

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT CLASS II PC REPORT

OF

**Product Name:** 802.11b/g/n RTL8191SU miniCard

**Brand Name:** Realtek

**Model Name:** RTL8191SU

**Model Difference:** N/A

**FCC ID:** TX2-RTL8191SU

**Report No.:** ER/2009/90021-02

**Issue Date:** Apr. 23, 2010

**FCC Rule Part:** §15.247,DTS

**Prepared for:** Realtek Semiconductor Corp.  
No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

**Prepared by:** SGS Taiwan Ltd.  
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## VERIFICATION OF COMPLIANCE

**Applicant:** Realtek Semiconductor Corp.  
 No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

**Product Name:** 802.11b/g/n RTL8191SU miniCard

**Brand Name:** Realtek

**FCC ID:** TX2-RTL8191SU

**Model Name:** RTL8191SU

**Model Difference:** N/A

**File Number:** ER/2009/90021-02

**Date of test:** Mar. 23, 2010 ~ Apr. 22, 2010

**Date of EUT Received:** Mar. 23, 2010

**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 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.

The test results of this report relate only to the tested sample identified in this report.

**Test By:** Jason Wu **Date:** Apr. 23, 2010  
 Jason Wu / Asst. Supervisor

**Prepared By:** Gigi yeh **Date:** Apr. 23, 2010  
 Gigi Yeh / Clerk

**Approved By:** Vincent Su **Date:** Apr. 23, 2010  
 Vincent Su / Manager

## Version

Version No.	Date	Description
00	Apr. 23, 2010	Initial creation of document

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# 1 GENERAL INFORMATION

## 1.1 Product Description

General:

Product name:	802.11b/g/n RTL8191SU miniCard
Brand Name:	Realtek
Model Name:	RTL8191SU
Model Difference:	N/A
Power Supply:	3.3Vdc

WLAN:

Frequency Range & Channel number:	802.11 b/g: 2412 – 2462 MHz, 11 channels 802.11 n_20MHz: 2412 – 2462 MHz, 11 channels 802.11 n_40MHz: 2422 – 2452 MHz, 9 channels
Rated Power:	802.11 b: 19.90 dBm 802.11 g: 17.80 dBm 802.11 n_20MHz: 16.64 dBm 802.11 n_40MHz: 16.81 dBm
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Transmission Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 - 300Mbps
Antenna Designation:	See next page for Antenna list
Type of Emission:	36M0M7D

The EUT is compliance with IEEE 802.11 b/g/n Standard.

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**Original Antenna Specification**

Item	Antenna Vendor	Model name	Antenna Type	Gain (dBi) With cable loss	Cable loss (dB)	Connector Type
1	wistron	DQ661500301(Main) DQ661500301(Aux)	PIFA	3.95 3.9	N/A	IPEX
2	wistron	DQ661500115(Main) DQ661500115(Aux)	PIFA	1.10 0.64	1.89 2.55	IPEX
3	wgt	AR830WIPI01A(L) AR830WIPI02A(R)	PIFA	2.17 2.39	-1.6 -2.03	IPEX
4	wgt	AR320WIPI01B(L) AR320WIPI02B(R)	PIFA	0.86 2.11	-1.43 -1.78	IPEX
5	wgt	ARW62WIPI01G(L) ARW62WIP102G(R)	PIFA	2.48 1.32	-2.39 -1.76	IPEX
6	wgt	ARUMPWIPI02+C (R) ARUMPWIPI01+D (L)	PIFA	2.41 2.07	N/A	IPEX
7	Foxconn	WDAN-GQMA6001-DF (Main) WDAN-GQMA6001-DF (Aux)	PIFA	2.32 1.10	-1.262 -1.813	IPEX
8	Foxconn	WDAN-GQMA6002-DF (Main) WDAN-GQMA6002-DF (Aux)	PIFA	0.74 0.78	-1.446 -2.009	IPEX
9	Galtronics	021020168NC3587 (Main) 021020168NC3587-1 (Aux)	PIFA	-0.25 3.64	1.75 2	U.FL
10	Galtronics	021020168NC3586 (Main) 021020168NC3586-1 (Aux)	PIFA	-0.04 3.25	1.9 1.85	U.FL
11	HIGH-TEK	AAFQ5050001LK0 (Main) AAFQ5050001RK0 (Aux)	PIFA	2.86 1.52	2.4 1.7	IPEX
12	Hitachi	HFT40-IV17 (Main) HMG03-IV17 (Aux)	PIFA	0.48 0.64	N/A	IPEX
13	WNC	81.EE215.016 (Main) 81.EE215.016 (Aux)	PIFA	0.34 0.79	2.52 3.17	IPEX
14	WNC	ASAW 001(L) ASAW 001(R)	PIFA	1.34 1.25	N/A	IPEX
15	Wgt	B1425050G00003 (Main) B1425050G00002 (Aux)	PIFA	0.03 0.63	-2.01 -2.05	IPEX
16	tyco	ASAT 001 (L) ASAT 001 (R)	PIFA	0.61 0.16	N/A	IPEX
17	ACON	ASAA 001 (L) ASAA 001 (R)	PIFA	1.56 1.36	N/A	IPEX

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18	Hitachi	HFT40 (Main) HFT40 (Aux)	PIFA	0.58 1.12	1.42 2.12	IPEX
19	Hitachi	HFT60 (Main) HFT60 (Aux)	PIFA	-1.65 -0.92	1.48 2.18	IPEX
20	Hitachi	HTL008 (Main) HTL008 (Aux)	PIFA	2.24 1.84	1.72 2.20	IPEX
21	Hitachi	HTL017 (Main) HTL017 (Aux)	PIFA	2.82 2.94	1.94 2.39	IPEX
22	WNC	WNC001(Main) WNC001 (Aux)	PIFA	-1.10 1.76	1.17 1.17	IPEX
23	WNC	WNC002(Main) WNC002(Aux)	PIFA	1.18 1.75	2.28 2.12	IPEX
24	Tyco	TIAN01 (Main) TIAN01 (Aux)	PIFA	0.57 0.87	-1.463 -1.865	IPEX
25	Tyco	TBN001 (Main) TBN001 (Aux)	PIFA	3.45 2.41	1.45 2.13	IPEX
26	Tyco	TBN003 (Main) TBN003 (Aux)	PIFA	-1.11 -1.11	1.84 2.16	IPEX
27	Tyco	2023935-1 (Main) 2023936-1 (Aux) 2023936-1(MIMO)	PIFA	2.95 1.90	1.88 2.03	U.FL
28	Tyco	2023937-1 (Main) 2023937-1 (Aux) 2023934-1(MIMO)	PIFA	1.60 0.05	1.85 2.00	U.FL
29	Tyco	2023938-1 (Main) 2023938-1 (Aux) 2023939-1(MIMO)	PIFA	1.41 1.24	2.17 2.40	U.FL
30	Tyco	2023954-1 (Main) 2023954-1 (Aux) 2023955-1(MIMO)	PIFA	1.68 0.92	2.14 3.02	U.FL
31	Hitachi	HB Y07 (TX1) HB Y07 (TX2)	PIFA	2.19 -0.33	0.95 0.95	IPEX
32	Hitachi	HB Y051 (TX1) HB Y051 (TX2)	PIFA	2.91 2.82	0.95 0.95	IPEX

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33	Hitachi	HB Y052 (TX1) HB Y052 (TX2)	PIFA	0.27 0.02	0.95 0.95	IPEX
34	Hitachi	HB Y061 (TX1) HB Y061 (TX2)	PIFA	1.30 2.42	0.95 0.95	IPEX
35	Hitachi	HB Y062 (TX1) HB Y062 (TX2)	PIFA	-1.04 -1.19	0.95 0.95	IPEX
36	Hitachi	HFT65 (TX1) HFT65 (TX2)	PIFA	-1.74 1.16	0.95 0.95	IPEX
37	QUANTA	AN-090-B (Tx1) AN-090-A (Tx2)	PIFA	-1.4 -2.2	-1	IPEX
38	Hitachi	HCT01 (Main) HCT01 (Aux)	PIFA	0.87 1.94	0.89	IPEX
39	FOXCONN	WDAN-TQ (Tx1) WDAN-TQ (Tx2)	PIFA	-0.43 -0.7	2.5	IPEX
40	Tyco	TBN005 TBN006	PIFA	-1.11	N/A	IPEX
41	Whayu	DQ652016100 (Tx1) DQ652016100 (Tx2)	PIFA	1.31 0.09	0.37 0.92	FAF
42	WNC	WNC004 (Main) WNC004 (Aux)	PIFA	2.40 1.50	1.53 1.92	IPEX
43	QUANTA	ON1 (Tx1) ON1 (Tx2)	PIFA	1.8 0.1	N/A	IPEX
44	HON HAI	WDAN-DQZM1001-DF (Tx1) WDAN-DQZM1001-DF (Tx2)	PIFA	1.67 -0.10	0.827 0.849	IPEX
45	ACON	AMM8P-700006(Tx1) AMM8P-700006 (Tx2)	PIFA	1.29 -0.8	0.97 0.9	IPEX
46	Yageo	CAN4313880012501B (Tx1) CAN4313880012501B (Tx2)	PIFA	1.12 0.7	1.05 1.08	IPEX
47	Wanshih	1415-00JK000	PIFA	3.34	N/A	IPEX
48	Wanshih	1415-00JL000	PIFA	2.05	N/A	IPEX
49	WNC	WNC001 (Main) WNC001(Aux)	PIFA	0.31 -0.75	1.98 2.01	IPEX
50	WNC	WNC003 (Main) WNC003 (Aux)	PIFA	0.52 1.07	1.49 2.13	IPEX

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51	Wha Yu	DQ652015800 (Tx1) DQ652015800 (Tx2)	PIFA	1.13 0.74	1.68 2.29	IPEX
52	Smart Approach	PE-AB0370 (Main) PE-AB0430 (Aux)	PIFA	2.95 0.94	N/A	IPEX
53	ARISTOTLE	RFA-02-P23-70-300-L	PIFA	-5	N/A	IPEX
54	ARISTOTLE	RFA-02-P23-70B-350-R	PIFA	-5	N/A	IPEX
55	ARISTOTLE	RFA-02-P24-70-305-L	PIFA	-5	N/A	IPEX
56	ARISTOTLE	RFA-02-P24-70B-340-R	PIFA	-5	N/A	IPEX
57	WNC	81.EEO15.001 (Main) 81.EEO15.002 (Aux)	PIFA	1.52 1.72	1.86 2.03	IPEX
58	HON HAI	WDAN-M1OS1001-DF(Main) WDAN-M1OS1002-DF(Aux)	PIFA	0.13 -0.13	-1.871 -2.072	IPEX
59	Amphenol KAE	SS-03-03-099 (Main) SS-03-03-100 (Aux)	PIFA	0.77 -0.90	1.59 1.76	IPEX
60	WNC	81.EHD15.003 (Main) 81.EHD15.002 (Aux)	PIFA	0.94 -0.77	1.39 1.71	IPEX
61	Foxconn	WDAN-M1SN1002-DF(Main) WDAN-M1SN1001-DF(Aux)	PIFA	0.93 -0.53	-1.357 -1.727	IPEX
62	HON HAI	WDAN-M1NY1001-DF	PIFA	0.56	-0.054	U.FL
63	WNC	81.EHD15.004 (Main) 81.EHD15.006 (Aux)	PIFA	0.95 -0.49	1.07 1.82	IPEX
64	HON HAI	WDAN-M1WC1001-DF(Main) WDAN-M1BN1001-DF(Aux)	PIFA	-0.28 -0.14	-1.407 2.3	IPEX
65	WNC	81.EHD15.004 (Main) 81.EHD15.007 (Aux)	PIFA	0.95 -0.09	1.07 1.60	IPEX
66	HON HAI	WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux)	PIFA	-0.28 -1.24	-1.407 1.99	IPEX
67	WNC	81.EHD15.G09 (Tx1) 81.EHD15.G10 (Tx2)	PIFA	0.31 -1.21	1.08 1.39	IPEX
68	HON HAI	WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2)	PIFA	0.54 -1.40	0.99 1.36	IPEX
69	WNC	81.EHD15.004 (Main) 81.EHD15.005 (Aux)	PIFA	0.95 -1.51	1.07 1.61	IPEX

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70	HON HAI	WDAN-M1WC1002-DF (Main) MDAN-M1WC1001-DF(Aux)	PIFA	0.18 -0.28	-0.866 -1.407	IPEX
71	JEM	M810L (WM-1) M810L (WM-1)	PIFA	-2.04 0.83	-1.46 -1.14	IPEX
72	wgt	M810L (WM-1) M810L (Wimax-2)	PIFA	2.1 2.99	N/A	IPEX
73	wgt	M980N (WM1) M980N (WM2)	PIFA	2.94 2.04	N/A	IPEX
74	FVC	TN120R-WLAN-1 TN120R-WLAN-2	PIFA	0.9 2.8	N/A	IPEX
75	FVC	W760-WiMAX-1 W760-WiMAX-2	PIFA	2.87 2.08	N/A	IPEX
76	Kim Well	89G 17356Z 61	PIFA	1.04	N/A	IPEX
77	ACON	APP6P-700261	PIFA	3.08	N/A	IPEX
78	TYCO	TBN007 (Tx1) TBN007 (Tx2)	PIFA	1.98 1.97	-0.97 -0.97	IPEX
79	Favortron	K05007010501 (WM-1) K05007010601 (WM-2)	PIFA	1.54 2.68	-2.71 -1.36	IPEX
80	Well Green	SKR13WMPB01+A (Tx1) SKR13WMPB01+A (Rx2)	PIFA	0.73 -0.98	-2.01 -2.01	IPEX
81	Well Green	SK840WMPB01+B (Tx1) SK840WMPB01+B (Rx2)	PIFA	-0.16 0.74	-1.81 -1.62	IPEX
82	Favortron	N01001146001 (WM-1) N01001146001 (WM-2)	PIFA	0.71 2.05	-2.69 -2.71	IPEX
83	Favortron	K05007009701 (WM-1) K05007009801 (WM-2)	PIFA	0.46 -0.29	-2.73 -3.87	IPEX
84	wgt	C4800 (WM-1) C4800 (WM-2)	PIFA	2.6 3.04	N/A	IPEX
85	wgt	D900F (WM-1) D900F (WM-2)	PIFA	2.76 1.13	N/A	IPEX
86	wgt	T890M (ANT-1) T890M (ANT-2)	PIFA	2.93 -0.32	N/A	IPEX

\* The max antenna gain is 3.95dBi

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**Additional antenna specifications**

Item	Antenna Vendor	Model name	Antenna Type	Gain (dBi) With cable loss	Cable loss (dB)	Connector Type
1	WNC	81.EBC15.GAA (Main) 81.EBC15.GAA (Aux)	PIFA	-1.18 -0.36	0.35 0.47	IPEX
2	YAGEO	CAN4313748012501B (Main) CAN4313907022501B (Aux)	PIFA	-2.08 0.67	N/A	IPEX IpeX/Hirose/Technova
3	WNC	81.XCC15.G03 (Main) 81.KEM15.G01 (Aux)	Dipole PIFA	2.56 0.05	0.96 0.67	IPEX Bellweather

The max antenna gain is 2.56dBi which was choosing for Radiated Spurious Emission test.

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

This submittal(s) (test report) is intended for FCC ID: TX2-RTL8191SU filing to comply with Section 15.247 of the FCC Part 15, Subpart E Rules.

## 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) a. 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-1.

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.

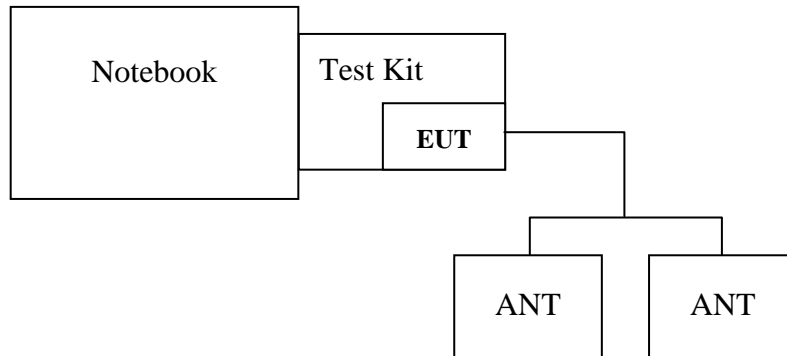
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## 2.4 Configuration of Tested System

**Fig. 2-1 Radiated Emission Configuration**



**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Notebook	HP	ProBook 4411S	N/A	Un-Shielding	Un-Shielding
2.	Test Kit	Realtek	N/A	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.247(b)/ §A8.4(2)	Output Power	Compliant
§15.247(c)/ §A8.5	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.247(c)/ §A8.5	Spurious Emission	Compliant
§15.203/ RSS-GEN 7.1.4, RSS-210 issue 7,§A8.4	Antenna Requirement	Compliant

### 4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

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

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

802.11 n\_20MHz: Lowest (2412MHz), Mid (2437MHz) and high (2462MHz) with 6.5 Mbps highest data rate are chosen for above testing.

802.11 n\_40MHz: Lowest (2422MHz), Mid(2437MHz) and high (2452MHz) with 13.5 Mbps highest data rate are chosen for above testing.

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## 5 OUTPUT POWER MEASUREMENT

### 5.1 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 is the highest total transmit power occurring in any mode.

(4) The 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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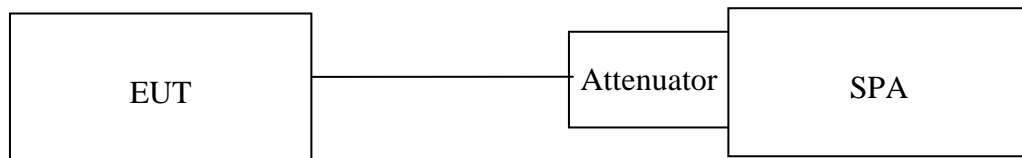
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### 5.2 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2009	04/18/2011
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2009	07/03/2010
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2010	02/21/2011
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2010	01/04/2011
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2009	07/04/2010

### 5.3 .Test Set-up:



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#### 5.4 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 power meter or spectrum. (Channel power function, RBW =1, VBW = 3MHz, Bandwidth=26dB Emission Bandwidth)
3. Peak power is then measured using internal channel power integration function of SPA.
4. Power is integrated over a bandwidth greater than or equal to 26dBc bandwidth
5. Record the max.reading.
6. Repeat above procedures until all frequency measured was completed.

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### 5.5 Measurement Result:

Output Power – 2400~2483.5MHz

802.11b

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	19.90	0.00	19.90	0.09772	1
2437.00	19.62	0.00	19.62	0.09162	1
2462.00	19.59	0.00	19.59	0.09099	1

802.11g

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	17.71	0.00	17.71	0.05902	1
2437.00	17.73	0.00	17.73	0.05959	1
2462.00	17.80	0.00	17.80	0.06026	1

802.11g/n(20M)

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	16.64	0.00	16.64	0.04613	1
2437.00	16.36	0.00	16.36	0.04325	1
2462.00	16.60	0.00	16.60	0.04571	1

802.11g/n(40M)

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2422.00	16.63	0.00	16.63	0.04603	1
2437.00	16.81	0.00	16.81	0.04797	1
2452.00	16.69	0.00	16.69	0.04667	1

Cable loss = 0

*\*Note: Offset 0.2dB*

Note: Refer to next page for plots.

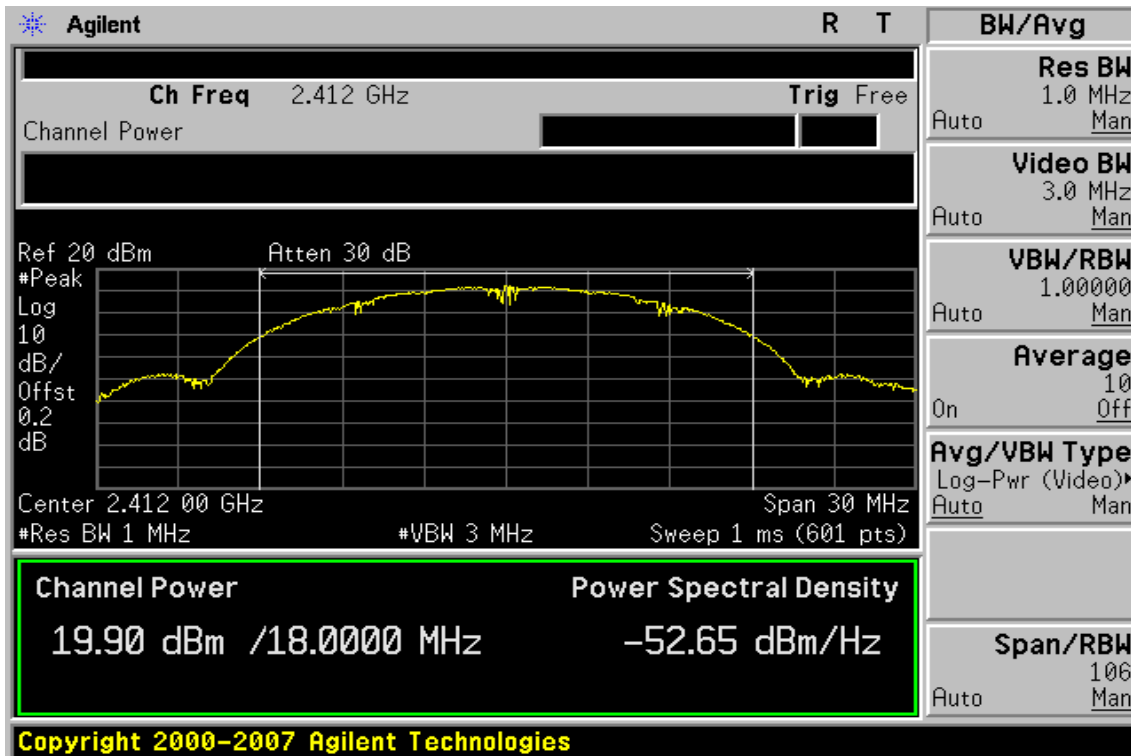
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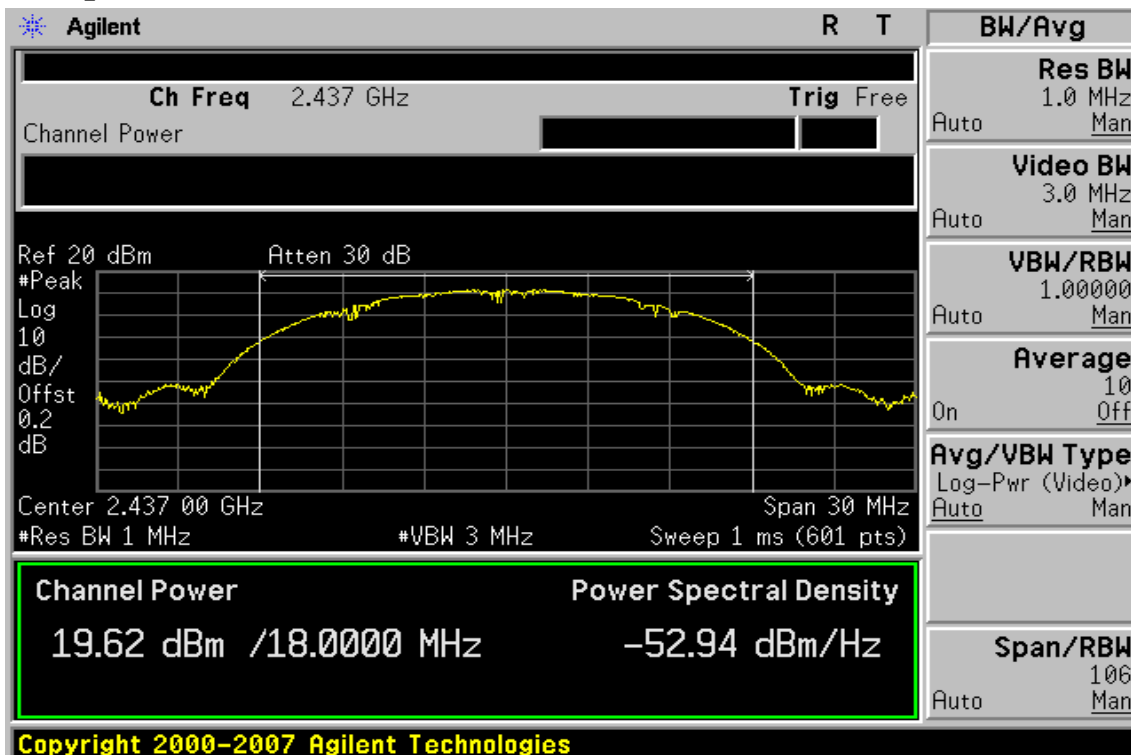
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### 802.11b, 1Mbps

### Power Output Plot (CH Low)



### Power Output Plot (CH Mid)

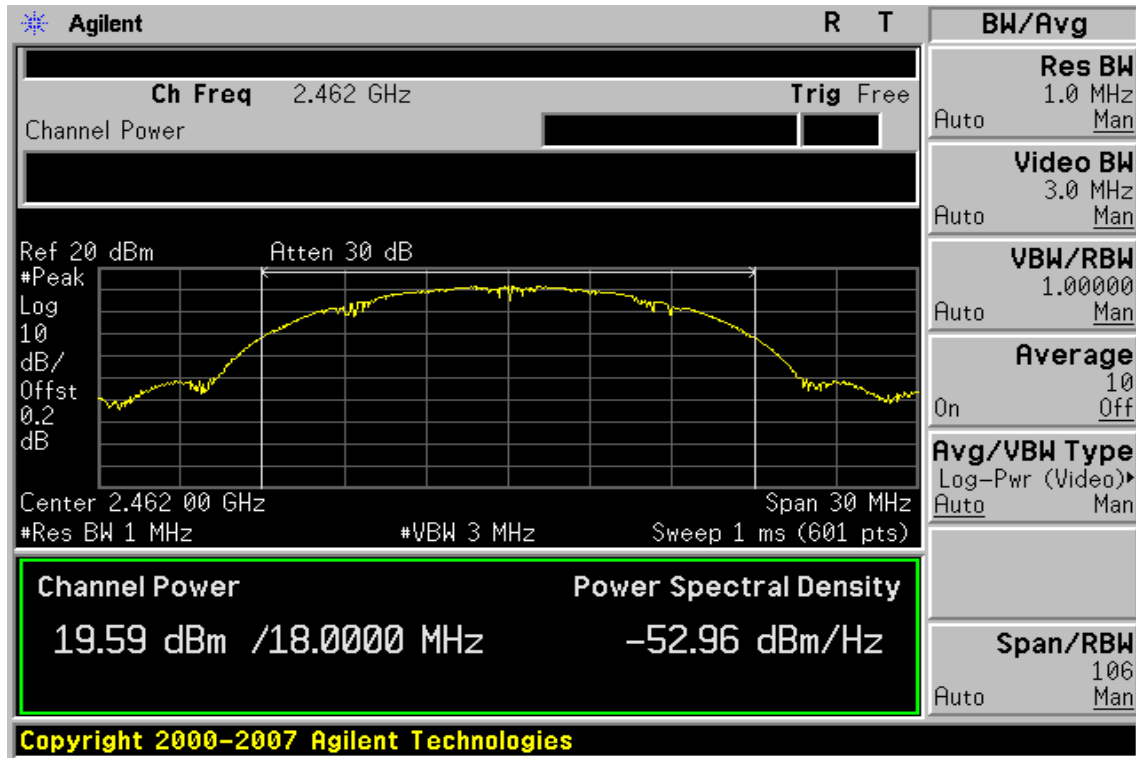


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### Power Output Plot (CH High)

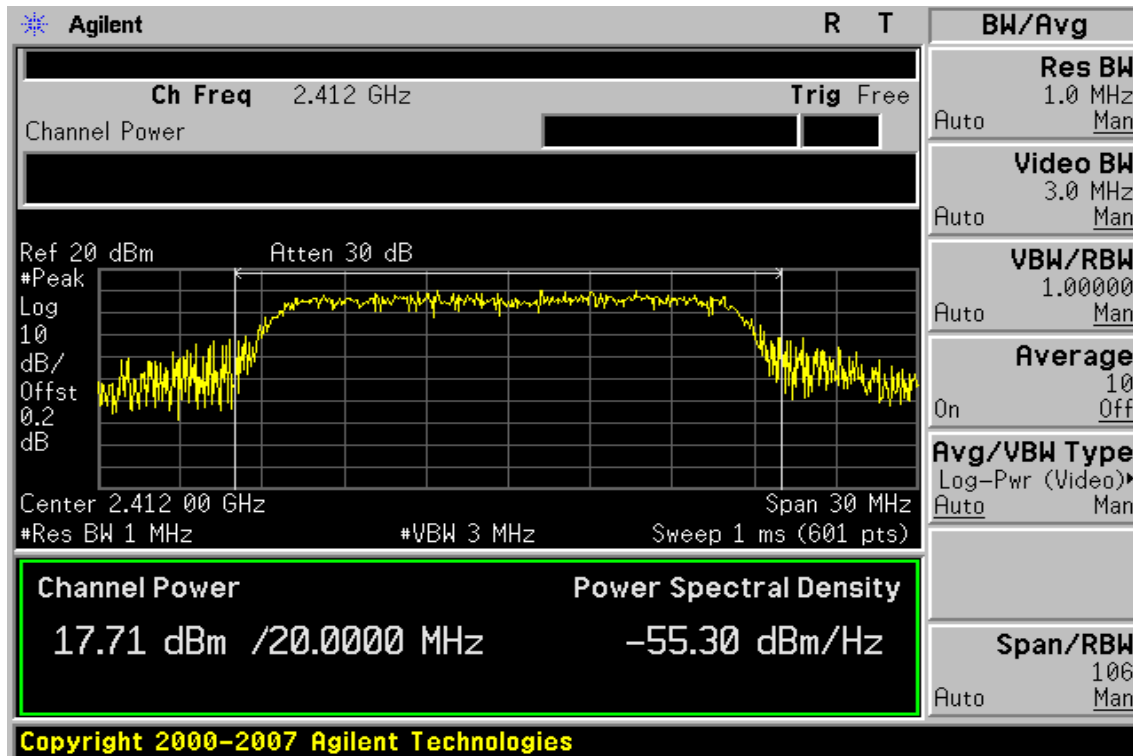


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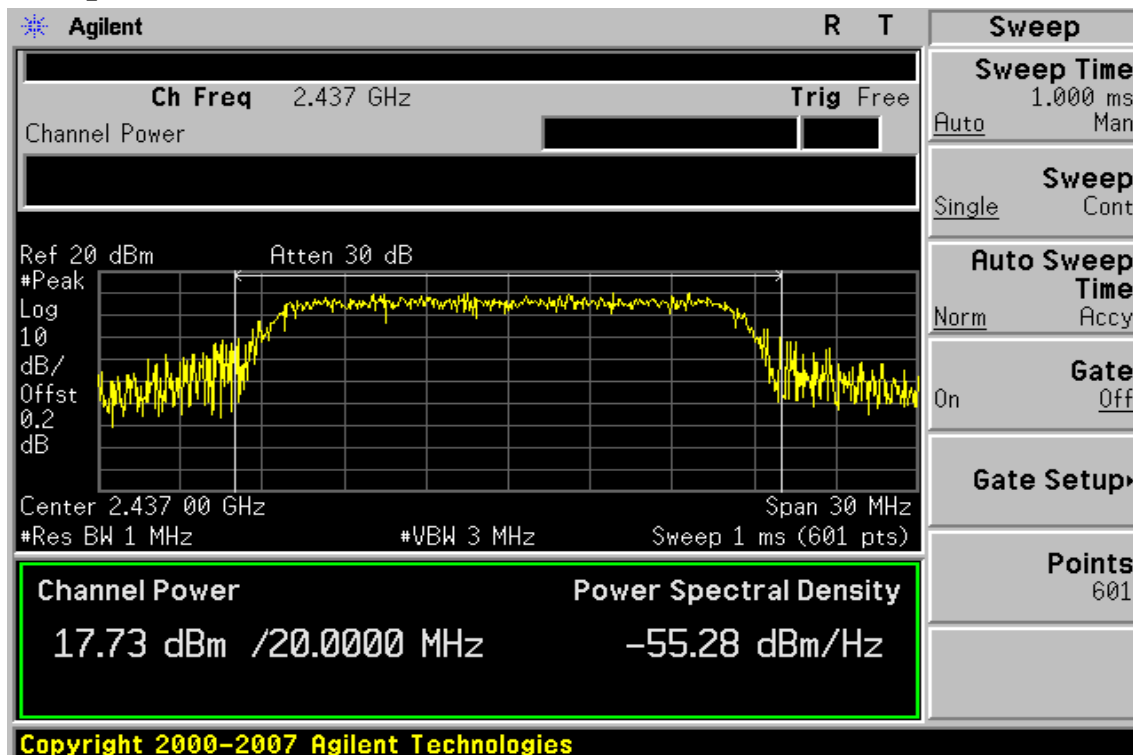
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### 802.11g, 6Mbps Power Output Plot (CH Low)



### Power Output Plot (CH Mid)

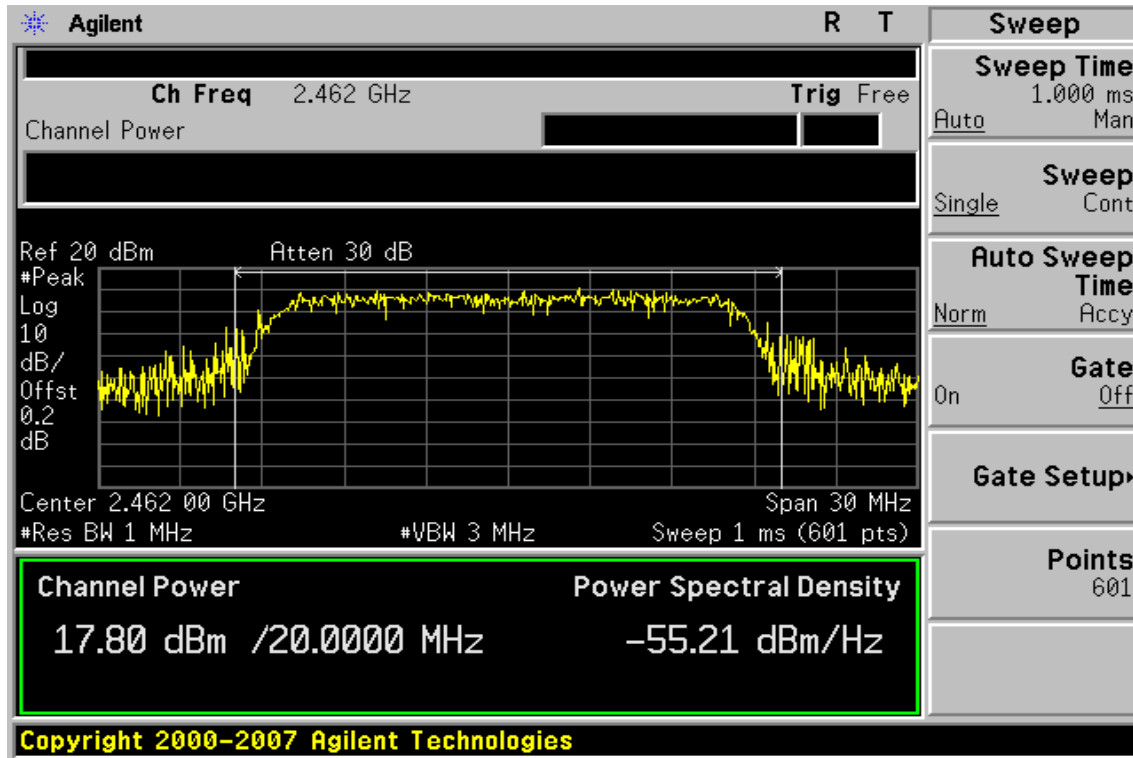


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### Power Output Plot (CH High)



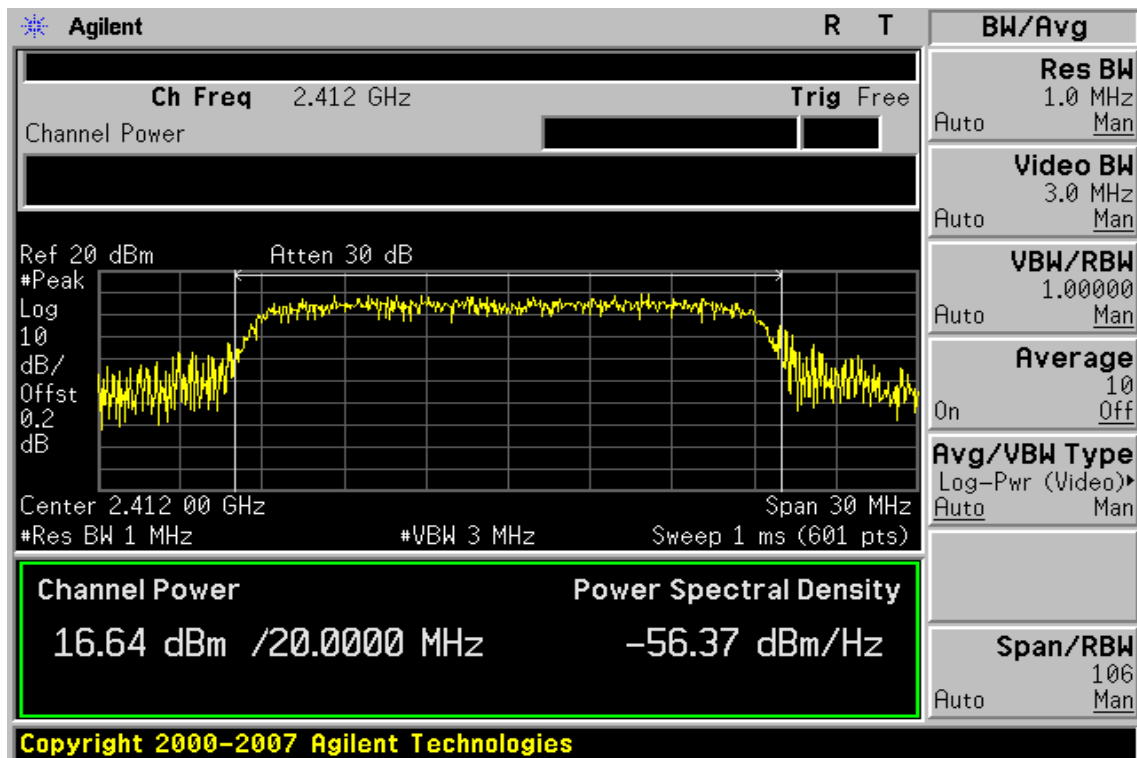
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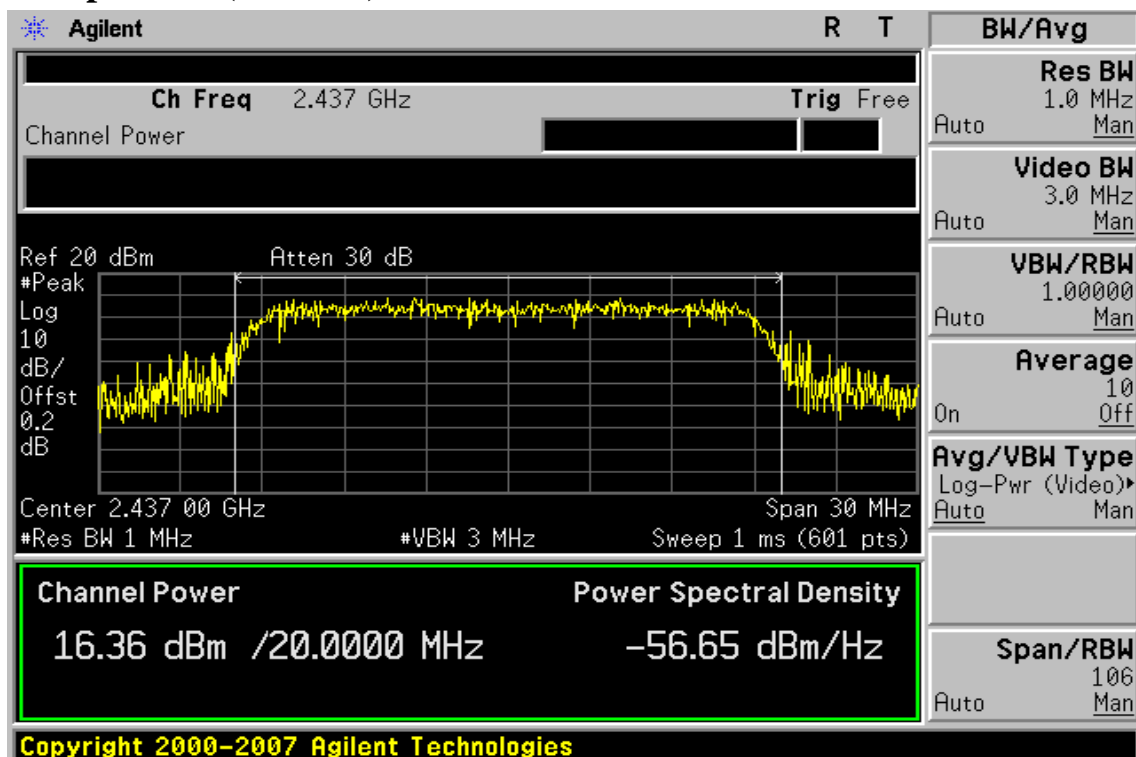
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**802.11n (20M), 6.5Mbps  
Power Output Plot (CH Low)**



**Power Output Plot (CH Mid)**

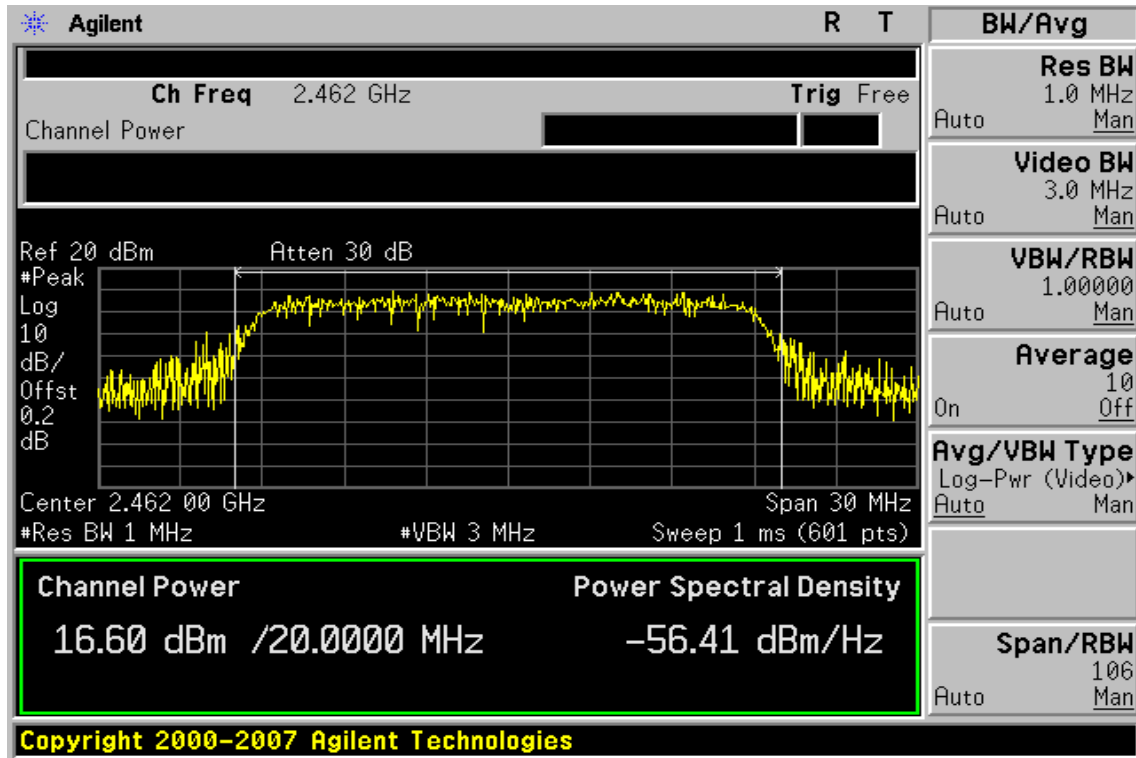


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### Power Output Plot (CH High)

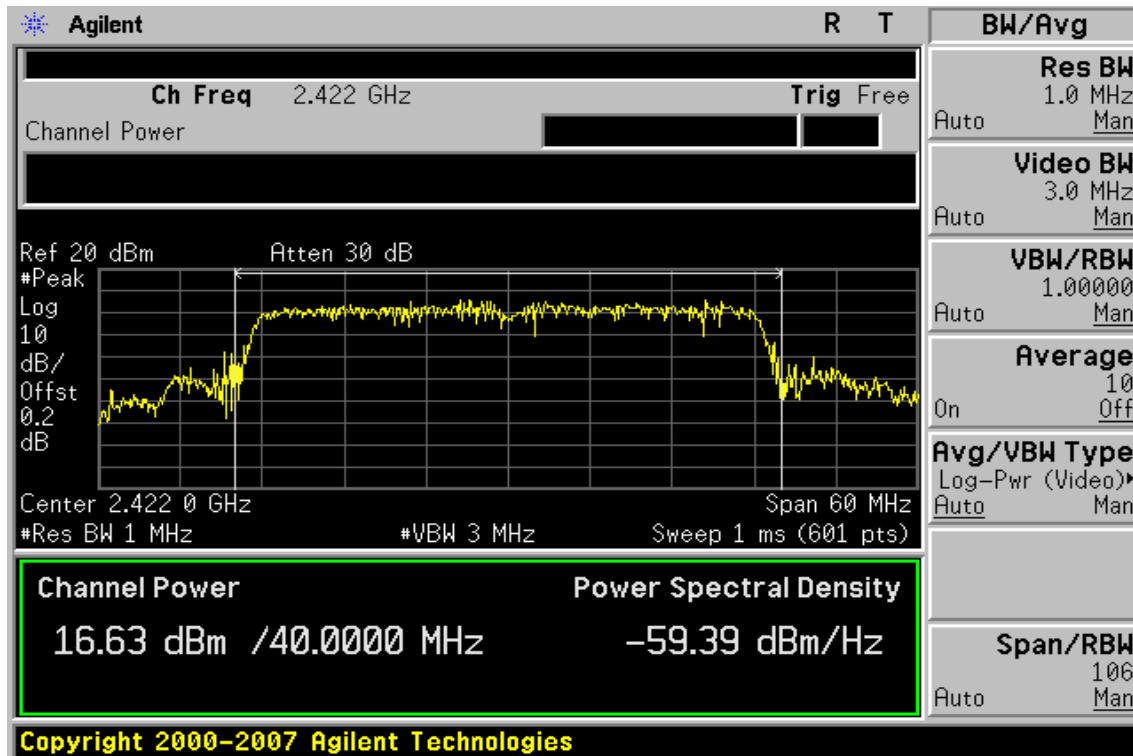


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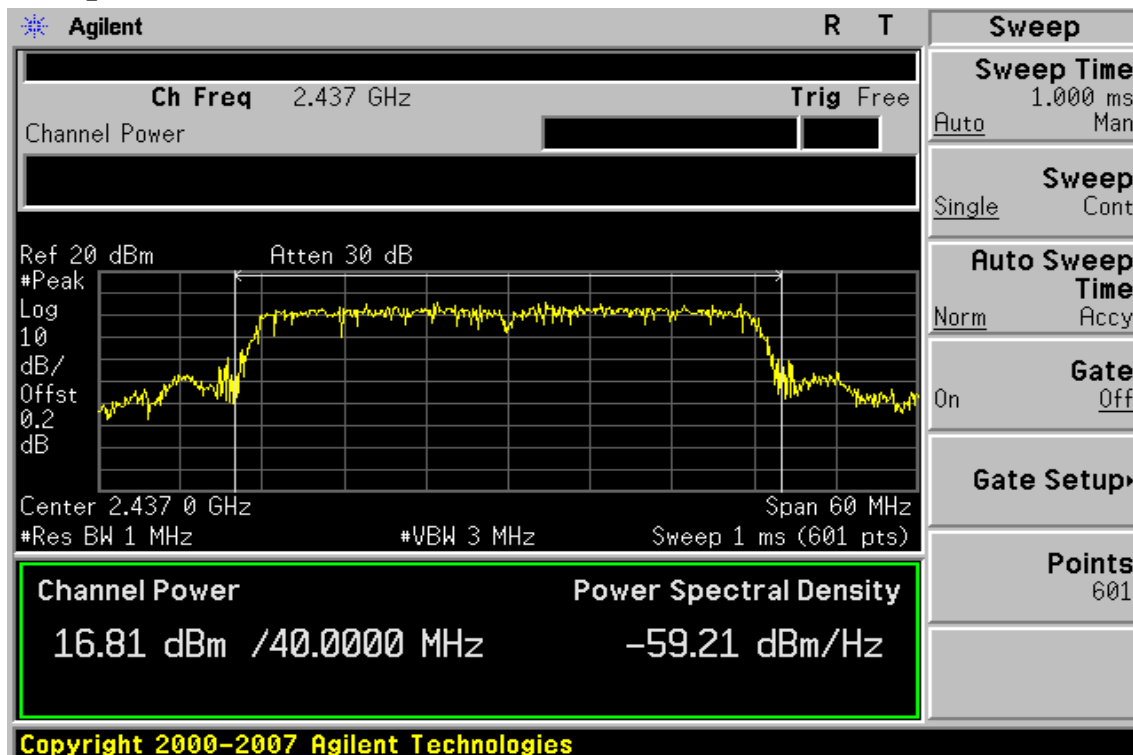
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### 802.11n\_40M, 13.5Mbps Power Output Plot (CH Low)



### Power Output Plot (CH Mid)

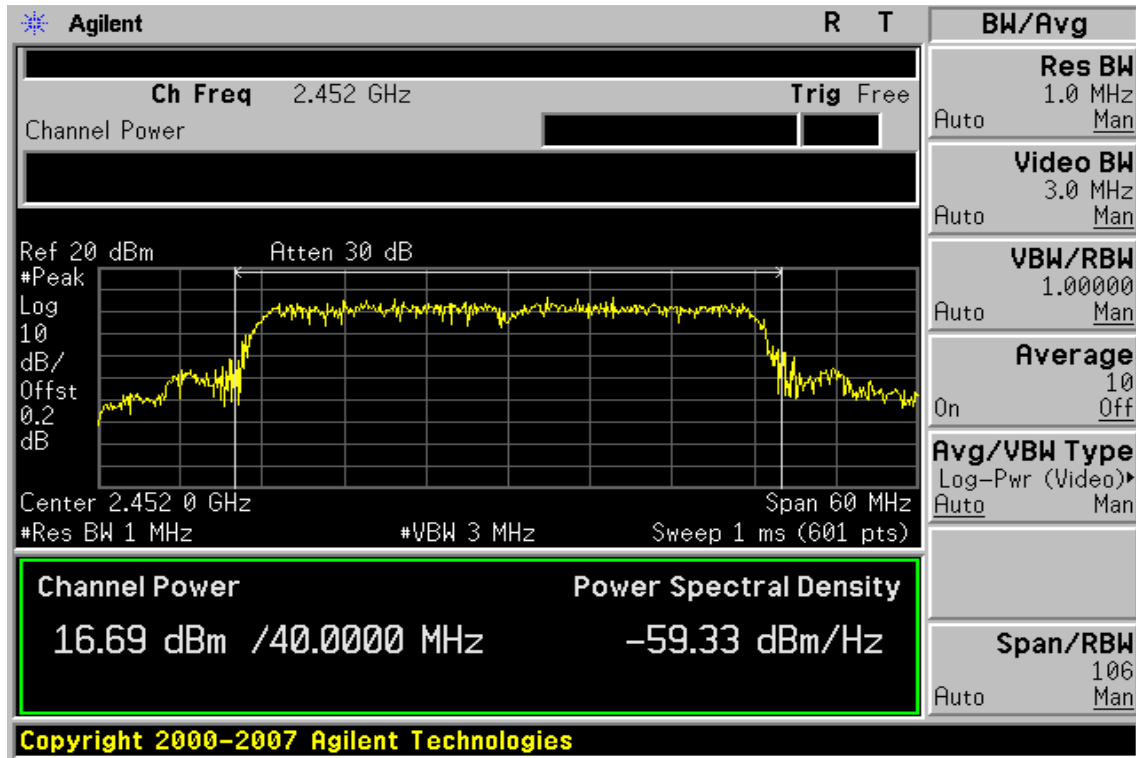


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### Power Output Plot (CH High)



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## 6 100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

### 6.1 Standard Applicable:

According to §15.247(c), in any 100 KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is 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 in 15.209(a).

### 6.2 Measurement Equipment Used:

#### 6.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.

#### 6.2.2. Radiated emission:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2011
Loop antenna	MESSTEC	FLA30	03/10086	07/08/2009	07/07/2011
Bilog Antenna	SCHWAZBECK	VULB9160	3158	11/29/2009	11/28/2011
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2009	11/29/2010
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2010	01/04/2011
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2010	01/04/2011
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2010	01/04/2011
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2010

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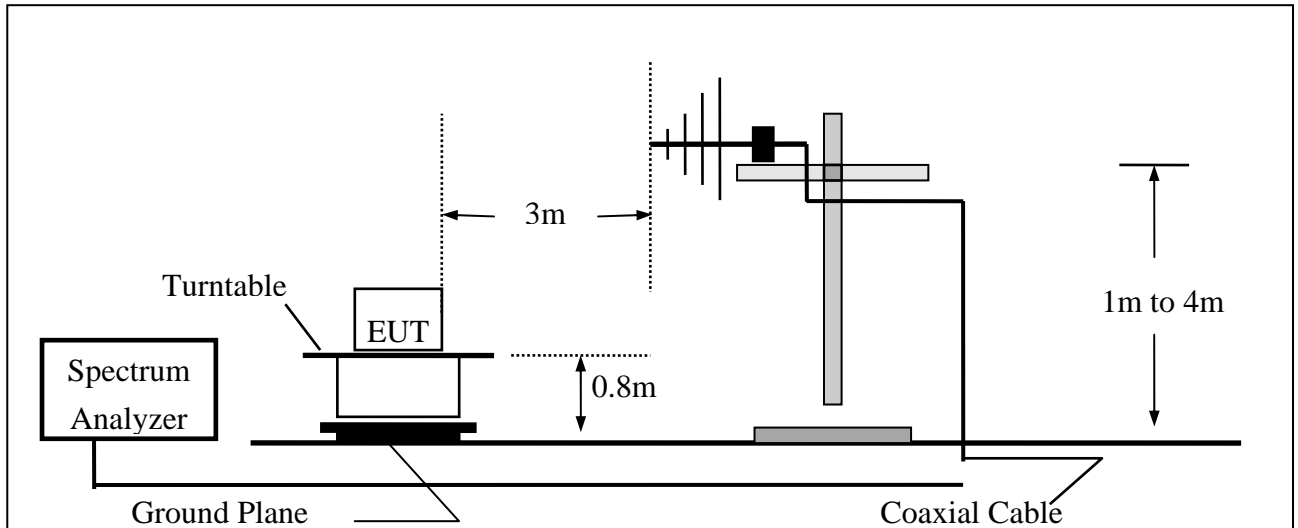
**6.3 Test SET-UP:**

**6.3.1 Conducted Emission at antenna port:**

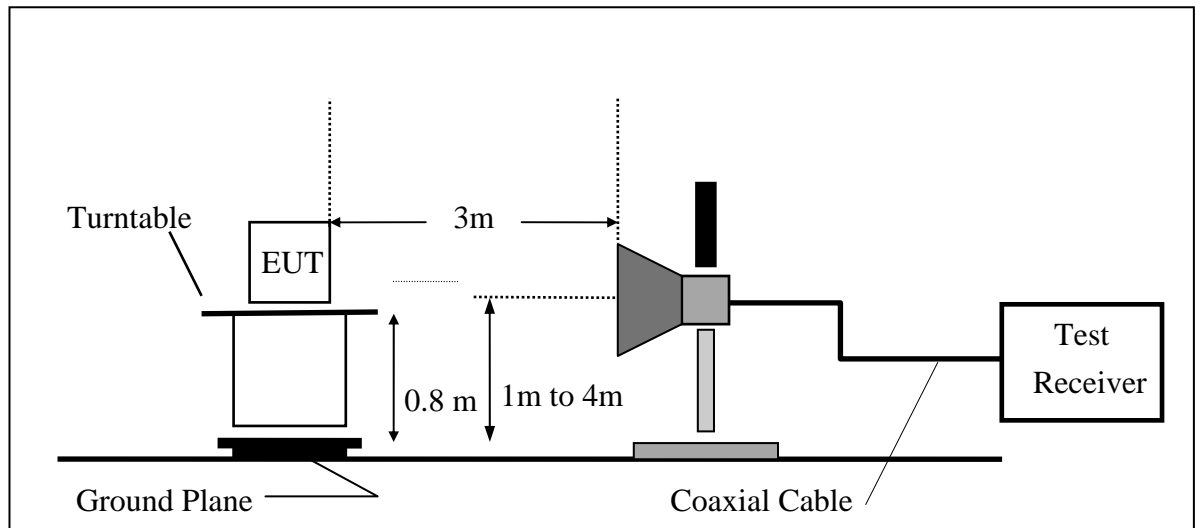
Refer to section 6.3 for details.

**6.3.2 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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**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 analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=25MHz, Sweep = auto
5. Mark Peak, 2.390GHz and 2.4835GHz, 5,725 and 5,850GHz and record the max. level.
6. Repeat above procedures until all frequency measured were complete.

**6.5 Field Strength Calculation:**

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

$$FS = RA + AF + CL - AG$$

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

**6.6 Measurement Result:**

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

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Radiated Emission: 802.11 b mode  
 Operation Mode TX CH Low  
 Fundamental Frequency 2412 MHz  
 Temperature 25 °C  
 Humidity 65 %

Test Date Apr. 20, 2010  
 Test By Jason  
 Pol Ver.

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	57.28	50.01	-1.39	55.89	48.62	74.00	54.00	-5.38	Avg

Operation Mode TX CH Low  
 Fundamental Frequency 2412 MHz  
 Temperature 25 °C  
 Humidity 65 %

Test Date Apr. 20, 2010  
 Test By Jason  
 Pol Hor.

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	56.51	48.85	-1.39	55.12	47.46	74.00	54.00	-6.54	Avg

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 b mode**

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.56	59.74	51.78	-0.92	58.82	50.86	74.00	54.00	-3.14	Avg

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.56	50.34	---	-0.92	49.42	---	74.00	54.00	-4.58	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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**Radiated Emission: 802.11 g mode**

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	64.27	52.27	-1.39	62.88	50.88	74.00	54.00	-3.12	Avg

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	57.79	49.77	-1.39	56.40	48.38	74.00	54.00	-5.62	Avg

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	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	68.51	53.55	-0.92	67.59	52.63	74.00	54.00	-1.37	Avg

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	53.15	43.51	-0.92	52.23	42.59	74.00	54.00	-11.41	Avg

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/n\_20M mode**

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	59.98	51.02	-1.39	58.59	49.63	74.00	54.00	-4.37	Avg

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	57.44	49.47	-1.39	56.05	48.08	74.00	54.00	-5.92	Avg

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/n\_20M mode**

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	61.99	50.53	-0.92	61.07	49.61	74.00	54.00	-4.39	Avg

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	50.53	53.47	-0.92	49.61	52.55	74.00	54.00	-1.45	Avg

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/n\_40M mode**

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2422 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	62.86	52.04	-1.40	61.46	50.64	74.00	54.00	-3.36	Avg

Operation Mode	TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2422 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2390.00	57.32	49.76	-1.39	55.93	48.37	74.00	54.00	-5.63	Avg

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/n\_40M mode**

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2452 MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	65.05	52.77	-0.92	64.13	51.85	74.00	54.00	-2.15	Avg

Operation Mode	TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2452 MHz	Test By	Jason
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2483.50	52.88	44.33	-0.92	51.96	43.41	74.00	54.00	-10.59	Avg

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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## 7 SPURIOUS RADIATED EMISSION TEST

### 7.1 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.

### 7.2 Measurement Equipment Used:

#### 7.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.

#### 7.2.2. Radiated emission:

Refer to section 7.2.2 for details.

### 7.3 Test SET-UP:

#### 7.3.1. Conducted Emission at antenna port:

Refer to section 6.3 for details.

#### 7.3.2. Radiated emission:

Refer to section 7.3 for details.

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### 7.4 Measurement Procedure:

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.

### 7.5 Field Strength Calculation

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

$$FS = RA + AF + CL - AG$$

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

### 7.6 Measurement Result:

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

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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.63	-14.66	30.97	40.00	-9.03
92.08	V	Peak	49.25	-17.38	31.87	43.50	-11.63
198.78	V	Peak	54.23	-15.56	38.67	43.50	-4.83
242.43	V	Peak	45.82	-14.06	31.76	46.00	-14.24
290.93	V	Peak	48.25	-13.21	35.04	46.00	-10.96
356.89	V	Peak	42.16	-11.49	30.67	46.00	-15.33
56.19	H	Peak	41.59	-14.63	26.96	40.00	-13.04
198.78	H	Peak	56.26	-15.56	40.70	43.50	-2.80
240.49	H	Peak	48.35	-14.11	34.24	46.00	-11.76
290.93	H	Peak	46.46	-13.21	33.25	46.00	-12.75
358.83	H	Peak	42.10	-11.43	30.67	46.00	-15.33
400.54	H	Peak	44.94	-9.99	34.95	46.00	-11.05

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
56.19	V	Peak	46.01	-14.63	31.38	40.00	-8.62
92.08	V	Peak	49.10	-17.38	31.72	43.50	-11.78
198.78	V	Peak	54.41	-15.56	38.85	43.50	-4.65
240.49	V	Peak	47.88	-14.11	33.77	46.00	-12.23
293.84	V	Peak	48.57	-13.19	35.38	46.00	-10.62
358.83	V	Peak	43.67	-11.43	32.24	46.00	-13.76
39.70	H	Peak	41.37	-13.73	27.64	40.00	-12.36
198.78	H	Peak	57.08	-15.56	41.52	43.50	-1.98
242.43	H	Peak	48.78	-14.06	34.72	46.00	-11.28
293.84	H	Peak	46.57	-13.19	33.38	46.00	-12.62
400.54	H	Peak	44.89	-9.99	34.90	46.00	-11.10
902.03	H	Peak	35.09	-1.07	34.02	46.00	-11.98

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)**

Operation Mode	802.11b TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.46	-14.66	30.80	40.00	-9.20
92.08	V	Peak	48.98	-17.38	31.60	43.50	-11.90
198.78	V	Peak	54.37	-15.56	38.81	43.50	-4.69
237.58	V	Peak	47.17	-14.22	32.95	46.00	-13.05
290.93	V	Peak	47.21	-13.21	34.00	46.00	-12.00
358.83	V	Peak	41.99	-11.43	30.56	46.00	-15.44
41.64	H	Peak	41.46	-13.76	27.70	40.00	-12.30
198.78	H	Peak	56.29	-15.56	40.73	43.50	-2.77
242.43	H	Peak	49.88	-14.06	35.82	46.00	-10.18
286.08	H	Peak	46.56	-13.26	33.30	46.00	-12.70
400.54	H	Peak	44.15	-9.99	34.16	46.00	-11.84
902.03	H	Peak	34.15	-1.07	33.08	46.00	-12.92

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
56.19	V	Peak	46.18	-14.63	31.55	40.00	-8.45
92.08	V	Peak	49.78	-17.38	32.40	43.50	-11.10
198.78	V	Peak	54.57	-15.56	39.01	43.50	-4.49
242.43	V	Peak	47.62	-14.06	33.56	46.00	-12.44
293.84	V	Peak	48.64	-13.19	35.45	46.00	-10.55
361.74	V	Peak	42.54	-11.33	31.21	46.00	-14.79
36.79	H	Peak	42.30	-14.36	27.94	40.00	-12.06
198.78	H	Peak	56.21	-15.56	40.65	43.50	-2.85
242.43	H	Peak	47.67	-14.06	33.61	46.00	-12.39
293.84	H	Peak	46.43	-13.19	33.24	46.00	-12.76
358.83	H	Peak	42.58	-11.43	31.15	46.00	-14.85
400.54	H	Peak	44.20	-9.99	34.21	46.00	-11.79

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.58	-14.66	30.92	40.00	-9.08
101.78	V	Peak	48.54	-16.87	31.67	43.50	-11.83
198.78	V	Peak	54.57	-15.56	39.01	43.50	-4.49
242.43	V	Peak	47.25	-14.06	33.19	46.00	-12.81
293.84	V	Peak	48.00	-13.19	34.81	46.00	-11.19
361.74	V	Peak	41.95	-11.33	30.62	46.00	-15.38
198.78	H	Peak	56.21	-15.56	40.65	43.50	-2.85
242.43	H	Peak	48.61	-14.06	34.55	46.00	-11.45
286.08	H	Peak	46.95	-13.26	33.69	46.00	-12.31
358.83	H	Peak	45.87	-11.43	34.44	46.00	-11.56
400.54	H	Peak	43.93	-9.99	33.94	46.00	-12.06
902.03	H	Peak	33.86	-1.07	32.79	46.00	-13.21

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)**

Operation Mode	802.11g TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.82	-14.66	31.16	40.00	-8.84
92.08	V	Peak	49.50	-17.38	32.12	43.50	-11.38
198.78	V	Peak	54.90	-15.56	39.34	43.50	-4.16
242.43	V	Peak	46.36	-14.06	32.30	46.00	-13.70
293.84	V	Peak	47.42	-13.19	34.23	46.00	-11.77
358.83	V	Peak	40.77	-11.43	29.34	46.00	-16.66
198.78	H	Peak	56.79	-15.56	41.23	43.50	-2.27
242.43	H	Peak	48.84	-14.06	34.78	46.00	-11.22
290.93	H	Peak	47.03	-13.21	33.82	46.00	-12.18
358.83	H	Peak	42.57	-11.43	31.14	46.00	-14.86
397.63	H	Peak	44.67	-10.09	34.58	46.00	-11.42
640.13	H	Peak	34.93	-5.19	29.74	46.00	-16.26

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_20M) Combine mode**

Operation Mode	802.11g/n_20M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.93	-14.66	31.27	40.00	-8.73
92.08	V	Peak	49.46	-17.38	32.08	43.50	-11.42
198.78	V	Peak	56.74	-15.56	41.18	43.50	-2.32
240.49	V	Peak	47.62	-14.11	33.51	46.00	-12.49
293.84	V	Peak	47.32	-13.19	34.13	46.00	-11.87
358.83	V	Peak	43.49	-11.43	32.06	46.00	-13.94
198.78	H	Peak	56.65	-15.56	41.09	43.50	-2.41
242.43	H	Peak	48.71	-14.06	34.65	46.00	-11.35
286.08	H	Peak	47.98	-13.26	34.72	46.00	-11.28
358.83	H	Peak	42.34	-11.43	30.91	46.00	-15.09
397.63	H	Peak	45.06	-10.09	34.97	46.00	-11.03
678.93	H	Peak	34.48	-4.98	29.50	46.00	-16.50

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_20M) Combine mode**

Operation Mode	802.11g/n_20M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
56.19	V	Peak	45.40	-14.63	30.77	40.00	-9.23
92.08	V	Peak	49.04	-17.38	31.66	43.50	-11.84
198.78	V	Peak	54.66	-15.56	39.10	43.50	-4.40
242.43	V	Peak	46.89	-14.06	32.83	46.00	-13.17
293.84	V	Peak	47.47	-13.19	34.28	46.00	-11.72
902.03	V	Peak	38.23	-1.07	37.16	46.00	-8.84
36.79	H	Peak	42.80	-14.36	28.44	40.00	-11.56
198.78	H	Peak	56.41	-15.56	40.85	43.50	-2.65
242.43	H	Peak	47.60	-14.06	33.54	46.00	-12.46
290.93	H	Peak	46.59	-13.21	33.38	46.00	-12.62
400.54	H	Peak	44.71	-9.99	34.72	46.00	-11.28
902.03	H	Peak	37.03	-1.07	35.96	46.00	-10.04

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_20M) Combine mode**

Operation Mode	802.11g/n_20M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
56.19	V	Peak	45.71	-14.63	31.08	40.00	-8.92
90.14	V	Peak	50.04	-17.62	32.42	43.50	-11.08
198.78	V	Peak	54.33	-15.56	38.77	43.50	-4.73
290.93	V	Peak	47.55	-13.21	34.34	46.00	-11.66
358.83	V	Peak	42.12	-11.43	30.69	46.00	-15.31
640.13	V	Peak	36.52	-5.19	31.33	46.00	-14.67
198.78	H	Peak	56.26	-15.56	40.70	43.50	-2.80
242.43	H	Peak	48.89	-14.06	34.83	46.00	-11.17
290.93	H	Peak	46.28	-13.21	33.07	46.00	-12.93
356.89	H	Peak	42.36	-11.49	30.87	46.00	-15.13
400.54	H	Peak	44.98	-9.99	34.99	46.00	-11.01
902.03	H	Peak	34.91	-1.07	33.84	46.00	-12.16

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_40M) Combine mode**

Operation Mode	802.11g/n_40M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2422MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	46.09	-14.66	31.43	40.00	-8.57
92.08	V	Peak	48.80	-17.38	31.42	43.50	-12.08
198.78	V	Peak	54.56	-15.56	39.00	43.50	-4.50
293.84	V	Peak	47.86	-13.19	34.67	46.00	-11.33
361.74	V	Peak	44.60	-11.33	33.27	46.00	-12.73
640.13	V	Peak	35.52	-5.19	30.33	46.00	-15.67
39.70	H	Peak	41.13	-13.73	27.40	40.00	-12.60
198.78	H	Peak	56.46	-15.56	40.90	43.50	-2.60
242.43	H	Peak	49.03	-14.06	34.97	46.00	-11.03
290.93	H	Peak	46.49	-13.21	33.28	46.00	-12.72
358.83	H	Peak	41.59	-11.43	30.16	46.00	-15.84
400.54	H	Peak	44.30	-9.99	34.31	46.00	-11.69

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_40M) Combine mode**

Operation Mode	802.11g/n_40M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.89	-14.66	31.23	40.00	-8.77
92.08	V	Peak	48.91	-17.38	31.53	43.50	-11.97
198.78	V	Peak	54.64	-15.56	39.08	43.50	-4.42
240.49	V	Peak	46.46	-14.11	32.35	46.00	-13.65
288.99	V	Peak	48.93	-13.23	35.70	46.00	-10.30
361.74	V	Peak	42.49	-11.33	31.16	46.00	-14.84
41.64	H	Peak	41.97	-13.76	28.21	40.00	-11.79
198.78	H	Peak	56.73	-15.56	41.17	43.50	-2.33
242.43	H	Peak	49.26	-14.06	35.20	46.00	-10.80
286.08	H	Peak	46.92	-13.26	33.66	46.00	-12.34
356.89	H	Peak	43.17	-11.49	31.68	46.00	-14.32
397.63	H	Peak	44.56	-10.09	34.47	46.00	-11.53

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz °
- 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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**Radiated Spurious Emission Measurement Result (below 1GHz) (802.11n\_40M) Combine mode**

Operation Mode	802.11g/n_40M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2452MHz	Test By	Jason
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
56.19	V	Peak	45.54	-14.63	30.91	40.00	-9.09
92.08	V	Peak	48.54	-17.38	31.16	43.50	-12.34
198.78	V	Peak	54.68	-15.56	39.12	43.50	-4.38
242.43	V	Peak	46.23	-14.06	32.17	46.00	-13.83
290.93	V	Peak	48.65	-13.21	35.44	46.00	-10.56
356.89	V	Peak	43.79	-11.49	32.30	46.00	-13.70
36.79	H	Peak	41.89	-14.36	27.53	40.00	-12.47
197.78	H	Peak	56.29	-15.56	40.73	43.50	-2.77
242.43	H	Peak	49.12	-14.06	35.06	46.00	-10.94
290.93	H	Peak	47.13	-13.21	33.92	46.00	-12.08
358.83	H	Peak	42.78	-11.43	31.35	46.00	-14.65
400.54	H	Peak	44.63	-9.99	34.64	46.00	-11.36

Remark :

- 1 Measuring frequencies from 30 MHz to the 1GHz .
- 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.90	---	-7.74	34.16	---	74.00	54.00	-19.84	Peak
1936.0	40.33	---	-3.73	36.60	---	74.00	54.00	-17.40	Peak
4824.0	38.04	---	6.02	44.06	---	74.00	54.00	-9.94	Peak
7236.0	35.68	---	12.91	48.59	---	74.00	54.00	-5.41	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.08	---	-7.74	32.34	---	74.00	54.00	-21.66	Peak
4824.0	34.76	---	6.02	40.78	---	74.00	54.00	-13.22	Peak
7236.0	34.33	---	12.91	47.24	---	74.00	54.00	-6.76	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.29	---	-7.74	33.55	---	74.00	54.00	-20.45	Peak
1936.0	39.51	---	-3.73	35.78	---	74.00	54.00	-18.22	Peak
4874.0	37.79	---	6.15	43.94	---	74.00	54.00	-10.06	Peak
7311.0	34.31	---	12.90	47.21	---	74.00	54.00	-6.79	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.39	---	-7.74	32.65	---	74.00	54.00	-21.35	Peak
1936.0	34.84	---	-3.73	31.11	---	74.00	54.00	-22.89	Peak
4874.0	34.88	---	6.15	41.03	---	74.00	54.00	-12.97	Peak
7311.0	32.77	---	12.90	45.67	---	74.00	54.00	-8.33	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.76	---	-7.74	33.02	---	74.00	54.00	-20.98	Peak
1936.0	39.03	---	-3.73	35.30	---	74.00	54.00	-18.70	Peak
4924.0	36.62	---	6.28	42.90	---	74.00	54.00	-11.10	Peak
7386.0	34.54	---	12.94	47.48	---	74.00	54.00	-6.52	Peak
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									

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)**

Operation Mode	802.11b TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	39.30	---	-7.74	31.56	---	74.00	54.00	-22.44	Peak
1936.0	34.79	---	-3.73	31.06	---	74.00	54.00	-22.94	Peak
4924.0	31.46	---	6.28	37.74	---	74.00	54.00	-16.26	Peak
7386.0	31.92	---	12.94	44.86	---	74.00	54.00	-9.14	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.52	---	-7.74	32.78	---	74.00	54.00	-21.22	Peak
1936.0	40.17	---	-3.73	36.44	---	74.00	54.00	-17.56	Peak
4824.0	33.91	---	6.02	39.93	---	74.00	54.00	-14.07	Peak
7236.0	31.35	---	12.86	44.21	---	74.00	54.00	-9.79	Peak
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		

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.58	---	-7.74	33.84	---	74.00	54.00	-20.16	Peak
1988.0	37.91	---	-3.47	34.44	---	74.00	54.00	-19.56	Peak
4824.0	34.36	---	6.02	40.38	---	74.00	54.00	-13.62	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.68	---	-7.74	32.94	---	74.00	54.00	-21.06	Peak
1091.0	40.25	---	-7.75	32.50	---	74.00	54.00	-21.50	Peak
1936.0	39.96	---	-3.73	36.23	---	74.00	54.00	-17.77	Peak
4874.0	34.70	---	6.15	40.85	---	74.00	54.00	-13.15	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									

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.03	---	-7.74	32.29	---	74.00	54.00	-21.71	Peak
1988.0	34.91	---	-3.47	31.44	---	74.00	54.00	-22.56	Peak
4874.0	33.82	---	6.15	39.97	---	74.00	54.00	-14.03	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	42.62	---	-7.74	34.88	---	74.00	54.00	-19.12	Peak
2001.0	37.90	---	-3.41	34.49	---	74.00	54.00	-19.51	Peak
4924.0	34.11	---	6.28	40.39	---	74.00	54.00	-13.61	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									

**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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)**

Operation Mode	802.11g TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.97	---	-7.74	33.23	---	74.00	54.00	-20.77	Peak
1936.0	35.04	---	-3.73	31.31	---	74.00	54.00	-22.69	Peak
4924.0	32.43	---	6.28	38.71	---	74.00	54.00	-15.29	Peak
7386.0	32.19	---	12.89	45.08	---	74.00	54.00	-8.92	Peak
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.

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	43.49	---	-7.74	35.75	---	74.00	54.00	-18.25	Peak
1936.0	39.71	---	-3.73	35.98	---	74.00	54.00	-18.02	Peak
4824.0	34.42	---	6.02	40.44	---	74.00	54.00	-13.56	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									

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2412MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.47	---	-7.74	33.73	---	74.00	54.00	-20.27	Peak
1988.0	36.35	---	-3.47	32.88	---	74.00	54.00	-21.12	Peak
4824.0	34.38	---	6.02	40.40	---	74.00	54.00	-13.60	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.34	---	-7.74	33.60	---	74.00	54.00	-20.40	Peak
1936.0	40.83	---	-3.73	37.10	---	74.00	54.00	-16.90	Peak
4874.0	35.95	---	6.15	42.10	---	74.00	54.00	-11.90	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									

**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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.47	---	-7.74	33.73	---	74.00	54.00	-20.27	Peak
1988.0	36.35	---	-3.47	32.88	---	74.00	54.00	-21.12	Peak
4874.0	33.59	---	6.15	39.74	---	74.00	54.00	-14.26	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.10	---	-7.74	33.36	---	74.00	54.00	-20.64	Peak
1936.0	39.91	---	-3.73	36.18	---	74.00	54.00	-17.82	Peak
4924.0	35.10	---	6.28	41.38	---	74.00	54.00	-12.62	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									

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_20M) Combined**

Operation Mode	802.11g/n_20M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2462MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.10	---	-7.74	32.36	---	74.00	54.00	-21.64	Peak
1936.0	35.35	---	-3.73	31.62	---	74.00	54.00	-22.38	Peak
4924.0	32.32	---	6.28	38.60	---	74.00	54.00	-15.40	Peak
7386.0	----					74.00	54.00		
9848.0	----					74.00	54.00		
12310.0	----					74.00	54.00		
14772.0	----					74.00	54.00		
17234.0	----					74.00	54.00		
19696.0	----					74.00	54.00		
22158.0	----					74.00	54.00		
24620.0	----					74.00	54.00		

Remark:

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

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2422MHz	Test By	Jason
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.56	---	-7.74	32.82	---	74.00	54.00	-21.18	Peak
1240.5	36.91	---	-7.08	29.83	---	74.00	54.00	-24.17	Peak
1936.0	39.86	---	-3.73	36.13	---	74.00	54.00	-17.87	Peak
4844.0	32.86	---	6.15	39.01	---	74.00	54.00	-14.99	Peak
7266.0	----					74.00	54.00		
9688.0	----					74.00	54.00		
12110.0	----					74.00	54.00		
14532.0	----					74.00	54.00		
16954.0	----					74.00	54.00		
19376.0	----					74.00	54.00		
21798.0	----					74.00	54.00		
24220.0									

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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH Low	Test Date	Apr. 20, 2010
Fundamental Frequency	2422MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	40.03	---	-7.74	32.29	---	74.00	54.00	-21.71	Peak
1936.0	35.91	---	-3.73	32.18	---	74.00	54.00	-21.82	Peak
4844.0	32.47	---	6.15	38.62	---	74.00	54.00	-15.38	Peak
7266.0	----					74.00	54.00		
9688.0	----					74.00	54.00		
12110.0	----					74.00	54.00		
14532.0	----					74.00	54.00		
16954.0	----					74.00	54.00		
19376.0	----					74.00	54.00		
21798.0	----					74.00	54.00		
24220.0	----					74.00	54.00		

Remark:

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

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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	41.72	---	-7.74	33.98	---	74.00	54.00	-20.02	Peak
1988.0	41.56	---	-3.47	38.09	---	74.00	54.00	-15.91	Peak
3613.0	33.40	---	2.47	35.87	---	74.00	54.00	-18.13	Peak
4874.0	33.90	---	6.21	40.11	---	74.00	54.00	-13.89	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH Mid	Test Date	Apr. 20, 2010
Fundamental Frequency	2437MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	39.73	---	-7.74	31.99	---	74.00	54.00	-22.01	Peak
2001.0	35.30	---	-3.41	31.89	---	74.00	54.00	-22.11	Peak
2573.0	35.04	---	-0.65	34.39	---	74.00	54.00	-19.61	Peak
4874.0	31.49	---	6.21	37.70	---	74.00	54.00	-16.30	Peak
7136.0	31.35	---	12.85	44.20	---	74.00	54.00	-9.80	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 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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**Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2452MHz	Test By	Jason
Temperature	25 °C	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1000.0	39.83	---	-7.74	32.09	---	74.00	54.00	-21.91	Peak
1936.0	39.92	---	-3.73	36.19	---	74.00	54.00	-17.81	Peak
3060.5	34.00	---	0.64	34.64	---	74.00	54.00	-19.36	Peak
4904.0	36.22	---	6.10	42.32	---	74.00	54.00	-11.68	Peak
7356.0	----					74.00	54.00		
9808.0	----					74.00	54.00		
12260.0	----					74.00	54.00		
14712.0	----					74.00	54.00		
17164.0	----					74.00	54.00		
19616.0	----					74.00	54.00		
22068.0	----					74.00	54.00		
24520.0									

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 (above 1GHz) (802.11g/n\_40M) Combined**

Operation Mode	802.11g/n_40M TX CH High	Test Date	Apr. 20, 2010
Fundamental Frequency	2452MHz	Test By	Jason
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
1936.0	36.06	---	-3.73	32.33	---	74.00	54.00	-21.67	Peak
4904.0	34.91	---	6.10	41.01	---	74.00	54.00	-12.99	Peak
7356.0	----					74.00	54.00		
9808.0	----					74.00	54.00		
12260.0	----					74.00	54.00		
14712.0	----					74.00	54.00		
17164.0	----					74.00	54.00		
19616.0	----					74.00	54.00		
22068.0	----					74.00	54.00		
24520.0	----					74.00	54.00		

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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## 8. ANTENNA REQUIREMENT

### 8.1. 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.

### 8.2. Antenna Connected Construction:

The directional gains of antenna used for transmitting is 2.56dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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