FCC Test Report

Product Name ： RP-N53 Dual-Band Wireless N-600 Range Extender

Model No. ： RP-N53

FCC ID. ： MSQ-RPN53

Applicant ： ASUSTeK COMPUTER INC.

Address ： 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt ： 2013/03/09

Issued Date ： 2013/06/06

Report No. ： 133212R-RFUSP46V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2013/06/06
Report No. : 133212R-RFUSP46V01

QuieTek

Product Name	:	RP-N53 Dual-Band Wireless N-600 Range Extender
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	:	ASUSTeK COMPUTER INC.
Model No.	:	RP-N53
FCC ID.	:	MSQ-RPN53
EUT Voltage	:	AC 100-240V, 50-60Hz
Trade Name	:	ASUS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2012 ANSI C63.4: 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 :

(Demi Chang / Engineering Adm. Specialist)

Reviewed By :

(Quale Tang / Engineer)

Approved By :

(Roy Wang / Manager)

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 1313**
USA	**:**	**FCC, Registration Number: 365520**
Canada	**:**	**IC, Submission No: 150981**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

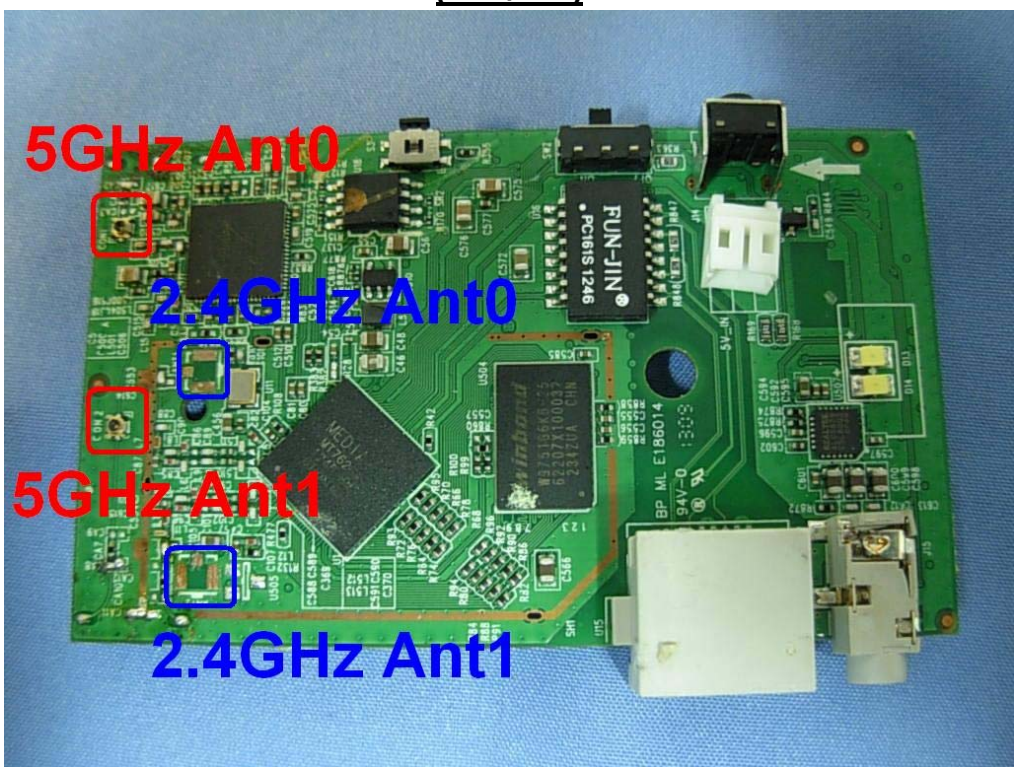
1.1. EUT Description

Product Name	RP-N53 Dual-Band Wireless N-600 Range Extender
Product Type	WLAN (2TX, 2RX)
Trade Name	ASUS
Model No.	RP-N53
Frequency Range/ Channel Number -IEEE 802.11a & IEEE 802.11n (20MHz)	5180~5240MHz / 4 Channels
Frequency Range/Channel Number -IEEE 802.11n (40MHz)	5190~5230MHz / 2 Channels
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	Ant0: Ant0: 3.5dBi, Ant1: 3.5dBi
Antenna Type	PIFA Antenna

ANT-TX / Rx & Bandwidth

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

(2TX /2RX)



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 RP-N53 Dual-Band Wireless N-600 Range Extender including 2.4GHz b/g/n and 5GHz a/n (2x2) 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 E Paragraph 15.407.
3. 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.
4. The function of the 2.4GHz and 5.8GHz transmitting is measured and makes a test report of the report number: 133212R-RFUSP42V01.
5. This device has USB and Ethernet ports, which can be connected to computer. The receiving function receiving was tested and its test report number is 133212R-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

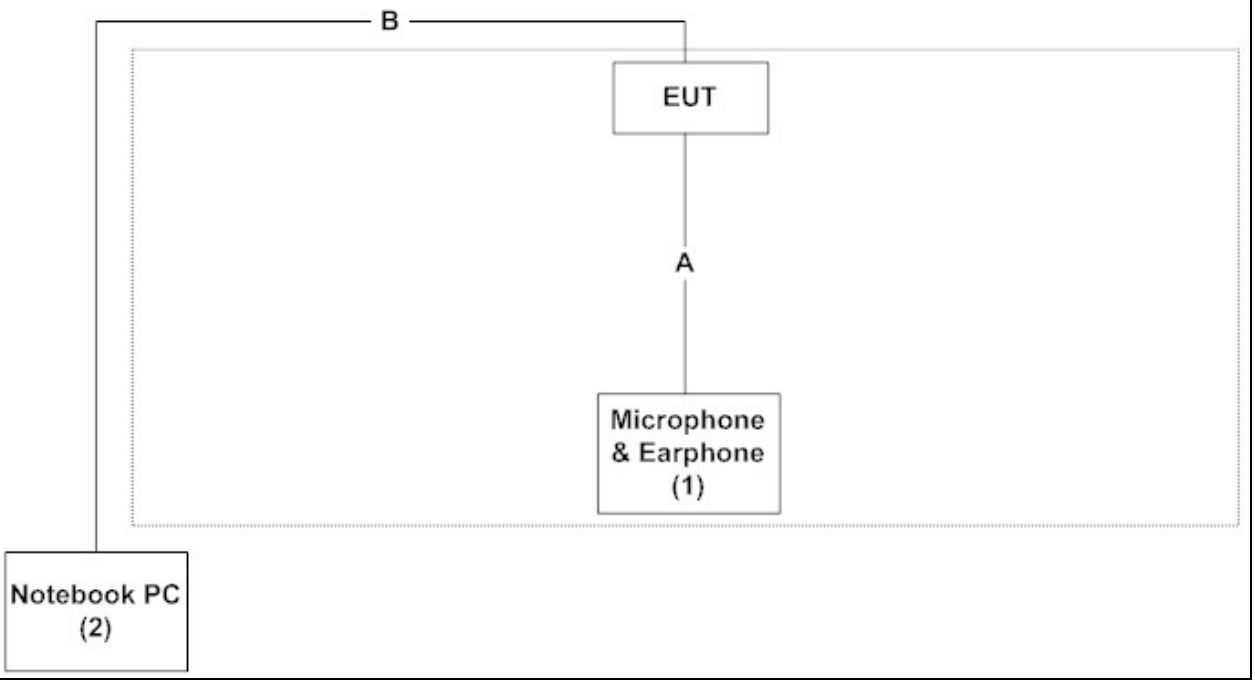
Test Items	Mode	Channel	Antenna	Result
Conducted Emission	11n (40MHz)	46	0+1	Complies
99 % & 26dB Bandwidth	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0/1	Complies
	11n (40MHz)	38/46	0/1	Complies
Peak Transmit Output	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0+1	Complies
	11n (40MHz)	38/46	0+1	Complies
Peak Power Spectrum Density	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0+1	Complies
	11n (40MHz)	38/46	0+1	Complies
Power Excursion	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0/1	Complies
	11n (40MHz)	38/46	0/1	Complies
Radiated Emission	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0+1	Complies
	11n (40MHz)	38/46	0+1	Complies
Band Edge	a	36	0	Complies
	11n (20MHz)	36	0+1	Complies
	11n (40MHz)	38	0+1	Complies
Frequency Stability	a	36/44/48	0	Complies
	11n (20MHz)	36/44/48	0/1	Complies
	11n (40MHz)	38/46	0/1	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	Microphone & Earphone	Samsung	N/A	N/A	DoC	--
2	Notebook PC	ACER	MS2296	LUSCV021391150332 C2000	DoC	Non-Shielded, 2.5m one ferrite core bonded

1.5. Configuration of tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	Microphone & Earphone Cable	Non-Shielded, 1.2m
B	LAN Cable	Non-Shielded, 10m

1.6. EUT Exercise Software

1	Test system is in accord with EUT user manual (refer to 1.4 configuration of tested system)
2	Turn on the power of all equipment.
3	Boot the Notebook PC from Hard Disk.
4	Data will communicate by connecting to LAN port and wireless of Notebook PC.
5	The Notebook PC ‘s monitor will show the transmitting and receiving characteristics when the communication is success.
6	Repeat the above procedure (4) to (5).

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 Peal 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

2. Conducted Emission

2.1. Test Equipment

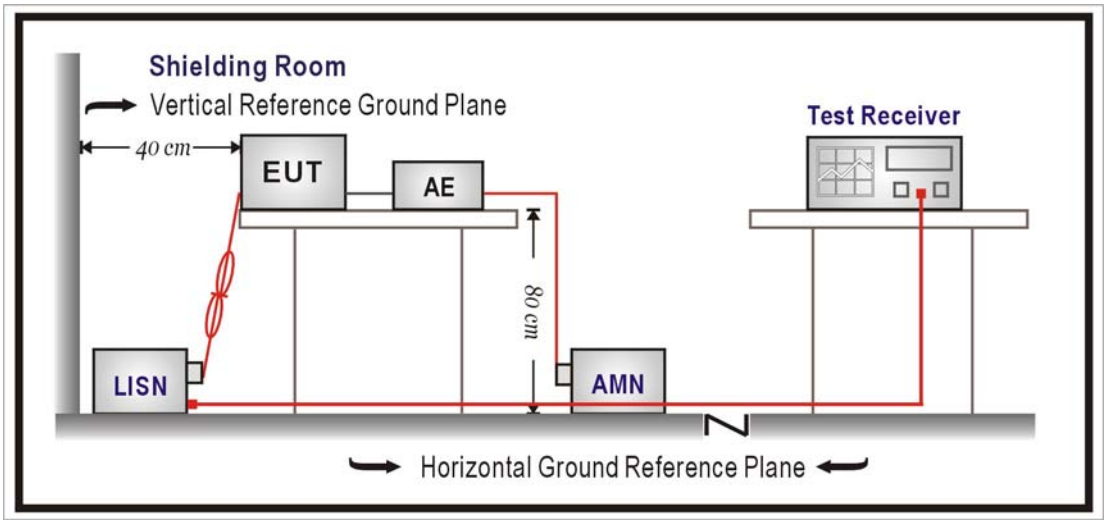
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2013/08/12
LISN	R&S	ESH3-Z5	836679/022	2014/01/20
Test Receiver	R&S	ESCS 30	825442/017	2014/01/01

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: 2009. 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

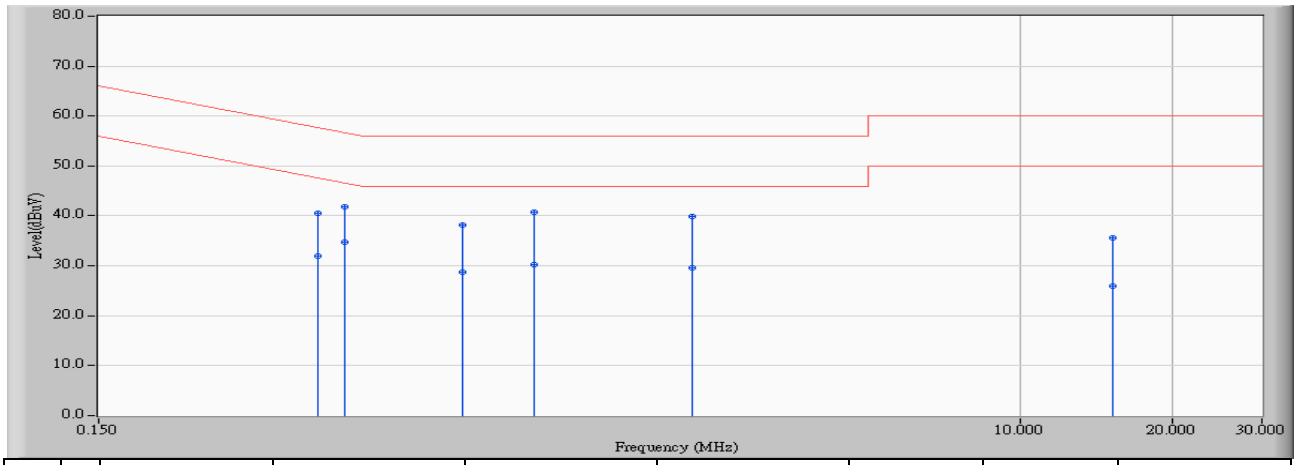
According to FCC Part 15 Subpart C Paragraph 15.207: 2012

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	**Time : 2013/04/29 - 17:19**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line1	**Power : AC 120V/60Hz**
EUT : RP-N53 Dual-Band Wireless N-600 Range Extender	**Note : Mode 1: Transmit_5.2GHz**

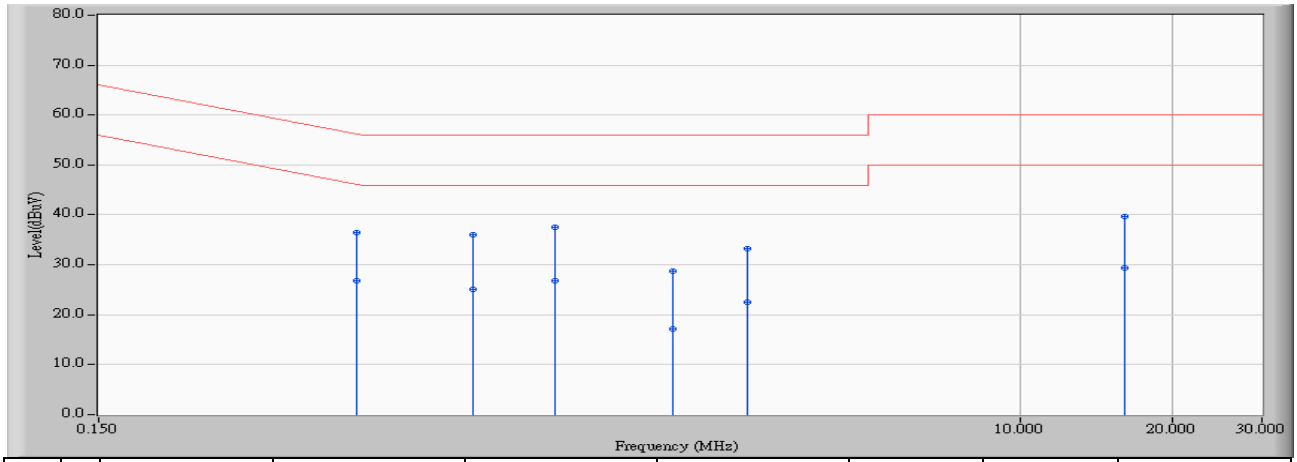


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.408	9.777	30.850	40.627	-17.066	57.693	QUASIPEAK
2		0.408	9.777	22.260	32.037	-15.656	47.693	AVERAGE
3		0.459	9.807	32.080	41.887	-14.831	56.718	QUASIPEAK
4	*	0.459	9.807	25.020	34.827	-11.891	46.718	AVERAGE
5		0.787	9.893	28.330	38.224	-17.776	56.000	QUASIPEAK
6		0.787	9.893	18.930	28.824	-17.176	46.000	AVERAGE
7		1.087	9.942	30.890	40.832	-15.168	56.000	QUASIPEAK
8		1.087	9.942	20.300	30.242	-15.758	46.000	AVERAGE
9		2.244	9.974	29.990	39.964	-16.036	56.000	QUASIPEAK
10		2.244	9.974	19.570	29.544	-16.456	46.000	AVERAGE
11		15.197	10.130	25.400	35.530	-24.470	60.000	QUASIPEAK
12		15.197	10.130	15.830	25.960	-24.040	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 : 2013/04/29 - 17:22**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line2	**Power : AC 120V/60Hz**
EUT : RP-N53 Dual-Band Wireless N-600 Range Extender	**Note : Mode 1: Transmit_5.2GHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.486	9.812	26.560	36.373	-19.864	56.237	QUASIPEAK
2		0.486	9.812	17.030	26.843	-19.394	46.237	AVERAGE
3		0.826	9.892	26.130	36.022	-19.978	56.000	QUASIPEAK
4		0.826	9.892	15.270	25.162	-20.838	46.000	AVERAGE
5	*	1.201	9.932	27.550	37.482	-18.518	56.000	QUASIPEAK
6		1.201	9.932	16.790	26.722	-19.278	46.000	AVERAGE
7		2.052	9.943	18.850	28.792	-27.208	56.000	QUASIPEAK
8		2.052	9.943	7.140	17.082	-28.918	46.000	AVERAGE
9		2.888	9.979	23.250	33.228	-22.772	56.000	QUASIPEAK
10		2.888	9.979	12.590	22.568	-23.432	46.000	AVERAGE
11		16.056	10.231	29.470	39.701	-20.299	60.000	QUASIPEAK
12		16.056	10.231	19.120	29.351	-20.649	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

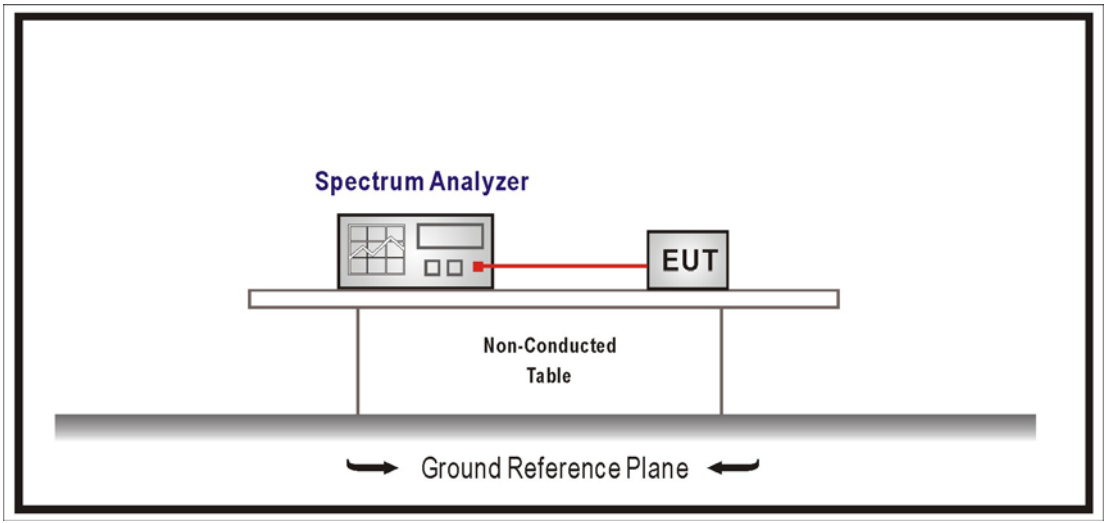
The following test equipments are used during the radiated emission tests:

99% & 26dB Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2013/07/31

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 U-NII test procedure of March 2012 KDB 789033.
Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

3.5. Uncertainty

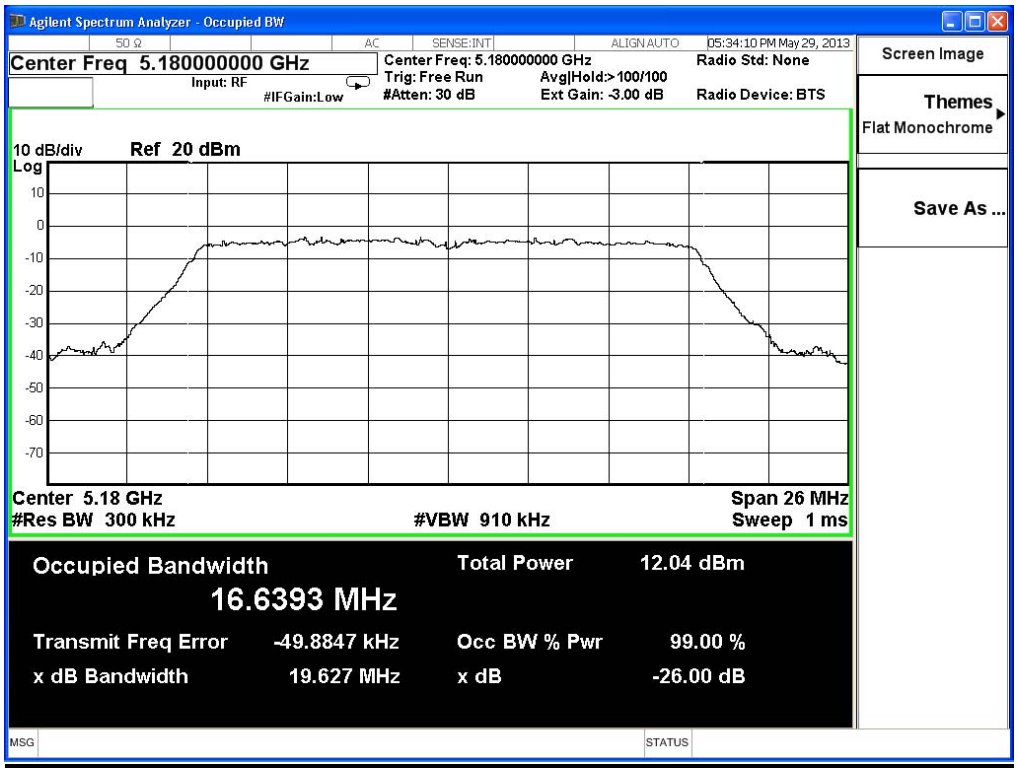
The measurement uncertainty is defined as ±150Hz

3.6. Test Result

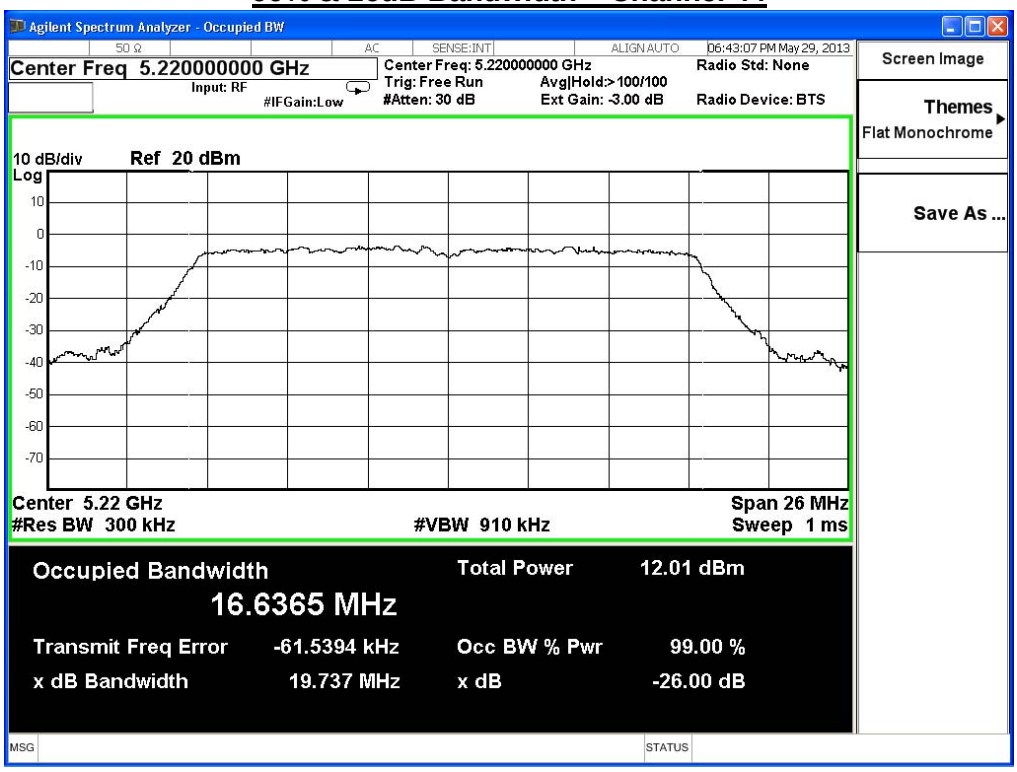
Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/05/29	Test Site	SR7

802.11a					
Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Required Limit (MHz)	Result
36	5180	19.62	16.63	--	Pass
44	5220	19.73	16.63	--	Pass
48	5240	19.64	16.63	--	Pass

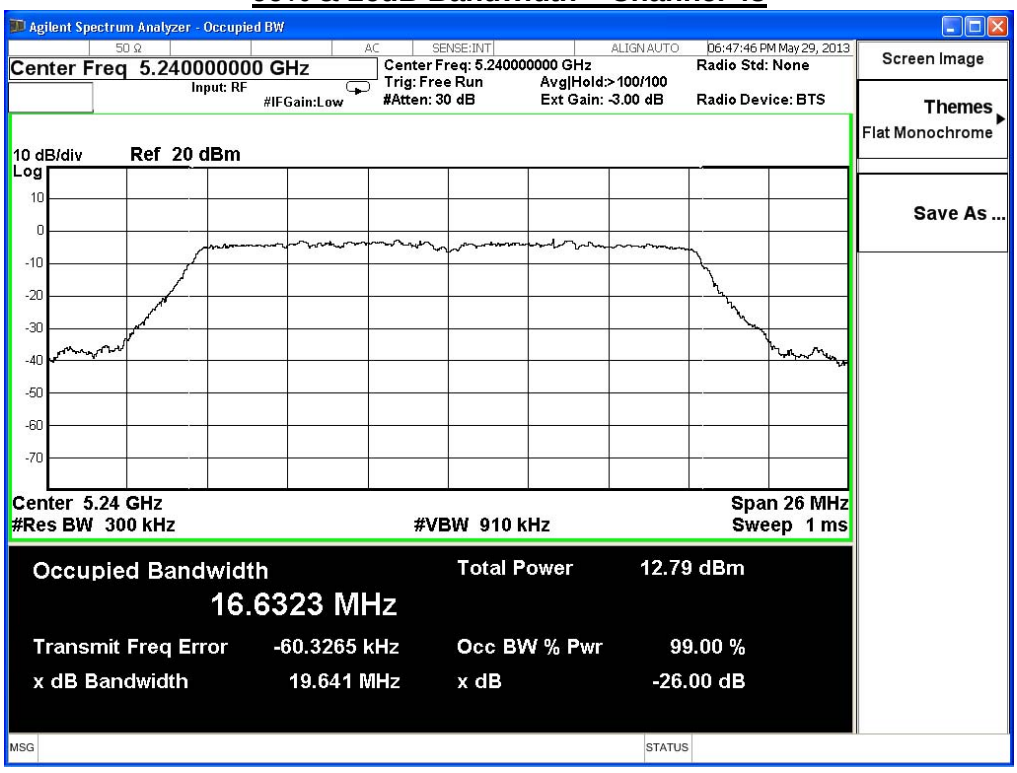
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



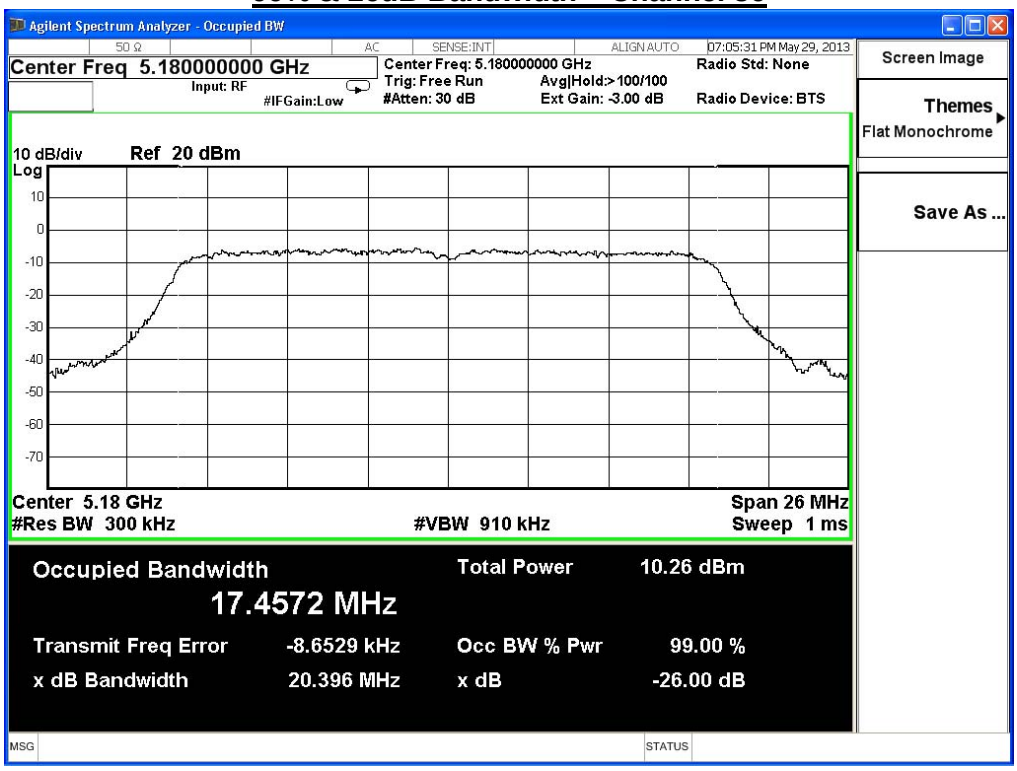
99% & 26dB Bandwidth – Channel 48



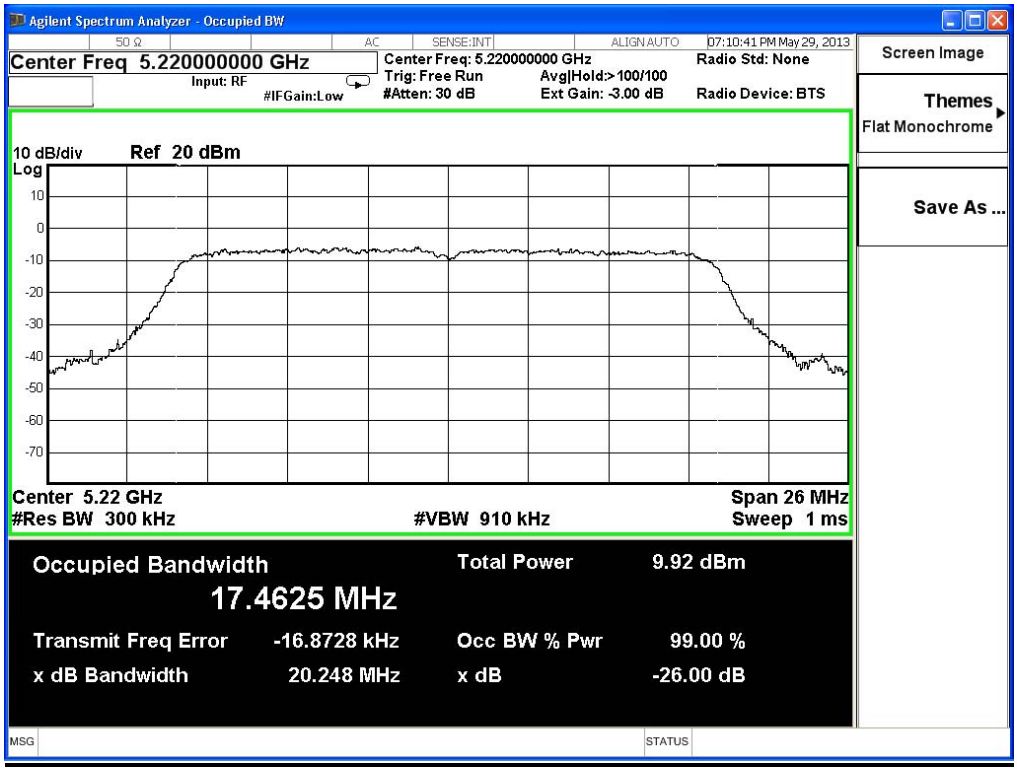
Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/05/29	Test Site	SR7

802.11n_20M(ANT 0)					
Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Required Limit (MHz)	Result
36	5180	20.39	17.45	--	Pass
44	5220	20.24	17.46	--	Pass
48	5240	20.16	17.47	--	Pass

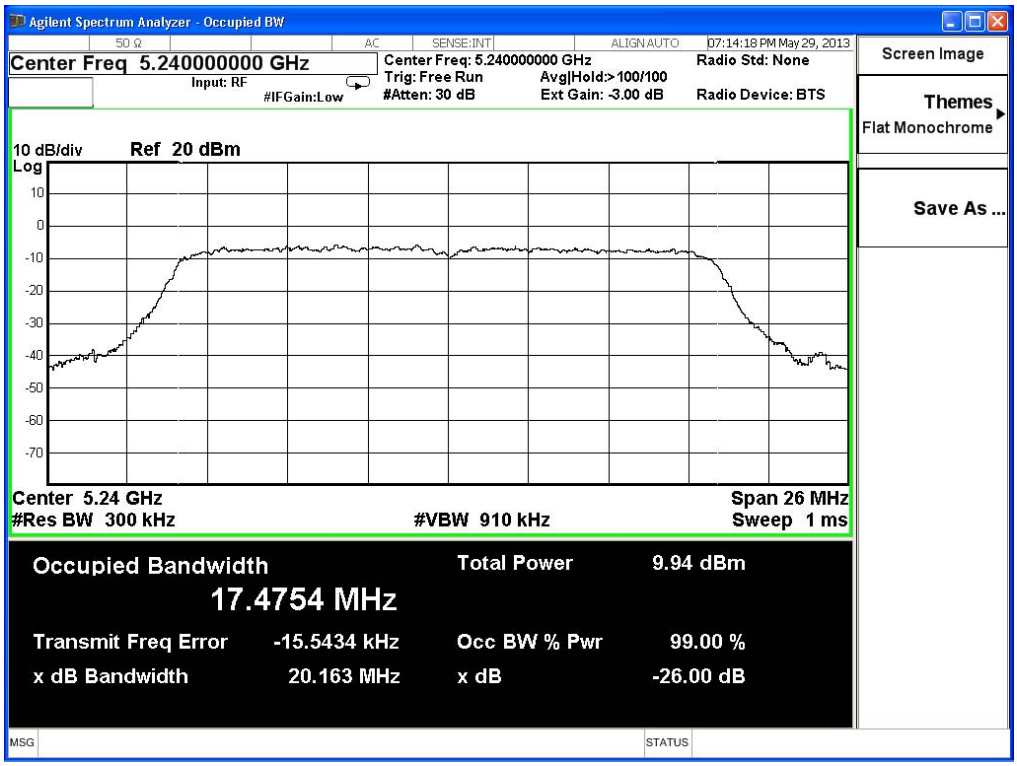
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



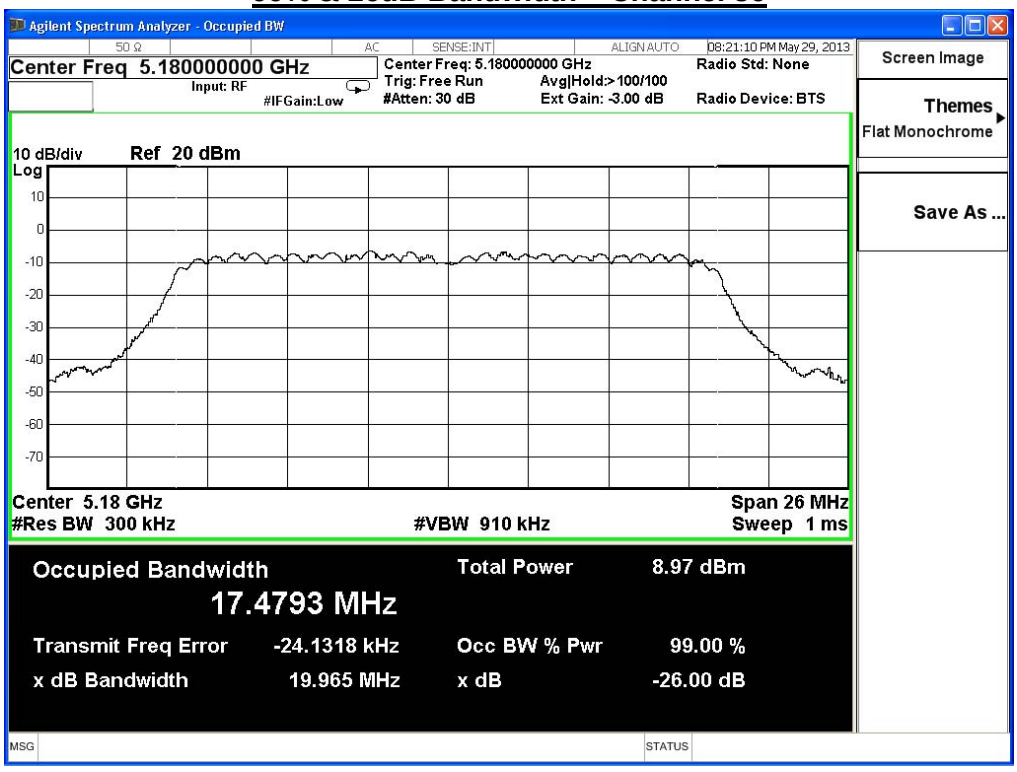
99% & 26dB Bandwidth – Channel 48



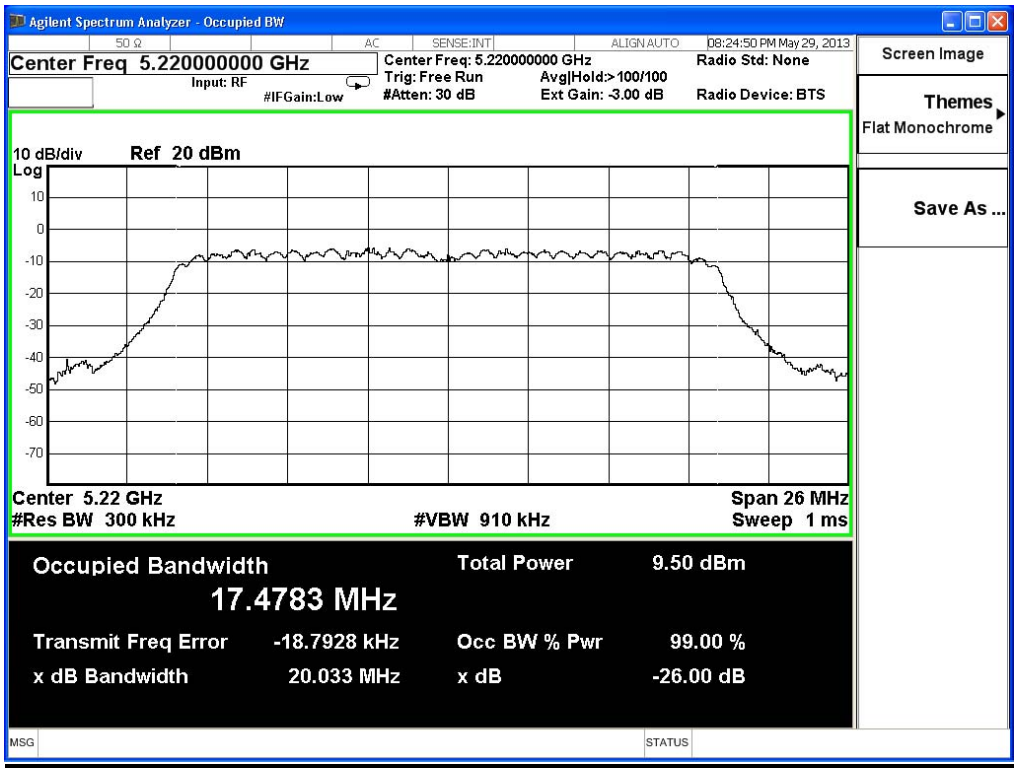
Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/05/29	Test Site	SR7

802.11n_20M(ANT 1)					
Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Required Limit (MHz)	Result
36	5180	19.96	17.47	--	Pass
44	5220	20.03	17.47	--	Pass
48	5240	19.97	17.48	--	Pass

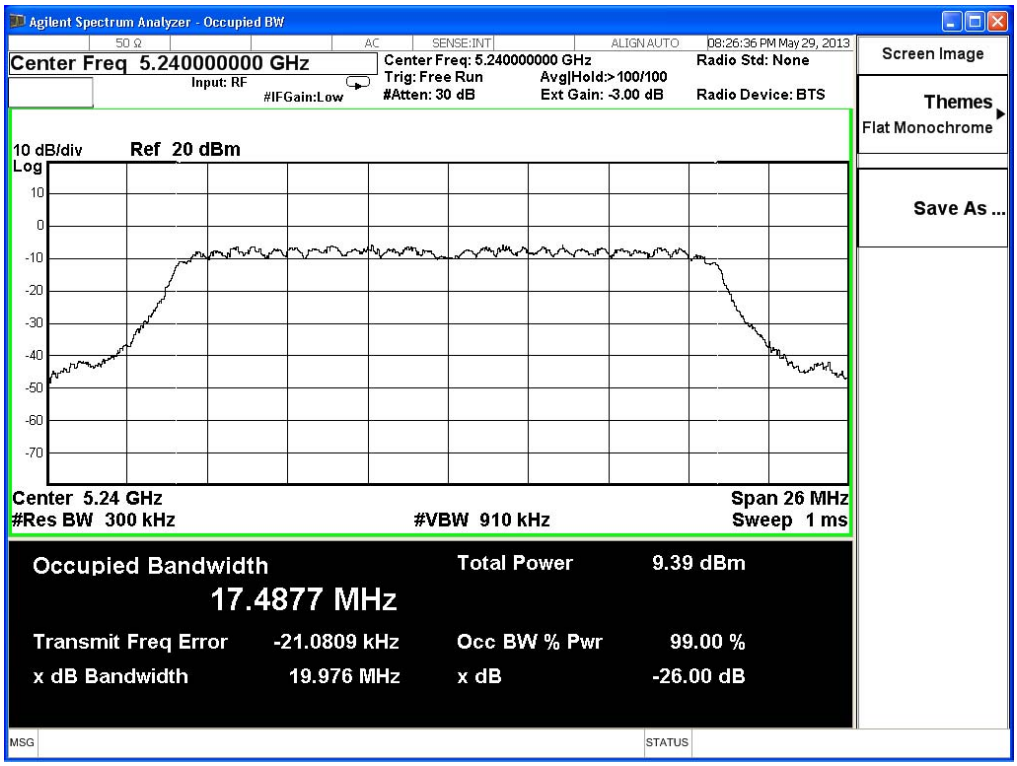
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



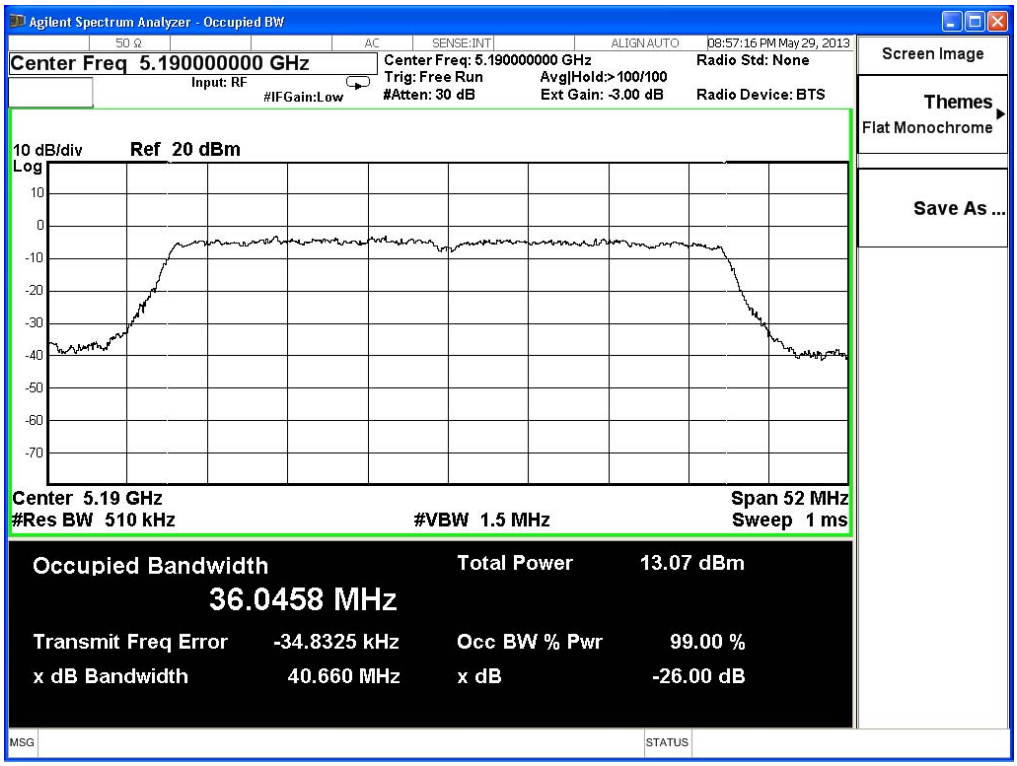
99% & 26dB Bandwidth – Channel 48



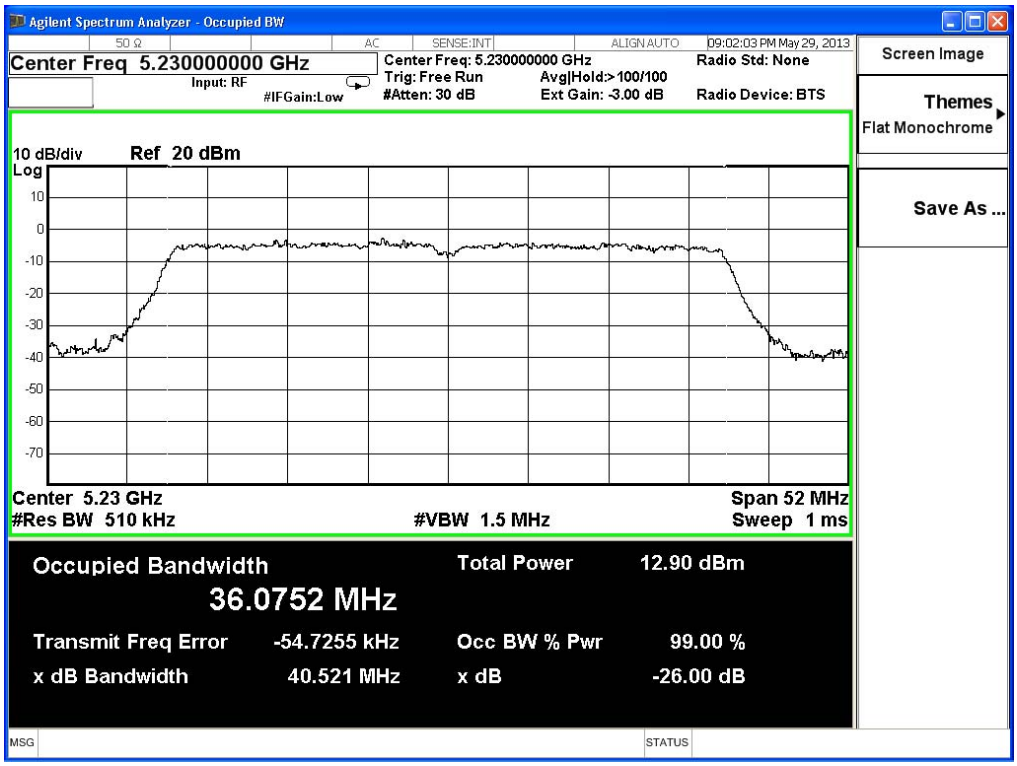
Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/05/29	Test Site	SR7

802.11n_40M(ANT 0)					
Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Required Limit (MHz)	Result
38	5190	40.66	36.04	--	Pass
46	5230	40.52	36.07	--	Pass

99% & 26dB Bandwidth – Channel 38



99% & 26dB Bandwidth – Channel 46

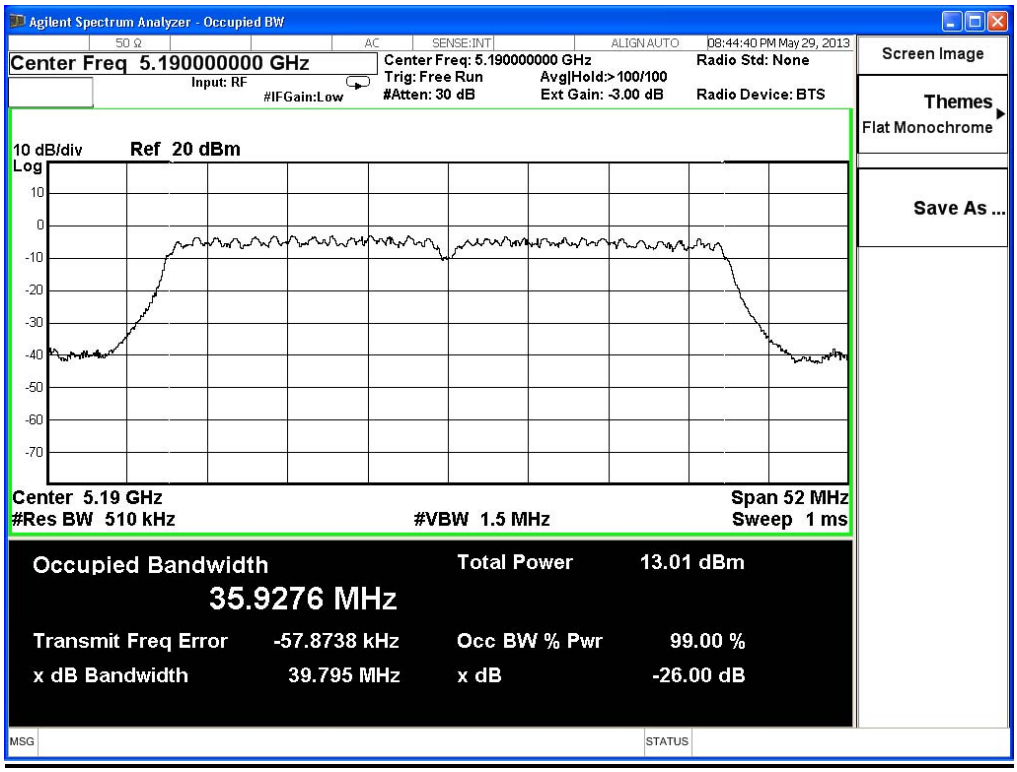


Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/05/29	Test Site	SR7

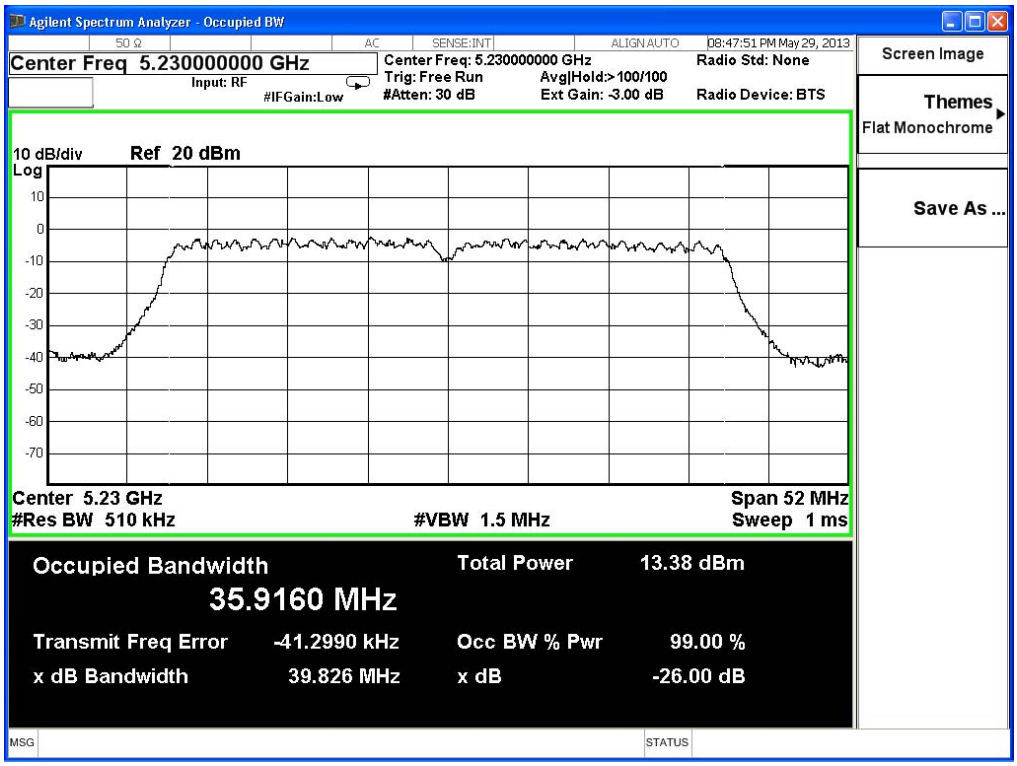
802.11n_40M(ANT 1)

Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Required Limit (MHz)	Result
38	5190	39.79	35.92	--	Pass
46	5230	39.82	35.91	--	Pass

99% & 26dB Bandwidth – Channel 38



99% & 26dB Bandwidth – Channel 46



4. Peak Transmit Output

4.1. Test Equipment

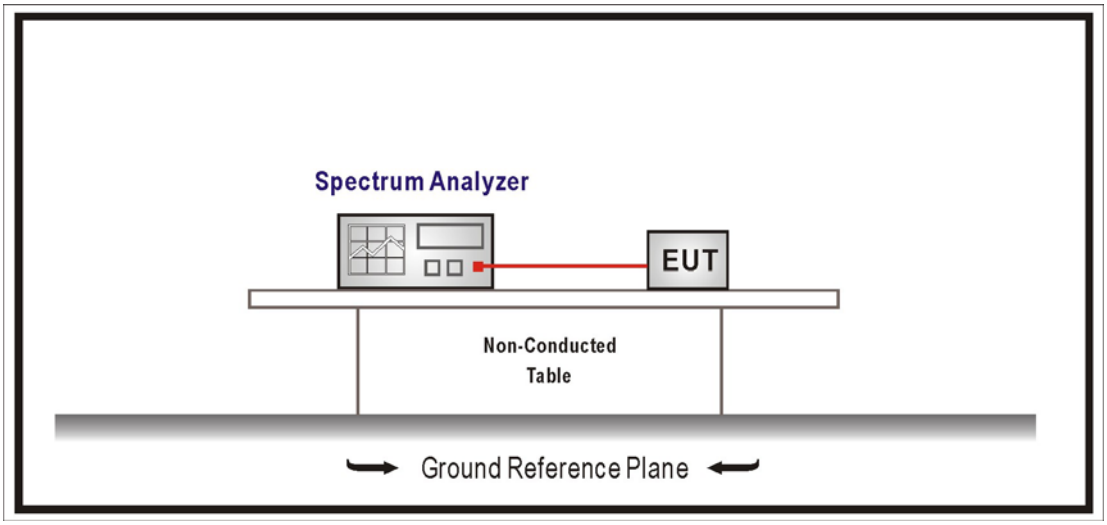
The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2013/07/31

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, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements. The Method SA-1 of the Maximum conducted output power was used.

Set RBW=1MHz, VBW=3MHz with RMS 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

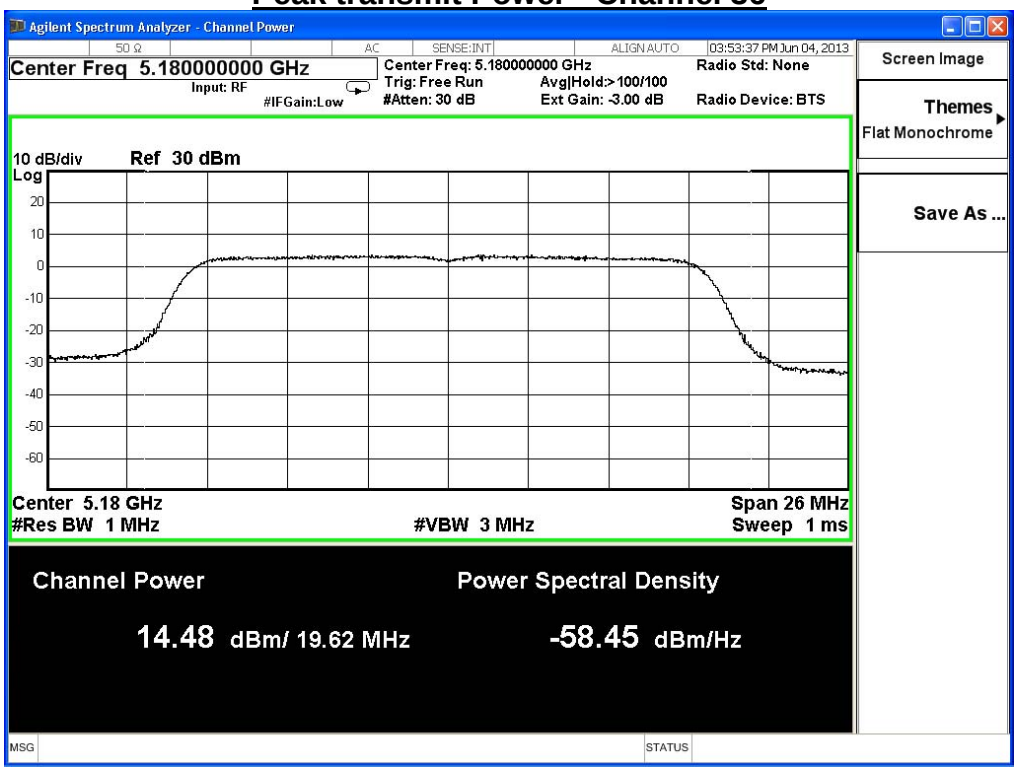
Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

802.11a						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	19.62	14.48	≤17	≤16.93	Pass
44	5220	19.73	14.47	≤17	≤16.95	Pass
48	5240	19.64	13.90	≤17	≤16.93	Pass

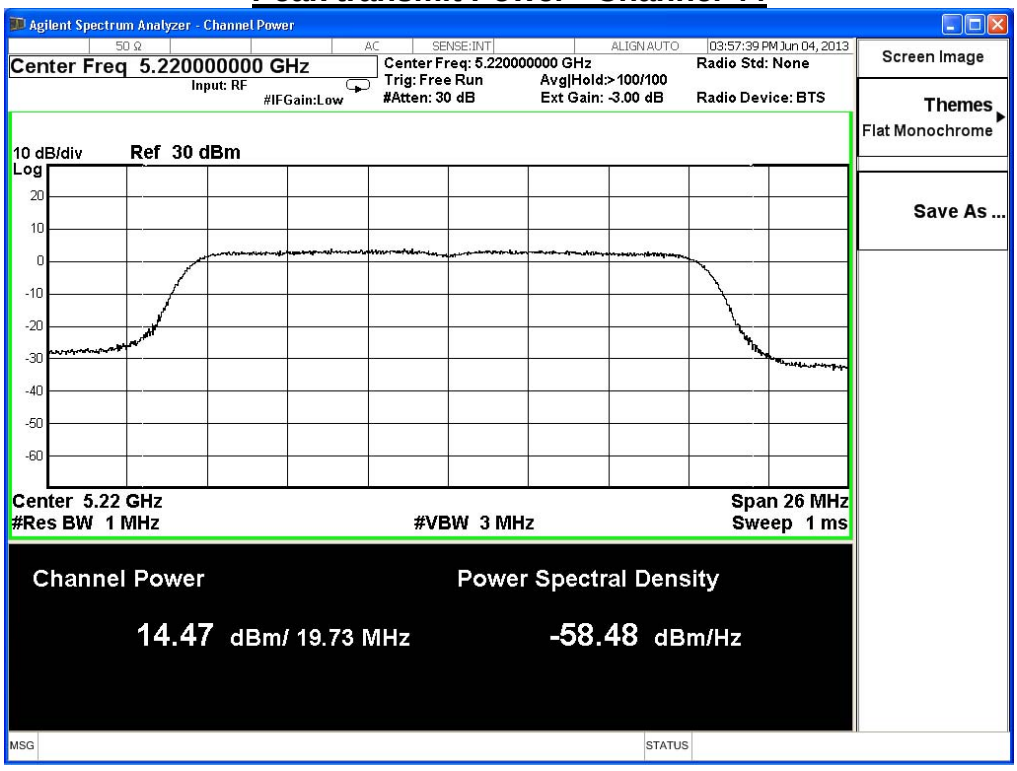
The worst emission of data rate is 6 Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	14.48	--	--	--	--	--	--	17dBm or 4dBm+10logB
44	5220	14.47	14.27	14.07	13.87	13.75	13.63	13.39	
48	5240	13.90	--	--	--	--	--	--	

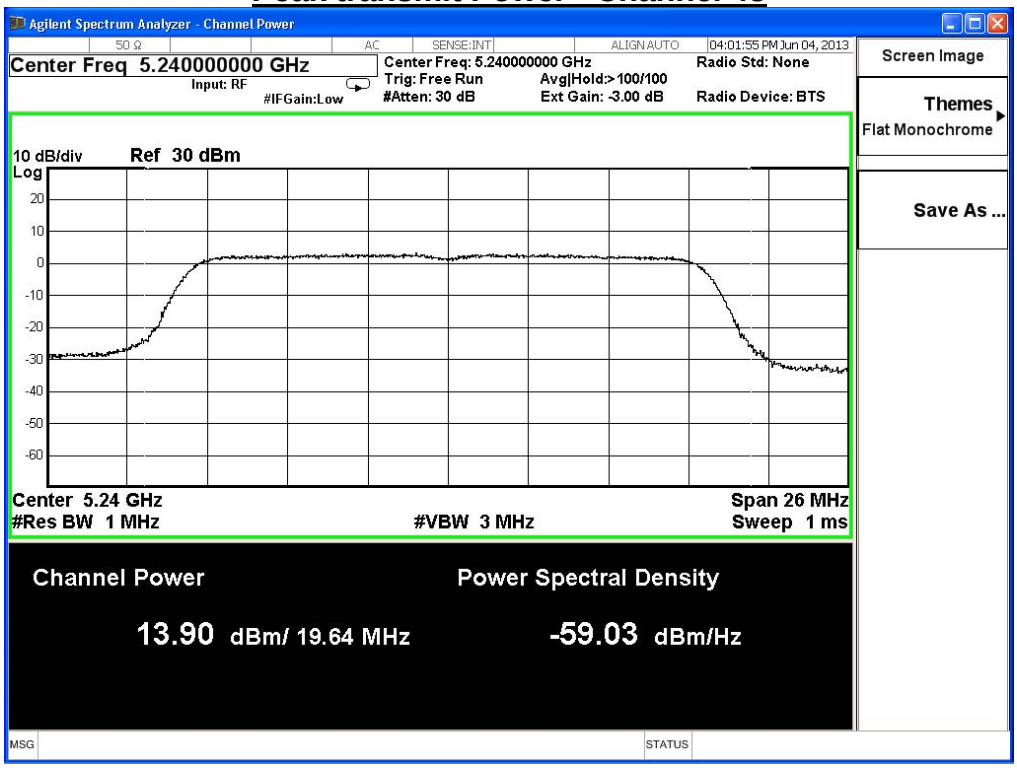
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

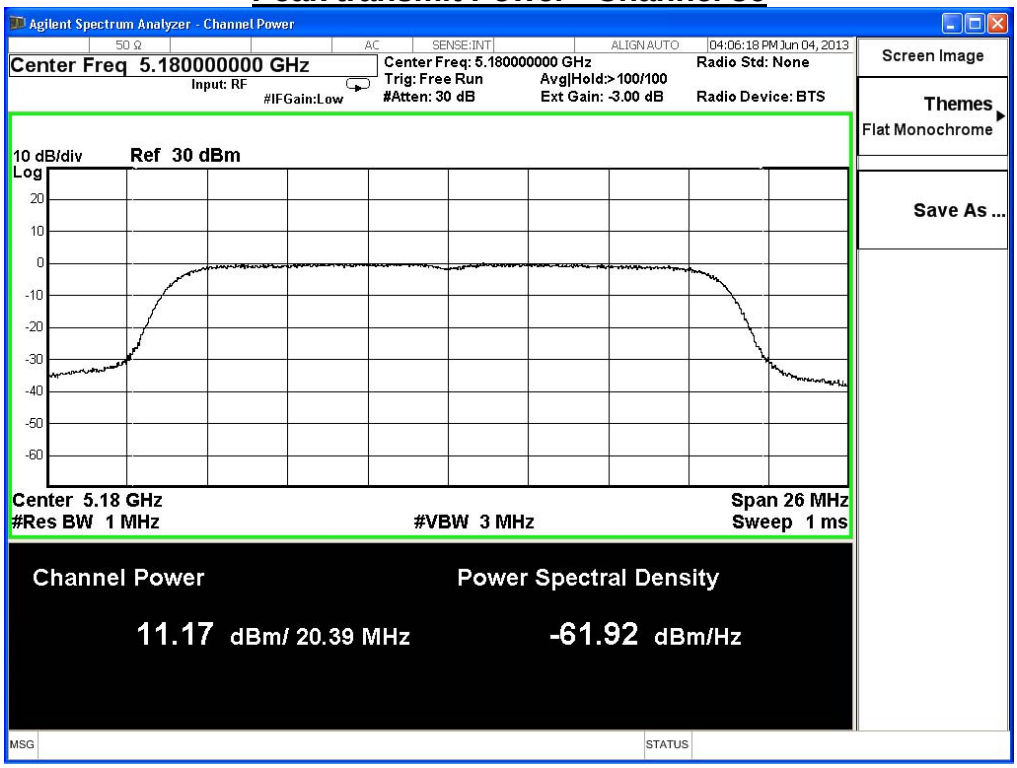
IEEE 802.11n(20MHz)_ANT 0						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	20.39	11.17	≤16.49	≤17.09	Pass
44	5220	20.24	11.27	≤16.49	≤17.06	Pass
48	5240	20.16	11.27	≤16.49	≤17.04	Pass

The worst emission of data rate is 13Mbps.

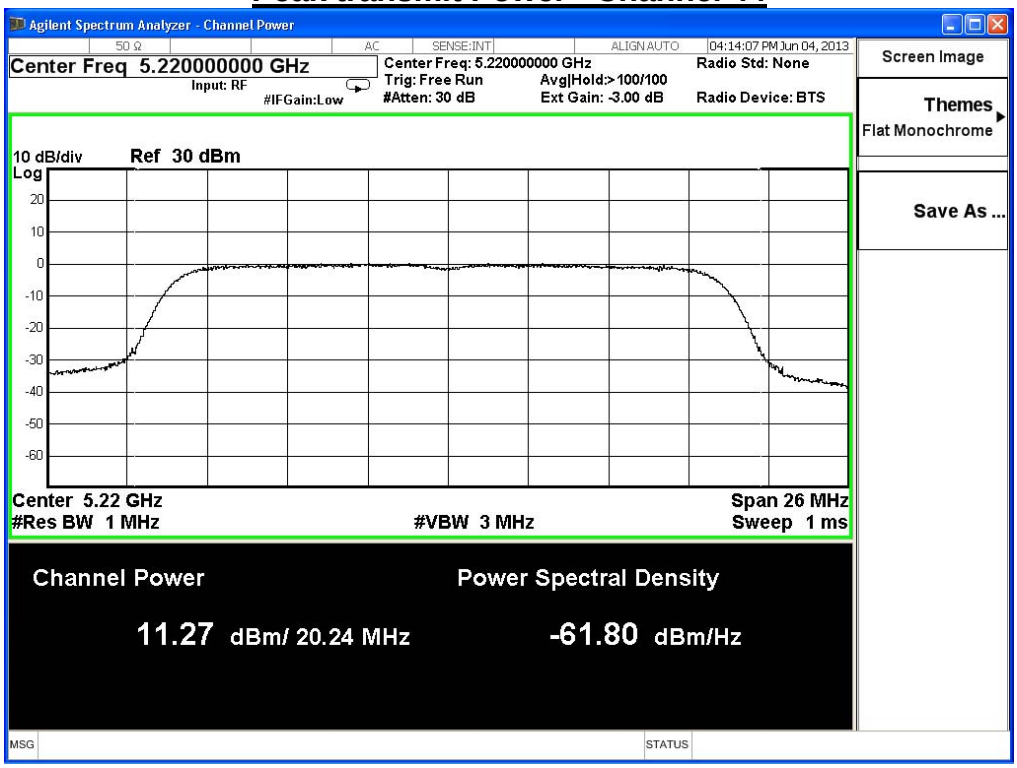
Peak Power Output (dBm)									
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		13	26	39	52	78	104	117	130	
36	5180	11.17	--	--	--	--	--	--	--	16.49dBm or 4dBm+10logB
44	5220	11.27	11.17	11.07	10.87	10.77	10.65	10.53	10.29	
48	5240	11.27	--	--	--	--	--	--	--	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm

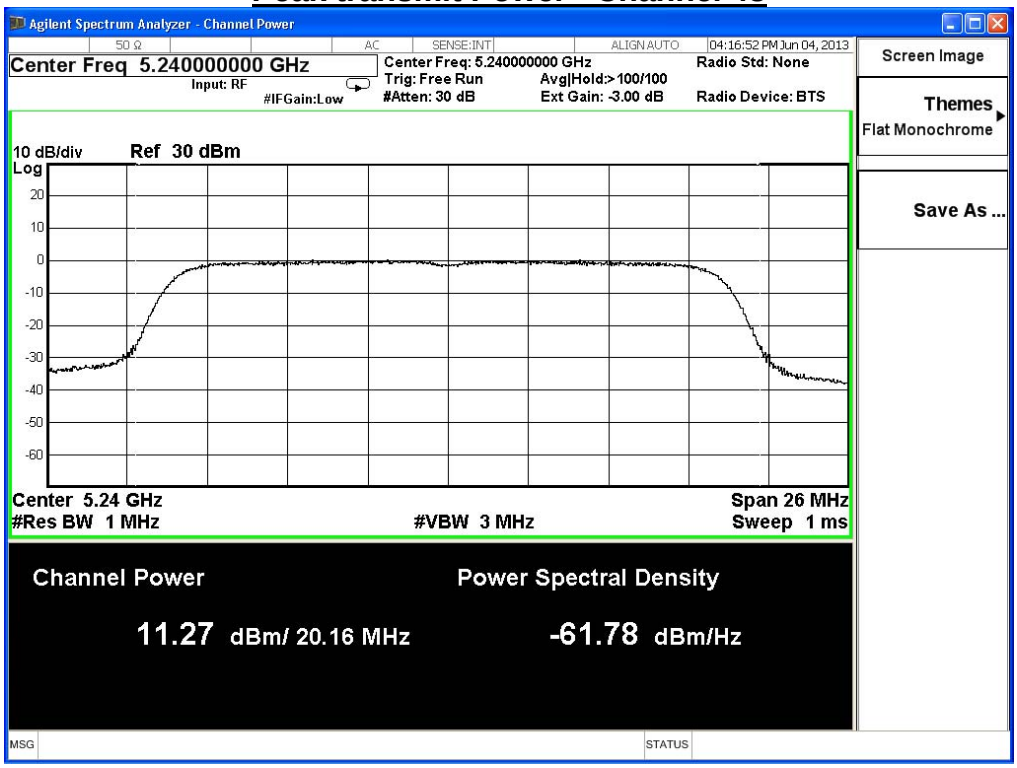
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

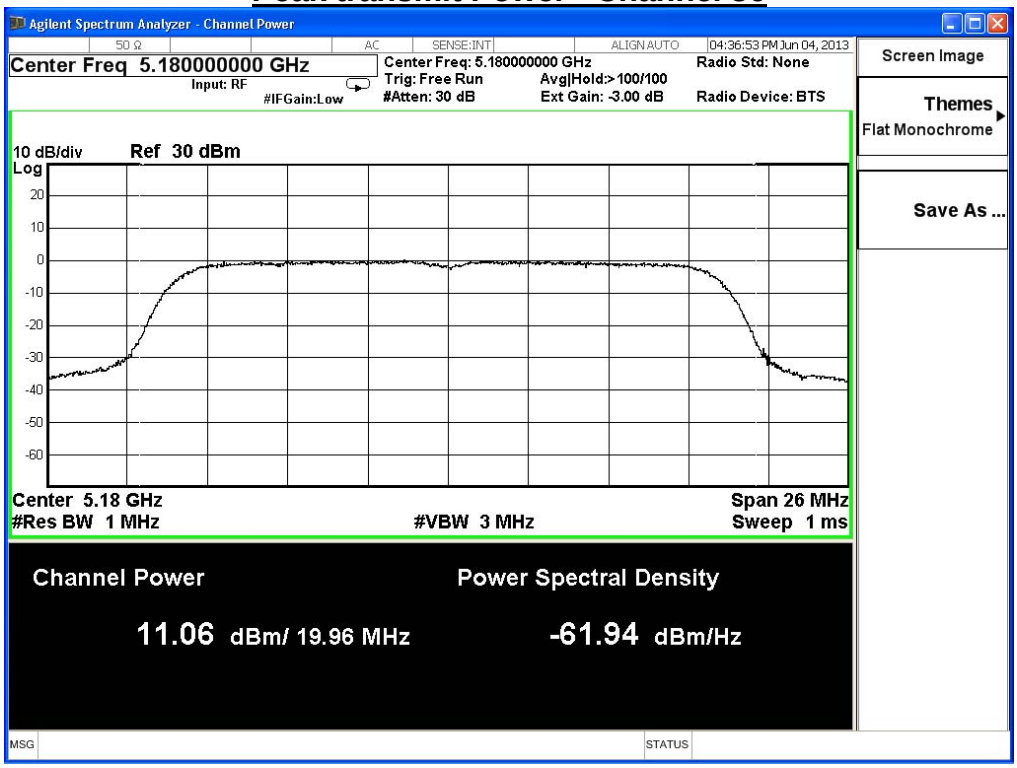
IEEE 802.11n(20MHz)_ANT 1						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
36	5180	19.96	11.06	≤16.49	≤17.00	Pass
44	5220	20.03	11.06	≤16.49	≤17.02	Pass
48	5240	19.97	10.62	≤16.49	≤17.00	Pass

The worst emission of data rate is 13Mbps.

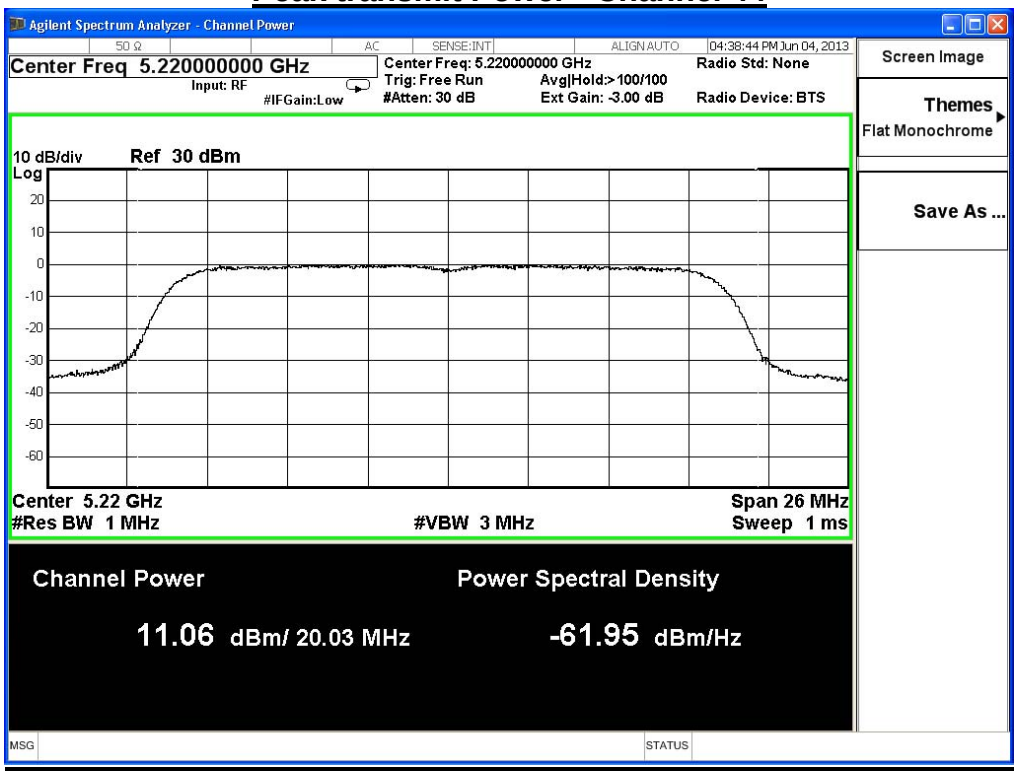
Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		13	26	39	52	78	104	117	130	
36	5180	11.06	--	--	--	--	--	--	--	16.4.9dBm or 4dBm+10logB
44	5220	11.06	10.86	10.76	10.56	10.46	10.22	9.98	9.74	
48	5240	10.62	--	--	--	--	--	--	--	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm

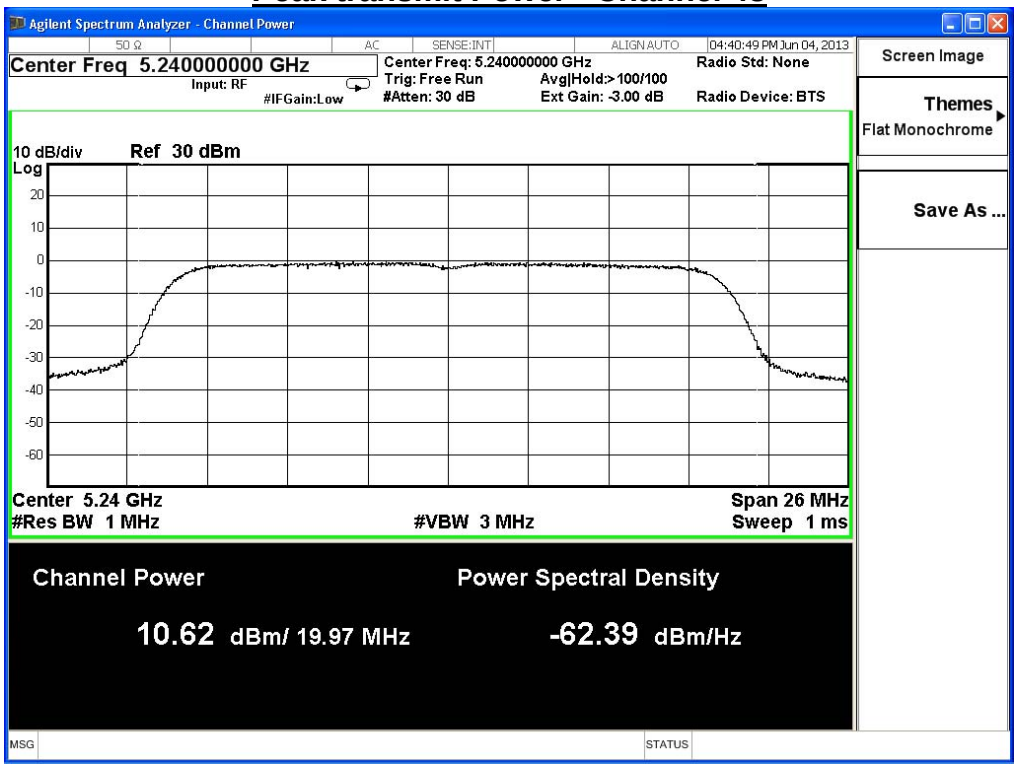
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

IEEE 802.11n(20MHz)_ANT 0+1					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(mW)	(dBm)		
36	5180	25.86	14.13	≤16.49	Pass
44	5220	26.16	14.18	≤16.49	Pass
48	5240	24.93	13.97	≤16.49	Pass

IEEE 802.11n(20MHz) Antenna 0+1

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	14.13	--	--	--	--	--	--	--	16.49dBm
44	5220	14.18	14.03	13.93	13.73	13.63	13.45	13.27	13.03	
48	5240	13.97	--	--	--	--	--	--	--	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm

Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

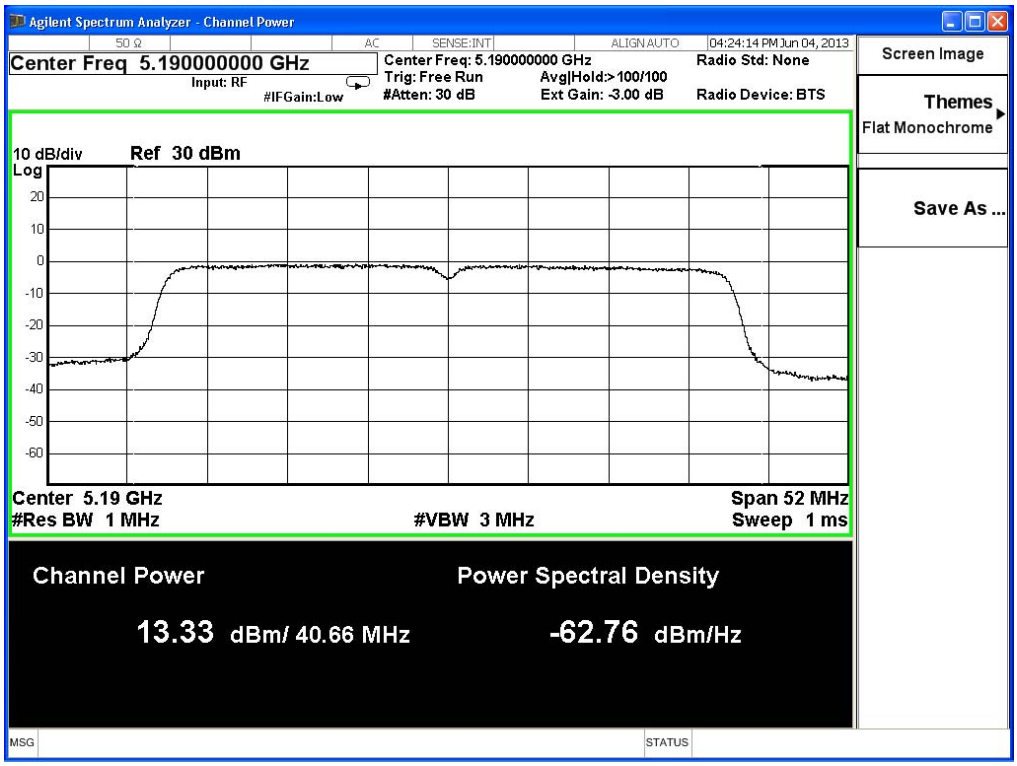
IEEE 802.11n(40MHz)_ANT 0						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	40.66	13.33	≤16.49	≤20.09	Pass
46	5230	40.52	13.29	≤16.49	≤20.08	Pass

The worst emission of data rate is 40.5 Mbps

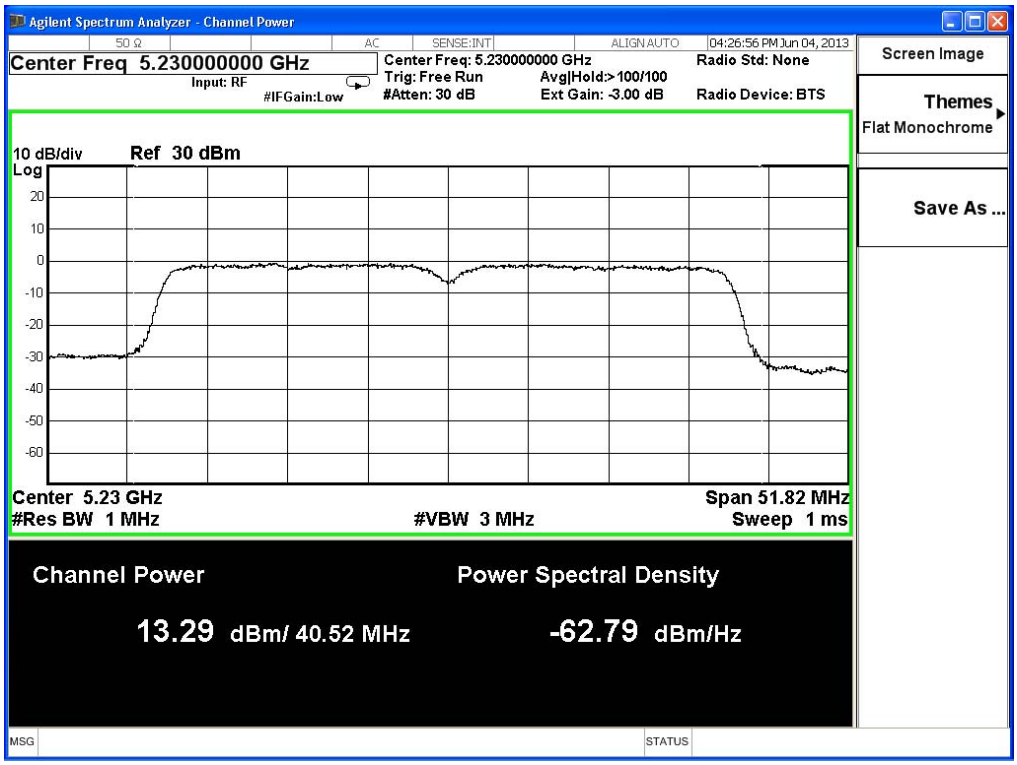
Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		27	54	81	108	162	216	243	270	
38	5190	13.33	--	--	--	--	--	--	--	16.49dBm or 4dBm+10logB
46	5230	13.29	13.09	12.99	12.79	12.59	12.47	12.23	12.11	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

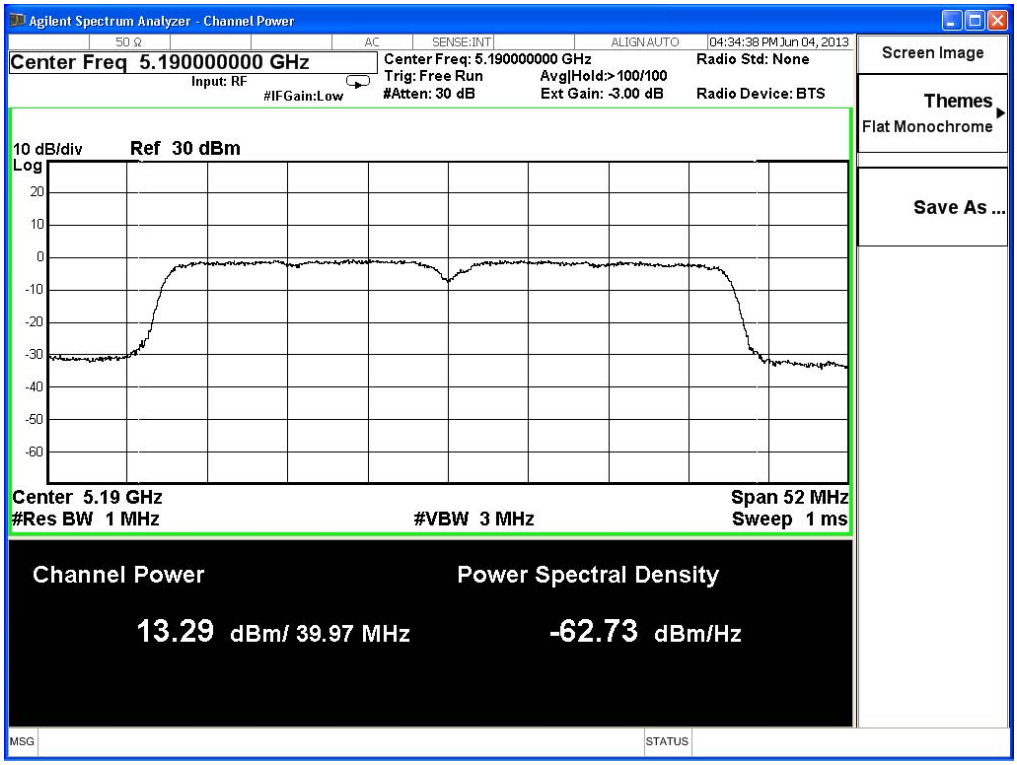
IEEE 802.11n(40MHz)_ANT 1						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	39.79	13.29	≤16.49	≤20.00	Pass
46	5230	39.82	13.30	≤16.49	≤20.00	Pass

The worst emission of data rate is 40.5 Mbps

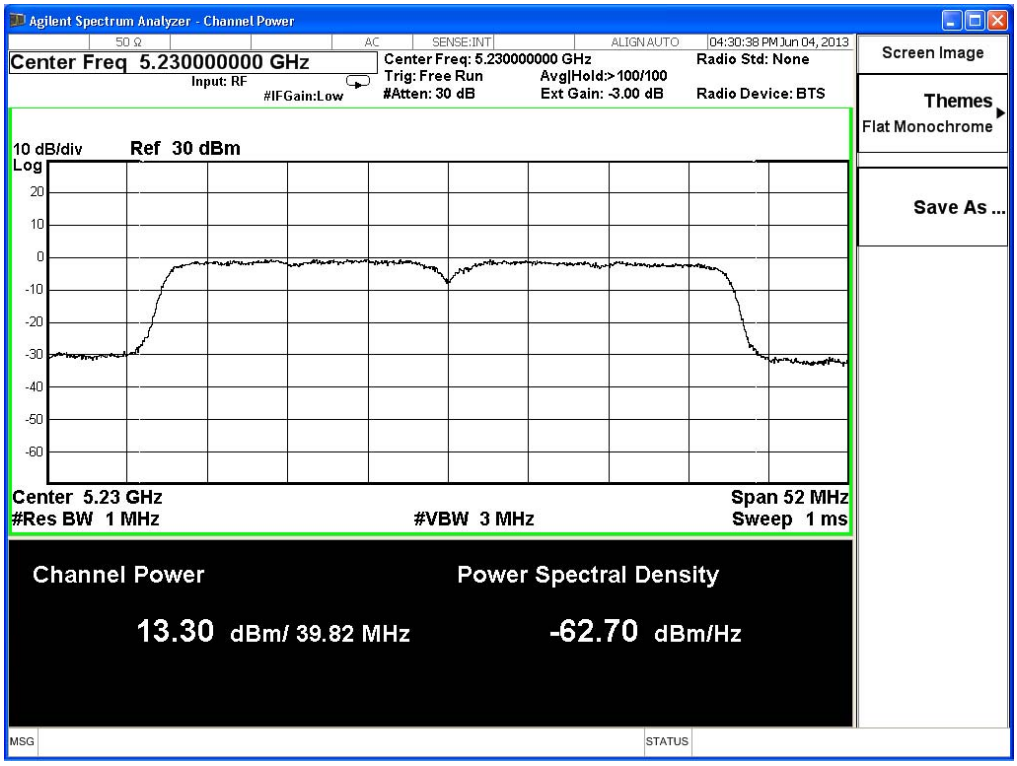
Peak Power Output (dBm)										
MCS Index		8	9	10	11	12	13	14	15	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		27	54	81	108	162	216	243	270	
38	5190	13.29	--	--	--	--	--	--	--	16.49dBm or 4dBm+10logB
46	5230	13.3	13.10	12.90	12.70	12.50	12.26	12.14	12.02	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/04	Test Site	SR7

IEEE 802.11n(40MHz)_ANT 0+1					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(mW)	(dBm)		
38	5190	43.41	16.38	≤16.49	Pass
46	5230	42.71	16.31	≤16.49	Pass

IEEE 802.11n(40MHz), Antenna 0+1

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	16.38	--	--	--	--	--	--	--	16.49dBm
46	5230	16.31	16.11	15.96	15.76	15.56	15.38	15.20	15.08	

Note:
10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi
Required Limit = 17dBm - (6.51dBi – 6dBi) = 17 – 0.51 = 16.49 dBm