

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE

FCC Certification

Applicant Name: LG Electronics Inc.	Date of Issue: September 21, 2012
Address: 19-1 Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, 451-713, Korea	Test Site/Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea
	Report No.: HCTR1209FR09-1
	HCT FRN: 0005866421

FCC ID : BEJTWFM006D

APPLICANT : LG Electronics Inc.

FCC Model(s):	TWFM-B006D
EUT Type:	Wi-Fi module
Max. RF Output Power:	Ant.0: Wi-Fi 802.11b(20.96 dBm) / Wi-Fi 802.11g (24.98 dBm) / Wi-Fi 802.11n_20 MHz (25.53 dBm) / Wi-Fi 802.11n_40 MHz (25.59 dBm)/ Wi-Fi 802.11a (5745~5825) (19.07 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (19.11 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (18.79 dBm) Ant.1: Wi-Fi 802.11b(20.74 dBm) / Wi-Fi 802.11g (24.74 dBm) / Wi-Fi 802.11n_20 MHz (24.85 dBm) / Wi-Fi 802.11n_40 MHz (25.00 dBm)/ Wi-Fi 802.11a (5745~5825) (17.93 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (18.22 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (17.89 dBm)
Frequency Range:	2412 MHz - 2462 MHz (2.4 GHz Band)_20 MHz BW 2422 MHz - 2452 MHz (2.4 GHz Band)_40 MHz BW 5745 MHz - 5825 MHz (5.8 GHz Band)_20 MHz BW 5755 MHz - 5795 MHz (5.8 GHz Band)_40 MHz BW
Modulation type	CCK/DSSS/OFDM
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C. 853(a)



Report prepared by

: Jong Seok Lee

Test engineer of RF Team



Approved by

: Chang Seok Choi

Manager of RF Team

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FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1209FR09	September 19, 2012	- First Approval Report
HCTR1209FR09-1	September 21, 2012	- Add Frequency Range of 40 MHz BW - Add Directional Gain Calculation (Page.7)

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1. GENERAL INFORMATION

Applicant: LG Electronics Inc.
Address: 19-1 Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, 451-713, Korea
FCC ID: BEJTWFM006D
EUT Type: Wi-Fi module
Model name(s): TWFM-B006D
Date(s) of Tests: August 26, 2012 ~ September 12, 2012
Place of Tests: HCT Co., Ltd.
 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, KOREA.
 (IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

EUT Type	Wi-Fi module		
FCC Model Name	TWFM-B006D		
Power Supply	DC 3.5 V		
Frequency Range	TX: 2412 MHz - 2462 MHz 20 MHz BW, 2422 MHz - 2452 MHz 40 MHz BW 5745 MHz - 5825 MHz 20 MHz BW 5755 MHz - 5795 MHz 40 MHz BW RX: 2412 MHz - 2462 MHz 20 MHz BW, 2422 MHz - 2452 MHz 40 MHz BW 5745 MHz - 5825 MHz 20 MHz BW 5755 MHz - 5795 MHz 40 MHz BW		
Max. RF Output Power:	Peak	Ant.0:	Wi-Fi 802.11b(20.96 dBm) / Wi-Fi 802.11g (24.98 dBm) / Wi-Fi 802.11n_20 MHz (25.53 dBm) / Wi-Fi 802.11n_40 MHz (25.59 dBm)/ Wi-Fi 802.11a (5745~5825) (19.07 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (19.11 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (18.79 dBm)
		Ant.1:	Wi-Fi 802.11b(20.74 dBm) / Wi-Fi 802.11g (24.74 dBm) / Wi-Fi 802.11n_20 MHz (24.85 dBm) / Wi-Fi 802.11n_40 MHz (25.00 dBm)/ Wi-Fi 802.11a (5745~5825) (17.93 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (18.22 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (17.89 dBm)
	Average	Ant.0:	Wi-Fi 802.11b(14.75 dBm) / Wi-Fi 802.11g (16.51 dBm) / Wi-Fi 802.11n_20 MHz (16.51 dBm) / Wi-Fi 802.11n_40 MHz (16.60 dBm)/ Wi-Fi 802.11a (5745~5825) (11.66 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (11.79 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (11.23 dBm)
		Ant.1:	Wi-Fi 802.11b(14.48 dBm) / Wi-Fi 802.11g (16.25 dBm) / Wi-Fi 802.11n_20 MHz (16.27 dBm) / Wi-Fi 802.11n_40 MHz (16.14 dBm)/ Wi-Fi 802.11a (5745~5825) (10.72 dBm) / Wi-Fi 802.11n_20 MHz (5745~5825) (10.71 dBm)/ Wi-Fi 802.11n_40 MHz (5755~5795) (10.25 dBm)
Modulation Type	DSSS/CCK(802.11b), OFDM(802.11a, 802.11g, 802.11n)		
Antenna Specification	Ant.0:	Manufacturer: LG Innotek Antenna type: PIFA Antenna Peak Gain : 2.47 dBi (2.4 GHz) / 3.92 dBi (5.8 GHz)	
	Ant.1:	Manufacturer: LG Innotek Antenna type: PIFA Antenna Peak Gain : 2.30 dBi (2.4 GHz) / 1.64 dBi (5.8 GHz)	
	Directional Antenna Gain	5.40 dBi(802.11g_2.4 GHz), 5.86 dBi(802.11a_5.8 GHz), 2.39 dBi(802.11n_2.4 GHz), 2.93 dBi (802.11n_5.8 GHz)	

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.10-2009) and FCC KDB 558074 D01 DTS Meas Guidance V01 dated January 18, 2012 entitled "Guidance for Performing Compliance Measurements on Digital Transmission Systems(DTS) Operating Under §15.247" were used in the measurement.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2009) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.3 of ANSI C63.10. (Version: 2009).

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

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4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

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6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

▣ Directional Gain Calculations

- If any transmit signals are correlated with each other(802.11a/g),

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N] \text{ dBi}$$

- If all transmit signals are completely uncorrelated with each other(802.11n)

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N] \text{ dBi}$$

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7. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	CONDUCTED	PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge(Out of Band Emissions)	§15.247(d)	Conducted < 20 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 8.6		PASS
Radiated Spurious Emissions	§15.205, 15.209	cf. Section 8.5.1	RADIATED	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 8.5.2		PASS

8. TEST RESULT

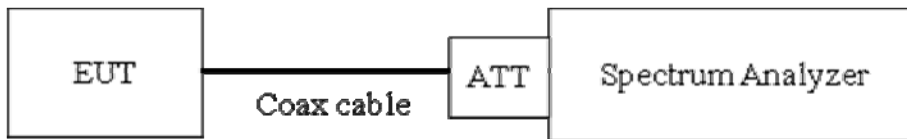
8.1 6 dB BANDWIDTH MEASUREMENT (802.11a/b/g/n)

Test Requirements and limit, §15.247(a)(2)

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

RBW: 430 kHz / 620 kHz(40 MHz BW)

VBW: 1.3 MHz / 2 MHz(40 MHz BW)

SPAN: 40 MHz / 60 MHz(40 MHz BW)

Detector = Peak

Trace mode = max hold

Sweep = auto couple

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■ TEST RESULTS_Ant. 0

Conducted 6dB Bandwidth Measurements for 802.11b

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.583	0.5	Pass
2437	6	8.328	0.5	Pass
2462	11	8.234	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11g

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.590	0.5	Pass
2437	6	15.500	0.5	Pass
2462	11	15.350	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	17.240	0.5	Pass
2437	6	17.070	0.5	Pass
2462	11	17.120	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.290	0.5	Pass
2437	6	36.280	0.5	Pass
2452	9	36.580	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11a

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802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.920	0.5	Pass
5785	157	16.030	0.5	Pass
5825	165	15.990	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.620	0.5	Pass
5785	157	16.970	0.5	Pass
5825	165	16.870	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.380	0.5	Pass
5795	159	36.060	0.5	Pass

■ TEST RESULTS_Ant. 1

Conducted 6dB Bandwidth Measurements for 802.11b

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.474	0.5	Pass
2437	6	8.631	0.5	Pass
2462	11	8.482	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11g

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.520	0.5	Pass
2437	6	15.650	0.5	Pass
2462	11	15.520	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	17.150	0.5	Pass
2437	6	17.290	0.5	Pass
2462	11	17.170	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.610	0.5	Pass
2437	6	36.100	0.5	Pass
2452	9	36.560	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11a

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802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.900	0.5	Pass
5785	157	15.940	0.5	Pass
5825	165	15.670	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_20 MHz BW

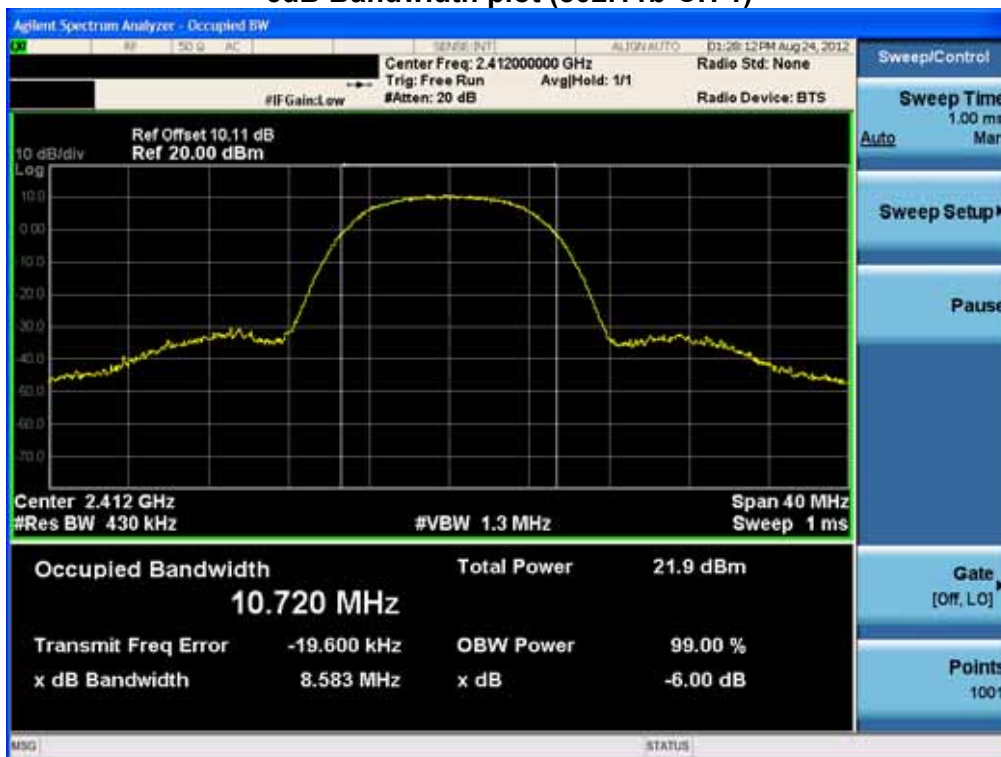
802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.890	0.5	Pass
5785	157	16.620	0.5	Pass
5825	165	16.630	0.5	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.190	0.5	Pass
5795	159	36.190	0.5	Pass

RESULT PLOTS_Ant.0

6dB Bandwidth plot (802.11b-CH 1)



6dB Bandwidth plot (802.11b-CH 6)



6dB Bandwidth plot (802.11b-CH 11)



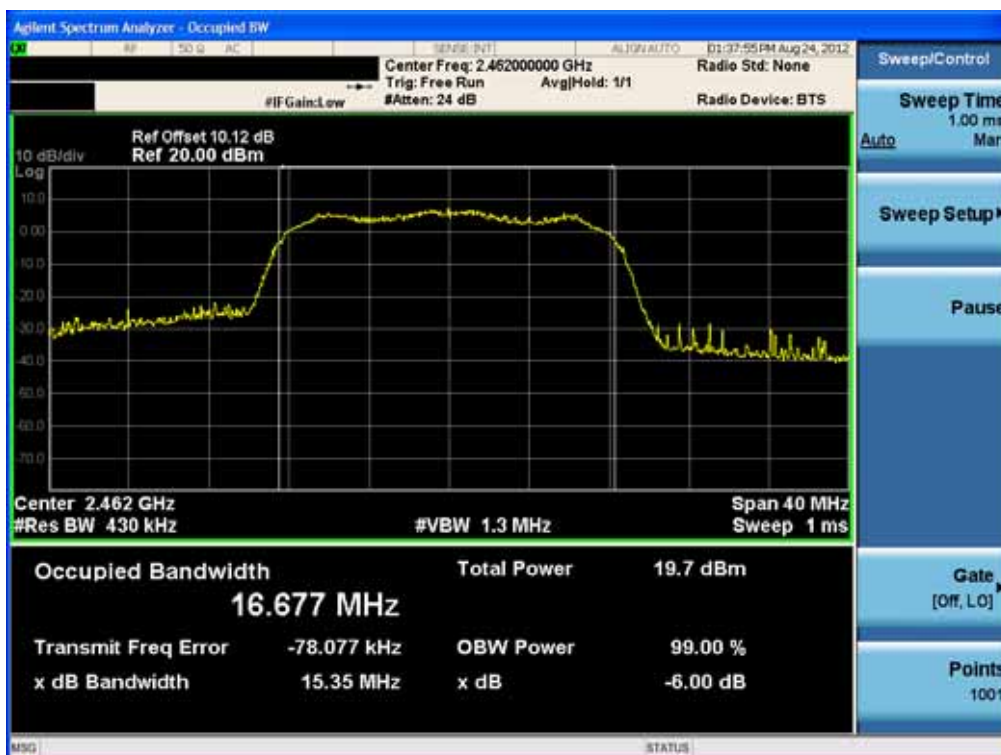
6dB Bandwidth plot (802.11g-CH 1)



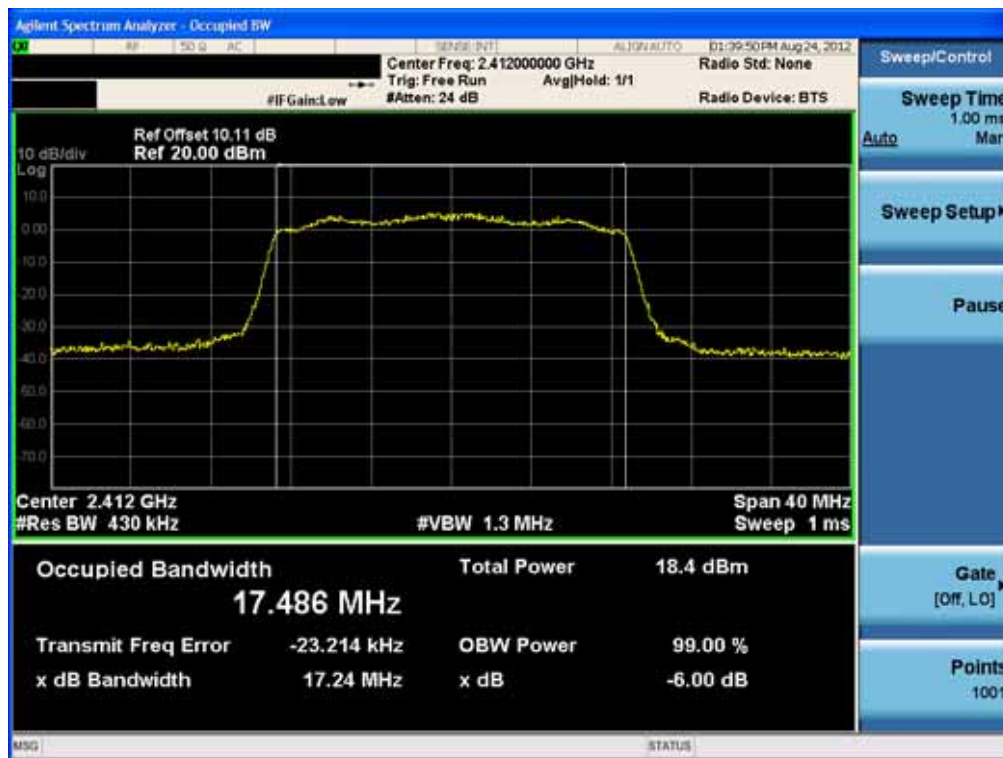
6dB Bandwidth plot (802.11g-CH 6)



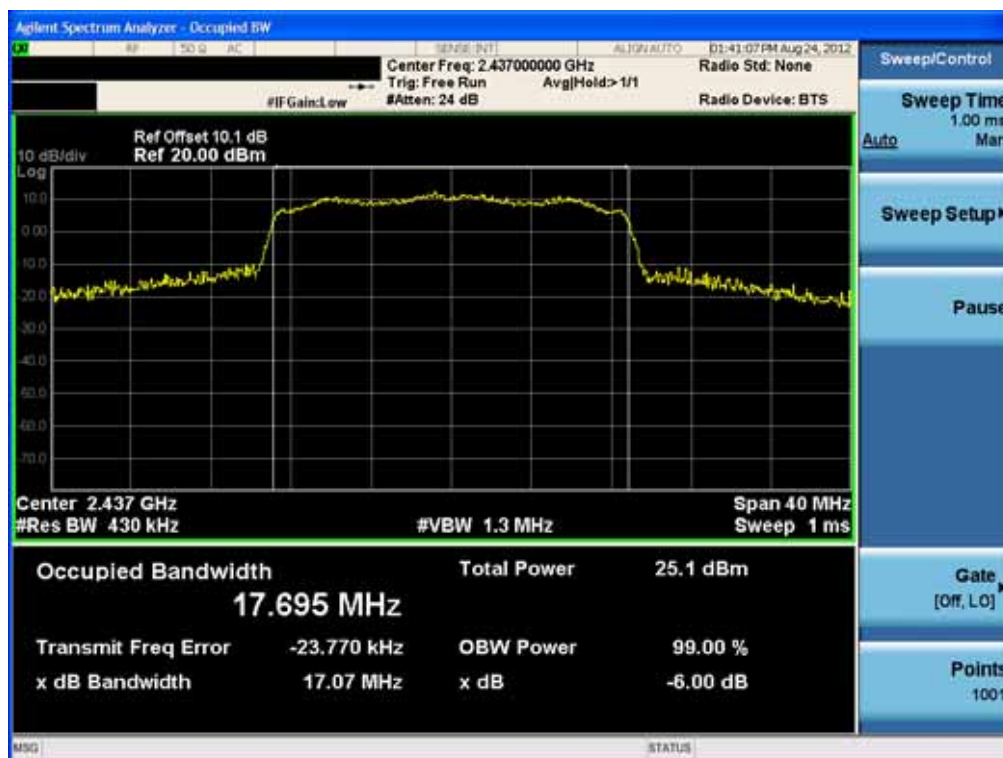
6dB Bandwidth plot (802.11g-CH 11)



6dB Bandwidth plot (802.11n-CH 1)_20 MHz BW



6dB Bandwidth plot (802.11n-CH 6)_20 MHz BW



6dB Bandwidth plot (802.11n-CH 11)_20 MHz BW



6dB Bandwidth plot (802.11n-CH 3)_40 MHz BW



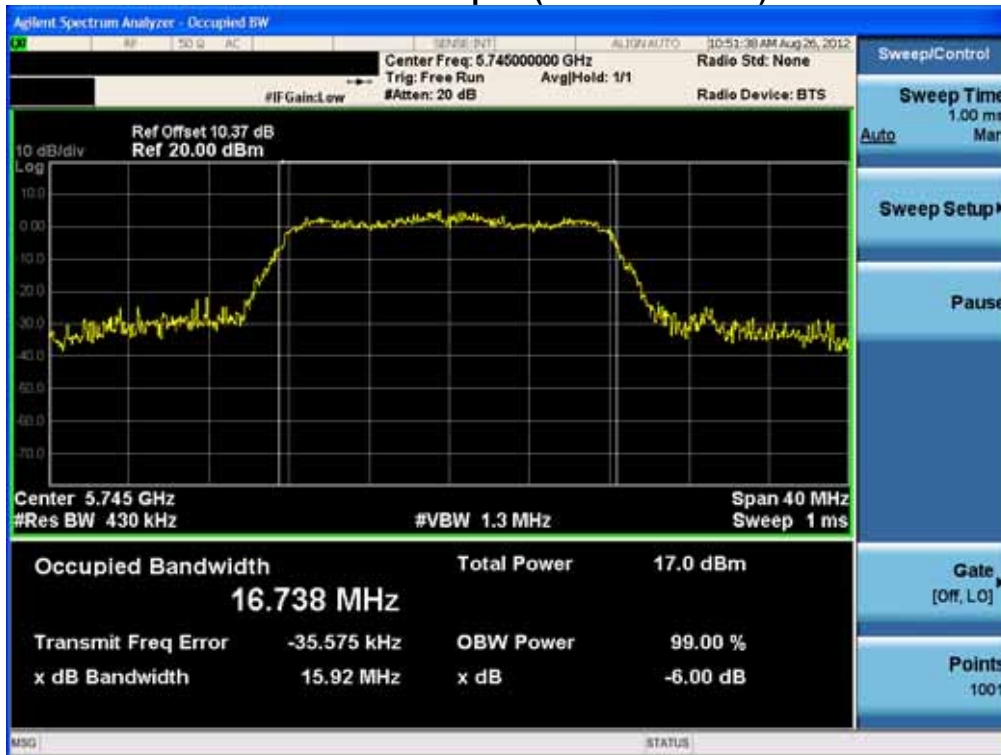
6dB Bandwidth plot (802.11n-CH 6) _40 MHz BW



6dB Bandwidth plot (802.11n-CH 9) _40 MHz BW



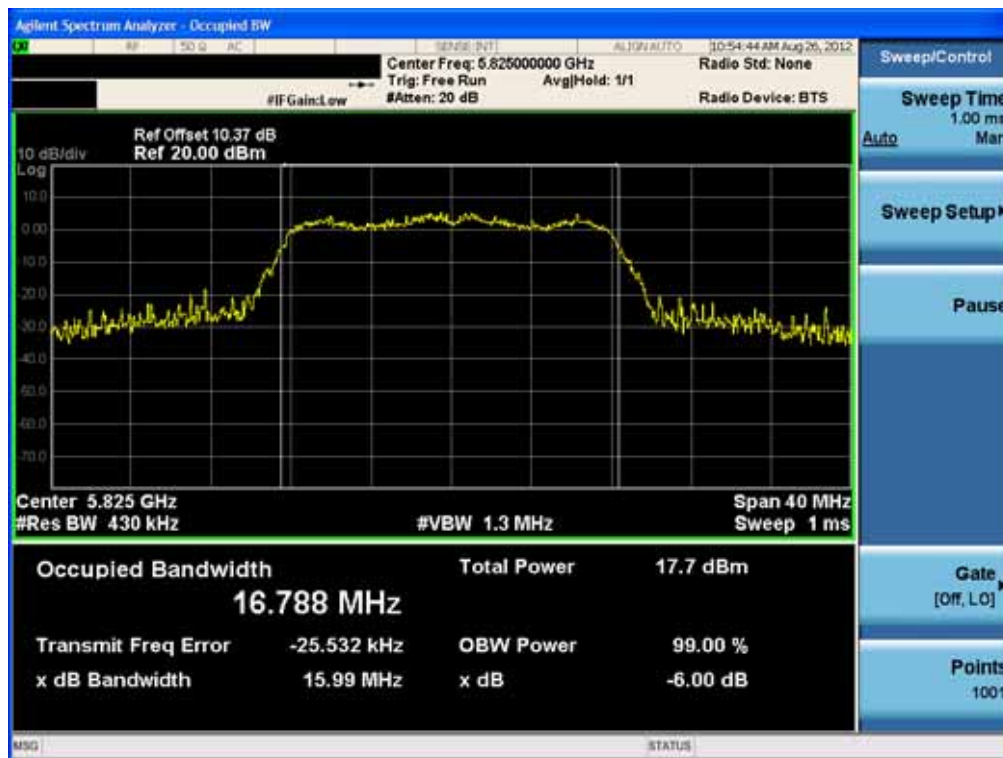
6dB Bandwidth plot (802.11a-CH 149)



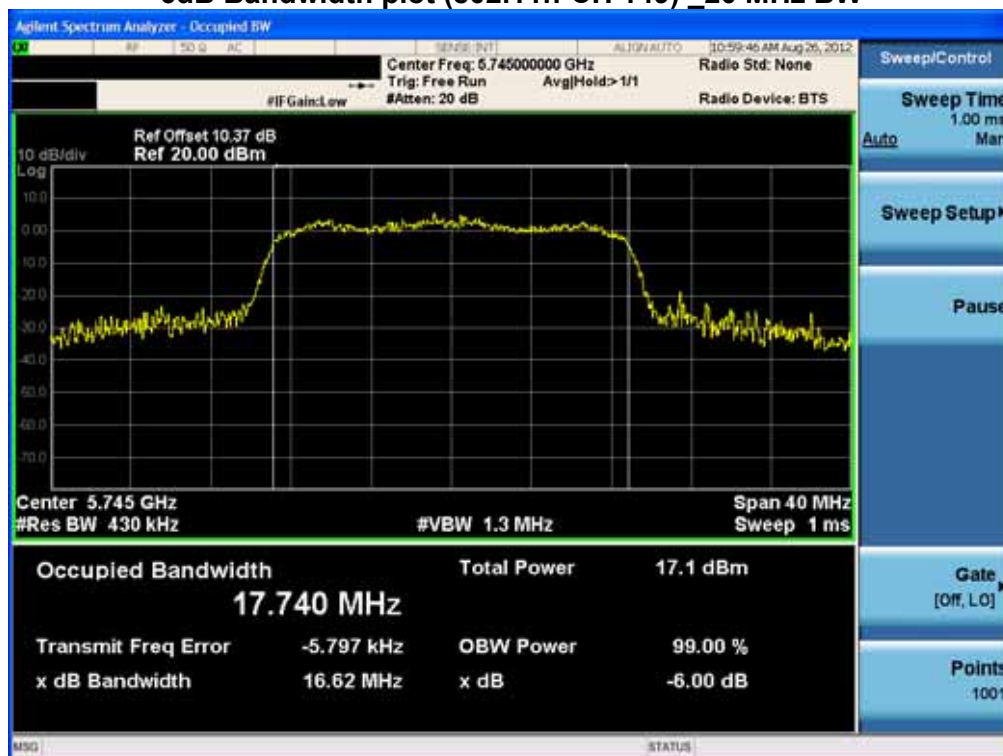
6dB Bandwidth plot (802.11a-CH 157)



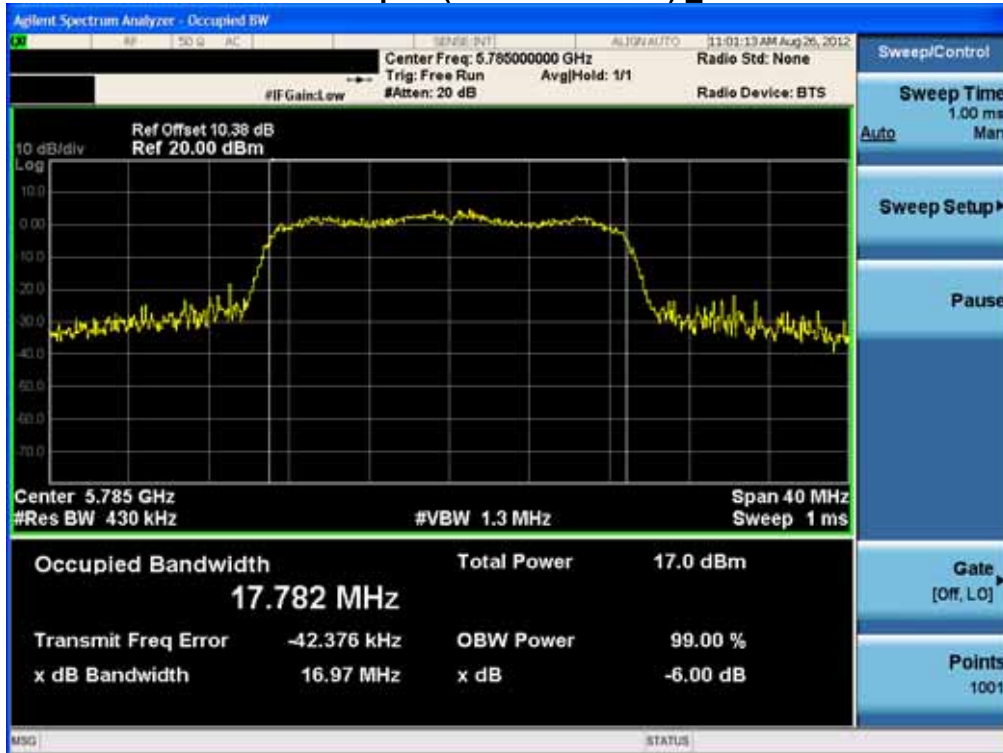
6dB Bandwidth plot (802.11a-CH 165)



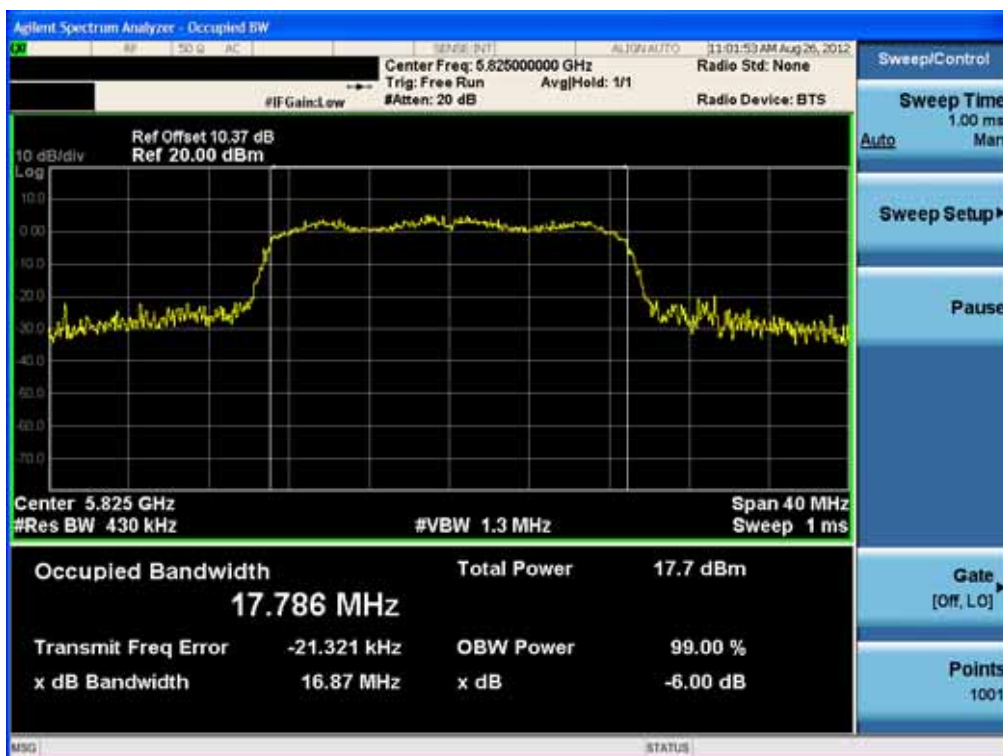
6dB Bandwidth plot (802.11n-CH 149) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 157) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 165) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 151)_40 MHz BW

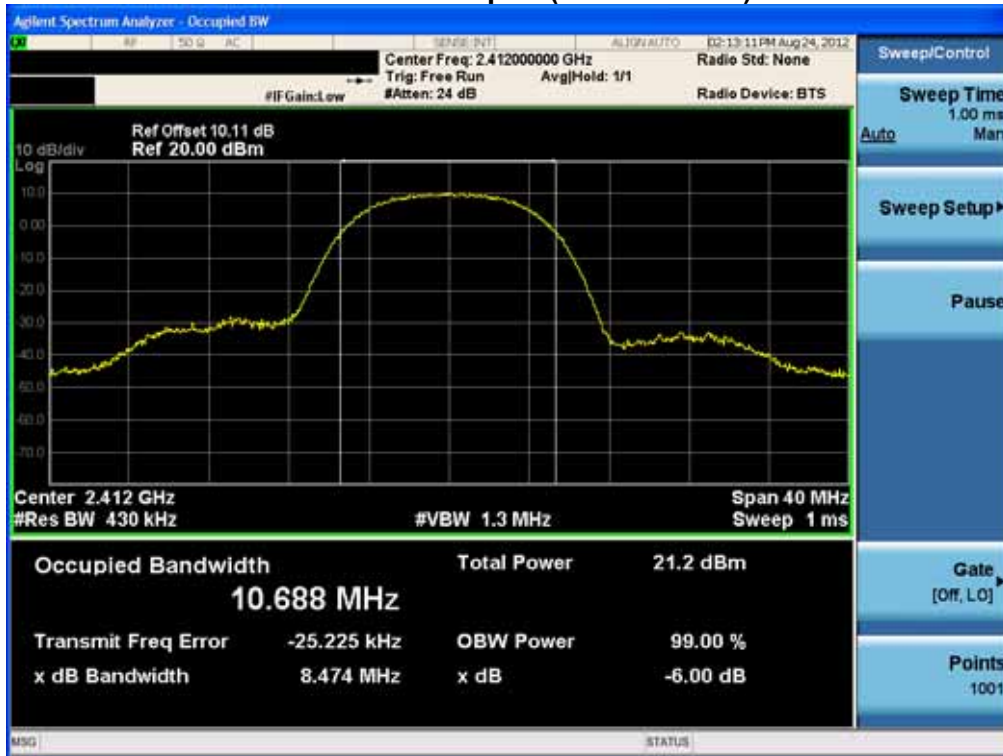


6 dB Bandwidth plot (802.11n-CH 159)_40 MHz BW

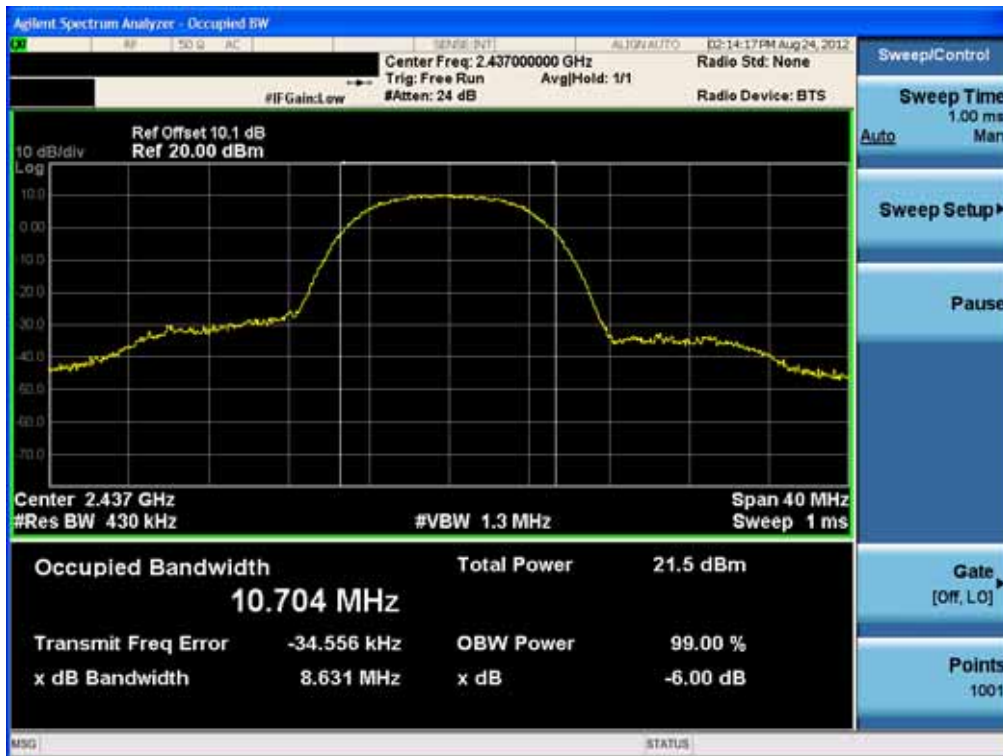


RESULT PLOTS_Ant.1

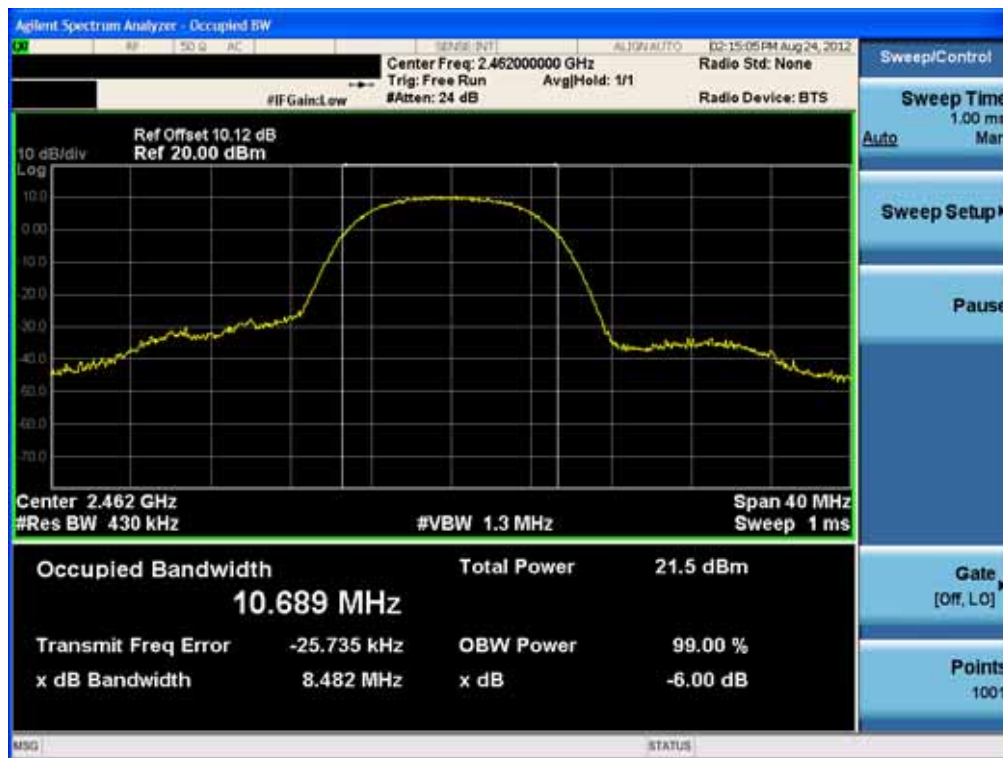
6dB Bandwidth plot (802.11b-CH 1)



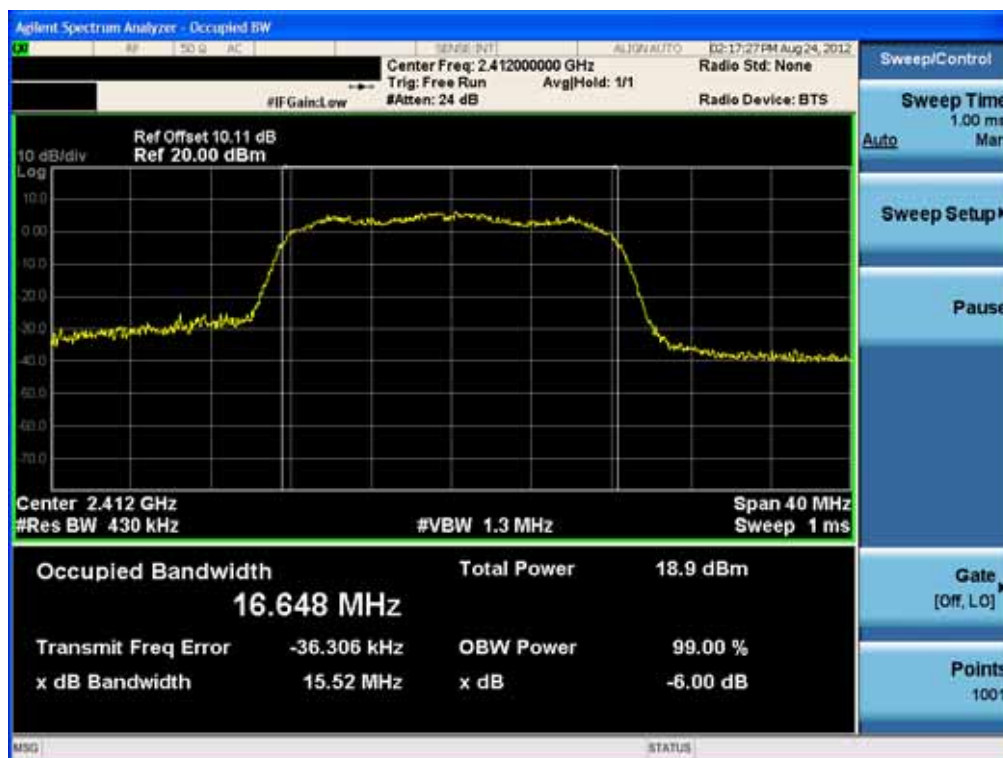
6dB Bandwidth plot (802.11b-CH 6)



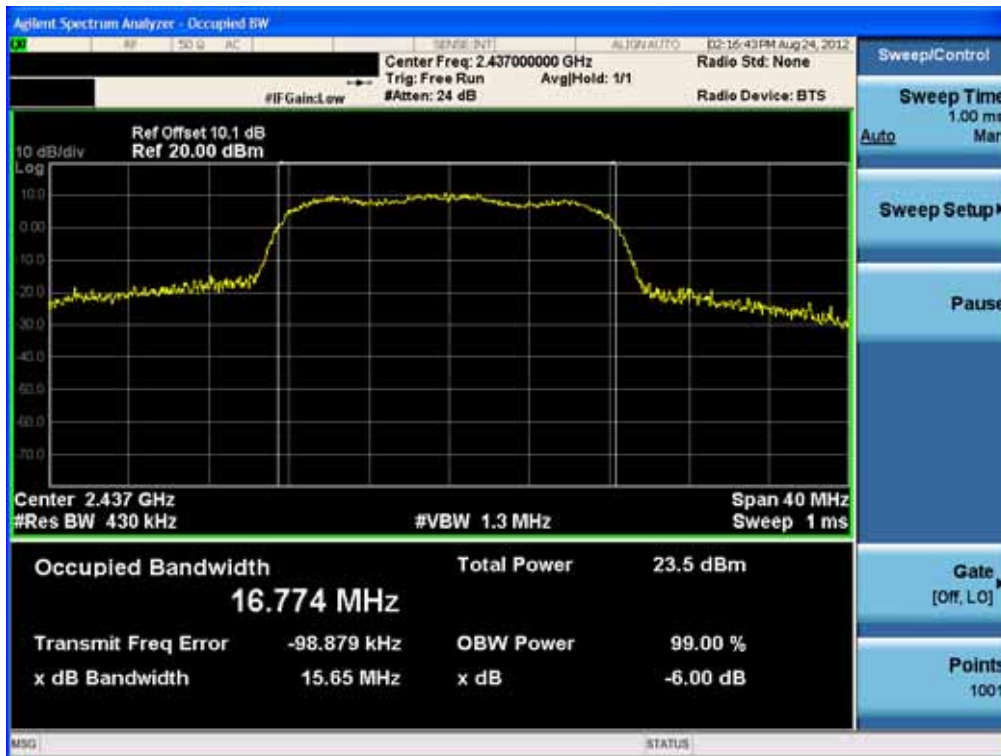
6dB Bandwidth plot (802.11b-CH 11)



6dB Bandwidth plot (802.11g-CH 1)



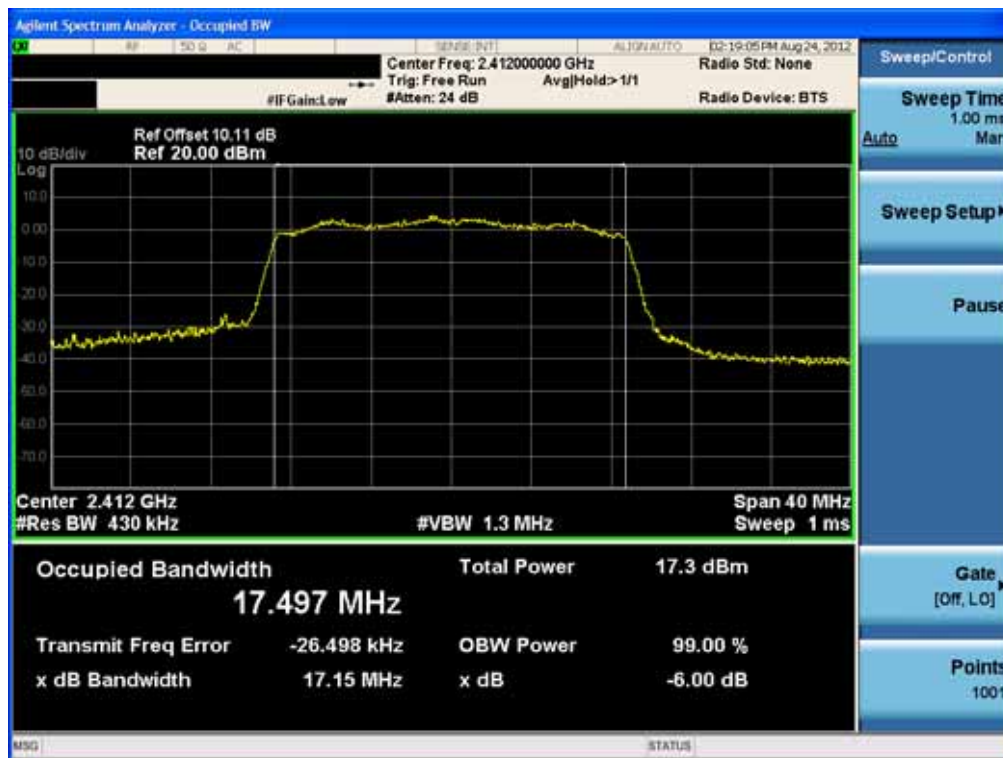
6dB Bandwidth plot (802.11g-CH 6)



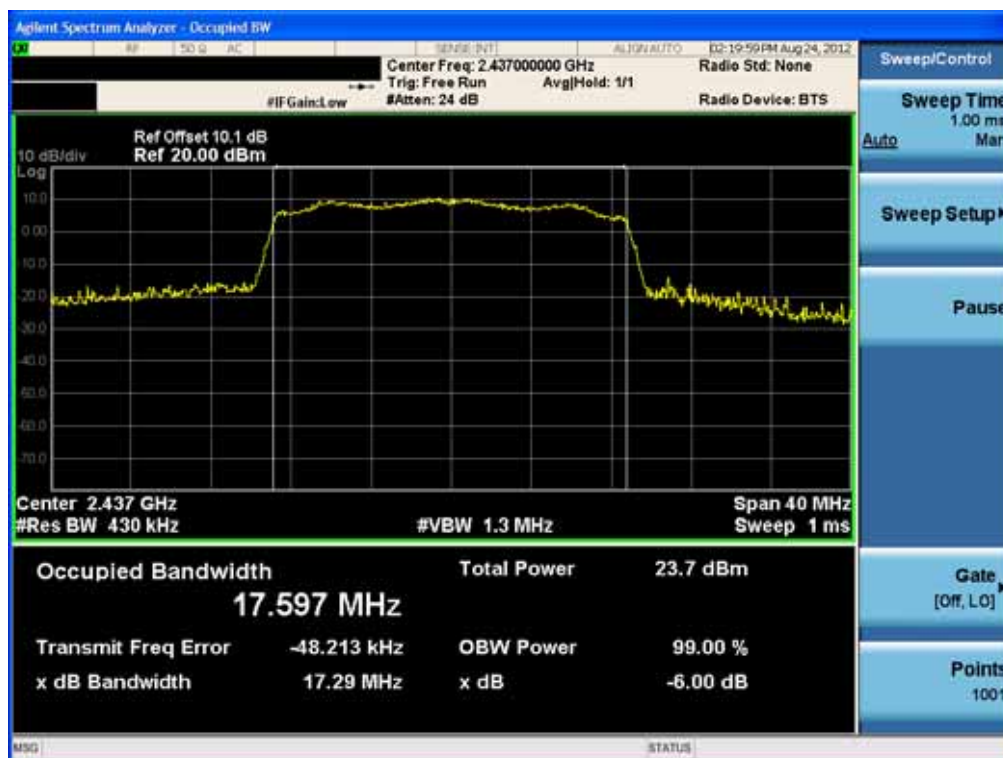
6dB Bandwidth plot (802.11g-CH 11)



6dB Bandwidth plot (802.11n-CH 1)_20 MHz BW



6dB Bandwidth plot (802.11n-CH 6)_20 MHz BW



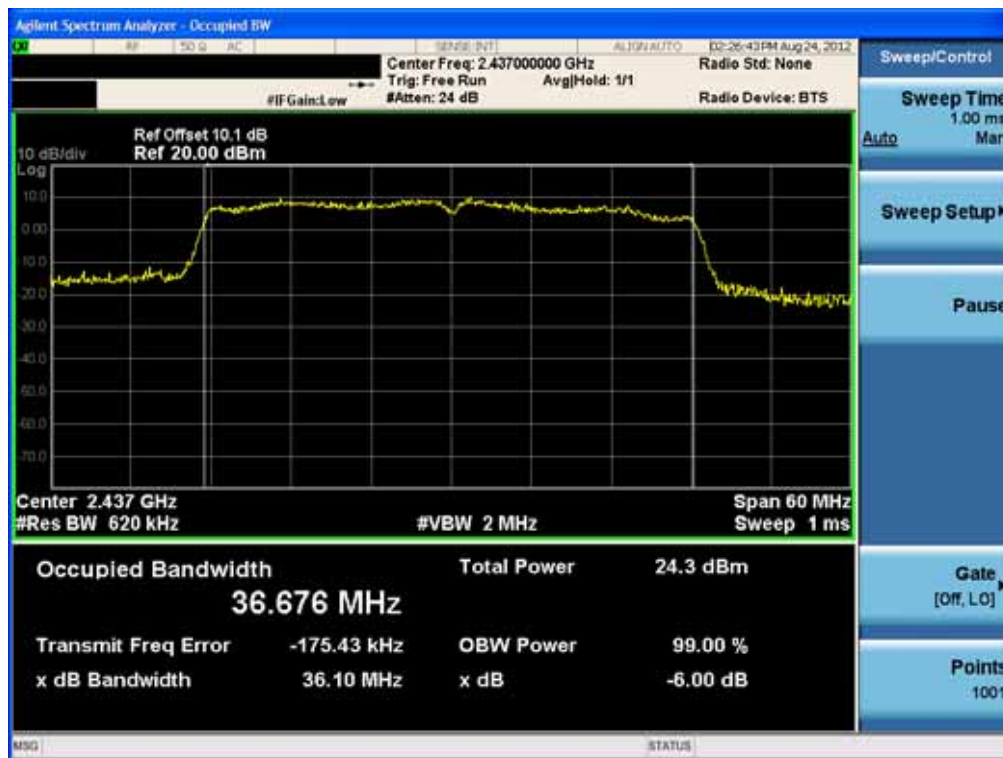
6dB Bandwidth plot (802.11n-CH 11)_20 MHz BW



6dB Bandwidth plot (802.11n-CH 3)_40 MHz BW



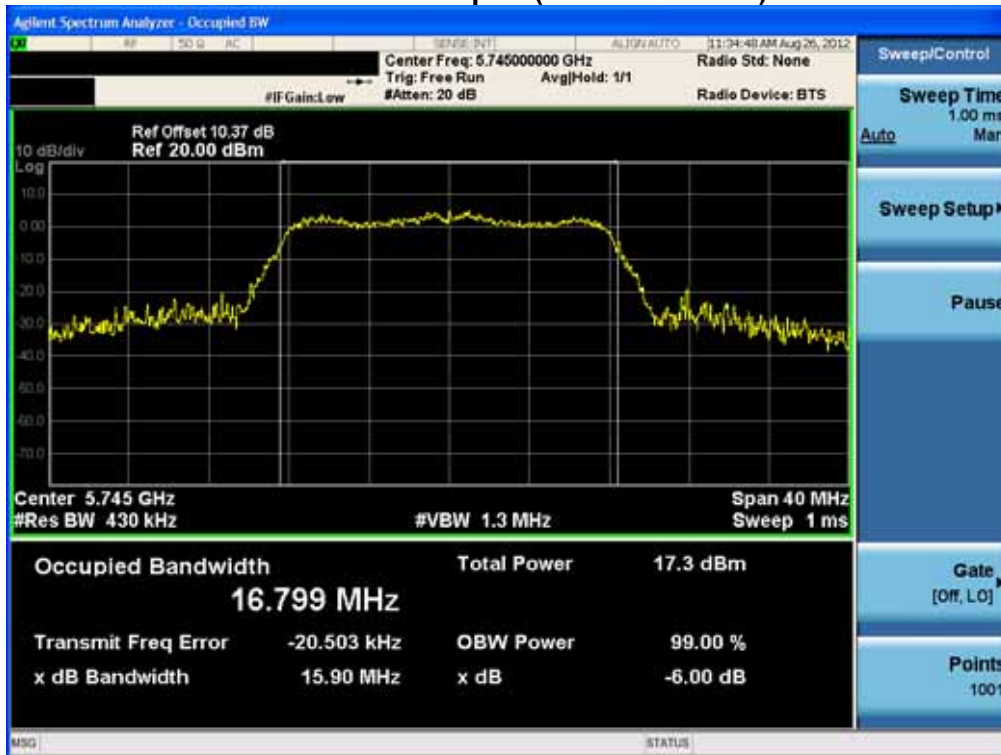
6dB Bandwidth plot (802.11n-CH 6) _40 MHz BW



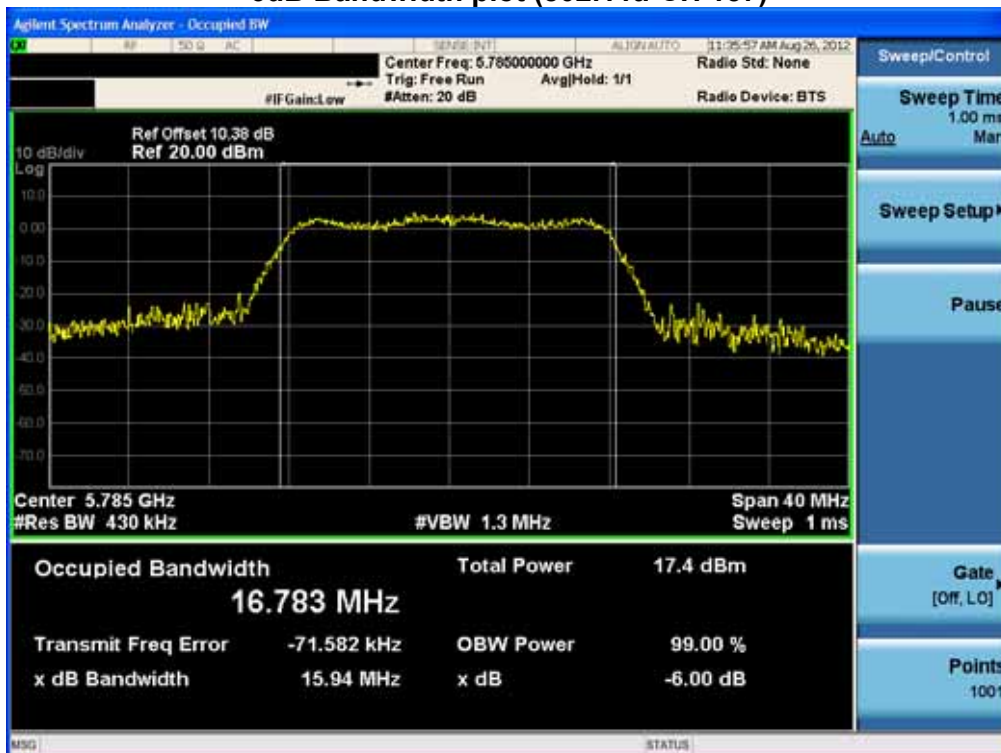
6dB Bandwidth plot (802.11n-CH 9) _40 MHz BW



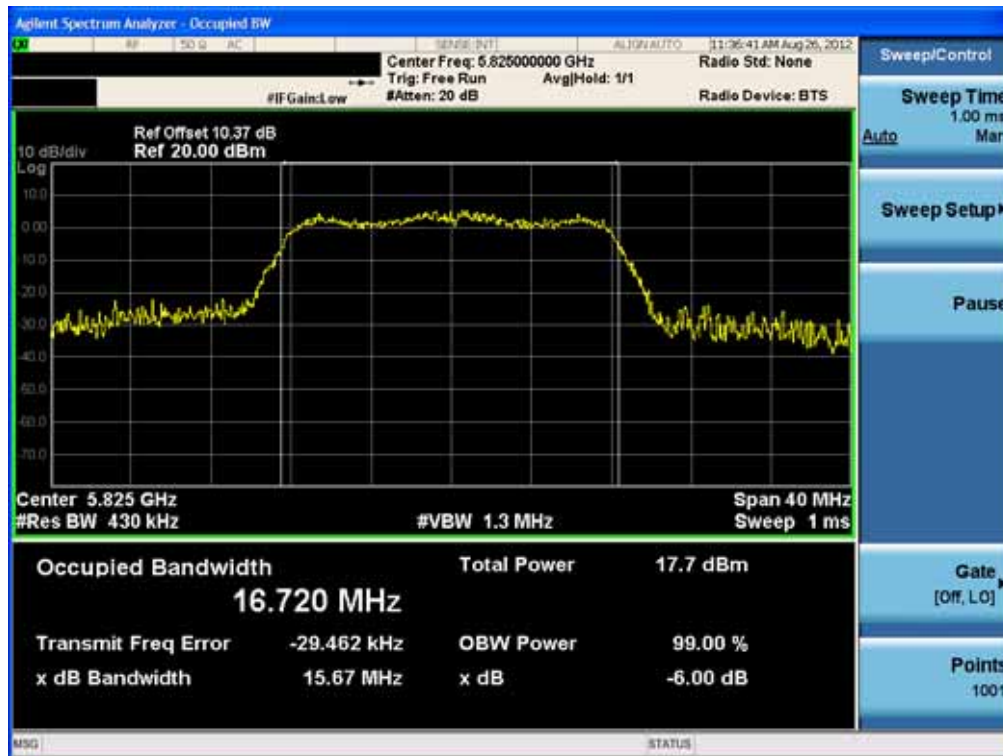
6dB Bandwidth plot (802.11a-CH 149)



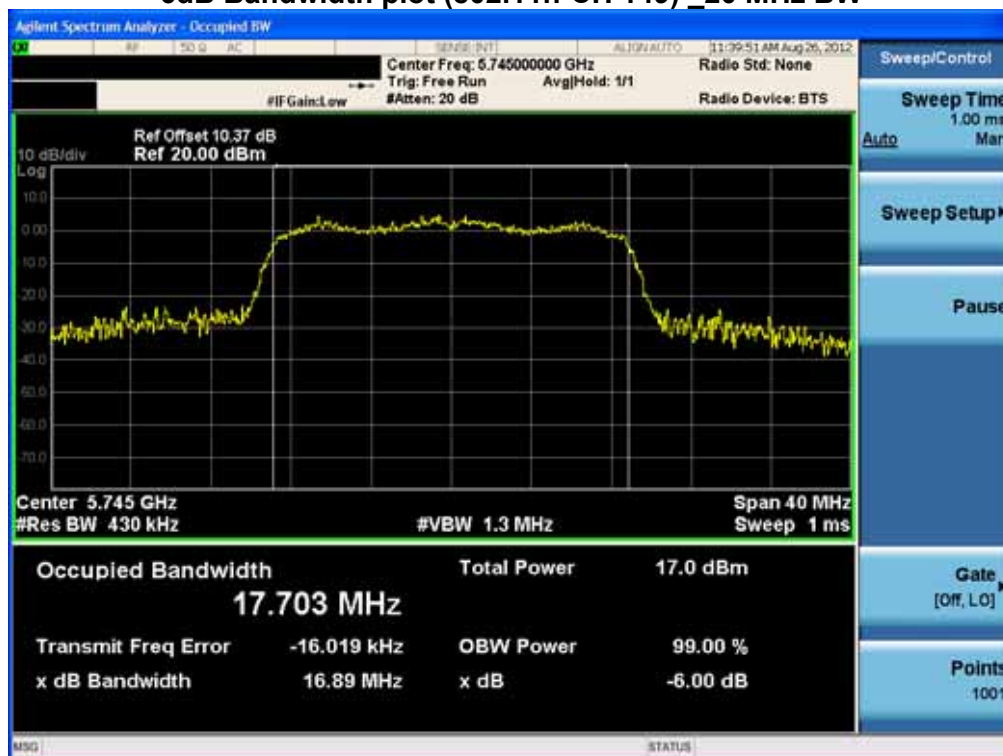
6dB Bandwidth plot (802.11a-CH 157)



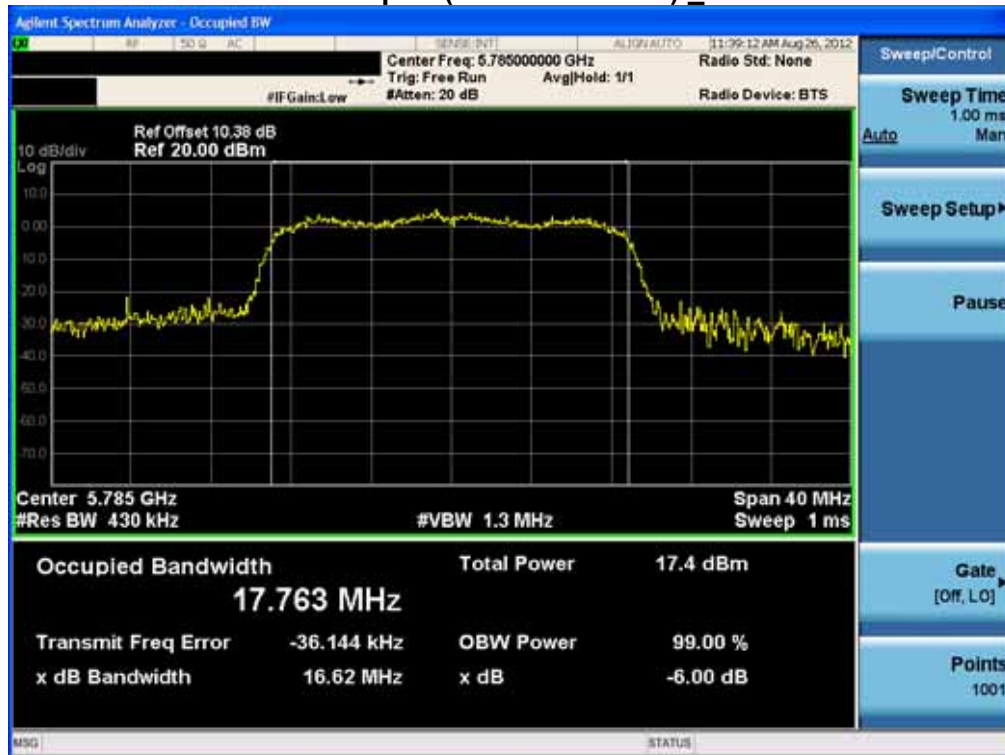
6dB Bandwidth plot (802.11a-CH 165)



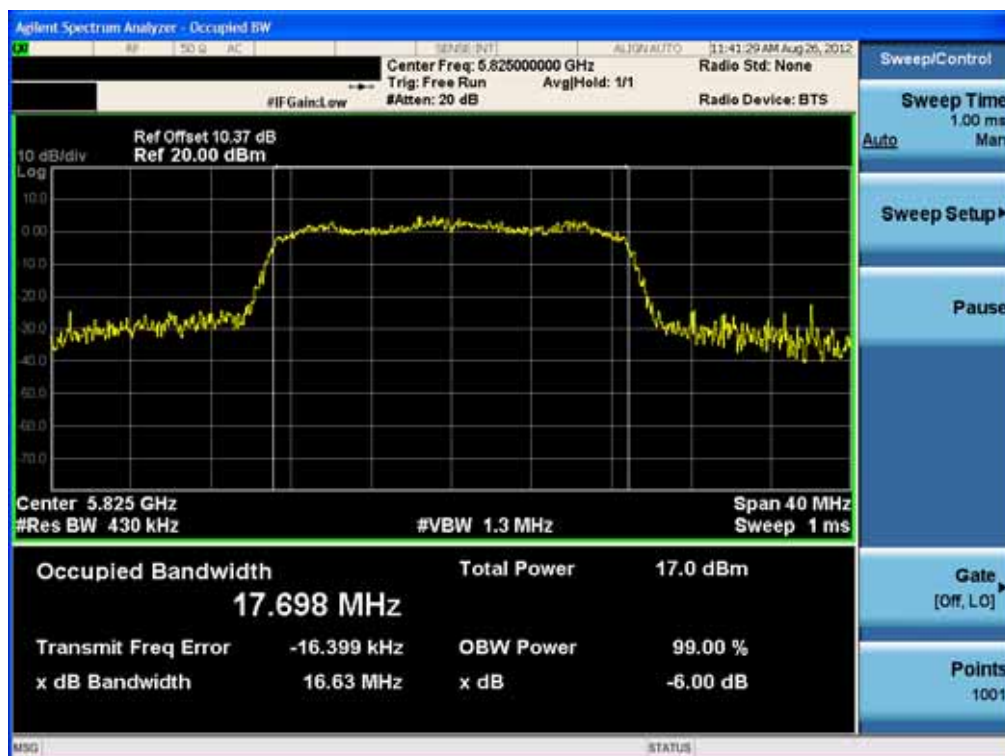
6dB Bandwidth plot (802.11n-CH 149) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 157) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 165) _20 MHz BW



6dB Bandwidth plot (802.11n-CH 151) _40 MHz BW



6dB Bandwidth plot (802.11n-CH 159) _40 MHz BW



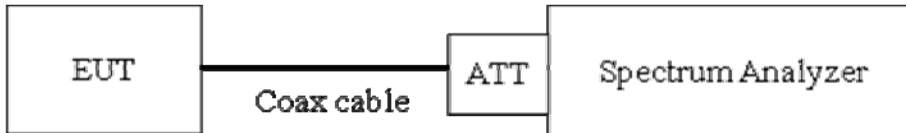
8.2 OUTPUT POWER MEASUREMENT (802.11a/b/g/n)

Test Requirements and limit, §15.247(b)(3)

A transmitter antenna terminal of EUT is connected to the input of a Spectrum Analyzer. Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

The maximum permissible conducted output power is 1 Watt.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function. We tested according to KDB 558074(issued 1/18/2012).

This EUT TX condition is actual operating mode(not near 100 % duty cycle) by WLAN test program.

The Spectrum Analyzer is set to

- Peak Power(Measurement Procedure PK2 in KDB 558074)

RBW: 1 MHz

VBW: 3 MHz

SPAN: OBW * 1.3 MHz

Detector Mode = Peak

Integrated bandwidth = EBW

Sweep = auto couple

Trace Mode = max hold

- Average Power(Measurement Procedure AVG2 in KDB 558074)

RBW: 1 MHz

VBW: 3 MHz

SPAN: OBW * 1.3 MHz

Detector Mode = power averaging(RMS) or sample

Integrated bandwidth = EBW

Sweep = auto couple

Sweep Point = 1001

Trace average at least 100 traces in power averaging(RMS) mode

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR09-1	Date of Issue: September 21, 2012	EUT Type: Wi-Fi module	FCC ID: BEJTWFB006D

■ **Sample Calculation**

$$\begin{aligned} \text{Output Power} &= \text{Reading Value} + \text{ATT loss} + \text{Cable loss(1 ea)} \\ &= 10 \text{ dBm} + 10 \text{ dB} + 0.8 \text{ dB} = 20.8 \text{ dBm} \end{aligned}$$

Note :

1. Spectrum reading values are not plot data. The power results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB.
Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.11
	2437	10.10
	2462	10.12
5.8 GHz (20 MHz BW)	5745	10.37
	5785	10.38
	5825	10.37
5.8 GHz (40 MHz BW)	5755	10.37
	5795	10.38

(Actual value of loss for the attenuator and cable combination)

Peak

▣ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	17.23	30
		2 Mbps	17.60	30
		5.5 Mbps	18.91	30
		11 Mbps	20.49	30
2437	6	1 Mbps	17.62	30
		2 Mbps	18.13	30
		5.5 Mbps	19.19	30
		11 Mbps	20.85	30
2462	11	1 Mbps	17.66	30
		2 Mbps	17.88	30
		5.5 Mbps	19.20	30
		11 Mbps	20.96	30

▣ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	16.92	30
		2 Mbps	17.42	30
		5.5 Mbps	18.52	30
		11 Mbps	20.24	30
2437	6	1 Mbps	17.33	30
		2 Mbps	17.61	30
		5.5 Mbps	18.94	30
		11 Mbps	20.59	30
2462	11	1 Mbps	17.27	30
		2 Mbps	17.99	30
		5.5 Mbps	19.08	30
		11 Mbps	20.74	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	19.16	30
		9 Mbps	19.61	30
		12 Mbps	19.21	30
		18 Mbps	19.25	30
		24 Mbps	19.51	30
		36 Mbps	19.49	30
		48 Mbps	19.66	30
		54 Mbps	19.67	30
2437	6	6 Mbps	24.51	30
		9 Mbps	24.49	30
		12 Mbps	24.38	30
		18 Mbps	24.48	30
		24 Mbps	24.86	30
		36 Mbps	24.98	30
		48 Mbps	24.78	30
		54 Mbps	24.97	30
2462	11	6 Mbps	19.86	30
		9 Mbps	20.04	30
		12 Mbps	20.08	30
		18 Mbps	19.77	30
		24 Mbps	20.01	30
		36 Mbps	20.15	30
		48 Mbps	20.62	30
		54 Mbps	20.84	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	19.48	30
		9 Mbps	19.52	30
		12 Mbps	19.15	30
		18 Mbps	19.13	30
		24 Mbps	19.75	30
		36 Mbps	19.62	30
		48 Mbps	19.63	30
		54 Mbps	19.88	30
2437	6	6 Mbps	24.24	30
		9 Mbps	24.06	30
		12 Mbps	23.95	30
		18 Mbps	24.20	30
		24 Mbps	24.52	30
		36 Mbps	24.60	30
		48 Mbps	24.62	30
		54 Mbps	24.74	30
2462	11	6 Mbps	19.69	30
		9 Mbps	19.99	30
		12 Mbps	19.85	30
		18 Mbps	19.80	30
		24 Mbps	20.30	30
		36 Mbps	19.98	30
		48 Mbps	20.11	30
		54 Mbps	20.31	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	22.33	30
		9 Mbps	22.58	30
		12 Mbps	22.19	30
		18 Mbps	22.20	30
		24 Mbps	22.64	30
		36 Mbps	22.57	30
		48 Mbps	22.66	30
		54 Mbps	22.79	30
2437	6	6 Mbps	27.39	30
		9 Mbps	27.29	30
		12 Mbps	27.18	30
		18 Mbps	27.35	30
		24 Mbps	27.70	30
		36 Mbps	27.80	30
		48 Mbps	27.71	30
		54 Mbps	27.87	30
2462	11	6 Mbps	22.79	30
		9 Mbps	23.03	30
		12 Mbps	22.98	30
		18 Mbps	22.80	30
		24 Mbps	23.17	30
		36 Mbps	23.08	30
		48 Mbps	23.38	30
		54 Mbps	23.59	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	18.12	30
		13 Mbps	18.08	30
		19.5 Mbps	18.23	30
		26 Mbps	18.69	30
		39 Mbps	18.66	30
		52 Mbps	18.75	30
		58.5 Mbps	19.16	30
		65 Mbps	18.53	30
2437	6	6.5 Mbps	24.70	30
		13 Mbps	24.96	30
		19.5 Mbps	24.54	30
		26 Mbps	25.53	30
		39 Mbps	24.94	30
		52 Mbps	24.99	30
		58.5 Mbps	25.02	30
		65 Mbps	25.00	30
2462	11	6.5 Mbps	19.04	30
		13 Mbps	19.13	30
		19.5 Mbps	19.39	30
		26 Mbps	19.58	30
		39 Mbps	19.69	30
		52 Mbps	19.57	30
		58.5 Mbps	19.35	30
		65 Mbps	19.61	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	18.01	30
		13 Mbps	17.75	30
		19.5 Mbps	17.91	30
		26 Mbps	18.21	30
		39 Mbps	17.96	30
		52 Mbps	18.08	30
		58.5 Mbps	18.16	30
		65 Mbps	18.17	30
2437	6	6.5 Mbps	24.23	30
		13 Mbps	24.33	30
		19.5 Mbps	24.03	30
		26 Mbps	24.57	30
		39 Mbps	24.73	30
		52 Mbps	24.76	30
		58.5 Mbps	24.79	30
		65 Mbps	24.85	30
2462	11	6.5 Mbps	19.10	30
		13 Mbps	18.99	30
		19.5 Mbps	18.98	30
		26 Mbps	19.57	30
		39 Mbps	19.64	30
		52 Mbps	19.44	30
		58.5 Mbps	19.60	30
		65 Mbps	19.55	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	21.08	30
		9 Mbps	20.93	30
		12 Mbps	21.08	30
		18 Mbps	21.47	30
		24 Mbps	21.33	30
		36 Mbps	21.44	30
		48 Mbps	21.70	30
		54 Mbps	21.36	30
2437	6	6 Mbps	27.48	30
		9 Mbps	27.67	30
		12 Mbps	27.30	30
		18 Mbps	28.09	30
		24 Mbps	27.85	30
		36 Mbps	27.89	30
		48 Mbps	27.92	30
		54 Mbps	27.94	30
2462	11	6 Mbps	22.08	30
		9 Mbps	22.07	30
		12 Mbps	22.20	30
		18 Mbps	22.59	30
		24 Mbps	22.68	30
		36 Mbps	22.52	30
		48 Mbps	22.49	30
		54 Mbps	22.59	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode)_40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	17.95	30
		27 Mbps	17.63	30
		40.5 Mbps	17.74	30
		54 Mbps	18.44	30
		81 Mbps	18.19	30
		108 Mbps	18.38	30
		121.5 Mbps	18.13	30
		135 Mbps	17.99	30
2437	6	13.5 Mbps	24.89	30
		27 Mbps	25.14	30
		40.5 Mbps	24.97	30
		54 Mbps	25.56	30
		81 Mbps	25.59	30
		108 Mbps	25.57	30
		121.5 Mbps	25.12	30
		135 Mbps	25.13	30
2452	9	13.5 Mbps	19.49	30
		27 Mbps	19.15	30
		40.5 Mbps	19.26	30
		54 Mbps	19.89	30
		81 Mbps	19.86	30
		108 Mbps	19.96	30
		121.5 Mbps	19.70	30
		135 Mbps	19.83	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode)_40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	17.35	30
		27 Mbps	17.12	30
		40.5 Mbps	17.30	30
		54 Mbps	17.79	30
		81 Mbps	17.65	30
		108 Mbps	17.75	30
		121.5 Mbps	17.89	30
		135 Mbps	18.02	30
2437	6	13.5 Mbps	24.66	30
		27 Mbps	24.53	30
		40.5 Mbps	24.47	30
		54 Mbps	25.00	30
		81 Mbps	24.77	30
		108 Mbps	24.84	30
		121.5 Mbps	24.90	30
		135 Mbps	24.89	30
2452	9	13.5 Mbps	18.95	30
		27 Mbps	18.90	30
		40.5 Mbps	18.85	30
		54 Mbps	19.44	30
		81 Mbps	19.16	30
		108 Mbps	19.28	30
		121.5 Mbps	19.30	30
		135 Mbps	19.39	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	20.67	30
		27 Mbps	20.39	30
		40.5 Mbps	20.54	30
		54 Mbps	21.14	30
		81 Mbps	20.94	30
		108 Mbps	21.09	30
		121.5 Mbps	21.02	30
		135 Mbps	21.02	30
2437	6	13.5 Mbps	27.79	30
		27 Mbps	27.86	30
		40.5 Mbps	27.74	30
		54 Mbps	28.30	30
		81 Mbps	28.21	30
		108 Mbps	28.23	30
		121.5 Mbps	28.02	30
		135 Mbps	28.02	30
2452	9	13.5 Mbps	22.24	30
		27 Mbps	22.04	30
		40.5 Mbps	22.07	30
		54 Mbps	22.68	30
		81 Mbps	22.53	30
		108 Mbps	22.64	30
		121.5 Mbps	22.51	30
		135 Mbps	22.63	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	18.89	30
		9 Mbps	18.84	30
		12 Mbps	18.54	30
		18 Mbps	18.56	30
		24 Mbps	19.04	30
		36 Mbps	18.90	30
		48 Mbps	18.96	30
		54 Mbps	19.05	30
5785	157	6 Mbps	18.65	30
		9 Mbps	18.57	30
		12 Mbps	18.35	30
		18 Mbps	18.46	30
		24 Mbps	18.95	30
		36 Mbps	18.78	30
		48 Mbps	18.70	30
		54 Mbps	18.81	30
5825	165	6 Mbps	18.89	30
		9 Mbps	18.70	30
		12 Mbps	18.48	30
		18 Mbps	18.46	30
		24 Mbps	19.07	30
		36 Mbps	18.84	30
		48 Mbps	18.76	30
		54 Mbps	19.03	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	17.51	30
		9 Mbps	17.41	30
		12 Mbps	17.12	30
		18 Mbps	17.22	30
		24 Mbps	17.32	30
		36 Mbps	17.46	30
		48 Mbps	17.59	30
		54 Mbps	17.59	30
5785	157	6 Mbps	17.53	30
		9 Mbps	17.56	30
		12 Mbps	17.27	30
		18 Mbps	17.24	30
		24 Mbps	17.81	30
		36 Mbps	17.84	30
		48 Mbps	17.82	30
		54 Mbps	17.60	30
5825	165	6 Mbps	17.81	30
		9 Mbps	17.75	30
		12 Mbps	17.71	30
		18 Mbps	17.65	30
		24 Mbps	17.72	30
		36 Mbps	17.93	30
		48 Mbps	17.78	30
		54 Mbps	17.90	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	21.26	30
		9 Mbps	21.19	30
		12 Mbps	20.90	30
		18 Mbps	20.95	30
		24 Mbps	21.27	30
		36 Mbps	21.25	30
		48 Mbps	21.34	30
		54 Mbps	21.39	30
5785	157	6 Mbps	21.14	30
		9 Mbps	21.10	30
		12 Mbps	20.85	30
		18 Mbps	20.90	30
		24 Mbps	21.43	30
		36 Mbps	21.35	30
		48 Mbps	21.29	30
		54 Mbps	21.26	30
5825	165	6 Mbps	21.39	30
		9 Mbps	21.26	30
		12 Mbps	21.12	30
		18 Mbps	21.08	30
		24 Mbps	21.46	30
		36 Mbps	21.42	30
		48 Mbps	21.31	30
		54 Mbps	21.51	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode: 5745~5825)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	18.78	30
		13 Mbps	18.84	30
		19.5 Mbps	18.76	30
		26 Mbps	19.11	30
		39 Mbps	18.85	30
		52 Mbps	18.71	30
		58.5 Mbps	18.68	30
		65 Mbps	18.78	30
5785	157	6.5 Mbps	18.86	30
		13 Mbps	18.60	30
		19.5 Mbps	18.55	30
		26 Mbps	19.02	30
		39 Mbps	18.91	30
		52 Mbps	18.97	30
		58.5 Mbps	18.96	30
		65 Mbps	18.90	30
5825	165	6.5 Mbps	18.73	30
		13 Mbps	18.50	30
		19.5 Mbps	18.49	30
		26 Mbps	18.99	30
		39 Mbps	18.83	30
		52 Mbps	18.74	30
		58.5 Mbps	18.89	30
		65 Mbps	18.84	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode: 5745~5825)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	17.47	30
		13 Mbps	17.25	30
		19.5 Mbps	17.15	30
		26 Mbps	17.45	30
		39 Mbps	17.49	30
		52 Mbps	17.75	30
		58.5 Mbps	17.49	30
		65 Mbps	17.45	30
5785	157	6.5 Mbps	17.65	30
		13 Mbps	17.53	30
		19.5 Mbps	17.43	30
		26 Mbps	17.76	30
		39 Mbps	17.90	30
		52 Mbps	17.88	30
		58.5 Mbps	17.96	30
		65 Mbps	17.45	30
5825	165	6.5 Mbps	18.11	30
		13 Mbps	17.66	30
		19.5 Mbps	17.63	30
		26 Mbps	18.22	30
		39 Mbps	17.57	30
		52 Mbps	17.90	30
		58.5 Mbps	18.10	30
		65 Mbps	17.82	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode: 5745~5825) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	21.18	30
		13 Mbps	21.13	30
		19.5 Mbps	21.04	30
		26 Mbps	21.37	30
		39 Mbps	21.23	30
		52 Mbps	21.27	30
		58.5 Mbps	21.14	30
		65 Mbps	21.18	30
5785	157	6.5 Mbps	21.31	30
		13 Mbps	21.11	30
		19.5 Mbps	21.04	30
		26 Mbps	21.45	30
		39 Mbps	21.44	30
		52 Mbps	21.47	30
		58.5 Mbps	21.50	30
		65 Mbps	21.25	30
5825	165	6.5 Mbps	21.44	30
		13 Mbps	21.11	30
		19.5 Mbps	21.09	30
		26 Mbps	21.63	30
		39 Mbps	21.26	30
		52 Mbps	21.35	30
		58.5 Mbps	21.52	30
		65 Mbps	21.37	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	18.60	30
		27 Mbps	18.56	30
		40.5 Mbps	18.67	30
		54 Mbps	18.75	30
		81 Mbps	18.79	30
		108 Mbps	18.65	30
		121.5 Mbps	18.38	30
		135 Mbps	18.25	30
5795	159	13.5 Mbps	18.59	30
		27 Mbps	18.22	30
		40.5 Mbps	17.97	30
		54 Mbps	18.54	30
		81 Mbps	18.11	30
		108 Mbps	18.21	30
		121.5 Mbps	18.17	30
		135 Mbps	18.24	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	17.58	30
		27 Mbps	17.40	30
		40.5 Mbps	17.32	30
		54 Mbps	17.72	30
		81 Mbps	17.28	30
		108 Mbps	17.34	30
		121.5 Mbps	17.42	30
		135 Mbps	17.54	30
5795	159	13.5 Mbps	17.81	30
		27 Mbps	17.62	30
		40.5 Mbps	17.52	30
		54 Mbps	17.89	30
		81 Mbps	17.64	30
		108 Mbps	17.71	30
		121.5 Mbps	17.54	30
		135 Mbps	17.69	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	21.13	30
		27 Mbps	21.03	30
		40.5 Mbps	21.06	30
		54 Mbps	21.28	30
		81 Mbps	21.11	30
		108 Mbps	21.05	30
		121.5 Mbps	20.94	30
		135 Mbps	20.92	30
5795	159	13.5 Mbps	21.23	30
		27 Mbps	20.94	30
		40.5 Mbps	20.76	30
		54 Mbps	21.24	30
		81 Mbps	20.89	30
		108 Mbps	20.98	30
		121.5 Mbps	20.88	30
		135 Mbps	20.98	30

Average

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	14.22	30
		2 Mbps	14.16	30
		5.5 Mbps	13.75	30
		11 Mbps	13.68	30
2437	6	1 Mbps	14.59	30
		2 Mbps	14.47	30
		5.5 Mbps	14.38	30
		11 Mbps	14.26	30
2462	11	1 Mbps	14.75	30
		2 Mbps	14.57	30
		5.5 Mbps	14.50	30
		11 Mbps	14.41	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	14.21	30
		2 Mbps	13.73	30
		5.5 Mbps	13.59	30
		11 Mbps	13.51	30
2437	6	1 Mbps	14.32	30
		2 Mbps	14.24	30
		5.5 Mbps	14.04	30
		11 Mbps	13.90	30
2462	11	1 Mbps	14.48	30
		2 Mbps	14.27	30
		5.5 Mbps	14.19	30
		11 Mbps	14.06	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	11.14	30
		9 Mbps	11.04	30
		12 Mbps	10.95	30
		18 Mbps	10.83	30
		24 Mbps	10.67	30
		36 Mbps	10.40	30
		48 Mbps	10.37	30
		54 Mbps	9.91	30
2437	6	6 Mbps	16.51	30
		9 Mbps	16.45	30
		12 Mbps	16.39	30
		18 Mbps	16.20	30
		24 Mbps	16.00	30
		36 Mbps	15.60	30
		48 Mbps	15.29	30
		54 Mbps	15.15	30
2462	11	6 Mbps	11.74	30
		9 Mbps	11.56	30
		12 Mbps	11.48	30
		18 Mbps	11.29	30
		24 Mbps	11.18	30
		36 Mbps	10.93	30
		48 Mbps	10.64	30
		54 Mbps	10.91	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	11.34	30
		9 Mbps	11.26	30
		12 Mbps	11.07	30
		18 Mbps	10.83	30
		24 Mbps	10.69	30
		36 Mbps	10.46	30
		48 Mbps	10.07	30
		54 Mbps	10.01	30
2437	6	6 Mbps	16.25	30
		9 Mbps	16.04	30
		12 Mbps	15.95	30
		18 Mbps	15.86	30
		24 Mbps	15.70	30
		36 Mbps	15.42	30
		48 Mbps	15.08	30
		54 Mbps	14.98	30
2462	11	6 Mbps	11.77	30
		9 Mbps	11.73	30
		12 Mbps	11.66	30
		18 Mbps	11.15	30
		24 Mbps	10.97	30
		36 Mbps	10.70	30
		48 Mbps	10.48	30
		54 Mbps	10.32	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	14.25	30
		9 Mbps	14.16	30
		12 Mbps	14.02	30
		18 Mbps	13.84	30
		24 Mbps	13.69	30
		36 Mbps	13.44	30
		48 Mbps	13.23	30
		54 Mbps	12.97	30
2437	6	6 Mbps	19.39	30
		9 Mbps	19.26	30
		12 Mbps	19.19	30
		18 Mbps	19.04	30
		24 Mbps	18.86	30
		36 Mbps	18.52	30
		48 Mbps	18.20	30
		54 Mbps	18.08	30
2462	11	6 Mbps	14.77	30
		9 Mbps	14.66	30
		12 Mbps	14.58	30
		18 Mbps	14.23	30
		24 Mbps	14.09	30
		36 Mbps	13.83	30
		48 Mbps	13.57	30
		54 Mbps	13.64	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	10.36	30
		13 Mbps	10.06	30
		19.5 Mbps	10.04	30
		26 Mbps	9.89	30
		39 Mbps	9.61	30
		52 Mbps	8.97	30
		58.5 Mbps	8.88	30
		65 Mbps	8.77	30
2437	6	6.5 Mbps	16.51	30
		13 Mbps	16.30	30
		19.5 Mbps	16.27	30
		26 Mbps	15.95	30
		39 Mbps	15.67	30
		52 Mbps	15.38	30
		58.5 Mbps	15.25	30
		65 Mbps	15.14	30
2462	11	6.5 Mbps	11.16	30
		13 Mbps	10.93	30
		19.5 Mbps	10.65	30
		26 Mbps	10.52	30
		39 Mbps	10.23	30
		52 Mbps	10.33	30
		58.5 Mbps	10.27	30
		65 Mbps	9.66	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	9.71	30
		13 Mbps	9.78	30
		19.5 Mbps	9.37	30
		26 Mbps	9.23	30
		39 Mbps	8.93	30
		52 Mbps	8.66	30
		58.5 Mbps	8.54	30
		65 Mbps	8.41	30
2437	6	6.5 Mbps	16.27	30
		13 Mbps	16.04	30
		19.5 Mbps	15.81	30
		26 Mbps	15.75	30
		39 Mbps	15.58	30
		52 Mbps	15.16	30
		58.5 Mbps	14.98	30
		65 Mbps	14.87	30
2462	11	6.5 Mbps	10.92	30
		13 Mbps	10.78	30
		19.5 Mbps	10.64	30
		26 Mbps	10.47	30
		39 Mbps	10.05	30
		52 Mbps	9.84	30
		58.5 Mbps	9.69	30
		65 Mbps	9.55	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	13.06	30
		9 Mbps	12.93	30
		12 Mbps	12.73	30
		18 Mbps	12.58	30
		24 Mbps	12.29	30
		36 Mbps	11.83	30
		48 Mbps	11.72	30
		54 Mbps	11.60	30
2437	6	6 Mbps	19.40	30
		9 Mbps	19.18	30
		12 Mbps	19.06	30
		18 Mbps	18.86	30
		24 Mbps	18.64	30
		36 Mbps	18.28	30
		48 Mbps	18.13	30
		54 Mbps	18.02	30
2462	11	6 Mbps	14.05	30
		9 Mbps	13.87	30
		12 Mbps	13.66	30
		18 Mbps	13.51	30
		24 Mbps	13.15	30
		36 Mbps	13.10	30
		48 Mbps	13.00	30
		54 Mbps	12.62	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode)_40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	9.74	30
		27 Mbps	9.41	30
		40.5 Mbps	8.74	30
		54 Mbps	8.87	30
		81 Mbps	7.84	30
		108 Mbps	7.77	30
		121.5 Mbps	7.61	30
		135 Mbps	7.06	30
2437	6	13.5 Mbps	16.60	30
		27 Mbps	16.42	30
		40.5 Mbps	16.20	30
		54 Mbps	15.51	30
		81 Mbps	15.06	30
		108 Mbps	14.87	30
		121.5 Mbps	14.50	30
		135 Mbps	14.29	30
2452	9	13.5 Mbps	11.20	30
		27 Mbps	10.45	30
		40.5 Mbps	10.08	30
		54 Mbps	9.89	30
		81 Mbps	9.69	30
		108 Mbps	9.29	30
		121.5 Mbps	9.17	30
		135 Mbps	8.94	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode)_40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	9.10	30
		27 Mbps	8.69	30
		40.5 Mbps	8.50	30
		54 Mbps	8.09	30
		81 Mbps	7.49	30
		108 Mbps	7.24	30
		121.5 Mbps	7.11	30
		135 Mbps	6.93	30
2437	6	13.5 Mbps	16.14	30
		27 Mbps	15.77	30
		40.5 Mbps	15.51	30
		54 Mbps	15.16	30
		81 Mbps	14.65	30
		108 Mbps	14.33	30
		121.5 Mbps	14.18	30
		135 Mbps	13.95	30
2452	9	13.5 Mbps	10.68	30
		27 Mbps	10.17	30
		40.5 Mbps	10.03	30
		54 Mbps	9.62	30
		81 Mbps	9.28	30
		108 Mbps	8.64	30
		121.5 Mbps	8.52	30
		135 Mbps	8.44	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	13.5 Mbps	12.44	30
		27 Mbps	12.08	30
		40.5 Mbps	11.63	30
		54 Mbps	11.51	30
		81 Mbps	10.68	30
		108 Mbps	10.52	30
		121.5 Mbps	10.38	30
		135 Mbps	10.01	30
2437	6	13.5 Mbps	19.39	30
		27 Mbps	19.12	30
		40.5 Mbps	18.88	30
		54 Mbps	18.35	30
		81 Mbps	17.87	30
		108 Mbps	17.62	30
		121.5 Mbps	17.35	30
		135 Mbps	17.13	30
2452	9	13.5 Mbps	13.96	30
		27 Mbps	13.32	30
		40.5 Mbps	13.07	30
		54 Mbps	12.77	30
		81 Mbps	12.50	30
		108 Mbps	11.99	30
		121.5 Mbps	11.87	30
		135 Mbps	11.71	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	11.66	30
		9 Mbps	11.60	30
		12 Mbps	11.50	30
		18 Mbps	11.20	30
		24 Mbps	11.02	30
		36 Mbps	10.80	30
		48 Mbps	10.50	30
		54 Mbps	10.38	30
5785	157	6 Mbps	11.54	30
		9 Mbps	11.46	30
		12 Mbps	11.31	30
		18 Mbps	11.44	30
		24 Mbps	10.92	30
		36 Mbps	10.68	30
		48 Mbps	10.41	30
		54 Mbps	10.41	30
5825	165	6 Mbps	11.61	30
		9 Mbps	11.53	30
		12 Mbps	11.44	30
		18 Mbps	11.25	30
		24 Mbps	10.99	30
		36 Mbps	10.71	30
		48 Mbps	10.49	30
		54 Mbps	10.28	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	10.29	30
		9 Mbps	10.17	30
		12 Mbps	10.03	30
		18 Mbps	9.83	30
		24 Mbps	9.71	30
		36 Mbps	9.35	30
		48 Mbps	9.16	30
		54 Mbps	8.93	30
5785	157	6 Mbps	10.27	30
		9 Mbps	10.22	30
		12 Mbps	10.14	30
		18 Mbps	10.05	30
		24 Mbps	9.88	30
		36 Mbps	9.49	30
		48 Mbps	9.21	30
		54 Mbps	9.03	30
5825	165	6 Mbps	10.72	30
		9 Mbps	10.55	30
		12 Mbps	10.43	30
		18 Mbps	10.30	30
		24 Mbps	10.11	30
		36 Mbps	9.55	30
		48 Mbps	9.60	30
		54 Mbps	9.40	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	14.04	30
		9 Mbps	13.95	30
		12 Mbps	13.84	30
		18 Mbps	13.58	30
		24 Mbps	13.42	30
		36 Mbps	13.15	30
		48 Mbps	12.89	30
		54 Mbps	12.73	30
5785	157	6 Mbps	13.96	30
		9 Mbps	13.89	30
		12 Mbps	13.77	30
		18 Mbps	13.81	30
		24 Mbps	13.44	30
		36 Mbps	13.14	30
		48 Mbps	12.86	30
		54 Mbps	12.78	30
5825	165	6 Mbps	14.20	30
		9 Mbps	14.08	30
		12 Mbps	13.97	30
		18 Mbps	13.81	30
		24 Mbps	13.58	30
		36 Mbps	13.18	30
		48 Mbps	13.08	30
		54 Mbps	12.87	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode: 5745~5825)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	11.79	30
		13 Mbps	11.58	30
		19.5 Mbps	11.06	30
		26 Mbps	10.89	30
		39 Mbps	10.57	30
		52 Mbps	10.32	30
		58.5 Mbps	10.18	30
		65 Mbps	9.98	30
5785	157	6.5 Mbps	11.64	30
		13 Mbps	11.48	30
		19.5 Mbps	11.28	30
		26 Mbps	11.10	30
		39 Mbps	10.70	30
		52 Mbps	10.43	30
		58.5 Mbps	10.40	30
		65 Mbps	10.30	30
5825	165	6.5 Mbps	11.56	30
		13 Mbps	11.39	30
		19.5 Mbps	11.17	30
		26 Mbps	10.95	30
		39 Mbps	10.63	30
		52 Mbps	10.38	30
		58.5 Mbps	10.24	30
		65 Mbps	10.08	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode: 5745~5825)_20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	10.19	30
		13 Mbps	10.04	30
		19.5 Mbps	9.65	30
		26 Mbps	9.66	30
		39 Mbps	9.29	30
		52 Mbps	9.01	30
		58.5 Mbps	8.91	30
		65 Mbps	8.83	30
5785	157	6.5 Mbps	10.29	30
		13 Mbps	10.08	30
		19.5 Mbps	9.98	30
		26 Mbps	9.83	30
		39 Mbps	9.43	30
		52 Mbps	9.11	30
		58.5 Mbps	9.01	30
		65 Mbps	8.93	30
5825	165	6.5 Mbps	10.71	30
		13 Mbps	10.38	30
		19.5 Mbps	10.19	30
		26 Mbps	10.08	30
		39 Mbps	9.76	30
		52 Mbps	9.57	30
		58.5 Mbps	9.40	30
		65 Mbps	9.18	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode: 5745~5825) _20 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	14.07	30
		13 Mbps	13.89	30
		19.5 Mbps	13.42	30
		26 Mbps	13.33	30
		39 Mbps	12.99	30
		52 Mbps	12.72	30
		58.5 Mbps	12.60	30
		65 Mbps	12.45	30
5785	157	6.5 Mbps	14.03	30
		13 Mbps	13.85	30
		19.5 Mbps	13.69	30
		26 Mbps	13.52	30
		39 Mbps	13.12	30
		52 Mbps	12.83	30
		58.5 Mbps	12.77	30
		65 Mbps	12.68	30
5825	165	6.5 Mbps	14.17	30
		13 Mbps	13.92	30
		19.5 Mbps	13.72	30
		26 Mbps	13.55	30
		39 Mbps	13.23	30
		52 Mbps	13.00	30
		58.5 Mbps	12.85	30
		65 Mbps	12.66	30

■ TEST RESULTS_Ant.0

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	11.23	30
		27 Mbps	10.86	30
		40.5 Mbps	10.24	30
		54 Mbps	9.99	30
		81 Mbps	9.56	30
		108 Mbps	9.08	30
		121.5 Mbps	8.91	30
		135 Mbps	8.70	30
5795	159	13.5 Mbps	10.91	30
		27 Mbps	10.49	30
		40.5 Mbps	10.08	30
		54 Mbps	9.82	30
		81 Mbps	9.31	30
		108 Mbps	8.99	30
		121.5 Mbps	8.87	30
		135 Mbps	8.61	30

■ TEST RESULTS_Ant.1

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	10.05	30
		27 Mbps	9.71	30
		40.5 Mbps	9.42	30
		54 Mbps	9.02	30
		81 Mbps	8.49	30
		108 Mbps	8.19	30
		121.5 Mbps	8.05	30
		135 Mbps	7.86	30
5795	159	13.5 Mbps	10.25	30
		27 Mbps	9.68	30
		40.5 Mbps	9.41	30
		54 Mbps	9.31	30
		81 Mbps	8.76	30
		108 Mbps	8.32	30
		121.5 Mbps	8.15	30
		135 Mbps	7.93	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n Mode: 5755~5795) _40 MHz BW

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	13.69	30
		27 Mbps	13.33	30
		40.5 Mbps	12.86	30
		54 Mbps	12.54	30
		81 Mbps	12.07	30
		108 Mbps	11.67	30
		121.5 Mbps	11.51	30
		135 Mbps	11.31	30
5795	159	13.5 Mbps	13.60	30
		27 Mbps	13.11	30
		40.5 Mbps	12.77	30
		54 Mbps	12.58	30
		81 Mbps	12.05	30
		108 Mbps	11.68	30
		121.5 Mbps	11.54	30
		135 Mbps	11.29	30

Peak

RESULT PLOTS_Ant.0

Conducted Output Power (802.11b-CH 1) 1Mbps



Conducted Output Power (802.11b-CH 1) 2Mbps



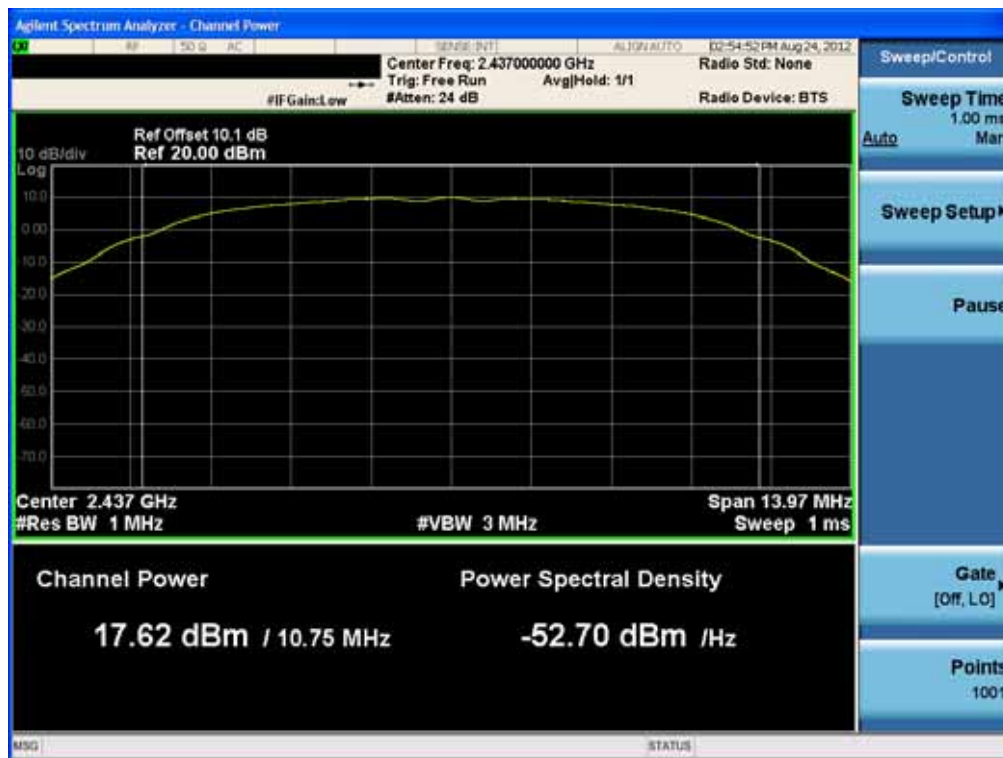
Conducted Output Power (802.11b-CH 1) 5.5Mbps



Conducted Output Power (802.11b-CH 1) 11Mbps



Conducted Output Power (802.11b-CH 6) 1Mbps



Conducted Output Power (802.11b-CH 6) 2Mbps



Conducted Output Power (802.11b-CH 6) 5.5Mbps



Conducted Output Power (802.11b-CH 6) 11Mbps



Conducted Output Power (802.11b-CH 11) 1Mbps



Conducted Output Power (802.11b-CH 11) 2Mbps



Conducted Output Power (802.11b-CH 11) 5.5Mbps



Conducted Output Power (802.11b-CH 11) 11Mbps



RESULT PLOTS_Ant.1

Conducted Output Power (802.11b-CH 1) 1Mbps



Conducted Output Power (802.11b-CH 1) 2Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR09-1	Date of Issue: September 21, 2012	EUT Type: Wi-Fi module	FCC ID: BEJTWFBM006D

Conducted Output Power (802.11b-CH 1) 5.5Mbps



Conducted Output Power (802.11b-CH 1) 11Mbps



Conducted Output Power (802.11b-CH 6) 1Mbps



Conducted Output Power (802.11b-CH 6) 2Mbps



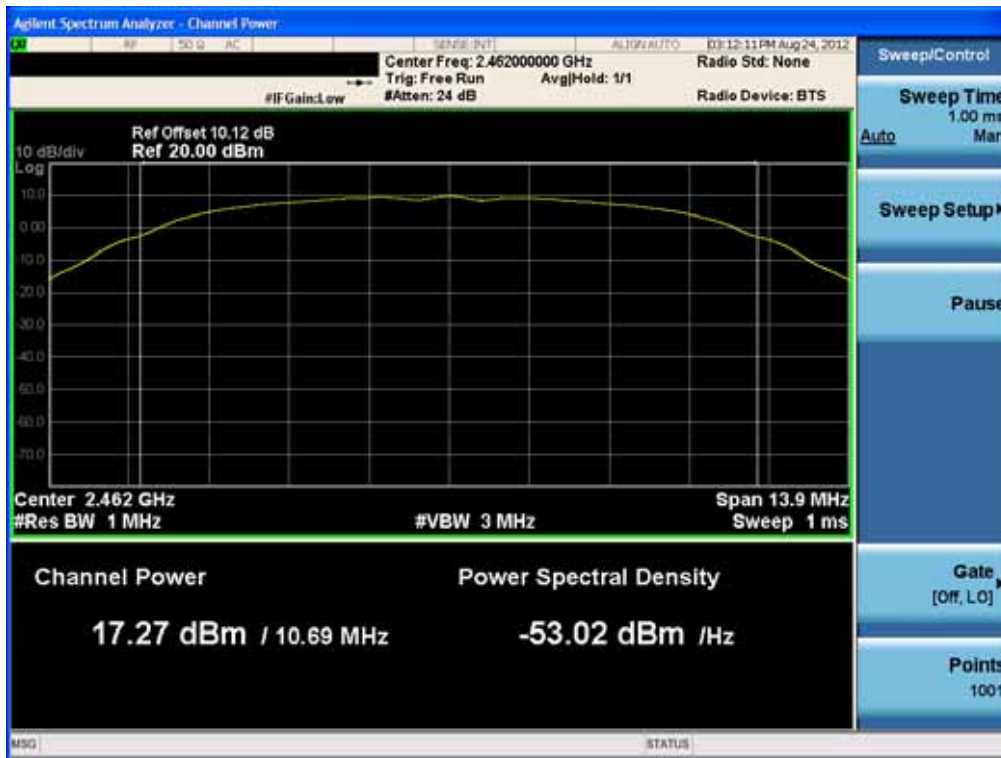
Conducted Output Power (802.11b-CH 6) 5.5Mbps



Conducted Output Power (802.11b-CH 6) 11Mbps



Conducted Output Power (802.11b-CH 11) 1Mbps



Conducted Output Power (802.11b-CH 11) 2Mbps



Conducted Output Power (802.11b-CH 11) 5.5Mbps



Conducted Output Power (802.11b-CH 11) 11Mbps



RESULT PLOTS_Ant.0

Conducted Output Power (802.11g-CH 1) 6Mbps



Conducted Output Power (802.11g-CH 1) 9Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR09-1	Date of Issue: September 21, 2012	EUT Type: Wi-Fi module	FCC ID: BEJTWFBM006D

Conducted Output Power (802.11g-CH 1) 12Mbps



Conducted Output Power (802.11g-CH 1) 18Mbps



Conducted Output Power (802.11g-CH 1) 24Mbps



Conducted Output Power (802.11g-CH 1) 36Mbps



Conducted Output Power (802.11g-CH 1) 48Mbps



Conducted Output Power (802.11g-CH 1) 54Mbps



Conducted Output Power (802.11g-CH 6) 6Mbps



Conducted Output Power (802.11g-CH 6) 9Mbps



Conducted Output Power (802.11g-CH 6) 12Mbps



Conducted Output Power (802.11g-CH 6) 18Mbps



Conducted Output Power (802.11g-CH 6) 24Mbps



Conducted Output Power (802.11g-CH 6) 36Mbps



Conducted Output Power (802.11g-CH 6) 48Mbps



Conducted Output Power (802.11g-CH 6) 54Mbps



Conducted Output Power (802.11g-CH 11) 6Mbps



Conducted Output Power (802.11g-CH 11) 9Mbps



Conducted Output Power (802.11g-CH 11) 12Mbps



Conducted Output Power (802.11g-CH 11) 18Mbps



Conducted Output Power (802.11g-CH 11) 24Mbps



Conducted Output Power (802.11g-CH 11) 36Mbps



Conducted Output Power (802.11g-CH 11) 48Mbps



Conducted Output Power (802.11g-CH 11) 54Mbps



RESULT PLOTS_Ant.1

Conducted Output Power (802.11g-CH 1) 6Mbps



Conducted Output Power (802.11g-CH 1) 9Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR09-1	Date of Issue: September 21, 2012	EUT Type: Wi-Fi module	FCC ID: BEJTWFBM006D

Conducted Output Power (802.11g-CH 1) 12Mbps



Conducted Output Power (802.11g-CH 1) 18Mbps



Conducted Output Power (802.11g-CH 1) 24Mbps



Conducted Output Power (802.11g-CH 1) 36Mbps



Conducted Output Power (802.11g-CH 1) 48Mbps



Conducted Output Power (802.11g-CH 1) 54Mbps



Conducted Output Power (802.11g-CH 6) 6Mbps



Conducted Output Power (802.11g-CH 6) 9Mbps



Conducted Output Power (802.11g-CH 6) 12Mbps



Conducted Output Power (802.11g-CH 6) 18Mbps



Conducted Output Power (802.11g-CH 6) 24Mbps



Conducted Output Power (802.11g-CH 6) 36Mbps



Conducted Output Power (802.11g-CH 6) 48Mbps



Conducted Output Power (802.11g-CH 6) 54Mbps



Conducted Output Power (802.11g-CH 11) 6Mbps



Conducted Output Power (802.11g-CH 11) 9Mbps



Conducted Output Power (802.11g-CH 11) 12Mbps



Conducted Output Power (802.11g-CH 11) 18Mbps



Conducted Output Power (802.11g-CH 11) 24Mbps



Conducted Output Power (802.11g-CH 11) 36Mbps



Conducted Output Power (802.11g-CH 11) 48Mbps



Conducted Output Power (802.11g-CH 11) 54Mbps



RESULT PLOTS_Ant.0_ 20 MHz BW

Conducted Output Power (802.11n-CH 1) 6.5Mbps



Conducted Output Power (802.11n-CH 1) 13Mbps



Conducted Output Power (802.11n-CH 1) 19.5Mbps



Conducted Output Power (802.11n-CH 1) 26Mbps



Conducted Output Power (802.11n-CH 1) 39Mbps



Conducted Output Power (802.11n-CH 1) 52Mbps



Conducted Output Power (802.11n-CH 1) 58.5Mbps



Conducted Output Power (802.11n-CH 1) 65Mbps



Conducted Output Power (802.11n-CH 6) 6.5Mbps



Conducted Output Power (802.11n-CH 6) 13Mbps



Conducted Output Power (802.11n-CH 6) 19.5Mbps



Conducted Output Power (802.11n-CH 6) 26Mbps



Conducted Output Power (802.11n-CH 6) 39Mbps



Conducted Output Power (802.11n-CH 6) 52Mbps



Conducted Output Power (802.11n-CH 6) 58.5Mbps



Conducted Output Power (802.11n-CH 6) 65Mbps



Conducted Output Power (802.11n-CH 11) 6.5Mbps



Conducted Output Power (802.11n-CH 11) 13Mbps



Conducted Output Power (802.11n-CH 11) 19.5Mbps



Conducted Output Power (802.11n-CH 11) 26Mbps



Conducted Output Power (802.11n-CH 11) 39Mbps



Conducted Output Power (802.11n-CH 11) 52Mbps



Conducted Output Power (802.11n-CH 11) 58.5Mbps



Conducted Output Power (802.11n-CH 11) 65Mbps



RESULT PLOTS_Ant.1_ 20 MHz BW

Conducted Output Power (802.11n-CH 1) 6.5Mbps



Conducted Output Power (802.11n-CH 1) 13Mbps

