

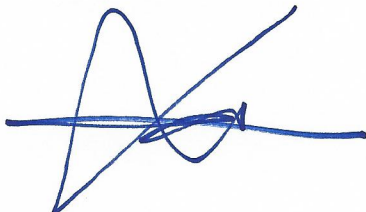
# TEST REPORT

## Part 15 Subpart E 15.407

**Equipment under test** WiFi Module  
**Model name** SWL-Q93T  
**Derivative Model** SWL-CQ93  
**FCC ID** NLMSWLQ93T  
**Applicant** Hanwha Techwin Co., Ltd.  
**Manufacturer** Hanwha Techwin Co., Ltd.  
**Date of test(s)** 2015.11.16 ~ 2015.12.15  
**Date of issue** 2015.12.17

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| Test and report completed by :                                                      | Report approval by :                                                                 |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| Kwon-se Kim / Test engineer                                                         | Jeff Do / Technical manager                                                          |



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### Revision history

| Revision | Date of issue | Test report No. | Description |
|----------|---------------|-----------------|-------------|
| -        | 2015.12.17    | KES-RF-15T0094  | Initial     |



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## 1. General information

Applicant: Hanwha Techwin Co., Ltd.  
Applicant address: 1204, Changwon-daero, Seongsan-gu, Changwon-si  
Gyeongsangnam-do, South Korea  
Test site: KES Co., Ltd.  
Test site address: C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
473-29, Gayeo-ro, Yeuju-si, Gyeonggi-do, 12658, Korea  
FCC rule part(s): 15.407  
Test device serial No.: ☒ Production ☐ Pre-production ☐ Engineering  
Application purpose: ☒ Original grant ☐ Class I permissive change ☐ Class II permissive change

### 1.1. EUT description

Equipment under test WiFi Module  
Frequency range 2 412 MHz ~ 2 462 MHz(802.11b/g/n\_HT20), 5 745 MHz ~ 5 825 MHz(802.11a/n\_HT20), 5 755 MHz ~ 5 795 MHz(802.11n\_HT40)  
5 180 MHz ~ 5 240 MHz(802.11a/n\_HT20), 5 190 MHz ~ 5 230 MHz(802.11n\_HT40)  
5 260 MHz ~ 5 320 MHz(802.11a/n\_HT20), 5 270 MHz ~ 5 310 MHz(802.11n\_HT40)  
5 500 MHz ~ 5 700 MHz(802.11a/n\_HT20), 5 510 MHz ~ 5 670 MHz(802.11n\_HT40)  
Model: SWL-Q93T(Basic), SWL-CQ93(Derivative model)  
Modulation technique DSSS, OFDM  
Number of channels 2 412 MHz ~ 2 462 MHz(802.11 b/g/n\_HT20) : 11ch  
5 745 MHz ~ 5 825 MHz(802.11a/n\_HT20) : 5ch  
5 755 MHz ~ 5 795 MHz(802.11n\_HT40) : 2ch  
5 180 MHz ~ 5 240 MHz(802.11a/n\_HT20) : 4ch  
5 190 MHz ~ 5 230 MHz(802.11n\_HT40) : 2ch  
5 260 MHz ~ 5 320 MHz(802.11a/n\_HT20) : 4ch  
5 270 MHz ~ 5 310 MHz(802.11n\_HT40) : 2ch  
5 500 MHz ~ 5 700 MHz(802.11a/n\_HT20) : 11ch  
5 510 MHz ~ 5 670 MHz(802.11n\_HT40) : 5ch  
Antenna specification Antenna type: FIPA Antenna  
Power source DC 5 V

## 1.2. Frequency/channel operations

### Band1

| Ch. | Frequency (MHz) | Mode       |
|-----|-----------------|------------|
| 36  | 5 180           | 11a/n_HT20 |
| .   | .               | .          |
| 44  | 5 220           | 11a/n_HT20 |
| .   | .               | .          |
| 48  | 5240            | 11a/n_HT20 |

| Ch. | Frequency (MHz) | Mode     |
|-----|-----------------|----------|
| 38  | 5 190           | 11n_HT40 |
| .   | .               | .        |
| 46  | 5 230           | 11n_HT40 |

### Band2A

| Ch. | Frequency (MHz) | Mode       |
|-----|-----------------|------------|
| 52  | 5 260           | 11a/n_HT20 |
| .   | .               | .          |
| 60  | 5 300           | 11a/n_HT20 |
| .   | .               | .          |
| 64  | 5 320           | 11a/n_HT20 |

| Ch. | Frequency (MHz) | Mode     |
|-----|-----------------|----------|
| 54  | 5 270           | 11n_HT40 |
| .   | .               | .        |
| 62  | 5 310           | 11n_HT40 |

### Band2C

| Ch. | Frequency (MHz) | Mode       |
|-----|-----------------|------------|
| 100 | 5 500           | 11a/n_HT20 |
| .   | .               | .          |
| 116 | 5 580           | 11a/n_HT20 |
| .   | .               | .          |
| 140 | 5 700           | 11a/n_HT20 |

| Ch. | Frequency (MHz) | Mode     |
|-----|-----------------|----------|
| 102 | 5 510           | 11n_HT40 |
| .   | .               | .        |
| 110 | 5 550           | 11n_HT40 |
| .   | .               | .        |
| 134 | 5 670           | 11n_HT40 |

### Band3

| Ch. | Frequency (MHz) | Mode       |
|-----|-----------------|------------|
| 149 | 5 745           | 11a/n_HT20 |
| .   | .               | .          |
| 157 | 5 785           | 11a/n_HT20 |
| .   | .               | .          |
| 165 | 5 825           | 11a/n_HT20 |

| Ch. | Frequency (MHz) | Mode     |
|-----|-----------------|----------|
| 151 | 5 755           | 11n_HT40 |
| .   | .               | .        |
| 159 | 5 795           | 11n_HT40 |

### 1.3. Information about derivative model

This is to notify that SWL-CQ93 are same Hardware, Software and components.

### 1.4. Directional antenna gain for MIMO

Model : SWL-CQ93 (Airlink)

| ANT0 Gain (dBi) | ANT1 Gain (dBi) | Total Gain (dBi) | Note        |
|-----------------|-----------------|------------------|-------------|
| 2.378           | 1.152           | 3.90             | For 5.2 GHz |
| 0.974           | -0.330          | 3.18             | For 5.3 GHz |
| 2.023           | -0.920          | 3.35             | For 5.5 GHz |
| 1.164           | -1.010          | 3.08             | For 5.8 GHz |

$$-Ant\ Gain = 10 \log[10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20}]^2 / N_{ANT}$$

## 2. Summary of tests

| Reference                                  | Test description                                                               | Test results |
|--------------------------------------------|--------------------------------------------------------------------------------|--------------|
| 15.205(a), 15.209(a)<br>15.407(b)(1)(2)(3) | General field strength limit<br>(Restricted bands and radiated emission limit) | Pass         |
| 15.407(e)                                  | 6 dB bandwidth                                                                 | Pass         |
| 15.407(a)                                  | Emission bandwidth (26dB bandwidth)                                            | Pass         |
| 15.407(a)(1)                               | Maximum conducted output power                                                 | Pass         |
| 15.407(a)(1)                               | Maximum Power spectral density                                                 | Pass         |
| 15.407(g)                                  | Frequency stability                                                            | Pass         |
| 15.207                                     | AC conducted emissions                                                         | Pass         |

### Test procedures;

The EUT was tested per the guidance of ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing, the guidance provided in KDB 789033 D02\_v01 and KDB 662911 D01 v02r01 were used in the measurement of the EUT.

### Pre-scanned maximum output power

Preliminary tests were performed in different data rate as below table and the highest power data rates were chosen for full test in the following section to demonstrate compliance to the FCC limit line.

#### 802.11a

| UNII<br>Band | Channel /<br>Ant port | Detector<br>mode | Conducted power(dB m) |       |       |       |       |       |       |       |
|--------------|-----------------------|------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|
|              |                       |                  | Data rate(Mbps)       |       |       |       |       |       |       |       |
|              |                       |                  | 6                     | 9     | 12    | 18    | 24    | 36    | 48    | 54    |
| 1            | Low /Ant0             | Peak             | 18.71                 | 17.56 | 17.34 | 18.20 | 17.66 | 18.07 | 17.76 | 17.75 |
|              | Middle/Ant0           |                  | 18.66                 | 17.79 | 17.80 | 17.89 | 18.08 | 18.52 | 18.37 | 18.25 |
|              | High/Ant0             |                  | 18.95                 | 18.93 | 18.73 | 18.36 | 18.46 | 18.14 | 18.31 | 18.11 |
| 2A           | Low /Ant0             | Peak             | 18.76                 | 18.50 | 18.21 | 17.70 | 17.78 | 18.50 | 17.67 | 17.63 |
|              | Middle/Ant0           |                  | 18.52                 | 18.25 | 18.19 | 18.03 | 17.83 | 17.80 | 17.52 | 16.95 |
|              | High/Ant0             |                  | 19.36                 | 19.16 | 19.07 | 18.36 | 17.71 | 18.03 | 17.90 | 17.88 |
| 2C           | Low /Ant0             | Peak             | 19.58                 | 19.56 | 19.51 | 18.82 | 18.94 | 18.57 | 18.93 | 18.82 |
|              | Middle/Ant0           |                  | 18.94                 | 18.49 | 18.39 | 18.33 | 18.28 | 18.18 | 18.09 | 18.00 |
|              | High/Ant0             |                  | 19.53                 | 19.44 | 18.99 | 18.86 | 18.80 | 18.46 | 18.23 | 18.12 |
| 3            | Low /Ant0             | Peak             | 13.99                 | 13.53 | 13.35 | 13.23 | 13.30 | 12.93 | 13.69 | 13.71 |
|              | Middle/Ant0           |                  | 13.92                 | 13.86 | 13.25 | 13.79 | 13.64 | 13.13 | 13.11 | 13.05 |
|              | High/Ant0             |                  | 14.18                 | 13.90 | 13.75 | 13.91 | 13.13 | 13.87 | 13.34 | 13.23 |
| 1            | Low /Ant1             | Peak             | 20.46                 | 19.84 | 19.04 | 19.12 | 19.40 | 19.31 | 18.94 | 18.79 |
|              | Middle/Ant1           |                  | 19.78                 | 18.06 | 18.67 | 18.40 | 18.76 | 18.26 | 17.96 | 17.92 |
|              | High/Ant1             |                  | 19.60                 | 18.98 | 18.59 | 18.22 | 18.79 | 18.69 | 18.71 | 18.43 |
| 2A           | Low /Ant1             | Peak             | 20.43                 | 19.14 | 18.83 | 18.75 | 18.47 | 18.35 | 18.38 | 18.26 |
|              | Middle/Ant1           |                  | 19.20                 | 18.09 | 17.54 | 17.39 | 17.30 | 17.27 | 17.32 | 16.65 |
|              | High/Ant1             |                  | 18.19                 | 17.86 | 17.36 | 17.26 | 17.18 | 17.15 | 17.02 | 16.64 |
| 2C           | Low /Ant1             | Peak             | 15.60                 | 15.28 | 15.27 | 15.53 | 15.04 | 14.81 | 15.46 | 14.21 |
|              | Middle/Ant1           |                  | 18.48                 | 18.34 | 18.33 | 17.95 | 17.84 | 17.57 | 17.55 | 17.10 |
|              | High/Ant1             |                  | 19.59                 | 18.96 | 18.50 | 18.46 | 18.43 | 18.23 | 18.22 | 18.05 |
| 3            | Low /Ant1             | Peak             | 18.66                 | 18.55 | 18.42 | 18.30 | 18.19 | 18.10 | 18.35 | 18.26 |
|              | Middle/Ant1           |                  | 18.28                 | 18.12 | 18.03 | 17.96 | 17.92 | 17.50 | 17.52 | 17.84 |
|              | High/Ant1             |                  | 17.82                 | 17.23 | 17.54 | 17.46 | 17.64 | 17.71 | 17.80 | 17.78 |

### 802.11a(HT20)

| UNII<br>Band | Channel /<br>Ant port | Detector<br>mode | Conducted power(dB m) |       |       |       |       |       |       |       |
|--------------|-----------------------|------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|
|              |                       |                  | Data rate(Mbps)       |       |       |       |       |       |       |       |
|              |                       |                  | MCS0                  | MCS1  | MCS2  | MCS3  | MCS4  | MCS5  | MCS6  | MCS7  |
| 1            | Low /Ant0             | Peak             | <u>18.66</u>          | 18.53 | 17.93 | 17.50 | 17.02 | 17.37 | 17.58 | 18.14 |
|              | Middle/Ant0           |                  | <u>19.16</u>          | 18.82 | 18.34 | 18.02 | 17.93 | 18.54 | 18.00 | 17.67 |
|              | High/Ant0             |                  | <u>18.86</u>          | 18.56 | 18.60 | 18.16 | 18.53 | 18.33 | 17.87 | 17.89 |
| 2A           | Low /Ant0             | Peak             | <u>18.37</u>          | 18.28 | 18.30 | 18.18 | 18.16 | 17.95 | 17.74 | 17.64 |
|              | Middle/Ant0           |                  | <u>18.95</u>          | 18.59 | 17.57 | 17.73 | 17.97 | 17.99 | 17.52 | 17.34 |
|              | High/Ant0             |                  | <u>18.77</u>          | 18.57 | 18.46 | 18.38 | 17.90 | 17.88 | 17.75 | 17.66 |
| 2C           | Low /Ant0             | Peak             | <u>18.79</u>          | 18.55 | 18.49 | 18.48 | 18.46 | 18.27 | 18.24 | 17.59 |
|              | Middle/Ant0           |                  | <u>18.56</u>          | 18.51 | 18.35 | 18.14 | 18.10 | 17.98 | 17.96 | 17.94 |
|              | High/Ant0             |                  | <u>19.40</u>          | 19.17 | 18.85 | 18.82 | 18.75 | 18.74 | 18.54 | 17.29 |
| 3            | Low /Ant0             | Peak             | <u>12.87</u>          | 12.35 | 12.23 | 12.30 | 12.52 | 12.69 | 12.71 | 12.33 |
|              | Middle/Ant0           |                  | <u>14.19</u>          | 14.10 | 14.07 | 13.79 | 13.64 | 14.13 | 13.86 | 13.83 |
|              | High/Ant0             |                  | <u>13.01</u>          | 12.90 | 12.75 | 12.91 | 12.66 | 12.71 | 12.34 | 12.23 |
| 1            | Low /Ant1             | Peak             | <u>19.98</u>          | 19.40 | 19.37 | 18.66 | 18.85 | 19.19 | 19.08 | 19.25 |
|              | Middle/Ant1           |                  | <u>19.17</u>          | 19.15 | 18.21 | 18.48 | 17.92 | 18.25 | 18.12 | 17.79 |
|              | High/Ant1             |                  | <u>19.55</u>          | 19.40 | 18.23 | 18.89 | 18.97 | 18.16 | 19.01 | 18.18 |
| 2A           | Low /Ant1             | Peak             | <u>19.76</u>          | 19.19 | 18.88 | 18.84 | 18.67 | 18.72 | 18.43 | 18.36 |
|              | Middle/Ant1           |                  | <u>18.54</u>          | 18.22 | 18.20 | 17.31 | 17.21 | 17.20 | 16.87 | 16.59 |
|              | High/Ant1             |                  | <u>18.34</u>          | 17.91 | 17.58 | 17.45 | 17.42 | 17.05 | 16.86 | 16.49 |
| 2C           | Low /Ant1             | Peak             | <u>15.26</u>          | 15.23 | 14.97 | 14.94 | 14.65 | 14.50 | 14.44 | 14.25 |
|              | Middle/Ant1           |                  | <u>17.94</u>          | 17.82 | 17.69 | 17.67 | 17.66 | 17.60 | 17.43 | 17.35 |
|              | High/Ant1             |                  | <u>19.08</u>          | 18.81 | 18.81 | 18.43 | 18.37 | 18.36 | 18.14 | 17.87 |
| 3            | Low /Ant1             | Peak             | <u>18.35</u>          | 18.26 | 18.19 | 18.07 | 17.66 | 17.35 | 17.26 | 17.19 |
|              | Middle/Ant1           |                  | <u>18.15</u>          | 17.98 | 17.96 | 17.92 | 17.84 | 17.92 | 17.84 | 17.83 |
|              | High/Ant1             |                  | <u>18.39</u>          | 18.23 | 18.16 | 17.96 | 17.64 | 17.82 | 17.80 | 17.78 |

### 802.11a(HT40)

| UNII<br>Band | Channel /<br>Ant port | Detector<br>mode | Conducted power(dB m) |       |       |       |       |       |       |       |
|--------------|-----------------------|------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|
|              |                       |                  | Data rate(Mbps)       |       |       |       |       |       |       |       |
|              |                       |                  | MCS0                  | MCS1  | MCS2  | MCS3  | MCS4  | MCS5  | MCS6  | MCS7  |
| 1            | Low /Ant0             | Peak             | 17.89                 | 17.24 | 17.70 | 17.51 | 17.61 | 17.62 | 17.14 | 16.73 |
|              | Middle/Ant0           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant0             |                  | 18.61                 | 18.56 | 17.83 | 17.84 | 17.73 | 18.11 | 18.05 | 17.92 |
| 2A           | Low /Ant0             | Peak             | 18.29                 | 18.23 | 17.72 | 17.42 | 17.37 | 17.30 | 17.28 | 16.80 |
|              | Middle/Ant0           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant0             |                  | 18.95                 | 18.79 | 18.26 | 18.25 | 18.07 | 17.97 | 17.75 | 17.59 |
| 2C           | Low /Ant0             | Peak             | 16.56                 | 16.50 | 16.40 | 16.36 | 16.32 | 16.33 | 16.27 | 16.21 |
|              | Middle/Ant0           |                  | 16.24                 | 15.39 | 15.33 | 15.21 | 14.99 | 14.96 | 14.81 | 14.02 |
|              | High/Ant0             |                  | 14.58                 | 14.24 | 13.81 | 13.77 | 13.58 | 13.54 | 13.42 | 13.40 |
| 3            | Low /Ant0             | Peak             | 13.57                 | 13.49 | 13.47 | 13.03 | 13.16 | 13.50 | 13.27 | 13.08 |
|              | Middle/Ant0           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant0             |                  | 13.96                 | 13.80 | 13.00 | 13.03 | 13.76 | 13.34 | 13.53 | 13.57 |
| 1            | Low /Ant1             | Peak             | 19.58                 | 18.82 | 18.08 | 18.04 | 18.66 | 18.70 | 18.91 | 17.96 |
|              | Middle/Ant1           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant1             |                  | 18.68                 | 18.46 | 17.89 | 17.92 | 17.85 | 17.73 | 17.48 | 17.60 |
| 2A           | Low /Ant1             | Peak             | 19.47                 | 18.49 | 18.40 | 18.23 | 18.16 | 18.14 | 18.04 | 18.05 |
|              | Middle/Ant1           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant1             |                  | 17.92                 | 17.78 | 17.76 | 17.61 | 17.22 | 17.21 | 16.82 | 16.81 |
| 2C           | Low /Ant1             | Peak             | 16.32                 | 15.67 | 15.56 | 15.38 | 15.36 | 15.34 | 14.99 | 14.96 |
|              | Middle/Ant1           |                  | 18.50                 | 18.49 | 18.11 | 17.82 | 17.75 | 17.60 | 17.41 | 16.64 |
|              | High/Ant1             |                  | 18.50                 | 18.01 | 17.97 | 17.84 | 17.74 | 17.71 | 17.69 | 17.42 |
| 3            | Low /Ant1             | Peak             | 18.82                 | 18.05 | 18.36 | 18.70 | 18.62 | 17.59 | 17.77 | 17.79 |
|              | Middle/Ant1           |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/Ant1             |                  | 18.53                 | 17.85 | 17.21 | 17.56 | 17.65 | 18.05 | 18.15 | 18.02 |

### 802.11a(HT20)

| UNII<br>Band | Channel /<br>Ant port | Detector<br>mode | Conducted power(dB m) |        |       |       |       |       |       |       |
|--------------|-----------------------|------------------|-----------------------|--------|-------|-------|-------|-------|-------|-------|
|              |                       |                  | Data rate(Mbps)       |        |       |       |       |       |       |       |
|              |                       |                  | MCS8                  | MCS9   | MCS10 | MCS11 | MCS12 | MCS13 | MCS14 | MCS15 |
| 1            | Low /<br>Ant0+Ant1    | Peak             | <u>22.38</u>          | 22.00  | 21.72 | 21.13 | 21.04 | 21.39 | 21.40 | 21.74 |
|              | Middle/<br>Ant0+Ant1  |                  | <u>22.18</u>          | 22.00  | 21.29 | 21.27 | 20.94 | 21.41 | 21.07 | 20.74 |
|              | High/<br>Ant0+Ant1    |                  | <u>22.23</u>          | 222.01 | 21.43 | 21.55 | 21.77 | 21.26 | 21.49 | 21.05 |
| 2A           | Low /<br>Ant0+Ant1    | Peak             | <u>22.13</u>          | 21.77  | 21.61 | 21.53 | 21.43 | 21.36 | 21.11 | 21.03 |
|              | Middle/<br>Ant0+Ant1  |                  | <u>21.76</u>          | 21.42  | 20.91 | 20.54 | 20.62 | 20.62 | 20.22 | 19.99 |
|              | High/<br>Ant0+Ant1    |                  | <u>21.57</u>          | 21.26  | 21.05 | 20.95 | 20.68 | 20.50 | 20.34 | 20.12 |
| 2C           | Low /<br>Ant0+Ant1    | Peak             | <u>19.45</u>          | 19.12  | 19.01 | 18.91 | 18.88 | 18.87 | 18.69 | 18.64 |
|              | Middle/<br>Ant0+Ant1  |                  | <u>20.53</u>          | 20.22  | 19.95 | 19.72 | 19.60 | 19.49 | 19.31 | 18.53 |
|              | High/<br>Ant0+Ant1    |                  | <u>19.98</u>          | 19.53  | 19.38 | 19.28 | 19.15 | 19.12 | 19.07 | 18.87 |
| 3            | Low /<br>Ant0+Ant1    | Peak             | <u>19.43</u>          | 19.25  | 19.17 | 19.09 | 18.82 | 18.63 | 18.57 | 18.42 |
|              | Middle/<br>Ant0+Ant1  |                  | <u>19.62</u>          | 19.47  | 19.45 | 19.34 | 19.24 | 19.44 | 19.30 | 19.29 |
|              | High/<br>Ant0+Ant1    |                  | <u>19.50</u>          | 19.35  | 19.26 | 19.14 | 18.84 | 18.99 | 18.89 | 18.85 |

### 802.11a(HT40)

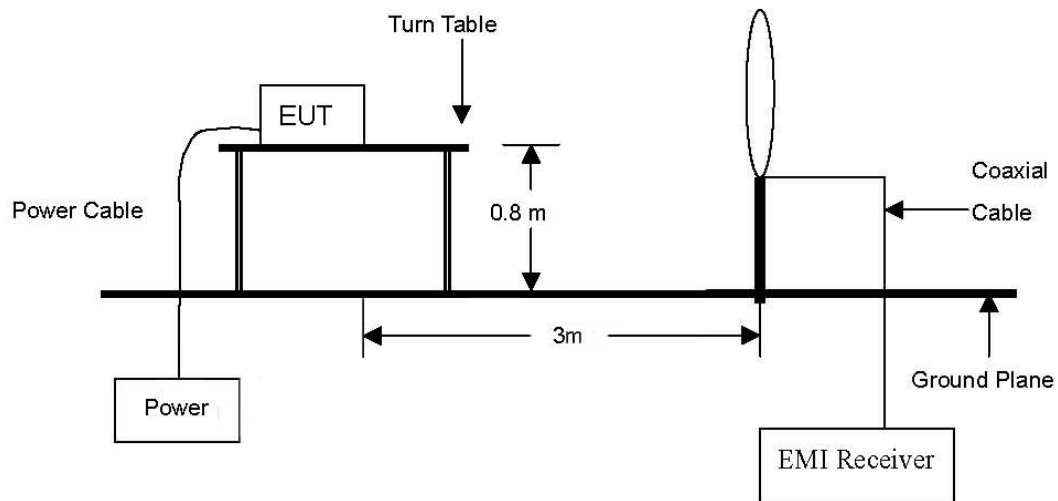
| UNII<br>Band | Channel /<br>Ant port | Detector<br>mode | Conducted power(dB m) |       |       |       |       |       |       |       |
|--------------|-----------------------|------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|
|              |                       |                  | Data rate(Mbps)       |       |       |       |       |       |       |       |
|              |                       |                  | MCS8                  | MCS9  | MCS10 | MCS11 | MCS12 | MCS13 | MCS14 | MCS15 |
| 1            | Low /<br>Ant0+Ant1    | Peak             | <b>21.83</b>          | 21.11 | 20.90 | 20.79 | 21.18 | 21.20 | 21.12 | 20.40 |
|              | Middle/<br>Ant0+Ant1  |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/<br>Ant0+Ant1    |                  | <b>21.66</b>          | 21.52 | 20.87 | 20.89 | 20.80 | 20.93 | 20.78 | 20.77 |
| 2A           | Low /<br>Ant0+Ant1    | Peak             | <b>21.93</b>          | 21.37 | 21.08 | 20.85 | 20.79 | 20.75 | 20.69 | 20.48 |
|              | Middle/<br>Ant0+Ant1  |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/<br>Ant0+Ant1    |                  | <b>21.48</b>          | 21.32 | 21.03 | 20.95 | 20.68 | 20.62 | 20.32 | 20.23 |
| 2C           | Low /<br>Ant0+Ant1    | Peak             | <b>19.45</b>          | 19.12 | 19.01 | 18.91 | 18.88 | 18.87 | 18.69 | 18.64 |
|              | Middle/<br>Ant0+Ant1  |                  | <b>20.53</b>          | 20.22 | 19.95 | 19.72 | 19.60 | 19.49 | 19.31 | 18.53 |
|              | High/<br>Ant0+Ant1    |                  | <b>19.98</b>          | 19.53 | 19.38 | 19.28 | 19.15 | 19.12 | 19.07 | 18.87 |
| 3            | Low /<br>Ant0+Ant1    | Peak             | <b>19.95</b>          | 19.35 | 19.58 | 19.74 | 19.71 | 19.02 | 19.09 | 19.05 |
|              | Middle/<br>Ant0+Ant1  |                  | -                     | -     | -     | -     | -     | -     | -     | -     |
|              | High/<br>Ant0+Ant1    |                  | <b>19.83</b>          | 19.29 | 18.61 | 18.06 | 19.14 | 19.31 | 19.44 | 19.35 |

### 3. Test results

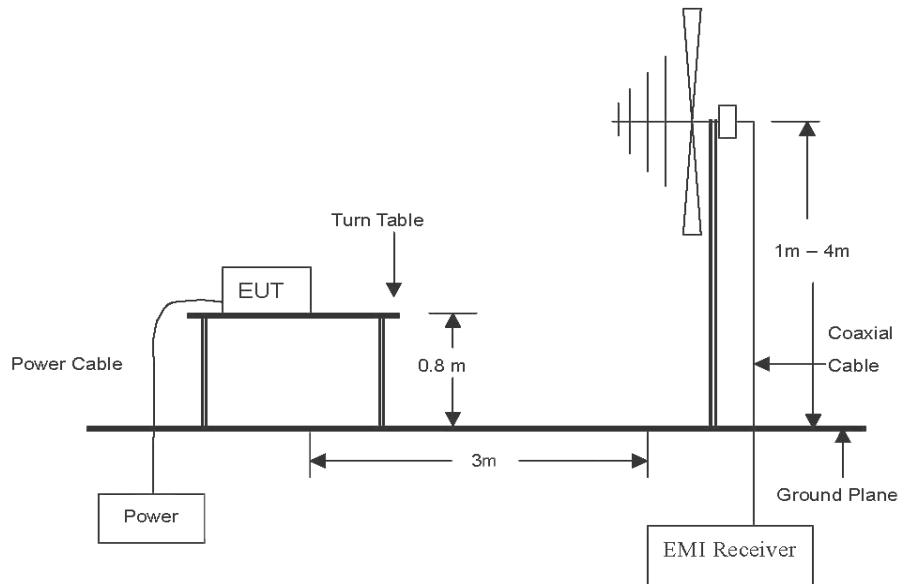
#### 3.1. Radiated restricted band and emissions

##### Test setup

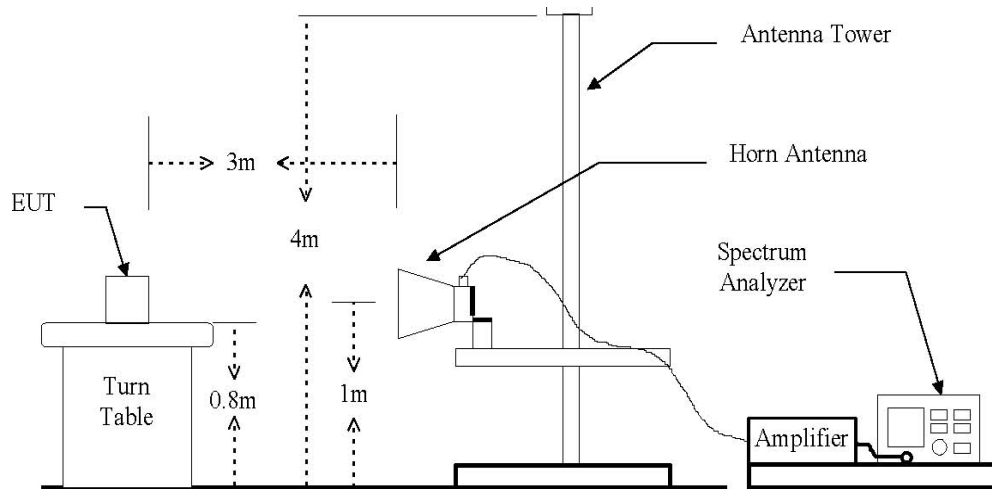
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 40 GHz emissions.



### Test procedure

Radiated emissions from the EUT were measured according to the dictates in section KDB 789033 D02 v01 and ANSI C63.4-2009

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site or open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be retested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

### Note.

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

#### 1. Average Field Strength Measurements per Section II.G.6

Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.

Set RBW = 1 MHz.

Set VBW = 3 MHz ( $\geq 3 \times \text{RBW}$ ).

Set detector = power average(RMS).

Set sweep time = auto.

Trace (RMS) averaging was performed over at least 100 traces.

#### 2. Peak Field Strength Measurements per Section II.G.5

Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.

Set RBW = 1 MHz.

Set VBW = 3 MHz ( $\geq 3 \times \text{RBW}$ ).

Set detector = Peak.

Set sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes.

### Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

| Frequency (MHz) | Distance (Meters) | Radiated ( $\mu\text{V/m}$ ) |
|-----------------|-------------------|------------------------------|
| 0.009 ~ 0.490   | 300               | 2 400 / F(kHz)               |
| 0.490 ~ 1.705   | 30                | 24 000 / F(kHz)              |
| 1.705 ~ 30.0    | 30                | 30                           |
| 30 ~ 88         | 3                 | 100**                        |
| 88 ~ 216        | 3                 | 150**                        |
| 216 ~ 960       | 3                 | 200**                        |
| Above 960       | 3                 | 500                          |

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

According to 15.205(a), 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         |
| 0.495-0.505       | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.17725-4.17775   | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37625-8.38675   | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725 | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41       |                     |               |                  |

According to 15.205(b), Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.

According to 15.407(b),

(b) Undesirable emission limits: Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p of –27 dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p of –27 dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p of –27 dBm/MHz.

(4) For transmitters operating in the 5.725–5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p of –27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz.

A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.

$$*EIRP[dBm] = E[dB\mu V/m] - 95.2$$

$$EIRP \text{ of } -27 \text{ dBm/MHz} = 68.2 \text{ dB}\mu V/m \text{ (3m)}$$

### Test results (Below 30 MHz)

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 180 MHz (Worst case)  
Channel: 36

| Frequency<br>(MHz) | Level<br>(dBμV) | Ant. Pol. | Correction<br>factors<br>(dB/m) | F <sub>d</sub><br>(dB) | Field<br>strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|-----------|---------------------------------|------------------------|-------------------------------|-------------------|----------------|
| No signal detected |                 |           |                                 |                        |                               |                   |                |

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 260 MHz (Worst case)  
Channel: 52

| Frequency<br>(MHz) | Level<br>(dBμV) | Ant. Pol. | Correction<br>factors<br>(dB/m) | F <sub>d</sub><br>(dB) | Field<br>strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|-----------|---------------------------------|------------------------|-------------------------------|-------------------|----------------|
| No signal detected |                 |           |                                 |                        |                               |                   |                |

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 700 MHz (Worst case)  
Channel: 140

| Frequency<br>(MHz) | Level<br>(dBμV) | Ant. Pol. | Correction<br>factors<br>(dB/m) | F <sub>d</sub><br>(dB) | Field<br>strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|-----------|---------------------------------|------------------------|-------------------------------|-------------------|----------------|
| No signal detected |                 |           |                                 |                        |                               |                   |                |

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 785 MHz (Worst case)  
Channel: 157

| Frequency<br>(MHz) | Level<br>(dBμV) | Ant. Pol. | Correction<br>factors<br>(dB/m) | F <sub>d</sub><br>(dB) | Field<br>strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|-----------|---------------------------------|------------------------|-------------------------------|-------------------|----------------|
| No signal detected |                 |           |                                 |                        |                               |                   |                |

**Note.**

1. All spurious emission at channels are almost the same below 30 MHz, so that 802.11a Band were chosen at representative in final test.
2. Actual = Reading + Ant. factor + Cable loss + F<sub>d</sub>
3.  $F_d = 40\log(D_m / D_s)$

Where:

F<sub>d</sub> = Distance factor in dB  
D<sub>m</sub> = Measurement distance in meters  
D<sub>s</sub> = Specification distance in meters

### Test results (Below 1 000 MHz)

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 180 MHz (Worst case)  
Channel: 36

| Radiated emissions |                | Ant. | Correction factors |                 | Total           | Limit          |             |
|--------------------|----------------|------|--------------------|-----------------|-----------------|----------------|-------------|
| Frequency (MHz)    | Reading (dBμV) | Pol. | Ant. factor (dB/m) | Cable loss (dB) | Actual (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| 99.840             | 27.01          | H    | 8.84               | 0.79            | 36.64           | 43.52          | 6.88        |
| 116.330            | 23.60          | H    | 10.32              | 0.86            | 34.78           | 43.52          | 8.74        |
| 167.740            | 21.95          | H    | 12.33              | 1.06            | 35.34           | 43.52          | 8.18        |
| 216.240            | 25.80          | H    | 10.74              | 1.33            | 37.87           | 46.02          | 8.15        |
| 231.760            | 26.55          | V    | 11.31              | 1.35            | 39.21           | 46.02          | 6.81        |
| 347.190            | 17.12          | V    | 14.89              | 1.65            | 33.66           | 46.02          | 12.36       |
| 403.450            | 16.05          | V    | 16.16              | 1.84            | 34.05           | 46.02          | 11.97       |

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 260 MHz (Worst case)  
Channel: 52

| Radiated emissions |                | Ant. | Correction factors |                 | Total           | Limit          |             |
|--------------------|----------------|------|--------------------|-----------------|-----------------|----------------|-------------|
| Frequency (MHz)    | Reading (dBμV) | Pol. | Ant. factor (dB/m) | Cable loss (dB) | Actual (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| 100.810            | 27.46          | H    | 8.93               | 0.79            | 37.18           | 43.52          | 6.34        |
| 116.330            | 23.44          | H    | 10.32              | 0.86            | 34.62           | 43.52          | 8.90        |
| 173.560            | 23.59          | H    | 11.75              | 1.09            | 36.43           | 43.52          | 7.09        |
| 230.790            | 27.82          | V    | 11.27              | 1.35            | 40.44           | 46.02          | 5.58        |
| 231.760            | 27.61          | H    | 11.31              | 1.35            | 40.27           | 46.02          | 5.75        |
| 288.020            | 20.27          | H    | 13.38              | 1.57            | 35.22           | 46.02          | 10.80       |
| 346.220            | 20.07          | H    | 14.86              | 1.65            | 36.58           | 46.02          | 9.44        |

### Note.

1. All spurious emission at channels are almost the same below 1 GHz, so that low channel was chosen at representative in final test.
2. Actual = Reading + Ant. factor + Cable loss
3. Detector mode: Quasi peak
4. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 700 MHz (Worst case)  
Channel: 140

| Radiated emissions |                   | Ant. | Correction factors    |                    | Total              | Limit             |                |
|--------------------|-------------------|------|-----------------------|--------------------|--------------------|-------------------|----------------|
| Frequency<br>(MHz) | Reading<br>(dBμV) | Pol. | Ant. factor<br>(dB/m) | Cable loss<br>(dB) | Actual<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
| 99.840             | 26.96             | H    | 8.84                  | 0.79               | 36.59              | 43.52             | 6.93           |
| 145.430            | 18.69             | V    | 12.90                 | 0.92               | 32.51              | 43.52             | 11.01          |
| 173.560            | 23.50             | V    | 11.75                 | 1.09               | 36.34              | 43.52             | 7.18           |
| 216.240            | 23.46             | H    | 10.74                 | 1.33               | 35.53              | 46.02             | 10.49          |
| 230.790            | 29.35             | H    | 11.27                 | 1.35               | 41.97              | 46.02             | 4.05           |
| 263.770            | 17.92             | V    | 12.49                 | 1.45               | 31.86              | 46.02             | 14.16          |
| 346.220            | 20.90             | H    | 14.86                 | 1.65               | 37.41              | 46.02             | 8.61           |

**Note.**

1. All spurious emission at channels are almost the same below 1 GHz, so that high channel was chosen at representative in final test.
2. Actual = Reading + Ant. factor + Cable loss
3. Detector mode: Quasi peak
4. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

Mode: 802.11 n\_HT20(MIMO)  
Transfer rate: 6 Mbps  
Distance of measurement: 3 meter  
Operating frequency: 5 785 MHz (Worst case)  
Channel: 157

| Radiated emissions |                | Ant. | Correction factors |                 | Total           | Limit          |             |
|--------------------|----------------|------|--------------------|-----------------|-----------------|----------------|-------------|
| Frequency (MHz)    | Reading (dBμV) | Pol. | Ant. factor (dB/m) | Cable loss (dB) | Actual (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| 100.810            | 27.07          | H    | 8.93               | 0.79            | 36.79           | 43.52          | 6.73        |
| 166.770            | 22.85          | H    | 12.43              | 1.06            | 36.34           | 43.52          | 7.18        |
| 173.560            | 21.95          | V    | 11.75              | 1.09            | 34.79           | 43.52          | 8.73        |
| 230.790            | 29.05          | H    | 11.27              | 1.35            | 41.67           | 46.02          | 4.35        |
| 231.760            | 26.79          | V    | 11.31              | 1.35            | 39.45           | 46.02          | 6.57        |
| 261.830            | 22.22          | H    | 12.42              | 1.44            | 36.08           | 46.02          | 9.94        |
| 346.220            | 19.80          | H    | 14.86              | 1.65            | 36.31           | 46.02          | 9.71        |

**Note.**

1. All spurious emission at channels are almost the same below 1 GHz, so that middle channel was chosen at representative in final test.
2. Actual = Reading + Ant. factor + Cable loss
3. Detector mode: Quasi peak
4. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

### Test results (Above 1 000 MHz)

#### -Antenna port 0

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 180 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 4782.10         | 45.44        | Peak   | H         | 7.91                      | 53.35                   | 74.00          | 20.65       |
| 4987.90         | 57.29        | Peak   | V         | 9.38                      | 66.67                   | 74.00          | 7.33        |
| 4998.95         | 29.24        | Avg    | V         | 9.46                      | 38.70                   | 54.00          | 15.30       |
| 10360.00        | 32.53        | Peak   | H         | 23.36                     | 55.89                   | 68.20          | 12.31       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 220 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10440.00        | 33.97        | Peak   | H         | 23.49                     | 57.46                   | 68.20          | 10.74       |
| 10440.00        | 32.25        | Peak   | V         | 23.49                     | 55.74                   | 68.20          | 12.46       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 240 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10480.00        | 33.38        | Peak   | H         | 23.59                     | 56.97                   | 68.20          | 11.23       |
| 10480.00        | 31.25        | Peak   | V         | 23.59                     | 54.84                   | 68.20          | 13.36       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 260 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10520.00        | 31.44        | Peak   | H         | 23.18                     | 54.62                   | 68.20          | 13.58       |
| 10520.00        | 30.25        | Peak   | V         | 23.18                     | 53.43                   | 68.20          | 14.77       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 300 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10600.00        | 32.42        | Peak   | H         | 23.72                     | 56.14                   | 68.20          | 12.06       |
| 10600.00        | 31.85        | Peak   | V         | 23.72                     | 55.57                   | 68.20          | 12.63       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 320 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5405.14         | 44.72        | Peak   | H         | 10.69                     | 55.41                   | 74.00          | 18.59       |
| 5350.30         | 25.85        | Avg    | H         | 10.52                     | 36.37                   | 54.00          | 17.63       |
| 5398.63         | 43.03        | Peak   | V         | 10.67                     | 53.70                   | 74.00          | 20.30       |
| 10640.00        | 32.32        | Peak   | H         | 23.86                     | 56.18                   | 68.20          | 12.02       |
| 10640.00        | 31.59        | Peak   | V         | 23.86                     | 55.45                   | 68.20          | 12.75       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 500 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 5465.14         | 45.05              | Peak   | H         | 10.87                     | 55.92                         | 74.00                | 18.08       |
| 5469.69         | 25.64              | Avg    | H         | 10.88                     | 36.52                         | 54.00                | 17.48       |
| 5455.88         | 45.15              | Peak   | V         | 10.84                     | 55.99                         | 74.00                | 18.01       |
| 5469.69         | 25.22              | Avg    | V         | 10.88                     | 36.11                         | 54.00                | 17.89       |
| 11000.00        | 36.21              | Peak   | H         | 22.91                     | 59.12                         | 68.20                | 9.08        |
| 11000.00        | 30.95              | Peak   | V         | 22.91                     | 53.86                         | 68.20                | 14.34       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 580 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 11160.00        | 35.91              | Peak   | H         | 23.70                     | 59.61                         | 68.20                | 8.59        |
| 11160.00        | 32.00              | Peak   | V         | 23.70                     | 55.70                         | 68.20                | 12.50       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 700 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 11400.00        | 34.54              | Peak   | H         | 24.58                     | 59.12                         | 68.20                | 9.08        |
| 11400.00        | 32.10              | Peak   | V         | 24.58                     | 56.68                         | 68.20                | 11.52       |



Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 745 MHz

| Frequency<br>(MHz)                                                        | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|---------------------------------------------------------------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
|                                                                           |                 |        |           |                                 |                            |                   |                |
| Emission levels are not reported much lower than the limits by over 20 dB |                 |        |           |                                 |                            |                   |                |
|                                                                           |                 |        |           |                                 |                            |                   |                |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 785 MHz

| Frequency<br>(MHz) | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
| 11570.00           | 33.77           | Peak   | H         | 31.21                           | 64.98                      | 68.20             | 3.22           |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 825 MHz

| Frequency<br>(MHz) | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
| 11653.00           | 36.76           | Peak   | H         | 24.62                           | 61.38                      | 68.20             | 6.82           |

### -Antenna port 1

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 180 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5149.00         | 50.43        | Peak   | H         | 9.92                      | 60.35                   | 74.00          | 13.65       |
| 5149.30         | 32.71        | Avg    | H         | 9.92                      | 42.63                   | 54.00          | 11.37       |
| 5147.00         | 48.97        | Peak   | V         | 9.91                      | 58.88                   | 74.00          | 15.12       |
| 5149.30         | 31.12        | Avg    | V         | 9.92                      | 41.04                   | 54.00          | 12.96       |
| 10360.00        | 34.24        | Peak   | H         | 23.36                     | 57.60                   | 68.20          | 10.60       |
| 10360.00        | 32.15        | Peak   | V         | 23.36                     | 55.51                   | 68.20          | 12.69       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 220 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10440.00        | 33.51        | Peak   | H         | 23.49                     | 57.00                   | 68.20          | 11.20       |
| 10440.00        | 32.62        | Peak   | V         | 23.49                     | 56.11                   | 68.20          | 12.09       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 240 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10480.00        | 31.96        | Peak   | H         | 23.59                     | 55.55                   | 68.20          | 12.65       |
| 10480.00        | 31.48        | Peak   | V         | 23.59                     | 55.07                   | 68.20          | 13.13       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 260 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10520.00        | 31.54        | Peak   | H         | 23.18                     | 54.72                   | 68.20          | 13.48       |
| 10520.00        | 31.20        | Peak   | V         | 23.18                     | 54.38                   | 68.20          | 13.82       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 300 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10600.00        | 32.56        | Peak   | H         | 23.72                     | 56.28                   | 68.20          | 11.92       |
| 10600.00        | 32.12        | Peak   | V         | 23.72                     | 55.84                   | 68.20          | 12.36       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 320 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5353.04         | 50.29        | Peak   | H         | 10.53                     | 60.82                   | 74.00          | 13.18       |
| 5350.30         | 29.78        | Avg    | H         | 10.52                     | 40.30                   | 54.00          | 13.70       |
| 5350.65         | 45.97        | Peak   | V         | 10.53                     | 56.50                   | 74.00          | 17.50       |
| 5350.30         | 27.33        | Avg    | V         | 10.52                     | 37.85                   | 54.00          | 16.15       |
| 10640.00        | 32.65        | Peak   | H         | 23.86                     | 56.51                   | 68.20          | 11.69       |
| 10640.00        | 32.05        | Peak   | V         | 23.86                     | 55.91                   | 68.20          | 12.29       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 500 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5469.54         | 51.54        | Peak   | H         | 10.88                     | 62.42                   | 74.00          | 11.58       |
| 5440.11         | 30.11        | Avg    | H         | 10.79                     | 40.90                   | 54.00          | 13.10       |
| 5469.31         | 45.19        | Peak   | V         | 10.88                     | 56.07                   | 74.00          | 17.93       |
| 5440.27         | 27.35        | Avg    | V         | 10.80                     | 38.15                   | 54.00          | 15.85       |
| 11000.00        | 34.80        | Peak   | H         | 22.91                     | 57.71                   | 68.20          | 10.49       |
| 11000.00        | 31.27        | Peak   | V         | 22.91                     | 54.18                   | 68.20          | 14.02       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 580 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11160.00        | 33.26        | Peak   | H         | 23.70                     | 56.96                   | 68.20          | 11.24       |
| 11160.00        | 31.12        | Peak   | V         | 23.70                     | 54.82                   | 68.20          | 13.38       |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 700 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11400.00        | 33.88        | Peak   | H         | 24.58                     | 58.46                   | 68.20          | 9.74        |
| 11400.00        | 31.44        | Peak   | V         | 24.58                     | 56.02                   | 68.20          | 12.18       |



Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 745 MHz

| Frequency<br>(MHz)                                                        | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|---------------------------------------------------------------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
|                                                                           |                 |        |           |                                 |                            |                   |                |
| Emission levels are not reported much lower than the limits by over 20 dB |                 |        |           |                                 |                            |                   |                |
|                                                                           |                 |        |           |                                 |                            |                   |                |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 785 MHz

| Frequency<br>(MHz) | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
| 11570.00           | 34.25           | Peak   | H         | 24.17                           | 58.42                      | 68.20             | 9.78           |

Mode: 802.11a  
Transfer rate: 6 Mbps  
Operating frequency: 5 825 MHz

| Frequency<br>(MHz) | Level<br>(dBμV) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|--------------------|-----------------|--------|-----------|---------------------------------|----------------------------|-------------------|----------------|
| 11650.00           | 35.43           | Peak   | H         | 24.61                           | 60.04                      | 68.20             | 8.16           |
| 11650.00           | 32.27           | Peak   | V         | 24.61                           | 56.88                      | 68.20             | 11.32          |

### -Antenna 0 + Antenna 1

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 180 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5149.00         | 48.64        | Peak   | H         | 9.92                      | 58.56                   | 74.00          | 15.44       |
| 5149.30         | 30.25        | Avg    | H         | 9.92                      | 40.17                   | 54.00          | 13.83       |
| 4954.30         | 46.78        | Peak   | V         | 9.14                      | 55.92                   | 74.00          | 18.08       |
| 5149.30         | 31.15        | Avg    | V         | 9.92                      | 41.07                   | 54.00          | 12.93       |
| 10360.00        | 31.75        | Peak   | H         | 23.36                     | 54.33                   | 68.20          | 13.09       |
| 10360.00        | 30.97        | Peak   | V         | 23.36                     | 43.51                   | 68.20          | 13.87       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 220 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10440.00        | 32.38        | Peak   | H         | 23.49                     | 55.87                   | 68.20          | 12.33       |
| 10440.00        | 31.24        | Peak   | V         | 23.49                     | 54.73                   | 68.20          | 13.47       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 240 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10480.00        | 31.42        | Peak   | H         | 23.59                     | 55.01                   | 68.20          | 13.19       |
| 10480.00        | 30.55        | Peak   | V         | 23.59                     | 54.14                   | 68.20          | 14.06       |



Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 260 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10520.00        | 32.45        | Peak   | H         | 27.95                     | 60.40                   | 74.00          | 13.60       |
| 10520.00        | 32.01        | Peak   | V         | 27.95                     | 59.96                   | 74.00          | 14.04       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 300 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10600.00        | 32.16        | Peak   | H         | 28.14                     | 60.30                   | 74.00          | 13.70       |
| 10600.00        | 32.01        | Peak   | V         | 28.14                     | 60.15                   | 74.00          | 13.85       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 320 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5351.30         | 49.50        | Peak   | H         | 10.53                     | 60.03                   | 74.00          | 13.97       |
| 5350.30         | 27.21        | Avg    | H         | 10.52                     | 37.73                   | 54.00          | 16.27       |
| 5350.22         | 46.62        | Peak   | V         | 10.52                     | 57.14                   | 74.00          | 16.86       |
| 5350.30         | 26.45        | Avg    | V         | 10.52                     | 36.97                   | 54.00          | 17.03       |
| 10640.00        | 33.47        | Peak   | H         | 28.23                     | 61.70                   | 74.00          | 12.30       |
| 10640.00        | 32.85        | Peak   | V         | 28.23                     | 61.08                   | 74.00          | 12.92       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 500 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 5469.07         | 52.04              | Peak   | H         | 10.88                     | 62.92                         | 74.00                | 11.08       |
| 5469.68         | 26.97              | Avg    | H         | 10.88                     | 37.85                         | 54.00                | 16.15       |
| 5392.89         | 48.36              | Peak   | V         | 10.65                     | 59.01                         | 74.00                | 14.99       |
| 5469.68         | 26.15              | Avg    | V         | 10.88                     | 37.03                         | 54.00                | 16.97       |
| 11000.00        | 35.67              | Peak   | H         | 22.91                     | 58.58                         | 68.20                | 9.62        |
| 11000.00        | 31.43              | Peak   | V         | 22.91                     | 54.34                         | 68.20                | 13.86       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 580 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 11160.00        | 34.29              | Peak   | H         | 23.70                     | 57.99                         | 68.20                | 10.21       |
| 11160.00        | 31.30              | Peak   | V         | 23.70                     | 55.00                         | 68.20                | 13.20       |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 700 MHz

| Frequency (MHz) | Level (dB $\mu$ V) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|--------------------|--------|-----------|---------------------------|-------------------------------|----------------------|-------------|
| 11400.00        | 34.80              | Peak   | H         | 24.58                     | 59.38                         | 68.20                | 8.82        |
| 11400.00        | 30.86              | Peak   | V         | 24.58                     | 55.44                         | 68.20                | 12.76       |



Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 745 MHz

| Frequency<br>(MHz) | Level<br>(dB $\mu$ V) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-----------------------|--------|-----------|---------------------------------|----------------------------------|-------------------------|----------------|
| 11490.00           | 36.09                 | Peak   | H         | 23.97                           | 60.06                            | 68.20                   | 8.14           |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 785 MHz

| Frequency<br>(MHz) | Level<br>(dB $\mu$ V) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-----------------------|--------|-----------|---------------------------------|----------------------------------|-------------------------|----------------|
| 11570.00           | 39.27                 | Peak   | H         | 24.17                           | 63.44                            | 68.20                   | 4.76           |

Mode: 802.11n (HT20)  
Transfer rate: MCS8  
Operating frequency: 5 825 MHz

| Frequency<br>(MHz) | Level<br>(dB $\mu$ V) | Detect | Ant. Pol. | Correction<br>factors<br>(dB/m) | Field strength<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-----------------------|--------|-----------|---------------------------------|----------------------------------|-------------------------|----------------|
| 11650.00           | 41.72                 | Peak   | H         | 24.61                           | 66.33                            | 68.20                   | 1.87           |
| 11650.00           | 33.37                 | Peak   | V         | 24.61                           | 57.98                            | 68.20                   | 10.22          |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 190 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5149.00         | 53.58        | Peak   | H         | 9.92                      | 63.50                   | 74.00          | 10.50       |
| 5149.30         | 34.52        | Avg    | H         | 9.92                      | 44.44                   | 54.00          | 9.56        |
| 5149.00         | 49.66        | Peak   | V         | 9.92                      | 59.58                   | 74.00          | 14.42       |
| 5149.30         | 32.78        | Avg    | V         | 9.92                      | 42.70                   | 54.00          | 11.30       |
| 10380.00        | 32.78        | Peak   | H         | 27.61                     | 60.39                   | 68.20          | 7.81        |
| 10380.00        | 31.85        | Peak   | V         | 27.61                     | 59.46                   | 68.20          | 8.74        |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 230 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10460.00        | 32.78        | Peak   | H         | 27.80                     | 60.58                   | 68.20          | 7.62        |
| 10460.00        | 32.11        | Peak   | V         | 27.80                     | 59.91                   | 68.20          | 8.29        |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 270 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 10540.00        | 33.08        | Peak   | H         | 23.24                     | 56.32                   | 68.20          | 11.88       |
| 10540.00        | 32.75        | Peak   | V         | 23.24                     | 55.99                   | 68.20          | 12.21       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 310 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5350.65         | 54.58        | Peak   | H         | 10.53                     | 65.11                   | 74.00          | 8.89        |
| 5350.16         | 32.34        | Avg    | H         | 10.52                     | 42.86                   | 54.00          | 11.14       |
| 5350.46         | 50.30        | Peak   | V         | 10.52                     | 60.82                   | 74.00          | 13.18       |
| 5350.16         | 29.42        | Avg    | V         | 10.52                     | 39.94                   | 54.00          | 14.06       |
| 10620.00        | 33.13        | Peak   | H         | 23.76                     | 56.89                   | 68.20          | 11.31       |
| 10620.00        | 21.56        | Peak   | V         | 23.76                     | 45.32                   | 68.20          | 22.88       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 510 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 5467.05         | 52.43        | Peak   | H         | 10.88                     | 63.31                   | 74.00          | 10.69       |
| 5469.83         | 30.44        | Avg    | H         | 10.88                     | 41.32                   | 54.00          | 12.68       |
| 5469.26         | 50.05        | Peak   | V         | 10.88                     | 60.93                   | 74.00          | 13.07       |
| 5469.83         | 29.77        | Avg    | V         | 10.88                     | 40.65                   | 54.00          | 13.35       |
| 11020.00        | 33.30        | Peak   | H         | 23.02                     | 56.32                   | 68.20          | 11.88       |
| 11020.00        | 32.05        | Peak   | V         | 23.02                     | 55.07                   | 68.20          | 13.13       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 550 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11100.00        | 31.30        | Peak   | H         | 23.33                     | 54.63                   | 68.20          | 13.57       |
| 11100.00        | 31.11        | Peak   | V         | 23.33                     | 54.44                   | 68.20          | 13.76       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 670 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11300.00        | 33.36        | Peak   | H         | 24.42                     | 57.78                   | 68.20          | 10.42       |
| 11300.00        | 32.05        | Peak   | V         | 24.42                     | 56.47                   | 68.20          | 11.73       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 755 MHz

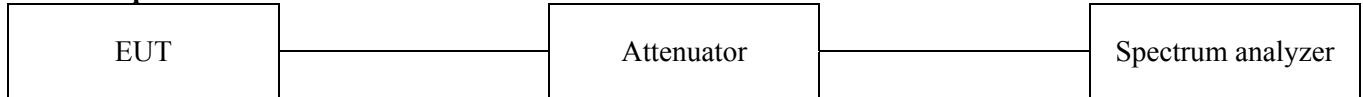
| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11510.00        | 33.46        | Peak   | H         | 24.04                     | 57.50                   | 68.20          | 10.70       |

Mode: 802.11n (HT40)  
Transfer rate: MCS8  
Operating frequency: 5 795 MHz

| Frequency (MHz) | Level (dBμV) | Detect | Ant. Pol. | Correction factors (dB/m) | Field strength (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|--------------|--------|-----------|---------------------------|-------------------------|----------------|-------------|
| 11590.00        | 34.34        | Peak   | H         | 24.42                     | 58.76                   | 68.20          | 9.44        |

### 3.2. 6 dB bandwidth

#### Test setup



#### Test procedure

KDB 789033 D02 v01 – Section C

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

#### Limit

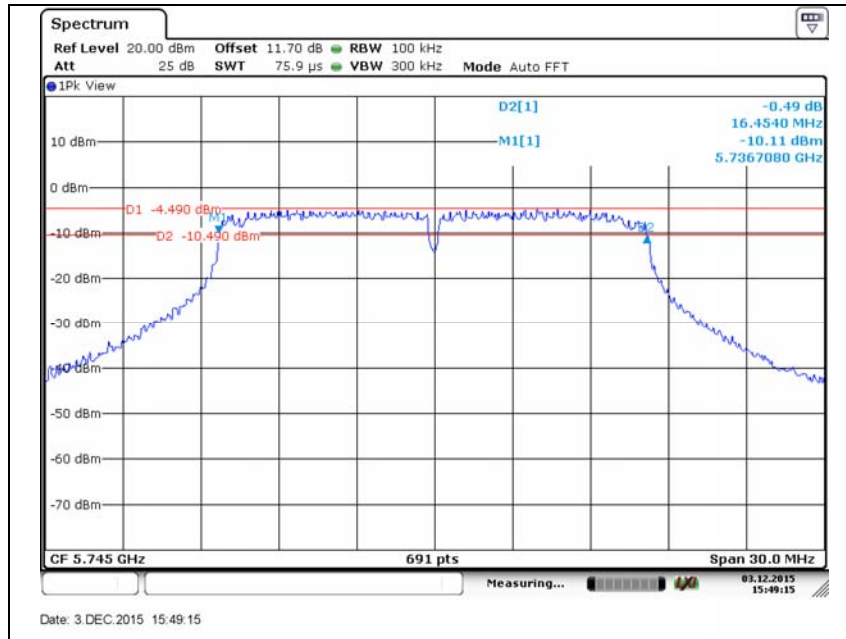
According to §15.407(e), Within the 5.725 ~ 5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

### Test results

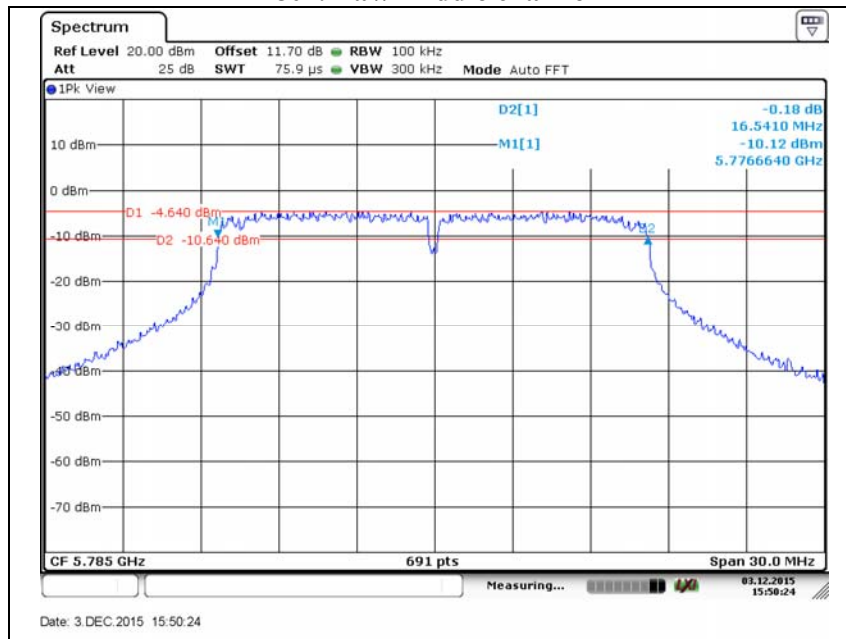
| UNII Band | Antenna port | Operation mode | Frequency(MHz) | 6 dB bandwidth(MHz) | Limit(MHz) |
|-----------|--------------|----------------|----------------|---------------------|------------|
| Band 3    | 0            | 802.11a        | 5 745          | 16.45               | 0.5        |
|           |              |                | 5 785          | 16.54               |            |
|           |              |                | 5 825          | 16.54               |            |
|           |              | 802.11n(HT20)  | 5 745          | 17.67               |            |
|           |              |                | 5 785          | 17.76               |            |
|           |              |                | 5 825          | 17.76               |            |
|           |              | 802.11n(HT40)  | 5 755          | 36.47               |            |
|           |              |                | 5 795          | 36.47               |            |
|           | 1            | 802.11a        | 5 745          | 16.54               |            |
|           |              |                | 5 785          | 16.54               |            |
|           |              |                | 5 825          | 16.54               |            |
|           |              | 802.11n(HT20)  | 5 745          | 17.76               |            |
|           |              |                | 5 785          | 17.71               |            |
|           |              |                | 5 825          | 17.71               |            |
|           |              | 802.11n(HT40)  | 5 755          | 36.47               |            |
|           |              |                | 5 795          | 36.47               |            |

- Antenna port 0 (Band3)

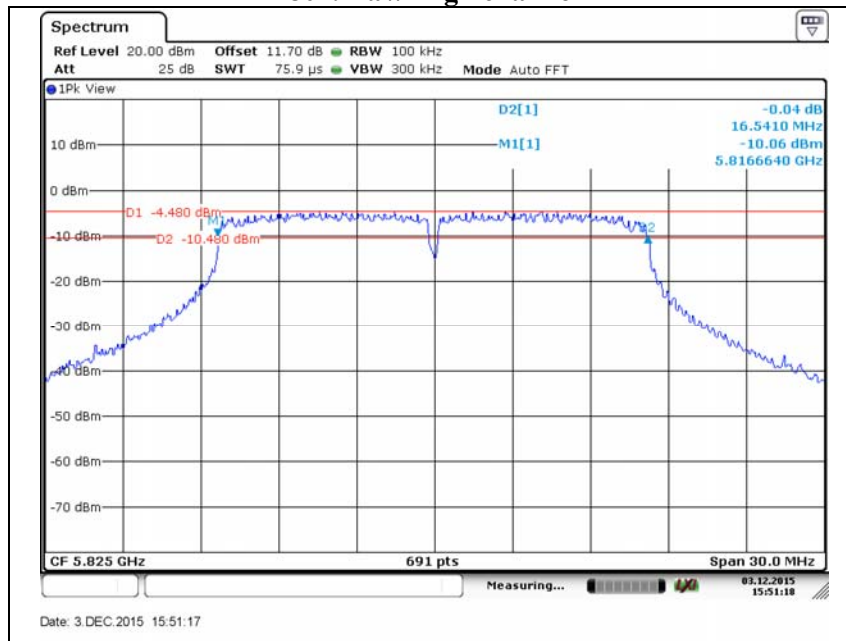
**802.11a // Low channel**



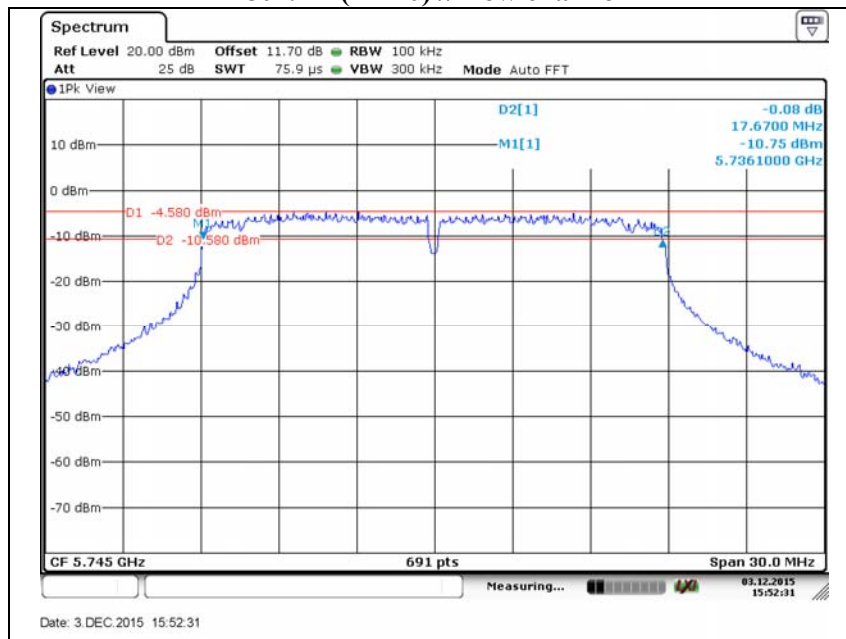
**802.11a // Middle channel**



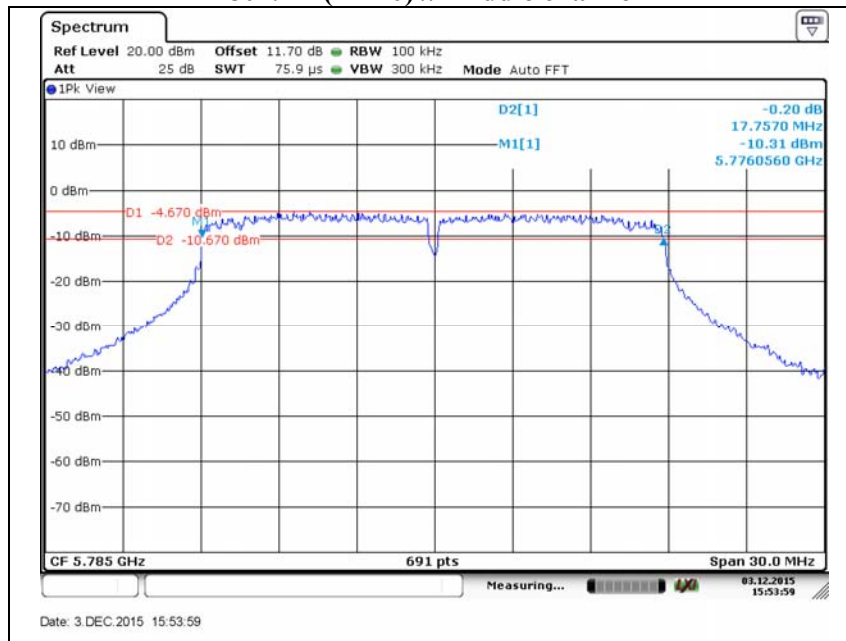
### 802.11a // High channel



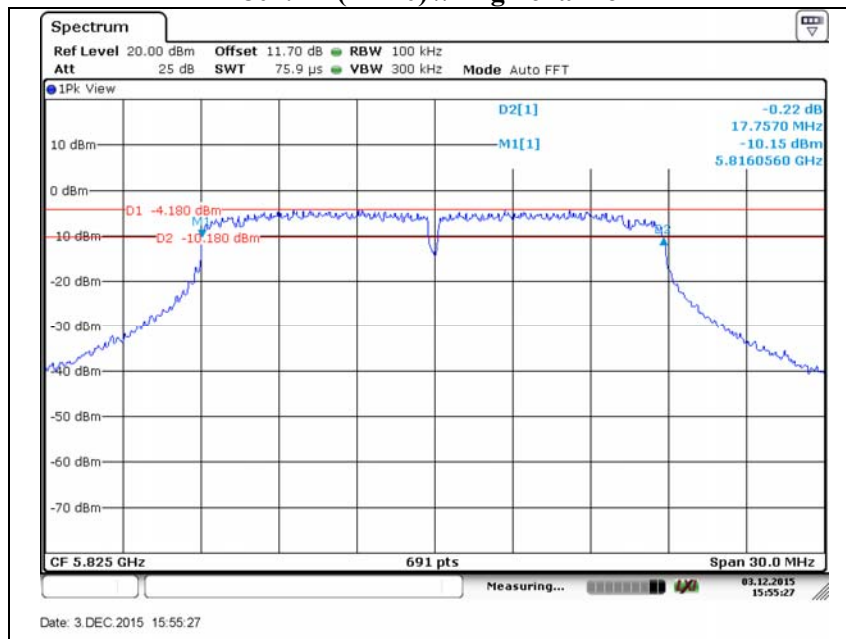
### 802.11n(HT20) // Low channel



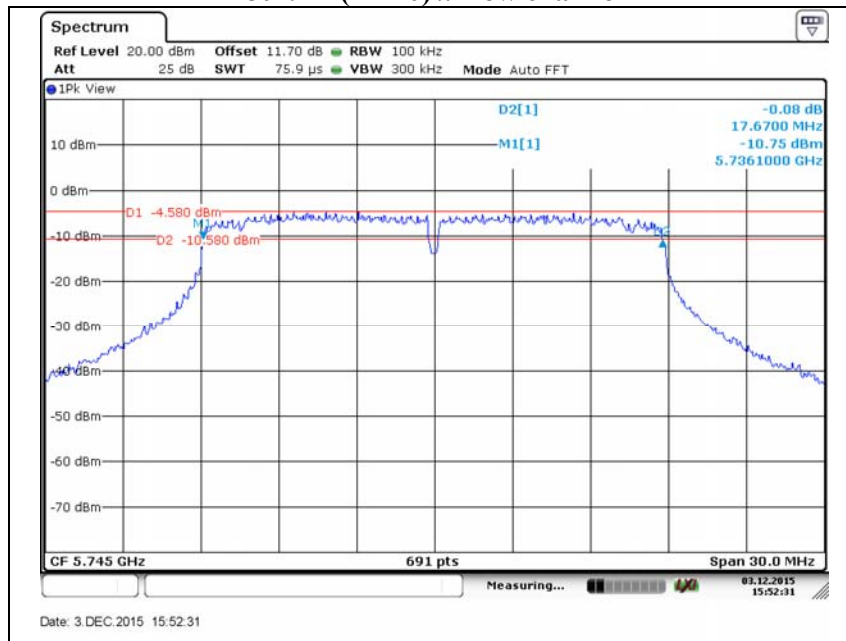
### 802.11n(HT20) // Middle channel



### 802.11n(HT20) // High channel



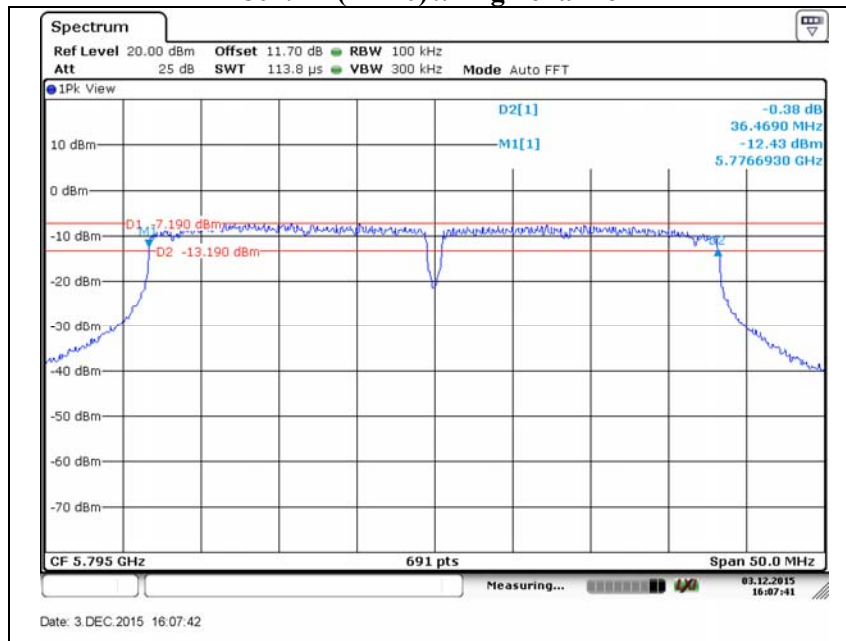
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel

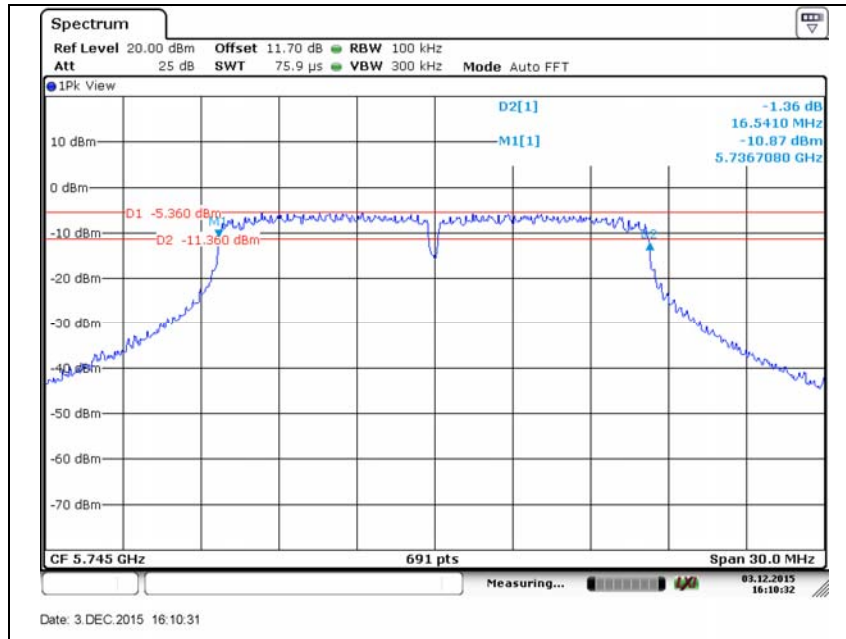
N/A

### 802.11n(HT40) // High channel

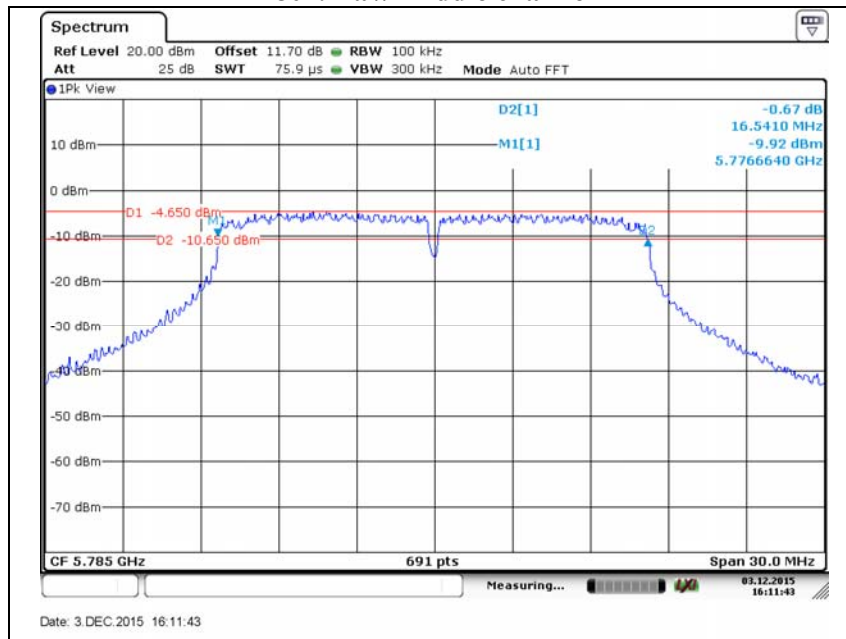


## - Antenna port 1 (Band3)

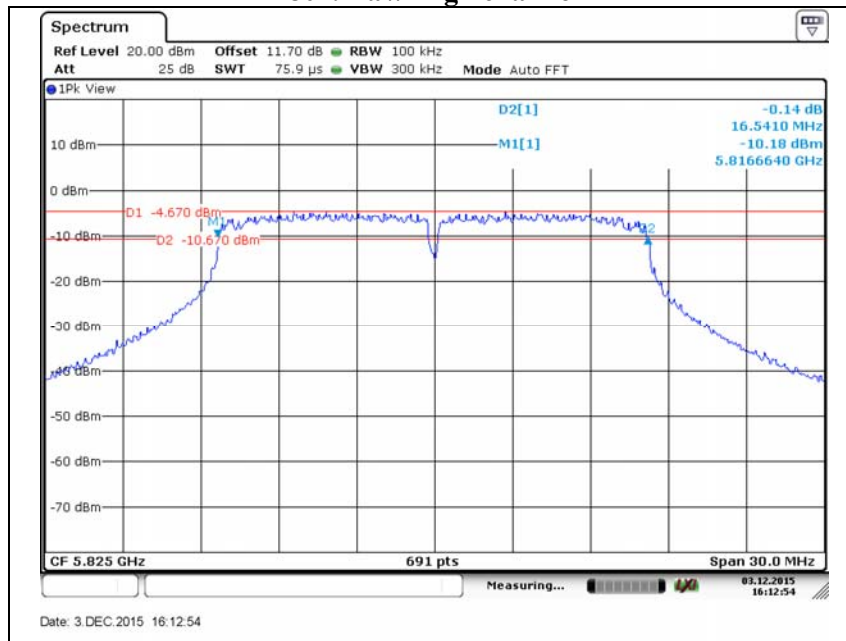
### 802.11a // Low channel



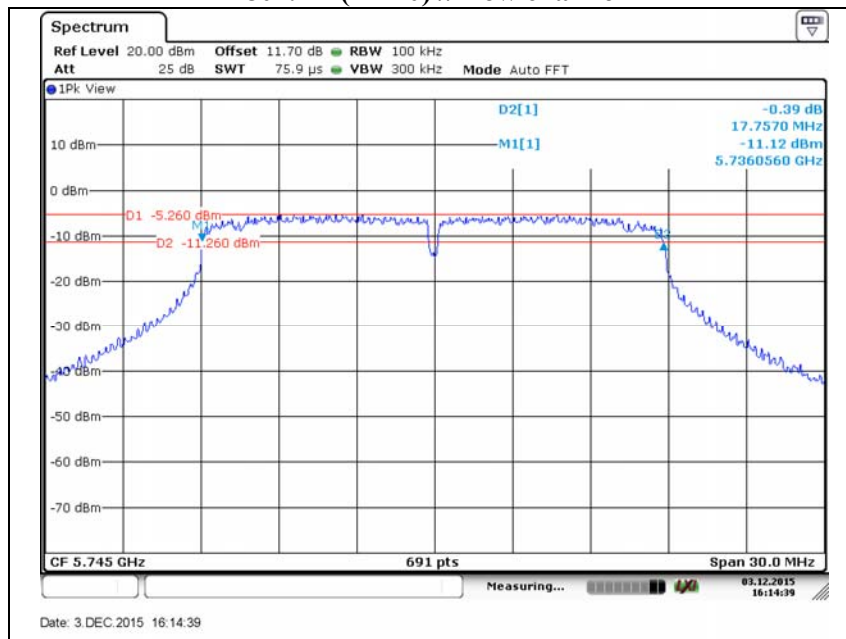
### 802.11a // Middle channel



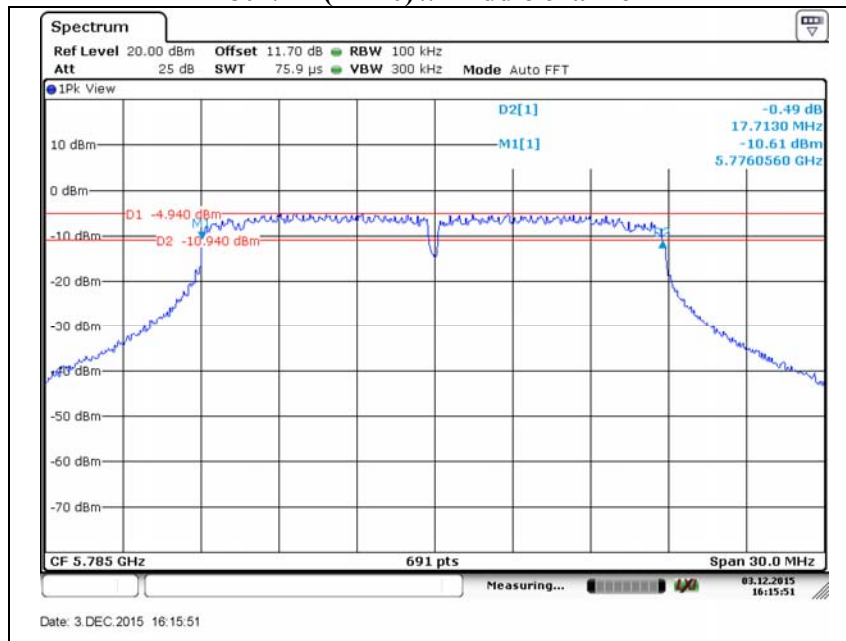
### 802.11a // High channel



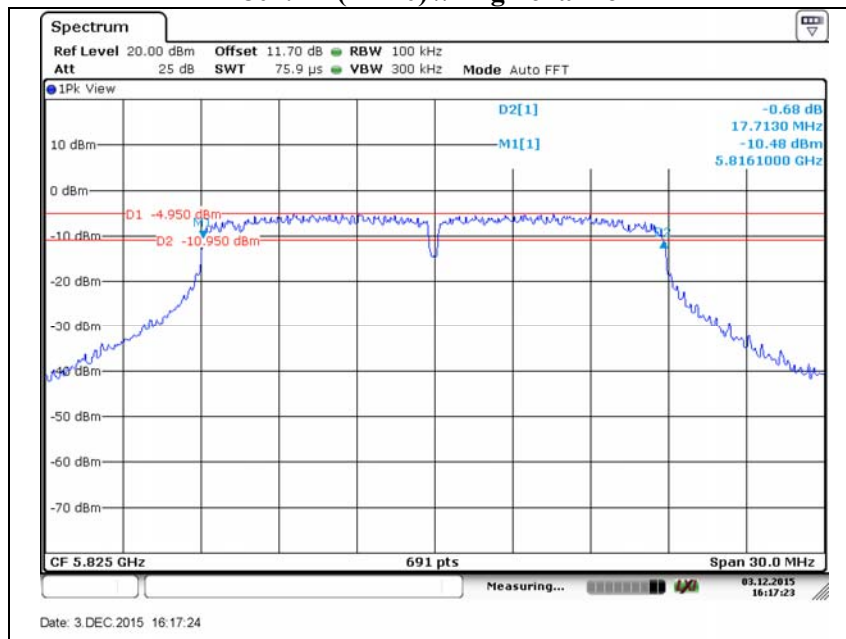
### 802.11n(HT20) // Low channel



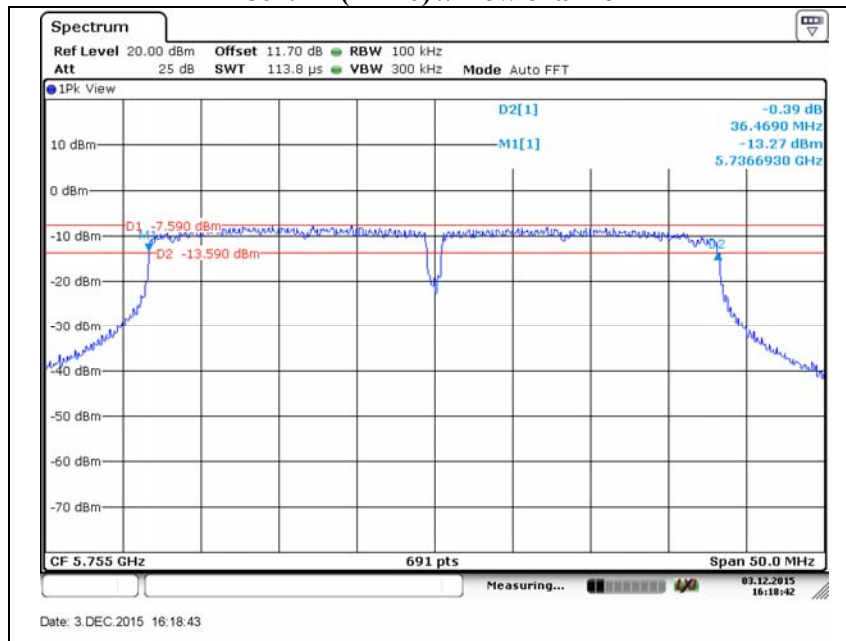
### 802.11n(HT20) // Middle channel



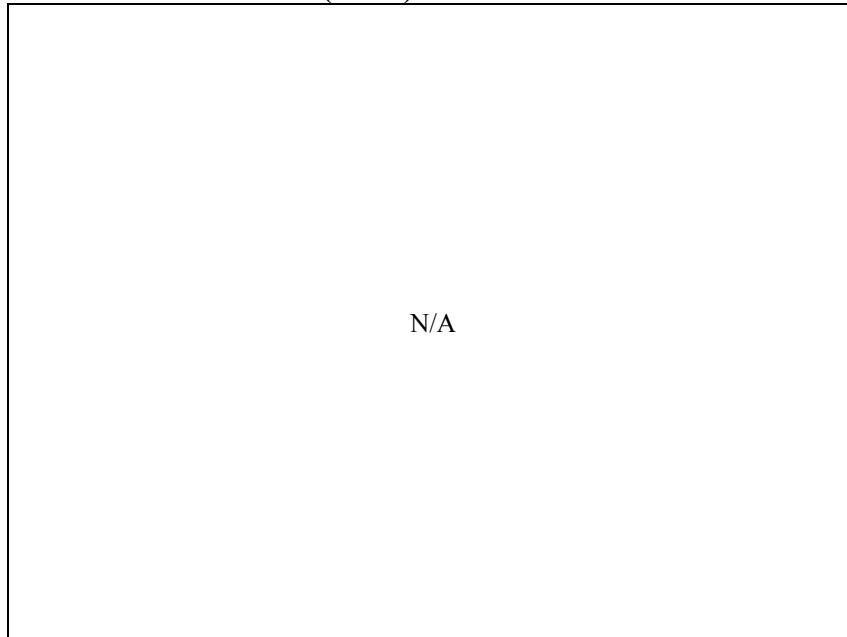
### 802.11n(HT20) // High channel



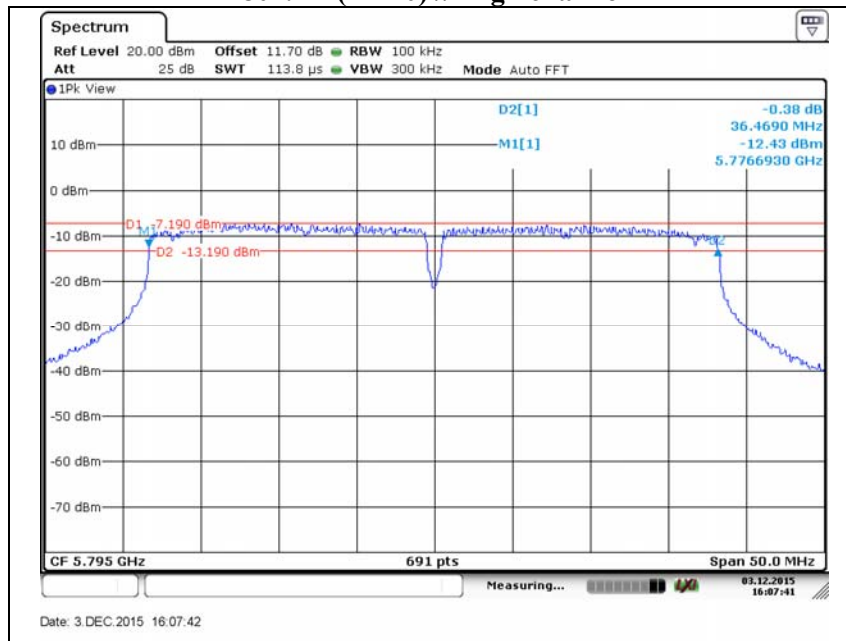
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel

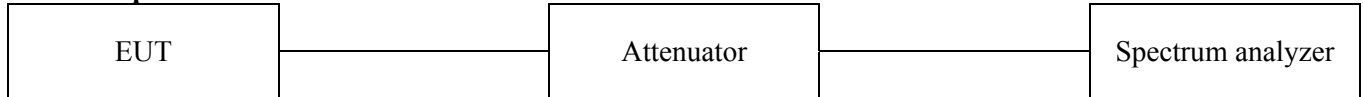


### 802.11n(HT40) // High channel



### 3.3. Emission bandwidth (26 dB bandwidth)

#### Test setup



#### Test procedure

KDB 789033 D02 v01 – Section C

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

#### Limit

N/A

### Test results

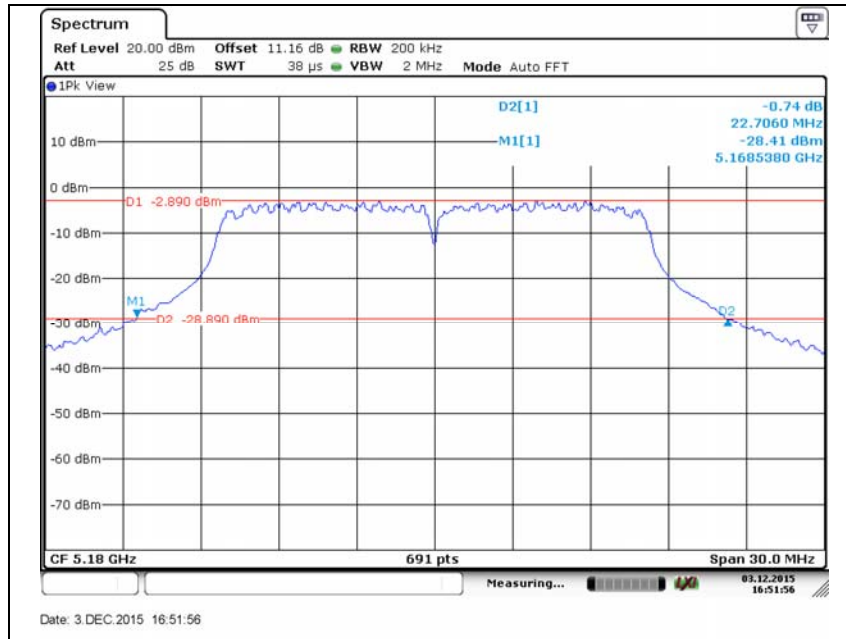
| UNII Band | Antenna port | Operation mode | Frequency(MHz) | 26 dB bandwidth(MHz) | Limit(MHz) |
|-----------|--------------|----------------|----------------|----------------------|------------|
| Band 1    | 0            | 802.11a        | 5 180          | 22.71                | N/A        |
|           |              |                | 5 220          | 22.71                |            |
|           |              |                | 5 240          | 22.40                |            |
|           |              | 802.11n(HT20)  | 5 180          | 23.18                |            |
|           |              |                | 5 220          | 23.49                |            |
|           |              |                | 5 240          | 23.71                |            |
|           |              | 802.11n(HT40)  | 5 190          | 47.24                |            |
|           |              |                | 5 230          | 46.11                |            |
|           | 1            | 802.11a        | 5 180          | 22.10                |            |
|           |              |                | 5 220          | 22.66                |            |
|           |              |                | 5 240          | 21.97                |            |
|           |              | 802.11n(HT20)  | 5 180          | 23.18                |            |
|           |              |                | 5 220          | 23.49                |            |
|           |              |                | 5 240          | 23.36                |            |
|           |              | 802.11n(HT40)  | 5 190          | 47.32                |            |
|           |              |                | 5 230          | 46.89                |            |
| Band 2A   | 0            | 802.11a        | 5 260          | 21.84                | N/A        |
|           |              |                | 5 300          | 22.27                |            |
|           |              |                | 5 320          | 22.06                |            |
|           |              | 802.11n(HT20)  | 5 260          | 22.66                |            |
|           |              |                | 5 300          | 22.62                |            |
|           |              |                | 5 320          | 22.32                |            |
|           |              | 802.11n(HT40)  | 5 270          | 47.50                |            |
|           |              |                | 5 310          | 47.50                |            |
|           | 1            | 802.11a        | 5 260          | 21.45                |            |
|           |              |                | 5 300          | 21.62                |            |
|           |              |                | 5 320          | 22.19                |            |
|           |              | 802.11n(HT20)  | 5 260          | 24.14                |            |
|           |              |                | 5 300          | 23.62                |            |
|           |              |                | 5 320          | 23.23                |            |
|           |              | 802.11n(HT40)  | 5 270          | 46.19                |            |
|           |              |                | 5 310          | 47.58                |            |



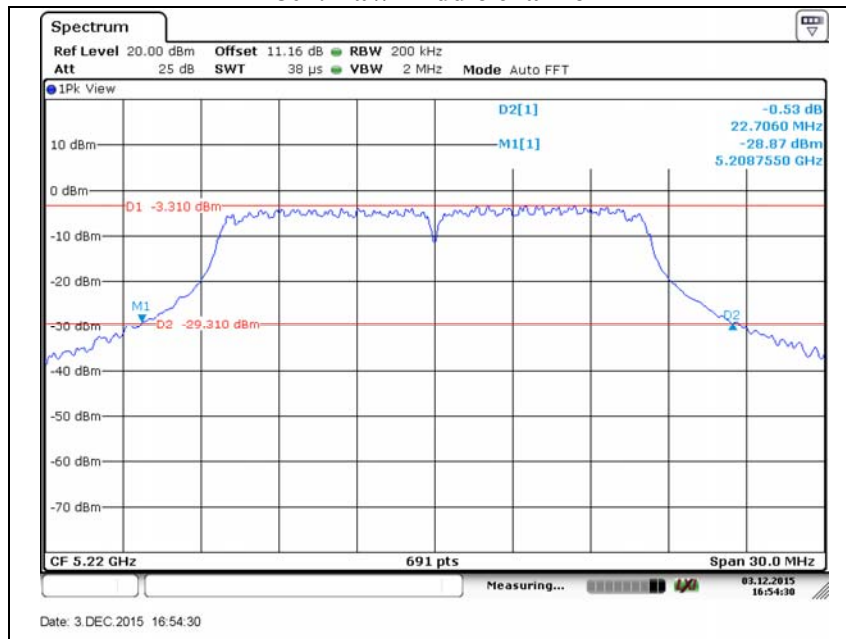
| UNII Band | Antenna port | Operation mode | Frequency(MHz) | 26 dB bandwidth(MHz) | Limit(MHz) |
|-----------|--------------|----------------|----------------|----------------------|------------|
| Band 2C   | 0            | 802.11a        | 5 500          | 21.88                | N/A        |
|           |              |                | 5 580          | 21.53                |            |
|           |              |                | 5 700          | 21.97                |            |
|           |              | 802.11n(HT20)  | 5 500          | 23.05                |            |
|           |              |                | 5 580          | 22.62                |            |
|           |              |                | 5 700          | 23.18                |            |
|           |              | 802.11n(HT40)  | 5 510          | 47.41                |            |
|           |              |                | 5 550          | 47.24                |            |
|           |              |                | 5 567          | 46.98                |            |
|           | 1            | 802.11a        | 5 180          | 21.80                |            |
|           |              |                | 5 220          | 21.53                |            |
|           |              |                | 5 240          | 21.66                |            |
|           |              | 802.11n(HT20)  | 5 180          | 22.71                |            |
|           |              |                | 5 220          | 22.58                |            |
|           |              |                | 5 240          | 22.53                |            |
|           |              | 802.11n(HT40)  | 5 510          | 47.32                |            |
|           |              |                | 5 550          | 46.45                |            |
|           |              |                | 5 567          | 46.72                |            |

- Antenna port 0 (Band1)

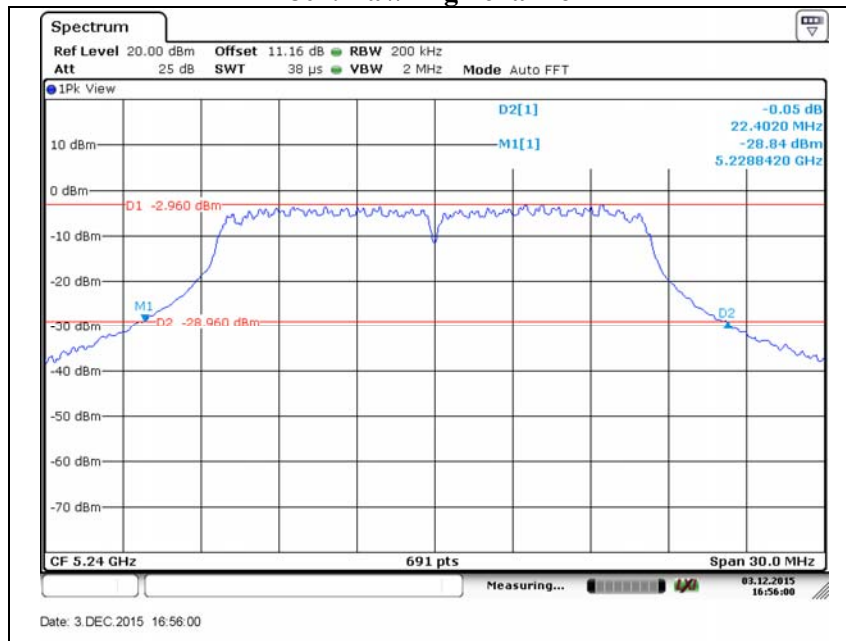
**802.11a // Low channel**



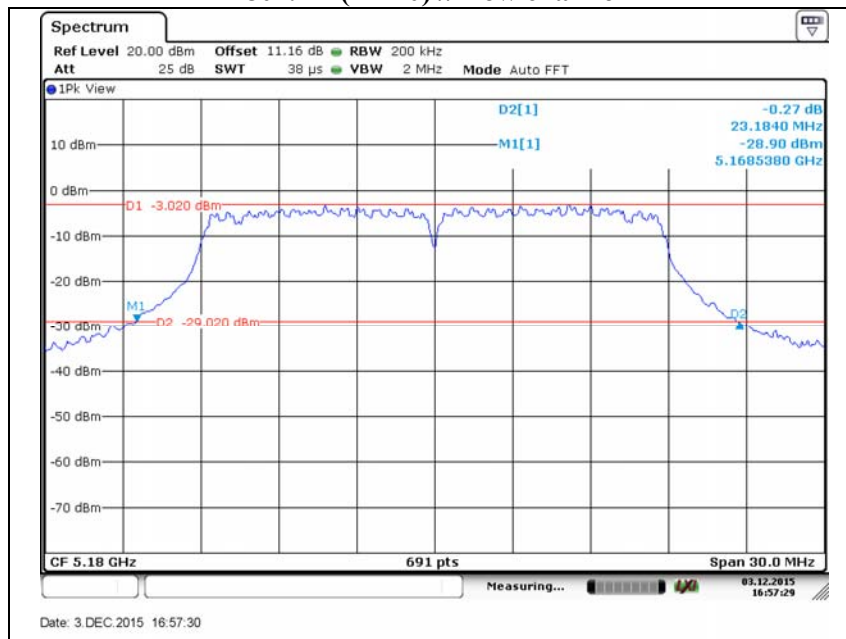
**802.11a // Middle channel**



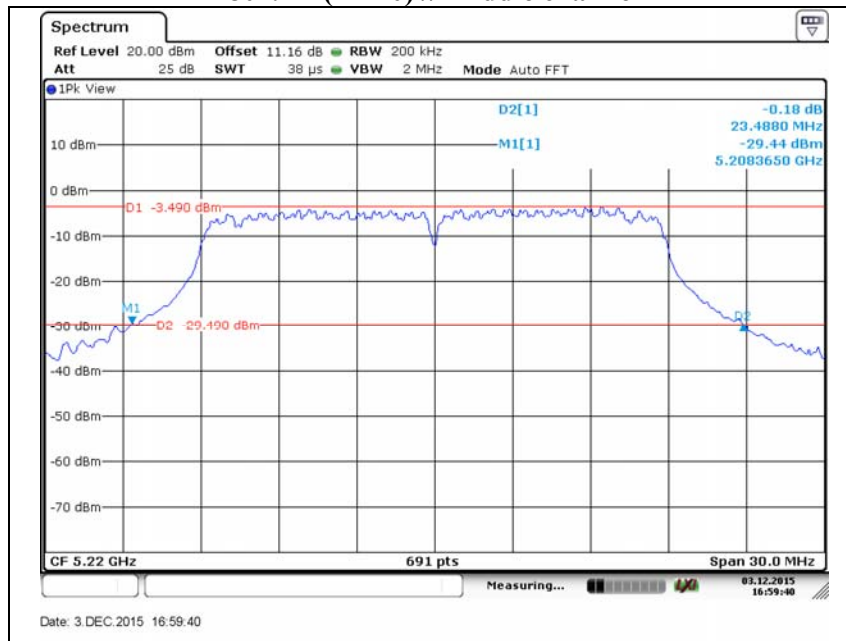
### 802.11a // High channel



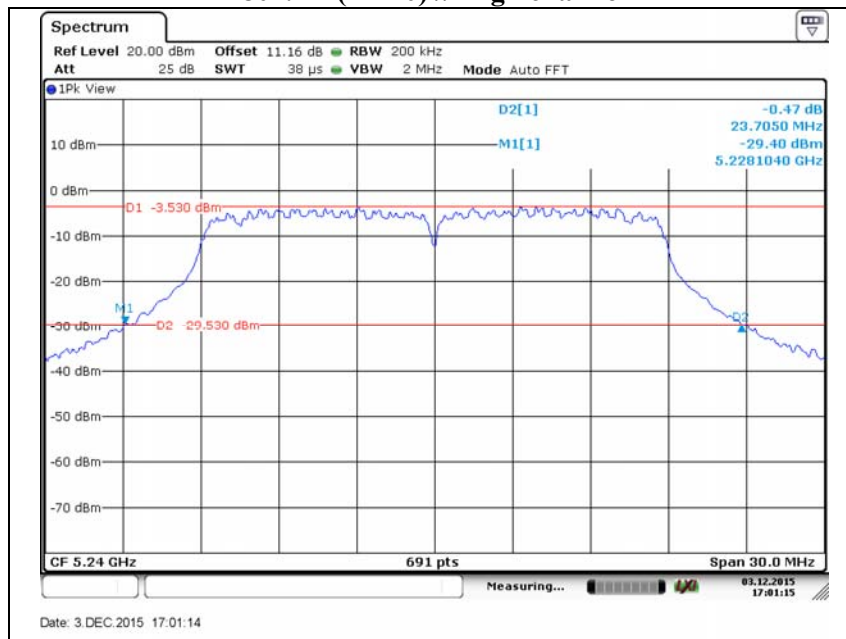
### 802.11n(HT20) // Low channel



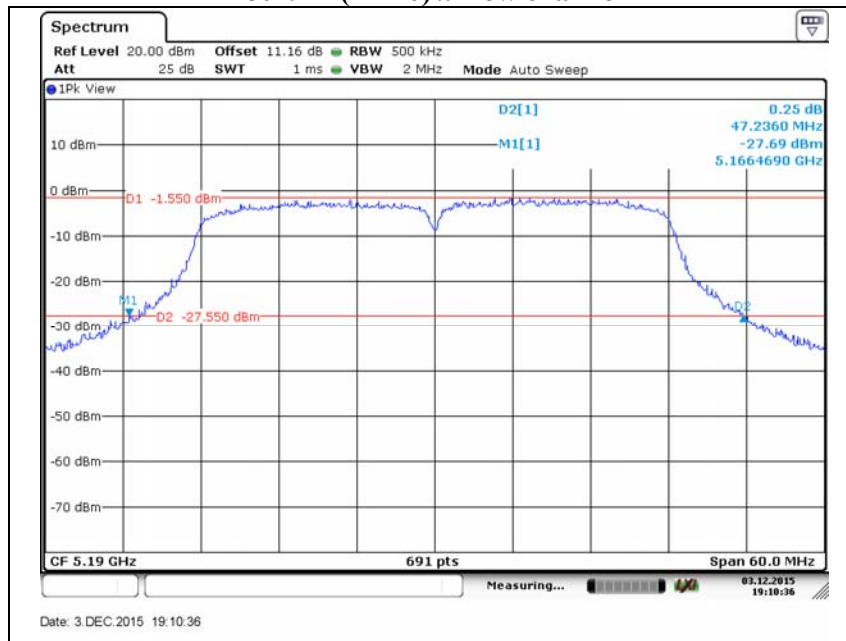
### 802.11n(HT20) // Middle channel



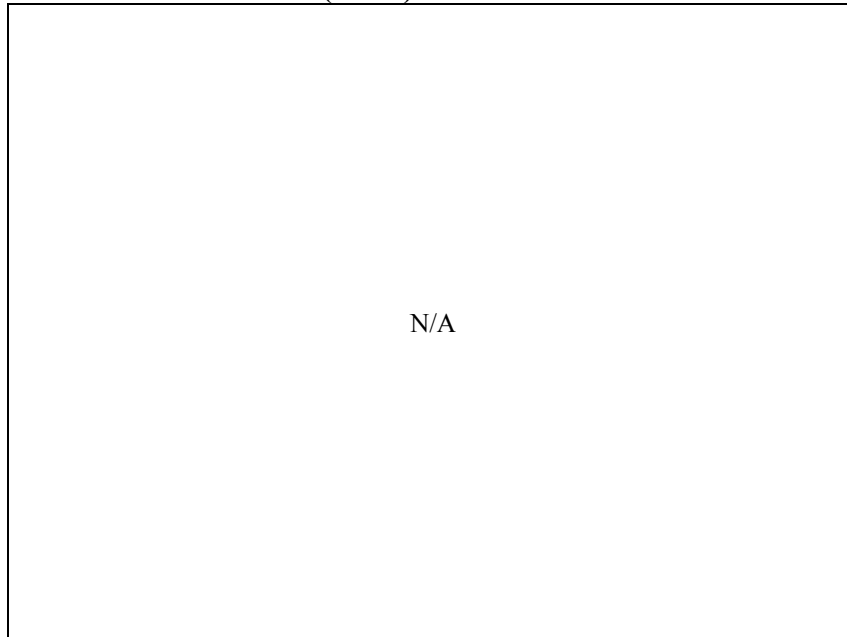
### 802.11n(HT20) // High channel



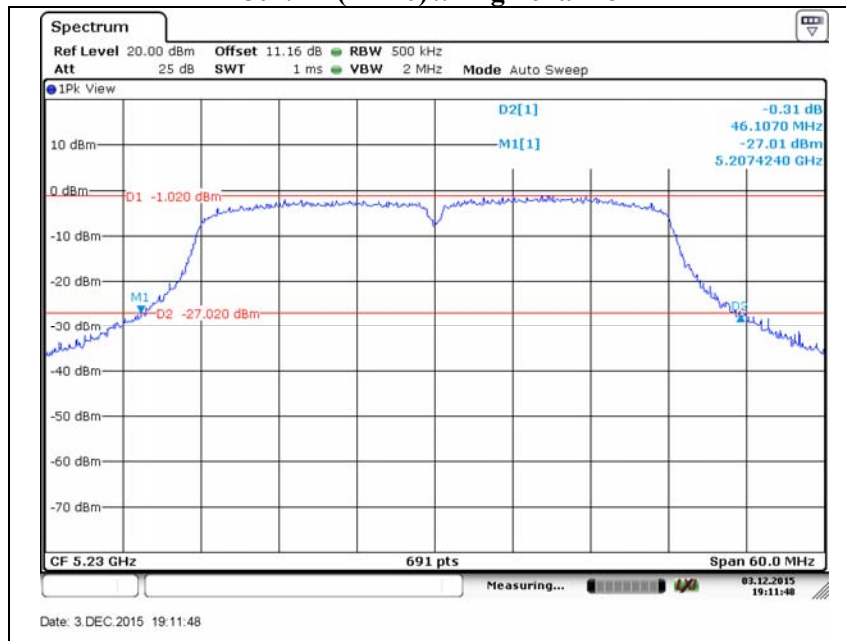
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel

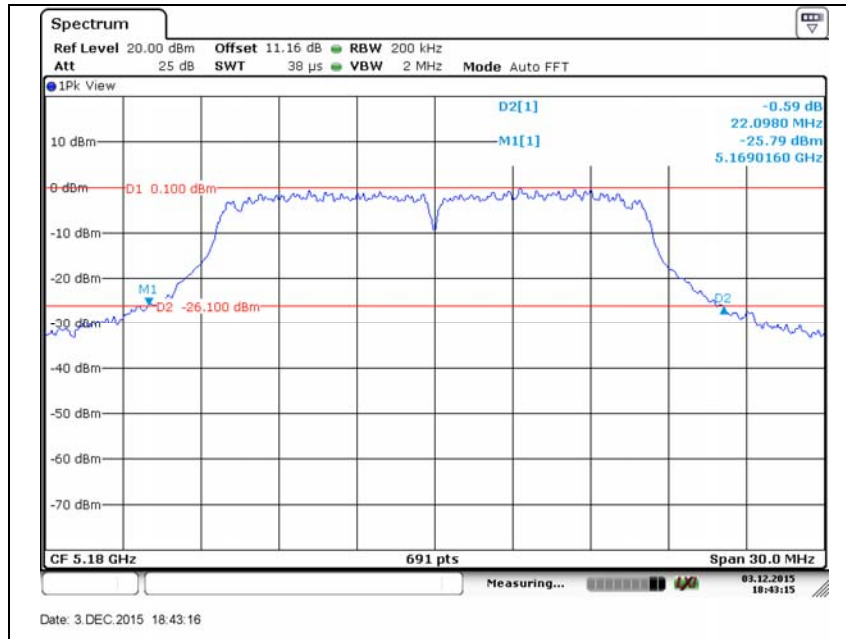


### 802.11n(HT40) // High channel

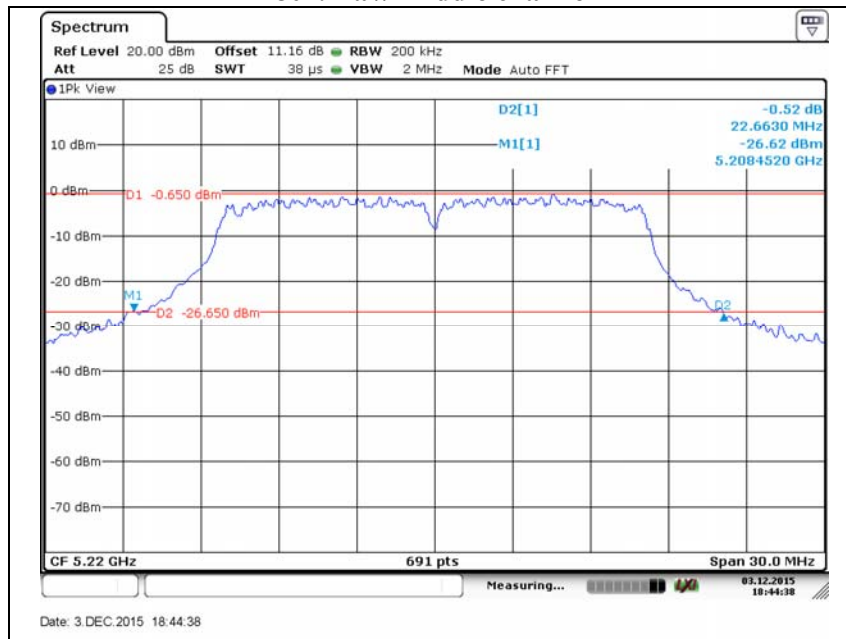


- Antenna port 1 (Band1)

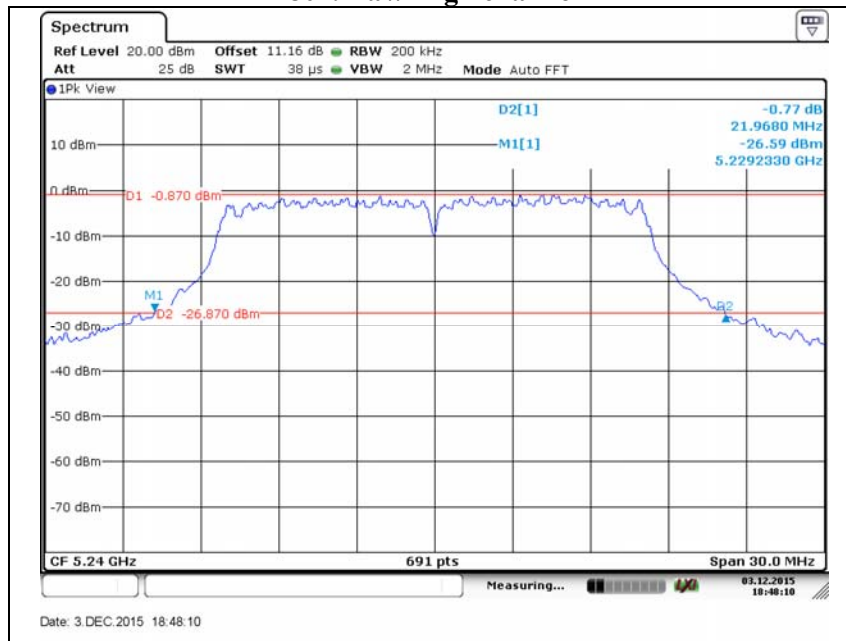
**802.11a // Low channel**



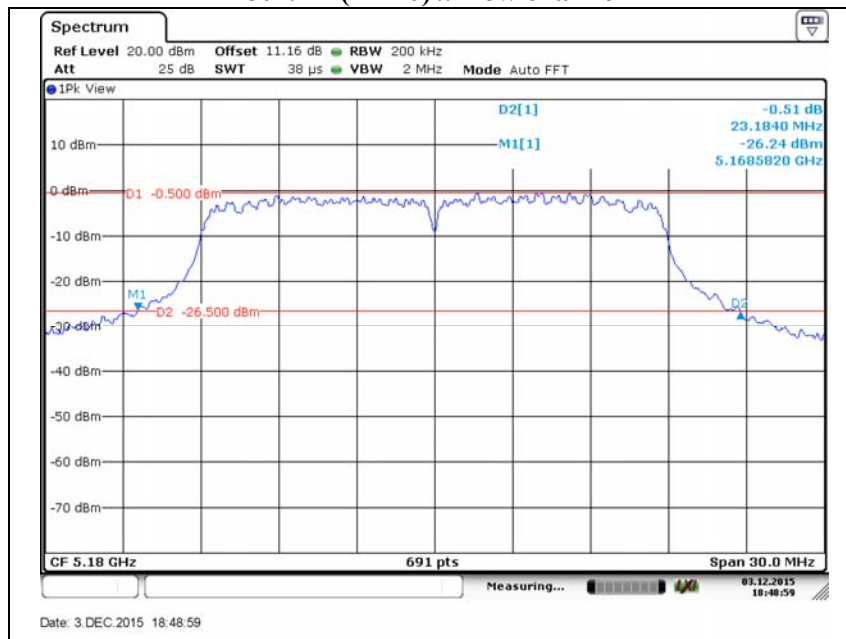
**802.11a // Middle channel**



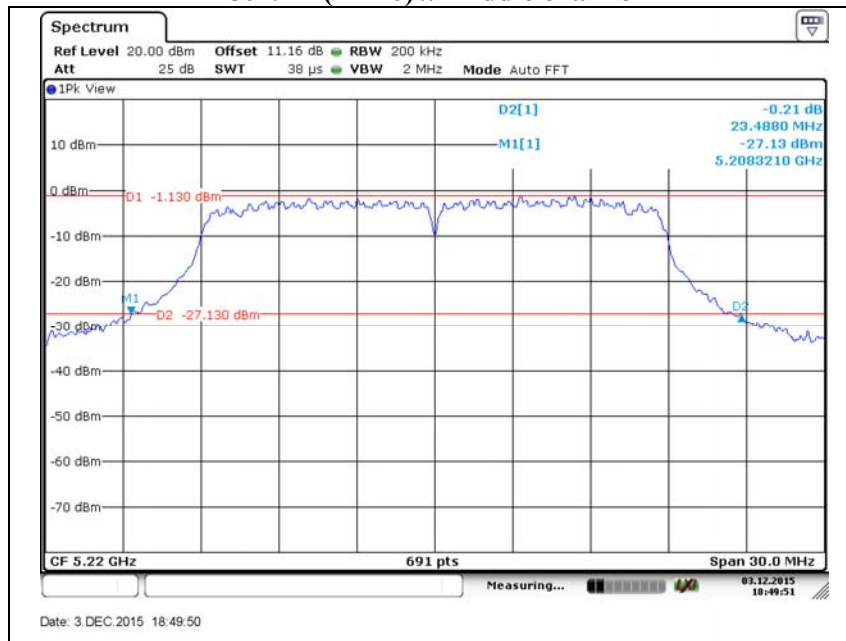
### 802.11a // High channel



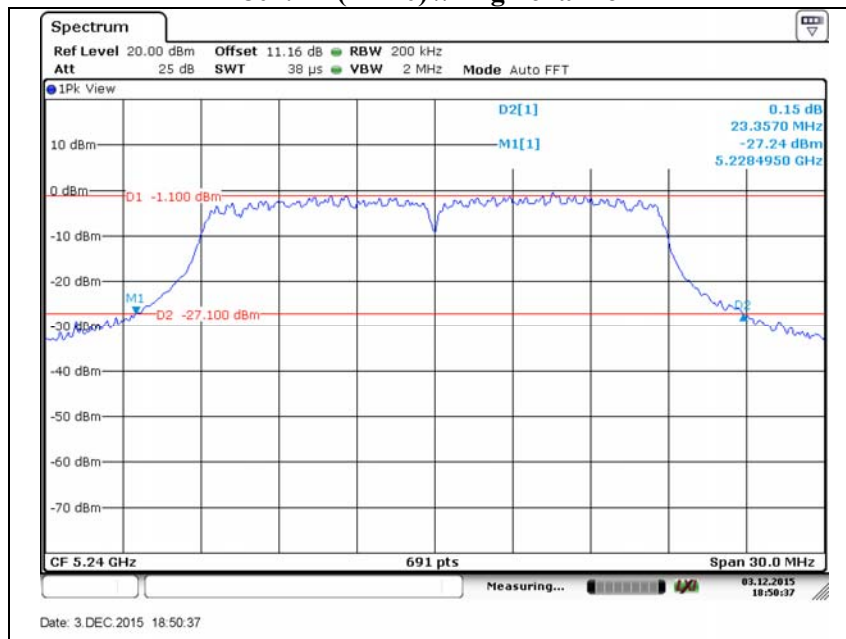
### 802.11n(HT20) // Low channel



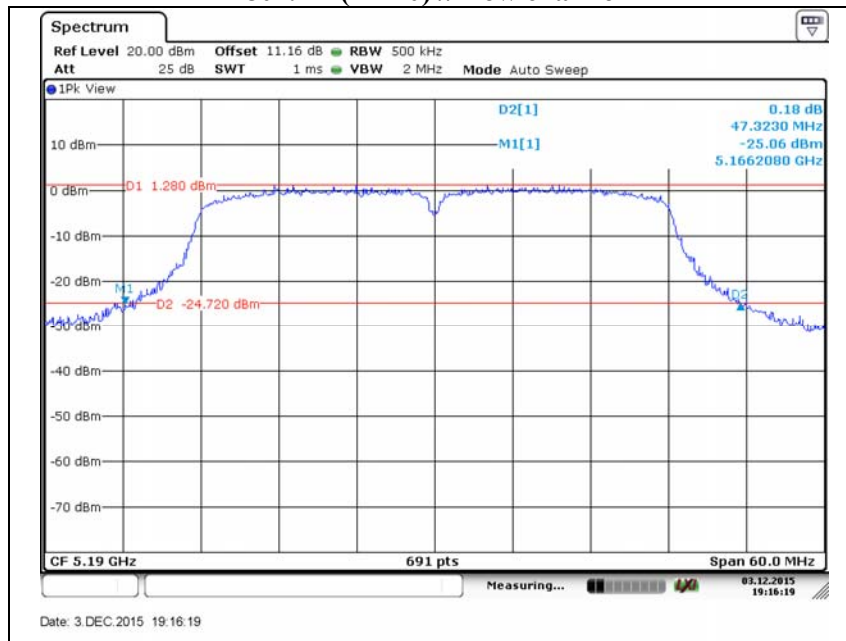
### 802.11n(HT20) // Middle channel



### 802.11n(HT20) // High channel



### 802.11n(HT40) // Low channel



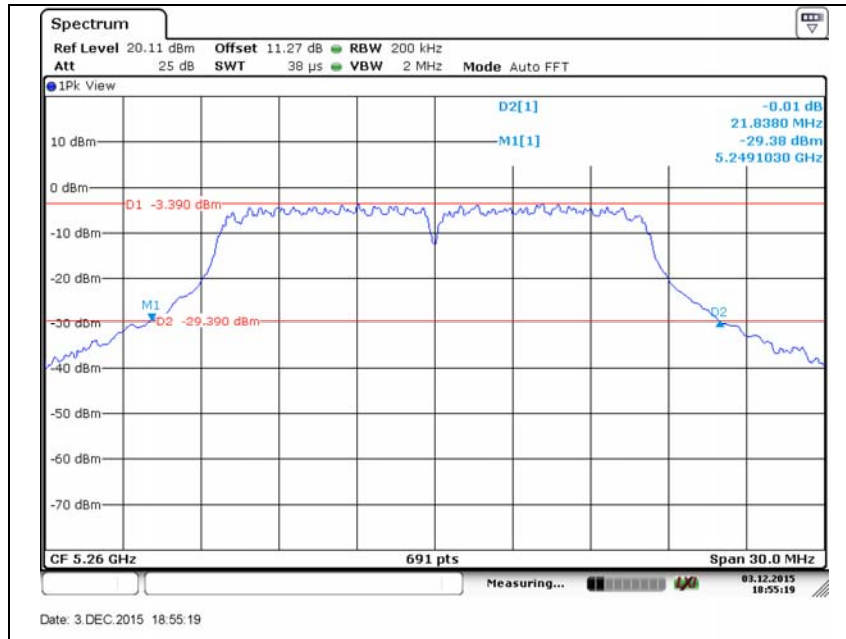
### 802.11n(HT40) // Middle channel

N/A

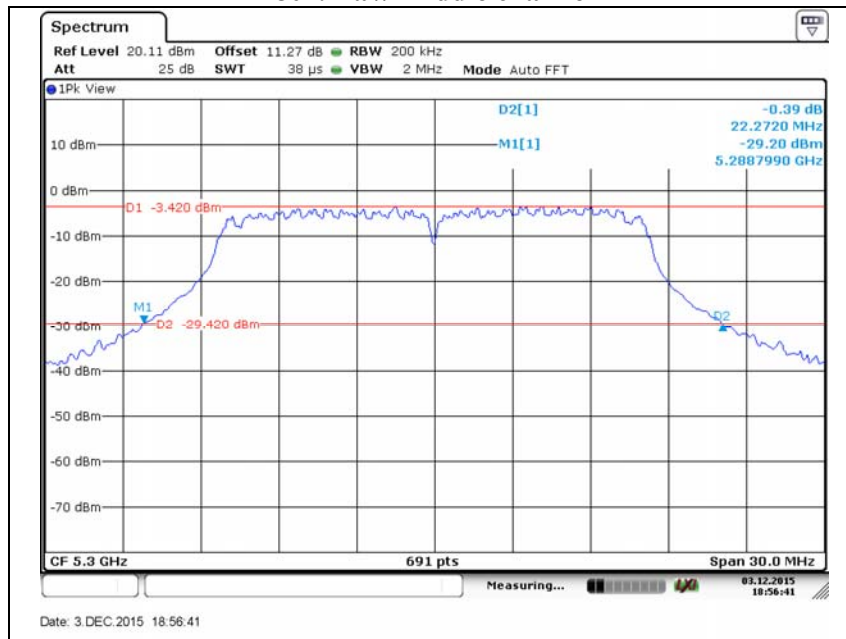


- Antenna port 0 (Band2A)

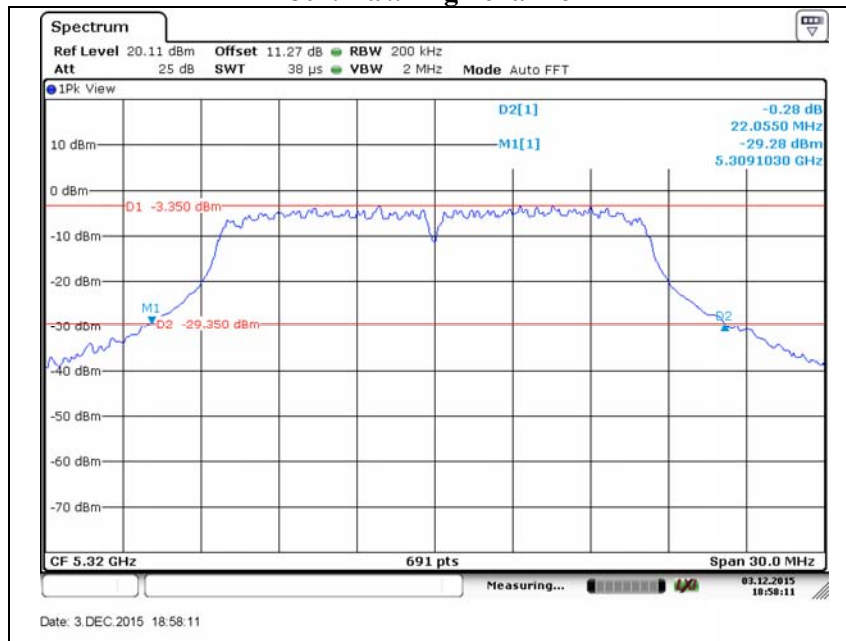
**802.11a // Low channel**



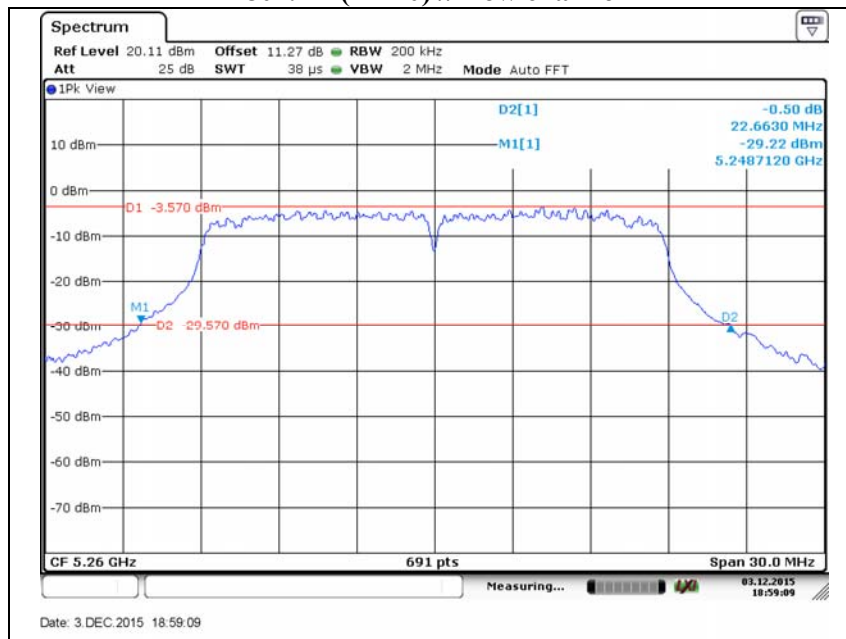
**802.11a // Middle channel**



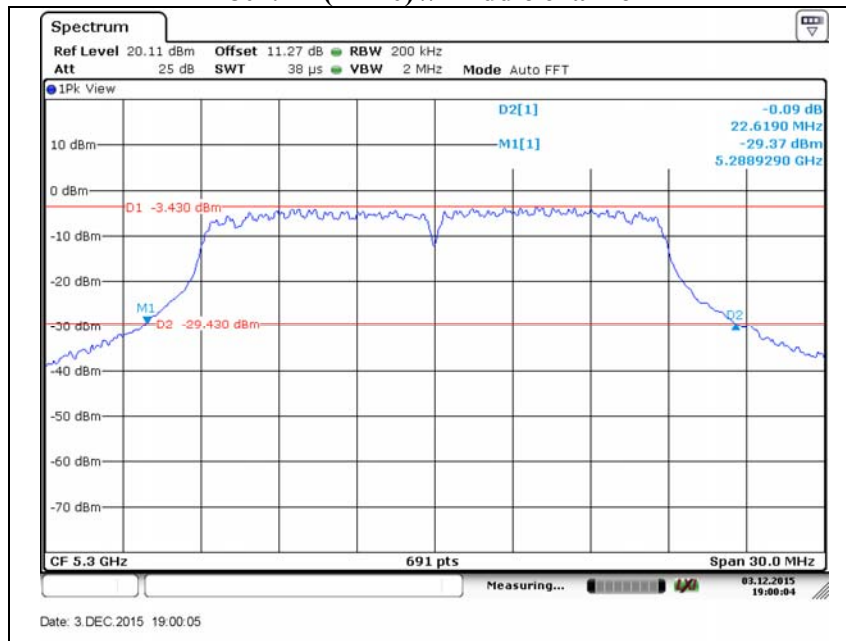
### 802.11a // High channel



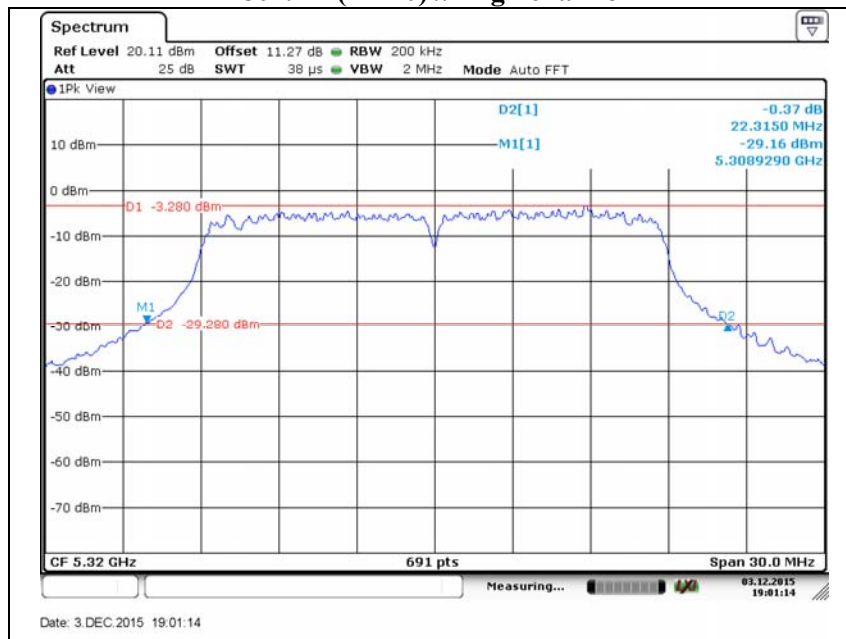
### 802.11n(HT20) // Low channel



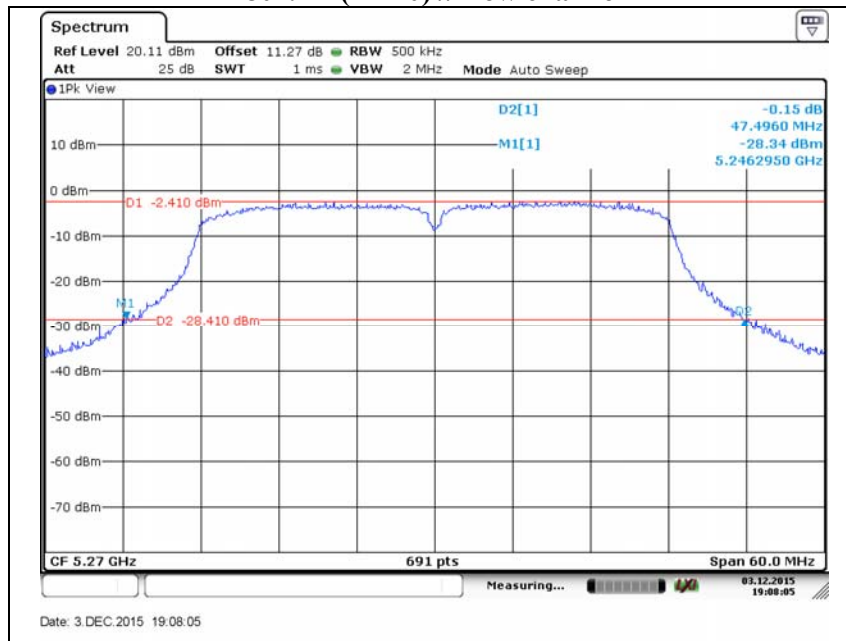
### 802.11n(HT20) // Middle channel



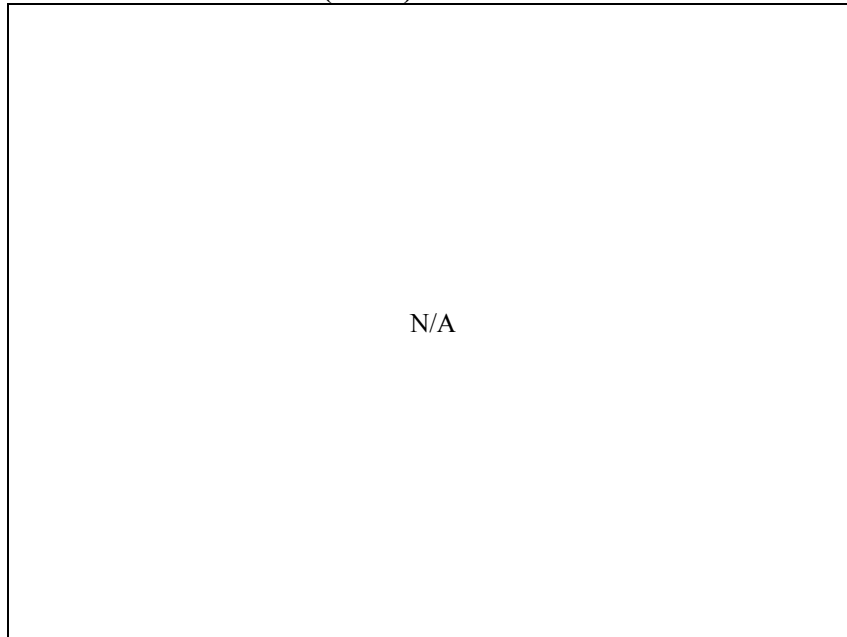
### 802.11n(HT20) // High channel



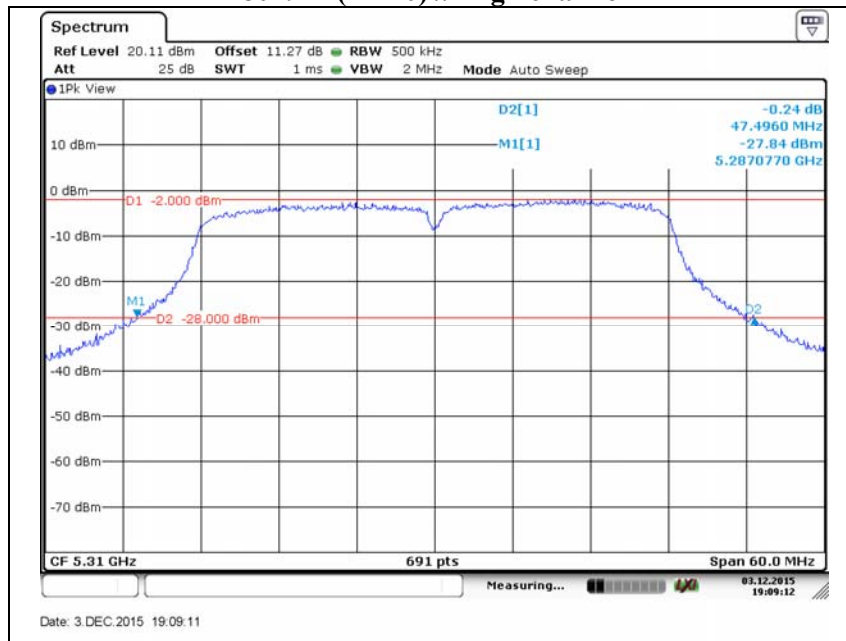
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel

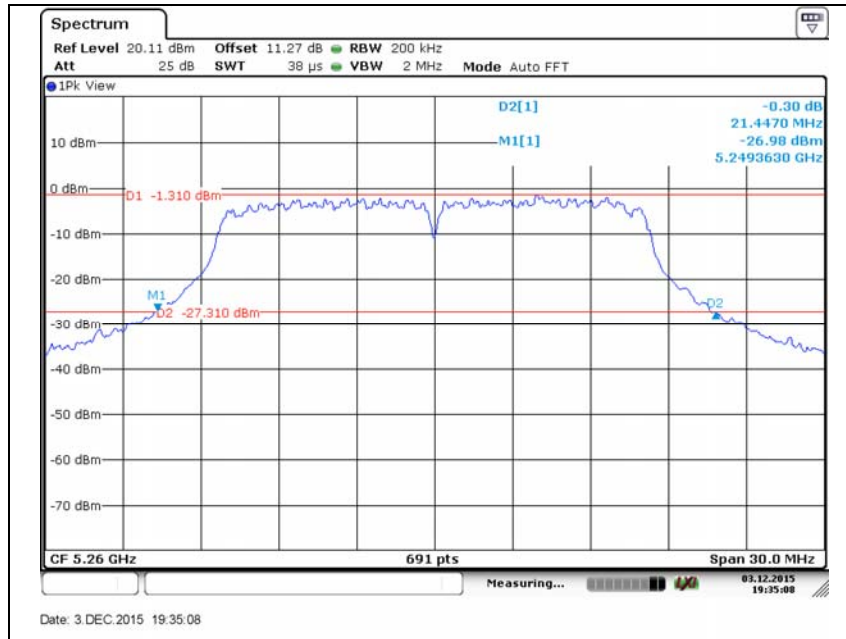


### 802.11n(HT40) // High channel

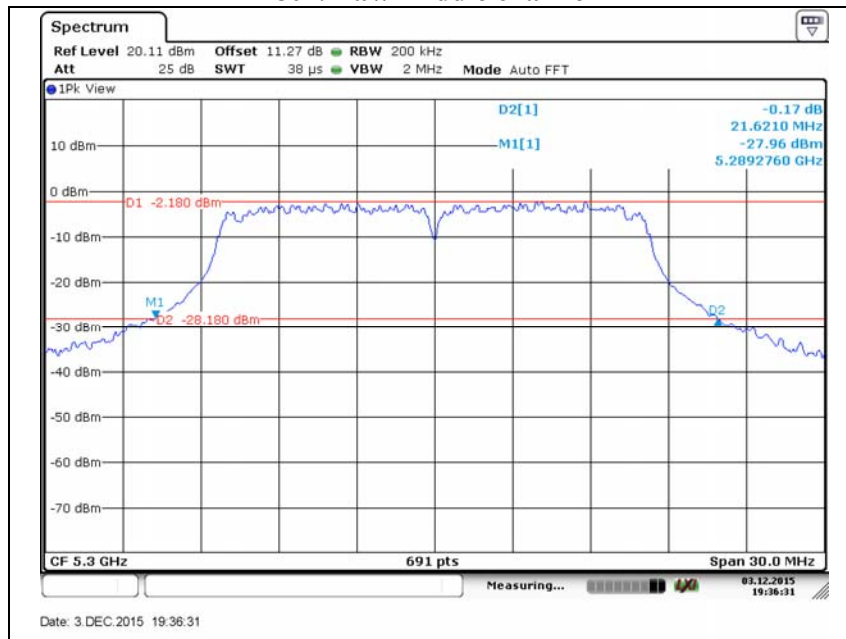


- Antenna port 1 (Band2A)

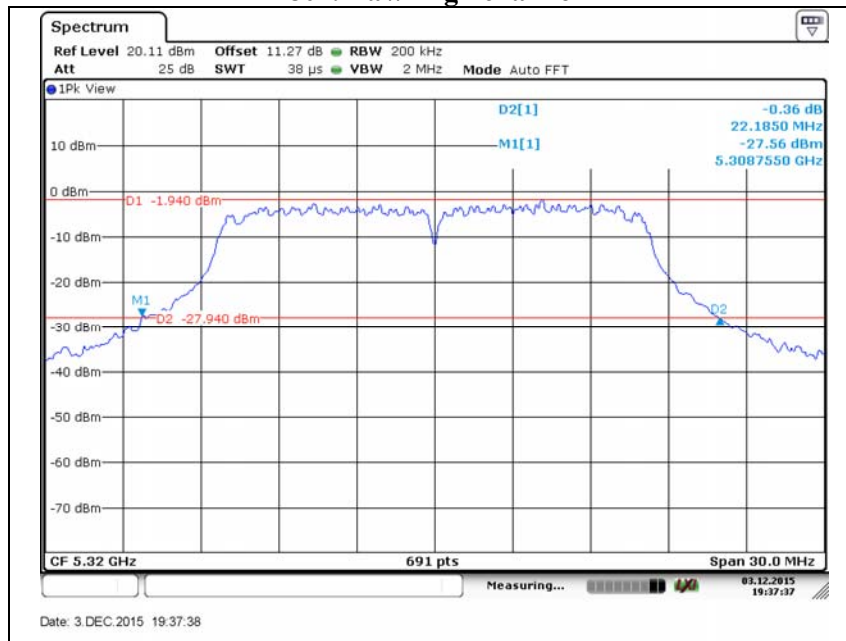
**802.11a // Low channel**



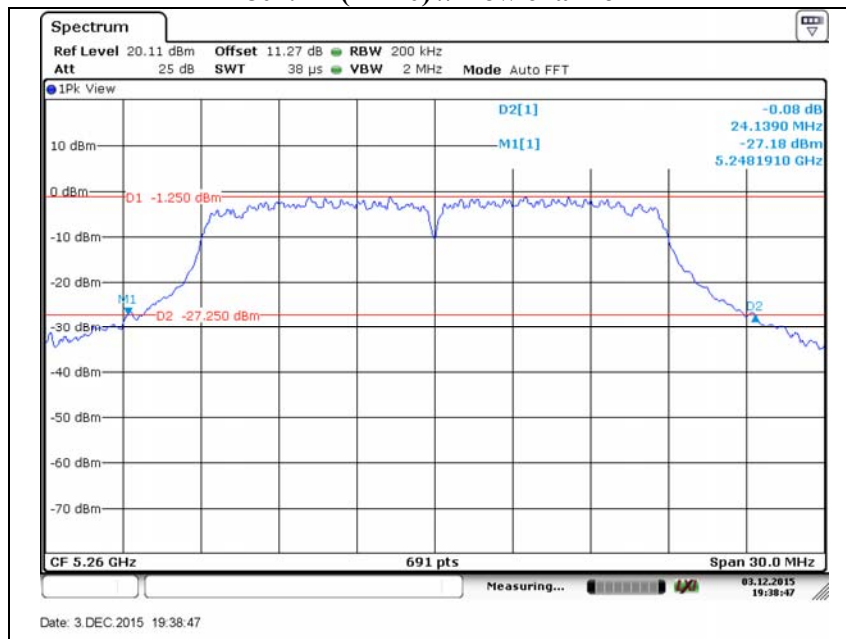
**802.11a // Middle channel**



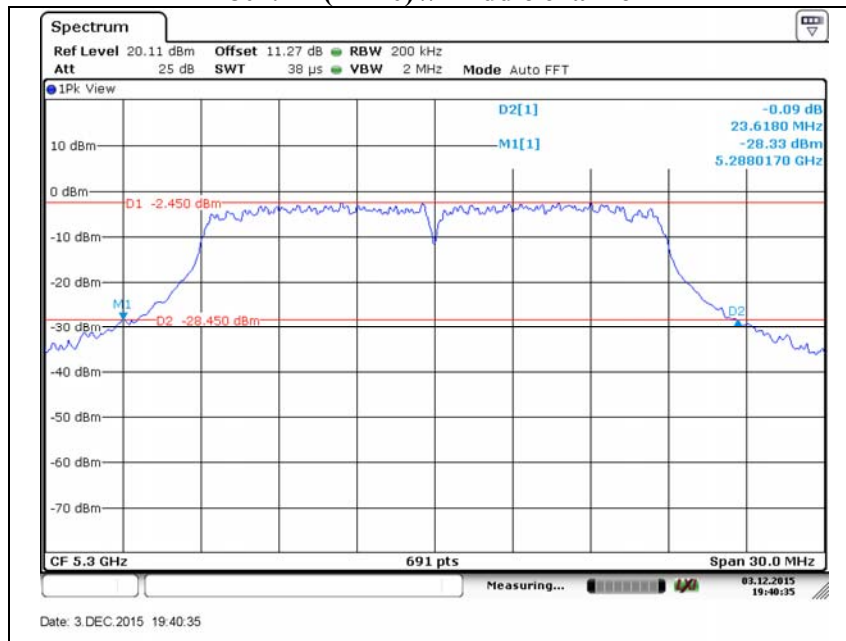
### 802.11a // High channel



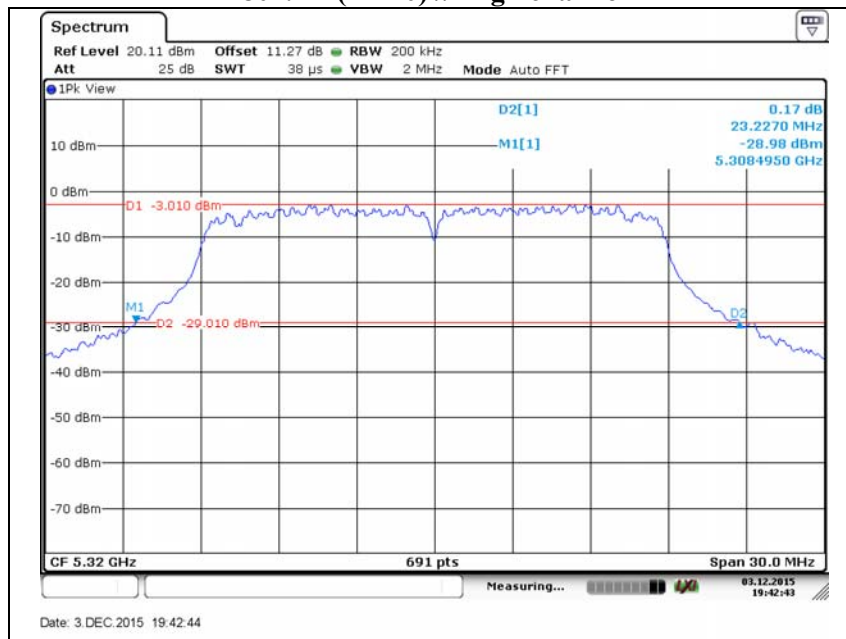
### 802.11n(HT20) // Low channel



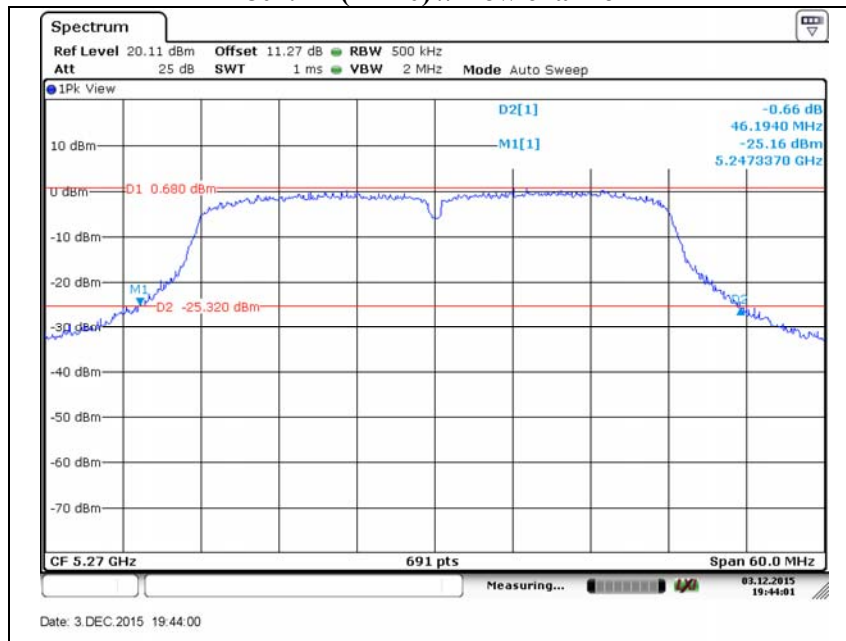
### 802.11n(HT20) // Middle channel



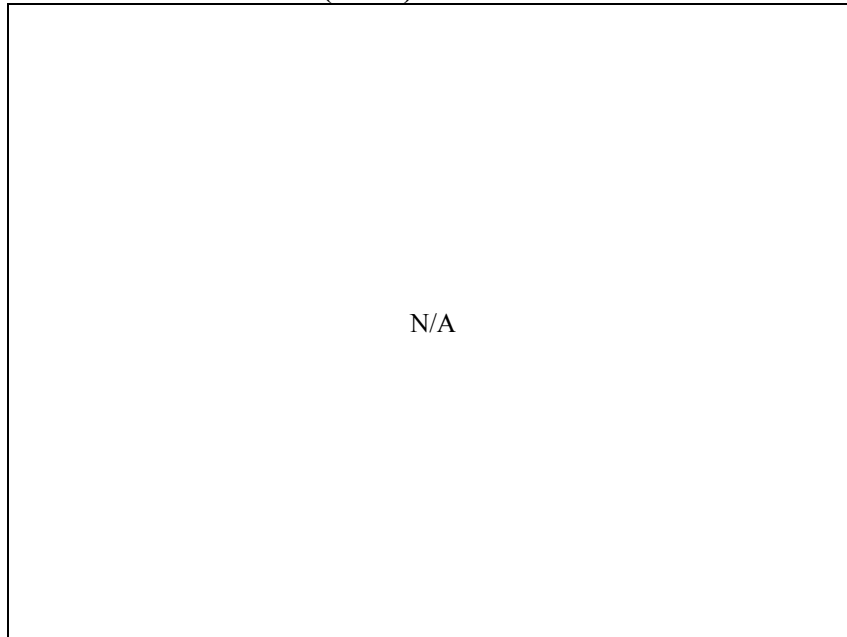
### 802.11n(HT20) // High channel



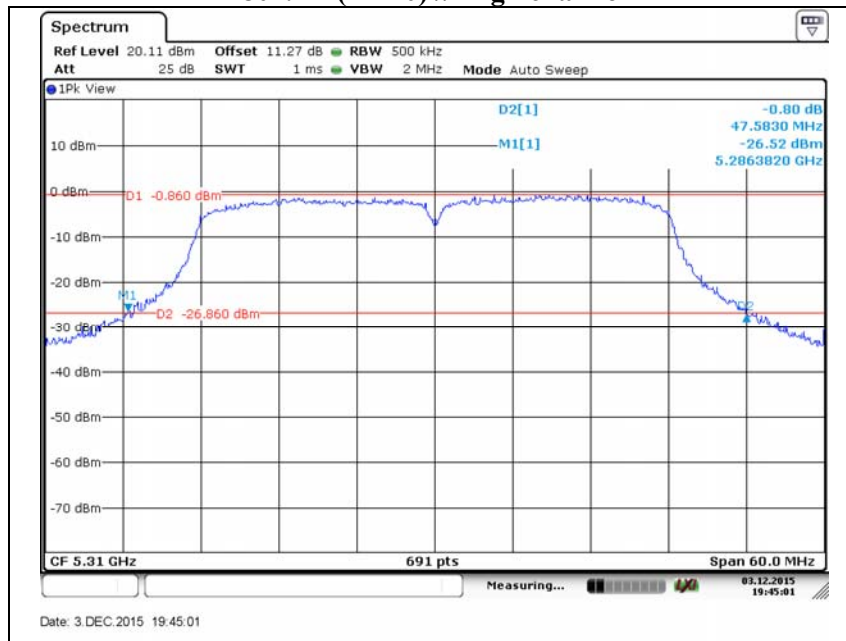
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel

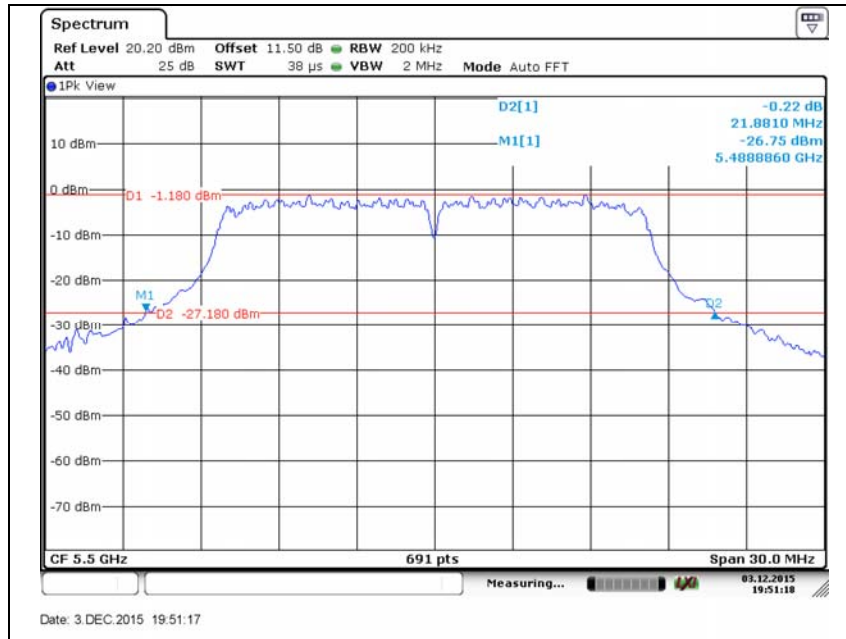


### 802.11n(HT40) // High channel

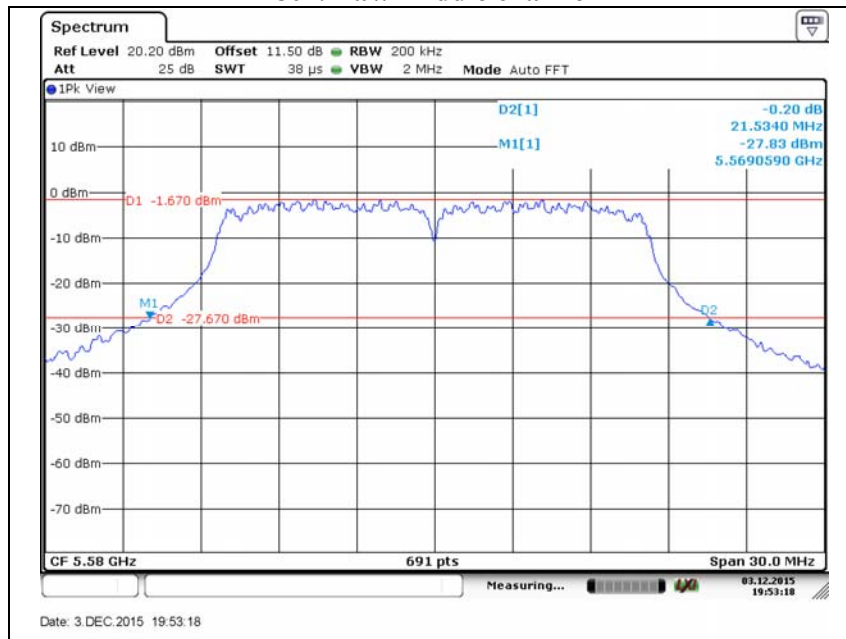


- Antenna port 0 (Band2C)

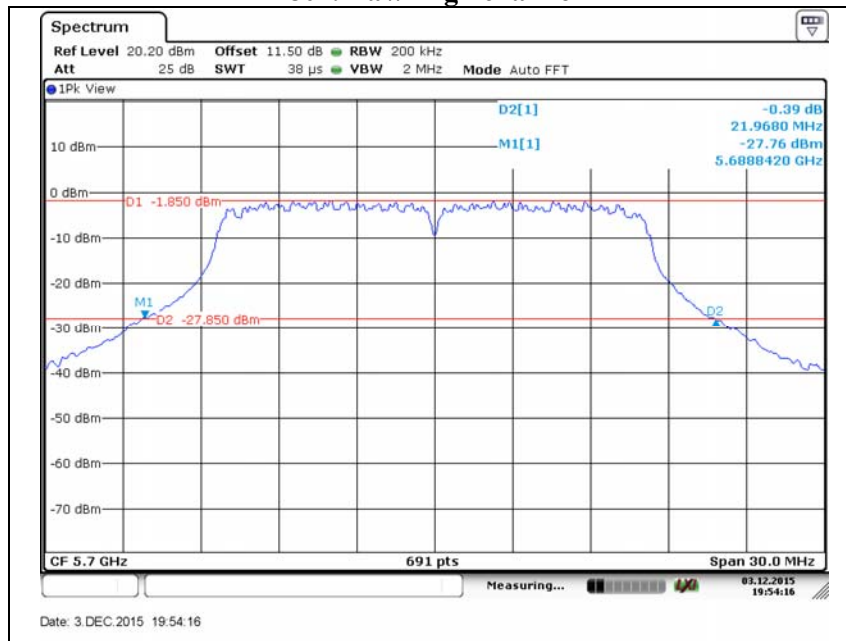
**802.11a // Low channel**



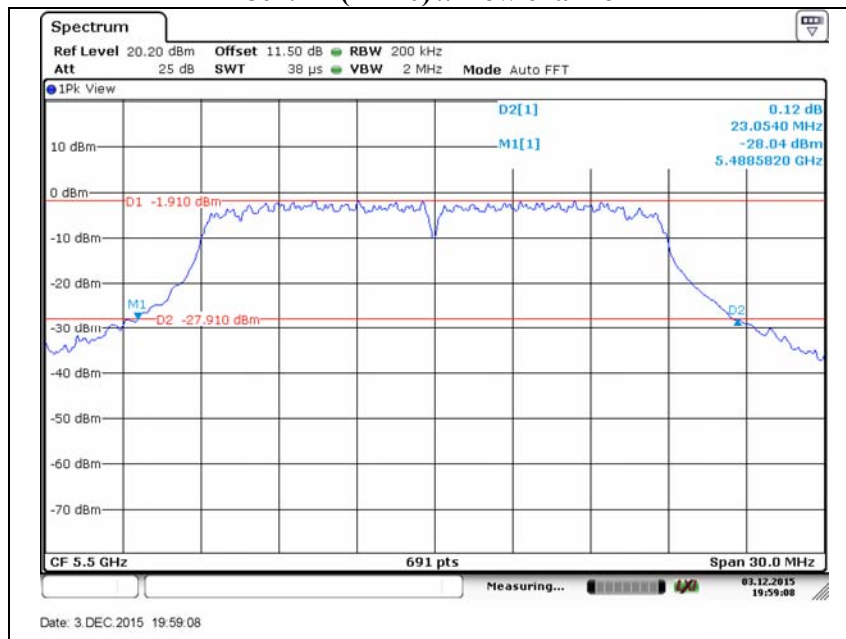
**802.11a // Middle channel**



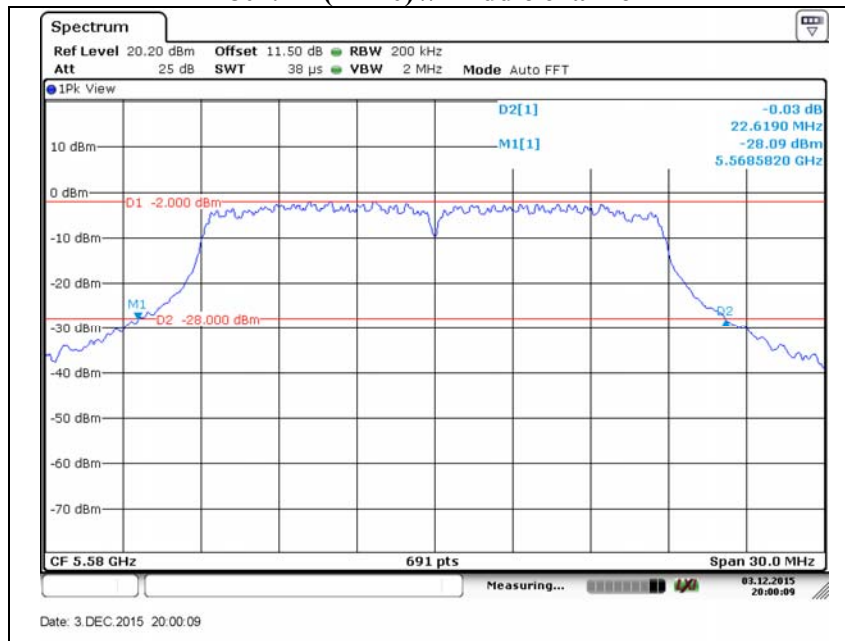
### 802.11a // High channel



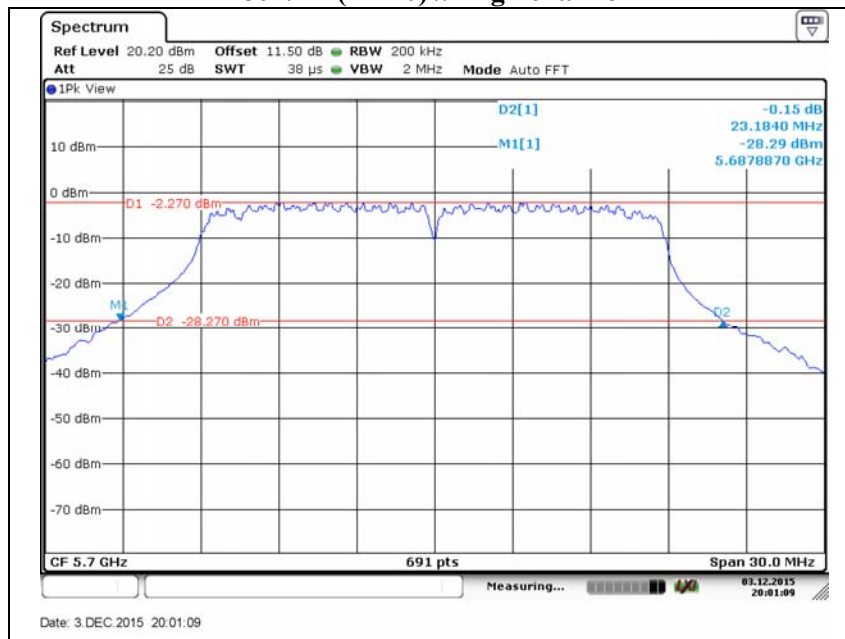
### 802.11n(HT20) // Low channel



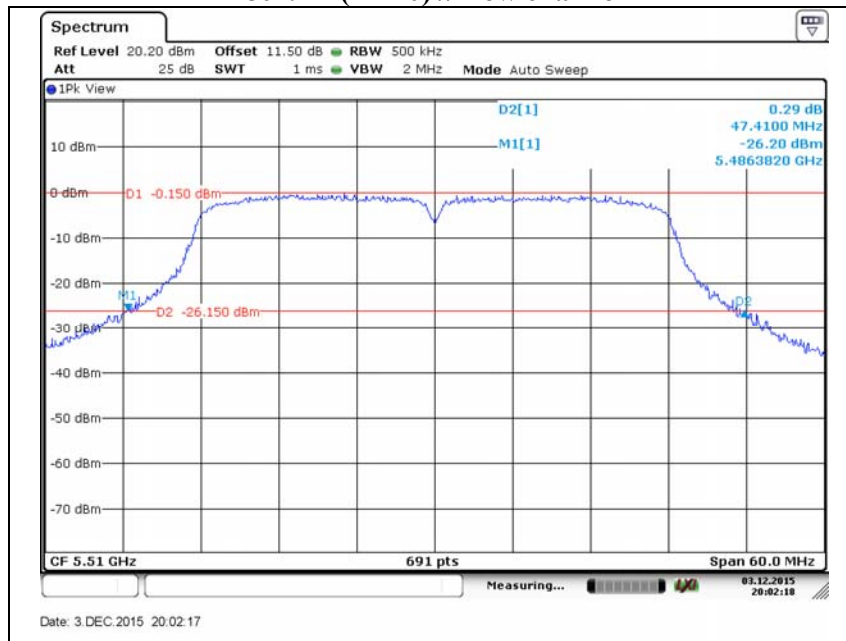
### 802.11n(HT20) // Middle channel



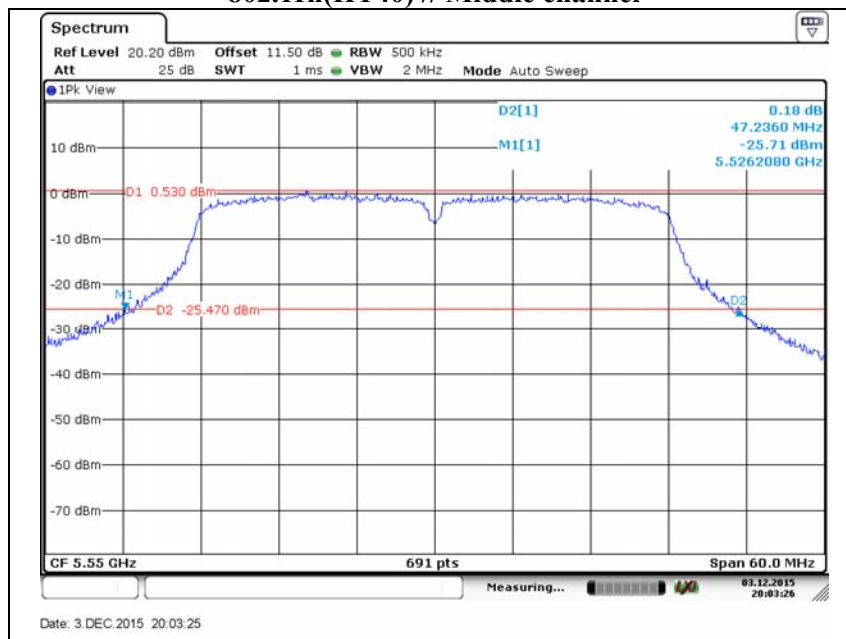
### 802.11n(HT20) // High channel



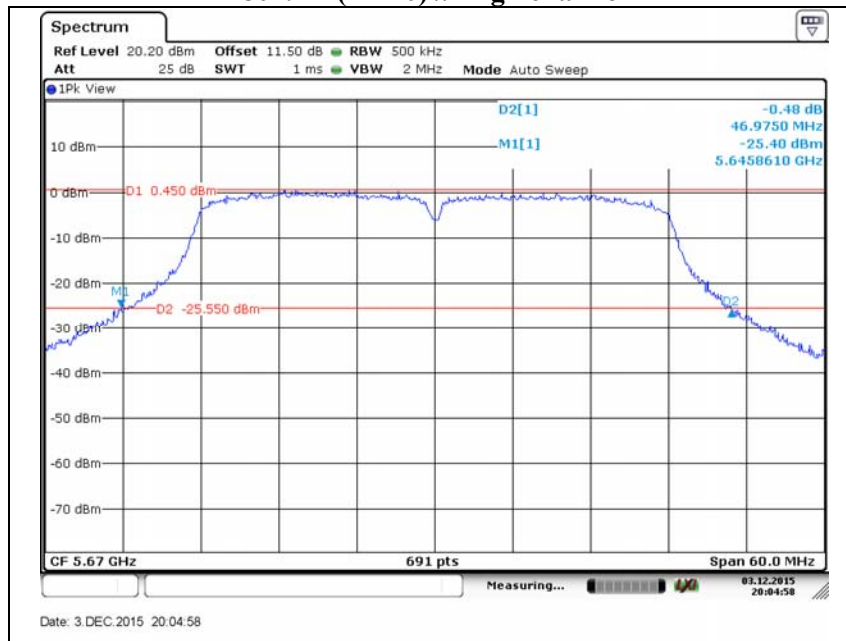
### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel



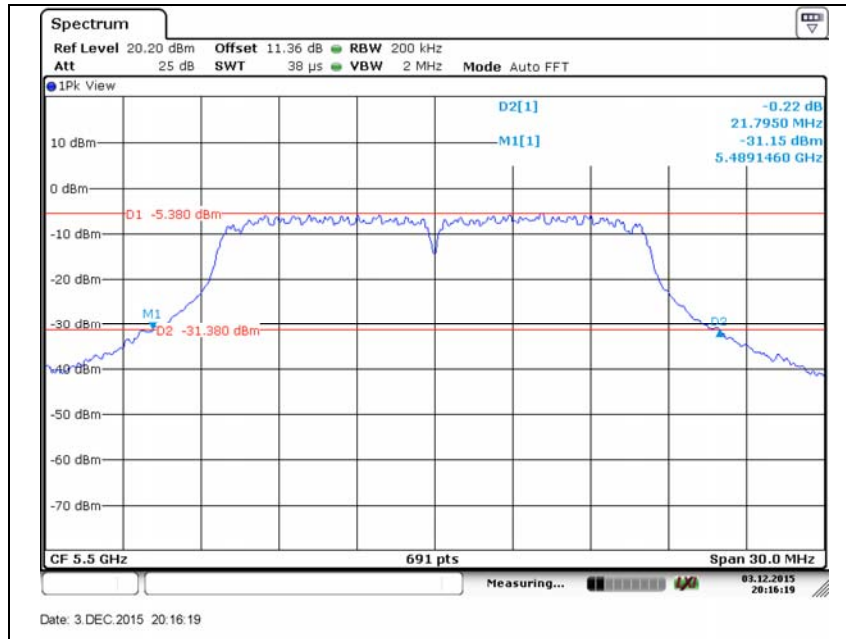
### 802.11n(HT40) // High channel



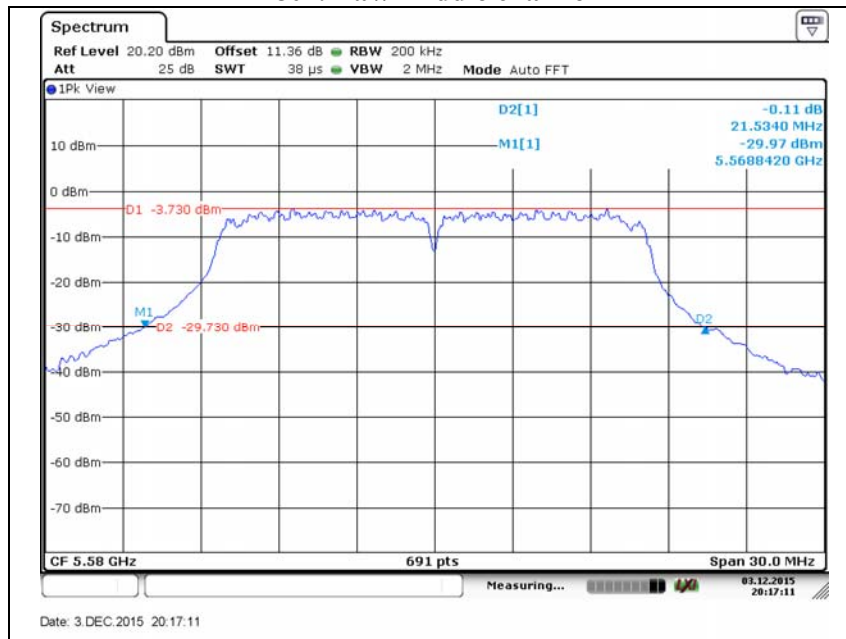
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The test results in the report only apply to the tested sample.

- Antenna port 1 (Band2C)

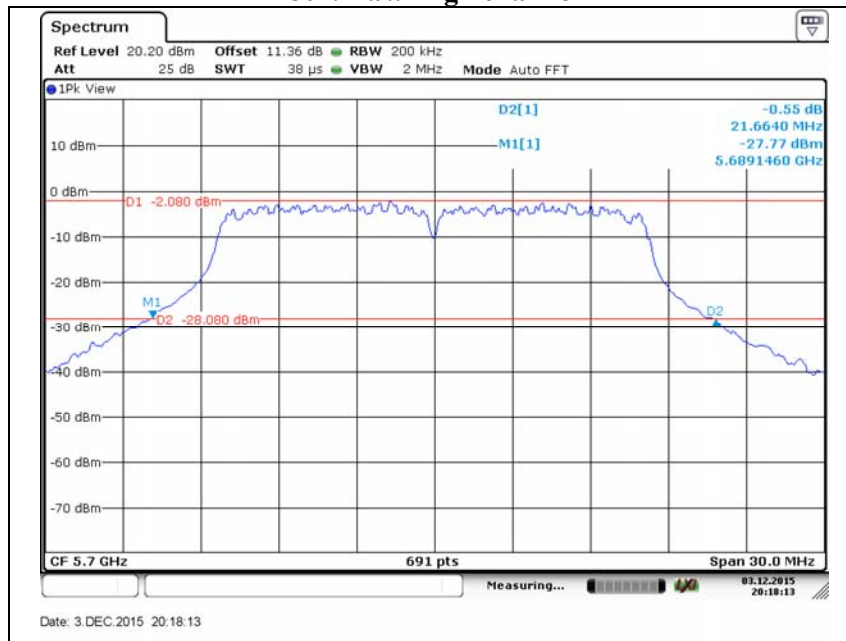
**802.11a // Low channel**



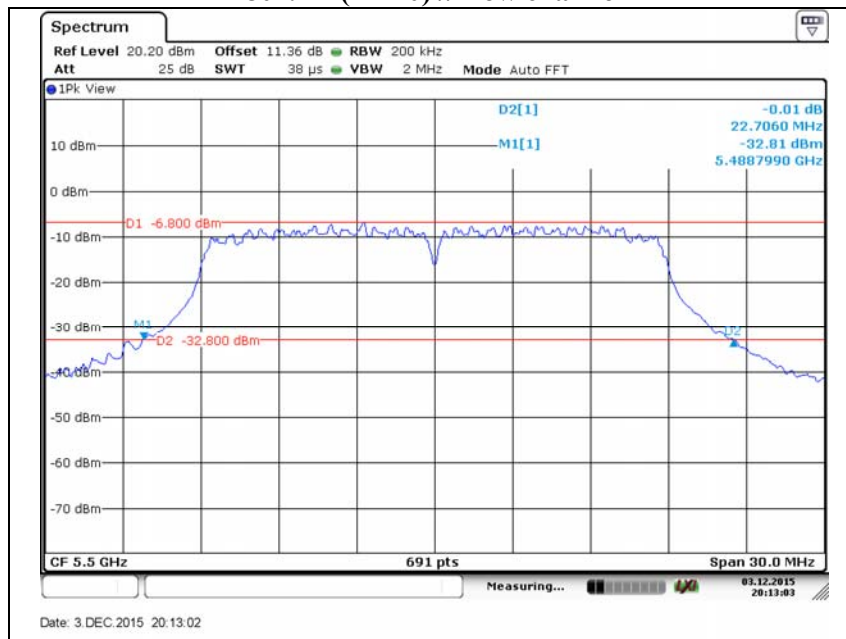
**802.11a // Middle channel**



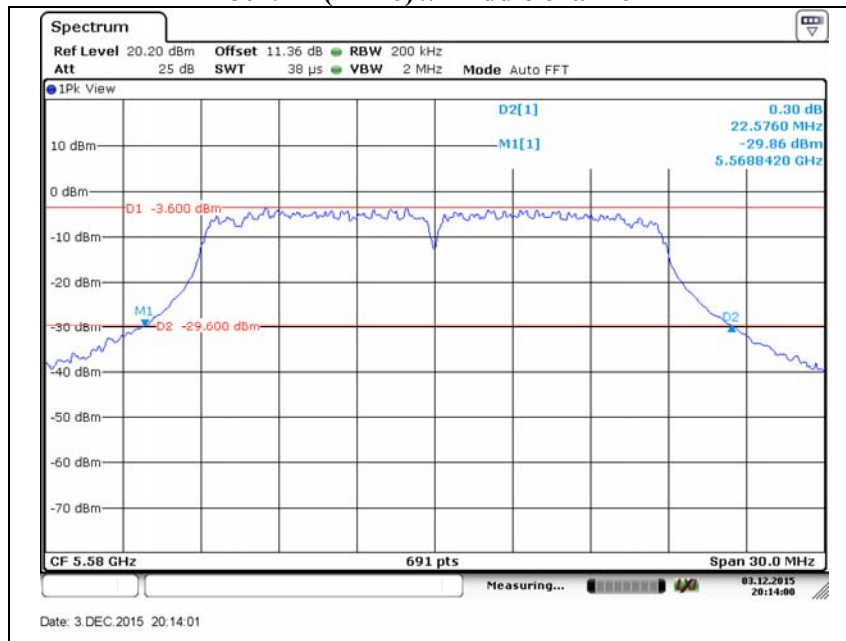
### 802.11a // High channel



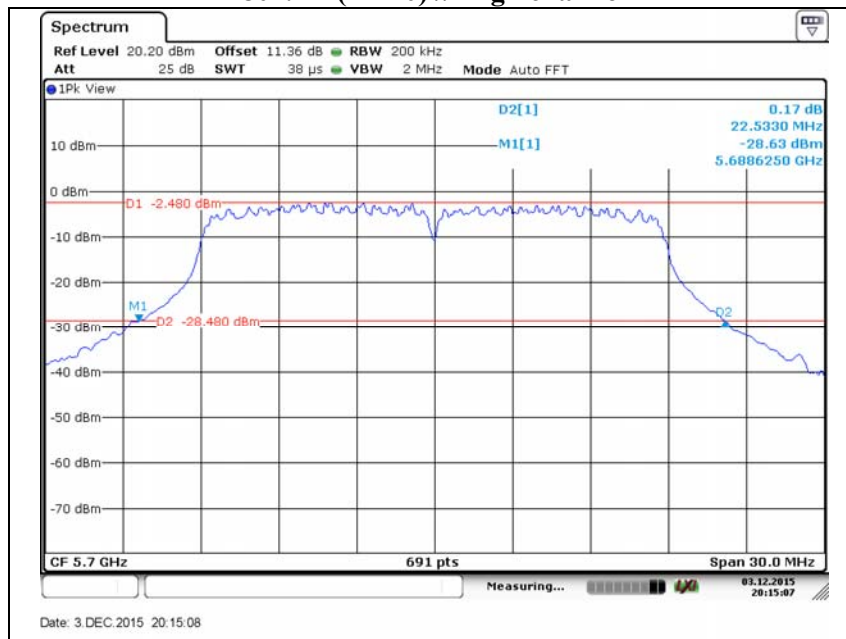
### 802.11n(HT20) // Low channel



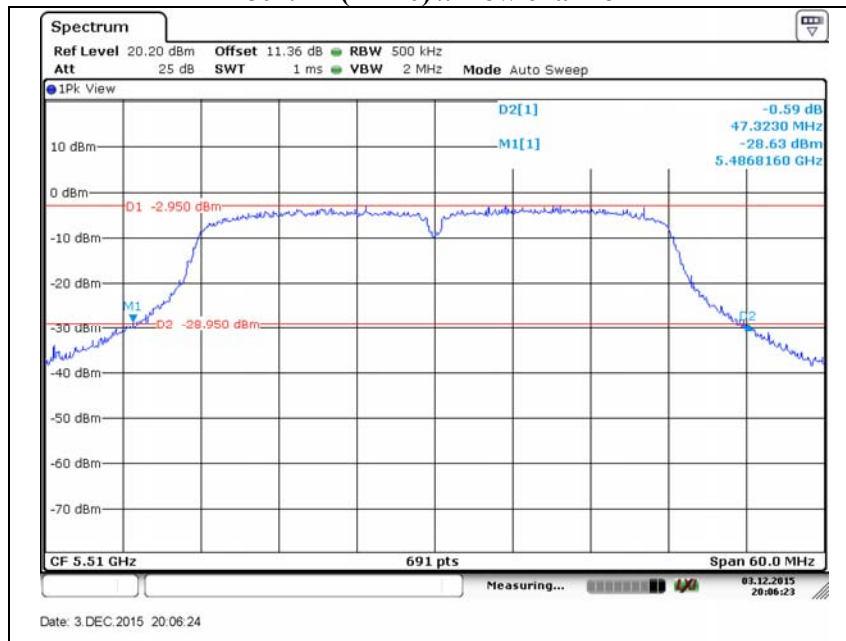
### 802.11n(HT20) // Middle channel



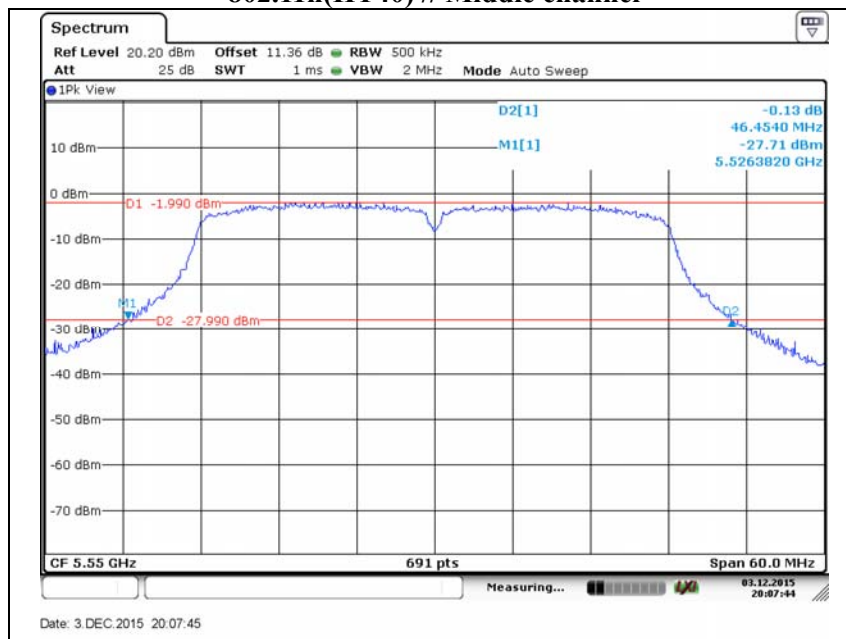
### 802.11n(HT20) // High channel



### 802.11n(HT40) // Low channel



### 802.11n(HT40) // Middle channel



### 802.11n(HT40) // High channel

