# DIGITAL EMC CO., LTD.

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# CERTIFICATION OF COMPLIANCE

**Zenocom Co.,Ltd.**
#7201 Dongil Technotown 7th, 823,Kwanyang-2Dong,
Dongan_Ku, Anyang-City, Kyungki-Do, Korea 431-716

Dates of Tests: September 21~28, 2006
Test Report S/N: DR50110609O
Test Site : DIGITAL EMC CO., LTD.

FCC ID **RRRBX-100**

APPLICANT **Zenocom Co.,Ltd.**

| | | |
|---|---|---|
| **FCC Classification** | : | **Frequency Hopping Spread Spectrum (FHSS)** |
| **Device name** | : | **Bluetooth Handsfree** |
| **Manufacturer** | : | **Zenocom Co., Ltd** |
| **FCC ID** | : | **RRRBX-100** |
| **Model name** | : | **BX-100** |
| **Test Device Serial number** | : | **Identical prototype** |
| **FCC Rule Part(s)** | : | **FCC Part 15.247 Subpart C** |
| | | **ANSI C-63.4-2003** |
| **Frequency Range** | : | **2402 ~ 2480 MHz** |
| **Max. Output power** | : | **2.16dBm Conducted** |
| **Data of issue** | : | **September 28, 2006** |

**I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.**

NVLAP LAB CODE 200559-0

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# 1. General information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.
Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080
http://www.digitalemc.com E-mail : Harveysung@digitalemc.com
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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competent of calibration and testing laboratory".
This laboratory is accredited by NVLAP for NVLAP Lab. Code : 200559-0.

**Test operator: engineer**

| Data | Name | Signature |
|---|---|---|
| September 28, 2006 | Dong -Chul CHA |  |

**Report Reviewed By: manager**

| Data | Name | Signature |
|---|---|---|
| September 28, 2006 | Harvay Sung |  |

Ordering party:

| | | |
|---|---|---|
| Company name | : | Zenocom Co., Ltd. |
| Address | : | #7201 Dongil Technotown 7th, 823,Kwanyang-2Dong, Dongan_Ku, Anyang-City, |
| City/town | : | Kyungki-Do |
| Country | : | Korea |
| Zip code | : | 431-716 |
| Date of order | : | September 20, 2006 |

# 2. Information about test item

**RRRBX-100**

## 2.1 Equipment information

| | |
|---|---|
| Equipment model no. | BX-100 |
| Add Model no. | PG82, PG83, R2D2, C3PO |
| Equipment serial no. | Identical prototype |
| Type of equipment | Bluetooth Handsfree |
| Frequency band | 2402 ~ 2480 MHz |
| Type of Modulation | GFSK |
| Channel Access Protocol | Frequency Hopping |
| Channel Spacing | 1.0 MHz |
| Type of antenna | Chip Antenna |

## 2.2 Tested frequency

| Frequency | TX | RX |
|---|---|---|
| Low frequency | 2402MHz | 2402MHz |
| Middle frequency | 2441MHz | 2441MHz |
| High frequency | 2480MHz | 2480MHz |

## 2.3 Tested environment

| | | |
|---|---|---|
| Temperature | : | 15 ~ 35 ($^{o}$C) |
| Relative humidity content | : | 20 ~ 75 % |
| Air pressure | : | 86 ~ 103 kPa |
| Details of power supply | : | 5 V DC |

## 2.4 Ancillary Equipment

| Equipment | Model No. | Serial No. | Manufacturer |
|---|---|---|---|
| MP3 Player | MP3Player(A1137) | 7K54434SSZB | Apple Computer Inc. |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

## 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 Section(s) | Parameter | Limit | Test Condition | Status (note 1) |
|---|---|---|---|---|
| **I. Test Items** | | | | |
| 15.247(a) | Carrier Frequency Separation | > 25 kHz | Conducted | C |
| | Number of Hopping Frequencies | > 75 hops | | C |
| | 20 dB Bandwidth | < 1 MHz | | C |
| | Dwell Time | 0.4 seconds within a 30 second period per any frequency | | C |
| 15.247(b) | Transmitter Output Power | < 1Watt | | C |
| 15.247(c) | 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<br>15.209 | Radiated Emissions | FCC 15.209 Limits | Radiated | C |
| 15.207 | AC Conducted Emissions | EN 55022 | AC Line Conducted | NT *Note 2 |

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2 : This device was tested with Ipod of Apple Computer Inc. AC/DC adaptor and this device can not be connected to Ipod simultaneously. So conducted emission test was not performed.

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

## 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 = 3 MHz (wide enough to capture the peaks of two adjacent channels)

RBW = 30 kHz (1% of the span or more) Sweep = auto

VBW = 30 kHz Detector function = peak

Trace = max hold

**Measurement Data:**

| Frequency of marker #1 (MHz) | Frequency of marker #2 (MHz) | Test Results | |
|---|---|---|---|
| | | Carrier Frequency Separation (MHz) | Result |
| 2440.995 | 2441.955 | 0.960 | Complies |

- See next pages for actual measured spectrum plots.

**Minimum Standard:**

| |
|---|
| The EUT shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. |

**Measurement Setup**

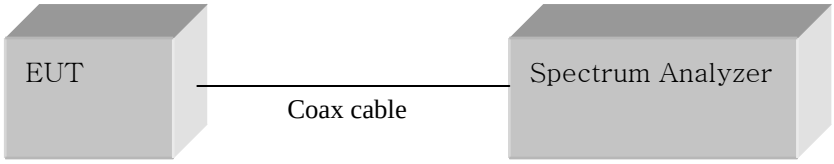
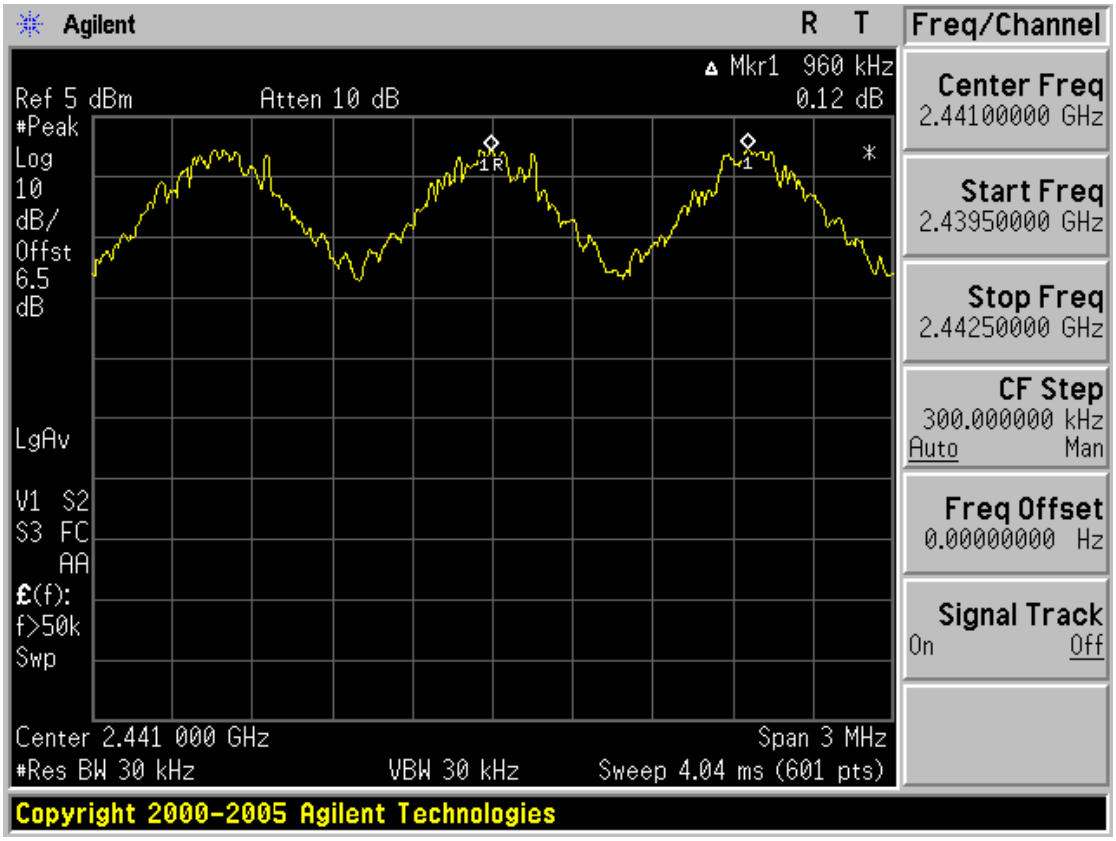



Figure 1: Measurement setup for the carrier frequency separation

## Carrier Frequency Separation



## 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:

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

RBW = 300 kHz (1% of the span or more) Sweep = auto

VBW = 300 kHz (VBW ≥ RBW) Detector function = peak

Trace = max hold Span = 25MHz

**Measurement Data: Complies**

| **Total number of Hopping Channels** | 79 |
|---|---|

- See next pages for actual measured spectrum plots.

**Minimum Standard:**

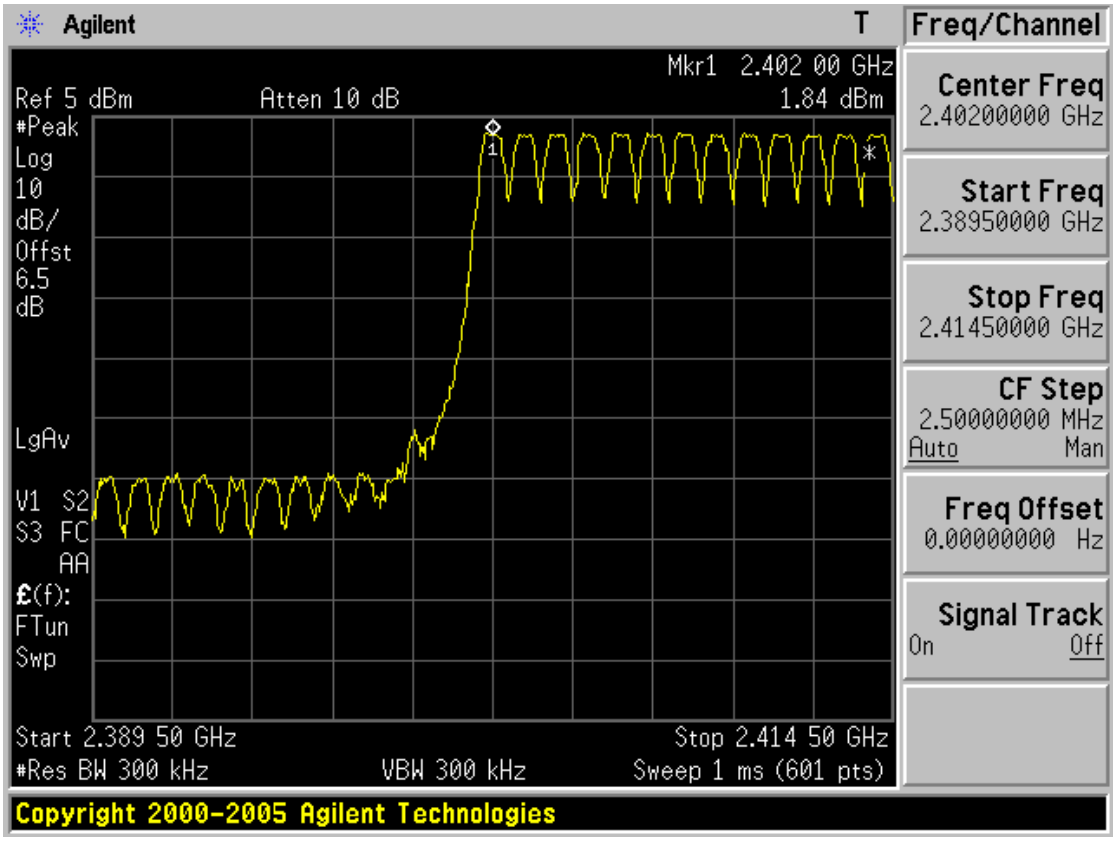
| At least 75 hopes |
|---|

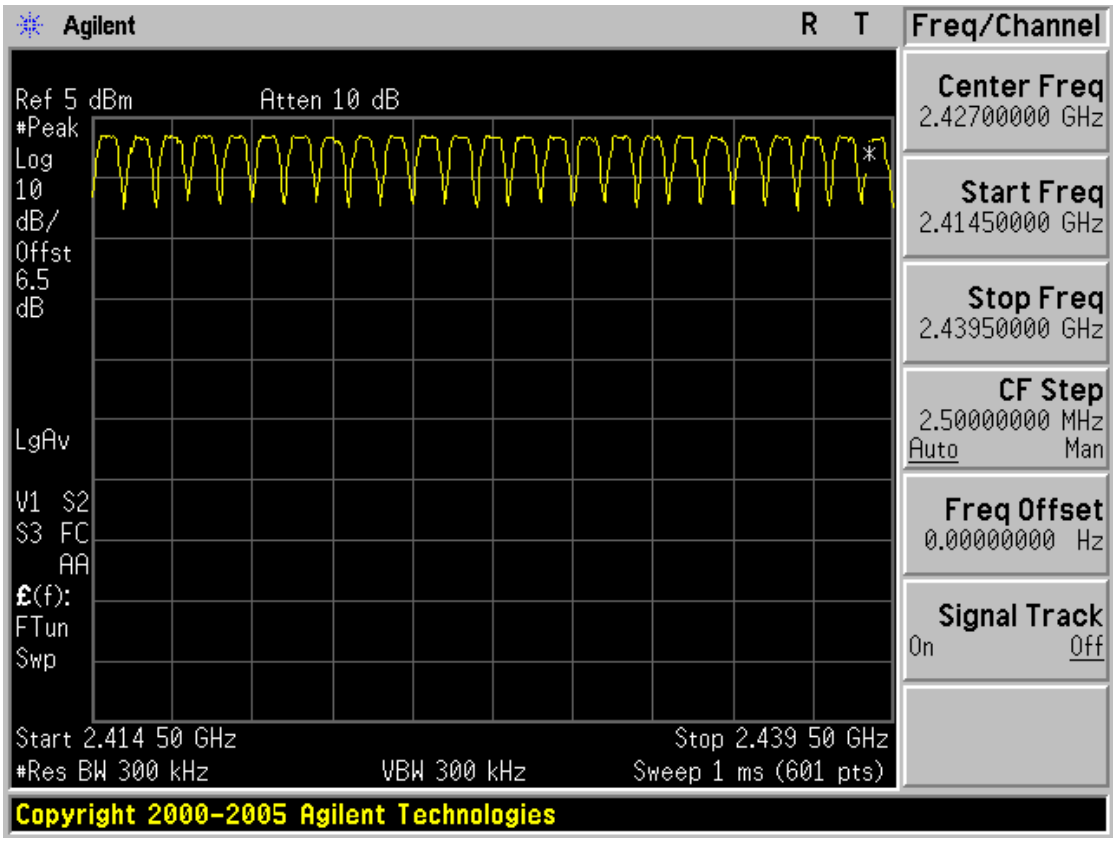
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

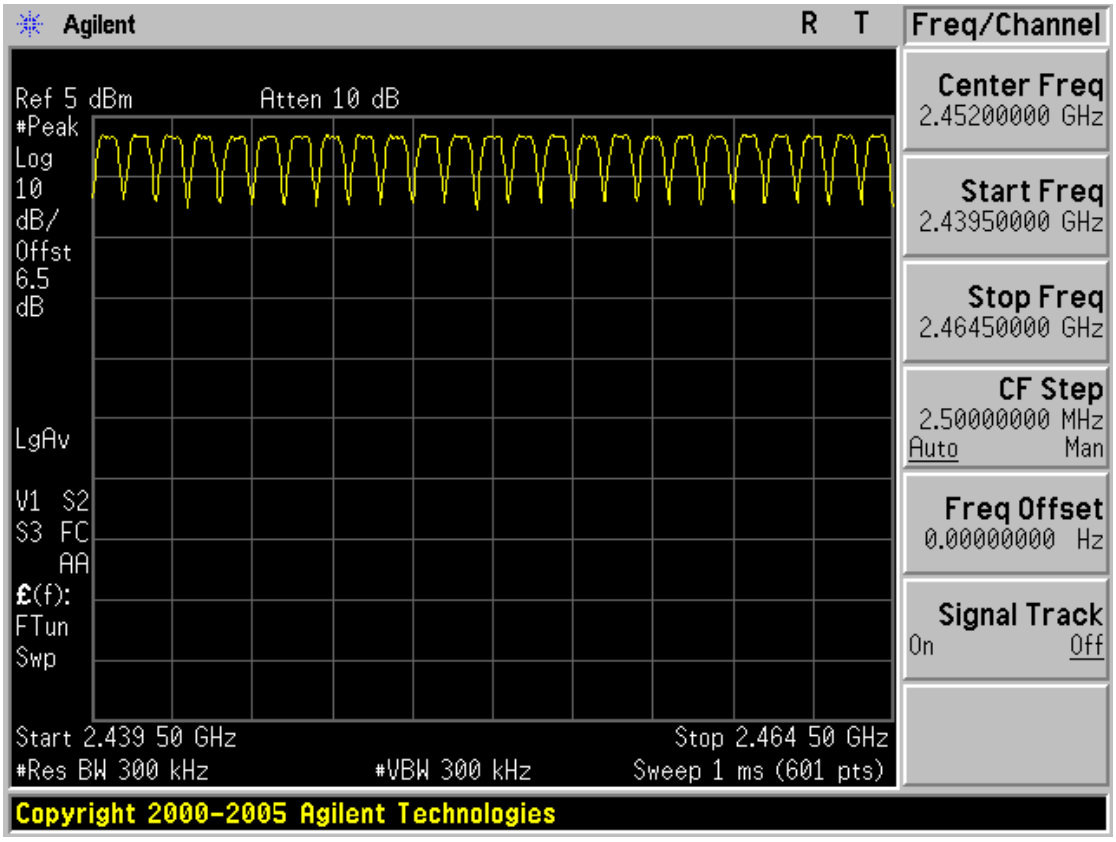
 

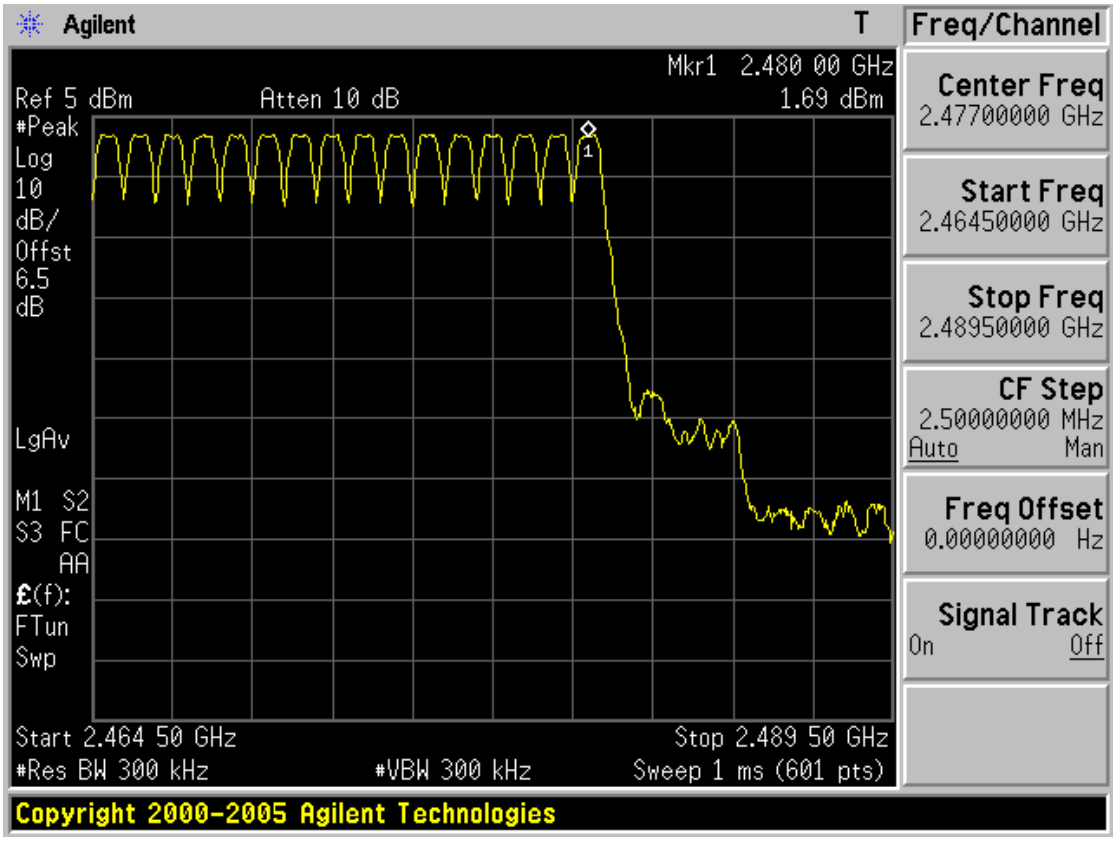
## Number of Hopping Frequencies



## Number of Hopping Frequencies



### 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 channels

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

RBW = 10 kHz (1% of the 20dB bandwidth or more) Sweep = auto

VBW = 30 kHz (VBW ≥ RBW) Detector function = peak

Trace = max hold

**Measurement Data:**

| Frequency (MHz) | Channel No. | Test Results | |
|---|---|---|---|
| | | Measured Bandwidth (MHz) | Result |
| 2402 | 1 | 0.840 | Complies |
| 2441 | 40 | 0.843 | Complies |
| 2480 | 79 | 0.840 | Complies |

- See next pages for actual measured spectrum plots.

**Minimum Standard:**

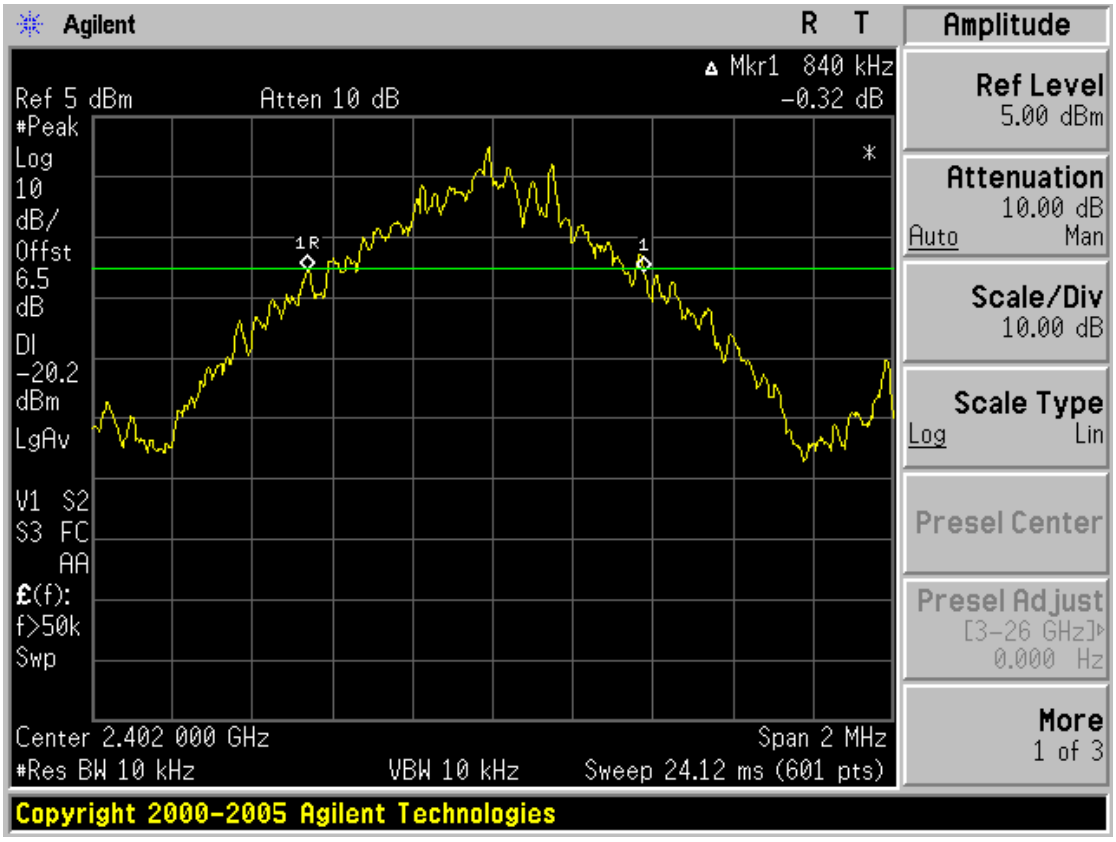
| |
|---|
| The transmitter shall have a maximum 20dB bandwidth of 1 MHz. |

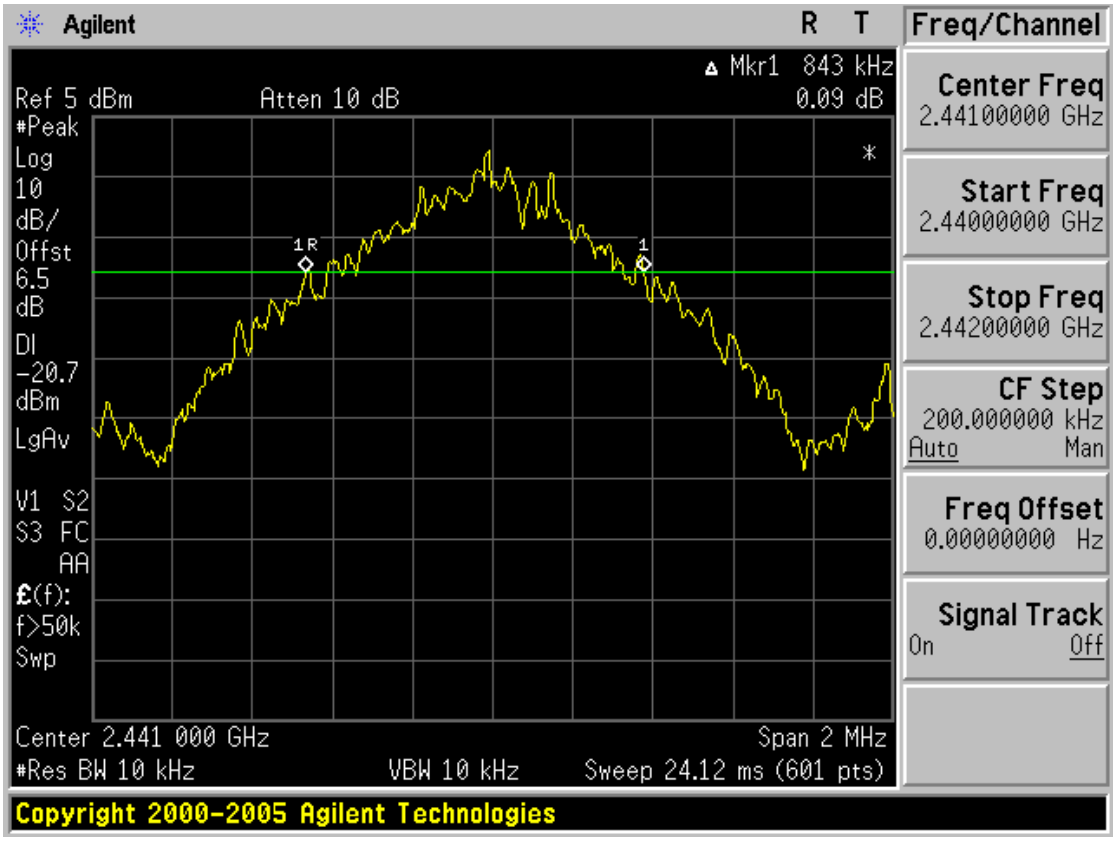
**Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

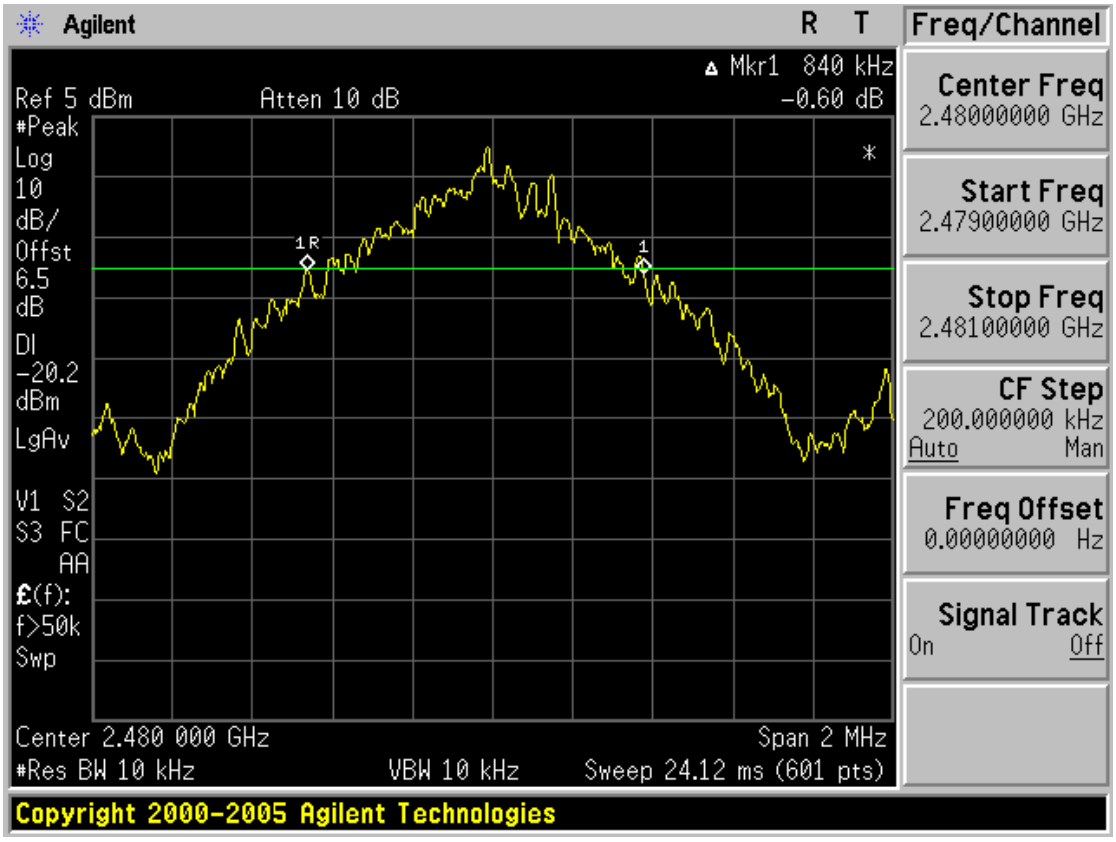
## 20 dB Bandwidth



## 20 dB Bandwidth



## 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 = 1 MHz (VBW ≥ RBW)

Trace = max hold  Detector function = peak

**Measurement Data:**

| Packet Type | Burst duration in one hop (us) | Test Results | |
|---|---|---|---|
| | | Dwell Time (ms) | Result |
| DH 1 | 420 | 134.446 | Complies |
| DH 3 | 1680 | 270.749 | Complies |
| DH 5 | 2917 | 310.631 | Complies |

- See next pages for actual measured spectrum plots.

**Minimum Standard:**

| |
|---|
| 0.4 seconds within a 30 second period per any frequency |

**Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

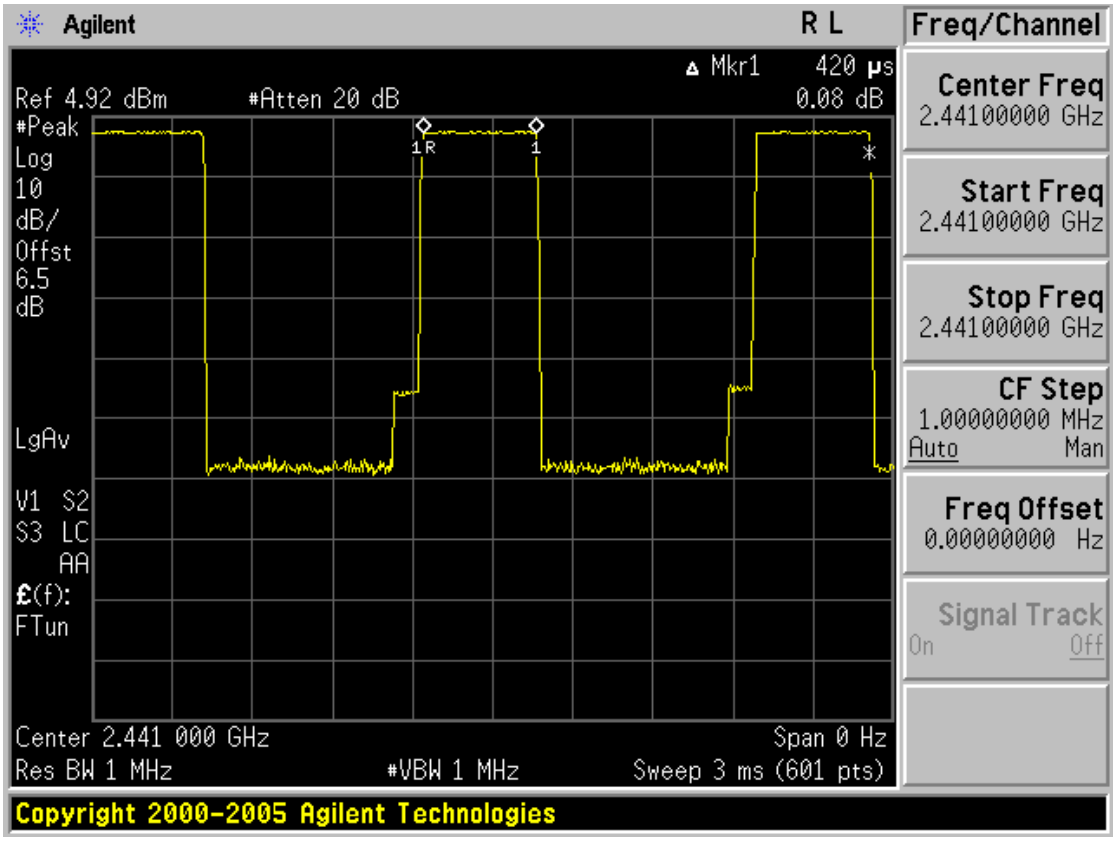
 

## Time of Occupancy for Packet Type DH 1

The system makes worst case 1600 hopes per second or 1 time slot has a length of 625 us with 79 channels. A DH 1 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/2 = 800 hops per second with 79 channels. So you have each channel 800/79 = 10.13 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 10.13 x 31.6 = 320.11 times of appearance.

Each Tx-time per appearance is 420 us

So we have 320.11 x 0.420ms = 134.446 ms per 31.6 seconds.

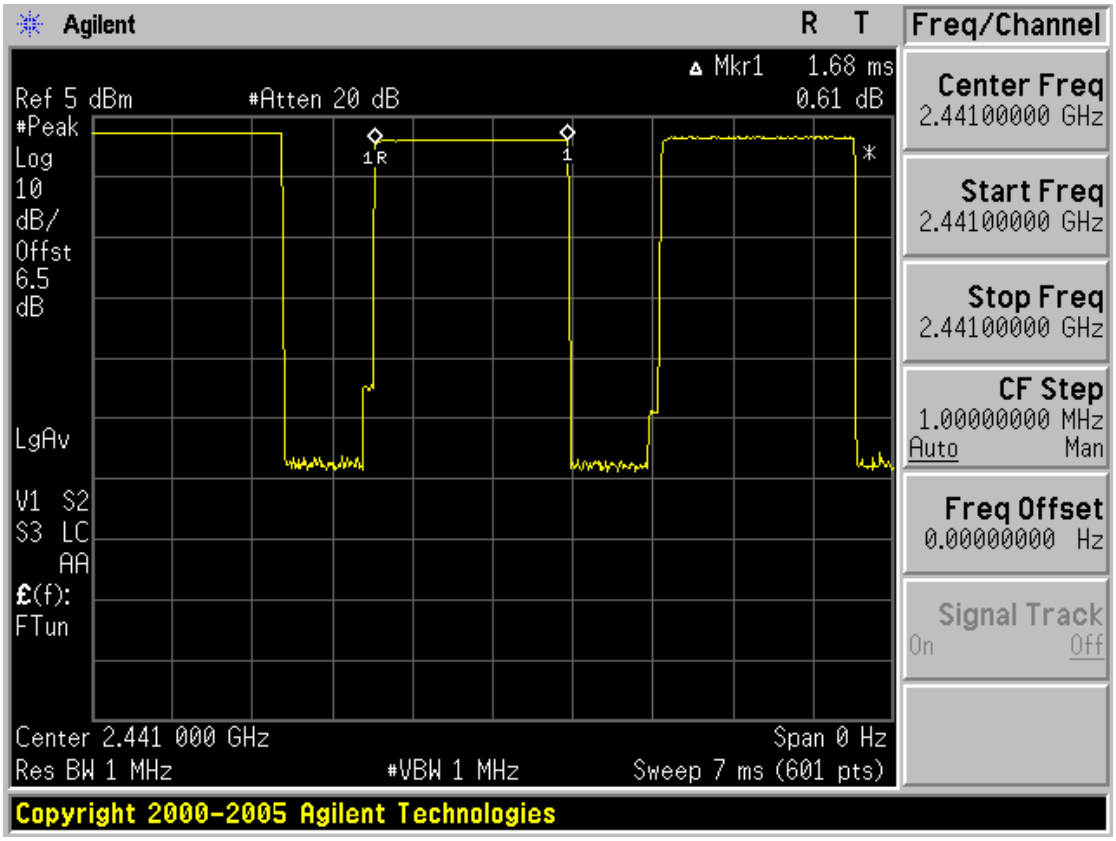


## Time of Occupancy for Packet Type DH 3

The system makes worst case 1600 hopes per second or 1 time slot has a length of 625 us with 79 channels. A DH 3 Packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/4 = 400 hops per second with 79 channels. So you have each channel 400/79 = 5.1 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 5.1 x 31.6 = 161.16 times of appearance.

Each Tx-time per appearance is 1.68 ms

So we have 161.16 x 1.68 ms = 270.749 ms per 31.6 seconds.



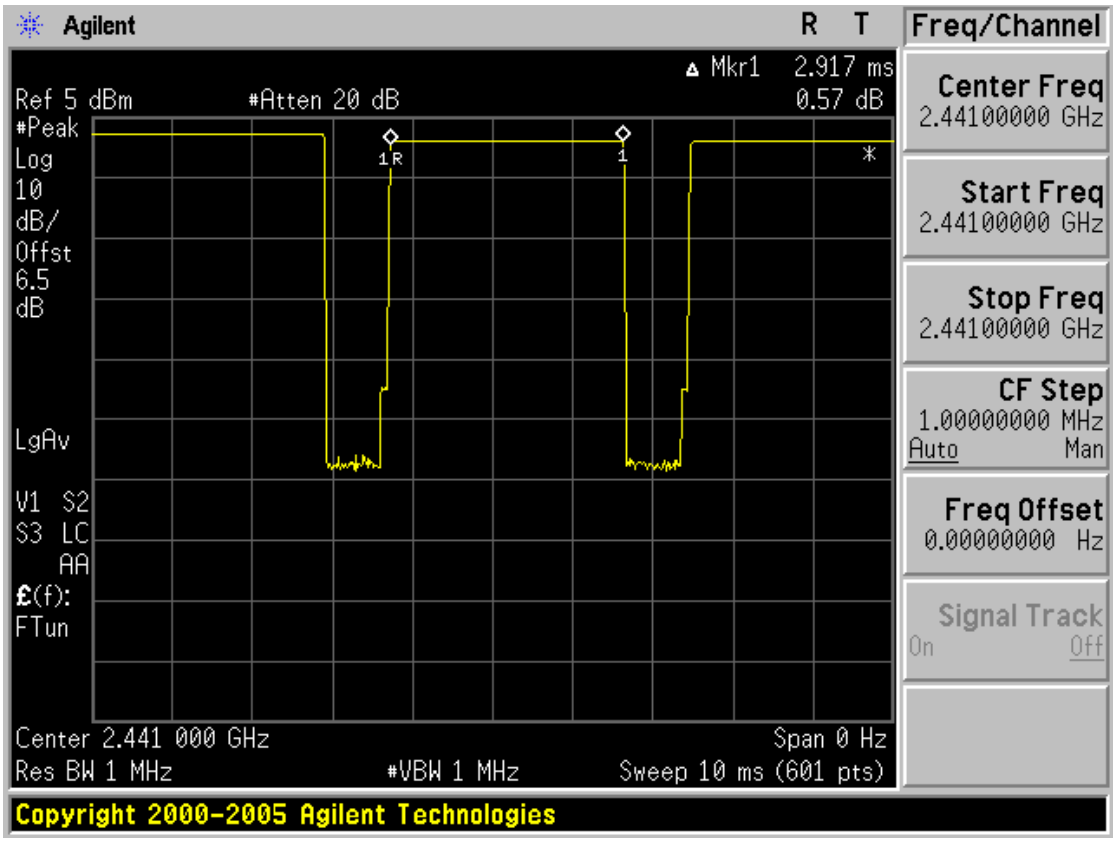
## Time of Occupancy for Packet Type DH 5

The system makes worst case 1600 hopes per second or 1 time slot has a length of 625 us with 79 channels. A DH 5 Packet need 5 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/6 = 266.67 hops per second with 79 channels. So you have each channel 266.67/79 = 3.37 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 3.37 x 31.6 = 106.49 times of appearance.

Each Tx-time per appearance is 2.917 ms

So we have 106.49 x 2.917 ms = 310.631 ms per 31.6 seconds.

.



### 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 channels

Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 1 MHz (greater than the 20dB bandwidth of the emission being measured)

VBW = 1 MHz (VBW ≥ RBW) Detector function = peak

Trace = max hold Sweep = auto

**Measurement Data:**

| Frequency (MHz) | Ch. | Test Results | | |
|---|---|---|---|---|
| | | dBm | mW | Result |
| 2402 | 1 | **2.16** | **1.64** | **Complies** |
| 2441 | 40 | **1.83** | **1.52** | **Complies** |
| 2480 | 79 | **2.01** | **1.59** | **Complies** |

- See next pages for actual measured spectrum plots.

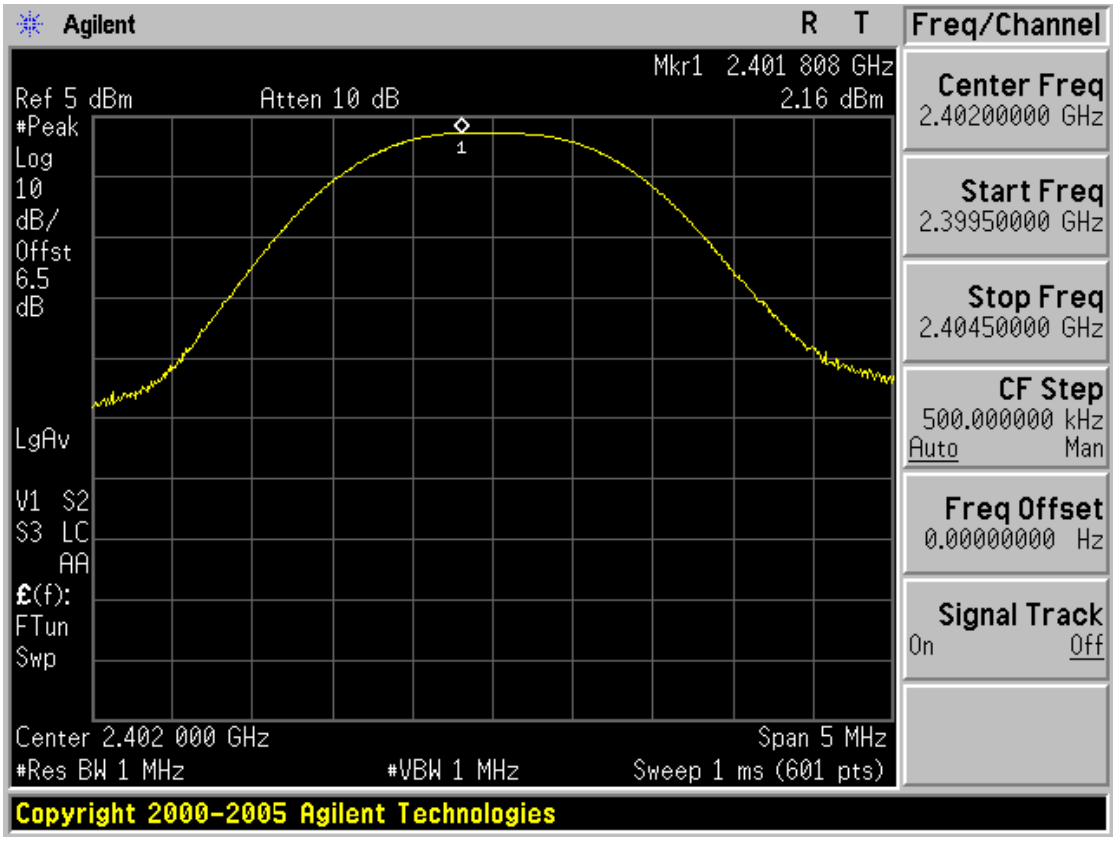
| **Minimum Standard:** | < 1W |
|---|---|

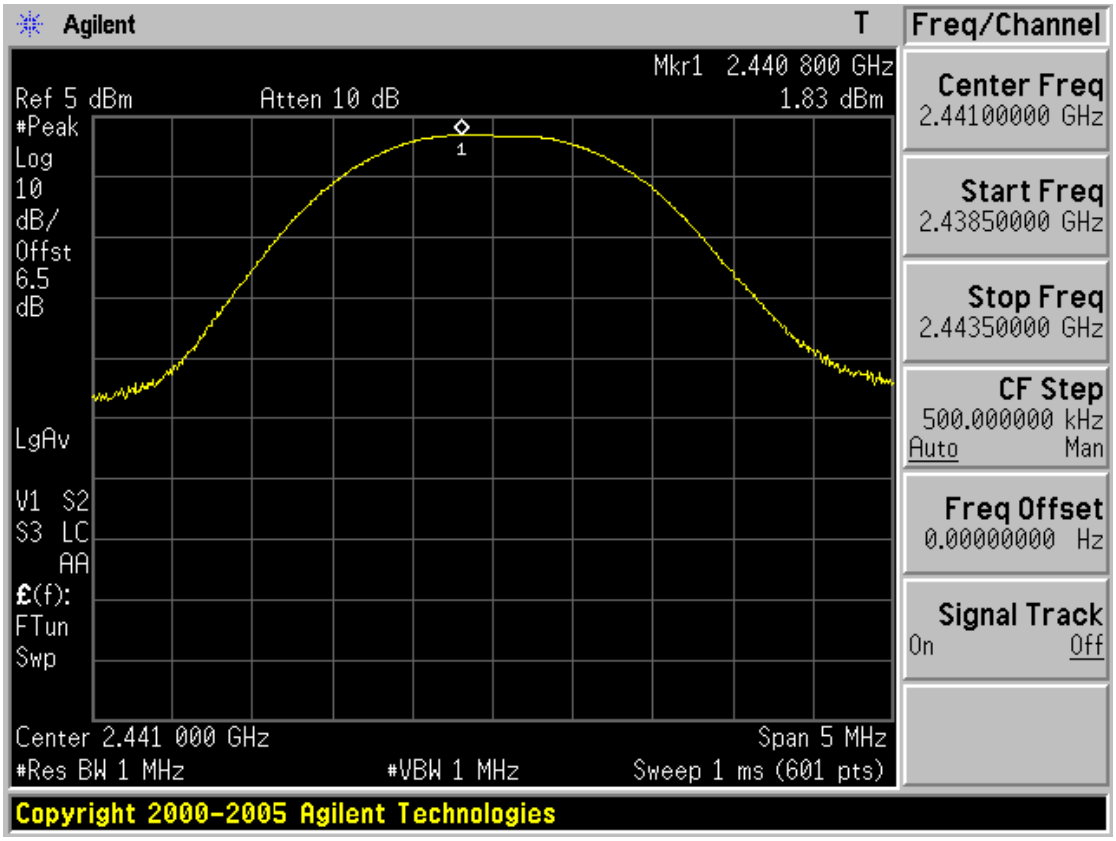
**Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

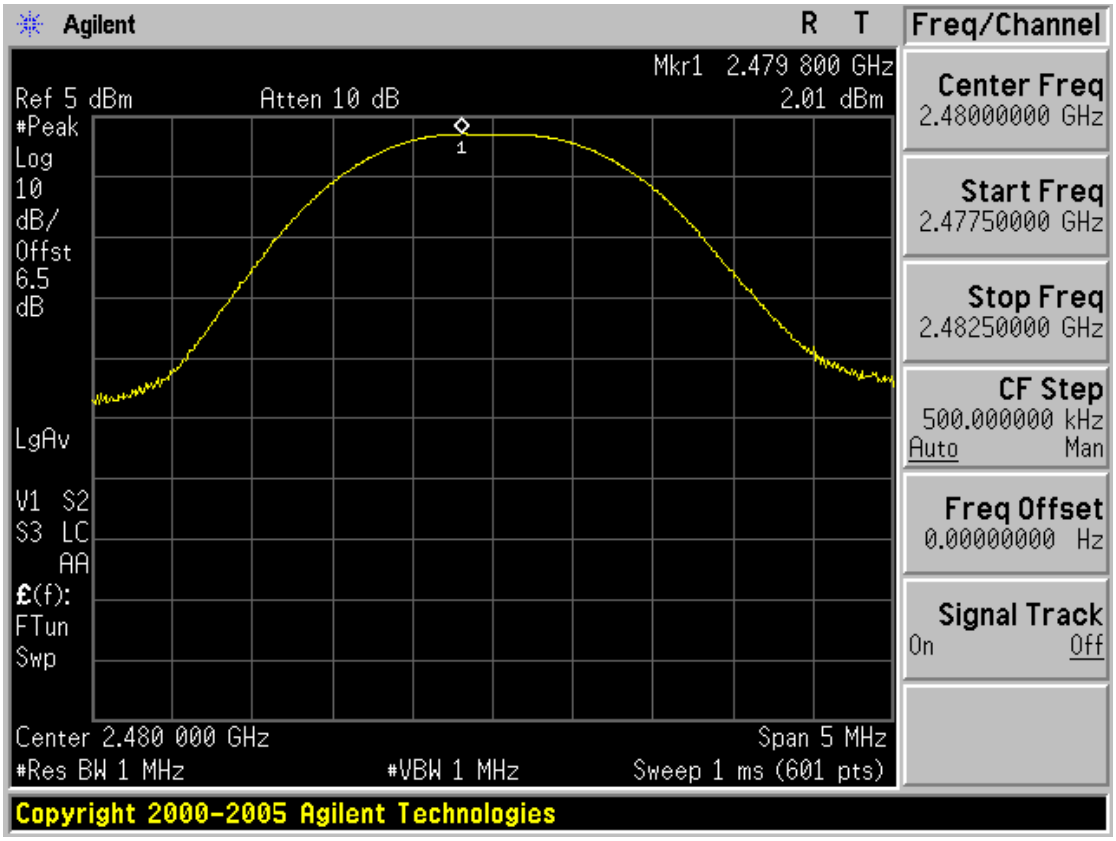
## Peak Output Power



## Peak Output Power



### 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.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

| | |
|---|---|
| RBW = 100 kHz | VBW = 100 kHz |
| Span = 100 MHz | Detector function = peak |
| Trace = max hold | Sweep = auto |

**Measurement Data: Complies**

- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

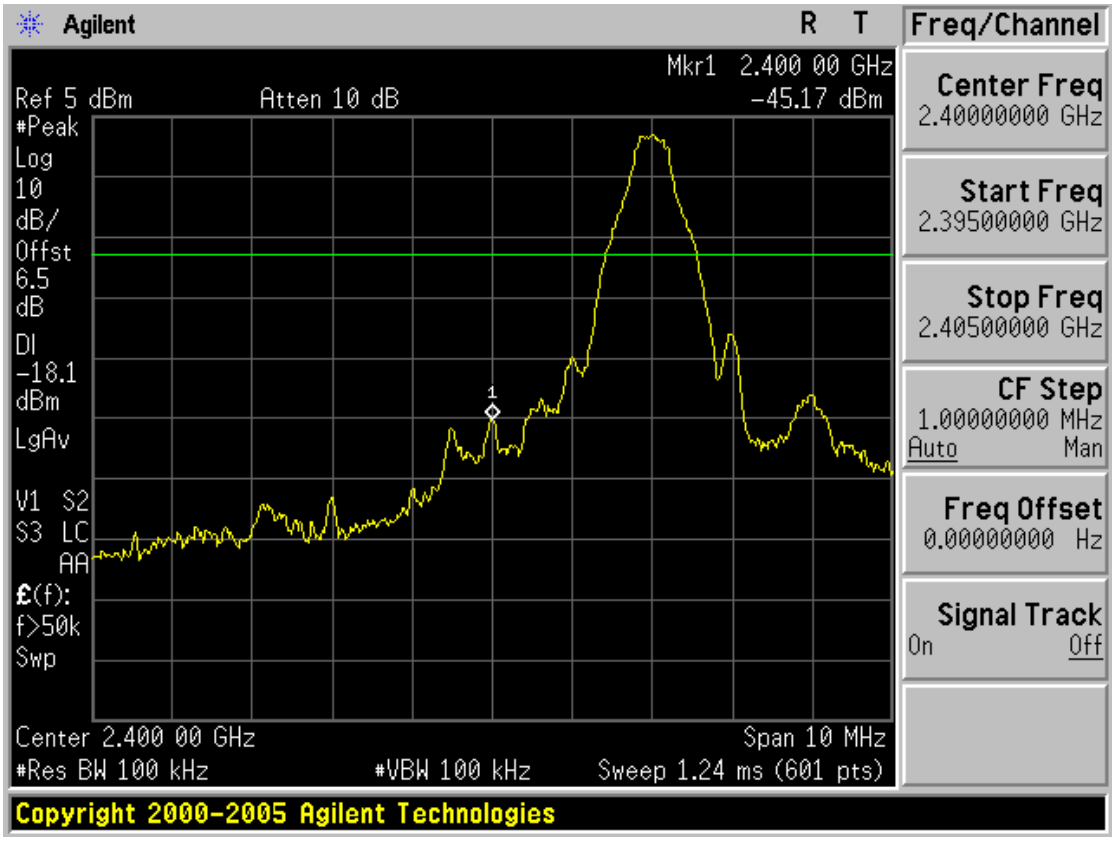
| | |
|---|---|
| **Minimum Standard:** | > 20 dBc |

**Measurement Setup**

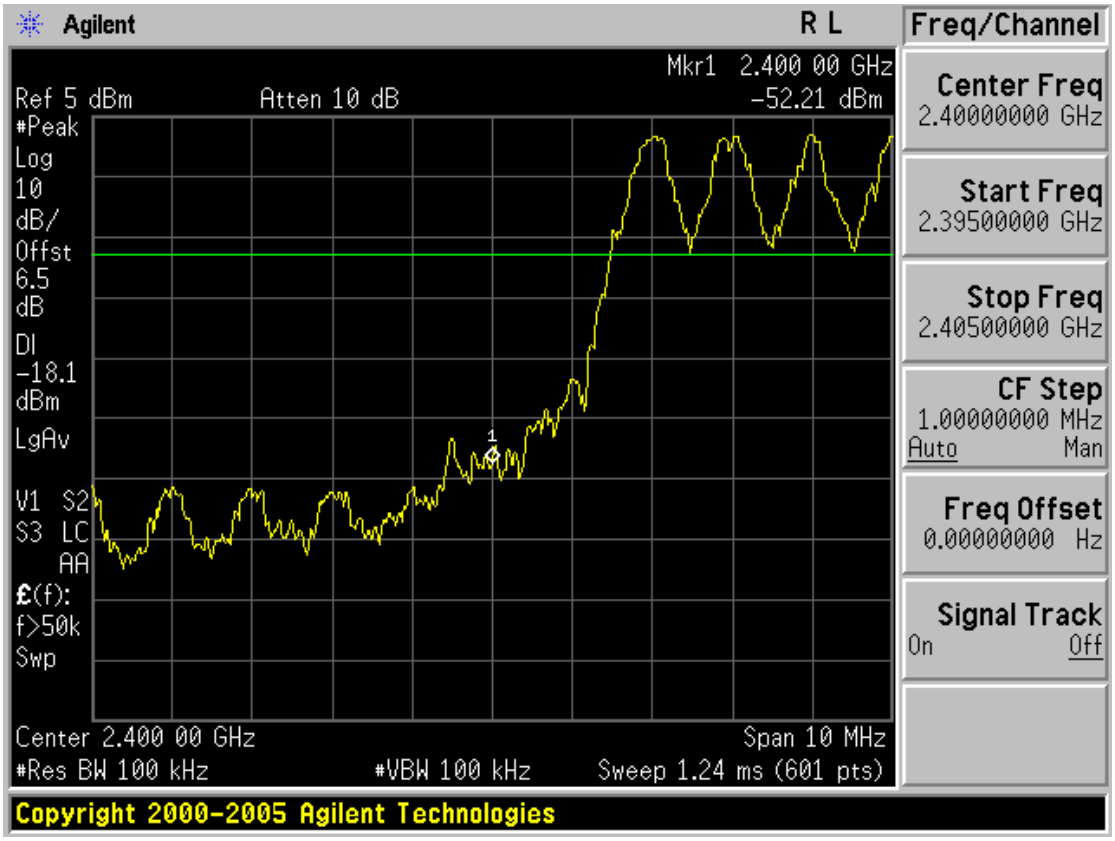
Same as the Chapter 3.2.1 (Figure 1)

**Low band with hopping disabled**

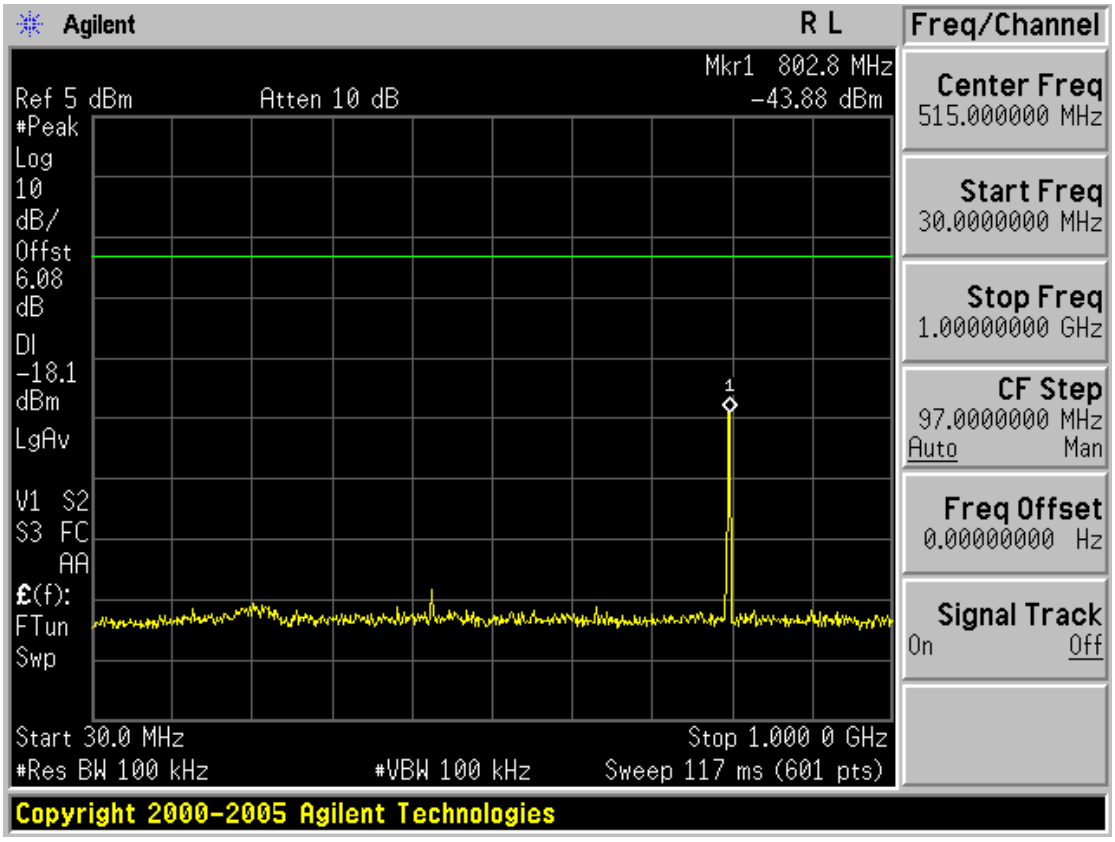



**Low band with hopping enabled**

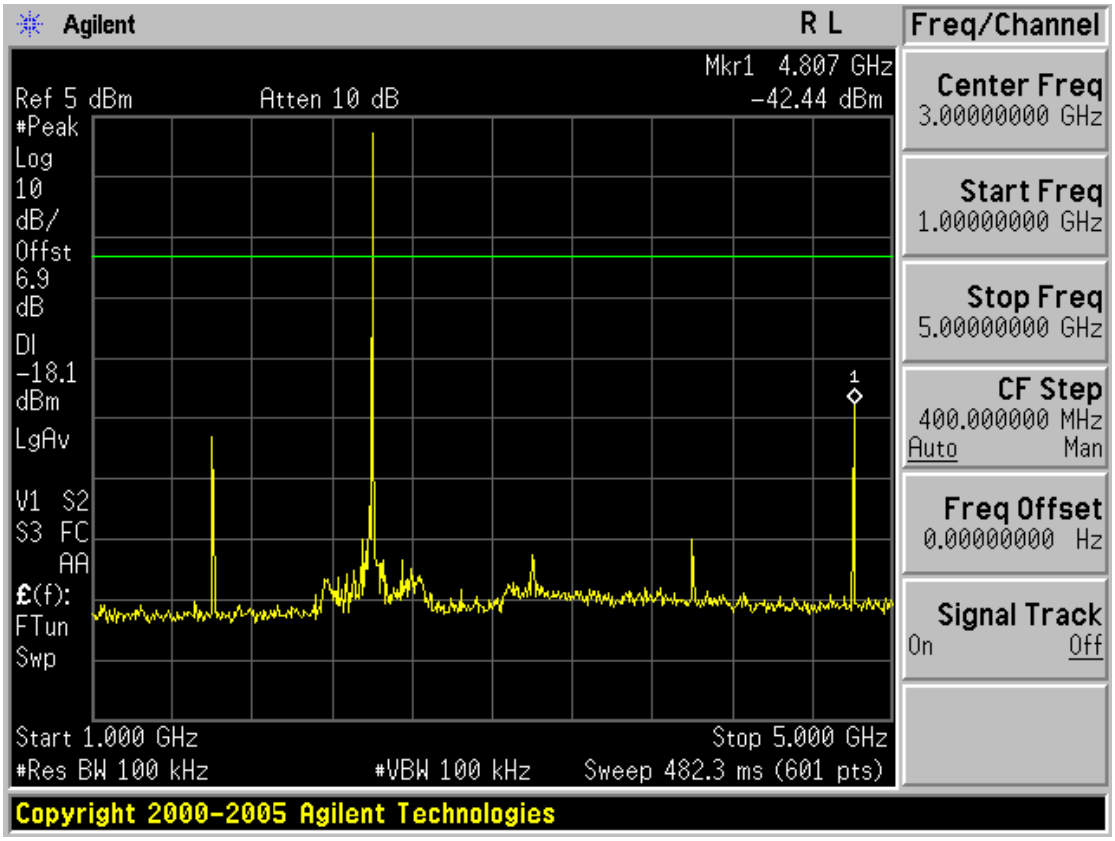


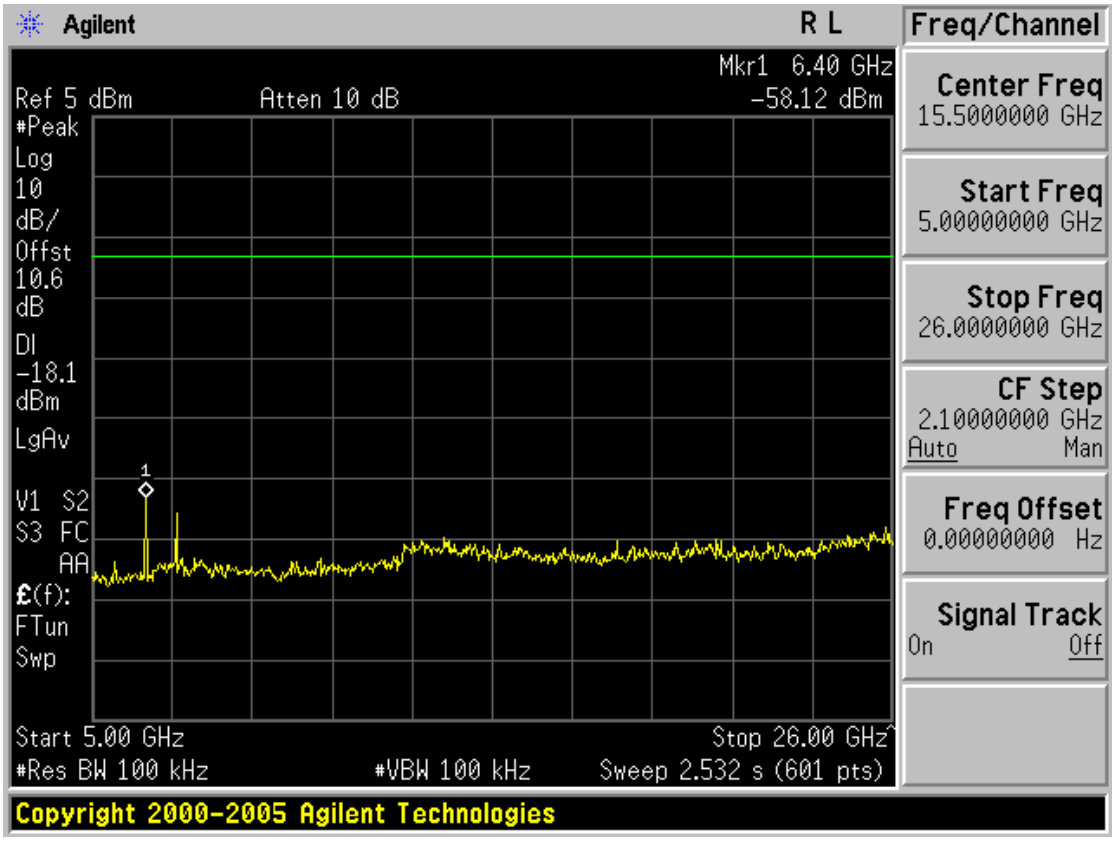
**Low channel spurious - 1**



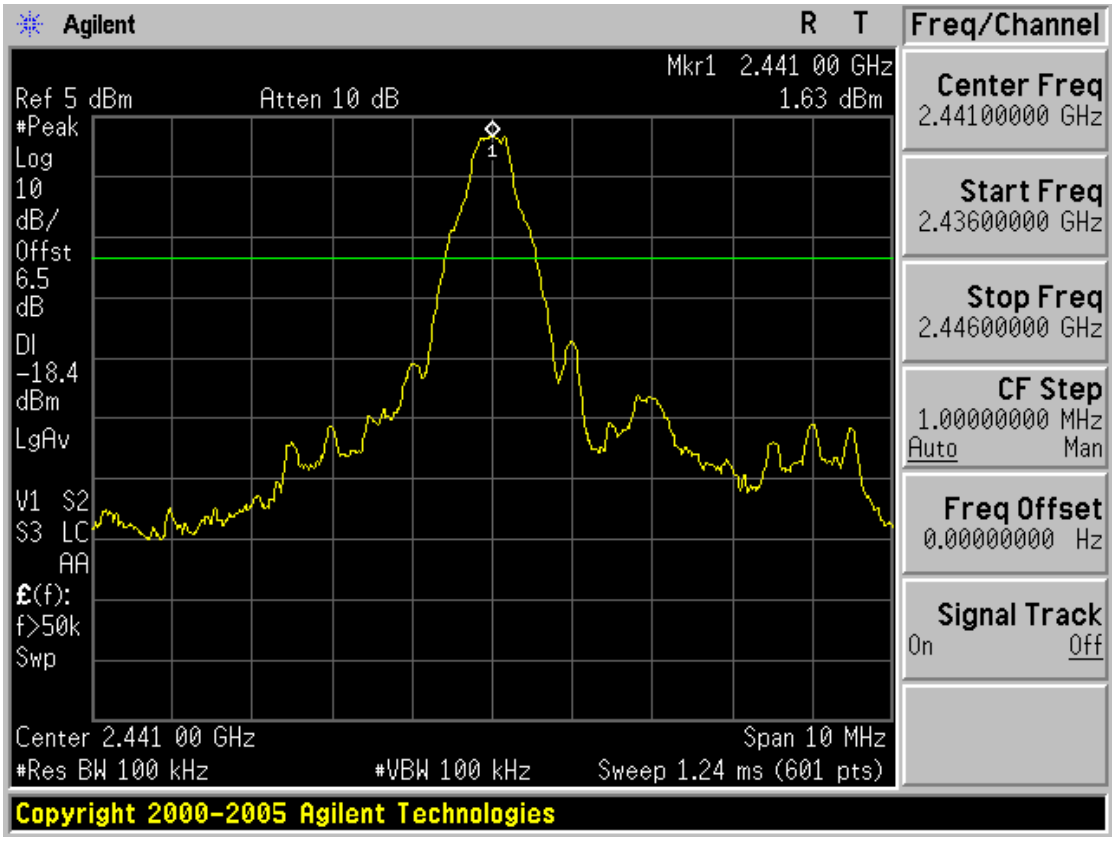

**Low channel spurious - 2**



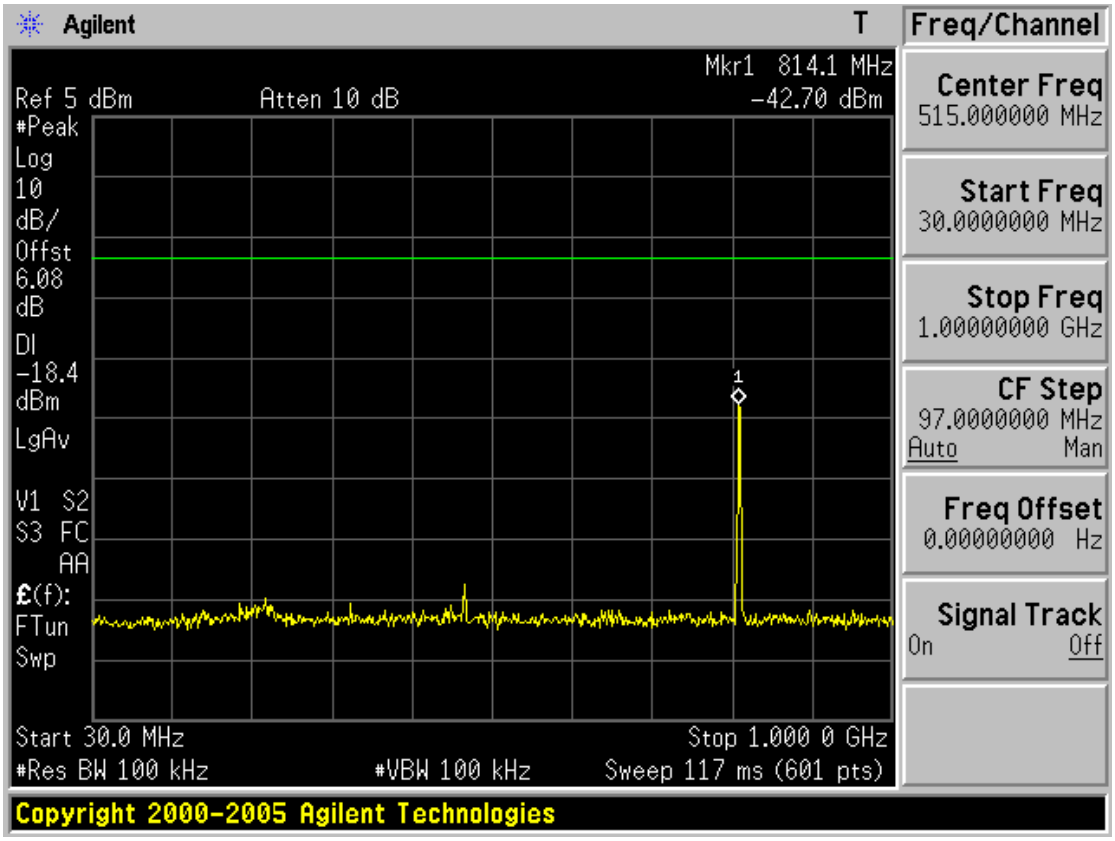
**Low channel spurious - 3**



**Mid channel ref**

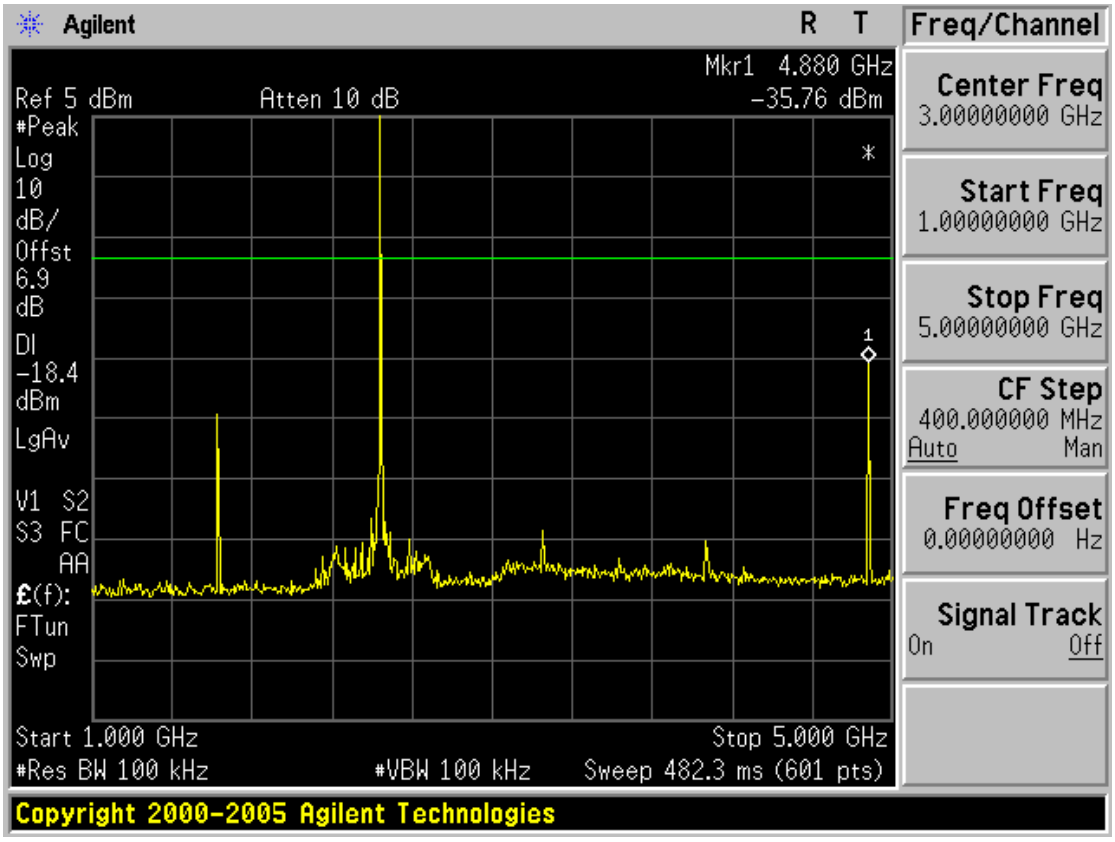



**Mid channel spurious - 1**

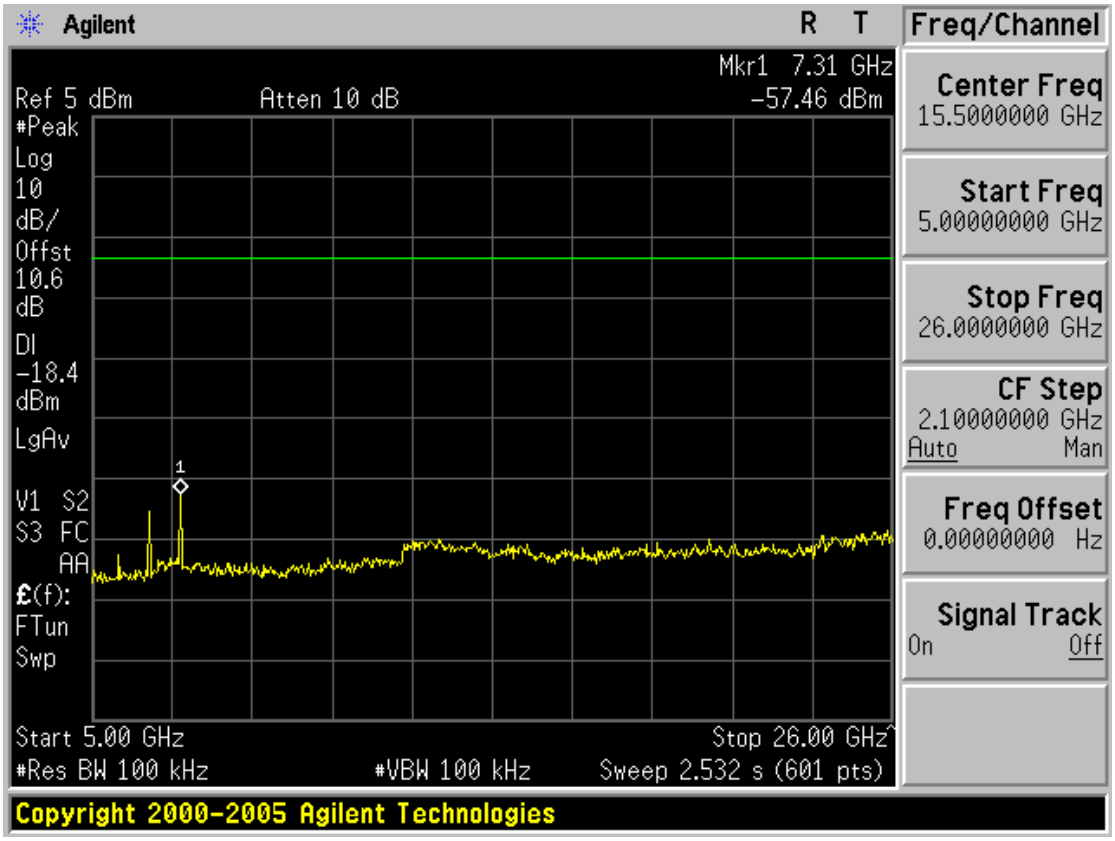


**Mid channel spurious - 2**

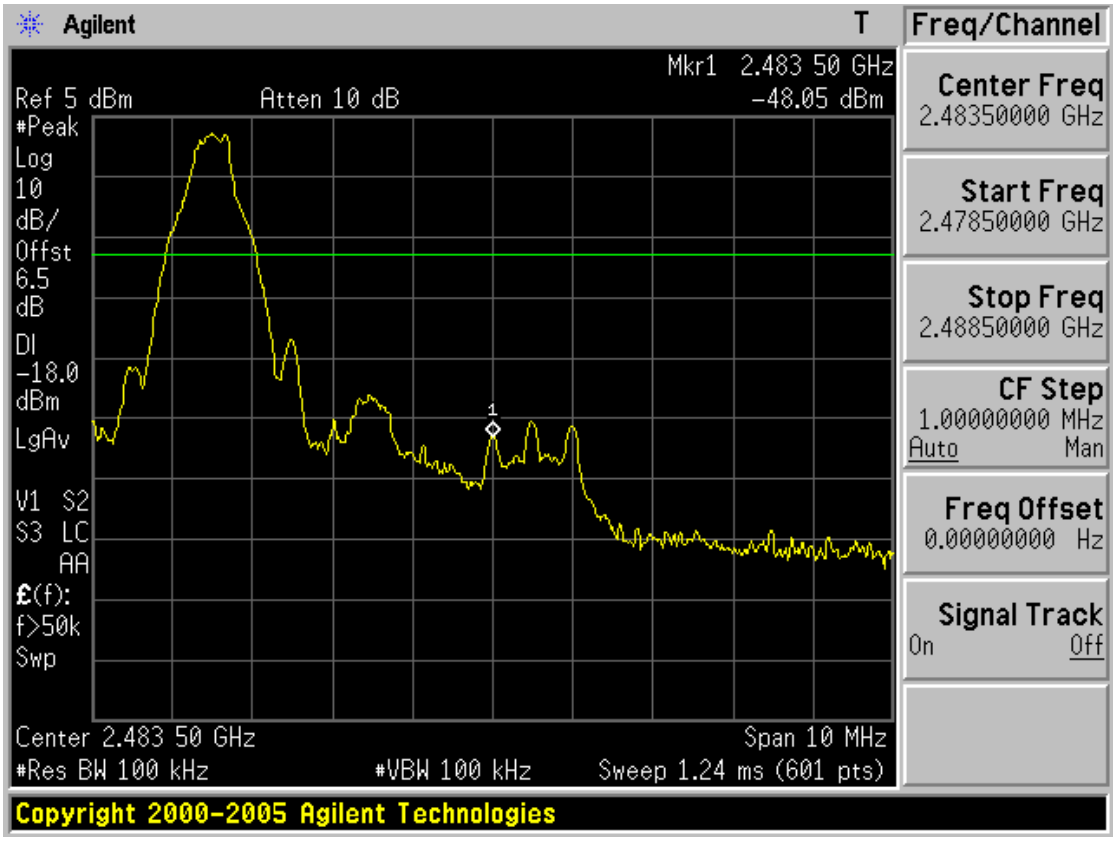



**Mid channel spurious - 3**

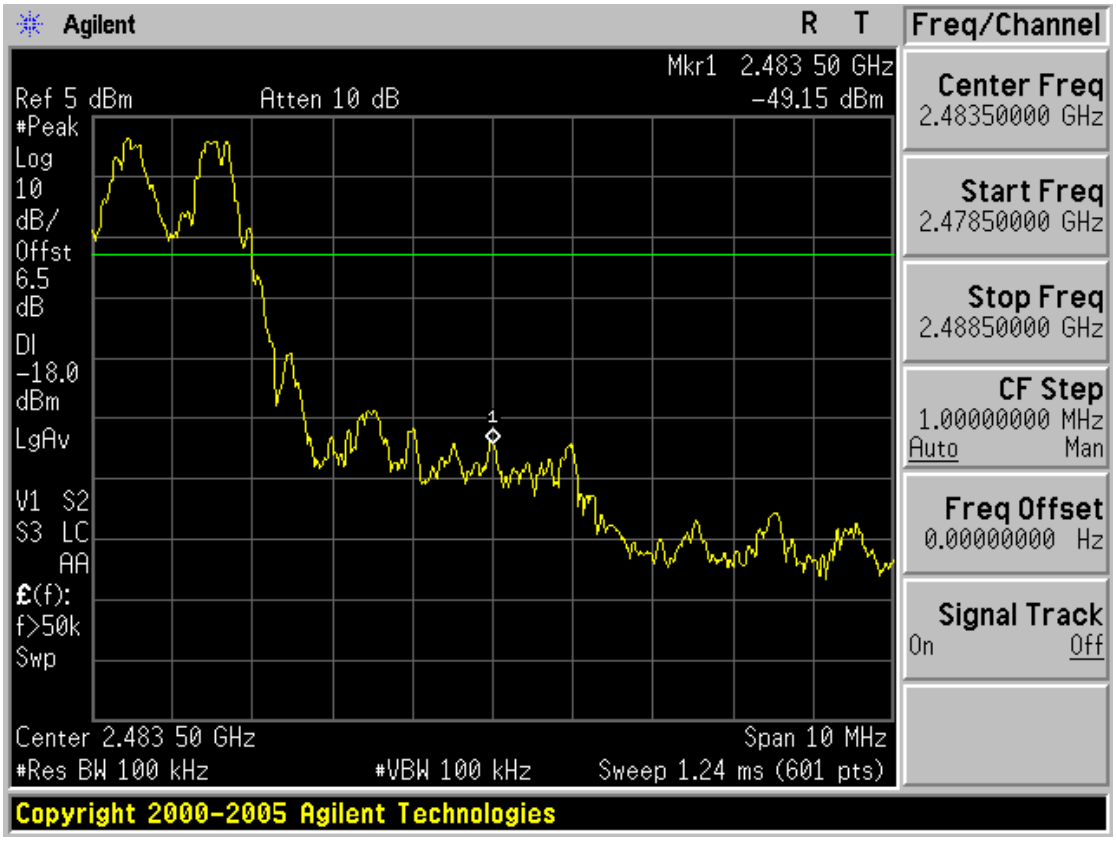


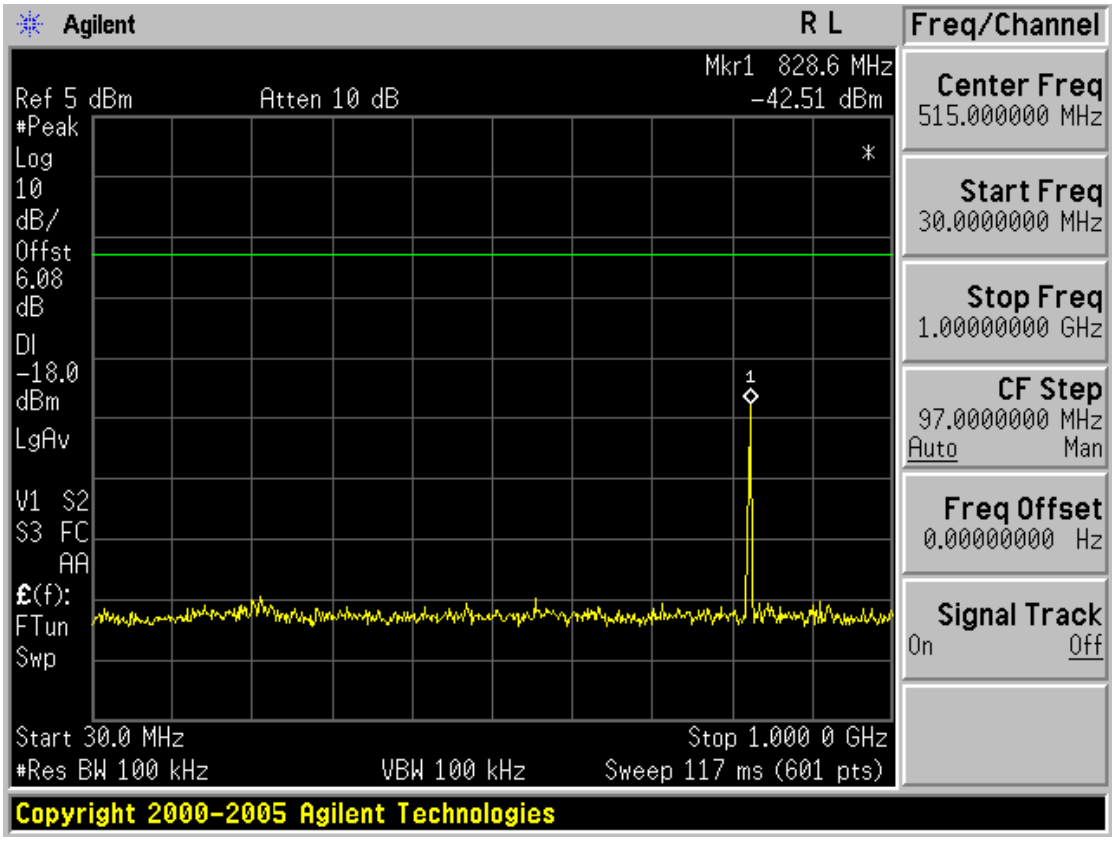
**High band with hopping disabled**



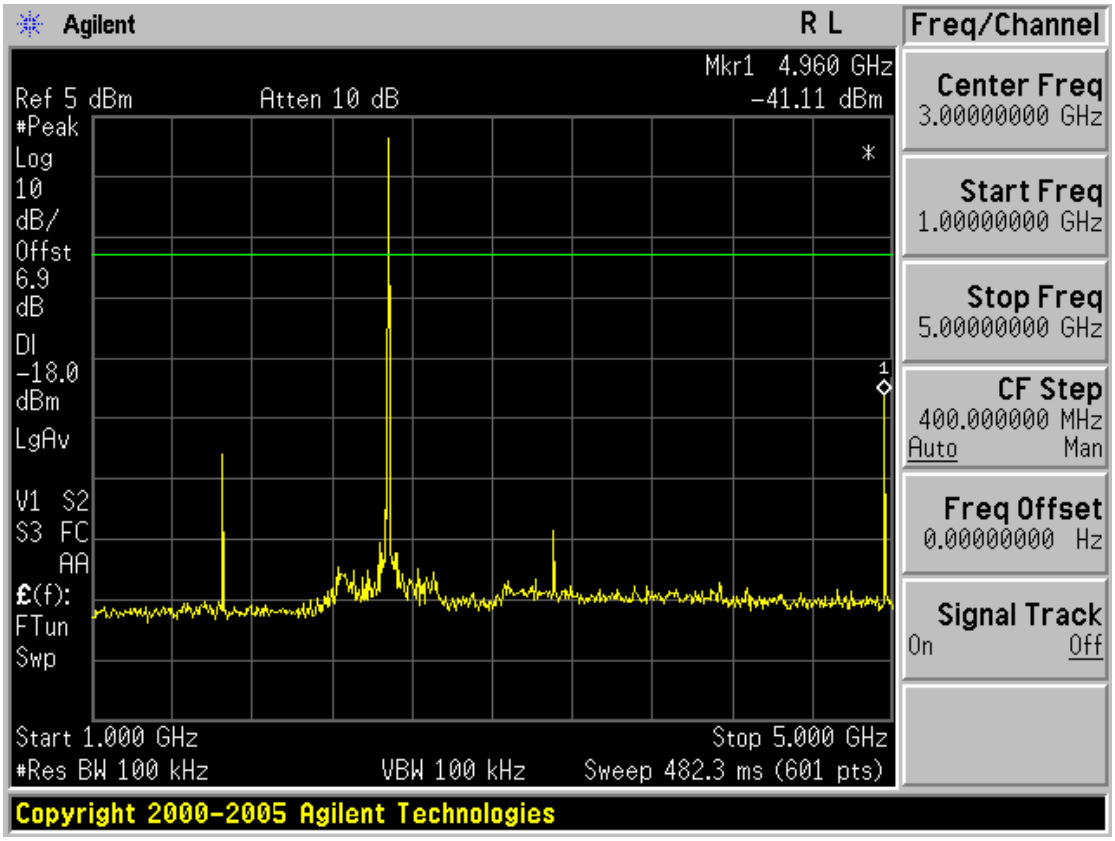

**High band with hopping enabled**



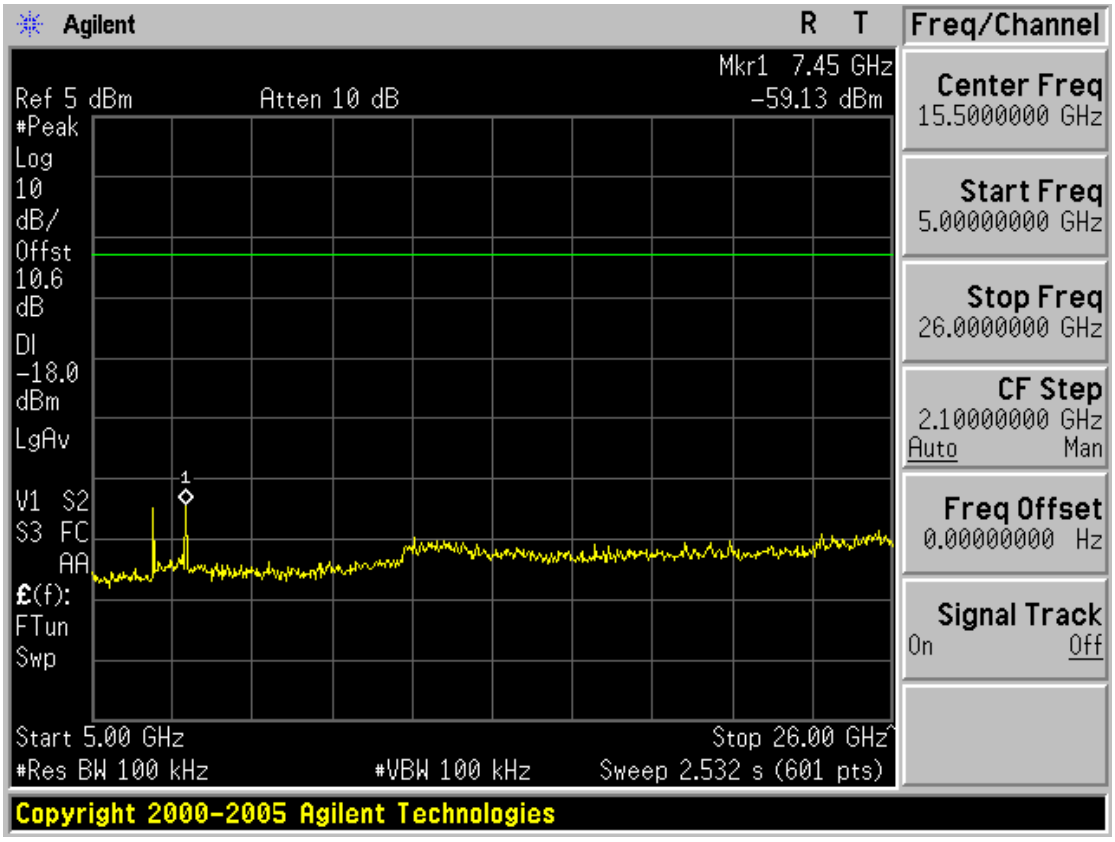
**High channel spurious - 1**




**High channel spurious – 2**



**High channel spurious – 3**



### 3.2.7 Radiated 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:

Center frequency = the worst channel

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

RBW = 120 kHz ( 30MHz ~ 1 GHz) VBW ≥ RBW ( Peak)

= 1 MHz (1 GHz ~ 10$^{th}$ harmonic ) VBW = 10Hz (Average)

Trace = max hold Sweep = auto

**Measurement Data: Complies**

- No emissions were detected at a level greater than 10dB below limit.
- Refer to the next page.

**Minimum Standard: FCC Part 15.205 (a), 15.205(b), 15.209(a) and (b)**

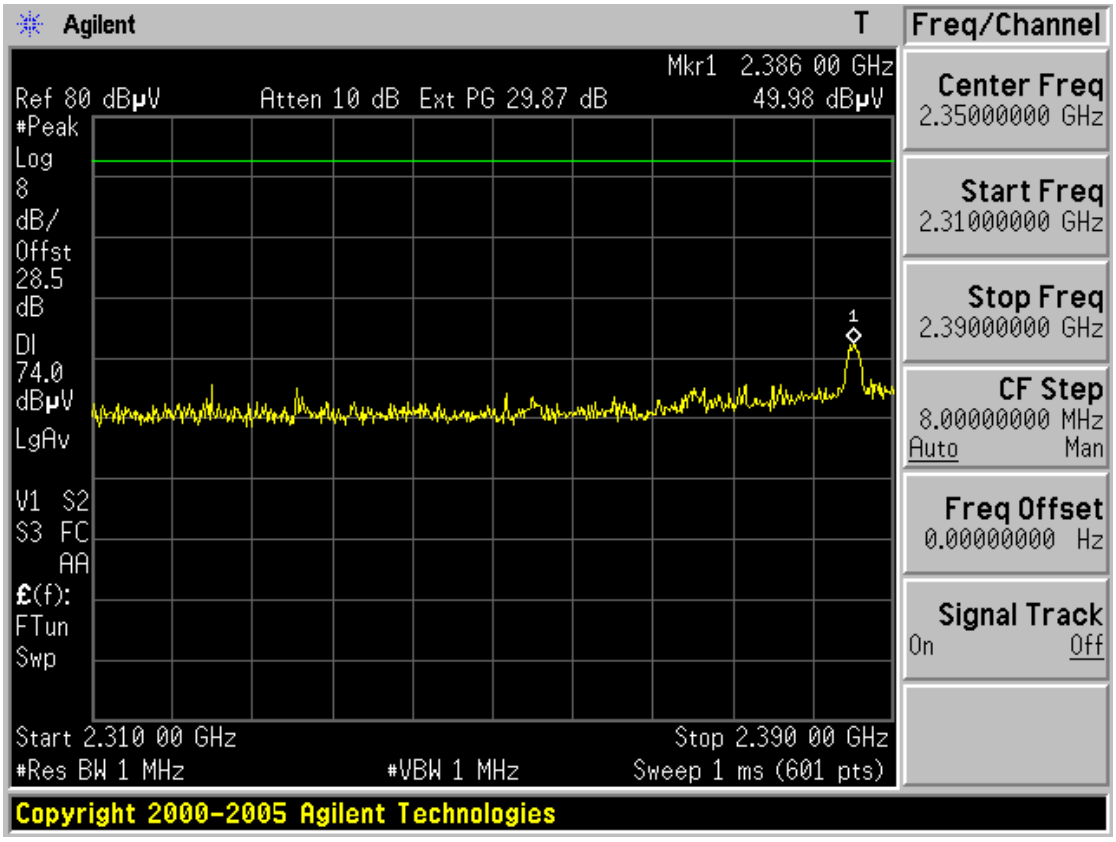
**Limit : FCC P15.209(a)**

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

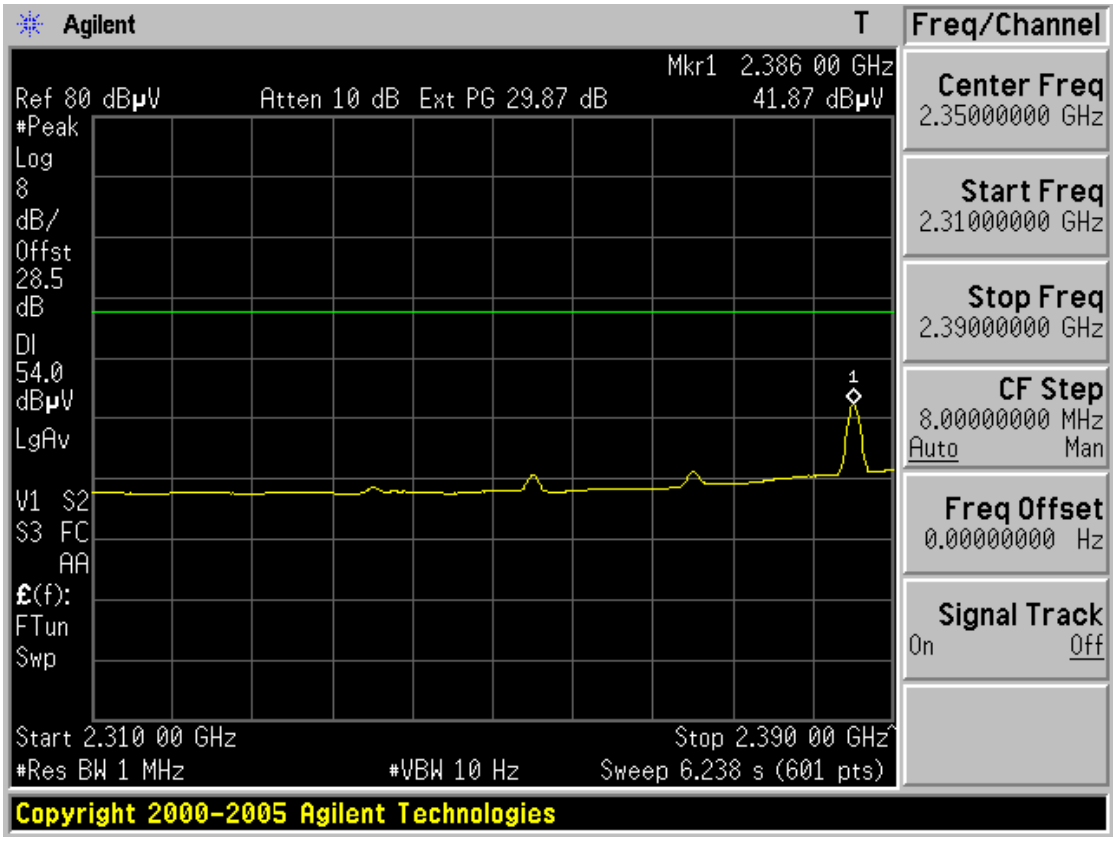
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

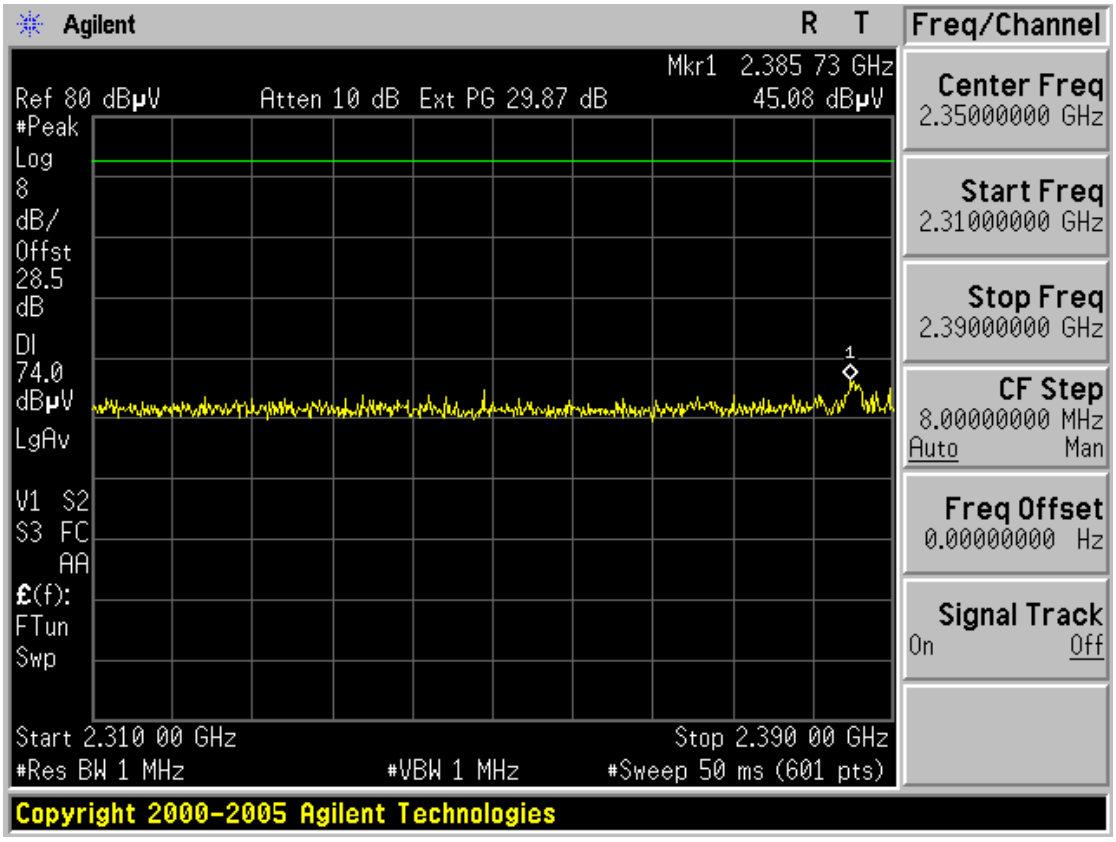
**Restricted Band Edge: Low Channel (Peak, Horizontal)**



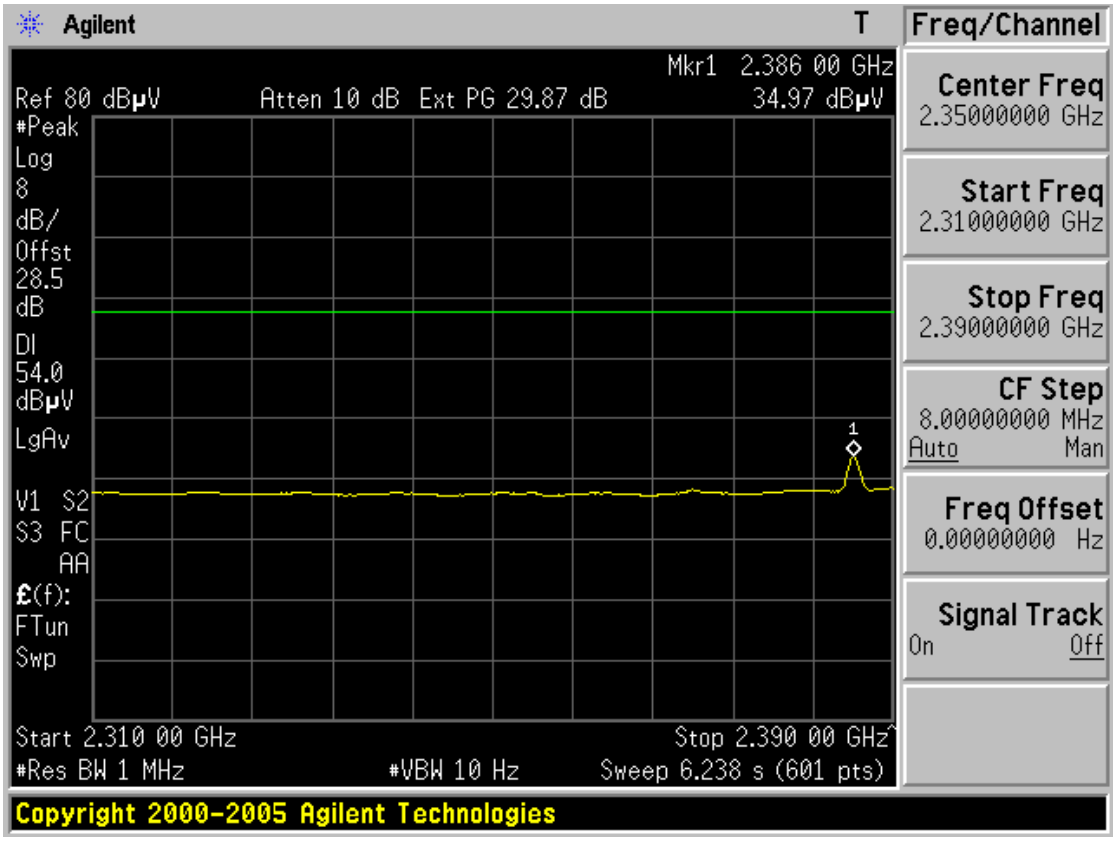

**Restricted Band Edge: Low Channel (Average, Horizontal)**



**Restricted Band Edge: Low Channel (Peak, Vertical)**

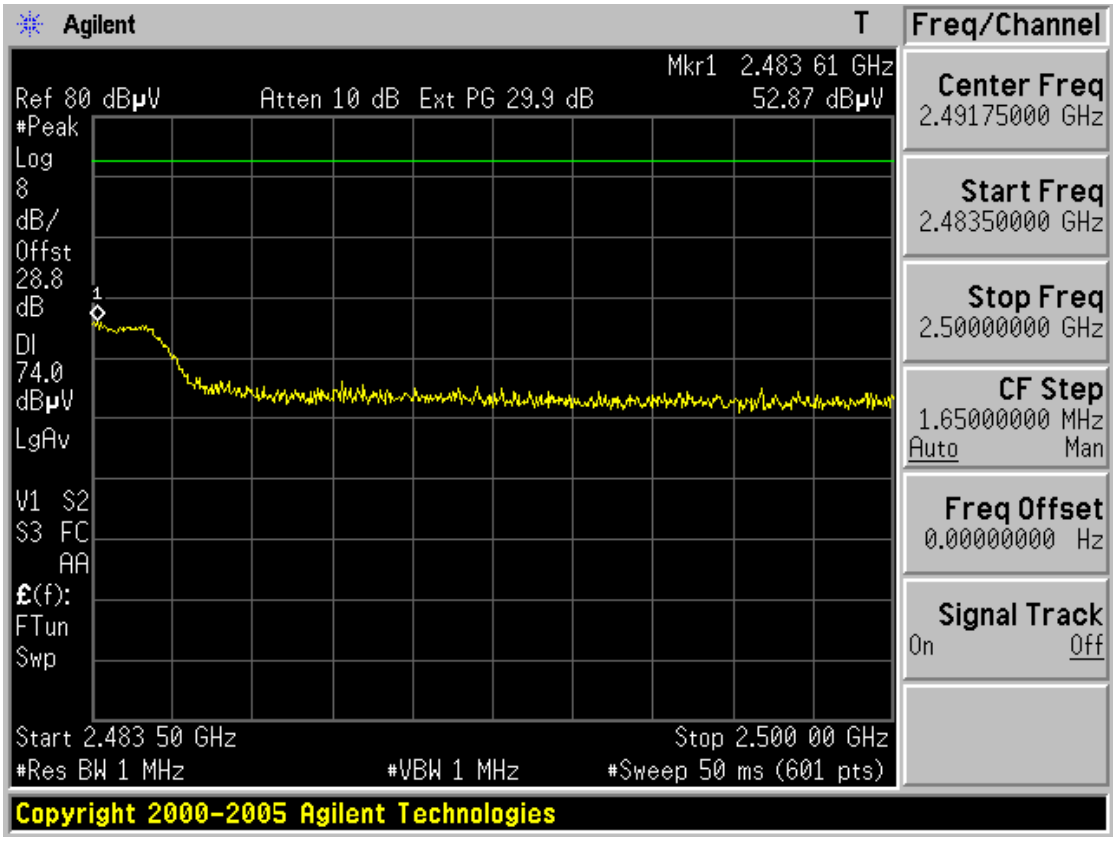



**Restricted Band Edge: Low Channel (Average, Vertical)**

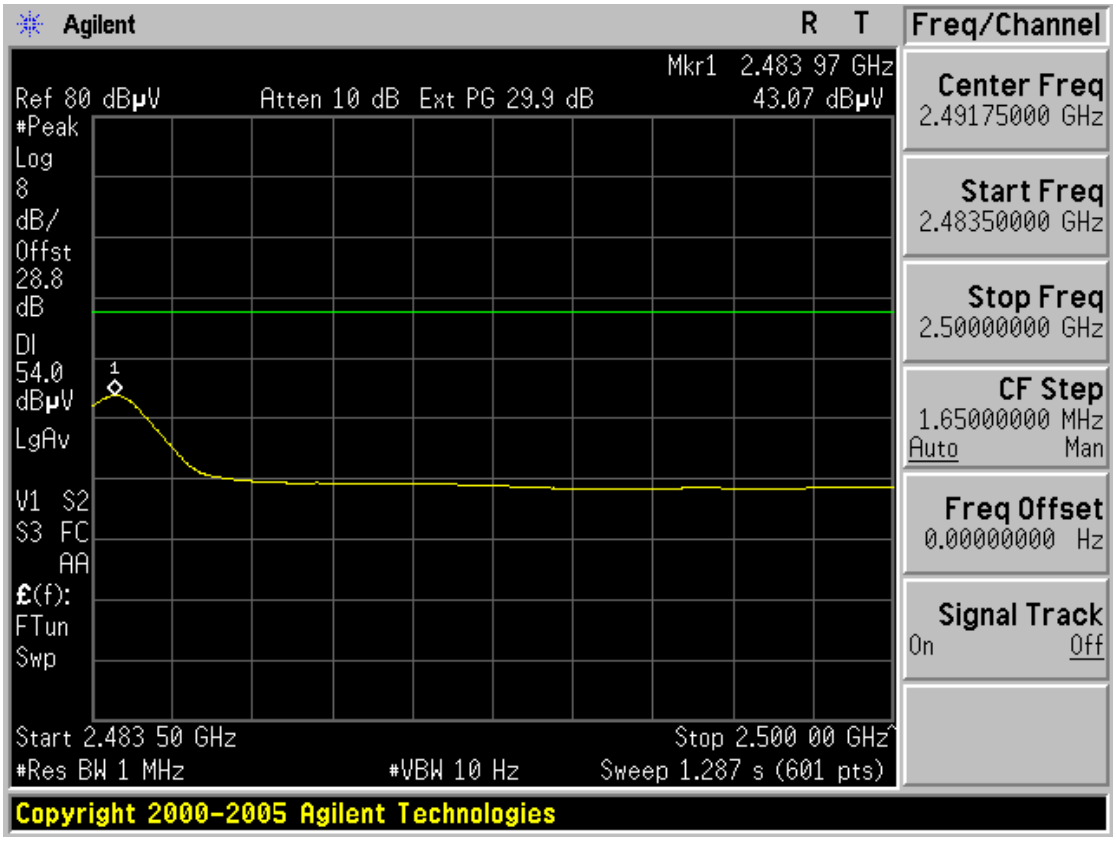


**Restricted Band Edge: High Channel (Peak, Horizontal)**

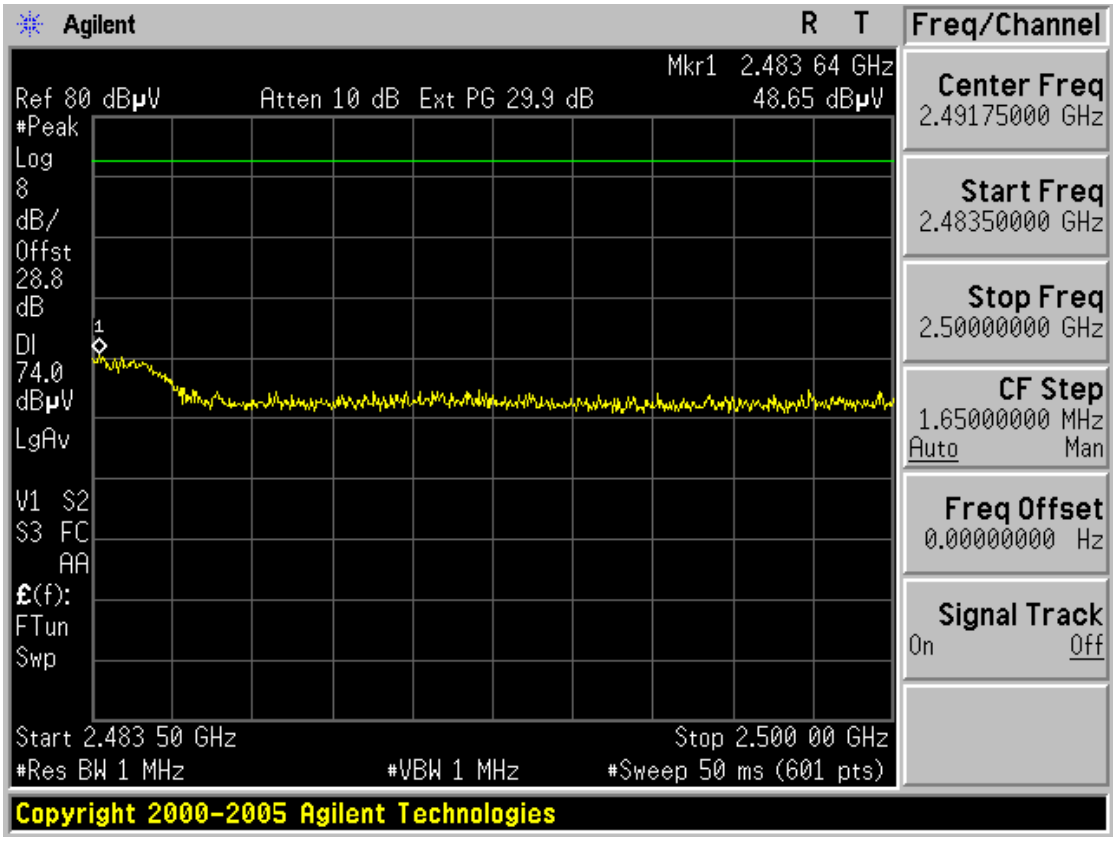



**Restricted Band Edge: High Channel (Average, Horizontal)**

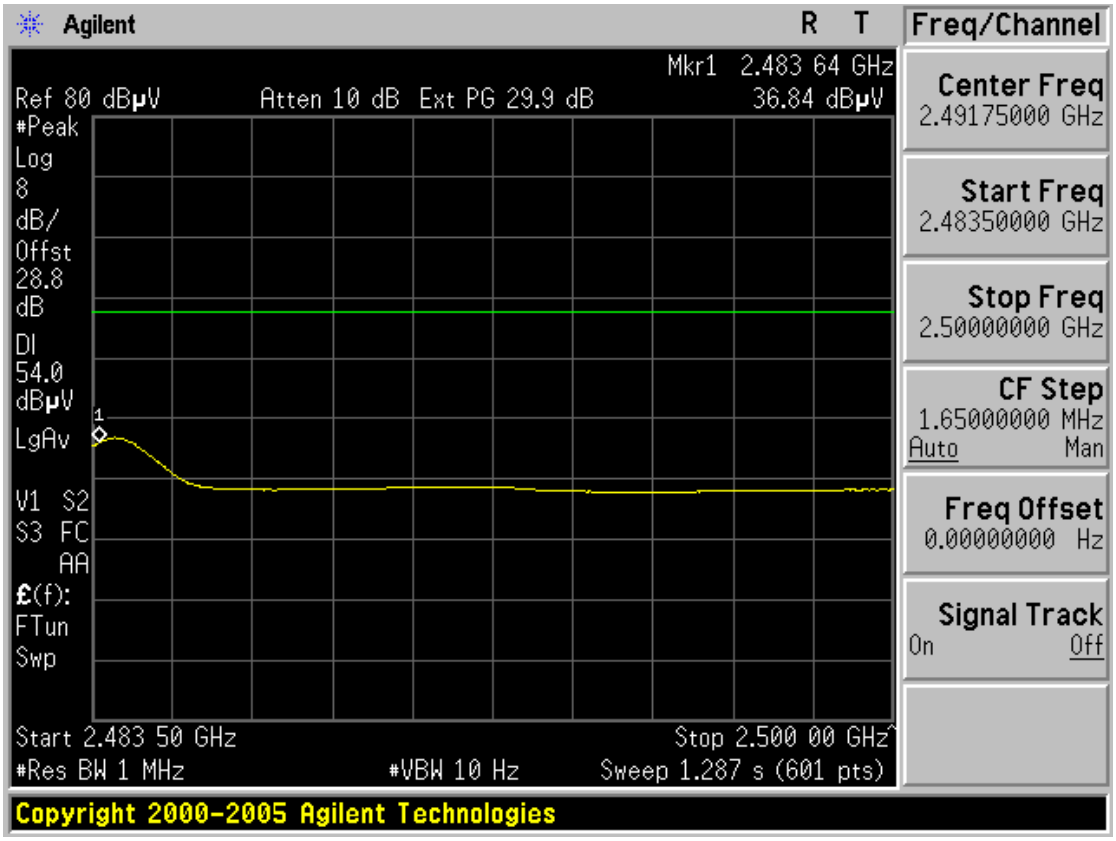


**Restricted Band Edge: High Channel (Peak, Vertical)**




**Restricted Band Edge: High Channel (Average, Vertical)**



## Radiated Spurious Emission Data(Harmonics)

**Low Channel(2402MHz)**

| Frequency (MHz) | ANT Pol. (H/V) | Reading Value (dBuV) | | T.F (dB) | Result (dBuV) | | Limit (dBuV) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | AV | | PK | AV | PK | AV | PK | AV |
| - | - | - | - | - | - | - | - | - | - | - |
| No emissions were detected at a level greater than 10dB below limit | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - |

**Middle Channel(2441MHz)**

| Frequency (MHz) | ANT Pol. (H/V) | Reading Value (dBuV) | | T.F (dB) | Result (dBuV) | | Limit (dBuV) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | AV | | PK | AV | PK | AV | PK | AV |
| - | - | - | - | - | - | - | - | - | - | - |
| No emissions were detected at a level greater than 10dB below limit | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - |

**High Channel(2480MHz)**

| Frequency (MHz) | ANT Pol. (H/V) | Reading Value (dBuV) | | T.F (dB) | Result (dBuV) | | Limit (dBuV) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | AV | | PK | AV | PK | AV | PK | AV |
| - | - | - | - | - | - | - | - | - | - | - |
| No emissions were detected at a level greater than 10dB below limit | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - |

Note. 1. No other emissions were detected at a level greater than 10dB below limit.

2. T.F(Total Factor) = Cable Loss + Ant Factor –AMP Gain

3. Result = Reading Value + T.F

4. Margin = Limit - Result

## Radiated Spurious Emission Data(Other Emissions)

**(Continued…)**

**Other Emissions**

| Frequency (MHz) | ANT Pol. (H/V) | Reading Value (dBuV) | | | T.F (dB) | Result (dBuV) | | | Limit (dBuV) | | | Margin (dB) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | QP | AV | | PK | QP | AV | PK | QP | AV | PK | QP | AV |
| 236.12 | H | - | 44 | - | -6.97 | - | 37.03 | - | - | 46.0 | - | - | -8.97 | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Note. 1. No other emissions were detected at a level greater than 10dB below limit.

2. T.F(Total Factor) = Cable Loss + Ant Factor –AMP Gain

3. Result = Reading Value + T.F

4. Margin = Limit - Result

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### 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 mode (QP) 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:** **Not Tested**

- Refer to the next page.

**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

**Measurement Setup**

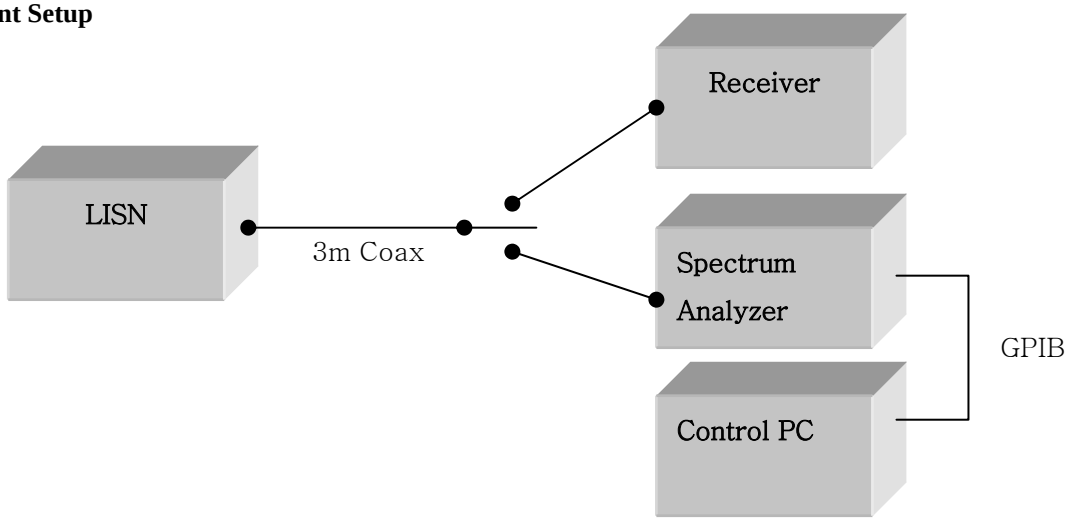


Figure 2: Measurement setup for AC Conducted Emission

 

# APPENDIX

## 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) | S/N |
|---|---|---|---|---|---|
| 01 | Spectrum Analyzer | Agilent | E4404B | 21/03/07 | US41061134 |
| 02 | Spectrum Analyzer | Agilent | E4440A | 05/10/07 | MY45304199 |
| 03 | Spectrum Analyzer | H.P | 8563E | 06/10/07 | 3551A04634 |
| 04 | Power Meter | H.P | EMP-442A | 06/07/07 | GB37170413 |
| 05 | Power Sensor | H.P | 8481A | 23/03/07 | 3318A96566 |
| 06 | Frequency Counter | H.P | 5342A | 21/10/06 | 2119A04450 |
| 07 | Multifunction Synthesizer | H.P | 8904A | 21/10/06 | 3633A08404 |
| 08 | Signal Generator | Rohde Schwarz | SMR20 | 22/03/07 | 101251 |
| 09 | Signal Generator | H.P | ESG-3000A | 06/07/07 | US37230529 |
| 10 | Audio Analyzer | H.P | 8903B | 06/07/07 | 3011A09448 |
| 11 | Modulation Analyzer | H.P | 8901B | 10/07/07 | 3028A03029 |
| 12 | Oscilloscope | Tektronix | TDS3052 | 01/10/06 | B016821 |
| 13 | CDMA Mobile Station Test Set | H.P | 8924C | 21/10/06 | US35360688 |
| 14 | Universal Radio Communication tester | Rohde Schwarz | CMU200 | 21/03/07 | 107631 |
| 15 | Bluetooth Tester | TESCOM | TC-3000A | 21/10/06 | 3000A4A0121 |
| 16 | Multisystem Ue Tester | Japan Radio Co.,Ltd | NJZ-2000 | 14/11/06 | ET00095 |
| 17 | Power Splitter | WEINSCHEL | 1593 | 21/10/06 | 332 |
| 18 | BAND Reject Filter | Microwave Circuits | N0308372 | 21/10/06 | 3125-01DC0312 |
| 19 | BAND Reject Filter | Wainwright | WRCG1750 | 21/10/06 | SN2 |
| 20 | AC Power supply | DAEKWANG | 5KVA | 20/03/07 | N/A |
| 21 | DC Power Supply | H.P | 6622A | 21/03/07 | 465487 |
| 22 | Attenuator (30dB) | H.P | 8498A | 21/10/06 | 50101 |
| 23 | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 21/10/06 | BP4387 |
| 24 | HORN ANT | EMCO | 3115 | 06/03/07 | 6419 |
| 25 | HORN ANT | EMCO | 3115 | 25/04/07 | 21097 |
| 26 | HORN ANT | A.H.Systems | SAS-574 | 09/11/06 | 154 |
| 27 | HORN ANT | A.H.Systems | SAS-574 | 09/11/06 | 155 |
| 28 | Dipole Antenna | Schwarzbeck | VHA9103 | 18/10/06 | 2116 |
| 29 | Dipole Antenna | Schwarzbeck | VHA9103 | 18/10/06 | 2117 |
| 30 | Dipole Antenna | Schwarzbeck | UHA9105 | 18/10/06 | 2261 |
| 31 | Dipole Antenna | Schwarzbeck | UHA9105 | 18/10/06 | 2262 |

 

| | Type | Manufacturer | Model | Cal.Due.Date (dd/mm/yy) | S/N |
|---|---|---|---|---|---|
| 32 | RFI/FIELD Intensity Meter | Kyorits | KNM-504D | 07/07/07 | SN-161-4 |
| 33 | Frequency Converter | Kyorits | KCV-604C | 07/07/07 | 4-230-3 |
| 34 | TEMP & HUMIDITY Chamber | JISCO | J-RHC2 | 13/09/07 | 021031 |
| 35 | Log Periodic Antenna | Schwarzbeck | UHALP9108A1 | 29/09/06 | 1098 |
| 36 | Biconical Antenna | Schwarzbeck | VHA9103 | 04/04/07 | 2233 |
| 37 | Digital Multimeter | H.P | 34401A | 20/03/07 | 3146A13475 |
| 38 | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 21/10/06 | BP4386 |
| 39 | High-Pass Filter | ANRITSU | MP526D | 21/10/06 | MP27756 |
| 40 | Attenuator (3dB) | Agilent | 8491B | 21/10/06 | 58177 |
| 41 | Amplifier (25dB) | Agilent | 8447D | 12/04/07 | 2944A10144 |
| 42 | Amplifier (30dB) | Agilent | 8449B | 21/10/06 | 3008A01590 |
| 43 | Position Controller | TOKIN | 5901T | N/A | 14173 |
| 44 | Driver | TOKIN | 5902T2 | N/A | 14174 |
| 45 | Spectrum Analyzer | H.P | 8591E | 21/03/07 | 3649A05889 |
| 46 | RFI/FIELD Intensity Meter | Kyorits | KNW-2402 | 11/07/07 | 4N-170-3 |
| 47 | LISN | Kyorits | KNW-407 | 19/08/07 | 8-317-8 |
| 48 | CVCF | NF Electronic | 4400 | N/A | 344536 4420064 |
| 49 | Software | ToYo EMI | EP5/RE | N/A | Ver 2.0.800 |
| 50 | Software | ToYo EMI | EP5/CE | N/A | Ver 2.0.801 |
| 51 | Software | AUDIX | e3 | N/A | Ver 3.0 |
| 52 | Software | Agilent | Benchlink | N/A | A.01.09 021211 |