

# 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 : 2013/04/09

Issued Date : 2013/06/14

Report No. : 133212R-RFUSP42V01

Report Version : V1.0



The test results relate only to the samples tested.

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# Test Report Certification

Issued Date : 2013/06/14

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 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 C Section 15.247: 2012  
 ANSI C63.4: 2009  
 Test Result : Complied

The test results relate only to the samples tested.  
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 ( 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:

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

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

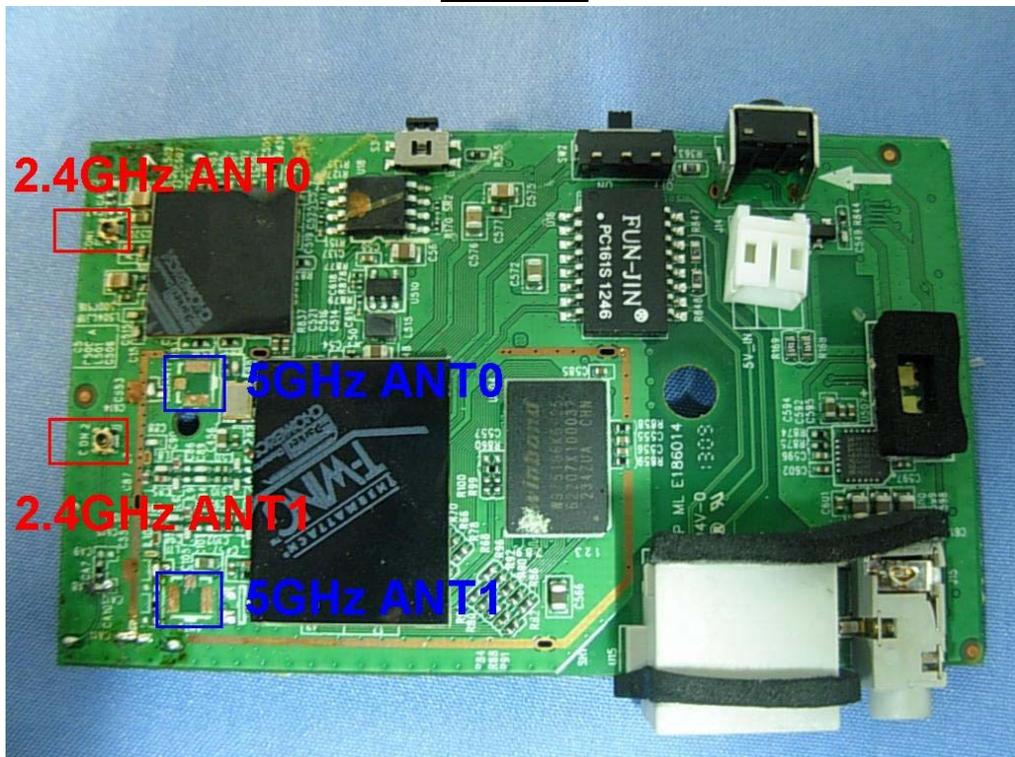
### 1.1. EUT Description

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 802.11b/g & IEEE 802.11n (20MHz)_2.4GHz	2412~2462MHz / 11 Channels
Frequency Range/Channel Number -IEEE 802.11n(40MHz) _2.4GHz	2422~2452MHz / 7 Channels
Frequency Range/Channel Number -IEEE 802.11a & IEEE 802.11n (20MHz)_5.8GHz	5745~5825MHz / 5 Channels
Frequency Range/Channel Number -IEEE 802.11n(40MHz) _5.8GHz	5755~5795MHz / 2 Channels
Type of Modulation (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Type of Modulation (IEEE 802.11a/g/n)	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed (IEEE 802.11b)	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data Speed (IEEE 802.11a/g)	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	2.4G: Ant0: 3.0dBi, Ant1: 3.0dBi 5G: Ant0: 3.5dBi, Ant1: 3.5dBi
Antenna Type	PIFA Antenna

ANT-TX / Rx & Bandwidth

ANT-TX / RX	TX		RX	
	20MHz	40MHz	20MHz	40MHz
IEEE802.11a	✓		✓	
IEEE802.11b	✓		✓	
IEEE802.11g	✓		✓	
IEEE802.11n	✓	✓	✓	✓

(2TX /2RX)



**IEEE 802.11n**

MCS Index	Modulation	R	N <sub>BPSCS</sub>	N <sub>CBPS</sub>		N <sub>DBPS</sub>		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 <sub>BPSCS</sub>	N <sub>CBPS</sub>		N <sub>DBPS</sub>		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 <sub>BPSC</sub>	Number of coded bits per single carrier
N <sub>CBPS</sub>	Number of coded bits per symbol
N <sub>DBPS</sub>	Number of data bits per symbol
GI	guard interval

## IEEE 802.11b/g &amp; IEEE 802.11n (20MHz) - 2.4GHz

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz		

## IEEE 802.11n (40MHz) - 2.4GHz

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
003	2422 MHz	004	2427 MHz	005	2432 MHz	006	2437 MHz
007	2442 MHz	008	2447 MHz	009	2452 MHz		

## IEEE 802.11a &amp; IEEE 802.11n (20MHz) - 5.8GHz

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz						

## IEEE 802.11n (40MHz) - 5.8GHz

Working Frequency of Each Channel			
Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

## Note:

1. This device is a RP-N53 Dual-Band Wireless N-600 Range Extender including 2.4GHz b/g/n (2x2) 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 C Paragraph 15.247.
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 5.2GHz transmitting is measured and makes a test report of the report number: 133212R-RFUSP46V01.
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 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
----	------------------

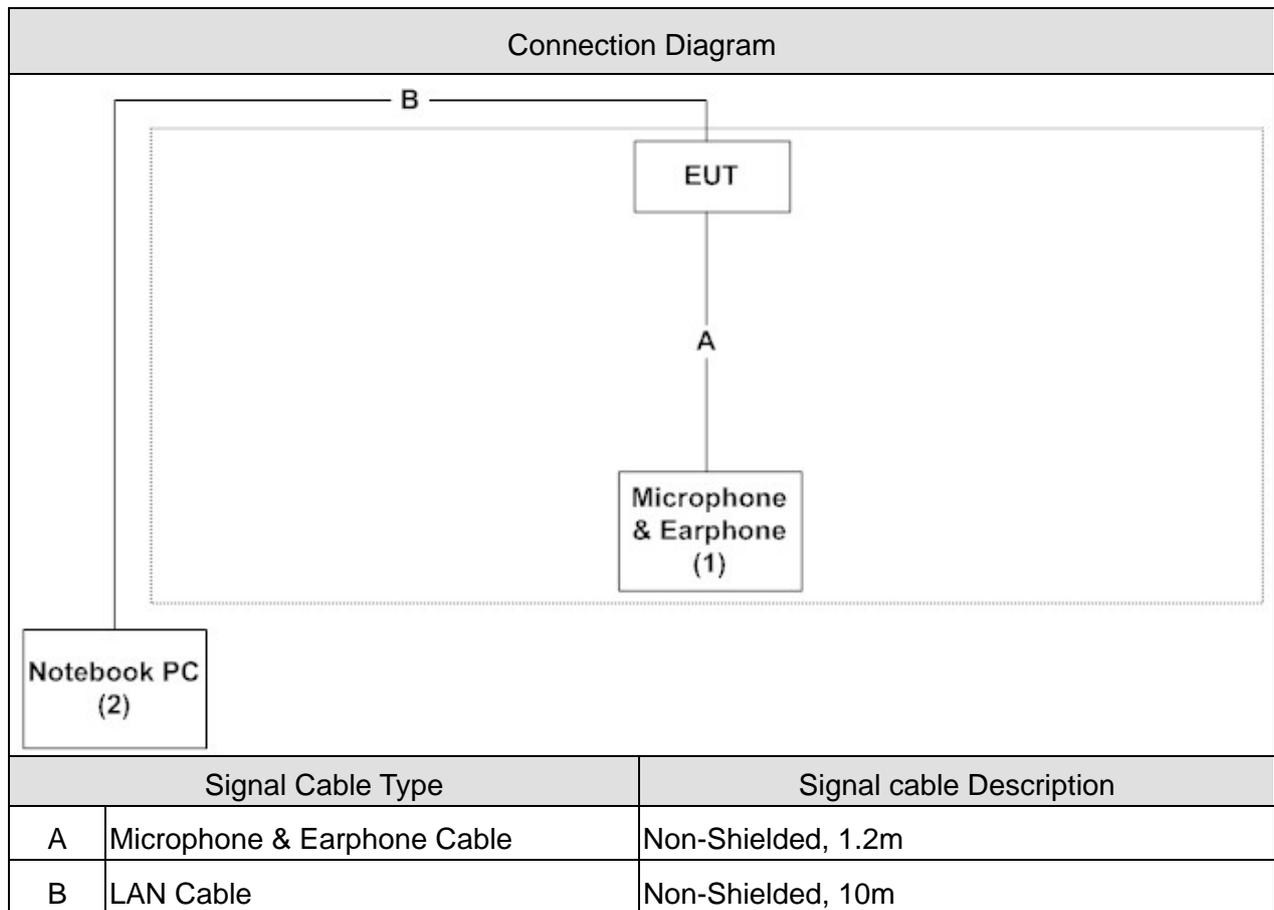
Test Items	Mode	Channel	Antenna	Result
Conducted Emission	11n(40MHz)	6/159	0+1	Complies
Peak Power Output	a	149/ 157/ 165	0	Complies
	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11/ 149/ 157/ 165	0+1	Complies
	11n(40MHz)	3/ 6/ 9/ 151/ 159	0+1	Complies
Radiated Emission	a	149/ 157/ 165	0	Complies
	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11/ 149/ 157/ 165	0+1	Complies
	11n(40MHz)	3/ 6/ 9/ 151/ 159	0+1	Complies
RF antenna conducted test	a	149/ 165	0	Complies
	b/g	1/ 11	0	Complies
	11n(20MHz)	1/ 11/ 149/ 165	0/1	Complies
	11n(40MHz)	3/ 9/ 151/ 159	0/1	Complies
Radiated Emission Band Edge	a	149/165	0	Complies
	b/g	1/ 11	0	Complies
	11n(20MHz)	1/ 11/149/165	0+1	Complies
	11n(40MHz)	3/ 9/151/159	0+1	Complies
Occupied Bandwidth	a	149/ 157/ 165	0	Complies
	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11/ 149/ 157/ 165	0/1	Complies
	11n(40MHz)	3/ 6/ 9/ 151/ 159	0/1	Complies
Power Density	a	149/ 157/ 165	0	Complies
	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11/ 149/ 157/ 165	0+1	Complies
	11n(40MHz)	3/ 6/ 9/ 151/ 159	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**



**1.6. EUT Exercise Software**

1	Setup the EUT as shown in Section 1.5.
2	Execute the test program “MT76200QA” for 2.4G function and “RT5x9xQA” for 5G function on the Notebook.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
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 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density (DSSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

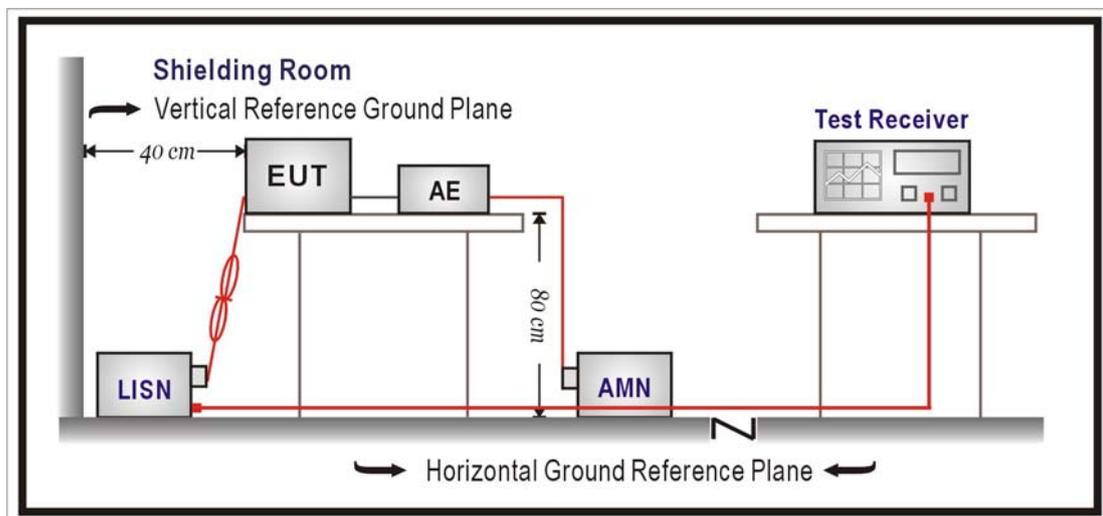
The following test equipments are used during the test:

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**

<b>FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)</b>		
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 and tested according to DTS test procedure of Jan. 2012 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**

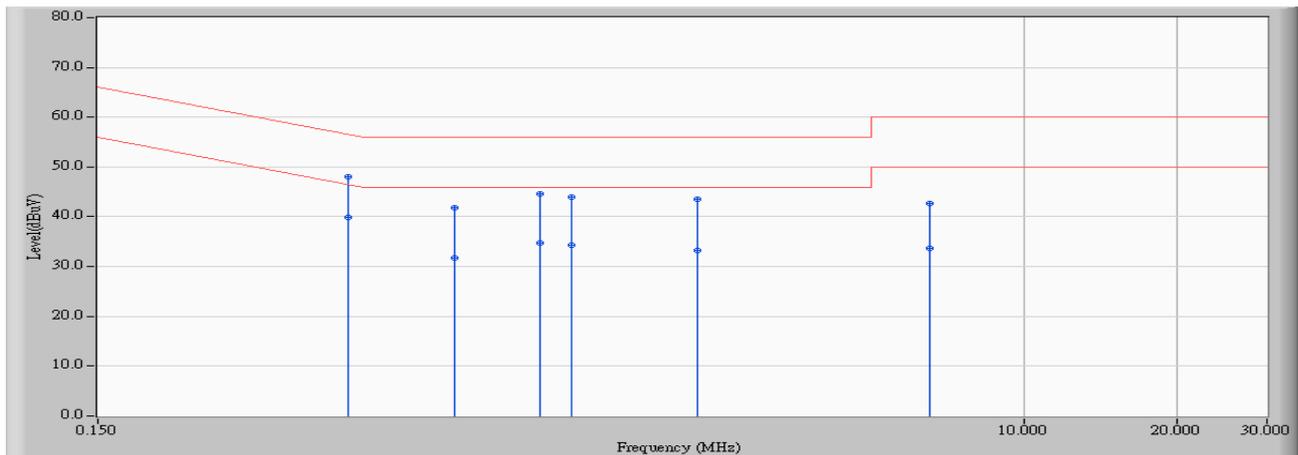
According to FCC Part 15 Subpart C Paragraph 15.207: 2012

**2.6. Uncertainty**

The measurement uncertainty is defined as  $\pm 2.26$  dB.

## 2.7. Test Result

Site : SR3	Time : 2013/04/29 - 16:47
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-2.4GHz

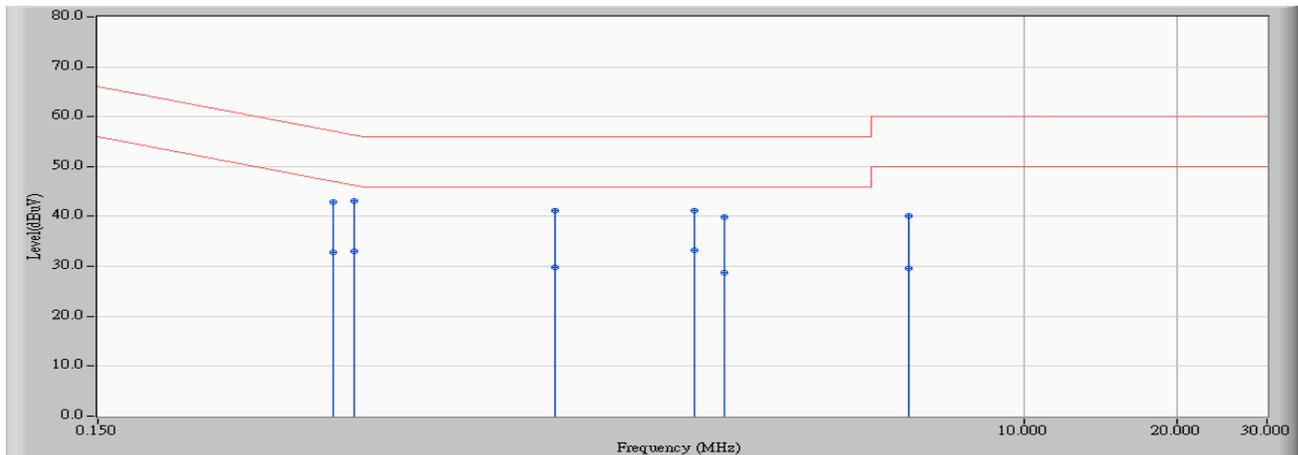


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.466	9.811	38.240	48.051	-8.526	56.578	QUASPEAK
2	* 0.466	9.811	30.020	39.831	-6.746	46.578	AVERAGE
3	0.755	9.887	31.960	41.847	-14.153	56.000	QUASPEAK
4	0.755	9.887	21.860	31.747	-14.253	46.000	AVERAGE
5	1.115	9.942	34.690	44.632	-11.368	56.000	QUASPEAK
6	1.115	9.942	24.870	34.812	-11.188	46.000	AVERAGE
7	1.287	9.946	34.100	44.046	-11.954	56.000	QUASPEAK
8	1.287	9.946	24.440	34.386	-11.614	46.000	AVERAGE
9	2.263	9.976	33.500	43.475	-12.525	56.000	QUASPEAK
10	2.263	9.976	23.300	33.275	-12.725	46.000	AVERAGE
11	6.521	10.110	32.670	42.780	-17.220	60.000	QUASPEAK
12	6.521	10.110	23.550	33.660	-16.340	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 - 16:55
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-2.4GHz

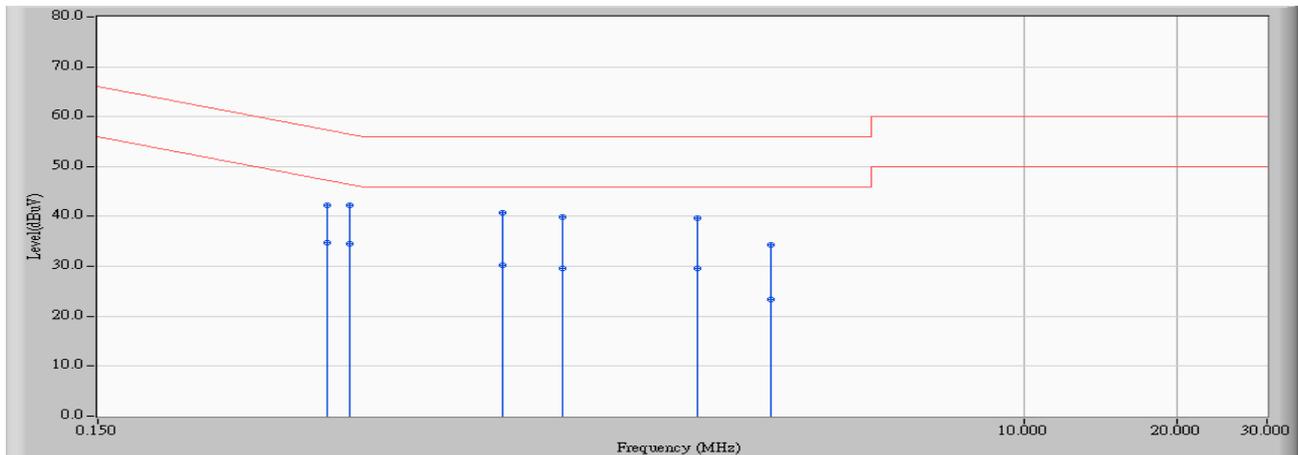


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.435	9.783	33.030	42.813	-14.341	57.154	QUASIPeAK
2	0.435	9.783	22.980	32.763	-14.391	47.154	AVERAGE
3	0.478	9.808	33.200	43.008	-13.363	56.372	QUASIPeAK
4	0.478	9.808	23.320	33.128	-13.243	46.372	AVERAGE
5	1.189	9.932	31.270	41.202	-14.798	56.000	QUASIPeAK
6	1.189	9.932	19.790	29.722	-16.278	46.000	AVERAGE
7	2.240	9.950	31.170	41.120	-14.880	56.000	QUASIPeAK
8	* 2.240	9.950	23.330	33.280	-12.720	46.000	AVERAGE
9	2.568	9.965	29.950	39.915	-16.085	56.000	QUASIPeAK
10	2.568	9.965	18.770	28.735	-17.265	46.000	AVERAGE
11	5.935	10.089	30.000	40.089	-19.911	60.000	QUASIPeAK
12	5.935	10.089	19.560	29.649	-20.351	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 - 17:43
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-5.8GHz

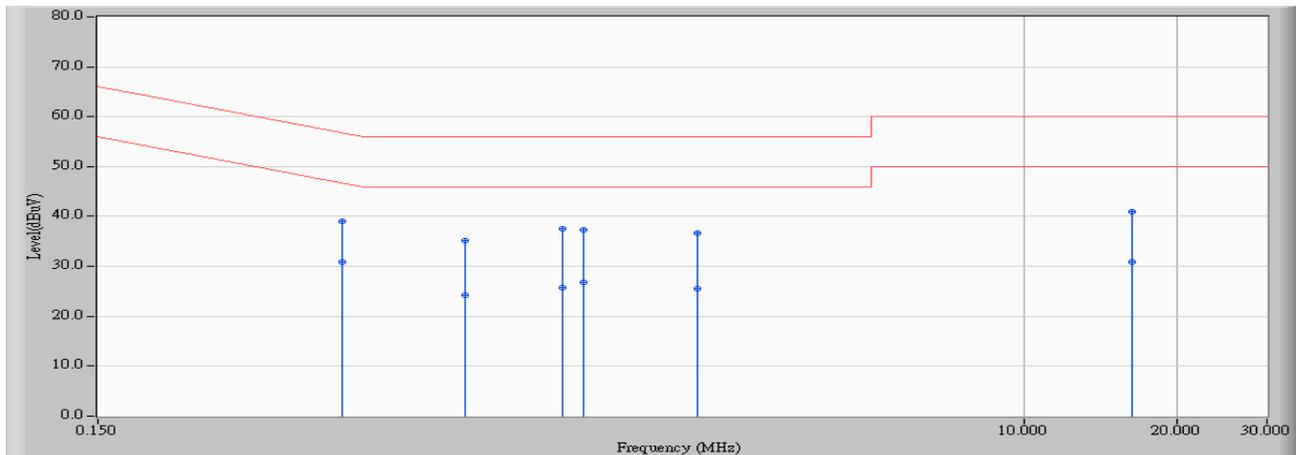


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.423	9.786	32.500	42.286	-15.094	57.380	QUASPEAK
2	0.423	9.786	24.980	34.766	-12.614	47.380	AVERAGE
3	0.469	9.813	32.390	42.203	-14.330	56.533	QUASPEAK
4	* 0.469	9.813	24.650	34.463	-12.070	46.533	AVERAGE
5	0.939	9.927	30.800	40.727	-15.273	56.000	QUASPEAK
6	0.939	9.927	20.400	30.327	-15.673	46.000	AVERAGE
7	1.228	9.945	29.990	39.935	-16.065	56.000	QUASPEAK
8	1.228	9.945	19.730	29.675	-16.325	46.000	AVERAGE
9	2.275	9.976	29.670	39.646	-16.354	56.000	QUASPEAK
10	2.275	9.976	19.710	29.686	-16.314	46.000	AVERAGE
11	3.170	10.028	24.360	34.388	-21.612	56.000	QUASPEAK
12	3.170	10.028	13.380	23.408	-22.592	46.000	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 - 17:47
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-5.8GHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.455	9.795	29.190	38.984	-17.805	56.789	QUASPEAK
2	*	0.455	9.795	21.100	30.894	-15.895	46.789	AVERAGE
3		0.791	9.885	25.200	35.084	-20.916	56.000	QUASPEAK
4		0.791	9.885	14.380	24.264	-21.736	46.000	AVERAGE
5		1.232	9.932	27.530	37.462	-18.538	56.000	QUASPEAK
6		1.232	9.932	15.880	25.812	-20.188	46.000	AVERAGE
7		1.357	9.934	27.280	37.214	-18.786	56.000	QUASPEAK
8		1.357	9.934	16.920	26.854	-19.146	46.000	AVERAGE
9		2.267	9.952	26.620	36.572	-19.428	56.000	QUASPEAK
10		2.267	9.952	15.620	25.572	-20.428	46.000	AVERAGE
11		16.279	10.236	30.730	40.966	-19.034	60.000	QUASPEAK
12		16.279	10.236	20.600	30.836	-19.164	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. Peak Power Output**

**3.1. Test Equipment**

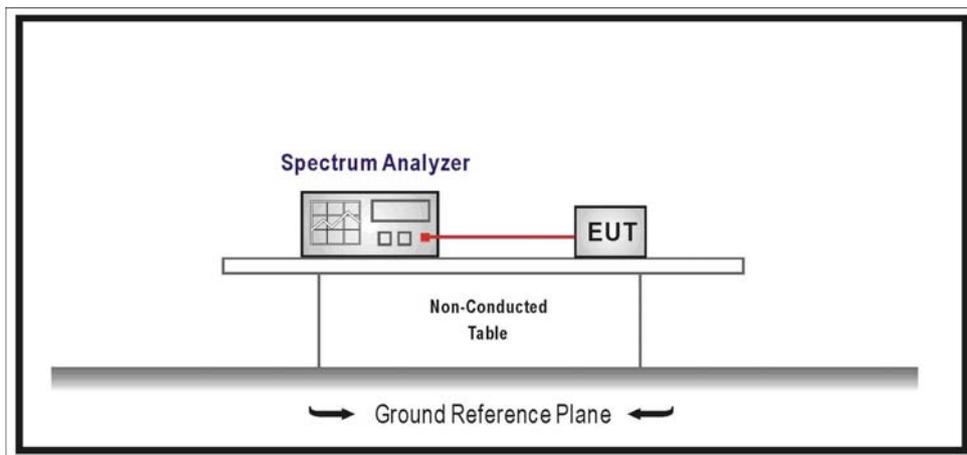
The following test equipments are used during the test:

Peak Power / 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. Test procedures**

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074, Section 5.2.1.2 Measurement Procedure PK2 for compliance to FCC 47CFR 15.247 requirements.

**3.4. Limits**

The maximum peak power shall be less 1 Watt.

**3.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

**3.6. Uncertainty**

The measurement uncertainty is defined as  $\pm 1.27$  dB.

**3.7. Test Result**

Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

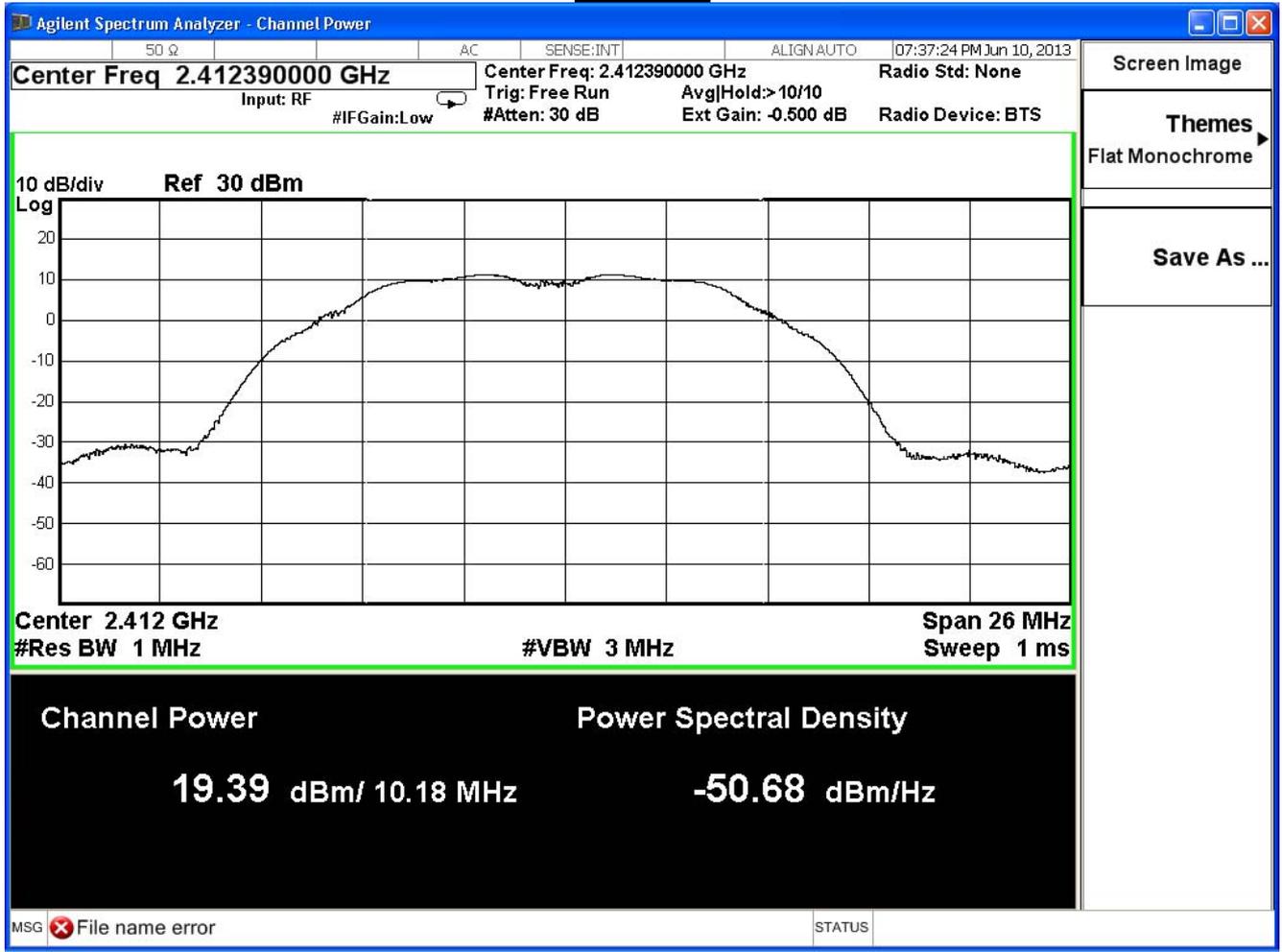
IEEE 802.11b				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	19.39	≤ 30	Pass
6	2437	19.41	≤ 30	Pass
11	2462	19.41	≤ 30	Pass

The worst emission of data rate is 1Mbps.

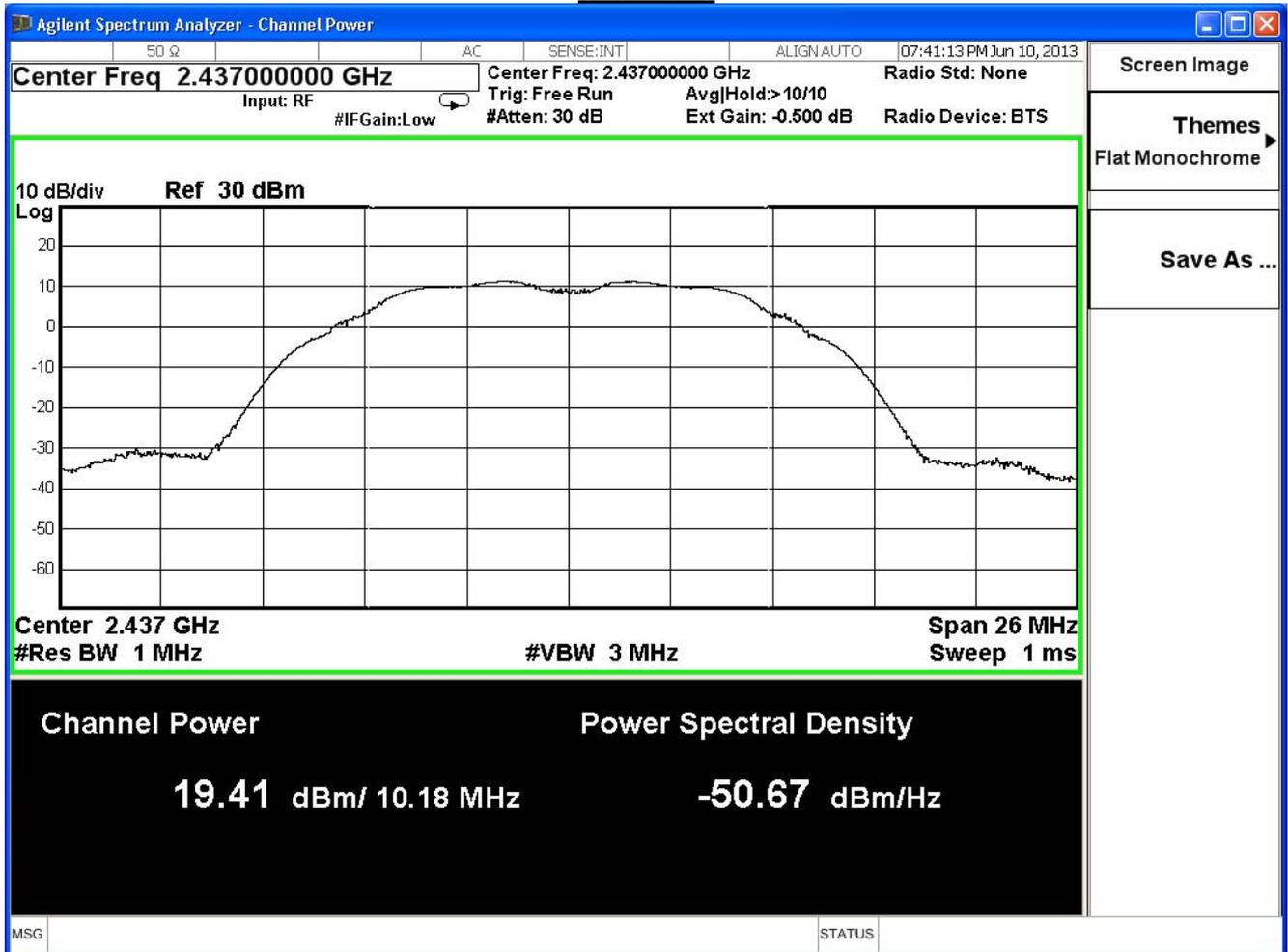
Peak Power Output Value (dBm)						
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1	2	5.5	11	
1	2412	19.39	--	--	-	1 Watt=30dBm
6	2437	19.41	19.40	19.39	19.38	1 Watt=30dBm
11	2462	19.41	--	--	-	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

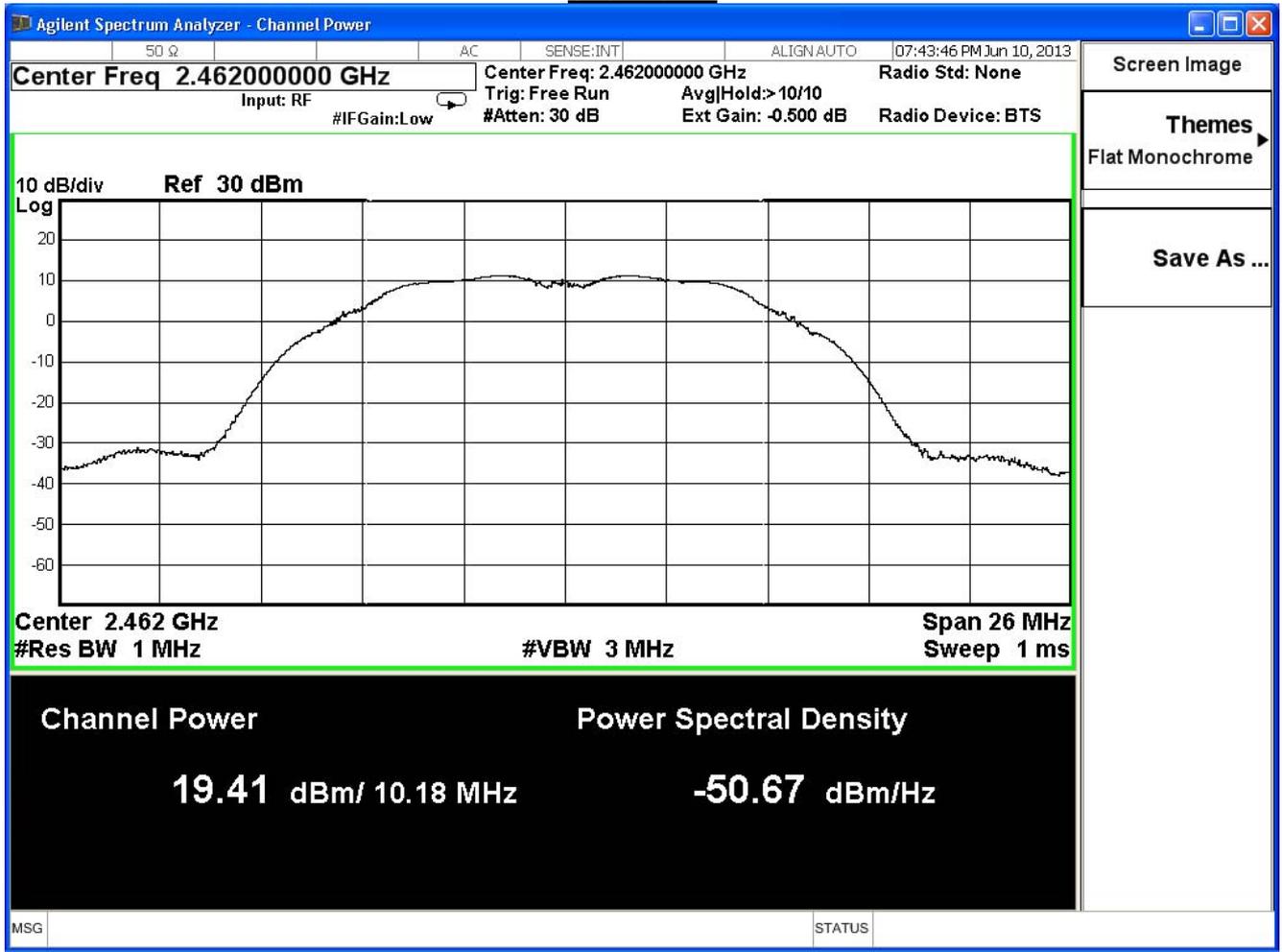
Channel 1



Channel 6



Channel 11



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

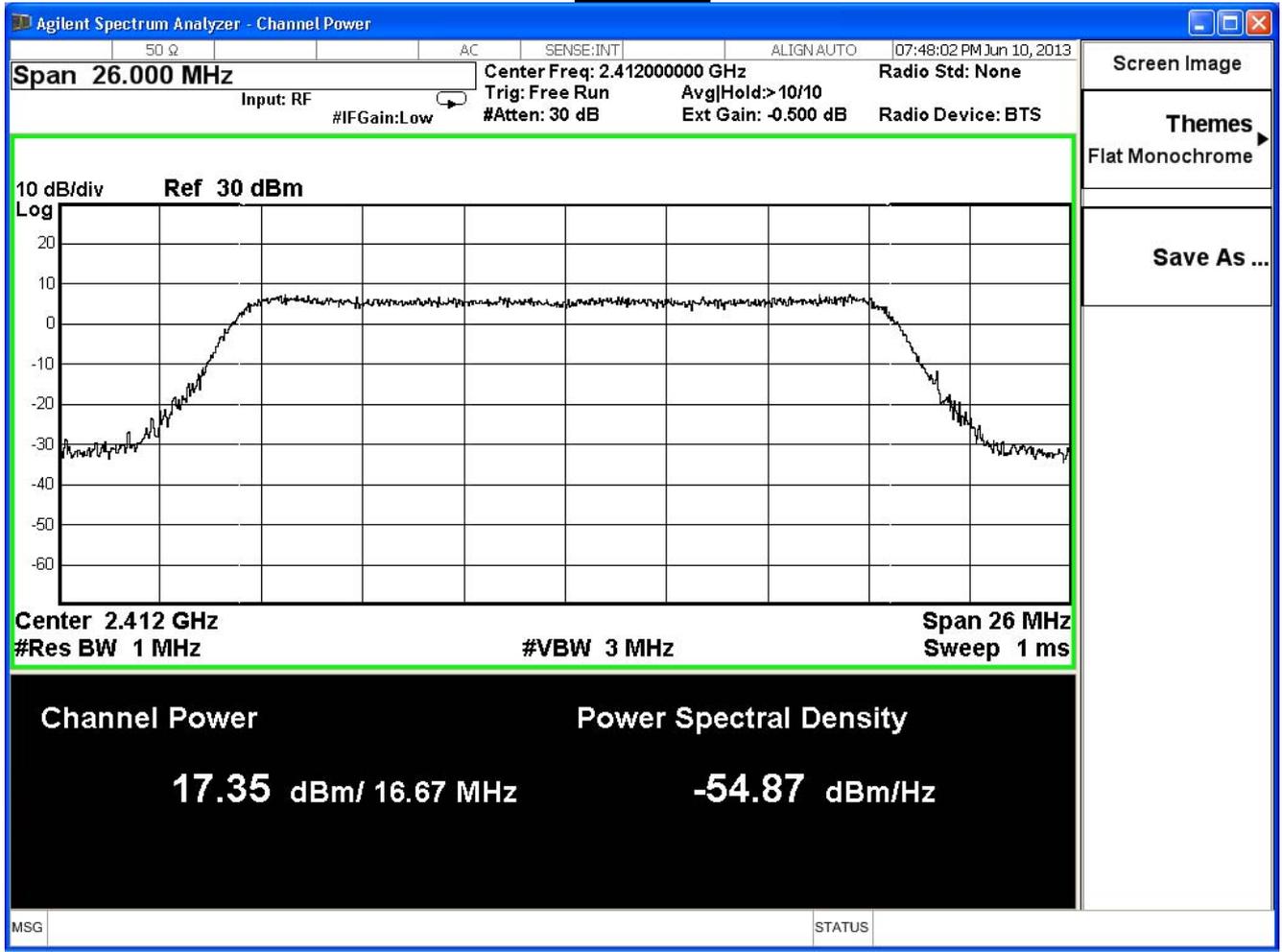
IEEE 802.11g				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	17.35	≤ 30	Pass
6	2437	17.62	≤ 30	Pass
11	2462	17.20	≤ 30	Pass

The worst emission of data rate is 6Mbps.

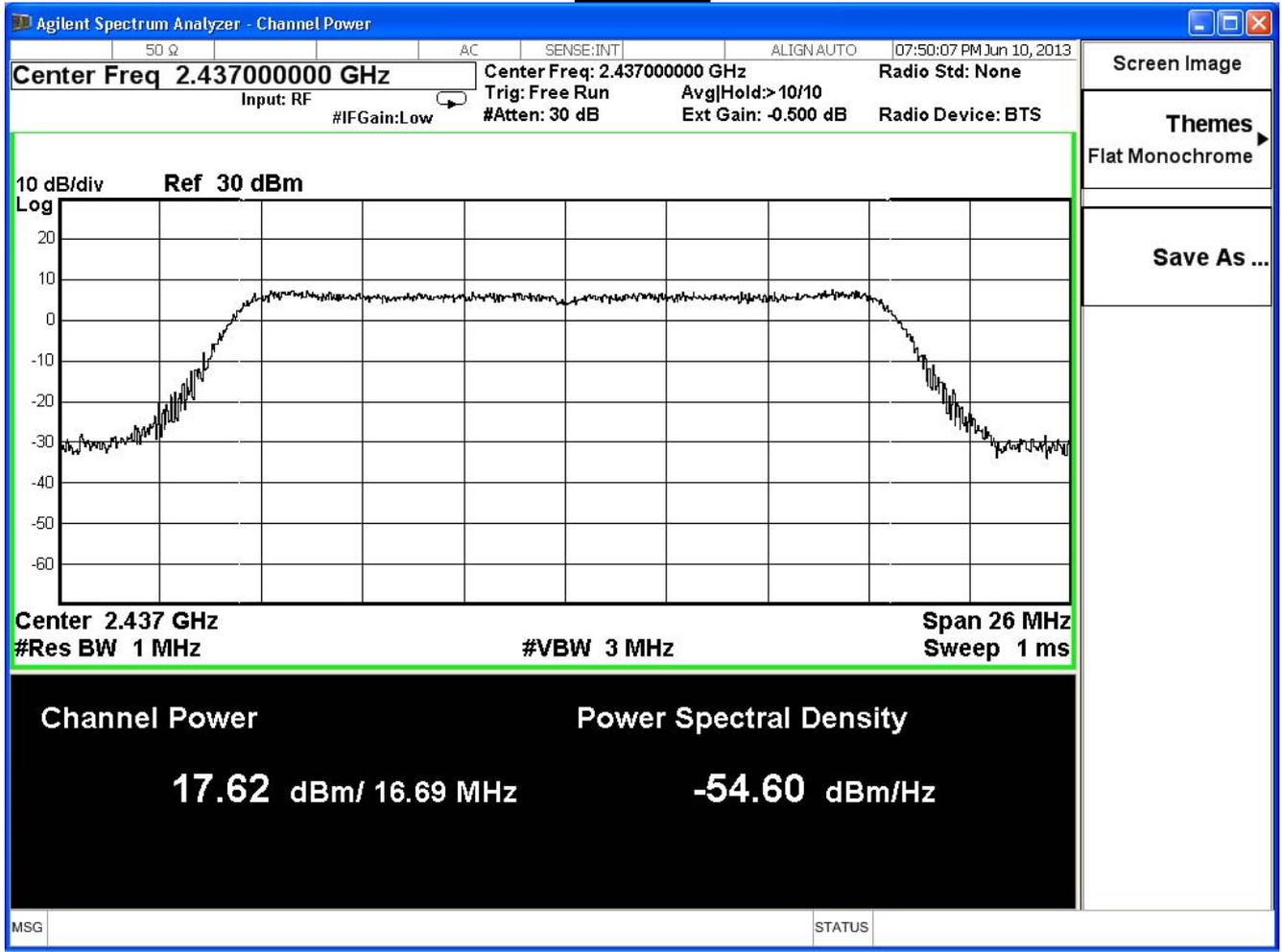
Peak Power Output Value(dBm)									
Channel No.	Frequency (MHz)	Data Rate (Mbps)							Required Limit
		6	12	18	24	36	48	54	
1	2412	17.35	--	--	-	--	--	-	1 Watt=30dBm
6	2437	17.62	17.61	17.60	17.59	17.58	17.57	17.56	1 Watt=30dBm
11	2462	17.20	--	--	-	--	--	-	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

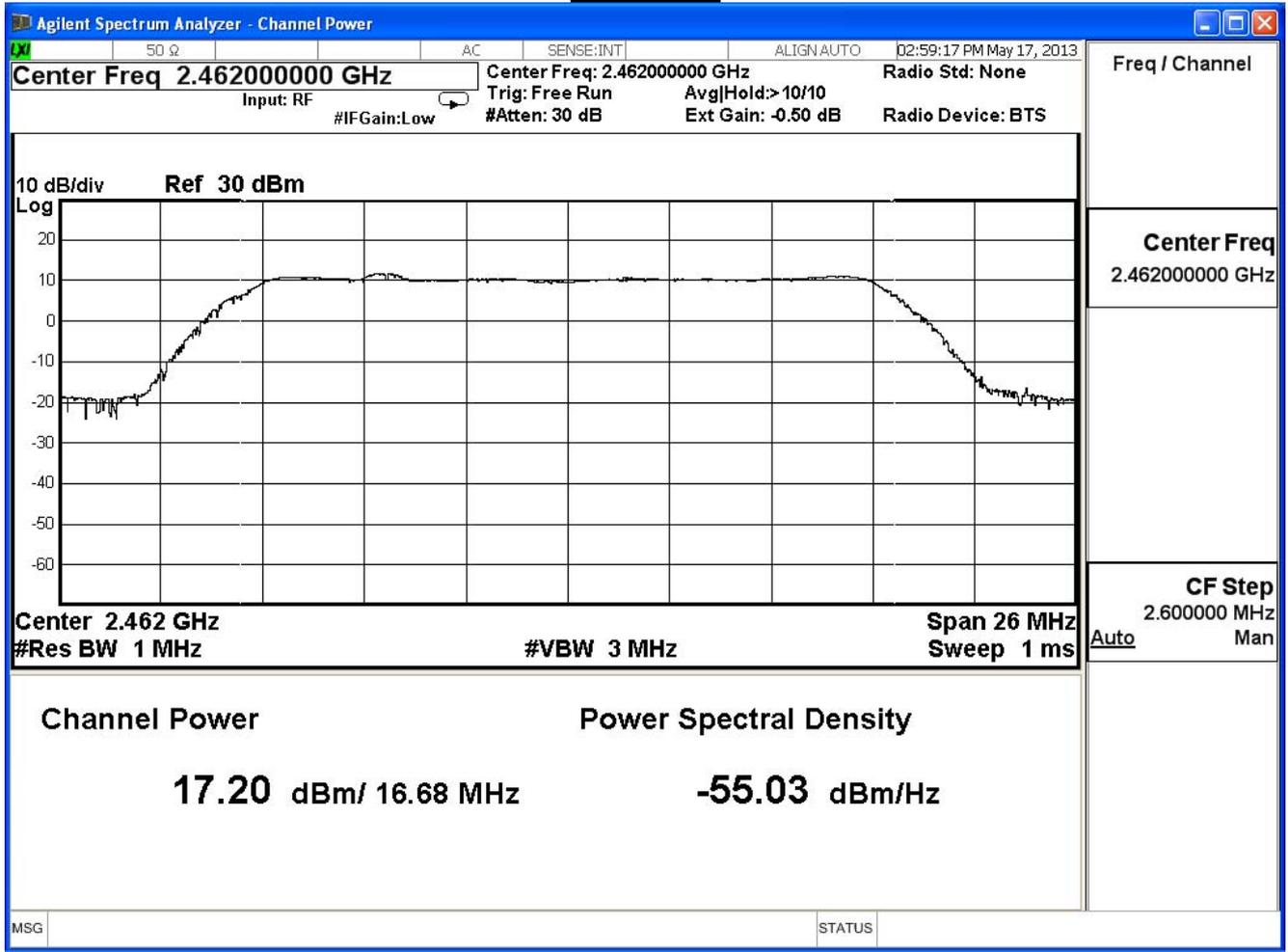
Channel 1



Channel 6



Channel 11



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

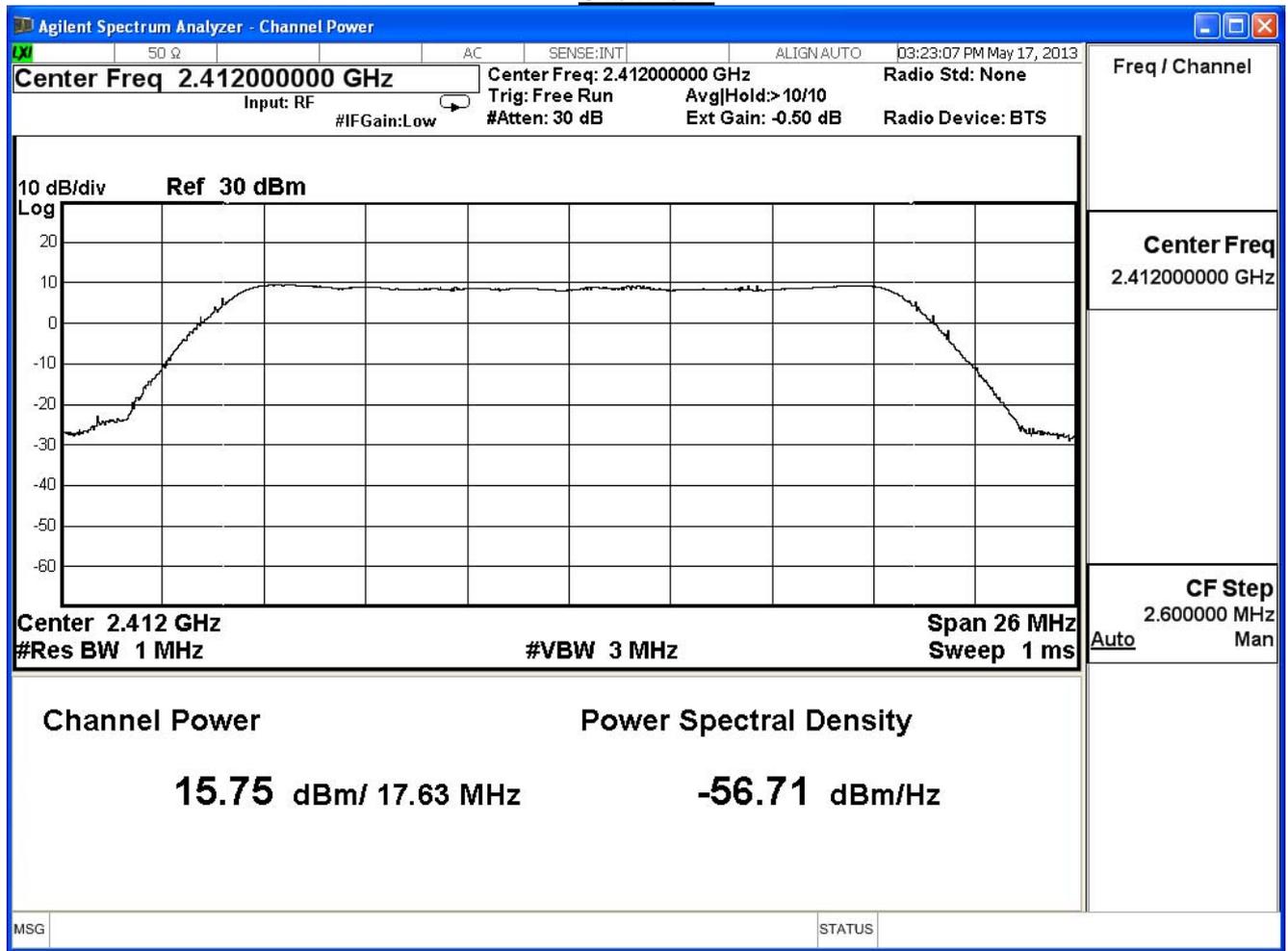
IEEE 802.11n 20MHz (ANT 0)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	15.75	≤ 30	Pass
6	2437	17.55	≤ 30	Pass
11	2462	15.04	≤ 30	Pass

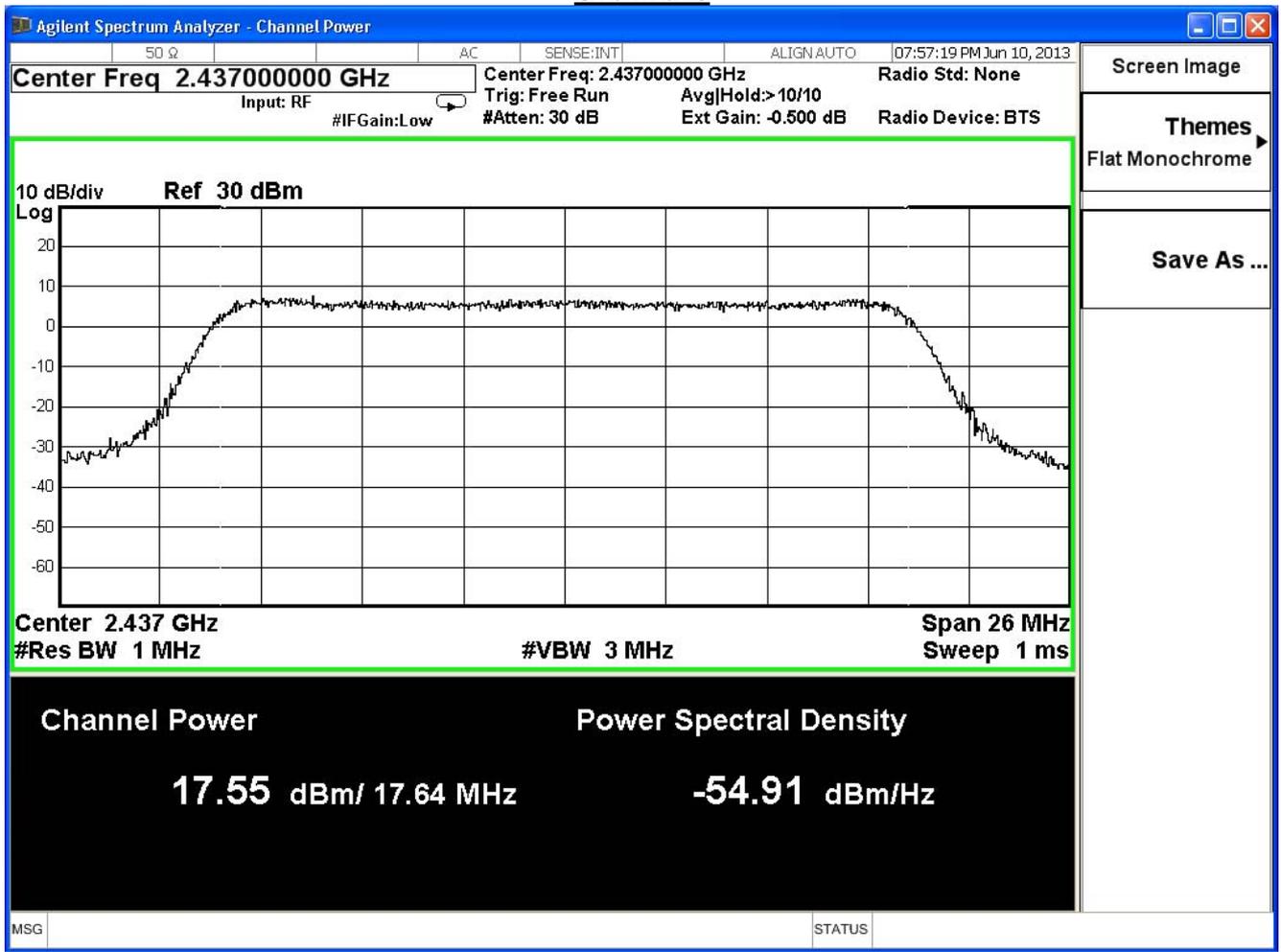
The worst emission of data rate is 19.5 Mbps.

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		19.5	39	58.5	78	117	156	175.5	195	
1	2412	15.75	--	--	-	--	--	-	--	30dBm
6	2437	17.55	17.54	17.53	17.52	17.51	17.50	17.49	17.48	30dBm
11	2462	15.04	--	--	-	--	--	-	--	30dBm

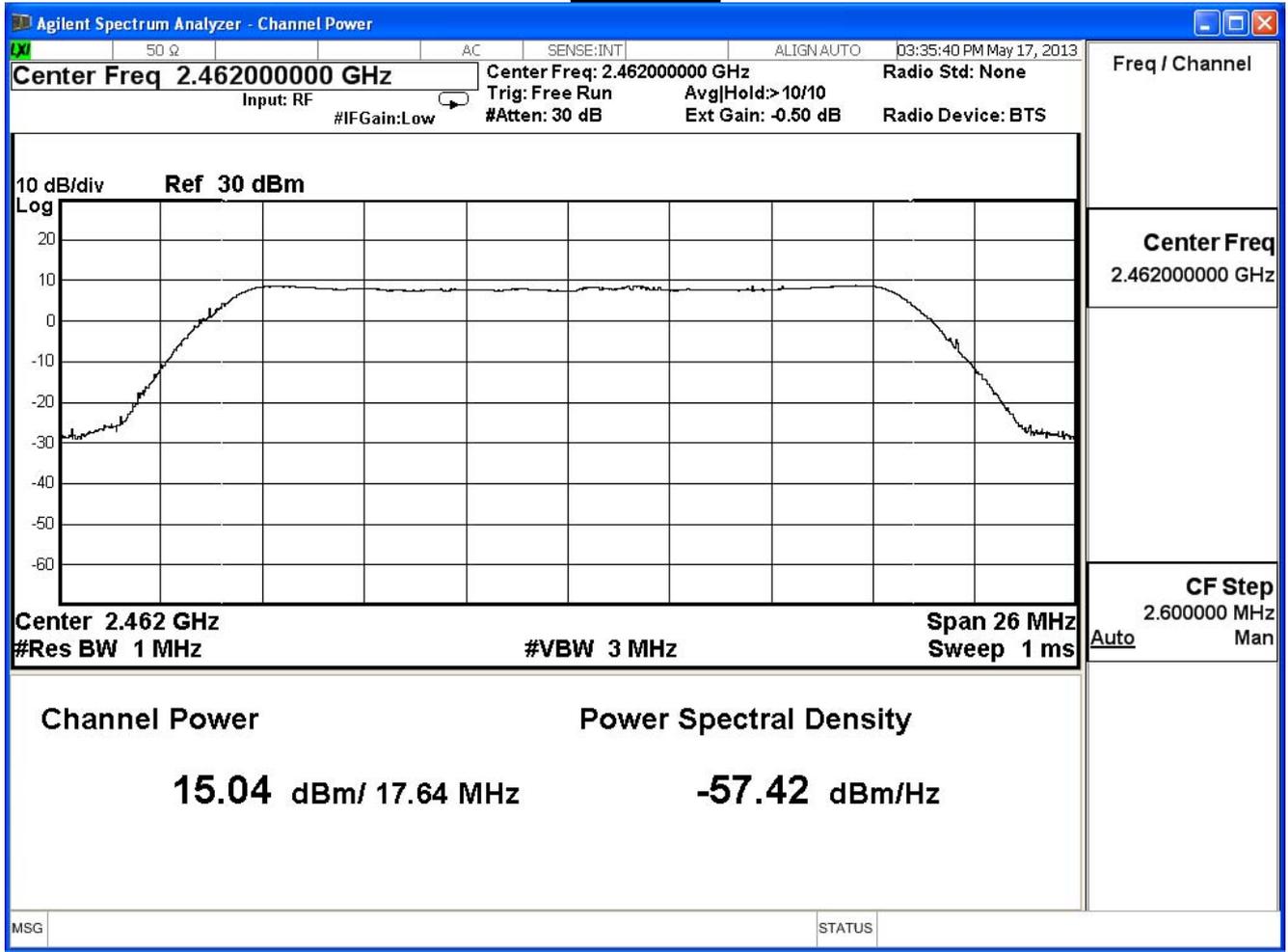
## Channel 1



Channel 6



Channel 11



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

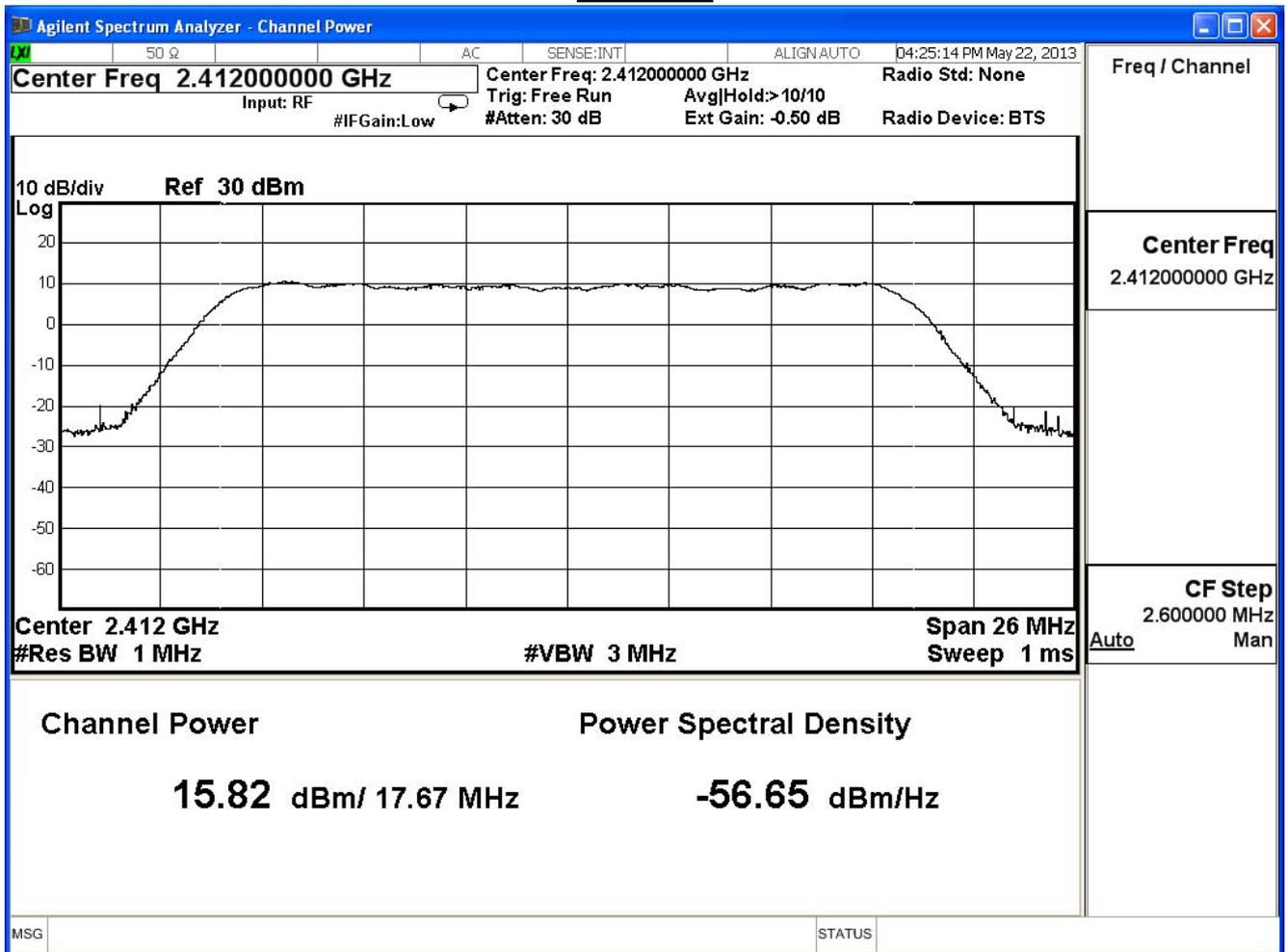
IEEE 802.11n 20MHz (ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	15.82	≤ 30	Pass
6	2437	17.22	≤ 30	Pass
11	2462	15.38	≤ 30	Pass

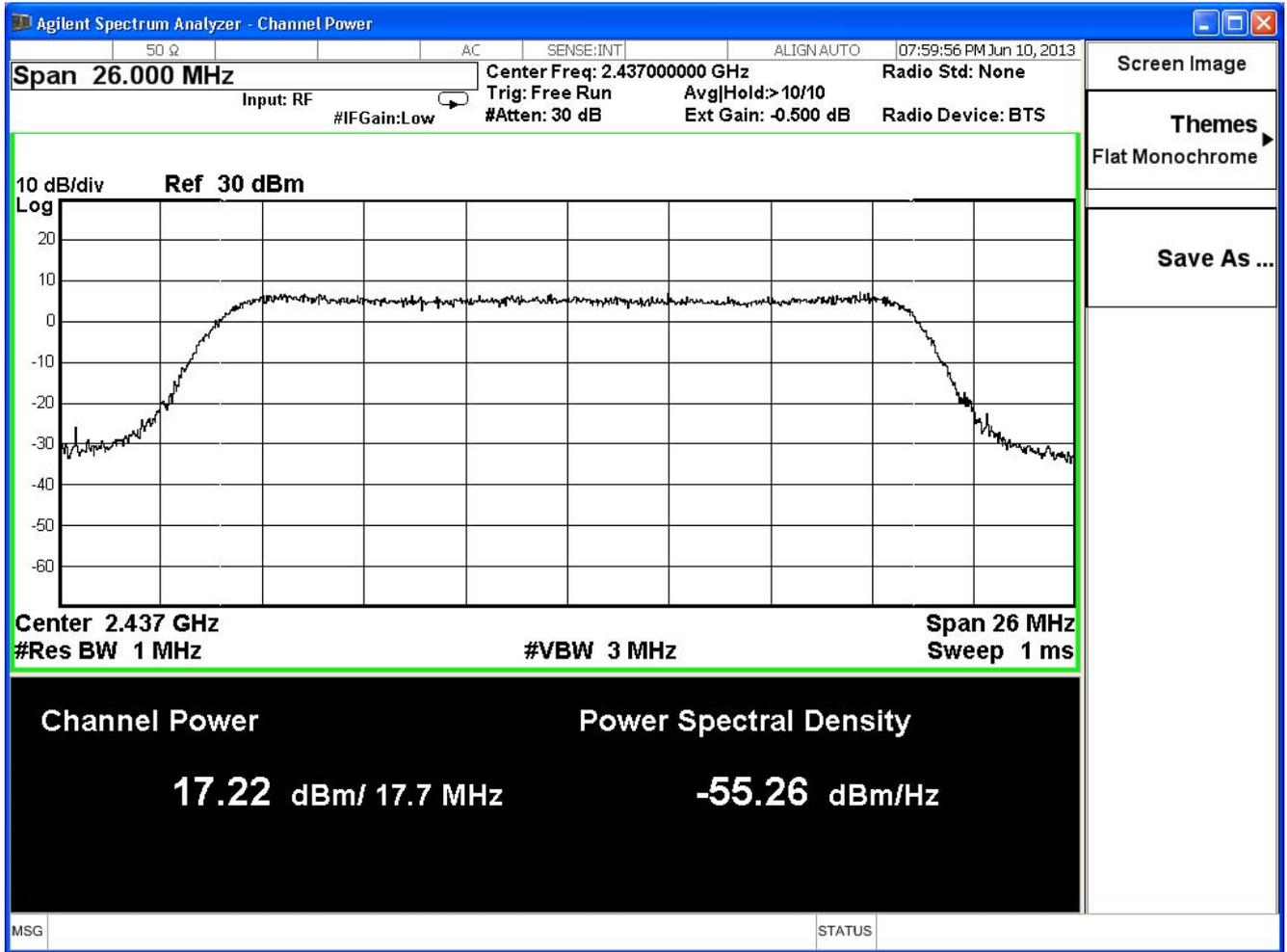
The worst emission of data rate is 19.5 Mbps.

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		19.5	39	58.5	78	117	156	175.5	195	
1	2412	15.82	--	--	-	--	--	-	--	30dBm
6	2437	17.22	17.21	17.20	17.19	17.18	17.17	17.16	17.15	30dBm
11	2462	15.38	--	--	-	--	--	-	--	30dBm

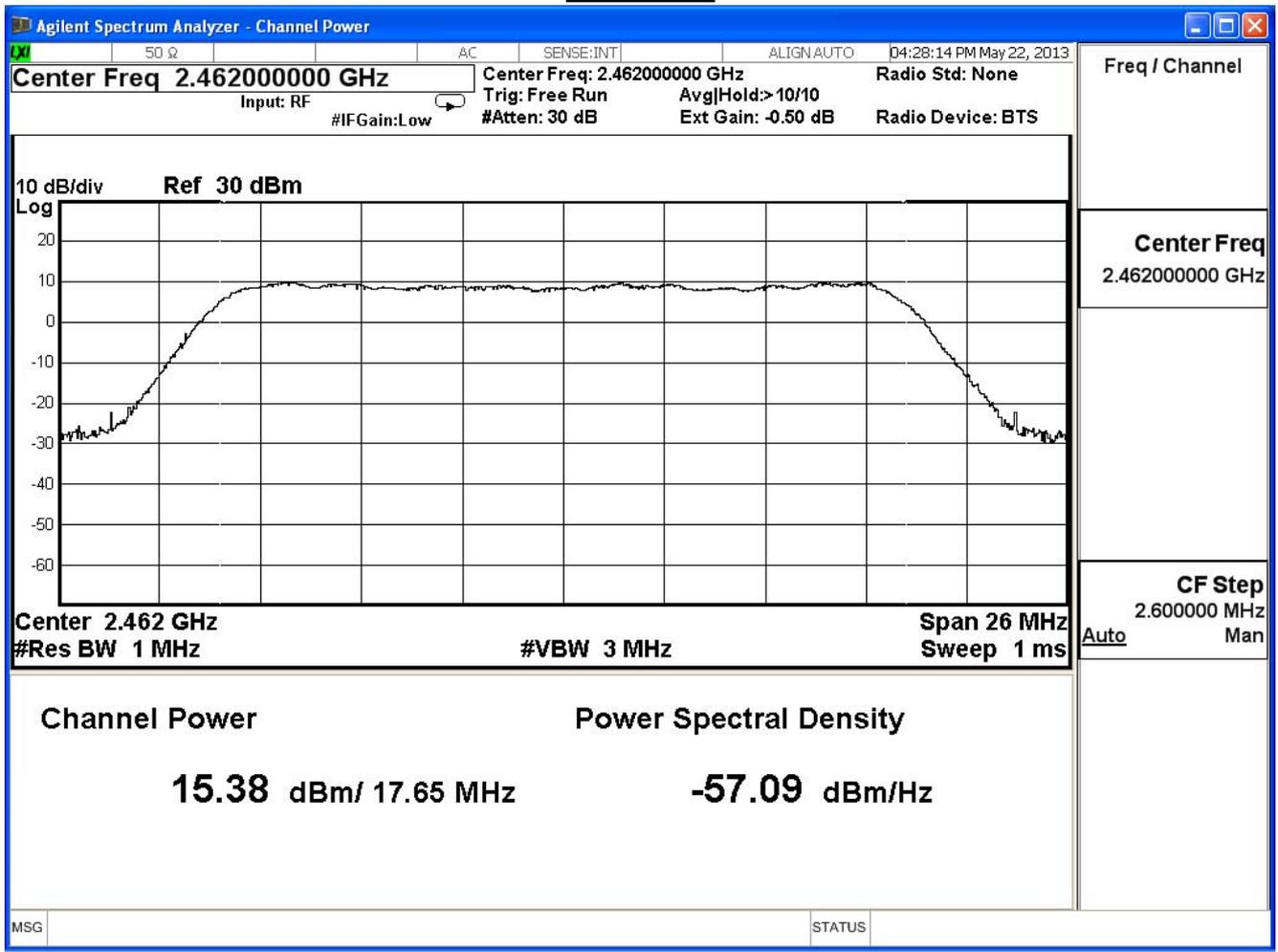
Channel 1



**Channel 6**



Channel 11



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE 802.11n 20MHz (ANT 0+1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	18.80	≤ 30	Pass
6	2437	20.40	≤ 30	Pass
11	2462	18.22	≤ 30	Pass

The worst emission of data rate is 19.5 Mbps.

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		19.5	39	58.5	78	117	156	175.5	195	
1	2412	18.80	--	--	-	--	--	-	--	30dBm
6	2437	20.40	20.39	20.38	20.37	20.36	20.35	20.34	20.33	30dBm
11	2462	18.22	--	--	-	--	--	-	--	30dBm

Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

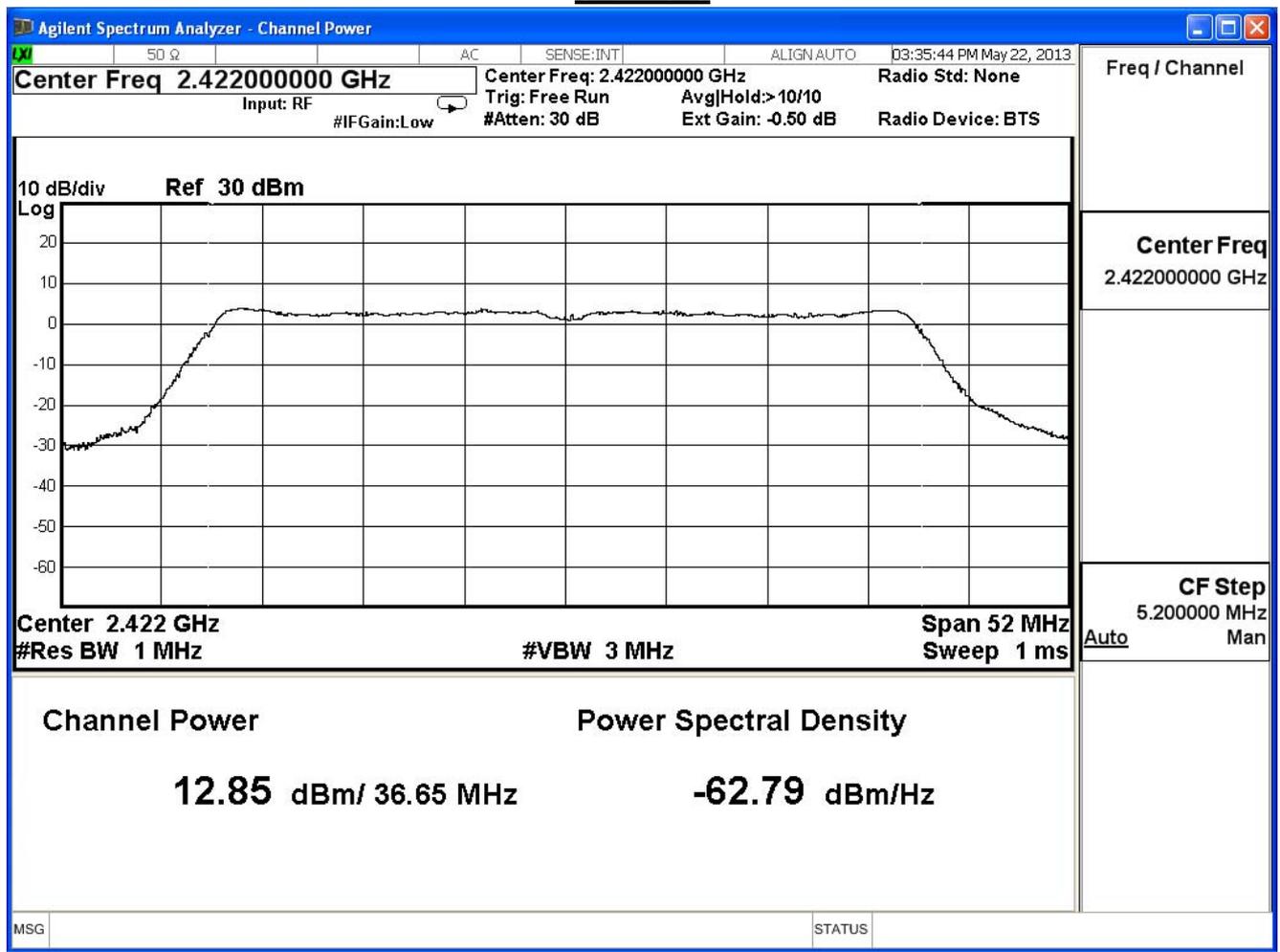
IEEE802.11n 40MHz (ANT 0)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
3	2422	12.85	≤ 30	Pass
6	2437	17.07	≤ 30	Pass
9	2452	12.47	≤ 30	Pass

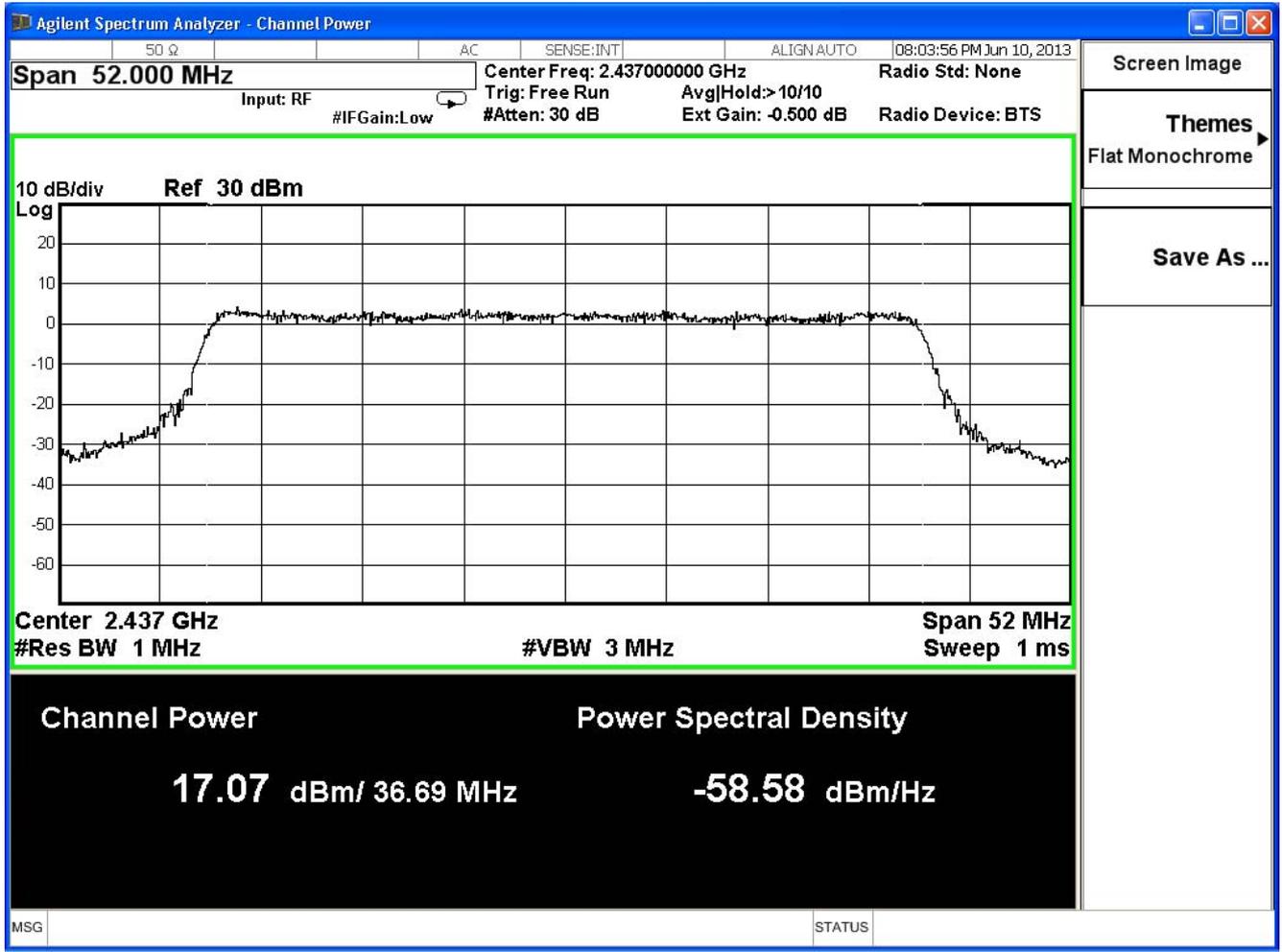
The worst emission of data rate is 40.5Mbps

		Peak Power Output (dBm)								Required Limit
MCS Index		16	17	18	19	20	21	22	23	
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
3	2422	12.85	--	--	-	--	--	-	--	30dBm
6	2437	17.07	17.06	17.05	17.04	17.03	17.02	17.01	17.00	30dBm
9	2452	12.47	--	--	-	--	--	-	--	30dBm

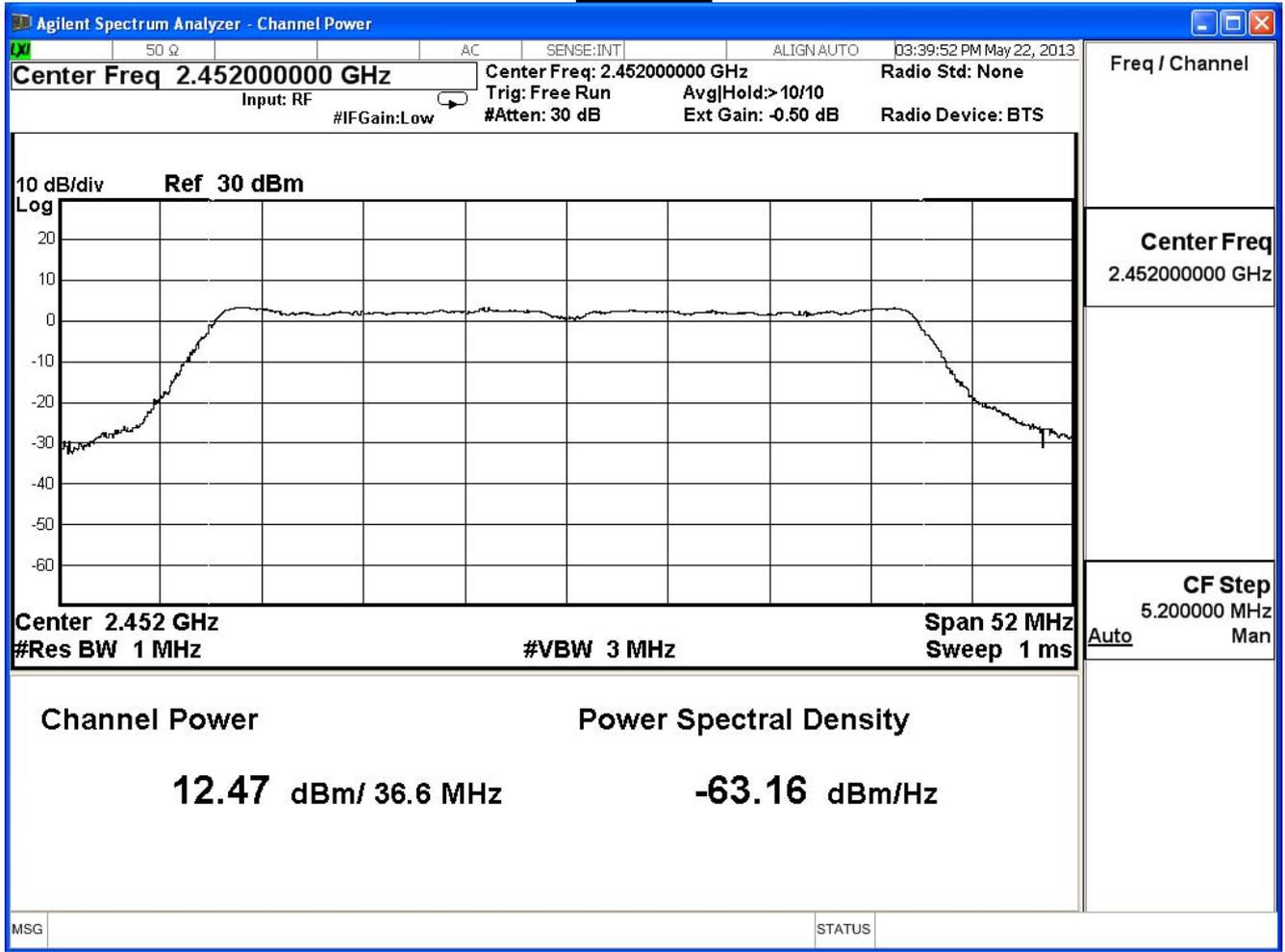
**Channel 3**



**Channel 6**



Channel 9



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

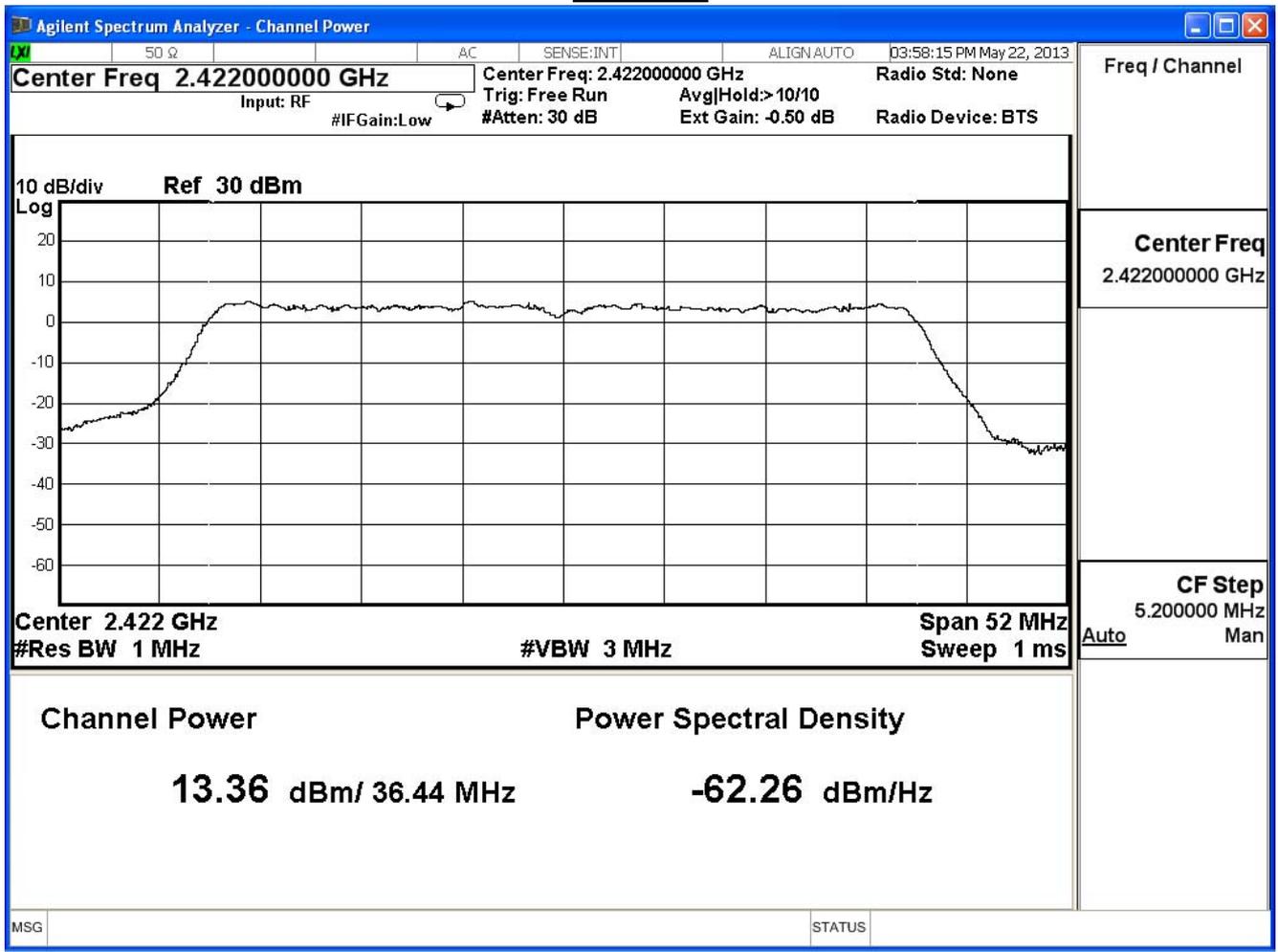
IEEE802.11n 40MHz (ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
3	2422	13.36	≤ 30	Pass
6	2437	17.29	≤ 30	Pass
9	2452	12.75	≤ 30	Pass

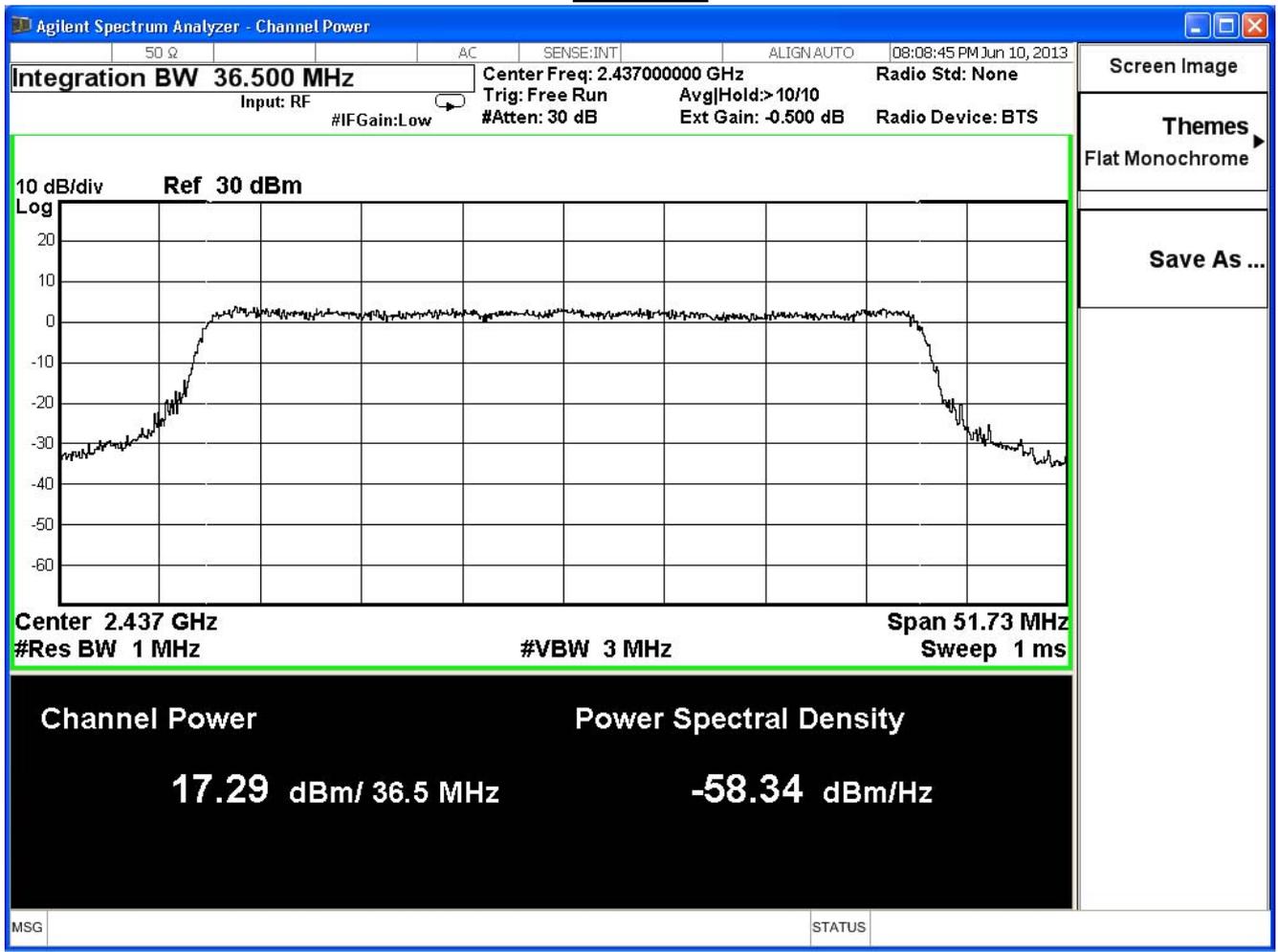
The worst emission of data rate is 40.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
3	2422	13.36	--	--	-	--	--	-	--	30dBm
6	2437	17.29	17.28	17.27	17.26	17.25	17.24	17.23	17.22	30dBm
9	2452	12.75	--	--	-	--	--	-	--	30dBm

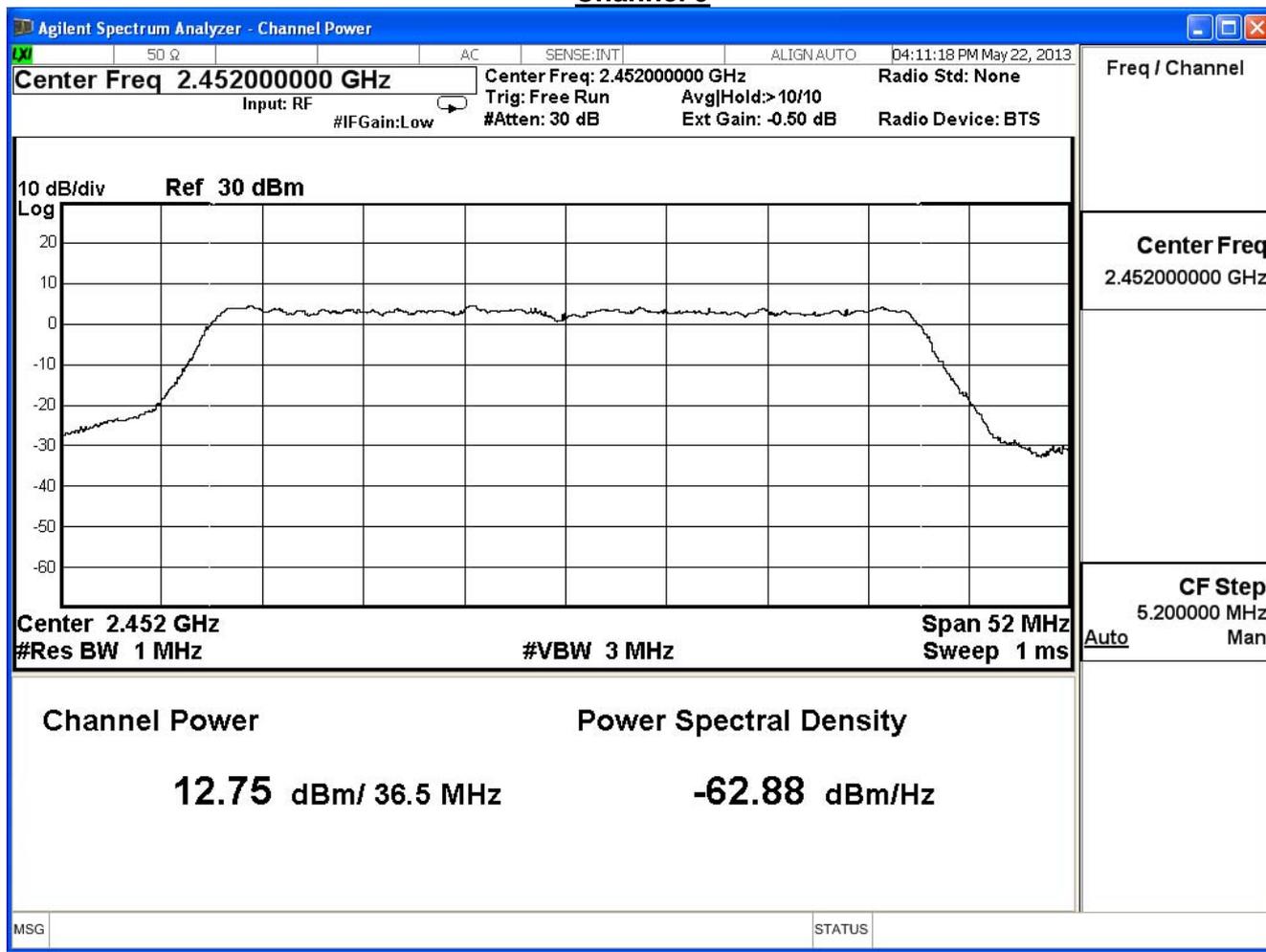
**Channel 3**



**Channel 6**



## Channel 9



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11n 40MHz (ANT 0+1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
3	2422	16.12	≤ 30	Pass
6	2437	20.19	≤ 30	Pass
9	2452	15.62	≤ 30	Pass

The worst emission of data rate is 40.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
3	2422	16.12	--	--	-	--	--	-	--	30dBm
6	2437	20.19	20.18	20.17	20.16	20.15	20.14	20.13	20.12	30dBm
9	2452	15.62	--	--		-	--	-	--	30dBm

Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

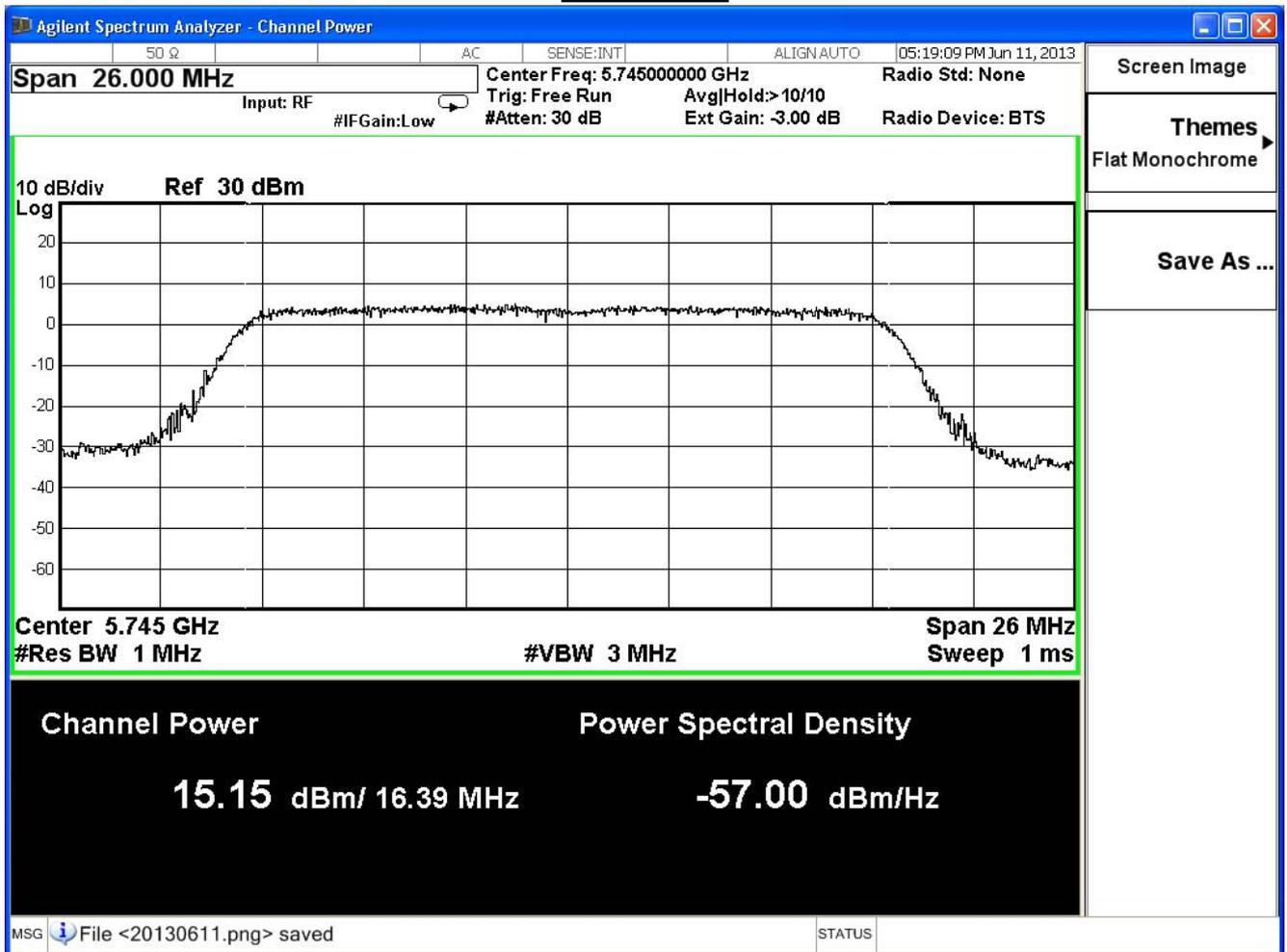
IEEE802.11a (ANT 0)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
149	5745	15.15	≤ 30	Pass
157	5785	15.23	≤ 30	Pass
165	5825	15.00	≤ 30	Pass

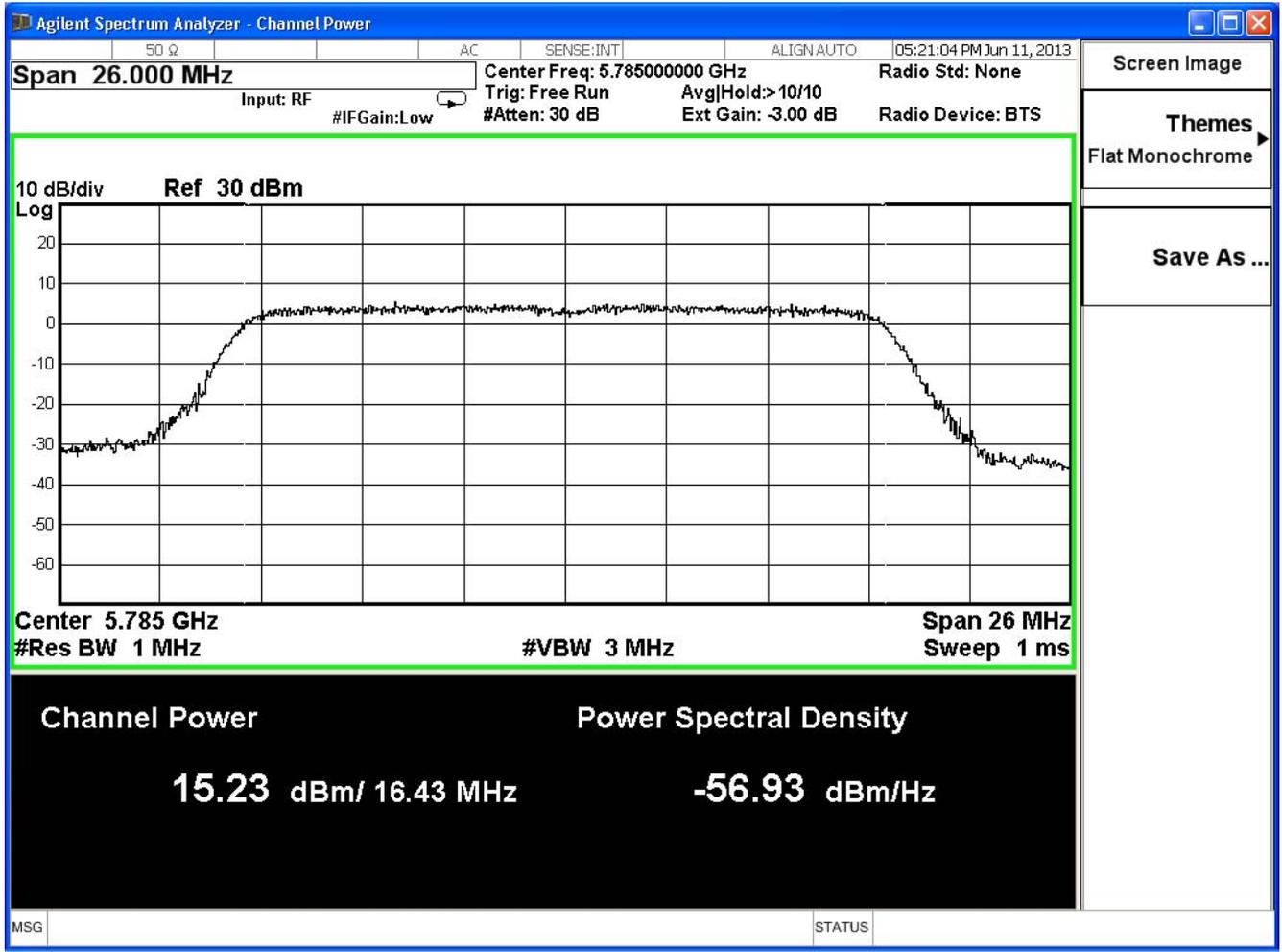
The worst emission of data rate is 6Mbps

Peak Power Output Value(dBm)									
Channel No.	Frequency (MHz)	Data Rate (Mbps)							Required Limit
		6	12	18	24	36	48	54	
149	5745	15.15	--	--	--	--	--	--	1 Watt=30dBm
157	5785	15.23	15.22	15.21	15.20	15.19	15.18	15.17	1 Watt=30dBm
165	5825	15.00	--	--	--	--	--	--	1 Watt=30dBm

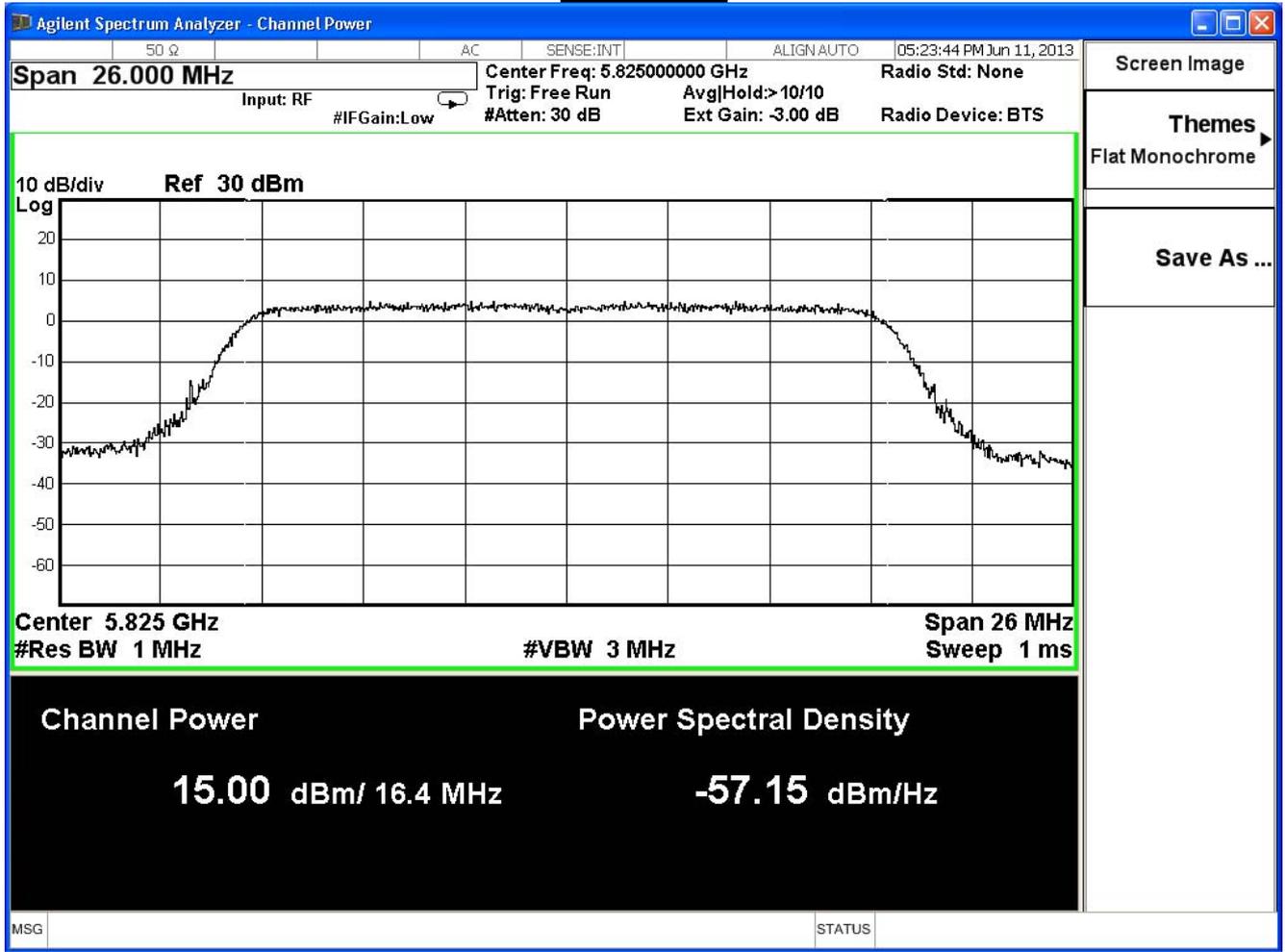
**Channel 149**



**Channel 157**



Channel 165



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11 n 20MHz (ANT 0)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
149	5745	15.26	≤ 29.49	Pass
157	5785	15.29	≤ 29.49	Pass
165	5825	15.20	≤ 29.49	Pass

The worst emission of data rate is 19.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		19.5	39	58.5	78	117	156	175.5	195	
149	5745	15.26	--	--	--	--	--	--	--	29.49dBm
157	5785	15.29	15.28	15.27	15.26	15.25	15.24	15.23	15.22	29.49dBm
165	5825	15.20	--	--	--	--	--	--	--	29.49dBm

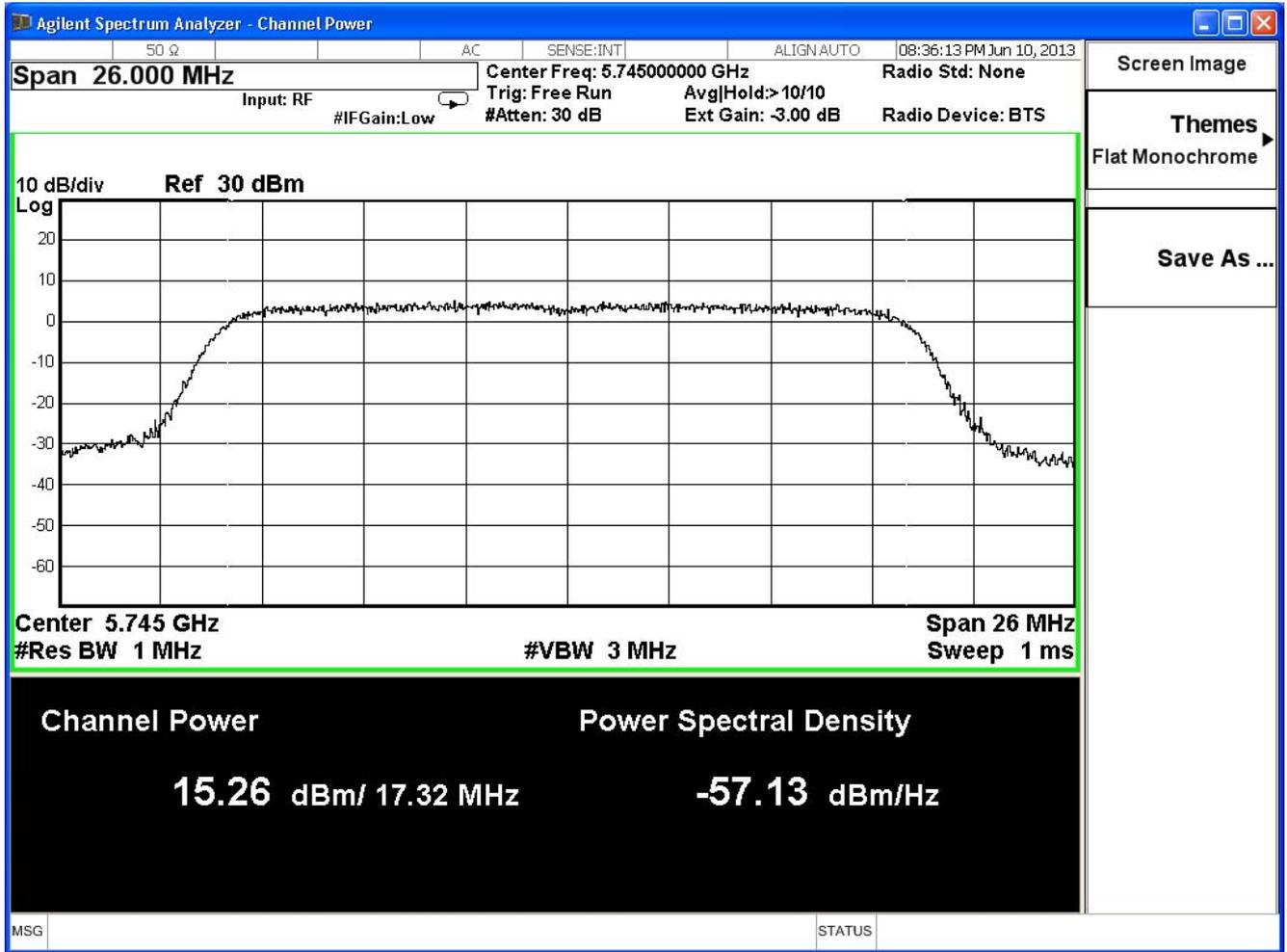
Note:

Measure Level =Reading value + cable loss

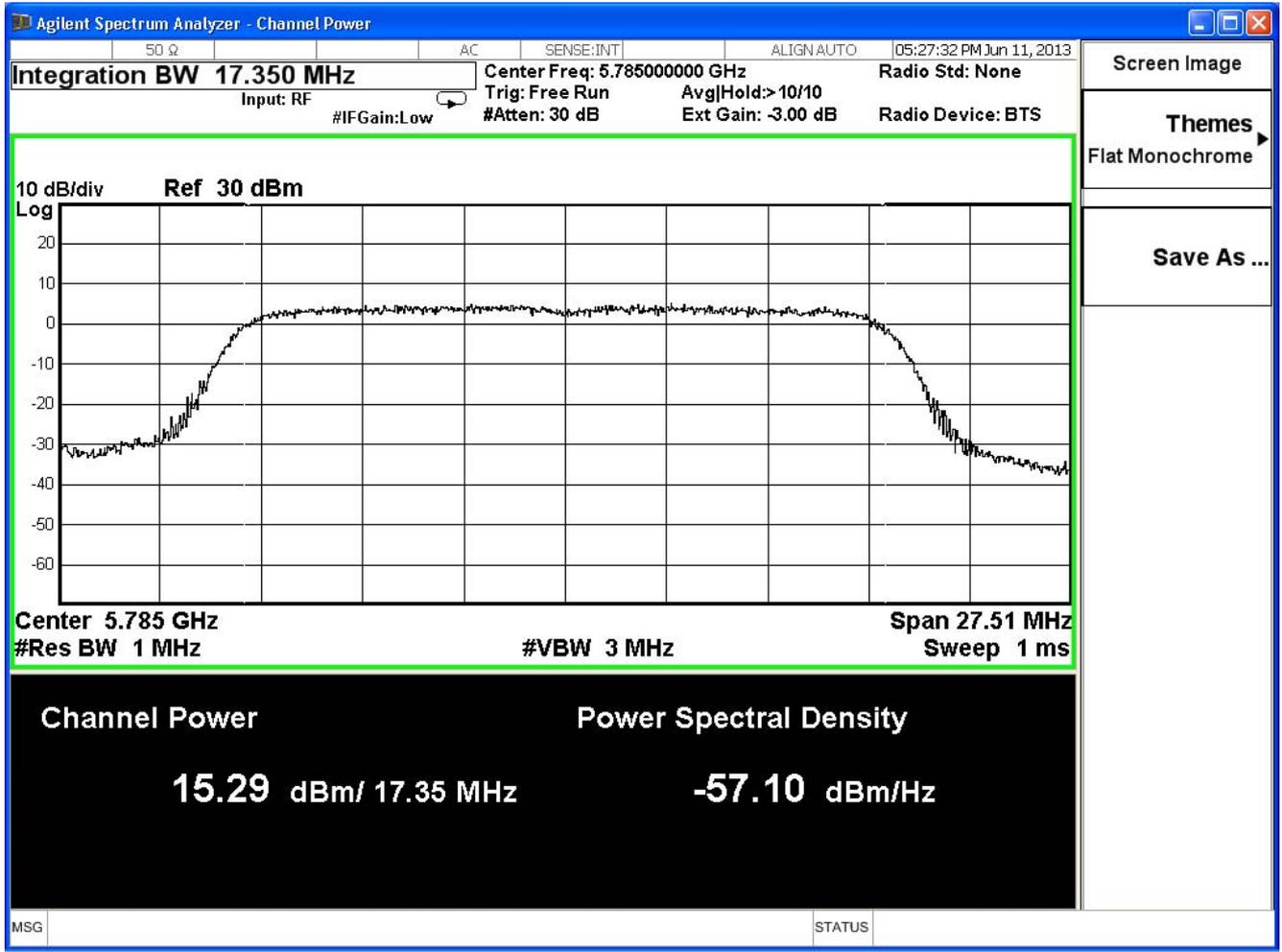
Required Limit =10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi

Required Limit = 30dBm - (6.51dBi - 6dBi) = 30 - 0.51 = 29.49 dBm

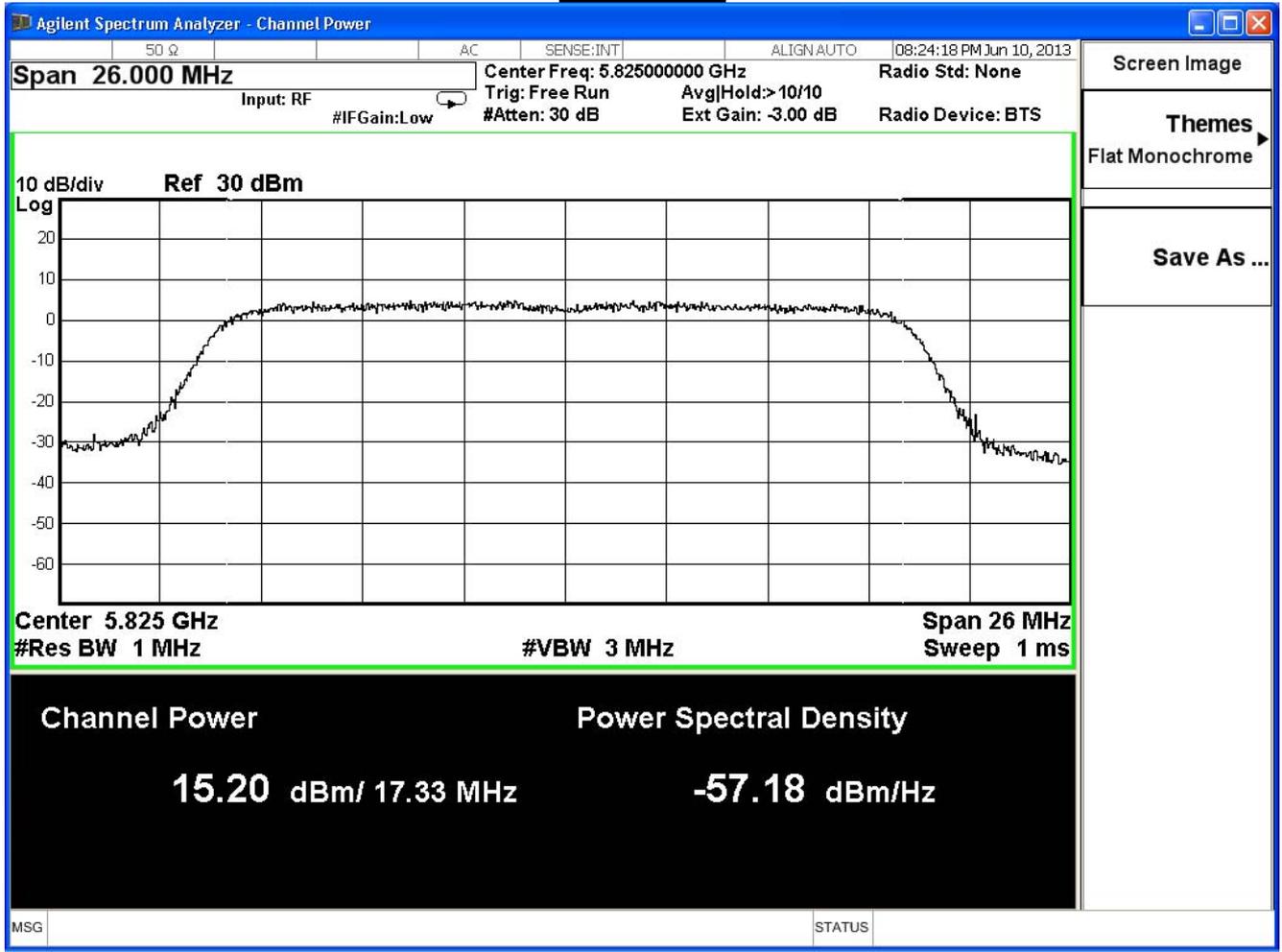
**Channel 149**



**Channel 157**



Channel 165



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11 n 20MHz (ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
149	5745	15.44	≤ 29.49	Pass
157	5785	15.30	≤ 29.49	Pass
165	5825	15.56	≤ 29.49	Pass

The worst emission of data rate is 19.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		19.5	39	58.5	78	117	156	175.5	195	
149	5745	15.44	--	--	--	--	--	--	--	29.49dBm
157	5785	15.30	15.29	15.28	15.27	15.26	15.25	15.24	15.23	29.49dBm
165	5825	15.56	--	--	--	--	--	--	--	29.49dBm

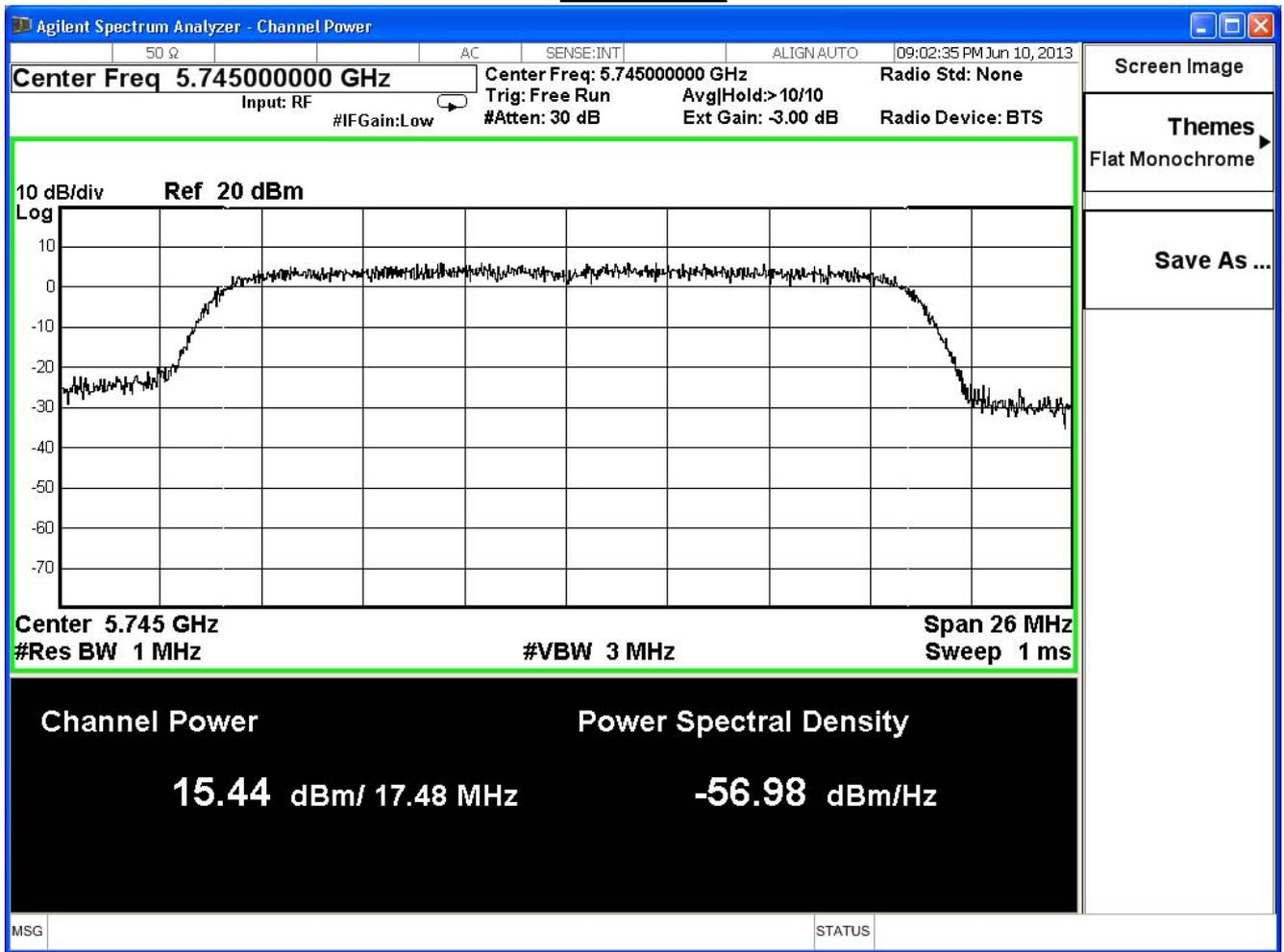
Note:

Measure Level =Reading value + cable loss

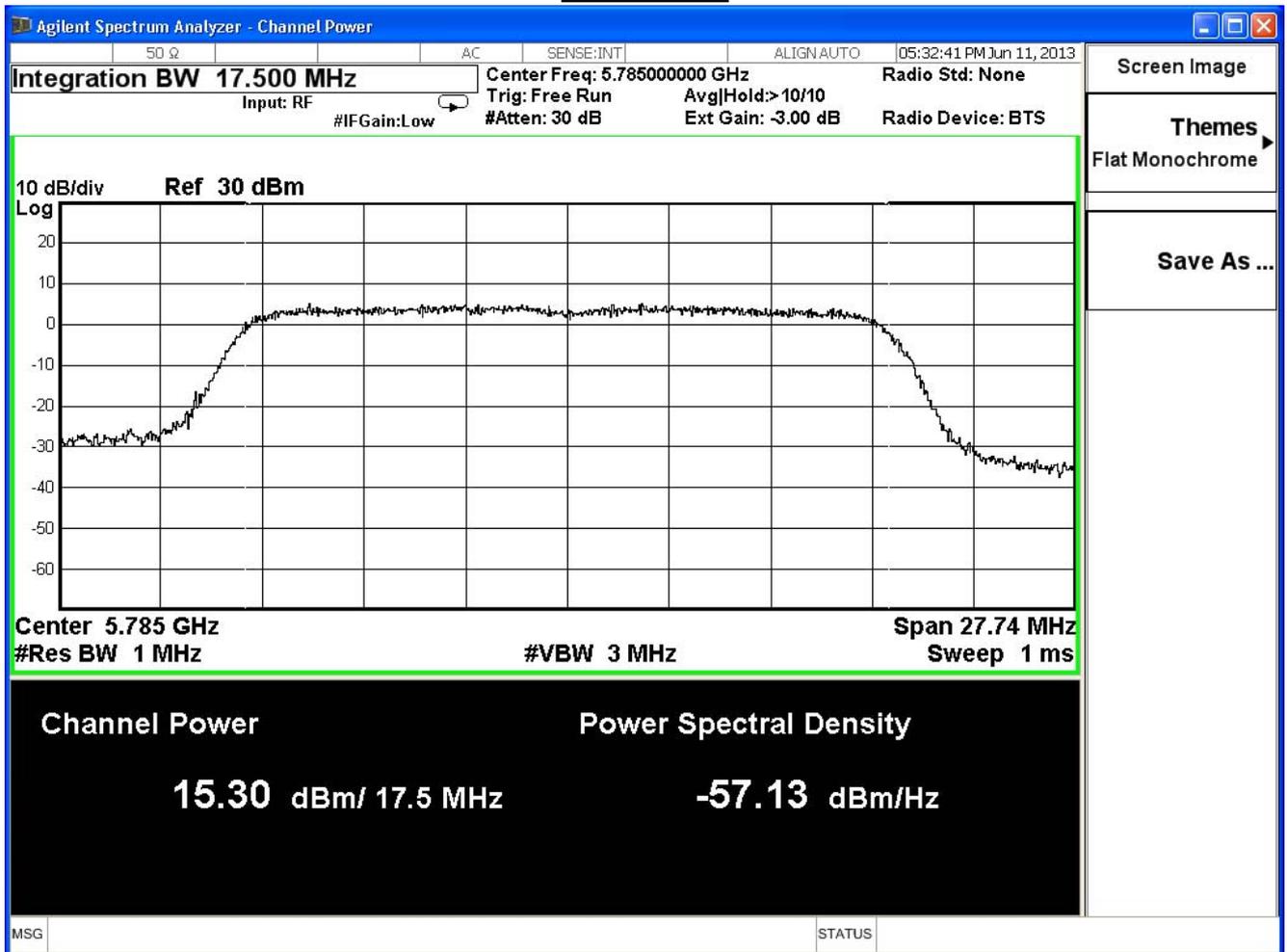
Required Limit =10log(Ant N)+max Gain = 10log(2)+3.5 =6.51dBi

Required Limit = 30dBm - (6.51dBi - 6dBi) = 30 - 0.51 = 29.49 dBm

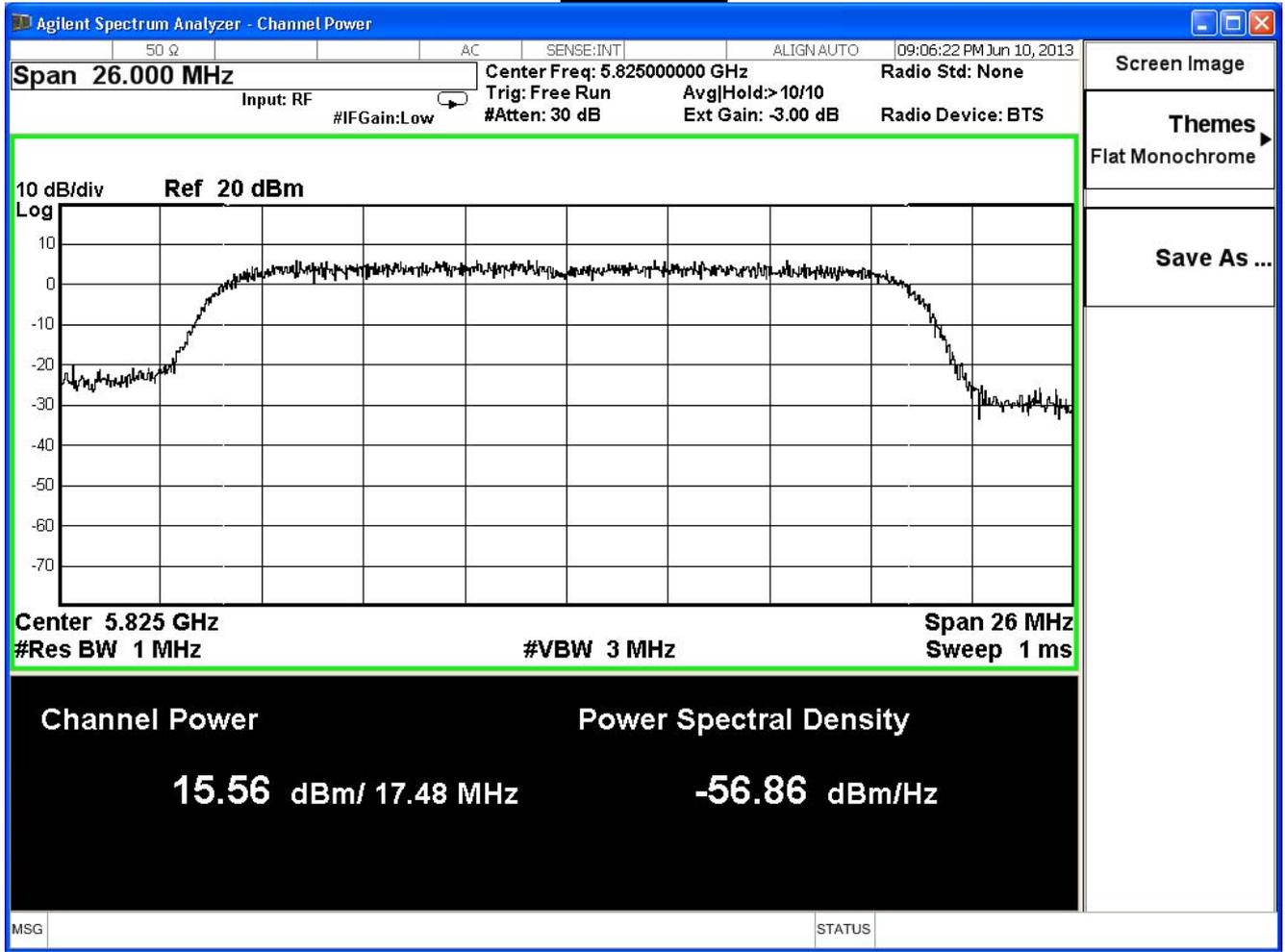
**Channel 149**



**Channel 157**



Channel 165



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11n 20MHz (ANT 0+1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
149	5745	18.36	≤ 29.49	Pass
157	5785	18.31	≤ 29.49	Pass
165	5825	18.39	≤ 29.49	Pass

The worst emission of data rate is 19.5Mbps

		Peak Power Output (dBm)								Required Limit
MCS Index		8	9	10	11	12	13	14	15	
Channel No	Frequency (MHz)	Data Rate								Required Limit
		19.5	39	58.5	78	117	156	175.5	195	
149	5745	18.36	--	--	--	--	--	--	--	29.49dBm
157	5785	18.31	18.30	18.29	18.27	18.26	18.25	18.24	18.23	29.49dBm
165	5825	18.39	--	--	--	--	--	--	--	29.49dBm

Note:

Measure Level = Reading value + cable loss

Required Limit =  $10\log(\text{Ant N}) + \text{max Gain} = 10\log(2) + 3.5 = 6.51\text{dBi}$

Required Limit =  $30\text{dBm} - (6.51\text{dBi} - 6\text{dBi}) = 30 - 0.51 = 29.49\text{ dBm}$

Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11 n 40MHz (ANT 0)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
151	5755	15.79	≤ 29.49	Pass
159	5795	15.19	≤ 29.49	Pass

The worst emission of data rate is 40.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
151	5755	15.79	15.78	15.77	15.76	15.75	15.74	15.73	15.72	29.49dBm
159	5795	15.19	--	--	--	--	--	--	--	29.49dBm

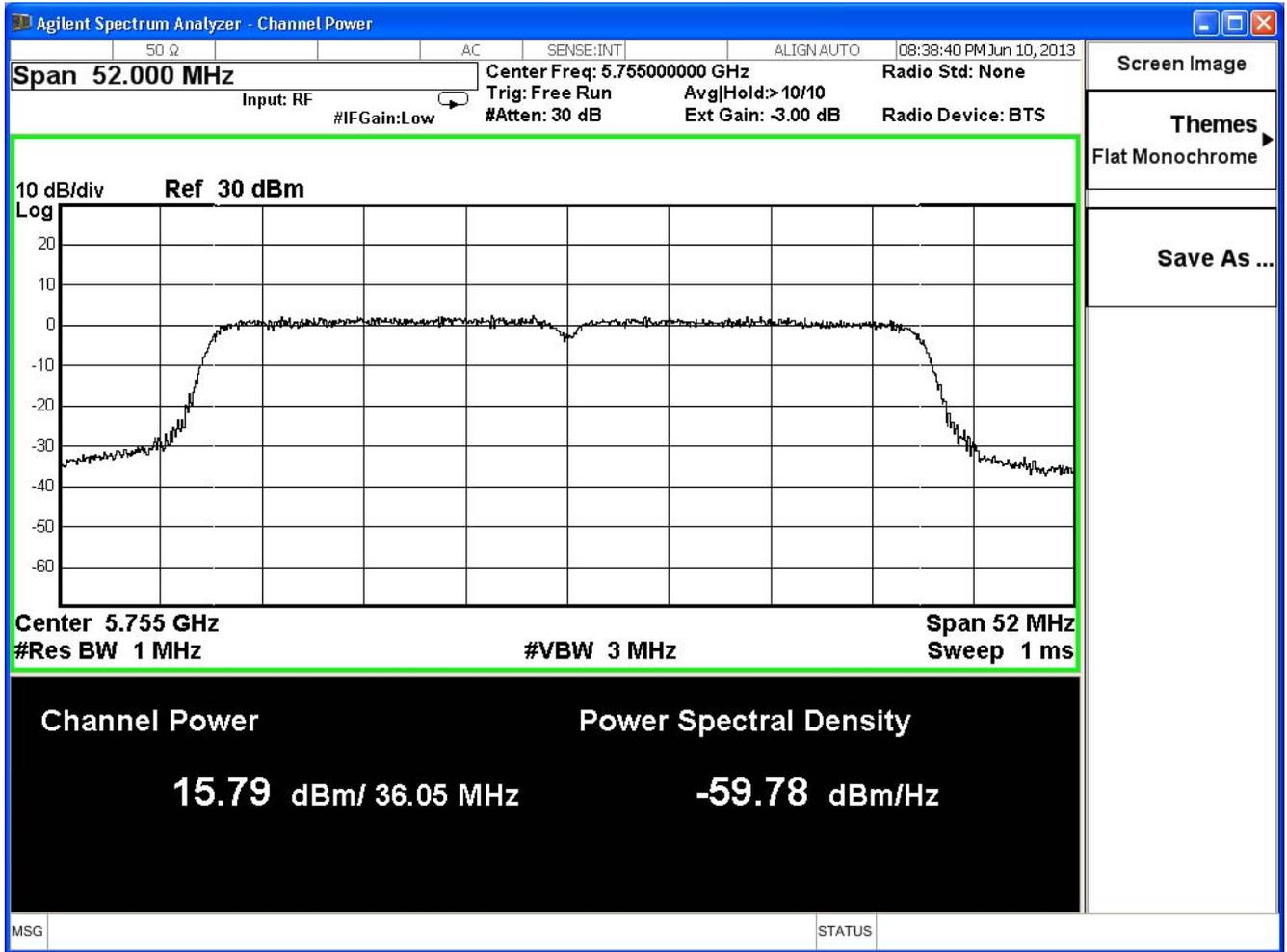
Note:

Measure Level = Reading value + cable loss

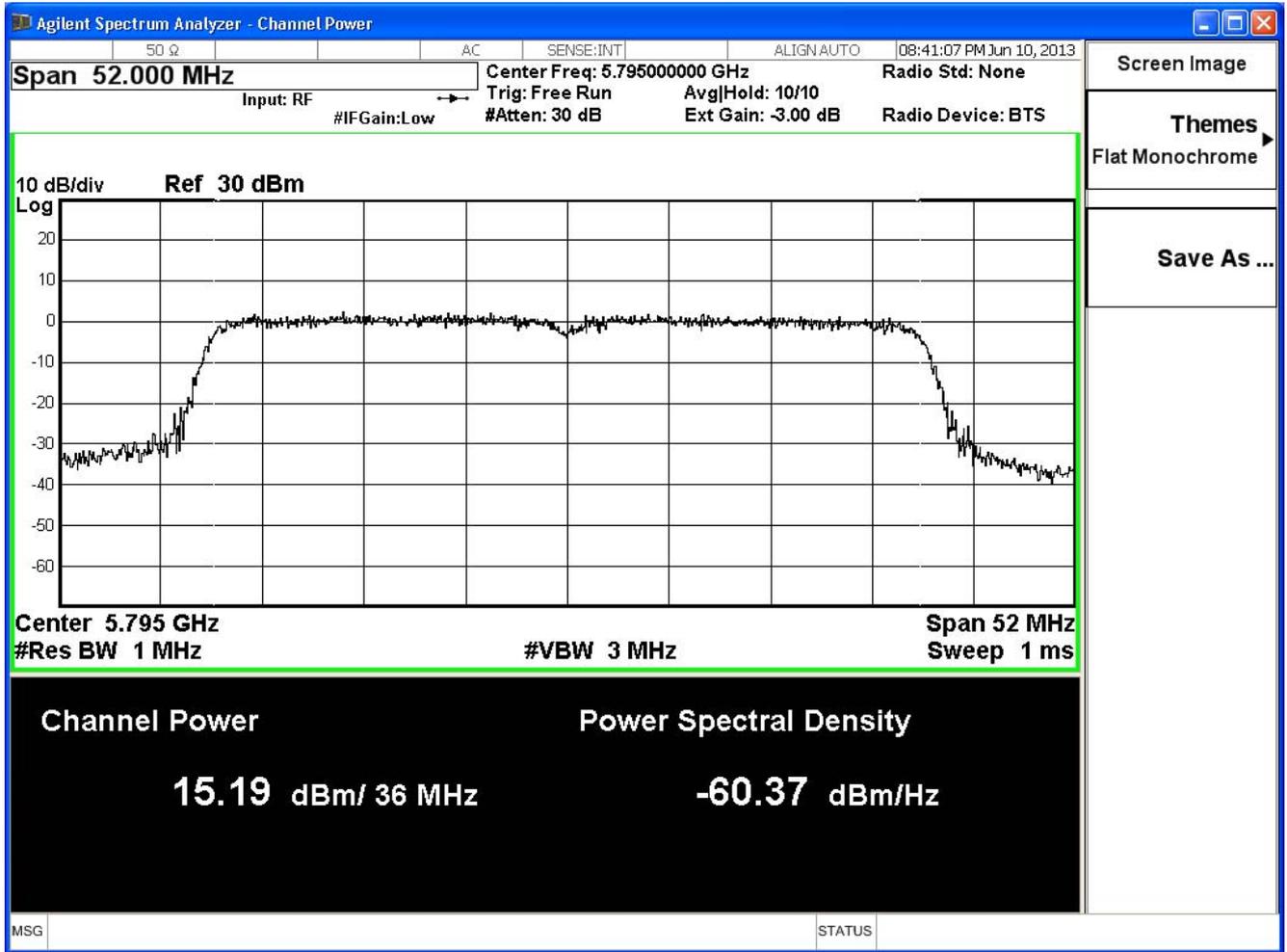
Required Limit =  $10\log(\text{Ant N}) + \text{max Gain} = 10\log(2) + 3.5 = 6.51\text{dBi}$

Required Limit =  $30\text{dBm} - (6.51\text{dBi} - 6\text{dBi}) = 30 - 0.51 = 29.49\text{ dBm}$

**Channel 151**



**Channel 159**



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11 n 40MHz (ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
151	5755	15.83	≤ 29.49	Pass
159	5795	15.75	≤ 29.49	Pass

The worst emission of data rate is 40.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
151	5755	15.83	15.82	15.81	15.80	15.79	15.78	15.77	15.76	29.49dBm
159	5795	15.75	--	--	--	--	--	--	--	29.49dBm

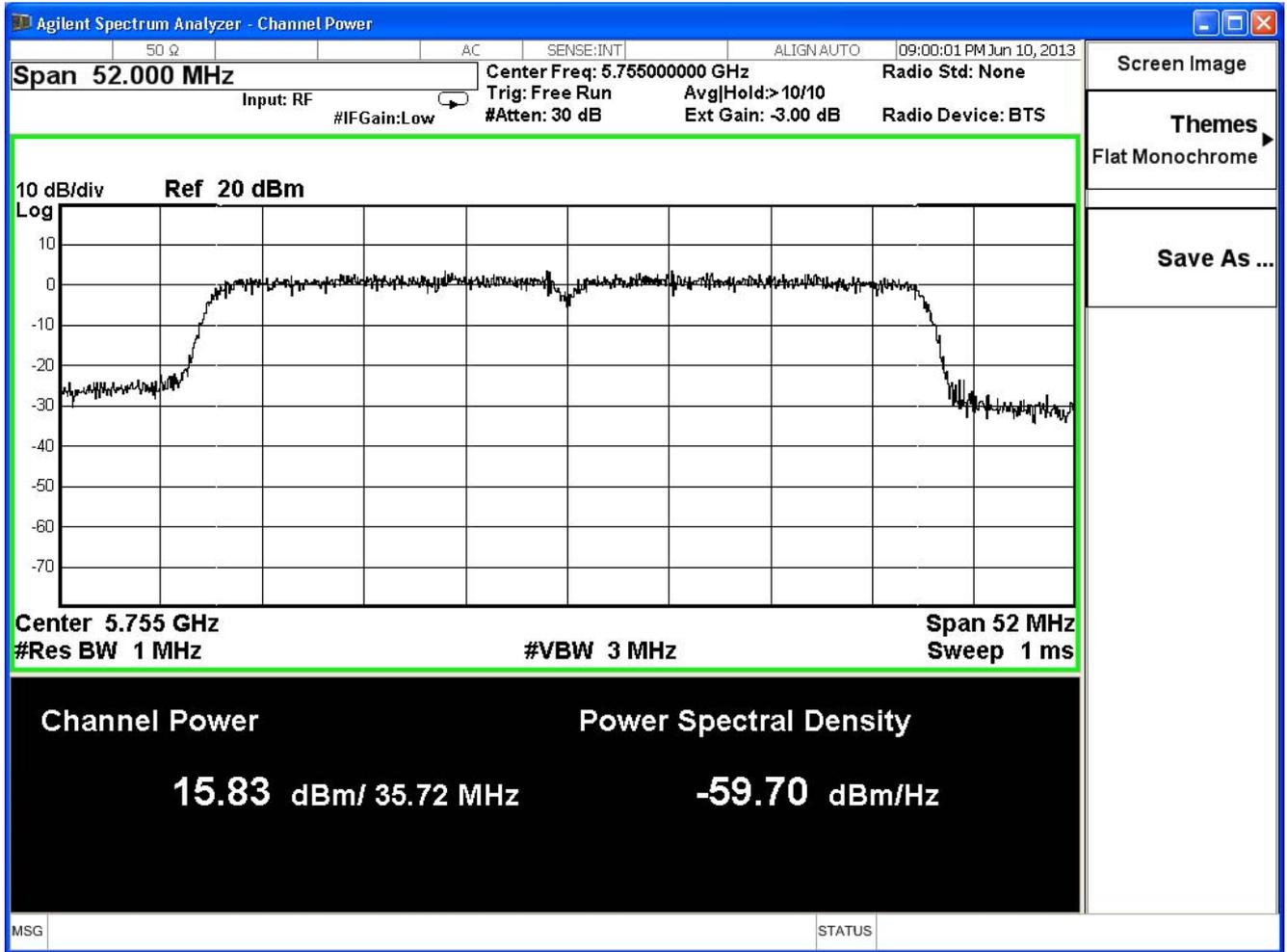
Note:

Measure Level = Reading value + cable loss

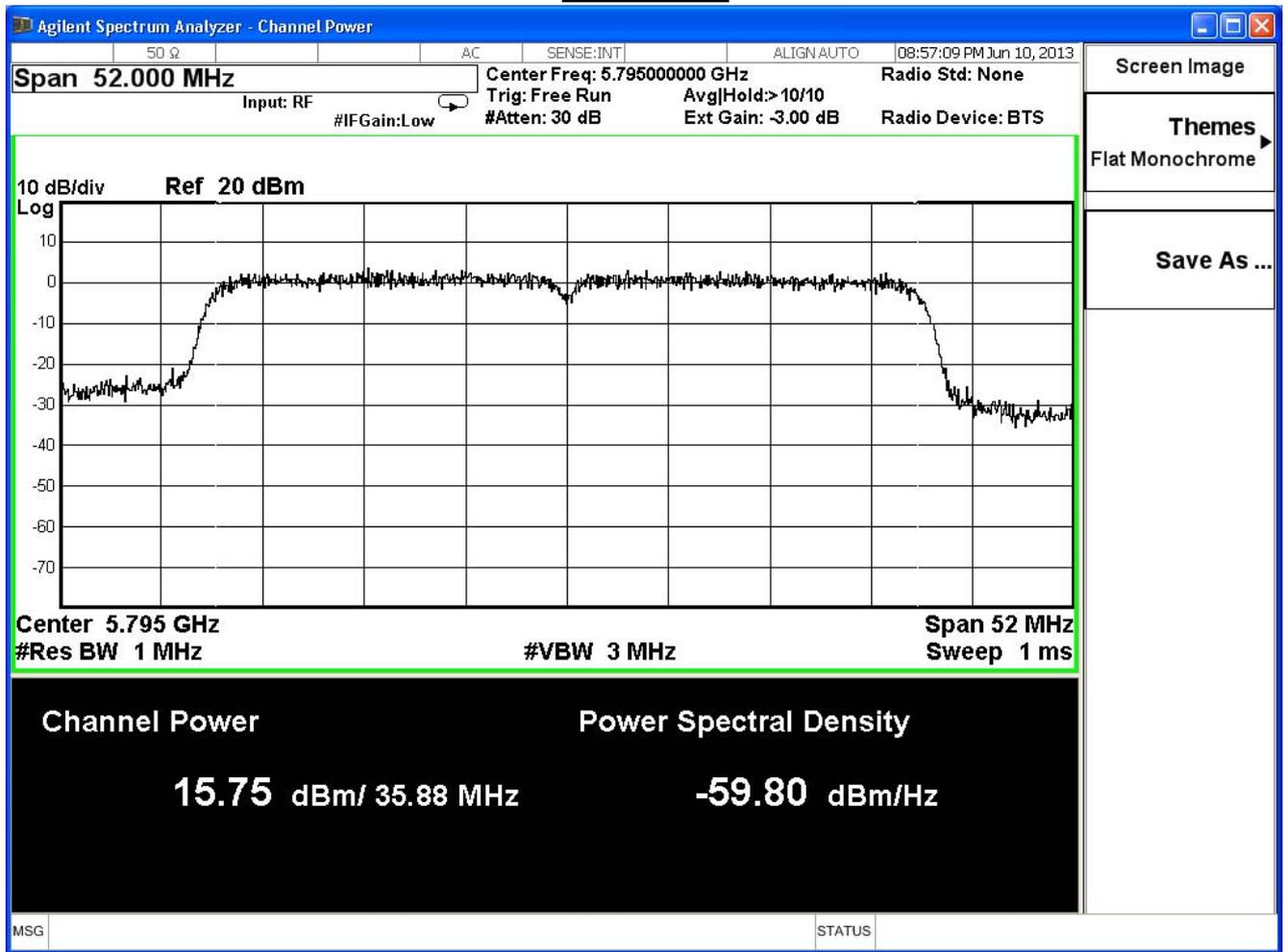
Required Limit =  $10\log(\text{Ant N}) + \text{max Gain} = 10\log(2) + 3.5 = 6.51\text{dBi}$

Required Limit =  $30\text{dBm} - (6.51\text{dBi} - 6\text{dBi}) = 30 - 0.51 = 29.49\text{ dBm}$

**Channel 151**



**Channel 159**



Product	RP-N53 Dual-Band Wireless N-600 Range Extender		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/06/11	Test Site	SR7

IEEE802.11n 40MHz (ANT 0+1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
151	5755	18.82	≤ 29.49	Pass
159	5795	18.49	≤ 29.49	Pass

The worst emission of data rate is 40.5Mbps

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81.0	121.5	162.0	243.0	324.0	364.5	405.0	
151	5755	18.82	18.81	18.80	18.79	18.78	18.77	18.76	18.75	29.49dBm
159	5795	18.49	--	--	--	--	--	--	--	29.49dBm

Note:

Measure Level = Reading value + cable loss

Required Limit =  $10\log(\text{Ant N}) + \text{max Gain} = 10\log(2) + 3.5 = 6.51\text{dBi}$

Required Limit =  $30\text{dBm} - (6.51\text{dBi} - 6\text{dBi}) = 30 - 0.51 = 29.49\text{ dBm}$