

Report No.: EF/2011/60004 Issue Date: June 21, 2011 Page: 1 of 128

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

0F

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

Product Name:	Tablet Computer
Brand Name:	Lenovo
Model Name:	TP00028AA
Model Difference:	N/A
FCC ID:	GKR-TP00028AA
IC:	2533B-TP00028AA
Report No.:	EF/2011/60004
Issue Date:	June 21, 2011
FCC Rule Part:	§15.247
IC Rule Part:	RSS-210 issue 8 :2010, Annex 8
Prepared for:	Compal Electronics, Inc. No. 581, Ruiguang, Neihu District, Taipei City 11492, Taiwan (R. O. C)
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.
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VERIFICATION OF COMPLIANCE

	Compal Electronics, Inc.
Applicant:	No. 581, Ruiguang, Neihu District,
	Taipei City 11492, Taiwan (R. O. C)
Product Name:	Tablet Computer
Brand Name:	Lenovo
FCC ID:	GKR-TP00028AA
IC:	2533B-TP00028AA
Model No.:	TP00028AA
Model Difference:	N/A
File Number:	EF/2011/60004
Date of test:	June 9, 2011 ~ June 20, 2011
Date of EUT Received:	June 9, 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	June 21, 2011	
Prepared By:	Lion Wang / Engineer Celine Chou	Date	June 21, 2011	
Approved By:	Celine Chou / Clerk Jim Chang Jim Chang / Supervisor	Date	June 21, 2011	

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1 GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Tablet Computer				
Brand Name:	Lenovo	Lenovo			
Model Name:	TP00028AA				
Model difference:	N/A				
USB Cable:	Model No.: N/A, Supplier: N/A				
	7.4Vdc L	i-ion battery or 5.35Vdc from AC/DC adapter			
Power Supply	Battery:	Model No.: 42T4965 (FRU), 42T4966 (ASM), Supplier: LGC Model No.: 42T4963 (FRU), 42T4964 (ASM), Supplier: Sanyo			
	Adapter: Model No.: PSAI10R-050Q(C1)-R, Supplier: PHIHONG				

WLAN: 802.11 b/g/n

	I
Frequency Range:	2412 – 2462 MHz
Channel number:	11 channels
Max. Output Power:	802.11 b: 16.95 dBm (Peak) 802.11 g: 16.72 dBm (Peak) 802.11 n _20MHz: 16.03dBm (Peak)
Modulation Technology:	DSSS, OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM
802.11 b: 1/2/5.5/11 Mbps; Transition Rate: 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n 20MHz: 6.5 – 65Mbps	
Antenna Designation:	Whayu / DC33000XZ320 (C435-520112-A) (Main) → PIFA Antenna, Gain: -0.97 Whayu / DC33000XZ330 (C435-520113-A) (Aux) → PIFA Antenna, Gain: -1.12 ACON / DC33000W320 (APP6P-700587) (Main) → PIFA Antenna, Gain: -1.01 ACON / DC33000W330 (APP6P-700588) (Aux) → PIFA Antenna, Gain: -2.01
Type of Emission:	17M7G1D

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: GKR-TP00028AA filing to comply with Section 15.247 of the FCC Part 15C, Subpart C Rules. And IC: 2533B-TP00028AA 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.

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.

1.5 **Special Accessories**

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

Item	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.

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.

Eraquanay ranga	Limits			
Frequency range	(LD	S(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 transition 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					CAL DUE.	
ТҮРЕ		NUMBER	NUMBER	CAL.		
EMI Test Receiver	R&S	ESCS30	828985/004	09/15/2010	09/14/2011	
LISN	Rolf-Heine	NNB-2/16Z	99012	02/02/2011	02/01/2012	
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	02/02/2011	02/01/2012	
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		0.1594	55.62	0.13	55.75	65.50	-9.75	QP	
2		0.1594	39.80	0.13	39.93	55.50	-15.57	AVG	
3	*	0.1748	56.46	0.13	56.59	64.73	-8.14	QP	
4		0.1748	35.12	0.13	35.25	54.73	-19.48	AVG	
5		0.2150	46.85	0.12	46.97	63.01	-16.04	peak	
6		0.3400	41.86	0.11	41.97	59.20	-17.23	peak	
7		0.7673	39.79	0.12	39.91	56.00	-16.09	QP	
8		0.7673	28.87	0.12	28.99	46.00	-17.01	AVG	
9		1.1792	39.82	0.13	39.95	56.00	-16.05	QP	
10		1.1792	30.79	0.13	30.92	46.00	-15.08	AVG	

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No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
1		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1543	53.90	0.14	54.04	65.77	-11.73	QP	
2		0.1543	34.82	0.14	34.96	55.77	-20.81	AVG	
3	*	0.1795	55.21	0.13	55.34	64.51	-9.17	QP	
4		0.1795	28.00	0.13	28.13	54.51	-26.38	AVG	
5		0.2195	44.53	0.12	44.65	62.84	-18.19	QP	
6		0.2195	27.93	0.12	28.05	52.84	-24.79	AVG	
7		0.2986	39.48	0.12	39.60	60.28	-20.68	QP	
8		0.2986	26.75	0.12	26.87	50.28	-23.41	AVG	
9		0.3692	33.14	0.12	33.26	58.52	-25.26	QP	
10		0.3692	19.20	0.12	19.32	48.52	-29.20	AVG	
11		1.2524	40.08	0.13	40.21	56.00	-15.79	QP	
12		1.2524	31.39	0.13	31.52	46.00	-14.48	AVG	

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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.

Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
ТҮРЕ		NUMBER	NUMBER	CAL.						
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	07/05/2010	07/04/2011					
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2011	01/04/2012					
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2010	07/04/2011					
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2010	07/04/2011					
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2011					
Splitter	Agilent	11636B	N/A	07/05/2010	07/04/2011					
Power Meter	Anritsu	ML2495A	1005007	02/17/2010	02/16/2012					

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.

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6.5 Measurement Result:

802.11b

	Cable loss $= 0$		Р	eak Powe	r Output	
СН			Data 2	Rate		Doguinad Limit
	r requency (wrrz)	1	2	5.5	11	Kequireu Liint
1	2412	16.95	16.81	16.66	16.49	1 Watt = 30 dBm
6	2437	16.49	16.32	16.15	16.02	1 Watt = 30 dBm
11	2462	16.63	16.49	16.31	16.16	1 Watt = 30 dBm
(Cable loss $= 0$		Av	erage Pow	ver Output	t
СЦ	Cable loss = 0		Av Data	erage Pow Rate	ver Output	Poquined Limit
СН	Cable loss = 0 Frequency (MHz)	1	Av Data 2	erage Pow Rate 5.5	ver Output	Required Limit
CH 1	Cable loss = 0 Frequency (MHz) 2412	1 14.40	Av Data 2 14.28	erage Pow Rate 5.5 14.1	ver Output 11 13.89	Required Limit 1 Watt = 30 dBm
CH 1 6	Cable loss = 0 Frequency (MHz) 2412 2437	1 14.40 13.96	Av Data 2 14.28 13.78	erage Pow Rate 5.5 14.1 13.55	11 13.89 13.37	Required Limit 1 Watt = 30 dBm 1 Watt = 30 dBm

802.11g

Cab	le loss $= 0$	e loss = 0 Peak Power Output								
СЦ	Frequency				Data	Rate				Poquirod Limit
CII	(MHz)	6	9	12	18	24	36	48	54	Kequireu Linnt
1	2412	15.23	15.11	14.98	14.72	14.61	14.49	14.26	14.11	1 Watt = 30 dBm
6	2437	16.57	16.42	16.34	16.19	16.05	15.89	15.76	15.58	1 Watt = 30 dBm
11	2462	16.72	16.61	16.46	16.32	16.19	16.05	15.88	15.74	1 Watt = 30 dBm
Cab	le loss = 0				Ave	erage Po	ower Ou	itput		
СН	Frequency				Data	Rate				Poquirod Limit
CII	(MHz)	6	9	12	18	24	36	48	54	Kequireu Linnt
1	2412	12.06	11.89	11.68	11.51	11.38	11.16	11.02	10.89	1 Watt = 30 dBm
6	2437	13.07	12.89	12.77	12.61	12.47	12.32	12.11	11.95	1 Watt = 30 dBm
11	2462	13.24	13.11	12.95	12.82	12.69	12.55	12.37	12.18	1 Watt = 30 dBm

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802.11n_20M

Cab	le loss = 0		Peak Power Output							
СЦ	Frequency				Data	Rate				Doguinad Limit
СП	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Kequireu Linin
1	2412	15.09	14.88	14.67	14.46	14.28	14.11	13.99	13.78	1 Watt = 30 dBm
6	2437	16.03	15.91	15.78	15.62	15.46	15.31	15.19	15.05	1 Watt = 30 dBm
11	2462	15.48	15.25	15.08	14.91	14.78	14.66	14.49	14.37	1 Watt = 30 dBm
Cab	le loss $= 0$				Ave	erage Po	ower Ou	ıtput		
СП	Frequency				Data	Rate				Dequined Limit
Сп	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Required Limit
1	2412	11.57	11.38	11.18	11.01	10.89	10.68	10.49	10.33	1 Watt = 30 dBm
6	2437	12.62	12.55	12.38	12.22	12.10	11.92	11.76	11.56	1 Watt = 30 dBm
11	2462	12.12	12.01	11.88	11.69	11.55	11.39	11.21	11.08	1 Watt = 30 dBm

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

Note: Refer to next page for plots.

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802.11b, 1Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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802.11g, 6Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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Peak Power Output Plot (CH High)



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Average Power Output Plot (CH Mid)



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₩VBW 3 MHz

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6.5 dB

Center 2.462 00 GHz

Channel Power

13.24 dBm /20.0000 MHz

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#Res BW 1 MHz

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Span 30 MHz

Sweep 1 ms (601 pts)

Power Spectral Density

-59.77 dBm/Hz

Member of SGS Group

<u>Auto</u>

0n

Man

Off

Freq Offset 0.0000000 Hz

Signal Track



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



Peak Power Output Plot (CH Mid)



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Peak Power Output Plot (CH High)



0.00000000 Hz Center 2.412 00 GHz Span 30 MHz #Res BW 1 MHz ₩VBW 3 MHz Sweep 1 ms (601 pts) Signal Track **Channel Power Power Spectral Density** 0n Off 11.57 dBm /20.0000 MHz -61.44 dBm/Hz

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Average Power Output Plot (CH Mid)



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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	Decult	
(MHz)	(MHz)	(KHz)	Kesuit	
2412	8.155	> 500	PASS	
2437	8.072	> 500	PASS	
2462	8.102	> 500	PASS	

802.11g

Frequency	Bandwidth	Bandwidth	Degult	
(MHz)	(MHz)	(KHz)	Result	
2412	15.355	> 500	PASS	
2437	15.149	> 500	PASS	
2462	15.167	> 500	PASS	

802.11n 20M

Frequency	Bandwidth	Bandwidth	Dogult	
(MHz)	(MHz)	(KHz)	Nesult	
2412	15.336	> 500	PASS	
2437	15.086	> 500	PASS	
2462	15.748	> 500	PASS	

offset: 6.5dB

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802.11b 6dB Bandwidth Test Data CH-Low



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6dB Bandwidth Test Data CH-High



802.11g

6dB Bandwidth Test Data CH-Low



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6dB Bandwidth Test Data CH-Mid



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802.11n 20M



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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:

Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012					
Spectrum Analyzer	Agilent	E7405A	US41160416	12/25/2009	12/24/2011					
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2011	02/11/2012					
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2011	01/04/2012					
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2010	07/04/2011					
Software	Audix	Ver 6.2009 – 23B	N/A	N/A	N/A					

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







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Radiated Emission: 802.11 b mode

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

	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m	Limit) (dBuV/m)	Limit (dBuV/n	Margin n) (dB)	Remark
2390.00	50.22		-1.06	49.16		74.00	54.00	-4.84	Peak
Operation Fundamen Temperatu	Mode tal Frequei ire	TX C ncy 2412 27	CH Low MHz			Test Test Pol	Date By	June 17, 2 Lion Hor.	011
Freq. (MHz)	Peak Reading (dBuV)	66 % AV Reading (dBuV)	Ant./CL CF(dB)	Actu Peak (dBuV/m)	al FS AV (dBuV/m	Peak Limit) (dBuV/m)	AV Limit (dBuV/n	Margin n) (dB)	Remark
2390.00	50.94		-1.06	49.88		74.00	54.00	-4.12	Peak

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 Fundamen Temperatu Humidity	Mode tal Frequen tre	TX C 2462 27 66 %	H High MHz			Test Test Pol	t Date t By	June 17, 20 Lion Ver.	011
Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actu Peak (dBuV/m)	1al FS AV) (dBuV/m)	Peak Limit) (dBuV/m)	AV Limit (dBuV/r	Margin n) (dB)	Remark
2483.56	52.26	43.52	-0.59	51.67	42.93	74.00	54.00	-11.07	AV
Operation Fundamen Temperatu Humidity	Mode tal Frequen re	TX C ncy 2462 27 66 %	H High MHz			Test Test Pol	t Date t By	June 17, 20 Lion Hor.	011
	Peak	AV		Actu	ıal 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)	
2483.50	58.33	41.79	-0.59	57.74	41.20	74.00	54.00	-12.80	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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802.11g **Band Edges Test Data CH-Low**





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Radiated Emission: 802.11 g mode

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

	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/r	Margin n) (dB)	Remark
2390.00	71.82	40.74	-1.06	70.76	39.68	74.00	54.00	-14.32	AV
Operation Fundamen Temperatu Humidity	Mode tal Frequer re	TX C 2412 27 °C 66 %	H Low MHz			Test Test Pol	Date By	June 17, 20 Lion Hor.	011
Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actu Peak (dBuV/m)	al FS AV (dBuV/m)	Peak Limit) (dBuV/m)	AV Limit (dBuV/r	Margin n) (dB)	Remark
2390.00	73.55	49.40	-1.06	72.49	48.34	74.00	54.00	-5.66	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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Radiated Emission: 802.11 g mode

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

	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/n	Margin n) (dB)	Remark
2483.50	73.39	52.41	-0.59	72.80	51.82	74.00	54.00	-2.18	AV
Operation Fundamen Temperatu Humidity	Mode tal Frequei re	TX C 2462 27 ℃ 66 %	'H High MHz			Test Test Pol	Date By	June 17, 20 Lion Hor.	011
Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actu Peak (dBuV/m)	al FS AV (dBuV/m)	Peak Limit) (dBuV/m)	AV Limit (dBuV/n	Margin n) (dB)	Remark
2483.50	72.56	50.84	-0.59	71.97	50.25	74.00	54.00	-3.75	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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802.11n 20M **Band Edges Test Data CH-Low**



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Radiated Emission: 802.11n_20M mode

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

	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/m	Margin (dB)	Remark
2390.00	71.65	48.69	-1.06	70.59	47.63	74.00	54.00	-6.37	AV
Operation Fundamen Temperatu Humidity	Mode tal Frequer re	TX C 2412 27 ℃ 66 %	'H Low MHz			Test Test Pol	Date By	June 17, 20 Lion Hor.	011
	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/n	Margin (dB)	Remark
2390.00	64.99	45.16	-1.06	63.93	44.10	74.00	54.00	-9.90	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.

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_20M mode

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

	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/m	Margin (dB)	Remark
2483.50	72.43	49.36	-0.59	71.84	48.77	74.00	54.00	-5.23	AV
Operation Fundamen Temperatu Humidity	Mode tal Frequei ire	TX C 2462 27 °C 66 %	CH High MHz			Test Test Pol	t Date	June 17, 20 Lion Hor.	011
	Peak	AV		Actu	al FS	Peak	AV		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit) (dBuV/m)	Limit (dBuV/m	Margin (dB)	Remark
2483.50	72.67	49.88	-0.59	72.08	49.29	74.00	54.00	-4.71	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.



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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:

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 100K & VBW = 100K on Spectrum.
- 3. Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 3G, 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

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:

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

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

9.6 Measurement Result:

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

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

Agilent R L Freq/Channel Mkr1 2.410 95 GHz Center Freq Ref 20 dBm Atten 30 dB 5.84 dBm 1.51500000 GHz #Peak Log 10 Start Freq dB/ 30.0000000 MHz Offst 6.5 dB Stop Freq 3.00000000 GHz DI 14.2 CF Step dBm 297.000000 MHz _gAv Man <u>Auto</u> Start 3<mark>0.00 MH</mark>z Stop 3.000 00 GHz Freq Offset 0.0000000 Hz #Res BW 100 kHz #VBW 100 kHz Sweep 358.1 ms (601 pts) Marker Amplitude Trace Туре X Axis 95 GHz (1)Freq 2.410 5.84 dBm Signal Track 0n Off

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Ch Mid 30MHz – 3GHz







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Ch High 30MHz – 3GHz







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

Agilent R Т Freq/Channel Mkr1 2.410 95 GHz Center Freq Atten 20 dB Ref 10 dBm 1.60 dBm 1.51500000 GHz #Peak Log 10 Start Freq dB/ 30.0000000 MHz Offst 6.5 dB Stop Freq 3.00000000 GHz DI -18.4CF Step dBm 297.000000 MHz ₋gAv Auto Man Stop 3.000 00 GHz Start 3<mark>0.00 MH</mark>z Freq Offset 0.0000000 Hz #Res BW 100 kHz #VBW 100 kHz Sweep 358.1 ms (601 pts) Amplitude Marker Trace Туре X Axis 95 GHz (1)Freq 2.410 1.60 dBm Signal Track 0n Off Copyright 2000-2010 Agilent Technologies



Ch Low 3GHz – 26.5GHz

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Ch Mid 30MHz – 3GHz



Ch Mid 3GHz – 26.5GHz



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Ch High 30MHz – 3GHz





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Conducted Spurious Emission Measurement Result (802.11n_20M) Ch Low 30MHz – 3GHz

Agilent R Т Freq/Channel Mkr1 2.410 95 GHz Center Freq Ref 20 dBm Atten 30 dB 2.29 dBm 1.51500000 GHz #Peak Log đ 10 Start Freq dB/ 30.0000000 MHz Offst 6.5 dB Stop Freq 3.00000000 GHz DI 17.7CF Step dBm 297.000000 MHz LgAv Auto Man Stop 3.000 00 GHz Start 3<mark>0.00 MH</mark>z Freq Offset 0.0000000 Hz #Res BW 100 kHz #VBW 100 kHz Sweep 358.1 ms (601 pts) Marker Amplitude Trace Туре X Axis 95 GHz (1)Freq 2.410 2.29 dBm Signal Track 0n Off Copyright 2000-2010 Agilent Technologies



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Ch Mid 30MHz – 3GHz







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Ch High 30MHz – 3GHz







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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	802.11b TX CH Low	Test Date	June 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)
53.28	V	Peak	31.00	-14.08	16.92	40.00	-23.08
99.84	V	Peak	32.81	-16.70	16.11	43.50	-27.39
274.44	V	Peak	27.93	-13.06	14.87	46.00	-31.13
378.23	V	Peak	28.09	-11.13	16.96	46.00	-29.04
460.68	V	Peak	28.99	-9.66	19.33	46.00	-26.67
870.99	V	Peak	28.43	-2.86	25.57	46.00	-20.43
44.55	Н	Peak	27.47	-13.62	13.85	40.00	-26.15
148.34	Н	Peak	28.50	-12.36	16.14	43.50	-27.36
286.08	Н	Peak	29.18	-12.81	16.37	46.00	-29.63
394.72	Н	Peak	30.59	-10.97	19.62	46.00	-26.38
500.45	Н	Peak	27.82	-9.09	18.73	46.00	-27.27
889.45	Н	Peak	28.87	-2.56	26.31	46.00	-19.69

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	June 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)
53.28	V	Peak	31.15	-14.08	17.07	40.00	-22.93
158.04	V	Peak	27.37	-12.00	15.37	43.50	-28.13
296.75	V	Peak	27.42	-12.49	14.93	46.00	-31.07
385.99	V	Peak	27.99	-11.06	16.93	46.00	-29.07
498.51	V	Peak	28.71	-9.16	19.55	46.00	-26.45
785.63	V	Peak	29.18	-3.80	25.38	46.00	-20.62
37.76	Н	Peak	28.23	-13.73	14.50	40.00	-25.50
149.31	Н	Peak	28.26	-12.35	15.91	43.50	-27.59
286.08	Н	Peak	30.95	-12.81	18.14	46.00	-27.86
393.75	Н	Peak	31.38	-11.00	20.38	46.00	-25.62
492.69	Н	Peak	28.93	-9.24	19.69	46.00	-26.31
891.36	Н	Peak	28.45	-2.53	25.92	46.00	-20.08

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	June 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)
53.28	V	Peak	30.53	-14.08	16.45	40.00	-23.55
152.22	V	Peak	28.42	-12.19	16.23	43.50	-27.27
269.59	V	Peak	27.85	-13.23	14.62	46.00	-31.38
397.63	V	Peak	27.52	-10.92	16.60	46.00	-29.40
498.51	V	Peak	29.08	-9.16	19.92	46.00	-26.08
897.18	V	Peak	27.94	-2.42	25.52	46.00	-20.48
40.67	Н	Peak	28.30	-13.38	14.92	40.00	-25.08
152.22	Н	Peak	27.91	-12.19	15.72	43.50	-27.78
286.08	Н	Peak	29.41	-12.81	16.60	46.00	-29.40
393.75	Н	Peak	31.36	-11.00	20.36	46.00	-25.64
496.57	Н	Peak	28.38	-9.19	19.19	46.00	-26.81
889.42	Н	Peak	28.05	-2.56	25.49	46.00	-20.51

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 Low	Test Date	June 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)
99.84	V	Peak	32.43	-16.70	15.73	43.50	-27.77
154.16	V	Peak	27.59	-12.18	15.41	43.50	-28.09
278.32	V	Peak	27.94	-13.01	14.93	46.00	-31.07
373.38	V	Peak	28.56	-11.18	17.38	46.00	-28.62
495.60	V	Peak	28.03	-9.21	18.82	46.00	-27.18
883.60	V	Peak	27.86	-2.66	25.20	46.00	-20.80
43.58	Н	Peak	27.80	-13.62	14.18	40.00	-25.82
157.07	Н	Peak	28.06	-12.00	16.06	43.50	-27.44
286.08	Н	Peak	30.03	-12.81	17.22	46.00	-28.78
394.72	Н	Peak	30.49	-10.70	19.79	46.00	-26.21
499.48	Н	Peak	28.18	-9.16	19.02	46.00	-26.98
874.87	Н	Peak	28.77	-2.81	25.96	46.00	-20.04

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	June 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)
53.28	V	Peak	30.84	-14.08	16.76	40.00	-23.24
151.25	V	Peak	28.03	-12.20	15.83	43.50	-27.67
297.72	V	Peak	28.03	-12.49	15.54	46.00	-30.46
389.87	V	Peak	27.99	-11.03	16.96	46.00	-29.04
467.47	V	Peak	28.71	-9.61	19.10	46.00	-26.90
886.51	V	Peak	28.00	-2.61	25.39	46.00	-20.61
43.58	Н	Peak	29.15	-13.62	15.53	40.00	-24.47
162.89	Н	Peak	28.34	-12.16	16.18	43.50	-27.32
286.08	Н	Peak	29.56	-12.81	16.75	46.00	-29.25
393.75	Н	Peak	30.47	-11.00	19.47	46.00	-26.53
498.51	Н	Peak	28.36	-9.16	19.20	46.00	-26.80
802.12	Н	Peak	28.83	-3.64	25.19	46.00	-20.81

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.



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

Freq. Ant.Pol.		Reading	Factor	Actual FS	Limit3m	Safe Margin
H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
V	Peak	32.03	-16.70	15.33	43.50	-28.17
V	Peak	27.76	-12.16	15.60	43.50	-27.90
V	Peak	26.86	-12.49	14.37	46.00	-31.63
V	Peak	27.86	-11.11	16.75	46.00	-29.25
V	Peak	29.70	-9.26	20.44	46.00	-25.56
V	Peak	28.89	-3.31	25.58	46.00	-20.42
Н	Peak	28.07	-13.75	14.32	40.00	-25.68
Н	Peak	28.45	-11.98	16.47	43.50	-27.03
Н	Peak	29.69	-12.81	16.88	46.00	-29.12
Н	Peak	30.53	-10.97	19.56	46.00	-26.44
Н	Peak	28.43	-9.58	18.85	46.00	-27.15
Н	Peak	28.90	-3.34	25.56	46.00	-20.44
	Ant.Pol. H/V V V V V V V H H H H H H	Ant.Pol.Detector ModeH/V(PK/QP)VPeakVPeakVPeakVPeakVPeakVPeakVPeakVPeakIPeakHPeak	Ant.Pol.Detector ModeReadingH/V(PK/QP)(dBuV)VPeak32.03VPeak27.76VPeak26.86VPeak27.86VPeak29.70VPeak28.89VPeak28.07HPeak28.07HPeak29.69HPeak30.53HPeak28.43HPeak28.43	Ant.Pol.Detector ModeReadingFactorH/V(PK/QP)(dBuV)(dB)VPeak32.03-16.70VPeak27.76-12.16VPeak26.86-12.49VPeak27.86-11.11VPeak29.70-9.26VPeak28.89-3.31HPeak28.07-13.75HPeak29.69-12.81HPeak29.69-12.81HPeak29.69-12.81HPeak30.53-10.97HPeak28.43-9.58HPeak28.90-3.34	Ant.Pol.Detector ModeReadingFactorActual FSH/V(PK/QP)(dBuV)(dB)(dBuV/m)VPeak32.03-16.7015.33VPeak27.76-12.1615.60VPeak26.86-12.4914.37VPeak27.86-11.1116.75VPeak29.70-9.2620.44VPeak28.89-3.3125.58HPeak28.07-13.7514.32HPeak29.69-12.8116.47HPeak29.69-12.8116.88HPeak30.53-10.9719.56HPeak28.43-9.5818.85HPeak28.90-3.3425.56	Ant.Pol. Detector Mode Reading Factor Actual FS Limit3m H/V (PK/QP) (dBuV) (dB) (dBuV/m) (dBuV/m) V Peak 32.03 -16.70 15.33 43.50 V Peak 27.76 -12.16 15.60 43.50 V Peak 26.86 -12.49 14.37 46.00 V Peak 27.86 -11.11 16.75 46.00 V Peak 29.70 -9.26 20.44 46.00 V Peak 28.89 -3.31 25.58 46.00 H Peak 28.07 -13.75 14.32 40.00 H Peak 28.63 -11.98 16.47 43.50 H Peak 29.69 -12.81 16.88 46.00 H Peak 30.53 -10.97 19.56 46.00 H Peak 28.43 -9.58 18.85 46.00 H </td

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	Test Date	June 17, 2011
Fundamental Frequency	2412MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Freq. Ant.Pol.		Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
53.28	V	Peak	29.73	-14.08	15.65	40.00	-24.35
143.49	V	Peak	29.13	-12.80	16.33	43.50	-27.17
292.87	V	Peak	28.54	-12.59	15.95	46.00	-30.05
394.72	V	Peak	27.72	-10.97	16.75	46.00	-29.25
430.61	V	Peak	30.22	-10.25	19.97	46.00	-26.03
888.45	V	Peak	27.87	-2.57	25.30	46.00	-20.70
43.58	Н	Peak	28.09	-13.62	14.47	40.00	-25.53
152.22	Н	Peak	28.71	-12.19	16.52	43.50	-26.98
286.08	Н	Peak	29.74	-12.81	16.93	46.00	-29.07
394.72	Н	Peak	31.79	-10.97	20.82	46.00	-25.18
496.57	Н	Peak	29.83	-9.19	20.64	46.00	-25.36
853.53	Н	Peak	28.67	-3.16	25.51	46.00	-20.49

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 Fundamental Frequency	802.11n_20M TX CH Mid 2437MHz	Test Date Test By	June 17, 2011 Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Freq. Ant.Pol.		eq. Ant.Pol. Detector Mode		Detector Reading Facto Mode		Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		
99.84	V	Peak	32.72	-16.70	16.02	43.50	-27.48		
154.16	V	Peak	29.12	-12.18	16.94	43.50	-26.56		
293.84	V	Peak	27.70	-12.58	15.12	46.00	-30.88		
363.68	V	Peak	28.59	-11.37	17.22	46.00	-28.78		
495.60	V	Peak	28.52	-9.21	19.31	46.00	-26.69		
891.36	V	Peak	28.23	-2.53	25.70	46.00	-20.30		
41.64	Н	Peak	27.84	-13.51	14.33	40.00	-25.67		
159.98	Н	Peak	26.95	-11.98	14.97	43.50	-28.53		
286.08	Н	Peak	29.49	-12.81	16.68	46.00	-29.32		
393.75	Н	Peak	31.61	-11.00	20.61	46.00	-25.39		
455.83	Н	Peak	29.24	-9.73	19.51	46.00	-26.49		
872.93	Н	Peak	29.35	-2.84	26.51	46.00	-19.49		

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	Test Date	June 17, 2011
Fundamental Frequency	2462MHz	Test By	Lion
Temperature	27	Pol	Ver./Hor
Humidity	66 %		

Freq.	Freq. Ant.Pol.		Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
53.28	V	Peak	29.68	-14.08	15.60	40.00	-24.40
128.94	V	Peak	30.47	-13.97	16.50	43.50	-27.00
289.96	V	Peak	27.43	-12.68	14.75	46.00	-31.25
377.26	V	Peak	28.15	-11.15	17.00	46.00	-29.00
458.74	V	Peak	29.76	-9.68	20.08	46.00	-25.92
886.51	V	Peak	28.46	-2.61	25.85	46.00	-20.15
51.34	Н	Peak	27.76	-13.93	13.83	40.00	-26.17
145.43	Н	Peak	28.81	-12.65	16.16	43.50	-27.34
286.08	Н	Peak	29.15	-12.81	16.34	46.00	-29.66
393.75	Н	Peak	30.88	-11.00	19.88	46.00	-26.12
465.53	Н	Peak	28.67	-9.63	19.04	46.00	-26.96
895.24	Н	Peak	28.10	-2.45	25.65	46.00	-20.35

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	June 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)	
3216.5	31.71		0.77	32.48		74.00	54.00	-21.52	Peak
4822.0	31.67		5.30	36.97		74.00	54.00	-17.03	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.



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Operation Mode	802.11b TX CH Low	Test Date	June 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)	
3216.5	25.63		0.77	26.40		74.00	54.00	-27.60	Peak
4822.0	26.37		5.30	31.67		74.00	54.00	-22.33	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.



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Operation Mode	802.11b TX CH Mid	Test Date	June 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)	
	3249.0	33.26		0.65	33.91		74.00	54.00	-20.09	Peak
	4874.0	29.53		5.43	34.96		74.00	54.00	-19.04	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.

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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Operation Mode	802.11b TX CH Mid	Test Date	June 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)	
3249.0	26.82		0.65	27.47		74.00	54.00	-26.53	Peak
4874.0	26.24		5.43	31.67		74.00	54.00	-22.33	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.
- Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 (5) 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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Operation Mode	802.11b TX CH High	Test Date	June 17, 2011
Fundamental Frequency	2462MHz	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)	
32.92		0.49	33.41		74.00	54.00	-20.59	Peak
35.67		5.56	41.23		74.00	54.00	-12.77	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		
	Peak Reading (dBuV) 32.92 35.67 	Peak AV Reading Reading (dBuV) (dBuV) 32.92 35.67 <	Peak AV Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 32.92 0.49 35.67 5.56 5.56	Peak AV Acture Reading Reading Ant./CL Peak (dBuV) (dBuV) CF(dB) (dBuV/m) 32.92 0.49 33.41 35.67 5.56 41.23 5.56 41.23	Peak AV Actual FS Reading Reading Ant./CL Peak AV (dBuV) (dBuV) CF(dB) (dBuV/m) (dBuV/m) 32.92 0.49 33.41 35.67 5.56 41.23	Peak AV Actual FS Peak Reading Reading Ant./CL Peak AV Limit (dBuV) (dBuV) CF(dB) (dBuV/m) (dBuV/m) (dBuV/m) 32.92 0.49 33.41 74.00 35.67 5.56 41.23 74.00 5.56 41.23 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00	PeakAVActual FSPeakAVReadingReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)32.920.4933.4174.0054.0035.675.5641.2374.0054.005.5641.2374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	PeakAVActual FSPeakAVReadingReadingAnt/CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)32.920.4933.4174.0054.00-20.5935.675.5641.2374.0054.00-12.775.5641.2374.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.7774.0054.00-12.77 </td

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.


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Operation Mode	802.11b TX CH High	Test Date	June 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)	
	3281.5	27.48		0.49	27.97		74.00	54.00	-26.03	Peak
	4926.0	30.80		5.56	36.36		74.00	54.00	-17.64	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.

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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Operation Mode	802.11g TX CH Low	Test Date	June 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)	
	3216.5	32.34		0.77	33.11		74.00	54.00	-20.89	Peak
	4824.0						74.00	54.00		
	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:

- Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental (1)frequency
- Data of measurement within this frequency range shown " " in the table above means (2)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.



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Operation Mode	802.11g TX CH Low	Test Date	June 17, 2011
Fundamental Frequency	2412MHz	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)	
26.85		0.77	27.62		74.00	54.00	-26.38	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		
					74.00	54.00		
	Peak Reading (dBuV) 26.85 -	Peak AV Reading Reading (dBuV) (dBuV) 26.85 26.7 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 26.85 27.95 28.95 29.95 29.95 29.95 29.95 29.95 29.95 29.95 29.95 29.95 29.95	PeakAVReadingReadingAnt./CL(dBuV)(dBuV)CF(dB)26.850.7726.850.77 <td< td=""><td>PeakAVActureReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)26.850.7727.620.7727.62<t< td=""><td>PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6226.850.7727.62</td><td>PeakAVActual IFSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7727.6274.00<tr <td=""><t< td=""><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6274.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7f0.7f27.6274.0054.0074.0054.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></t<></tr></td></t<></td></td<>	PeakAVActureReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)26.850.7727.620.7727.62 <t< td=""><td>PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6226.850.7727.62</td><td>PeakAVActual IFSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7727.6274.00<tr <td=""><t< td=""><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6274.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7f0.7f27.6274.0054.0074.0054.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></t<></tr></td></t<>	PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6226.850.7727.62	PeakAVActual IFSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7727.6274.00 <tr <td=""><t< td=""><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6274.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7f0.7f27.6274.0054.0074.0054.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></t<></tr>	PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6274.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7f0.7f27.6274.0054.0074.0054.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00
PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)26.850.7727.6274.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)26.850.7f0.7f27.6274.0054.0074.0054.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00							

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.



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Operation Mode	802.11g TX CH Mid	Test Date	June 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)	
3249.0	32.44		0.65	33.09		74.00	54.00	-20.91	Peak
4874.0						74.00	54.00		
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.

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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Operation Mode	802.11g TX CH Mid	Test Date	June 17, 2011
Fundamental Frequency	2437MHz	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)	
24.92		0.65	25.57		74.00	54.00	-28.43	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		
					74.00	54.00		
	Peak Reading (dBuV) 24.92 -	Peak AV Reading Reading (dBuV) (dBuV) 24.92 24.92 <td< td=""><td>Peak AV Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 24.92 0.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 </td><td>PeakAVActureReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)24.920.6525.570.6525.571.011.011.01<td>PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.57<!--</td--><td>PeakAVActuul ISSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00<!--</td--><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0054.00</td><td>PeakAVActual FSPeakAVReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)24.920.6525.5774.0054.00-28.4374.0054.00-28.4374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00-</td></td></td></td></td<>	Peak AV Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 24.92 0.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65 10.65	PeakAVActureReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)24.920.6525.570.6525.571.011.011.01 <td>PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.57<!--</td--><td>PeakAVActuul ISSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00<!--</td--><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0054.00</td><td>PeakAVActual FSPeakAVReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)24.920.6525.5774.0054.00-28.4374.0054.00-28.4374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00-</td></td></td>	PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.57 </td <td>PeakAVActuul ISSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00<!--</td--><td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0054.00</td><td>PeakAVActual FSPeakAVReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)24.920.6525.5774.0054.00-28.4374.0054.00-28.4374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00-</td></td>	PeakAVActuul ISSPeakReadingReadingAnt./CLPeakAVLimit(dBuV)CF(dB)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.0074.00 </td <td>PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0054.00</td> <td>PeakAVActual FSPeakAVReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)24.920.6525.5774.0054.00-28.4374.0054.00-28.4374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00-</td>	PeakAVActual FSPeakAVReadingAnt/CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)24.920.6525.5774.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0054.00	PeakAVActual FSPeakAVReadingAnt./CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)(dBuV/m)24.920.6525.5774.0054.00-28.4374.0054.00-28.4374.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00-

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.



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Operation Mode	802.11g TX CH High	Test Date	June 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)	
3281.5	31.99		0.49	32.48		74.00	54.00	-21.52	Peak
4924.0						74.00	54.00		
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.

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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Operation Mode	802.11g TX CH High	Test Date	June 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)	
3281.5	26.01		0.49	26.50		74.00	54.00	-27.50	Peak
4924.0						74.00	54.00		
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.

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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Operation Mode	802.11n_20M TX CH Low	Test Date	June 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)	
3216.5	31.15		0.77	31.92		74.00	54.00	-22.08	Peak
4824.0						74.00	54.00		
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 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.



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Operation Mode	802.11n_20M TX CH Low	Test Date	June 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)	
3216.5	27.21		0.77	27.98		74.00	54.00	-26.02	Peak
4824.0						74.00	54.00		
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 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.



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Operation Mode	802.11n_20M TX CH Mid	Test Date	June 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	Remark
 (MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3249.0	30.73		0.65	31.38		74.00	54.00	-22.62	Peak
4874.0						74.00	54.00		
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 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.



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Operation Mode	802.11n_20M TX CH Mid	Test Date	June 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)	
3249.0	24.90		0.65	25.55		74.00	54.00	-28.45	Peak
4874.0						74.00	54.00		
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 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.



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Operation Mode	802.11n_20M TX CH High	Test Date	June 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)	
3281.5	32.40		0.49	32.89		74.00	54.00	-21.11	Peak
4924.0						74.00	54.00		
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.



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Operation Mode	802.11n_20M TX CH High	Test Date	June 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)	
3281.5	28.00		0.49	28.49		74.00	54.00	-25.51	Peak
4924.0						74.00	54.00		
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.



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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	802.11b RX CH Low	Test Date	June 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)
53.28	V	Peak	29.87	-14.08	15.79	40.00	-24.21
153.19	V	Peak	27.81	-12.18	15.63	43.50	-27.87
256.01	V	Peak	27.96	-13.76	14.20	46.00	-31.80
332.64	V	Peak	28.82	-11.83	16.99	46.00	-29.01
500.45	V	Peak	29.15	-9.09	20.06	46.00	-25.94
899.12	V	Peak	29.37	-2.33	27.04	46.00	-18.96
49.40	Н	Peak	28.04	-13.93	14.11	40.00	-25.89
164.83	Н	Peak	27.87	-12.34	15.53	43.50	-27.97
286.08	Н	Peak	29.42	-12.81	16.61	46.00	-29.39
395.69	Н	Peak	32.13	-10.94	21.19	46.00	-24.81
496.57	Н	Peak	28.57	-9.19	19.38	46.00	-26.62
896.21	Н	Peak	28.55	-2.42	26.13	46.00	-19.87

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 RX CH Mid	Test Date	June 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)
99.84	V	Peak	33.46	-16.70	16.76	43.50	-26.74
152.22	V	Peak	28.95	-12.19	16.76	43.50	-26.74
295.78	V	Peak	29.02	-12.54	16.48	46.00	-29.52
395.69	V	Peak	28.36	-10.94	17.42	46.00	-28.58
462.62	V	Peak	28.88	-9.65	19.23	46.00	-26.77
877.78	V	Peak	28.16	-2.77	25.39	46.00	-20.61
45.52	Н	Peak	28.15	-13.75	14.40	40.00	-25.60
156.10	Н	Peak	27.72	-12.01	15.71	43.50	-27.79
286.08	Н	Peak	30.06	-12.81	17.25	46.00	-28.75
395.69	Н	Peak	31.28	-10.94	20.34	46.00	-25.66
495.60	Н	Peak	28.17	-9.21	18.96	46.00	-27.04
841.89	Н	Peak	29.41	-3.33	26.08	46.00	-19.92

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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Operation Mode	802.11b RX CH High	Test Date	June 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)
99.84	V	Peak	32.31	-16.70	15.61	43.50	-27.89
168.71	V	Peak	28.47	-12.72	15.75	43.50	-27.75
299.66	V	Peak	27.16	-12.45	14.71	46.00	-31.29
387.93	V	Peak	27.74	-11.04	16.70	46.00	-29.30
498.51	V	Peak	28.20	-9.16	19.04	46.00	-26.96
889.42	V	Peak	28.92	-2.56	26.36	46.00	-19.64
39.70	Н	Peak	27.74	-13.38	14.36	40.00	-25.64
148.34	Н	Peak	28.31	-12.36	15.95	43.50	-27.55
286.08	Н	Peak	30.14	-12.81	17.33	46.00	-28.67
393.75	Н	Peak	30.87	-11.00	19.87	46.00	-26.13
499.48	Н	Peak	28.55	-9.16	19.39	46.00	-26.61
894.27	Н	Peak	27.44	-2.46	24.98	46.00	-21.02

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	802.11g RX CH Low	Test Date	June 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)
53.28	V	Peak	29.72	-14.08	15.64	40.00	-24.36
145.43	V	Peak	29.11	-12.65	16.46	43.50	-27.04
293.84	V	Peak	27.13	-12.58	14.55	46.00	-31.45
385.99	V	Peak	28.07	-11.06	17.01	46.00	-28.99
491.72	V	Peak	29.78	-9.26	20.52	46.00	-25.48
873.90	V	Peak	28.46	-2.83	25.63	46.00	-20.37
52.31	Н	Peak	28.88	-13.92	14.96	40.00	-25.04
153.19	Н	Peak	27.55	-12.18	15.37	43.50	-28.13
286.08	Н	Peak	29.89	-12.81	17.08	46.00	-28.92
394.72	Н	Peak	31.35	-10.97	20.38	46.00	-25.62
464.56	Н	Peak	29.04	-9.63	19.41	46.00	-26.59
893.30	Н	Peak	28.67	-2.49	26.18	46.00	-19.82

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	June 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)
99.84	V	Peak	32.20	-16.70	15.50	43.50	-28.00
154.16	V	Peak	28.09	-12.18	15.91	43.50	-27.59
294.81	V	Peak	27.06	-12.54	14.52	46.00	-31.48
393.75	V	Peak	27.45	-11.00	16.45	46.00	-29.55
491.72	V	Peak	28.23	-9.26	18.97	46.00	-27.03
887.48	V	Peak	27.85	-2.60	25.25	46.00	-20.75
48.43	Н	Peak	28.50	-13.85	14.65	40.00	-25.35
156.10	Н	Peak	27.94	-12.01	15.93	43.50	-27.57
286.08	Н	Peak	29.53	-12.81	16.72	46.00	-29.28
391.81	Н	Peak	30.81	-11.01	19.80	46.00	-26.20
484.93	Н	Peak	28.95	-9.35	19.60	46.00	-26.40
897.18	Н	Peak	28.07	-2.42	25.65	46.00	-20.35

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	June 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)
99.84	V	Peak	32.72	-16.70	16.02	43.50	-27.48
153.19	V	Peak	27.68	-12.18	15.50	43.50	-28.00
291.90	V	Peak	27.40	-12.64	14.76	46.00	-31.24
373.38	V	Peak	28.14	-11.18	16.96	46.00	-29.04
494.63	V	Peak	28.74	-9.21	19.53	46.00	-26.47
884.57	V	Peak	28.23	-2.64	25.59	46.00	-20.41
30.00	Н	Peak	29.04	-14.25	14.79	40.00	-25.21
154.16	Н	Peak	28.30	-12.18	16.12	43.50	-27.38
286.08	Н	Peak	31.12	-12.81	18.31	46.00	-27.69
395.69	Н	Peak	32.19	-10.94	21.25	46.00	-24.75
491.72	Н	Peak	28.31	-9.26	19.05	46.00	-26.95
882.63	Н	Peak	27.64	-2.67	24.97	46.00	-21.03

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 RX CH Low	Test Date	June 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)
53.28	V	Peak	31.16	-14.08	17.08	40.00	-22.92
154.16	V	Peak	28.47	-12.18	16.29	43.50	-27.21
283.17	V	Peak	27.25	-12.86	14.39	46.00	-31.61
386.96	V	Peak	28.07	-11.07	17.00	46.00	-29.00
460.68	V	Peak	29.12	-9.66	19.46	46.00	-26.54
888.45	V	Peak	27.95	-2.57	25.38	46.00	-20.62
60.07	Н	Peak	29.05	-14.52	14.53	40.00	-25.47
160.95	Н	Peak	28.50	-11.98	16.52	43.50	-26.98
286.08	Н	Peak	29.45	-12.81	16.64	46.00	-29.36
391.81	Н	Peak	30.31	-11.01	19.30	46.00	-26.70
500.45	Н	Peak	29.05	-9.09	19.96	46.00	-26.04
885.54	Н	Peak	27.89	-2.64	25.25	46.00	-20.75

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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Operation Mode	802.11n_20M RX CH Mid	Test Date	June 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)
53.28	V	Peak	29.69	-14.08	15.61	40.00	-24.39
148.34	V	Peak	28.67	-12.36	16.31	43.50	-27.19
296.75	V	Peak	27.43	-12.49	14.94	46.00	-31.06
373.38	V	Peak	27.90	-11.18	16.72	46.00	-29.28
492.69	V	Peak	28.60	-9.24	19.36	46.00	-26.64
878.75	V	Peak	28.69	-2.74	25.95	46.00	-20.05
31.94	Н	Peak	28.85	-14.19	14.66	40.00	-25.34
157.07	Н	Peak	27.84	-12.00	15.84	43.50	-27.66
286.08	Н	Peak	28.85	-12.81	16.04	46.00	-29.96
393.75	Н	Peak	32.04	-11.00	21.04	46.00	-24.96
495.60	Н	Peak	28.12	-9.21	18.91	46.00	-27.09
884.57	Н	Peak	28.37	-2.64	25.73	46.00	-20.27

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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Operation Mode	802.11n_20M RX CH High	Test Date	June 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)
53.28	V	Peak	31.96	-14.08	17.88	40.00	-22.12
149.31	V	Peak	28.55	-12.35	16.20	43.50	-27.30
285.11	V	Peak	27.70	-12.81	14.89	46.00	-31.11
378.23	V	Peak	28.50	-11.13	17.37	46.00	-28.63
464.56	V	Peak	28.99	-9.63	19.36	46.00	-26.64
892.33	V	Peak	28.26	-2.50	25.76	46.00	-20.24
39.70	Н	Peak	28.43	-13.38	15.05	40.00	-24.95
154.16	Н	Peak	27.86	-12.18	15.68	43.50	-27.82
286.08	Н	Peak	30.02	-12.81	17.21	46.00	-28.79
394.72	Н	Peak	30.53	-10.97	19.56	46.00	-26.44
482.02	Н	Peak	29.02	-9.40	19.62	46.00	-26.38
835.10	Н	Peak	28.40	-3.35	25.05	46.00	-20.95

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 RX CH Low	Test Date	June 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)	
4824.0						74.00	54.00		
4991.0	23.70		5.70	29.40		74.00	54.00	-24.60	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_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.



Operation Mode	802.11b RX CH Low	Test Date	June 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)	
4824.0						74.00	54.00		
4984.5	23.92		5.66	29.58		74.00	54.00	-24.42	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_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	802.11b RX CH Mid	Test Date	June 17, 2011
Fundamental Frequency	2437 MHz	Test By	Lion
Temperature	27	Pol	Ver.
Humidity	66 %		

Peak

Remark:

- (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.



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Operation Mode	802.11b RX CH Mid	Test Date	June 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)	
4744.0	24.43		5.02	29.45		74.00	54.00	-24.55	Peak
4874.0						74.00	54.00		
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		

Remark:

- (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	802.11b RX CH High	Test Date	June 17, 2011
Fundamental Frequency	2462 MHz	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)	
25.31		5.10	30.41		74.00	54.00	-23.59	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Peak Reading (dBuV) 25.31 	Peak AV Reading Reading (dBuV) (dBuV) 25.31	Peak AV Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 25.31 5.10	PeakAVActureReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)25.315.1030.415.1040.41 <tr< td=""><td>PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)CF(dB)(dBuV/m)(dBuV/m)25.315.1030.41</td><td>PeakAVActuHSPeakReadingReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.005.1030.4174.0074.0074.0074.0074.0074.0074.0074.00</td><td>PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td><td>PeakAVActual FSPeakAVReadingReadingAnt/CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.0054.00-23.5974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00</td></tr<>	PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)CF(dB)(dBuV/m)(dBuV/m)25.315.1030.41	PeakAVActuHSPeakReadingReadingAnt/CLPeakAVLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.005.1030.4174.0074.0074.0074.0074.0074.0074.0074.00	PeakAVActual FSPeakAVReadingReadingAnt./CLPeakAVLimitLimit(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00	PeakAVActual FSPeakAVReadingReadingAnt/CLPeakAVLimitMargin(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)25.315.1030.4174.0054.00-23.5974.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.0074.0054.00

Remark:

- (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	802.11b RX CH High	Test Date	June 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)	
4924.0						74.00	54.00		
4991.0	24.58		5.70	30.28		74.00	54.00	-23.72	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		

Remark:

- (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 Low	Test Date	June 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)	
4562.0	24.74		4.56	29.30		74.00	54.00	-24.70	Peak
4824.0						74.00	54.00		
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_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 Low	Test Date	June 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)	
4824.0						74.00	54.00		
4919.5	24.59		5.50	30.09		74.00	54.00	-23.91	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_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	June 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)	
4828.5	24.93		5.24	30.17		74.00	54.00	-23.83	Peak
4874.0						74.00	54.00		
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		

Remark:

- (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	June 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)	
4828.5	24.56		5.24	29.80		74.00	54.00	-24.20	Peak
4874.0						74.00	54.00		
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		

Remark:

- (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 High	Test Date	June 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)	
4737.5	24.57		5.00	29.57		74.00	54.00	-24.43	Peak
4924.0						74.00	54.00		
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		

Remark:

- (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 High	Test Date	June 17, 2011
Fundamental Frequency	2462 MHz	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)	
					74.00	54.00		
23.40		5.61	29.01		74.00	54.00	-24.99	Peak
					74.00	54.00		
					74.00	54.00		
					74.00	54.00		
	Peak Reading (dBuV) 23.40 	Peak AV Reading Reading (dBuV) (dBuV) 23.40	Peak AV Reading Reading Ant./CL (dBuV) (dBuV) CF(dB) 5.61 5.61 5.61	PeakAVActuReadingReadingAnt./CLPeak(dBuV)(dBuV)CF(dB)(dBuV/m)5.6129.01	PeakAVActual FSReadingReadingAnt./CLPeakAV(dBuV)(dBuV)CF(dB)(dBuV/m)(dBuV/m)5.6129.01	Peak AV Actual FS Peak Reading Reading Ant./CL Peak AV Limit (dBuV) (dBuV) CF(dB) (dBuV/m) (dBuV/m) (dBuV/m) Z3.40 5.61 29.01 74.00 5.61 29.01 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00	Peak AV Actual FS Peak AV Reading Reading Ant./CL Peak AV Limit Limit (dBuV) (dBuV) CF(dB) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) 5.61 29.01 74.00 54.00 5.61 29.01 74.00 54.00 5.61 29.01 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00	Peak AV Actual FS Peak AV Reading Reading Ant./CL Peak AV Limit Limit Margin (dBuV) (dBuV) CF(dB) (dBuV/m) (dB

Remark:

- (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	802.11n_20M RX CH Low	Test Date	June 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)	
4809.0	23.99		5.19	29.18		74.00	54.00	-24.82	Peak
4824.0						74.00	54.00		
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	802.11n_20M RX CH Low	Test Date	June 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)	
4824.0						74.00	54.00		
4854.5	23.82		5.33	29.15		74.00	54.00	-24.85	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	802.11n_20M RX CH Mid	Test Date	June 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	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4588.0	24.83		4.60	29.43		74.00	54.00	-24.57	Peak
4874.0						74.00	54.00		
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						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 RX CH Mid	Test Date	June 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)	
4757.0	24.29		5.05	29.34		74.00	54.00	-24.66	Peak
4874.0						74.00	54.00		
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						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 RX CH High	Test Date	June 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)	
4841.5	24.01		5.28	29.29		74.00	54.00	-24.71	Peak
4924.0						74.00	54.00		
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						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.



Operation Mode	802.11n_20M RX CH High	Test Date	June 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)	
4588.0	24.58		4.60	29.18		74.00	54.00	-24.82	Peak
4924.0						74.00	54.00		
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						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.

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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.



10.5 **Measurement Result:**

802.11b

Frequency	RF Power Density	RF Power Density	Maximum Limit		
MHz	Reading (dBm)	Level (dBm)	(dBm)		
2412	-9.40	-9.40	8		
2437	-6.48	-6.48	8		
2462	-7.45	-7.45	8		

802.11g

Frequency	RF Power Density	RF Power Density	Maximum Limit	
MHz	Reading (dBm)	Level (dBm)	(dBm)	
2412	-11.20	-11.20	8	
2437	-9.56	-9.56	8	
2462	-8.58	-8.58	8	

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Frequency	RF Power Density	RF Power Density	Maximum Limit	
MHz	Reading (dBm)	Level (dBm)	(dBm)	
2412	-11.34	-11.34	8	
2437	-10.14	-10.14	8	
2462	-10.09	-10.09	8	

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

Note: Refer to next page for plots.

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802.11b

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)

🔆 Ag	ilent								F	≀ Т	Freq/Channel
Ref 10 #Peak	dBm		Atten	20 dB			Mk	(r1 2.4	35 987 -6.4	5 GHz 8 dBm	Center Freq 2.43597500 GHz
10 dB/ Offst	-uterstaure	V	hourseally	ana tana kapat	Mary was	1 Marrie	ant ar so the	e-parat-actor	~_1.+~~~.A.++	9 494-96 /14-494	Start Freq 2.43582500 GHz
6.5 dB DI											Stop Freq 2.43612500 GHz
8.0 dBm LgAv											CF Step 30.0000000 kHz <u>Auto</u> Man
W1 S2 S3 FS											FreqOffset 0.00000000 Hz
£ (f): f>50k Swp											Signal Track On <u>Off</u>
Center #Res B	2.435 W 3 kH	975 0 z	GHz	#V	BW 10 H	<hz< td=""><td>#Sw</td><td>eep 10</td><td>Span 3 0 s (60</td><td>00 kHz^ 1 pts)</td><td></td></hz<>	#Sw	eep 10	Span 3 0 s (60	00 kHz^ 1 pts)	
Copyri	ight 20	000-20	10 Ag	ilent T	echnol	ogies					

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Power Spectral Density Test Plot (CH-High)



802.11g

Power Spectral Density Test Plot (CH-Low)

🔆 Agilent									F	2 Т	Freq/Channel
Ref 10 #Peak	dBm		Atten	20 dB			Mk	r1 2.4	13 238 -11.2	32 GHz 0 dBm	Center Freq 2.41326833 GHz
10 10 dB/ Offst			n a sa tainin an	-low the ser	www.	n Athur I	- 6 .0. 11. 10.				Start Freq 2.41311833 GHz
6.5 dB DI	aforest and	NAME OF A	~ () / / · · ·					^.~.w	Munu	or have	Stop Freq 2.41341833 GHz
8.0 dBm LgAv											CF Step 30.0000000 kHz <u>Auto</u> Man
W1 S2 S3 FS											FreqOffset 0.00000000 Hz
£ (f): f>50k Swp											Signal Track On <u>Off</u>
Center #Res B	2.413 W 3 kH	268 3 z	GHz	#V{	3W 10 K	(Hz	#Swe	eep 100	Span 3 0 s (60	00 kHz^ 1 pts)	
Copyright 2000–2010 Agilent Technologies											

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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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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.

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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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 -0.97 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.

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12.5. Measurement Result:

802.11b

Frequency	99%Bandwidth			
MHz	(MHz)			
2412	13.8650			
2437	13.9547			
2462	13.9515			

802.11g

Frequency	99%Bandwidth			
MHz	(MHz)			
2412	16.4476			
2437	16.4567			
2462	16.4544			

802.11n_20M

Frequency	99%Bandwidth			
MHz	(MHz)			
2412	17.6182			
2437	17.6518			
2462	17.6401			

Note: Refer to next page for plots.

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802.11b



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99% Band Width Test Data CH-High



802.11g

99% Band Width Test Data CH-Low



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99% Band Width Test Data CH-Mid



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



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99% Band Width Test Data CH-High



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