

Report No.: EH/2011/80029 Issue Date: Sep. 28, 2011 Page: 1 of 169

+ELECTROMAGNETIC EMISSIONS COMPLIANCE **REPORT**

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT **AND INDUSTRY CANADA RSS 210**

	OF
Product Name:	3G36W-V
Brand Name:	NetComm
Model No.:	3G36W-V
Model Difference:	N/A
FCC ID:	XIA-3G36WV
IC:	8847A-3G36WV
Report No.:	EH/2011/80029
Issue Date:	Sep. 28, 2011
FCC Rule Part:	§15.247
IC Rule Part:	RSS-210 issue 8 :2010, Annex 8
Prepared for:	NetComm Limited Level 2, 18-20 Orion Road, Lane Cove, NSW Australia
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.
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Report No.: EH/2011/80029 Issue Date: Sep. 28, 2011 Page: 2 of 169

VERIFICATION OF COMPLIANCE

Applicant:	NetComm Limited Level 2, 18-20 Orion Road, Lane Cove, NSW Australia
Product Name:	3G36W-V
Brand Name:	NetComm
FCC ID:	XIA-3G36WV
IC:	8847A-3G36WV
Model No.:	3G36W-V
Model Difference:	N/A
File Number:	EH/2011/80029
Date of test:	Aug. 10, 2011 ~ Sep. 23, 2011
Date of EUT Received:	Aug. 10, 2011

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and RSS-Gen. issue 3 the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247 and IC RSS 210 issue 8: 2010 Annex 8. The test results of this report relate only to the tested sample identified in this report.

Test By:	Lion Wang	Date	Sep. 28, 2011	
_	Lion Wang / Engineer Gigi Ach			
Prepared By:	0 0	Date	Sep. 28, 2011	
Approved By:	Gigi Yeh / Clerk Tim Ch ang	Date	Sep. 28, 2011	

Jim Chang / Supervisor

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Version

Version No.	Date	Description
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GENERAL INFORMATION 1

1.1 **Product Description**

General:

Product Name:	3G36W-V
Model No.:	3G36W-V
Brand Name:	NetComm
Model Difference	N/A
Marketing Name:	HSPA+ Data Gateway
Antenna Spec:	PIF Antenna 824~968MHz: 0.8~1.6 dBi 1710~2170 MHz: 2.0~4.3dBi
Power Supply:	12V from AC/DC adapter, model: Au-79Dmu, Supplier: ELEMEN

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WLAN: 802.11 b/g/n

Frequency Range:	802.11b / g / n_20MHz: 2412 – 2462 MHz 802.11 n_40MHz: 2422 – 2452 MHz		
Channel number:	802.11b / g / n_20MHz: 11 channels 802.11 n_40MHz: 9 channels		
Max. Output Power:	802.11 b: 18.35 dBm (Peak) 802.11 g: 15.47 dBm (Peak) 802.11 n _20MHz: 12.38dBm (Peak) 802.11 n _40MHz: 12.66dBm (Peak) 802.11 n _40MHz(MIMO): 15.21dBm (Peak) 802.11 n _40MHz(MIMO): 15.76dBm (Peak)		
Modulation Technology:	DSSS, OFDM		
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM		
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 7.2 – 144.4Mbps 802.11 n_40MHz: 15 – 300Mbps		
Antenna Designation:	PIF Antenna 4.35dBi+10log(2)=7.36 dBi		
Type of Emission:	802.11 b : 15M2G1D 802.11 g : 17M2G1D 802.11 n_20MHz : 17M4G1D 802.11 n_40MHz : 35M6G1D		

This test report applies for WLAN 802.11 b/g/n.

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1.2 **Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for FCC ID: XIA-3G36WV filing to comply with Section 15.247 of the FCC Part 15C, Subpart C Rules. And IC: 8847A-3G36WV filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 8. The composite system (digital device) is compliance with Subpart B is authorized under a DoC procedure.

1.3 **Test Methodology**

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2010. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Oct 2002 KDB558074 and KDB662911 for compliance to FCC 47CFR 15.247 requirements.

1.4 **Test Facility**

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

Special Accessories 1.5

Not available for this EUT intended for grant.

1.6 **Equipment Modifications**

Not available for this EUT intended for grant.

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2 SYSTEM TEST CONFIGURATION

2.1 **EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 **EUT Exercise**

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

2.3 **Test Procedure**

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

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Configuration of Tested System 2.4

Fig. 2-1 Configuration of Tested System

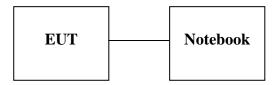


Table 2-1 Equipment Used in Tested System

Iten	n Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	Notebook	Dell	E5400	3704625136	shielding	Un-shielding

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SUMMARY OF TEST RESULTS 3

FCC Rules	Description Of Test	Result
§15.207(a)/	AC Power Line Conducted Emission	Compliant
RSS-Gen §7.2.4		
§15.247(b)/	Peak Output Power	Compliant
RSS-210 §A8.4(4)		
§15.247(b)/	6dB Bandwidth	Compliant
RSS-210 §A8.4(4)		
§15.247(c)/	100 KHz Bandwidth Of	Compliant
RSS-210 §A8.4(4)	Frequency Band Edges	
§15.247(c)/	Spurious Emission	Compliant
RSS-210 §A8.4(4)		
§15.247/	Peak Power Density	Compliant
RSS-210 §A8.2(b)		
§15.203/	Antenna Requirement	Compliant
RSS-GEN §7.1.2,		
RSS-Gen §4.6.1	99% Power Bandwidth	Compliant

DESCRIPTION OF TEST MODES 4

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting is programmed.

802.11 b mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 1Mbps data rate are chosen for above testing.

802.11 g mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 6Mbps data rate are chosen for above testing.

802.11 n_20MHz mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 6.5Mbps data rate are chosen for above testing.

802.11 n mode(40M): Channel low (2422MHz) > mid (2437MHz) and high (2452MHz) with 13.5 Mbps data rate are chosen for conducted power testing.

In comparison with which EUT deposits on the surface of turned table. The X plane is found to be the worst case.

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5 **CONDUCTED EMISSION TEST**

5.1. **Standard Applicable:**

According to §15.207 and RSS-Gen §7.2.4, frequency range within 150KHz to 30MHz shall not exceed the Limit table as below.

Frequency range		mits (uV)
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the	ransition frequencies	

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

5.2. Measurement Equipment Used:

AC Power Line Conducted Emission Test Site						
EQUIPMENT MFR MODEL SERIAL LAST CALD						
ТҮРЕ		NUMBER	NUMBER	CAL.		
EMI Test Receiver	R&S	ESCS30	828985/004	09/23/2010	09/22/2012	
LISN	Rolf-Heine	NNB-2/16Z	99012	03/31/2011	03/30/2012	
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/31/2011	03/30/2012	
Coaxial Cables	N/A	WK CE Cable	N/A	11/28/2010	11/27/2011	

5.3. EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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5.4. Measurement Procedure:

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

5.5. Measurement Result:

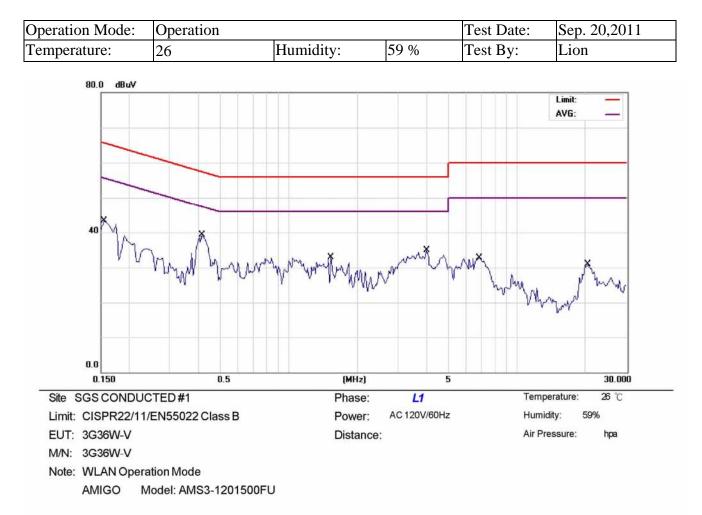
The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Note: Refer to next page for measurement data and plots.

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AC POWER LINE CONDUCTED EMISSION TEST DATA



No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1		0.1550	43.08	0.13	43.21	65.73	-22.52	QP		
2	*	0.4150	39.28	0.12	39.40	57.55	-18.15	QP		
3		1.5300	32.68	0.14	32.82	56.00	-23.18	QP		
4		4.0200	34.66	0.17	34.83	56.00	-21.17	QP		
5		6.8200	32.48	0.26	32.74	60.00	-27.26	QP		
6		20.4800	30.62	0.23	30.85	60.00	-29.15	QP		

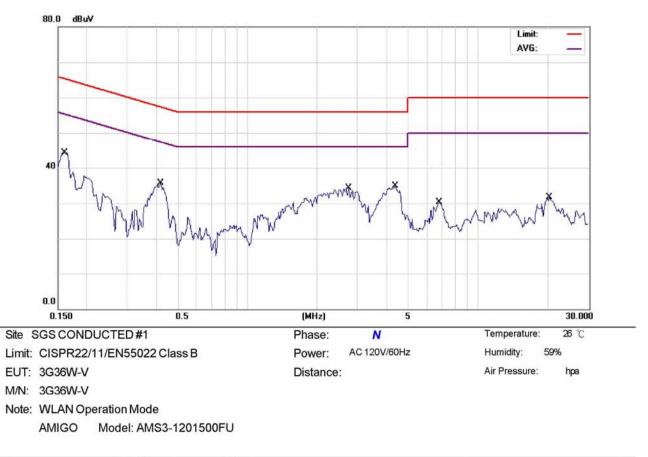
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No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	44.19	0.18	44.37	65.46	-21.09	QP	
2		0.4200	35.59	0.16	35.75	57.45	-21.70	QP	
3		2.7400	34.19	0.19	34.38	56.00	-21.62	QP	
4	*	4.3800	34.73	0.21	34.94	56.00	-21.06	QP	
5		6.8000	29.98	0.29	30.27	60.00	-29.73	QP	
6		20.4800	31.32	0.29	31.61	60.00	-28.39	QP	

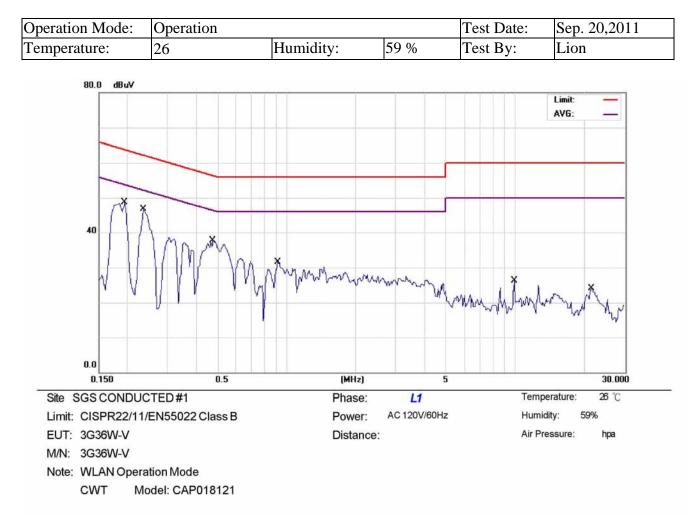
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AC POWER LINE CONDUCTED EMISSION TEST DATA



No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	*	0.1950	48.65	0.12	48.77	63.82	-15.05	QP		
2		0.2350	46.50	0.12	46.62	62.27	-15.65	QP		
3		0.4750	37.51	0.12	37.63	56.43	-18.80	QP		
4		0.9100	31.44	0.11	31.55	56.00	-24.45	QP		
5		9.9600	25.77	0.45	26.22	60.00	-33.78	QP		
6		21.6600	23.88	0.25	24.13	60.00	-35.87	QP		

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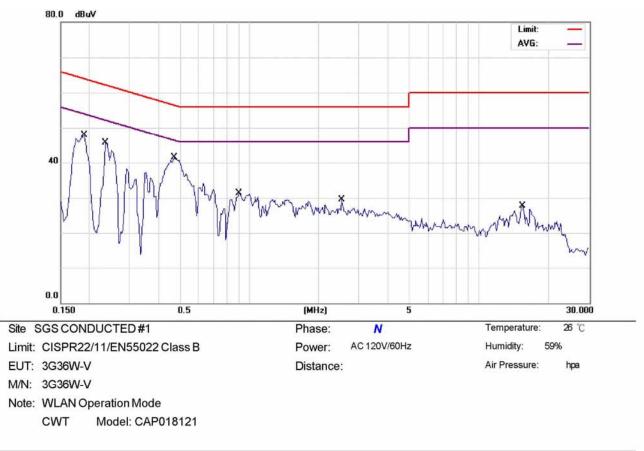
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No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1900	47.75	0.17	47.92	64.04	-16.12	QP	
2		0.2350	45.54	0.16	45.70	62.27	-16.57	QP	
3	*	0.4700	41.25	0.16	41.41	56.51	-15.10	QP	
4		0.9000	31.06	0.15	31.21	56.00	-24.79	QP	
5		2.5200	29.27	0.19	29.46	56.00	-26.54	QP	
6		15.5000	27.29	0.44	27.73	60.00	-32.27	QP	

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6 PEAK OUTPUT POWER MEASUREMENT

6.1 Standard Applicable:

According to §15.247(a)(2), (b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and
5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(c) Operation with directional antenna gains greater than 6 dBi.

(1) Fixed point-to-point operation:

(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for

fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725-5850 MHz band that are used exclusively for

fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

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According to RSS-210 issue 8,§A8.4(4), for systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

	Conduct	ted Emission T	est Site		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Power Sensor	Anritsu	MA2411B	917032	01/21/2010	01/20/2012
Power Meter	Anritsu	ML2495A	1005007	02/17/2010	02/16/2012
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/25/2011	01/24/2012
DC Block	Agilent	BLK-18	155452	07/05/2011	07/04/2012
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2011	01/04/2012
Attenuator	Mini-Circuit	BW-S6W5	001	01/05/2011	01/04/2012
Attenuator	Mini-Circuit	BW-S10W5	001	01/05/2011	01/04/2012
Attenuator	Mini-Circuit	BW-S20W5	001	01/05/2011	01/04/2012
Splitter	Agilent	11636B	N/A	01/05/2011	01/04/2012

6.2 Measurement Equipment Used:

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6.3 Test Set-up:



6.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.
- 3. Record the max. reading.
- 4. Repeat above procedures until all frequency measured were complete.

Note: For MIMO operation, directional gain and limit are subject to be varied as per 15.247 c)1)i), and RSS-210 A8.4 4)5)

Due to correlation of two transmitting signal antenna, directional gain = Gain + 10 Log(N) dBi is used in determination of total power being transmitting while MIMO mode is enabled.

For the measurement of MIMO operation complying with the conducted bandedge test item, Aux with 3dB offset on HT_20 and main with 3dB offset on HT_40 is measured out, and its corresponding resultant plot is captured, respectively. Following the higher emission generated by respective port while signal is being transmitted singularly, 3dB offset with higher value yields worsen and representative data. While measuring HT_20 at single transmission of Aux port, Aux is observed and test out to obtain worsen outcome. Likewise, HT_40 at Main results the worsen data while undertaking single transmission, and therefore offset 3dB would results worsen emission.

Note: Following "measure and add 10 Log (N)" as per KDB 662911 by adding 10 Log (N) on spectrum to measure the conducted emission at MIMO mode.

Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

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6.5 Measurement Result:

802.11b

	Cable loss $= 0$		Р	eak Powe	r Output						
СН	Frequency (MHz)		Data 2	Rate		Required Limit					
СП	r requency (wrrz)	1	2	5.5	11	Kequirea Linin					
1	2412	18.33	18.29	18.24	18.2	1 Watt = 30 dBm					
6	2437	18.35	18.3	18.27	18.23	1 Watt = 30 dBm					
11	2462	18.10	18.06	18.01	17.98	1 Watt = 30 dBm					
	Cable loss $= 0$		Average Power Output								
СН			Data 2	Rate		Required Limit					
СП	Frequency (MHz)	1	2	5.5	11	Kequireu Liint					
1	2412	15.85	15.82	15.77	15.74	1 Watt = 30 dBm					
6	2437	15.78	15.74	15.7	15.67	1 Watt = 30 dBm					
11	2462	15.56	15.51	15.45	15.42	1 Watt = 30 dBm					

802.11g

Cab	le loss = 0				P	eak Pow	ver Outj	put		
СН	Frequency				Data	Rate				Required Limit
CII	(MHz)	6	9	12	18	24	36	48	54	Kequii eu Linnt
1	2412	15.15	15.11	15.08	15.02	14.97	14.93	14.88	14.82	1 Watt = 30 dBm
6	2437	15.45	15.41	15.35	15.3	15.26	15.2	15.15	15.08	1 Watt = 30 dBm
11	2462	15.47	15.42	15.38	15.32	15.24	15.19	15.13	15.07	1 Watt = 30 dBm
Cab	le loss = 0				Ave	erage Po	ower Ou	ıtput		
СН	Frequency				Data	Rate				Required Limit
Сп	(MHz)	6	9	12	18	24	36	48	54	Required Linin
1	2412	11.71	11.66	11.64	11.6	11.55	11.49	11.42	11.37	1 Watt = 30 dBm
6	2437	11.95	11.9	11.84	11.8	11.73	11.68	11.62	11.58	1 Watt = 30 dBm
11	2462	12.02	11.98	11.93	11.88	11.82	11.74	11.66	11.62	1 Watt = 30 dBm

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802.11n_20M (Aux Mode)

Cab	ble loss = 0				P	eak Pow	ver Outj	put		
СН	Frequency				Data	Rate				Required Limit
CII	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Required Linit
1	2412	12.38	12.33	12.29	12.23	12.18	12.12	12.08	12.03	1 Watt = 30 dBm
6	2437	12.23	12.28	12.22	12.12	12.07	12.00	11.93	11.88	1 Watt = 30 dBm
11	2462	12.15	12.08	12.00	11.95	11.89	11.82	11.77	11.71	1 Watt = 30 dBm
Cab	le loss $= 0$				P	eak Pow	ver Outj	put		
СН	Frequency		_	_	Data	Rate			_	Dequined Limit
Сп	(MHz)	72.2	86.7	115.6	130	144.4				Required Limit
1	2412	12.03	11.98	11.95	11.9	11.82				1 Watt = 30 dBm
6	2437	11.88	11.83	11.77	11.69	11.65				1 Watt = 30 dBm
11	2462	11.71	11.66	11.58	11.51	11.44				1 Watt = 30 dBm

802.11n 20M (Aux Mode)

Cab	le loss = 0				Av	erage Po	ower Ou	ıtput		
СН	Frequency				Data	Rate				Required Limit
	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Required Linit
1	2412	8.89	8.85	8.81	8.74	7.68	7.64	7.60	8.89	1 Watt = 30 dBm
6	2437	8.58	8.52	8.47	8.40	8.33	8.24	8.20	8.58	1 Watt = 30 dBm
11	2462	8.61	8.55	8.48	8.43	8.36	8.30	8.25	8.61	1 Watt = 30 dBm
Cab	le loss = 0				Av	erage Po	ower Ou	ıtput		
СН	Frequency				Data	Rate				Doguinad Limit
СП	(MHz)	72.2	86.7	115.6	130	144.4				Required Limit
1	2412	7.55	7.51	7.44	7.38	7.32				1 Watt = 30 dBm
6	2437	8.12	8.06	8.01	7.92	7.87				1 Watt = 30 dBm
11	2462	8.19	8.15	8.08	8.01	7.95				1 Watt = 30 dBm

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802.11n 40M (Aux Mode)

Cab	le loss = 0				Р	eak Pow	ver Out	put		
СН	Frequency				Data	Rate				Required Limit
CII	(MHz)	15	30	45	60	90	120	135	150	Kequileu Linnt
1	2422	12.66	12.61	12.55	15.43	12.37	12.32	12.28	12.21	1 Watt = 30 dBm
6	2437	12.65	12.57	12.50	12.44	12.38	12.31	12.21	12.15	1 Watt = 30 dBm
11	2452	12.55	12.49	12.44	12.33	12.25	12.20	12.14	12.05	1 Watt = 30 dBm
Cab	le loss = 0				P	eak Pow	ver Out	put		
СН	Frequency				Data	Rate				Required Limit
СП	(MHz)	180	240	270	300					Kequirea Linin
1	2422	12.15	12.09	12.05	12.00					1 Watt = 30 dBm
6	2437	12.10	12.04	11.97	11.93					1 Watt = 30 dBm
11	2452	12.00	11.93	11.88	11.81					1 Watt = 30 dBm

802.11n 40M (Aux Mode)

Cab	ble loss = 0		,		Av	erage Po	ower Ou	ıtput		
СН	Frequency		-	-	Data	Rate	-	-	-	Required Limit
CII	(MHz)	15	30	45	60	90	120	135	150	Required Linin
1	2422	9.12	9.05	8.97	8.91	8.84	8.75	8.65	8.60	1 Watt = 30 dBm
6	2437	9.04	8.98	8.91	8.80	8.75	8.71	8.64	8.58	1 Watt = 30 dBm
11	2452	8.95	8.91	8.85	8.77	8.71	8.64	8.60	8.55	1 Watt = 30 dBm
Cab	ble loss = 0				Ave	erage Po	ower Ou	ıtput		
СН	Frequency				Data	Rate				Required Limit
CII	(MHz)	180	240	270	300					Required Linin
1	2422	8.57	8.51	8.44	8.37					1 Watt = 30 dBm
6	2437	8.52	8.44	8.40	8.35					1 Watt = 30 dBm
11	2452	8.48	8.40	8.33	8.23					1 Watt = 30 dBm

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802.11n_20M (Main Mode)

Cab	ble loss = 0				Р	eak Pow	ver Outj	put		
СН	Frequency				Data	Rate				Required Limit
CII	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Kequileu Linnt
1	2412	12.01	11.95	11.90	11.86	11.77	11.72	11.62	11.58	1 Watt = 30 dBm
6	2437	12.03	11.95	11.92	11.82	11.77	11.71	11.66	11.60	1 Watt = 30 dBm
11	2462	12.10	12.02	11.97	11.91	11.86	11.82	11.77	11.70	1 Watt = 30 dBm
Cab	le loss $= 0$				Р	eak Pow	ver Outj	put		
СН	Frequency				Data	Rate				Required Limit
СП	(MHz)	72.2	86.7	115.6	130	144.4				Kequireu Linnt
1	2412	11.58	11.55	11.49	11.45	11.38				1 Watt = 30 dBm
6	2437	11.60	11.54	11.49	11.41	11.37				1 Watt = 30 dBm
11	2462	11.70	11.61	11.55	11.48	11.44				1 Watt = 30 dBm

802.11n 20M (Main Mode)

Cab	ble loss = 0		Average Power Output									
СН	Frequency		Required Limit									
CII	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Required Linit		
1	2412	8.43	8.40	8.32	8.27	8.22	8.16	8.08	8.02	1 Watt = 30 dBm		
6	2437	8.50	8.42	8.37	8.31	8.22	8.15	8.10	8.04	1 Watt = 30 dBm		
11	2462	8.63	8.55	8.48	8.43	8.38	8.31	8.21	8.15	1 Watt = 30 dBm		
Cab	ble loss = 0				Av	erage Po	ower Ou	ıtput				
СН	Frequency		Required Limit									
Сп	(MHz)	72.2	86.7	115.6	130	144.4				Required Linin		
1	2412	8.02	7.95	7.91	7.85	7.77				1 Watt = 30 dBm		
6	2437	8.04	7.98	7.95	7.91	7.82				1 Watt = 30 dBm		
11	2462	8.15	8.10	8.03	7.97	7.93				1 Watt = 30 dBm		

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802.11n 40M (Main Mode)

Cab	le loss = 0	Peak Power Output									
СН	Frequency (MHz)		-	Required Limit							
CII		15	30	45	60	90	120	135	150	Kequileu Linnt	
1	2422	12.11	12.00	11.95	11.88	11.82	11.77	11.71	11.61	1 Watt = 30 dBm	
6	2437	12.85	12.81	12.72	12.66	12.60	12.54	12.46	12.38	1 Watt = 30 dBm	
11	2452	12.37	12.30	12.22	12.14	12.07	12.01	11.92	11.83	1 Watt = 30 dBm	
Cab	le loss $= 0$				P	eak Pow	ver Out	put			
СН	Frequency (MHz)		Required Limit								
СП		180	240	270	300					Kequirea Linni	
1	2422	11.56	11.50	11.42	11.32					1 Watt = 30 dBm	
6	2437	12.28	12.29	12.22	12.10					1 Watt = 30 dBm	
11	2452	11.71	11.65	11.58	11.50					1 Watt = 30 dBm	

802.11n 40M (Main Mode)

Cab	ble loss = 0		,							
СН	Frequency (MHz)		Required Limit							
CII		15	30	45	60	90	120	135	150	Required Linit
1	2422	8.68	8.60	8.55	8.48	8.41	8.35	8.30	8.22	1 Watt = 30 dBm
6	2437	9.33	9.26	9.20	9.12	9.05	9.00	8.91	8.80	1 Watt = 30 dBm
11	2452	8.86	8.80	8.74	8.66	8.55	8.48	8.40	8.31	1 Watt = 30 dBm
Cab	ble loss = 0				Av	erage Po	ower Ou	ıtput		
СН	Frequency		Dogwined Limit							
СП	(MHz)	180	240	270	300					Required Limit
1	2422	8.12	8.03	7.95	7.90					1 Watt = 30 dBm
6	2437	8.72	8.66	8.58	8.45					1 Watt = 30 dBm
11	2452	8.21	8.09	8.01	7.95					1 Watt = 30 dBm

*Note: Offset 6.5 dB = Attenuator 6.0 dB + Cable loss 0.5 dB

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802.11n HT20 Mode 6.5M data rate (MIMO Mode)

Frequency (MHz)	Readi	ng Power	(dBm)	Outp	out Power	Limit	
	Chain 0	Chain 1	Combine	Chain 0	Chain 1	Combine	(W)
2412.00	12.01	12.38	15.21	0.01589	0.01730	0.03319	0.73
2437.00	12.03	12.23	15.14	0.01596	0.01671	0.03266	0.73
2462.00	12.10	12.15	15.14	0.01641	0.01641	0.03266	0.73

802.11n HT40 Mode 15M data rate (MIMO Mode)

Frequency	Readi	ng Power	(dBm)	Outp	out Power	Limit	
(MHz)	Chain 0	Chain 1	Combine	Chain 0	Chain 1	Combine	(W)
2422.00	12.11	12.66	15.40	0.01626	0.01845	0.03467	0.73
2437.00	12.85	12.65	15.76	0.01928	0.01841	0.03767	0.73
2452.00	12.37	12.55	15.47	0.01726	0.01799	0.03524	0.73

802.11n HT20 Mode 6.5M data rate (MIMO Mode)

Frequency		Limit				
(MHz)	Chain 0	Chain 1	Combine	EIRP (dBm)	EIRP (W)	(W)
2412.00	12.01	12.38	15.21	22.57	0.013535	4
2437.00	12.03	12.23	15.14	22.50	0.013522	4
2462.00	12.10	12.15	15.14	22.50	0.013522	4

802.11n HT40 Mode 15M data rate (MIMO Mode)

Frequency		Limit					
(MHz)	Chain 0	Chain 1	Combine	EIRP (dBm)	EIRP (W)	(W)	
2422.00	12.11	12.66	15.40	22.76	0.013572	4	
2437.00	12.85	12.65	15.76	23.12	0.01364	4	
2452.00	12.37	12.55	15.47	22.83	0.013585	4	

Note: Antenna Gain: $4.35 \, dBi + 10 \log (2) = 7.36 \, dBi$ FCC Limit: $(30 \, dB - (7.36 - 6 \, dBi) = 28.64 dB = 0.73W$ (applies for MIMO mode as above table) RSS Limit: 4W (applies for MIMO mode as above table)

Note: Refer to next page for plots.

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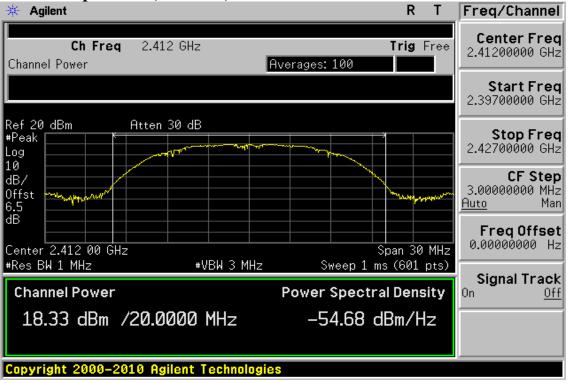
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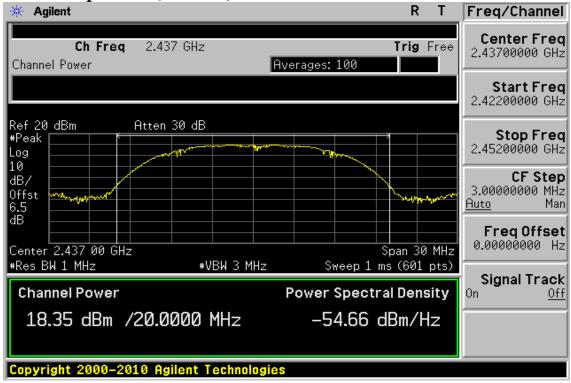
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802.11b, 1Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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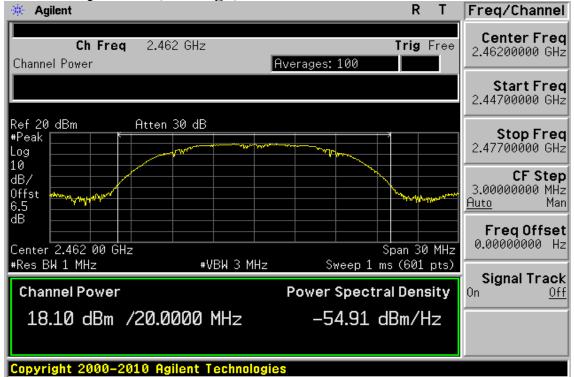
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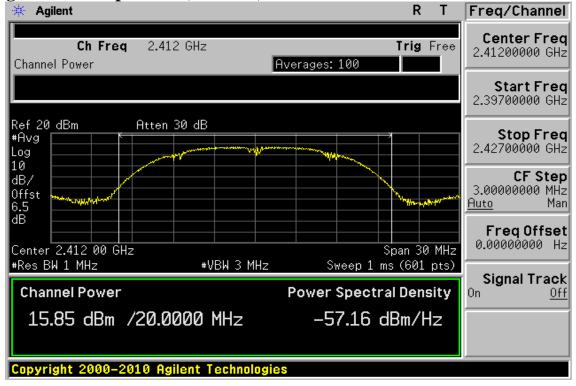


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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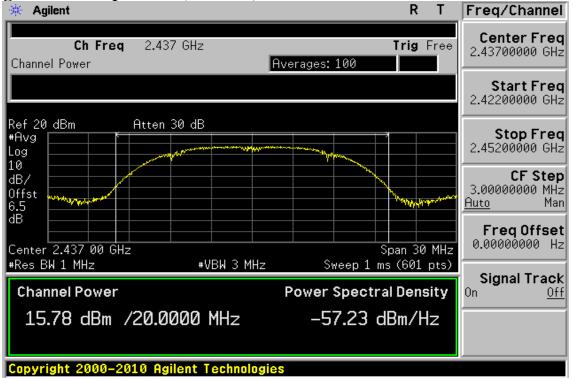
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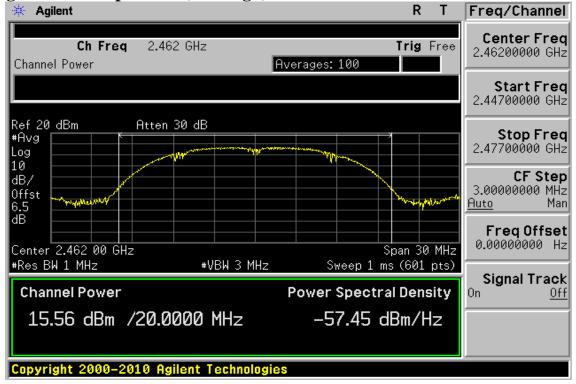


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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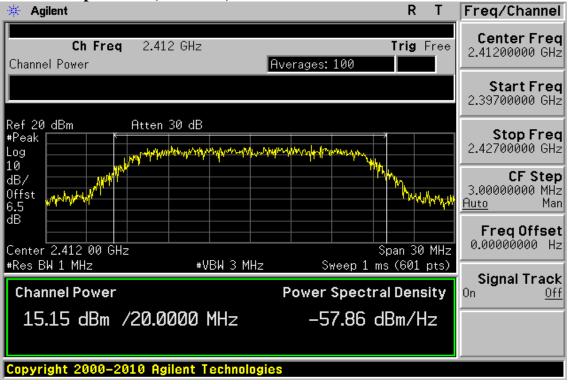
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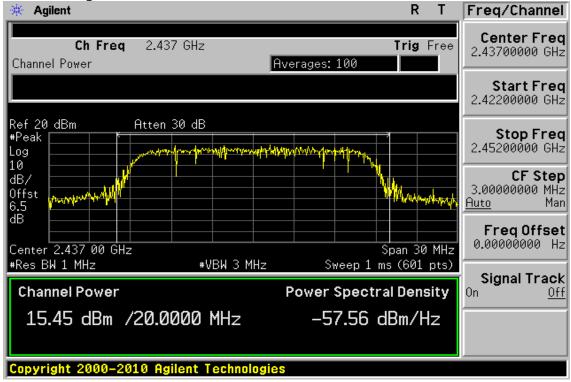
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802.11g, 6Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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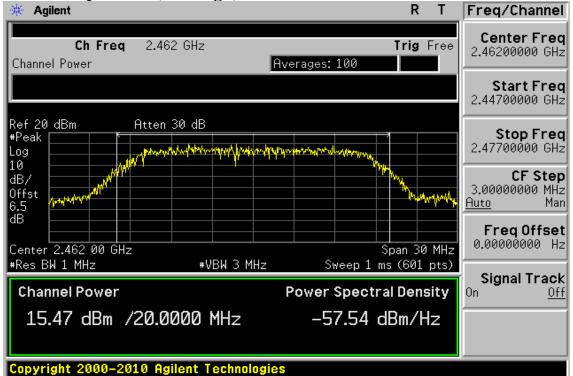
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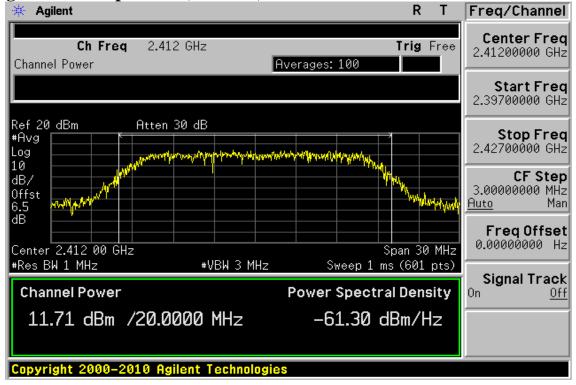


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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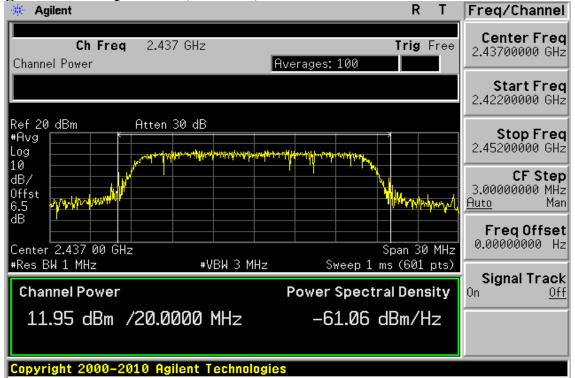
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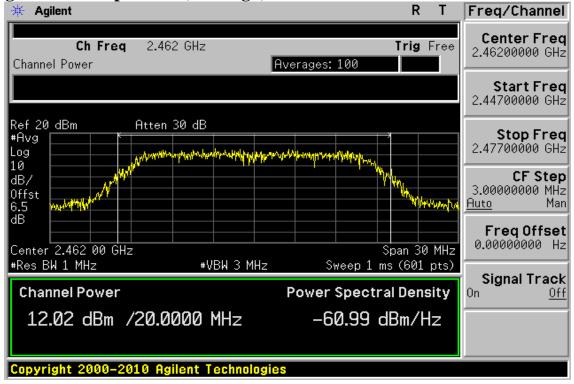


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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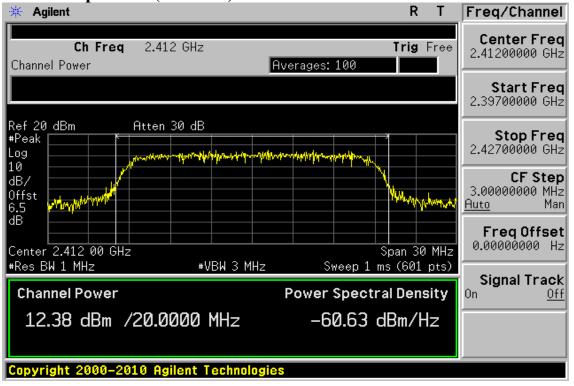
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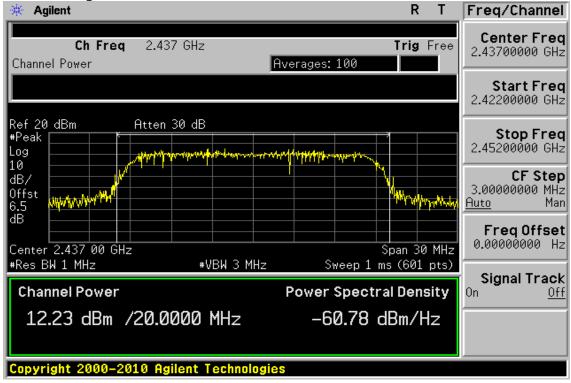


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802.11n_20M, 6.5Mbps (Aux) **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH Mid)



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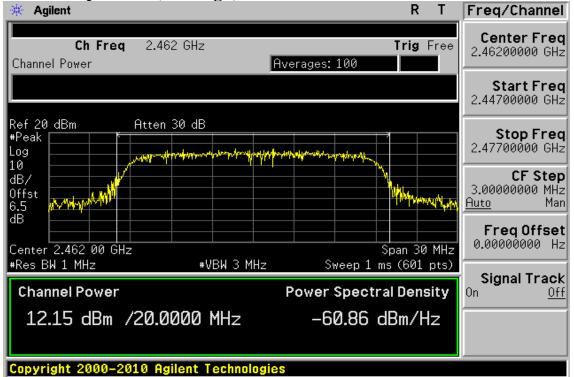
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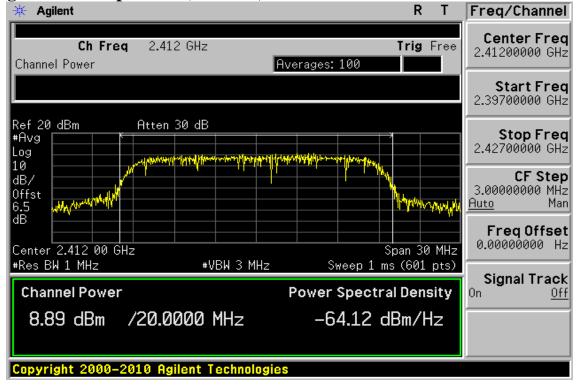


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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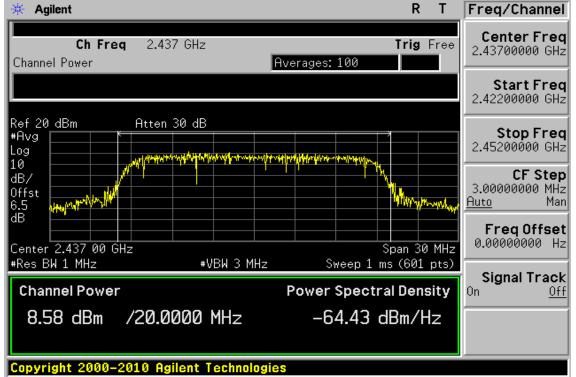
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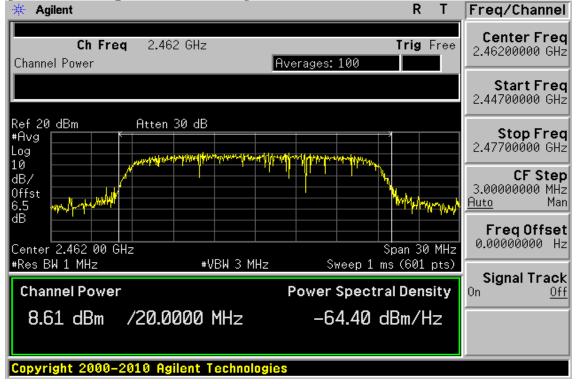


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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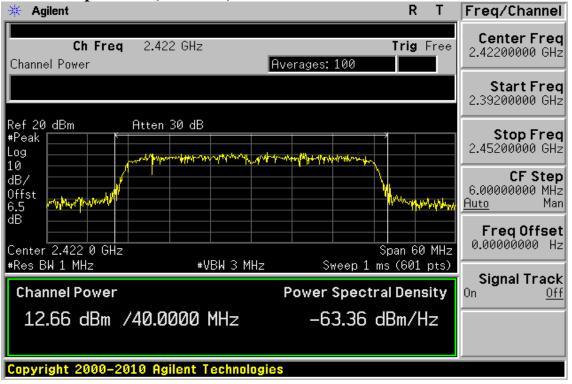
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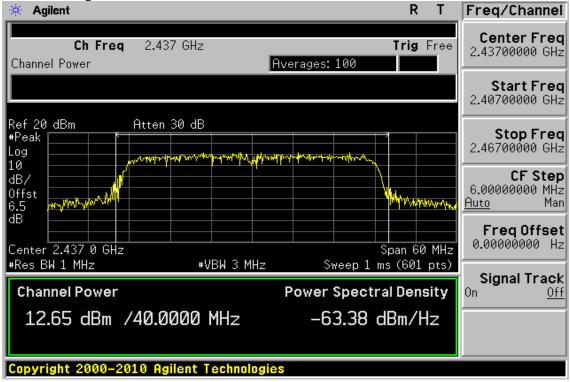


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802.11n_40M, 13.5Mbps (Aux) **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH Mid)



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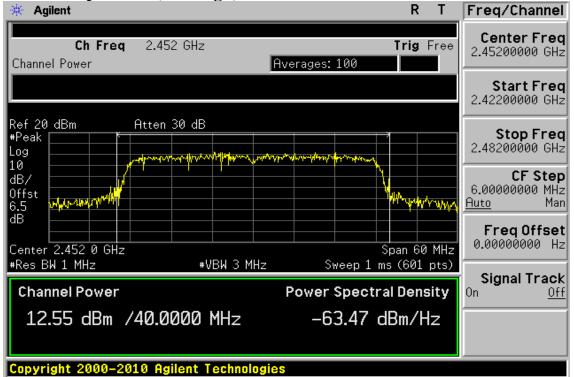
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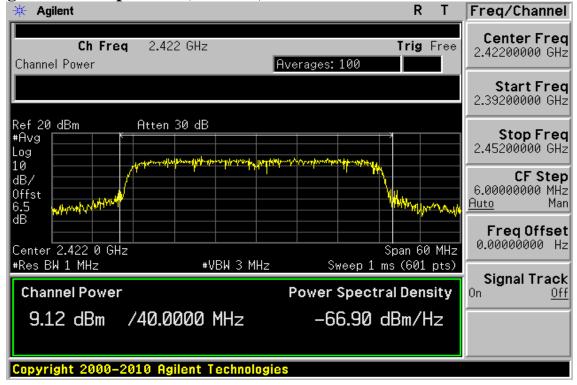


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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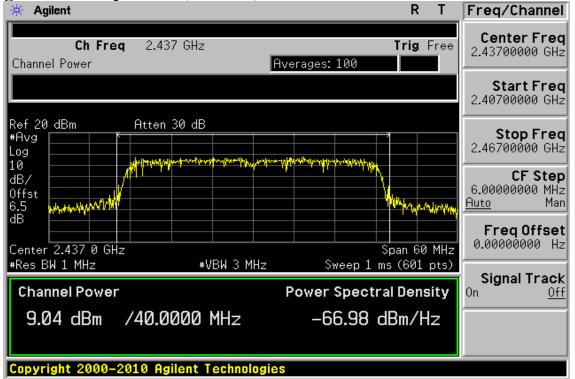
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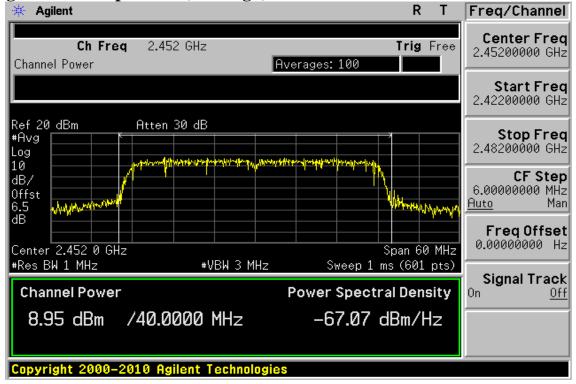


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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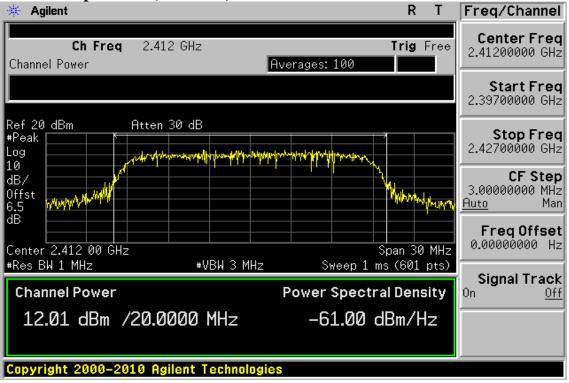
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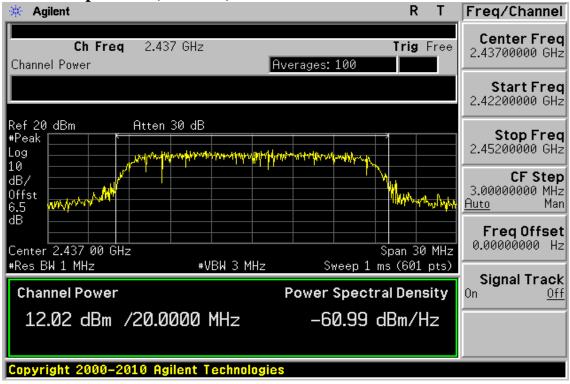


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802.11n_20M, 6.5Mbps (Mian) **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH Mid)



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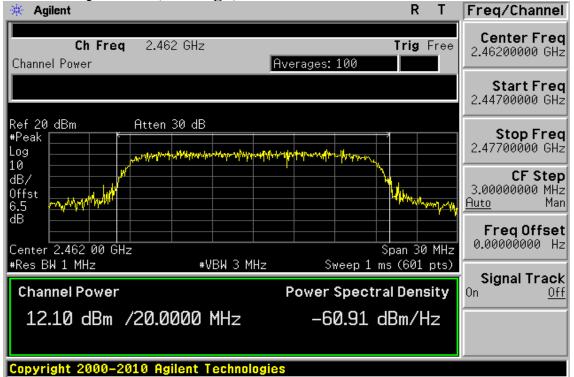
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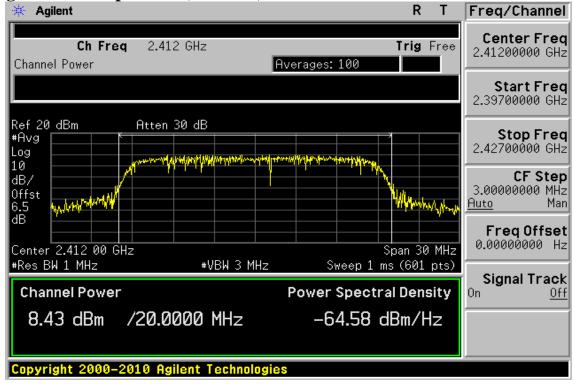


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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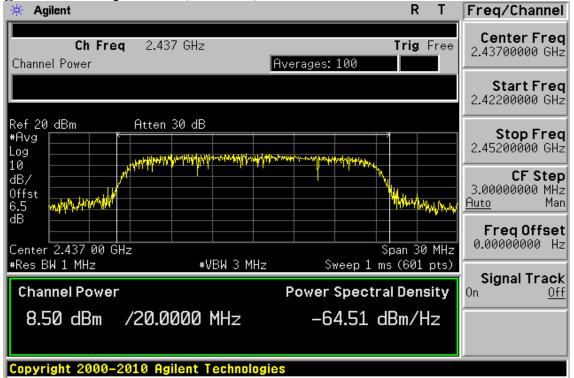
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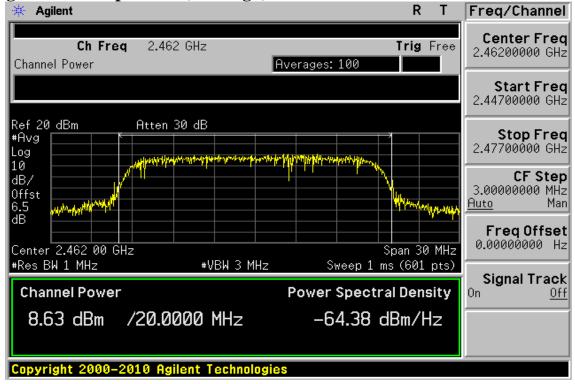


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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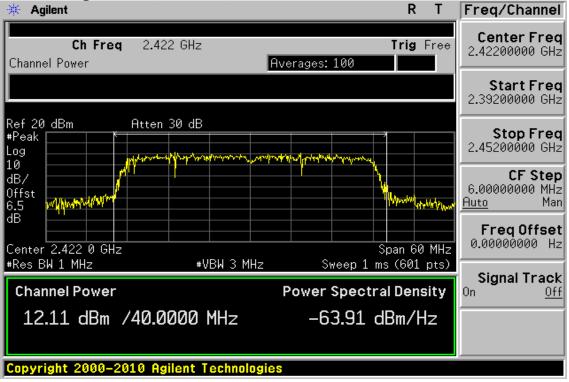
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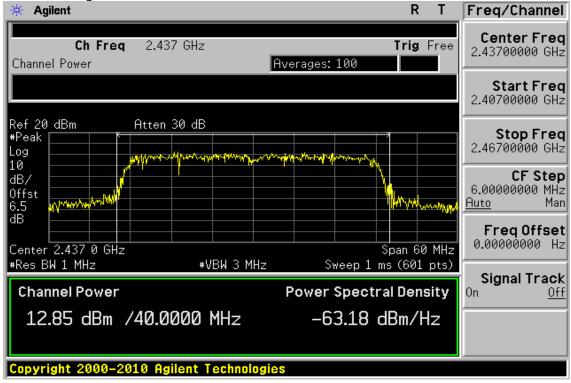


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802.11n_40M, 13.5Mbps (Main) **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH Mid)



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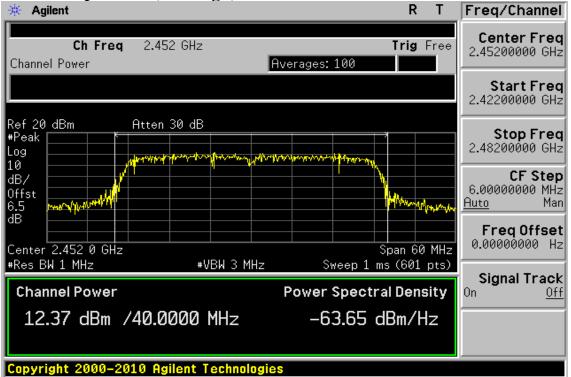
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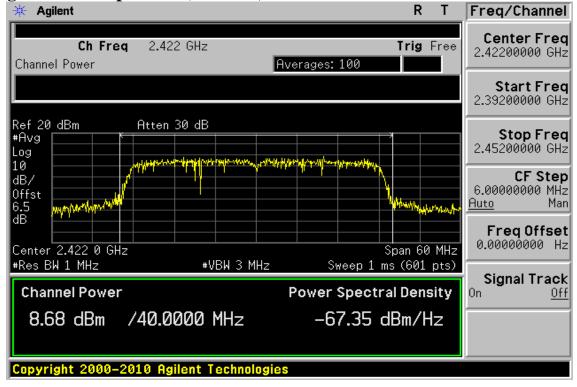


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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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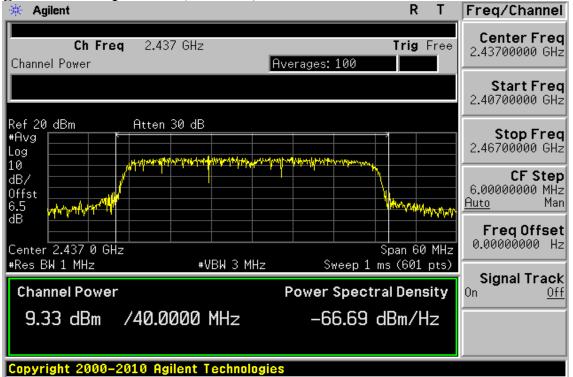
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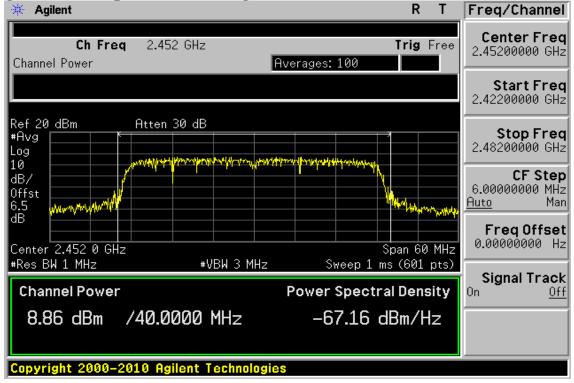


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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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7 6dB BANDWIDTH

7.1 Standard Applicable:

According to §15.247(a)(2), Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

According to RSS 210 issue 8: 2010Annex 8.2. Systems employing digital modulation techniques (which includes direct sequence) can now be certified under RSS-210 provided they comply with the following requirements: The minimum 6 dB bandwidth shall be at least 500 kHz.

7.2 Measurement Equipment Used:

Refer to section 6.2 for details.

7.3 Test Set-up:

Refer to section 6.3 for details.

7.4 Measurement Procedure:

1.Place the EUT on the table and set it in transmitting mode.

- 2.Remove the antenna from the EUT and then connect a low loss RF cable from the 3.antenna port to the spectrum analyzer.
- 3.Set the spectrum analyzer as RBW=100KHz, VBW = 3*RBW, Span= 50MHz, Sweep=auto

4. Mark the peak frequency and –6dB (upper and lower) frequency.

5. Repeat above procedures until all frequency measured were complete.



7.5 Measurement Result:

802.11b

Frequency	Bandwidth	Bandwidth	Result	
(MHz)	(MHz)	(KHz)	Result	
2412	12.235	> 500	PASS	
2437	11.145	> 500	PASS	
2462	11.146	> 500	PASS	

802.11g

Frequency	Bandwidth	Bandwidth	Decult	
(MHz)	(MHz)	(KHz)	Result	
2412	16.670	> 500	PASS	
2437	16.427	> 500	PASS	
2462	16.590	> 500	PASS	

802.11n_20M (Aux)

Frequency	Bandwidth	Bandwidth	Degult	
(MHz)	(MHz)	(KHz)	Result	
2412	17.265	> 500	PASS	
2437	17.256	> 500	PASS	
2462	17.177	> 500	PASS	

802.11n 40M(Aux)

Frequency	Bandwidth	Bandwidth	Result	
(MHz)	(MHz)	(KHz)		
2422	35.174	> 500	PASS	
2437	35.215	> 500	PASS	
2452	35.244	> 500	PASS	

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802.11n_20M (Main)

Frequency	Bandwidth	Bandwidth	Degult	
(MHz)	(MHz)	(KHz)	Result	
2412	17.536	> 500	PASS	
2437	17.544	> 500	PASS	
2462	17.440	> 500	PASS	

802.11n_40M (Main)

Frequency	Bandwidth	Bandwidth	Result	
(MHz)	(MHz)	(KHz)		
2422	35.824	> 500	PASS	
2437	35.587	> 500	PASS	
2452	35.574	> 500	PASS	

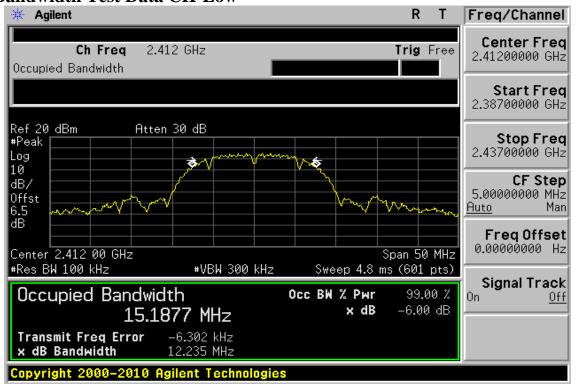
offset: 6.5dB

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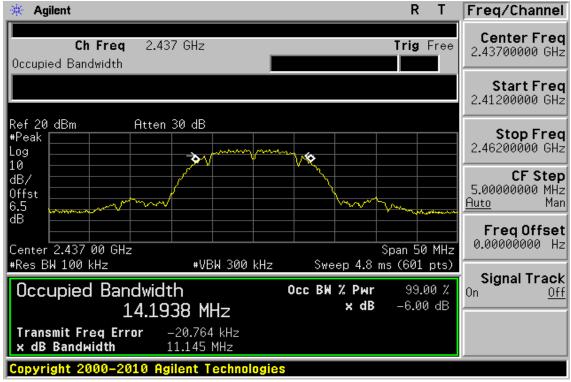


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802.11b 6dB Bandwidth Test Data CH-Low



6dB Bandwidth Test Data CH-Mid



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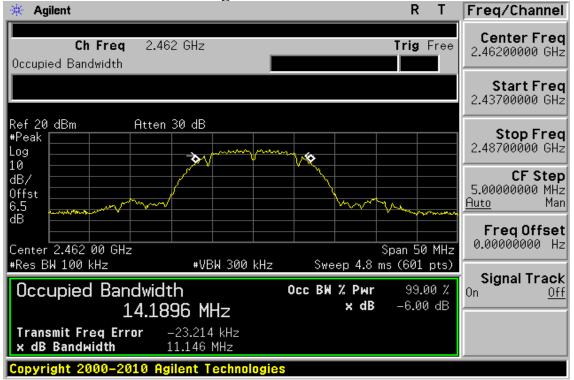
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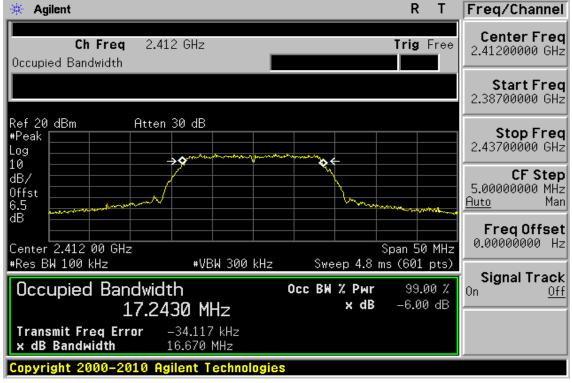
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6dB Bandwidth Test Data CH-High



802.11g





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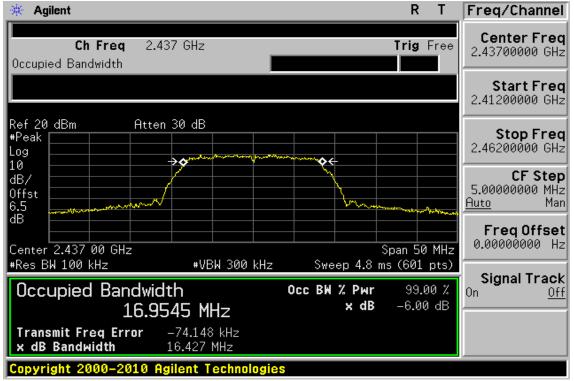
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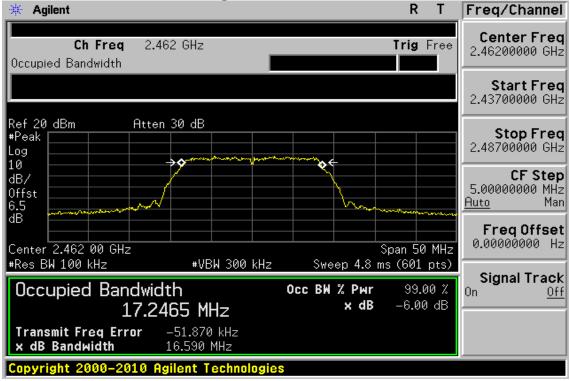


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6dB Bandwidth Test Data CH-Mid



6dB Bandwidth Test Data CH-High



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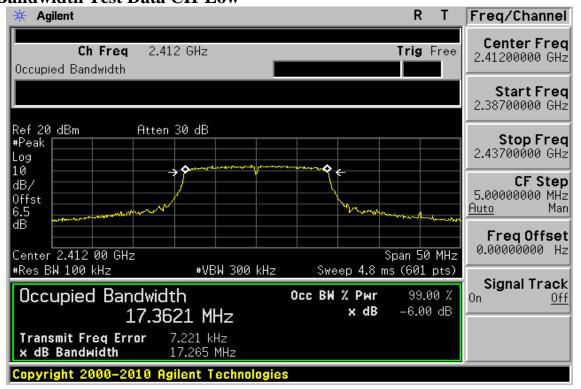
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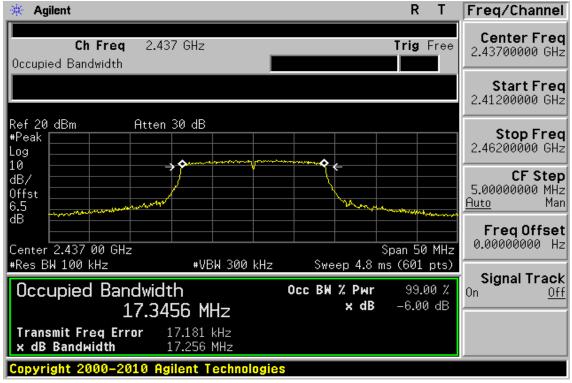


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802.11n 20M (Aux) 6dB Bandwidth Test Data CH-Low



6dB Bandwidth Test Data CH-Mid



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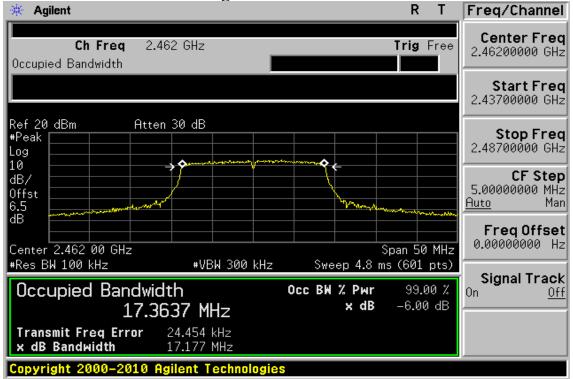
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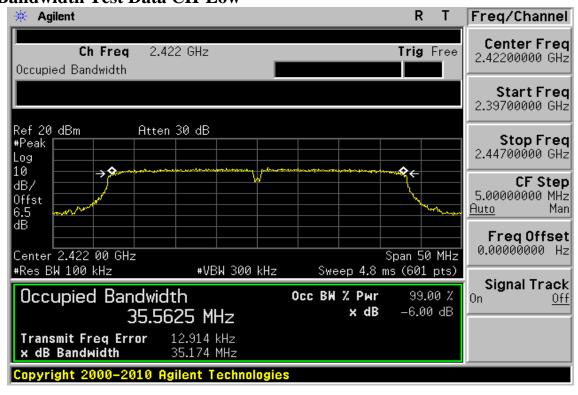


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6dB Bandwidth Test Data CH-High



802.11n 40M (Aux) 6dB Bandwidth Test Data CH-Low



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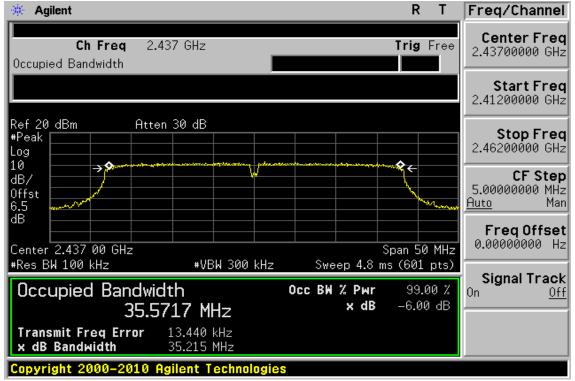
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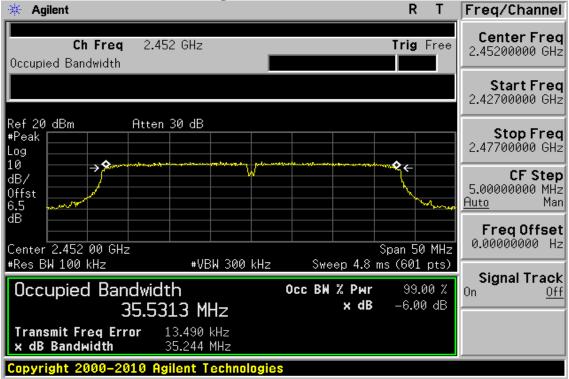


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6dB Bandwidth Test Data CH-Mid



6dB Bandwidth Test Data CH-High



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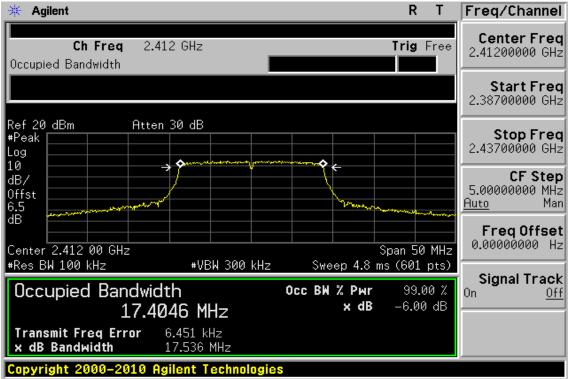
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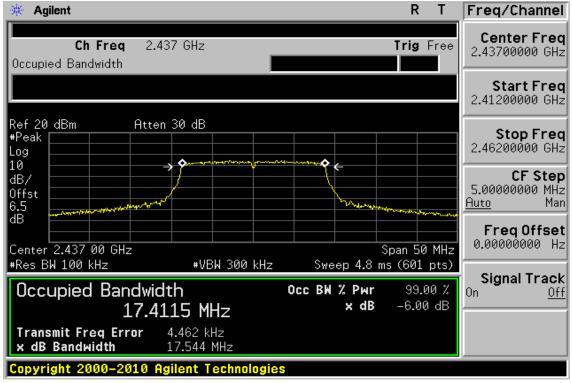


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802.11n 20M (Main) 6dB Bandwidth Test Data CH-Low



6dB Bandwidth Test Data CH-Mid



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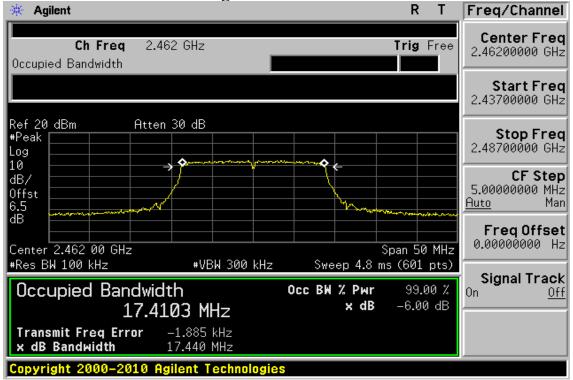
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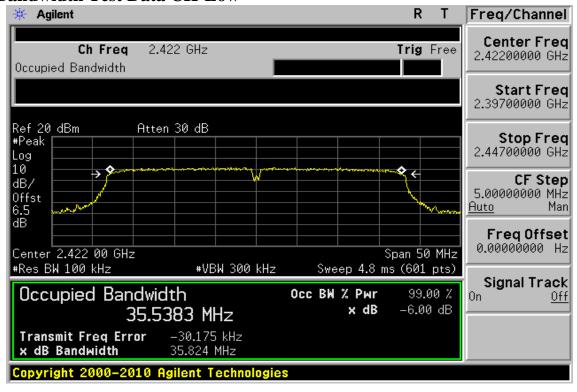


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6dB Bandwidth Test Data CH-High



802.11n 40M (Main) 6dB Bandwidth Test Data CH-Low



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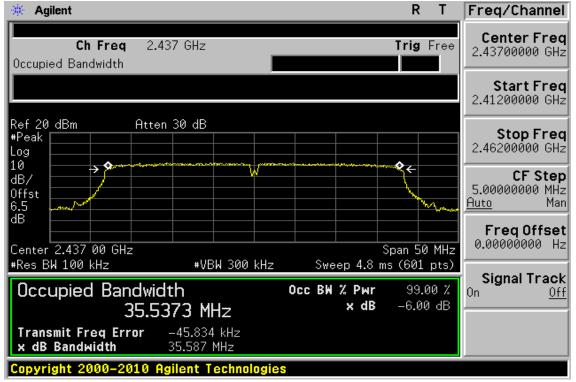
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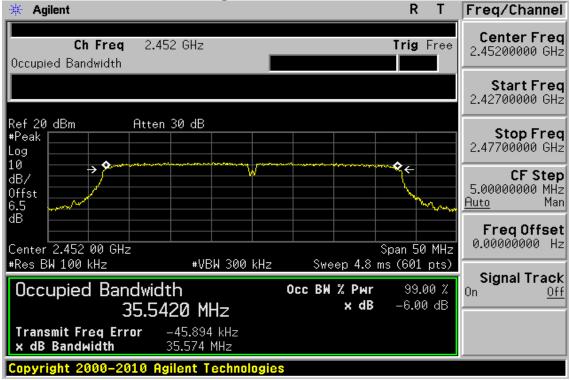


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6dB Bandwidth Test Data CH-Mid



6dB Bandwidth Test Data CH-High



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8 100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

8.1 Standard Applicable:

According to §15.247(c), in any 100 KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

According to RSS-210 issue 8,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

8.2 Measurement Equipment Used:

8.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.



8.2.2. Radiated emission:

966 Chamber									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
ТҮРЕ		NUMBER	NUMBER	CAL.					
Spectrum Analyzer	R&S	FSP 40	100034	03/30/2011	03/29/2012				
Bilog Antenna	SCHWAZBECK	VULB9160	3136	11/19/2010	11/18/2011				
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	01/22/2010	01/21/2012				
Pre-Amplifier	Agilent	8447D	1937A02834	11/28/2010	11/27/2011				
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2011	01/04/2012				
Radio Communication Analyzer	R & S	CMU200	102189	08/12/2010	08/11/2012				
DC Block	Agilent	BLK-18	155452	01/05/2011	01/04/2012				
Turn Table	HD	DT420	N/A	N.C.R	N.C.R				
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R				
Controller	HD	HD100	N/A	N.C.R	N.C.R				
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2011	01/04/2012				
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2011	01/04/2012				
3m Site	SGS	966 chamber	N/A	09/05/2011	09/04/2012				

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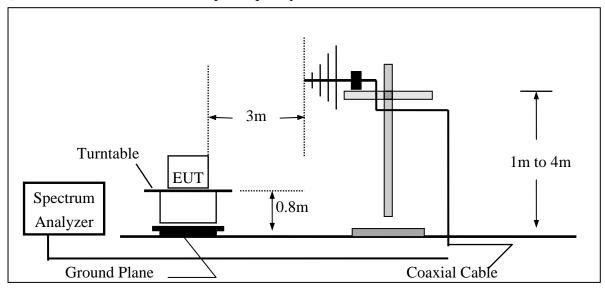
8.3 Test SET-UP:

8.3.1 Conducted Emission at antenna port:

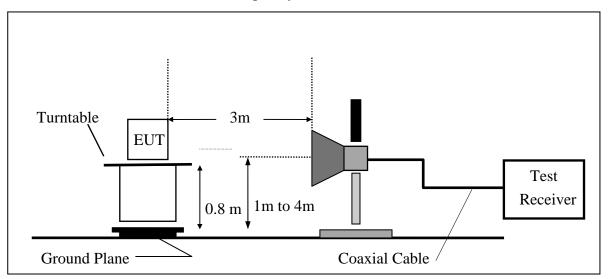
Refer to section 6.3 for details.

8.3.2 Radiated emission:

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



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8.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set center frequency of spectrum analyzer = operating frequency.
- 4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=100MHz, Sweep = auto
- 5. Mark Peak, 2.310GHz 2.390GHz and 2.4835GHz 2.500GHz and record the max. level.
- 6. Repeat above procedures until all frequency measured were complete.

8.5 Field Strength Calculation:

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$\mathbf{FS} = \mathbf{RA} + \mathbf{AF} + \mathbf{CL} - \mathbf{AG}$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

8.6 Measurement Result:

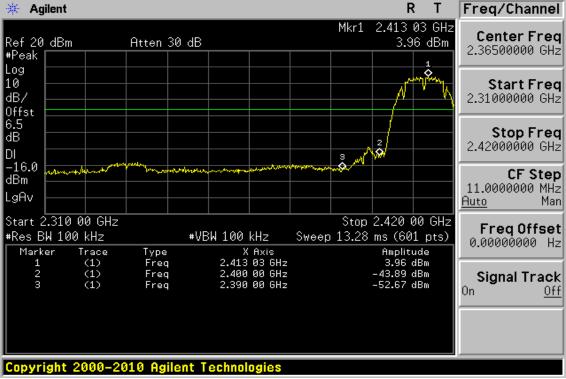
Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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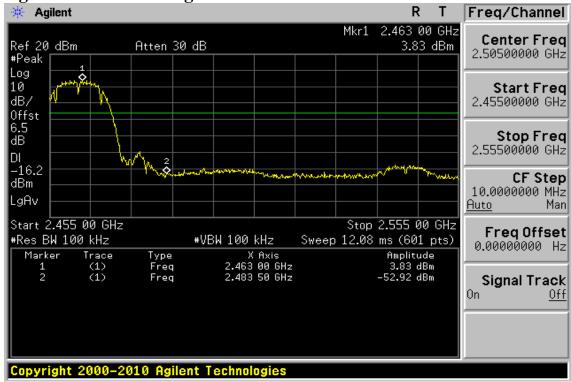


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802.11b **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission: 802.11 b mode

Operation Mode	TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412 MHz	Test By	Lion
Tmperature	27 °C	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	ual FS	Peak	AV		
Freq.		Reading		Peak	AV	Limit	Limit	e	Remark
(MHz)	(d Bu V)	(dBuV)	CF(d B)	(dBu V/m) (dBuV/m) (dBu V/m)	(abuv/n	n) (dB)	
2390.00	54.49	42.98	-1.25	53.24	41.73	74.00	54.00	-12.27	AV
Operation			CH Low					Sep. 17, 20	011
Fundame	ntal Freque	ncy 2412	MHz			Test	2	Lion	
Temperat	ure	27				Pol		Hor.	
Humidity		66 %							
	Peak	AV		Actu	ual FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m) (dBuV/m) (dBuV/m)	(dBuV/n	n) (dB)	
2390.00	55.68	45.03	-1.25	54.43	43.78	74.00	54.00	-10.22	AV

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	TX CH High		Test Da	ate	Sep. 17, 2011
Fundamental Frequency	2462 MHz		Test By	/	Lion
Temperature	27		Pol		Ver.
Humidity	66 %				
Peak	AV	Actual FS	Peak	AV	

	1 cuii	1.		11000		1 cuii			
Freq. (MHz)	R ead ing (d Bu V)	R ead ing (dBu V)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/r	0	Remark
2483.56	48.44	36.85	-0.59	47.85	36.26	74.00	54.00	-17.74	AV
Operation Fundamen Temperatu Humidity	tal Freque		CH High MHz			Tes Tes Pol	t Date t By	Sep. 17, 2 Lion Hor.	011
	Peak	AV		Actu	ial FS	Peak	AV		
Freq. (MHz)	R ead ing (d Bu V)	R ead ing (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/r	e	Remark
2483.50	50.33	39.45	-0.59	49.74	38.86	74.00	54.00	-15.14	AV

Remark :

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

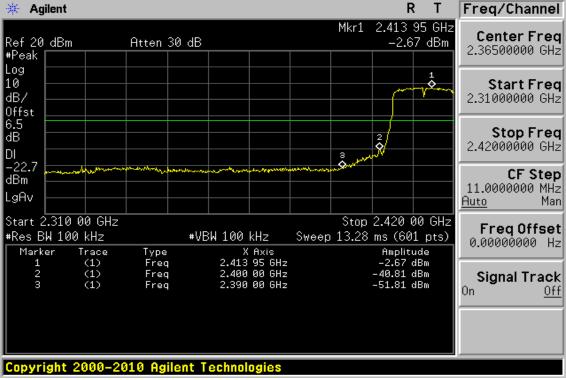
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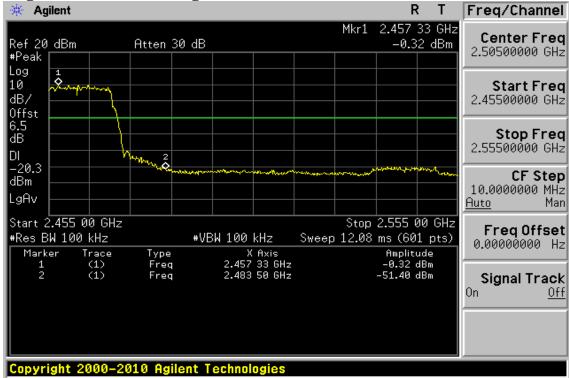


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802.11g **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission: 802.11 g mode

Operation Mode	TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412 MHz	Test By	Lion
Tmperature	27 °C	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	ual FS	Peak	AV		
Freq.	0	R ead ing		Peak	AV	Limit	Limit	e	Remark
(MHz)	$(\mathbf{d} \mathbf{B} \mathbf{u} \mathbf{V})$	(dBuV)	CF(dB)	(dBu V/m	(dBuV/m)	$(\mathbf{d}\mathbf{B}\mathbf{u}\mathbf{V}/\mathbf{m})$	dBuV/n	n) (dB)	
2390.00	61.43	38.70	-1.06	60.37	37.64	74.00	54.00	-16.36	AV
Operation ModeTX CH LowFundamental Frequency2412 MHzTemperature27 °CHumidity66 %				Test Test Pol	Date By	Sep. 17, 20 Lion Hor.	011		
	Peak	AV		Actu	ual FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m) (dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2390.00	64.03	41.32	-1.06	62.97	40.26	74.00	54.00	-13.74	AV

Remark :

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462 MHz	Test By	Lion
Temperature	27 °C	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	61.27	39.64	-0.59	60.68	39.05	74.00	54.00	-14.95	AV
Operation Fundament Temperatu	tal Frequei	ncy 2462 27 °C				Test Test Pol	By	Sep. 17, 20 Lion Hor.	011
Humidity		66 %							
	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	63.45	43.18	-0.59	62.86	42.59	74.00	54.00	-11.41	AV

Remark :

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

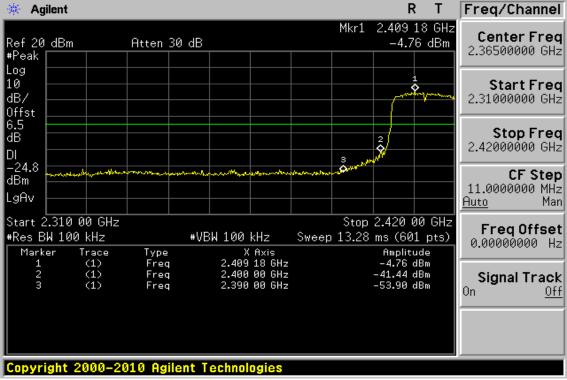
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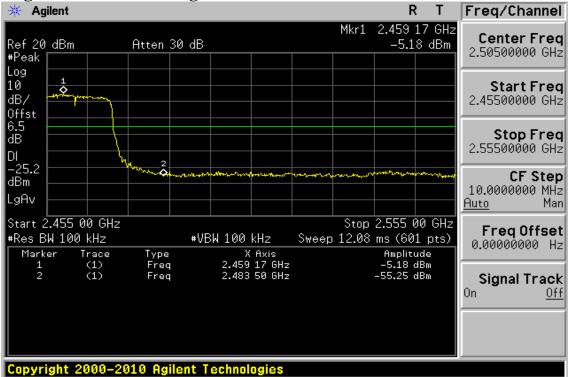


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802.11n_20M (Main) Band Edges Test Data CH-Low



Band Edges Test Data CH-High



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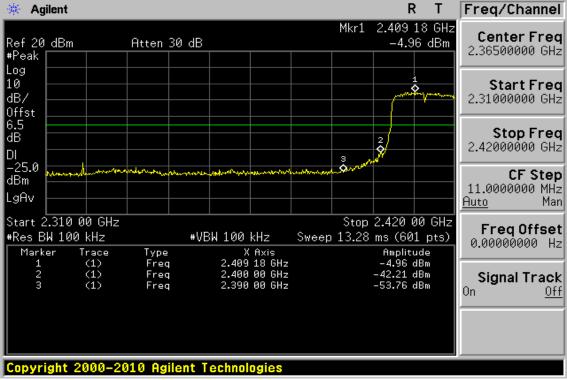
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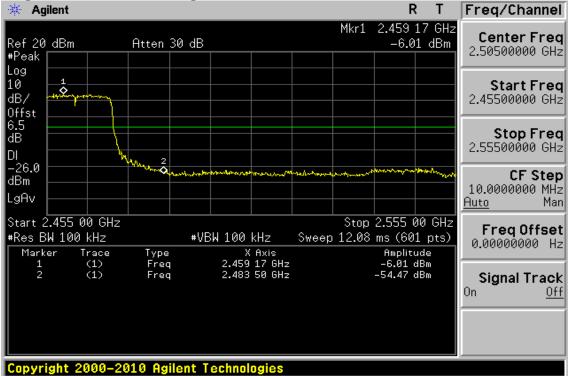


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802.11n_20M (Aux) Band Edges Test Data CH-Low



Band Edges Test Data CH-High



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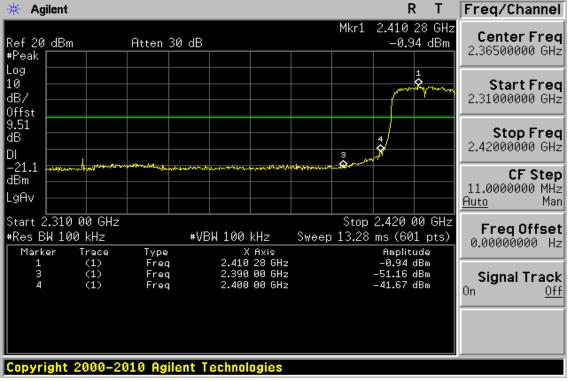
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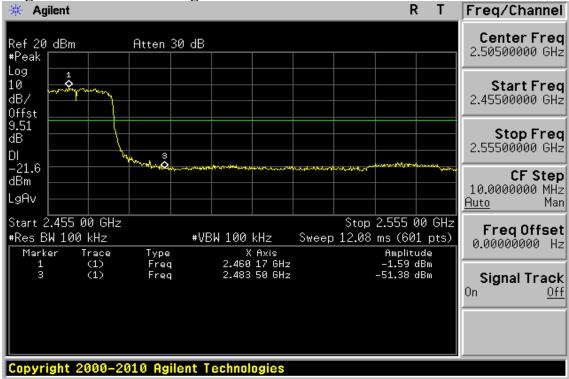


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802.11n_20M (MIMO) **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission: 802.11n_20M mode (MIMO Combine)

Operation Mode	TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2390.00	62.59	44.07	-1.06	61.53	43.01	74.00	54.00	-10.99	AV
Operation	Mode	TX C	CH Low			Test	t Date	Sep. 17, 20	011
Fundamen	tal Frequei	ncy 2412	MHz			Test	tВy	Lion	
Temperatu	ire	27				Pol		Hor.	
Humidity		66 %							
	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)) (dBu V/m)	(dBuV/n	n) (dB)	
2390.00	60.73	44.23	-1.06	59.67	43.17	74.00	54.00	-10.83	AV

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2)Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms. (3)
- (4) Spectrum AV Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Emission: 802.11 n_20M mode (MIMO Combine)

Operation Mode	TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	58.39	39.24	-0.59	57.80	38.65	74.00	54.00	-15.35	AV
a .						_	-		
Operation	Mode		'H High			Test		Sep. 17, 20	011
Fundamen	tal Freque	ncy 2462	MHz			Test	t By	Lion	
Temperatu	ire	27				Pol		Hor.	
Humidity		66 %							
-									
	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	57.46	44.90	-0.59	56.87	44.31	74.00	54.00	-9.69	AV

Remark:

- Data of measurement within this frequency range shown "-" in the table above means the (1)reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2)Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

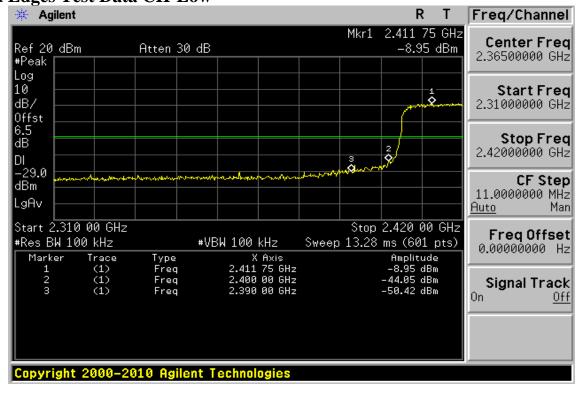
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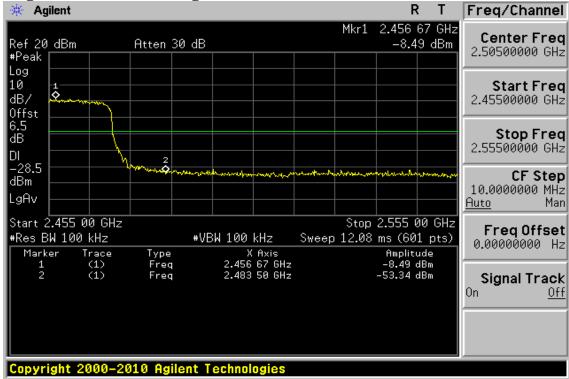


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802.11n 40M (MIMO Main) **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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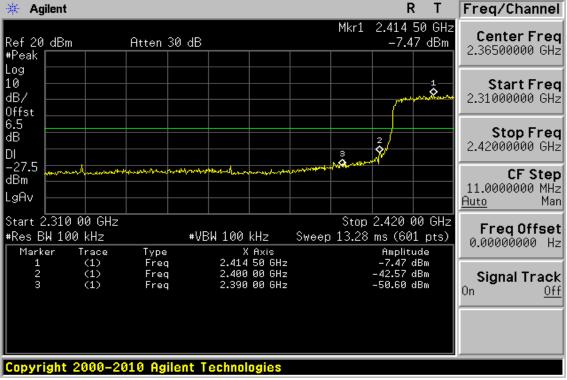
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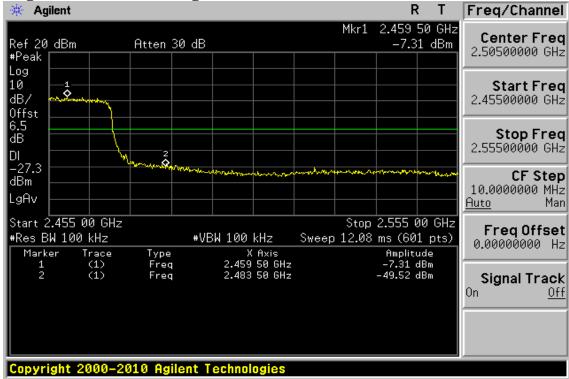


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802.11n_40M (Aux) **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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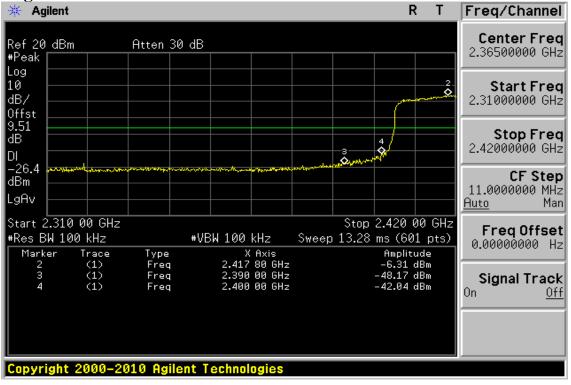
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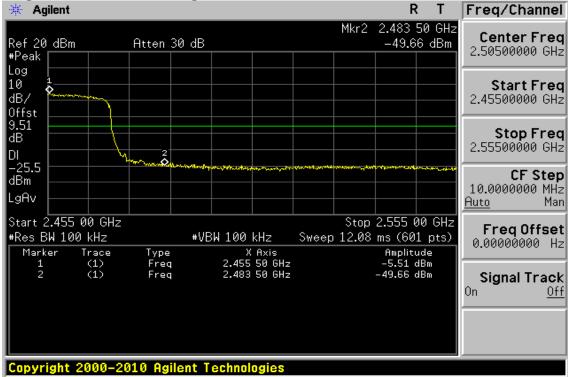


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802.11n 40M (MIMO) **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission: 802.11n_40M mode (MIMO Combine)

Operation Mode	TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2422 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2390.00	58.72	45.46	-1.06	57.66	44.40	74.00	54.00	-9.60	AV
						_	_		
Operation			H Low					Sep. 17, 20	011
Fundamen	tal Frequei	ncy 2422	MHz			Test	By	Lion	
Temperatu	re	27				Pol]	Hor.	
Humidity		66 %							
				• •		D 1			
	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2390.00	59.46	48.37	-1.06	58.40	47.31	74.00	54.00	-6.69	AV

Remark:

- Data of measurement within this frequency range shown "-" in the table above means the (1)reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument us-(2)ing Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Radiated Emission: 802.11 n_40M mode (MIMO Combine)

Operation Mode	TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2452 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	57.44	45.15	-0.59	56.85	44.56	74.00	54.00	-9.44	AV
Operation	Mode	TX C	'H High			Test	Date	Sep. 17, 20	011
Fundamen	tal Frequei	ncy 2452	MHz			Test		Lion	
Temperatu	re	27				Pol	•	Hor.	
Humidity		66 %							
	Peak	AV		Actu	al FS	Peak	AV		
Freq.	R ead ing	R ead ing	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(d Bu V)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/n	n) (dB)	
2483.50	60.94	48.35	-0.59	60.35	47.76	74.00	54.00	-6.24	AV

Remark:

- Data of measurement within this frequency range shown "-" in the table above means the (1)reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2)Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



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9 SPURIOUS RADIATED EMISSION TEST

9.1 Standard Applicable

According to §15.247(c), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). And according to §15.33(a)(1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

According to RSS-210 issue 8,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

9.2 Measurement Equipment Used:

9.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.

9.2.2. Radiated emission:

Refer to section 7.2 for details.

9.3 Test SET-UP:

9.3.1. Conducted Emission at antenna port:

Refer to section 6.3 for details.

9.3.2. Radiated emission:

Refer to section 7.3 for details.

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9.4 Measurement Procedure:

Radiated Emission:

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 7. Repeat above procedures until all frequency measured were complete.

Conducted Emission:

- To connect Antenna Port of EUT to Spectrum. 1.
- 2. Set RBW = 100K & VBW = 100K on Spectrum.
- Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 3G, 3. 3G to 8G, 8G to 13G, 13G to 18G and 18G to 26.5GHz
- 4. Via Software, combine 5 spans of frequency range into one plot
- 5. 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the emission for MIMO mode.

Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

Note: For the test of conducted spurious emission at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. . The single transmitting mode is only reported measurement that produces higher value of outcome.

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9.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

9.6 Measurement Result:

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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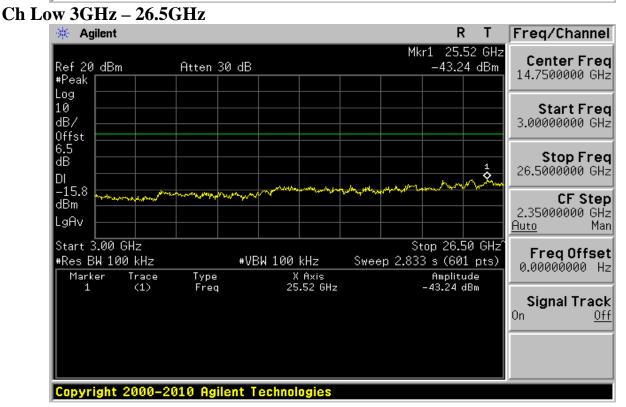


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Conducted Spurious Emission Measurement Result (802.11b) Ch Low 30MHz – 3GHz

Agilent R Т Freq/Channel Mkr2 2.495 10 GHz Center Freq Ref 20 dBm Atten 30 dB -48.60 dBm 1.51500000 GHz #Peak Log 10 Start Freq dB/ 30.0000000 MHz Offst 6.5 dB Stop Freq 3.00000000 GHz \$ DI -15.8 march CF Step dBm 297.000000 MHz .gAv Man <u>Auto</u> Start 30.00 MHz Stop 3.000 00 GHz Freq Offset Sweep 358.1 ms (601 pts) #Res BW 100 kHz #VBW 100 kHz 0.00000000 Hz Marker X Axis Amplitude Trace Туре Freq Freq 2.410 95 GHz 2.495 10 GHz 4.17 dBm -48.60 dBm (1)(1)Signal Track Ûn <u> 0ff</u>

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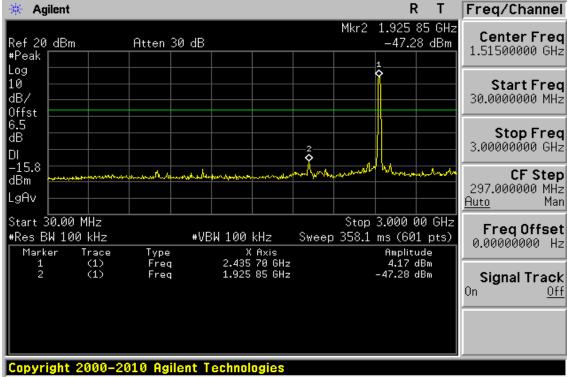
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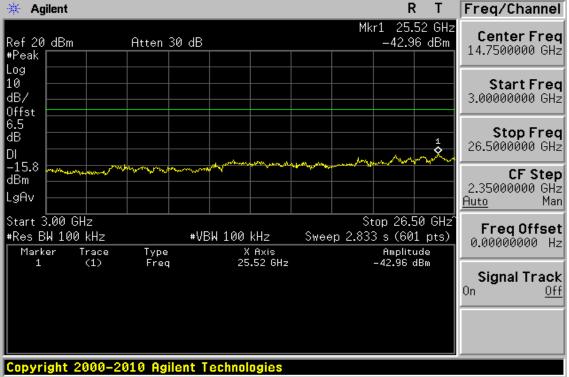


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Ch Mid 30MHz – 3GHz







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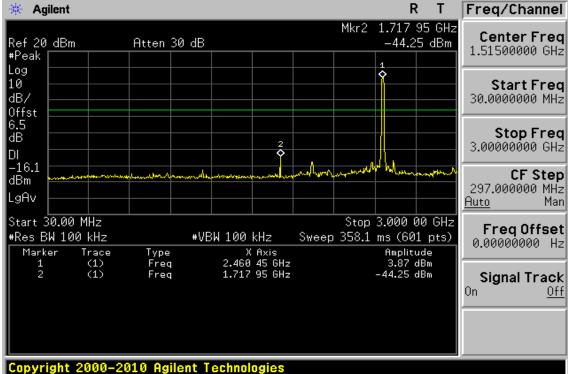
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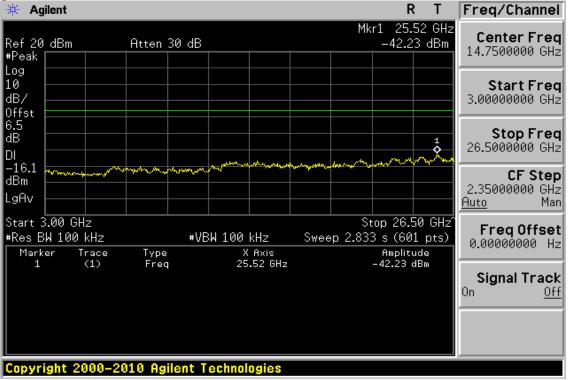


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Ch High 30MHz - 3GHz







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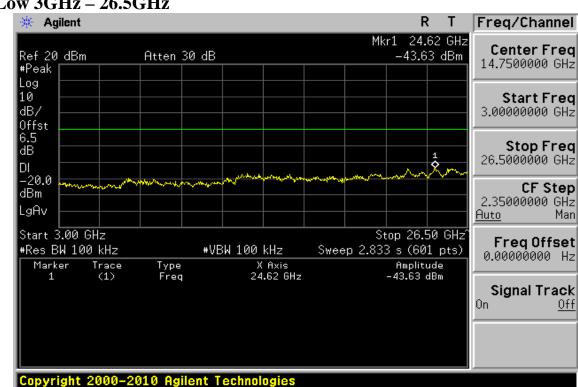
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Conducted Spurious Emission Measurement Result (802.11g) Ch Low 30MHz – 3GHz

Agilent R Т Freq/Channel Mkr1 2.406 00 GHz Center Freq 0.00 dBm Ref 20 dBm Atten 30 dB 1.51500000 GHz #Peak Log 10 Start Freq dB/ 30.0000000 MHz Offst 6.5 Stop Freq dB 3.00000000 GHz DI 20.0n.... CF Step dBm 297.000000 MHz .gAv Man <u>Auto</u> Start 30.00 MHz Stop 3.000 00 GHz Freq Offset #Res BW 100 kHz #VBW 100 kHz Sweep 358.1 ms (601 pts) 0.00000000 Hz Marker Amplitude Trace Туре 2.406 00 GHz (1)Freq 0.00 dBm Signal Track 0n <u> 0ff</u> Copyright 2000-2010 Agilent Technologies



Ch Low 3GHz – 26.5GHz

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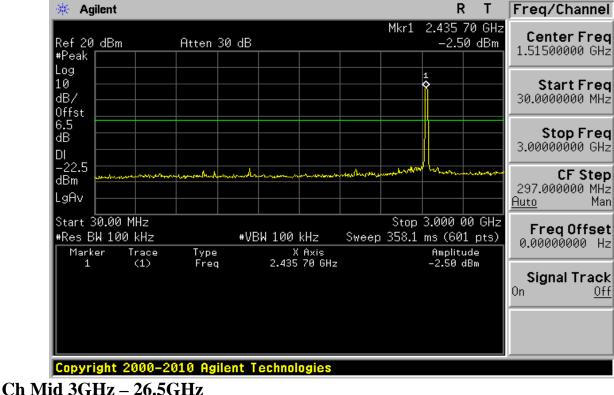
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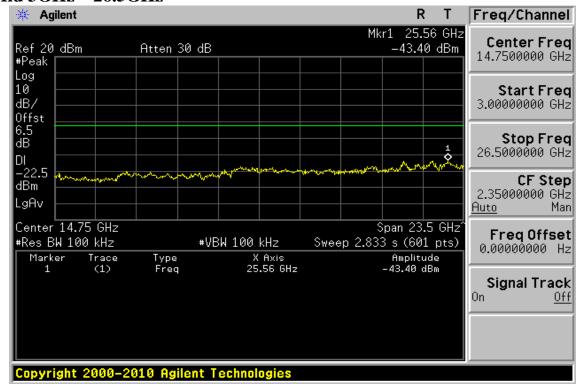
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Ch Mid 30MHz – 3GHz





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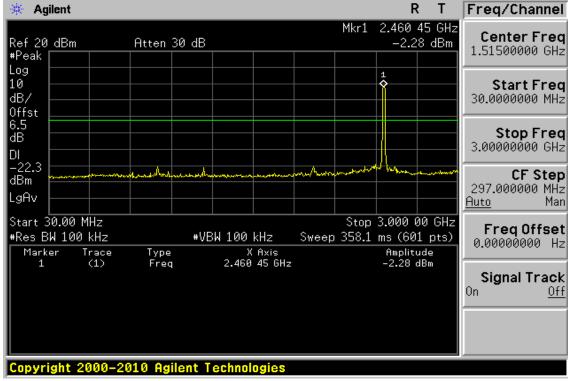
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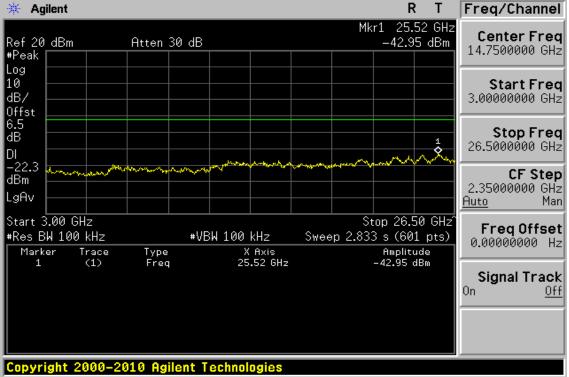


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Ch High 30MHz – 3GHz







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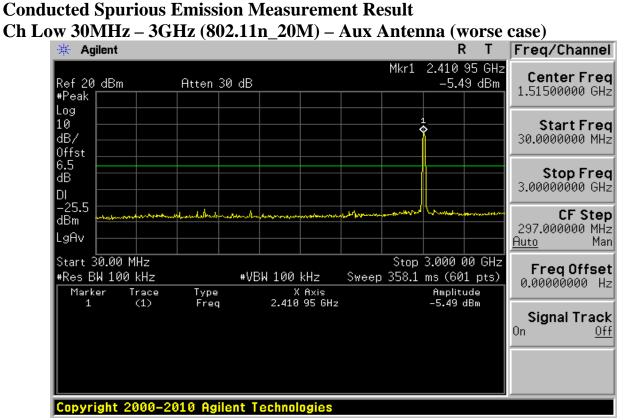
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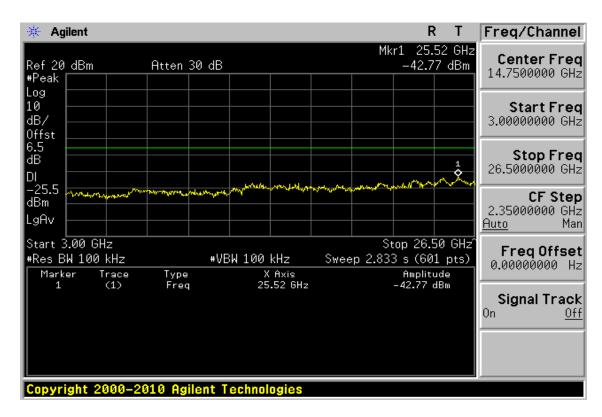
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Ch Low 3GHz – 26.5GHz



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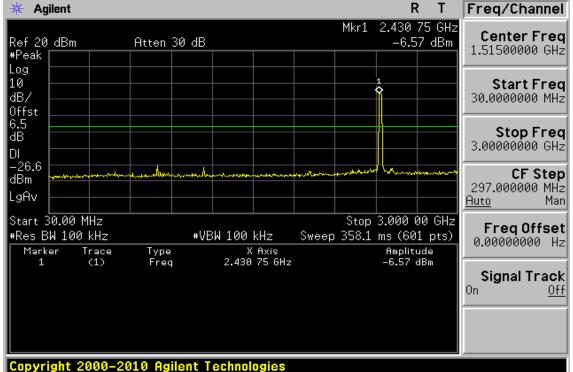
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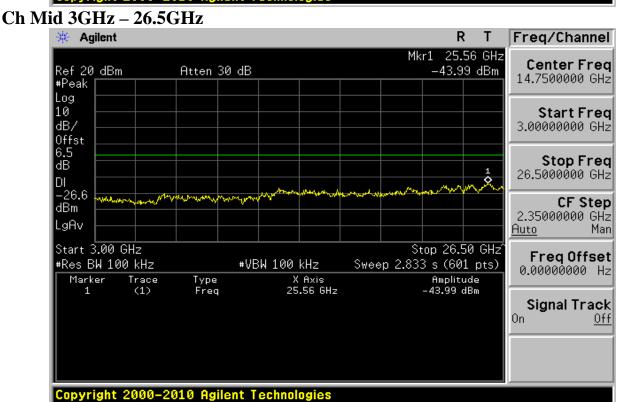
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Ch Mid 30MHz – 3GHz





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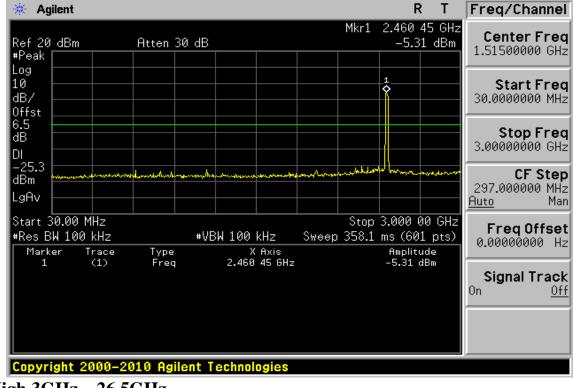
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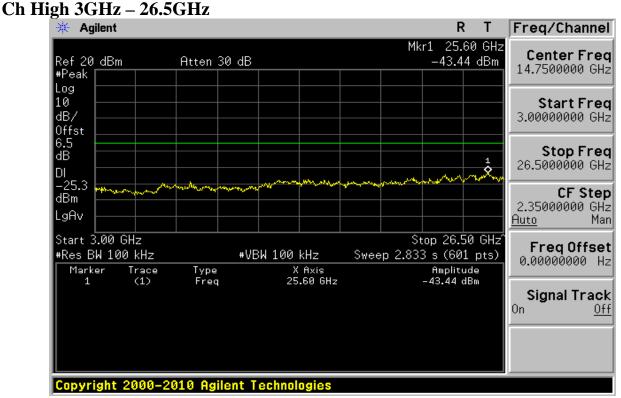
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Ch High 30MHz - 3GHz





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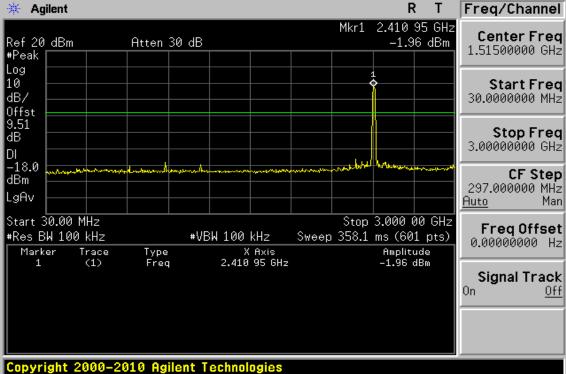
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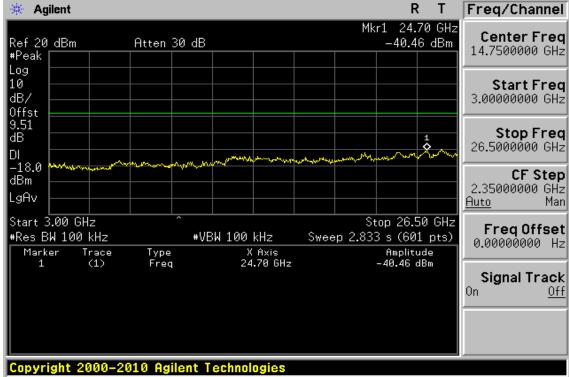


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Conducted Spurious Emission Measurement Result Ch Low 30MHz - 3GHz (802.11n 20M) - MIMO mode



Ch Low 3GHz – 26.5GHz



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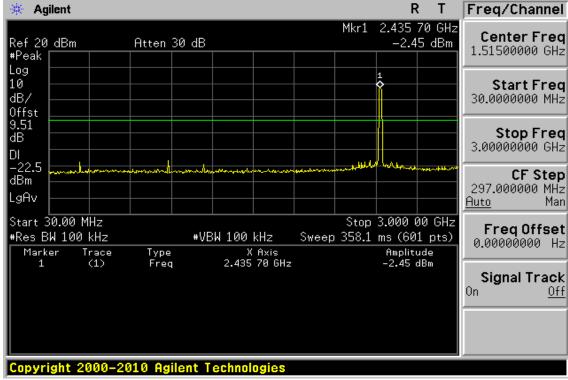
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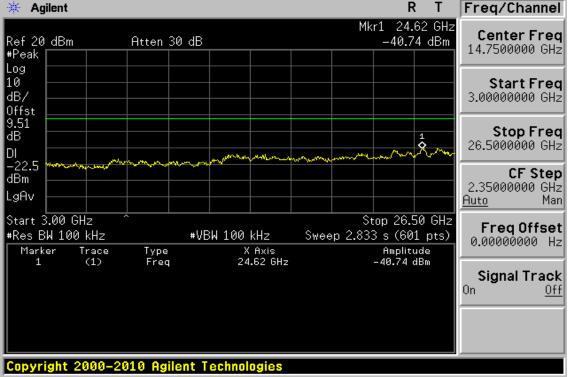


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Ch Mid 30MHz – 3GHz







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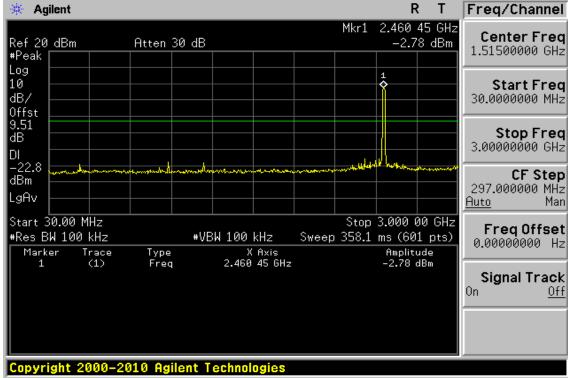
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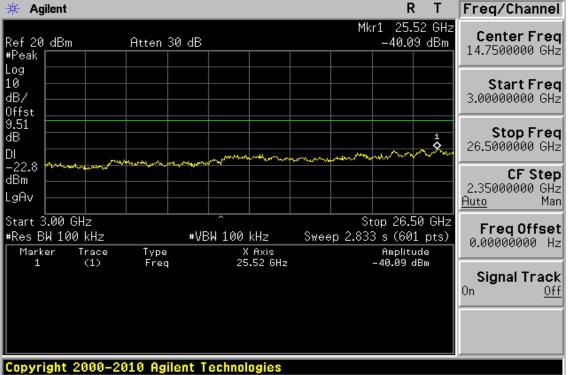


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Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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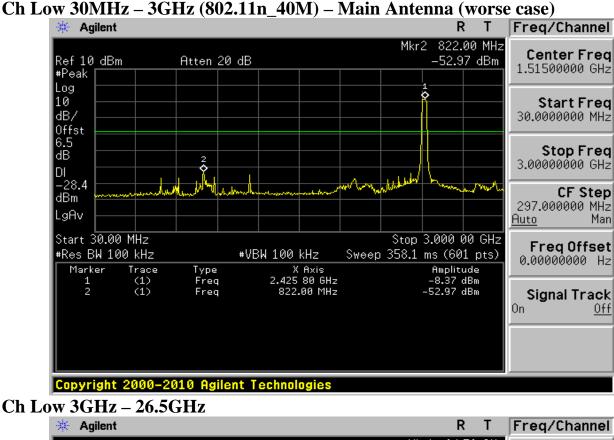
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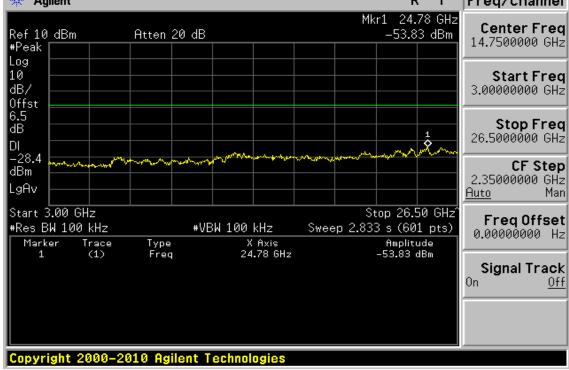
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Conducted Spurious Emission Measurement Result





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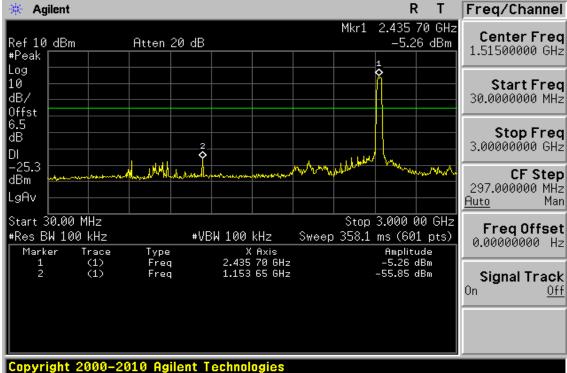
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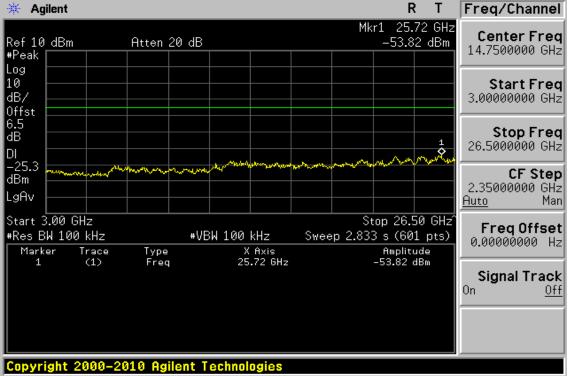


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Ch Mid 30MHz – 3GHz







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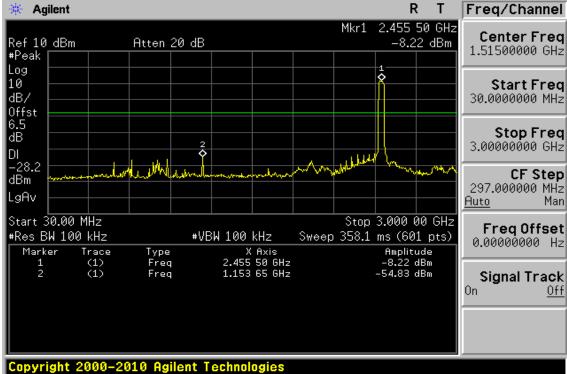
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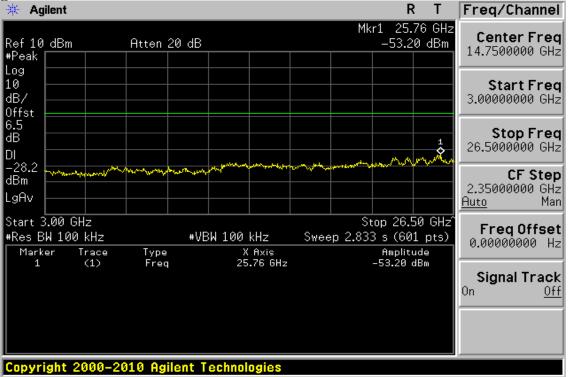


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Ch High 30MHz - 3GHz







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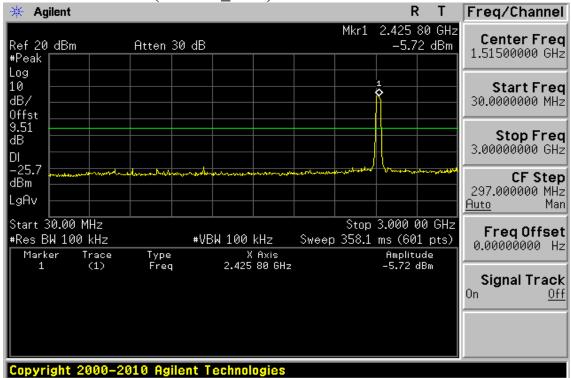
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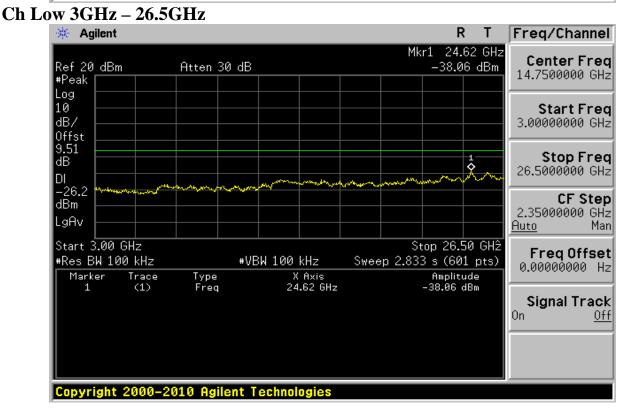
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Conducted Spurious Emission Measurement Result Ch Low 30MHz - 3GHz (802.11n 40M) - MIMO Mode





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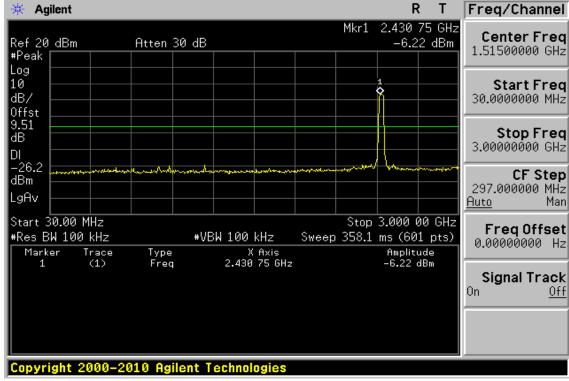
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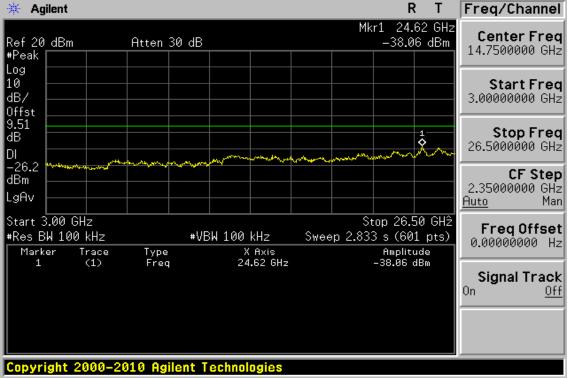


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Ch Mid 30MHz – 3GHz







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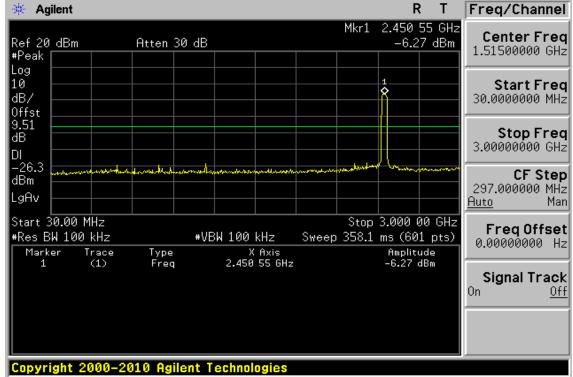
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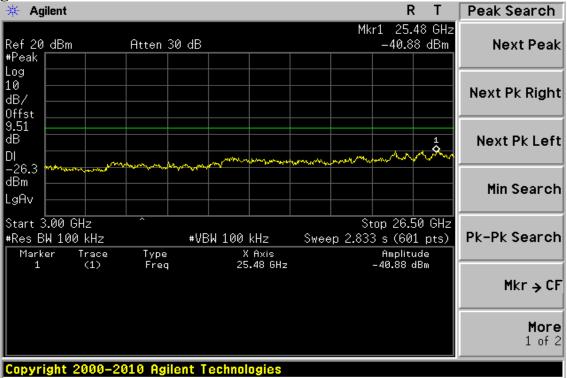


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Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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Radiated Spurious Emission Measurement Result (below 1GHz)

D-4--4---

Operation Mode	802.11b TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

	Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
-	(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
	48.43	V	Peak	50.38	-13.85	36.53	40.00	-3.47
	127.97	V	Peak	51.59	-13.97	37.62	43.50	-5.88
	256.01	V	Peak	50.17	-13.76	36.41	46.00	-9.59
	384.05	V	Peak	46.89	-11.08	35.81	46.00	-10.19
	512.09	V	Peak	43.48	-8.88	34.60	46.00	-11.40
	896.21	V	Peak	40.73	-2.42	38.31	46.00	-7.69
	53.28	Н	Peak	40.04	-14.08	25.96	40.00	-14.04
	127.97	Н	Peak	52.67	-13.97	38.70	43.50	-4.80
	256.01	Н	Peak	51.72	-13.76	37.96	46.00	-8.04
	384.05	Н	Peak	46.58	-11.08	35.50	46.00	-10.50
	512.09	Н	Peak	44.16	-8.88	35.28	46.00	-10.72
	896.21	Н	Peak	44.77	-2.42	42.35	46.00	-3.65

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11b TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
49.40	V	Peak	50.03	-13.93	36.10	40.00	-3.90
127.97	V	Peak	52.13	-13.97	38.16	43.50	-5.34
256.01	V	Peak	52.21	-13.76	38.45	46.00	-7.55
384.05	V	Peak	46.67	-11.08	35.59	46.00	-10.41
512.09	V	Peak	44.77	-8.88	35.89	46.00	-10.11
896.21	V	Peak	40.35	-2.42	37.93	46.00	-8.07
48.43	Н	Peak	39.64	-13.85	25.79	40.00	-14.21
127.97	Н	Peak	52.82	-13.97	38.85	43.50	-4.65
256.01	Н	Peak	53.53	-13.76	39.77	46.00	-6.23
384.05	Н	Peak	46.65	-11.08	35.57	46.00	-10.43
512.09	Н	Peak	41.74	-8.88	32.86	46.00	-13.14
896.21	Н	Peak	45.20	-2.42	42.78	46.00	-3.22

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Operation Mode	802.11b TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.62	-13.85	36.77	40.00	-3.23
127.97	V	Peak	51.27	-13.97	37.30	43.50	-6.20
256.01	V	Peak	49.16	-13.76	35.40	46.00	-10.60
384.05	V	Peak	46.95	-11.08	35.87	46.00	-10.13
512.09	V	Peak	45.73	-8.88	36.85	46.00	-9.15
896.21	V	Peak	40.71	-2.42	38.29	46.00	-7.71
49.40	Н	Peak	40.12	-13.93	26.19	40.00	-13.81
127.97	Н	Peak	52.73	-13.97	38.76	43.50	-4.74
256.01	Н	Peak	53.05	-13.76	39.29	46.00	-6.71
384.05	Н	Peak	47.06	-11.08	35.98	46.00	-10.02
512.09	Н	Peak	43.47	-8.88	34.59	46.00	-11.41
896.21	Н	Peak	45.17	-2.42	42.75	46.00	-3.25

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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17,2011

Operation Mode	802.11g TX CH Low	Test Date	Sep. 17, 20
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.01	-13.85	36.16	40.00	-3.84
127.97	V	Peak	51.97	-13.97	38.00	43.50	-5.50
256.01	V	Peak	51.12	-13.76	37.36	46.00	-8.64
384.05	V	Peak	46.20	-11.08	35.12	46.00	-10.88
512.09	V	Peak	46.38	-8.88	37.50	46.00	-8.50
896.21	V	Peak	40.70	-2.42	38.28	46.00	-7.72
48.43	Н	Peak	39.63	-13.85	25.78	40.00	-14.22
127.97	Н	Peak	52.54	-13.97	38.57	43.50	-4.93
256.01	Н	Peak	53.11	-13.76	39.35	46.00	-6.65
384.05	Н	Peak	46.32	-11.08	35.24	46.00	-10.76
512.09	Н	Peak	43.66	-8.88	34.78	46.00	-11.22
896.21	Н	Peak	44.56	-2.42	42.14	46.00	-3.86

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11g TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.72	-13.85	36.87	40.00	-3.13
127.97	V	Peak	51.65	-13.97	37.68	43.50	-5.82
256.01	V	Peak	50.37	-13.76	36.61	46.00	-9.39
384.05	V	Peak	46.85	-11.08	35.77	46.00	-10.23
512.09	V	Peak	45.17	-8.88	36.29	46.00	-9.71
896.21	V	Peak	40.65	-2.42	38.23	46.00	-7.77
48.43	Н	Peak	40.87	-13.85	27.02	40.00	-12.98
127.97	Н	Peak	52.98	-13.97	39.01	43.50	-4.49
256.01	Н	Peak	52.72	-13.76	38.96	46.00	-7.04
384.05	Н	Peak	46.66	-11.08	35.58	46.00	-10.42
512.09	Н	Peak	44.31	-8.88	35.43	46.00	-10.57
896.21	Н	Peak	44.98	-2.42	42.56	46.00	-3.44

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11g TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
49.40	V	Peak	50.43	-13.93	36.50	40.00	-3.50
127.97	V	Peak	52.42	-13.97	38.45	43.50	-5.05
256.01	V	Peak	52.68	-13.76	38.92	46.00	-7.08
384.05	V	Peak	46.71	-11.08	35.63	46.00	-10.37
512.09	V	Peak	43.45	-8.88	34.57	46.00	-11.43
896.21	V	Peak	40.57	-2.42	38.15	46.00	-7.85
48.43	Н	Peak	39.20	-13.85	25.35	40.00	-14.65
127.97	Н	Peak	52.45	-13.97	38.48	43.50	-5.02
256.01	Н	Peak	54.01	-13.76	40.25	46.00	-5.75
384.05	Н	Peak	46.80	-11.08	35.72	46.00	-10.28
512.09	Н	Peak	44.19	-8.88	35.31	46.00	-10.69
896.21	Н	Peak	44.81	-2.42	42.39	46.00	-3.61

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_20M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.22	-13.85	36.37	40.00	-3.63
127.97	V	Peak	52.72	-13.97	38.75	43.50	-4.75
256.01	V	Peak	52.20	-13.76	38.44	46.00	-7.56
384.05	V	Peak	47.29	-11.08	36.21	46.00	-9.79
512.09	V	Peak	44.67	-8.88	35.79	46.00	-10.21
896.21	V	Peak	40.70	-2.42	38.28	46.00	-7.72
47.46	Н	Peak	38.48	-13.85	24.63	40.00	-15.37
127.97	Н	Peak	52.43	-13.97	38.46	43.50	-5.04
256.01	Н	Peak	54.44	-13.76	40.68	46.00	-5.32
384.05	Н	Peak	46.38	-11.08	35.30	46.00	-10.70
512.09	Н	Peak	43.62	-8.88	34.74	46.00	-11.26
896.21	Н	Peak	44.70	-2.42	42.28	46.00	-3.72

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_20M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.20	-13.85	36.35	40.00	-3.65
127.97	V	Peak	52.40	-13.97	38.43	43.50	-5.07
256.01	V	Peak	54.16	-13.76	40.40	46.00	-5.60
384.05	V	Peak	46.79	-11.08	35.71	46.00	-10.29
512.09	V	Peak	46.40	-8.88	37.52	46.00	-8.48
896.21	V	Peak	40.47	-2.42	38.05	46.00	-7.95
48.43	Н	Peak	38.70	-13.85	24.85	40.00	-15.15
127.97	Н	Peak	53.30	-13.97	39.33	43.50	-4.17
256.01	Н	Peak	50.86	-13.76	37.10	46.00	-8.90
384.05	Н	Peak	47.02	-11.08	35.94	46.00	-10.06
512.09	Н	Peak	42.58	-8.88	33.70	46.00	-12.30
896.21	Н	Peak	45.40	-2.42	42.98	46.00	-3.02

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_20M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.01	-13.85	36.16	40.00	-3.84
127.97	V	Peak	52.31	-13.97	38.34	43.50	-5.16
256.01	V	Peak	50.73	-13.76	36.97	46.00	-9.03
384.05	V	Peak	46.41	-11.08	35.33	46.00	-10.67
512.09	V	Peak	45.53	-8.88	36.65	46.00	-9.35
896.21	V	Peak	41.08	-2.42	38.66	46.00	-7.34
48.43	Н	Peak	38.84	-13.85	24.99	40.00	-15.01
127.97	Н	Peak	52.80	-13.97	38.83	43.50	-4.67
256.01	Н	Peak	53.60	-13.76	39.84	46.00	-6.16
384.05	Н	Peak	46.98	-11.08	35.90	46.00	-10.10
512.09	Н	Peak	42.95	-8.88	34.07	46.00	-11.93
896.21	Н	Peak	44.64	-2.42	42.22	46.00	-3.78

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_40M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	49.41	-13.85	35.56	40.00	-4.44
127.97	V	Peak	52.25	-13.97	38.28	43.50	-5.22
256.01	V	Peak	50.54	-13.76	36.78	46.00	-9.22
384.05	V	Peak	46.79	-11.08	35.71	46.00	-10.29
512.09	V	Peak	42.71	-8.88	33.83	46.00	-12.17
896.21	V	Peak	40.32	-2.42	37.90	46.00	-8.10
49.40	Н	Peak	38.95	-13.85	25.10	40.00	-14.90
127.97	Н	Peak	52.74	-13.97	38.77	43.50	-4.73
256.01	Н	Peak	56.55	-13.76	42.79	46.00	-3.21
384.05	Н	Peak	46.22	-11.08	35.14	46.00	-10.86
512.09	Н	Peak	42.90	-8.88	34.02	46.00	-11.98
896.21	Н	Peak	44.92	-2.42	42.50	46.00	-3.50

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_40M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.07	-13.85	36.22	40.00	-3.78
127.97	V	Peak	51.48	-13.97	37.51	43.50	-5.99
256.01	V	Peak	50.51	-13.76	36.75	46.00	-9.25
384.05	V	Peak	46.55	-11.08	35.47	46.00	-10.53
512.09	V	Peak	45.57	-8.88	36.69	46.00	-9.31
896.21	V	Peak	40.75	-2.42	38.33	46.00	-7.67
48.43	Н	Peak	38.42	-13.85	24.57	40.00	-15.43
127.97	Н	Peak	53.19	-13.97	39.22	43.50	-4.28
256.01	Н	Peak	51.93	-13.76	38.17	46.00	-7.83
384.05	Н	Peak	45.92	-11.08	34.84	46.00	-11.16
512.09	Н	Peak	42.28	-8.88	33.40	46.00	-12.60
896.21	Н	Peak	44.69	-2.42	42.27	46.00	-3.73

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11n_40M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Frea Ant Pol		Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin	
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
49.40	V	Peak	50.78	-13.85	36.93	40.00	-3.07	
127.97	V	Peak	52.29	-13.97	38.32	43.50	-5.18	
256.01	V	Peak	50.83	-13.76	37.07	46.00	-8.93	
384.05	V	Peak	47.55	-11.08	36.47	46.00	-9.53	
512.09	V	Peak	42.26	-8.88	33.38	46.00	-12.62	
896.21	V	Peak	40.19	-2.42	37.77	46.00	-8.23	
48.43	Н	Peak	40.09	-13.85	26.24	40.00	-13.76	
127.97	Н	Peak	52.33	-13.97	38.36	43.50	-5.14	
256.01	Н	Peak	51.94	-13.76	38.18	46.00	-7.82	
384.05	Н	Peak	46.27	-11.08	35.19	46.00	-10.81	
512.09	Н	Peak	41.87	-8.88	32.99	46.00	-13.01	
896.21	Н	Peak	44.81	-2.42	42.39	46.00	-3.61	

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	802.11b TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

		Peak	AV		Actu	al FS	Peak	AV		
	Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
_	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
	1663.0	42.51		-4.13	38.38		74.00	54.00	-15.62	Peak
	1897.0	53.15		-3.12	50.03		74.00	54.00	-3.97	Peak
	4824.0	38.56		5.24	43.80		74.00	54.00	-10.20	Peak
	7236.0						74.00	54.00		
	9648.0						74.00	54.00		
	12060.0						74.00	54.00		
	14472.0						74.00	54.00		
	16884.0						74.00	54.00		
	19296.0						74.00	54.00		
	21708.0						74.00	54.00		
	24120.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11b TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	45.54		-4.13	41.41		74.00	54.00	-12.59	Peak
1897.0	54.04		-3.12	50.92		74.00	54.00	-3.08	Peak
4824.0	34.80		5.24	40.04		74.00	54.00	-13.96	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction form exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. SGS Taiwan Ltd. No.134, Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan /台北縣五股工業區五工路 134 號



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Operation Mode	802.11b TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.65		-4.13	37.52		74.00	54.00	-16.48	Peak
1923.0	53.92		-3.10	50.82		74.00	54.00	-3.18	Peak
4874.0	38.08		5.38	43.46		74.00	54.00	-10.54	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11b TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actual FS		Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	45.36		-4.13	41.23		74.00	54.00	-12.77	Peak
1923.0	51.18		-3.10	48.08		74.00	54.00	-5.92	Peak
4874.0	34.10		5.38	39.48		74.00	54.00	-14.52	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11b TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	42.46		-4.13	38.33		74.00	54.00	-15.67	Peak
1949.0	53.03		-3.03	50.00		74.00	54.00	-4.00	Peak
4924.0	41.18		5.52	46.70		74.00	54.00	-7.30	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		
19696.0 22158.0	 					74.00 74.00	54.00 54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11b TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

Peak	AV		Actu	al FS	Peak	AV		
Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
45.61		-4.13	41.48		74.00	54.00	-12.52	Peak
53.47		-3.03	50.44		74.00	54.00	-3.56	Peak
34.37		5.52	39.89		74.00	54.00	-14.11	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Reading (dBuV) 45.61 53.47	Reading Reading (dBuV) (dBuV) 45.61 53.47	Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 45.61 -4.13 53.47 -3.03	Reading Reading Ant./CL Peak (dBuV) (dBuV) (dBuV/m) 45.61 -4.13 41.48 53.47 -3.03 50.44	Reading Ant./CL Peak AV (dBuV) (dBuV) (dBuV) (dBuV) 45.61 -4.13 41.48 53.47 -3.03 50.44	ReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV)(dBuV)(dBuV)45.614.1341.4874.0053.473.0350.4474.0034.375.5239.8974.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00	ReadingReadingAnt./CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)45.614.1341.4874.0054.0053.473.0350.4474.0054.0034.375.5239.8974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	ReadingReadingAnt./ClPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)45.614.1341.4874.0054.00-12.5253.473.0350.4474.0054.00-3.5634.375.5239.8974.0054.00-14.1174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

Peak	AV		Actu	al FS	Peak	AV		
Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
43.05		-4.13	38.92		74.00	54.00	-15.08	Peak
50.94		-3.12	47.82		74.00	54.00	-6.18	Peak
35.05		5.16	40.21		74.00	54.00	-13.79	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Reading (dBuV) 43.05 50.94 35.05 	Reading Reading (dBuV) (dBuV) 43.05 50.94 35.05	Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 43.05 -4.13 50.94 -3.12 35.05 5.16	ReadingAnt./CLPeak(dBuV)CF(dB)(dBuV/m)43.054.1338.9250.943.1247.8235.055.1640.21 <t< td=""><td>ReadingAnt./CLPeakAV(dBuV)CF(dB)(dBuV/m)(dBuV/m)43.054.1338.9250.943.1247.8235.055.1640.21</td></t<> <td>ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)43.054.1338.9274.0050.9431.2247.8274.0035.0551.6040.2174.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00</td> <td>ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.054.1338.9274.0054.0050.943.1247.8274.0054.0035.055.1640.2174.0054.005.1640.2174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.00<td>ReadingAnt/CLPeakAVLinitLinitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.054.1338.9274.0054.00-15.0850.943.1247.8274.0054.00-6.1835.055.1640.2174.0054.00-13.7974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00<!--</td--></td></td>	ReadingAnt./CLPeakAV(dBuV)CF(dB)(dBuV/m)(dBuV/m)43.054.1338.9250.943.1247.8235.055.1640.21	ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)43.054.1338.9274.0050.9431.2247.8274.0035.0551.6040.2174.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00	ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.054.1338.9274.0054.0050.943.1247.8274.0054.0035.055.1640.2174.0054.005.1640.2174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.00 <td>ReadingAnt/CLPeakAVLinitLinitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.054.1338.9274.0054.00-15.0850.943.1247.8274.0054.00-6.1835.055.1640.2174.0054.00-13.7974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00<!--</td--></td>	ReadingAnt/CLPeakAVLinitLinitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.054.1338.9274.0054.00-15.0850.943.1247.8274.0054.00-6.1835.055.1640.2174.0054.00-13.7974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00 </td

Remark:

- Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental (1)frequency
- (2)Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column
- Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 (4)ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	40.32		-4.13	36.19		74.00	54.00	-17.81	Peak
1897.0	46.57		-3.12	43.45		74.00	54.00	-10.55	Peak
4824.0	36.84		5.24	42.08		74.00	54.00	-11.92	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.27		-4.13	37.14		74.00	54.00	-16.86	Peak
1923.0	54.21		-3.10	51.11		74.00	54.00	-2.89	Peak
4874.0	35.35		5.38	40.73		74.00	54.00	-13.27	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.27		-4.13	37.14		74.00	54.00	-16.86	Peak
1923.0	45.19		-3.10	42.09		74.00	54.00	-11.91	Peak
4874.0	41.67		5.38	47.05		74.00	54.00	-6.95	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	40.63		-4.13	36.50		74.00	54.00	-17.50	Peak
1949.0	52.70		-3.10	49.60		74.00	54.00	-4.40	Peak
4924.0	40.54		5.38	45.92		74.00	54.00	-8.08	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g TX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	39.88		-4.13	35.75		74.00	54.00	-18.25	Peak
1949.0	44.59		-3.03	41.56		74.00	54.00	-12.44	Peak
4924.0	45.57		5.50	51.07		74.00	54.00	-2.93	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11n_20M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	43.22		-4.13	39.09		74.00	54.00	-14.91	Peak
1903.5	49.24		-3.12	46.12		74.00	54.00	-7.88	Peak
4824.0	34.03		5.44	39.47		74.00	54.00	-14.53	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_20M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.59		-4.13	37.46		74.00	54.00	-16.54	Peak
1897.0	43.52		-3.12	40.40		74.00	54.00	-13.60	Peak
4824.0	35.62		5.24	40.86		74.00	54.00	-13.14	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_20M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver
Humidity	66 %		

Peak	AV		Actu	al FS	Peak	AV		
Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
43.40		-4.13	39.27		74.00	54.00	-14.73	Peak
49.38		-3.10	46.28		74.00	54.00	-7.72	Peak
34.39		5.70	40.09		74.00	54.00	-13.91	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Reading (dBuV) 43.40 49.38 34.39	Reading Reading (dBuV) (dBuV) 43.40 49.38 34.39	Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 43.40 -4.13 49.38 -3.10 34.39 5.70	Reading Ant./CL Peak (dBuV) CF(dB) (dBuV/m) 43.40 -4.13 39.27 49.38 -3.10 46.28 34.39 5.70 40.09	ReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV/m)(dBuV/m)43.4039.2749.3834.3934.395.7040.09	ReadingReadingAnt./CLPeakAVLimit(dBuv)(dBuv)(CF(dB)(dBuV)(dBuV)(dBuV)43.404.1339.2774.0049.383.1046.2874.0034.395.7040.0974.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00	ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.404.1339.2774.0054.0049.383.1046.2874.0054.0034.395.7040.0974.0054.005.7040.0974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00 <td>ReadingReadingAnt./CLPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.404.1339.2774.0054.00-14.7349.383.1046.2874.0054.00-7.7234.395.7040.0974.0054.00-13.9174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00<</td>	ReadingReadingAnt./CLPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)43.404.1339.2774.0054.00-14.7349.383.1046.2874.0054.00-7.7234.395.7040.0974.0054.00-13.9174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00<

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11n_20M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.39		-4.13	37.26		74.00	54.00	-16.74	Peak
1929.5	43.75		-3.06	40.69		74.00	54.00	-13.31	Peak
4874.0	35.51		5.38	40.89		74.00	54.00	-13.11	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_20M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	43.68		-4.13	39.55		74.00	54.00	-14.45	Peak
1949.0	49.46		-3.03	46.43		74.00	54.00	-7.57	Peak
4924.0	36.68		5.52	42.20		74.00	54.00	-11.80	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_20M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	40.79		-4.13	36.66		74.00	54.00	-17.34	Peak
1955.5	42.74		-3.03	39.71		74.00	54.00	-14.29	Peak
4924.0	37.65		5.52	43.17		74.00	54.00	-10.83	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2422MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	45.00		-4.13	40.87		74.00	54.00	-13.13	Peak
1916.5	50.09		-3.10	46.99		74.00	54.00	-7.01	Peak
4844.0	34.27		5.38	39.65		74.00	54.00	-14.35	Peak
7266.0						74.00	54.00		
9688.0						74.00	54.00		
12110.0						74.00	54.00		
14532.0						74.00	54.00		
16954.0						74.00	54.00		
19376.0						74.00	54.00		
21798.0						74.00	54.00		
24220.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH Low (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2422MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.41		-4.13	37.28		74.00	54.00	-16.72	Peak
1916.5	41.24		-3.10	38.14		74.00	54.00	-15.86	Peak
4844.0	34.62		5.30	39.92		74.00	54.00	-14.08	Peak
7266.0						74.00	54.00		
9688.0						74.00	54.00		
12110.0						74.00	54.00		
14532.0						74.00	54.00		
16954.0						74.00	54.00		
19376.0						74.00	54.00		
21798.0						74.00	54.00		
24220.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver
Humidity	66 %		

Peak	AV		Actu	al FS	Peak	AV		
Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
44.26		-4.13	40.13		74.00	54.00	-13.87	Peak
50.01		-3.03	46.98		74.00	54.00	-7.02	Peak
33.90		5.70	39.60		74.00	54.00	-14.40	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Reading (dBuV) 44.26 50.01 33.90 	Reading Reading (dBuV) (dBuV) 44.26 50.01 33.90 <td>Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 44.26 -4.13 50.01 -3.03 33.90 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 <!--</td--><td>ReadingAnt./CLPeak(dBuv)CF(dB)(dBu/)44.264.1340.1350.013.0346.9833.905.70039.60</td><td>ReadingAnt./CLPeakAV(dBu/)(dBu/)(dBu/)(dBu/)44.264.1340.1350.013.0346.9833.905.7039.60<td< td=""><td>ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)44.264.1340.1374.0050.0146.9874.0033.905.7039.6074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00</td><td>ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.0050.013.0346.9874.0054.0033.905.7039.6074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>ReadingReadingAnt./ClPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.00-13.8750.013.0346.9874.0054.00-7.0233.905.7039.6074.0054.00-14.4074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></td<></td></td>	Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 44.26 -4.13 50.01 -3.03 33.90 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 5.700 </td <td>ReadingAnt./CLPeak(dBuv)CF(dB)(dBu/)44.264.1340.1350.013.0346.9833.905.70039.60</td> <td>ReadingAnt./CLPeakAV(dBu/)(dBu/)(dBu/)(dBu/)44.264.1340.1350.013.0346.9833.905.7039.60<td< td=""><td>ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)44.264.1340.1374.0050.0146.9874.0033.905.7039.6074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00</td><td>ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.0050.013.0346.9874.0054.0033.905.7039.6074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>ReadingReadingAnt./ClPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.00-13.8750.013.0346.9874.0054.00-7.0233.905.7039.6074.0054.00-14.4074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></td<></td>	ReadingAnt./CLPeak(dBuv)CF(dB)(dBu/)44.264.1340.1350.013.0346.9833.905.70039.60	ReadingAnt./CLPeakAV(dBu/)(dBu/)(dBu/)(dBu/)44.264.1340.1350.013.0346.9833.905.7039.60 <td< td=""><td>ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)44.264.1340.1374.0050.0146.9874.0033.905.7039.6074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00</td><td>ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.0050.013.0346.9874.0054.0033.905.7039.6074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>ReadingReadingAnt./ClPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.00-13.8750.013.0346.9874.0054.00-7.0233.905.7039.6074.0054.00-14.4074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></td<>	ReadingReadingAnt./ClPeakAVLimit(dBuv)CF(dB)(dBuv)(dBuv)(dBuv)44.264.1340.1374.0050.0146.9874.0033.905.7039.6074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00	ReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.0050.013.0346.9874.0054.0033.905.7039.6074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	ReadingReadingAnt./ClPeakAVLimitLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)44.264.1340.1374.0054.00-13.8750.013.0346.9874.0054.00-7.0233.905.7039.6074.0054.00-14.4074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH Mid (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.21		-4.13	37.08		74.00	54.00	-16.92	Peak
1942.5	42.48		-3.06	39.42		74.00	54.00	-14.58	Peak
4874.0	31.36		5.44	36.80		74.00	54.00	-17.20	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2452MHz	Test By	Lion
Temperature	27	Pol	Ver
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	43.58		-4.13	39.45		74.00	54.00	-14.55	Peak
1936.0	51.85		-3.06	48.79		74.00	54.00	-5.21	Peak
4904.0	34.51		5.42	39.93		74.00	54.00	-14.07	Peak
7356.0						74.00	54.00		
9808.0						74.00	54.00		
12260.0						74.00	54.00		
14712.0						74.00	54.00		
17164.0						74.00	54.00		
19616.0						74.00	54.00		
22068.0						74.00	54.00		
24520.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11n_40M TX CH High (MIMO)	Test Date	Sep. 17, 2011
Fundamental Frequency	2452MHz	Test By	Lion
Temperature	27	Pol	Hor
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	42.38		-4.13	38.25		74.00	54.00	-15.75	Peak
1929.5	41.35		-3.06	38.29		74.00	54.00	-15.71	Peak
4904.0	34.90		5.47	40.37		74.00	54.00	-13.63	Peak
7356.0						74.00	54.00		
9808.0						74.00	54.00		
12260.0						74.00	54.00		
14712.0						74.00	54.00		
17164.0						74.00	54.00		
19616.0						74.00	54.00		
22068.0						74.00	54.00		
24520.0						74.00	54.00		

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Radiated Spurious Emission Measurement Result (below 1GHz) (The worse case)

Operation Mode	802.11g RX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.58	-13.85	36.73	40.00	-3.27
127.97	V	Peak	50.52	-13.97	36.55	43.50	-6.95
256.01	V	Peak	49.34	-13.76	35.58	46.00	-10.42
384.05	V	Peak	44.87	-11.08	33.79	46.00	-12.21
584.84	V	Peak	47.86	-7.38	40.48	46.00	-5.52
896.21	V	Peak	33.94	-2.42	31.52	46.00	-14.48
48.43	Н	Peak	41.08	-13.85	27.23	40.00	-12.77
127.97	Н	Peak	53.15	-13.97	39.18	43.50	-4.32
256.10	Н	Peak	55.52	-13.76	41.76	46.00	-4.24
384.05	Н	Peak	44.73	-11.08	33.65	46.00	-12.35
640.13	Н	Peak	44.00	-6.18	37.82	46.00	-8.18
896.21	Н	Peak	39.54	-2.42	37.12	46.00	-8.88

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



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Operation Mode	802.11g RX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	49.87	-13.85	36.02	40.00	-3.98
127.97	V	Peak	50.47	-13.97	36.50	43.50	-7.00
256.01	V	Peak	51.59	13.76	65.35	46.00	19.35
384.05	V	Peak	45.02	-11.08	33.94	46.00	-12.06
584.84	V	Peak	46.59	-7.38	39.21	46.00	-6.79
896.21	V	Peak	33.73	-2.42	31.31	46.00	-14.69
47.46	Н	Peak	38.97	-13.85	25.12	40.00	-14.88
127.97	Н	Peak	52.97	-13.97	39.00	43.50	-4.50
256.01	Н	Peak	53.63	-13.76	39.87	46.00	-6.13
384.05	Н	Peak	45.55	-11.08	34.47	46.00	-11.53
640.13	Н	Peak	44.17	-6.18	37.99	46.00	-8.01
896.21	Н	Peak	39.10	-2.42	36.68	46.00	-9.32

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Operation Mode	802.11g RX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor.
Humidity	66 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
48.43	V	Peak	50.85	-13.85	37.00	40.00	-3.00
127.97	V	Peak	50.72	-13.97	36.75	43.50	-6.75
256.01	V	Peak	47.73	-13.76	33.97	46.00	-12.03
384.05	V	Peak	44.88	-11.08	33.80	46.00	-12.20
584.84	V	Peak	47.98	-7.38	40.60	46.00	-5.40
896.21	V	Peak	34.91	-2.42	32.49	46.00	-13.51
48.43	Н	Peak	38.58	-13.85	24.73	40.00	-15.27
127.97	Н	Peak	53.03	-13.97	39.06	43.50	-4.44
256.01	Н	Peak	55.82	-13.76	42.06	46.00	-3.94
384.05	Н	Peak	46.86	-11.08	35.78	46.00	-10.22
640.13	Н	Peak	42.32	-6.18	36.14	46.00	-9.86
896.21	Н	Peak	40.61	-2.42	38.19	46.00	-7.81

Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz_o
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	802.11g RX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

		Peak	AV		Actu	al FS	Peak	AV		
	Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
_	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
	1663.0	41.71		-4.13	37.58		74.00	54.00	-16.42	Peak
	4824.0	34.02		5.19	39.21		74.00	54.00	-14.79	Peak
	7236.0						74.00	54.00		
	9648.0						74.00	54.00		
	12060.0						74.00	54.00		

Remark:

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11g RX CH Low	Test Date	Sep. 17, 2011
Fundamental Frequency	2412 MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

		Peak	AV		Actu	al FS	Peak	AV		
	Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
_	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
	1663.0	35.44		-4.13	31.31		74.00	54.00	-22.69	Peak
	4824.0	33.73		5.10	38.83		74.00	54.00	-15.17	Peak
	7236.0						74.00	54.00		
	9648.0						74.00	54.00		
	12060.0						74.00	54.00		

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency_o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11g RX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	42.21		-4.13	38.08		74.00	54.00	-15.92	Peak
4874.0	33.97		5.24	39.21		74.00	54.00	-14.79	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency_o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11g RX CH Mid	Test Date	Sep. 17, 2011
Fundamental Frequency	2437 MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	35.88		-4.13	31.75		74.00	54.00	-22.25	Peak
4874.0	33.39		5.70	39.09		74.00	54.00	-14.91	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency_o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Operation Mode	802.11g RX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	41.45		-4.13	37.32		74.00	54.00	-16.68	Peak
4924.0	33.77		5.57	39.34		74.00	54.00	-14.66	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode	802.11g RX CH High	Test Date	Sep. 17, 2011
Fundamental Frequency	2462 MHz	Test By	Lion
Temperature	27	Pol	Hor.
Humidity	66 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1663.0	35.77		-4.13	31.64		74.00	54.00	-22.36	Peak
2963.0	33.44		5.57	39.01		74.00	54.00	-14.99	Peak
4924.0						74.00	54.00		
7386.0						74.00	54.00		
9848.0						74.00	54.00		

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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10 PEAK POWER SPECTRAL DENSITY

10.1 Standard Applicable:

According to §15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

According to RSS-210 issue 8, §A8.2(b) The transmitter power spectral density (into the antenna) shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration.

10.2 Measurement Equipment Used:

Refer to section 6.2 for details.

10.3 Test Set-up:

Refer to section 6.3 for details.



10.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 3KHz, VBW = 10KHz, Span = 300KHz, Sweep=100s
- 4. Record the max. reading.
- 5. Repeat above procedures until all frequency measured were complete.
- 6. 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode.

Offset = cable loss + $10 \log (N)$, where N is number of transmitting antenna. N=2 for this given application.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. . The single transmitting mode is only reported measurement that produces higher value of outcome.

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10.5 **Measurement Result:**

802.11b

Frequency MHz	RF Power Density Reading (dBm)	RF Power Density Level (dBm)	Maximum Limit (dBm)
2412	-14.09	-14.09	8
2437	-14.02	-14.02	8
2462	-14.31	-14.31	8

802.11g

Frequency	RF Power Density	RF Power Density	Maximum Limit
MHz	Reading (dBm)	Level (dBm)	(dBm)
2412	-17.52	-17.52	8
2437	-17.58	-17.58	8
2462	-17.64	-17.64	8

802.11n_20M - Aux Antenna

Frequency	RF Power Density	RF Power Density	Maximum Limit
MHz	Reading (dBm)	Level (dBm)	(dBm)
2412	-20.97	-20.97	8
2437	-21.61	-21.61	8
2462	-21.59	-21.59	8

802.11n_40M - Aux Antenna

Frequency	RF Power Density	RF Power Density	Maximum Limit
MHz	Reading (dBm)	Level (dBm)	(dBm)
2412	-22.66	-22.66	8
2437	-22.62	-22.62	8
2462	-18.33	-18.33	8

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802.11n_20M (MIMO)

Frequency	RF Power Density	RF Power Density	Maximum Limit
MHz	Reading (dBm)	Level (dBm)	(dBm)
2412	-20.97	-20.97	8
2437	-21.61	-21.61	8
2462	-21.59	-21.59	8

802.11n_40M (MIMO)

Frequency	RF Power Density	RF Power Density	Maximum Limit
MHz	Reading (dBm)	Level (dBm)	(dBm)
2412	-22.66	-22.66	8
2437	-22.62	-22.62	8
2462	-21.05	-21.05	8

*Note: offset=class loss+10 log 2=6.5dBm+3.01dBm=9.51dBm

Note: Refer to next page for plots.

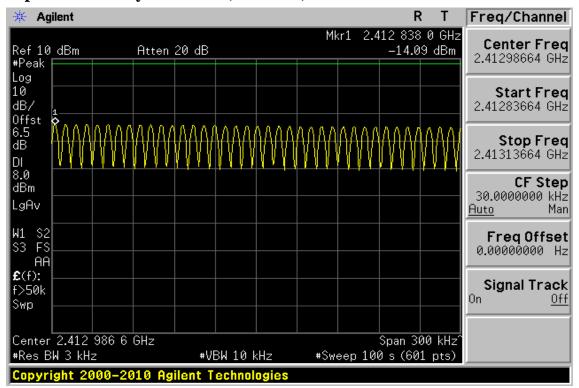
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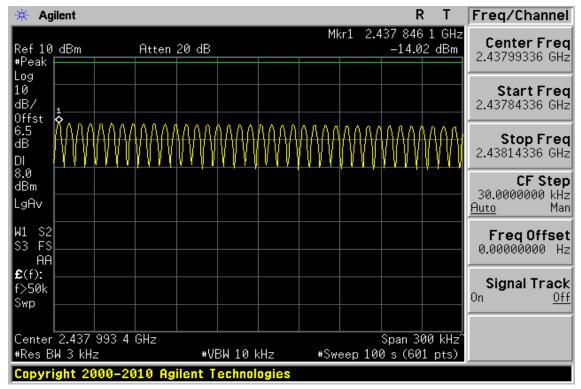
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802.11b

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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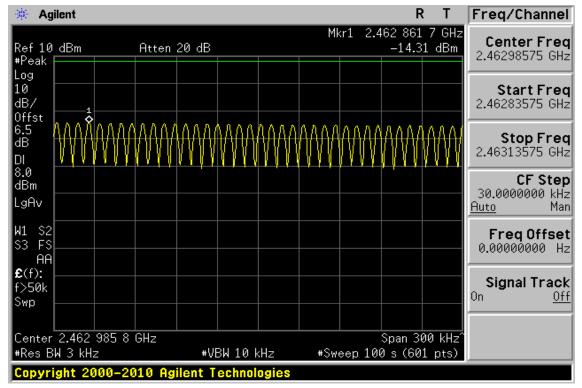
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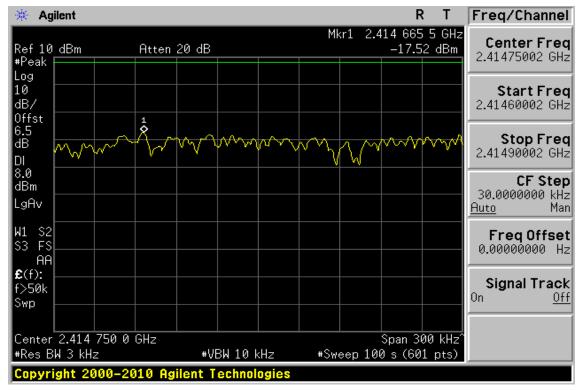
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Power Spectral Density Test Plot (CH-High)



802.11g

Power Spectral Density Test Plot (CH-Low)



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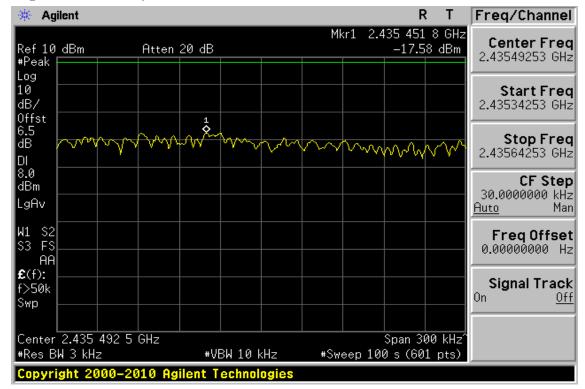
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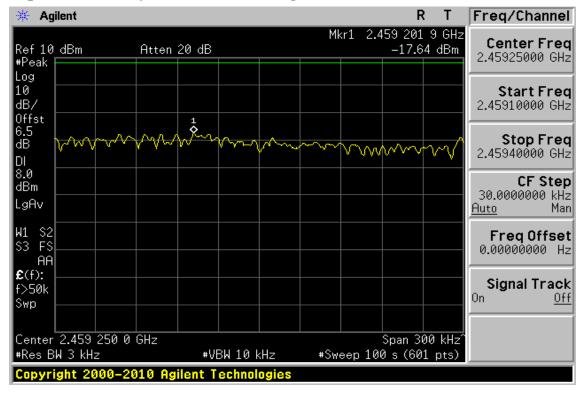


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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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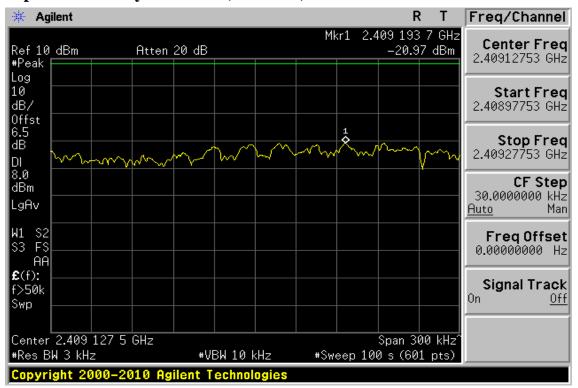
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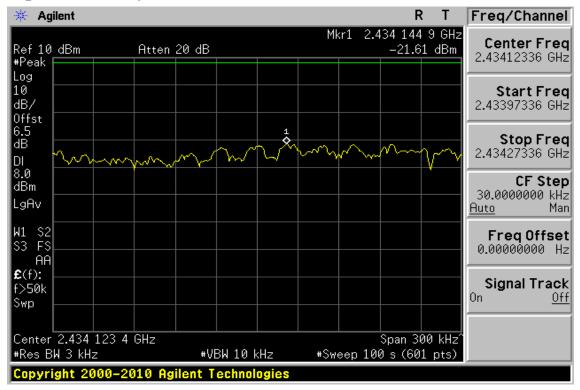
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802.11n_20M (Aux Antenna)

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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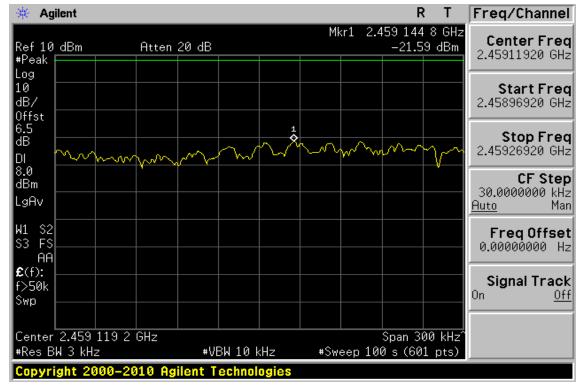
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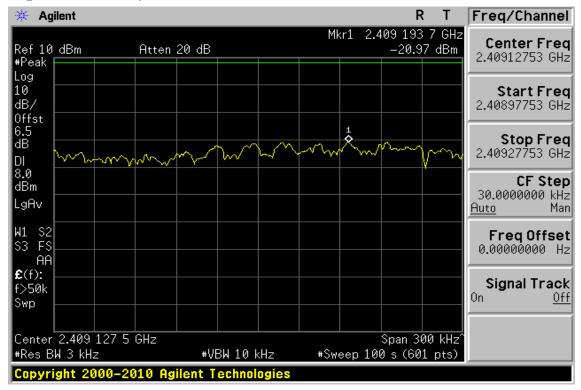
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Power Spectral Density Test Plot (CH-High)



802.11n_20M (MIMO Mode)

Power Spectral Density Test Plot (CH-Low)



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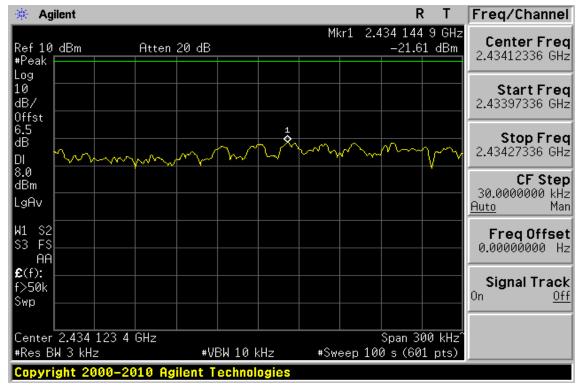
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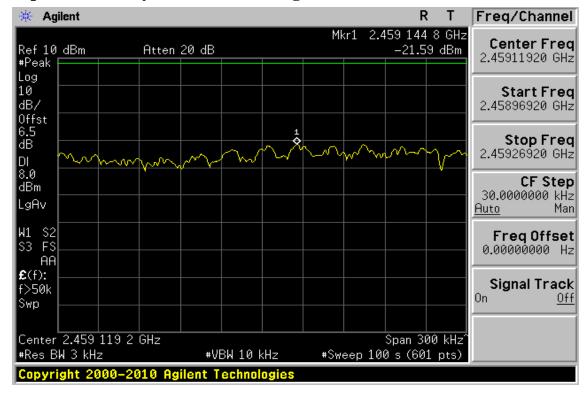


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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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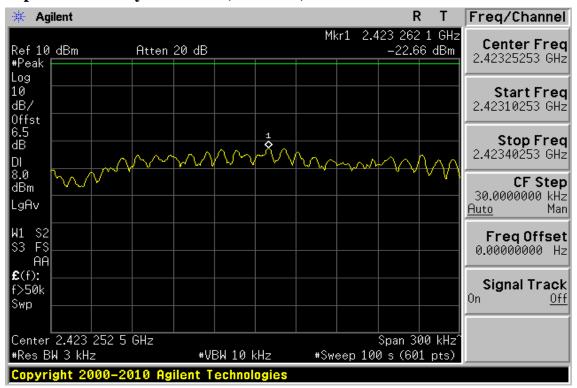
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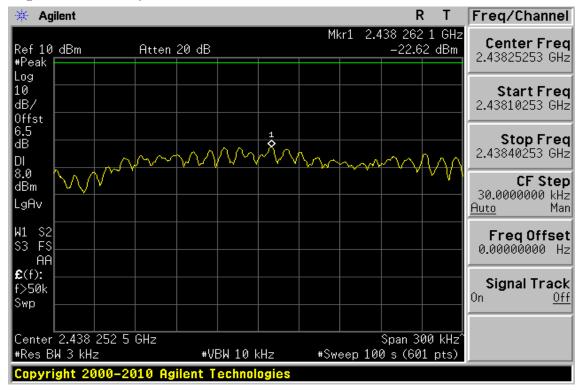
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802.11n_40M (Main Antenna)

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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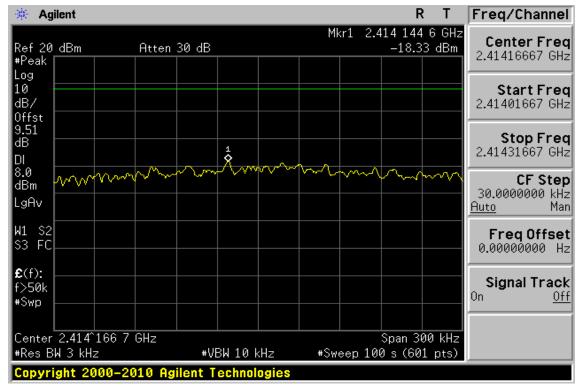
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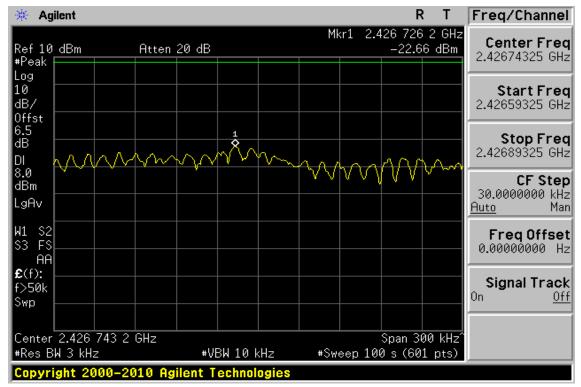
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Power Spectral Density Test Plot (CH-High)



802.11n_40M (MIMO Mode)

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)

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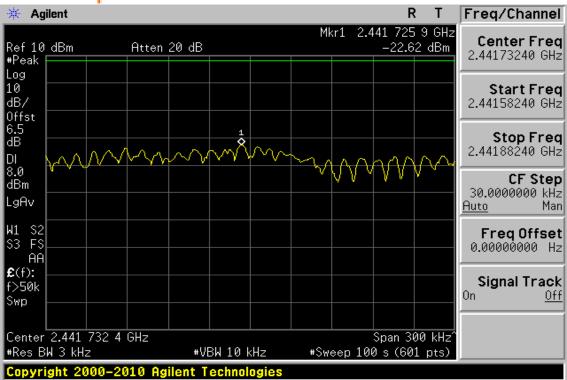
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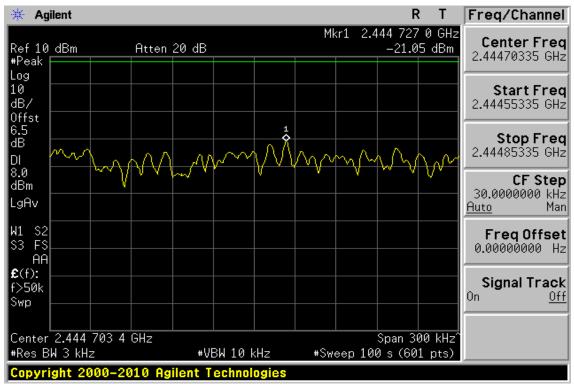
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Power Spectral Density Test Plot (CH-High)



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11 ANTENNA REQUIREMENT

11.1. Standard Applicable:

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be

replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some

field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the

proper antenna is employed so that the limits in this Part are not exceeded.

According to RSS-GEN 7.1.2, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

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When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

11.2. Antenna Connected Construction:

The directional gains of antenna used for transmitting is 4.35 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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12 99% BANDWIDTH MEASUREMENT

12.1. Standard Applicable:

RSS-Gen §4.6.1, the transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

12.2. Measurement Equipment Used:

Refer to section 6.2 for details.

12.3. Test Set-up:

Refer to section 6.3 for details.

12.4. Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= 50
- 4. Turn on the 99% bandwidth function, max reading..
- 5. Repeat above procedures until all frequency measured were complete.



12.5. Measurement Result:

802.11b

Frequency MHz	99%Bandwidth (MHz)
2412	15.1877
2437	14.1938
2462	14.1896

802.11g

Frequency	99%Bandwidth
MHz	(MHz)
2412	17.2430
2437	16.9545
2462	17.2465

802.11n_20M (Aux)

Frequency	99%Bandwidth
MHz	(MHz)
2412	17.3621
2437	17.3456
2462	17.3637

802.11n_40M(Aux)

Frequency	99%Bandwidth
MHz	(MHz)
2412	35.5625
2437	35.5717
2462	35.5313

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802.11n_20M (Main)

Frequency	99%Bandwidth
MHz	(MHz)
2412	17.4046
2437	17.4115
2462	17.4103

802.11n_40M (Main)

Frequency	99%Bandwidth
MHz	(MHz)
2412	35.5383
2437	35.5373
2462	35.5420

Note: Refer to next page for plots.

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802.11b



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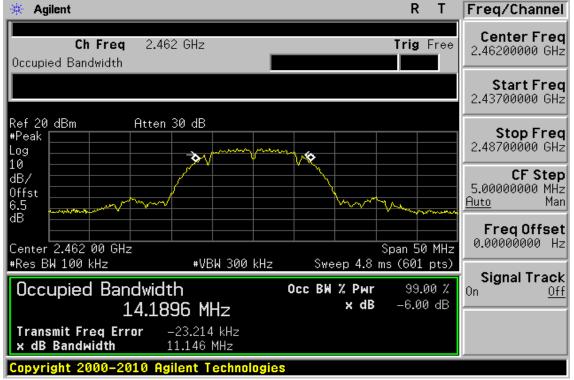
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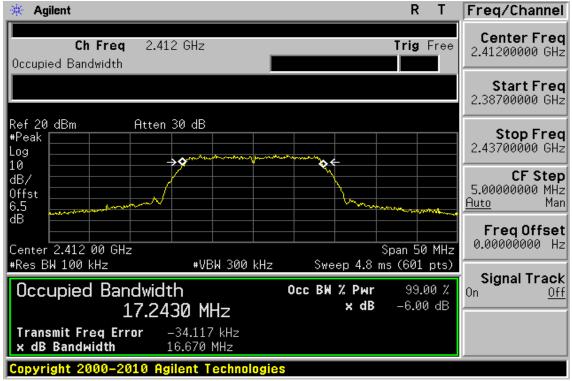
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99% Band Width Test Data CH-High



802.11g

99% Band Width Test Data CH-Low



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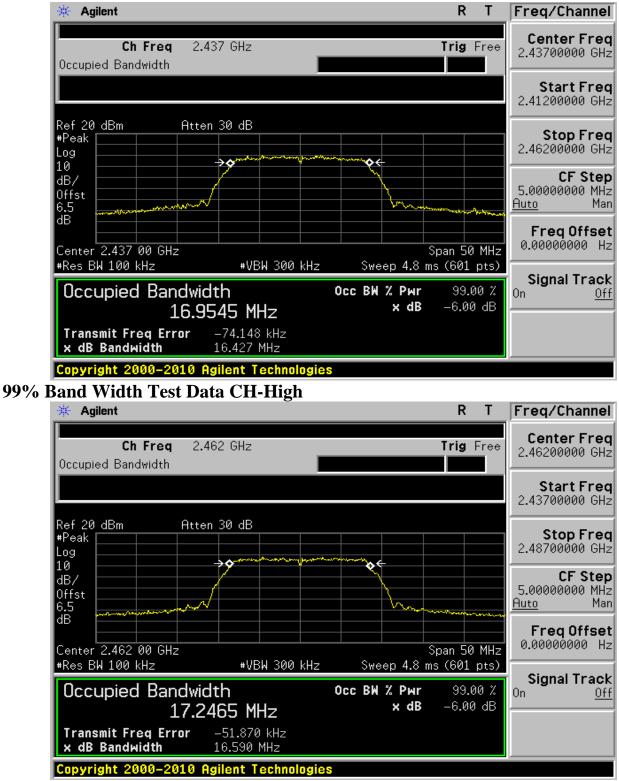
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99% Band Width Test Data CH-Mid



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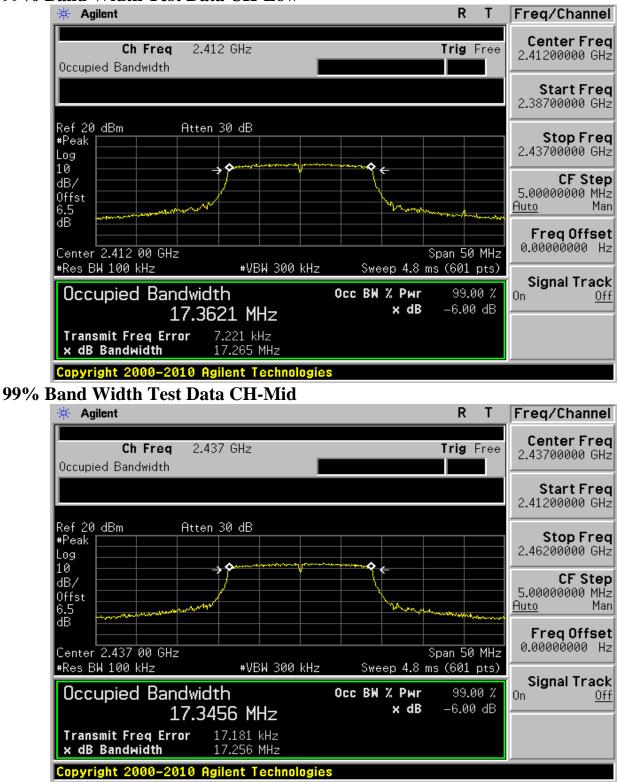
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802.11n 20M (Aux) 99% Band Width Test Data CH-Low



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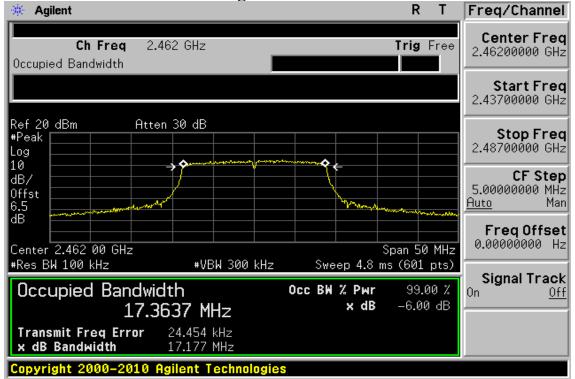
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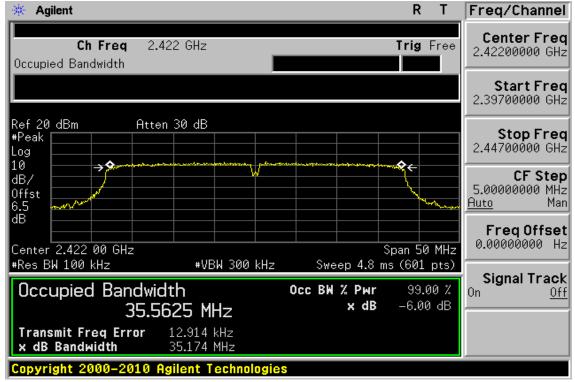
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99% Band Width Test Data CH-High



802.11n_40M (Aux)

99% Band Width Test Data CH-Low



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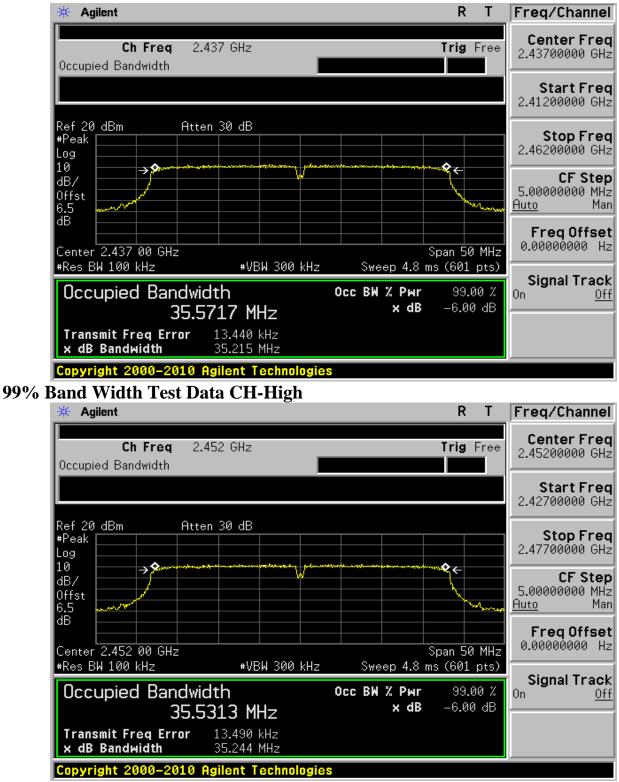
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99% Band Width Test Data CH-Mid



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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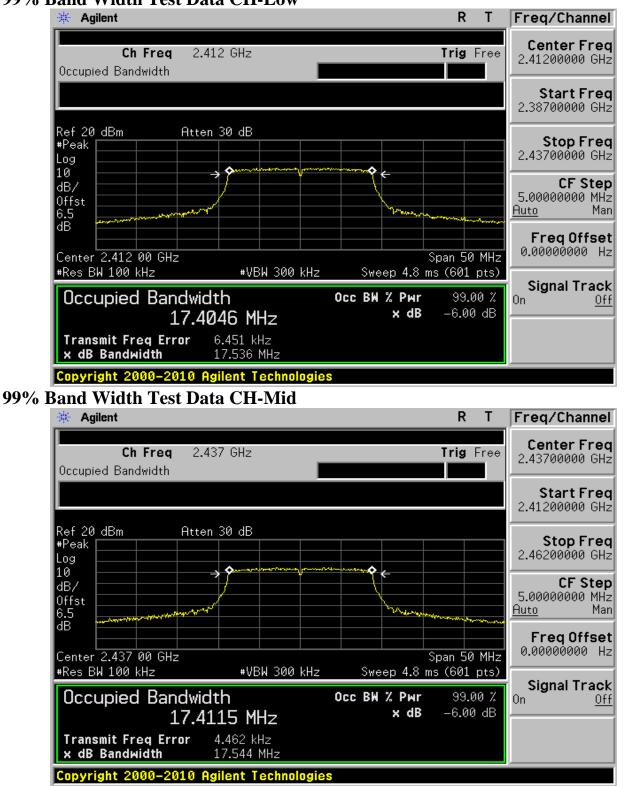
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802.11n 20M (Main) 99% Band Width Test Data CH-Low



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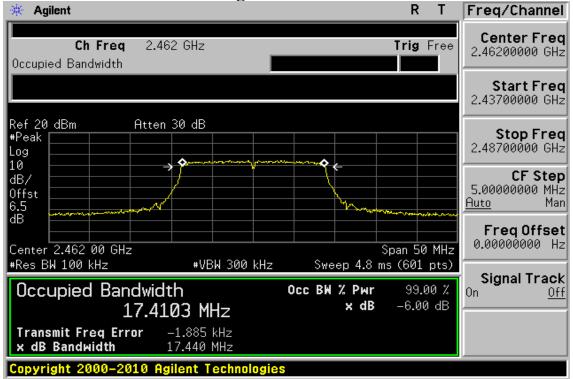
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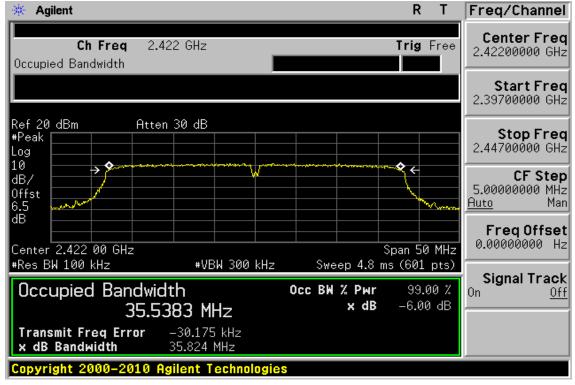
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99% Band Width Test Data CH-High



802.11n_40M (Main)

99% Band Width Test Data CH-Low



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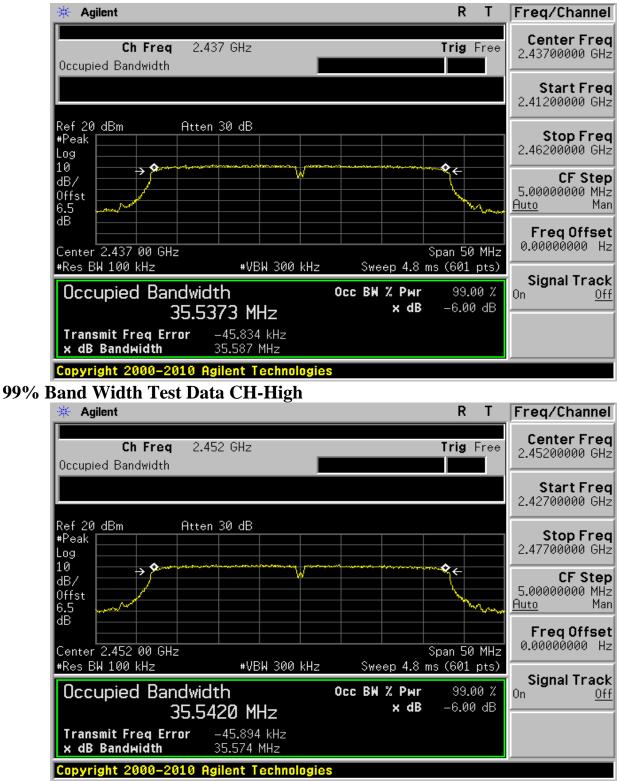
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99% Band Width Test Data CH-Mid



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