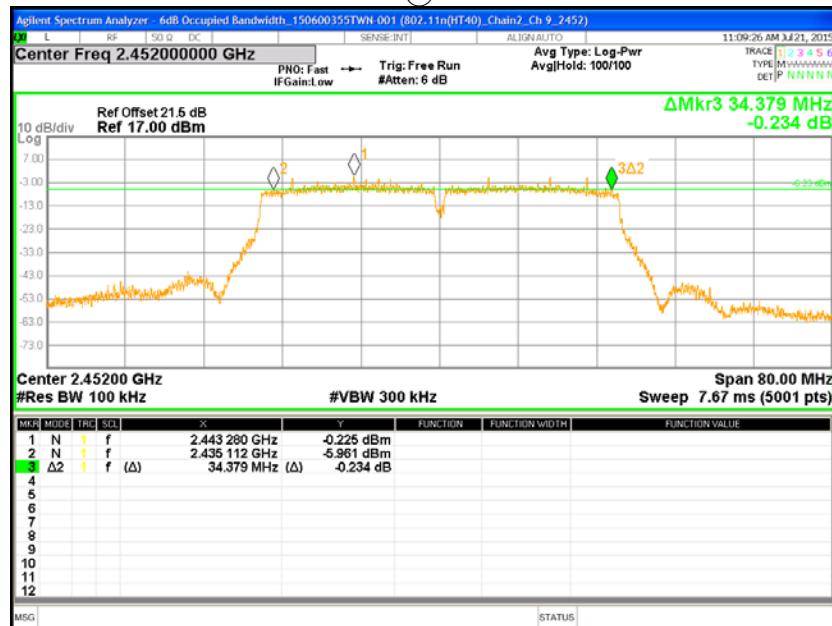
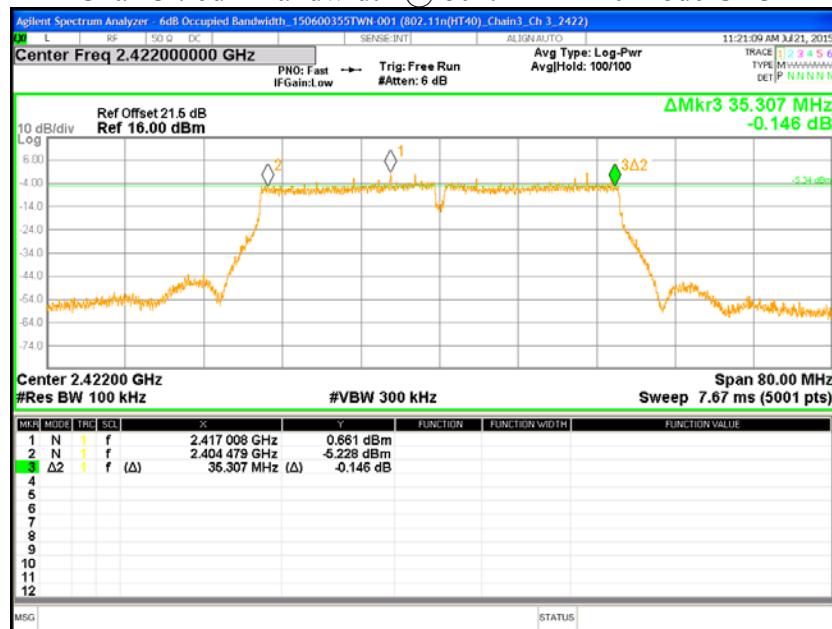


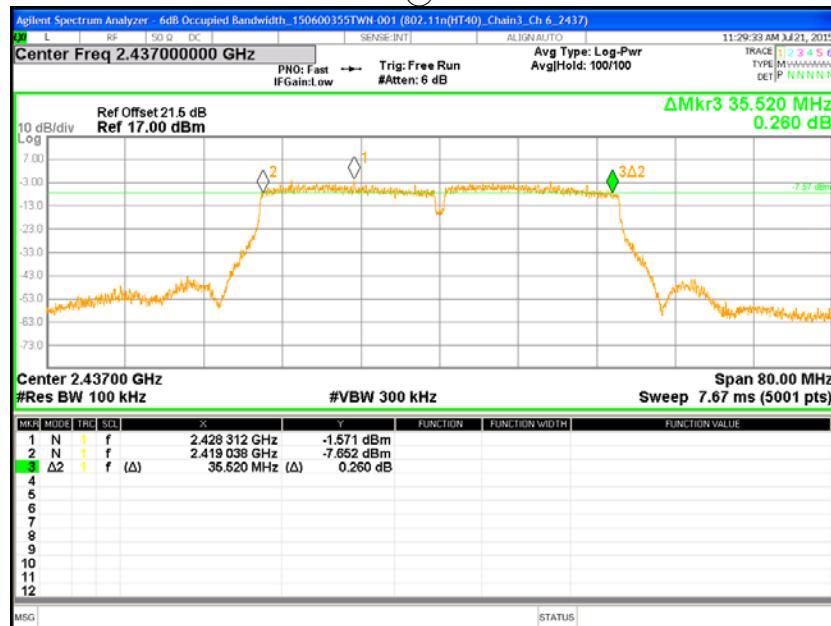
Chain2 : 6dB Bandwidth @ 802.11n HT40 mode Ch 9



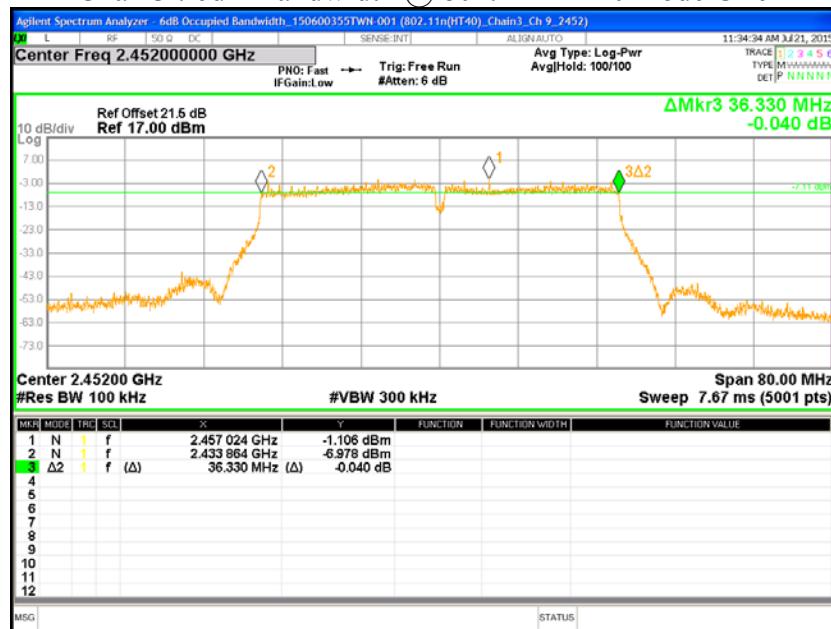
Chain3 : 6dB Bandwidth @ 802.11n HT40 mode Ch 3



Chain3 : 6dB Bandwidth @ 802.11n HT40 mode Ch 6



Chain3 : 6dB Bandwidth @ 802.11n HT40 mode Ch 9



## 4. Maximum Peak Conducted Output Power

### 4.1 Operating environment

|                           |                                       |     |
|---------------------------|---------------------------------------|-----|
| Temperature:              | 25                                    | °C  |
| Relative Humidity:        | 50                                    | %   |
| Atmospheric Pressure      | 1008                                  | hPa |
| Requirement & Test method | 15.247(b)(3)<br>KDB 558074 D01 v03r03 |     |

### 4.2 Limit for maximum peak conducted output power

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt (30dBm)

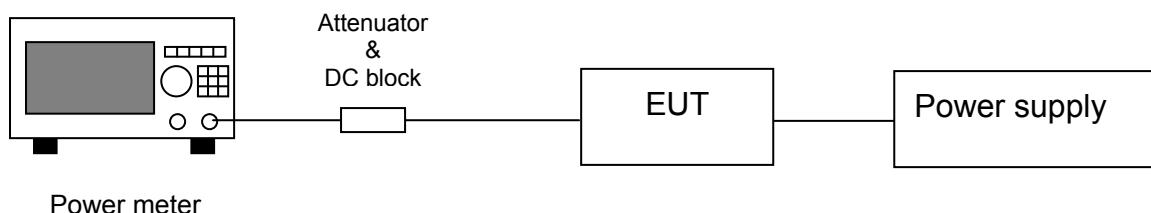
### 4.3 Measuring instrument setting

| Power meter |  |
|-------------|--|
| Power meter | Setting  |
| Bandwidth   | 65MHz bandwidth is greater than the EUT emission bandwidth |
| Detector    | Average  |

### 4.4 Test procedure

Test procedures refer to clause 9.1.2 peak power meter method and clause 9.2.3.2 measurement using a gated RF average power meter of KDB 558074 D01.

### 4.5 Test diagram



#### 4.6 Test result

Single TX

| Mode                   | Channel | Frequency (MHz) | Data Rate (Mbps) | Output Power (AV) (dBm) | Total Power (AV) (mW) | Limit (dBm) | Margin (dB) |
|------------------------|---------|-----------------|------------------|-------------------------|-----------------------|-------------|-------------|
| 802.11b<br>(chain0)    | 1       | 2412            | 1                | 21.8                    | 151.36                | 30          | -8.20       |
|                        | 6       | 2437            |                  | 24.2                    | 263.03                | 30          | -5.80       |
|                        | 11      | 2462            |                  | 22                      | 158.49                | 30          | -8.00       |
| 802.11b<br>11b(chain1) | 1       | 2412            | 1                | 21.9                    | 154.88                | 30          | -8.10       |
|                        | 6       | 2437            |                  | 24.2                    | 263.03                | 30          | -5.80       |
|                        | 11      | 2462            |                  | 22.1                    | 162.18                | 30          | -7.90       |
| 802.11b<br>(chain2)    | 1       | 2412            | 1                | 21.8                    | 151.36                | 30          | -8.20       |
|                        | 6       | 2437            |                  | 24.1                    | 257.04                | 30          | -5.90       |
|                        | 11      | 2462            |                  | 22.1                    | 162.18                | 30          | -7.90       |
| 802.11b<br>(chain3)    | 1       | 2412            | 1                | 22.1                    | 162.18                | 30          | -7.90       |
|                        | 6       | 2437            |                  | 24.5                    | 281.84                | 30          | -5.50       |
|                        | 11      | 2462            |                  | 22.4                    | 173.78                | 30          | -7.60       |
| 802.11g<br>(chain0)    | 1       | 2412            | 6                | 18.3                    | 67.61                 | 30          | -11.70      |
|                        | 6       | 2437            |                  | 21.4                    | 138.04                | 30          | -8.60       |
|                        | 11      | 2462            |                  | 18.4                    | 69.18                 | 30          | -11.60      |
| 802.11g<br>(chain1)    | 1       | 2412            | 6                | 18.2                    | 66.07                 | 30          | -11.80      |
|                        | 6       | 2437            |                  | 21.5                    | 141.25                | 30          | -8.50       |
|                        | 11      | 2462            |                  | 18.4                    | 69.18                 | 30          | -11.60      |
| 802.11g<br>(chain2)    | 1       | 2412            | 6                | 18.1                    | 64.57                 | 30          | -11.90      |
|                        | 6       | 2437            |                  | 21.4                    | 138.04                | 30          | -8.60       |
|                        | 11      | 2462            |                  | 18.2                    | 66.07                 | 30          | -11.80      |
| 802.11g<br>(chain3)    | 1       | 2412            | 6                | 18.2                    | 66.07                 | 30          | -11.80      |
|                        | 6       | 2437            |                  | 21.2                    | 131.83                | 30          | -8.80       |
|                        | 11      | 2462            |                  | 18.4                    | 69.18                 | 30          | -11.60      |

4TX

| Mode            | Ch | Freq.<br>(MHz) | Data<br>Rate<br>(Mbps) | Output Power (dBm) |         |         |         | Output Power (mW) |         |         |         | Total Power<br>(dBm) |                  | Limit<br>(dBm) | Margin<br>(dB) |  |  |
|-----------------|----|----------------|------------------------|--------------------|---------|---------|---------|-------------------|---------|---------|---------|----------------------|------------------|----------------|----------------|--|--|
|                 |    |                |                        | Chian 0            | Chain 1 | Chain 2 | Chain 3 | Chain 0           | Chian 1 | Chain 2 | Chain 3 | AV                   |                  |                |                |  |  |
|                 |    |                |                        | AV                 | AV      | AV      | AV      | AV                | AV      | AV      | AV      | 0+1+2+3<br>(mW)      | 0+1+2+3<br>(dBm) |                |                |  |  |
| 802.11n<br>HT20 | 1  | 2412           | 6.5                    | 16.57              | 16.16   | 16.75   | 16.63   | 45.39             | 41.30   | 47.32   | 46.03   | 180.04               | 22.55            | 30             | -7.45          |  |  |
|                 | 6  | 2437           |                        | 21.4               | 21.2    | 21.4    | 21.3    | 138.04            | 131.83  | 138.04  | 134.90  | 542.80               | 27.35            | 30             | -2.65          |  |  |
|                 | 11 | 2462           |                        | 16.53              | 16.53   | 16.44   | 16.54   | 44.98             | 44.98   | 44.06   | 45.08   | 179.09               | 22.53            | 30             | -7.47          |  |  |
| 802.11n<br>HT40 | 3  | 2422           | 13.5                   | 12.91              | 12.95   | 13.47   | 13.91   | 19.54             | 19.72   | 22.23   | 24.60   | 86.10                | 19.35            | 30             | -10.65         |  |  |
|                 | 6  | 2437           |                        | 21.4               | 21.2    | 21.3    | 21.4    | 138.04            | 131.83  | 134.90  | 138.04  | 542.80               | 27.35            | 30             | -2.65          |  |  |
|                 | 9  | 2452           |                        | 13.25              | 12.96   | 13.35   | 13.28   | 21.13             | 19.77   | 21.63   | 21.28   | 83.81                | 19.23            | 30             | -10.77         |  |  |

## 5. Power Spectral Density

### 5.1 Operating environment

|                           |                                    |     |
|---------------------------|------------------------------------|-----|
| Temperature:              | 25                                 | °C  |
| Relative Humidity:        | 50                                 | %   |
| Atmospheric Pressure      | 1008                               | hPa |
| Requirement & Test method | 15.247(e)<br>KDB 558074 D01 v03r03 |     |

### 5.2 Limit for power spectrum density

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

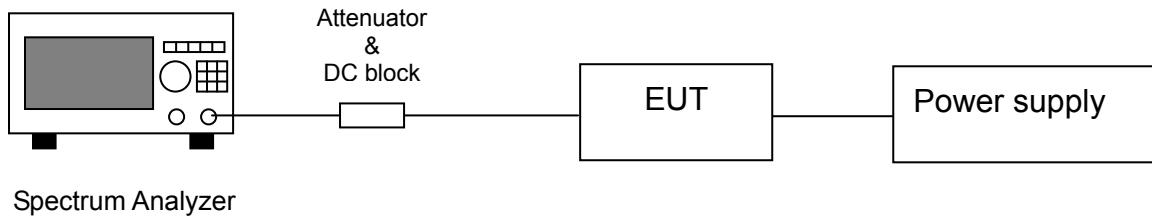
### 5.3 Measuring instrument setting

| Spectrum analyzer settings |                                  |
|----------------------------|----------------------------------|
| Spectrum Analyzer function | Setting                          |
| Detector                   | Average                          |
| RBW                        | $\geq 3$ kHz                     |
| VBW                        | $\geq 3 \times$ RBW              |
| Sweep                      | Auto couple                      |
| Trace                      | Max hold                         |
| Span                       | 1.5 times $\times$ 6dB bandwidth |
| Attenuation                | Auto                             |

## 5.4 Test procedure

1. Test procedure refer to clause 10.3 method AVPSD (average PSD) of KDB 558074 D01 and clause E) 2) c) “Measure and add  $10 \log(n \text{ ANT}) \text{ dB}$ , where n is the number of outputs” of KDB 662911 D01.
2. Using the maximum conducted output power in the fundamental emission demonstrates compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Use the peak marker function to determine the maximum amplitude level within the RBW.

## 5.5 Test diagram



## 5.6 Test results

### Single TX

| Mode                | Channel | Frequency<br>(MHz) | PSD     |      | Limit<br>(dBm) | Margin<br>(dB) |
|---------------------|---------|--------------------|---------|------|----------------|----------------|
|                     |         |                    | (dBm)   | (mw) |                |                |
| 802.11b<br>(chain0) | 1       | 2412               | -4.043  | 0.39 | 8              | -12.04         |
|                     | 6       | 2437               | -1.918  | 0.64 | 8              | -9.92          |
|                     | 11      | 2462               | -4.079  | 0.39 | 8              | -12.08         |
| 802.11b<br>(chain1) | 1       | 2412               | -4.655  | 0.34 | 8              | -12.66         |
|                     | 6       | 2437               | -2.128  | 0.61 | 8              | -10.13         |
|                     | 11      | 2462               | -4.168  | 0.38 | 8              | -12.17         |
| 802.11b<br>(chain2) | 1       | 2487               | -4.037  | 0.39 | 8              | -12.04         |
|                     | 6       | 2512               | -2.225  | 0.60 | 8              | -10.23         |
|                     | 11      | 2537               | -4.213  | 0.38 | 8              | -12.21         |
| 802.11b<br>(chain3) | 1       | 2487               | -4.161  | 0.38 | 8              | -12.16         |
|                     | 6       | 2512               | -1.334  | 0.74 | 8              | -9.33          |
|                     | 11      | 2537               | -3.676  | 0.43 | 8              | -11.68         |
| 802.11g<br>(chain0) | 1       | 2412               | -10.245 | 0.09 | 8              | -18.25         |
|                     | 6       | 2437               | -5.309  | 0.29 | 8              | -13.31         |
|                     | 11      | 2462               | -9.897  | 0.10 | 8              | -17.90         |
| 802.11g<br>(chain1) | 1       | 2412               | -10.456 | 0.09 | 8              | -18.46         |
|                     | 6       | 2437               | -5.196  | 0.30 | 8              | -13.20         |
|                     | 11      | 2462               | -10.134 | 0.10 | 8              | -18.13         |
| 802.11g<br>(chain2) | 1       | 2412               | -10.108 | 0.10 | 8              | -18.11         |
|                     | 6       | 2437               | -4.79   | 0.33 | 8              | -12.79         |
|                     | 11      | 2462               | -10.301 | 0.09 | 8              | -18.30         |
| 802.11g<br>(chain3) | 1       | 2412               | -10.069 | 0.10 | 8              | -18.07         |
|                     | 6       | 2437               | -5.224  | 0.30 | 8              | -13.22         |
|                     | 11      | 2462               | -9.911  | 0.10 | 8              | -17.91         |

## 4TX

| Mode              | Ch | Freq.<br>(MHz) | PSD (dBm/3kHz) |        |        |        | Total PSD |          | Correct<br>PSD | Limit<br>(dBm/3kHz) | Margin<br>(dB) |
|-------------------|----|----------------|----------------|--------|--------|--------|-----------|----------|----------------|---------------------|----------------|
|                   |    |                | chain0         | chain1 | chain2 | chain3 | mW        | dBm/3kHz |                |                     |                |
| 802.11n<br>(HT20) | 1  | 2412           | -13.2          | -13.4  | -13.45 | -13.49 | 0.18      | -7.36    | -1.36          | 8                   | -9.36          |
|                   | 6  | 2437           | -12.81         | -13.12 | -13.76 | -13.69 | 0.19      | -7.30    | -1.30          | 8                   | -9.30          |
|                   | 11 | 2462           | -13.45         | -12.68 | -13.61 | -12.72 | 0.20      | -7.07    | -1.07          | 8                   | -9.07          |
| 802.11n<br>(HT40) | 3  | 2422           | -19.25         | -19.2  | -18.84 | -18.61 | 0.05      | -12.95   | -6.95          | 8                   | -14.95         |
|                   | 6  | 2437           | -18.6          | -19.25 | -19    | -18.93 | 0.05      | -12.92   | -6.92          | 8                   | -14.92         |
|                   | 9  | 2452           | -18.46         | -18.57 | -19.26 | -18.05 | 0.06      | -12.54   | -6.54          | 8                   | -14.54         |

Note: Correct PSD means Total PSD add MIMO correction ( $10 \log (4)=6 \text{ dB}$ ).

## Chain 0\_ 802.11b mode Ch 1



## Chain 0\_ 802.11b mode Ch 6



## Chain 0\_ 802.11b mode Ch 11



## Chain 1\_ 802.11b mode Ch 1



## Chain 1\_ 802.11b mode Ch 6



## Chain 1\_ 802.11b mode Ch 11



## Chain 2\_ 802.11b mode Ch 1



## Chain 2\_ 802.11b mode Ch 6



## Chain 2\_ 802.11b mode Ch 11



## Chain 3\_ 802.11b mode Ch 1



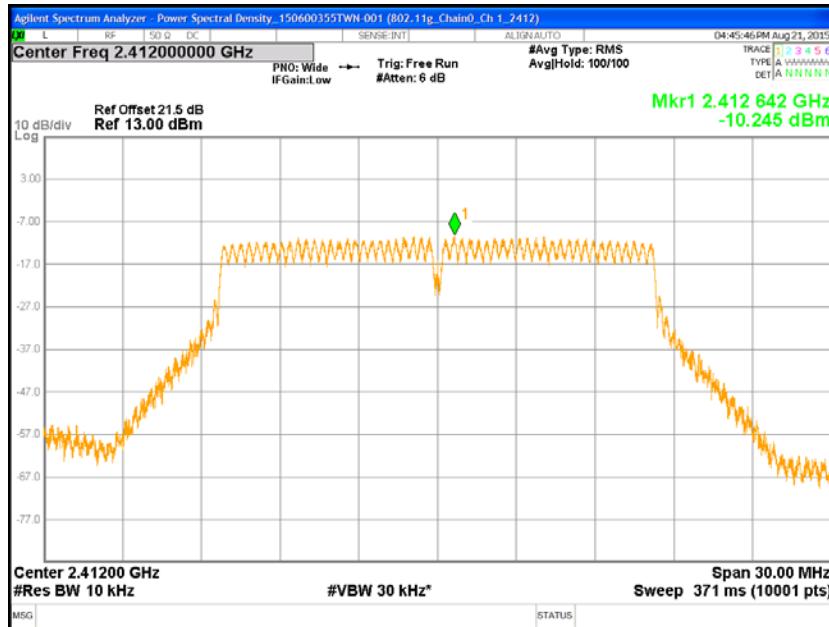
## Chain 3\_ 802.11b mode Ch 6



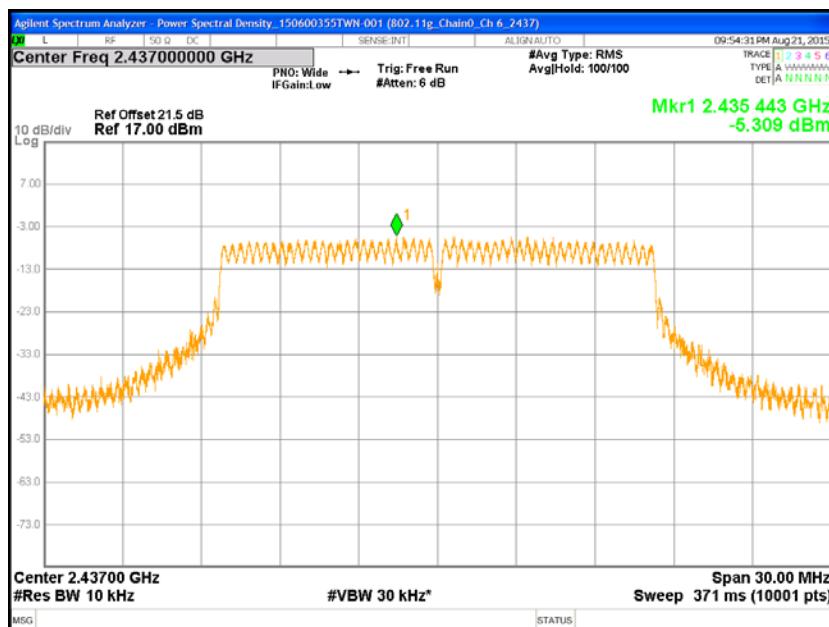
## Chain 3\_ 802.11b mode Ch 11



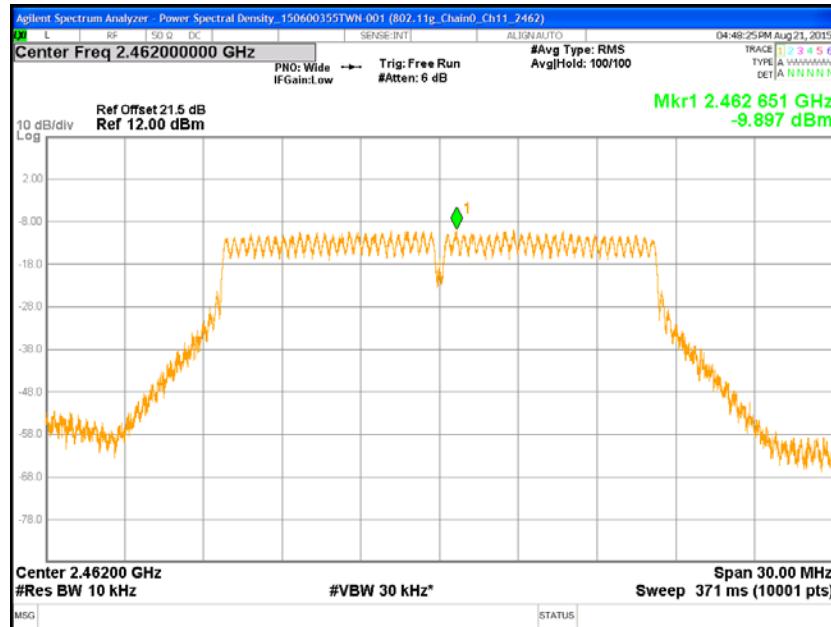
## Chain 0\_ 802.11g mode Ch 1



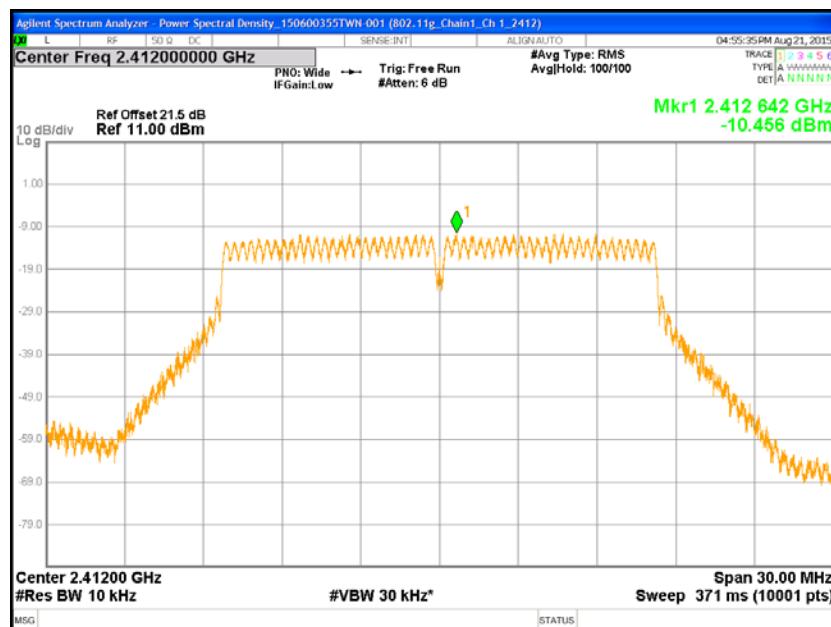
## Chain 0\_ 802.11g mode Ch 6



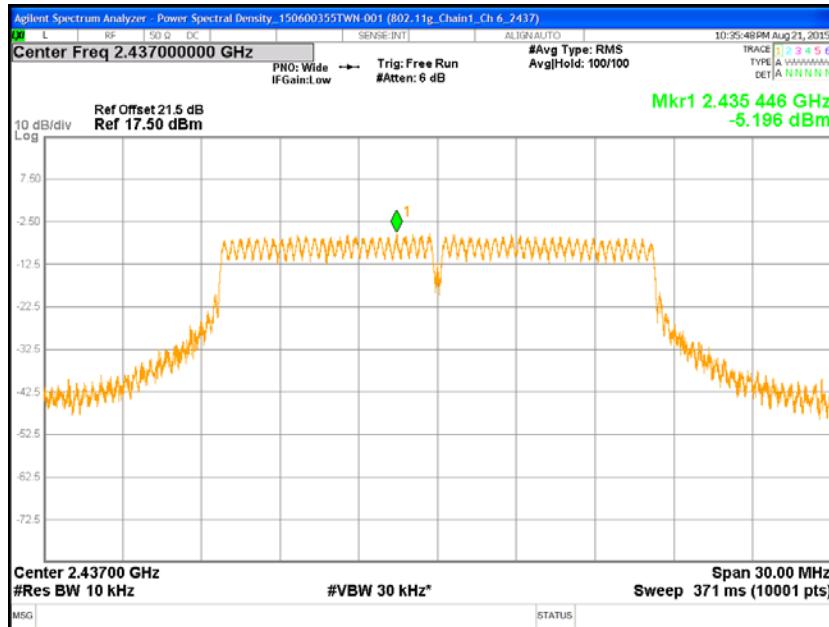
## Chain 0\_ 802.11g mode Ch 11



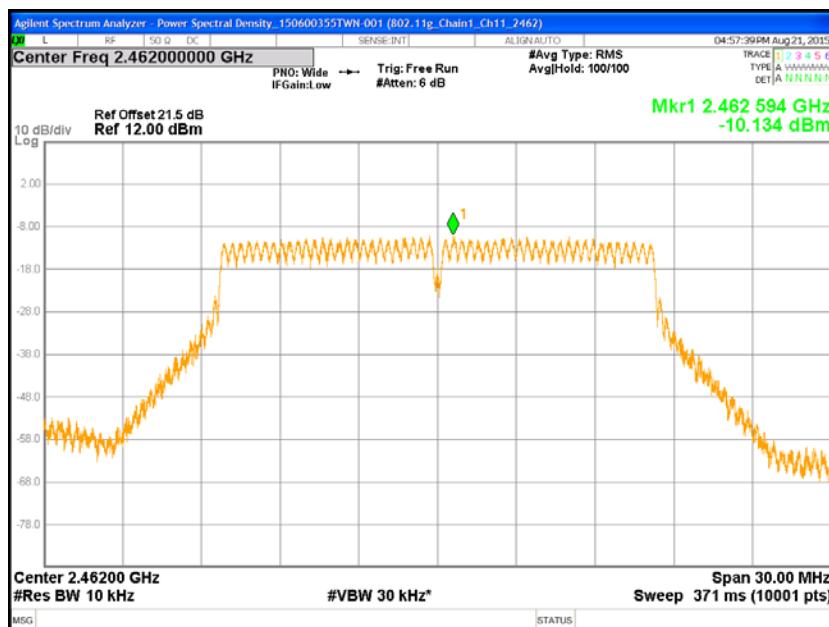
## Chain 1\_ 802.11g mode Ch 1



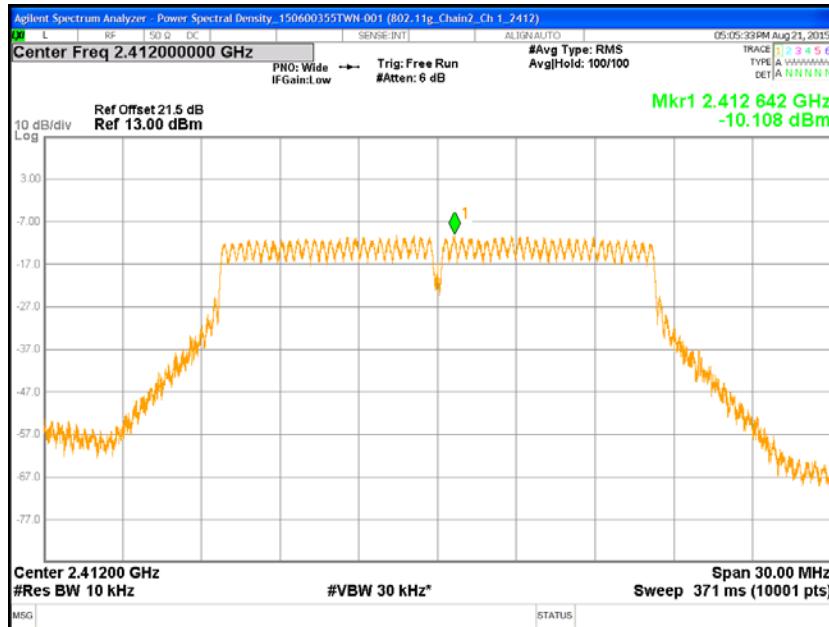
## Chain 1\_ 802.11g mode Ch 6



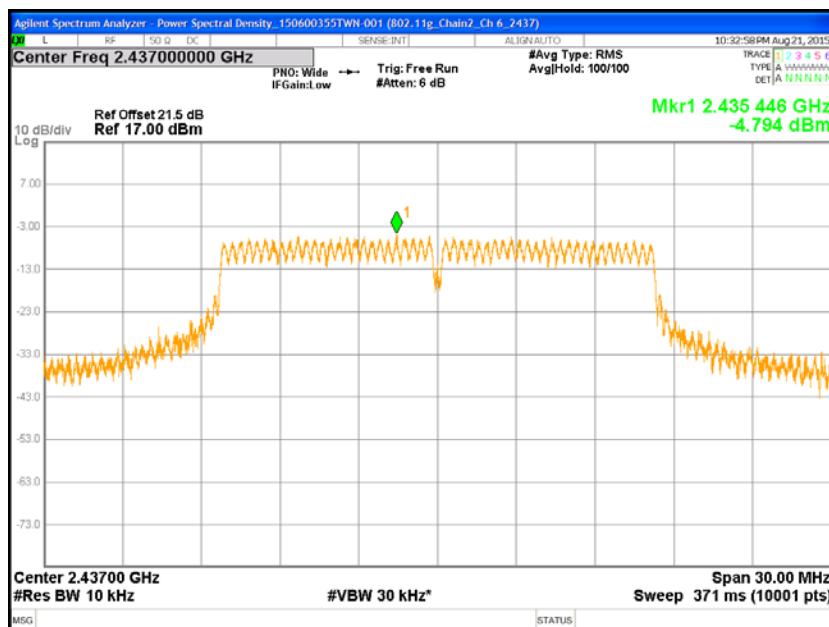
## Chain 1\_ 802.11g mode Ch 11



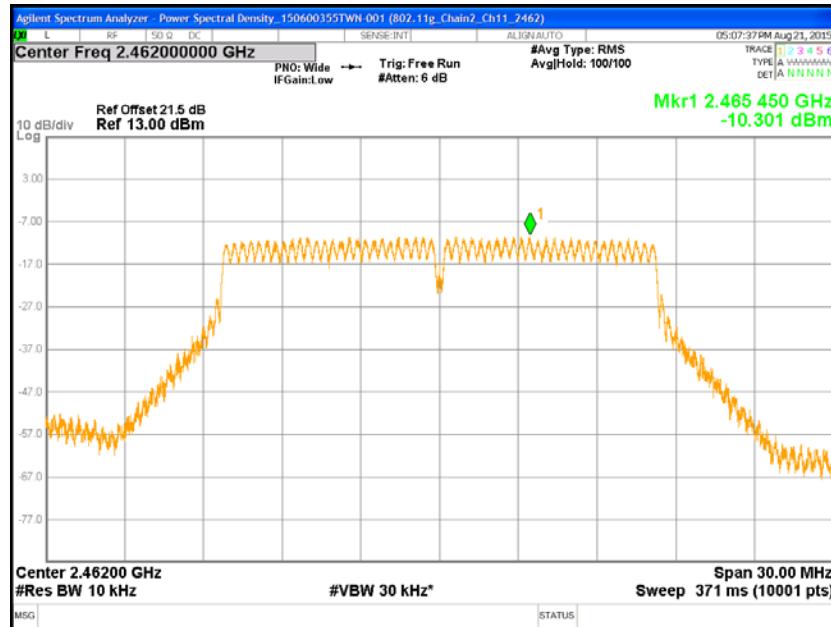
## Chain 2\_ 802.11g mode Ch 1



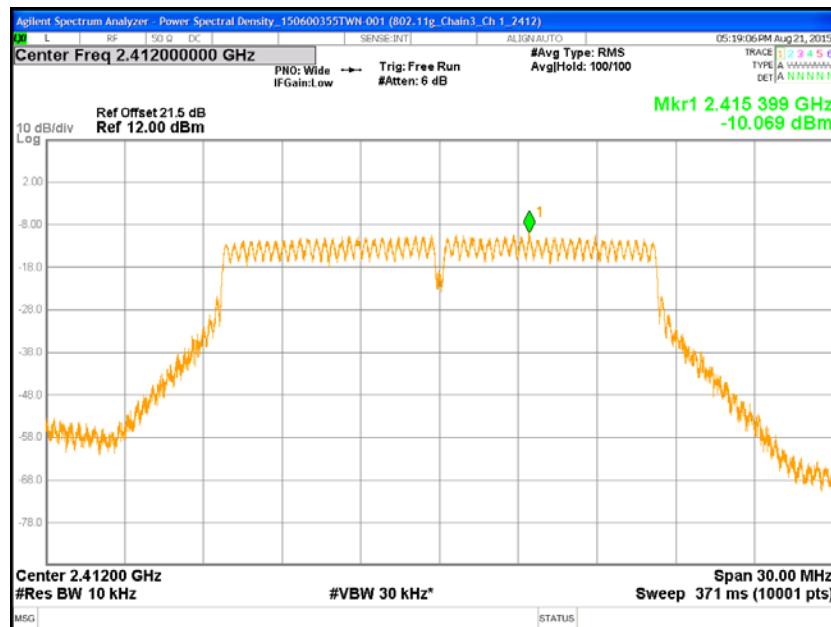
## Chain 2\_ 802.11g mode Ch 6



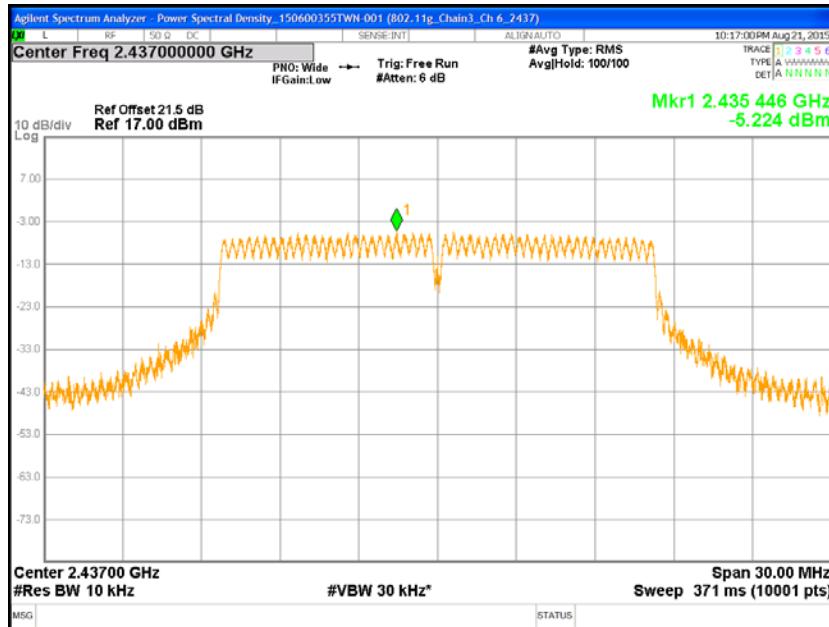
## Chain 2\_ 802.11g mode Ch 11



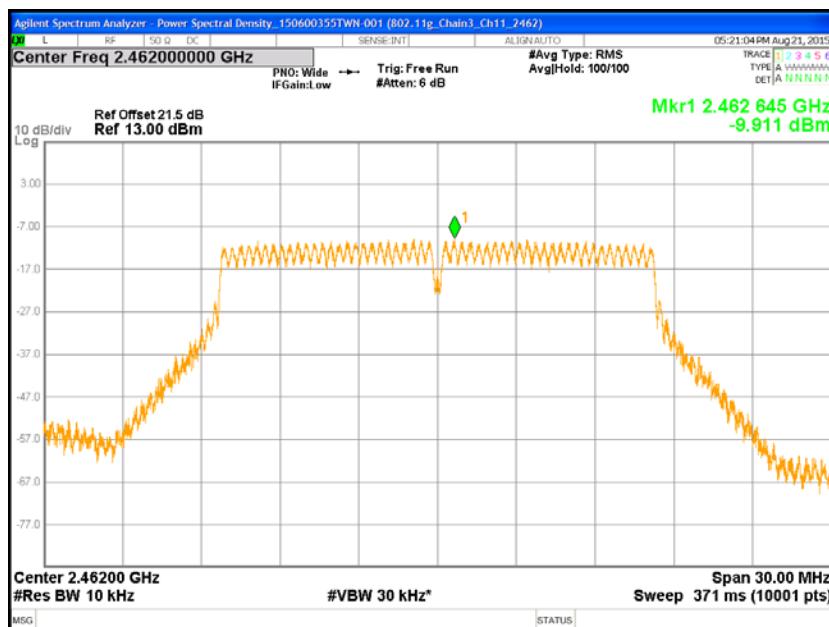
## Chain 3\_ 802.11g mode Ch 1



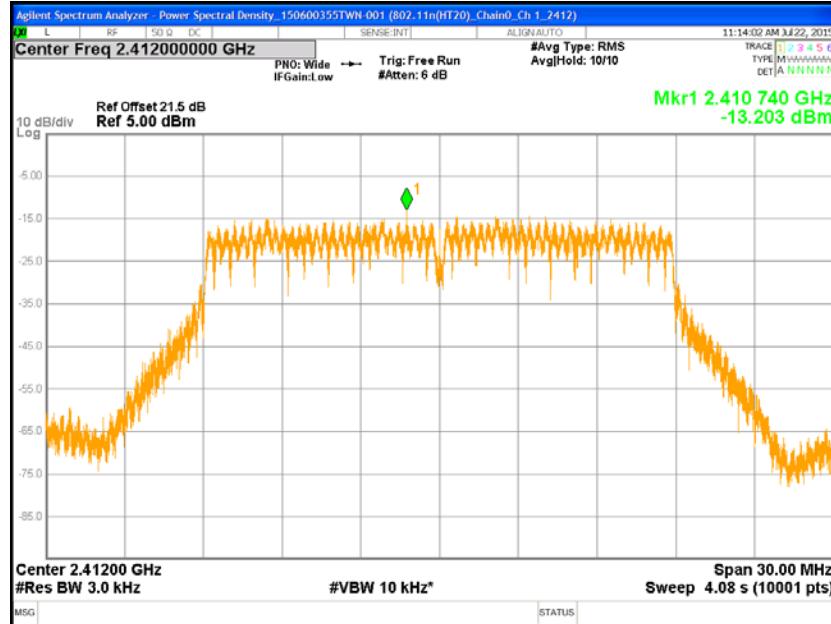
## Chain 3\_ 802.11g mode Ch 6



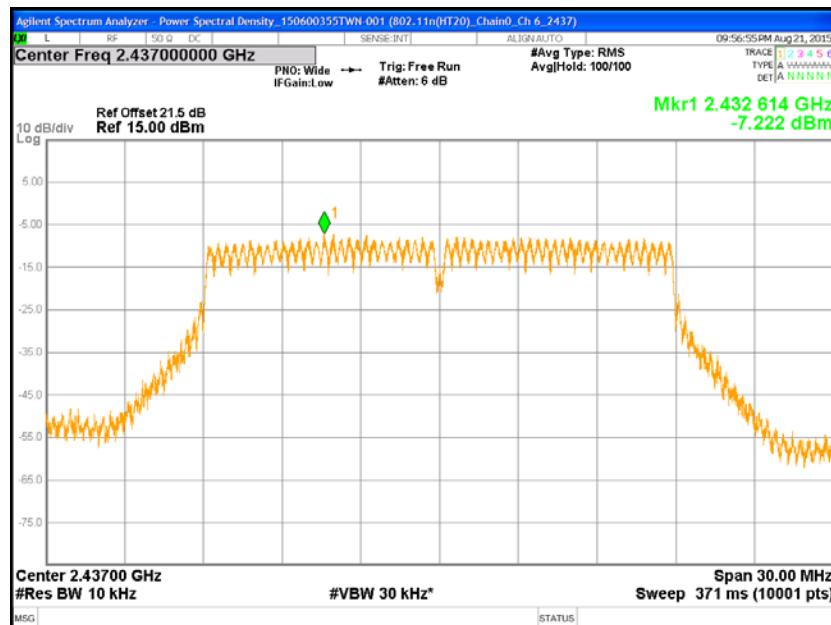
## Chain 3\_ 802.11g mode Ch 11



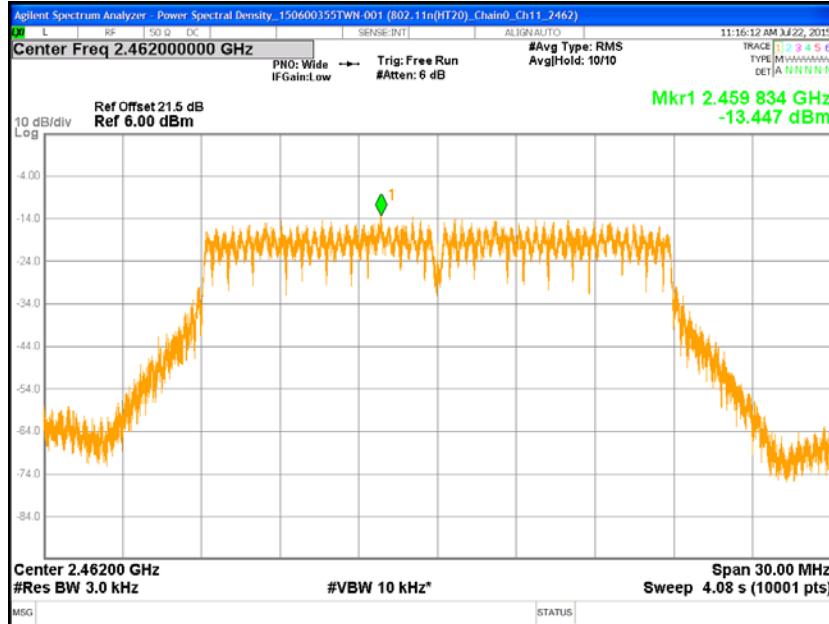
## Chain 0\_ 802.11 n(HT20) mode Ch 1



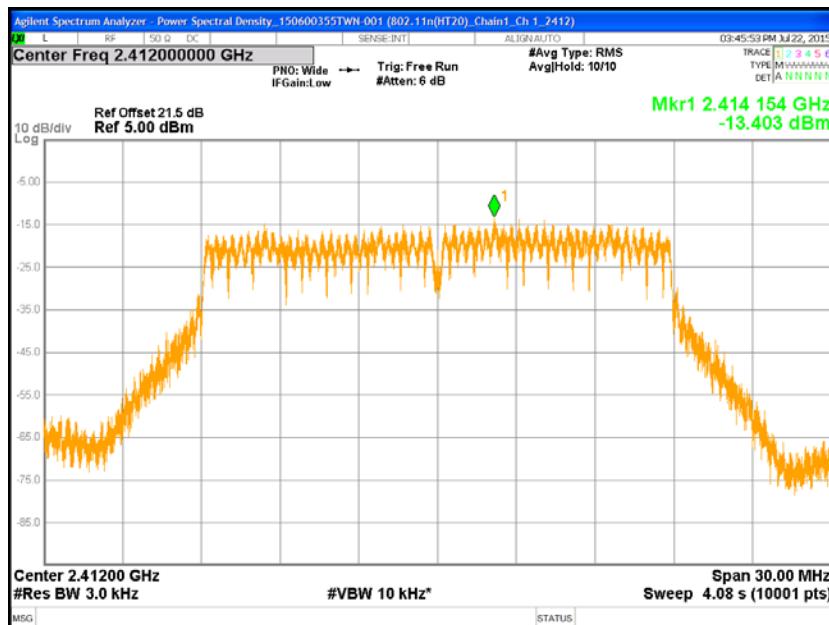
## Chain 0\_ 802.11 n(HT20) mode Ch 6



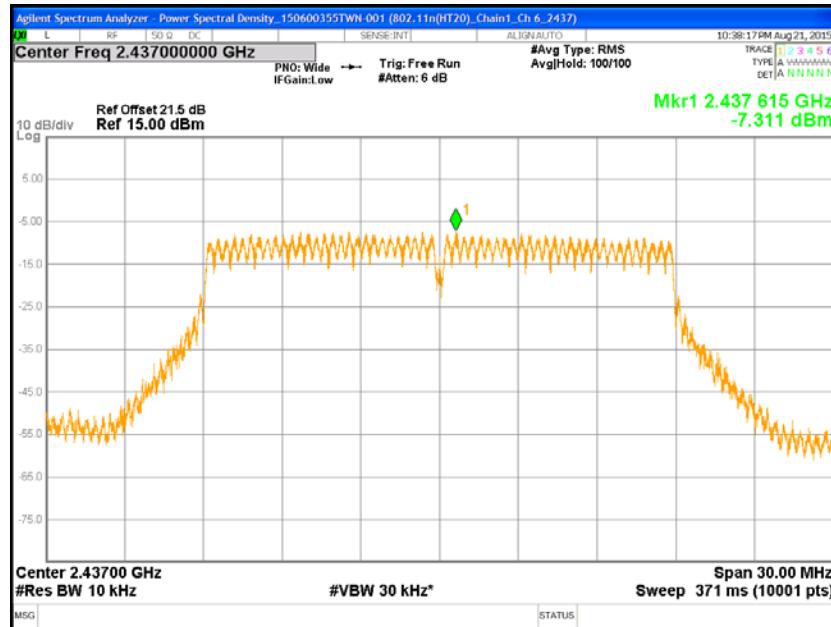
## Chain 0\_ 802.11n(HT20) mode Ch 11



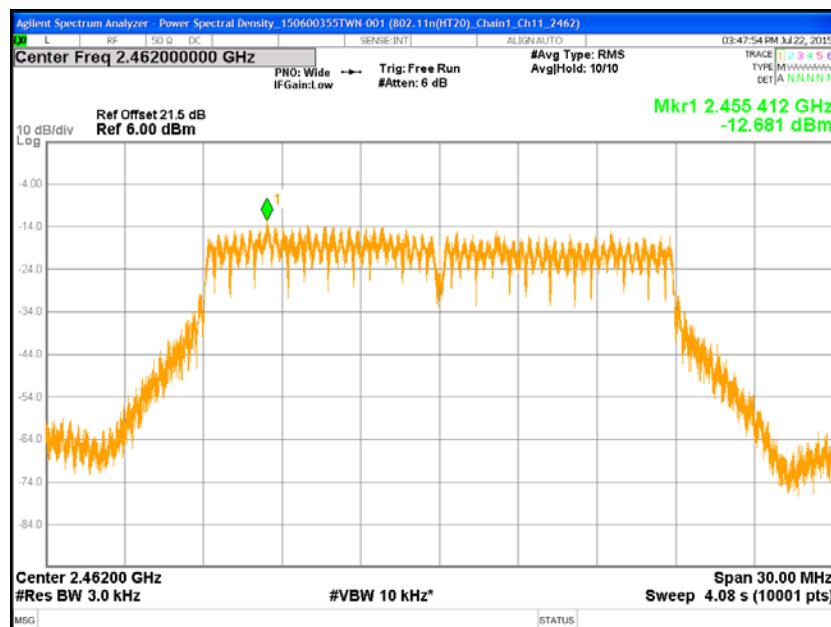
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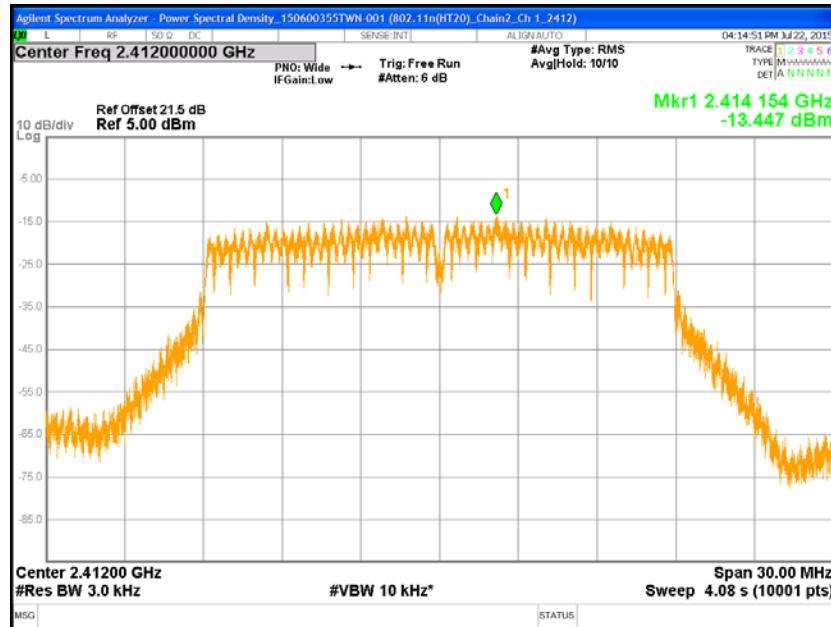
## Chain 1\_ 802.11n(HT20) mode Ch 6



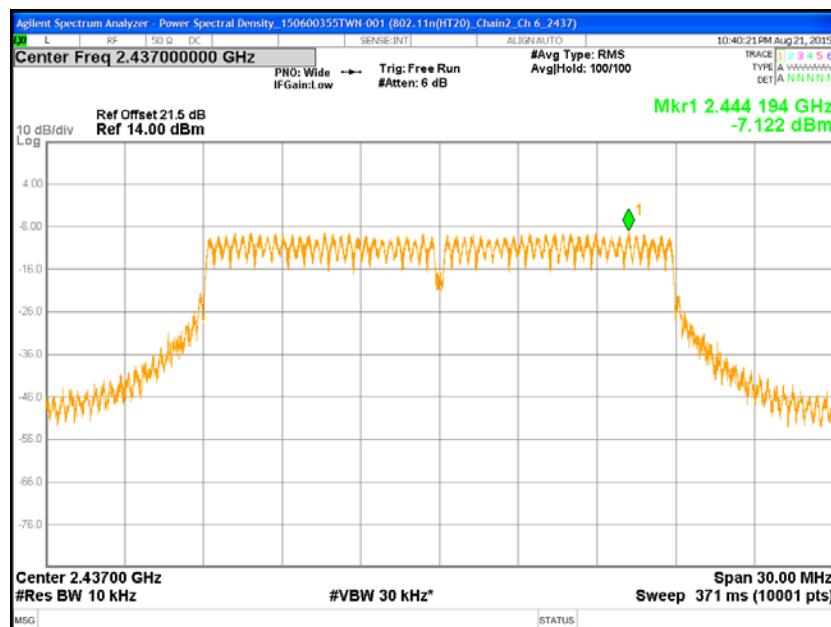
## Chain 1\_ 802.11n(HT20) mode Ch 11



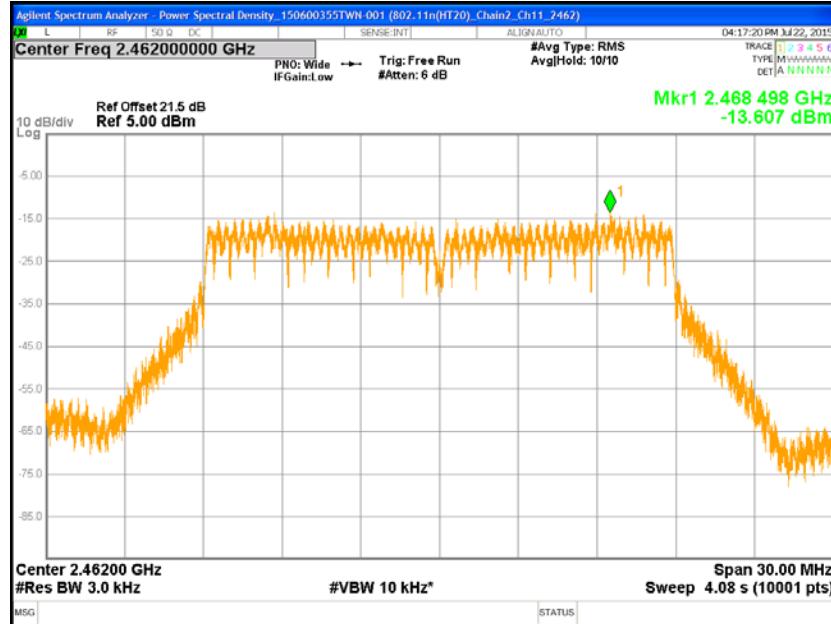
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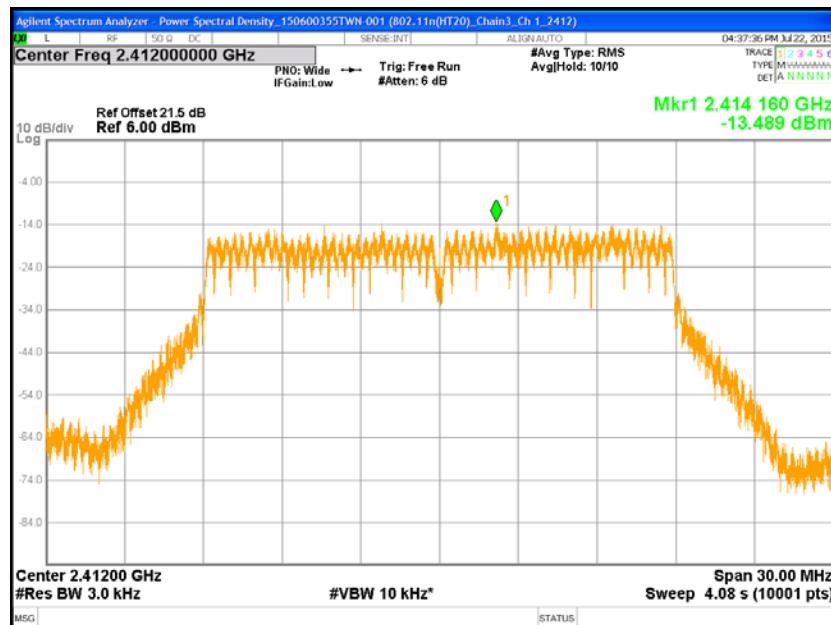
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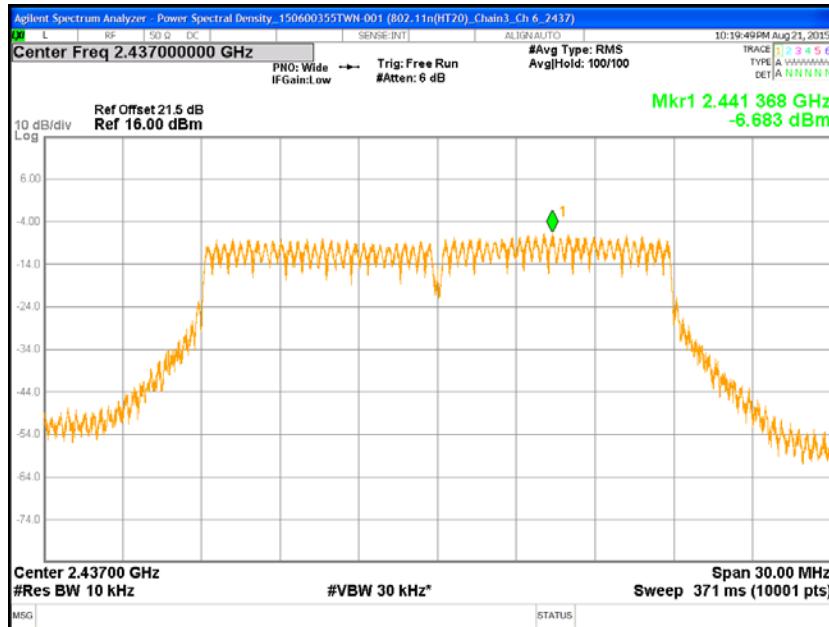
## Chain 2\_ 802.11n(HT20) mode Ch 11



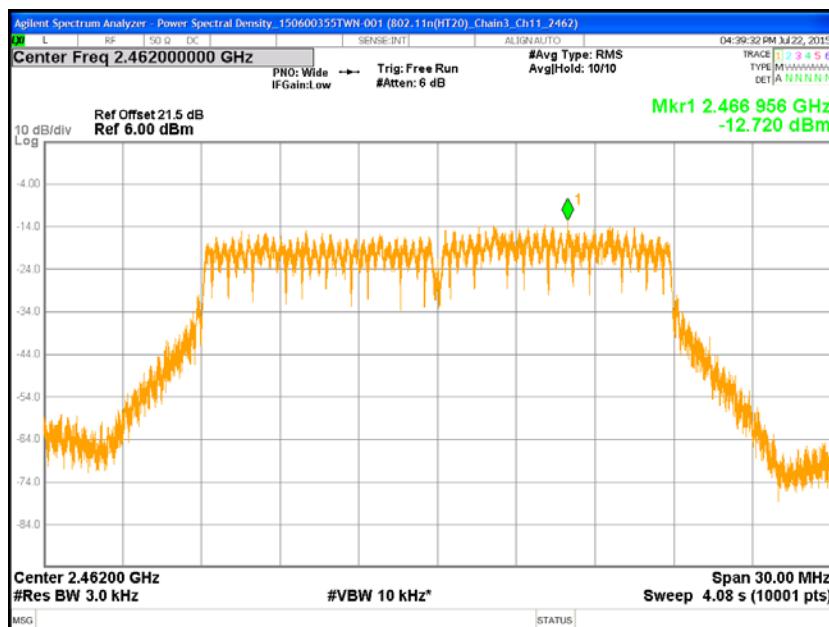
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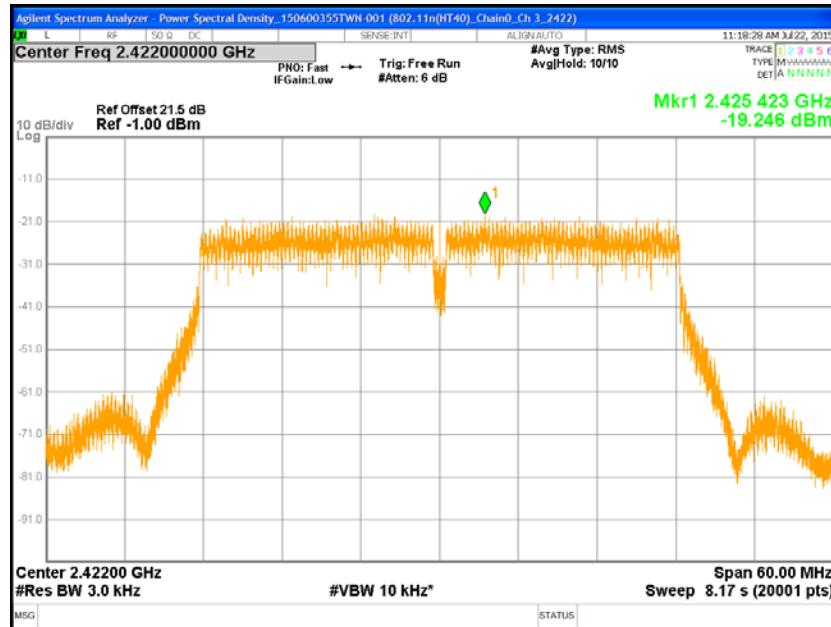
## Chain 3\_ 802.11n(HT20) mode Ch 6



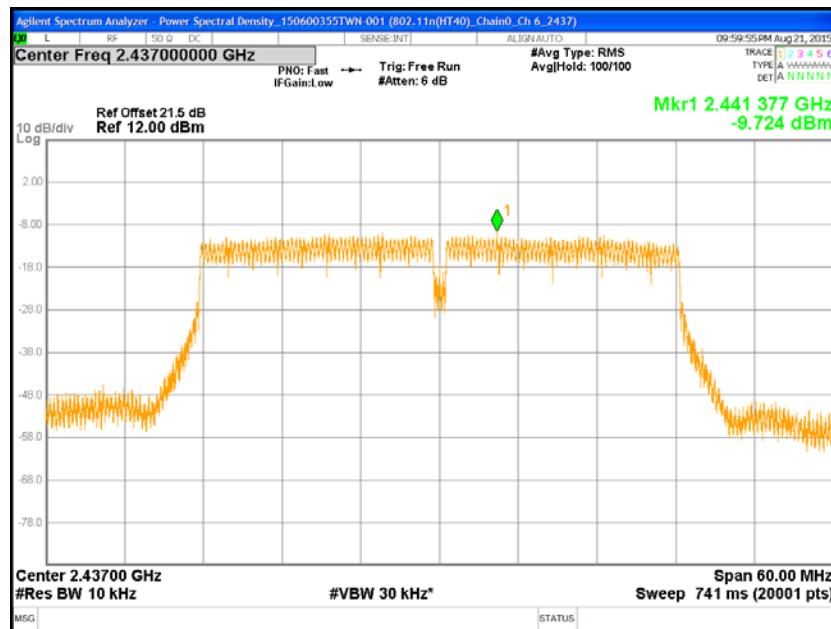
## Chain 3\_ 802.11n(HT20) mode Ch 11



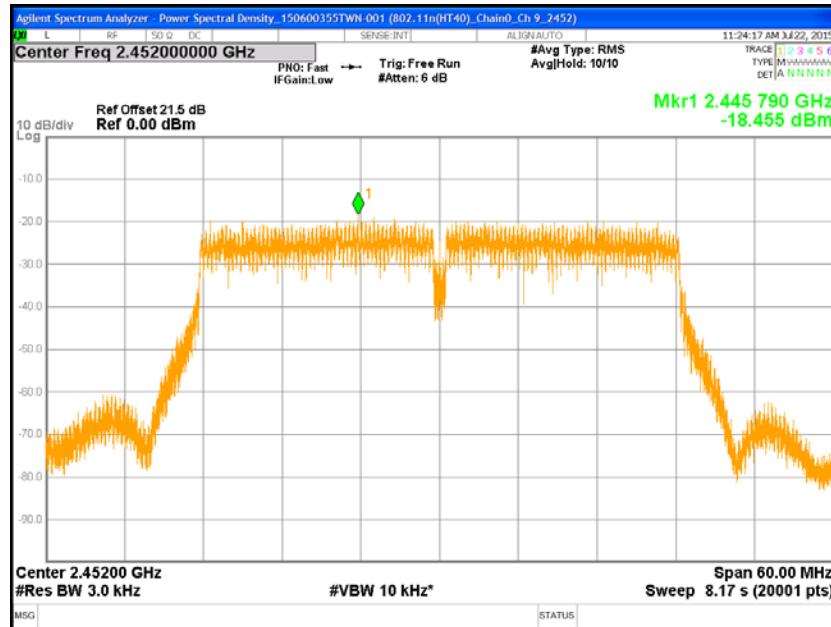
## Chain 0\_ 802.11n(HT40) mode Ch 3



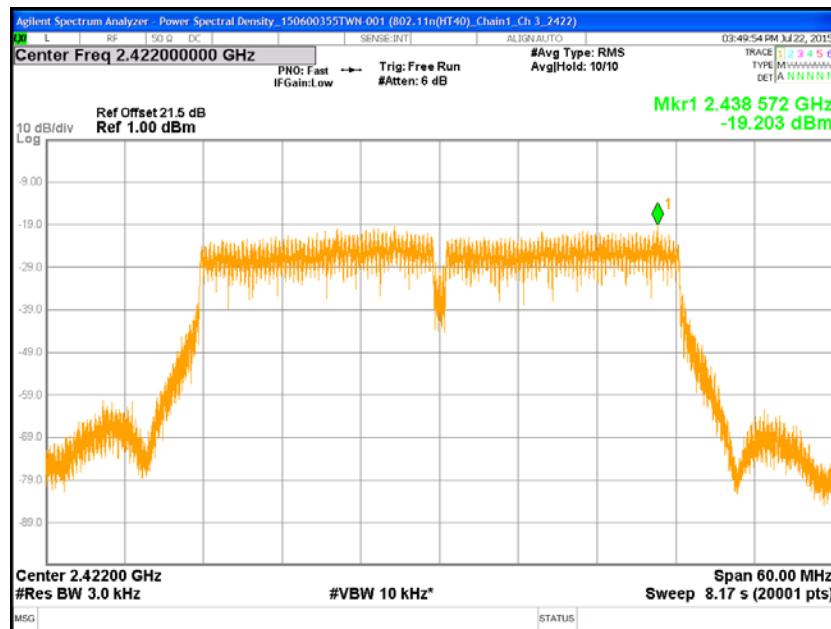
## Chain 0\_ 802.11n(HT40) mode Ch 6



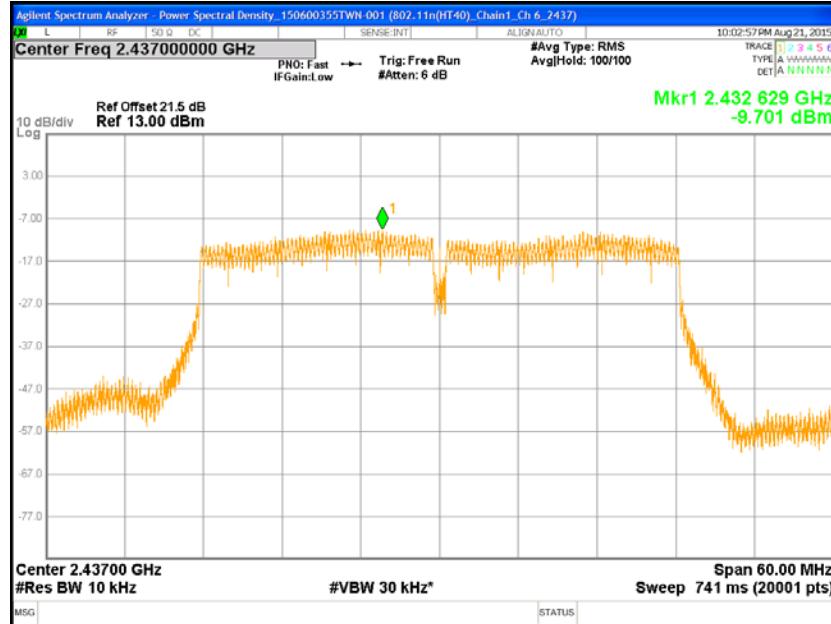
## Chain 0\_ 802.11n(HT40) mode Ch 9



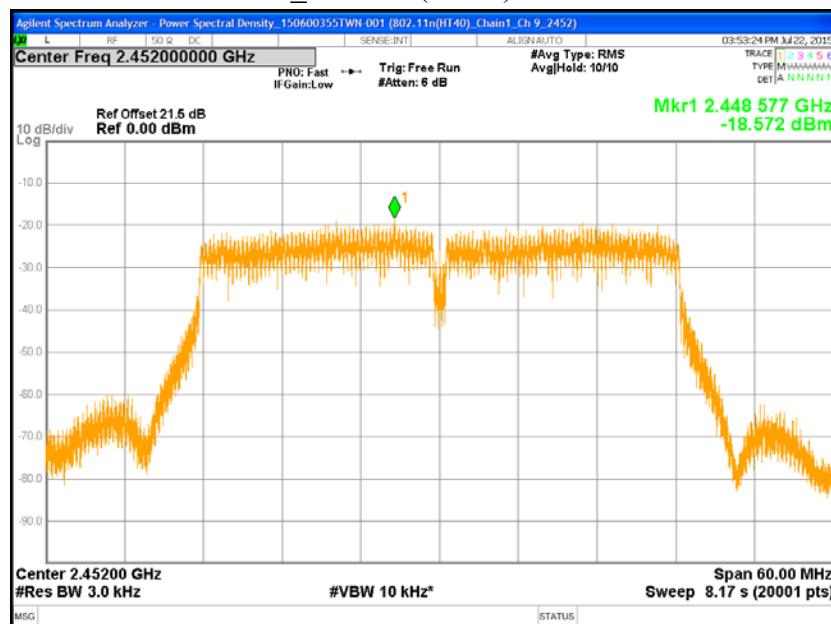
## Chain 1\_ 802.11n(HT40) mode Ch 3



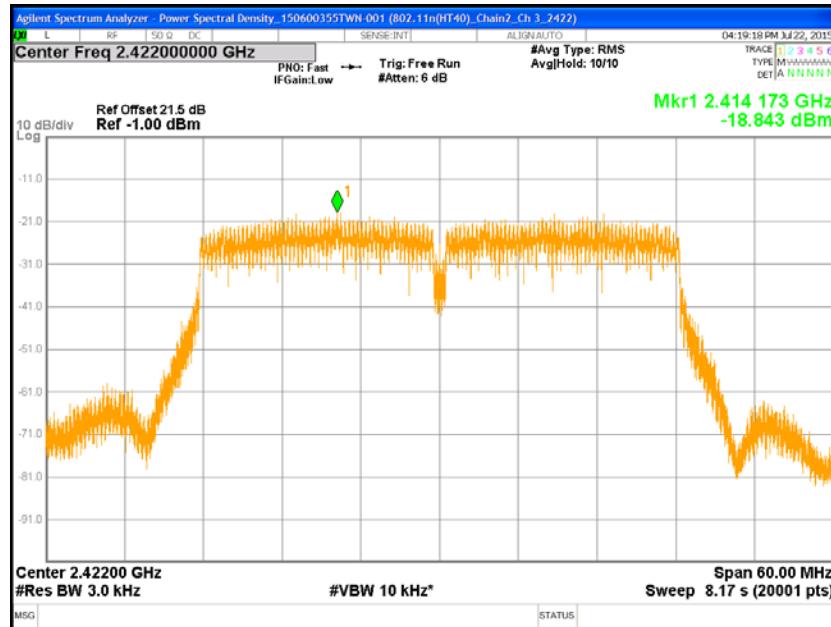
## Chain 1\_ 802.11n(HT40) mode Ch 6



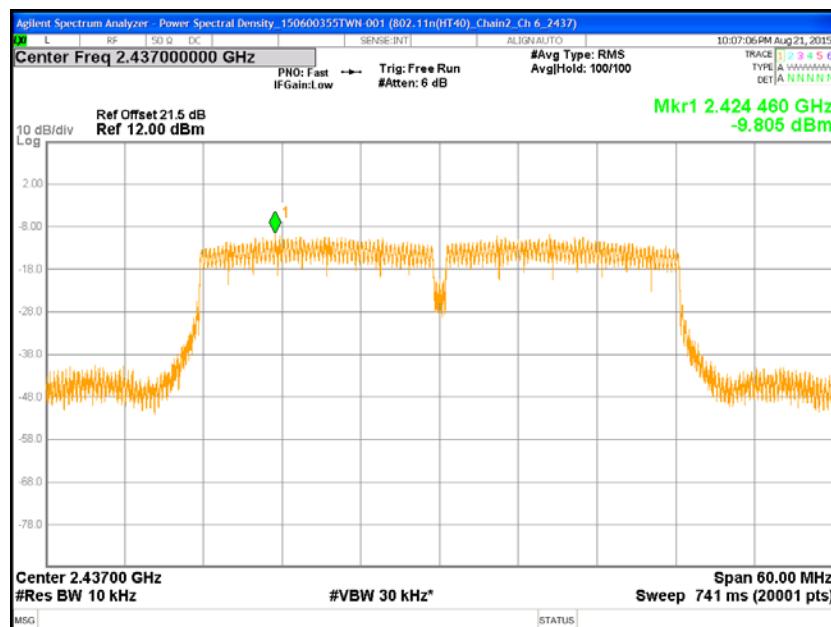
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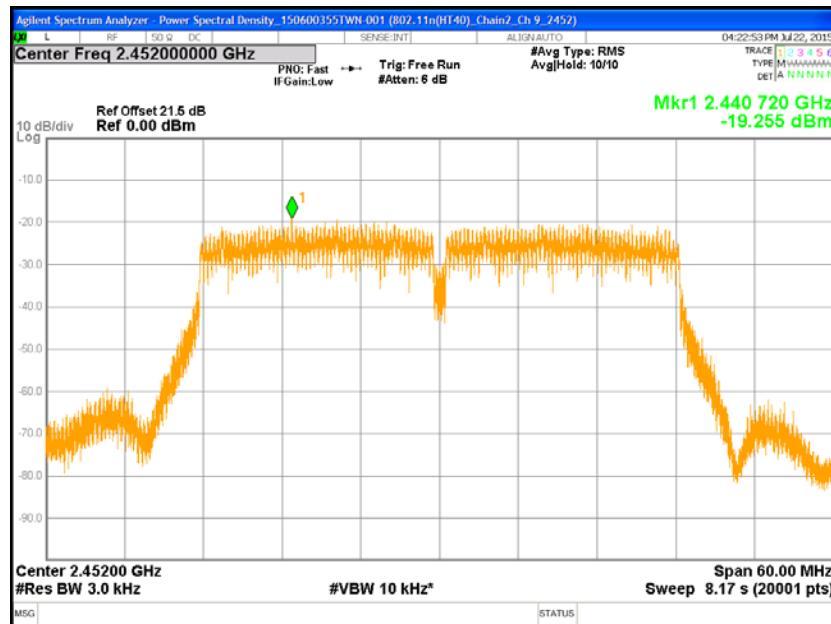
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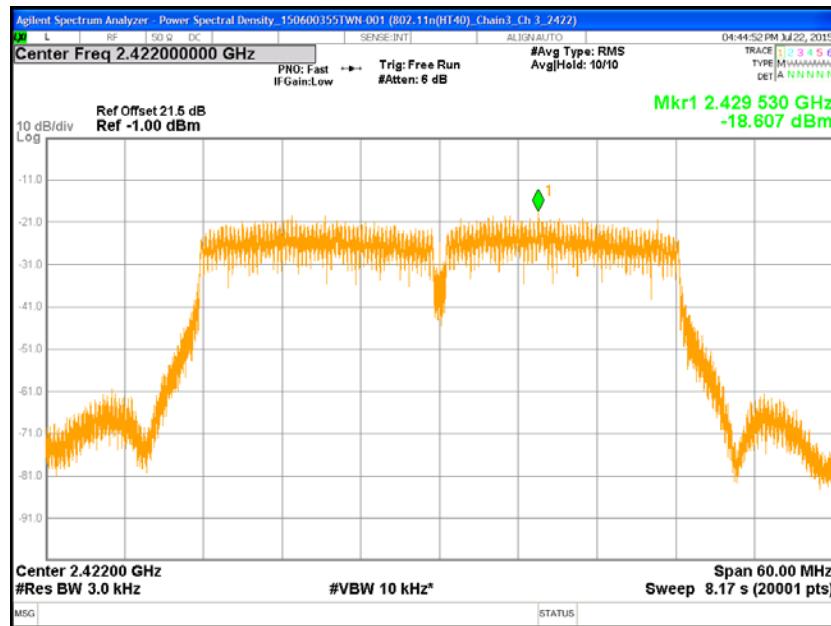
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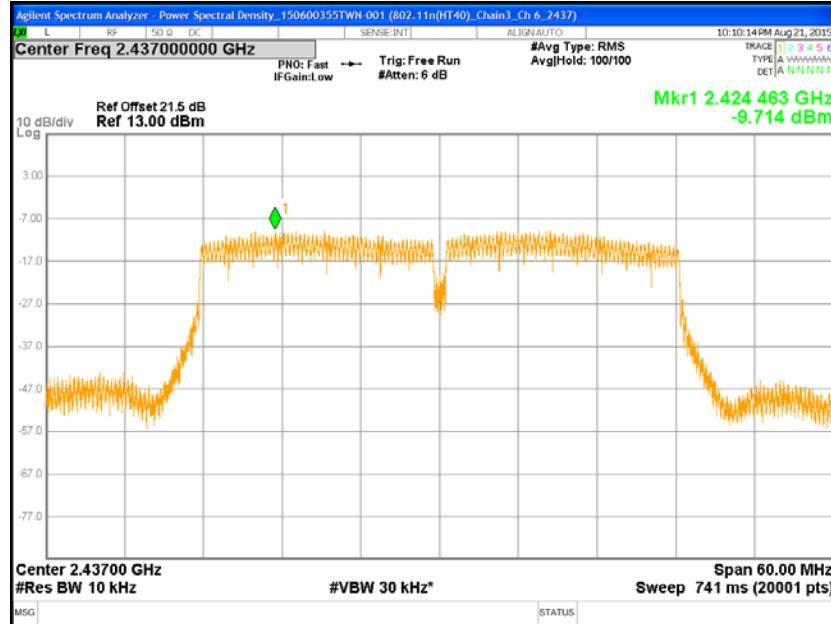
## Chain 2\_ 802.11n(HT40) mode Ch 9



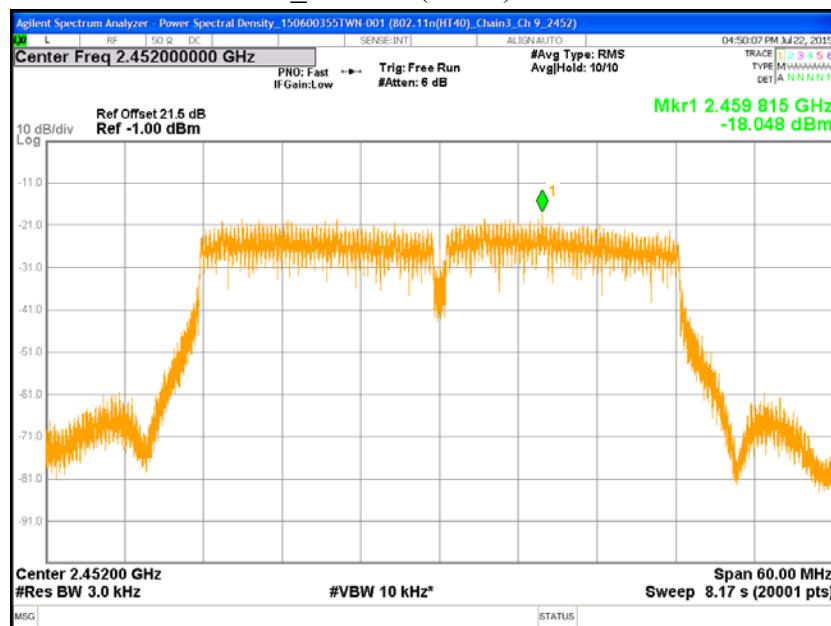
## Chain 3\_ 802.11n(HT40) mode Ch 3



## Chain 3\_ 802.11n(HT40) mode Ch 6



## Chain 3\_ 802.11n(HT40) mode Ch 9



## 6. Emissions In Non-Restricted Frequency Bands

### 6.1 Operating environment

|                      |           |     |
|----------------------|-----------|-----|
| Temperature:         | 25        | °C  |
| Relative Humidity:   | 50        | %   |
| Atmospheric Pressure | 1008      | hPa |
| Requirement          | 15.247(d) |     |
| Channel number       | 1、6、11    |     |

### 6.2 Limit for emissions in non-restricted frequency bands

The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB or 30 dB relative to the maximum in-band peak PSD level in 100 kHz

### 6.3 Measuring instruments setting

#### Reference level measurement

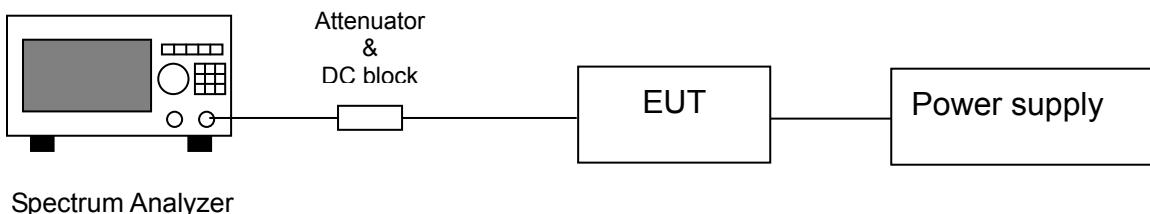
| Spectrum analyzer settings |                               |
|----------------------------|-------------------------------|
| Spectrum Analyzer function | Setting                       |
| Detector                   | Peak                          |
| RBW                        | $\geq 100$ kHz                |
| VBW                        | $\geq 3 \times$ RBW           |
| Sweep                      | Auto couple                   |
| Trace                      | Max hold                      |
| Span                       | $\geq 1.5$ time 6dB bandwidth |
| Attenuation                | Auto                          |

**Emission level measurement**

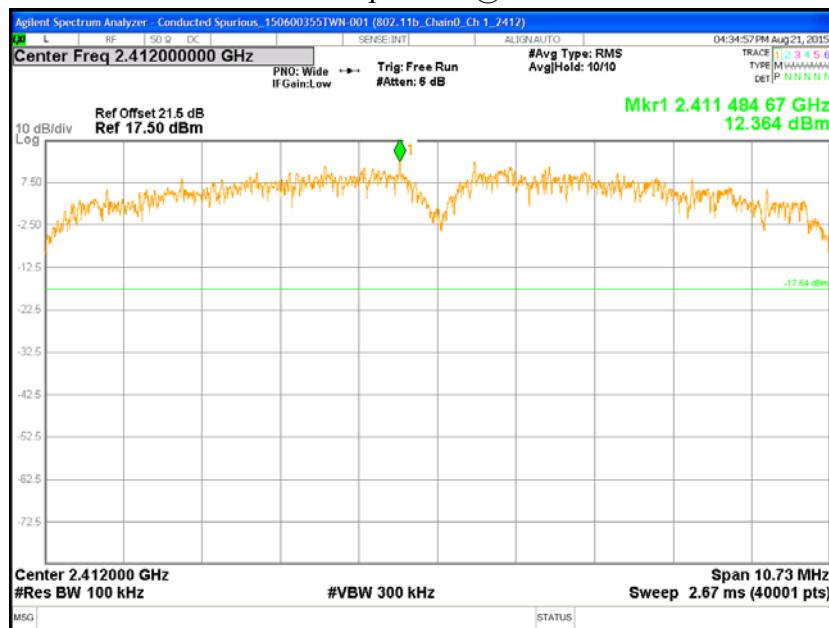
| Spectrum analyzer settings |                     |
|----------------------------|---------------------|
| Spectrum Analyzer function | Setting             |
| Detector                   | Peak                |
| RBW                        | $\geq 100$ kHz      |
| VBW                        | $\geq 3 \times$ RBW |
| Sweep                      | Auto couple         |
| Trace                      | Max hold            |
| Attenuation                | Auto                |

**6.4 Test procedure**

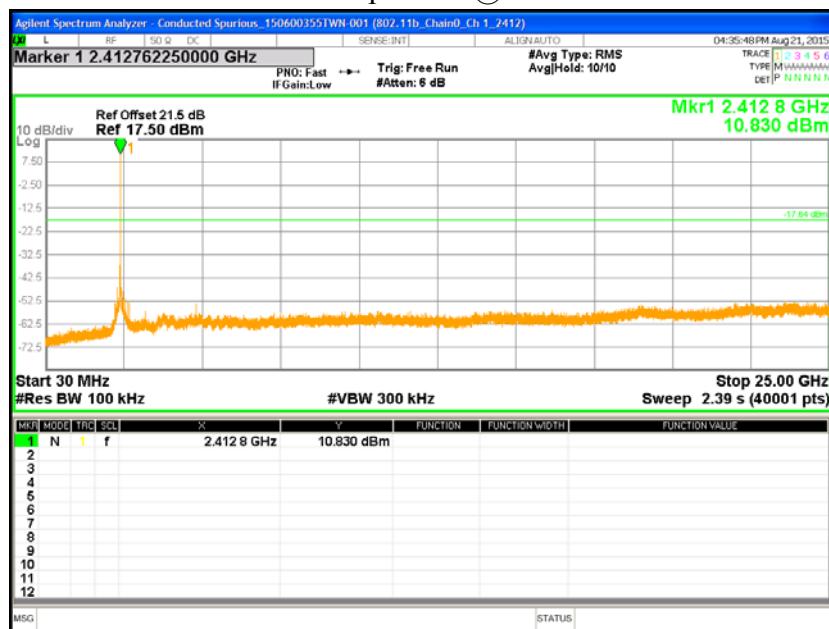
1. The procedure was used in antenna-port conducted and connected to the spectrum analyzer.
2. Set instrument center frequency to center frequency
3. Use the parameter configured in clause 6.3 to measure
4. Use the peak marker function to determine the maximum amplitude level.

**6.5 Test diagram****6.6 Test results**

## Chain0 : Conducted Spurious @ 802.11b mode Ch 1



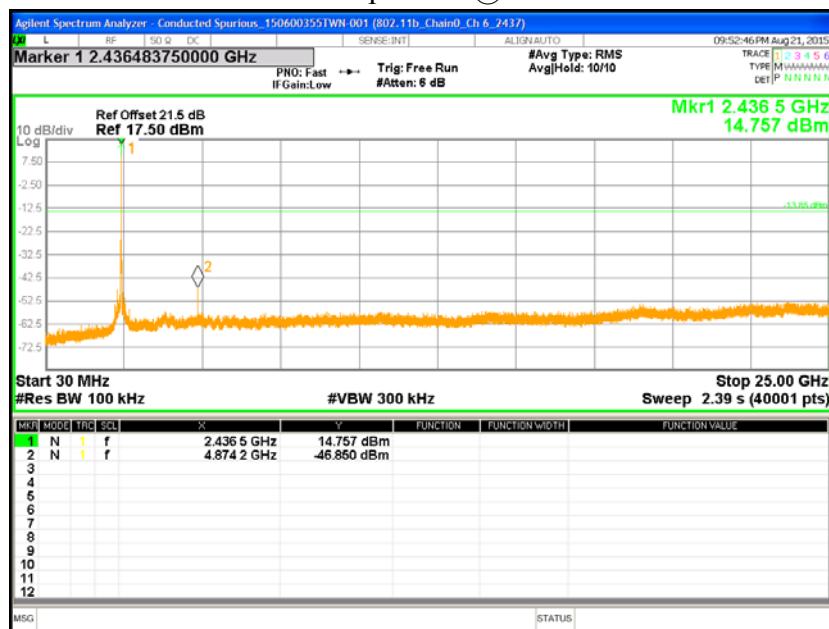
Chain0 : Conducted Spurious @ 802.11b mode Ch 1



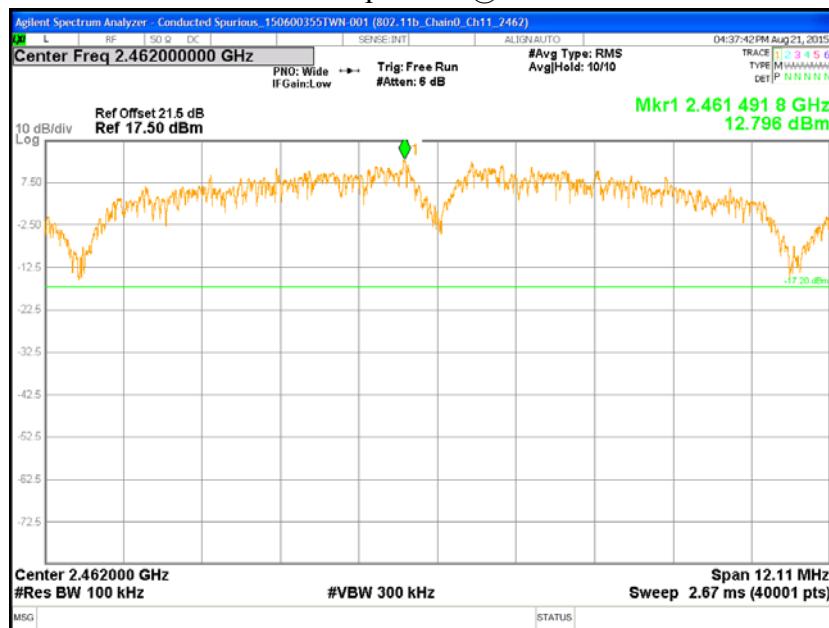
Chain0 : Conducted Spurious @ 802.11b mode Ch 6



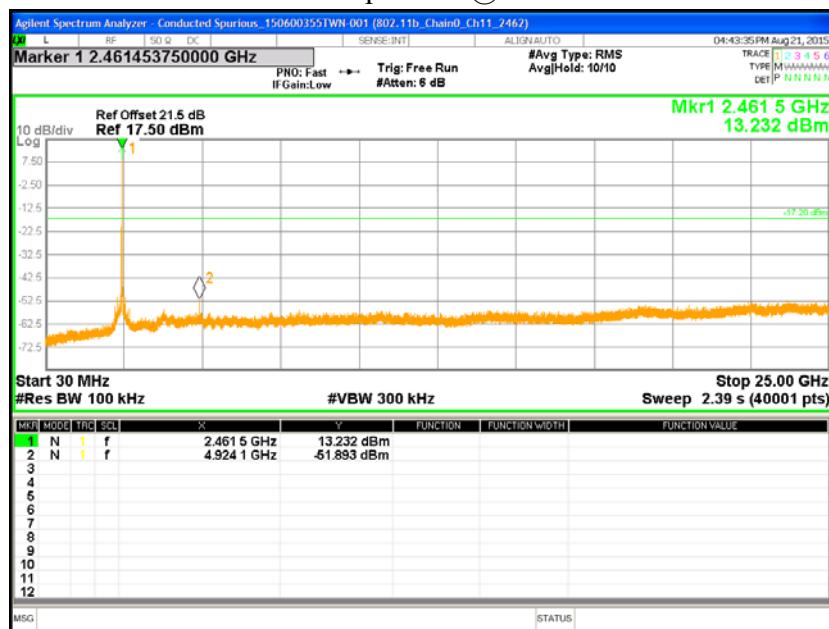
Chain0 : Conducted Spurious @ 802.11b mode Ch 6



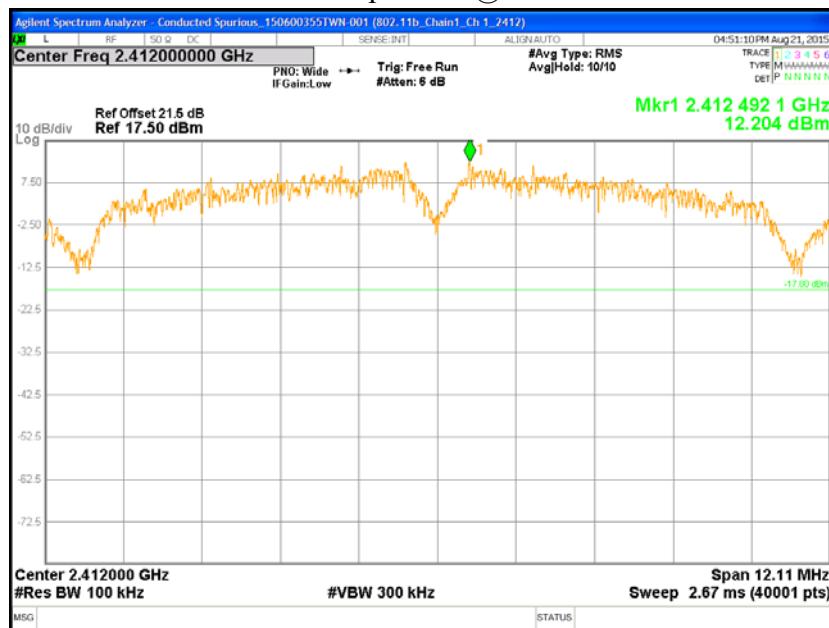
Chain0 : Conducted Spurious @ 802.11b mode Ch11



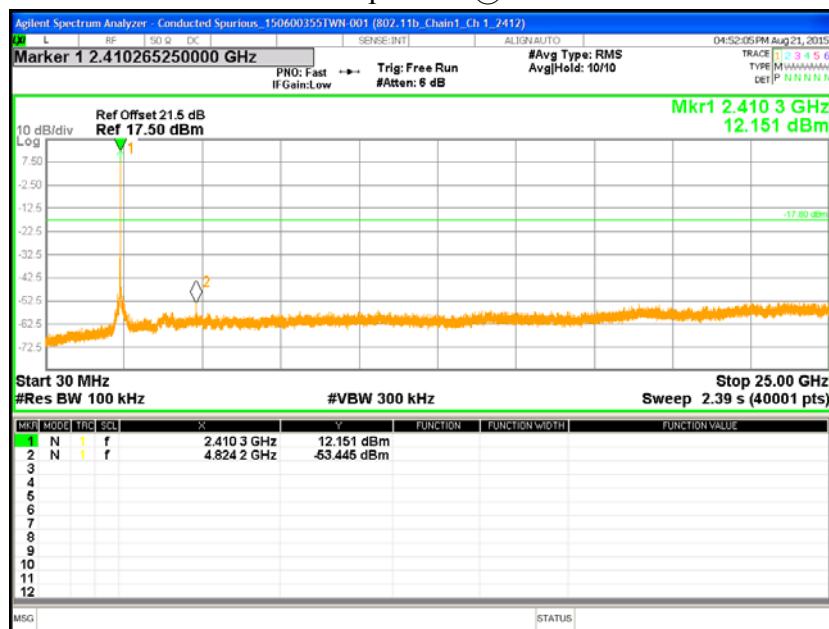
Chain0 : Conducted Spurious @ 802.11b mode Ch11



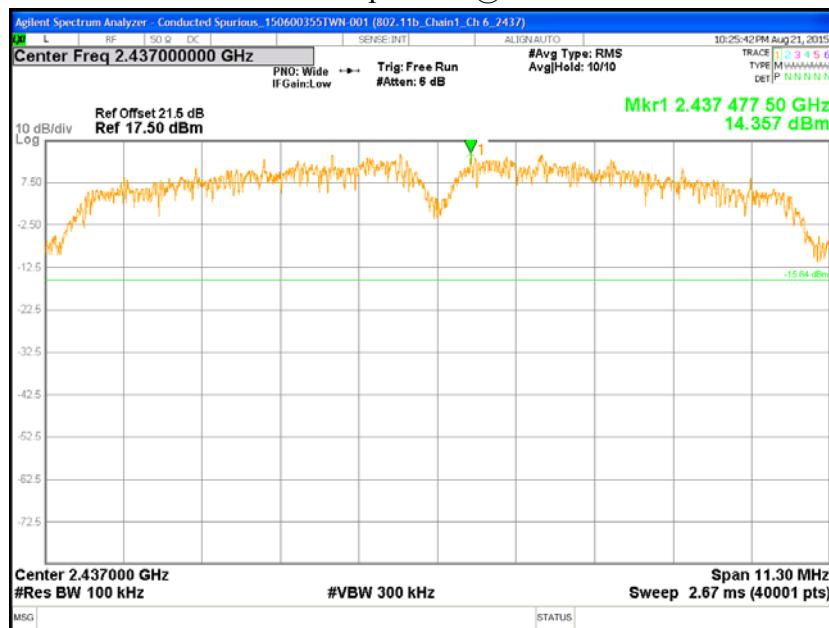
Chain1 : Conducted Spurious @ 802.11b mode Ch 1



Chain1 : Conducted Spurious @ 802.11b mode Ch 1



## Chain1 : Conducted Spurious @ 802.11b mode Ch 6



## Chain1 : Conducted Spurious @ 802.11b mode Ch 6

