5. Peak Excursion

5.1. Test Equipment

The following test equipments are used during the radiated emission tests:

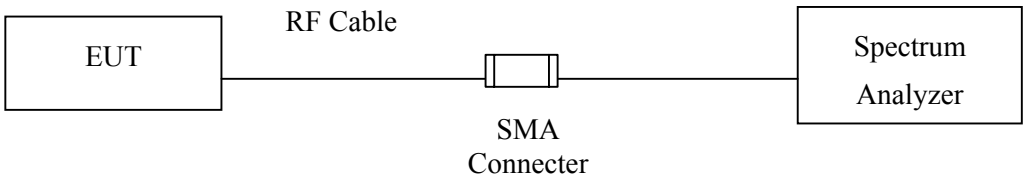
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

5.2. Test Setup

Conduction Power Measurement



5.3. Limits

The ratio of the peak excursion of the modulation envelope (measured suing a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

5.5. Uncertainty

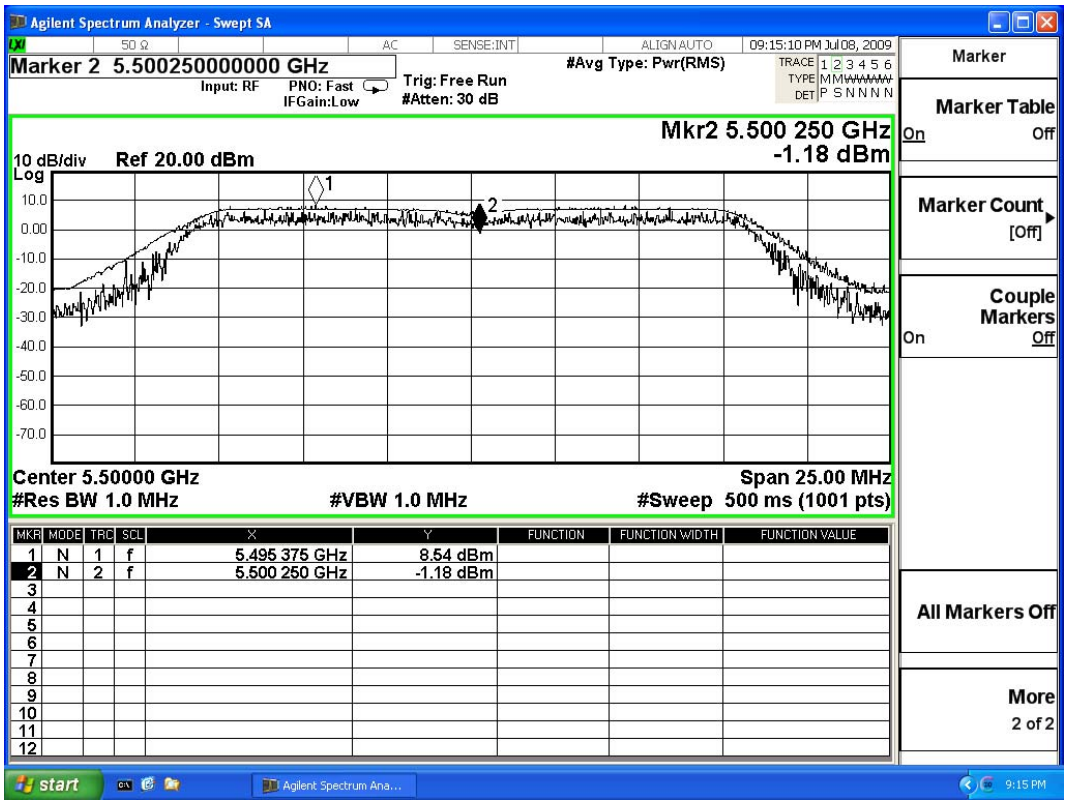
± 1.27 dB

5.6. Test Result of Peak Excursion

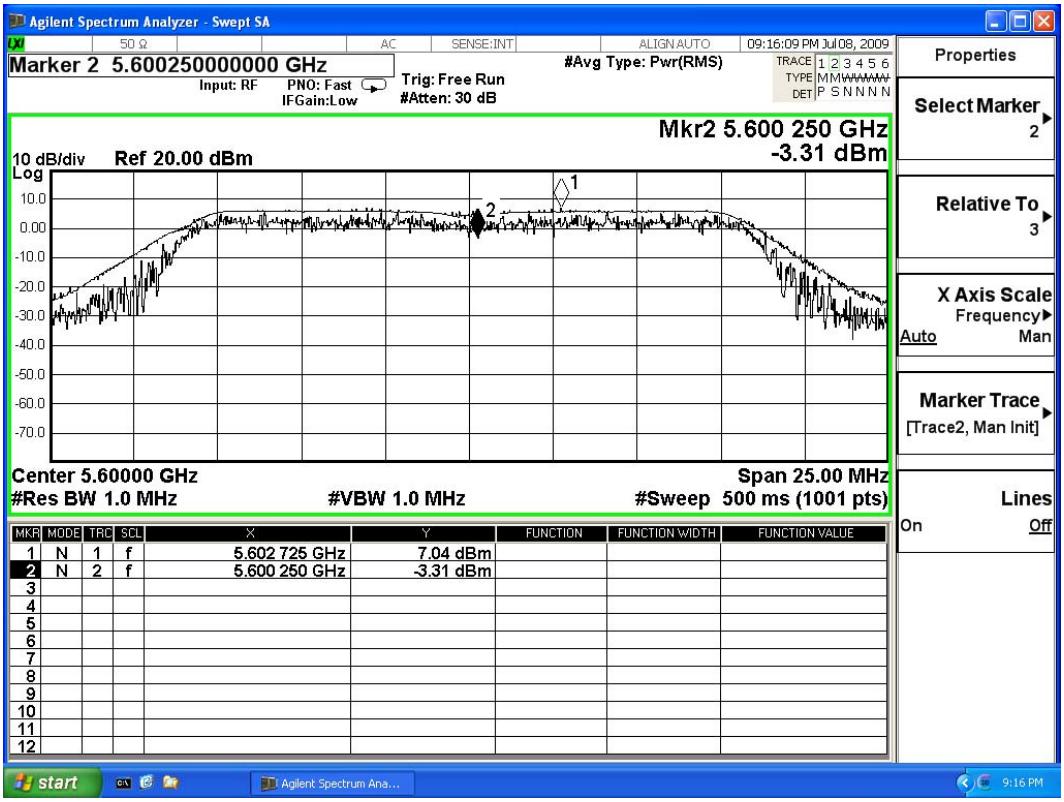
Product : Notebook P.C.
Test Item : Peak Excursion
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dB)	Result
100	5500	9.72	<13	Pass
120	5600	10.35	<13	Pass
140	5700	9.24	<13	Pass

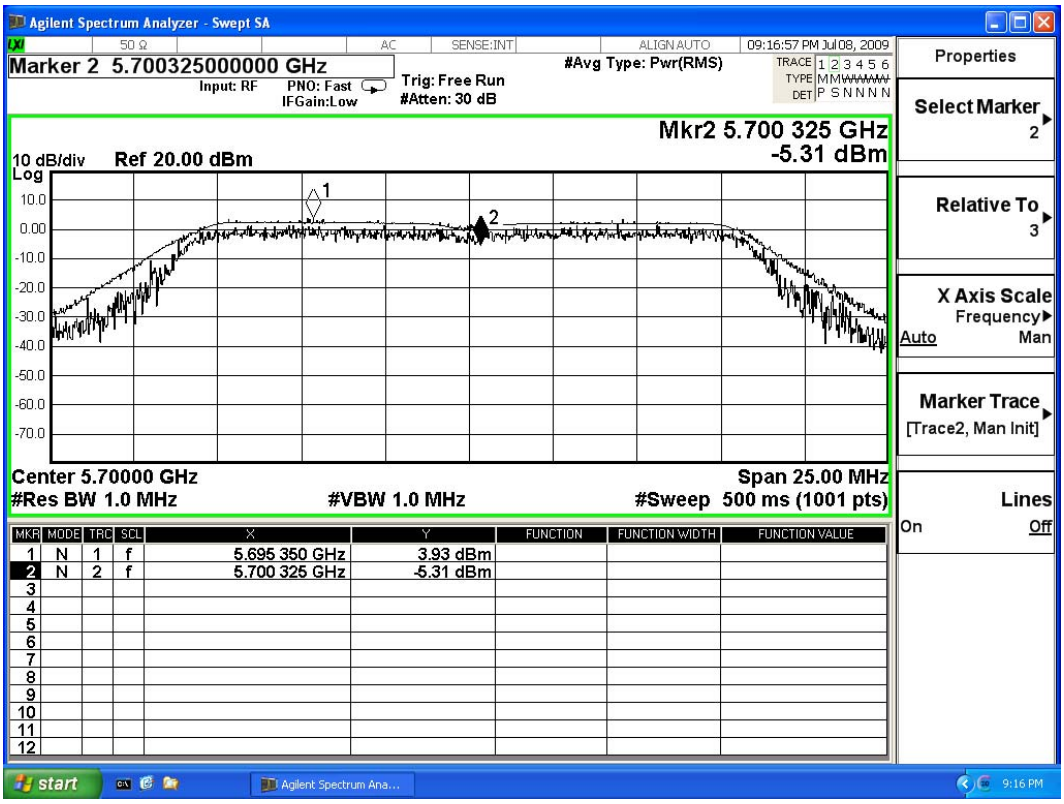
Channel 100:



Channel 120:



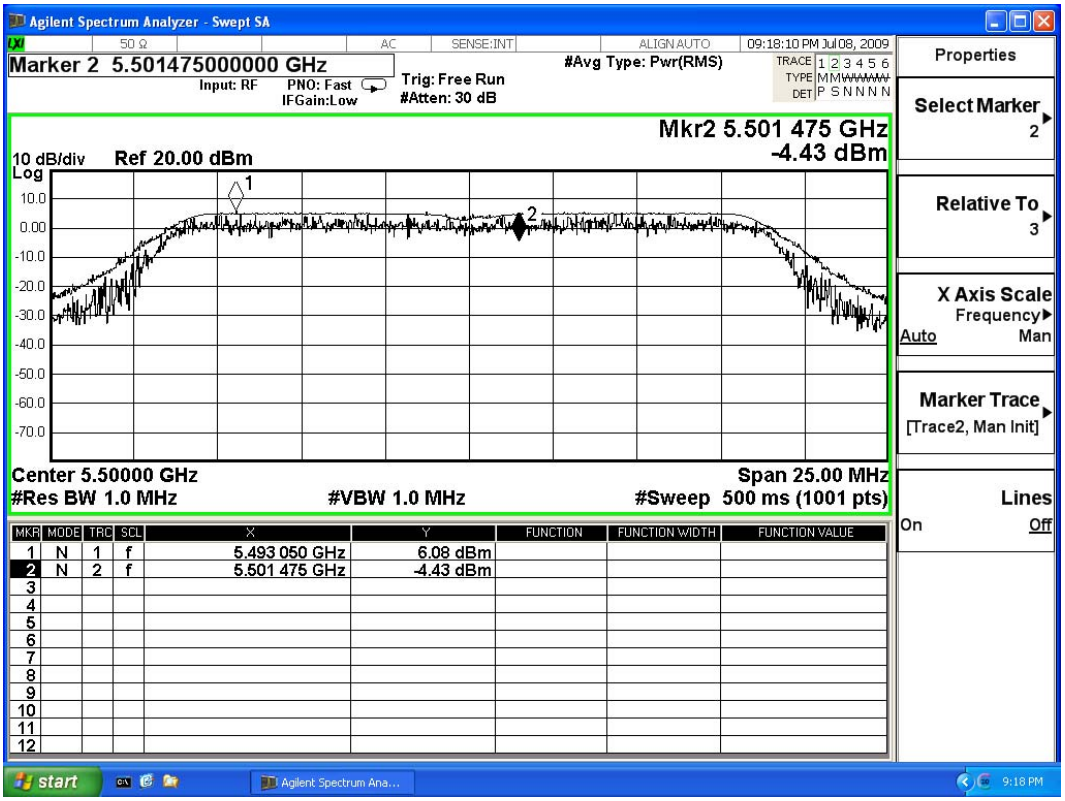
Channel 140:



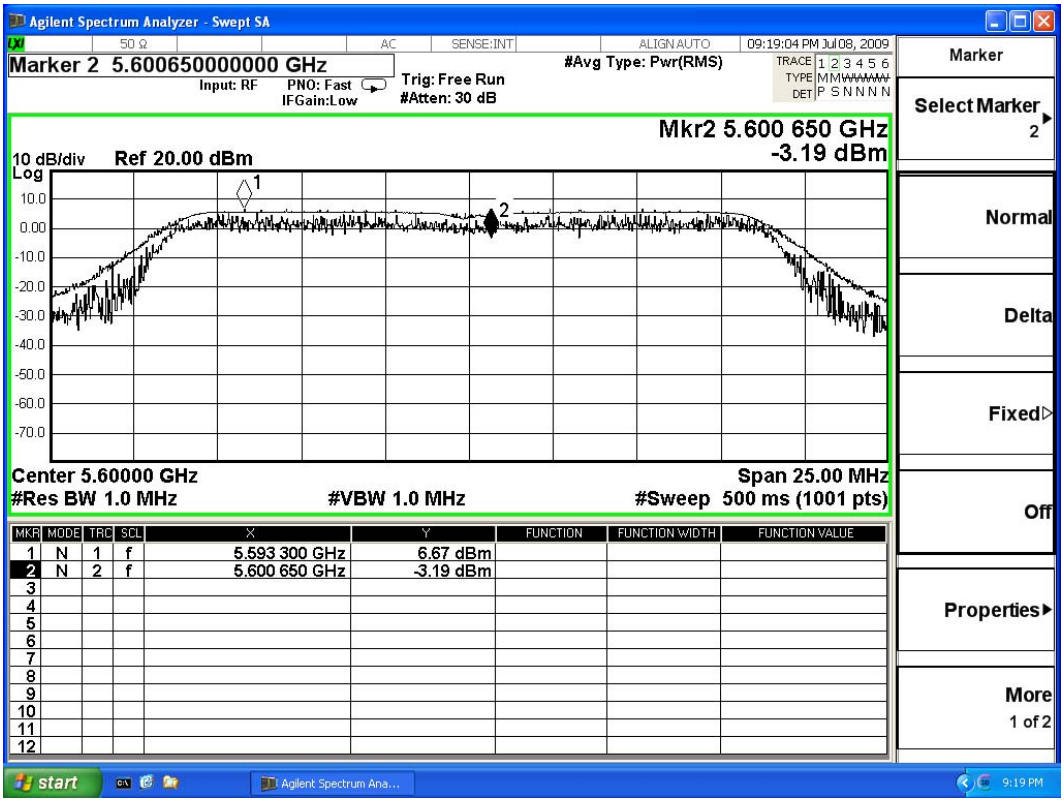
Product : Notebook P.C.
Test Item : Peak Excursion
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dB)	Result
100	5500	10.51	<13	Pass
120	5600	9.86	<13	Pass
140	5700	10.64	<13	Pass

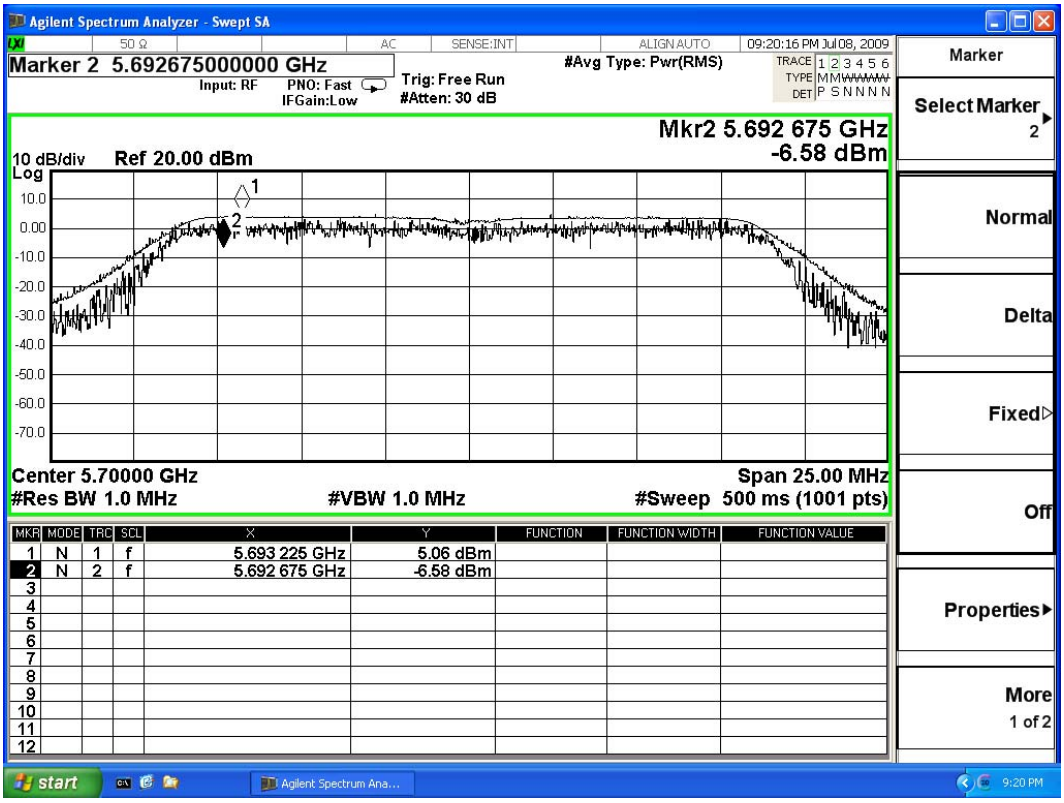
Channel 100:



Channel 120:



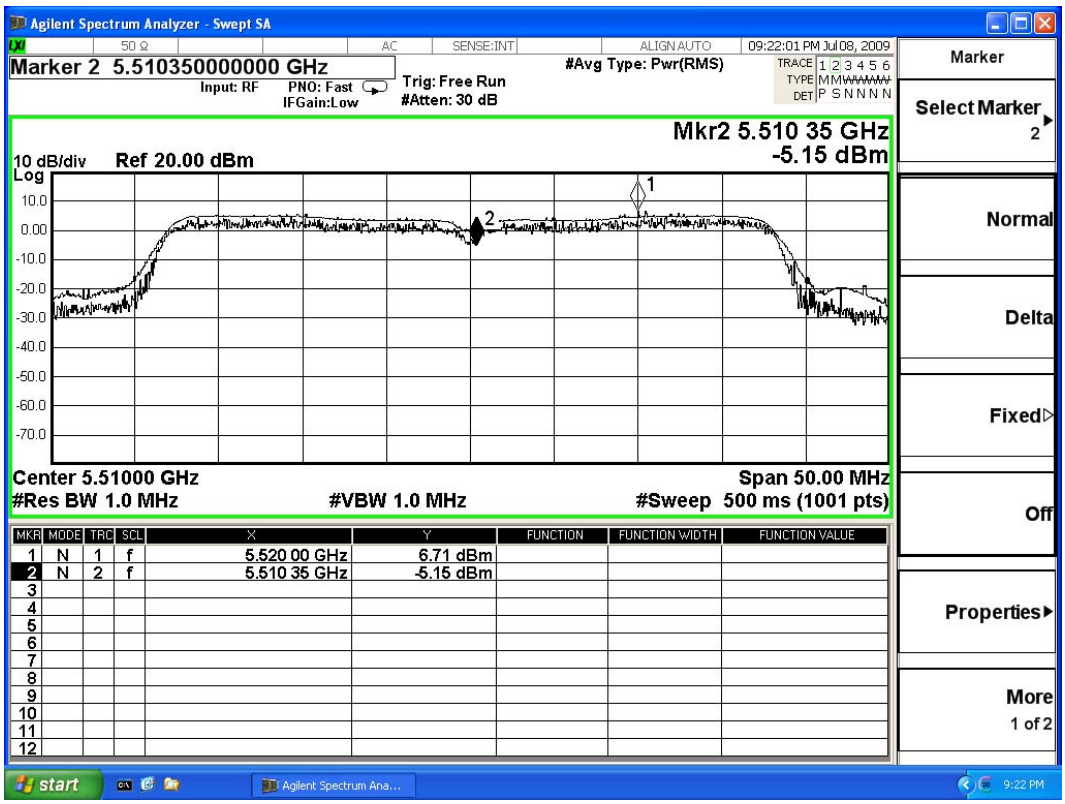
Channel 140:



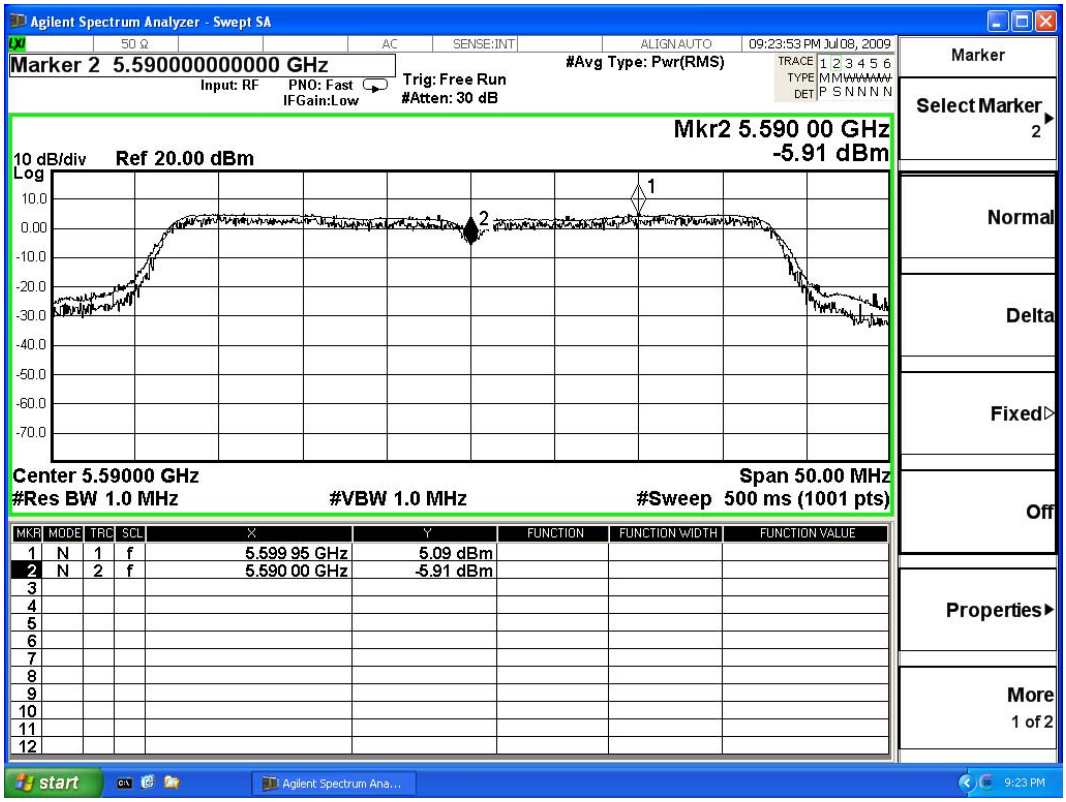
Product : Notebook P.C.
Test Item : Peak Excursion
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dB)	Result
102	5510	11.86	<13	Pass
118	5590	11.00	<13	Pass
134	5670	11.54	<13	Pass

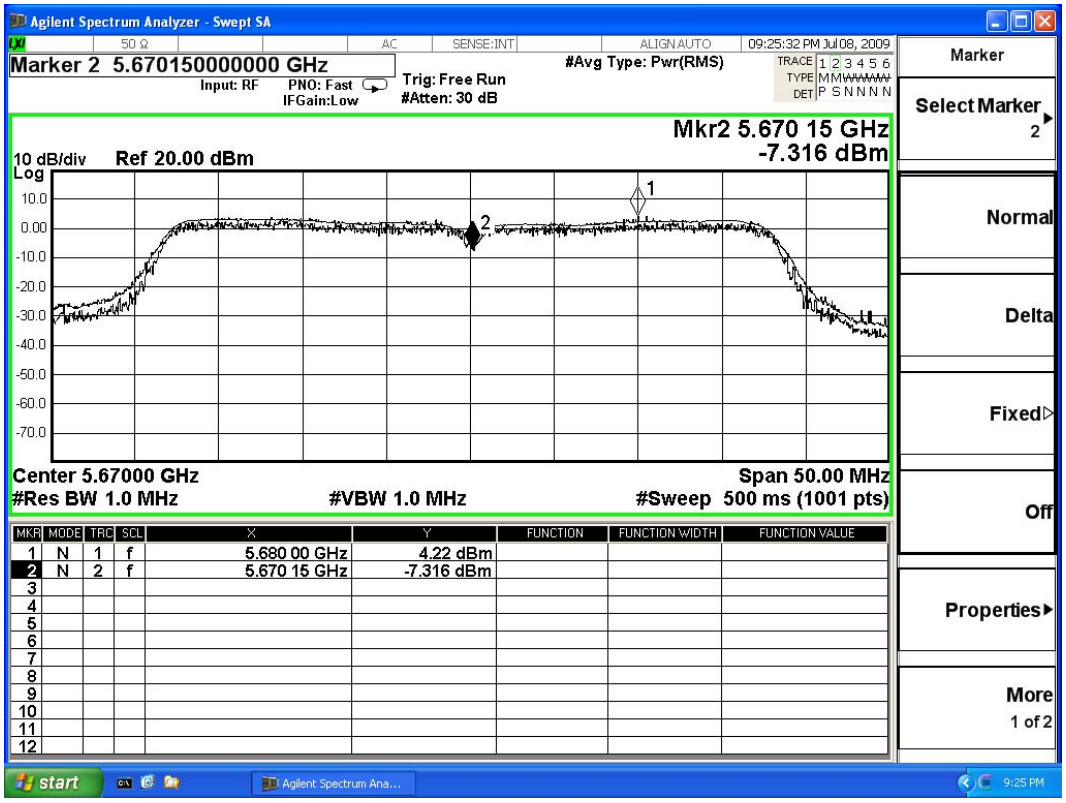
Channel 102:



Channel 118:



Channel 134:



6. Undesirable Emission

6.1. Test Equipment

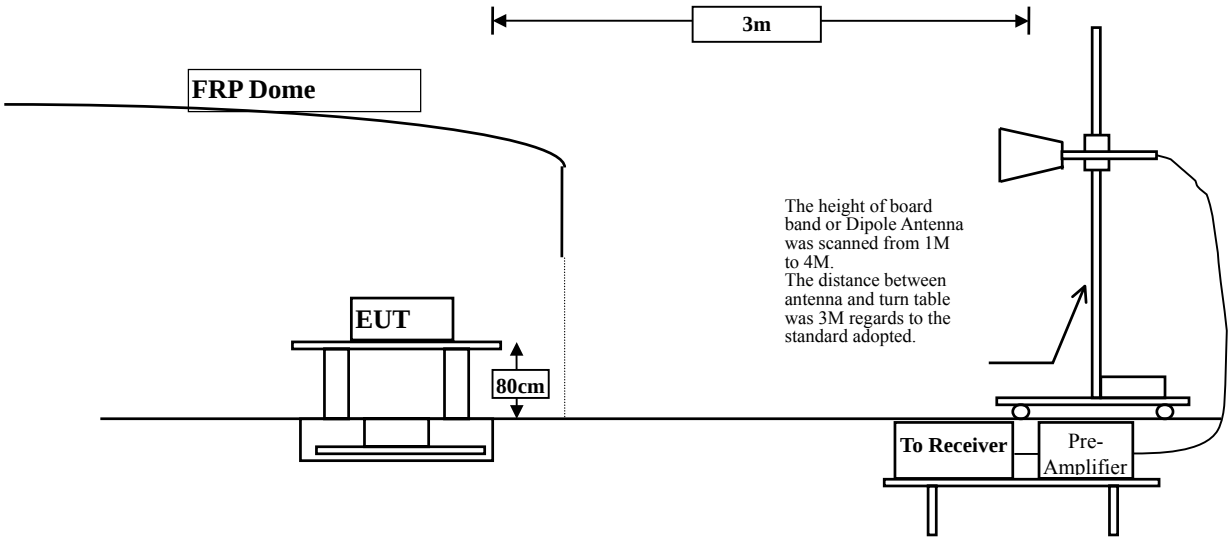
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2009
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2009
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2009
	X	Horn Antenna	ETS	3115 / 0005-6160	July, 2009
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup



6.3. Limits

Inside of the restricted band(section 15.205): Apply to 15.209 limit.

Outside of the restricted band (section 15.407):

5 .15GHz - 5.35 GHz	< -27 dBm/MHz EIRP,
5.47GHz - 5.725 GHz	< -27 dBm/MHz EIRP,
5.725GHz - 5.825 GHz	< -27 dBm/MHz EIRP,
	<-17 dBm/MHz EIRP (all emission within the frequency range from the band edge to 10 MHz above or below the band edge).

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FCC Public Notice DA 02-2138 test procedure for compliance to FCC 47CFR 15. 407 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

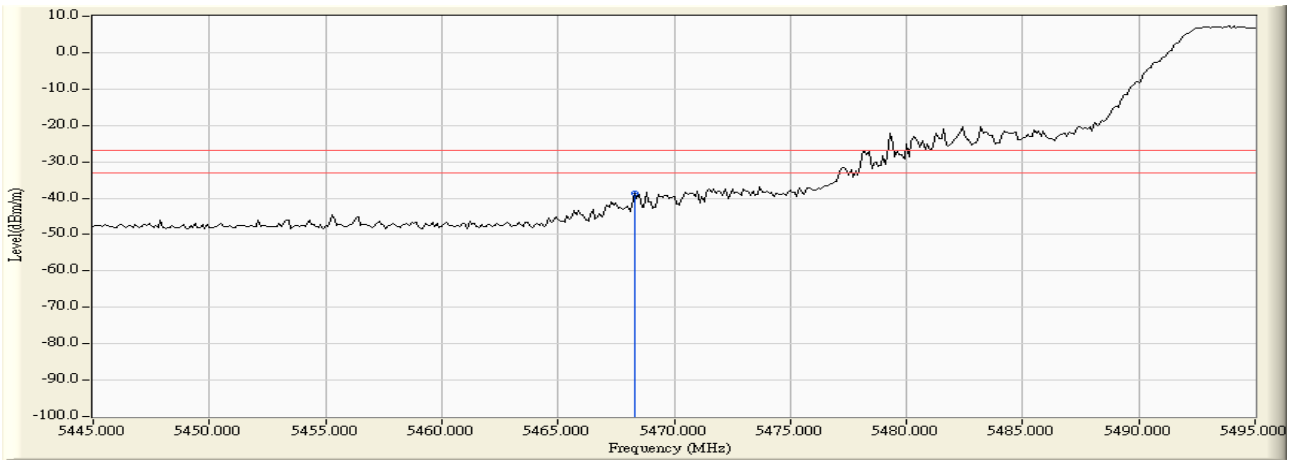
6.6. Test Result of Undesirable Emission

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5500MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
100 (Peak)	5468.300	14.187	-52.981	-38.794	-11.794	-27.000	Pass

Figure Channel 100: Horizontal (Peak)



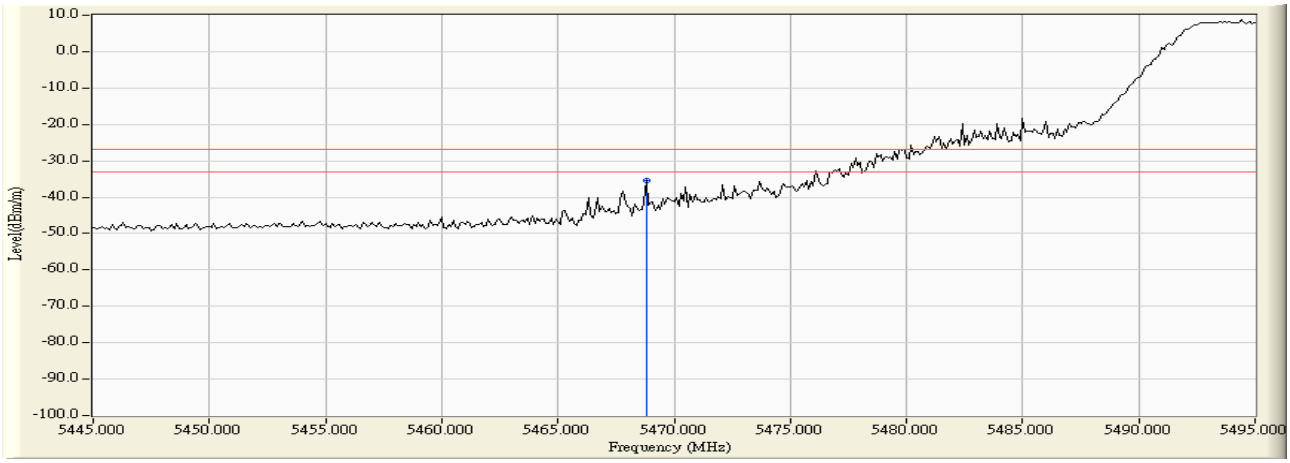
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5500MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
100 (Peak)	5468.800	13.630	-49.070	-35.440	-8.440	-27.000	Pass

Figure Channel 100: Vertical (Peak)



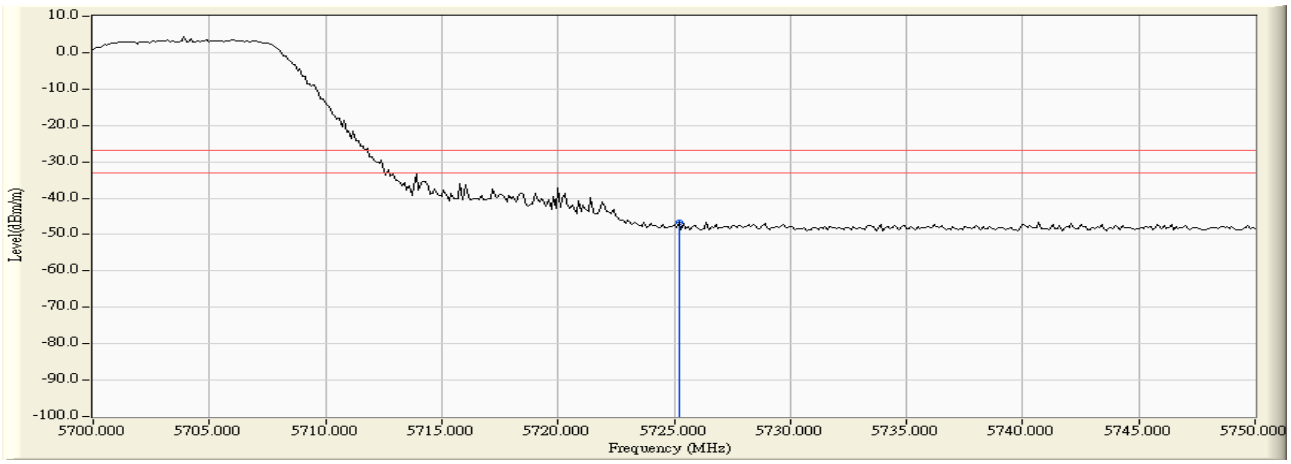
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5700MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
140 (Peak)	5725.200	14.558	-61.271	-46.713	-19.713	-27.000	Pass

Figure Channel 140: Horizontal (Peak)



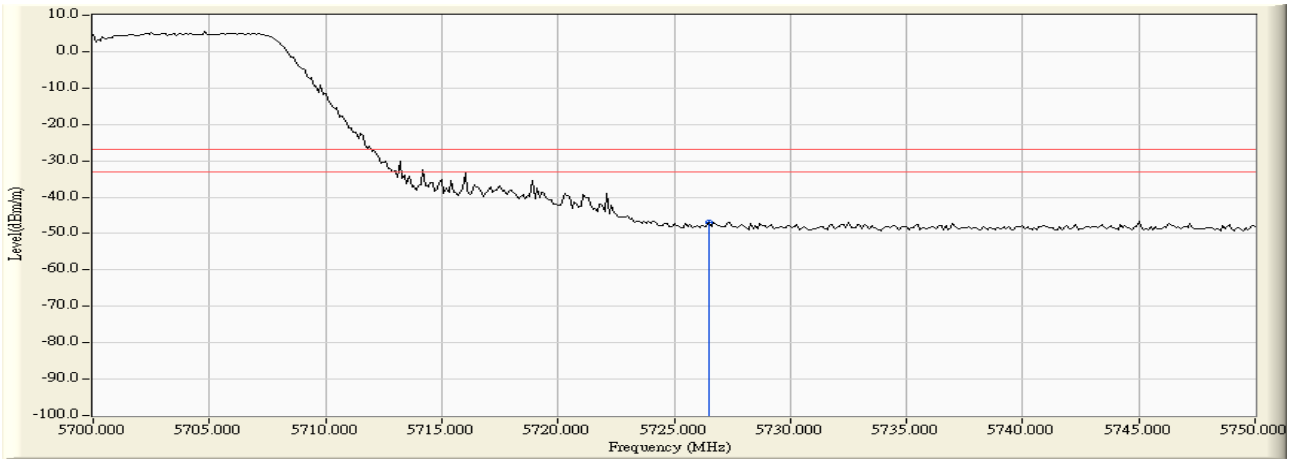
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5700MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
140 (Peak)	5726.500	14.289	-61.263	-46.974	-19.974	-27.000	Pass

Figure Channel 140: Vertical (Peak)



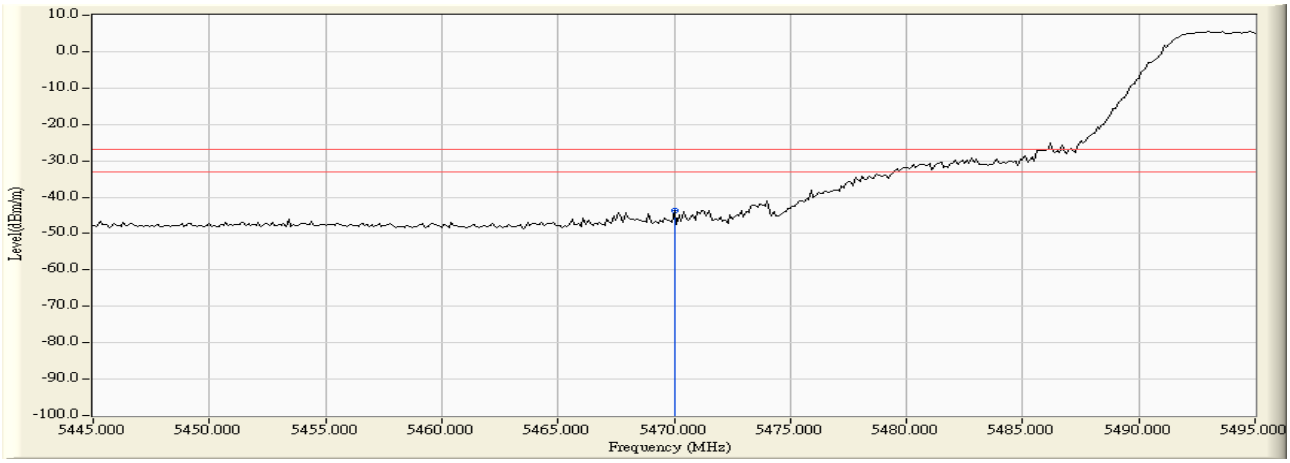
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5500MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
100 (Peak)	5470.000	14.189	-57.870	-43.681	-16.681	-27.000	Pass

Figure Channel 100: Horizontal (Peak)



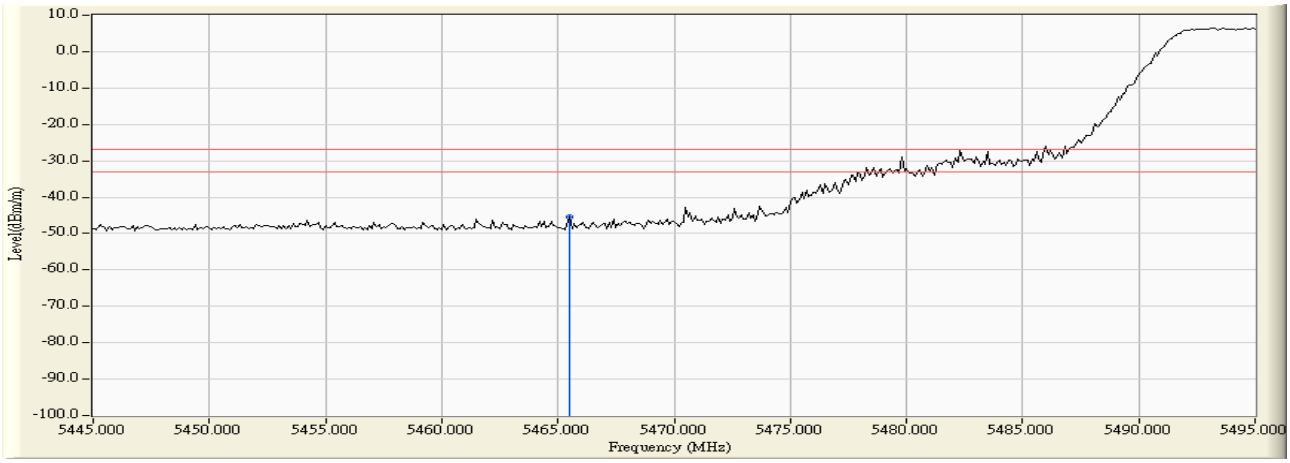
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5500MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
100(Peak)	5465.500	13.630	-59.049	-45.419	-18.419	-27.000	Pass

Figure Channel 100: Vertical (Peak)



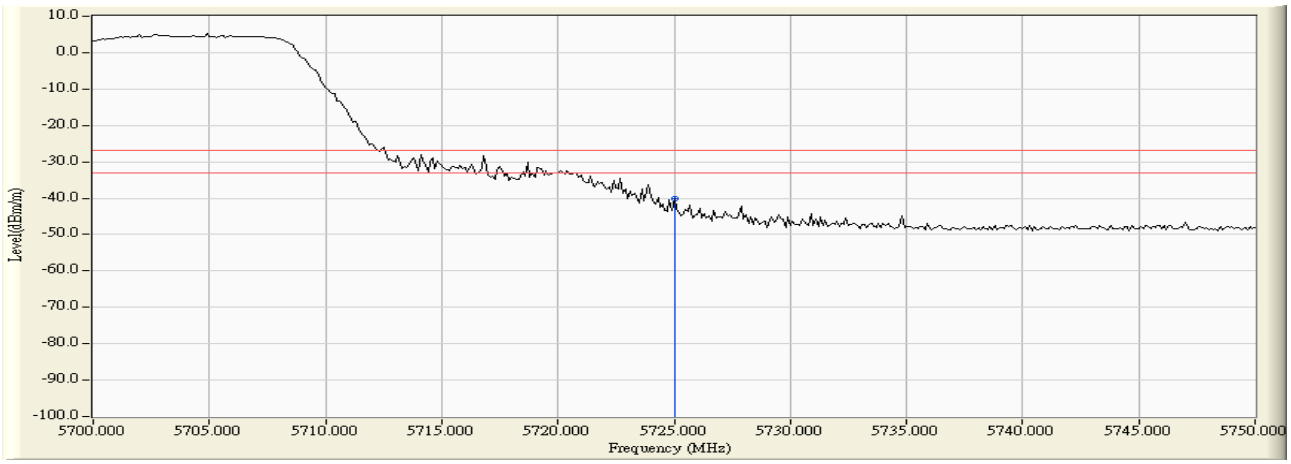
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5700MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
140 (Peak)	5725.000	14.557	-54.634	-40.077	-13.077	-27.000	Pass

Figure Channel 140: Horizontal (Peak)



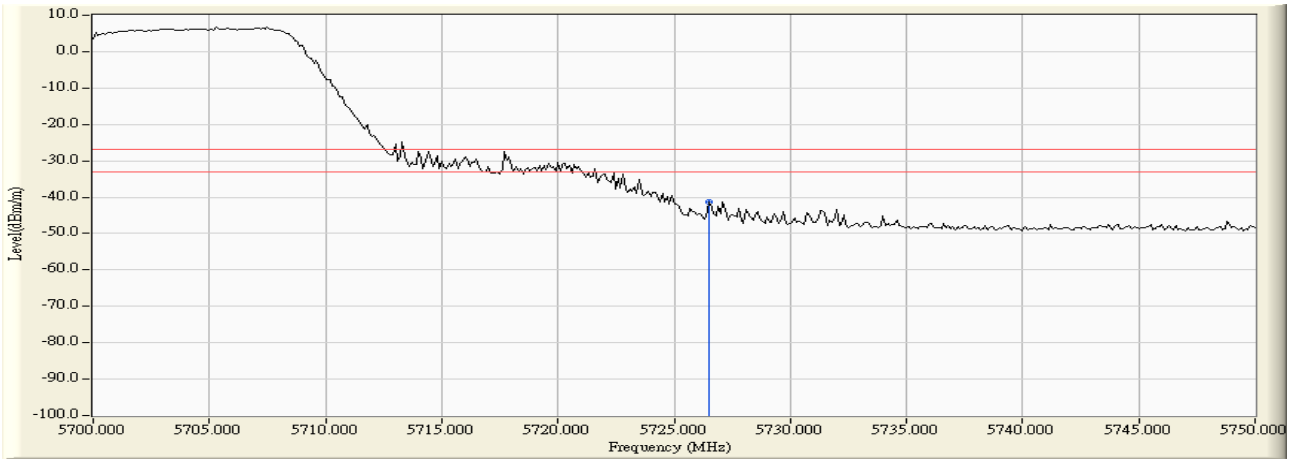
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5700MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
140 (Peak)	5726.500	14.289	-55.593	-41.304	-14.304	-27.000	Pass

Figure Channel 140: Vertical (Peak)



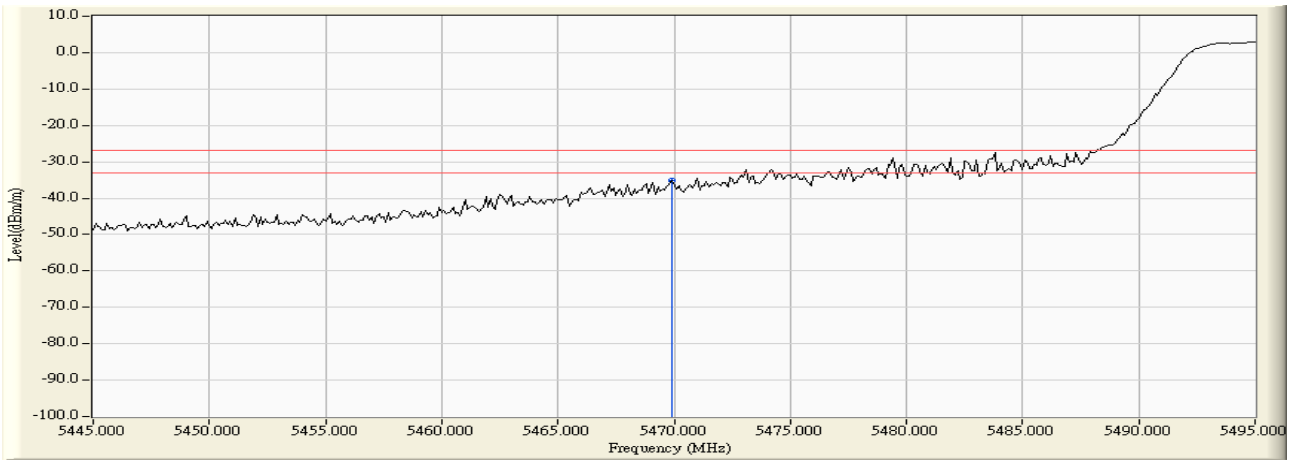
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5510MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
102 (Peak)	5469.900	14.189	-49.209	-35.020	-8.020	-27.000	Pass

Figure Channel 102: Horizontal (Peak)



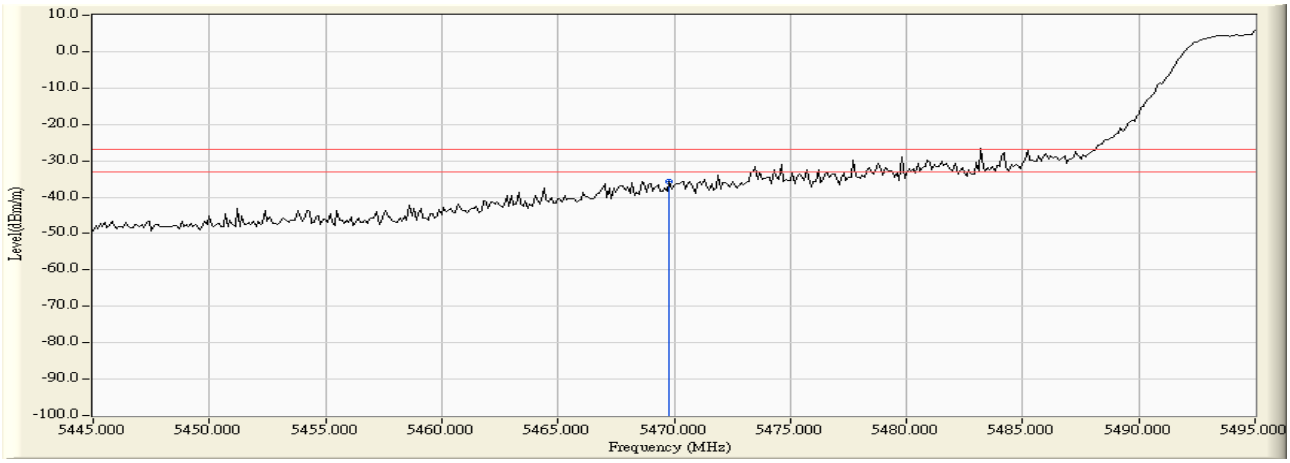
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5510MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
102 (Peak)	5469.800	13.630	-49.263	-35.633	-8.633	-27.000	Pass

Figure Channel 102: Vertical (Peak)



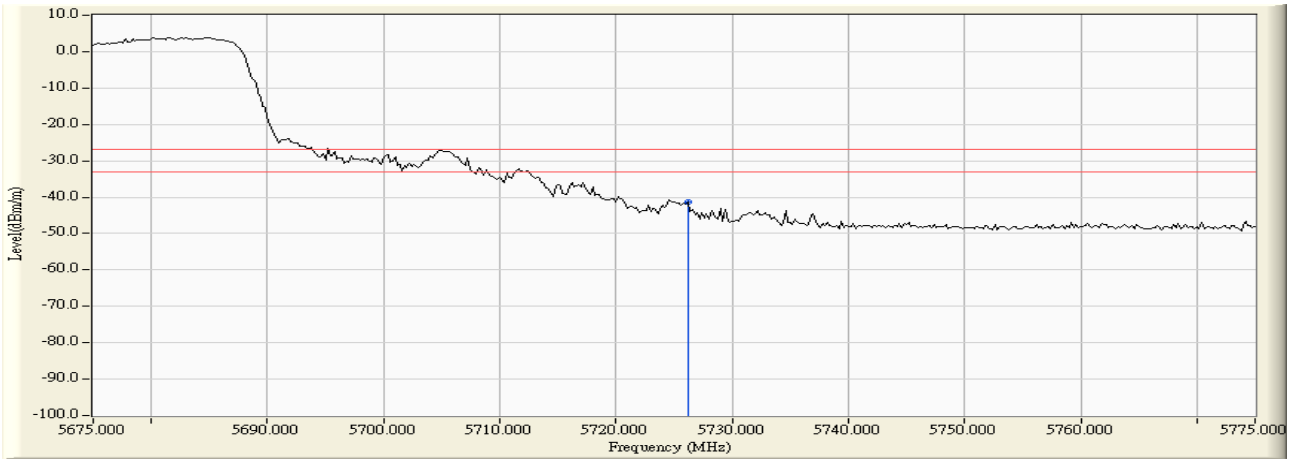
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5670MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
134 (Peak)	5726.200	14.561	-55.909	-41.348	-14.348	-27.000	Pass

Figure Channel 134: Horizontal (Peak)



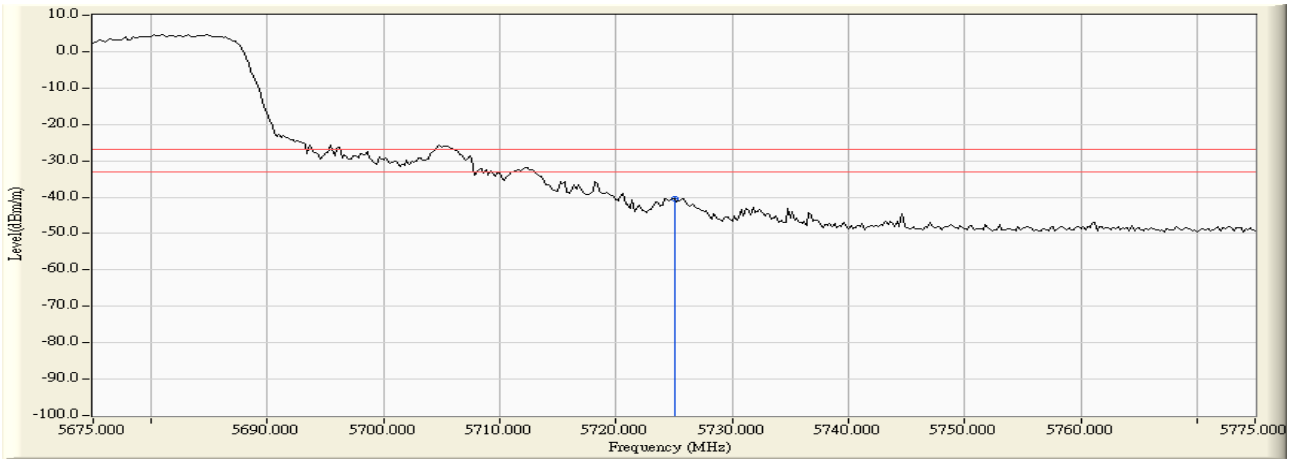
Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

Product : Notebook P.C.
Test Item : Undesirable Emission
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5670MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
134 (Peak)	5725.000	14.292	-54.599	-40.307	-13.307	-27.000	Pass

Figure Channel 134: Vertical (Peak)



Note: Spectrum setting: Detector=Peak detector and maximum hold,
RBW= 1MHz, VBW=3 MHz.

7. Radiated Emission

7.1. Test Equipment

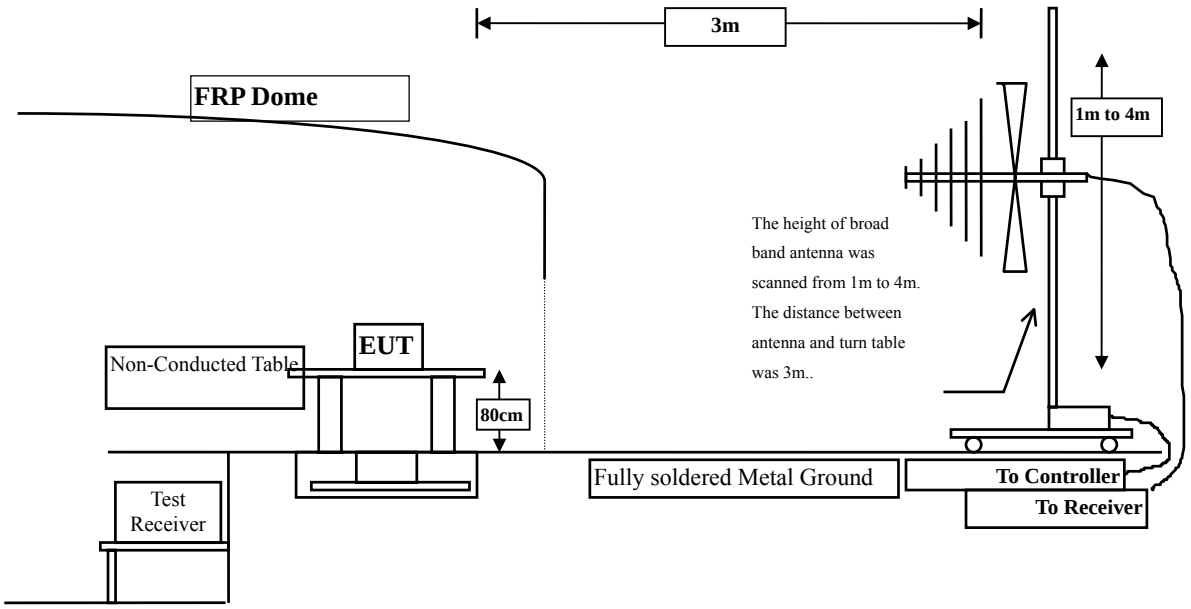
The following test equipments are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2008
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2009
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	Advantest	R3162/91700283	Oct., 2008
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

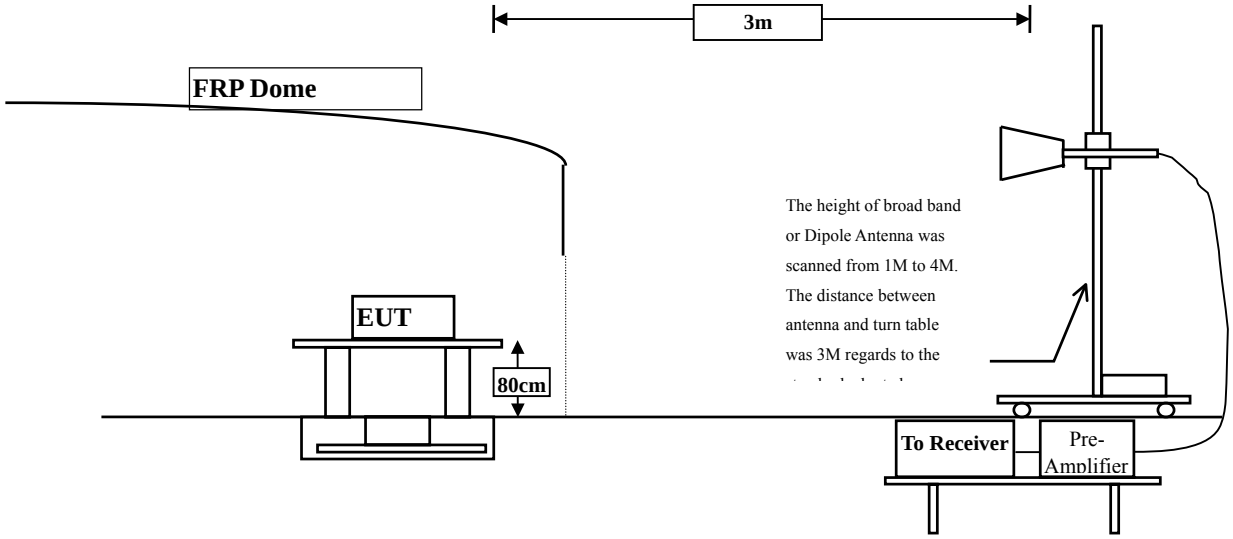
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

7.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



7.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

7.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FCC Public Notice DA 02-2138 test procedure for compliance to FCC 47CFR 15. 407 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. The frequency range from 30MHz to 10th harminics is checked.

7.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

7.6. Test Result of Radiated Emission

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5500MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11000.000	14.738	41.730	56.467	-17.533	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
33000.000	*	*	*	*	74.000
38500.000	*	*	*	*	74.000
Average					
Detector:					
11000.000	14.738	28.150	42.887	-11.113	54.000
16500.000	*	*	*	*	54.000
22000.000	*	*	*	*	54.000
27500.000	*	*	*	*	54.000
33000.000	*	*	*	*	54.000
38500.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5500 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11000.000	15.633	41.540	57.172	-16.828	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
33000.000	*	*	*	*	74.000
38500.000	*	*	*	*	74.000
Average Detector:					
11000.000	15.633	28.240	43.872	-10.128	54.000
16500.000	*	*	*	*	54.000
22000.000	*	*	*	*	54.000
27500.000	*	*	*	*	54.000
33000.000	*	*	*	*	54.000
38500.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5600 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11200.000	12.176	41.660	53.836	-20.164	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
33600.000	*	*	*	*	74.000
39200.000	*	*	*	*	74.000
Average					
Detector:					
11200.000	*	*	*	*	54.000
16800.000	*	*	*	*	54.000
22400.000	*	*	*	*	54.000
28000.000	*	*	*	*	54.000
33600.000	*	*	*	*	54.000
39200.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5600MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11200.000	12.696	43.390	56.086	-17.914	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
33600.000	*	*	*	*	74.000
39200.000	*	*	*	*	74.000
Average Detector:					
11200.000	12.696	31.150	43.846	-10.154	54.000
16800.000	*	*	*	*	54.000
22400.000	*	*	*	*	54.000
28000.000	*	*	*	*	54.000
33600.000	*	*	*	*	54.000
39200.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5700 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11400.000	11.032	40.760	51.792	-22.208	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
34200.000	*	*	*	*	74.000
39900.000	*	*	*	*	74.000
Average					
Detector:					
11400.000	*	*	*	*	54.000
17100.000	*	*	*	*	54.000
22800.000	*	*	*	*	54.000
28500.000	*	*	*	*	54.000
34200.000	*	*	*	*	54.000
39900.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5700MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11400.000	11.092	40.680	51.771	-22.229	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
34200.000	*	*	*	*	74.000
39900.000	*	*	*	*	74.000
Average Detector:					
11400.000	*	*	*	*	54.000
17100.000	*	*	*	*	54.000
22800.000	*	*	*	*	54.000
28500.000	*	*	*	*	54.000
34200.000	*	*	*	*	54.000
39900.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5500MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11000.000	14.738	41.340	56.077	-17.923	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
33000.000	*	*	*	*	74.000
38500.000	*	*	*	*	74.000
Average					
Detector:					
11000.000	14.738	28.030	42.767	-11.233	54.000
16500.000	*	*	*	*	54.000
22000.000	*	*	*	*	54.000
27500.000	*	*	*	*	54.000
33000.000	*	*	*	*	54.000
38500.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5500MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11000.000	15.633	41.310	56.942	-17.058	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
33000.000	*	*	*	*	74.000
38500.000	*	*	*	*	74.000
Average Detector:					
11000.000	15.633	28.190	43.822	-10.178	54.000
16500.000	*	*	*	*	54.000
22000.000	*	*	*	*	54.000
27500.000	*	*	*	*	54.000
33000.000	*	*	*	*	54.000
38500.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5600MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11200.000	12.176	41.600	53.776	-20.224	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
33600.000	*	*	*	*	74.000
39200.000	*	*	*	*	74.000
Average					
Detector:					
11200.000	*	*	*	*	54.000
16800.000	*	*	*	*	54.000
22400.000	*	*	*	*	54.000
28000.000	*	*	*	*	54.000
33600.000	*	*	*	*	54.000
39200.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5600MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11200.000	12.696	41.740	54.436	-19.564	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
33600.000	*	*	*	*	74.000
39200.000	*	*	*	*	74.000
Average Detector:					
11200.000	12.696	28.110	40.806	-13.194	54.000
16800.000	*	*	*	*	54.000
22400.000	*	*	*	*	54.000
28000.000	*	*	*	*	54.000
33600.000	*	*	*	*	54.000
39200.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5700MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11400.000	11.032	40.330	51.362	-22.638	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
34200.000	*	*	*	*	74.000
39900.000	*	*	*	*	74.000
Average					
Detector:					
11400.000	*	*	*	*	54.000
17100.000	*	*	*	*	54.000
22800.000	*	*	*	*	54.000
28500.000	*	*	*	*	54.000
34200.000	*	*	*	*	54.000
39900.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5700MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11400.000	11.092	40.850	51.941	-22.059	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
34200.000	*	*	*	*	74.000
39900.000	*	*	*	*	74.000
Average					
Detector:					
11400.000	*	*	*	*	54.000
17100.000	*	*	*	*	54.000
22800.000	*	*	*	*	54.000
28500.000	*	*	*	*	54.000
34200.000	*	*	*	*	54.000
39900.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5510MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11020.000	14.537	41.520	56.058	-17.942	74.000
16530.000	*	*	*	*	74.000
22040.000	*	*	*	*	74.000
27550.000	*	*	*	*	74.000
33060.000	*	*	*	*	74.000
38570.000	*	*	*	*	74.000
Average					
Detector:					
11020.000	11020.000	14.537	28.220	42.758	54.000
16530.000	*	*	*	*	54.000
22040.000	*	*	*	*	54.000
27550.000	*	*	*	*	54.000
33060.000	*	*	*	*	54.000
38570.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5510 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11020.000	15.401	41.570	56.971	-17.029	74.000
16530.000	*	*	*	*	74.000
22040.000	*	*	*	*	74.000
27550.000	*	*	*	*	74.000
33060.000	*	*	*	*	74.000
38570.000	*	*	*	*	74.000
Average Detector:					
11020.000	15.401	28.160	43.561	-10.439	54.000
16530.000	*	*	*	*	54.000
22040.000	*	*	*	*	54.000
27550.000	*	*	*	*	54.000
33060.000	*	*	*	*	54.000
38570.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5590 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11180.000	12.420	42.290	54.710	-19.290	74.000
16770.000	*	*	*	*	74.000
22360.000	*	*	*	*	74.000
27950.000	*	*	*	*	74.000
33540.000	*	*	*	*	74.000
39130.000	*	*	*	*	74.000
Average					
Detector:					
11180.000	12.420	28.090	40.510	-13.490	54.000
16770.000	*	*	*	*	54.000
22360.000	*	*	*	*	54.000
27950.000	*	*	*	*	54.000
33540.000	*	*	*	*	54.000
39130.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5590 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11180.000	12.975	42.220	55.195	-18.805	74.000
16770.000	*	*	*	*	74.000
22360.000	*	*	*	*	74.000
27950.000	*	*	*	*	74.000
33540.000	*	*	*	*	74.000
39130.000	*	*	*	*	74.000
Average Detector:					
11180.000	12.975	28.180	41.155	-12.845	54.000
16770.000	*	*	*	*	54.000
22360.000	*	*	*	*	54.000
27950.000	*	*	*	*	54.000
33540.000	*	*	*	*	54.000
39130.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5670MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11340.000	11.318	40.670	51.988	-22.012	74.000
17010.000	*	*	*	*	74.000
22680.000	*	*	*	*	74.000
28350.000	*	*	*	*	74.000
34020.000	*	*	*	*	74.000
39690.000	*	*	*	*	74.000
Average					
Detector:					
11340.000	*	*	*	*	54.000
17010.000	*	*	*	*	54.000
22680.000	*	*	*	*	54.000
28350.000	*	*	*	*	54.000
34020.000	*	*	*	*	54.000
39690.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5670MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Vertical					
Peak Detector:					
11340.000	11.511	40.990	52.501	-21.499	74.000
17010.000	*	*	*	*	74.000
22680.000	*	*	*	*	74.000
28350.000	*	*	*	*	74.000
34020.000	*	*	*	*	74.000
39690.000	*	*	*	*	74.000
Average Detector:					
11340.000	*	*	*	*	54.000
17010.000	*	*	*	*	54.000
22680.000	*	*	*	*	54.000
28350.000	*	*	*	*	54.000
34020.000	*	*	*	*	54.000
39690.000	*	*	*	*	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Notebook P.C.
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2 (5600MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector					
348.160	-1.354	39.909	38.555	-7.445	46.000
431.580	0.597	35.230	35.827	-10.173	46.000
600.360	3.235	32.030	35.265	-10.735	46.000
697.360	3.097	34.598	37.695	-8.305	46.000
800.180	6.336	31.105	37.442	-8.558	46.000
970.900	7.152	27.642	34.794	-19.206	54.000
Vertical					
Peak Detector					
338.460	-1.611	40.289	38.677	-7.323	46.000
503.360	-0.280	33.917	33.637	-12.363	46.000
697.360	0.557	30.433	30.990	-15.010	46.000
800.180	2.556	30.193	32.750	-13.250	46.000
864.200	-0.465	30.165	29.700	-16.300	46.000
970.900	2.772	29.788	32.560	-21.440	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product : Notebook P.C.
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 (5600MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector					
352.040	-1.342	38.023	36.681	-9.319	46.000
431.580	0.597	35.808	36.405	-9.595	46.000
600.360	3.235	32.615	35.850	-10.150	46.000
699.300	2.822	34.407	37.229	-8.771	46.000
800.180	6.336	30.803	37.140	-8.860	46.000
970.900	7.152	28.380	35.532	-18.468	54.000
Vertical					
Peak Detector					
342.340	-0.932	39.877	38.945	-7.055	46.000
503.360	-0.280	32.170	31.890	-14.110	46.000
600.360	1.065	27.942	29.007	-16.993	46.000
699.300	-0.158	30.609	30.451	-15.549	46.000
796.300	2.553	29.418	31.971	-14.029	46.000
970.900	2.772	29.288	32.060	-21.940	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product : Notebook P.C.
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 (5590MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector					
328.760	-4.471	40.379	35.908	-10.092	46.000
431.580	0.597	36.863	37.460	-8.540	46.000
577.080	2.983	31.879	34.862	-11.138	46.000
697.360	3.097	34.024	37.121	-8.879	46.000
800.180	6.336	30.160	36.497	-9.503	46.000
970.900	7.152	27.387	34.539	-19.461	54.000
Vertical					
Peak Detector					
338.460	-1.611	40.766	39.154	-6.846	46.000
503.360	-0.280	34.002	33.722	-12.278	46.000
648.860	-3.278	32.023	28.745	-17.255	46.000
743.920	0.535	30.454	30.989	-15.011	46.000
864.200	-0.465	30.084	29.619	-16.381	46.000
970.900	2.772	28.868	31.640	-22.360	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

8. Band Edge

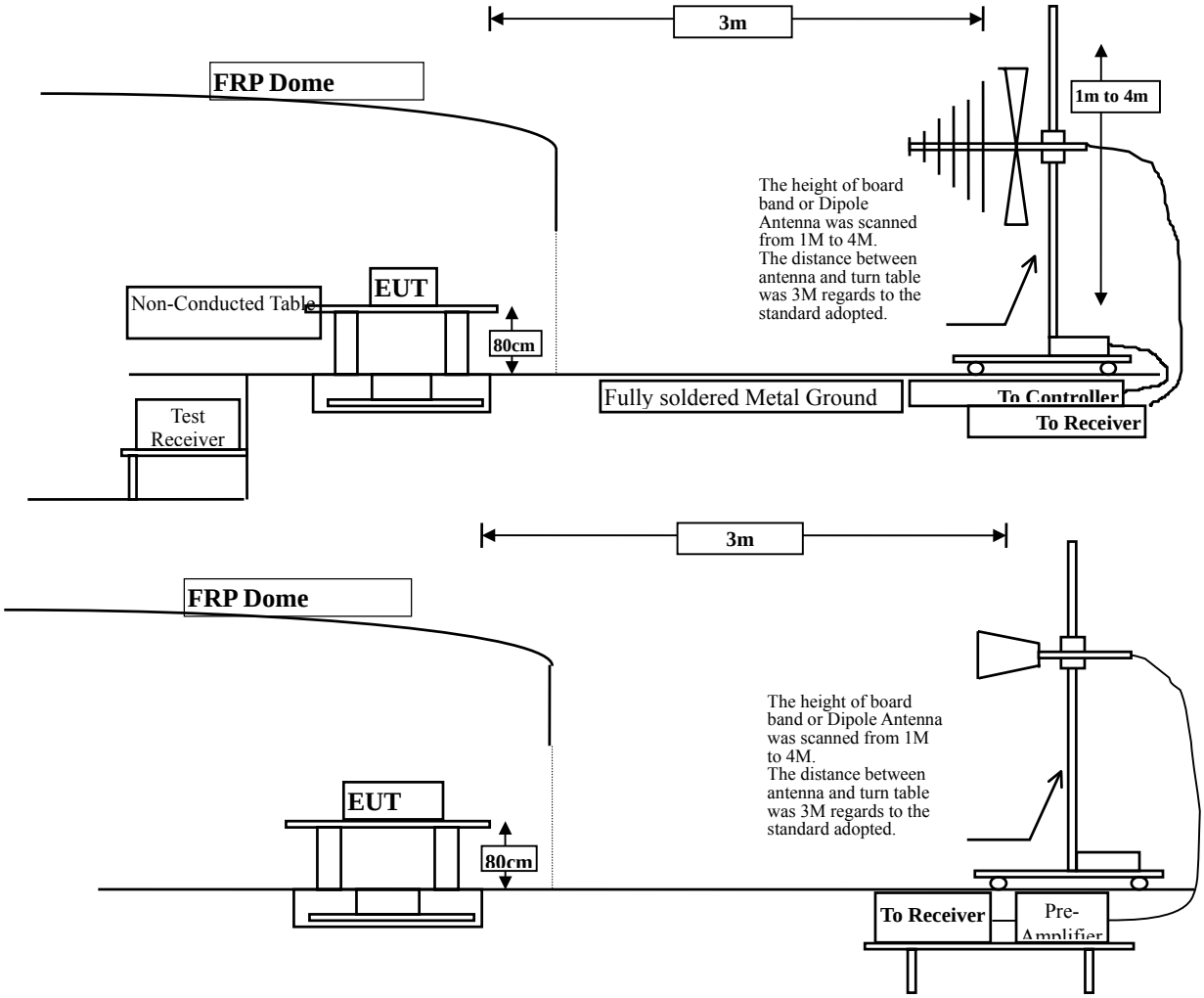
8.1. Test Equipment

The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2008
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2009
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A
	X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2009

8.2. Test Setup

RF Radiated Measurement:



8.3. Limits

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

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

8.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

8.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

8.6. Test Result of Band Edge

Product : Notebook P.C.
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2-Channel 100

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Reading Level [dBuV]	Correction Factor [dB/m]	Emission Level [dBuV/m]	Detector
Horizontal	5500	41.951	53.560	95.511	Peak
Horizontal	5500	41.954	43.914	85.869	Average
Vertical	5500	43.289	61.632	104.921	Peak
Vertical	5500	43.280	52.339	95.618	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=30Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	5459.7	95.511	55.44	40.071	Peak
Horizontal	5460.0	85.869	58.19	27.679	Average
Vertical	5459.7	104.921	55.44	49.481	Peak
Vertical	5460.0	95.618	58.19	37.428	Average

Note:

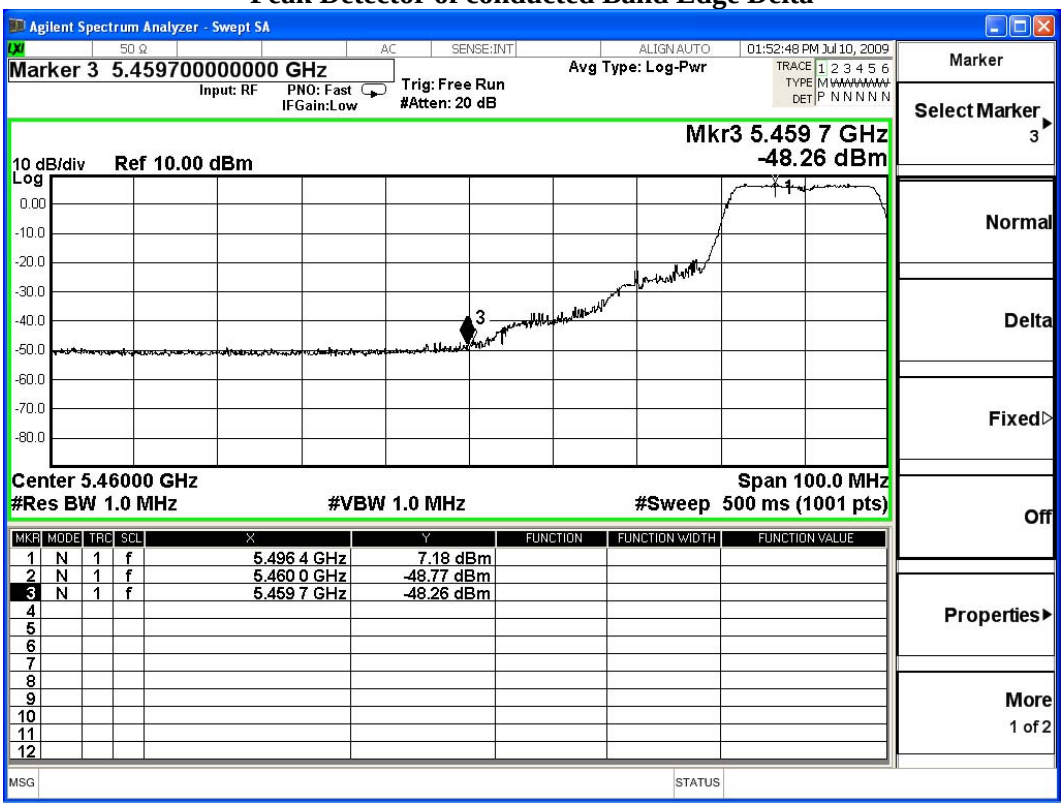
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

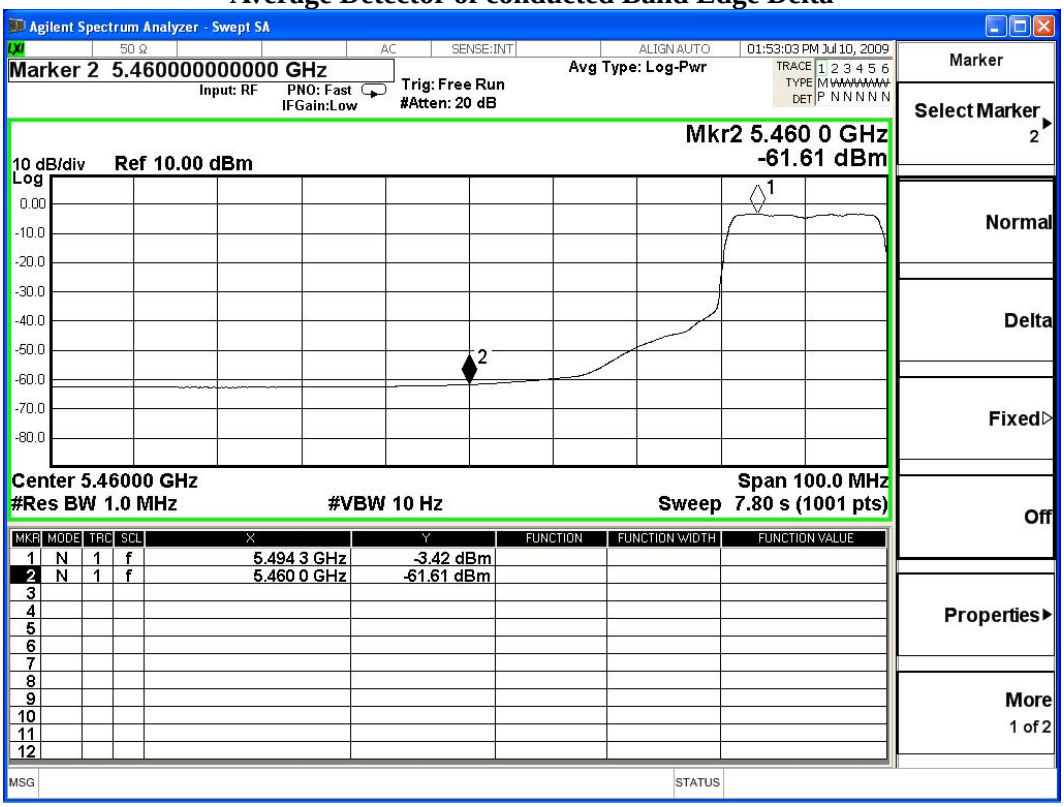
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Notebook P.C.
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2 -Channel 100

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Reading Level [dBuV]	Correction Factor [dB/m]	Emission Level [dBuV/m]	Detector
Horizontal	5500	41.936	52.805	94.741	Peak
Horizontal	5500	41.954	42.549	84.504	Average
Vertical	5500	43.284	60.190	103.475	Peak
Vertical	5500	43.281	50.015	93.295	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=30Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	5458.9	94.741	46.24	48.501	Peak
Horizontal	5460.0	84.504	52.36	32.144	Average
Vertical	5458.9	103.475	46.24	57.235	Peak
Vertical	5460.0	93.295	52.36	40.935	Average

Note:

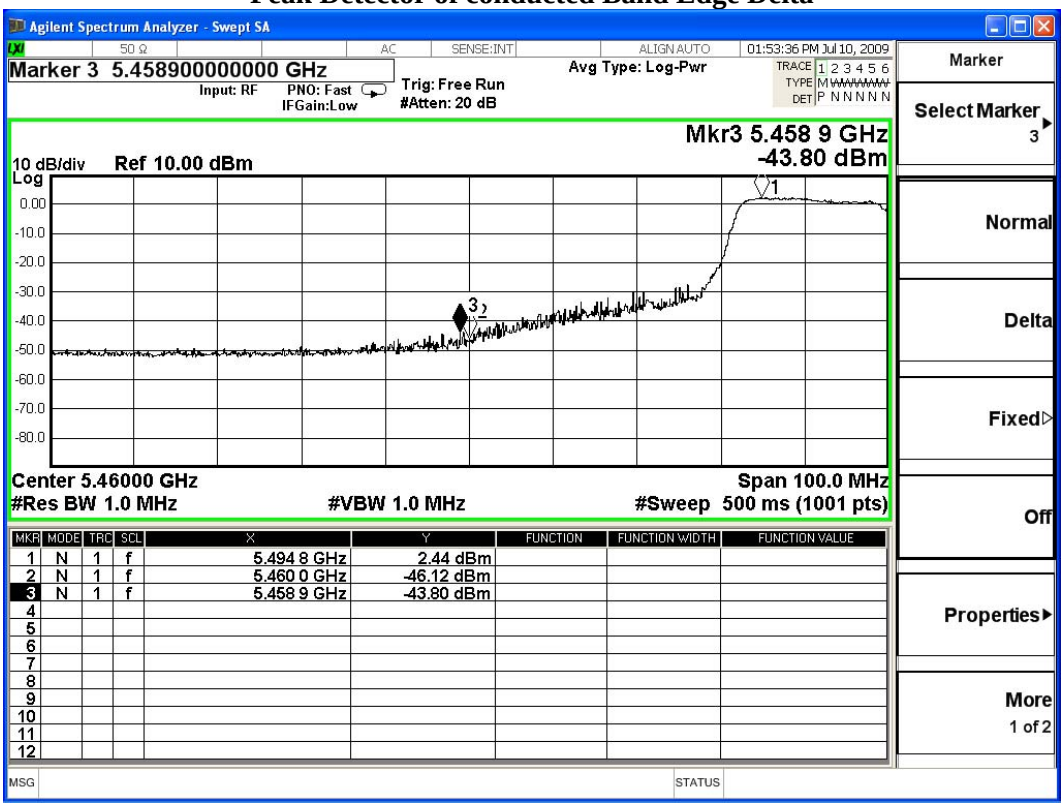
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

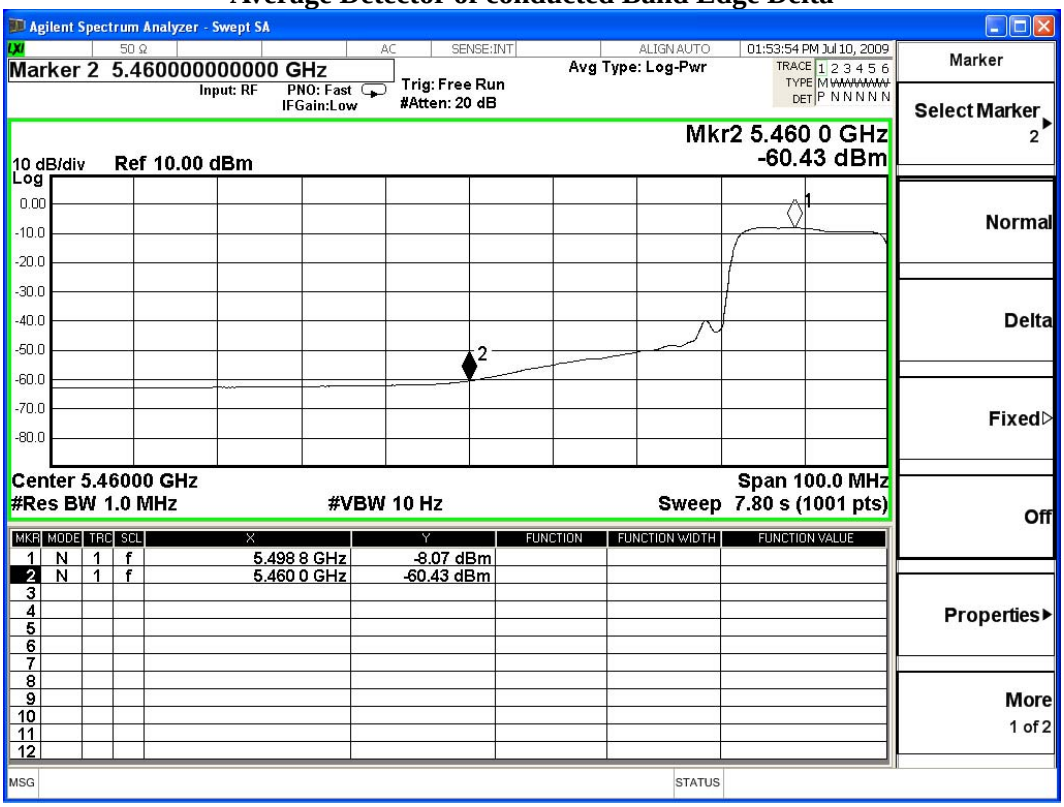
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Notebook P.C.
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2 -Channel 102

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Reading Level [dBuV]	Correction Factor [dB/m]	Emission Level [dBuV/m]	Detector
Horizontal	5510	41.944	52.248	94.191	Peak
Horizontal	5510	41.946	42.617	84.563	Average
Vertical	5510	43.241	57.822	101.063	Peak
Vertical	5510	43.281	47.823	91.104	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=30Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	5457.7	94.191	53.63	40.561	Peak
Horizontal	5460.0	84.563	64.97	19.593	Average
Vertical	5457.7	101.063	53.63	47.433	Peak
Vertical	5460.0	91.104	64.97	26.134	Average

Note:

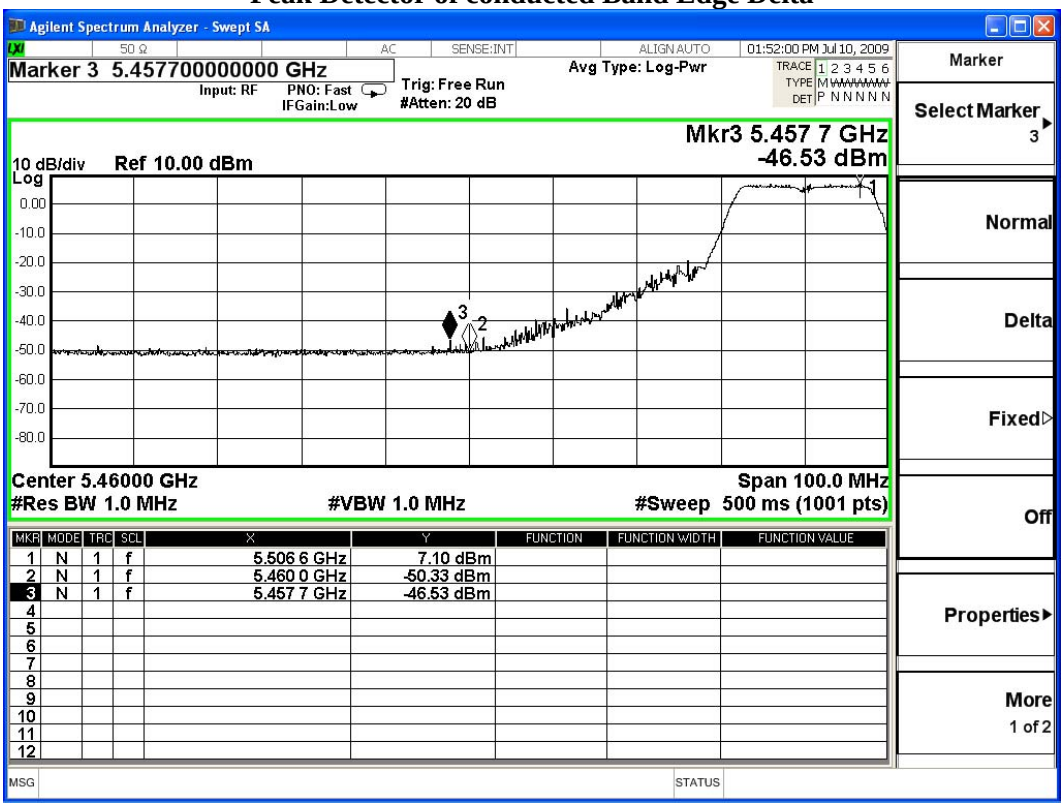
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

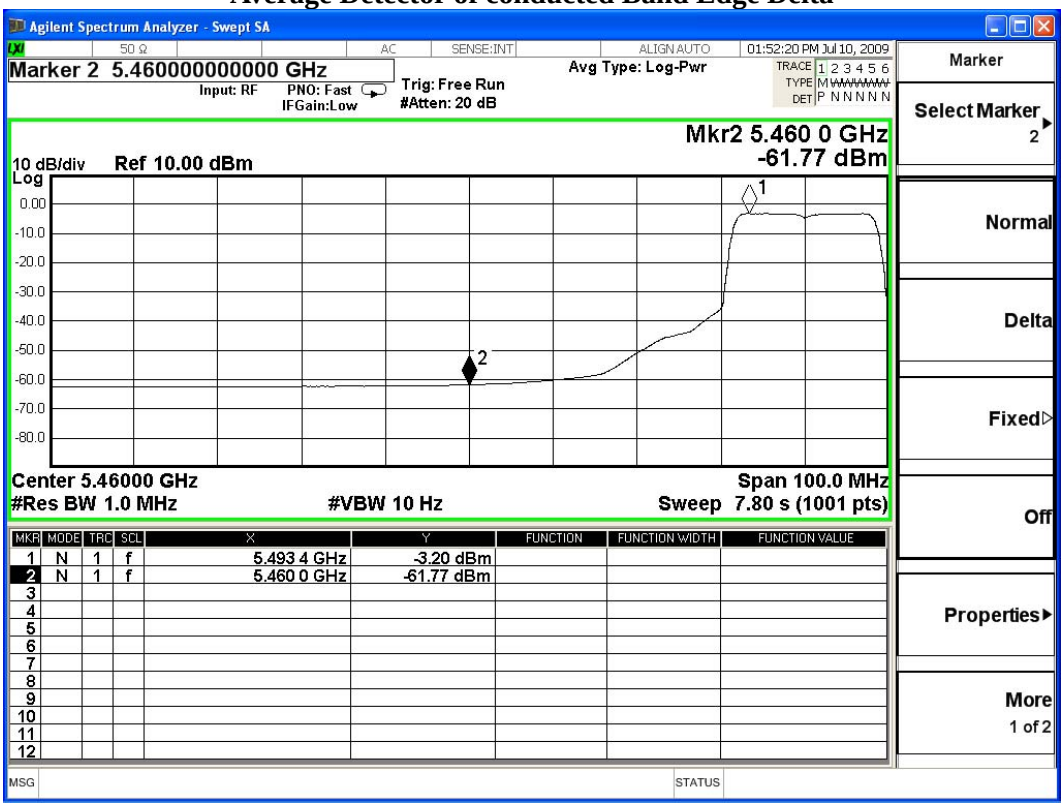
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



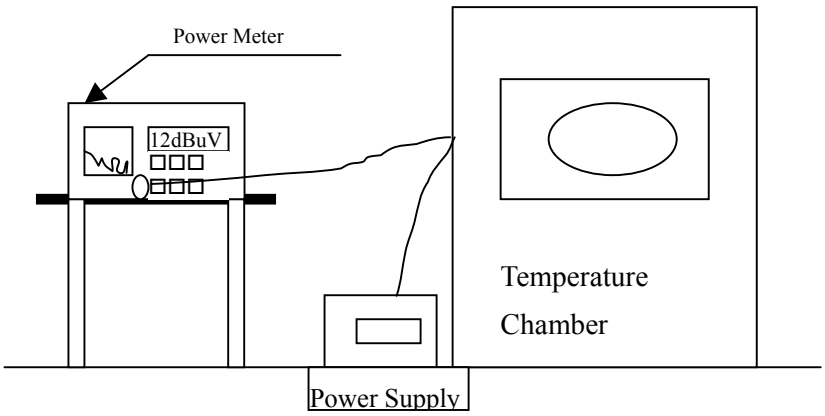
9. Frequency Stability

9.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.	Remark
Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2009	
Temperature Chamber	WIT GROUP	TH-1S-B / WIT-02121901	June, 2009	

Note: All equipments are calibrated every one year.

9.2. Test Setup



9.3. Limits

Manufactures 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

9.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

9.5. Uncertainty

± 150 Hz

9.6. Test Result of Frequency Stability

Product : Notebook P.C.
Test Item : Frequency Stability
Test Site : Temperature Chamber
Test Mode : Mode 1: Transmitter (802.11a-6Mbps)-Antenna 2

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (20) °C	Vnom (110)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (50) °C	Vnom (126.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (50) °C	Vnom (93.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (0) °C	Vnom (126.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (0) °C	Vnom (93.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00

Product : Notebook P.C.
Test Item : Frequency Stability
Test Site : Temperature Chamber
Test Mode : Mode 2: Transmitter (802.11n-20BW 13.5Mbps)-Antenna 2

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (20) °C	Vnom (110)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (50) °C	Vnom (126.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (50) °C	Vnom (93.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (0) °C	Vnom (126.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00
Tnom (0) °C	Vnom (93.5)V	100	5500.00	5500.0000	0.00
		120	5600.00	5600.0000	0.00
		140	5700.00	5700.0000	0.00

Product : Notebook P.C.
Test Item : Frequency Stability
Test Site : Temperature Chamber
Test Mode : Mode 3: Transmitter (802.11n-40BW 27Mbps)-Antenna 2

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (20) °C	Vnom (110)V	102	5510.00	5510.0000	0.00
		118	5590.00	5590.0000	0.00
		134	5670.00	5670.0000	0.00
Tnom (50) °C	Vnom (126.5)V	102	5510.00	5510.0000	0.00
		118	5590.00	5590.0000	0.00
		134	5670.00	5670.0000	0.00
Tnom (50) °C	Vnom (93.5)V	102	5510.00	5510.0000	0.00
		118	5590.00	5590.0000	0.00
		134	5670.00	5670.0000	0.00
Tnom (0) °C	Vnom (126.5)V	102	5510.00	5510.0000	0.00
		118	5590.00	5590.0000	0.00
		134	5670.00	5670.0000	0.00
Tnom (0) °C	Vnom (93.5)V	102	5510.00	5510.0000	0.00
		118	5590.00	5590.0000	0.00
		134	5670.00	5670.0000	0.00

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.