Test Report

Product Name ： Dual-band Gigabit Wireless-N Router

Model No. ： RT-N56U

FCC ID. ： MSQ-RTN56U

Applicant ： ASUSTeK COMPUTER INC.

Address ： No.150 Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt ： 2010/07/18

Issued Date ： 2010/09/30

Report No. ： 107269R-RFUSP42V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2010/09/30
Report No. : 107269R-RFUSP42V01

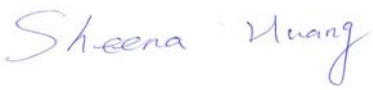
QuieTek

Product Name	:	Dual-band Gigabit Wireless-N Router
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	No.150 Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer	:	Senao Networks, Inc.
Model No.	:	RT-N56U
FCC ID.	:	MSQ-RTN56U
EUT Voltage	:	AC 100-240V / 50-60Hz
Trade Name	:	ASUS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.407:2009
Test Result	:	Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : 

(Carol Tsai / Adm. Specialist)

Reviewed By : 

(Sheena Huang / Engineer)

Approved By : 

(Roy Wang / Manager)

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1. General Information

1.1. EUT Description

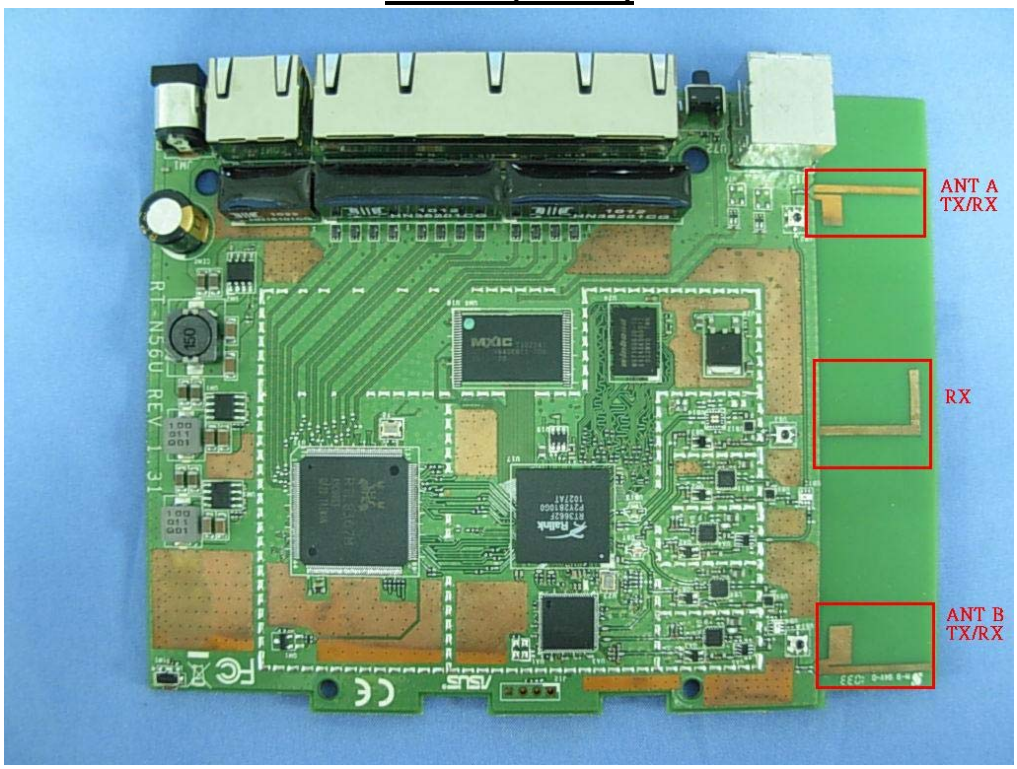
Product Name	Dual-band Gigabit Wireless-N Router
Product Type	WLAN (2TX, 3RX)
Trade Name	ASUS
Model No.	MSQ-RTN56U
Frequency Range -IEEE 802.11a & IEEE 802.11n (20MHz)	5180~5240MHz
Frequency Range- IEEE 802.11n (40MHz)	5190~5230MHz
Channel Number - IEEE 802.11a & IEEE 802.11n (20MHz))	4
Channel Number- IEEE 802.11n (40MHz)	2
Type of Modulation (IEEE 802.11a/n)	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed (IEEE 802.11a)	6MBPS,9MBPS,12MBPS,18MBPS,24MBPS,36MBPS,48MBPS,54MBPS
Data Speed (IEEE 802.11n)	Support a subset of the combination of GI, MCS 0~MCS 15 and bandwidth defined in 802.11n
Antenna Gain	5.1dBi
Channel Control	Manual
Antenna Type	CB Antenna

Component	
LAN Cable	Non-Shielded, 1.5m
Power Adapter	DVE, DSA-24PFD-15 FUS 120200 I/P: 100-240V ~ 50/60Hz 0.8A O/P: +12V⎓2A Cable out: Non-Shielded, 1.5m
Power Adapter	ASUS, AD820M0 I/P: 100-240V ~ 50/60Hz, 0.8A O/P: 19V⎓1.58A Cable out: Non-Shielded, 1.5m, one ferrite core bonded.
Power Adapter	ASUS, AD82030 I/P: 100-240V ~ 50/60Hz, 0.8A O/P: 19V⎓1.58A Cable out: Non-Shielded, 1.8m, one ferrite core bonded.
Power Adapter	ASUS, EXA1004UH I/P: 100-240V, 50-60Hz, 1A O/P: +19V⎓1.58A Cable out: Non-Shielded, 2.5m, one ferrite core bonded.

ANT-TX / Rx & Bandwidth

ANT-TX / RX	SINGLE-TX		TWO-TX		RX	
Mode/ Channel Bandwidth	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
IEEE802.11a	✓				✓	
IEEE802.11n			✓	✓	✓	✓

ANT A/B (TX / RX)



IEEE 802.11n

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
				20MHz	40MHz	20MHz	40MHz	800ns GI		400ns GI (Note1)	
								20MHz	40MHz	20MHz	40MHz
0	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0
1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0
2	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0
3	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0
4	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0
5	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0
6	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0
7	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 1 – MCS parameters for TX Antenna number = 1

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
				20MHz	40MHz	20MHz	40MHz	800ns GI		400ns GI (Note1)	
								20MHz	40MHz	20MHz	40MHz
8	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.4	30.0
9	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.9	60.0
10	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.3	90.0
11	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.8	120.0
12	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.7	180.0
13	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.6	240.0
14	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.0	270.0
15	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.4	300.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 2 – MCS parameters for TX Antenna number = 2

Symbol	Explanation
R	Code rate
N_{BPSC}	Number of coded bits per single carrier
N_{CBPS}	Number of coded bits per symbol
N_{DBPS}	Number of data bits per symbol
GI	guard interval

IEEE 802.11a & IEEE 802.11n (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

IEEE 802.11n (40MHz)

Working Frequency of Each Channel			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

Note:

1. This device is a Dual-band Gigabit Wireless-N Router including 2.4GHz b/g/n and 5GHz a/n (2x3) transmitting and receiving function.
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.407.
3. The power adapters, ASUS: AD820M0 and ASUS: AD82030 are equal in layout. Only one of them was tested and shown in the report.
4. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 107261R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit (Adapter: DVE_DSA-24PFD-15 FUS 120200) Mode 2: Transmit (Adapter: ASUS_AD820M0) Mode 3: Transmit (Adapter: ASUS_EXA1004UH)

Test Items	Mode1	Channel	Result
Conducted Emission	11n(40MHz)	38	Complies
99 % & 26dB Bandwidth	a	36/44/48	Complies
	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Peak Transmit Power	a	36/44/48	Complies
	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Peak Power Spectrum Density	a	36/44/48	Complies
	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Power Excursion	a	36/44/48	Complies
	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Radiated Emission	a	36/44/48	Complies
	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Band Edge	a	36	Complies
	11n(20MHz)	36	Complies
	11n(40MHz)	38	Complies
Frequency Stability	a	36/48	Complies
	11n(20MHz)	36/48	Complies
	11n(40MHz)	38/46	Complies

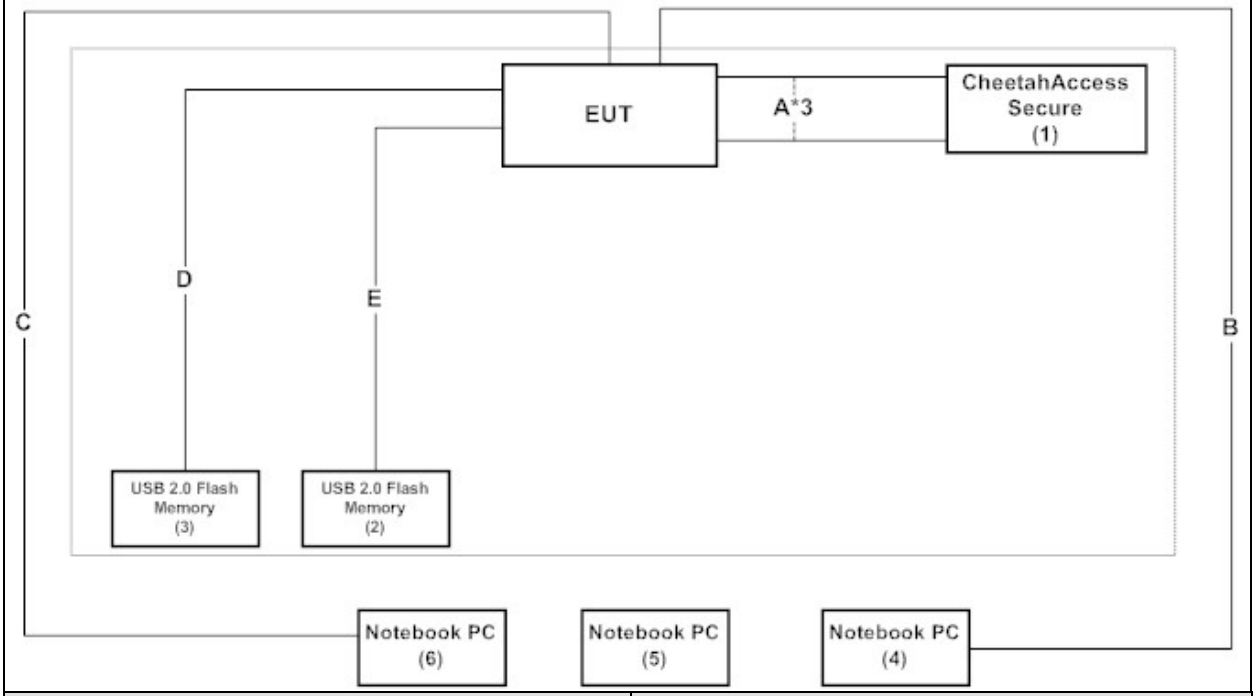
1.4. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	CheetahAccess Secure	Accton	AC-IG1104	N/A	DoC	Non-Shielded, 1.8m
2	USB 2.0 Flash Memory	Sony	USM2GJX	N/A	DoC	--
3	USB 2.0 Flash Memory	Sony	USM2GJX	N/A	DoC	--
4	Notebook PC	DELL	LATITUDE D400	GK43D1S	DoC	Non-Shielded, 1.7m, one ferrite core bonded
5	Notebook PC	DELL	LATITUDE D400	HK43D1S	DoC	Non-Shielded, 1.7m, one ferrite core bonded
6	Notebook PC	HP	HSTNN-146C	CNU8253S1X	DoC	Non-Shielded, 1.8m

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-Shielded, 1m, 3 Pcs
B	LAN Cable	Non-Shielded, 10m
C	LAN Cable	Non-Shielded, 10m
D	USB 2.0 Flash Memory Cable	Shielded, 1m
E	USB 2.0 Flash Memory Cable	Shielded, 1m

1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the QA_RT3883-AP-V1.0.2.1 on the EUT
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous Transmitter.
5	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.407 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 99 % & 26dB Bandwidth	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Peak Transmit Power	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Peak Power Spectrum Density	15 - 35	24
Humidity (%RH)		25 - 75	49
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Power Excursion	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407 Frequency Stability	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520

Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2010

Site Name: Quietek Corporation
Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Conducted Emission

2.1. Test Equipment

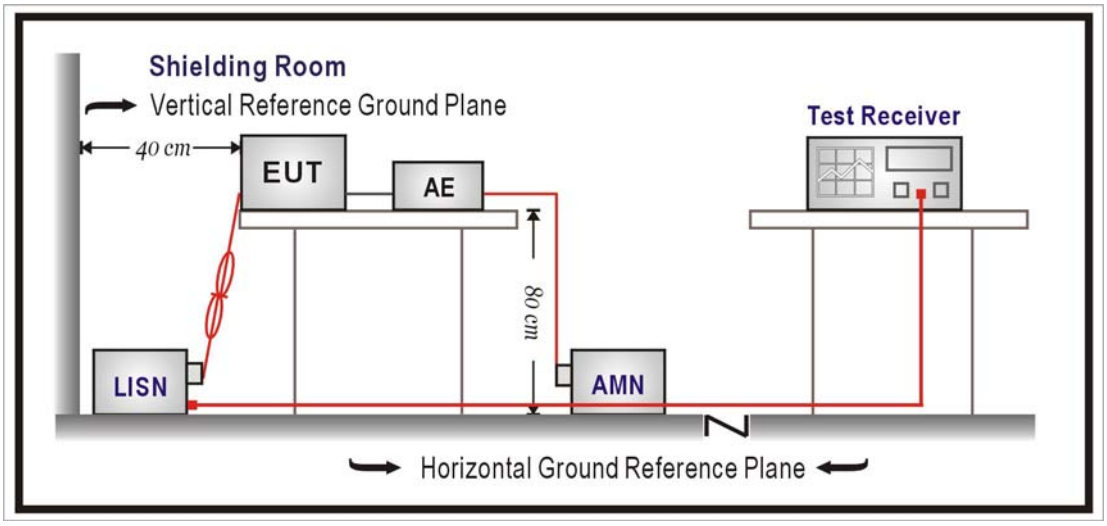
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal.
LISN	R&S	ENV216	100096	2010/09/27
LISN	R&S	ESH3-Z5	836679/022	2011/05/30
Test Receiver	R&S	ESCS 30	825442/017	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

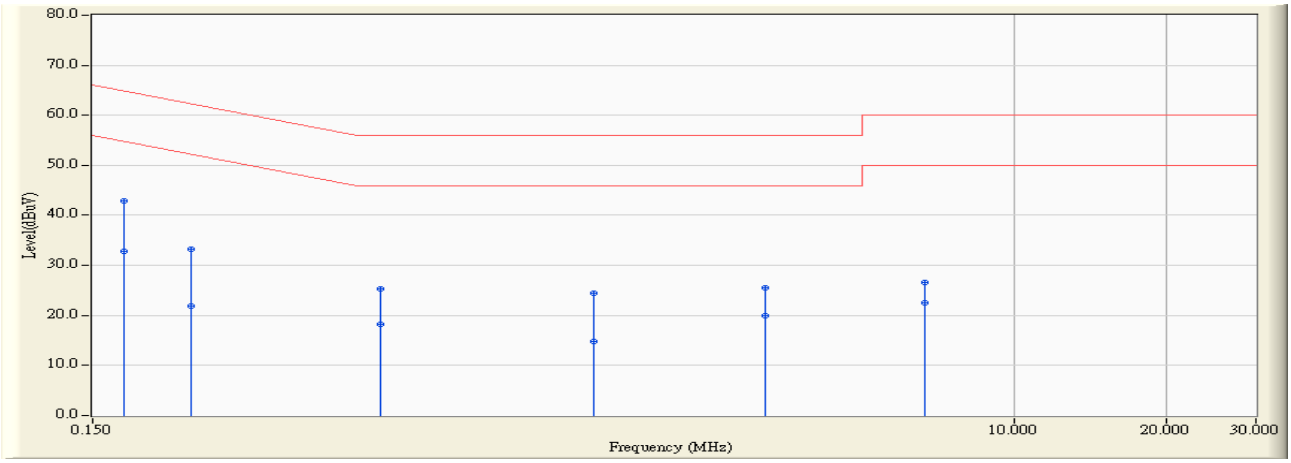
According to FCC Part 15 Subpart C Paragraph 15.207: 2009

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	**Time : 2010/08/25 - 17:59**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line1	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 1: Transmit (Adapter: DVE_DSA-24PFD-15 FUS 120200)_ 802.11n(40M)-5190MHz**

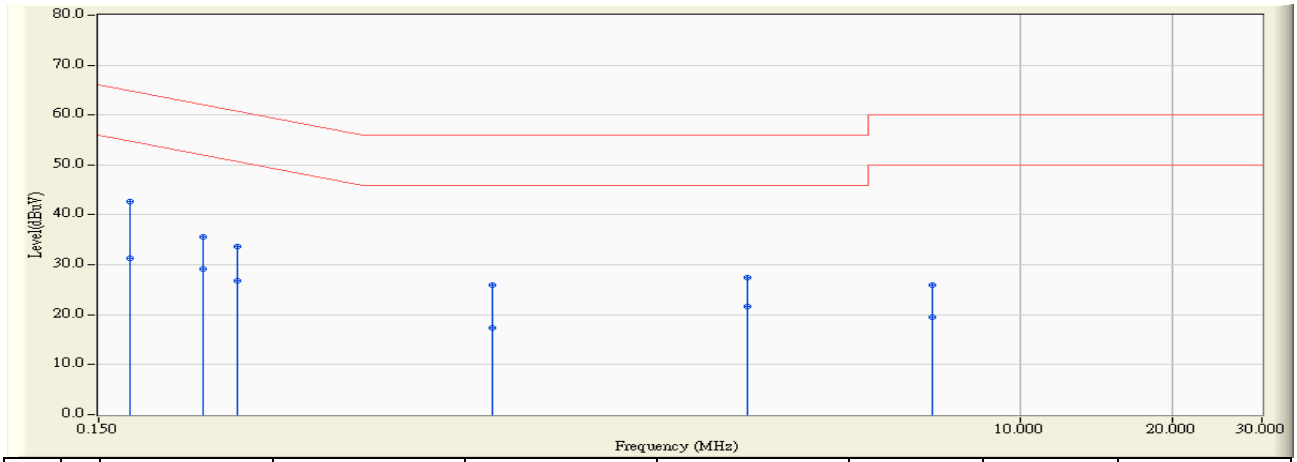


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.173	9.815	33.080	42.895	-21.899	64.794	QUASIPEAK
2		0.173	9.815	22.900	32.715	-22.079	54.794	AVERAGE
3		0.234	9.834	23.360	33.194	-29.097	62.291	QUASIPEAK
4		0.234	9.834	12.070	21.904	-30.387	52.291	AVERAGE
5		0.557	9.760	15.450	25.210	-30.790	56.000	QUASIPEAK
6		0.557	9.760	8.510	18.270	-27.730	46.000	AVERAGE
7		1.474	9.812	14.650	24.462	-31.538	56.000	QUASIPEAK
8		1.474	9.812	4.990	14.802	-31.198	46.000	AVERAGE
9		3.216	9.876	15.690	25.566	-30.434	56.000	QUASIPEAK
10		3.216	9.876	10.120	19.996	-26.004	46.000	AVERAGE
11		6.634	9.971	16.530	26.502	-33.498	60.000	QUASIPEAK
12		6.634	9.971	12.640	22.612	-27.388	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	**Time : 2010/08/25 - 18:02**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line2	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 1: Transmit (Adapter: DVE_DSA-24PFD-15 FUS 120200)_ 802.11n(40M)-5190MHz**

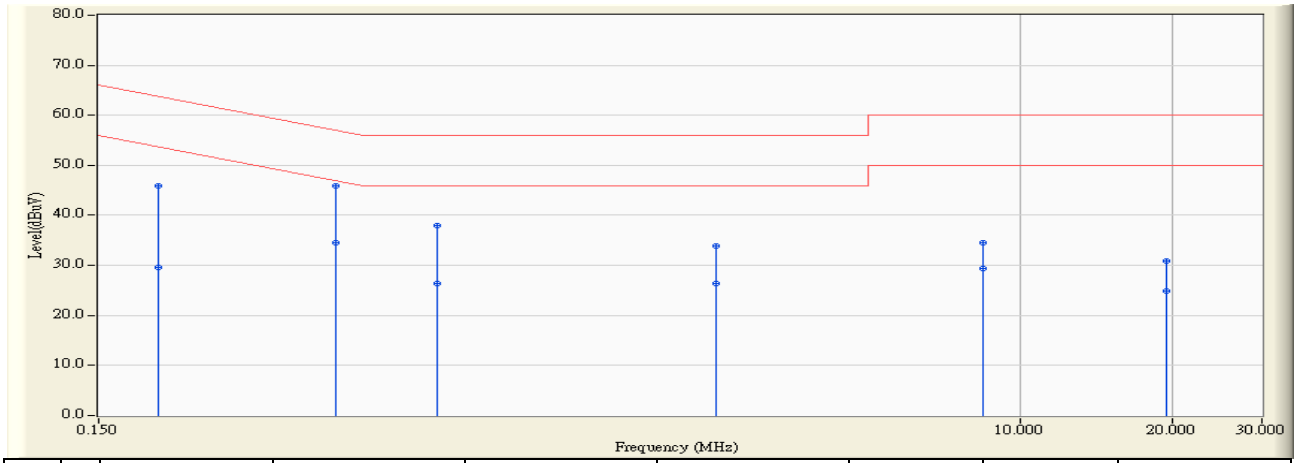


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.173	9.815	32.840	42.655	-22.139	64.794	QUASIPEAK
2		0.173	9.815	21.450	31.265	-23.529	54.794	AVERAGE
3		0.242	9.832	25.770	35.602	-26.428	62.029	QUASIPEAK
4		0.242	9.832	19.330	29.162	-22.868	52.029	AVERAGE
5		0.283	9.818	23.920	33.738	-26.995	60.733	QUASIPEAK
6		0.283	9.818	17.010	26.828	-23.905	50.733	AVERAGE
7		0.904	9.758	16.140	25.899	-30.101	56.000	QUASIPEAK
8		0.904	9.758	7.660	17.419	-28.581	46.000	AVERAGE
9		2.880	9.879	17.500	27.379	-28.621	56.000	QUASIPEAK
10		2.880	9.879	11.860	21.739	-24.261	46.000	AVERAGE
11		6.689	9.997	15.940	25.938	-34.062	60.000	QUASIPEAK
12		6.689	9.997	9.600	19.598	-30.402	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	**Time : 2010/08/25 - 18:16**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line1	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 2: Transmit (Adapter: ASUS_AD820M0)_ 802.11n(40M)-5190MHz**

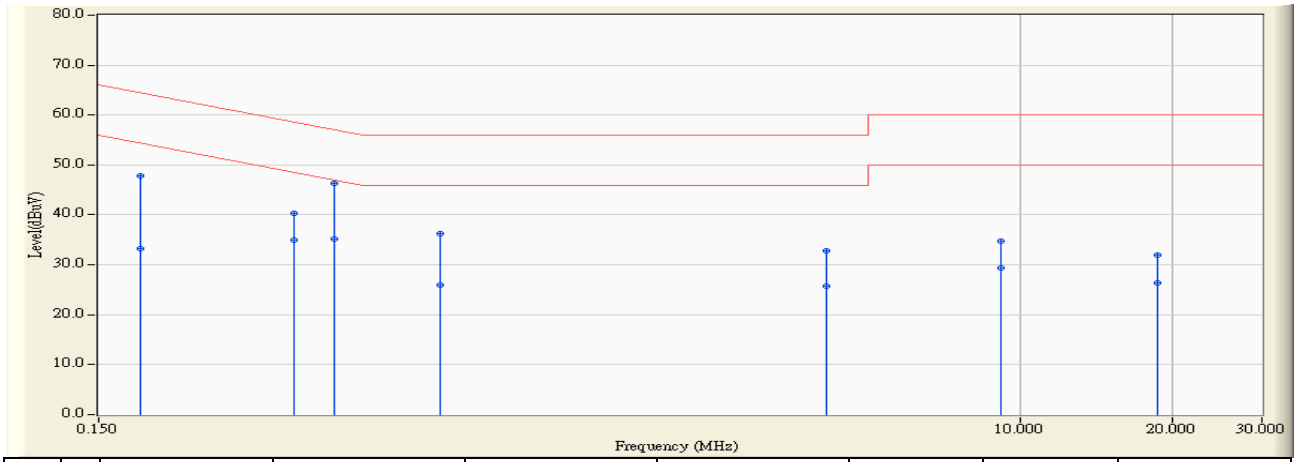


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.197	9.832	35.970	45.802	-17.939	63.741	QUASIPEAK
2		0.197	9.832	19.740	29.572	-24.169	53.741	AVERAGE
3	*	0.441	9.773	36.170	45.943	-11.103	57.045	QUASIPEAK
4		0.441	9.773	24.830	34.603	-12.443	47.045	AVERAGE
5		0.703	9.755	28.160	37.915	-18.085	56.000	QUASIPEAK
6		0.703	9.755	16.620	26.375	-19.625	46.000	AVERAGE
7		2.494	9.872	24.010	33.882	-22.118	56.000	QUASIPEAK
8		2.494	9.872	16.580	26.452	-19.548	46.000	AVERAGE
9		8.451	10.063	24.450	34.512	-25.488	60.000	QUASIPEAK
10		8.451	10.063	19.320	29.382	-20.618	50.000	AVERAGE
11		19.474	10.241	20.730	30.971	-29.029	60.000	QUASIPEAK
12		19.474	10.241	14.630	24.871	-25.129	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	**Time : 2010/08/25 - 18:18**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line2	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 2: Transmit (Adapter: ASUS_AD820M0)_ 802.11n(40M)-5190MHz**

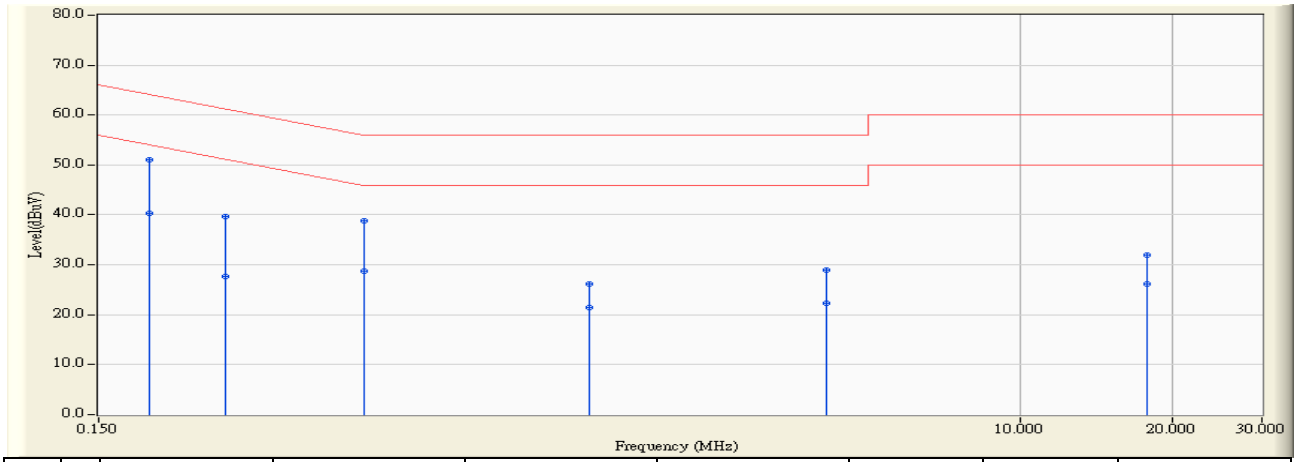


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.182	9.821	37.960	47.781	-16.633	64.414	QUASIPEAK
2		0.182	9.821	23.490	33.311	-21.103	54.414	AVERAGE
3		0.366	9.790	30.590	40.380	-18.204	58.584	QUASIPEAK
4		0.366	9.790	25.220	35.010	-13.574	48.584	AVERAGE
5	*	0.439	9.773	36.540	46.313	-10.767	57.079	QUASIPEAK
6		0.439	9.773	25.470	35.243	-11.837	47.079	AVERAGE
7		0.709	9.755	26.560	36.315	-19.685	56.000	QUASIPEAK
8		0.709	9.755	16.130	25.885	-20.115	46.000	AVERAGE
9		4.115	9.892	22.920	32.812	-23.188	56.000	QUASIPEAK
10		4.115	9.892	15.850	25.742	-20.258	46.000	AVERAGE
11		9.111	10.131	24.580	34.711	-25.289	60.000	QUASIPEAK
12		9.111	10.131	19.170	29.301	-20.699	50.000	AVERAGE
13		18.627	10.386	21.490	31.875	-28.125	60.000	QUASIPEAK
14		18.627	10.386	16.100	26.485	-23.515	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	**Time : 2010/08/25 - 18:40**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line1	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 3: Transmit (Adapter: ASUS_EXA1004UH)_ 802.11n(40M)-5190MHz**

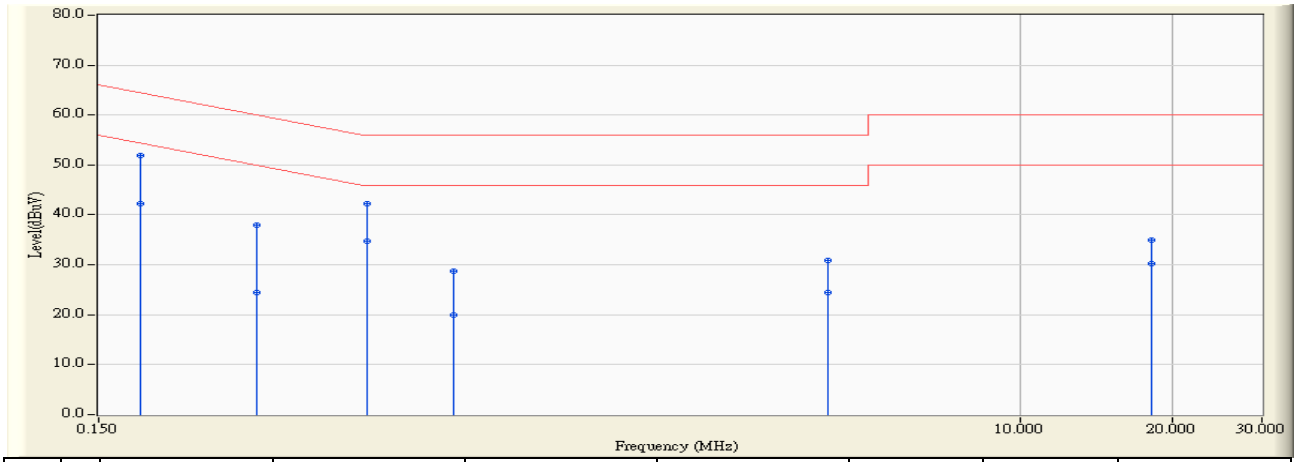


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.189	9.826	41.280	51.106	-12.972	64.078	QUASIPEAK
2		0.189	9.826	30.450	40.276	-13.802	54.078	AVERAGE
3		0.268	9.824	29.910	39.733	-21.445	61.178	QUASIPEAK
4		0.268	9.824	17.820	27.643	-23.535	51.178	AVERAGE
5		0.502	9.766	29.000	38.766	-17.234	56.000	QUASIPEAK
6		0.502	9.766	19.030	28.796	-17.204	46.000	AVERAGE
7		1.404	9.804	16.270	26.074	-29.926	56.000	QUASIPEAK
8		1.404	9.804	11.700	21.504	-24.496	46.000	AVERAGE
9		4.119	9.881	19.050	28.931	-27.069	56.000	QUASIPEAK
10		4.119	9.881	12.340	22.221	-23.779	46.000	AVERAGE
11		17.826	10.211	21.790	32.001	-27.999	60.000	QUASIPEAK
12		17.826	10.211	15.930	26.141	-23.859	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	**Time : 2010/08/25 - 18:43**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A) - Line2	**Power : AC 120V / 60Hz**
EUT : Dual-band Gigabit Wireless-N Router	**Note : Mode 3: Transmit (Adapter: ASUS_EXA1004UH)_ 802.11n(40M)-5190MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.181	9.821	42.080	51.901	-12.528	64.428	QUASIPEAK
2		0.181	9.821	32.510	42.331	-12.098	54.428	AVERAGE
3		0.308	9.810	28.110	37.920	-22.098	60.018	QUASIPEAK
4		0.308	9.810	14.650	24.460	-25.558	50.018	AVERAGE
5		0.508	9.765	32.590	42.355	-13.645	56.000	QUASIPEAK
6	*	0.508	9.765	25.020	34.785	-11.215	46.000	AVERAGE
7		0.754	9.756	18.900	28.656	-27.344	56.000	QUASIPEAK
8		0.754	9.756	10.210	19.966	-26.034	46.000	AVERAGE
9		4.154	9.892	21.080	30.972	-25.028	56.000	QUASIPEAK
10		4.154	9.892	14.640	24.532	-21.468	46.000	AVERAGE
11		18.107	10.364	24.550	34.914	-25.086	60.000	QUASIPEAK
12		18.107	10.364	19.830	30.194	-19.806	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. 99% & 26dB Bandwidth

3.1. Test Equipment

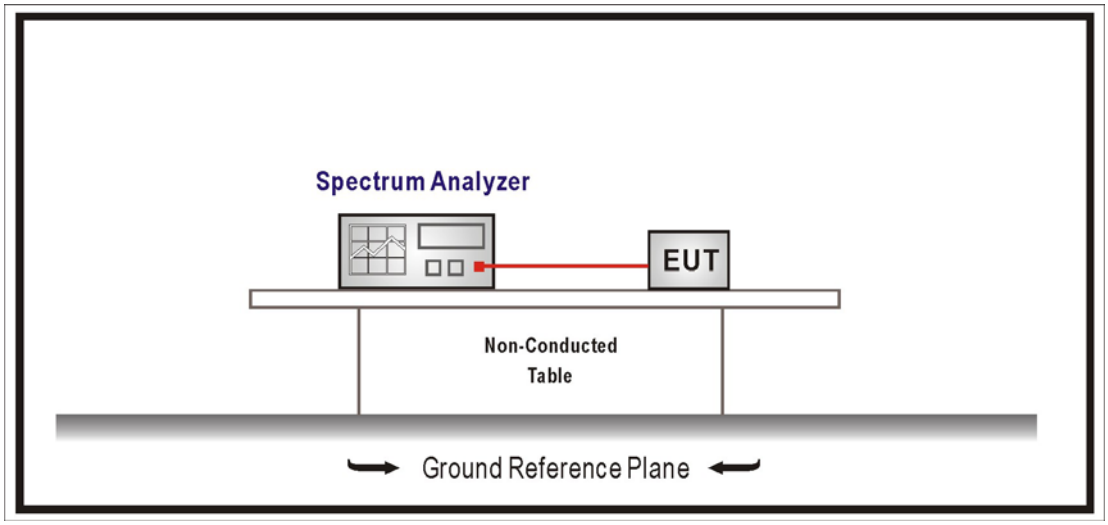
The following test equipments are used during the radiated emission tests:

99% & 26dB Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/1

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

No Required

3.4. Test Procedure

The EUT was tested according to FCC Public Notice DA 02-2138, AUGUST 2002.
Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

3.5. Uncertainty

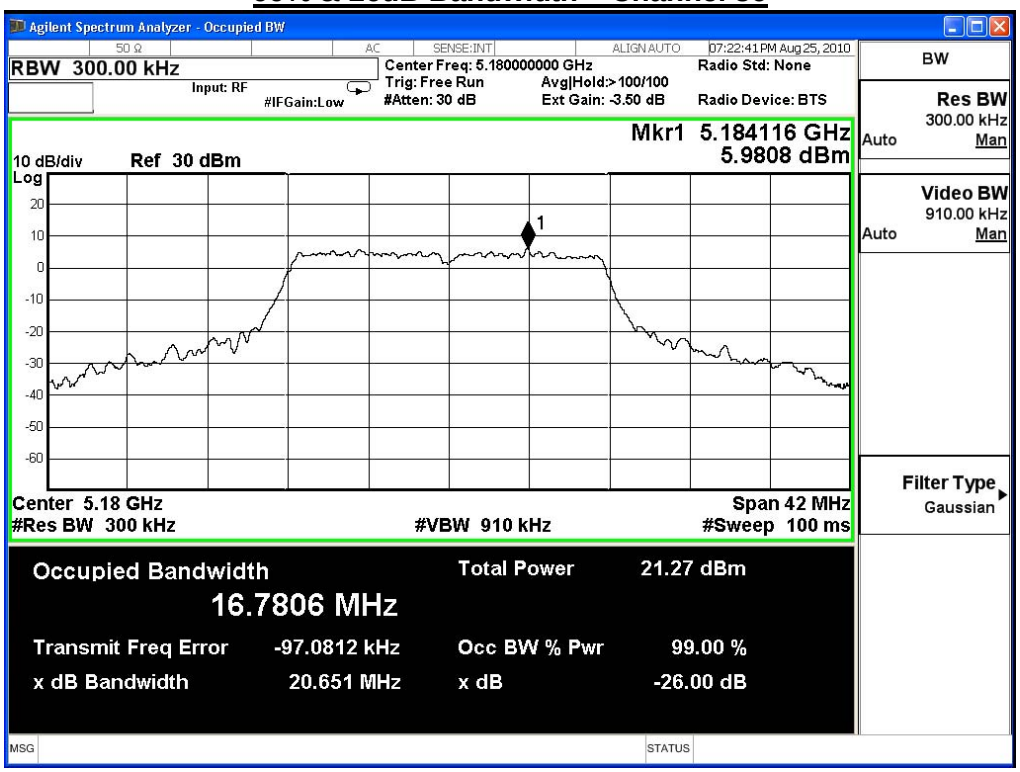
The measurement uncertainty is defined as ±150Hz

3.6. Test Result

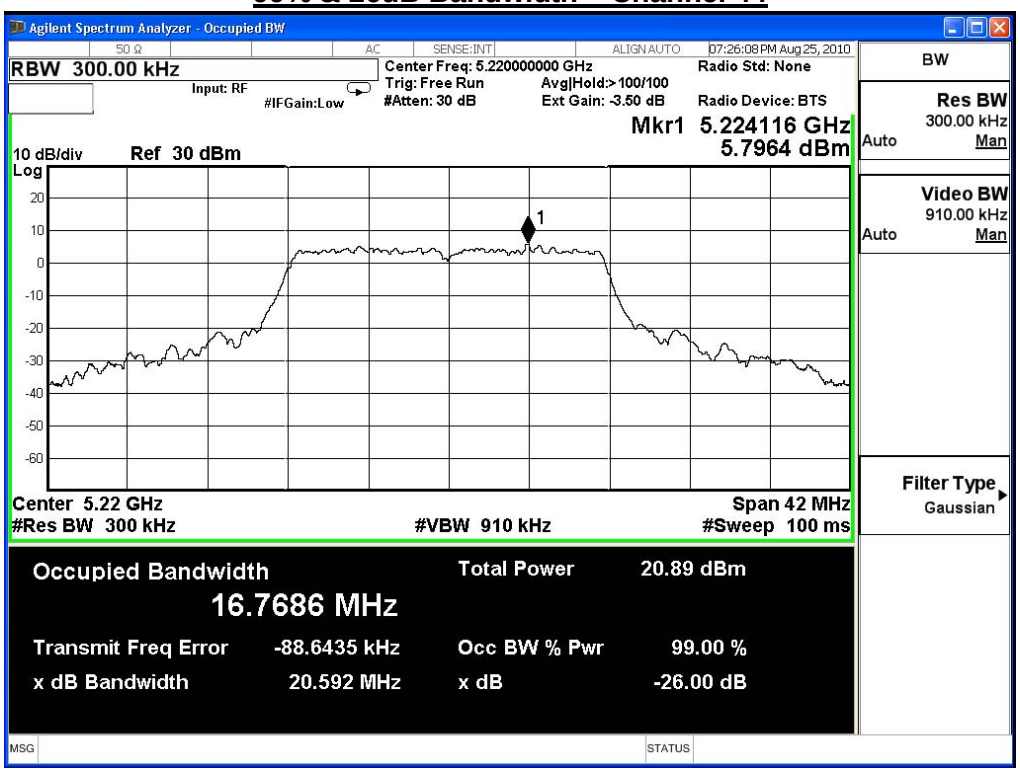
Product	Dual-band Gigabit Wireless-N Router		
Test Item	99% & 26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

802.11a					
Channel No.	Frequency (MHz)	99 % OBW (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result
36	5180	16.7806	20.651	--	NA
44	5220	16.7686	20.592	--	NA
48	5240	16.9164	22.858	--	NA

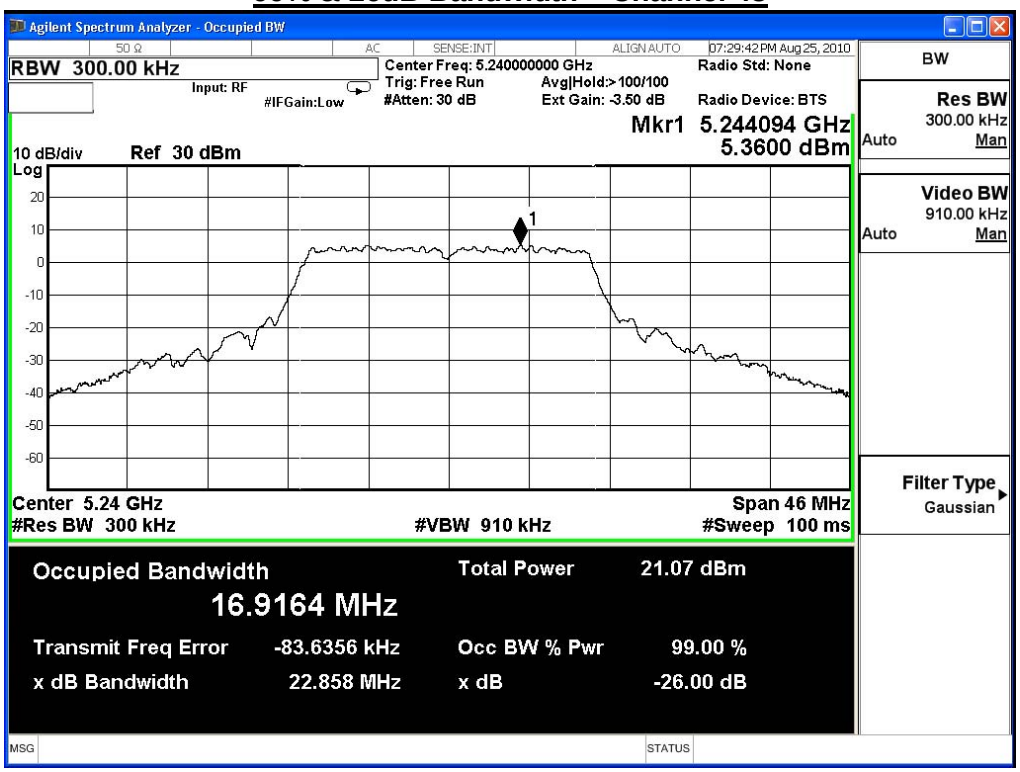
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



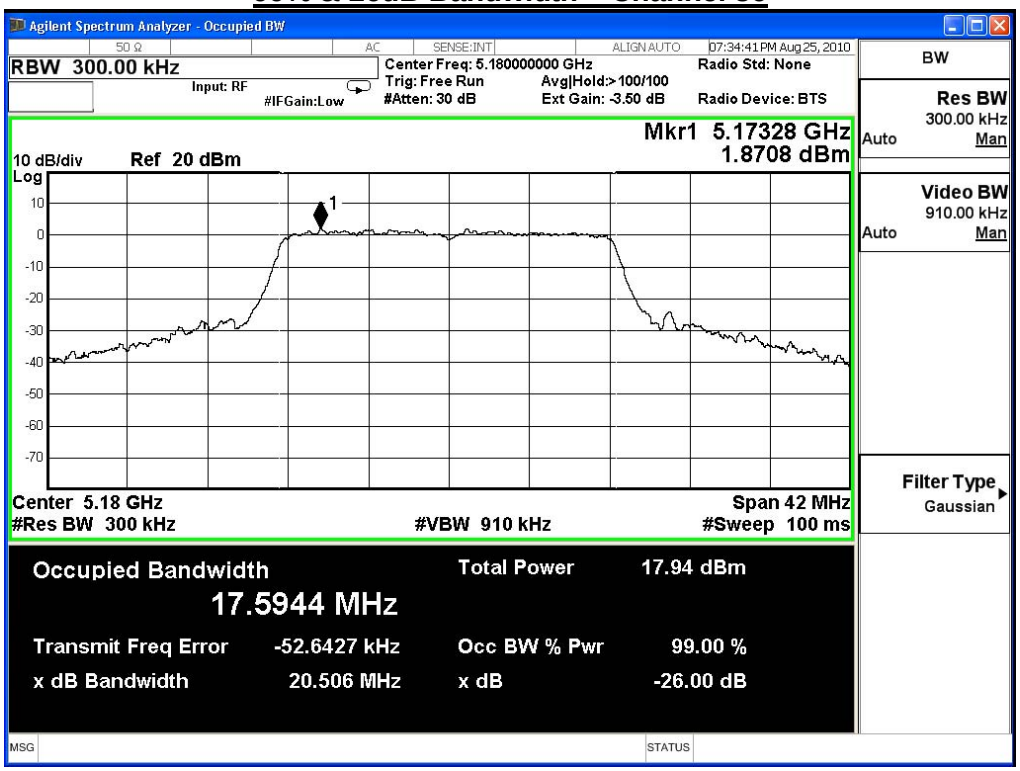
99% & 26dB Bandwidth – Channel 48



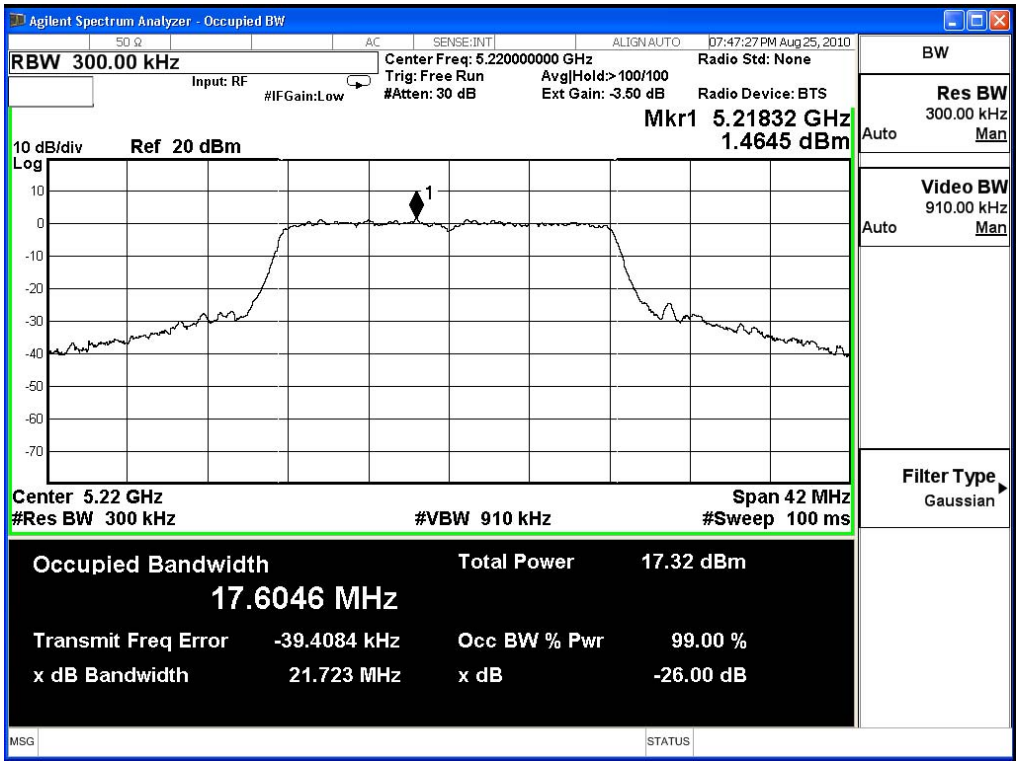
Product	Dual-band Gigabit Wireless-N Router		
Test Item	99% & 26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

802.11n_20M(ANT A)					
Channel No.	Frequency (MHz)	99 % OBW (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result
36	5180	17.5944	20.506	--	NA
44	5220	17.6046	21.723	--	NA
48	5240	17.6030	21.848	--	NA

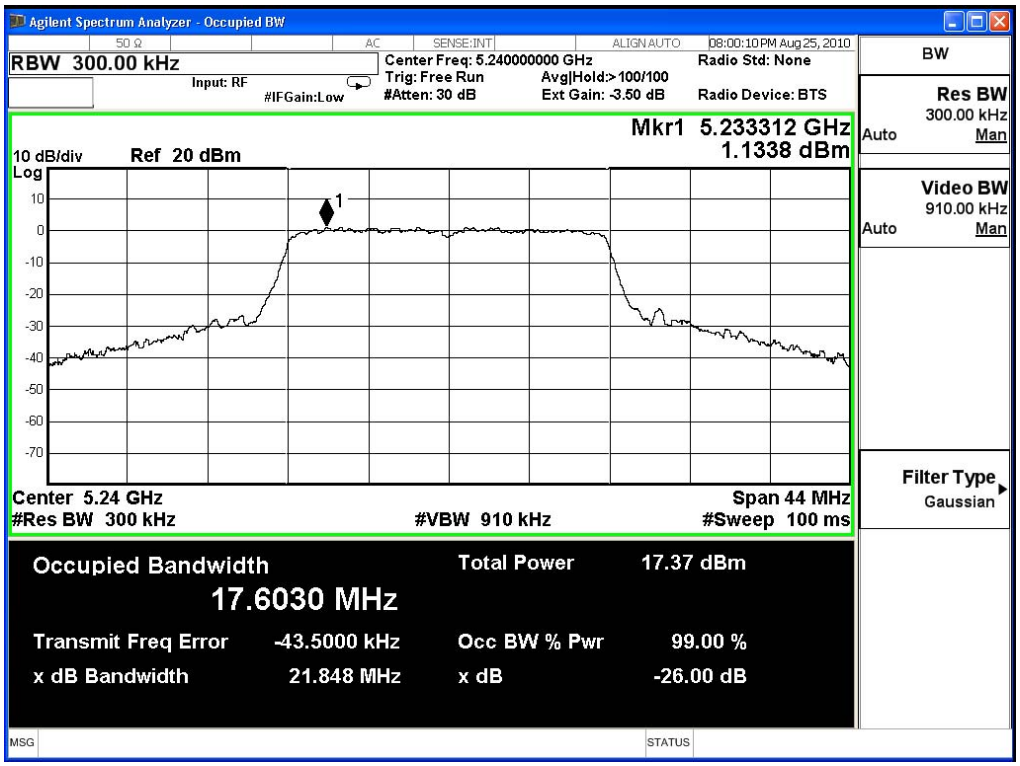
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



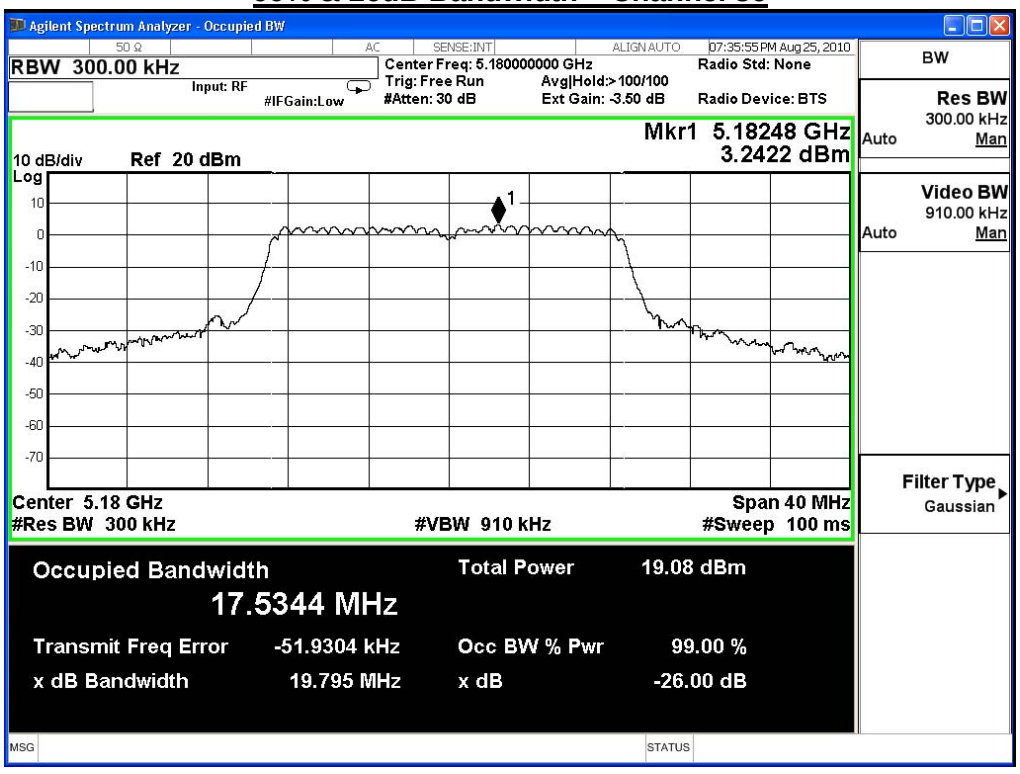
99% & 26dB Bandwidth – Channel 48



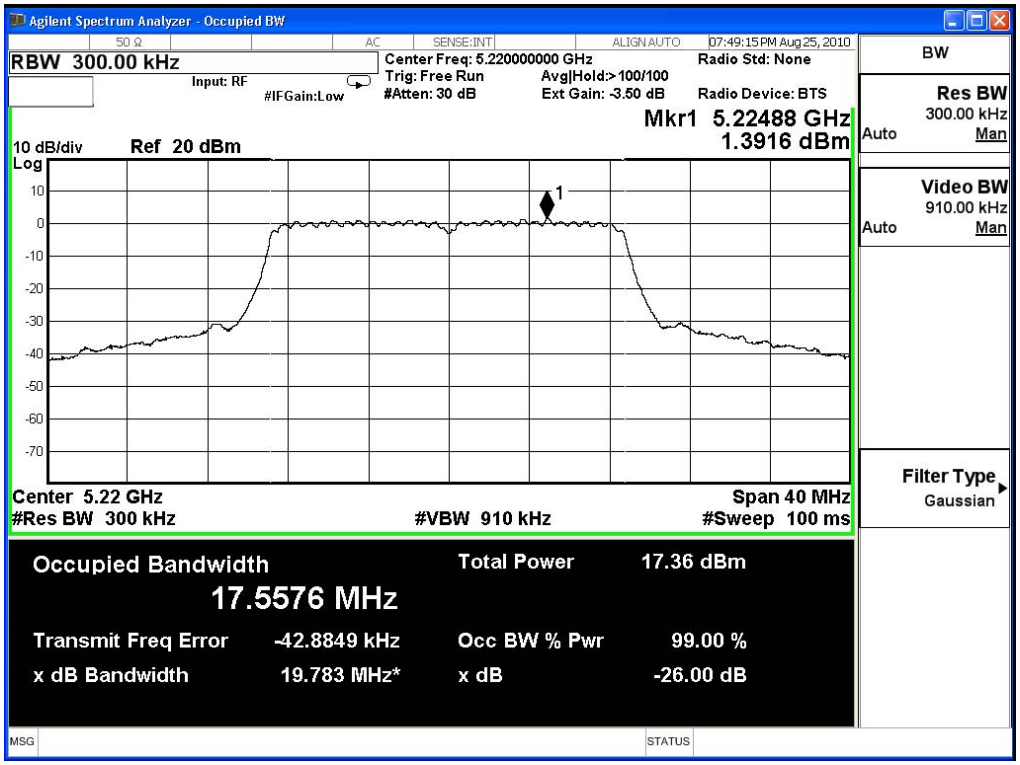
Product	Dual-band Gigabit Wireless-N Router		
Test Item	99% & 26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

802.11n_20M(ANT B)					
Channel No.	Frequency (MHz)	99 % OBW (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result
36	5180	17.5344	19.795	--	NA
44	5220	17.5576	19.783	--	NA
48	5240	17.5423	19.793	--	NA

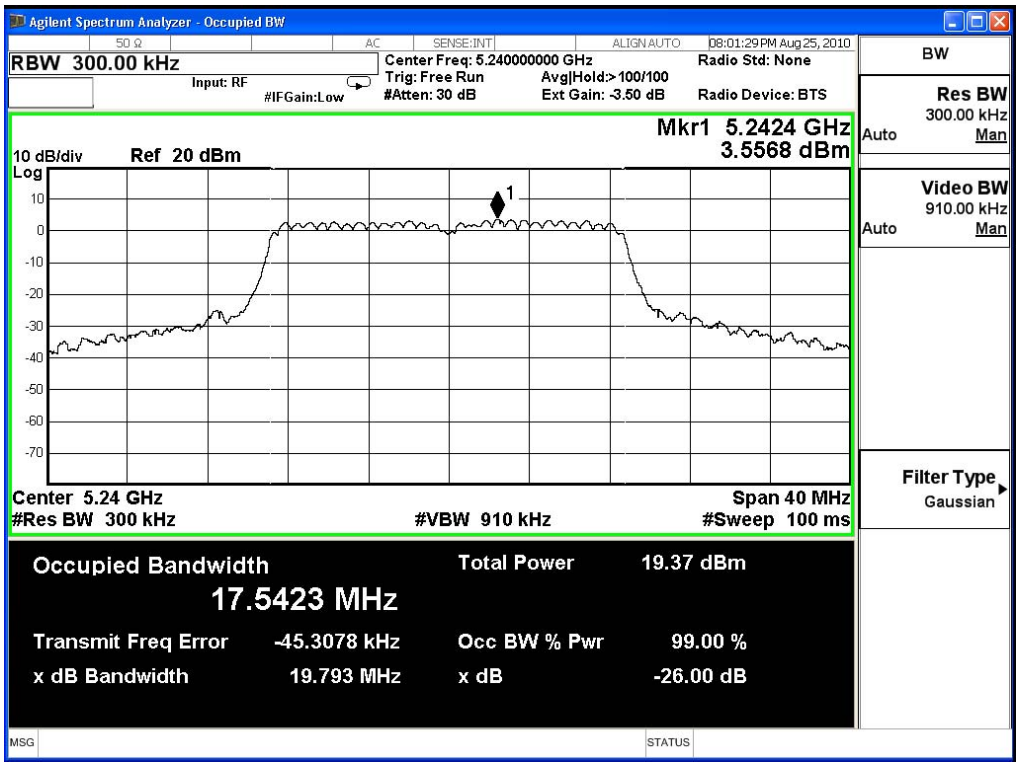
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



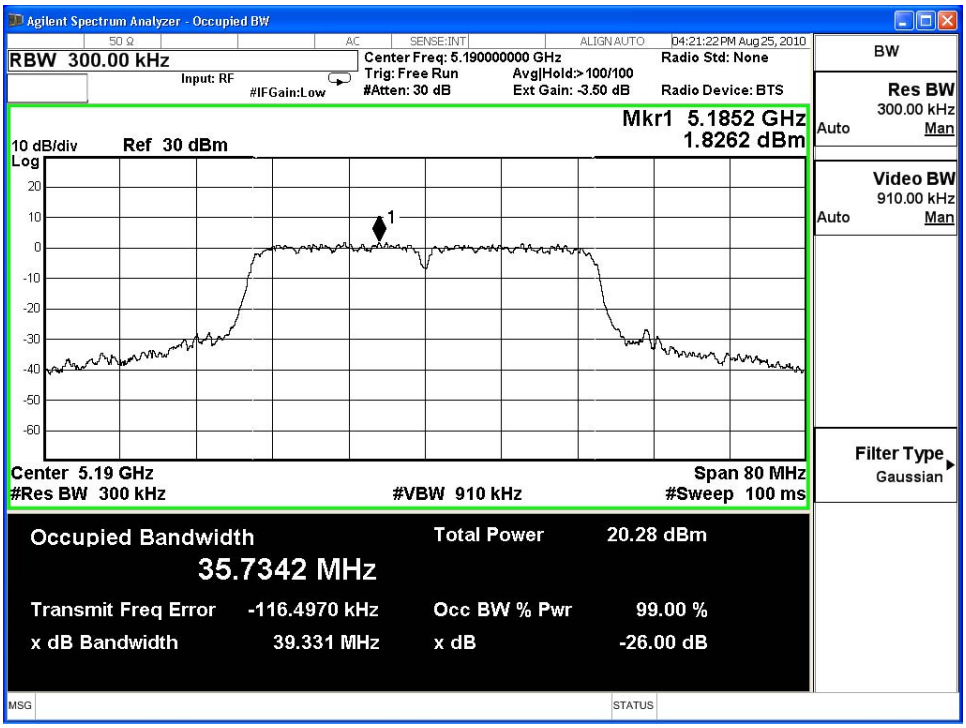
99% & 26dB Bandwidth – Channel 48



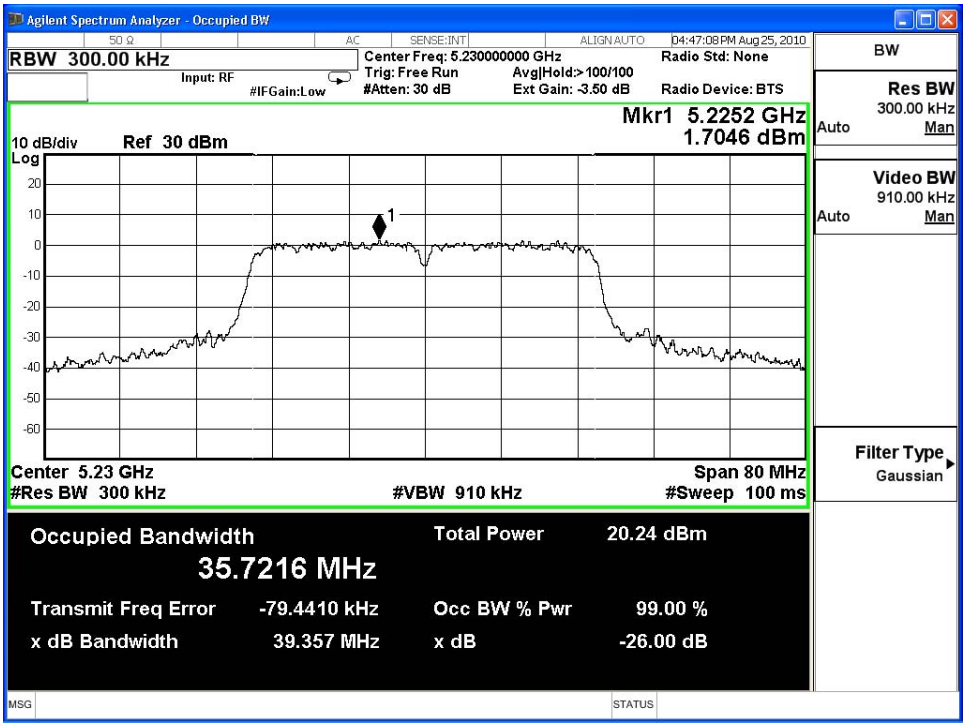
Product	Dual-band Gigabit Wireless-N Router		
Test Item	99% & 26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

802.11n_40M(ANT A)					
Channel No.	Frequency (MHz)	99 % OBW (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result
38	5190	35.7342	39.331	--	NA
46	5230	35.7216	39.357	--	NA

99% & 26dB Bandwidth – Channel 38



99% & 26dB Bandwidth – Channel 46

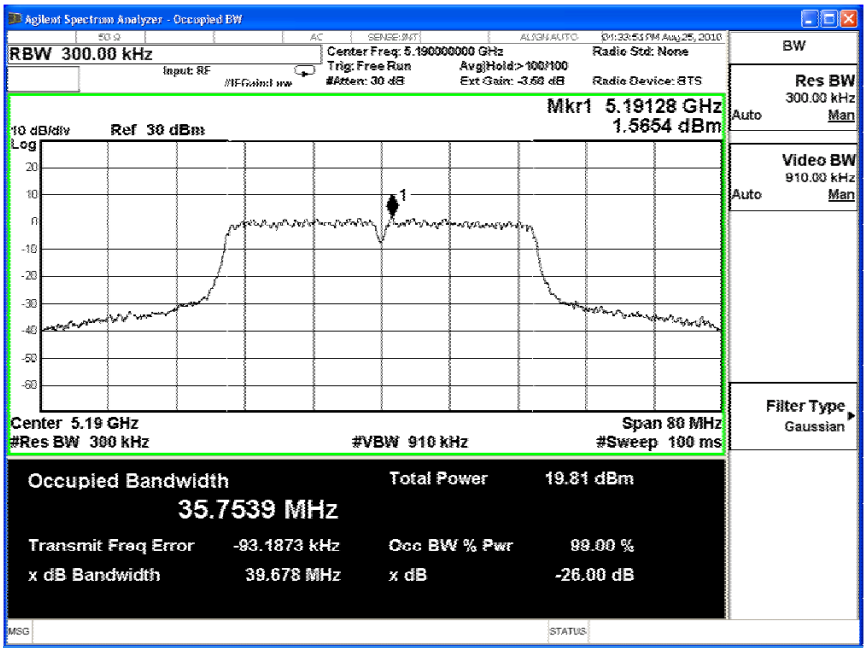


Product	Dual-band Gigabit Wireless-N Router		
Test Item	99% & 26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

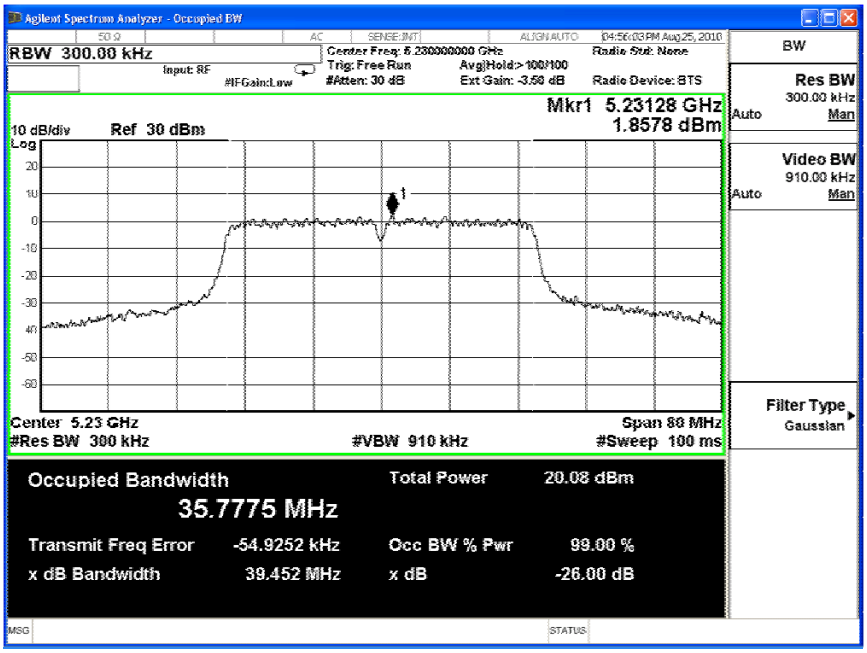
802.11n_40M(Ant B)

Channel No.	Frequency (MHz)	99 % OBW (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result
38	5190	35.7539	39.678	--	NA
46	5230	35.7775	39.452	--	NA

99% & 26dB Bandwidth – Channel 38



99% & 26dB Bandwidth – Channel 46



4. Peak Transmit Power

4.1. Test Equipment

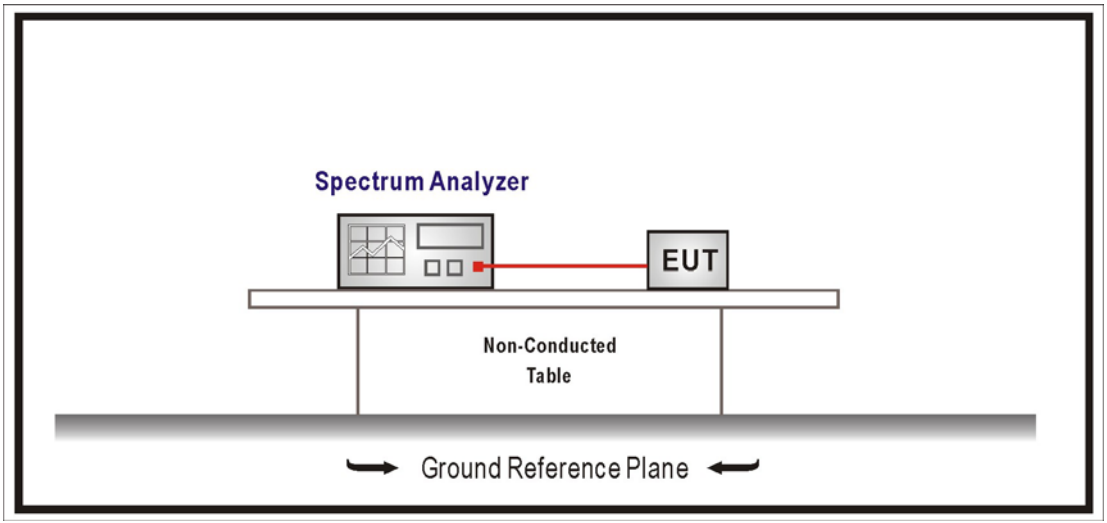
The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/01

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

1. For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W or 17 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements. The Method #1 of the Peak conducted transmit output power was used.

Set RBW=1MHz, VBW=3MHz with sample detector and trace average 100 traces in power averaging mode. Set span to encompass the entire emission bandwidth (EBW) of the signal. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

4.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

The worst emission of data rate is 6Mbps.

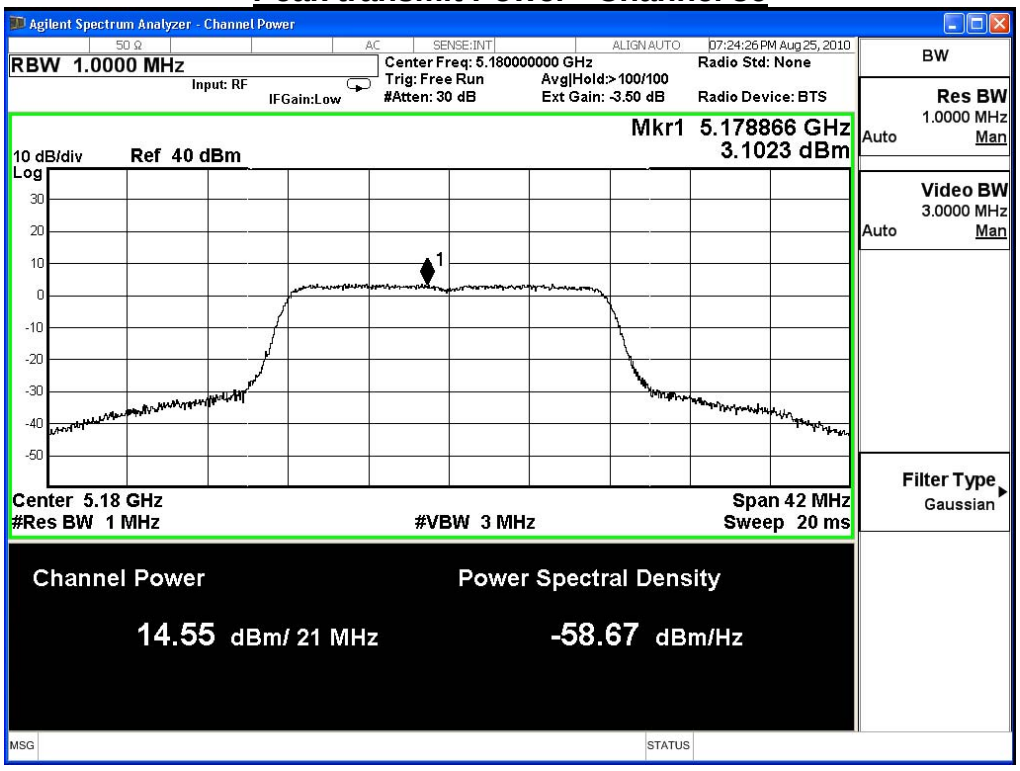
802.11a

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	20.651	14.55	≤ 17	≤17.15	Pass
44	5220	20.592	14.23	≤ 17	≤17.14	Pass
48	5240	22.858	14.32	≤ 17	≤17.60	Pass

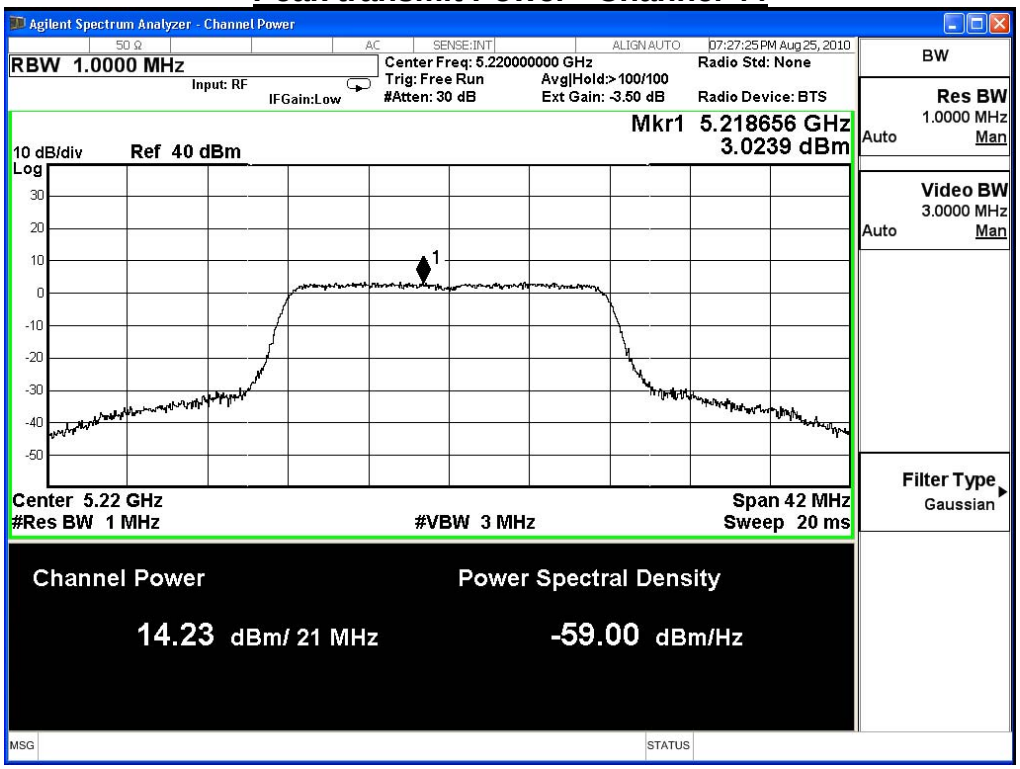
The worst emission of data rate is 6 Mbps.

Peak Power Output Value(dBm)										
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6	9	12	18	24	36	48	54	
36	5180	14.55	--	--	--	--	--	--	--	1 Watt=17dBm
44	5220	14.23	14.19	12.14	12.22	10.46	10.11	8.55	8.49	1 Watt=17dBm
48	5240	14.32	--	--	--	--	--	--	--	1 Watt=17dBm

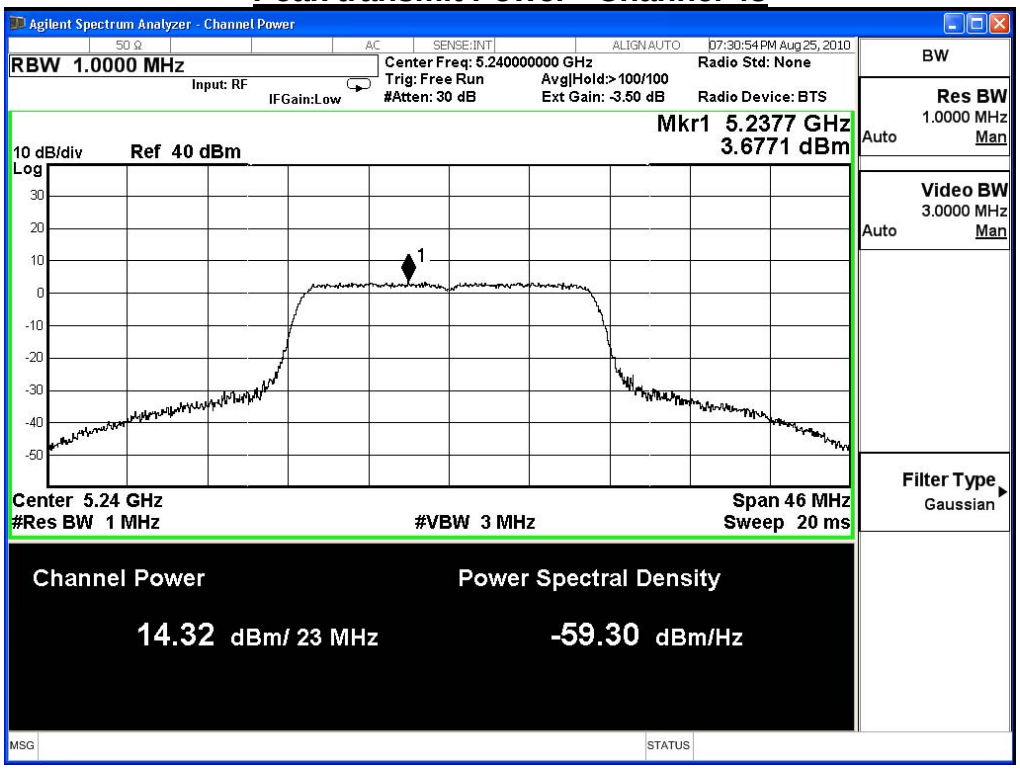
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

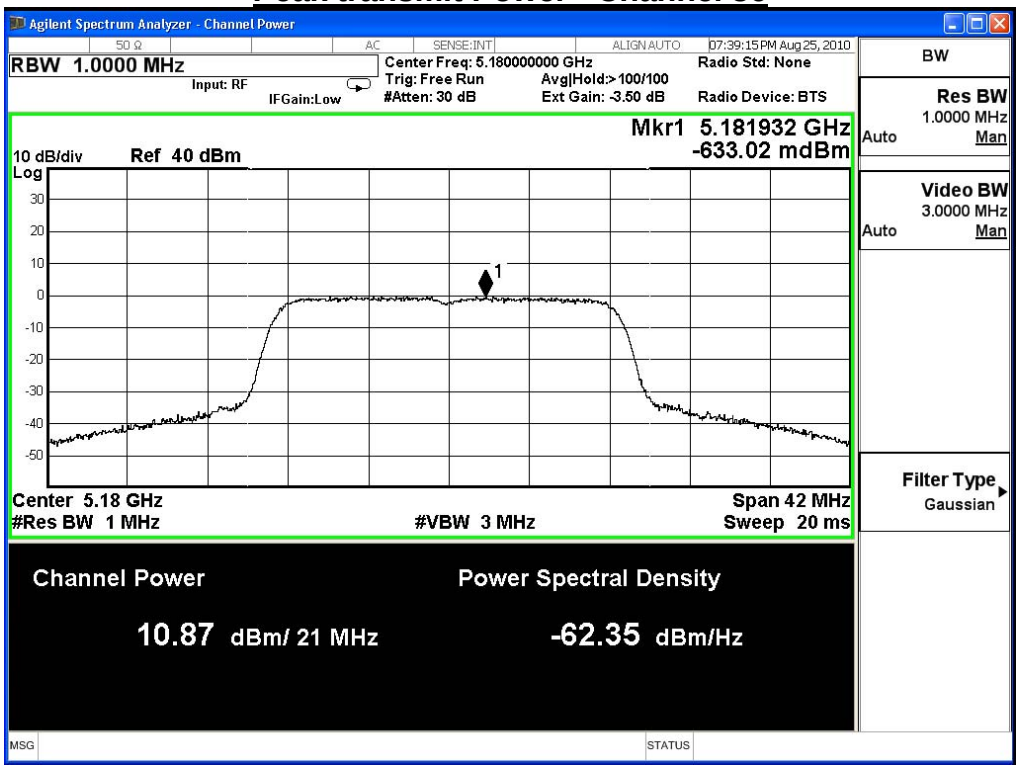
The worst emission of data rate is 6Mbps.

IEEE 802.11n(20MHz)_ANT A						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	20.506	10.87	≤ 17	≤17.11	Pass
44	5220	21.723	10.46	≤ 17	≤17.36	Pass
48	5240	21.848	10.44	≤ 17	≤17.40	Pass

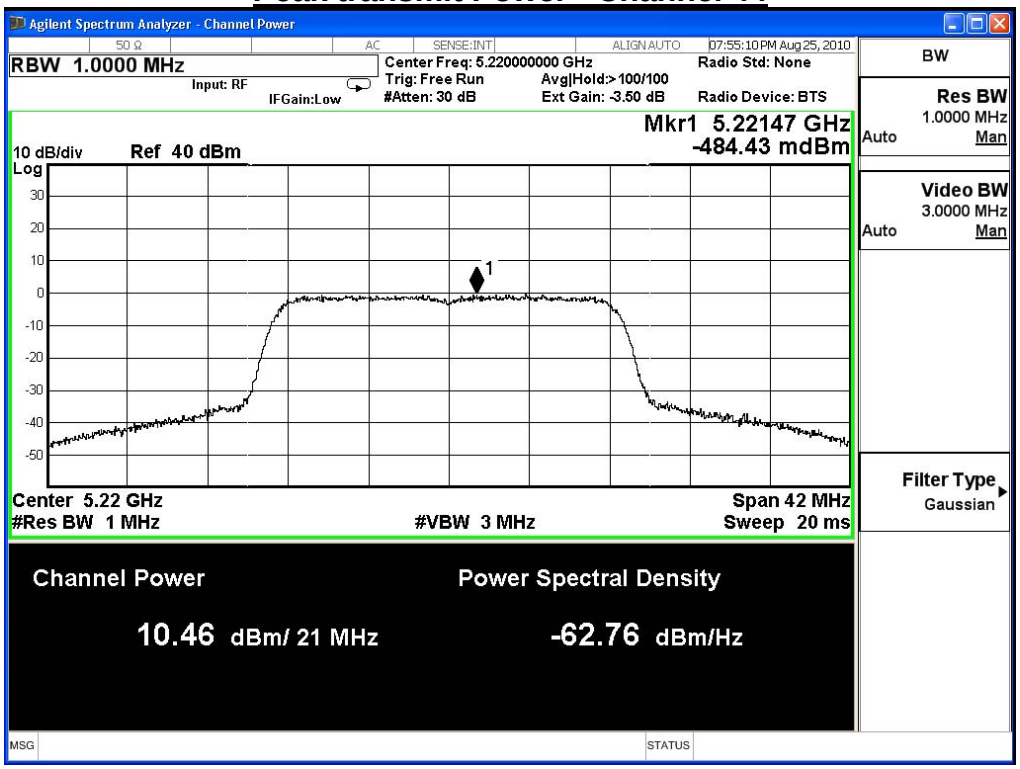
The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		13	26	39	52	78	104	117	130	
36	5180	10.87	--	--	--	--	--	--	--	1Watt=17dBm
44	5220	10.46	10.41	8.62	8.73	6.89	6.87	5.14	5.12	1Watt=17dBm
48	5240	10.44	--	--	--	--	--	--	--	1Watt=17dBm

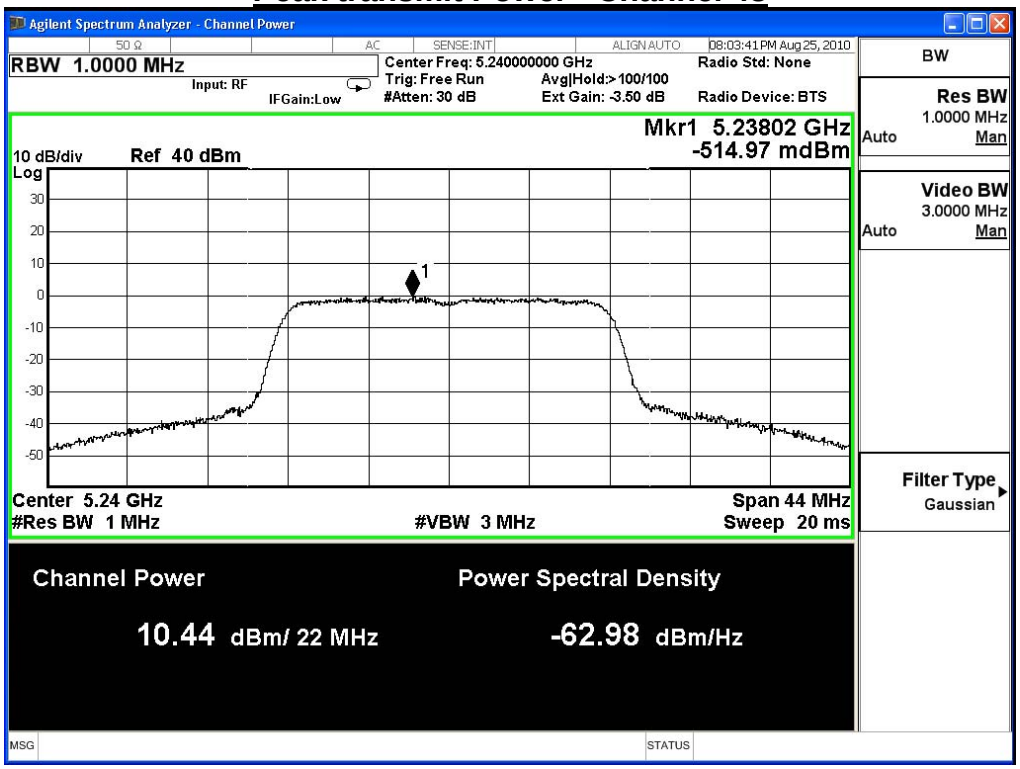
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

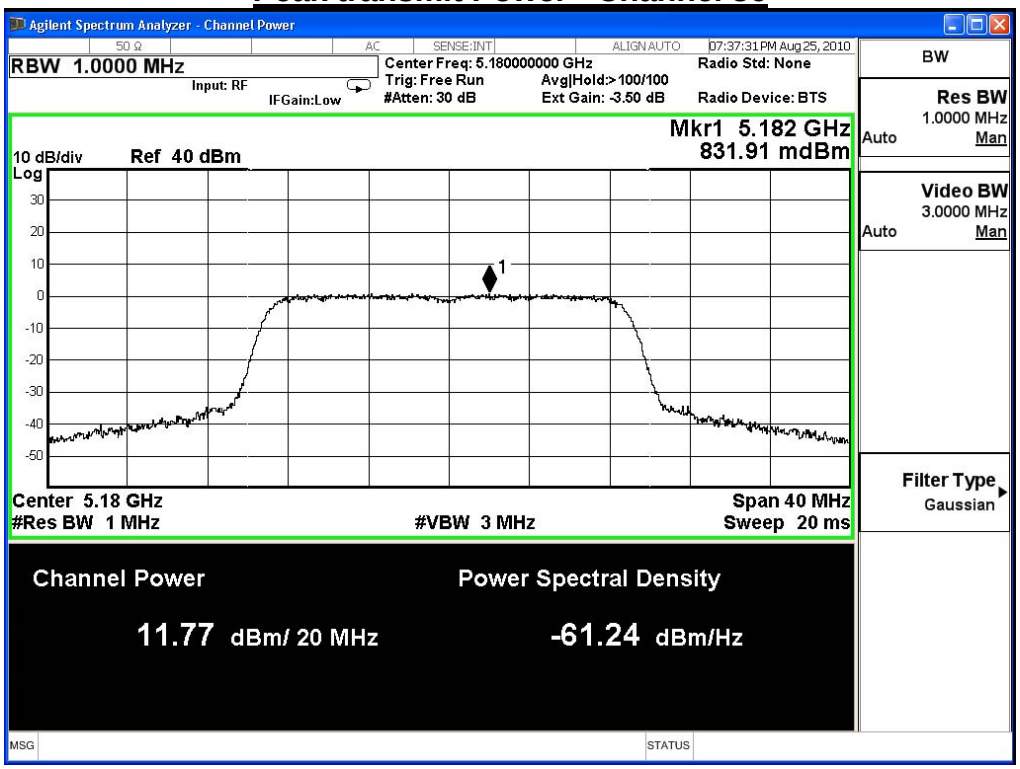
The worst emission of data rate is 6Mbps.

IEEE 802.11n(20MHz)_ANT B						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	19.795	11.77	≤ 17	≤16.96	Pass
44	5220	19.783	11.78	≤ 17	≤16.96	Pass
48	5240	19.793	12.13	≤ 17	≤16.96	Pass

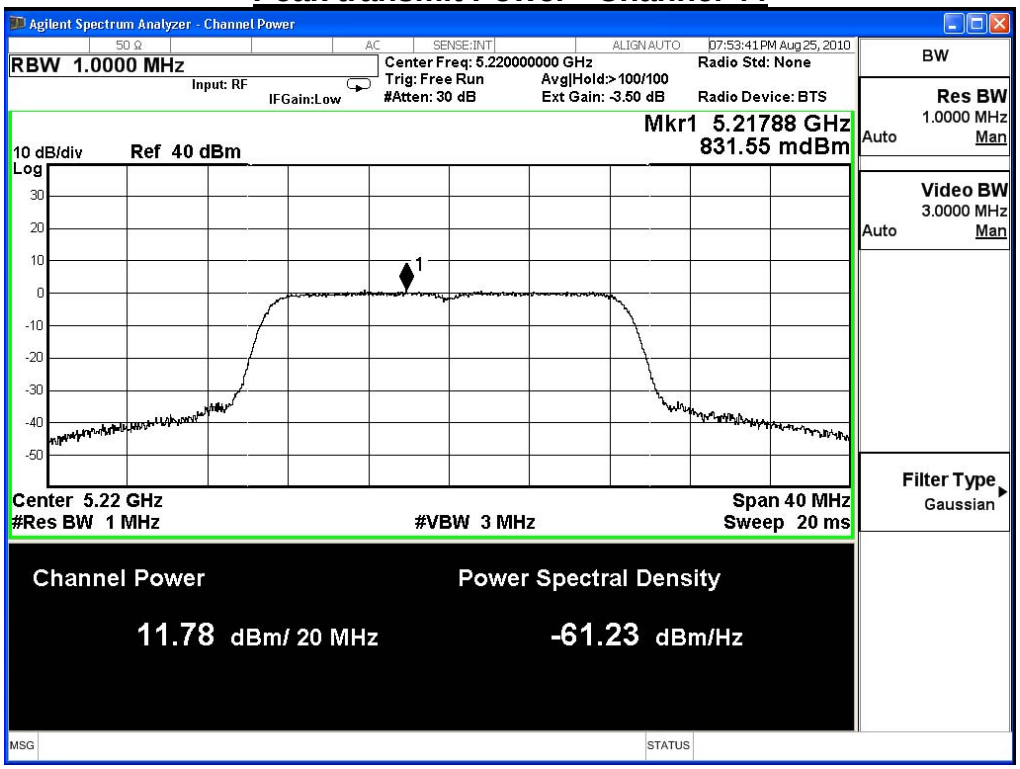
The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		13	26	39	52	78	104	117	130	
36	5180	11.77	--	--	--	--	--	--	--	1Watt=16.96dBm
44	5220	11.78	11.66	10.16	10.37	8.12	8.16	6.54	6.52	1Watt=16.96dBm
48	5240	12.13	--	--	--	--	--	--	--	1Watt=16.96dBm

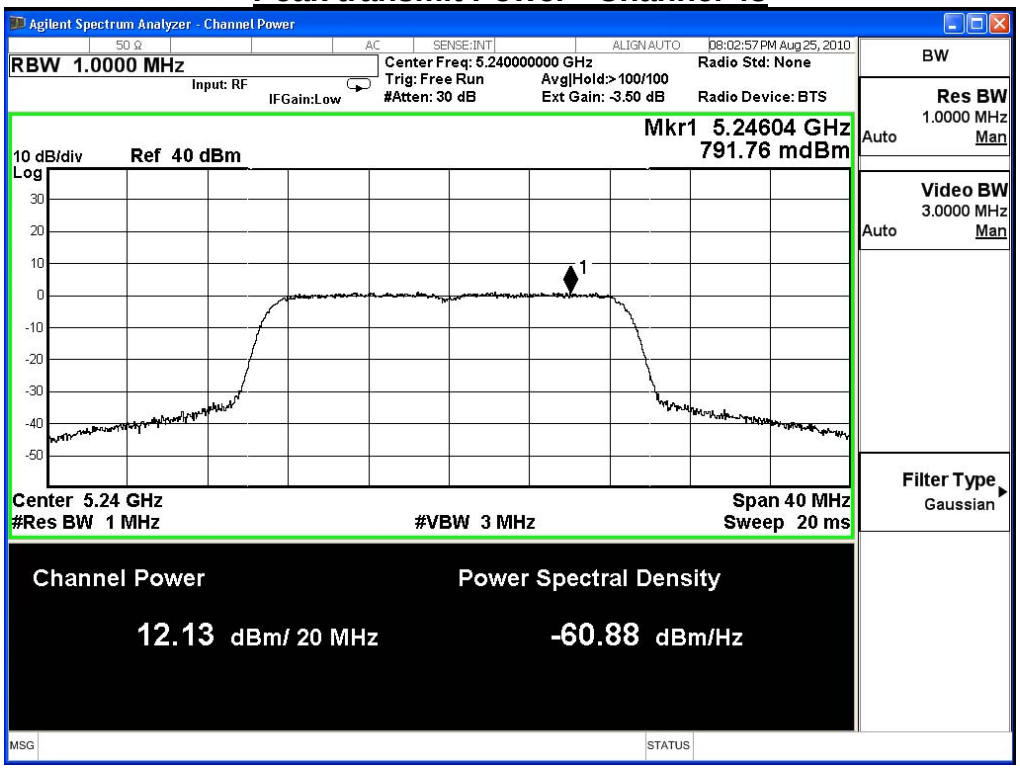
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

IEEE 802.11n(20MHz)_ANT A+B					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(dBm)	(mW)		
36	5180	14.35	27.25	≤ 16.96 dBm	Pass
44	5220	14.18	26.18	≤ 16.96 dBm	Pass
48	5240	14.38	27.40	≤ 16.96 dBm	Pass

Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

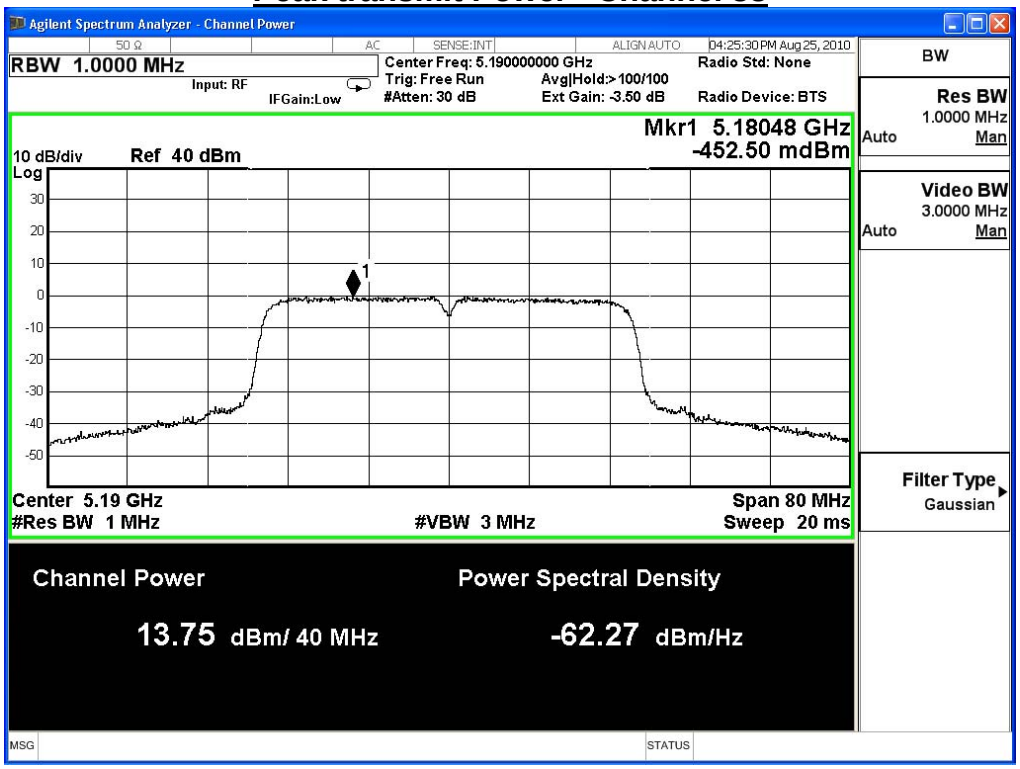
The worst emission of data rate is 27 Mbps

IEEE 802.11n(40MHz)_ANT A						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	39.331	13.75	≤ 17	≤19.94	Pass
46	5230	39.357	13.32	≤ 17	≤19.95	Pass

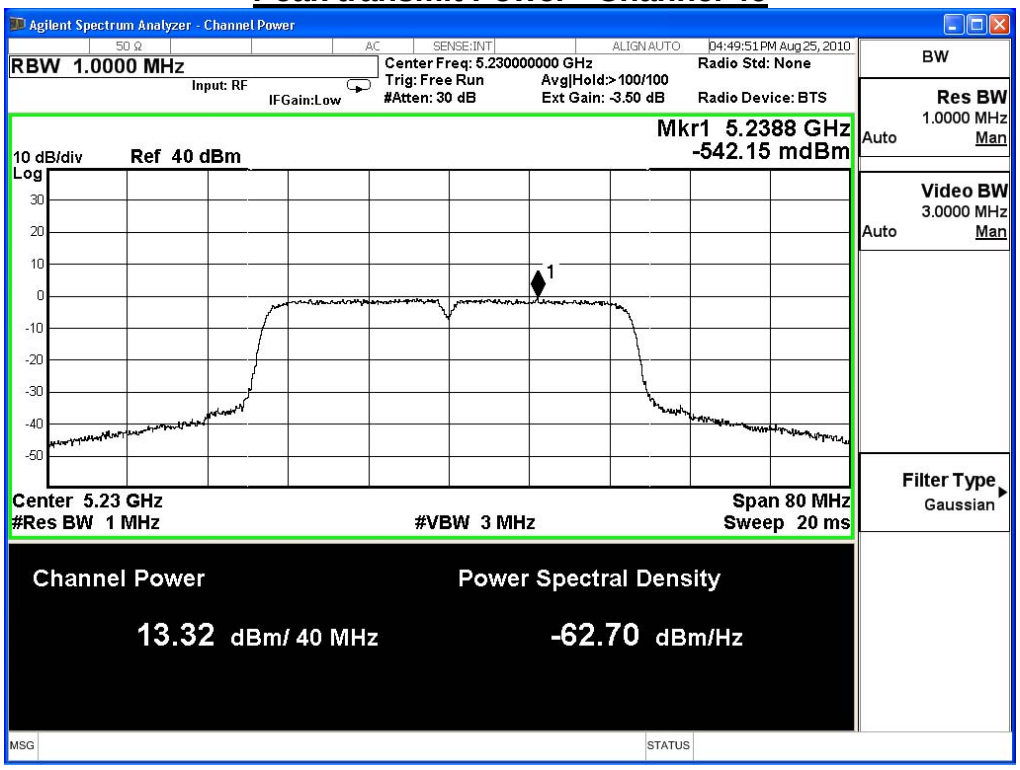
The worst emission of data rate is 27 Mbps

Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		27	54	81	108	162	216	243	270	
38	5190	13.75	13.55	11.54	11.69	9.75	9.70	7.74	7.76	1Watt=17dBm
46	5230	13.32	--	--	--	--	--	--	--	1Watt=17dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

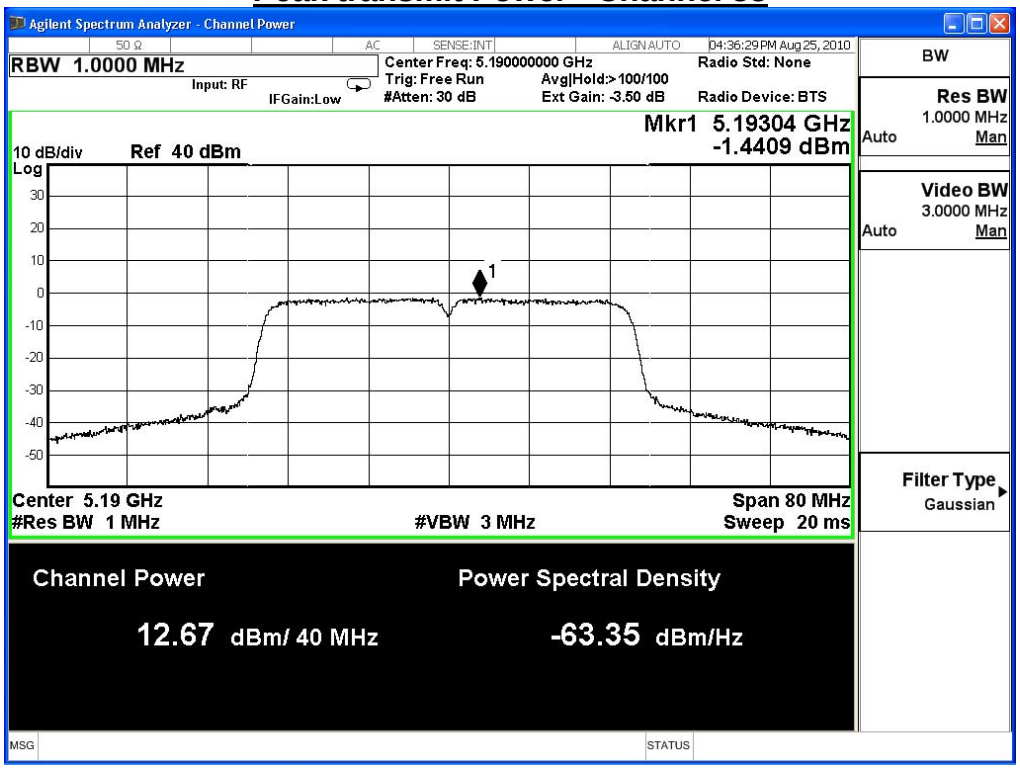
The worst emission of data rate is 27 Mbps

IEEE 802.11n(40MHz)_ANT B						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	39.678	12.67	≤17	≤19.98	Pass
46	5230	39.452	13.01	≤ 17	≤19.96	Pass

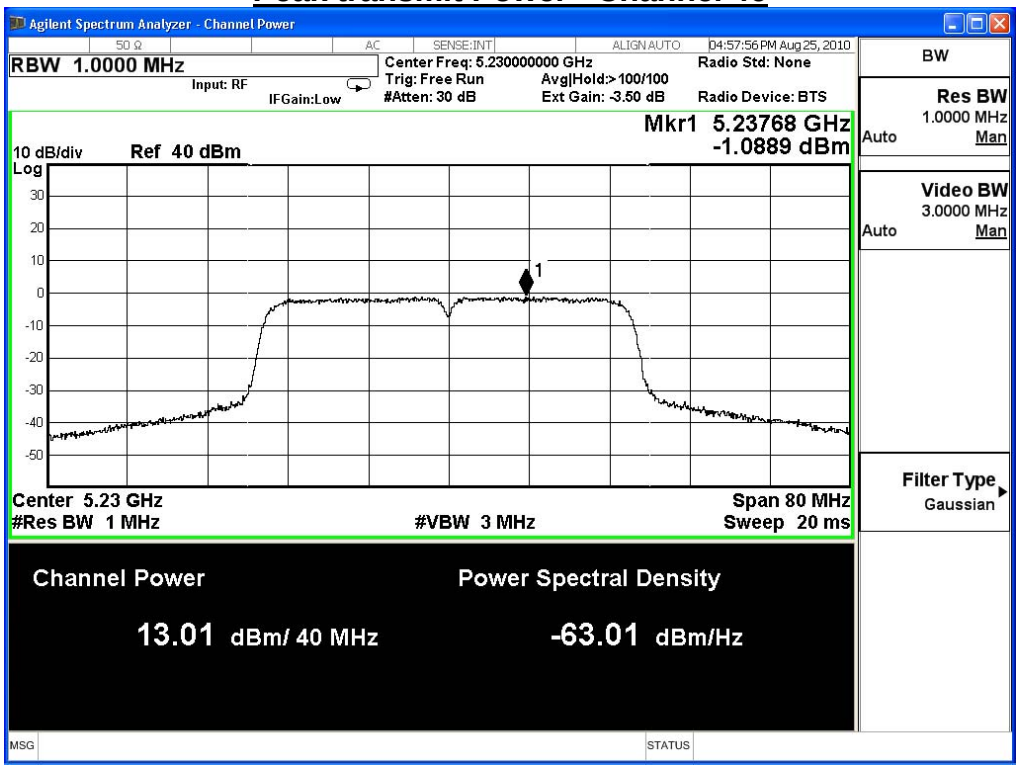
The worst emission of data rate is 27 Mbps

Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		27	54	81	108	162	216	243	270	
38	5190	12.67	--	--	--	--	--	--	--	1Watt=17dBm
46	5230	13.01	12.97	11.05	11.22	9.29	9.16	7.26	7.3	1Watt=17dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	Dual-band Gigabit Wireless-N Router		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/25	Test Site	No.7 Shielding Room

IEEE 802.11n(40MHz)_ANT A+B					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(dBm)	(mW)		
38	5190	16.25	42.21	1Watt=17dBm	Pass
46	5230	16.18	41.48	1Watt=17dBm	Pass