



HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name:
Pantech Co., Ltd.

Address:
Pantech Bldg, I-2, DMC, Sangam-dong, Mapo-gu, Seoul,
121-792, Korea

Date of Issue:
July 05, 2012

Test Site/Location:
HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon,
Icheon-si, Kyunggi-Do, Korea

Report No.: HCTR1206FR19

HCT FRN: 0005866421

FCC ID : JYCP9090

APPLICANT : Pantech Co., Ltd.

FCC Model(s): P9090

EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC

Max. RF Output Power: Wi-Fi 802.11a (5180~5240) (14.96 dBm)/ Wi-Fi 802.11a (5260~5320) (14.16 dBm)/
Wi-Fi 802.11a (5500~5700) (14.57 dBm)/ Wi-Fi 802.11n_20 MHz BW (5180~5240) (12.36 dBm)/
Wi-Fi 802.11n_20 MHz BW(5260~5320)(12.62 dBm)/ Wi-Fi 802.11n_20 MHz BW(5500~5700)(12.47 dBm)/
Wi-Fi 802.11n_40 MHz BW(5190~5230) (8.17 dBm)/ Wi-Fi 802.11n_40 MHz BW (5270~5310) (8.28 dBm)/
Wi-Fi 802.11n_40 MHz BW (5510~5670) (12.69 dBm)

Frequency Range: 20 MHz BW
5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/
5500 MHz - 5700 MHz (UNII 3)

40 MHz BW
5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/
5510 MHz - 5670 MHz (UNII 3)

Modulation type: OFDM

FCC Classification: Unlicensed National Information Infrastructure(UNII)

FCC Rule Part(s): Part 15.407

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
: Sang Jun Lee
Manager of RF Team

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FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1206FR19	July 05, 2012	- First Approval Report

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
4. INSTRUMENT CALIBRATION.....	6
5. FACILITIES AND ACCREDITATIONS	6
5.1 FACILITIES	6
5.2 EQUIPMENT	6
6. ANTENNA REQUIREMENTS	7
7. SUMMARY OF TEST RESULTS	8
8. TEST RESULT	9
8.1 26 dB BANDWIDTH MEASUREMENT	9
8.2 OUTPUT POWER MEASUREMENT.....	2 7
8.3 POWER SPECTRAL DENSITY.....	1 3 8
8.4 PEAK EXCURSION RATIO.....	1 5 6
8.5 FREQUENCY STABILITY.....	1 7 2
8.6 RADIATED MEASUREMENT.....	1 7 5
8.6.1 RADIATED SPURIOUS EMISSIONS.....	1 7 5
8.6.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS	1 9 6
8.7 POWERLINE CONDUCTED EMISSIONS	2 0 0
9. LIST OF TEST EQUIPMENT	2 0 5

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC		FCC ID: JYCP9090



1. GENERAL INFORMATION

Applicant: Pantech Co., Ltd.
Address: Pantech Bldg, I-2, DMC, Sangam-dong, Mapo-gu, Seoul, 121-792, Korea
FCC ID: JYCP9090
EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC
Model name(s): P9090
Date(s) of Tests: May 31, 2012 ~ July 04, 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	850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC
FCC Model Name	P9090
Power Supply	DC 3.7 V
Frequency Range	TX_20 MHz: 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 3) 40 MHz: 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 3) RX_20 MHz: 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 3) 40 MHz: 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 3)
Max. RF Output Power:	Wi-Fi 802.11a (5180~5240) (14.96 dBm)/ Wi-Fi 802.11a (5260~5320) (14.16 dBm)/ Wi-Fi 802.11a (5500~5700) (14.57 dBm)/ Wi-Fi 802.11n_20 MHz BW (5180~5240) (12.36 dBm)/ Wi-Fi 802.11n_20 MHz BW(5260~5320)(12.62 dBm)/ Wi-Fi 802.11n_20 MHz BW(5500~5700)(12.47 dBm)/ Wi-Fi 802.11n_40 MHz BW(5190~5230) (8.17 dBm)/ Wi-Fi 802.11n_40 MHz BW (5270~5310) (8.28 dBm)/ Wi-Fi 802.11n_40 MHz BW (5510~5670) (12.69 dBm)
Modulation Type	OFDM(802.11a, 802.11n_20 MHz, 802.11n_40 MHz)
Antenna Specification	Manufacturer: DAEYOUNG KTX Antenna type: FPCB Antenna Peak Gain : -1.78 dBi

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.10-2009) and FCC KDB 789033 D01 General UNII Test Procedures v01r01 dated March 05, 2012 entitled “ Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E” 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.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	



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."

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

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

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

7. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
<u>TRANSMITTER MODE(TX)</u>				
26dB Bandwidth	NA	NA	CONDUCTED	PASS
Maximum Conducted Output Power	§15.407(a)(1)	< 4+10 log ₁₀ (BW) dBm (5150-5250 MHz) < 11+10 log ₁₀ (BW) dBm (5250-5350 MHz) < 11+10 log ₁₀ (BW) dBm (5470-5725 MHz)		PASS
Peak Power Spectral Density	§15.407(a)(1), (5)	<4 dBm/ MHz (5150-5250) <11 dBm/ MHz (5250-5350) <11 dBm/ MHz (5470-5725)		PASS
Peak Excursion	§15.407(a)(6)	<13 dB/ MHz maximum difference		PASS
Frequency Stability	§15.407(g)	NA		PASS
Undesirable Emissions	§15.407(b)(1), (2), (3)	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 5.407(b)(1), (5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207	<FCC 15.207 limits	LINE CONDUCTED	PASS

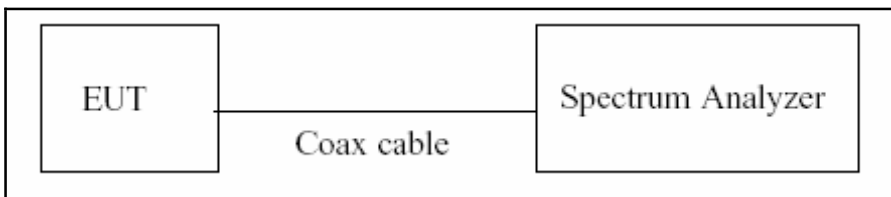
8. TEST RESULT

8.1 26 dB BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

RBW: approximately 1 % of the emission bandwidth

VBW: >RBW

SPAN: 40 MHz(20 MHz BW) / 60 MHz(40 MHz BW)

Detector = Peak

Trace mode = max hold

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

■ TEST RESULTS

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	22.244	N/A	Pass
5200	40	22.299	N/A	Pass
5240	48	22.457	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	22.676	N/A	Pass
5300	60	22.373	N/A	Pass
5320	64	22.292	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	22.173	N/A	Pass
5600	120	22.098	N/A	Pass
5700	140	23.564	N/A	Pass

■ TEST RESULTS

20 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	22.680	N/A	Pass
5200	40	22.473	N/A	Pass
5240	48	22.910	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	22.701	N/A	Pass
5300	60	22.488	N/A	Pass
5320	64	22.169	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	22.957	N/A	Pass
5600	120	23.063	N/A	Pass
5700	140	22.662	N/A	Pass

40 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	44.13	N/A	Pass
5230	46	43.37	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

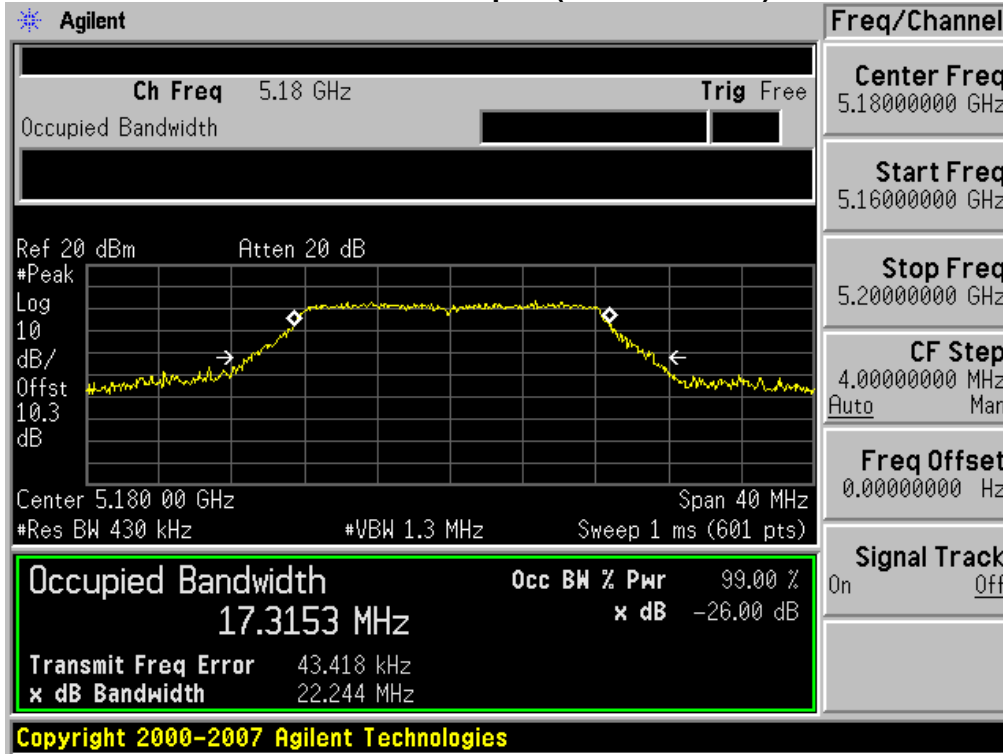
802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	43.41	N/A	Pass
5310	62	43.41	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

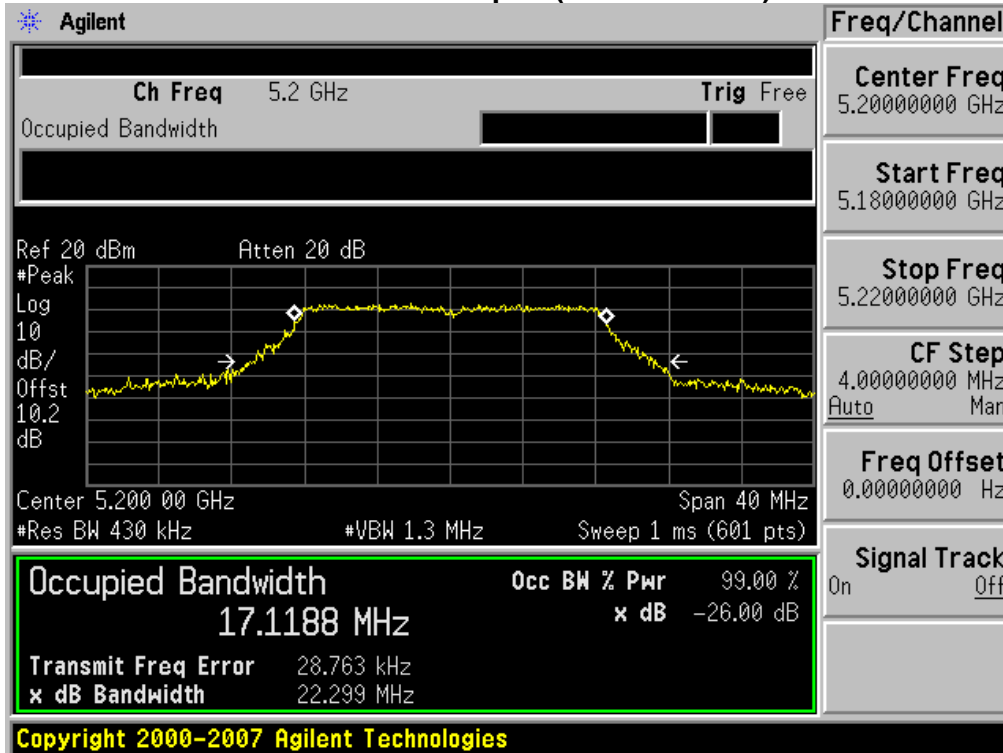
802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	46.41	N/A	Pass
5590	118	44.27	N/A	Pass
5670	134	44.61	N/A	Pass

RESULT PLOTS

26 dB Bandwidth plot (802.11a-CH 36)

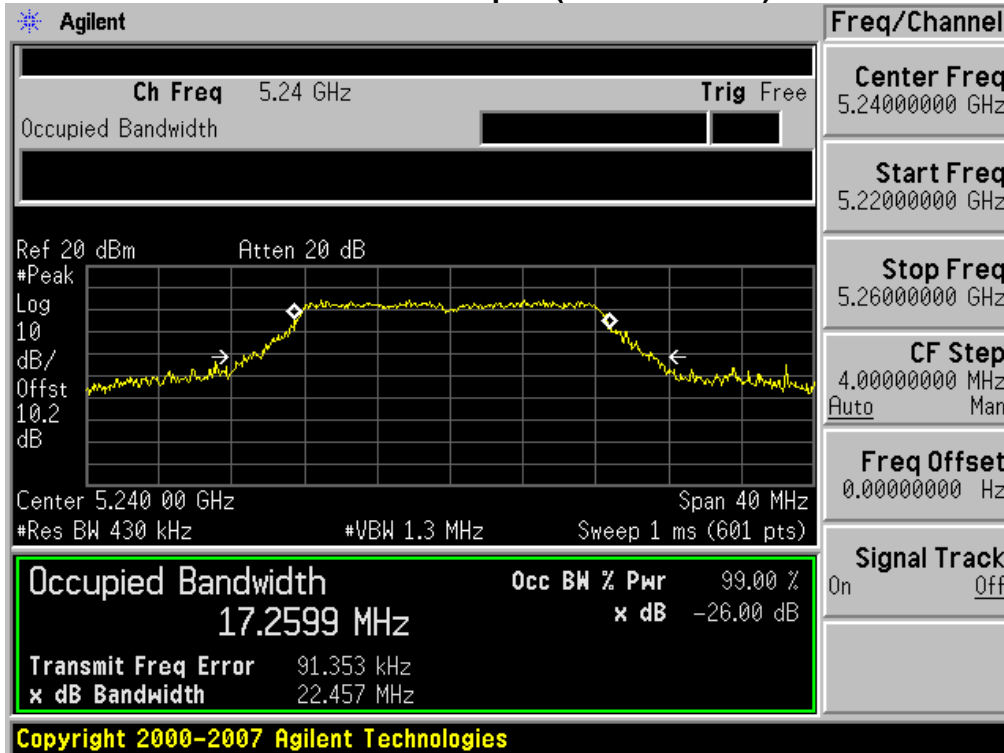


26 dB Bandwidth plot (802.11a-CH 40)

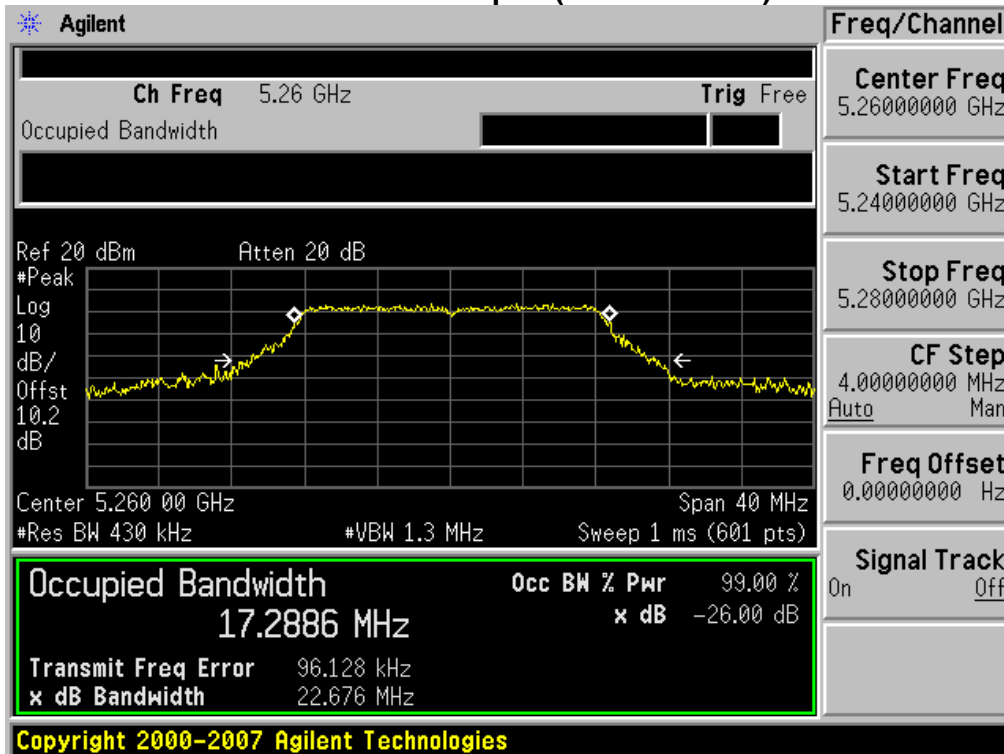


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

26 dB Bandwidth plot (802.11a-CH 48)

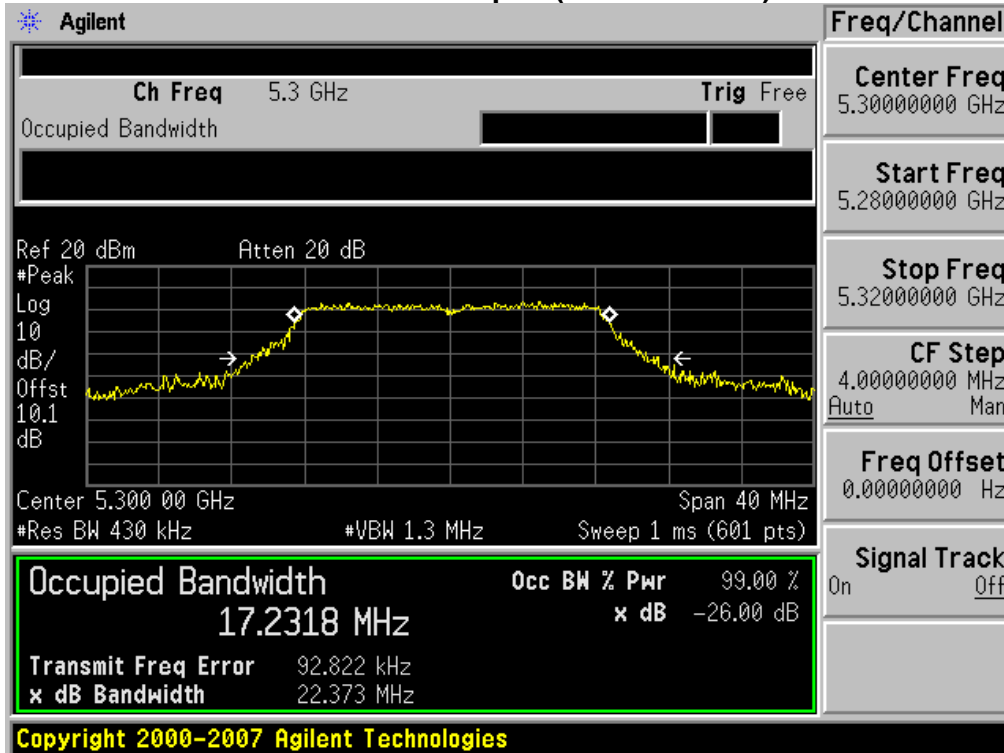


26 dB Bandwidth plot (802.11a-CH 52)

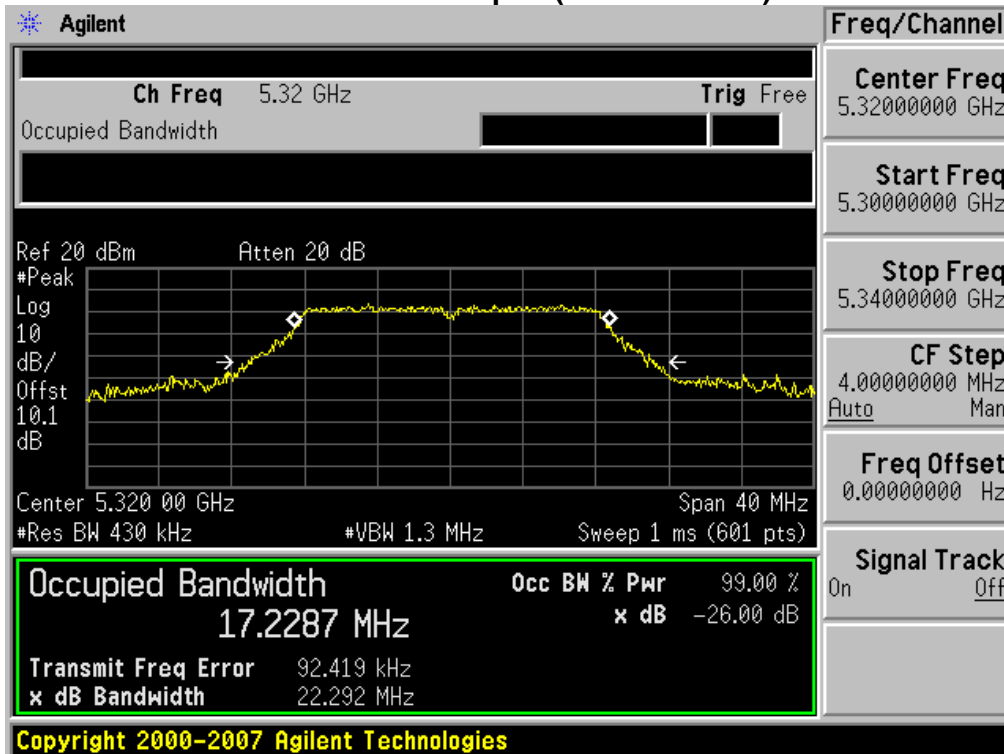


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

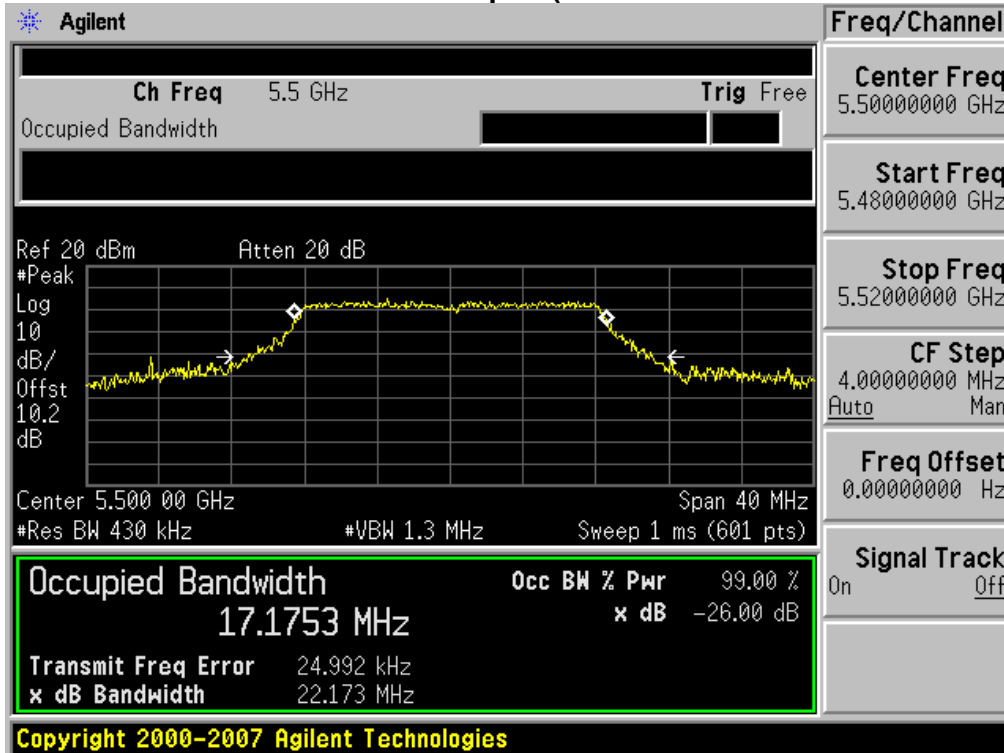
26 dB Bandwidth plot (802.11a-CH 60)



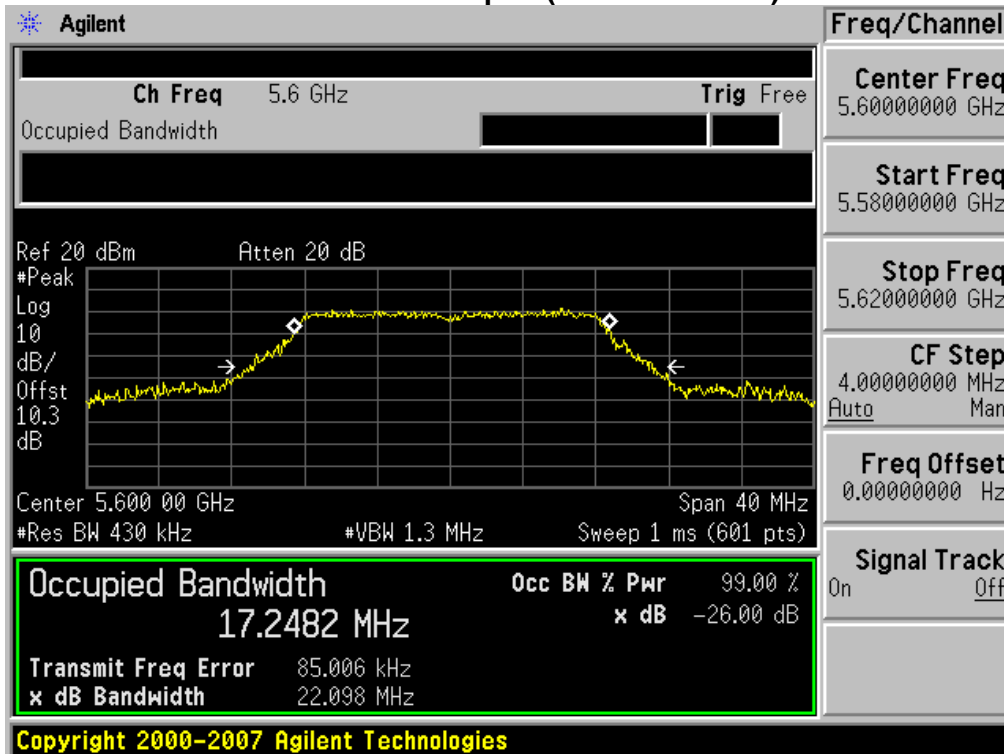
26 dB Bandwidth plot (802.11a-CH 64)



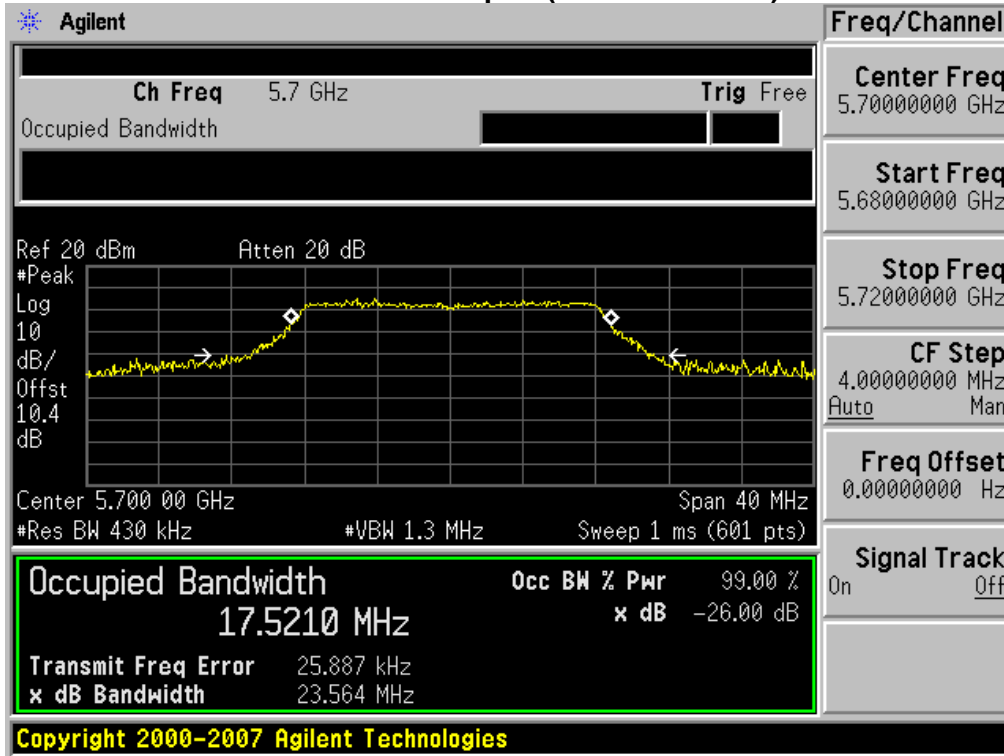
26 dB Bandwidth plot (802.11a-CH 100)



26 dB Bandwidth plot (802.11a-CH 120)

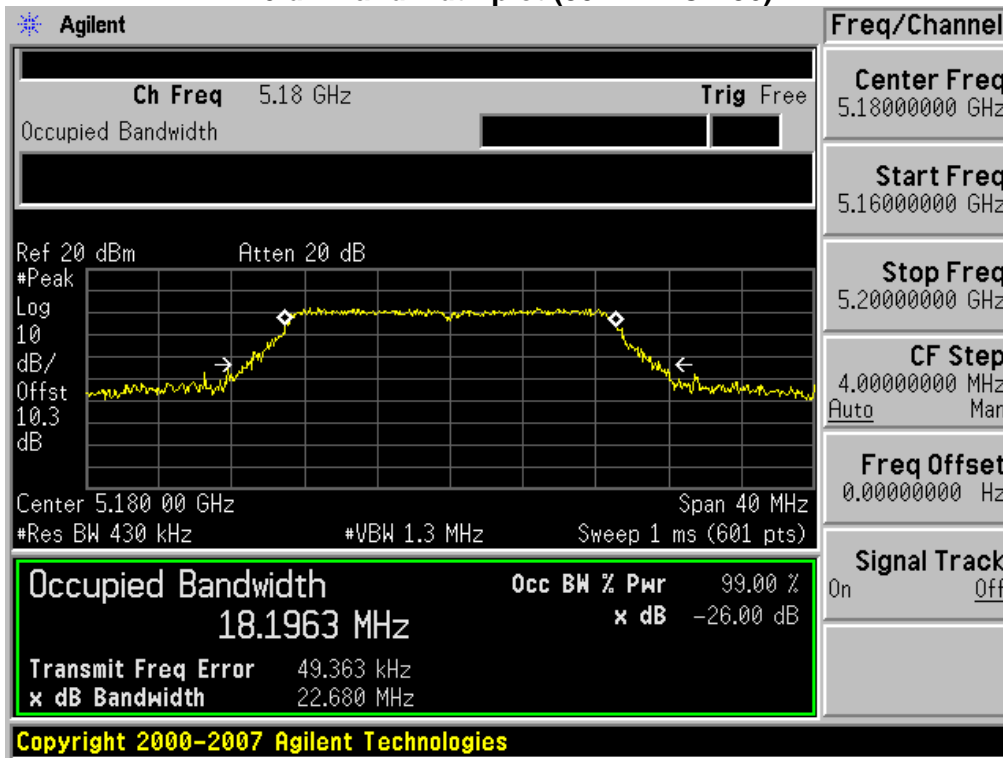


26 dB Bandwidth plot (802.11a-CH 140)

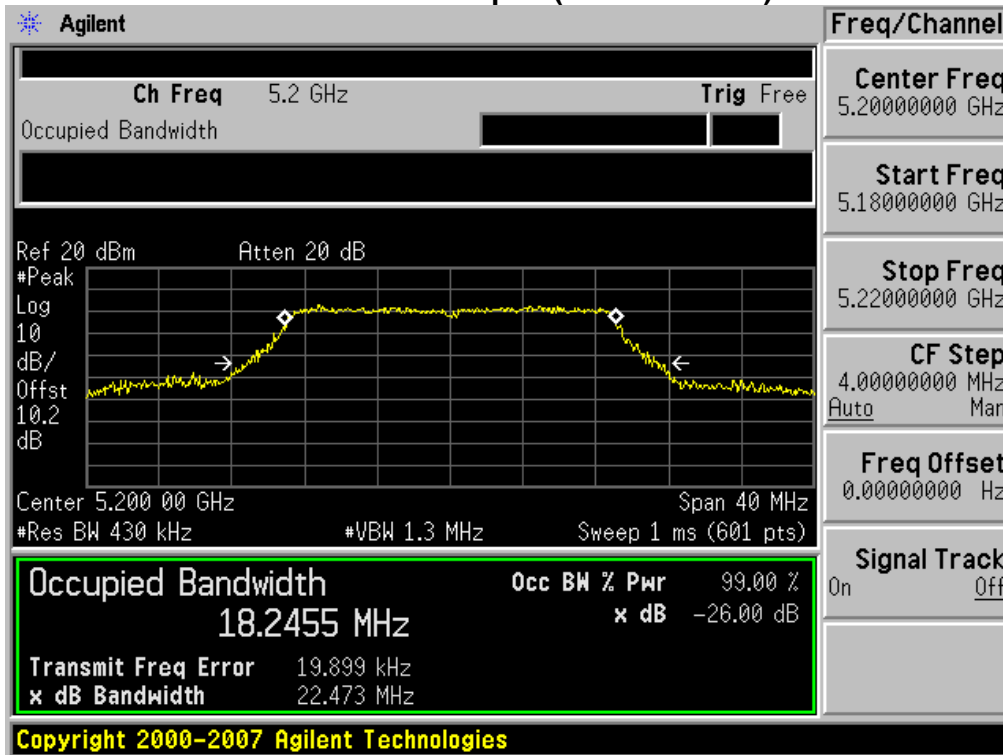


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

26 dB Bandwidth plot (802.11n-CH 36)

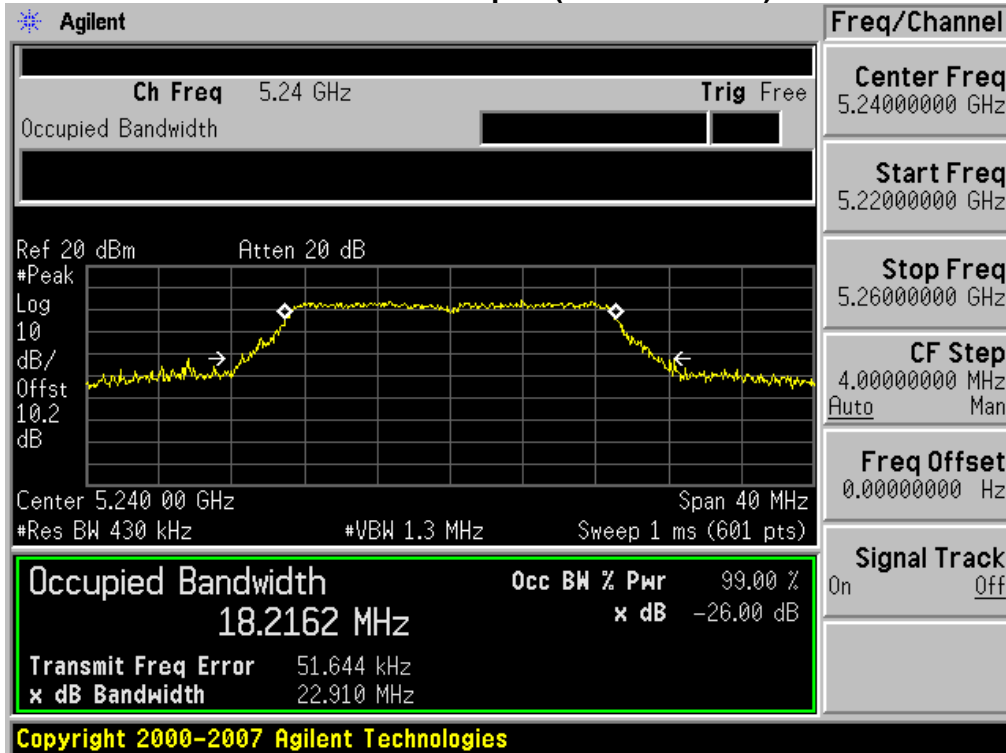


26 dB Bandwidth plot (802.11n-CH 40)

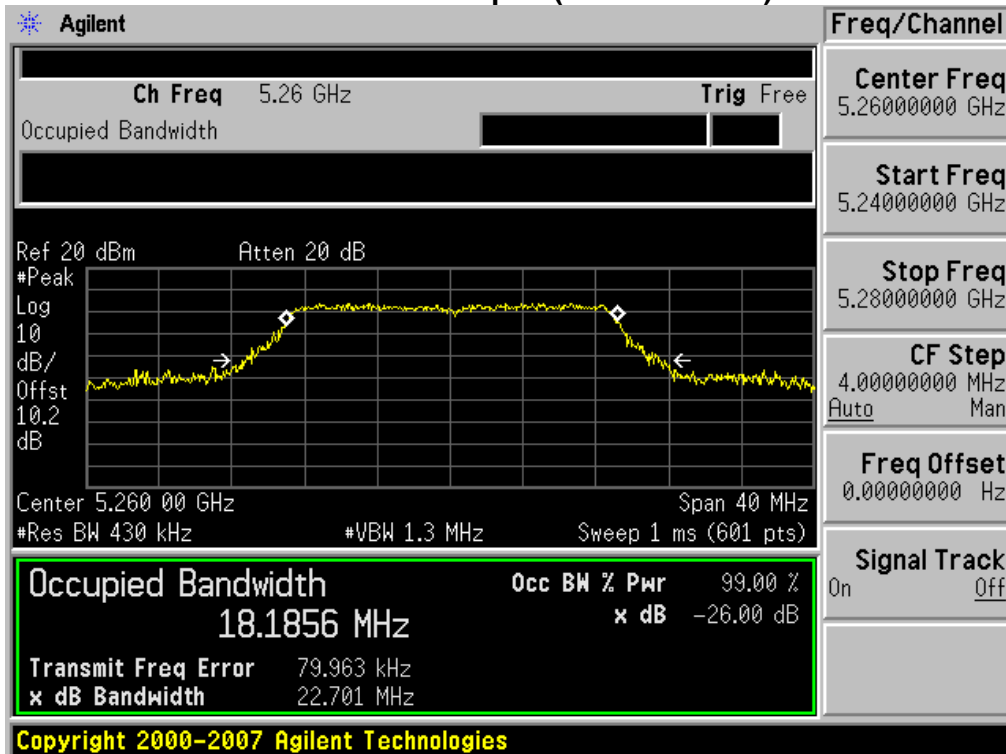


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

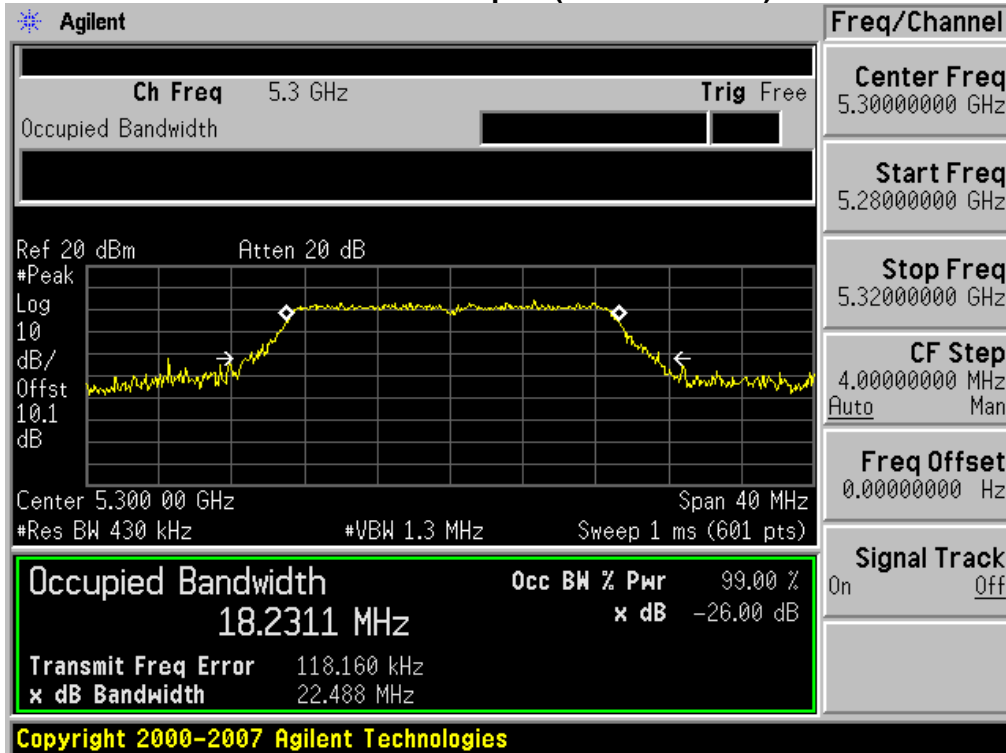
26 dB Bandwidth plot (802.11n-CH 48)



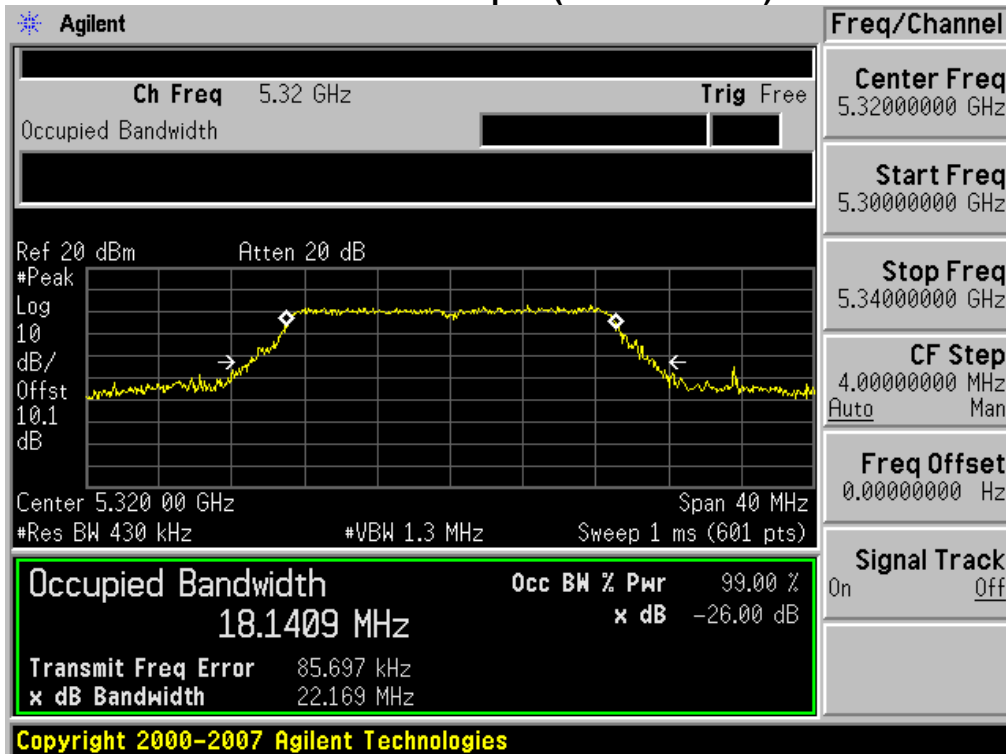
26 dB Bandwidth plot (802.11n-CH 52)



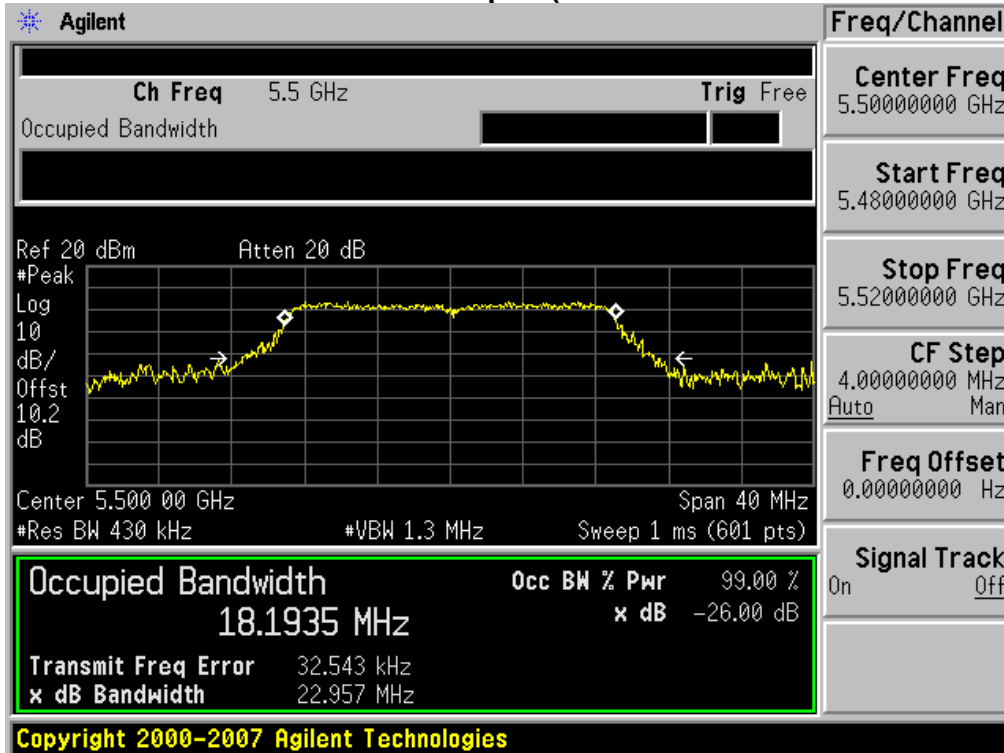
26 dB Bandwidth plot (802.11n-CH 60)



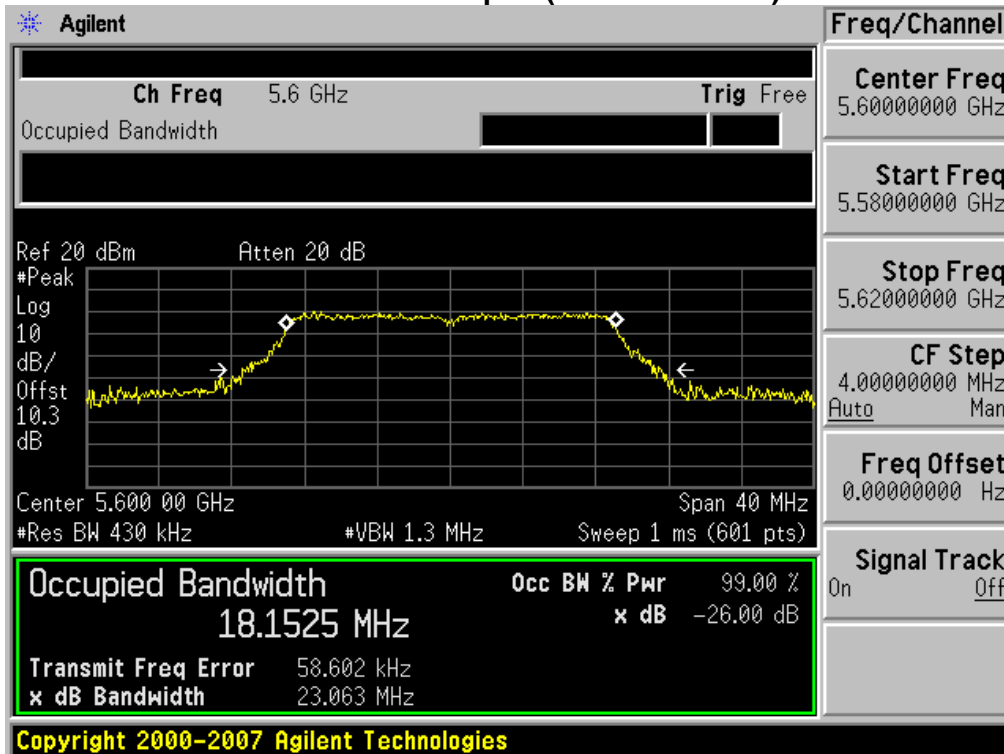
26 dB Bandwidth plot (802.11n-CH 64)



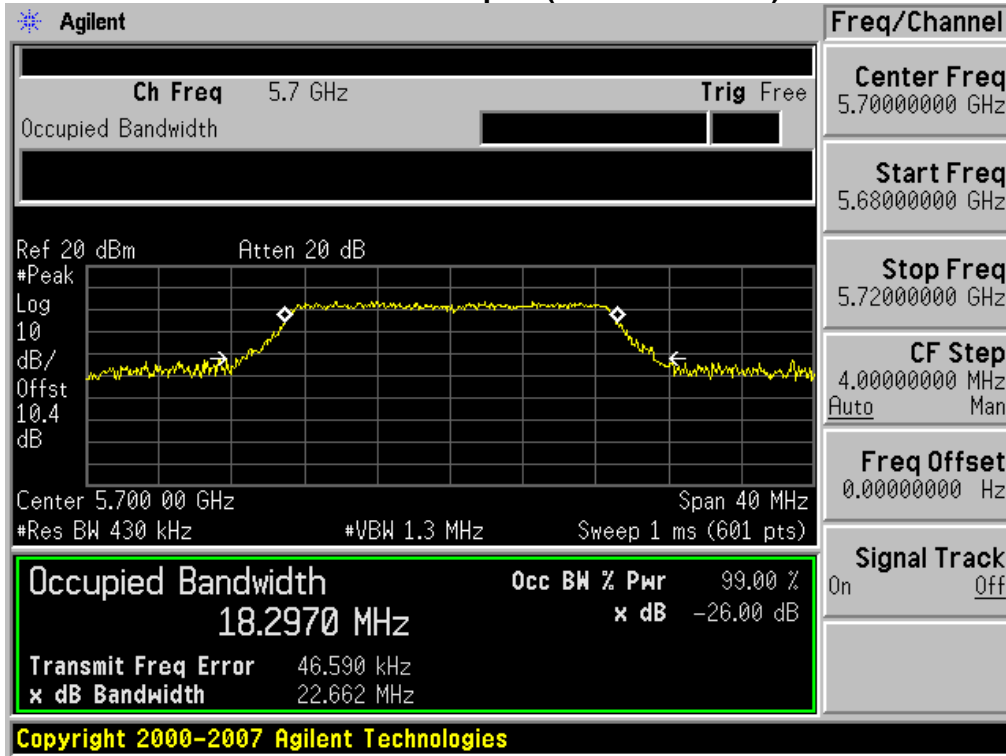
26 dB Bandwidth plot (802.11n-CH 100)



26 dB Bandwidth plot (802.11n-CH 120)



26 dB Bandwidth plot (802.11n-CH 140)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

26 dB Bandwidth plot (802.11n-CH 38)



26 dB Bandwidth plot (802.11n-CH 46)



26 dB Bandwidth plot (802.11n-CH 54)



26 dB Bandwidth plot (802.11n-CH 62)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

26 dB Bandwidth plot (802.11n-CH 102)



26 dB Bandwidth plot (802.11n-CH 118)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP0900

26 dB Bandwidth plot (802.11n-CH 134)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

8.2 OUTPUT POWER MEASUREMENT

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. In the 5.15 – 5.25 GHz band, the maximum permissible conducted output power is the lesser of 50 mW (16.99 dBm) and $4 \text{ dBm} + 10 \log_{10}(26 \text{ dB BW})$

frequencies. In the 5.25 – 5.35 GHz band, the maximum permissible conducted output power is the lesser of 250 mW (23.98 dBm) and $11 \text{ dBm} + 10 \log_{10}(26 \text{ dB BW})$

frequencies. In the 5.47 – 5.725 GHz band, the maximum permissible conducted output power is the lesser of 250 mW (23.98 dBm) and $11 \text{ dBm} + 10 \log_{10}(26 \text{ dB BW})$

Limit : 802.11a_UNII-1 = 16.99 dBm

802.11n_UNII-1 = 16.99 dBm

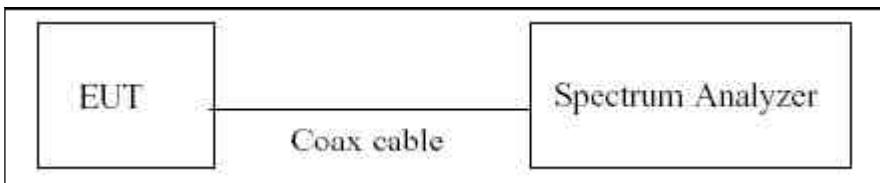
802.11a_UNII-2 = 23.98 dBm

802.11n_UNII-2 = 23.98 dBm

802.11a_UNII-3 = 23.98 dBm

802.11n_UNII-3 = 23.98 dBm

■ 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 Method SA-1 in KDB 789033(issued 3/05/2012).

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

The Spectrum Analyzer is set to

- Average Power

RBW = 1 MHz

VBW = 3 MHz

Sweep Point = 601

SPAN = to encompass the entire EBW of the signal

Sweep Time = auto

Detector Mode = RMS(i.e., power averaging)

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

Integrated bandwidth = 26 dB EBW

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC		FCC ID: JYCP9090

■ **Sample Calculation**

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

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 5.2 GHz, 5.3 GHz and 5.6 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)
UNII 1	5180	10.26
	5200	10.18
	5240	10.19
UNII 2	5260	10.18
	5300	10.14
	5320	10.09
UNII 3	5500	10.20
	5600	10.27
	5700	10.40

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

■ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5180	36	6 Mbps	13.76	16.99
		9 Mbps	13.40	16.99
		12 Mbps	13.24	16.99
		18 Mbps	12.78	16.99
		24 Mbps	12.32	16.99
		36 Mbps	11.66	16.99
		48 Mbps	10.96	16.99
		54 Mbps	10.88	16.99
5200	40	6 Mbps	14.11	16.99
		9 Mbps	13.56	16.99
		12 Mbps	13.47	16.99
		18 Mbps	12.92	16.99
		24 Mbps	12.78	16.99
		36 Mbps	11.80	16.99
		48 Mbps	11.28	16.99
		54 Mbps	10.91	16.99
5240	48	6 Mbps	14.96	16.99
		9 Mbps	14.87	16.99
		12 Mbps	14.41	16.99
		18 Mbps	13.96	16.99
		24 Mbps	13.69	16.99
		36 Mbps	12.85	16.99
		48 Mbps	12.50	16.99
		54 Mbps	11.97	16.99

Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5260	52	6 Mbps	14.16	23.98
		9 Mbps	13.62	23.98
		12 Mbps	13.47	23.98
		18 Mbps	12.98	23.98
		24 Mbps	12.83	23.98
		36 Mbps	11.81	23.98
		48 Mbps	11.32	23.98
		54 Mbps	11.05	23.98
5300	60	6 Mbps	13.73	23.98
		9 Mbps	13.25	23.98
		12 Mbps	13.20	23.98
		18 Mbps	13.18	23.98
		24 Mbps	12.16	23.98
		36 Mbps	11.47	23.98
		48 Mbps	10.96	23.98
		54 Mbps	10.66	23.98
5320	64	6 Mbps	13.09	23.98
		9 Mbps	12.82	23.98
		12 Mbps	12.62	23.98
		18 Mbps	12.30	23.98
		24 Mbps	11.91	23.98
		36 Mbps	11.02	23.98
		48 Mbps	11.04	23.98
		54 Mbps	10.05	23.98

Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5500	100	6 Mbps	14.57	23.98
		9 Mbps	14.48	23.98
		12 Mbps	14.03	23.98
		18 Mbps	13.70	23.98
		24 Mbps	13.02	23.98
		36 Mbps	12.54	23.98
		48 Mbps	11.91	23.98
		54 Mbps	11.64	23.98
5600	120	6 Mbps	10.16	23.98
		9 Mbps	9.70	23.98
		12 Mbps	9.30	23.98
		18 Mbps	9.25	23.98
		24 Mbps	8.22	23.98
		36 Mbps	7.70	23.98
		48 Mbps	7.09	23.98
		54 Mbps	6.78	23.98
5700	140	6 Mbps	12.97	23.98
		9 Mbps	12.71	23.98
		12 Mbps	12.31	23.98
		18 Mbps	11.89	23.98
		24 Mbps	11.41	23.98
		36 Mbps	10.89	23.98
		48 Mbps	10.53	23.98
		54 Mbps	9.43	23.98

Conducted Output Power Measurements (802.11n Mode: 5180~5240)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5180	36	6.5 Mbps	11.29	16.99
		13 Mbps	10.00	16.99
		19.5 Mbps	9.73	16.99
		26 Mbps	9.51	16.99
		39 Mbps	9.14	16.99
		52 Mbps	8.21	16.99
		58.5 Mbps	8.53	16.99
		65 Mbps	7.59	16.99
5200	40	6.5 Mbps	11.06	16.99
		13 Mbps	10.54	16.99
		19.5 Mbps	10.40	16.99
		26 Mbps	10.20	16.99
		39 Mbps	9.25	16.99
		52 Mbps	8.53	16.99
		58.5 Mbps	8.40	16.99
		65 Mbps	7.84	16.99
5240	48	6.5 Mbps	12.36	16.99
		13 Mbps	11.95	16.99
		19.5 Mbps	11.69	16.99
		26 Mbps	10.12	16.99
		39 Mbps	9.97	16.99
		52 Mbps	9.29	16.99
		58.5 Mbps	9.28	16.99
		65 Mbps	8.86	16.99

Conducted Output Power Measurements (802.11n Mode: 5260~5320)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5260	52	6.5 Mbps	12.62	23.98
		13 Mbps	11.85	23.98
		19.5 Mbps	11.16	23.98
		26 Mbps	10.68	23.98
		39 Mbps	9.97	23.98
		52 Mbps	10.19	23.98
		58.5 Mbps	9.19	23.98
		65 Mbps	9.76	23.98
5300	60	6.5 Mbps	12.10	23.98
		13 Mbps	10.90	23.98
		19.5 Mbps	10.79	23.98
		26 Mbps	10.79	23.98
		39 Mbps	9.56	23.98
		52 Mbps	9.11	23.98
		58.5 Mbps	8.85	23.98
		65 Mbps	8.81	23.98
5320	64	6.5 Mbps	11.55	23.98
		13 Mbps	10.42	23.98
		19.5 Mbps	9.90	23.98
		26 Mbps	9.78	23.98
		39 Mbps	9.62	23.98
		52 Mbps	8.35	23.98
		58.5 Mbps	8.36	23.98
		65 Mbps	8.46	23.98

Conducted Output Power Measurements (802.11n Mode: 5500~5700)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5500	100	6.5 Mbps	12.47	23.98
		13 Mbps	11.80	23.98
		19.5 Mbps	11.65	23.98
		26 Mbps	10.97	23.98
		39 Mbps	10.29	23.98
		52 Mbps	9.85	23.98
		58.5 Mbps	9.68	23.98
		65 Mbps	9.54	23.98
5600	120	6.5 Mbps	8.19	23.98
		13 Mbps	7.62	23.98
		19.5 Mbps	6.92	23.98
		26 Mbps	6.57	23.98
		39 Mbps	5.90	23.98
		52 Mbps	5.73	23.98
		58.5 Mbps	5.42	23.98
		65 Mbps	5.12	23.98
5700	140	6.5 Mbps	12.27	23.98
		13 Mbps	11.78	23.98
		19.5 Mbps	11.35	23.98
		26 Mbps	11.31	23.98
		39 Mbps	10.35	23.98
		52 Mbps	9.87	23.98
		58.5 Mbps	9.48	23.98
		65 Mbps	9.75	23.98

Conducted Output Power Measurements (802.11n Mode: 5190~5230)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5190	38	13.5 Mbps	8.04	16.99
		27 Mbps	7.80	16.99
		40.5 Mbps	7.23	16.99
		54 Mbps	7.12	16.99
		81 Mbps	6.56	16.99
		108 Mbps	6.03	16.99
		121.5 Mbps	5.87	16.99
		135 Mbps	5.67	16.99
5230	46	13.5 Mbps	8.17	16.99
		27 Mbps	7.58	16.99
		40.5 Mbps	7.37	16.99
		54 Mbps	6.83	16.99
		81 Mbps	6.28	16.99
		108 Mbps	5.97	16.99
		121.5 Mbps	5.79	16.99
		135 Mbps	5.72	16.99

Conducted Output Power Measurements (802.11n Mode: 5270~5310)

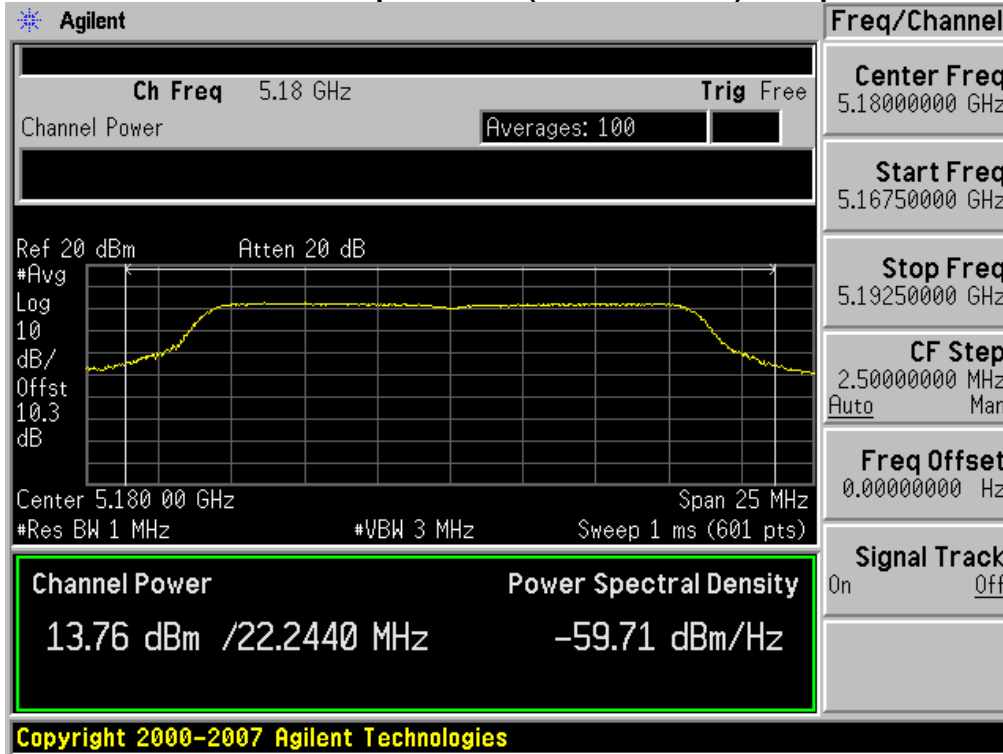
802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5270	54	13.5 Mbps	8.28	23.98
		27 Mbps	7.78	23.98
		40.5 Mbps	7.45	23.98
		54 Mbps	6.96	23.98
		81 Mbps	6.33	23.98
		108 Mbps	6.15	23.98
		121.5 Mbps	5.88	23.98
		135 Mbps	5.64	23.98
5310	62	13.5 Mbps	8.01	23.98
		27 Mbps	7.63	23.98
		40.5 Mbps	7.30	23.98
		54 Mbps	6.61	23.98
		81 Mbps	6.29	23.98
		108 Mbps	5.77	23.98
		121.5 Mbps	5.63	23.98
		135 Mbps	5.53	23.98

Conducted Output Power Measurements (802.11n Mode: 5510~5670)

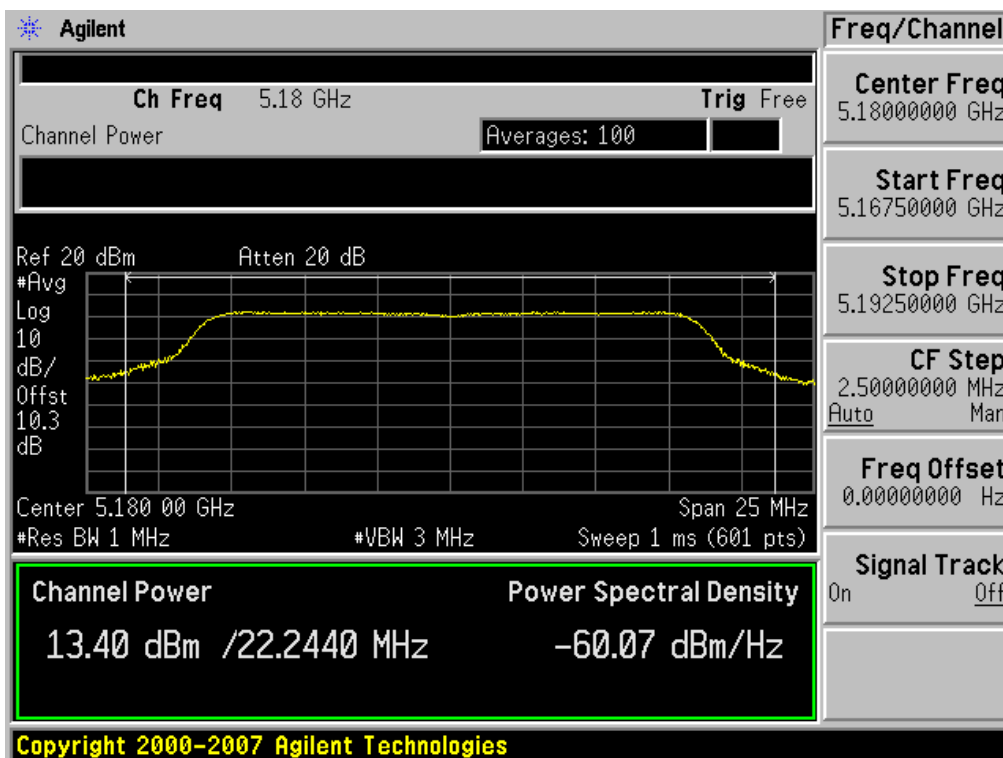
802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5510	102	13.5 Mbps	12.69	23.98
		27 Mbps	12.48	23.98
		40.5 Mbps	12.02	23.98
		54 Mbps	11.45	23.98
		81 Mbps	11.00	23.98
		108 Mbps	10.64	23.98
		121.5 Mbps	10.66	23.98
		135 Mbps	10.32	23.98
5590	118	13.5 Mbps	11.53	23.98
		27 Mbps	11.03	23.98
		40.5 Mbps	10.62	23.98
		54 Mbps	10.10	23.98
		81 Mbps	9.72	23.98
		108 Mbps	9.18	23.98
		121.5 Mbps	9.12	23.98
		135 Mbps	8.94	23.98
5670	134	13.5 Mbps	10.40	23.98
		27 Mbps	9.95	23.98
		40.5 Mbps	9.44	23.98
		54 Mbps	9.05	23.98
		81 Mbps	8.51	23.98
		108 Mbps	8.00	23.98
		121.5 Mbps	7.89	23.98
		135 Mbps	7.85	23.98

RESULT PLOTS (5180 MHz ~5240 MHz)

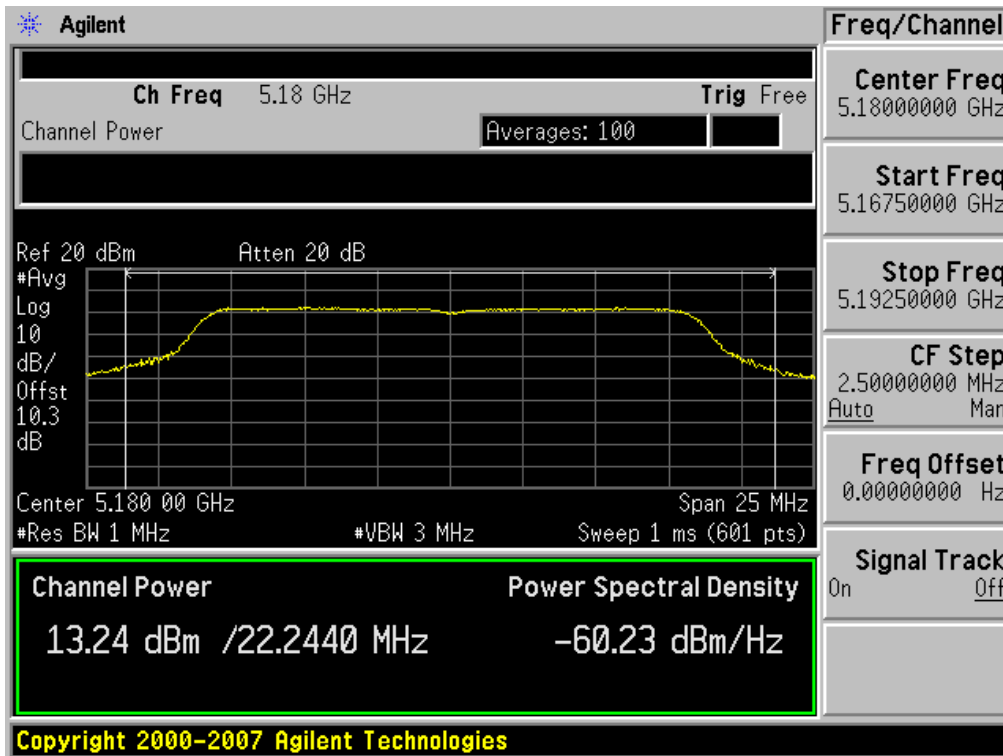
Conducted Output Power (802.11a-CH 36) 6 Mbps



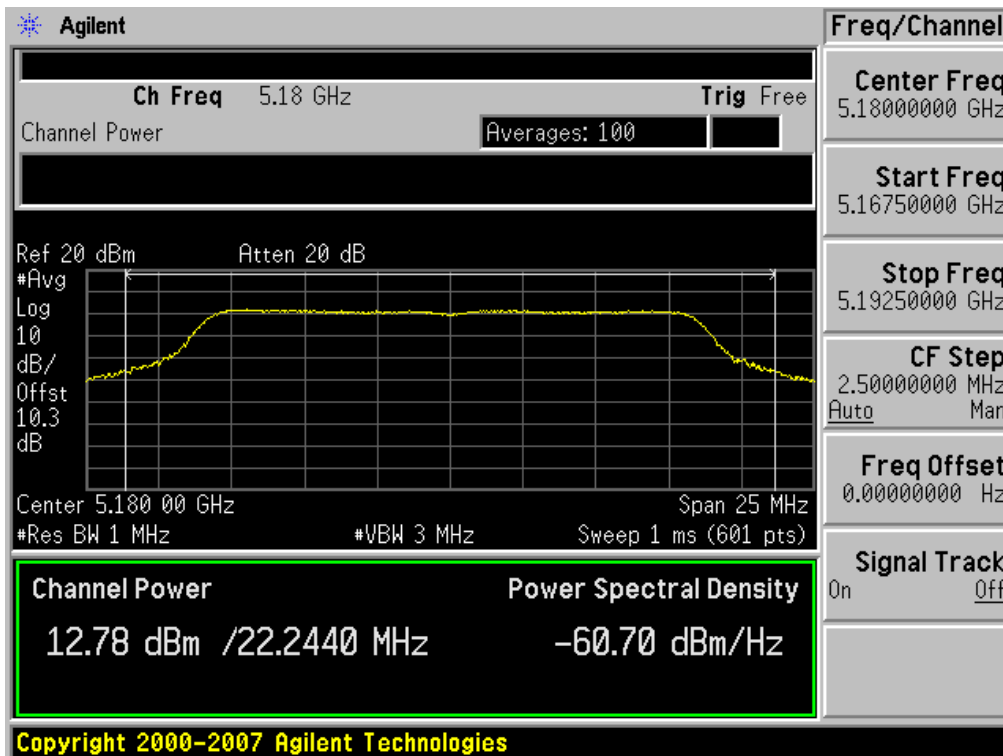
Conducted Output Power (802.11a-CH 36) 9 Mbps



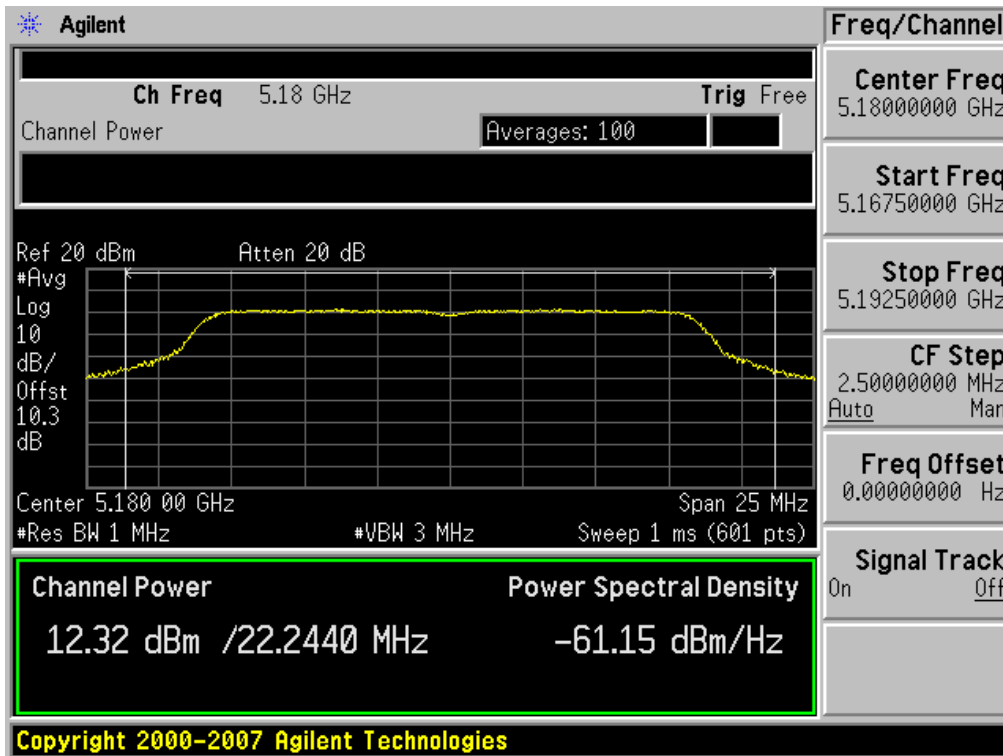
Conducted Output Power (802.11a-CH 36) 12 Mbps



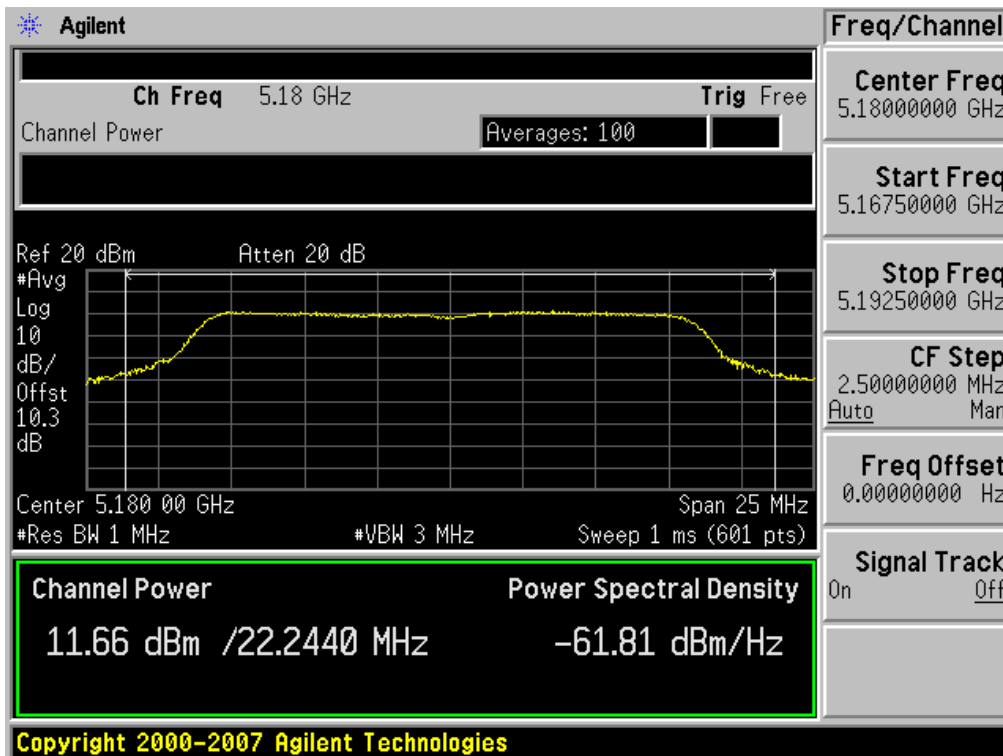
Conducted Output Power (802.11a-CH 36) 18 Mbps



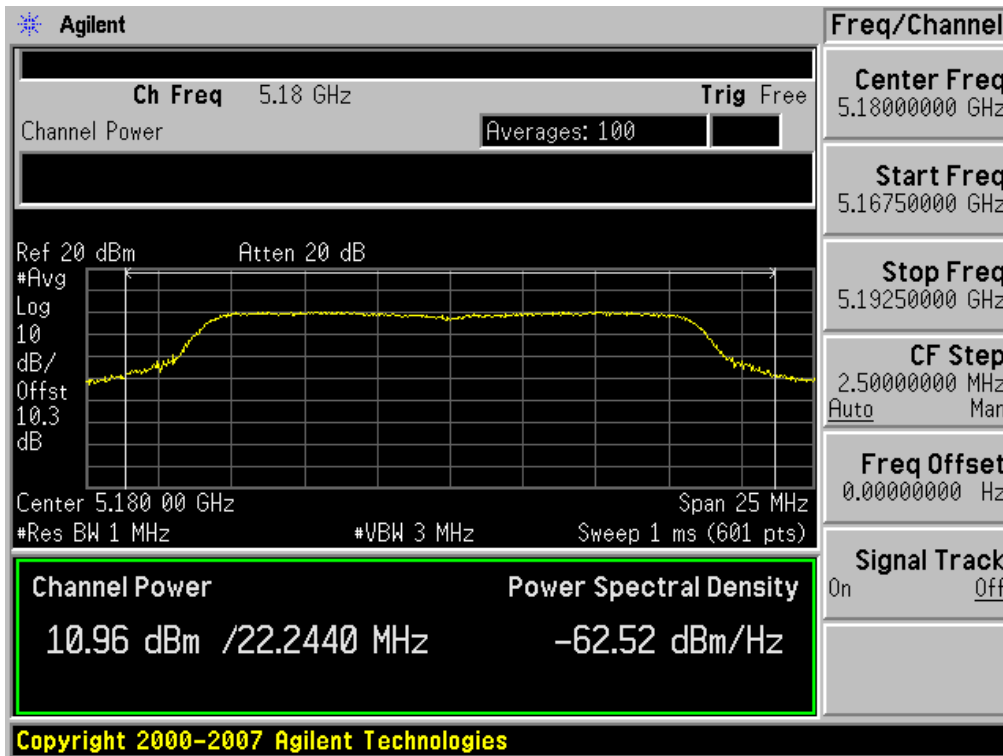
Conducted Output Power (802.11a-CH 36) 24 Mbps



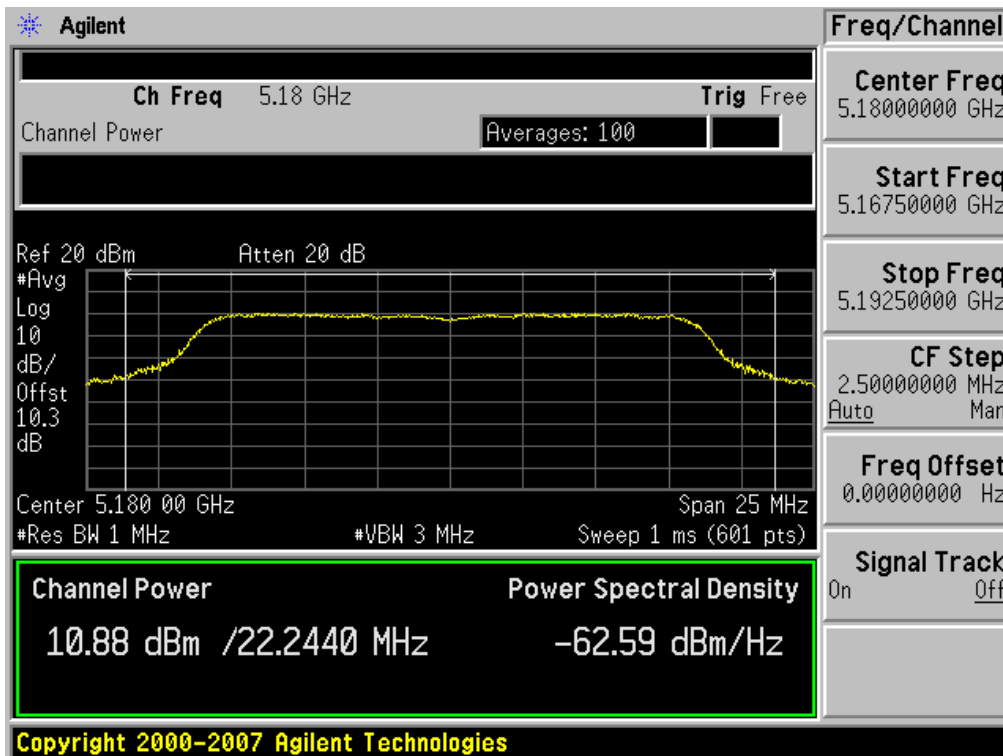
Conducted Output Power (802.11a-CH 36) 36 Mbps



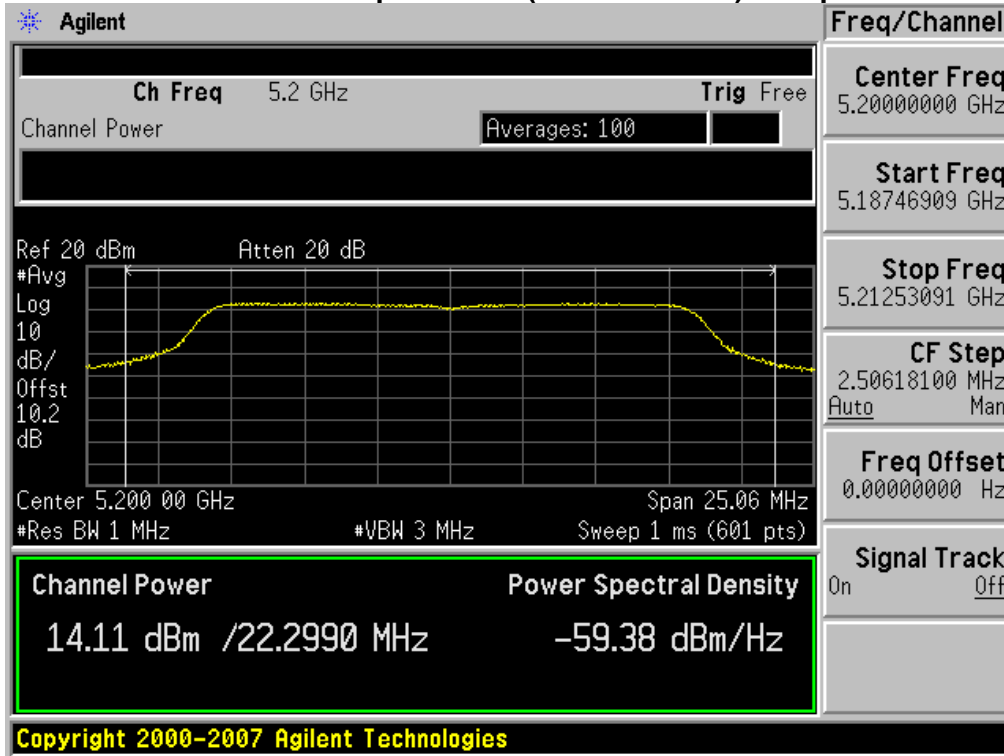
Conducted Output Power (802.11a-CH 36) 48 Mbps



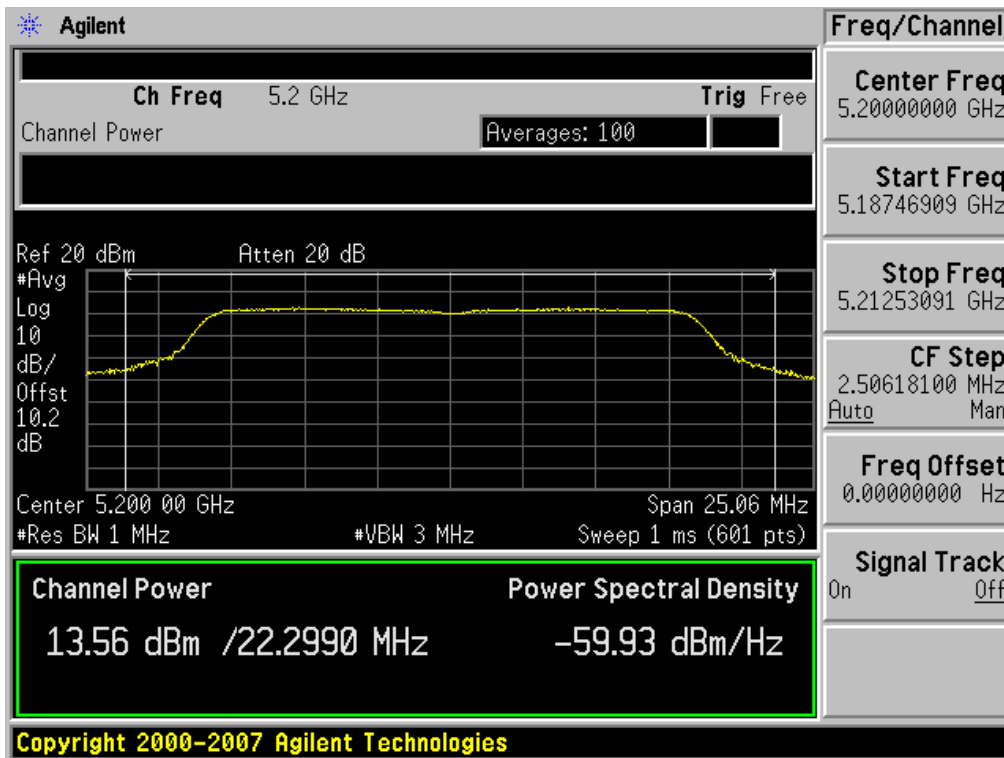
Conducted Output Power (802.11a-CH 36) 54 Mbps



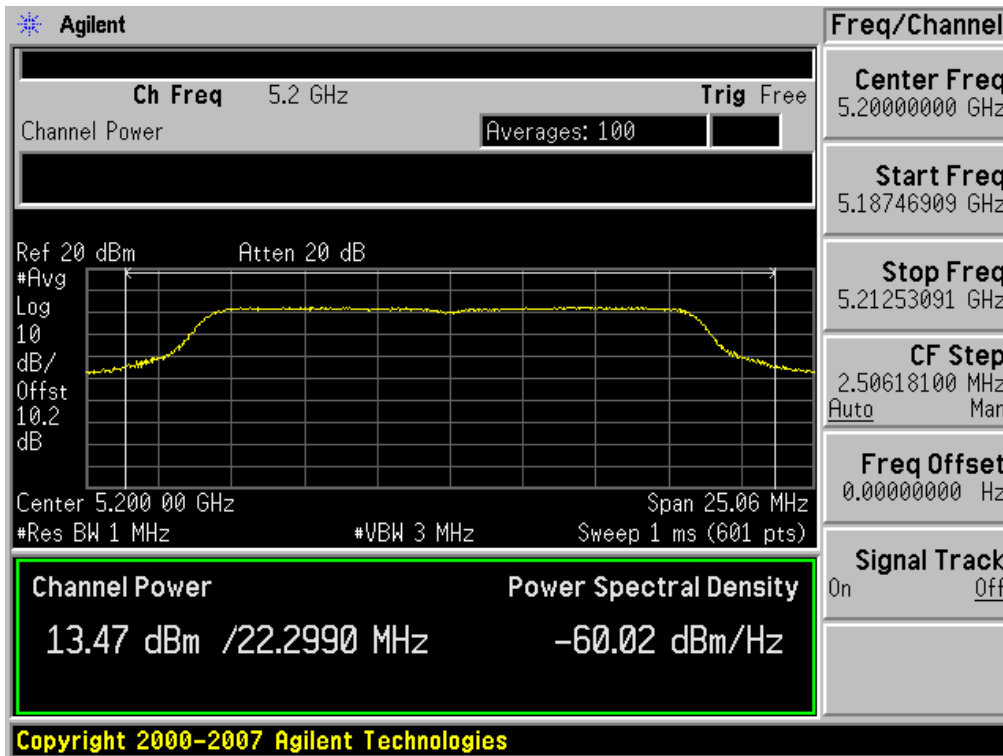
Conducted Output Power (802.11a-CH 40) 6 Mbps



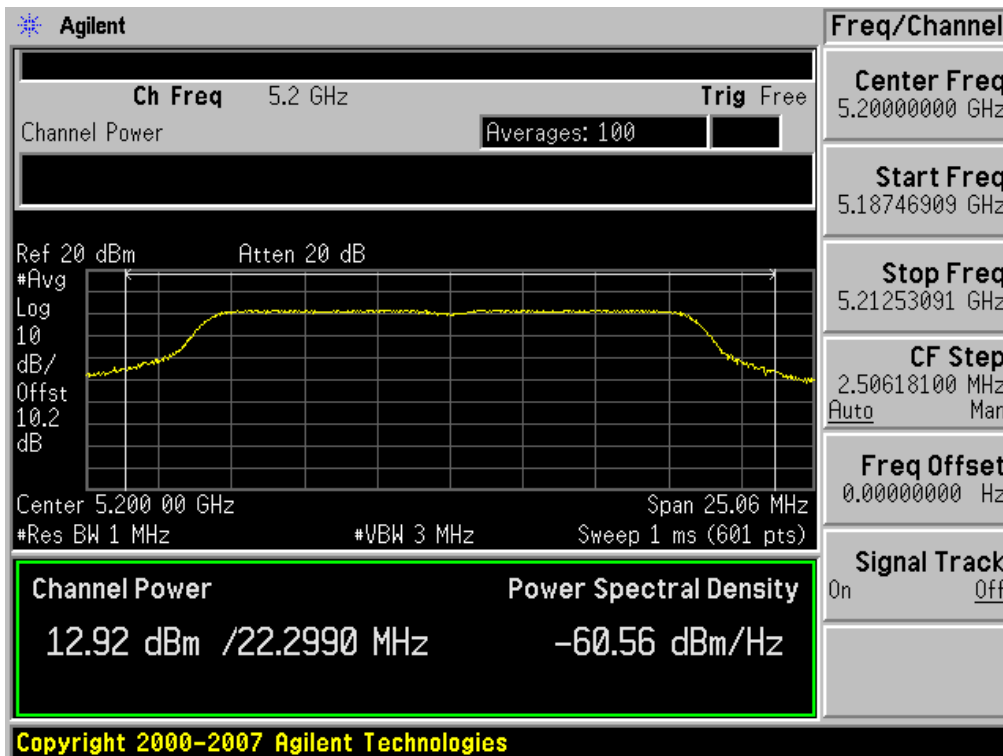
Conducted Output Power (802.11a-CH 40) 9 Mbps



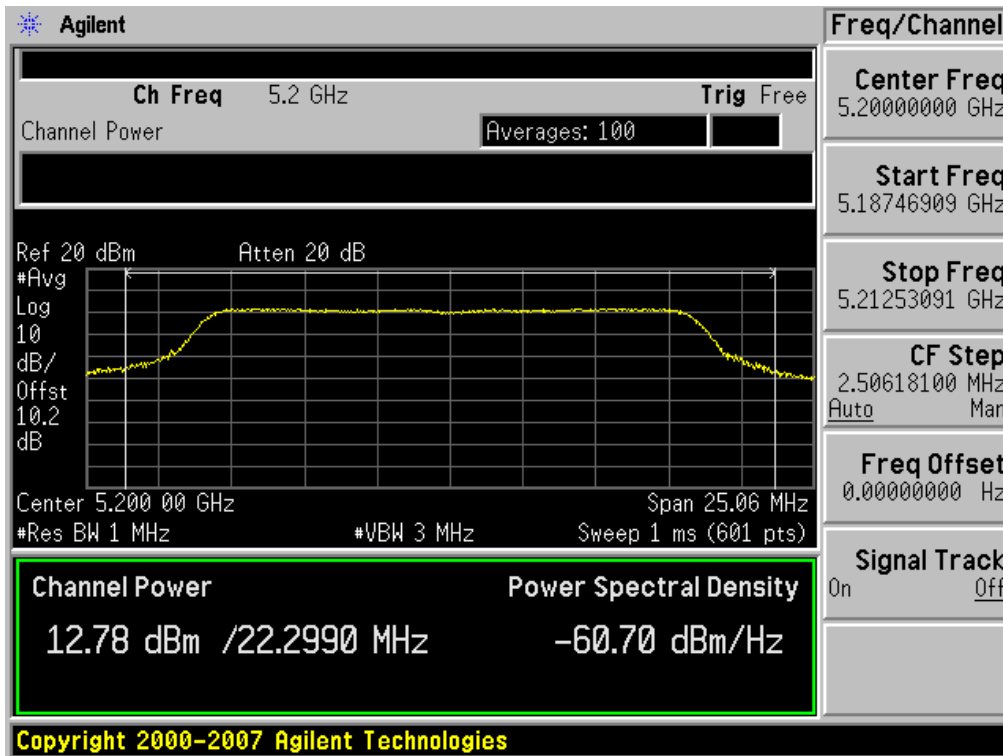
Conducted Output Power (802.11a-CH 40) 12 Mbps



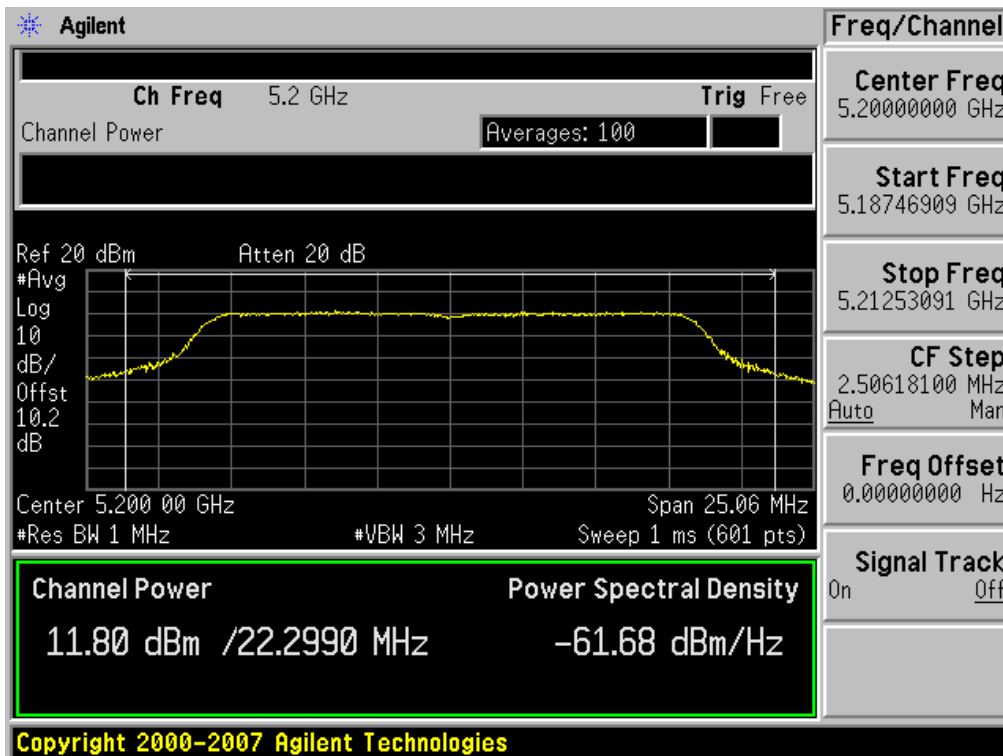
Conducted Output Power (802.11a-CH 40) 18 Mbps



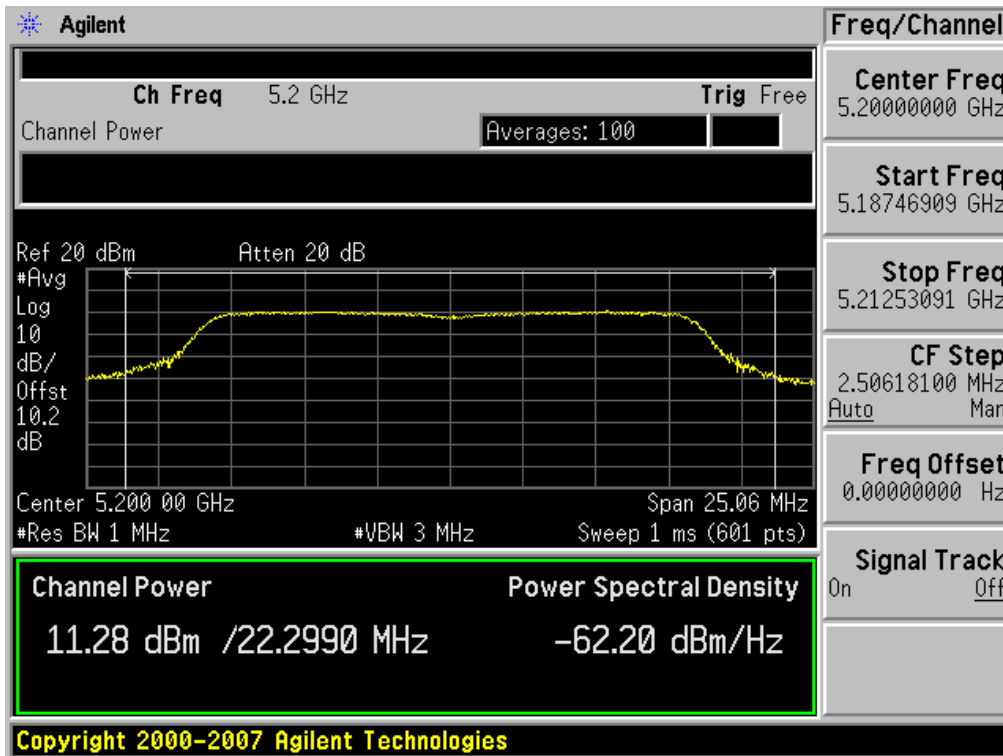
Conducted Output Power (802.11a-CH 40) 24 Mbps



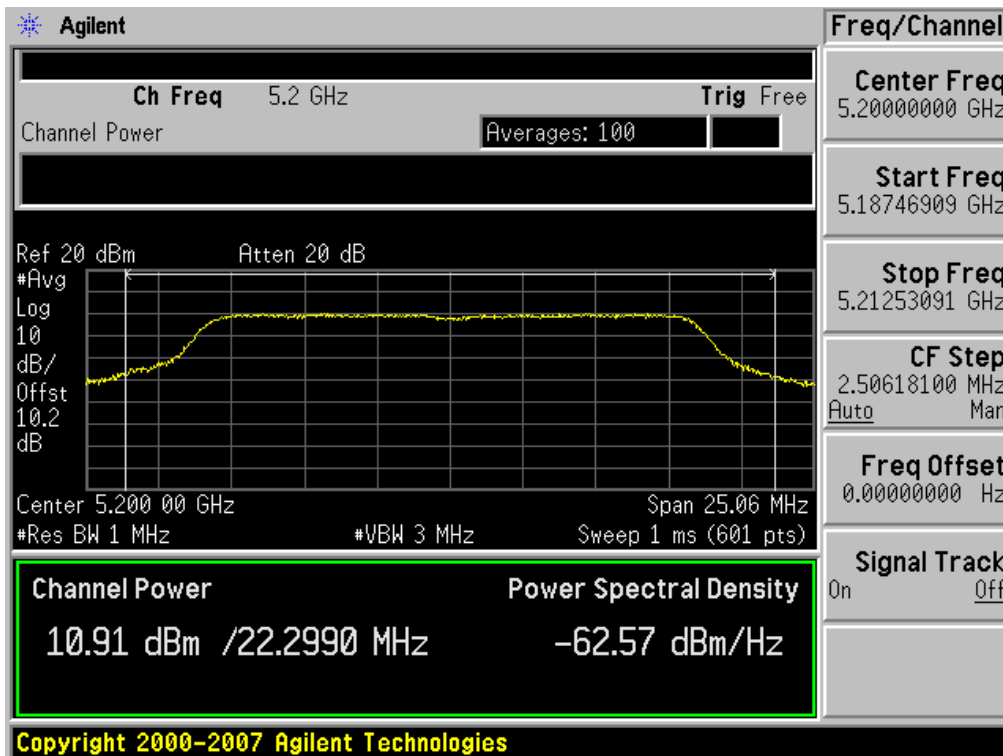
Conducted Output Power (802.11a-CH 40) 36 Mbps



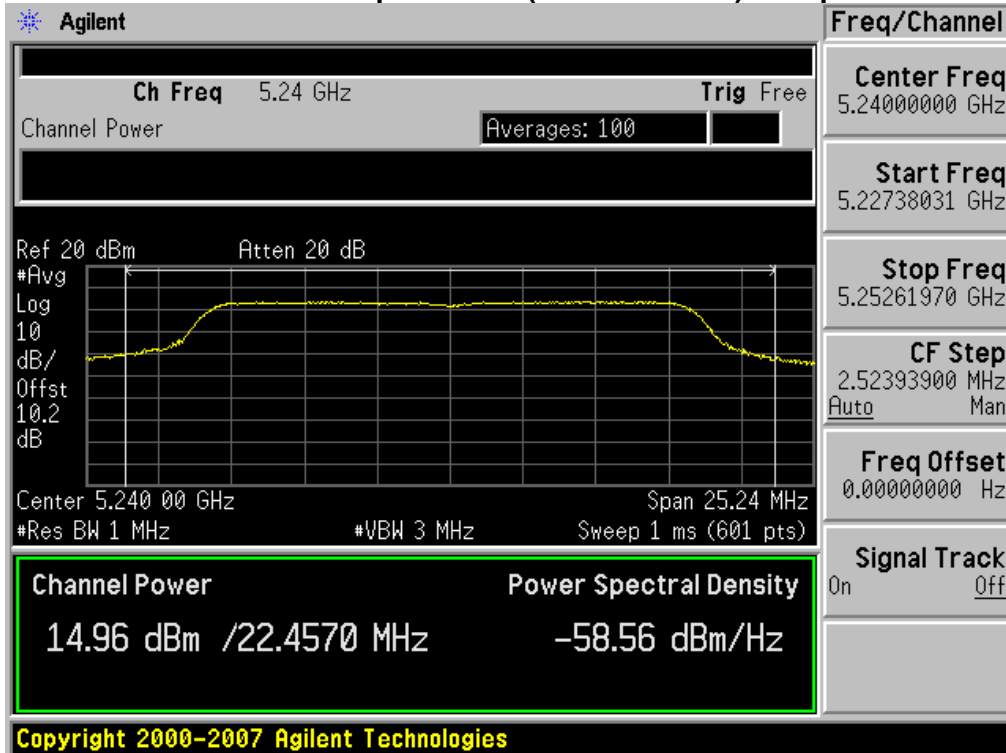
Conducted Output Power (802.11a-CH 40) 48 Mbps



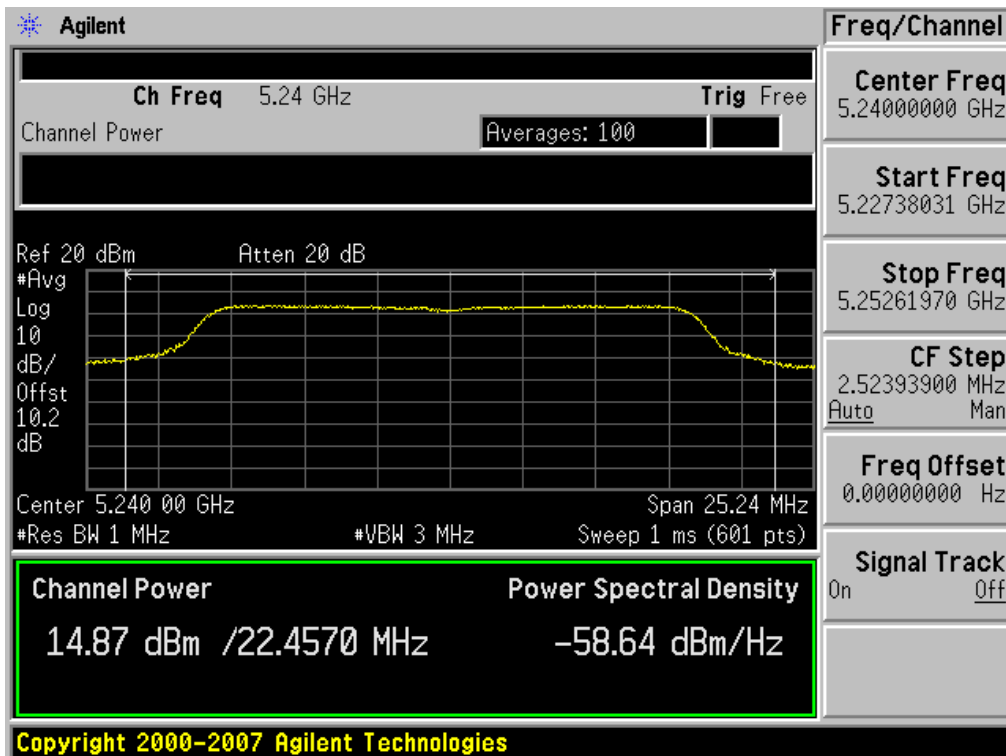
Conducted Output Power (802.11a-CH 40) 54 Mbps



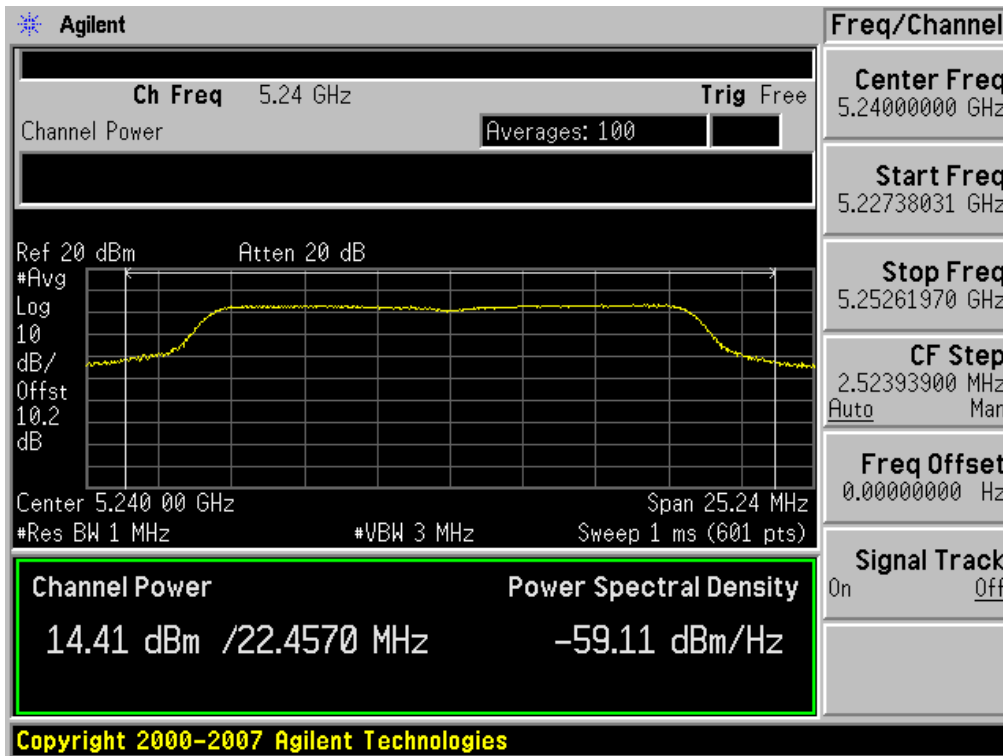
Conducted Output Power (802.11a-CH 48) 6 Mbps



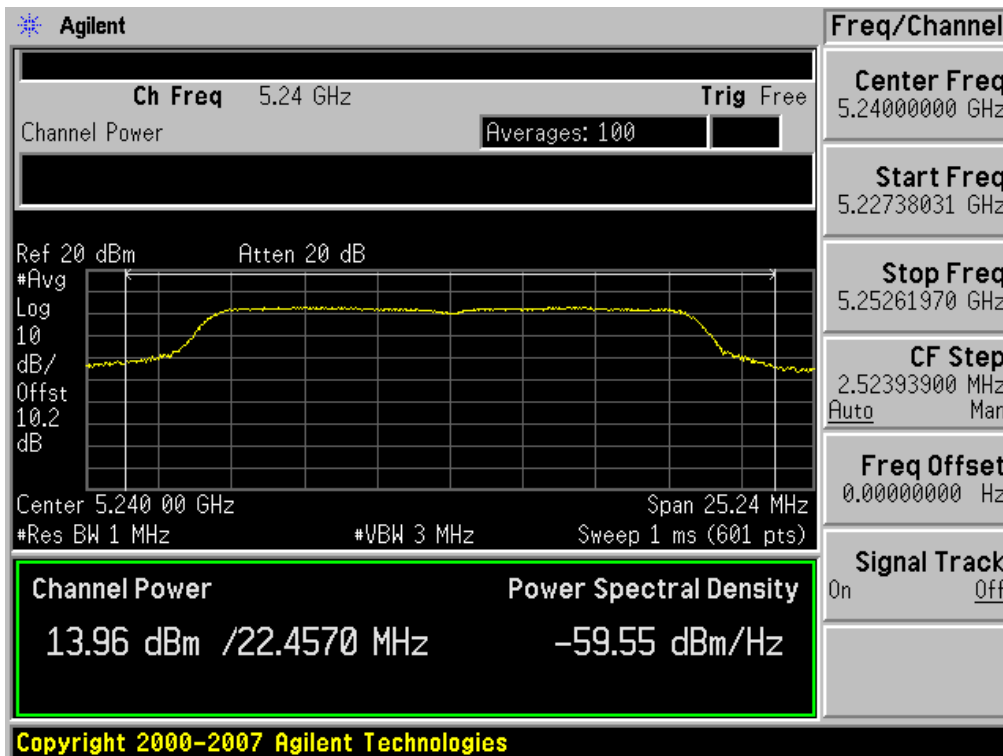
Conducted Output Power (802.11a-CH 48) 9 Mbps



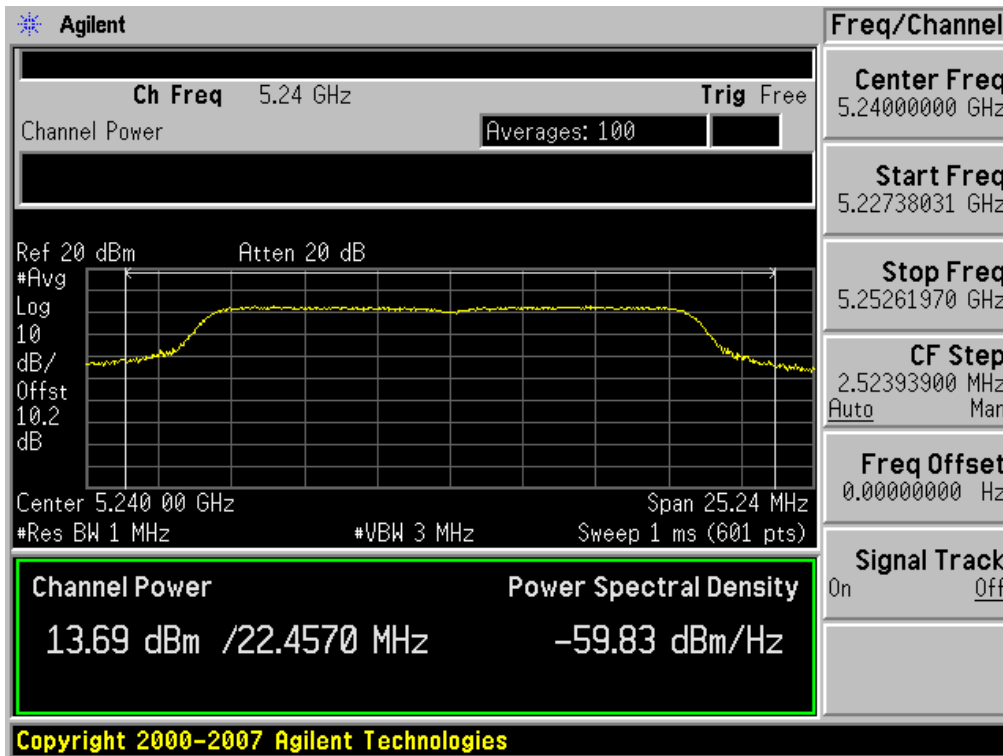
Conducted Output Power (802.11a-CH 48) 12 Mbps



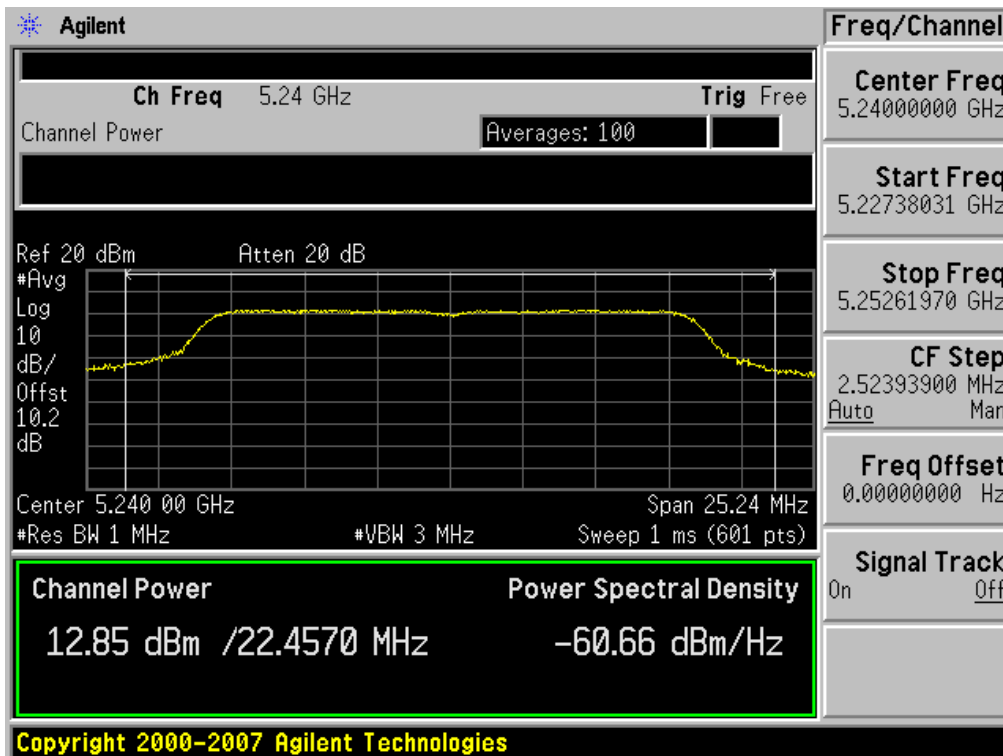
Conducted Output Power (802.11a-CH 48) 18 Mbps



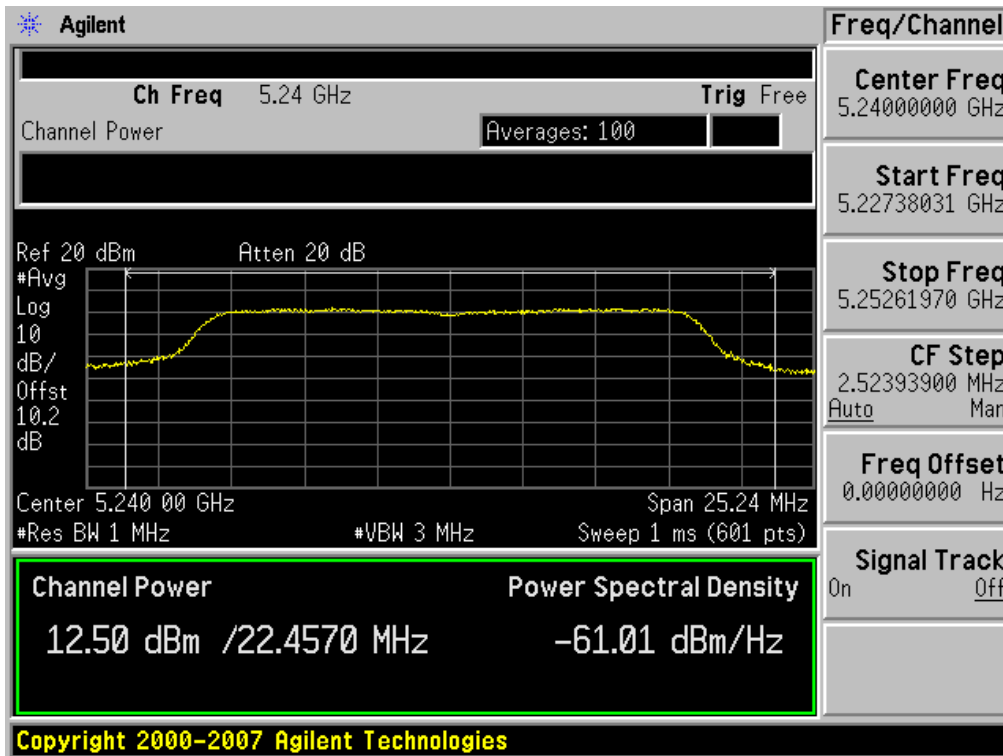
Conducted Output Power (802.11a-CH 48) 24 Mbps



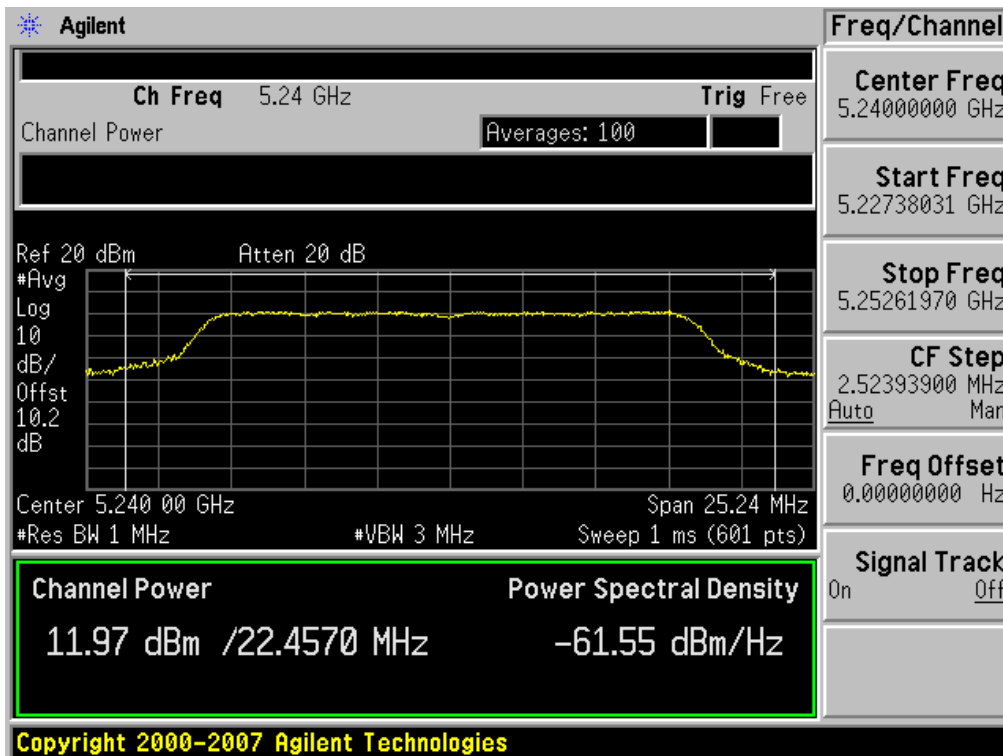
Conducted Output Power (802.11a-CH 48) 36 Mbps



Conducted Output Power (802.11a-CH 48) 48 Mbps

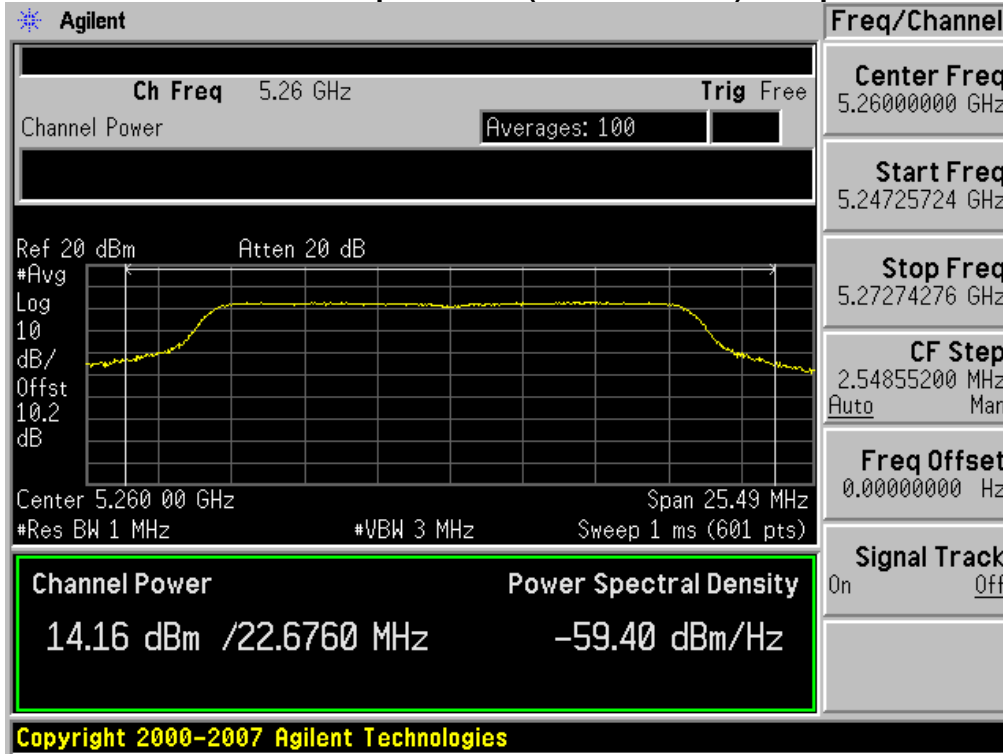


Conducted Output Power (802.11a-CH 48) 54 Mbps

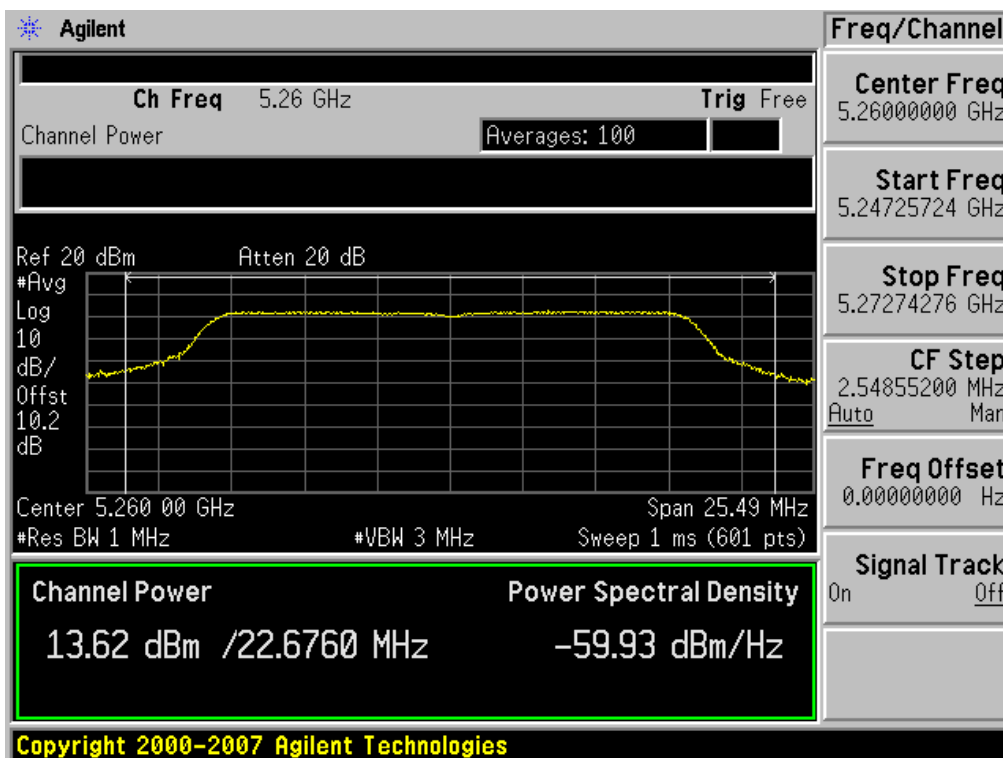


RESULT PLOTS (5260 MHz ~5320 MHz)

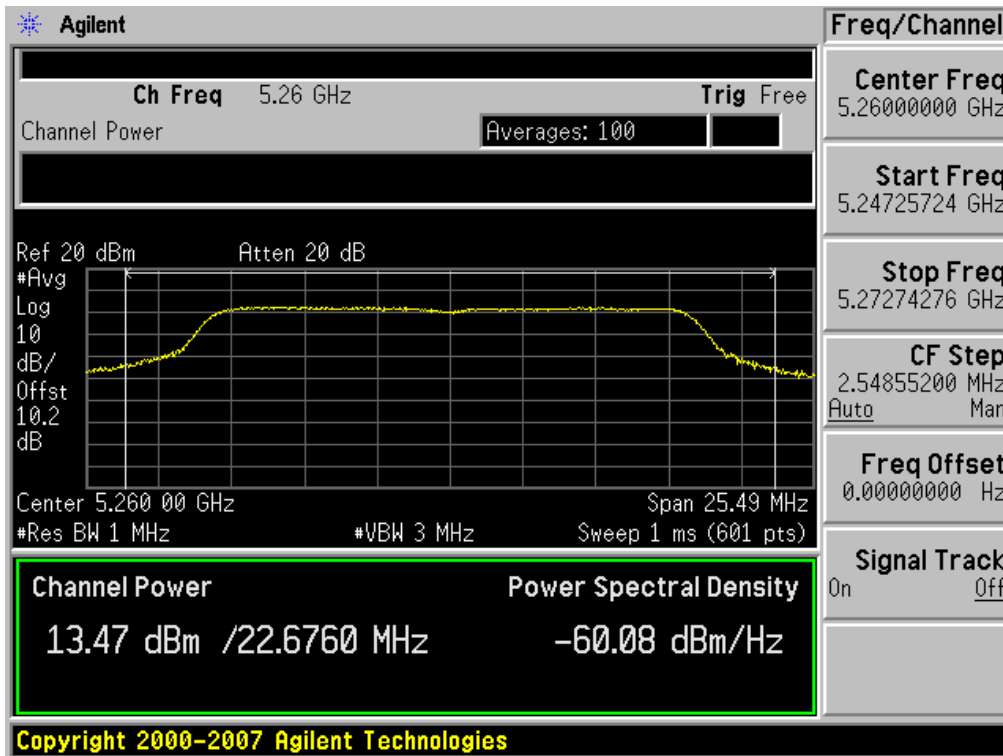
Conducted Output Power (802.11a-CH 52) 6 Mbps



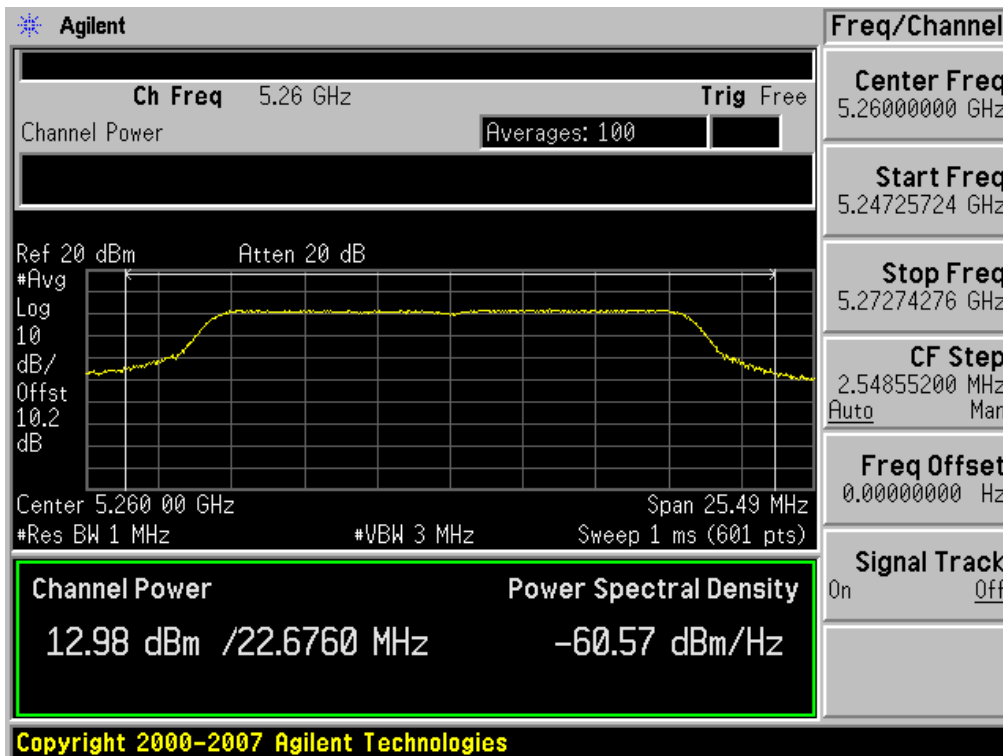
Conducted Output Power (802.11a-CH 52) 9 Mbps



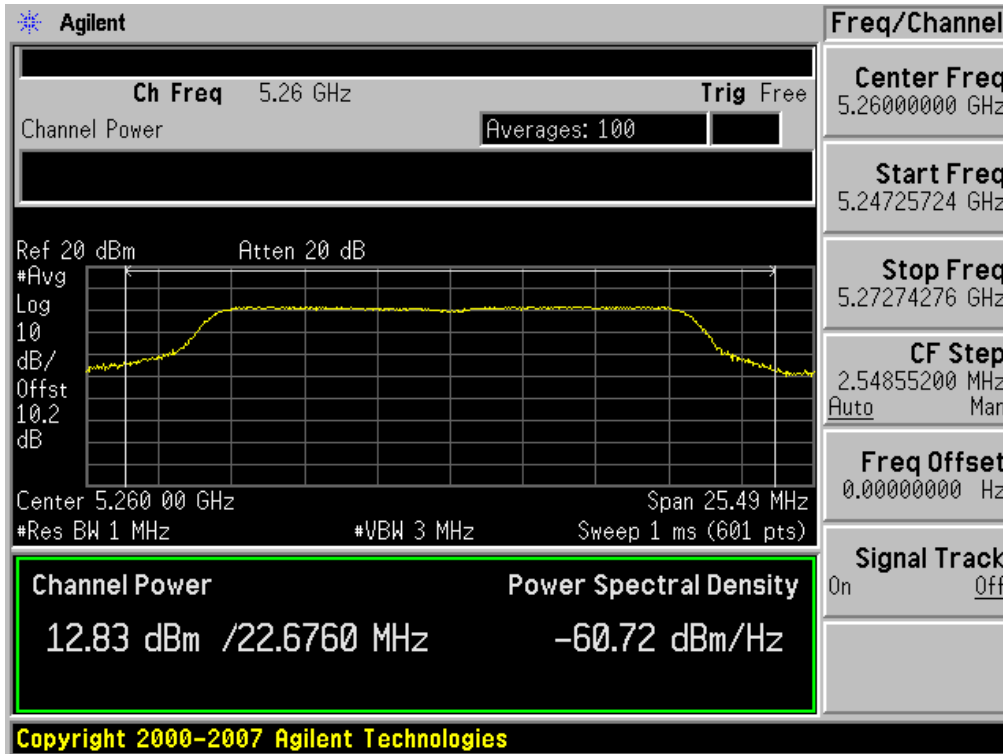
Conducted Output Power (802.11a-CH 52) 12 Mbps



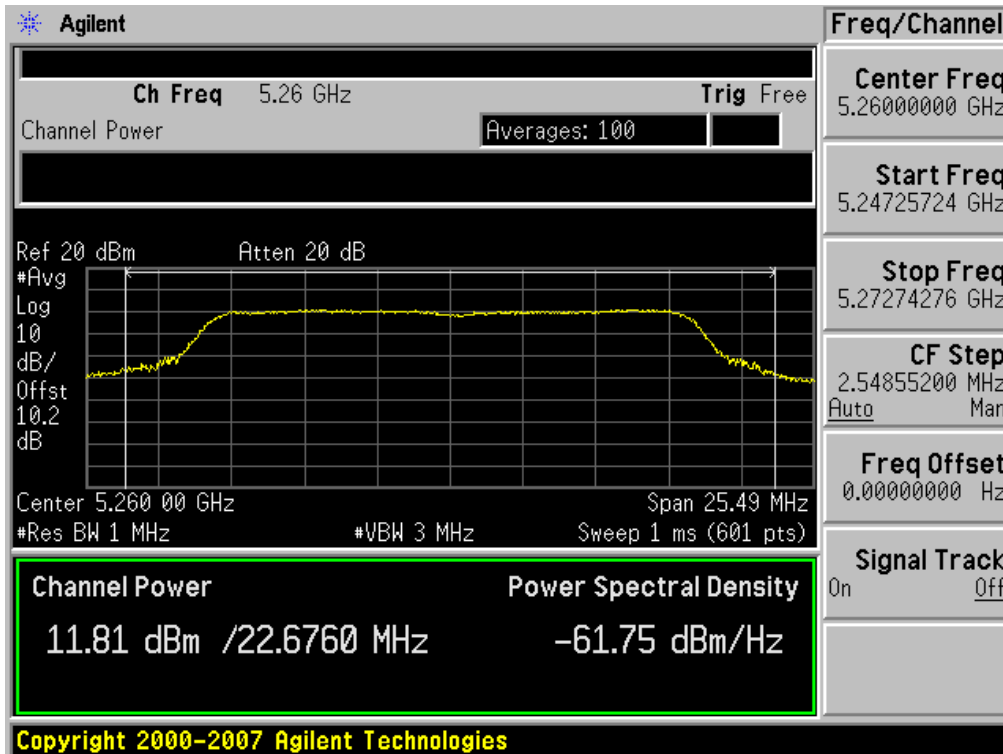
Conducted Output Power (802.11a-CH 52) 18 Mbps



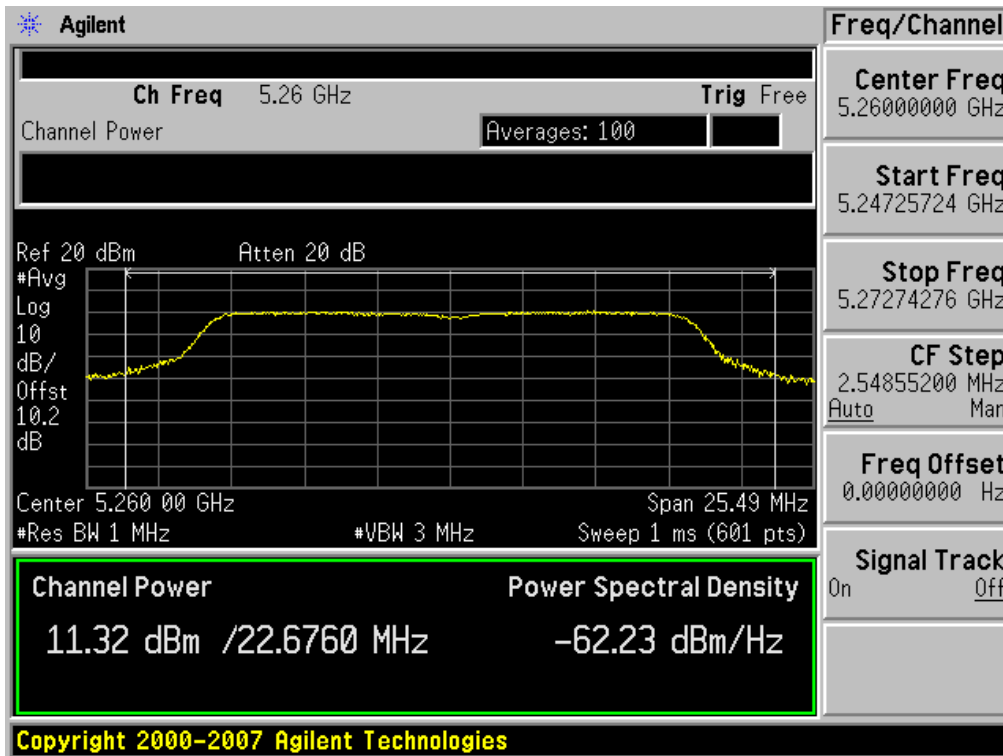
Conducted Output Power (802.11a-CH 52) 24 Mbps



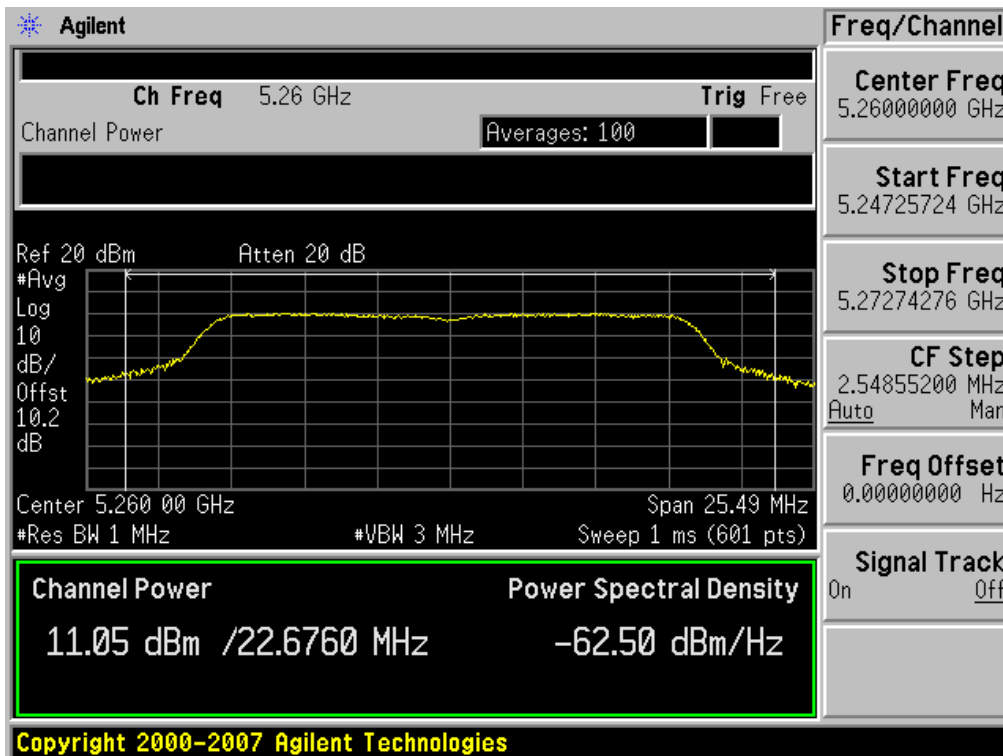
Conducted Output Power (802.11a-CH 52) 36 Mbps



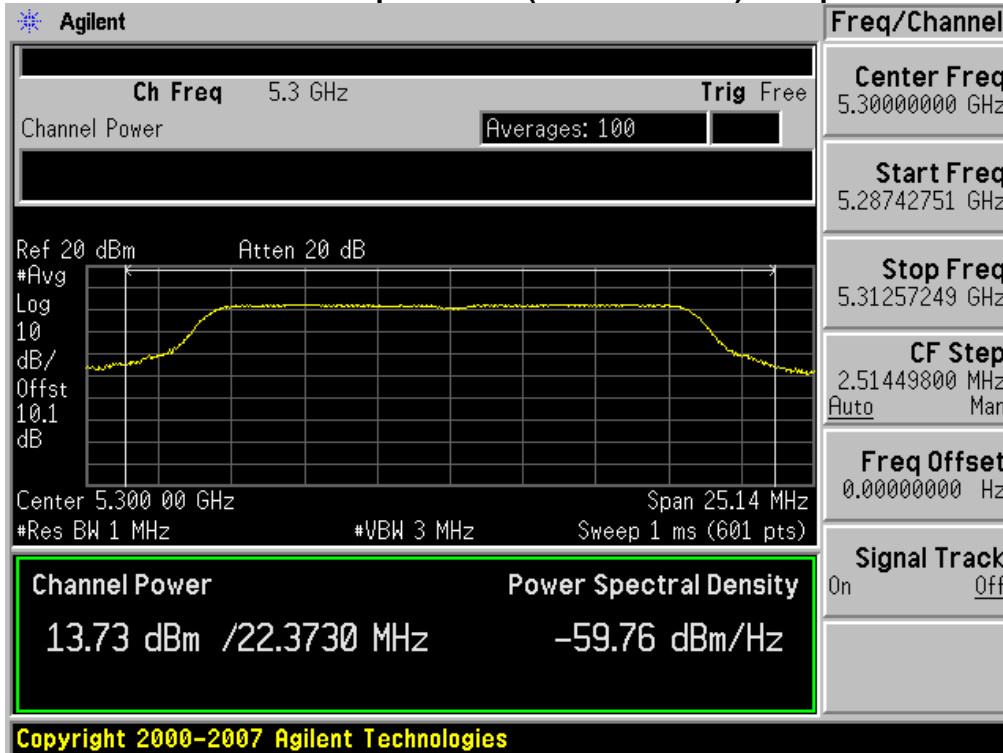
Conducted Output Power (802.11a-CH 52) 48 Mbps



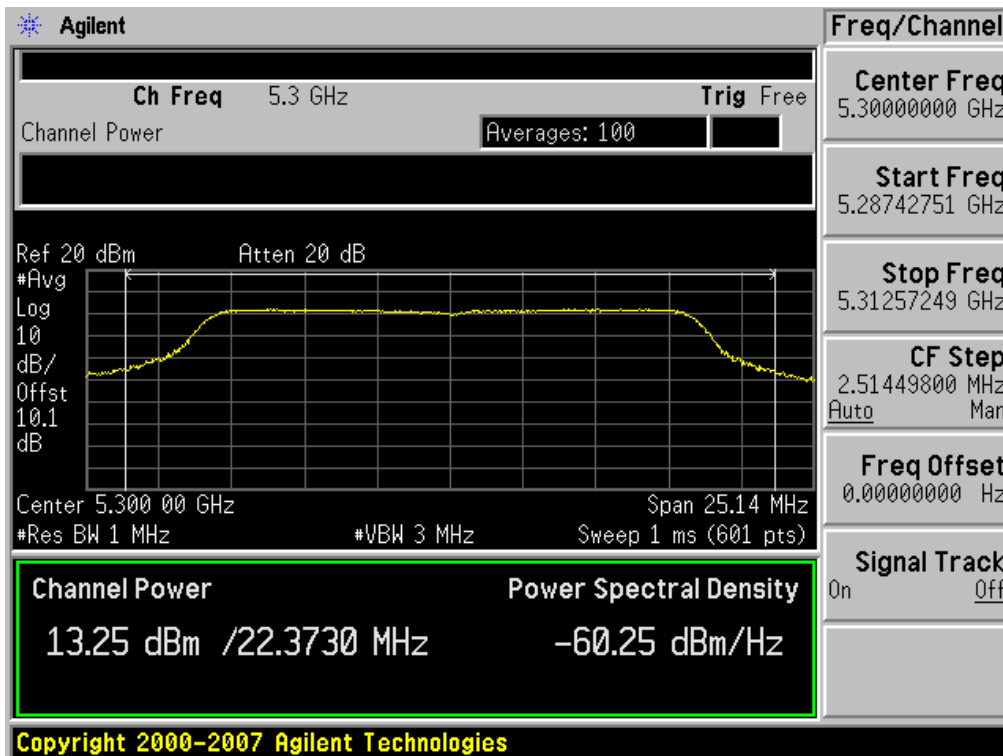
Conducted Output Power (802.11a-CH 52) 54 Mbps



Conducted Output Power (802.11a-CH 60) 6 Mbps

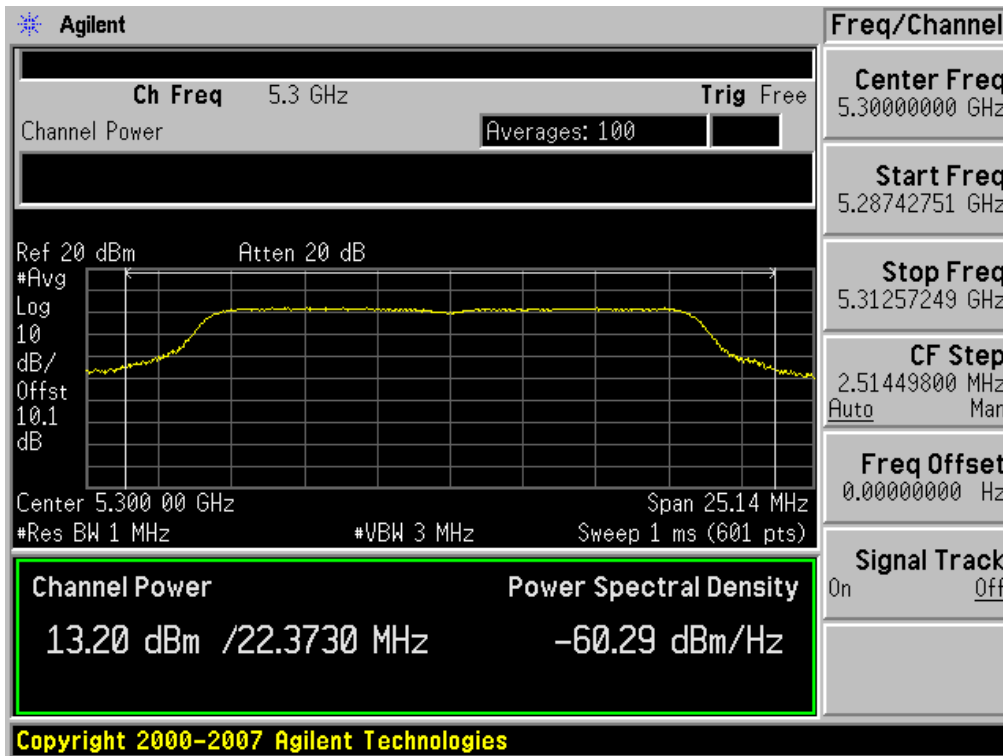


Conducted Output Power (802.11a-CH 60) 9 Mbps

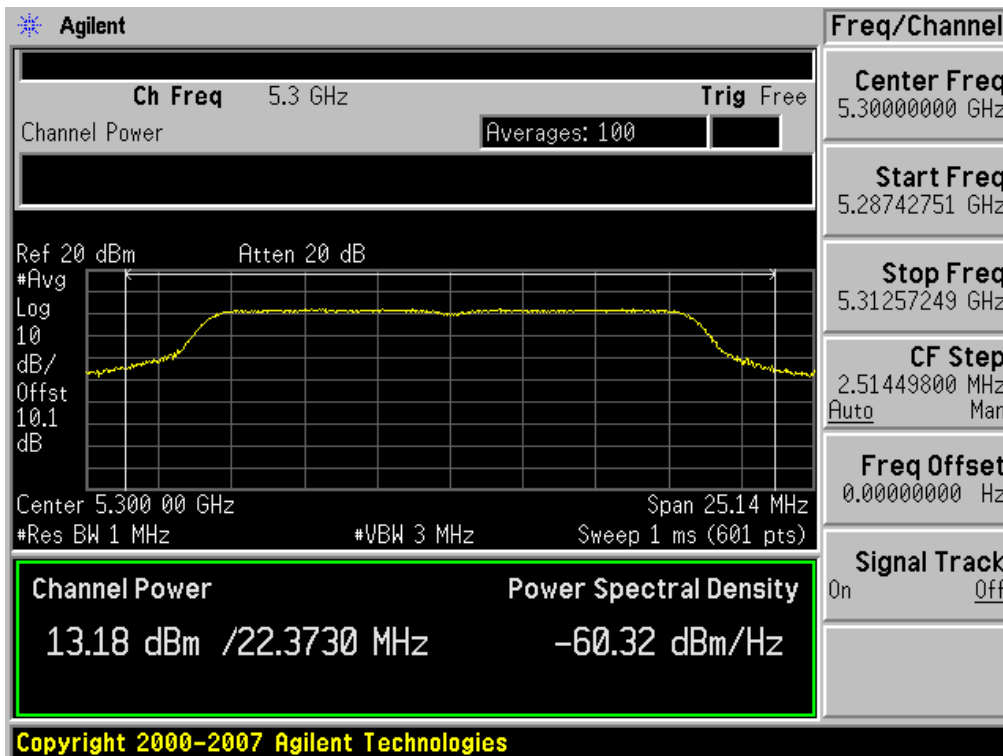


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

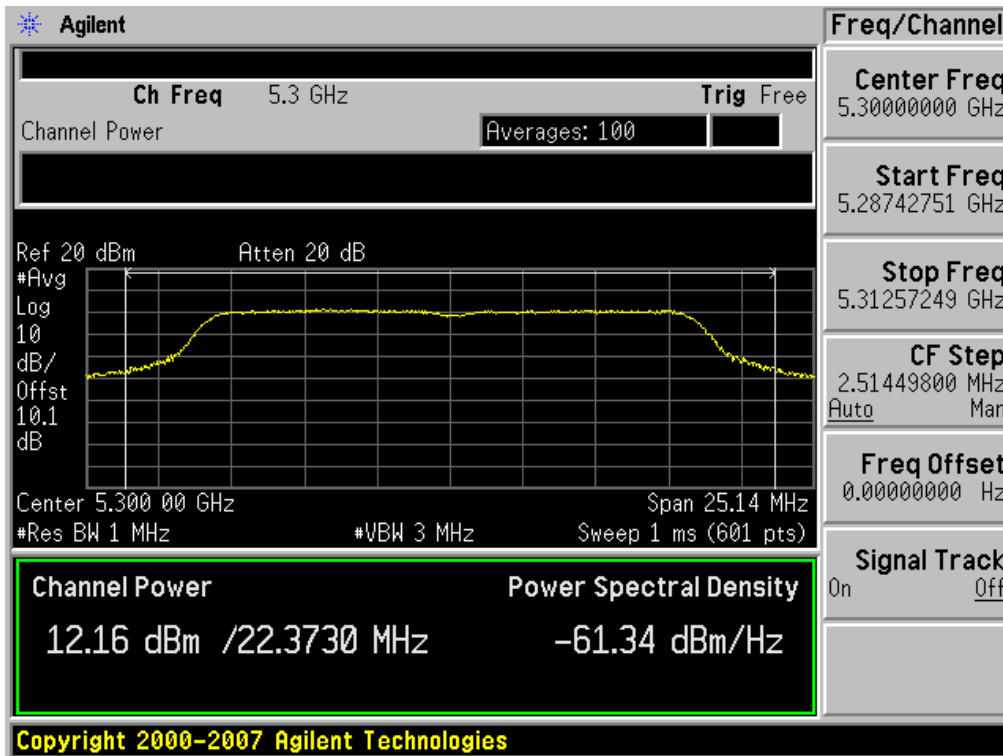
Conducted Output Power (802.11a-CH 60) 12 Mbps



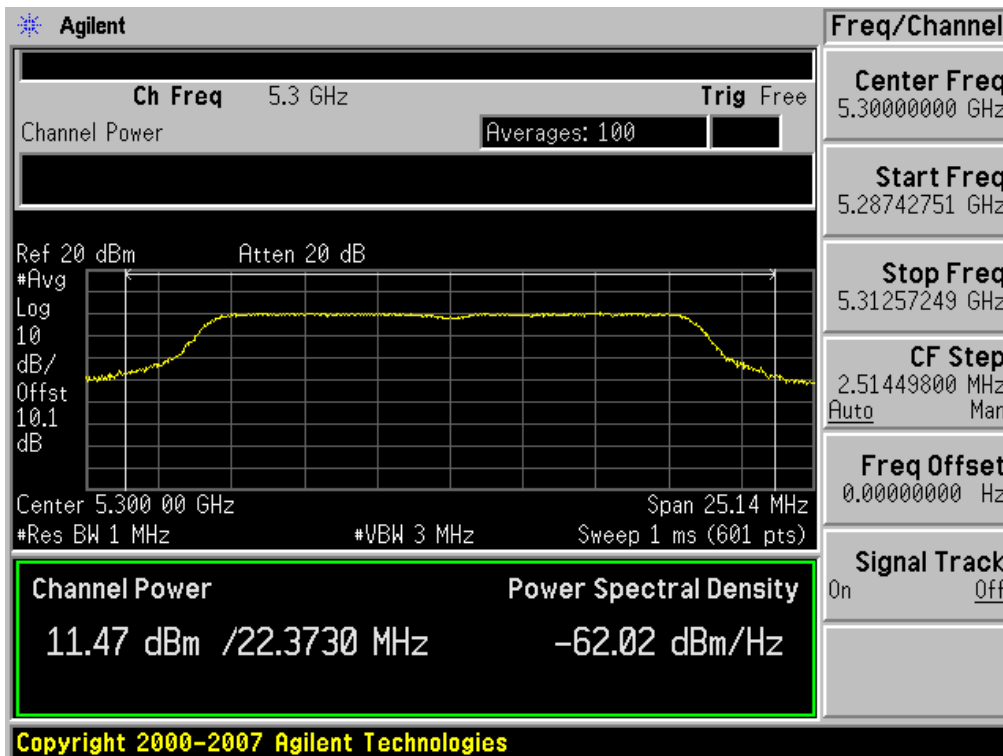
Conducted Output Power (802.11a-CH 60) 18 Mbps



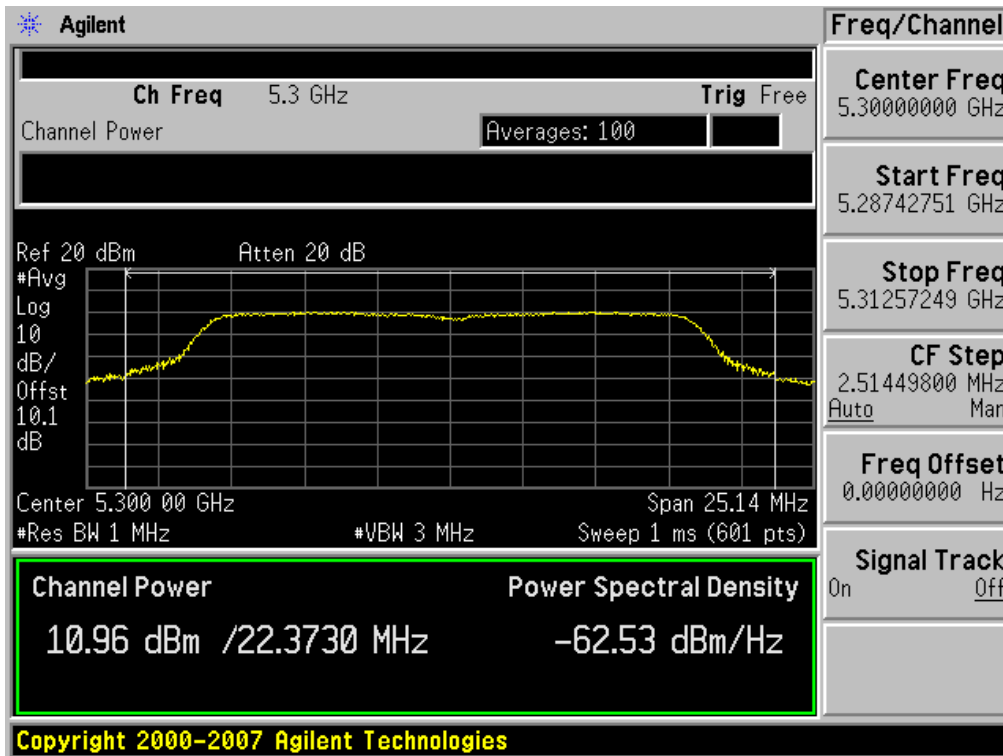
Conducted Output Power (802.11a-CH 60) 24 Mbps



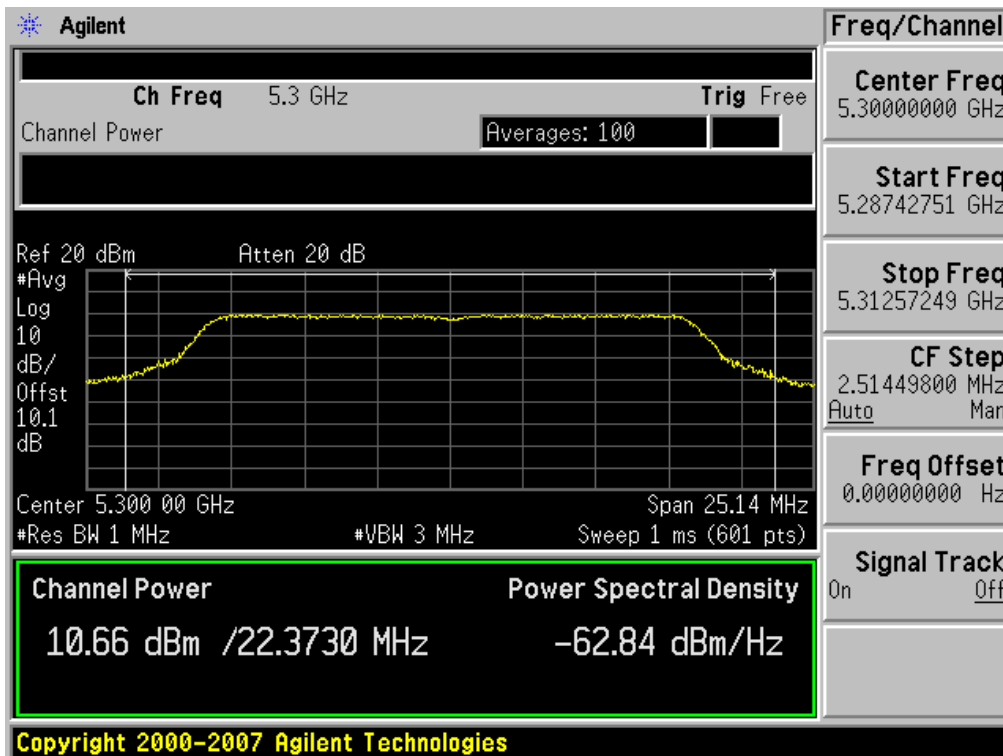
Conducted Output Power (802.11a-CH 60) 36 Mbps



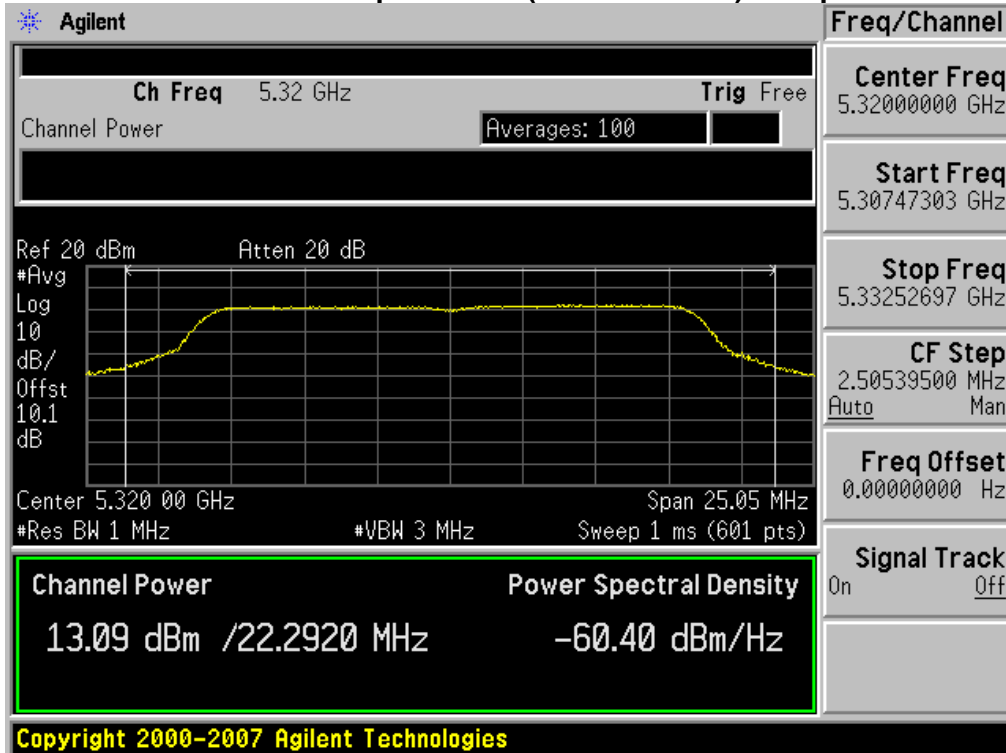
Conducted Output Power (802.11a-CH 60) 48 Mbps



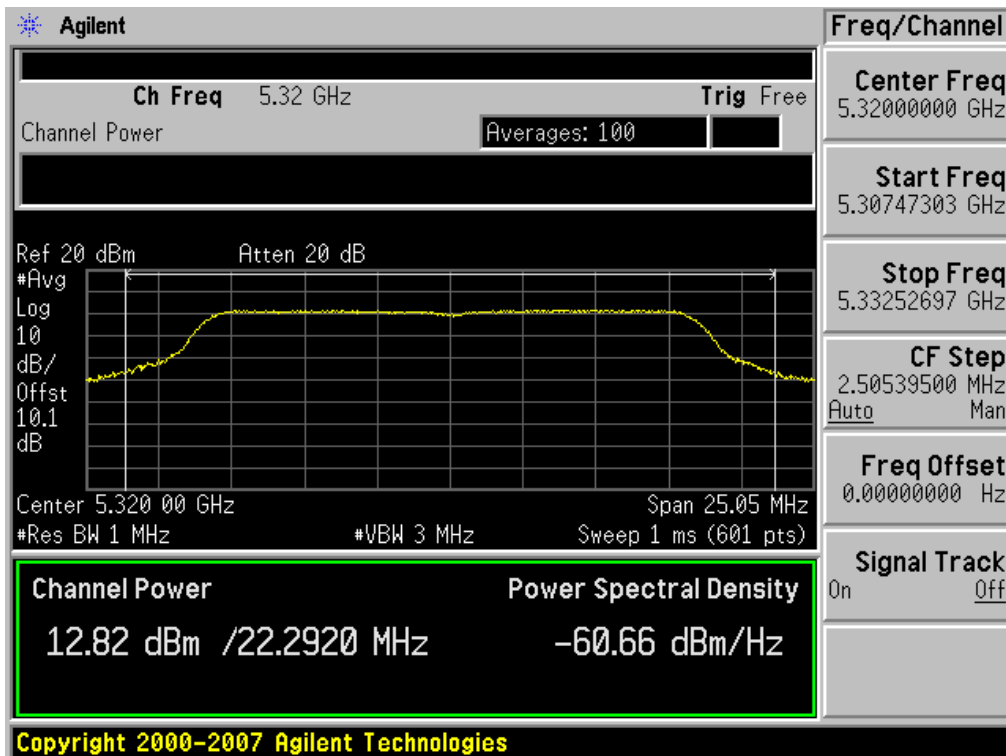
Conducted Output Power (802.11a-CH 60) 54 Mbps



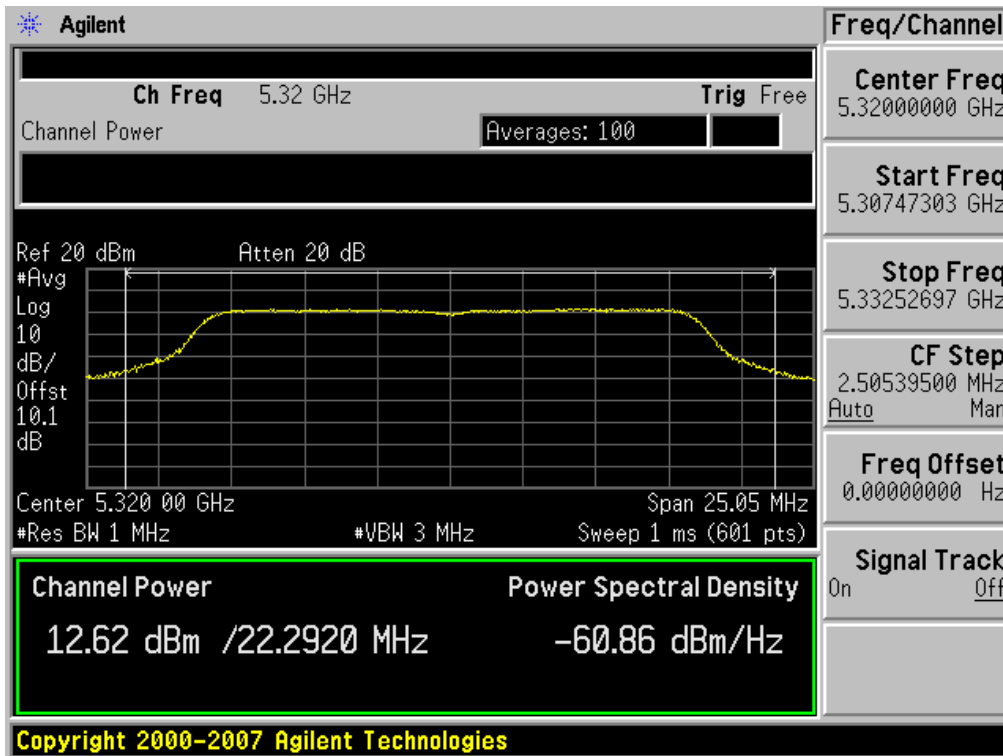
Conducted Output Power (802.11a-CH 64) 6 Mbps



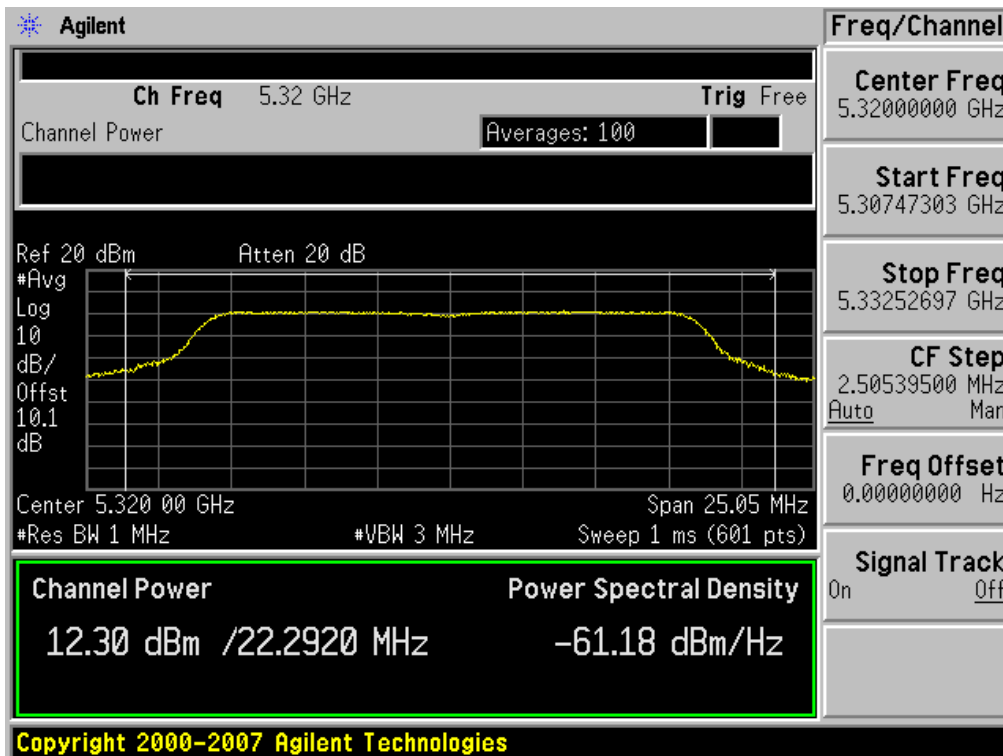
Conducted Output Power (802.11a-CH 64) 9 Mbps



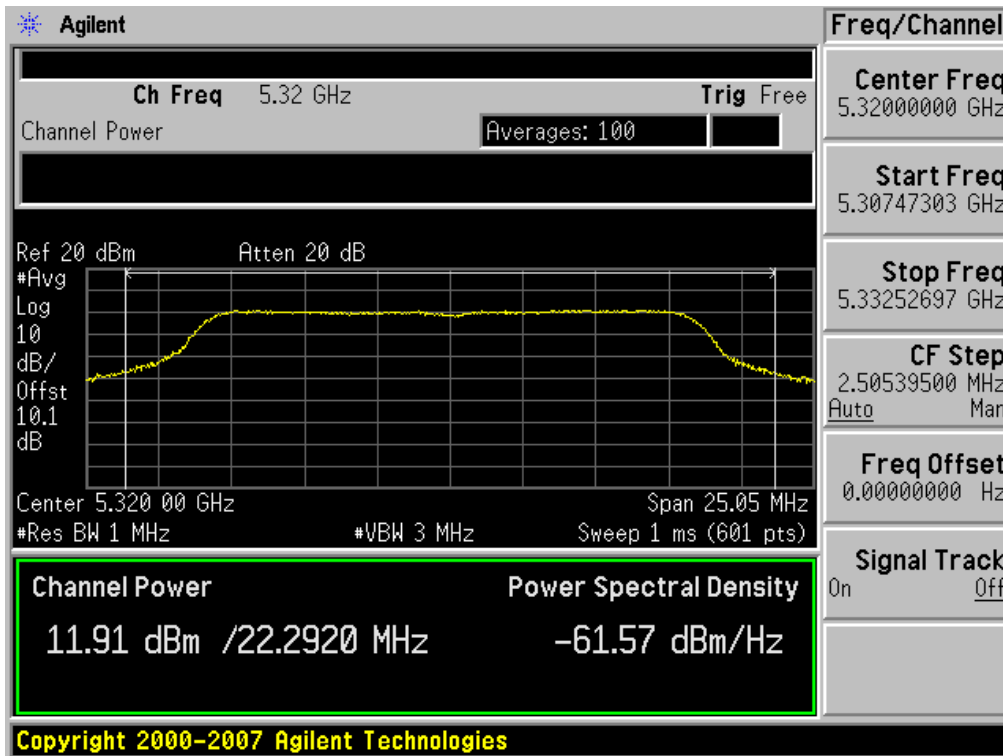
Conducted Output Power (802.11a-CH 64) 12 Mbps



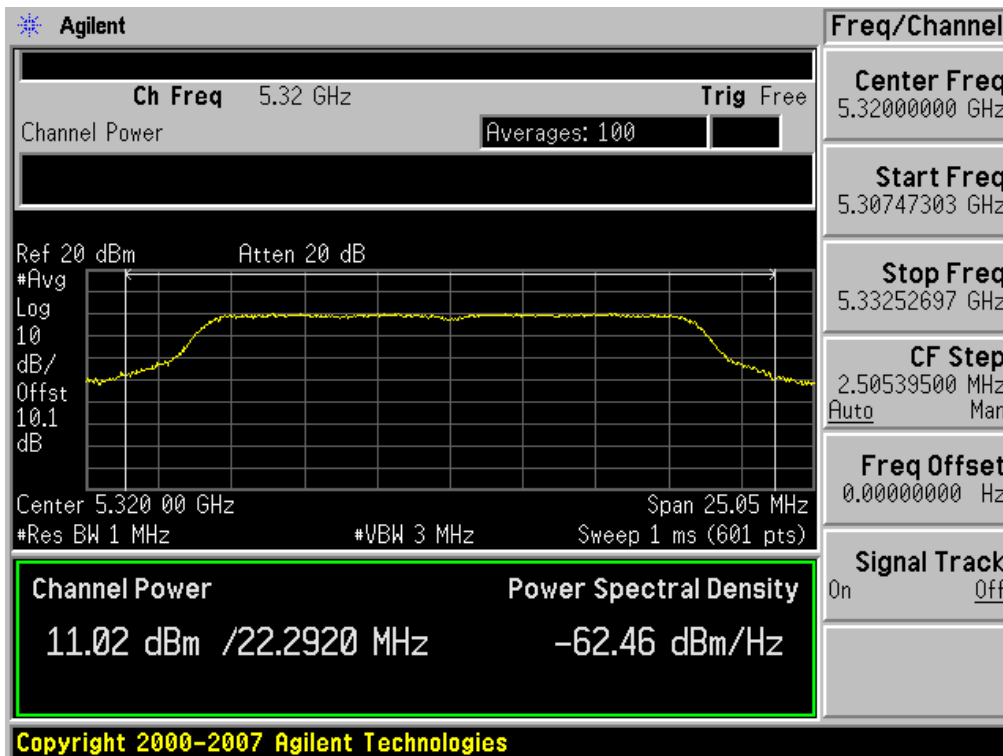
Conducted Output Power (802.11a-CH 64) 18 Mbps



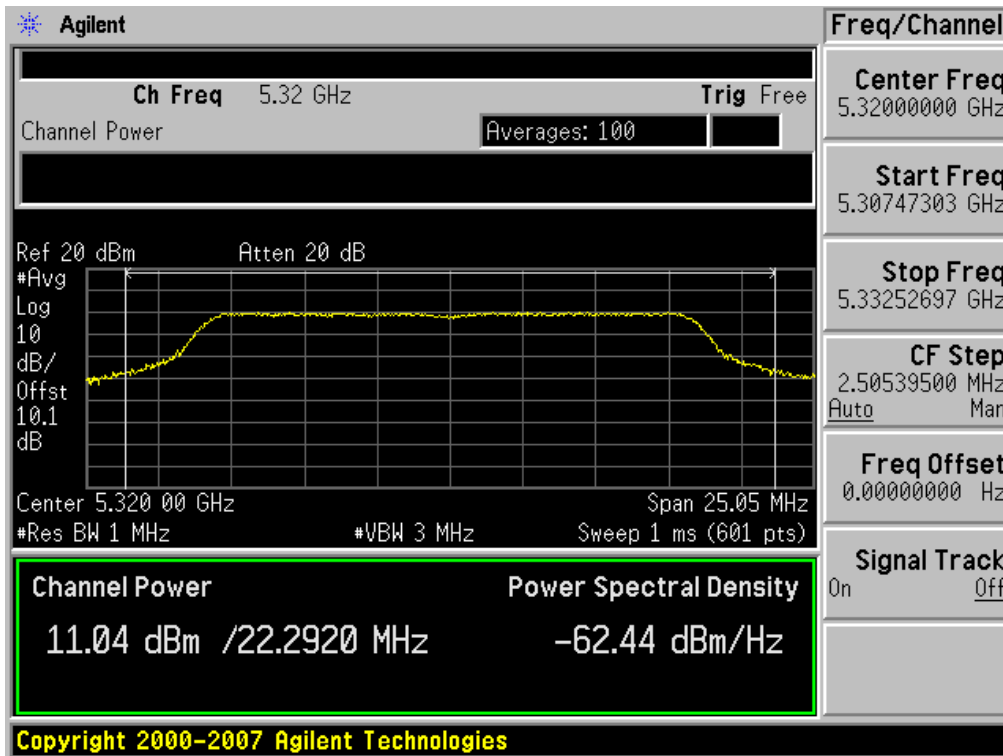
Conducted Output Power (802.11a-CH 64) 24 Mbps



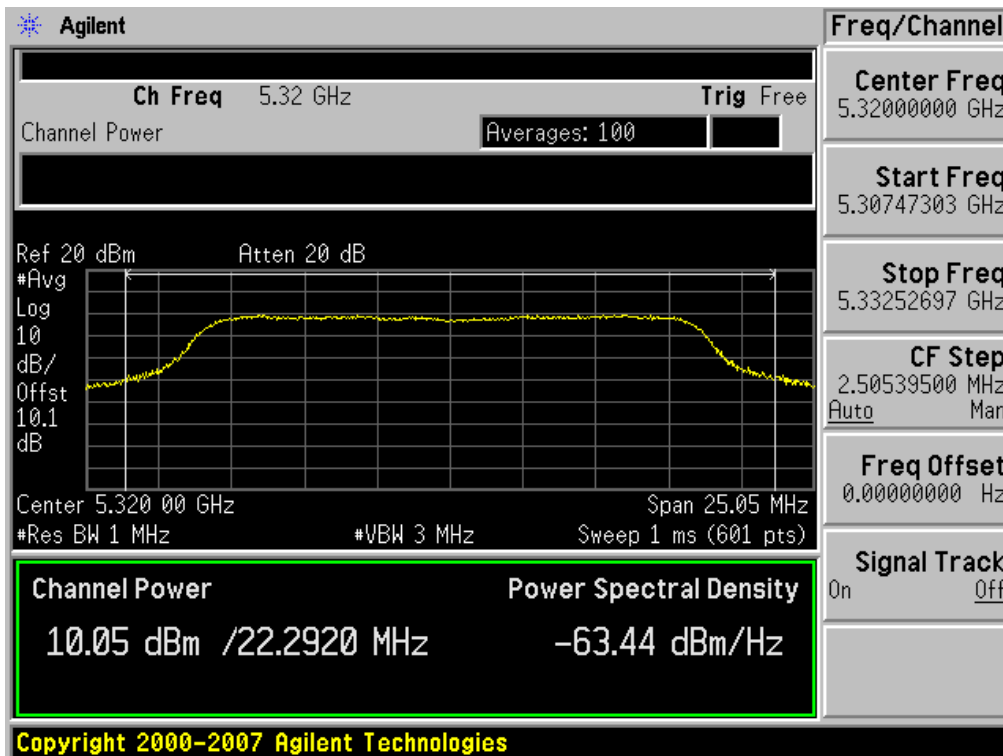
Conducted Output Power (802.11a-CH 64) 36 Mbps



Conducted Output Power (802.11a-CH 64) 48 Mbps

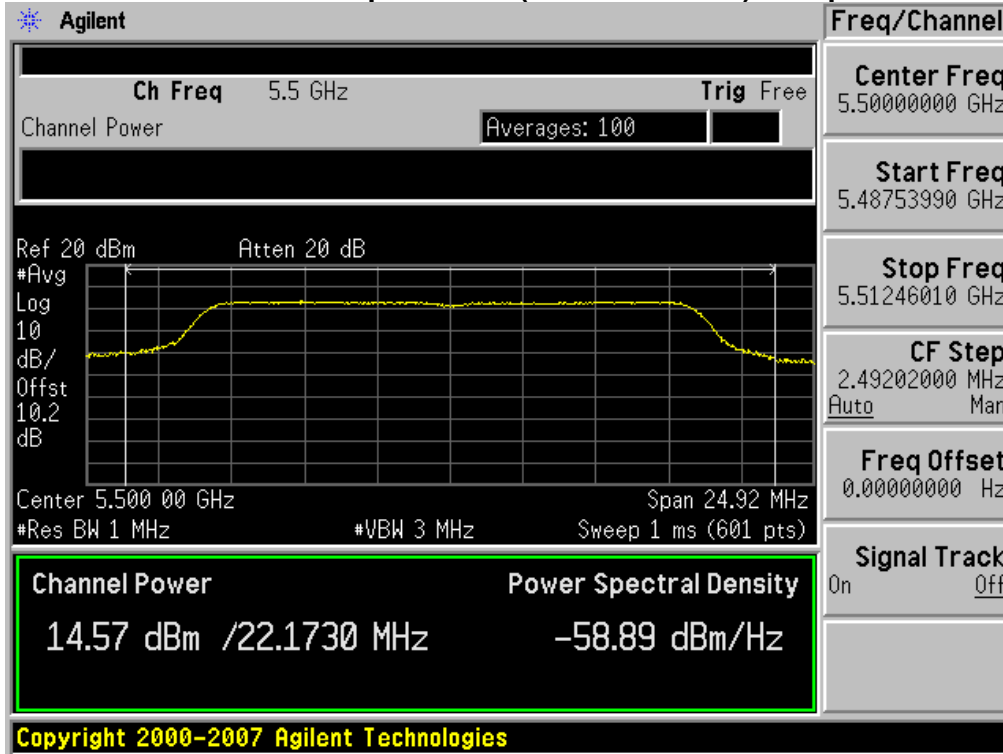


Conducted Output Power (802.11a-CH 64) 54 Mbps

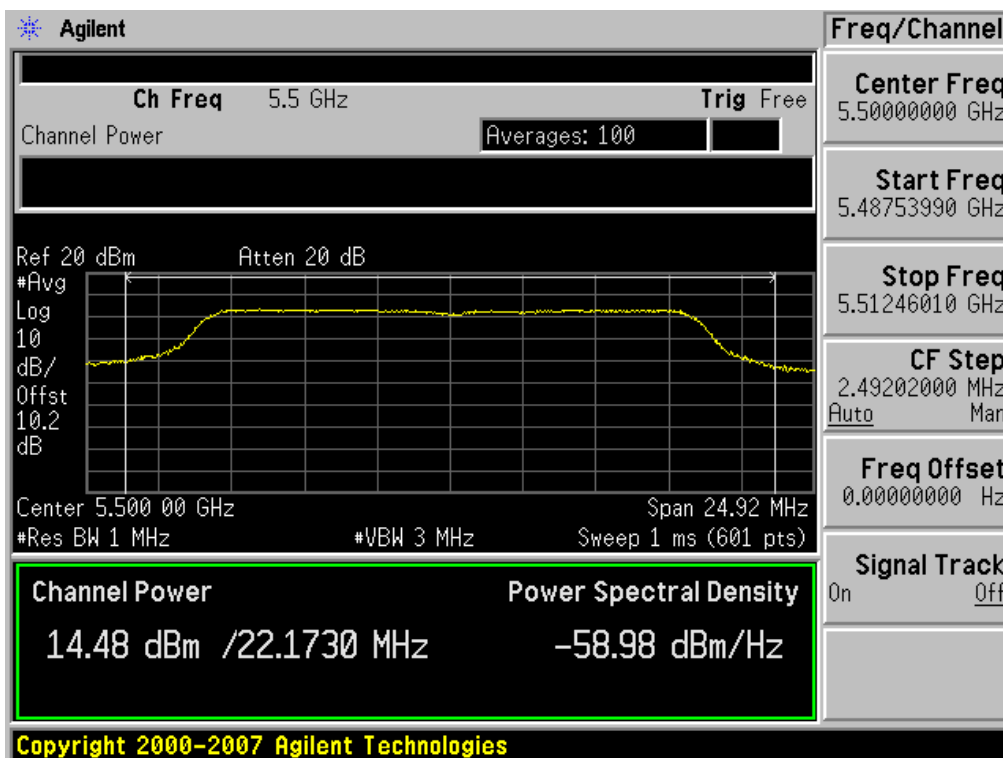


RESULT PLOTS (5500 MHz ~5700 MHz)

Conducted Output Power (802.11a-CH 100) 6 Mbps

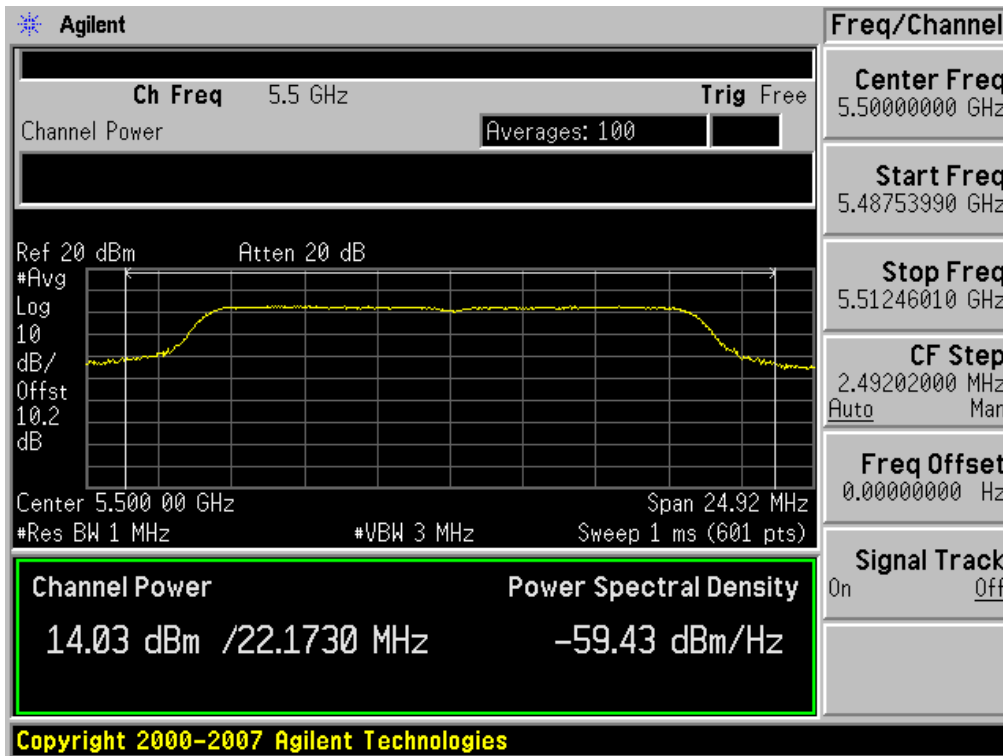


Conducted Output Power (802.11a-CH 100) 9 Mbps

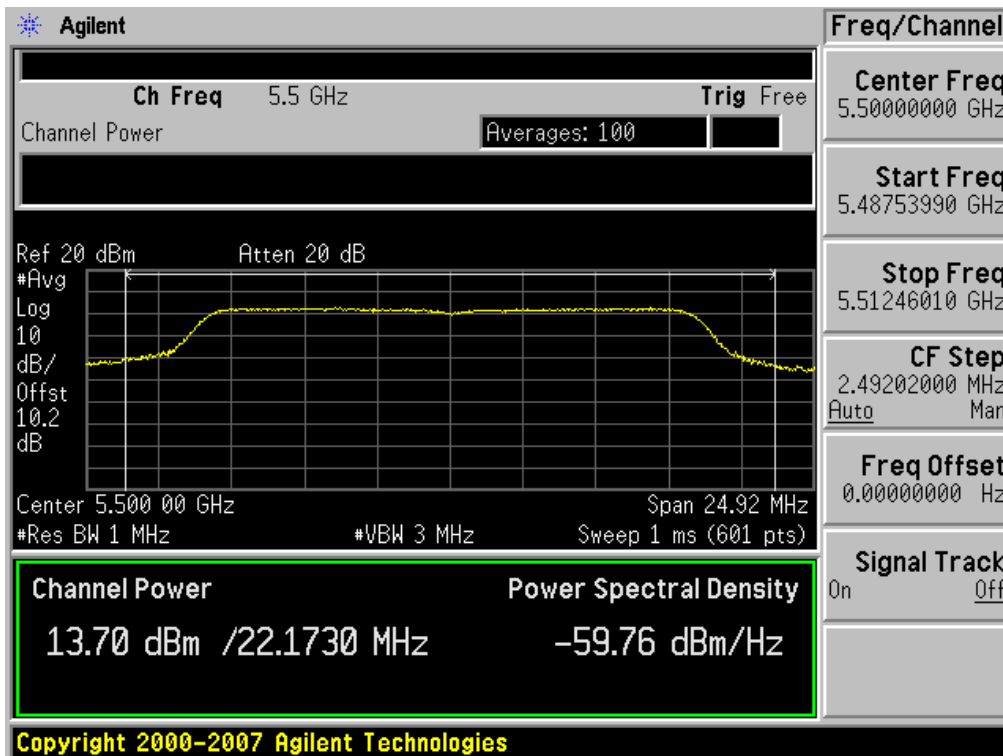


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

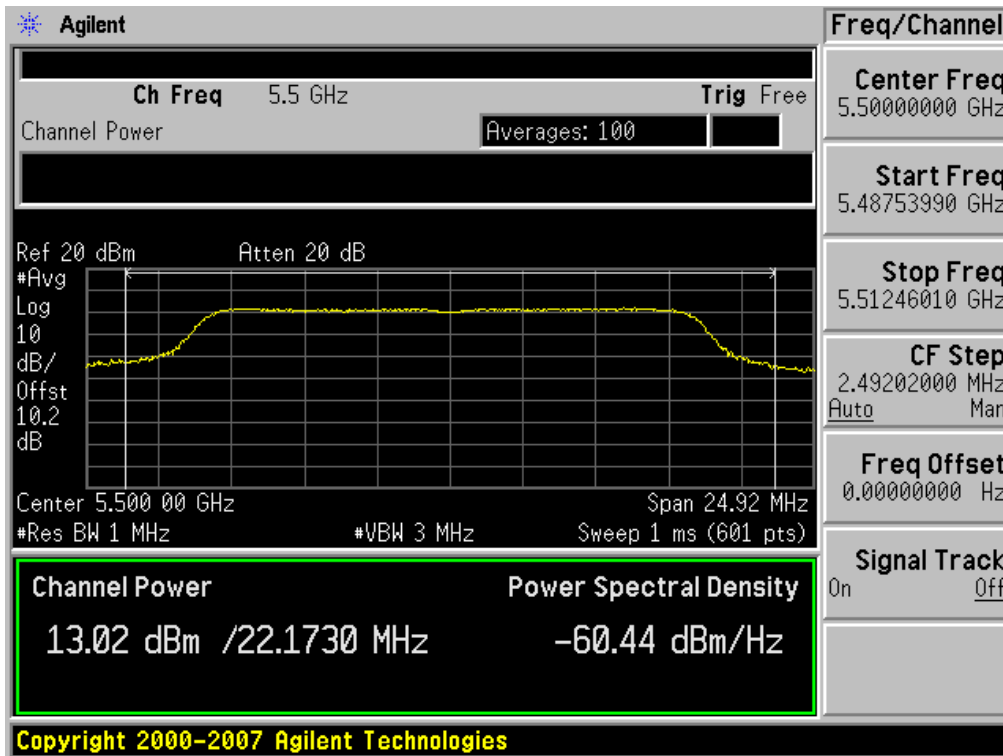
Conducted Output Power (802.11a-CH 100) 12 Mbps



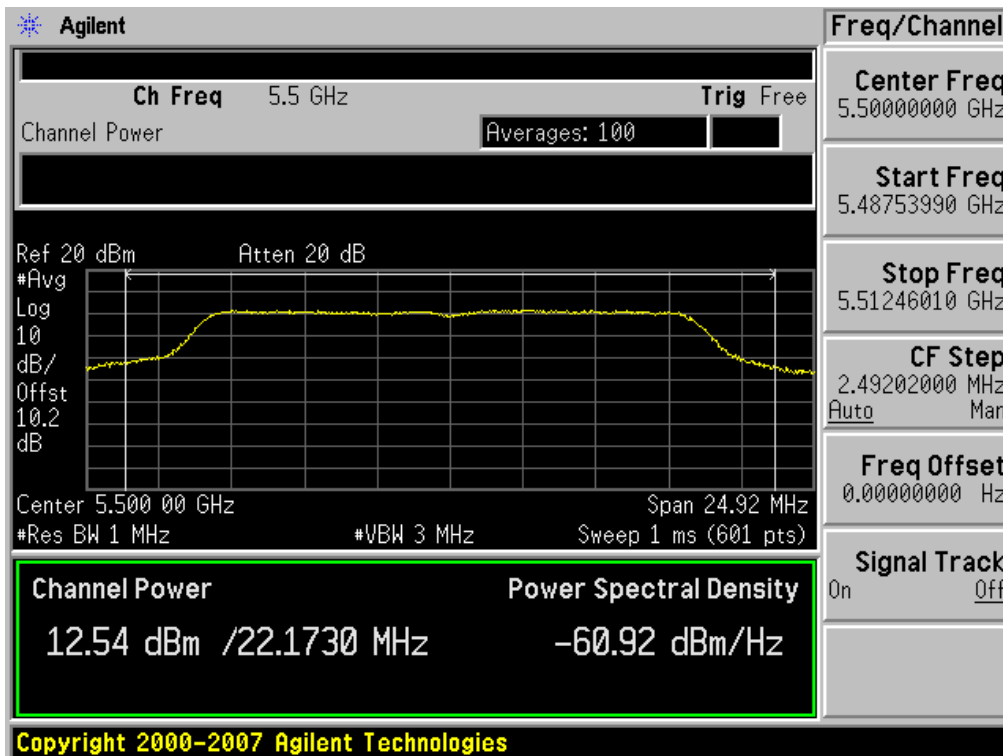
Conducted Output Power (802.11a-CH 100) 18 Mbps



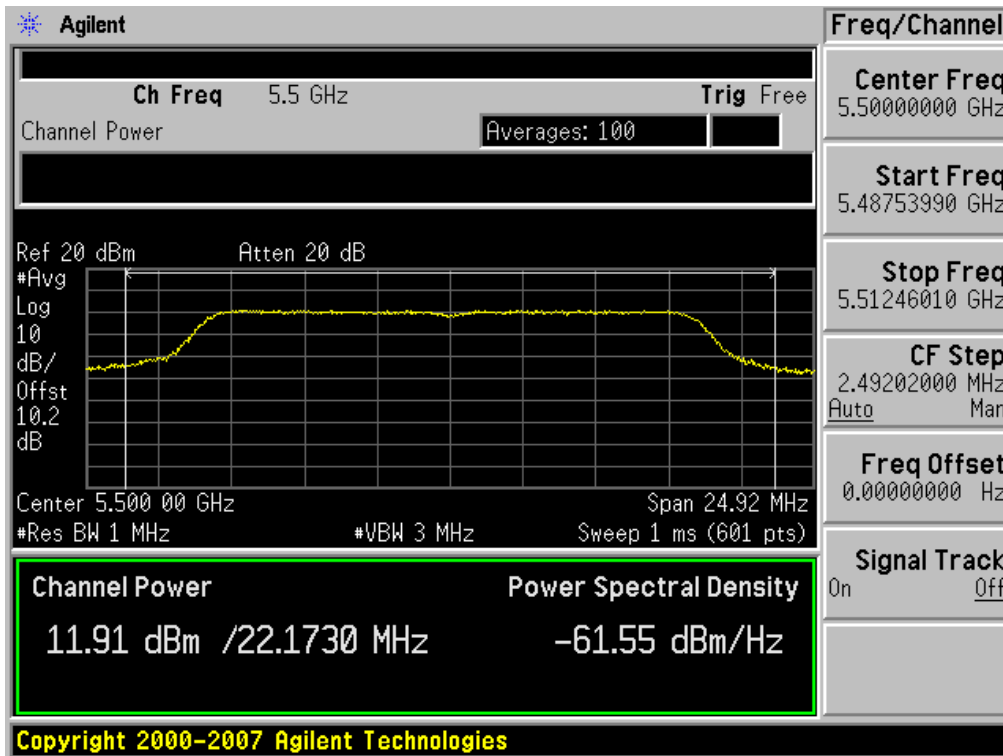
Conducted Output Power (802.11a-CH 100) 24 Mbps



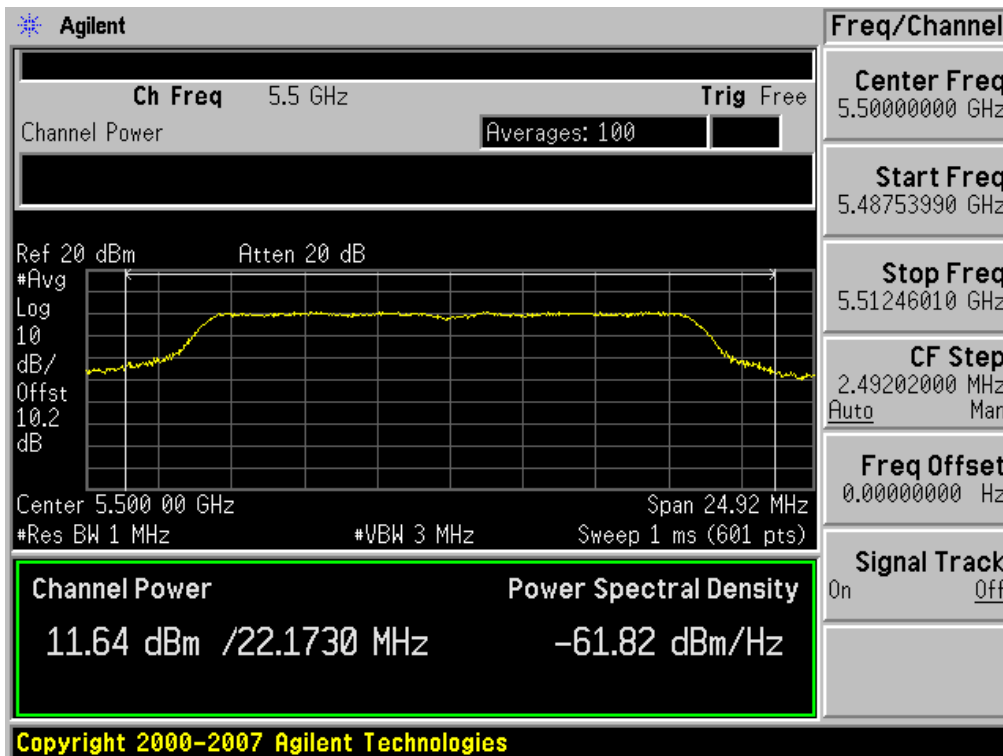
Conducted Output Power (802.11a-CH 100) 36 Mbps



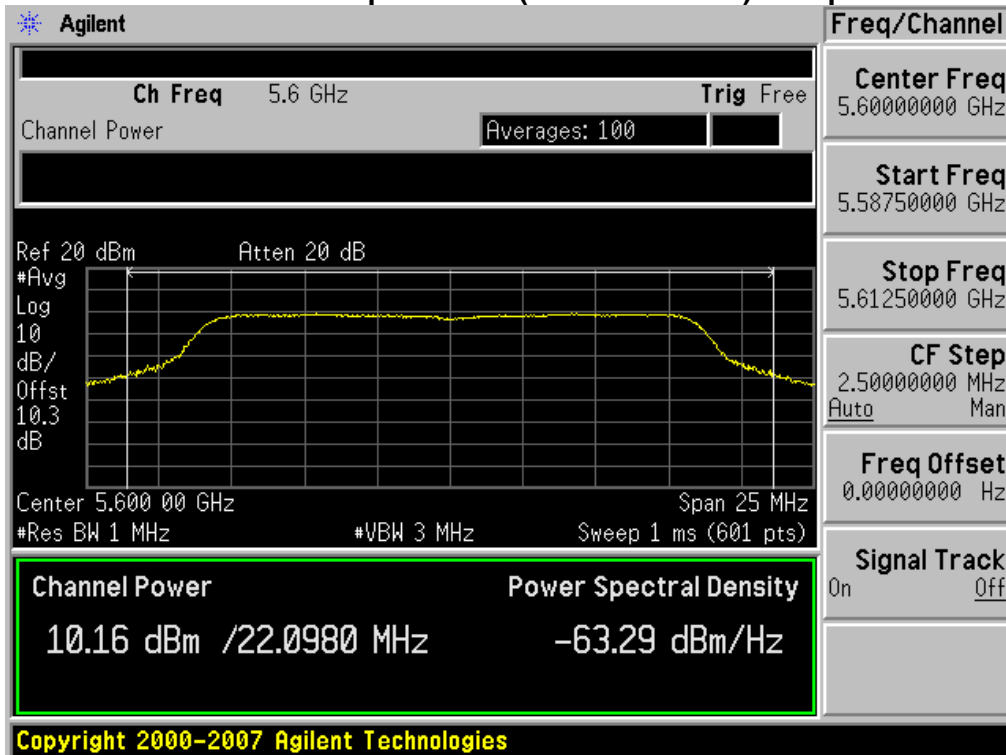
Conducted Output Power (802.11a-CH 100) 48 Mbps



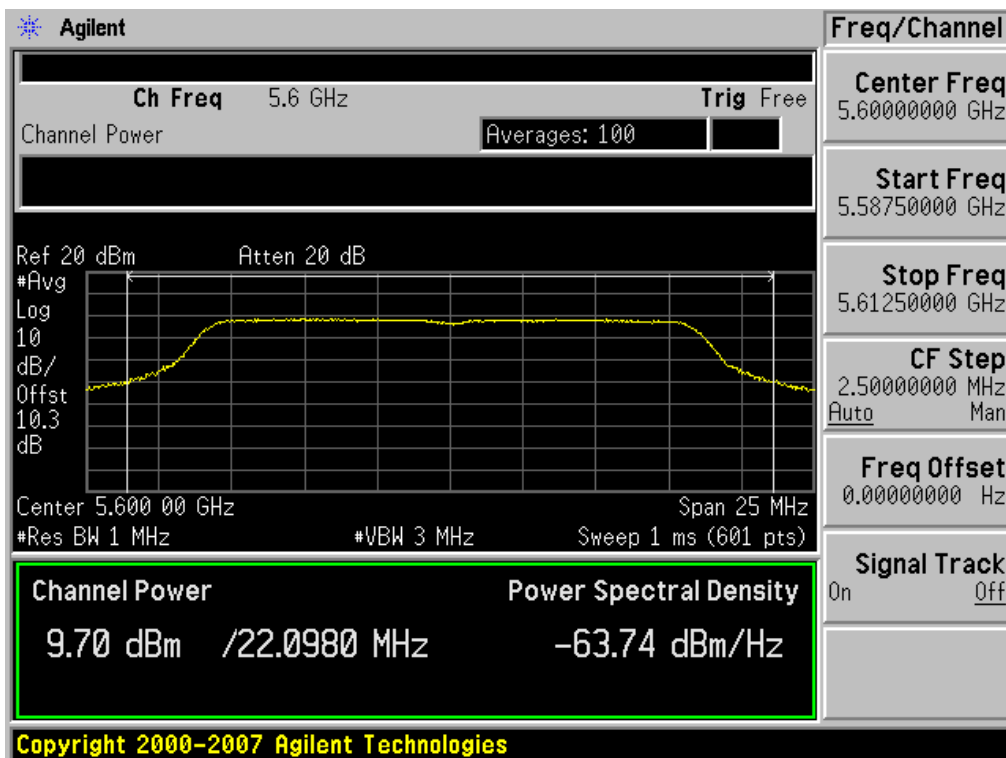
Conducted Output Power (802.11a-CH 100) 54 Mbps



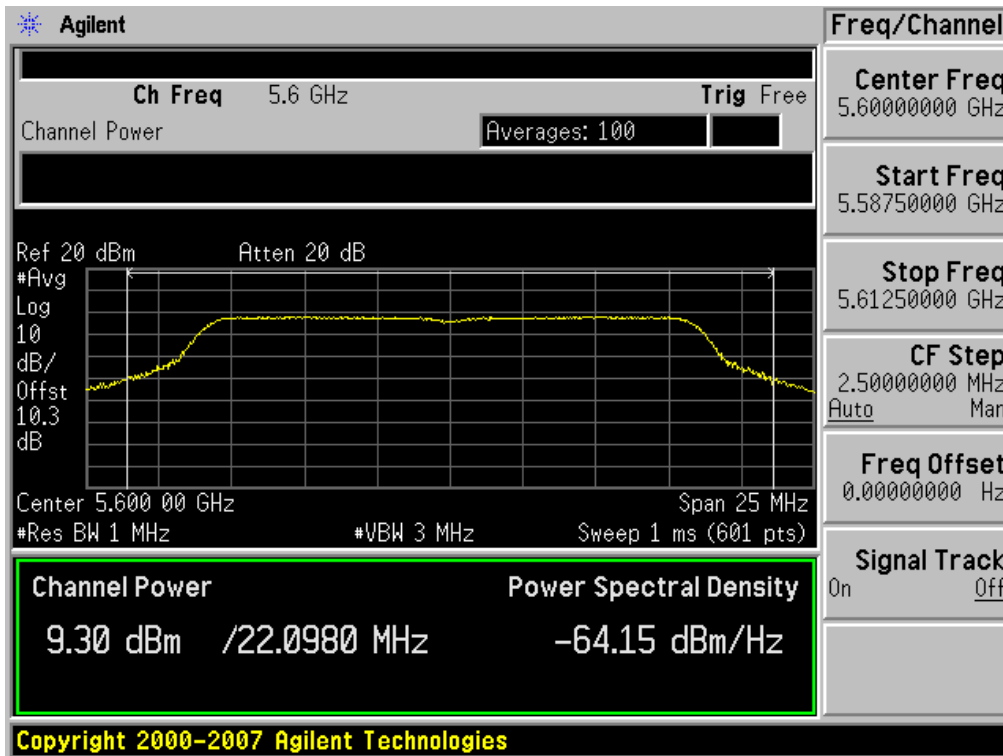
Conducted Output Power (802.11a-CH 120) 6 Mbps



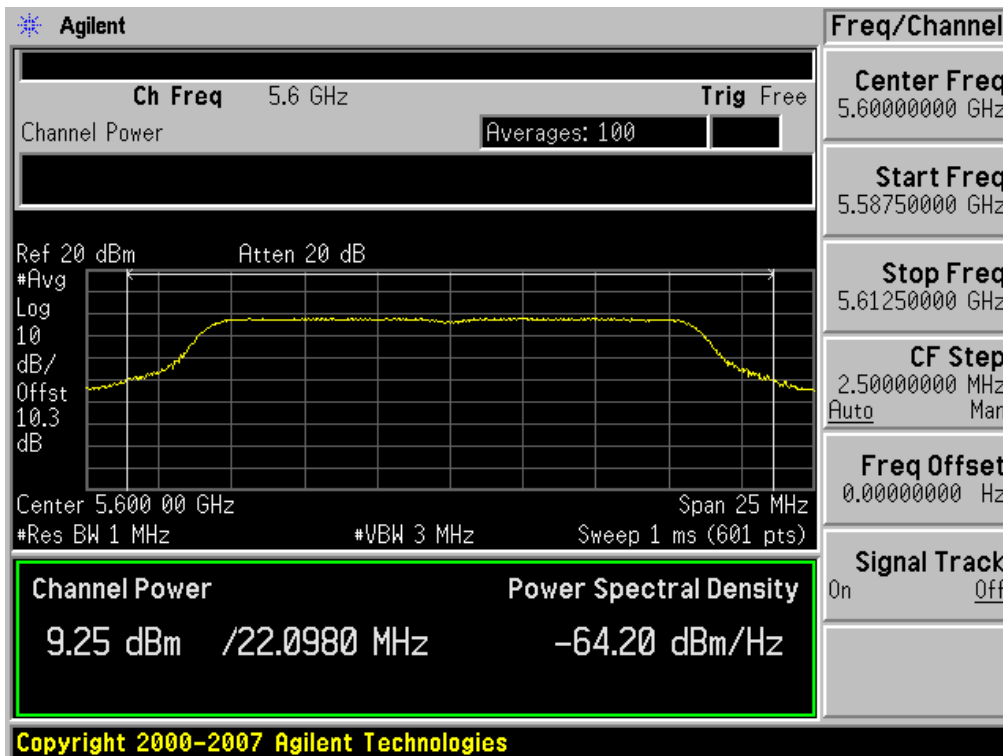
Conducted Output Power (802.11a-CH 120) 9 Mbps



Conducted Output Power (802.11a-CH 120) 12 Mbps

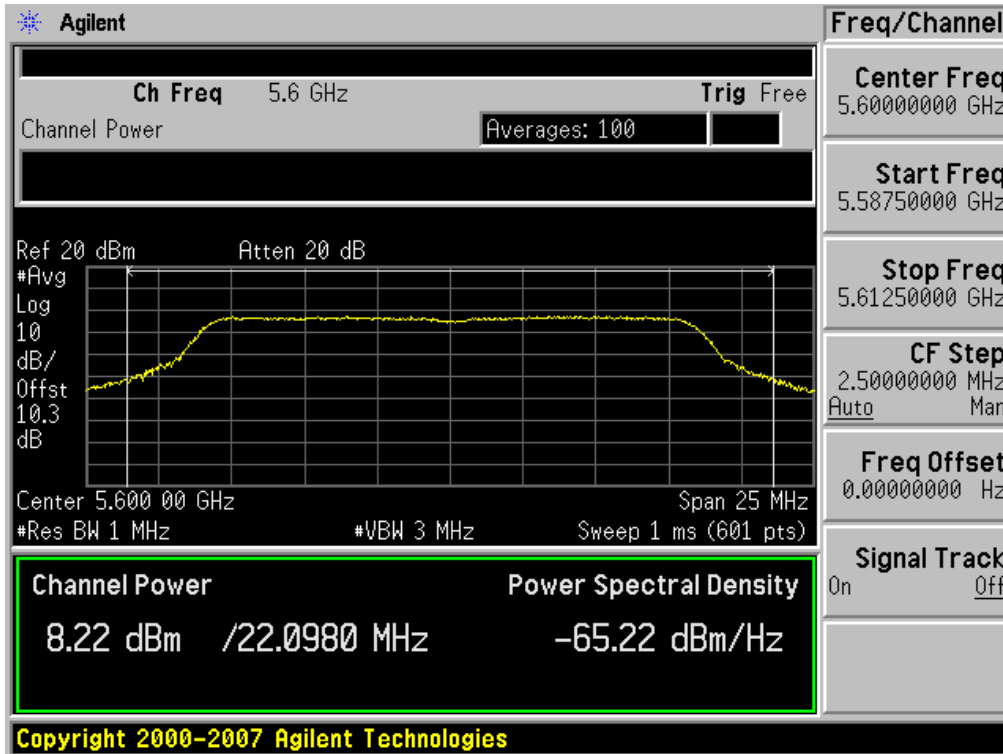


Conducted Output Power (802.11a-CH 120) 18 Mbps

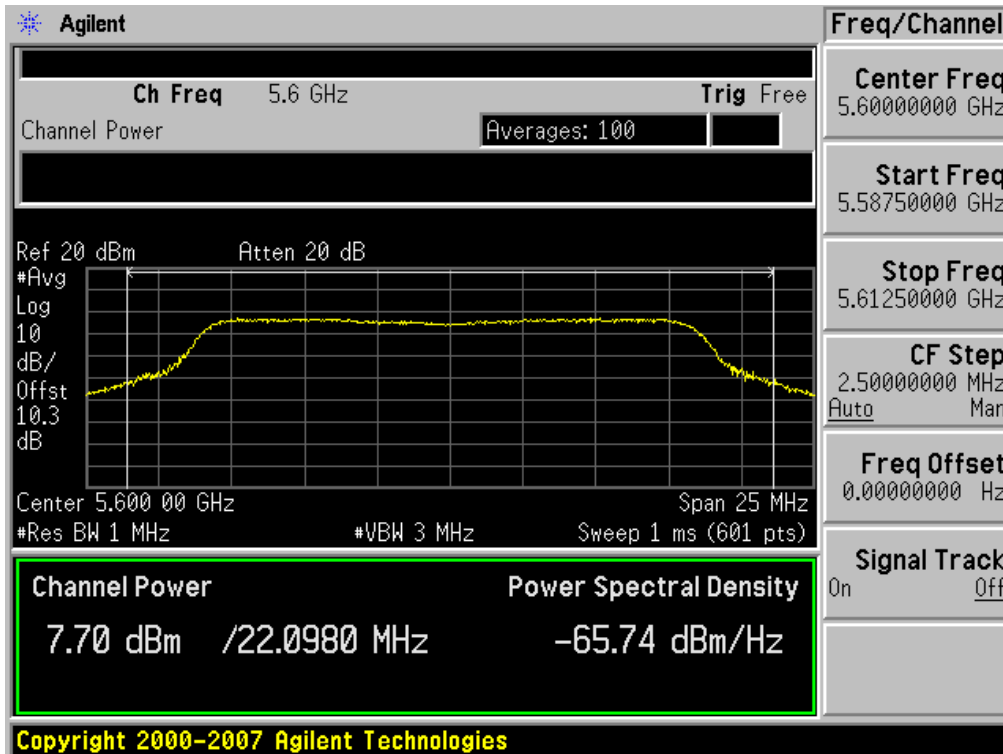


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

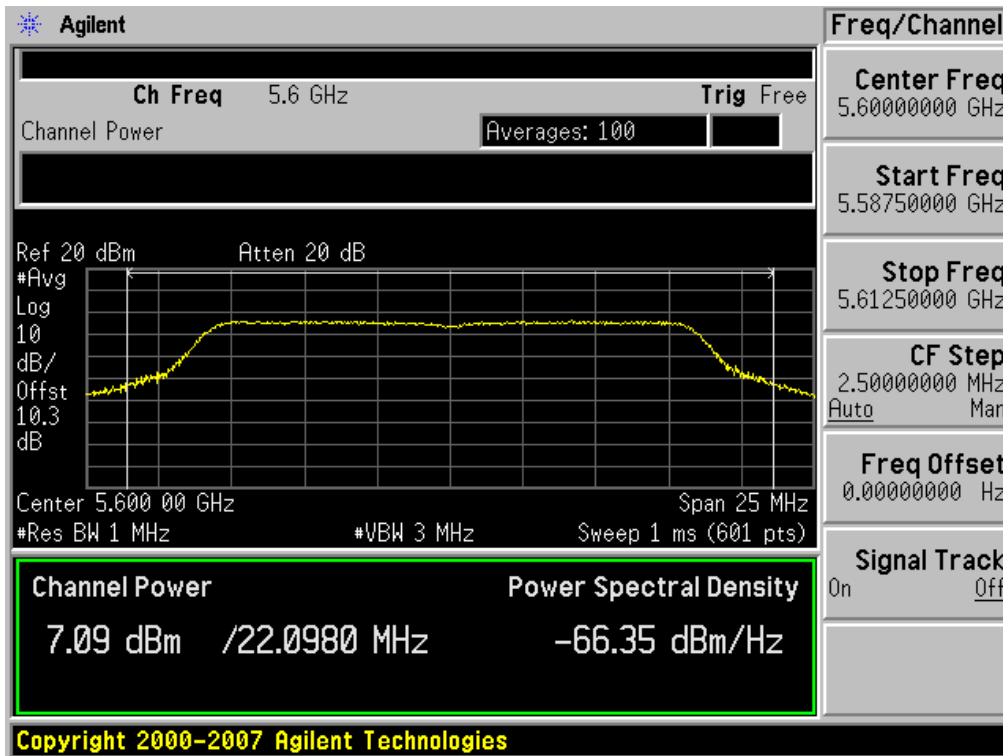
Conducted Output Power (802.11a-CH 120) 24 Mbps



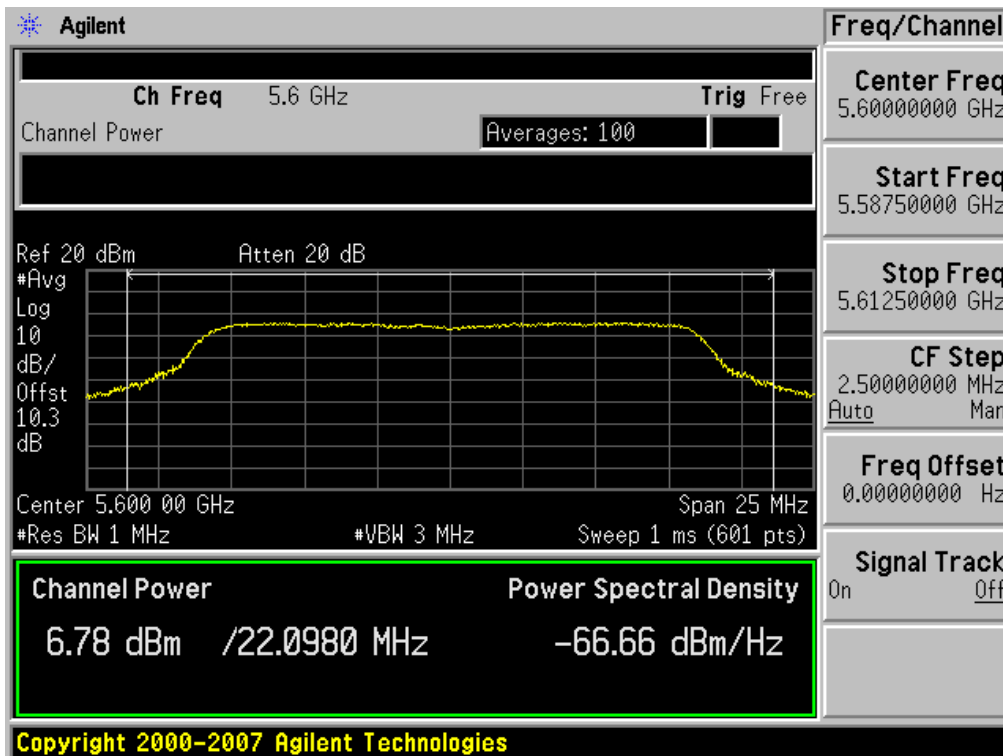
Conducted Output Power (802.11a-CH 120) 36 Mbps



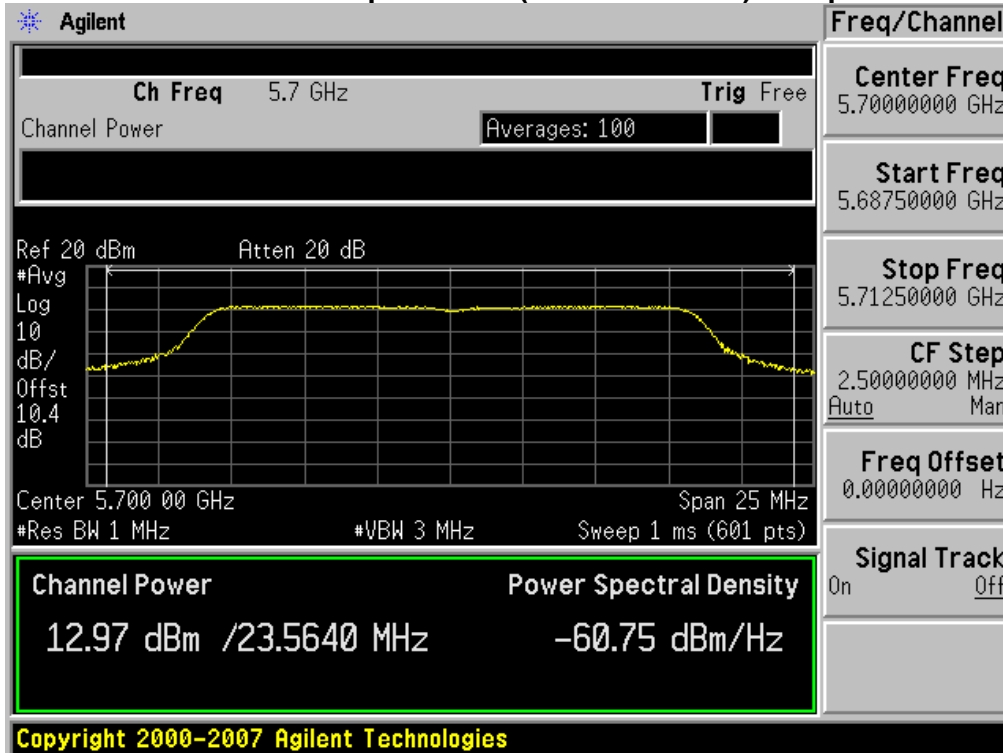
Conducted Output Power (802.11a-CH 120) 48 Mbps



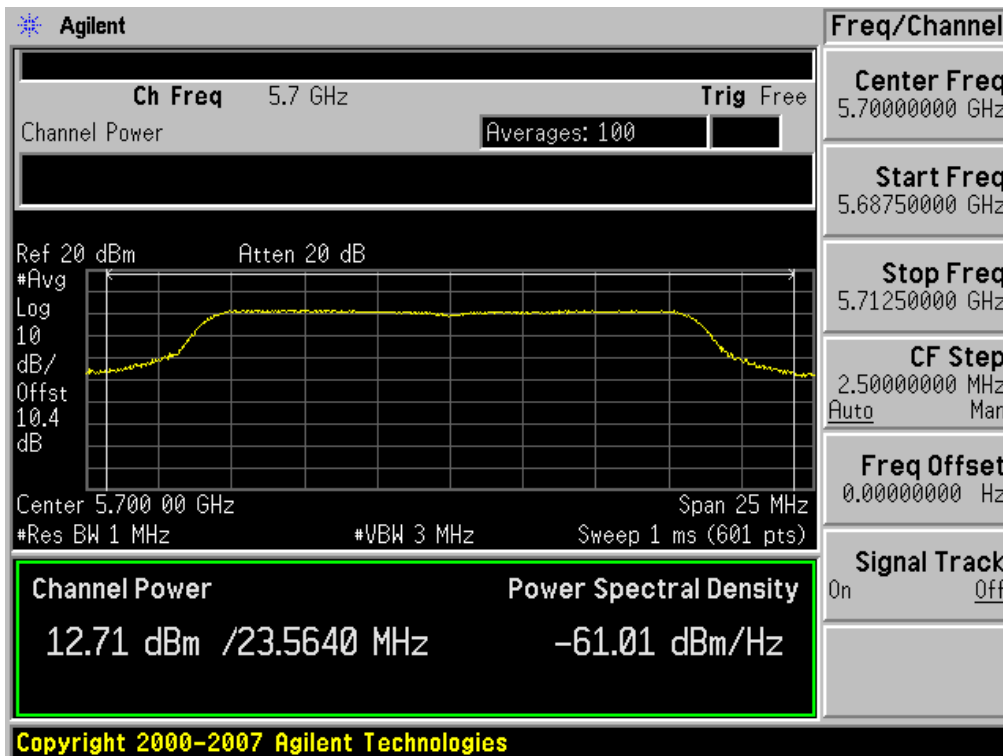
Conducted Output Power (802.11a-CH 120) 54 Mbps



Conducted Output Power (802.11a-CH 140) 6 Mbps

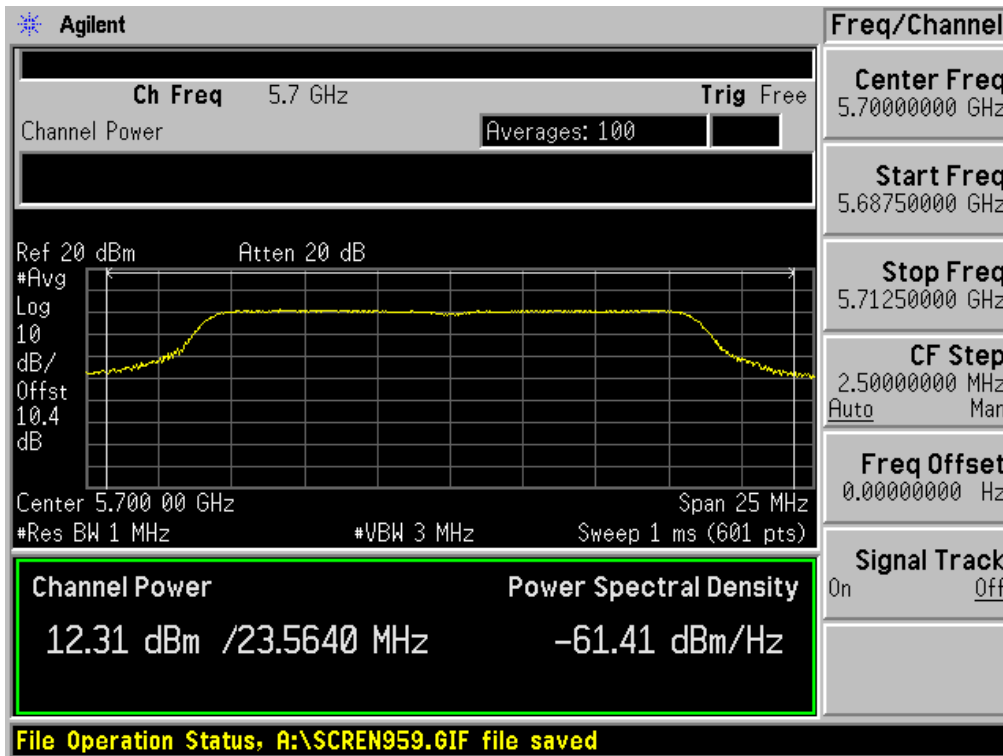


Conducted Output Power (802.11a-CH 140) 9 Mbps

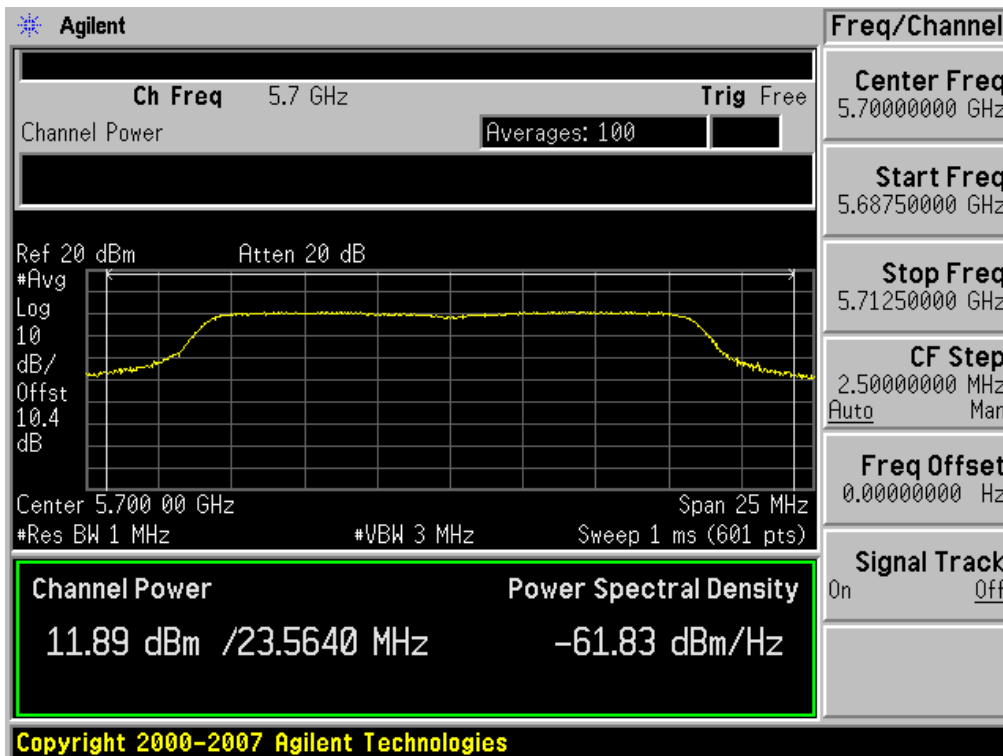


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

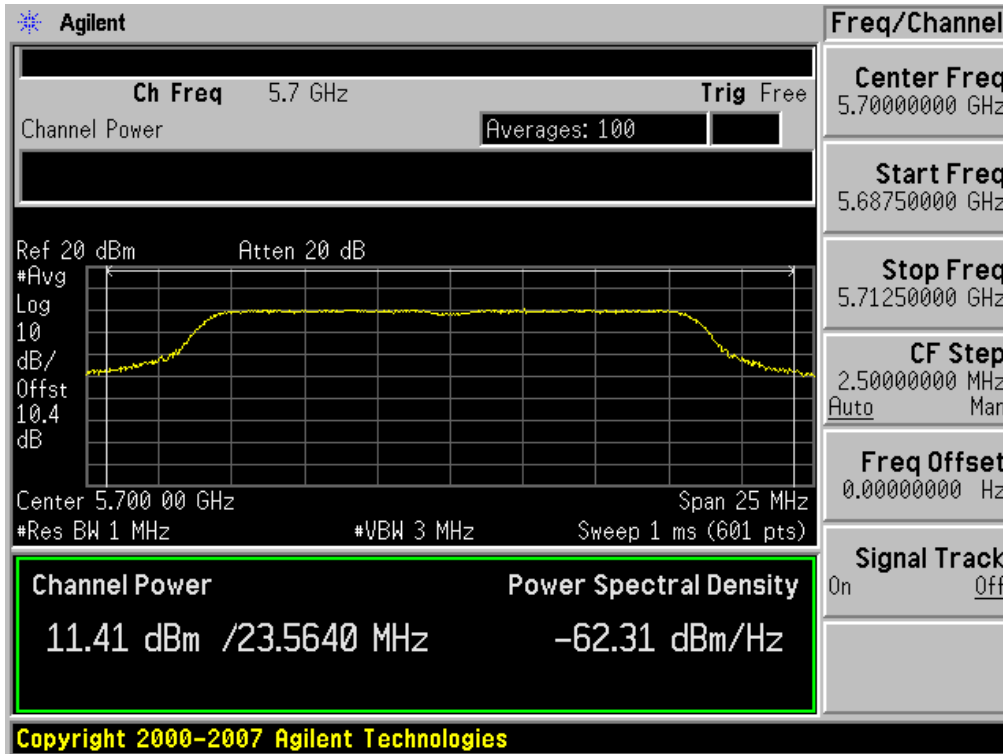
Conducted Output Power (802.11a-CH 140) 12 Mbps



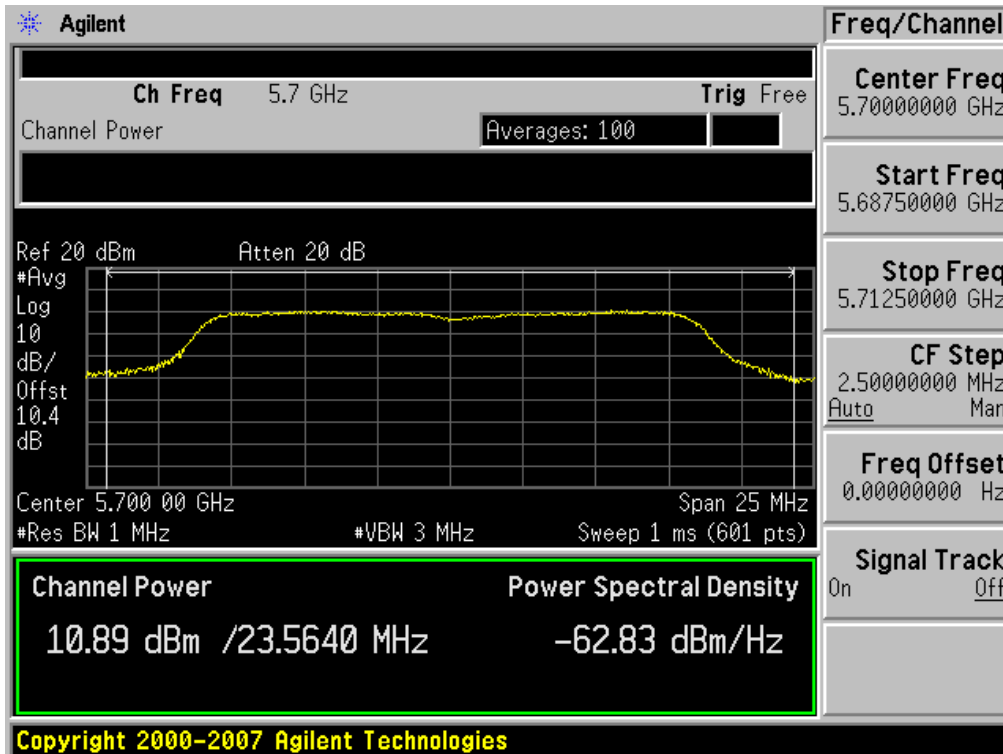
Conducted Output Power (802.11a-CH 140) 18 Mbps



Conducted Output Power (802.11a-CH 140) 24 Mbps

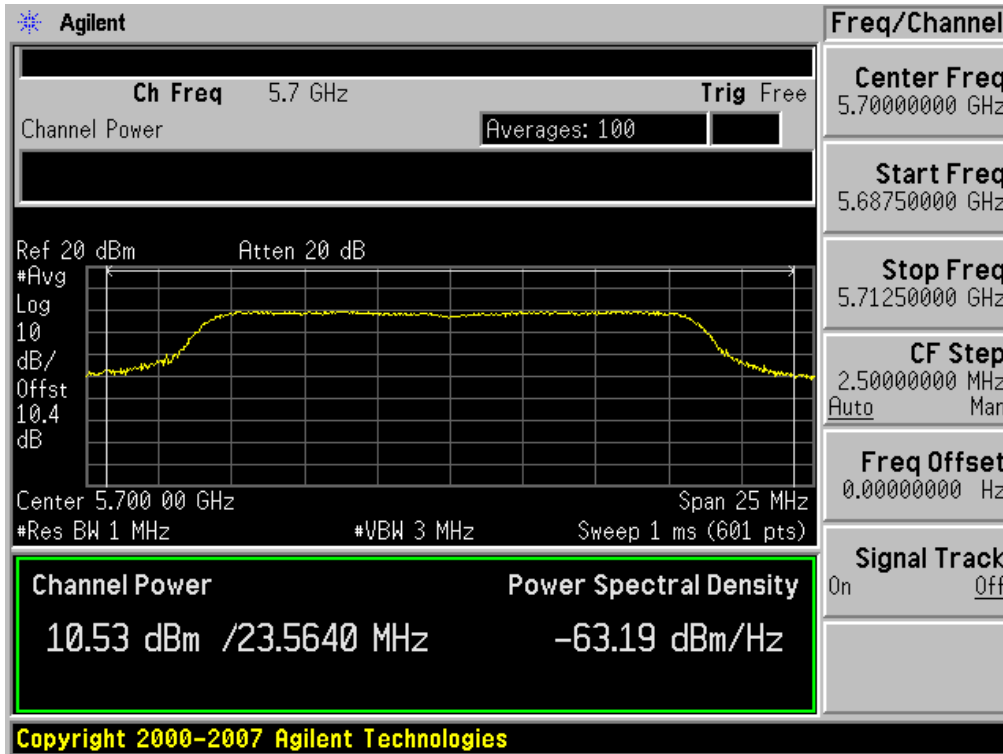


Conducted Output Power (802.11a-CH 140) 36 Mbps

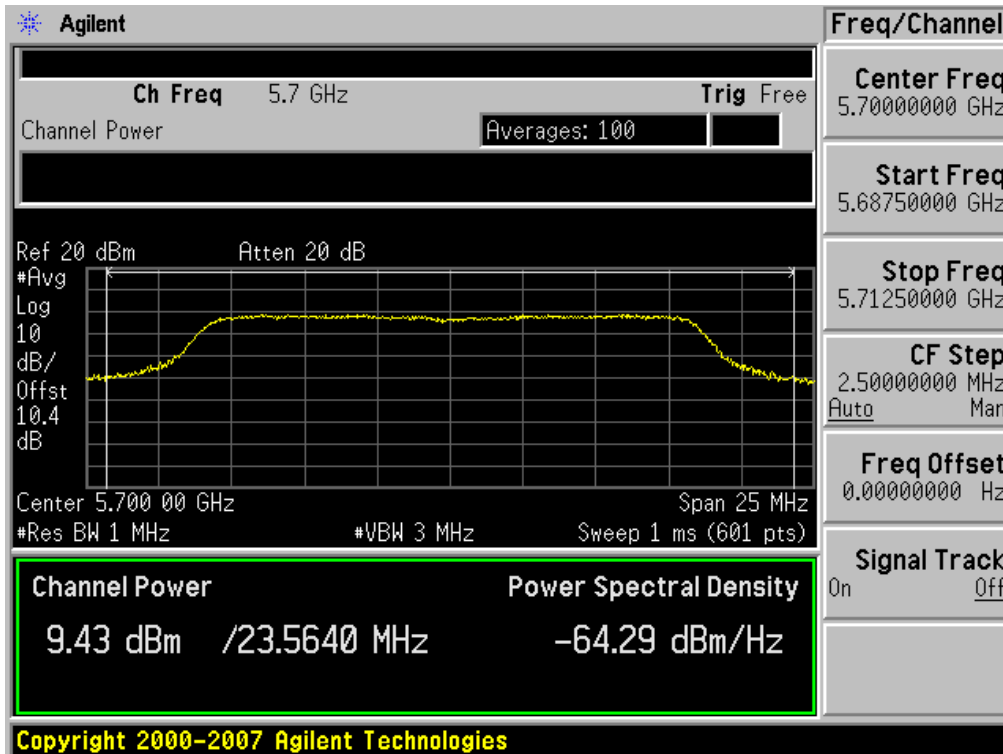


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11a-CH 140) 48 Mbps



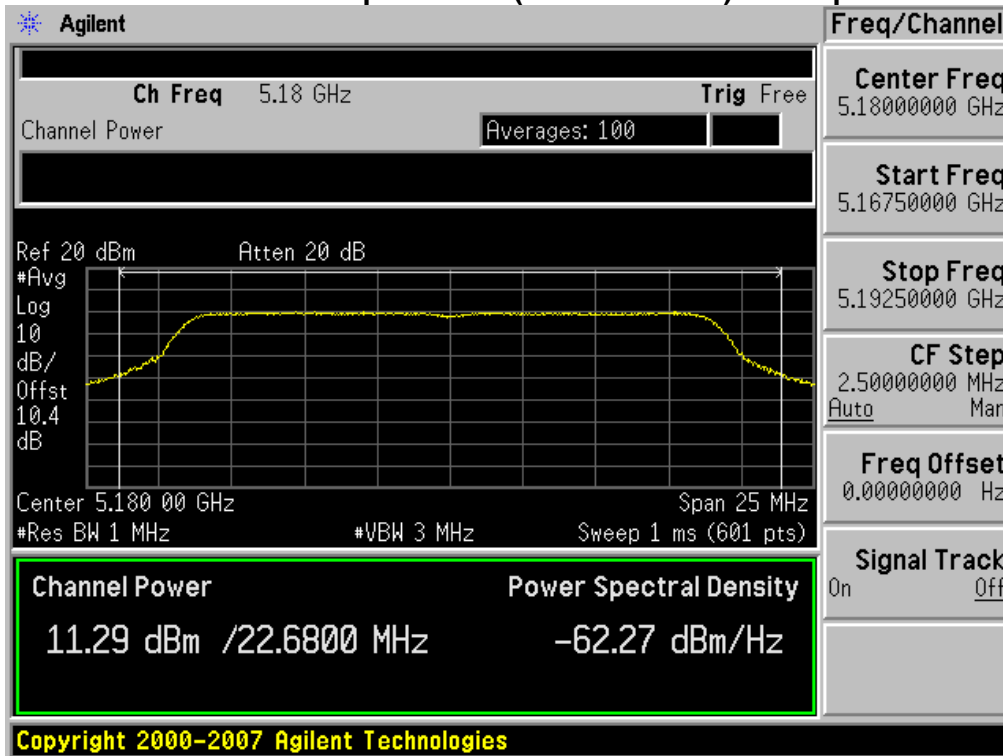
Conducted Output Power (802.11a-CH 140) 54 Mbps



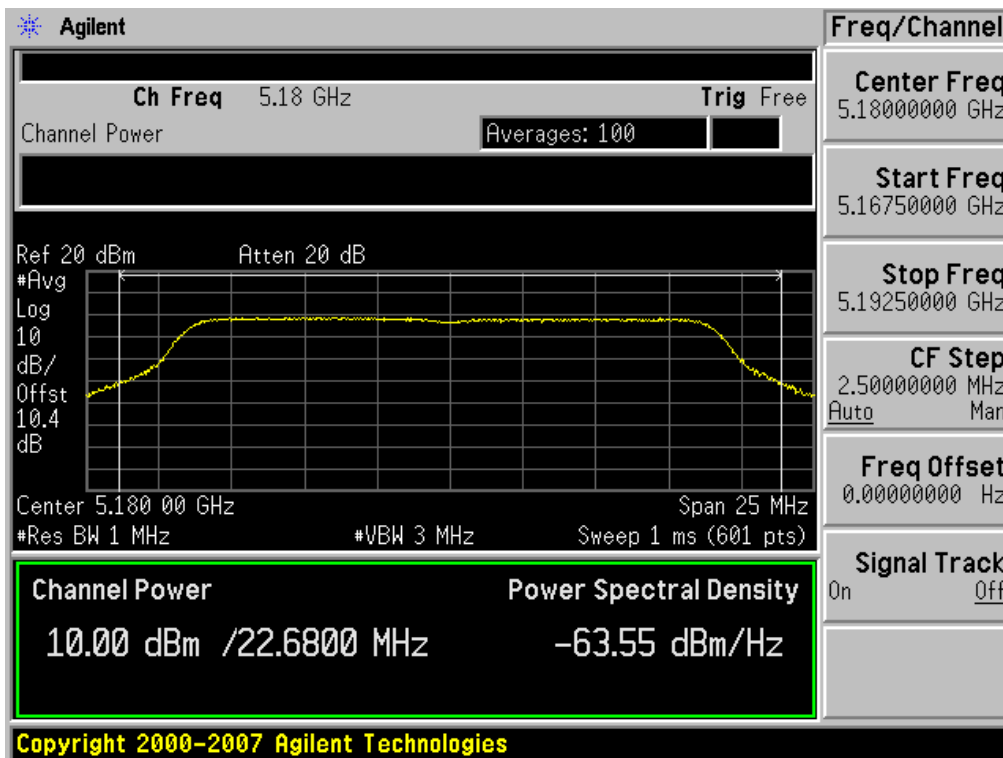
20 MHz BW

RESULT PLOTS (5180 MHz ~5240 MHz)

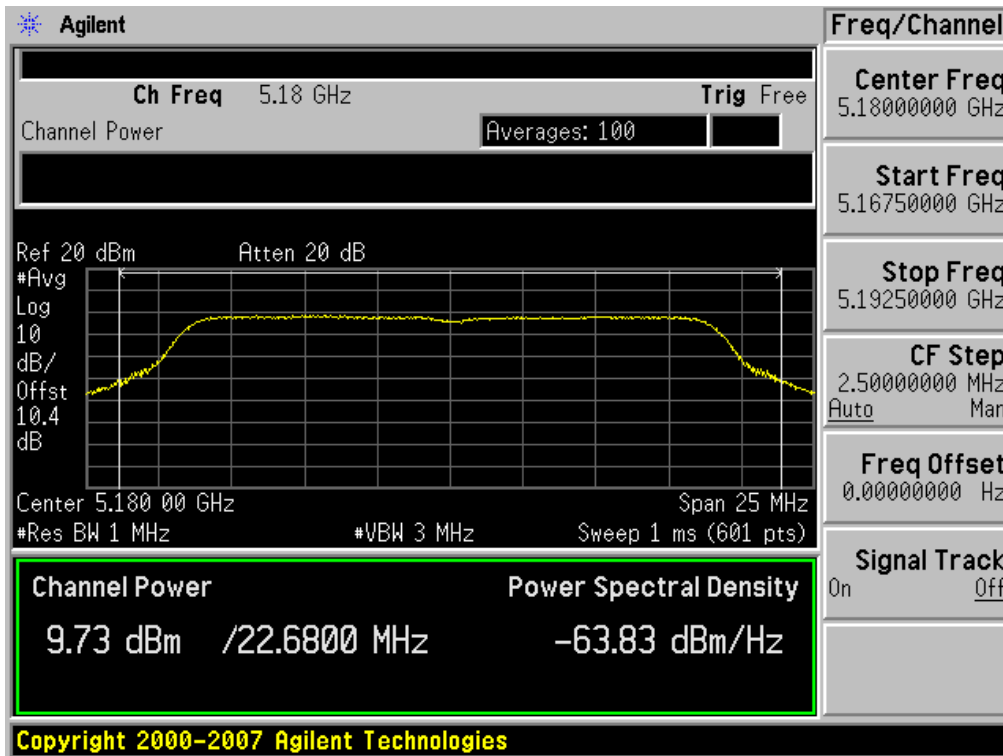
Conducted Output Power (802.11n-CH 36) 6.5 Mbps



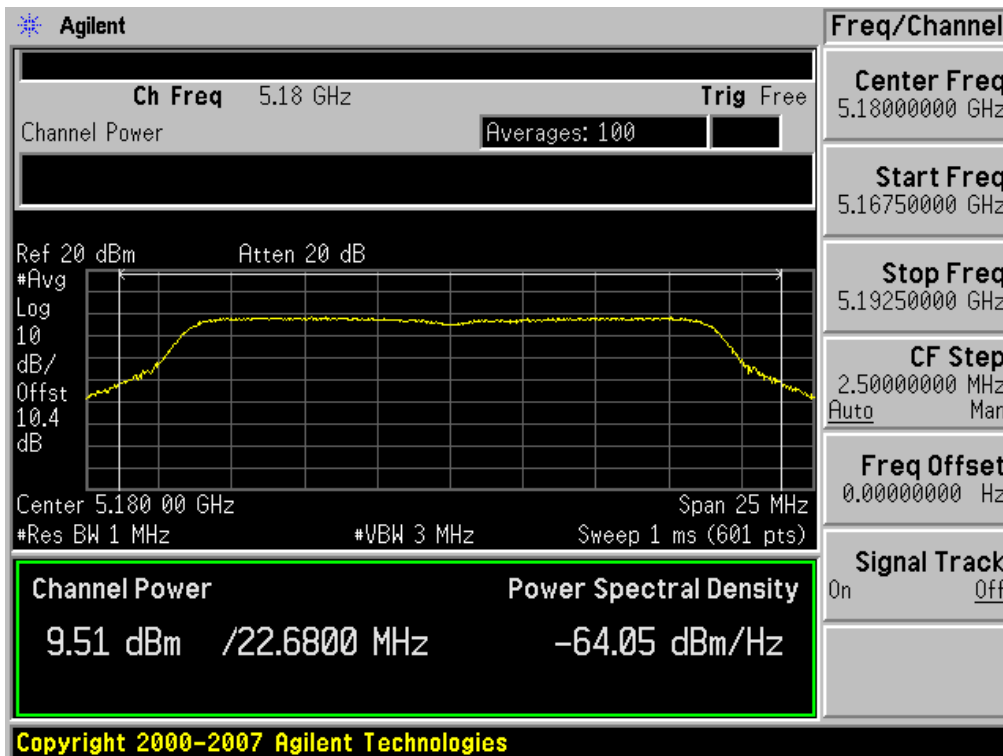
Conducted Output Power (802.11n-CH 36) 13 Mbps



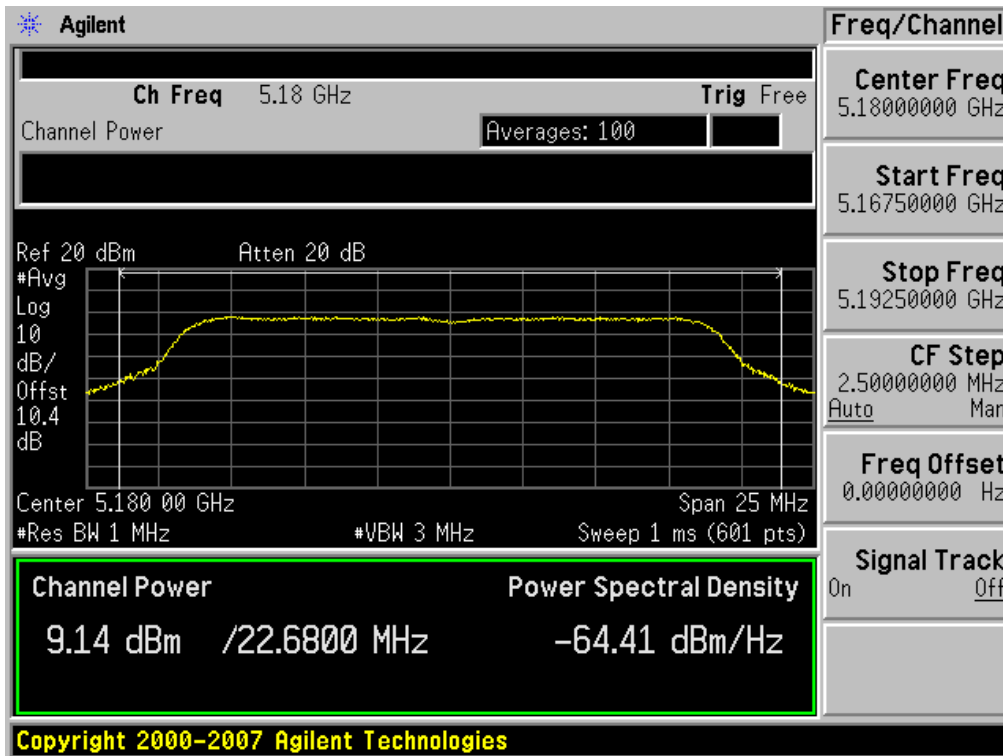
Conducted Output Power (802.11n-CH 36) 19.5 Mbps



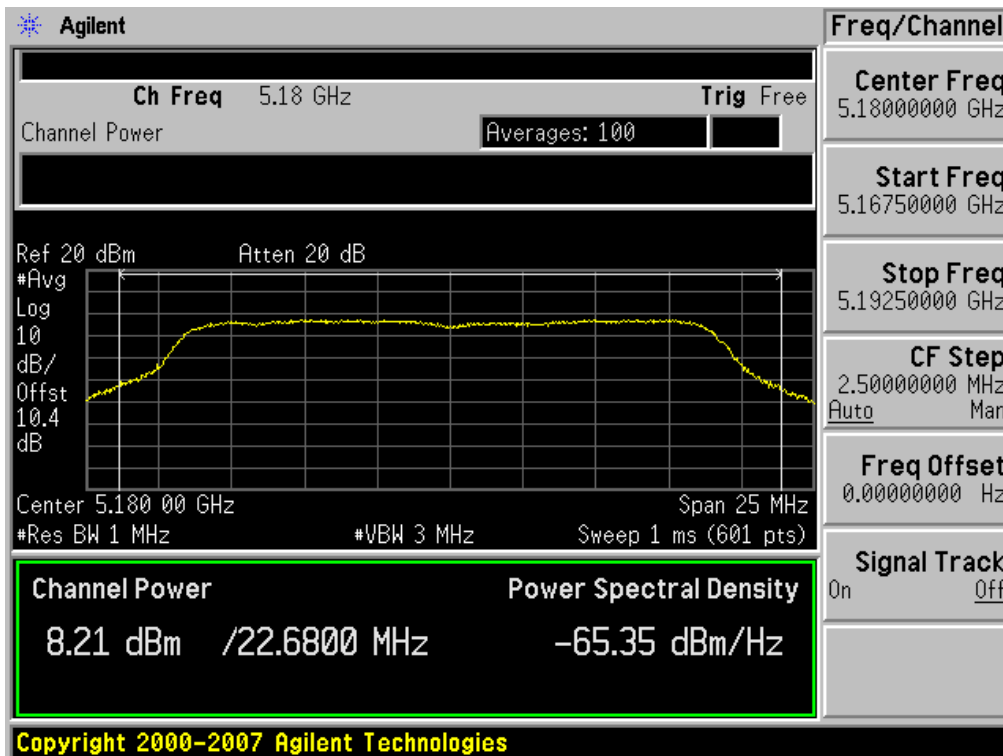
Conducted Output Power (802.11n-CH 36) 26 Mbps



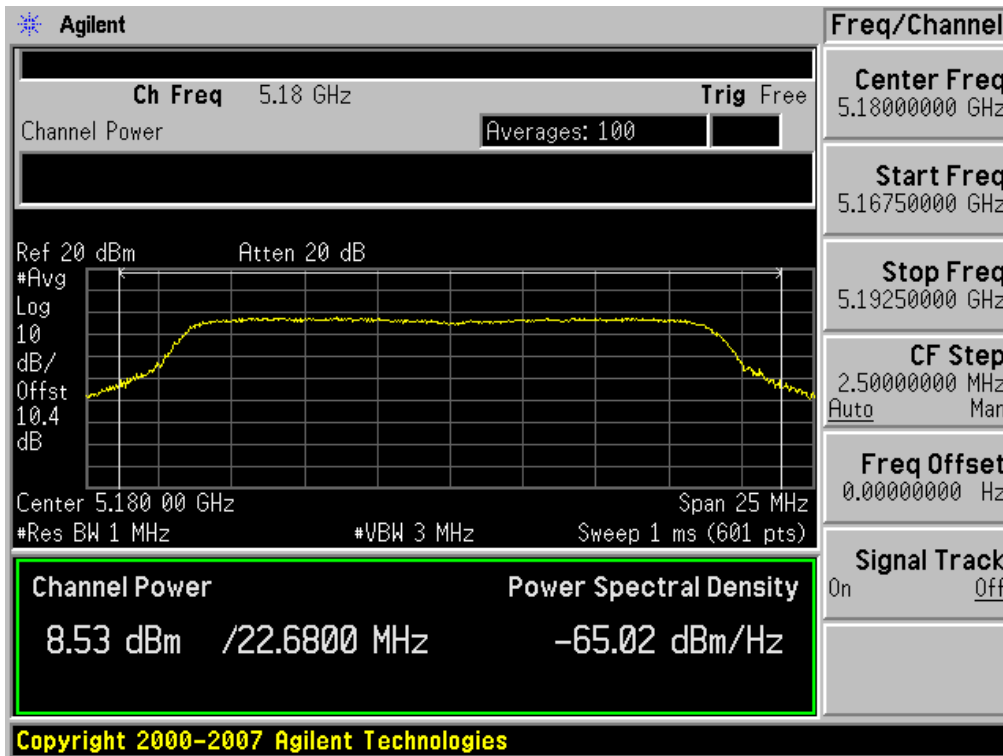
Conducted Output Power (802.11n-CH 36) 39 Mbps



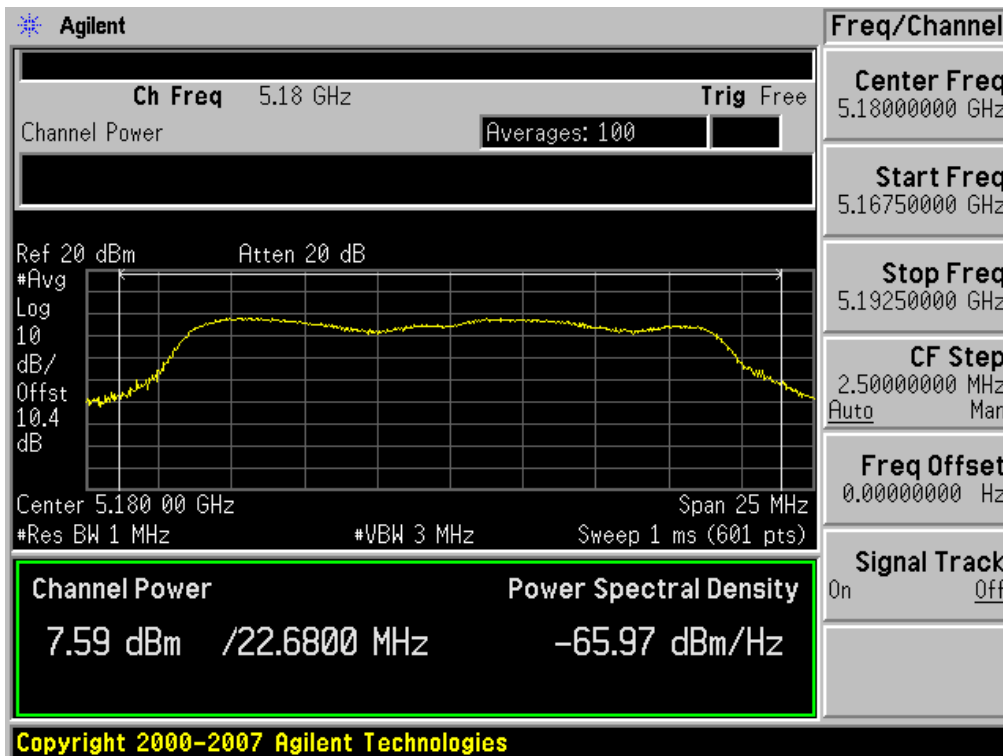
Conducted Output Power (802.11n-CH 36) 52 Mbps



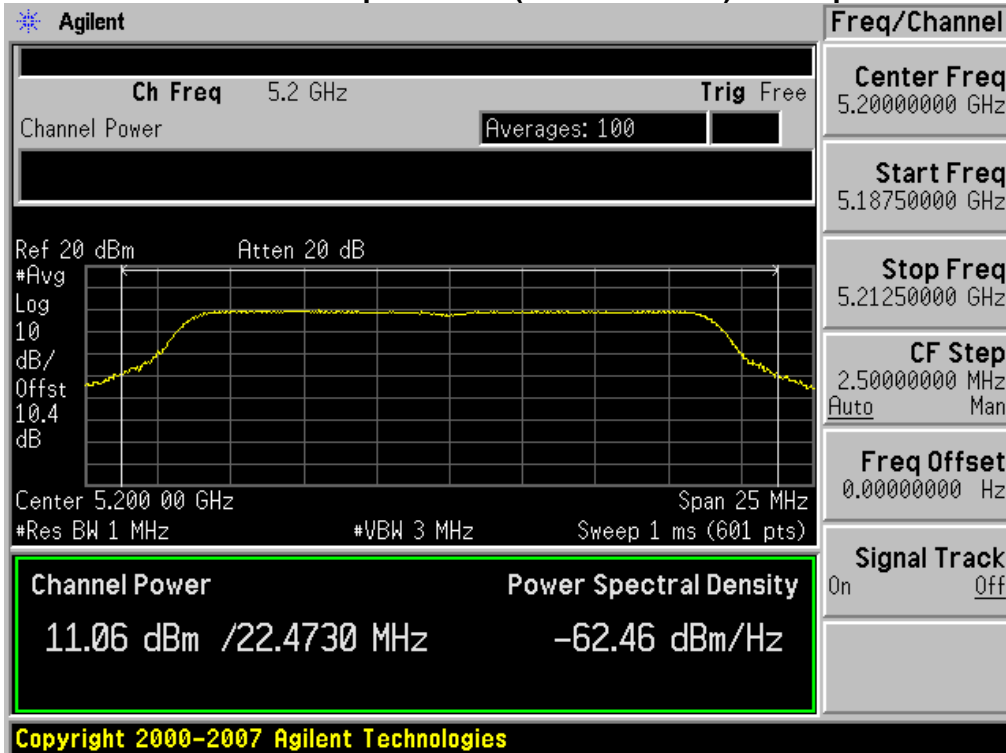
Conducted Output Power (802.11n-CH 36) 58.5 Mbps



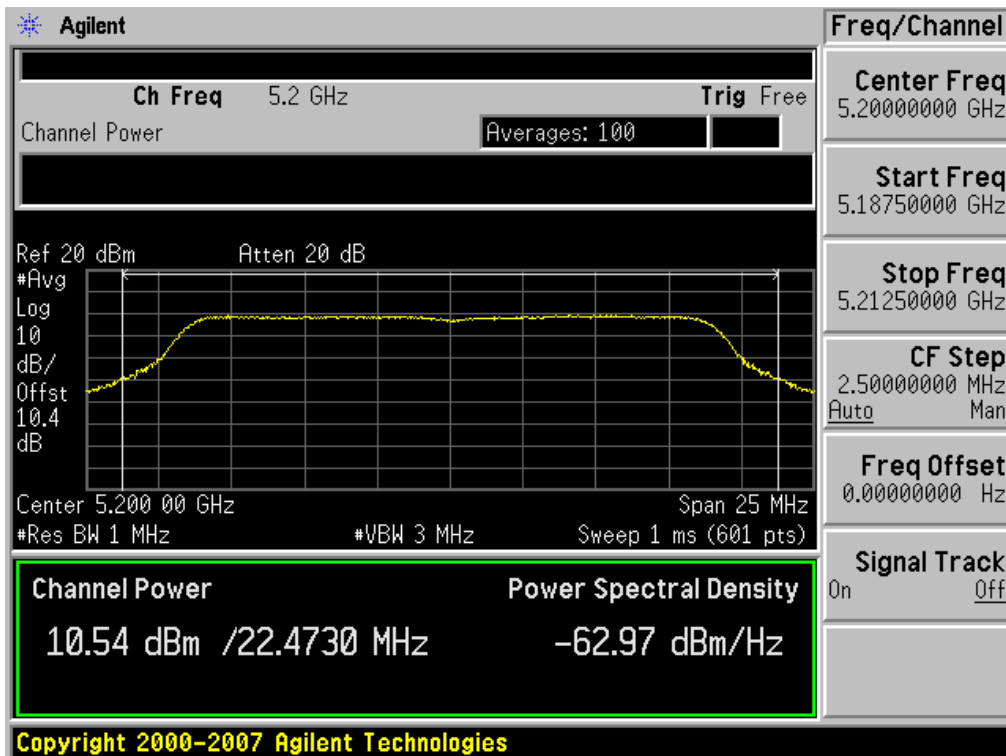
Conducted Output Power (802.11n-CH 36) 65 Mbps



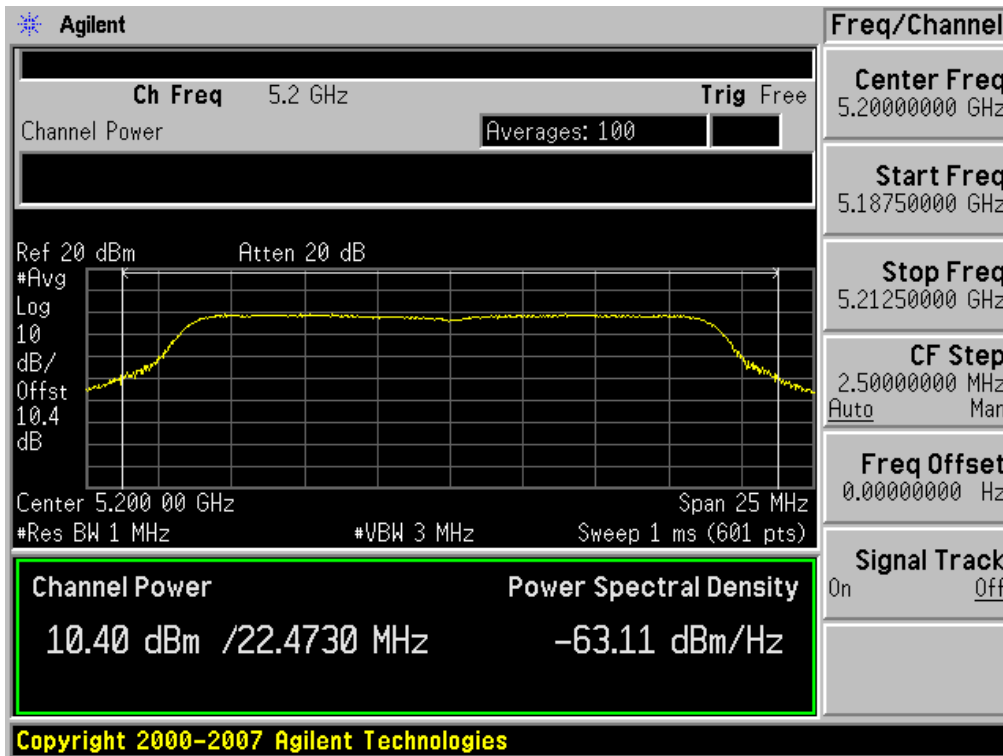
Conducted Output Power (802.11n-CH 40) 6.5 Mbps



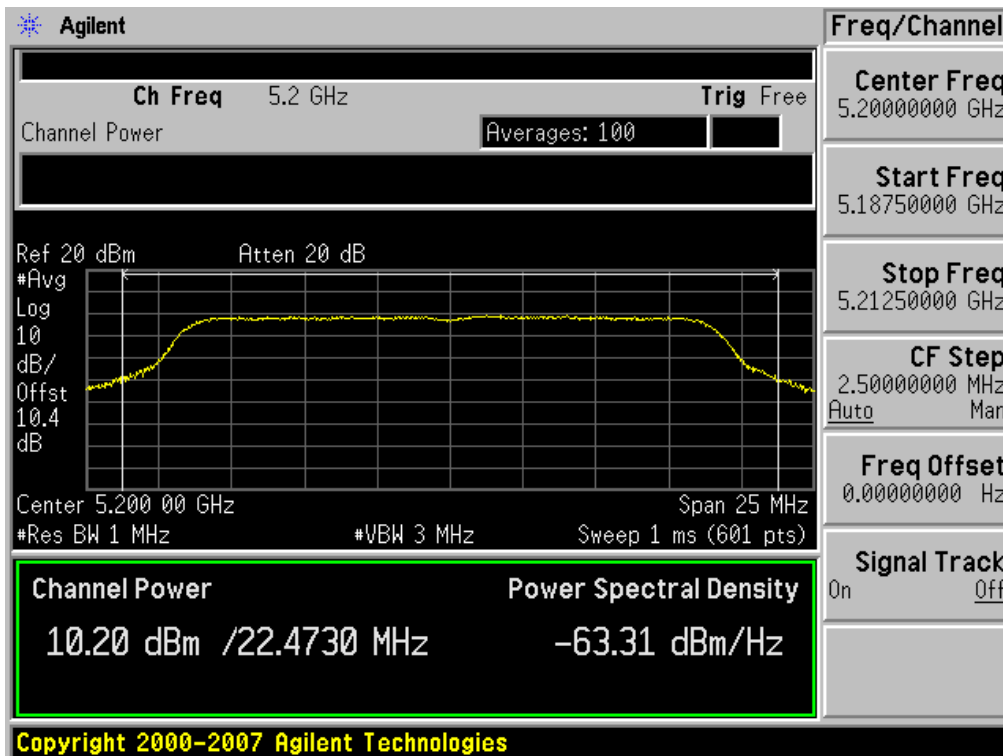
Conducted Output Power (802.11n-CH 40) 13 Mbps



Conducted Output Power (802.11n-CH 40) 19.5 Mbps

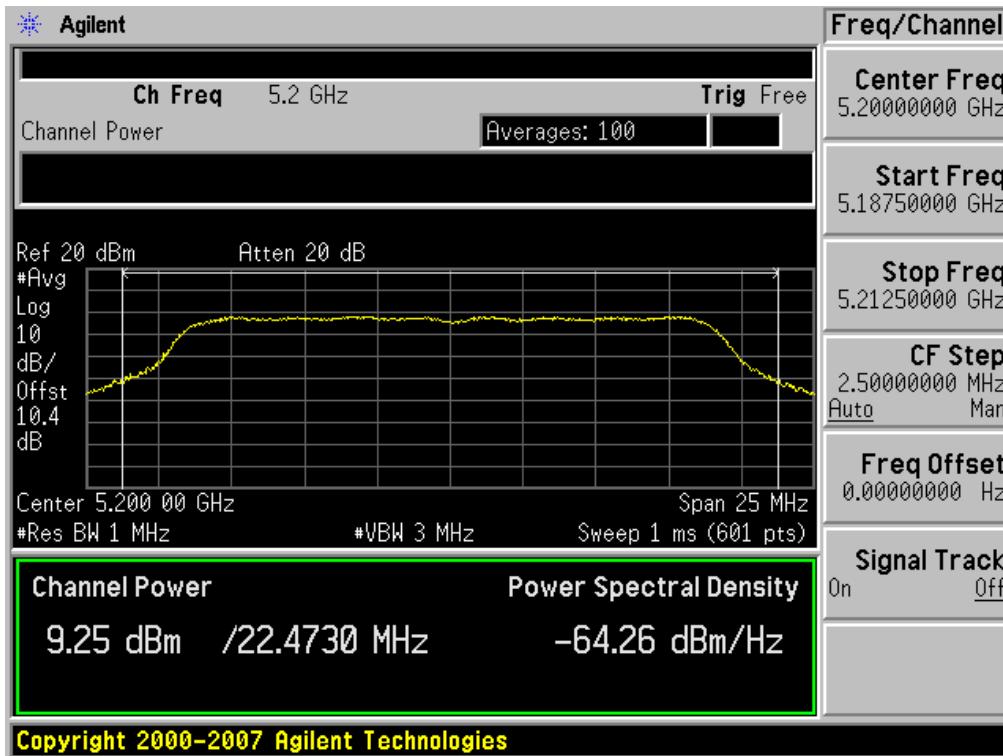


Conducted Output Power (802.11n-CH 40) 26 Mbps

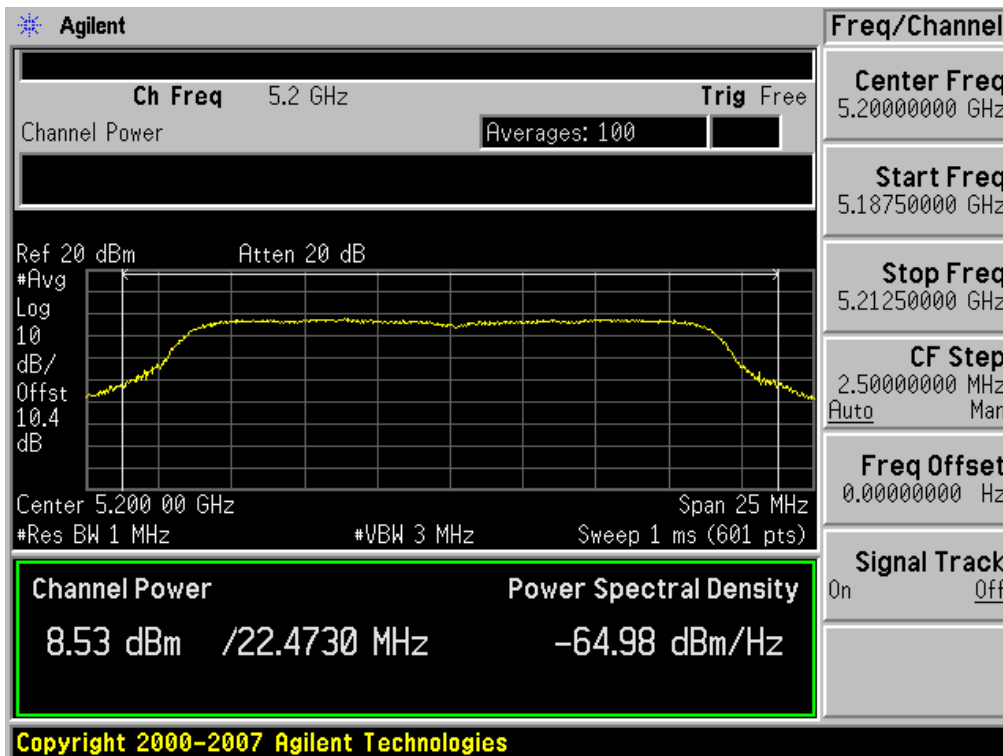


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

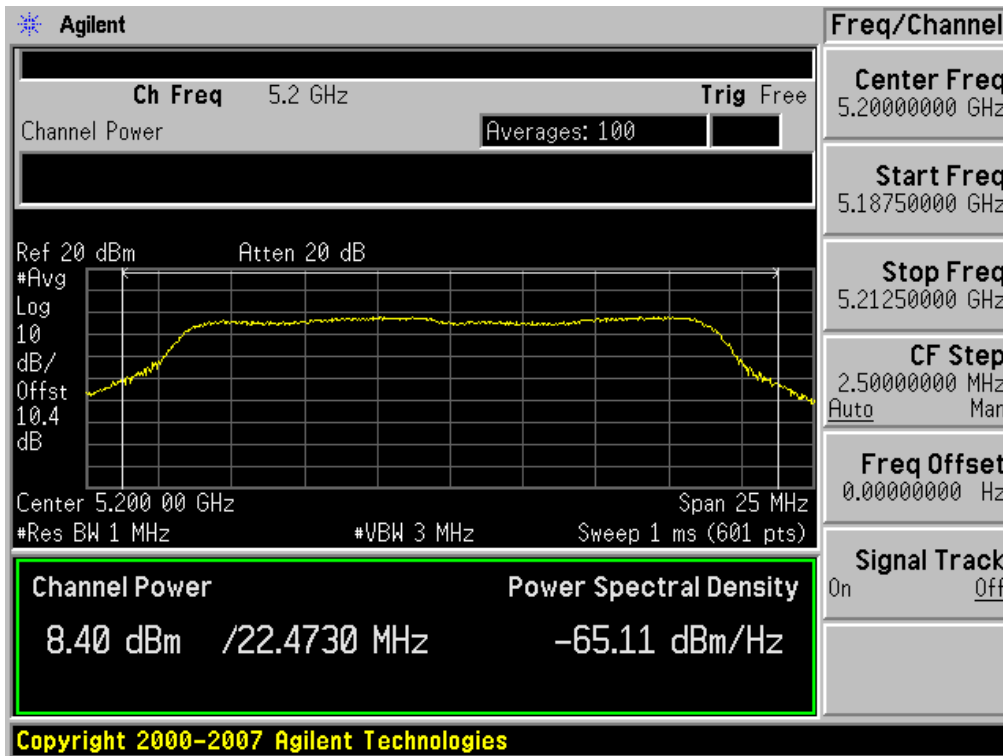
Conducted Output Power (802.11n-CH 40) 39 Mbps



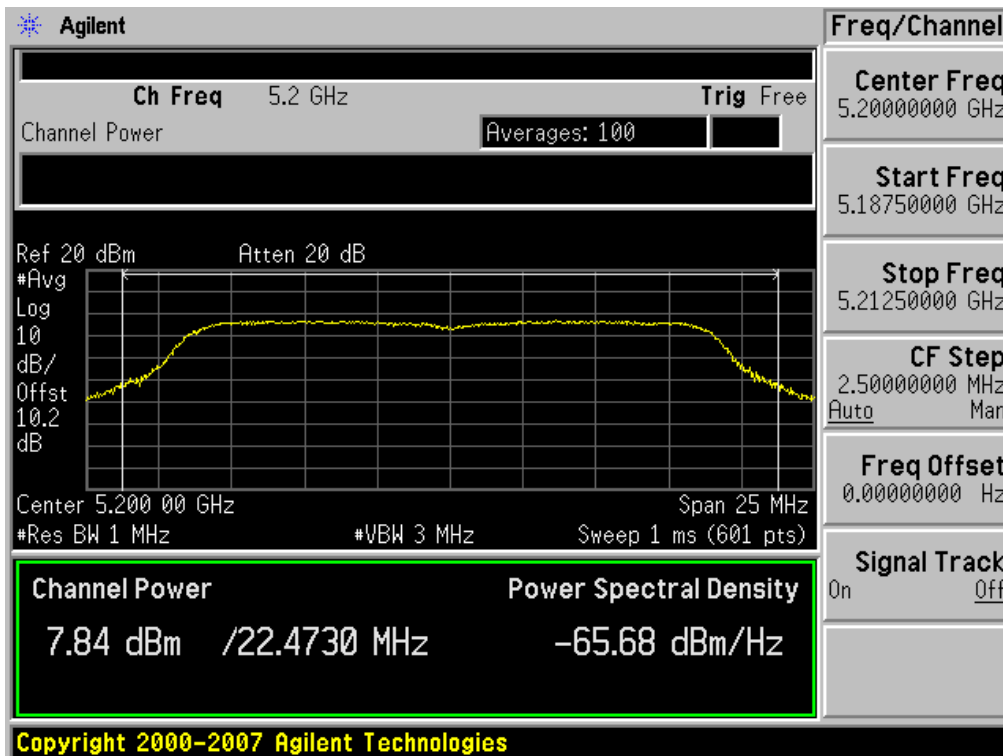
Conducted Output Power (802.11n-CH 40) 52 Mbps



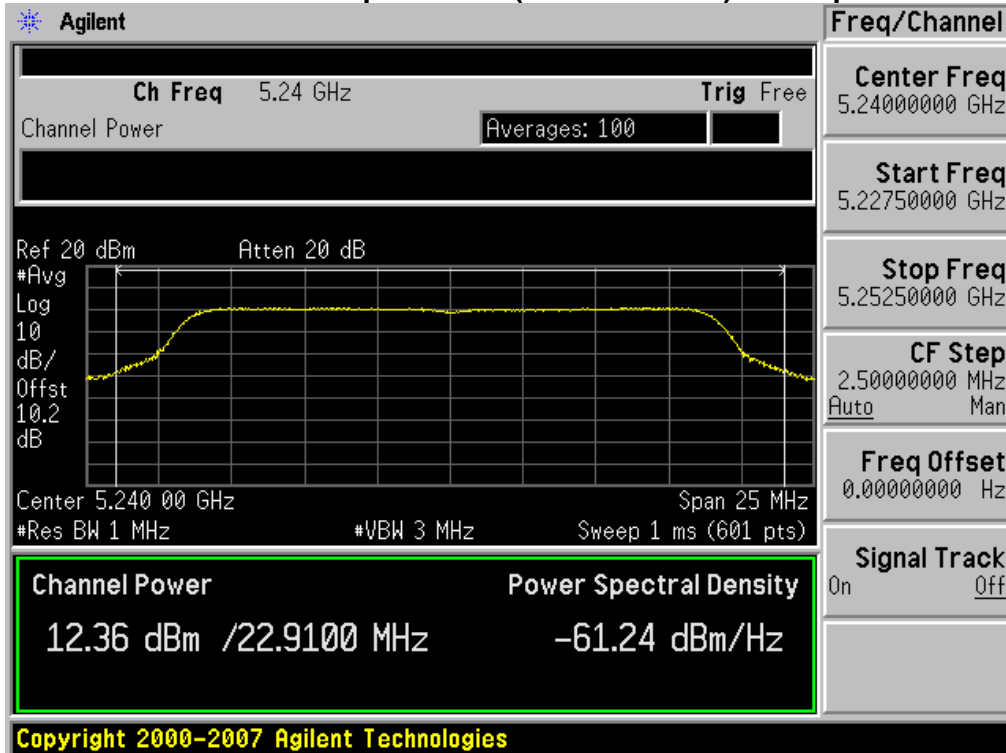
Conducted Output Power (802.11n-CH 40) 58.5 Mbps



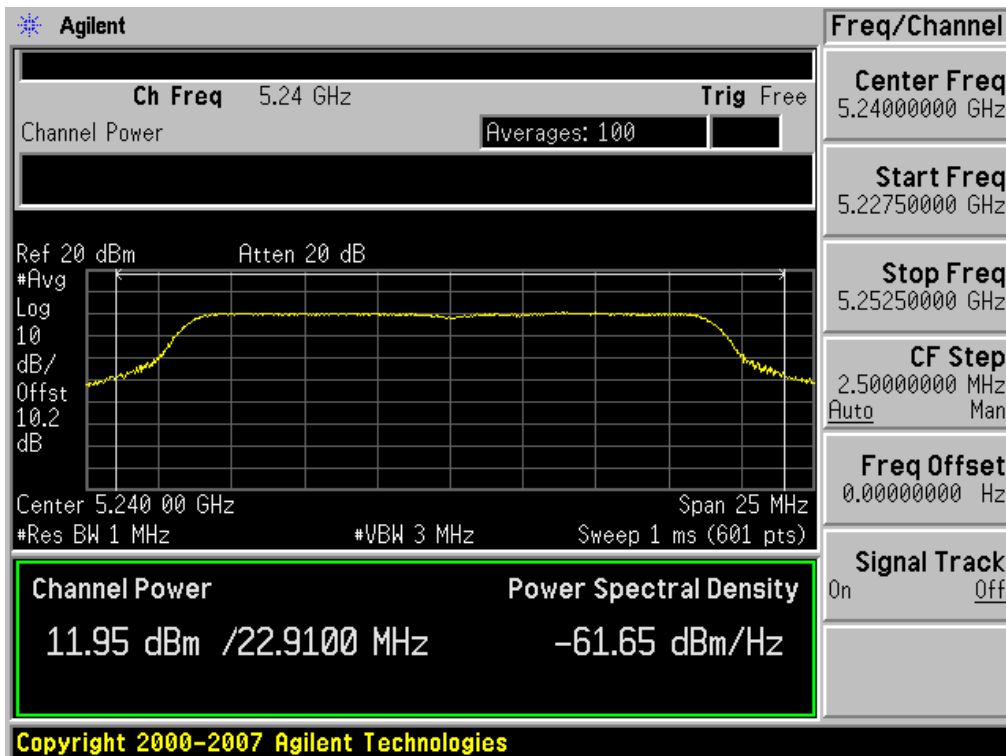
Conducted Output Power (802.11n-CH 40) 65 Mbps



Conducted Output Power (802.11n-CH 48) 6.5 Mbps

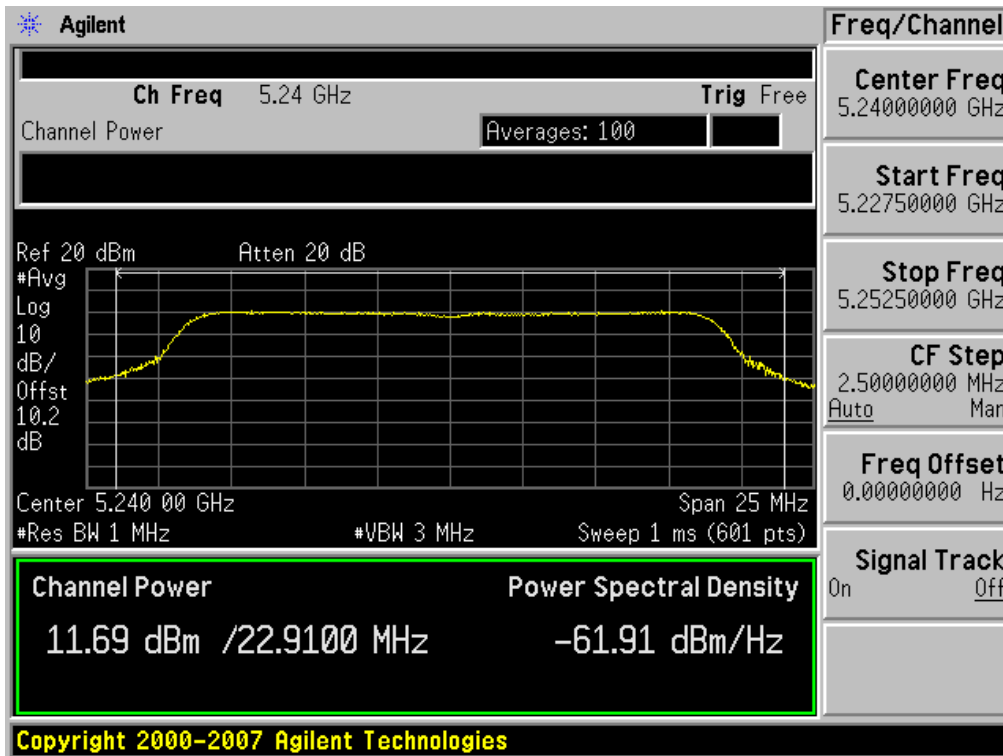


Conducted Output Power (802.11n-CH 48) 13 Mbps

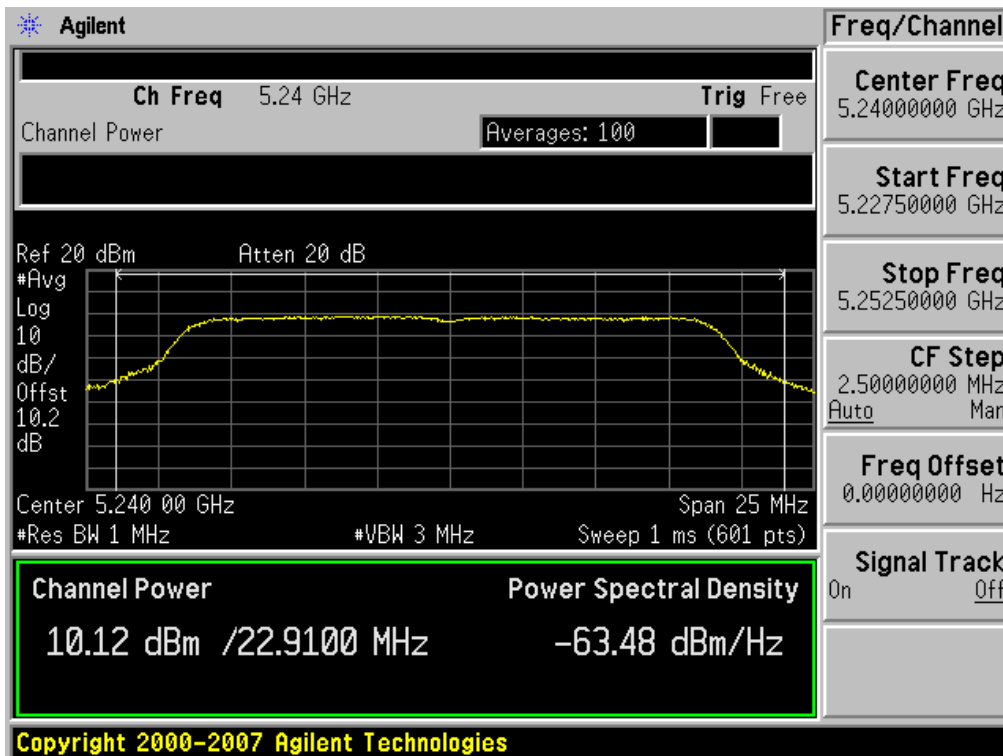


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 48) 19.5 Mbps

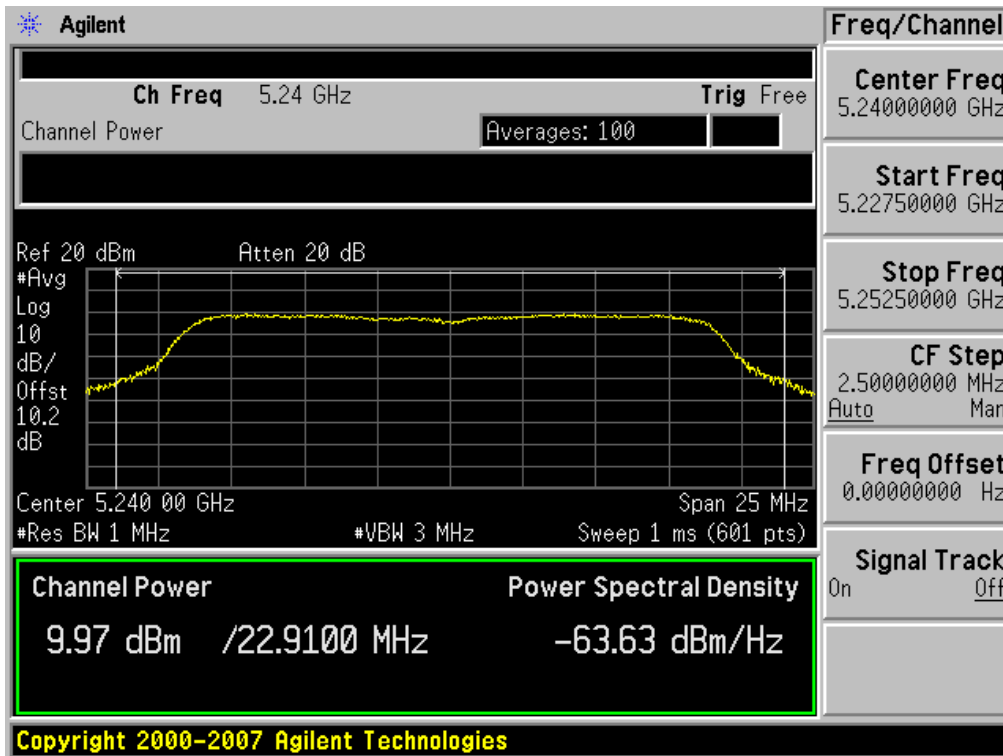


Conducted Output Power (802.11n-CH 48) 26 Mbps

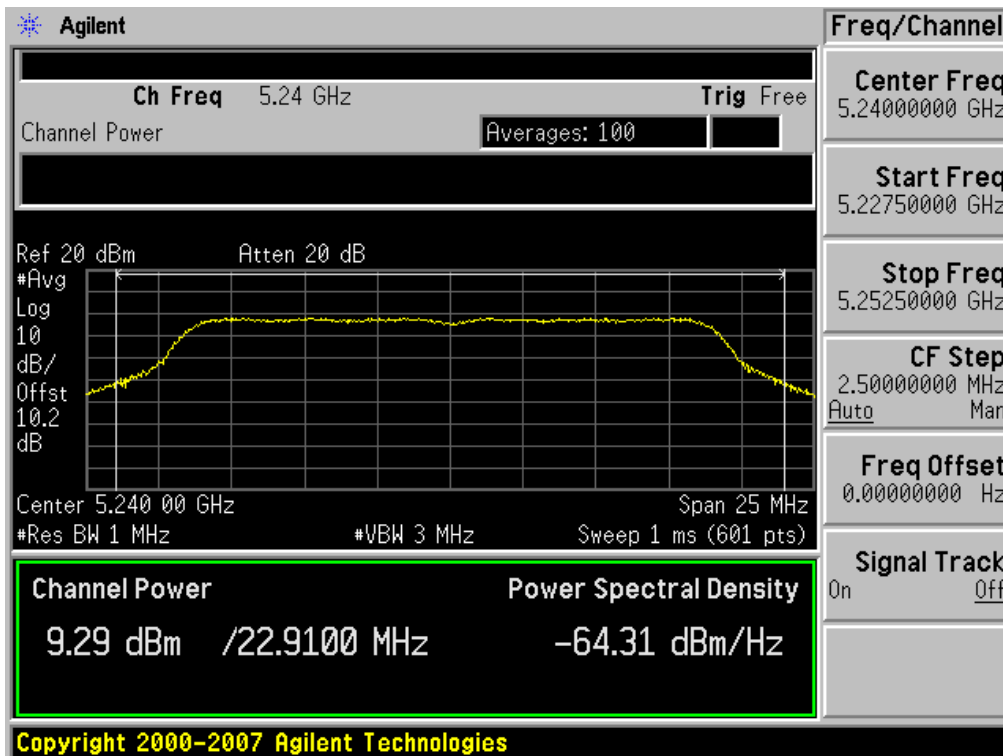


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

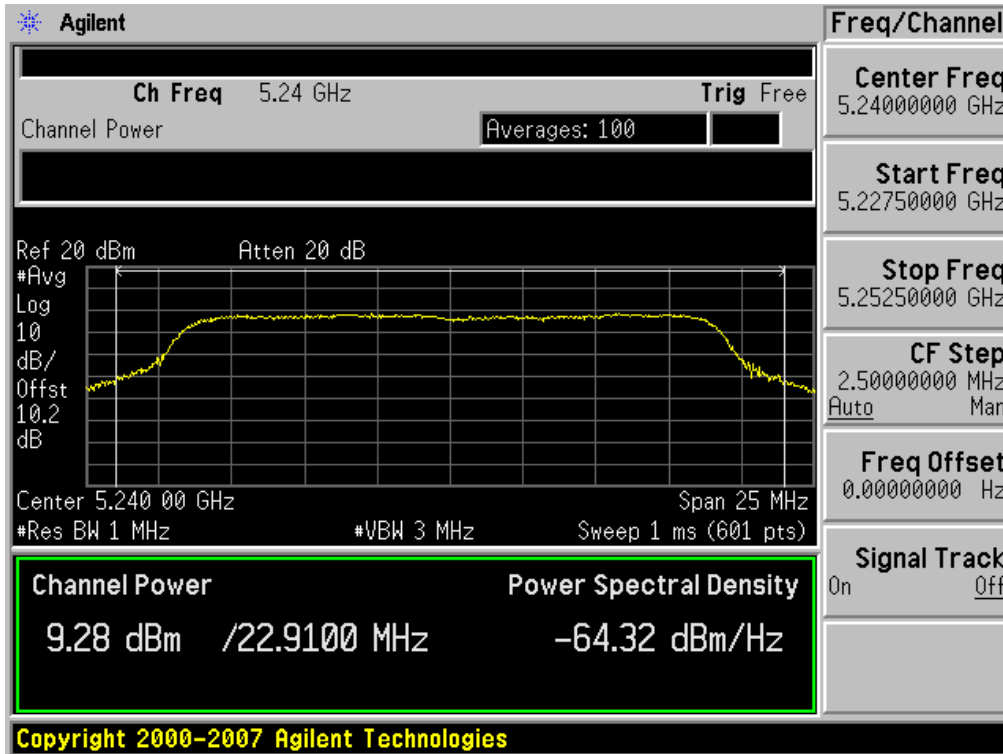
Conducted Output Power (802.11n-CH 48) 39 Mbps



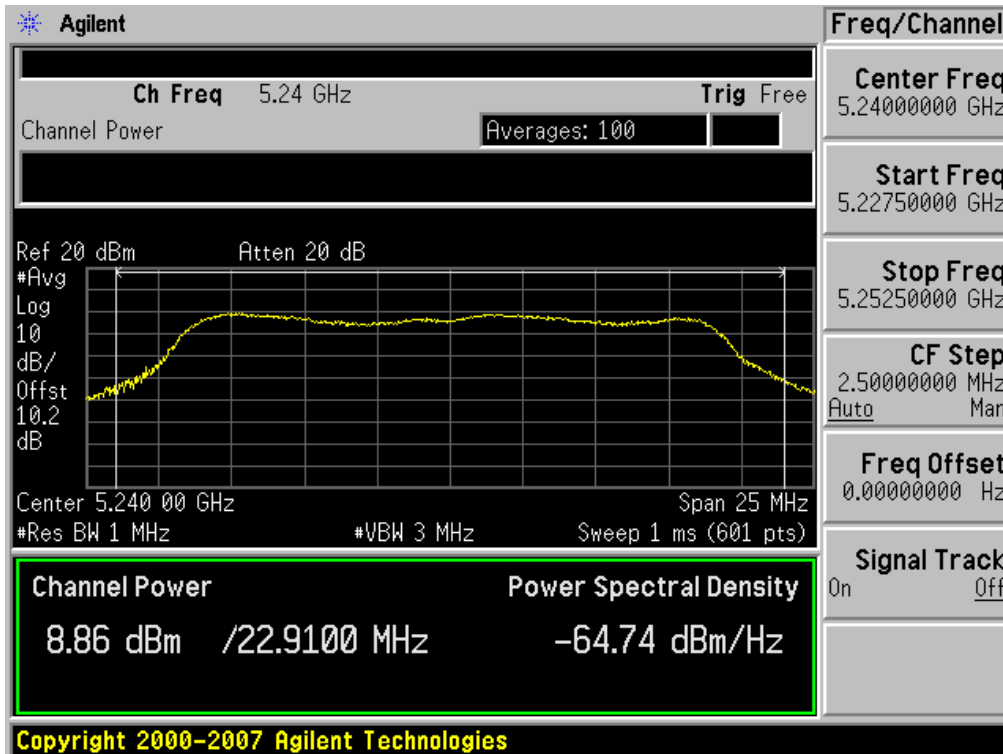
Conducted Output Power (802.11n-CH 48) 52 Mbps



Conducted Output Power (802.11n-CH 48) 58.5 Mbps

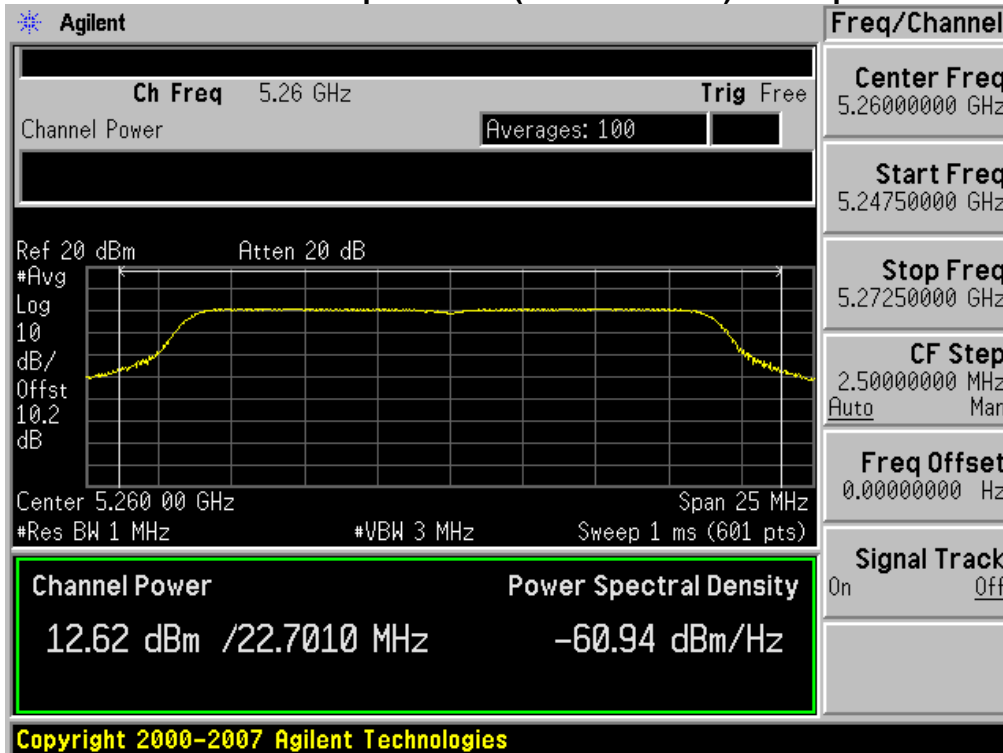


Conducted Output Power (802.11n-CH 48) 65 Mbps

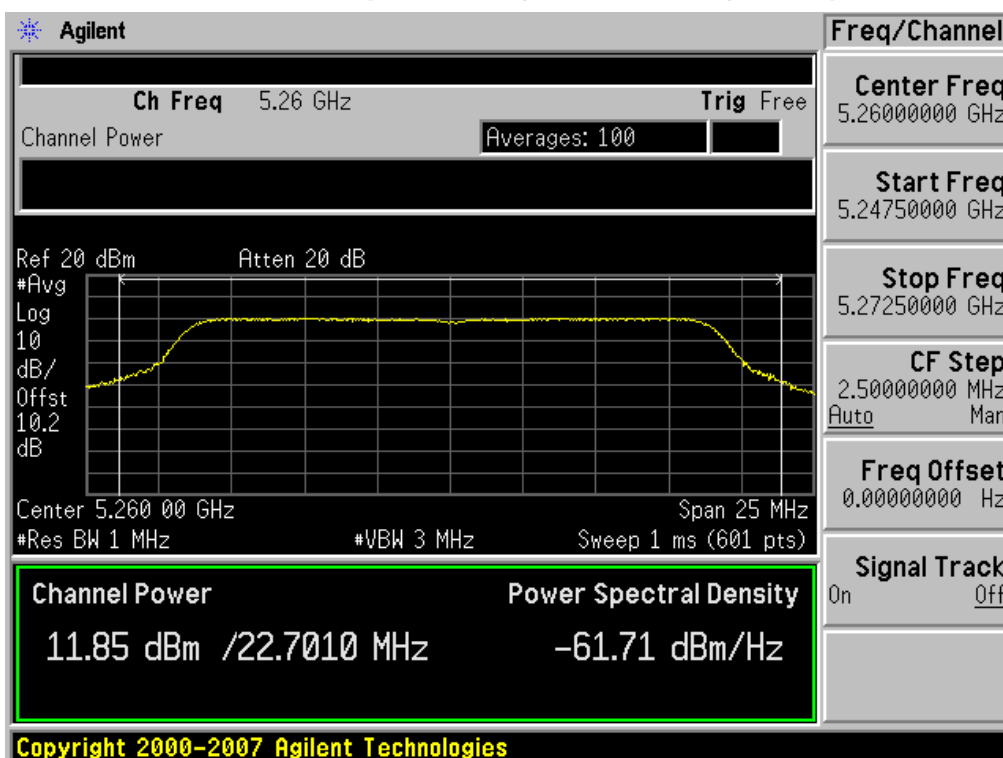


■ RESULT PLOTS (5260 MHz ~5320 MHz)

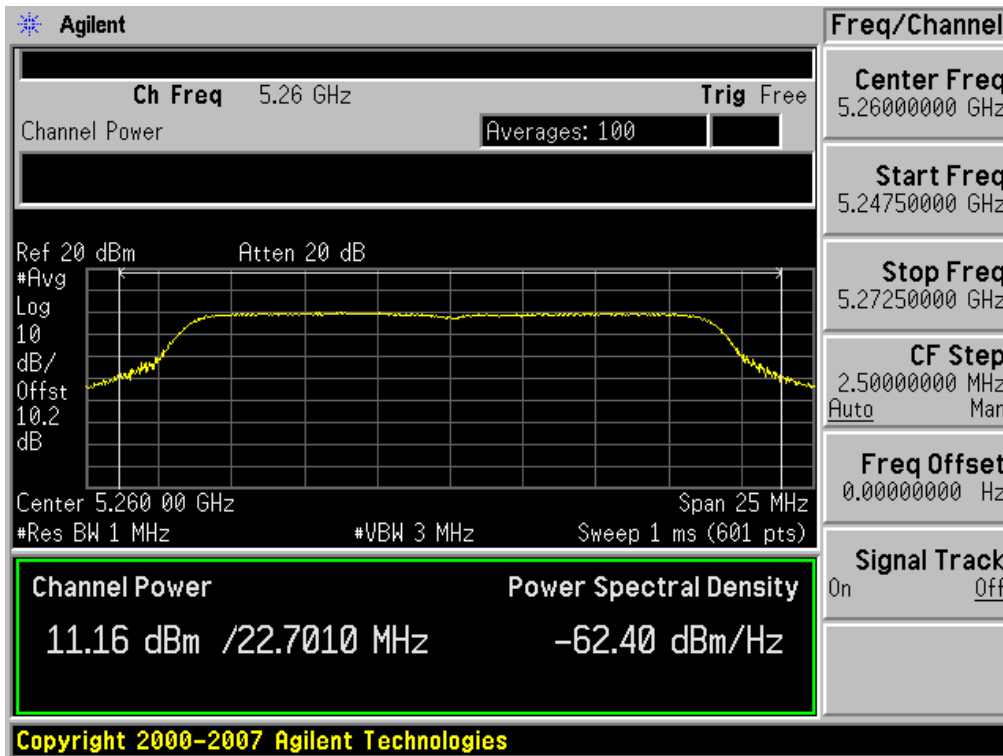
Conducted Output Power (802.11n-CH 52) 6.5 Mbps



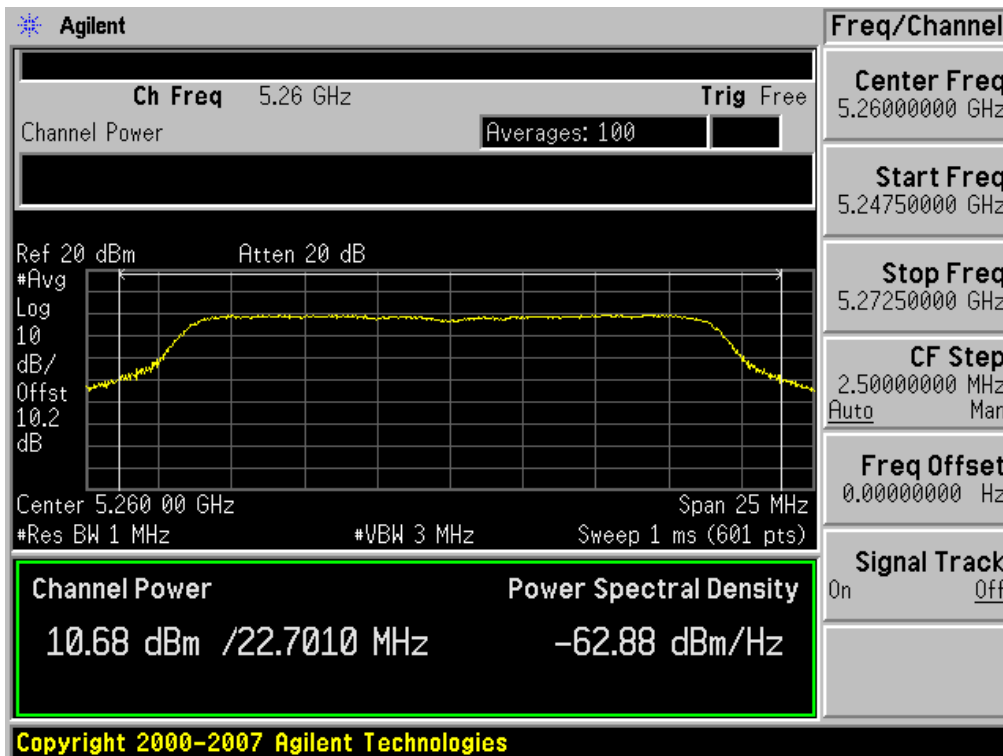
Conducted Output Power (802.11n-CH 52) 13 Mbps



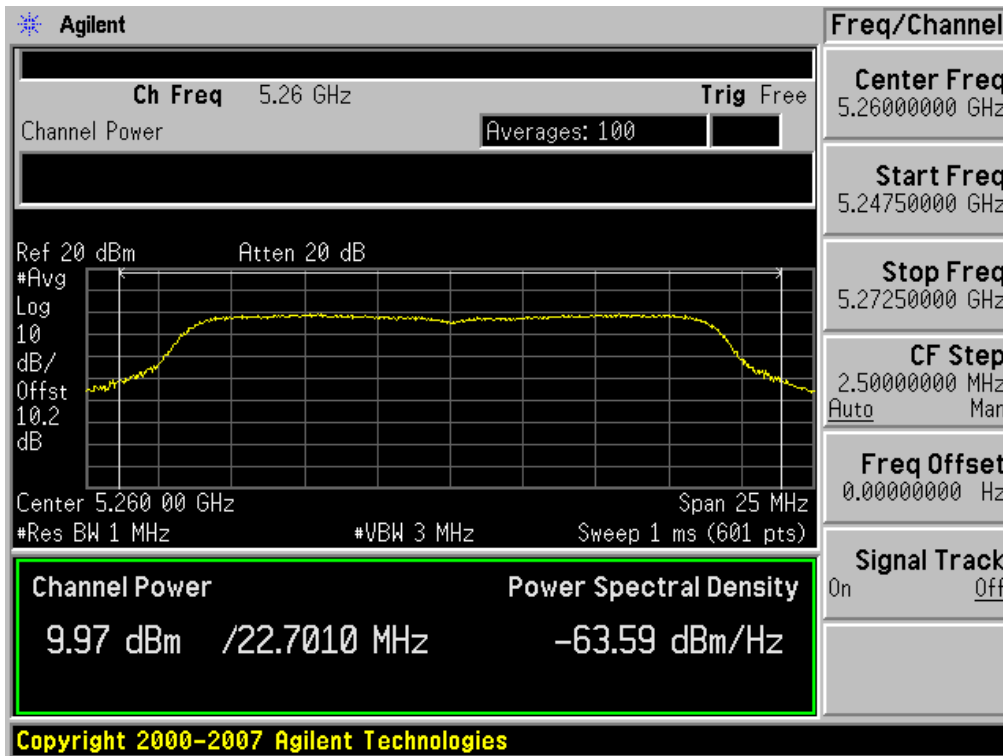
Conducted Output Power (802.11n-CH 52) 19.5 Mbps



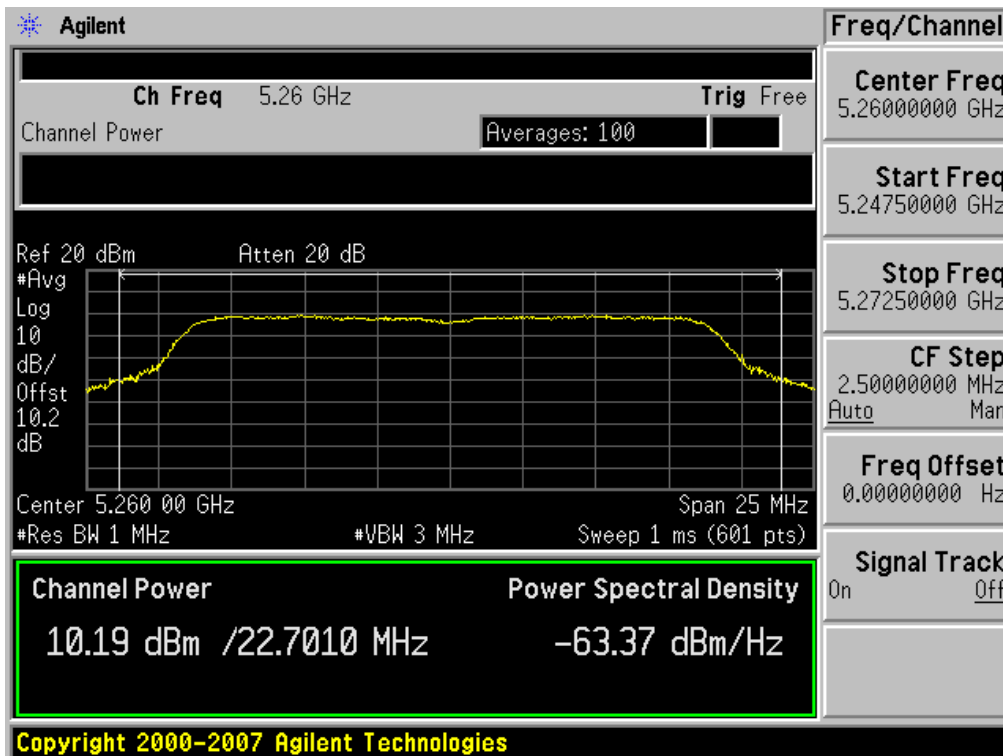
Conducted Output Power (802.11n-CH 52) 26 Mbps



Conducted Output Power (802.11n-CH 52) 39 Mbps

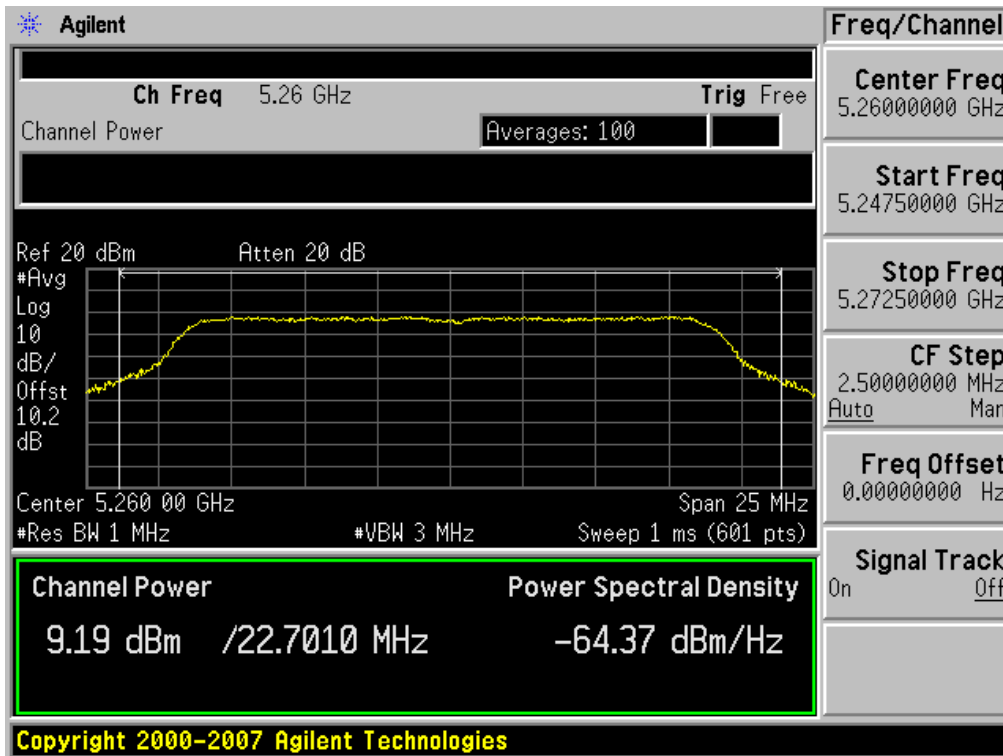


Conducted Output Power (802.11n-CH 52) 52 Mbps

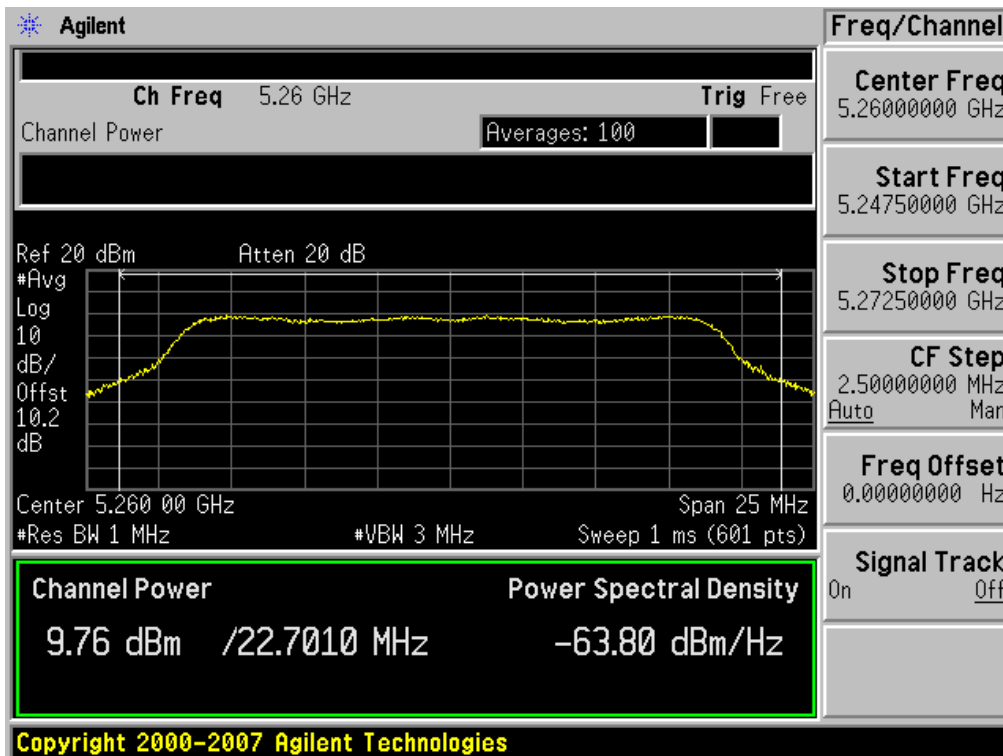


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Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

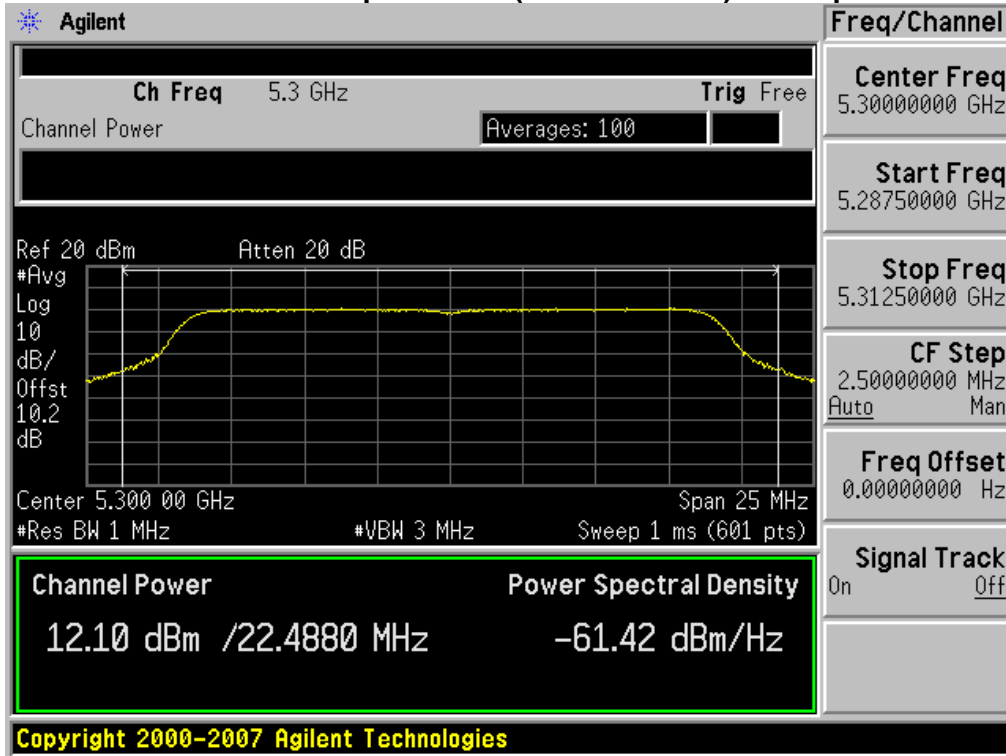
Conducted Output Power (802.11n-CH 52) 58.5 Mbps



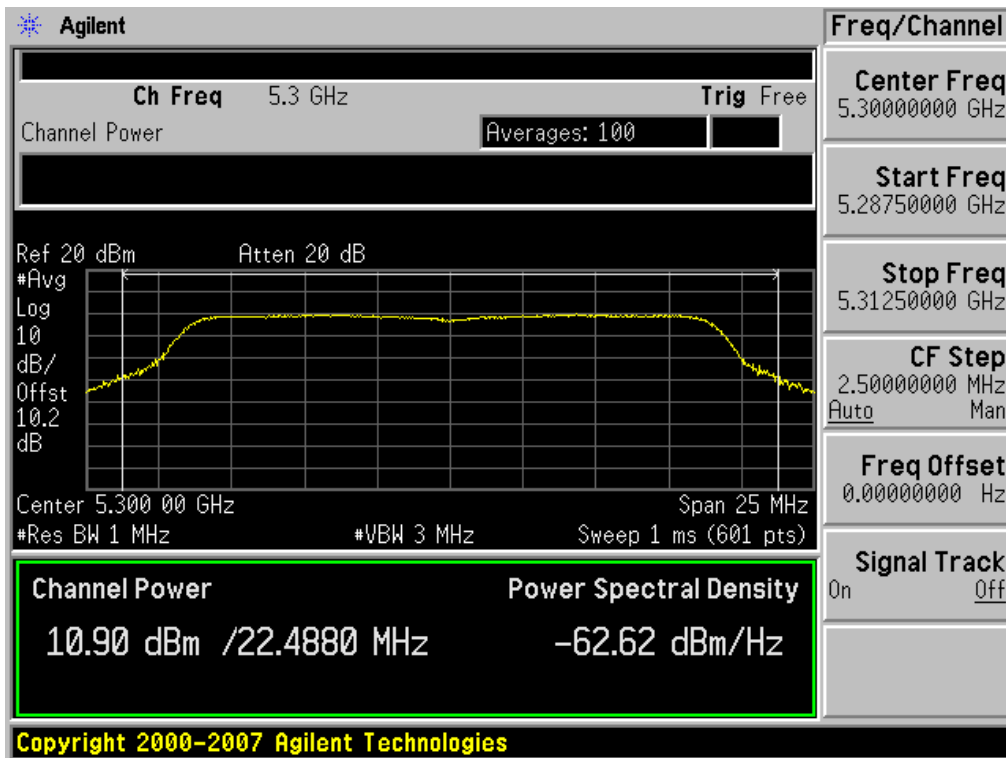
Conducted Output Power (802.11n-CH 52) 65 Mbps



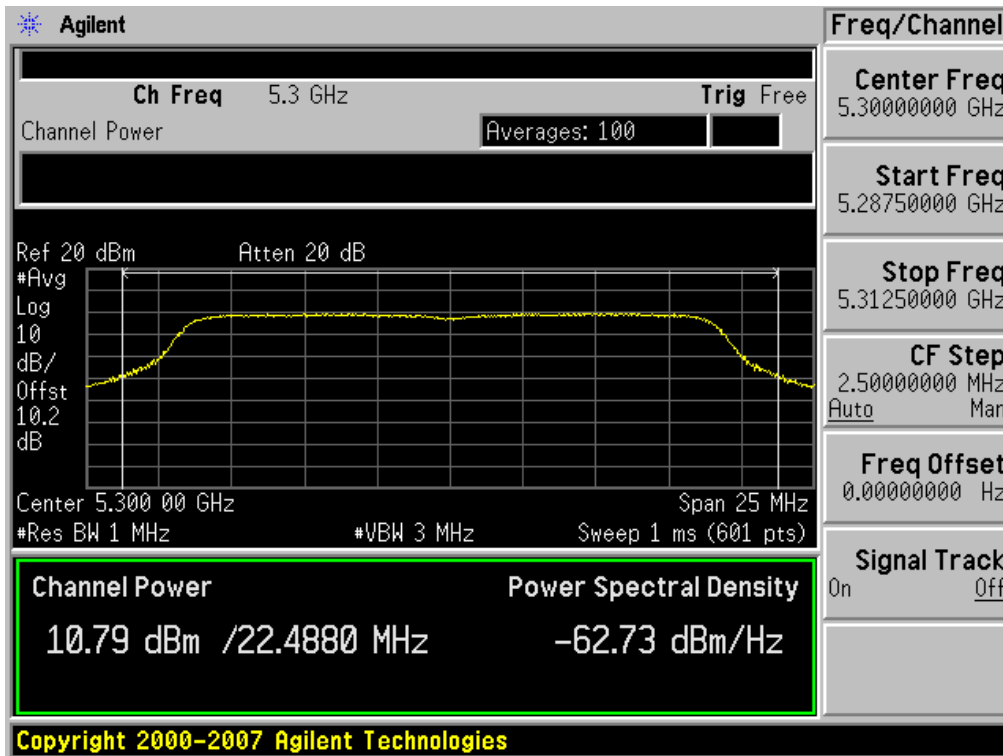
Conducted Output Power (802.11n-CH 60) 6.5 Mbps



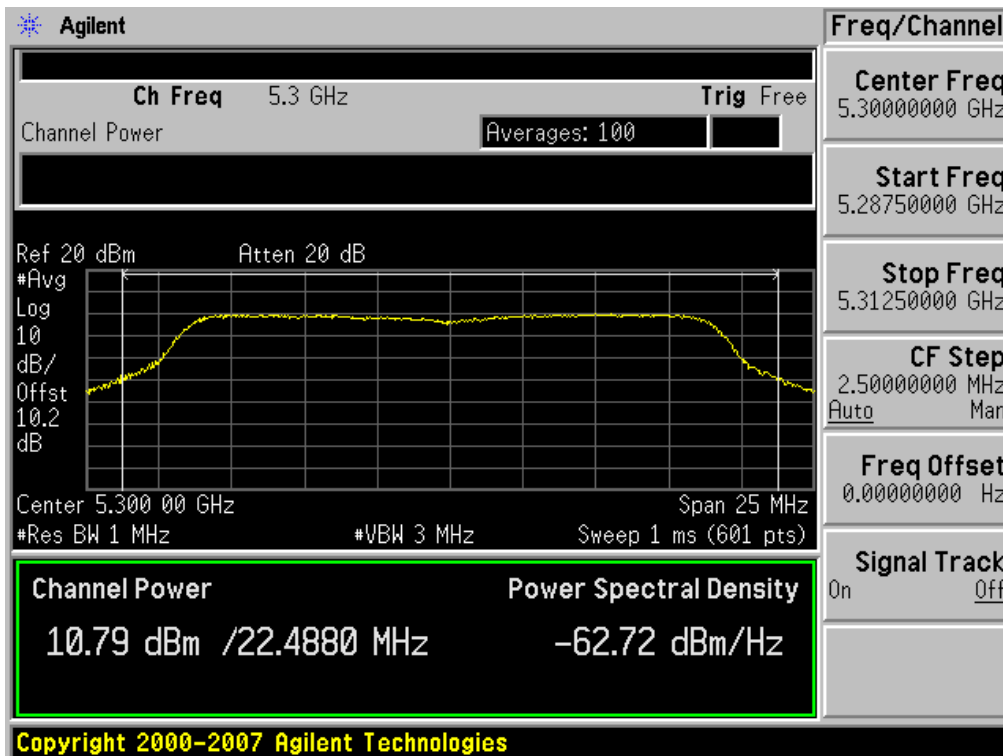
Conducted Output Power (802.11n-CH 60) 13 Mbps



Conducted Output Power (802.11n-CH 60) 19.5 Mbps

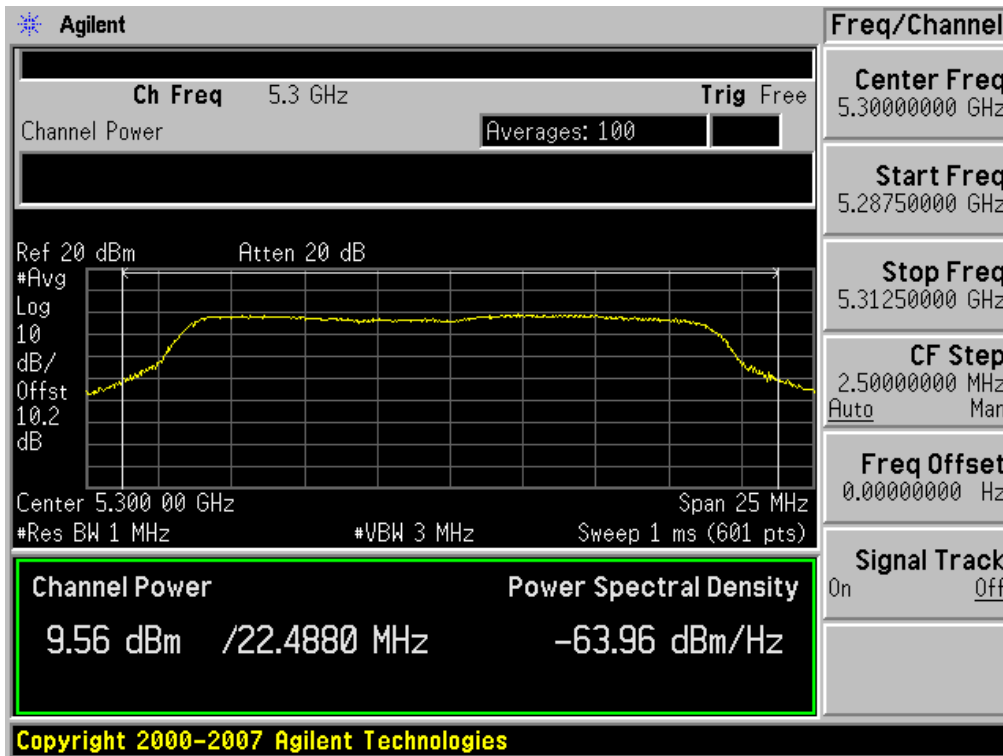


Conducted Output Power (802.11n-CH 60) 26 Mbps

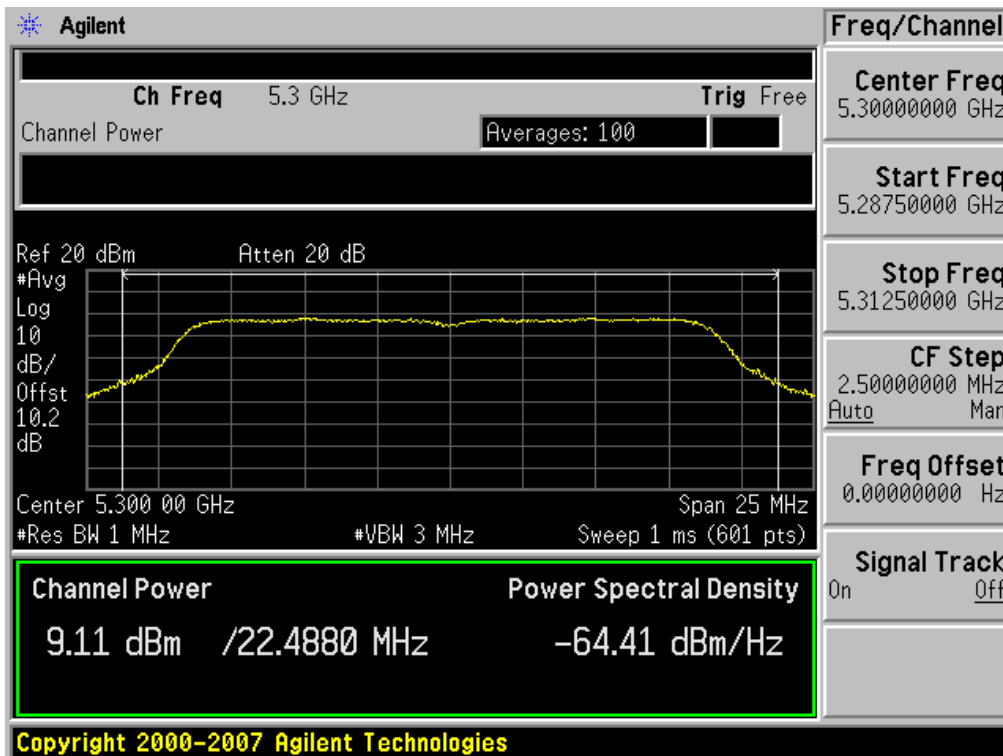


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

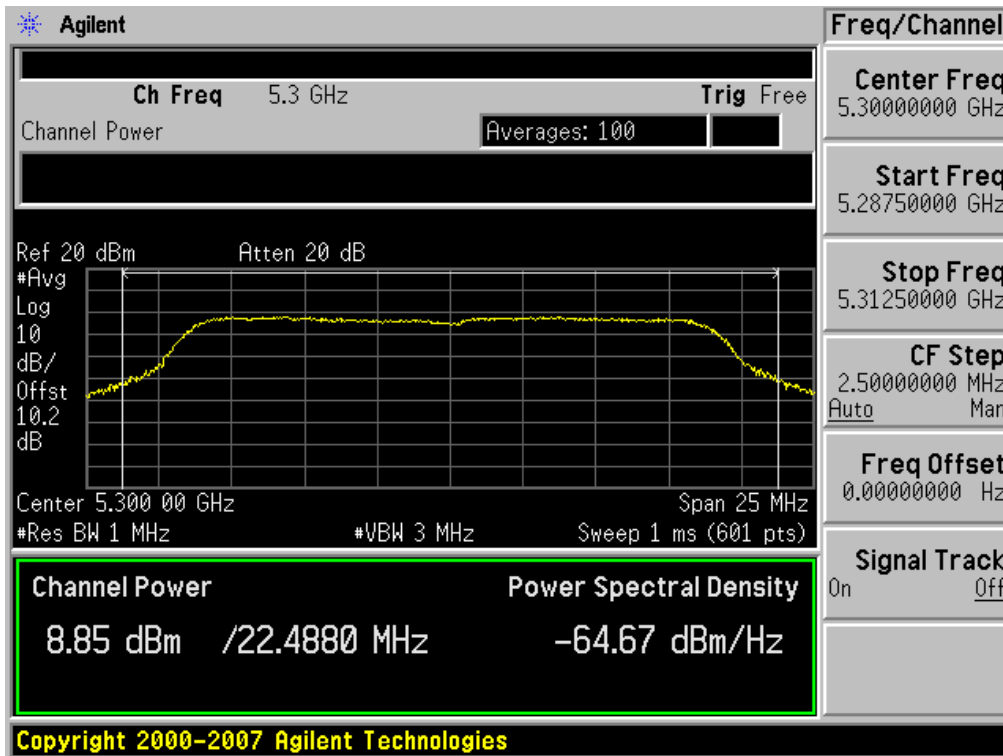
Conducted Output Power (802.11n-CH 60) 39 Mbps



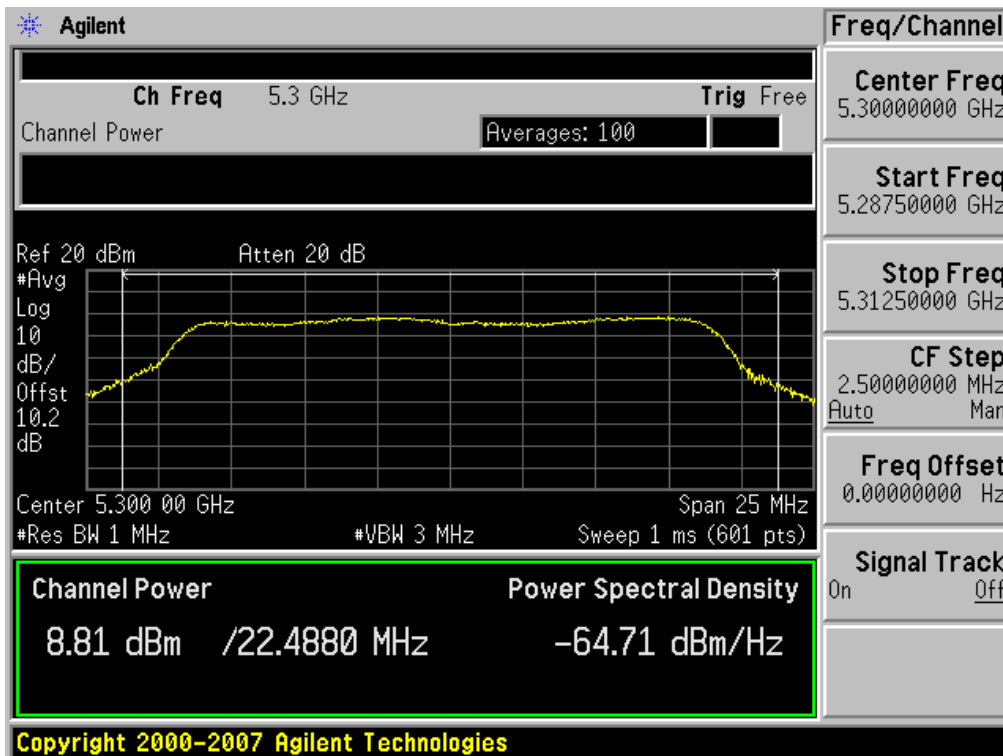
Conducted Output Power (802.11n-CH 60) 52 Mbps



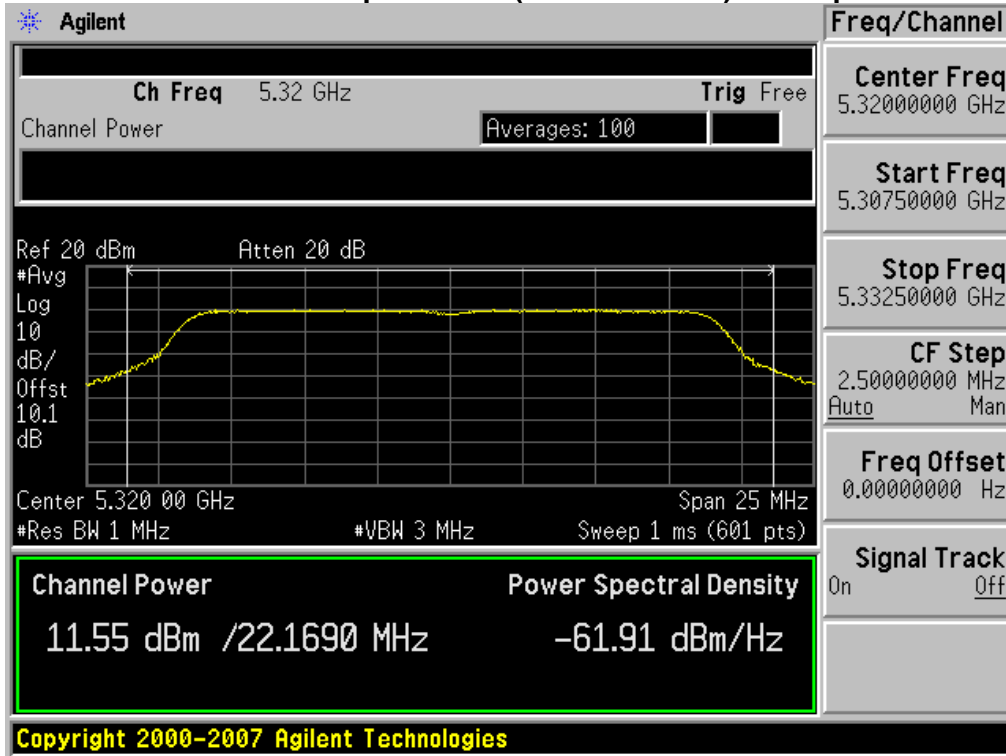
Conducted Output Power (802.11n-CH 60) 58.5 Mbps



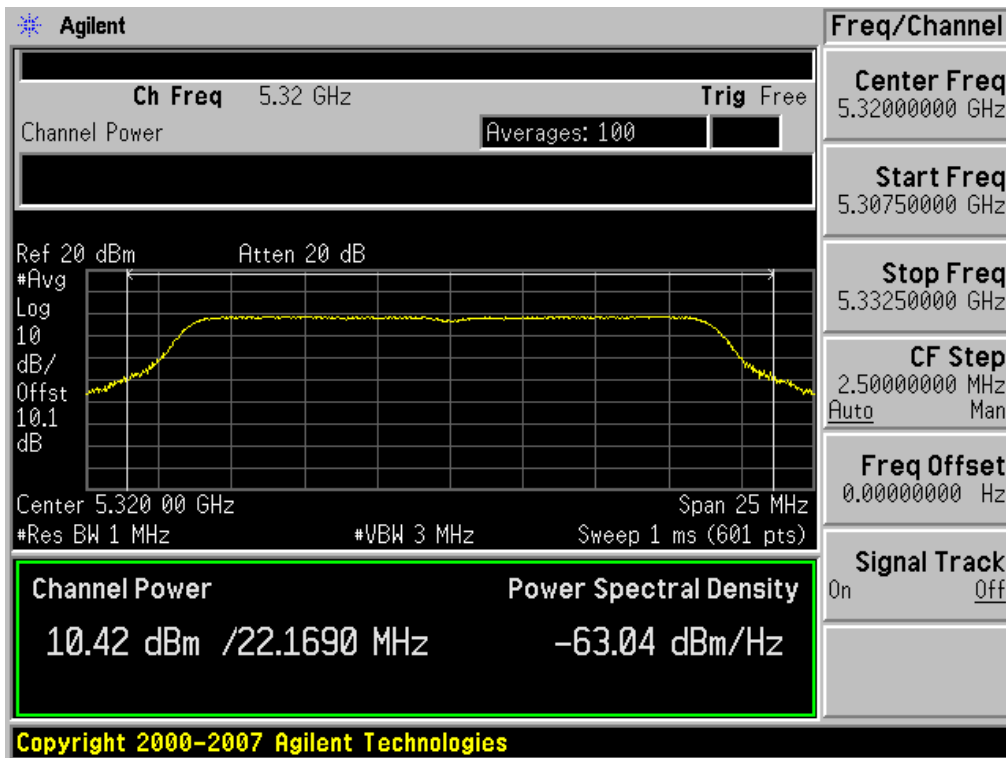
Conducted Output Power (802.11n-CH 60) 65 Mbps



Conducted Output Power (802.11n-CH 64) 6.5 Mbps

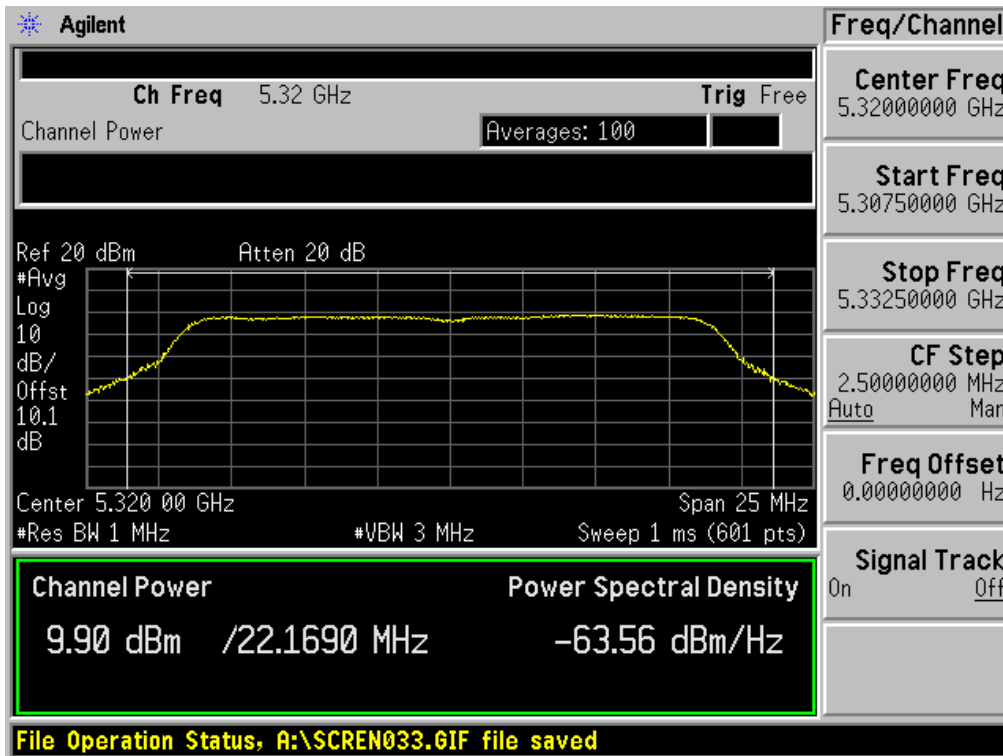


Conducted Output Power (802.11n-CH 64) 13 Mbps

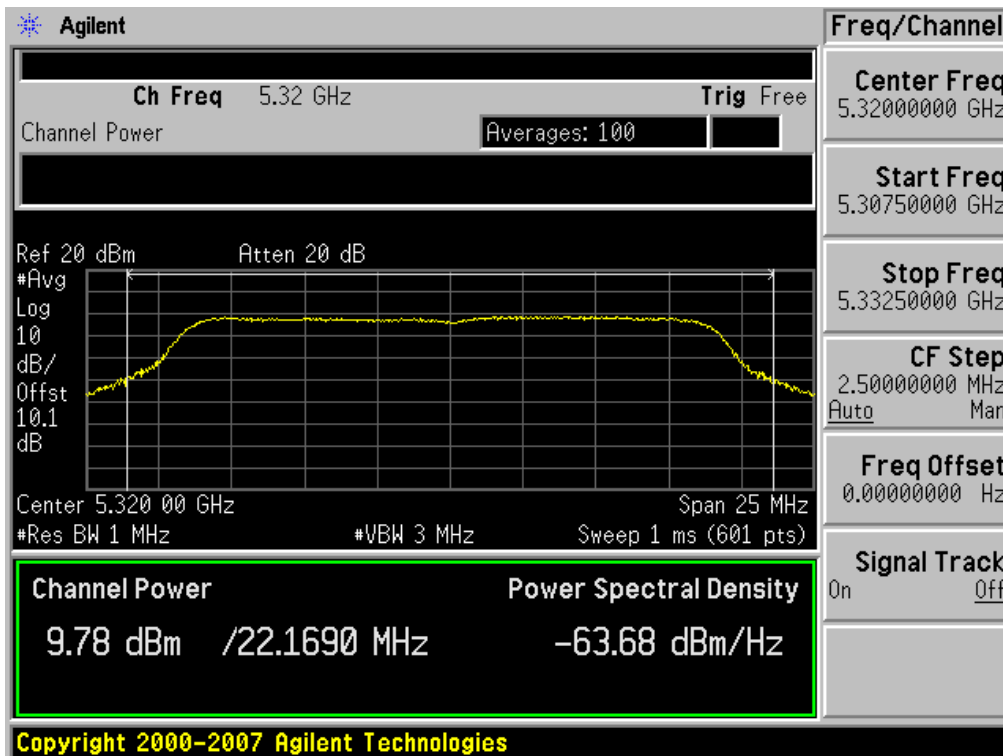


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

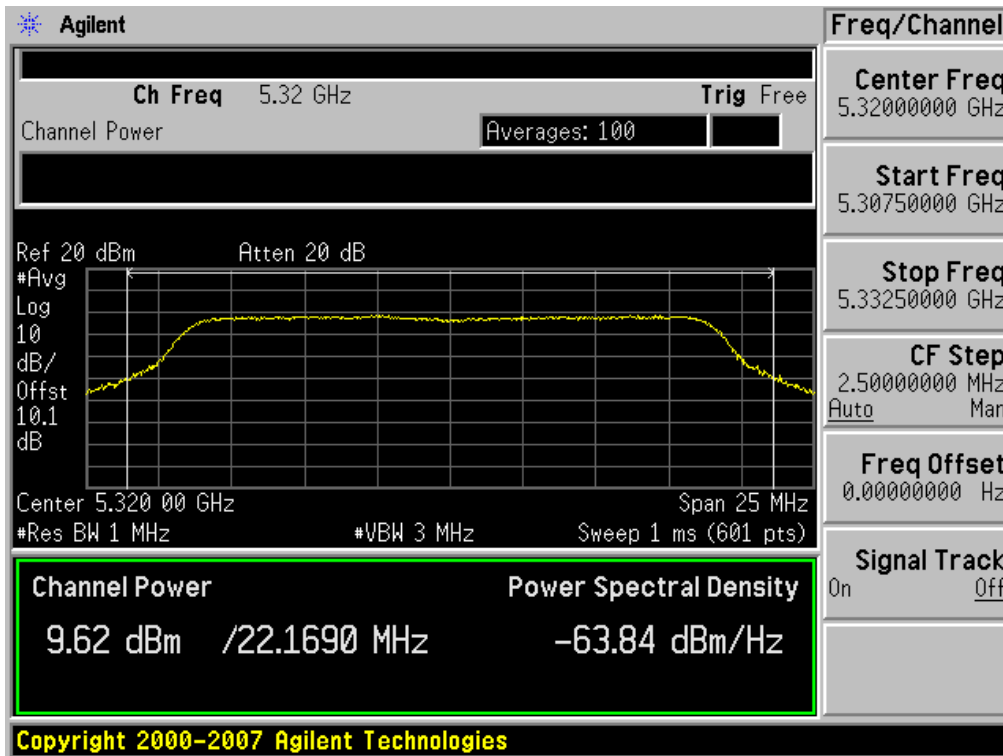
Conducted Output Power (802.11n-CH 64) 19.5 Mbps



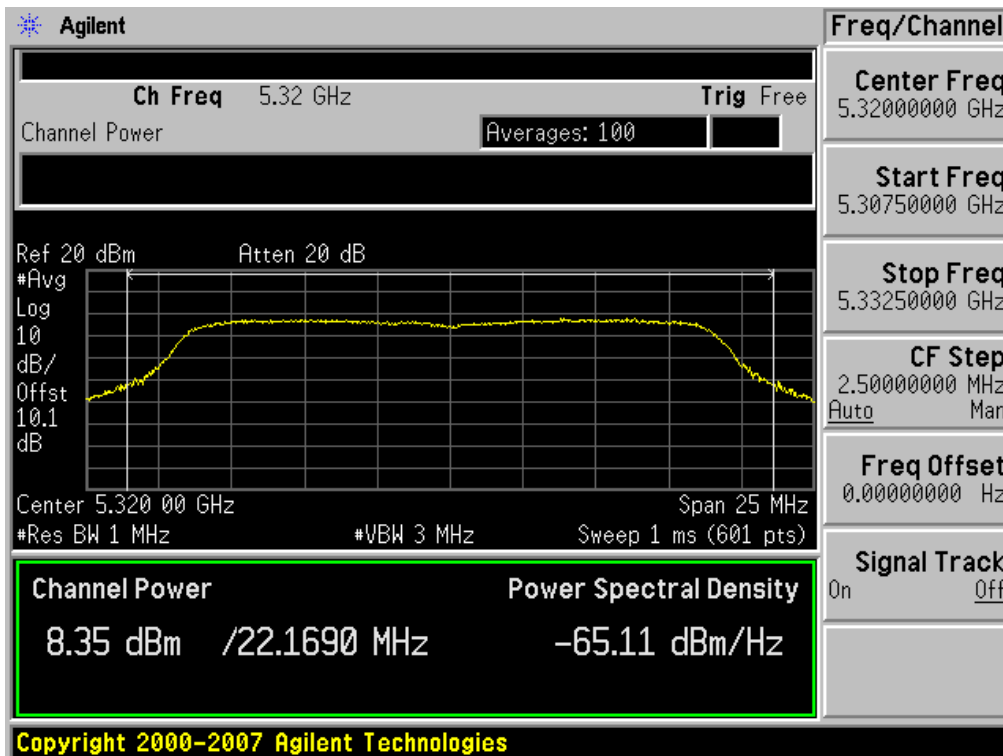
Conducted Output Power (802.11n-CH 64) 26 Mbps



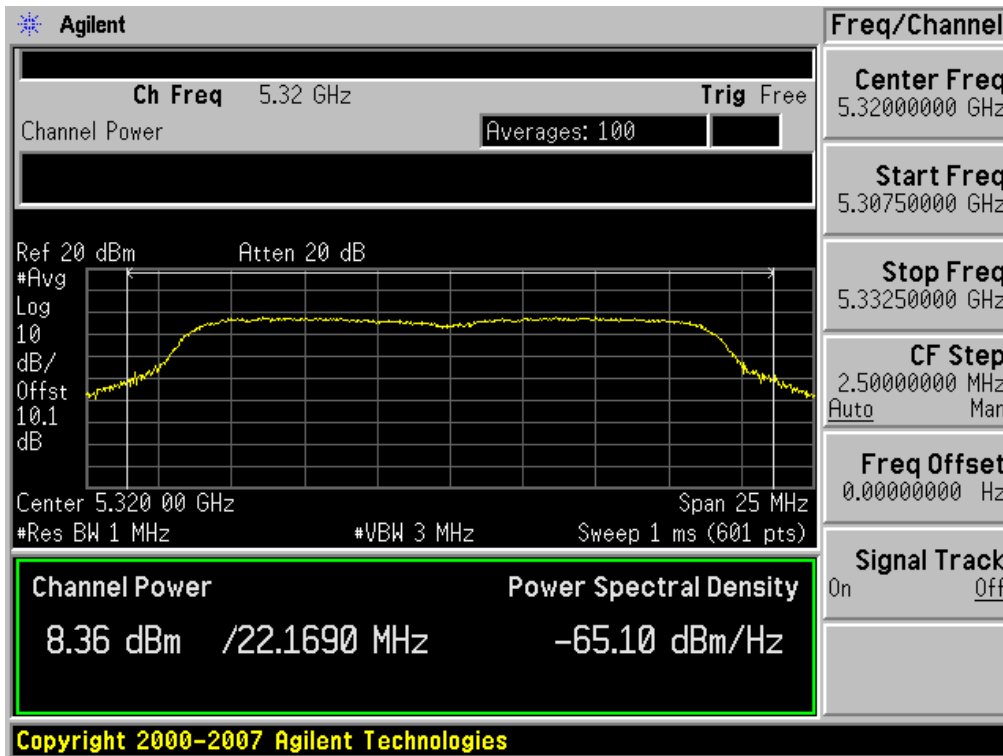
Conducted Output Power (802.11n-CH 64) 39 Mbps



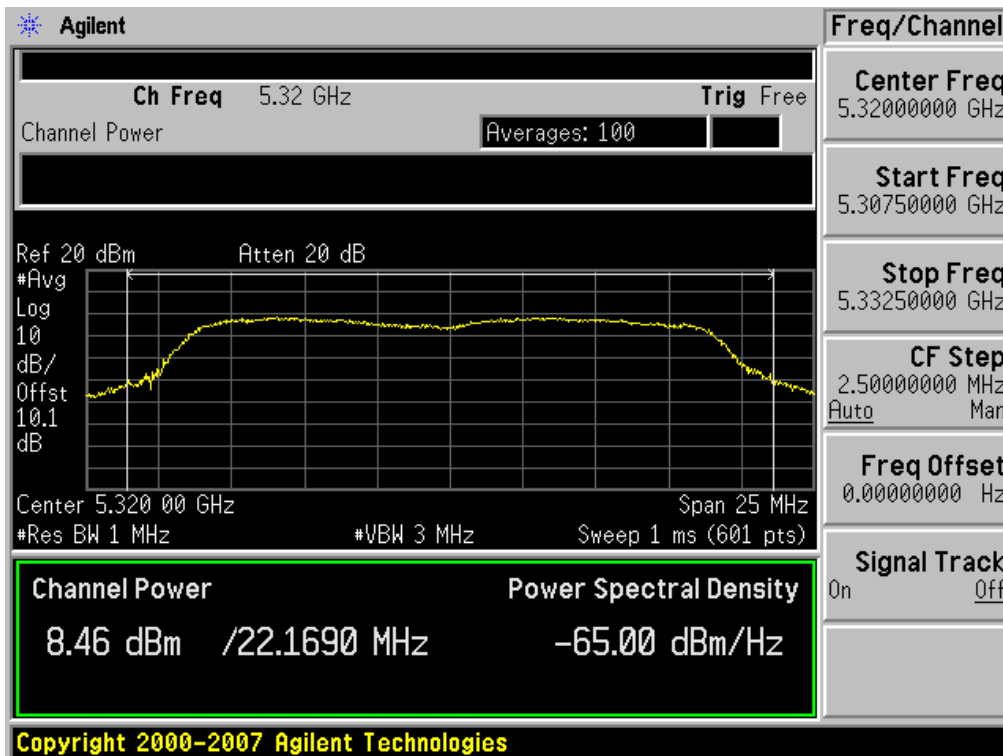
Conducted Output Power (802.11n-CH 64) 52 Mbps



Conducted Output Power (802.11n-CH 64) 58.5 Mbps

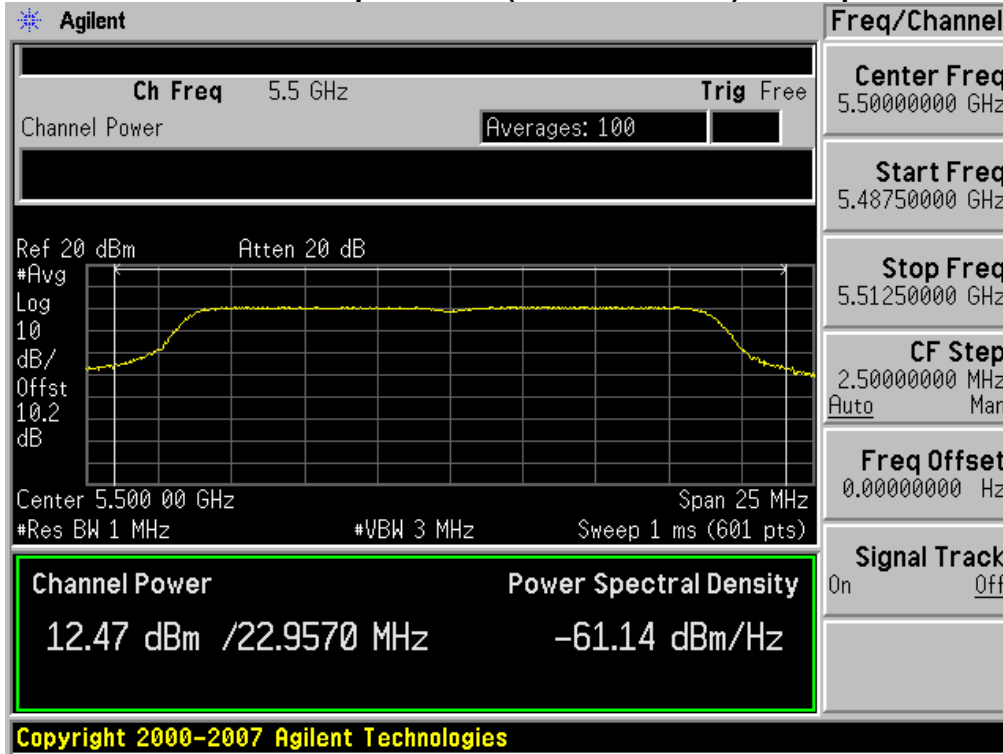


Conducted Output Power (802.11n-CH 64) 65 Mbps

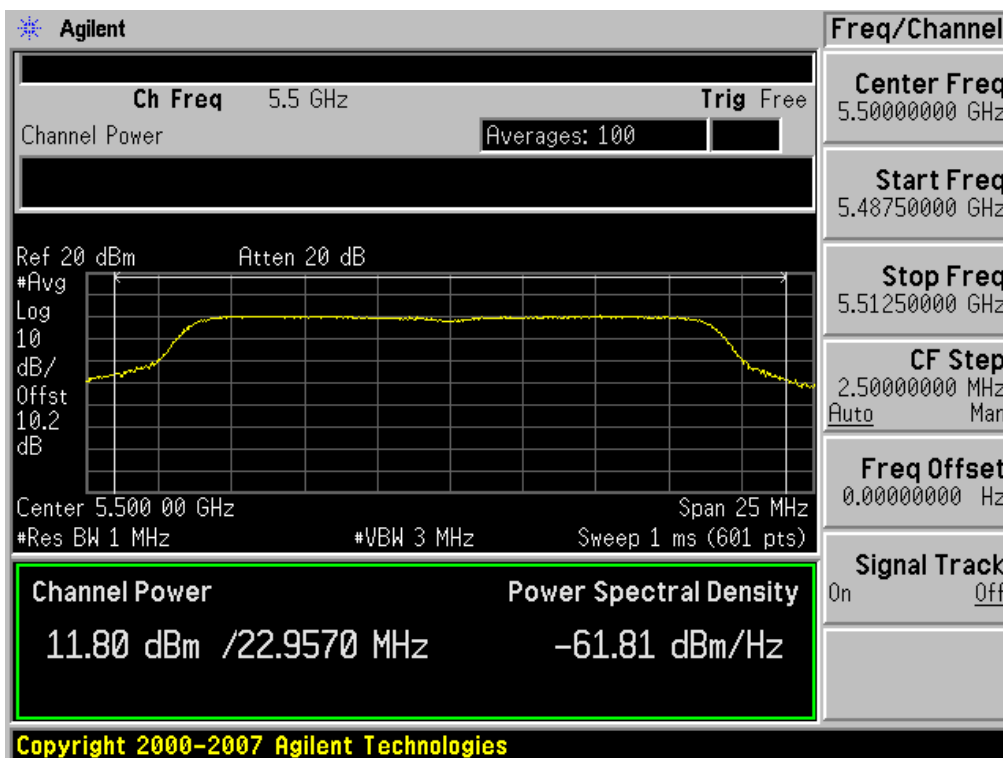


RESULT PLOTS (5500 MHz ~5700 MHz)

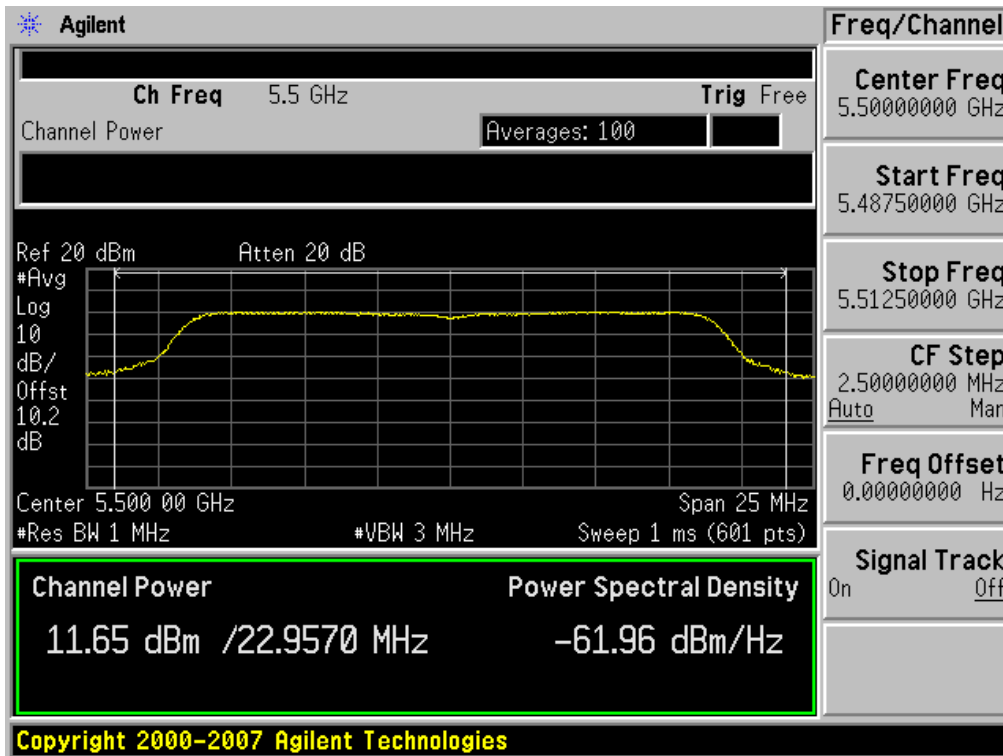
Conducted Output Power (802.11n-CH 100) 6.5 Mbps



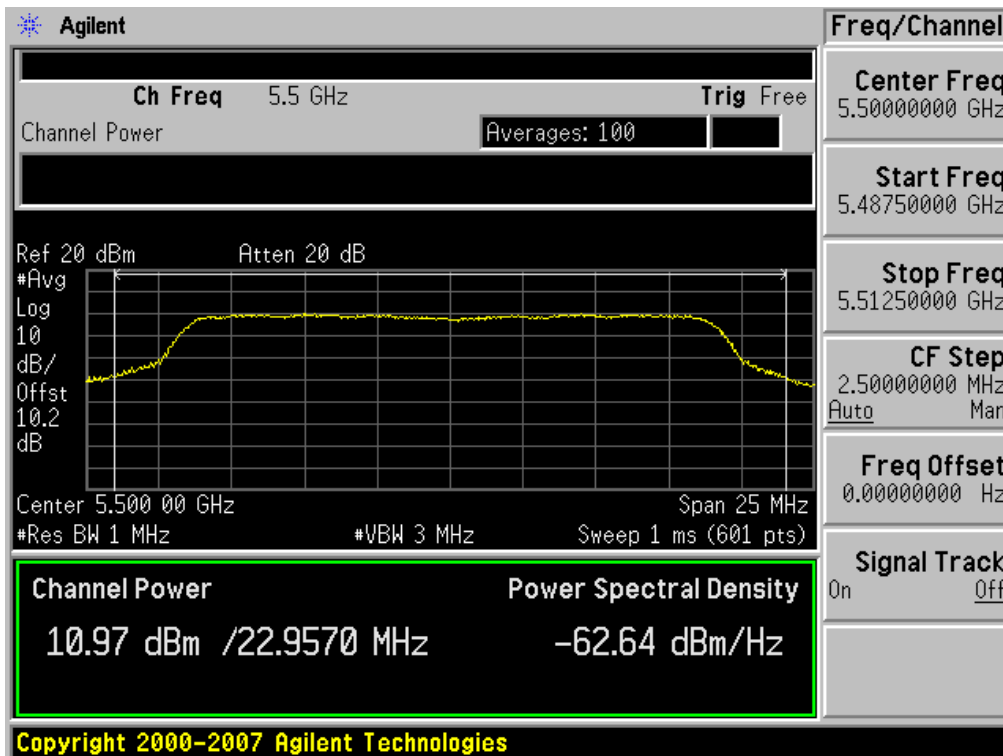
Conducted Output Power (802.11n-CH 100) 13 Mbps



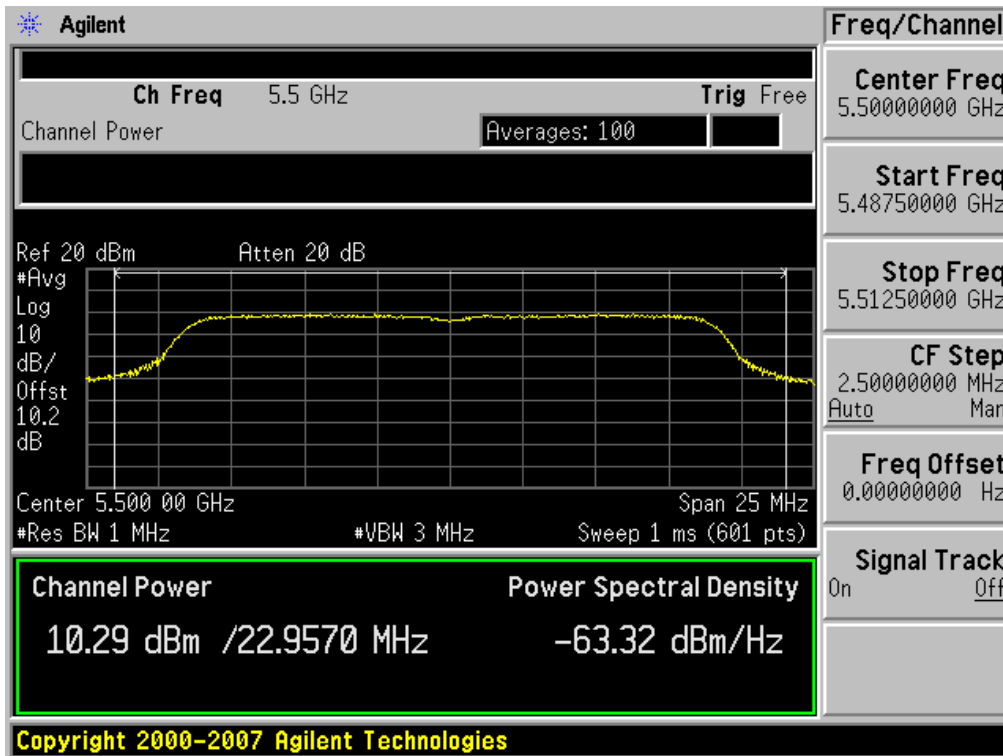
Conducted Output Power (802.11n-CH 100) 19.5 Mbps



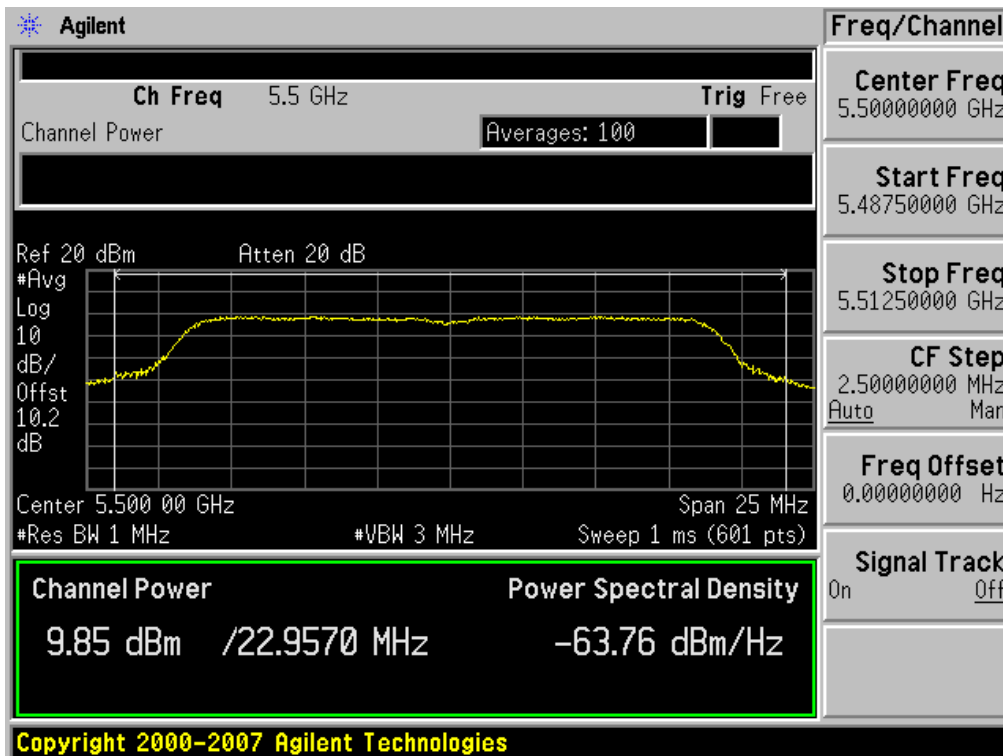
Conducted Output Power (802.11n-CH 100) 26 Mbps



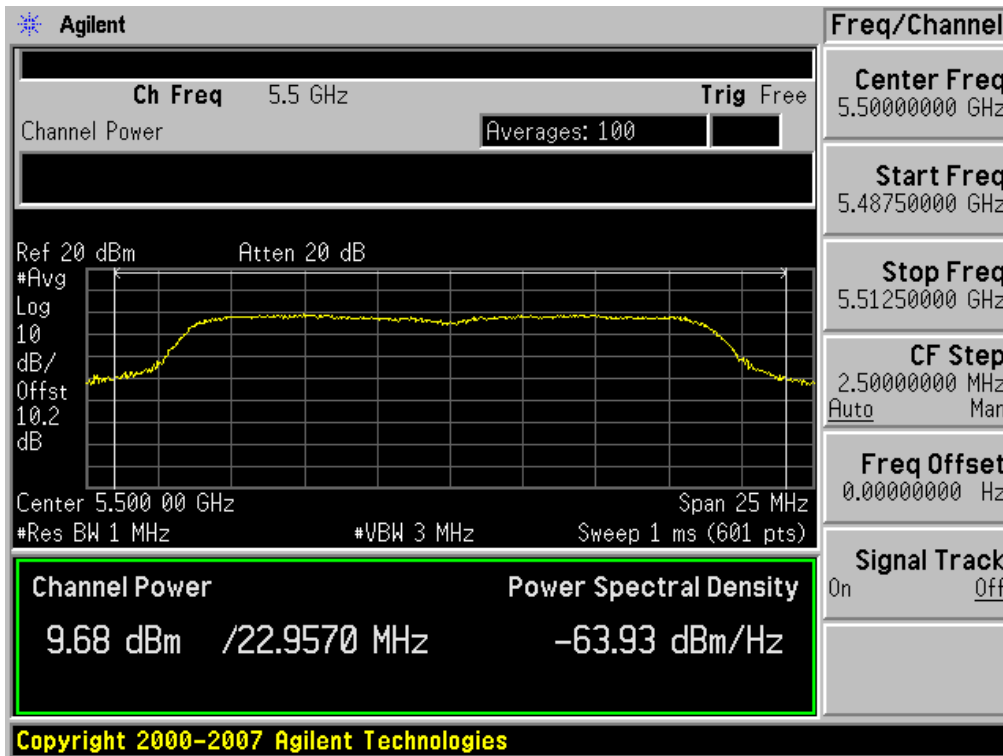
Conducted Output Power (802.11n-CH 100) 39 Mbps



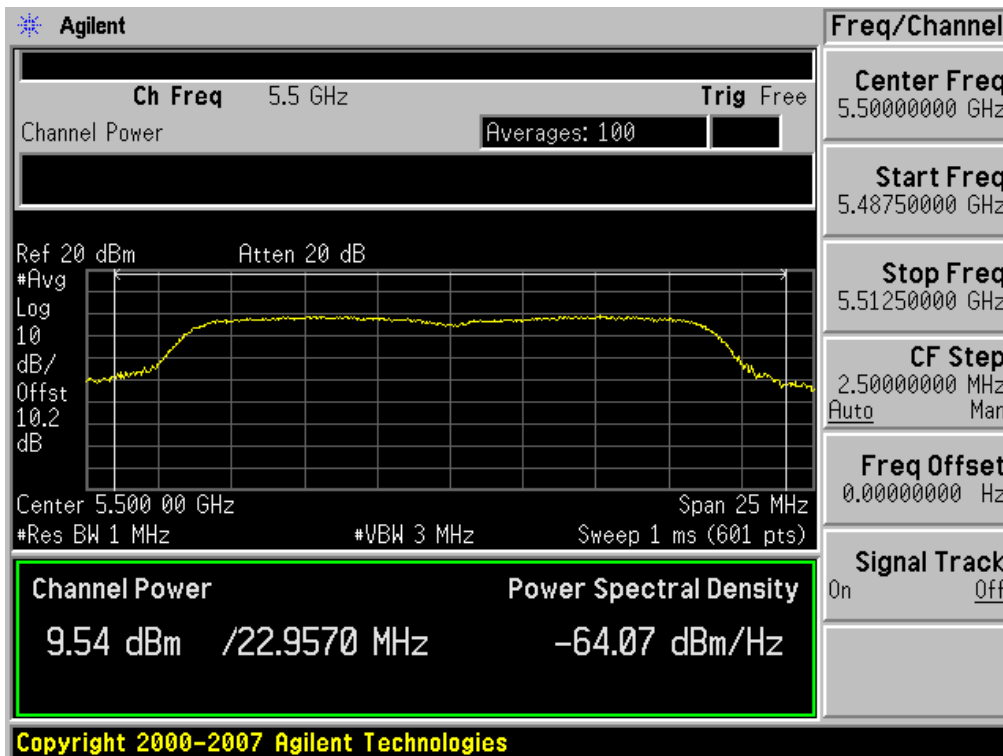
Conducted Output Power (802.11n-CH 100) 52 Mbps



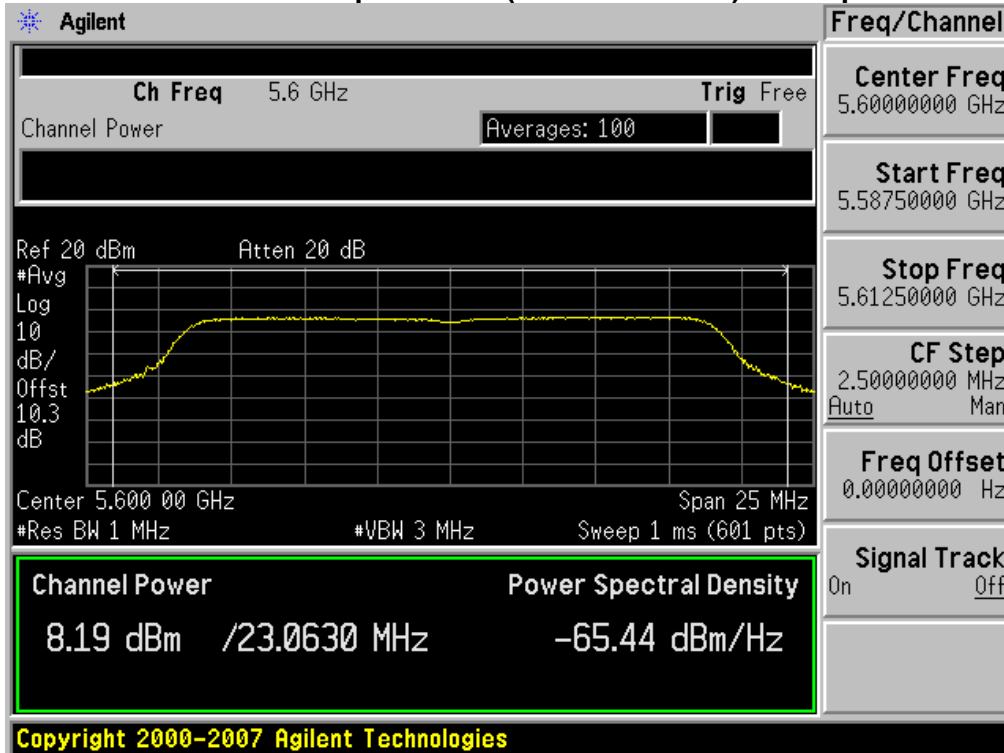
Conducted Output Power (802.11n-CH 100) 58.5 Mbps



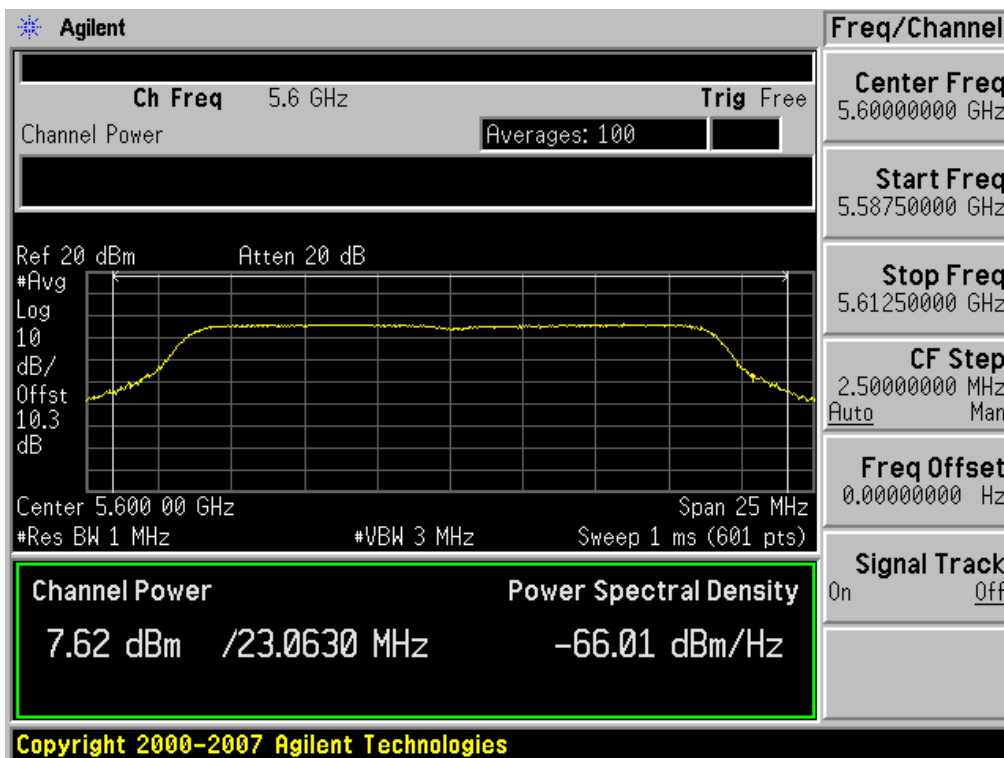
Conducted Output Power (802.11n-CH 100) 65 Mbps



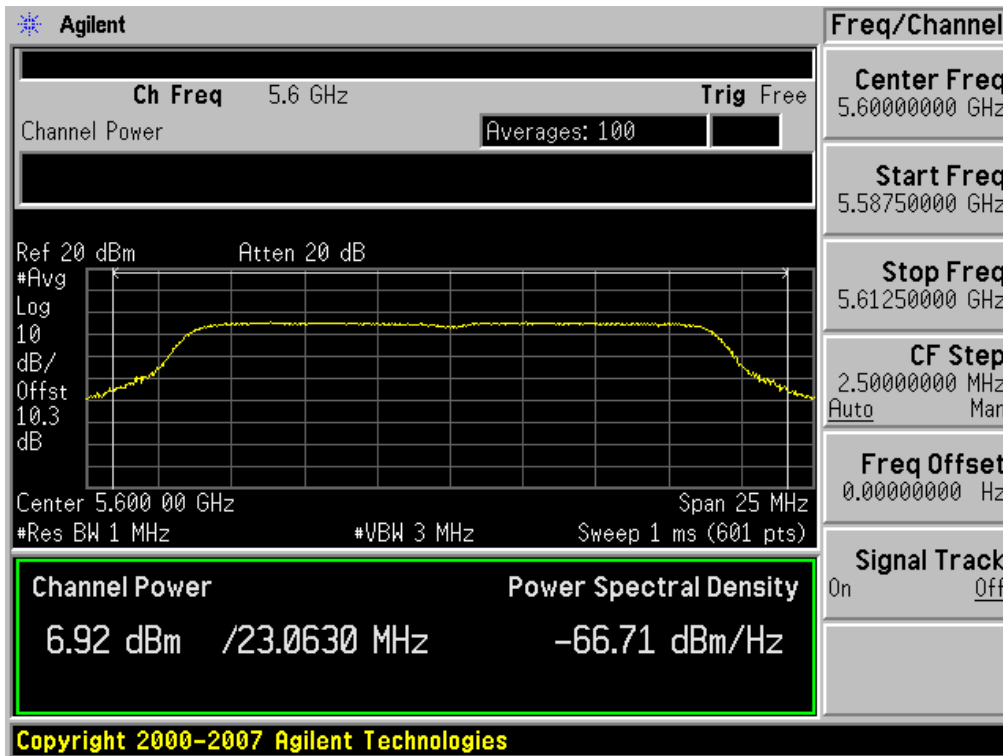
Conducted Output Power (802.11n-CH 120) 6.5 Mbps



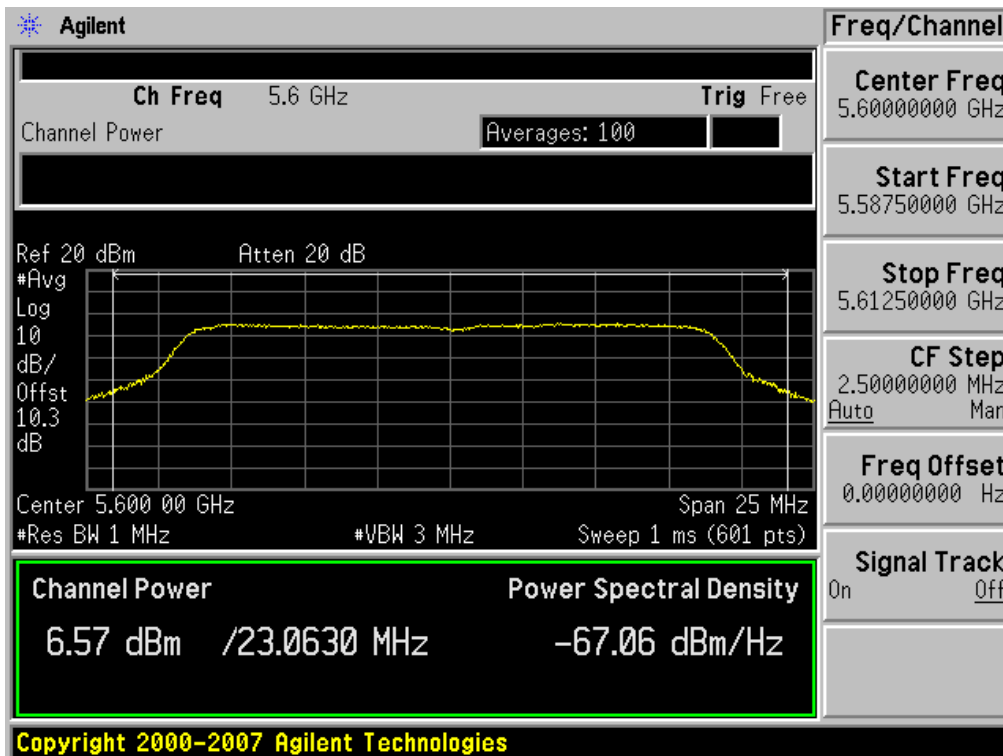
Conducted Output Power (802.11n-CH 120) 13 Mbps



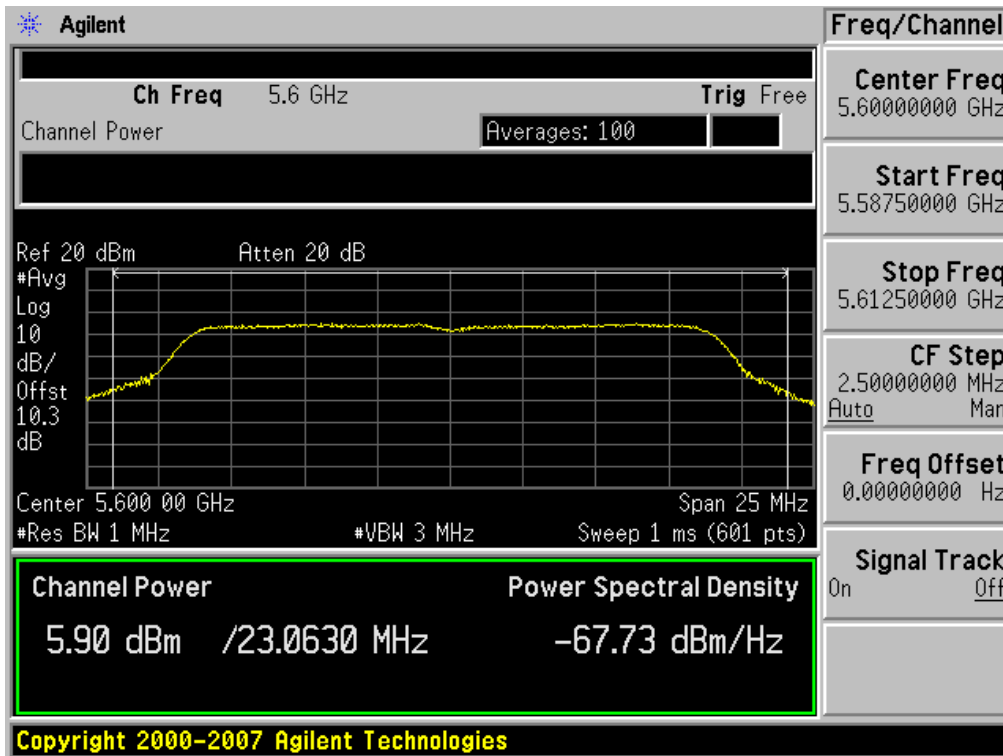
Conducted Output Power (802.11n-CH 120) 19.5 Mbps



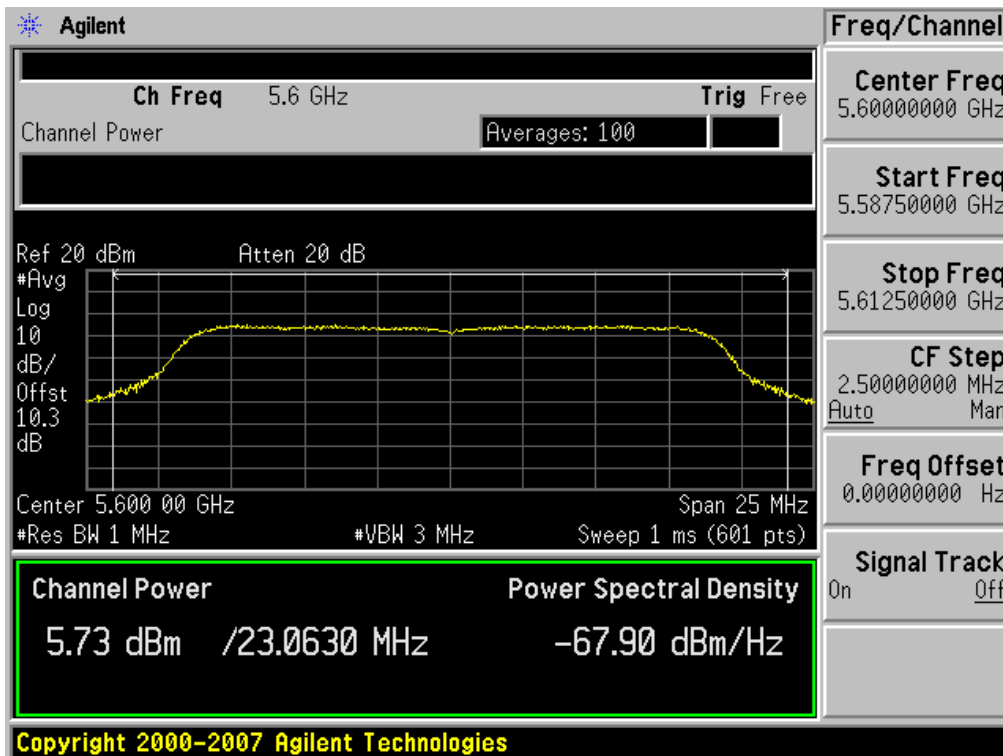
Conducted Output Power (802.11n-CH 120) 26 Mbps



Conducted Output Power (802.11n-CH 120) 39 Mbps

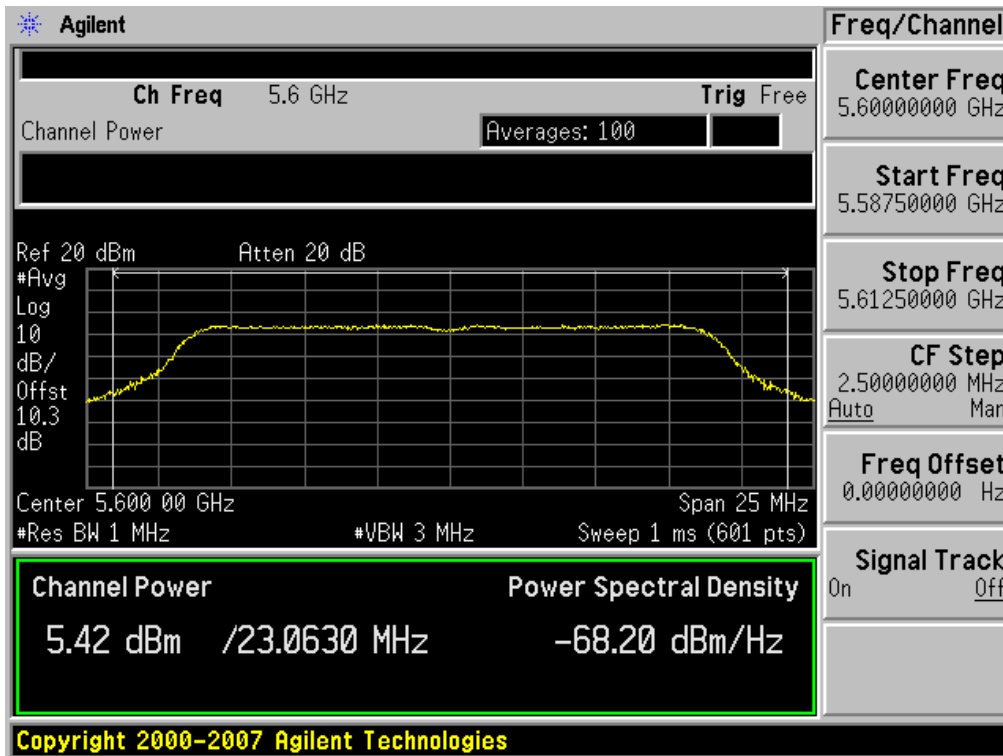


Conducted Output Power (802.11n-CH 120) 52 Mbps

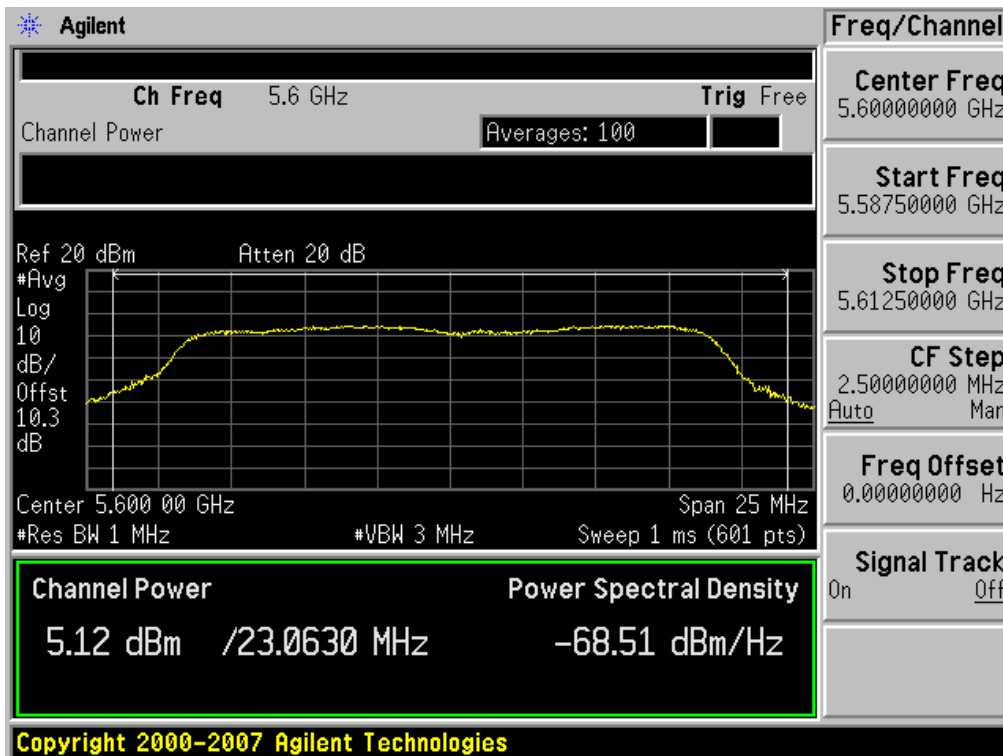


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

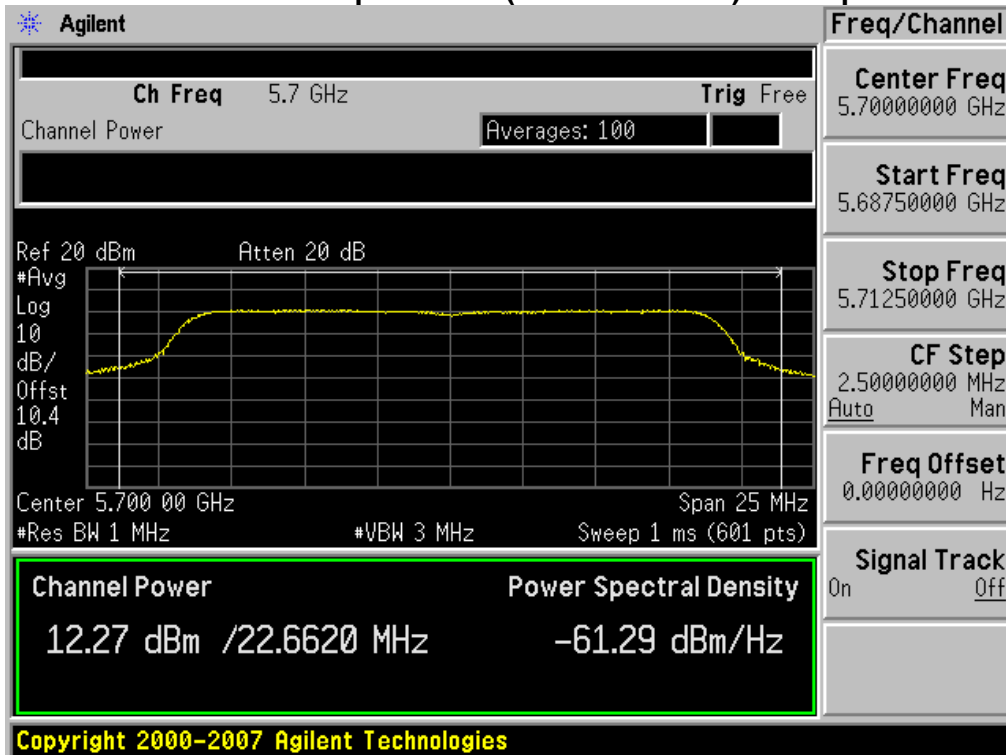
Conducted Output Power (802.11n-CH 120) 58.5 Mbps



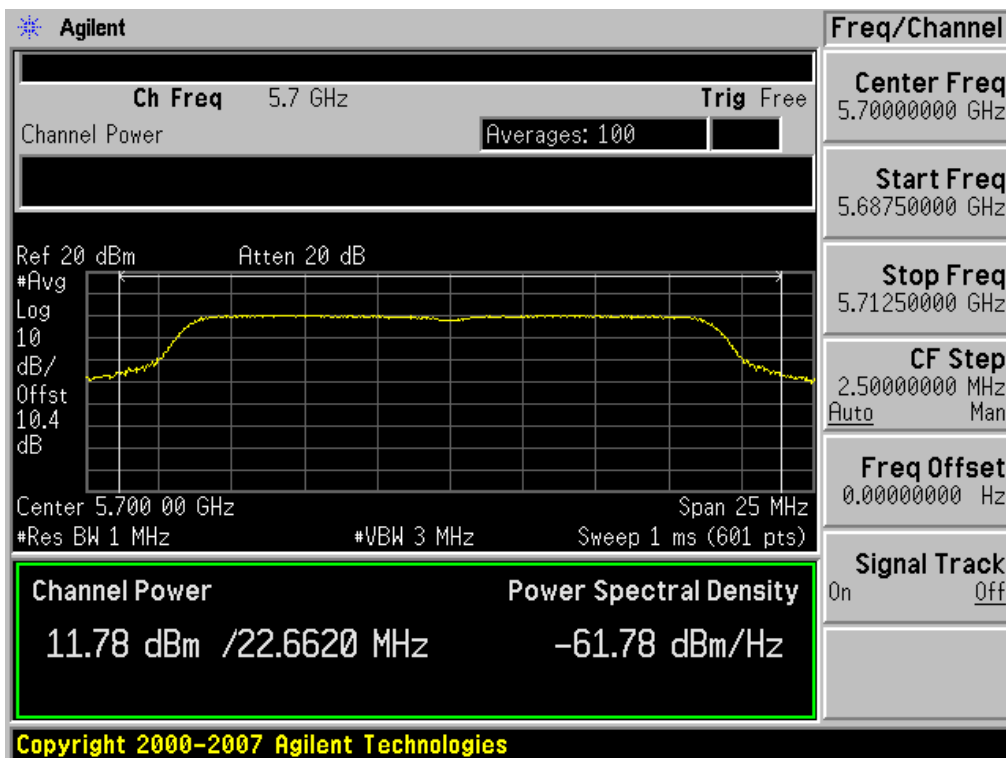
Conducted Output Power (802.11n-CH 120) 65 Mbps



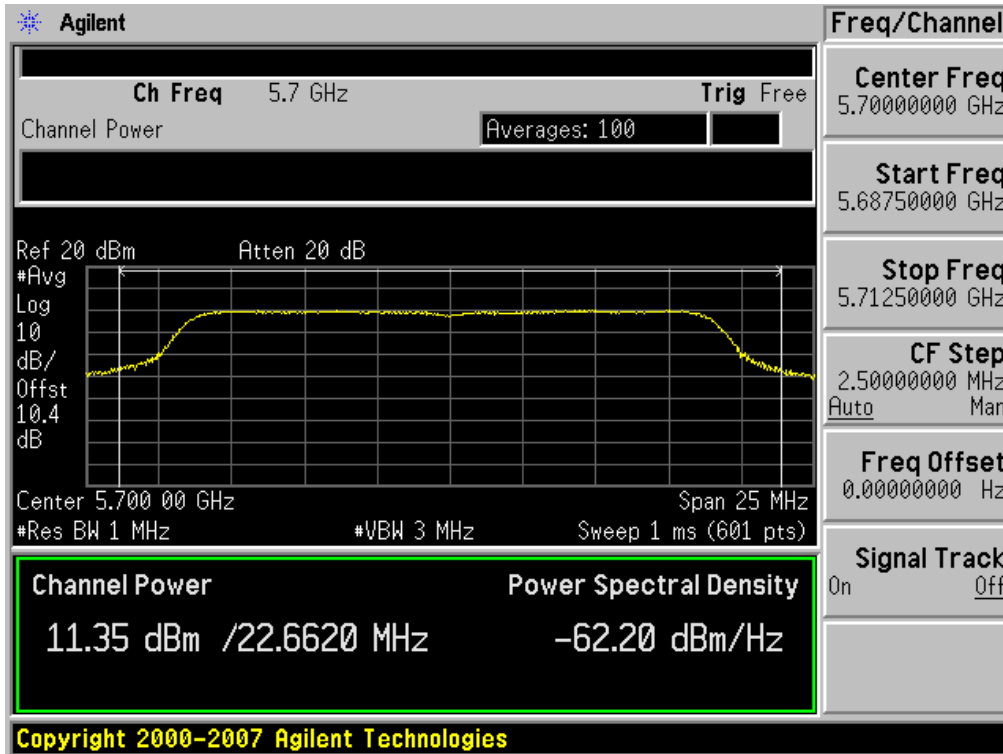
Conducted Output Power (802.11n-CH 140) 6.5 Mbps



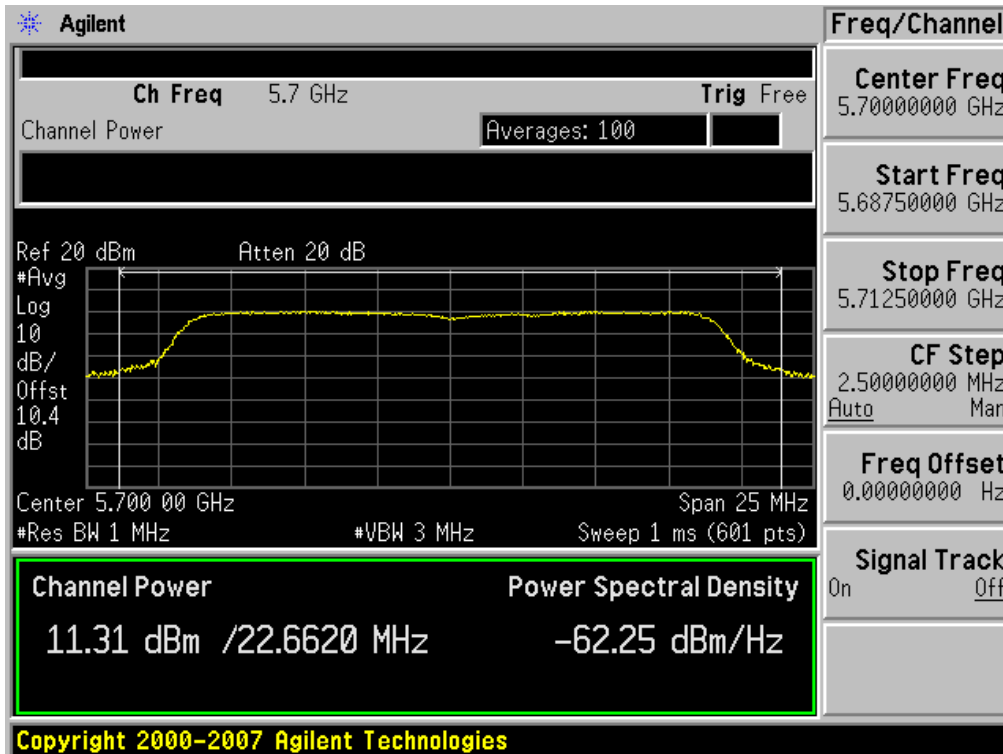
Conducted Output Power (802.11n-CH 140) 13 Mbps



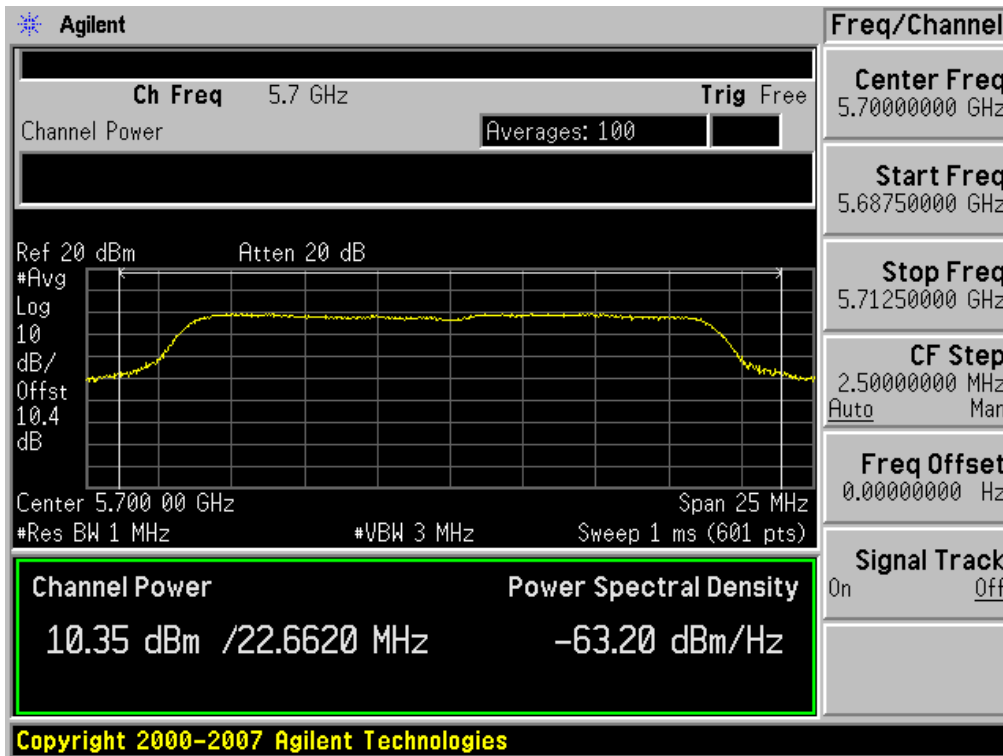
Conducted Output Power (802.11n-CH 140) 19.5 Mbps



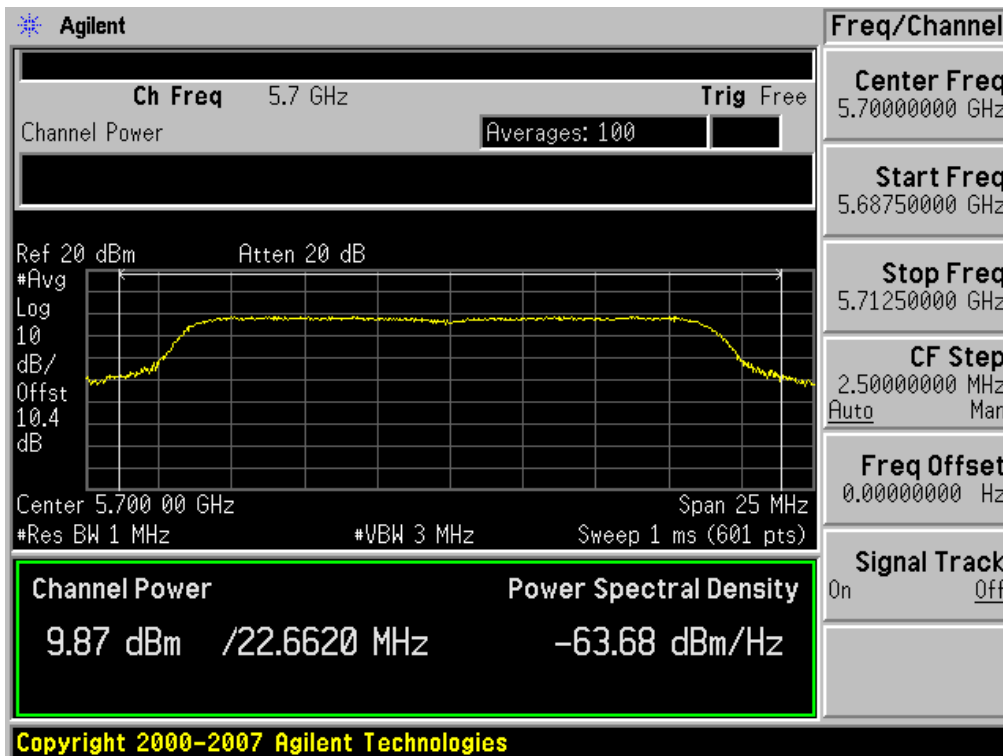
Conducted Output Power (802.11n-CH 140) 26 Mbps



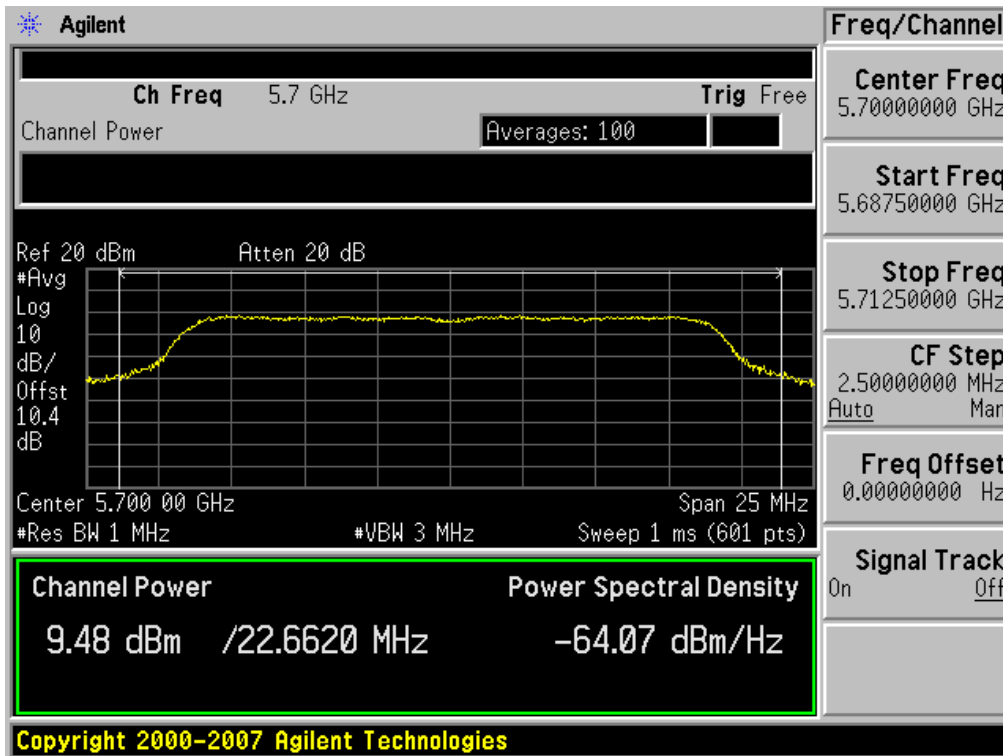
Conducted Output Power (802.11n-CH 140) 39 Mbps



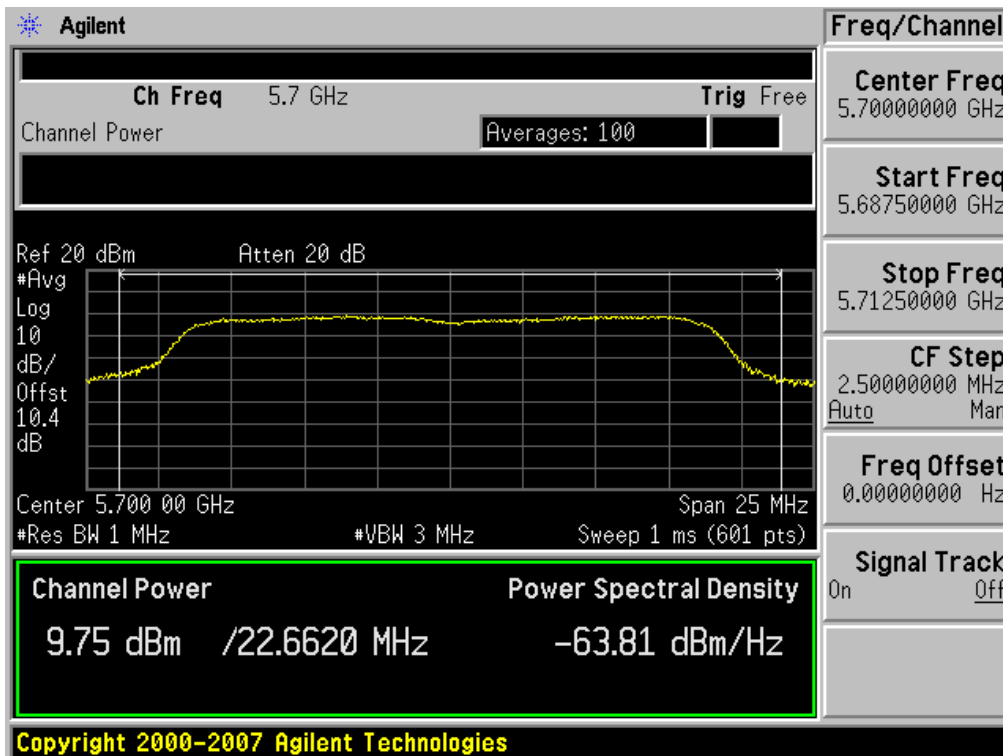
Conducted Output Power (802.11n-CH 140) 52 Mbps



Conducted Output Power (802.11n-CH 140) 58.5 Mbps



Conducted Output Power (802.11n-CH 140) 65 Mbps



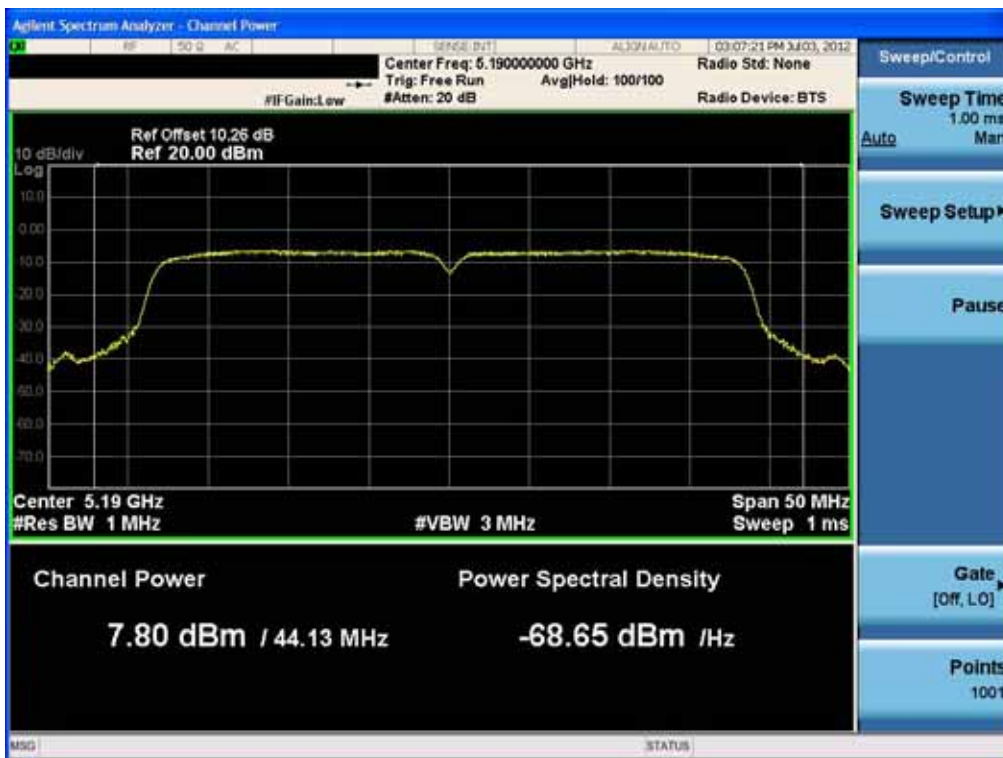
40 MHz BW

RESULT PLOTS (5190 MHz ~5230 MHz)

Conducted Output Power (802.11n-CH 36) 13.5 Mbps



Conducted Output Power (802.11n-CH 36) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 36) 40.5 Mbps



Conducted Output Power (802.11n-CH 36) 54 Mbps



Conducted Output Power (802.11n-CH 36) 81 Mbps



Conducted Output Power (802.11n-CH 36) 108 Mbps



Conducted Output Power (802.11n-CH 36) 121.5 Mbps



Conducted Output Power (802.11n-CH 36) 135 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 36) 13.5 Mbps



Conducted Output Power (802.11n-CH 36) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 36) 40.5 Mbps



Conducted Output Power (802.11n-CH 36) 54 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 36) 81 Mbps



Conducted Output Power (802.11n-CH 36) 108 Mbps



Conducted Output Power (802.11n-CH 36) 121.5 Mbps



Conducted Output Power (802.11n-CH 36) 135 Mbps



RESULT PLOTS (5270 MHz ~5310 MHz)

Conducted Output Power (802.11n-CH 52) 13.5 Mbps



Conducted Output Power (802.11n-CH 52) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 52) 40.5 Mbps



Conducted Output Power (802.11n-CH 52) 54 Mbps



Conducted Output Power (802.11n-CH 52) 81 Mbps



Conducted Output Power (802.11n-CH 52) 108 Mbps



Conducted Output Power (802.11n-CH 52) 121.5 Mbps



Conducted Output Power (802.11n-CH 60) 135 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 52) 13.5 Mbps



Conducted Output Power (802.11n-CH 52) 27 Mbps



Conducted Output Power (802.11n-CH 52) 40.5 Mbps



Conducted Output Power (802.11n-CH 52) 54 Mbps



Conducted Output Power (802.11n-CH 52) 81 Mbps



Conducted Output Power (802.11n-CH 52) 108 Mbps



Conducted Output Power (802.11n-CH 52) 121.5 Mbps



Conducted Output Power (802.11n-CH 60) 135 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

RESULT PLOTS (5510 MHz ~5670 MHz)

Conducted Output Power (802.11n-CH 100) 13.5 Mbps



Conducted Output Power (802.11n-CH 100) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

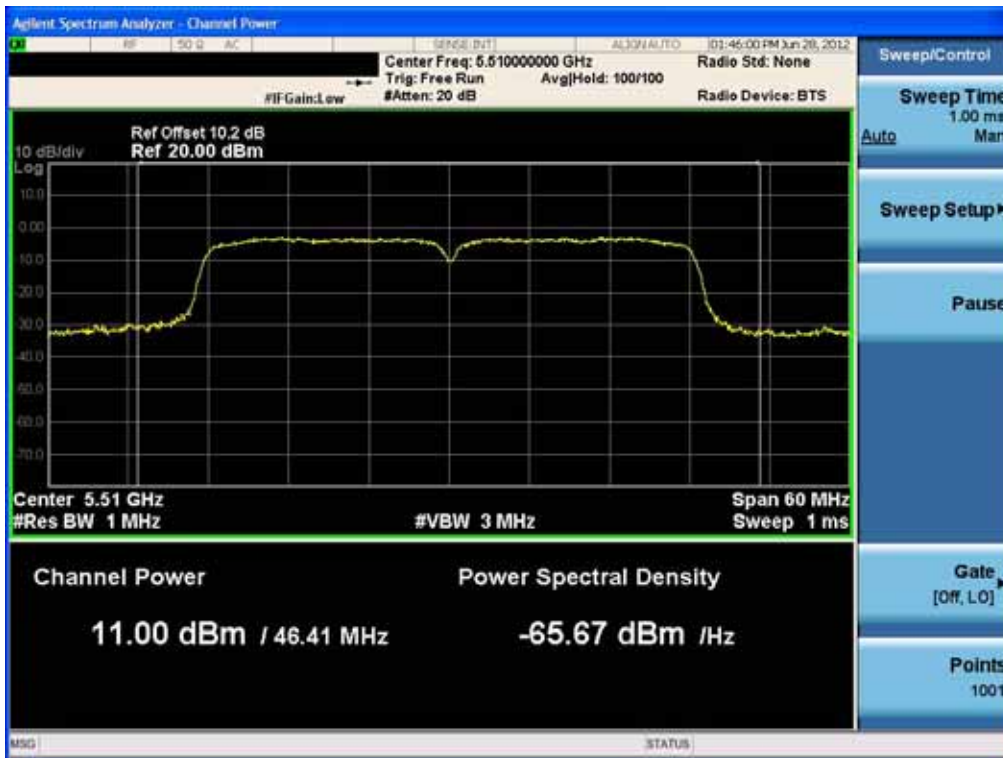
Conducted Output Power (802.11n-CH 100) 40.5 Mbps



Conducted Output Power (802.11n-CH 100) 54 Mbps



Conducted Output Power (802.11n-CH 100) 81 Mbps



Conducted Output Power (802.11n-CH 100) 108 Mbps



Conducted Output Power (802.11n-CH 100) 121.5 Mbps



Conducted Output Power (802.11n-CH 100) 135 Mbps



Conducted Output Power (802.11n-CH 100) 13.5 Mbps



Conducted Output Power (802.11n-CH 100) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 100) 40.5 Mbps



Conducted Output Power (802.11n-CH 100) 54 Mbps



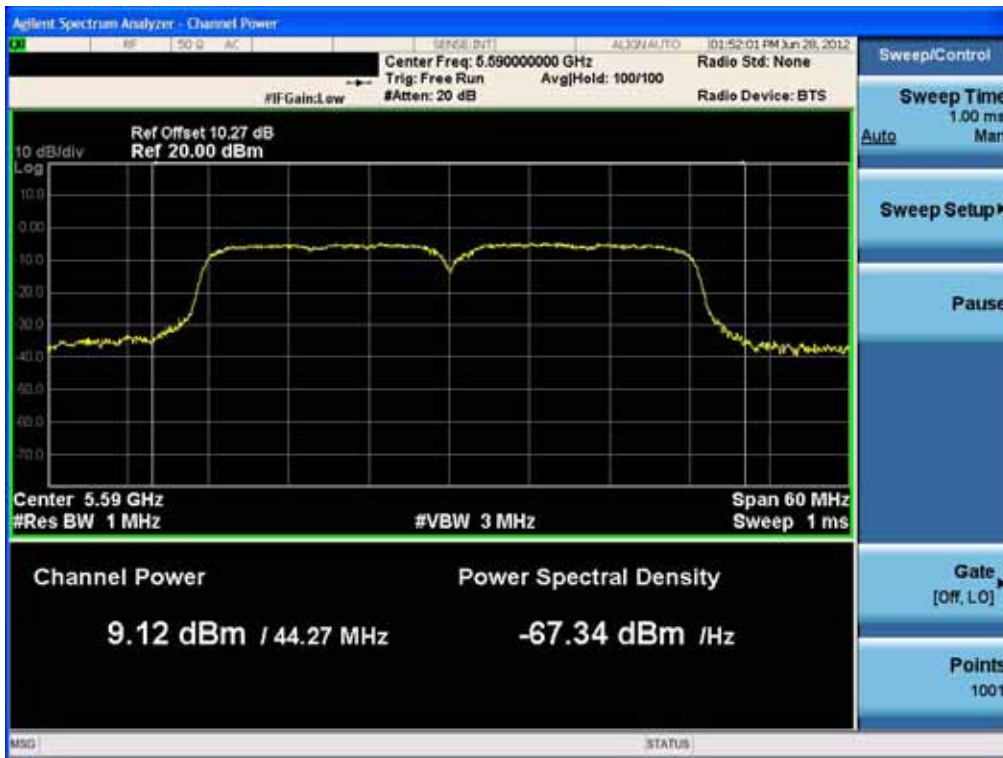
Conducted Output Power (802.11n-CH 100) 81 Mbps



Conducted Output Power (802.11n-CH 100) 108 Mbps



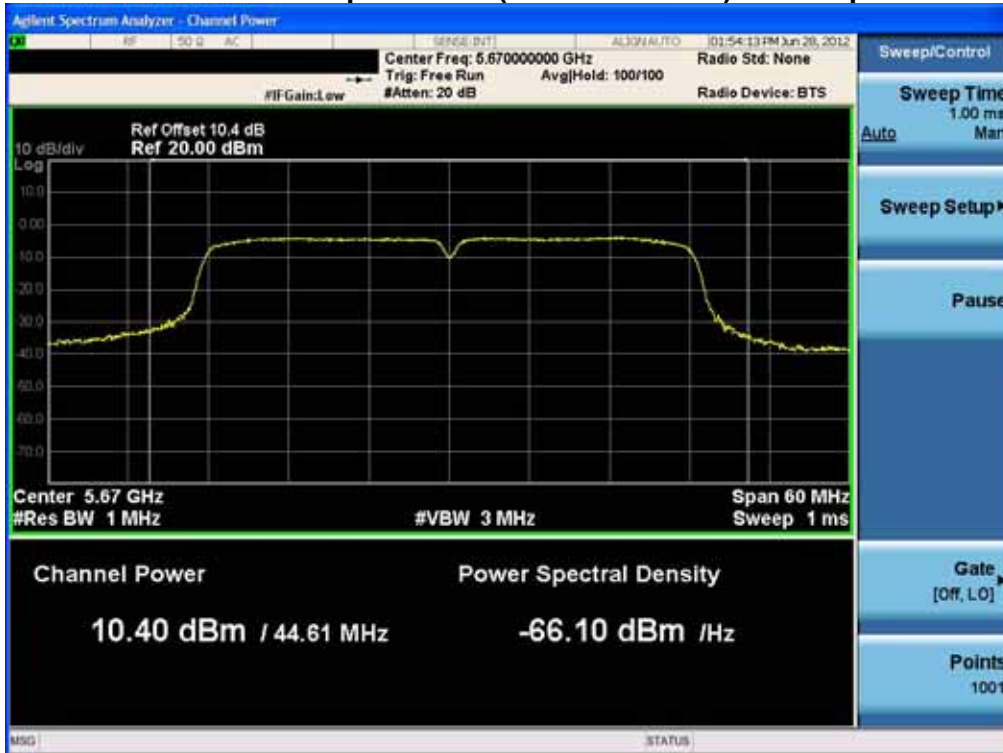
Conducted Output Power (802.11n-CH 100) 121.5 Mbps



Conducted Output Power (802.11n-CH 100) 135 Mbps



Conducted Output Power (802.11n-CH 100) 13.5 Mbps



Conducted Output Power (802.11n-CH 100) 27 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Output Power (802.11n-CH 100) 40.5 Mbps



Conducted Output Power (802.11n-CH 100) 54 Mbps



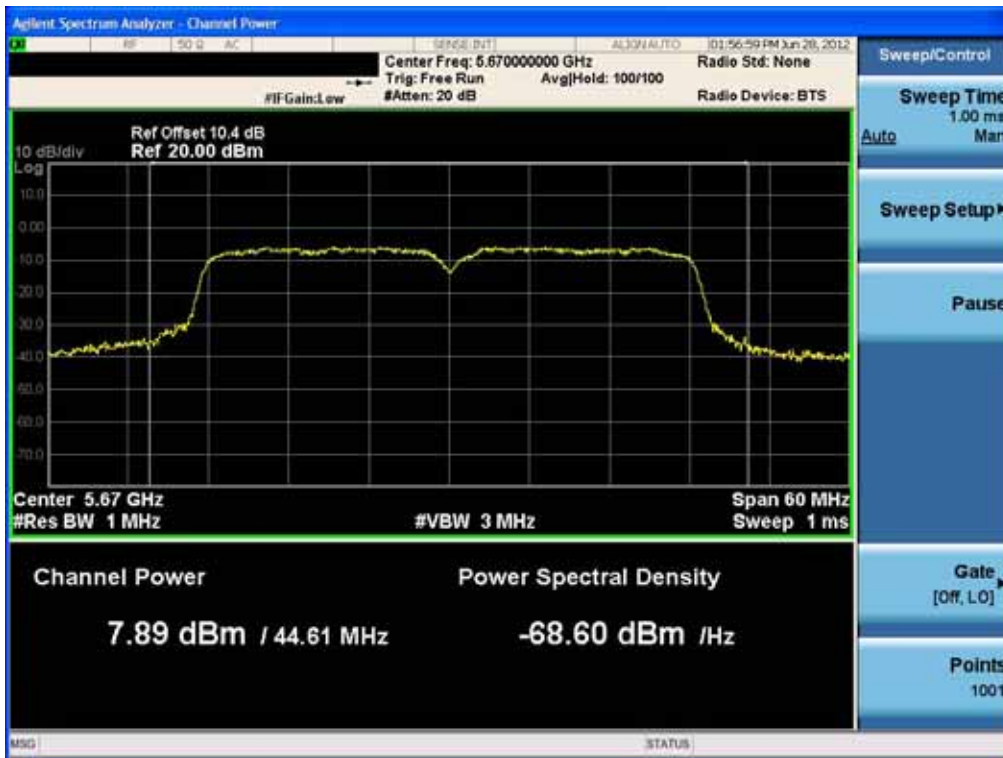
Conducted Output Power (802.11n-CH 100) 81 Mbps



Conducted Output Power (802.11n-CH 100) 108 Mbps



Conducted Output Power (802.11n-CH 100) 121.5 Mbps



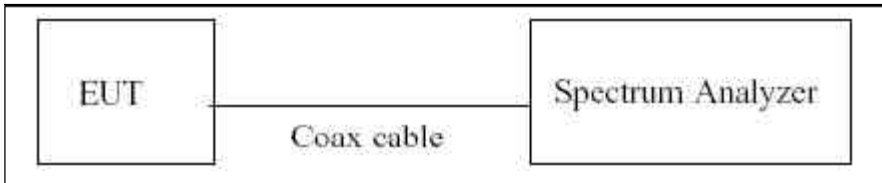
Conducted Output Power (802.11n-CH 100) 135 Mbps



8.3 POWER SPECTRAL DENSITY

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. The maximum permissible peak power spectral density is 4 dBm/ MHz in the 5.15 GHz – 5.25 GHz band and 11 dBm/ MHz in the 5.25 GHz – 5.35 GHz and 5.47 GHz – 5.725 GHz bands

■ TEST CONFIGURATION



■ TEST PROCEDURE

The spectrum analyzer is set to :

RBW = 1 MHz

VBW = 3 MHz

SPAN = to encompass the entire EBW of the signal

Sweep Time = auto

Sweep Point = 601

Detector Mode = Average

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

■ Sample Calculation

$$\begin{aligned} \text{PSD} &= \text{Reading Value} + \text{ATT loss} + \text{Cable loss}(1 \text{ ea}) \\ &= -5 \text{ dBm} + 10 \text{ dB} + 0.8 \text{ dB} = 15.8 \text{ dBm} \end{aligned}$$

Note :

1. Spectrum reading values are not plot data. The PSD 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 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.26
	5200	10.18
	5240	10.19
UNII 2	5260	10.18
	5300	10.14
	5320	10.09
UNII 3	5500	10.20
	5600	10.27
	5700	10.40

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

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Power Density (dBm)	Limit (dBm)	Pass/Fail
5180	36	802.11a	-0.338	4	Pass
5200	40		0.258	4	Pass
5240	48		2.035	4	Pass
5260	52	802.11a	1.950	11	Pass
5300	60		0.651	11	Pass
5320	64		0.715	11	Pass
5500	100	802.11a	-0.720	11	Pass
5600	120		-5.043	11	Pass
5700	140		-1.215	11	Pass

Conducted Power Density Measurements

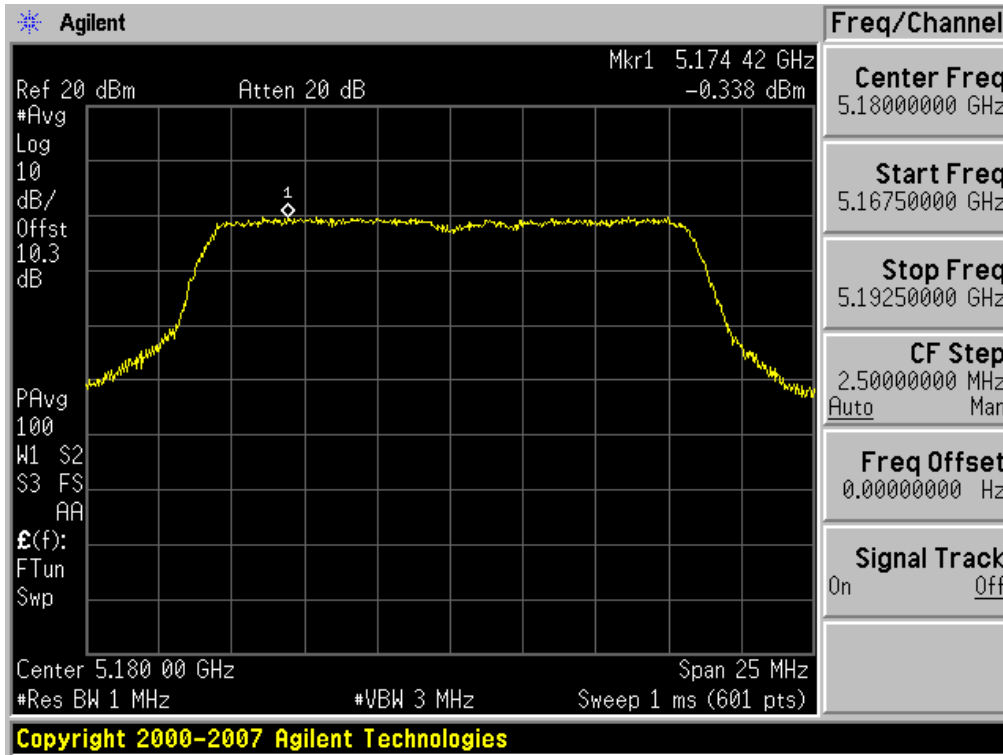
Frequency (MHz)	Channel No.	Mode	Test Result		
			Power Density (dBm)	Limit (dBm)	Pass/Fail
5180	36	802.11n_20MHz BW	-0.510	4	Pass
5200	40		-0.723	4	Pass
5240	48		0.132	4	Pass
5260	52	802.11n_20MHz BW	0.309	11	Pass
5300	60		-0.099	11	Pass
5320	64		-0.692	11	Pass
5500	100	802.11n_20MHz BW	1.818	11	Pass
5600	120		-2.268	11	Pass
5700	140		1.746	11	Pass

Conducted Power Density Measurements

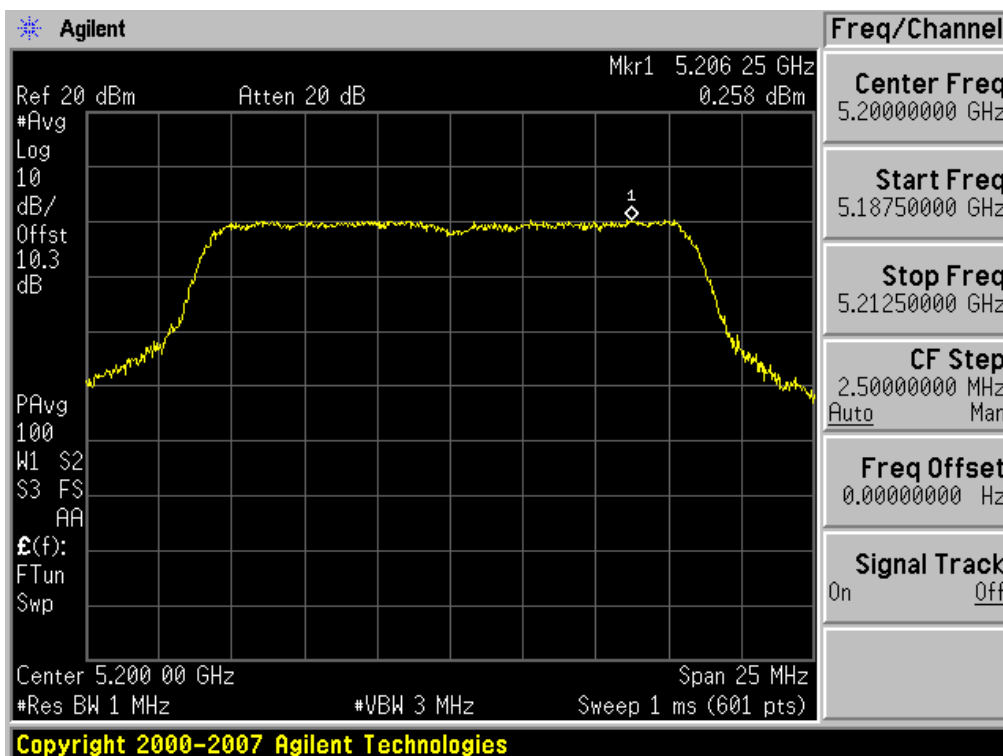
Frequency (MHz)	Channel No.	Mode	Test Result		
			Power Density (dBm)	Limit (dBm)	Pass/Fail
5190	38	802.11n_40	-6.278	4	Pass
5230	46	MHz BW	-6.287	4	Pass
5270	54	802.11n_40	-6.229	4	Pass
5310	62	MHz BW	-6.130	11	Pass
5510	102	802.11n_40 MHz BW	-1.376	11	Pass
5590	118		-2.187	11	Pass
5670	134		-3.558	11	Pass

RESULT PLOTS

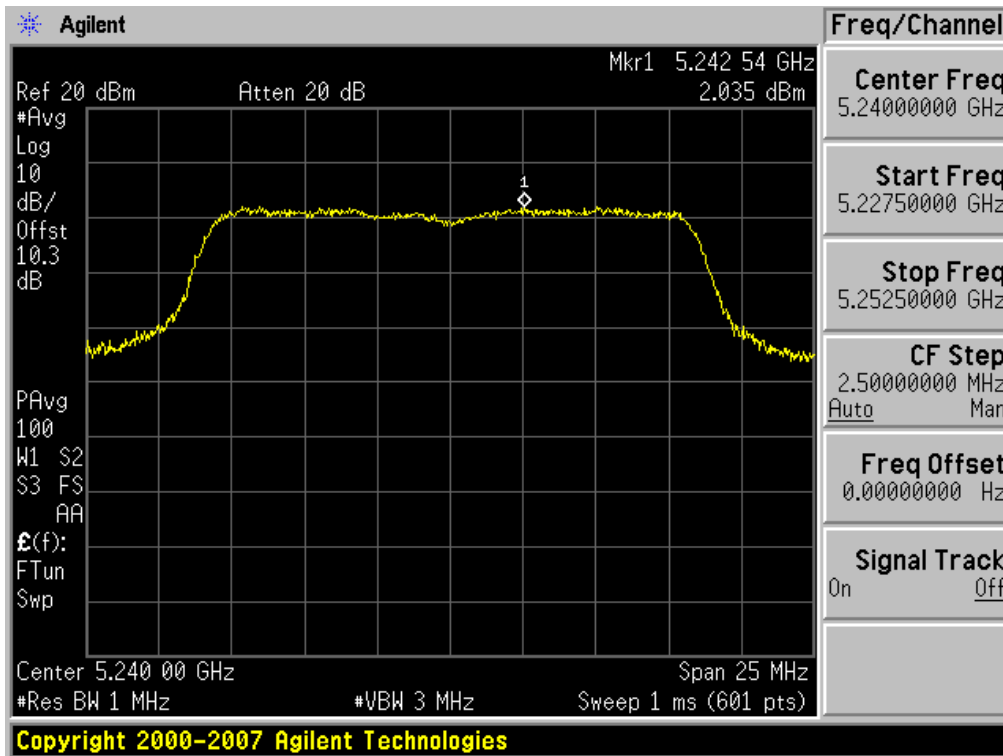
Power Spectral Density (802.11a-CH 36)



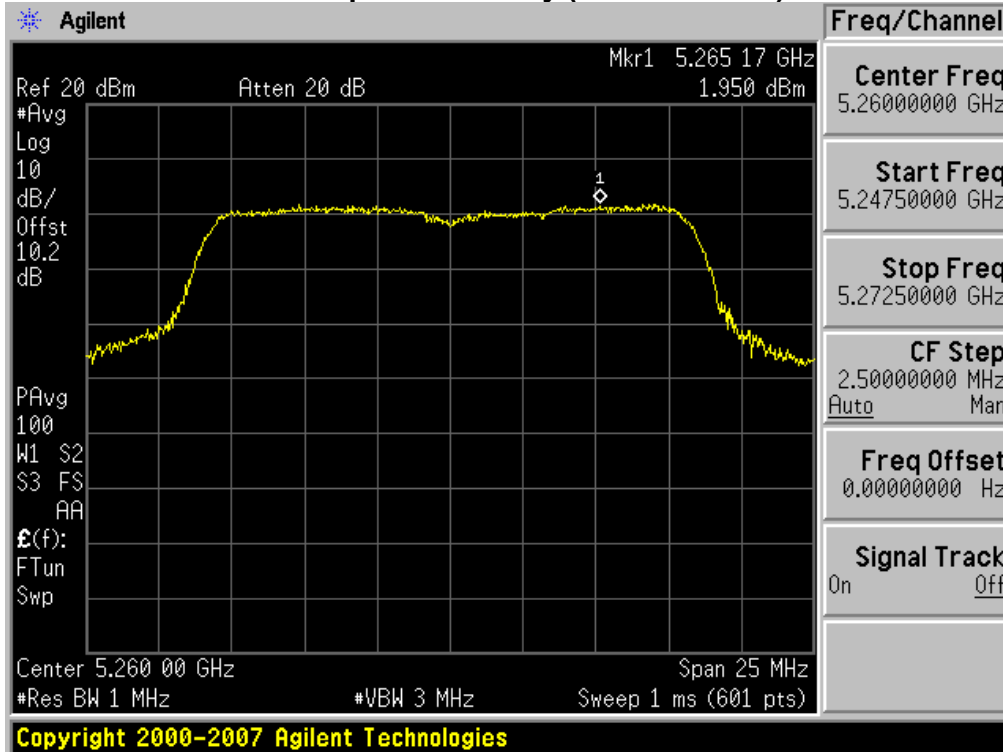
Power Spectral Density (802.11a-CH 40)



Power Spectral Density (802.11a-CH 48)

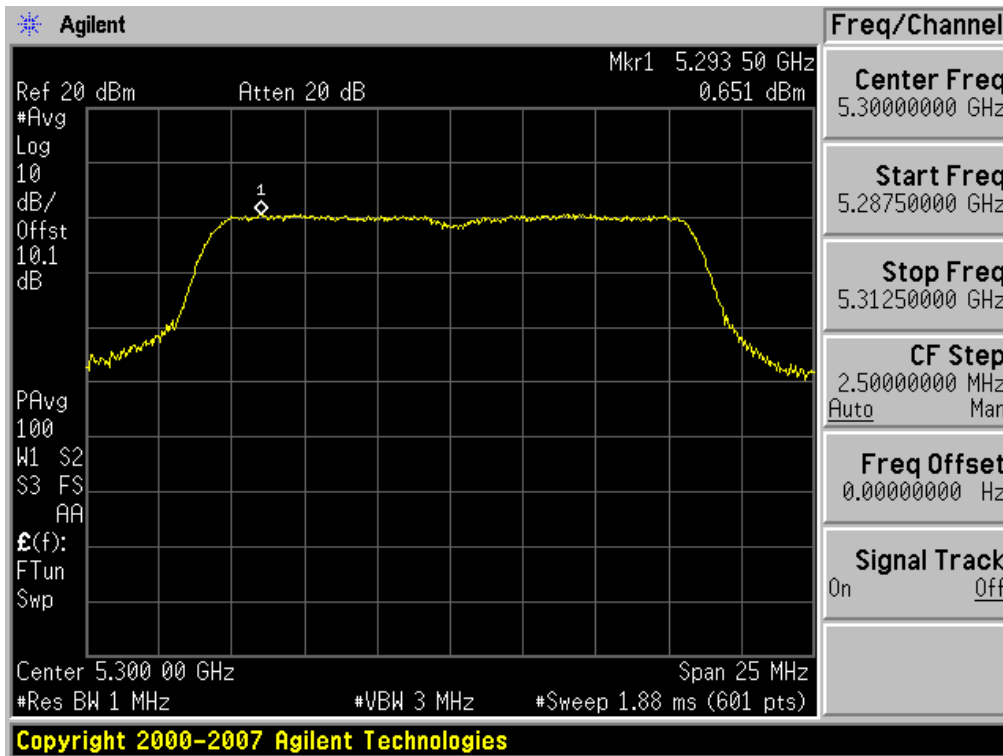


Power Spectral Density (802.11a-CH 52)

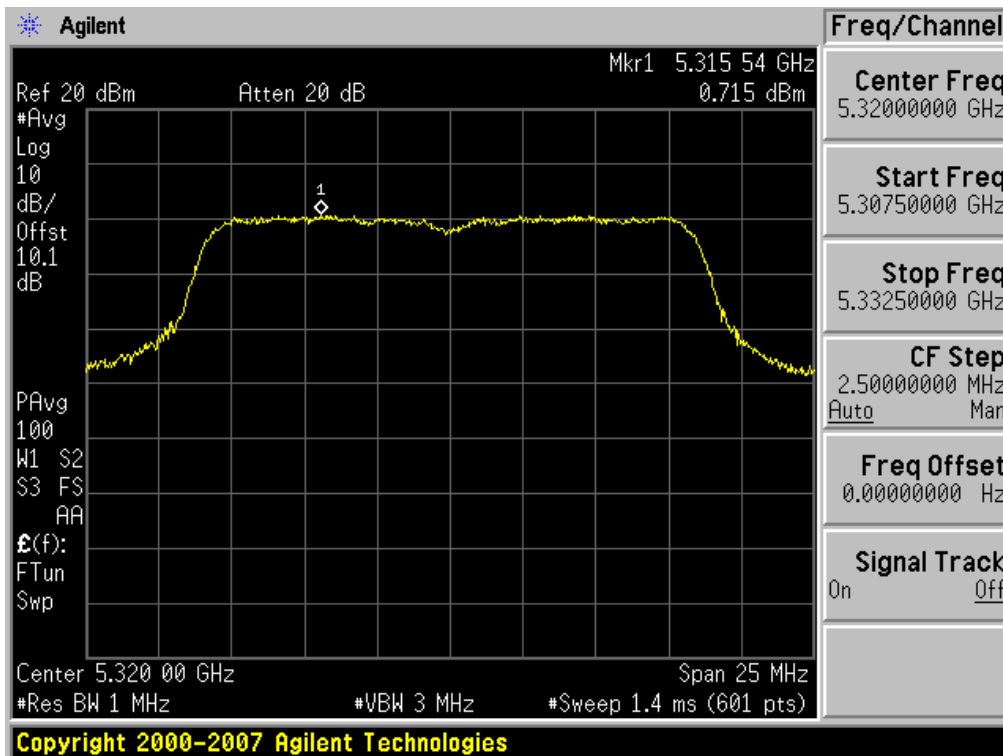


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Power Spectral Density (802.11a-CH 60)

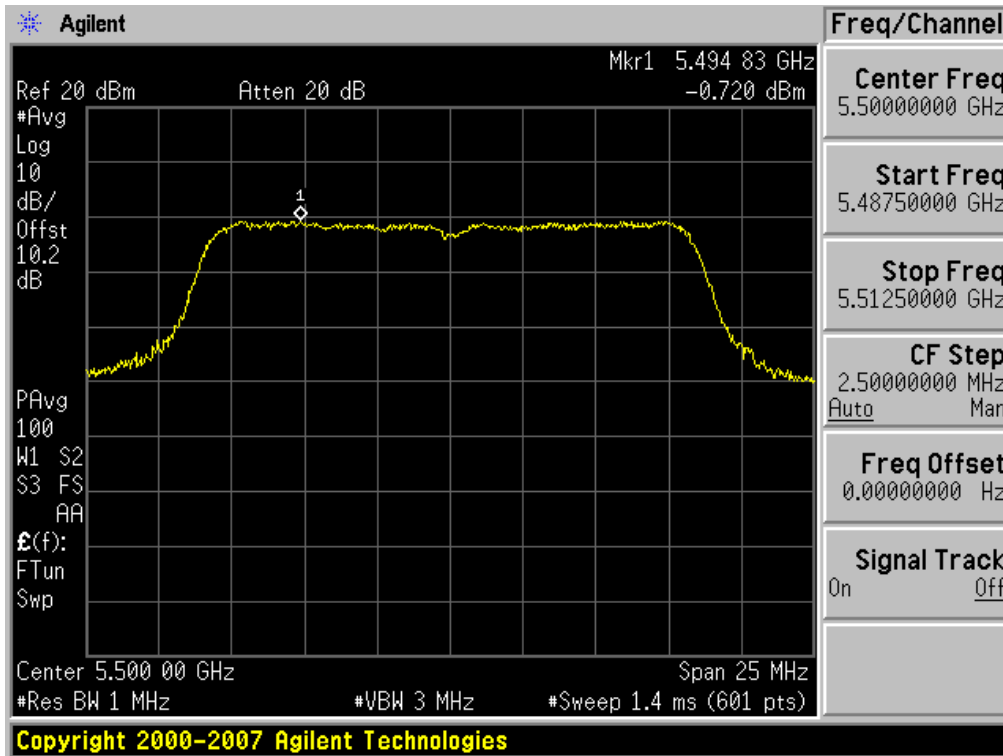


Power Spectral Density (802.11a-CH 64)

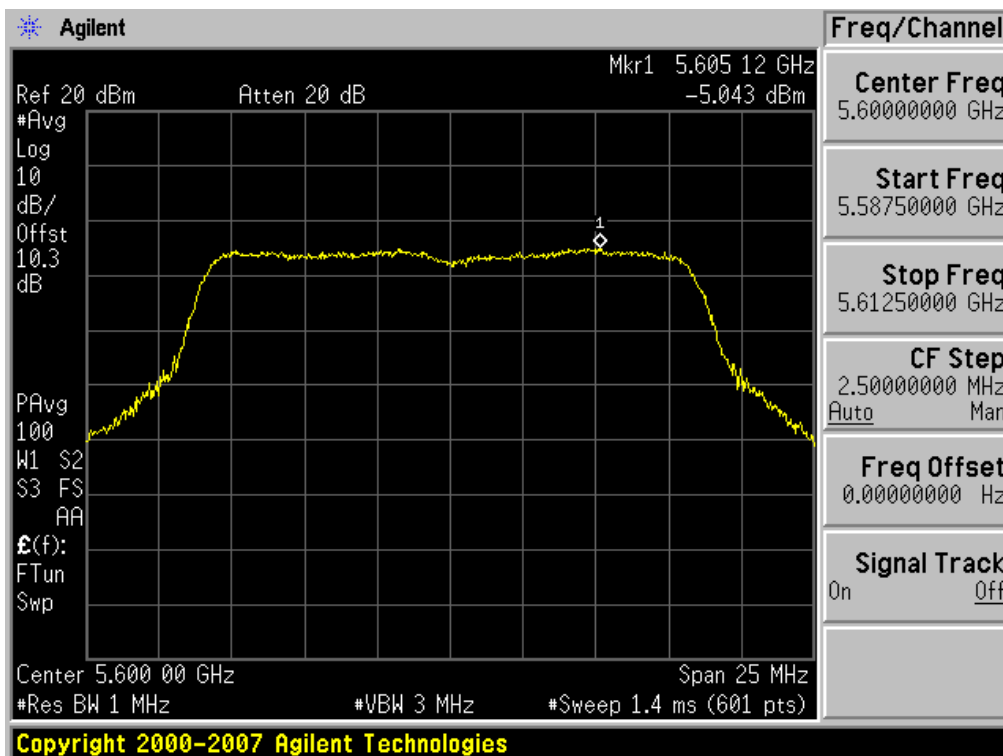


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

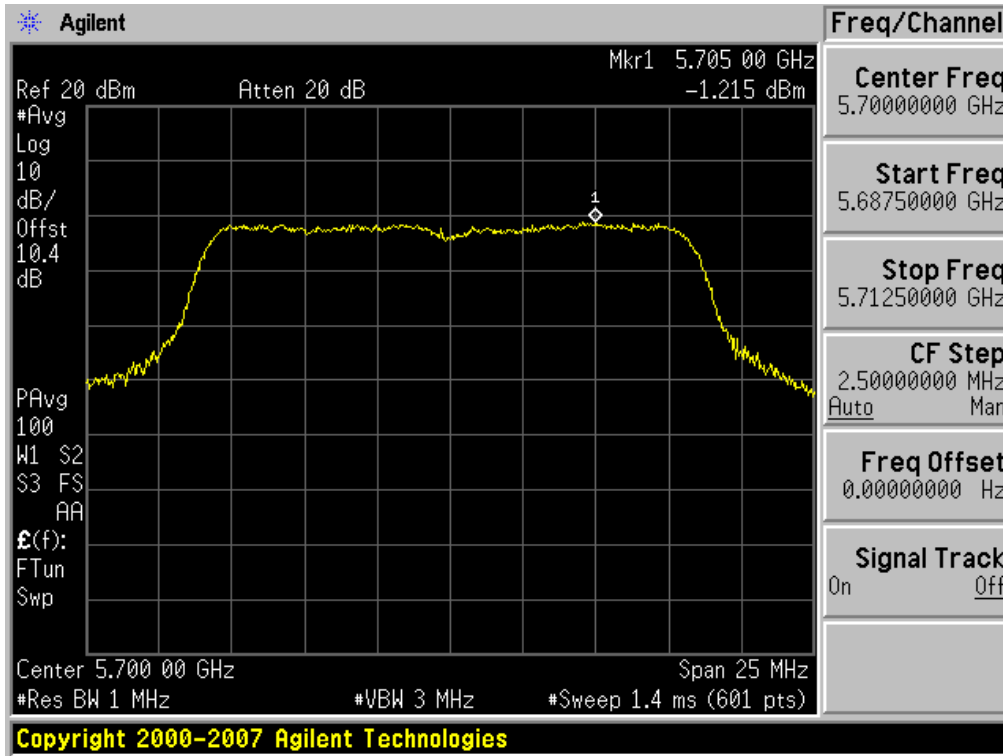
Power Spectral Density (802.11a-CH 100)



Power Spectral Density (802.11a-CH 120)

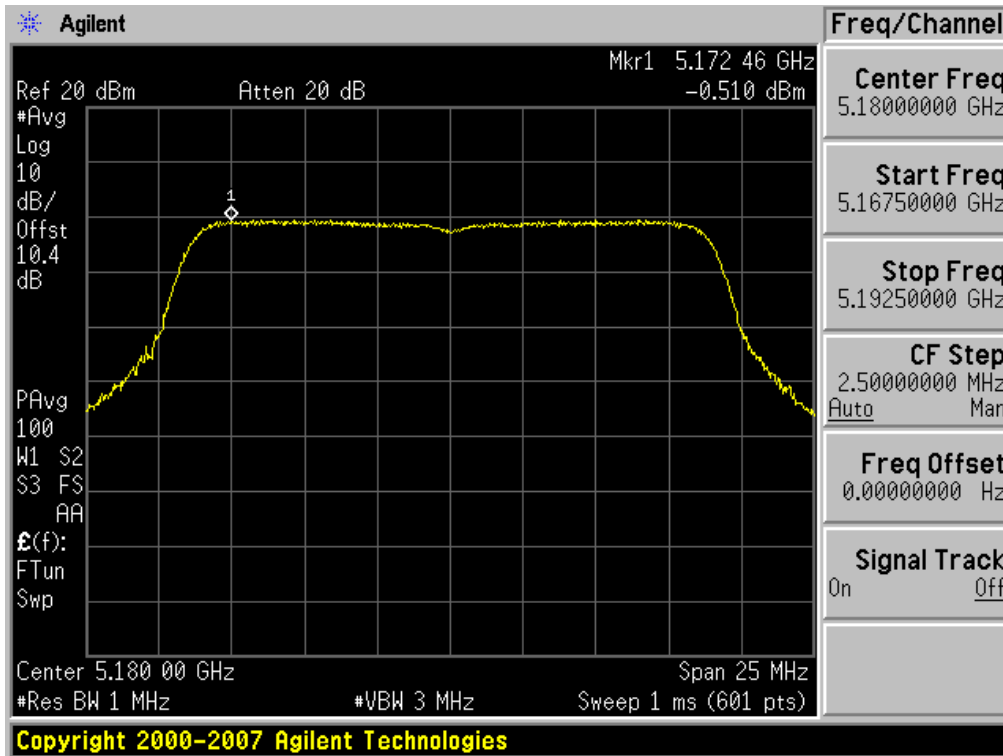


Power Spectral Density (802.11a-CH 140)

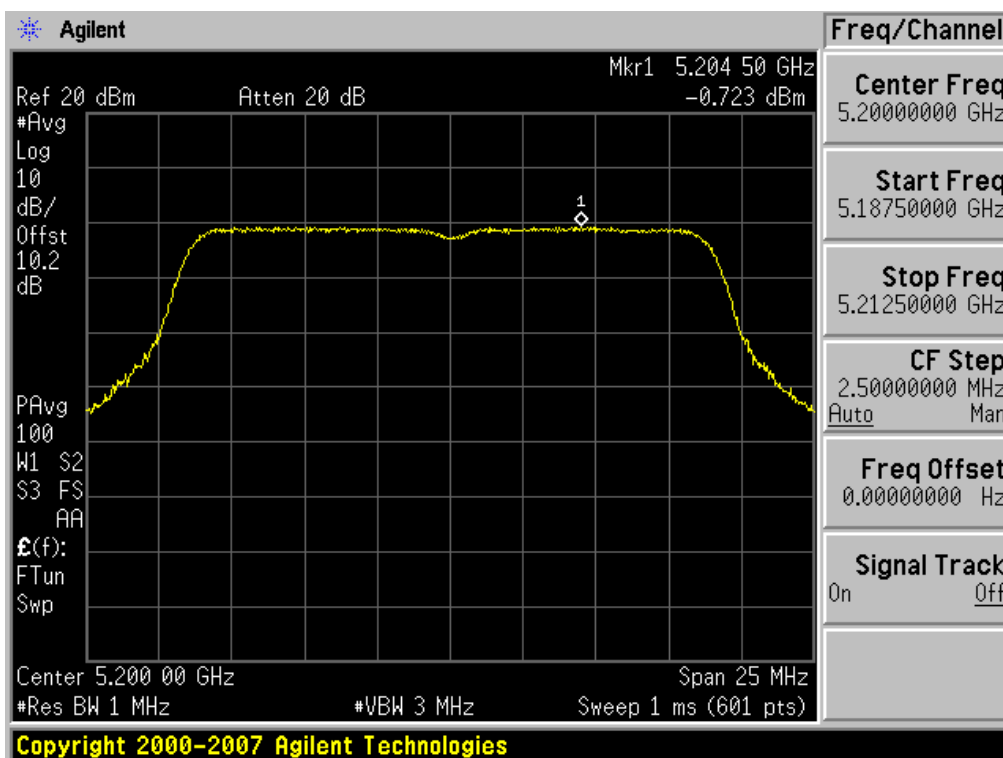


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

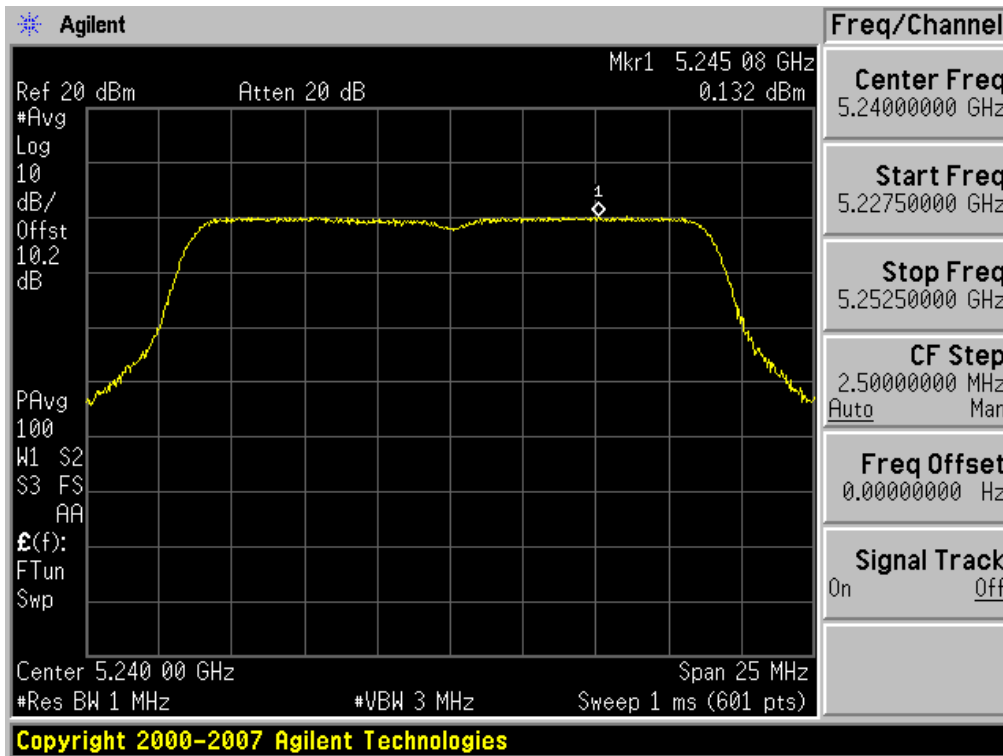
Power Spectral Density (802.11n-CH 36)



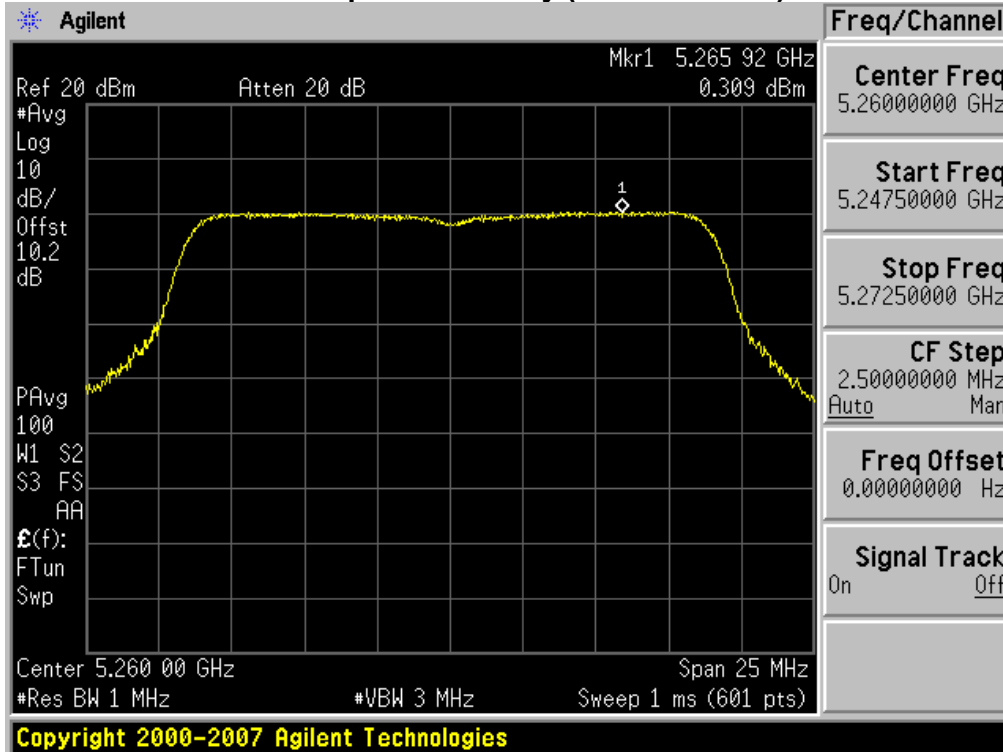
Power Spectral Density (802.11n-CH 40)



Power Spectral Density (802.11n-CH 48)

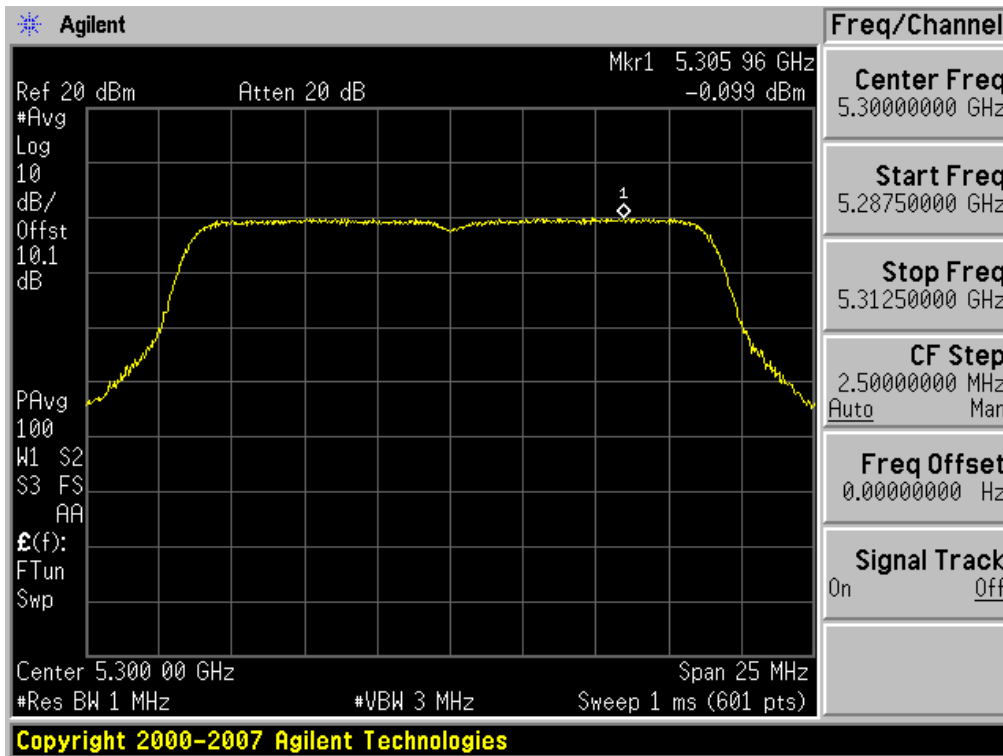


Power Spectral Density (802.11n-CH 52)

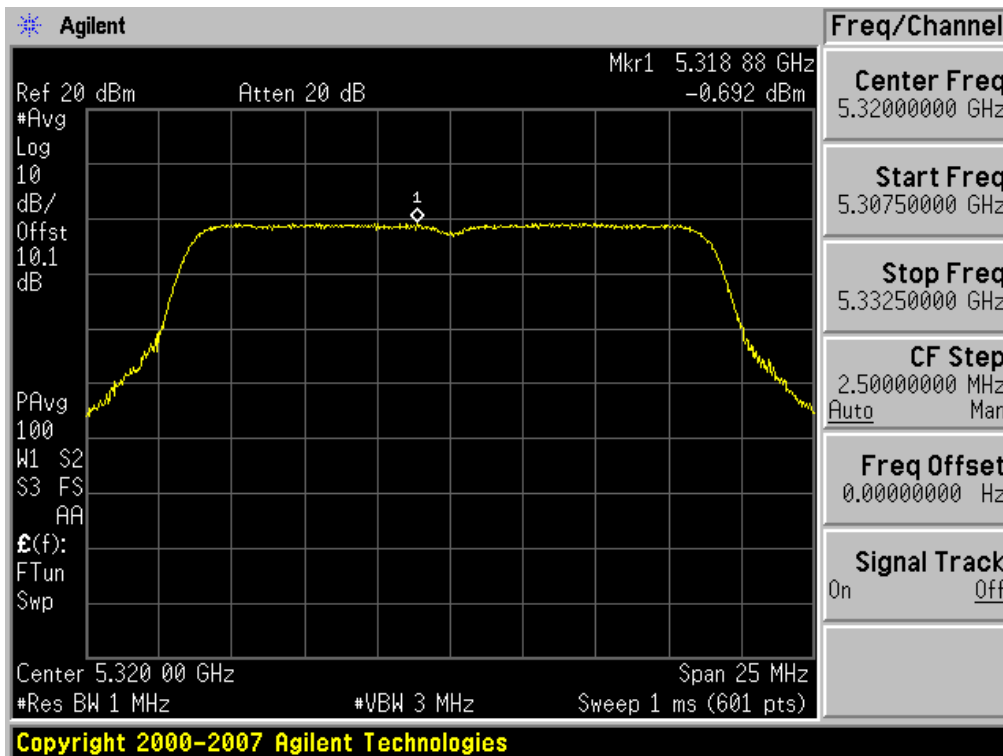


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

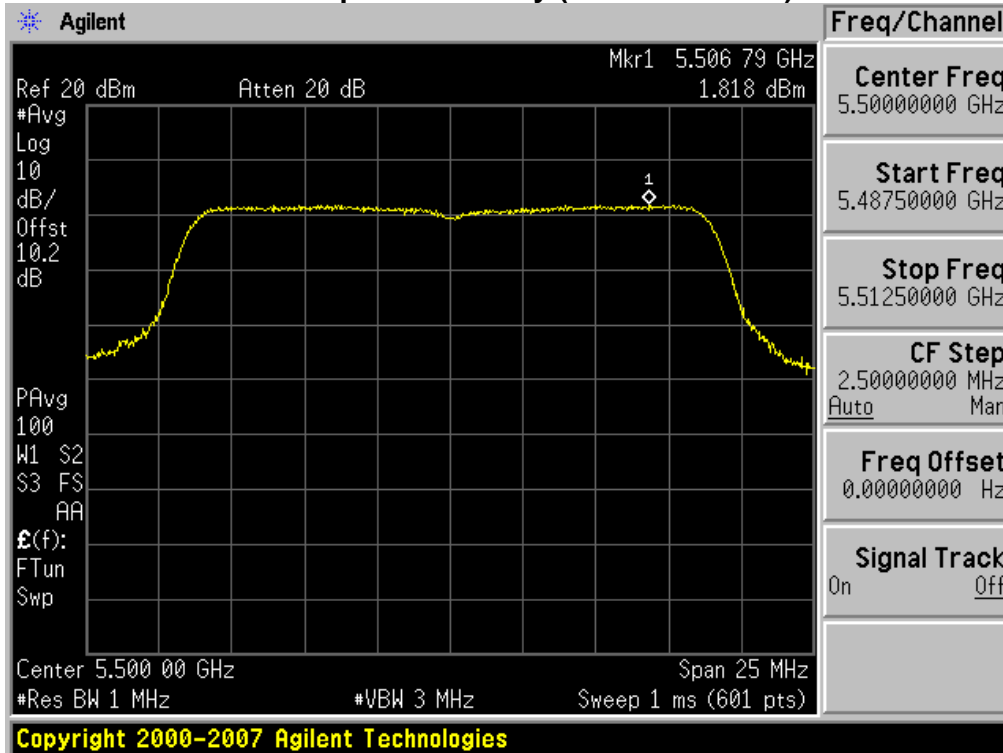
Power Spectral Density (802.11n-CH 60)



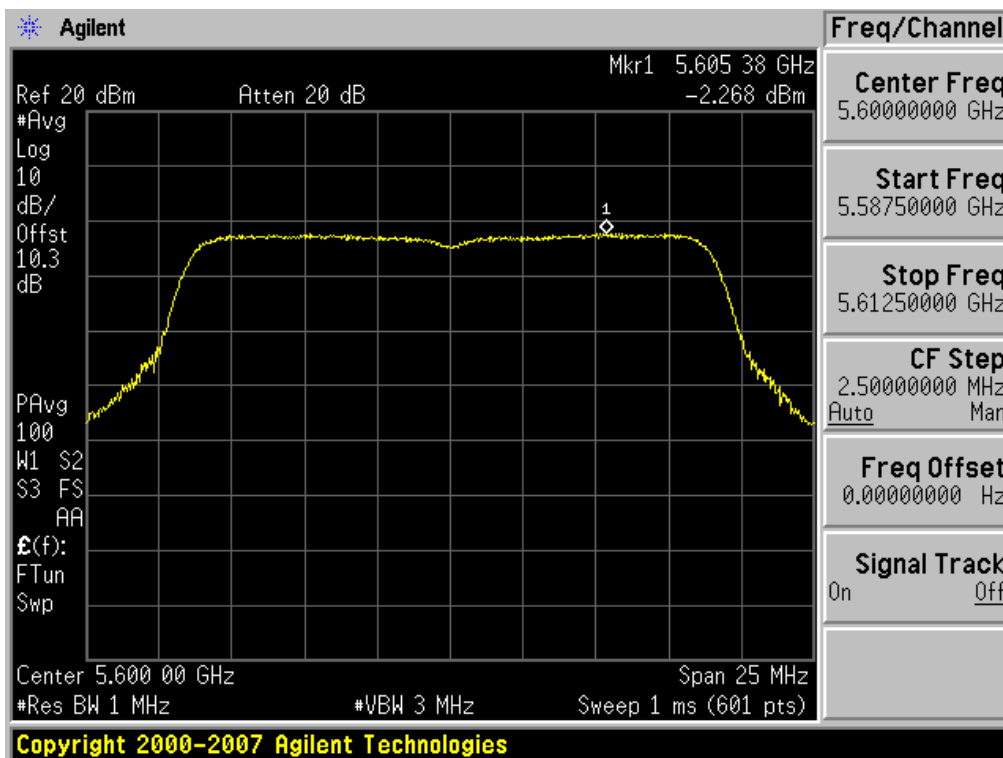
Power Spectral Density (802.11n-CH 64)



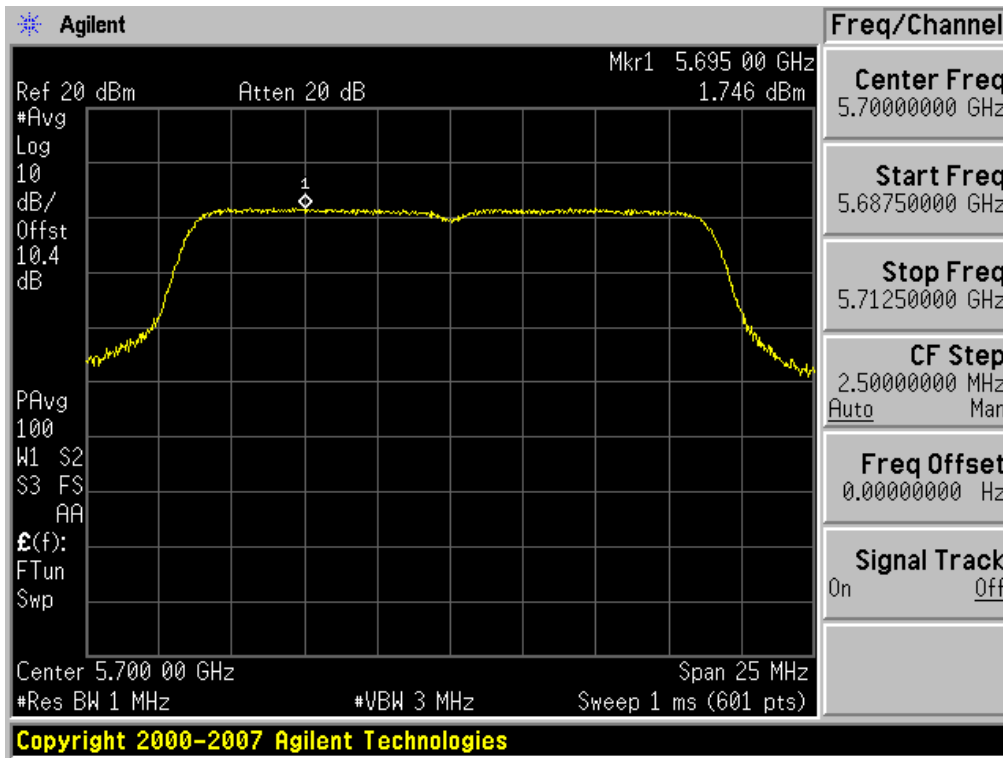
Power Spectral Density (802.11n-CH 100)



Power Spectral Density (802.11n-CH 120)



Power Spectral Density (802.11n-CH 140)



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

Power Spectral Density (802.11n-CH 38)



Power Spectral Density (802.11n-CH 46)



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Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Power Spectral Density (802.11n-CH 54)



Power Spectral Density (802.11n-CH 62)

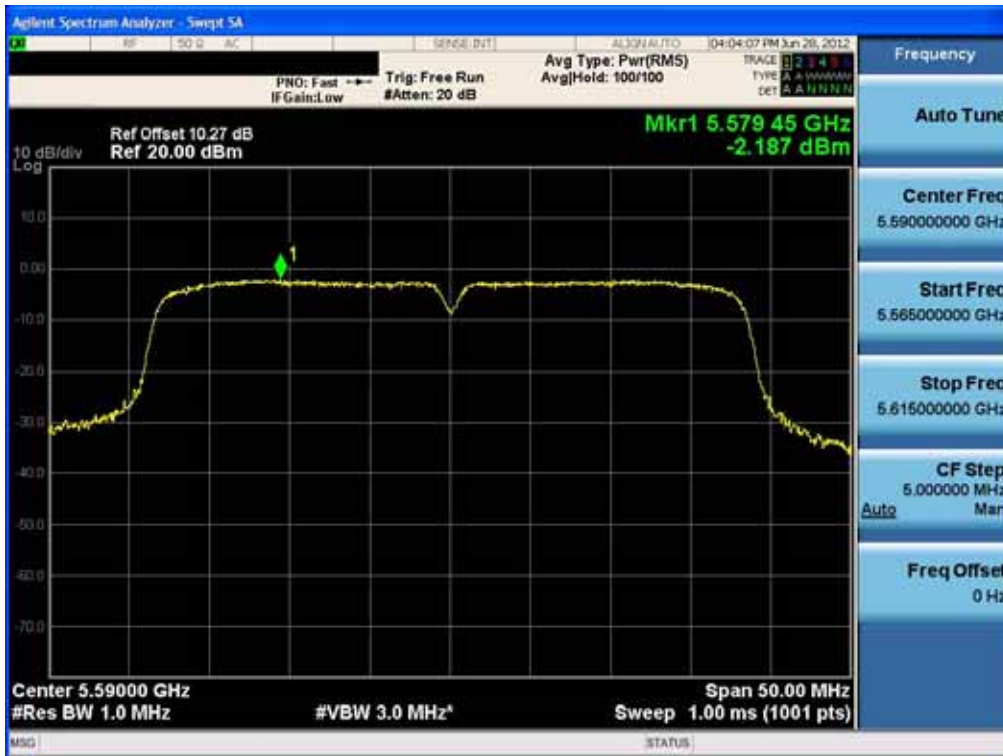


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Power Spectral Density (802.11n-CH 102)



Power Spectral Density (802.11n-CH 118)



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Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Power Spectral Density (802.11n-CH 134)

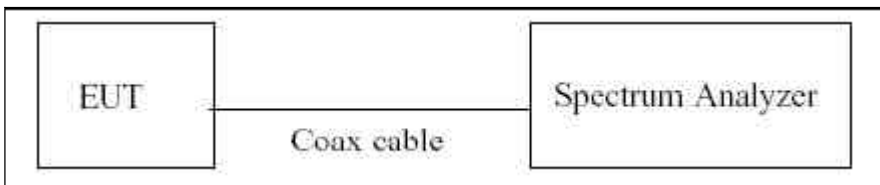


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

8.4 PEAK EXCURSION RATIO

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in the continuous transmission mode at the appropriate center frequencies. The largest permissible difference between the modulation envelope(measured using a peak hold function) and the maximum conducted output power 13 dB/MHz.

■ TEST CONFIGURATION



■ TEST PROCEDURE

We tested according to KDB 789033(issued 03/05/2012).

The spectrum analyzer is set to :

1. Span = Set the span to view the entire emission bandwidth.
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Sweep = Auto couple
5. Detector Mode = Peak
6. Trace Mode = Max hold
7. Use the procedure to measure the PPSD
8. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

Note :

1. The PSD 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 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

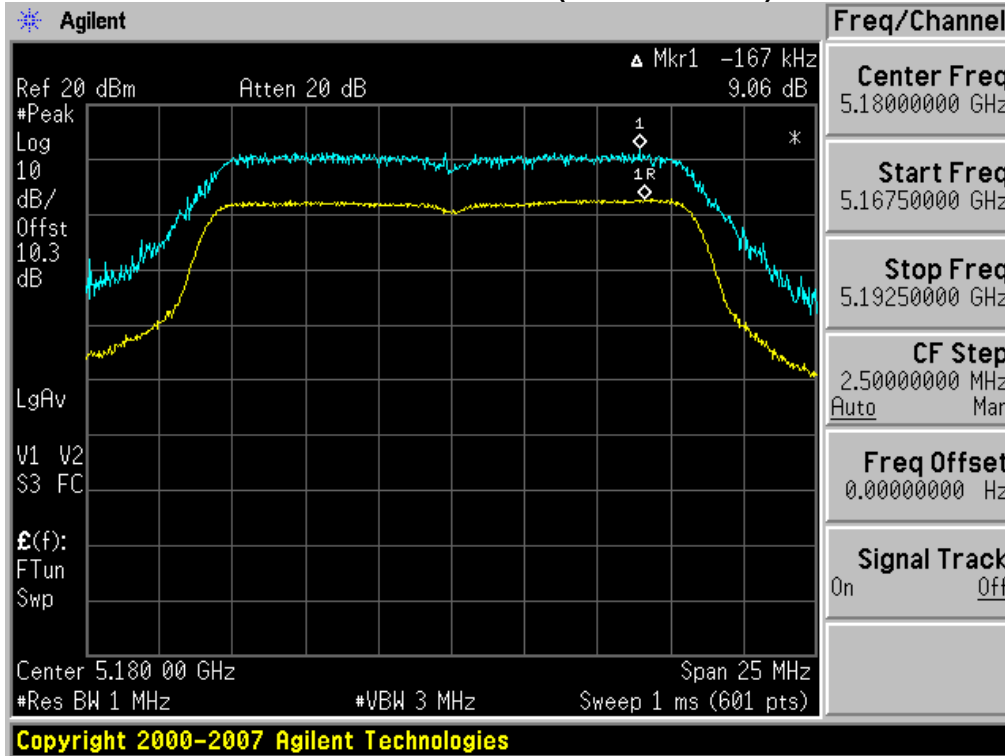
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.26
	5200	10.18
	5240	10.19
UNII 2	5260	10.18
	5300	10.14
	5320	10.09
UNII 3	5500	10.20
	5600	10.27
	5700	10.40

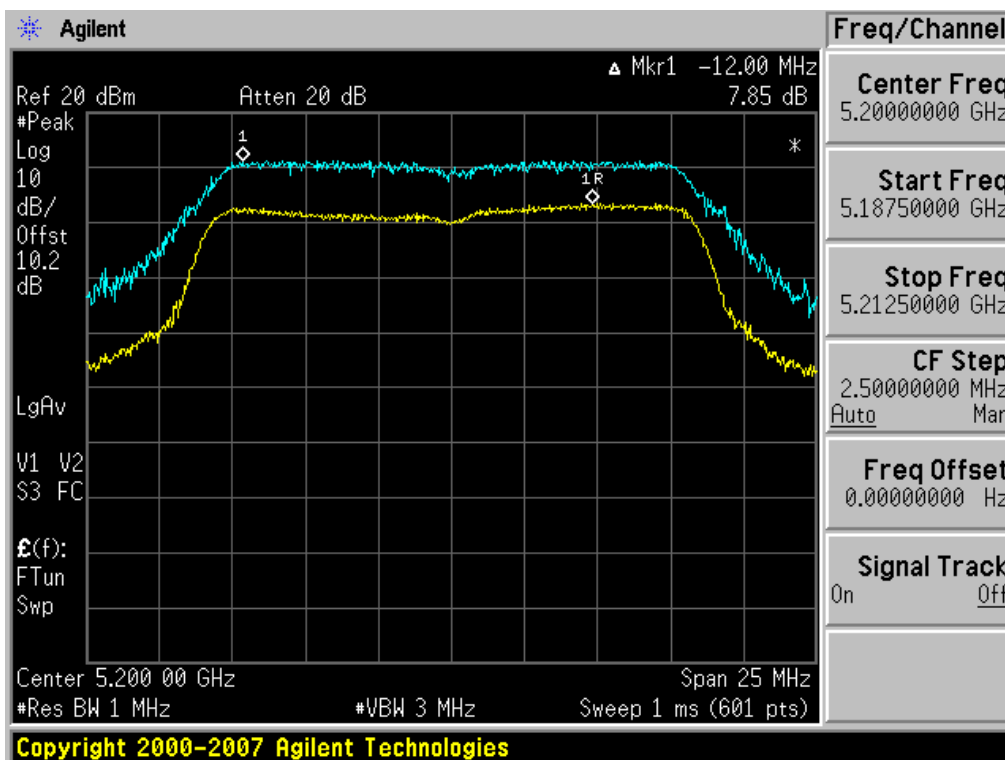
(Actual value of loss for the attenuator and cable combination)

■ RESULT PLOTS

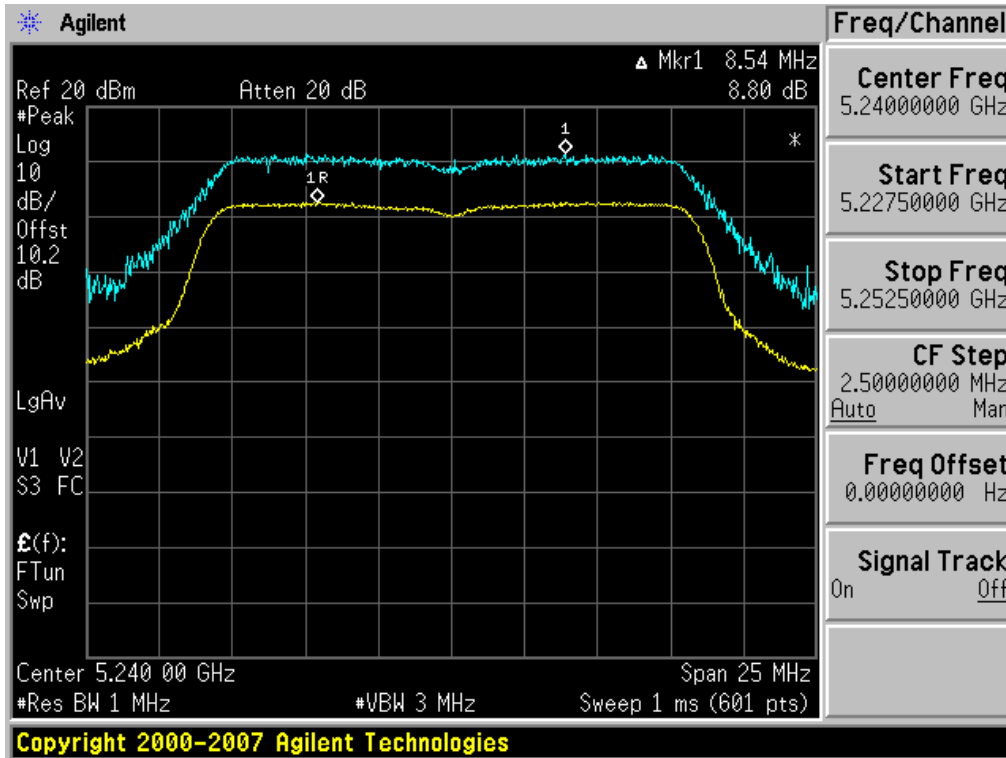
Peak Excursion Ratio (802.11a-CH 36)



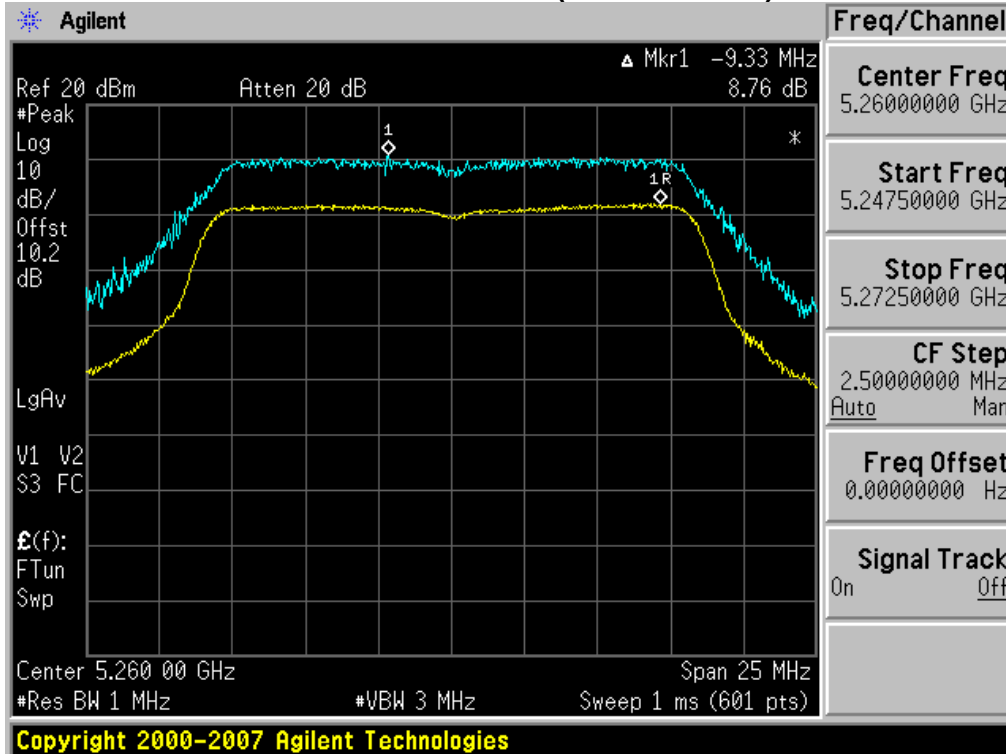
Peak Excursion Ratio (802.11a-CH 40)



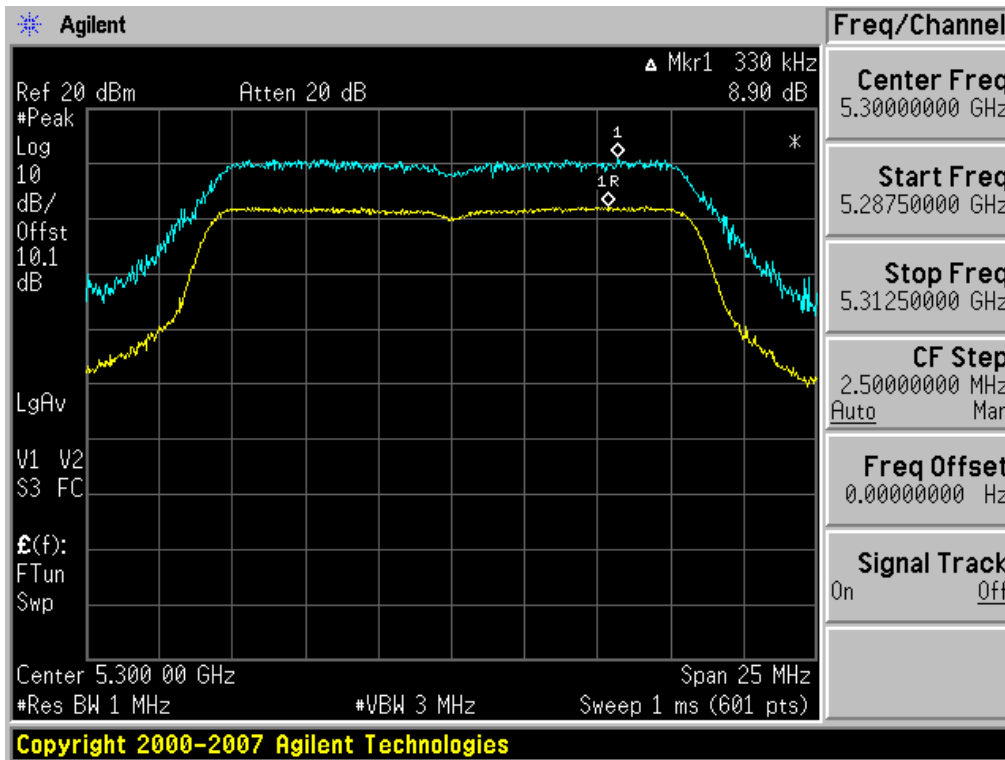
Peak Excursion Ratio (802.11a-CH 48)



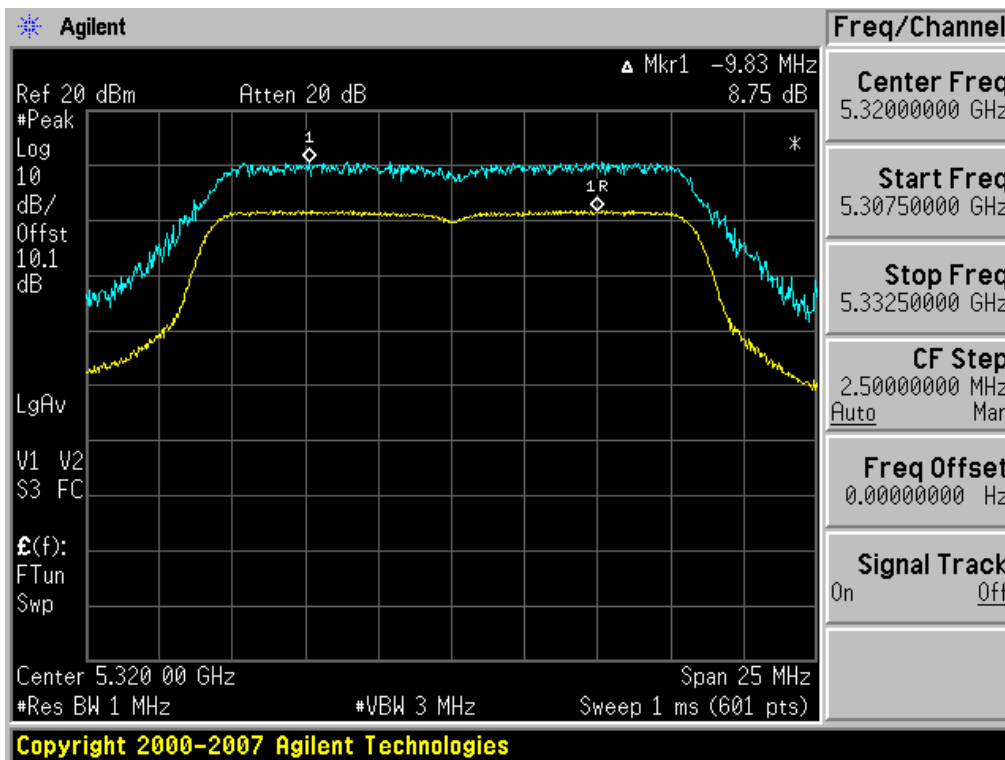
Peak Excursion Ratio (802.11a-CH 52)



Peak Excursion Ratio (802.11a-CH 60)

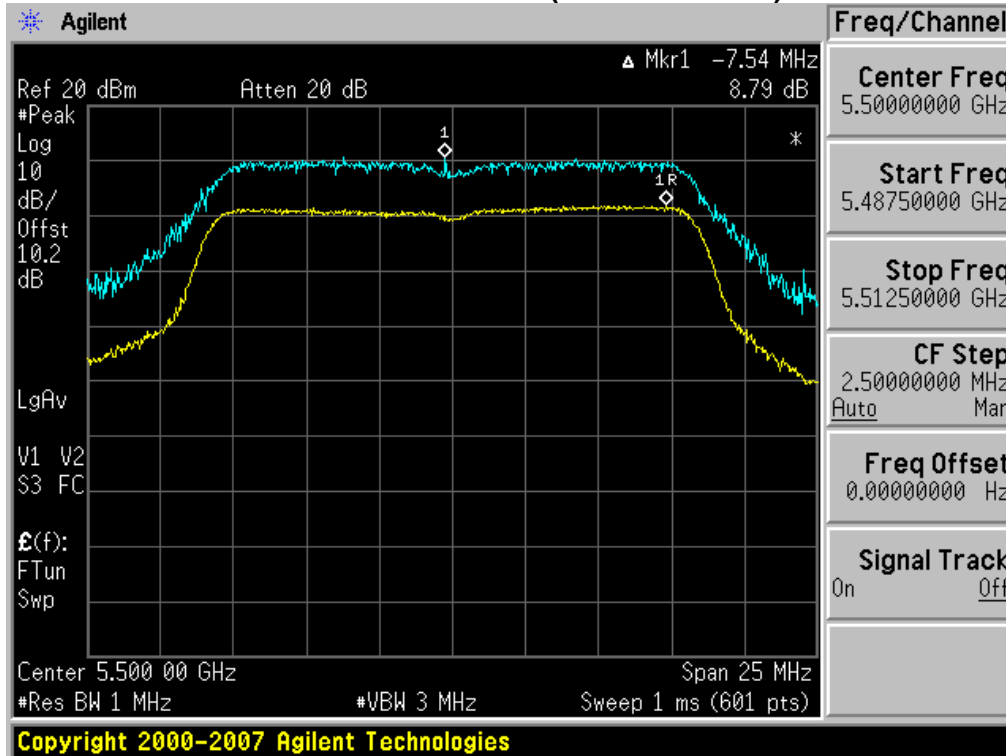


Peak Excursion Ratio (802.11a-CH 64)

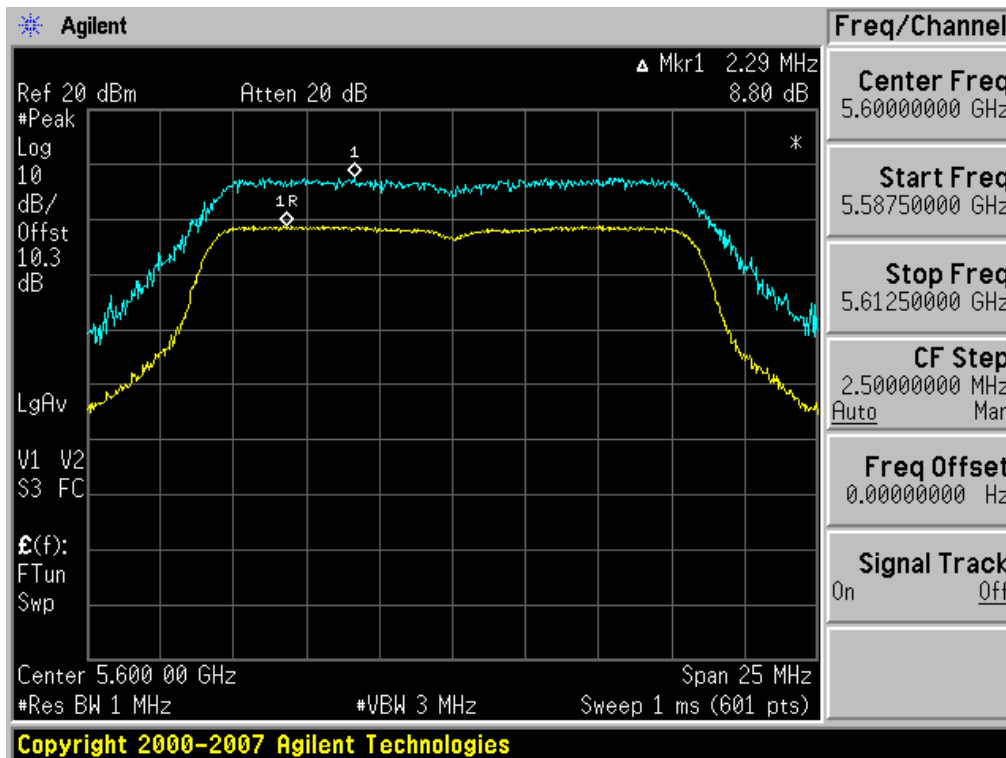


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

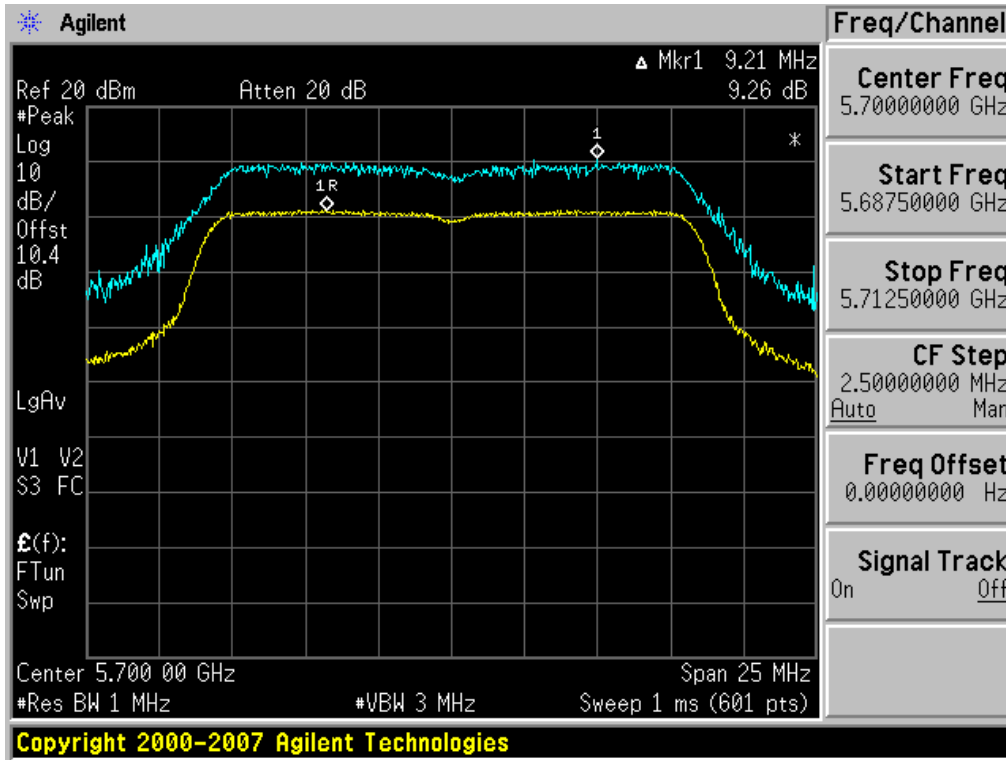
Peak Excursion Ratio (802.11a-CH 100)



Peak Excursion Ratio (802.11a-CH 120)

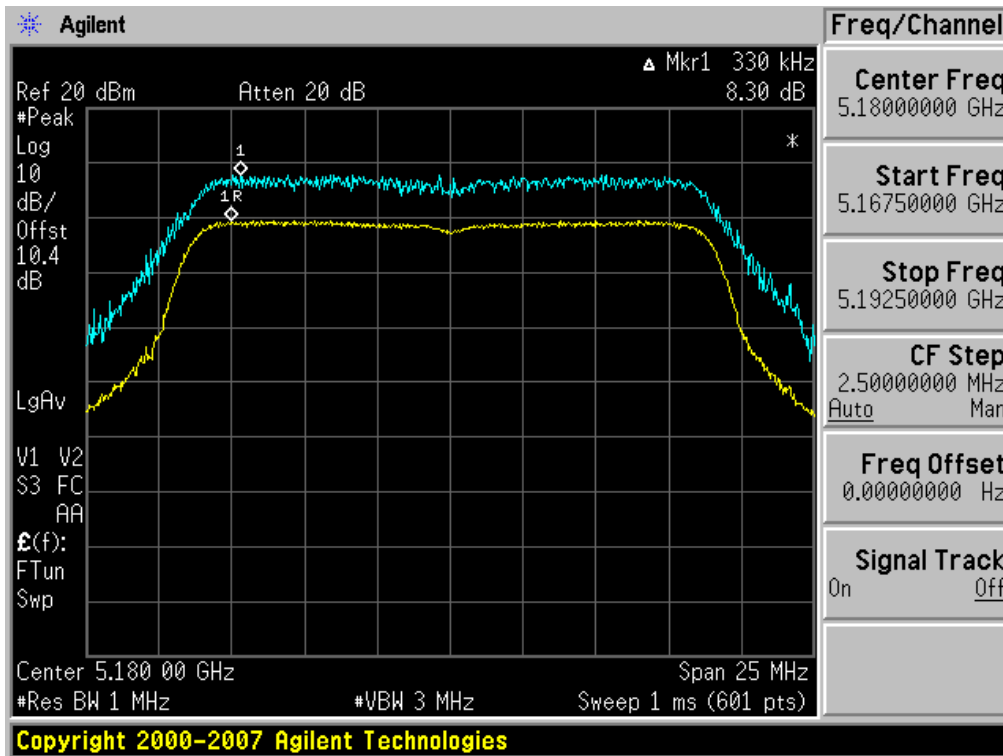


Peak Excursion Ratio (802.11a-CH 140)

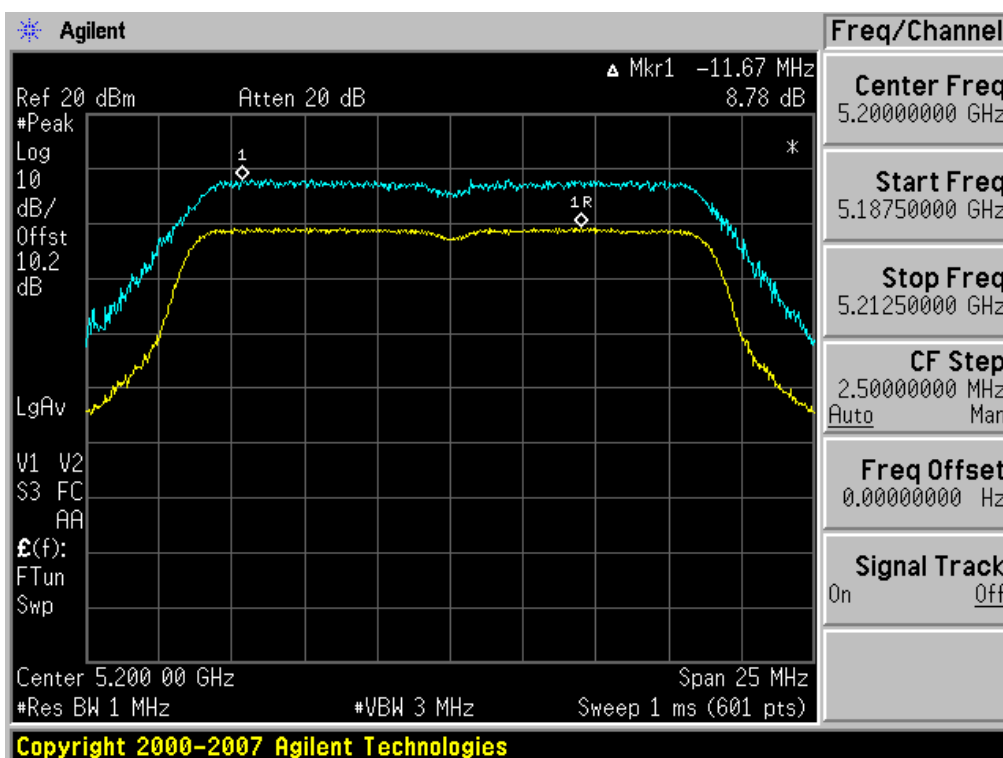


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

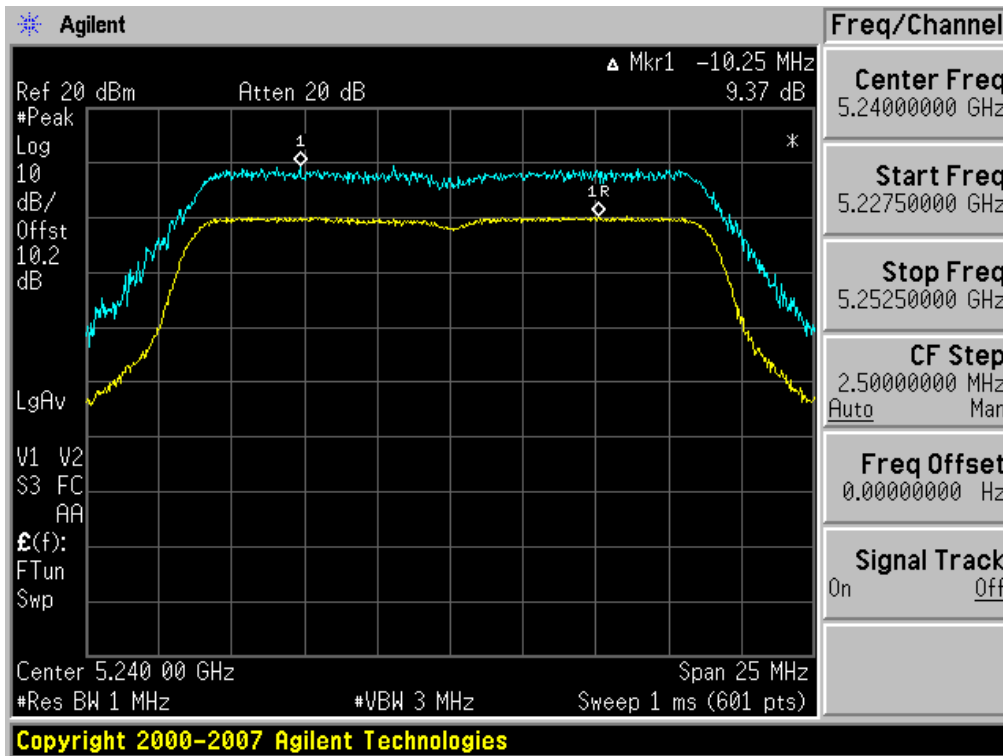
Peak Excursion Ratio (802.11n-CH 36)



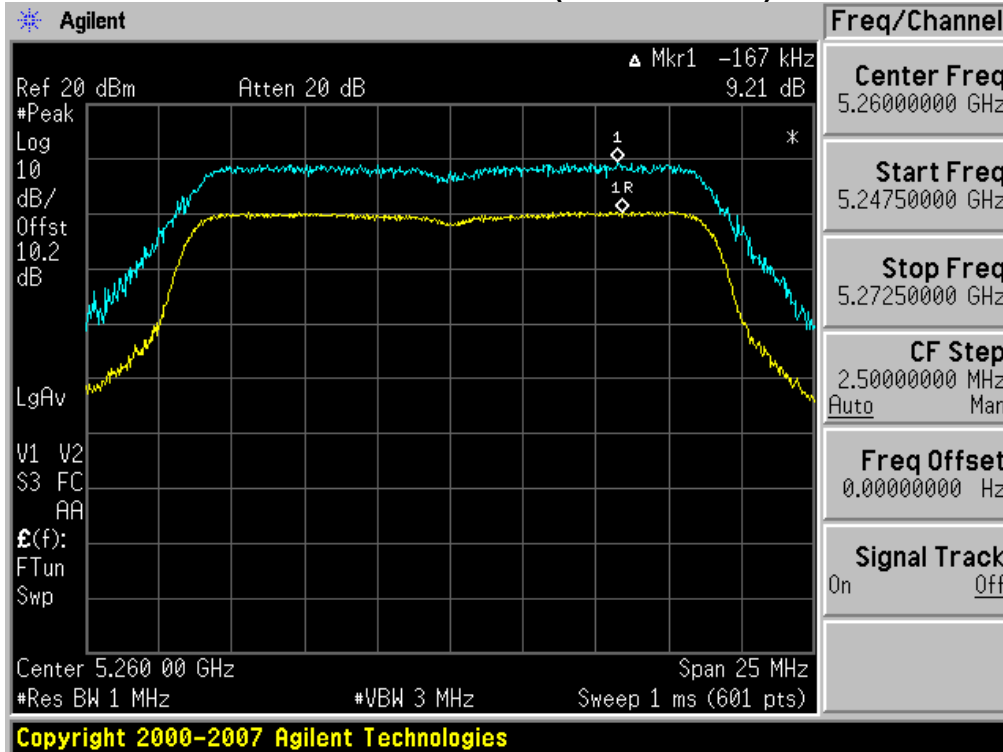
Peak Excursion Ratio (802.11n-CH 40)



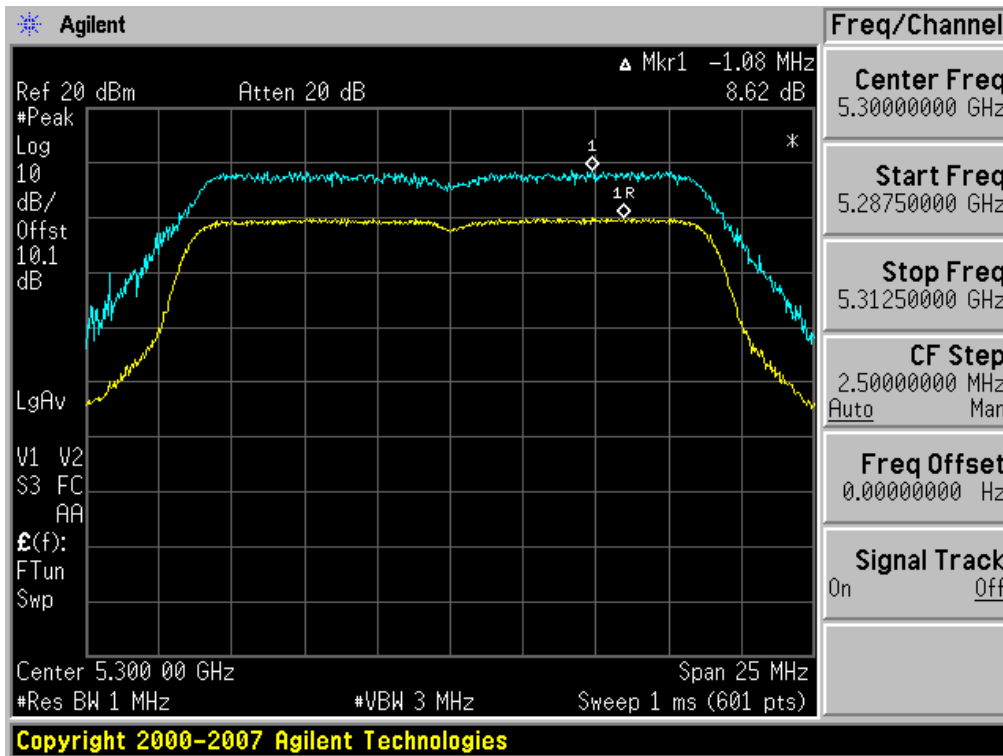
Peak Excursion Ratio (802.11n-CH 48)



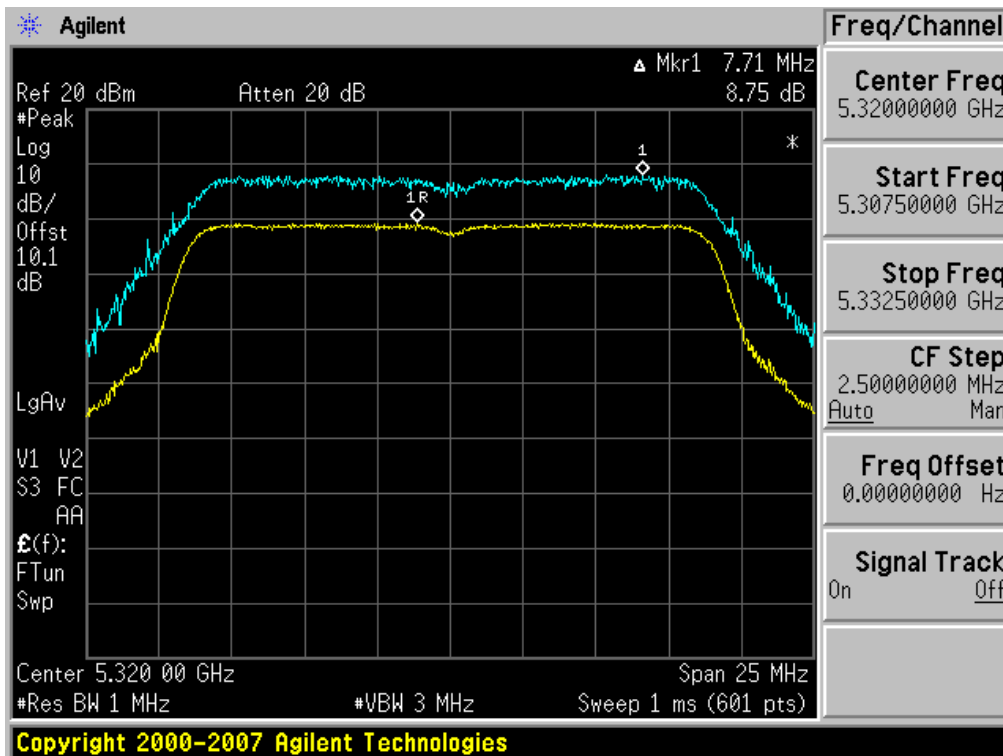
Peak Excursion Ratio (802.11n-CH 52)



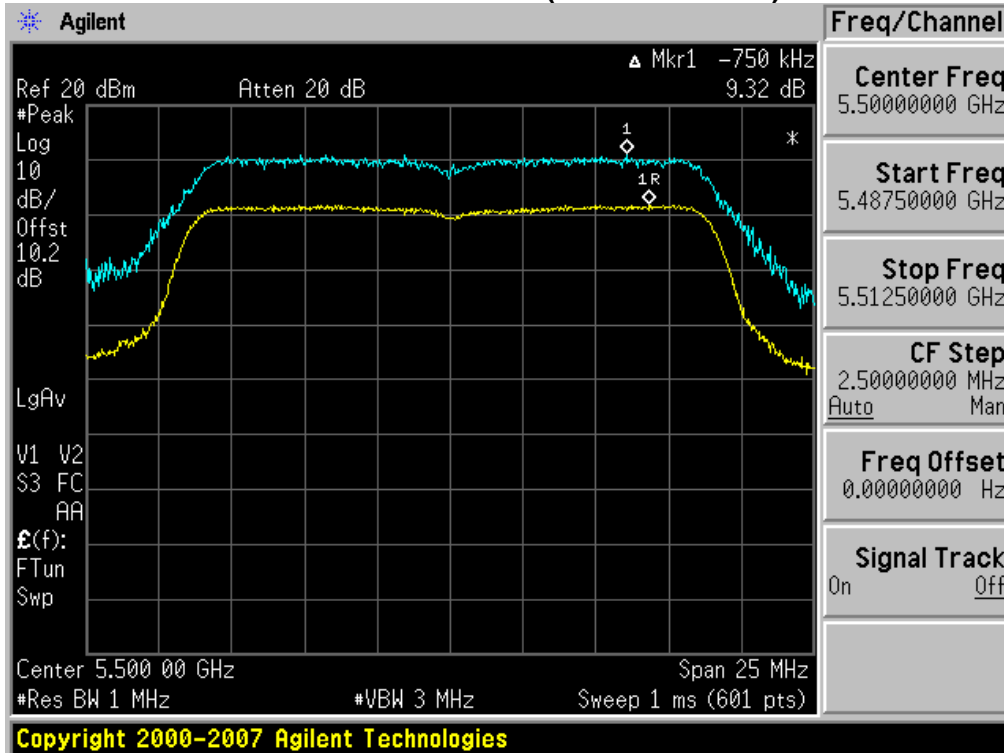
Peak Excursion Ratio (802.11n-CH 60)



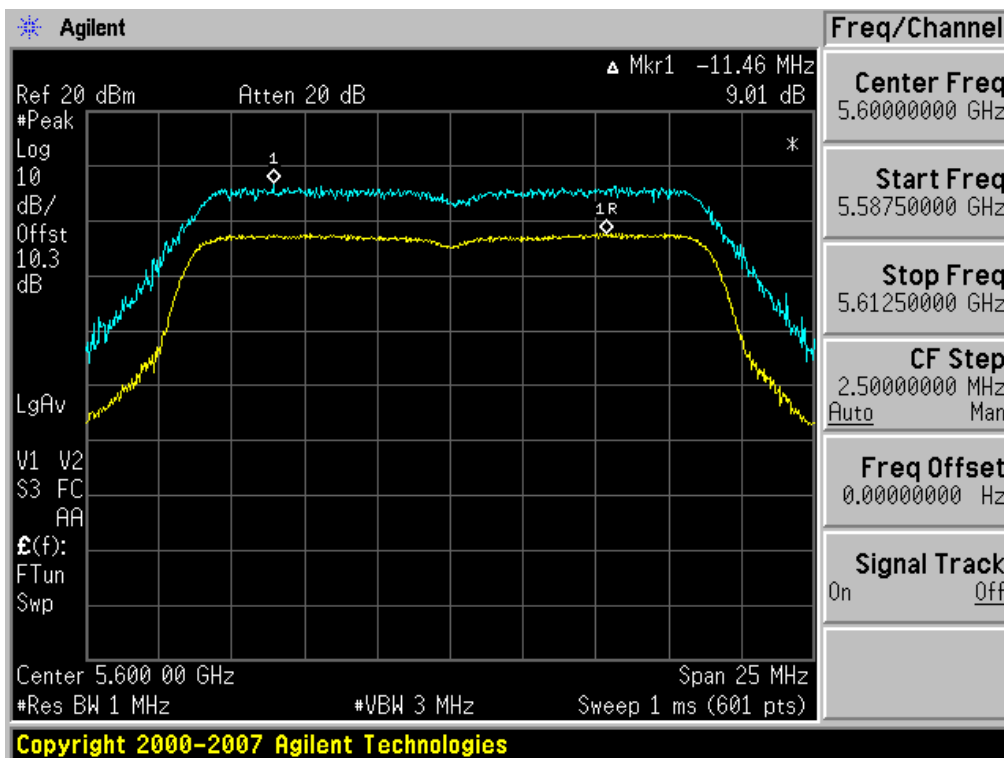
Peak Excursion Ratio (802.11n-CH 64)



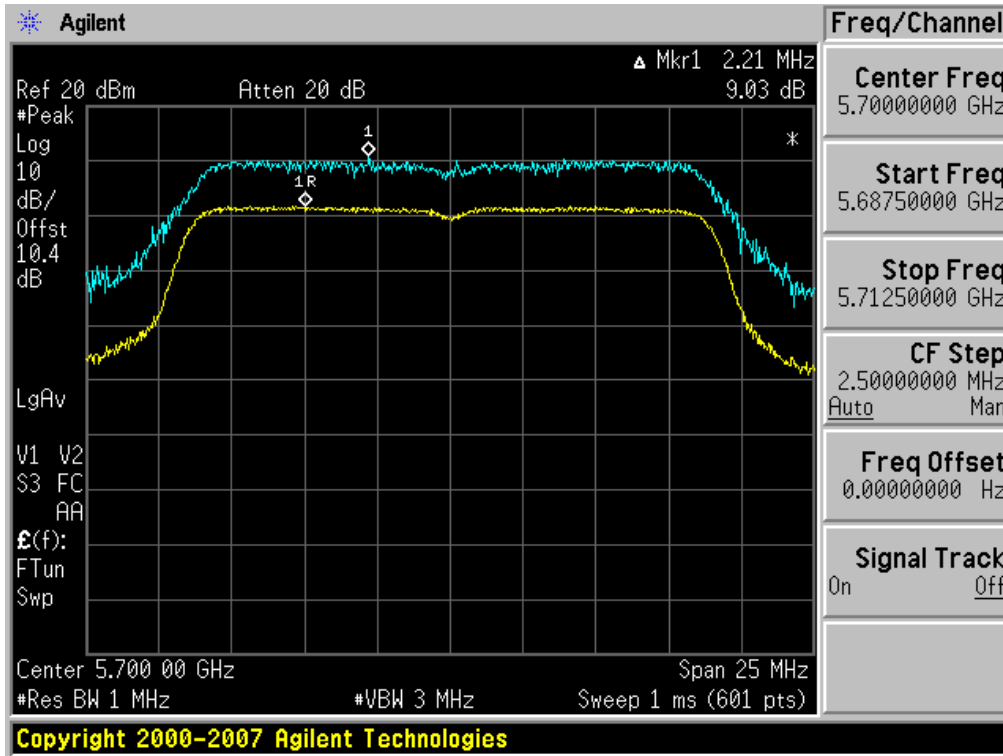
Peak Excursion Ratio (802.11n-CH 100)



Peak Excursion Ratio (802.11n-CH 120)

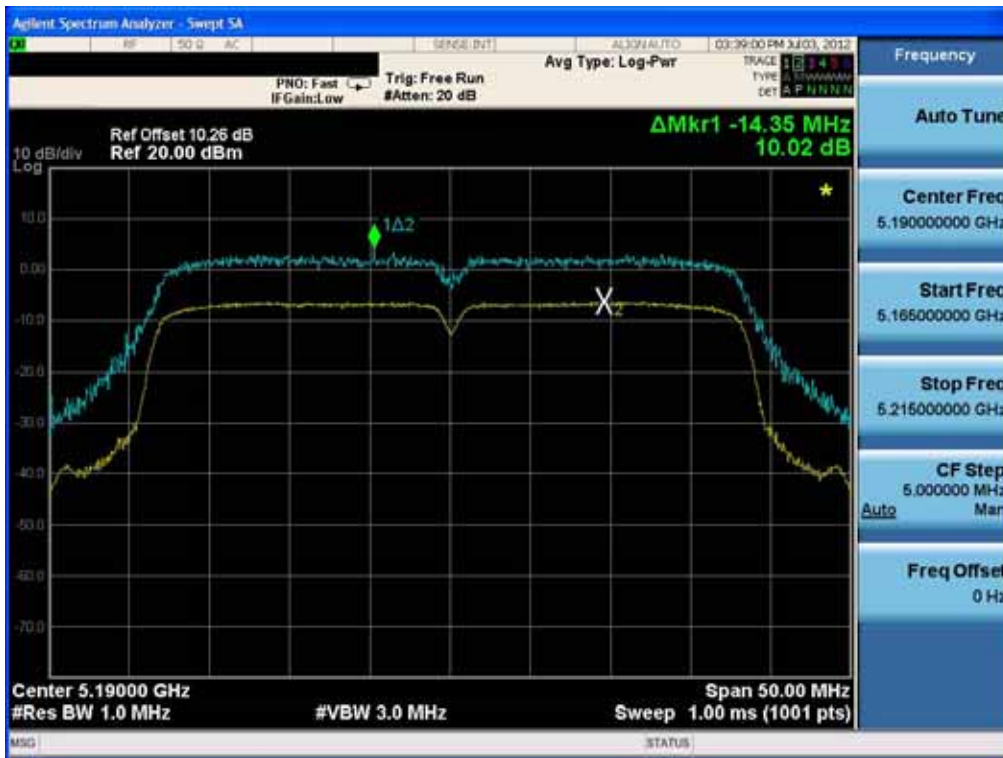


Peak Excursion Ratio (802.11n-CH 140)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Peak Excursion Ratio (802.11n-CH 38)



Peak Excursion Ratio (802.11n-CH 46)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Peak Excursion Ratio (802.11n-CH 54)

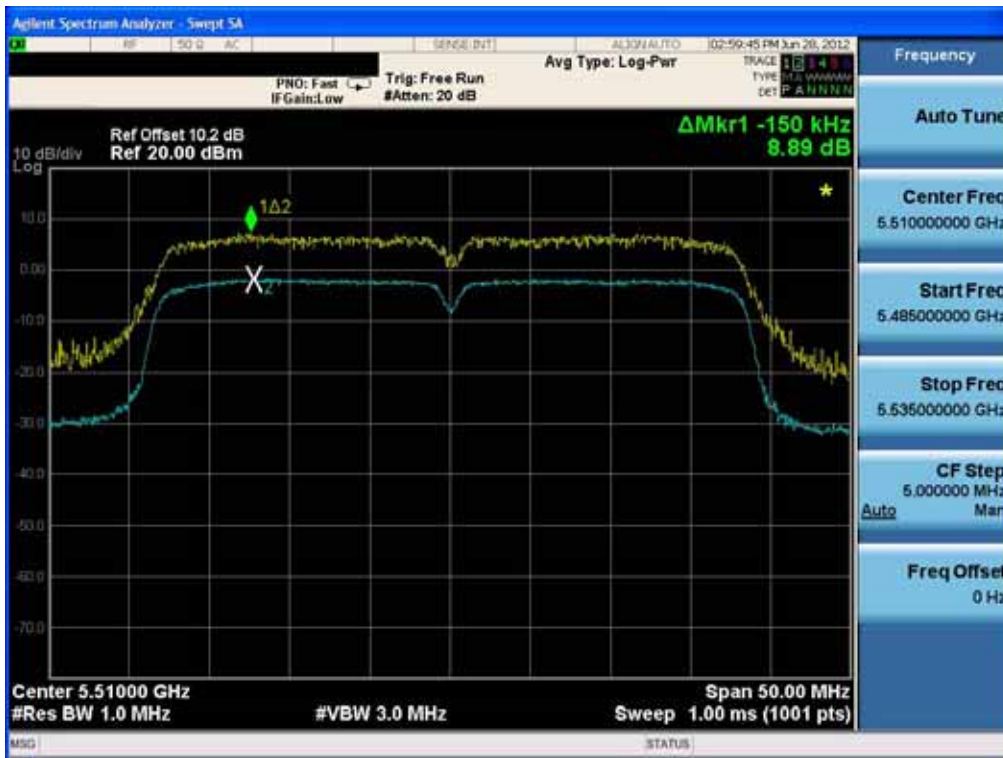


Peak Excursion Ratio (802.11n-CH 62)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Peak Excursion Ratio (802.11n-CH 102)



Peak Excursion Ratio (802.11n-CH 118)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Peak Excursion Ratio (802.11n-CH 134)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

8.5 FREQUENCY STABILITY.

The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

OPERATING FREQUENCY: 5,200,000,000 Hz
 CHANNEL: 40
 REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 200 049	49.4
100%		-30	5 199 949	-51.2
100%		-20	5 200 053	52.9
100%		-10	5 200 045	45.2
100%		0	5 199 939	-61.3
100%		+10	5 200 037	37.4
100%		+30	5 200 058	57.6
100%		+40	5 199 939	-60.6
100%		+50	5 199 942	-58.4
115%		3.3	+20	5 200 057
Batt. Endpoint	4.7	+20	5 200 057	57.1

OPERATING FREQUENCY: 5,300,000,000 Hz
 CHANNEL: 60
 REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 300 050	50.4
100%		-30	5 300 043	42.9
100%		-20	5 299 946	-53.6
100%		-10	5 300 058	58.1
100%		0	5 300 062	62.4
100%		+10	5 299 938	-62.3
100%		+30	5 300 044	43.9
100%		+40	5 300 053	53.3
100%		+50	5 300 041	41.0
115%		3.3	+20	5 299 945
Batt. Endpoint	4.7	+20	5 300 062	61.6

OPERATING FREQUENCY: 5,600,000,000 Hz
 CHANNEL: 120
 REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 600 053	53.1
100%		-30	5 599 945	-55.0
100%		-20	5 599 942	-57.6
100%		-10	5 600 047	47.3
100%		0	5 599 938	-61.8
100%		+10	5 600 040	39.6
100%		+30	5 600 048	48.4
100%		+40	5 599 943	-57.2
100%		+50	5 600 038	38.1
115%		3.3	+20	5 599 940
Batt. Endpoint	4.7	+20	5 600 056	56.0

8.6 RADIATED MEASUREMENT.

8.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209, §15.407

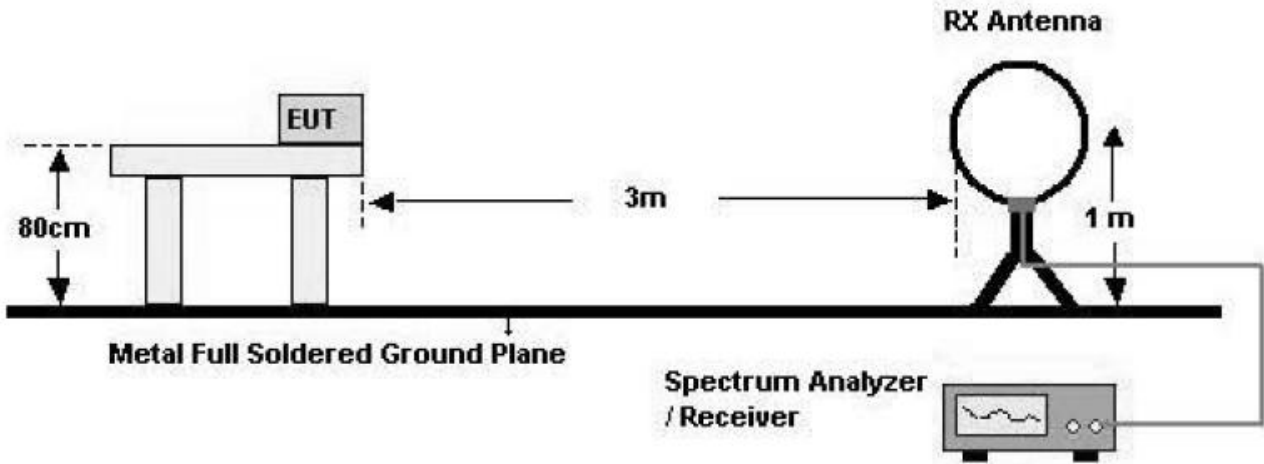
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

■ §15.407, KDB 789033

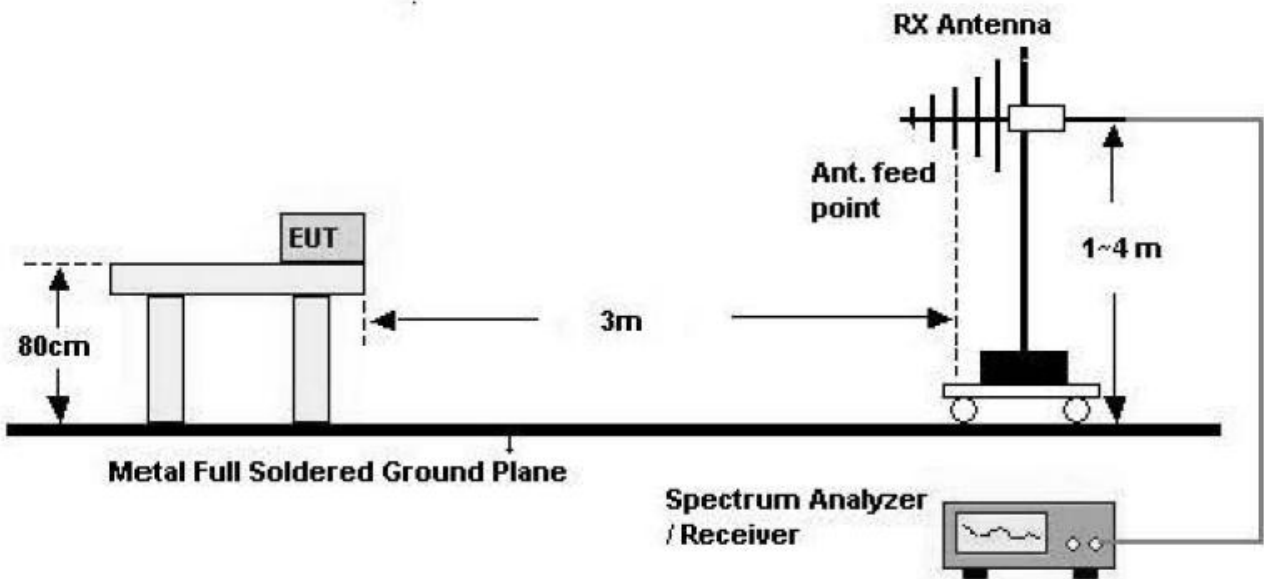
All harmonics that do not lie in a restricted band are subject to a peak limit of -27 dBm/MHz. At a distance of 3 meters the field strength limit in dBµV/m can be determined by adding a “conversion” factor of 95.2 dB to the EIRP limit of -27 dBm/MHz to obtain the limit for out of band spurious emissions of 68.2 dBµV/m.

Test Configuration

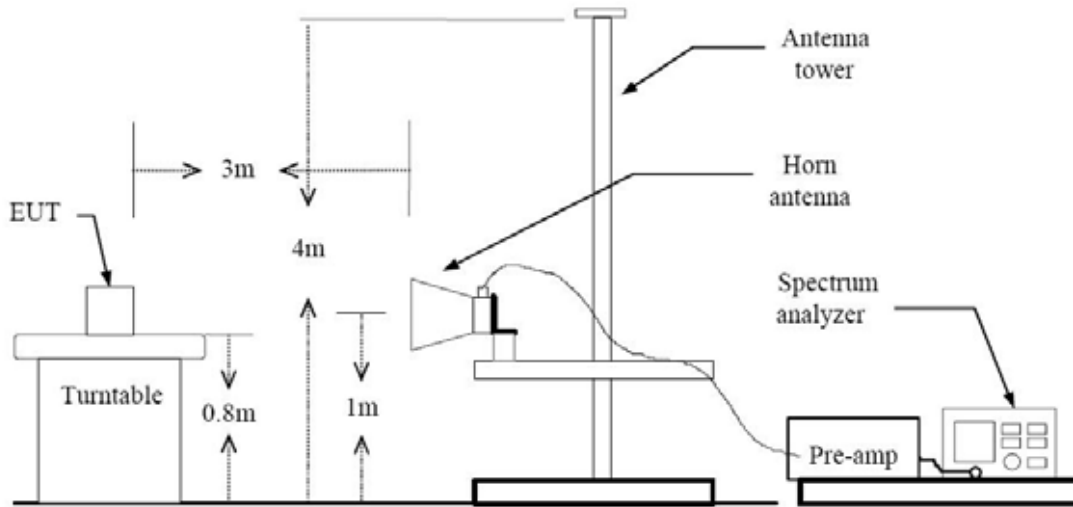
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090	

TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



Above 1 GHz

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.96	9.30	V	53.26	68.2	14.94	PK
10360	35.39	9.30	V	44.69	54.0	9.31	AV
15540	44.85	15.04	V	59.89	74.0	14.11	PK
15540	30.80	15.04	V	45.84	54.0	8.16	AV
10360	45.21	9.30	H	54.51	68.2	13.69	PK
10360	39.63	9.30	H	48.93	54.0	5.07	AV
15540	45.50	15.04	H	60.54	74.0	13.46	PK
15540	30.84	15.04	H	45.88	54.0	8.12	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Band : UNII 1
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5200 MHz
 Channel No. 40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	42.19	9.60	V	51.79	68.2	16.41	PK
10400	34.08	9.60	V	43.68	54.0	10.32	AV
15600	44.24	14.81	V	59.05	74.0	14.95	PK
15600	30.94	14.81	V	45.75	54.0	8.25	AV
10400	44.40	9.60	H	54.00	68.2	14.20	PK
10400	38.28	9.60	H	47.88	54.0	6.12	AV
15600	45.62	14.81	H	60.43	74.0	13.57	PK
15600	30.92	14.81	H	45.73	54.0	8.27	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	43.12	9.83	V	52.95	68.2	15.25	PK
10480	35.58	9.83	V	45.41	54.0	8.59	AV
15720	46.71	14.83	V	61.54	74.0	12.46	PK
15720	32.18	14.83	V	47.01	54.0	6.99	AV
10480	44.48	9.83	H	54.31	68.2	13.89	PK
10480	38.99	9.83	H	48.82	54.0	5.18	AV
15720	46.64	14.83	H	61.47	74.0	12.53	PK
15720	32.17	14.83	H	47.00	54.0	7.00	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (i.e.: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	43.18	9.43	V	52.61	68.2	15.59	PK
10380	34.71	9.43	V	44.14	54.0	9.86	AV
15570	44.68	14.93	V	59.61	74.0	14.39	PK
15570	30.86	14.93	V	45.79	54.0	8.21	AV
10380	44.40	9.43	H	53.83	68.2	14.37	PK
10380	37.77	9.43	H	47.20	54.0	6.80	AV
15570	44.36	14.93	H	59.29	74.0	14.71	PK
15570	30.91	14.93	H	45.84	54.0	8.16	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	42.64	9.72	V	52.36	68.2	15.84	PK
10460	34.20	9.72	V	43.92	54.0	10.08	AV
15690	46.70	14.81	V	61.51	74.0	12.49	PK
15690	32.04	14.81	V	46.85	54.0	7.15	AV
10460	43.97	9.72	H	53.69	68.2	14.51	PK
10460	38.07	9.72	H	47.79	54.0	6.21	AV
15690	46.03	14.81	H	60.84	74.0	13.16	PK
15690	32.02	14.81	H	46.83	54.0	7.17	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : UNII 2
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5260 MHz
 Channel No. 52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	44.40	9.86	V	54.26	68.2	13.94	PK
10520	37.24	9.86	V	47.10	54.0	6.90	AV
15780	45.14	14.94	V	60.08	74.0	13.92	PK
15780	32.05	14.94	V	46.99	54.0	7.01	AV
10520	45.97	9.86	H	55.83	68.2	12.37	PK
10520	40.51	9.86	H	50.37	54.0	3.63	AV
15780	46.00	14.94	H	60.94	74.0	13.06	PK
15780	32.04	14.94	H	46.98	54.0	7.02	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	44.19	9.35	V	53.54	68.2	14.66	PK
10600	36.93	9.35	V	46.28	54.0	7.72	AV
15900	44.05	14.89	V	58.94	74.0	15.06	PK
15900	30.46	14.89	V	45.35	54.0	8.65	AV
10600	45.66	9.35	H	55.01	68.2	13.19	PK
10600	40.22	9.35	H	49.57	54.0	4.43	AV
15900	43.89	14.89	H	58.78	74.0	15.22	PK
15900	30.49	14.89	H	45.38	54.0	8.62	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	43.87	9.46	V	53.33	74.0	20.67	PK
10640	36.97	9.46	V	46.43	54.0	7.57	AV
15960	44.27	15.06	V	59.33	74.0	14.68	PK
15960	30.22	15.06	V	45.28	54.0	8.73	AV
10640	44.81	9.46	H	54.27	74.0	19.73	PK
10640	39.69	9.46	H	49.15	54.0	4.85	AV
15960	43.94	15.06	H	59.00	74.0	15.01	PK
15960	30.23	15.06	H	45.29	54.0	8.72	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	44.38	9.84	V	54.22	68.2	13.98	PK
10540	36.81	9.84	V	46.65	54.0	7.35	AV
15810	44.80	14.93	V	59.73	74.0	14.27	PK
15810	31.60	14.93	V	46.53	54.0	7.47	AV
10540	45.33	9.84	H	55.17	68.2	13.03	PK
10540	39.36	9.84	H	49.20	54.0	4.80	AV
15810	45.44	14.93	H	60.37	74.0	13.63	PK
15810	31.55	14.93	H	46.48	54.0	7.52	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	43.27	9.32	V	52.59	68.2	15.61	PK
10620	36.42	9.32	V	45.74	54.0	8.26	AV
15930	43.99	14.98	V	58.97	74.0	15.03	PK
15930	30.27	14.98	V	45.25	54.0	8.75	AV
10620	44.06	9.32	H	53.38	68.2	14.82	PK
10620	38.00	9.32	H	47.32	54.0	6.68	AV
15930	43.79	14.98	H	58.77	74.0	15.23	PK
15930	30.28	14.98	H	45.26	54.0	8.74	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	45.47	10.54	V	56.01	74.0	17.99	PK
11000	40.26	10.54	V	50.80	54.0	3.20	AV
16500	44.87	16.37	V	61.24	68.2	6.96	PK
16500	31.54	16.37	V	47.91	54.0	6.09	AV
11000	45.12	10.54	H	55.66	74.0	18.34	PK
11000	39.50	10.54	H	50.04	54.0	3.96	AV
16500	45.86	16.37	H	62.23	68.2	5.97	PK
16500	31.52	16.37	H	47.89	54.0	6.11	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5600 MHz
Channel No.	120 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11200	45.20	10.16	V	55.36	74.0	18.64	PK
11200	40.57	10.16	V	50.73	54.0	3.27	AV
16800	45.69	18.26	V	63.95	68.2	4.25	PK
16800	31.60	18.26	V	49.86	54.0	4.14	AV
11200	43.95	10.16	H	54.11	74.0	19.89	PK
11200	38.74	10.16	H	48.90	54.0	5.10	AV
16800	46.55	18.26	H	64.81	68.2	3.39	PK
16800	31.49	18.26	H	49.75	54.0	4.25	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5700 MHz
Channel No.	140 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	45.10	10.21	V	55.31	74.0	18.69	PK
11400	40.74	10.21	V	50.95	54.0	3.05	AV
17100	45.42	18.86	V	64.28	68.2	3.92	PK
17100	31.21	18.86	V	50.07	54.0	3.93	AV
11400	44.10	10.21	H	54.31	74.0	19.69	PK
11400	38.79	10.21	H	49.00	54.0	5.00	AV
17100	44.57	18.86	H	63.43	68.2	4.77	PK
17100	31.10	18.86	H	49.96	54.0	4.04	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done 802.11a, 802.11n_20 MHz BW test. Worst case is 6 Mbps in 802.11a.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	44.74	10.45	V	55.19	74.0	18.81	PK
11020	39.32	10.45	V	49.77	54.0	4.23	AV
16530	45.35	16.23	V	61.58	68.2	6.62	PK
16530	31.32	16.23	V	47.55	54.0	6.45	AV
11020	43.99	10.45	H	54.44	74.0	19.56	PK
11020	38.33	10.45	H	48.78	54.0	5.22	AV
16530	45.41	16.23	H	61.64	68.2	6.56	PK
16530	31.29	16.23	H	47.52	54.0	6.48	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5590 MHz
Channel No.	118 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	44.39	10.19	V	54.58	74.0	19.42	PK
11180	39.09	10.19	V	49.28	54.0	4.72	AV
16770	45.17	17.30	V	62.47	68.2	5.73	PK
16770	31.59	17.30	V	48.89	54.0	5.11	AV
11180	43.57	10.19	H	53.76	74.0	20.24	PK
11180	38.09	10.19	H	48.28	54.0	5.72	AV
16770	45.38	17.30	H	62.68	68.2	5.52	PK
16770	31.57	17.30	H	48.87	54.0	5.13	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 3
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5670 MHz
Channel No.	134 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11340	43.51	10.30	V	53.81	74.0	20.19	PK
11340	37.82	10.30	V	48.12	54.0	5.88	AV
17010	44.64	18.90	V	63.54	68.2	4.66	PK
17010	31.00	18.90	V	49.90	54.0	4.10	AV
11340	43.87	10.30	H	54.17	74.0	19.83	PK
11340	37.40	10.30	H	47.70	54.0	6.30	AV
17010	44.47	18.90	H	63.37	68.2	4.83	PK
17010	31.02	18.90	H	49.92	54.0	4.08	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
6. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

8.6.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

Test Requirements and limit, §15.247(d) §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	57.72	4.18	H	61.90	74	12.10	PK
5150	39.18	4.18	H	43.36	54	10.64	AV
5150	57.45	4.18	V	61.63	74	12.37	PK
5150	38.72	4.18	V	42.90	54	11.10	AV

Band : UNII 2
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5320 MHz
 Channel No. 64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	53.99	4.80	H	58.79	74	15.21	PK
5350	37.60	4.80	H	42.40	54	11.60	AV
5350	52.89	4.80	V	57.69	74	16.31	PK
5350	37.12	4.80	V	41.92	54	12.08	AV

Band : UNII 3
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5500 MHz
 Channel No. 100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	52.69	5.04	H	57.73	68.2	16.27	PK
5460	37.96	5.04	H	43.00	54.0	11.00	AV
5460	53.44	5.04	V	58.48	68.2	15.52	PK
5460	37.88	5.04	V	42.92	54.0	11.08	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
3. We have done 802.11a/n_20 MHz BW mode test. . Worst case of EUT is 6 Mbps in 802.11a.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : UNII 1
 Operation Mode: 802.11 n
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5190 MHz
 Channel No. 38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	62.63	4.18	H	66.81	74	7.19	PK
5150	45.62	4.18	H	49.80	54	4.20	AV
5150	63.50	4.18	V	67.68	74	6.32	PK
5150	46.95	4.18	V	51.13	54	2.87	AV

Band : UNII 2
 Operation Mode: 802.11 n
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5310 MHz
 Channel No. 62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	62.88	4.8	H	67.68	74	6.32	PK
5350	46.46	4.8	H	51.26	54	2.74	AV
5350	60.11	4.8	V	64.91	74	9.09	PK
5350	44.78	4.8	V	49.58	54	4.42	AV



Band :	UNII 3
Operation Mode:	802.11 n
Transfer Rate:	13.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	64.67	5.04	H	69.71	74	4.29	PK
5460	45.60	5.04	H	50.64	54	3.36	AV
5460	62.33	5.04	V	67.37	74	6.63	PK
5460	43.46	5.04	V	48.50	54	5.50	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. Spectrum setting:
 - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 3 MHz.
 - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
3. We have done 802.11n_40 MHz BW mode test. . Worst case of EUT is 13.5 Mbps in 802.11n_40 MHz BW.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC		FCC ID: JYCP9090

8.7 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference groundplane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for 6 Mbps, Ch.48 and 802.11a mode in UNII 1. Because 802.11a mode in UNII 1 is worst case.

■ RESULT PLOTS

Conducted Emissions (Line 1)

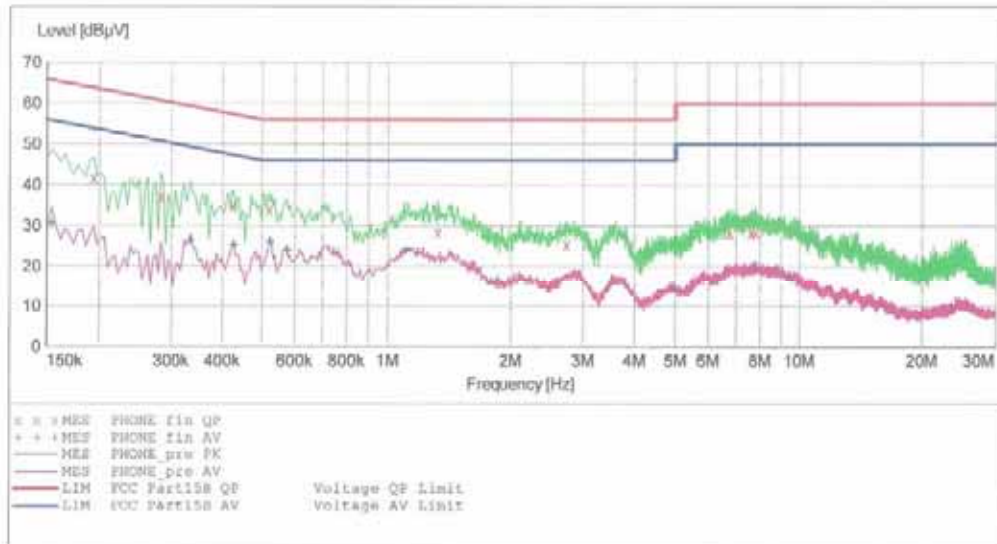
HCT

EMC

EUT: P9090
 Manufacturer: PANTECH
 Operating Condition: WLAN MODE(UNII)
 Test Site: SHIELD ROOM
 Operator: JS LEE
 Test Specification: FCC PART15 CLASS B
 Comment: N

SCAN TABLE: "FCC PART 15 B(N)"

Start Frequency	Stop Frequency	Step Width	FCC PART 15 CLASS B Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

6/22/2012 9:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.194010	41.60	10.1	64	22.2	---	---
0.282010	37.10	10.1	61	23.6	---	---
0.422010	34.90	10.1	57	22.5	---	---
0.520000	34.00	10.0	56	22.0	---	---
1.320000	28.60	10.2	56	27.4	---	---
2.740000	25.50	10.3	56	30.5	---	---
6.744000	28.10	10.7	60	31.9	---	---
7.612000	28.20	10.8	60	31.8	---	---
7.004000	28.40	10.9	60	31.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

6/22/2012 9:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	30.60	10.0	56	25.2	---	---
0.334010	26.50	10.1	49	22.8	---	---
0.426010	25.30	10.1	47	22.0	---	---
0.524000	26.10	10.1	46	19.9	---	---
0.576000	24.00	10.1	46	22.0	---	---
1.108000	23.90	10.1	46	22.1	---	---
5.000000	14.20	10.5	46	31.8	---	---
7.764000	19.70	10.8	50	30.3	---	---
9.456000	17.20	10.8	50	32.8	---	---

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

Conducted Emissions (Line 2)

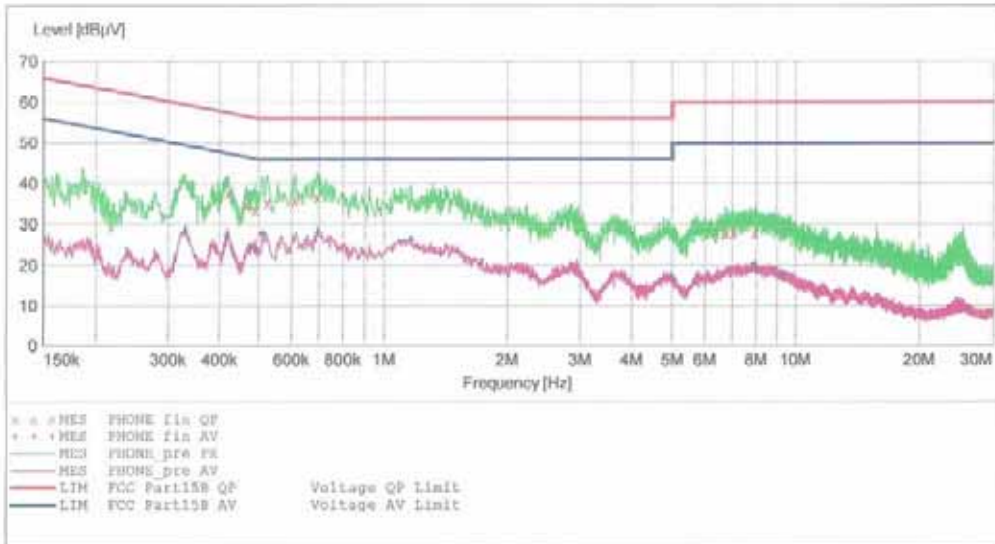
HCT

EMC

EUT: P9090
 Manufacturer: PANTECH
 Operating Condition: WLAN MODE (UNII)
 Test Site: SHIELD ROOM
 Operator: JS LEE
 Test Specification: FCC PART15 CLASS B
 Comment: H

SCAN TABLE: "FCC PART 15 B(H)"

Short Description:		FCC PART 15 CLASS B					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	500.0 kHz	1.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				



MEASUREMENT RESULT: "PHONE_fin QP"

6/22/2012 9:42AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.420010	37.50	10.1	57	19.9	---	---
0.465010	34.70	10.1	57	21.9	---	---
0.490010	33.50	10.1	56	22.6	---	---
0.524000	35.20	10.1	56	20.8	---	---
0.612000	36.00	10.1	56	20.0	---	---
0.692000	36.60	10.1	56	19.4	---	---
6.760000	27.70	10.8	60	32.3	---	---
7.040000	27.80	10.8	60	32.2	---	---
7.980000	27.70	10.8	60	32.3	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

6/22/2012 9:42AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PR
0.330010	28.30	10.1	50	21.1	---	---
0.417010	27.40	10.1	48	20.1	---	---
0.490010	24.40	10.1	46	21.8	---	---
0.512000	27.70	10.1	46	18.3	---	---
0.696000	28.10	10.1	46	17.9	---	---
1.164000	26.20	10.2	46	19.8	---	---
5.000000	16.90	10.5	46	29.1	---	---
7.980000	19.20	10.8	50	30.8	---	---
9.196000	17.60	10.8	50	32.4	---	---

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1206FR19	Date of Issue: July 05, 2012	EUT Type: 850/1900 GSM/GPRS/EDGE/WCDMA Phone with Bluetooth/WLAN/NFC	FCC ID: JYCP9090

9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESH2-Z5/ LISN	Annual	02/03/2013	861741/013
Schwarzbeck	VULB 9168/ TRILOG Antenna	Biennial	02/09/2013	200
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/03/2013	831564103
Rohde & Schwarz	FSV 40 / Signal Analyzer	Annual	06/11/2013	1307.9002k40-100931-NK
Agilent	E4440A/ Spectrum Analyzer	Annual	05/02/2013	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	09/23/2012	MY51110020
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	ESH3-Z2/ PULSE LIMITER	Annual	08/01/2012	375.8810.352
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/19/2012	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2013	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2013	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/26/2012	BBHA9170342
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/09/2013	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2012	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2013	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2013	1
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	05/02/2013	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	05/02/2013	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	05/02/2013	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2012	11377
Hewlett Packard	11667B / Power Splitter	Annual	11/04/2012	10126
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2012	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2012	010002156287001199
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2013	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
MITEQ	AMF-6D-001180-35-20P/ POWER AMP	Annual	12/26/2012	990893
Agilent	8493C / Attenuator(10 dB)	Annual	09/23/2012	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617