



## Test Report

Product Name : 2.4GHz Digital AV module

Model No. : MDD-24R2001

FCC ID. : O6L-MDD24R2001

Applicant : Tranwo Technology Corp

Address : No.236, Sec. 3, Huanbei Rd., Jubei City, Hsinchu County 30265,  
Taiwan, R.O.C.

Date of Receipt : 2011/05/16

Issued Date : 2011/05/24

Report No. : 115294R-RFUSP43V01

Report Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

# Test Report Certification

Issued Date : 2011/05/24

Report No. : 115294R-RFUSP43V01



Product Name : 2.4GHz Digital AV module  
 Applicant : Tranwo Technology Corp  
 Address : No.236, Sec. 3, Huanbei Rd., Jubei City, Hsinchu County  
 30265, Taiwan, R.O.C.  
 Manufacturer : Tranwo Technology Corp  
 Model No. : MDD-24R2001  
 FCC ID. : O6L-MDD24R2001  
 EUT Voltage : DC 9V  
 Trade Name : TRANWO  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2010  
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By :

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*Roy Wang*

( Roy Wang / Manager )

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## 1. General Information

### 1.1. EUT Description

|                    |                          |
|--------------------|--------------------------|
| Product Name       | 2.4GHz Digital AV module |
| Trade Name         | TRANWO                   |
| Model No.          | MDD-24R2001              |
| Frequency Range    | 2403~2475MHz             |
| Channel Number     | 25                       |
| Type of Modulation | QPSK, 16QAM              |
| Channel Control    | Auto                     |
| Antenna Type       | Refer to Note 2          |
| Antenna Gain       | Refer to Note 2          |

| Working Frequency of Each Channel |           |         |           |
|-----------------------------------|-----------|---------|-----------|
| Channel                           | Frequency | Channel | Frequency |
| 00                                | 2403      | 13      | 2442      |
| 01                                | 2406      | 14      | 2445      |
| 02                                | 2409      | 15      | 2448      |
| 03                                | 2412      | 16      | 2451      |
| 04                                | 2415      | 17      | 2454      |
| 05                                | 2418      | 18      | 2457      |
| 06                                | 2421      | 19      | 2460      |
| 07                                | 2424      | 20      | 2463      |
| 08                                | 2427      | 21      | 2466      |
| 09                                | 2430      | 22      | 2469      |
| 10                                | 2433      | 23      | 2472      |
| 11                                | 2436      | 24      | 2475      |
| 12                                | 2439      |         |           |

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 25 channels and over the minimum number of hopping channels (15 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is a 2.4GHz Digital AV module including a 2.4GHz receiving function, and transmitting function.
2. There are three antennas provided to this EUT, Please refer to the following table:

| No. | Antenna Type   | Antenna Gain |
|-----|----------------|--------------|
| 1   | Dipole Antenna | 5dBi         |
| 2   | Dipole Antenna | 3dBi         |
| 3   | Dipole Antenna | 3dBi         |

3. These test results on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
4. Regards to the frequency band operation; the lowest , middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
6. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 115293R-RFUSP37V02 under Declaration of Conformity.

### 1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

| Pre-Test Mode   |                                                     |
|-----------------|-----------------------------------------------------|
| EMI             | Mode 1: Transmit (16QAM)<br>Mode 2: Transmit (QPSK) |
| Final Test Mode |                                                     |
| EMI             | Mode 1: Transmit (16QAM)<br>Mode 2: Transmit (QPSK) |

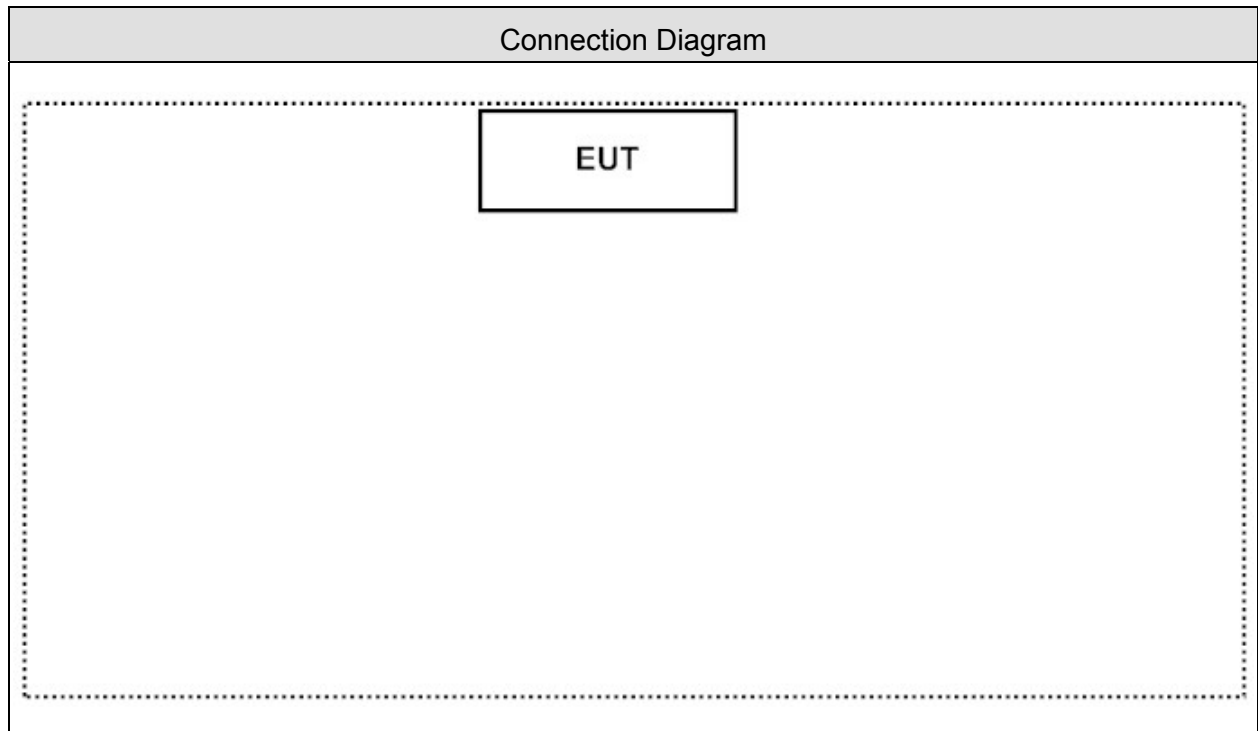
| Emission                  | Mode 1 | Mode 2 |
|---------------------------|--------|--------|
| Conducted Emission        | Yes    | Yes    |
| Peak Power Output         | Yes    | Yes    |
| Radiated Emission         | Yes    | Yes    |
| RF antenna conducted test | Yes    | Yes    |
| Band Edge                 | Yes    | Yes    |
| Channel of Number         | Yes    | Yes    |
| Channel Separation        | Yes    | Yes    |
| Occupied Bandwidth        | Yes    | Yes    |
| Dwell Time                | Yes    | Yes    |

#### 1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

N/A

#### 1.5. Configuration of tested System



#### 1.6. EUT Exercise Software

|   |                                                            |
|---|------------------------------------------------------------|
| 1 | Setup the EUT and simulators as shown on 1.4.              |
| 2 | Turn on the power.                                         |
| 3 | The RF signal's status will continue transmit through EUT. |
| 4 | Repeat the above procedure (3)                             |



## 1.7. Test Facility

Ambient conditions in the laboratory:

| Items                      | Test Item                                         | Required (IEC 68-1) | Actual   |
|----------------------------|---------------------------------------------------|---------------------|----------|
| Temperature (°C)           | FCC PART 15 C 15.247<br>Peak Power Output (FHSS)  | 15 - 35             | 23       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Radiated Emission (FHSS)  | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 54       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Band Edge (FHSS)          | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Channel Of Number (FHSS)  | 15 - 35             | 23       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Channel Separation (FHSS) | 15 - 35             | 23       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Occupied Bandwidth (FHSS) | 15 - 35             | 24       |
| Humidity (%RH)             |                                                   | 25 - 75             | 48       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Dwell Time (FHSS)         | 15 - 35             | 23       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |

Site Description: September 27, 2010 File on  
Federal Communications Commission  
Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 365520  
Accredited by TAF  
Accreditation Number: 1313  
Effective through: December 27, 2013



Accredited by NVLAP  
NVLAP Lab Code: 200347-0  
Effective through: September 30, 2011



Site Name: Quietek Corporation

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Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan  
TEL : 886-3-5928858 / FAX : 886-3-5928859  
E-Mail : service@quietek.com

## 2. Conducted Emission

### 2.1. Test Equipment

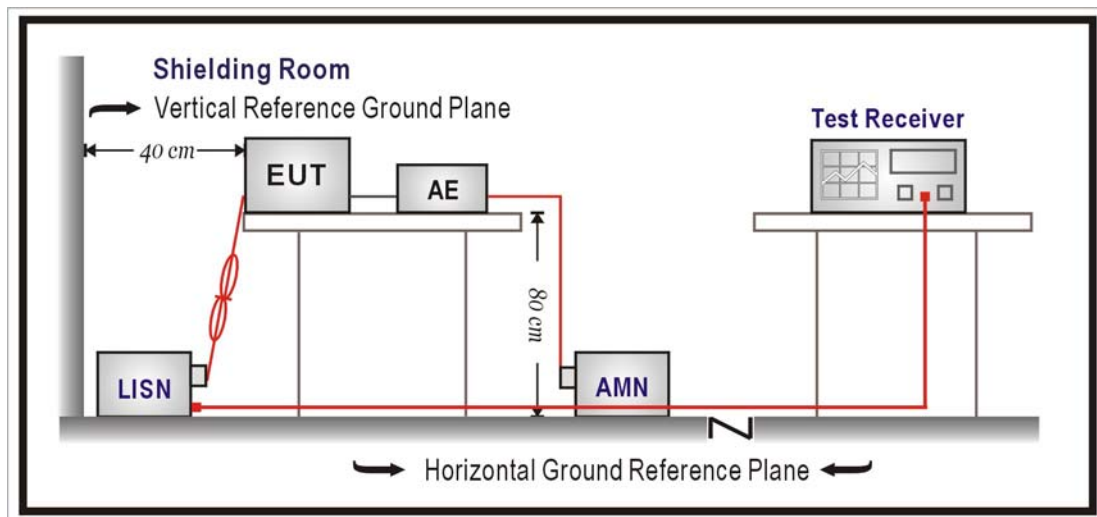
The following test equipments are used during the test:

#### Conducted Emission / SR2

| Instrument               | Manufacturer | Model No. | Serial No  | Next Cal. Date |
|--------------------------|--------------|-----------|------------|----------------|
| Artificial Mains Network | R&S          | ENV4200   | 848411/010 | 2012/02/29     |
| LISN                     | R&S          | ENV216    | 100092     | 2011/09/12     |
| Test Receiver            | R&S          | ESCS 30   | 825442/014 | 2011/09/02     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 2.2. Test Setup



### 2.3. Limits

| FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV) |       |       |
|------------------------------------------------------|-------|-------|
| Frequency<br>MHz                                     | QP    | AV    |
| 0.15 - 0.50                                          | 66-56 | 56-46 |
| 0.50 - 5.0                                           | 56    | 46    |
| 5.0 - 30                                             | 60    | 50    |

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

### 2.5. Test Specification

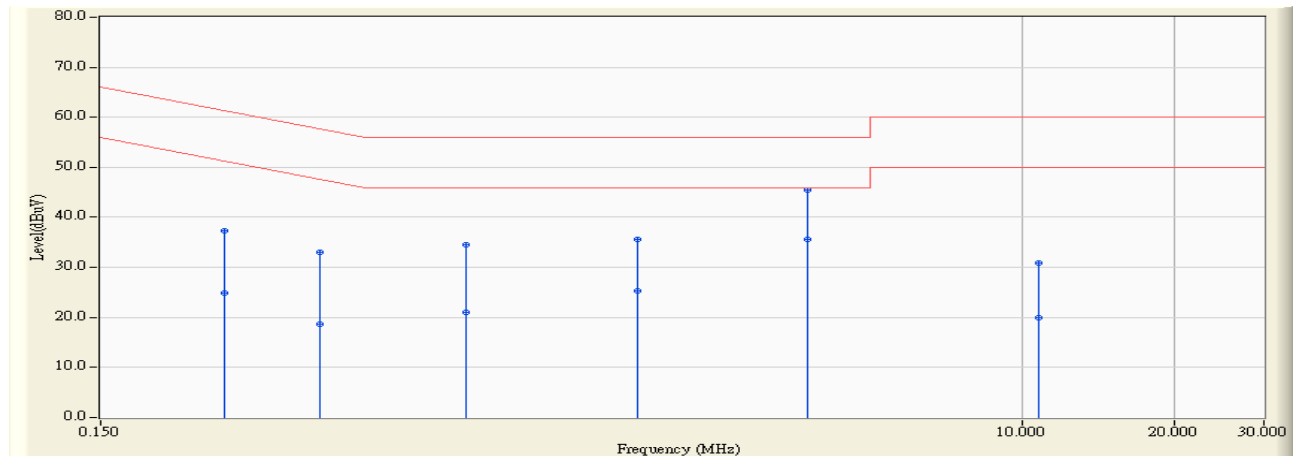
According to FCC Part 15 Subpart C Paragraph 15.207: 2010

### 2.6. Uncertainty

The measurement uncertainty is defined as  $\pm 2.26$  dB.

## 2.7. Test Result

|                                |                                            |
|--------------------------------|--------------------------------------------|
| Site : SR2                     | Time : 2011/05/22 - 20:37                  |
| Limit : CISPR_B_00M_QP         | Margin : 10                                |
| Probe : SR2_LISN(16A) - Line1  | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module | Note : Tx_2439MHz-Mode 1: Transmit (16QAM) |

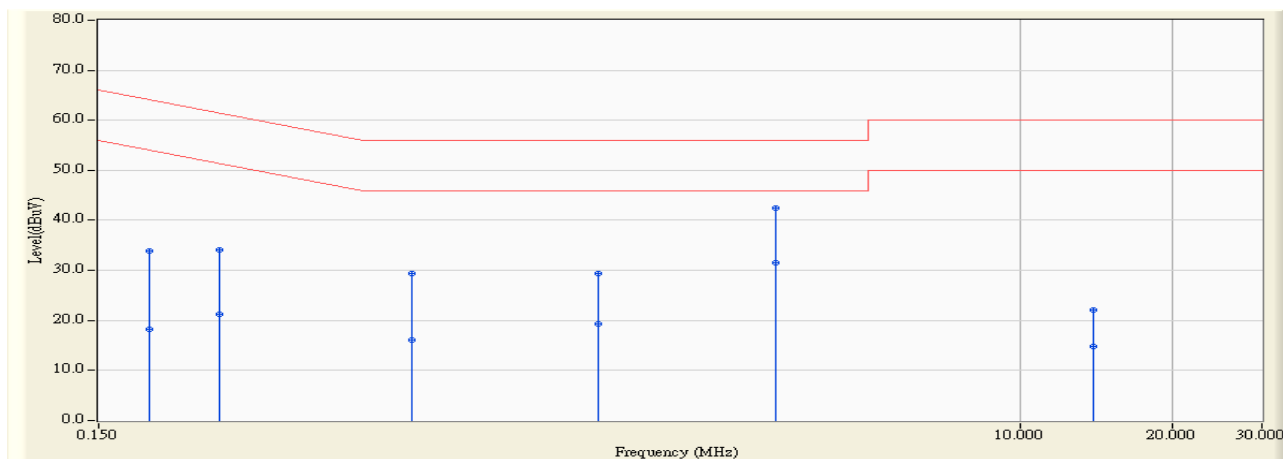


|    |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|----|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1  |   | 0.263              | 9.600                  | 27.670                  | 37.270                  | -24.057        | 61.327          | QUASIPeAK     |
| 2  |   | 0.263              | 9.600                  | 15.250                  | 24.850                  | -26.477        | 51.327          | AVERAGE       |
| 3  |   | 0.408              | 9.610                  | 23.400                  | 33.010                  | -24.683        | 57.693          | QUASIPeAK     |
| 4  |   | 0.408              | 9.610                  | 9.020                   | 18.630                  | -29.063        | 47.693          | AVERAGE       |
| 5  |   | 0.791              | 9.630                  | 24.810                  | 34.440                  | -21.560        | 56.000          | QUASIPeAK     |
| 6  |   | 0.791              | 9.630                  | 11.370                  | 21.000                  | -25.000        | 46.000          | AVERAGE       |
| 7  |   | 1.728              | 9.782                  | 25.890                  | 35.672                  | -20.328        | 56.000          | QUASIPeAK     |
| 8  |   | 1.728              | 9.782                  | 15.530                  | 25.312                  | -20.688        | 46.000          | AVERAGE       |
| 9  |   | 3.744              | 9.834                  | 35.640                  | 45.474                  | -10.526        | 56.000          | QUASIPeAK     |
| 10 | * | 3.744              | 9.834                  | 25.710                  | 35.544                  | -10.456        | 46.000          | AVERAGE       |
| 11 |   | 10.763             | 10.093                 | 20.770                  | 30.863                  | -29.137        | 60.000          | QUASIPeAK     |
| 12 |   | 10.763             | 10.093                 | 9.860                   | 19.953                  | -30.047        | 50.000          | AVERAGE       |

### Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                |                                            |
|--------------------------------|--------------------------------------------|
| Site : SR2                     | Time : 2011/05/22 - 20:43                  |
| Limit : CISPR_B_00M_QP         | Margin : 10                                |
| Probe : SR2_LISN(16A) - Line2  | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module | Note : Tx_2439MHz-Mode 1: Transmit (16QAM) |

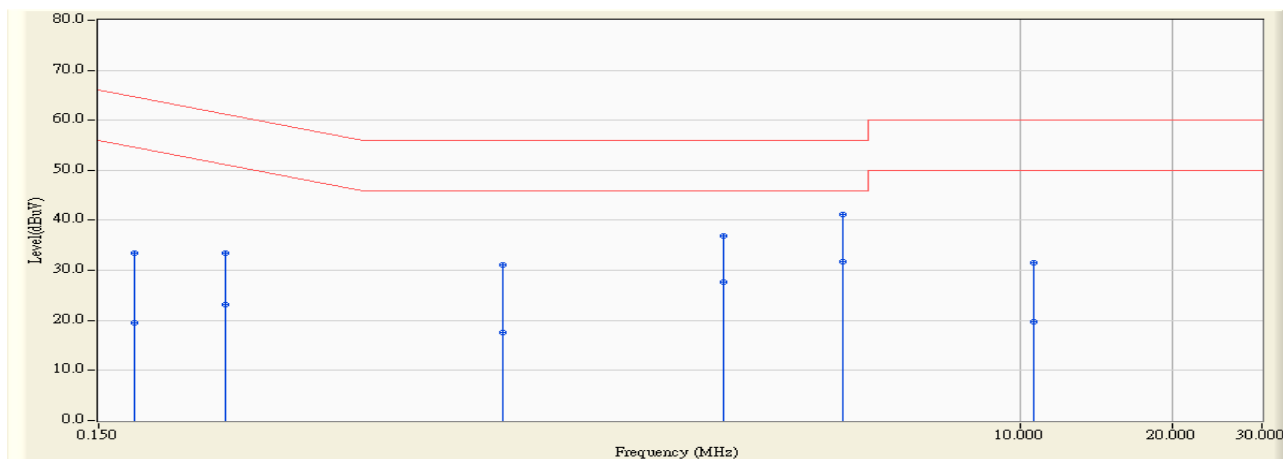


|    |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|----|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1  |   | 0.189              | 9.600                  | 24.310                  | 33.910                  | -30.168        | 64.078          | QUASIPeAK     |
| 2  |   | 0.189              | 9.600                  | 8.530                   | 18.130                  | -35.948        | 54.078          | AVERAGE       |
| 3  |   | 0.259              | 9.600                  | 24.570                  | 34.170                  | -27.281        | 61.451          | QUASIPeAK     |
| 4  |   | 0.259              | 9.600                  | 11.530                  | 21.130                  | -30.321        | 51.451          | AVERAGE       |
| 5  |   | 0.627              | 9.602                  | 19.820                  | 29.422                  | -26.578        | 56.000          | QUASIPeAK     |
| 6  |   | 0.627              | 9.602                  | 6.550                   | 16.152                  | -29.848        | 46.000          | AVERAGE       |
| 7  |   | 1.459              | 9.752                  | 19.530                  | 29.281                  | -26.719        | 56.000          | QUASIPeAK     |
| 8  |   | 1.459              | 9.752                  | 9.650                   | 19.401                  | -26.599        | 46.000          | AVERAGE       |
| 9  | * | 3.279              | 9.825                  | 32.670                  | 42.495                  | -13.505        | 56.000          | QUASIPeAK     |
| 10 |   | 3.279              | 9.825                  | 21.750                  | 31.575                  | -14.425        | 46.000          | AVERAGE       |
| 11 |   | 13.884             | 10.284                 | 11.890                  | 22.173                  | -37.827        | 60.000          | QUASIPeAK     |
| 12 |   | 13.884             | 10.284                 | 4.500                   | 14.783                  | -35.217        | 50.000          | AVERAGE       |

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                |                                           |
|--------------------------------|-------------------------------------------|
| Site : SR2                     | Time : 2011/05/22 - 20:53                 |
| Limit : CISPR_B_00M_QP         | Margin : 10                               |
| Probe : SR2_LISN(16A) - Line1  | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module | Note : Tx_2439MHz-Mode 2: Transmit (QPSK) |

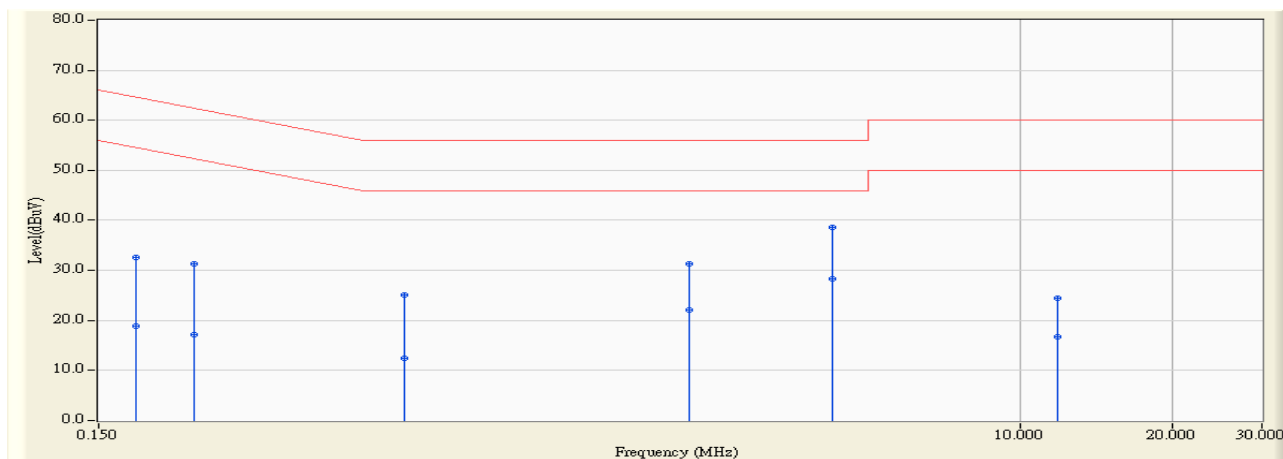


|    |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|----|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1  |   | 0.177              | 9.600                  | 23.770                  | 33.370                  | -31.255        | 64.625          | QUASPEAK      |
| 2  |   | 0.177              | 9.600                  | 9.970                   | 19.570                  | -45.055        | 64.625          | AVERAGE       |
| 3  |   | 0.267              | 9.600                  | 23.760                  | 33.360                  | -27.851        | 61.211          | QUASPEAK      |
| 4  |   | 0.267              | 9.600                  | 13.620                  | 23.220                  | -37.991        | 61.211          | AVERAGE       |
| 5  |   | 0.943              | 9.658                  | 21.520                  | 31.178                  | -24.822        | 56.000          | QUASPEAK      |
| 6  |   | 0.943              | 9.658                  | 7.850                   | 17.508                  | -38.492        | 56.000          | AVERAGE       |
| 7  |   | 2.587              | 9.805                  | 27.170                  | 36.975                  | -19.025        | 56.000          | QUASPEAK      |
| 8  |   | 2.587              | 9.805                  | 17.930                  | 27.735                  | -28.265        | 56.000          | AVERAGE       |
| 9  | * | 4.463              | 9.855                  | 31.390                  | 41.245                  | -14.755        | 56.000          | QUASPEAK      |
| 10 |   | 4.463              | 9.855                  | 21.860                  | 31.715                  | -24.285        | 56.000          | AVERAGE       |
| 11 |   | 10.607             | 10.088                 | 21.480                  | 31.568                  | -28.432        | 60.000          | QUASPEAK      |
| 12 |   | 10.607             | 10.088                 | 9.680                   | 19.768                  | -40.232        | 60.000          | AVERAGE       |

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                |                                           |
|--------------------------------|-------------------------------------------|
| Site : SR2                     | Time : 2011/05/22 - 20:58                 |
| Limit : CISPR_B_00M_QP         | Margin : 10                               |
| Probe : SR2_LISN(16A) - Line2  | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module | Note : Tx_2439MHz-Mode 2: Transmit (QPSK) |



|    |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|----|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1  |   | 0.177              | 9.600                  | 23.040                  | 32.640                  | -31.969        | 64.609          | QUASIPeAK     |
| 2  |   | 0.177              | 9.600                  | 9.250                   | 18.850                  | -35.759        | 54.609          | AVERAGE       |
| 3  |   | 0.232              | 9.600                  | 21.810                  | 31.410                  | -30.967        | 62.377          | QUASIPeAK     |
| 4  |   | 0.232              | 9.600                  | 7.460                   | 17.060                  | -35.317        | 52.377          | AVERAGE       |
| 5  |   | 0.603              | 9.600                  | 15.600                  | 25.200                  | -30.800        | 56.000          | QUASIPeAK     |
| 6  |   | 0.603              | 9.600                  | 2.930                   | 12.530                  | -33.470        | 46.000          | AVERAGE       |
| 7  |   | 2.216              | 9.787                  | 21.560                  | 31.348                  | -24.652        | 56.000          | QUASIPeAK     |
| 8  |   | 2.216              | 9.787                  | 12.210                  | 21.998                  | -24.002        | 46.000          | AVERAGE       |
| 9  | * | 4.240              | 9.860                  | 28.840                  | 38.700                  | -17.300        | 56.000          | QUASIPeAK     |
| 10 |   | 4.240              | 9.860                  | 18.350                  | 28.210                  | -17.790        | 46.000          | AVERAGE       |
| 11 |   | 11.857             | 10.201                 | 14.260                  | 24.461                  | -35.539        | 60.000          | QUASIPeAK     |
| 12 |   | 11.857             | 10.201                 | 6.500                   | 16.701                  | -33.299        | 50.000          | AVERAGE       |

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.



### 3. Peak Power Output

#### 3.1. Test Equipment

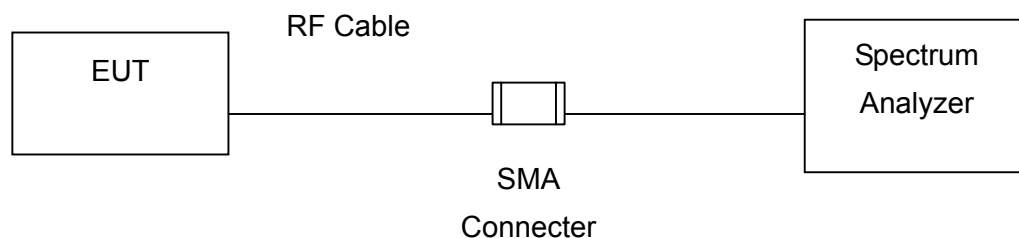
The following test equipment is used during the test:

Peak Power Output / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

#### 3.2. Test Setup



#### 3.3. Test procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

#### 3.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

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

#### 3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2010

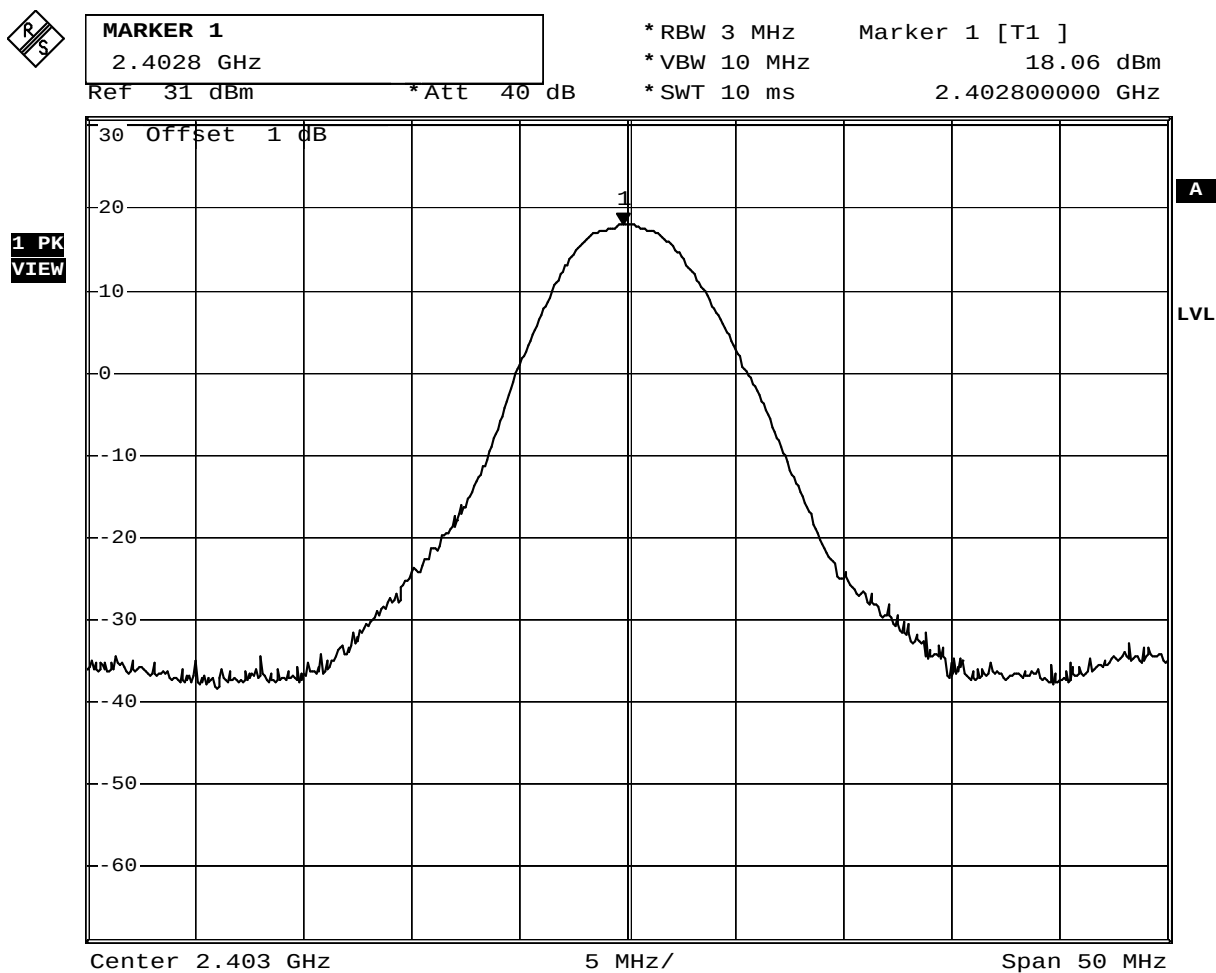
### 3.6. Test Result

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

#### 16QAM

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 00          | 2403            | 18.06               | 1Watt= 30 dBm | Pass   |

#### Channel 00



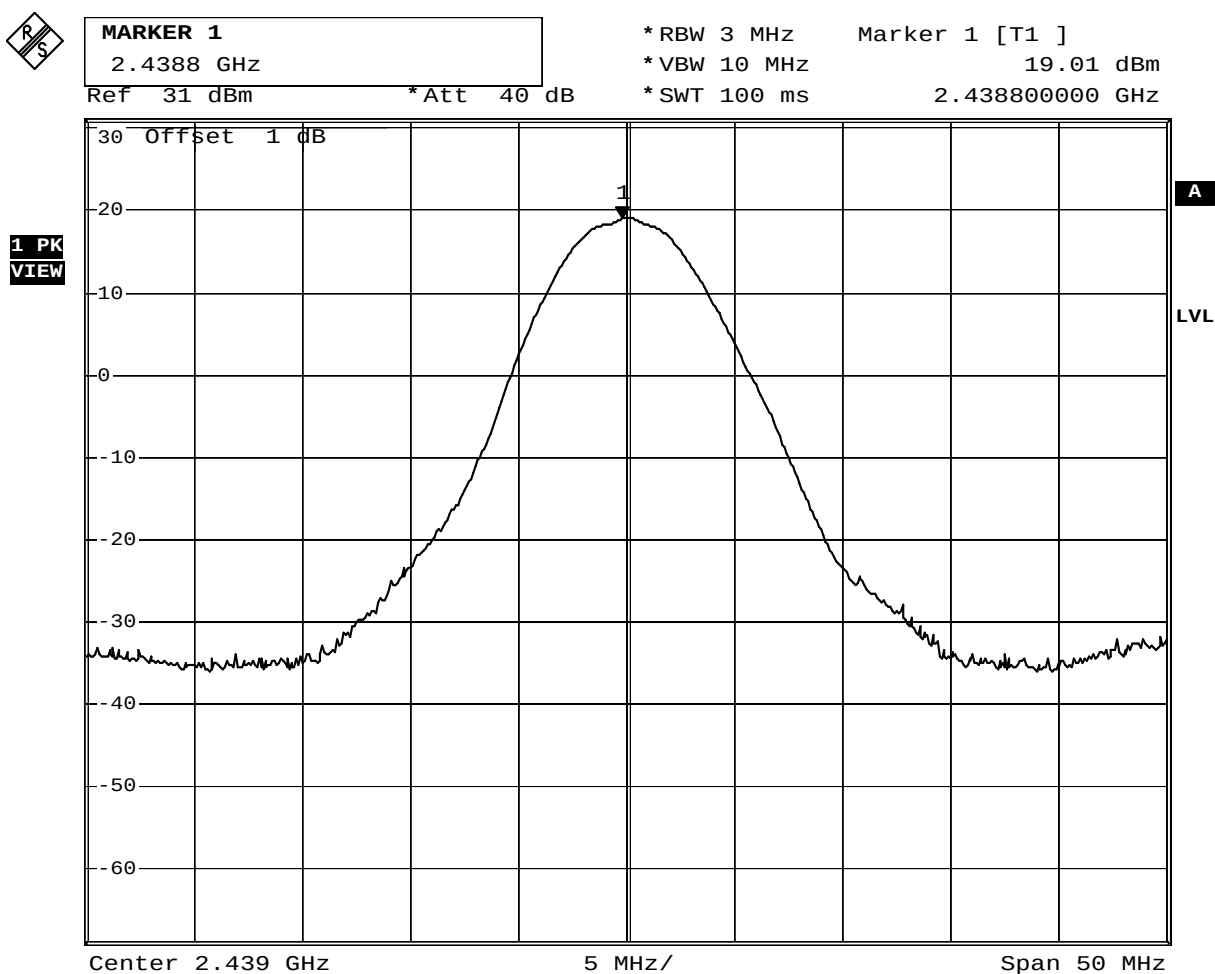
Date: 18.MAY.2011 12:14:43

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 12          | 2439            | 19.01               | 1Watt= 30 dBm | Pass   |

### Channel 12



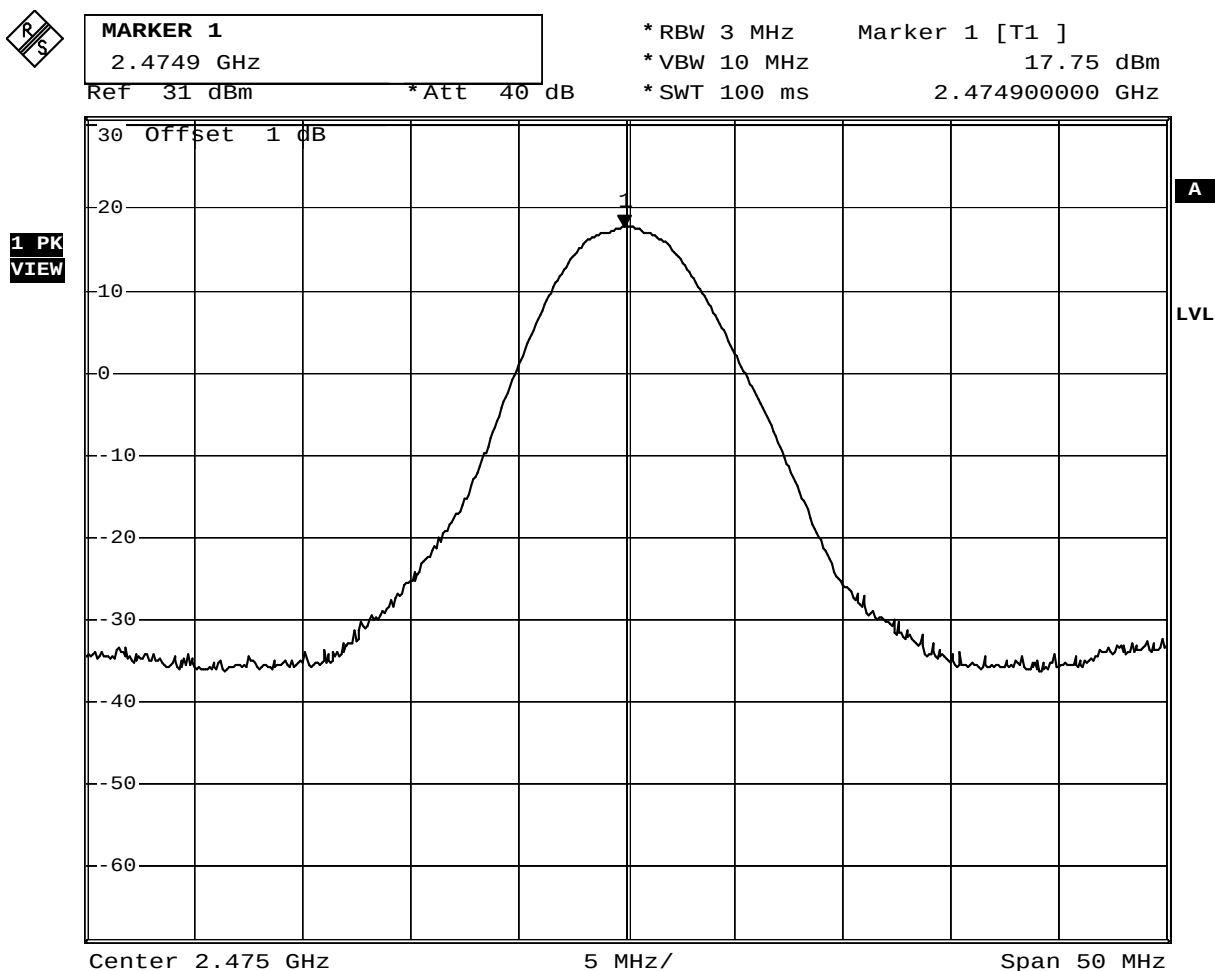
Date: 22.MAY.2011 15:13:42

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 24          | 2475            | 17.75               | 1Watt= 30 dBm | Pass   |

### Channel 24



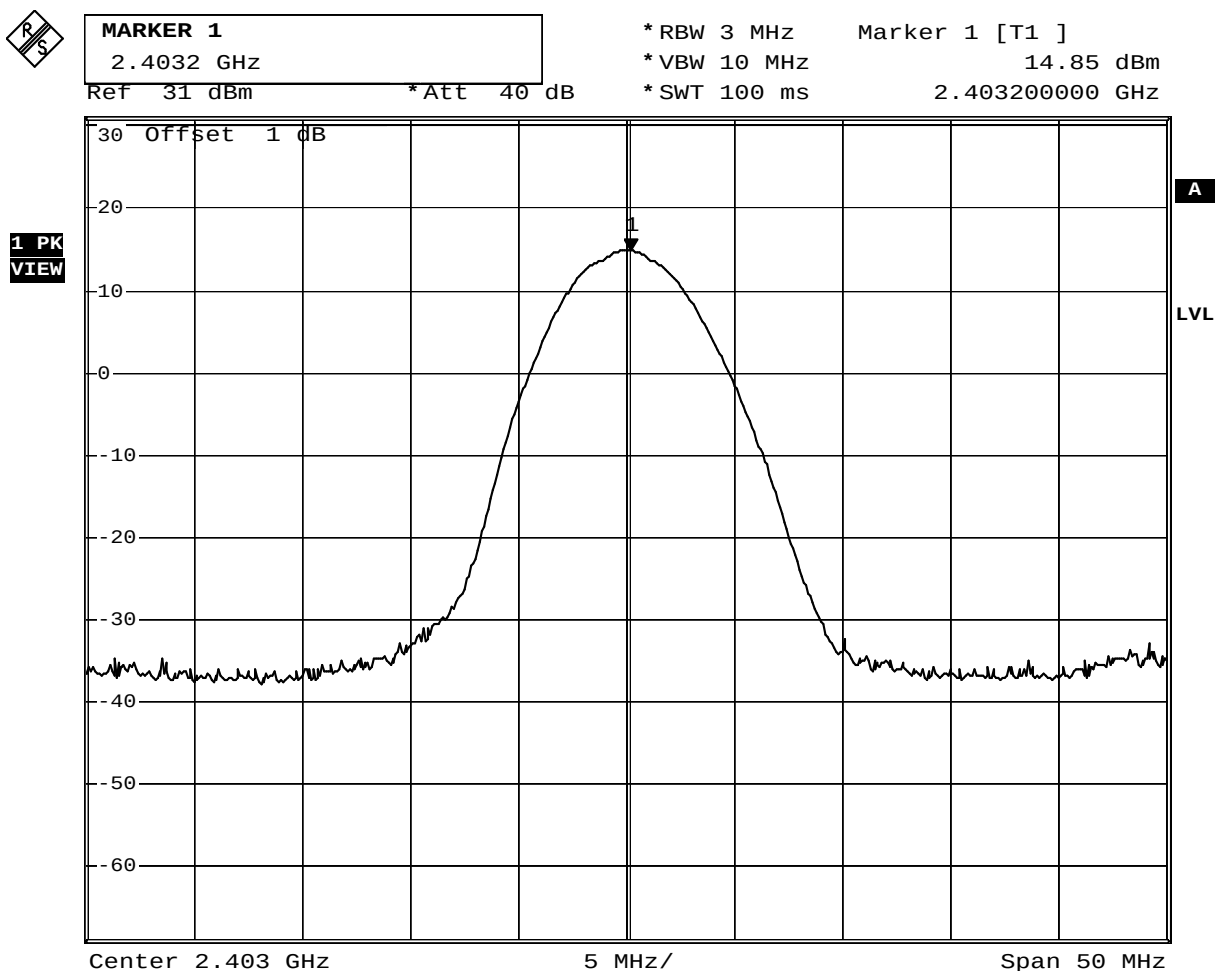
Date: 22.MAY.2011 15:14:23

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 00          | 2403            | 14.85               | 1Watt= 30 dBm | Pass   |

### Channel 00



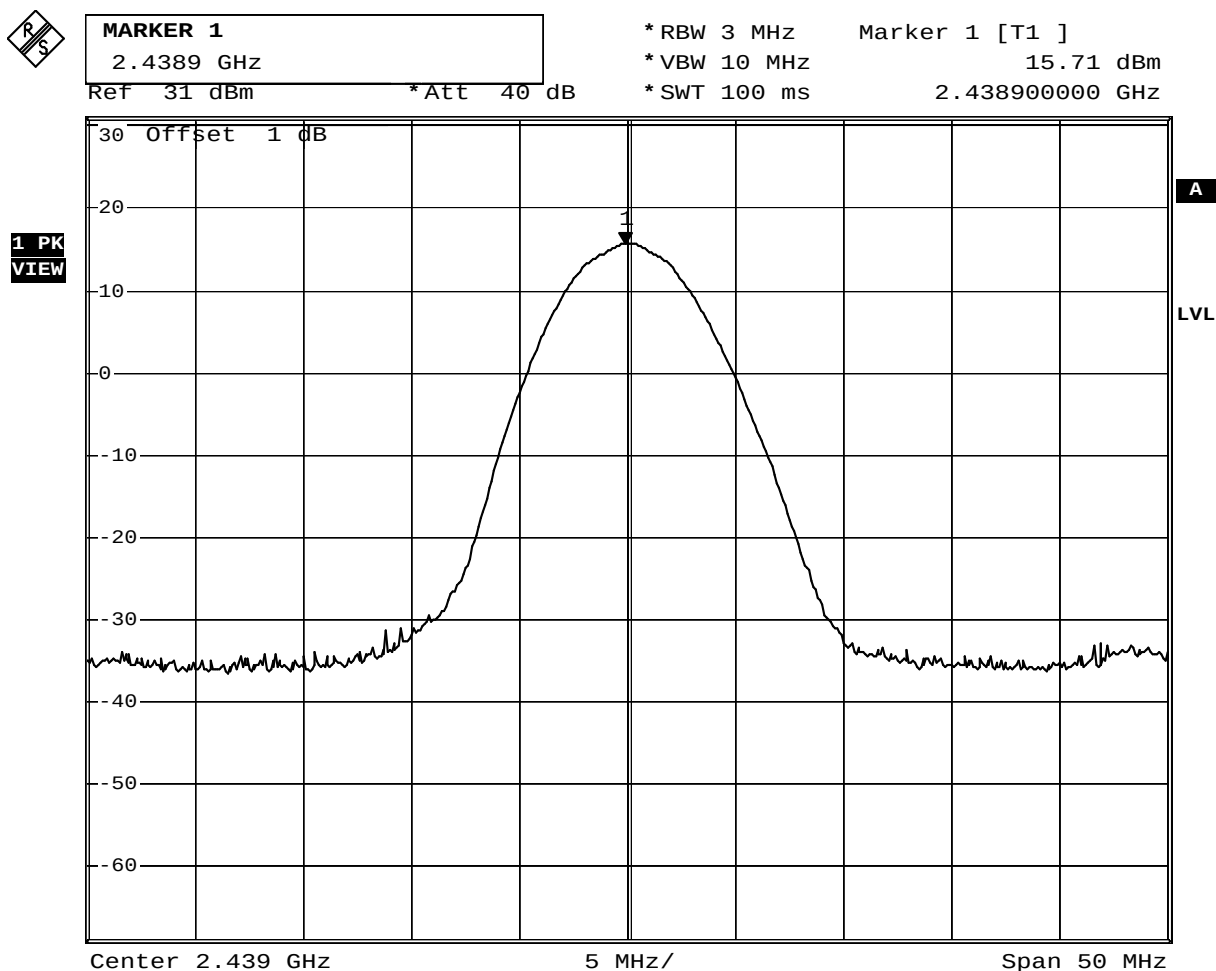
Date: 18.MAY.2011 12:58:14

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 12          | 2439            | 15.71               | 1Watt= 30 dBm | Pass   |

### Channel 12



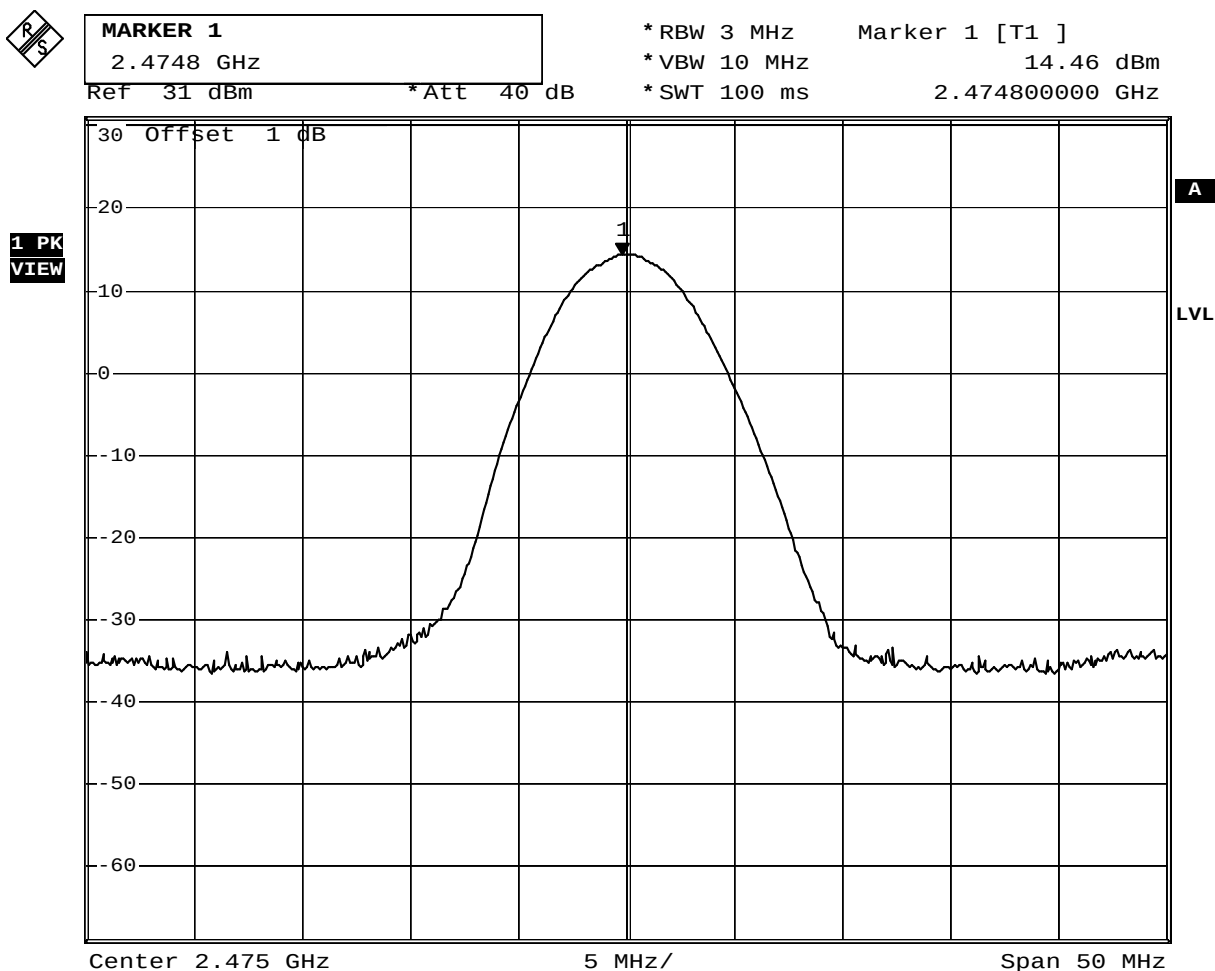
Date: 22.MAY.2011 15:16:57

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Peak Power Output        |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 24          | 2475            | 14.46               | 1Watt= 30 dBm | Pass   |

### Channel 24



Date: 22.MAY.2011 15:17:37

## 4. Radiated Emission

### 4.1. Test Equipment

The following test equipments are used during the test:

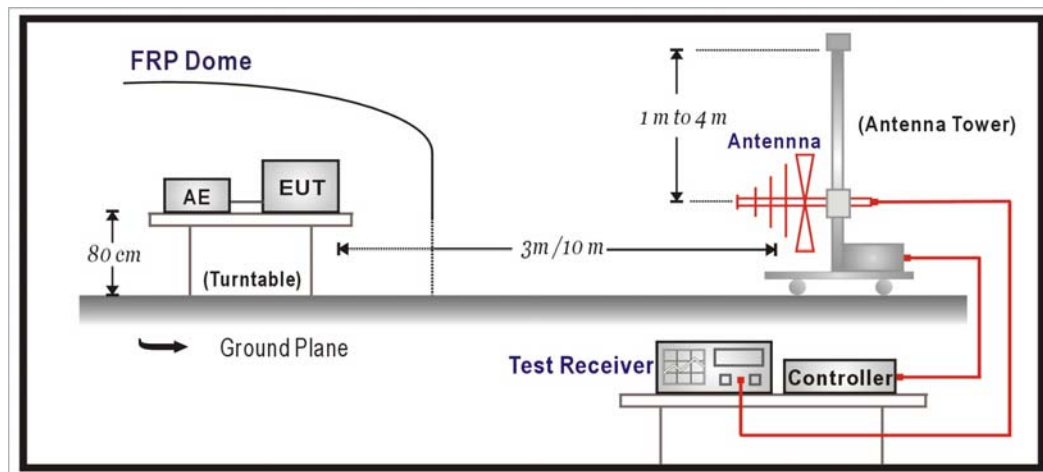
#### Radiated Emission / CB1

| Instrument                       | Manufacturer       | Model No.                | Serial No   | Next Cal. Date |
|----------------------------------|--------------------|--------------------------|-------------|----------------|
| Bilog Antenna                    | SCHAFFNER          | CBL6112B                 | 2895        | 2011/08/14     |
| Double Ridged Guide Horn Antenna | Schwarzback        | BBHA 9120D               | 743         | 2012/02/24     |
| Pre-Amplifier                    | MITEQ              | AMF-4D-005180-2<br>4-10P | 888003      | 2011/12/16     |
| Pre-Amplifier                    | QuieTek            | AP-025C                  | CHM-0706049 | 2012/03/10     |
| PSA Series Spectrum analyzer     | Agilent            | E4440A                   | MY46187335  | 2012/01/06     |
| Coaxial Cable                    | Huber+Suhner<br>AG | Sucoflex 102             | 25623/2     | 2012/03/21     |

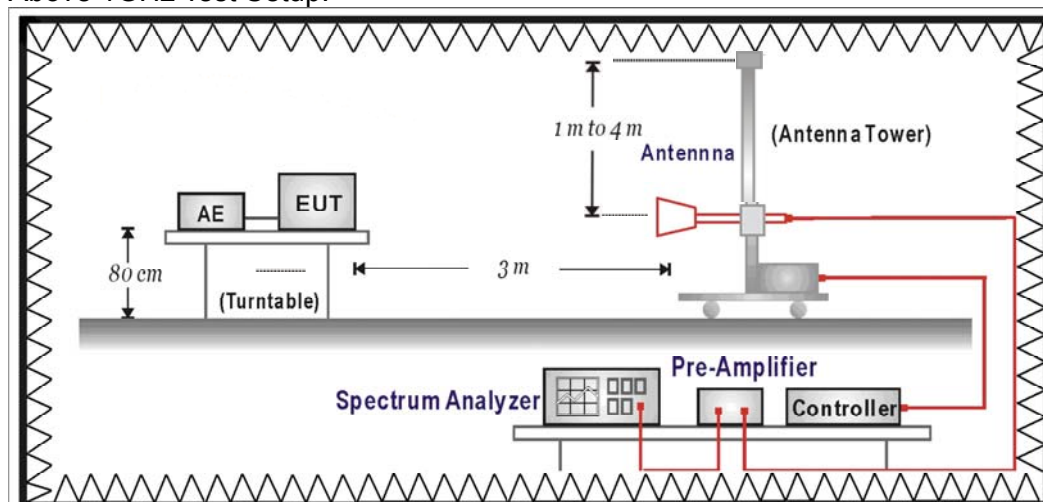
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:





### 4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

| FCC Part 15 Subpart C Paragraph 15.209 Limits |      |        |
|-----------------------------------------------|------|--------|
| Frequency<br>MHz                              | uV/m | dBuV/m |
| 30-88                                         | 100  | 40     |
| 88-216                                        | 150  | 43.5   |
| 216-960                                       | 200  | 46     |
| Above 960                                     | 500  | 54     |

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

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

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

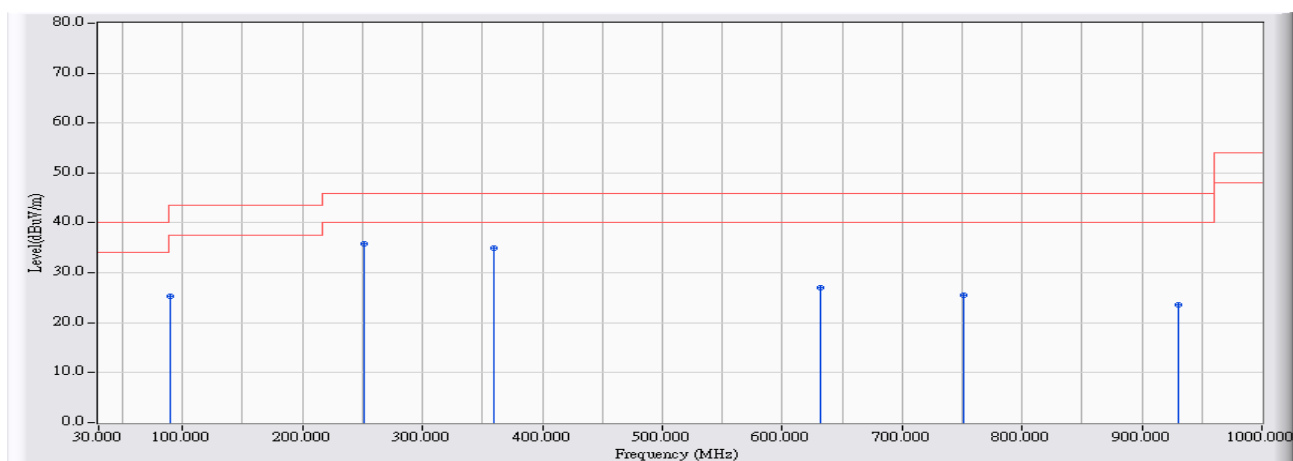
### 4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2010

## 4.6. Test Result

### 30MHz-1GHz Spurious

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/23 - 21:58                  |
| Limit : FCC_CLASS_B_03M_QP                      | Margin : 6                                 |
| Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2439MHz-Mode 1: Transmit (16QAM) |

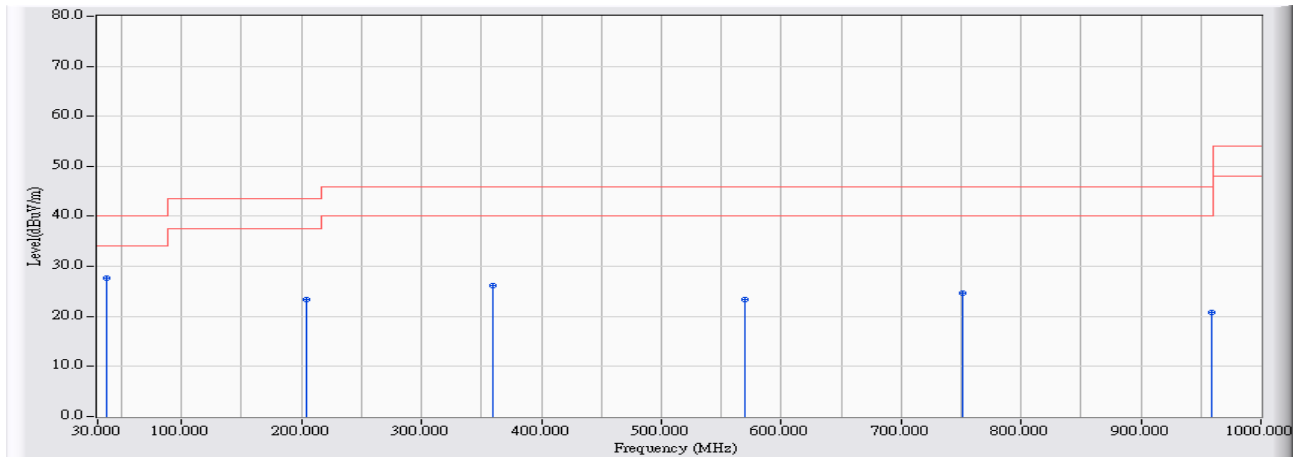


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 89.817             | -16.088                | 41.454                  | 25.366                    | -18.134        | 43.500            | QUASIPeAK     |
| 2 | * | 251.483            | -11.443                | 47.303                  | 35.860                    | -10.140        | 46.000            | QUASIPeAK     |
| 3 |   | 359.800            | -8.990                 | 43.988                  | 34.997                    | -11.003        | 46.000            | QUASIPeAK     |
| 4 |   | 631.400            | -4.844                 | 31.953                  | 27.110                    | -18.890        | 46.000            | QUASIPeAK     |
| 5 |   | 751.033            | -3.927                 | 29.529                  | 25.602                    | -20.398        | 46.000            | QUASIPeAK     |
| 6 |   | 930.483            | -2.628                 | 26.160                  | 23.532                    | -22.468        | 46.000            | QUASIPeAK     |

#### Note:

1. All Reading Levels are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/23 - 21:59                  |
| Limit : FCC_CLASS_B_03M_QP                    | Margin : 6                                 |
| Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2439MHz-Mode 1: Transmit (16QAM) |

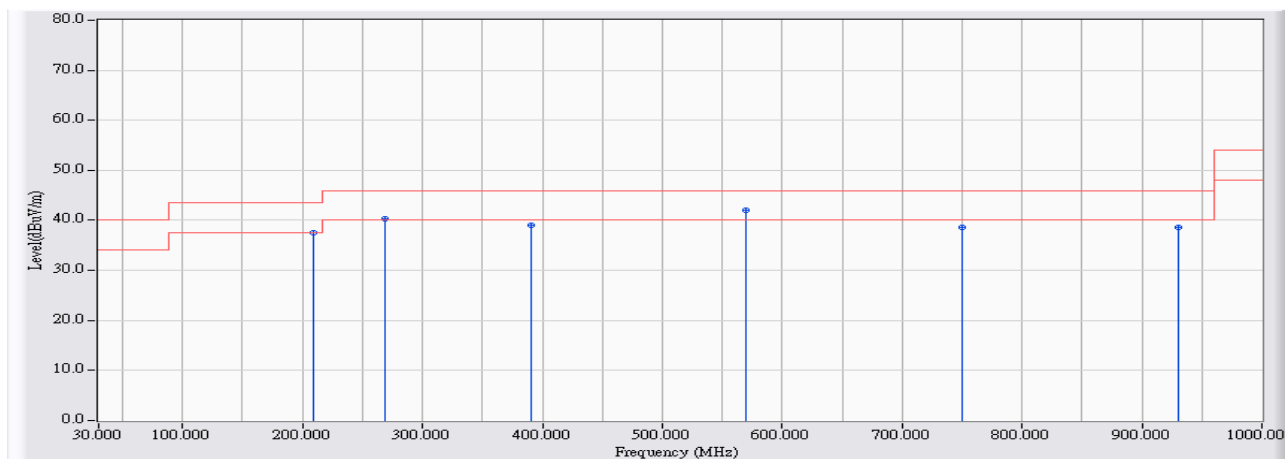


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 | * | 38.083             | -12.172                | 39.831                  | 27.660                    | -12.340        | 40.000            | QUASIPeAK     |
| 2 |   | 204.600            | -14.779                | 38.143                  | 23.364                    | -20.136        | 43.500            | QUASIPeAK     |
| 3 |   | 359.800            | -8.990                 | 35.143                  | 26.152                    | -19.848        | 46.000            | QUASIPeAK     |
| 4 |   | 569.967            | -5.269                 | 28.711                  | 23.441                    | -22.559        | 46.000            | QUASIPeAK     |
| 5 |   | 751.033            | -3.927                 | 28.530                  | 24.603                    | -21.397        | 46.000            | QUASIPeAK     |
| 6 |   | 959.583            | -2.367                 | 23.228                  | 20.861                    | -25.139        | 46.000            | QUASIPeAK     |

## Note:

1. All Reading Levels are Quasi-Peak value.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/23 - 21:59                 |
| Limit : FCC_CLASS_B_03M_QP                      | Margin : 6                                |
| Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2439MHz-Mode 2: Transmit (QPSK) |

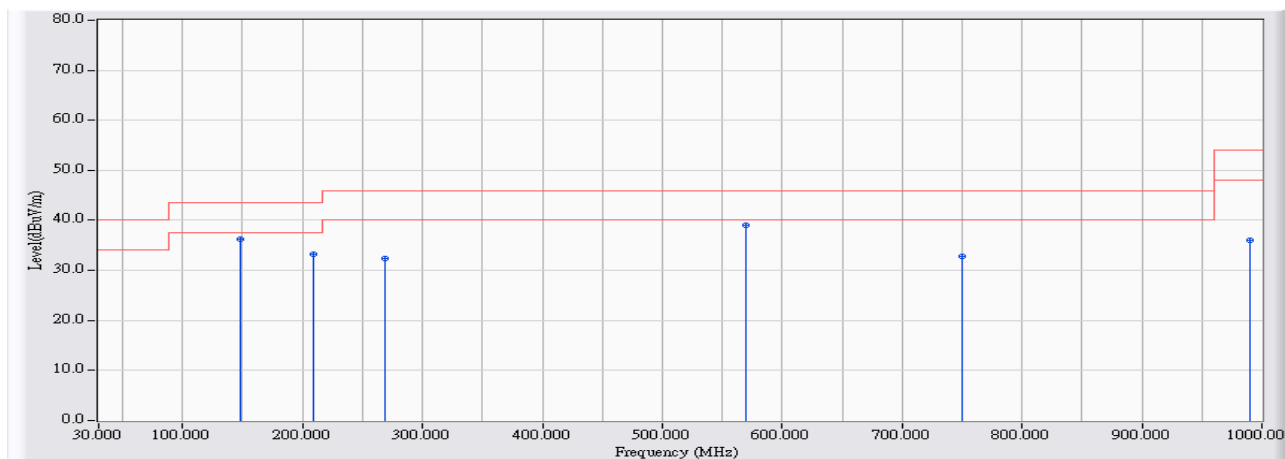


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 209.450            | -14.426                | 51.908                  | 37.483                    | -6.017         | 43.500            | QUASIPeAK     |
| 2 |   | 269.267            | -11.161                | 51.520                  | 40.360                    | -5.640         | 46.000            | QUASIPeAK     |
| 3 |   | 390.517            | -8.134                 | 47.203                  | 39.069                    | -6.931         | 46.000            | QUASIPeAK     |
| 4 | * | 569.967            | -5.269                 | 47.206                  | 41.936                    | -4.064         | 46.000            | QUASIPeAK     |
| 5 |   | 749.417            | -3.947                 | 42.485                  | 38.539                    | -7.461         | 46.000            | QUASIPeAK     |
| 6 |   | 930.483            | -2.628                 | 41.256                  | 38.628                    | -7.372         | 46.000            | QUASIPeAK     |

Note:

1. All Reading Levels are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/23 - 21:59                 |
| Limit : FCC_CLASS_B_03M_QP                    | Margin : 6                                |
| Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2439MHz-Mode 2: Transmit (QPSK) |



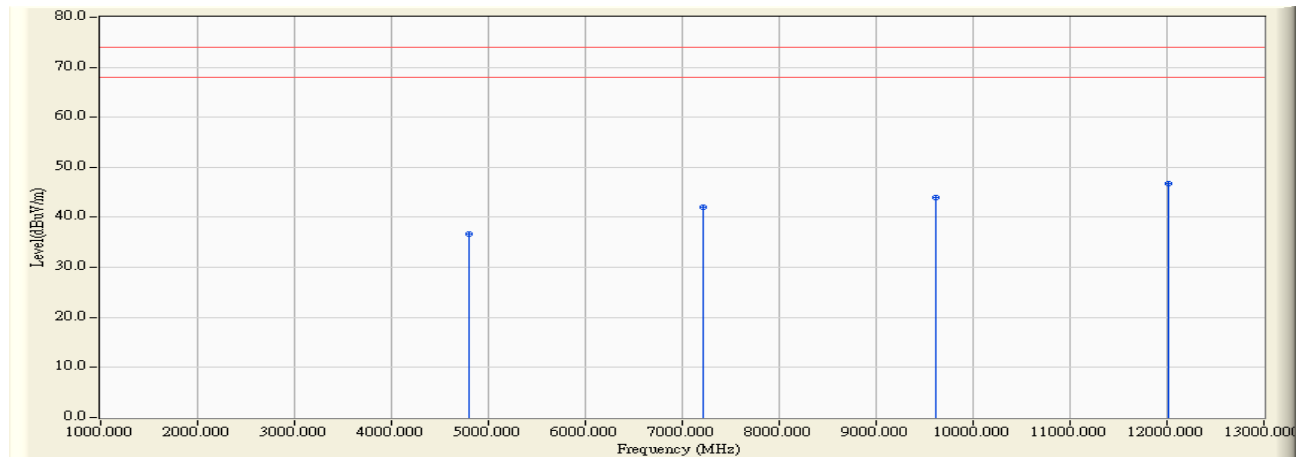
|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 148.017            | -13.749                | 49.910                  | 36.161                    | -7.339         | 43.500            | QUASIPeAK     |
| 2 |   | 209.450            | -14.426                | 47.590                  | 33.165                    | -10.335        | 43.500            | QUASIPeAK     |
| 3 |   | 269.267            | -11.161                | 43.578                  | 32.418                    | -13.582        | 46.000            | QUASIPeAK     |
| 4 | * | 569.967            | -5.269                 | 44.301                  | 39.031                    | -6.969         | 46.000            | QUASIPeAK     |
| 5 |   | 749.417            | -3.947                 | 36.841                  | 32.895                    | -13.105        | 46.000            | QUASIPeAK     |
| 6 |   | 990.300            | -2.110                 | 38.096                  | 35.985                    | -18.015        | 54.000            | QUASIPeAK     |

Note:

1. All Reading Levels are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

# Harmonic & Spurious:

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:44                  |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

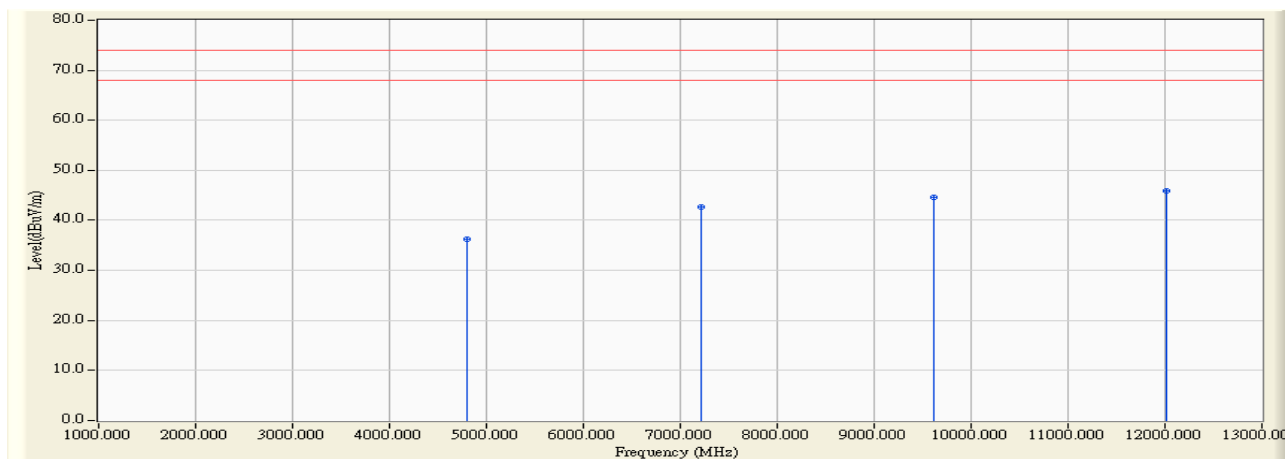


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4806.400           | -1.467                 | 38.177                     | 36.710                       | -37.290        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7209.450           | 4.772                  | 37.261                     | 42.032                       | -31.968        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9612.150           | 7.461                  | 36.511                     | 43.972                       | -30.028        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12015.300          | 10.224                 | 36.579                     | 46.803                       | -27.197        | 74.000                    | 54.000                       | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:46                  |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

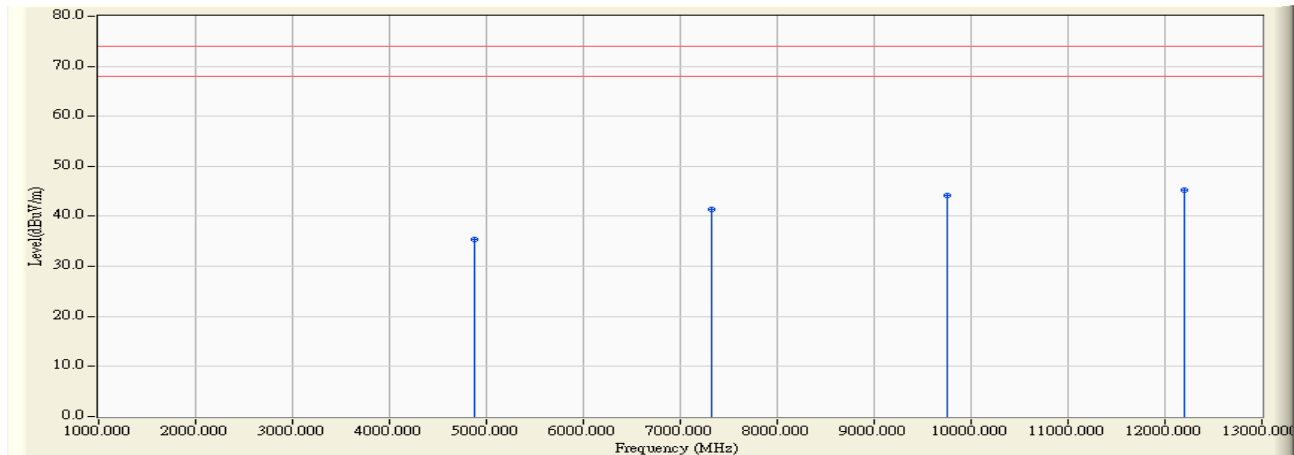


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4805.600           | -1.469                 | 37.771                     | 36.302                       | -37.698        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7208.600           | 4.769                  | 37.969                     | 42.739                       | -31.261        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9611.850           | 7.461                  | 37.172                     | 44.633                       | -29.367        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12014.900          | 10.225                 | 35.597                     | 45.821                       | -28.179        | 74.000                    | 54.000                       | PEAK             |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:49                  |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2439MHz-Mode 1: Transmit (16QAM) |



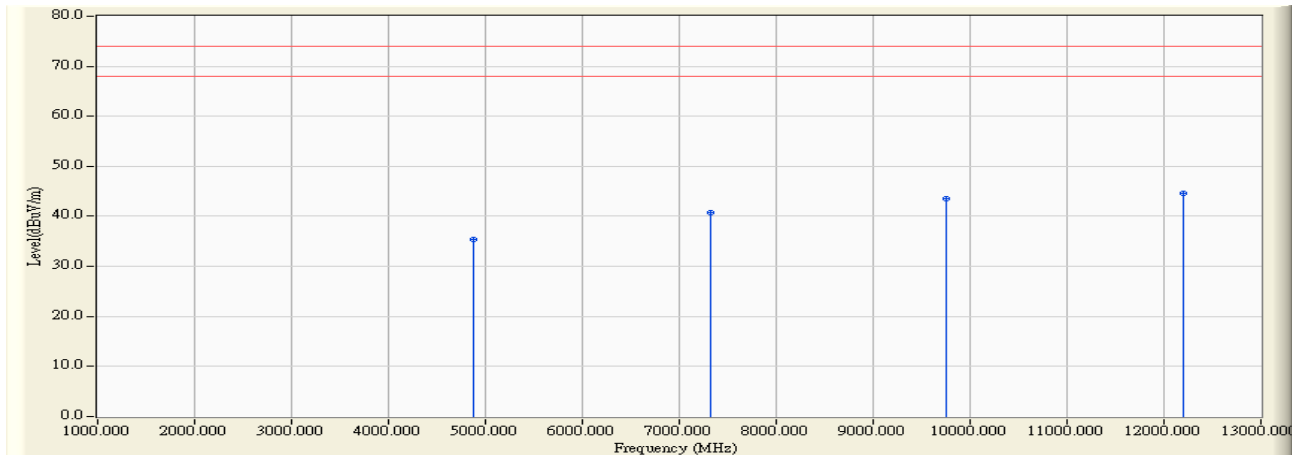
|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4877.700           | -1.313                 | 36.747                     | 35.434                       | -38.566        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7317.700           | 4.969                  | 36.321                     | 41.291                       | -32.709        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9756.900           | 7.672                  | 36.404                     | 44.076                       | -29.924        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12194.300          | 10.242                 | 34.965                     | 45.207                       | -28.793        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.



|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:52                  |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2439MHz-Mode 1: Transmit (16QAM) |

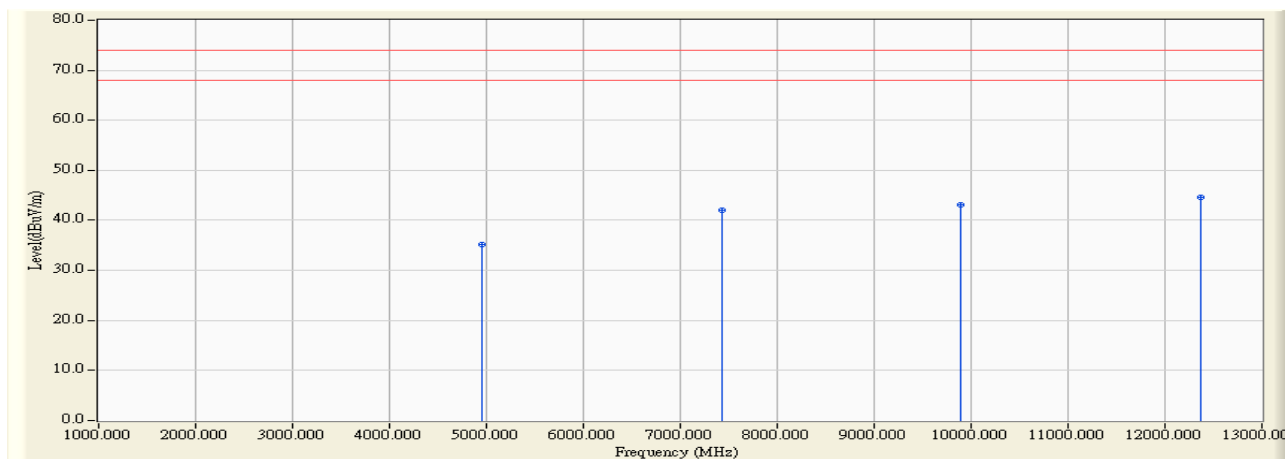


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4878.200           | -1.312                 | 36.797                     | 35.485                       | -38.515        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7316.350           | 4.968                  | 35.844                     | 40.811                       | -33.189        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9755.600           | 7.670                  | 35.831                     | 43.501                       | -30.499        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12194.550          | 10.242                 | 34.315                     | 44.557                       | -29.443        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:55                  |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |

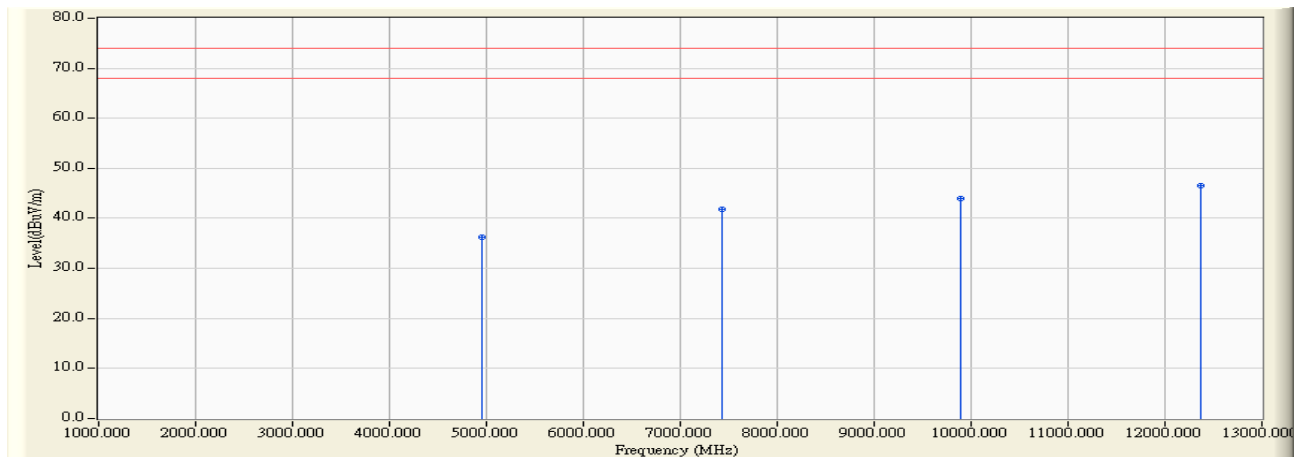


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4950.050           | -1.157                 | 36.228                     | 35.071                       | -38.929        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7424.800           | 5.166                  | 36.838                     | 42.004                       | -31.996        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9899.800           | 7.880                  | 35.314                     | 43.193                       | -30.807        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12375.250          | 10.260                 | 34.421                     | 44.681                       | -29.319        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:56                  |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |

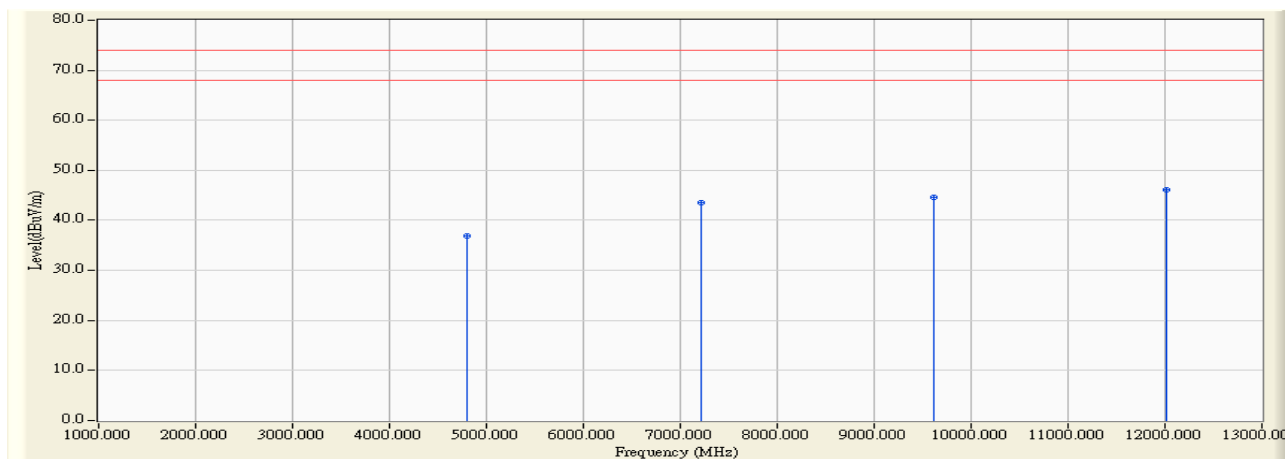


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4949.650           | -1.158                 | 37.298                     | 36.140                       | -37.860        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7425.450           | 5.167                  | 36.680                     | 41.847                       | -32.153        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9899.600           | 7.879                  | 36.043                     | 43.922                       | -30.078        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12375.250          | 10.260                 | 36.269                     | 46.529                       | -27.471        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:22                 |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

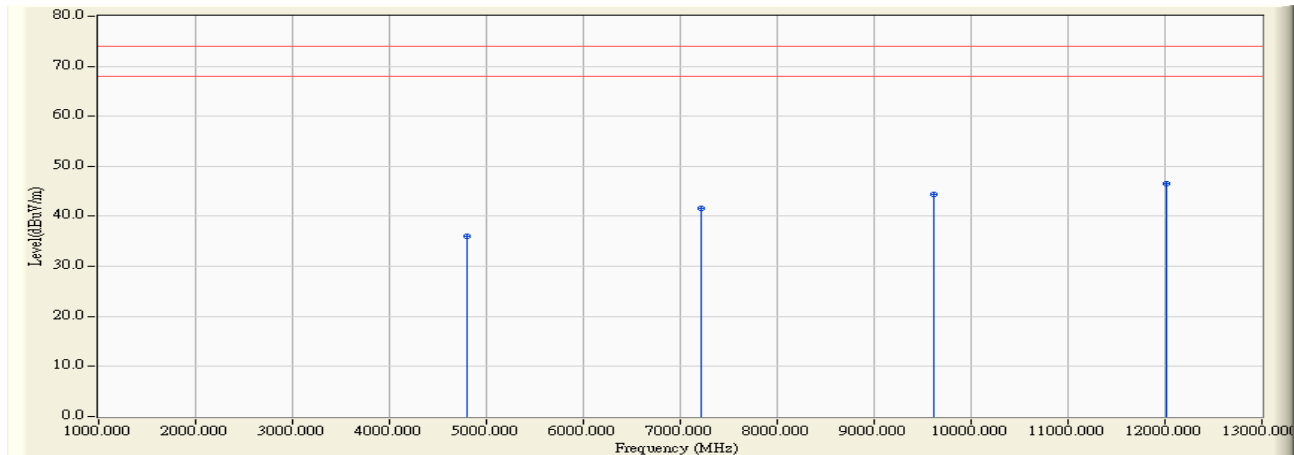


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4806.500           | -1.467                 | 38.315                     | 36.848                       | -37.152        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7209.350           | 4.772                  | 38.693                     | 43.464                       | -30.536        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9611.100           | 7.460                  | 37.131                     | 44.591                       | -29.409        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12015.400          | 10.224                 | 35.835                     | 46.059                       | -27.941        | 74.000                    | 54.000                       | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:24                 |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

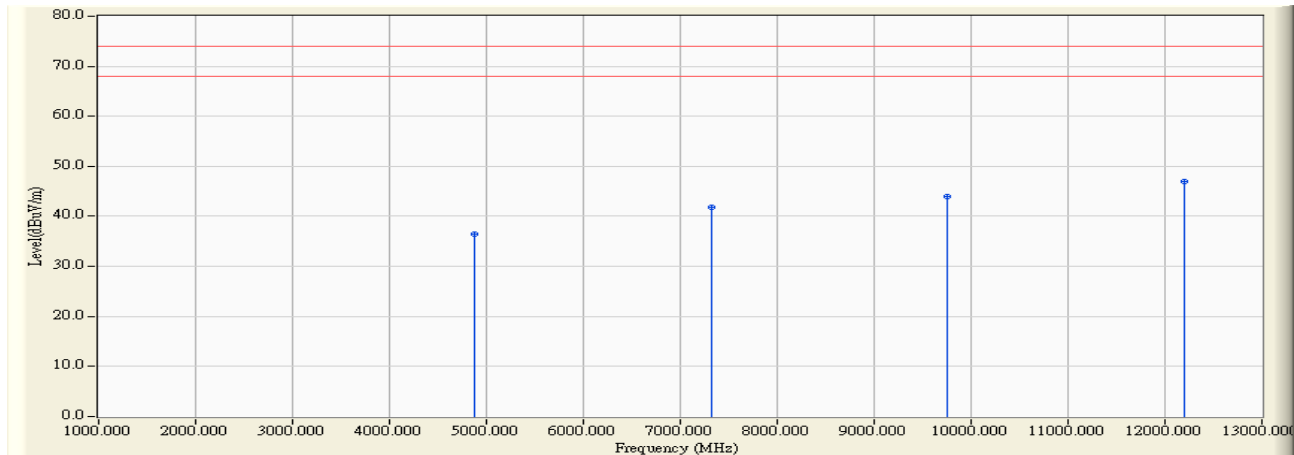


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4805.600           | -1.469                 | 37.443                     | 35.974                       | -38.026        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7209.350           | 4.772                  | 36.777                     | 41.548                       | -32.452        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9611.200           | 7.460                  | 36.845                     | 44.305                       | -29.695        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12014.800          | 10.225                 | 36.266                     | 46.490                       | -27.510        | 74.000                    | 54.000                       | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:32                 |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2439MHz-Mode 2: Transmit (QPSK) |

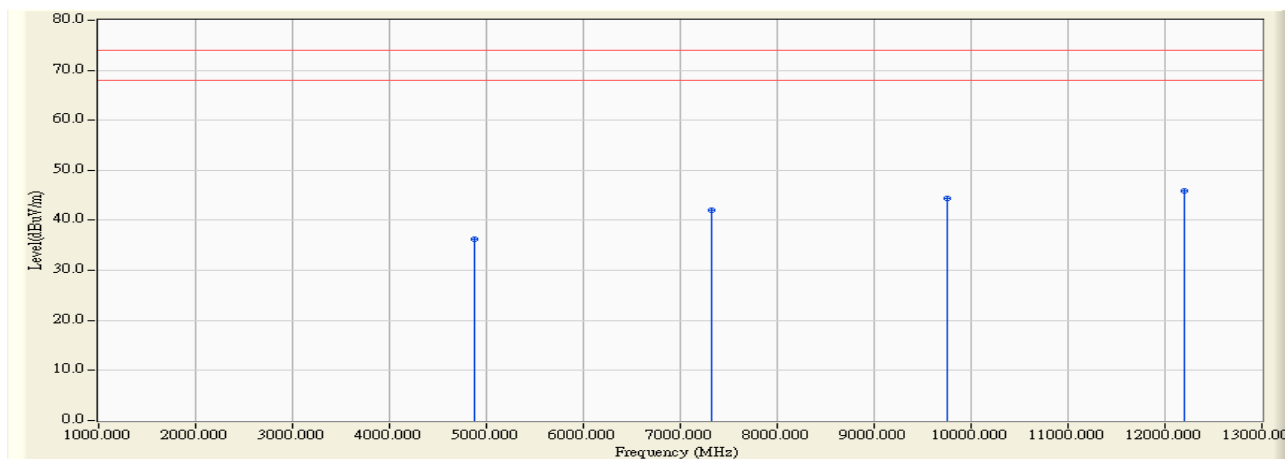


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4877.500           | -1.313                 | 37.850                     | 36.536                       | -37.464        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7317.200           | 4.969                  | 36.899                     | 41.868                       | -32.132        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9756.050           | 7.670                  | 36.361                     | 44.032                       | -29.968        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12194.850          | 10.243                 | 36.788                     | 47.030                       | -26.970        | 74.000                    | 54.000                       | PEAK             |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:34                 |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2439MHz-Mode 2: Transmit (QPSK) |

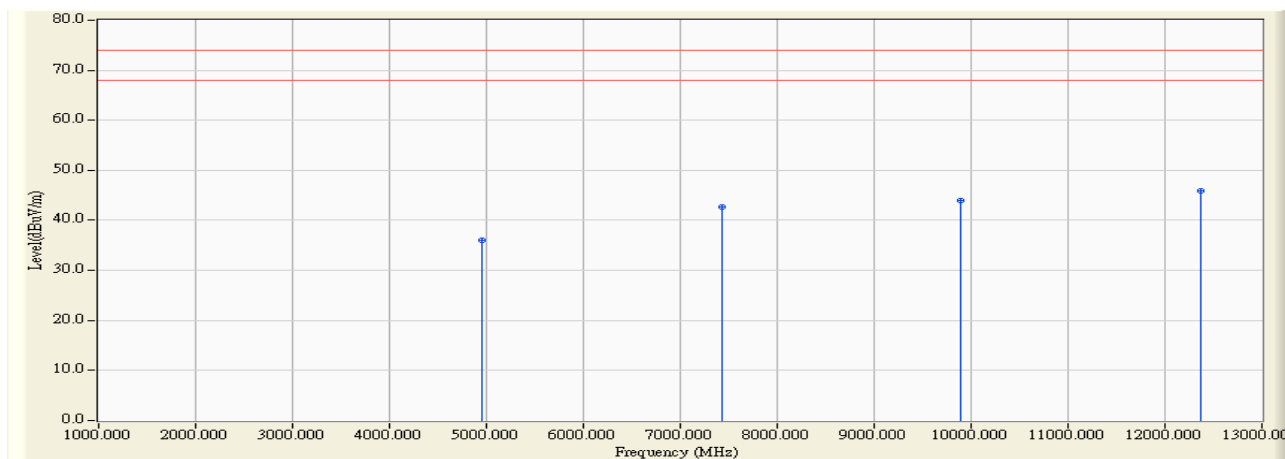


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4877.750           | -1.313                 | 37.584                     | 36.271                       | -37.729        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7316.700           | 4.968                  | 37.123                     | 42.091                       | -31.909        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9756.750           | 7.672                  | 36.730                     | 44.402                       | -29.598        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12195.750          | 10.242                 | 35.747                     | 45.989                       | -28.011        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:38                 |
| Limit : FCC_SpartC_15.247_H_03M_PK              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |



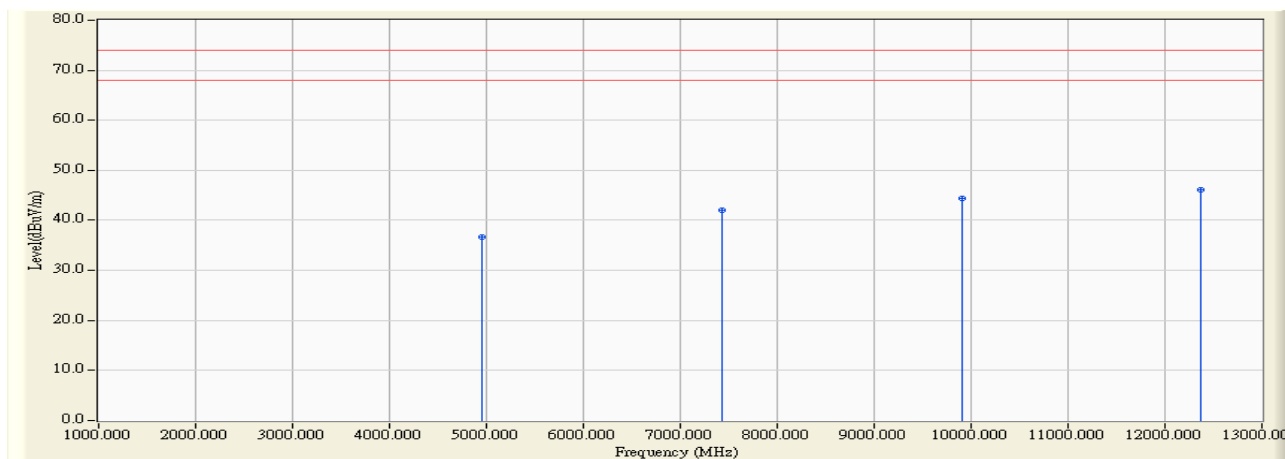
|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4949.800           | -1.157                 | 37.096                     | 35.938                       | -38.062        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7424.800           | 5.166                  | 37.605                     | 42.771                       | -31.229        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9899.450           | 7.878                  | 36.077                     | 43.956                       | -30.044        | 74.000                    | 54.000                       | PEAK             |
| 4 |   | 12375.200          | 10.260                 | 35.677                     | 45.937                       | -28.063        | 74.000                    | 54.000                       | PEAK             |
| 5 | * | 12375.250          | 10.260                 | 35.678                     | 45.938                       | -28.062        | 74.000                    | 54.000                       | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.



|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:39                 |
| Limit : FCC_SpartC_15.247_H_03M_PK            | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |



|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading<br>Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|----------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4949.750           | -1.157                 | 37.761                     | 36.603                       | -37.397        | 74.000                    | 54.000                       | PEAK             |
| 2 |   | 7425.250           | 5.166                  | 36.881                     | 42.048                       | -31.952        | 74.000                    | 54.000                       | PEAK             |
| 3 |   | 9900.300           | 7.880                  | 36.594                     | 44.474                       | -29.526        | 74.000                    | 54.000                       | PEAK             |
| 4 | * | 12375.500          | 10.260                 | 35.827                     | 46.087                       | -27.913        | 74.000                    | 54.000                       | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

## 5. RF antenna conducted test

### 5.1. Test Equipment

The following test equipment is used during the test:

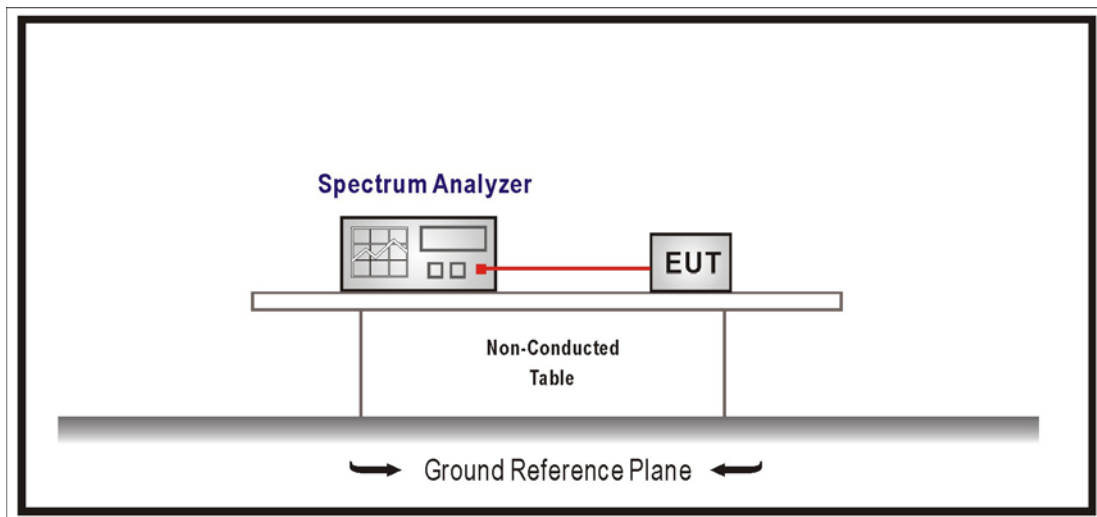
RF antenna conducted test / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 5.2. Test Setup

RF Conducted Measurement:



### **5.3. Limits**

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

### **5.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

### **5.5. Test Specification**

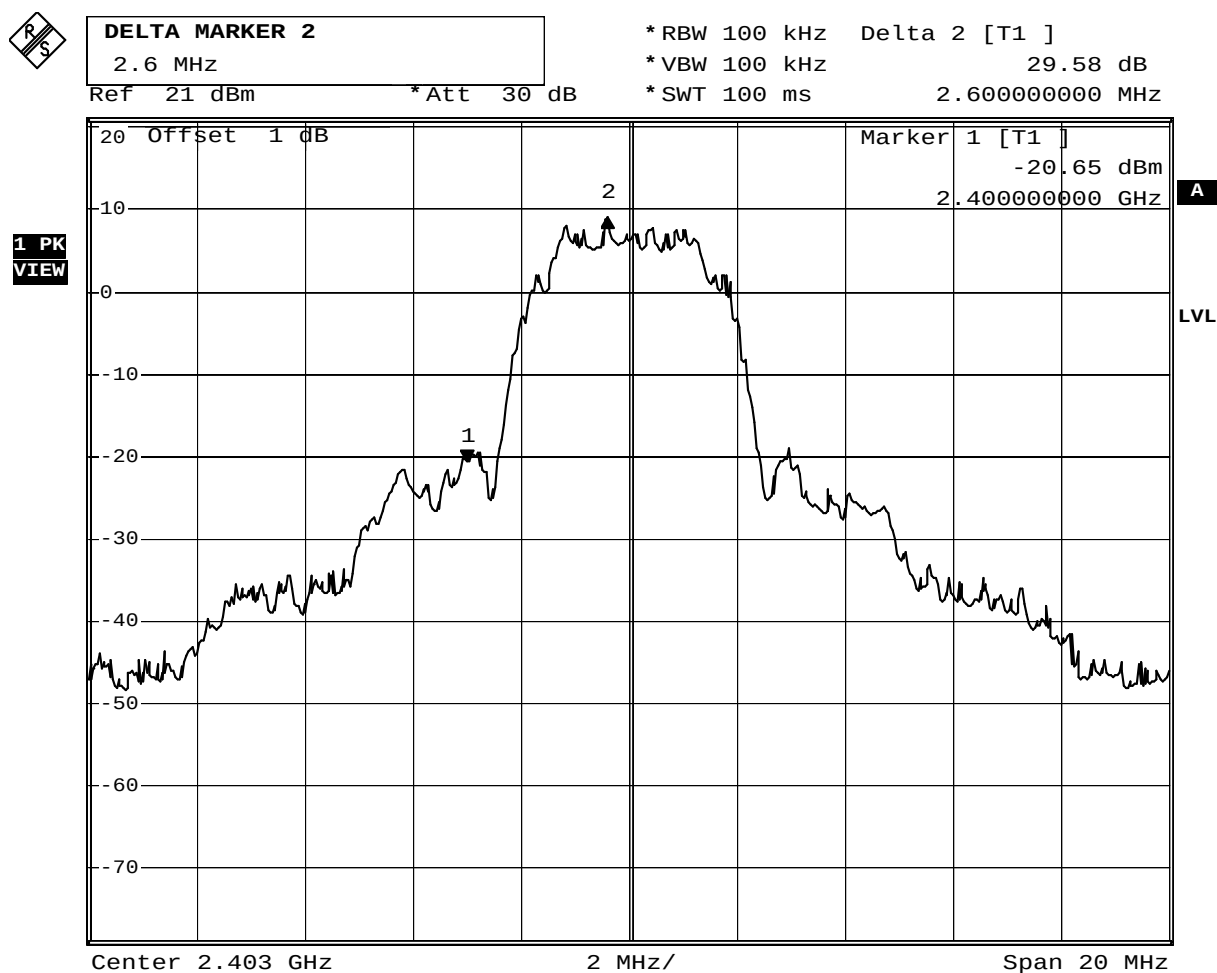
According to FCC Part 15 Subpart C Paragraph 15.247: 2010

## 5.6. Test Result

|              |                           |           |                     |
|--------------|---------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module  |           |                     |
| Test Item    | RF antenna conducted test |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM)  |           |                     |
| Date of Test | 2011/05/20                | Test Site | No.7 Shielding Room |

| Channel No. | Frequency (MHz) | Measurement Level (dB) | Required Limit (dBc) | Result |
|-------------|-----------------|------------------------|----------------------|--------|
| 00          | 2403            | 29.58                  | $\geq 20$            | Pass   |
| 24          | 2475            | 47.31                  | $\geq 20$            | Pass   |

### Channel 00



Date: 20.MAY.2011 22:18:48

## Channel 24



MARKER 1

2.4835 GHz

Ref 21 dBm

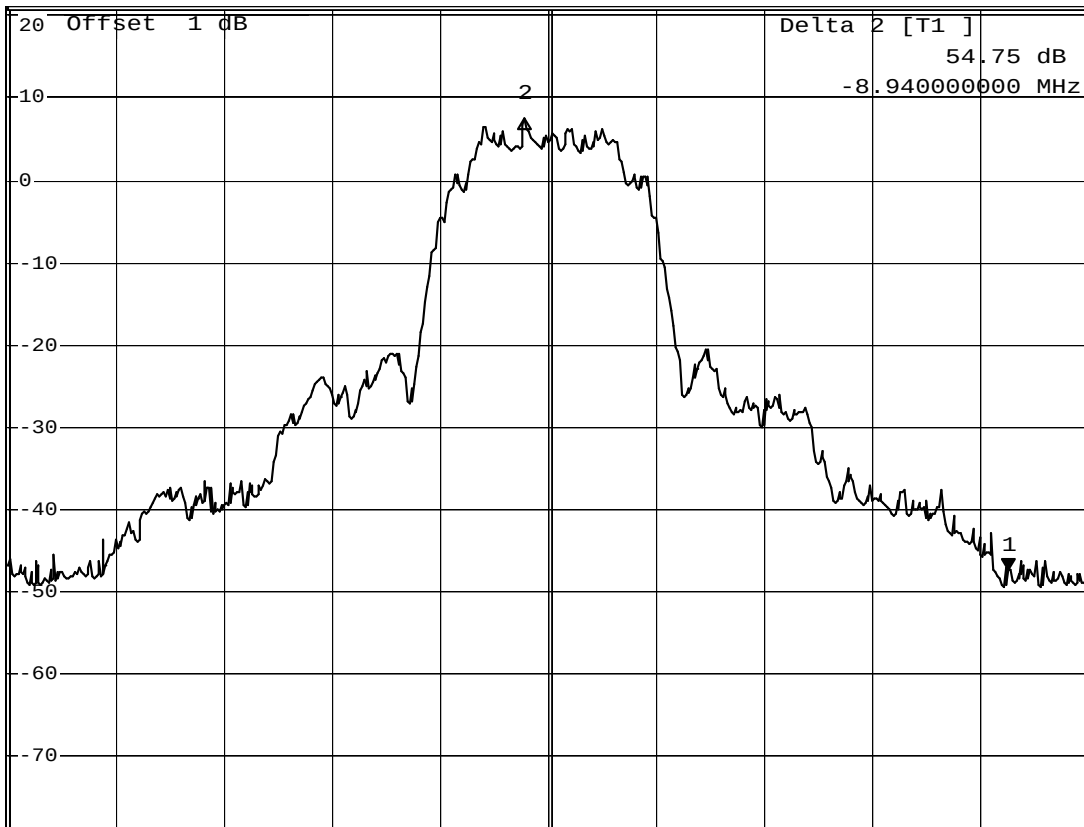
\*Att 30 dB

\*RBW 100 kHz Marker 1 [T1]

\*VBW 100 kHz -47.31 dBm

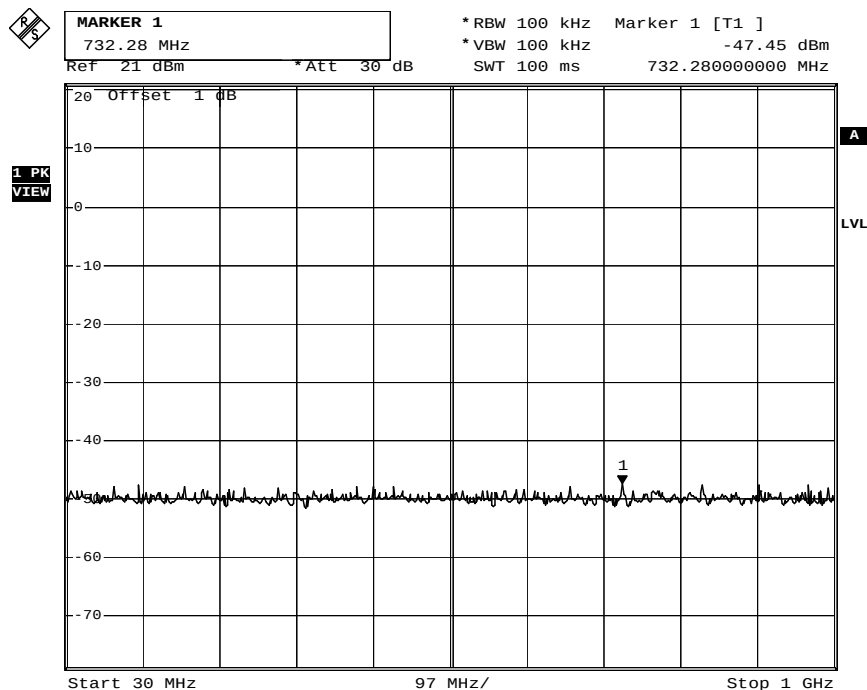
\*SWT 100 ms 2.483500000 GHz

1 PK  
VIEW



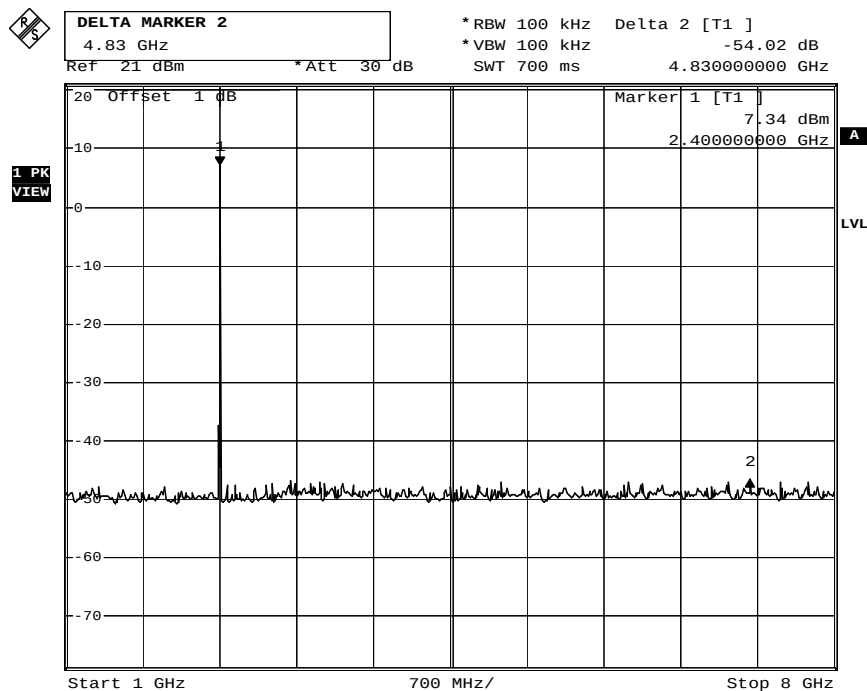
Date: 20.MAY.2011 22:23:23

## Channel 00 (30MHz-1GHz)



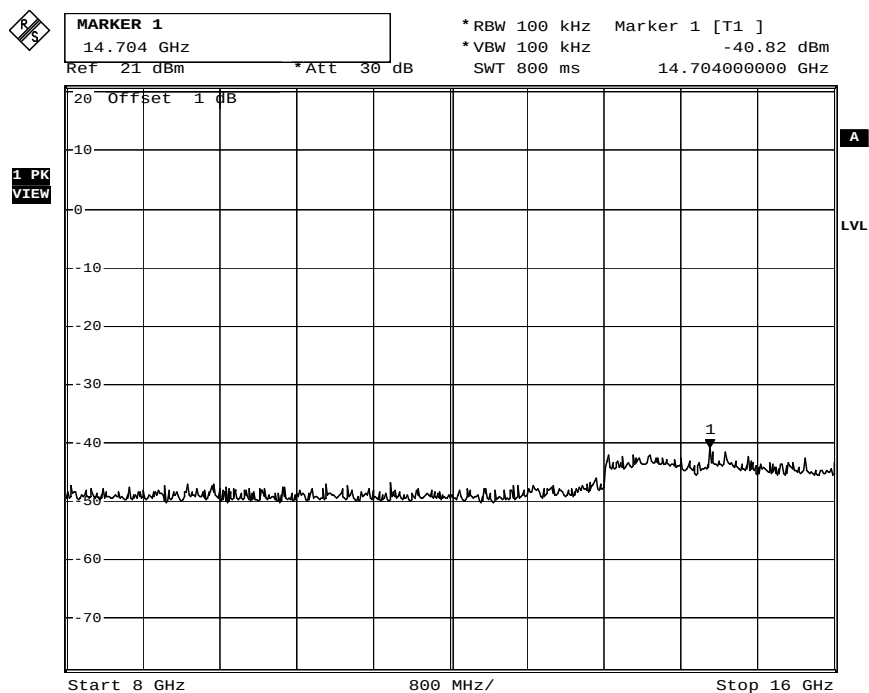
Date: 22.MAY.2011 15:28:11

## Channel 00 (1GHz-8GHz)



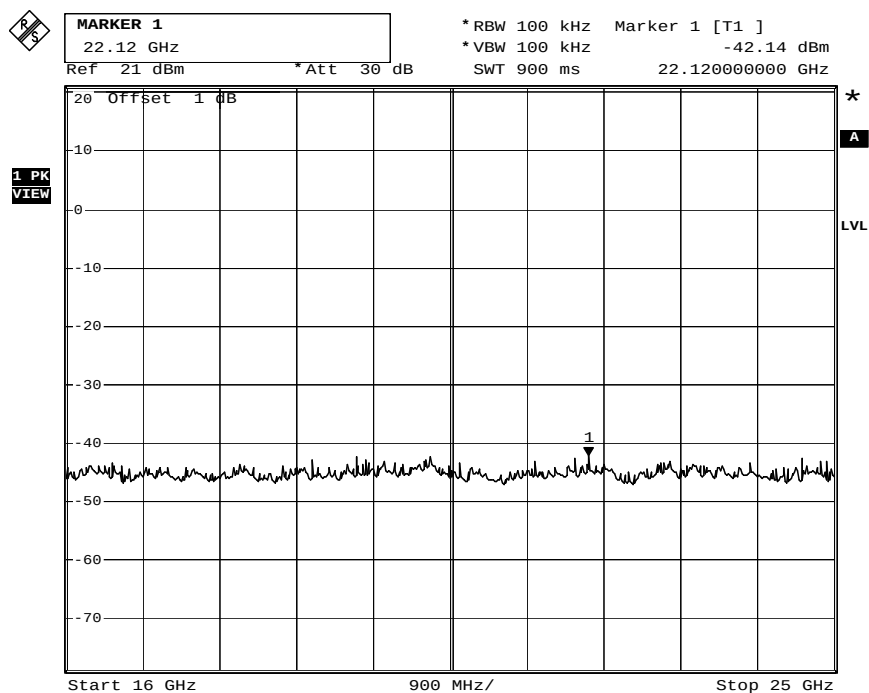
Date: 22.MAY.2011 15:29:03

### Channel 00 (8GHz-16GHz)



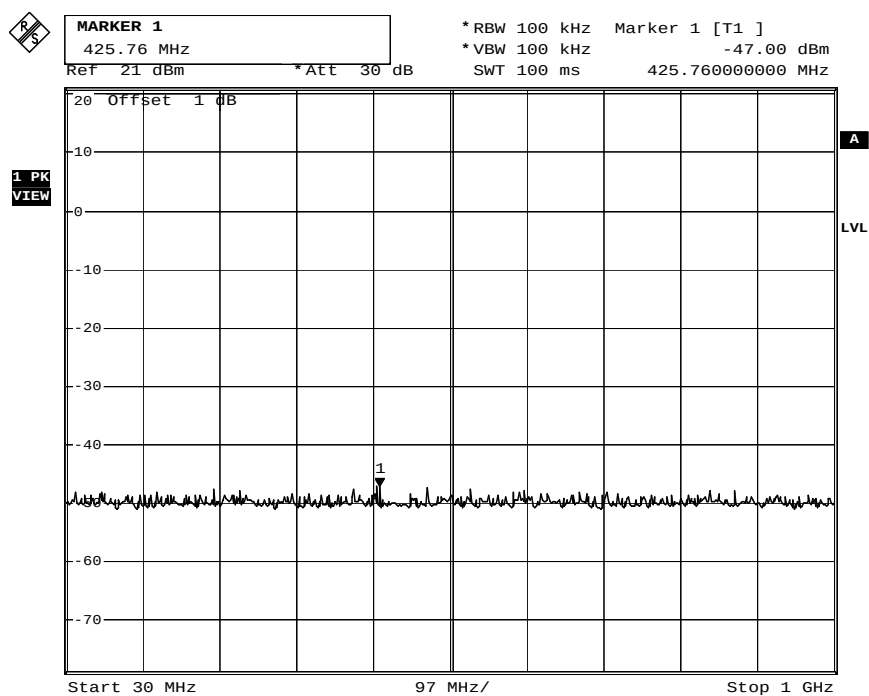
Date: 22.MAY.2011 15:29:30

### Channel 00 (16GHz-25GHz)



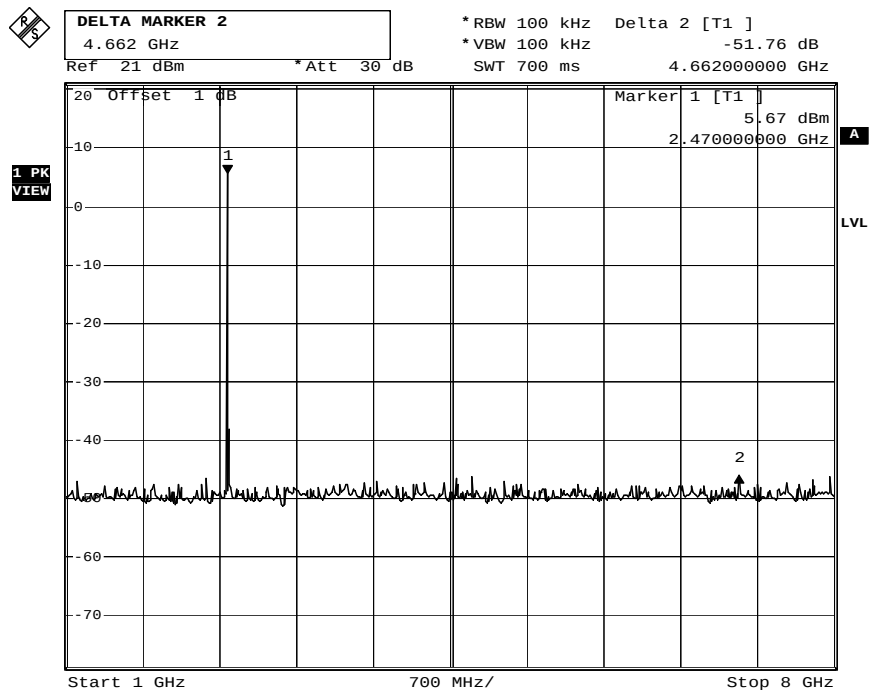
Date: 22.MAY.2011 15:29:53

# Channel 24 (30MHz-1GHz)



Date: 22.MAY.2011 15:30:50

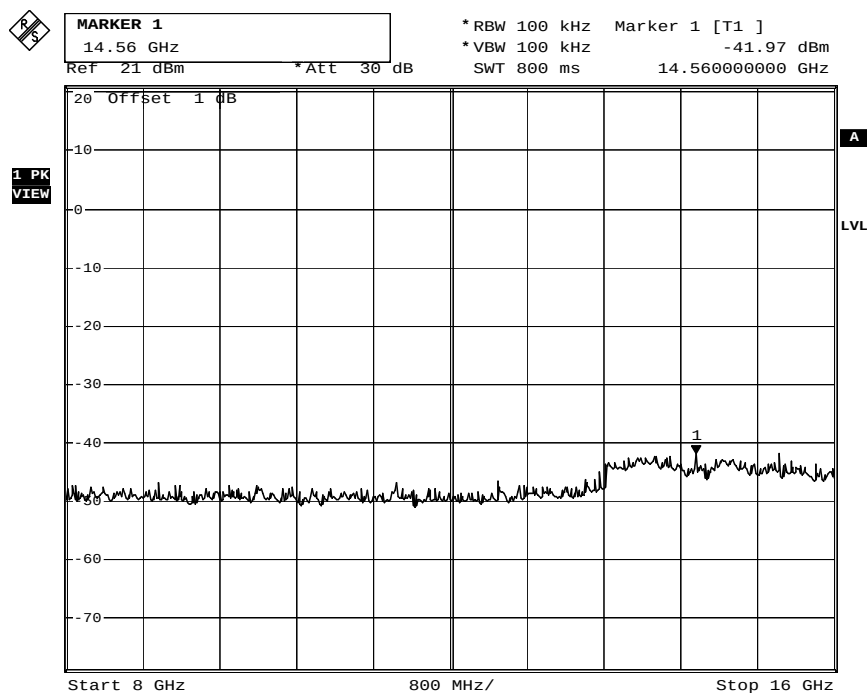
# Channel 24 (1GHz-8GHz)



Date: 22.MAY.2011 15:31:31

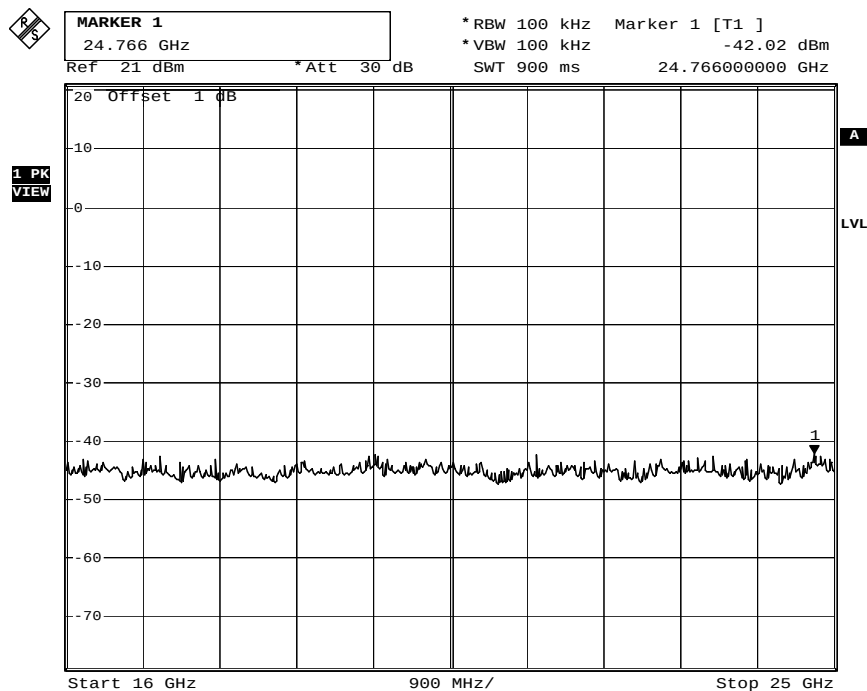


## Channel 24 (8GHz-16GHz)



Date: 22.MAY.2011 15:31:56

## Channel 24 (16GHz-25GHz)

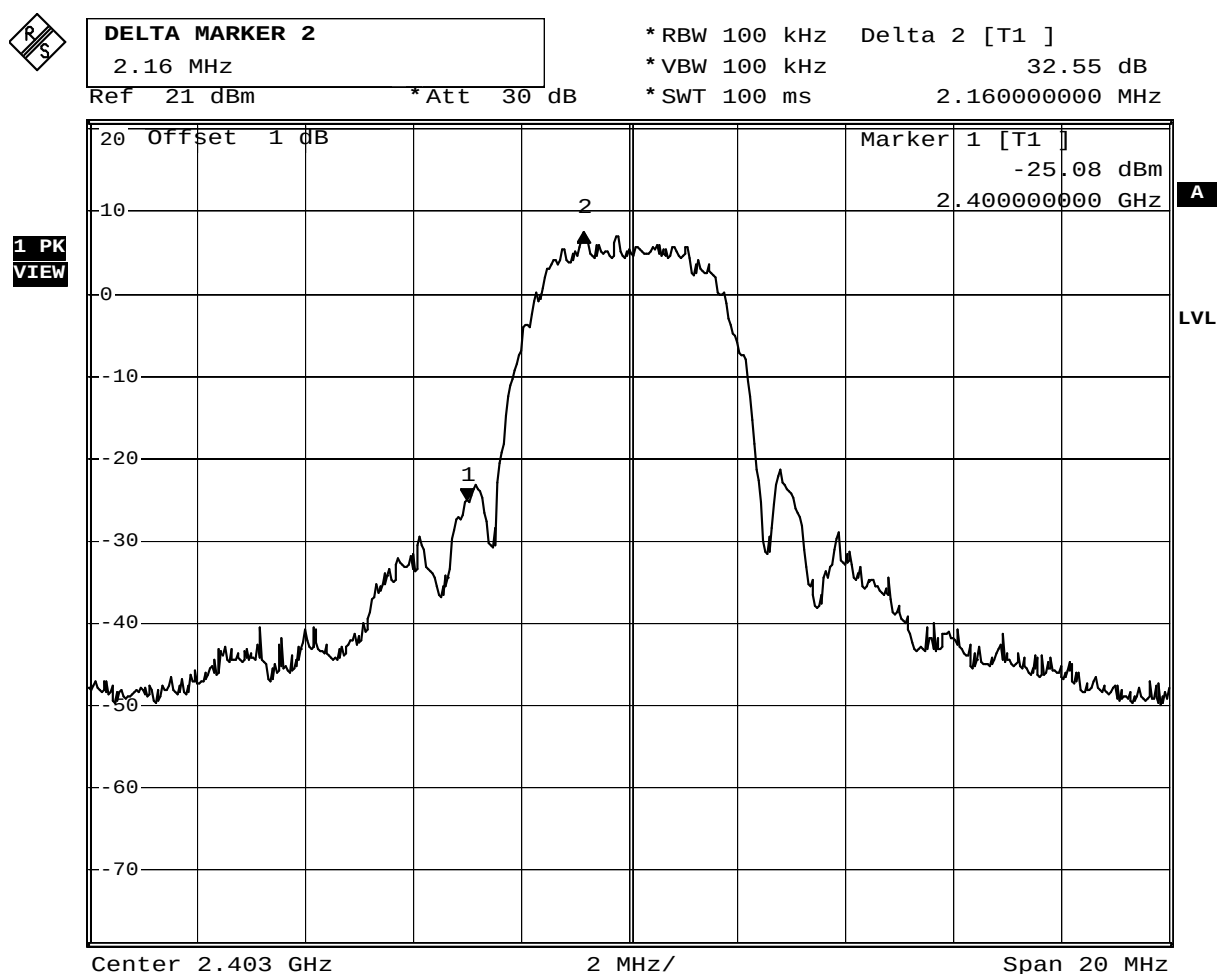


Date: 22.MAY.2011 15:32:16

|              |                           |           |                     |
|--------------|---------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module  |           |                     |
| Test Item    | RF antenna conducted test |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)   |           |                     |
| Date of Test | 2011/05/20                | Test Site | No.7 Shielding Room |

| Channel No. | Frequency (MHz) | Measurement Level (dB) | Required Limit (dBc) | Result |
|-------------|-----------------|------------------------|----------------------|--------|
| 00          | 2403            | 32.55                  | $\geq 20$            | Pass   |
| 24          | 2475            | 46.30                  | $\geq 20$            | Pass   |

## Channel 00



Date: 20.MAY.2011 22:08:47

### Channel 24



MARKER 1

2.4835 GHz

Ref 21 dBm

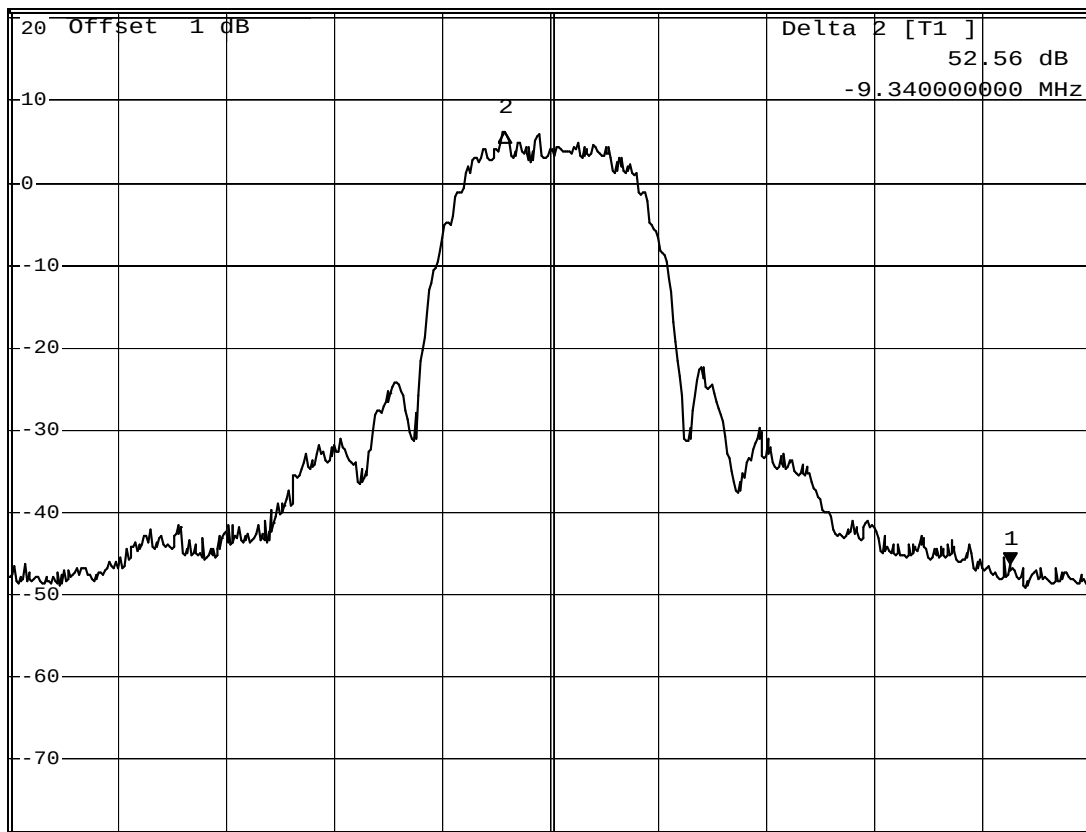
\*Att 30 dB

\*RBW 100 kHz Marker 1 [T1]

\*VBW 100 kHz -46.30 dBm

\*SWT 100 ms 2.483500000 GHz

1 PK  
VIEW



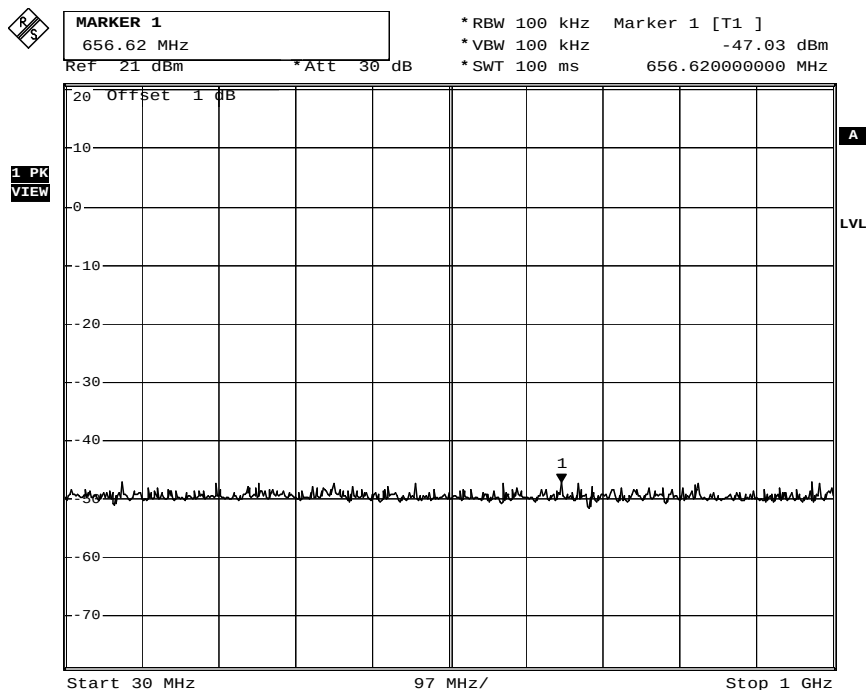
Center 2.475 GHz

2 MHz/

Span 20 MHz

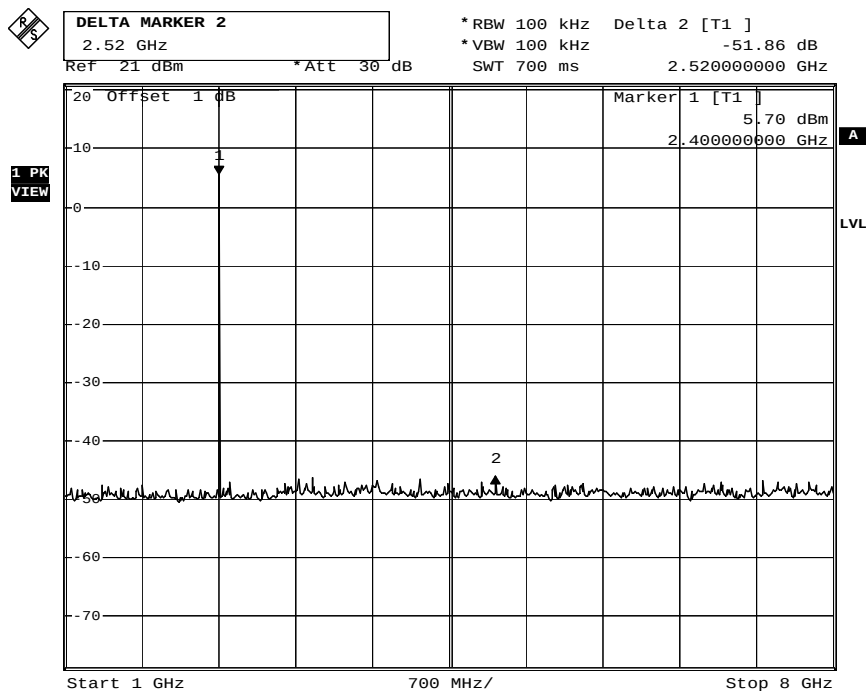
Date: 20.MAY.2011 22:14:36

## Channel 00 (30MHz-1GHz)



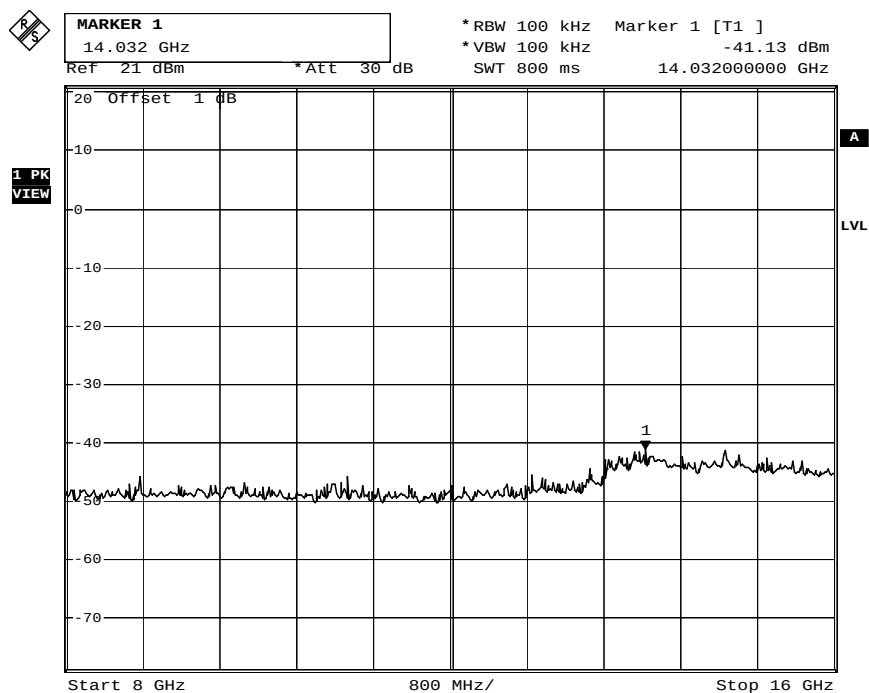
Date: 22.MAY.2011 15:20:54

## Channel 00 (1GHz-8GHz)



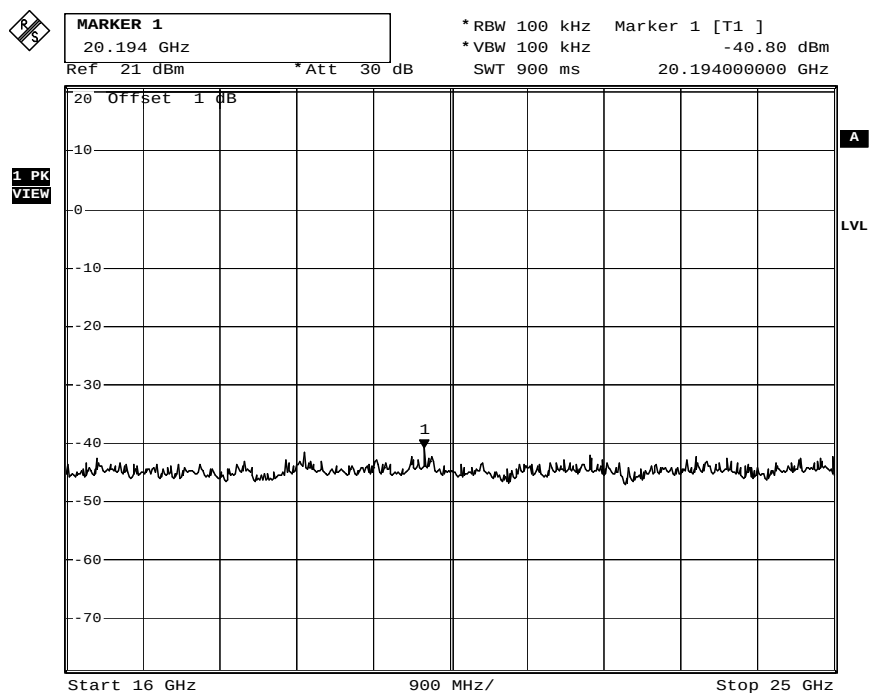
Date: 22.MAY.2011 15:22:17

## Channel 00 (8GHz-16GHz)



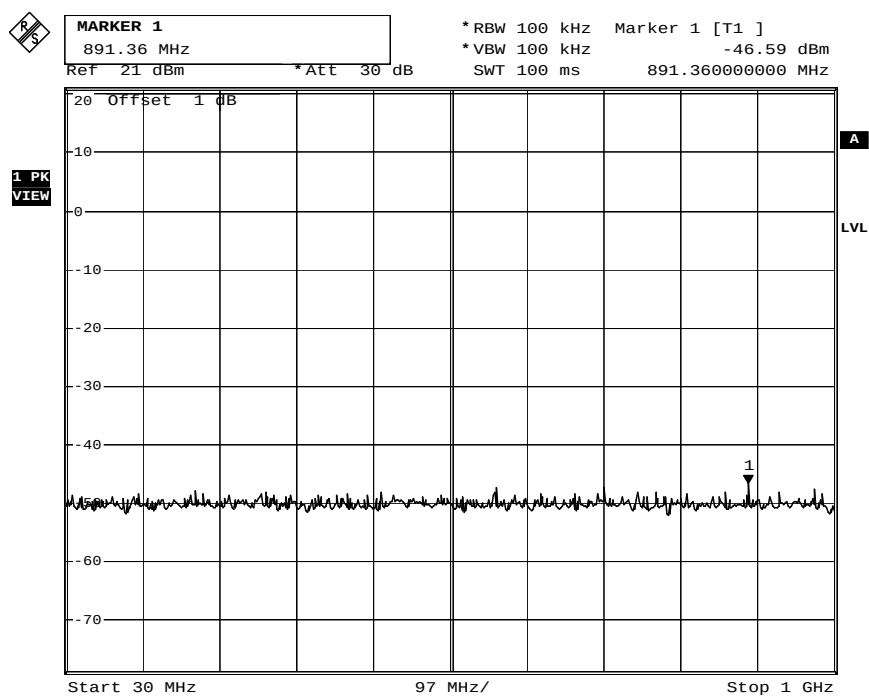
Date: 22.MAY.2011 15:22:51

## Channel 00 (16GHz-25GHz)



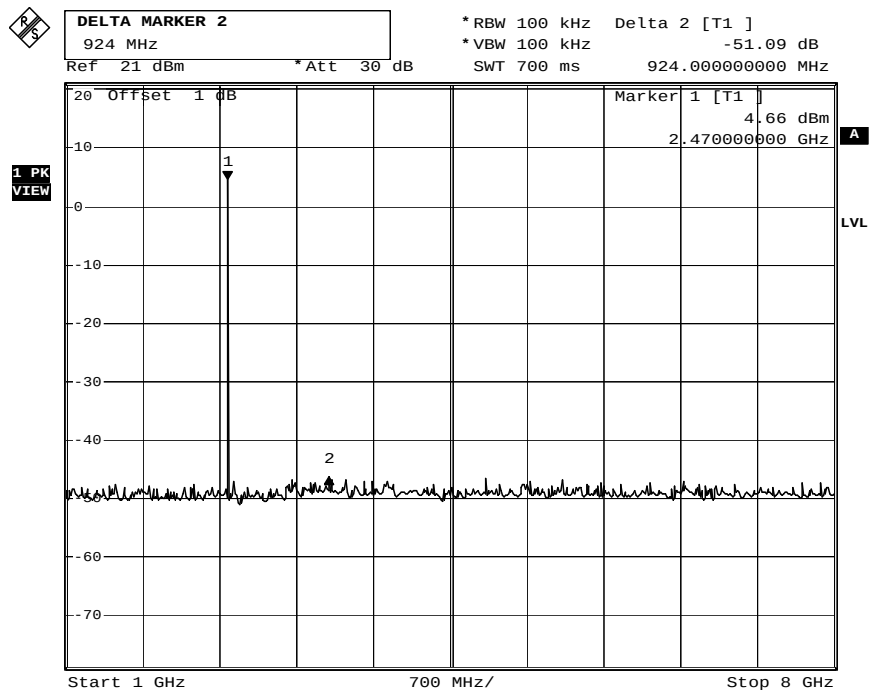
Date: 22.MAY.2011 15:23:37

## Channel 24 (30MHz-1GHz)



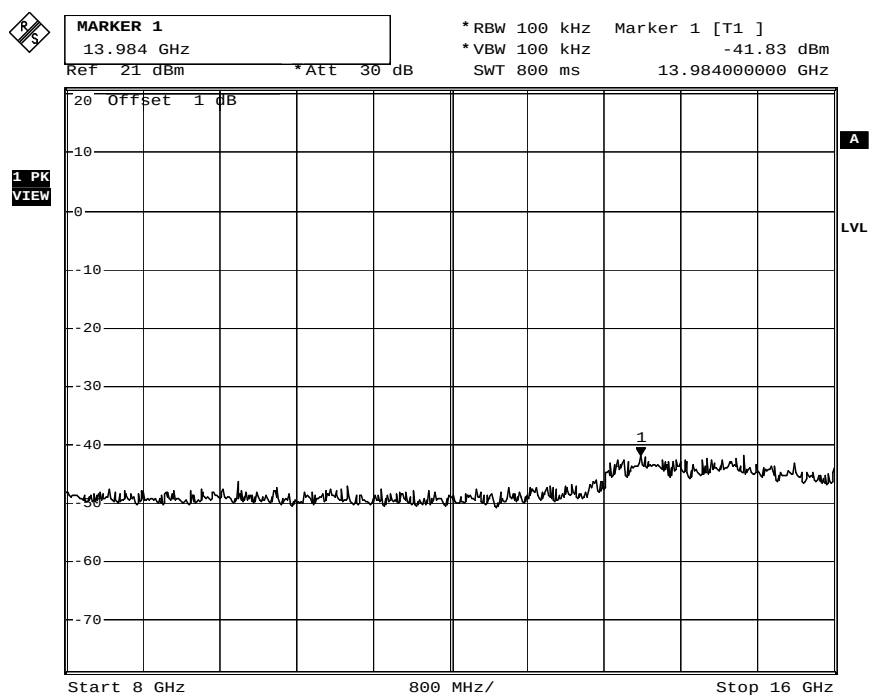
Date: 22.MAY.2011 15:24:34

## Channel 24 (1GHz-8GHz)



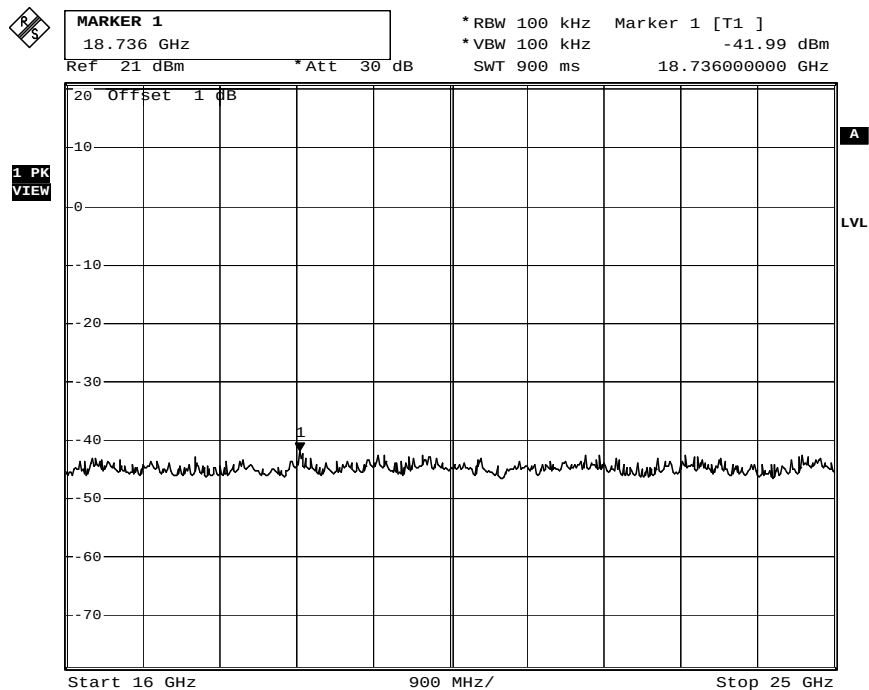
Date: 22.MAY.2011 15:25:35

## Channel 24 (8GHz-16GHz)



Date: 22.MAY.2011 15:26:04

## Channel 24 (16GHz-25GHz)



Date: 22.MAY.2011 15:26:37

## 6. Band Edge

### 6.1. Test Equipment

The following test equipments are used during the test:

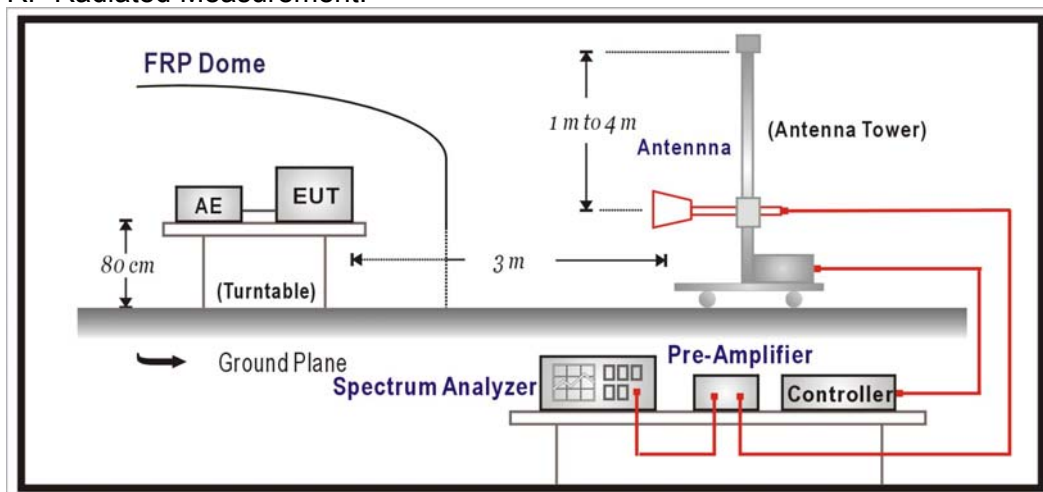
#### Band Edge / CB1

| Instrument                       | Manufacturer    | Model No.    | Serial No  | Next Cal. Date |
|----------------------------------|-----------------|--------------|------------|----------------|
| Double Ridged Guide Horn Antenna | Schwarzback     | BBHA 9120D   | 743        | 2012/02/24     |
| PSA Series Spectrum analyzer     | Agilent         | E4440A       | MY46187335 | 2012/01/06     |
| Coaxial Cable                    | Huber+Suhner AG | Sucoflex 102 | 25623/2    | 2012/03/21     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 6.2. Test Setup

RF Radiated Measurement:





### 6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

### 6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

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

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

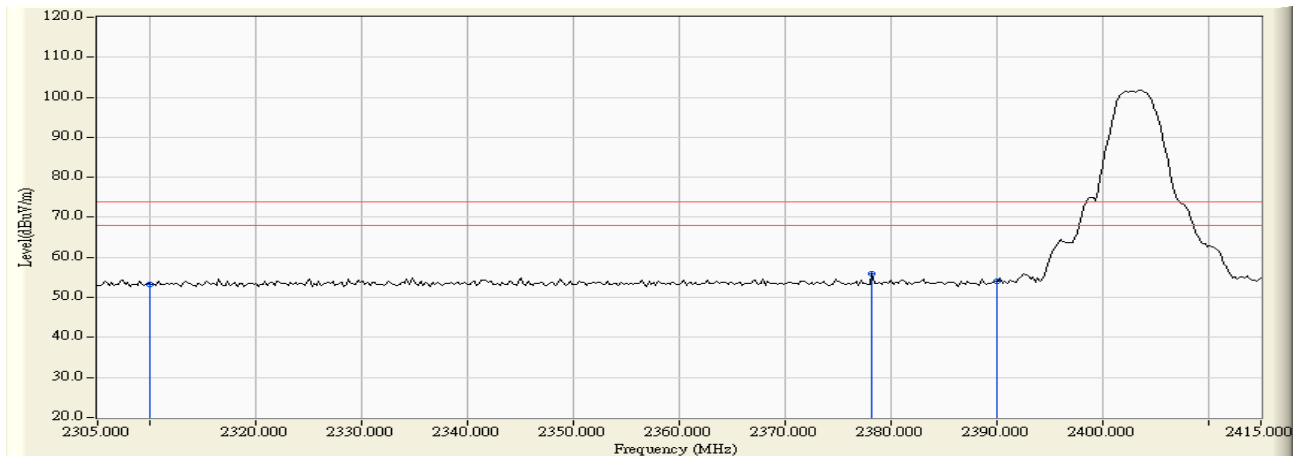
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

### 6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2010

## 6.6. Test Result

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/19 - 10:09                  |
| Limit : FCC_SpartC_15.209_03M_PK                | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

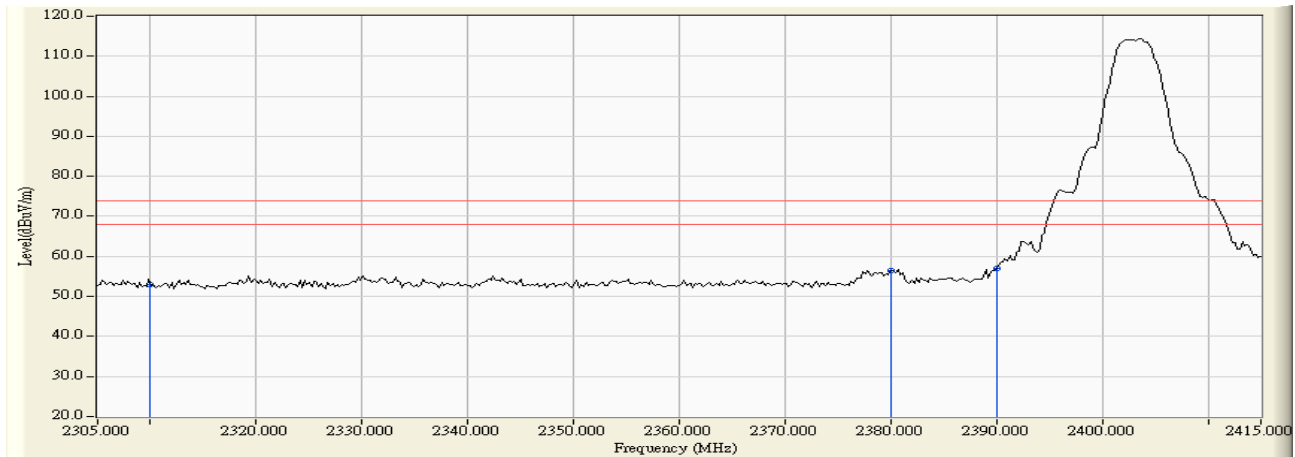


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 25.862                  | 53.270                    | -20.730        | 74.000            | PEAK          |
| 2 | * | 2378.260           | 27.693                 | 28.233                  | 55.926                    | -18.074        | 74.000            | PEAK          |
| 3 |   | 2390.000           | 27.742                 | 26.319                  | 54.061                    | -19.939        | 74.000            | PEAK          |

### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/19 - 10:14                  |
| Limit : FCC_SpartC_15.209_03M_PK              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

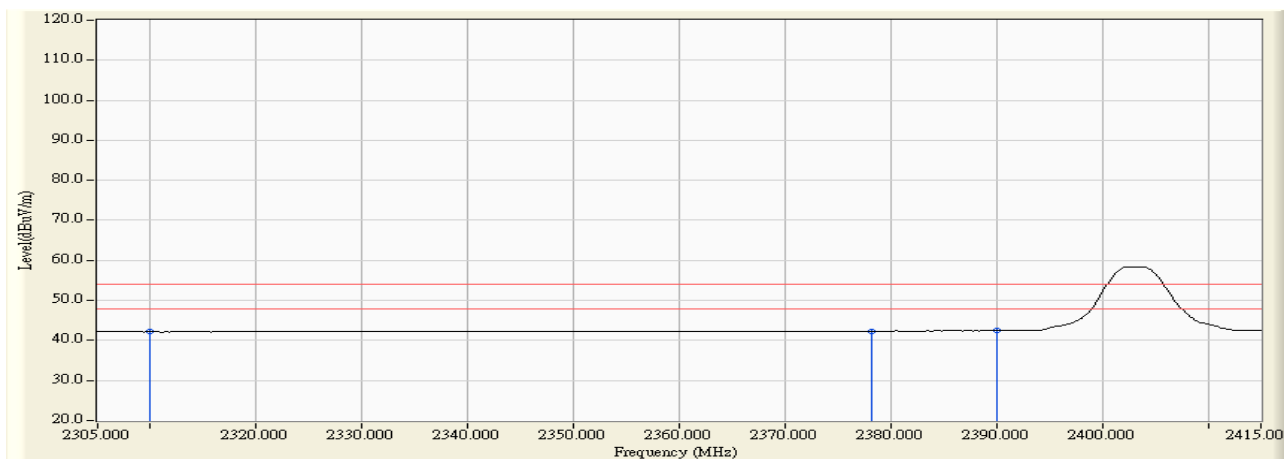


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 25.634                  | 53.042                    | -20.958        | 74.000            | PEAK          |
| 2 |   | 2380.020           | 27.701                 | 28.859                  | 56.559                    | -17.441        | 74.000            | PEAK          |
| 3 | * | 2390.000           | 27.742                 | 29.355                  | 57.097                    | -16.903        | 74.000            | PEAK          |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/19 - 10:11                  |
| Limit : FCC_SpartC_15.209_03M_AV                | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

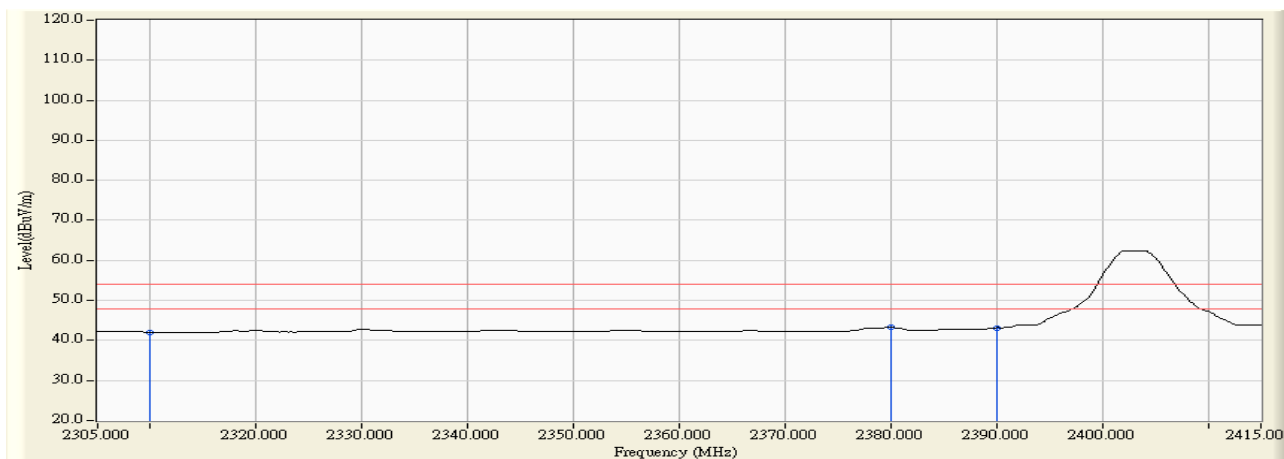


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 14.713                  | 42.121                    | -11.879        | 54.000            | AVERAGE       |
| 2 |   | 2378.260           | 27.693                 | 14.670                  | 42.363                    | -11.637        | 54.000            | AVERAGE       |
| 3 | * | 2390.000           | 27.742                 | 14.703                  | 42.445                    | -11.555        | 54.000            | AVERAGE       |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/19 - 10:16                  |
| Limit : FCC_SpartC_15.209_03M_AV              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 1: Transmit (16QAM) |

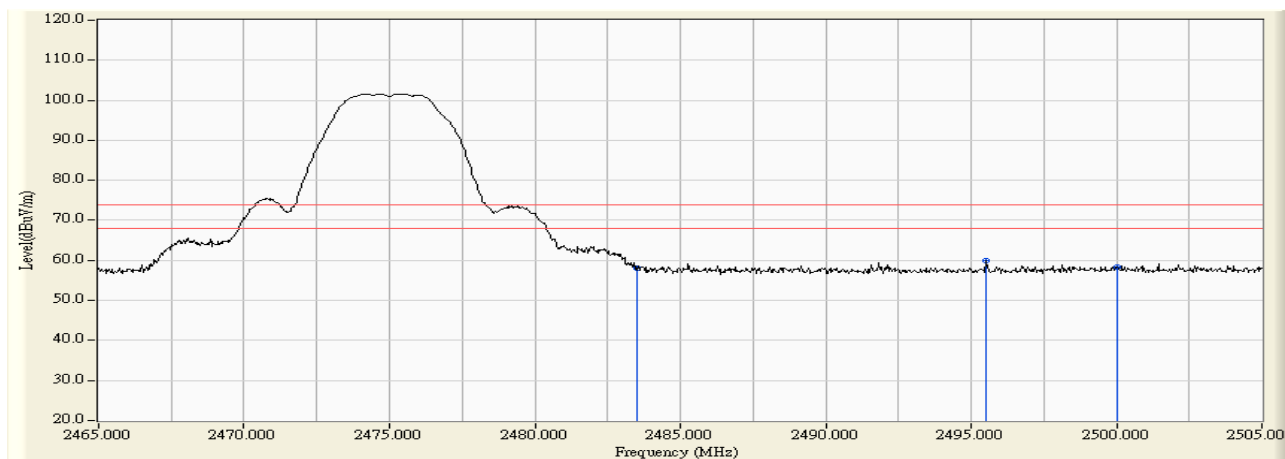


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 14.662                  | 42.070                    | -11.930        | 54.000            | AVERAGE       |
| 2 | * | 2380.020           | 27.701                 | 15.561                  | 43.261                    | -10.739        | 54.000            | AVERAGE       |
| 3 |   | 2390.000           | 27.742                 | 15.431                  | 43.173                    | -10.827        | 54.000            | AVERAGE       |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 13:47                  |
| Limit : FCC_SpartC_15.209_03M_PK                | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |

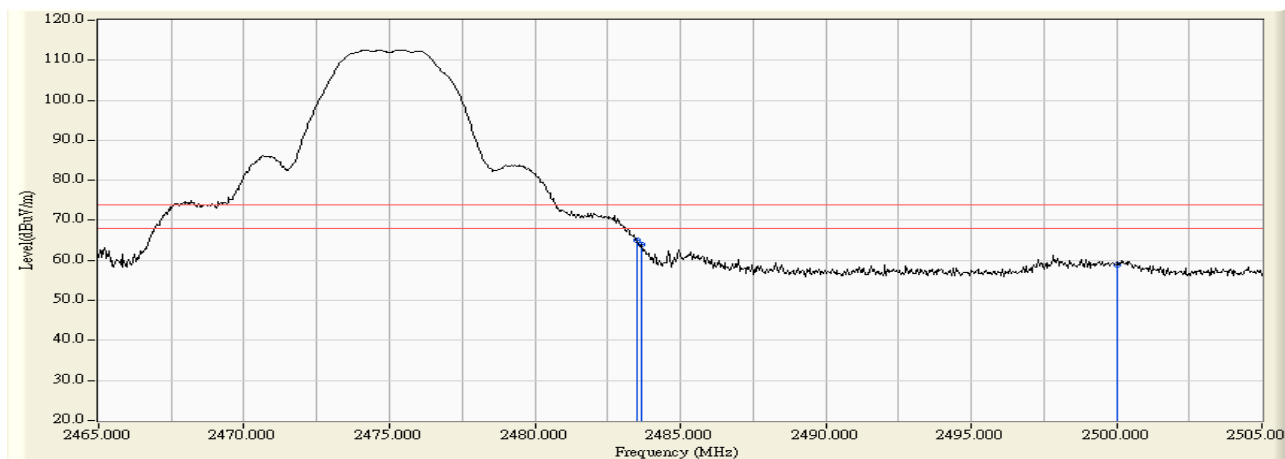


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 29.991                  | 58.108                    | -15.892        | 74.000            | PEAK          |
| 2 | * | 2495.520           | 28.157                 | 31.873                  | 60.029                    | -13.971        | 74.000            | PEAK          |
| 3 |   | 2500.000           | 28.171                 | 30.141                  | 58.312                    | -15.688        | 74.000            | PEAK          |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 13:52                  |
| Limit : FCC_SpartC_15.209_03M_PK              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |

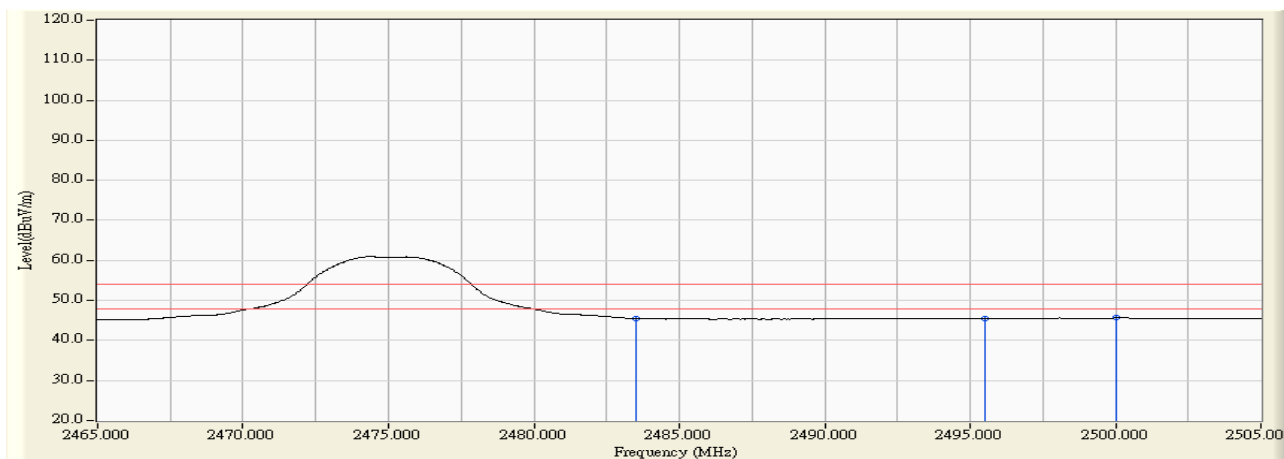


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 | * | 2483.500           | 28.116                 | 36.832                  | 64.949                    | -9.051         | 74.000            | PEAK          |
| 2 |   | 2483.680           | 28.117                 | 35.768                  | 63.885                    | -10.115        | 74.000            | PEAK          |
| 3 |   | 2500.000           | 28.171                 | 30.836                  | 59.007                    | -14.993        | 74.000            | PEAK          |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 13:48                  |
| Limit : FCC_SpartC_15.209_03M_AV                | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |



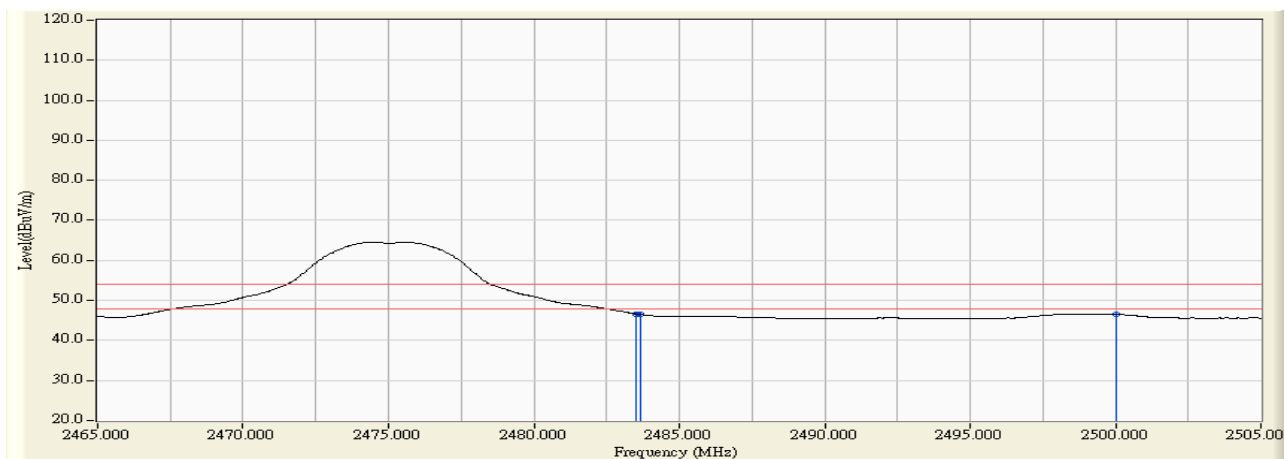
|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 17.379                  | 45.496                    | -8.504         | 54.000            | AVERAGE       |
| 2 |   | 2495.520           | 28.157                 | 17.276                  | 45.432                    | -8.568         | 54.000            | AVERAGE       |
| 3 | * | 2500.000           | 28.171                 | 17.433                  | 45.604                    | -8.396         | 54.000            | AVERAGE       |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 13:52                  |
| Limit : FCC_SpartC_15.209_03M_AV              | Margin : 6                                 |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                              |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 1: Transmit (16QAM) |

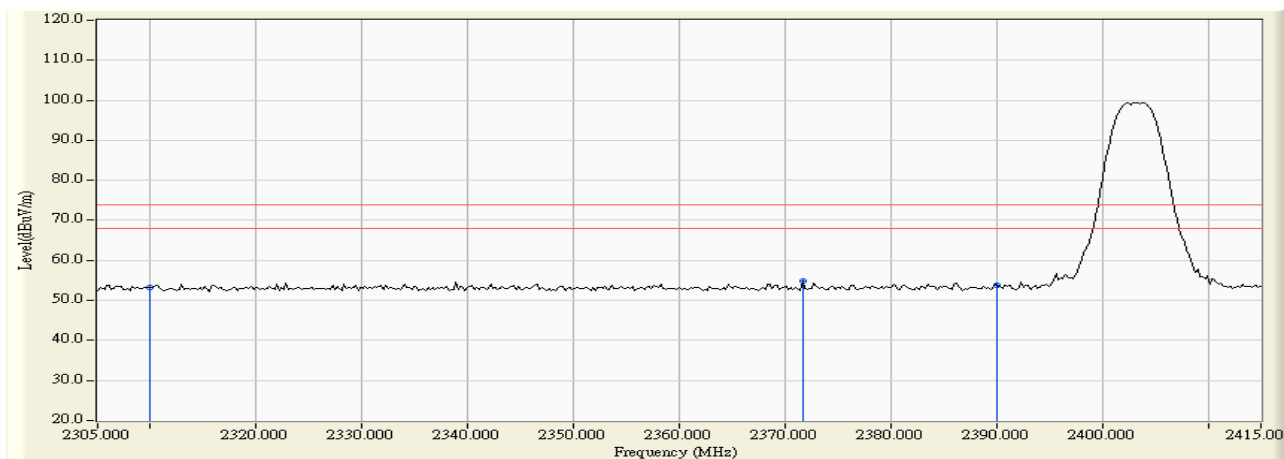


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 | * | 2483.500           | 28.116                 | 18.532                  | 46.649                    | -7.351         | 54.000            | AVERAGE       |
| 2 |   | 2483.680           | 28.117                 | 18.362                  | 46.479                    | -7.521         | 54.000            | AVERAGE       |
| 3 |   | 2500.000           | 28.171                 | 18.341                  | 46.512                    | -7.488         | 54.000            | AVERAGE       |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/19 - 10:50                 |
| Limit : FCC_SpartC_15.209_03M_PK                | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

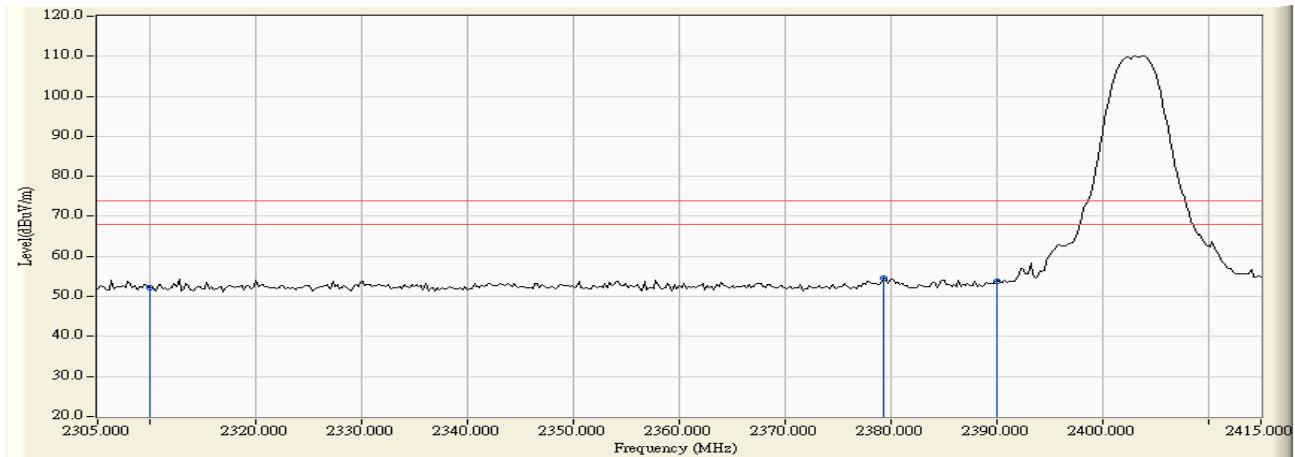


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 25.779                  | 53.187                    | -20.813        | 74.000            | PEAK          |
| 2 | * | 2371.660           | 27.665                 | 27.056                  | 54.721                    | -19.279        | 74.000            | PEAK          |
| 3 |   | 2390.000           | 27.742                 | 26.027                  | 53.769                    | -20.231        | 74.000            | PEAK          |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/19 - 10:55                 |
| Limit : FCC_SpartC_15.209_03M_PK              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

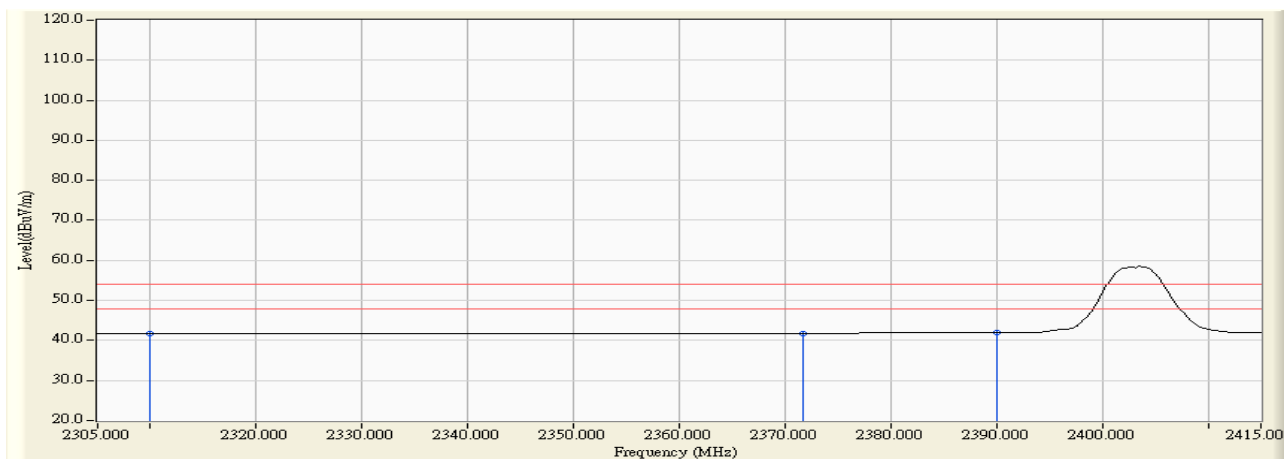


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 24.884                  | 52.292                    | -21.708        | 74.000            | PEAK          |
| 2 | * | 2379.360           | 27.698                 | 26.768                  | 54.466                    | -19.534        | 74.000            | PEAK          |
| 3 |   | 2390.000           | 27.742                 | 26.076                  | 53.818                    | -20.182        | 74.000            | PEAK          |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 14:07                 |
| Limit : FCC_SpartC_15.209_03M_AV                | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

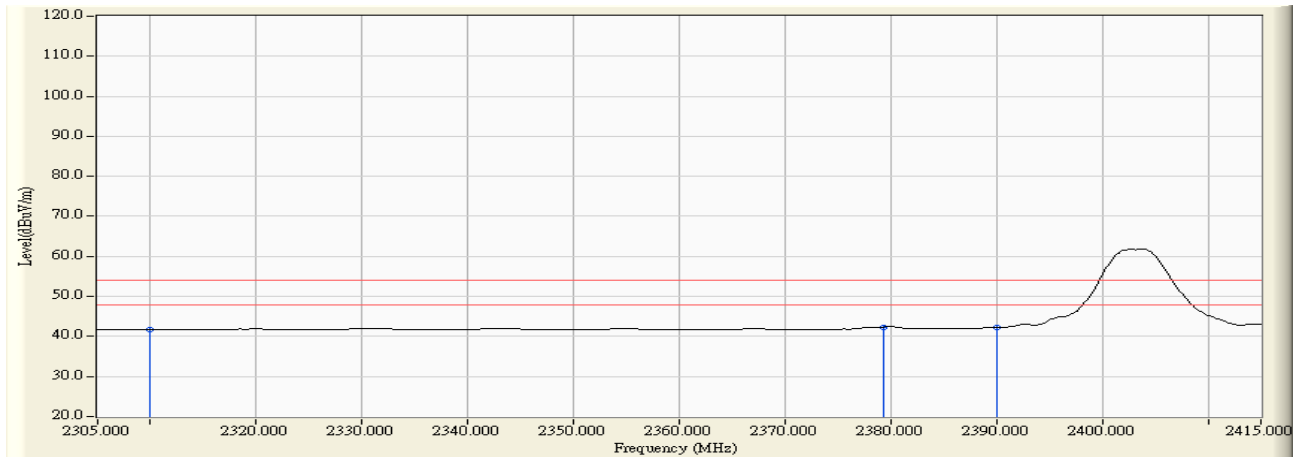


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 14.208                  | 41.616                    | -12.384        | 54.000            | AVERAGE       |
| 2 |   | 2371.660           | 27.665                 | 14.117                  | 41.782                    | -12.218        | 54.000            | AVERAGE       |
| 3 | * | 2390.000           | 27.742                 | 14.204                  | 41.946                    | -12.054        | 54.000            | AVERAGE       |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/19 - 10:57                 |
| Limit : FCC_SpartC_15.209_03M_AV              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2403MHz-Mode 2: Transmit (QPSK) |

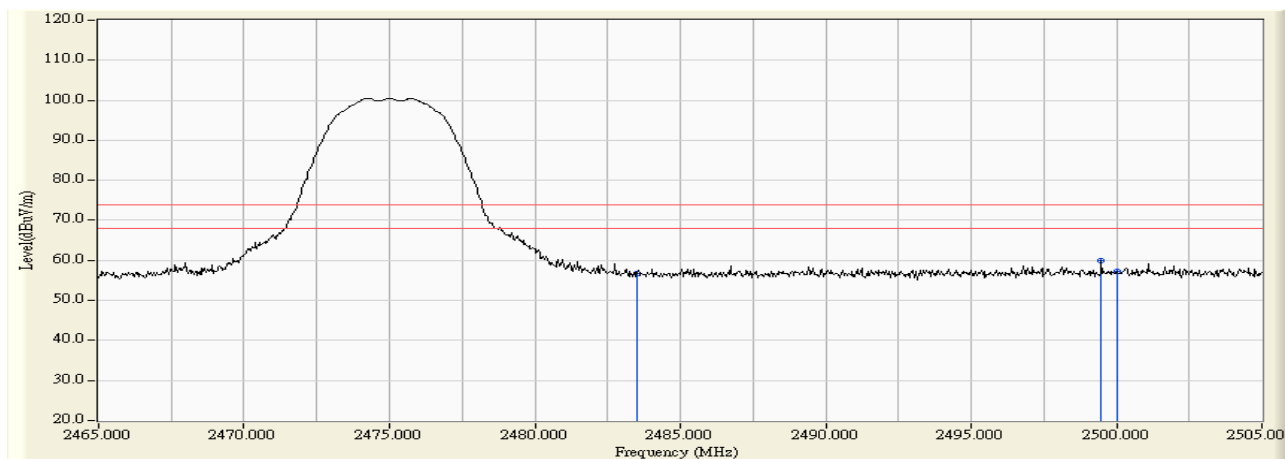


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2310.000           | 27.408                 | 14.225                  | 41.633                    | -12.367        | 54.000            | AVERAGE       |
| 2 | * | 2379.360           | 27.698                 | 14.660                  | 42.358                    | -11.642        | 54.000            | AVERAGE       |
| 3 |   | 2390.000           | 27.742                 | 14.569                  | 42.311                    | -11.689        | 54.000            | AVERAGE       |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 13:59                 |
| Limit : FCC_SpartC_15.209_03M_PK                | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |

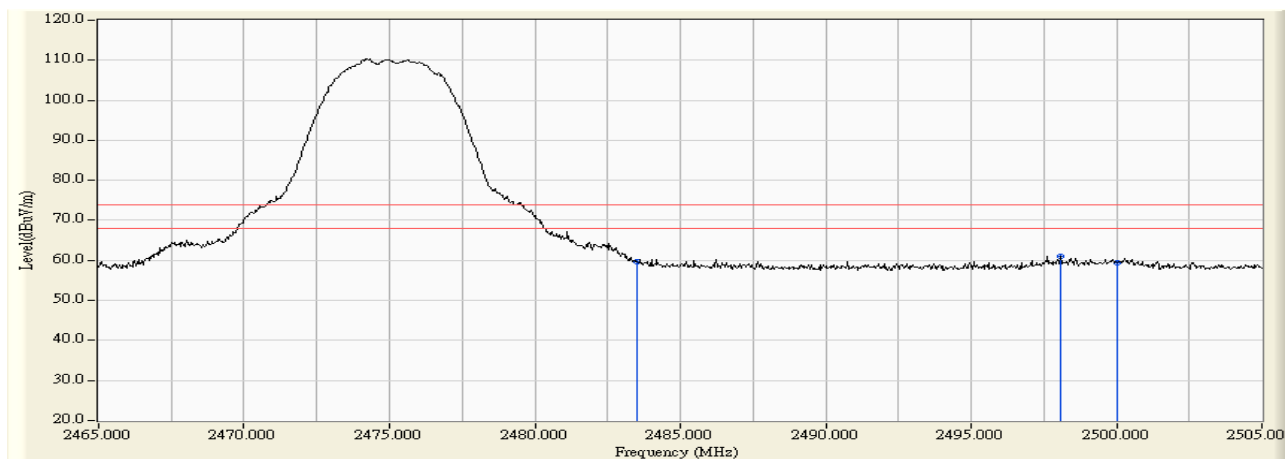


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 28.735                  | 56.852                    | -17.148        | 74.000            | PEAK          |
| 2 | * | 2499.480           | 28.169                 | 31.801                  | 59.971                    | -14.029        | 74.000            | PEAK          |
| 3 |   | 2500.000           | 28.171                 | 29.013                  | 57.184                    | -16.816        | 74.000            | PEAK          |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:05                 |
| Limit : FCC_SpartC_15.209_03M_PK              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |

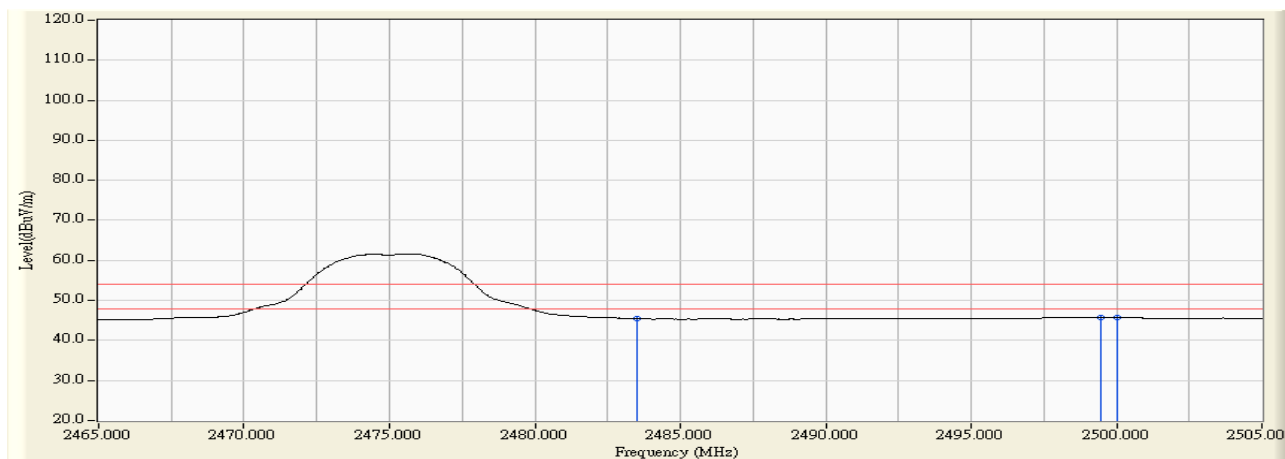


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 31.589                  | 59.706                    | -14.294        | 74.000            | PEAK          |
| 2 | * | 2498.080           | 28.164                 | 32.907                  | 61.072                    | -12.928        | 74.000            | PEAK          |
| 3 |   | 2500.000           | 28.171                 | 31.345                  | 59.516                    | -14.484        | 74.000            | PEAK          |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Site : CB1                                      | Time : 2011/05/22 - 13:59                 |
| Limit : FCC_SpartC_15.209_03M_AV                | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                  | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |



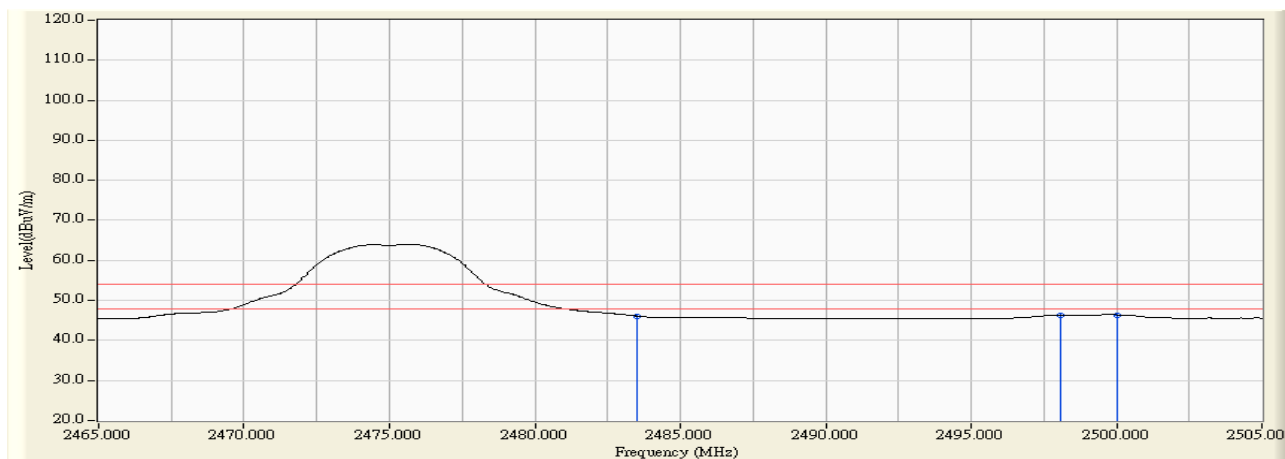
|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 17.303                  | 45.420                    | -8.580         | 54.000            | AVERAGE       |
| 2 | * | 2499.480           | 28.169                 | 17.565                  | 45.735                    | -8.265         | 54.000            | AVERAGE       |
| 3 |   | 2500.000           | 28.171                 | 17.518                  | 45.689                    | -8.311         | 54.000            | AVERAGE       |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Site : CB1                                    | Time : 2011/05/22 - 14:05                 |
| Limit : FCC_SpartC_15.209_03M_AV              | Margin : 6                                |
| Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL | Power : DC 9V                             |
| EUT : 2.4GHz Digital AV module                | Note : TX-2475MHz-Mode 2: Transmit (QPSK) |



|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 2483.500           | 28.116                 | 17.986                  | 46.103                    | -7.897         | 54.000            | AVERAGE       |
| 2 |   | 2498.080           | 28.164                 | 18.142                  | 46.307                    | -7.693         | 54.000            | AVERAGE       |
| 3 | * | 2500.000           | 28.171                 | 18.235                  | 46.406                    | -7.594         | 54.000            | AVERAGE       |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

## 7. Number of hopping frequency

### 7.1. Test Equipment

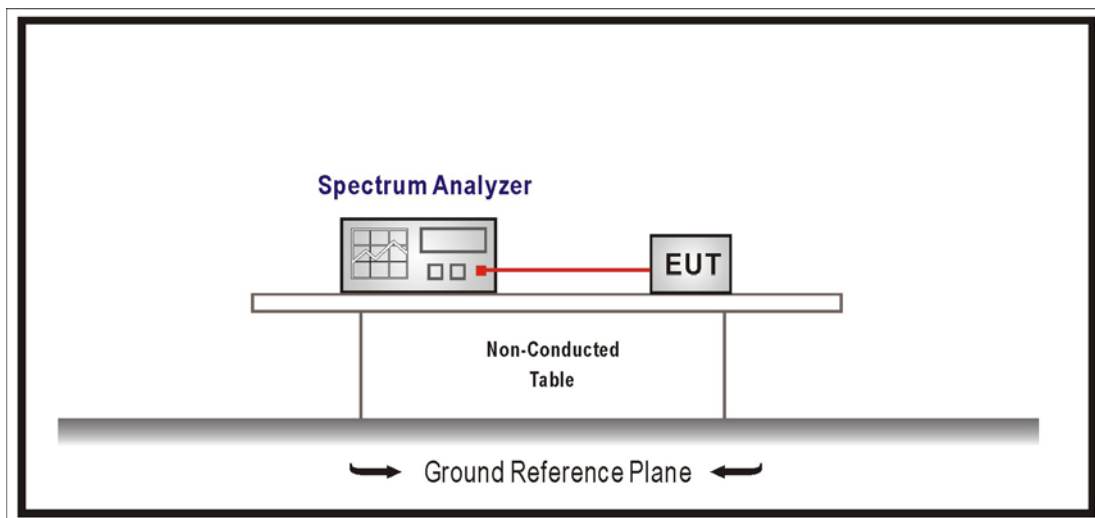
The following test equipment is used during the test:

Number of hopping frequency / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 7.2. Test Setup



### 7.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

### 7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

$RBW \geq 1\%$  of the span ,  $VBW \geq RBW$

Sweep = auto, Detector function = peak, Trace = max hold

### 7.5. Test Specification

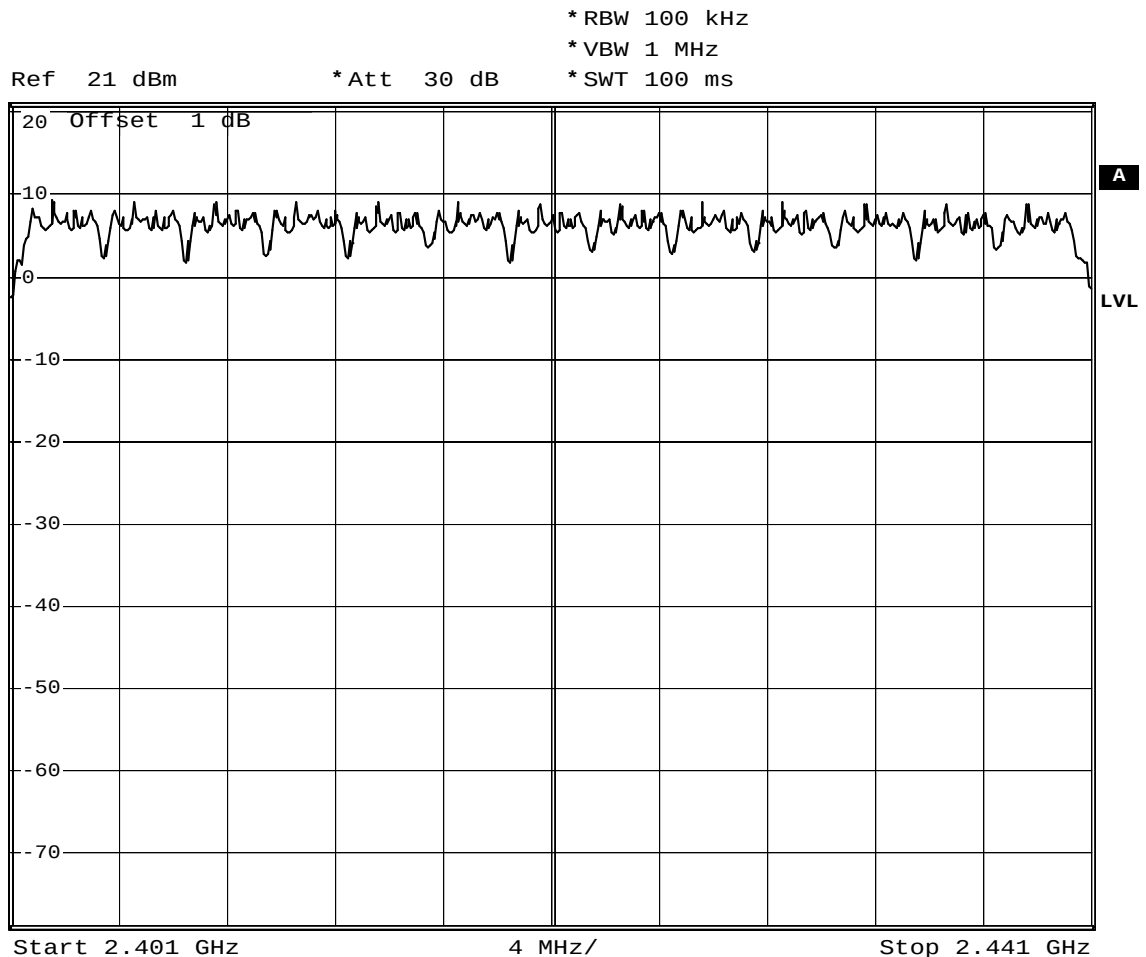
According to FCC Part 15 Subpart C Paragraph 15.247: 2010

## 7.6. Test Result

|              |                             |           |                     |
|--------------|-----------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module    |           |                     |
| Test Item    | Number of hopping frequency |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM)    |           |                     |
| Date of Test | 2011/05/20                  | Test Site | No.7 Shielding Room |

| Frequency Range<br>(MHz) | Measure Level<br>(Channels) | Limit<br>(Channels) | Result |
|--------------------------|-----------------------------|---------------------|--------|
| 2403 ~ 2475              | 24                          | $\geq 15$           | Pass   |

### 2401-2441MHz



Date: 20.MAY.2011 21:24:29

## 2441-2477MHz



\* RBW 100 kHz

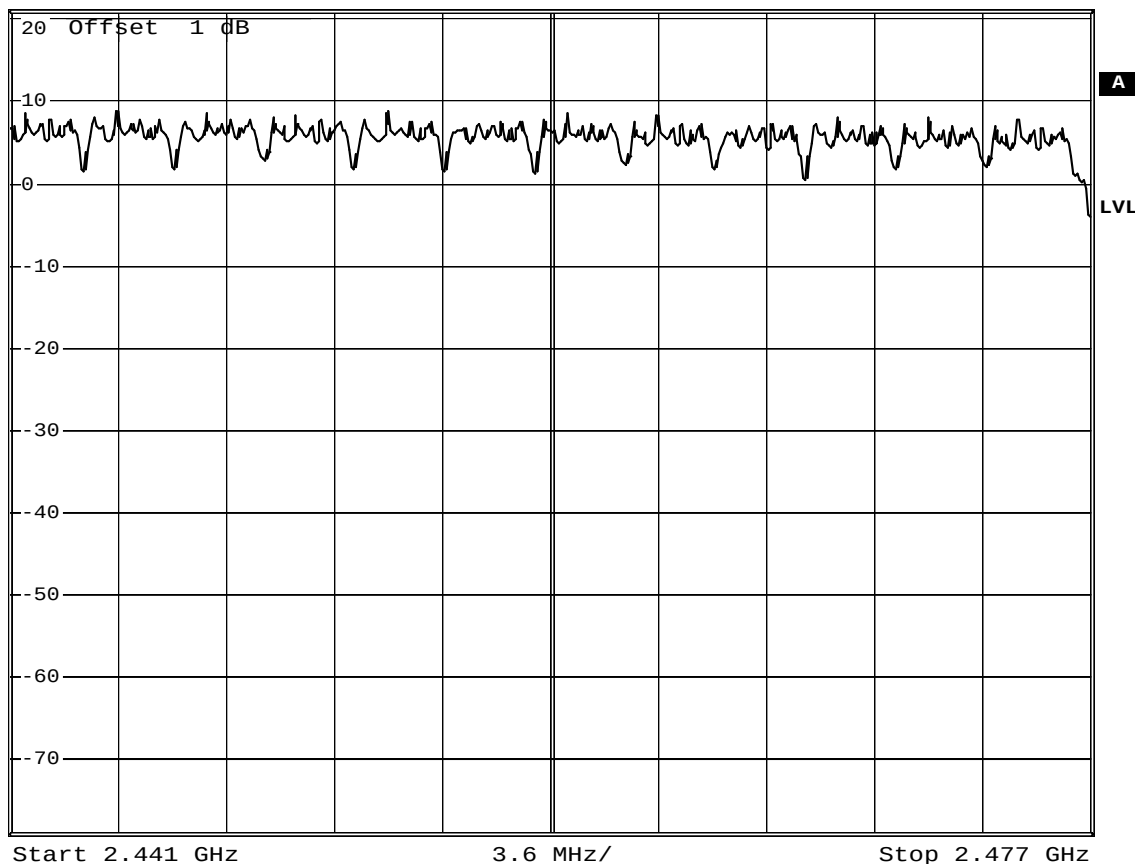
\* VBW 1 MHz

\* SWT 100 ms

Ref 21 dBm

\* Att 30 dB

1 PK  
VIEW



Date: 20.MAY.2011 21:25:45

|              |                             |           |                     |
|--------------|-----------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module    |           |                     |
| Test Item    | Number of hopping frequency |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)     |           |                     |
| Date of Test | 2011/05/20                  | Test Site | No.7 Shielding Room |

| Frequency Range<br>(MHz) | Measure Level<br>(Channels) | Limit<br>(Channels) | Result |
|--------------------------|-----------------------------|---------------------|--------|
| 2403 ~ 2475              | 24                          | $\geq 15$           | Pass   |

## 2401-2441MHz



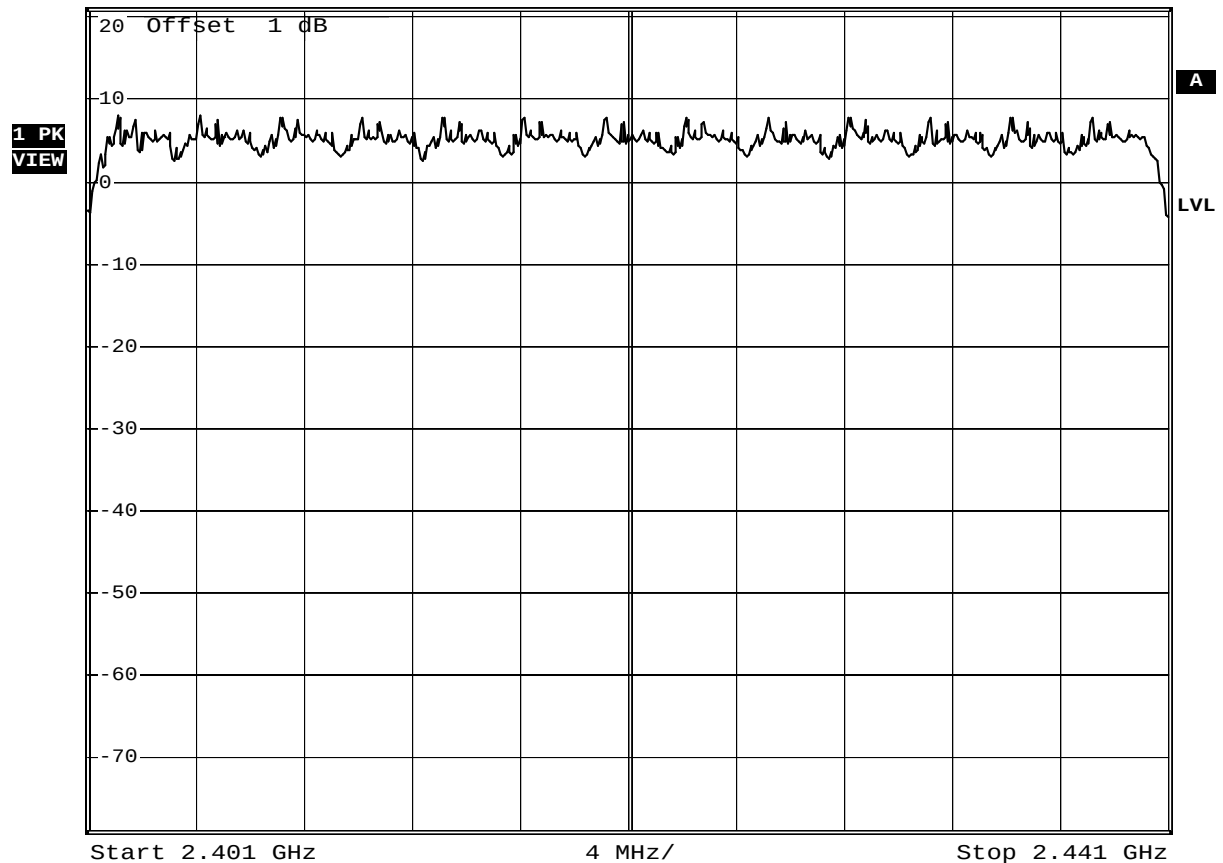
\* RBW 100 kHz

\* VBW 1 MHz

\* SWT 100 ms

Ref 21 dBm

\* Att 30 dB



Date: 20.MAY.2011 21:17:28

## 2441-2477MHz



\* RBW 100 kHz

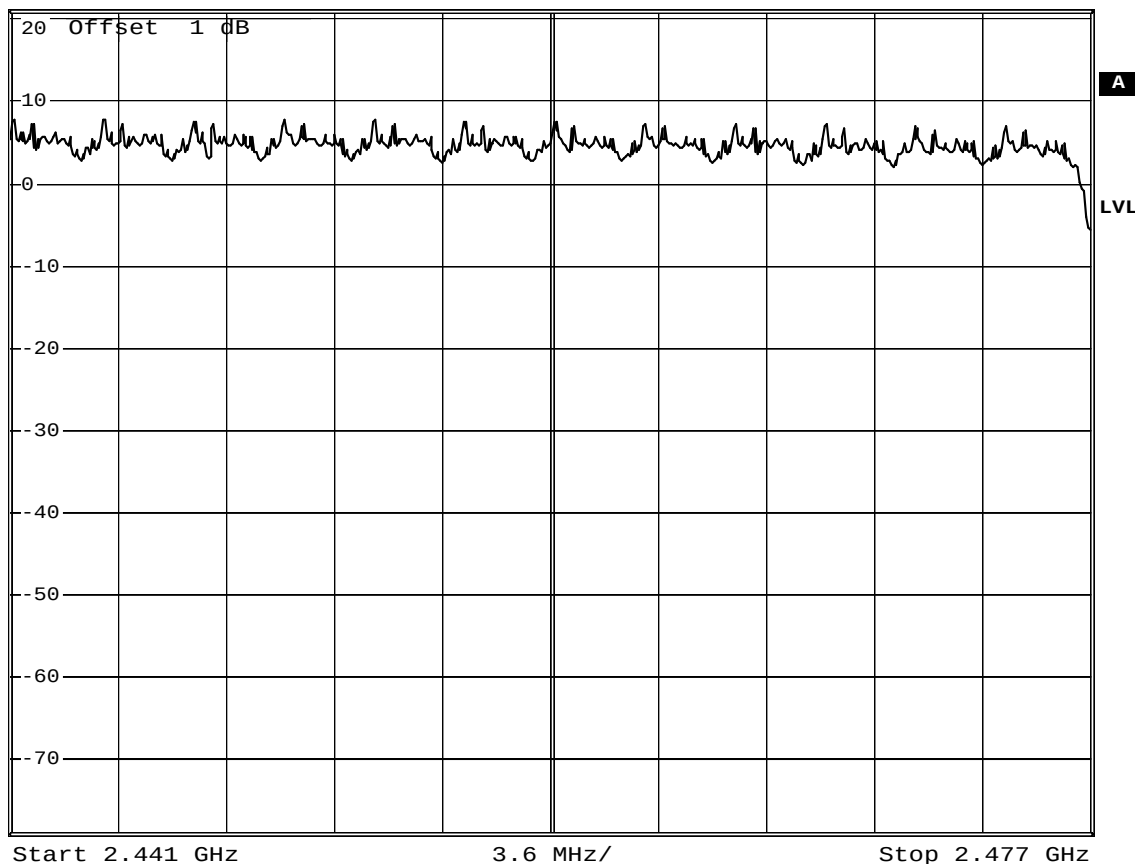
\* VBW 1 MHz

\* SWT 100 ms

Ref 21 dBm

\* Att 30 dB

1 PK  
VIEW



Date: 20.MAY.2011 21:14:17

## 8. Carrier Frequency Separation

### 8.1. Test Equipment

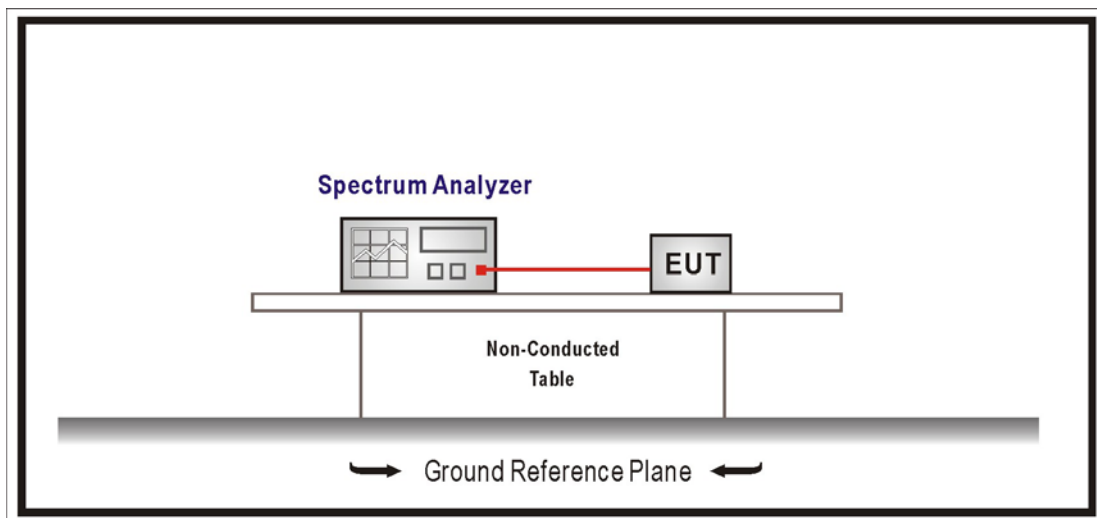
The following test equipment is used during the test:

#### Carrier Frequency Separation / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 8.2. Test Setup



### 8.3. Limits

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

### 8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

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

Resolution Bandwidth (RBW)  $\geq$  1% of the span, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

### 8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2010



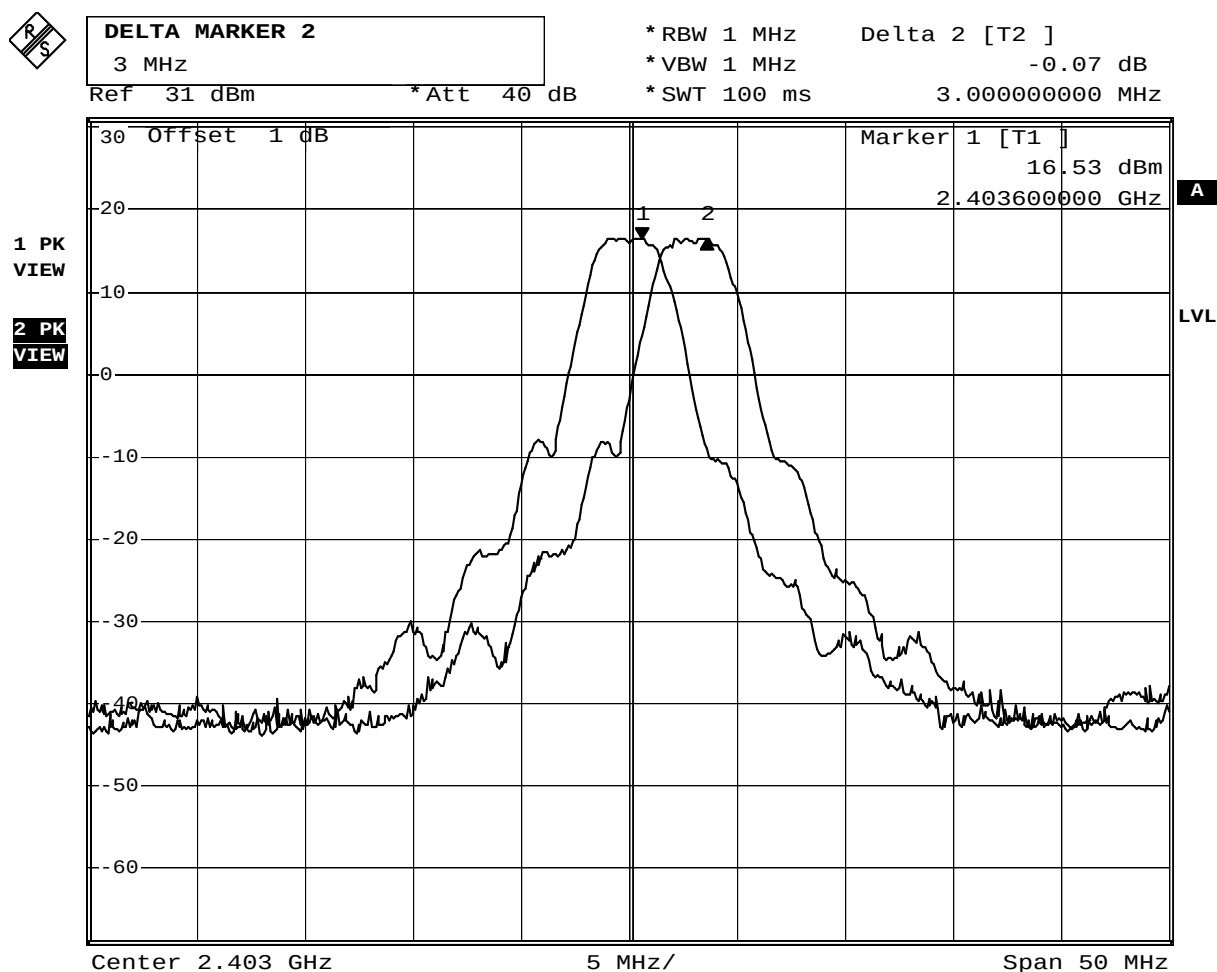
## 8.6. Test Result

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM)     |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2403            | 3                   | >2.99       | Pass   |

### Channel 00

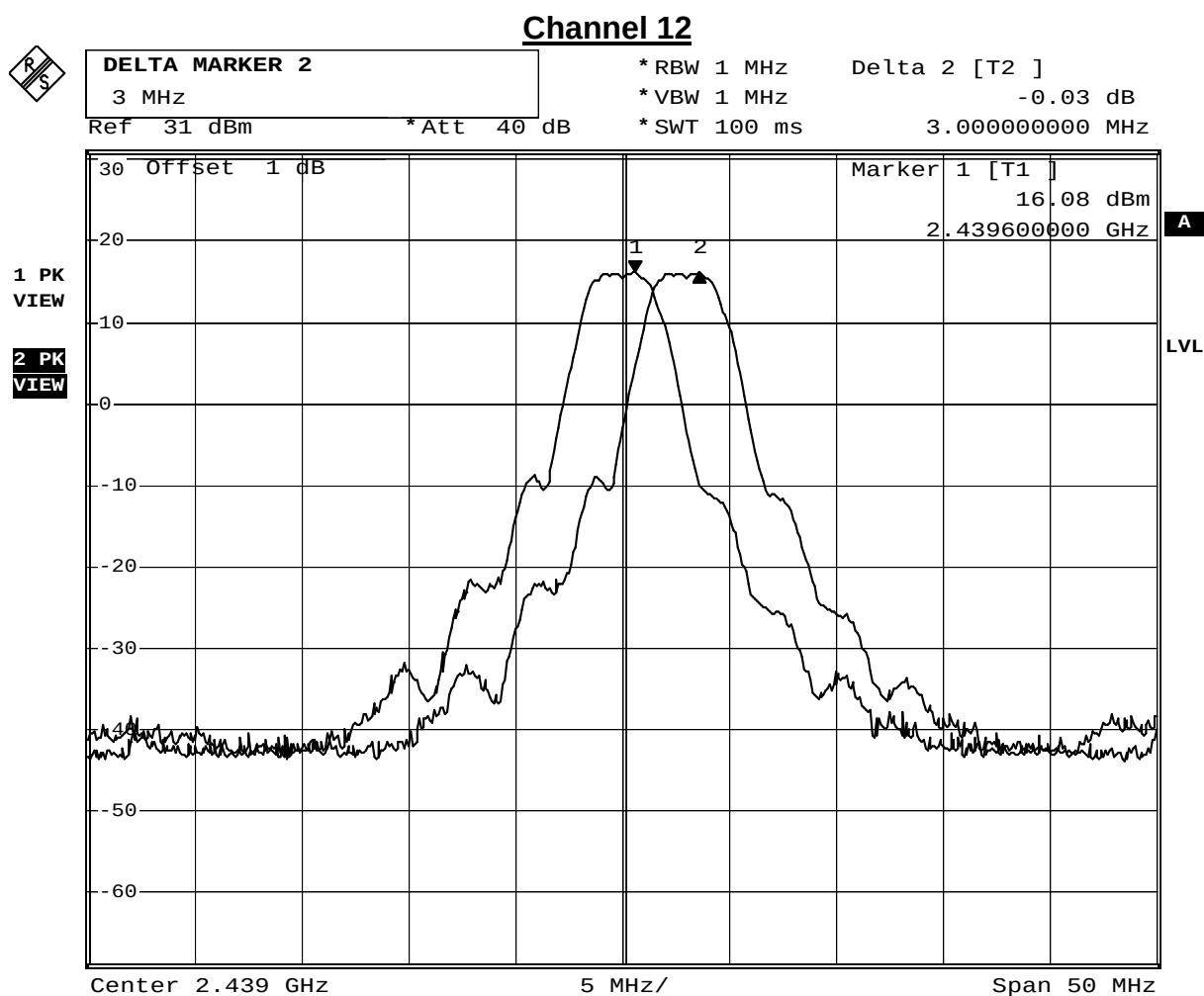


Date: 20.MAY.2011 21:31:22

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM)     |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 12          | 2439            | 3                   | >2.99       | Pass   |



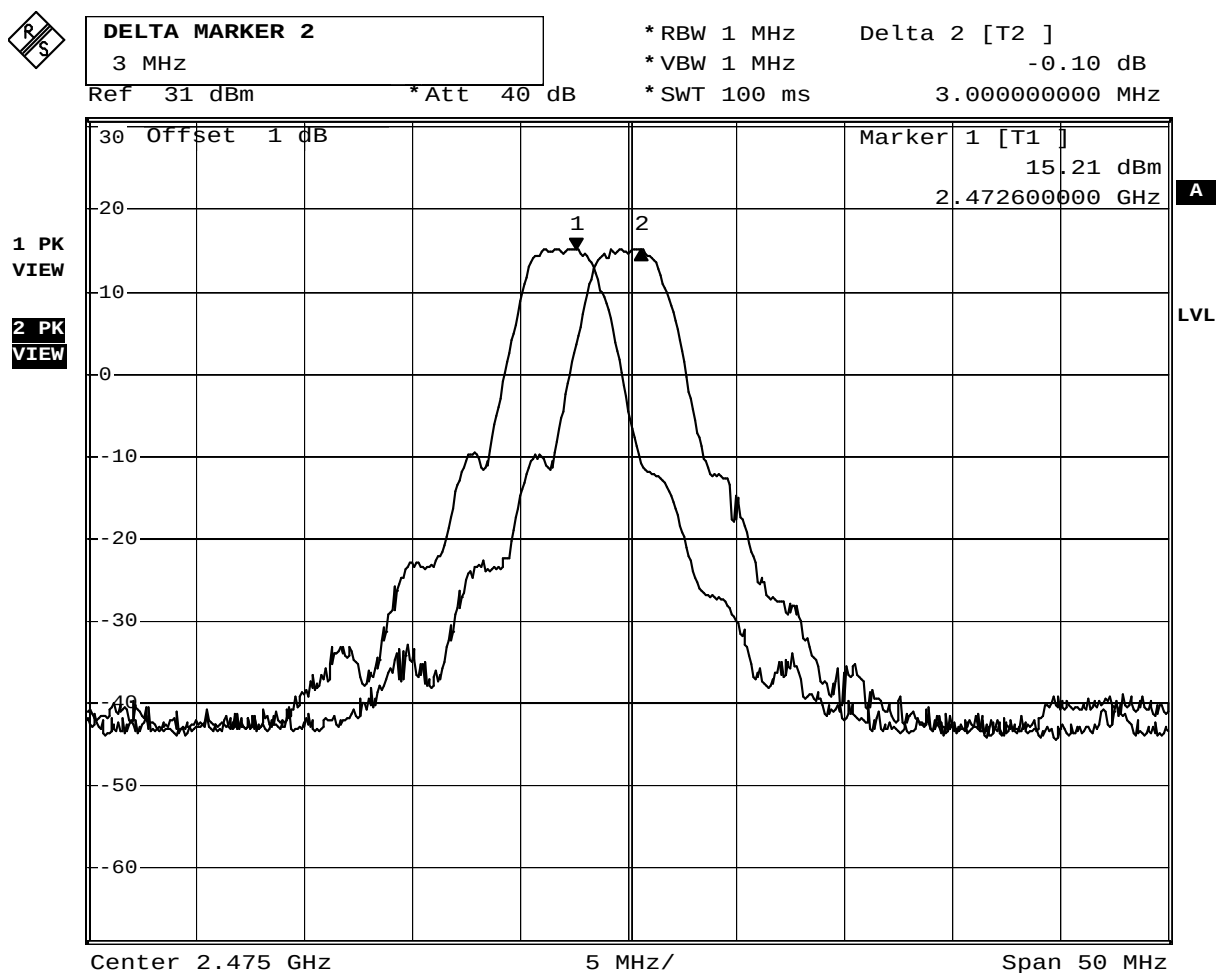
Date: 20.MAY.2011 21:33:21

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM)     |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 24          | 2475            | 3                   | >2.99       | Pass   |

### Channel 24



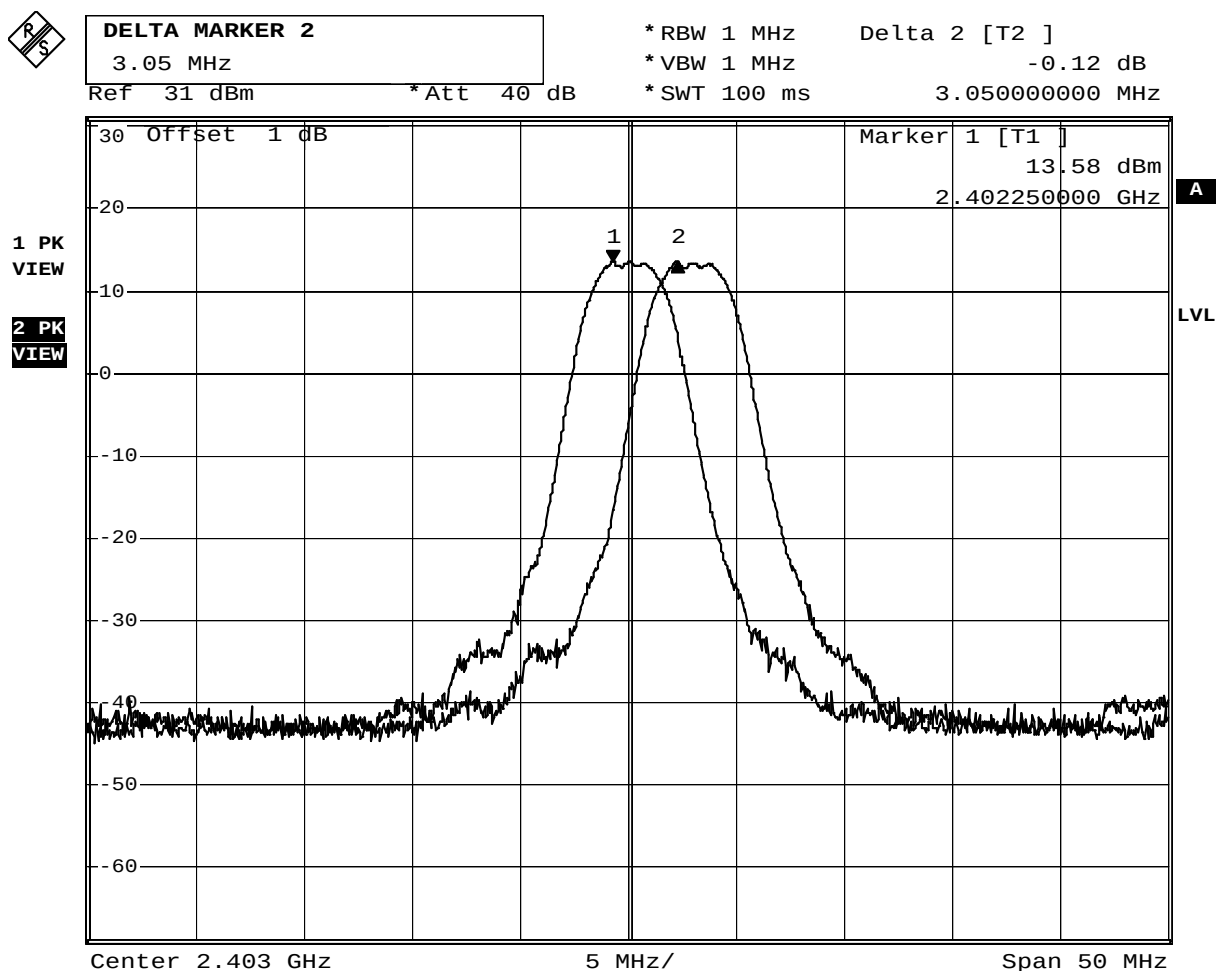
Date: 20.MAY.2011 21:34:46

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)      |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2403            | 3.05                | >3.04       | Pass   |

### Channel 00



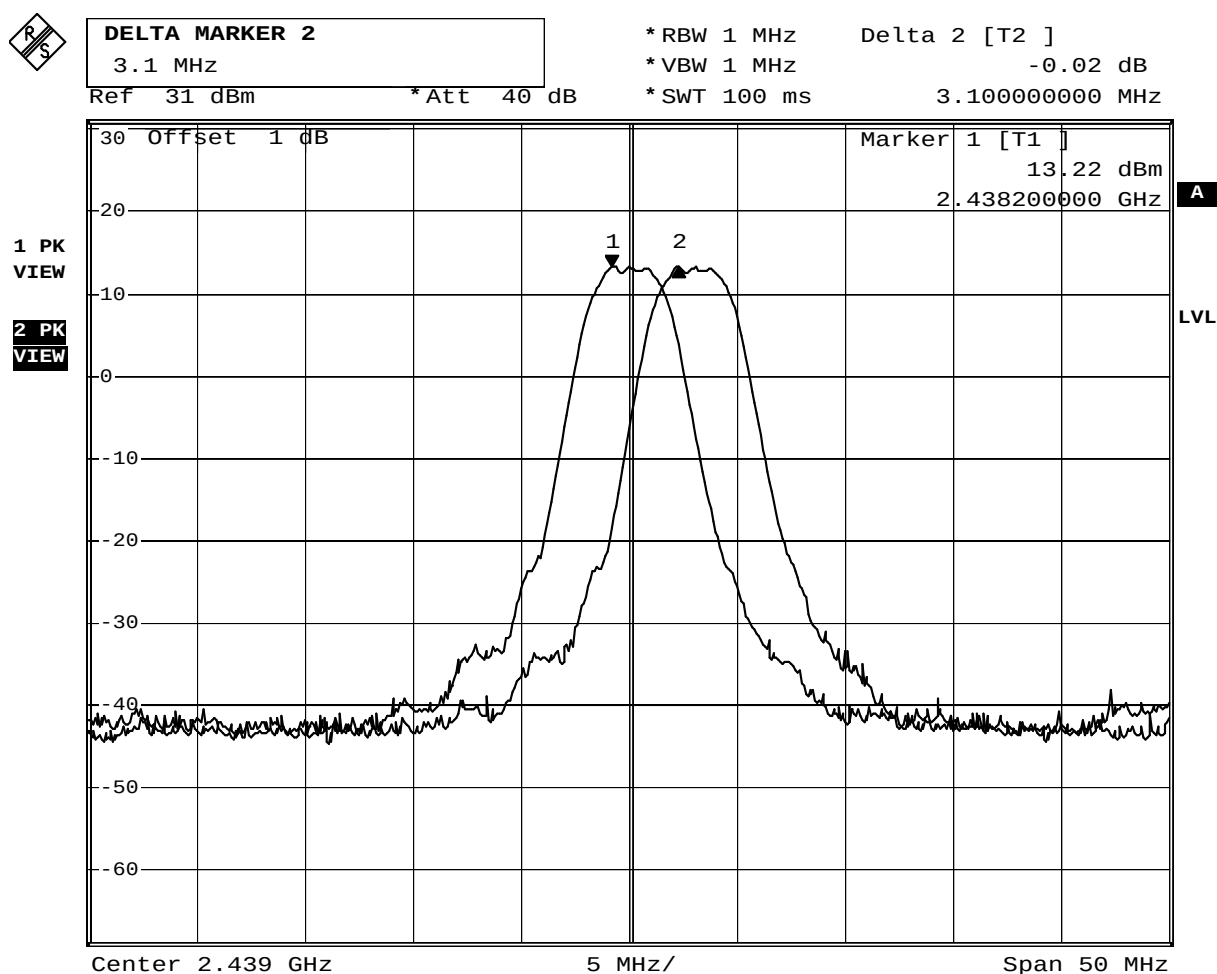
Date: 20.MAY.2011 21:55:51

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)      |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 12          | 2439            | 3.10                | >3.01       | Pass   |

### Channel 12



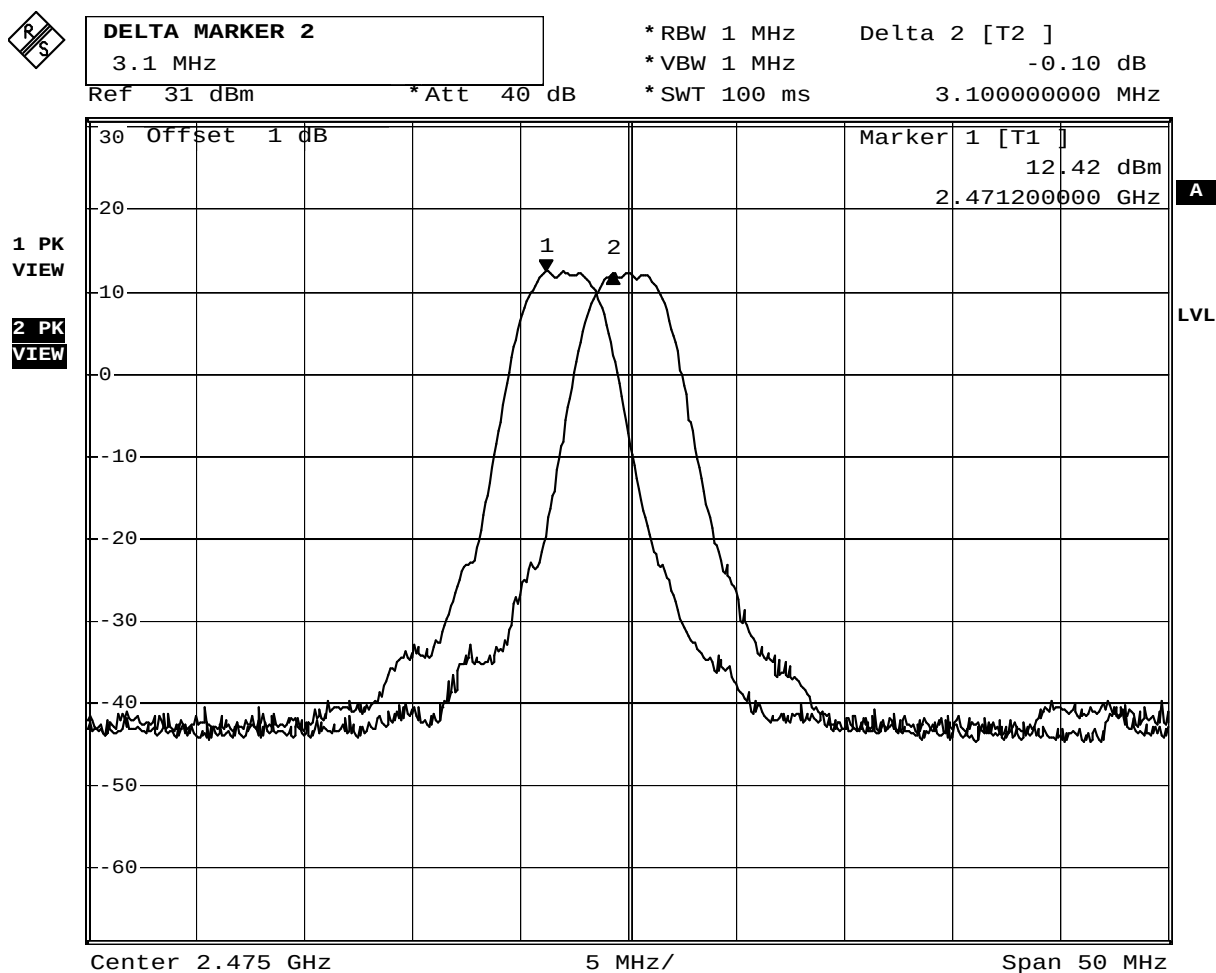
Date: 20.MAY.2011 21:49:14

|              |                              |           |                     |
|--------------|------------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module     |           |                     |
| Test Item    | Carrier Frequency Separation |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)      |           |                     |
| Date of Test | 2011/05/18                   | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 24          | 2475            | 3.10                | >3.07       | Pass   |

### Channel 24



Date: 20.MAY.2011 21:50:55

## 9. Occupied Bandwidth

### 9.1. Test Equipment

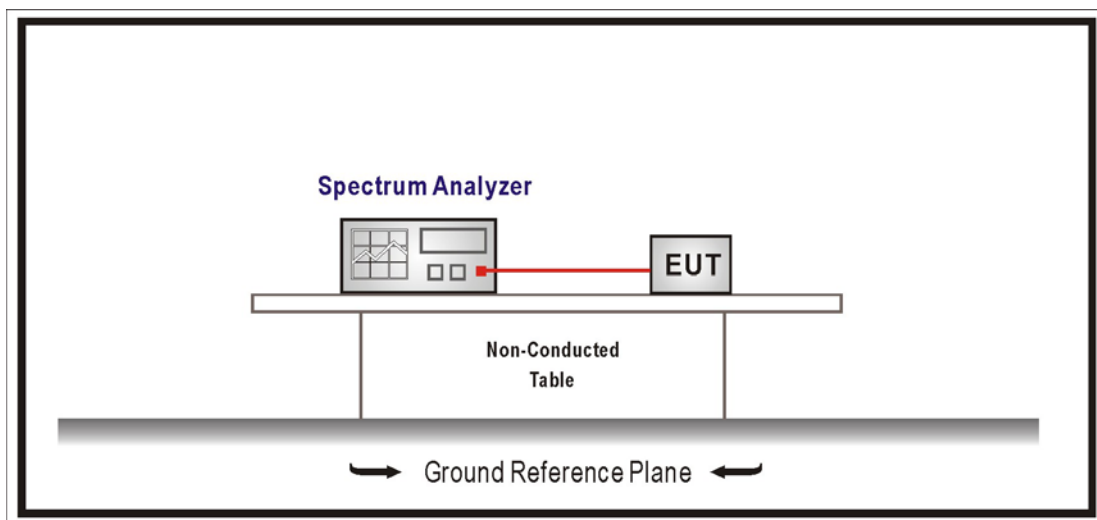
The following test equipment is used during the test:

Occupied Bandwidth / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 9.2. Test Setup



### **9.3. Limits**

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For 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.

### **9.4. Test Procedures**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW  $\geq$  1% of the 20 dB bandwidth, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

### **9.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2010



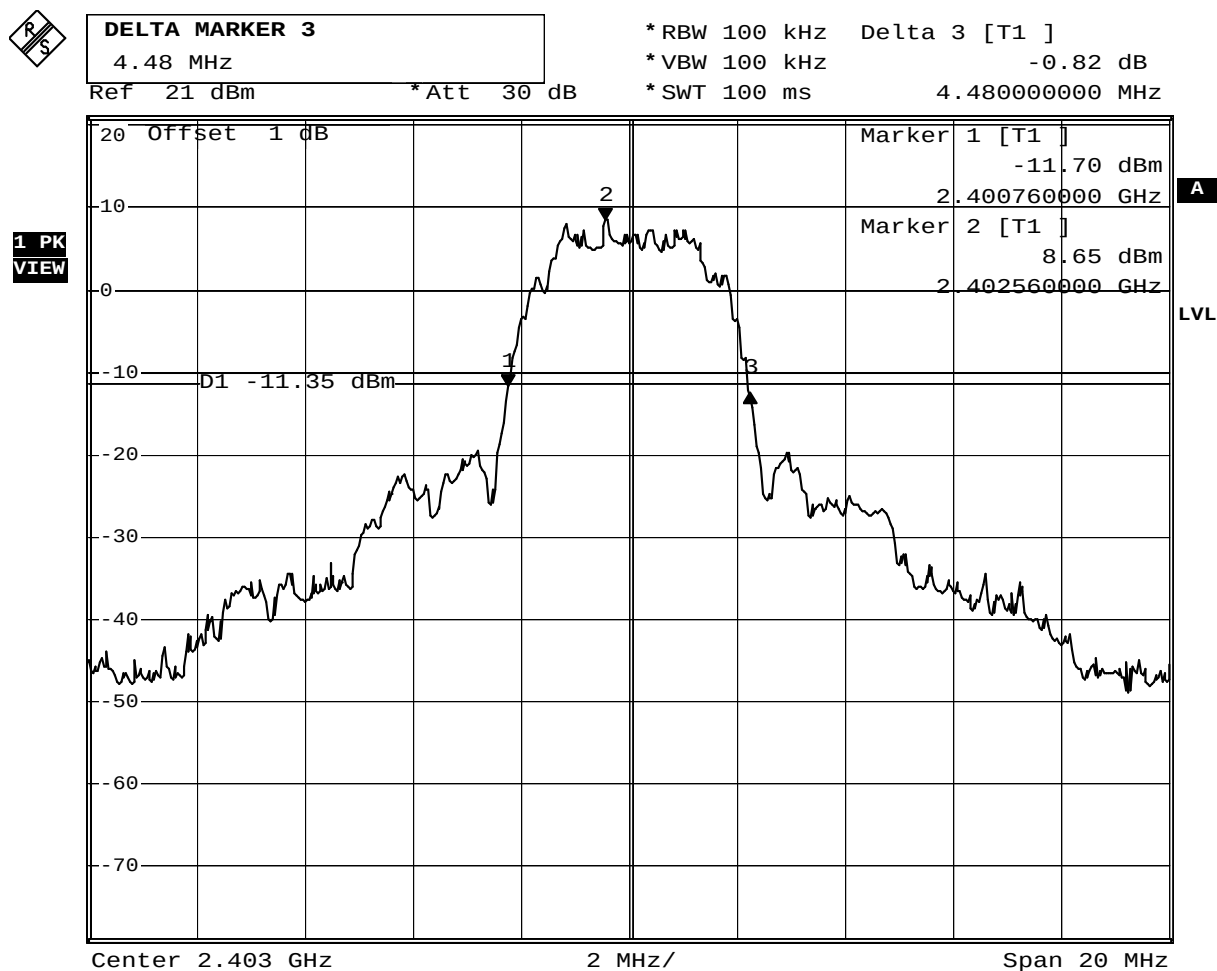
## 9.6. Test Result

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2403            | 4.48                | --          | Pass   |

### Channel 00



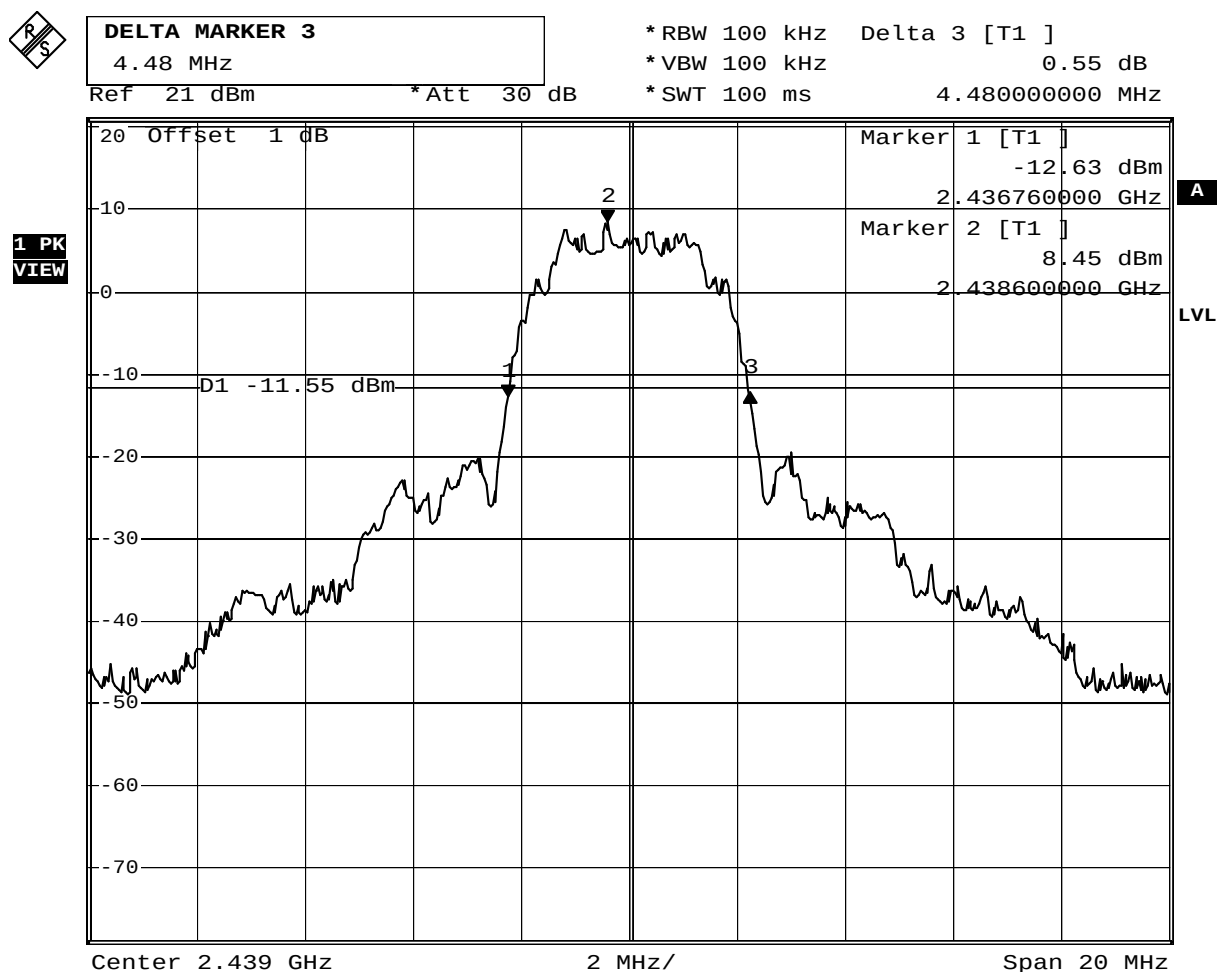
Date: 20.MAY.2011 20:27:01

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 12          | 2439            | 4.48                | --          | Pass   |

### Channel 12



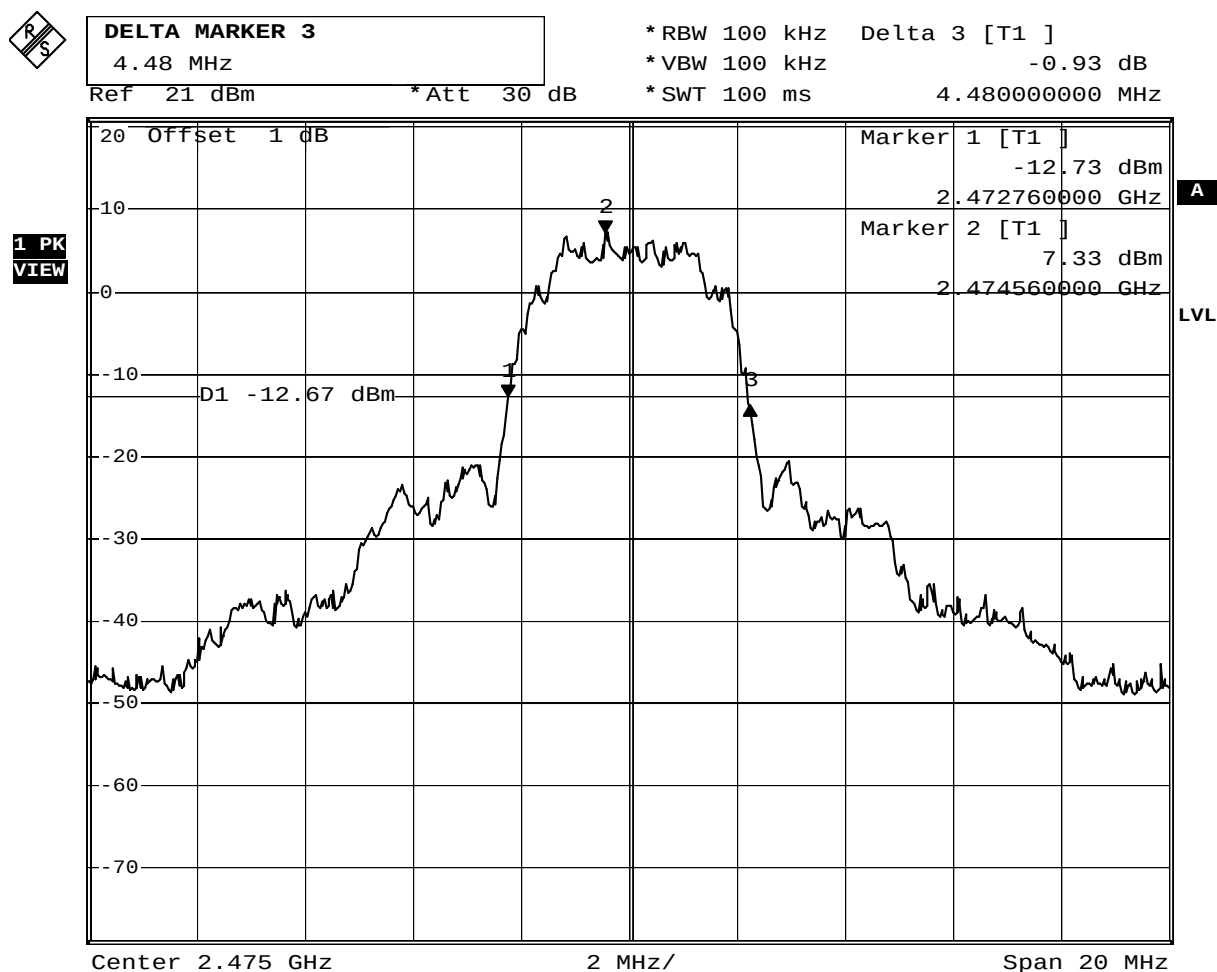
Date: 20.MAY.2011 20:32:00

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## 16QAM

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 24          | 2475            | 4.48                | --          | Pass   |

### Channel 24



Date: 20.MAY.2011 20:33:57

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2403            | 4.56                | --          | Pass   |

### Channel 00



#### DELTA MARKER 3

4.56 MHz

Ref 21 dBm

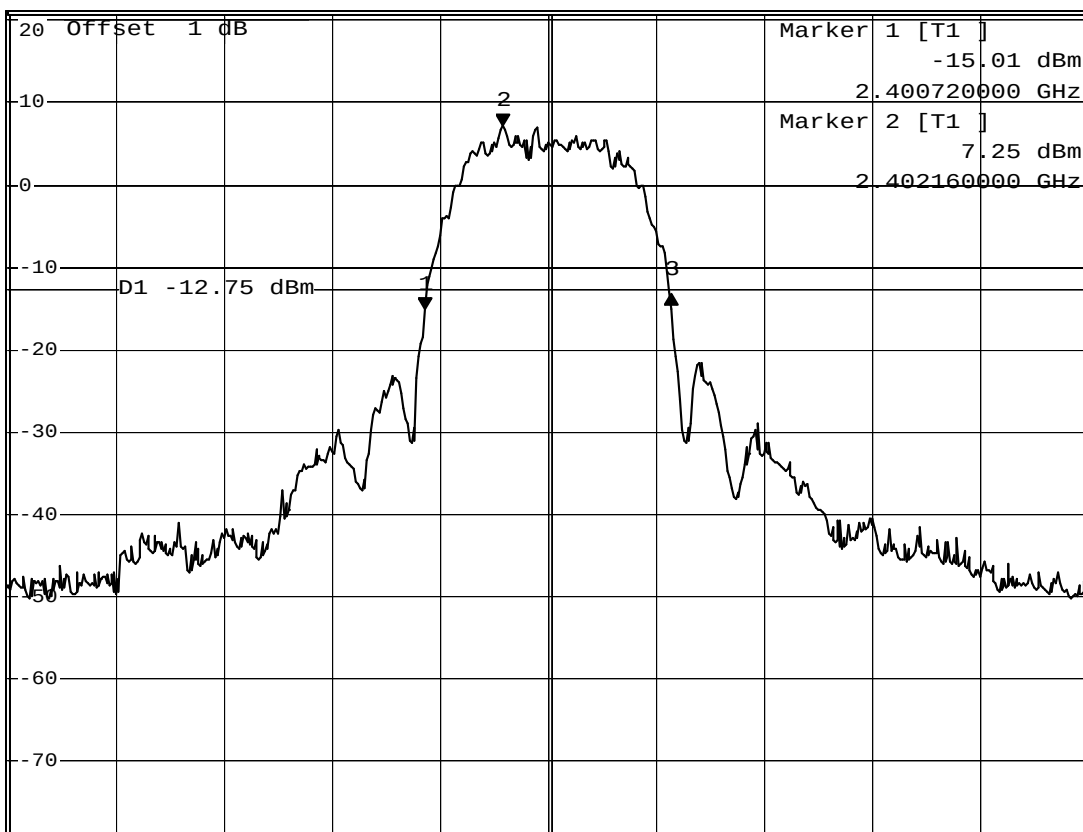
\* Att 30 dB

\* RBW 100 kHz Delta 3 [T1 ]

\* VBW 100 kHz 1.86 dB

\* SWT 100 ms 4.560000000 MHz

1 PK  
VIEW



Center 2.403 GHz

2 MHz/

Span 20 MHz

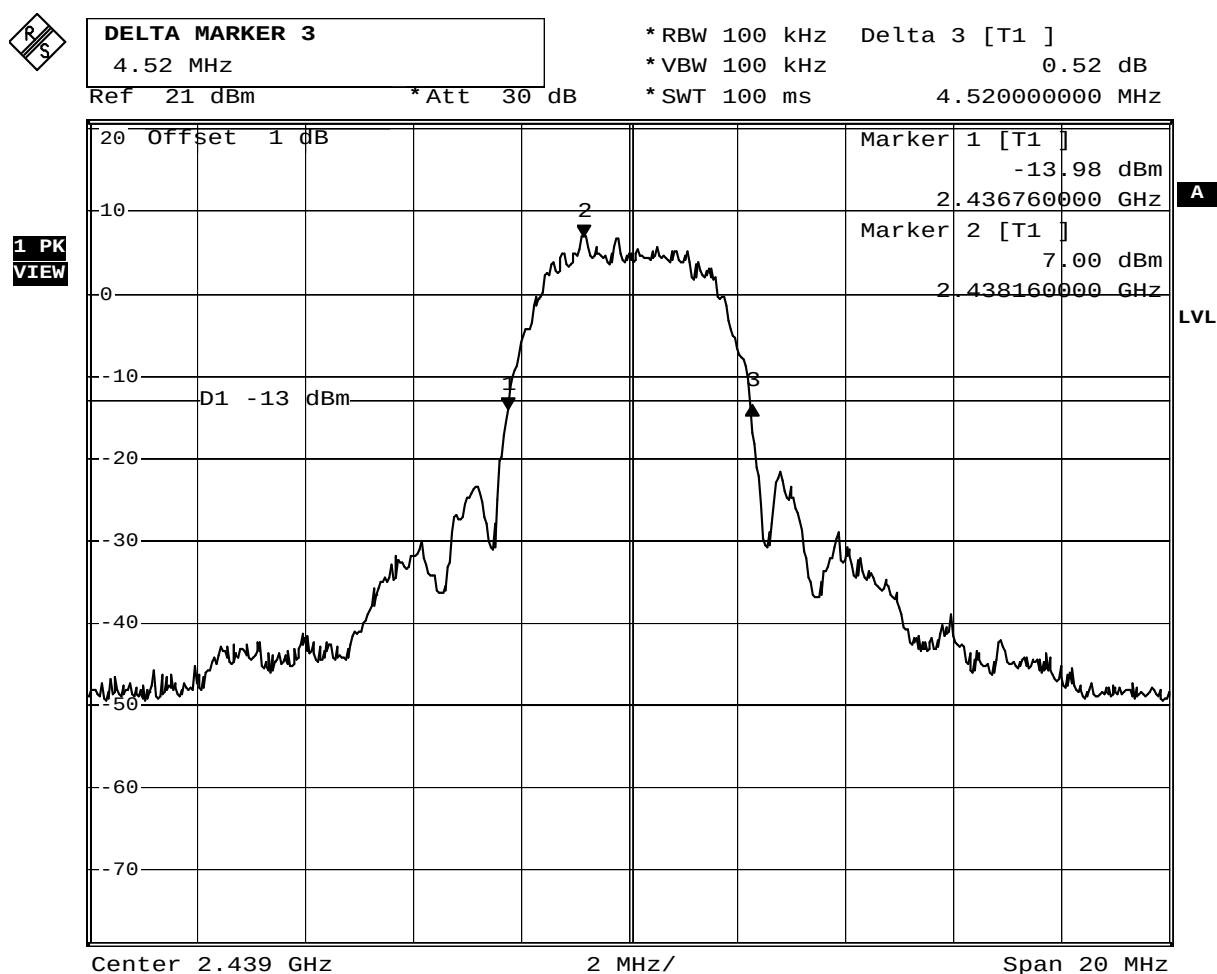
Date: 20.MAY.2011 21:02:41

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 12          | 2439            | 4.52                | --          | Pass   |

### Channel 12



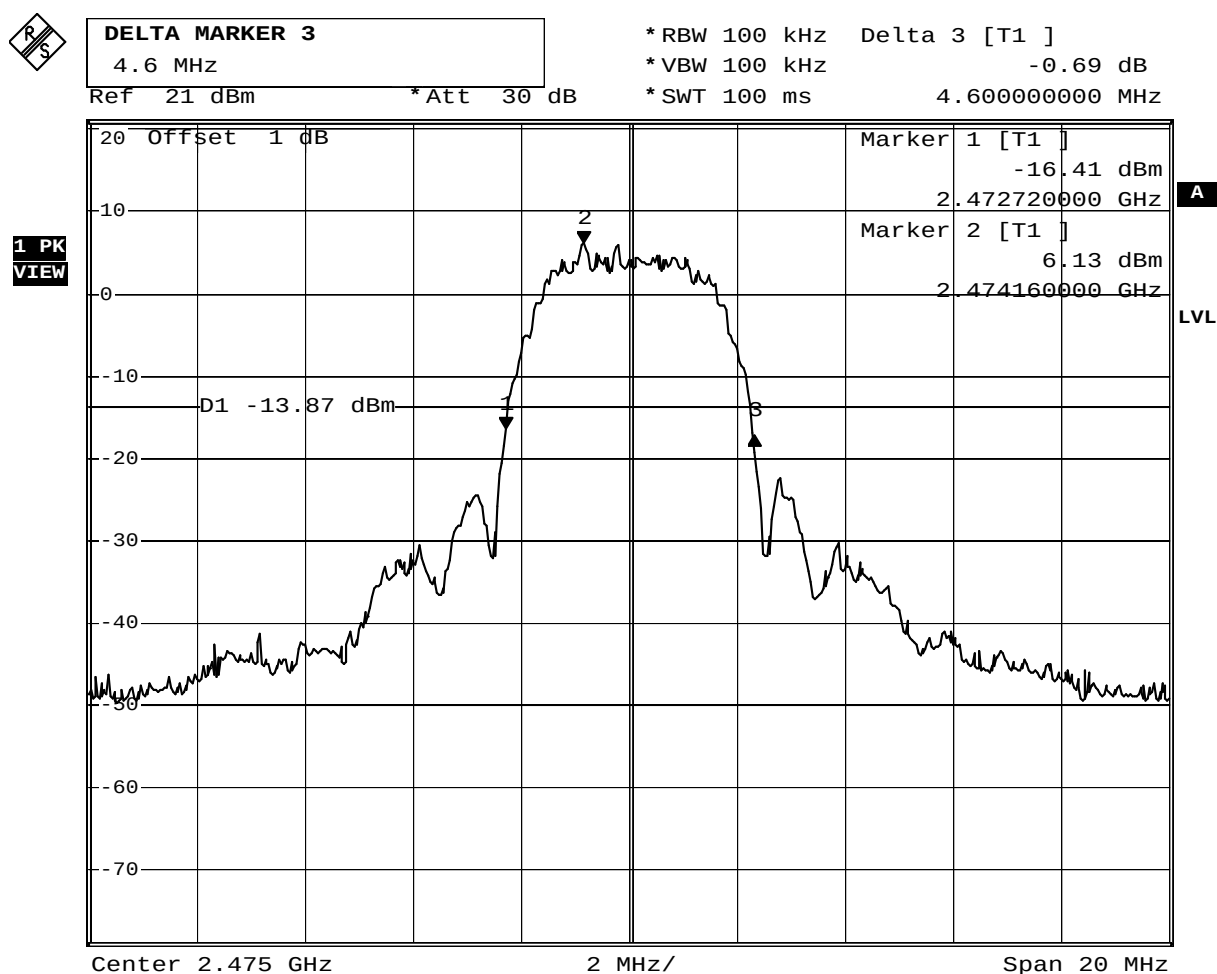
Date: 20.MAY.2011 21:04:20

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Occupied Bandwidth       |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/20               | Test Site | No.7 Shielding Room |

## QPSK

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 24          | 2475            | 4.60                | --          | Pass   |

### Channel 24



Date: 20.MAY.2011 20:59:10

## 10. Dwell Time

### 10.1. Test Equipment

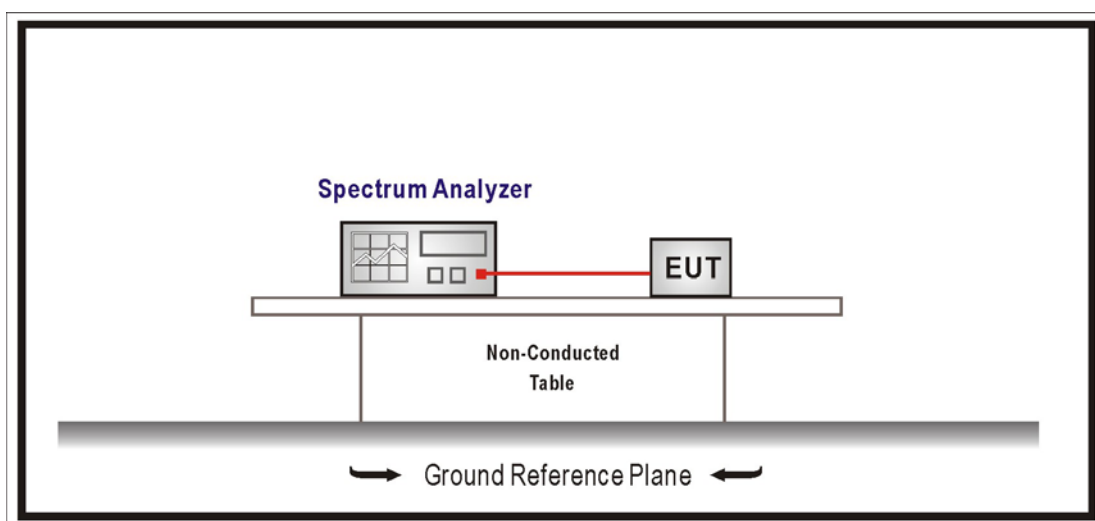
The following test equipment is used during the test:

Dwell Time / No.7 Shielding Room

| Instrument        | Manufacturer | Model No. | Serial No | Next Cal. Date |
|-------------------|--------------|-----------|-----------|----------------|
| Spectrum Analyzer | R&S          | FSP       | 100561    | 2012/01/16     |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 10.2. Test Setup



### **10.3. Limits**

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

### **10.4. Test Procedures**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW  $\geq$  RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

### **10.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2010



## 10.6. Test Result

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Dwell Time               |           |                     |
| Test Mode    | Mode 1: Transmit (16QAM) |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

### Occupancy Time of Frequency Hopping System

A) 2403MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600 / \text{sec}$

The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

B) 2439MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600 / \text{sec}$

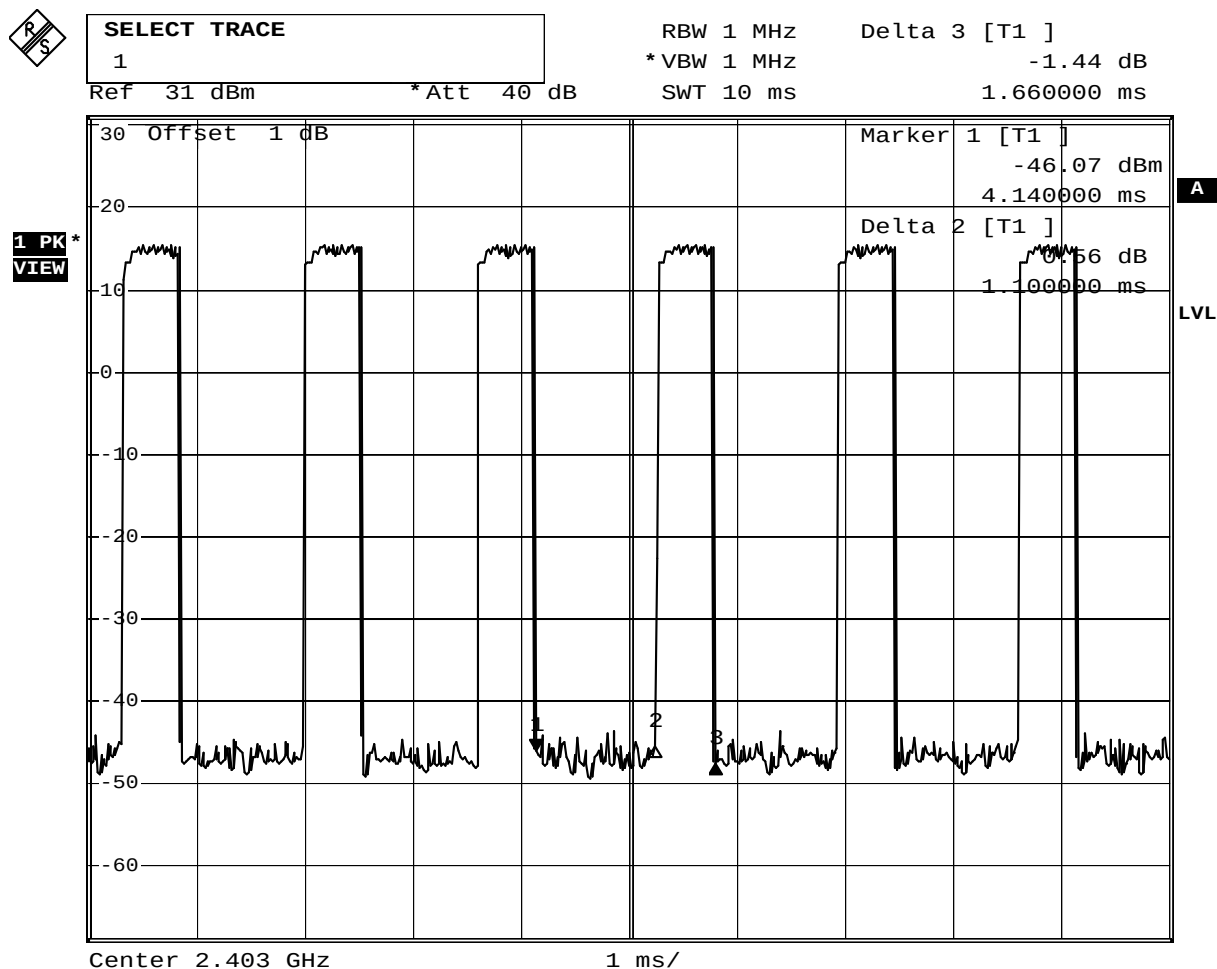
The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

C) 2475MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600 / \text{sec}$

The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

### Hop rate-2403MHz



Date: 18.MAY.2011 12:12:52

# Hop rate-2439MHz



DELTA MARKER 3

1.68 ms

RBW 1 MHz

Delta 3 [T1 ]

\*VBW 1 MHz

0.59 dB

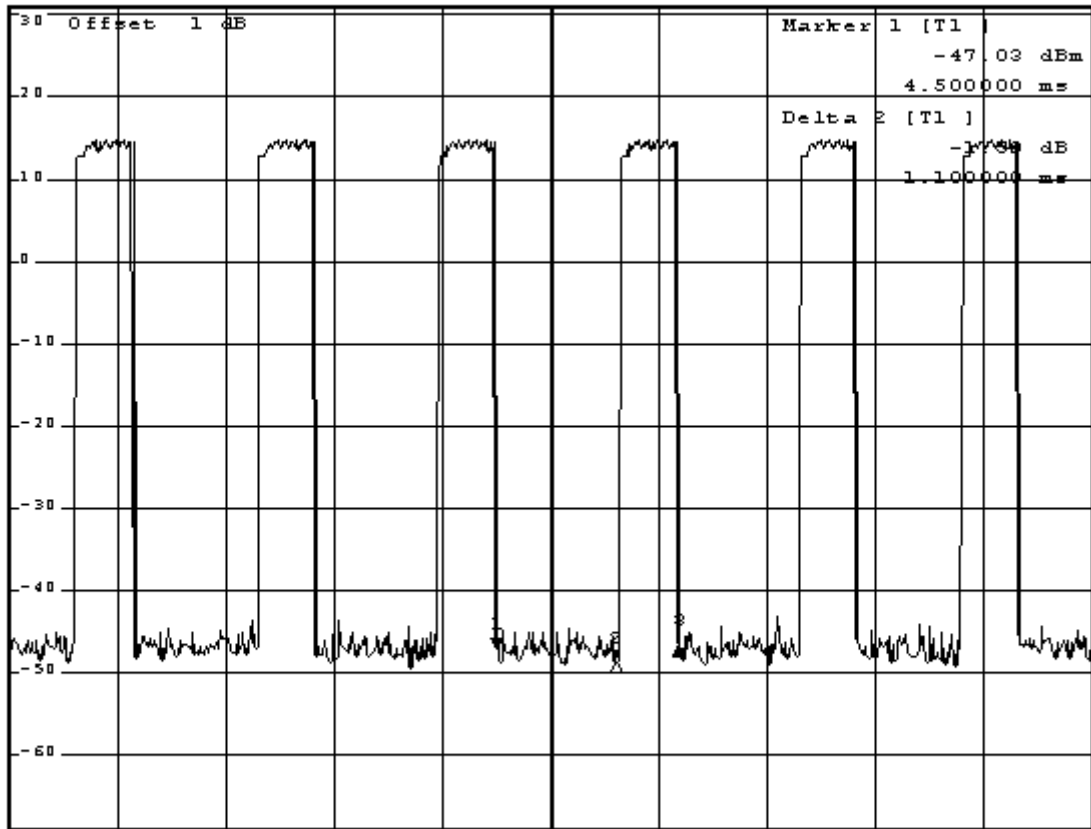
Ref 31 dBm

\*Att 40 dB

SWT 10 ms

1.680000 ms

1.0X  
VIEW

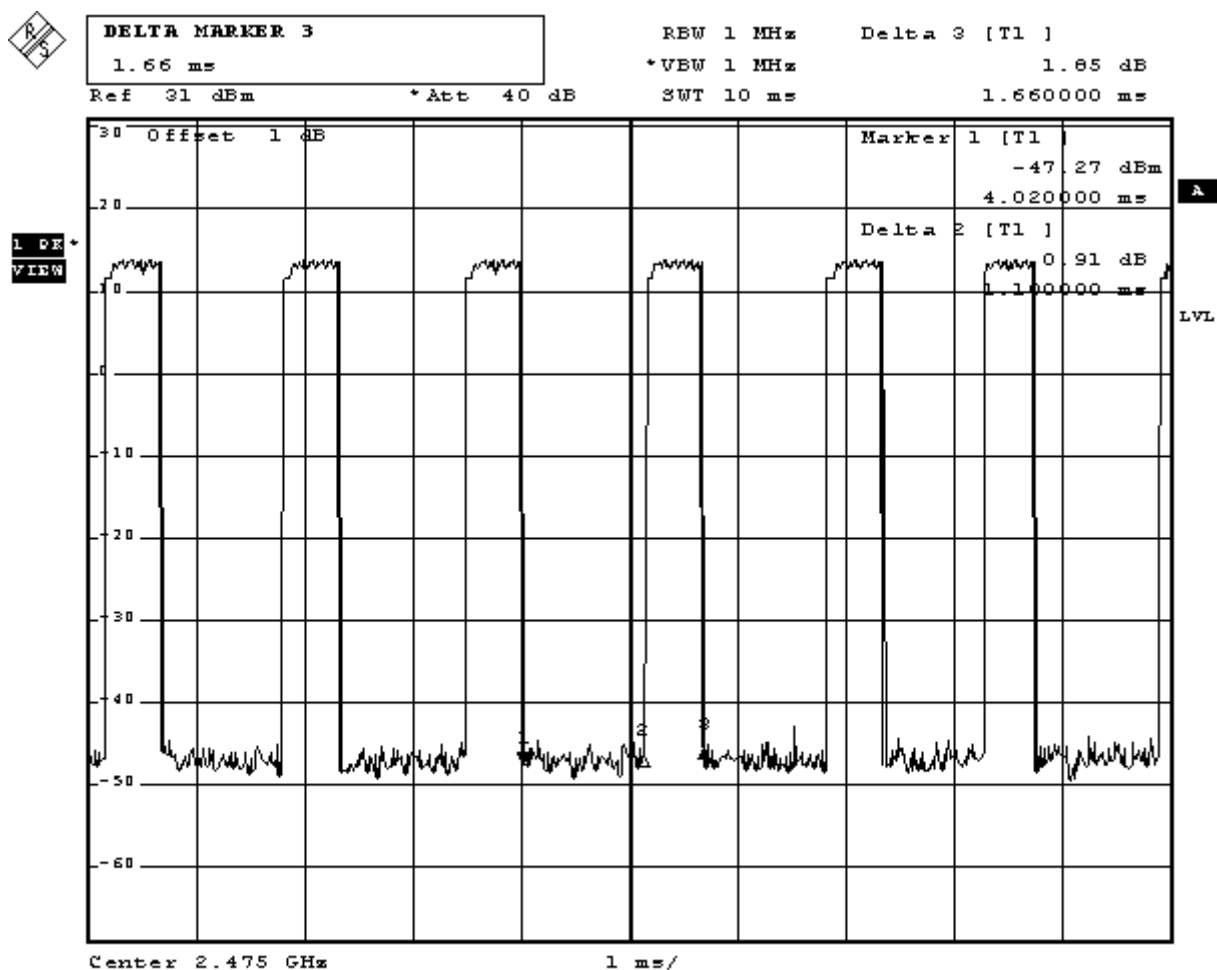


Center 2.439 GHz

1 ms/

Date: 18.MAY.2011 12:47:59

## Hop rate-2475MHz



Date: 18.MAY.2011 12:44:09

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

|              |                          |           |                     |
|--------------|--------------------------|-----------|---------------------|
| Product      | 2.4GHz Digital AV module |           |                     |
| Test Item    | Dwell Time               |           |                     |
| Test Mode    | Mode 2: Transmit (QPSK)  |           |                     |
| Date of Test | 2011/05/18               | Test Site | No.7 Shielding Room |

## Occupancy Time of Frequency Hopping System

A) 2403MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600/\text{sec}$

The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

B) 2439MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600/\text{sec}$

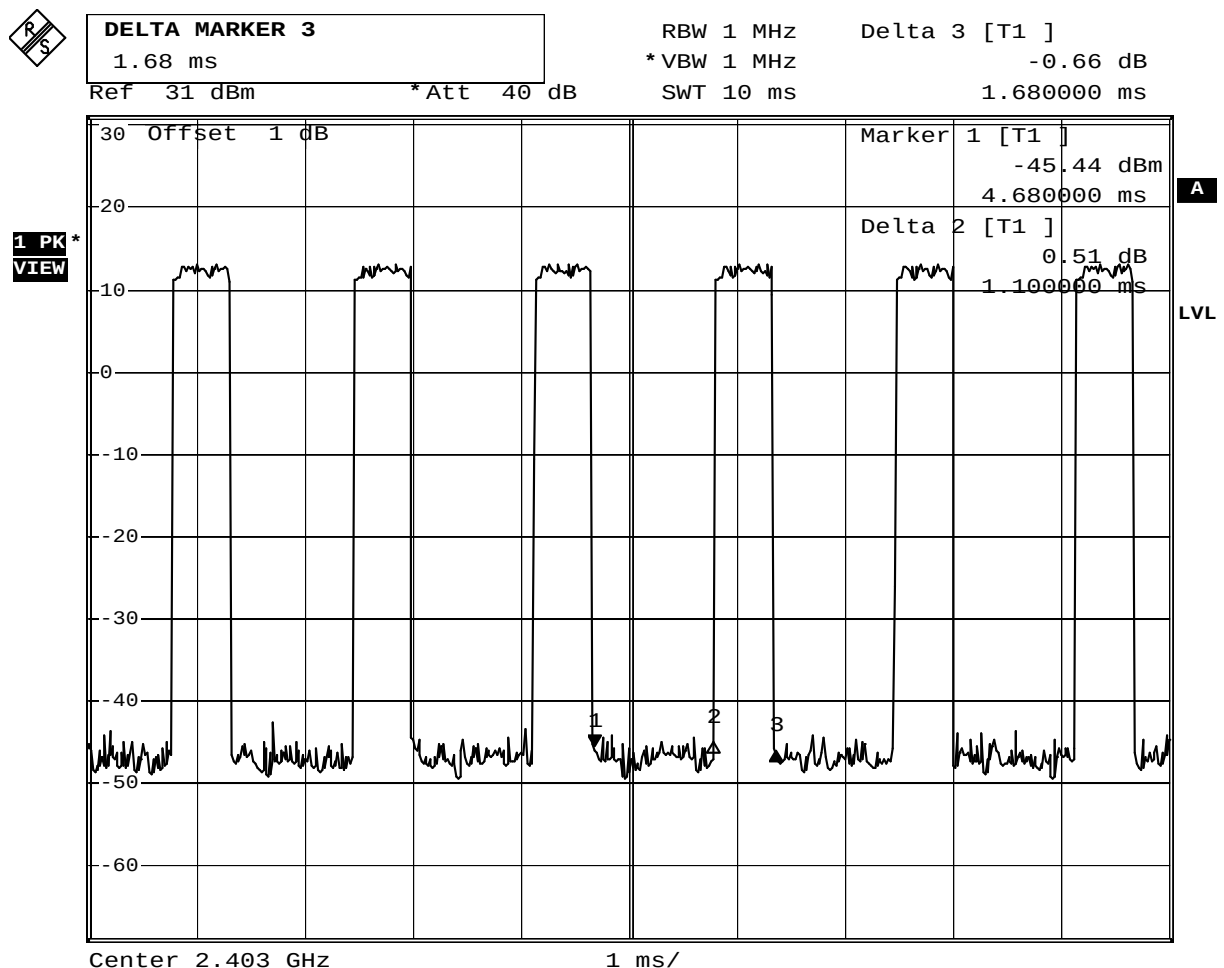
The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

C) 2475MHz Test Time Period:  $0.4 \times 25 = 10\text{sec}$  , Hopping Times Within 1sec:  $6/10\text{msec} = 600/\text{sec}$

The Maximum Occupancy Time Within 2.64sec:  $0.0011 \times (600/25) \times 10 = 0.264\text{sec}$  .

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

## Hop rate-2403MHz



Date: 18.MAY.2011 14:10:02

# Hop rate-2439MHz



DELTA MARKER 3

1.66 ms

RBW 1 MHz

Delta 3 [T1 ]

\*VBW 1 MHz

2.46 dB

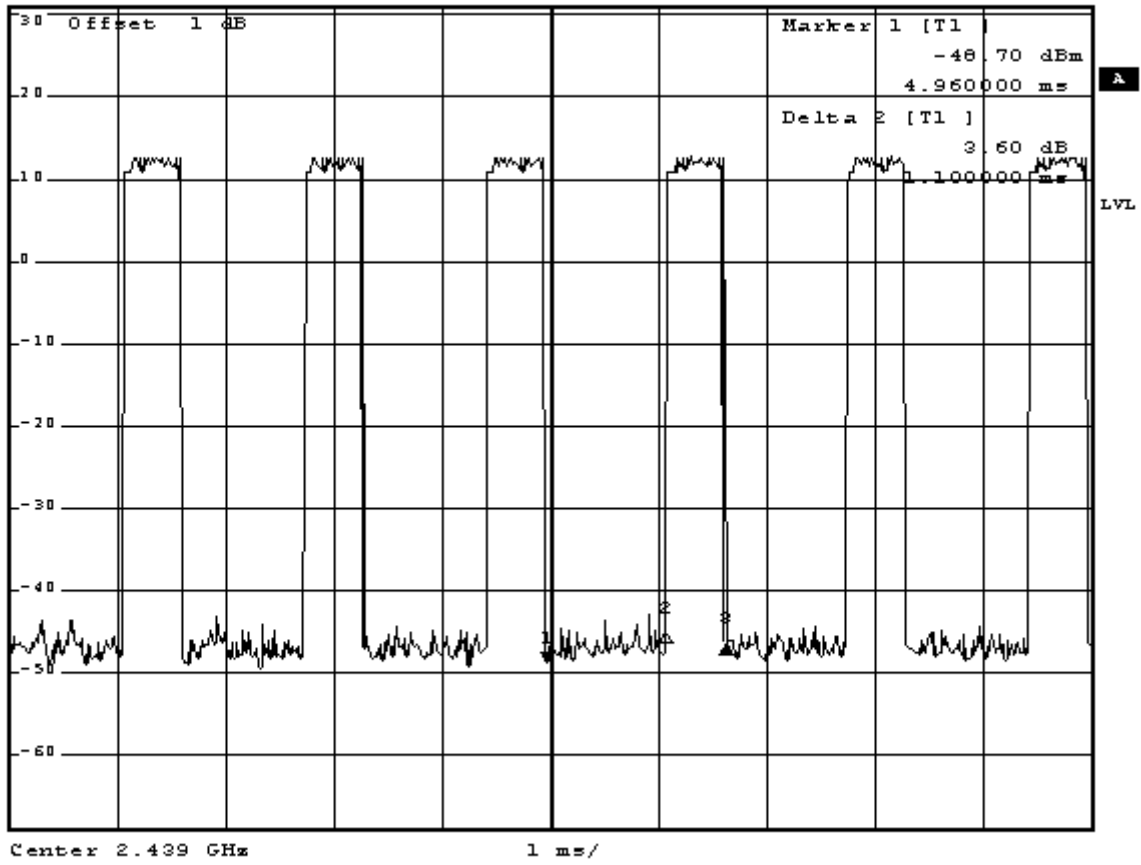
Ref 31 dBm

\*Att 40 dB

SWT 10 ms

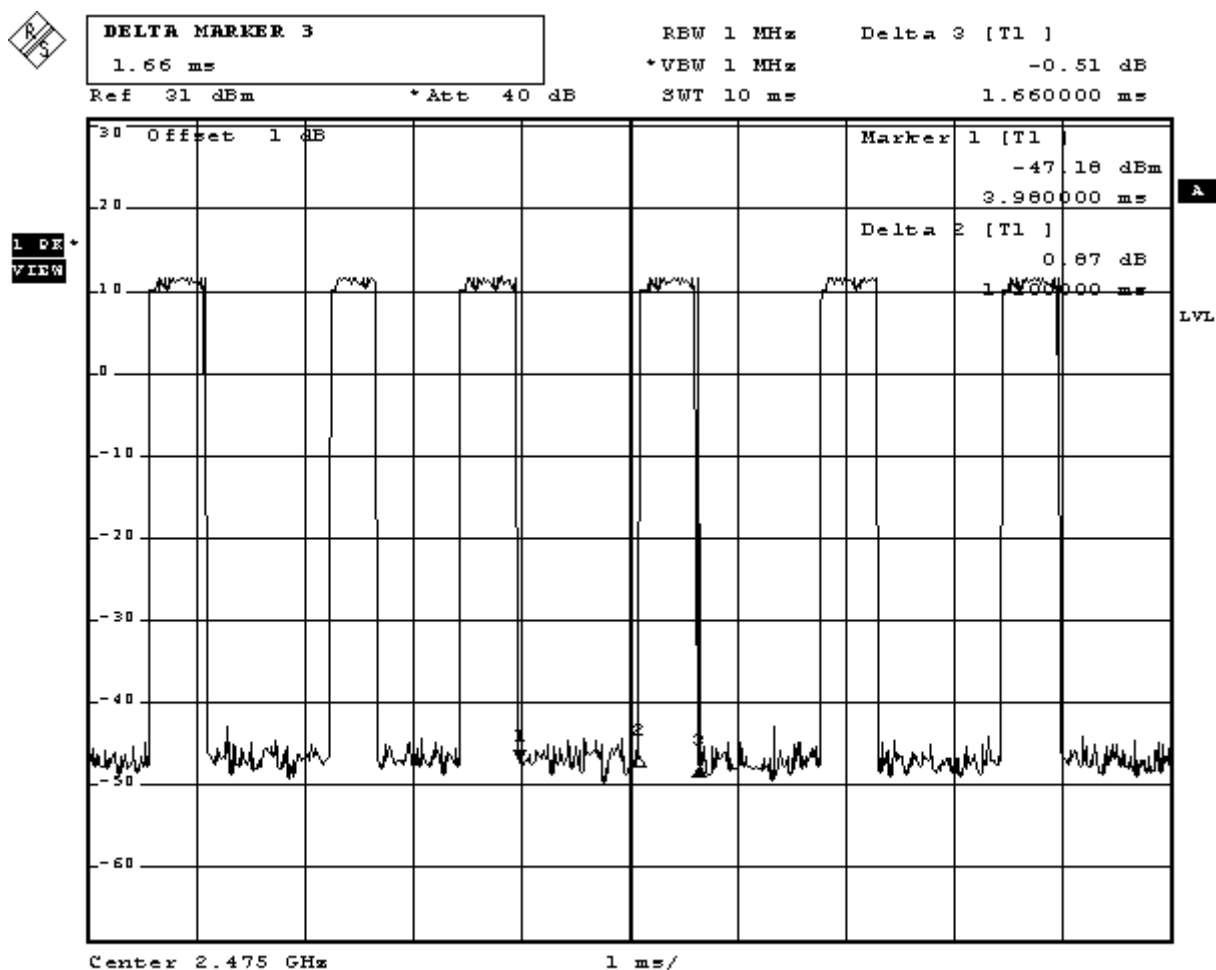
1.660000 ms

1.0K  
VIEW



Date: 18.MAY.2011 14:11:23

# Hop rate-2475MHz



Date: 18.MAY.2011 14:07:47

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