

## FCC/IC- TEST REPORT

Report Number : **68.950.14.272.01** Date of Issue: Dec 12, 2014

Model : 360526

Product Type : MP7QCFS Module

Applicant : ICON Health & Fitness Inc.

Address : 1500 South 1000 West, Logan UT 84321, USA

Production Facility : Wanlida Group Co., Ltd.

Address : Wanlida Industry Zone, 363601 Nanjing, Fujian,  
PEOPLE'S REPUBLIC OF CHINA

Test Result :  Positive  Negative

Total pages including Appendices : 43

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12&13, Zhiheng Wisdomland Business Park,  
Nantou Checkpoint Road 2, Nanshan District,  
Shenzhen City, 518052,  
P. R. China

Telephone: 86 755 8828 6998

Fax: 86 755 828 5299

#### Test Site 2

Company name: Audix Technology (shenzhen) Co.,Ltd  
Block Shenzhen, Science & Industry Park,  
Nantou, Shenzhen,  
Guangdong,  
China

Telephone: 86 755 2663 9496

Fax: 86 755 2663 2877

### 3 Description of the Equipment under Test

#### Description of the Equipment Under Test

|                               |  |
|-------------------------------|--|
| Product:                      | MP7QCFS Module   |
| Model no.:                    | 360526   |
| FCC ID:                       | OMC360526  |
| IC ID:                        | 3673A-360526   |
| Options and accessories:      | NIL  |
| Rating:                       | DC 12V<br>Powered by external power supply:<br>Adaptor Input: 100-240VAC, 50/60Hz<br>Adaptor Output: 12VDC, 2.0A |
| RF Transmission<br>Frequency: | 2412-2462MHz   |
| No. of Operated Channel:      | 11   |
| Modulation:                   | OFDM, DSSS   |
| Duty Cycle:                   | 100%   |
| Antenna Type:                 | Embedded Type Antenna  |
| Antenna Gain:                 | 1dBi   |
| Description of the EUT:       | The Equipment Under Test (EUT) is a MP7QCFS Module with WIFI function operating at 2.4GHz .                      |



## 4 Summary of Test Standards

| Test Standards                             |   |
|--|---|
| FCC Part 15 Subpart C<br>10-1-2014 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators                  |
| RSS-Gen Issue 4<br>November 2014           | General Requirements for the Certification of Radio Apparatus                           |
| RSS-210 Issue 8<br>December 2010           | RSS-210 — Licence-exempt Radio Apparatus (All Frequency<br>Bands): Category I Equipment |

All the test methods were according to KDB558074 D01 DTS Meas Guidance v03r02 and ANSI C63.10 (2013).

## 5 Summary of Test Results

| Technical Requirements                  |                              |   |            |           |                                     |                          |                                     |
|---|------------------------------|---|------------|-----------|-------------------------------------|--------------------------|-------------------------------------|
| FCC Part 15 Subpart C, RSS-Gen, RSS-210 |                              |   |            |           |                                     |                          |                                     |
| Test Condition                          |                              |   | Pages      | Test Site | Test Result                         |                          |                                     |
|   |                              |   |            |           | Pass                                | Fail                     | N/A                                 |
| §15.207                                 | RSS-GEN A8.8                 | Conducted emission AC power port            | 10         | ---       | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247 (b) (1)                         | RSS-210 A8.4                 | Conducted peak output power                 | 13         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(a)(1)                           | RSS-210 A8.2(a) & RSSGEN 6.6 | 20dB bandwidth                              | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)                           | RSS-210 A8.1(a)              | Carrier frequency separation                | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)                      | RSS-210 A8.1(b)              | Number of hopping frequencies               | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)                      | RSS-210 A8.1(d)              | Dwell Time                                  | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(2)                           | RSS-210 A8.1(c)              | 6dB bandwidth and 99% Occupied Bandwidth    | 14         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(e)                              | RSS-210 A8.2(b)              | Power spectral density                      | 19         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)                              | RSS-210 A8.5                 | Spurious RF conducted emissions             | 20         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)                              | RSS-210 A8.5                 | Band edge                                   | 34         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d) & §15.209                    | RSS-210 2.5 & RSSGEN 6.13    | Spurious radiated emissions for transmitter | 38         | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.203                                 | RSSGEN 8.3                   | Antenna requirement                         | See note 1 |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a Embedded Type antenna, which gain is 1dBi. According to §15.203 and RSSGEN 8.3, it is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: OMC360526, IC ID: 3673A-360526 complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules and RSS-210.

### SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: November 5, 2014

Testing Start Date: November 6, 2014

Testing End Date: December 11, 2014

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

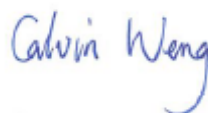
Reviewed by:

Prepared by:

Tested by:



Phoebe Hu  
EMC Project Manager



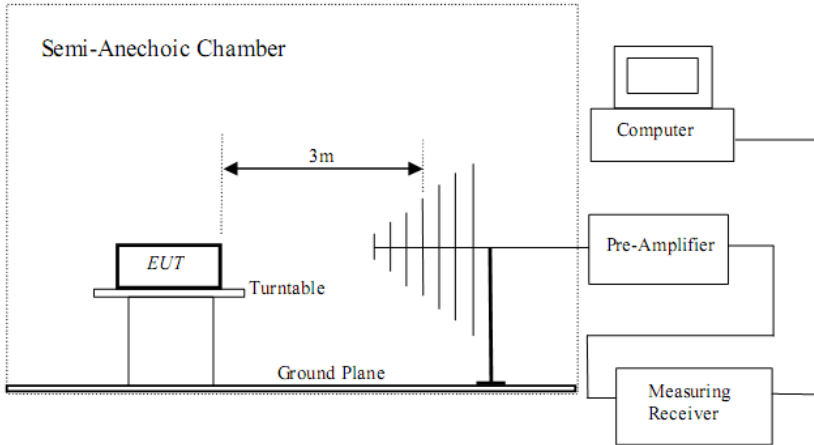
Calvin Weng  
EMC Project Engineer



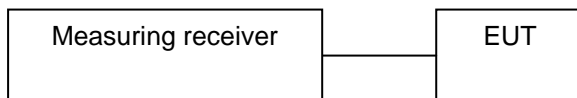
Leo Li  
EMC Test Engineer

## 7 Test Setups

### 7.1 Radiated test setups



### 7.2 Conducted RF test setups







## 8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-------------|
| ---         | ---          | ---               | ---         |

Test software: USI\_BCM\_Testing\_Tool.

The system was configured to channel 1(2412MHz), 6(2437MHz), and 11(2462MHz) for the test.

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

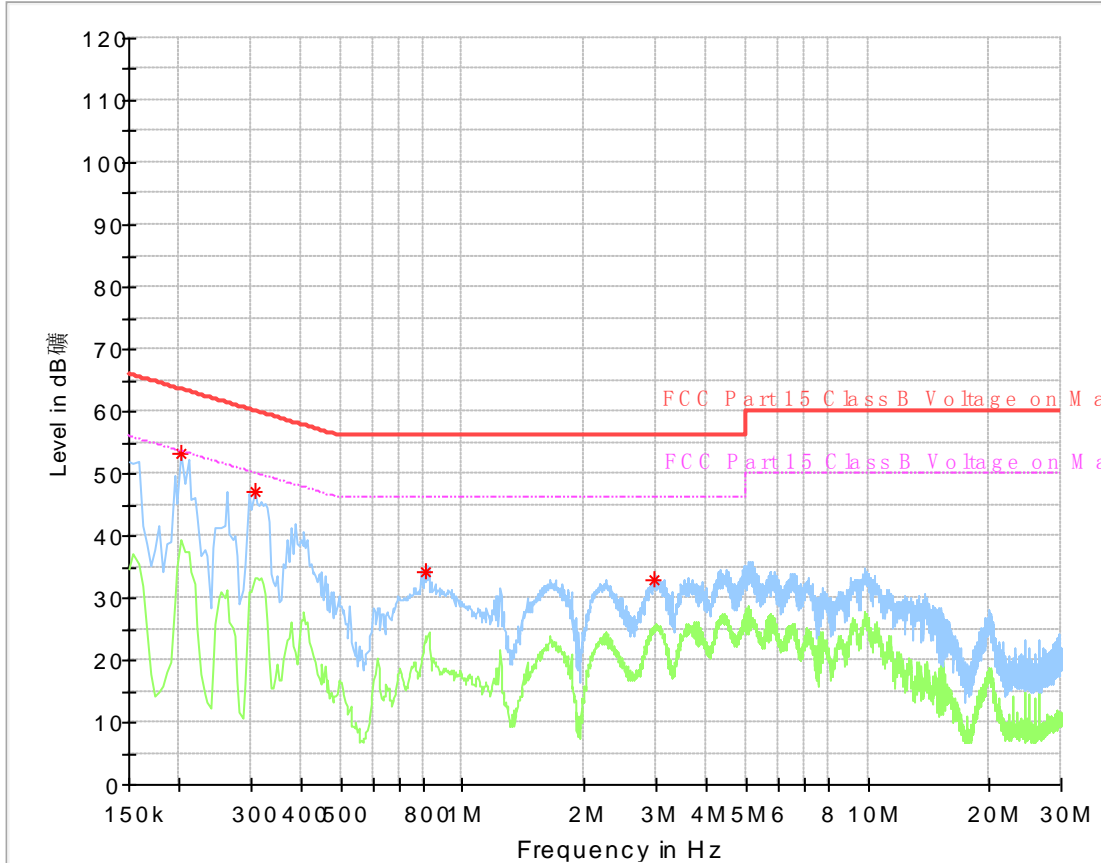
#### Limit

According to §15.207, conducted emissions limit as below:

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

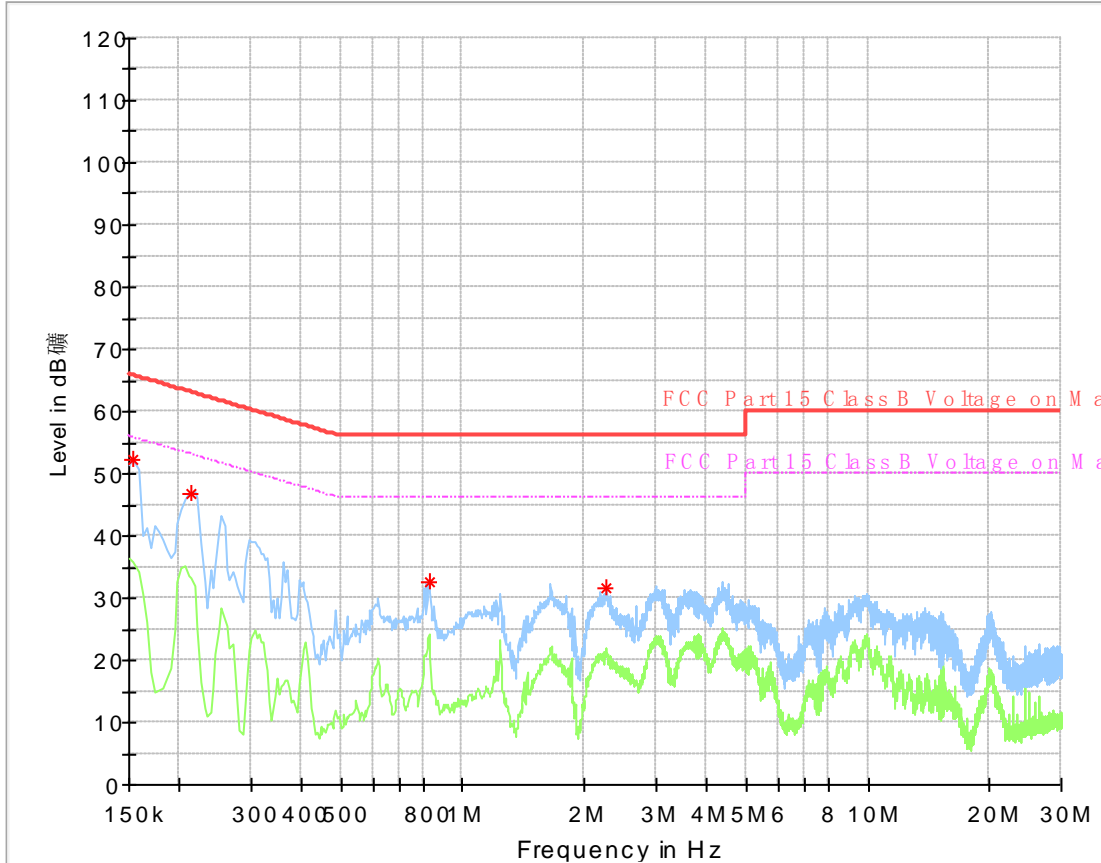
Decreasing linearly with logarithm of the frequency

Product Type : MP7QCFS Module  
 M/N : 360526  
 Operating Condition : Transmitting  
 Test Specification : Line  
 Comment : AC 120V/60Hz



| Frequency (MHz) | MaxPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.202000        | 53.36          | ---            | 63.53        | 10.17       | L1   | 9.8        |
| 0.306000        | 47.09          | ---            | 60.08        | 12.99       | L1   | 10.2       |
| 0.810000        | 34.22          | ---            | 56.00        | 21.78       | L1   | 9.9        |
| 2.970000        | 32.76          | ---            | 56.00        | 23.24       | L1   | 9.8        |

Product Type : MP7QCFS Module  
 M/N : 360526  
 Operating Condition : Transmitting  
 Test Specification : Neutral  
 Comment : AC 120V/60Hz



| Frequency (MHz) | MaxPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.154000        | 52.29          | ---            | 65.78        | 13.49       | N    | 9.6        |
| 0.214000        | 46.79          | ---            | 63.05        | 16.26       | N    | 9.8        |
| 0.826000        | 32.45          | ---            | 56.00        | 23.55       | N    | 9.8        |
| 2.270000        | 31.64          | ---            | 56.00        | 24.36       | N    | 9.8        |

## 9.2 Conducted peak output power

### Test Method

1. Use the following spectrum analyzer settings:  
RBW > the 6 dB bandwidth of the emission being measured, VBW $\geq$ 3RBW, Span $\geq$ 3RBW  
Sweep = auto, Detector function = peak, Trace = max hold.
2. Add a correction factor to the display.
3. Use a power meter to measure the conducted peak output power.

### Limits

According to §15.247 (b) (1), conducted peak output power limit as below:

| Frequency Range<br>MHz | Limit<br>W | Limit<br>dBm |
|------------------------|------------|--------------|
| 2400-2483.5            | $\leq 1$   | $\leq 30$    |

Test result as below table

#### 802.11B

| Frequency<br>MHz       | Conducted Peak<br>Output Power<br>dBm | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | 13.02                                 | Pass   |
| Middle channel 2437MHz | 12.38                                 | Pass   |
| High channel 2462MHz   | 14.35                                 | Pass   |

#### 802.11G

| Frequency<br>MHz       | Conducted Peak<br>Output Power<br>dBm | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | 18.47                                 | Pass   |
| Middle channel 2437MHz | 18.21                                 | Pass   |
| High channel 2462MHz   | 19.63                                 | Pass   |

#### 802.11N20

| Frequency<br>MHz       | Conducted Peak<br>Output Power<br>dBm | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | 18.29                                 | Pass   |
| Middle channel 2437MHz | 18.13                                 | Pass   |
| High channel 2462MHz   | 19.48                                 | Pass   |

### 9.3 6dB bandwidth and 99% Occupied Bandwidth

#### Test Method

1. Use the following spectrum analyzer settings:  
RBW=100K, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

#### Limit

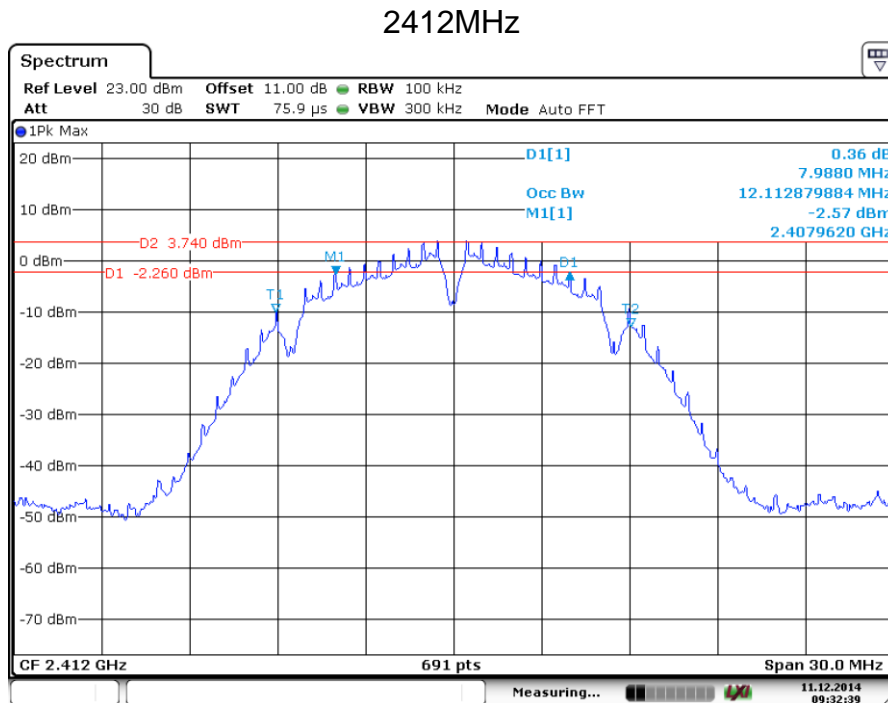
Limit [kHz]

≥500

#### Test result

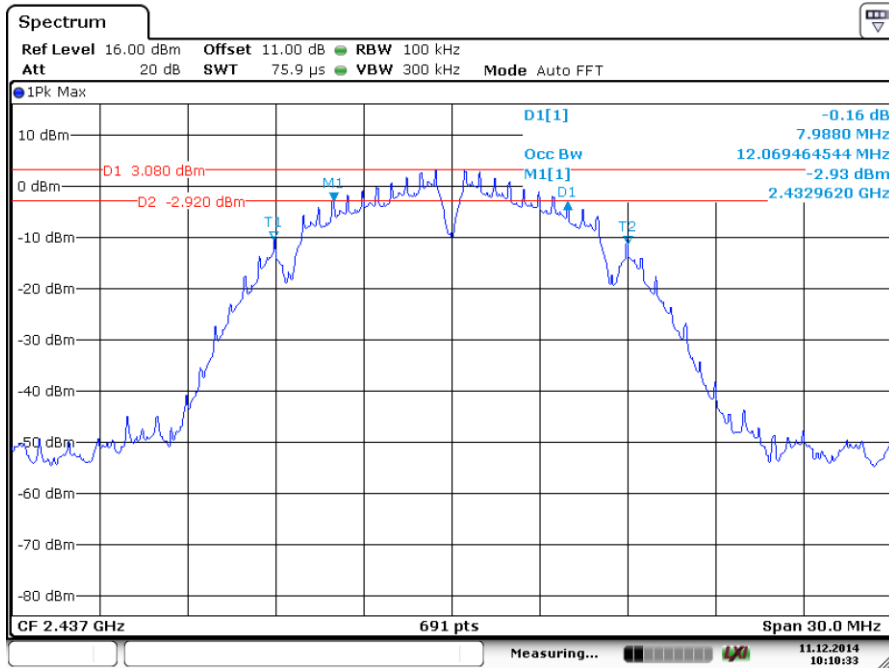
802.11B

| Frequency<br>MHz       | 6dB bandwidth<br>MHz | 99% occupied<br>bandwidth<br>MHz | Result |
|------------------------|----------------------|----------------------------------|--------|
| Low channel 2412MHz    | 7.988                | 12.112                           | Pass   |
| Middle channel 2437MHz | 7.988                | 12.069                           | Pass   |
| High channel 2462MHz   | 7.988                | 12.373                           | Pass   |



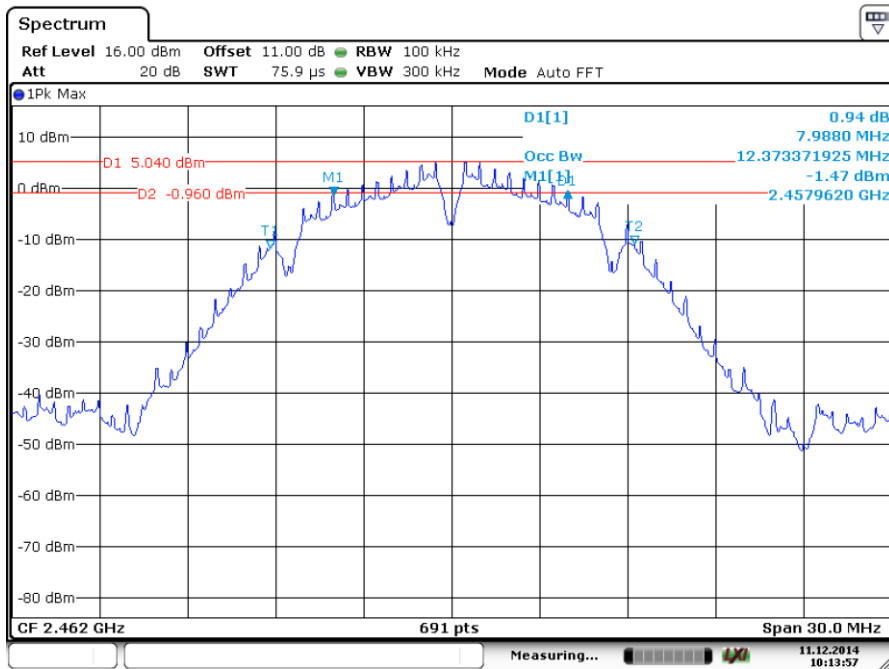
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### 2437MHz



Date: 11.DEC.2014 10:10:34

### 2462MHz

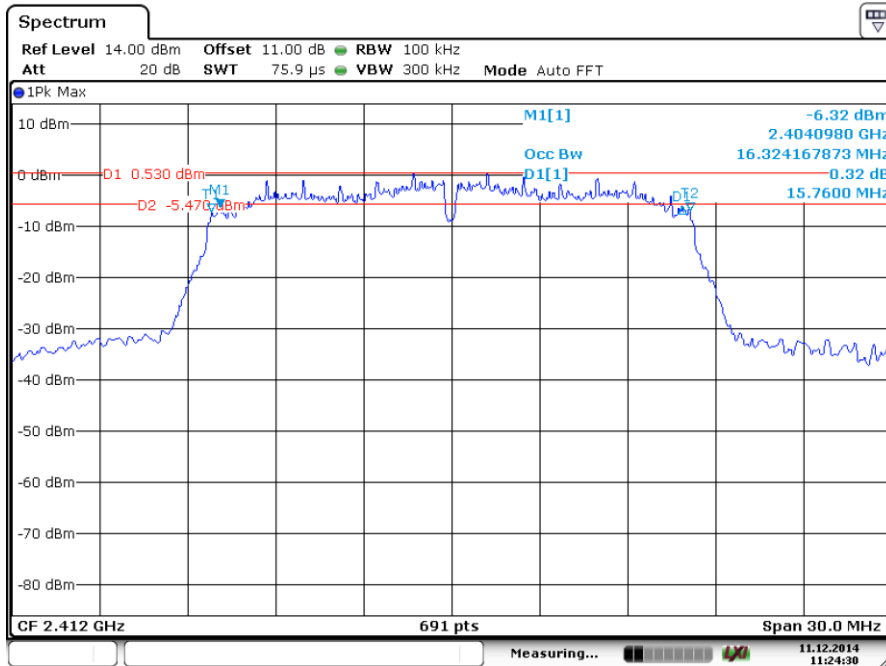


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802.11G

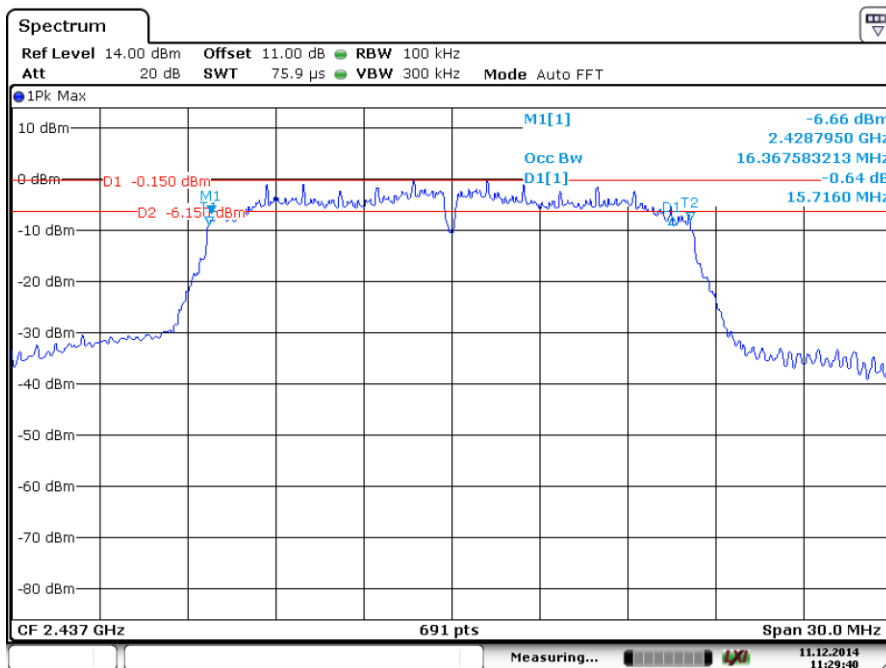
| Frequency<br>MHz       | 6dB bandwidth<br>MHz | 99% occupied<br>bandwidth<br>MHz | Result |
|------------------------|----------------------|----------------------------------|--------|
| Low channel 2412MHz    | 15.760               | 16.324                           | Pass   |
| Middle channel 2437MHz | 15.716               | 16.368                           | Pass   |
| High channel 2462MHz   | 15.760               | 16.368                           | Pass   |

2412MHz



Date: 11.DEC.2014 11:24:30

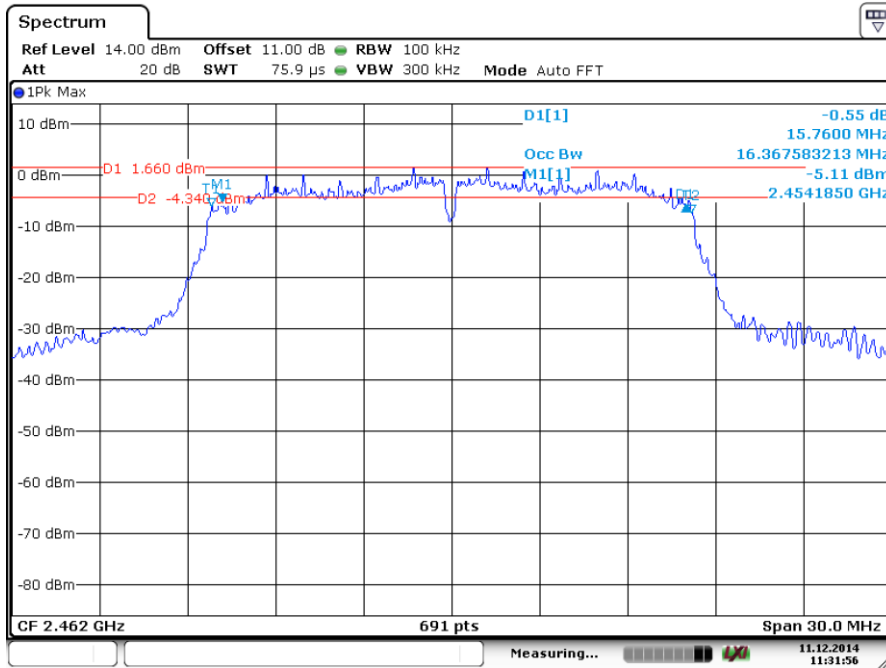
2437MHz



Date: 11.DEC.2014 11:29:41



### 2462MHz

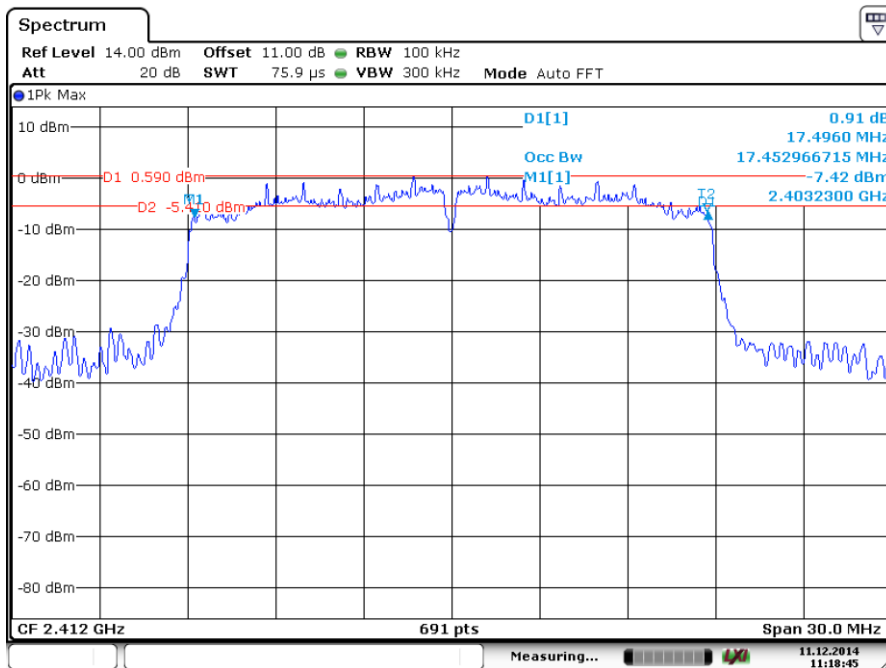


Date: 11.DEC.2014 11:31:56

### 802.11N20

| Frequency<br>MHz       | 6dB bandwidth<br>MHz | 99% occupied<br>bandwidth<br>MHz | Result |
|------------------------|----------------------|----------------------------------|--------|
| Low channel 2412MHz    | 17.496               | 17.453                           | Pass   |
| Middle channel 2437MHz | 17.496               | 17.496                           | Pass   |
| High channel 2462MHz   | 17.496               | 17.496                           | Pass   |

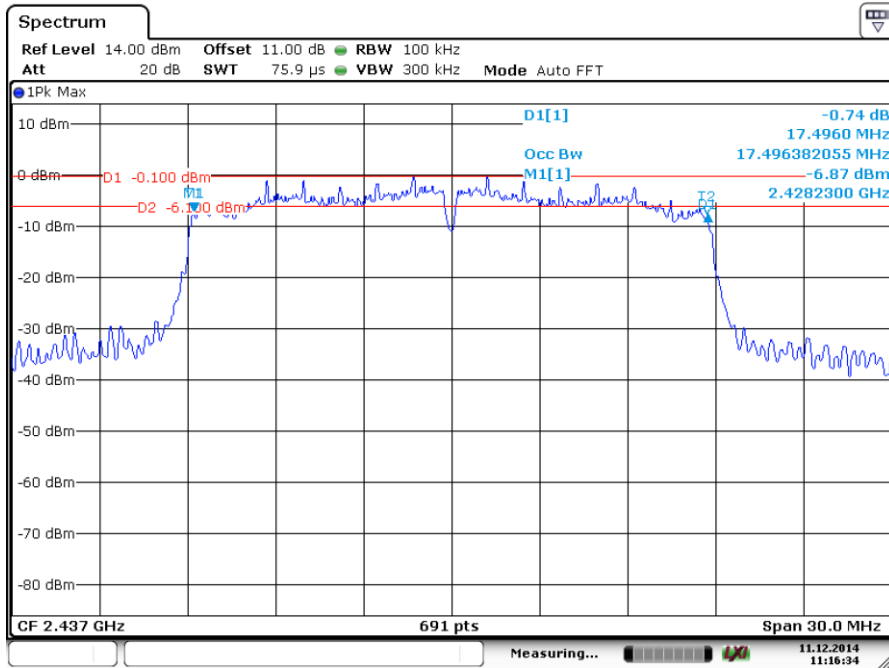
### 2412MHz



Date: 11.DEC.2014 11:18:45

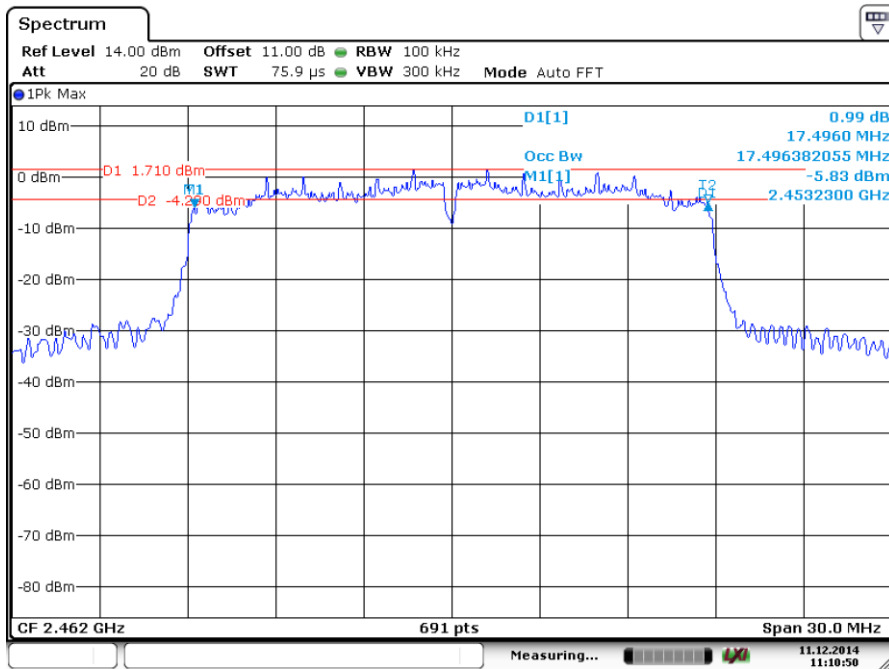


### 2437MHz



Date: 11.DEC.2014 11:16:34

### 2462MHz



Date: 11.DEC.2014 11:10:51

## 9.4 Power spectral density

### Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency.  
RBW=3kHz,VBW≥3RBW,Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.

### Limit

Limit [dBm]

≤8

### Test result

#### 802.11 B

| Frequency<br>MHz       | Power spectral<br>density<br>dBm | Result |
|------------------------|----------------------------------|--------|
| Low channel 2412MHz    | -8.41                            | Pass   |
| Middle channel 2437MHz | -9.58                            | Pass   |
| High channel 2462MHz   | -7.26                            | Pass   |

#### 802.11 G

| Frequency<br>MHz       | Power spectral<br>density<br>dBm | Result |
|------------------------|----------------------------------|--------|
| Low channel 2412MHz    | -12.71                           | Pass   |
| Middle channel 2437MHz | -13.44                           | Pass   |
| High channel 2462MHz   | -9.65                            | Pass   |

#### 802.11 N20

| Frequency<br>MHz       | Power spectral<br>density<br>dBm | Result |
|------------------------|----------------------------------|--------|
| Low channel 2412MHz    | -12.50                           | Pass   |
| Middle channel 2437MHz | -13.28                           | Pass   |
| High channel 2462MHz   | -11.00                           | Pass   |

## 9.5 Spurious RF conducted emissions

### Test Method

1. Establish a reference level by using the following procedure:
  - a. Set RBW=100 kHz. VBW≥3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.
  - b. Allow trace to fully stabilize, use the peak marker function to determine the maximum PSD level.
2. Use the maximum PSD level to establish the reference level.
  - a. Set the center frequency and span to encompass frequency range to be measured.
  - b. Use the peak marker function to determine the maximum amplitude level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements, report the three highest emissions relative to the limit.
3. Repeat above procedures until other frequencies measured were completed.

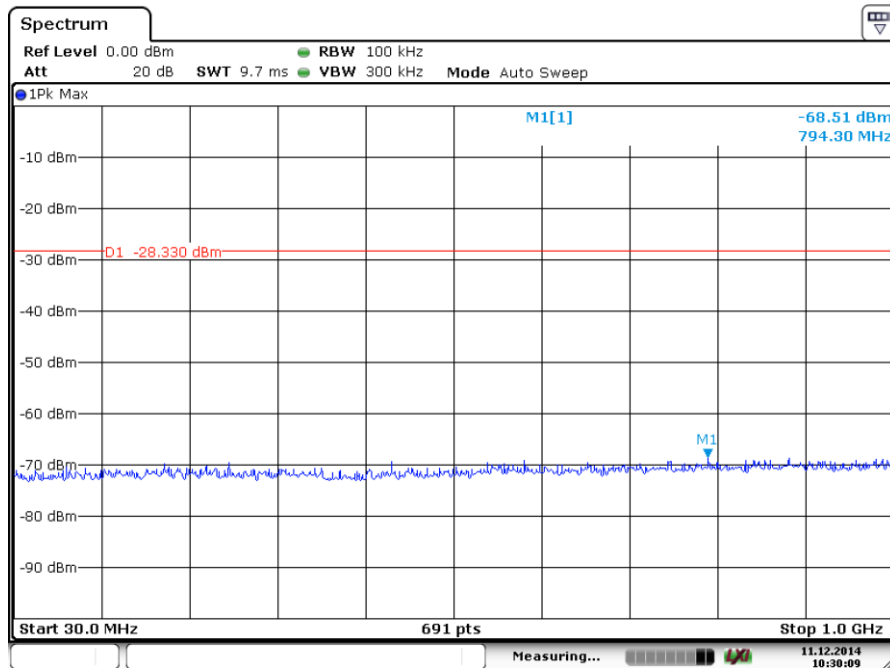
### Limit

| Frequency Range<br>MHz | Limit (dBc) |
|------------------------|-------------|
| 30-25000               | -20         |

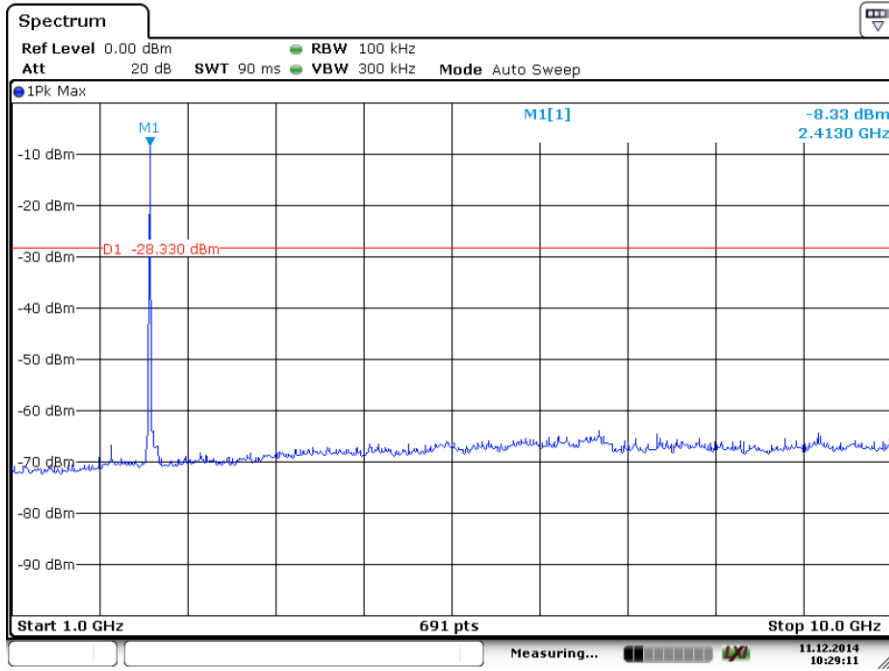
## Spurious RF conducted emissions

802.11 B

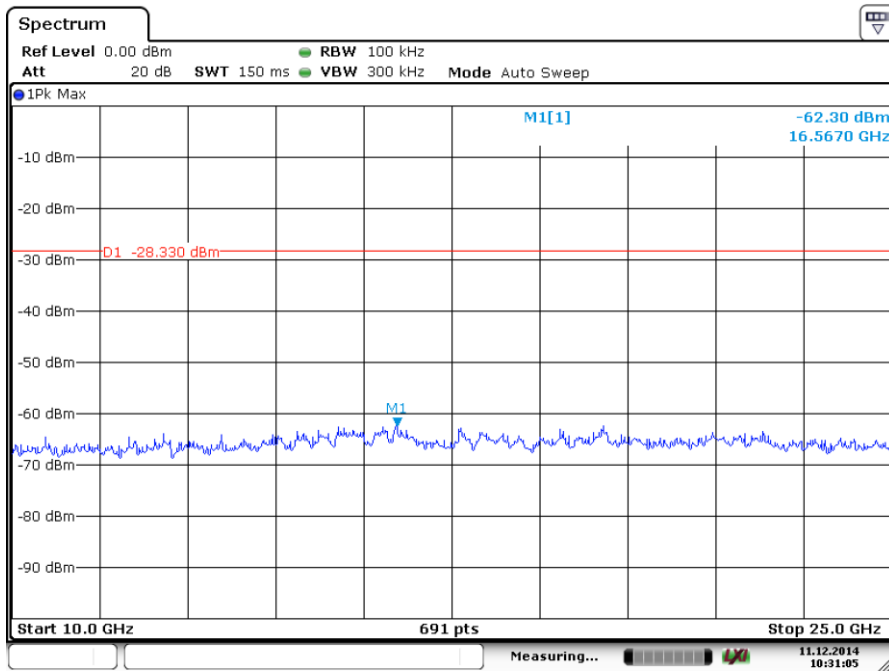
2412MHz



Date: 11. DEC. 2014 10:30:09



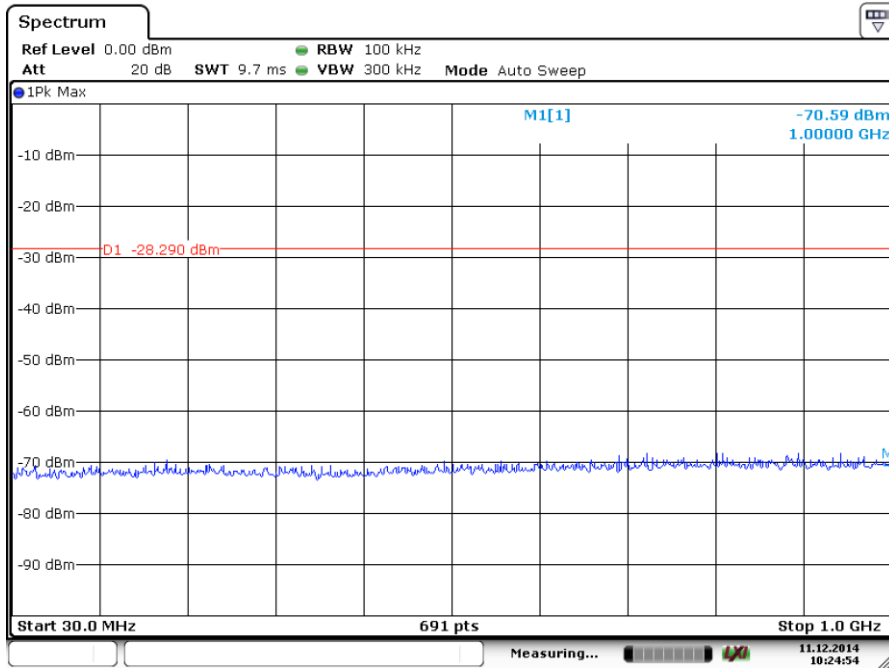
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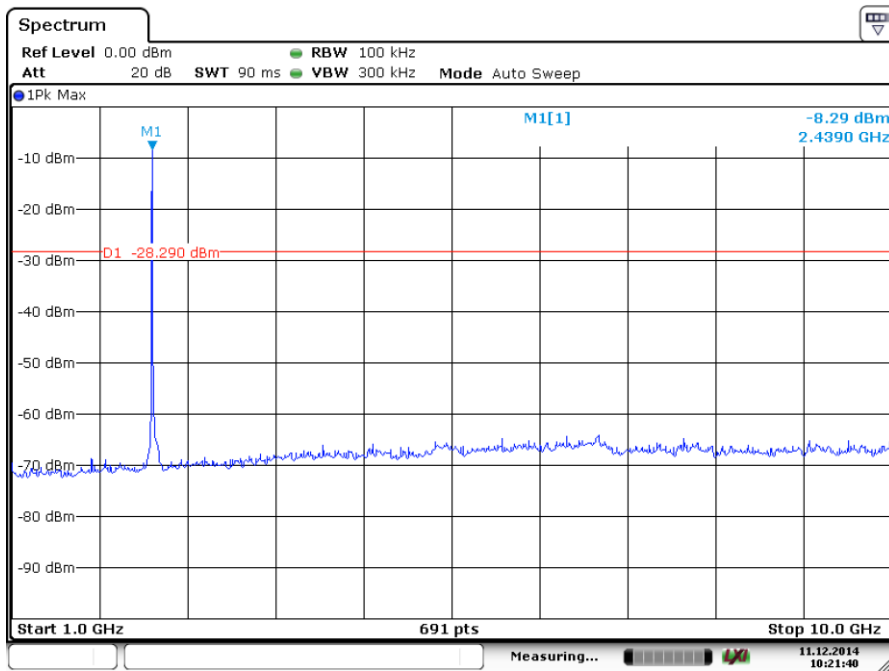
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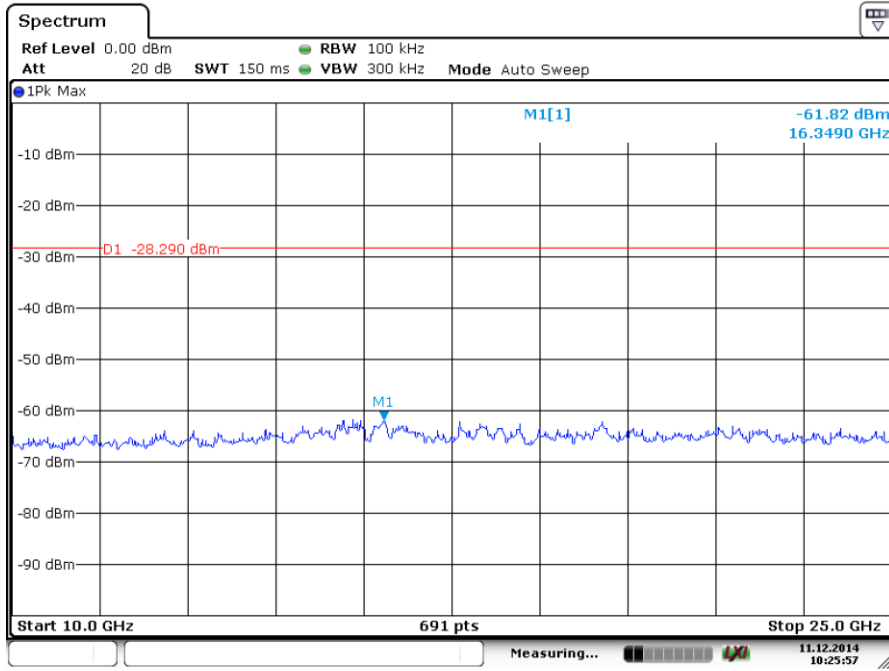
### 2437MHz



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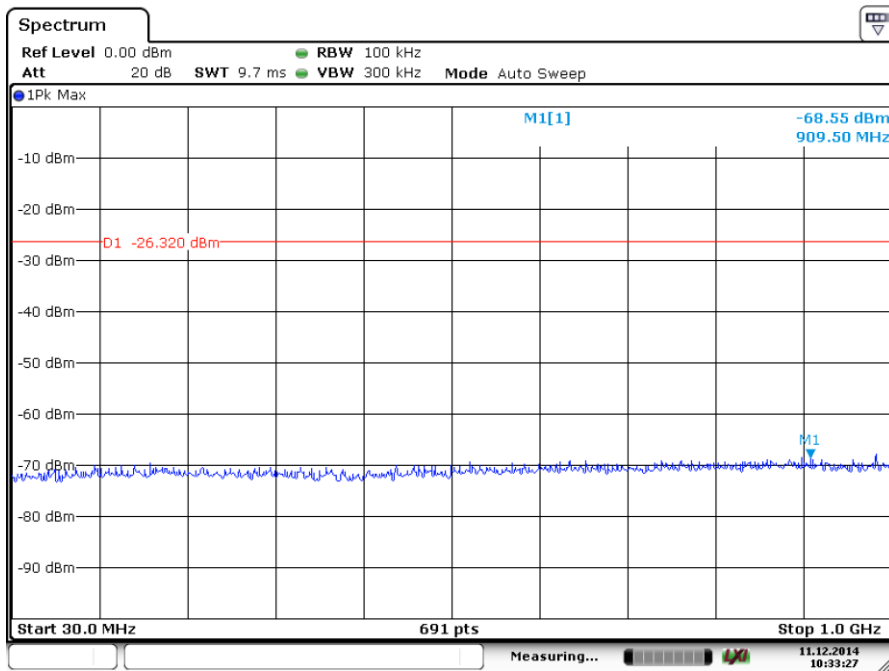


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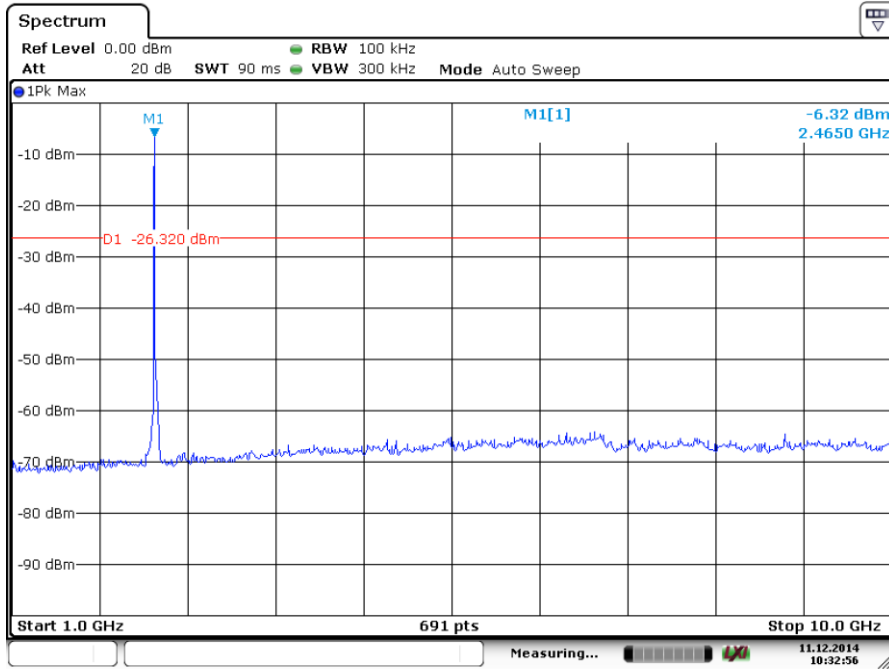


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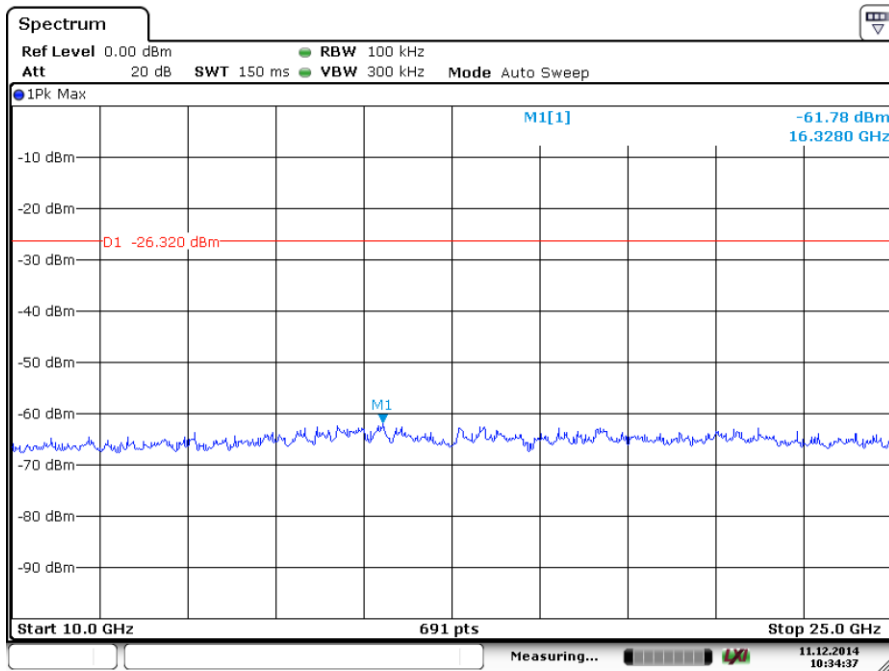
### 2462MHz



Date: 11.DEC.2014 10:33:28



Date: 11.DEC.2014 10:32:56

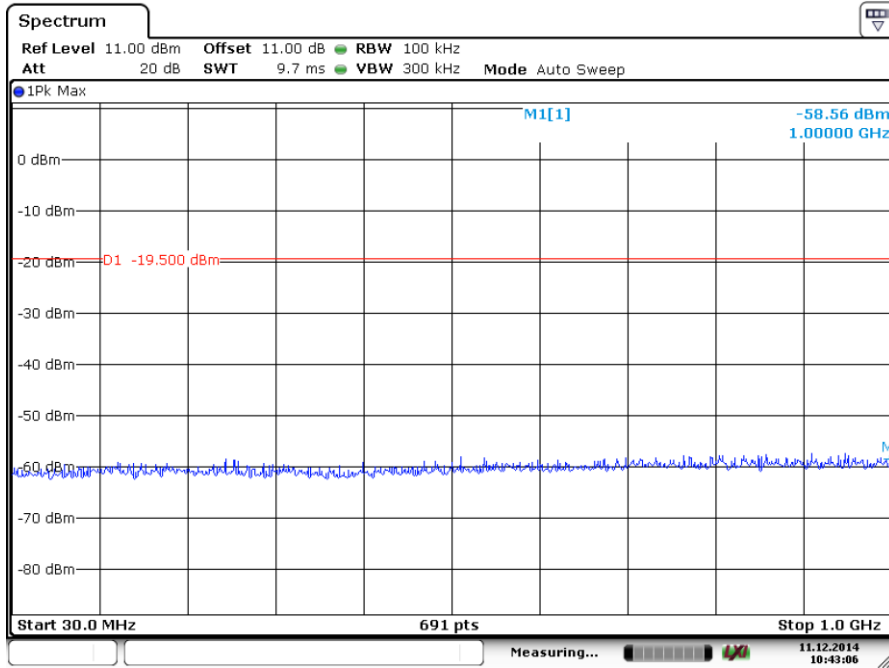


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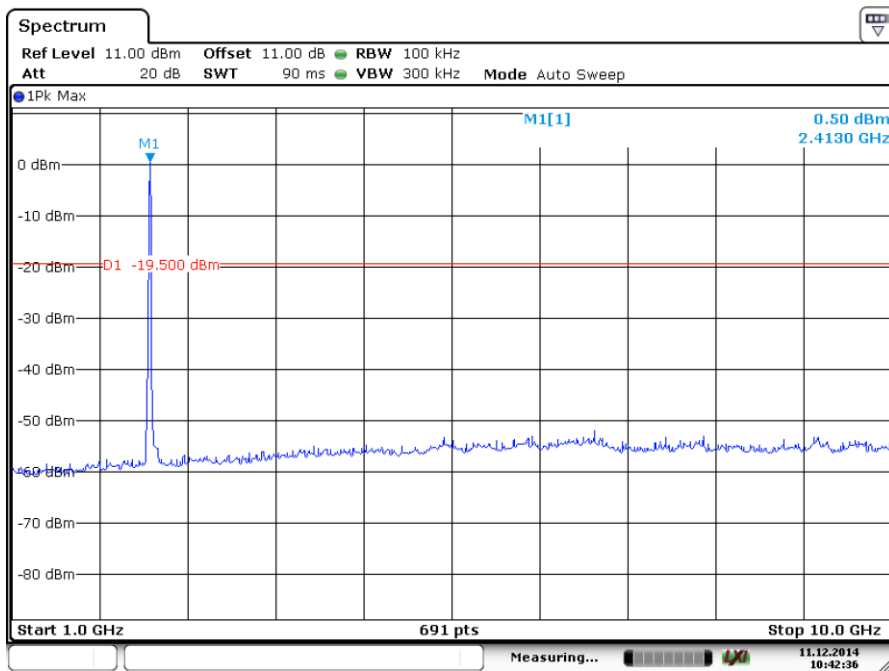


802.11 G

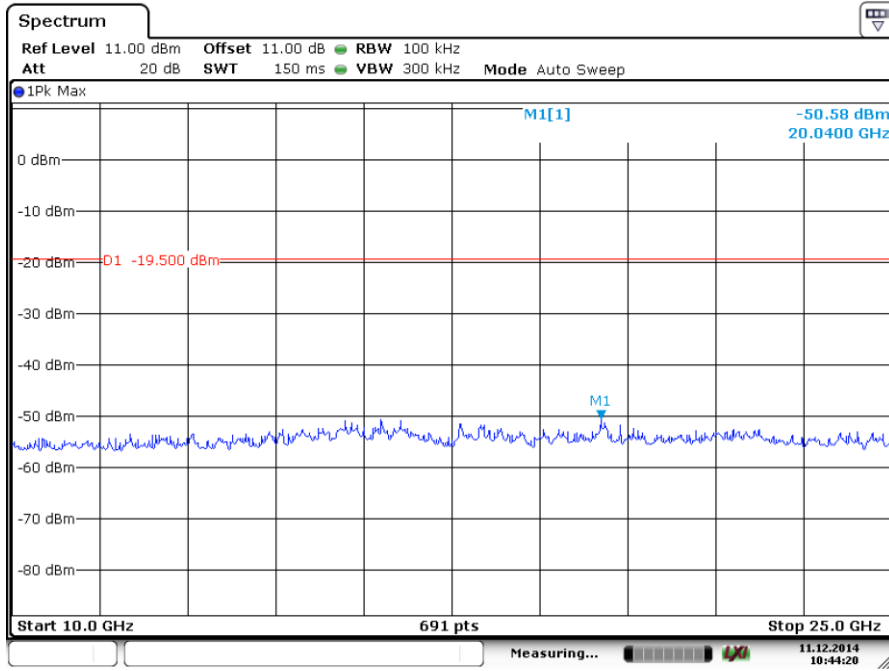
2412MHz



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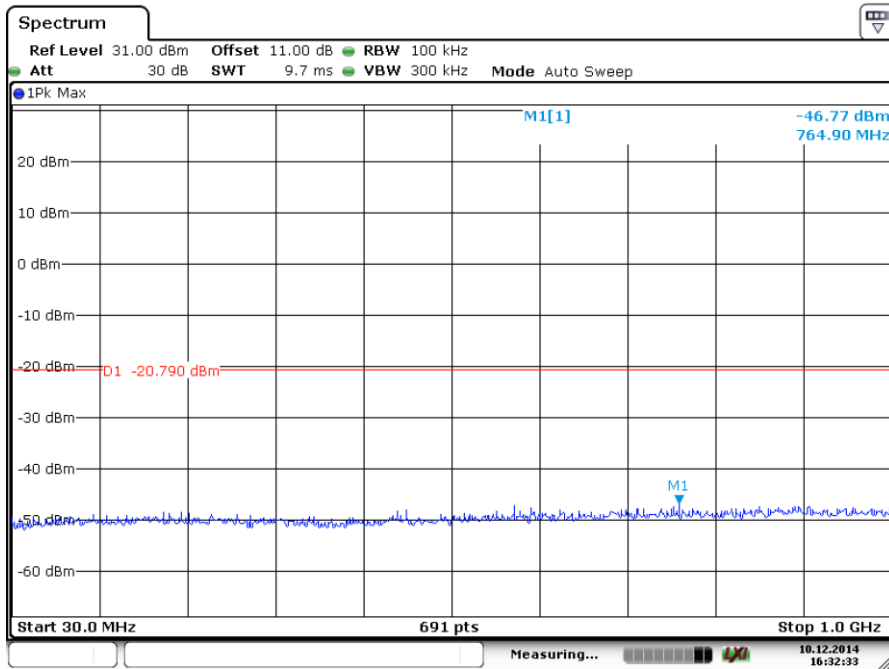


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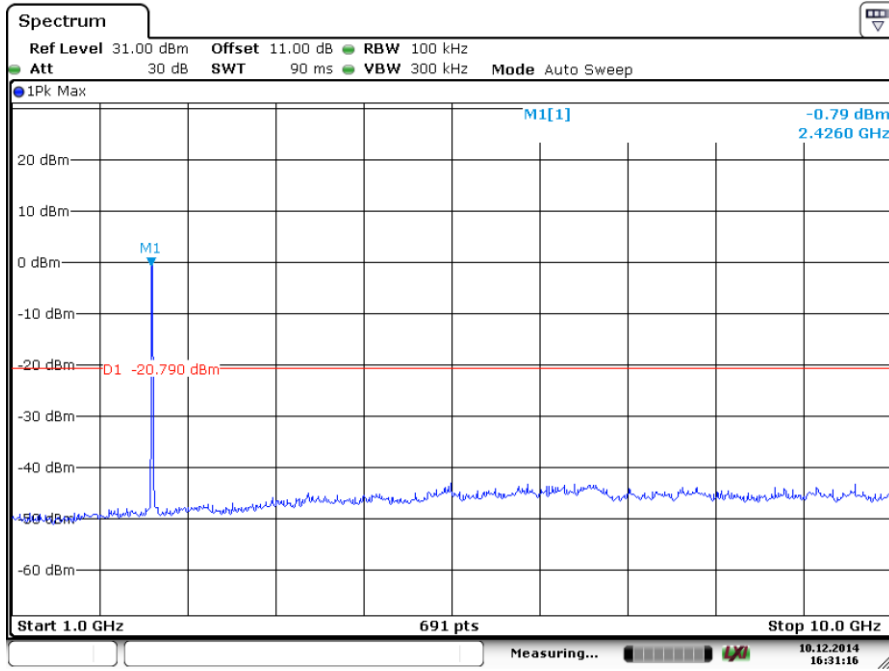


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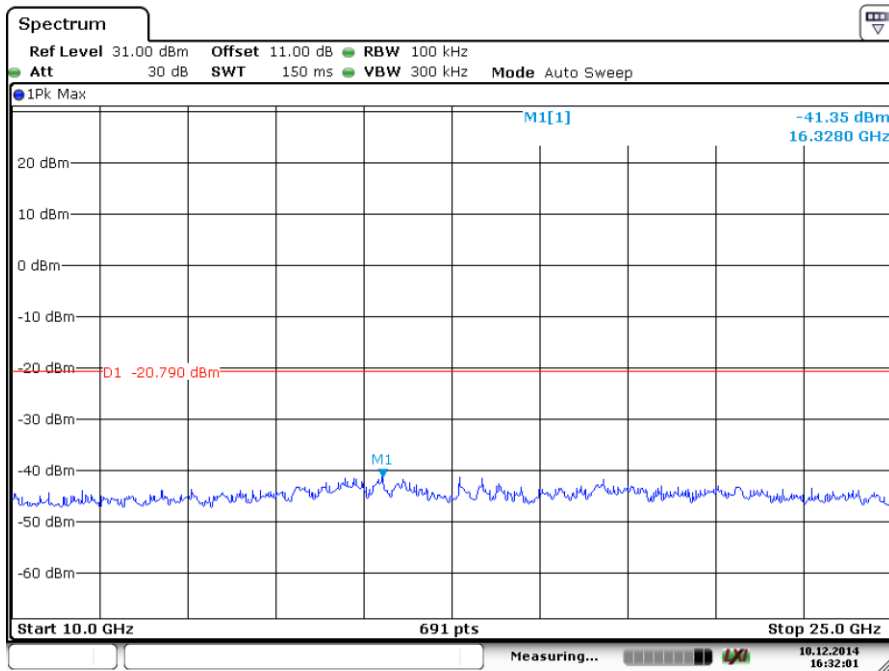
### 2437MHz



Date: 10.DEC.2014 16:32:33

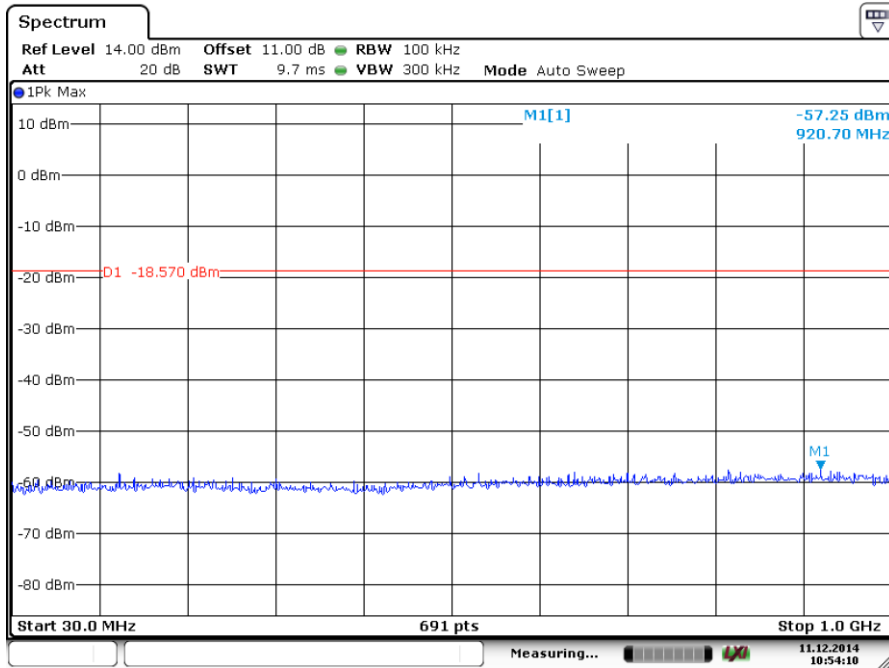


Date: 10.DEC.2014 16:31:16

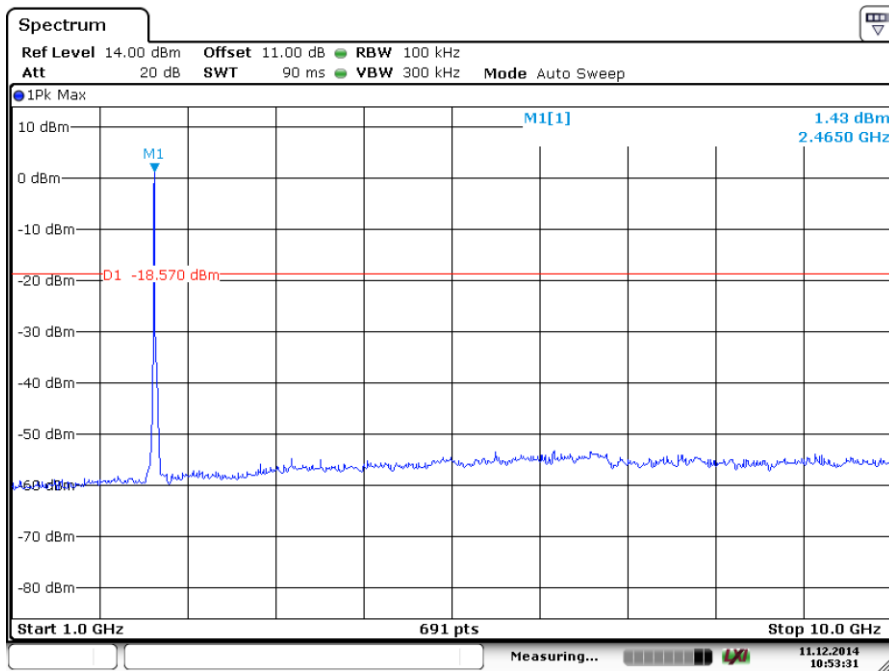


Date: 10.DEC.2014 16:32:02

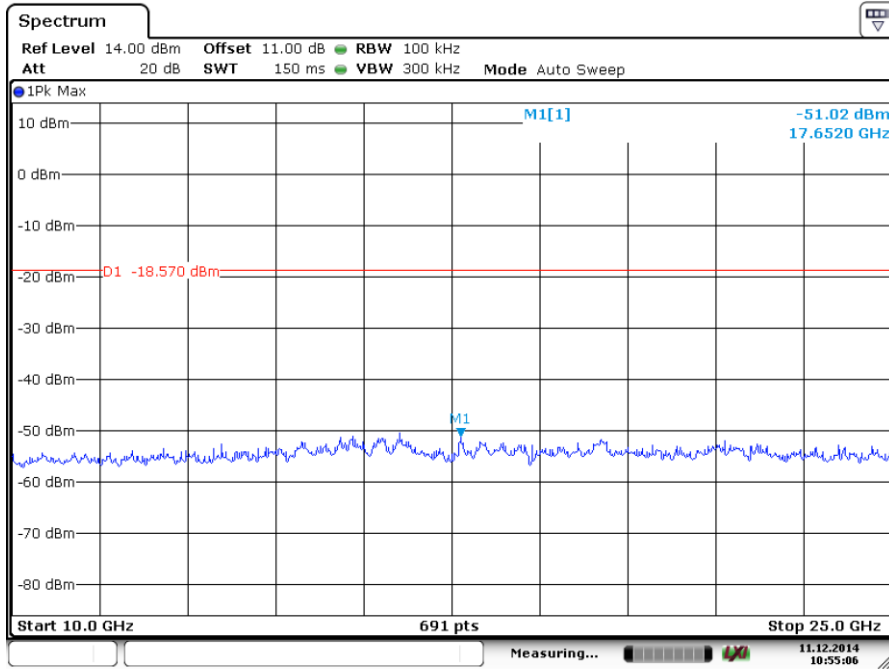
### 2462MHz



Date: 11.DEC.2014 10:54:10



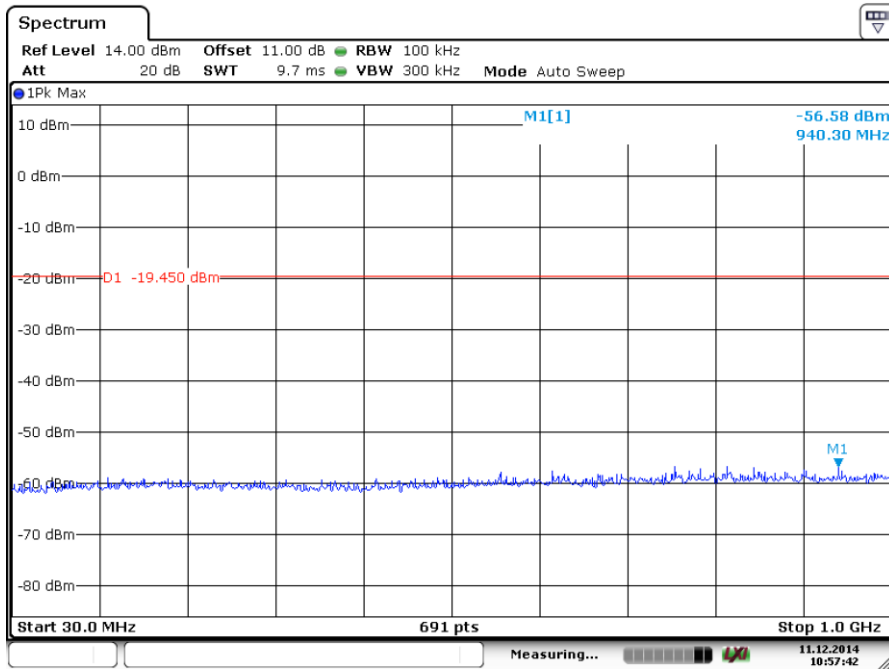
Date: 11.DEC.2014 10:53:31



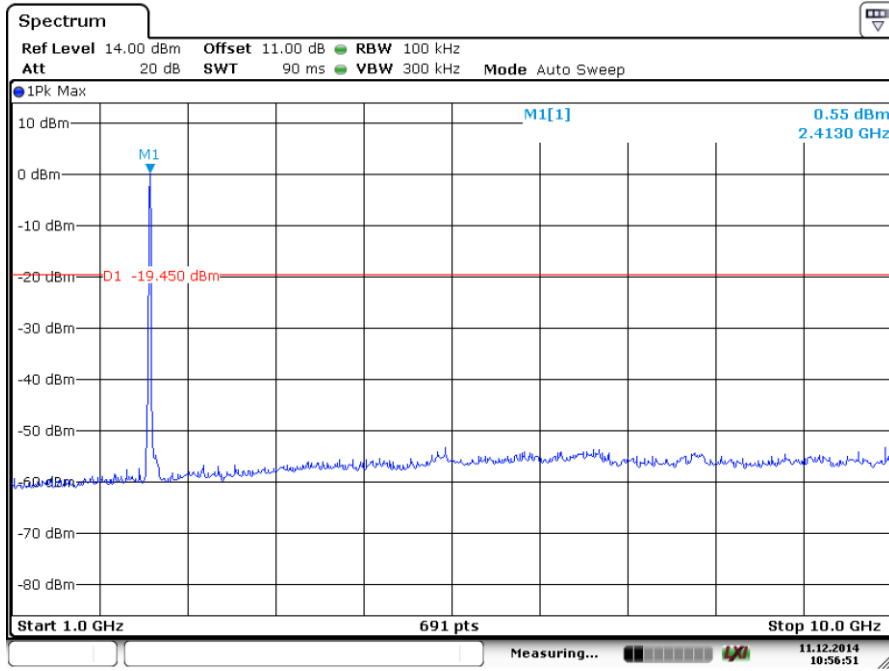
Date: 11.DEC.2014 10:55:06

802.11 N20

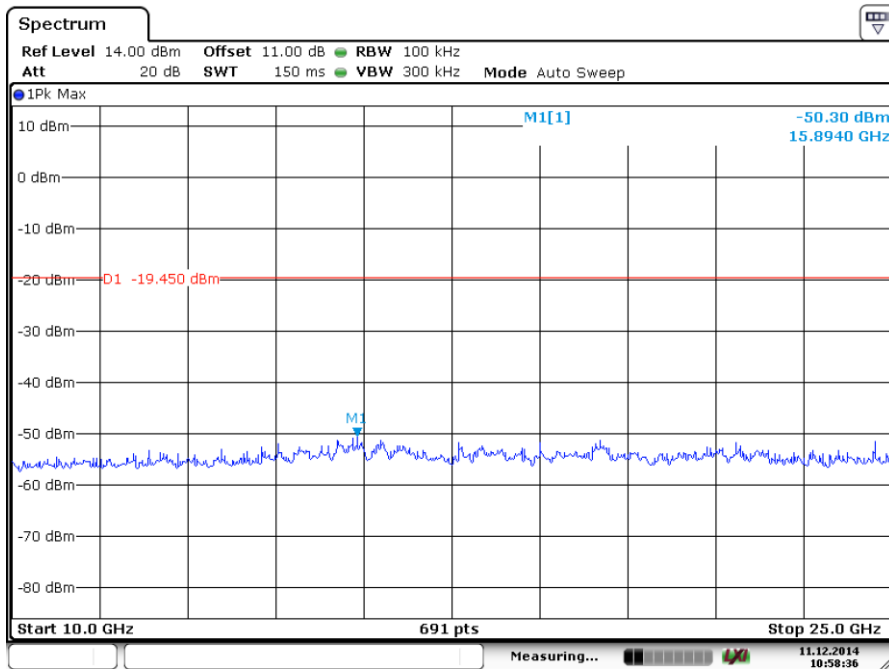
### 2412MHz



Date: 11.DEC.2014 10:57:42



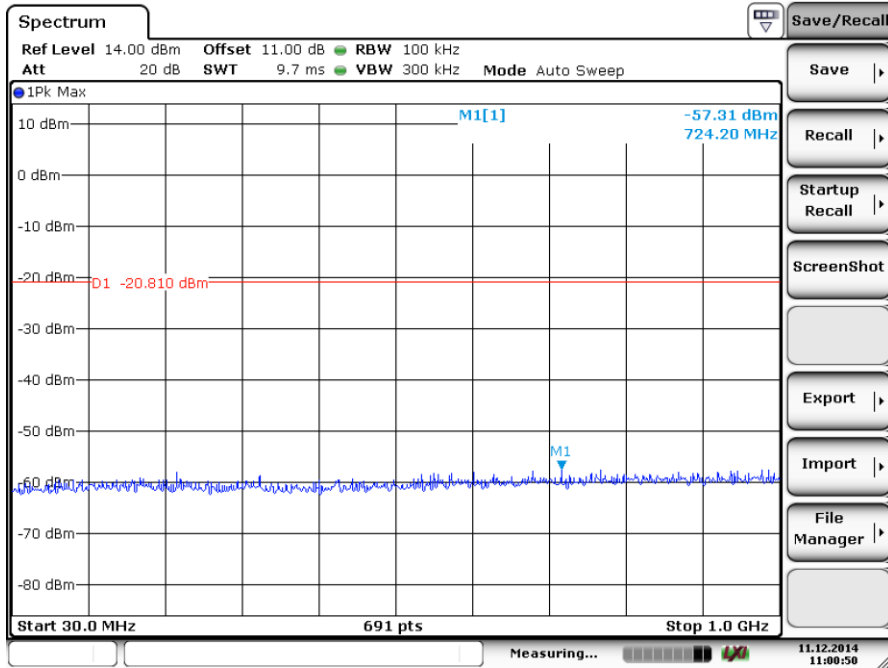
Date: 11.DEC.2014 10:56:51



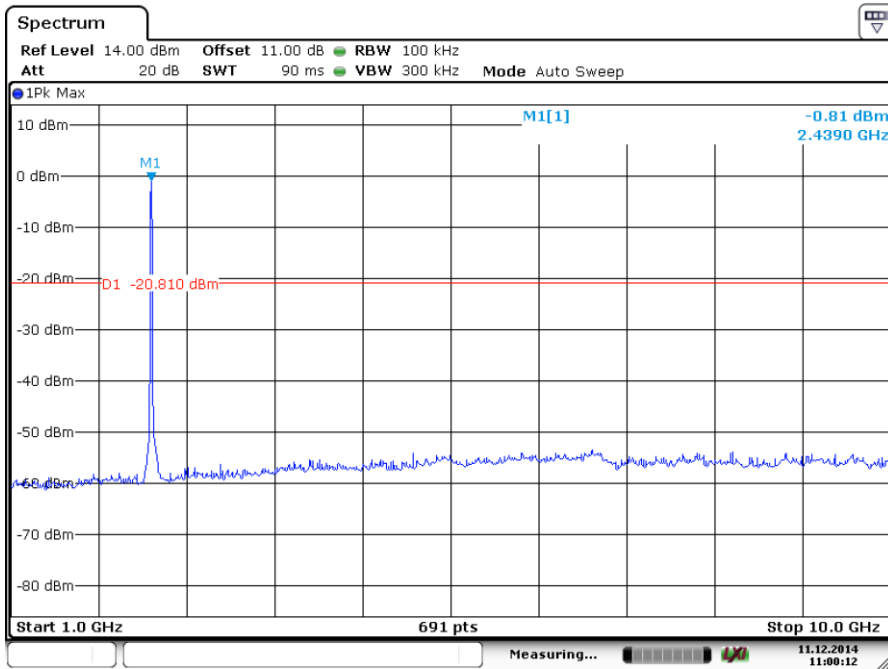
Date: 11.DEC.2014 10:58:37



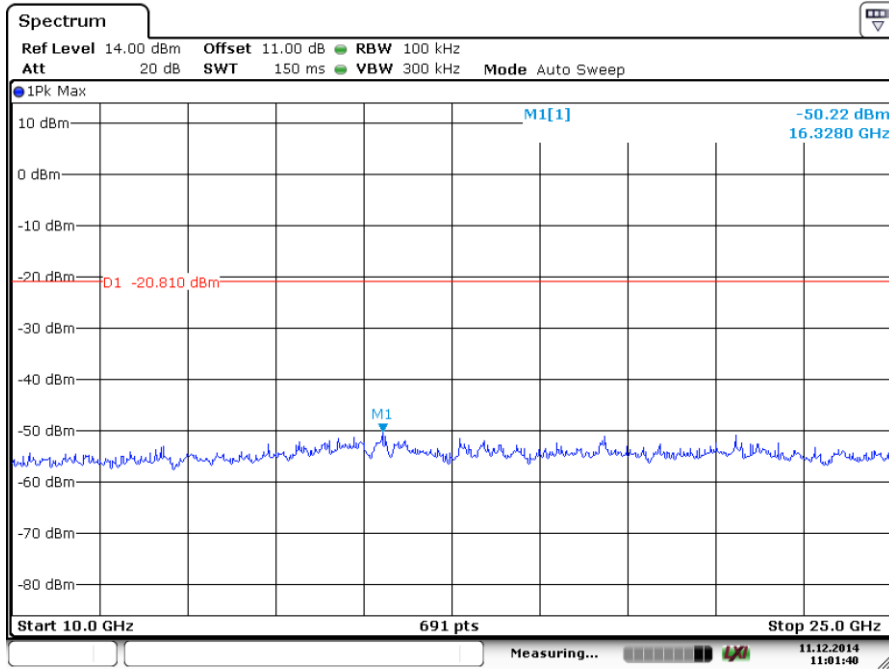
### 2437MHz



Date: 11.DEC.2014 11:00:50

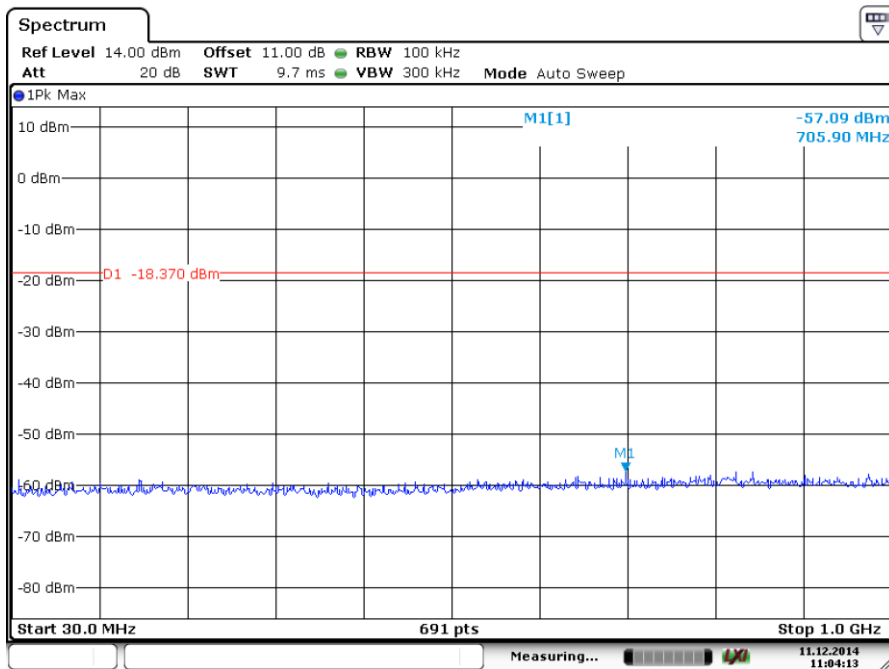


Date: 11.DEC.2014 11:00:11



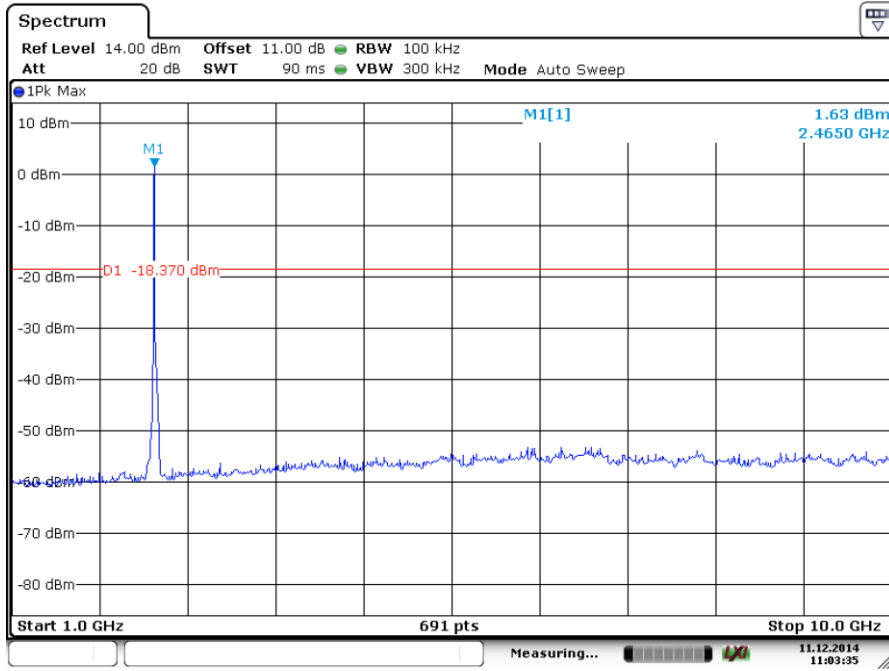
Date: 11.DEC.2014 11:01:40

### 2462MHz

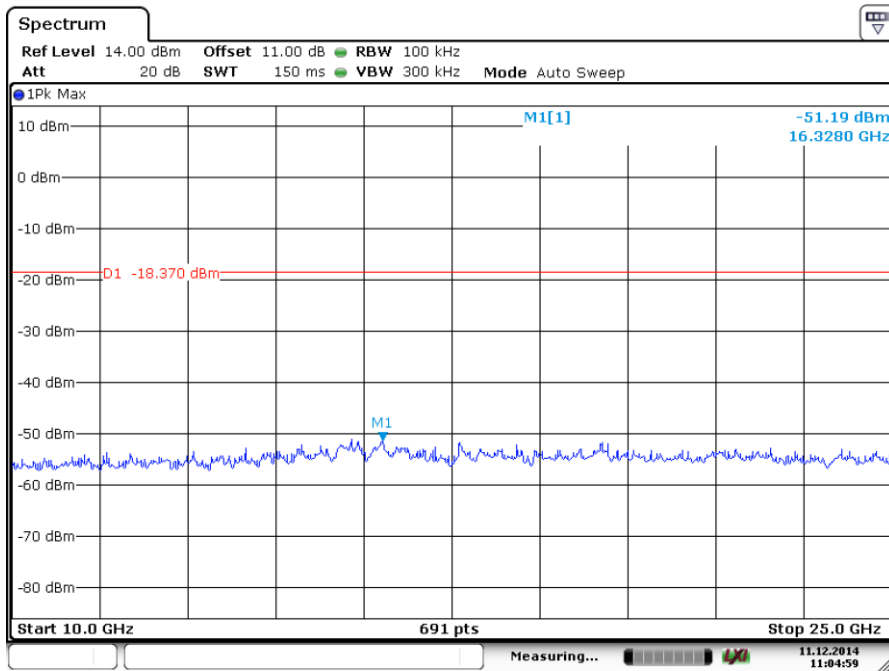


Date: 11.DEC.2014 11:04:14





Date: 11.DEC.2014 11:03:35



Date: 11.DEC.2014 11:04:59



## 9.6 Band edge

### Test Method

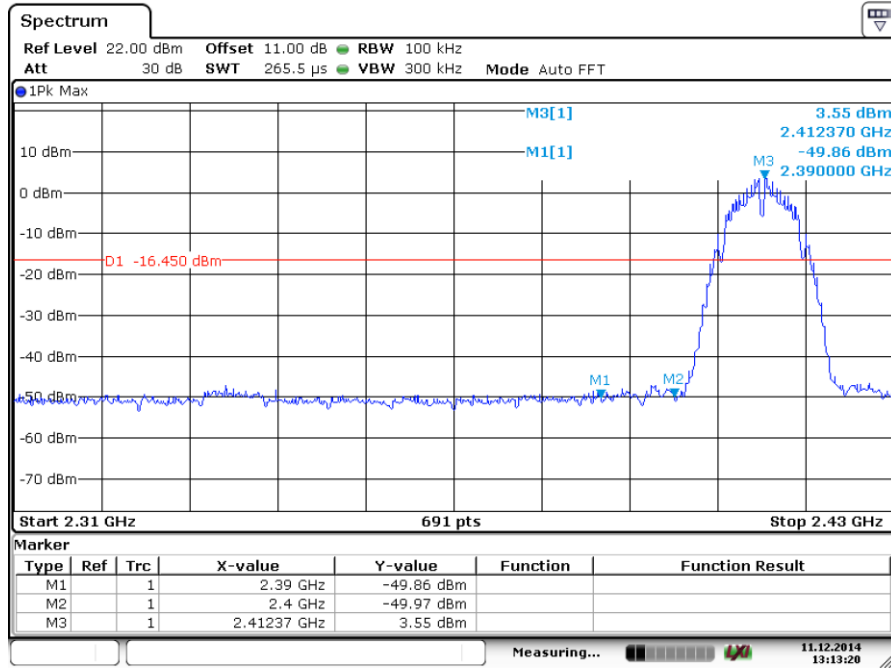
- 1 Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section.

### Limit

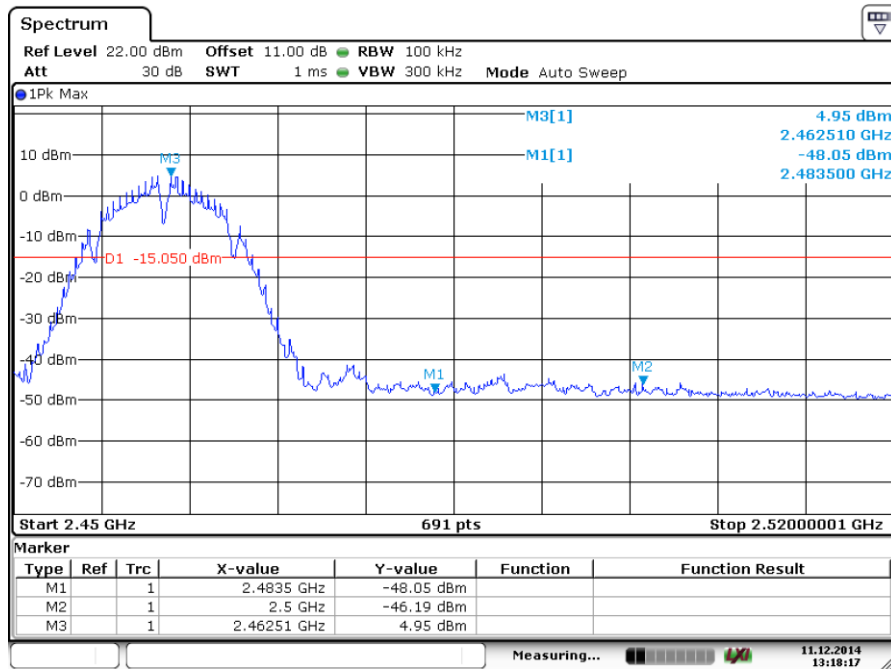
| Frequency Range<br>MHz | Limit (dBc) |
|------------------------|-------------|
| 30-25000               | -20         |

### Test result

802.11 B

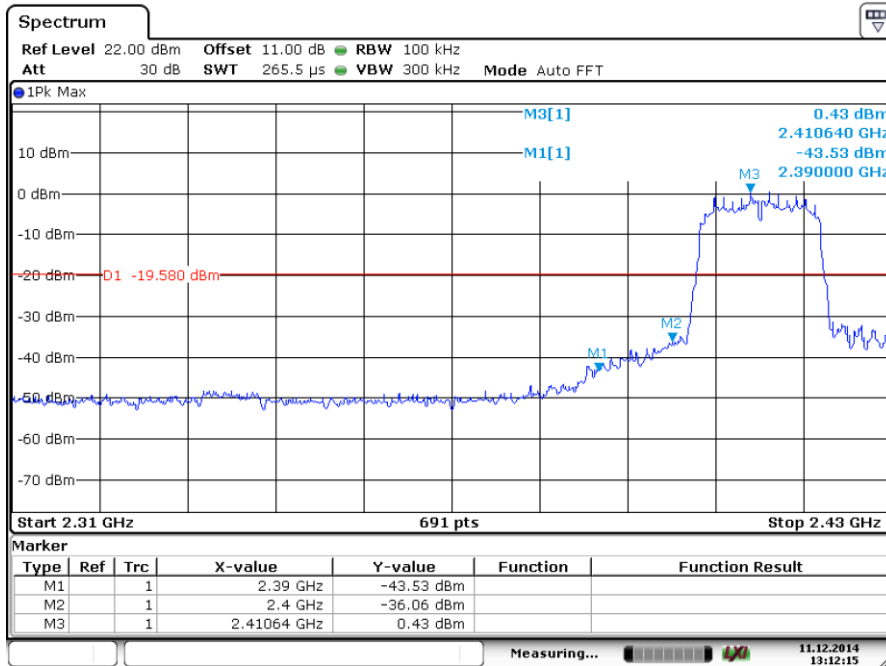


Date: 11.DEC.2014 13:13:20

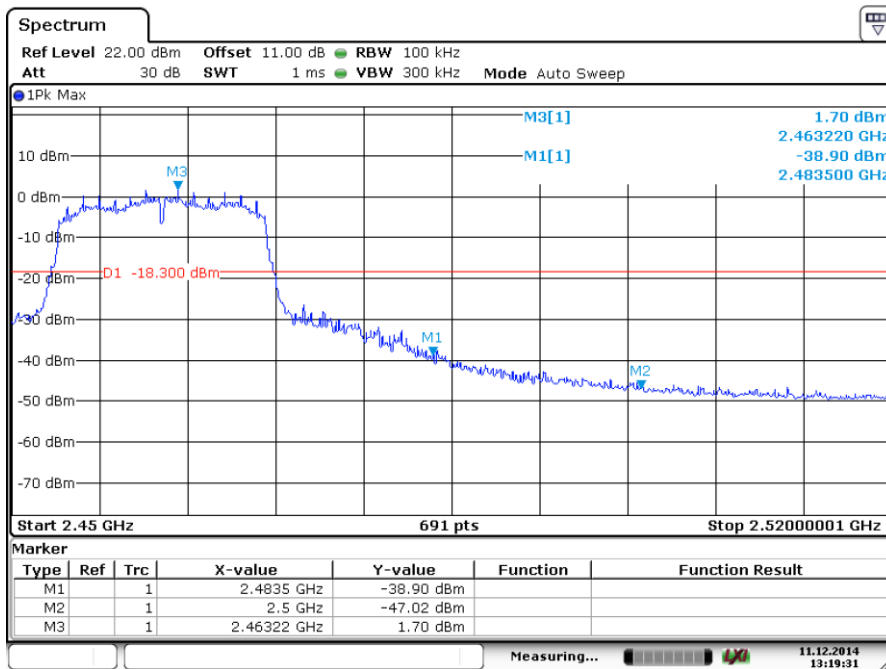


Date: 11.DEC.2014 13:18:17

802.11 G

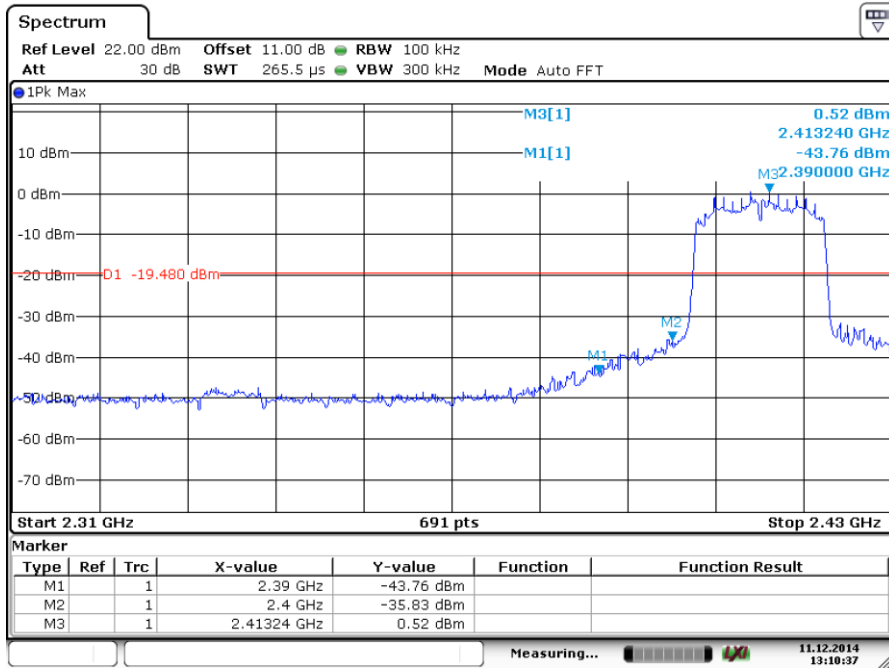


Date: 11.DEC.2014 13:12:15

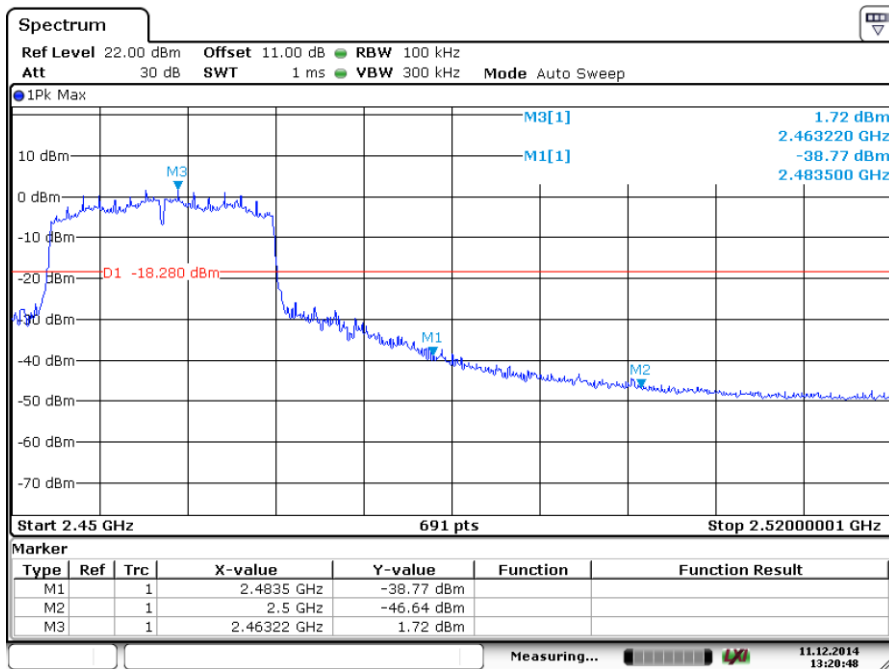


Date: 11.DEC.2014 13:19:32

802.11 N20



Date: 11.DEC.2014 13:10:37



Date: 11.DEC.2014 13:20:48

## 9.7 Spurious radiated emissions for transmitter

### Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
3. Use the following spectrum analyzer settings:  
Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for  $f \geq 1$ GHz, 100 kHz for  $f < 1$  GHz, VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Follow the guidelines in ANSI C63.4-1992 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. 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 duty cycle 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  $20\log(\text{duty cycle}/100 \text{ ms})$ , in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

### Limit

According to part 15.247(d), the radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

| Frequency<br>MHz | Field Strength<br>uV/m | Field Strength<br>dB $\mu$ V/m | Detector |
|------------------|------------------------|--------------------------------|----------|
| 30-88            | 100                    | 40                             | QP       |
| 88-216           | 150                    | 43.5                           | QP       |
| 216-960          | 200                    | 46                             | QP       |
| 960-1000         | 500                    | 54                             | QP       |
| Above 1000       | 500                    | 54                             | AV       |
| Above 1000       | 5000                   | 74                             | PK       |

### Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, B mode) test result is listed in the report.

### Transmitting spurious emission test result as below:

#### 802.11 B

#### 2412MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 363.5            | 37.65                       | Horizontal   | 46              | QP       | 8.35             | Pass   |
| 509.2            | 36.75                       | Vertical     | 46              | QP       | 9.25             | Pass   |
| 2412             | 99.21                       | Horizontal   | -               | PK       | -                | -      |
| 2412             | 94.26                       | Vertical     | -               | PK       | -                | -      |
| *4824            | 42.18                       | Horizontal   | 74              | PK       | 31.82            | Pass   |
| *4824            | 41.62                       | Vertical     | 74              | PK       | 32.38            | Pass   |

#### 2437MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 2437             | 99.21                       | Horizontal   | -               | PK       | -                | -      |
| 2437             | 94.20                       | Vertical     | -               | PK       | -                | -      |
| *4874            | 40.73                       | Horizontal   | 74              | PK       | 33.27            | Pass   |
| *4874            | 40.29                       | Vertical     | 74              | PK       | 33.71            | Pass   |

#### 2462MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 2462             | 103.72                      | Horizontal   | -               | PK       | -                | -      |
| 2462             | 97.64                       | Vertical     | -               | PK       | -                | -      |
| *4924            | 41.12                       | Horizontal   | 74              | PK       | 32.88            | Pass   |
| *4924            | 40.25                       | Vertical     | 74              | PK       | 33.75            | Pass   |

**802.11 G**  
 2412MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 800.5            | 35.98                       | Horizontal   | 46              | QP       | 10.02            | Pass   |
| 224              | 41.92                       | Vertical     | 46              | QP       | 4.08             | Pass   |
| 2412             | 99.30                       | Horizontal   | -               | PK       | -                | -      |
| 2412             | 96.39                       | Vertical     | -               | PK       | -                | -      |
| *4824            | 40.49                       | Horizontal   | 74              | PK       | 33.51            | Pass   |
| *4824            | 41.14                       | Vertical     | 74              | PK       | 32.86            | Pass   |

## 2437MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 2437             | 99.51                       | Horizontal   | -               | PK       | -                | -      |
| 2437             | 94.89                       | Vertical     | -               | PK       | -                | -      |
| *4874            | 40.18                       | Horizontal   | 74              | PK       | 33.72            | Pass   |
| *4874            | 41.29                       | Vertical     | 74              | PK       | 32.71            | Pass   |

## 2462MHz

| Frequency<br>MHz | Emission<br>Level<br>dBuV/m | Polarization | Limit<br>dBuV/m | Detector | Margin<br>dBuV/m | Result |
|------------------|-----------------------------|--------------|-----------------|----------|------------------|--------|
| 2462             | 102.07                      | Horizontal   | -               | PK       | -                | -      |
| 2462             | 97.54                       | Vertical     | -               | PK       | -                | -      |
| *4924            | 40.83                       | Horizontal   | 74              | PK       | 33.17            | Pass   |
| *4924            | 40.48                       | Vertical     | 74              | PK       | 33.52            | Pass   |



**802.11 N20**  
2412MHz

| Frequency<br>MHz | Emission Level<br>dBuV/m | Polarization | Limit<br>dBµV/m | Detector | Margin<br>dBµV/m | Result |
|------------------|--------------------------|--------------|-----------------|----------|------------------|--------|
| 800.2            | 36.40                    | Horizontal   | 46              | QP       | 9.60             | Pass   |
| 224.1            | 40.97                    | Vertical     | 46              | QP       | 5.03             | Pass   |
| 2412             | 99.38                    | Horizontal   | -               | PK       | -                | -      |
| 2412             | 95.01                    | Vertical     | -               | PK       | -                | -      |
| *4824            | 41.63                    | Horizontal   | 74              | PK       | 32.37            | Pass   |
| *4824            | 40.85                    | Vertical     | 74              | PK       | 33.15            | Pass   |

2437MHz

| Frequency<br>MHz | Emission Level<br>dBuV/m | Polarization | Limit<br>dBµV/m | Detector | Margin<br>dBµV/m | Result |
|------------------|--------------------------|--------------|-----------------|----------|------------------|--------|
| 2437             | 99.92                    | Horizontal   | -               | PK       | -                | -      |
| 2437             | 94.37                    | Vertical     | -               | PK       | -                | -      |
| *4874            | 40.38                    | Horizontal   | 74              | PK       | 33.62            | Pass   |
| *4874            | 40.05                    | Vertical     | 74              | PK       | 33.95            | Pass   |

2462MHz

| Frequency<br>MHz | Emission Level<br>dBuV/m | Polarization | Limit<br>dBµV/m | Detector | Margin<br>dBµV/m | Result |
|------------------|--------------------------|--------------|-----------------|----------|------------------|--------|
| 2462             | 102.50                   | Horizontal   | -               | PK       | -                | -      |
| 2462             | 97.24                    | Vertical     | -               | PK       | -                | -      |
| *4924            | 39.83                    | Horizontal   | 74              | PK       | 34.17            | Pass   |
| *4924            | 40.19                    | Vertical     | 74              | PK       | 33.81            | Pass   |

Remark:

- (1) AV Emission Level= PK Emission Level+20log (dutycycle)
- (2) Data of measurement within 30-1000MHz frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (3) "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

## 10 Test Equipment List

### List of Test Instruments

|                  | DESCRIPTION            | MANUFACTURER    | MODEL NO.       | SERIAL NO.    | CAL. DUE DATE |                                     |
|------------------|------------------------|-----------------|-----------------|---------------|---------------|-------------------------------------|
| CE               | Test Receiver          | Rohde & Schwarz | ESHS10          | 838693/001    | Nov.04, 15    | <input checked="" type="checkbox"/> |
|                  | L.I.S.N.#1             | Rohde & Schwarz | ESH2-Z5         | 834066/011    | Nov.04, 15    | <input checked="" type="checkbox"/> |
|                  | L.I.S.N.#3             | Kyoritsu        | KNW-242C        | 8-1920-1      | May.07, 15    | <input type="checkbox"/>            |
|                  | RF Cable               | 3D-2W           | Fujikura        | LISN Cable 1# | May.07, 15    | <input checked="" type="checkbox"/> |
|                  | Coaxial Switch         | MP59B           | Anritsu         | M55367        | May.07, 15    | <input checked="" type="checkbox"/> |
|                  | Passive Probe          | ESH2-Z3         | Rohde & Schwarz | 299.7810.52   | May.07, 15    | <input type="checkbox"/>            |
|                  | Pulse Limiter          | ESH3-Z2         | Rohde & Schwarz | 100341        | May.07, 15    | <input type="checkbox"/>            |
| C                | Spectrum               | Agilent         | E4446A          | US44300459    | May.08, 15    | <input checked="" type="checkbox"/> |
| RE<br>< 1<br>GHz | Test Receiver<br><1GHz | Rohde & Schwarz | ESVS10          | 834468/011    | May.07, 15    | <input checked="" type="checkbox"/> |
|                  | Amplifier < 1 GHz      | HP              | 8447D           | 2648A04738    | May.07, 15    | <input checked="" type="checkbox"/> |
|                  | HF Cable               | Hubersuhne      | Sucoflex104     | Room 2        | May.08, 15    | <input checked="" type="checkbox"/> |
|                  | Bilog Antenna          | Schaffner       | CBL6111C        | 2598          | Oct.25, 15    | <input checked="" type="checkbox"/> |
| RE<br>> 1<br>GHz | Spectrum > 1GHz        | Agilent         | E4446A          | US44300459    | May.08, 15    | <input checked="" type="checkbox"/> |
|                  | Horn Antenna           | EMCO            | 3115            | 9607-4877     | Jun. 24, 15   | <input checked="" type="checkbox"/> |
|                  | Amp > 1 Ghz            | HP              | 8449B           | 3008A08495    | May.08, 15    | <input checked="" type="checkbox"/> |
|                  | HF Cable               | Hubersuhne      | Sucoflex104     | Room1         | May.08, 15    | <input checked="" type="checkbox"/> |

#### C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density\*
- Spurious RF conducted emissions
- Band edge

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

| Items              | Extended Uncertainty   |
|--------------------|------------------------|
| Radiation emission | U=4.32dB (30MHz-25GHz) |
| Output power test  | 0.94 dB                |
| Power density test | 2.10 dB                |
| Bandwidth          | 1x10 <sup>-9</sup>     |