

**CONFORMANCE TEST REPORT****FOR****Subpart C Part 15.247****Report No. : JNDL-NU-15R-0006**

**Client:** JVM CO., Ltd.  
**Product:** Automated medication management system  
**Model:** JV-EH10  
**Manufacture/supplier:** JVM CO., Ltd.

**Date test item received:** July 07, 2015  
**Date test campaign completed:** July 23, 2015  
**Date of issue:** July 29, 2015

**ATTESTATION STATEMENT**

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards.

All **JNDL Laboratory. CO., LTD** instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

**Total number of pages of this test report : 52 pages**

| Test engineer                                                                       | Report reviewed by                                                                   |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| Byoung-Su, Shim                                                                     | Gye-Woog, Lee                                                                        |

## REPORT SUMMARY

|                        |                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------|
| Purpose of Test :      | To demonstrate the EUT in compliance with FCC Part 15 Subpart C for DTS (Part 15 Digital Transmission System) |
| Disclaimer :           | The test results relate only to the items tested.                                                             |
| Applicable Standards : | Pt 15.247, ANSI C63.4-2009                                                                                    |

## TEST ENVIRONMENT AND TEST SETUP

|                              |                                                                                                                                                                                                                                 |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Facilities :            | Test Firm Registration # : 748649<br>3m & 10m Open Site : 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea<br>3m semi-Anechoic chamber : B 114~115, 810 Kwanyang-Dong, dongan-Gu, Anyang-Si, Kyunggi-Do, 431-060, Korea |
| Laboratory Test Conditions : | Open Site : Temperature 30 °C, Humidity : 45 %<br>3m anechoic chamber : Temperature 24 °C, Humidity : 46 %                                                                                                                      |
| Test Exercise :              | The EUT was set in continuous transmit mode of operation unless stated otherwise.                                                                                                                                               |
| Modification to the EUT :    | No modification was made.                                                                                                                                                                                                       |
| Supporting Accessories :     | None                                                                                                                                                                                                                            |

## REVISION HISTORY

| Revision | Date          | Descriptions     |
|----------|---------------|------------------|
| 0        | July 29, 2015 | Original release |

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## 1. General Remarks

The test results in this report apply to the particular Equipment Under Test (EUT) as declared in this report.  
The test results presented in this report relate only to the item tested.

## 2. Test Site

### 2.1 Location

#### JNDL Laboratory. CO., LTD. (Test Firm Registration # : 748649)

3m anechoic chamber : B 114~115, 810 Kwanyang-Dong, dongan-Gu, Anyang-Si, Kyunggi-Do, Korea

3m & 10m Open site : 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea

### 2.2 List of Test equipment used for tests

| No.                                 | Instrument                                  | Model No.             | Due to Calibration | Manufacturer                                        | Serial No.  |
|-------------------------------------|---------------------------------------------|-----------------------|--------------------|-----------------------------------------------------|-------------|
| <input checked="" type="checkbox"/> | PSA SPECTRUM ANALYZER<br>(3 Hz ~ 26.5 GHz)  | E4440A                | 2016-01-06         | Agilent Technologies                                | MY46185375  |
| <input checked="" type="checkbox"/> | SPECTRUM ANALYZER<br>(9 KHz ~ 40 GHz)       | FSP40                 | 2015-10-13         | Rohde & Schwarz                                     | 100308      |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR<br>(10 MHz ~ 40 GHz)       | MG3694B               | 2015-10-15         | Anritsu Corp                                        | 062513      |
| <input checked="" type="checkbox"/> | POWER METER<br>(DC ~ 67 GHz)                | NRP2                  | 2015-10-14         | Rohde & Schwarz                                     | 100973      |
| <input checked="" type="checkbox"/> | POWER SENSOR<br>(50 MHz ~ 40 GHz)           | NRP-Z85               | 2015-10-14         | Rohde & Schwarz                                     | 101121      |
| <input checked="" type="checkbox"/> | POWER SENSOR<br>(9 KHz ~ 6 GHz)             | NRP-Z92               | 2015-10-14         | Rohde & Schwarz                                     | 100093      |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER<br>(9 KHz ~ 7 GHz)        | ESCI7                 | 2015-07-30         | Rohde & Schwarz                                     | 100933      |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER<br>(20 MHz ~ 1000 MHz)    | ESVS30                | 2015-10-14         | Rohde & Schwarz                                     | 828525/005  |
| <input checked="" type="checkbox"/> | AUTORAING POWER SUPPLY                      | E3630A                | 2015-10-13         | Agilent Technologies                                | MY40005094  |
| <input checked="" type="checkbox"/> | Active Loop Antenna                         | 6502                  | 2016-11-06         | ETS-LINDGREN                                        | 00148046    |
| <input checked="" type="checkbox"/> | BILOG ANTENNA<br>(30 MHz ~ 1000 MHz)        | VULB 9168             | 2017-03-15         | Schwarzbeck                                         | 9168-505    |
| <input checked="" type="checkbox"/> | HORN ANTENNA<br>(1 GHz ~ 18 GHz)            | BBHA 9120D            | 2016-10-14         | Schwarzbeck                                         | 568         |
| <input checked="" type="checkbox"/> | HORN ANTENNA<br>(18 GHz ~ 40 GHz)           | BBHA 9170             | 2015-09-06         | Schwarzbeck                                         | BBHA9170440 |
| <input type="checkbox"/>            | HORN ANTENNA<br>(18 GHz ~ 40 GHz)           | BBHA 9170             | 2015-09-06         | Schwarzbeck                                         | BBHA9170444 |
| <input checked="" type="checkbox"/> | Low Noise Amplifier<br>(100 MHz ~ 26.5 GHz) | TTA2650-HG            | 2016-05-06         | MITEQ                                               | 1881352     |
| <input type="checkbox"/>            | Low Noise Amplifier<br>(18 GHz ~ 40 GHz)    | AMF-6F-18004000-37-8P | 2015-10-14         | MITEQ                                               | 1814914     |
| <input checked="" type="checkbox"/> | High Pass Filter<br>(2.3 GHz ~ 18 GHz)      | WT-A1706-HS           | 2016-07-06         | Chengdu Microwave Communication Technology Co., Ltd | WT140626102 |
| <input checked="" type="checkbox"/> | EMI RECEIVER<br>(10 KHz ~ 30MHz)            | PMM 9010              | 2015.09.07         | Narda S.T.S/PMM                                     | 697WW40306  |

➔ All equipment is calibrated with traceable calibrations.

Each calibration is traceable to the national or international standards.

### 2.3 Test Date

Date of Application: July 10, 2015

Date of Test: July 14, 2015 ~ July 23, 2015

### 3. Product Information

#### 3.1 Manufacturers declarations

|                       |                                                                                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manufacturer :        | JVM Co., Ltd.                                                                                                                                                                                                                                            |
| Product Description : | Supporting 7 days/15 days/30days replaceable medicine containers<br>Automatic medicine recognition installation function<br>Automatic cut off<br>Medicine dose pre-discharge function<br>Communication function<br>Supporting convenient touch-screen UI |
| FCC ID :              | 2AF6G-JVEH10                                                                                                                                                                                                                                             |
| Model Name :          | JV-EH10                                                                                                                                                                                                                                                  |
| Multiple Model Name : |                                                                                                                                                                                                                                                          |
| Operating Frequency : | 2 402 MHz to 2 480 MHz and Channel Spacing 1 MHz (79 Ch)                                                                                                                                                                                                 |
| Type of Modulation :  | FHSS (GFSK (BDR), 8DPSK (EDR))                                                                                                                                                                                                                           |
| Air Data Rate :       | BDR (1 Mbps), EDR (2 Mbps, 3 Mbps)                                                                                                                                                                                                                       |
| Antenna Type :        | Chip Antenna                                                                                                                                                                                                                                             |
| Antenna Gain :        | 2.5 dBi max                                                                                                                                                                                                                                              |
| RF Power :            | 1.47 mW                                                                                                                                                                                                                                                  |
| EUT Power Source :    | Primary power – Direct plug type adapter                                                                                                                                                                                                                 |
|                       | Secondary Power – N/A                                                                                                                                                                                                                                    |

➔ All the testing were performed according to the procedures in FCC Parts 15.247  
The EUT was operation in special test mode.

### 3.2 General Specification

| Item                                                               | Spec                                                                |
|--------------------------------------------------------------------|---------------------------------------------------------------------|
| Model No.                                                          | JV-EH10                                                             |
| Container Volume                                                   | 7, 15, 30 days                                                      |
| Dimensions(WxDxHmm)                                                | 176x374(D1)x261(H1),176x458(D2)x282.5(H2),<br>176x508(D3)x307.5(H3) |
| Weight(kg)                                                         | About 6.5                                                           |
| Pouch Size(mm)                                                     | 70 x 75                                                             |
| Max. Number of pouch canbe installed<br>(on the basis of 20 pills) | 28 , 60, 120 pouches                                                |
| Max. Number of the skipped pouch                                   | 3 pouches                                                           |
| Display                                                            | 4.3" TFT LCD                                                        |
| Power Consumption                                                  | 12V DC, 30W                                                         |
| Power Supply                                                       | 110-240V~, 50/60Hz                                                  |
| Operation Temperature                                              | 10 °C ~ 40 °C                                                       |

## 4. Description of Tests

The tests documented in this report were performed in accordance with ANSI C63.4-2009 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

### 4.1 Radiated Emission Measurement

Radiated emission measurements were made in accordance with § 13 in ANSI C63.4-2009 "Measurement of Intentional radiators" The measurements were performed over the frequency range of 30 MHz to 40 GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak, Quasi-peak, Average" within a bandwidth of 120 kHz and above 1 GHz is 1 MHz.

Preliminary measurements were made at 3 m using broadband antennas, and spectrum analyzer to determine the frequency producing the maximum emission in shielded room. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1 000 MHz using Log-Bicon antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used. Final measurements were made open site or SVSWR chamber at 3 m. The test equipment was placed on a styrofoam table. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8 m high nonmetallic 1.0 m x 1.5 m table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 m to 4 m and stopped at the azimuth or height producing the maximum emission.

Varying the mode of operating frequencies of the EUT maximized each emission. The system was tested in all the three orthogonal planes and changing the polarity of the antenna. The worst-case emissions are recorded in the data tables. If necessary, the radiated emission measurement could be performed at a closer distance to ensure higher accuracy and the results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20 dB/decade) as per section 15.31(f).

Photographs of the worst-case emission can be seen in Photographs of the worst-case emission test setup can be seen in Appendix B.

## 4.2 Conducted Emission Measurement

Conducted emissions measurements were made in accordance with section § 13 in ANSI C63.4-2009 "measurement of intentional radiators" The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50  $\Omega$ /50  $\mu$ H LISN as the input transducer to a Spectrum Analyzer or a Test Receiver. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 9 kHz or for "quasi-peak" within a bandwidth of 9 kHz.

The line-conducted emission test is conducted inside a shielded anechoic chamber room with 1 m x 1.5 m x 0.8 m wooden table which is placed 0.4 m away from the vertical wall and 1.5 m away from the side wall of the chamber room. Two LISN are bonded to the shielded room. The EUT is powered from the LISN and the support equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner  $\phi$  1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and these supply lines will be connected to the LISN. Non-inductive bundling to a 1 m length shortened all interconnecting cables more than 1 m. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the EMI Test Receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using to set Quasi-Peak mode by manual, after scanned by automatic Peak mode from 0.15 MHz to 30 MHz. The bandwidth of the spectrum analyzer was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission.

Photographs of the worst-case emission can be seen in Photographs of the worst-case emission test setup can be seen in Appendix B.

### 4.3 FCC Part 15.205 Restricted Bands of Operations

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                     | MHz               | GHz              |
|----------------------------|-------------------------|-------------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423          | 399.9 - 410       | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.694 75 - 16.695 25   | 608 - 614         | 5.35 - 5.46      |
| 2.173 5 - 2.190 5          | 16.804 25 - 16.804 75   | 960 - 1 240       | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67            | 1 300 - 1 427     | 8.025 - 8.5      |
| 4.177 25 - 4.177 75        | 37.5 - 38.25            | 1 435 - 1 626.5   | 9.0 - 9.2        |
| 4.207 25 - 4.207 75        | 73 - 74.6               | 1 645.5 - 1 646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2             | 1 660 - 1 710     | 10.6 - 12.7      |
| 6.267 75 - 6.268 25        | 108 - 121.94            | 1 718.8 - 1 722.2 | 13.25 - 13.4     |
| 6.311 75 - 6.312 25        | 123 - 138               | 2 200 - 2 300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05          | 2 310 - 2 390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.524 75 - 156.525 25 | 2 483.5 - 2 500   | 17.7 - 21.4      |
| 8.376 25 - 8.386 75        | 156.7 - 156.9           | 2 690 - 2 900     | 22.01 - 23.12    |
| 8.414 25 - 8.414 75        | 162.012 5 - 167.17      | 3 260 - 3 267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2          | 3 332 - 3 339     | 31.2 - 31.8      |
| 12.519 75 - 12.520 25      | 240 - 285               | 3 345.8 - 3 358   | 36.43 - 36.5     |
| 12.576 75 - 12.577 25      | 322 - 335.4             | 3 600 - 4 400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                         |                   |                  |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490 MHz - 0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1 000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 5. TEST CONDITION

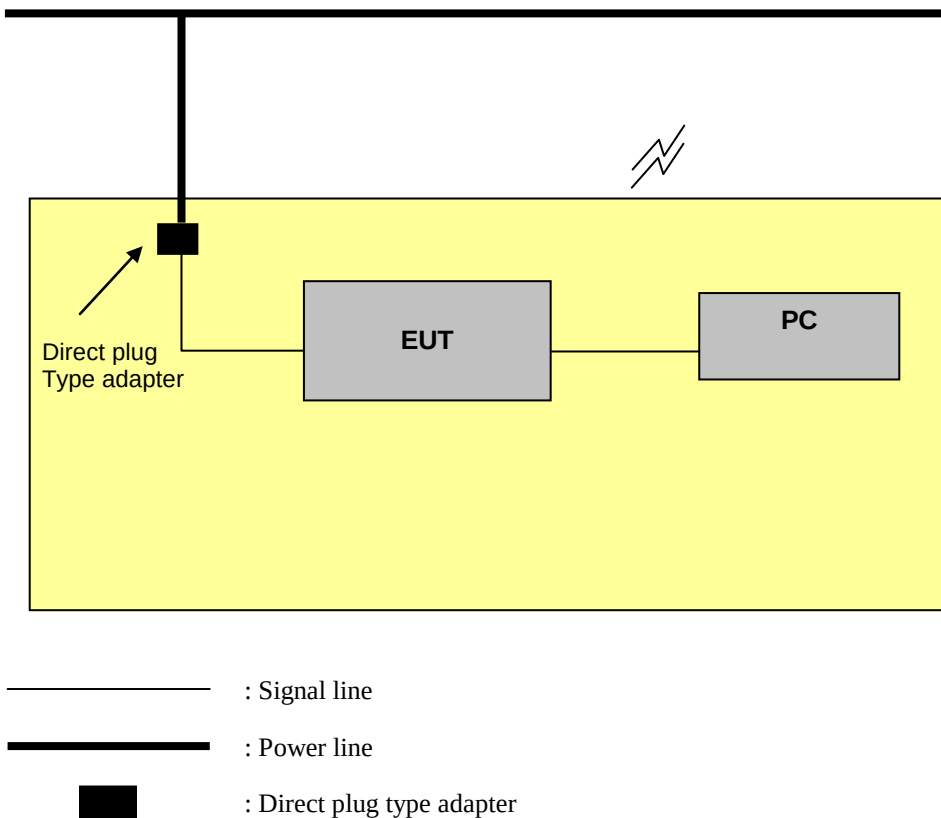
### 5.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the following conditions and configurations were used.

### 5.2 Description of Test modes

Automated medication management system that has the control software.

### 5.3 The setup drawing(s)



## 6. TEST RESULTS

### 6.1 Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

| 47 CFR Part 15, Subpart C | Measurement Required                    | Result |
|---------------------------|-----------------------------------------|--------|
| 15.247(a)(1)              | Channel Bandwidth, Frequency Separation | Pass   |
| 15.247(b)(3)              | Maximum Peak Output Power               | Pass   |
| 15.247(d)                 | Bandwidth of Frequency Band Edges       | Pass   |
| 15.247(a)(1)(iii)         | Number of Hopping Channels              | Pass   |
| 15.247(a)(1)(iii)         | Time of Occupancy (Dwell time)          | Pass   |
| 15.209(a)                 | Spurious Emissions                      | Pass   |
| 15.207                    | Conducted Emissions                     | Pass   |
| 15.247(i)<br>1.1307(b)(1) | RF Exposure                             | Pass   |

The data collected shows that the **JVM Co., Ltd / Automated medication management system / JV-EH10** complied with technical requirements of above rules part 15.207, 209 and 15.247 Limits.

The equipment is not modified anything, mechanical or circuits to improve EMI status during a measurement. No EMI suppression device(s) was added and/or modified during testing.

## 6.2 Channel Bandwidth and Frequency Separation

### 6.2.1 Channel Bandwidth

| Type of Modulation | Frequency [MHz] | 20 dB Bandwidth [MHz] | Limit                                                        |
|--------------------|-----------------|-----------------------|--------------------------------------------------------------|
| BDR                | 2 402           | 0.858.                | 2/3 of the 20 dB Bandwidth<br>< Carrier frequency separation |
|                    | 2 441           | 0.868                 |                                                              |
|                    | 2 480           | 0.861                 |                                                              |
| EDR                | 2 402           | 1.184                 |                                                              |
|                    | 2 441           | 1.176                 |                                                              |
|                    | 2 480           | 1.174                 |                                                              |

NOTES:

1. Measure frequency separation of relevant channel using spectrum analyzer.
2. Please see the measured plot in next page.

### 6.2.2 Frequency Separation

Frequency hopping systems operating in the 2 400.0 MHz - 2 483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

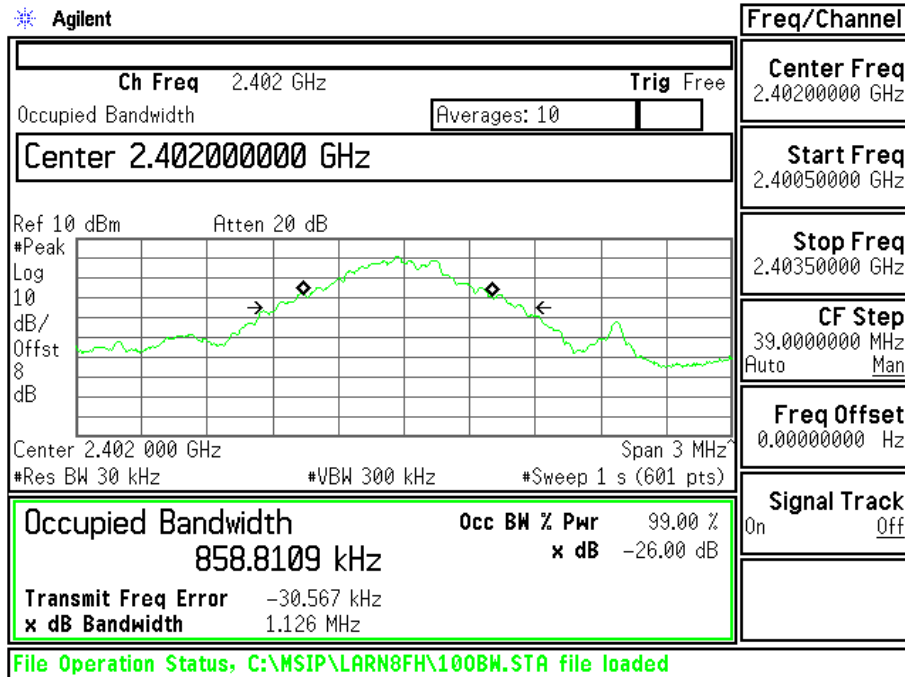
| Type of Modulation | EUT Channel Separation [MHz] | 20 dB bandwidth [MHz] | Limit                                       |
|--------------------|------------------------------|-----------------------|---------------------------------------------|
| BDR                | 1.000 (Worst)                | 0.985 (Worst)         | > 25 kHz or<br>> 2/3 of the 20 dB Bandwidth |
| EDR                | 1.000 (Worst)                | 0.999 (Worst)         |                                             |

NOTES:

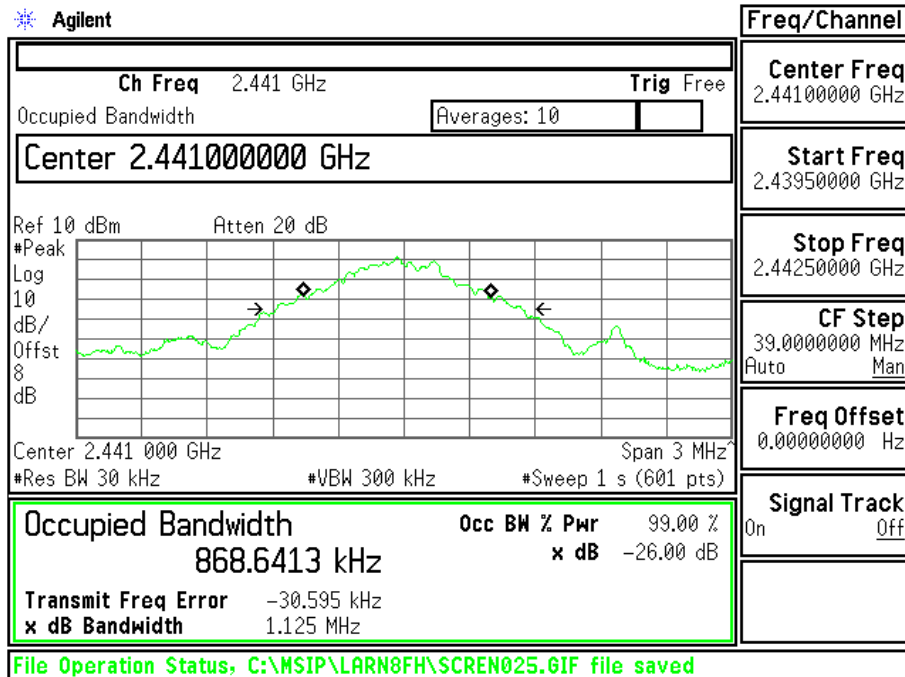
1. Measure frequency separation of relevant channel using spectrum analyzer.
2. Please see the measured plot in next page.

## Plots of 20 dB Bandwidth (BDR)

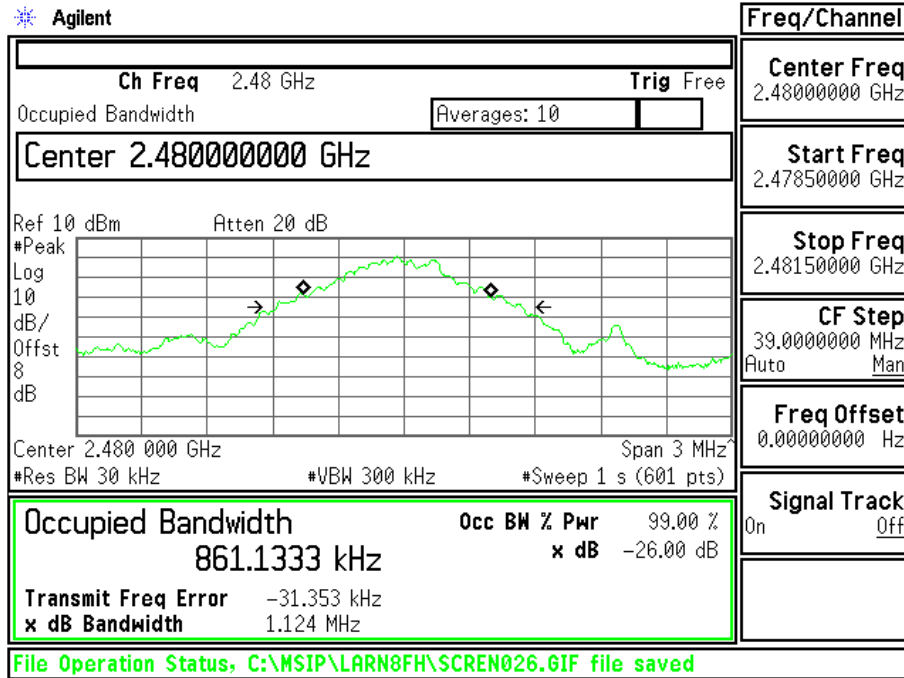
[2 402 MHz]



[2 441 MHz]

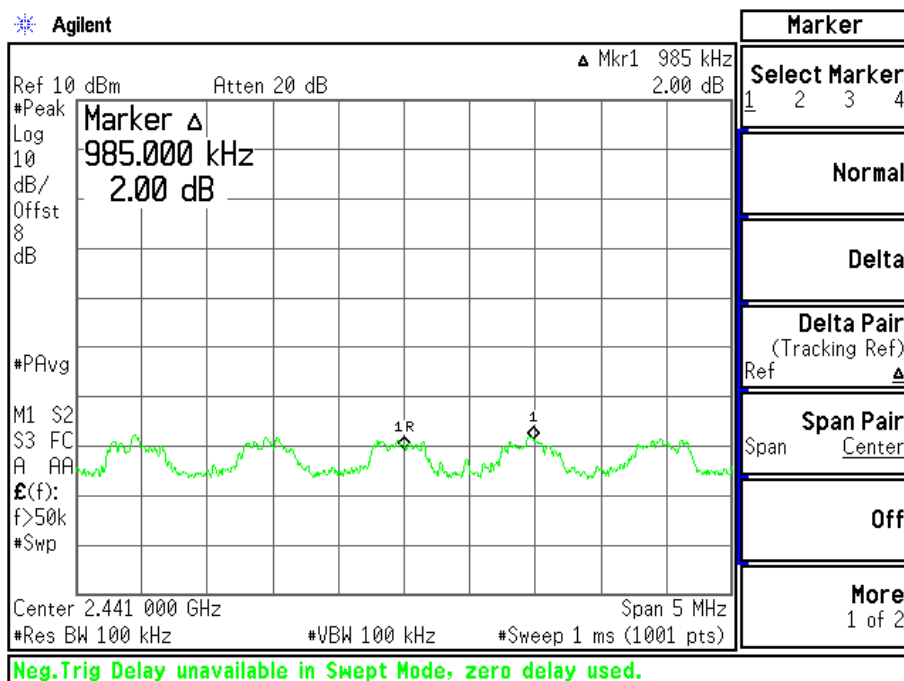


[2 480 MHz]



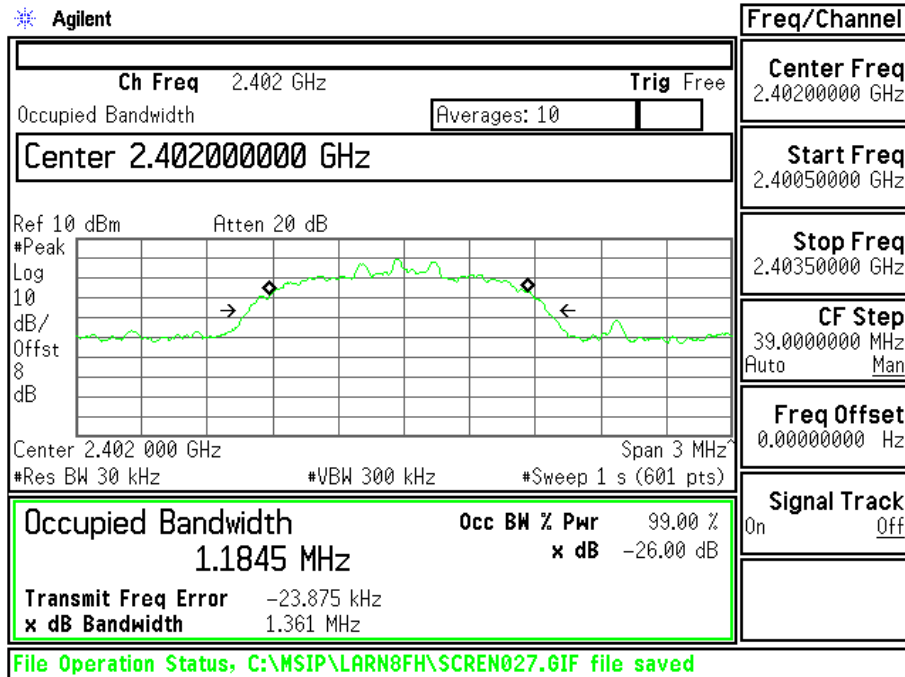
## Plots of Frequency Separation (BDR)

[Channel Separation]

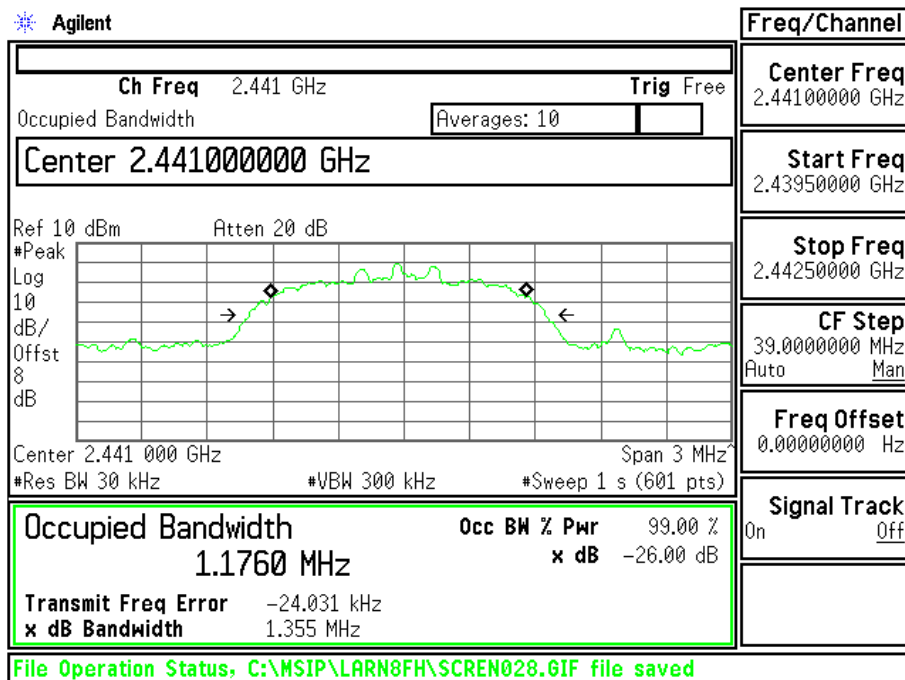


## Plots of 20 dB Bandwidth (EDR)

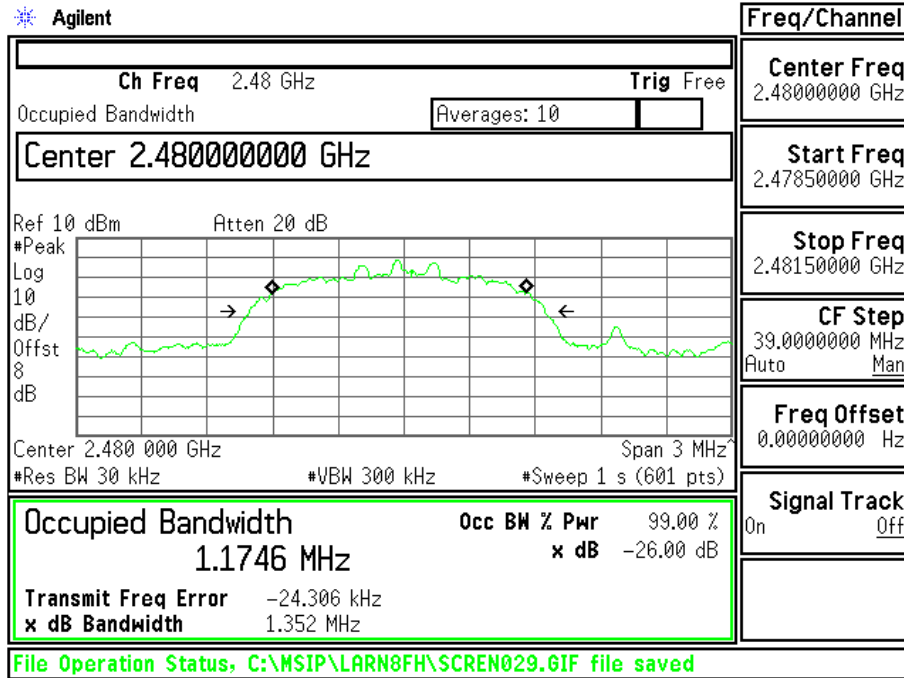
[2 402 MHz]



[2 441 MHz]

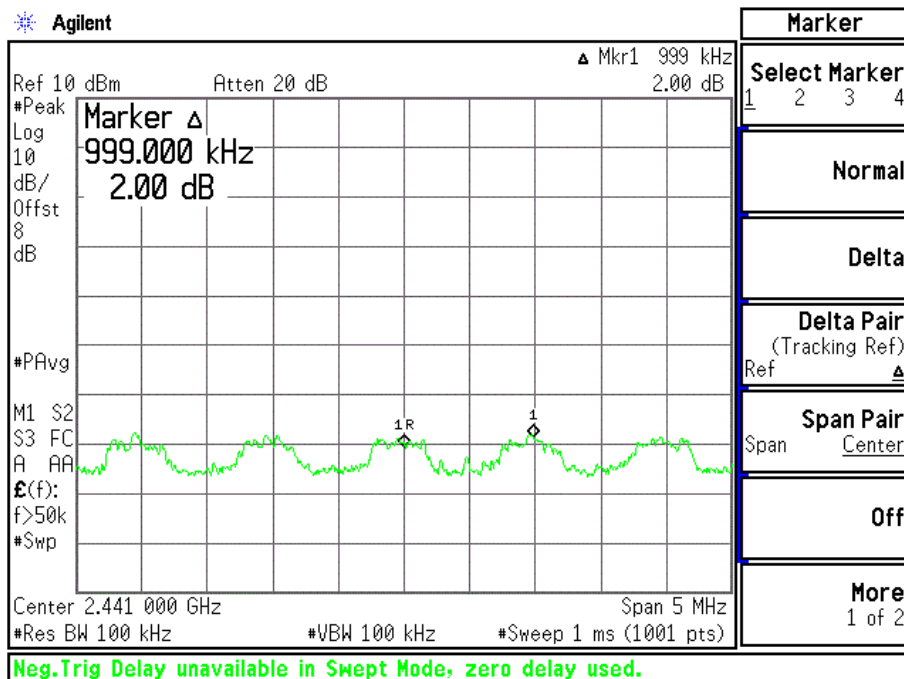


[2 480 MHz]



## Plots of Frequency Separation (EDR)

[Channel Separation]



### 6.3 Maximum Peak Conducted Output Power

#### Limit

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

For frequency hopping systems operating in the 2 400.0 MHz - 2 483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 Watt

#### Test Data

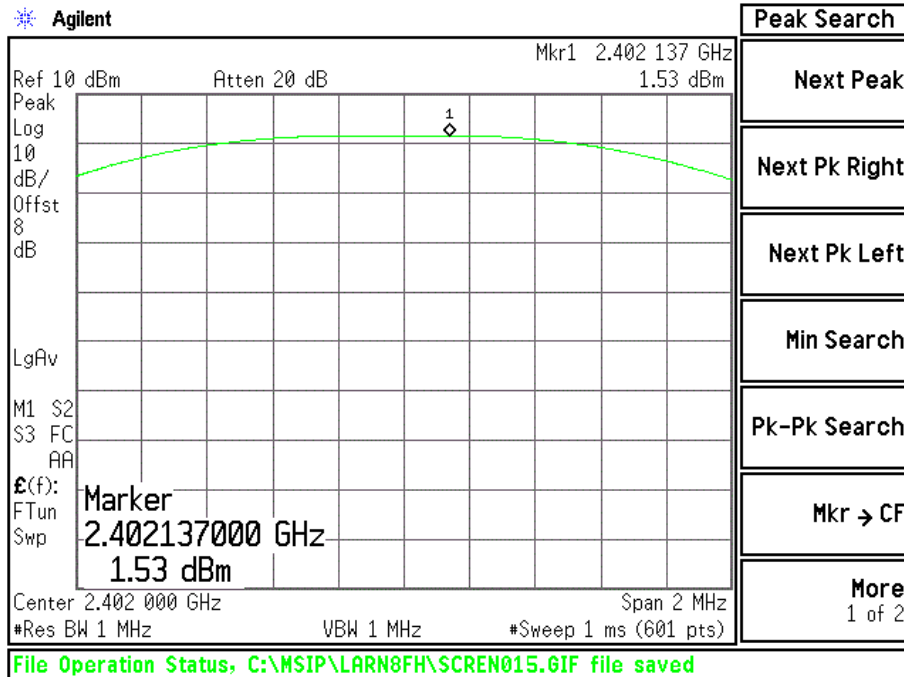
| Type of Modulation | Channel | Frequency [MHz] | Output Power [dBm] | Limit          |
|--------------------|---------|-----------------|--------------------|----------------|
| BDR                | Low     | 2 402           | 1.53               | < 30 dBm (1 W) |
|                    | Mid     | 2 441           | 1.68               |                |
|                    | High    | 2 480           | 1.52               |                |
| EDR                | Low     | 2 402           | 0.75               |                |
|                    | Mid     | 2 441           | 0.82               |                |
|                    | High    | 2 480           | 0.33               |                |

#### NOTES:

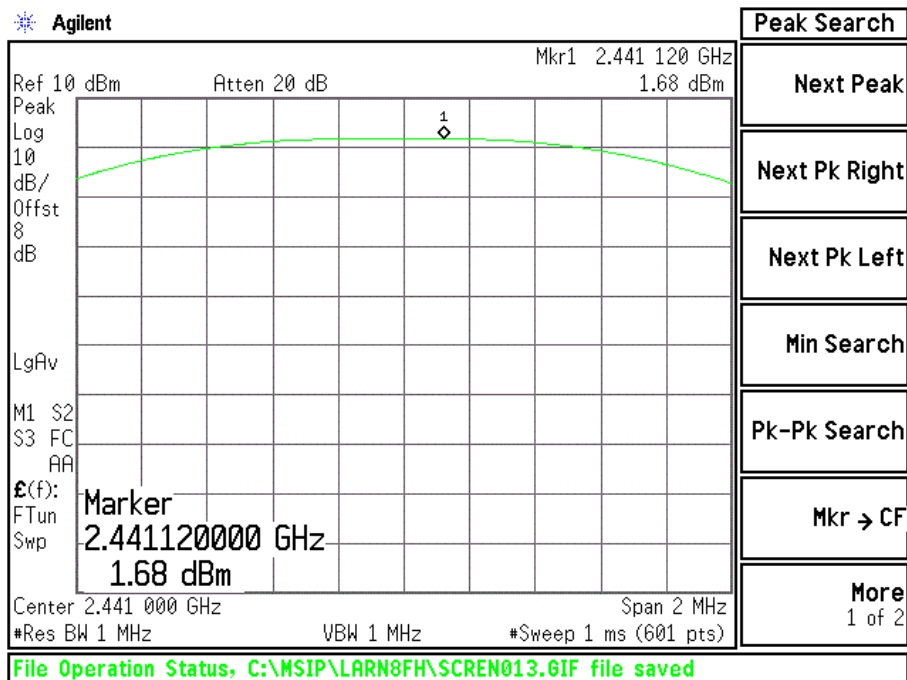
1. Measure conducted Channel power of relevant channel using Spectrum analyzer
2. RBW 1 MHz, VBW 1 MHz
3. Please see the measured plot in next page.

## Plots of Maximum Peak Output Power (BDR)

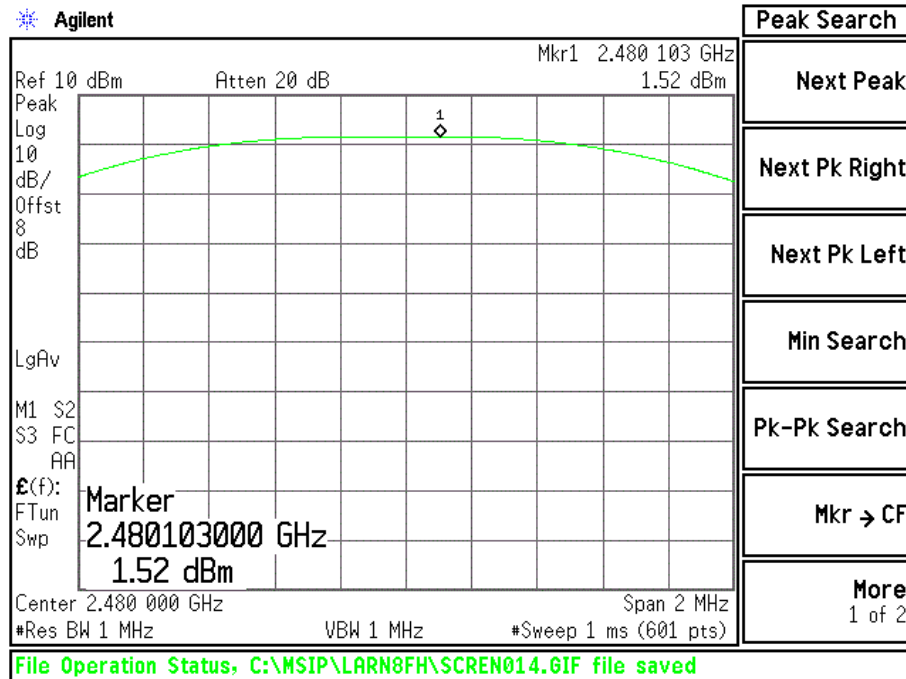
[2 402 MHz]



[2 441 MHz]

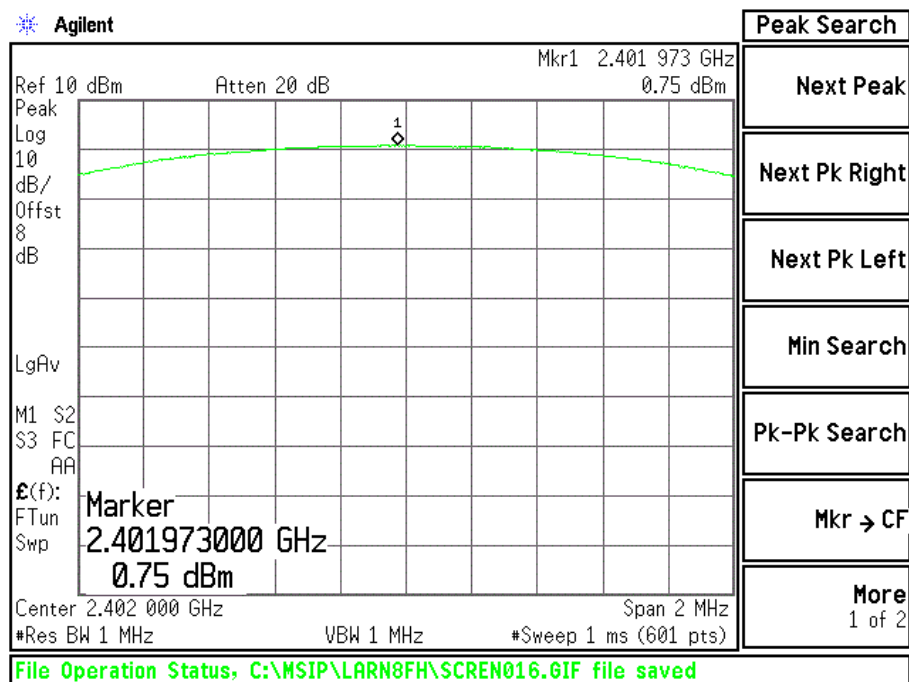


[2 480 MHz]

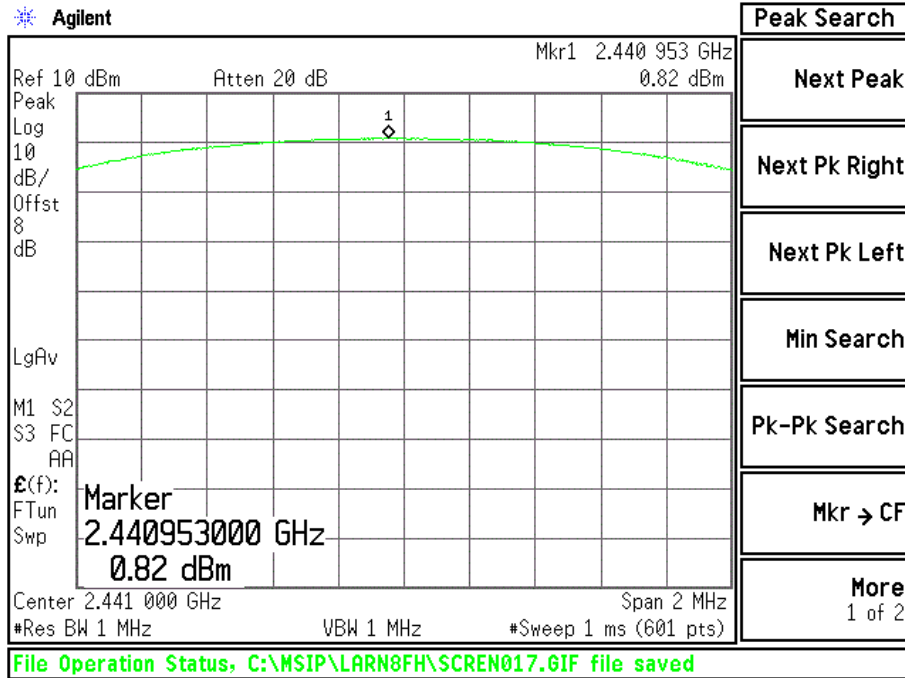


## Plots of Maximum Peak Output Power (EDR)

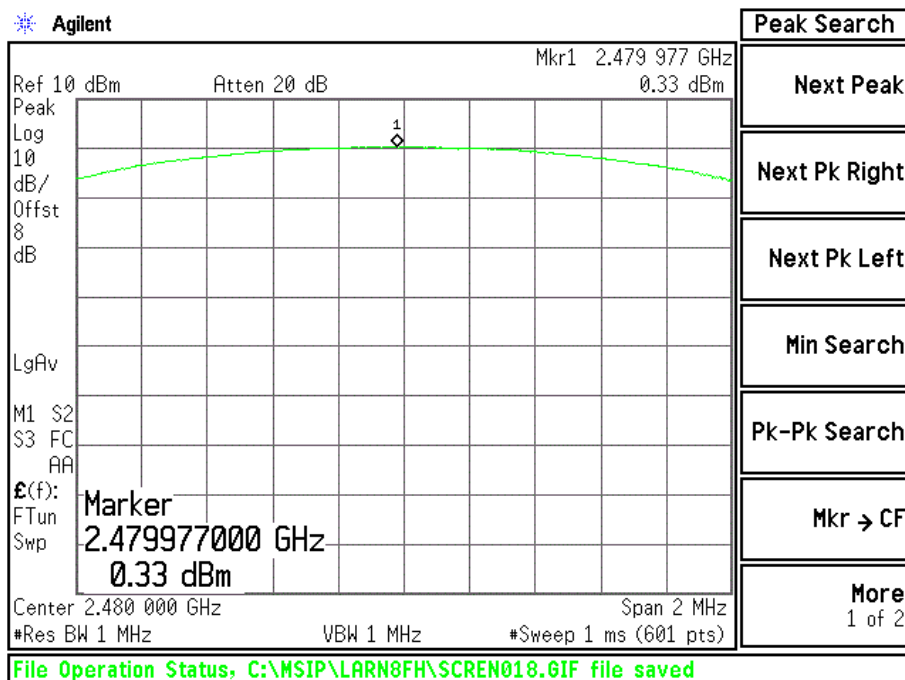
[2 402 MHz]



[2 441 MHz]



[2 480 MHz]



## 6.4 Bandwidth of Frequency Band Edges

### Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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)).

### Test Results

- Refer to see the measured plot in next page.

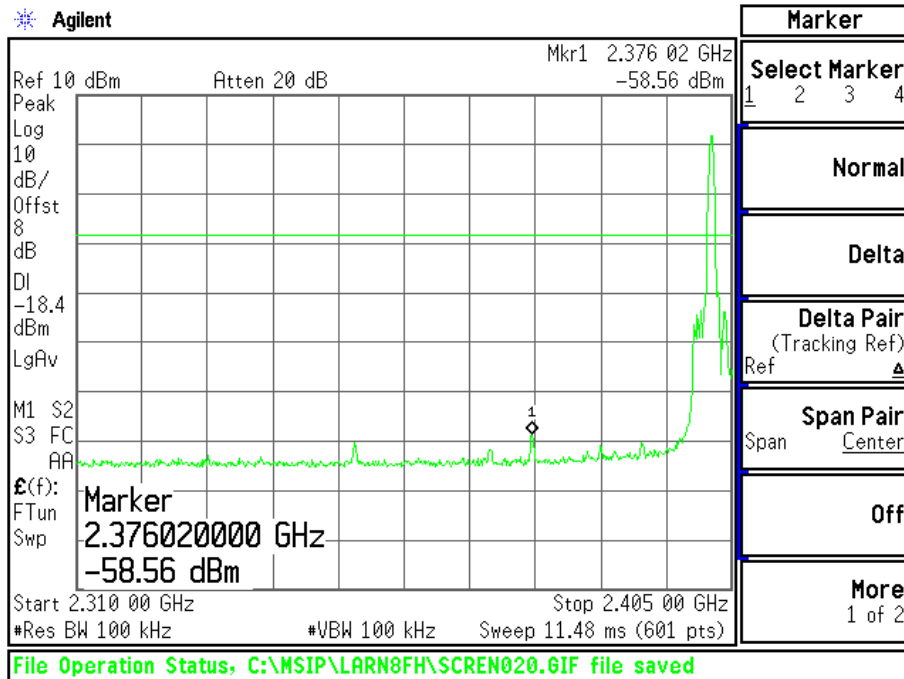
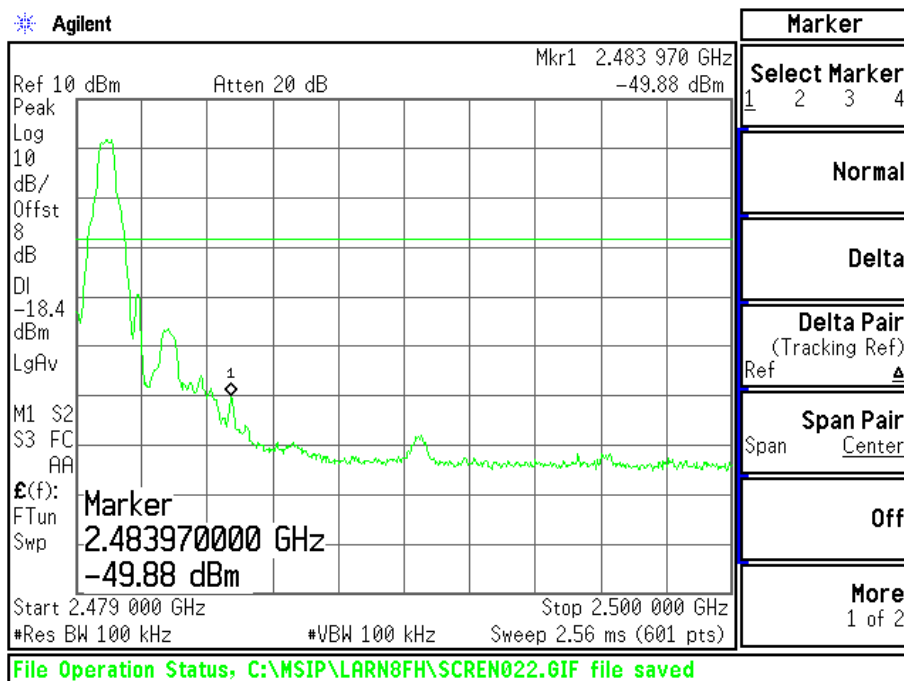
### NOTES:

1. The test was performed to make a direct field strength measurement at the band edge frequencies.

## Plots of Bandwidth of Frequency Band Edges (BDR)

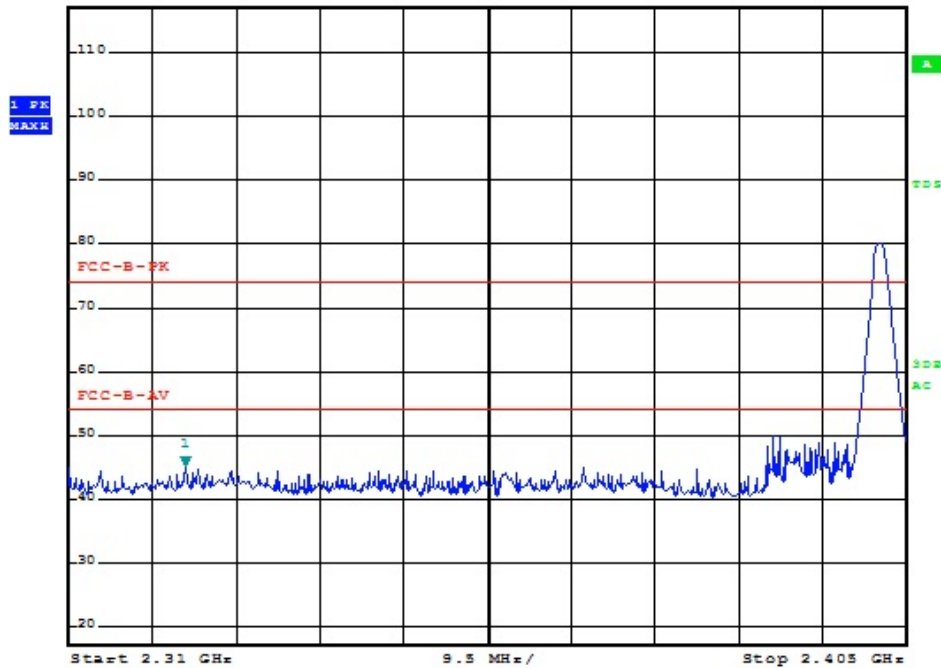
[Non-hopping mode]

Conducted

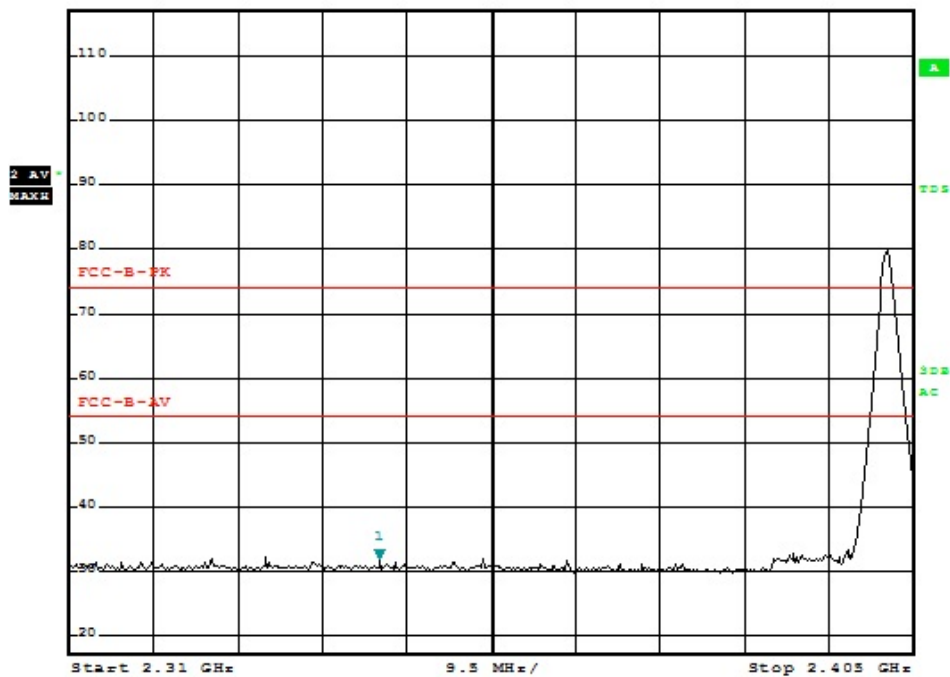


## Radiated

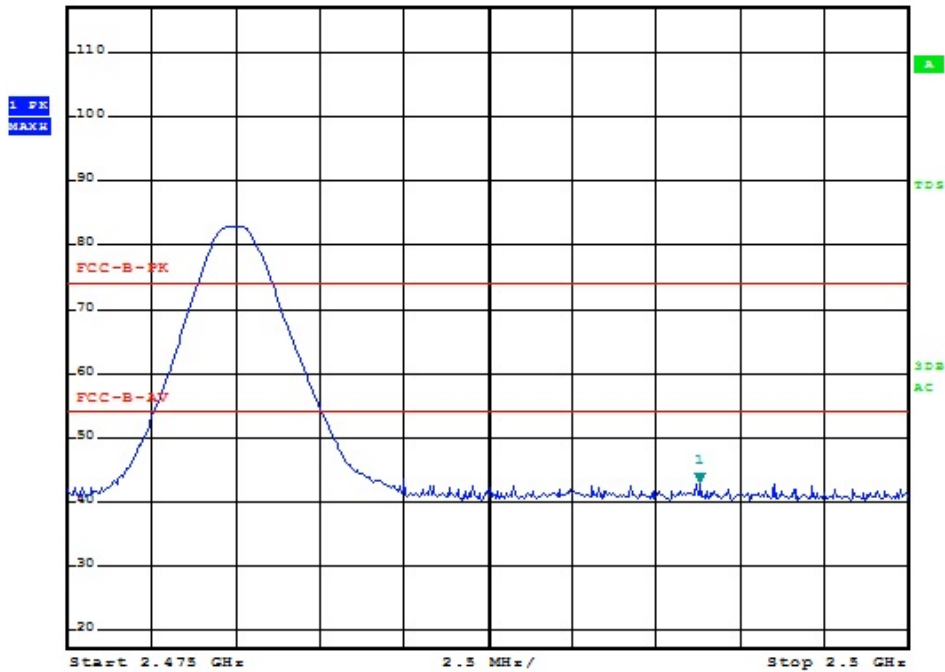
Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



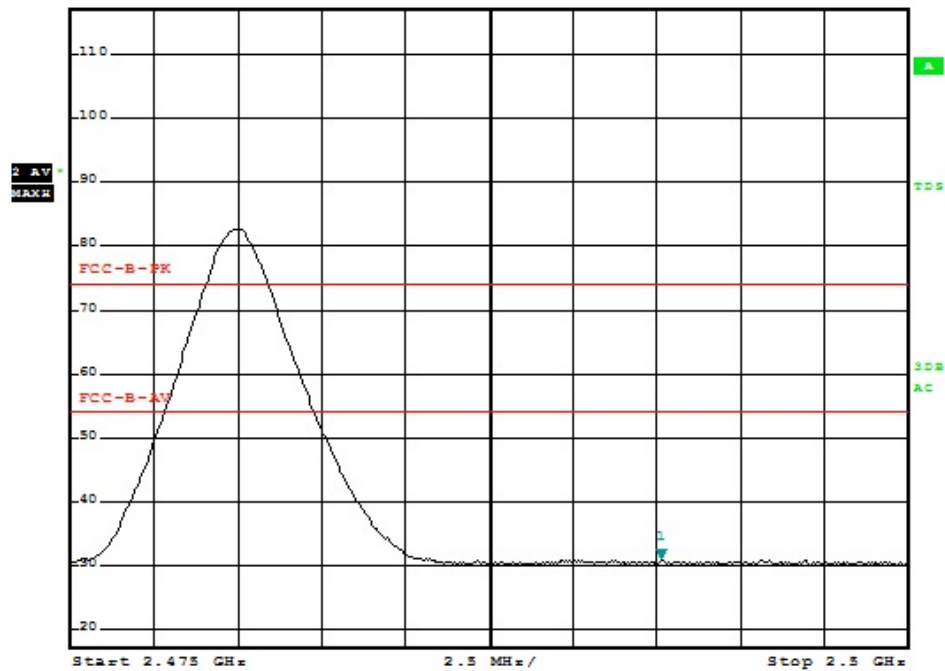
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



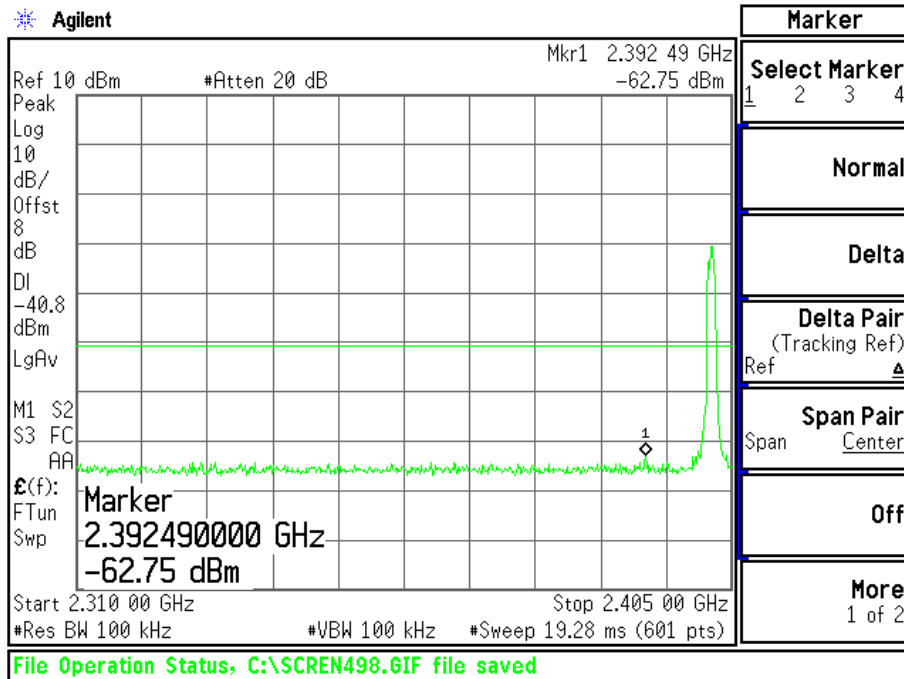
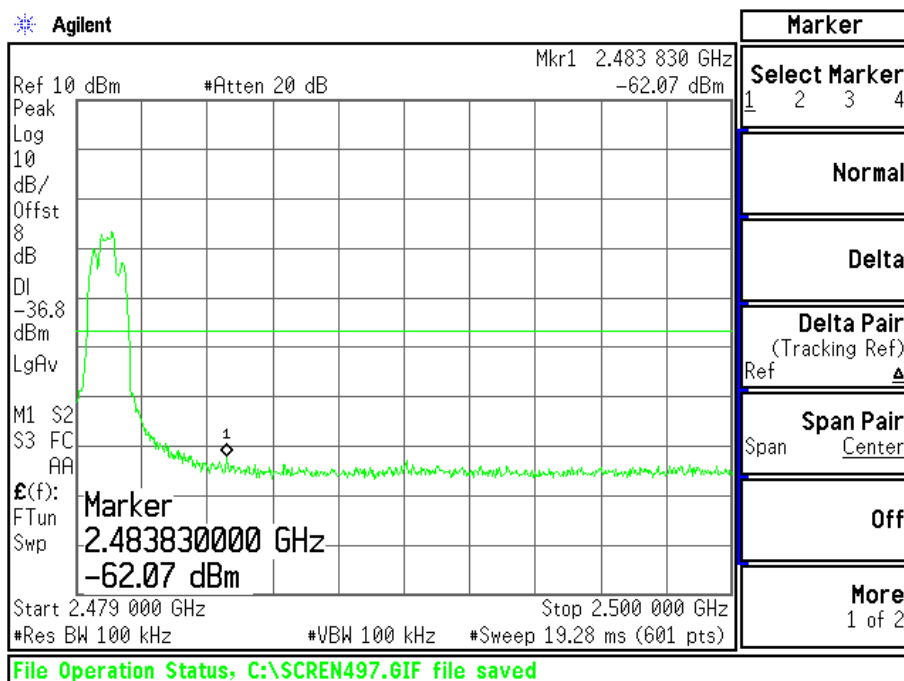
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



## Plots of Bandwidth of Frequency Band Edges (EDR)

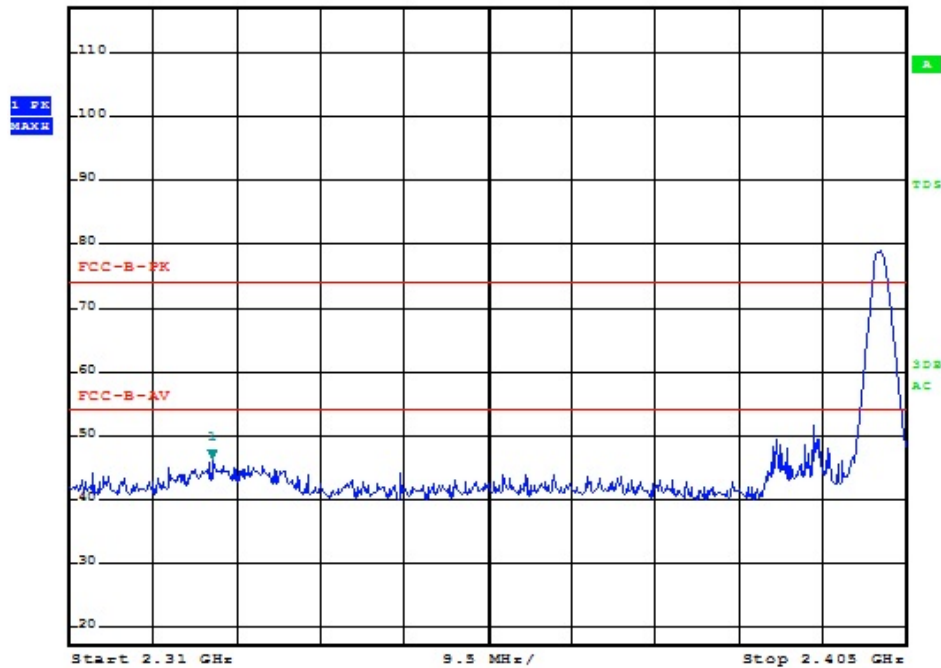
[Non-hopping mode]

Conducted

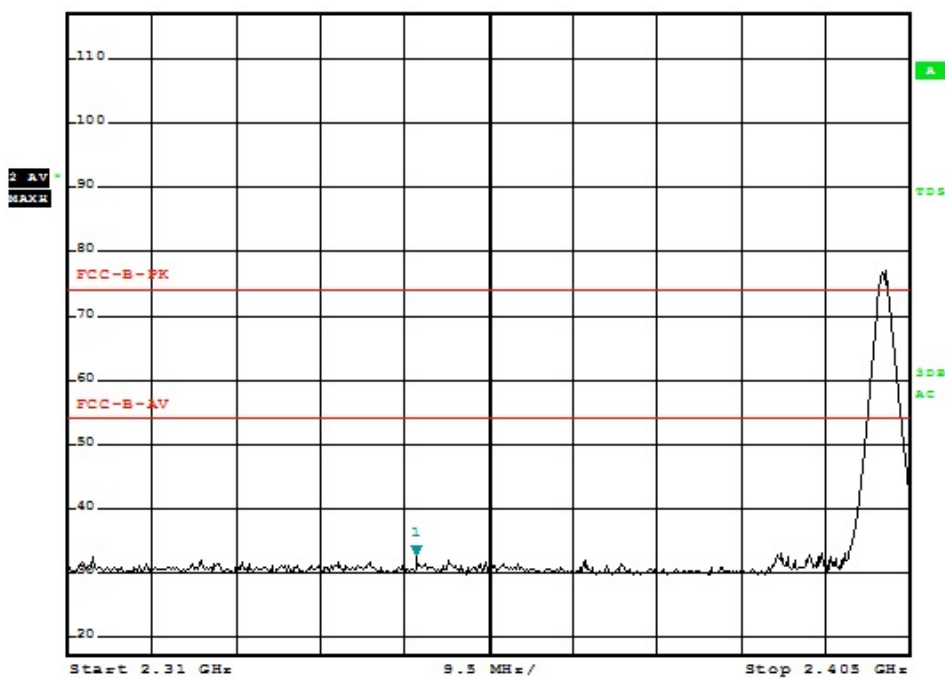


## Radiated

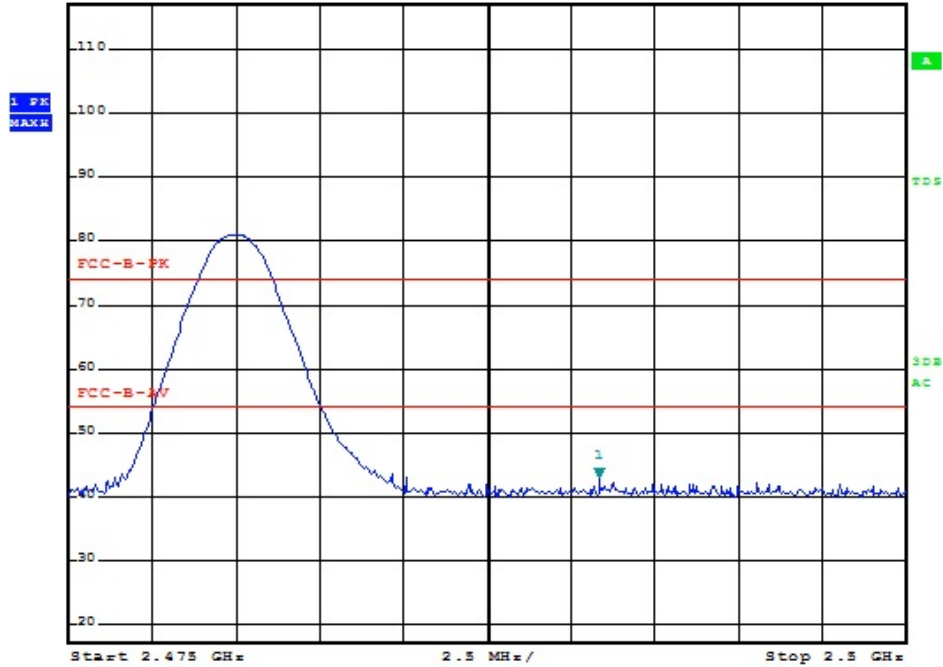
Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



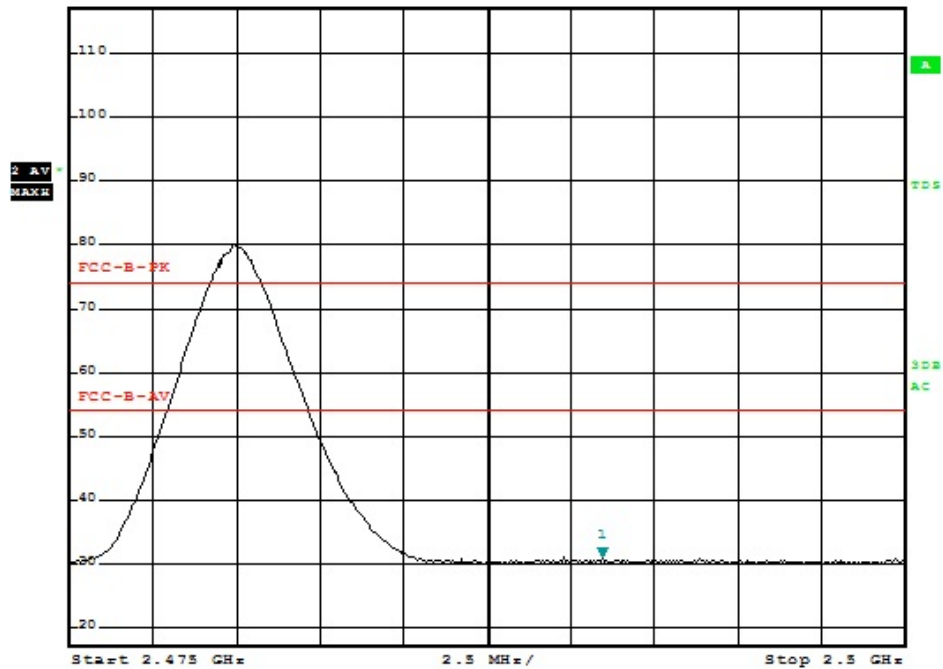
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



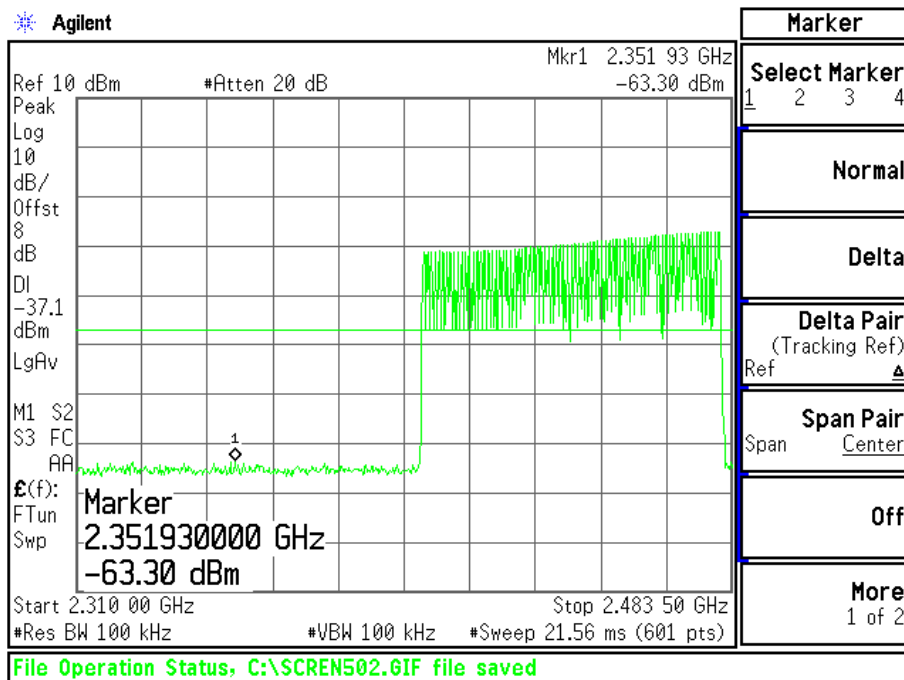
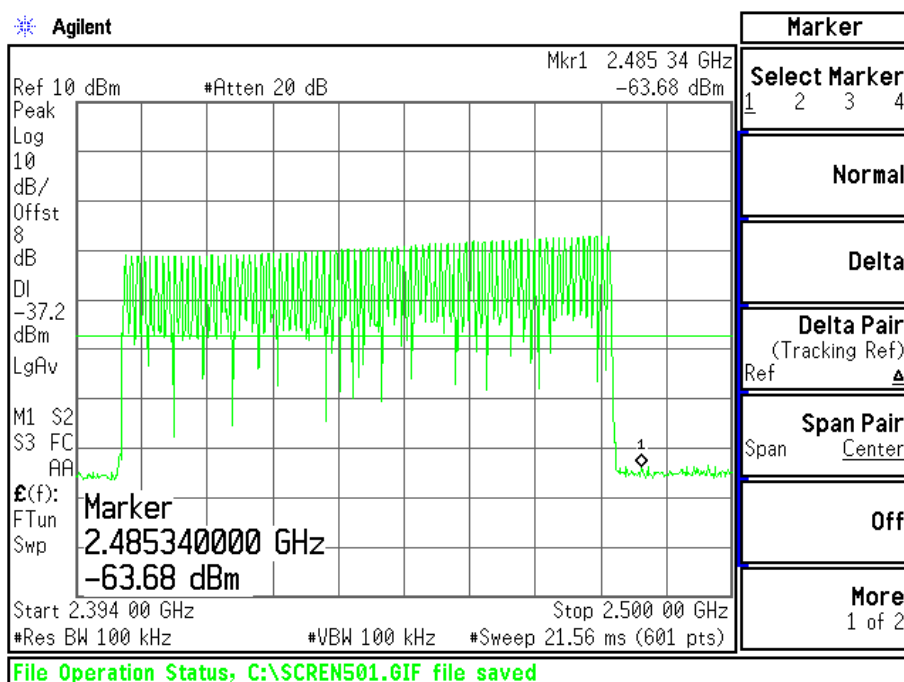
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



## Plots of Bandwidth of Frequency Band Edges (BDR)

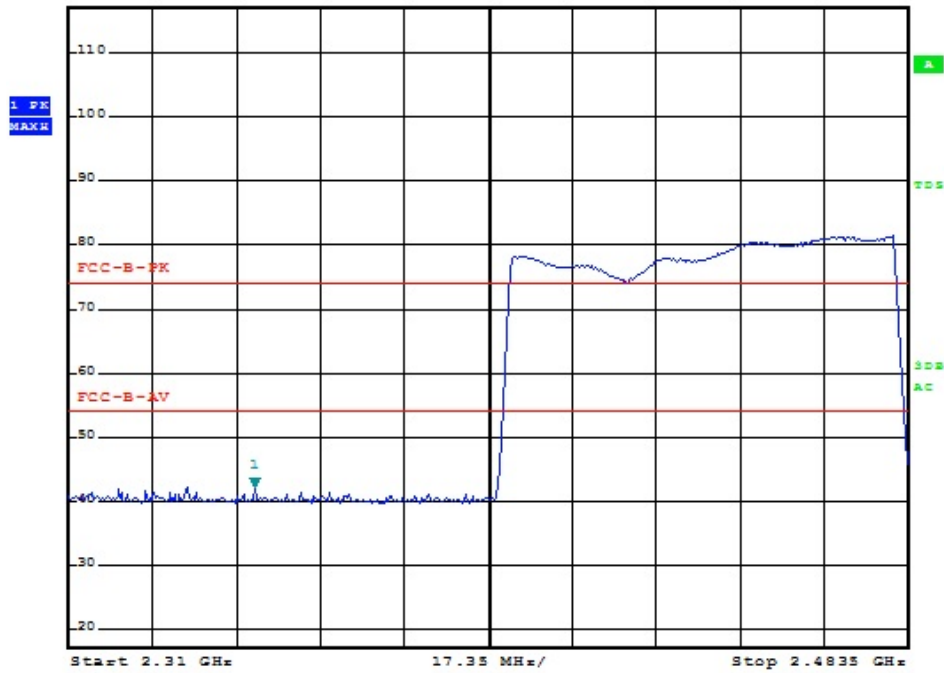
[Hopping mode]

Conducted

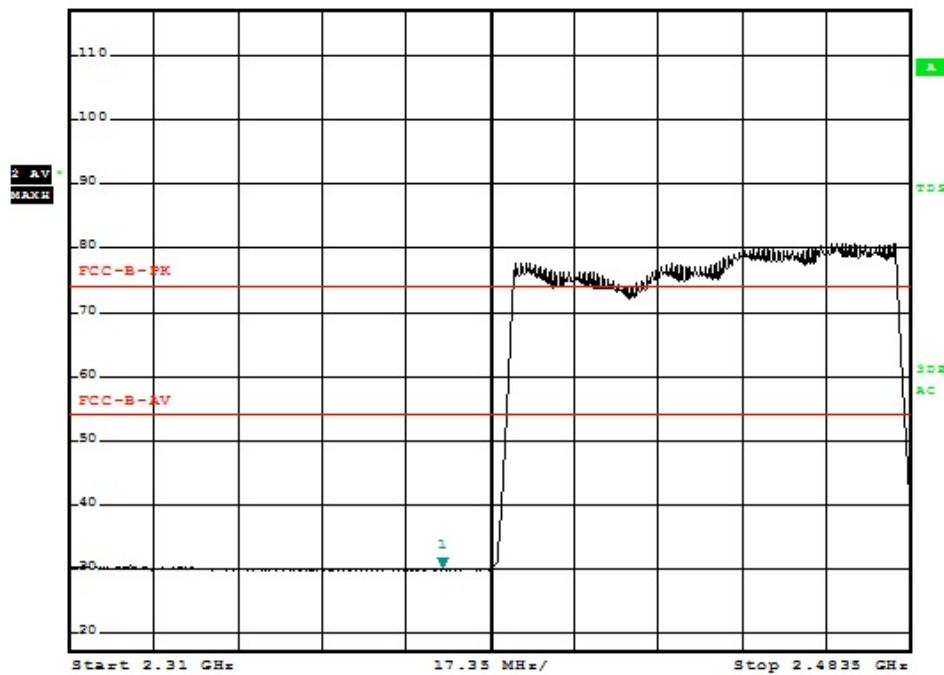


## Radiated

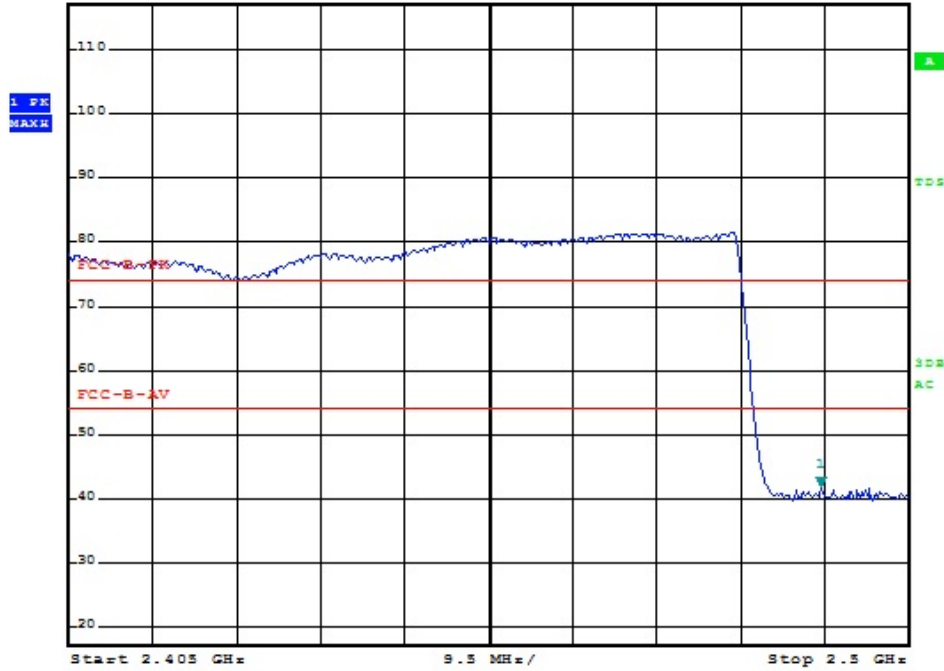
Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



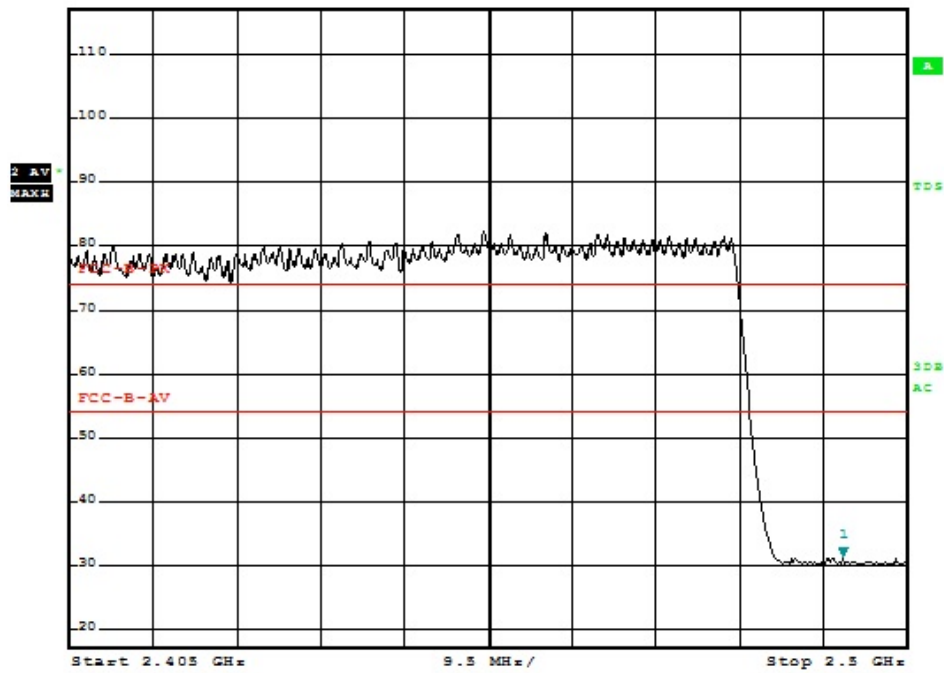
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



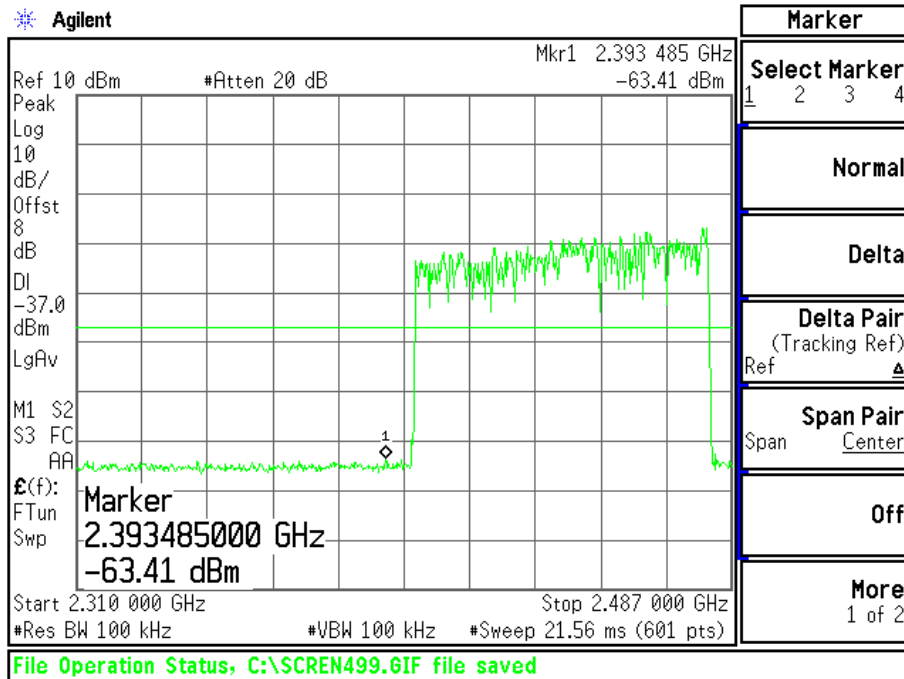
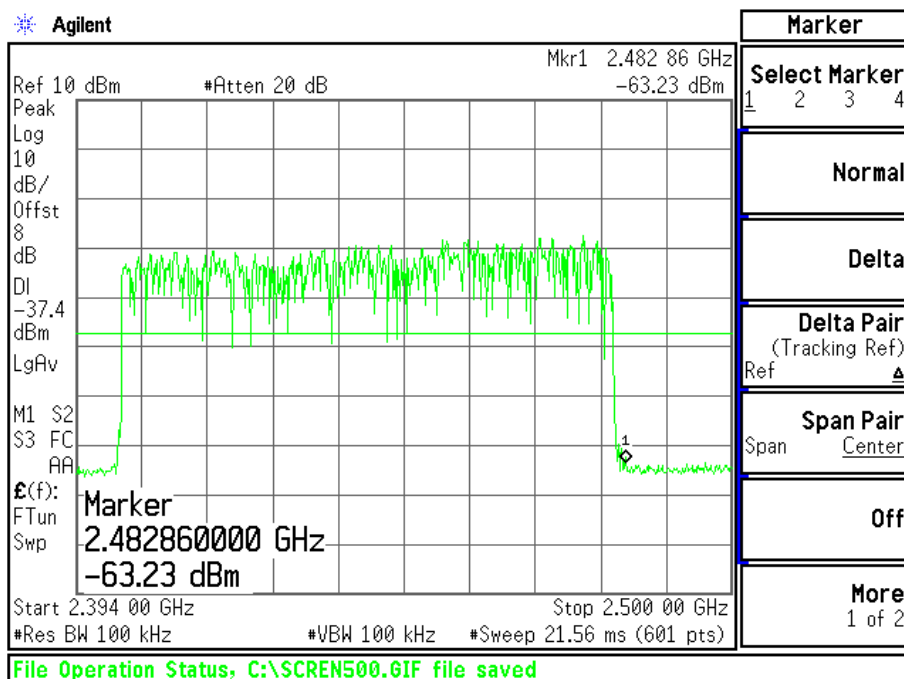
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



## Plots of Bandwidth of Frequency Band Edges (EDR)

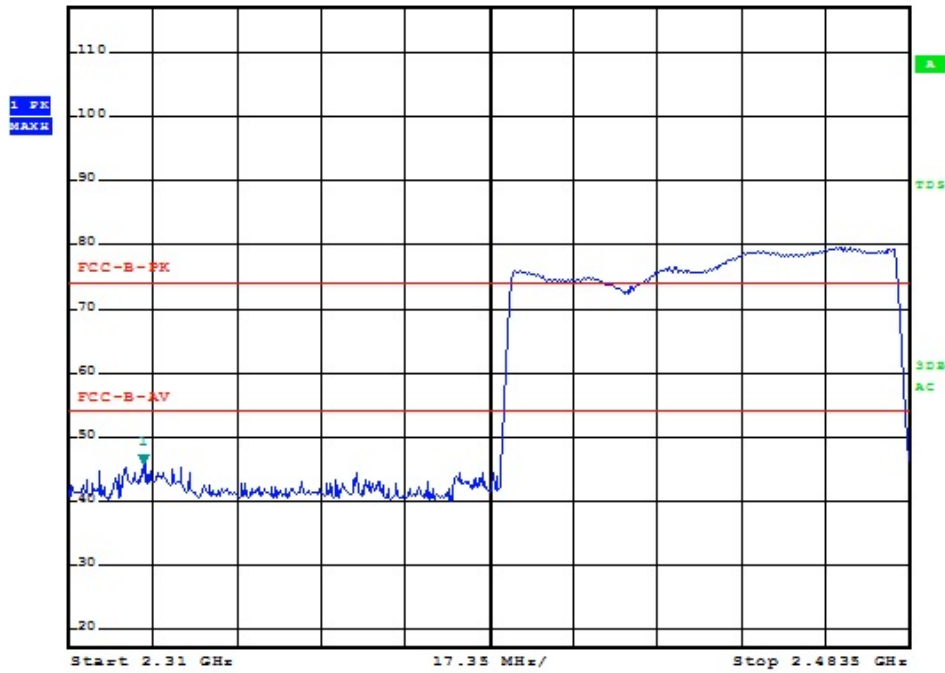
[Hopping mode]

Conducted

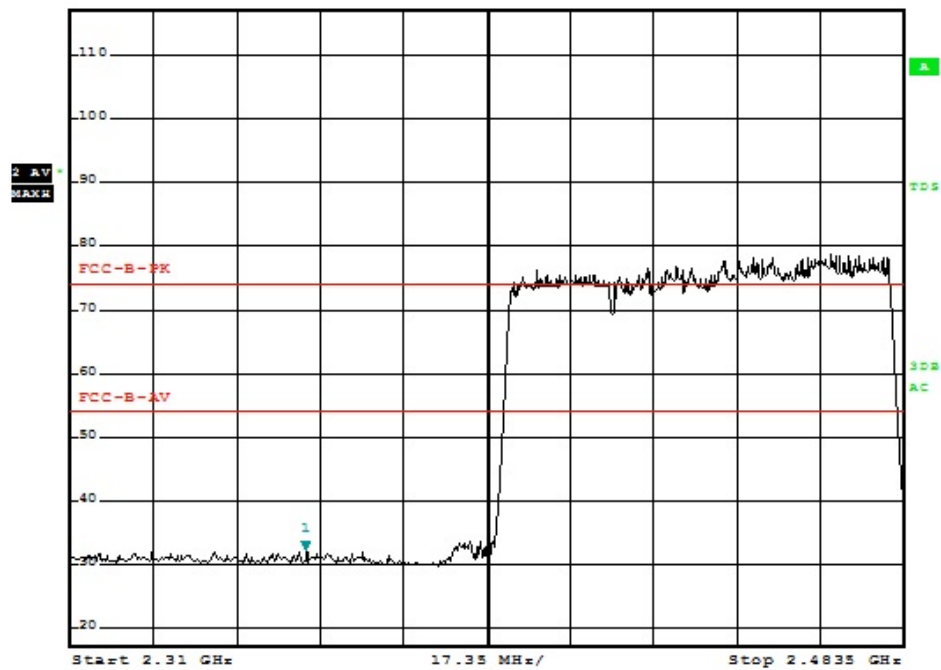


## Radiated

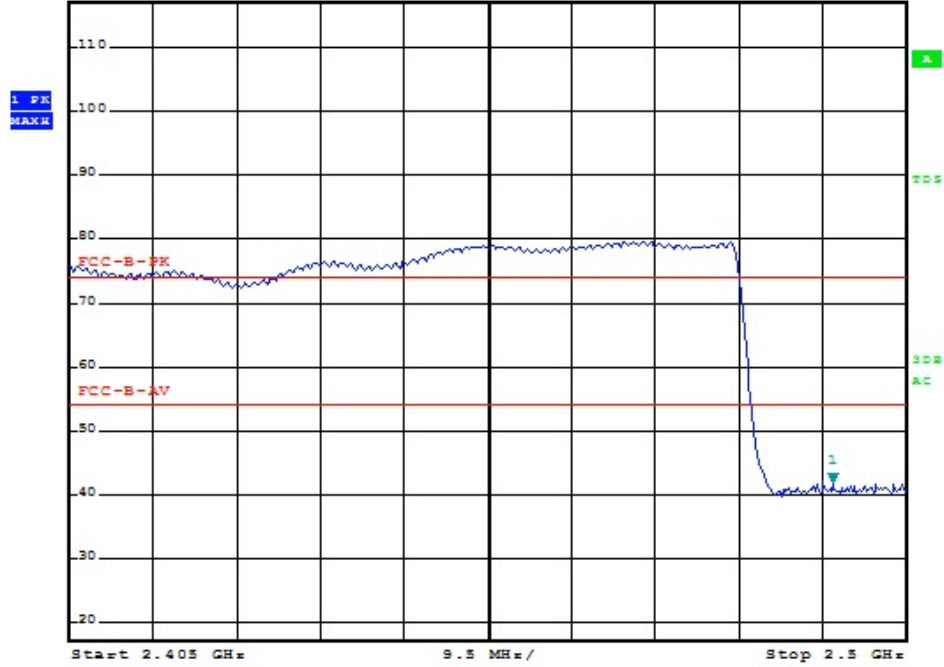
Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



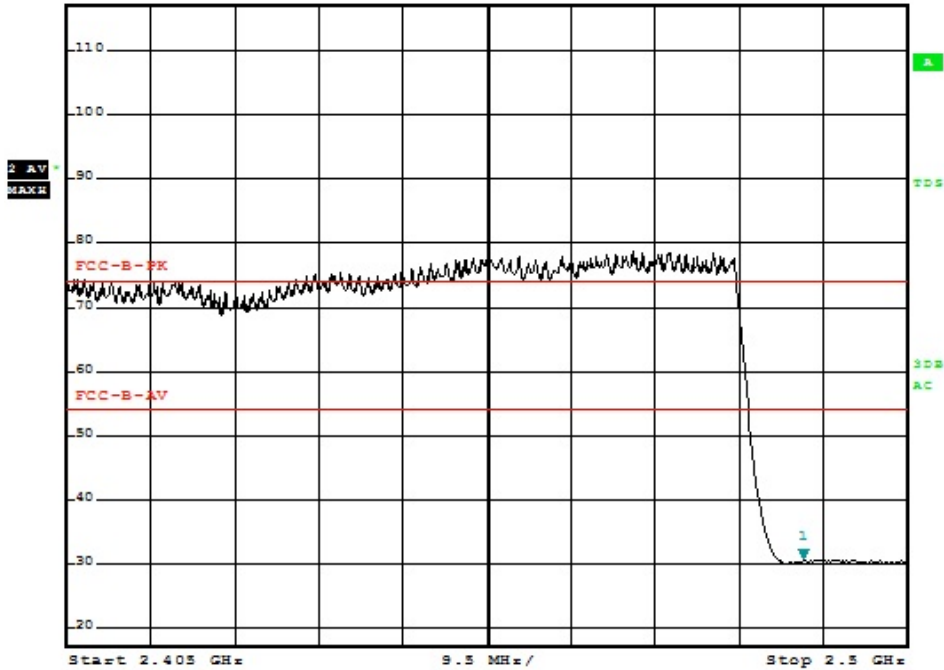
AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 310 MHz - 2 390 MHz), Worst case (Low, Vertical)



Peak Detector: RBW: 1 MHz, VBW: 1 MHz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



AV Detector: RBW: 1 MHz, VBW: 10 Hz (2 483.5 MHz - 2 500.0 MHz), Worst case (High, Vertical)



## 6.5 Number of Hopping Channels

### Limit

Frequency hopping systems in the 2 400.0 MHz - 2 483.5 MHz band shall use at least 15 channels.

### Test Data

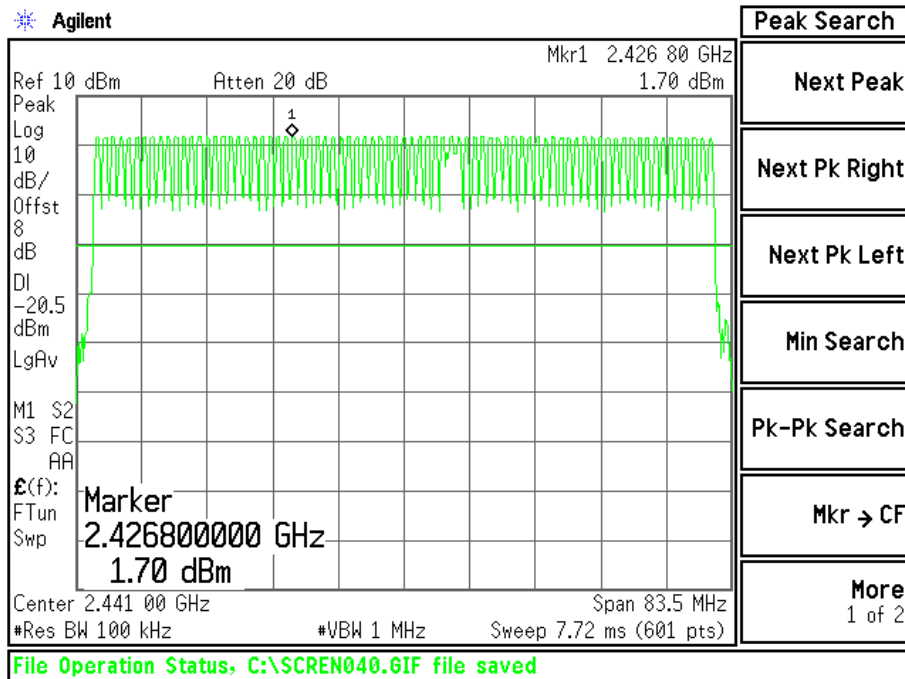
| Type of Modulation | Result | Limit        |
|--------------------|--------|--------------|
| BDR                | 79     | > 15 Channel |
| EDR                | 79     |              |

### NOTES:

1. Measure number of hopping channel of relevant channel using spectrum analyzer.
2. Please see the measured plot in next page.

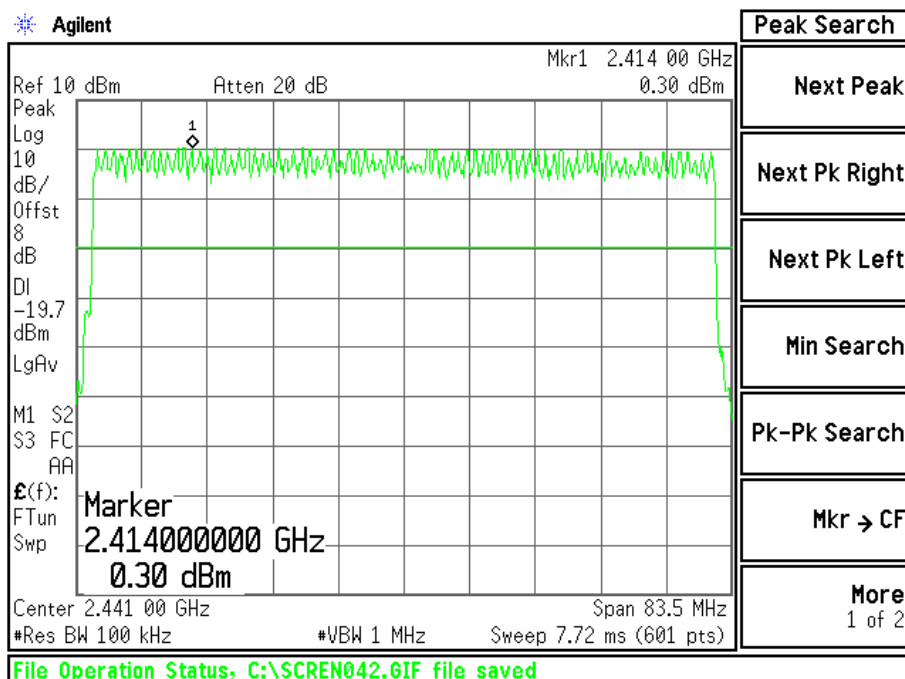
## Plots of Number of Hopping Channels (BDR)

[Hopping Channels]



## Plots of Number of Hopping Channels (EDR)

[Hopping Channels]



## 6.6 Time of Occupancy

### Limit

Frequency hopping systems in the 2 400.0 MHz - 2 483.5 MHz band. 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.

### Test Data

Time of Occupancy

Test period = 0.4 [seconds/channel] x 79 [channel]

Actual = Reading x (Hopping rate/Number of channels) x Test period

- Hopping rate (DH5 Packet) = 1 600 [hopping/second] / 6 [time slot] = 266.667

- Hopping rate (3DH5 Packet) = 1 600 [hopping/second] / 6 [time slot] = 266.667

- Type of Modulation: BDR

$0.4 \text{ s} \times 79 \text{ (CH)} = 31.6 \text{ s}$

$2.900 \text{ ms} \times (266.667/79) \times 31.6 \text{ s} = 309.333 \text{ ms}$

- Type of Modulation: EDR

$0.4 \text{ s} \times 79 \text{ (CH)} = 31.6 \text{ s}$

$2.875 \text{ ms} \times (266.667/79) \times 31.6 \text{ s} = 302.294 \text{ ms}$

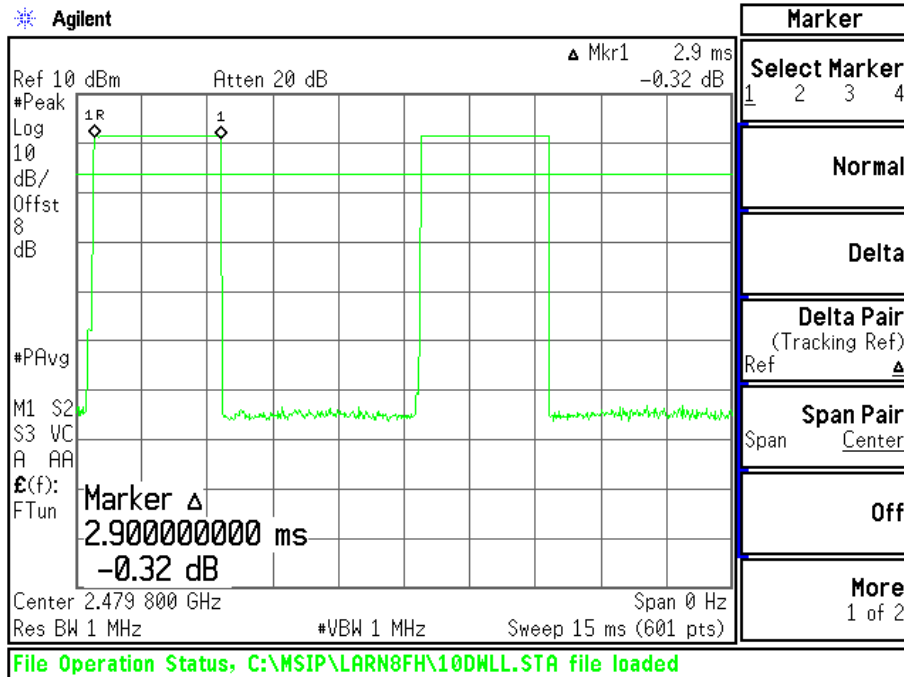
| Type of Modulation | Pulse Time<br>[ms] | Total of Dwell<br>[ms] | Limit<br>[ms] |
|--------------------|--------------------|------------------------|---------------|
| BDR                | 2.900              | 309.333                | 400.000       |
| EDR                | 2.875              | 306.667                | 400.000       |

### NOTES:

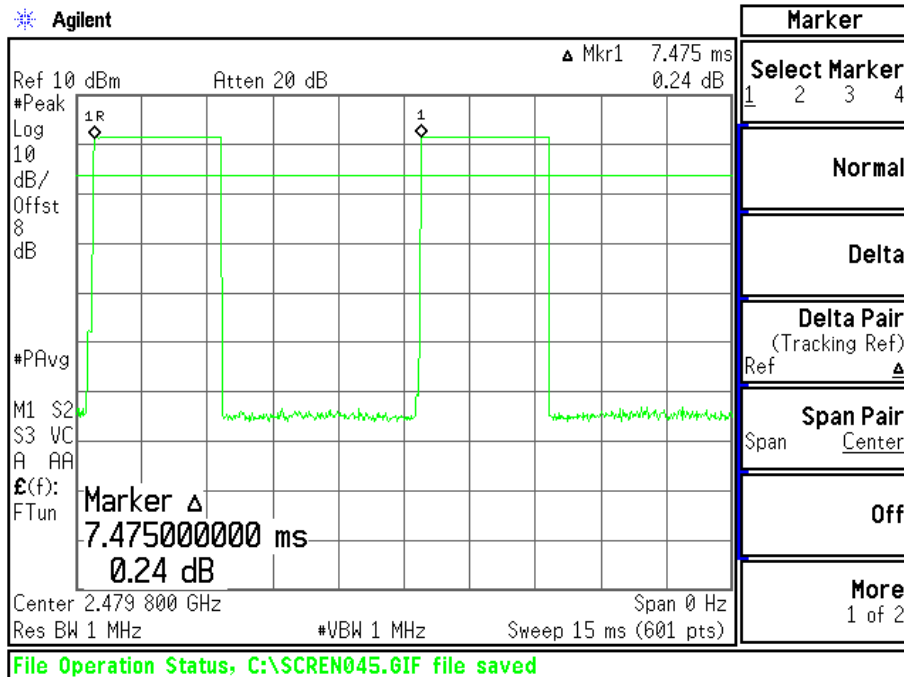
1. BDR: This test was applied both to DH1, DH3 and DH5. (Worst case: DH5)
2. EDR: This test was applied both to 2DH1, 2DH3, 2DH5, 3DH1, 3DH3 and 3DH5. (Worst case: 3DH5)
3. Measure time of occupancy of relevant channel using spectrum analyzer.
4. Please see the measured plot in next page.

## Plots of Time of Occupancy (BDR)

[Continuous Time]

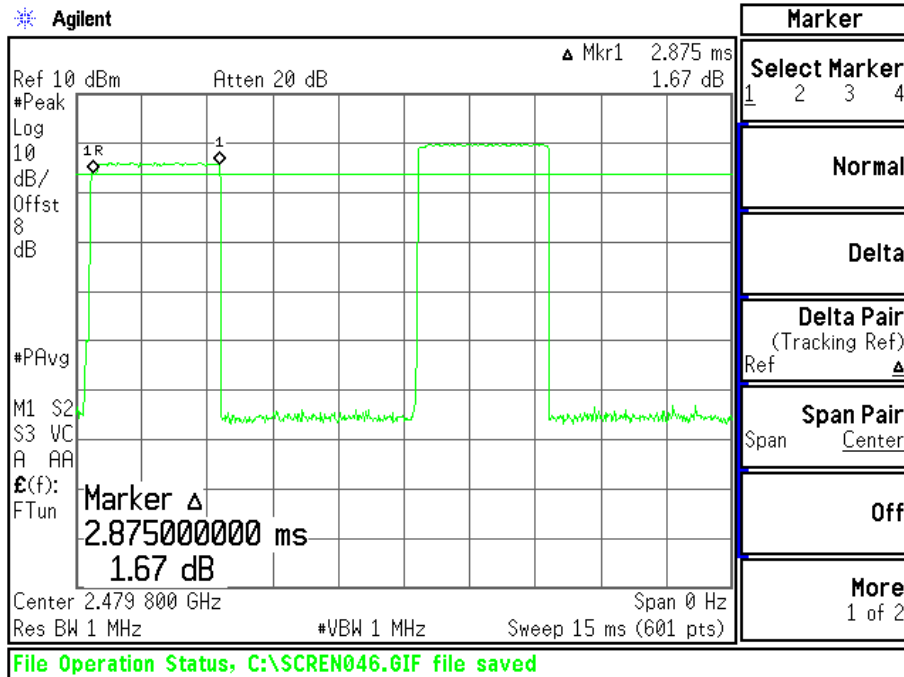


[Hopping Period]

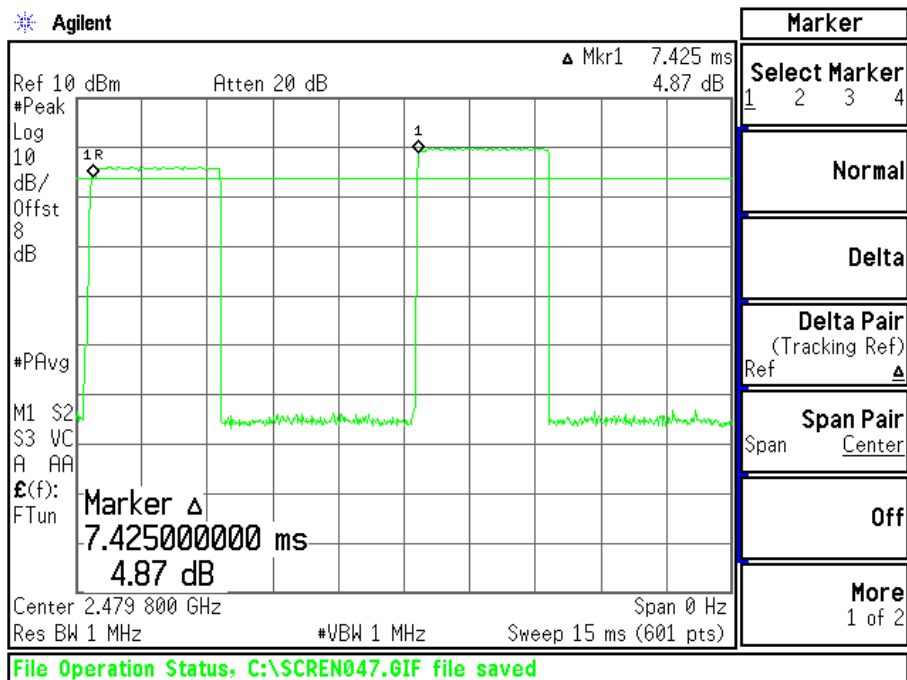


## Plots of Time of Occupancy (EDR)

[Continuous Time]



[Hopping Period]



## 6.7 Spurious Emissions

### Limit

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequencies<br>[MHz] | Field Strength<br>[ $\mu\text{V/m}$ ] | Measurement Distance<br>[m] |
|----------------------|---------------------------------------|-----------------------------|
| 0.009 - 0.490        | $2\,400/F(\text{kHz})$                | 300                         |
| 0.490 - 1.705        | $24\,000/F(\text{kHz})$               | 30                          |
| 1.705 - 30.0         | 30                                    | 30                          |
| 30 - 88              | 100                                   | 3                           |
| 88 - 216             | 150                                   | 3                           |
| 216 - 960            | 200                                   | 3                           |
| Above 960            | 500                                   | 3                           |

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

### Test Results

- Refer to see the measured plot in next page.

## Radiated Emissions Test data

### - 9 kHz to 30 MHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.  
Detector mode: CISPR Quasi-Peak mode (100 Hz, 9 kHz)

- Type of Modulation: BDR, EDR

| Frequency<br>[MHz] | Reading<br>[dB(μV)]                                                      | Polarization<br>(*H/**V) | Ant. Factor<br>[dB/m] | Cable Loss<br>[dB] | Result<br>[dB(μV/m)] | Limit<br>[dB(μV/m)] | Margin<br>[dB] |
|--------------------|--------------------------------------------------------------------------|--------------------------|-----------------------|--------------------|----------------------|---------------------|----------------|
|                    |                                                                          |                          |                       |                    |                      |                     |                |
|                    | Emission attenuated more than<br>20 dB below the limit are not reported. |                          |                       |                    |                      |                     |                |
|                    |                                                                          |                          |                       |                    |                      |                     |                |
|                    |                                                                          |                          |                       |                    |                      |                     |                |

**Result: All emissions below noise floor of 20 dB(μV/m).**

#### NOTES:

- \* H : Horizontal polarization , \*\* V : Vertical polarization
- Result = Reading + Antenna factor + Cable loss
- Margin = Limit - Result
- The measurement was performed for the frequency range 9 kHz to 30 MHz according to FCC Part 15.209.

### - Below 1 GHz (30 MHz to 1 GHz)

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

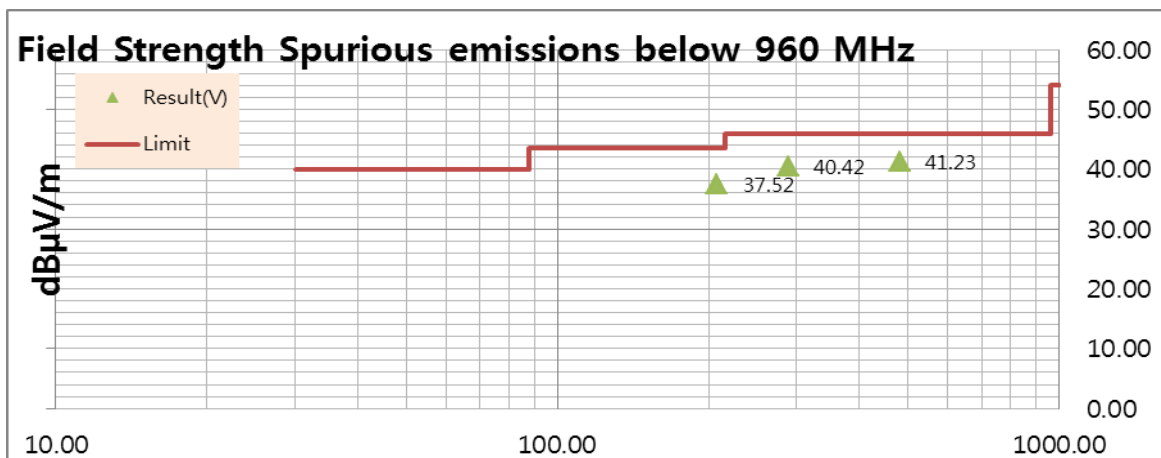
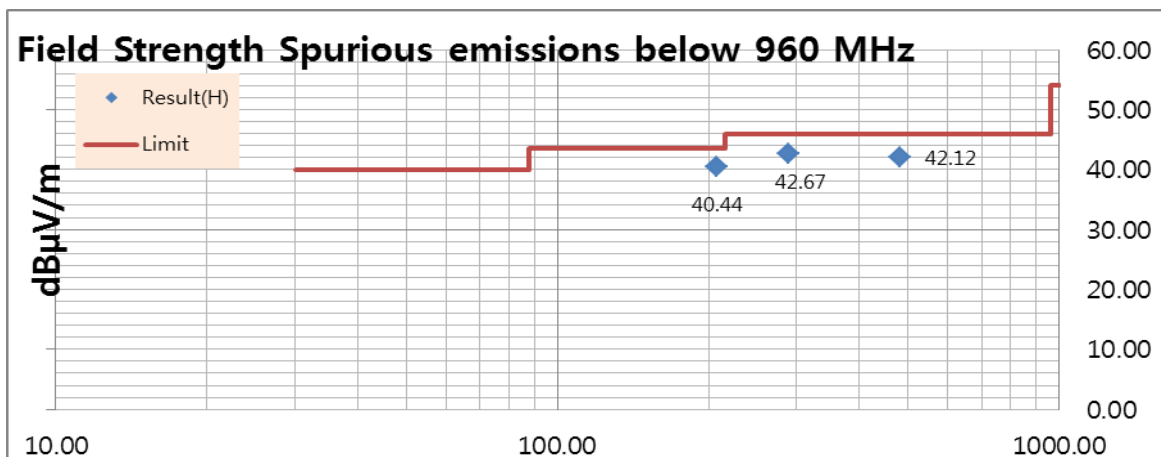
Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 120 kHz)

- Type of Modulation: BDR (Worst case)

| Emission Frequency [MHz] | Measure Value [dBμV] | Antenna Pola V/H | Antenna Factor [dB/m] | Cable Loss [dB] | Field Strength dBμV/m @ 3m | Limit dBμV/m @ 3m | Margin [dB] |
|--------------------------|----------------------|------------------|-----------------------|-----------------|----------------------------|-------------------|-------------|
| 207.85                   | 26.55                | V                | 9.80                  | 1.17            | 37.52                      | 43.5              | 5.98        |
| 287.99                   | 26.21                | V                | 12.80                 | 1.41            | 40.42                      | 46.0              | 5.58        |
| 480.53                   | 21.95                | V                | 17.33                 | 1.95            | 41.23                      | 46.0              | 4.77        |
| 207.85                   | 29.47                | H                | 9.80                  | 1.17            | 40.44                      | 43.5              | 3.06        |
| 287.99                   | 28.46                | H                | 12.80                 | 1.41            | 42.67                      | 46.0              | 3.33        |
| 480.53                   | 22.84                | H                | 17.33                 | 1.95            | 42.12                      | 46.0              | 3.88        |

#### NOTES:

- \* H : Horizontal polarization , \*\* V : Vertical polarization
- Result = Reading + Antenna factor + Cable loss
- Margin value = Limit - Result
- The measurement was performed for the frequency range above 30 MHz according to FCC Part 15.209.



## - Above 1 GHz (1 GHz to 25 GHz)

- Type of Modulation: BDR

### 1. Low CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5616.10            | 65.09               | 53.11   | V                    | 33.49                    | 5.69                  | 55.19                | 44.06   | 73.97               | 53.97   | 25.7           | 15.2    |

### 2. Middle CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5616.10            | 66.01               | 54.09   | V                    | 33.49                    | 5.69                  | 54.57                | 43.67   | 73.97               | 53.97   | 25.4           | 14.9    |

### 3. High CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5114.00            | 65.78               | 53.47   | V                    | 32.57                    | 5.60                  | 51.26                | 40.71   | 73.97               | 53.97   | 23.1           | 13.7    |

**Result: No signal detect above second harmonic.**

- Type of Modulation: EDR

### 1. Low CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5616.10            | 64.15               | 52.67   | V                    | 33.49                    | 5.69                  | 54.17                | 42.77   | 73.97               | 53.97   | 24.1           | 15.0    |

### 2. Middle CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5616.10            | 66.09               | 55.10   | V                    | 33.49                    | 5.69                  | 53.77                | 44.20   | 73.97               | 53.97   | 25.9           | 15.4    |

### 3. High CH

| Frequency<br>[MHz] | Reading<br>[dB(μV)] |         | Polarity<br>(*H/**V) | Ant.<br>Factor<br>[dB/m] | Cable<br>Loss<br>[dB] | Result<br>[dB(μV/m)] |         | Limit<br>[dB(μV/m)] |         | Margin<br>[dB] |         |
|--------------------|---------------------|---------|----------------------|--------------------------|-----------------------|----------------------|---------|---------------------|---------|----------------|---------|
|                    | Peak                | Average |                      |                          |                       | Peak                 | Average | Peak                | Average | Peak           | Average |
| 5114.00            | 64.54               | 52.66   | V                    | 32.57                    | 5.60                  | 50.94                | 41.64   | 73.97               | 53.97   | 22.9           | 14.6    |

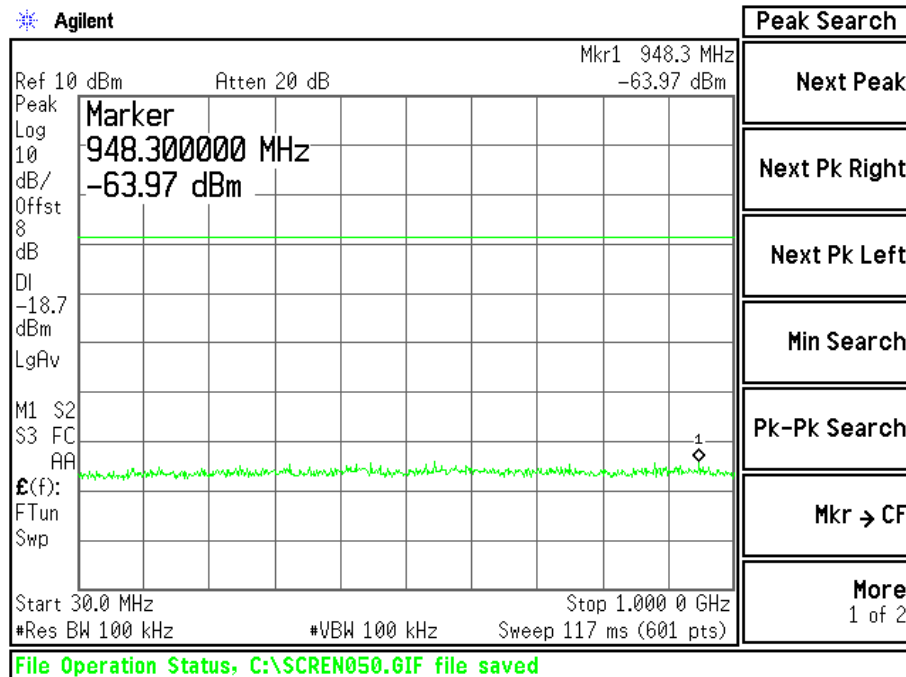
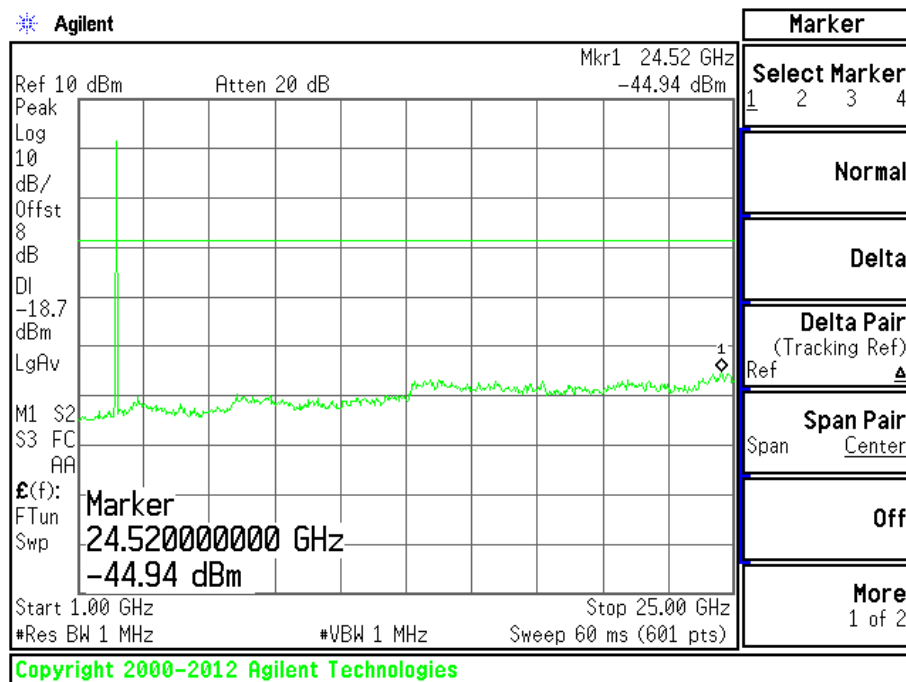
**Result: No signal detect above second harmonic.**

#### NOTES:

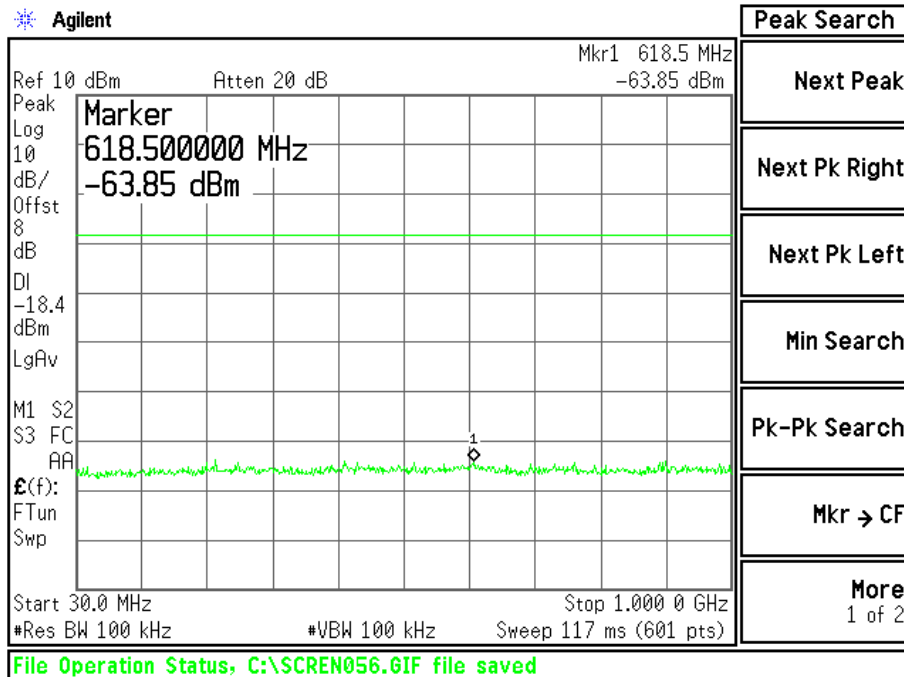
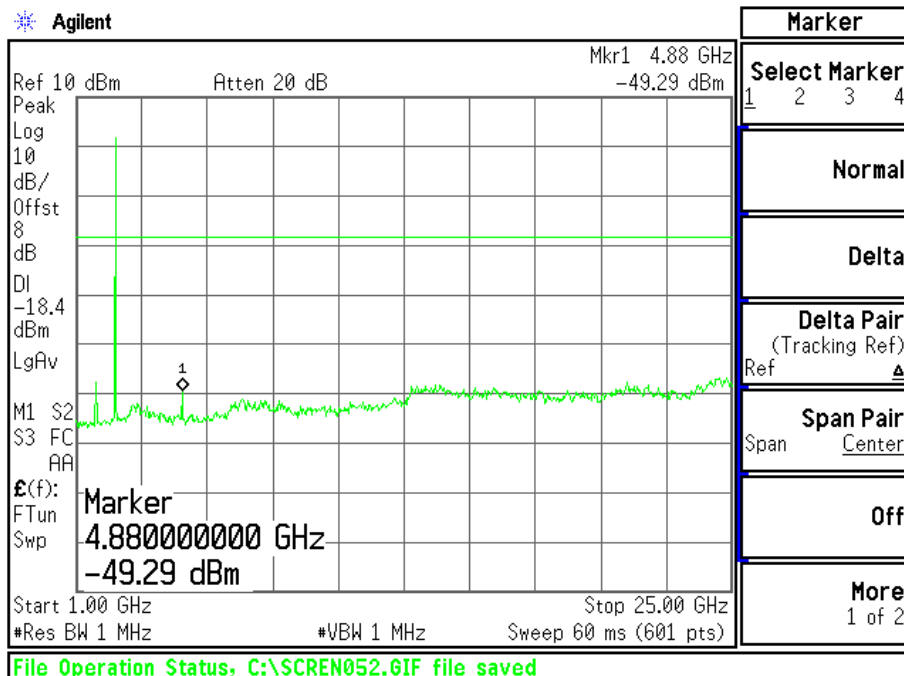
- \* H : Horizontal polarization , \*\* V : Vertical polarization
- Cable loss = Cable loss + Amp. Gain
- Result = Reading + Antenna factor + Cable loss
- Margin value = Limit - Result
- Measuring frequencies from 1 GHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- Spectrum setting:
  - Peak Setting 1 GHz to 10<sup>th</sup> harmonics of fundamental, RBW = 1 MHz, VBW = 1 MHz, Sweep = Auto
  - AV Setting 1 GHz to 10<sup>th</sup> harmonics of fundamental, RBW = 1 MHz, VBW = 10 Hz, Sweep = Auto

## Plots of Spurious Emissions (Conducted Measurement) (BDR)

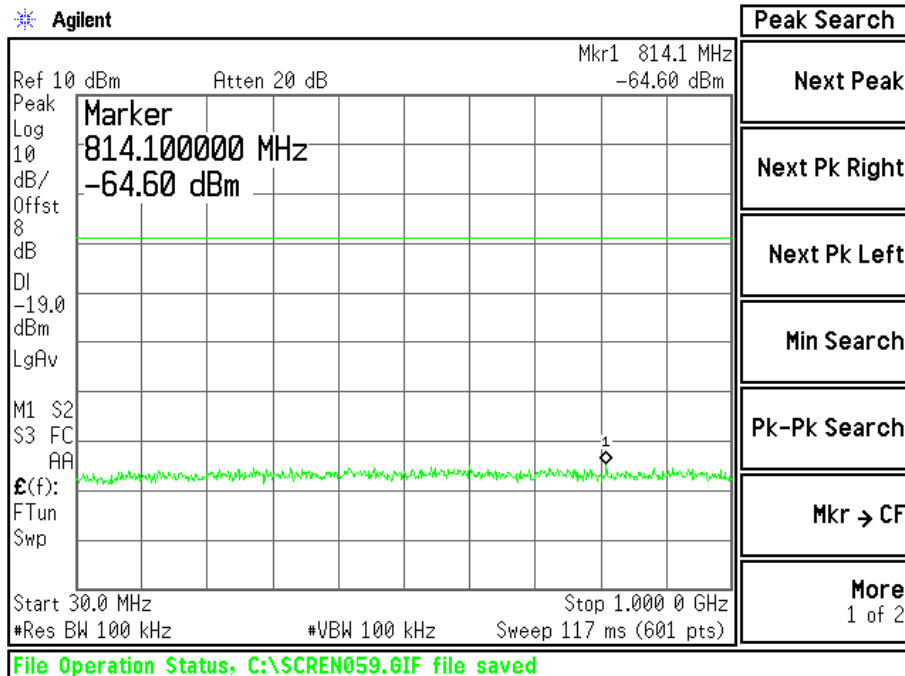
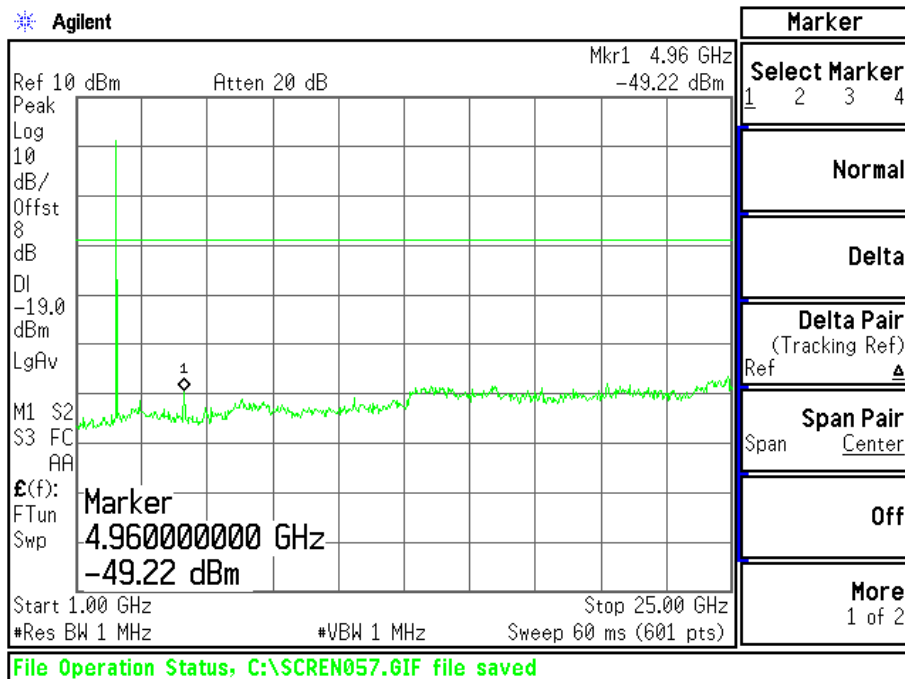
[CH Low]



[CH Mid]

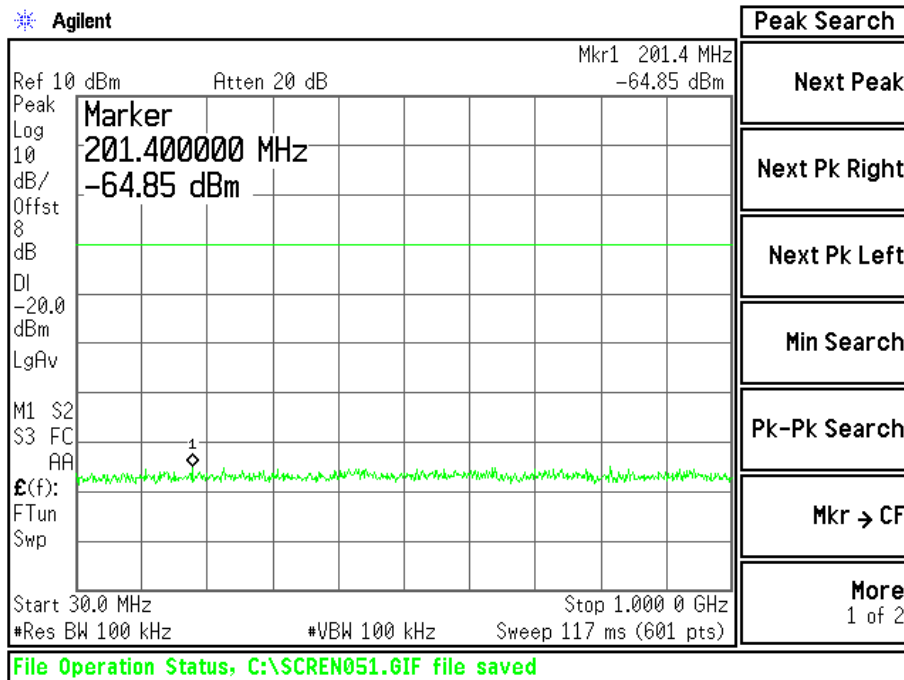
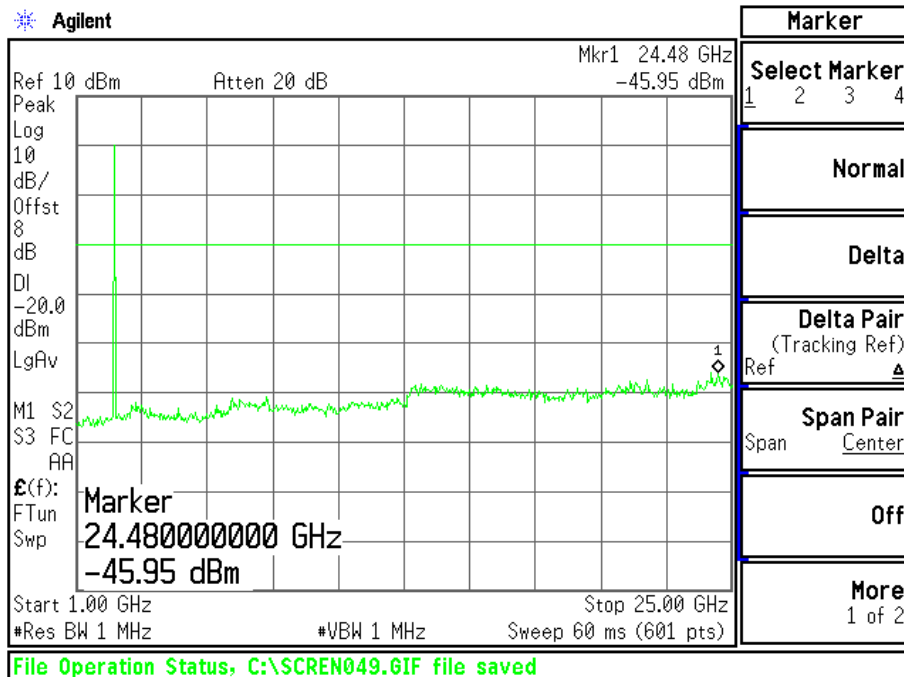


[CH High]

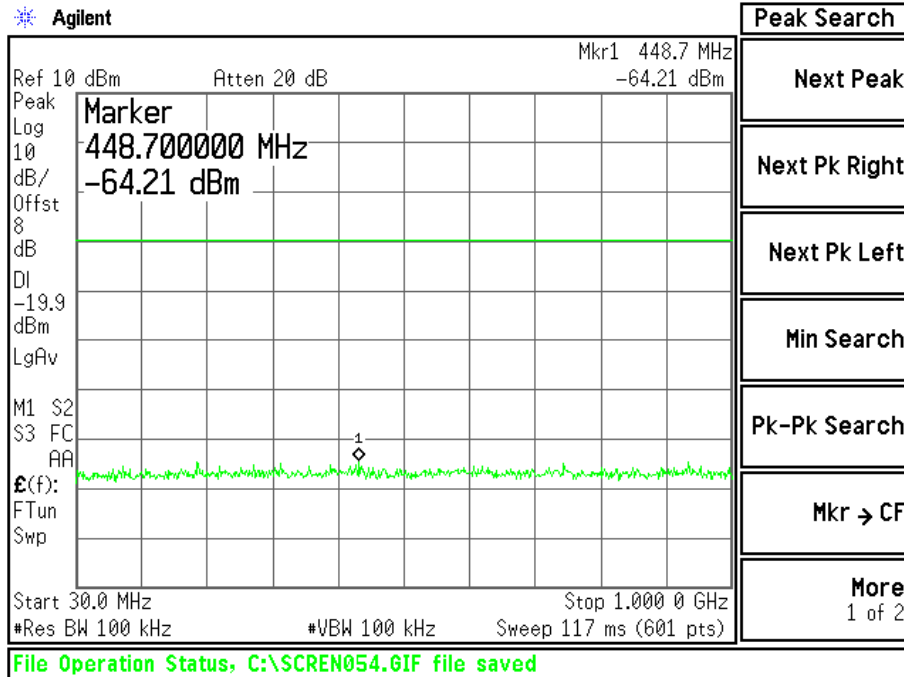
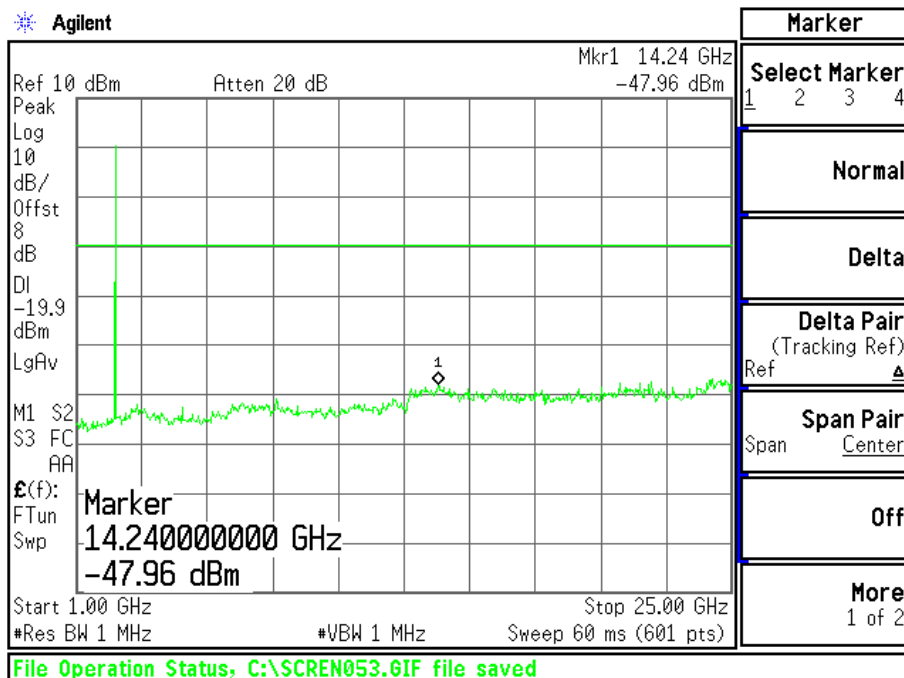


## Plots of Spurious Emissions (Conducted Measurement) (EDR)

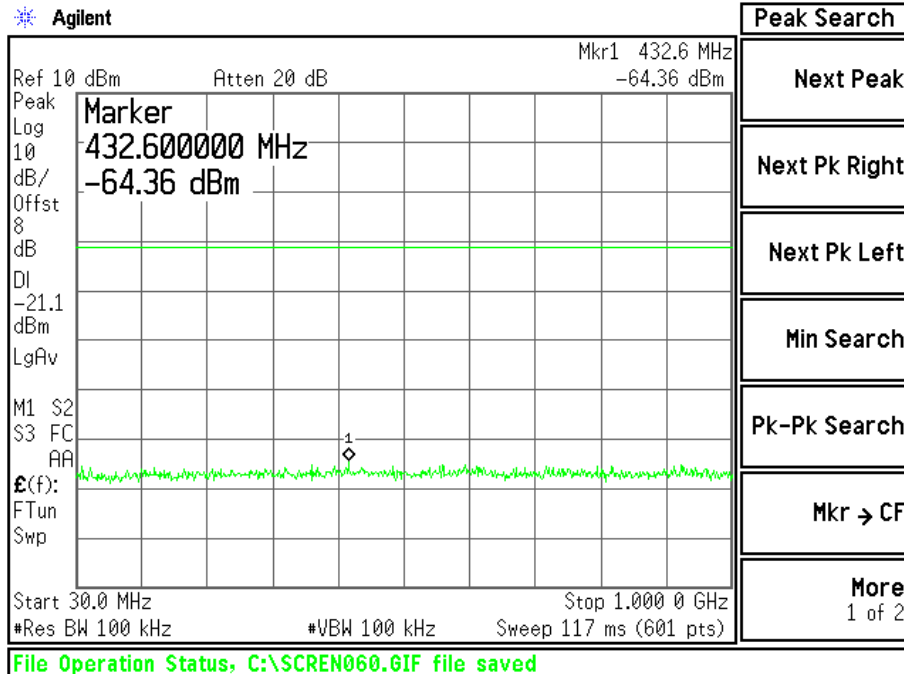
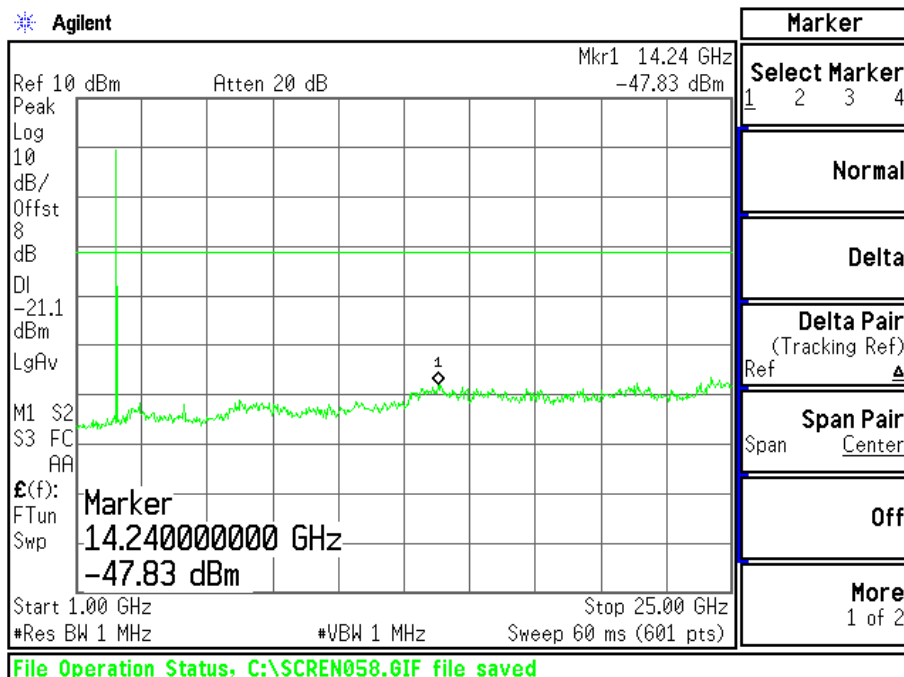
[CH Low]



[CH Mid]



[CH High]



## 6.8 Conducted Emissions Measurement

### Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

| Frequency of Emission<br>[MHz] | Conducted limit<br>[dB( $\mu$ V)] |            |
|--------------------------------|-----------------------------------|------------|
|                                | Quasi-peak                        | Average    |
| 0.15 - 0.5                     | 66 to 56 *                        | 56 to 46 * |
| 0.5 - 5                        | 56                                | 46         |
| 5 - 30                         | 60                                | 50         |

\* Decreases with the logarithm of the frequency.

### Test Results : Pass

- Refer to see the measured plot in next page.

## Conducted Emission Test Data

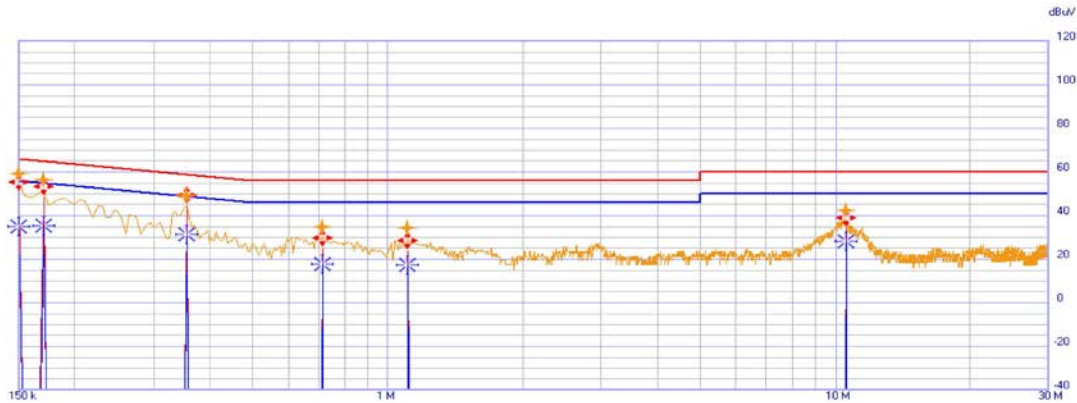
The following data and graph shows the highest levels of conducted emissions on both polarizations of hot and neutral line.

Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

### NOTES:

1. Please see the measured data and graph in next page.
2. The c.f value was included the antenna factor and cable loss.
3. Result value = Reading + c.f
4. Margin value = Limit – Result
5. Measurements were performed at the AC Power Inlet in the frequency band of 150 kHz ~ 30 MHz according to the FCC Part 15 Class A.

## Line: HOT

| Start [MHz] | Stop [MHz] | Step         | Detector                           | Hold Time | RBW   | Min Att | Pre Amp | Pre Sel | Prompt start | Ancillary |
|-------------|------------|--------------|------------------------------------|-----------|-------|---------|---------|---------|--------------|-----------|
| 0.15        | 30         | AUTO (5 kHz) | P Q C<br>Class B_QP<br>Class B_CAV | 1500 ms   | 9 kHz | 0       | ON      | ON      | ...          | ...       |

Pulse Limiter ON  
Ancillary = General  
Limits:  
Class B\_QP  
Class B\_CAV

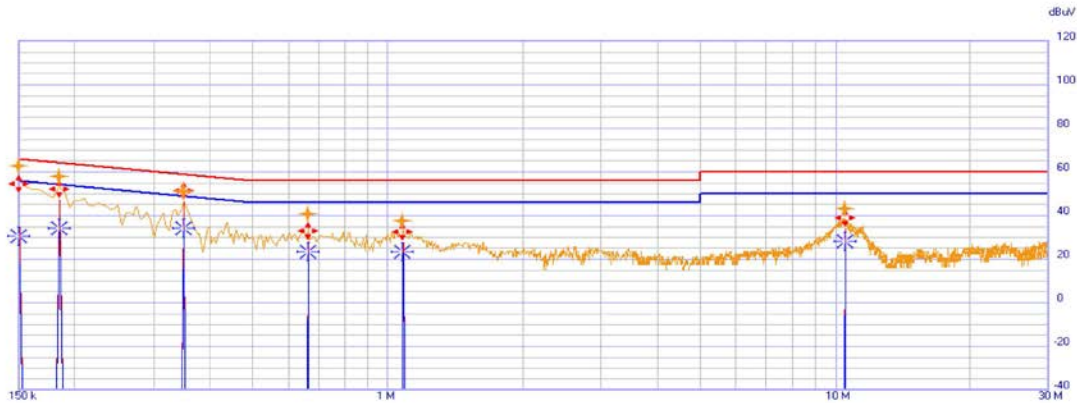
Factors:  
cable loss  
LISN L

Peak  
QPeak  
C-Avg



| Frequency [MHz] | QPeak [dBuV] | Limit Class B_QP [dBuV] | Delta [dB] | C-Avg [dBuV] | Limit Class B_CAV [dBuV] | Delta [dB] | Factor cable loss [dB] | Factor LISN L [dB] |
|-----------------|--------------|-------------------------|------------|--------------|--------------------------|------------|------------------------|--------------------|
| 1 0.15          | 50.52        | 66.00                   | -15.48     | 34.63        | 56.00                    | -21.37     | 0.04                   | 9.59               |
| 2 0.17          | 48.54        | 64.96                   | -16.42     | 35.15        | 54.96                    | -19.81     | 0.04                   | 9.59               |
| 3 0.355         | 44.44        | 58.84                   | -14.40     | 30.97        | 48.84                    | -17.87     | 0.09                   | 9.58               |
| 4 0.715         | 24.76        | 55.00                   | -30.24     | 17.47        | 46.00                    | -28.53     | 0.09                   | 9.59               |
| 5 1.11          | 23.57        | 55.00                   | -31.43     | 17.13        | 46.00                    | -28.87     | 0.05                   | 9.60               |
| 6 10.525        | 33.91        | 60.00                   | -26.09     | 27.98        | 50.00                    | -22.02     | 0.15                   | 9.68               |

## Line: Neutral



| Start [MHz] | Stop [MHz] | Step         | Detector                           | Hold Time | RBW   | Min Att | Pre Amp | Pre Sel | Prompt start | Ancillary |
|-------------|------------|--------------|------------------------------------|-----------|-------|---------|---------|---------|--------------|-----------|
| 1 0.15      | 30         | AUTO (5 kHz) | P Q C<br>Class B_QP<br>Class B_CAV | 1500 ms   | 9 kHz | 0       | ON      | ON      | ...          | ...       |

Pulse Limiter ON  
Ancillary = General  
Limits:  
Class B\_QP  
Class B\_CAV

Factors:  
cable loss  
LISN\_N

Peak  
QPeak  
CAvg



| Frequency [MHz] | QPeak [dBuV] | Limit Class B_QP [dBuV] | Delta [dB] | CAvg [dBuV] | Limit Class B_CAV [dBuV] | Delta [dB] | Factor cable loss [dB] | Factor LISN_N [dB] |
|-----------------|--------------|-------------------------|------------|-------------|--------------------------|------------|------------------------|--------------------|
| 1 0.15          | 49.65        | 66.00                   | -16.35     | 30.31       | 56.00                    | -25.69     | 0.04                   | 9.59               |
| 2 0.185         | 47.23        | 64.26                   | -17.03     | 33.72       | 54.26                    | -20.54     | 0.05                   | 9.59               |
| 3 0.35          | 46.54        | 58.96                   | -12.42     | 33.81       | 48.96                    | -15.15     | 0.09                   | 9.59               |
| 4 0.685         | 28.00        | 55.00                   | -28.00     | 23.10       | 46.00                    | -22.90     | 0.10                   | 9.59               |
| 5 1.085         | 27.50        | 55.00                   | -28.50     | 22.92       | 46.00                    | -23.08     | 0.08                   | 9.60               |
| 6 10.44         | 34.15        | 60.00                   | -25.85     | 27.90       | 50.00                    | -22.10     | 0.15                   | 9.69               |

## 6.9 Radio Frequency Exposure

### Standard Applicable:

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device with its physical nature to be used nearby, the distance between radiating structure and human is less than 20 cm.

As per KDB 447498 D01, The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

f (GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

### Measurement Result:

This is a portable device and the Max peak output power is (**1.47 mW**) lower than the threshold given and derived as above, where

$$= 1.47 \text{ (mW)} / 5 \text{ (mm)} * \sqrt{2.441 \text{ (GHz)}} = 0.46 < 3.00$$

As the result of calculation result indicates, the RF exposure generating from given transmitter (transmitter employed digital modulation) can be excluded from SAR measurement, and is deemed compliant with RF exposure as per FCC.

| Type of Modulation | Frequency [MHz] | Output Power [dBm] | Target power W/ tolerance [dBm] | Max tune up power [dBm] | Max tune up power [mW] | Separation distance [mm] | RF exposure | Limit |
|--------------------|-----------------|--------------------|---------------------------------|-------------------------|------------------------|--------------------------|-------------|-------|
| BDR                | 2 402           | 1.53               | 1 ~ 2                           | 2                       | 1.47                   | 5                        | 0.46        | 3.00  |
|                    | 2 441           | 1.68               | 1 ~ 2                           | 2                       | 1.47                   | 5                        | 0.46        | 3.00  |
|                    | 2 480           | 1.52               | 1 ~ 2                           | 2                       | 1.47                   | 5                        | 0.46        | 3.00  |
| EDR                | 2 402           | 0.75               | 0 ~ 1                           | 1                       | 1.21                   | 5                        | 0.38        | 3.00  |
|                    | 2 441           | 0.82               | 0 ~ 1                           | 1                       | 1.21                   | 5                        | 0.38        | 3.00  |
|                    | 2 480           | 0.33               | 0 ~ 1                           | 1                       | 1.21                   | 5                        | 0.38        | 3.00  |

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## 7. SAMPLE CALCULATION

### Sample Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - PA$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

PA\* = Preamplifier Factor

\* PA is only be used for the measuring frequency above 1 GHz.

$$dB(\mu V) = 20 \log_{10} (\mu V) : \text{Equation}$$

$$dB(\mu V) = dBm + 107$$

Example : @ 480.53 MHz

$$\text{Class B Limit} = 46.00 \text{ dB}(\mu V/m)$$

$$\text{Reading} = 22.84 \text{ dB}(\mu V)$$

$$\text{Antenna Factor + Cable Loss} = 17.33 + 1.95 = 19.28 \text{ dB}(\mu V/m)$$

$$\text{Total} = 42.12 \text{ dB}(\mu V/m)$$

$$\text{Margin} = 46.00 - 42.12 = 3.88 \text{ dB}$$

$$= 3.88 \text{ dB below Limit}$$