Lowest Channel & 1Mbps



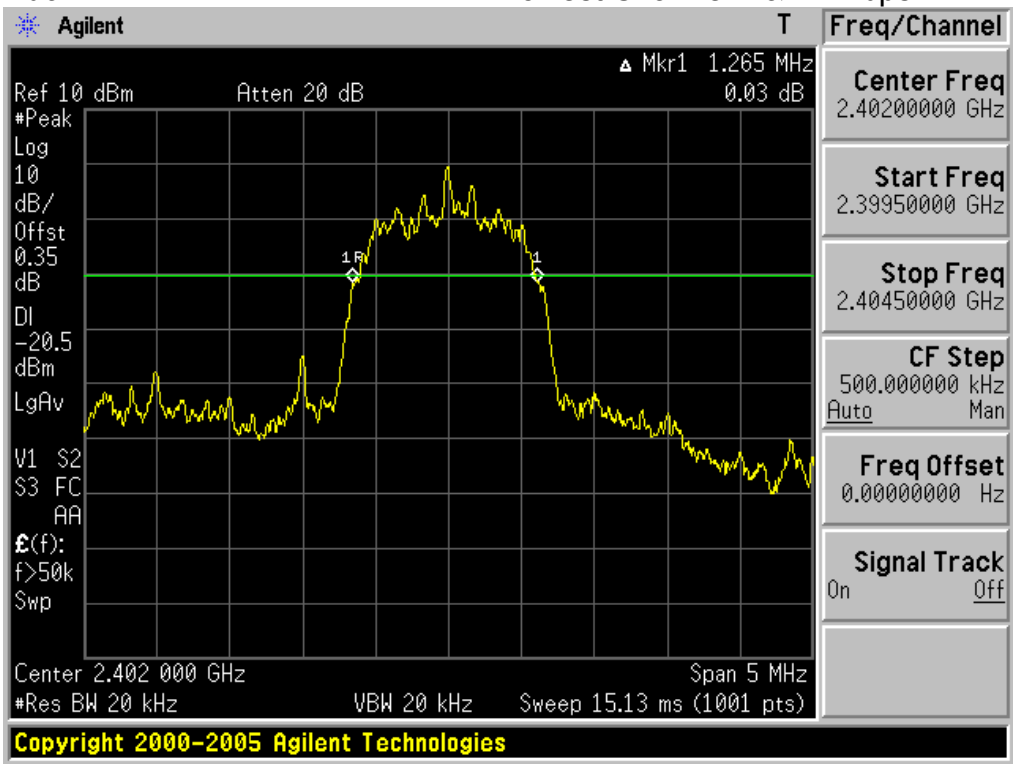

**20dB Bandwidth** Middle Channel & 1Mbps



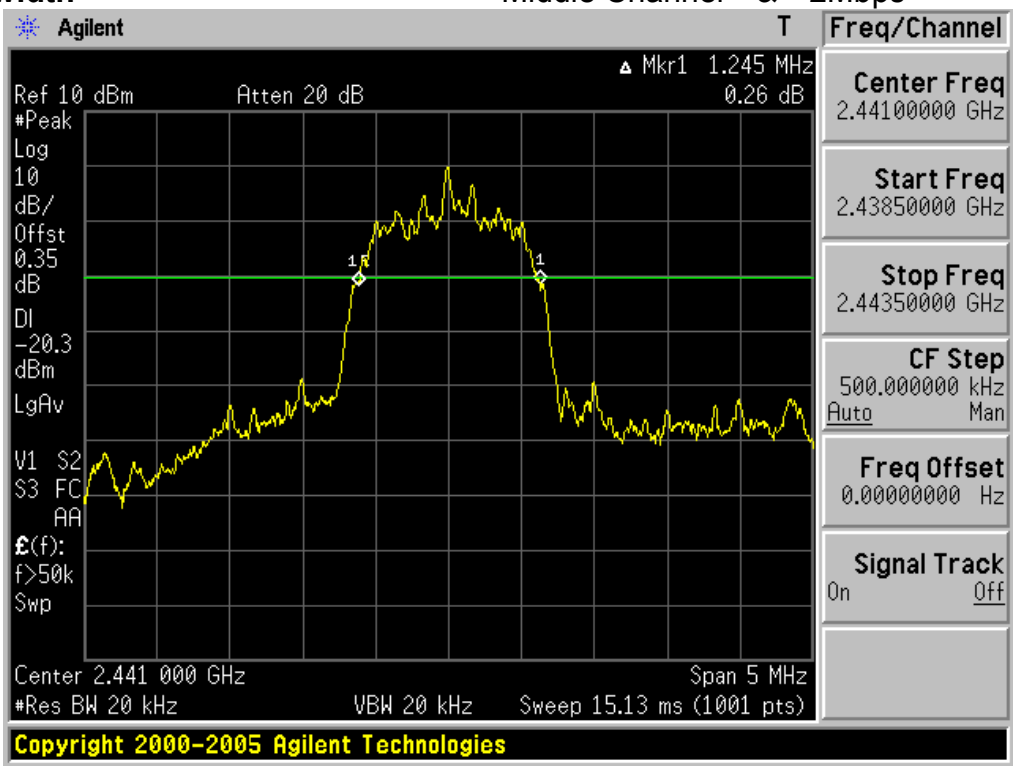
**20dB Bandwidth** Highest Channel & 1Mbps



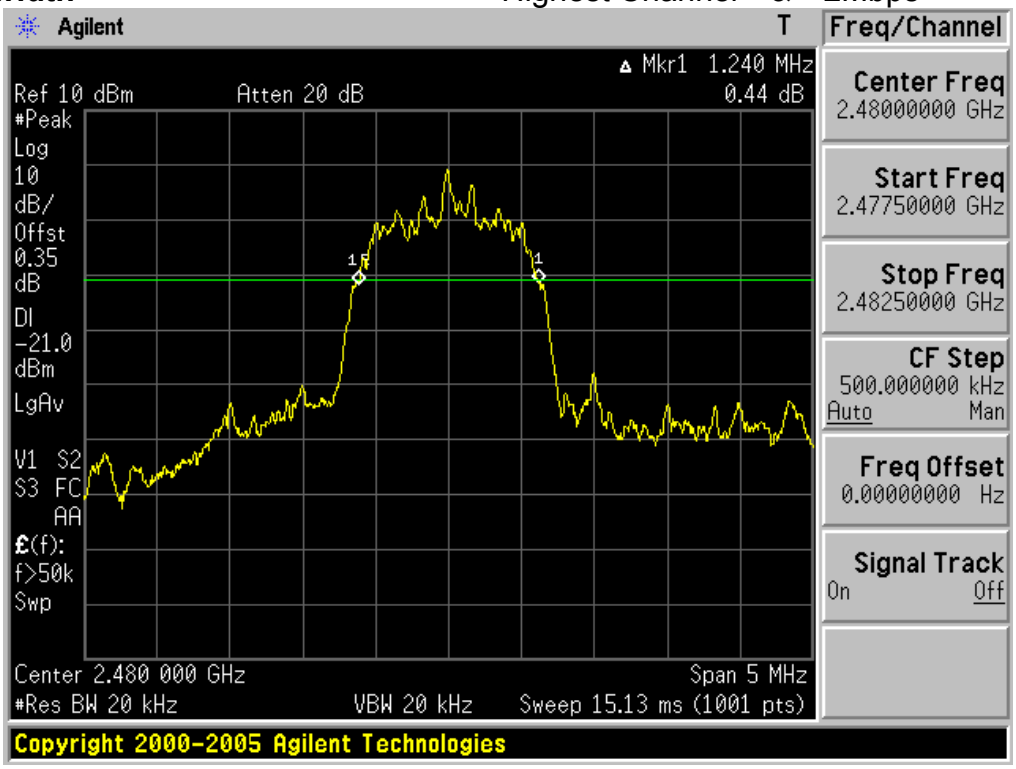
**20dB Bandwidth** Lowest Channel & 2Mbps




**20dB Bandwidth** Middle Channel & 2Mbps



**20dB Bandwidth** Highest Channel & 2Mbps



### 3.2.4 Time of Occupancy (Dwell Time)

**- Procedure:**

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

| | |
|---|---|
| Center frequency = 2441 MHz | Span = zero |
| RBW = 1 MHz | VBW = ≥ RBW |
| Trace = max hold | Detector function = peak |

**- Measurement Data: Comply**

| Hopping mode | Test mode | Packet Type | Burst On Time (ms) | Period (ms) | Number of hopping Channels | Test Result (s) |
|---|---|---|---|---|---|---|
| Enable | Data Rate: 1Mbps | DH 5 | 2.895 | 3.75 | 79 | 0.3088 |
| | Data Rate: 2Mbps | DH 5 | 2.91 | 3.75 | 79 | 0.3104 |

Note 1: Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event.

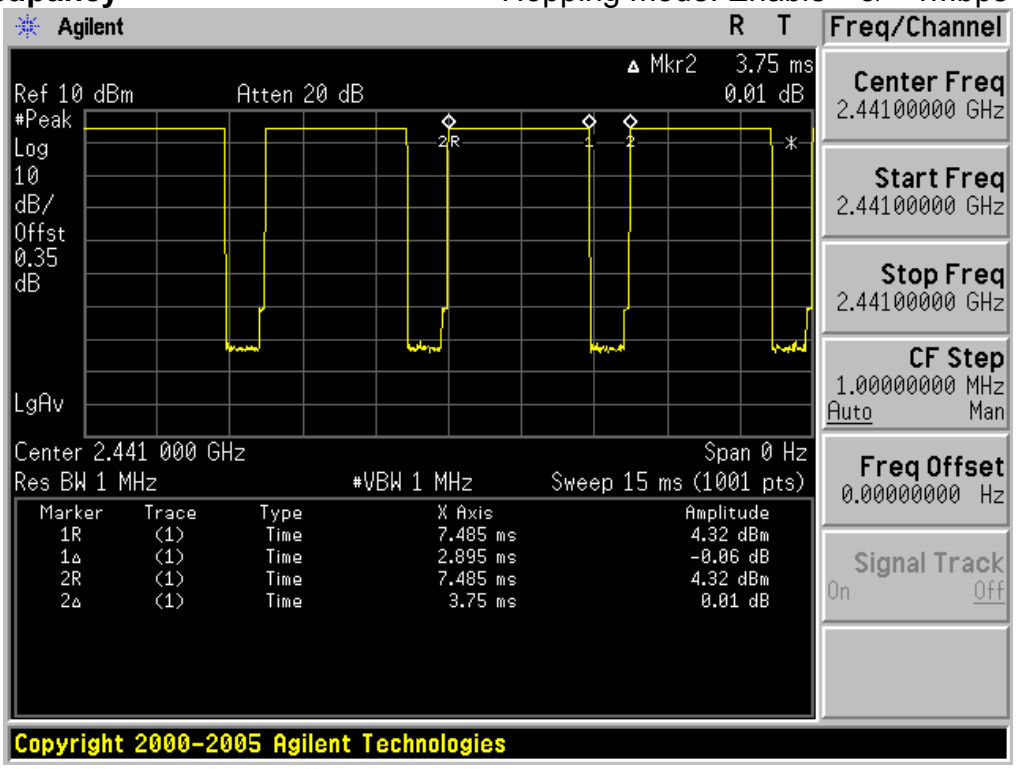
DWELL TIME=(0.4 x Number of hopping Channels) x Burst On time / (period x Number of hopping Channels)

Note 2: See next pages for actual measured spectrum plots.

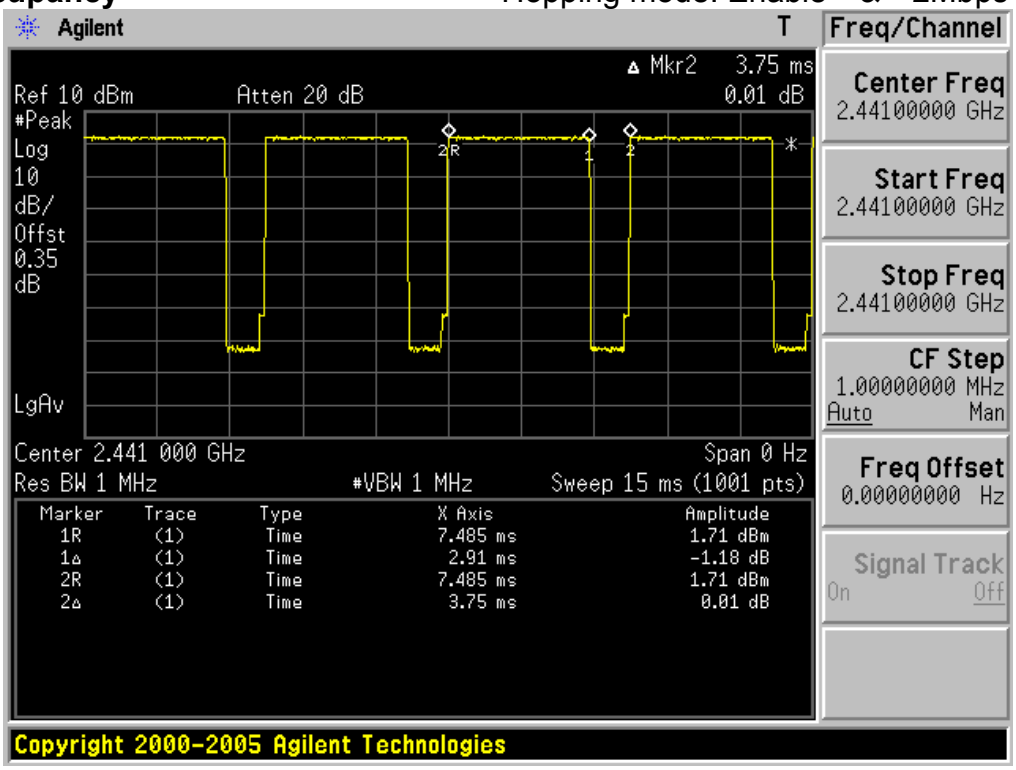
**- Minimum Standard:**

| |
|---|
| No greater than 0.4 seconds |

**Time of Occupancy** Hopping mode: Enable & 1Mbps




**Time of Occupancy** Hopping mode: Enable & 2Mbps



### 3.2.5 Peak Output Power

**- Procedure:**

The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.
After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest Frequencies
Span = approximately 5 times of the 20 dB bandwidth
RBW = greater than the 20dB bandwidth of the emission being measured
VBW = ≥ RBW Detector function = peak
Trace = max hold Sweep = auto

- **Measurement Data: Comply**

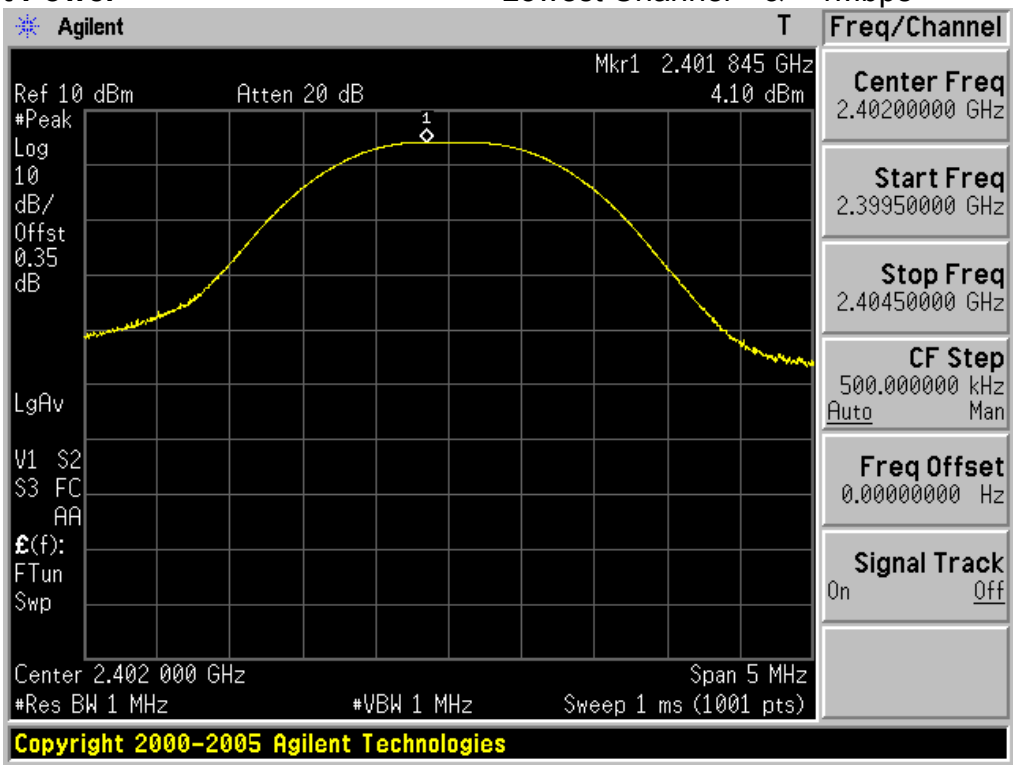
| Hopping mode | Test mode | Tested Channel | Test Results | |
|---|---|---|---|---|
| | | | dBm | mW |
| Disable | Data rate: 1Mbps | Lowest | 4.01 | 2.518 |
| | | **Middle** | **4.56** | **2.858** |
| | | Highest | 4.01 | 2.518 |
| | Data rate: 2Mbps | Lowest | 2.41 | 1.742 |
| | | **Middle** | **2.74** | **1.879** |
| | | Highest | 2.34 | 1.714 |

Note 1: See next pages for actual measured spectrum plots.

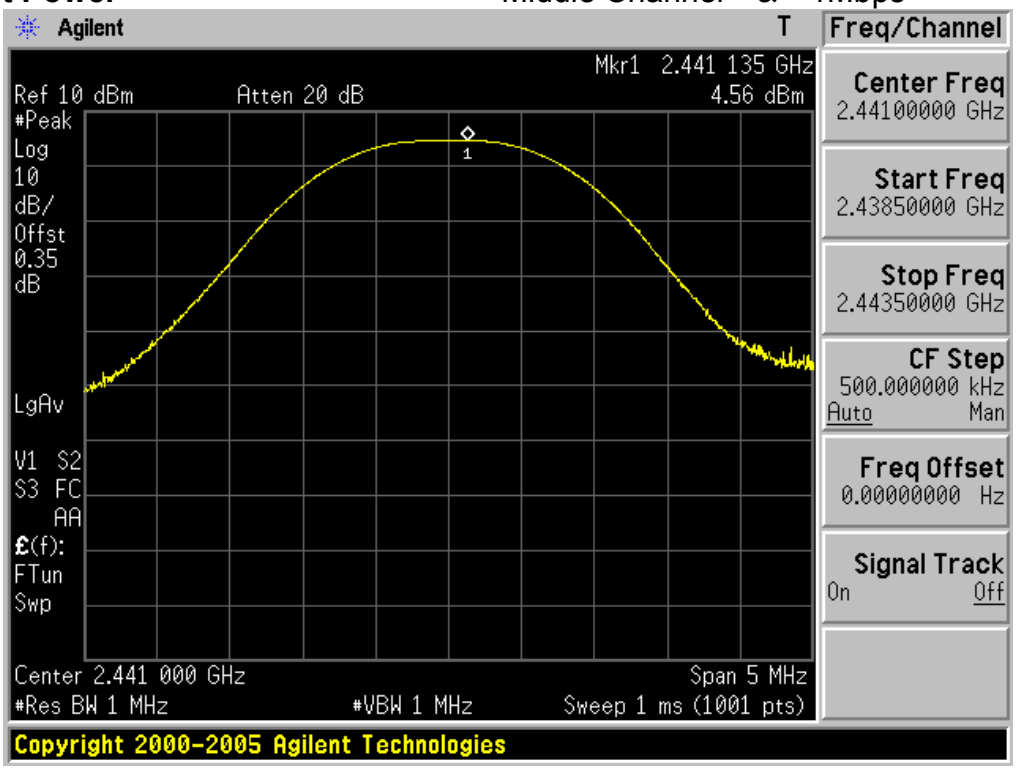
**- Minimum Standard:**

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: **1 Watt**. For all other frequency hopping systems in the 2400-2483.5 MHz band: **0.125 Watts**

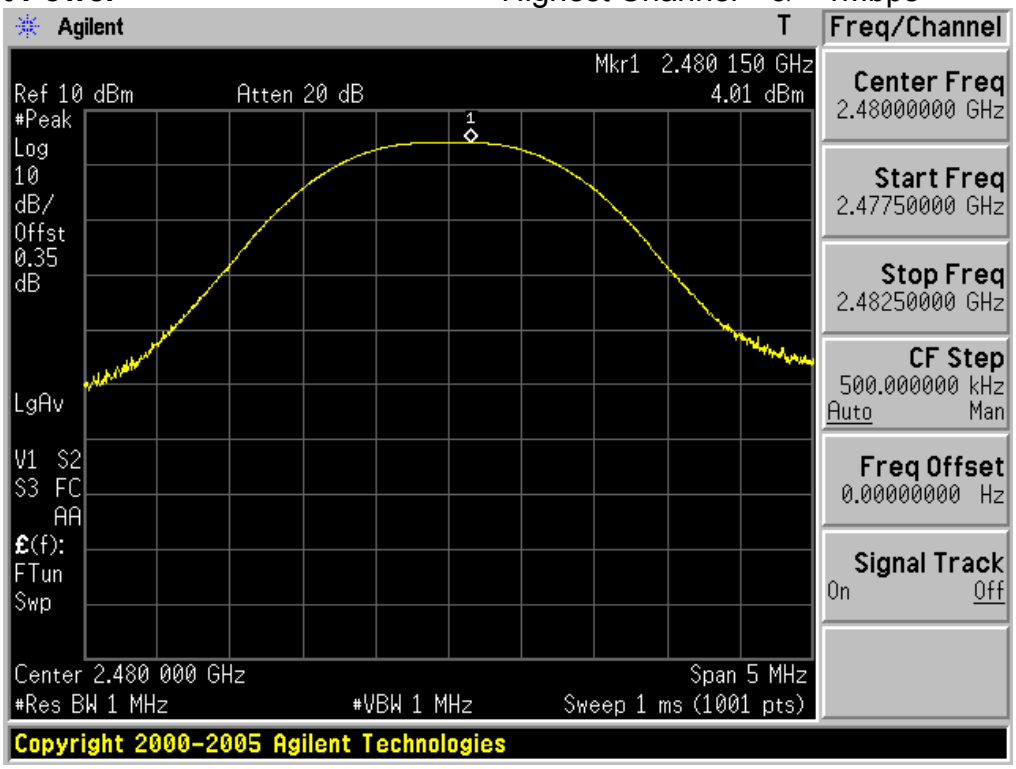
**Peak Output Power** Lowest Channel & 1Mbps



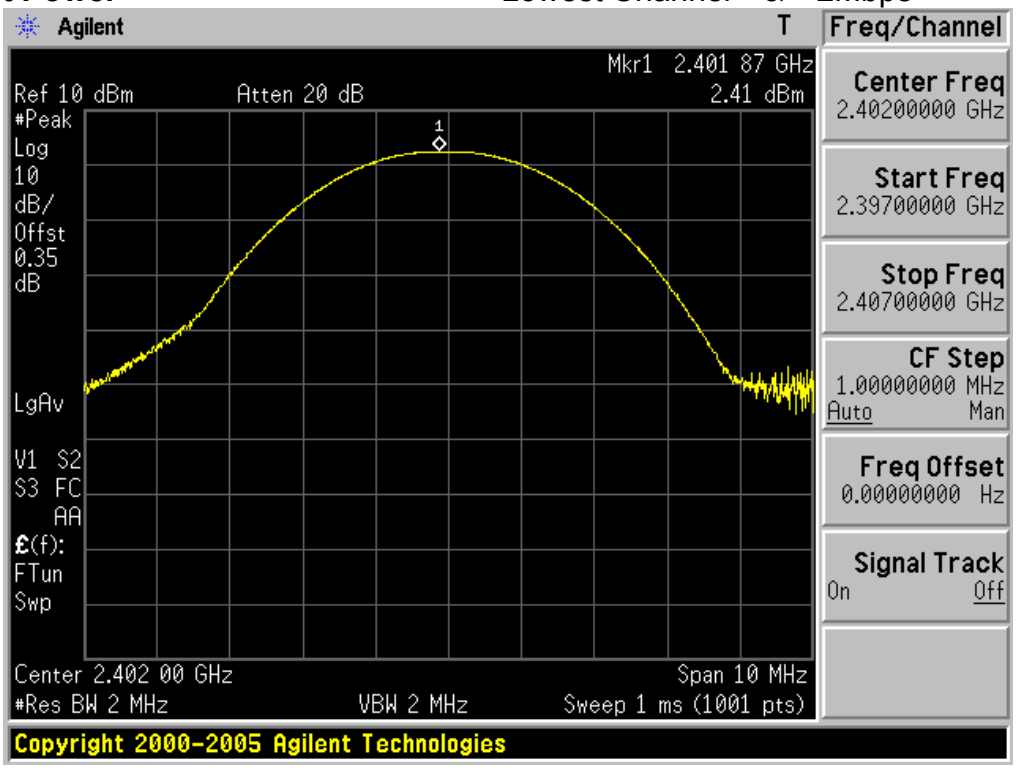

**Peak Output Power** Middle Channel & 1Mbps



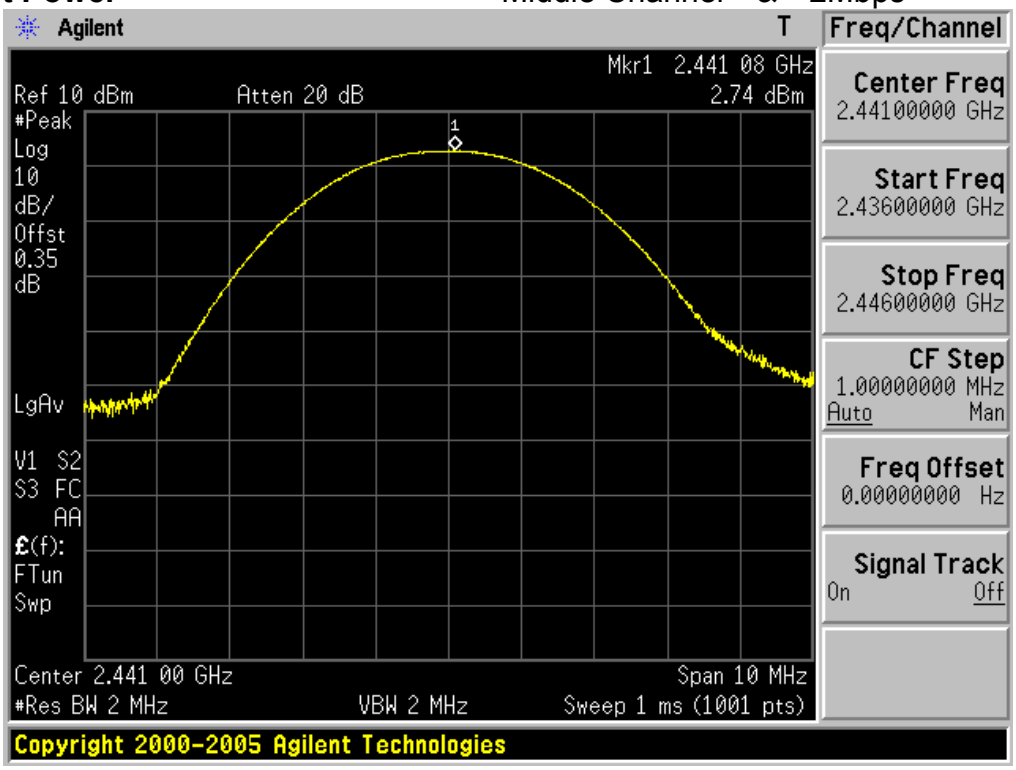
**Peak Output Power** Highest Channel & 1Mbps



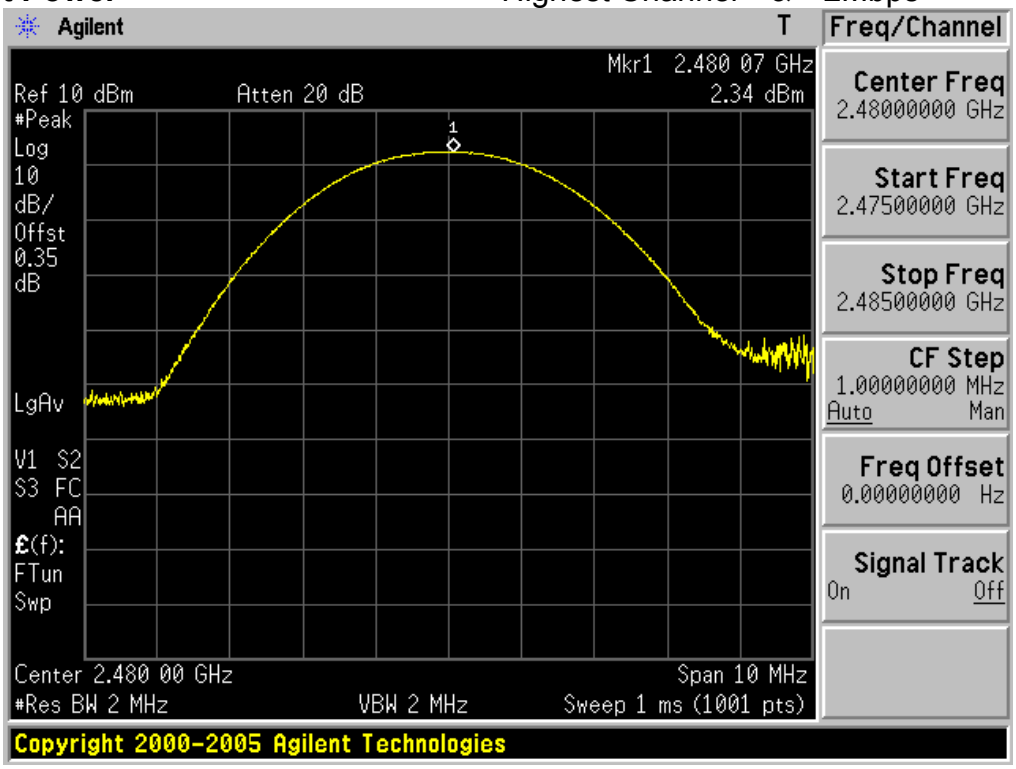
**Peak Output Power** Lowest Channel & 2Mbps




**Peak Output Power** Middle Channel & 2Mbps



**Peak Output Power** Highest Channel & 2Mbps



### 3.2.6 Conducted Spurious Emissions

**- Procedure:**

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

For Band-edge testing the spectrum analyzer is set to:

Tested frequency = the highest and the lowest Frequencies

Center frequency = 2400MHz, 2483.5MHz

Span = 10MHz Detector function = peak

RBW = 1% of the span VBW = ≥ RBW

Trace = max hold Sweep = auto

For spurious testing the spectrum analyzer is set to:

Tested frequency = the highest, middle and the lowest Frequencies

RBW = 100 kHz VBW = ≥ RBW

Detector function = peak Sweep = auto

Trace = max hold

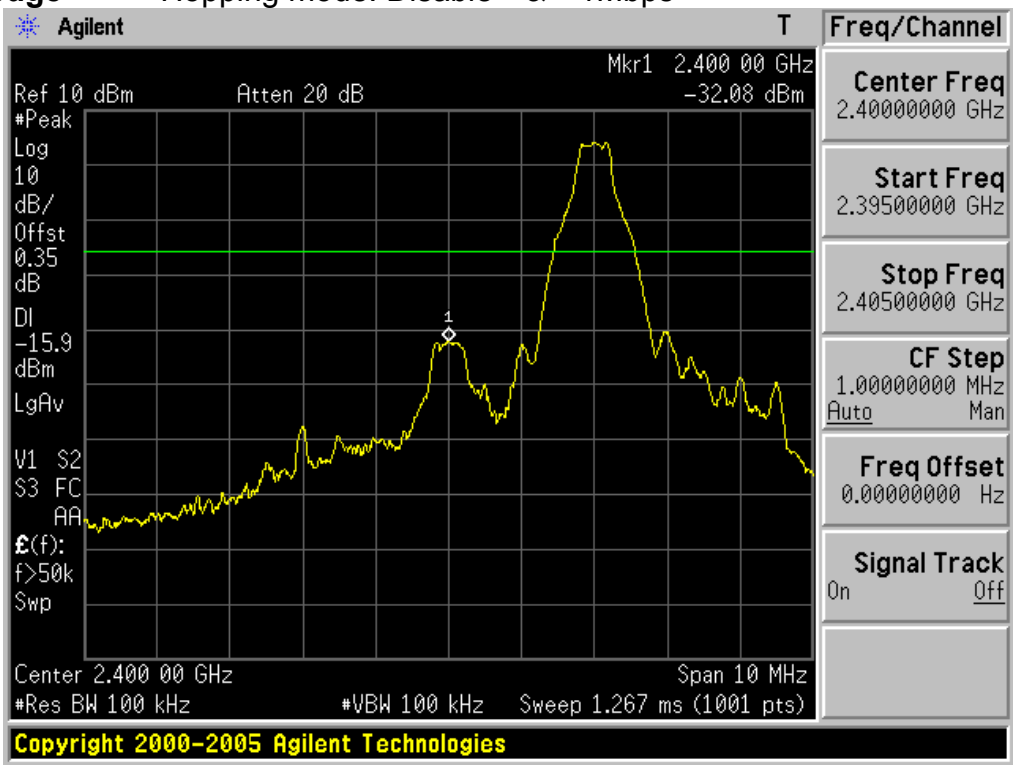
**- Measurement Data: Comply**

Note 1: See next pages for actual measured spectrum plots.

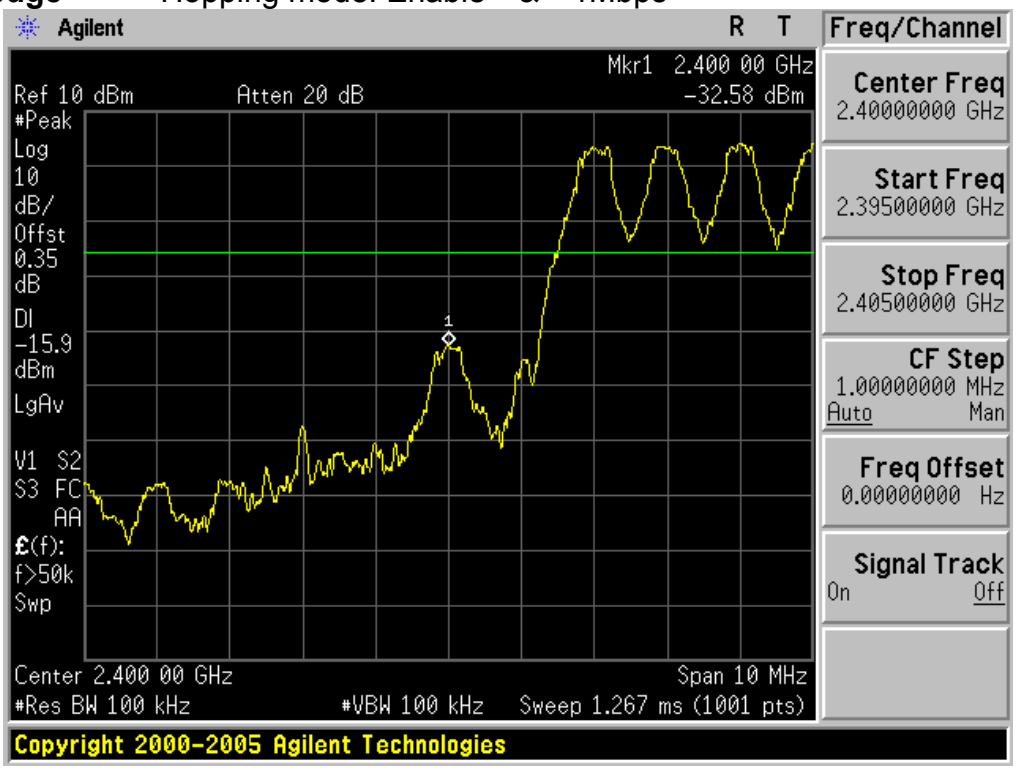
- **Minimum Standard:**

| | |
|---|---|
| Minimum Standard: | > 20 dBc |

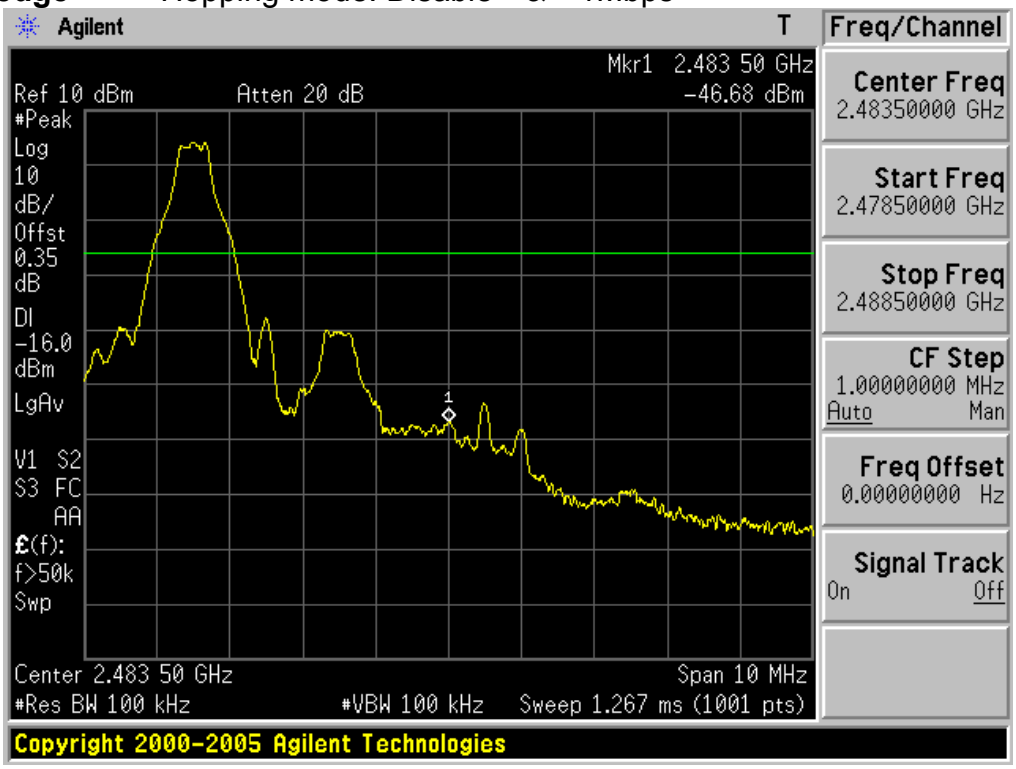
**Low Band-edge** Hopping mode: Disable & 1Mbps



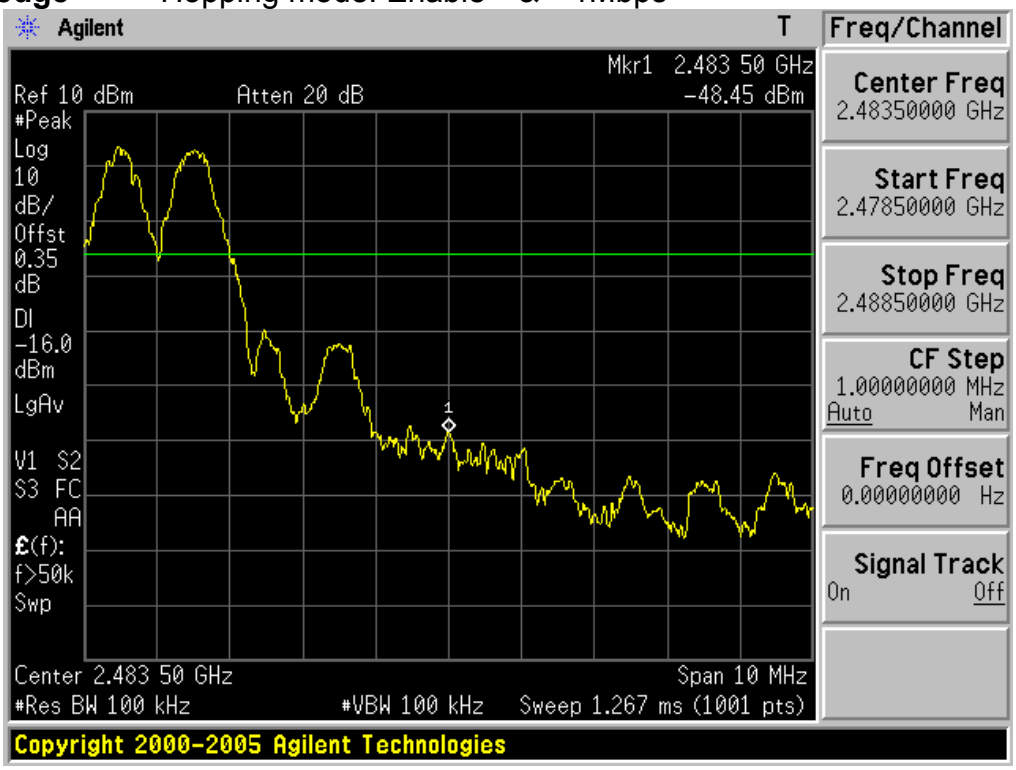

**Low Band-edge** Hopping mode: Enable & 1Mbps



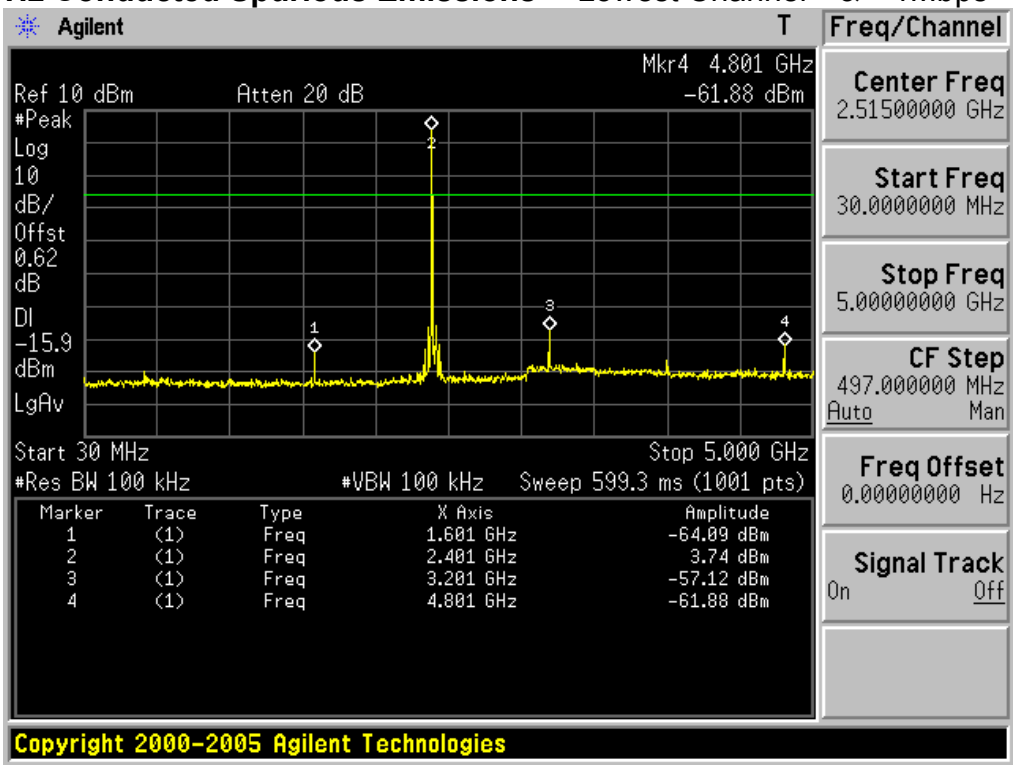
**High Band-edge** Hopping mode: Disable & 1Mbps



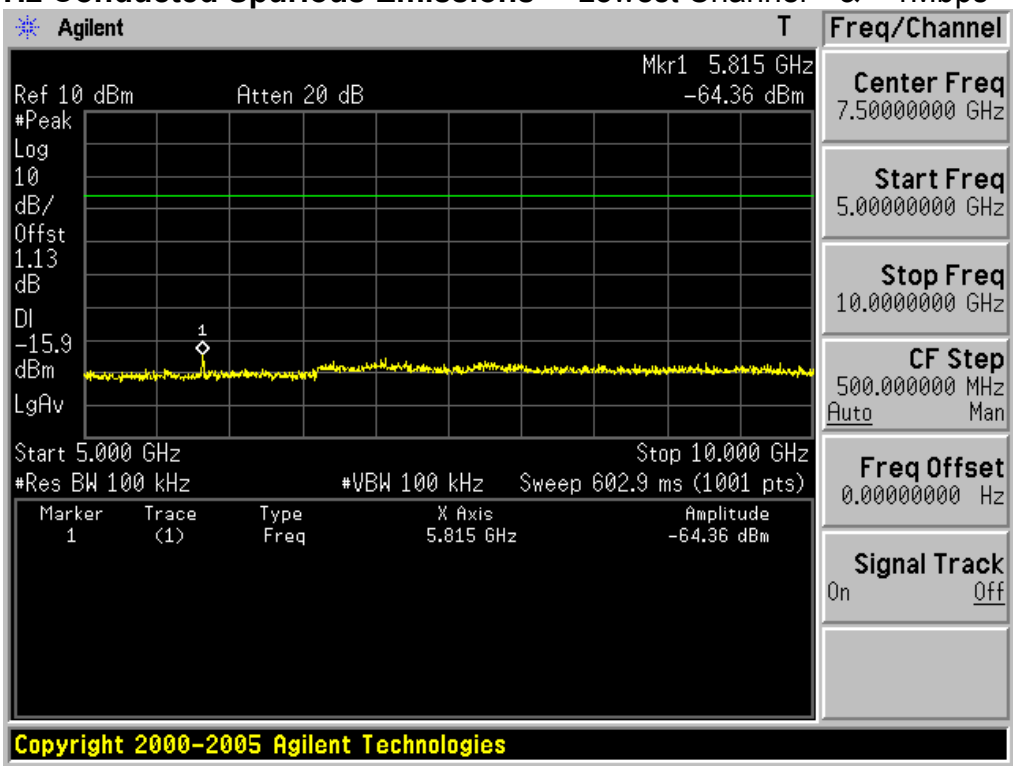

**High Band-edge** Hopping mode: Enable & 1Mbps



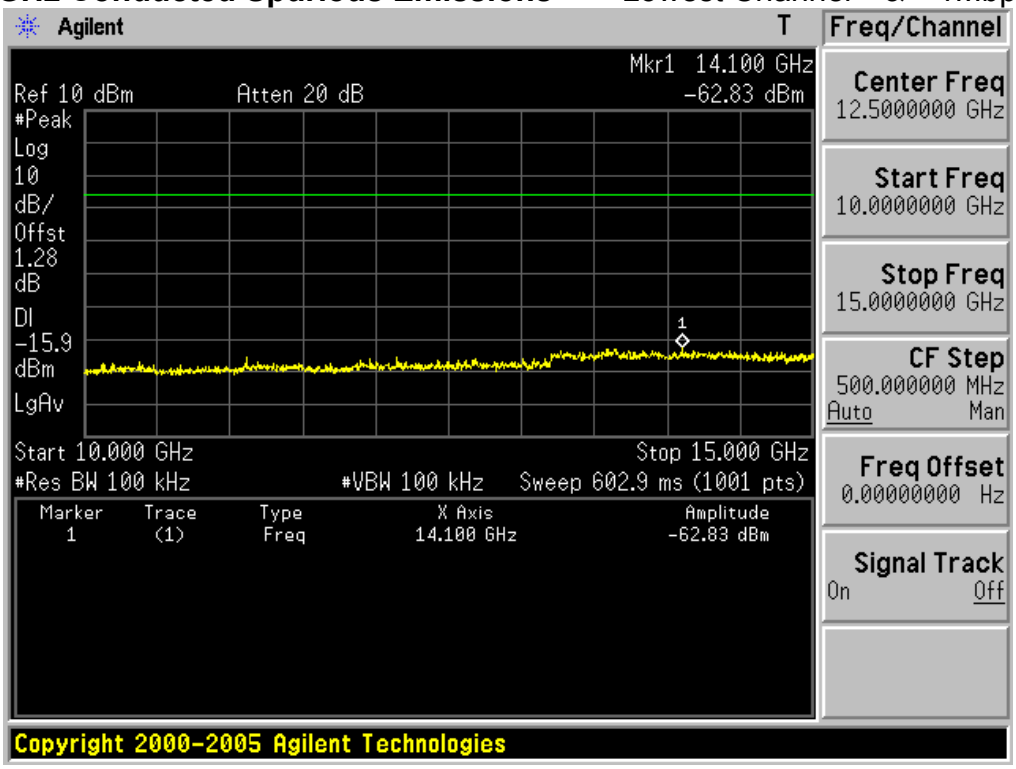
**30MHz ~ 5GHz Conducted Spurious Emissions** Lowest Channel & 1Mbps



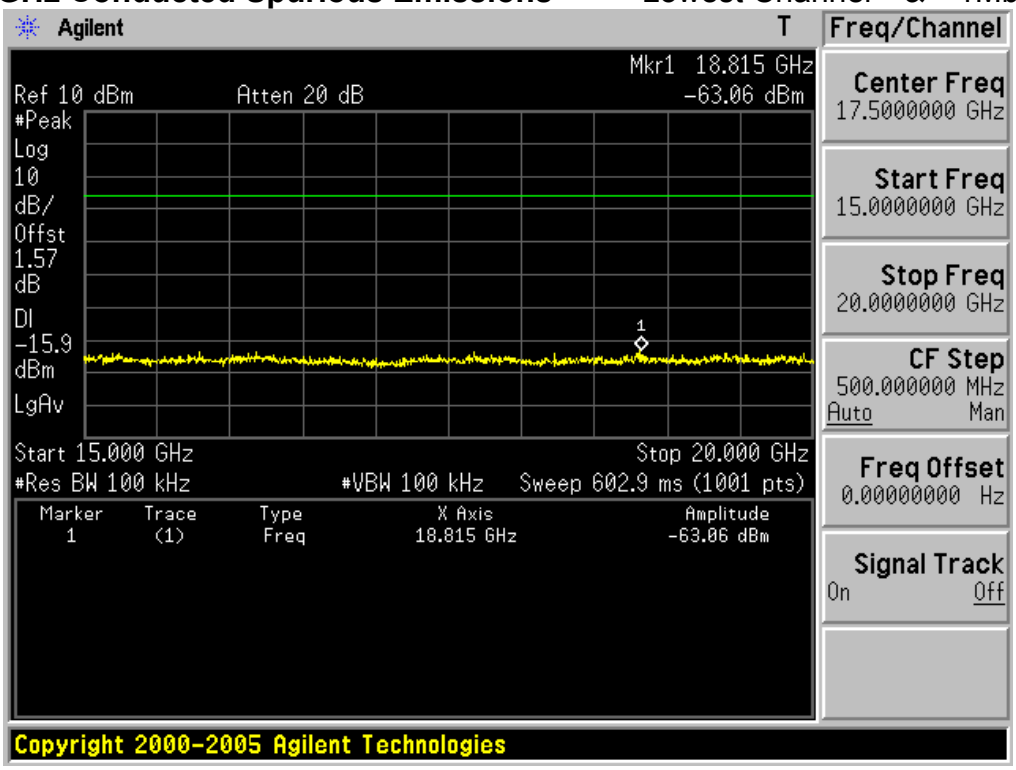

**5GHz ~ 10GHz Conducted Spurious Emissions** Lowest Channel & 1Mbps



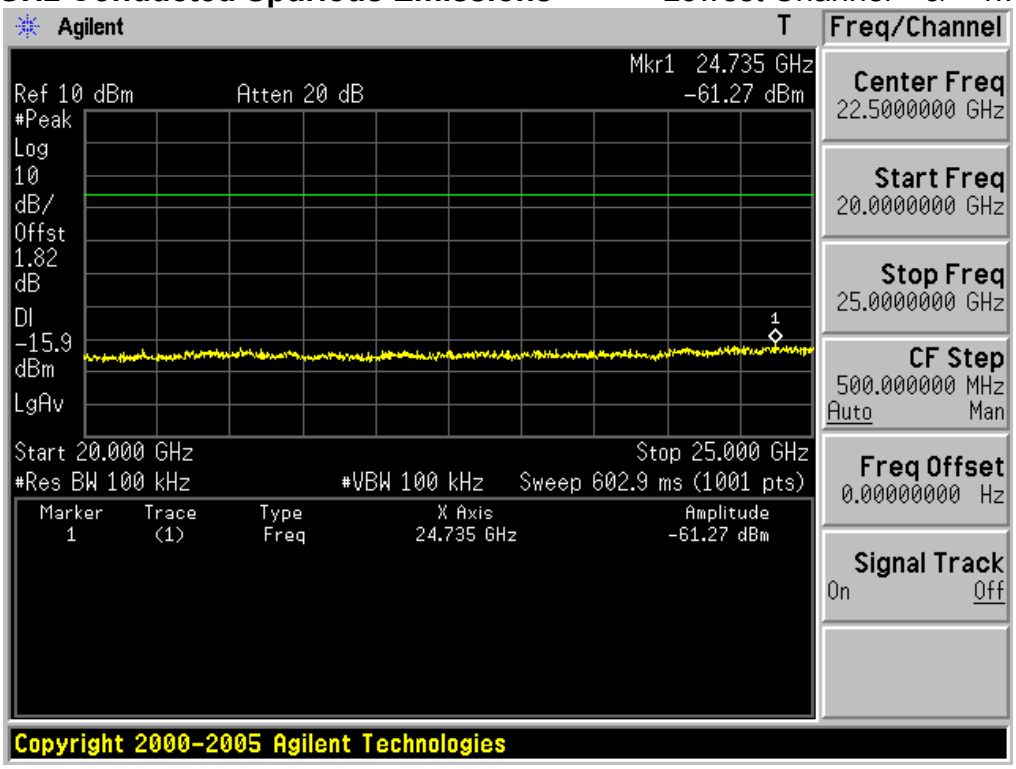
**10GHz ~ 15GHz Conducted Spurious Emissions** Lowest Channel & 1Mbps



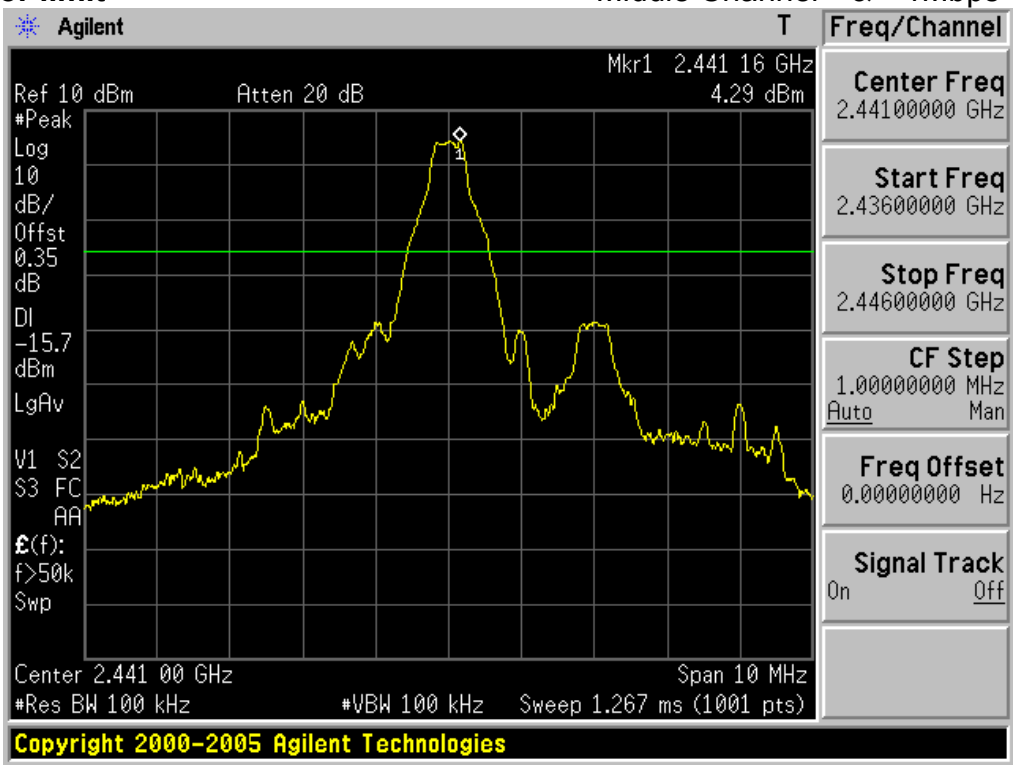

**15GHz ~ 20GHz Conducted Spurious Emissions** Lowest Channel & 1Mbps



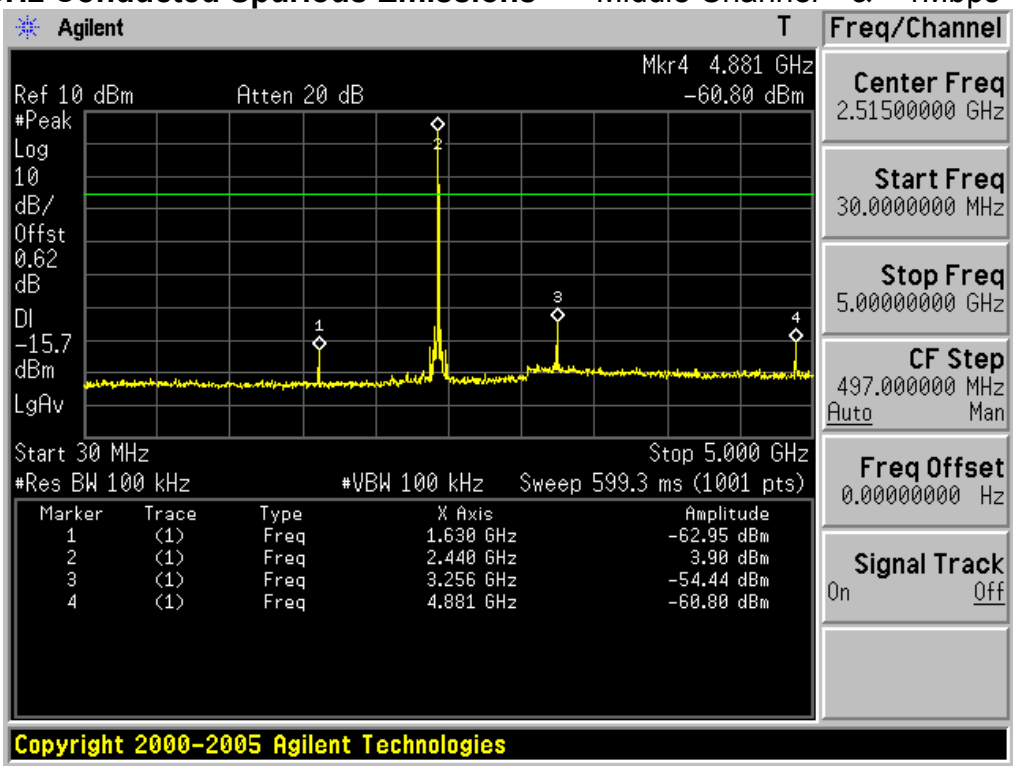
**20GHz ~ 25GHz Conducted Spurious Emissions** Lowest Channel & 1Mbps



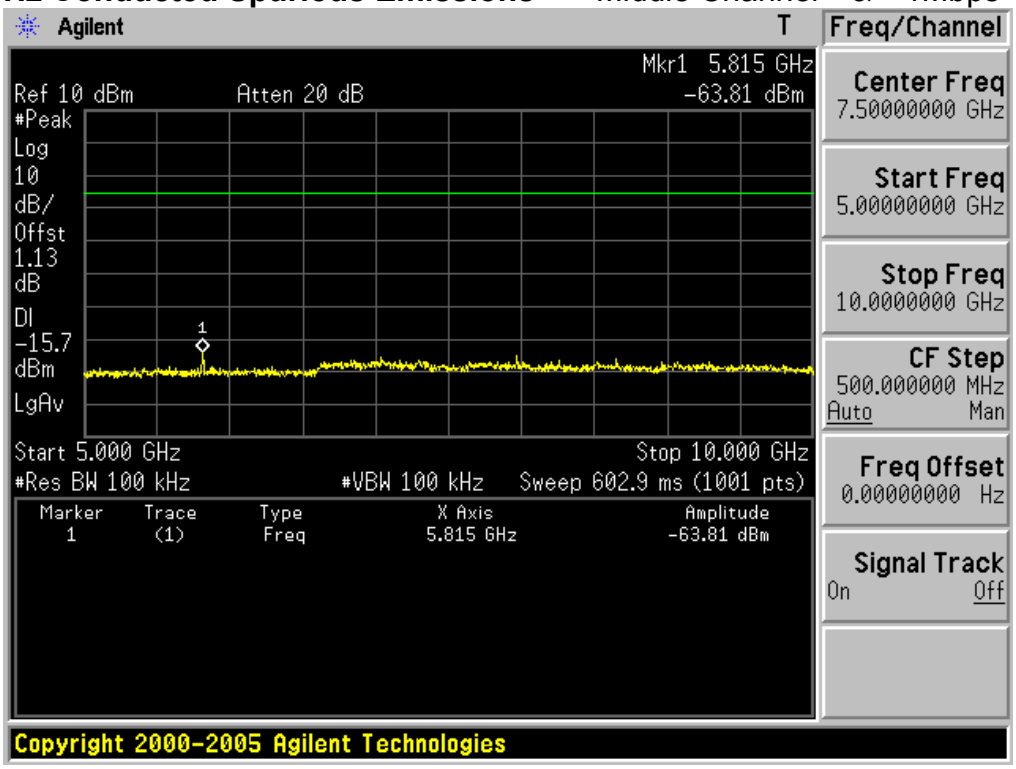
**Reference for limit** Middle Channel & 1Mbps



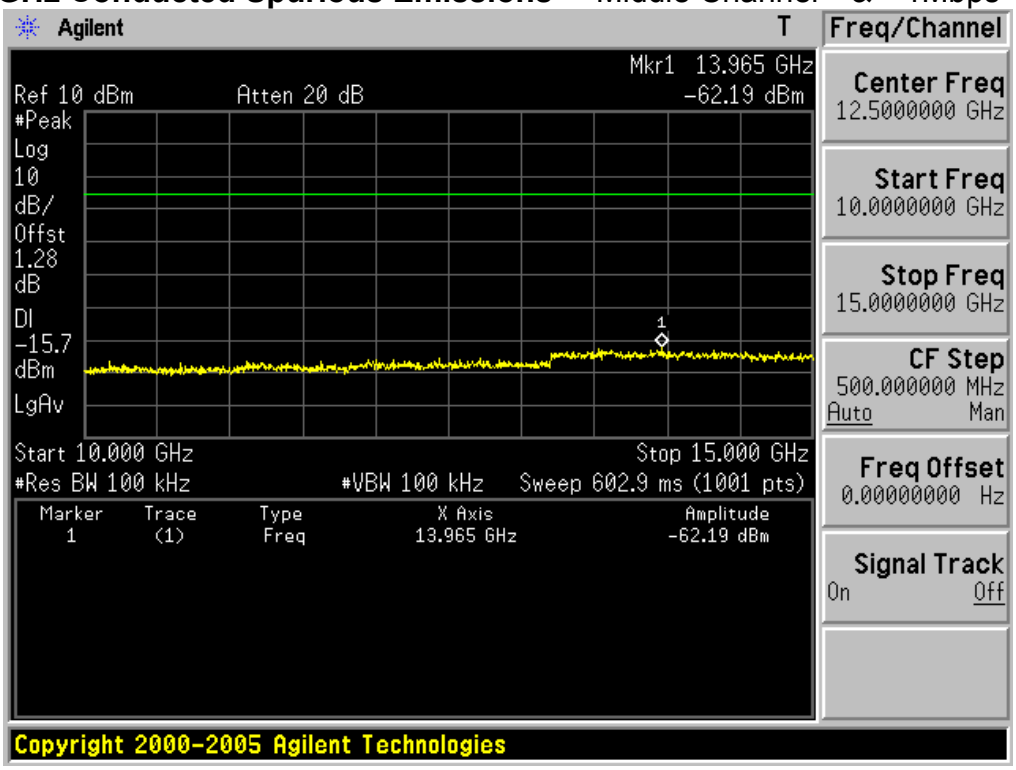

**30MHz ~ 5GHz Conducted Spurious Emissions** Middle Channel & 1Mbps



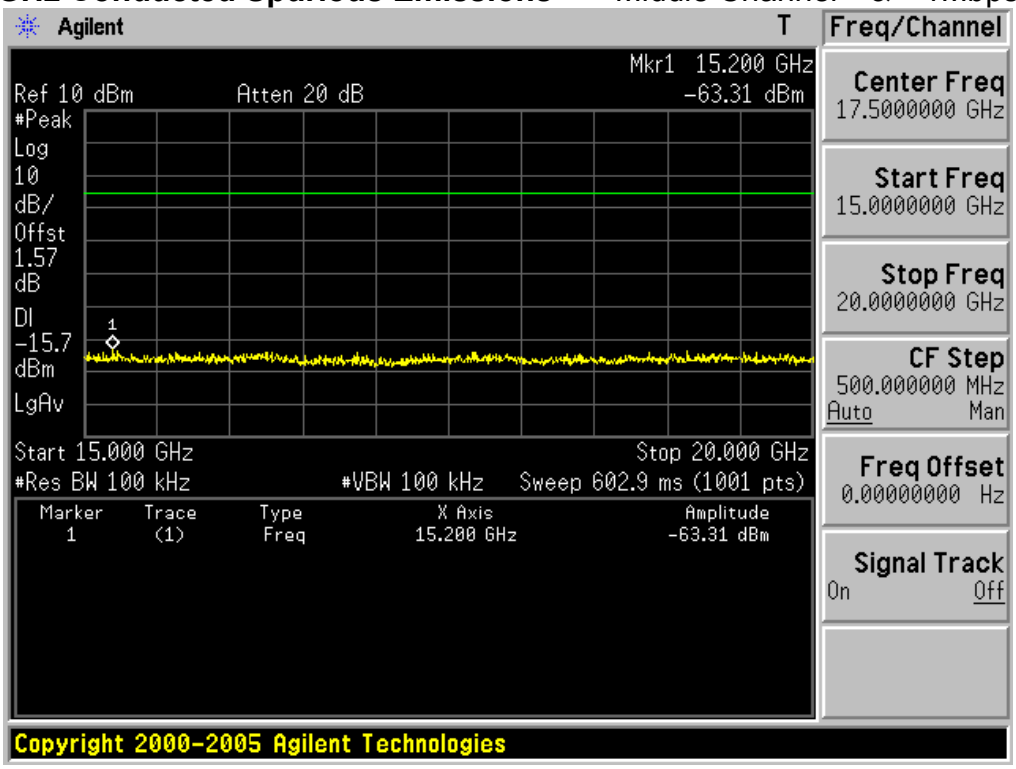
**5GHz ~ 10GHz Conducted Spurious Emissions** Middle Channel & 1Mbps



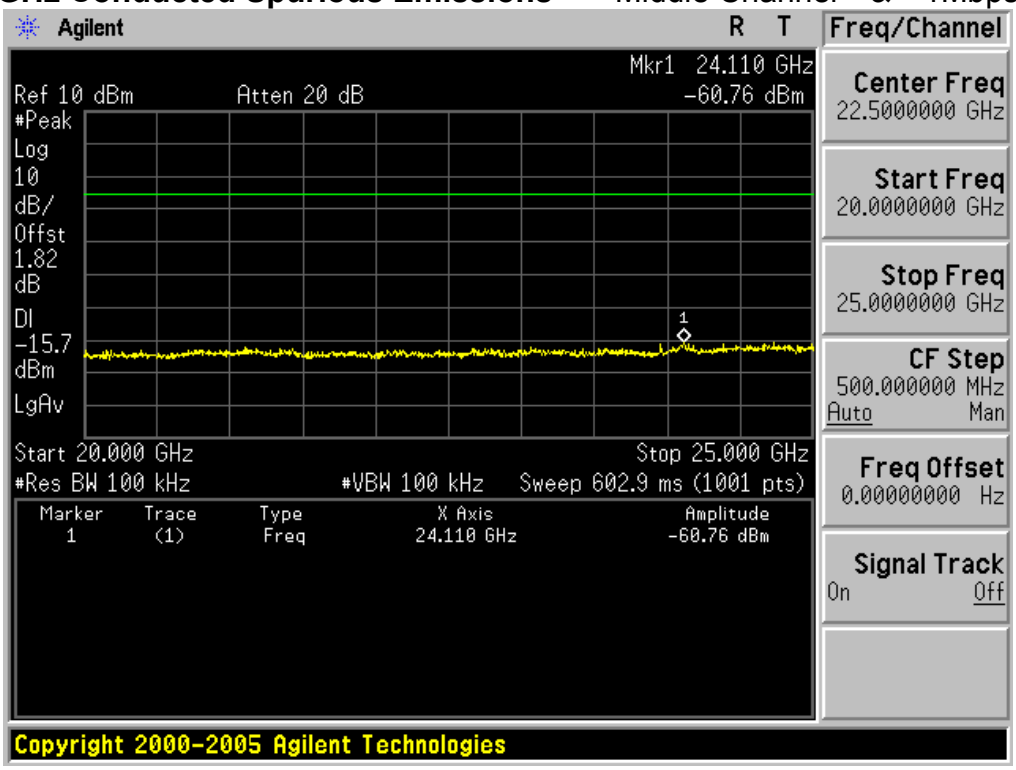

**10GHz ~ 15GHz Conducted Spurious Emissions** Middle Channel & 1Mbps



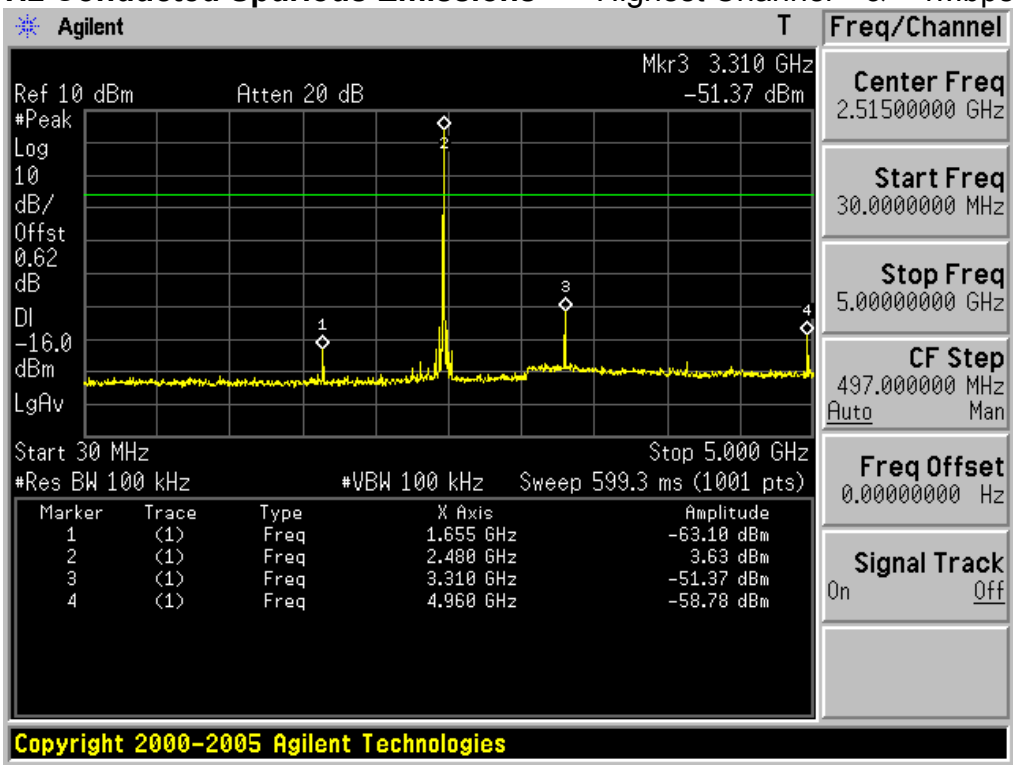
**15GHz ~ 20GHz Conducted Spurious Emissions** Middle Channel & 1Mbps



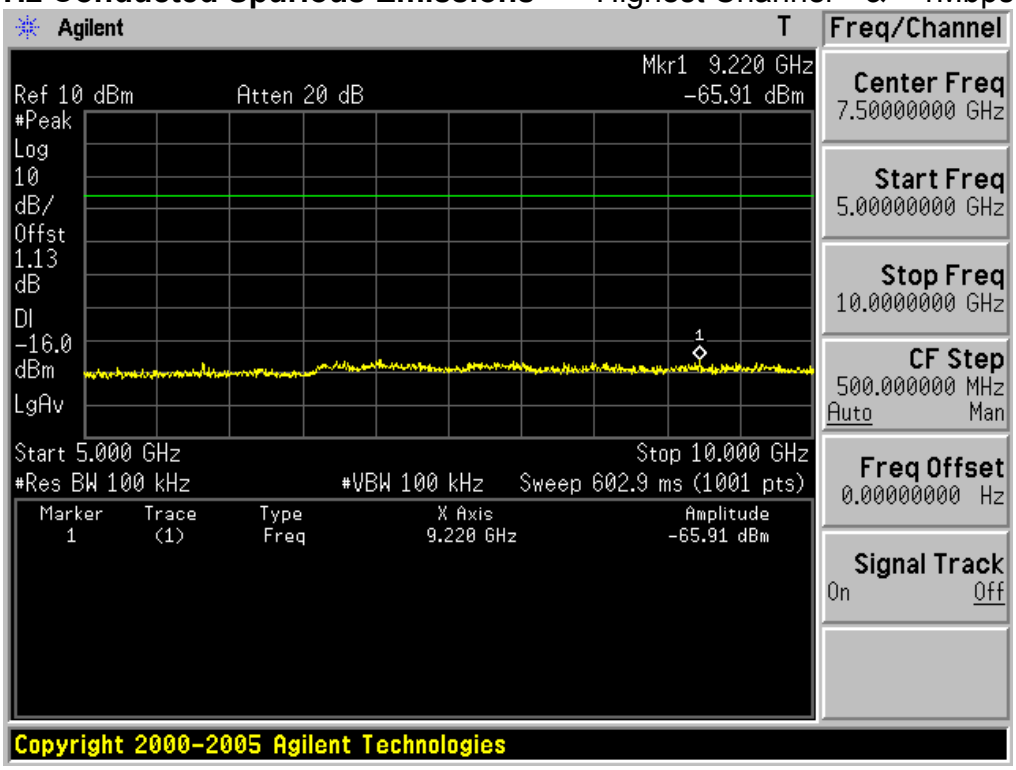

**20GHz ~ 25GHz Conducted Spurious Emissions** Middle Channel & 1Mbps



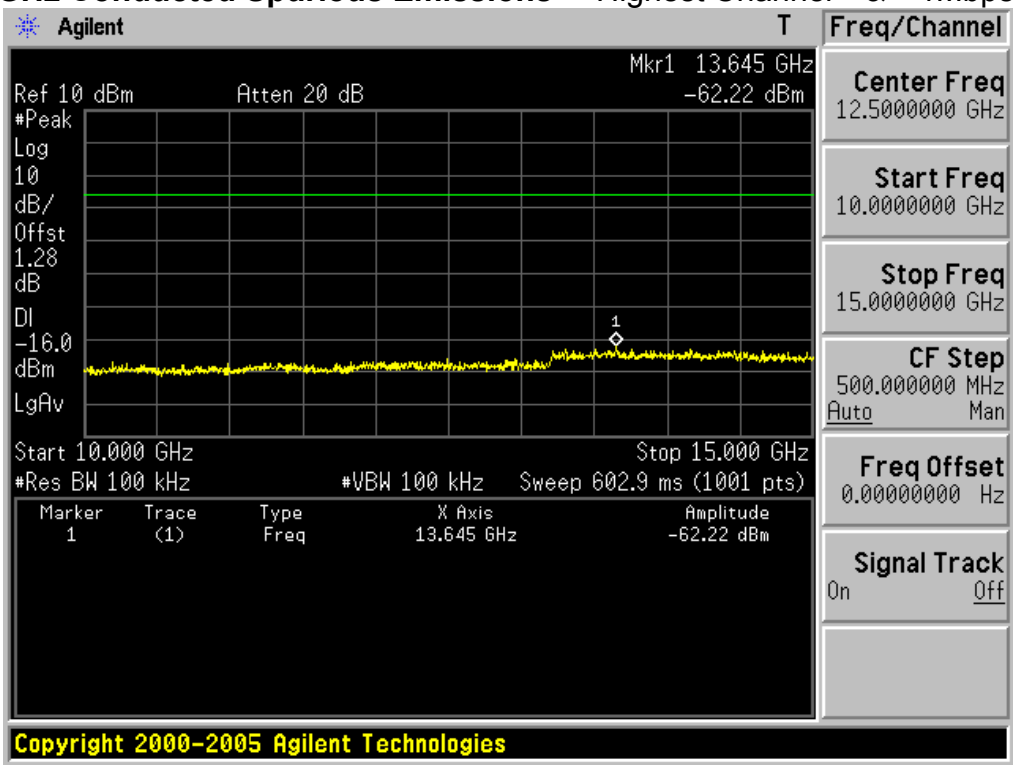
**30MHz ~ 5GHz Conducted Spurious Emissions** Highest Channel & 1Mbps



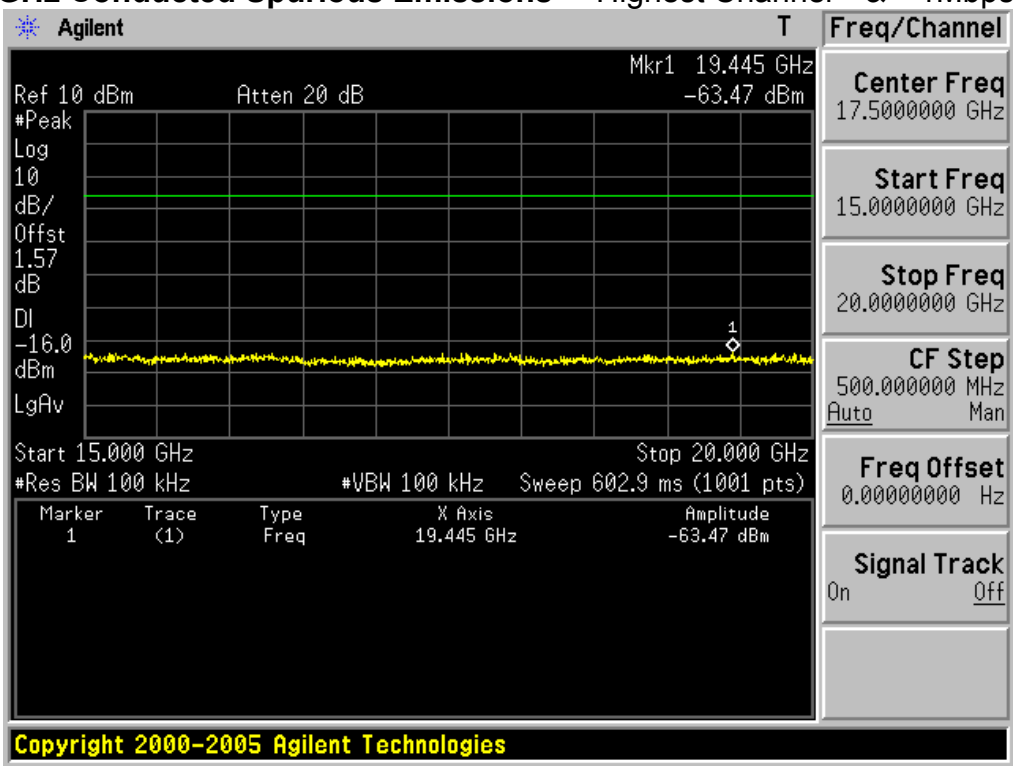

**5GHz ~ 10GHz Conducted Spurious Emissions** Highest Channel & 1Mbps



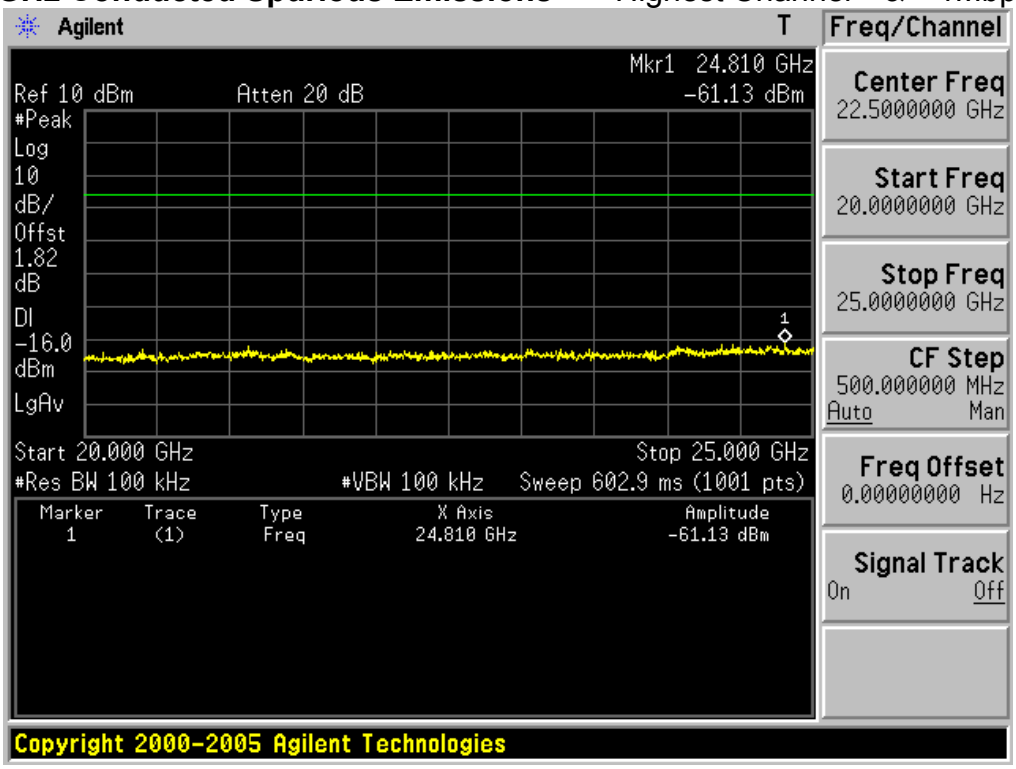
**10GHz ~ 15GHz Conducted Spurious Emissions** Highest Channel & 1Mbps



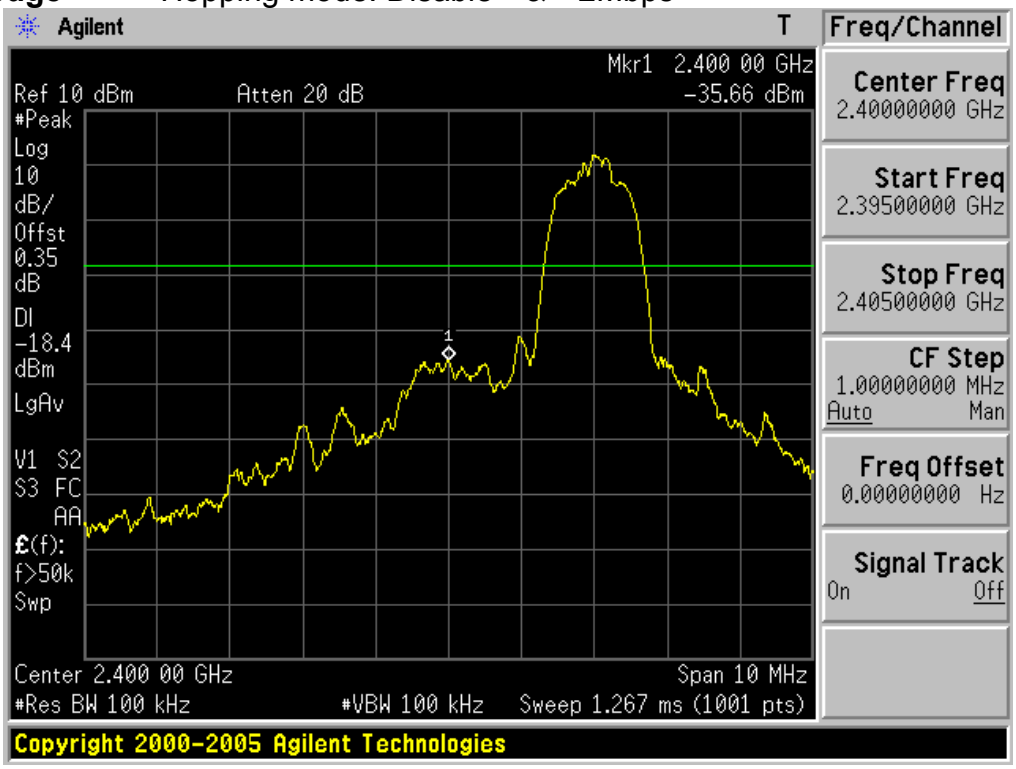

**15GHz ~ 20GHz Conducted Spurious Emissions** Highest Channel & 1Mbps



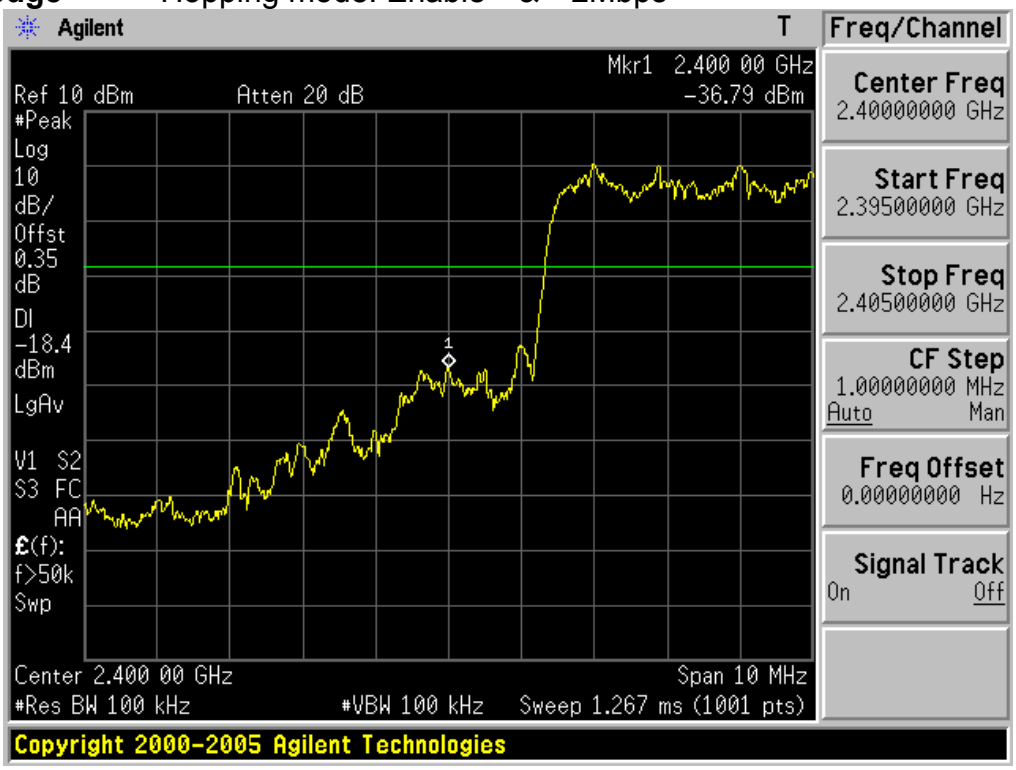
**20GHz ~ 25GHz Conducted Spurious Emissions** Highest Channel & 1Mbps



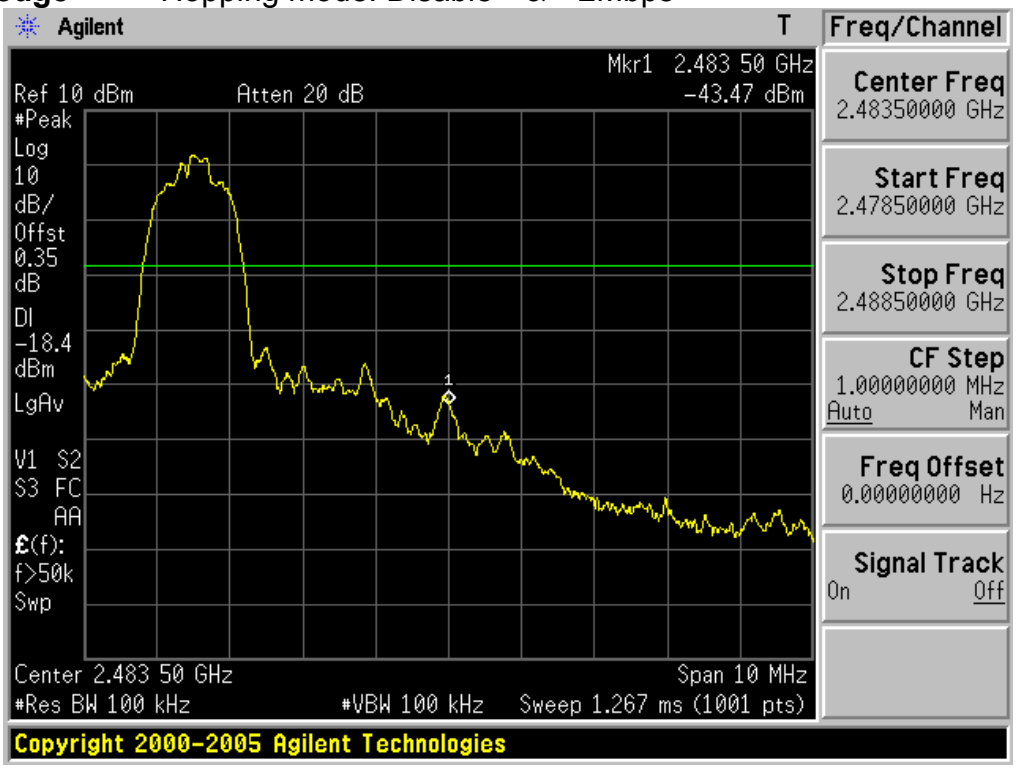
**Low Band-edge** Hopping mode: Disable & 2Mbps



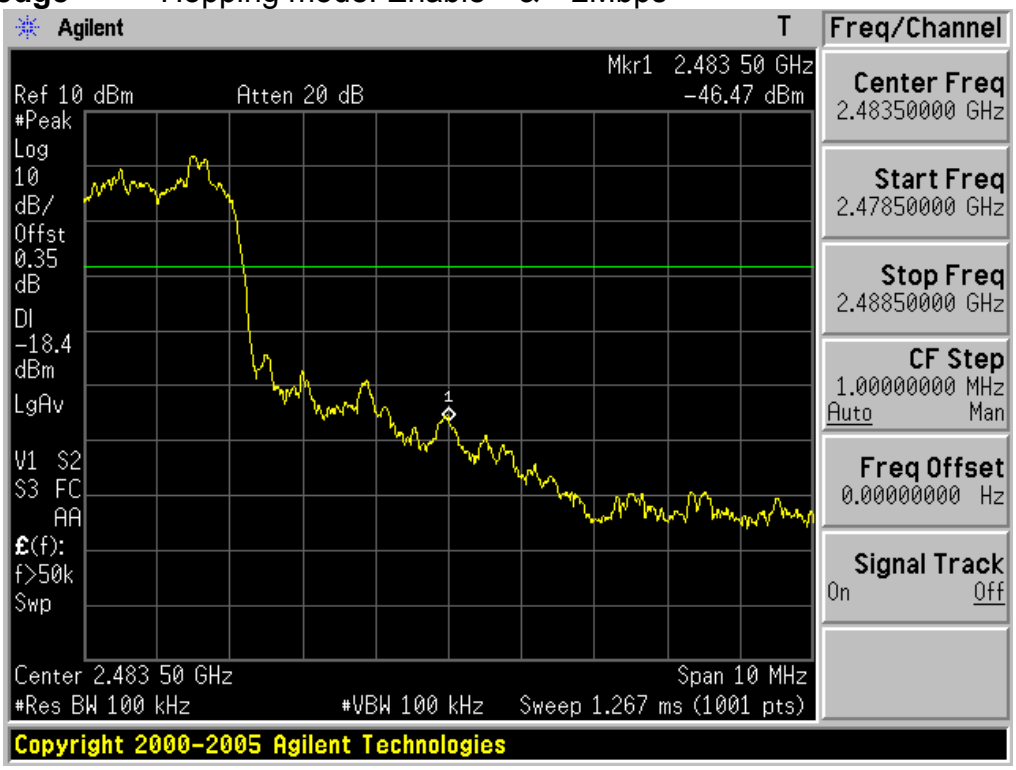

**Low Band-edge** Hopping mode: Enable & 2Mbps



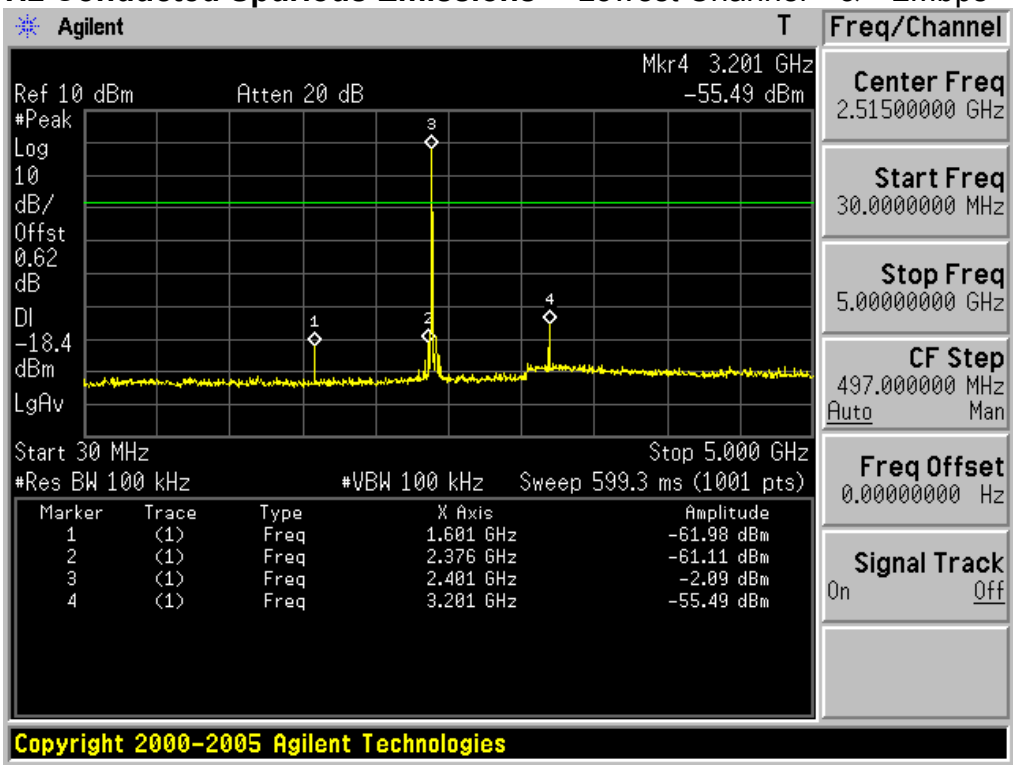
**High Band-edge** Hopping mode: Disable & 2Mbps



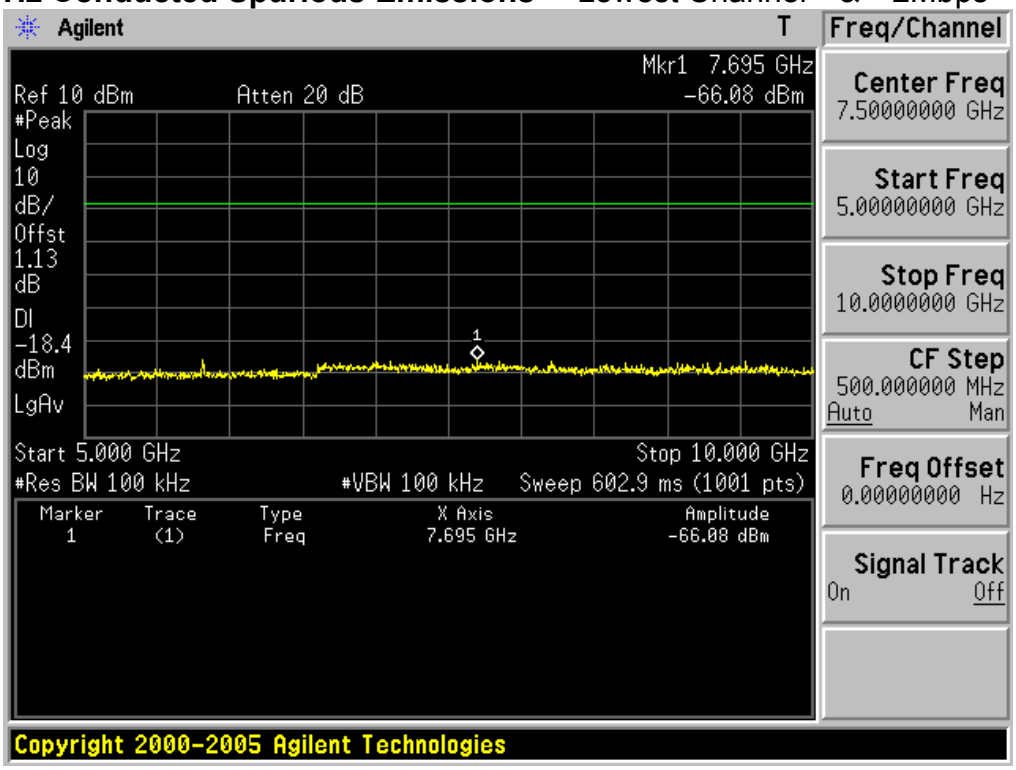

**High Band-edge** Hopping mode: Enable & 2Mbps



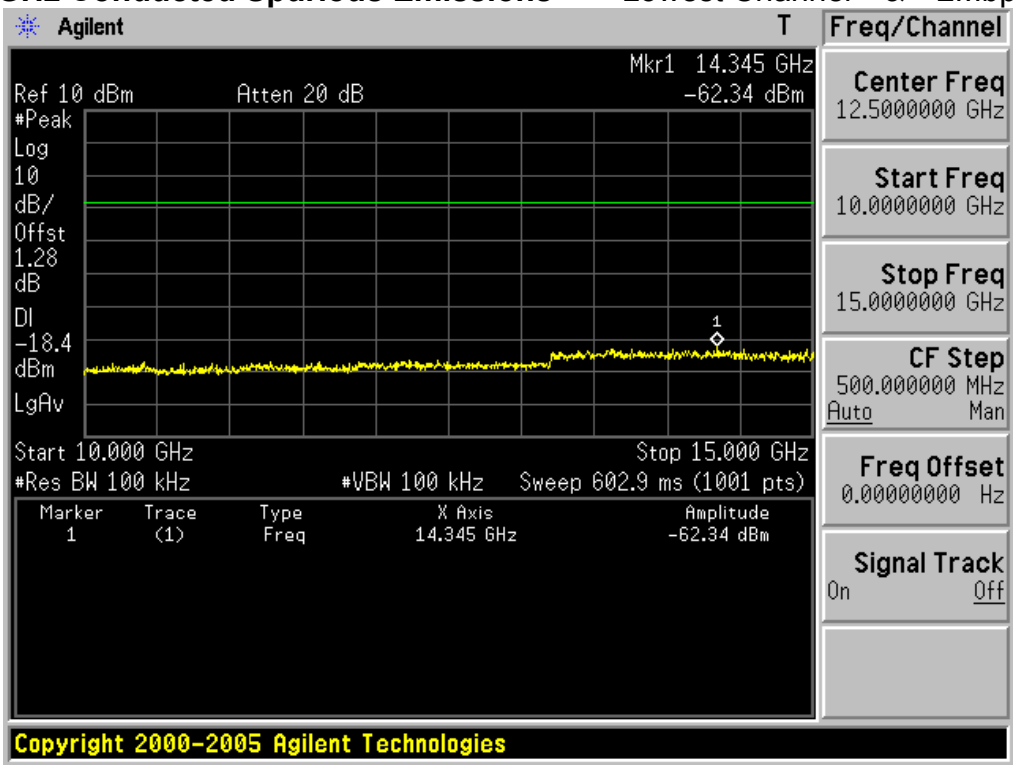
**30MHz ~ 5GHz Conducted Spurious Emissions** Lowest Channel & 2Mbps



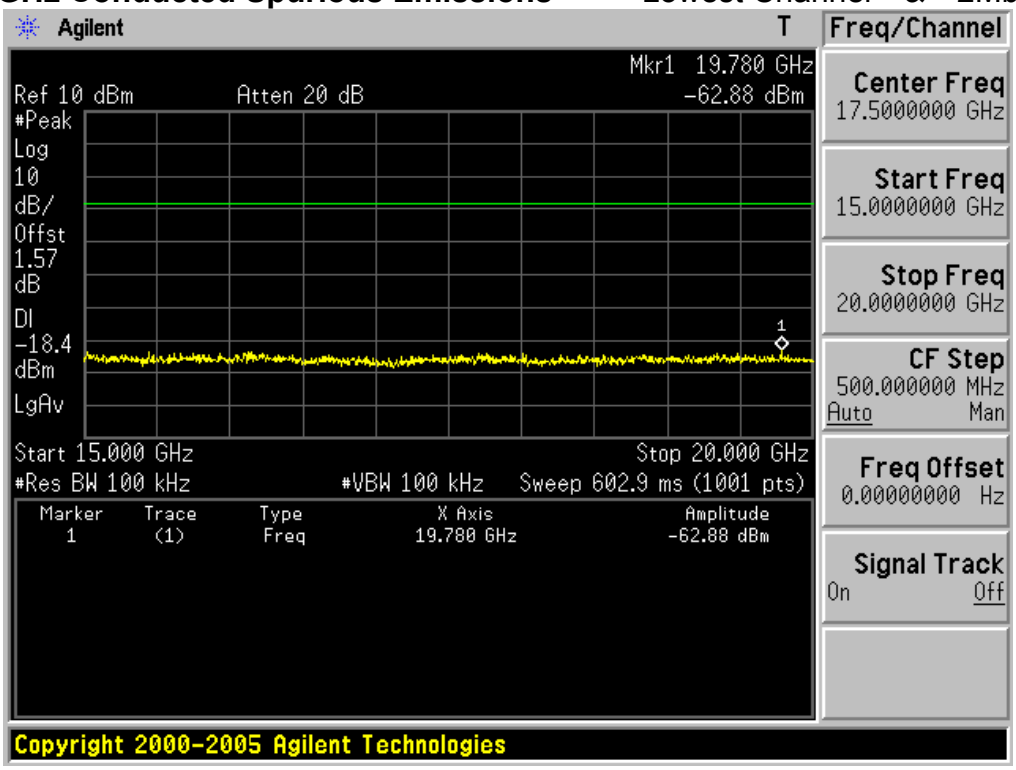

**5GHz ~ 10GHz Conducted Spurious Emissions** Lowest Channel & 2Mbps



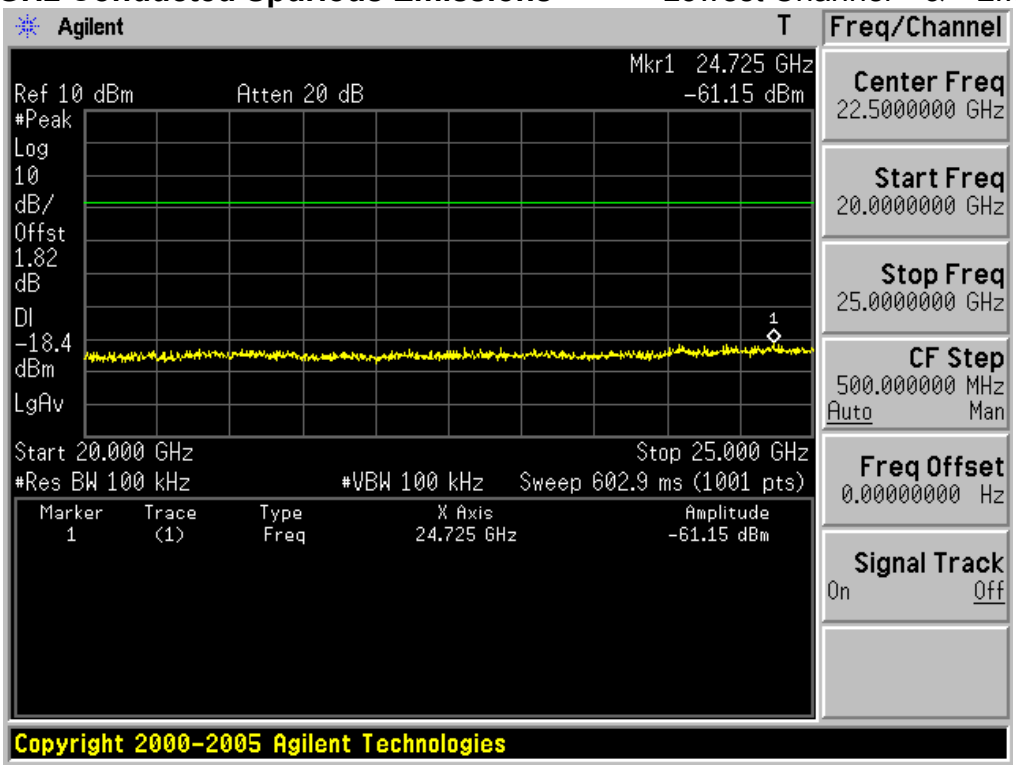
**10GHz ~ 15GHz Conducted Spurious Emissions** Lowest Channel & 2Mbps



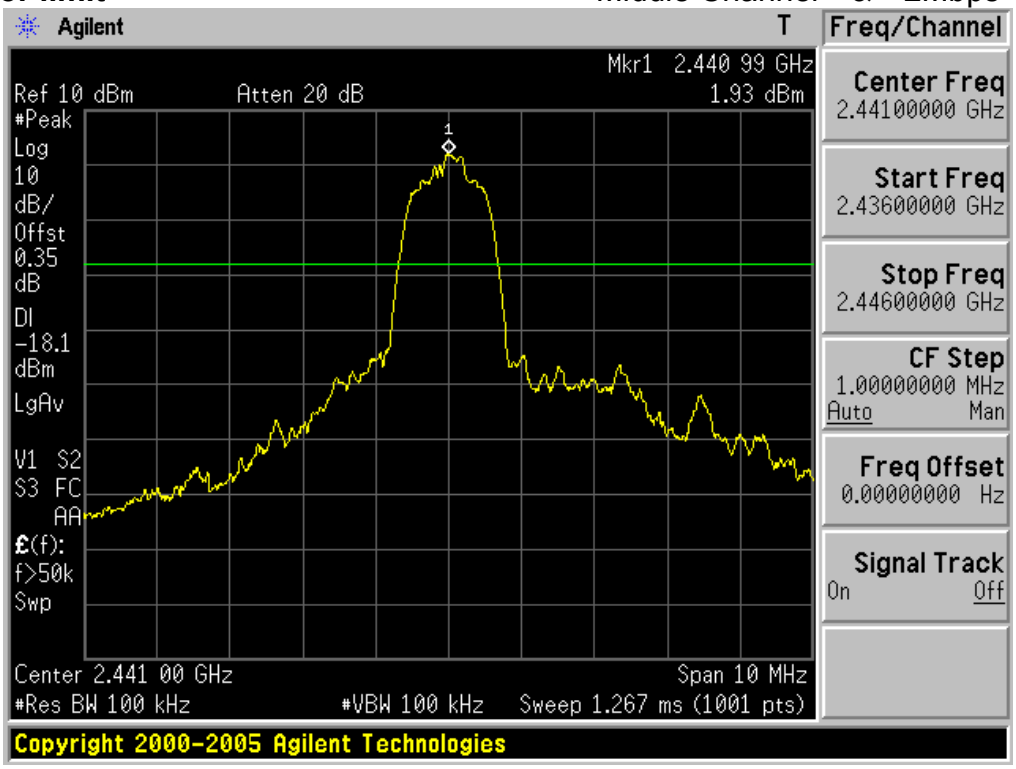

**15GHz ~ 20GHz Conducted Spurious Emissions** Lowest Channel & 2Mbps



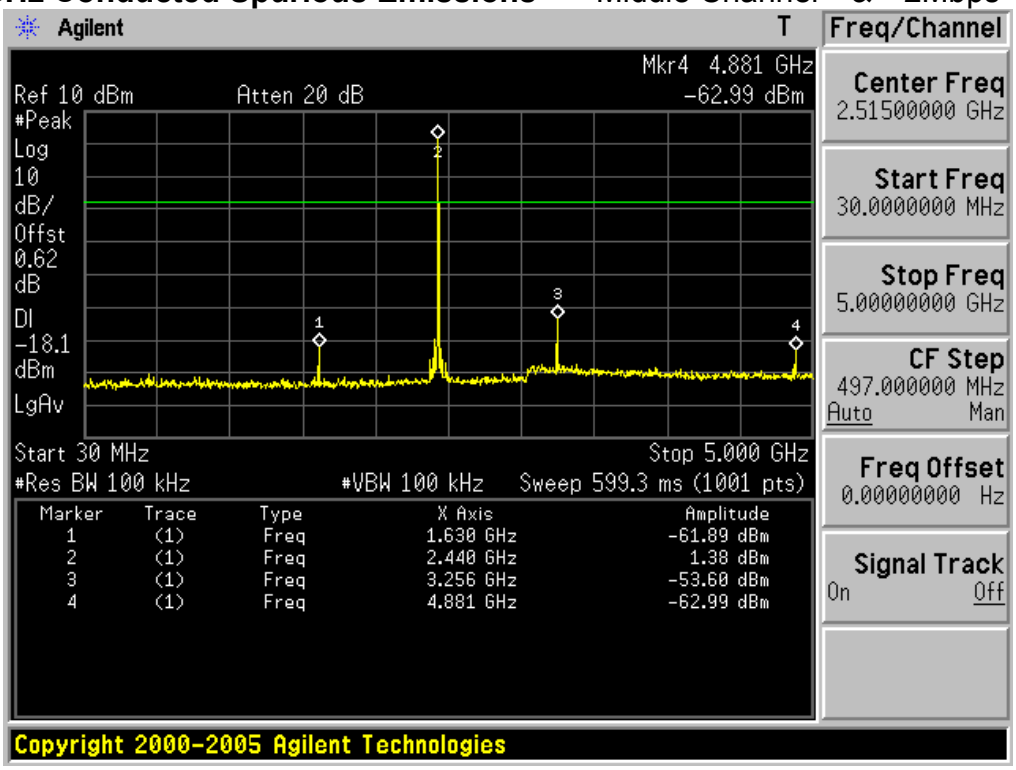
**20GHz ~ 25GHz Conducted Spurious Emissions** Lowest Channel & 2Mbps



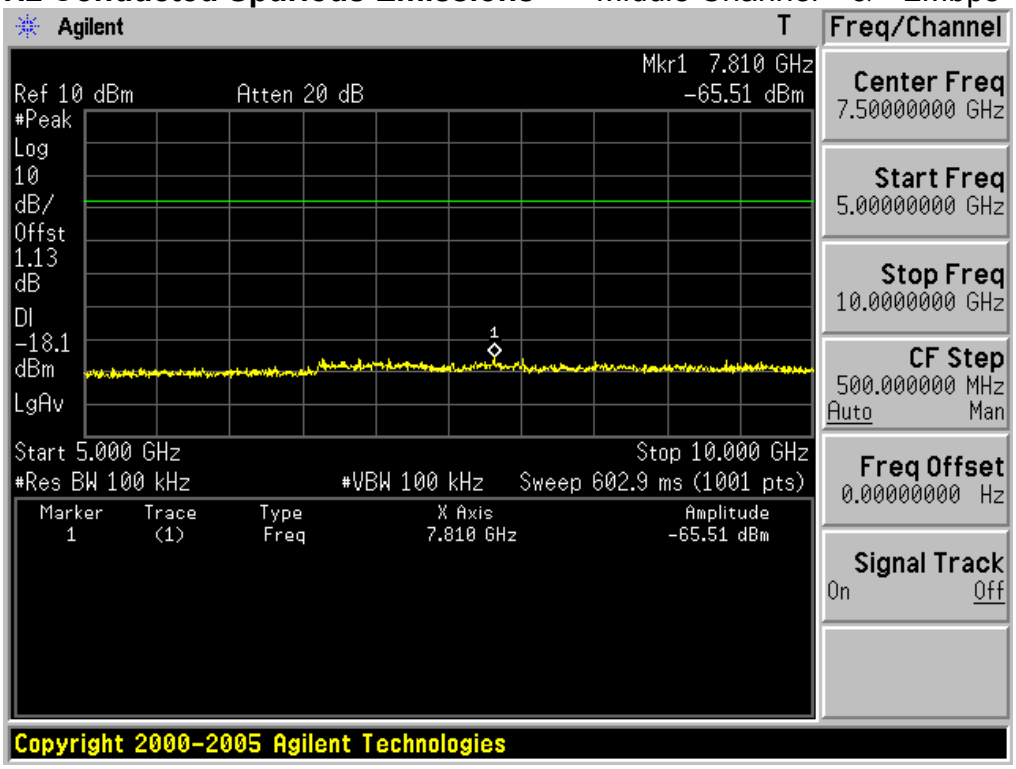
**Reference for limit** Middle Channel & 2Mbps



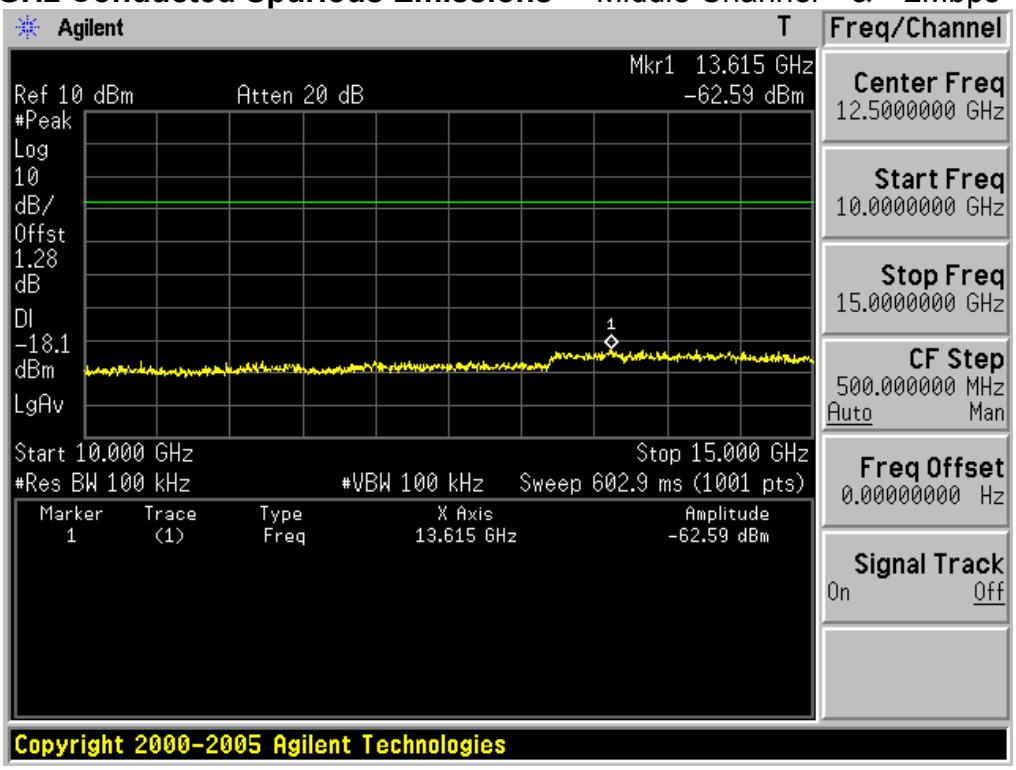

**30MHz ~ 5GHz Conducted Spurious Emissions** Middle Channel & 2Mbps



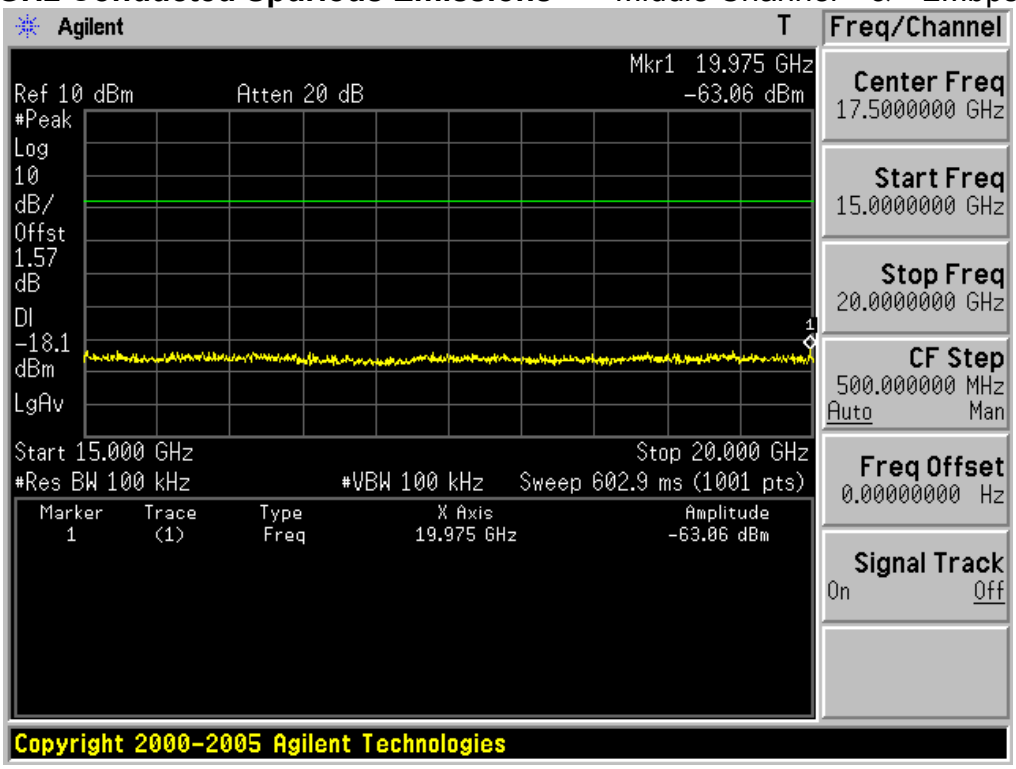
**5GHz ~ 10GHz Conducted Spurious Emissions** Middle Channel & 2Mbps



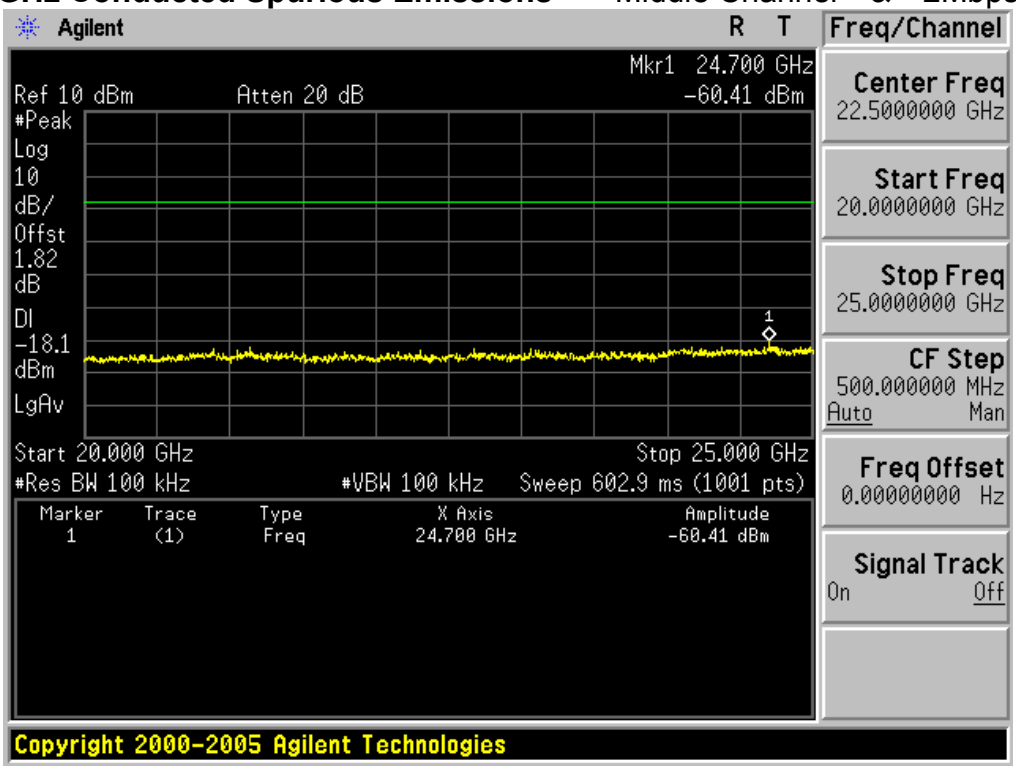

**10GHz ~ 15GHz Conducted Spurious Emissions** Middle Channel & 2Mbps



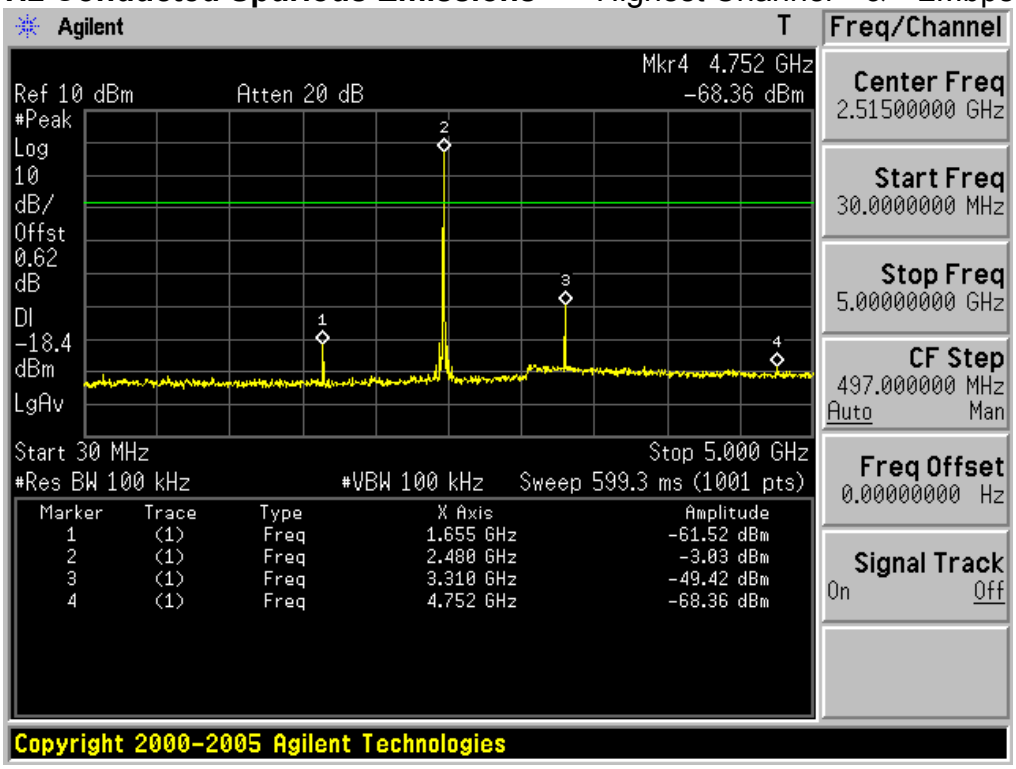
**15GHz ~ 20GHz Conducted Spurious Emissions** Middle Channel & 2Mbps



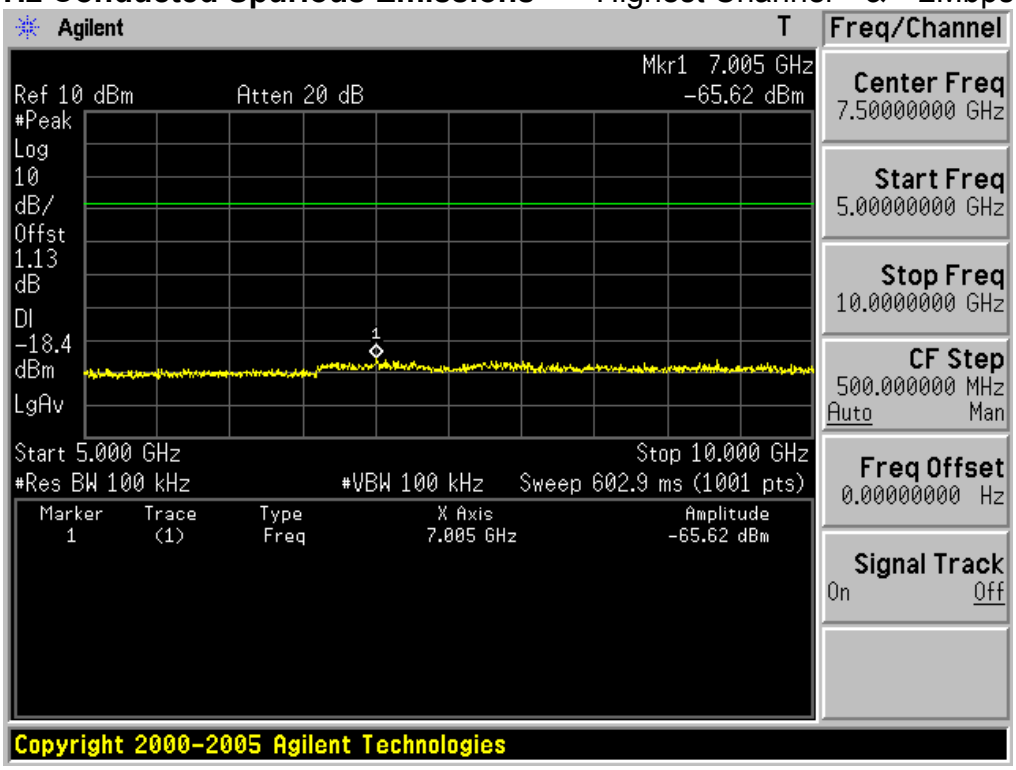

**20GHz ~ 25GHz Conducted Spurious Emissions** Middle Channel & 2Mbps



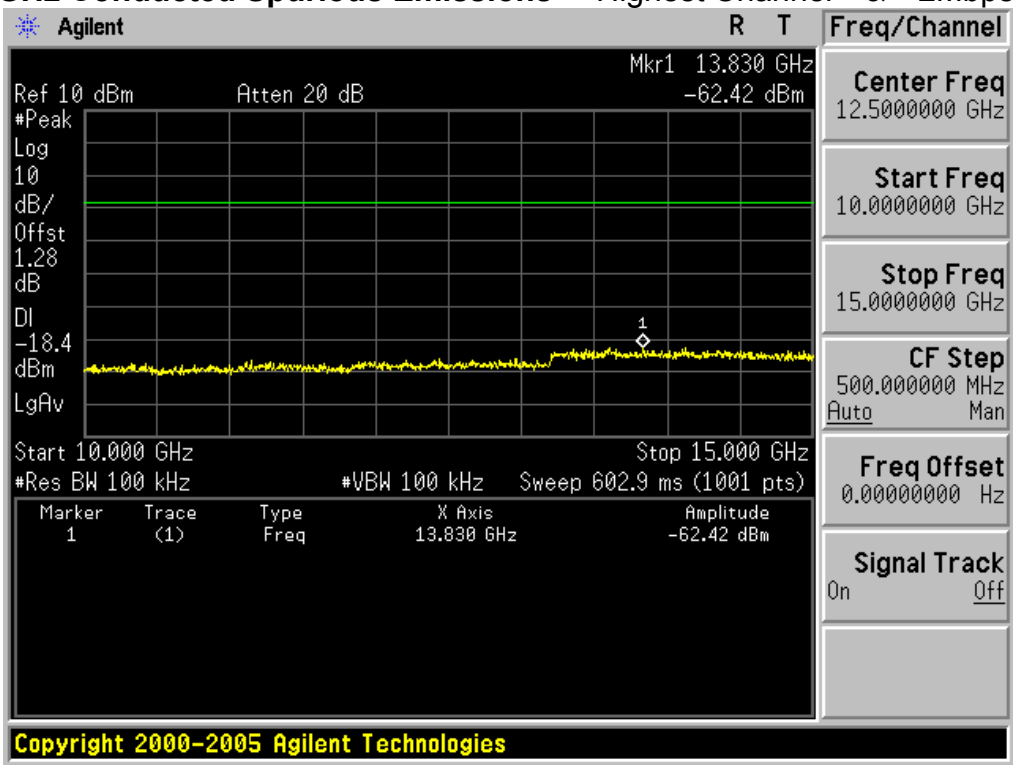
**30MHz ~ 5GHz Conducted Spurious Emissions** Highest Channel & 2Mbps



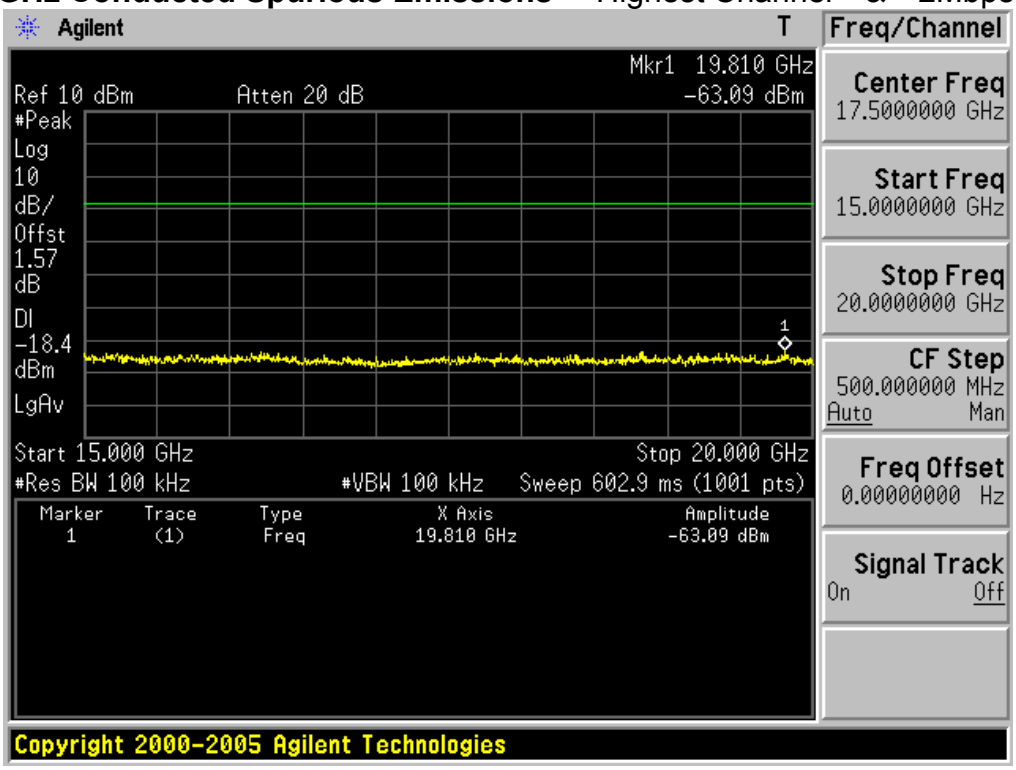

**5GHz ~ 10GHz Conducted Spurious Emissions** Highest Channel & 2Mbps



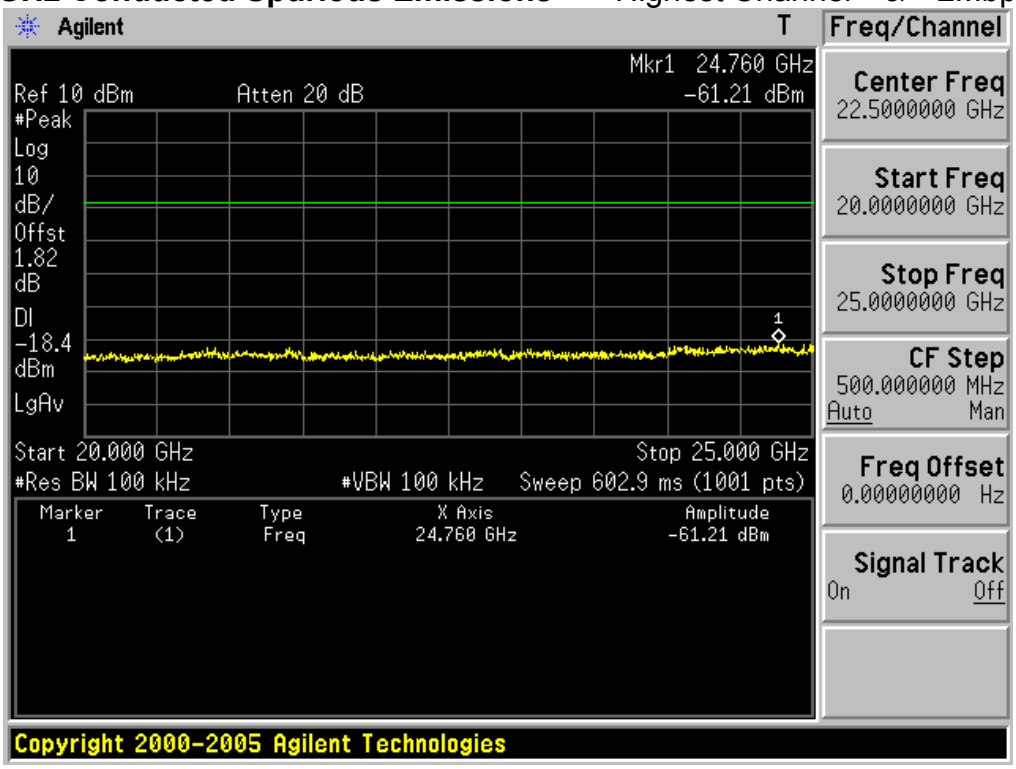
**10GHz ~ 15GHz Conducted Spurious Emissions** Highest Channel & 2Mbps




**15GHz ~ 20GHz Conducted Spurious Emissions** Highest Channel & 2Mbps



**20GHz ~ 25GHz Conducted Spurious Emissions** Highest Channel & 2Mbps



### 3.2.7 Radiated Spurious Emissions

**- Procedure:**

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Tested frequency = Low, Middle, High Frequencies

Frequency Range = 30 MHz ~ 10th harmonic.

RBW and VBW = 1. Frequency range: 30MHz ~ 1GHz
RBW = 120KHz / VBW = ≥ RBW
2. Frequency range: 1GHz ~ 10$^{th}$ harmonics
Peak mode: RBW = 1MHz / VBW = ≥ RBW
Average mode: RBW = 1MHz / VBW = 10Hz

Detector function = Peak Sweep = auto

Trace = max hold

**- Measurement Data: Comply**

Note 1: See next pages for actual measured spectrum plots and data.

**- Minimum Standard:**

**▪ FCC Part 15.209(a) and (b)**

| Frequency (MHz) | Limit (uV/m) @ 3m |
|---|---|
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

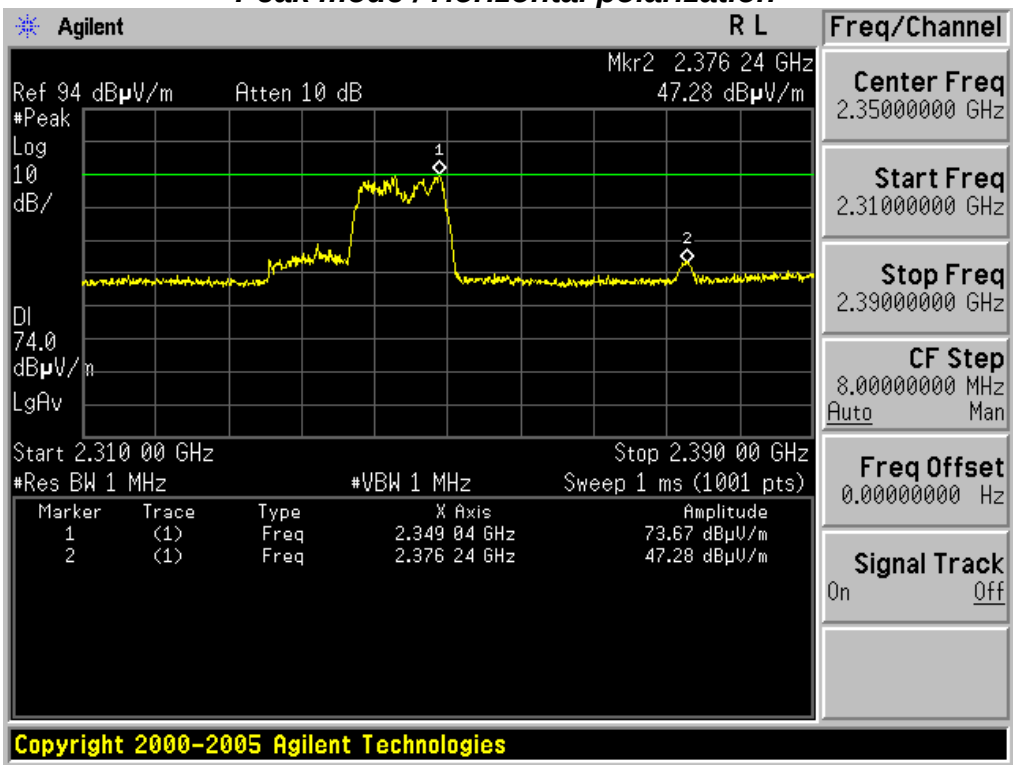
**▪ FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | MHz | GHz | GHz |
|---|---|---|---|---|---|
| 0.009 ~ 0.110 | 8.41425 ~ 8.41475 | 108 ~ 121.94 | 1300 ~ 1427 | 3600 ~ 4400 | 14.47 ~ 14.5 |
| 0.495 ~ 0.505 | 12.29 ~ 12.293 | 123 ~ 138 | 1435 ~ 1626.5 | 4.5 ~ 5.15 | 15.35 ~ 16.2 |
| 2.1735 ~ 2.1905 | 12.51975 ~ 12.52025 | 149.9 ~ 150.05 | 1645.5 ~ 1646.5 | 5.35 ~ 5.46 | 17.7 ~ 21.4 |
| 4.125 ~ 4.128 | 12.57675 ~ 12.57725 | 156.52475 ~ 156.52525 | 1660 ~ 1710 | 7.25 ~ 7.75 | 22.01 ~ 23.12 |
| 4.17725 ~ 4.17775 | 13.36 ~ 13.41 | 156.7 ~ 156.9 | 1718.8 ~ 1722.2 | 8.025 ~ 8.5 | 23.6 ~ 24.0 |
| 4.20725 ~ 4.20775 | 16.42 ~ 16.423 | 162.0125 ~ 167.17 | 2200 ~ 2300 | 9.0 ~ 9.2 | 31.2 ~ 31.8 |
| 6.215 ~ 6.218 | 16.69475 ~ 16.69525 | 167.72 ~ 173.2 | 2310 ~ 2390 | 9.3 ~ 9.5 | 36.43 ~ 36.5 |
| 6.26775 ~ 6.26825 | 16.80425 ~ 16.80475 | 240 ~ 285 | 2483.5 ~ 2500 | 10.6 ~ 12.7 | Above 38.6 |
| 6.31175 ~ 6.31225 | 25.5 ~ 25.67 | 322 ~ 335.4 | 2655 ~ 2900 | 13.25 ~ 13.4 | |
| 8.291 ~ 8.294 | 37.5 ~ 38.25 | 399.90 ~ 410 | 3260 ~ 3267 | | |
| 8.362 ~ 8.366 | 73 ~ 74.6 | 608 ~ 614 | 3332 ~ 3339 | | |
| 8.37625 ~ 8.38675 | 74.8 ~ 75.2 | 960 ~ 1240 | 3345.8 ~ 3358 | | |

**▪ FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

**Restricted Band Edge** Lowest Channel & 1Mbps & The worst case EUT Position: Z-axis

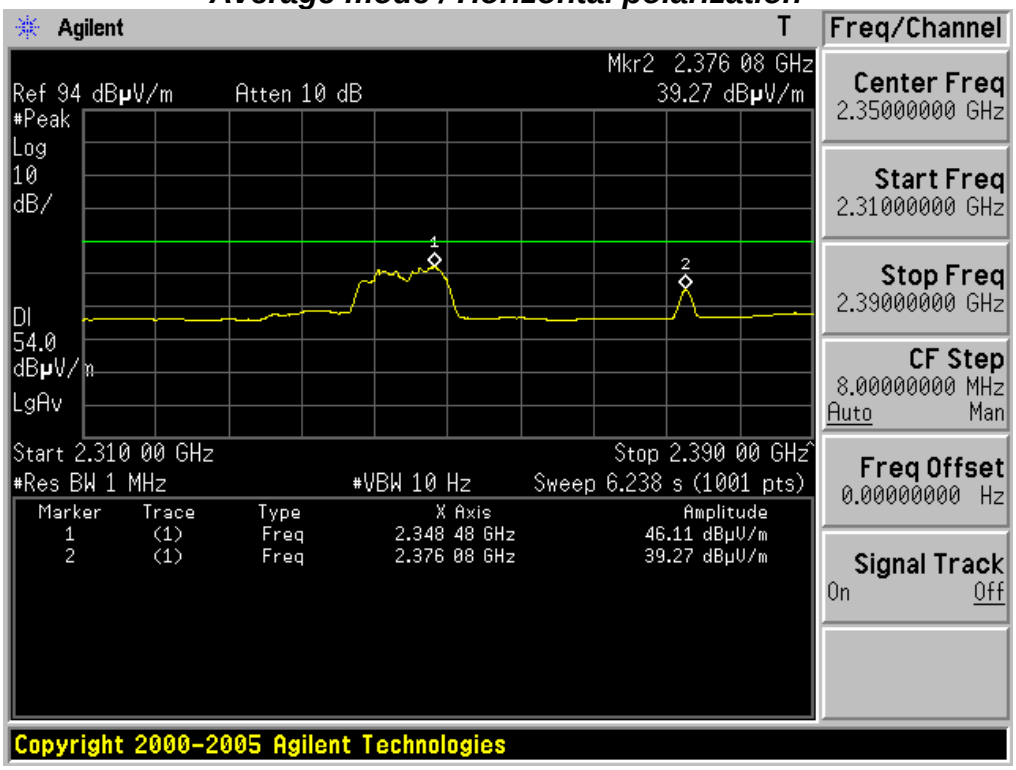
***Peak mode / Horizontal polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 1Mbps & The worst case EUT Position: Z-axis

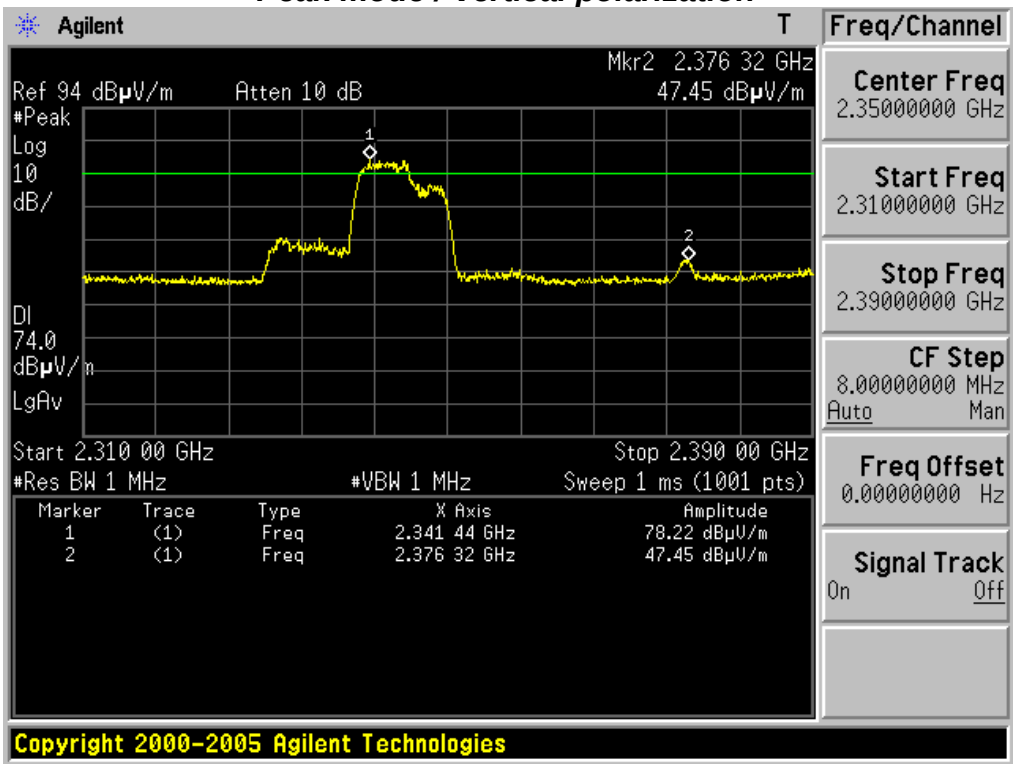
***Average mode / Horizontal polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 1Mbps & The worst case EUT Position: Y-axis

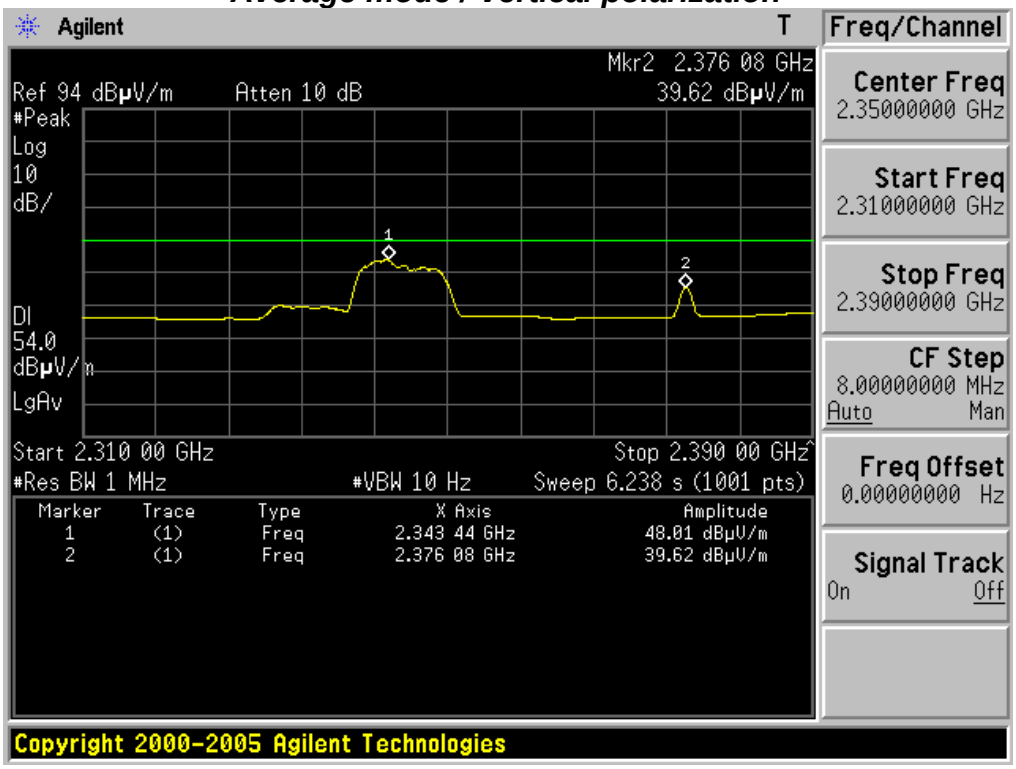
***Peak mode / Vertical polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 1Mbps & The worst case EUT Position: Y-axis

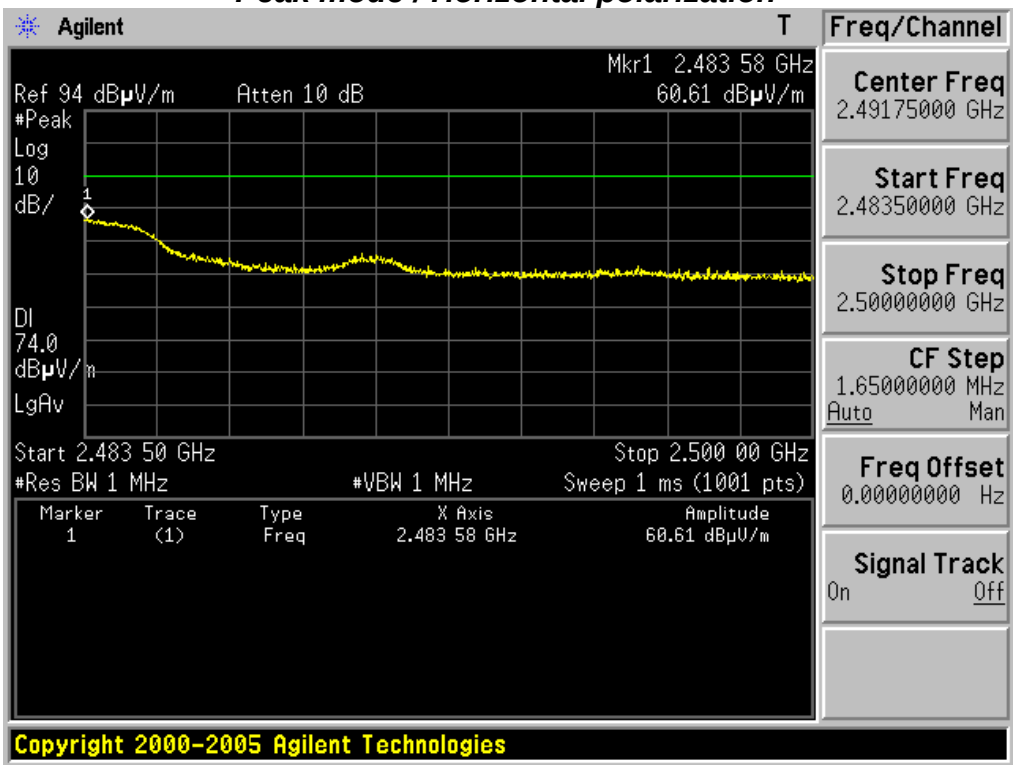
***Average mode / Vertical polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

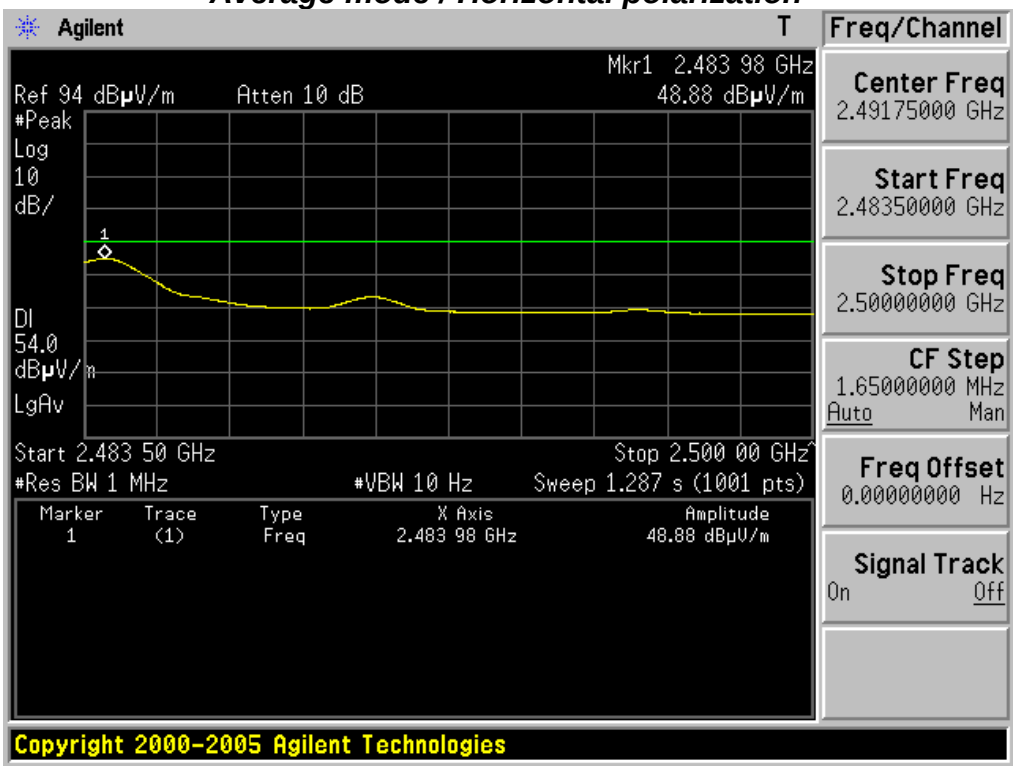
**Restricted Band Edge** Highest Channel & 1Mbps & The worst case EUT Position: X-axis

***Peak mode / Horizontal polarization***



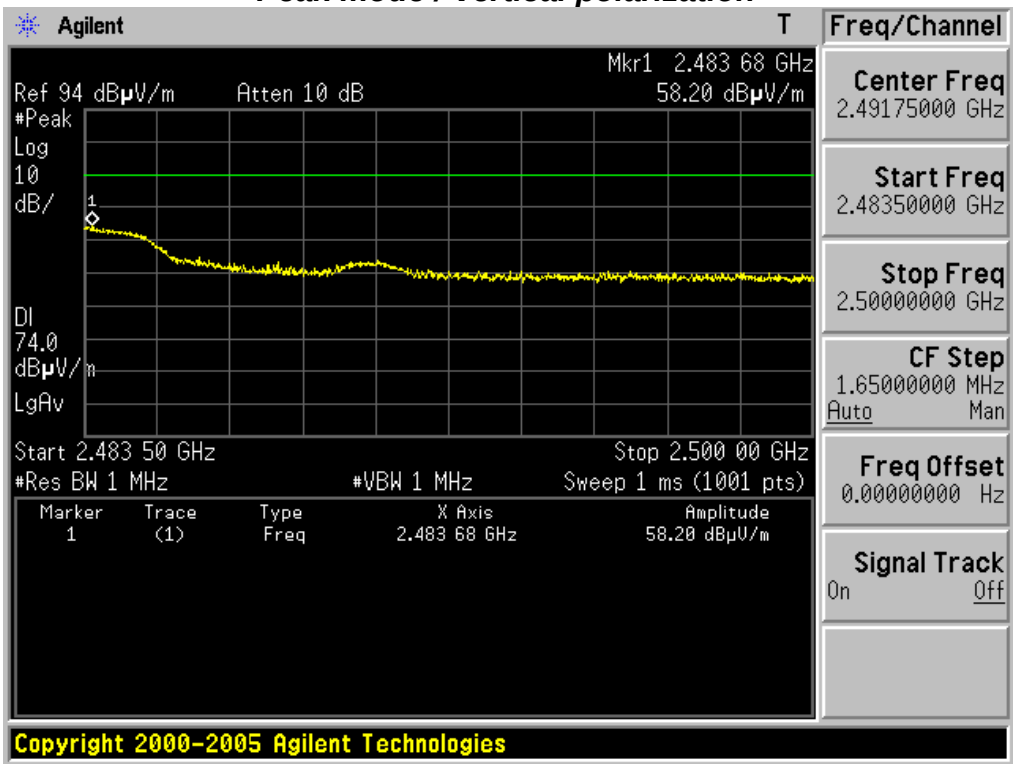

**Restricted Band Edge** Highest Channel & 1Mbps & The worst case EUT Position: X-axis

***Average mode / Horizontal polarization***



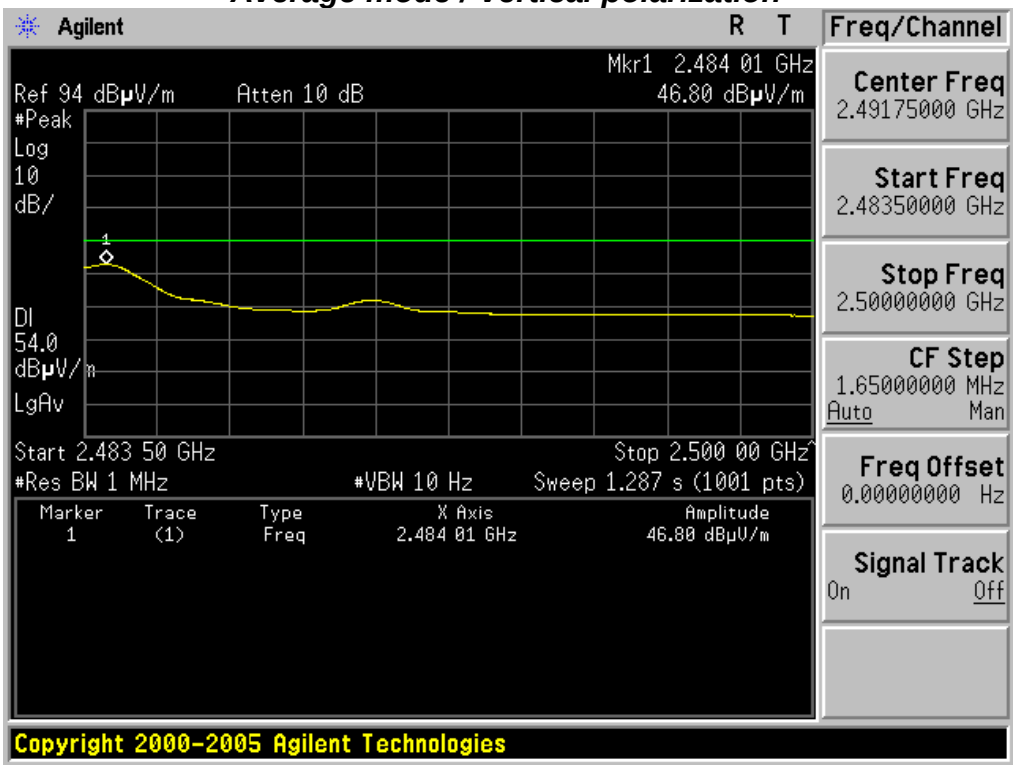
**Restricted Band Edge** Highest Channel & 1Mbps & The worst case EUT Position: Y-axis

***Peak mode / Vertical polarization***



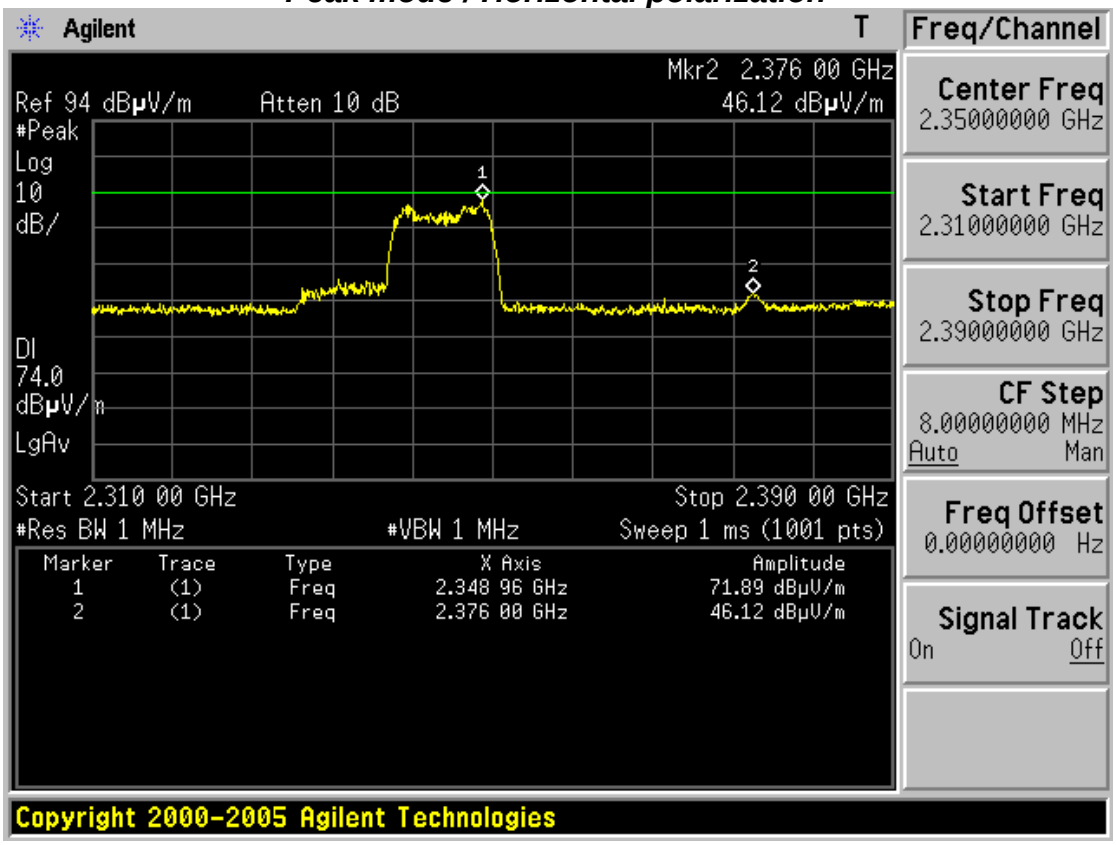

**Restricted Band Edge** Highest Channel & 1Mbps & The worst case EUT Position: Y-axis

***Average mode / Vertical polarization***



**Restricted Band Edge** Lowest Channel & 2Mbps & The worst case EUT Position: X-axis

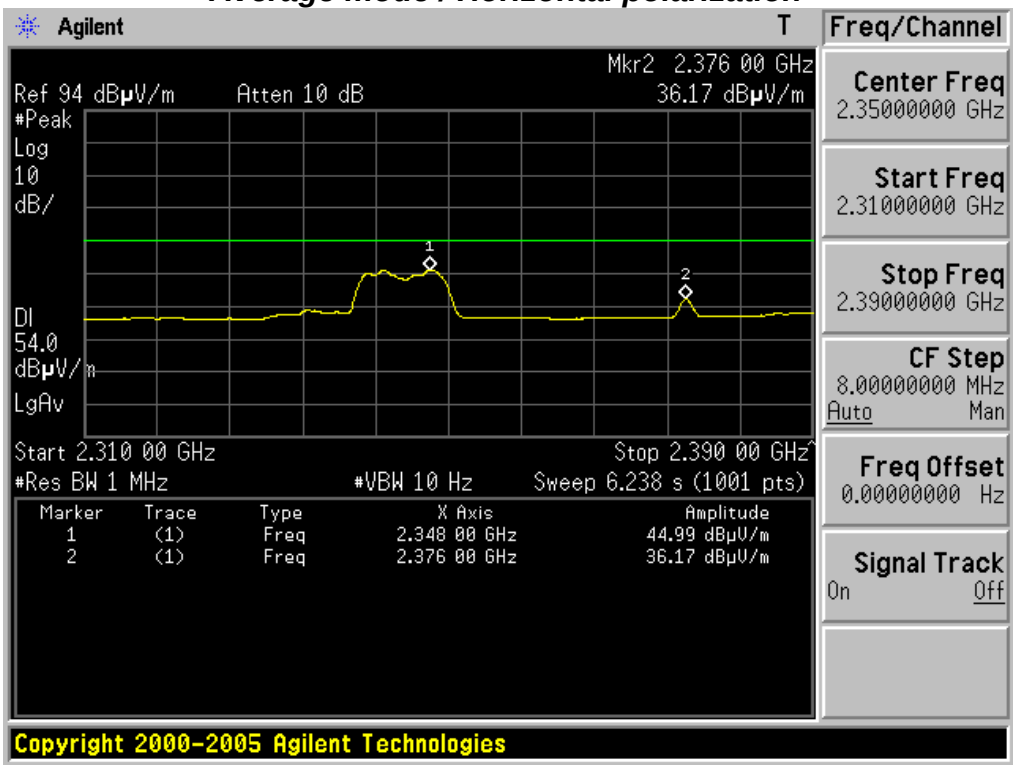
***Peak mode / Horizontal polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 2Mbps & The worst case EUT Position: X-axis

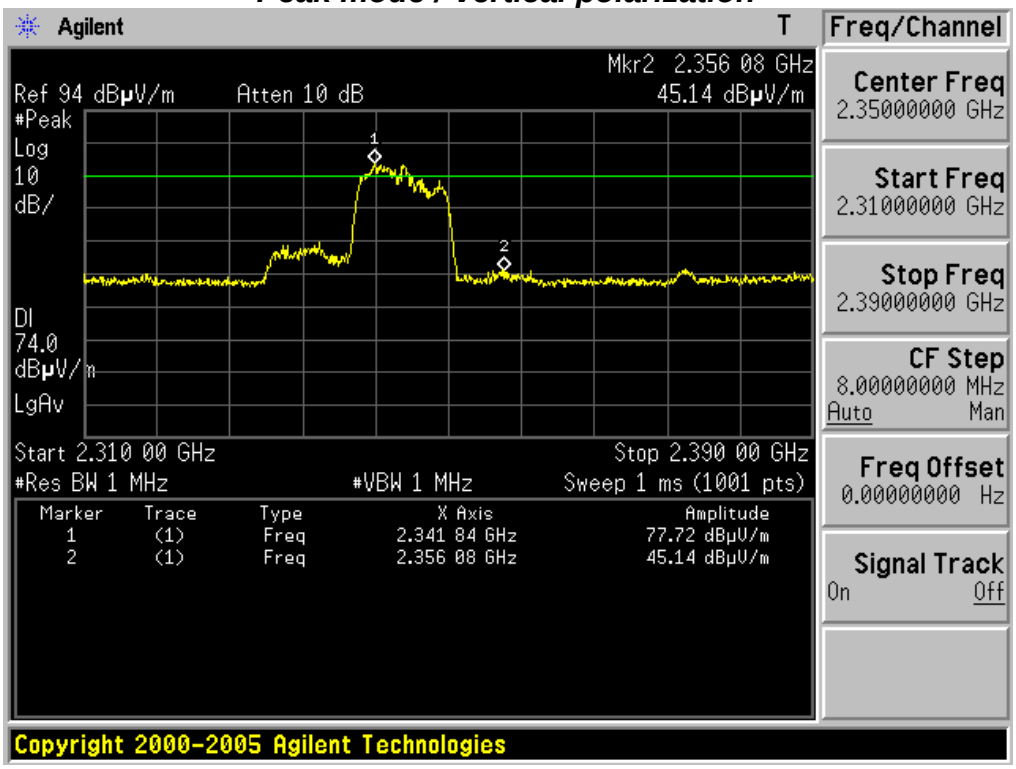
***Average mode / Horizontal polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 2Mbps & The worst case EUT Position: Y-axis

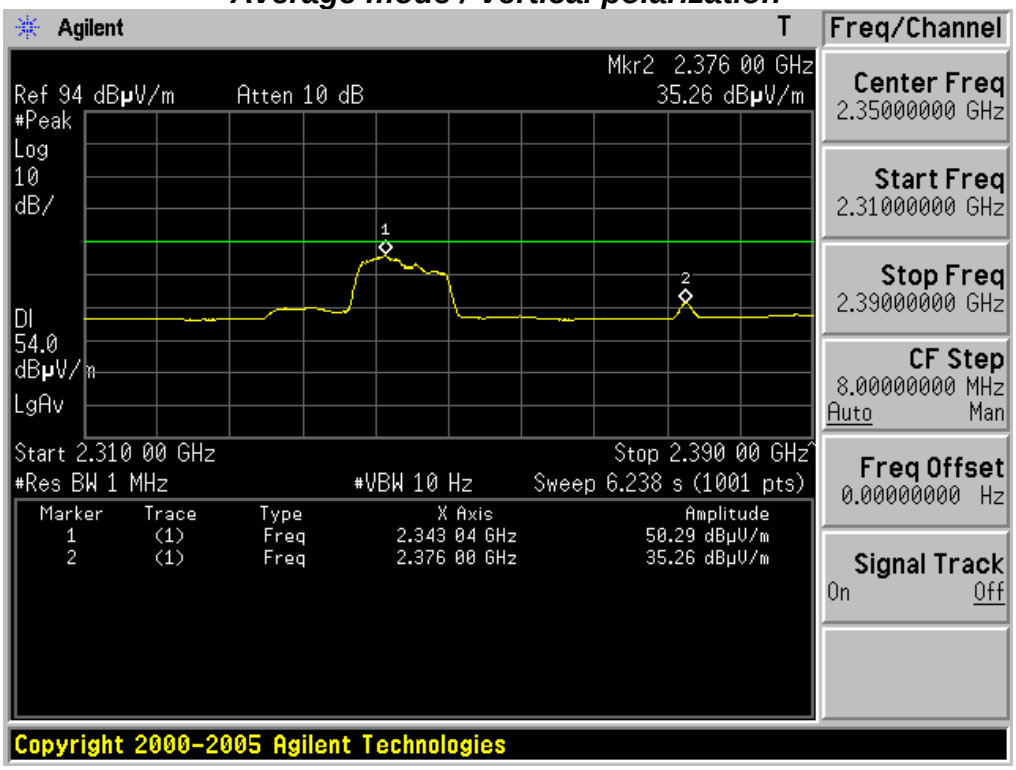
***Peak mode / Vertical polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge** Lowest Channel & 2Mbps & The worst case EUT Position: Y-axis

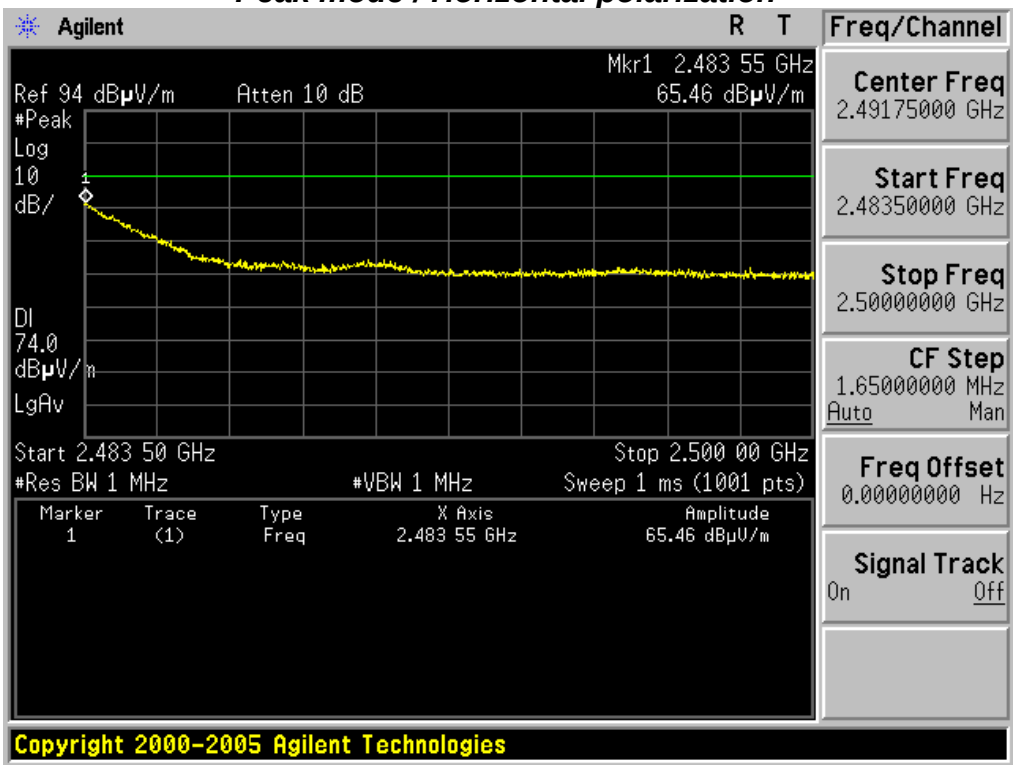
***Average mode / Vertical polarization***




Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

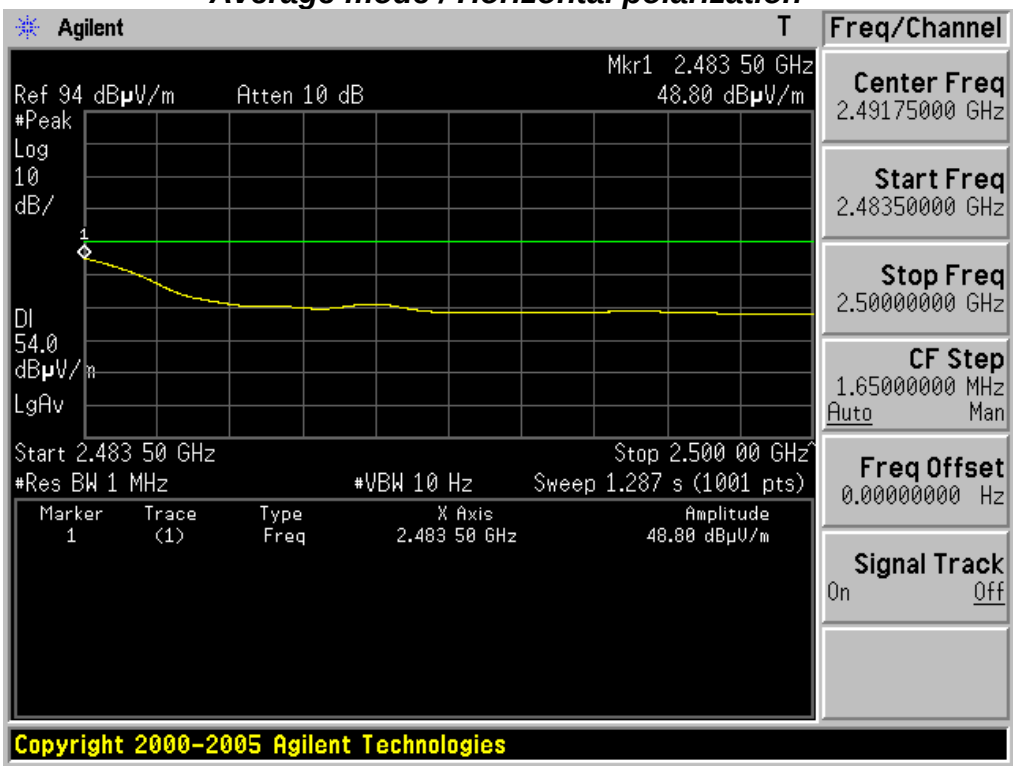
**Restricted Band Edge** Highest Channel & 2Mbps & The worst case EUT Position: X-axis

***Peak mode / Horizontal polarization***



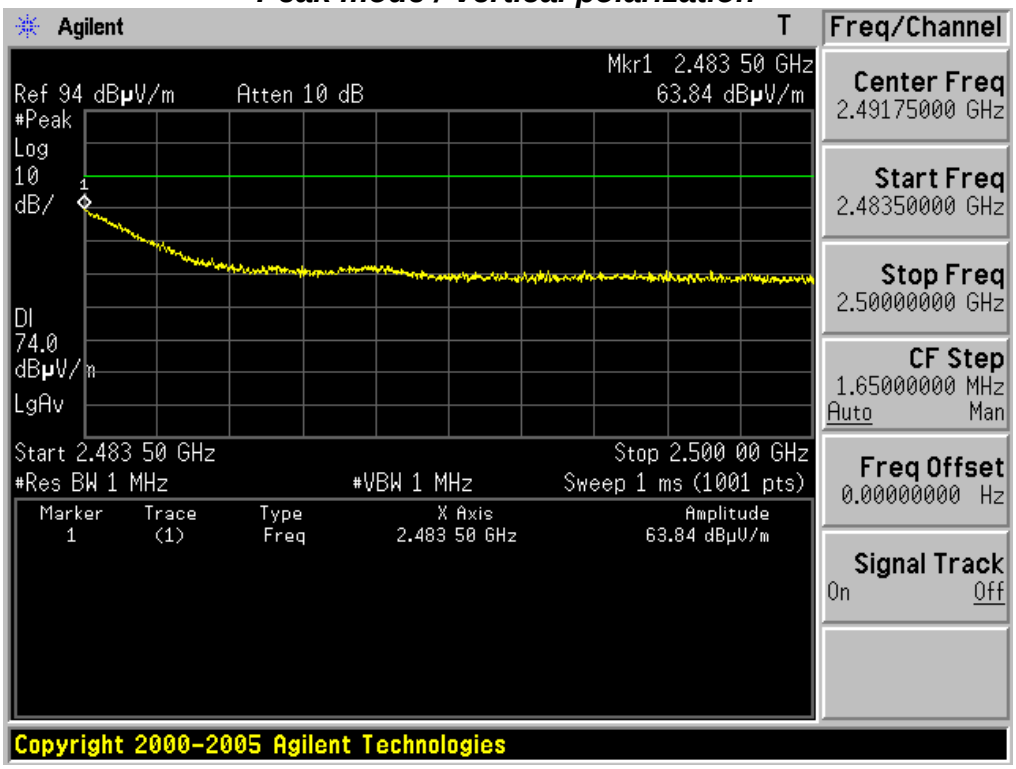

**Restricted Band Edge** Highest Channel & 2Mbps & The worst case EUT Position: X-axis

***Average mode / Horizontal polarization***



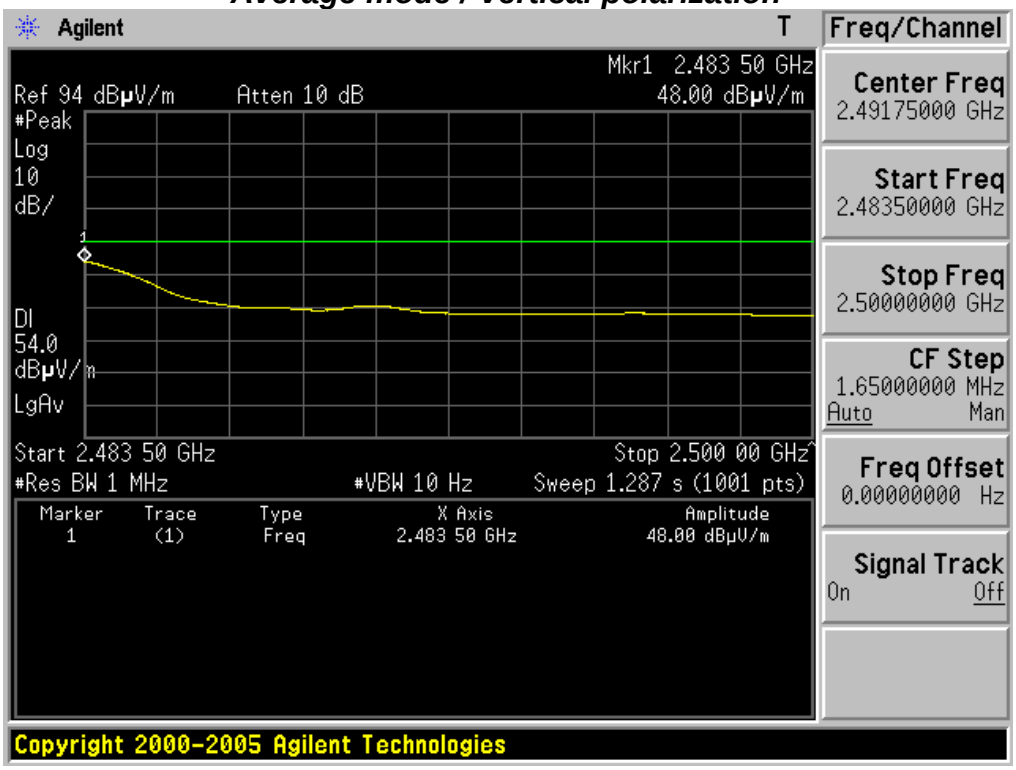
**Restricted Band Edge** Highest Channel & 2Mbps & The worst case EUT Position: Y-axis

***Peak mode / Vertical polarization***




**Restricted Band Edge** Highest Channel & 2Mbps & The worst case EUT Position: Y-axis

***Average mode / Vertical polarization***



## 30MHz ~ 1GHz Radiated Spurious Emissions & 1Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 938.888 | H | Z axis | 19.91 | 1.08 | 20.99 | 46.00 | 25.01 |
| - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 938.231 | H | Z axis | 20.20 | 1.08 | 21.28 | 46.00 | 24.72 |
| - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 937.836 | H | Z axis | 20.21 | 1.06 | 21.27 | 46.00 | 24.73 |
| - | - | - | - | - | - | - | - |

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 30dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 30MHz ~ 1GHz Radiated Spurious Emissions & 2Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 937.256 | H | X axis | 20.60 | 1.06 | 21.66 | 46.00 | 24.34 |
| - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 937.423 | H | X axis | 19.00 | 1.07 | 20.07 | 46.00 | 25.93 |
| - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | T.F (dB/m) | Result(dBuV/m) | Limit(dBuV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|
| | | | QP | | QP | QP | QP |
| 937.234 | H | Z axis | 19.80 | 1.06 | 20.86 | 46.00 | 25.14 |
| - | - | - | - | - | - | - | - |

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 30dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 25GHz Radiated Spurious Emissions & 1Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4804.265 | H | Z axis | 47.76 | 39.43 | 5.28 | - | 53.04 | 44.71 | 74.00 | 54.00 | 20.96 | 9.29 |
| 4803.955 | V | Z axis | 47.49 | 39.58 | 5.28 | - | 52.77 | 44.86 | 74.00 | 54.00 | 21.23 | 9.14 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4882.310 | H | X axis | 48.19 | 39.68 | 5.27 | - | 53.46 | 44.95 | 74.00 | 54.00 | 20.54 | 9.05 |
| 4882.470 | V | Y axis | 48.75 | 40.31 | 5.27 | - | 54.02 | 45.58 | 74.00 | 54.00 | 19.98 | 8.42 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4959.585 | H | X axis | 47.15 | 37.71 | 5.64 | - | 52.79 | 43.35 | 74.00 | 54.00 | 21.21 | 10.65 |
| 4960.190 | V | Y axis | 47.52 | 38.64 | 5.64 | - | 53.16 | 44.28 | 74.00 | 54.00 | 20.84 | 9.72 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 25dB below limit.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F + D.C.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   D.C.F = Duty Correction Factor

## 1GHz ~ 25GHz Radiated Spurious Emissions & 2Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4806.015 | H | Z axis | 45.05 | 32.27 | 5.28 | - | 50.33 | 37.55 | 74.00 | 54.00 | 23.67 | 16.45 |
| 4803.825 | V | X axis | 44.11 | 31.81 | 5.28 | - | 49.39 | 37.09 | 74.00 | 54.00 | 24.61 | 16.91 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4881.895 | H | Y axis | 44.13 | 32.44 | 5.27 | - | 49.40 | 37.71 | 74.00 | 54.00 | 24.60 | 16.29 |
| 4881.430 | V | Y axis | 44.30 | 32.42 | 5.27 | - | 49.57 | 37.69 | 74.00 | 54.00 | 24.43 | 16.31 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | D.C.F | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | | PK | AV | PK | AV | PK | AV |
| 4959.025 | H | Y axis | 44.35 | 33.14 | 5.64 | - | 49.99 | 38.78 | 74.00 | 54.00 | 24.01 | 15.22 |
| 4961.370 | V | Y axis | 43.94 | 32.80 | 5.64 | - | 49.58 | 38.44 | 74.00 | 54.00 | 24.42 | 15.56 |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 25dB below limit.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F + D.C.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   D.C.F = Duty Correction Factor

### 3.2.8 AC Line Conducted Emissions

**- Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak and average detector mode with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

**- Measurement Data: NA**

Note: When this device is in the charging mode, the Bluetooth function is disabled.

**- Minimum Standard: FCC Part 15.207(a)/EN 55022**

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency

### 3.2.9 Antenna Requirements

**- Procedure:**
Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

**- Conclusion: Comply**
The antenna is permanently attached by soldering. (Refer to Internal Photo file.)

**- Minimum Standard:**

| |
|---|
| An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions. |

### 3.2.10 Occupied Bandwidth (99%)

**- Procedure: (RSS-Gen Issue 3)**
- The 99% power bandwidth was measured with a calibrated spectrum analyzer.
- Spectrum analyzer plots are included on the following pages.

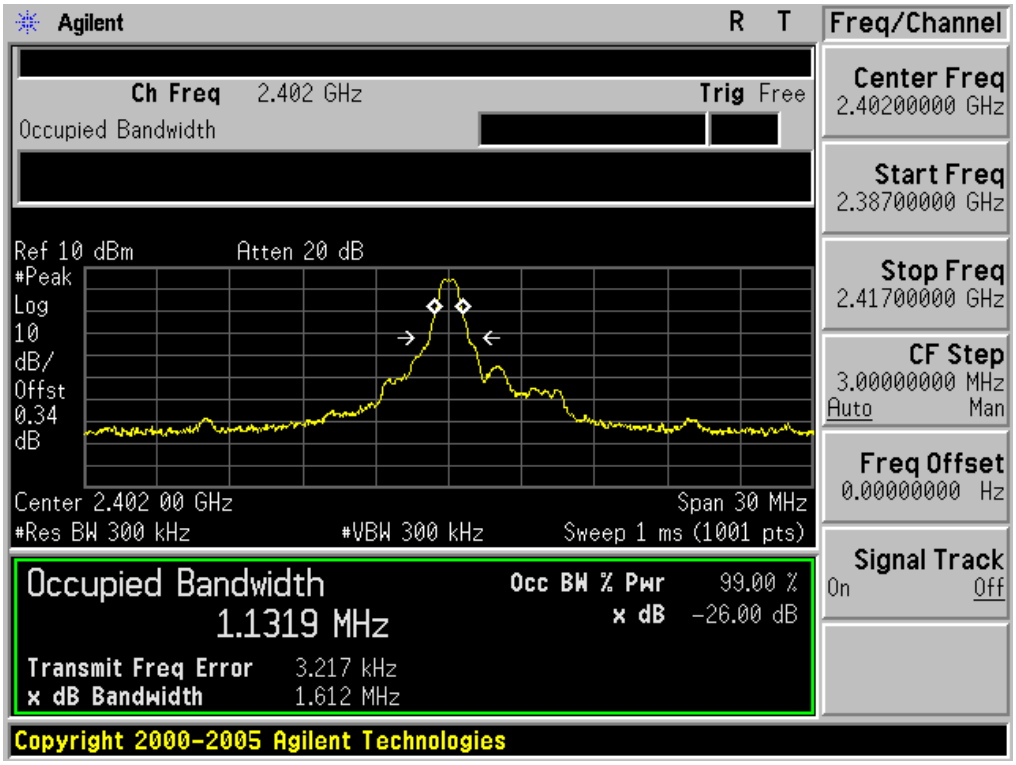
**- Measurement Data: Comply**

| Hopping mode | Test Mode | Tested Channel | Test Results (KHz) |
|---|---|---|---|
| Disable | Data rate:1Mbps | Lowest | 1.1319 |
| | | Middle | 1.1179 |
| | | Highest | 1.1211 |
| | Data rate: 2Mbps | Lowest | 1.4809 |
| | | Middle | 1.4672 |
| | | Highest | 1.4792 |

Note 1: See next pages for actual measured spectrum plots.

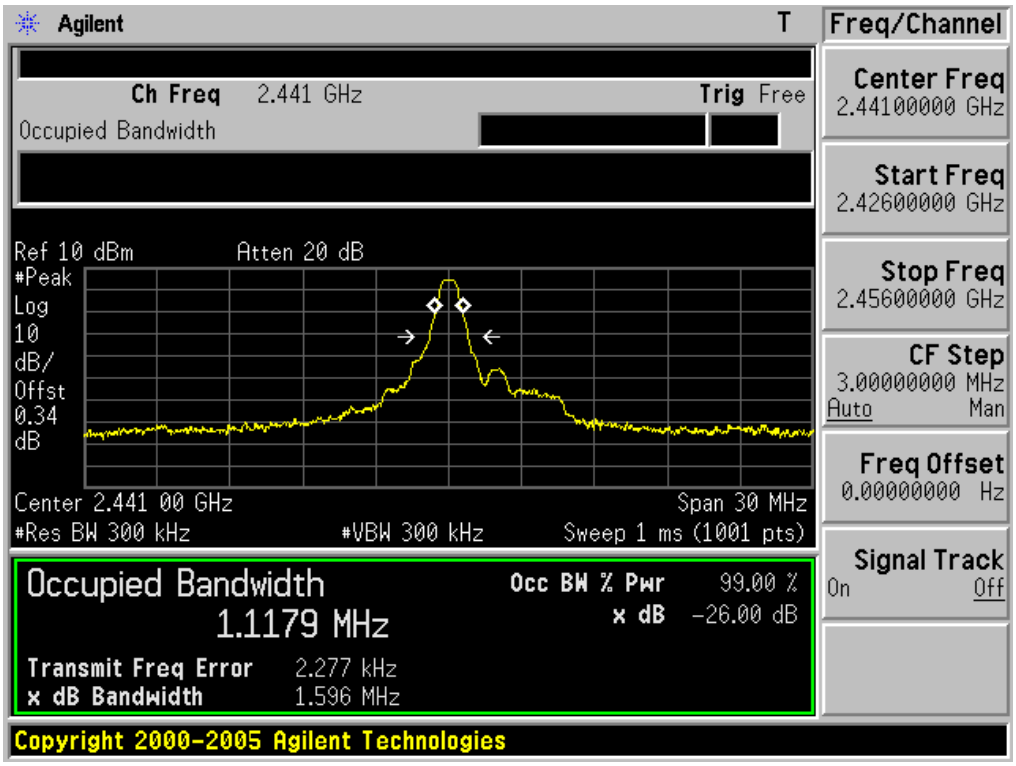
**Occupied Bandwidth** Lowest Channel & 1Mbps

**99 % Bandwidth**



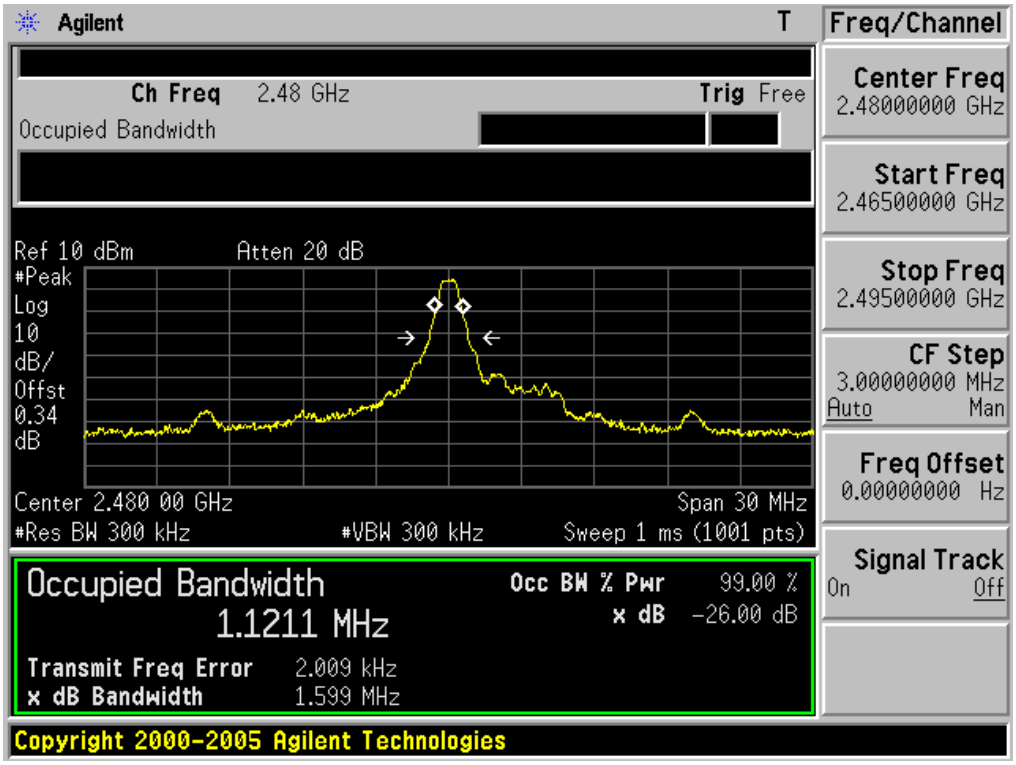

**Occupied Bandwidth** Middle Channel & 1Mbps

**99 % Bandwidth**



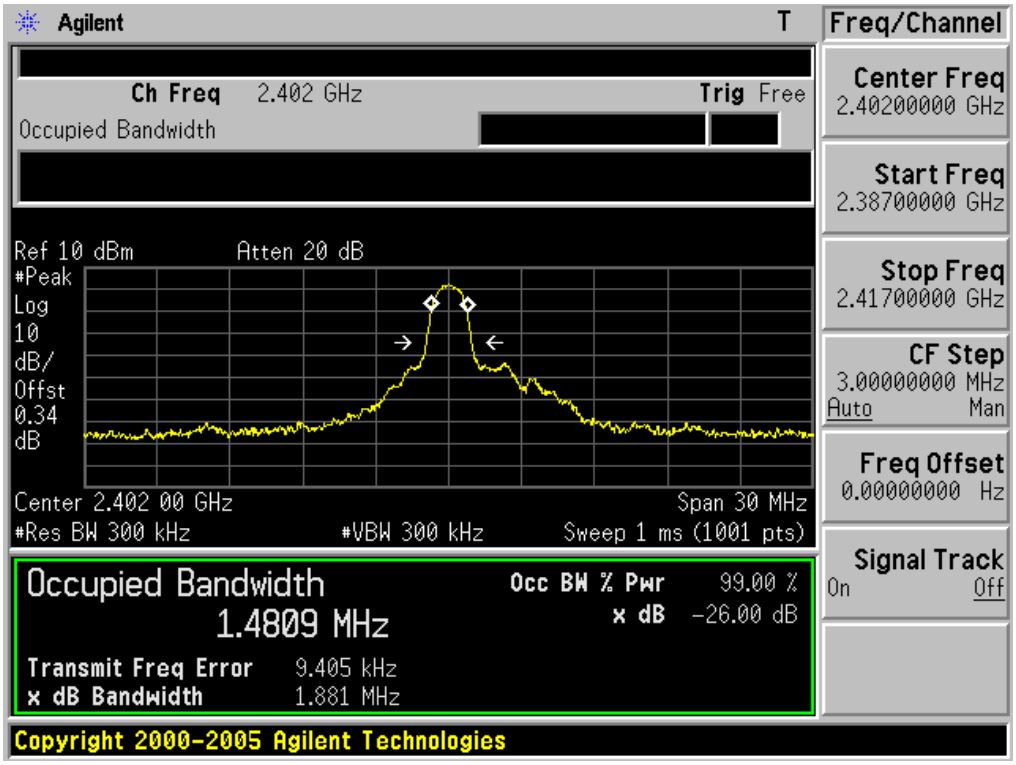
**Occupied Bandwidth** Highest Channel & 1Mbps

**99 % Bandwidth**



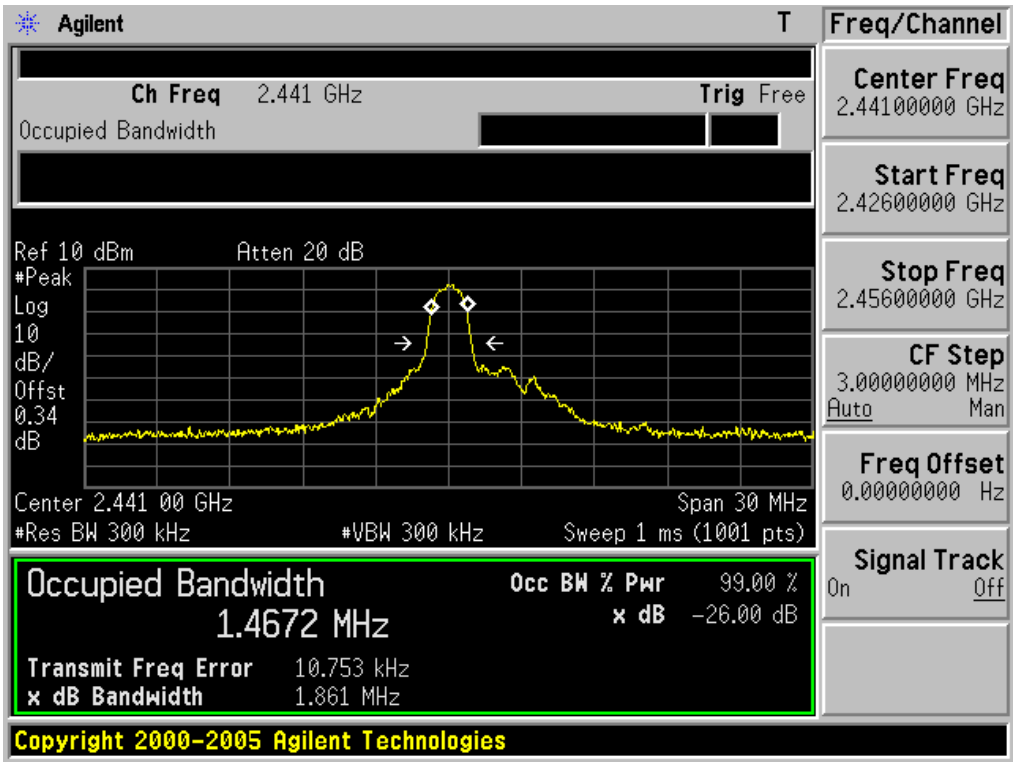
**Occupied Bandwidth** Lowest Channel & 2Mbps

**99 % Bandwidth**



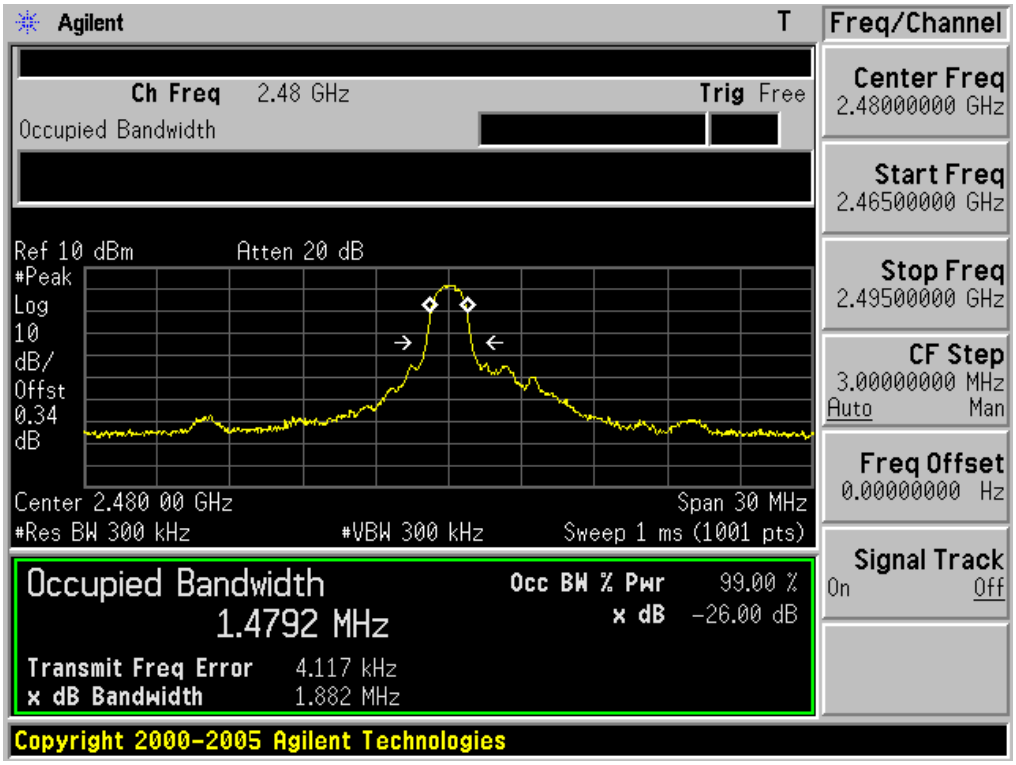

**Occupied Bandwidth** Middle Channel & 2Mbps

**99 % Bandwidth**



**Occupied Bandwidth** Highest Channel & 2Mbps

**99 % Bandwidth**



## 3.3 Receiver requirements

### 3.3.1 AC Conducted Emissions (Receiver Mode)

**- Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its receiving function. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

**- Measurement Data: Comply**

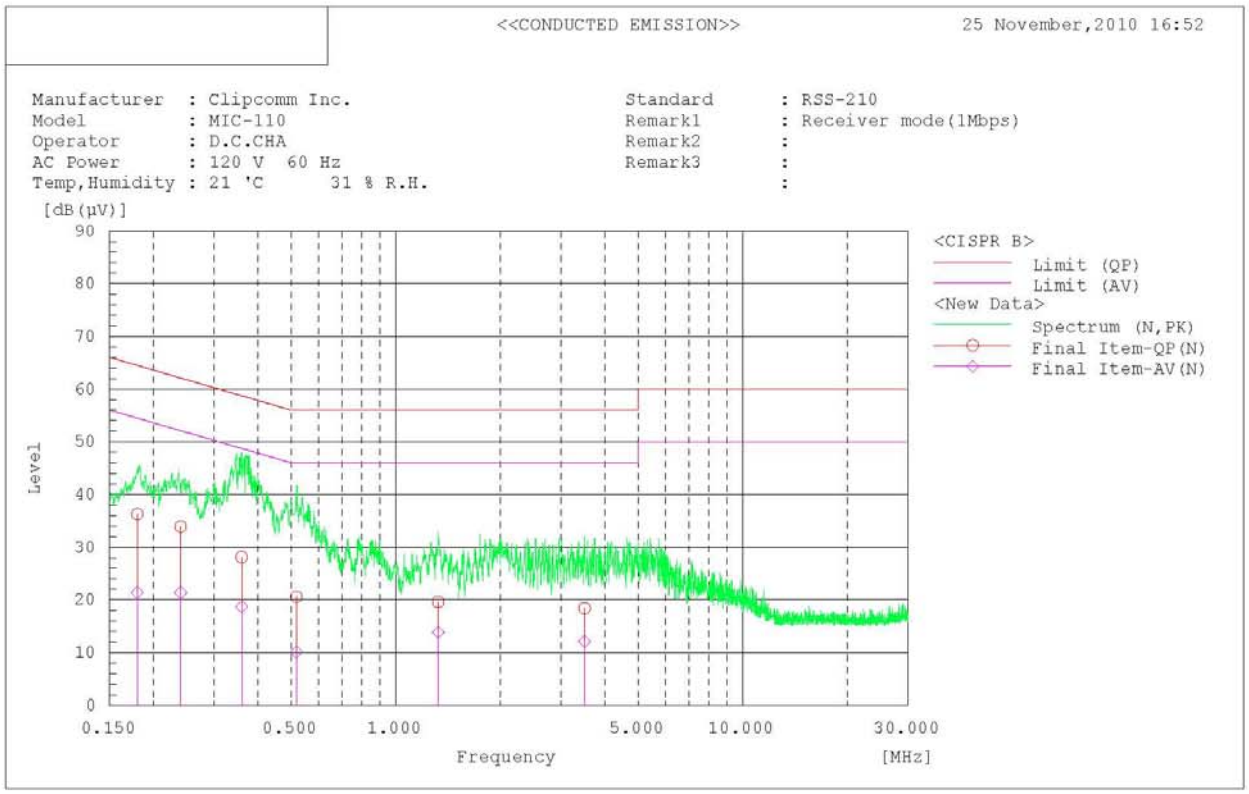
Note 1: See next pages for actual measured spectrum plots.

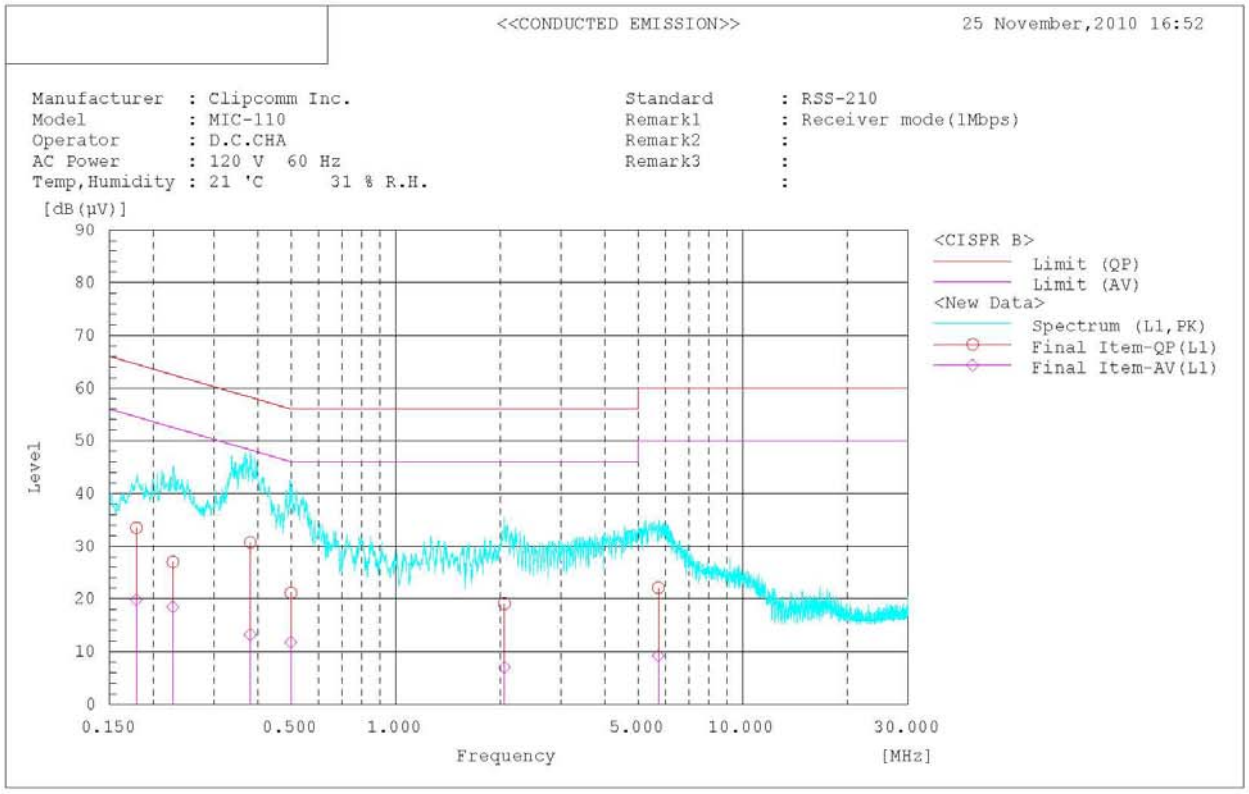
**- Minimum Standard: FCC Part 15.207(a)/EN 55022**

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency

## AC Line Conducted Emissions (Graph) 1Mbps



## AC Line Conducted Emissions (Data List) 1Mbps

<<CONDUCTED EMISSION>>

25 November,2010 16:52

Standard : RSS-210
Manufacturer : Clipcomm Inc.
Model : MIC-110
Operator : D.C.CHA
AC Power : 120 V 60 Hz
Temp,Humidity : 21 'C 31 % R.H.
Remark1 : Receiver mode(1Mbps)
Remark2 :
Remark3 :
:

Final Result

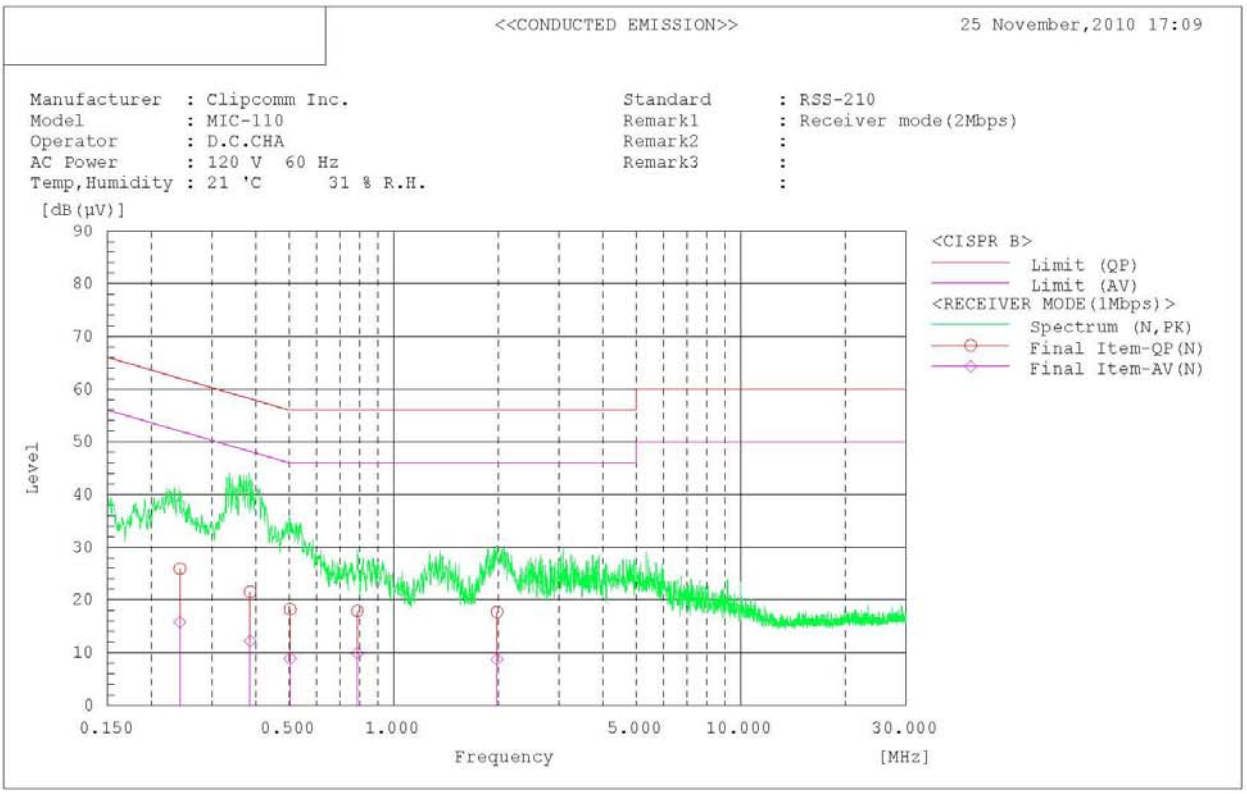
--- N Phase ---

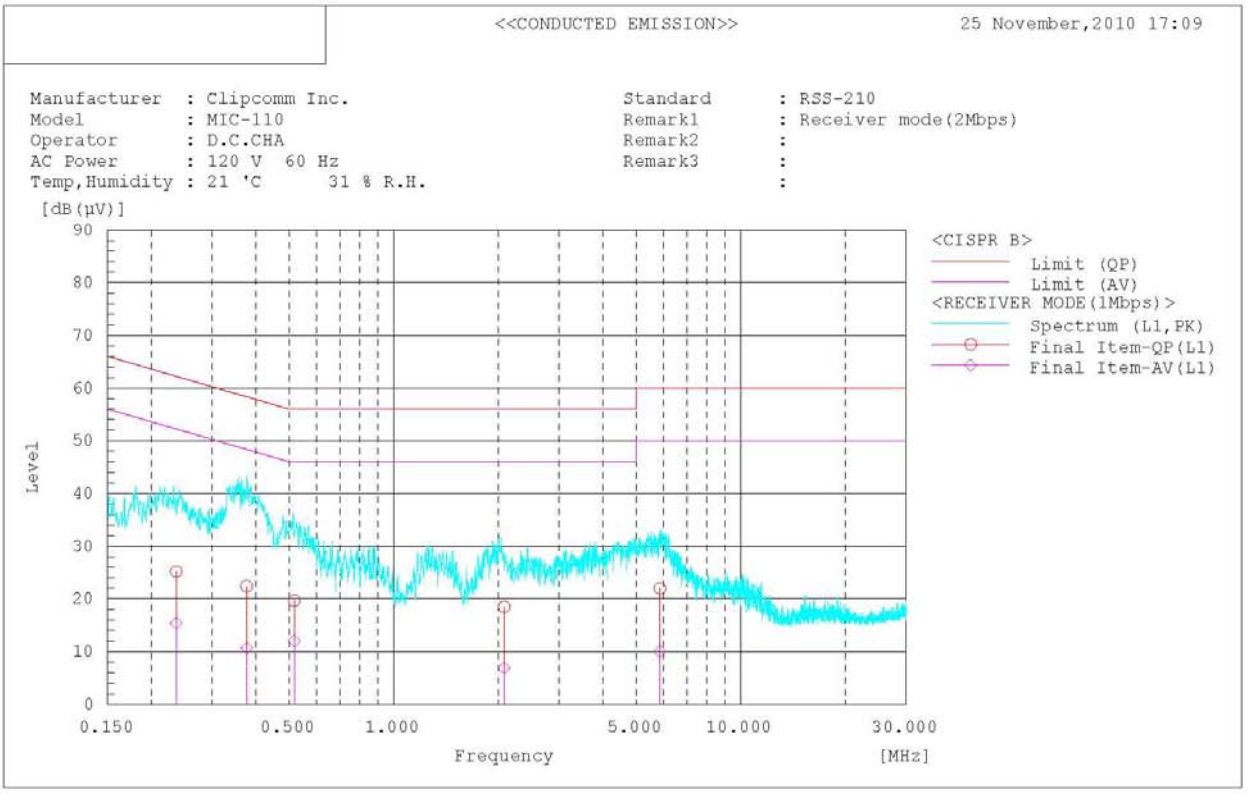
| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | [dB(µV)] | [dB(µV)] | [dB] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB] | [dB] | |
| 1 | 0.180 | 36.2 | 21.3 | 0.1 | 36.3 | 21.4 | 64.5 | 54.5 | 28.2 | 33.1 | |
| 2 | 0.240 | 33.8 | 21.3 | 0.1 | 33.9 | 21.4 | 62.1 | 52.1 | 28.2 | 30.7 | |
| 3 | 0.360 | 28.0 | 18.6 | 0.1 | 28.1 | 18.7 | 58.7 | 48.7 | 30.6 | 30.0 | |
| 4 | 0.517 | 20.5 | 10.0 | 0.1 | 20.6 | 10.1 | 56.0 | 46.0 | 35.4 | 35.9 | |
| 5 | 1.326 | 19.5 | 13.8 | 0.1 | 19.6 | 13.9 | 56.0 | 46.0 | 36.4 | 32.1 | |
| 6 | 3.500 | 18.2 | 11.9 | 0.2 | 18.4 | 12.1 | 56.0 | 46.0 | 37.6 | 33.9 | |

--- L1 Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | [dB(µV)] | [dB(µV)] | [dB] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB] | [dB] | |
| 1 | 0.179 | 33.3 | 19.6 | 0.2 | 33.5 | 19.8 | 64.5 | 54.5 | 31.0 | 34.7 | |
| 2 | 0.228 | 26.8 | 18.3 | 0.2 | 27.0 | 18.5 | 62.5 | 52.5 | 35.5 | 34.0 | |
| 3 | 0.381 | 30.5 | 13.0 | 0.2 | 30.7 | 13.2 | 58.3 | 48.3 | 27.6 | 35.1 | |
| 4 | 0.499 | 20.9 | 11.6 | 0.2 | 21.1 | 11.8 | 56.0 | 46.0 | 34.9 | 34.2 | |
| 5 | 2.056 | 18.8 | 6.7 | 0.3 | 19.1 | 7.0 | 56.0 | 46.0 | 36.9 | 39.0 | |
| 6 | 5.714 | 21.7 | 8.8 | 0.4 | 22.1 | 9.2 | 60.0 | 50.0 | 37.9 | 40.8 | |

## AC Line Conducted Emissions (Graph) 2Mbps



## AC Line Conducted Emissions (Data List) 2Mbps

<<CONDUCTED EMISSION>>

25 November,2010 17:09

Standard : RSS-210
Manufacturer : Clipcomm Inc.
Model : MIC-110
Operator : D.C.CHA
AC Power : 120 V 60 Hz
Temp,Humidity : 21 'C 31 % R.H.
Remark1 : Receiver mode(2Mbps)
Remark2 :
Remark3 :

Final Result

--- N Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | [dB(µV)] | [dB(µV)] | [dB] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB] | [dB] | |
| 1 | 0.242 | 25.8 | 15.7 | 0.1 | 25.9 | 15.8 | 62.0 | 52.0 | 36.1 | 36.2 | |
| 2 | 0.386 | 21.4 | 12.1 | 0.1 | 21.5 | 12.2 | 58.1 | 48.1 | 36.6 | 35.9 | |
| 3 | 0.503 | 18.1 | 8.8 | 0.1 | 18.2 | 8.9 | 56.0 | 46.0 | 37.8 | 37.1 | |
| 4 | 0.786 | 17.8 | 9.7 | 0.1 | 17.9 | 9.8 | 56.0 | 46.0 | 38.1 | 36.2 | |
| 5 | 1.986 | 17.5 | 8.5 | 0.2 | 17.7 | 8.7 | 56.0 | 46.0 | 38.3 | 37.3 | |

--- L1 Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | [dB(µV)] | [dB(µV)] | [dB] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB(µV)] | [dB] | [dB] | |
| 1 | 0.236 | 25.0 | 15.2 | 0.2 | 25.2 | 15.4 | 62.2 | 52.2 | 37.0 | 36.8 | |
| 2 | 0.377 | 22.2 | 10.5 | 0.2 | 22.4 | 10.7 | 58.3 | 48.3 | 35.9 | 37.6 | |
| 3 | 0.517 | 19.4 | 11.7 | 0.3 | 19.7 | 12.0 | 56.0 | 46.0 | 36.3 | 34.0 | |
| 4 | 2.082 | 18.2 | 6.6 | 0.3 | 18.5 | 6.9 | 56.0 | 46.0 | 37.5 | 39.1 | |
| 5 | 5.856 | 21.6 | 9.6 | 0.4 | 22.0 | 10.0 | 60.0 | 50.0 | 38.0 | 40.0 | |

### 3.3.2 Out of Band Emissions – Radiated (Receiver Mode)

**- Procedure:**

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in a OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10$^{th}$ harmonic.

RBW = 120 kHz ( 30MHz ~ 1 GHz)
= 1 MHz (1 GHz ~ 10$^{th}$ harmonic )

VBW = 10Hz (Average), VBW ≥ RBW (Peak)

Trace = max hold

Detector function = peak

Sweep = auto

**- Measurement Data: Comply** (Refer to the Next page)

Note 1: See next pages for actual measured spectrum plots and data.

Note 2: This test item was performed in each axis. and the worst case data were reported.

**- Minimum Standard: FCC Part 15.109(a)**

| Frequency (MHz) | Limit (uV/m) @ 3m |
|---|---|
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

**30MHz ~ 1GHz Receiver Spurious Emissions** Lowest Channel & 1Mbps

Digital EMC

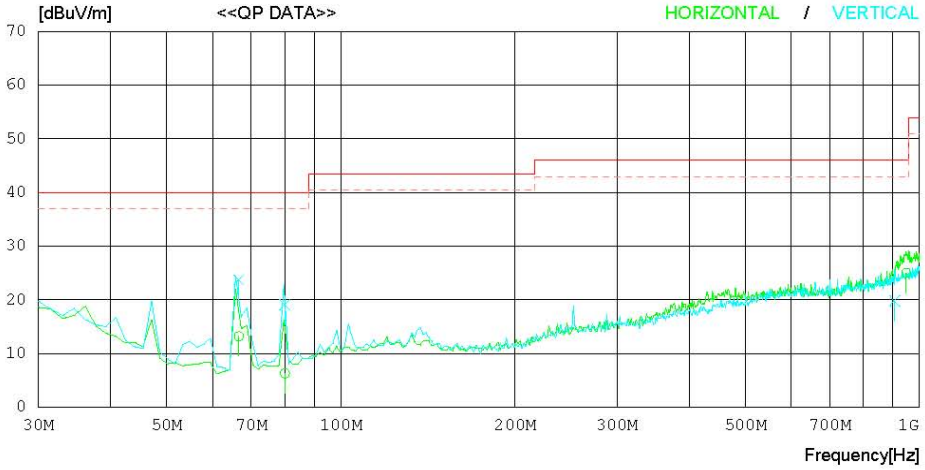
## RADIATED EMISSION

Date : 2010-11-22

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 59 % R.H |
| Test Condition | : | RX / 2402 MHz (1Mbps) | Operator | : | D.C.CHA |

Memo : X-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 66.610 | 28.7 | 6.2 | 1.0 | 22.7 | 13.2 | 40.0 | 26.8 | 101 | 153 |
| 2 | 80.044 | 20.8 | 7.1 | 1.1 | 22.7 | 6.3 | 40.0 | 33.7 | 103 | 110 |
| 3 | 948.699 | 23.2 | 21.1 | 3.7 | 23.0 | 25.0 | 46.0 | 21.0 | 100 | 136 |
| ----- Vertical ------ | | | | | | | | | | |
| 4 | 66.602 | 39.2 | 6.2 | 1.0 | 22.7 | 23.7 | 40.0 | 16.3 | 103 | 214 |
| 5 | 79.990 | 33.6 | 7.1 | 1.1 | 22.7 | 19.1 | 40.0 | 20.9 | 102 | 96 |
| 6 | 906.699 | 18.9 | 20.5 | 3.6 | 23.2 | 19.8 | 46.0 | 26.2 | 100 | 100 |

- Note: Above listed point data is the worst case data.

**30MHz ~ 1GHz Receiver Spurious Emissions** Middle Channel & 1Mbps

Digital EMC

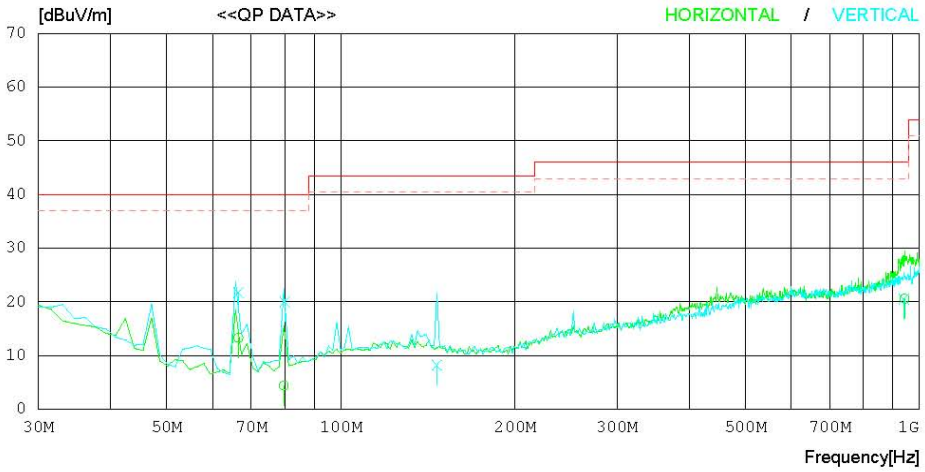
# RADIATED EMISSION

Date : 2010-11-22

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 59 % R.H |
| Test Condition | : | RX / 2441 MHz (1Mbps) | Operator | : | D.C.CHA |

Memo : X-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 66.530 | 28.8 | 6.2 | 1.0 | 22.7 | 13.3 | 40.0 | 26.7 | 101 | 45 |
| 2 | 79.736 | 18.9 | 7.1 | 1.1 | 22.7 | 4.4 | 40.0 | 35.6 | 101 | 147 |
| 3 | 942.468 | 18.9 | 21.0 | 3.7 | 23.0 | 20.6 | 46.0 | 25.4 | 100 | 358 |
| ----- Vertical ------ | | | | | | | | | | |
| 4 | 66.554 | 37.2 | 6.2 | 1.0 | 22.7 | 21.7 | 40.0 | 18.3 | 101 | 165 |
| 5 | 80.000 | 34.5 | 7.1 | 1.1 | 22.7 | 20.0 | 40.0 | 20.0 | 103 | 214 |
| 6 | 146.556 | 19.4 | 10.4 | 1.4 | 23.0 | 8.2 | 43.5 | 35.3 | 100 | 198 |
| 7 | 939.378 | 18.9 | 21.0 | 3.7 | 23.1 | 20.5 | 46.0 | 25.5 | 102 | 133 |

- Note: Above listed point data is the worst case data.

**30MHz ~ 1GHz Receiver Spurious Emissions** Highest Channel & 1Mbps

Digital EMC

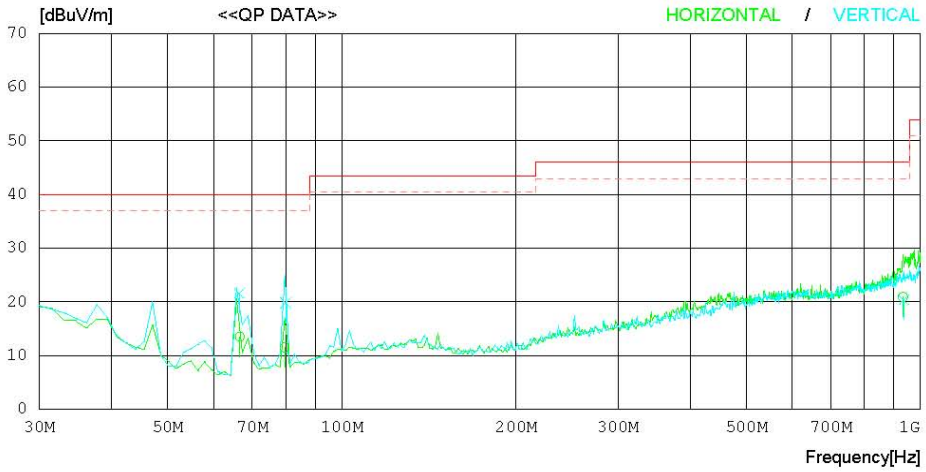
# RADIATED EMISSION

Date : 2010-11-22

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 59 % R.H |
| Test Condition | : | RX / 2480 MHz (1Mbps) | Operator | : | D.C.CHA |

Memo : X-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 66.594 | 29.0 | 6.2 | 1.0 | 22.7 | 13.5 | 40.0 | 26.5 | 110 | 263 |
| 2 | 79.733 | 26.0 | 7.1 | 1.1 | 22.7 | 11.5 | 40.0 | 28.5 | 102 | 165 |
| 3 | 933.110 | 19.4 | 20.9 | 3.7 | 23.1 | 20.9 | 46.0 | 25.1 | 100 | 189 |
| ----- Vertical ------ | | | | | | | | | | |
| 4 | 66.554 | 37.1 | 6.2 | 1.0 | 22.7 | 21.6 | 40.0 | 18.4 | 102 | 241 |
| 5 | 79.984 | 34.3 | 7.1 | 1.1 | 22.7 | 19.8 | 40.0 | 20.2 | 103 | 247 |
| 6 | 936.255 | 18.9 | 20.9 | 3.7 | 23.1 | 20.4 | 46.0 | 25.6 | 102 | 119 |

- Note: Above listed point data is the worst case data.

**30MHz ~ 1GHz Receiver Spurious Emissions** Lowest Channel & 2Mbps

Digital EMC

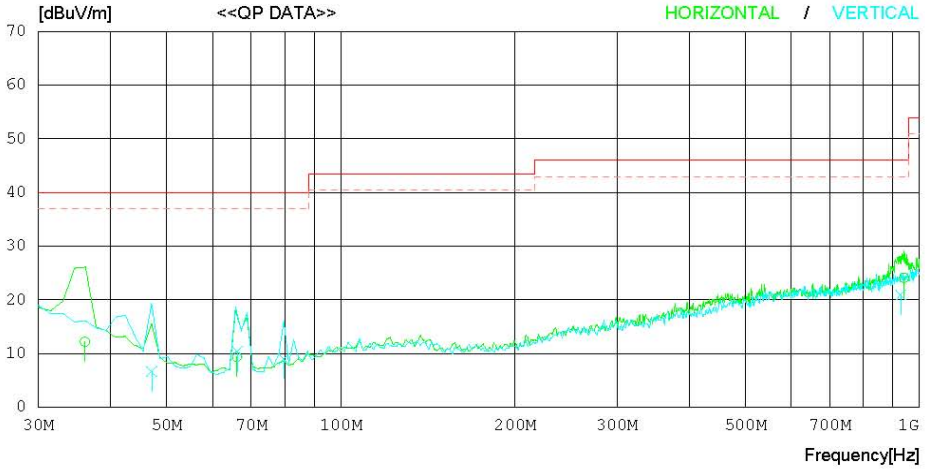
# RADIATED EMISSION

Date : 2010-10-23

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 38 % R.H |
| Test Condition | : | RX / 2402 MHz (2Mbps) | Operator | : | D.C.CHA |

Memo : Z-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 36.104 | 18.6 | 15.4 | 0.8 | 22.6 | 12.2 | 40.0 | 27.8 | 105 | 258 |
| 2 | 66.102 | 24.9 | 6.2 | 1.0 | 22.7 | 9.4 | 40.0 | 30.6 | 102 | 169 |
| 3 | 940.926 | 22.4 | 21.0 | 3.7 | 23.0 | 24.1 | 46.0 | 21.9 | 100 | 358 |
| ----- Vertical ------ | | | | | | | | | | |
| 4 | 47.115 | 18.9 | 9.5 | 0.9 | 22.7 | 6.6 | 40.0 | 33.4 | 103 | 344 |
| 5 | 66.274 | 25.9 | 6.2 | 1.0 | 22.7 | 10.4 | 40.0 | 29.6 | 102 | 126 |
| 6 | 79.710 | 23.5 | 7.1 | 1.1 | 22.7 | 9.0 | 40.0 | 31.0 | 106 | 248 |
| 7 | 928.489 | 19.5 | 20.8 | 3.7 | 23.1 | 20.9 | 46.0 | 25.1 | 104 | 110 |

- Note: Above listed point data is the worst case data.

**30MHz ~ 1GHz Receiver Spurious Emissions** Middle Channel & 2Mbps

Digital EMC

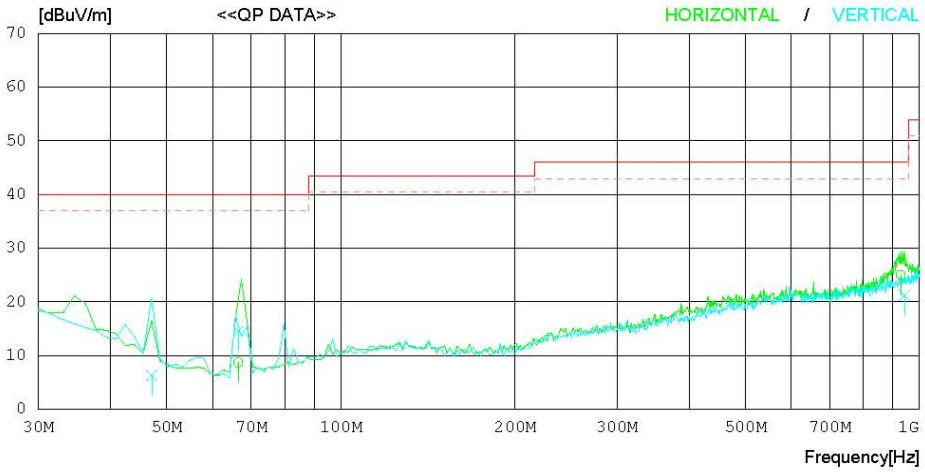
# RADIATED EMISSION

Date : 2010-10-23

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 38 % R.H |
| Test Condition | : | RX / 2441 MHz (2Mbps) | Operator | : | D.C.CHA |

Memo : Y-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 66.506 | 24.2 | 6.2 | 1.0 | 22.7 | 8.7 | 40.0 | 31.3 | 102 | 87 |
| 2 | 928.484 | 23.6 | 20.8 | 3.7 | 23.1 | 25.0 | 46.0 | 21.0 | 108 | 158 |
| ----- Vertical ------ | | | | | | | | | | |
| 3 | 47.121 | 18.6 | 9.5 | 0.9 | 22.7 | 6.3 | 40.0 | 33.7 | 101 | 218 |
| 4 | 66.548 | 30.1 | 6.2 | 1.0 | 22.7 | 14.6 | 40.0 | 25.4 | 120 | 110 |
| 5 | 942.474 | 19.5 | 21.0 | 3.7 | 23.0 | 21.2 | 46.0 | 24.8 | 105 | 94 |

- Note: Above listed point data is the worst case data.

**30MHz ~ 1GHz Receiver Spurious Emissions** Highest Channel & 2Mbps

Digital EMC

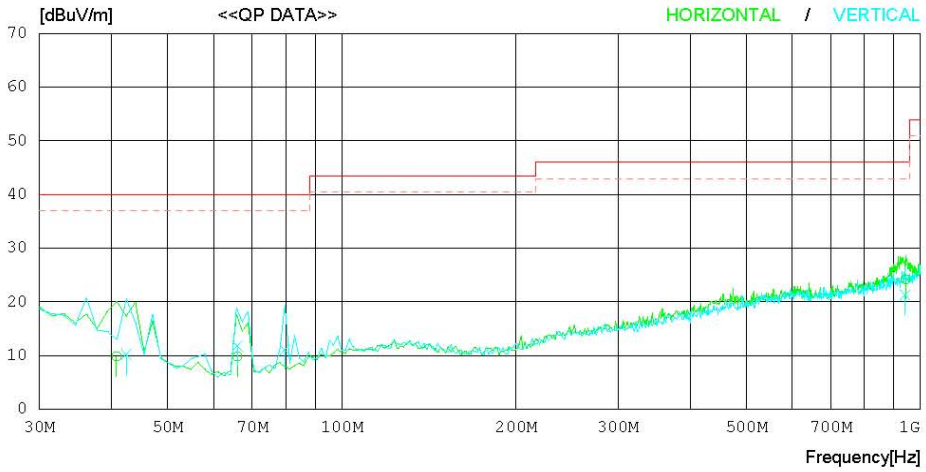
# RADIATED EMISSION

Date : 2010-10-23

| | | | | | |
|---|---|---|---|---|---|
| Model Name | : | MIC-110 | Reference No. | : | |
| Model No. | : | | Power Supply | : | DC 3.7 V |
| Serial No. | : | Identical prototype | Temp/Humi | : | 22 'C 38 % R.H |
| Test Condition | : | RX / 2480 MHz (2Mbps) | Operator | : | D.C.CHA |

Memo : Z-axis

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB




| No. | FREQ [MHz] | READING QP [dBuV] | ANT FACTOR [dB] | LOSS [dB] | GAIN [dB] | RESULT [dBuV/m] | LIMIT [dBuV/m] | MARGIN [dB] | ANTENNA [cm] | TABLE [DEG] |
|---|---|---|---|---|---|---|---|---|---|---|
| ----- Horizontal ------ | | | | | | | | | | |
| 1 | 40.789 | 18.5 | 13.1 | 0.8 | 22.6 | 9.8 | 40.0 | 30.2 | 102 | 198 |
| 2 | 66.003 | 25.3 | 6.2 | 1.0 | 22.7 | 9.8 | 40.0 | 30.2 | 106 | 110 |
| 3 | 942.466 | 22.5 | 21.0 | 3.7 | 23.0 | 24.2 | 46.0 | 21.8 | 100 | 255 |
| ----- Vertical ------ | | | | | | | | | | |
| 4 | 42.436 | 19.9 | 12.1 | 0.8 | 22.6 | 10.2 | 40.0 | 29.8 | 106 | 159 |
| 5 | 66.058 | 27.3 | 6.2 | 1.0 | 22.7 | 11.8 | 40.0 | 28.2 | 102 | 287 |
| 6 | 79.685 | 25.6 | 7.1 | 1.1 | 22.7 | 11.1 | 40.0 | 28.9 | 100 | 325 |
| 7 | 940.932 | 19.6 | 21.0 | 3.7 | 23.0 | 21.3 | 46.0 | 24.7 | 102 | 300 |

- Note: Above listed point data is the worst case data.

## 1GHz ~ 25GHz Radiated Spurious Emissions & 1Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5479.175 | H | Z axis | 45.00 | 31.30 | 4.10 | 49.10 | 35.40 | 74.00 | 54.00 | 24.90 | 18.60 |
| - | - | - | - | - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5495.201 | H | Y axis | 45.00 | 31.00 | 4.30 | 49.30 | 35.30 | 74.00 | 54.00 | 24.70 | 18.70 |
| - | - | - | - | - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5447.125 | V | X axis | 44.90 | 31.50 | 4.00 | 48.90 | 35.50 | 74.00 | 54.00 | 25.10 | 18.50 |
| - | - | - | - | - | - | - | - | - | - | - | - |

**Note.**

1. Except for the above table: All other spurious emissions were less than 30dB for the limit.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 25GHz Radiated Spurious Emissions & 2Mbps

▪ Lowest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5463.150 | V | Y axis | 45.20 | 31.70 | 4.00 | 49.20 | 35.70 | 74.00 | 54.00 | 24.80 | 18.30 |
| - | - | - | - | - | - | - | - | - | - | - | - |

▪ Middle Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5727.569 | V | Y axis | 44.90 | 32.00 | 3.50 | 48.40 | 35.50 | 74.00 | 54.00 | 25.60 | 18.50 |
| - | - | - | - | - | - | - | - | - | - | - | - |

▪ Highest Channel

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Reading(dBuV) | | T.F (dB/m) | Result(dBuV/m) | | Limit(dBuV/m) | | Margin(dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 5735.582 | V | Y axis | 44.60 | 31.90 | 4.30 | 48.90 | 36.20 | 74.00 | 54.00 | 25.10 | 17.80 |
| - | - | - | - | - | - | - | - | - | - | - | - |

**Note.**

1. Except for the above table: All other spurious emissions were less than 30dB for the limit.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

# APPENDIX I

## TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

| | Type | Manufacturer | Model | Cal.Due.Date (dd/mm/yy) | Next.Due.Date (dd/mm/yy) | S/N |
|---|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Agilent | E4440A | 30/09/10 | 30/09/11 | MY45304199 |
| ☐ | Spectrum Analyzer | Rohde Schwarz | FSQ26 | 25/02/10 | 25/02/11 | 200445 |
| ☐ | Spectrum Analyzer(RE) | H.P | 8563E | 04/10/10 | 04/10/11 | 3551A04634 |
| ☐ | Power Meter | H.P | EPM-442A | 01/07/10 | 01/07/11 | GB37170413 |
| ☐ | Power Sensor | H.P | 8481A | 01/07/10 | 01/07/11 | 3318A96332 |
| ☐ | Power Divider | Agilent | 11636B | 05/10/10 | 05/10/11 | 56471 |
| ☐ | Power Splitter | Anritsu | K241B | 05/10/10 | 05/10/11 | 020611 |
| ☐ | Power Splitter | Anritsu | K241B | 01/07/10 | 01/07/11 | 017060 |
| ☐ | Frequency Counter | H.P | 5342A | 01/07/10 | 01/07/11 | 2119A04450 |
| ☐ | TEMP & HUMIDITY Chamber | JISCO | KR-100/J-RHC2 | 04/10/10 | 04/10/11 | 30604493/021031 |
| ☒ | Digital Multimeter | H.P | 34401A | 12/03/10 | 12/03/11 | 3146A13475, US36122178 |
| ☐ | Multifunction Synthesizer | HP | 8904A | 11/10/10 | 11/10/11 | 3633A08404 |
| ☒ | Signal Generator | Rohde Schwarz | SMR20 | 12/03/10 | 12/03/11 | 101251 |
| ☐ | Signal Generator | H.P | ESG-3000A | 01/07/10 | 01/07/11 | US37230529 |
| ☒ | Vector Signal Generator | Rohde Schwarz | SMJ100A | 11/01/10 | 11/01/11 | 100148 |
| ☐ | Vector Signal Generator | Rohde Schwarz | SMBV100A | 23/02/10 | 23/02/11 | 255571 |
| ☐ | Audio Analyzer | H.P | 8903B | 02/07/10 | 02/07/11 | 3011A09448 |
| ☐ | Modulation Analyzer | H.P | 8901B | 01/07/10 | 01/07/11 | 3028A03029 |
| ☐ | 8960 Series 10 Wireless Comms. Test Set | Agilent | E5515C | 02/07/10 | 02/07/11 | GB43461134 |
| ☐ | Universal Radio communication Tester | Rohde Schwarz | CMU 200 | 12/03/10 | 12/03/11 | 106760 |
| ☐ | Bluetooth Tester | TESCOM | TC-3000B | 01/07/10 | 01/07/11 | 3000B000268 |
| ☒ | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-3 |
| ☒ | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-2 |
| ☐ | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-4 |
| ☐ | AC Power supply | DAEKWANG | 5KVA | 12/03/10 | 12/03/11 | 20060321-1 |
| ☒ | DC Power Supply | HP | 6622A | 12/03/10 | 12/03/11 | 3448A03760 |
| ☐ | DC Power Supply | HP | 6633A | 12/03/10 | 12/03/11 | 3524A06634 |
| ☐ | DC Power Supply | Protek | PWS-3010D | 04/10/10 | 04/10/11 | 4072702 |
| ☐ | BAND Reject Filter | Microwave Circuits | N0308372 | 05/10/10 | 05/10/11 | 3125-01DC0352 |
| ☐ | BAND Reject Filter | Wainwright | WRCG1750 | 05/10/10 | 05/10/11 | 2 |
| ☐ | High-Pass Filter | ANRITSU | MP526D | 04/10/10 | 04/10/11 | M27756 |
| ☐ | High-pass filter | Wainwright | WHNX2.1 | N/A | N/A | 1 |
| ☒ | High-pass filter | Wainwright | WHNX3.0 | N/A | N/A | 9 |
| ☐ | High-pass filter | Wainwright | WHNX5.0 | N/A | N/A | 8 |
| ☐ | High-Pass Filter | Wainwright | WHKX8.5 | N/A | N/A | 1 |
| ☐ | Tunable Notch Filter | Wainwright | WRCT800.0 /960.0-0.2/40-8SSK | N/A | N/A | 32 |
| ☐ | Tunable Notch Filter | Wainwright | WRCD1700.0 /2000.0-0.2/40-10SSK | N/A | N/A | 53 |
| ☐ | Tunable Notch Filter | Wainwright | WRCT1900.0/ 2200.0-5/40-10SSK | N/A | N/A | 30 |
| ☒ | HORN ANT | ETS | 3115 | 04/10/10 | 04/10/11 | 21097 |
| ☐ | HORN ANT | ETS | 3115 | 14/07/10 | 14/07/11 | 6419 |
| ☒ | HORN ANT | A.H.Systems | SAS-574 | 10/06/09 | 10/06/11 | 154 |
| ☐ | HORN ANT | A.H.Systems | SAS-574 | 10/06/09 | 10/06/11 | 155 |

| | Type | Manufacturer | Model | Cal.Due.Date (dd/mm/yy) | Next.Due.Date (dd/mm/yy) | S/N |
|---|---|---|---|---|---|---|
| ☐ | LOOP Antenna | ETS | 6502 | 29/10/10 | 29/10/11 | 3471 |
| ☐ | Coaxial Fixed Attenuators | Agilent | 8491B | 01/07/10 | 01/07/11 | MY39260700 |
| ☐ | Attenuator (3dB) | WEINSCHEL | 56-3 | 05/10/10 | 05/10/11 | Y2342 |
| ☐ | Attenuator (3dB) | WEINSCHEL | 56-3 | 05/10/10 | 05/10/11 | Y2370 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 01/10/10 | 01/10/11 | BP4386 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 11/01/10 | 11/01/11 | BP4387 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 31696 | 05/10/10 | 05/10/11 | 446 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 31696 | 05/10/10 | 05/10/11 | 408 |
| ☐ | Attenuator (20dB) | WEINSCHEL | 86-20-11 | 05/10/10 | 05/10/11 | 432 |
| ☐ | Attenuator (30dB) | JFW | 50FH-030-300 | 12/03/10 | 12/03/11 | 060320-1 |
| ☐ | Attenuator (40dB) | WEINSCHEL | 57-40-33 | 01/10/10 | 01/10/11 | NN837 |
| ☐ | Termination | H.P | HP-909D | 02/07/10 | 02/07/11 | 02750 |
| ☐ | Termination | H.P | HP-909D | 02/07/10 | 02/07/11 | 02702 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0088CAN | 01/07/10 | 01/07/11 | 788 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0185CAN | 01/07/10 | 01/07/11 | 790 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0215CAN | 01/07/10 | 01/07/11 | 112 |
| ☒ | Amplifier (30dB) | Agilent | 8449B | 23/04/10 | 23/04/11 | 3008A01590 |
| ☐ | Amplifier (30dB) | H.P | 8449B | 13/05/10 | 13/05/11 | 3008A00370 |
| ☐ | Amplifier | EMPOWER | BBS3Q7ELU | 04/10/10 | 04/10/11 | 1020 |
| ☐ | RF Power Amplifier | OPHIRRF | 5069F | 01/07/10 | 01/07/11 | 1006 |
| ☒ | EMI TEST RECEIVER | R&S | ESU | 29/01/10 | 29/01/11 | 100014 |
| ☒ | BILOG ANTENNA | SCHAFFNER | CBL6112B | 14/07/10 | 14/07/11 | 2737 |
| ☒ | Amplifier (22dB) | H.P | 8447E | 29/01/10 | 29/01/11 | 2945A02865 |
| ☐ | EMI TEST RECEIVER | R&S | ESCI | 12/05/10 | 12/05/11 | 100364 |
| ☒ | LOG-PERIODIC ANT. | Schwarzbeck | UHALP 9108 A-1 | 07/10/09 | 07/10/11 | 1098 |
| ☒ | BICONICAL ANT. | Schwarzbeck | VHA 9103 | 06/10/09 | 06/10/11 | 91031946 |
| ☐ | LOG-PERIODIC ANT. | Schwarzbeck | UHALP9108A | 07/07/10 | 07/07/11 | 590 |
| ☐ | Low Noise Pre Amplifier | TSJ | MLA-100K01-B01-2 | 12/03/10 | 12/03/11 | 1252741 |
| ☒ | Amplifier (25dB) | Agilent | 8447D | 12/03/10 | 12/03/11 | 2944A10144 |
| ☐ | Amplifier (25dB) | Agilent | 8447D | 01/07/10 | 01/07/11 | 2648A04922 |
| ☒ | Spectrum Analyzer(CE) | H.P | 8591E | 12/03/10 | 12/03/11 | 3649A05889 |
| ☒ | LISN | Kyoritsu | KNW-407 | 29/01/10 | 29/01/11 | 8-317-8 |
| ☒ | LISN | Kyoritsu | KNW-242 | 29/01/10 | 29/01/11 | 8-654-15 |
| ☒ | CVCF | NF Electronic | 4420 | 12/03/10 | 12/03/11 | 304935/337980 |
| ☒ | 50 ohm Terminator | HME | CT-01 | 12/01/10 | 12/01/11 | N/A |
| ☒ | RFI/FIELD Intensity Meter | Kyoritsu | KNM-2402 | 02/07/10 | 02/07/11 | 4N-170-3 |