# EMC
# TEST REPORT

**Report No. : TS08110048-EME**
**Model No. : 02640**
**Issued Date : Nov. 18, 2008**

| | |
|---|---|
| **Applicant:** | **Summer Infant Inc.**<br>**1275 Park East Drive Woonsocket, RI. 02895. United States** |
| **Test Method/ Standard:** | **FCC Part 15 Subpart C Section §15.205、§15.207、§15.209、§15.247, DA 00-705 and ANSI C63.4/2003.** |
| **Test By:** | **Intertek Testing Services Taiwan Ltd.**<br>**No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,**<br>**Shiang-Shan District, Hsinchu City, Taiwan** |



| | |
|---|---|
| **The test report was prepared by:** | Sign on File<br>Sammi Liu/ Assistant |
| **These measurements were taken by:** | Sign on File<br>Leon Cheng/ Engineer |
| **The test report was reviewed by:** | Jimmie Liu<br>**Name** Jimmie Liu<br>**Title** Engineer |

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**Summary of Tests**

# Best View Handheld Color Video Monitor-Model: 02640
# FCC ID: PZK-0264041R

| Test | Reference | Results |
|---|---|---|
| 20dB Bandwidth test | 15.247(a)(1) | Pass |
| Carrier Frequency Separation test | 15.247(a)(1) | Pass |
| Number of hopping frequencies test | 15.247(a)(1) | Pass |
| Time of Occupancy (dwell time) test | 15.247(a)(1) | Pass |
| Maximum Output Power test | 15.247(b) | Pass |
| RF Antenna Conducted Spurious test | 15.247(d) | Pass |
| Radiated Spurious Emission test | 15.205, 15.209 | Pass |
| Emission on the Band Edge test | 15.247(d) | Pass |
| AC Power Line Conducted Emission test | 15.207 | Pass |

## 1. General information

### 1.1 Identification of the EUT

| | |
|---|---|
| Applicant: | Summer Infant Inc. |
| Product: | Best View Handheld Color Video Monitor |
| Model No.: | 02640 |
| FCC ID.: | PZK-0264041R |
| Frequency Range: | 2408.625 MHz ~ 2469.375 MHz |
| Channel Number: | 18 channels |
| Type of Modulation: | FSK, FHSS |
| Power Supply: | 1. DC 6V from adapter model No.: OH-1048A0600800U1<br>I/P: 100-240 Vac, 50/60 Hz<br>2. DC 3.6 V form battery (1.2 V × 3) |
| Power Cord: | N/A |
| Sample Received: | Nov. 07, 2008 |
| Test Date(s): | Nov. 07, 2008 ~ Nov. 17, 2008 |
| Note 1: | This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. |
| Note 2: | When determining the test conclusion, the Measurement Uncertainty of test has been considered. |

A FCC DoC report has been generated for the client.

## 1.2 Additional information about the EUT

The EUT is a Best View Handheld Color Video Monitor (Monitor), and was defined as radio and telecommunications terminal equipment.

For more detail features, please refer to User's manual as file name “Installation guide.pdf”

## 1.3 Antenna description

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

| | |
|---|---|
| Antenna Gain | 1.5 dBi max |
| Antenna Type | Monopole antenna |
| Connector Type | N/A |

## 2. Test specifications

### 2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section § 15.205、§15.207、§15.209、§15.247, DA 00-705 and ANSI C63.4/2003.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

### 2.2 Operation mode

The EUT was supplied with 120 Vac, 60 Hz and it was run in TX mode.

| Frequency (MHz) | Channel |
|---|---|
| 2408.625 | 3 |
| 2412.000 | 0 |
| 2415.375 | 4 |
| 2418.750 | 8 |
| 2423.250 | 12 |
| 2426.625 | 16 |
| 2430.000 | 20 |
| 2433.375 | 24 |
| 2436.750 | 28 |
| 2440.125 | 32 |
| 2444.625 | 36 |
| 2448.000 | 40 |
| 2451.375 | 44 |
| 2454.750 | 48 |
| 2458.125 | 52 |
| 2462.625 | 56 |
| 2466.000 | 60 |
| 2469.375 | 59 |

## 2.3 Test equipment

| Equipment | Brand | Frequency range | Model No. |
|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | 9kHz~2.75GHz | ESCS 30 |
| Spectrum Analyzer | Rohde & Schwarz | 9kHz~30GHz | FSP 30 |
| Spectrum Analyzer | Rohde & Schwarz | 20Hz~40GHz | FSEK 30 |
| Horn Antenna | SCHWARZBECK | 1GHz~18GHz | BBHA 9120 D |
| Horn Antenna | SCHWARZBECK | 14GHz~40GHz | BBHA 9170 |
| Bilog Antenna | SCHWARZBECK | 25MHz~1.7GHz | VULB 9168 |
| Pre-Amplifier | MITEQ | 100MHz~26.5GHz | 919981 |
| Pre-Amplifier | MITEQ | 26GHz~40GHz | 828825 |
| Wideband Peak Power Meter/ Sensor | Anritsu | 100MHz~18GHz | ML2487A/ MA2491A |
| Controller | HDGmbH | N/A | HD 100 |
| Antenna Tower | HDGmbH | N/A | MA 240 |
| Turn Table | HDGmbH | N/A | DS 420S |
| LISN | Rohde & Schwarz | 9KHz~30MHz | ESH3-Z5 |

Note: The above equipments are within the valid calibration period.

## 3. 20dB Bandwidth test

### 3.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 25 | ℃ |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure: | 1023 | hPa |

### 3.2 Test setup & procedure

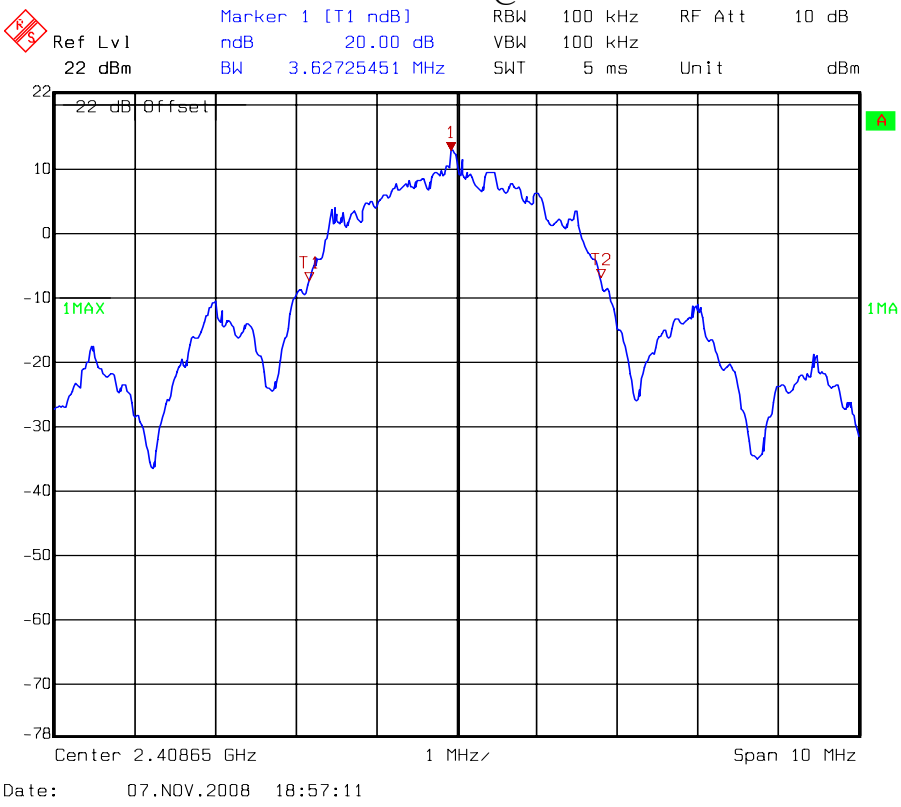
**The test procedure was according to FCC measurement guidelines DA 00-705.**
The 20dB bandwidth per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100 kHz, the video bandwidth≧RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

### 3.3 Measured data of modulated bandwidth test results

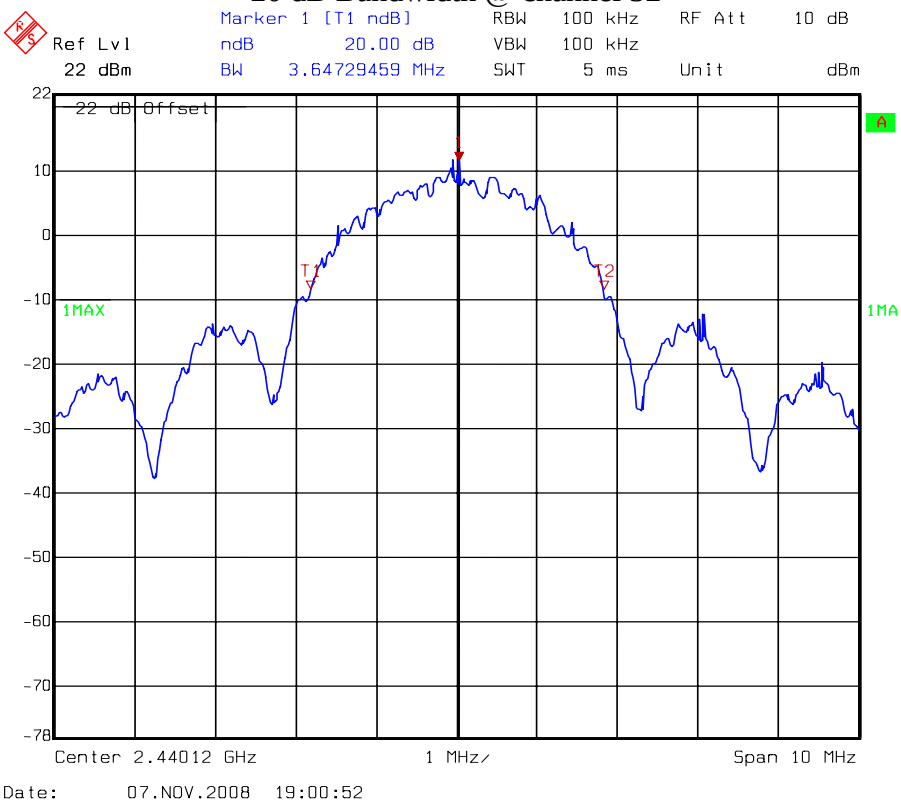
| Channel | Frequency (MHz) | Bandwidth (kHz) |
|---|---|---|
| 3 | 2408.625 | 3627.255 |
| 32 | 2440.125 | 3647.295 |
| 59 | 2469.375 | 3787.575 |

Please see the plot below.

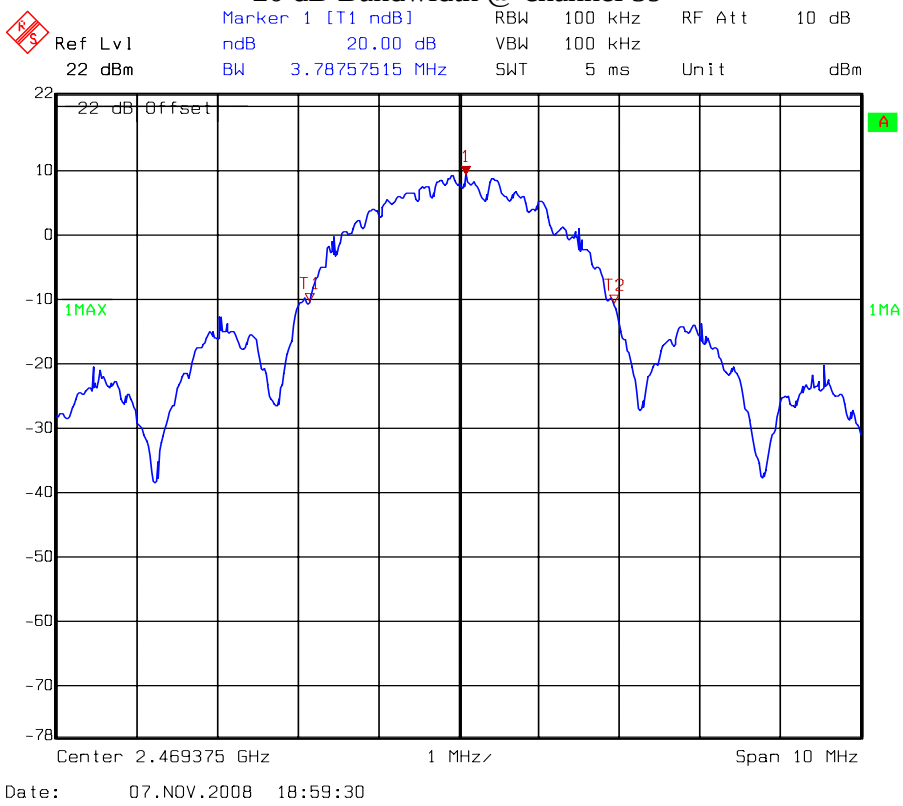
## 20 dB Bandwidth @ channel 3




## 20 dB Bandwidth @ channel 32



20 dB Bandwidth @ channel 59



## 4. Carrier Frequency Separation test

### 4.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 25 | ℃ |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure: | 1023 | hPa |

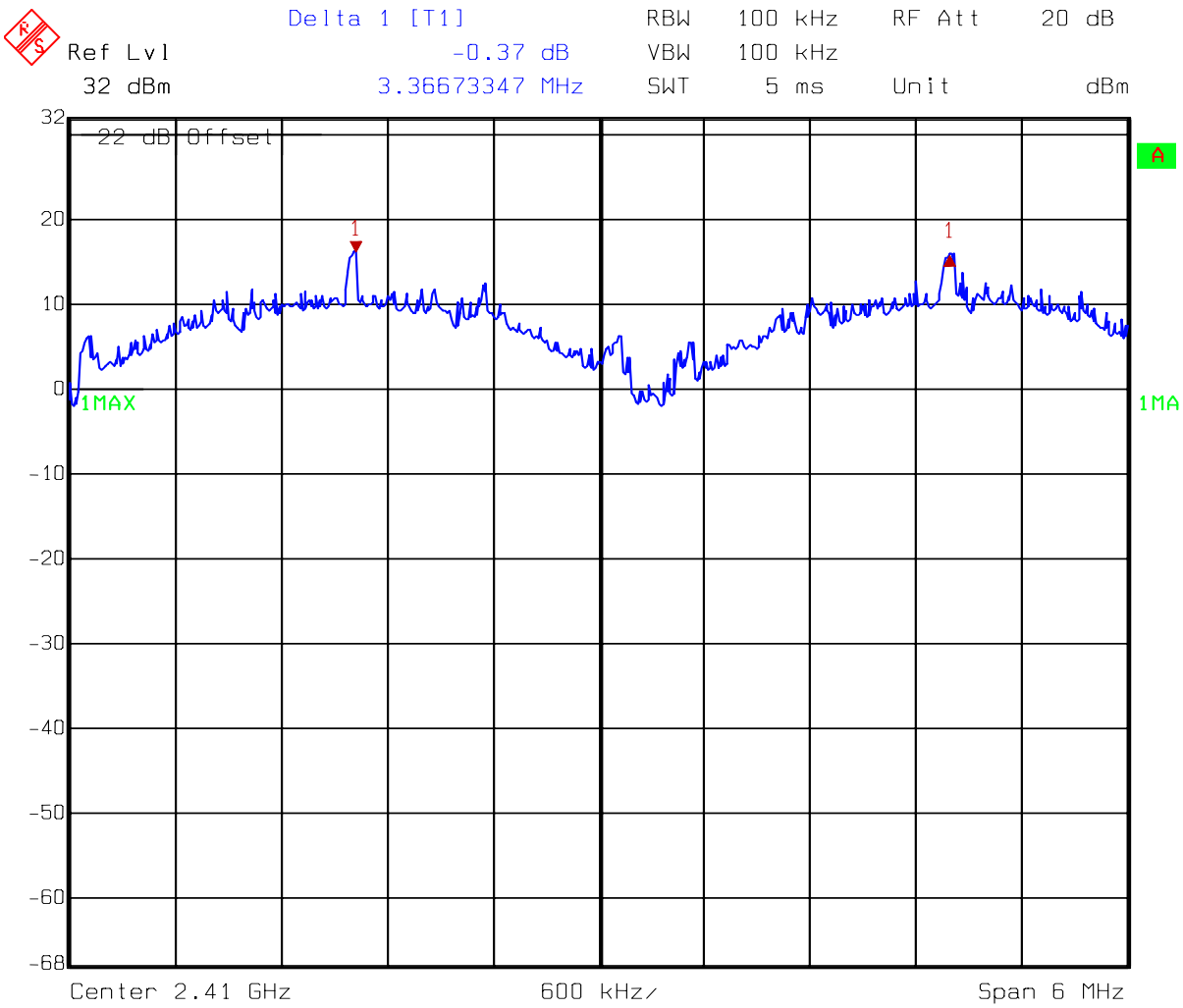
### 4.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705.**
The carrier frequency separation per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1％of the span, the video bandwidth≧RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

### 4.3 Measured data of Carrier Frequency Separation test result

| Frequency (MHz) | Measurement Frequency separation (kHz) |
|---|---|
| 2408.625 | 3366.733 |
| 2412.000 | |

Please see the plot below.


Delta 1 [T1]
RBW 100 kHz
RF Att 20 dB
Ref Lvl
-0.37 dB
VBW 100 kHz
32 dBm
3.36673347 MHz
SWT 5 ms
Unit dBm
22 dB Offset
A
1MAX
1MA
Center 2.41 GHz
600 kHz/
Span 6 MHz
Date: 07.NOV.2008 19:08:50

## 5. Number of hopping frequencies test

### 5.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 25 | ℃ |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure: | 1023 | hPa |

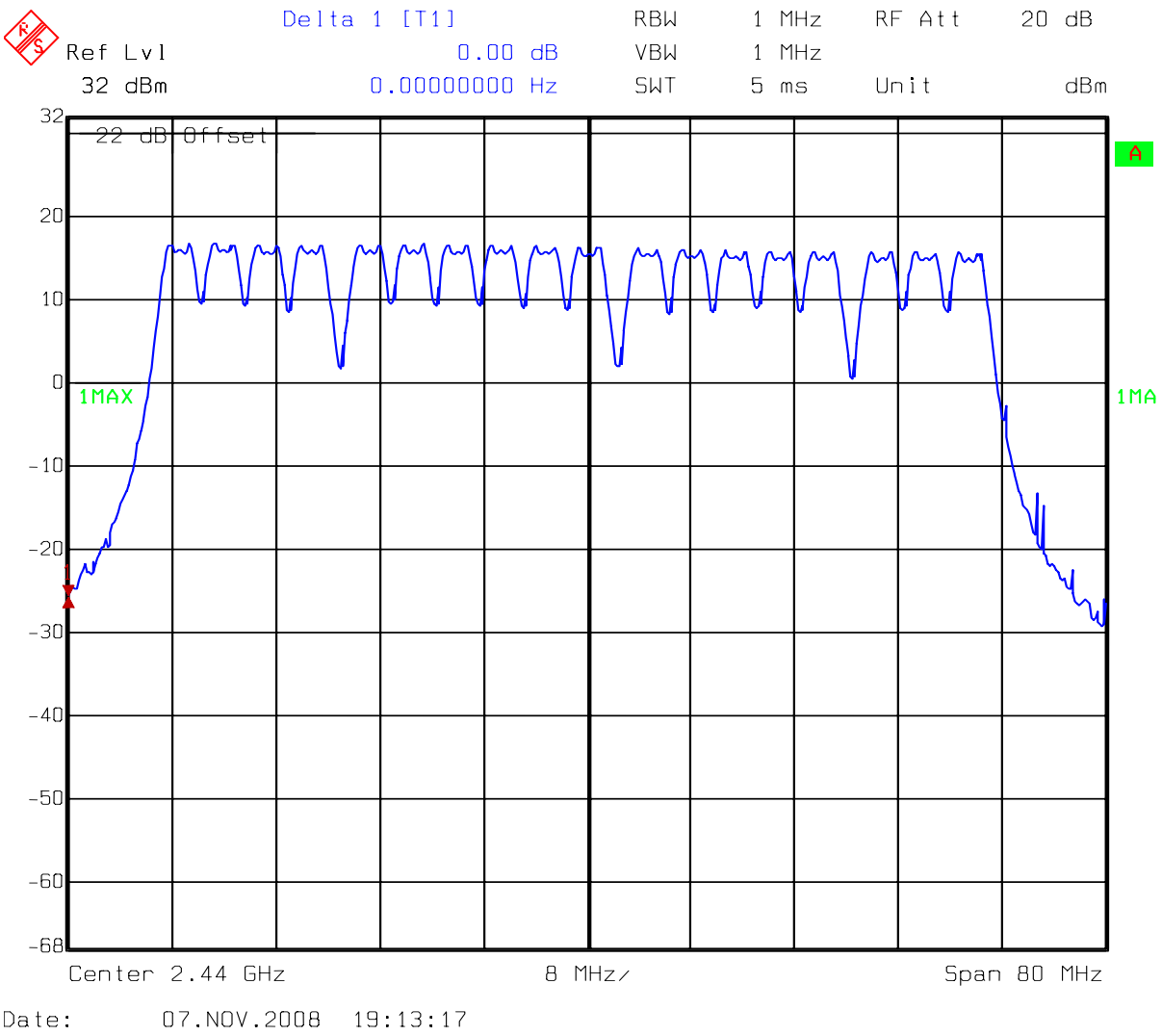
### 5.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705.**
The number of hopping frequencies per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1 % of the span, the video bandwidth≧RBW, and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

### 5.3 Measured data of number of hopping frequencies test result

| Frequency Range (MHz) | Total hopping channels |
|---|---|
| 2408.625 ~ 2469.375 | 18 |

Please see the plot below.


Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
0.00 dB
VBW 1 MHz
32 dBm
0.00000000 Hz
SWT 5 ms
Unit dBm
22 dB Offset
A
1MAX
1MA
32
20
10
0
-10
-20
-30
-40
-50
-60
-68
Center 2.44 GHz
8 MHz/
Span 80 MHz
Date: 07.NOV.2008 19:13:17

## 6. Time of Occupancy (dwell time) test

### 6.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 25 | ℃ |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure: | 1023 | hPa |

### 6.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705.**
The time of occupancy (dwell time) per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth≧RBW, and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

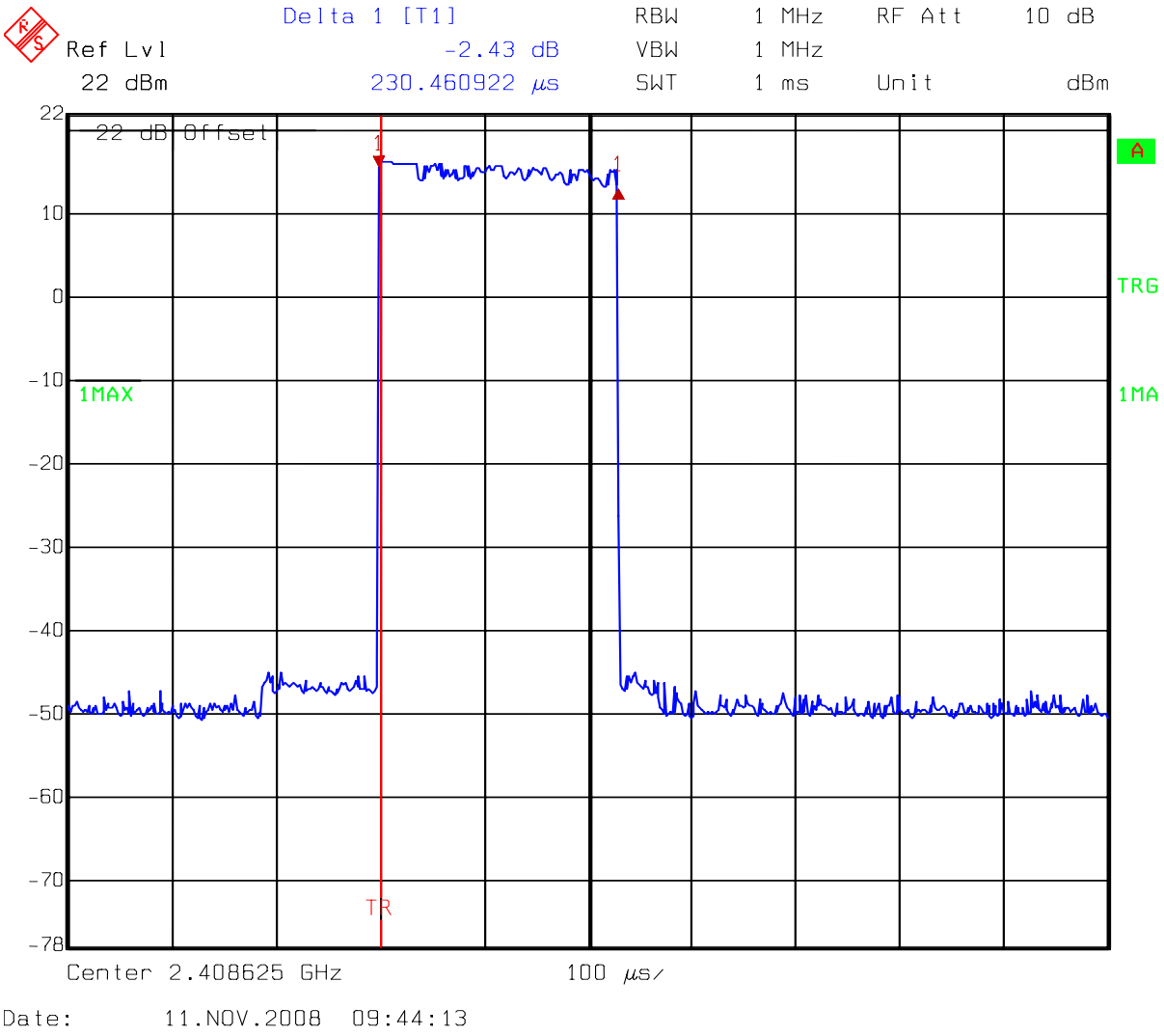
The system makes worst case 1000 hops per second or 1 time solt has a length of 230.46 μs with 18 channels.

The one package include 5 time slots (4 transmit, 1 receive).

Hop rate = 1/5 *1000 = 200 Hz

Dwell time = 0.23 ms * 200 Hz/18 * 7.2 sec
=18.4 ms < 0.4 sec

Please see the plot below.


Delta 1 [T1]
RBW 1 MHz
RF Att 10 dB
Ref Lvl
-2.43 dB
VBW 1 MHz
22 dBm
230.460922 µs
SWT 1 ms
Unit dBm
22 dB Offset
22
10
0
-10
-20
-30
-40
-50
-60
-70
-78
1MAX
TRG
1MA
TR
Center 2.408625 GHz
100 µs/
Date: 11.NOV.2008 09:44:13

## 7. Maximum Output Power test

### 7.1 Operating environment

Temperature: 25 ℃
Relative Humidity: 53 %
Atmospheric Pressure: 1022 hPa

### 7.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705.**
The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (2.0 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

### 7.3 Measured data of Maximum Output Power test results

| Freq. (MHz) | C.L. (dB) | Reading (dBm) | Conducted Peak Output Power | | Limit (dBm) |
|---|---|---|---|---|---|
| | | | (dBm) | (mW) | |
| 2408.625 MHz | 2.0 | 15.74 | 17.74 | 59.43 | 21 |
| 2440.125 MHz | 2.0 | 15.42 | 17.42 | 55.21 | 21 |
| 2469.375 MHz | 2.0 | 14.73 | 16.73 | 47.10 | 21 |

Remark:
Conducted Peak Output Power = Reading + C.L.

## 8. RF Antenna Conducted Spurious test

### 8.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 24 | ℃ |
| Relative Humidity: | 56 | % |

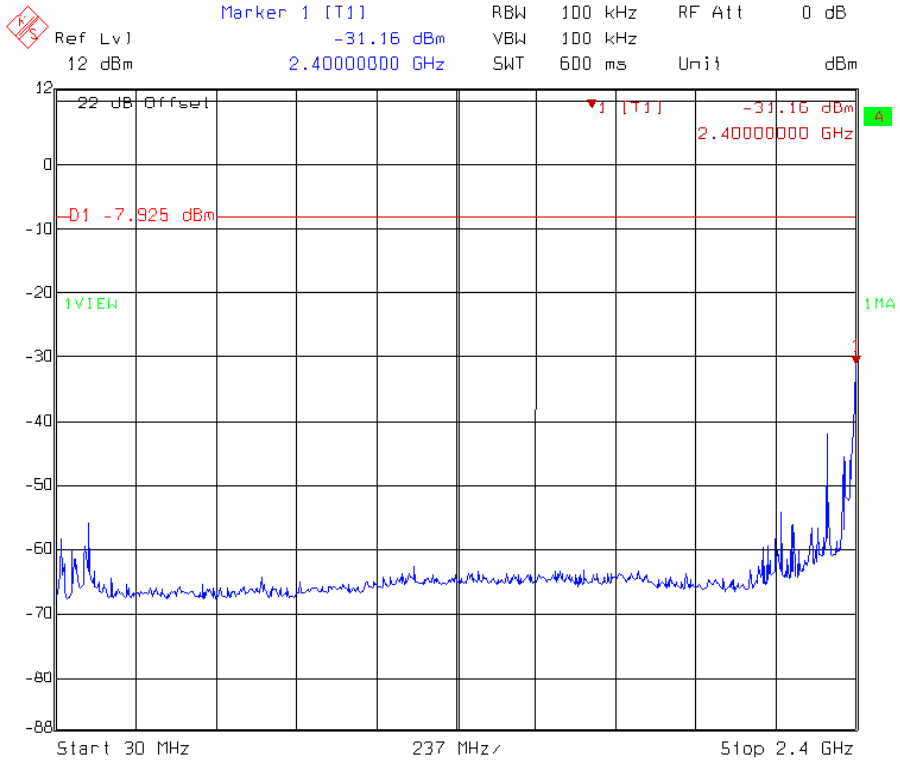
### 8.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705.**
The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

### 8.3 Measured data of the highest RF Antenna Conducted Spurious test result

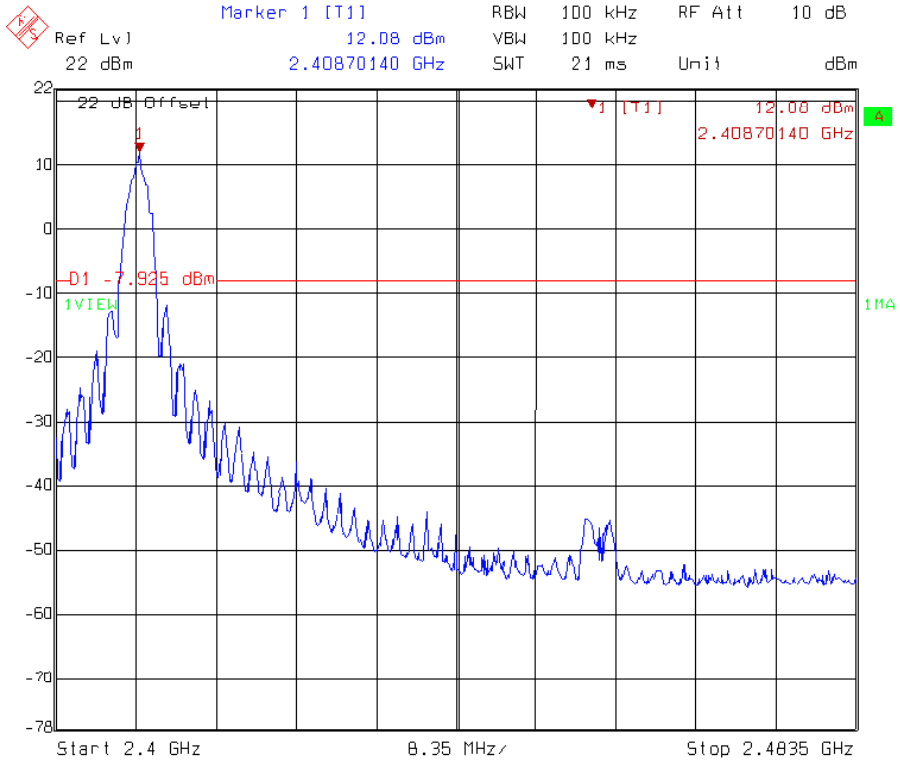
The test results please see the plot below.

conducted spurious @ channel 3 (1 of 3)



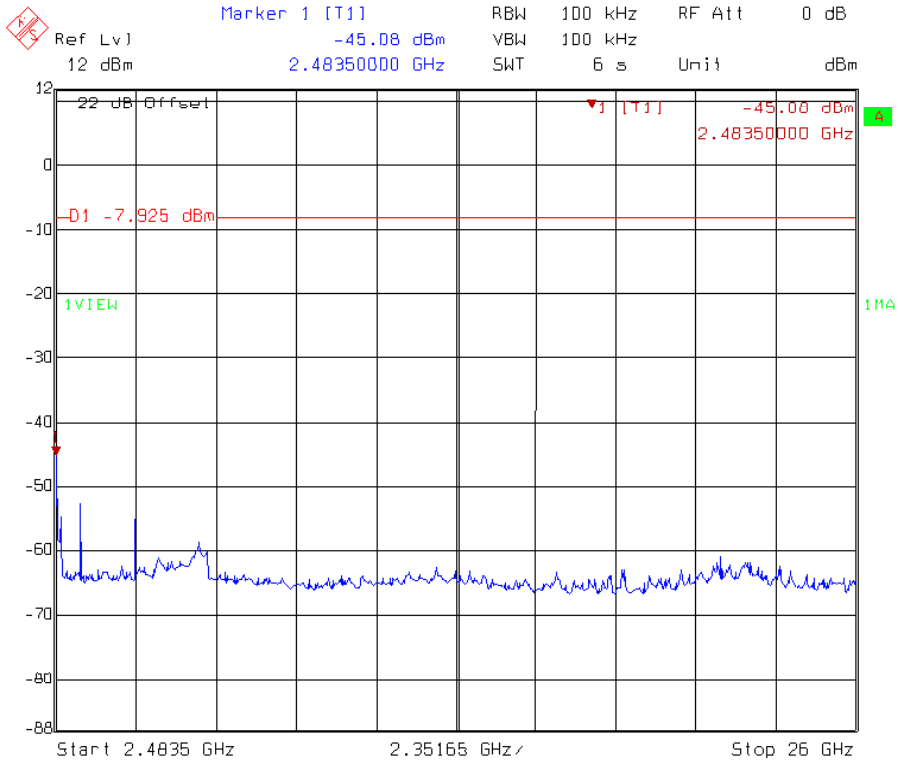

Title: Spurious
Comment A: 30MHz~2400MHz
Date: 17.NOV.2008 09:41:33

conducted spurious @ channel 3 (2 of 3)



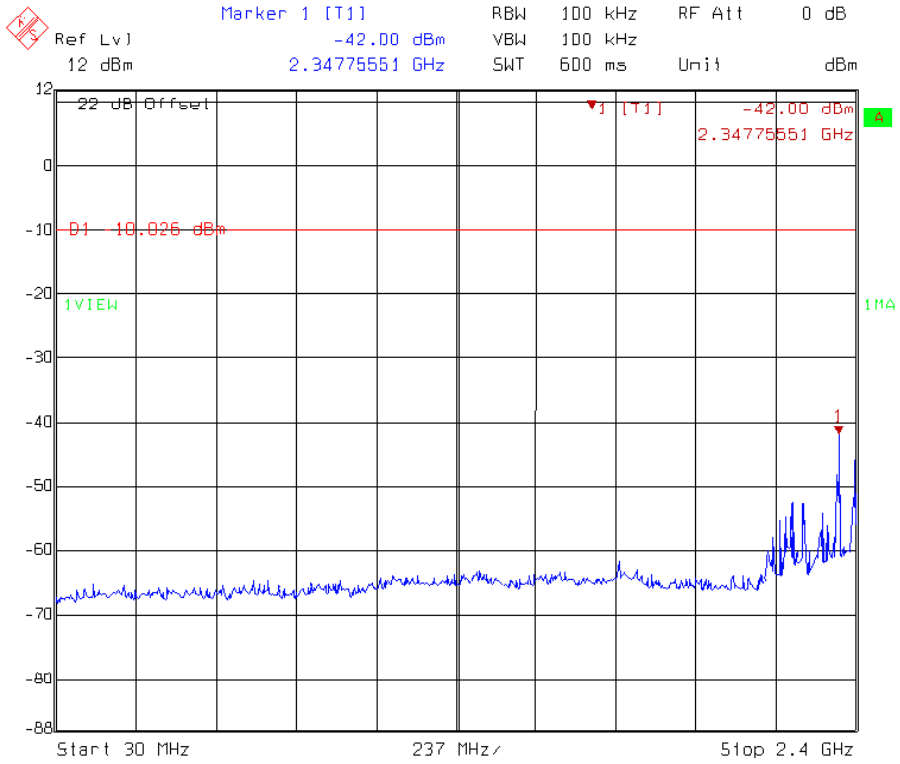

Title: Spurious
Comment A: 2400MHz~2483.5MHz
Date: 17.NOV.2008 09:41:12

conducted spurious @ channel 3 (3 of 3)



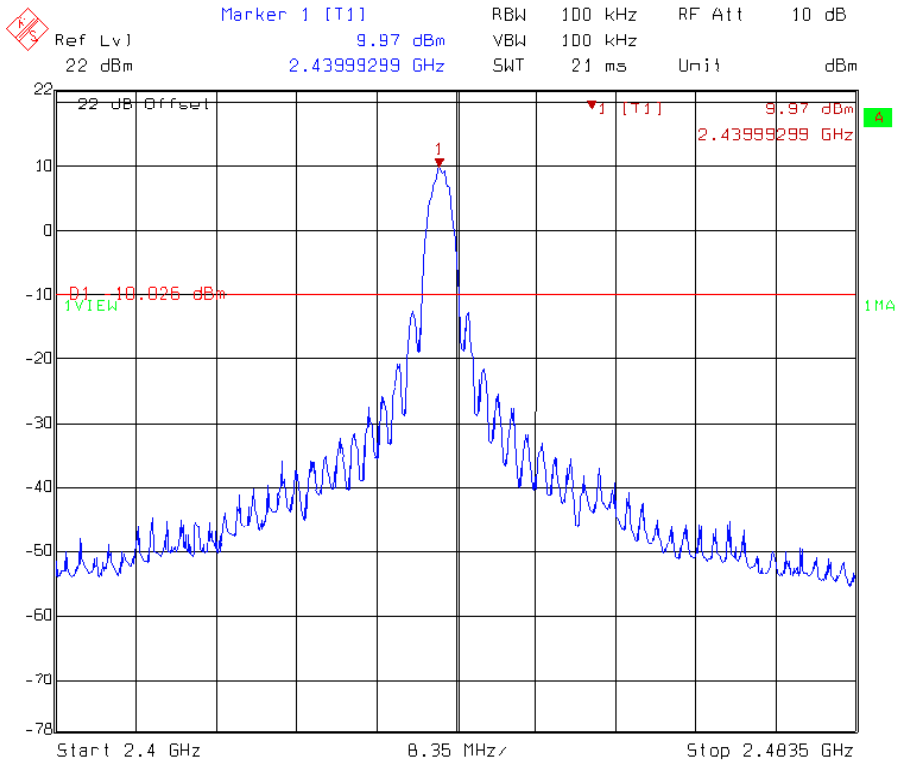

Title: Spurious
Comment A: 2483.5MHz~26000MHz
Date: 17.NOV.2008 09:42:01

conducted spurious @ channel 32 (1 of 3)



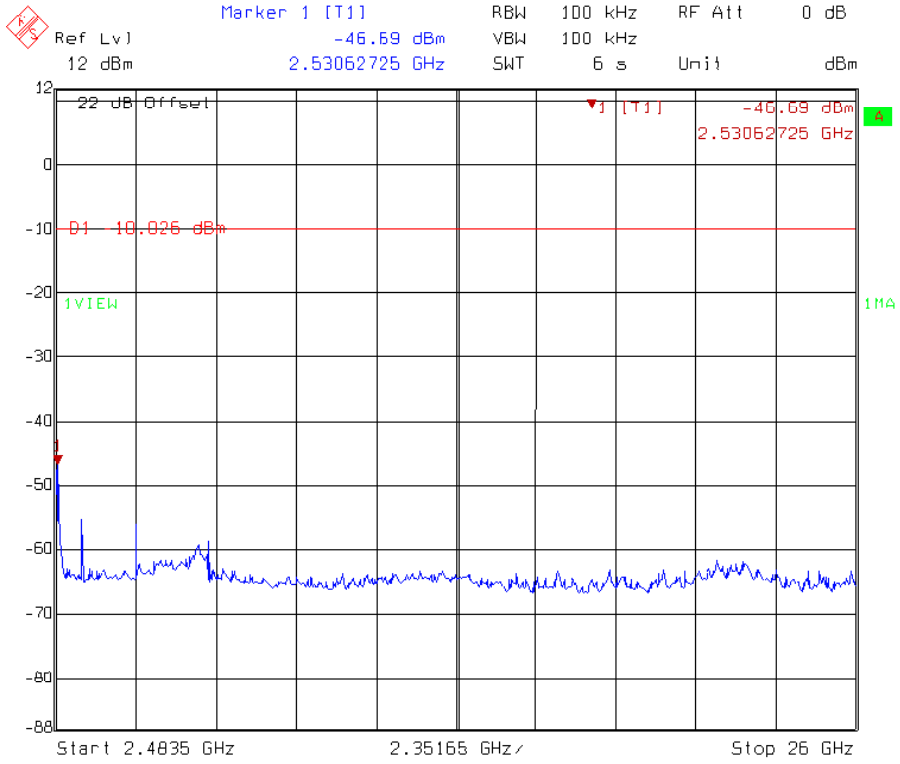

Title: Spurious
Comment A: 30MHz~2400MHz
Date: 17.NOV.2008 09:43:59

conducted spurious @ channel 32 (2 of 3)



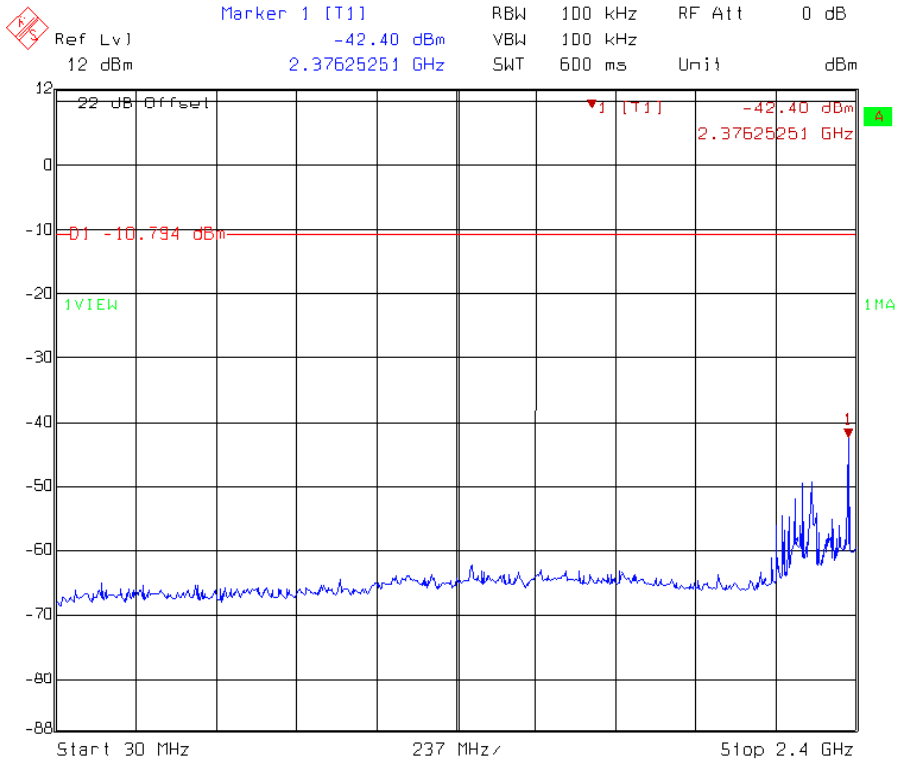

Title: Spurious
Comment A: 2400MHz~2483.5MHz
Date: 17.NOV.2008 09:43:37

conducted spurious @ channel 32 (3 of 3)



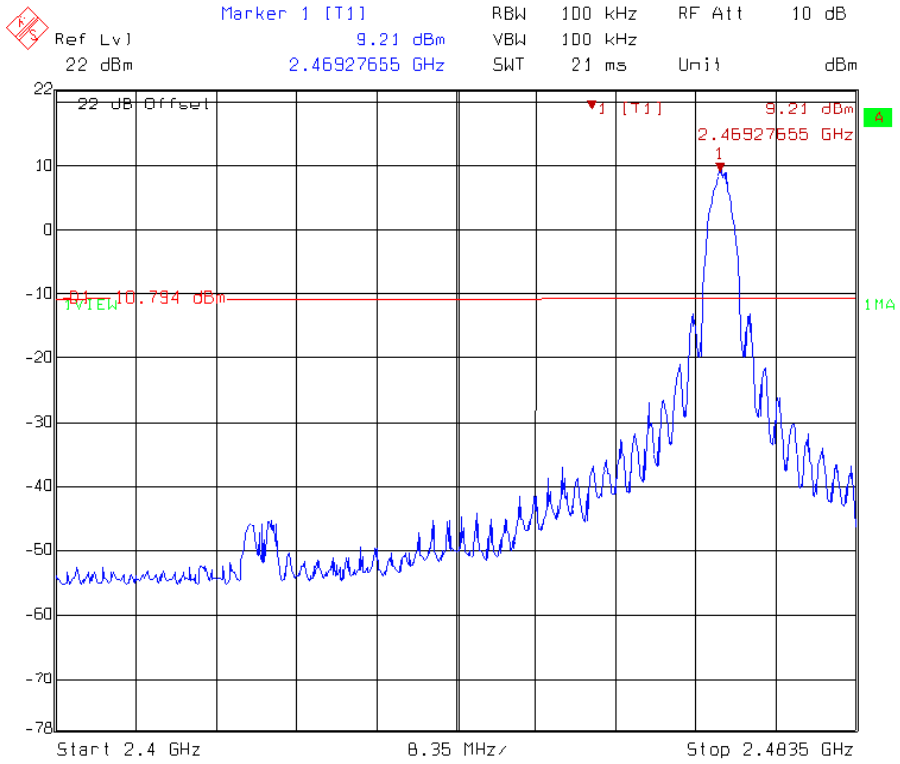

Title: Spurious
Comment A: 2483.5MHz~26000MHz
Date: 17.NOV.2008 09:44:26

conducted spurious @ channel 59 (1 of 3)



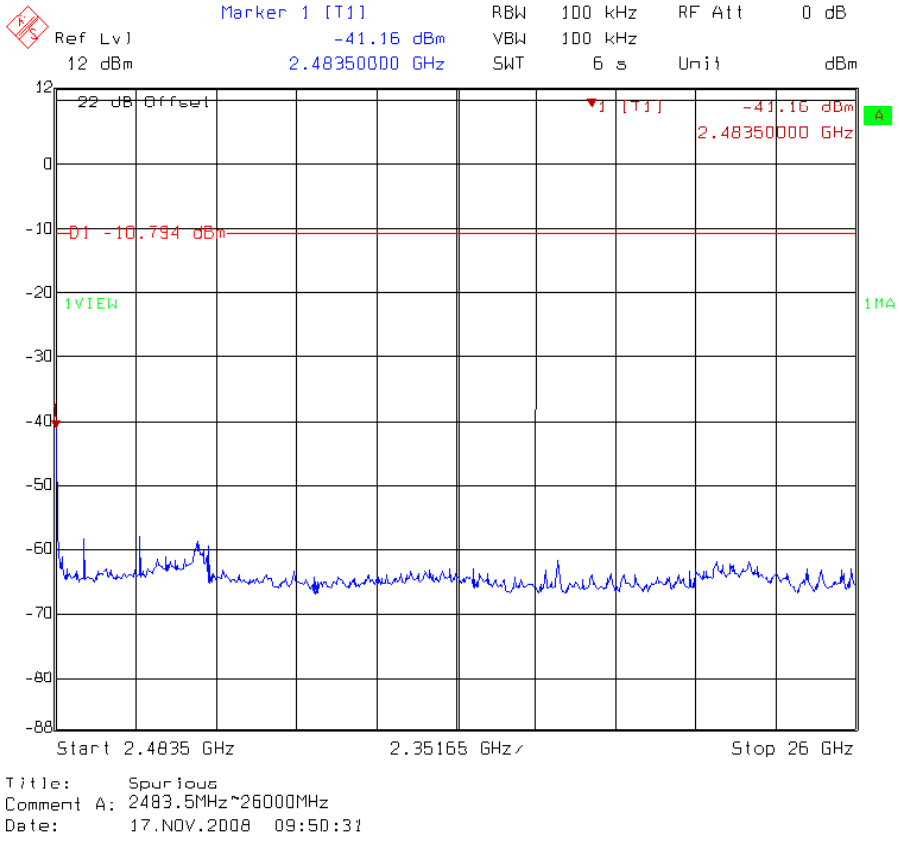

Title: Spurious
Comment A: 30MHz~2400MHz
Date: 17.NOV.2008 09:50:04

conducted spurious @ channel 59 (2 of 3)




Title: Spurious
Comment A: 2400MHz~2483.5MHz
Date: 17.NOV.2008 09:49:43

conducted spurious @ channel 59 (3 of 3)



## 9. Radiated Emission test

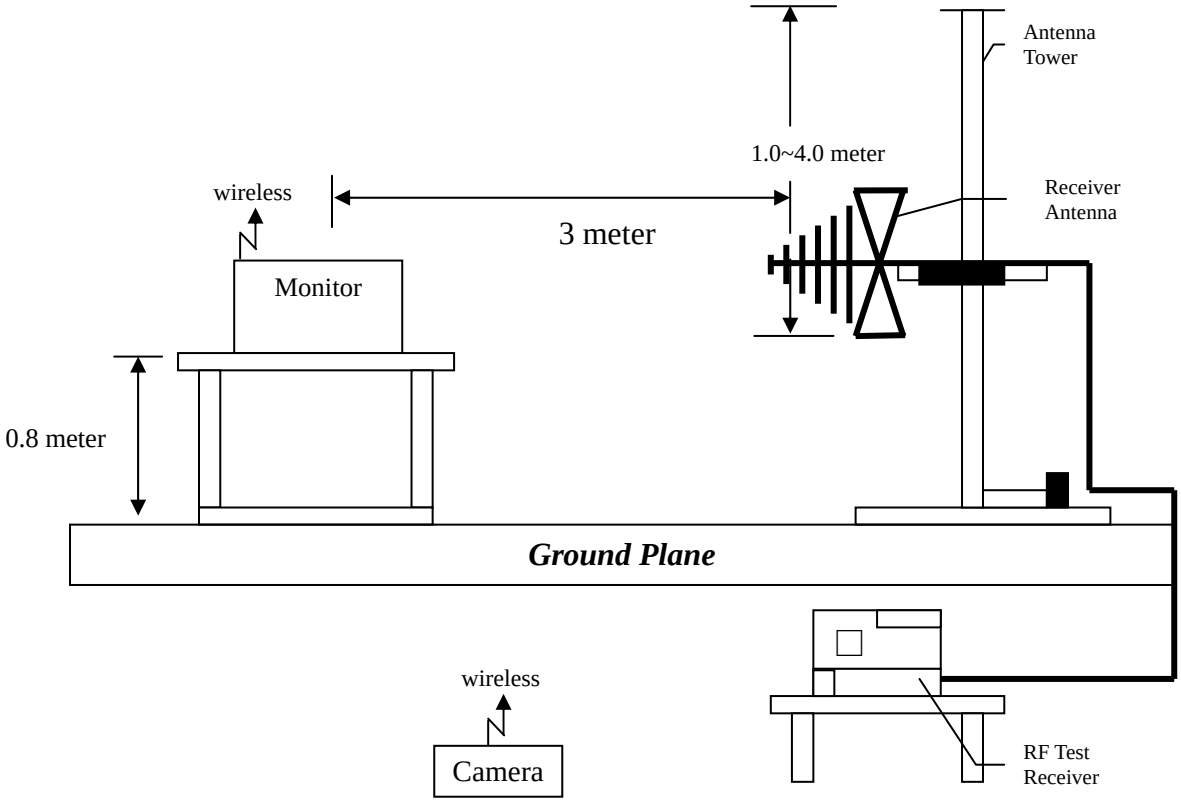
### 9.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 24 | ℃ |
| Relative Humidity: | 56 | % |
| Atmospheric Pressure: | 1023 | hPa |

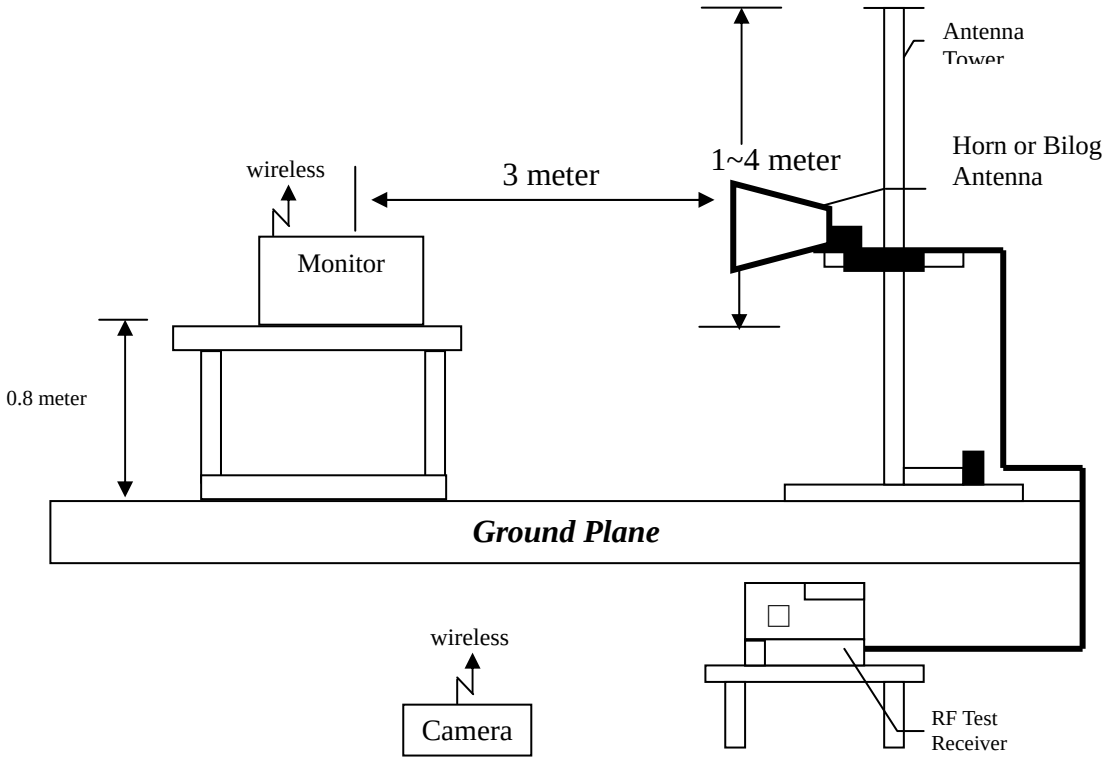
### 9.2 Test setup & procedure

**The test procedure was according to FCC measurement guidelines DA 00-705 and ANSI C63.4/2003.**
The Diagram below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 1000MHz was investigated.



The frequency spectrum from over 1GHz was investigated.




The signal is maximized through rotation and placement in the three orthogonal axes.
Radiated emission measurements were performed from 30MHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, 1MHz – for frequencies above 1GHz.
The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meter reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

### 9.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

| Frequency (MHz) | Limits (dB μ V/m@3m) |
|---|---|
| 30-88 | 40 |
| 88-216 | 43.5 |
| 216-960 | 46 |
| Above 960 | 54 |

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.
Expanded uncertainty (k=2) of radiated emission measurement is 4.98 dB.

## 9.4 Radiated spurious emission test data

### 9.4.1 Measurement results: frequencies equal to or less than 1 GHz

EUT : 02640
Worst Case : Tx at 2408.625 MHz

| Antenna Polariz. (V/H) | Freq. (MHz) | Receiver Detector | Corr. Factor (dB/m) | Reading (dBuV) | Corrected Level (dBuV/m) | Limit @ 3 m (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| V | 384.050 | QP | 16.40 | 15.82 | 32.22 | 46.00 | -13.78 |
| V | 431.580 | QP | 17.64 | 16.20 | 33.84 | 46.00 | -12.16 |
| V | 527.610 | QP | 19.46 | 21.41 | 40.87 | 46.00 | -5.13 |
| V | 623.640 | QP | 20.75 | 22.50 | 43.25 | 46.00 | -2.75 |
| V | 671.170 | QP | 21.50 | 13.16 | 34.66 | 46.00 | -11.34 |
| V | 695.420 | QP | 22.33 | 10.89 | 33.21 | 46.00 | -12.79 |
| H | 384.050 | QP | 16.74 | 19.88 | 36.62 | 46.00 | -9.38 |
| H | 407.330 | QP | 16.81 | 18.46 | 35.27 | 46.00 | -10.73 |
| H | 431.580 | QP | 18.12 | 19.49 | 37.61 | 46.00 | -8.39 |
| H | 527.610 | QP | 19.65 | 22.05 | 41.70 | 46.00 | -4.30 |
| H | 623.640 | QP | 20.88 | 21.96 | 42.83 | 46.00 | -3.17 |
| H | 677.960 | QP | 22.48 | 12.36 | 34.84 | 46.00 | -11.16 |

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

### 9.4.2 Calculation of Average Factor (Duty cycle correction factor)

The specification for output field strengths in accordance with the FCC rules specify measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Averaging factor in dB = 20log (dewll time /100 ms)

Dwell time = 0.23 ms × 1000Hz × 7.2sec (0.4 sec × 18 Ch) / 18 Ch / 5 (4 Tx, 1 Rx)
= 18.4 ms

Therefore, the averaging factor is fond by $20 \log_{10} 0.184 = -14.7$ dB

### 9.4.3 Measurement results: frequency above 1GHz

EUT : 02640
Test Condition : Tx at 2408.625 MHz

| Frequency (MHz) | Spectrum Analyzer Detector | Antenna Polariz. (H/V) | Correction Factor (dB/m) | Reading (dBuV) | Average Factor (dB) | Corrected Level (dBuV/m) | Limit @ 3 m (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 2313.20 | PK | V | 31.70 | 24.06 | 0.00 | 55.76 | 74.00 | -18.24 |
| 2313.20 | AV | V | 31.70 | 24.06 | -14.70 | 41.06 | 54.00 | -12.94 |
| 2360.80 | PK | V | 31.91 | 20.37 | 0.00 | 52.28 | 74.00 | -21.72 |
| 2360.80 | AV | V | 31.91 | 20.37 | -14.70 | 37.58 | 54.00 | -16.42 |
| 2313.20 | PK | H | 31.70 | 26.35 | 0.00 | 58.05 | 74.00 | -15.95 |
| 2313.20 | AV | H | 31.70 | 26.35 | -14.70 | 43.35 | 54.00 | -10.65 |
| 2360.80 | PK | H | 31.91 | 23.23 | 0.00 | 55.14 | 74.00 | -18.86 |
| 2360.80 | AV | H | 31.91 | 23.23 | -14.70 | 40.44 | 54.00 | -13.56 |
| 3210.00 | PK | V | -5.50 | 55.66 | 0.00 | 50.16 | 74.00 | -23.84 |
| 3210.00 | AV | V | -5.50 | 55.66 | -14.70 | 35.46 | 54.00 | -18.54 |
| 4816.00 | PK | V | -3.50 | 51.33 | 0.00 | 47.83 | 74.00 | -26.17 |
| 4816.00 | AV | V | -3.50 | 51.33 | -14.70 | 33.13 | 54.00 | -20.87 |
| 7224.00 | PK | V | 1.93 | 60.63 | 0.00 | 62.56 | 74.00 | -11.44 |
| 7224.00 | AV | V | 1.93 | 60.63 | -14.70 | 47.86 | 54.00 | -6.14 |
| 3210.00 | PK | H | -5.50 | 53.62 | 0.00 | 48.12 | 74.00 | -25.88 |
| 3210.00 | AV | H | -5.50 | 53.62 | -14.70 | 33.42 | 54.00 | -20.58 |
| 4816.00 | PK | H | -3.50 | 51.11 | 0.00 | 47.61 | 74.00 | -26.39 |
| 4816.00 | AV | H | -3.50 | 51.11 | -14.70 | 32.91 | 54.00 | -21.09 |
| 7224.00 | PK | H | 1.93 | 63.08 | 0.00 | 65.01 | 74.00 | -8.99 |
| 7224.00 | AV | H | 1.93 | 63.08 | -14.70 | 50.31 | 54.00 | -3.69 |

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain

EUT : 02640
Test Condition : Tx at 2440.125 MHz

| Frequency (MHz) | Spectrum Analyzer Detector | Antenna Polariz. (H/V) | Correction Factor (dB/m) | Reading (dBuV) | Average Factor (dB) | Corrected Level (dBuV/m) | Limit @ 3 m (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 3240.00 | PK | V | -5.52 | 51.59 | 0.00 | 46.07 | 74.00 | -27.93 |
| 3240.00 | AV | V | -5.52 | 51.59 | -14.70 | 31.37 | 54.00 | -22.63 |
| 4880.00 | PK | V | -3.38 | 55.22 | 0.00 | 51.84 | 74.00 | -22.16 |
| 4880.00 | AV | V | -3.38 | 55.22 | -14.70 | 37.14 | 54.00 | -16.86 |
| 7320.00 | PK | V | 2.20 | 62.94 | 0.00 | 65.14 | 74.00 | -8.86 |
| 7320.00 | AV | V | 2.20 | 62.94 | -14.70 | 50.44 | 54.00 | -3.56 |
| 3240.00 | PK | H | -5.52 | 49.45 | 0.00 | 43.93 | 74.00 | -30.07 |
| 3240.00 | AV | H | -5.52 | 49.45 | -14.70 | 29.23 | 54.00 | -24.77 |
| 4880.00 | PK | H | -3.38 | 52.94 | 0.00 | 49.56 | 74.00 | -24.44 |
| 4880.00 | AV | H | -3.38 | 52.94 | -14.70 | 34.86 | 54.00 | -19.14 |
| 7320.00 | PK | H | 2.20 | 64.76 | 0.00 | 66.96 | 74.00 | -7.04 |
| 7320.00 | AV | H | 2.20 | 64.76 | -14.70 | 52.26 | 54.00 | -1.74 |

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain

EUT : 02640
Test Condition : Tx at 2469.375 MHz

| Frequency (MHz) | Spectrum Analyzer Detector | Antenna Polariz. (H/V) | Correction Factor (dB/m) | Reading (dBuV) | Average Factor (dB) | Corrected Level (dBuV/m) | Limit @ 3 m (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 3270.00 | PK | V | -5.54 | 50.16 | 0.00 | 44.62 | 74.00 | -29.38 |
| 3270.00 | AV | V | -5.54 | 50.16 | -14.70 | 29.92 | 54.00 | -24.08 |
| 4938.00 | PK | V | -3.26 | 60.08 | 0.00 | 56.82 | 74.00 | -17.18 |
| 4938.00 | AV | V | -3.26 | 60.08 | -14.70 | 42.12 | 54.00 | -11.88 |
| 7407.00 | PK | V | 2.46 | 60.93 | 0.00 | 63.39 | 74.00 | -10.61 |
| 7407.00 | AV | V | 2.46 | 60.93 | -14.70 | 48.69 | 54.00 | -5.31 |
| 4938.00 | PK | H | -3.26 | 55.28 | 0.00 | 52.02 | 74.00 | -21.98 |
| 4938.00 | AV | H | -3.26 | 55.28 | -14.70 | 37.32 | 54.00 | -16.68 |
| 7407.00 | PK | H | 2.46 | 64.61 | 0.00 | 67.07 | 74.00 | -6.93 |
| 7407.00 | AV | H | 2.46 | 64.61 | -14.70 | 52.37 | 54.00 | -1.63 |

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain

## 10. Emission on the band edge §FCC 15.247(C)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 10.1 Test setup & procedure

Please refer to the clause 9.2 of this report.

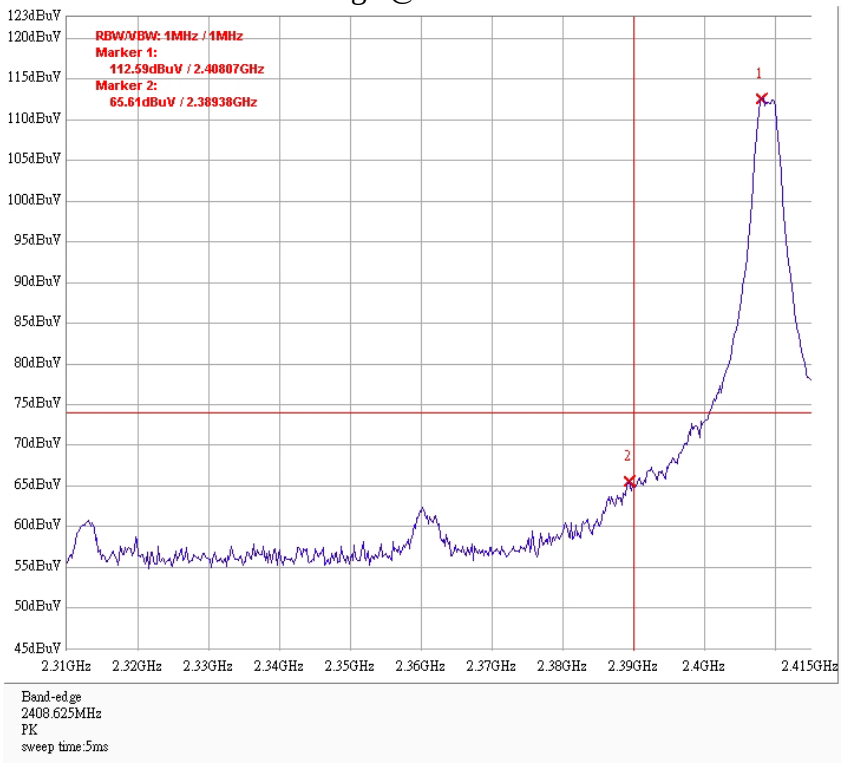
### 10.2 Test Result

| Channel | Measurement Freq.Band (MHz) | Detector | The Max. Field Strength in Restrict Band (dBuV/m) | Limit @ 3 m (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 3 (lowest) | 2310-2390 | PK | 65.61 | 74 | -8.39 |
| | | AV | 50.91 | 54 | -3.09 |
| 59 (highest) | 2483.5-2500 | PK | 61.31 | 74 | -12.69 |
| | | AV | 46.61 | 54 | -7.39 |

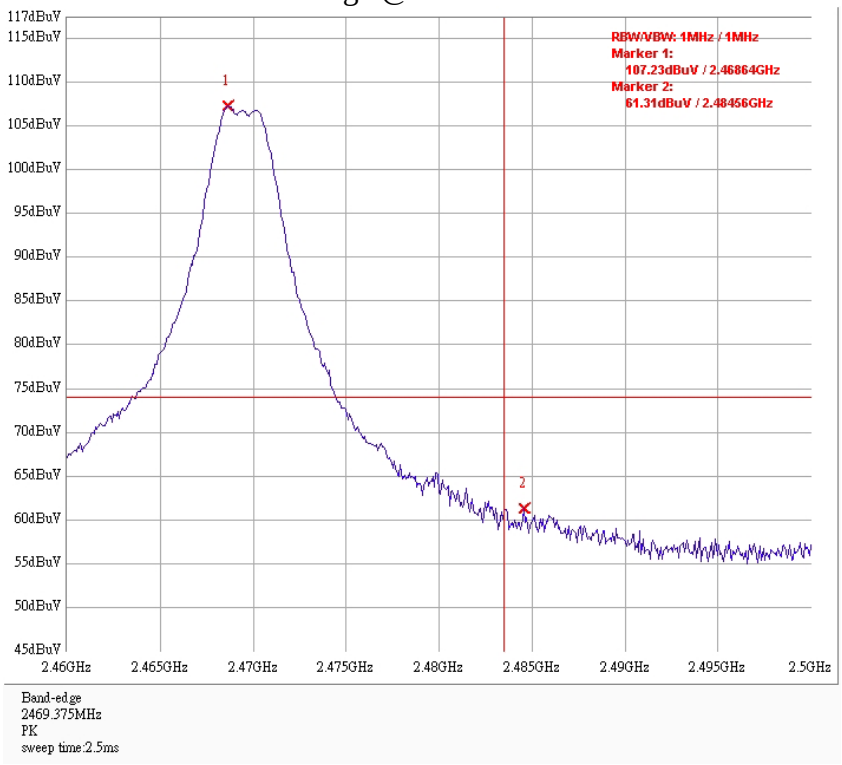
Note: Average Factor = -14.7 dB

### 10.2.1 Band-edge

Band edge @ channel 3 PK




Band edge @ channel 59 PK

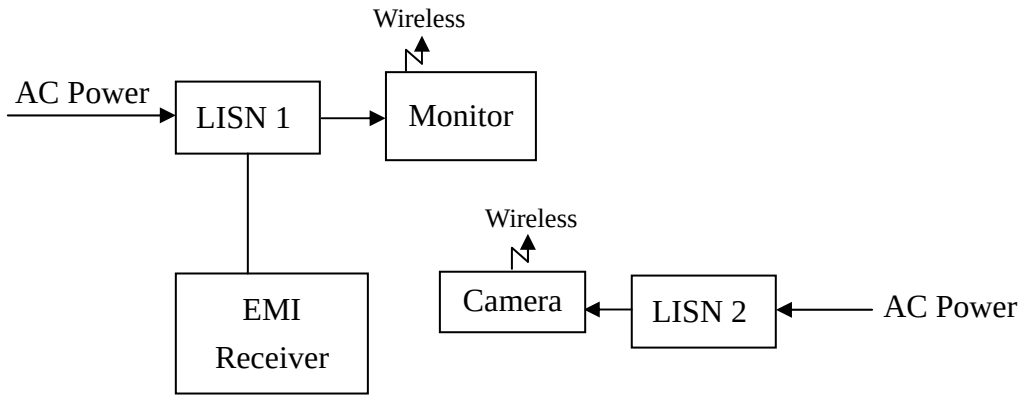


## 11. Power Line Conducted Emission test §FCC 15.207

### 11.1 Operating environment

| | | |
|---|---|---|
| Temperature: | 24 | ℃ |
| Relative Humidity: | 53 | % |
| Atmospheric Pressure | 1023 | hPa |

### 11.2 Test setup & procedure




**The test procedure was according to** ANSI C63.4/2003**.**

The EUT are connected to the main power through a line impedance stabilization network (LISN). 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.
Both sides (Line and Neutral) of AC 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 C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

### 11.3 Emission limit

| Freq. (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Q.P. | Ave. |
| 0.15~0.50 | 66 – 56* | 56 – 46* |
| 0.50~5.00 | 56 | 46 |
| 5.00~30.0 | 60 | 50 |

*Decreases with the logarithm of the frequency.

### 11.4 Uncertainty of Conducted Emission

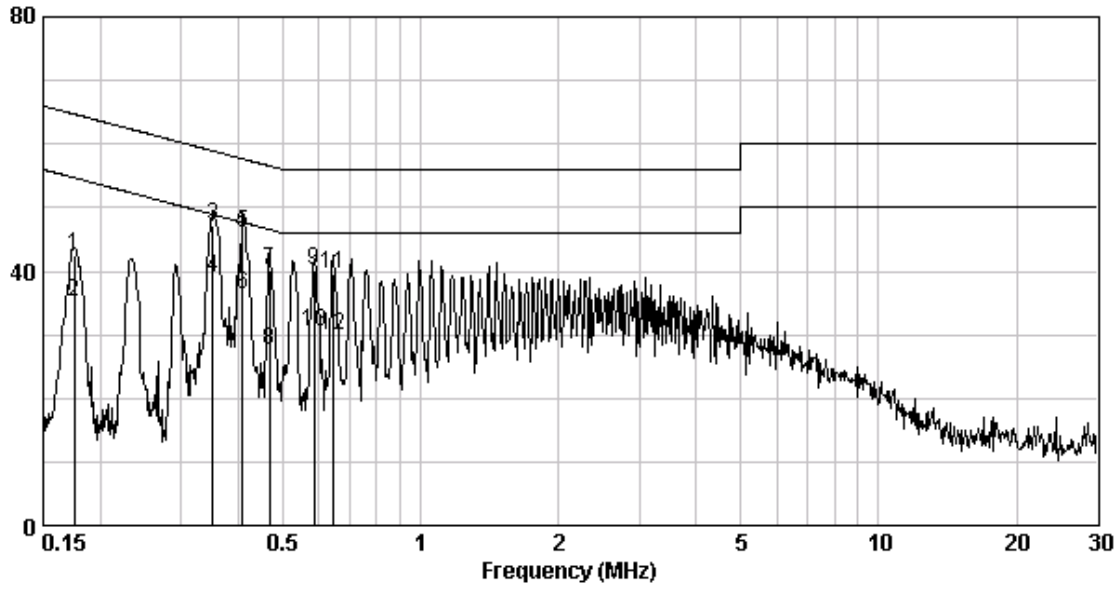
Expanded uncertainty (k=2) of conducted emission measurement is ±2.26 dB.

## 11.5 Power Line Conducted Emission test data

Phase : Line
EUT : 02640
Test Condition : Normal operating mode

| Frequency (MHz) | Corr. Factor (dB) | Level Qp (dBuV) | Limit Qp (dBuV) | Level AV (dBuV) | Limit Av (dBuV) | Margin (dB) Qp | Margin (dB) Av |
|---|---|---|---|---|---|---|---|
| 0.18 | 0.81 | 42.61 | 64.71 | 35.11 | 54.71 | -22.10 | -19.60 |
| 0.35 | 0.24 | 47.13 | 58.90 | 39.03 | 48.90 | -11.77 | -9.87 |
| 0.41 | 0.11 | 46.03 | 57.68 | 36.22 | 47.68 | -11.65 | -11.46 |
| 0.47 | 0.11 | 40.07 | 56.54 | 27.67 | 46.54 | -16.47 | -18.87 |
| 0.59 | 0.11 | 40.04 | 56.00 | 30.58 | 46.00 | -15.96 | -15.42 |
| 0.65 | 0.11 | 39.66 | 56.00 | 29.95 | 46.00 | -16.34 | -16.05 |

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : 02640
Test Condition : Normal operating mode

| Frequency (MHz) | Corr. Factor (dB) | Level Qp (dBuV) | Limit Qp (dBuV) | Level AV (dBuV) | Limit Av (dBuV) | Margin (dB) Qp | Margin (dB) Av |
|---|---|---|---|---|---|---|---|
| 0.18 | 0.11 | 39.42 | 64.68 | 27.65 | 54.68 | -25.26 | -27.03 |
| 0.23 | 0.11 | 36.06 | 62.30 | 25.62 | 52.30 | -26.25 | -26.69 |
| 0.35 | 0.11 | 41.15 | 58.91 | 31.97 | 48.91 | -17.77 | -16.95 |
| 0.41 | 0.11 | 39.31 | 57.68 | 28.85 | 47.68 | -18.37 | -18.83 |
| 0.47 | 0.11 | 34.04 | 56.54 | 20.41 | 46.54 | -22.50 | -26.13 |
| 0.65 | 0.11 | 34.87 | 56.00 | 23.48 | 46.00 | -21.13 | -22.52 |

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)