



## 7.6 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

*Remark: 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.*

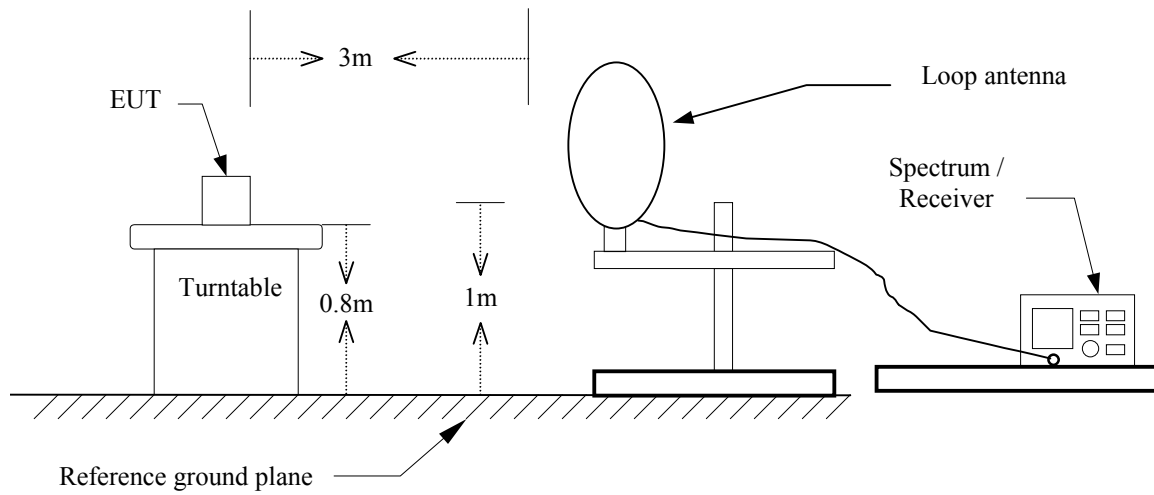
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength ( $\text{dB}\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

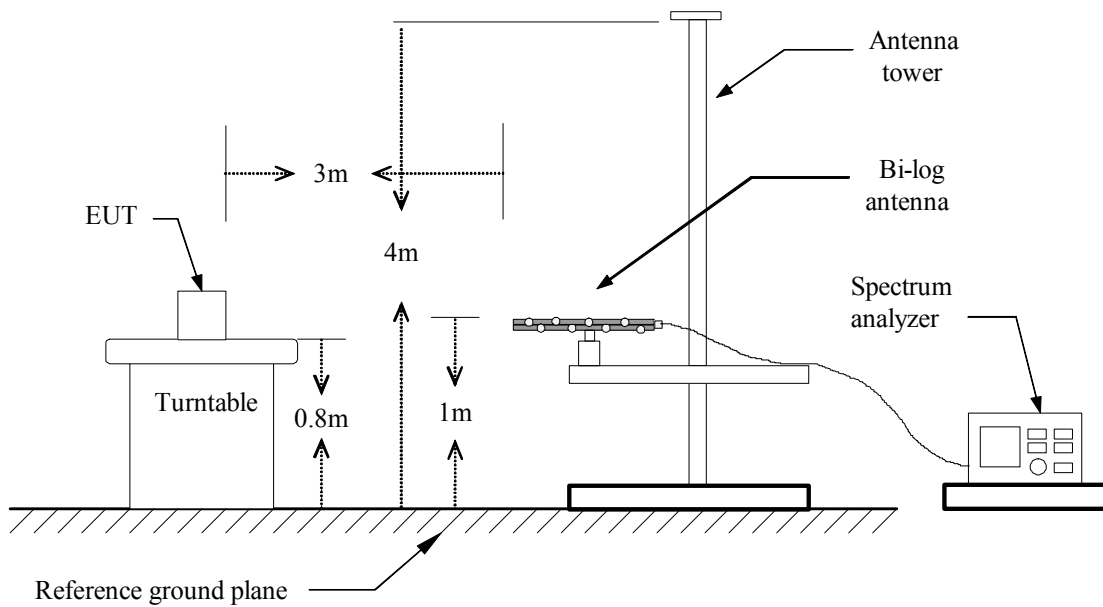


### Test Configuration

#### 9kHz ~ 30MHz

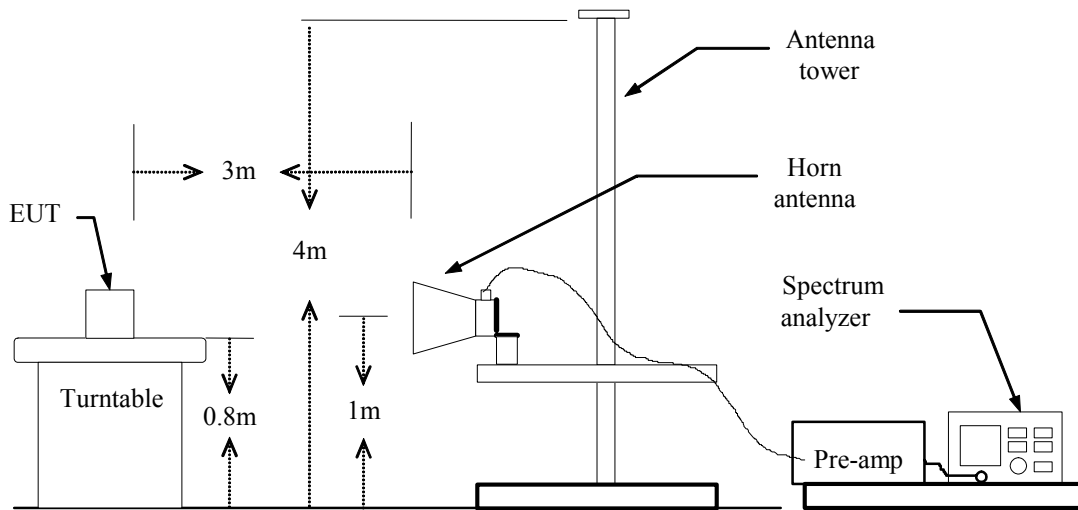


#### 30MHz ~ 1GHz





Above 1 GHz





## **TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.



## TEST RESULTS

### Below 1 GHz

#### For V-100-2X

**Operation Mode:** Normal Link

**Test Date:** July 27, 2010

**Temperature:** 23°C

**Tested by:** Wolf Huang

**Humidity:** 51% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.00	V	37.71	-1.86	35.85	40.00	-4.15	Peak
135.08	V	35.83	-9.82	26.02	43.50	-17.48	Peak
243.40	V	39.23	-11.03	28.20	46.00	-17.80	Peak
296.75	V	38.54	-9.27	29.26	46.00	-16.74	Peak
647.57	V	33.65	-2.95	30.70	46.00	-15.30	Peak
728.40	V	31.77	-2.13	29.64	46.00	-16.36	Peak
30.00	H	28.12	-1.86	26.26	40.00	-13.74	Peak
178.73	H	39.91	-11.56	28.35	43.50	-15.15	Peak
251.48	H	39.76	-10.80	28.96	46.00	-17.04	Peak
335.55	H	39.47	-8.39	31.07	46.00	-14.93	Peak
451.95	H	31.41	-5.83	25.57	46.00	-20.43	Peak
807.62	H	26.06	-1.26	24.80	46.00	-21.20	Peak

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



**For V-100-X**

**Operation Mode:** Normal Link

**Test Date:** September 10, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
31.62	V	30.64	-3.02	27.62	40.00	-12.38	Peak
299.98	V	41.47	-9.24	32.23	46.00	-13.77	Peak
479.43	V	36.06	-5.44	30.62	46.00	-15.38	Peak
500.45	V	36.14	-5.14	31.00	46.00	-15.00	Peak
584.52	V	34.30	-4.19	30.11	46.00	-15.89	Peak
959.58	V	29.58	0.44	30.03	46.00	-15.97	Peak
240.17	H	41.46	-11.09	30.37	46.00	-15.63	Peak
299.98	H	39.06	-9.24	29.82	46.00	-16.18	Peak
400.22	H	36.62	-7.08	29.54	46.00	-16.46	Peak
500.45	H	35.39	-5.14	30.25	46.00	-15.75	Peak
699.30	H	32.75	-2.54	30.20	46.00	-15.80	Peak
959.58	H	29.84	0.44	30.28	46.00	-15.72	Peak

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



**For V-200-X**

**Operation Mode:** Normal Link

**Test Date:** September 10, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
240.17	V	39.03	-11.09	27.94	46.00	-18.06	Peak
299.98	V	39.92	-9.24	30.68	46.00	-15.32	Peak
324.23	V	36.70	-8.66	28.04	46.00	-17.96	Peak
345.25	V	36.04	-8.16	27.88	46.00	-18.12	Peak
479.43	V	35.26	-5.44	29.81	46.00	-16.19	Peak
647.57	V	32.07	-2.95	29.12	46.00	-16.88	Peak
240.17	H	40.84	-11.09	29.76	46.00	-16.24	Peak
259.57	H	39.23	-10.26	28.97	46.00	-17.03	Peak
400.22	H	36.13	-7.08	29.04	46.00	-16.96	Peak
500.45	H	34.16	-5.14	29.02	46.00	-16.98	Peak
699.30	H	31.64	-2.54	29.10	46.00	-16.90	Peak
959.58	H	28.22	0.44	28.66	46.00	-17.34	Peak

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



**Above 1 GHz**

**For V-100-2X**

**Operation Mode:** Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low **Test Date:** July 27, 2010

**Temperature:** 25°C **Tested by:** Wolf Huang

**Humidity:** 50% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1906.67	V	53.67	---	-5.01	48.66	---	74.00	54.00	-5.34	Peak
2300.00	V	52.43	---	-3.26	49.17	---	74.00	54.00	-4.83	Peak
N/A										
2300.00	H	52.49	---	-3.26	49.24	---	74.00	54.00	-4.76	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





**Operation Mode:** Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Mid      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1576.67	V	52.27	---	-8.05	44.21	---	74.00	54.00	-9.79	Peak
2230.00	V	52.46	---	-3.46	49.00	---	74.00	54.00	-5.00	Peak
N/A										
1926.67	H	52.79	---	-4.83	47.97	---	74.00	54.00	-6.03	Peak
2453.33	H	52.25	---	-2.80	49.45	---	74.00	54.00	-4.55	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH High

Test Date: July 27, 2010

Temperature: 25°C

Tested by: Wolf Huang

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1630.00	V	53.16	---	-7.56	45.60	---	74.00	54.00	-8.40	Peak
1890.00	V	52.88	---	-5.16	47.71	---	74.00	54.00	-6.29	Peak
2796.67	V	51.36	---	-1.79	49.56	---	74.00	54.00	-4.44	Peak
N/A										
2090.00	H	52.72	---	-3.88	48.84	---	74.00	54.00	-5.16	Peak
2313.33	H	51.60	---	-3.22	48.38	---	74.00	54.00	-5.62	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / CH Low      **Test Date:** July 27, 2010

**Temperature:** 25°C      **Tested by:** Wolf Huang

**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1873.33	V	52.61	---	-5.32	47.29	---	74.00	54.00	-6.71	Peak
2046.67	V	52.44	---	-4.01	48.43	---	74.00	54.00	-5.57	Peak
2786.67	V	51.11	---	-1.82	49.29	---	74.00	54.00	-4.71	Peak
N/A										
1770.00	H	53.26	---	-6.27	46.99	---	74.00	54.00	-7.01	Peak
2440.00	H	51.77	---	-2.84	48.94	---	74.00	54.00	-5.06	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / CH Mid      **Test Date:** July 27, 2010

**Temperature:** 25°C      **Tested by:** Wolf Huang

**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2036.67	V	51.88	---	-4.04	47.84	---	74.00	54.00	-6.16	Peak
N/A										
2213.33	H	53.14	---	-3.51	49.63	---	74.00	54.00	-4.37	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / CH High

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1660.00	V	52.29	---	-7.28	45.01	---	74.00	54.00	-8.99	Peak
2193.33	V	51.79	---	-3.57	48.22	---	74.00	54.00	-5.78	Peak
2440.00	V	52.39	---	-2.84	49.55	---	74.00	54.00	-4.45	Peak
N/A										
1206.67	H	53.41	---	-9.25	44.17	---	74.00	54.00	-9.83	Peak
1936.67	H	51.84	---	-4.73	47.10	---	74.00	54.00	-6.90	Peak
2346.67	H	51.86	---	-3.12	48.74	---	74.00	54.00	-5.26	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / CH Low

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2056.67	V	52.22	---	-3.98	48.24	---	74.00	54.00	-5.76	Peak
2270.00	V	52.13	---	-3.35	48.79	---	74.00	54.00	-5.21	Peak
N/A										
1653.33	H	52.64	---	-7.35	45.29	---	74.00	54.00	-8.71	Peak
1880.00	H	52.19	---	-5.26	46.93	---	74.00	54.00	-7.07	Peak
2316.67	H	51.67	---	-3.21	48.46	---	74.00	54.00	-5.54	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / CH High

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2233.33	V	52.68	---	-3.45	49.23	---	74.00	54.00	-4.77	Peak
2780.00	V	52.21	---	-1.84	50.37	---	74.00	54.00	-3.63	Peak
N/A										
2313.33	H	51.90	---	-3.22	48.68	---	74.00	54.00	-5.32	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH Low      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1400.00	V	54.15	---	-8.93	45.22	---	74.00	54.00	-8.78	Peak
2183.33	V	52.83	---	-3.60	49.23	---	74.00	54.00	-4.77	Peak
2540.00	V	51.83	---	-2.54	49.29	---	74.00	54.00	-4.71	Peak
N/A										
2246.67	H	51.76	---	-3.41	48.35	---	74.00	54.00	-5.65	Peak
2536.67	H	52.03	---	-2.55	49.48	---	74.00	54.00	-4.52	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





**Operation Mode:** Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH Mid      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1210.00	V	53.91	---	-9.24	44.67	---	74.00	54.00	-9.33	Peak
2006.67	V	52.54	---	-4.13	48.41	---	74.00	54.00	-5.59	Peak
2263.33	V	52.03	---	-3.37	48.67	---	74.00	54.00	-5.33	Peak
N/A										
1750.00	H	53.44	---	-6.46	46.99	---	74.00	54.00	-7.01	Peak
2436.67	H	52.78	---	-2.85	49.93	---	74.00	54.00	-4.07	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH High

Test Date: July 27, 2010

Temperature: 25°C

Tested by: Wolf Huang

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1876.67	V	53.37	---	-5.29	48.08	---	74.00	54.00	-5.92	Peak
2073.33	V	52.51	---	-3.93	48.57	---	74.00	54.00	-5.43	Peak
N/A										
1923.33	H	52.27	---	-4.86	47.41	---	74.00	54.00	-6.59	Peak
2176.67	H	52.13	---	-3.62	48.51	---	74.00	54.00	-5.49	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / CH Low      **Test Date:** July 27, 2010

**Temperature:** 25°C      **Tested by:** Wolf Huang

**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1256.67	V	54.81	---	-9.16	45.65	---	74.00	54.00	-8.35	Peak
1653.33	V	53.29	---	-7.35	45.95	---	74.00	54.00	-8.05	Peak
2153.33	V	52.75	---	-3.69	49.06	---	74.00	54.00	-4.94	Peak
2636.67	V	51.16	---	-2.26	48.90	---	74.00	54.00	-5.10	Peak
N/A										
1313.33	H	53.19	---	-9.07	44.12	---	74.00	54.00	-9.88	Peak
2180.00	H	52.11	---	-3.61	48.50	---	74.00	54.00	-5.50	Peak
2753.33	H	51.08	---	-1.92	49.16	---	74.00	54.00	-4.84	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / CH Mid      **Test Date:** July 27, 2010

**Temperature:** 25°C      **Tested by:** Wolf Huang

**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1413.33	V	52.57	---	-8.90	43.67	---	74.00	54.00	-10.33	Peak
1980.00	V	52.43	---	-4.33	48.10	---	74.00	54.00	-5.90	Peak
2606.67	V	51.36	---	-2.35	49.01	---	74.00	54.00	-4.99	Peak
N/A										
1126.67	H	54.43	---	-9.38	45.05	---	74.00	54.00	-8.95	Peak
2296.67	H	51.90	---	-3.27	48.64	---	74.00	54.00	-5.36	Peak
2393.33	H	52.32	---	-2.98	49.34	---	74.00	54.00	-4.66	Peak
2790.00	H	51.39	---	-1.81	49.58	---	74.00	54.00	-4.42	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / CH High

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1303.33	V	52.98	---	-9.09	43.89	---	74.00	54.00	-10.11	Peak
1770.00	V	52.94	---	-6.27	46.67	---	74.00	54.00	-7.33	Peak
2536.67	V	51.91	---	-2.55	49.36	---	74.00	54.00	-4.64	Peak
N/A										
1226.67	H	53.74	---	-9.21	44.53	---	74.00	54.00	-9.47	Peak
1510.00	H	54.35	---	-8.67	45.68	---	74.00	54.00	-8.32	Peak
2330.00	H	51.79	---	-3.17	48.62	---	74.00	54.00	-5.38	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / CH Low

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2023.33	V	52.41	---	-4.08	48.33	---	74.00	54.00	-5.67	Peak
2553.33	V	51.54	---	-2.50	49.04	---	74.00	54.00	-4.96	Peak
N/A										
1740.00	H	52.24	---	-6.55	45.69	---	74.00	54.00	-8.31	Peak
2053.33	H	52.48	---	-3.99	48.49	---	74.00	54.00	-5.51	Peak
2410.00	H	51.59	---	-2.93	48.66	---	74.00	54.00	-5.34	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / CH High

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2023.33	V	51.79	---	-4.08	47.71	---	74.00	54.00	-6.29	Peak
2363.33	V	51.94	---	-3.07	48.88	---	74.00	54.00	-5.12	Peak
N/A										
1836.67	H	52.85	---	-5.66	47.19	---	74.00	54.00	-6.81	Peak
2010.00	H	52.01	---	-4.12	47.89	---	74.00	54.00	-6.11	Peak
2636.67	H	50.95	---	-2.26	48.69	---	74.00	54.00	-5.31	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH Low      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1430.00	V	53.41	---	-8.88	44.53	---	74.00	54.00	-9.47	Peak
2070.00	V	52.43	---	-3.94	48.49	---	74.00	54.00	-5.51	Peak
2650.00	V	51.71	---	-2.22	49.49	---	74.00	54.00	-4.51	Peak
N/A										
1910.00	H	53.08	---	-4.98	48.10	---	74.00	54.00	-5.90	Peak
2296.67	H	52.47	---	-3.27	49.21	---	74.00	54.00	-4.79	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





**Operation Mode:** Tx / IEEE 802.11a mode / 5500 ~ 5700MHz /CH Mid **Test Date:** July 27, 2010  
**Temperature:** 25°C **Tested by:** Wolf Huang  
**Humidity:** 50% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2036.67	V	52.49	---	-4.04	48.45	---	74.00	54.00	-5.55	Peak
2743.33	V	51.12	---	-1.95	49.17	---	74.00	54.00	-4.83	Peak
N/A										
1786.67	H	52.70	---	-6.12	46.58	---	74.00	54.00	-7.42	Peak
2203.33	H	52.27	---	-3.54	48.72	---	74.00	54.00	-5.28	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH High      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1806.67	V	52.98	---	-5.93	47.04	---	74.00	54.00	-6.96	Peak
2690.00	V	51.11	---	-2.11	49.01	---	74.00	54.00	-4.99	Peak
11400.00	V	45.58	32.12	16.44	62.02	48.56	74.00	54.00	-5.44	AVG
N/A										
1826.67	H	52.34	---	-5.75	46.59	---	74.00	54.00	-7.41	Peak
2350.00	H	52.13	---	-3.11	49.02	---	74.00	54.00	-4.98	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / CH Low      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1463.33	V	53.43	---	-8.82	44.61	---	74.00	54.00	-9.39	Peak
1893.33	V	52.63	---	-5.13	47.50	---	74.00	54.00	-6.50	Peak
2260.00	V	51.84	---	-3.38	48.47	---	74.00	54.00	-5.53	Peak
11000.00	V	42.40	30.37	15.72	58.12	46.09	74.00	54.00	-7.91	AVG
N/A										
2213.33	H	52.29	---	-3.51	48.78	---	74.00	54.00	-5.22	Peak
2686.67	H	51.31	---	-2.11	49.20	---	74.00	54.00	-4.80	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / CH Mid      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1723.33	V	53.33	---	-6.70	46.63	---	74.00	54.00	-7.37	Peak
2050.00	V	52.08	---	-4.00	48.08	---	74.00	54.00	-5.92	Peak
N/A										
2303.33	H	51.33	---	-3.25	48.08	---	74.00	54.00	-5.92	Peak
2540.00	H	51.43	---	-2.54	48.89	---	74.00	54.00	-5.11	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / CH High      **Test Date:** July 27, 2010  
**Temperature:** 25°C      **Tested by:** Wolf Huang  
**Humidity:** 50% RH      **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1856.67	V	52.49	---	-5.47	47.02	---	74.00	54.00	-6.98	Peak
2496.67	V	51.42	---	-2.67	48.75	---	74.00	54.00	-5.25	Peak
11400.00	V	42.02	30.69	16.44	58.46	47.13	74.00	54.00	-6.87	AVG
1360.00	H	53.53	---	-8.99	44.54	---	74.00	54.00	-9.46	Peak
2053.33	H	52.27	---	-3.99	48.28	---	74.00	54.00	-5.72	Peak
2243.33	H	51.96	---	-3.42	48.54	---	74.00	54.00	-5.46	Peak
11450.00	H	41.43	29.16	16.53	57.96	45.69	74.00	54.00	-8.31	AVG
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / CH Low

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1873.33	V	52.37	---	-5.32	47.05	---	74.00	54.00	-6.95	Peak
2606.67	V	51.42	---	-2.35	49.07	---	74.00	54.00	-4.93	Peak
N/A										
1856.67	H	52.79	---	-5.47	47.32	---	74.00	54.00	-6.68	Peak
2516.67	H	51.90	---	-2.61	49.29	---	74.00	54.00	-4.71	Peak
2656.67	H	51.66	---	-2.20	49.45	---	74.00	54.00	-4.55	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / CH Mid

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2023.33	V	51.67	---	-4.08	47.59	---	74.00	54.00	-6.41	Peak
2523.33	V	51.24	---	-2.59	48.65	---	74.00	54.00	-5.35	Peak
N/A										
1860.00	H	52.20	---	-5.44	46.76	---	74.00	54.00	-7.24	Peak
2620.00	H	51.46	---	-2.31	49.15	---	74.00	54.00	-4.85	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / CH High

**Test Date:** July 27, 2010

**Temperature:** 25°C

**Tested by:** Wolf Huang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1993.33	V	52.84	---	-4.21	48.63	---	74.00	54.00	-5.37	Peak
2250.00	V	51.94	---	-3.41	48.54	---	74.00	54.00	-5.46	Peak
11333.33	V	44.95	31.43	16.32	61.27	47.75	74.00	54.00	-6.25	AVG
N/A										
2040.00	H	51.95	---	-4.03	47.91	---	74.00	54.00	-6.09	Peak
2386.67	H	51.92	---	-3.00	48.92	---	74.00	54.00	-5.08	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





**For V-100-X**

**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / CH Mid **Test Date:** September 13, 2010

**Temperature:** 25°C **Tested by:** Mark Yang

**Humidity:** 50% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1200.00	V	56.26	---	-9.26	47.00	---	74.00	54.00	-7.00	Peak
1886.67	V	51.47	---	-5.19	46.27	---	74.00	54.00	-7.73	Peak
N/A										
1146.67	H	53.71	---	-9.35	44.37	---	74.00	54.00	-9.63	Peak
1580.00	H	52.99	---	-8.02	44.97	---	74.00	54.00	-9.03	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / CH Mid

**Test Date:** September 13, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1396.67	V	53.50	---	-8.93	44.57	---	74.00	54.00	-9.43	Peak
1886.67	V	52.51	---	-5.19	47.31	---	74.00	54.00	-6.69	Peak
N/A										
1366.67	H	53.25	---	-8.98	44.27	---	74.00	54.00	-9.73	Peak
2203.33	H	51.81	---	-3.54	48.26	---	74.00	54.00	-5.74	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**For V-200-X**

**Operation Mode:** Tx / draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / CH Mid **Test Date:** September 13, 2010

**Temperature:** 25°C **Tested by:** Mark Yang

**Humidity:** 50% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1200.00	V	57.18	---	-9.26	47.92	---	74.00	54.00	-6.08	Peak
1973.33	V	51.69	---	-4.40	47.30	---	74.00	54.00	-6.70	Peak
N/A										
1516.67	H	53.37	---	-8.61	44.76	---	74.00	54.00	-9.24	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** Tx / draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / CH Mid

**Test Date:** September 13, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1920.00	V	51.84	---	-4.89	46.95	---	74.00	54.00	-7.05	Peak
2803.33	V	51.55	---	-1.77	49.78	---	74.00	54.00	-4.22	Peak
N/A										
1866.67	H	52.74	---	-5.38	47.36	---	74.00	54.00	-6.64	Peak
2353.33	H	50.94	---	-3.10	47.84	---	74.00	54.00	-6.16	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



## 7.7 CONDUCTED UNDESIRABLE EMISSION

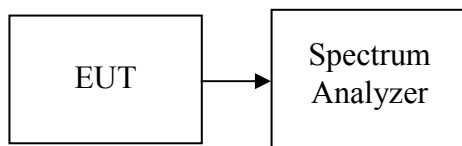
### LIMIT

According to 15.407(b),

- (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 EIRP 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 EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

The provisions of §15.205 apply to intentional radiators operating under this section.

### Test Configuration



### TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

### TEST RESULTS

*No non-compliance noted*



**Test Plot**

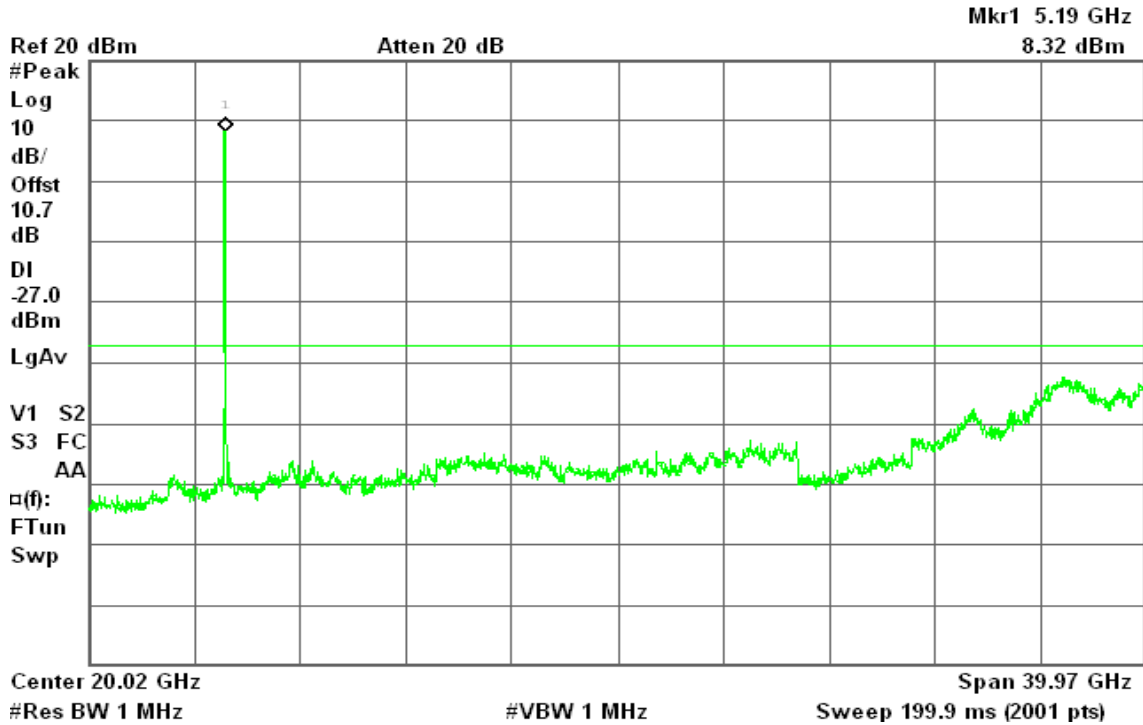
**IEEE 802.11a mode / 5180 ~ 5240MHz**

CH Low

30MHz ~ 40GHz

Agilent 17:07:18 Jul 27, 2010

R L

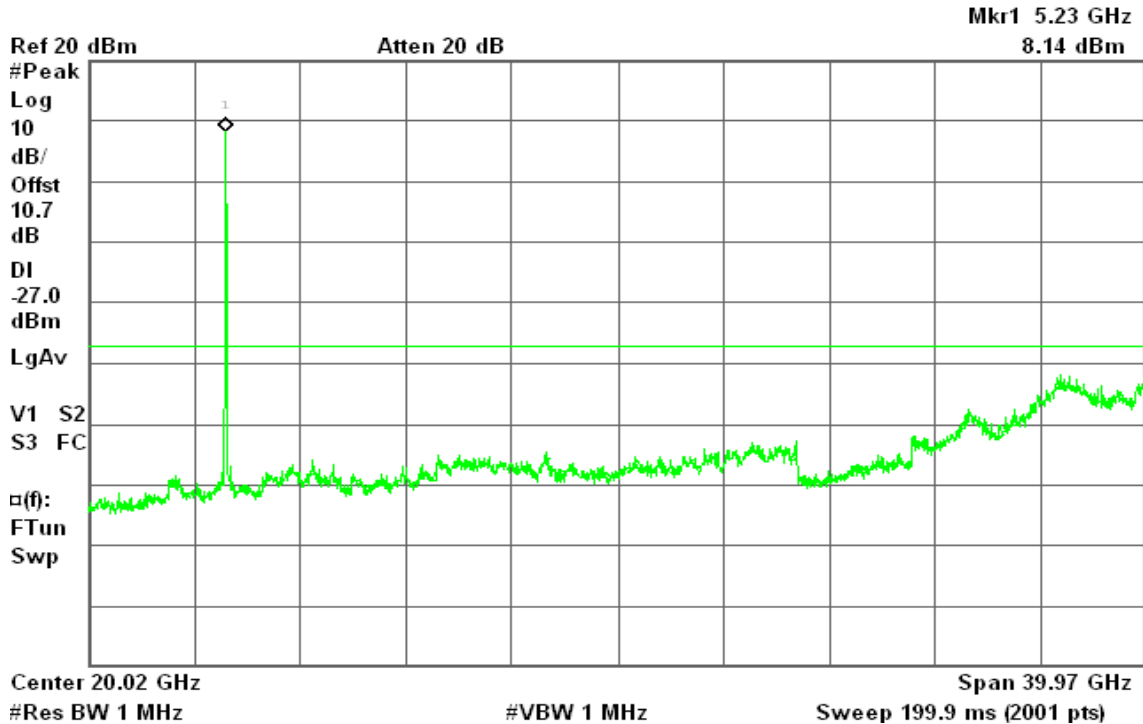


CH Mid

30MHz ~ 40GHz

Agilent 17:12:49 Jul 27, 2010

R T



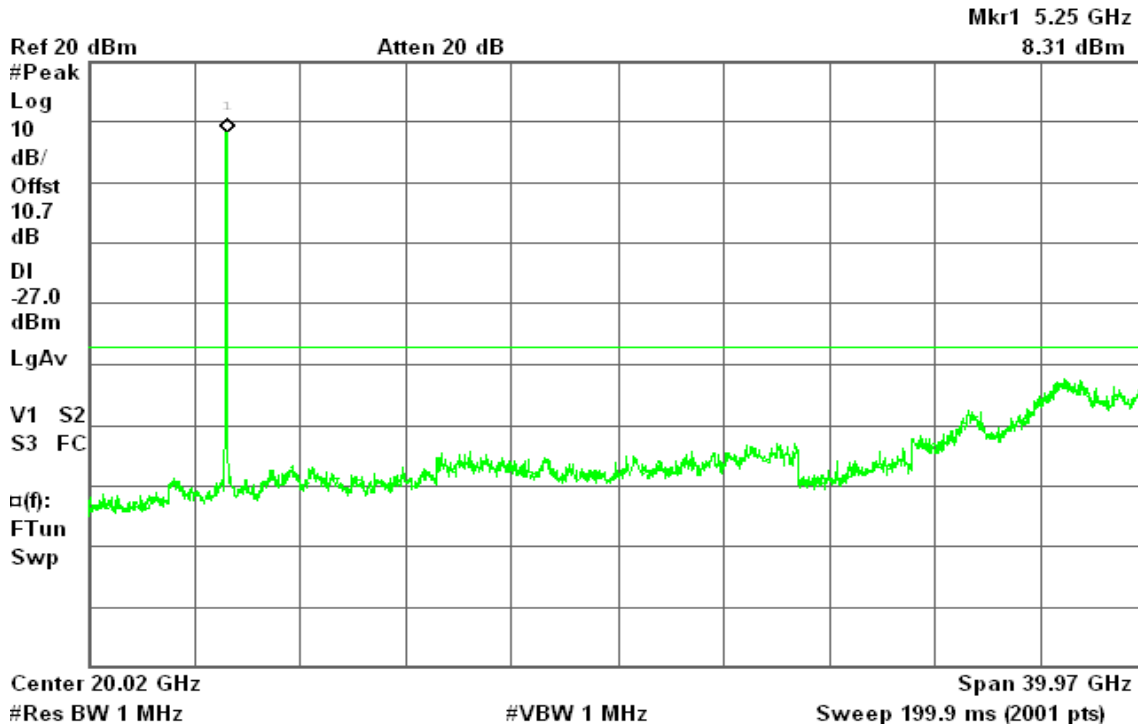


### CH High

30MHz ~ 40GHz

Agilent 17:17:58 Jul 27, 2010

R T



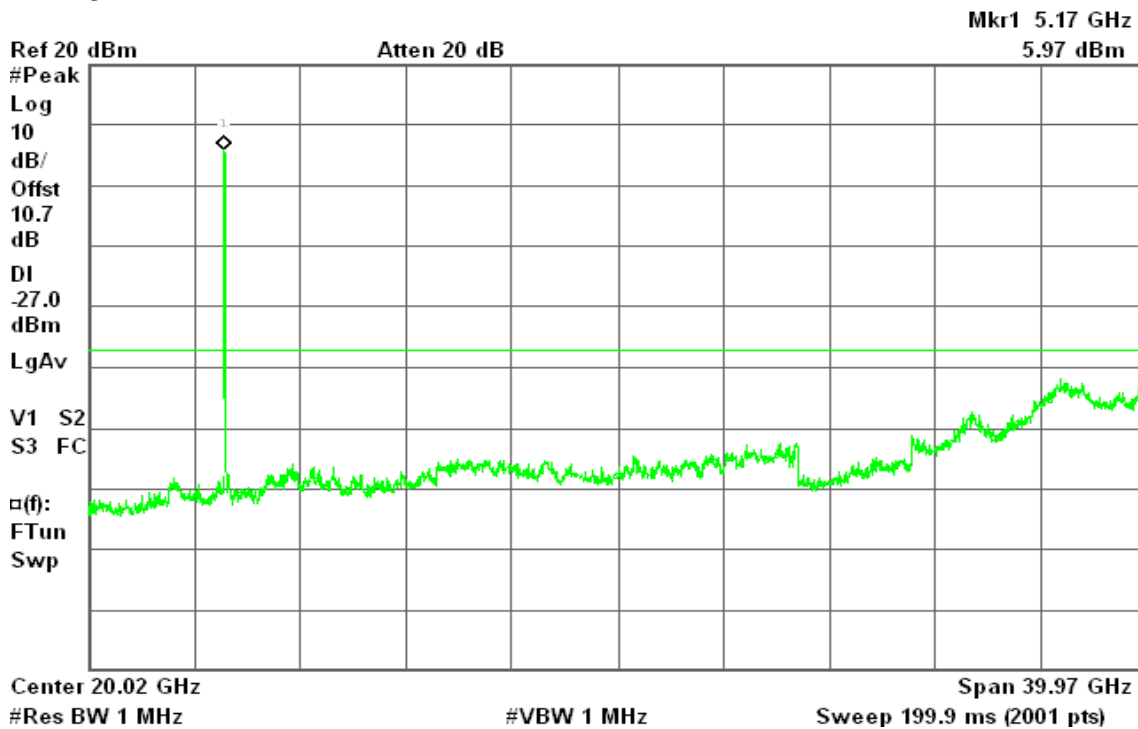
### draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

### CH Low

30MHz ~ 40GHz

Agilent 14:42:34 Jul 28, 2010

R T



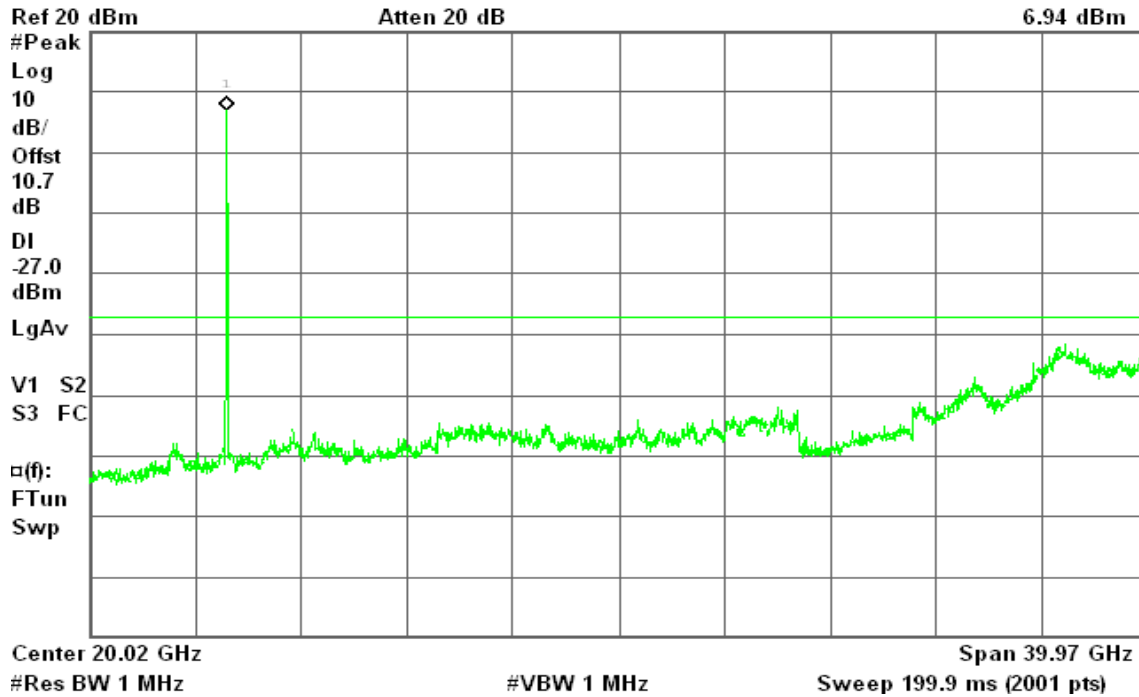


### CH Mid 30MHz ~ 40GHz

Agilent 14:45:16 Jul 28, 2010

R T

Mkr1 5.23 GHz  
6.94 dBm

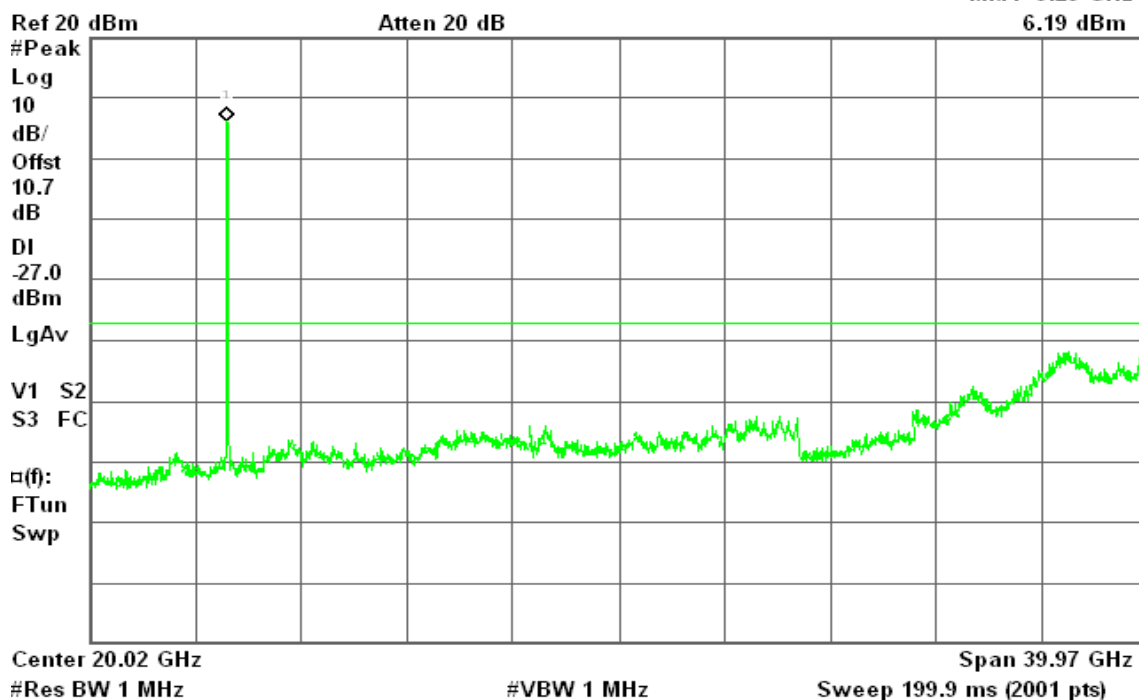


### CH High 30MHz ~ 40GHz

Agilent 14:48:06 Jul 28, 2010

R T

Mkr1 5.23 GHz  
6.19 dBm







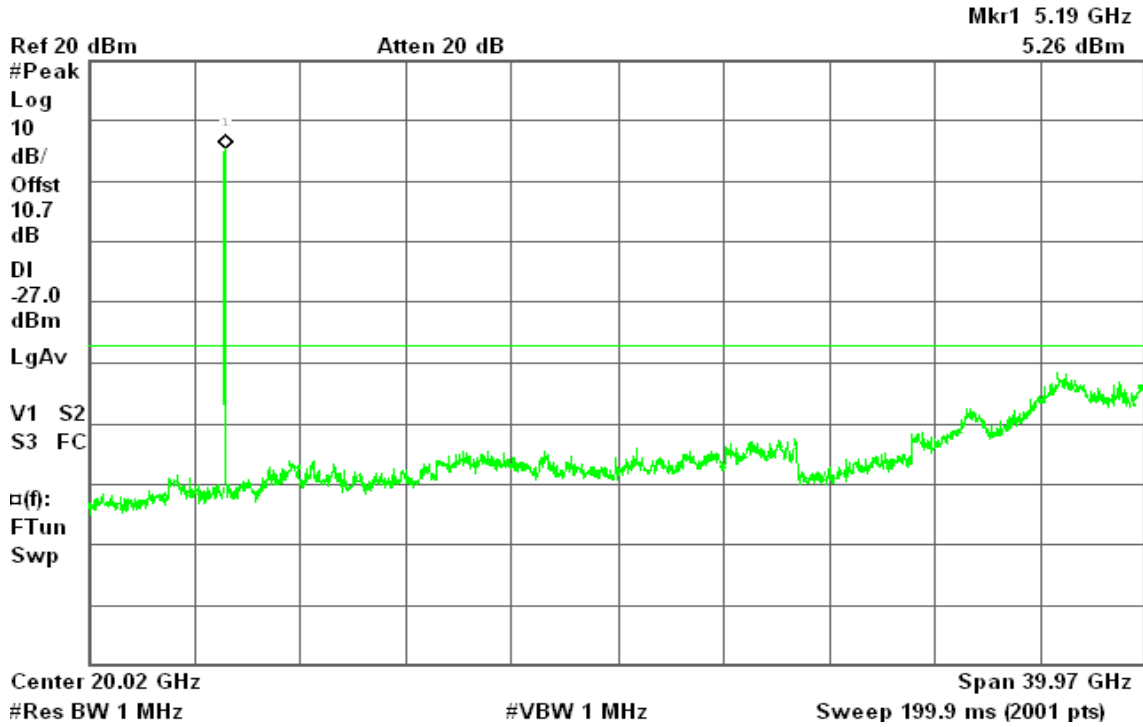
**draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1**

**CH Low**

**30MHz ~ 40GHz**

Agilent 14:51:30 Jul 28, 2010

R L

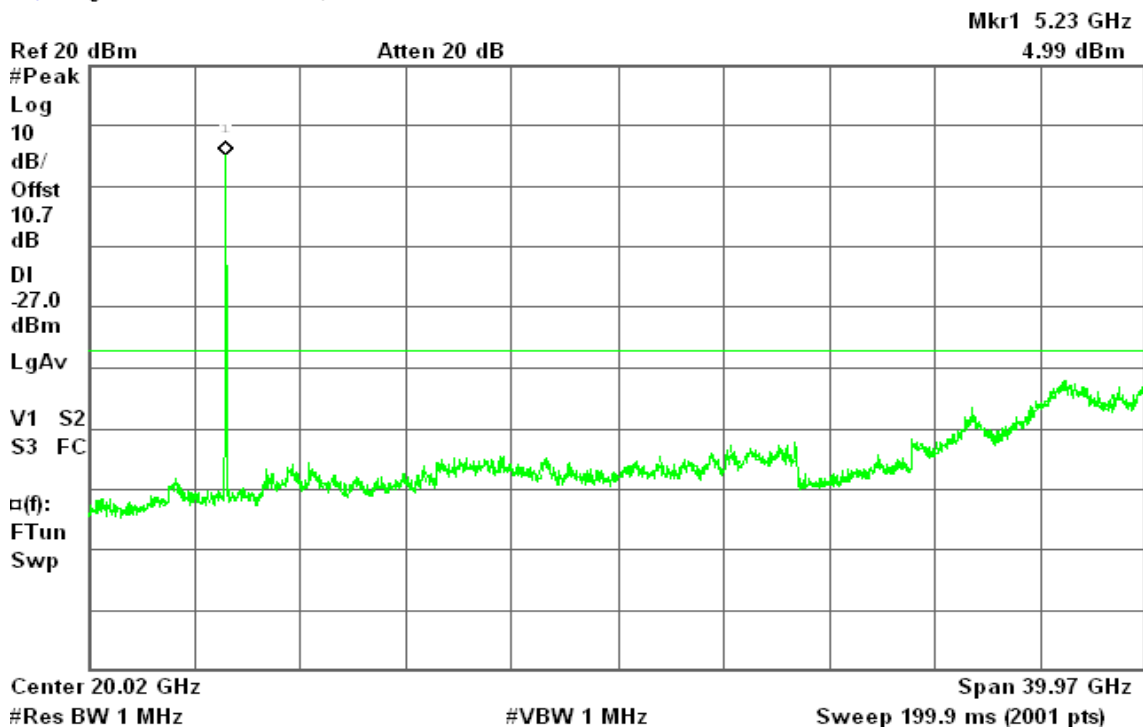


**CH Mid**

**30MHz ~ 40GHz**

Agilent 14:53:33 Jul 28, 2010

R T

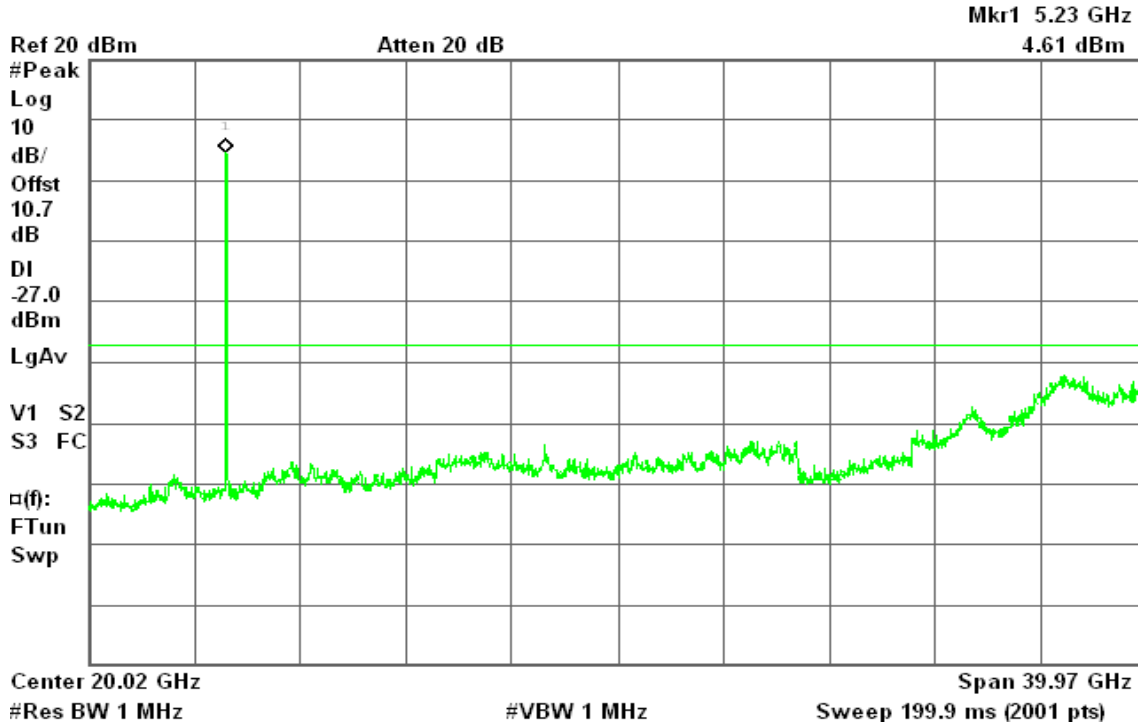




**CH High**  
**30MHz ~ 40GHz**

Agilent 14:37:40 Jul 28, 2010

R T

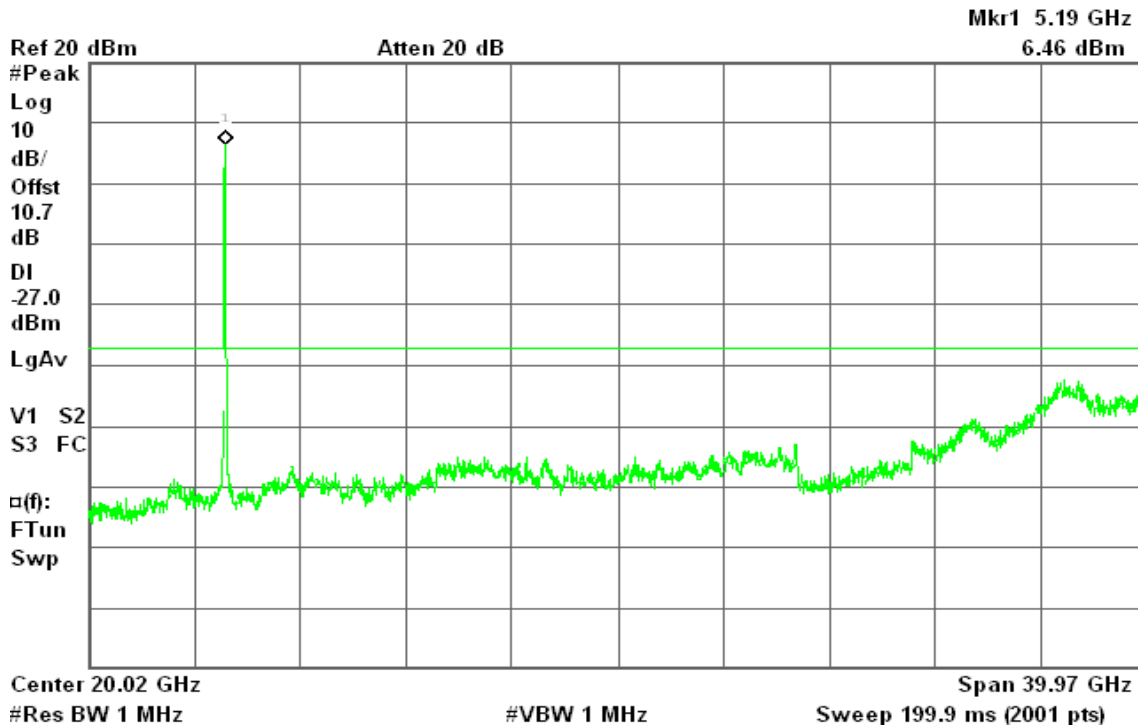


**draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0**

**CH Low**  
**30MHz ~ 40GHz**

Agilent 16:27:57 Jul 28, 2010

R T

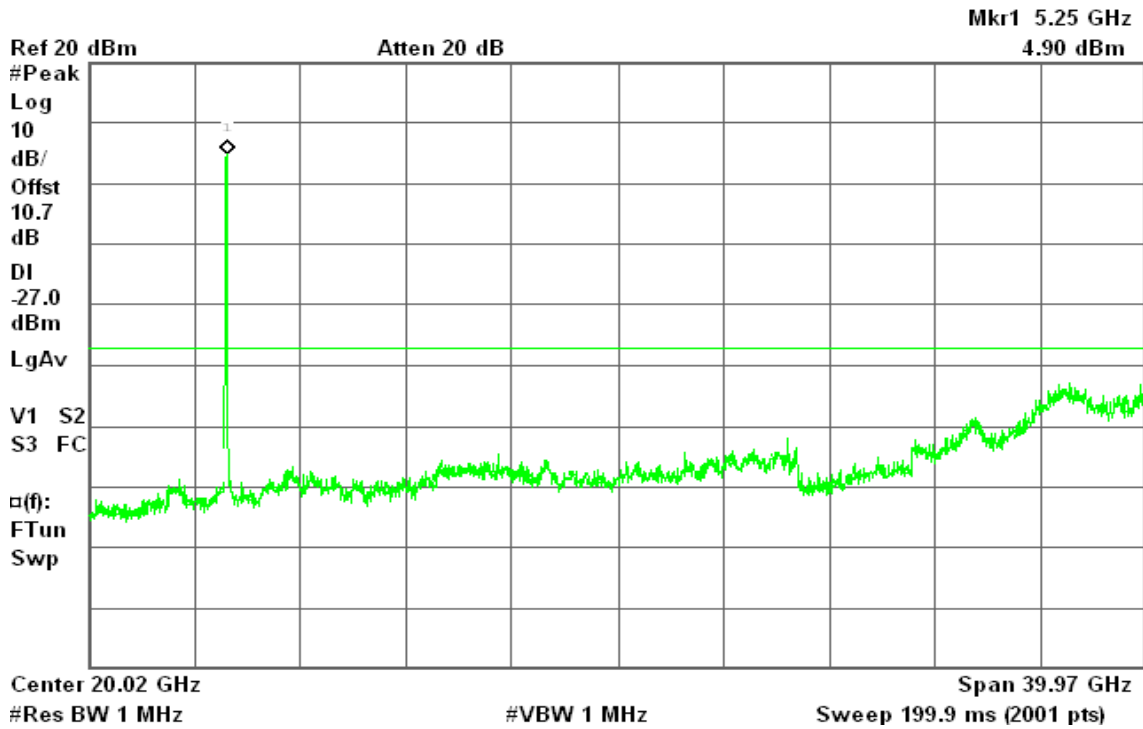




### CH High 30MHz ~ 40GHz

Agilent 16:29:52 Jul 28, 2010

R T

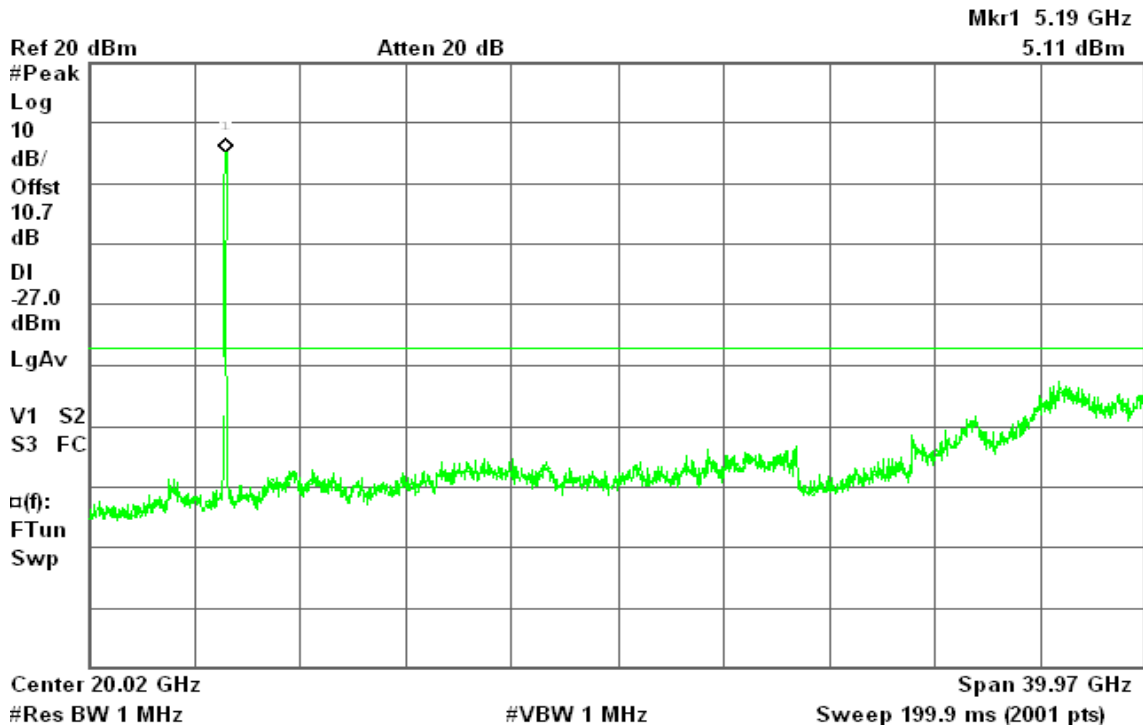


### draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

### CH Low 30MHz ~ 40GHz

Agilent 17:04:51 Jul 28, 2010

R T

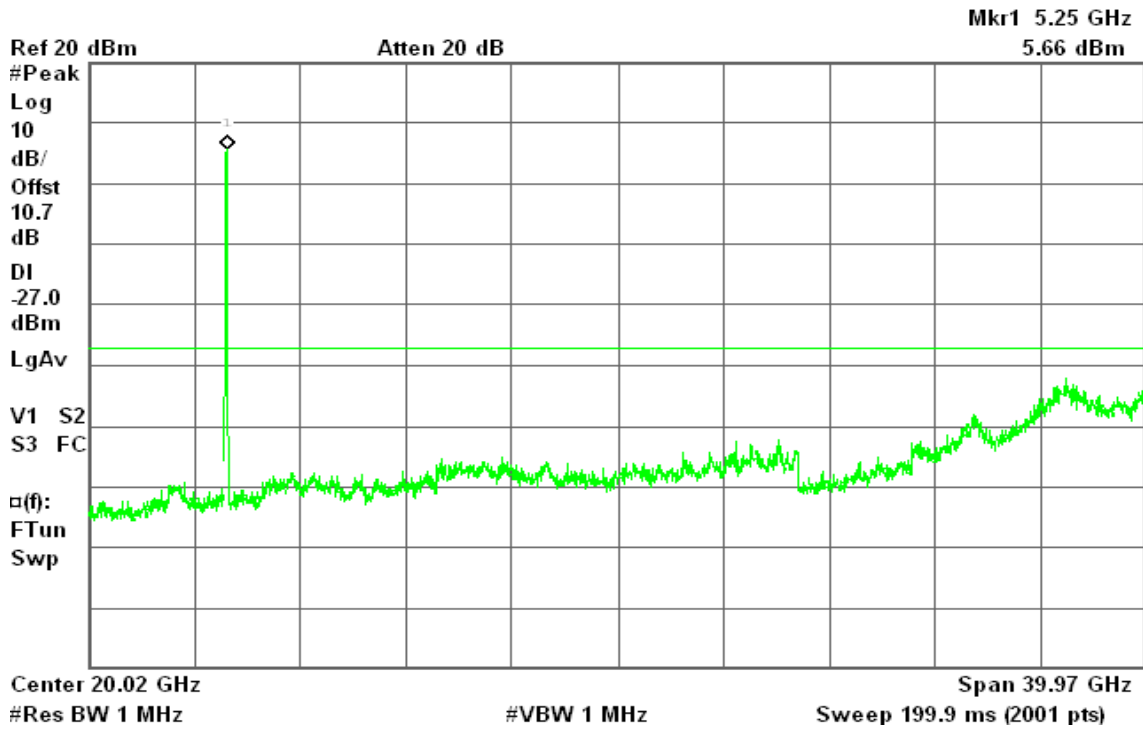




### CH High 30MHz ~ 40GHz

Agilent 17:10:06 Jul 28, 2010

R T

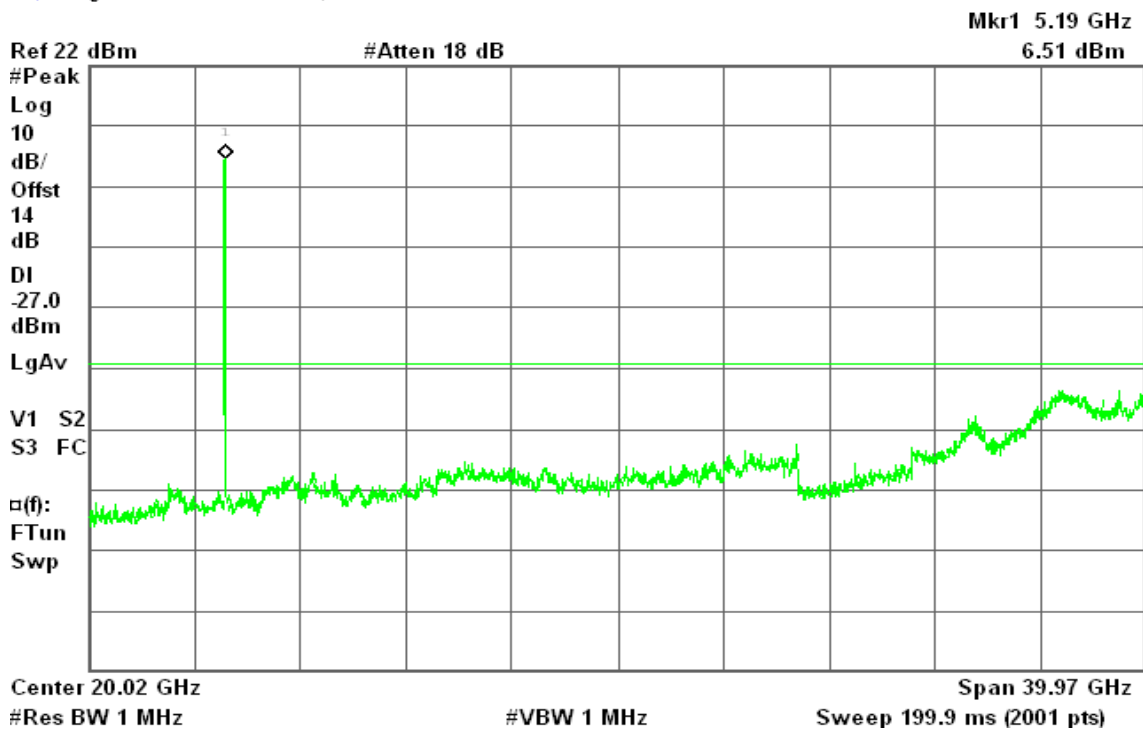


### draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / with combiner

### CH Low 30MHz ~ 40GHz

Agilent 15:33:37 Jul 28, 2010

R T

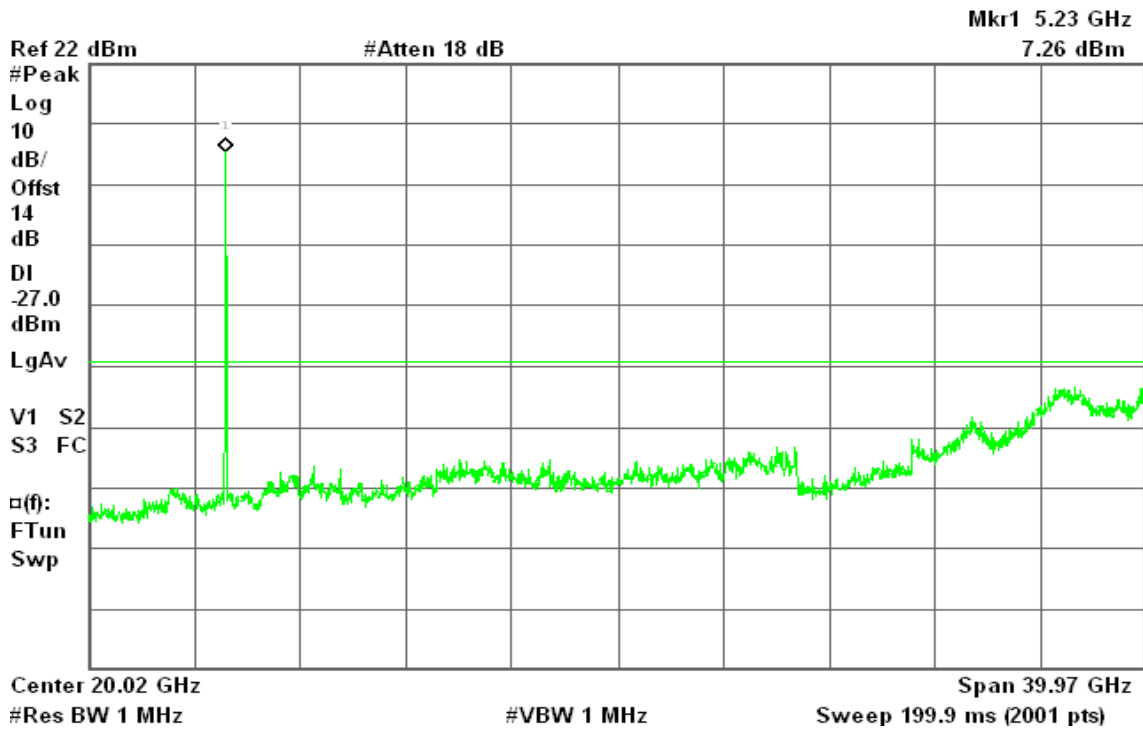




### CH Mid 30MHz ~ 40GHz

Agilent 15:35:05 Jul 28, 2010

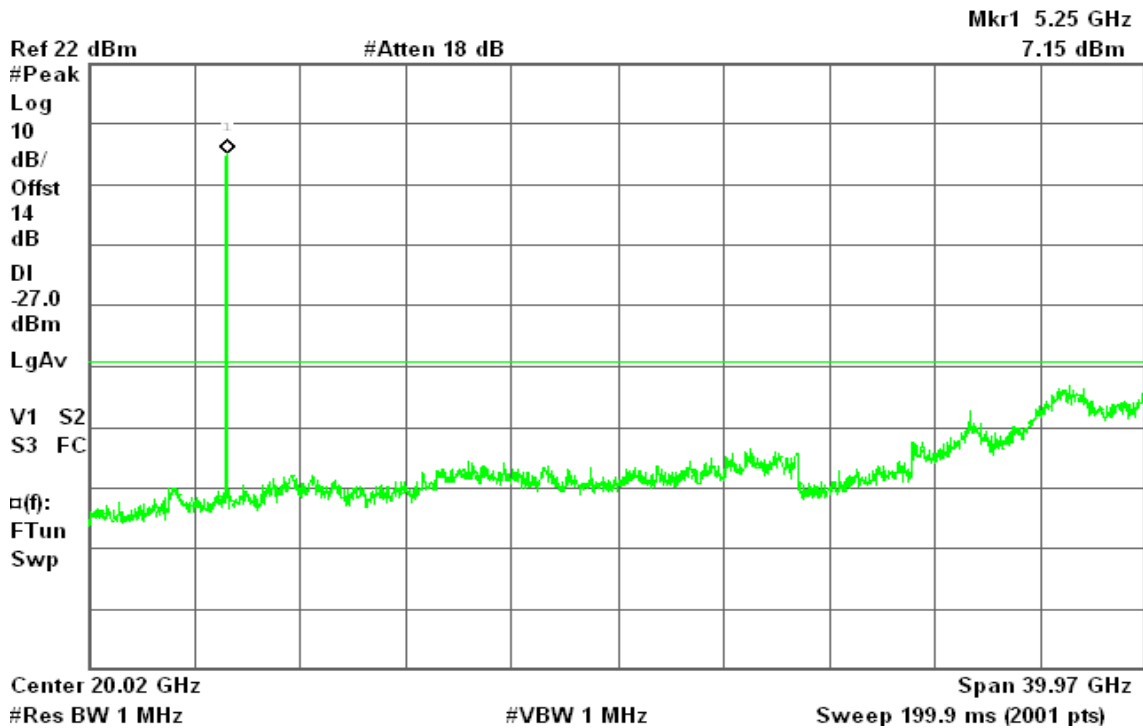
R T



### CH High 30MHz ~ 40GHz

Agilent 15:36:39 Jul 28, 2010

R T





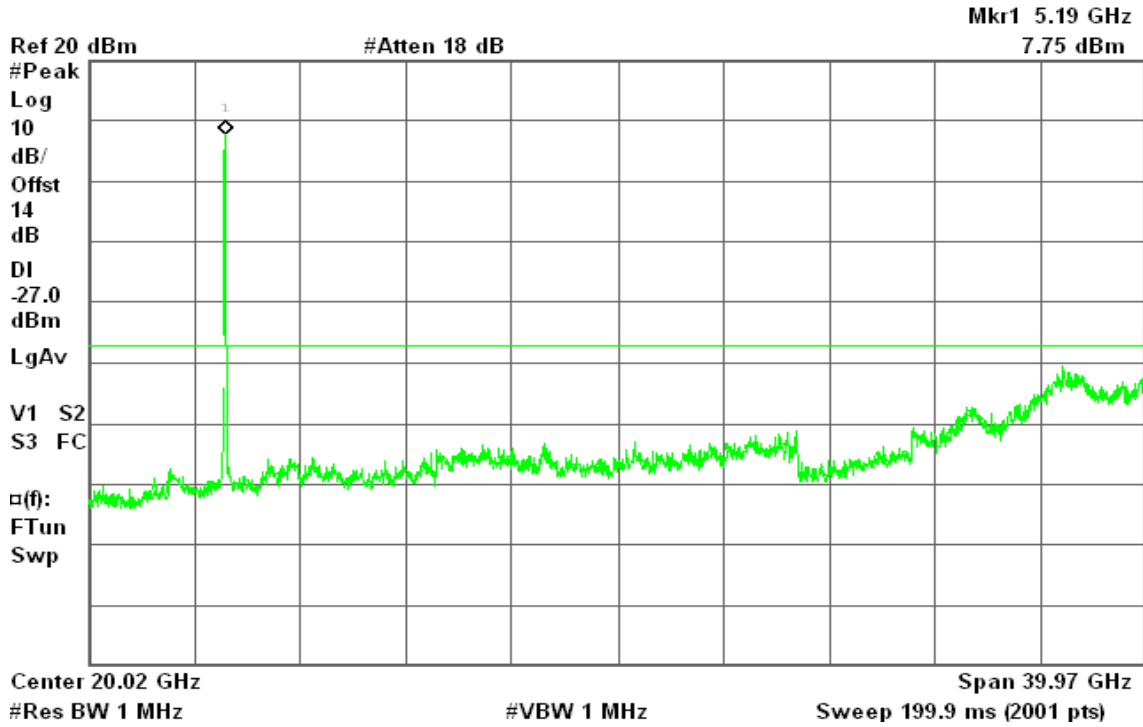
**draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / with combiner**

**CH Low**

**30MHz ~ 40GHz**

Agilent 16:05:26 Jul 28, 2010

R T

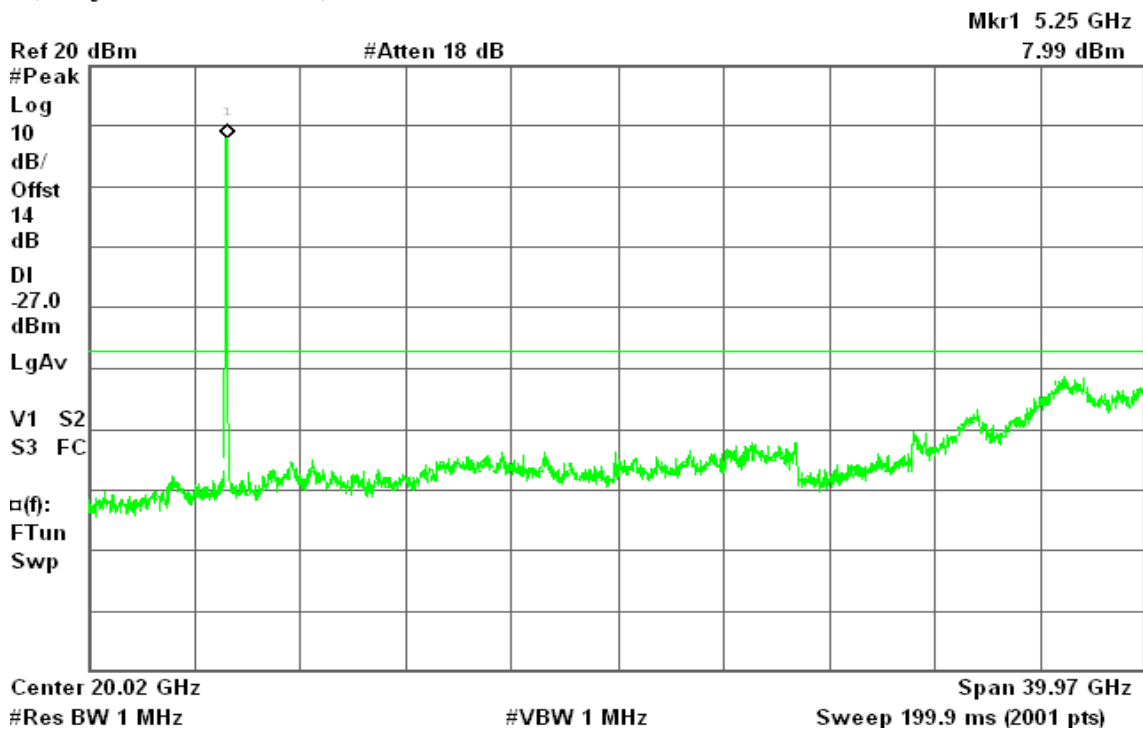


**CH High**

**30MHz ~ 40GHz**

Agilent 16:06:40 Jul 28, 2010

R T





**IEEE 802.11a mode / 5260 ~ 5320MHz**

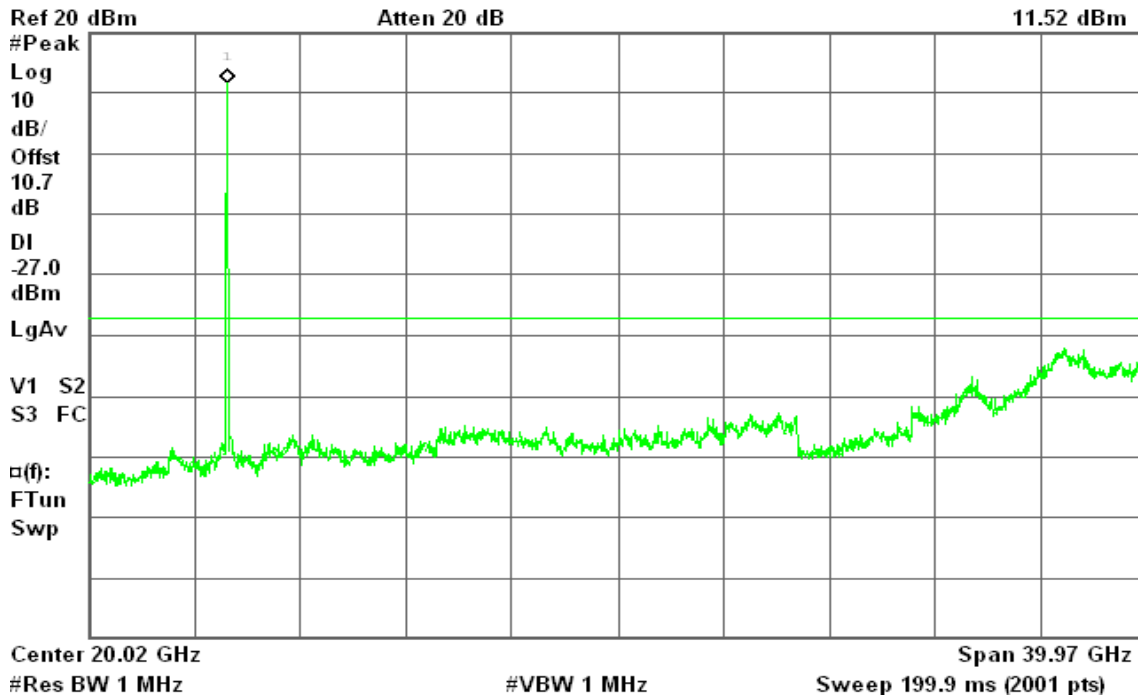
CH Low

30MHz ~ 40GHz

Agilent 10:48:17 Jul 28, 2010

R T

Mkr1 5.27 GHz  
11.52 dBm



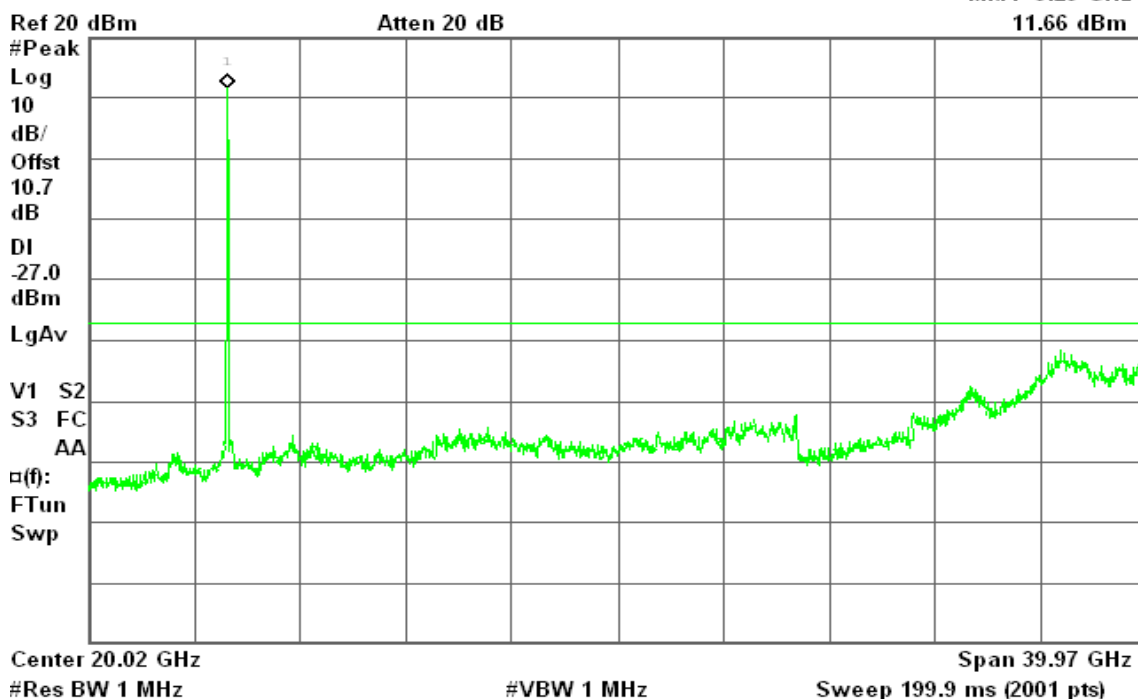
CH Mid

30MHz ~ 40GHz

Agilent 10:43:10 Jul 28, 2010

R T

Mkr1 5.29 GHz  
11.66 dBm



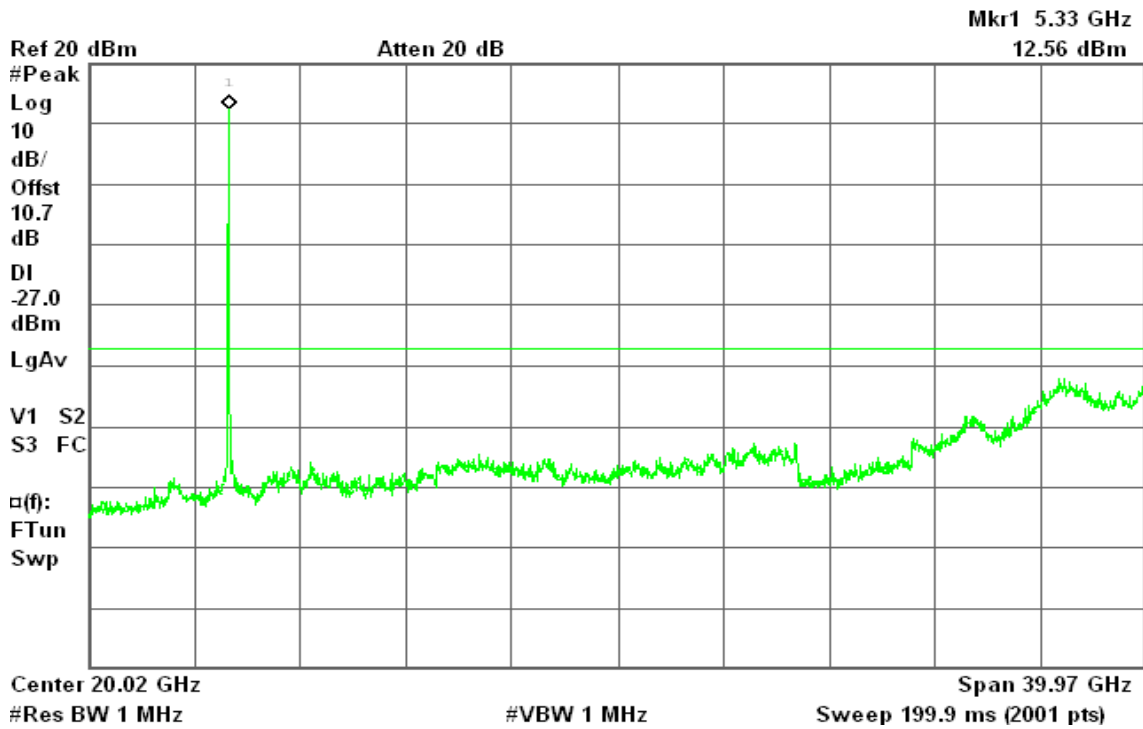


### CH High

30MHz ~ 40GHz

Agilent 10:54:42 Jul 28, 2010

R T



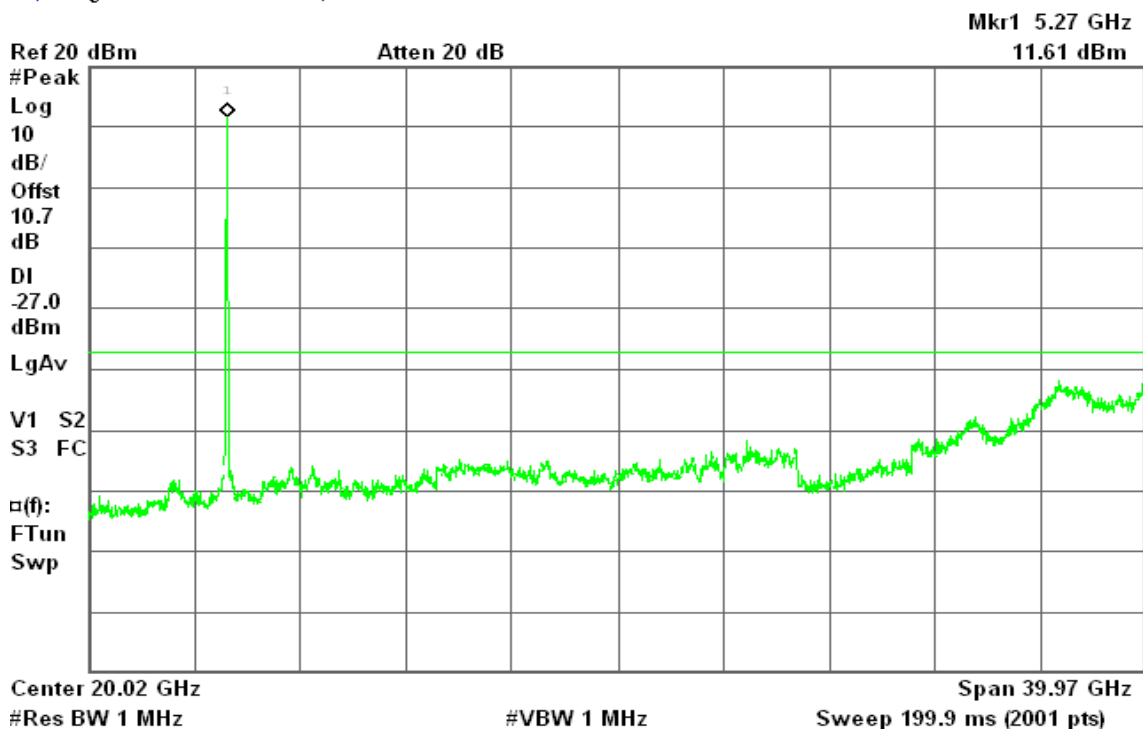
### draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

### CH Low

30MHz ~ 40GHz

Agilent 12:00:48 Jul 28, 2010

R T





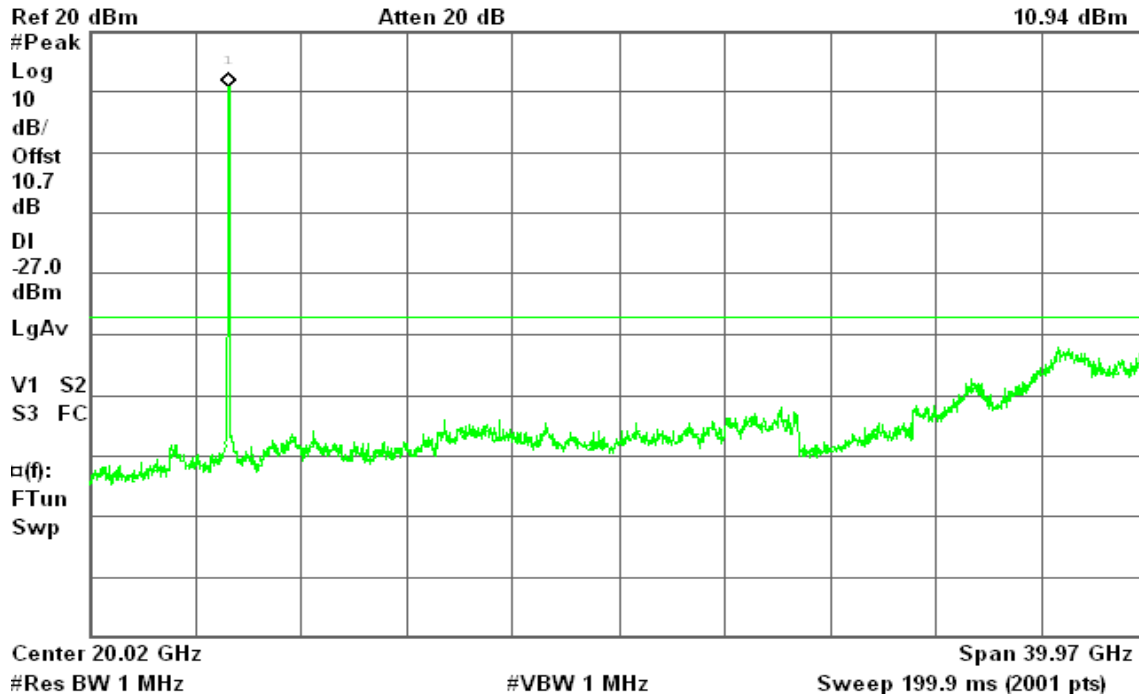


### CH Mid 30MHz ~ 40GHz

Agilent 13:07:36 Jul 28, 2010

R T

Mkr1 5.27 GHz  
10.94 dBm

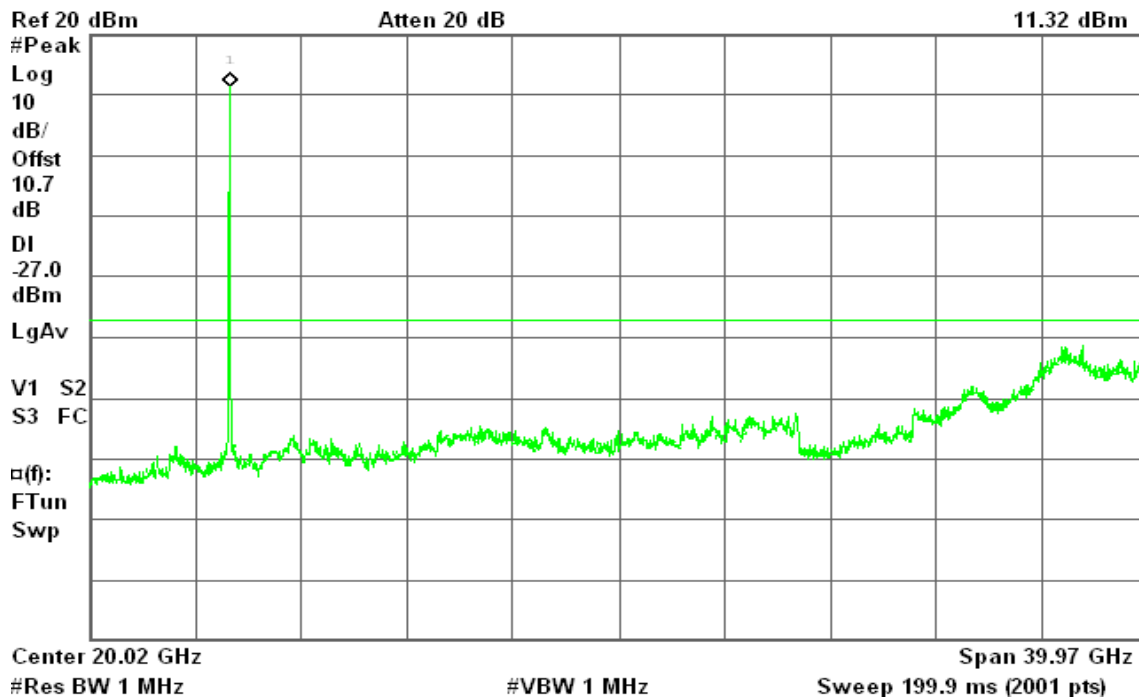


### CH High 30MHz ~ 40GHz

Agilent 13:09:45 Jul 28, 2010

R T

Mkr1 5.33 GHz  
11.32 dBm





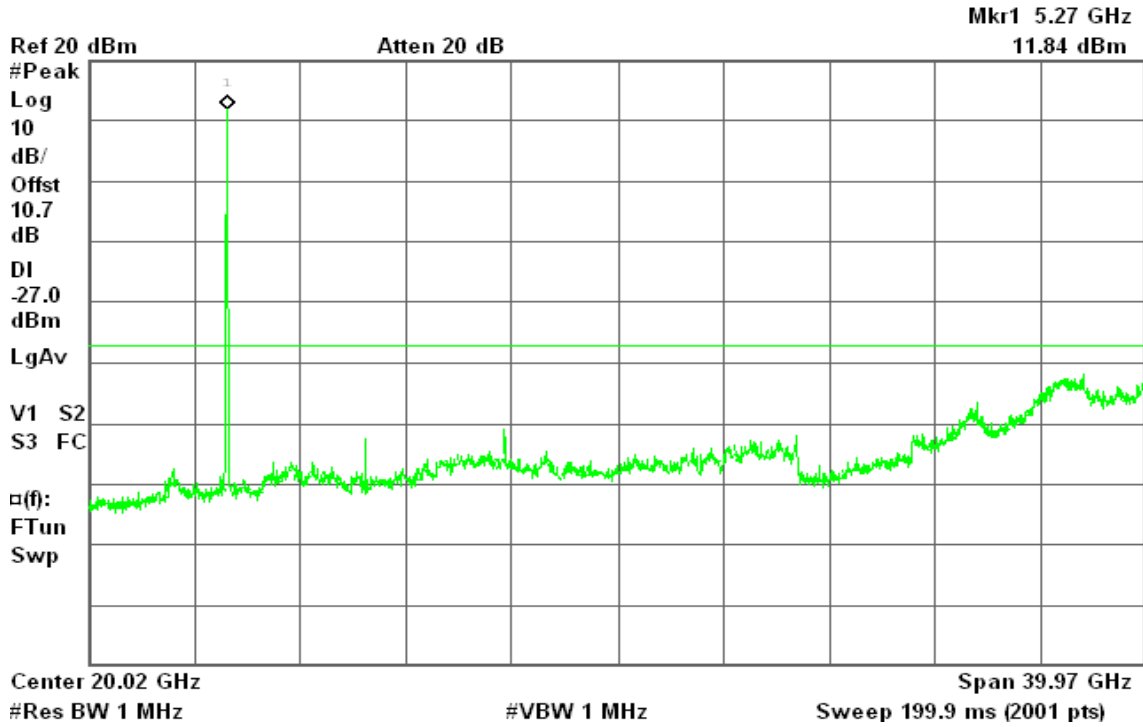
**draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1**

CH Low

30MHz ~ 40GHz

Agilent 14:59:24 Jul 28, 2010

R T

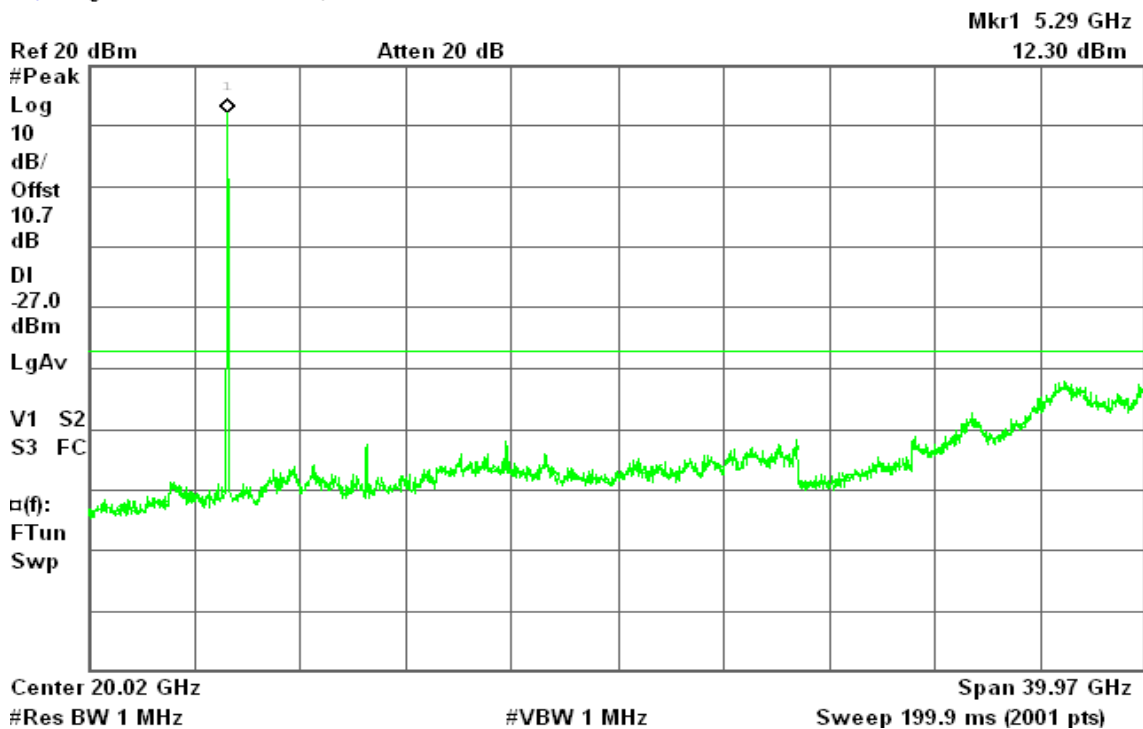


CH Mid

30MHz ~ 40GHz

Agilent 15:02:56 Jul 28, 2010

R T

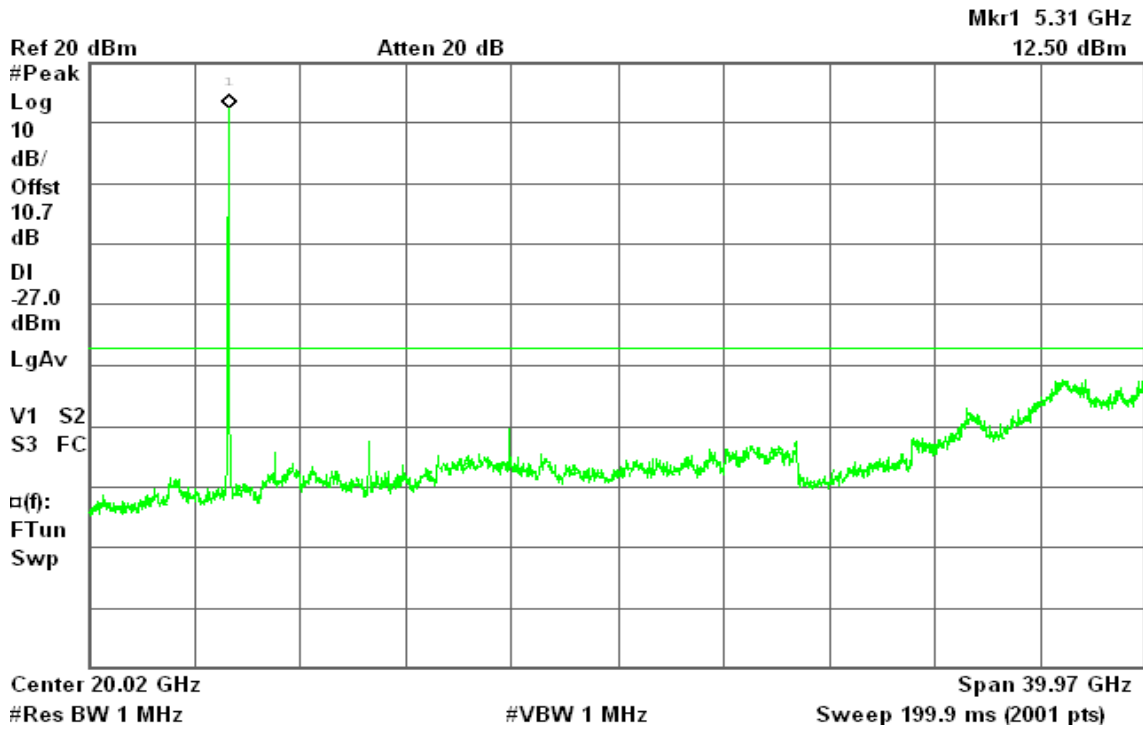




### CH High 30MHz ~ 40GHz

Agilent 15:05:01 Jul 28, 2010

R T

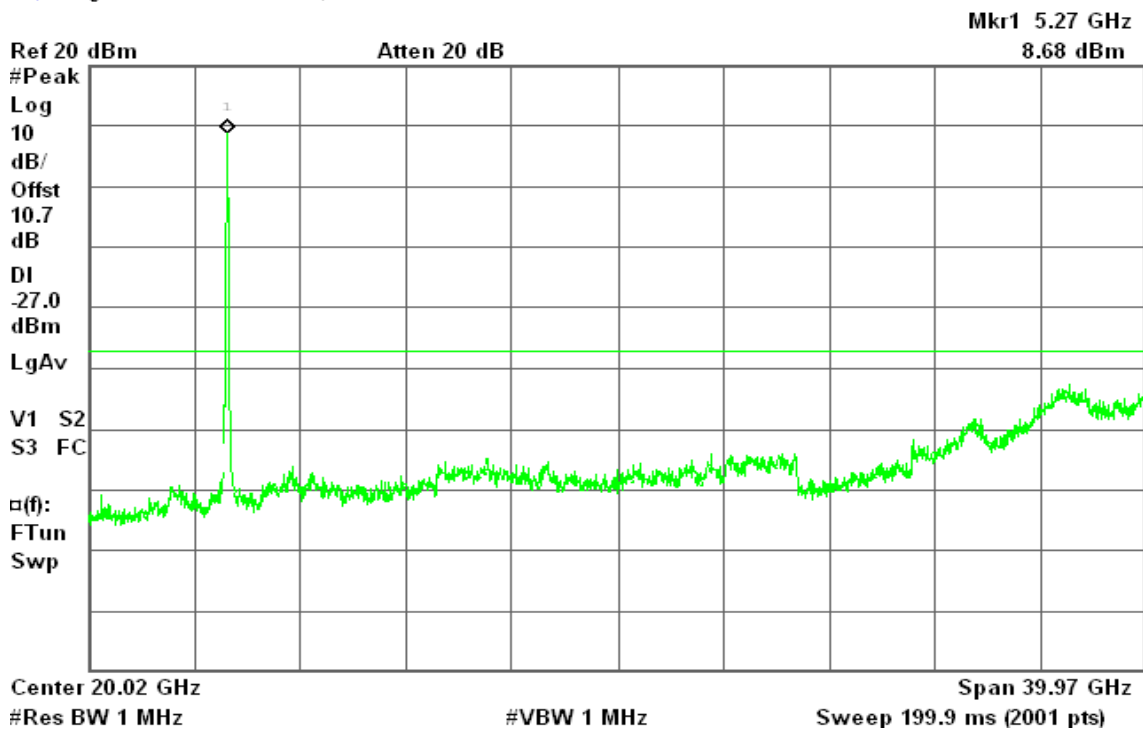


### draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

### CH Low 30MHz ~ 40GHz

Agilent 16:33:12 Jul 28, 2010

R T



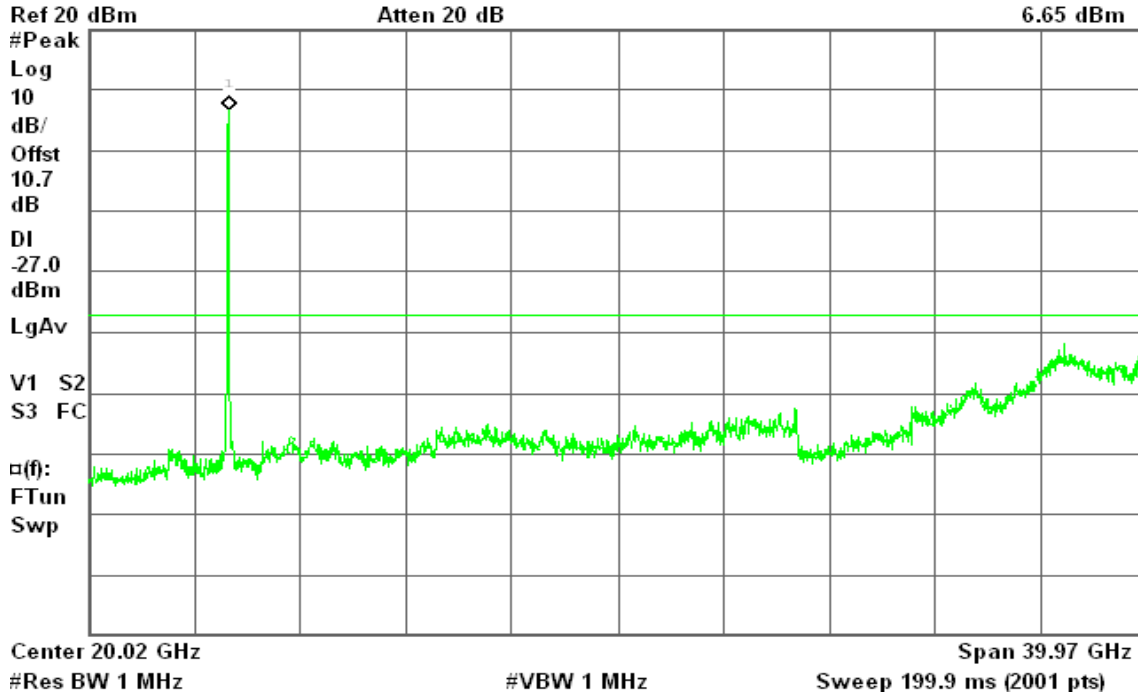


### CH High 30MHz ~ 40GHz

Agilent 16:37:48 Jul 28, 2010

R L

Mkr1 5.31 GHz  
6.65 dBm



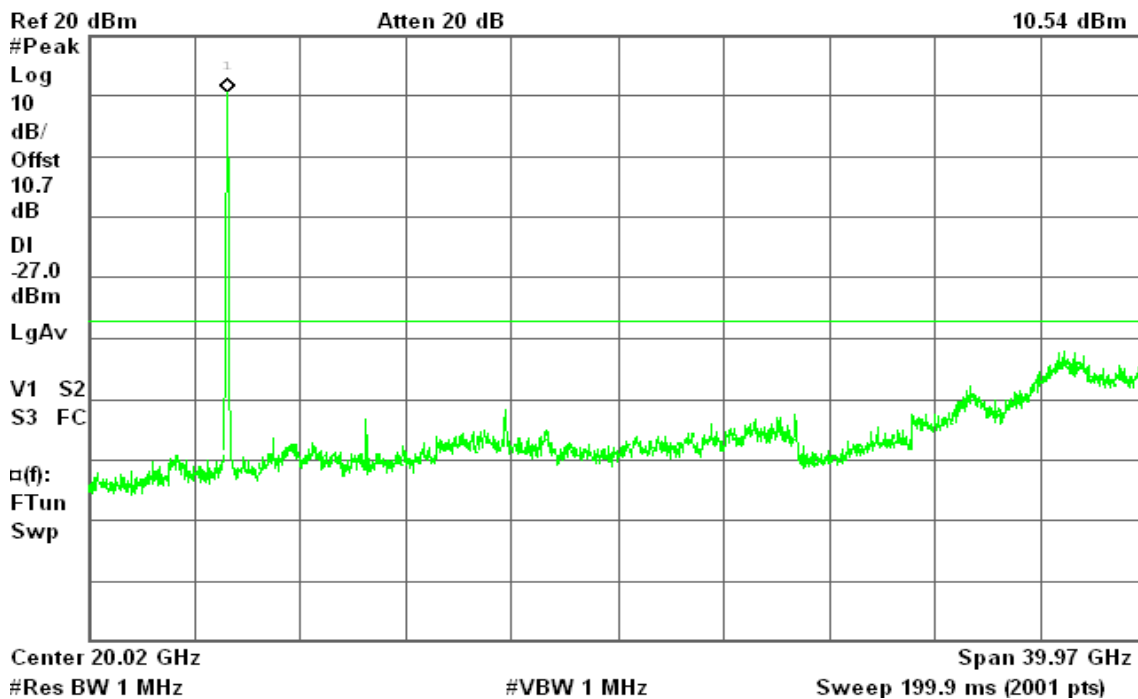
### draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

### CH Low 30MHz ~ 40GHz

Agilent 16:54:31 Jul 28, 2010

R T

Mkr1 5.29 GHz  
10.54 dBm



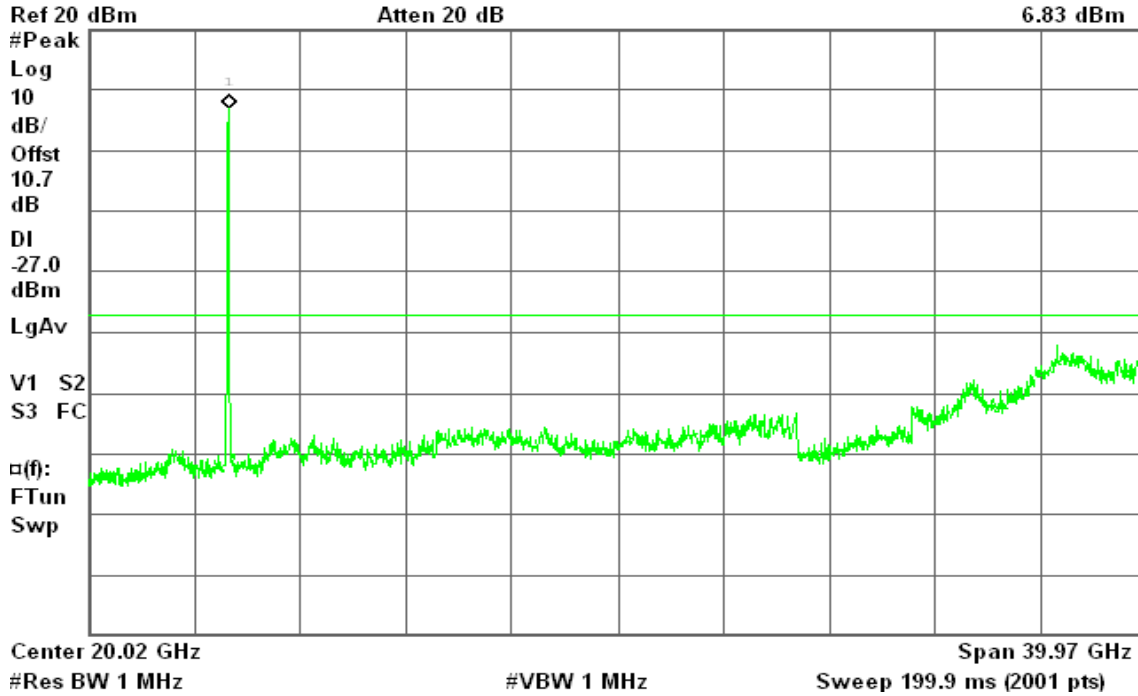


**CH High**  
**30MHz ~ 40GHz**

Agilent 16:40:12 Jul 28, 2010

R T

Mkr1 5.31 GHz  
6.83 dBm



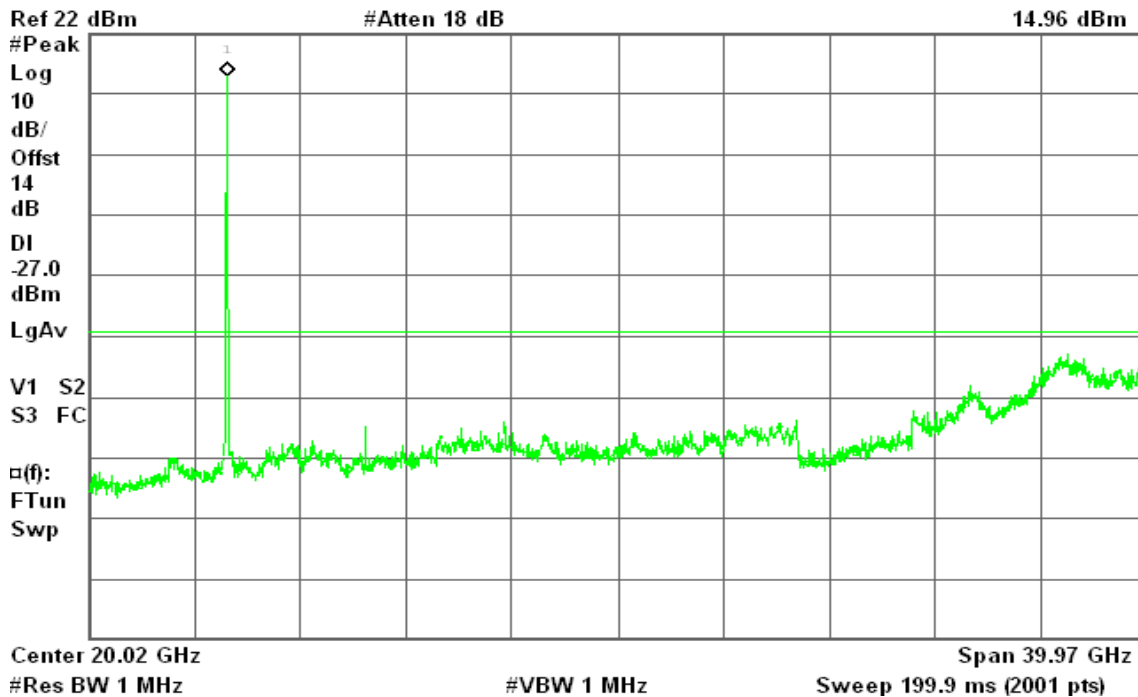
**draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / with combiner**

**CH Low**  
**30MHz ~ 40GHz**

Agilent 15:38:00 Jul 28, 2010

R T

Mkr1 5.27 GHz  
14.96 dBm

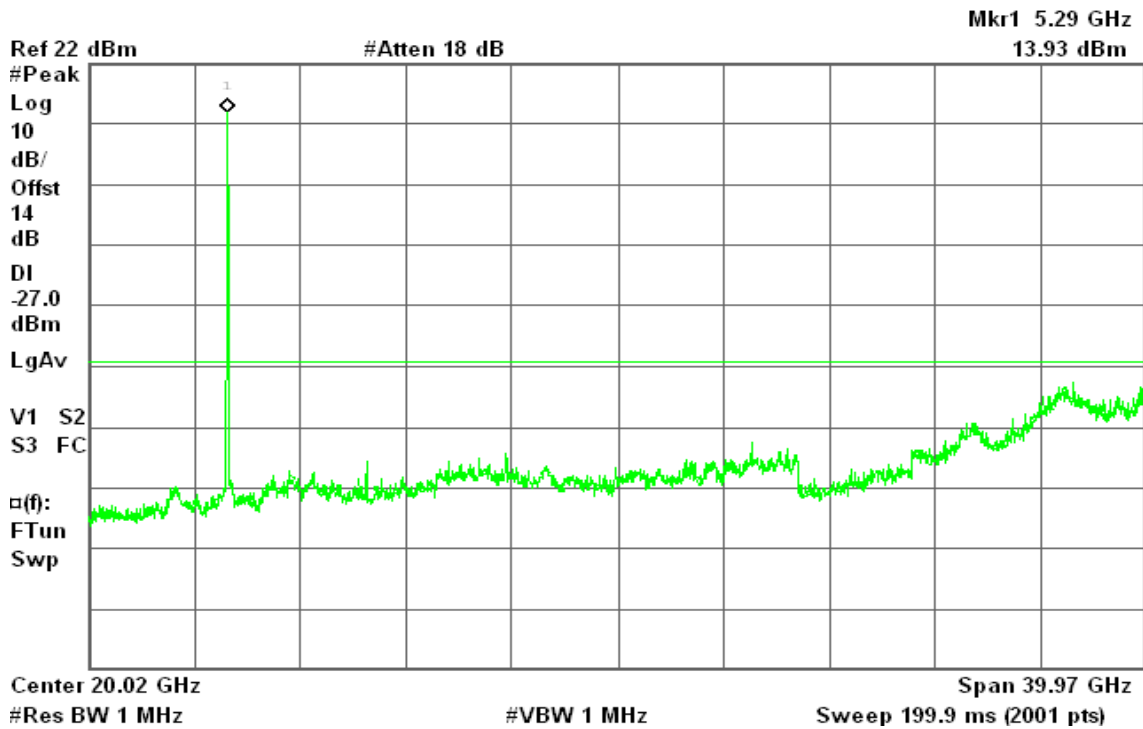




### CH Mid 30MHz ~ 40GHz

Agilent 15:38:58 Jul 28, 2010

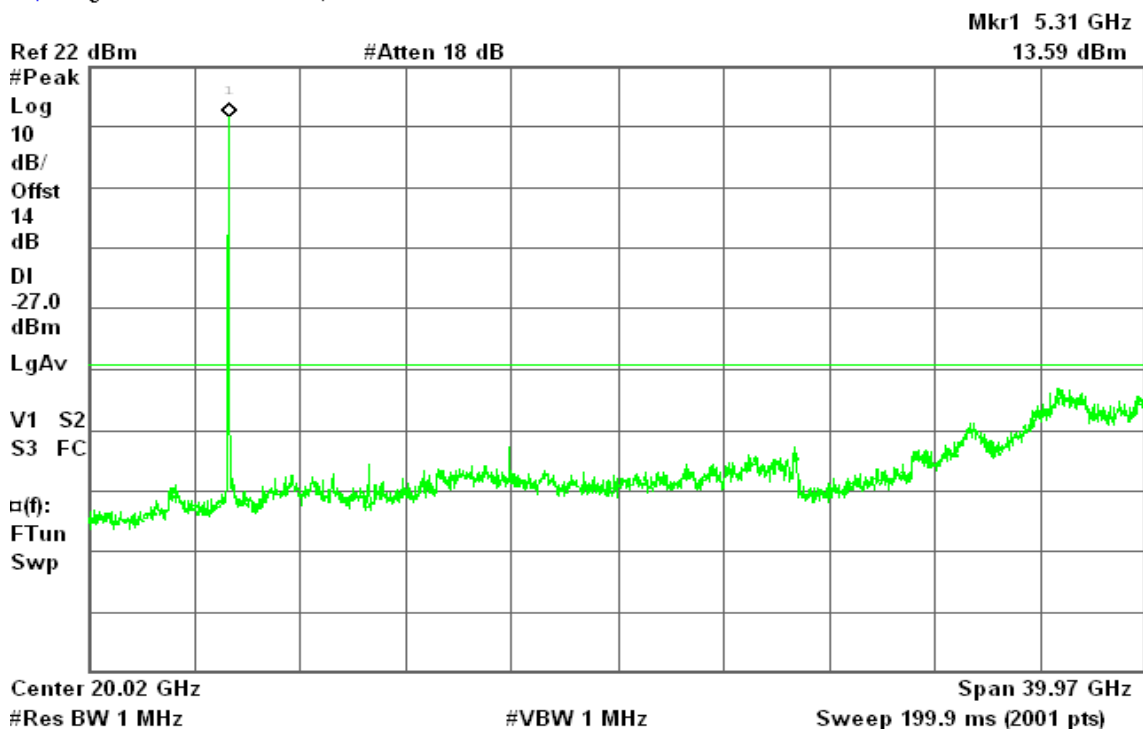
R T



### CH High 30MHz ~ 40GHz

Agilent 15:40:06 Jul 28, 2010

R T





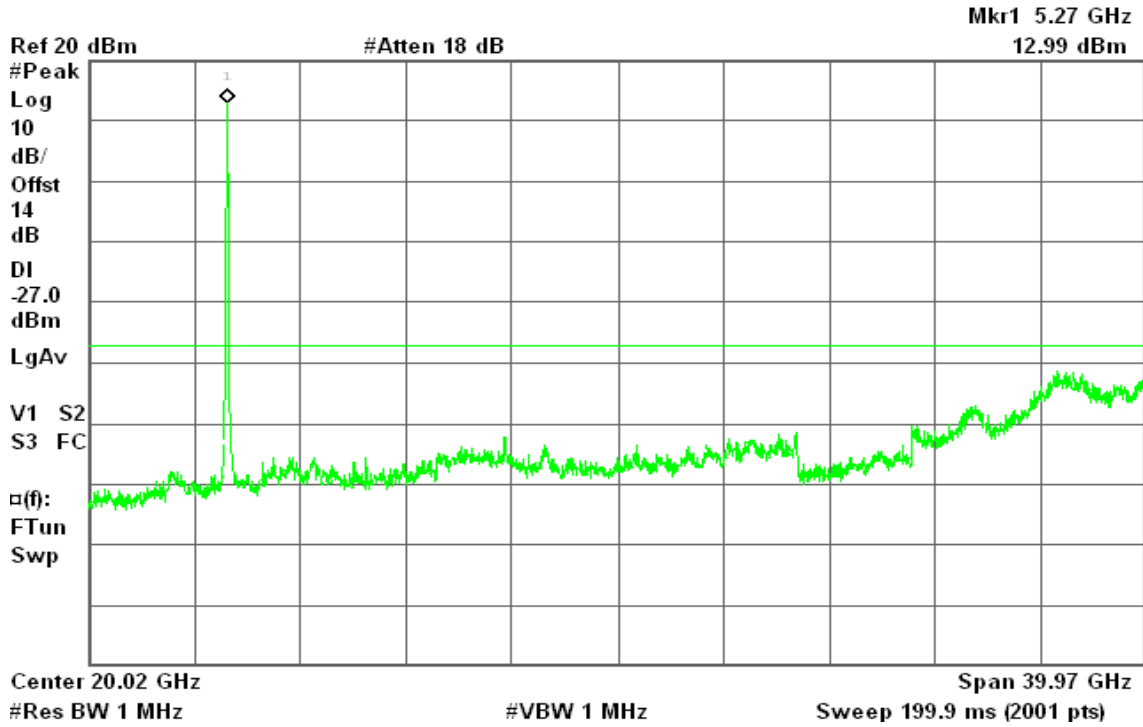
**draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / with combiner**

**CH Low**

**30MHz ~ 40GHz**

Agilent 16:08:42 Jul 28, 2010

R T

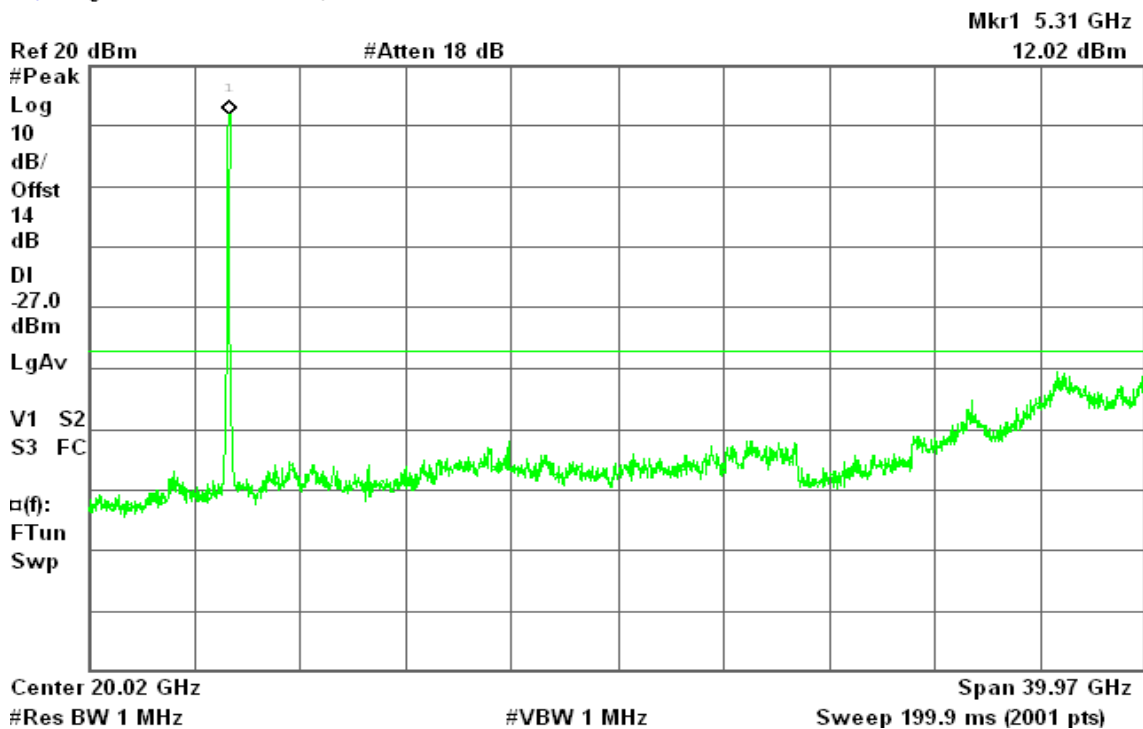


**CH High**

**30MHz ~ 40GHz**

Agilent 16:09:34 Jul 28, 2010

R T





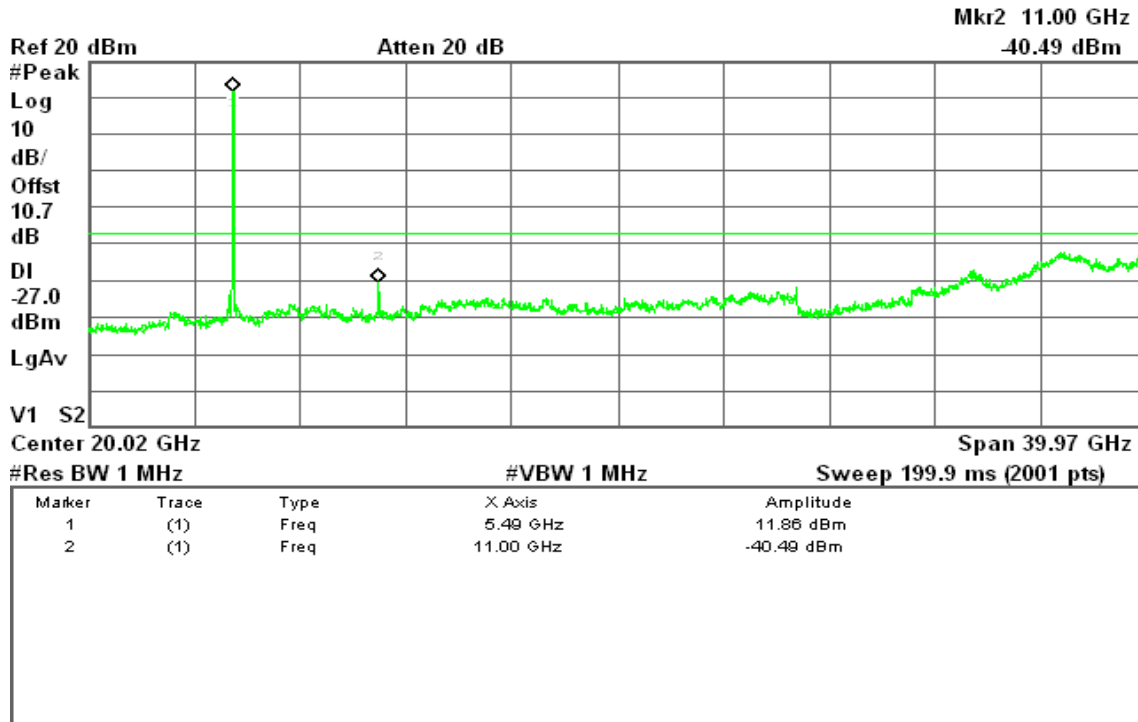
**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

**CH Low**

**30MHz ~ 40GHz**

Agilent 11:01:58 Jul 28, 2010

R T

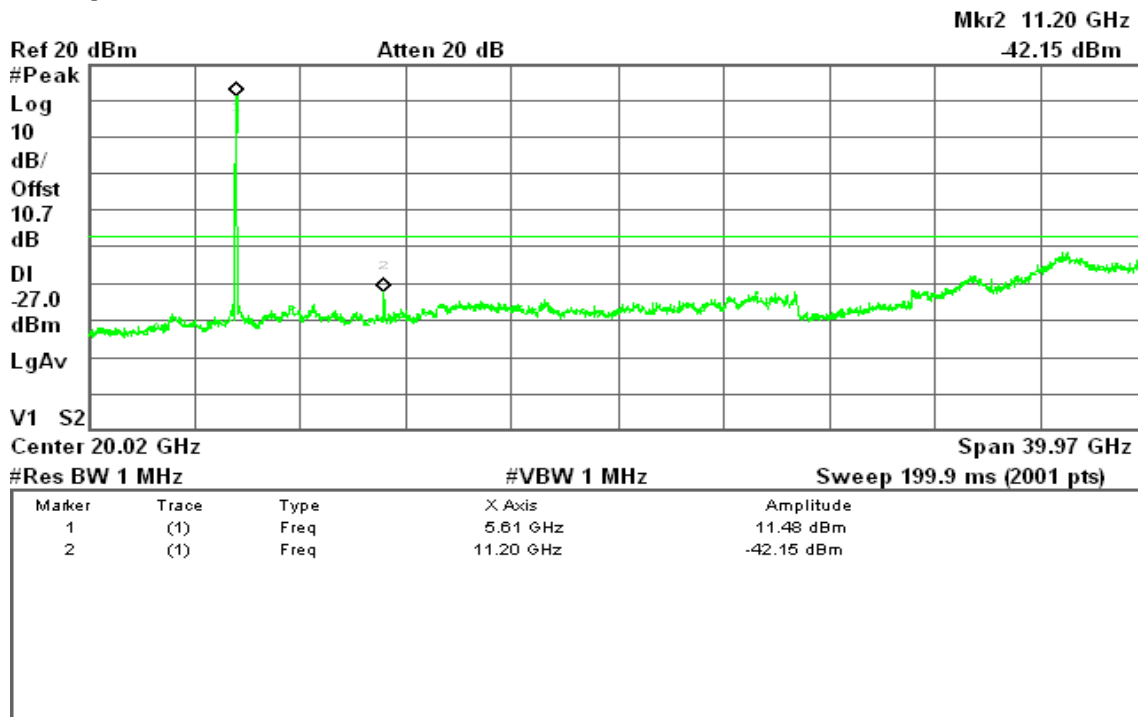


**CH Mid**

**30MHz ~ 40GHz**

Agilent 11:04:33 Jul 28, 2010

R T





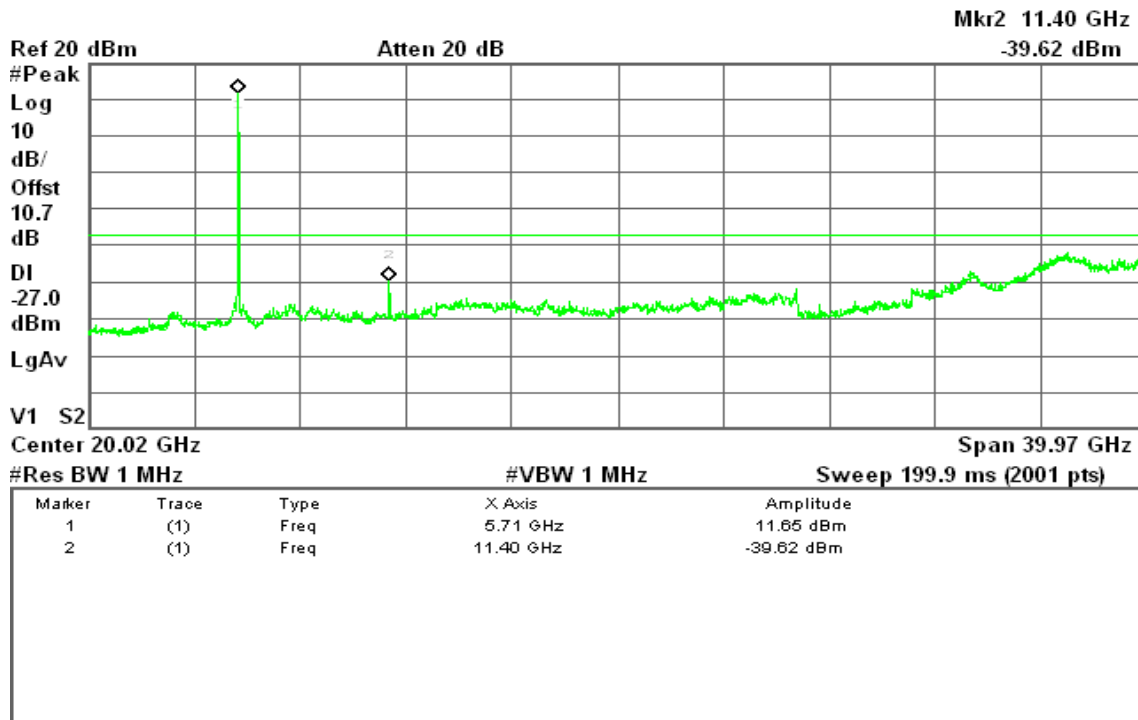


### CH High

30MHz ~ 40GHz

Agilent 11:07:23 Jul 28, 2010

R L



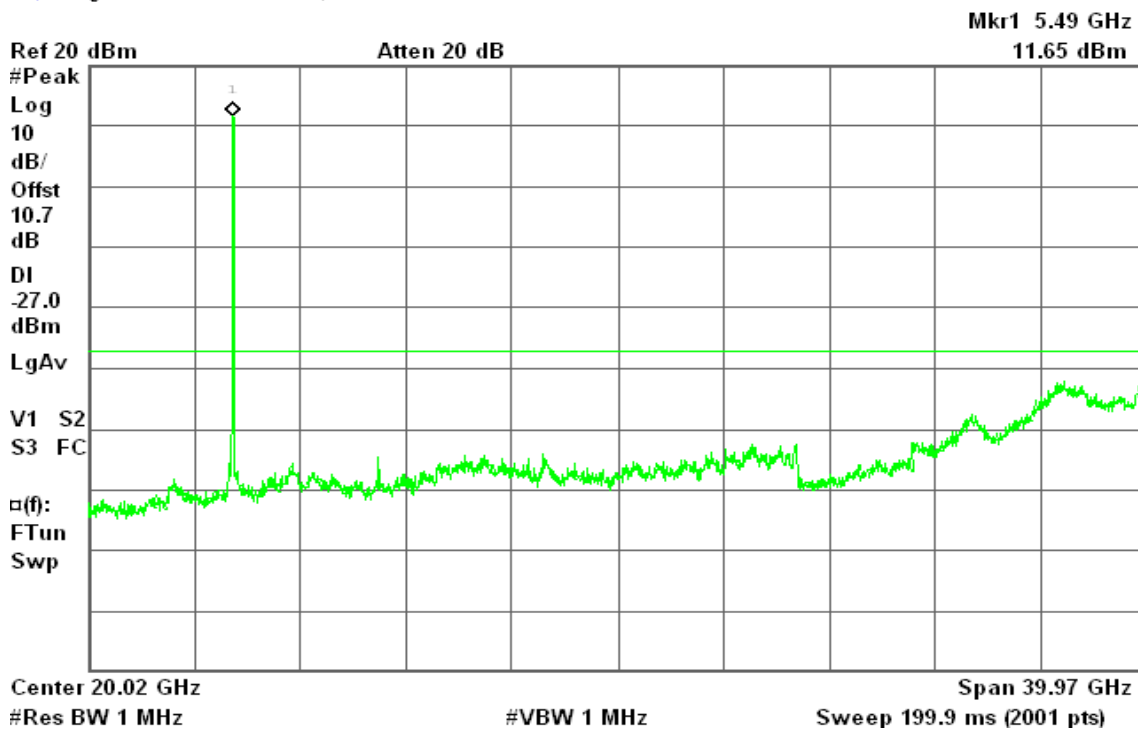
### draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

### CH Low

30MHz ~ 40GHz

Agilent 13:13:05 Jul 28, 2010

R T

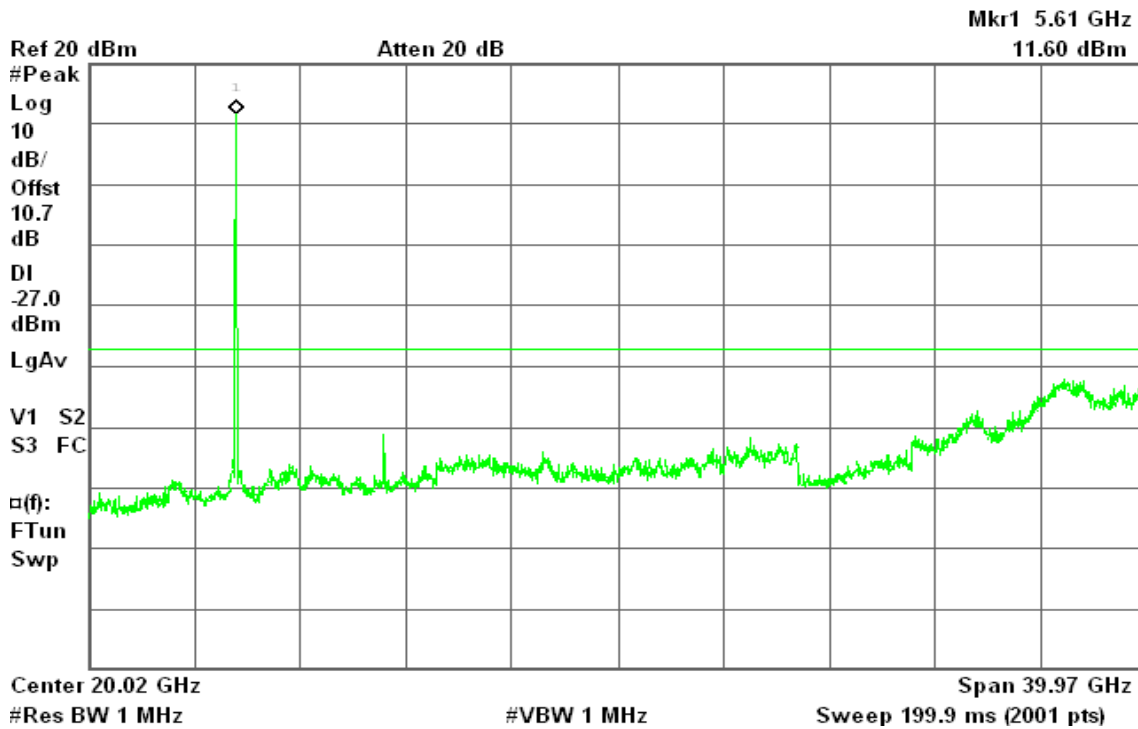




### CH Mid 30MHz ~ 40GHz

Agilent 13:15:42 Jul 28, 2010

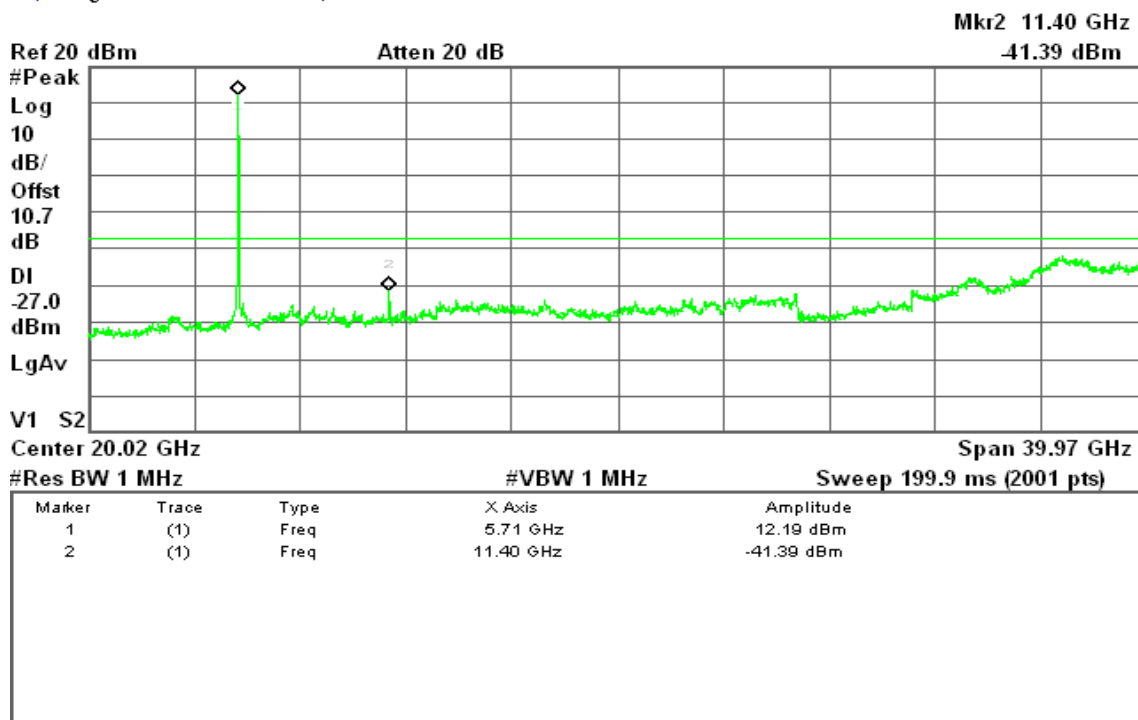
R T



### CH High 30MHz ~ 40GHz

Agilent 13:18:41 Jul 28, 2010

R T





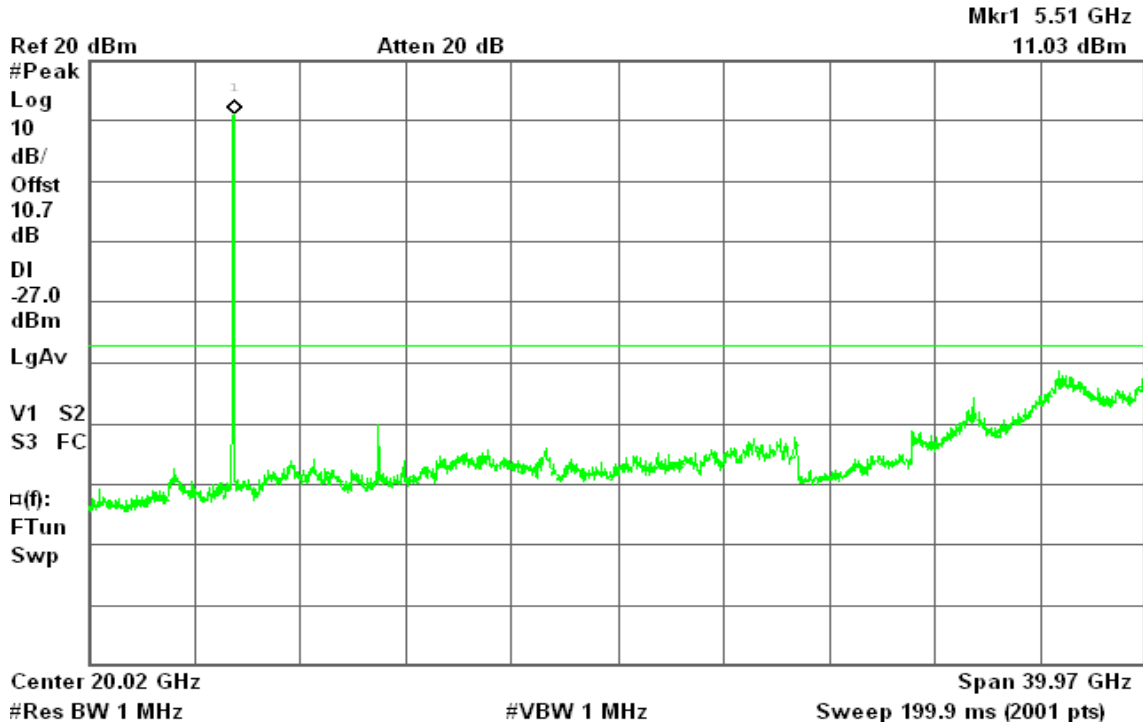
**draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1**

CH Low

30MHz ~ 40GHz

Agilent 15:09:44 Jul 28, 2010

R T

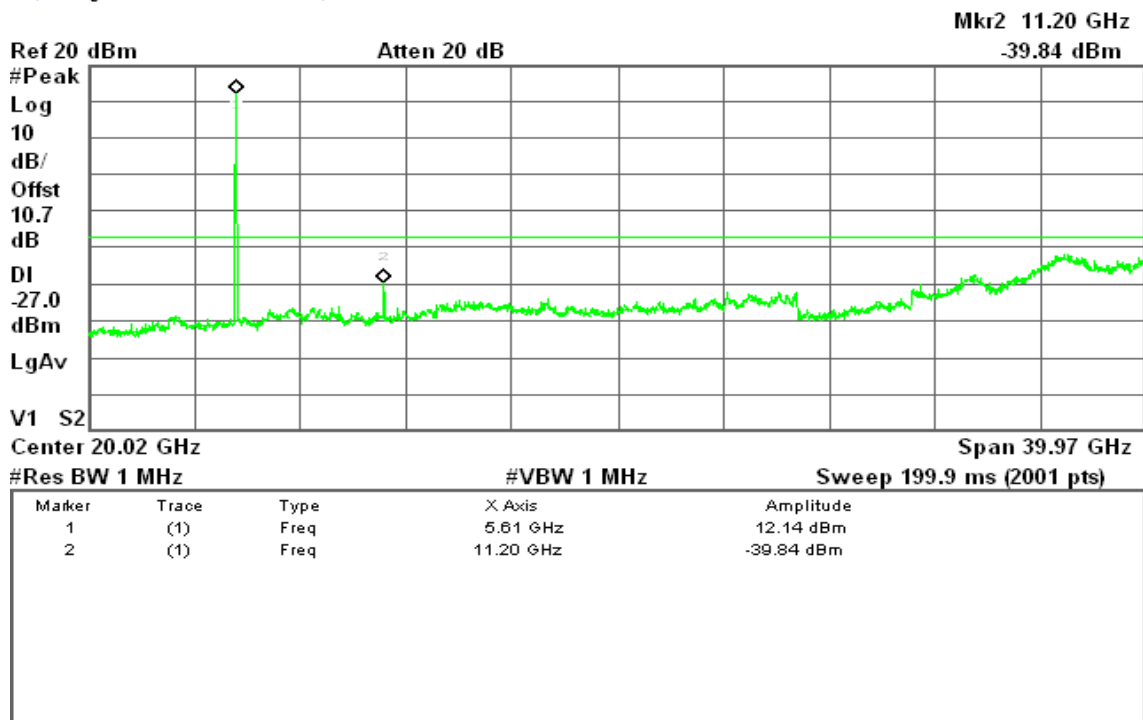


CH Mid

30MHz ~ 40GHz

Agilent 15:12:44 Jul 28, 2010

R T

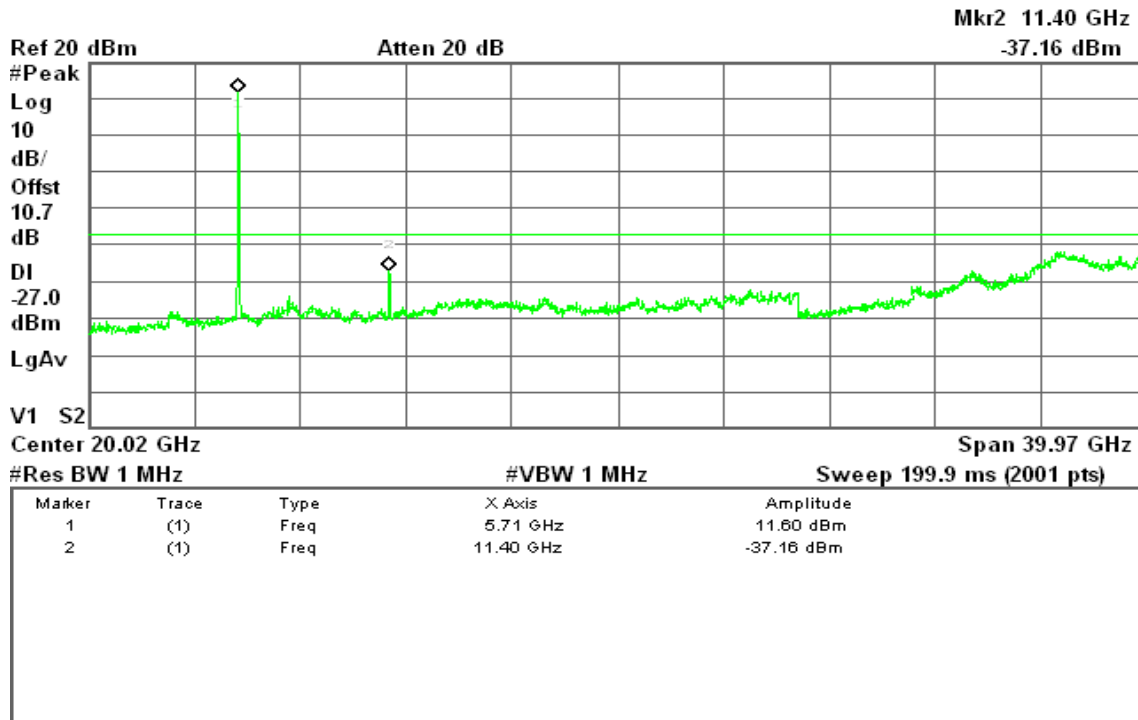




### CH High 30MHz ~ 40GHz

Agilent 15:15:29 Jul 28, 2010

R T

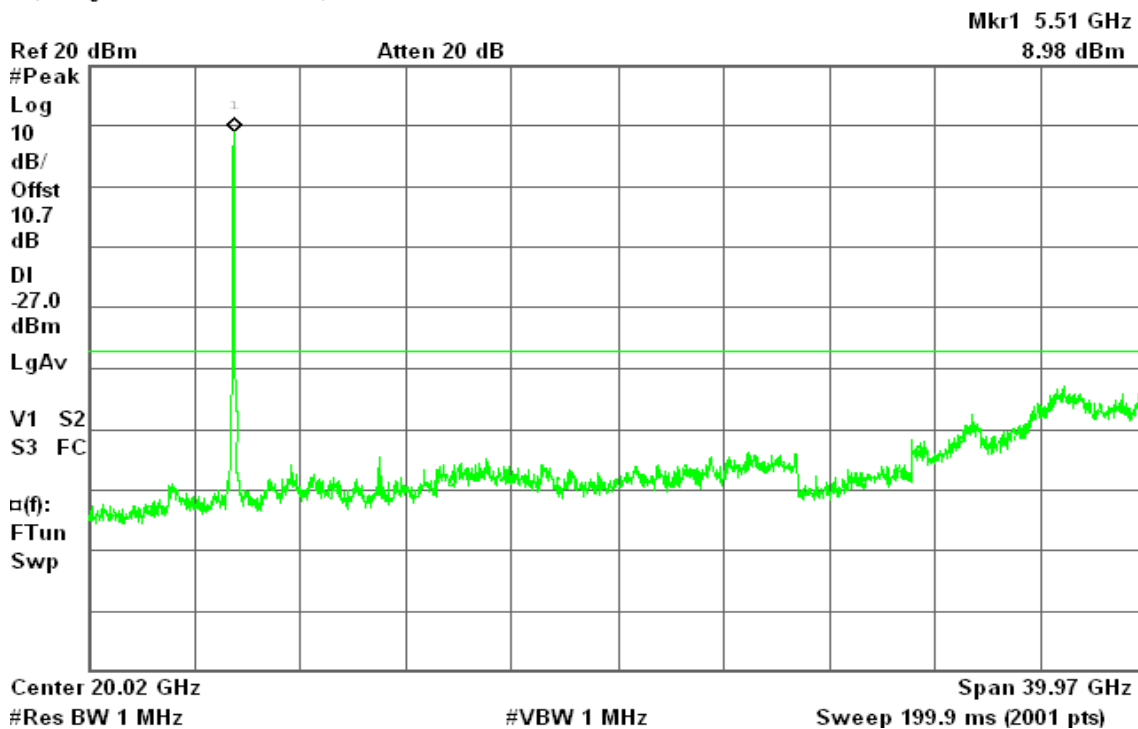


### draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

### CH Low 30MHz ~ 40GHz

Agilent 16:18:01 Jul 28, 2010

R T

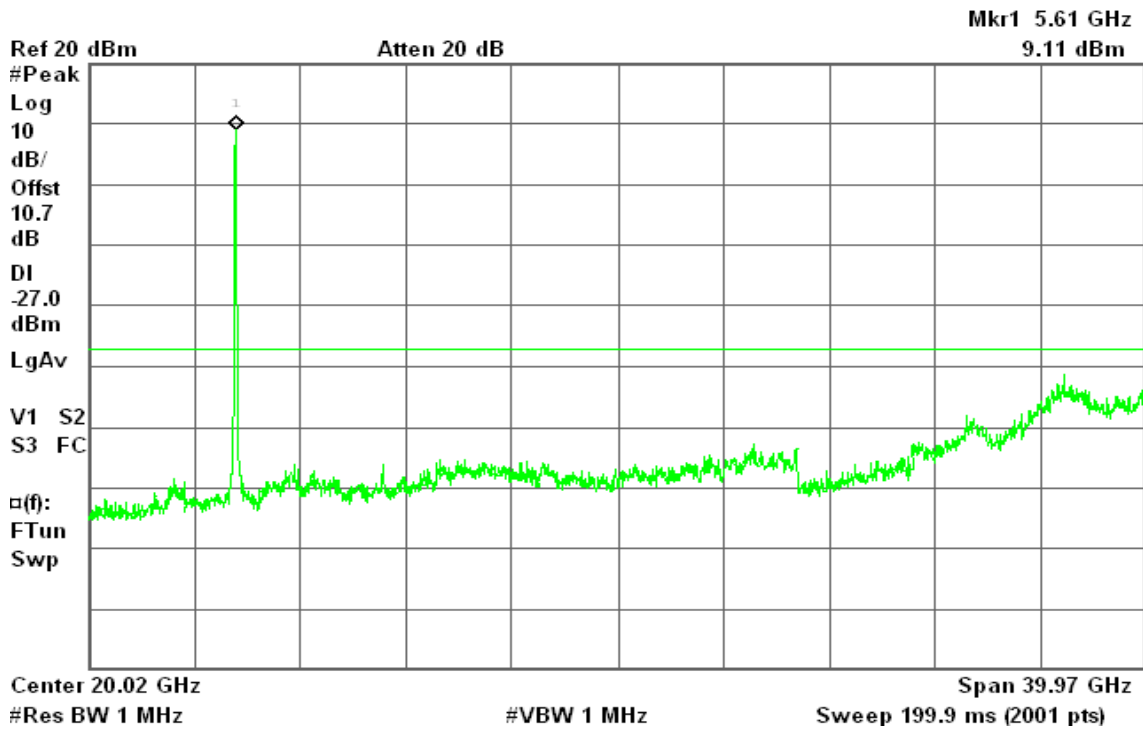




### CH Mid 30MHz ~ 40GHz

Agilent 16:20:49 Jul 28, 2010

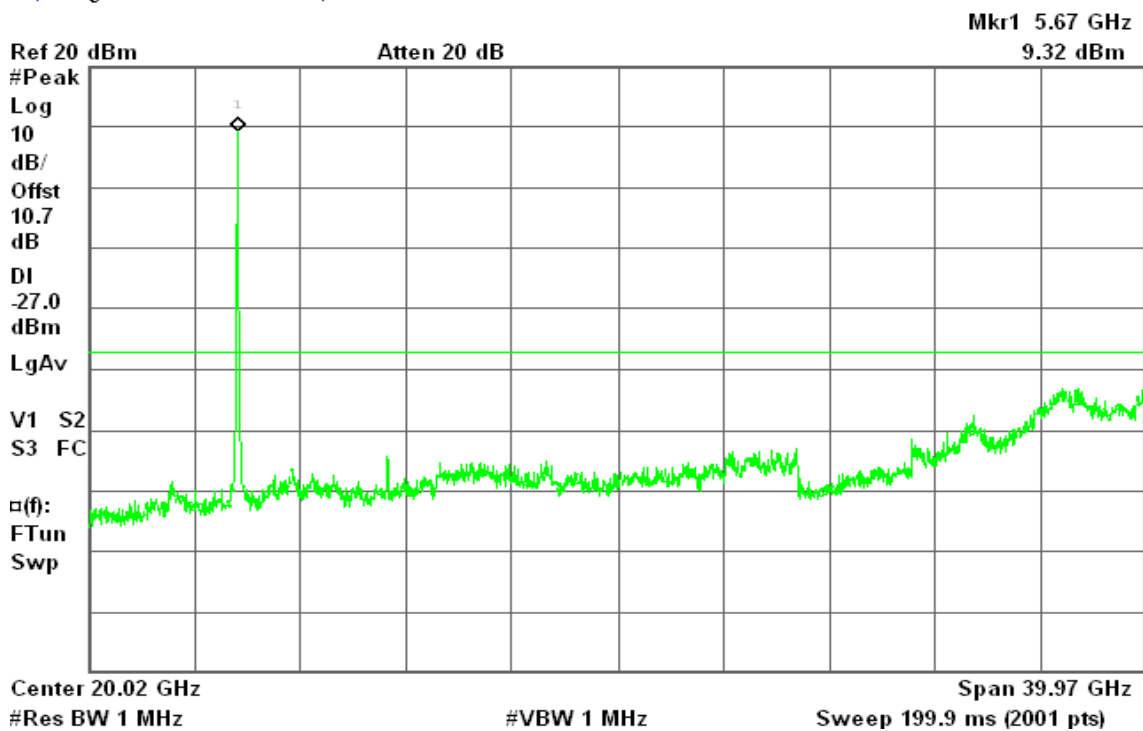
R T



### CH High 30MHz ~ 40GHz

Agilent 16:24:58 Jul 28, 2010

R T





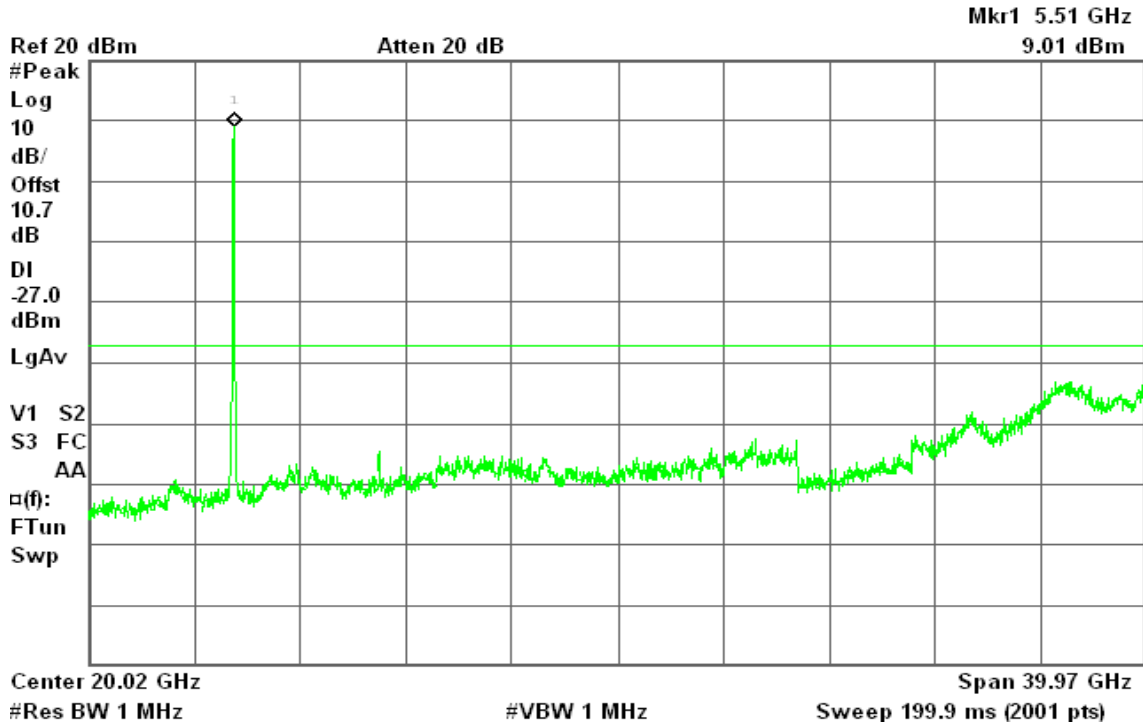
**draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1**

CH Low

30MHz ~ 40GHz

Agilent 17:22:20 Jul 28, 2010

R T

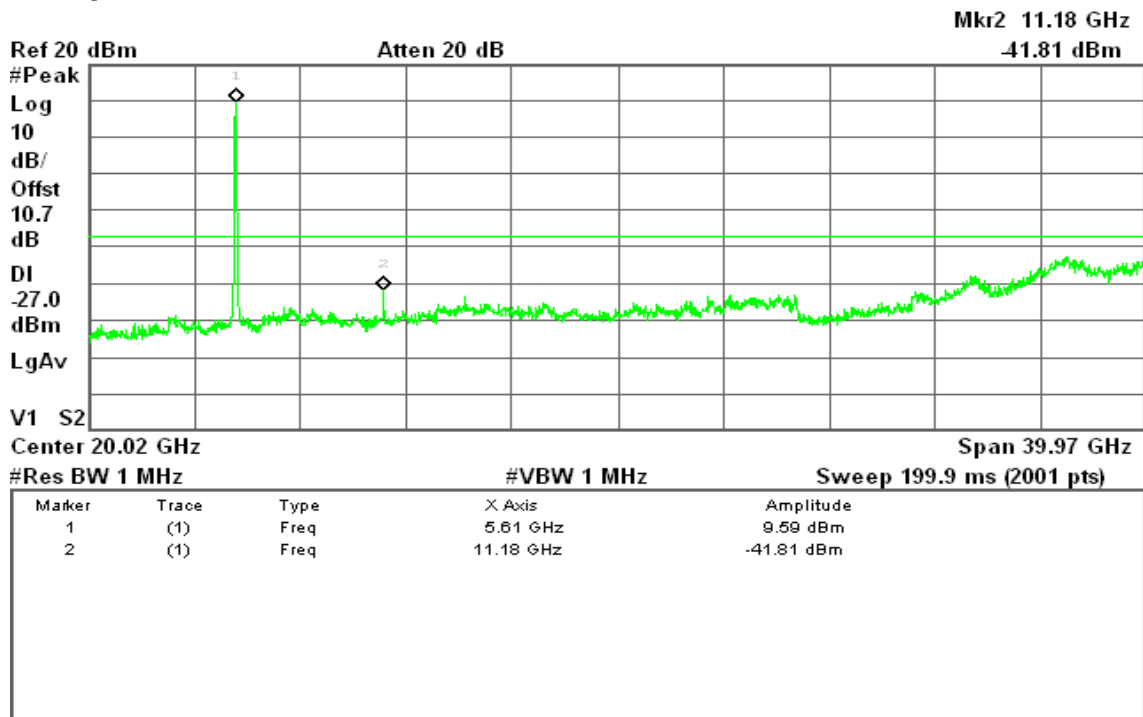


CH Mid

30MHz ~ 40GHz

Agilent 17:25:01 Jul 28, 2010

R T

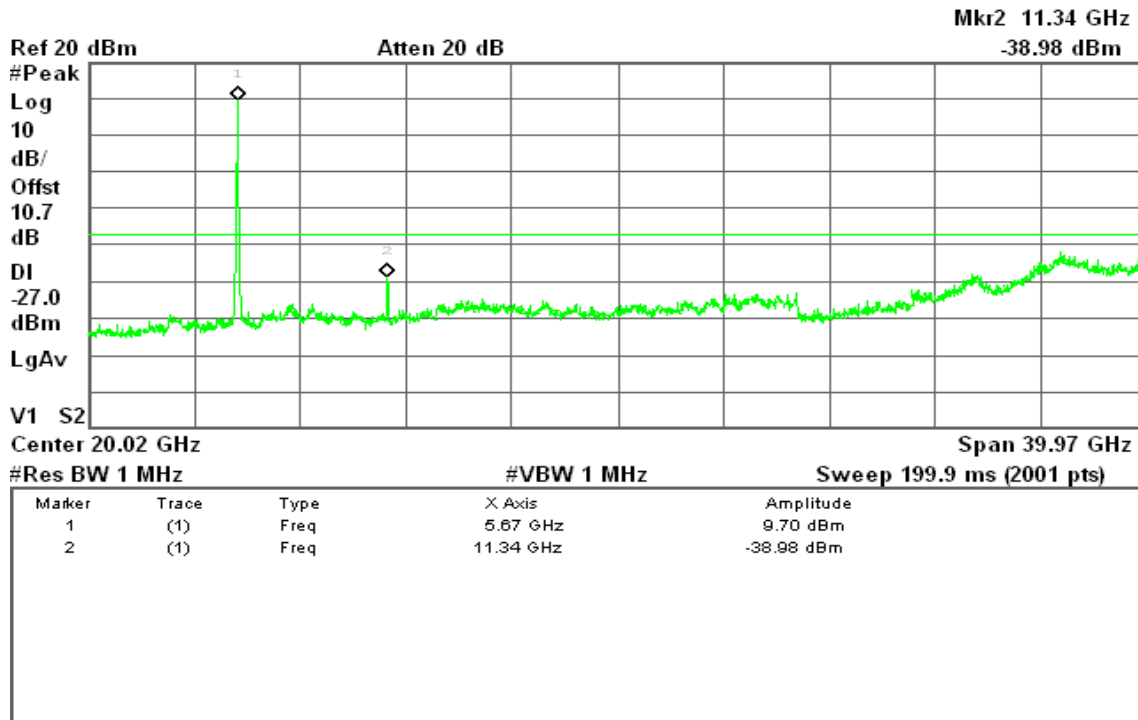




### CH High 30MHz ~ 40GHz

Agilent 17:27:05 Jul 28, 2010

R T

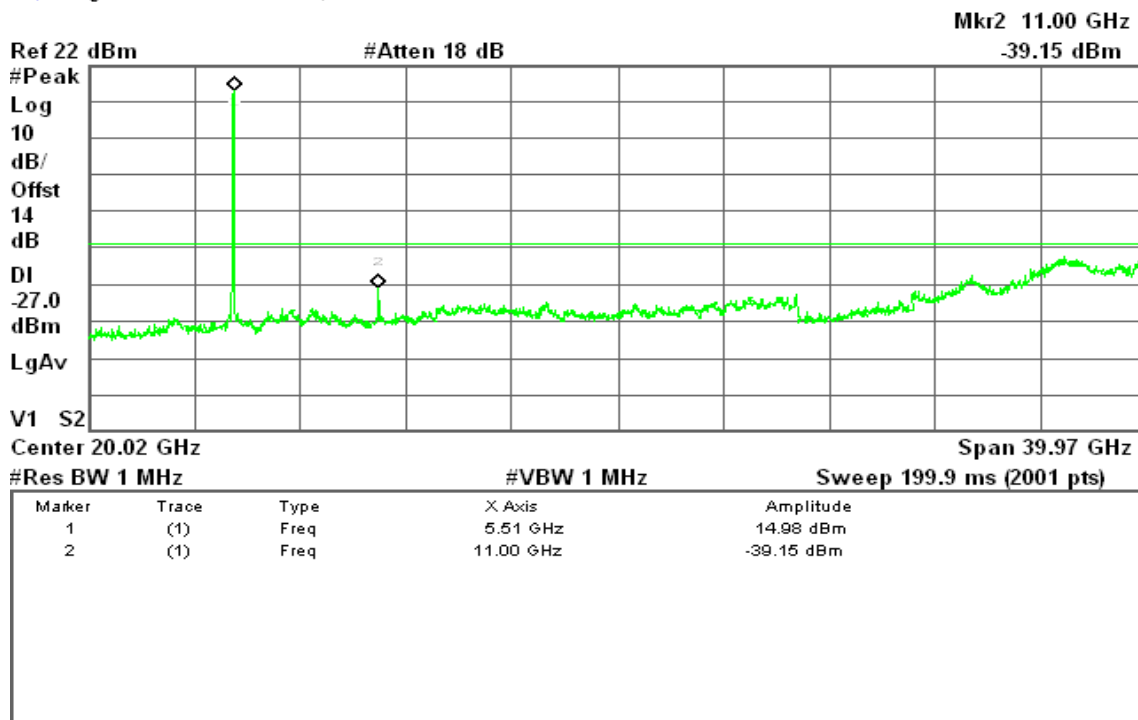


### draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / with combiner

### CH Low 30MHz ~ 40GHz

Agilent 15:28:28 Jul 28, 2010

R L



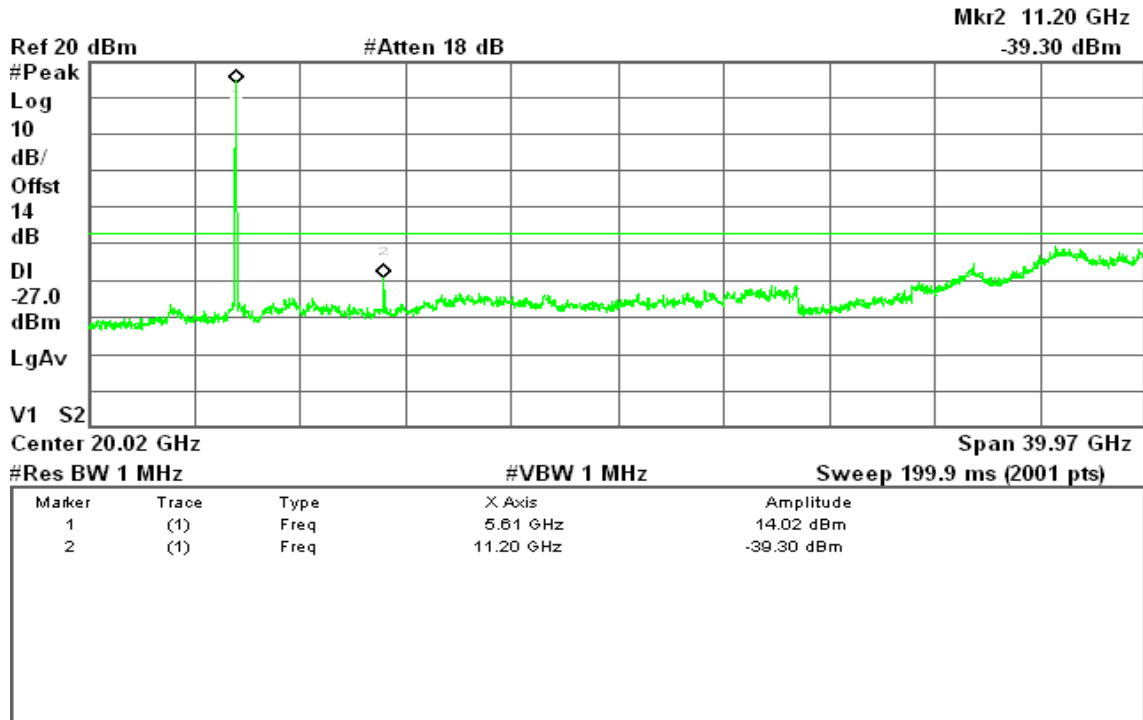


### CH Mid

30MHz ~ 40GHz

Agilent 15:29:37 Jul 28, 2010

R L

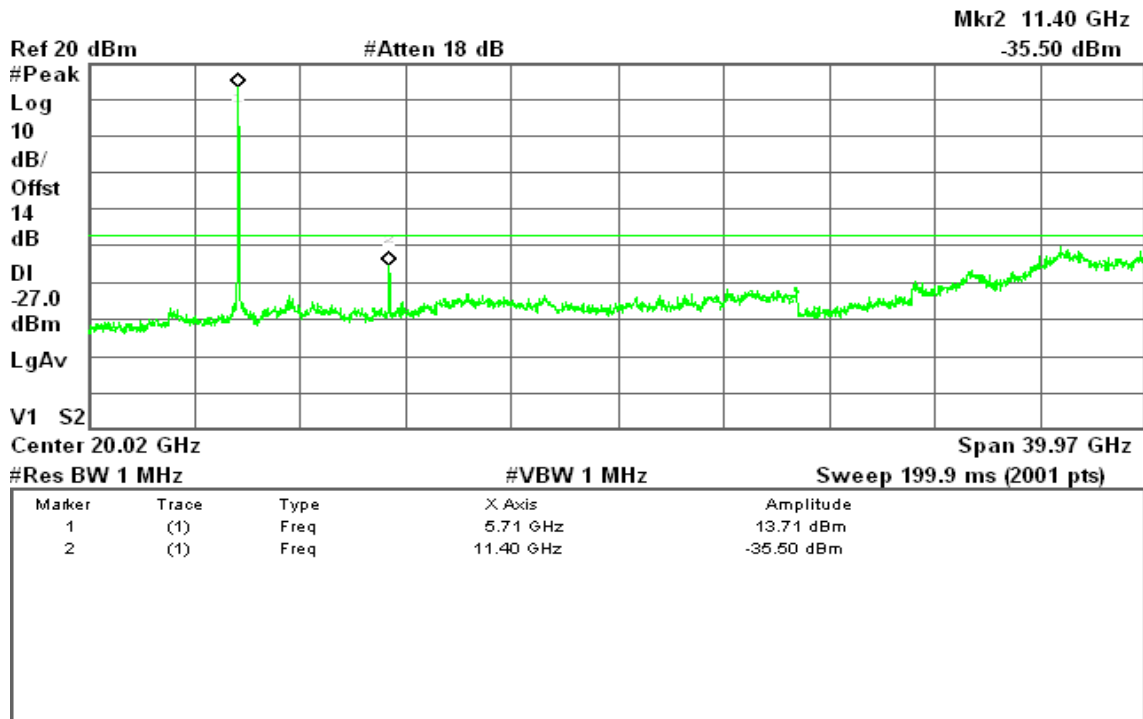


### CH High

30MHz ~ 40GHz

Agilent 15:30:14 Jul 28, 2010

R T







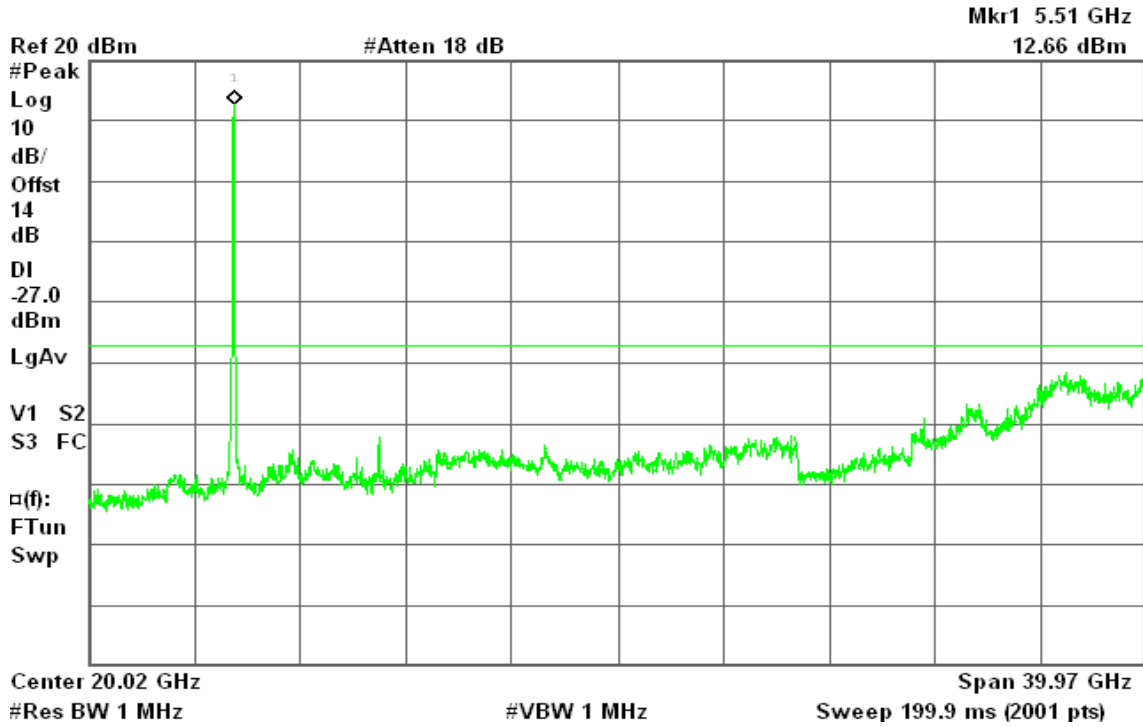
**draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / with combiner**

**CH Low**

**30MHz ~ 40GHz**

Agilent 16:10:53 Jul 28, 2010

R T

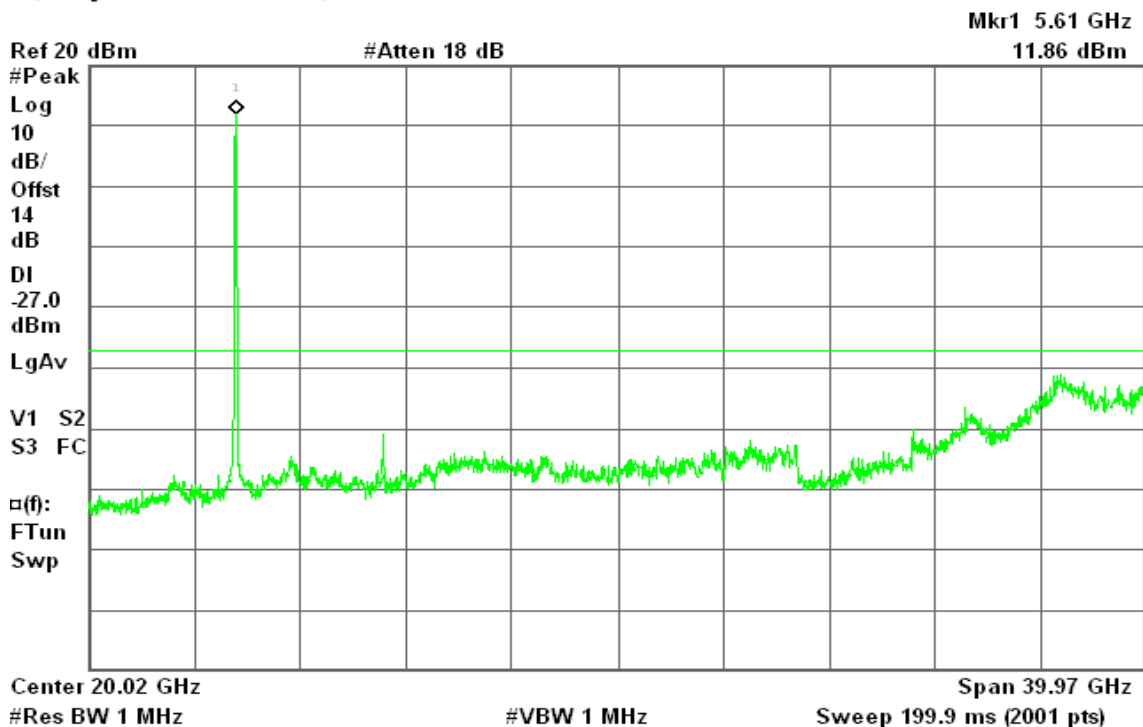


**CH Mid**

**30MHz ~ 40GHz**

Agilent 16:11:42 Jul 28, 2010

R T



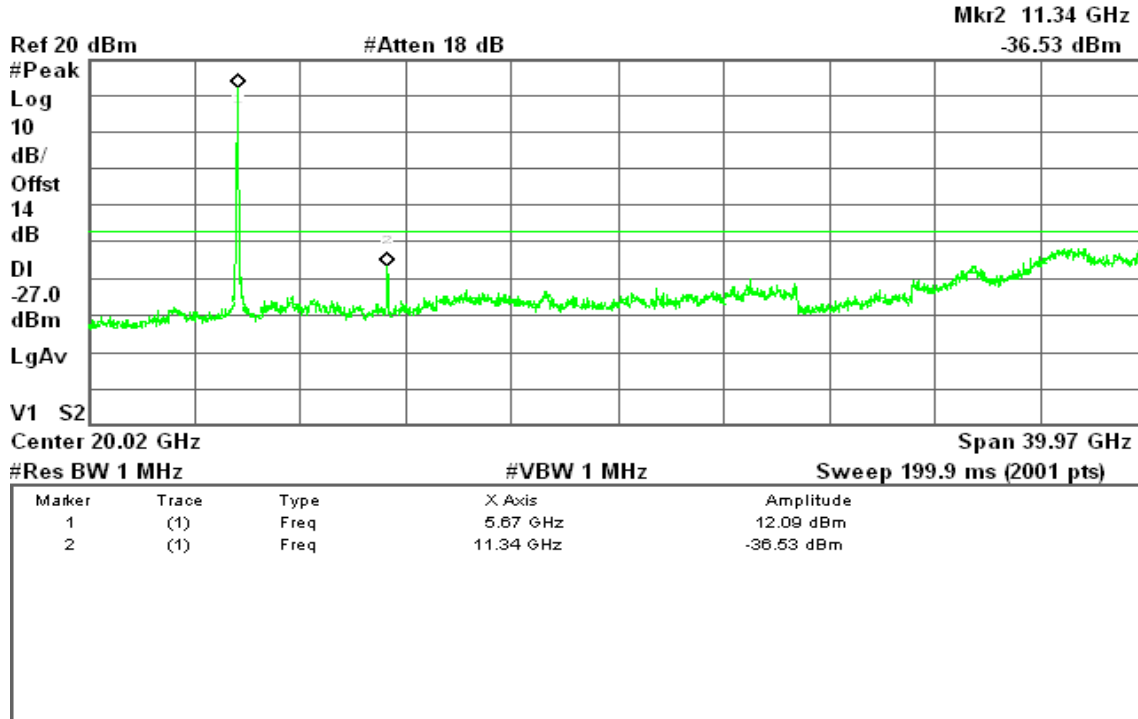


### CH High

30MHz ~ 40GHz

Agilent 16:13:06 Jul 28, 2010

R T





## 7.8 POWERLINE CONDUCTED EMISSIONS

### LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

\* Decreases with the logarithm of the frequency.

### TEST CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### TEST RESULTS

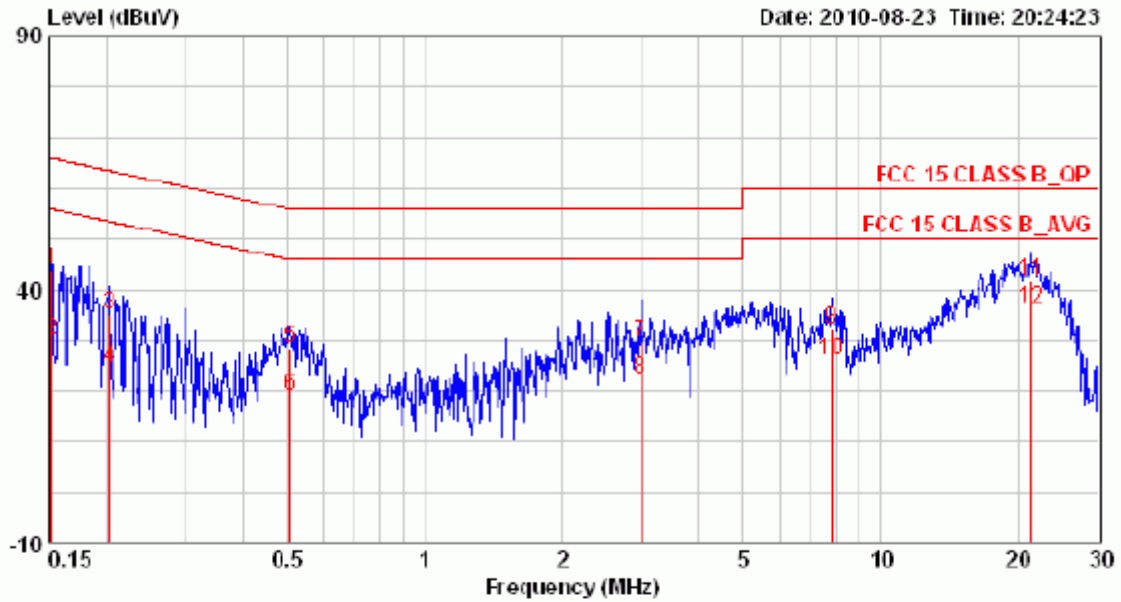
The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



**Test Data**

**Operation Mode:** Normal Link  
**Temperature:** 19°C  
**Humidity:** 66% RH

**Test Date:** August 23, 2010  
**Tested by:** Vic Lin  
**Line:** L1



Freq. MHz	Corr. Factor dB	Reading Value dBuV		Emission Level dBuV		Limit dBuV		Margin dB	
		Q. P.	Ave.	Q. P.	Ave.	Q. P.	Ave.	Q. P.	Ave.
0.152	0.05	43.04	29.90	43.09	29.95	65.91	55.91	-22.02	-25.96
0.203	0.06	34.96	24.26	35.02	24.32	63.49	53.49	-28.47	-29.17
0.507	0.06	28.34	18.70	28.40	18.76	56.00	46.00	-27.60	-27.24
2.978	0.16	29.54	22.02	29.70	22.18	56.00	46.00	-26.30	-23.82
7.810	0.29	31.83	25.77	32.12	26.06	60.00	50.00	-27.88	-23.94
21.373	0.53	41.18	35.60	41.71	36.13	60.00	50.00	-18.29	-13.87

**Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



Operation Mode: Normal Link

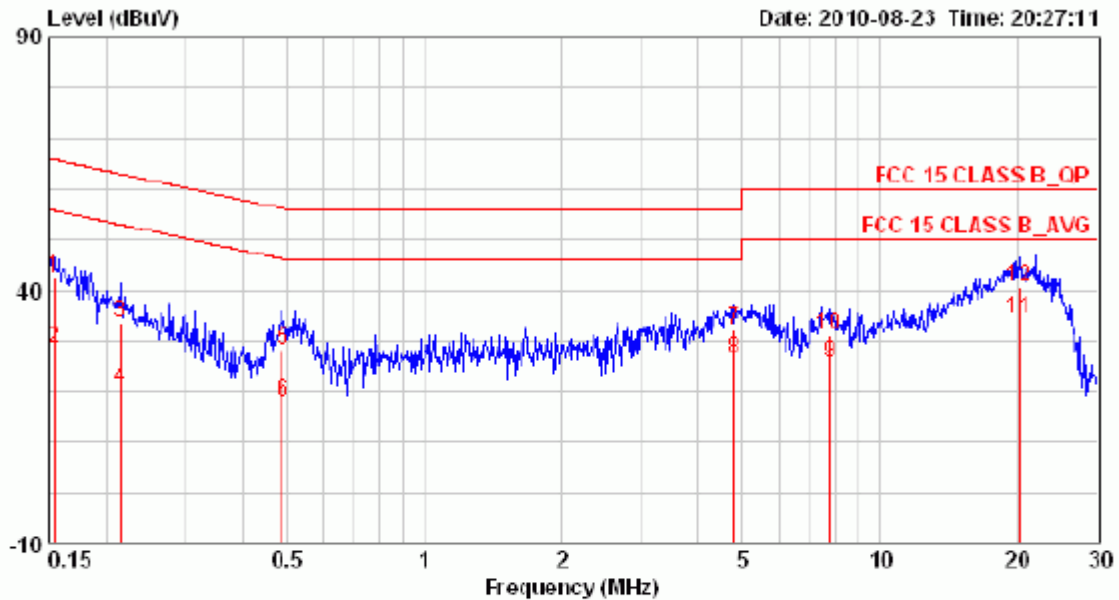
Test Date: August 23, 2010

Temperature: 19°C

Tested by: Vic Lin

Humidity: 66% RH

Line: L2



Freq. MHz	Corr. Factor dB	Reading Value dBuV		Emission Level dBuV		Limit dBuV		Margin dB	
		Q. P.	Ave.	Q. P.	Ave.	Q. P.	Ave.	Q. P.	Ave.
0.154	0.06	42.16	28.24	42.22	28.30	65.78	55.78	-23.56	-27.48
0.215	0.06	33.36	20.34	33.42	20.40	63.01	53.01	-29.59	-32.61
0.489	0.06	27.90	17.71	27.96	17.77	56.19	46.19	-28.23	-28.42
4.772	0.19	31.81	26.23	32.00	26.42	56.00	46.00	-24.00	-19.58
7.769	0.27	30.78	25.30	31.05	25.57	60.00	50.00	-28.95	-24.43
20.270	0.48	39.96	33.79	40.44	34.27	60.00	50.00	-19.56	-15.73

**Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

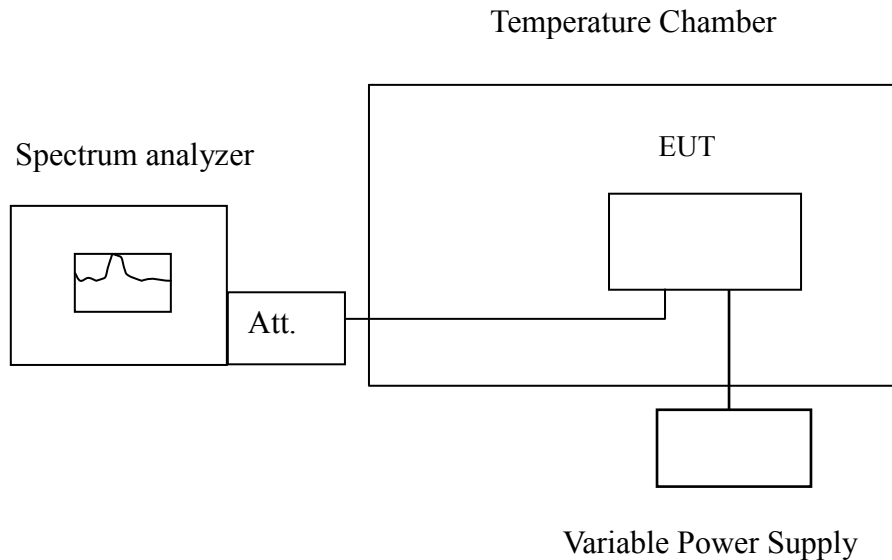


## 7.9 FREQUENCY STABILITY

### LIMIT

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### Test Configuration



**Remark:** Measurement setup for testing on Antenna connector



### TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

### TEST RESULTS

*No non-compliance noted.*

#### **IEEE 802.11a mode / 5180 ~ 5240 MHz:**

##### CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5179.994280	5150~5250	Pass
40	110	5180.001009	5150~5250	Pass
30	110	5179.998525	5150~5250	Pass
20	110	5179.982668	5150~5250	Pass
10	110	5180.008516	5150~5250	Pass
0	110	5179.979187	5150~5250	Pass
-10	110	5179.988953	5150~5250	Pass
-20	110	5179.971851	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5179.983826	5150~5250	Pass
	110	5180.004066	5150~5250	Pass
	121	5180.002293	5150~5250	Pass



**CH High**

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5240.011483	5150~5250	Pass
40	110	5239.989052	5150~5250	Pass
30	110	5239.97171	5150~5250	Pass
20	110	5239.999063	5150~5250	Pass
10	110	5240.012907	5150~5250	Pass
0	110	5240.007675	5150~5250	Pass
-10	110	5239.981583	5150~5250	Pass
-20	110	5240.006497	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5239.974893	5150~5250	Pass
	110	5239.996009	5150~5250	Pass
	121	5240.007005	5150~5250	Pass





**draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240 MHz:**

**CH Low**

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5180.012254	5150~5250	Pass
40	110	5179.980279	5150~5250	Pass
30	110	5180.003689	5150~5250	Pass
20	110	5179.997802	5150~5250	Pass
10	110	5179.971316	5150~5250	Pass
0	110	5180.006715	5150~5250	Pass
-10	110	5179.983170	5150~5250	Pass
-20	110	5179.992990	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5180.014738	5150~5250	Pass
	110	5179.986089	5150~5250	Pass
	121	5179.993759	5150~5250	Pass



**CH High**

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5239.998866	5150~5250	Pass
40	110	5240.008763	5150~5250	Pass
30	110	5240.00759	5150~5250	Pass
20	110	5240.014107	5150~5250	Pass
10	110	5240.008261	5150~5250	Pass
0	110	5239.973581	5150~5250	Pass
-10	110	5240.013917	5150~5250	Pass
-20	110	5239.979161	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5239.991183	5150~5250	Pass
	110	5239.986526	5150~5250	Pass
	121	5239.998332	5150~5250	Pass



**draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230 MHz:**

**CH Low**

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5190.012814	5150~5250	Pass
40	110	5190.019838	5150~5250	Pass
30	110	5189.985185	5150~5250	Pass
20	110	5189.986597	5150~5250	Pass
10	110	5189.984501	5150~5250	Pass
0	110	5190.005642	5150~5250	Pass
-10	110	5190.006639	5150~5250	Pass
-20	110	5190.001927	5150~5250	Pass

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5189.991643	5150~5250	Pass
	110	5190.020659	5150~5250	Pass
	121	5189.994408	5150~5250	Pass



**CH High**

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5230.014948	5150~5250	Pass
40	110	5229.976434	5150~5250	Pass
30	110	5229.979094	5150~5250	Pass
20	110	5229.993816	5150~5250	Pass
10	110	5229.995199	5150~5250	Pass
0	110	5230.009753	5150~5250	Pass
-10	110	5229.989794	5150~5250	Pass
-20	110	5230.016223	5150~5250	Pass

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5229.998084	5150~5250	Pass
	110	5229.984963	5150~5250	Pass
	121	5230.007881	5150~5250	Pass



**IEEE 802.11a mode / 5260 ~ 5320 MHz:**

**CH Low**

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5260.007146	5250~5350	Pass
40	110	5259.97489	5250~5350	Pass
30	110	5259.971883	5250~5350	Pass
20	110	5260.01535	5250~5350	Pass
10	110	5259.977986	5250~5350	Pass
0	110	5259.976992	5250~5350	Pass
-10	110	5260.009784	5250~5350	Pass
-20	110	5259.985933	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5260.002865	5250~5350	Pass
	110	5259.971089	5250~5350	Pass
	121	5259.970435	5250~5350	Pass



**CH High**

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5319.993267	5250~5350	Pass
40	110	5319.980488	5250~5350	Pass
30	110	5320.020199	5250~5350	Pass
20	110	5320.011366	5250~5350	Pass
10	110	5320.014059	5250~5350	Pass
0	110	5320.000178	5250~5350	Pass
-10	110	5319.998094	5250~5350	Pass
-20	110	5319.982933	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5320.012065	5250~5350	Pass
	110	5319.993859	5250~5350	Pass
	121	5320.009046	5250~5350	Pass



**draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320 MHz:**

**CH Low**

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5259.982565	5250~5350	Pass
40	110	5260.019851	5250~5350	Pass
30	110	5260.01517	5250~5350	Pass
20	110	5259.996719	5250~5350	Pass
10	110	5259.991243	5250~5350	Pass
0	110	5260.017786	5250~5350	Pass
-10	110	5259.980214	5250~5350	Pass
-20	110	5259.977541	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5260.008211	5250~5350	Pass
	110	5259.986892	5250~5350	Pass
	121	5259.980574	5250~5350	Pass



**CH High**

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5320.004534	5250~5350	Pass
40	110	5319.974437	5250~5350	Pass
30	110	5320.001835	5250~5350	Pass
20	110	5320.00271	5250~5350	Pass
10	110	5319.979586	5250~5350	Pass
0	110	5319.980016	5250~5350	Pass
-10	110	5319.974455	5250~5350	Pass
-20	110	5319.975138	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5319.985069	5250~5350	Pass
	110	5319.972448	5250~5350	Pass
	121	5320.003644	5250~5350	Pass





**draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310 MHz:**

**CH Low**

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5269.992833	5250~5350	Pass
40	110	5269.980124	5250~5350	Pass
30	110	5270.011228	5250~5350	Pass
20	110	5269.993481	5250~5350	Pass
10	110	5270.018087	5250~5350	Pass
0	110	5269.976021	5250~5350	Pass
-10	110	5270.011394	5250~5350	Pass
-20	110	5269.98935	5250~5350	Pass

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5270.017791	5250~5350	Pass
	110	5269.978255	5250~5350	Pass
	121	5270.020274	5250~5350	Pass



**CH High**

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5310.002241	5250~5350	Pass
40	110	5310.006137	5250~5350	Pass
30	110	5309.974259	5250~5350	Pass
20	110	5309.996793	5250~5350	Pass
10	110	5310.006624	5250~5350	Pass
0	110	5310.009284	5250~5350	Pass
-10	110	5309.973079	5250~5350	Pass
-20	110	5309.980627	5250~5350	Pass

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5309.996251	5250~5350	Pass
	110	5309.9873	5250~5350	Pass
	121	5310.006258	5250~5350	Pass



**IEEE 802.11a mode / 5500 ~ 5700 MHz:**

**CH Low**

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5499.995987	5470~5725	Pass
40	110	5499.996122	5470~5725	Pass
30	110	5499.995374	5470~5725	Pass
20	110	5499.991104	5470~5725	Pass
10	110	5499.983538	5470~5725	Pass
0	110	5499.987191	5470~5725	Pass
-10	110	5500.009796	5470~5725	Pass
-20	110	5500.005004	5470~5725	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5499.989054	5470~5725	Pass
	110	5499.995972	5470~5725	Pass
	121	5500.002928	5470~5725	Pass



**CH High**

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5700.01101	5470~5725	Pass
40	110	5699.976483	5470~5725	Pass
30	110	5700.003691	5470~5725	Pass
20	110	5699.974725	5470~5725	Pass
10	110	5699.977013	5470~5725	Pass
0	110	5700.006582	5470~5725	Pass
-10	110	5700.005498	5470~5725	Pass
-20	110	5700.019957	5470~5725	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5700.011523	5470~5725	Pass
	110	5699.975469	5470~5725	Pass
	121	5699.991407	5470~5725	Pass



**draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700 MHz:**

**CH Low**

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5500.018589	5470~5725	Pass
40	110	5499.970457	5470~5725	Pass
30	110	5499.989247	5470~5725	Pass
20	110	5500.00284	5470~5725	Pass
10	110	5499.977444	5470~5725	Pass
0	110	5500.010155	5470~5725	Pass
-10	110	5500.012187	5470~5725	Pass
-20	110	5499.970114	5470~5725	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5500.006526	5470~5725	Pass
	110	5499.970953	5470~5725	Pass
	121	5500.010779	5470~5725	Pass



**CH High**

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5699.978874	5470~5725	Pass
40	110	5700.000105	5470~5725	Pass
30	110	5699.994718	5470~5725	Pass
20	110	5699.974967	5470~5725	Pass
10	110	5700.008961	5470~5725	Pass
0	110	5700.013961	5470~5725	Pass
-10	110	5699.99955	5470~5725	Pass
-20	110	5699.998181	5470~5725	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5700.019473	5470~5725	Pass
	110	5699.975437	5470~5725	Pass
	121	5699.980422	5470~5725	Pass



**draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670 MHz:**

**CH Low**

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5509.982328	5470~5725	Pass
40	110	5510.002453	5470~5725	Pass
30	110	5510.005246	5470~5725	Pass
20	110	5509.995099	5470~5725	Pass
10	110	5509.997864	5470~5725	Pass
0	110	5510.013354	5470~5725	Pass
-10	110	5510.010339	5470~5725	Pass
-20	110	5509.980554	5470~5725	Pass

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5509.99053	5470~5725	Pass
	110	5510.005879	5470~5725	Pass
	121	5509.986714	5470~5725	Pass



**CH High**

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5670.004381	5470~5725	Pass
40	110	5669.981857	5470~5725	Pass
30	110	5670.002096	5470~5725	Pass
20	110	5670.018484	5470~5725	Pass
10	110	5669.997257	5470~5725	Pass
0	110	5669.976783	5470~5725	Pass
-10	110	5669.991171	5470~5725	Pass
-20	110	5669.974813	5470~5725	Pass

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5670.015453	5470~5725	Pass
	110	5670.017966	5470~5725	Pass
	121	5670.01909	5470~5725	Pass





## 7.10 DYNAMIC FREQUENCY SELECTION

### LIMIT

According to §15.407 (h) and FCC 06-96 appendix “compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection”.

**Table 1: Applicability of DFS requirements prior to use of a channel**

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
Non-Occupancy Period	Yes	Yes	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

**Table 2: Applicability of DFS requirements during normal operation**

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

**Table 3: Interference Threshold values, Master or Client incorporating In-Service**

Maximum Transmit Power	Value (see note)
≥200 Milliwatt	-64 dBm
< 200 Milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.



**Table 4: DFS Response requirement values**

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period
U-NII Detection Bandwidth	Minimum 80% of the UNII 99% transmission power bandwidth. See Note 3.

The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

**Table 5 – Short Pulse Radar Test Waveforms**

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

**Table 6 – Long Pulse Radar Test Signal**

Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (µsec)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

**Table 7 – Frequency Hopping Radar Test Signal**

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Burst Length (ms)	Pulses Per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	0.33	70%	30



## **DESCRIPTION OF EUT**

### **Overview Of EUT With Respect To §15.407 (H) Requirements**

The EUT operates over the 5250-5350 MHz range as a Client Device that does not have radar detection capability.

The antenna assembly utilized with the EUT has a gain of 3.48 dBi.

The highest power level is 20.02 dBm EIRP in the 5500 ~ 5700MHz band.

The EUT uses one transmitter connected to two 50-ohm coaxial antenna ports via a diversity switch. Two antenna port is connected to the test system since the EUT has two antenna.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11a architecture, with a nominal channel bandwidth of 20 MHz.

The Master Device is a Cisco Aironet 802.11a/b/g Access Point, FCC ID: LDK102056.

The rated output power of the Master unit is < 23dBm (EIRP). Therefore the required interference threshold level is -62 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is  $-62 + 5 = -57$ dBm.

The calibrated conducted DFS Detection Threshold level is set to -62 dBm. The tested level is lower than the required level hence it provides margin to the limit.

### **Manufacturer’s Statement Regarding Uniform Channel Spreading**

The end product implements an automatic channel selection feature at startup such that operation commences on channels distributed across the entire set of allowed 5GHz channels. This feature will ensure uniform spreading is achieved while avoiding non-allowed channels due to prior radar events.



## **TEST AND MEASUREMENT SYSTEM**

### **System Overview**

The measurement system is based on a conducted test method.

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

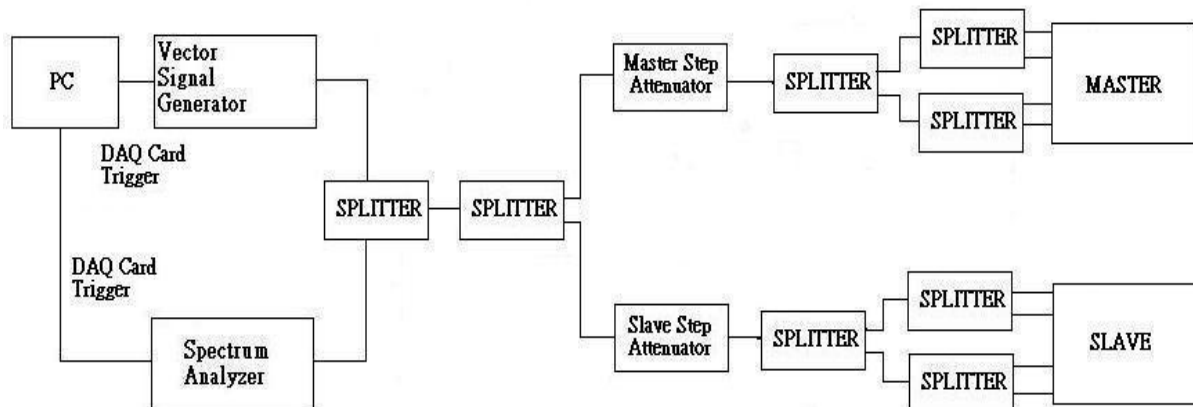
The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from FL to FH for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold. The time-domain resolution is 3 msec / bin with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), 50 ohm termination would be removed from the splitter so that connection can be established between splitter and the Master and/or Slave devices.

### **Conducted Method System Block Diagram**





### **System Calibration**

Connect the spectrum analyzer to the test system in place of the master device. Set the signal generator to CW mode. Adjust the amplitude of the signal generator to yield a measured level of  $-62$  dBm on the spectrum analyzer.

Without changing any of the instrument settings, reconnect the spectrum analyzer to the Common port of the Spectrum Analyzer Combiner/Divider and connect a 50 ohm load to the Master Device port of the test system.

Measure the amplitude and calculate the difference from  $-62$  dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference. Confirm that the signal is displayed at  $-62$  dBm. Readjust the RBW and VBW to 3 MHz, set the span to 10 MHz, and confirm that the signal is still displayed at  $-62$  dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of  $-62$  dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

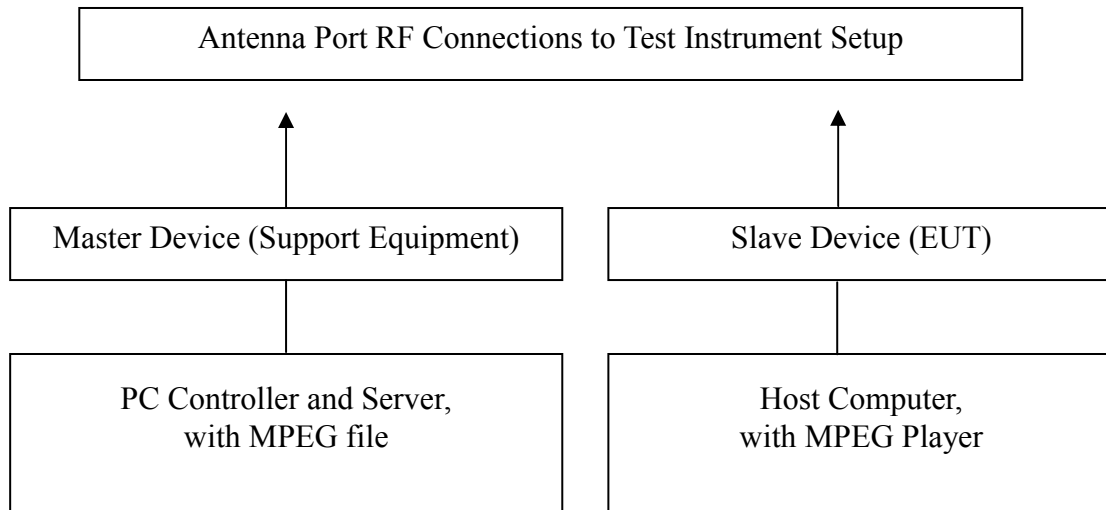
### **Adjustment Of Displayed Traffic Level**

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. Confirm that the displayed traffic is from the Master Device. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.



**Test Setup**



**TEST RESULTS**

*No non-compliance noted*



**Test Plot**

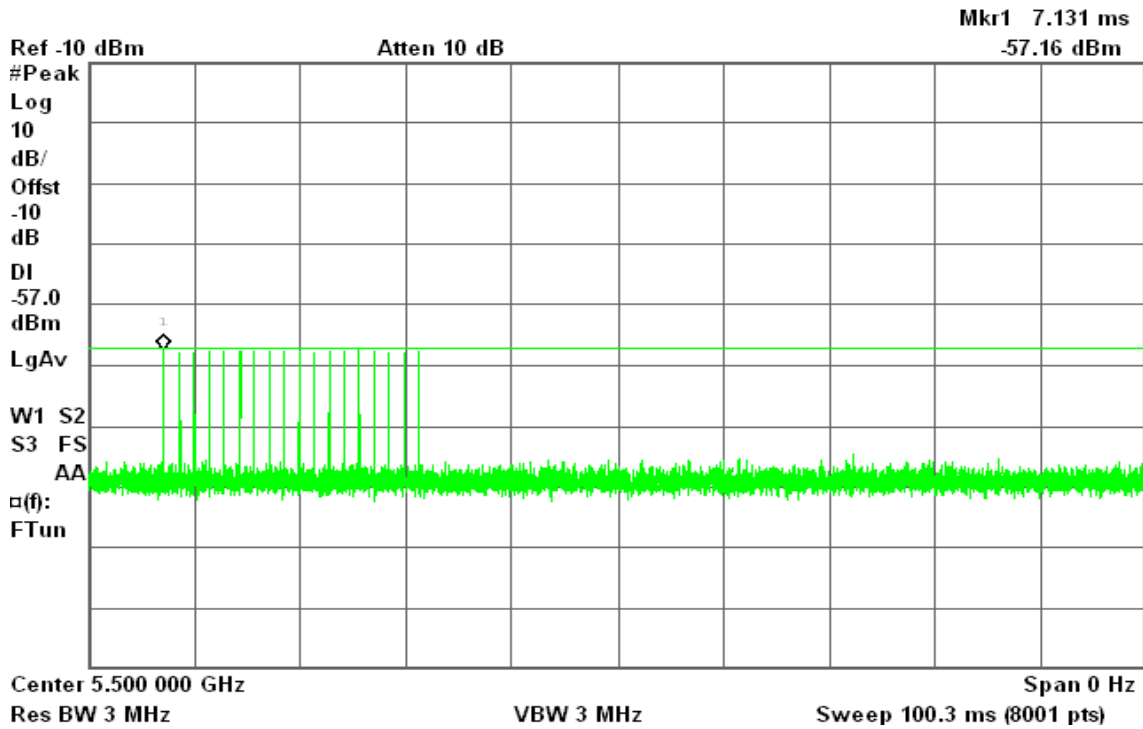
**PLOTS OF RADAR WAVEFORMS**

**draft 802.11n Standard-20 MHz mode**

**Sample of Short Pulse Radar Type 1**

Agilent 17:20:47 Aug 4, 2010

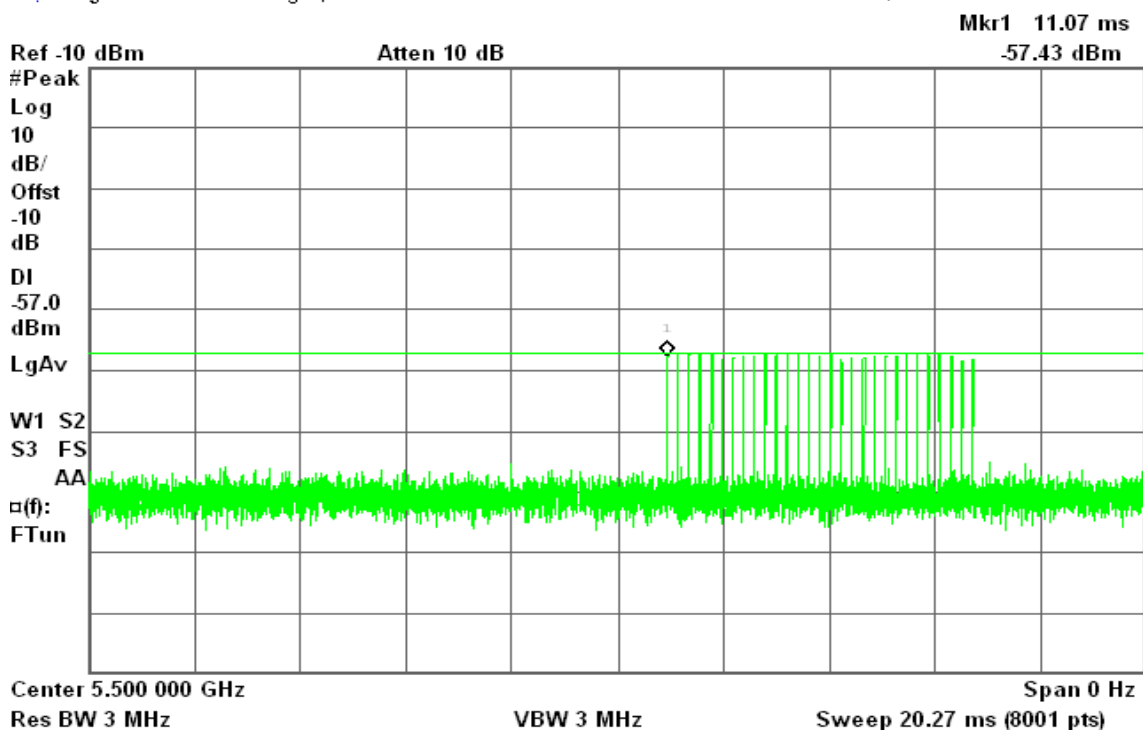
T



**Sample of Short Pulse Radar Type 2**

Agilent 17:18:57 Aug 4, 2010

T

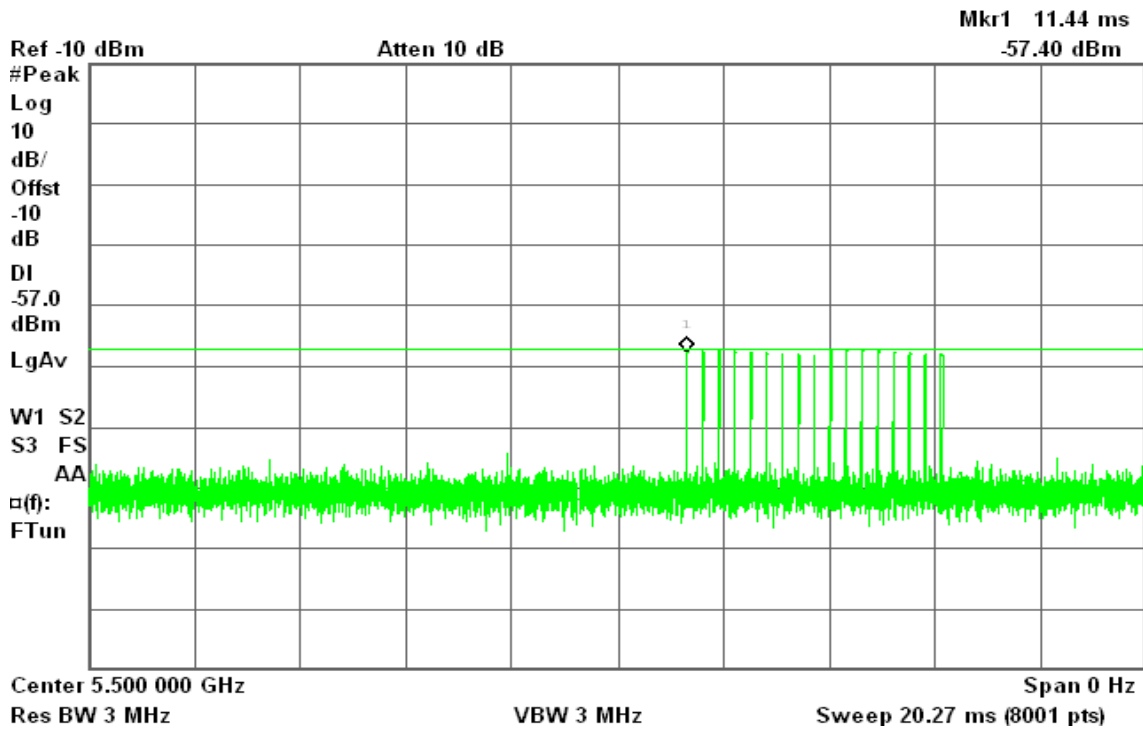




### Sample of Short Pulse Radar Type 3

Agilent 17:17:54 Aug 4, 2010

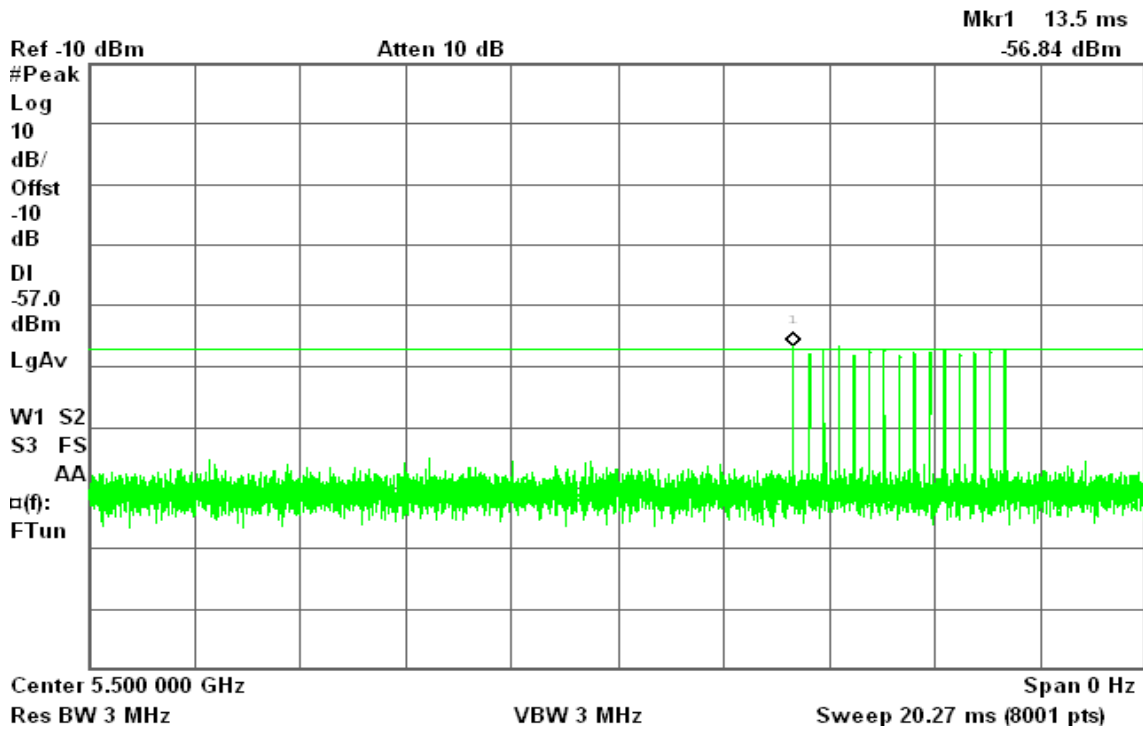
T



### Sample of Short Pulse Radar Type 4

Agilent 17:16:39 Aug 4, 2010

T





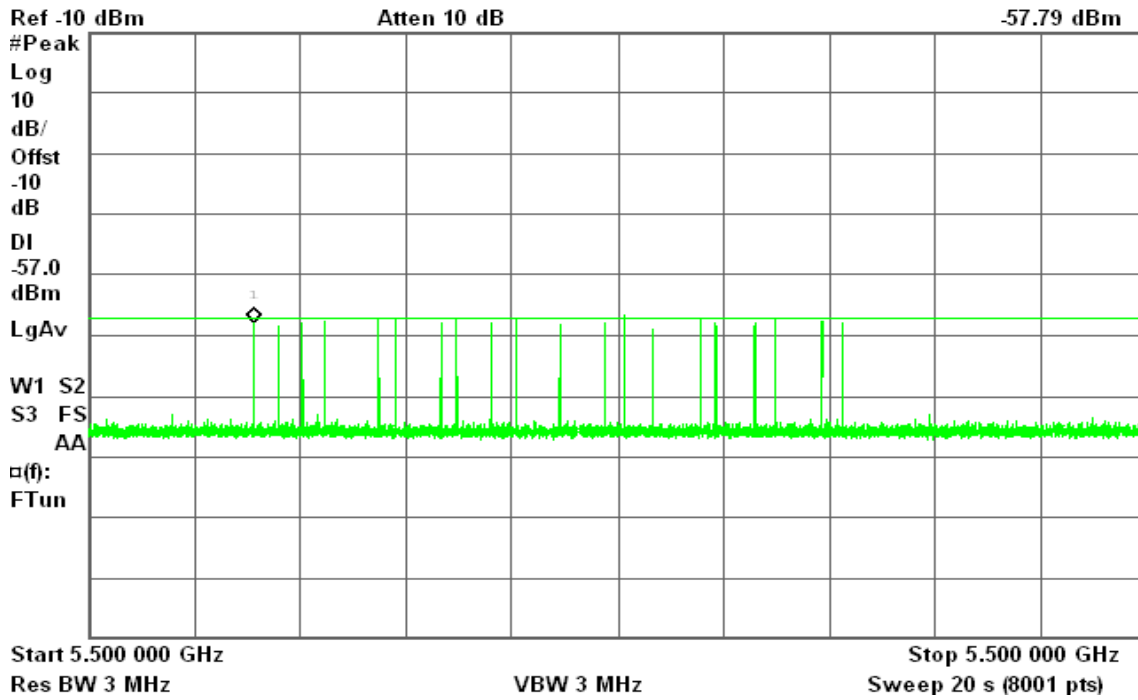


### Sample of Long Pulse Radar Type 5

Agilent 17:02:21 Aug 4, 2010

T

Mkr1 3.14 s  
-57.79 dBm

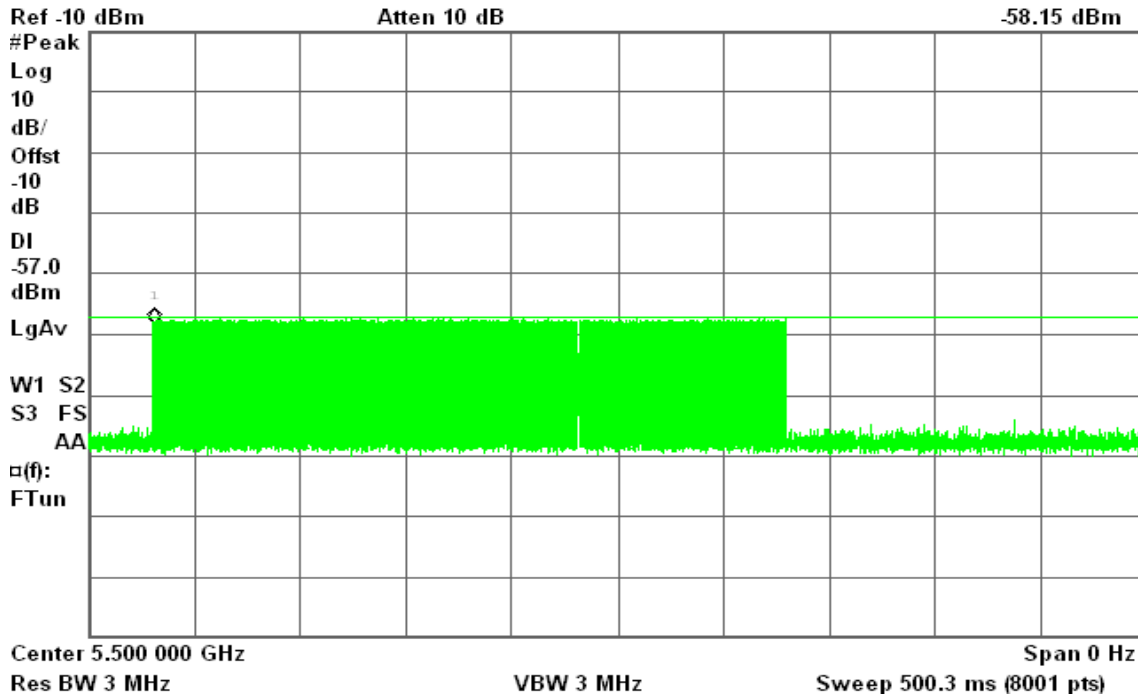


### Sample of Frequency Hopping Radar Type 6

Agilent 17:14:44 Aug 4, 2010

T

Mkr1 31.45 ms  
-58.15 dBm

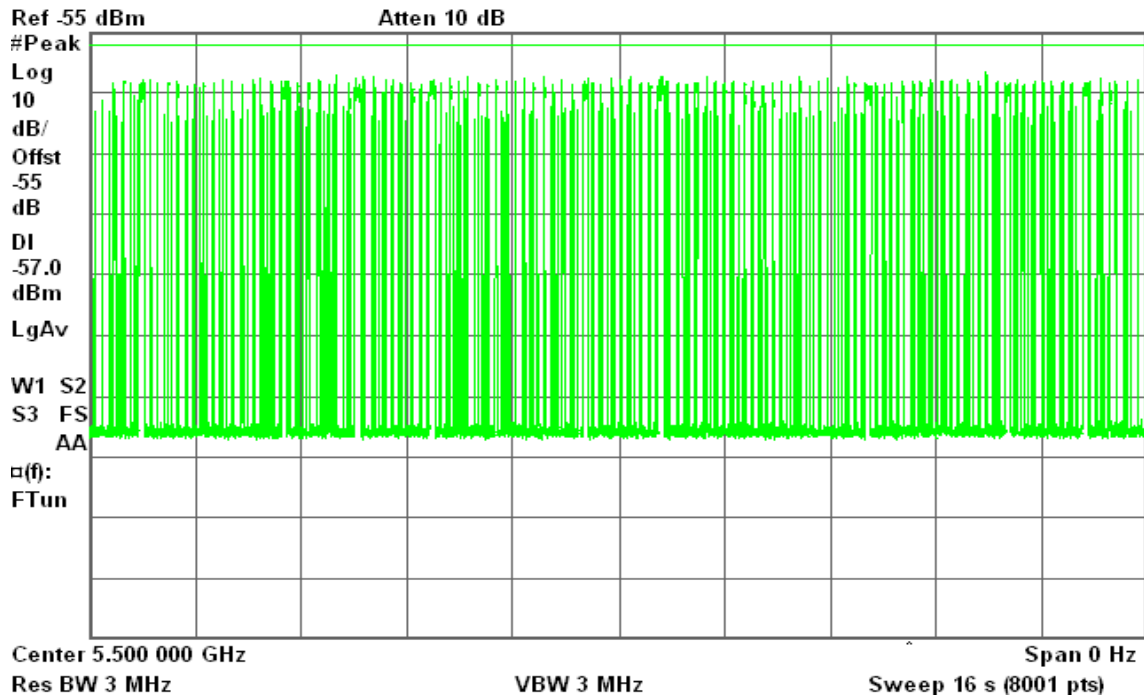




### Plot of WLAN Traffic from Slave

Agilent 15:34:46 Aug 3, 2010

R T



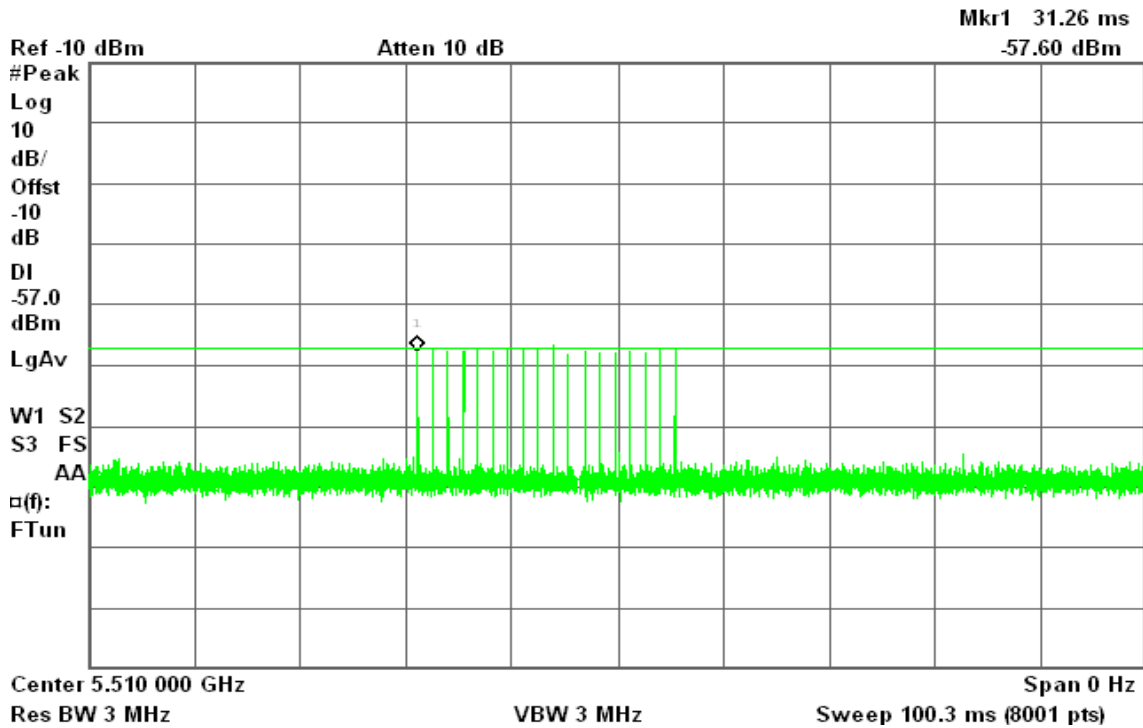


**draft 802.11n Wide-40 MHz mode**

**Sample of Short Pulse Radar Type 1**

Agilent 16:51:36 Aug 4, 2010

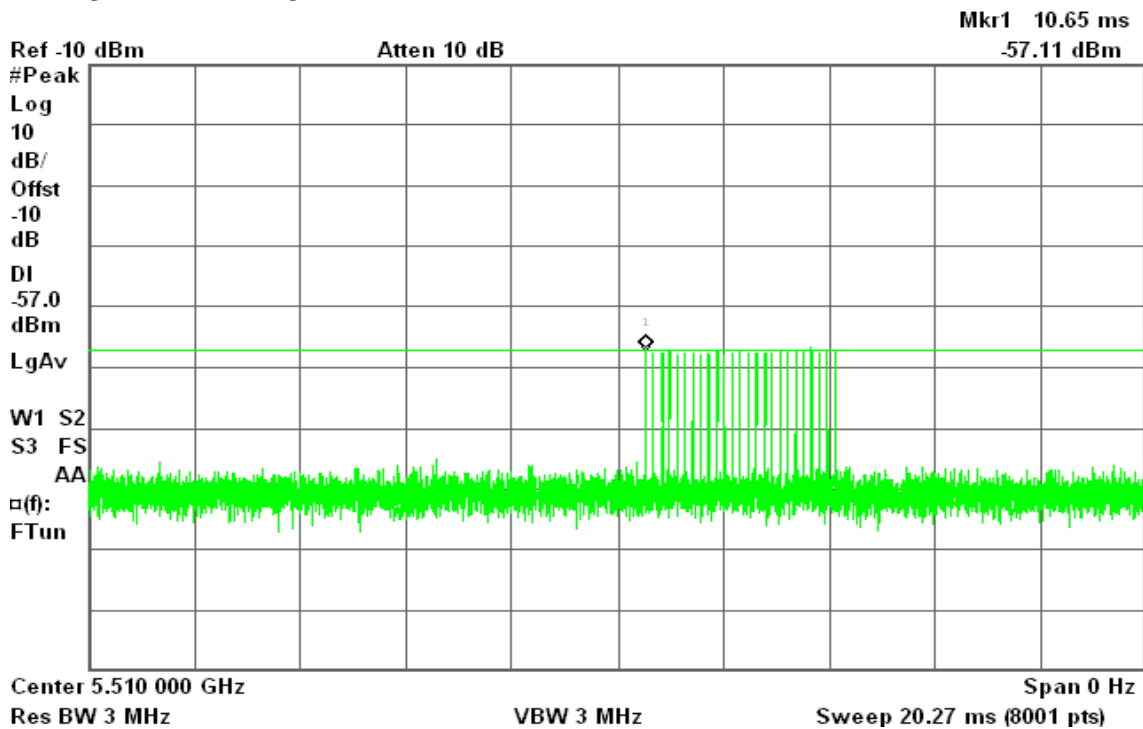
T



**Sample of Short Pulse Radar Type 2**

Agilent 16:53:09 Aug 4, 2010

T

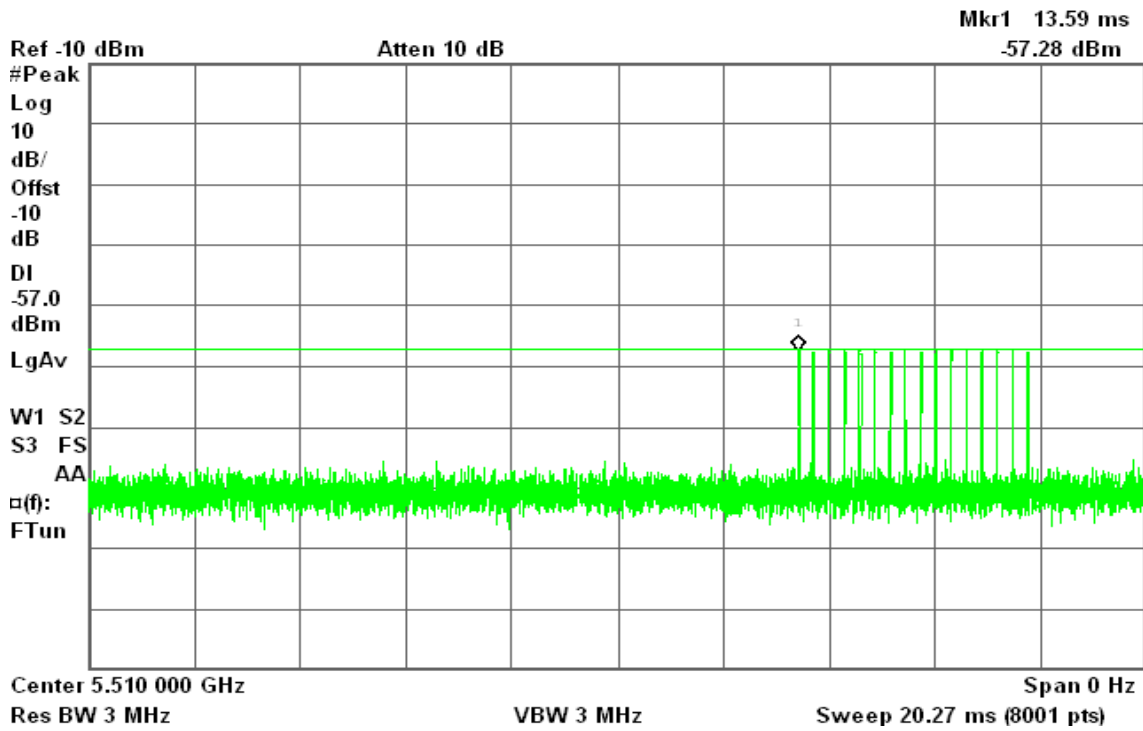




### Sample of Short Pulse Radar Type 3

Agilent 16:54:47 Aug 4, 2010

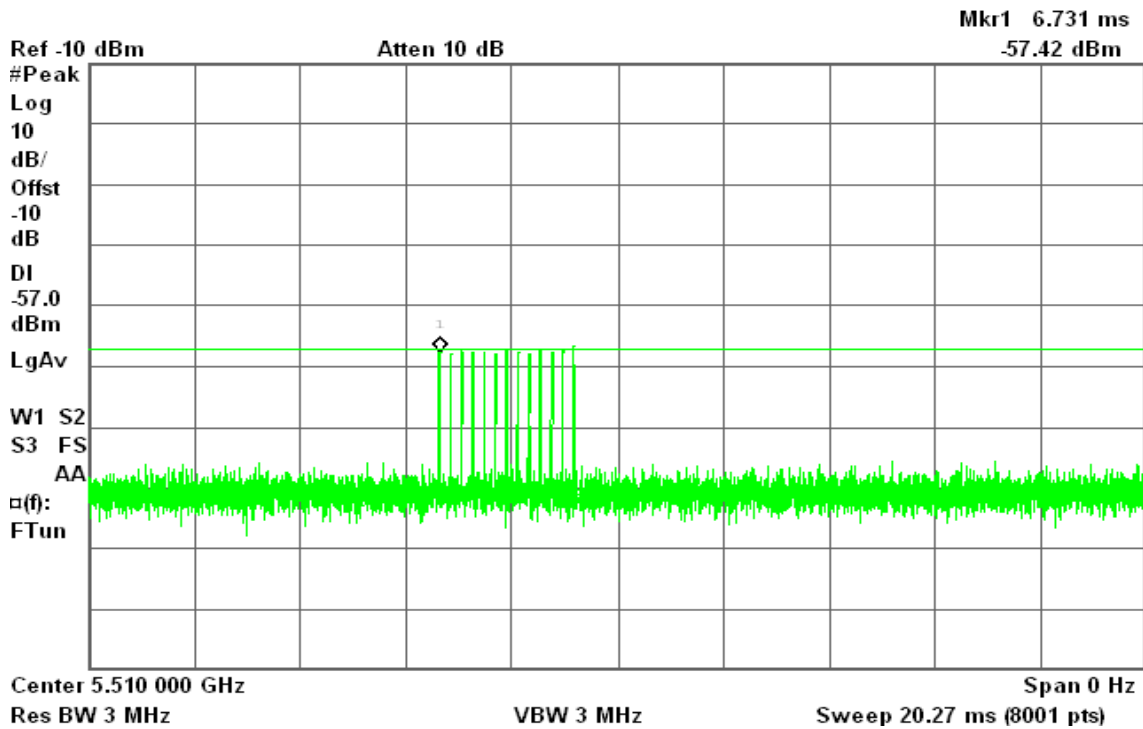
T



### Sample of Short Pulse Radar Type 4

Agilent 16:55:59 Aug 4, 2010

T



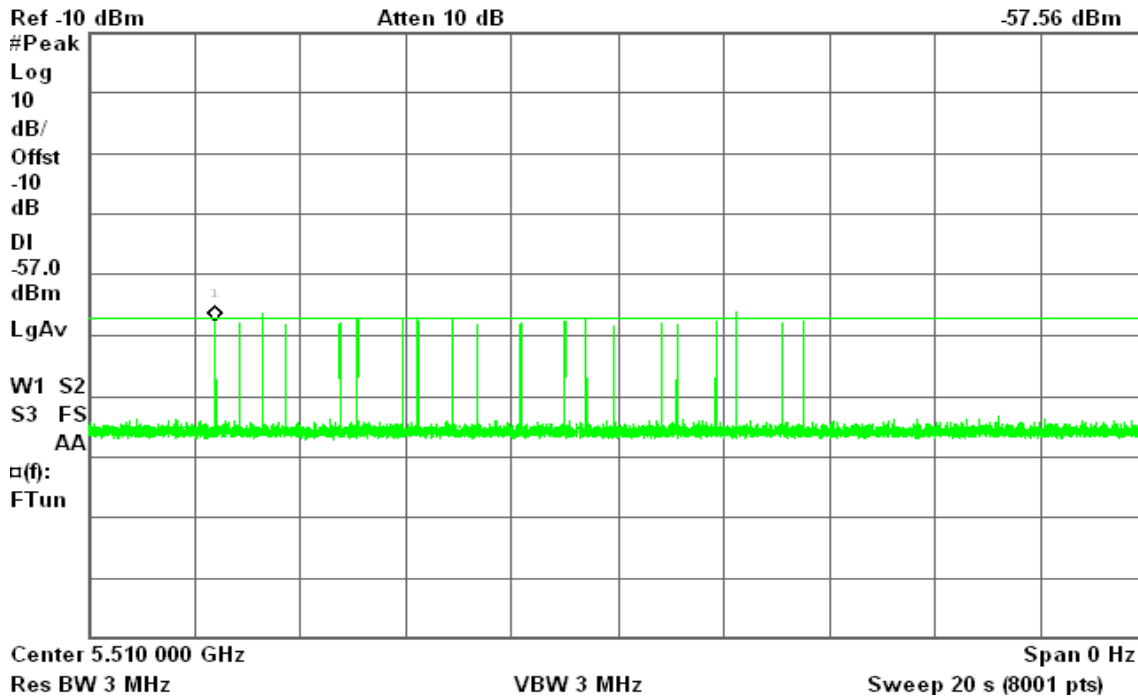


### Sample of Long Pulse Radar Type 5

Agilent 17:00:57 Aug 4, 2010

T

Mkr1 2.4 s  
-57.56 dBm

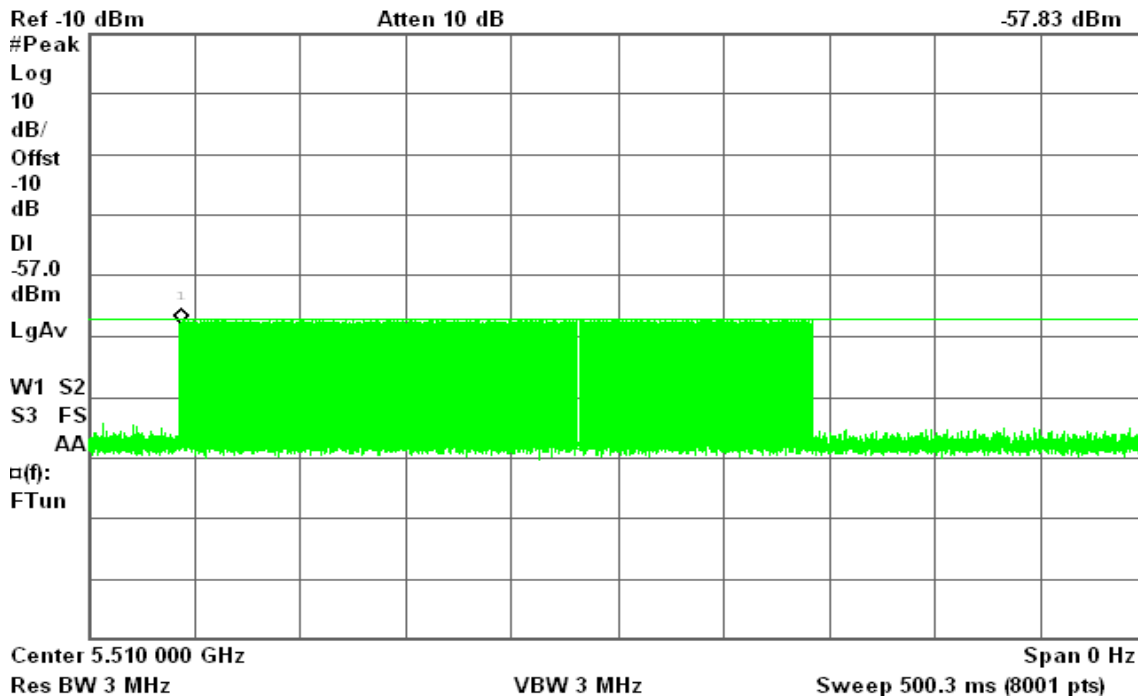


### Sample of Frequency Hopping Radar Type 6

Agilent 17:11:39 Aug 4, 2010

T

Mkr1 43.71 ms  
-57.83 dBm

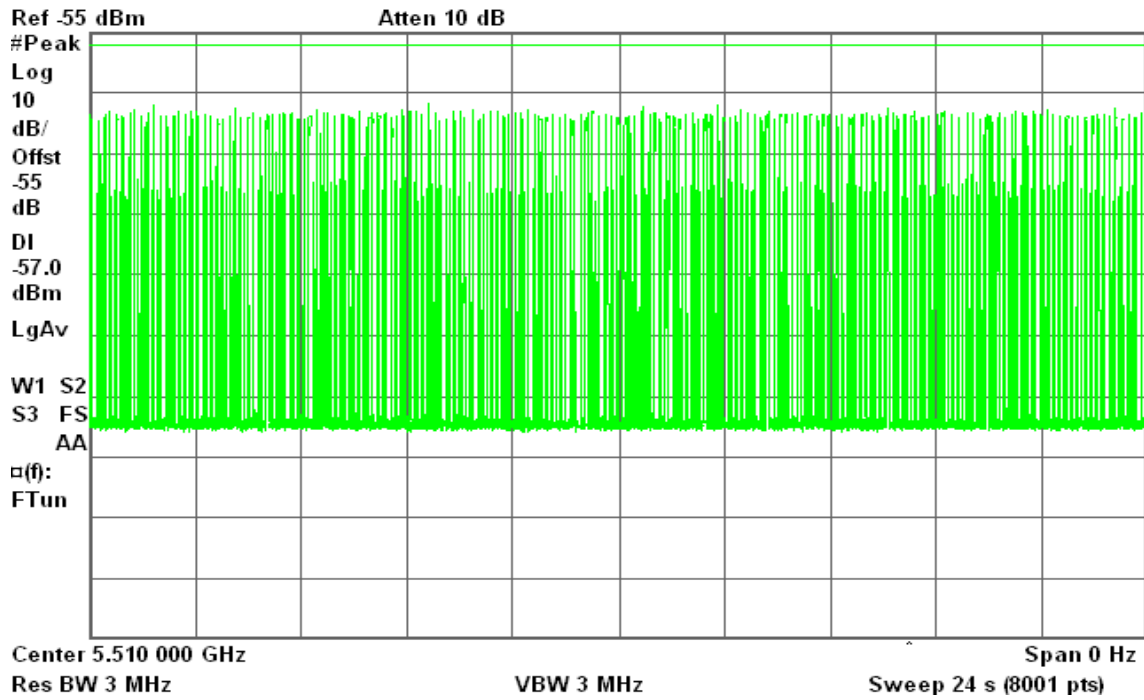




### Plot of WLAN Traffic from Slave

Agilent 13:13:31 Aug 4, 2010

R T





## **TEST CHANNEL AND METHOD**

All tests were performed at a channel center frequency of 5500 MHz utilizing a conducted test method.

## **CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME**

### **GENERAL REPORTING NOTES**

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =

(Number of analyzer bins showing transmission) \* (dwell time per bin)

The observation period over which the aggregate time is calculated

Begins at (Reference Marker + 200 msec) and

Ends no earlier than (Reference Marker + 10 sec).



**draft 802.11n Standard-20 MHz Channel mode**

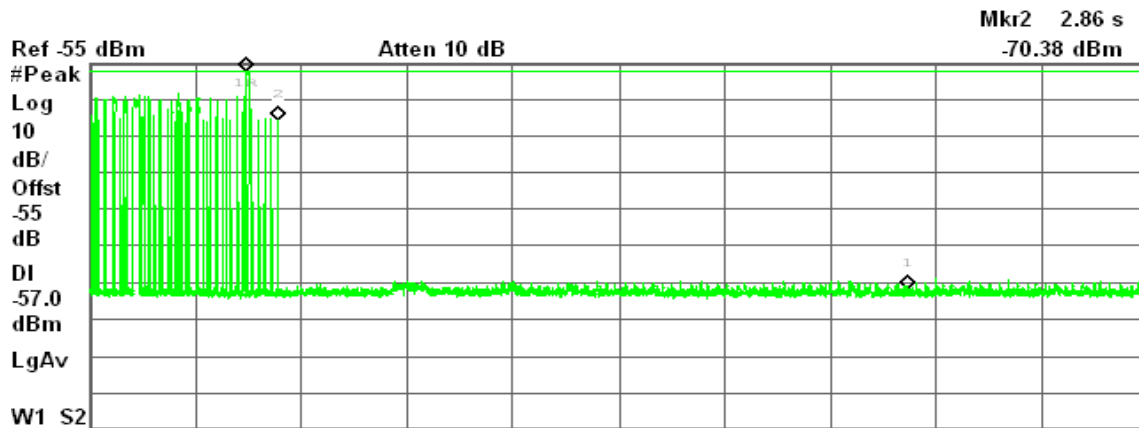
**Type 1 Channel Move Time Results**

No non-compliance noted.

Channel Move Time (s)	Limit (s)
2.86	10

Agilent 15:51:51 Aug 3, 2010

R T



Center 5.500 000 GHz      Span 0 Hz  
 Res BW 3 MHz      VBW 3 MHz      Sweep 16 s (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.372 s	-57.31 dBm
1Δ	(1)	Time	10 s	-59.56 dB
2	(1)	Time	2.86 s	-70.38 dBm





**draft 802.11n Wide-40 MHz Channel mode**

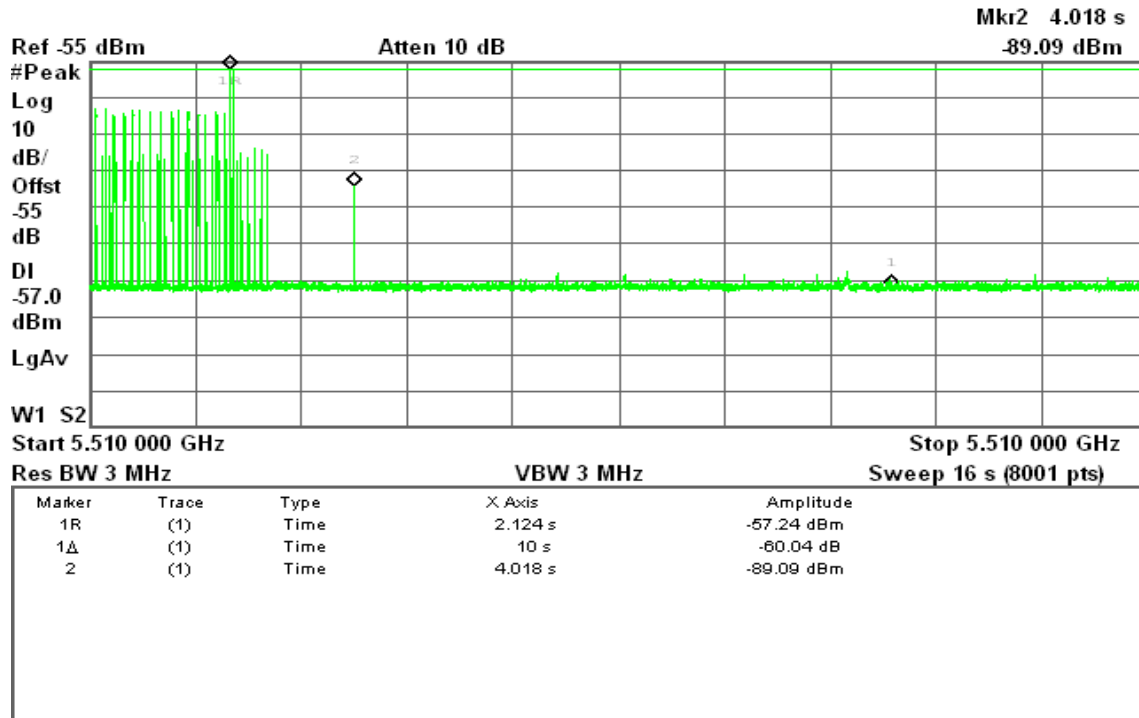
**Type 1 Channel Move Time Results**

No non-compliance noted.

Channel Move Time (s)	Limit (s)
4.018	10

Agilent 15:27:02 Aug 4, 2010

R T



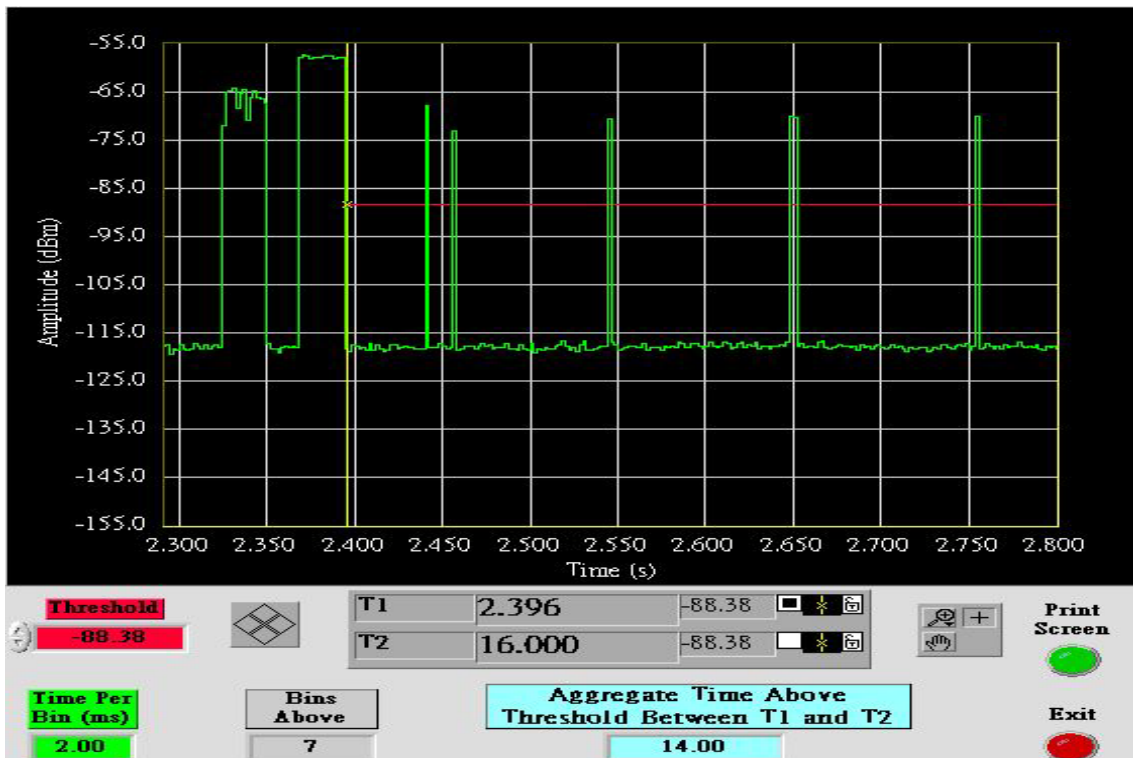
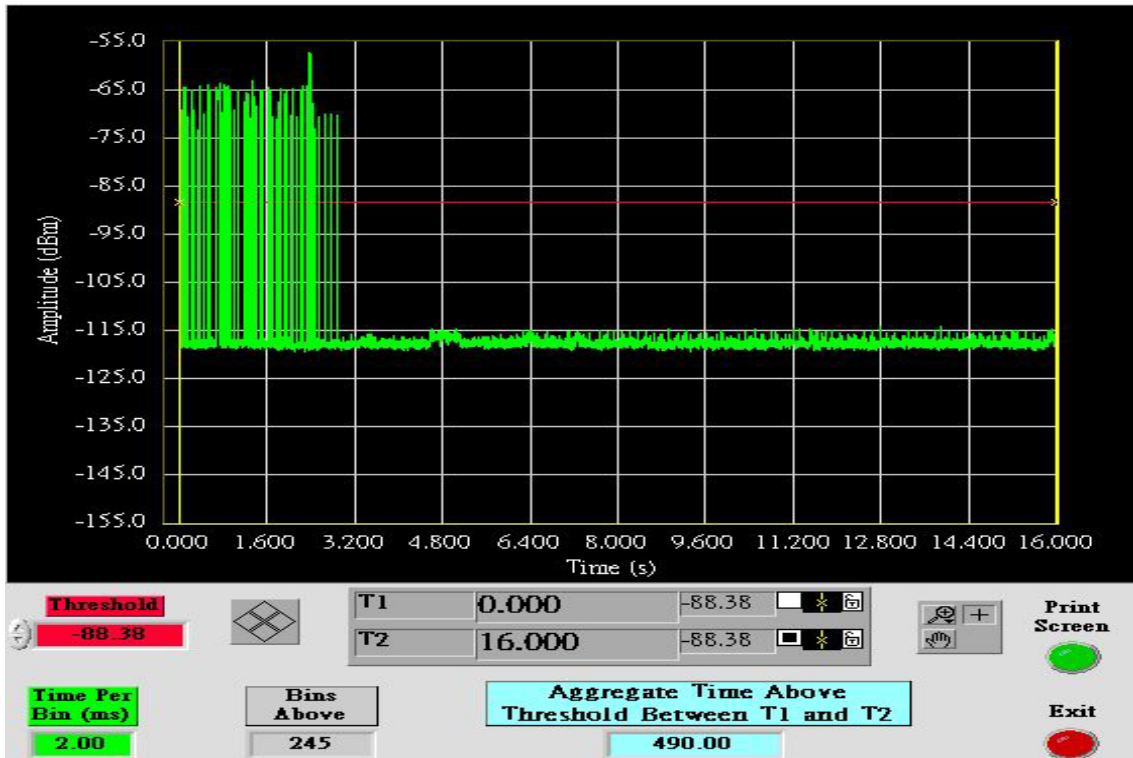


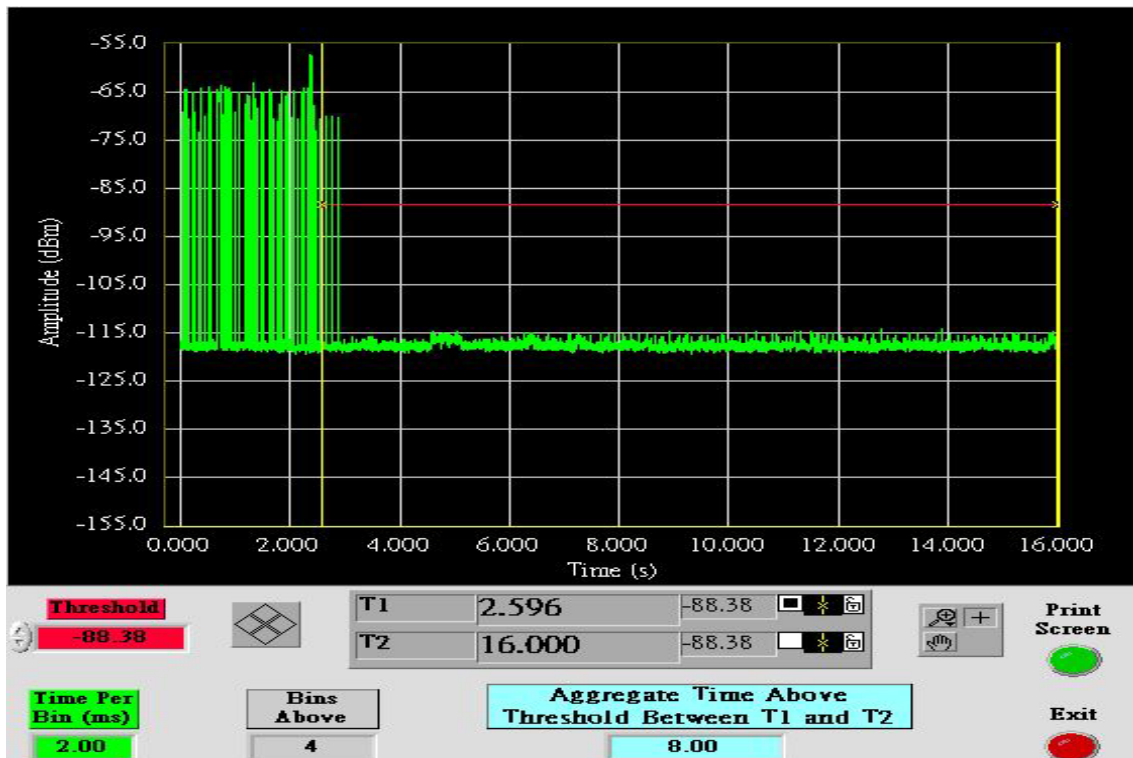
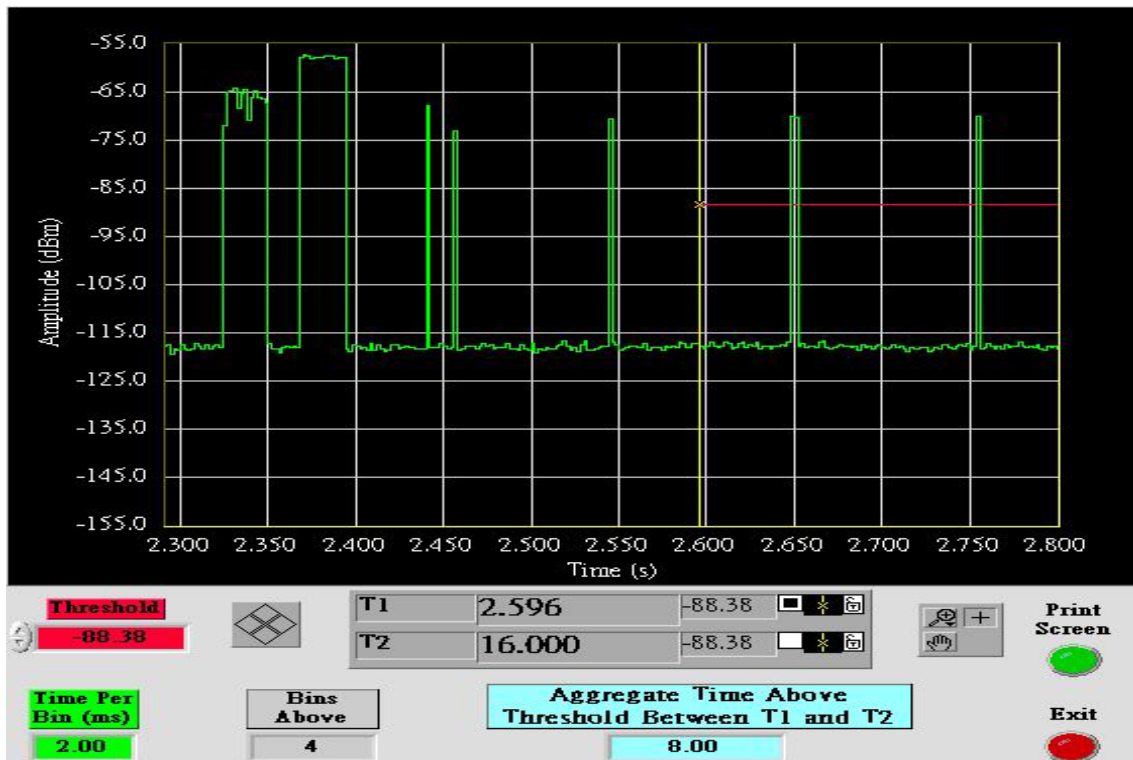
**draft 802.11n Standard-20 MHz Channel mode**

**Type 1 Channel Closing Transmission Time Results**

No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
8	60	-52





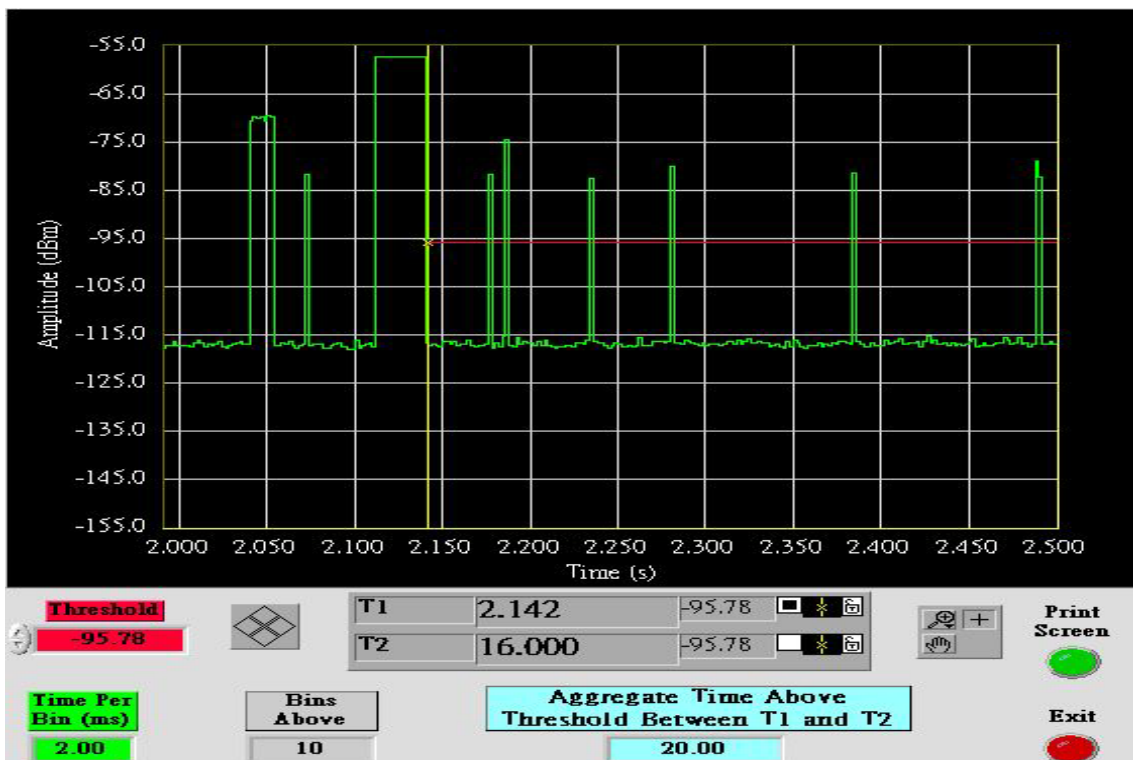
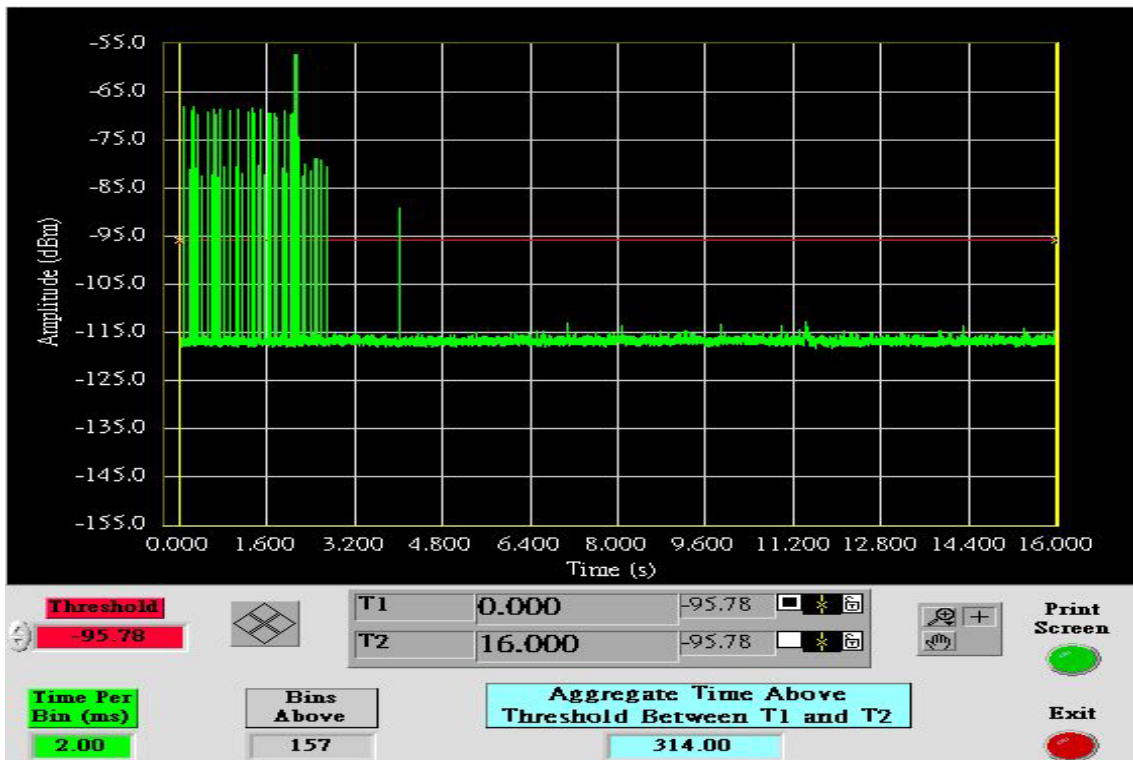


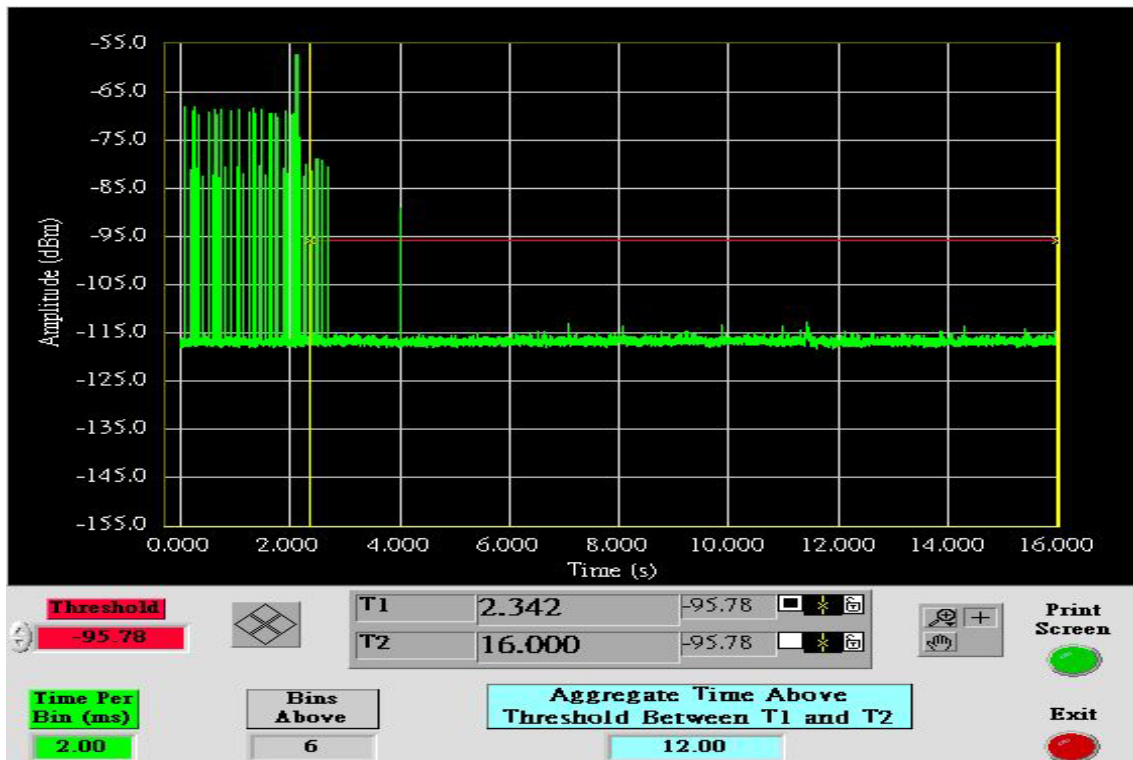
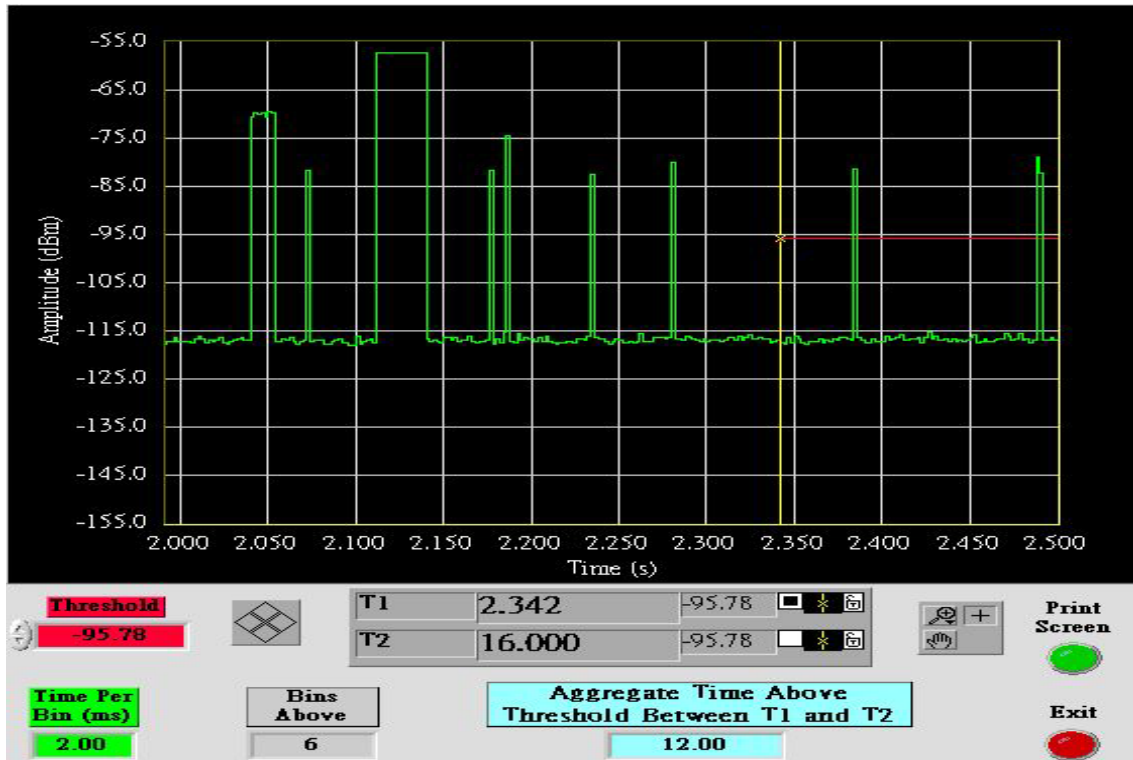
**draft 802.11n Wide-40 MHz Channel mode**

**Type 1 Channel Closing Transmission Time Results**

No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
12	60	-48







**draft 802.11n Standard-20 MHz Channel mode**

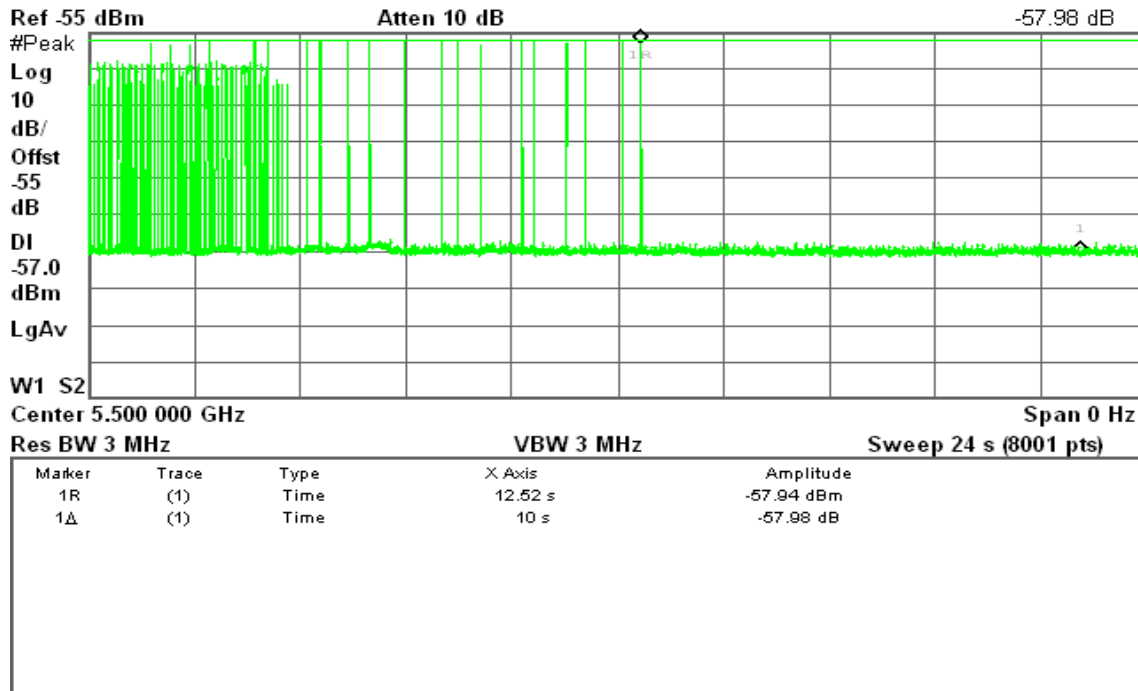
**Type 5 Channel Move Time Results**

No non-compliance noted: The traffic ceases prior to the end of the radar waveform, therefore it also ceases prior to 10 seconds after the end of the radar waveform.

Agilent 11:51:46 Aug 4, 2010

R T

Δ Mkr1 10 s





**draft 802.11n Wide-40 MHz Channel mode**

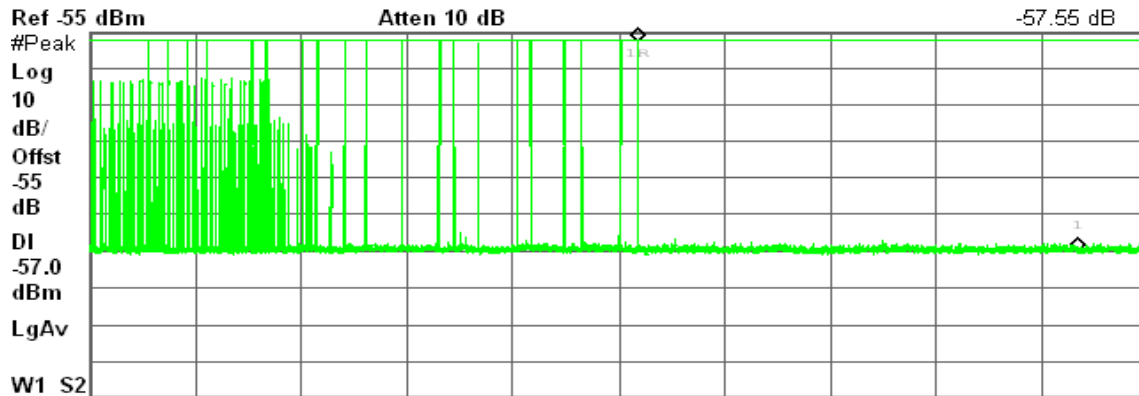
**Type 5 Channel Move Time Results**

No non-compliance noted: The traffic ceases prior to the end of the radar waveform, therefore it also ceases prior to 10 seconds after the end of the radar waveform.

Agilent 13:17:04 Aug 4, 2010

R T

Δ Mkr1 10 s  
-57.55 dB



Center 5.510 000 GHz Span 0 Hz  
Res BW 3 MHz VBW 3 MHz Sweep 24 s (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	12.42 s	-57.54 dBm
1Δ	(1)	Time	10 s	-57.55 dB



### NON-OCCUPANCY PERIOD

#### draft 802.11n Wide-20 MHz mode

#### Type 1 Non-Occupancy Period Test Results

No non-compliance noted.

No EUT transmissions were observed on the test channel during the 30 minute observation time.

Agilent 16:49:54 Aug 3, 2010

R T

Δ Mkr1 1.8 ks

-59.62 dB



Center 5.500 000 GHz

Span 0 Hz

Res BW 3 MHz

VBW 3 MHz

Sweep 2 ks (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	68.25 s	-56.66 dBm
1Δ	(1)	Time	1.8 ks	-59.62 dB





### Type 5 Non-Occupancy Period Test Results

No non-compliance noted.

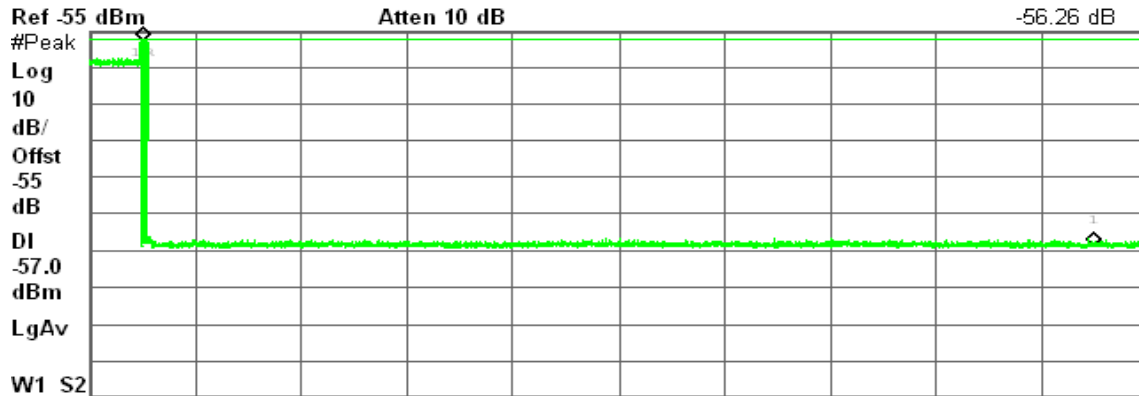
No EUT transmissions were observed on the test channel during the 30 minute observation time.

Agilent 14:51:07 Aug 4, 2010

R T

Δ Mkr1 1.8 ks

-56.26 dB



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	100.5 s	-57.56 dBm
1Δ	(1)	Time	1.8 ks	-56.26 dB



**draft 802.11n Wide-40 MHz mode**

**Type 1 Non-Occupancy Period Test Results**

*No non-compliance noted.*

No EUT transmissions were observed on the test channel during the 30 minute observation time.

Agilent 16:27:55 Aug 4, 2010

R T



Center 5.510 000 GHz Span 0 Hz  
Res BW 3 MHz VBW 3 MHz Sweep 2 ks (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	67.75 s	-56.97 dBm
1Δ	(1)	Time	1.8 ks	-57.95 dB



### Type 5 Non-Occupancy Period Test Results

No non-compliance noted.

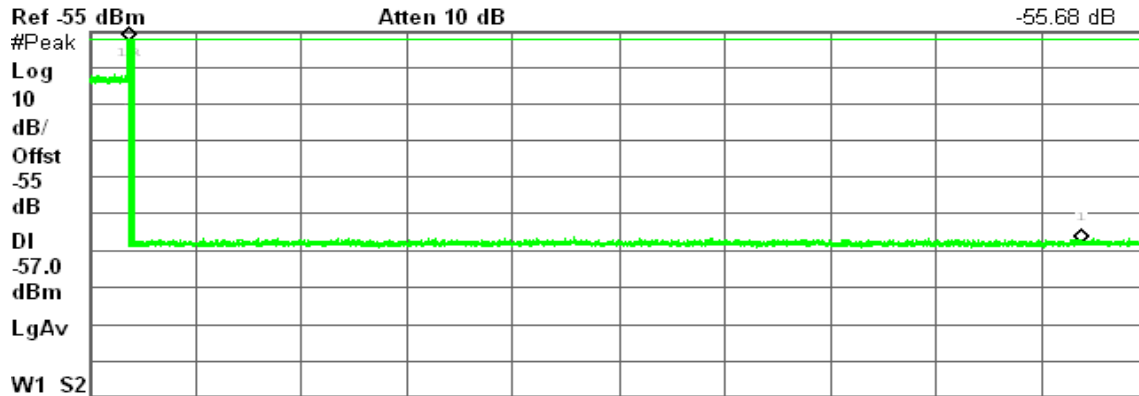
No EUT transmissions were observed on the test channel during the 30 minute observation time.

Agilent 14:09:22 Aug 4, 2010

R L

Δ Mkr1 1.8 ks

-55.68 dB



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	75 s	-57.49 dBm
1Δ	(1)	Time	1.8 ks	-55.68 dB