

# (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



The test results relate only to the samples tested.

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## 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.

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(Engineer / Henk Huang)

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(Manager / Vincent Lin)

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Attachment 2: EUT Detailed Photographs

#### 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	Air 802 Antenna: ANRD245X05-RTP	-1.65 dBi for 2.4 GHz
	+ Hirose	Amphenol Connector: 901-10097	-0.80 dBi for 5.725~5.850GHz
		Hirose Cable: U.FL-2LP-04N1-A-(100)	

Note:

1. The antenna of EUT is conform to FCC 15.203

## 

802.11b/g	y/n-20MHz Cente	r Frequency of	Each Channe	el:			
Chann	el Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel (	01: 2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel (	)5: 2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel (	)9: 2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		
802.11a/r	-20MHz Center V	Working Frequ	ency of Each	Channel:			
Chann	el 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-4	40MHz (2.4G Bar	nd) Center Wor	king Frequen	cy of Each Cha	annel:		
Chann	el 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-4	40MHz (5G Band	) Center Worki	ing Frequency	of Each Chan	nel:		
Chann	el Frequency	Channel	Frequency				
Channel	151: 5755 MHz	Channel 159:	5795 MHz				
No	te:						
1.	This device is ar	n Intel® Centri	no® Advance	d-N 6230 with	a built-in 2.4	GHz and 5GH	Z
	WLAN +Bluetoo	oth transceiver,	, this report fo	or WLAN.			
2.	2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to					ected to	
	perform the test.						
3.	Lowest and high	est data rates a	re tested in ea	ach mode. Only	y worst case i	s 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.	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.					on.	
	(A:	ntenna type: D	ipole antenna	)			
	× ×	J 1	•				

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 : <u>http://www.quietek.com/tw/ctg/cts/accreditations.htm</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <u>http://www.quietek.com/</u>

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 : <u>service@quietek.com</u>					

FCC Accreditation Number: TW1014

#### 2. Peak Power Output

#### 2.1. Test Equipment

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

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 Peak (MHz) 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:

🎾 Agilent Spect	rum Analyzer -	Channel Powe								
<mark>₩</mark> ∟ Span 20.0	50 Ω DOO MHz		β	C SE	NSE:INT req: 2.41200	0000 GHz	ALIGN AUTO	04:47:37 Radio Std	PM Mar 21, 2012 I: None	Span
10 dB/div	Input: RF #IFGain:Low #Atten: 30 dB Avg Hold>100/100 Radio Device: BTS								Span 20.000 MHz	
			354							
0		-					har	-		
-10										Full Span
-40				5 						
-50 -60										
-70										
Center 2.4 #Res BW	12 GHz 1 MHz			#VE	з амн	z		Spa #Swe	an 20 MHz ep 50 ms	LastSpan
Chann	Channel Power Power Spectral Density									
	16.28 dBm/ 10.29 MHz -53.84 dBm/Hz									
MSG							STATUS	5		



#### Figure Channel 6:

🗊 Agilent Spectrum Analyzer - C	hannel Power								
Center Freq 2.43700	00000 GHz	C SENSE:INT Center Freq: 2.437000000 GHz	ALIGN AUTO	04:50:35 PM Mar 21, 2012 Radio Std: None	Freq / Channel				
Inp	Input: RF TING: Free Run Avg Hold>100/100 #IFGain:Low #Atten: 30 dB Radio Device: BTS								
10 dB/div Ref 20 dl	Bm								
10					Center Freq				
0					2.437000000 GHz				
-10									
-30									
-40									
-50									
-70									
Center 2 437 GHz				Spap 20 MHz	CF Step 2.000000 MHz				
#Res BW 1 MHz		#VBW 3 MHz		#Sweep 50 ms	<u>Auto</u> Man				
Channel Power Power Spectral Density									
16.69	dBm/ 10.29 N	инz -53	.44 dB	m/Hz					
MSG			STATUS						

#### Figure Channel 11:



Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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:

🔍 Agilent Spectrum Analyzer - Channel Power								
🗱 L 50 Ω Span 20.000 MHz	AC SENSE:INT Center Freq: 2.437000000 GH	ALIGN AUTO 05:02:46 PM Mar 21, 2012 z Radio Std: None	Span					
Input: RF #IFGain:1	Input: RF Trig: Free Run Avg Hold>100/100 #IFGain:Low #Atten: 30 dB Radio Device: BTS							
10 dB/div Ref 20 dBm			20.000 MHz					
10								
0	and the and the second se	minister many man and the second						
-10								
-20			Full Span					
-40								
-50								
-60								
-70			Last Snan					
Center 2.437 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 20 MHz #Sweep 50 ms						
Channel Power	Channel Power Power Spectral Density							
15.51 dBm/ 16								
MSG		STATUS						

#### Figure Channel 11:



Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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)	Frequency Peak (MHz) Power		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:





DAgilent Spectru	m Analyzer - C	hannel Powe	ar -							
UXI L 5	0Ω			AC SE	NSE:INT	0000 CH-	ALIGN AUTO	05:47:23 P	M Mar 21, 2012	Span
Span 20.00		ut: RF	(-	Trig: Free	e Run	Avg Hold:	> 100/100	Radio Sta	. None	
		#IF(	Gain:Low	#Atten: 3	0 dB	859		Radio Dev	vice: BTS	Span
										20.000 MHz
10 dB/div	Ref 20 d	Bm								
Log										
10				-						
0	and a state of the second s	**************************************	<b>∊</b> ∼⋎∊ <b>∊</b> ⋡⋴⋭⋴ <b>⋟</b> ⋹⋫⋴⋓⋎∊	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- representation	****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	an tark and and		
-10									$\mathbf{\lambda}$	
- wh									2 hours	
-20						-				Full Span
-30									-	
-40										
-50										
-00										
-70										
Conton 5 70								0	- 20 MIL	Last Span
#Res BM 1	MH7			#\/F	NAT 3 MH	7		spa #Swe	en 50 ms	•
miles but Th	11112			<i>n</i> v L	<b>744</b> 0 14111	5		<b><i>n</i>ow</b> co		
Chonnel	Dewer				Deve	Cneets	ol Deno	14.7		
Channe	Channel Power Spectral Density									
	50.40									
	14.04 dBm/ 16.44 MHz -38.12 dBm/Hz									
MSG							STATUS			
17 - 18 - 18 - 18 - 18 - 18 - 18 - 18 -										

#### 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	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
	(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
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))







					(0	-)		
🎾 Agilent Spe	ctrum Analyzer -	Channel Power						
LXI L	50 Ω		AC SE	INSE:INT	ALIGN AUTO	05:16:13 P	M Mar 21, 2012	Snan
Span 20	.000 MHz		Center F	req: 2.437000000 G	9Hz  Hald:>100/100	Radio Std:	None	opun
	In	put: RF #IEGain:I	w #Atten: 3	0 dB	11010.2 1007100	Radio Dev	ice: BTS	Cnon
r		in ounit					1	span
								20.000 MHz
10 dB/div	Ref 20 (	dBm						
Log								
10	-							
0		and the second s	Land a water and a state of the server show	and the second s	worman and the second s			
							- manne	
-10	*							
-20							Y	
								Full Span
-30								
-40								
100								
-50	·							
-60						-		
-70	·							
								Last Span
Center 2.	437 GHz					Spai	n 20 MHz	Lustopui
#Res BW	1 MHz		#VE	BW 3 MHz		#Swee	ep 50 ms	
Chan	nel Power			Power Sp	ectral Den	sitv		
						,		
	40.04	en tana an matrice a						
	13.20	JdBm/17	.24 MHz	-*	09.1 <i>1</i> de	sm/Hz		
MSG					STATU	S		

#### Figure Channel 6: (Chain A)

Figure Channel 11: (Chain A)

🗊 Agilent Spectrum Analyzer - Channel Power								
α 1 50 Ω	AC SENSE:INT ALIGNAUTO	05:17:52 PM Mar 21, 2012 Radio Std: None	Span					
Input: RF 🕞 #IFGain:Low	⊇ Thg: Free Run Avg Hold:>100/100 #Atten: 30 dB	Radio Device: BTS	Span 20.000 MHz					
10 dB/div Ref 20 dBm								
10								
-10		the second second						
-20			Full Span					
-30								
-50								
-60								
-70			Last Span					
Center 2.462 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 20 MHz #Sweep 50 ms	Lustopun					
Channel Power	Power Spectral Den	sity						
11.00 dBm/ 16.36	11.00 dBm/ 16.36 MHz -61.14 dBm/Hz							
MSG	STATU	JS						



The Automation Second	and the large of the	Sharana I Danama	0			·		
Agrient Spect	rum Anatyzer - t	. nannet Power		ENCENT	N ICH N ITO	05,11,201	MM-x 21 2012	
Span 20.0			Center	Fred: 2.412000000 G	Hz	Radio Std	: None	Span
Spart 20.0		ut RF	Trig: Fre	e Run Avg	Hold:>100/100		-	38
		#IFGain:I	ow #Atten:	30 dB		Radio Dev	vice: BTS	Snan
								opul
		-						20.000 MHz
10 dB/div	Ref 20 d	Bm						
LOG			2					
10								
سر ۱		Langer Party Contraction of the Internet					- man	
-10							$+ \rightarrow +$	
							X	
-20 2							N	Full Span
-30								. an opan
-40			6				+II	
-50								
-60								
No.								
-70							+Ir	
			<i>u</i>					Leat On an
Center 2.4	12 GHz					Spa	n 20 MHz	Last Span
#Res BW 1	MHz		#V	BW 3 MHz		#Swe	ep 50 ms	
							<u> </u>	
				_				
Channe	el Power			Power Spe	ectral Den	sity		
	44.06			~	0.70			
	11.33	) dBm/ 16	.35 MHZ	-0	0.79 dB	sm/Hz		
MSG					STATU	S		

#### Figure Channel 1: (Chain B)

Figure Channel 6: (Chain B)





		8	ure chunner	iii (enam			
Agilent Spe	ectrum Analyzer - Cha	innel Power					
Span 20	0.000 MHz	pr c	Center Freq: 2.4620	00000 GHz AvalHold:>100/100	Radio Std: N	Mar 21, 2012 Jone	Span
	input	#IFGain:Low	#Atten: 30 dB		Radio Devid	e: BTS	Spa
0 dB/div	Ref 20 dB	m					20.000 MH
.og 10							
0		and the second s					
-10	and the second s				- barry and a	- www.	
-20					+	\ \	Full Sna
-30					+ +		i di opu
-40					+ +		
-50							
-60							
-70							1
enter 2 Res BW	.462 GHz 1 MHz		#VBW 3 MH	łz	Span #Sweep	20 MHz 50 ms	Last Spa
Chan	nel Power		Powe	r Spectral Den	sity		
	10.12	dBm/ 16.38	MHz	-62.02 dE	sm/Hz		
G				STATU	s		

Figure Channel 11: (Chain B)

### QuieTer

Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
	(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
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)



M Anthony Construmt Analysis Channel Down		,	
agilent Spectrum Analyzer - Channel Power		05-00-02 PM Max 21, 2012	
	Center Fred: 2 437000000 GHz	Badio Std: None	Span
	Trig: Free Run Avg Hold:>100/100		58
#IFGain:Low	#Atten: 30 dB	Radio Device: BTS	Snan
		1	Copul
			50.000 MHz
10 dB/div Ref 20 dBm			
Log			
10			
0			
and a second second second second			
-10			
-20			Full Snan
-30			i ai opan
		and the second second	
-40			
-50			
-60			
2024			
-70		· · · · · · · · · · · · · · · · · · ·	
			1
Center 2.437 GHz		Span 50 MHz	Last Span
#Res BW 1 MHz	#VBW 3 MHz	#Sweep 50 ms	
Channel Power	Power Spectral Den	sity	
		-	
44.05			
11.90 dBm/ 36.37 N	1Hz -63.66 dE	3m/Hz	
MSG	STATU	JS	

#### Figure Channel 6: (Chain A)

Figure Channel 9: (Chain A)

💴 Agilent Spectrum Analyzer - Channel Power			
α L 50 Ω A Span 50.000 MHz	C SENSE:INT ALIGNAUTO	05:40:00 PM Mar 21, 2012 Radio Std: None	Span
Input: RF #IFGain:Low	#Atten: 30 dB	Radio Device: BTS	Span 50.000 MHz
0			
-10 -20 -20 -20 -20 -20 -20 -20 -20 -20 -2			Full Span
-30 -40		hy have been a second as a sec	
-60			
-70		Spap 50 MHz	Last Span
#Res BW 1 MHz	#VBW 3 MHz	#Sweep 50 ms	
Channel Power	sity		
<b>6.28</b> dBm/ 36.34 N	3m/Hz		
MSG	STATU	IS	





#### Figure Channel 3: (Chain B)

Figure Channel 6: (Chain B)





	inguite channel / (channel	
Agilent Spectrum Analyzer - Channel Pow	97	
Span 50.000 MHz	AC SENSE:INT ALIGNAUTO	Radio Std: None Span
Input: RF #IF	Gain:Low #Atten: 30 dB	Radio Device: BTS Spar
10 dB/div Ref 20 dBm		50.000 MHz
10		
0		
-10		
-30		Full Spar
-40		
-50		
-60		
Contor 2 452 CHz		Enan 50 MHz Last Spar
#Res BW 1 MHz	#VBW 3 MHz	#Sweep 50 ms
Channel Power	Power Spectral Den	sity
6.65 dBm	/ 36.03 MHz -68.91 dB	3m/Hz
ISG	STATU	IS

Figure Channel 9: (Chain B)

Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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	57 5785 12.97 <30dBm		<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 Peak (MHz) 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	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
	(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
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))







			8*	• ena		0.1	0	-,		
Magilent Spect	rum Analyzer	Channel Power								
LXI	50 Ω		A	C SE	NSE:INT		ALIGN AUTO	10:37:18	AM Mar 22, 2012	Snan
Span 20.0	000 MHz			Center Fi	req: 5.7850 o Dun	00000 GHz	I~ 100/100	Radio Ste	1: None	opun
	h	nput: RF #IEG	ain:Low	#Atten: 30	0 dB	Arginoid	1.2 100/100	Radio De	vice: BTS	-
		MIFO	am.Luw	With the state of	• 40			Tuuro De	1	Span
										20.000 MHz
10 dB/div	Ref 20	dBm								
Log										
10		4			6	-				
	and the second s		mainenterensen	work when	autoin the Beam	-	-	manungedin	marine and	
-10		-					_		- WA	
1									1	
-20 4									τ, t	Full Span
-30										i un opun
-40									<u> </u>	
50										
-50										
-60	-		-				-			
70										
-70										
										l ast Snan
Center 5.7	85 GHz							Spa	an 20 MHz	Lustopun
#Res BW 1	1 MHz			#VE	BW 3 MH	IZ		#Swe	ep 50 ms	
-										
Channe	al Dowo	-			Dowo	r Snaat	ral Done	sits.		
Channe	el FOwe				FOWE	Speci	iai Dena	sity		
	12.9	7 dBm/	17 69 M	1Hz		-62	50 dB	m/Hz		
	12.0		17.00 1	1112		· · L ·	<b>00</b> uD	110116		
MSG							STATIS	2		
Mod							STATU	,		

#### Figure Channel 157: (Chain A)

Figure Channel 165: (Chain A)





8-	(***		
D Agilent Spectrum Analyzer - Channel Power			
50 Ω	AC SENSE:INT ALIGN	NAUTO 10:34:21 AM Mar 22, 2012	Snan
Span 20.000 MHz	Center Freq: 5.745000000 GHz	Radio Std: None	opan
Input: RF	#Atton: 30 dB	Padia Davisa: BTS	-
#IFGain:Low	#Atten: 50 dB	Radio Device. B15	Span
			20.000 MHz
10 dB/div Ref 30 dBm			
Log			
20			
20			
10			
0	an analy and a subscription of the form of the former and the fore	an sussessment of the property of the second se	
10		Mar Marine	17748 - Sale 23.512
-10			Full Span
-20			•••••
8.57		I I I-	
-30			
40			
-40			
-50			
8-25			
-60			
			1 4 0
Center 5.745 GHz		Span 20 MHz	LastSpan
#Res BW 1 MHz	#VBW 3 MHz	#Sweep 50 ms	
Channel Power	Power Spectral [	Density	
	(4) REPAIRSON (5) REPAIRSON	•	
10.19 dBm/ 17.73	MHz -62.30	dBm/Hz	
MSG		STATUS	
mod		514105	

#### Figure Channel 149: (Chain B)

Figure Channel 157: (Chain B)



_				0			· · · ·		/		
D Agi	lent Spectrum Ana	alyzer - Chan	nel Power								
LXI	50 Ω			AC	SEI	VSE:INT		ALIGN AUTO	10:39:42	AM Mar 22, 2012	Snan
Spa	n 20.000 N	Hz			Center Fr	eq: 5.82500	00000 GHz	. 400/400	Radio Sto	l: None	Span
		Input: F	RF #IECainy		#Atten: 30	dB	Avginoia	.> 100/100	Radio De	vice: BTS	-
-			#IFGalli.	LOW	withcom of	40			That is a set	1	Span
											20.000 MHz
10 dE	3/div Ref	f 20 dBm	า								
Log											
10						6					
n											
Ŭ	and the second	have duration		menongram	- Contraction of the second second	with the state of			- warden and and a second	and and a second	
-10	1										
	مر									X	
-20										1	Full Span
-30											
.40											
-40											
-50											
- cn											
-00											
-70											
											1
Cent	ter 5.825 GH	lz							Spa	an 20 MHz	Last Span
#Res	s BW 1 MHz				#VB	W ЗМН	z		#Swe	ep 50 ms	
6	honnol De	NACE				Douvo	- Speat	ol Done	1417		
6	namer PC	Jwei				Fower	speci	al Della	sity		
	10	0.14	dBm/ 17	7 MH	IZ		-62.	34 dB	m/Hz		
	AL <b>=</b> 145										
MSG								STATUS			

Figure Channel 165: (Chain B)

Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
	(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
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.
$\square$ Site # 3	X Bilog Antenna		Schaffner Chase	CBL6112B/2673	Sep., 2011
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	Х	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
	Х	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2011
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
X Pre-Amplifier X Spectrum Analyzer X Test Receiver		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
		Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	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	Frequency MHz uV/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	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
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					
<b>Detector:</b>					
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                                       | Reading | Measurement | Margin  | Limit  |  |  |
|                | Factor  | Level   | Level       |         |        |  |  |
| 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 |  |  |

- 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	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
<b>Peak Detector:</b>								
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								
<b>Peak Detector:</b>								
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								
<b>Detector:</b>								
4924.000	5.521	46.730	52.250	-1.750	54.000			

- 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	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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							
<b>Detector:</b>							
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							
<b>Detector:</b>							

- 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	<ul> <li>No.3 OATS</li> <li>Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)</li> </ul>						
Test Mode							
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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		

- 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	de : Mode 2: Transmit - 802.11g 6Mbps (2462 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
<b>Peak Detector:</b>							
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							
<b>Peak Detector:</b>							
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							
<b>Detector:</b>							

- 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	: Harmon	: Harmonic Radiated Emission Data					
Test Site	: No.3 OATS						
Test Mode	: Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)						
<b>F</b> actor <b>a</b>	Correct	Deeding	Maagunaaaa	Manain	Т ::4		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
11490.000	17.106	35.360	52.467	-21.533	74.000		
Average							
<b>Detector:</b>							
Vertical							
Peak Detector:							
11490.000	18.034	35.720	53.755	-20.245	74.000		

**Detector:** 

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- 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® C	: Intel® Centrino® Advanced-N 6230						
Test Item	: Harmon	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS							
Test Mode	: Mode 3	Transmit - 802.1	1a 6Mbps (5785 MHz	z)				
_	~				- · · ·			
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
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			

#### **Detector:**

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- 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	: Harmon	: Harmonic Radiated Emission Data						
Test Site	<ul> <li>No.3 OATS</li> <li>Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)</li> </ul>							
Test Mode								
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
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								
<b>Peak Detector:</b>								
11650.000	17.274	35.850	53.125	-20.875	74.000			

**Detector:** 

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- 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	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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:							

- 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: Tr	ansmit - 802.11	n-20BW_14.4Mbps(2	2.4G Band) (2437 M	IHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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							
<b>Detector:</b>							
Vertical							
<b>Peak Detector:</b>							
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							
<b>Detector:</b>							
4874.000	5.812	31.630	37.441	-16.559	54.000		

- 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	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
<b>Peak Detector:</b>								
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								
<b>Detector:</b>								
Vertical								
<b>Peak Detector:</b>								
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								
<b>Detector:</b>								

- 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	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
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:								

- 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	<ul> <li>No.3 OATS</li> <li>Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437 MHz)</li> </ul>						
Test Mode							
Fraguaray	Comot	Deading	Maaguramant	Morain	Limit		
Frequency	Easter	Laval	Laval	Iviaigin	Limit		
MI	Factor			ID			
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:							

- 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	<ul> <li>No.3 OATS</li> <li>Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2452 MHz)</li> </ul>						
Test Mode							
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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:							

- 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	: Harmon	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS							
Test Mode	: Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5745MHz)							
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
11490.000	17.106	35.170	52.277	-21.723	74.000			
Average								
<b>Detector:</b>								
Vertical								
Peak Detector:								
11490.000	18.034	35.420	53.455	-20.545	74.000			

#### **Detector:**

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- 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® C	entrino® Advanc	ed-N 6230					
Test Item	: Harmoni	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS							
Test Mode	: Mode 6:	: Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5785 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
11570.000	16.809	35.100	51.909	-22.091	74.000			
A								
Average								
Detector:								
Vertical								
Peak Detector:								
11570.000	17.698	35.470	53.168	-20.832	74.000			

**Detector:** 

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- 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	Test Site : No.3 OATS						
Test Mode	: Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5825 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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							
Vertical Dools Dotootom							
Peak Delector:			/		-		
11650.000	17.274	35.180	52.455	-21.545	74.000		
A. womo go							

Average Detector:

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- 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® C	Centrino® Advanc	ed-N 6230				
Test Item	: Harmon	: Harmonic Radiated Emission Data					
Test Site	e : No.3 OATS						
Test Mode	: Mode 7	Transmit - 802.1	1n-40BW_30Mbps(5	G Band) (5755M	Hz)		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
11510.000	17.124	35.170	52.294	-21.706	74.000		
Average							
<b>Detector:</b>							
Vertical							
Peak Detector:							
11510.000	18.081	35.550	53.631	-20.369	74.000		

#### **Detector:**

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- 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® C	Centrino® Advanc	ed-N 6230				
Test Item	: Harmon	: Harmonic Radiated Emission Data					
Test Site	: No.3 OATS						
Test Mode	: Mode 7:	Transmit - 802.1	1n-40BW_30Mbps(5	G Band) (5795 M	IHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
11590.000	16.701	35.090	51.790	-22.210	74.000		
Average							
<b>Detector:</b>							
Vertical							
<b>Peak Detector:</b>							
11590.000	17.567	35.460	53.026	-20.974	74.000		

**Detector:** 

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- 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)						
			1	,			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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		

- 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 Test Item	: Intel® Centrino® Advanced-N 6230								
Test Site	$\sim N_0 3 \text{ OATS}$								
Test Mode	· Mode 2	Mode 2. Transmit - 802 11g 6Mbns (2437 MHz)							
1051 11040	. 111040 2		15 0000p5 (2157 000						
Frequency	Correct	Reading	Measurement	Margin	Limit				
	Factor	Level	Level						
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				

- 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	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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		

- 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 - 802.1	1n-20BW_14.4Mbps	(2.4G Band) (243	7 MHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
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		

- 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 Test Item Test Site Test Mode	<ul> <li>it : Intel® Centrino® Advanced-N 6230</li> <li>it : General Radiated Emission Data</li> <li>it : No.3 OATS</li> </ul>							
Test Wide	Due . Mode 3. mansmit - $\delta 02.11$ m-40B w_30Mops(2.4G Band) (2437 MHZ)							
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
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			

- 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	Reading	Measurement	Margin	Limit				
	Factor	Level	Level						
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				

- 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)							
1000111040								
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level	-				
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			

- 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.
Х	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
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2011
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	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	Power Setting Measured (dBm)
(MHz)	(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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = Conducted Band Edge Delta (Peak or Average)



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 <sup>®</sup> Centrino <sup>®</sup> Advanced-N 6230
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 802.11b 1Mbps

Frequency	Power Setting Measured (dBm)
(MHz)	(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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = 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 <sup>®</sup> Centrino <sup>®</sup> Advanced-N 6230
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 802.11g 6Mbps

Frequency	Power Setting Measured (dBm)
(MHz)	(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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = Conducted Band Edge Delta (Peak or Average)



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	Power Setting Measured (dBm)		
(MHz)	(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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = Conducted Band Edge Delta (Peak or Average)


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	Power Setting Measured (dBm)			
(MHz)	(Av	erage)		
	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

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

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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)



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



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	Power Setting Measured (dBm)			
(MHz)	(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

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

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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)



#### 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 <sup>®</sup> Centrino <sup>®</sup> 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	Power Setting Measured (dBm)			
(MHz)	(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

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

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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)



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



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

# QuieTer

Product	:	Intel <sup>®</sup> Centrino <sup>®</sup> 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	Power Setting Measured (dBm)			
(MHz)	(Average)			
	Chain A	Chain B		
2452	6.66	6.13		

# Fundamental Filed Strength

Antenna Pole	Frequency	Correction Factor	Reading Level [dBuV]	Emission Level	Detector
1 010		[uD/m]		[uDuv/m]	
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

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

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 -  $\Delta$ 

F = Fundamental field Strength (Peak or Average)



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



Average Detector of conducted Band Edge Delta-Chain A

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



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