Test Report

(Class II Permissive Change)

Product Name	Intel® Centrino® Advanced-N 6230
Model No	62230ANHMW
FCC ID.	PD962230ANH

Applicant	Intel Corporation
Address	100 Center Point Circle Suite 200 Columbia, SC 29210

Date of Receipt	Feb. 24, 2012
Issue Date	Mar. 22, 2012
Report No.	122428R-RFUSP28V01
Report Version	V1.0

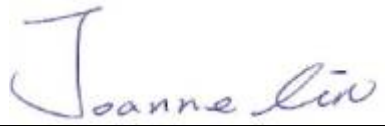
Testing Laboratory
0914

Test Report Certification

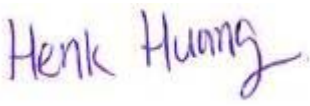
Issue Date: Mar. 22, 2012
Report No.: 122428R-RFUSP28V01

Product Name	Intel® Centrino® Advanced-N 6230
Applicant	Intel Corporation
Address	100 Center Point Circle Suite 200 Columbia, SC 29210
Manufacturer	Intel Corporation
Model No.	62230ANHMW
FCC ID.	PD962230ANH
EUT Rated Voltage	DC 3.3V (via Mini-PCI Express slot)
EUT Test Voltage	AC 120V/ 60Hz
Trade Name	Intel
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
Test Result	Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : 

(Adm. Specialist / Joanne Lin)

Tested By : 

(Engineer / Henk Huang)

Approved By : 

(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Intel® Centrino® Advanced-N 6230
Trade Name	Intel
Model No.	62230ANHMW
FCC ID.	PD962230ANH
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz,802.11n-40MHz:2422-2452MHz 802.11a/n-20MHz:5745-5825MHz ,802.11n-40MHz:5755-5795MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7 802.11a/n-20MHz: 5, n-40MHz: 2
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps
Channel separation	802.11b/g/n-20MHz: 5 MHz, 802.11a/n-20MHz: 20MHz 802.11n-40MHz: 40MHz
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11a/g/n: OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Type	Dipole Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Air802 + Amphenol + Hirose	Air 802 Antenna: ANRD245X05-RTP Amphenol Connector: 901-10097 Hirose Cable: U.FL-2LP-04N1-A-(100)	-1.65 dBi for 2.4 GHz -0.80 dBi for 5.725~5.850GHz

Note:

1. The antenna of EUT is conform to FCC 15.203

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n-40MHz (2.4G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 3:	2422 MHz	Channel 4:	2427 MHz	Channel 5:	2432 MHz	Channel 6:	2437 MHz
Channel 7:	2442 MHz	Channel 8:	2447 MHz	Channel 9:	2452 MHz		

802.11n-40MHz (5G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 151:	5755 MHz	Channel 159:	5795 MHz

Note:

1. This device is an Intel® Centrino® Advanced-N 6230 with a built-in 2.4GHz and 5GHz WLAN +Bluetooth transceiver, this report for WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps、802.11g is 6Mbps、802.11n(20M-BW) is 14.4Mbps and 、802.11n(40M-BW) is 30Mbps).
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11a/b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
5. This is to request a Class II permissive change for **FCC ID: PD962230ANH,** originally granted on **10/21/2010.**

   The major change filed under this application is:

   Change #1: Addition new antenna, antenna type is different with the original application.

   (Antenna type: Dipole antenna)

Test Mode:	Mode 1: Transmit - 802.11b 1Mbps
	Mode 2: Transmit - 802.11g 6Mbps
	Mode 3: Transmit - 802.11a 6Mbps
	Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)
	Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)
	Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)
	Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

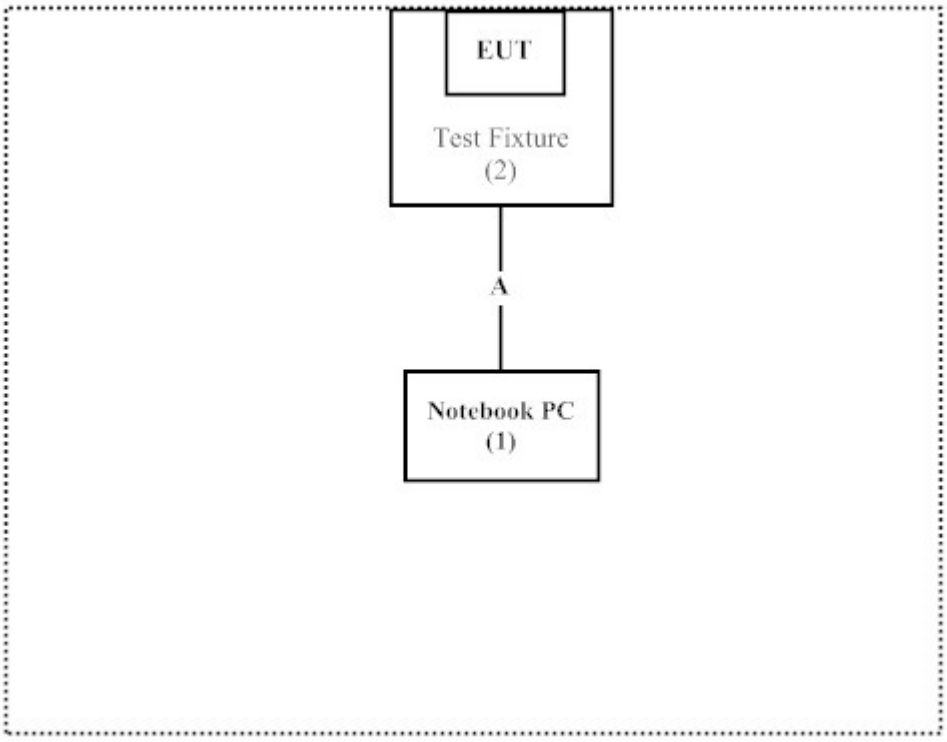
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	Intel	N/A	N/A	Non-Shielded, 1.8m
2	Test Fixture	Intel	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
1	Test Fixture Cable	Non-shielded, 0.15m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute “DRTU v1.5.3-0320” program on the notebook.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous Transmit.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng Linkou Dist., New Taipei City
24451, Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Peak Power Output

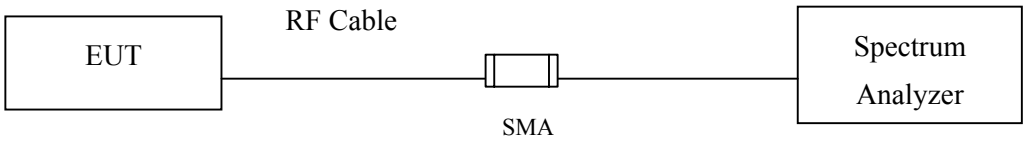
2.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2011
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2011
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2011

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.

2.2. Test Setup



2.3. Limits

The maximum peak power shall be less 1 Watt.

2.4. Test Procedure

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

2.5. Uncertainty

± 1.27 dB

2.6. Test Result of Peak Power Output

Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
01	2412	16.28	<30dBm	Pass
06	2437	16.69	<30dBm	Pass
11	2462	16.57	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

Figure Channel 1:

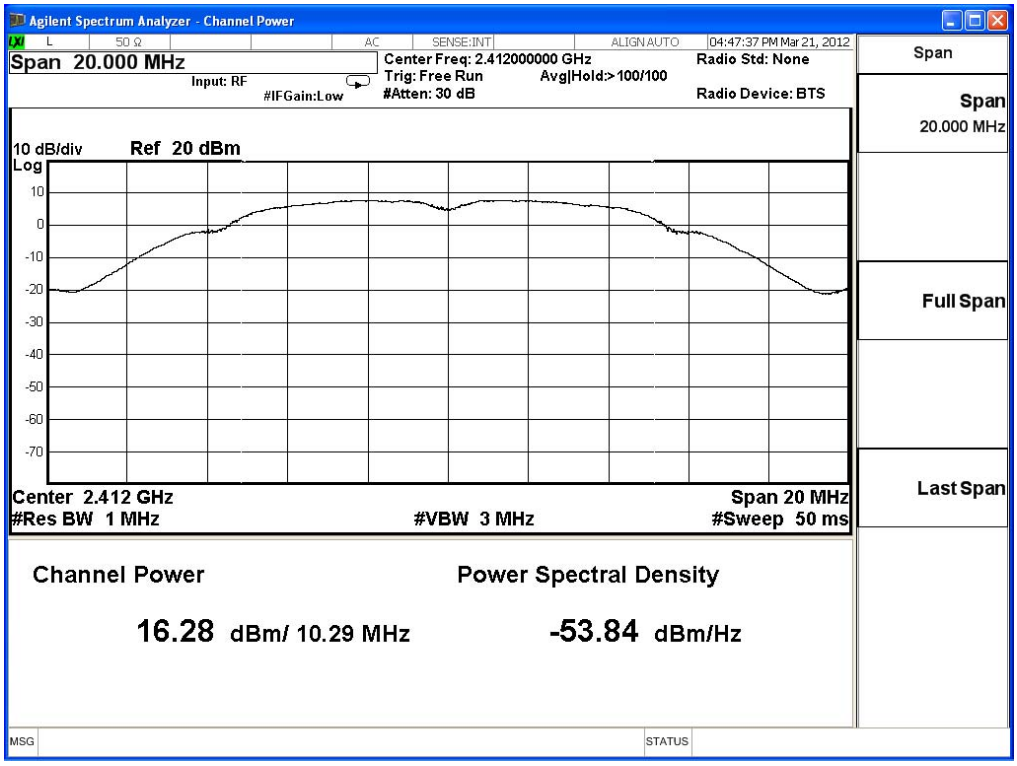


Figure Channel 6:

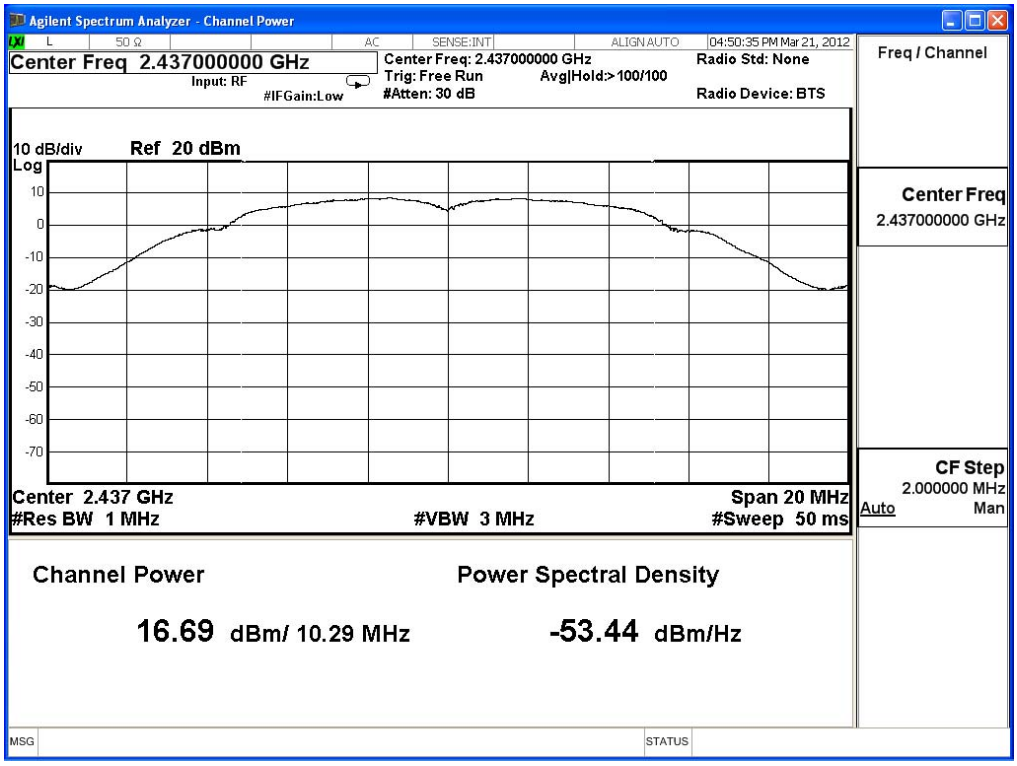
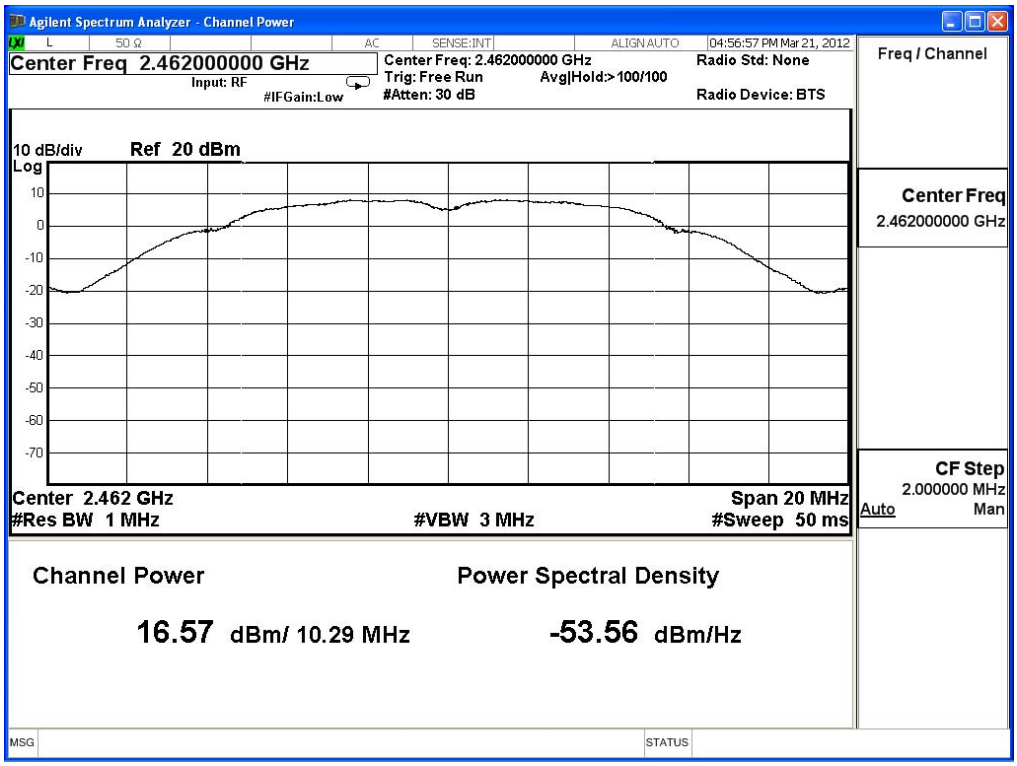


Figure Channel 11:



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
01	2412	12.88	<30dBm	Pass
06	2437	15.51	<30dBm	Pass
11	2462	12.94	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

Figure Channel 1:

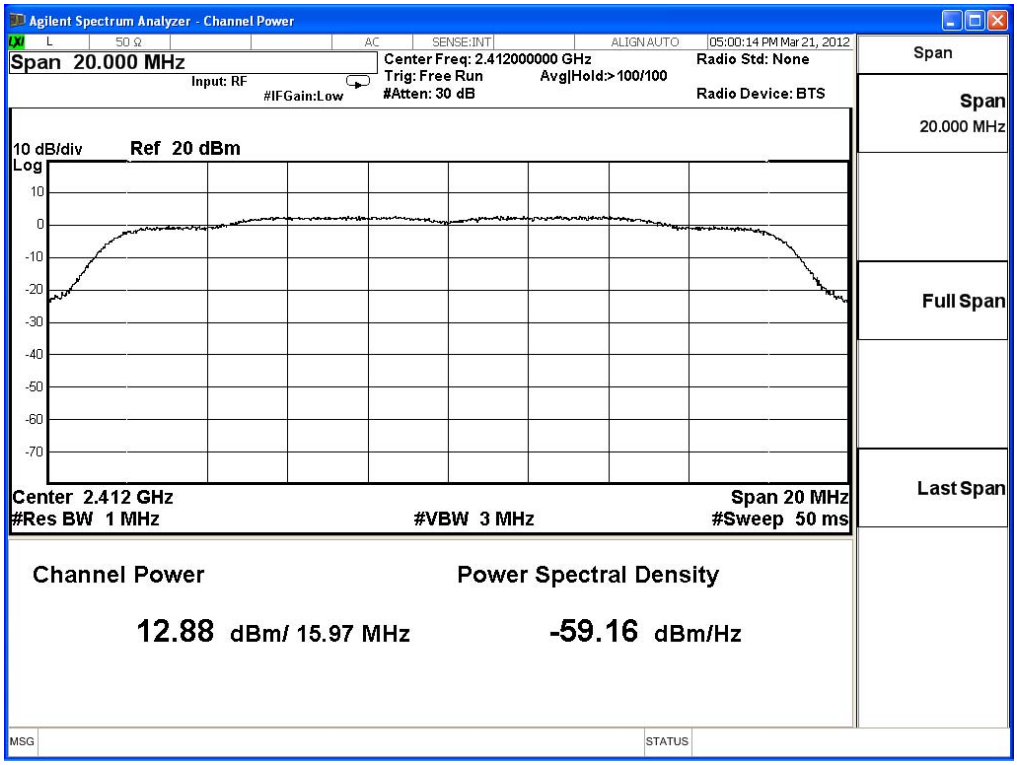


Figure Channel 6:

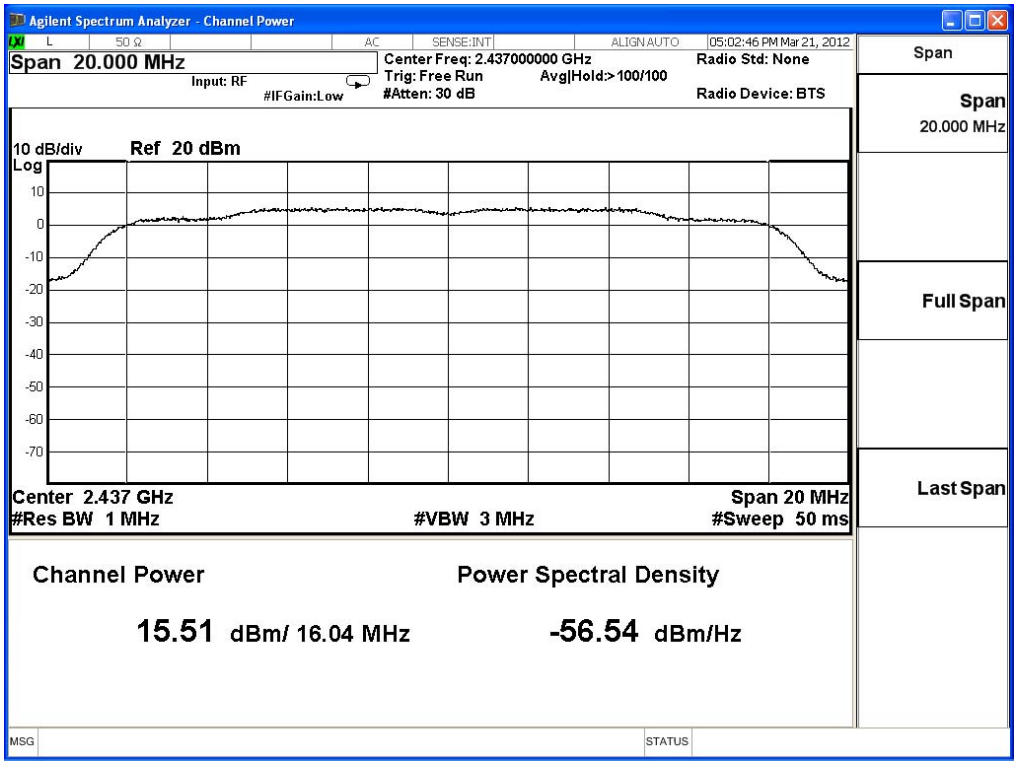
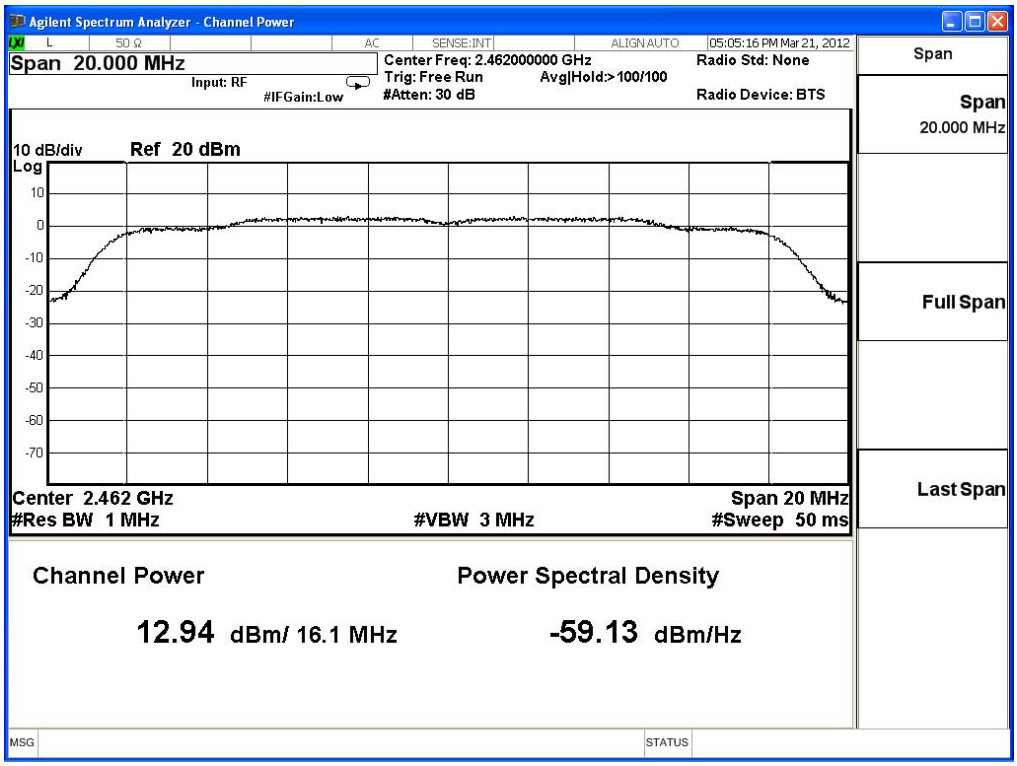


Figure Channel 11:



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
149	5745	14.10	<30dBm	Pass
157	5785	14.04	<30dBm	Pass
165	5825	13.93	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

Figure Channel 149:

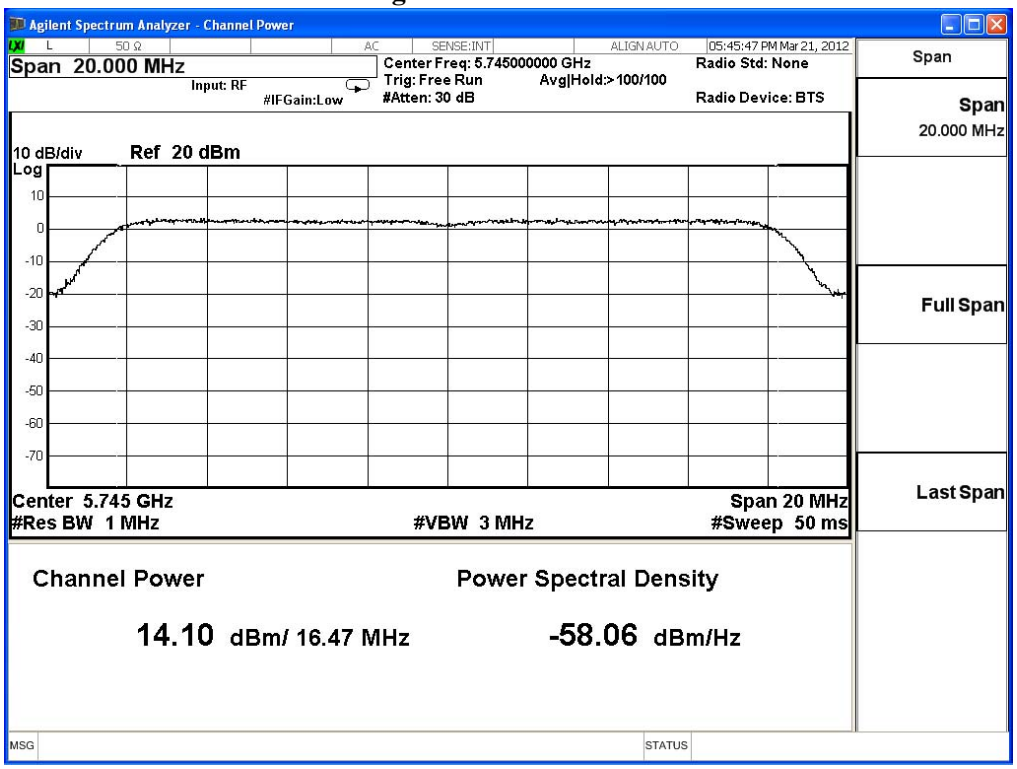


Figure Channel 157:

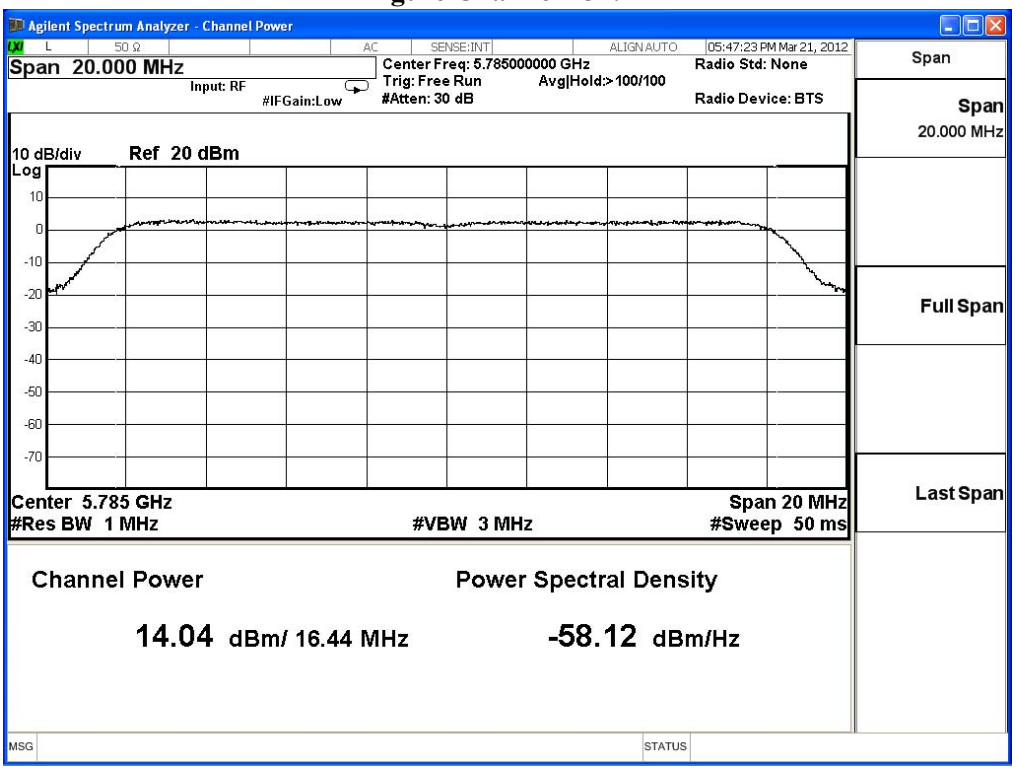
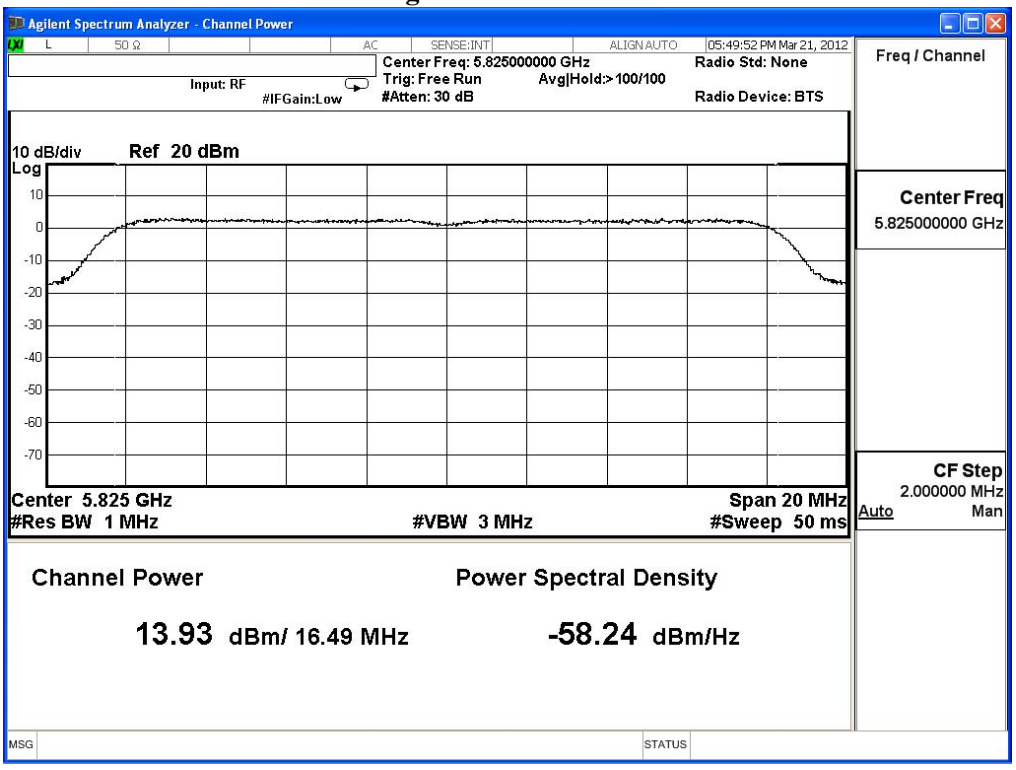


Figure Channel 165:



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
01	2412	11.36	<30dBm	Pass
06	2437	13.2	<30dBm	Pass
11	2462	11	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN B

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
01	2412	11.35	<30dBm	Pass
06	2437	12.95	<30dBm	Pass
11	2462	10.12	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
1	2412	HT8	11.36	11.35	14.37	<30dBm	Pass
6	2437	HT8	13.20	12.95	16.09	<30dBm	Pass
11	2462	HT8	11.00	10.12	13.59	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Figure Channel 1: (Chain A)

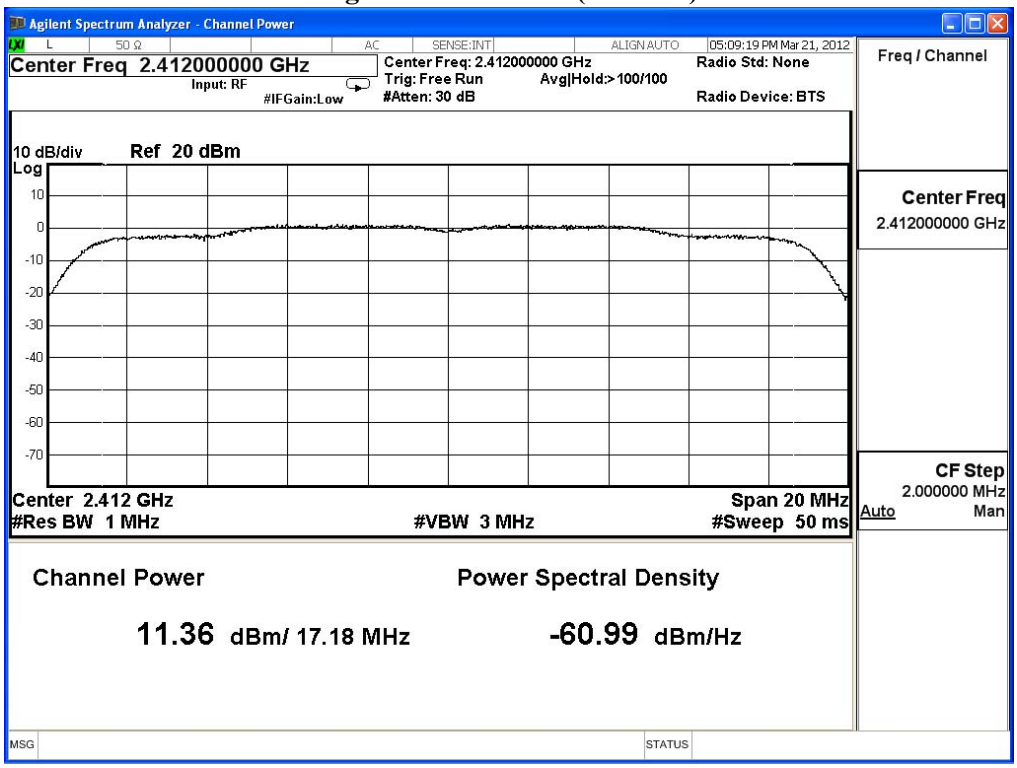


Figure Channel 6: (Chain A)

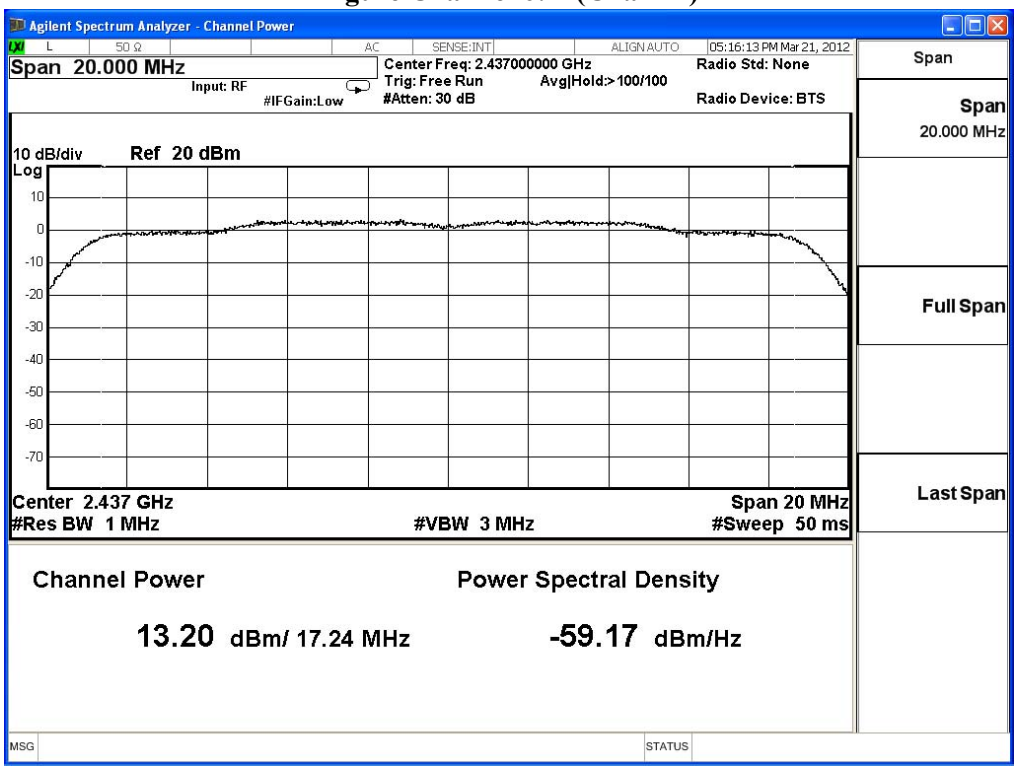


Figure Channel 11: (Chain A)

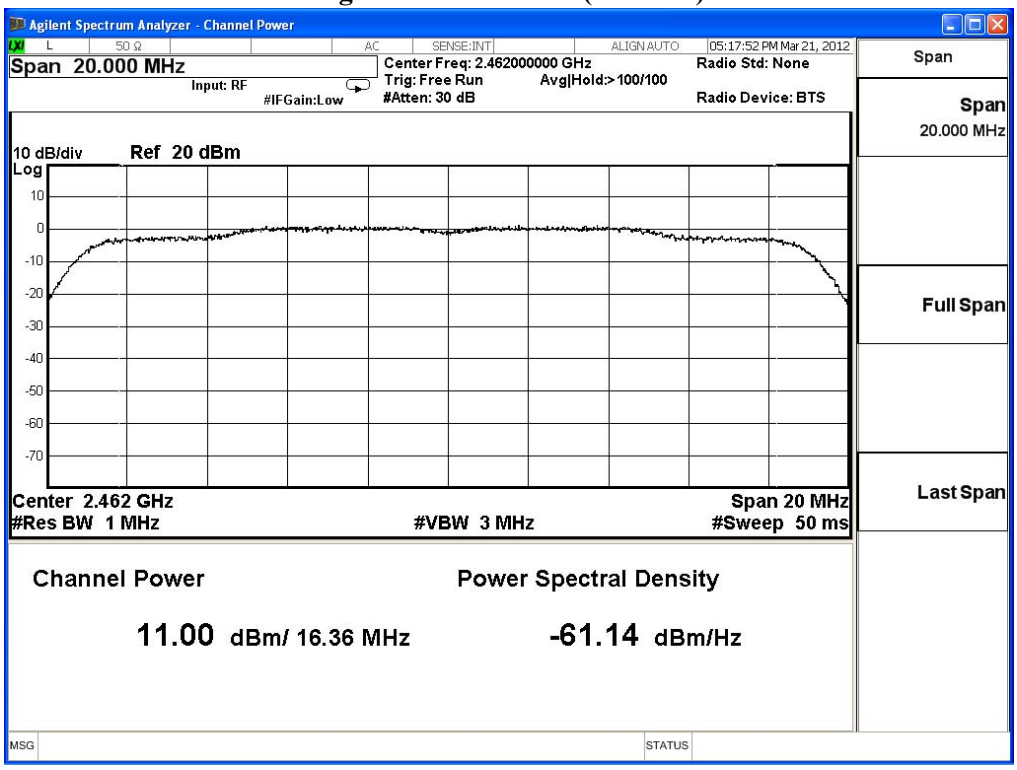


Figure Channel 1: (Chain B)

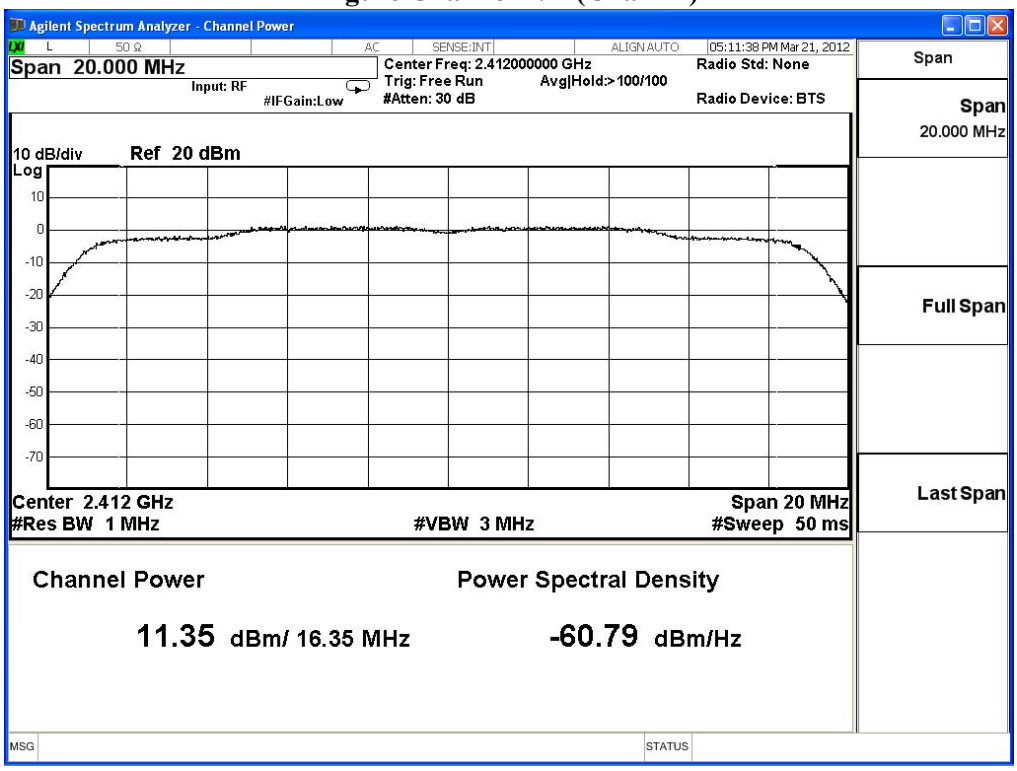


Figure Channel 6: (Chain B)

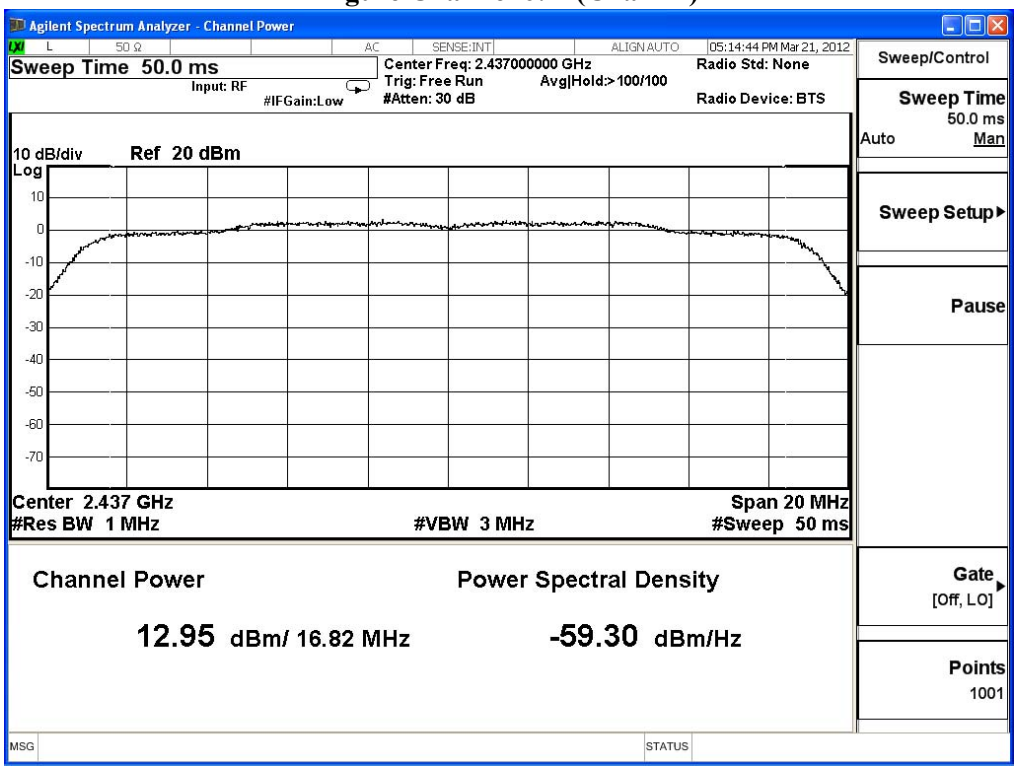
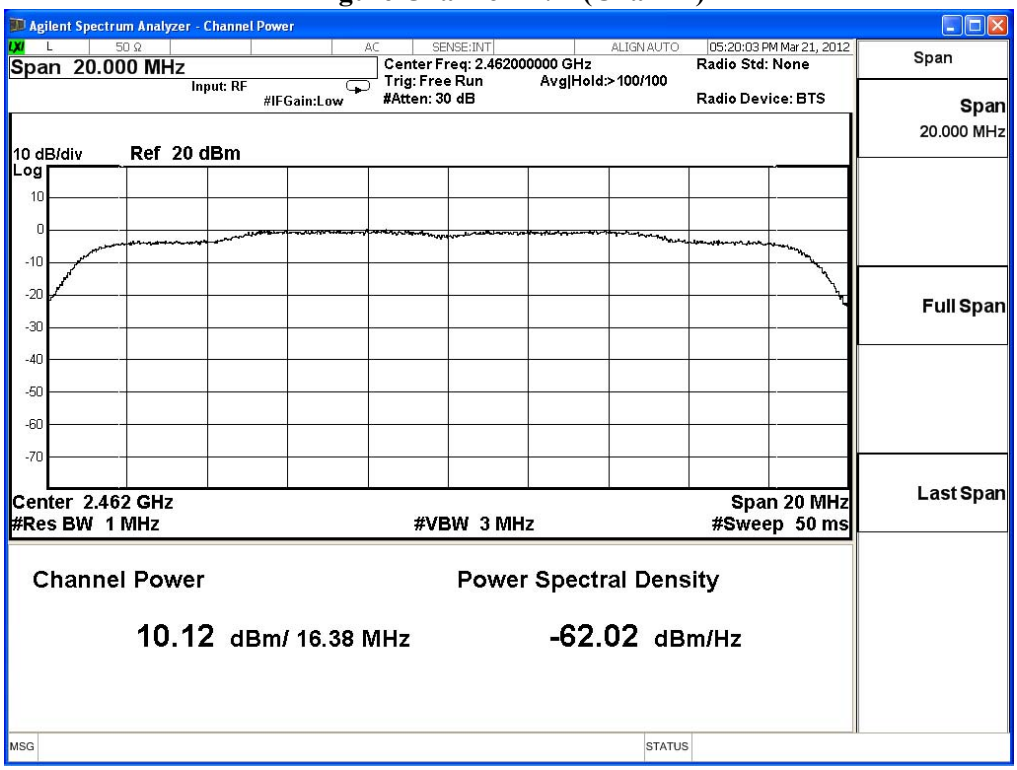


Figure Channel 11: (Chain B)



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
3	2422	6.83	<30dBm	Pass
6	2437	11.95	<30dBm	Pass
9	2452	6.28	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN B

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
3	2422	6.75	<30dBm	Pass
6	2437	12.26	<30dBm	Pass
9	2452	6.65	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
3	2422	HT8	6.83	6.75	9.80	<30dBm	Pass
6	2437	HT8	11.95	12.26	15.12	<30dBm	Pass
9	2452	HT8	6.28	6.65	9.48	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Figure Channel 3: (Chain A)

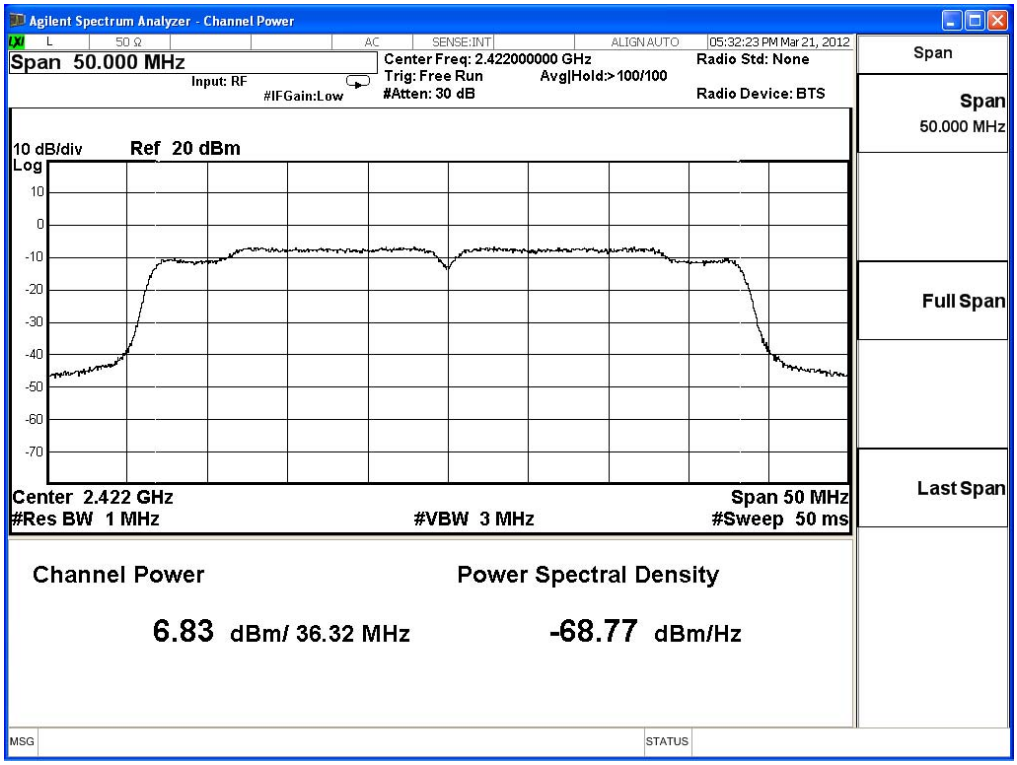


Figure Channel 6: (Chain A)

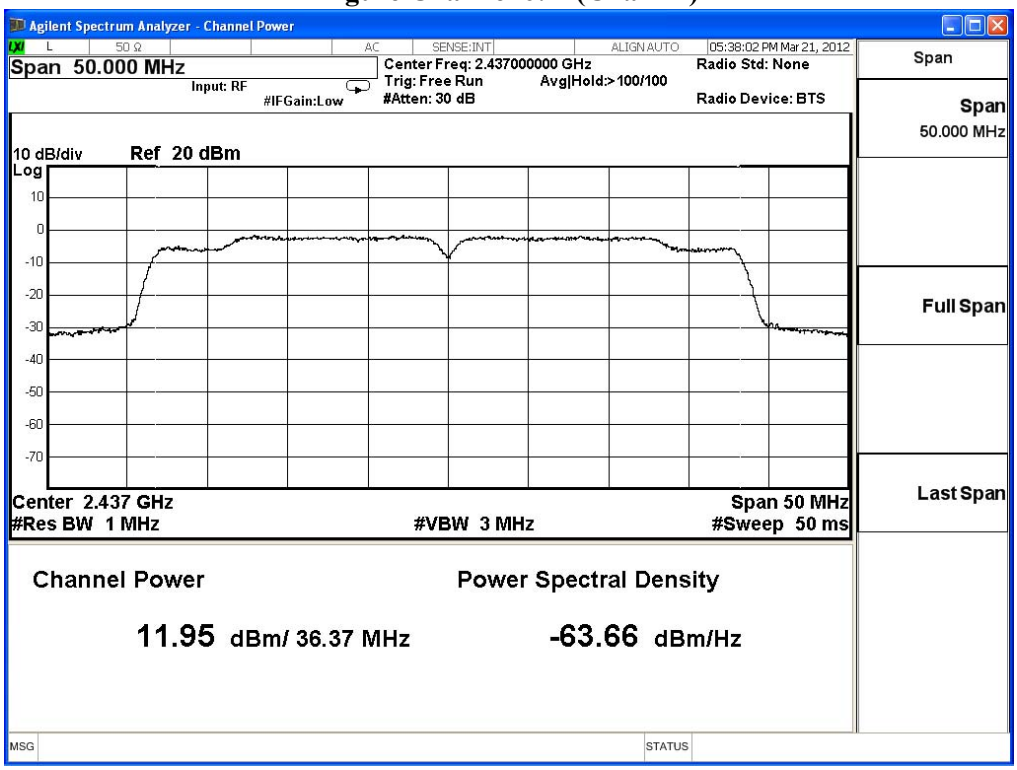


Figure Channel 9: (Chain A)

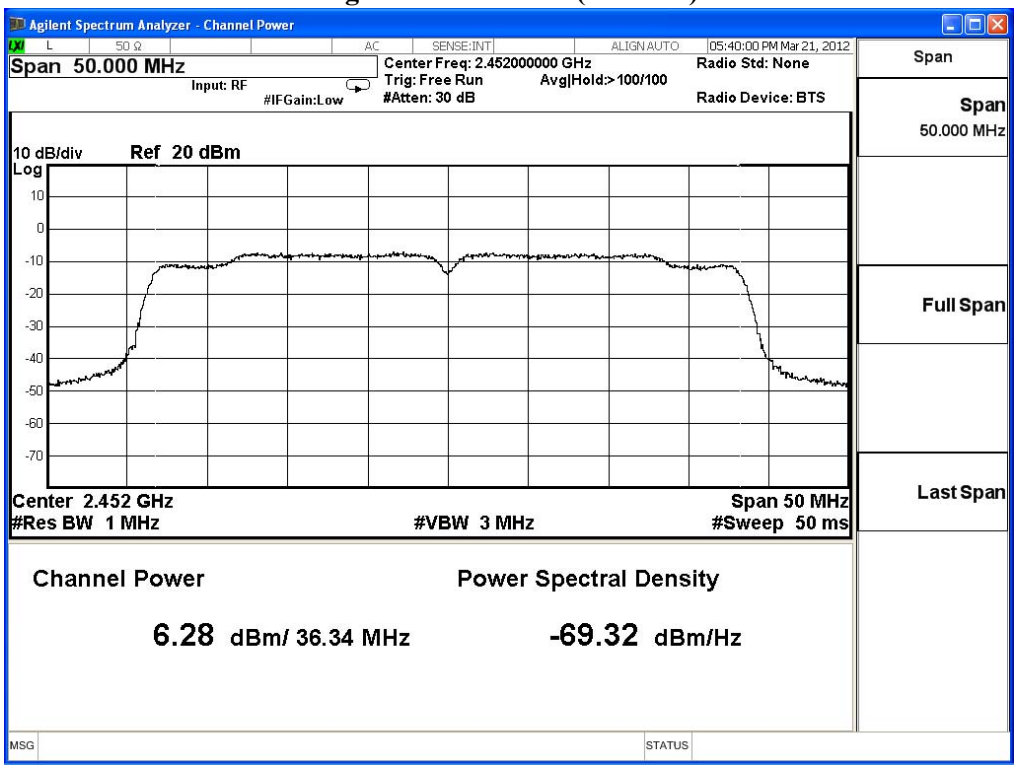


Figure Channel 3: (Chain B)

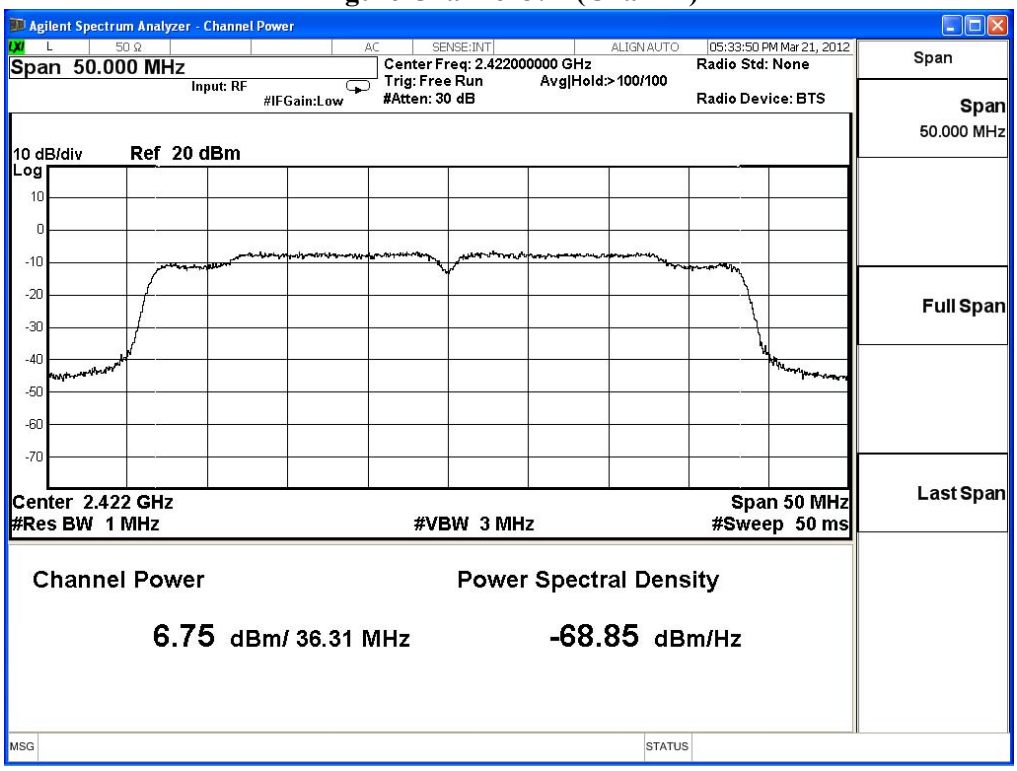


Figure Channel 6: (Chain B)

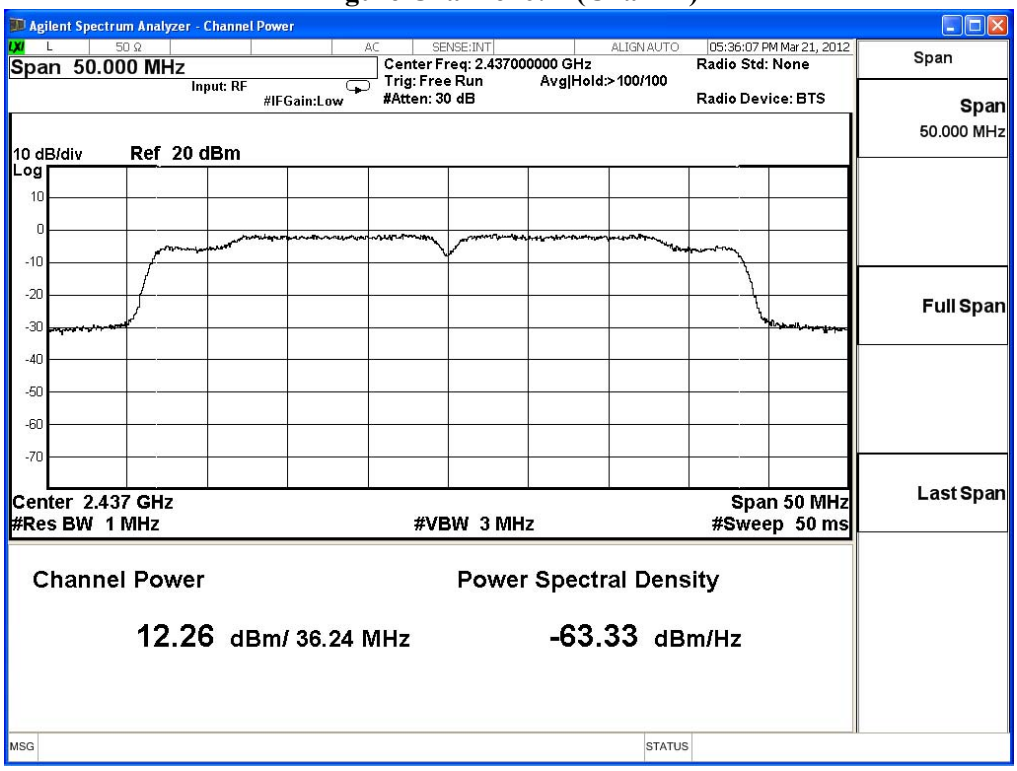
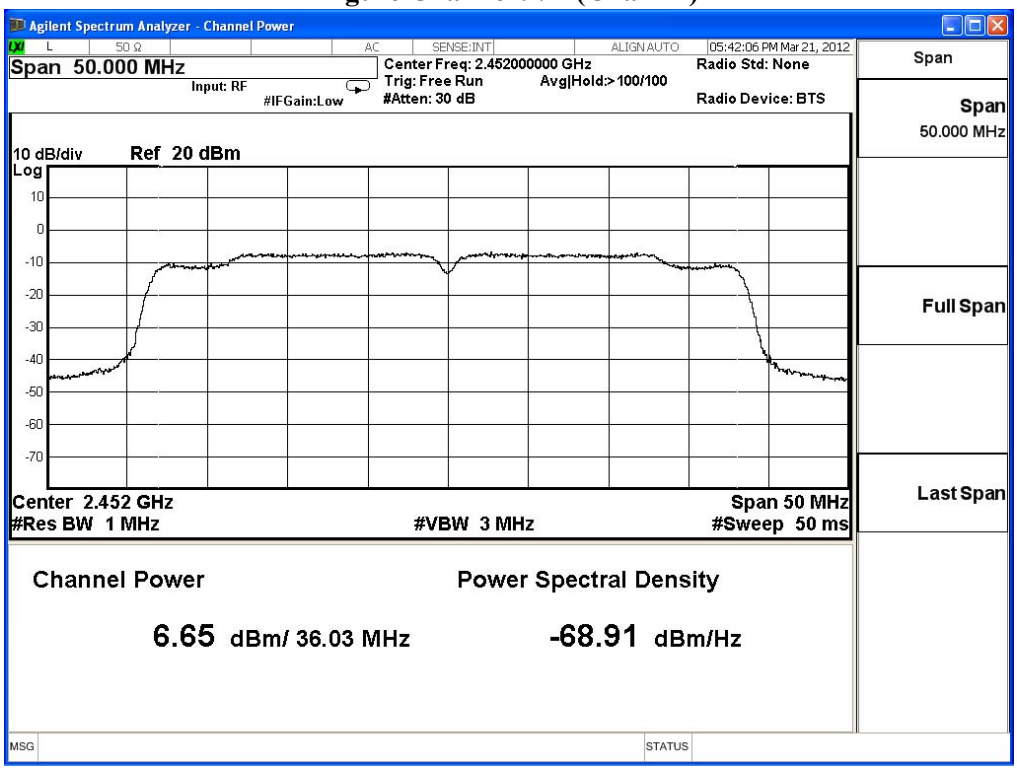


Figure Channel 9: (Chain B)



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
149	5745	10.31	<30dBm	Pass
157	5785	12.97	<30dBm	Pass
165	5825	9.8	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN B

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
149	5745	10.19	<30dBm	Pass
157	5785	12.86	<30dBm	Pass
165	5825	10.14	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss (Use the spectrum analyzer's integrated channel power measurement function)

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
149	5745	HT8	10.31	10.19	13.26	<30dBm	Pass
157	5785	HT8	12.97	12.86	15.93	<30dBm	Pass
165	5825	HT8	9.80	10.14	12.98	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Figure Channel 149: (Chain A)

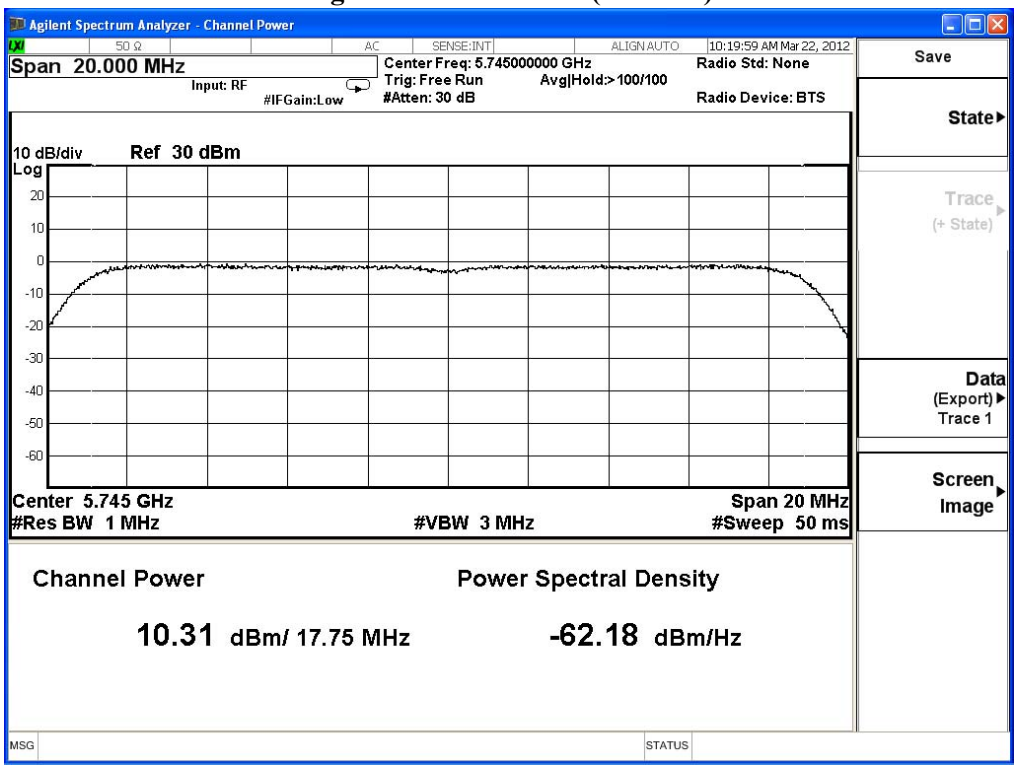


Figure Channel 157: (Chain A)

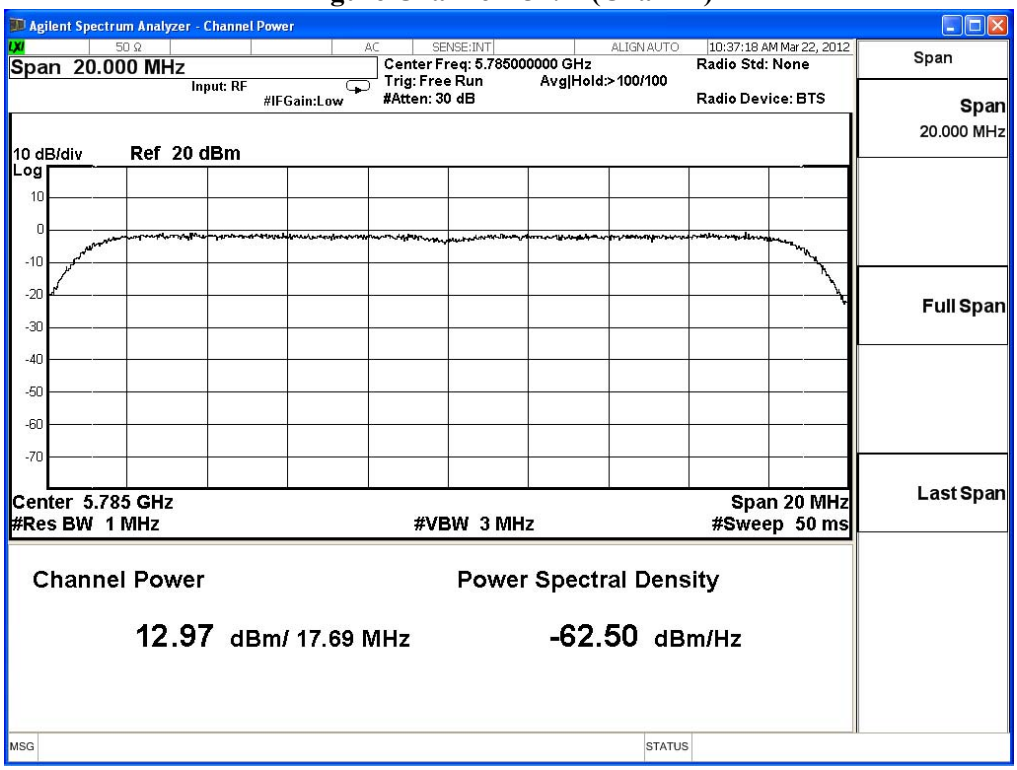


Figure Channel 165: (Chain A)

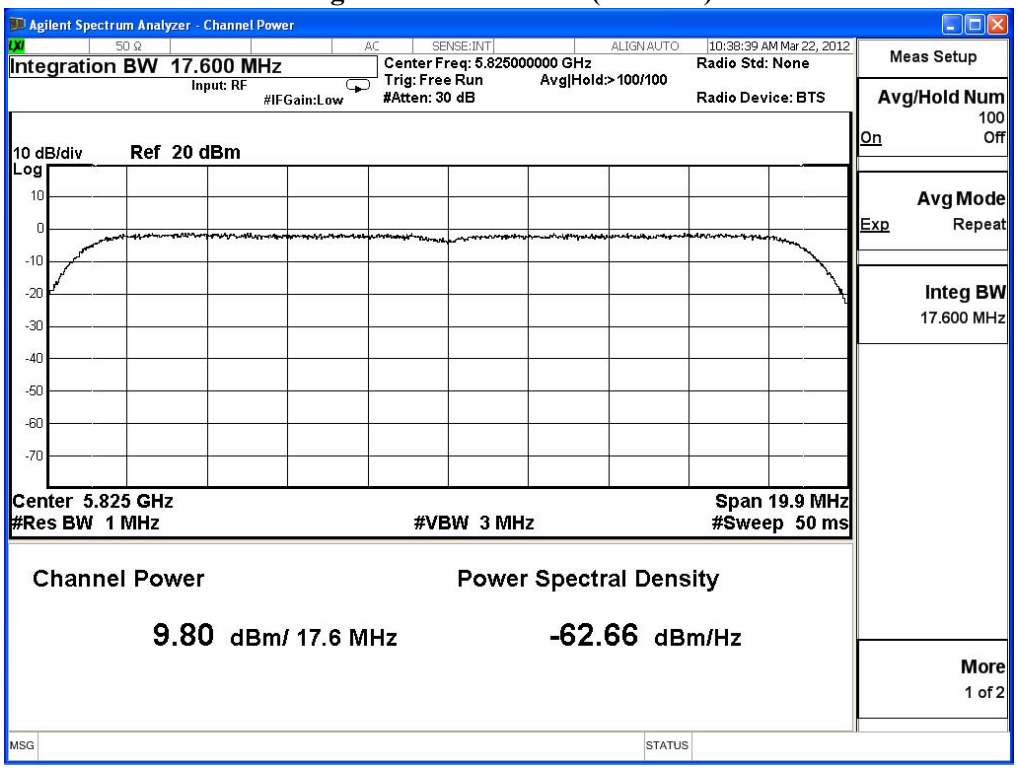


Figure Channel 149: (Chain B)

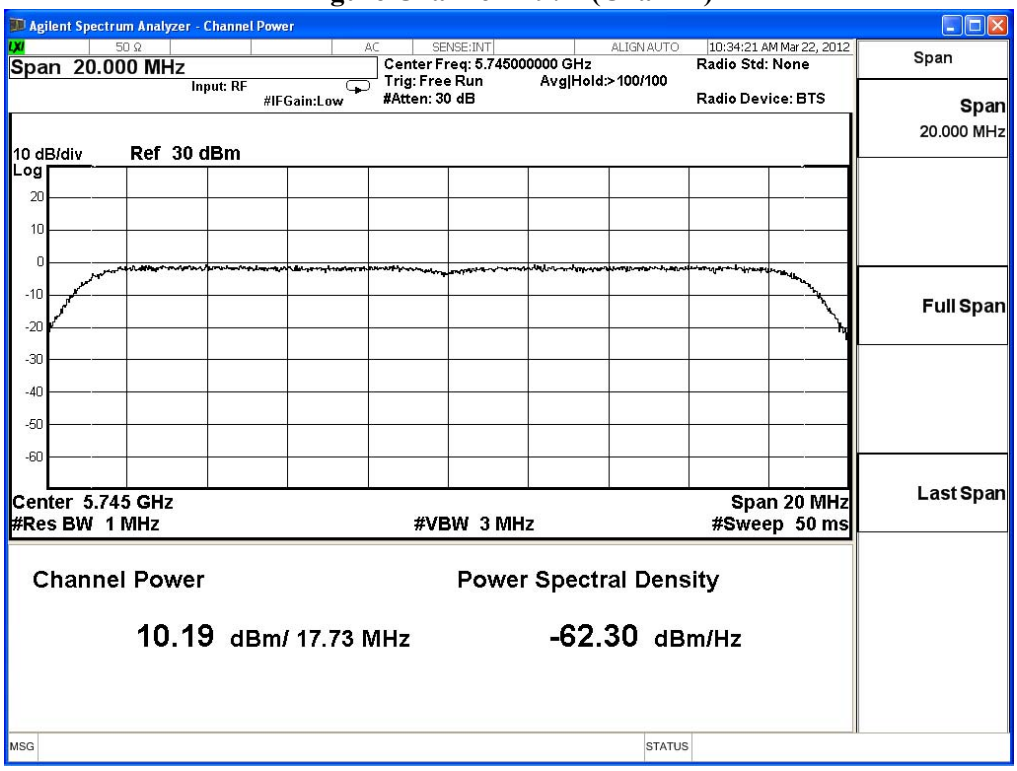


Figure Channel 157: (Chain B)

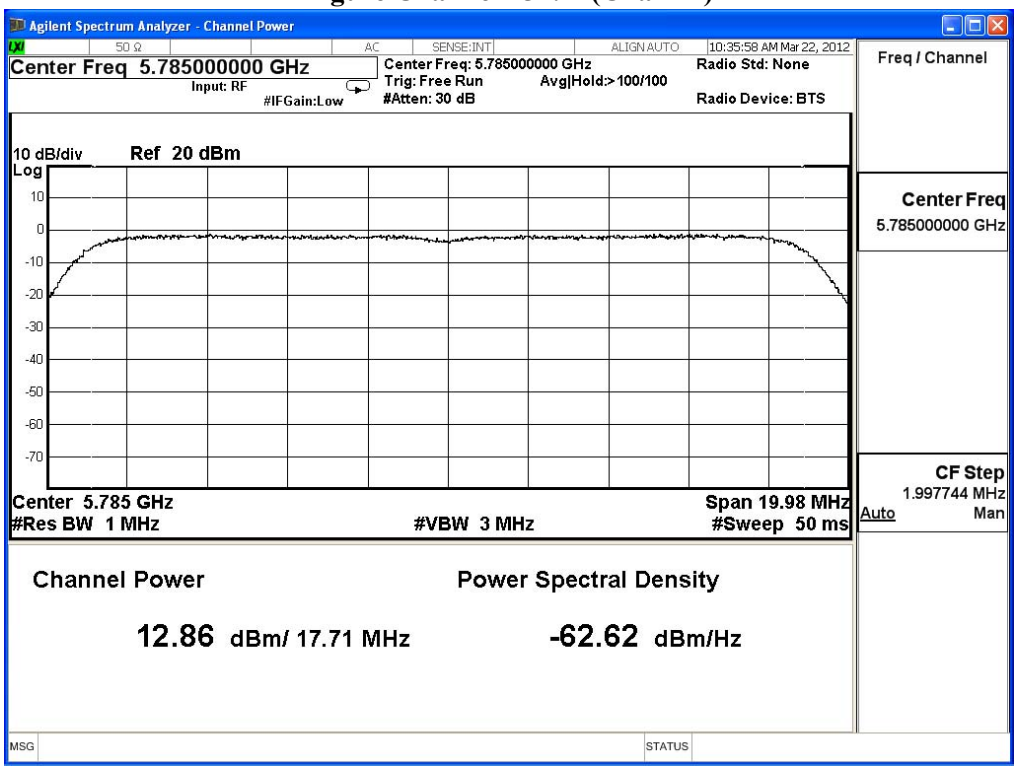
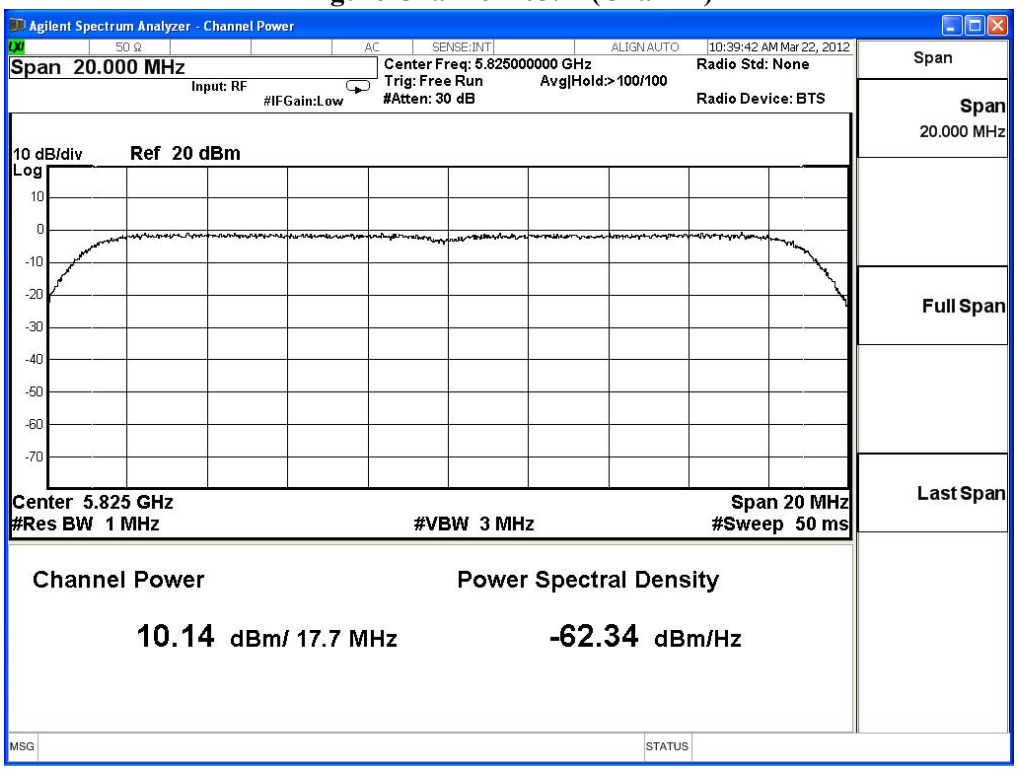


Figure Channel 165: (Chain B)



Product : Intel® Centrino® Advanced-N 6230
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

CHAIN A

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
151	5755	20.75	<30dBm	Pass
159	5795	20.54	<30dBm	Pass

Note:
1. Output power measured using a peak power meter.

CHAIN B

Channel No	Frequency (MHz)	Peak Power	Required Limit	Result
151	5755	20.38	<30dBm	Pass
159	5795	20.44	<30dBm	Pass

Note:
1. Output power measured using a peak power meter.

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
151	5755	HT8	20.75	20.38	23.58	<30dBm	Pass
159	5795	HT8	20.54	20.44	23.50	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

3. Radiated Emission

3.1. Test Equipment

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

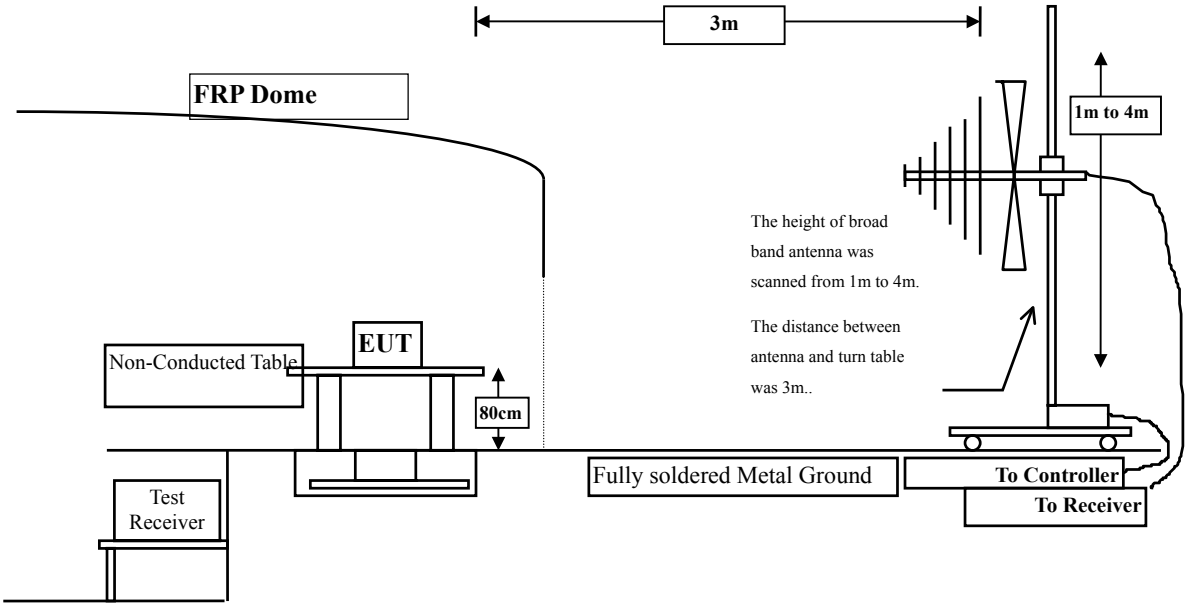
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2011
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	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.

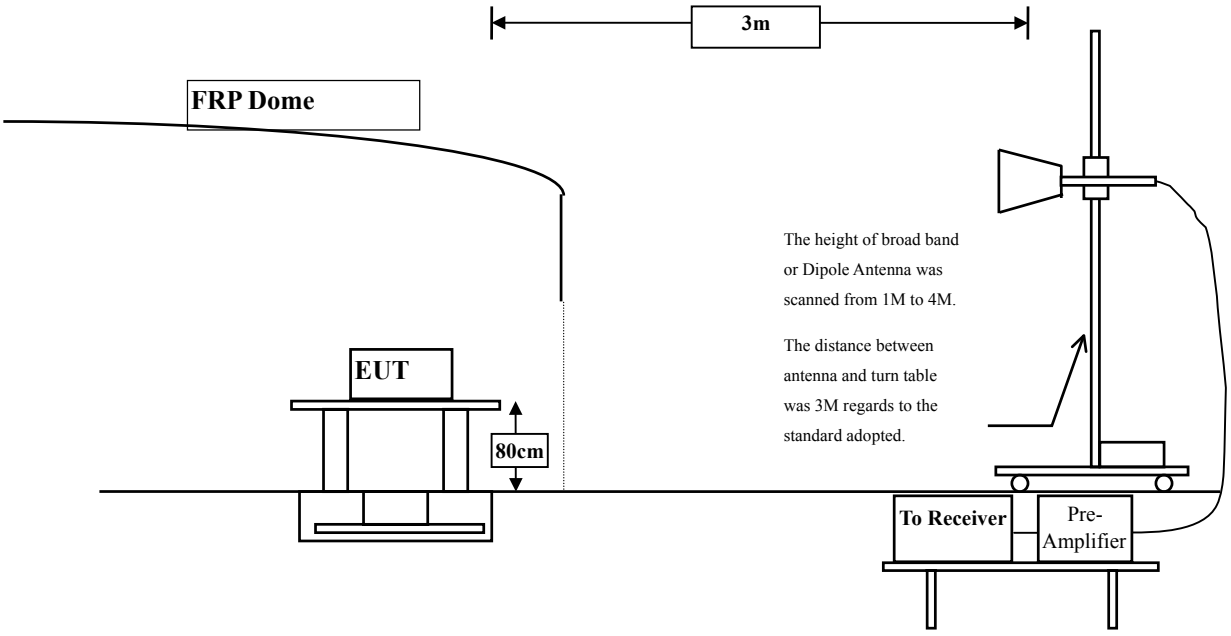
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



3.3. 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)

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 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 between 1 meter and 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.
Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.
The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.
The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

3.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

3.6. Test Result of Radiated Emission

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	40.480	43.741	-30.259	74.000
7236.000	10.650	36.810	47.460	-26.540	74.000
9648.000	13.337	36.760	50.096	-23.904	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	46.800	53.221	-20.779	74.000
7236.000	11.495	36.720	48.215	-25.785	74.000
9648.000	13.807	36.130	49.936	-24.064	74.000
Average Detector:					
4824.000	6.421	43.060	49.481	-4.519	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	44.200	47.461	-26.539	74.000
7311.000	11.795	35.550	47.344	-26.656	74.000
9748.000	12.635	37.140	49.775	-24.225	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	49.710	55.521	-18.479	74.000
7311.000	12.630	35.250	47.879	-26.121	74.000
9748.000	13.126	37.650	50.776	-23.224	74.000
Average					
Detector:					
4874.000	5.812	46.080	51.891	-2.109	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	43.780	46.637	-27.363	74.000
7386.000	12.127	35.600	47.728	-26.272	74.000
9848.000	12.852	36.320	49.173	-24.827	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	49.270	54.790	-19.210	74.000
7386.000	13.254	35.440	48.694	-25.306	74.000
9848.000	13.367	37.180	50.547	-23.453	74.000
Average					
Detector:					
4924.000	5.521	46.730	52.250	-1.750	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	38.110	41.371	-32.629	74.000
7236.000	10.650	35.860	46.510	-27.490	74.000
9648.000	13.337	36.270	49.606	-24.394	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	42.970	49.391	-24.609	74.000
7236.000	11.495	36.280	47.775	-26.225	74.000
9648.000	13.807	36.030	49.836	-24.164	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	43.520	46.557	-27.443	74.000
7311.000	11.795	35.530	47.324	-26.676	74.000
9748.000	12.635	36.660	49.295	-24.705	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	50.070	55.881	-18.119	74.000
7311.000	12.630	35.510	48.139	-25.861	74.000
9748.000	13.126	36.520	49.646	-24.354	74.000
Average					
Detector:					
4874.000	5.812	35.570	41.381	-12.619	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	38.300	41.157	-32.843	74.000
7386.000	12.127	35.930	48.058	-25.942	74.000
9848.000	12.852	36.980	49.833	-24.167	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	44.600	50.120	-23.880	74.000
7386.000	13.254	35.740	48.994	-25.006	74.000
9848.000	13.367	36.580	49.947	-24.053	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	17.106	35.360	52.467	-21.533	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11490.000	18.034	35.720	53.755	-20.245	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	16.809	35.670	52.479	-21.521	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11570.000	17.698	35.810	53.508	-20.492	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11650.000	16.158	34.780	50.938	-23.062	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11650.000	17.274	35.850	53.125	-20.875	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	38.340	41.601	-32.399	74.000
7236.000	10.650	35.990	46.640	-27.360	74.000
9648.000	13.337	35.930	49.266	-24.734	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	42.870	49.291	-24.709	74.000
7236.000	11.495	36.010	47.505	-26.495	74.000
9648.000	13.807	36.490	50.296	-23.704	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	39.680	42.717	-31.283	74.000
7311.000	11.795	35.500	47.294	-26.706	74.000
9748.000	12.635	37.120	49.755	-24.245	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	46.650	52.461	-21.539	74.000
7311.000	12.630	35.890	48.519	-25.481	74.000
9748.000	13.126	36.400	49.526	-24.474	74.000
Average					
Detector:					
4874.000	5.812	31.630	37.441	-16.559	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	37.600	40.457	-33.543	74.000
7386.000	12.127	35.480	47.608	-26.392	74.000
9848.000	12.852	36.550	49.403	-24.597	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	42.100	47.620	-26.380	74.000
7386.000	13.254	35.680	48.934	-25.066	74.000
9848.000	13.367	36.980	50.347	-23.653	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	3.171	38.540	41.711	-32.289	74.000
7266.000	11.162	35.940	47.102	-26.898	74.000
9688.000	12.964	36.450	49.415	-24.585	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.178	38.020	44.198	-29.802	74.000
7266.000	11.982	36.240	48.222	-25.778	74.000
9688.000	13.507	36.970	50.478	-23.522	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.880	40.917	-33.083	74.000
7311.000	11.795	35.870	47.664	-26.336	74.000
9748.000	12.635	36.080	48.715	-25.285	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	44.730	50.541	-23.459	74.000
7311.000	12.630	35.940	48.569	-25.431	74.000
9748.000	13.126	36.960	50.086	-23.914	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	38.350	41.265	-32.735	74.000
7356.000	11.995	36.410	48.404	-25.596	74.000
9808.000	12.475	37.240	49.715	-24.285	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	38.420	43.951	-30.049	74.000
7356.000	13.005	35.870	48.874	-25.126	74.000
9808.000	12.901	37.550	50.451	-23.549	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5745MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	17.106	35.170	52.277	-21.723	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11490.000	18.034	35.420	53.455	-20.545	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	16.809	35.100	51.909	-22.091	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
11570.000	17.698	35.470	53.168	-20.832	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11650.000	16.158	35.030	51.188	-22.812	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11650.000	17.274	35.180	52.455	-21.545	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11510.000	17.124	35.170	52.294	-21.706	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11510.000	18.081	35.550	53.631	-20.369	74.000
Average					
Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5795 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11590.000	16.701	35.090	51.790	-22.210	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11590.000	17.567	35.460	53.026	-20.974	74.000
Average Detector:					
--					

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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
255.040	-5.098	41.456	36.358	-9.642	46.000
336.520	-3.860	36.669	32.809	-13.191	46.000
398.600	-2.268	33.579	31.311	-14.689	46.000
499.480	0.048	35.735	35.783	-10.217	46.000
600.360	3.977	30.351	34.328	-11.672	46.000
932.100	6.922	25.498	32.420	-13.580	46.000
Vertical					
159.980	-6.185	43.026	36.841	-6.659	43.500
299.660	-6.855	39.922	33.067	-12.933	46.000
398.600	-4.678	32.115	27.437	-18.563	46.000
499.480	-0.852	32.476	31.624	-14.376	46.000
600.360	-2.833	28.624	25.791	-20.209	46.000
961.200	7.260	28.069	35.329	-18.671	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
94.020	-8.189	42.626	34.436	-9.064	43.500
255.040	-5.098	43.387	38.289	-7.711	46.000
398.600	-2.268	35.717	33.449	-12.551	46.000
499.480	0.048	35.219	35.267	-10.733	46.000
625.580	1.770	30.236	32.006	-13.994	46.000
928.220	6.893	32.704	39.597	-6.403	46.000
Vertical					
159.980	-6.185	39.382	33.197	-10.303	43.500
299.660	-6.855	38.651	31.796	-14.204	46.000
398.600	-4.678	33.751	29.073	-16.927	46.000
499.480	-0.852	31.428	30.576	-15.424	46.000
600.360	-2.833	28.329	25.496	-20.504	46.000
961.200	7.260	28.804	36.064	-17.936	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
255.040	-5.098	43.110	38.012	-7.988	46.000
297.720	-3.633	41.432	37.800	-8.200	46.000
499.480	0.048	35.646	35.694	-10.306	46.000
600.360	3.977	29.316	33.293	-12.707	46.000
666.320	2.031	29.276	31.308	-14.692	46.000
926.280	6.491	31.701	38.192	-7.808	46.000
Vertical					
336.520	-4.630	36.237	31.607	-14.393	46.000
398.600	-4.678	31.258	26.580	-19.420	46.000
499.480	-0.852	31.665	30.813	-15.187	46.000
699.300	0.695	27.036	27.731	-18.269	46.000
846.740	2.601	22.905	25.506	-20.494	46.000
961.200	7.260	28.544	35.804	-18.196	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
299.660	-3.585	39.272	35.687	-10.313	46.000
499.480	0.048	35.273	35.321	-10.679	46.000
600.360	3.977	29.370	33.347	-12.653	46.000
722.580	3.496	27.963	31.459	-14.541	46.000
885.540	6.102	27.314	33.416	-12.584	46.000
972.840	6.802	26.376	33.178	-20.822	54.000
Vertical					
336.520	-4.630	36.711	32.081	-13.919	46.000
398.600	-4.678	34.362	29.684	-16.316	46.000
499.480	-0.852	30.818	29.966	-16.034	46.000
600.360	-2.833	28.462	25.629	-20.371	46.000
840.920	2.961	25.134	28.095	-17.905	46.000
961.200	7.260	27.440	34.700	-19.300	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
255.040	-5.098	43.444	38.346	-7.654	46.000
398.600	-2.268	33.309	31.041	-14.959	46.000
499.480	0.048	35.750	35.798	-10.202	46.000
600.360	3.977	29.247	33.224	-12.776	46.000
800.180	5.141	25.431	30.572	-15.428	46.000
932.100	6.922	25.945	32.867	-13.133	46.000
Vertical					
299.660	-6.855	38.820	31.965	-14.035	46.000
398.600	-4.678	32.460	27.782	-18.218	46.000
499.480	-0.852	32.183	31.331	-14.669	46.000
600.360	-2.833	27.141	24.308	-21.692	46.000
769.140	2.923	25.251	28.174	-17.826	46.000
961.200	7.260	28.327	35.587	-18.413	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
268.620	-4.942	42.673	37.731	-8.269	46.000
400.540	-2.276	32.844	30.568	-15.432	46.000
499.480	0.048	35.410	35.458	-10.542	46.000
625.580	1.770	29.702	31.472	-14.528	46.000
854.500	6.626	26.160	32.786	-13.214	46.000
932.100	6.922	26.811	33.733	-12.267	46.000
Vertical					
297.720	-7.143	37.683	30.541	-15.459	46.000
336.520	-4.630	36.166	31.536	-14.464	46.000
499.480	-0.852	32.813	31.961	-14.039	46.000
699.300	0.695	26.113	26.808	-19.192	46.000
800.180	2.801	24.828	27.629	-18.371	46.000
961.200	7.260	27.989	35.249	-18.751	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Centrino® Advanced-N 6230
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
255.040	-5.098	43.291	38.193	-7.807	46.000
336.520	-3.860	36.751	32.891	-13.109	46.000
398.600	-2.268	33.418	31.150	-14.850	46.000
499.480	0.048	35.531	35.579	-10.421	46.000
600.360	3.977	29.792	33.769	-12.231	46.000
891.360	5.888	27.831	33.719	-12.281	46.000
Vertical					
297.720	-7.143	38.793	31.651	-14.349	46.000
336.520	-4.630	38.748	34.118	-11.882	46.000
499.480	-0.852	32.138	31.286	-14.714	46.000
699.300	0.695	26.932	27.627	-18.373	46.000
932.100	6.152	26.401	32.553	-13.447	46.000
961.200	7.260	27.453	34.713	-19.287	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Band Edge

4.1. Test Equipment

RF Conducted Measurement

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2011

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.

RF Radiated Measurement:

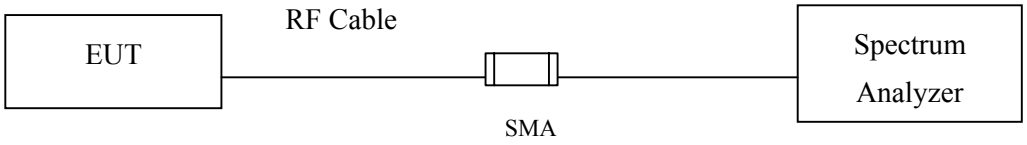
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2011
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

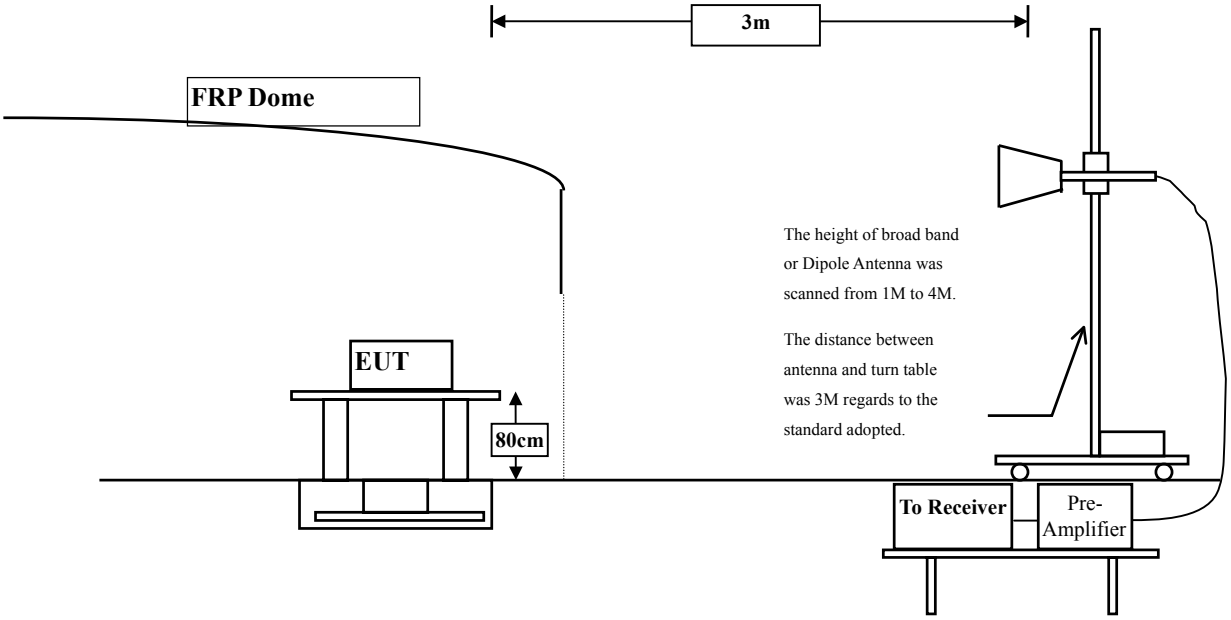
Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



4.3. 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.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 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.

4.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

4.6. Test Result of Band Edge

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps

Frequency (MHz)	Power Setting Measured (dBm)
	(Average)
2412	16.34

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	31.639	55.57	87.208	Peak
Horizontal	2412	31.639	51.1	82.738	Average
Vertical	2412	30.95	73.96	104.909	Peak
Vertical	2412	30.95	69.27	100.219	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	87.208	44.54	42.668	74.000	Peak
Horizontal	2389.2	82.738	60.77	21.968	54.000	Average
Vertical	2390	104.909	44.54	60.369	74.000	Peak
Vertical	2389.2	100.219	60.77	39.449	54.000	Average

Note:

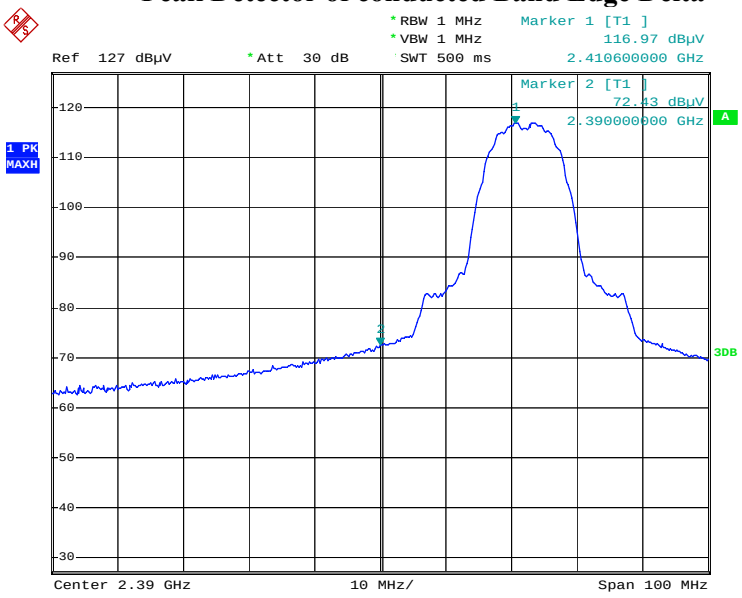
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

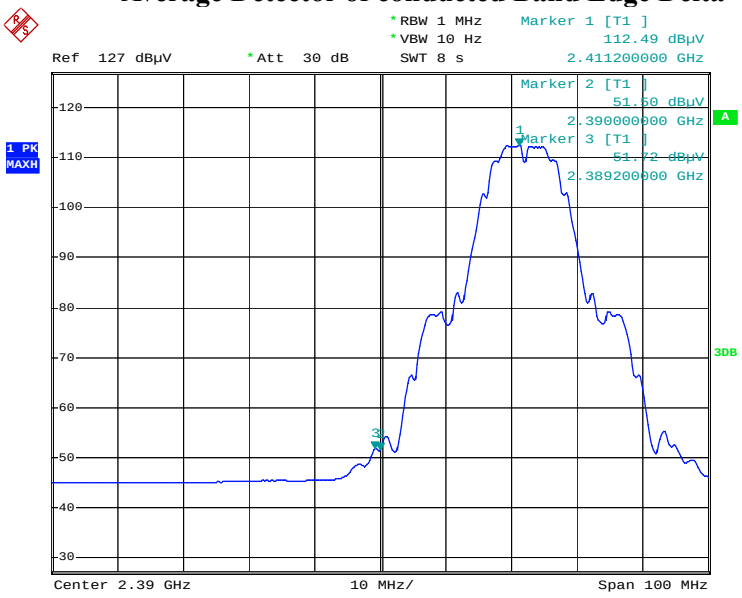
Peak Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:02:38

Average Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:03:18

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps

Frequency (MHz)	Power Setting Measured (dBm)
	(Average)
2462	16.44

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	54.58	86.599	Peak
Horizontal	2462	32.019	50.02	82.039	Average
Vertical	2462	31.29	72.71	104	Peak
Vertical	2462	31.29	68	99.29	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	86.599	45.67	40.929	74.000	Peak
Horizontal	2483.5	82.039	59.43	22.609	54.000	Average
Vertical	2483.5	104	45.67	58.33	74.000	Peak
Vertical	2483.5	99.29	59.43	39.86	54.000	Average

Note:

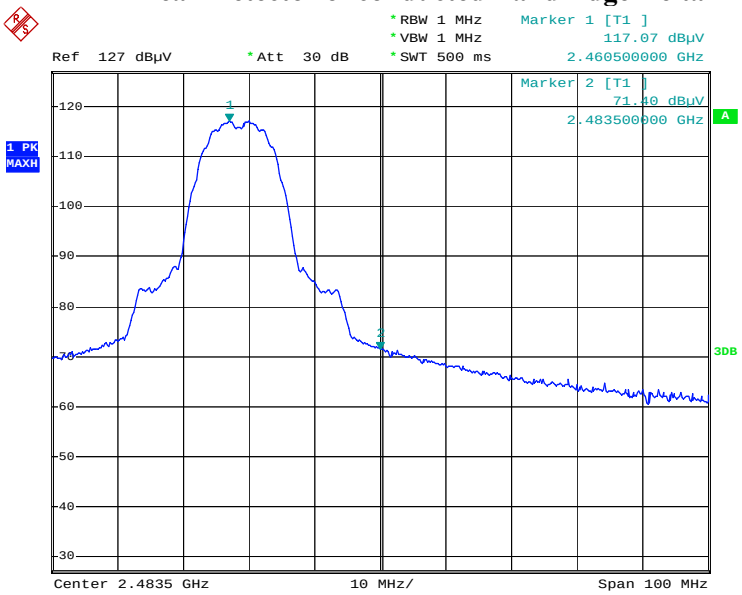
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

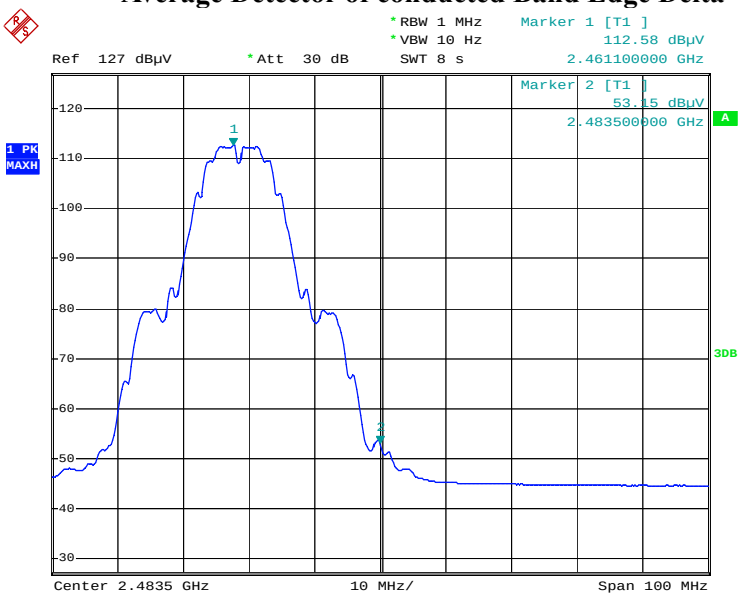
Peak Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:07:00

Average Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:07:18

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps

Frequency (MHz)	Power Setting Measured (dBm)
	(Average)
2412	13.73

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	31.639	56.57	88.208	Peak
Horizontal	2412	31.639	46.69	78.328	Average
Vertical	2412	30.95	74.31	105.259	Peak
Vertical	2412	30.95	64.07	95.019	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	88.208	40.35	47.858	74.000	Peak
Horizontal	2390	78.328	49.39	28.938	54.000	Average
Vertical	2390	105.259	40.35	64.909	74.000	Peak
Vertical	2390	95.019	49.39	45.629	54.000	Average

Note:

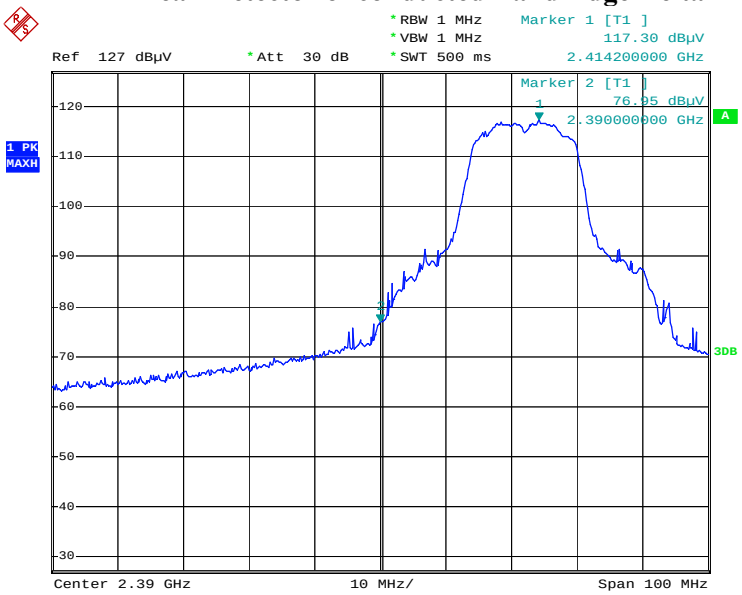
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

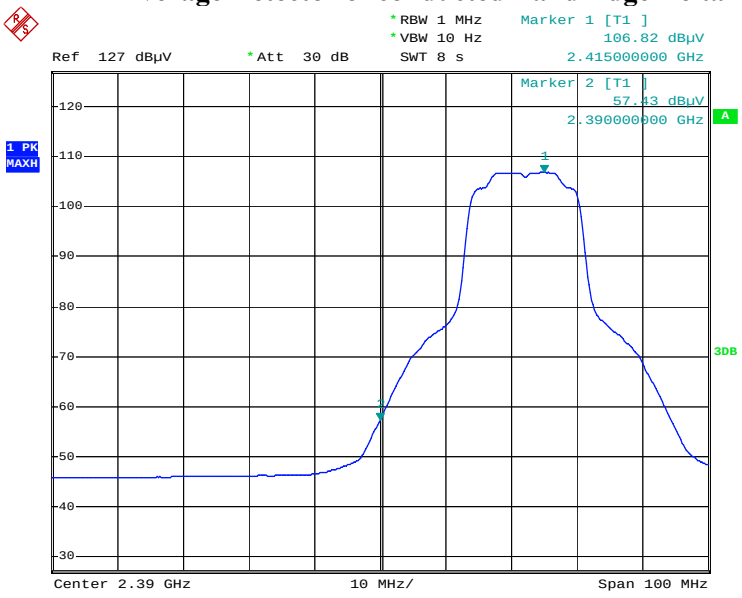
Peak Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:04:19

Average Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:04:42

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps

Frequency (MHz)	Power Setting Measured (dBm)
	(Average)
2462	13.45

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	55.54	87.559	Peak
Horizontal	2462	32.019	45.38	77.399	Average
Vertical	2462	32.019	72.19	104.209	Peak
Vertical	2462	32.019	61.98	93.999	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	87.559	39.06	48.499	74.000	Peak
Horizontal	2483.5	77.399	47.7	29.699	54.000	Average
Vertical	2483.5	104.209	39.06	65.149	74.000	Peak
Vertical	2483.5	93.999	47.7	46.299	54.000	Average

Note:

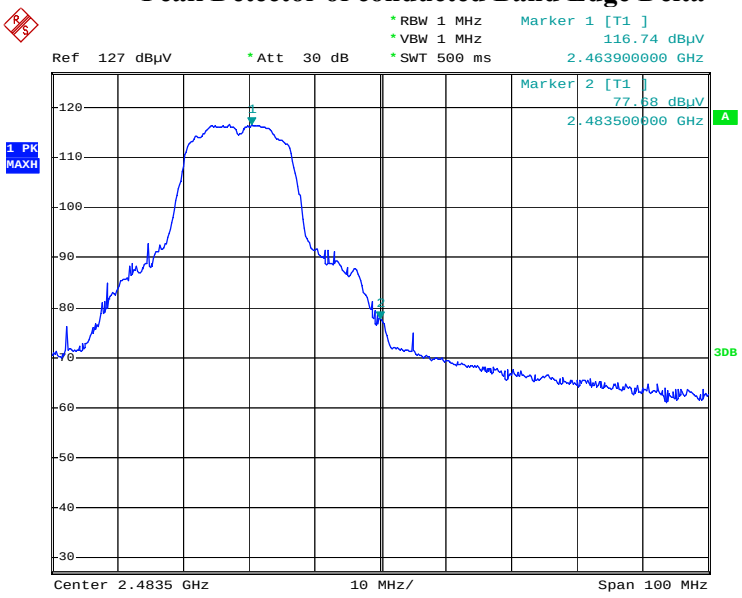
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

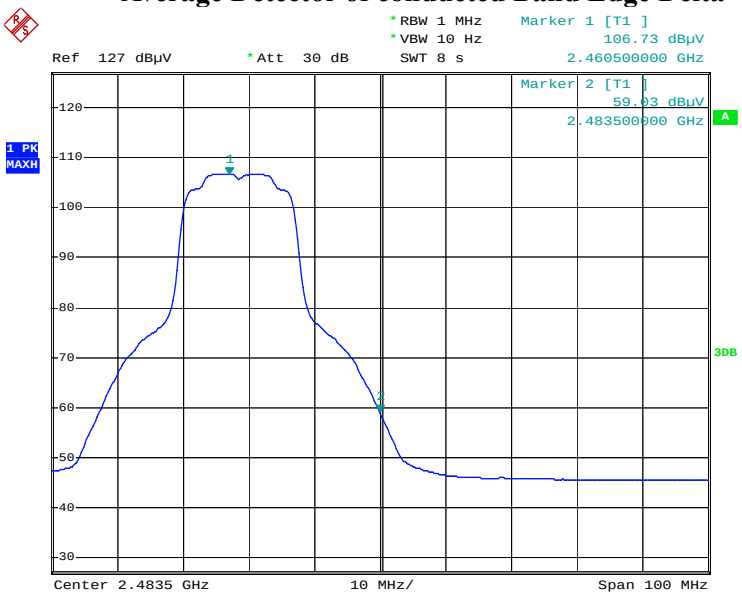
Peak Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:05:58

Average Detector of conducted Band Edge Delta



5190B-2

Date: 8.MAR.2012 05:06:23

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

Frequency (MHz)	Power Setting Measured (dBm) (Average)	
	Chain A	Chain B
2412	11.16	11.29

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	31.639	57.05	88.688	Peak
Horizontal	2412	31.639	43.94	75.578	Average
Vertical	2412	30.95	75.72	106.669	Peak
Vertical	2412	30.95	62.61	93.559	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data (Chain A)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	88.688	42.05	46.638	74.000	Peak
Horizontal	2390	75.578	48.58	26.998	54.000	Average
Vertical	2390	106.669	42.05	64.619	74.000	Peak
Vertical	2390	93.559	48.58	44.979	54.000	Average

Band Edge Test Data (Chain B)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2388.88	88.688	42.21	46.478	74.000	Peak
Horizontal	2390	75.578	47.33	28.248	54.000	Average
Vertical	2388.88	106.669	42.21	64.459	74.000	Peak
Vertical	2390	93.559	47.33	46.229	54.000	Average

Note:

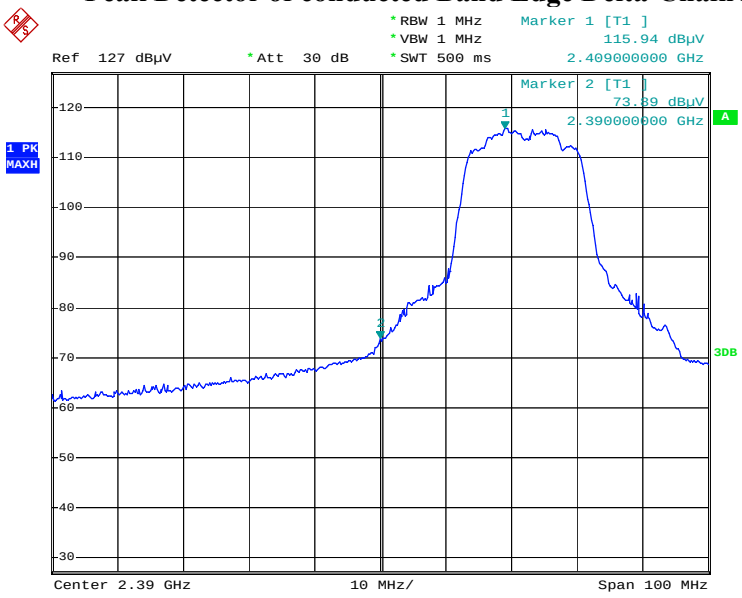
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

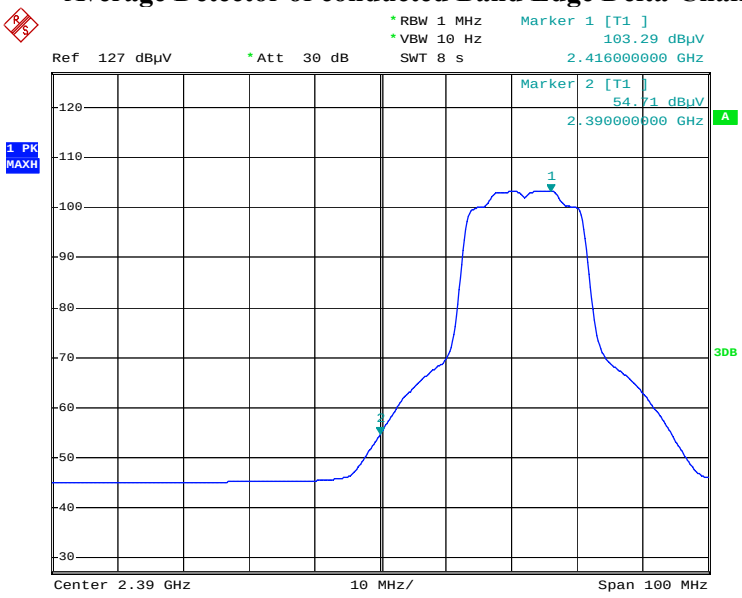
Peak Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:30:38

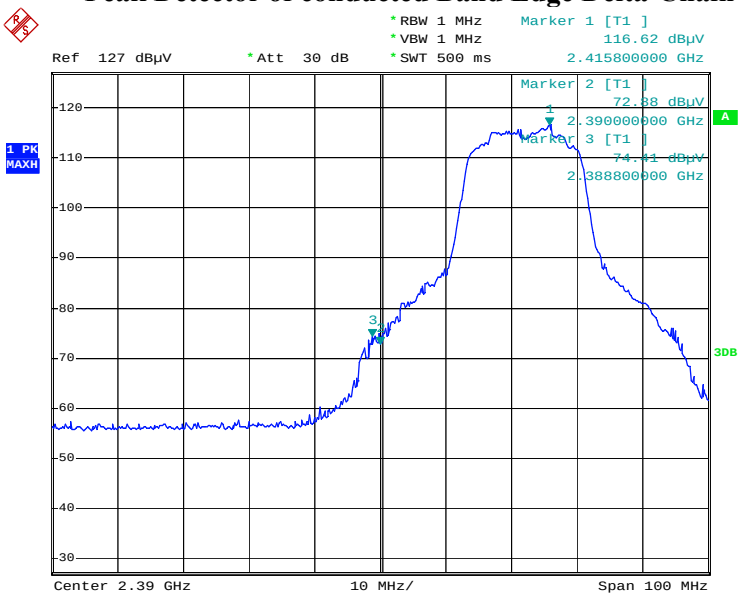
Average Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:31:23

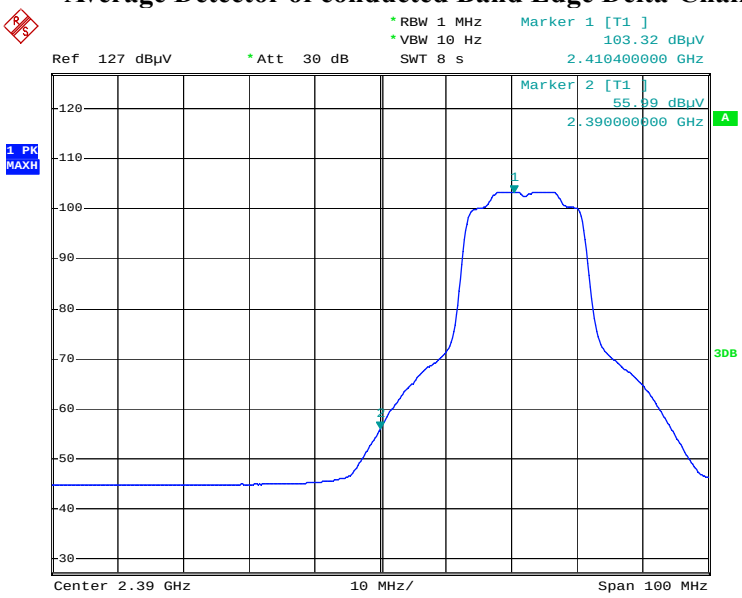
Peak Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:33:44

Average Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:34:14

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

Frequency (MHz)	Power Setting Measured (dBm) (Average)	
	Chain A	Chain B
2462	11.25	10.70

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	54.73	86.749	Peak
Horizontal	2462	32.019	42.54	74.559	Average
Vertical	2462	32.019	73.66	105.679	Peak
Vertical	2462	32.019	60.27	92.289	Average

Note: 1:Spectrum Analyzer setting:
Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data (Chain A)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	86.749	41.62	45.129	74.000	Peak
Horizontal	2483.5	74.559	46.97	27.589	54.000	Average
Vertical	2483.5	105.679	41.62	64.059	74.000	Peak
Vertical	2483.5	92.289	46.97	45.319	54.000	Average

Band Edge Test Data (Chain B)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	86.749	41.69	45.059	74.000	Peak
Horizontal	2483.5	74.559	47.11	27.449	54.000	Average
Vertical	2483.5	105.679	41.69	63.989	74.000	Peak
Vertical	2483.5	92.289	47.11	45.179	54.000	Average

Note:

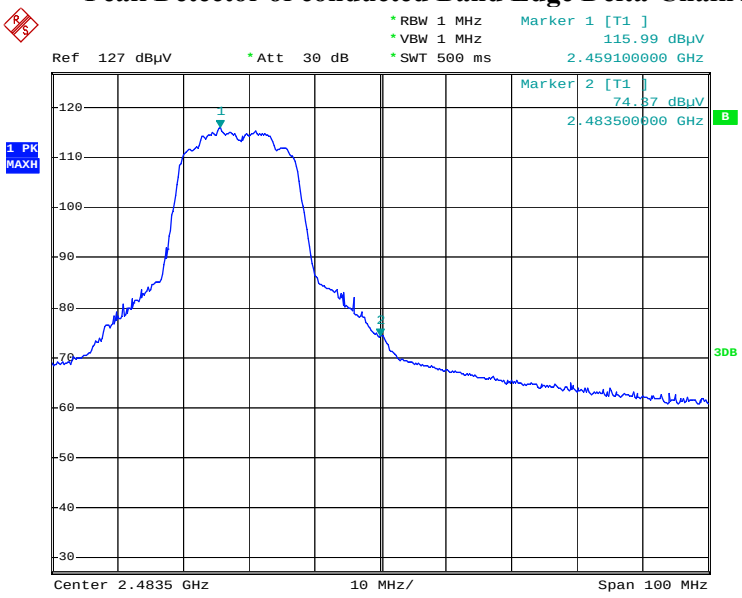
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

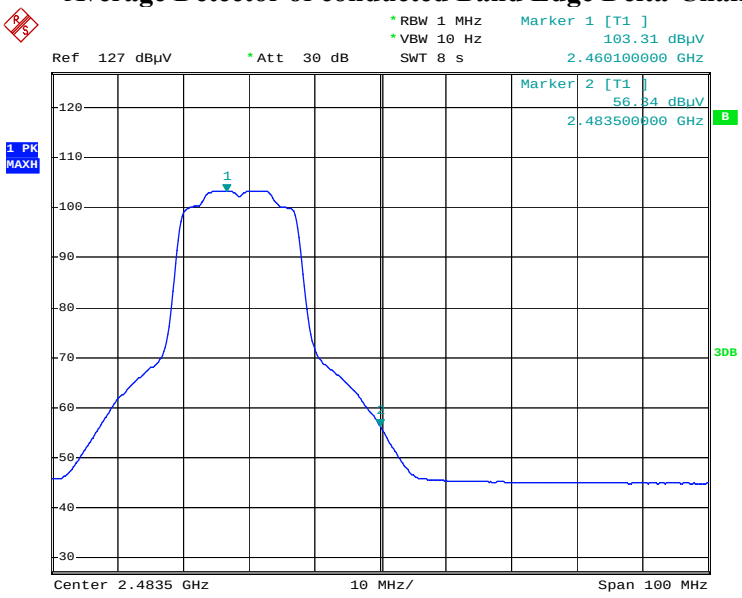
Peak Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:36:16

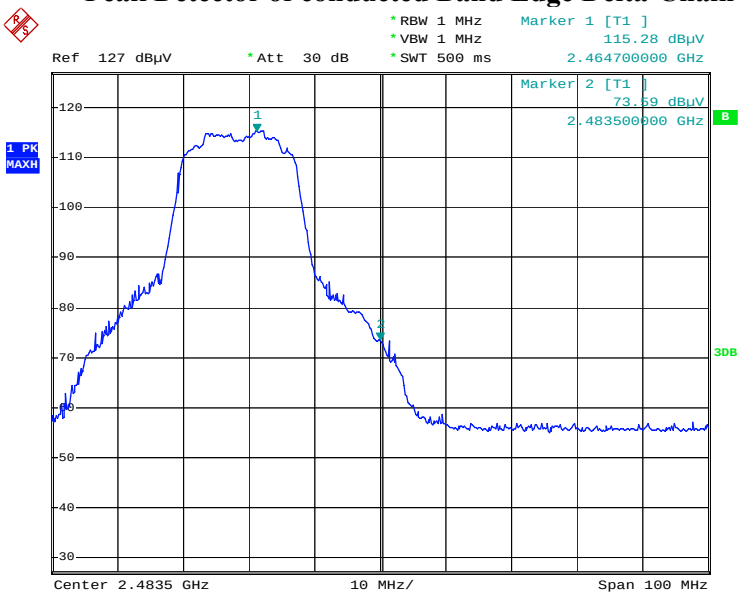
Average Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:36:46

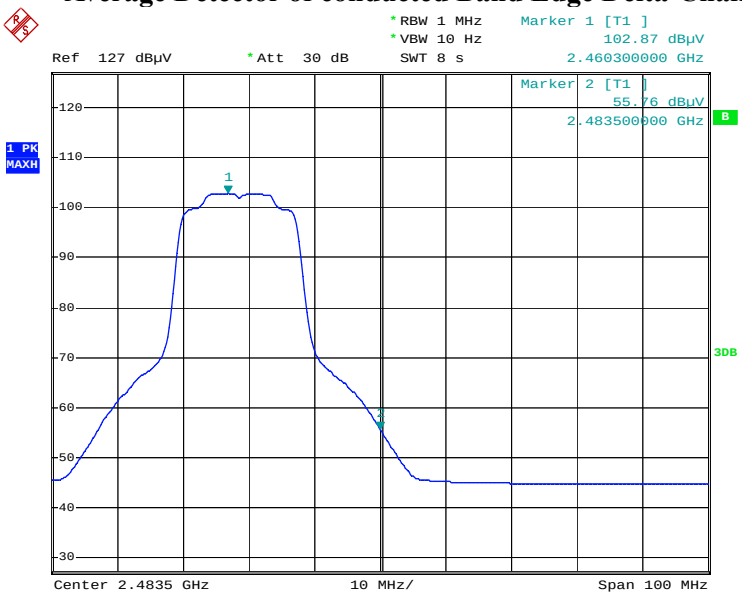
Peak Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:34:59

Average Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:35:27

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

Frequency (MHz)	Power Setting Measured (dBm) (Average)	
	Chain A	Chain B
2422	7.16	7.09

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2422	31.715	49.94	81.655	Peak
Horizontal	2422	31.715	37.06	68.775	Average
Vertical	2422	31.017	68.9	99.917	Peak
Vertical	2422	31.017	54.69	85.707	Average

Note: 1:Spectrum Analyzer setting:
Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data (Chain A)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	81.655	37.67	43.985	74.000	Peak
Horizontal	2390	68.775	40.88	27.895	54.000	Average
Vertical	2390	99.917	37.67	62.247	74.000	Peak
Vertical	2390	85.707	40.88	44.827	54.000	Average

Band Edge Test Data (Chain B)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	81.655	35.67	45.985	74.000	Peak
Horizontal	2390	68.775	39.06	29.715	54.000	Average
Vertical	2390	99.917	35.67	64.247	74.000	Peak
Vertical	2390	85.707	39.06	46.647	54.000	Average

Note:

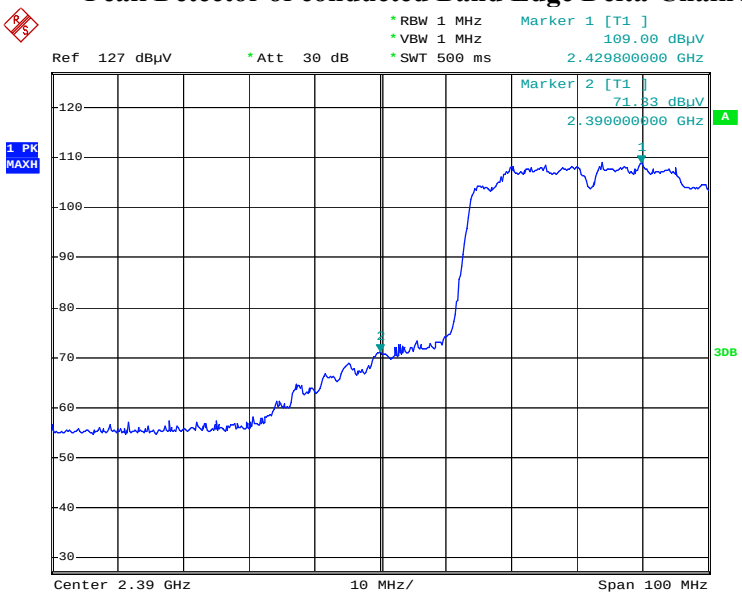
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

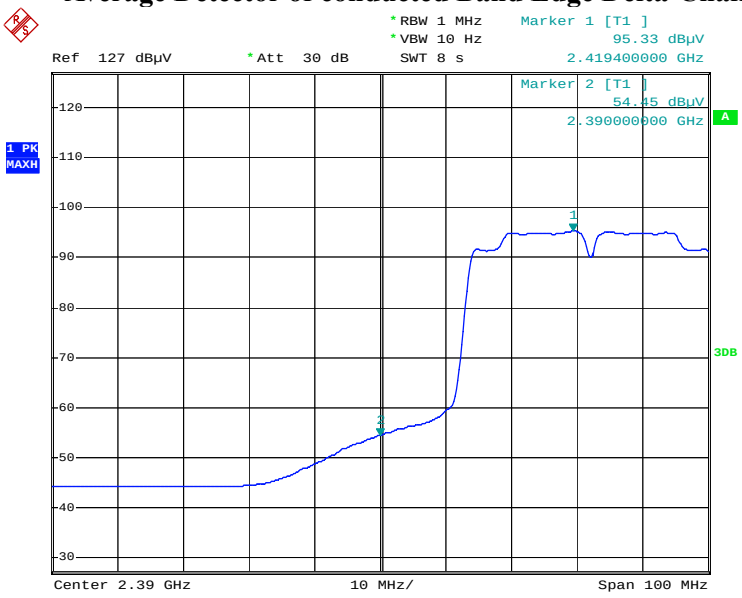
Peak Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:38:11

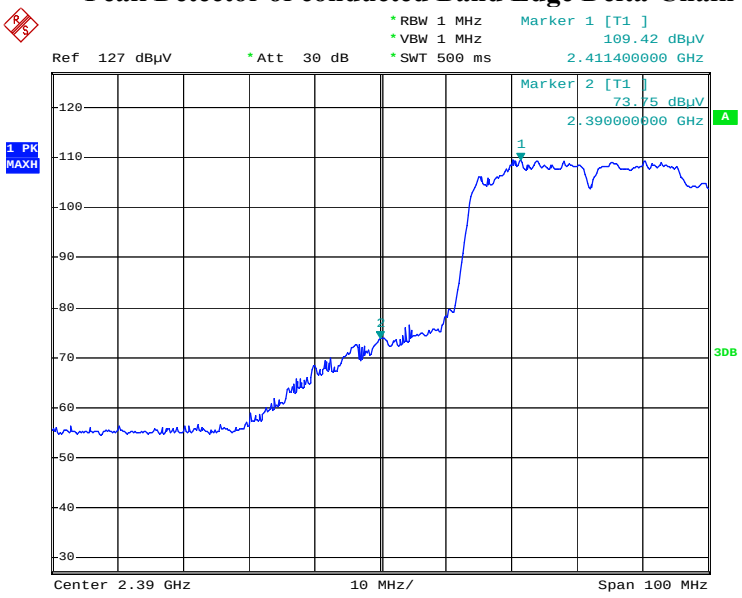
Average Detector of conducted Band Edge Delta-Chain A



5190B-2

Date: 29.FEB.2012 11:38:49

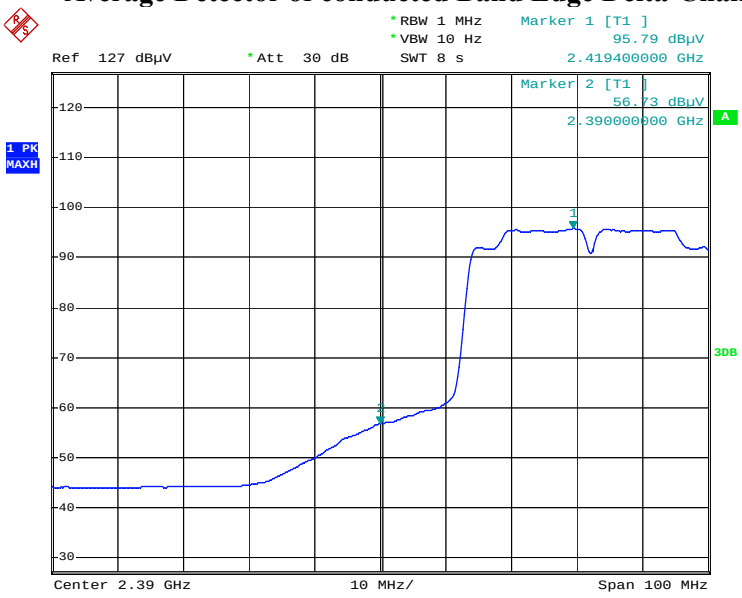
Peak Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:40:20

Average Detector of conducted Band Edge Delta-Chain B



5190B-2

Date: 29.FEB.2012 11:41:11

Product : Intel® Centrino® Advanced-N 6230
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

Frequency (MHz)	Power Setting Measured (dBm) (Average)	
	Chain A	Chain B
2452	6.66	6.13

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2452	31.944	47.71	79.654	Peak
Horizontal	2452	31.944	34.46	66.404	Average
Vertical	2452	31.222	66.89	98.112	Peak
Vertical	2452	31.222	53.4	84.622	Average

Note: 1:Spectrum Analyzer setting:

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

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data (Chain A)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2484.5	79.654	37.86	41.794	74.000	Peak
Horizontal	2483.5	66.404	41.25	25.154	54.000	Average
Vertical	2484.5	98.112	37.86	60.252	74.000	Peak
Vertical	2483.5	84.622	41.25	43.372	54.000	Average

Band Edge Test Data (Chain B)

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2484.5	79.654	39.27	40.384	74.000	Peak
Horizontal	2483.5	66.404	41.82	24.584	54.000	Average
Vertical	2484.5	98.112	39.27	58.842	74.000	Peak
Vertical	2483.5	84.622	41.82	42.802	54.000	Average

Note:

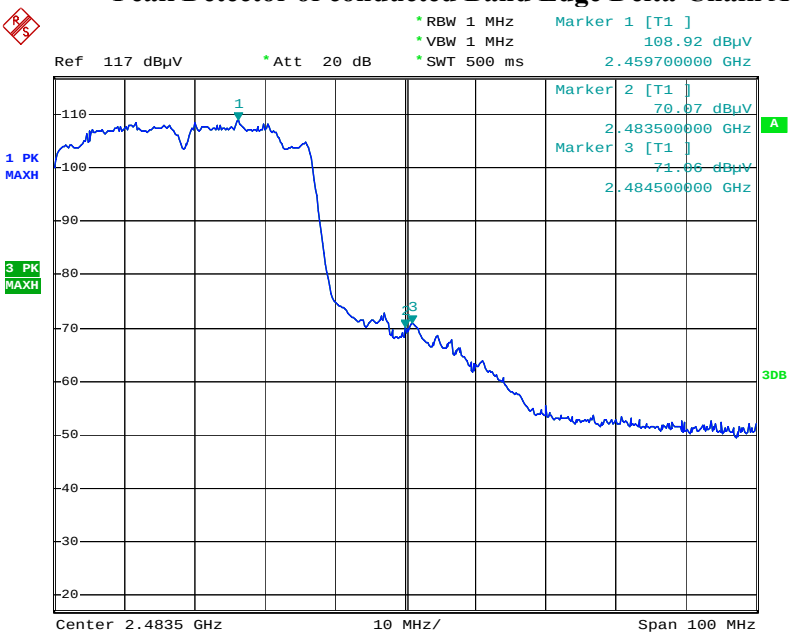
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

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-Chain A

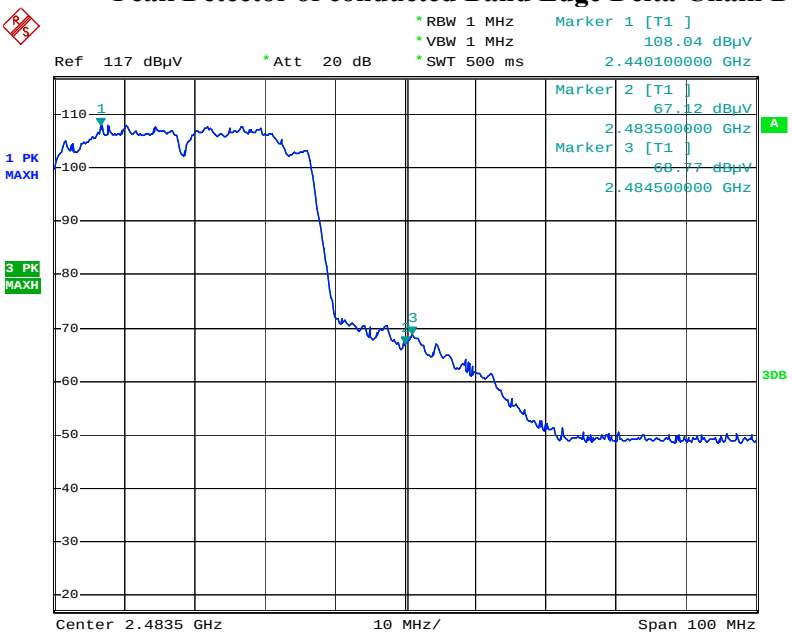


Date: 23.MAR.2012 10:41:08

Average Detector of conducted Band Edge Delta-Chain A

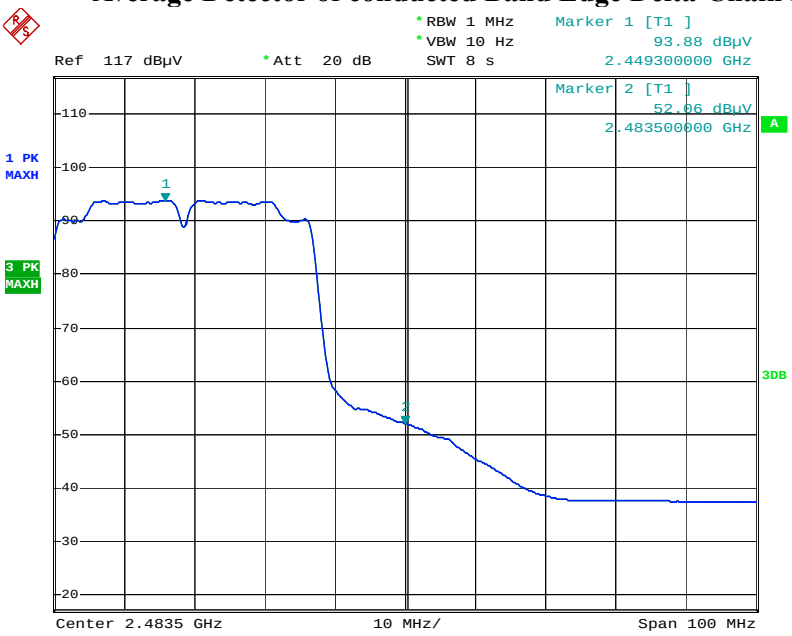
Date: 23.MAR.2012 10:40:23

Peak Detector of conducted Band Edge Delta-Chain B



Date: 23.MAR.2012 10:42:08

Average Detector of conducted Band Edge Delta-Chain B



Date: 23.MAR.2012 10:42:34

5. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs