

6. EMISSION LIMITATIONS MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the emission limitations test :

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|-------------------|--------------|------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-507 | MY49061167 | Feb. 24, 11' | Feb. 23, 12' |
| 2. | Spectrum Analyzer | Agilent | E4446A | US44300366 | Aug. 04, 11' | Aug. 03, 12' |

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(This test result attaching to §3.6.3)

6.4. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

6.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW.

The measurement guideline was according to KDB 558074.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

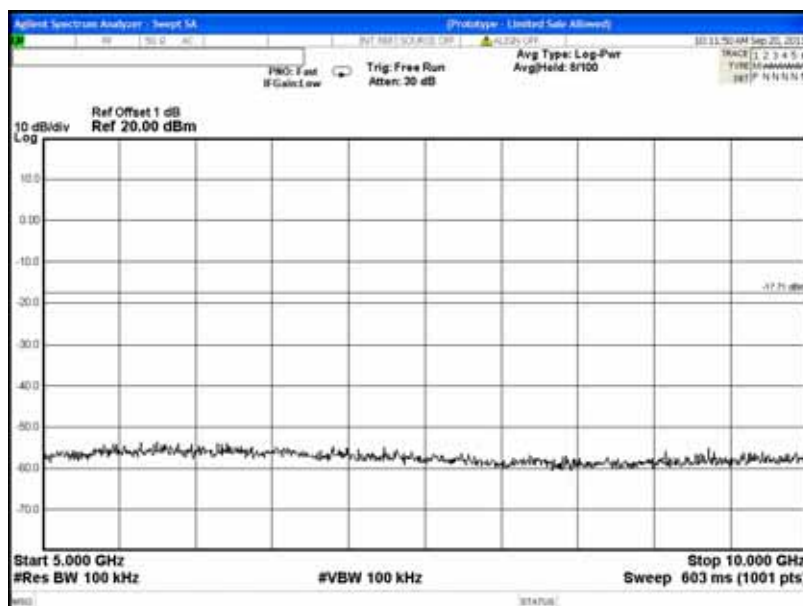
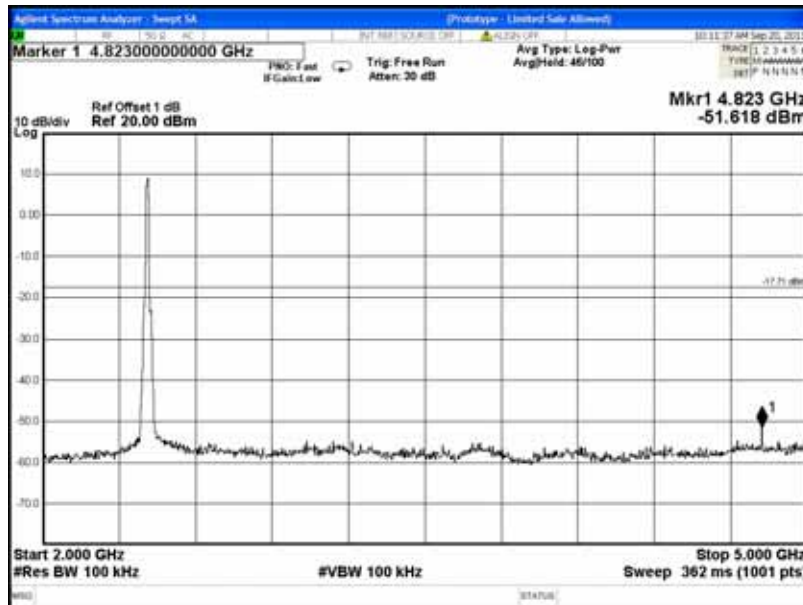
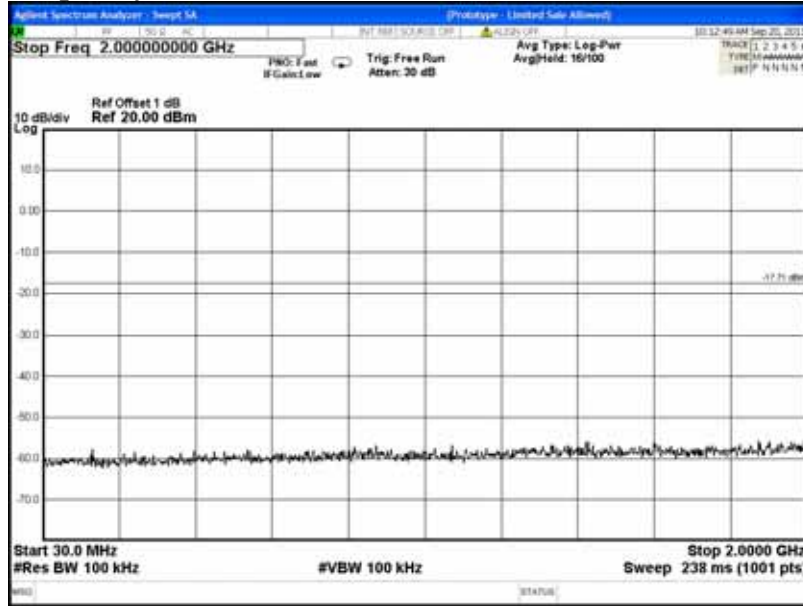
6.6. Test Results

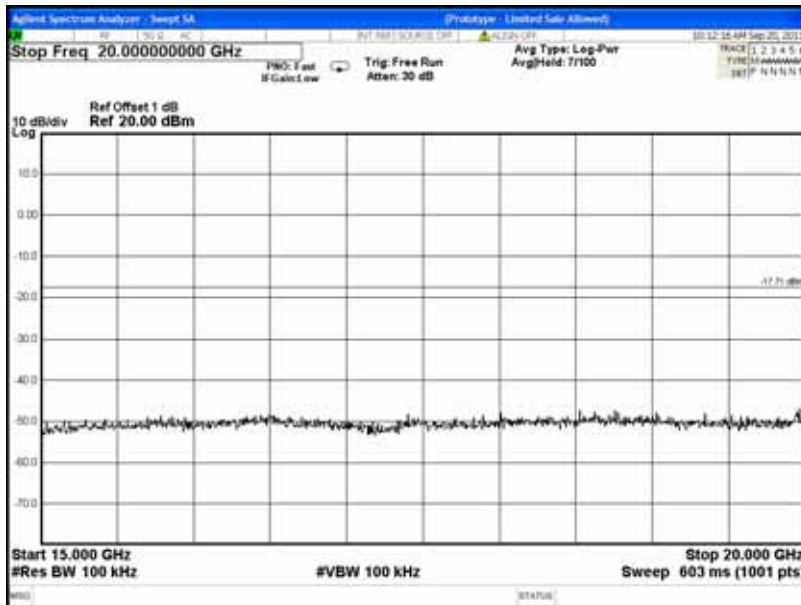
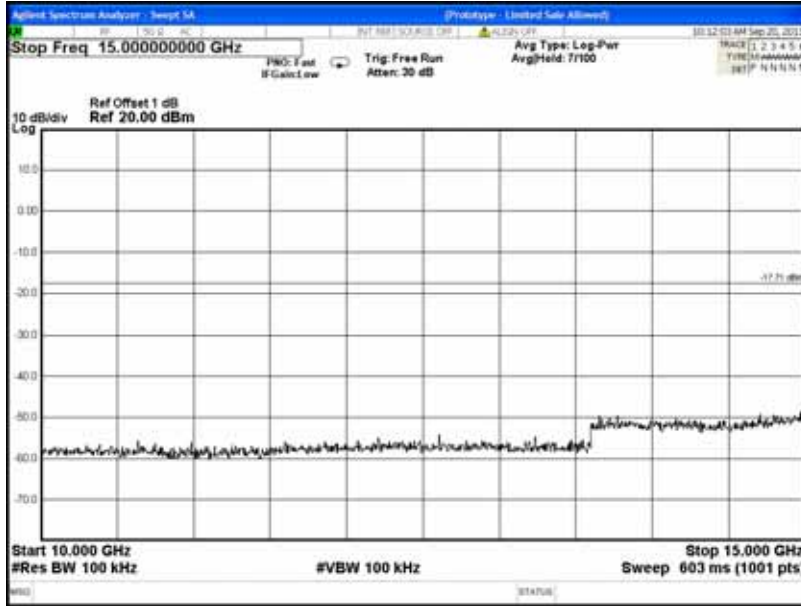
PASSED. The testing data was attached in the next pages.

Pursuant to KDB 662911, the test result has been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

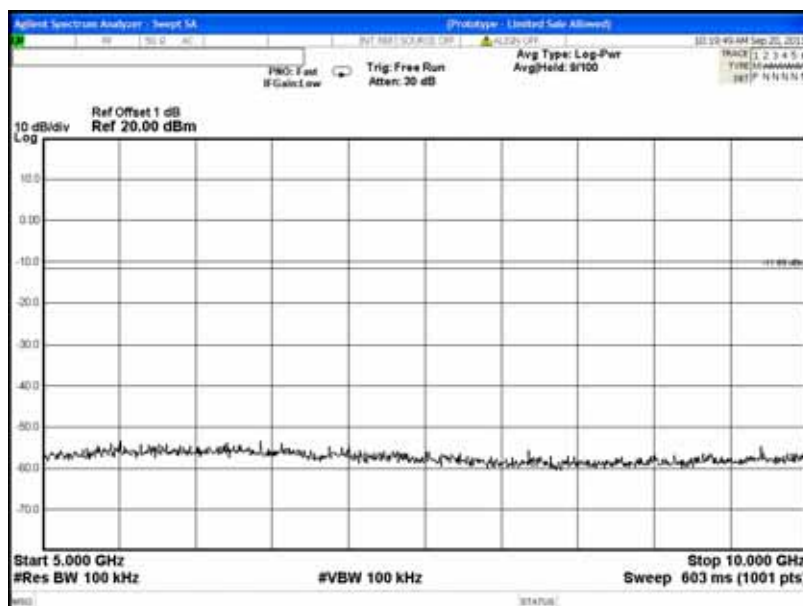
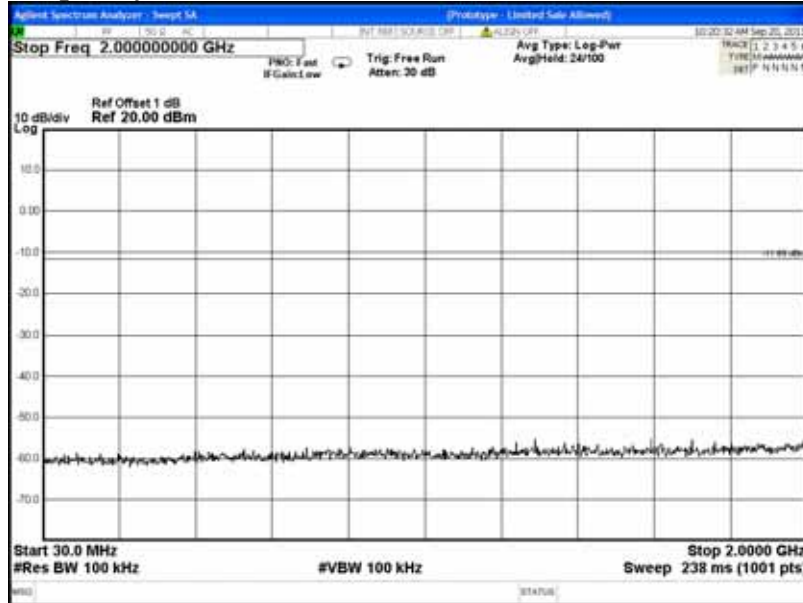
| | | |
|--------------------------|------------------|-----------------|
| Test Date: Sep. 20, 2011 | Temperature : 25 | Humidity : 51 % |
| Test Date: Sep. 21, 2011 | Temperature : 26 | Humidity : 55 % |
| Test Date: Sep. 26, 2011 | Temperature : 25 | Humidity : 54 % |

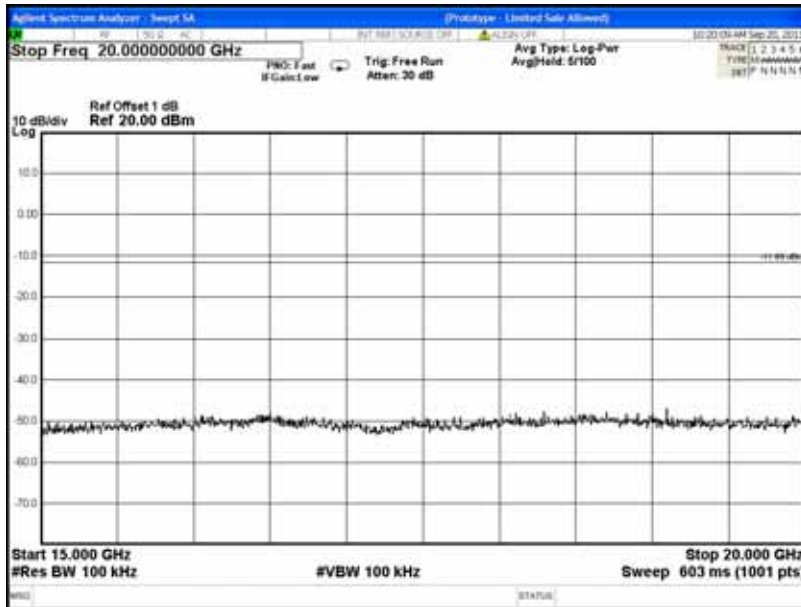
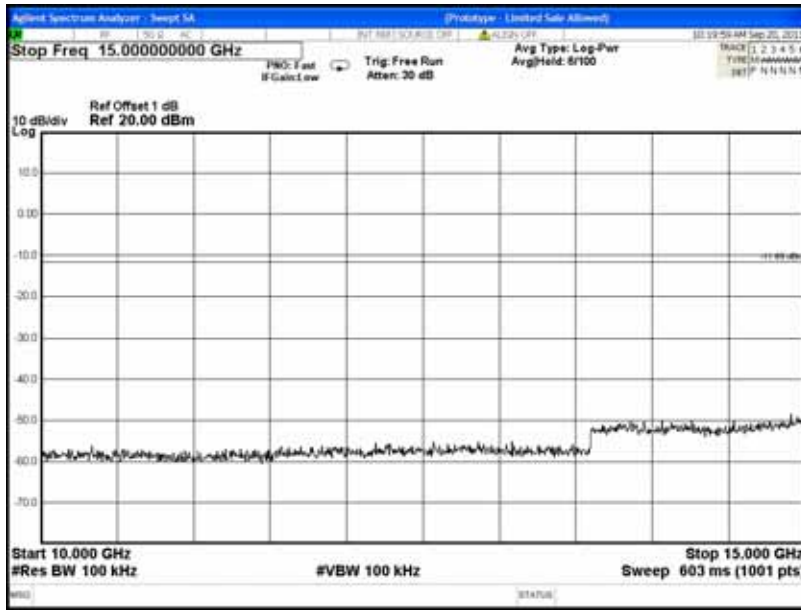
802.11b, Frequency: 2412MHz



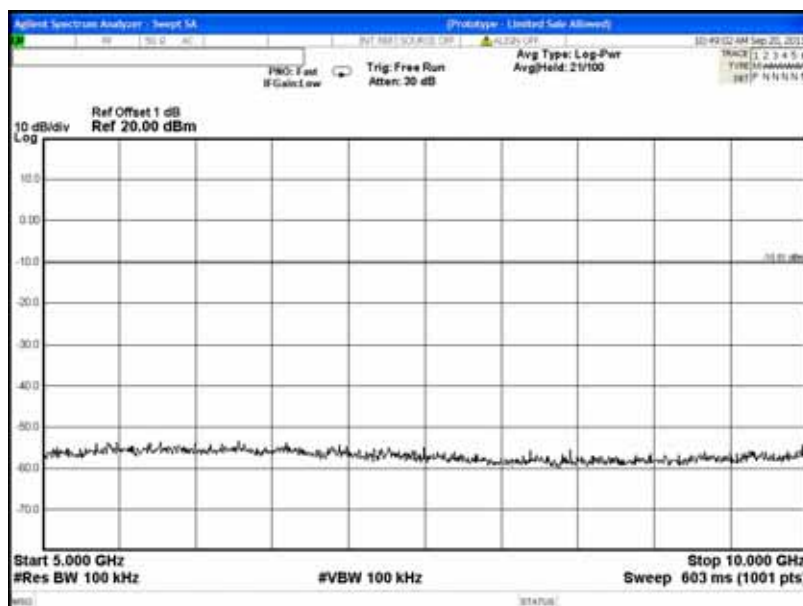
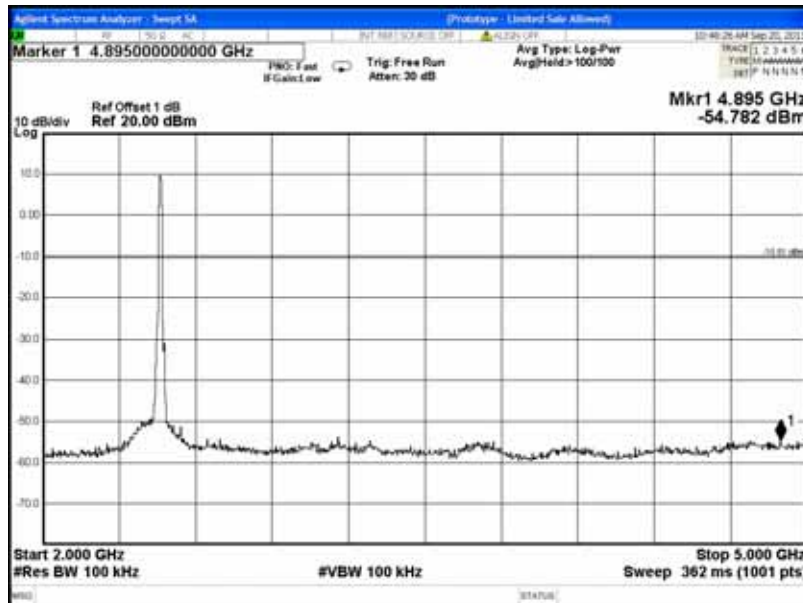
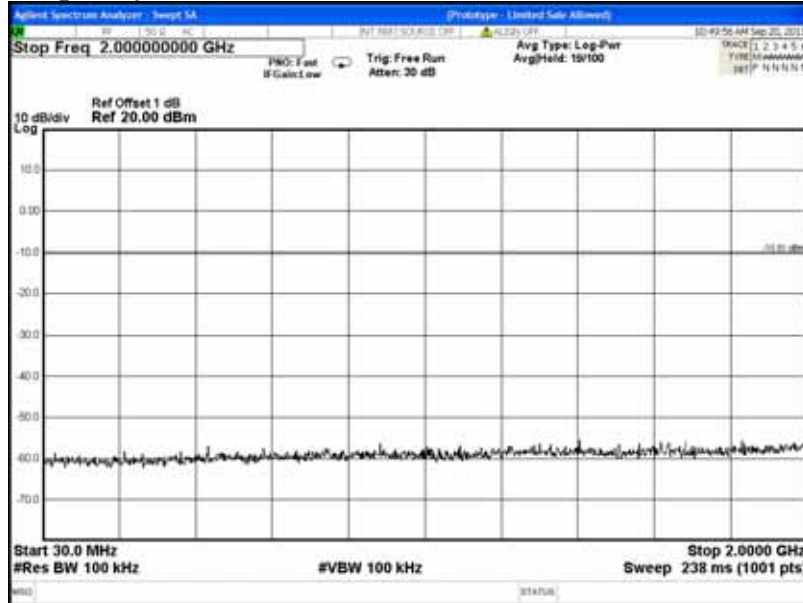


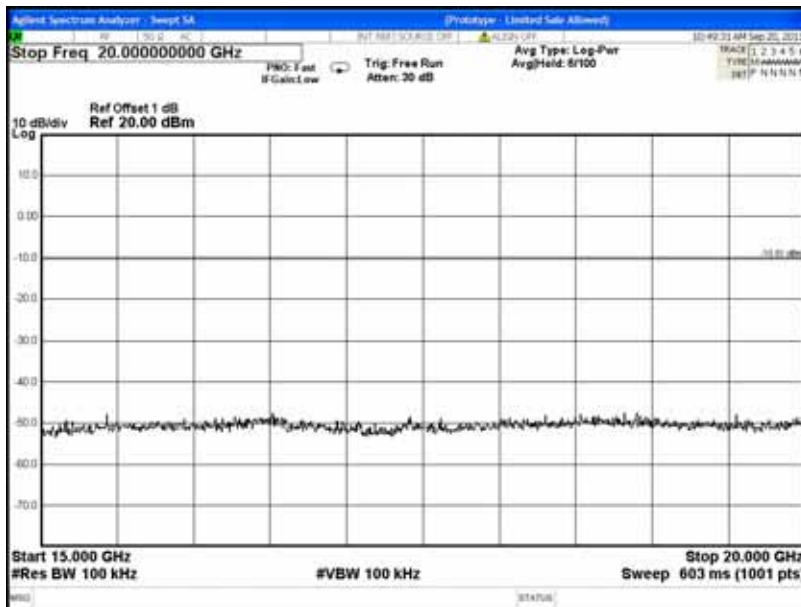
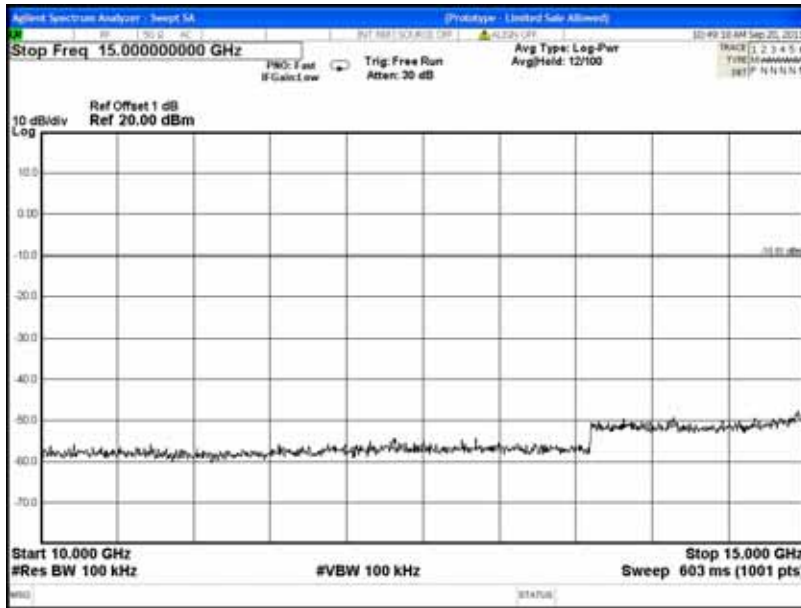
802.11b, Frequency: 2437MHz



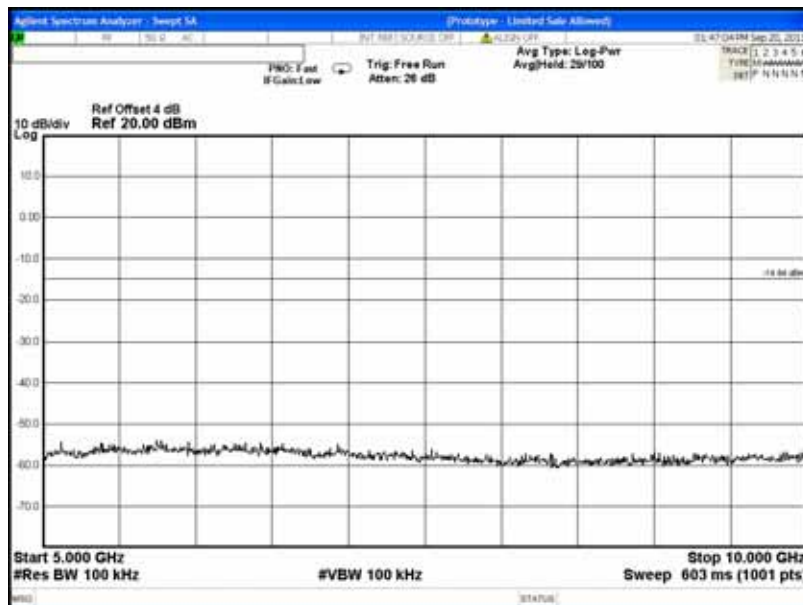
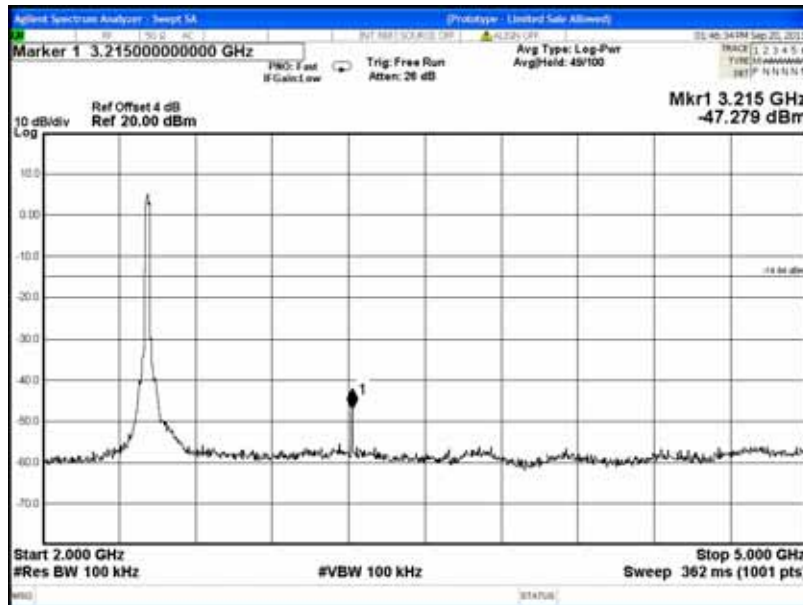
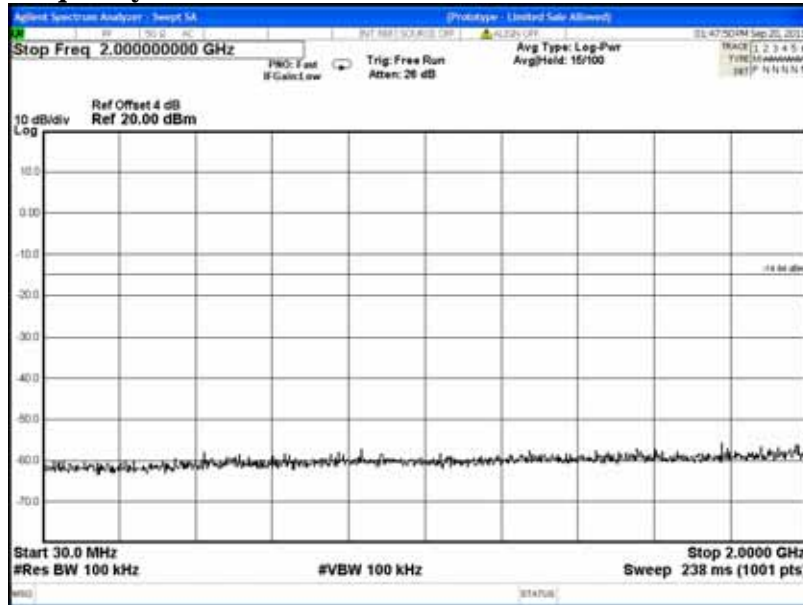


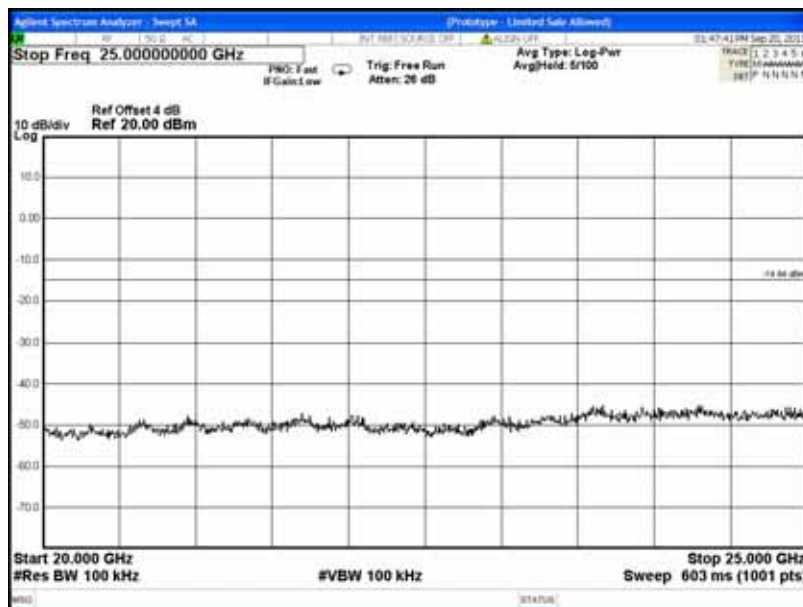
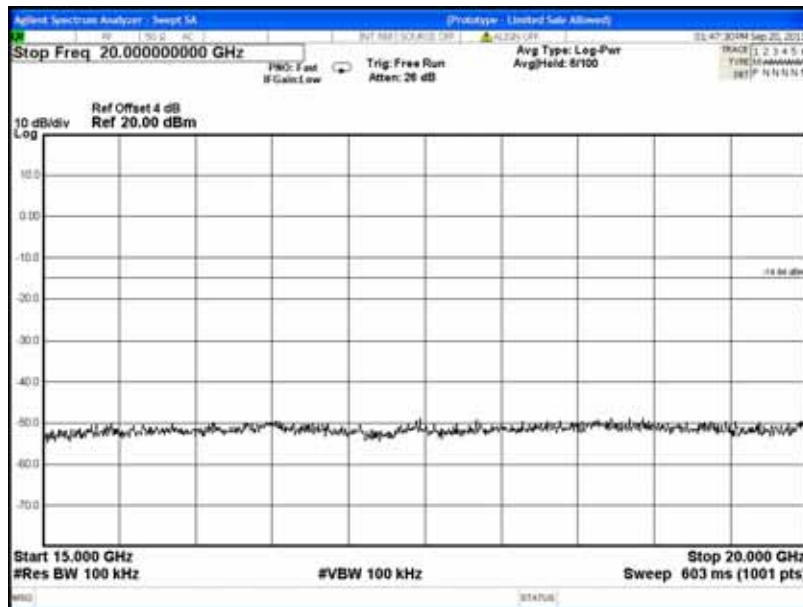
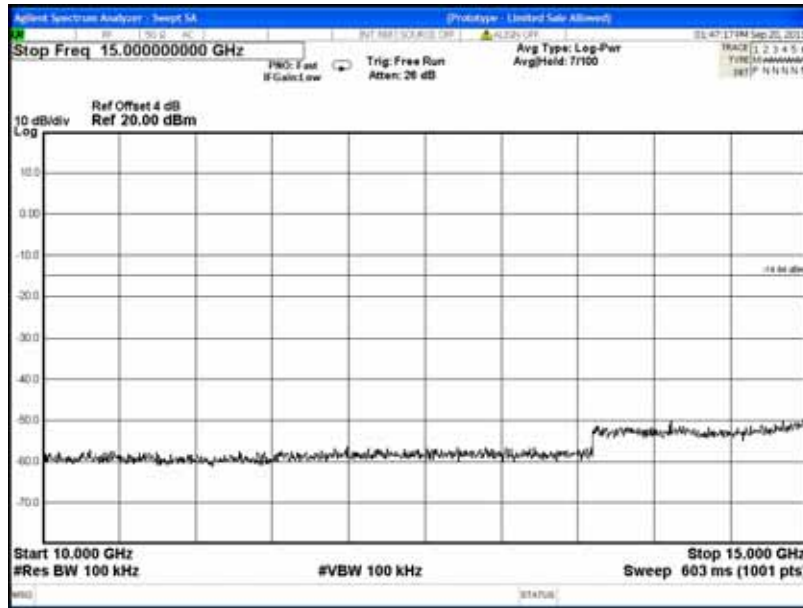
802.11b, Frequency: 2462MHz



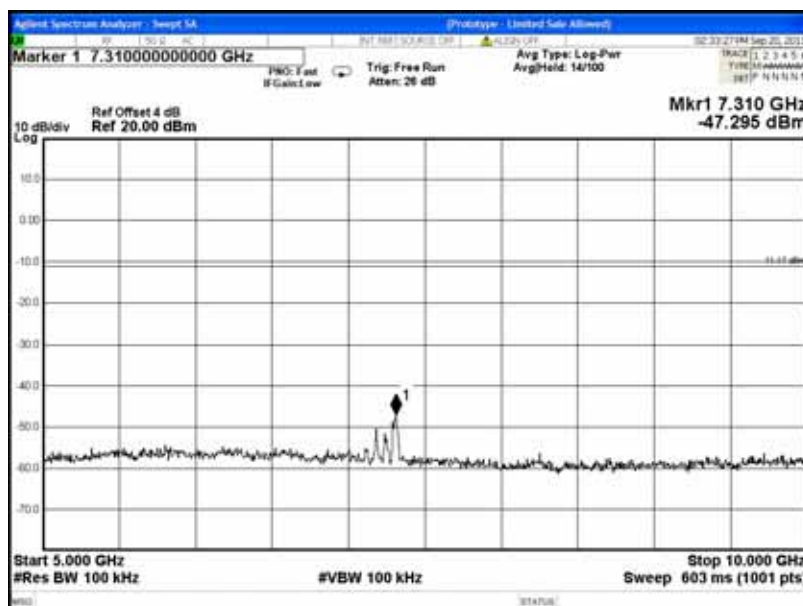
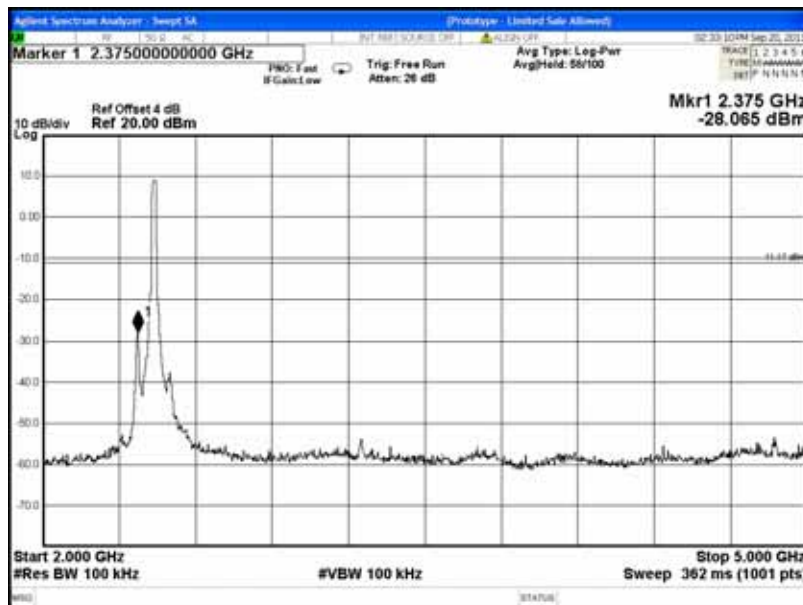
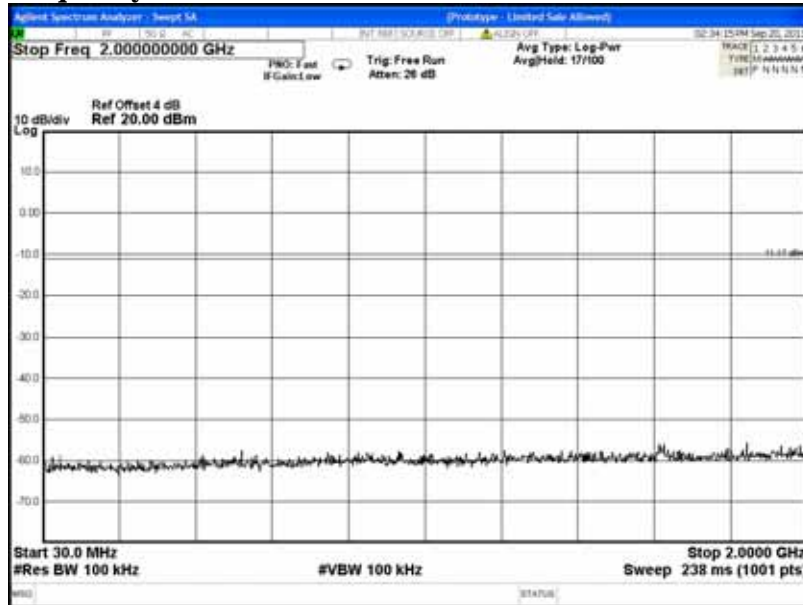


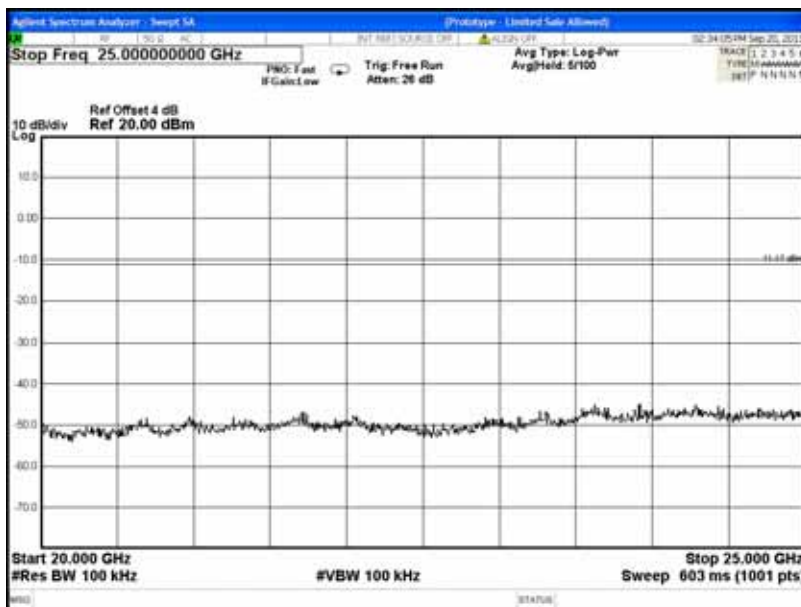
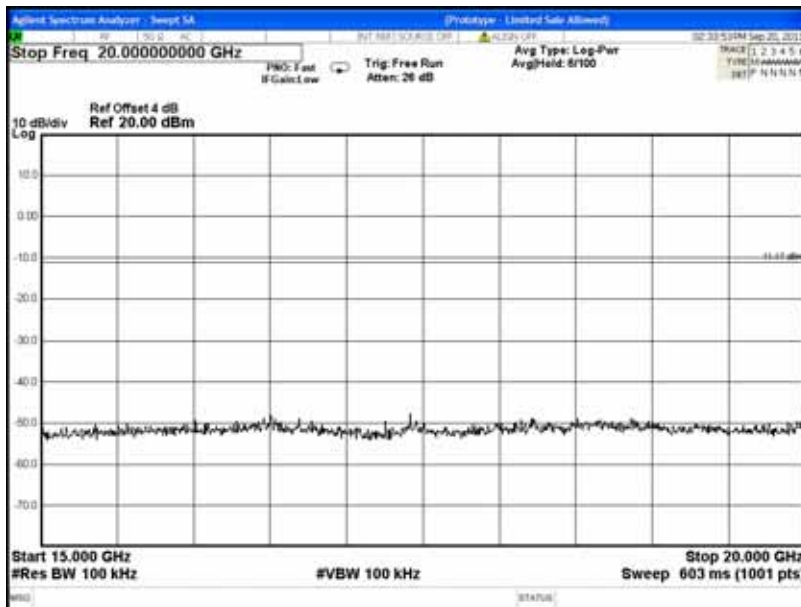
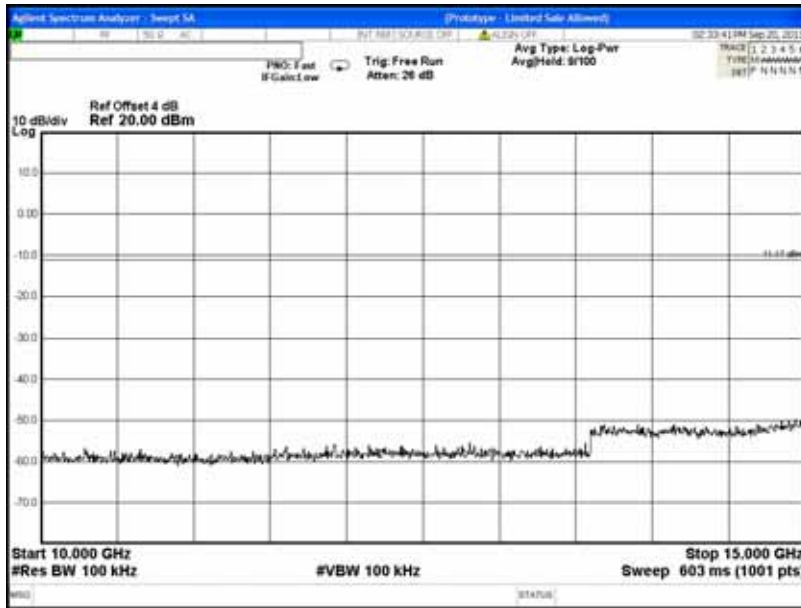
802.11g, Frequency: 2412MHz



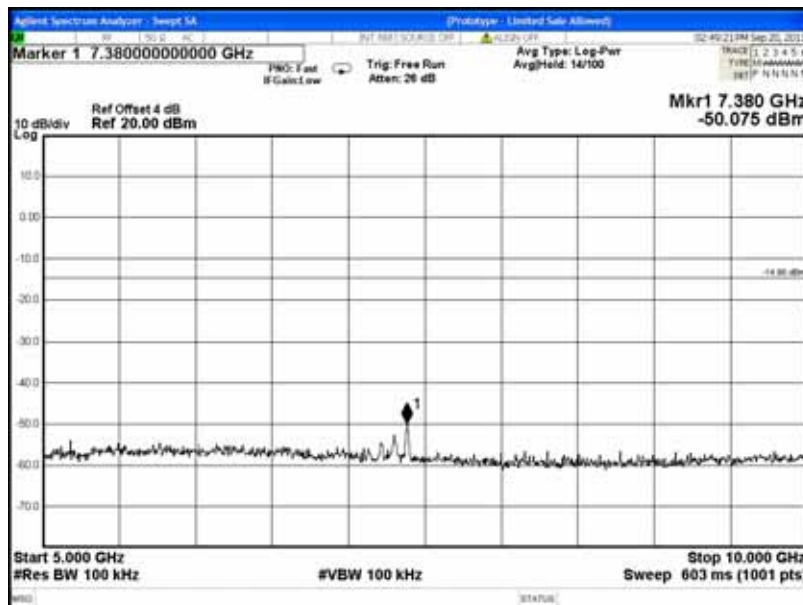
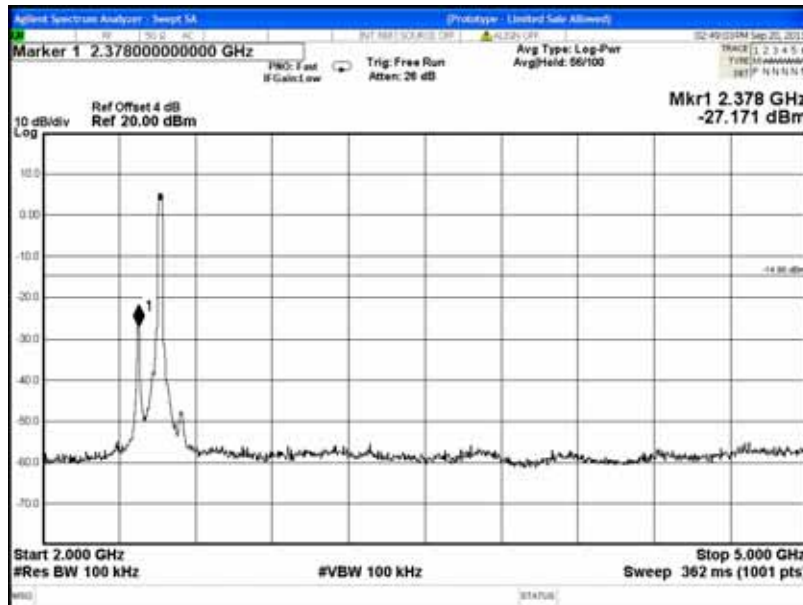
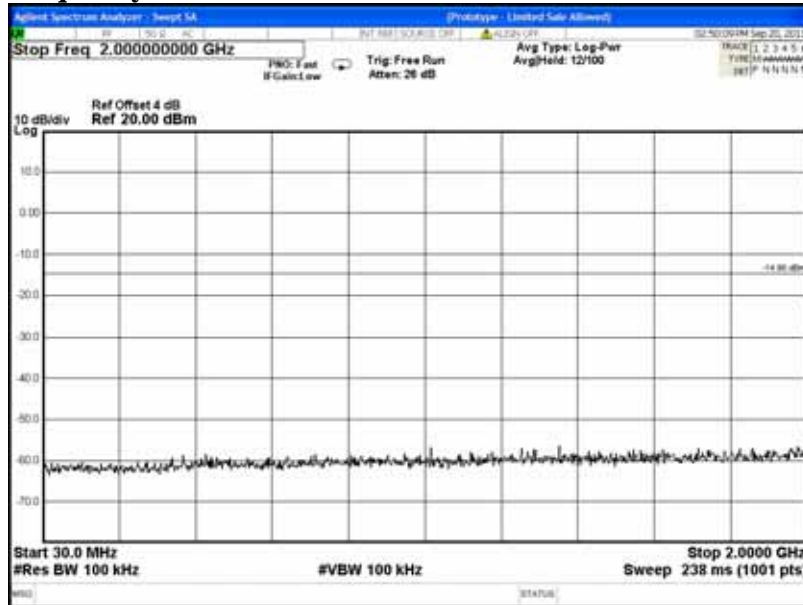


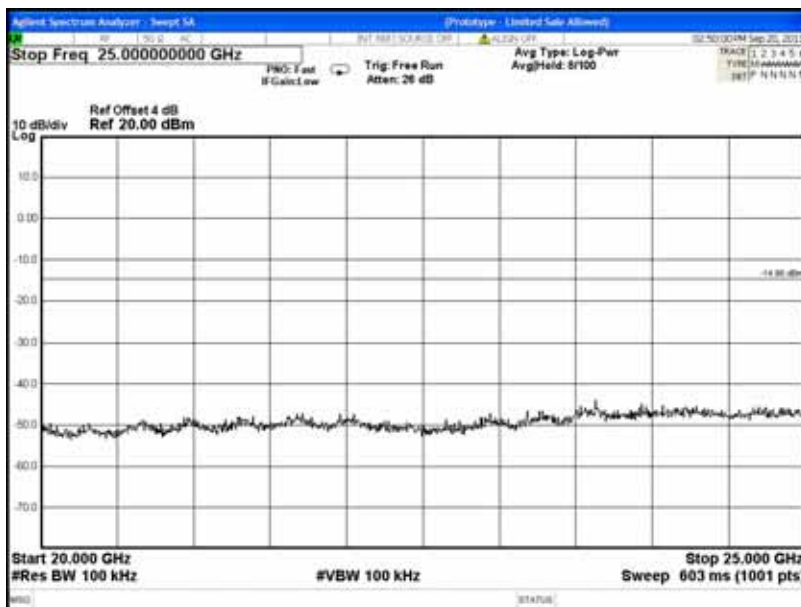
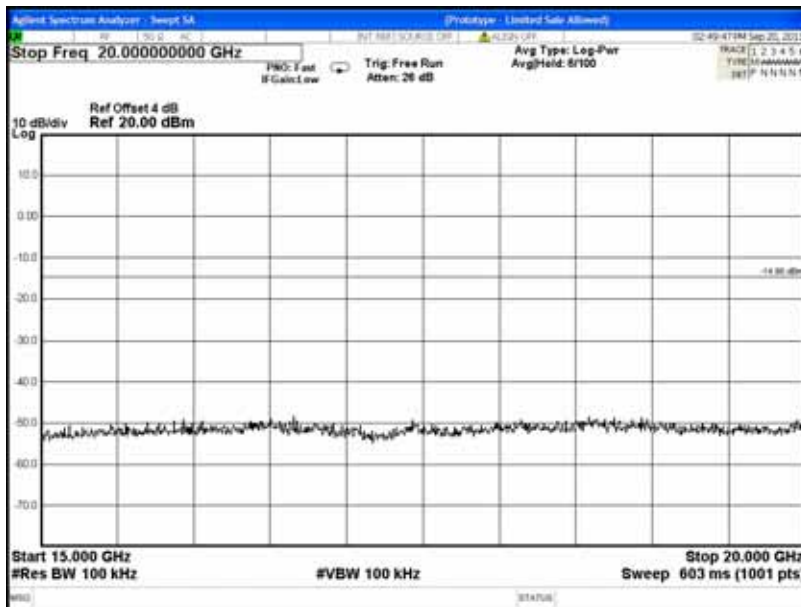
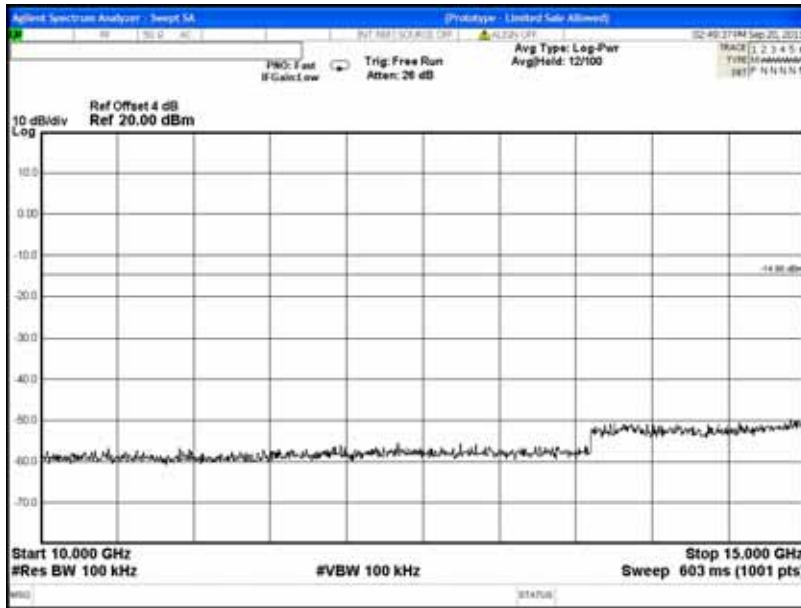
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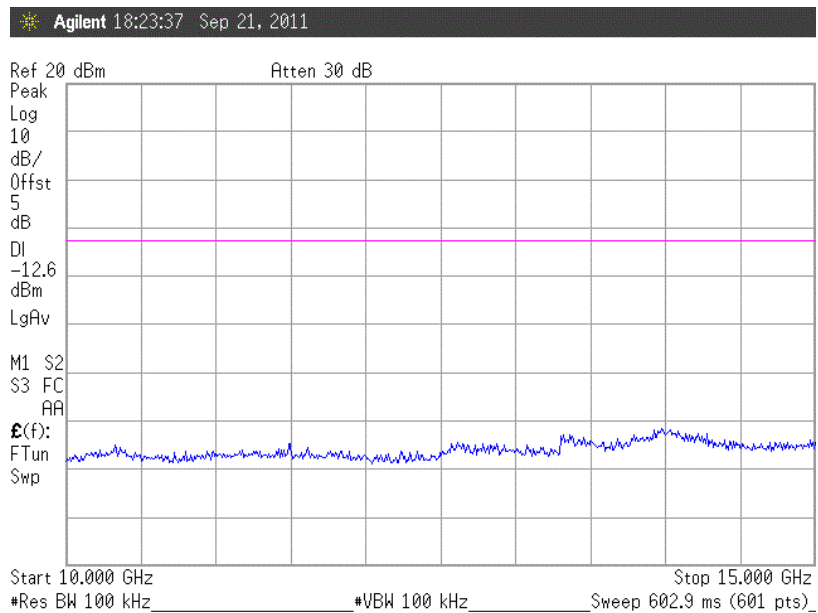
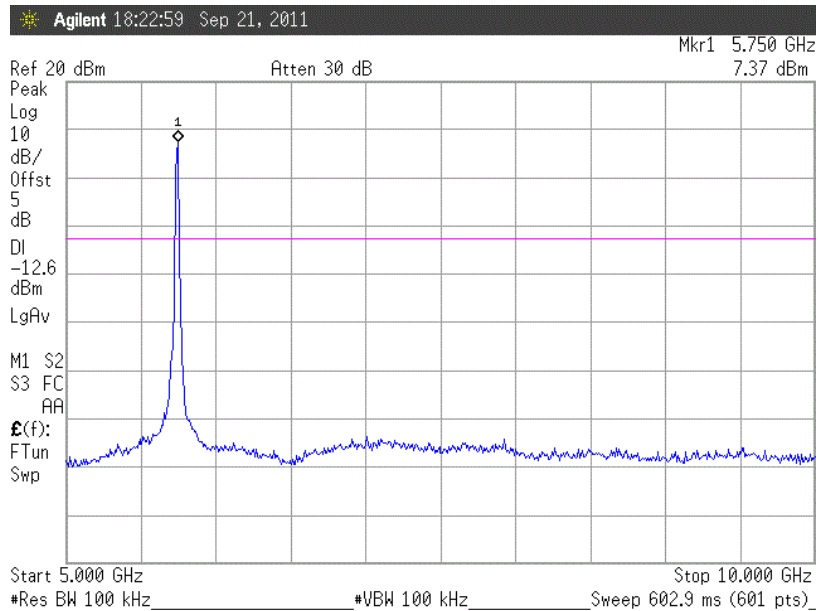
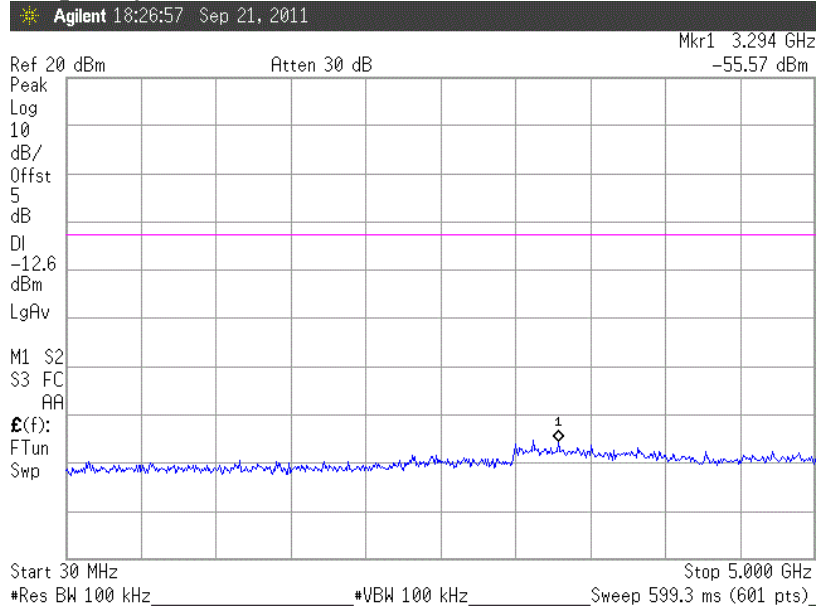


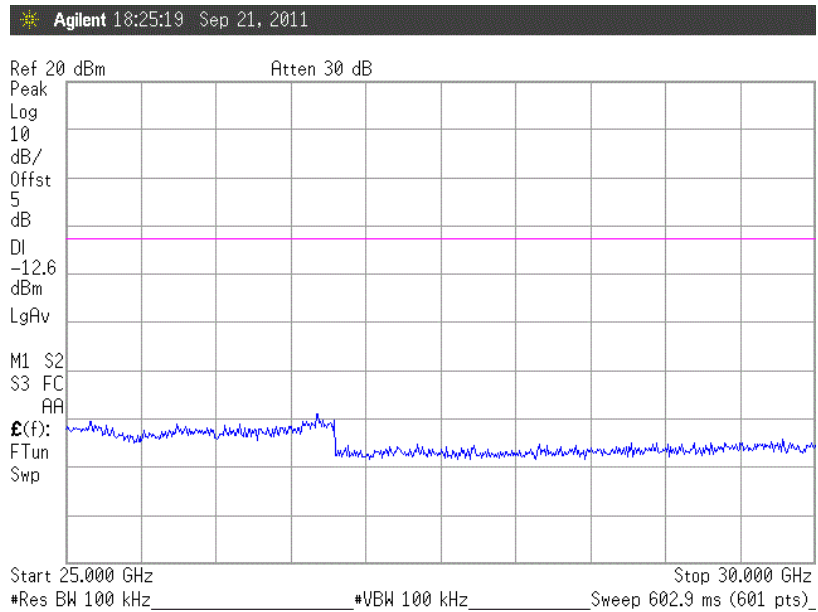
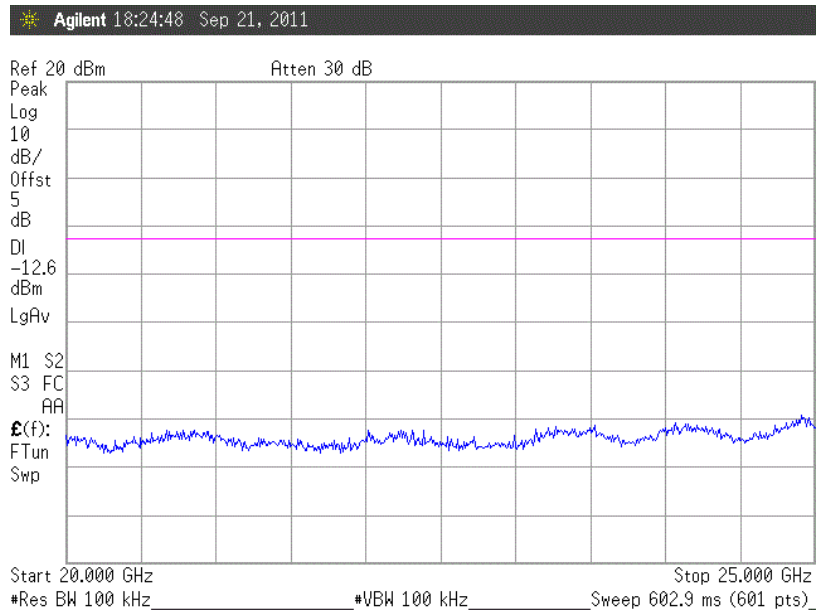
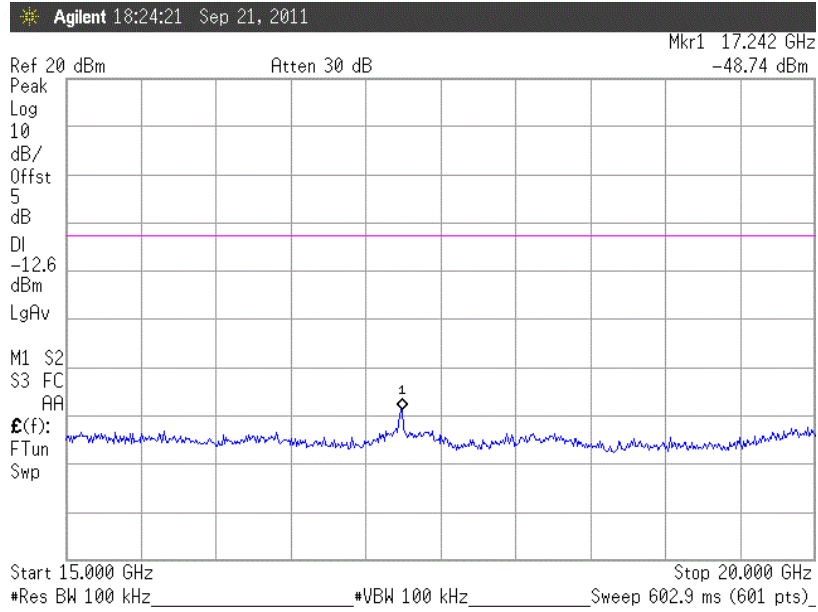
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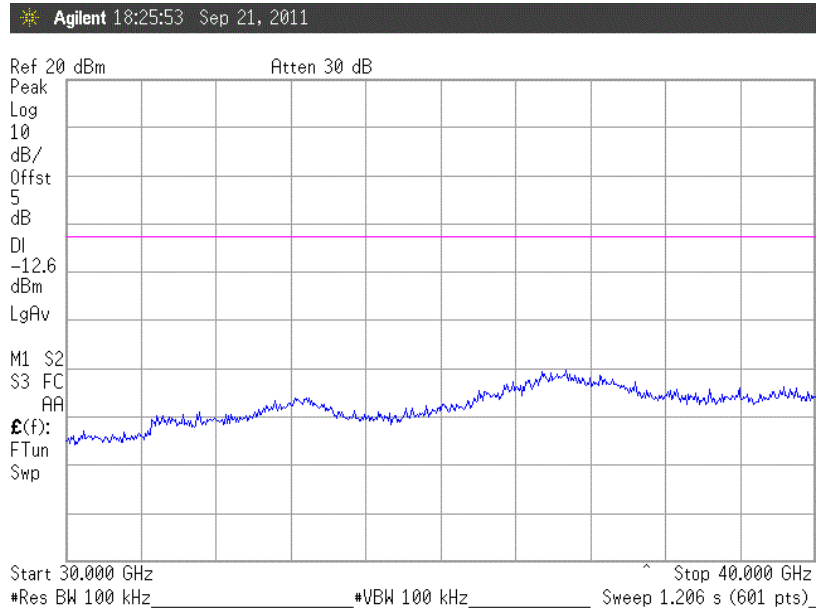




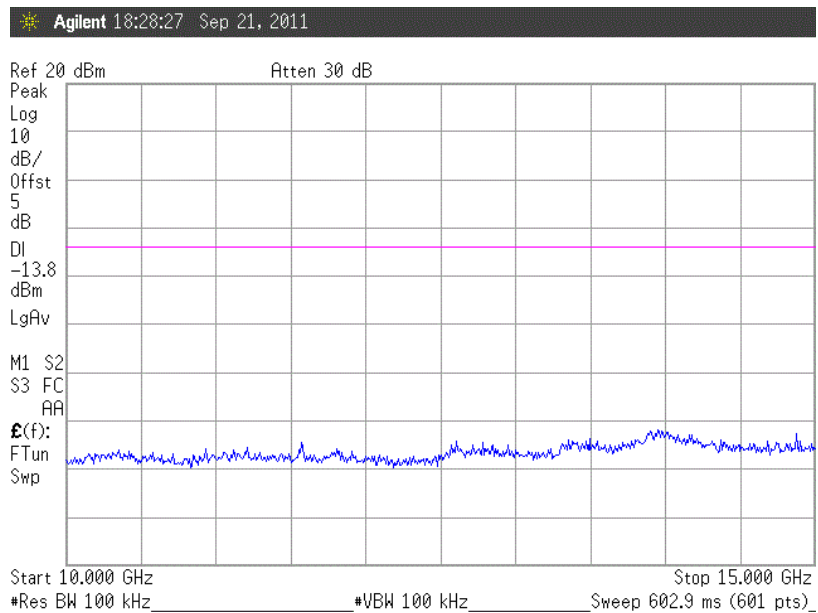
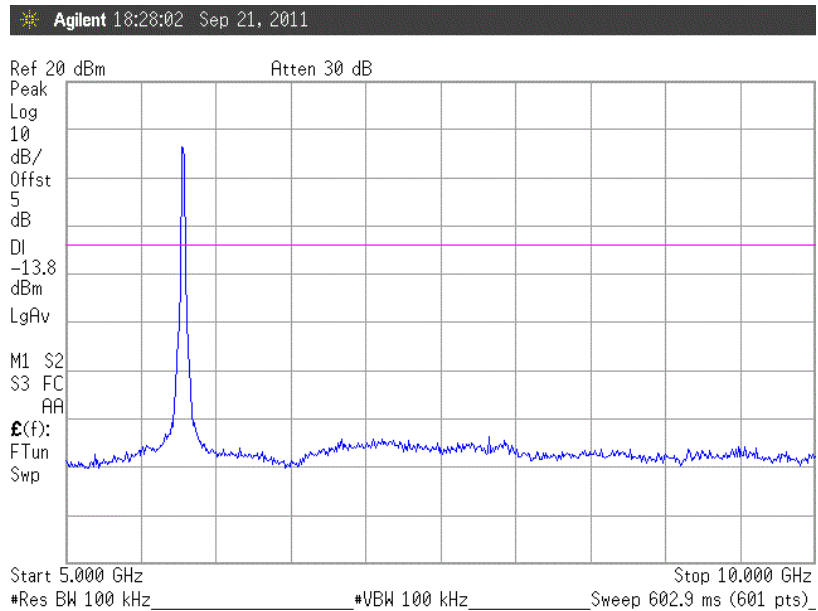
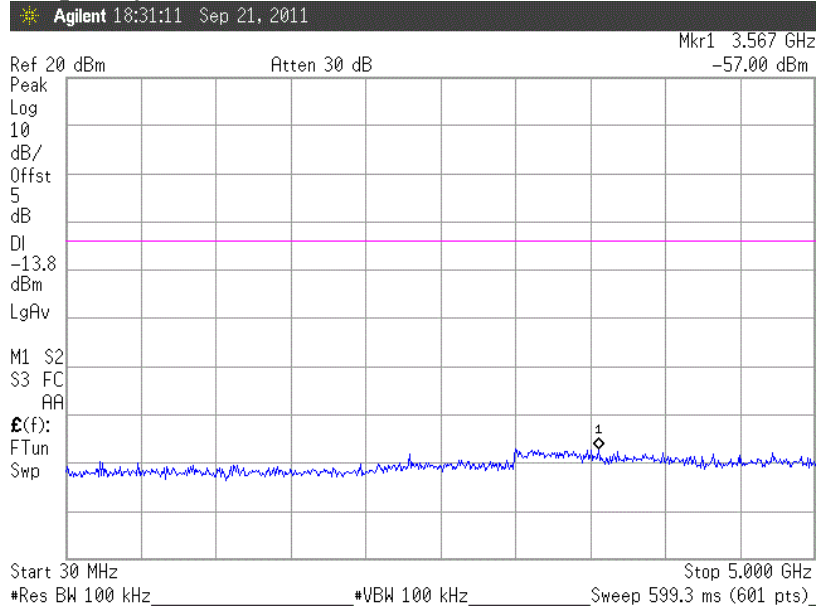
802.11a, Frequency: 5745MHz

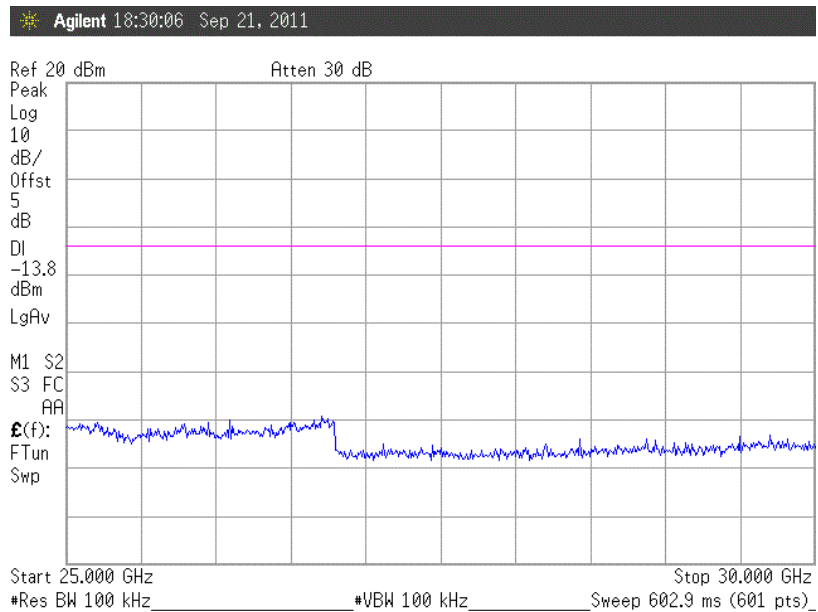
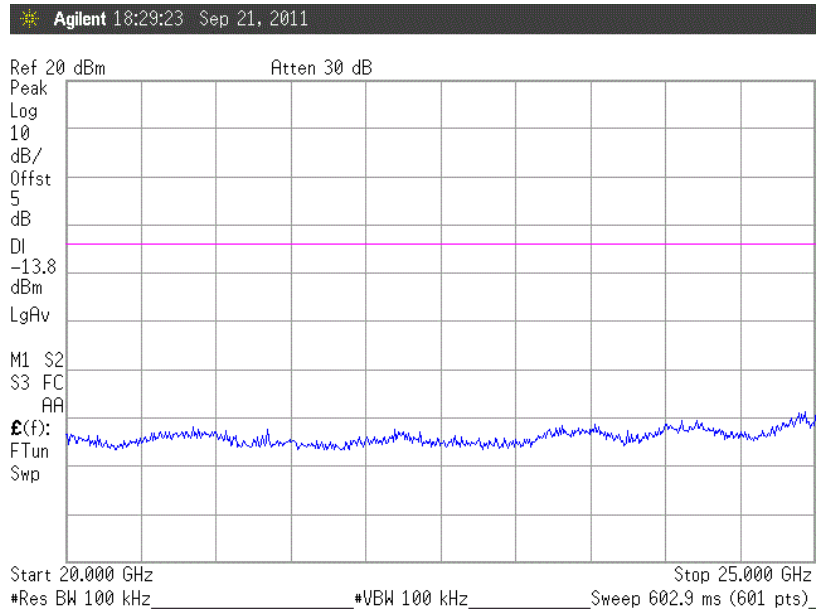
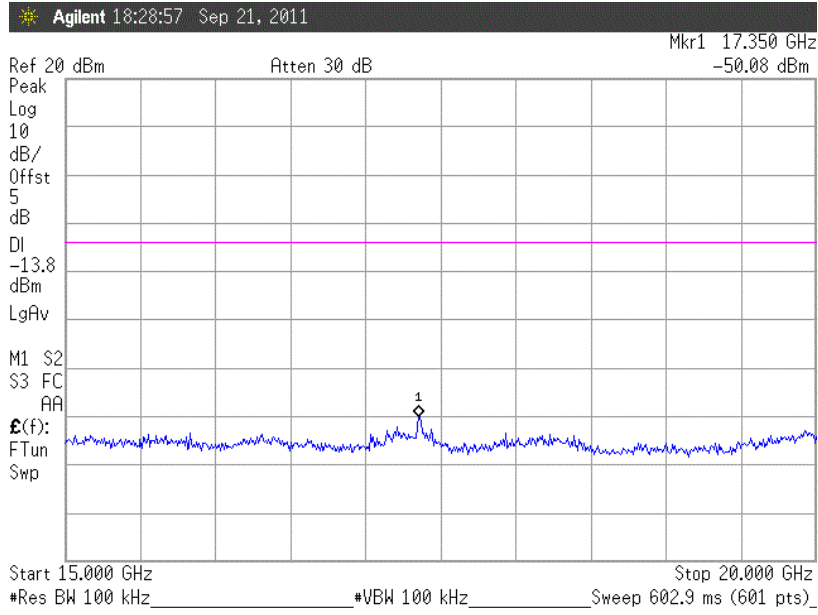


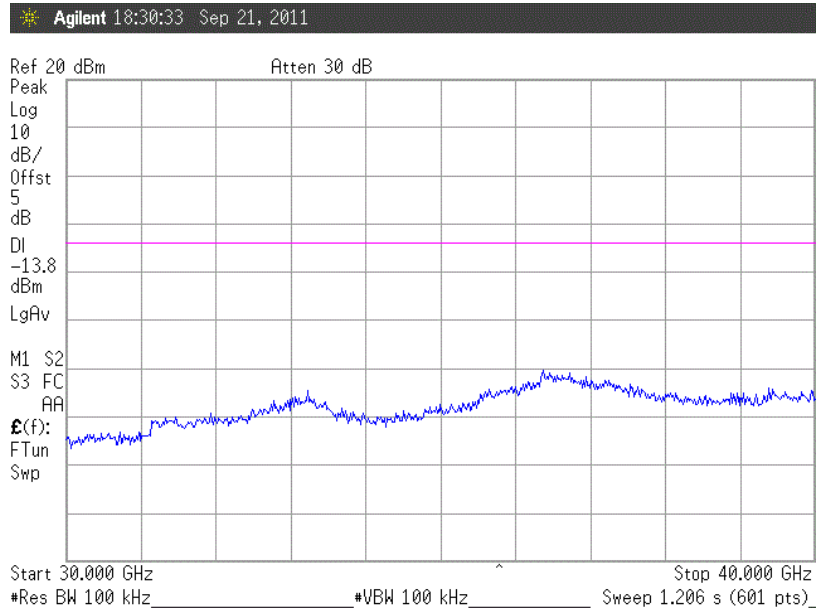




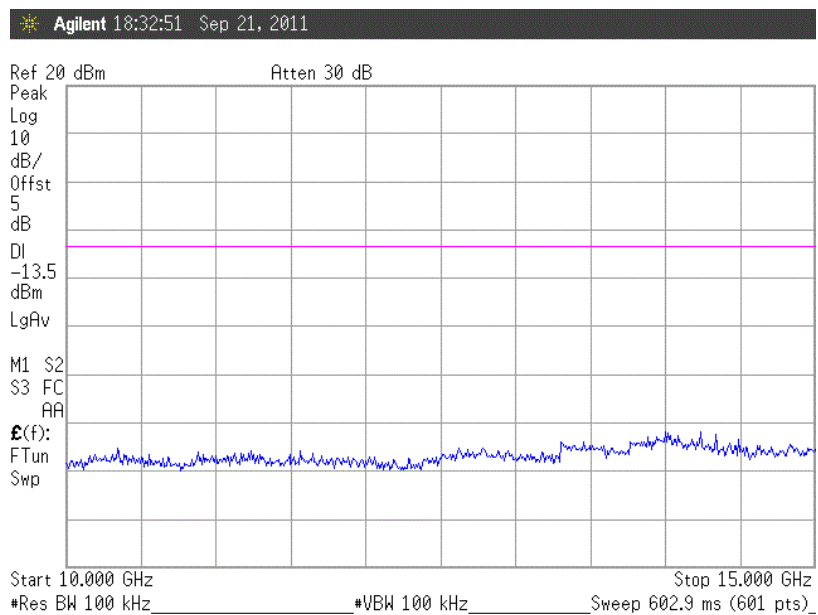
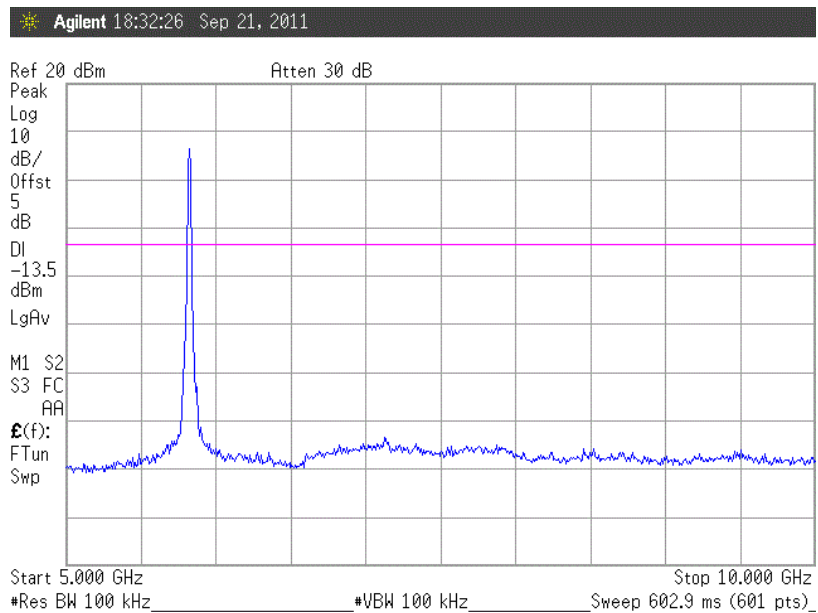
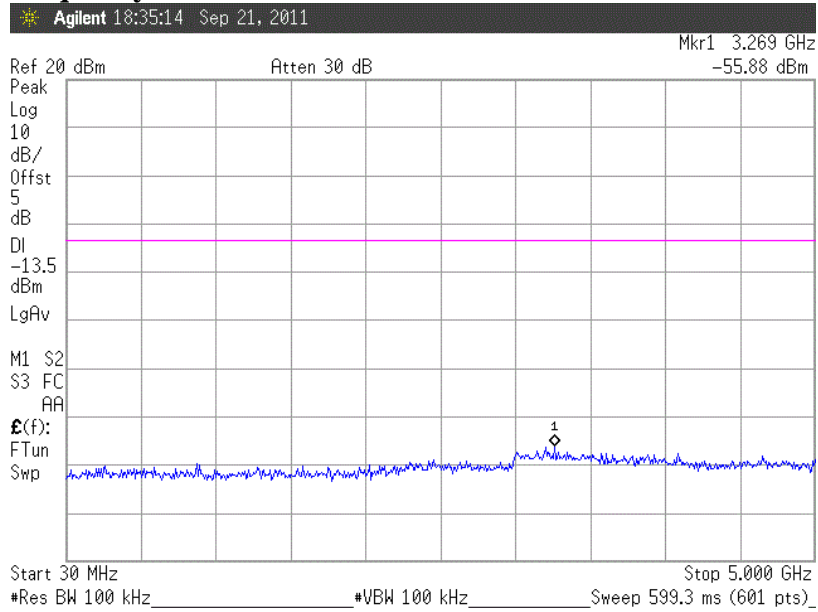
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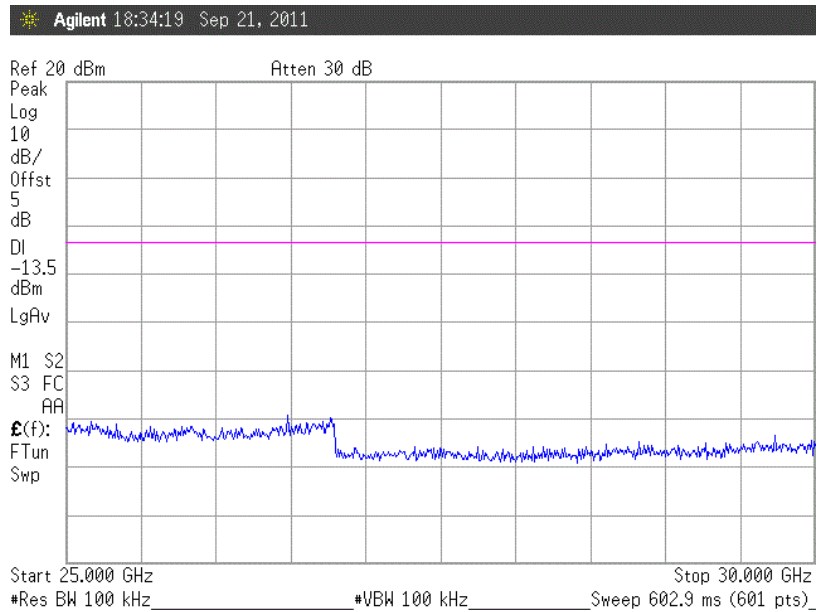
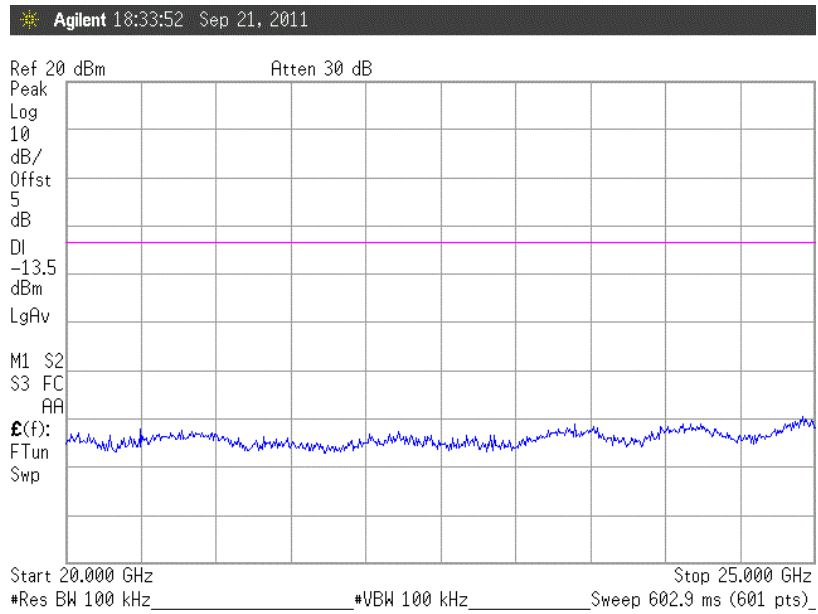
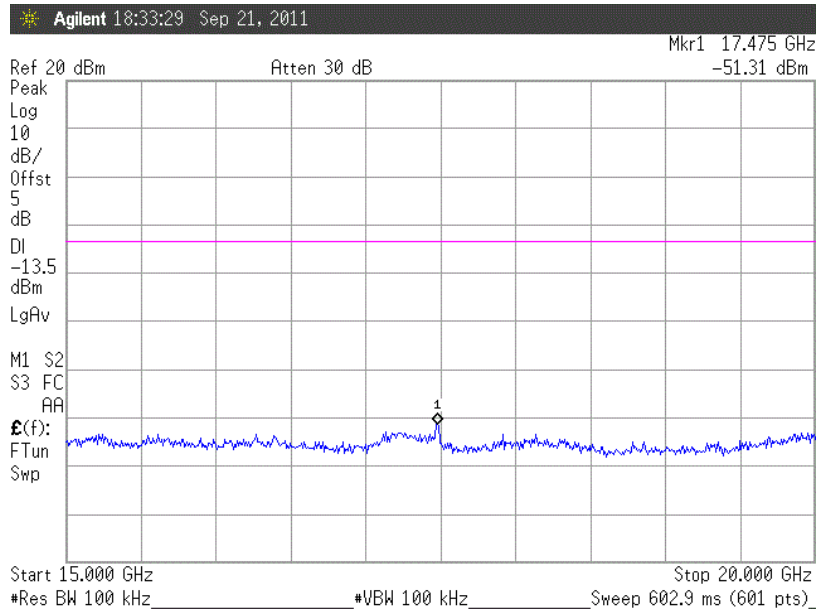


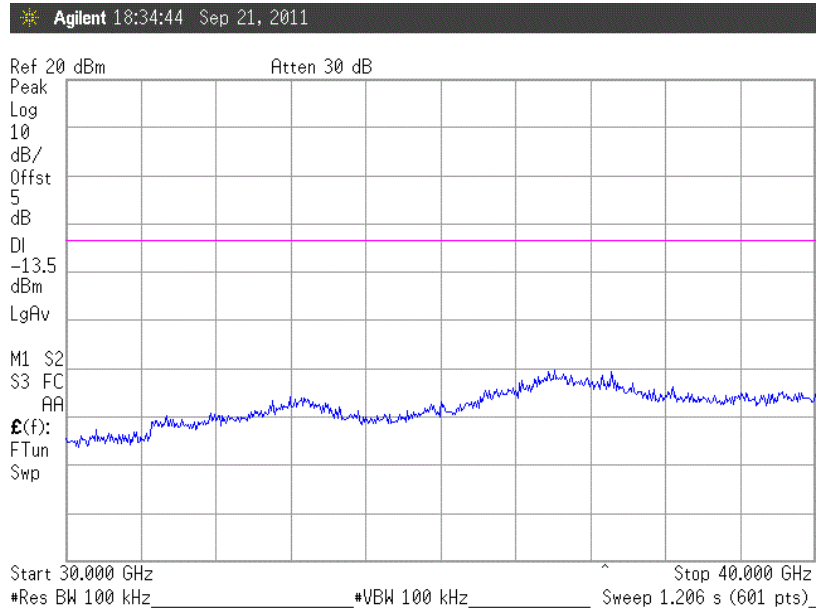




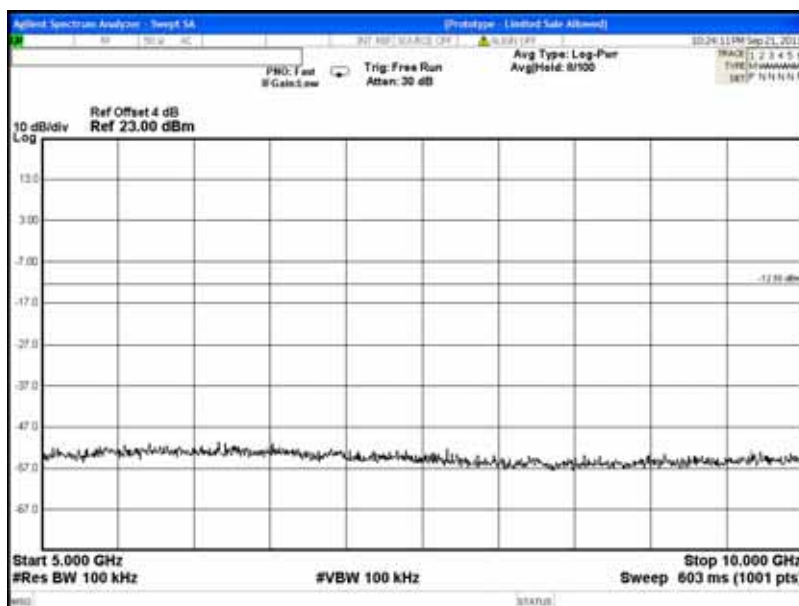
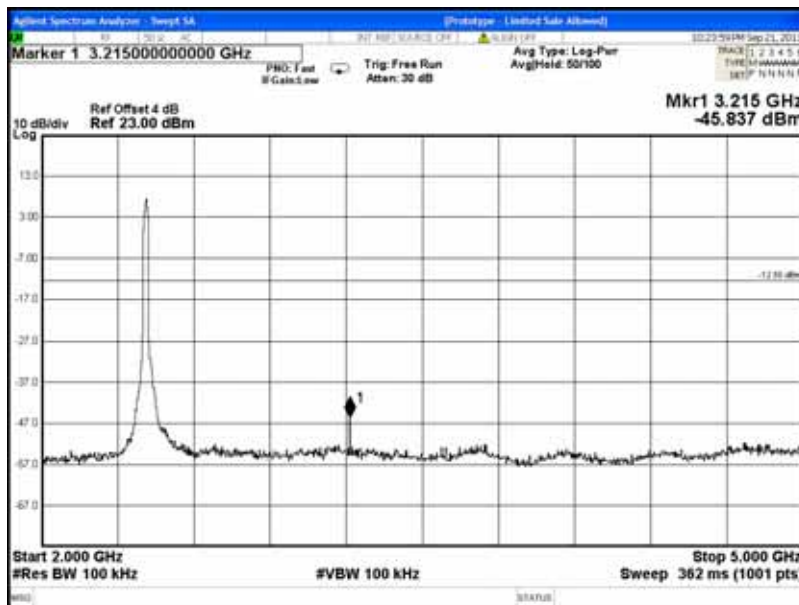
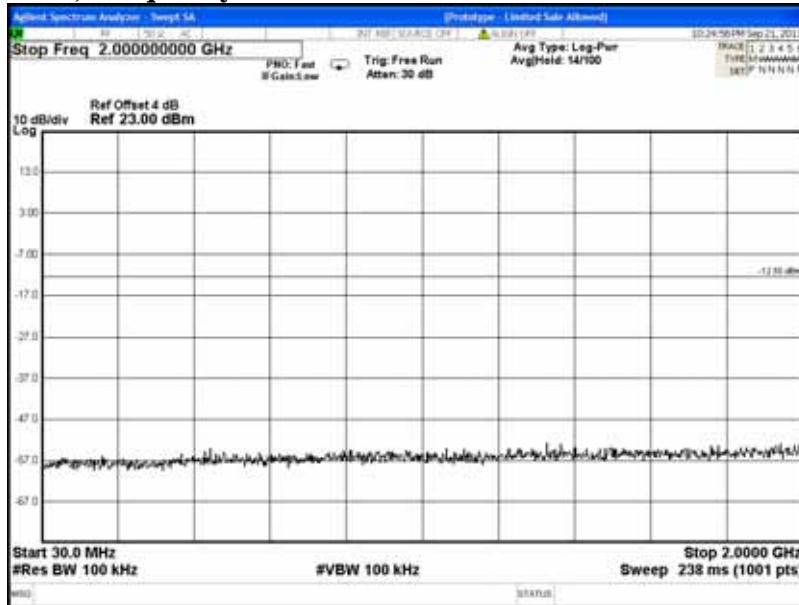
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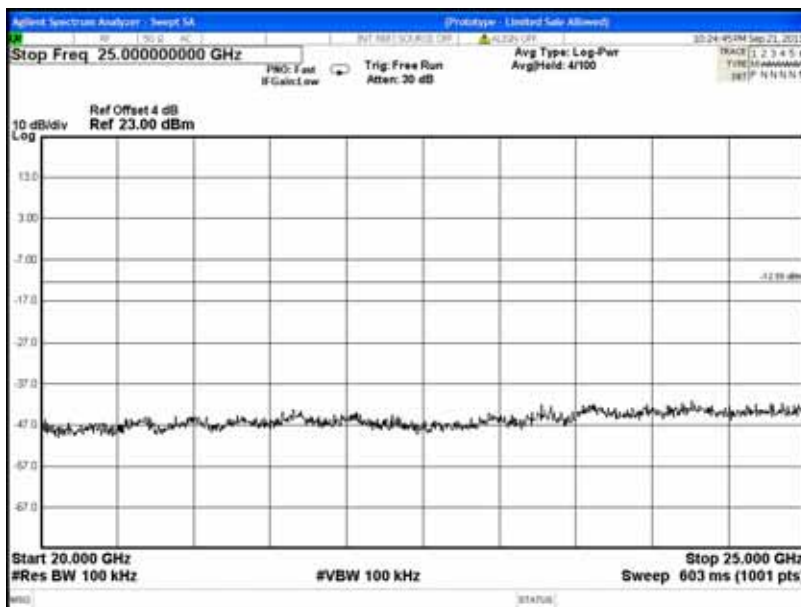
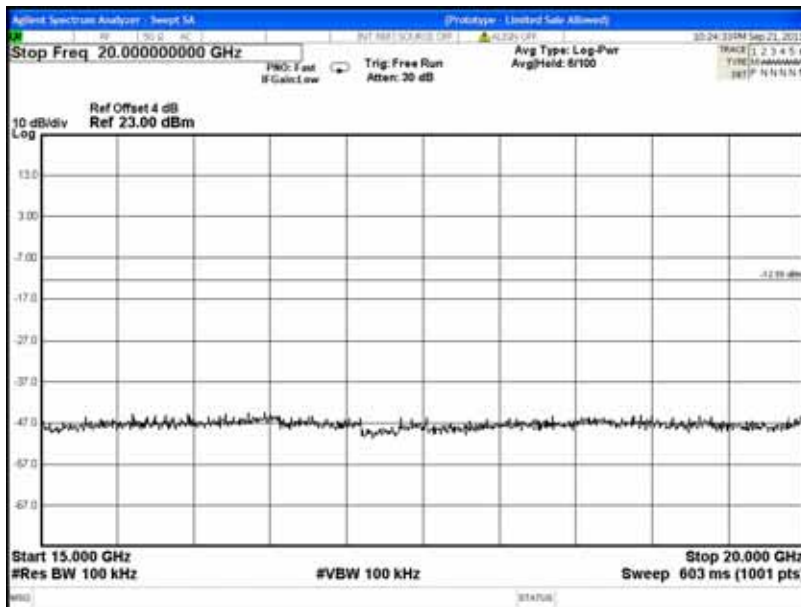
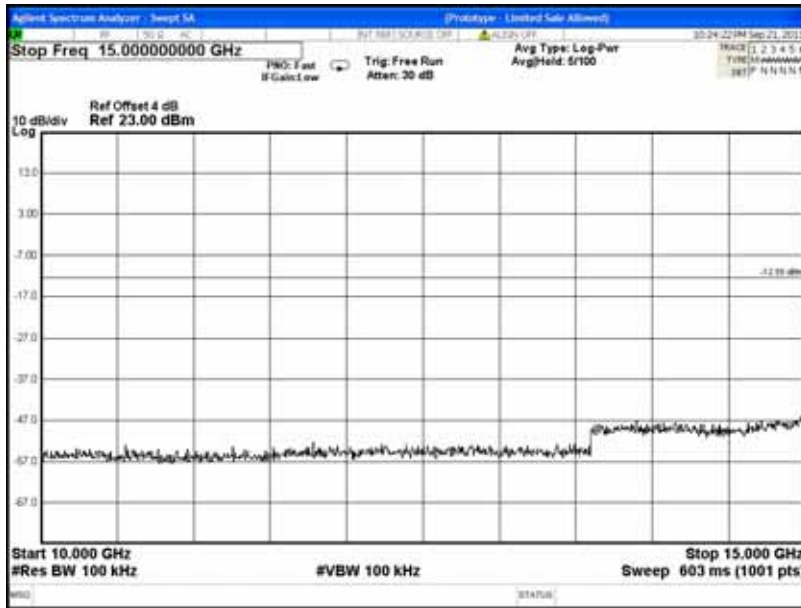




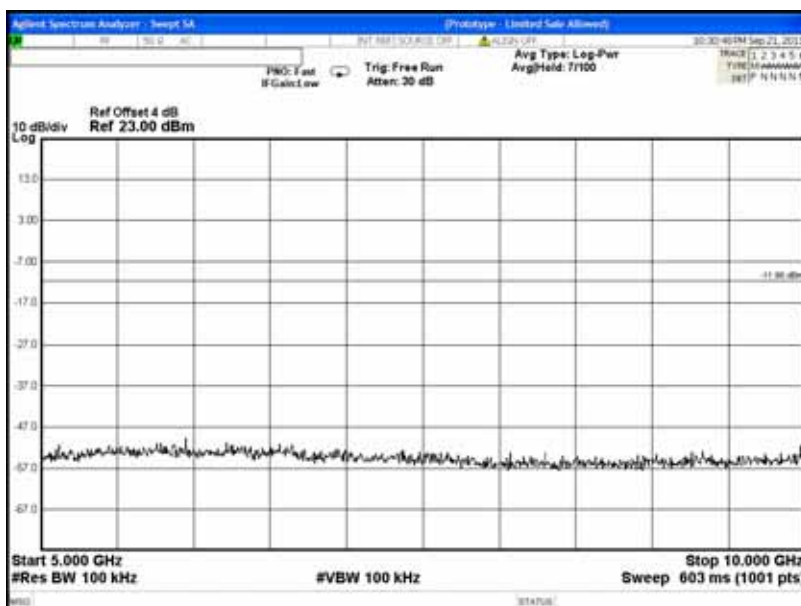
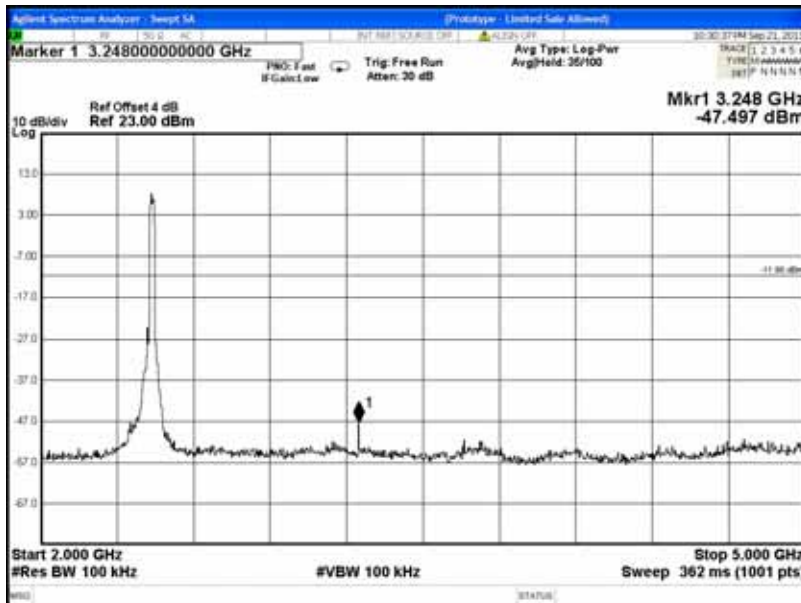
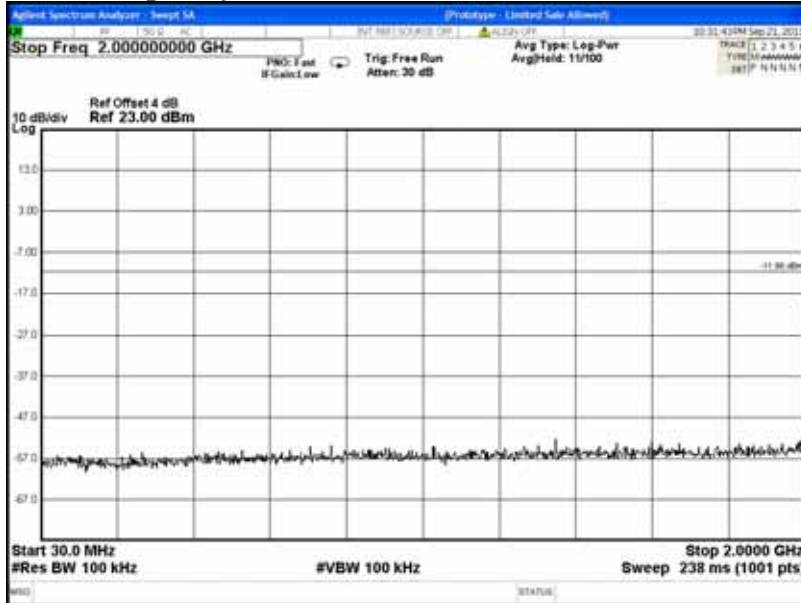


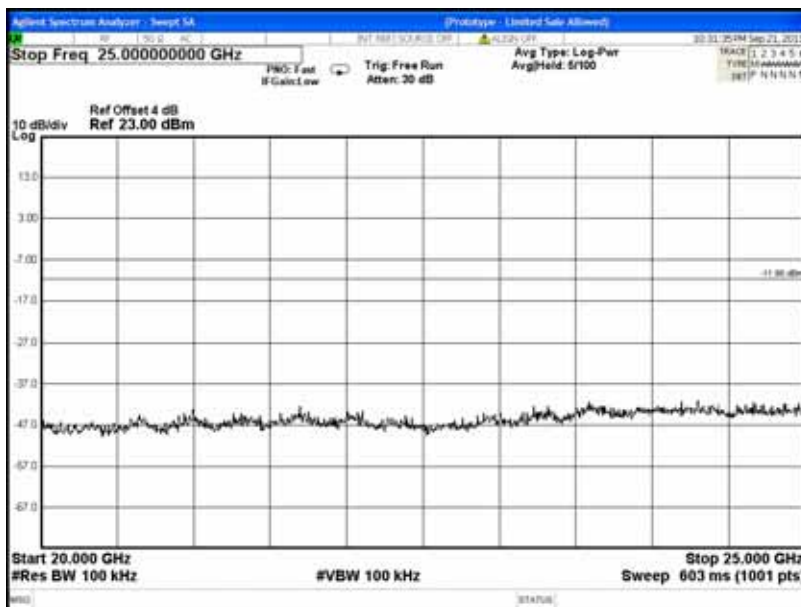
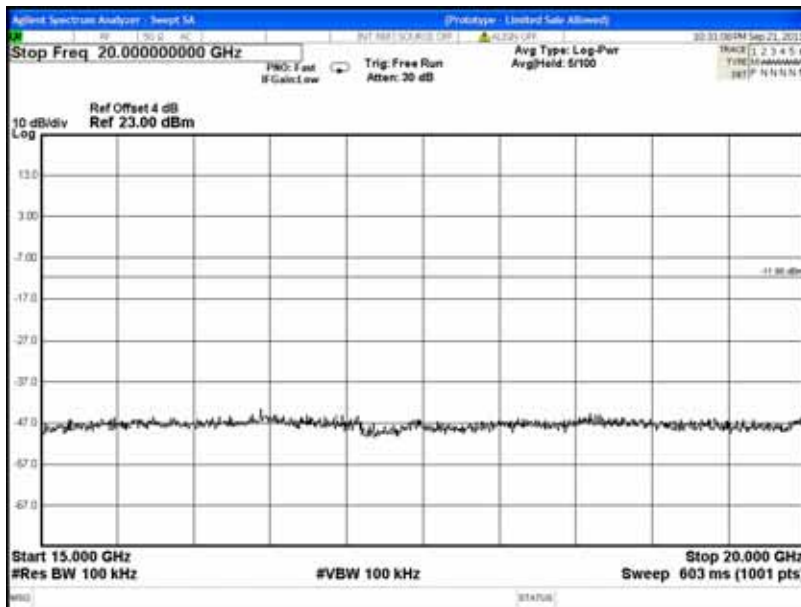
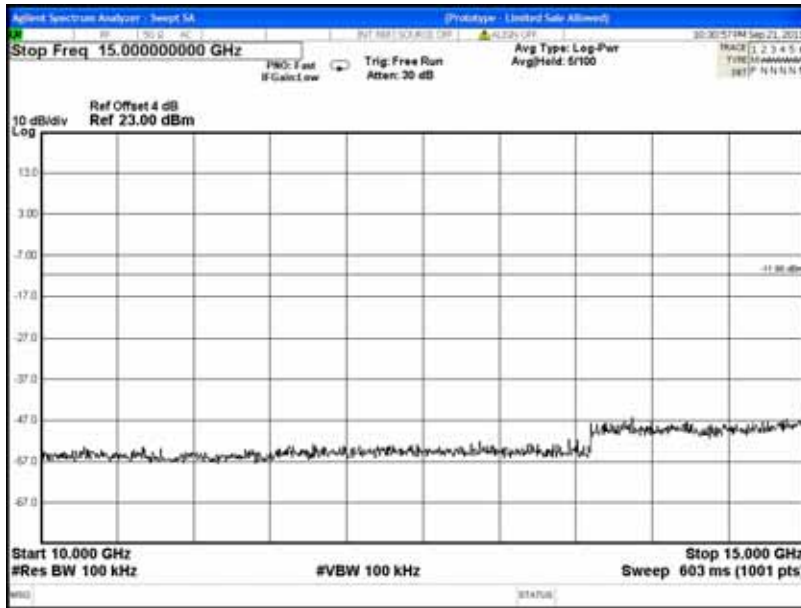
802.11n-HT20, Frequency: 2412MHz



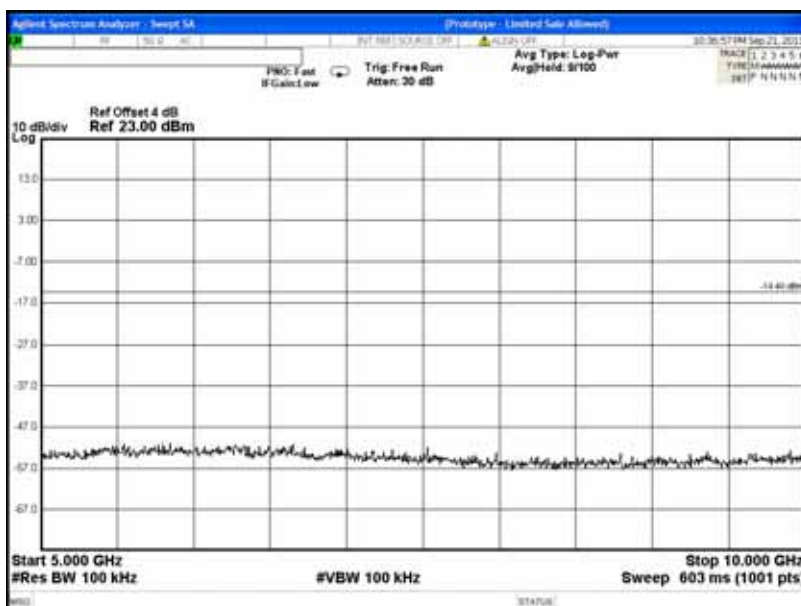
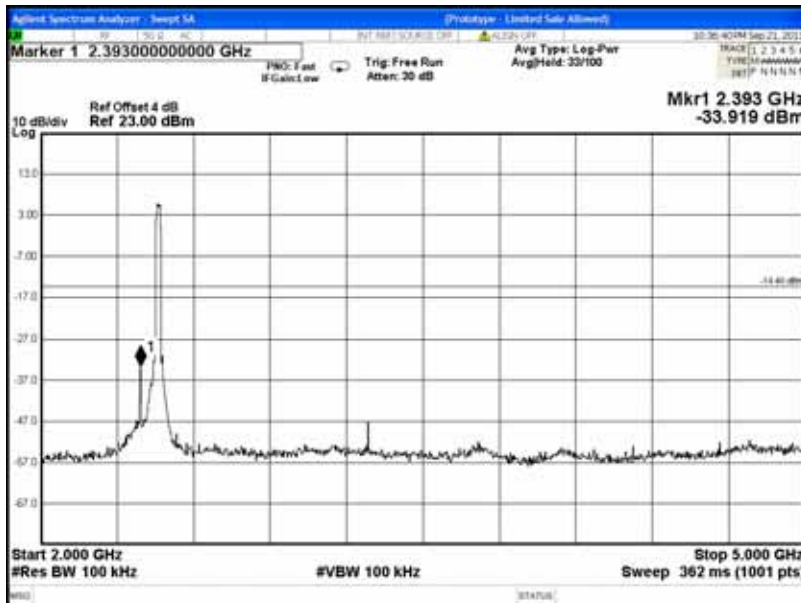
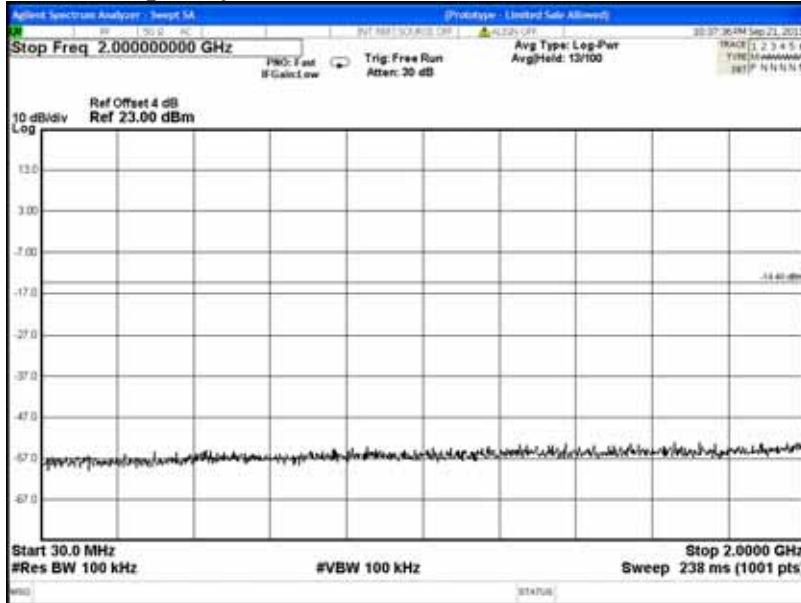


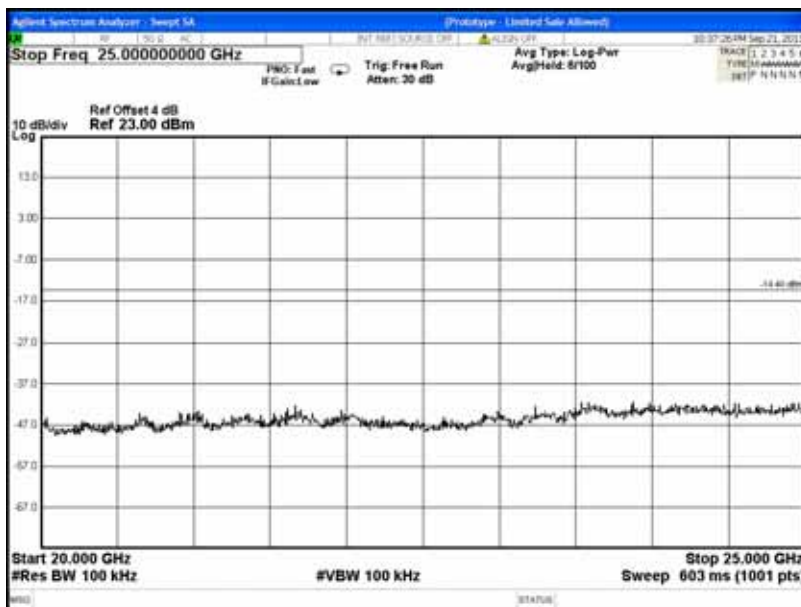
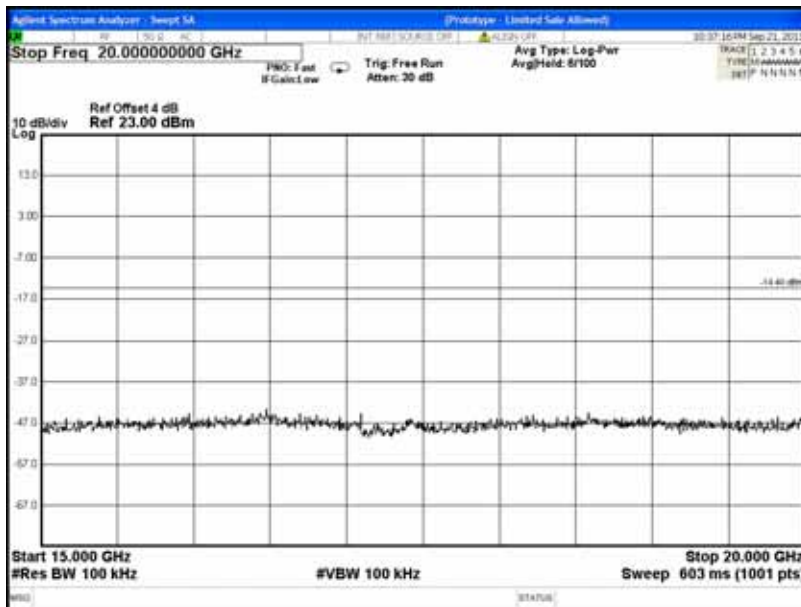
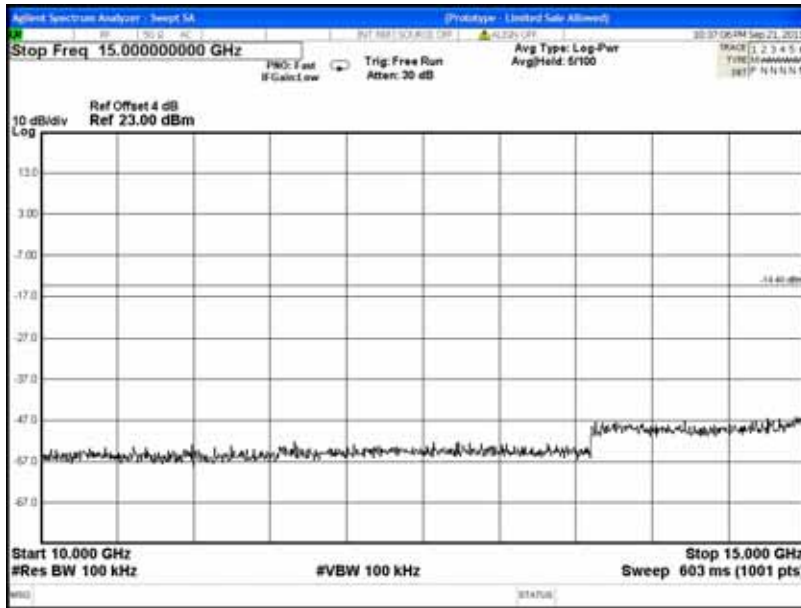
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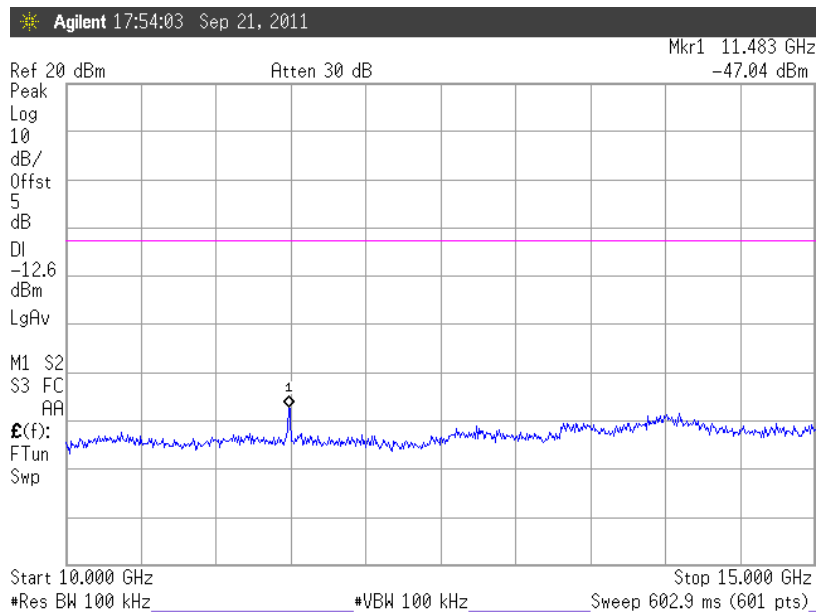
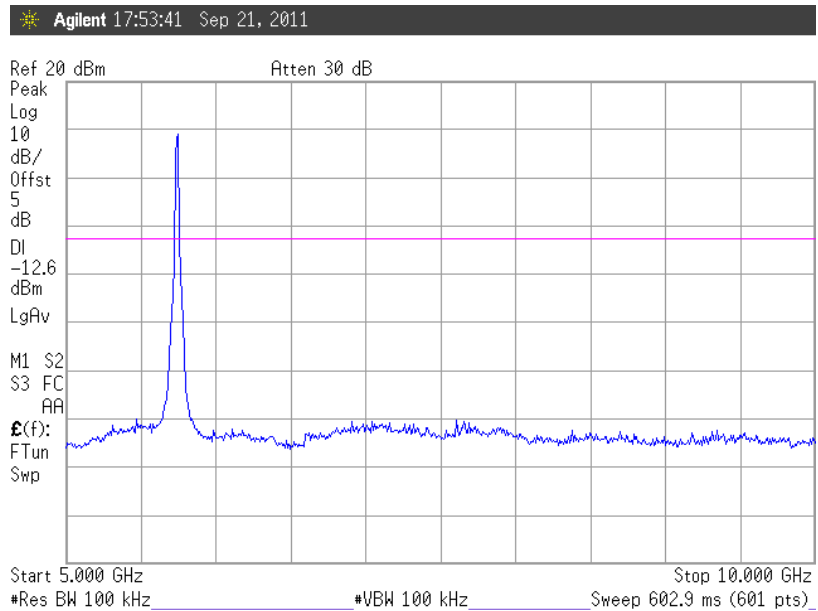
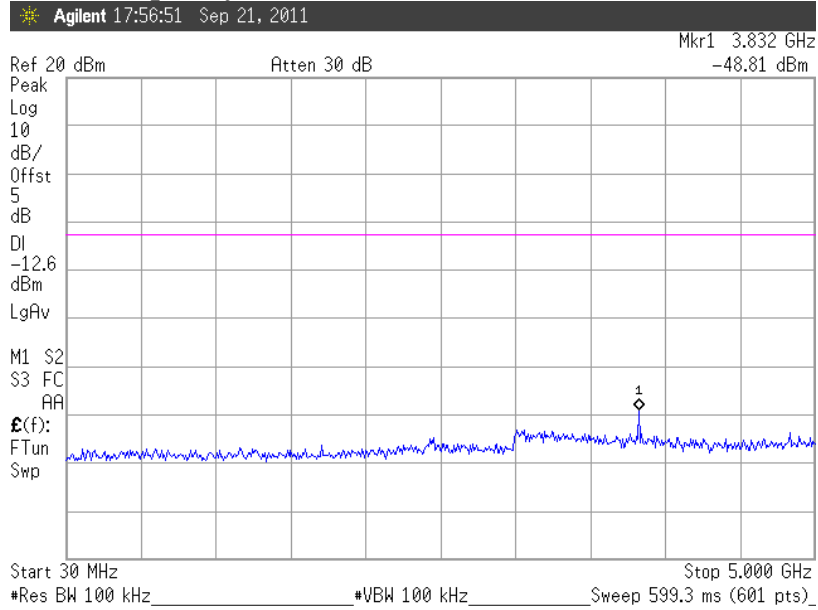


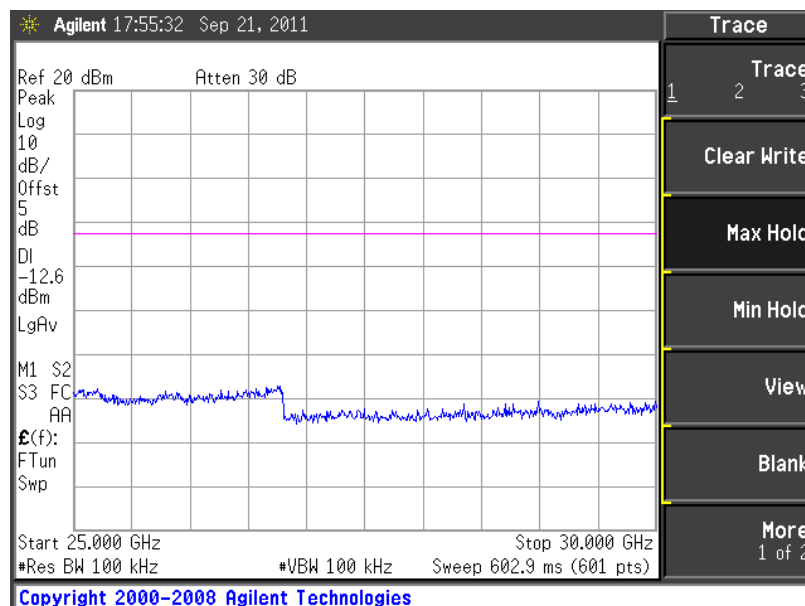
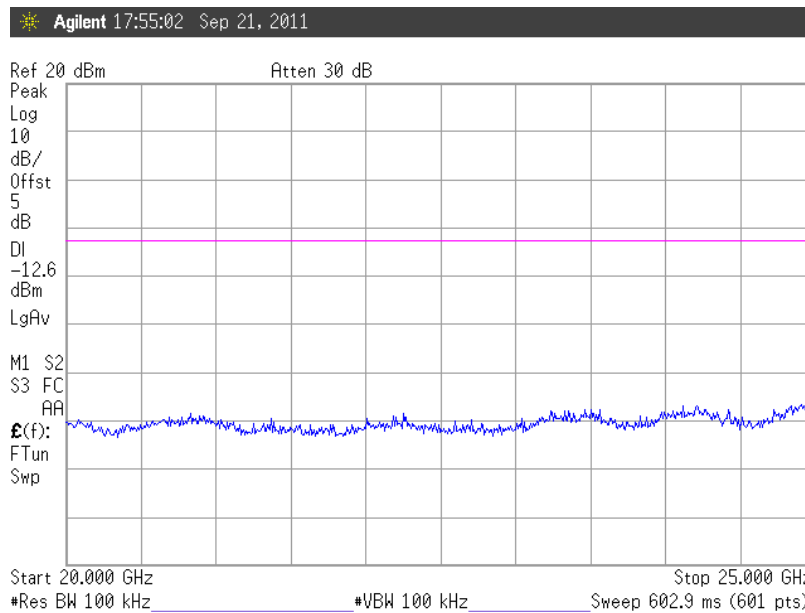
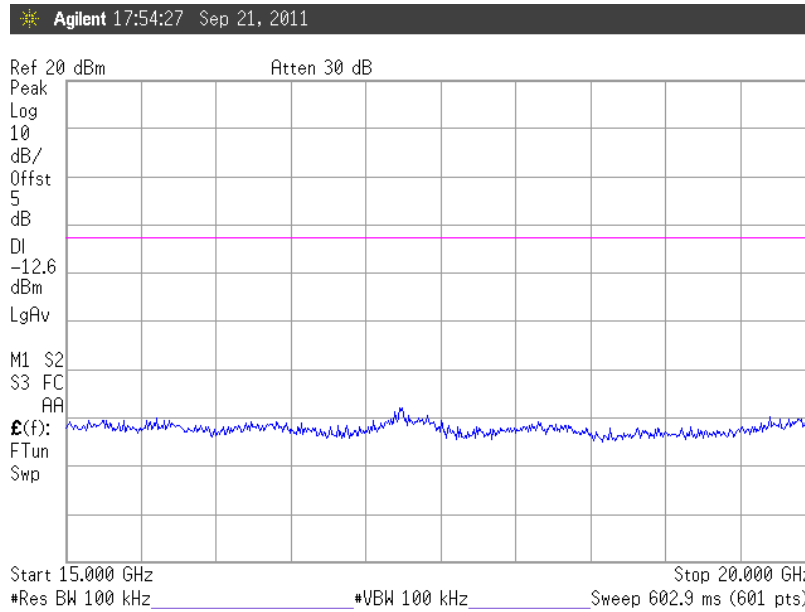
802.11n-HT20, Frequency: 2462MHz

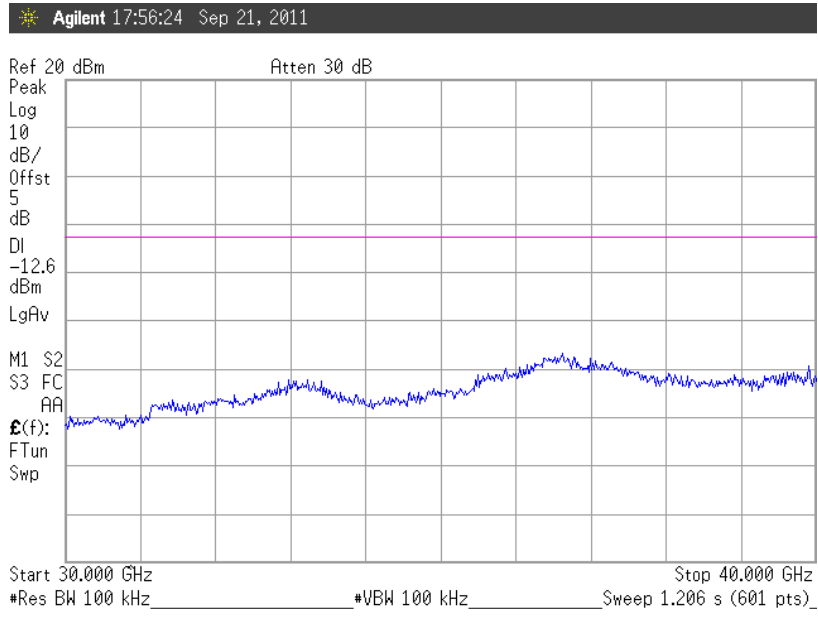




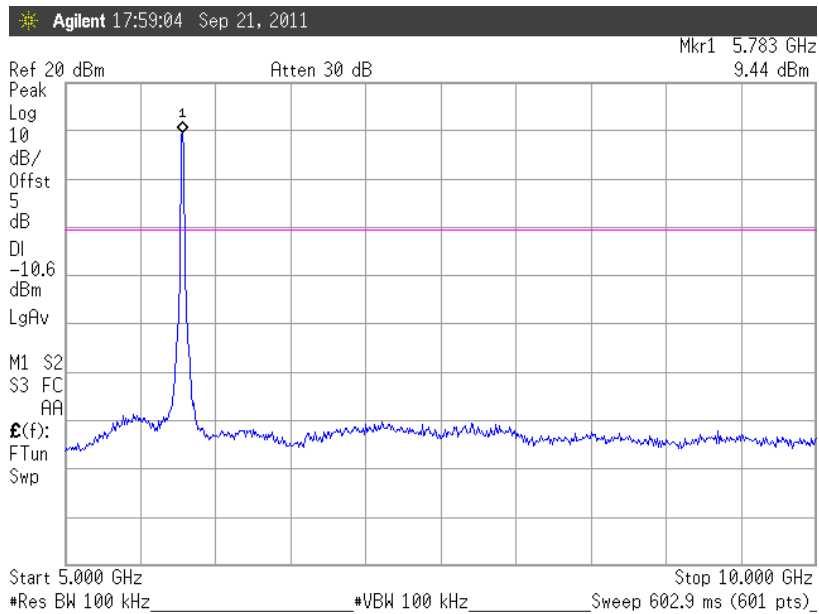
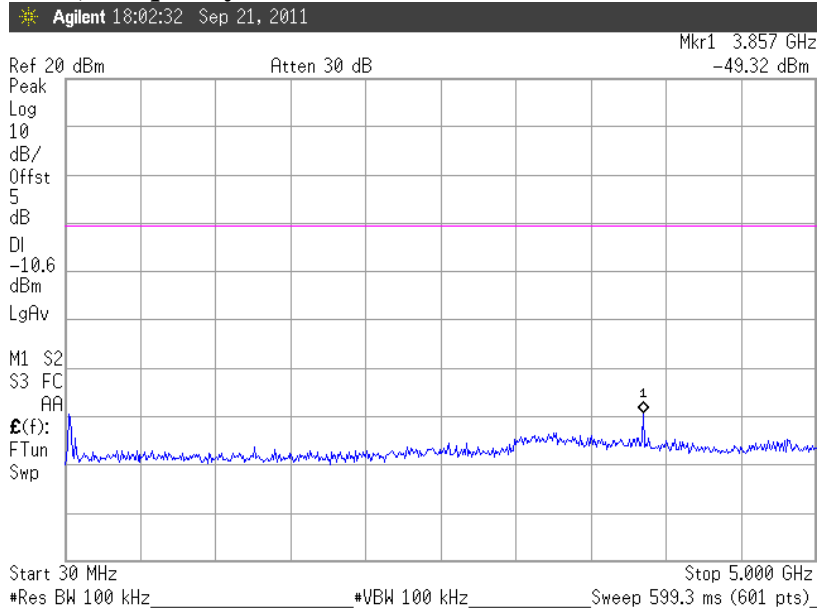
802.11n-HT20, Frequency: 5745MHz

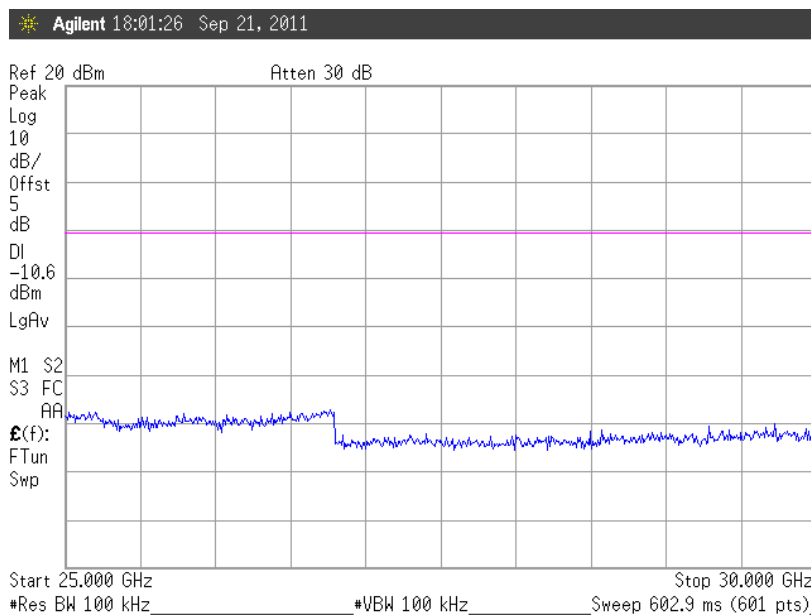
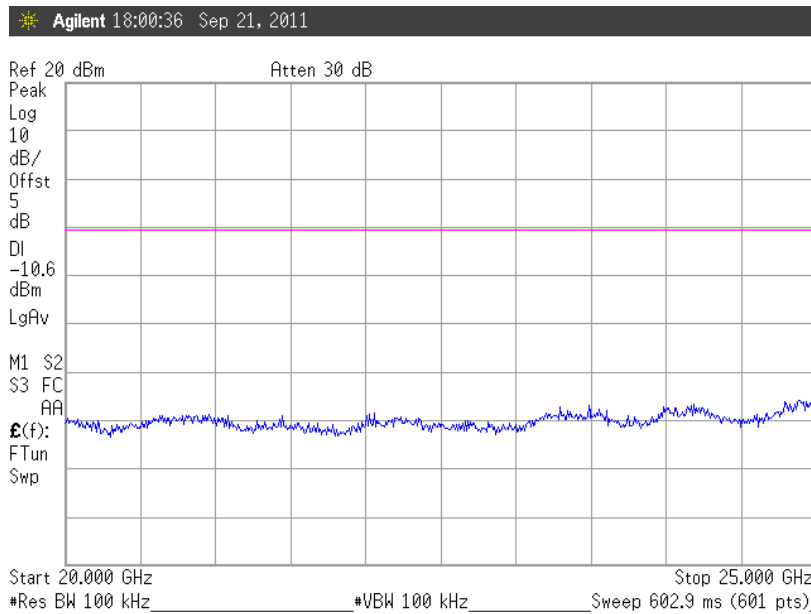
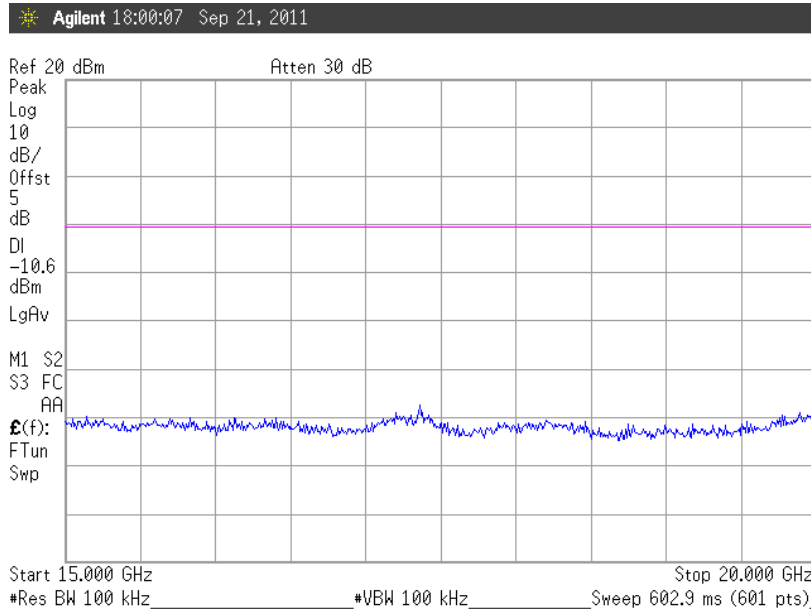


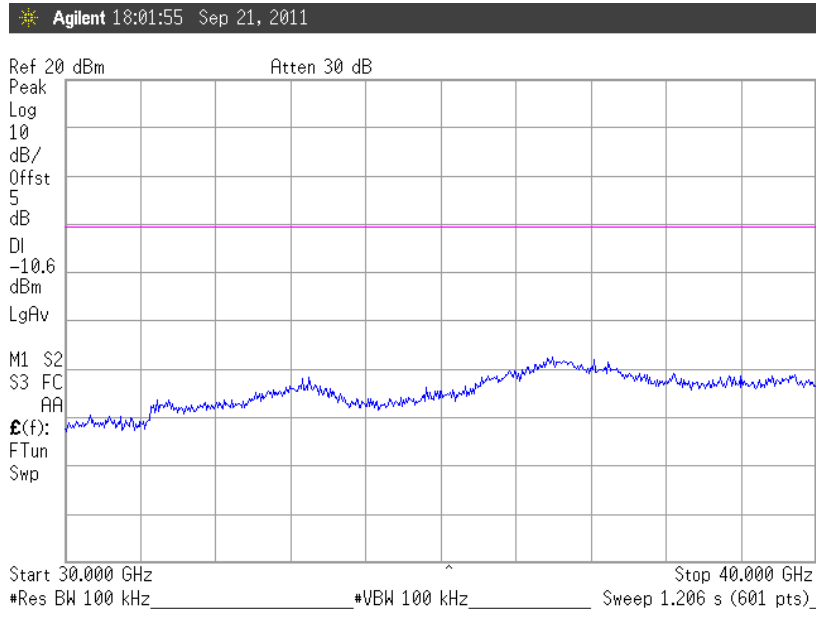




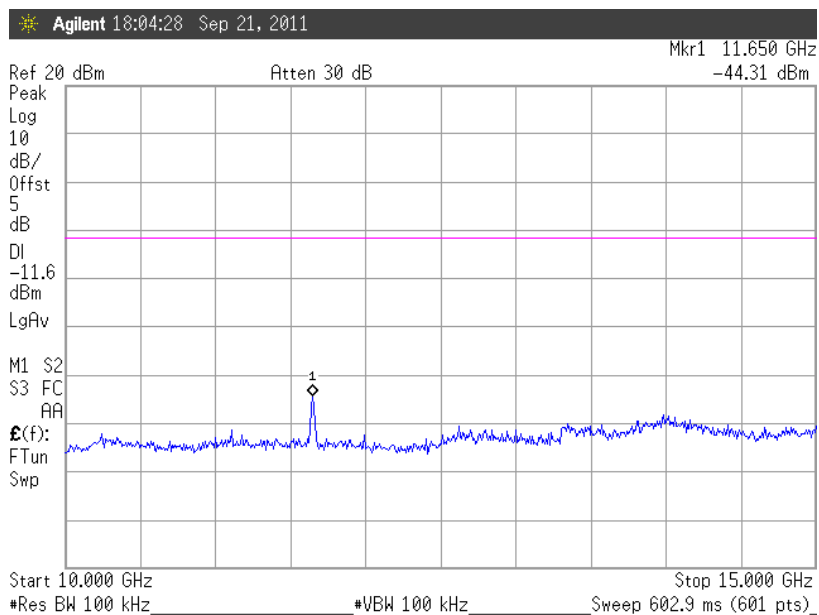
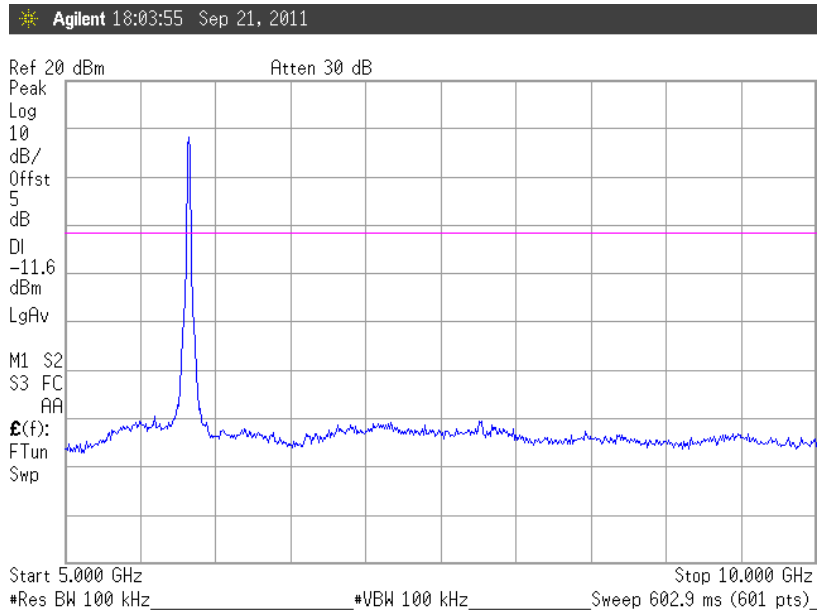
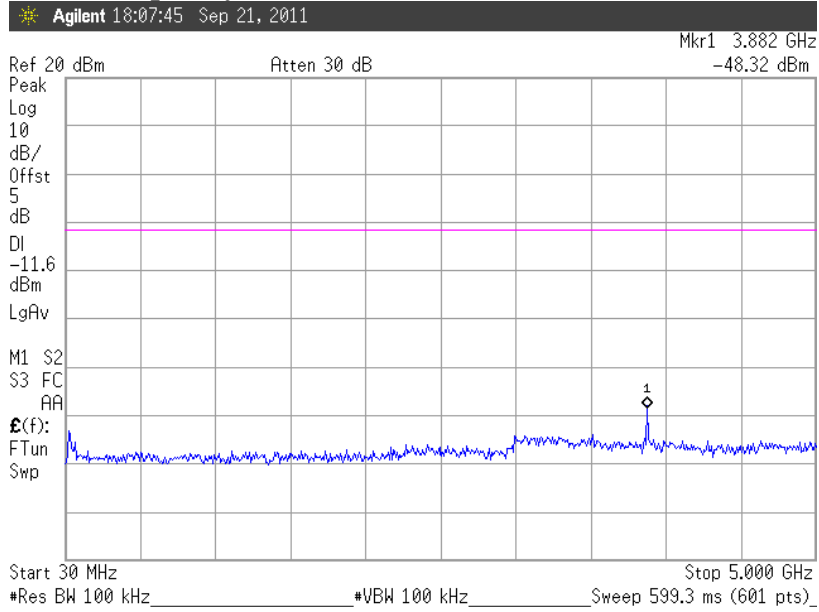
802.11n-HT20, Frequency: 5785MHz

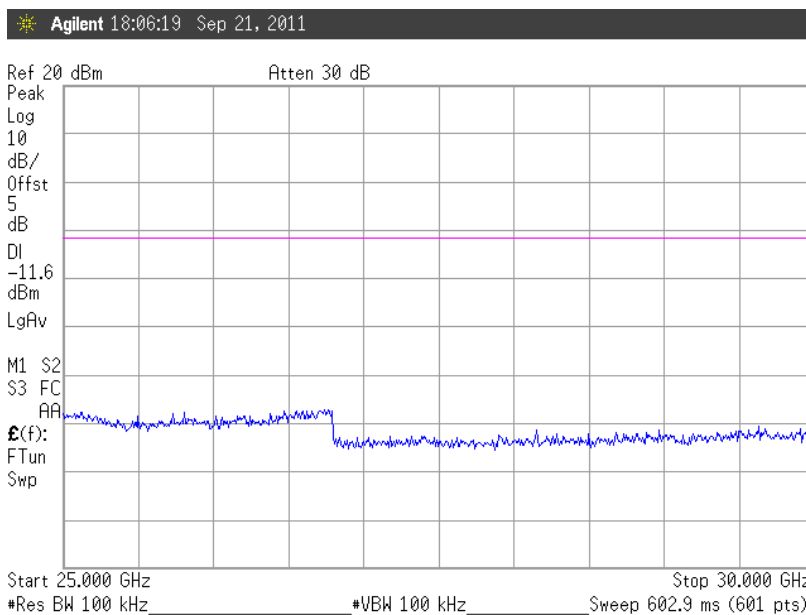
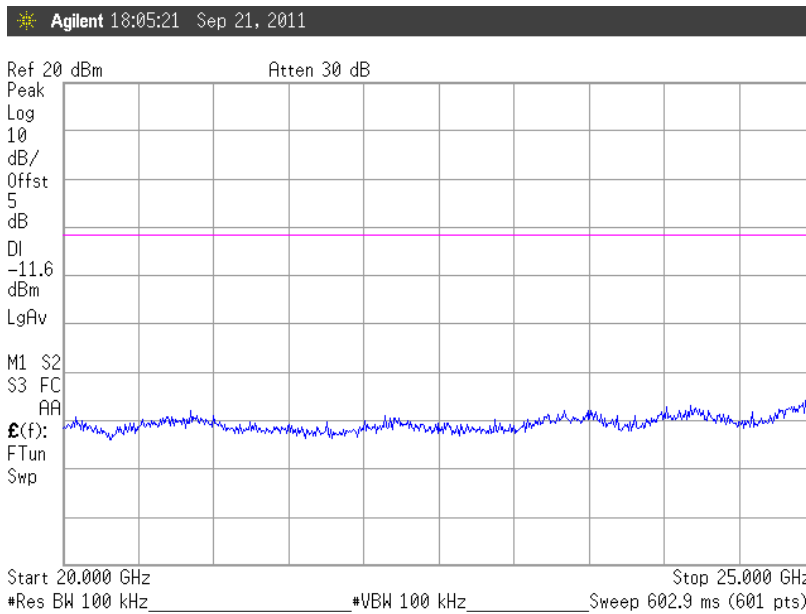
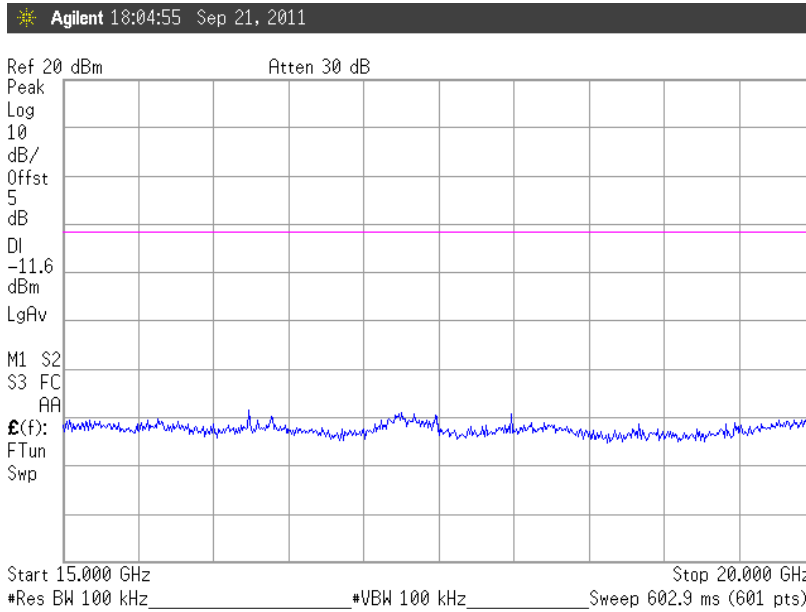


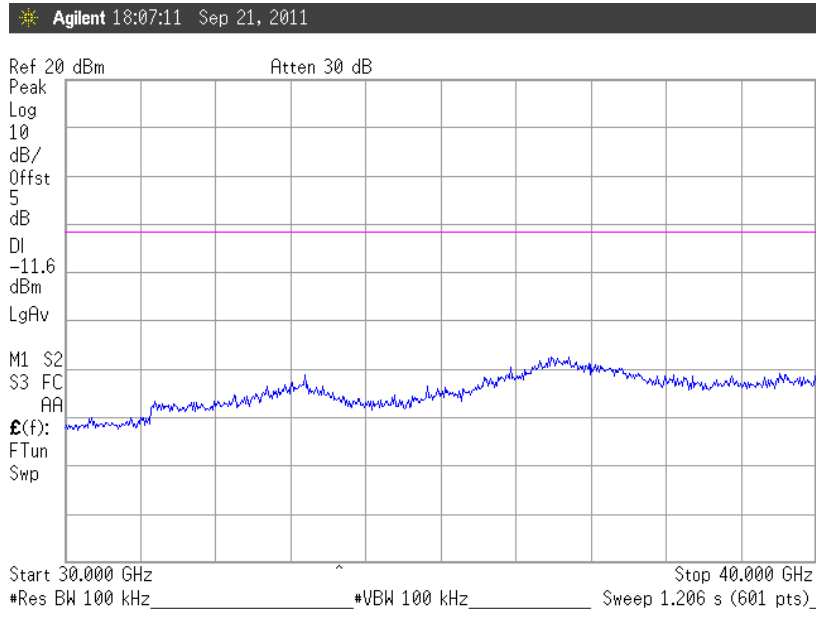




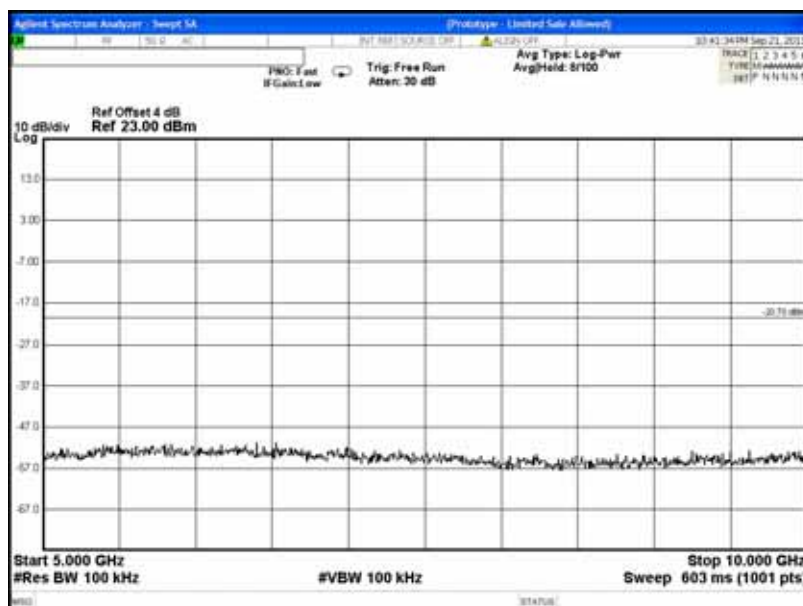
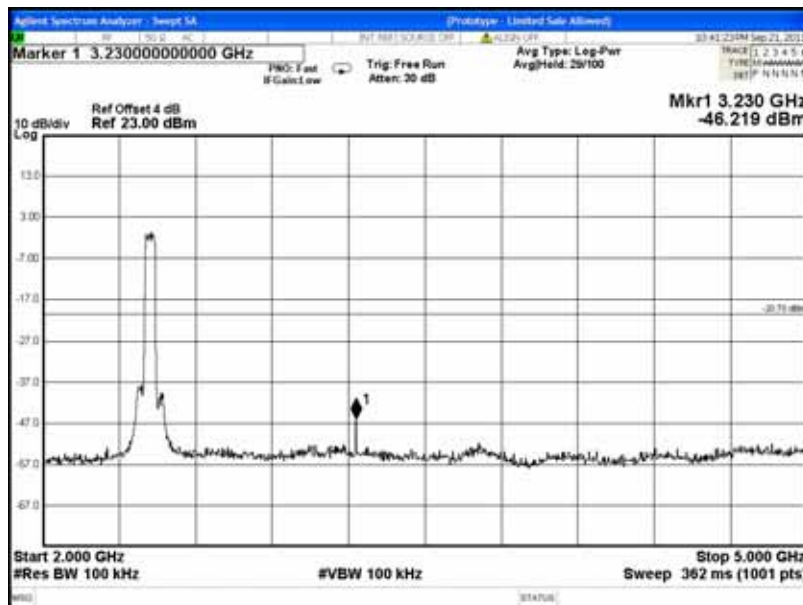
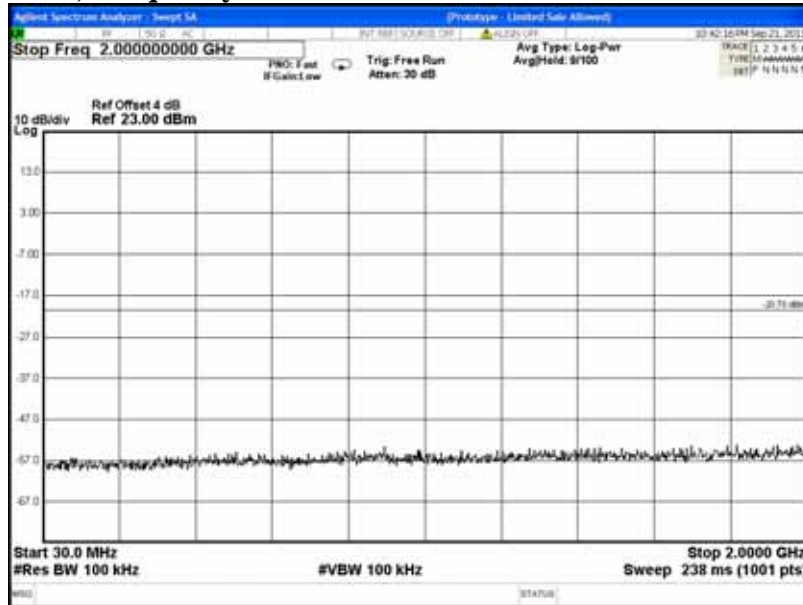
802.11n-HT20, Frequency: 5825MHz

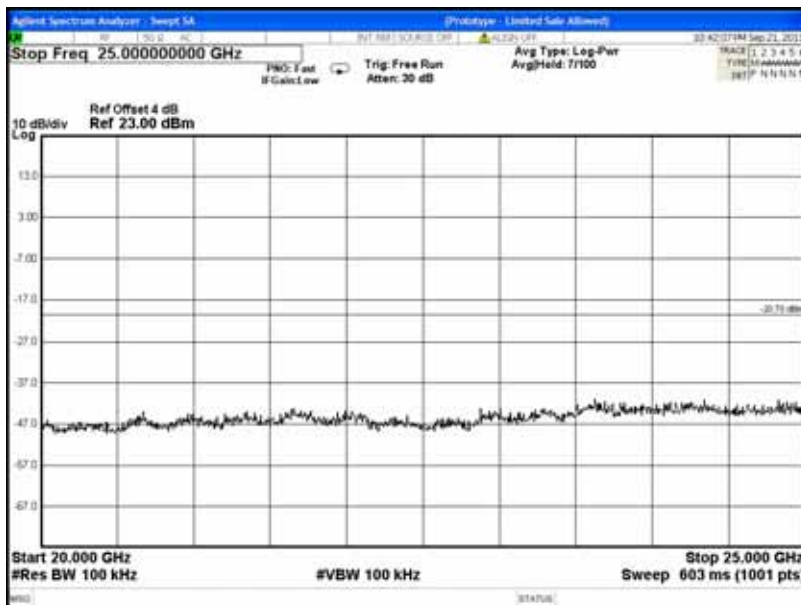
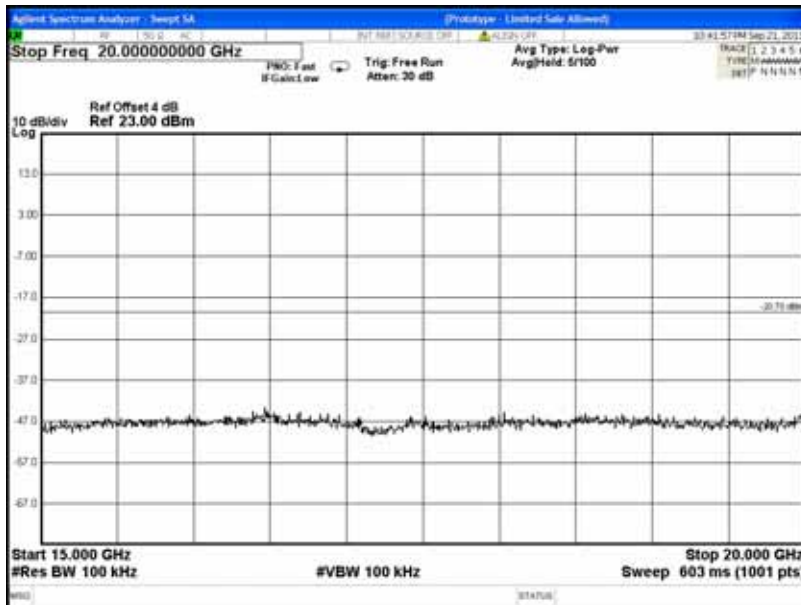
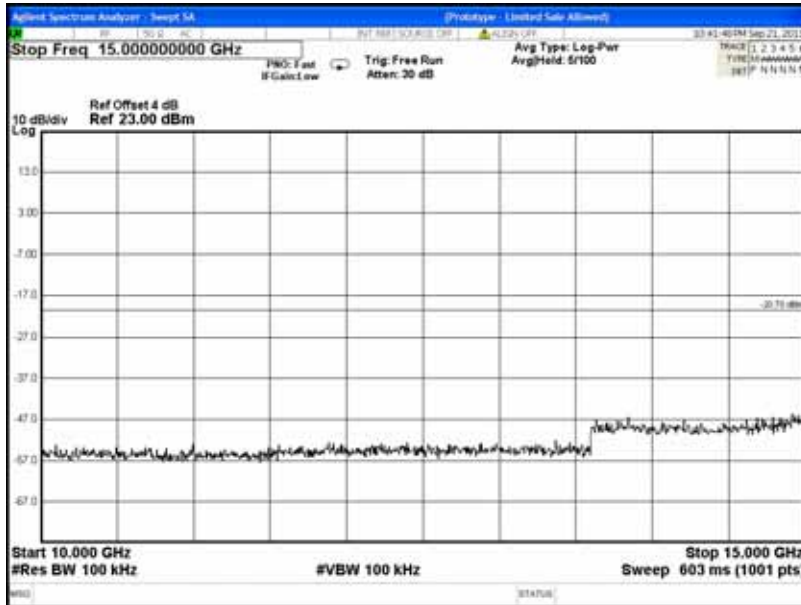




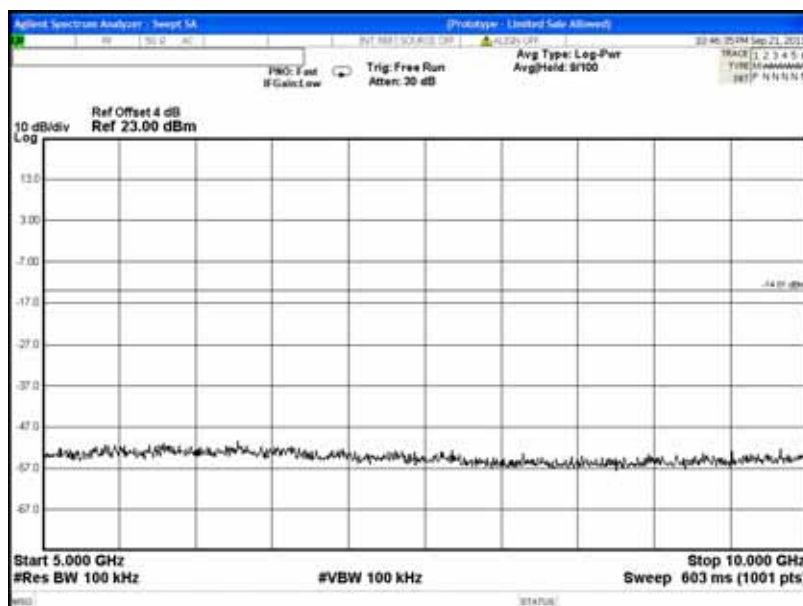
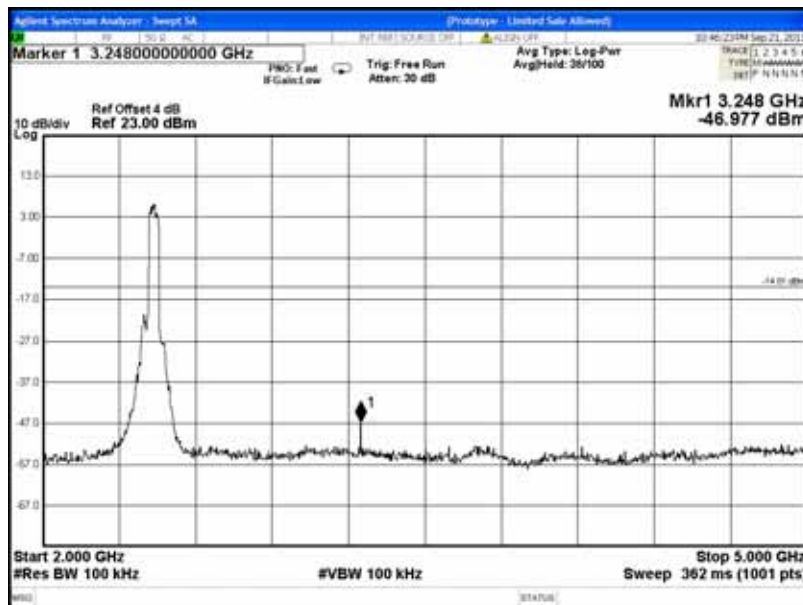
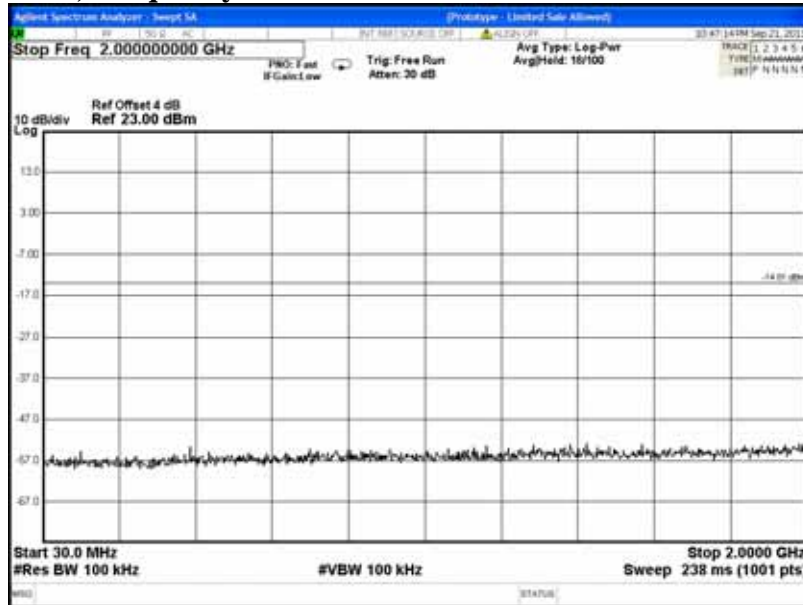


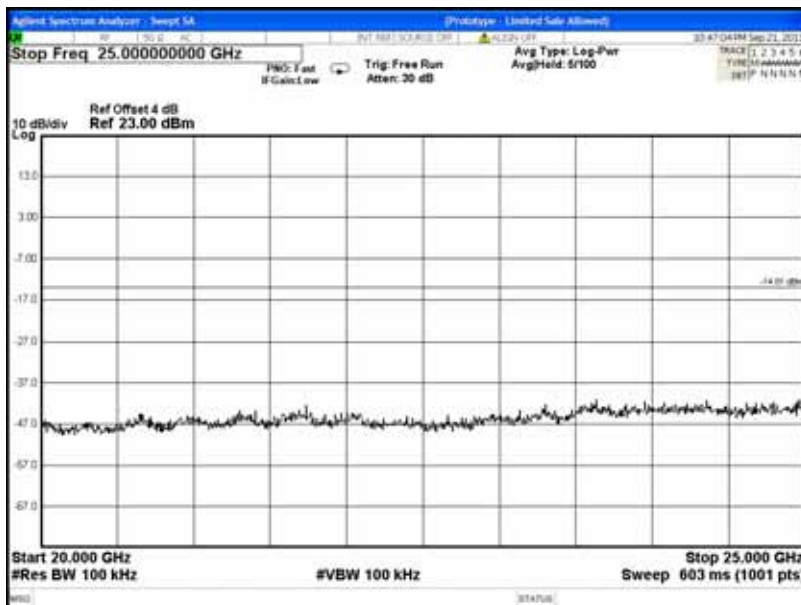
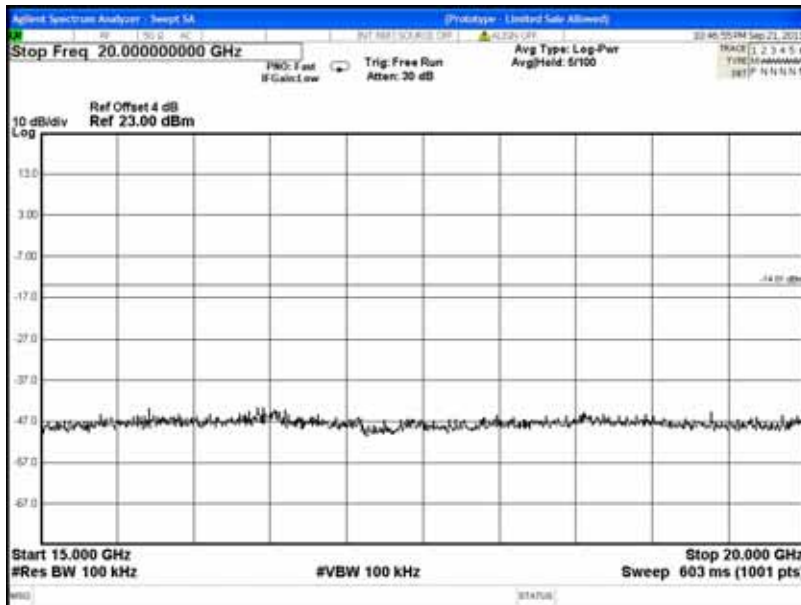
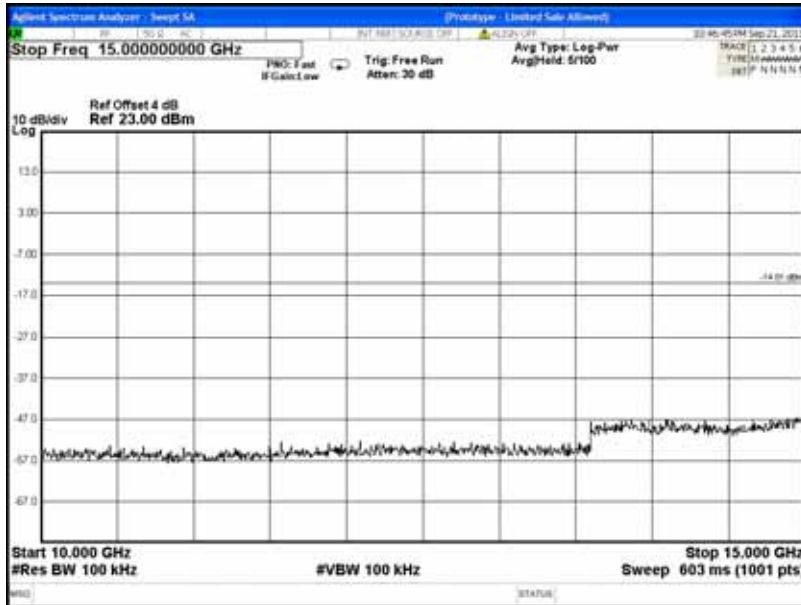
802.11n-HT40, Frequency: 2422MHz



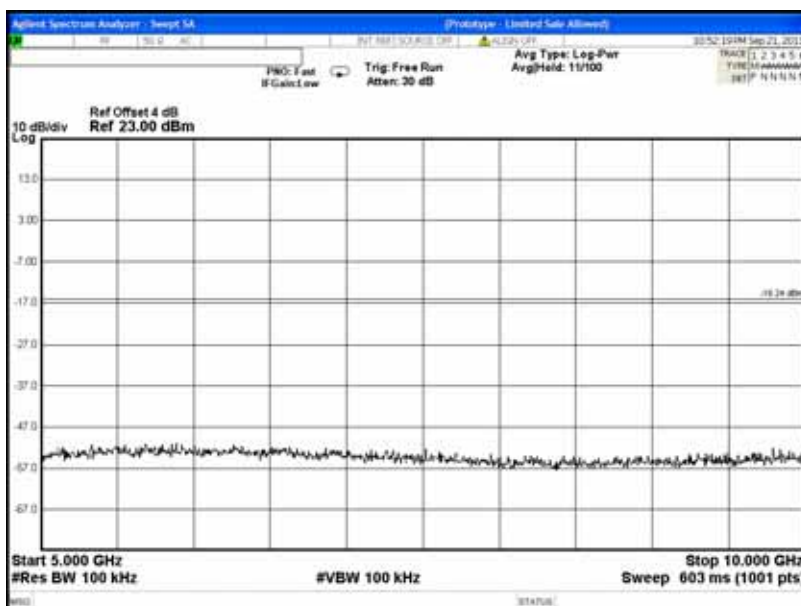
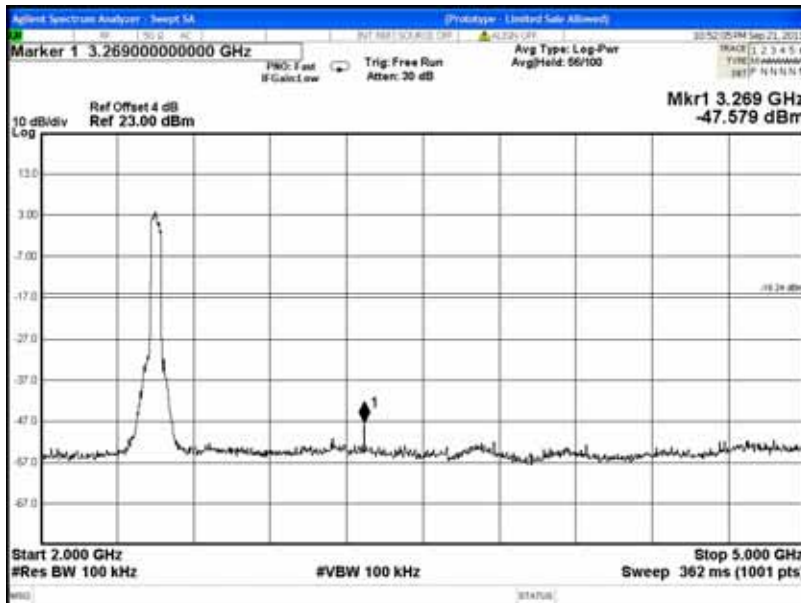
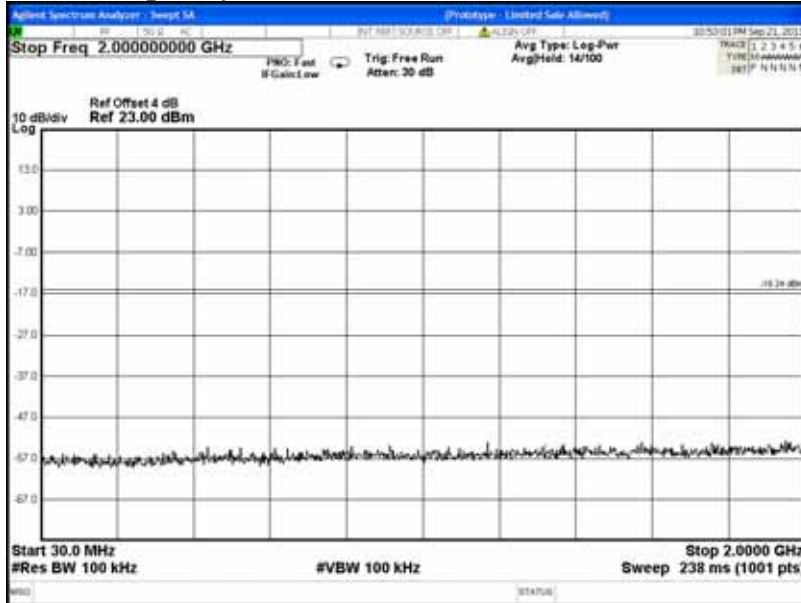


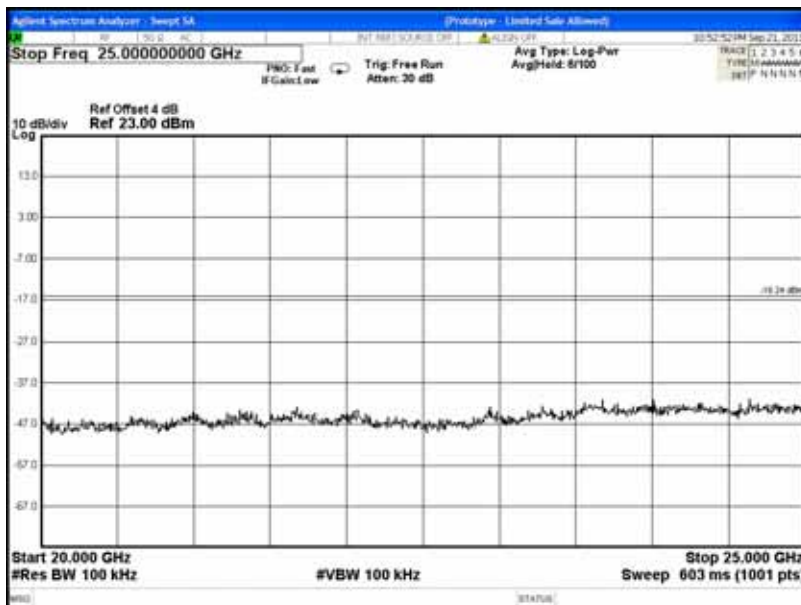
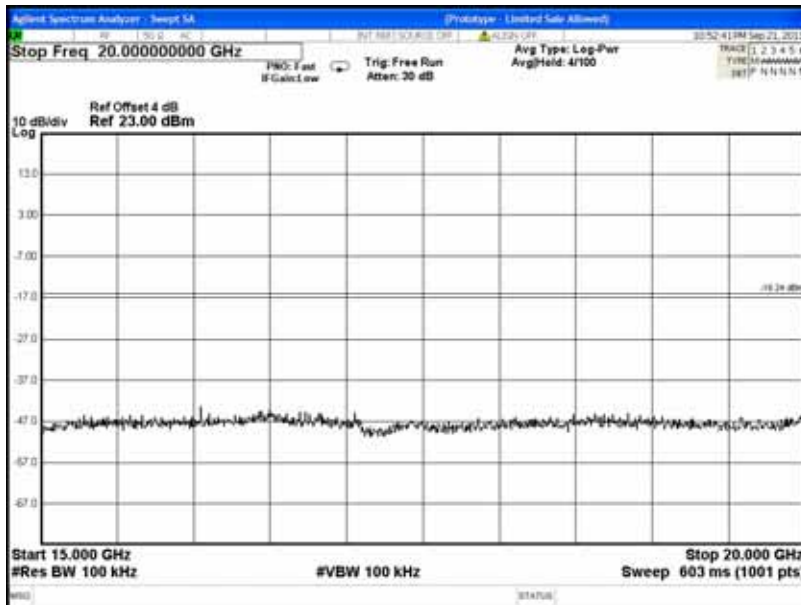
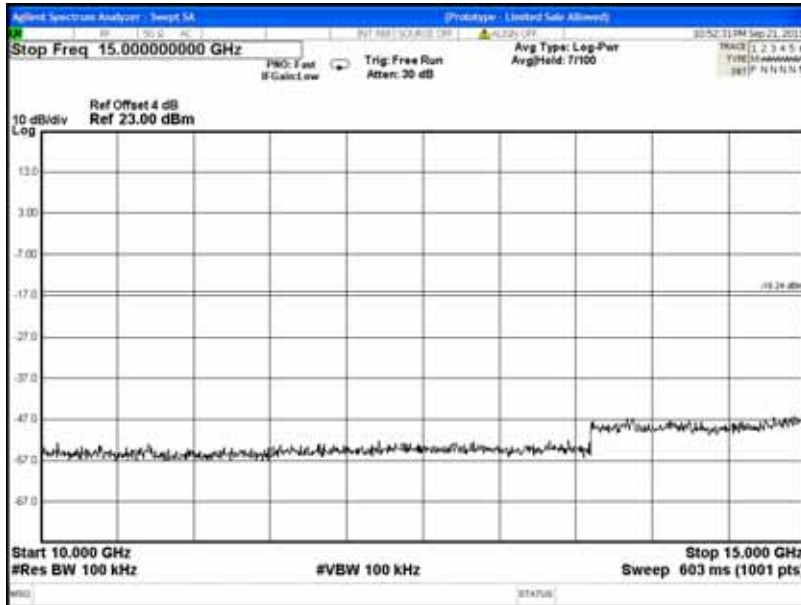
802.11n-HT40, Frequency: 2437MHz



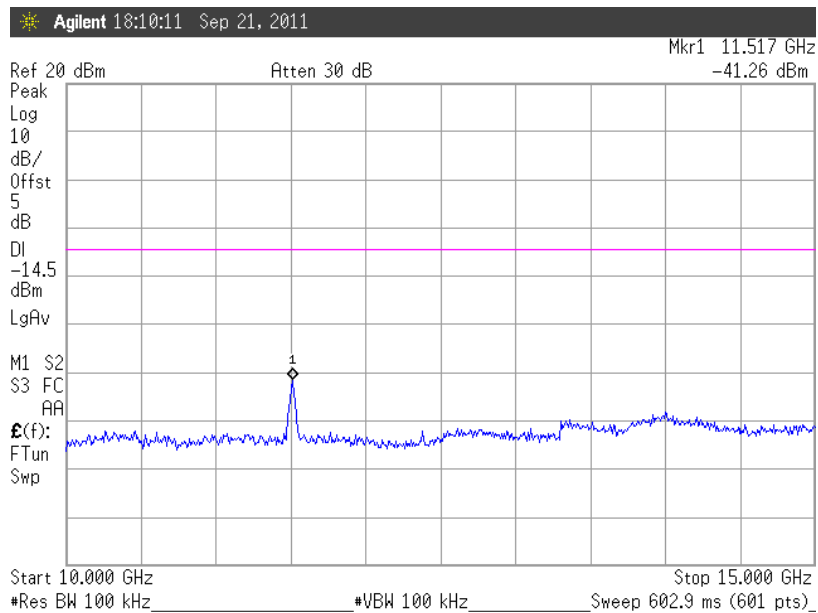
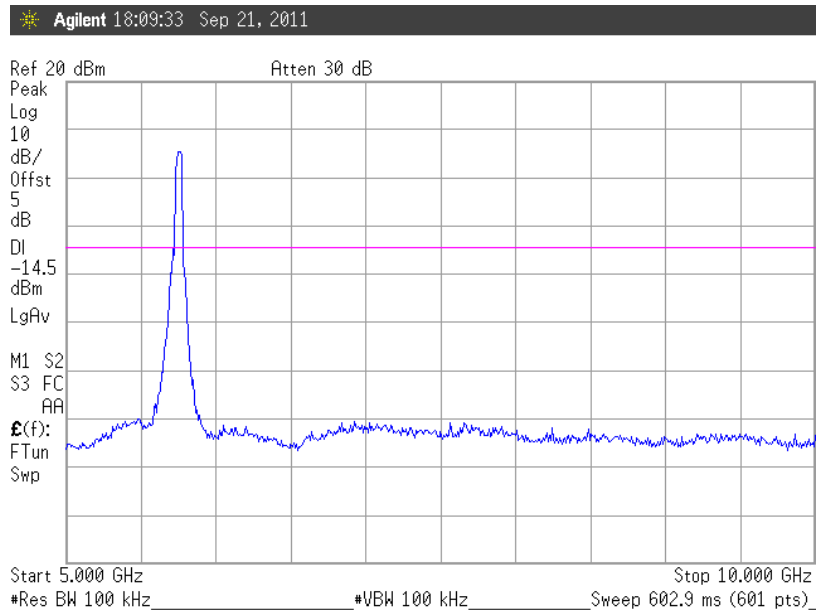
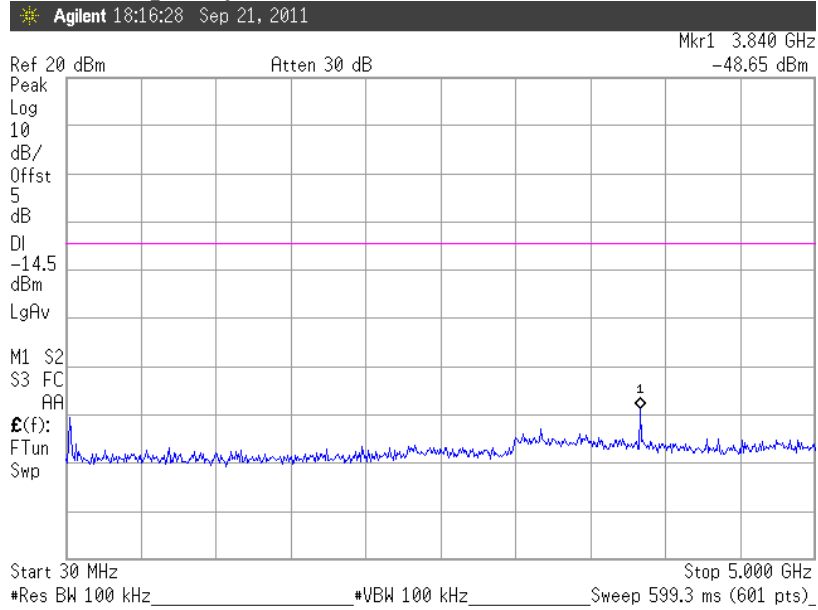


802.11n-HT40, Frequency: 2452MHz

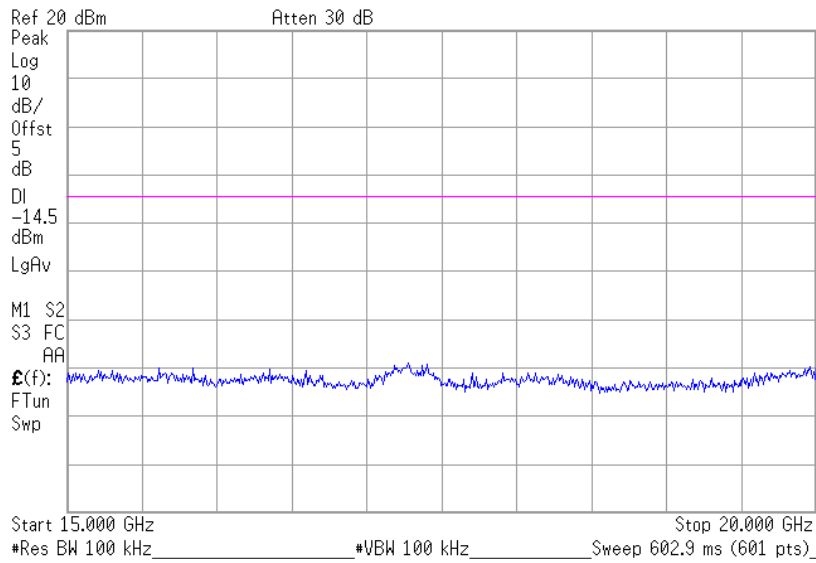




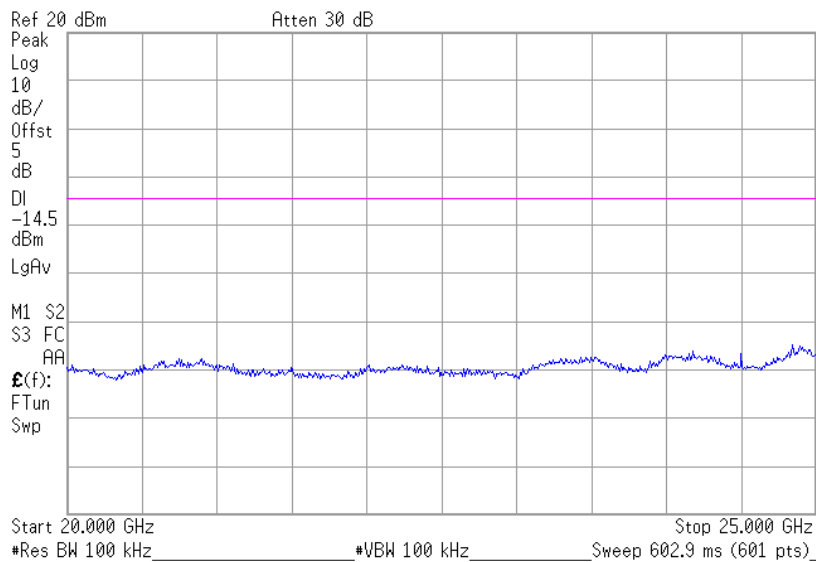
802.11n-HT40, Frequency: 5755MHz



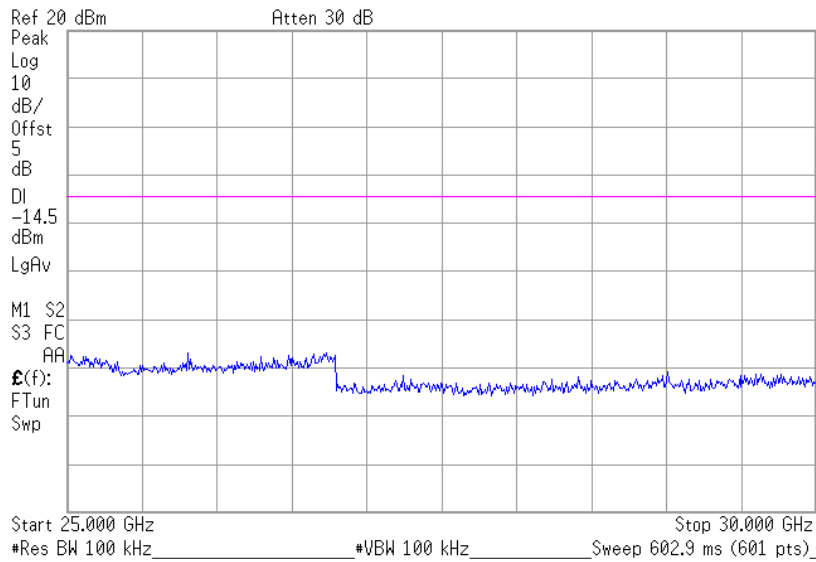
Agilent 18:10:45 Sep 21, 2011

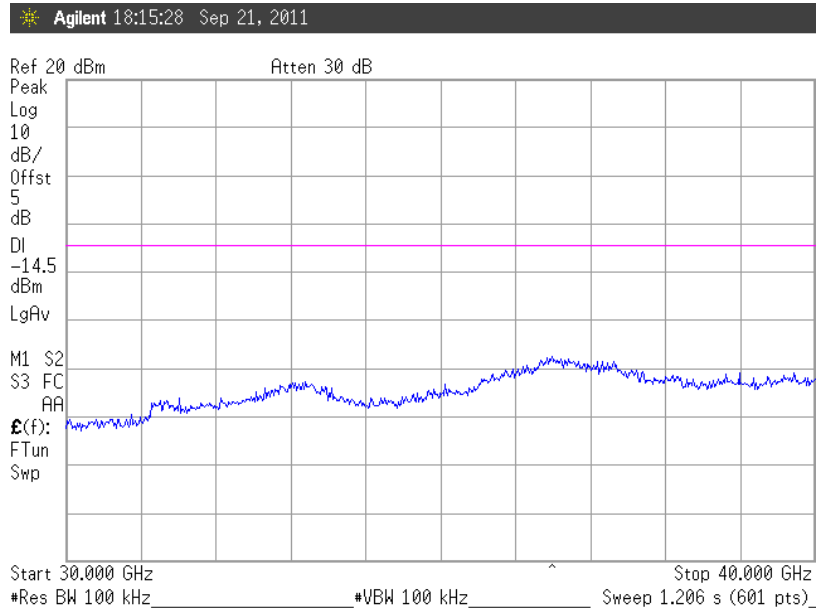


Agilent 18:14:29 Sep 21, 2011

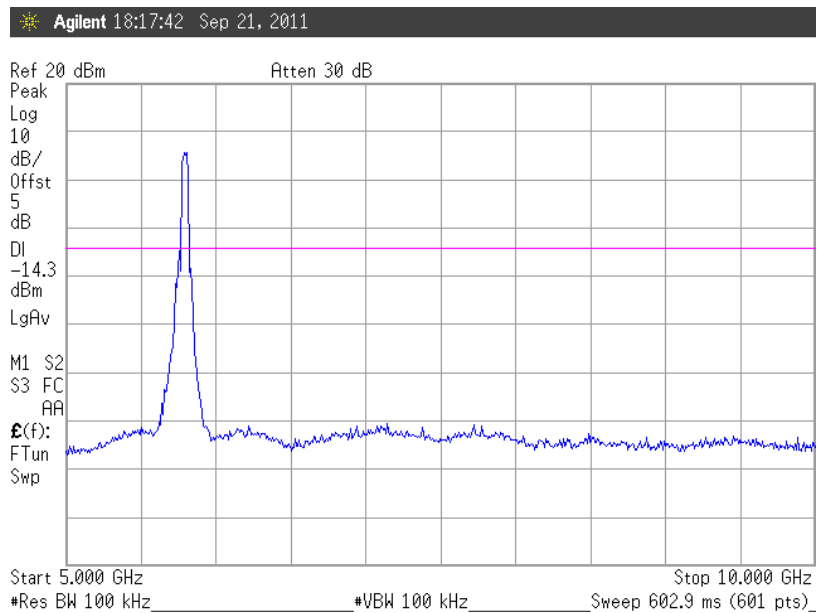
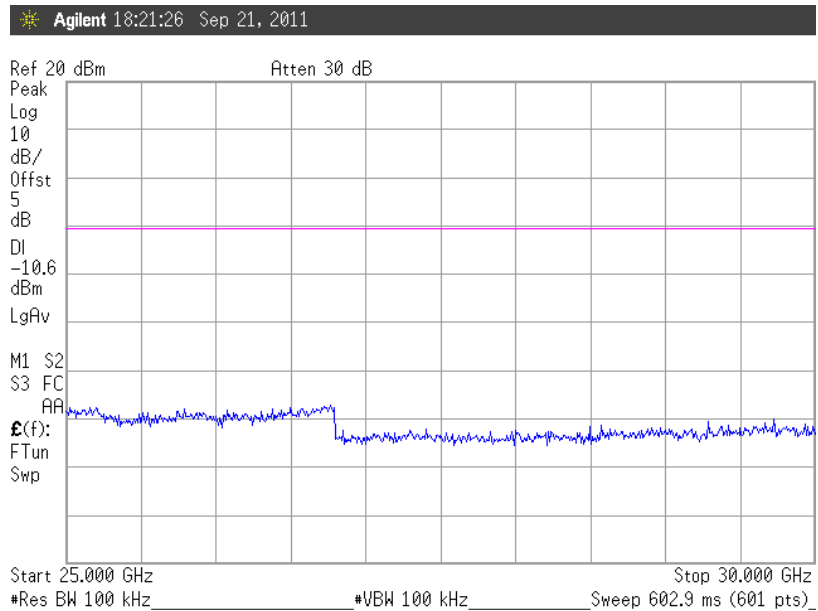
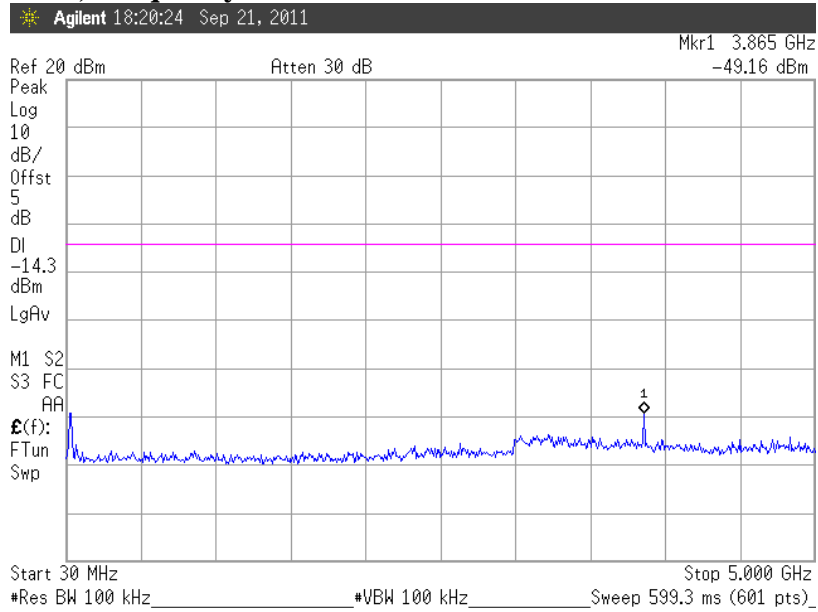


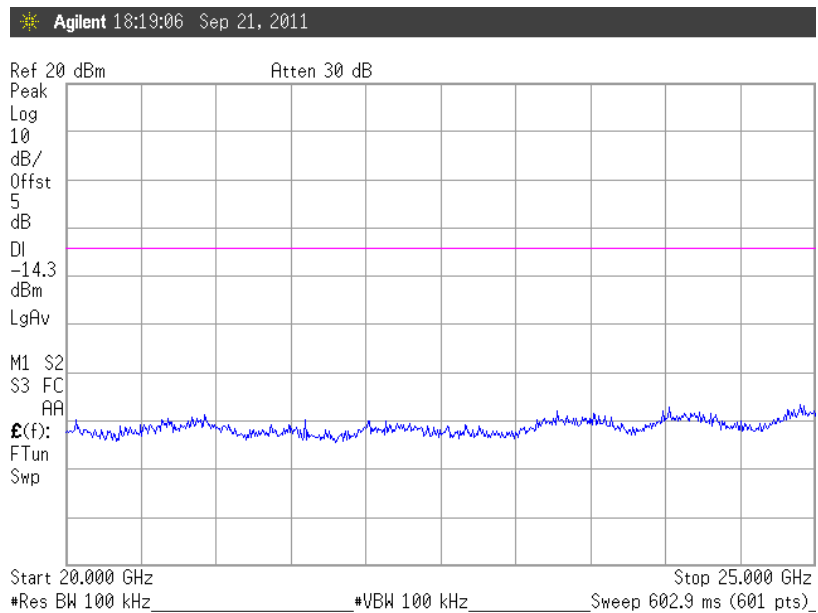
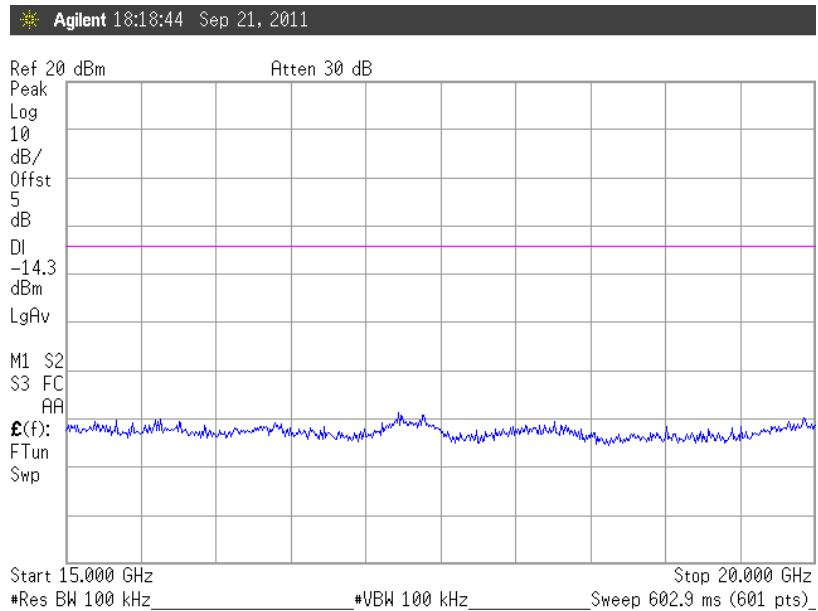
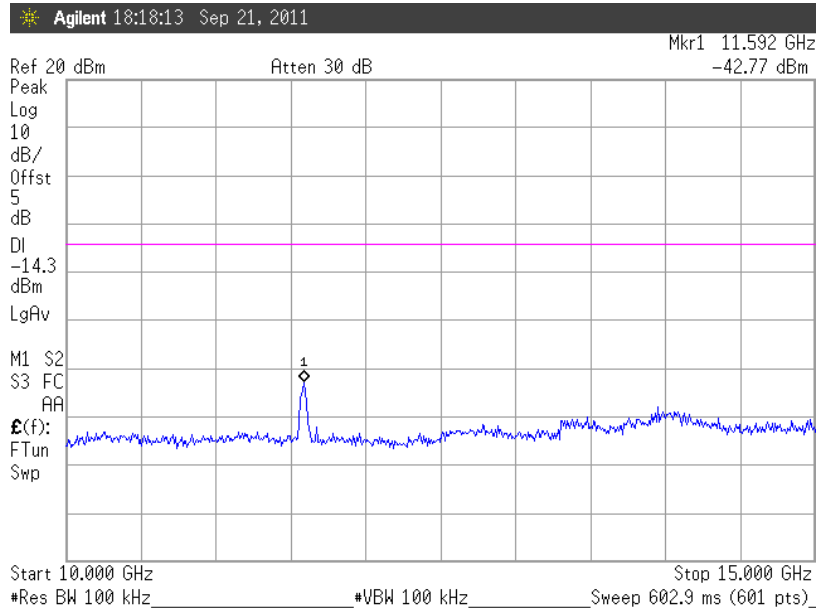
Agilent 18:14:54 Sep 21, 2011

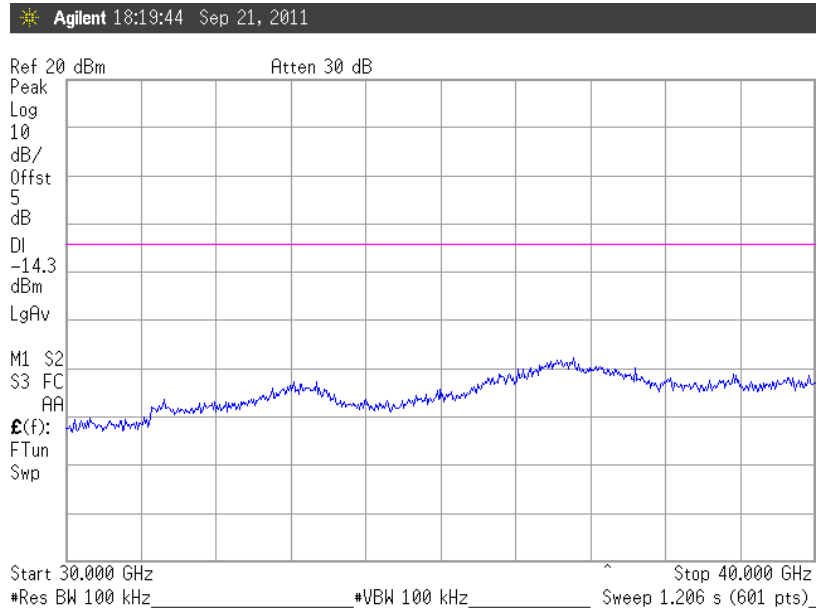




802.11n-HT40, Frequency: 5795MHz







7. BAND EDGES MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the band edges measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|-------------------|--------------|------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-507 | MY49061167 | Feb. 24, 11' | Feb. 23, 12' |

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (§15.247(c))

The highest level should be at least 20 dB below that in the 100kHz bandwidth.

7.4. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

7.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

The measurement guideline was according to KDB 558074.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

7.6. Test Results

PASSED. All the test results are attached in next pages.

Pursuant to KDB 662911, the test result has been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

(Test Date : Sep. 20, 2011 Temperature : 25 Humidity : 51%)

(Test Date : Sep. 21, 2011 Temperature : 26 Humidity : 55%)

802.11b

Below Band edge: The highest emission level is -29.085dBm on 2.39990GHz.

Upper Band edge : The highest emission level is -41.286dBm on 2.48350GHz.

802.11g

Below Band edge: The highest emission level is -30.229dBm on 2.39990GHz.

Upper Band edge : The highest emission level is -29.305dBm on 2.48358GHz.

802.11a

Below Band edge: The highest emission level is -24.183dBm on 5.72500GHz.

Upper Band edge : The highest emission level is -36.897dBm on 5.58500GHz.

802.11n-HT20(2.4GHz)

Below Band edge: The highest emission level is -25.801dBm on 2.39990GHz.

Upper Band edge : The highest emission level is -36.841dBm on 2.48358GHz.

802.11n-HT20(5.8GHz)

Below Band edge: The highest emission level is -25.042dBm on 5.72500GHz.

Upper Band edge : The highest emission level is -31.047dBm on 5.85000GHz.

802.11n-HT40(2.4GHz)

Below Band edge: The highest emission level is -29.475dBm on 2.39999GHz.

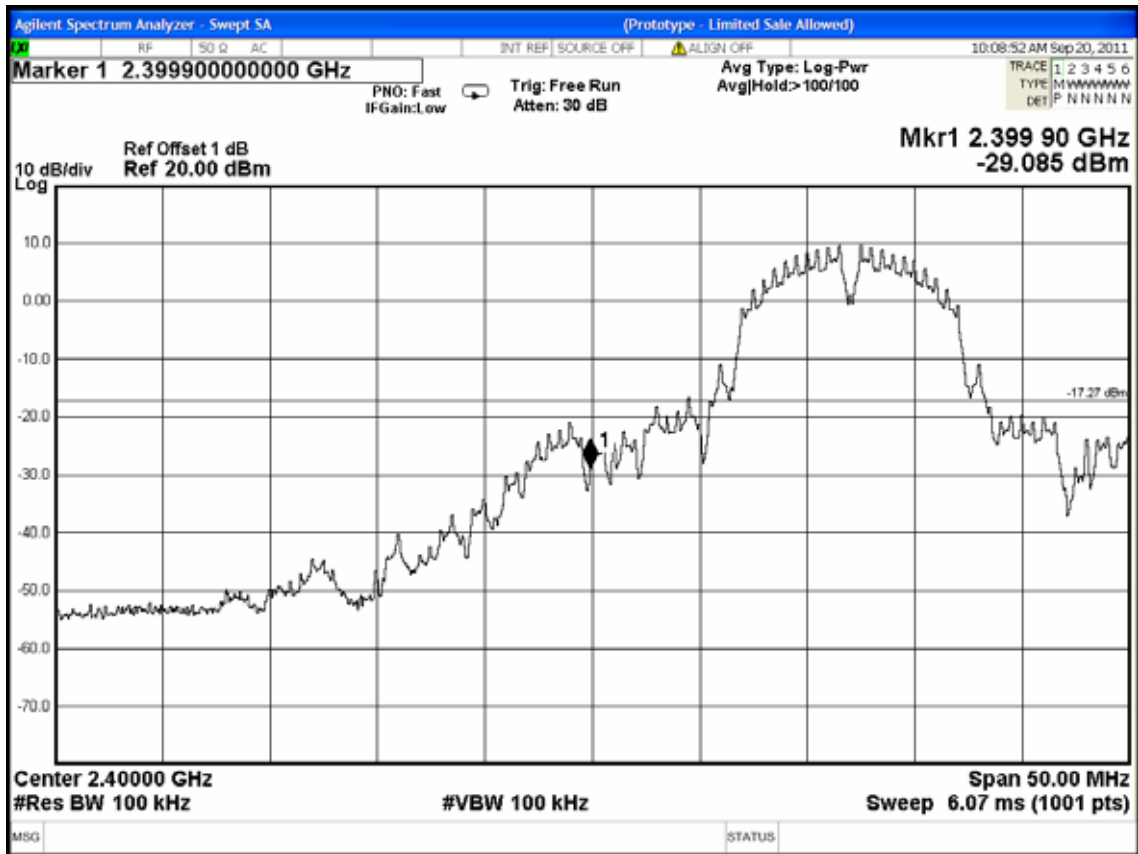
Upper Band edge : The highest emission level is -34.911dBm on 2.48350GHz.

802.11n-HT40(5.8GHz)

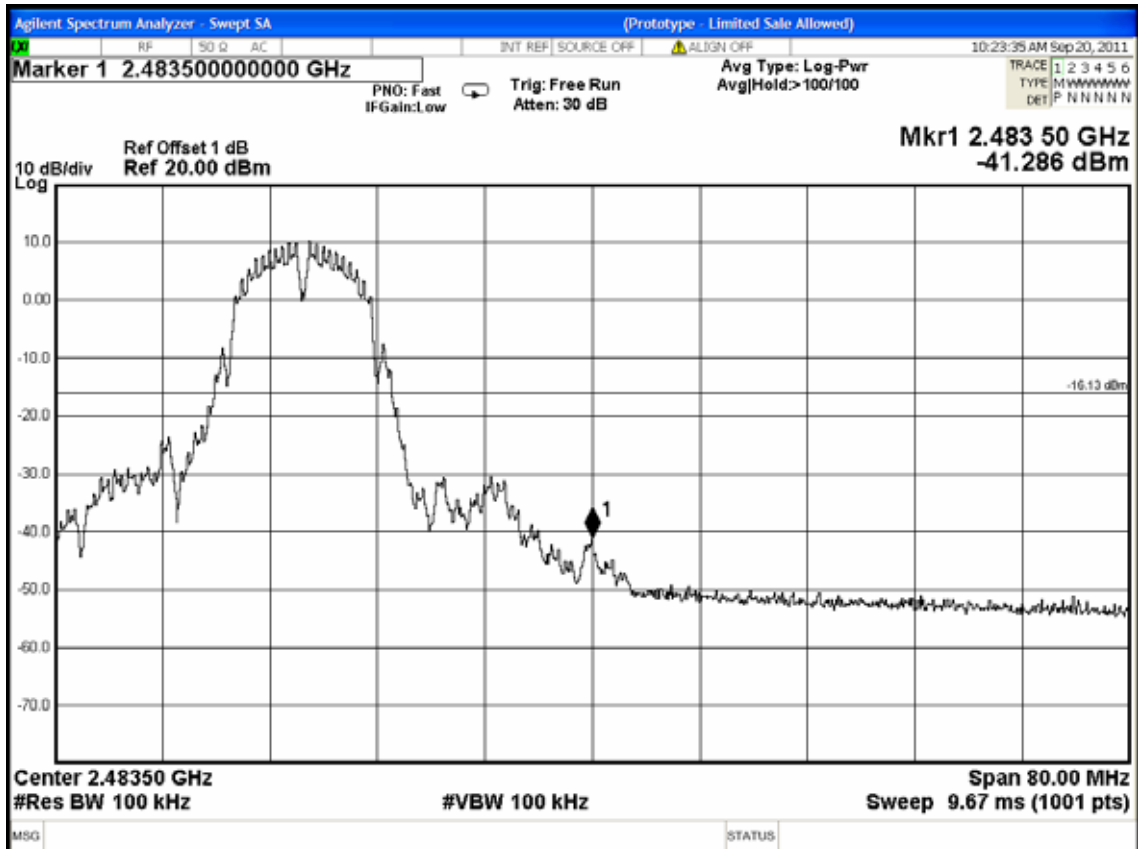
Below Band edge: The highest emission level is -19.730dBm on 5.7249GHz.

Upper Band edge : The highest emission level is -31.896dBm on 5.85000GHz.

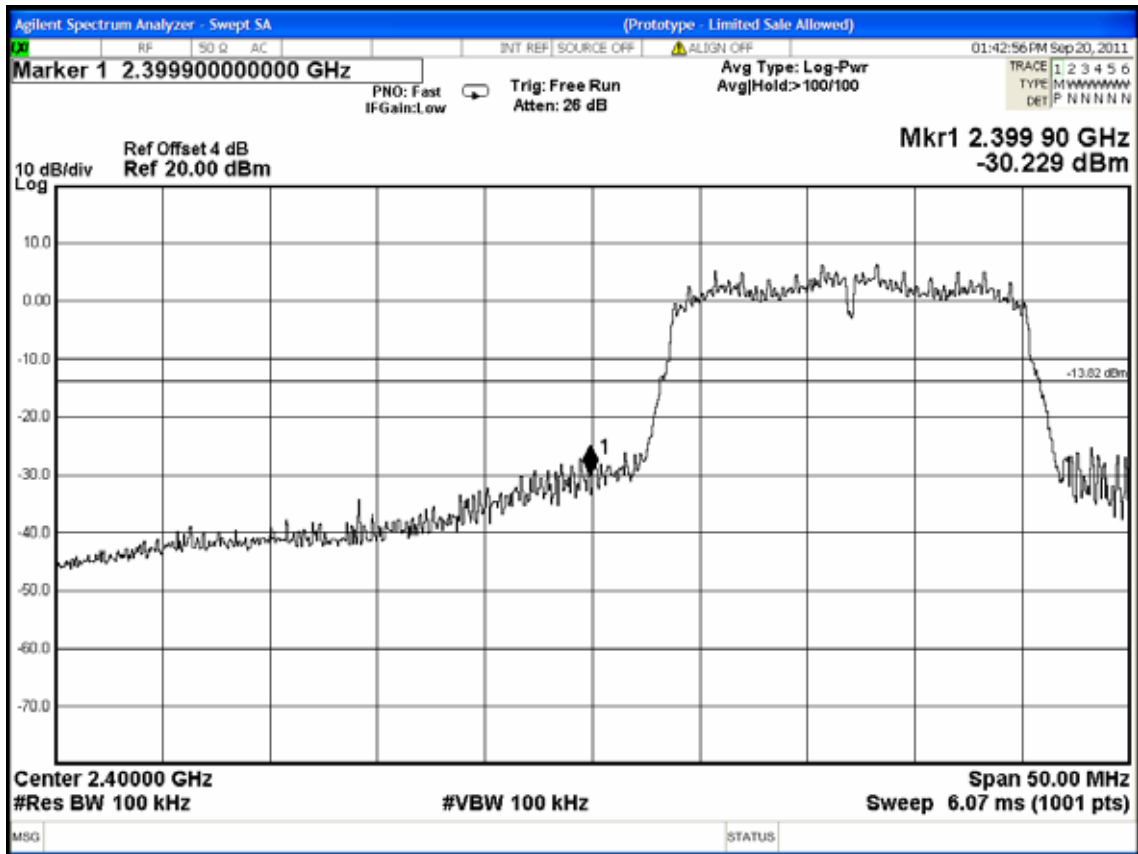
802.11b
Below Band edge



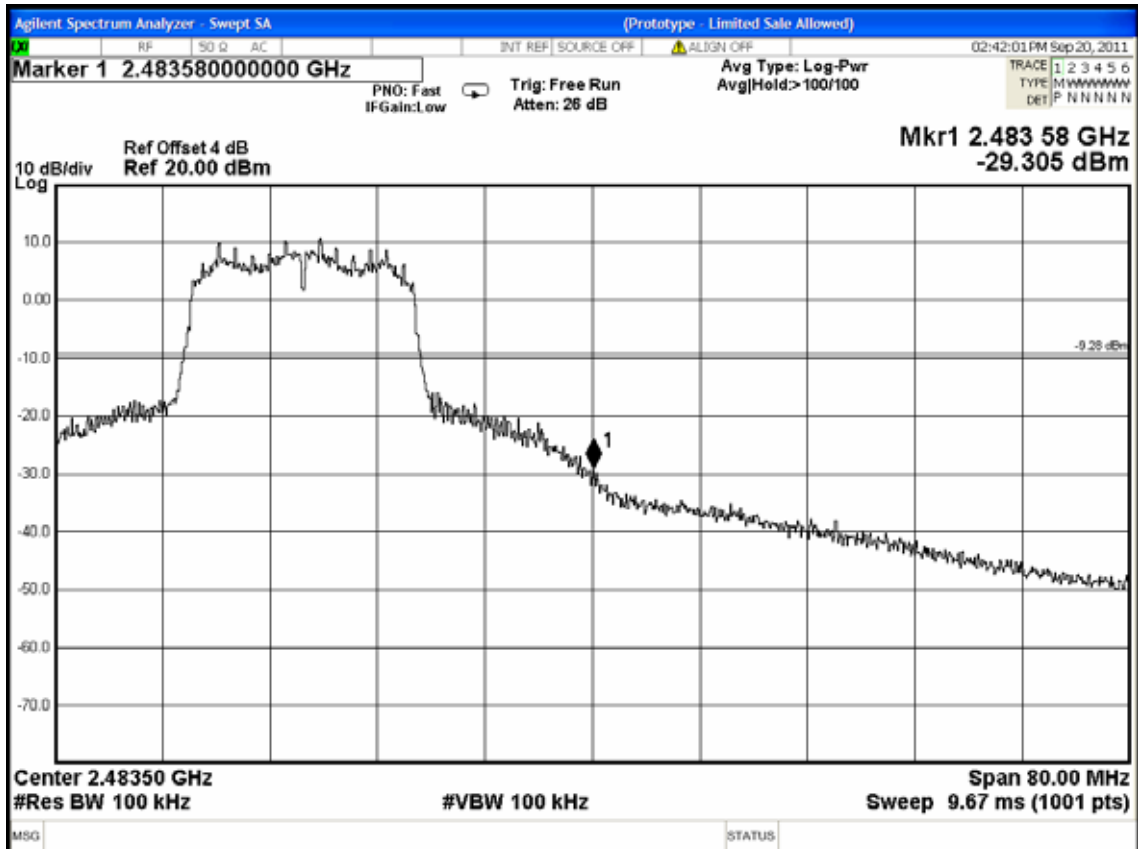
Upper Band edge



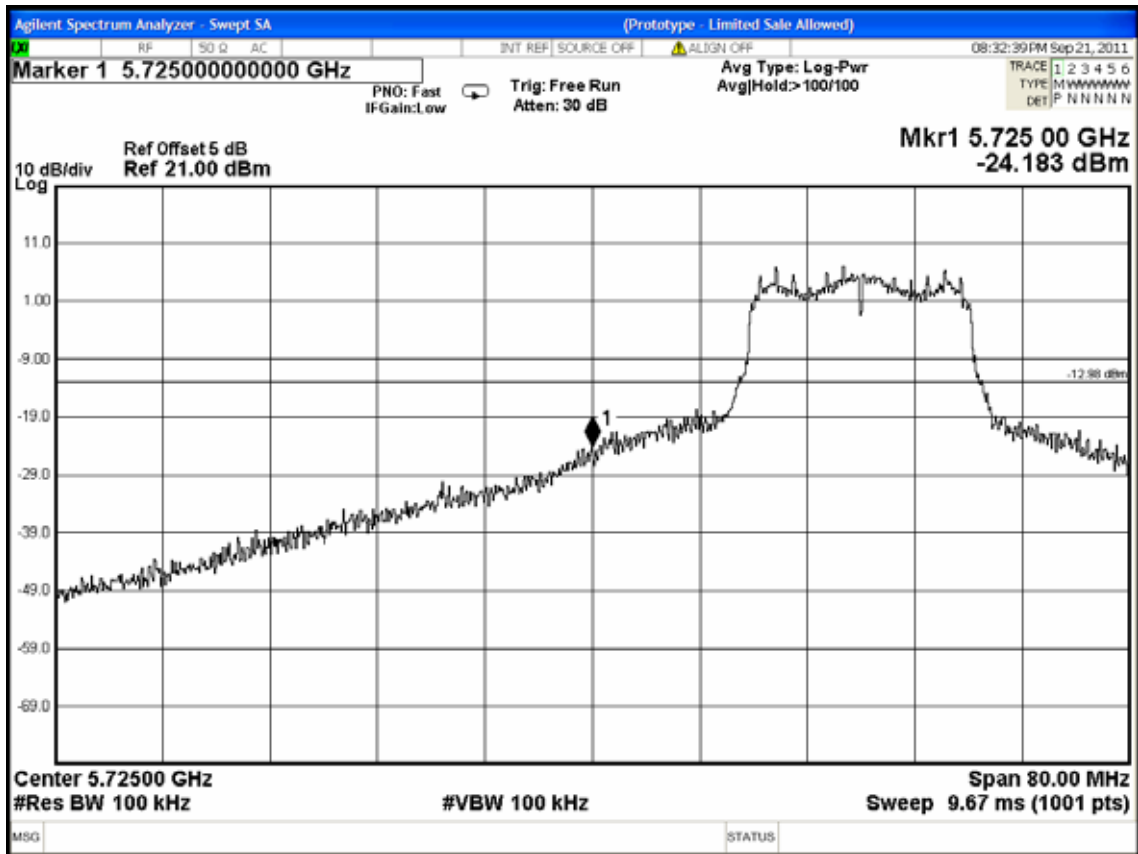
802.11g Below Band edge



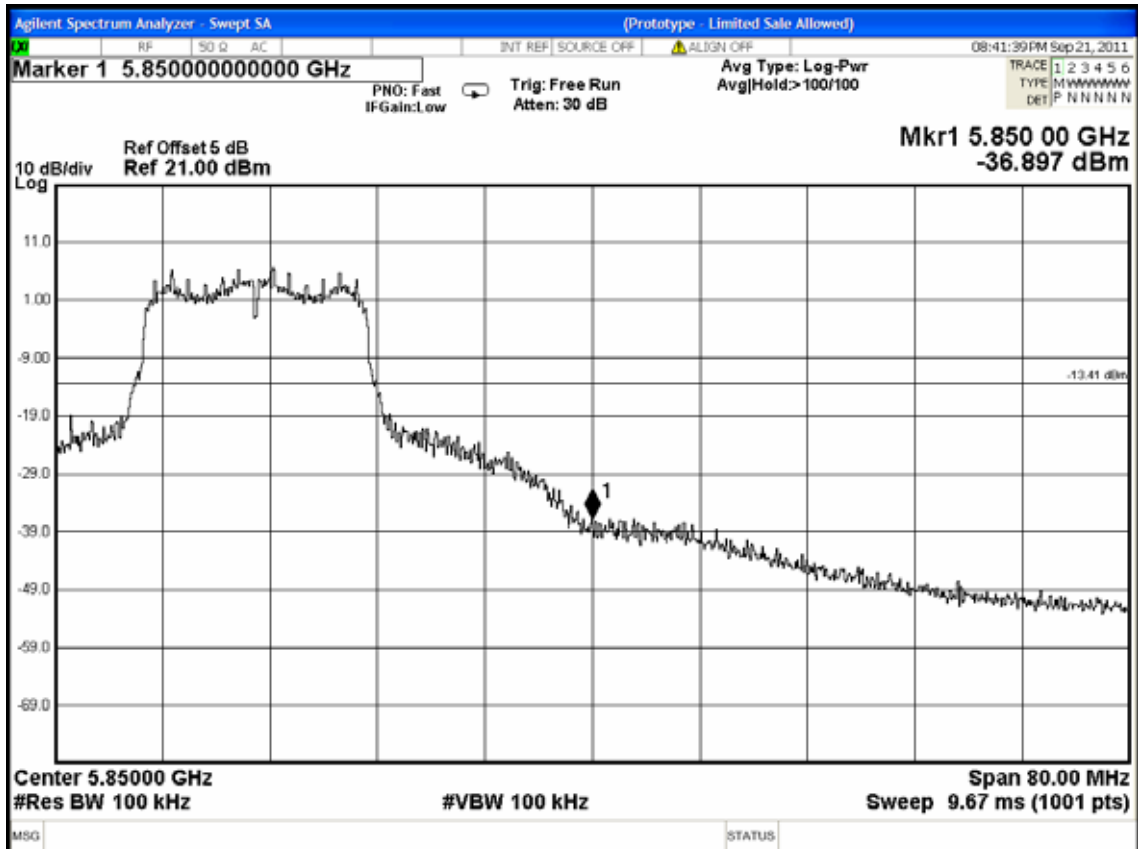
Upper Band edge



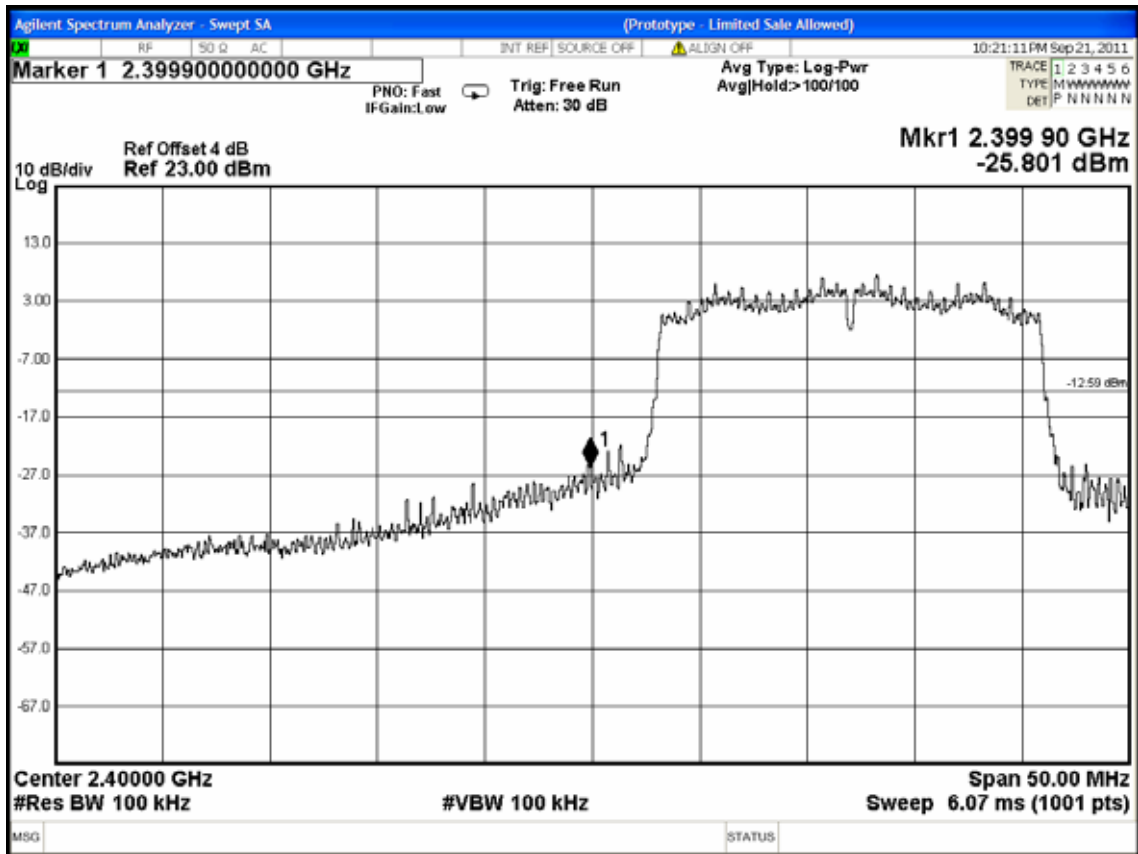
802.11a
Below Band edge



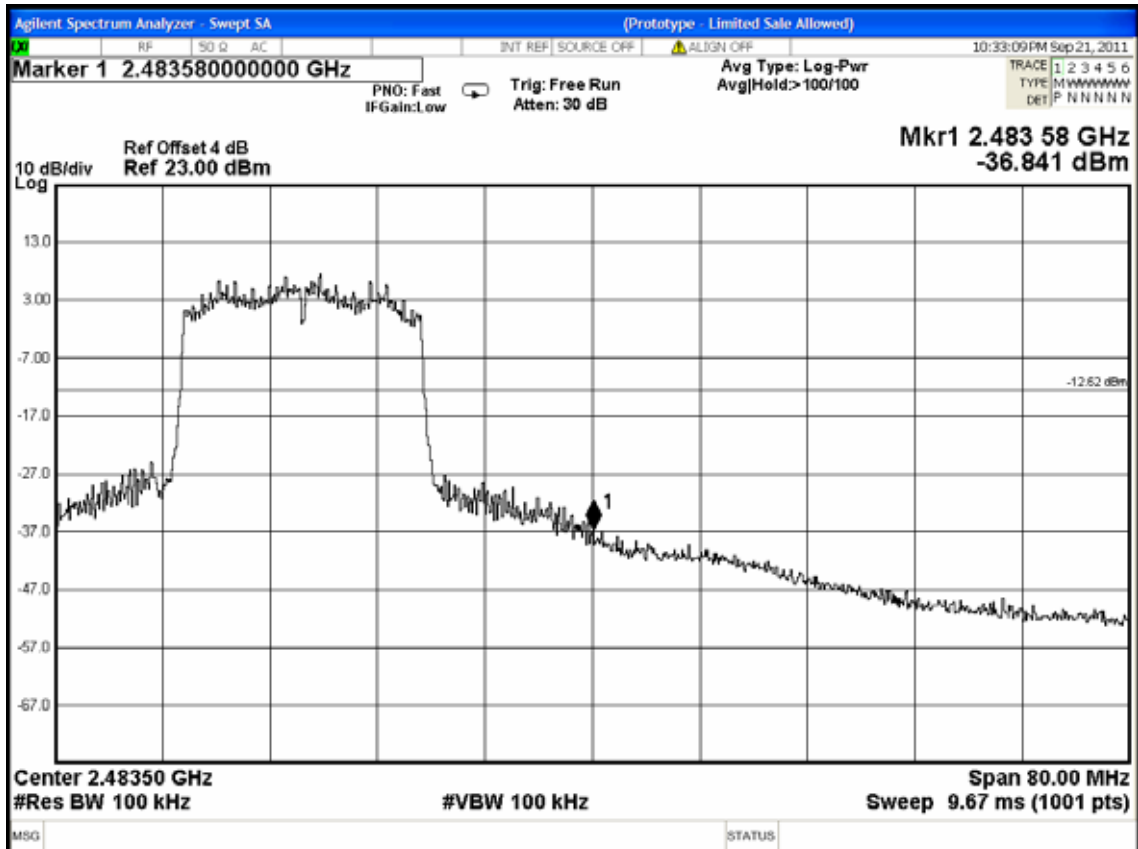
Upper Band edge



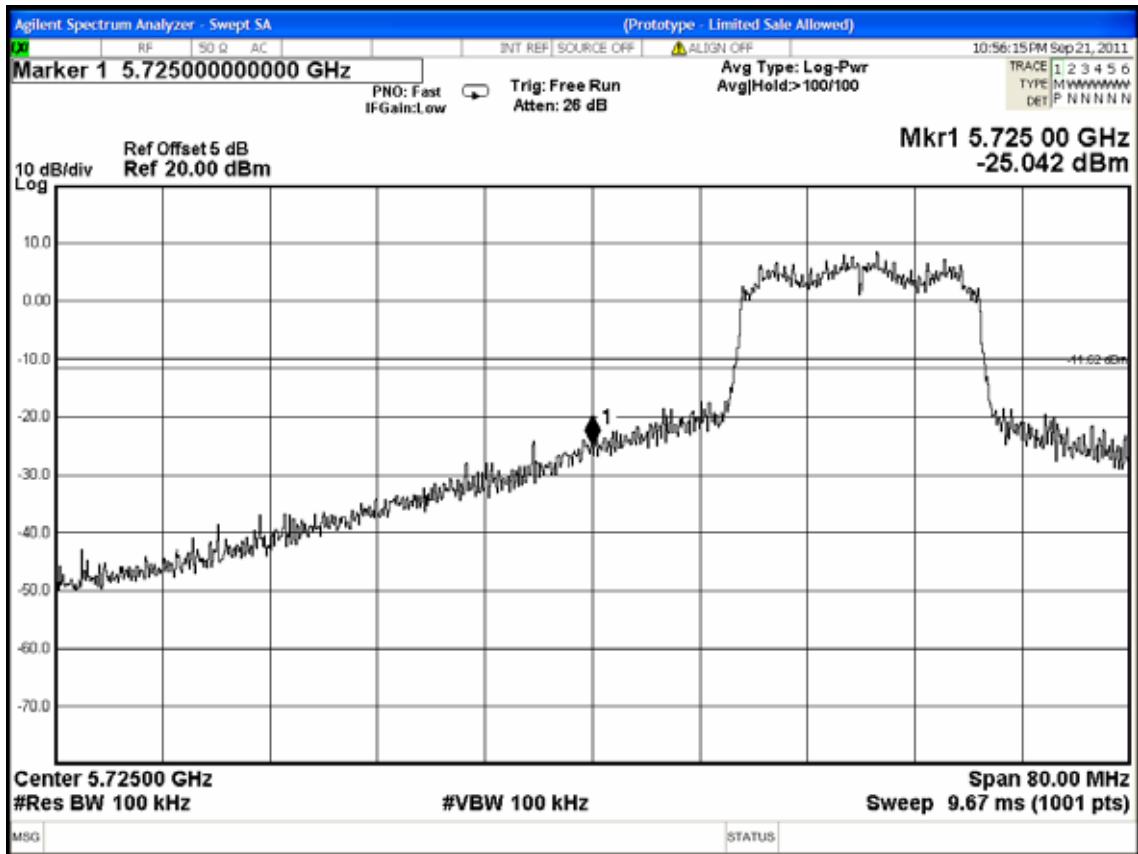
**802.11n-HT20(2.4GHz)
Below Band edge**



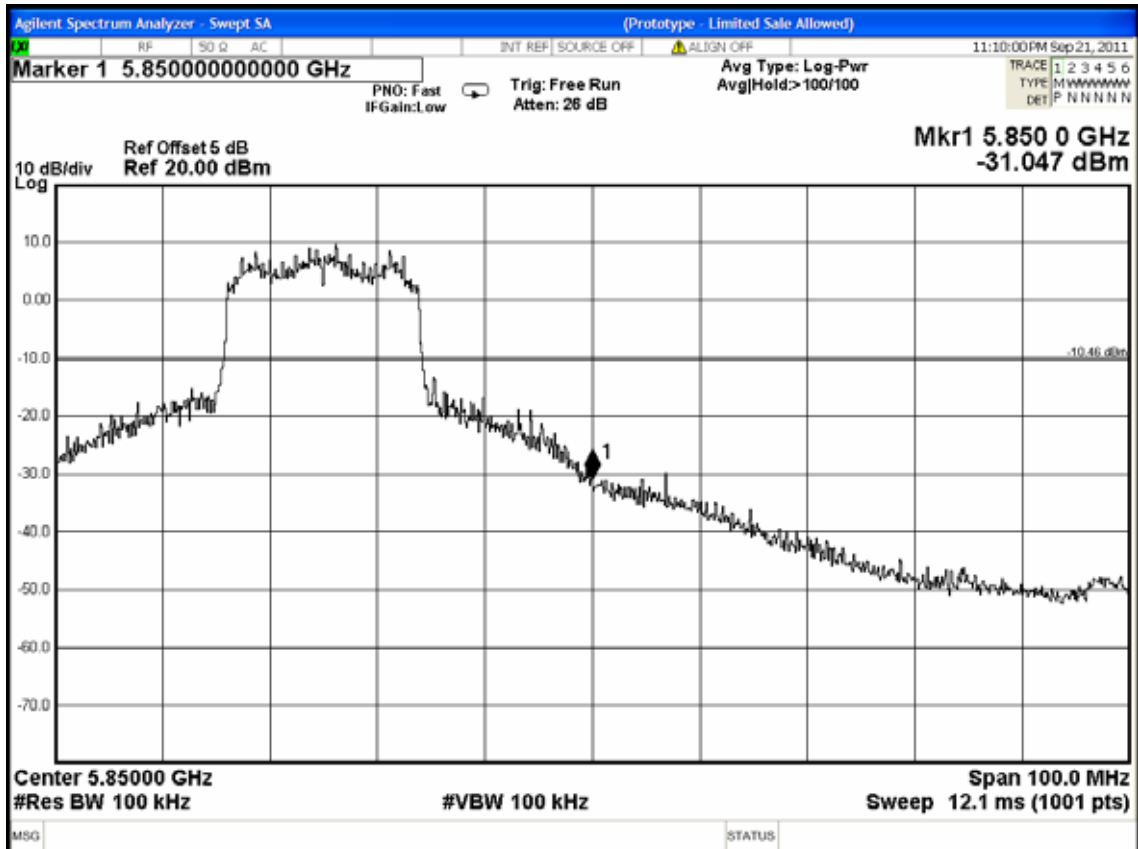
Upper Band edge



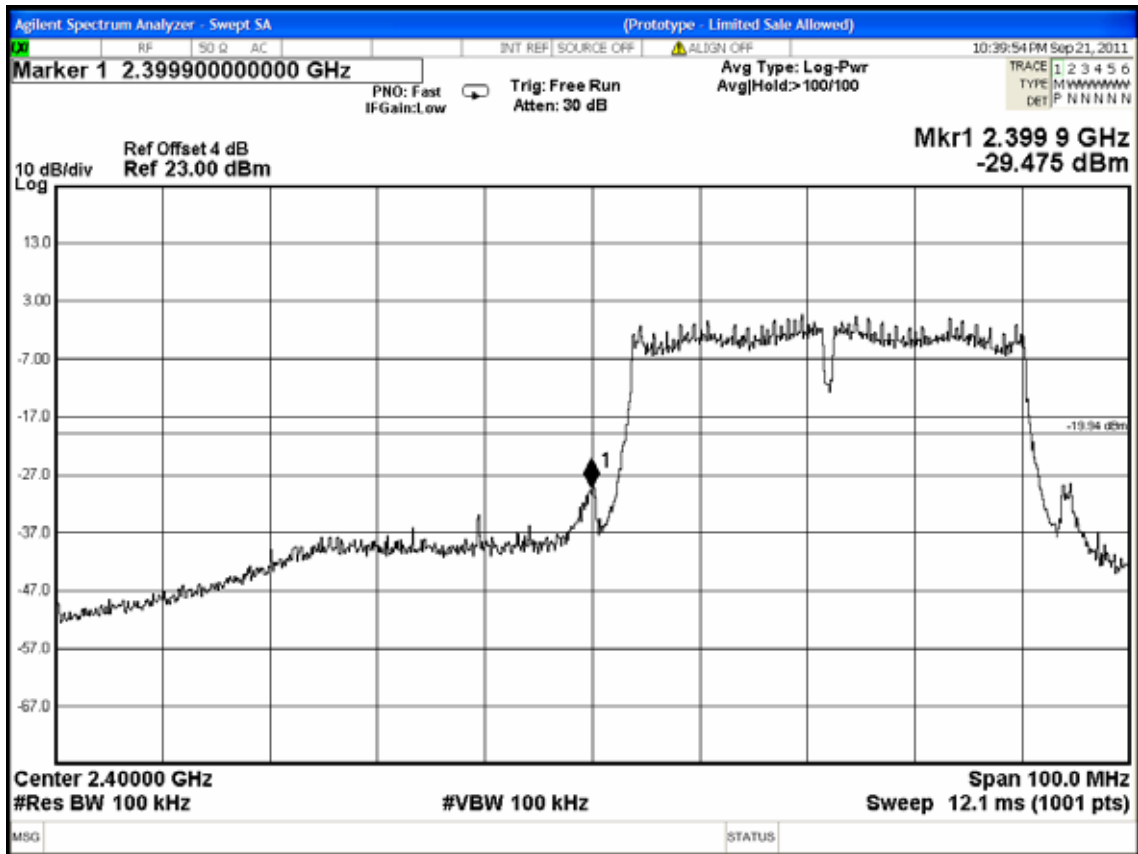
**802.11n-HT20(5.8GHz)
Below Band edge**



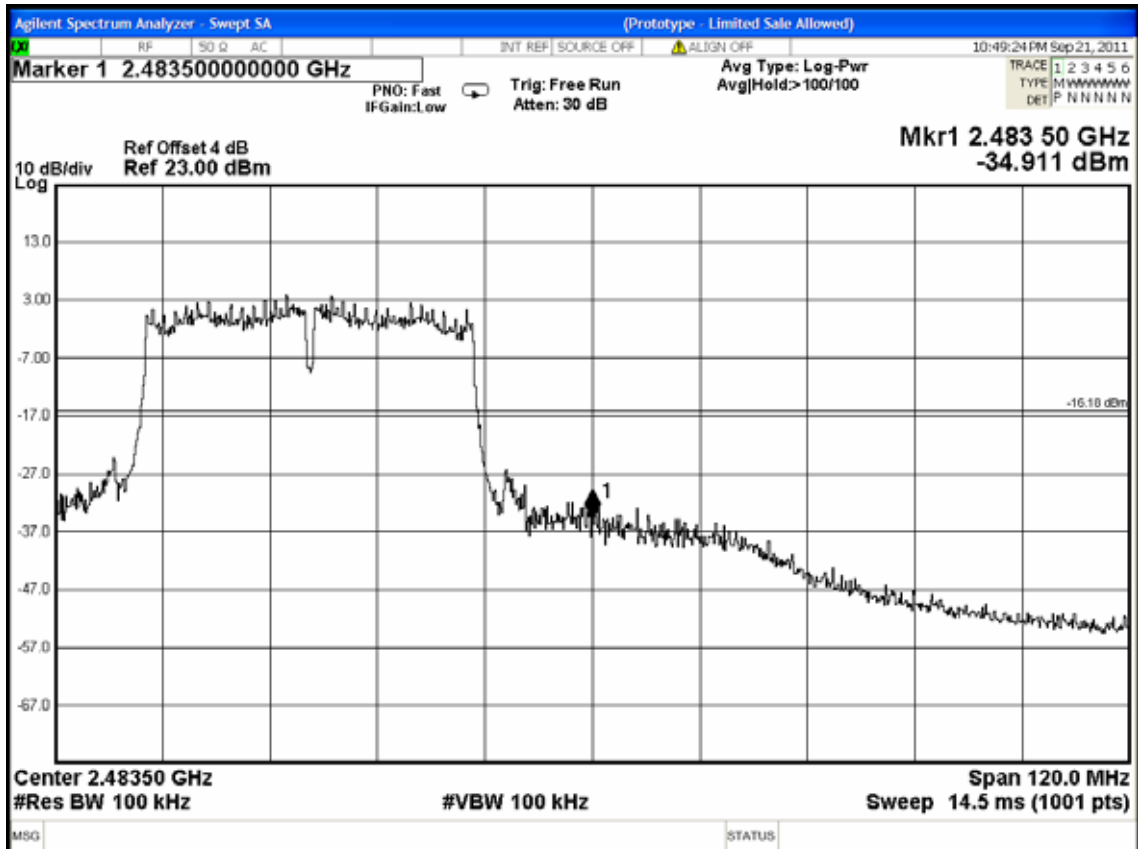
Upper Band edge



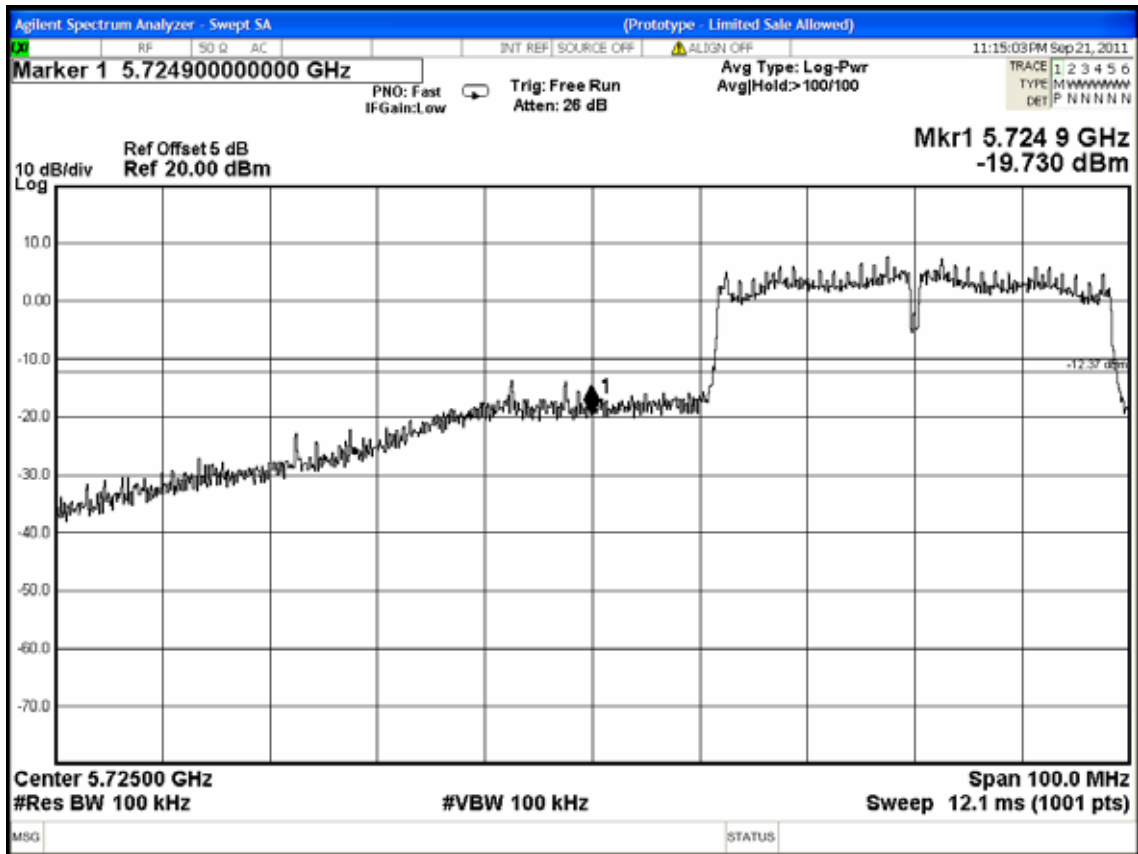
**802.11n-HT40(2.4GHz)
Below Band edge**



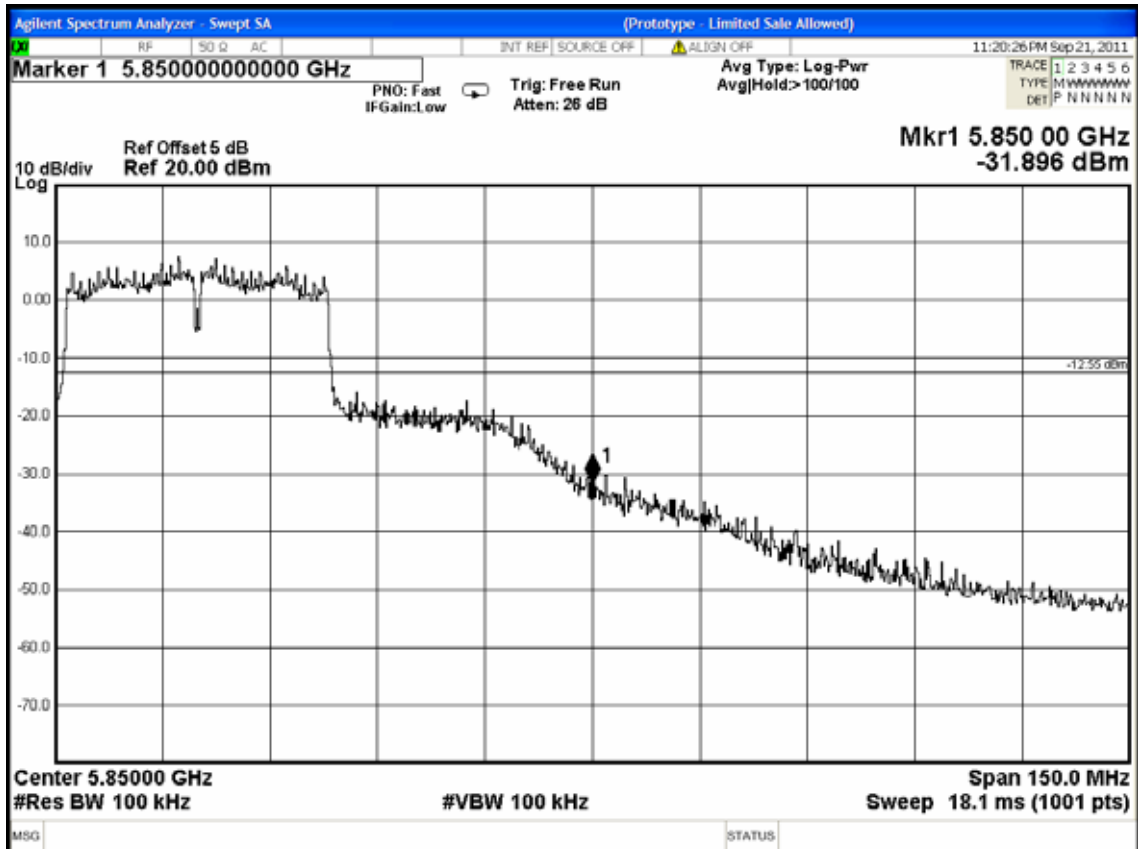
Upper Band edge



**802.11n-HT40(5.8GHz)
Below Band edge**



Upper Band edge



8. POWER SPECTRAL DENSITY MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|-------------------|--------------|------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-507 | MY49061167 | Feb. 24, 11' | Feb. 23, 12' |

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits (§15.247(d))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

8.4. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

8.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz.

The measurement guideline was according to KDB 558074.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

8.6. Test Results

PASSED. All the test results are attached in next pages.

Pursuant to KDB 662911, the test result has been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

(Test Date : Sep. 20, 2011 Temperature : 25 Humidity : 51%)

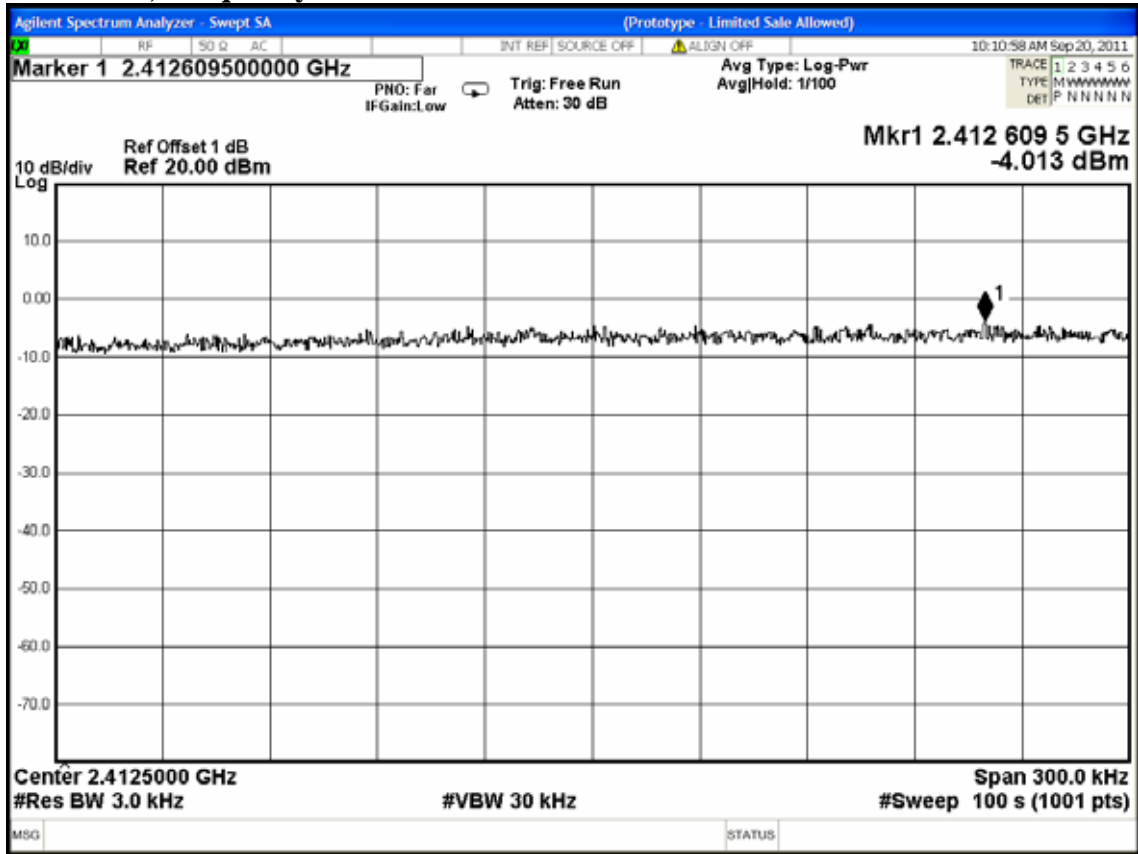
(Test Date : Sep. 21, 2011 Temperature : 26 Humidity : 55%)

8.6.1. For 802.11b/802.11g/802.11a

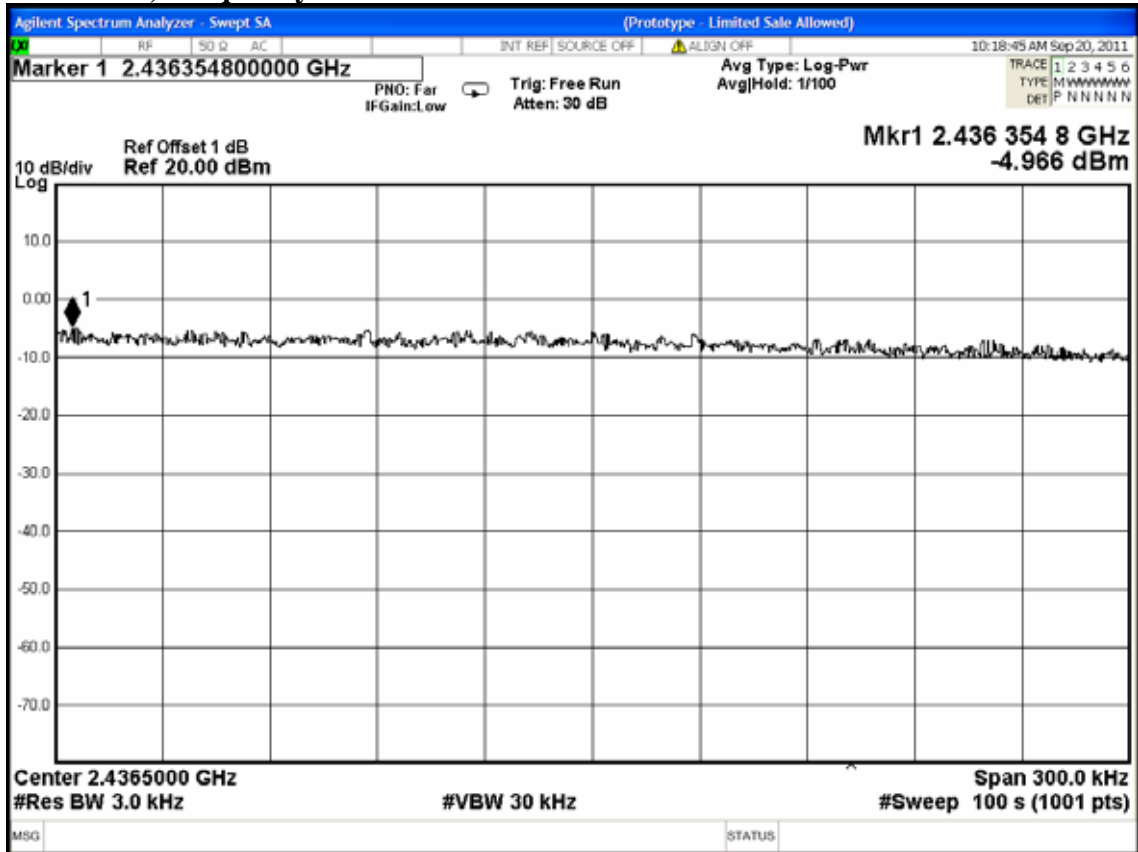
| Mode | Type of Network | Channel | Frequency | Power Spectral Density (dBm) |
|------|-----------------|---------|-----------|------------------------------|
| 1. | 802.11b | CH 1 | 2412MHz | -4.013 |
| 2. | | CH 6 | 2437MHz | -4.966 |
| 3. | | CH 11 | 2462MHz | -3.558 |
| 4. | 802.11g | CH 1 | 2412MHz | -6.387 |
| 5. | | CH 6 | 2437MHz | -2.468 |
| 6. | | CH 11 | 2462MHz | -5.768 |
| 7. | 802.11a | CH 149 | 5745MHz | -4.988 |
| 8. | | CH 157 | 5785MHz | -5.342 |
| 9. | | CH 165 | 5825MHz | -5.797 |
| 10. | 802.11n-HT20 | CH 1 | 2412MHz | -5.659 |
| 11. | | CH 6 | 2437MHz | -4.552 |
| 12. | | CH 11 | 2462MHz | -5.868 |
| 13. | 802.11n-HT20 | CH 149 | 5745MHz | -4.297 |
| 14. | | CH 157 | 5785MHz | -2.861 |
| 15. | | CH 165 | 5825MHz | -3.451 |
| 16. | 802.11n-HT40 | CH 3 | 2422MHz | -13.362 |
| 17. | | CH 6 | 2437MHz | -6.948 |
| 18. | | CH 9 | 2452MHz | -9.924 |
| 19. | 802.11n-HT40 | CH 151 | 5755MHz | -6.304 |
| 20. | | CH 159 | 5795MHz | -6.702 |

[Limit: 8dBm]

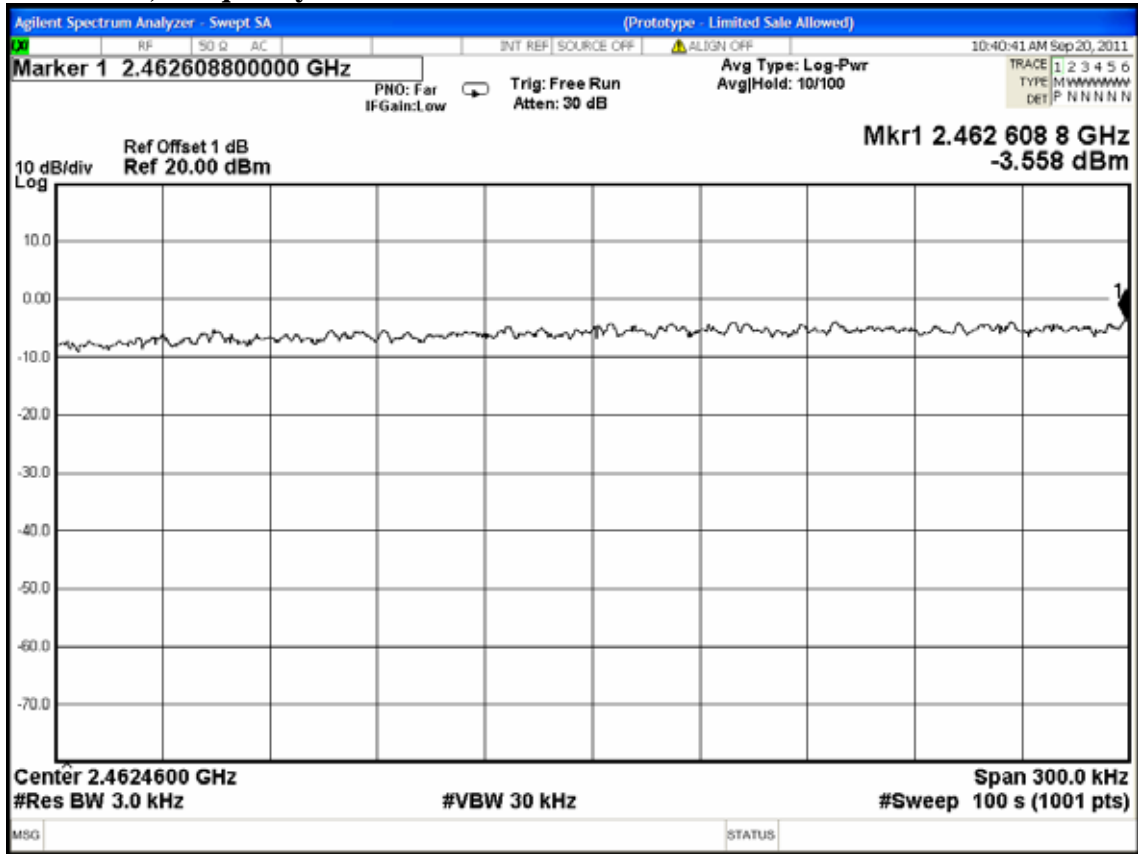
802.11b, Frequency: 2412MHz



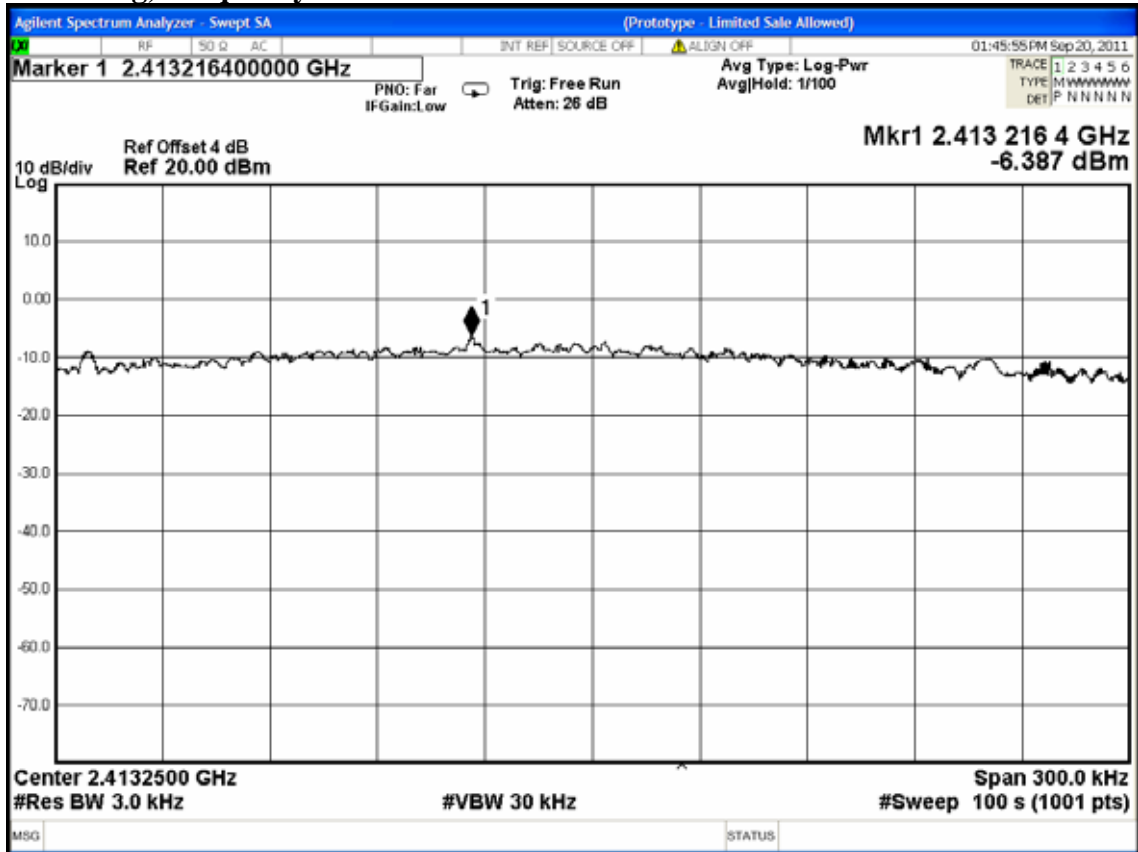
802.11b, Frequency: 2437MHz



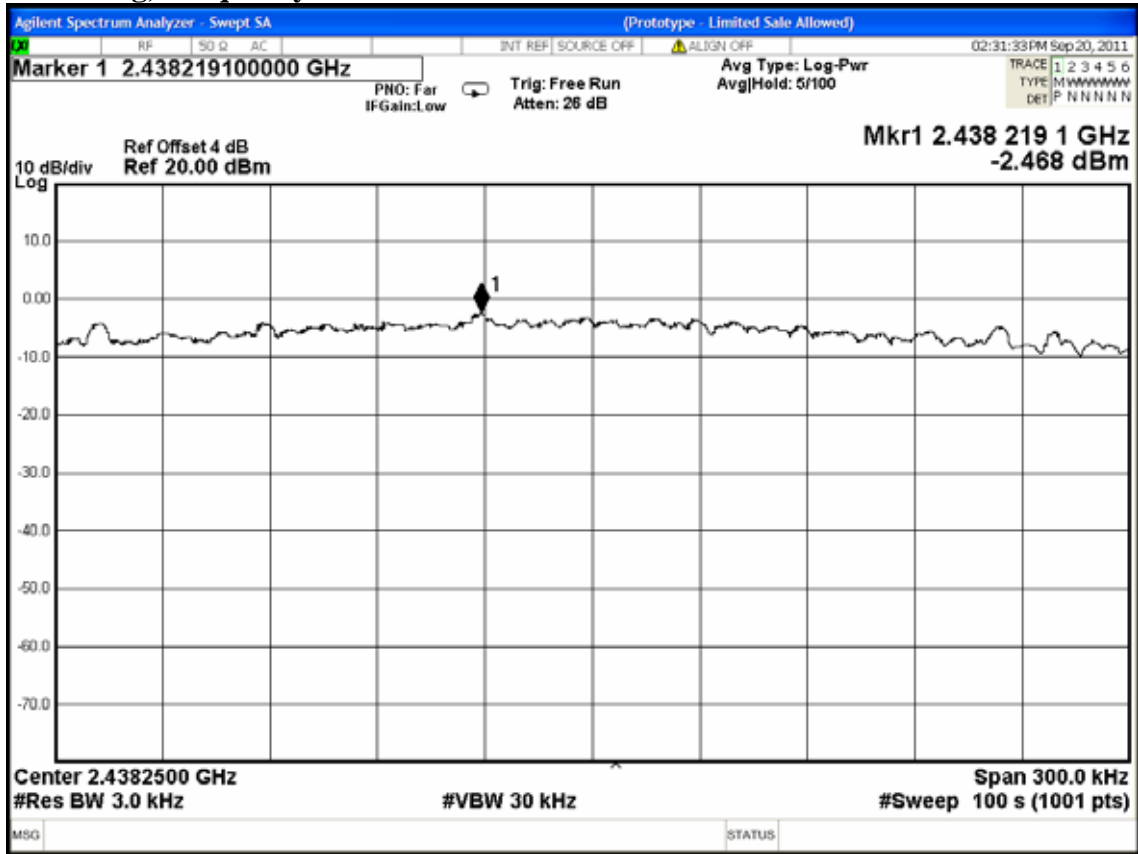
802.11b, Frequency: 2462MHz



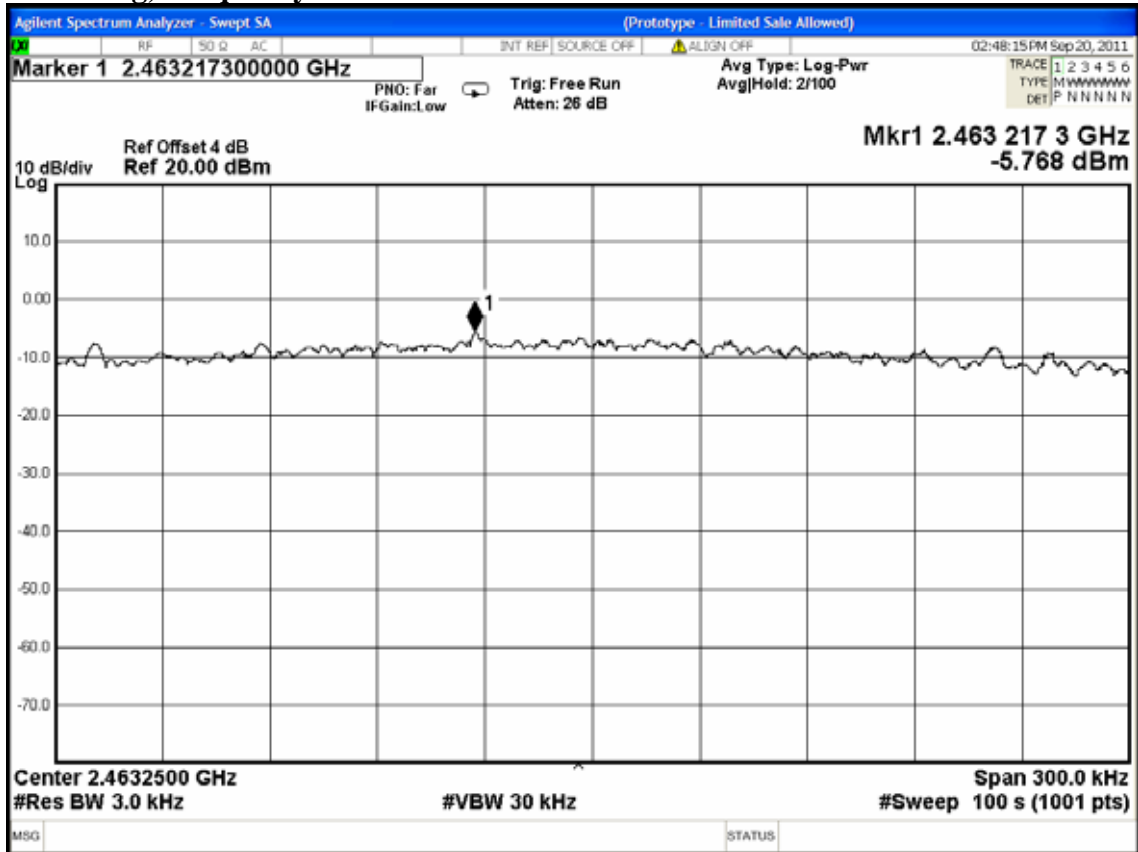
802.11g, Frequency: 2412MHz



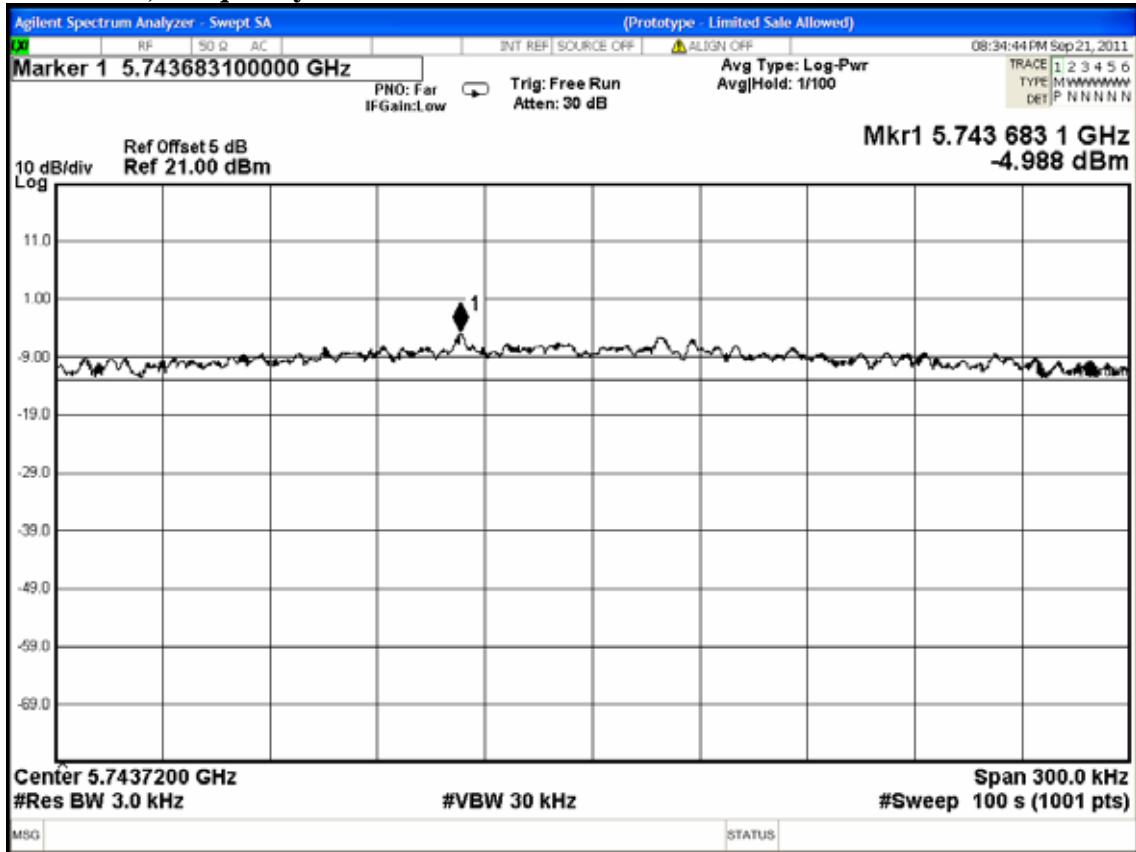
802.11g, Frequency: 2437MHz



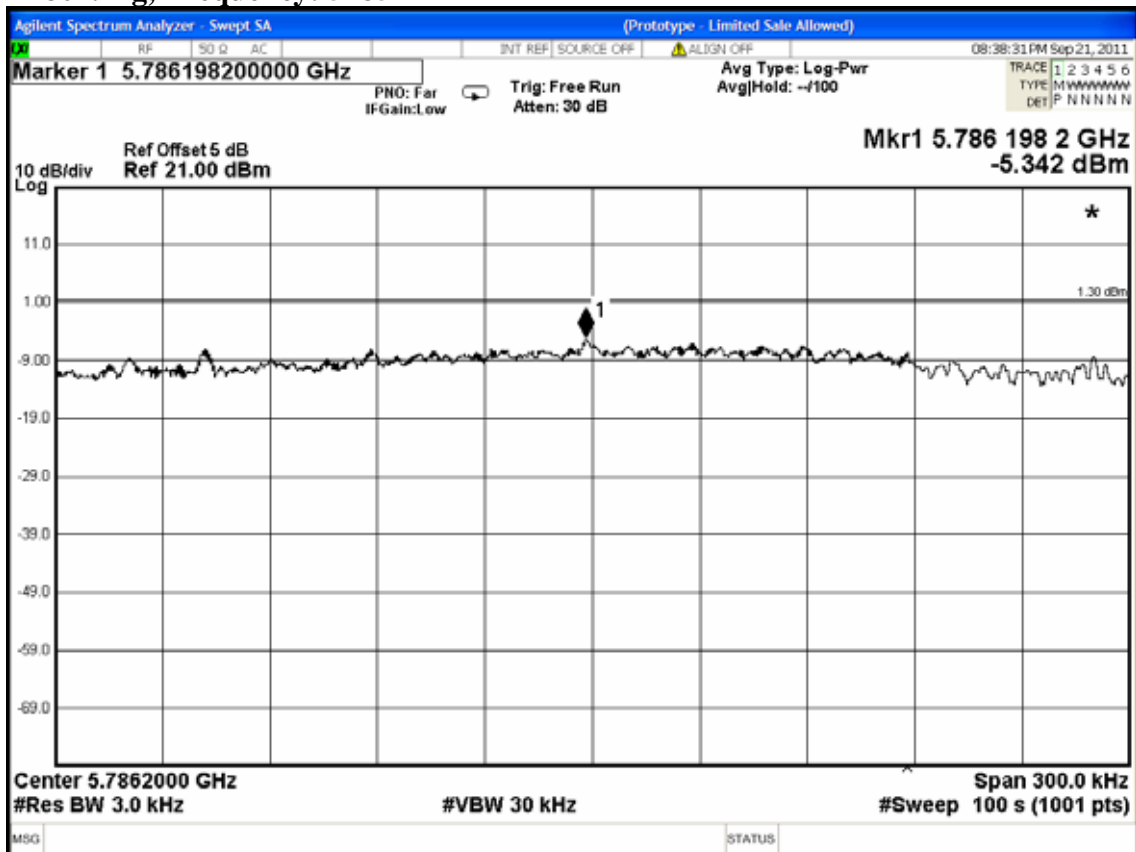
802.11g, Frequency: 2462MHz



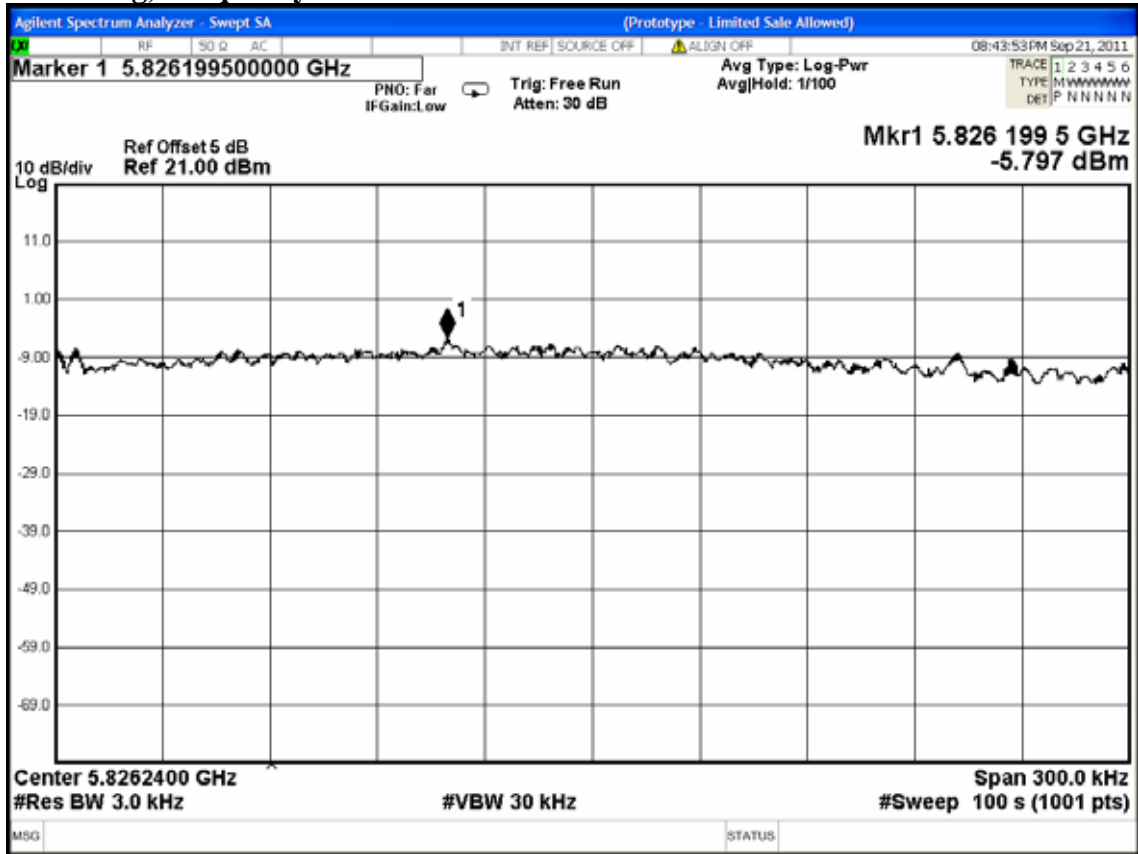
802.11a, Frequency: 5475MHz



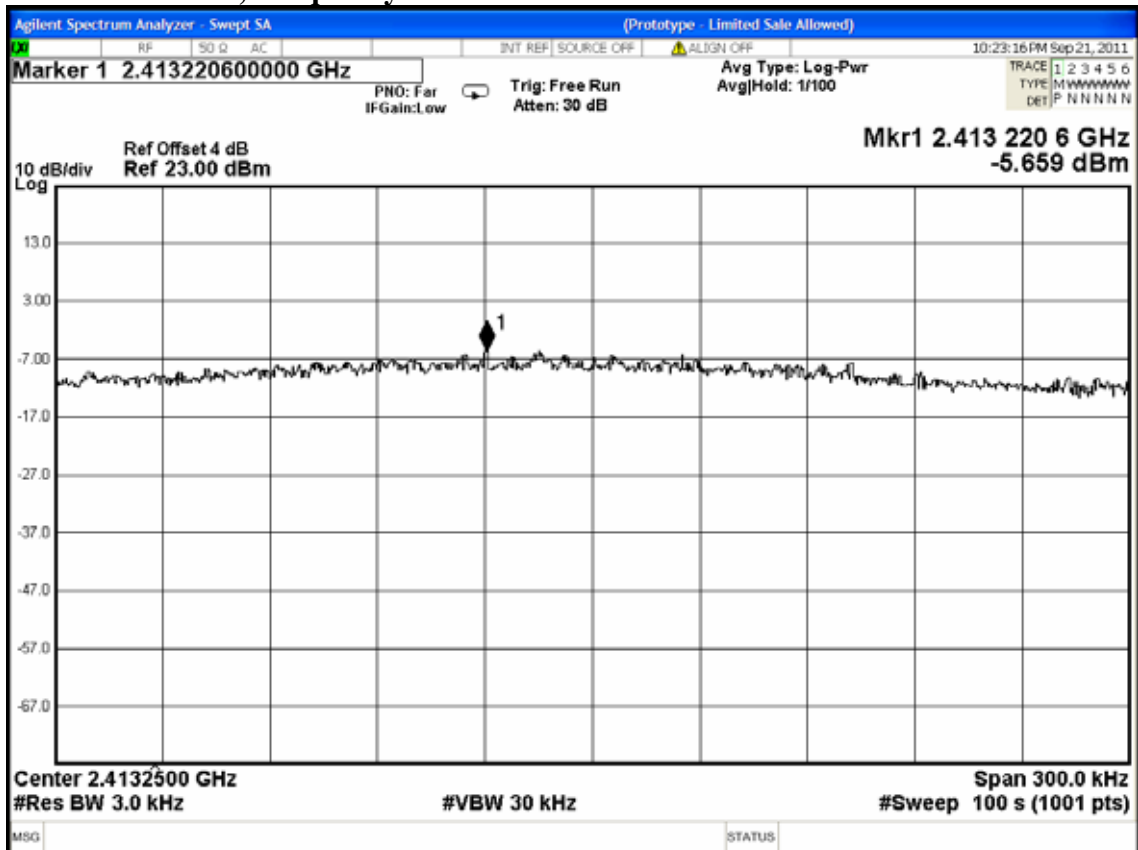
802.11g, Frequency: 5785MHz



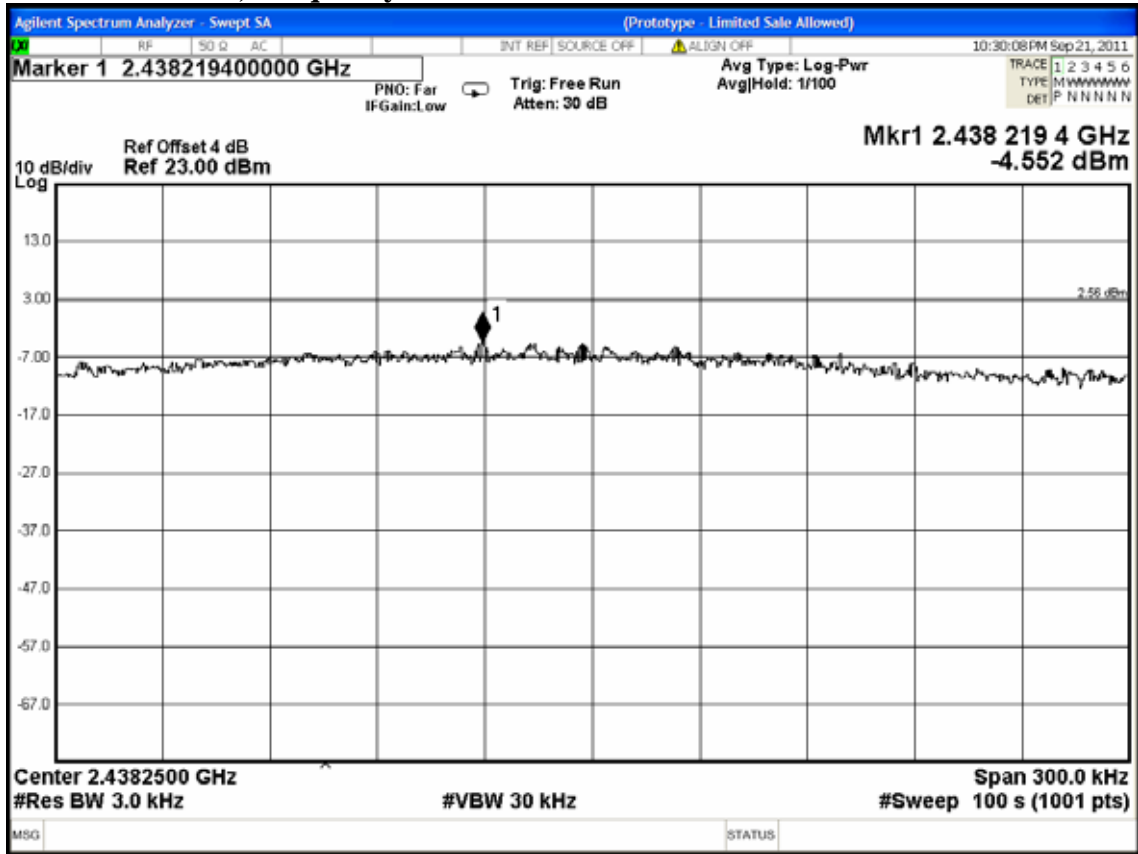
802.11g, Frequency: 5825MHz



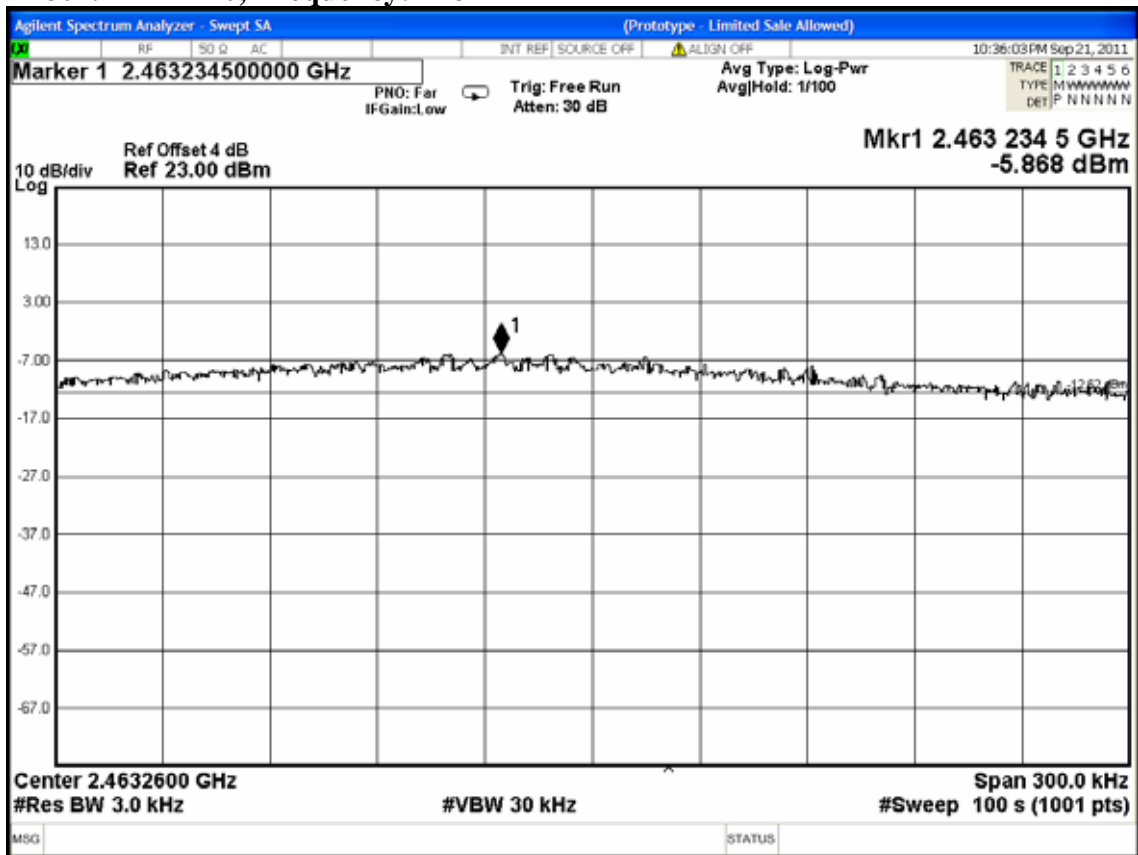
802.11n-HT20, Frequency: 2412MHz



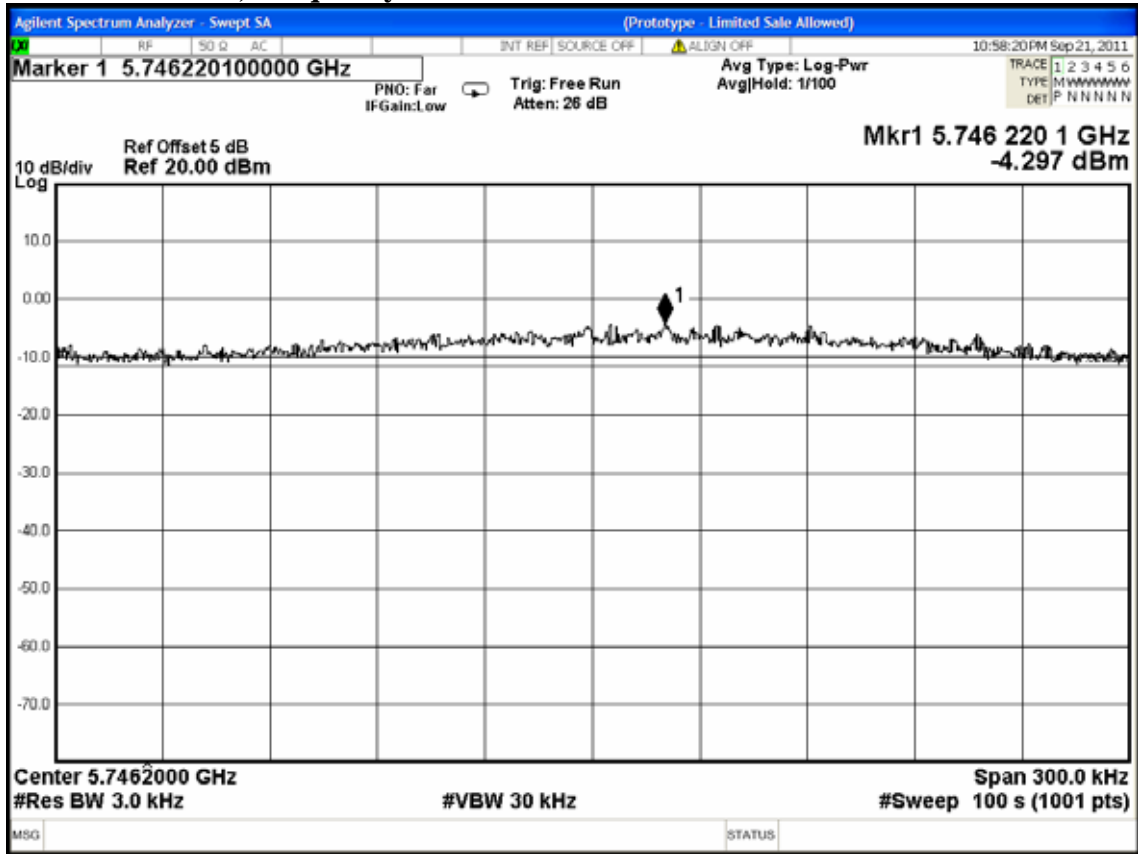
802.11n-HT20, Frequency: 2437MHz



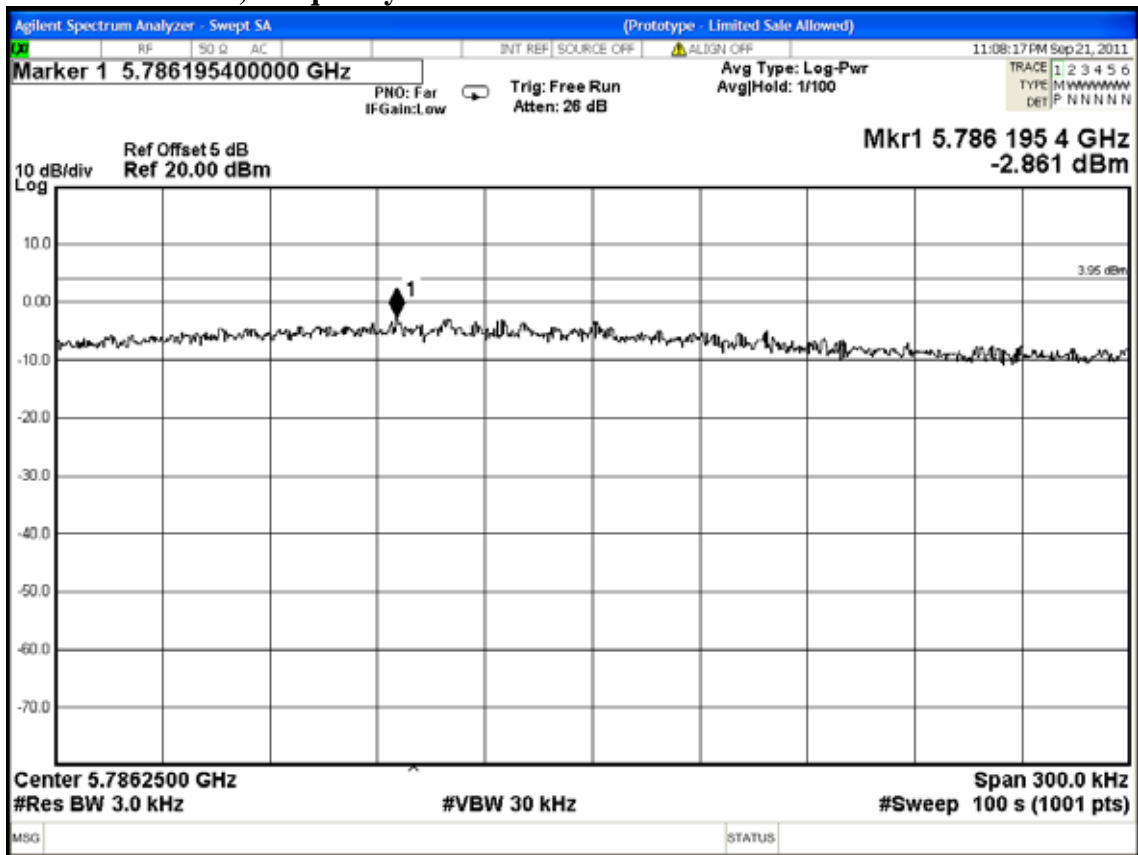
802.11n-HT20, Frequency: 2462MHz



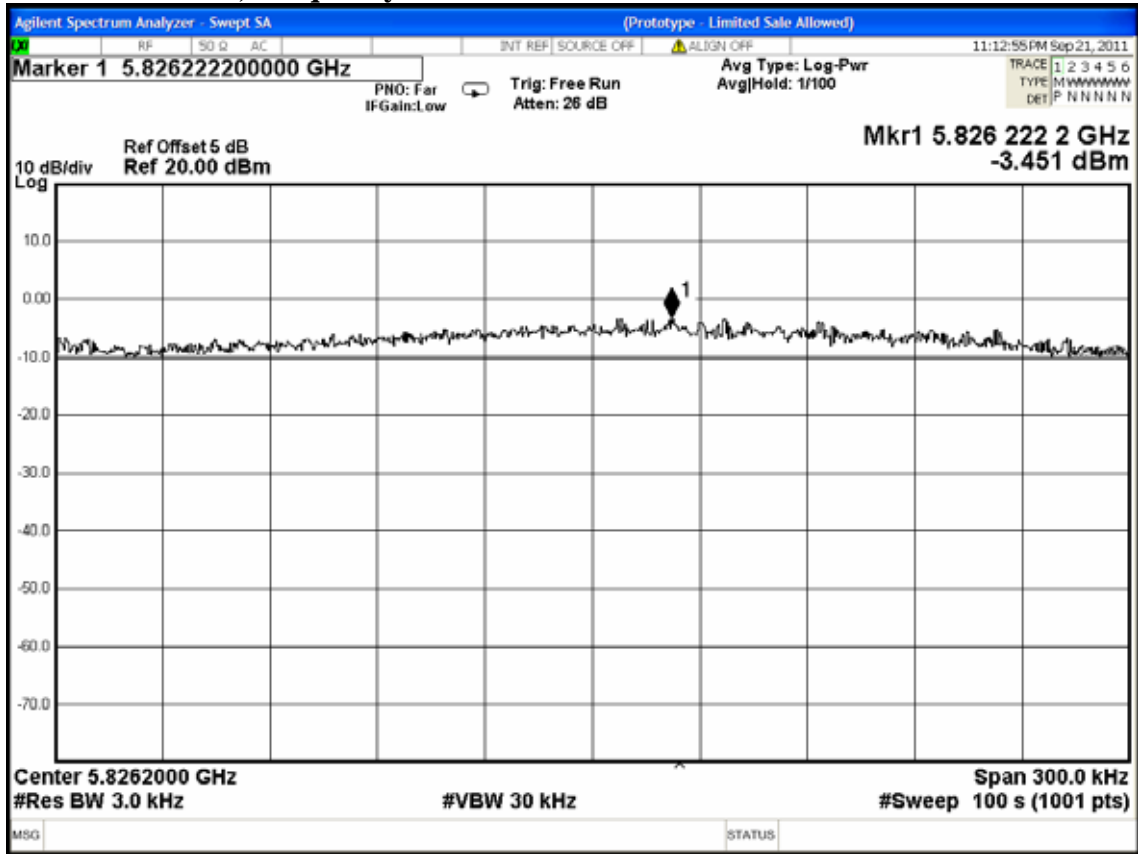
802.11n-HT20, Frequency: 5745MHz



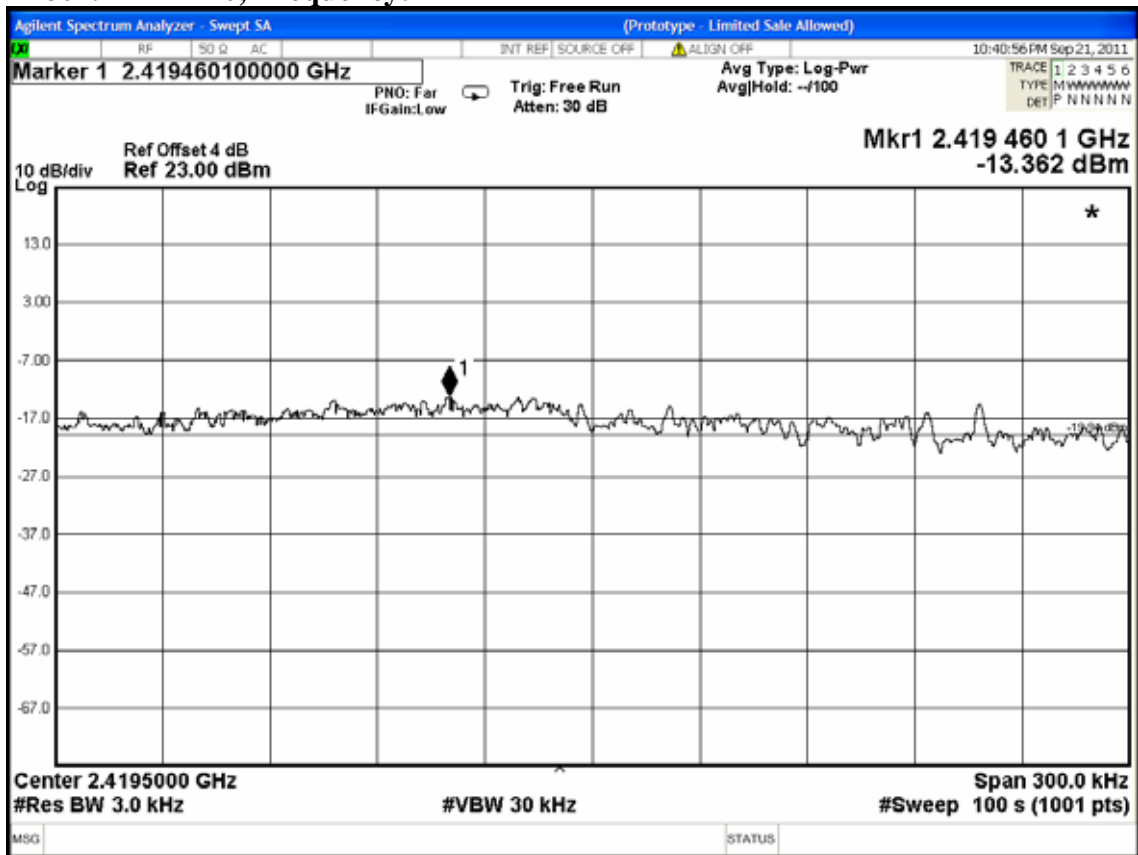
802.11n-HT20, Frequency: 5785MHz



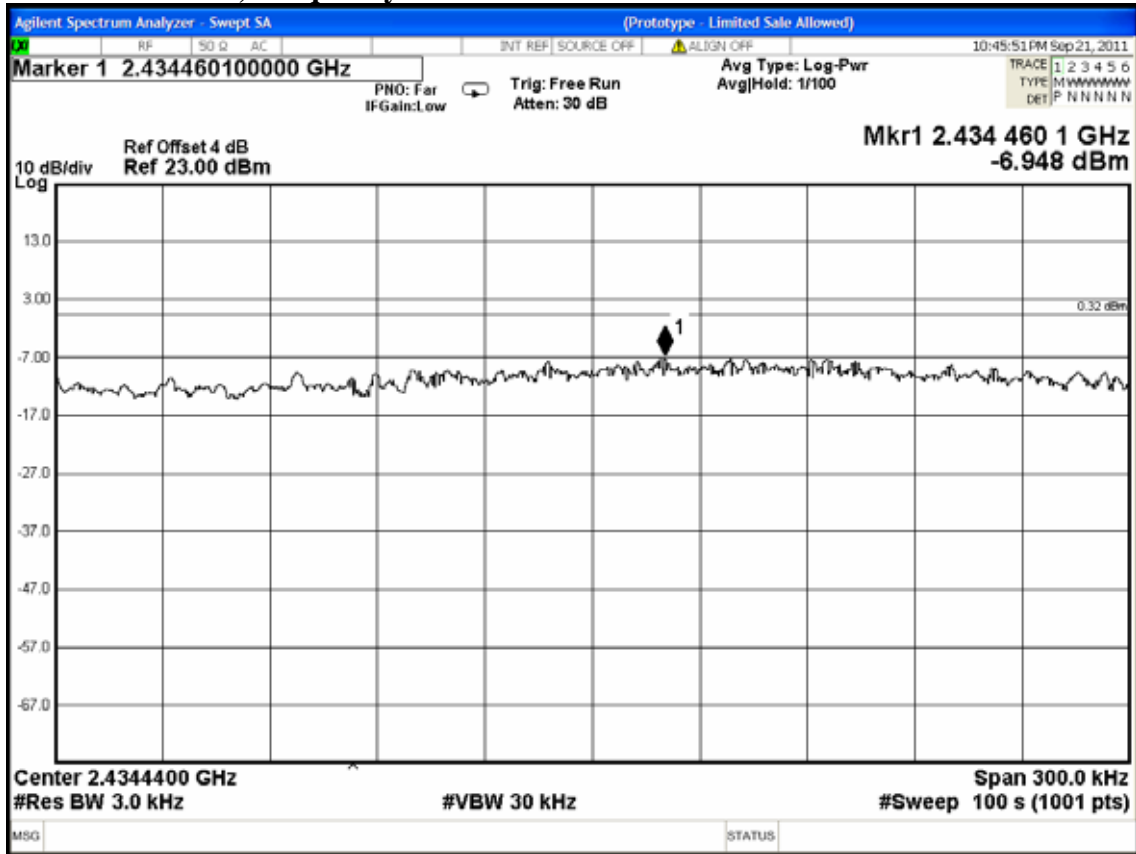
802.11n-HT20, Frequency: 5825MHz



802.11n-HT40, Frequency: 2422MHz



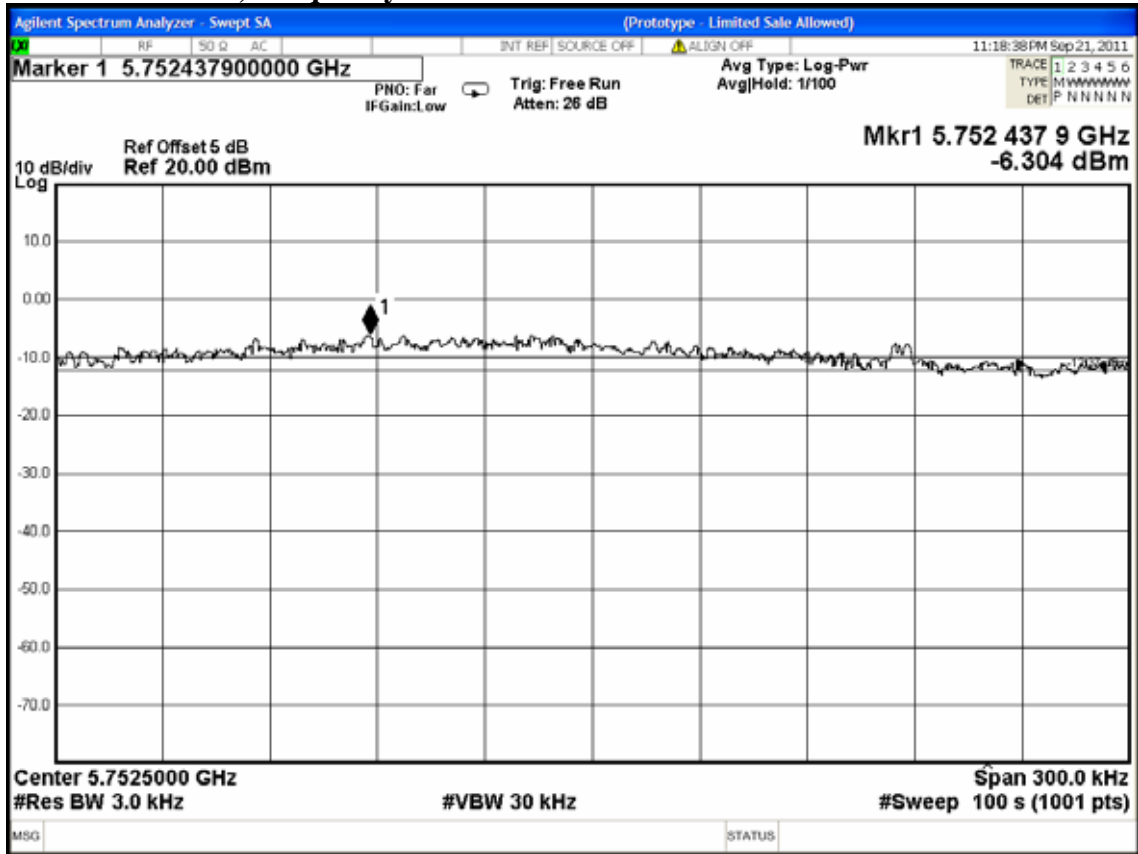
802.11n-HT40, Frequency: 2437MHz



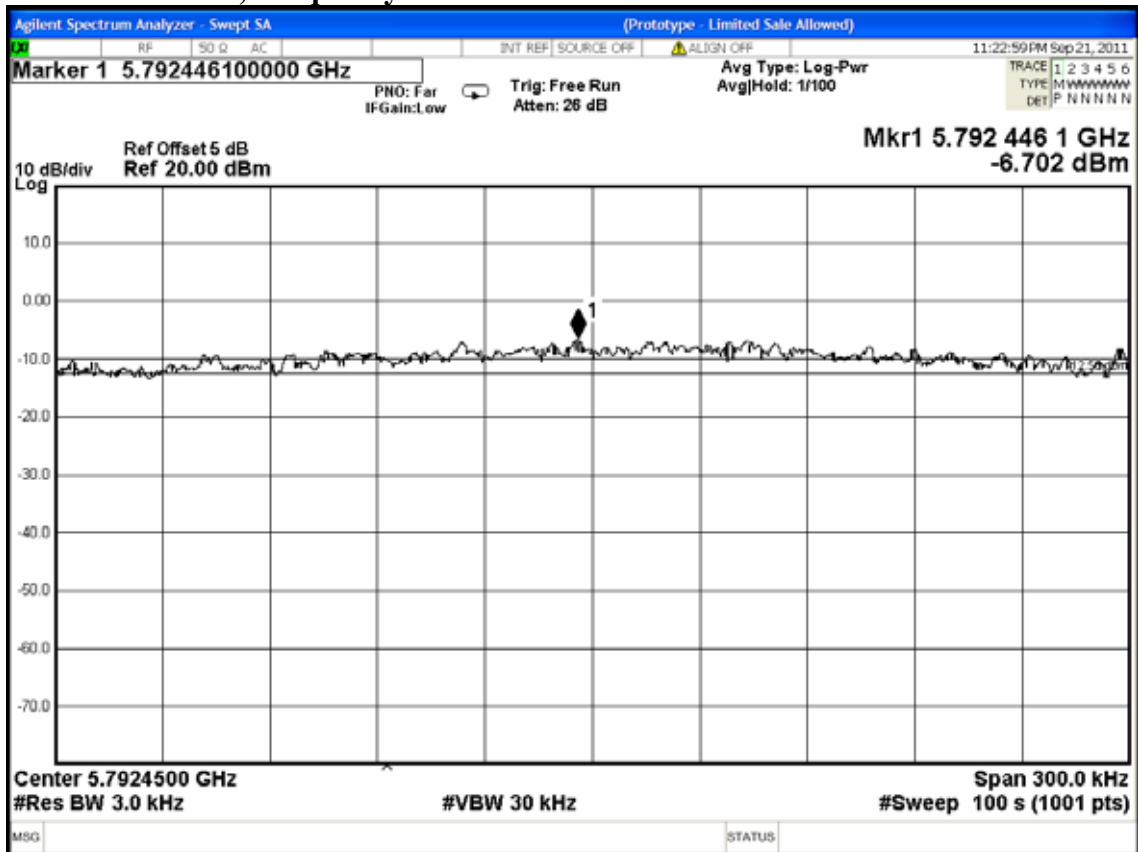
802.11n-HT40, Frequency: 2452MHz



802.11n-HT40, Frequency: 5755MHz



802.11n-HT40, Frequency: 5795MHz



9. DEVIATION TO TEST SPECIFICATIONS

【NONE】