

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

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. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Conducted Output Power (802.11n-CH 116) 6.5 Mbps



Conducted Output Power (802.11n-CH 116) 13 Mbps



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Conducted Output Power (802.11n-CH 116) 19.5 Mbps



Conducted Output Power (802.11n-CH 116) 26 Mbps



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Conducted Output Power (802.11n-CH 116) 39 Mbps



Conducted Output Power (802.11n-CH 116) 52 Mbps



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Conducted Output Power (802.11n-CH 116) 58.5 Mbps



Conducted Output Power (802.11n-CH 116) 65 Mbps



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

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



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

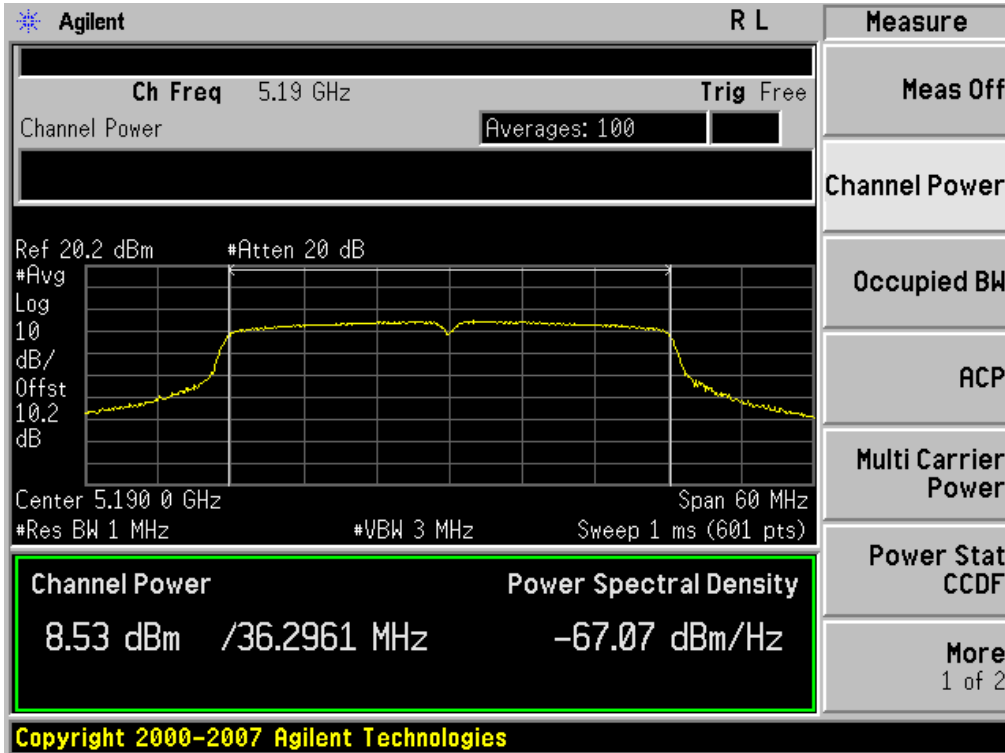


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIF1802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

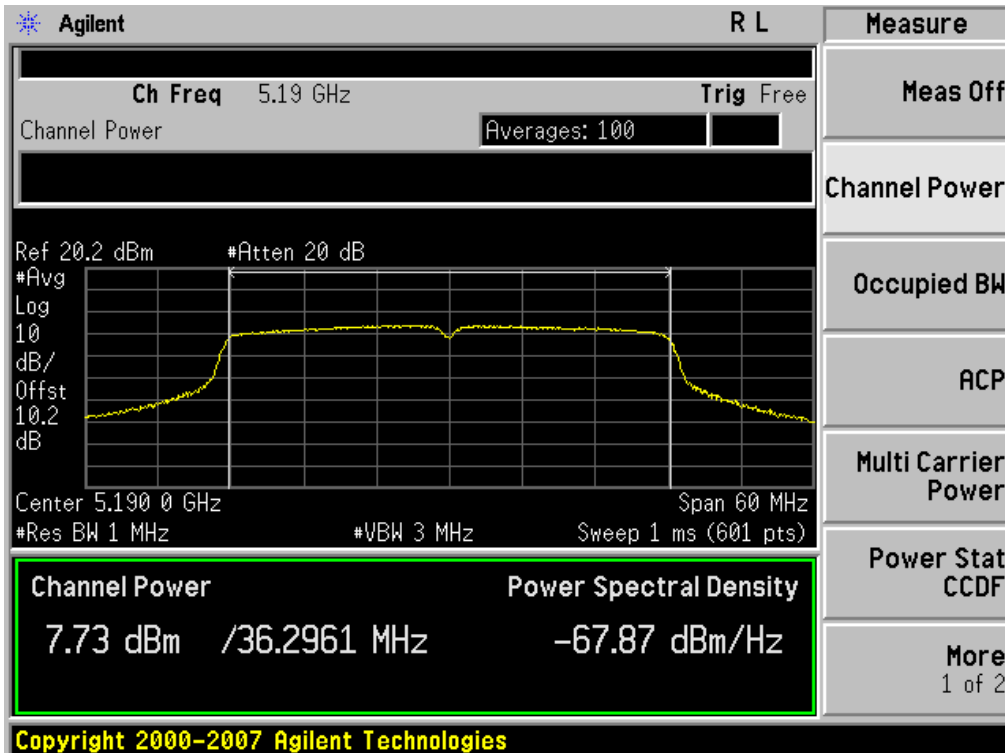
40 MHz BW

RESULT PLOTS (5190 MHz ~5230 MHz)

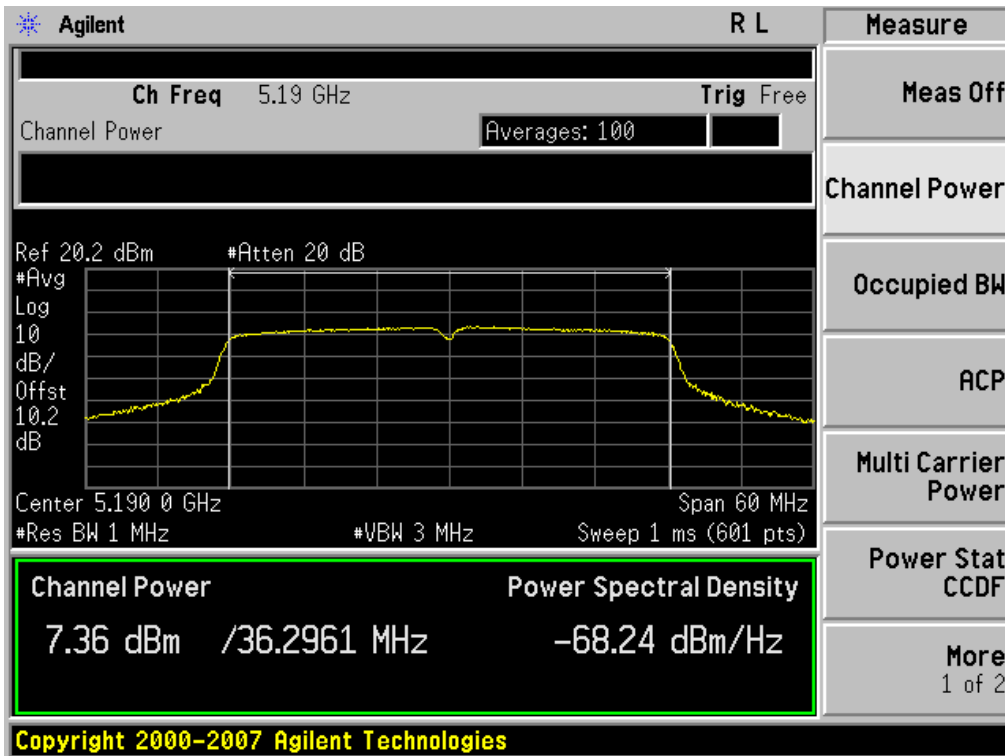
Conducted Output Power (802.11n-CH 38) 13.5 Mbps



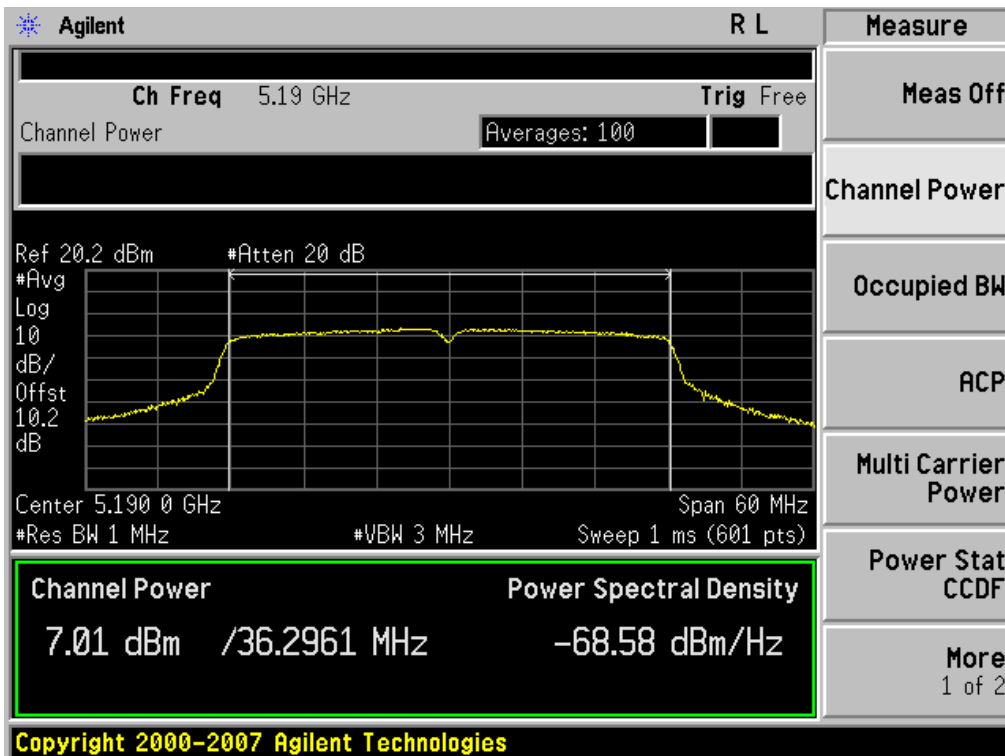
Conducted Output Power (802.11n-CH 38) 27 Mbps



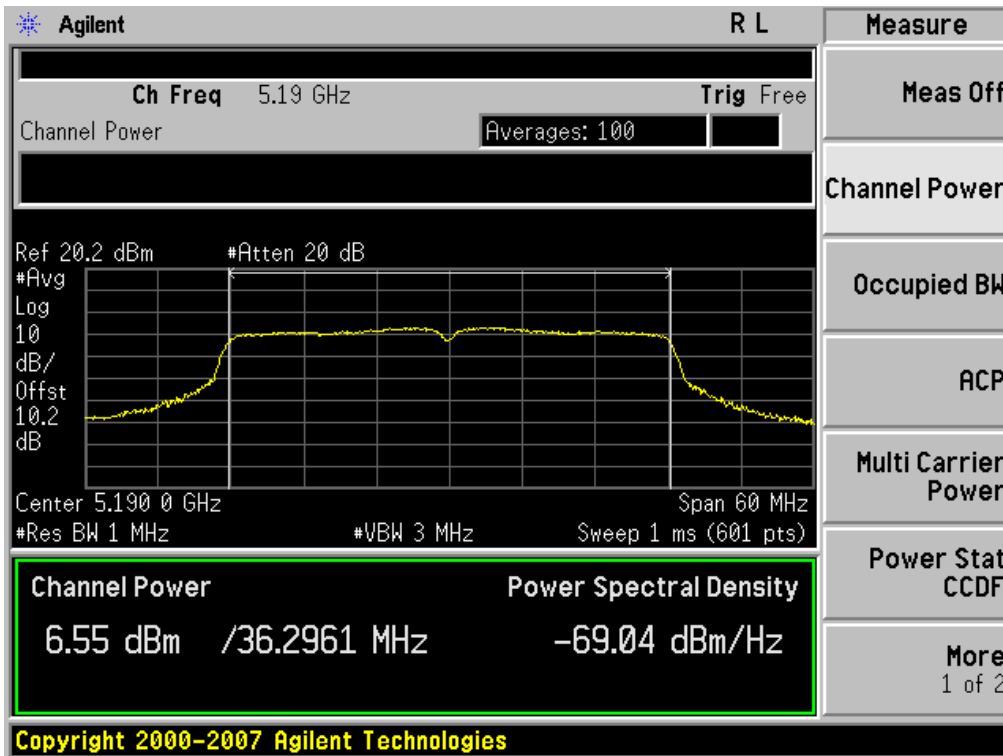
Conducted Output Power (802.11n-CH 38) 40.5 Mbps



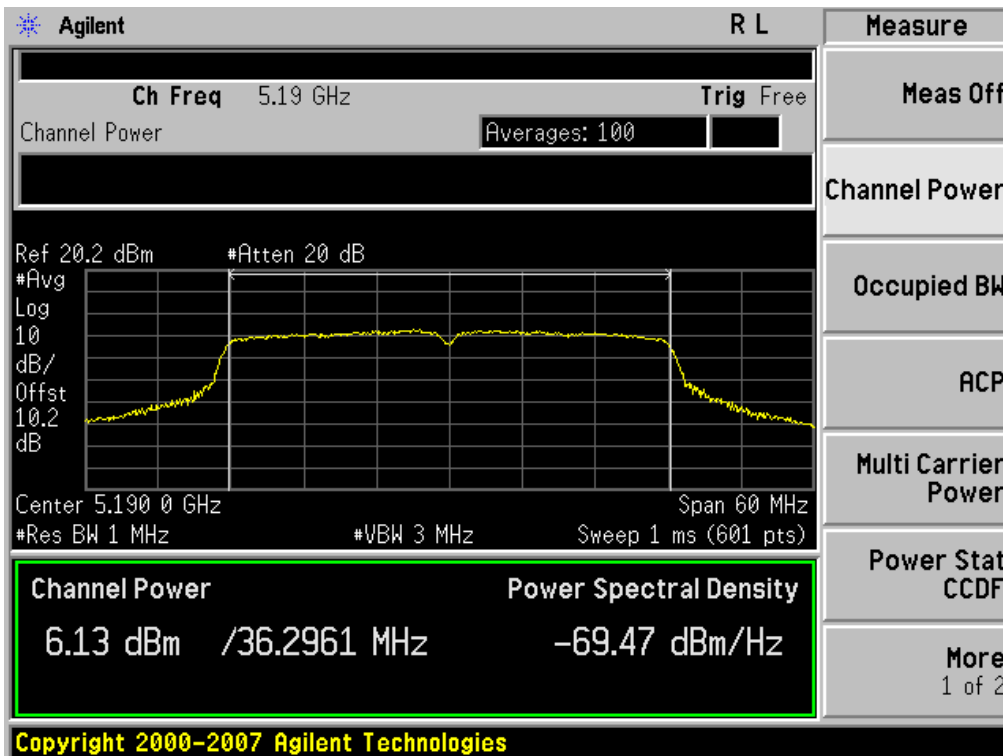
Conducted Output Power (802.11n-CH 38) 54 Mbps



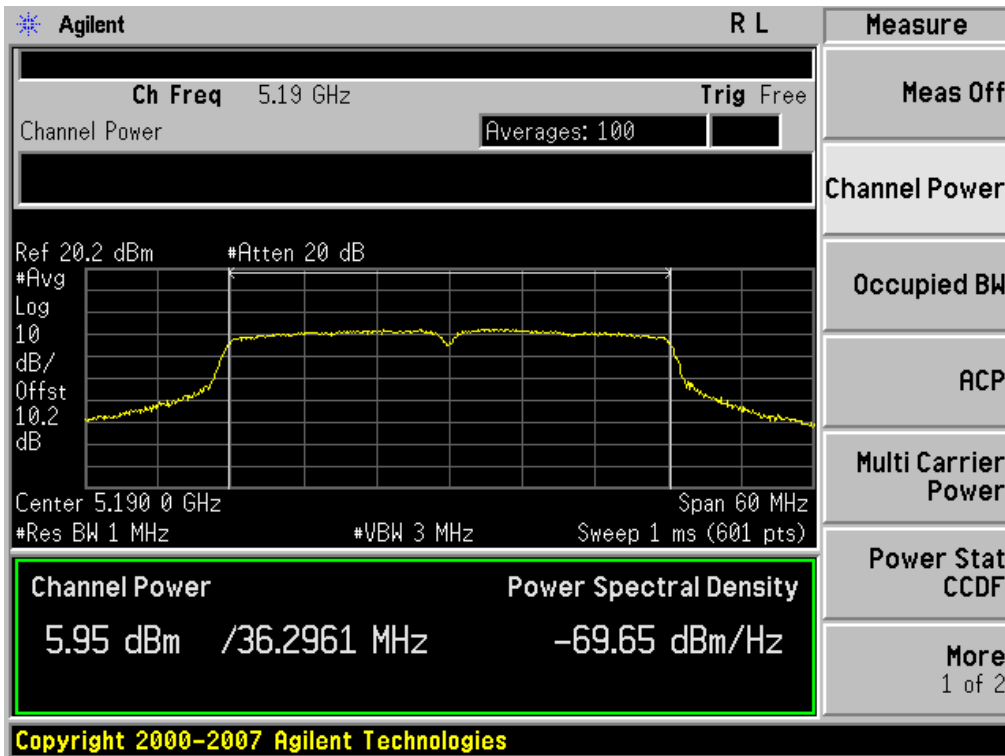
Conducted Output Power (802.11n-CH 38) 81 Mbps



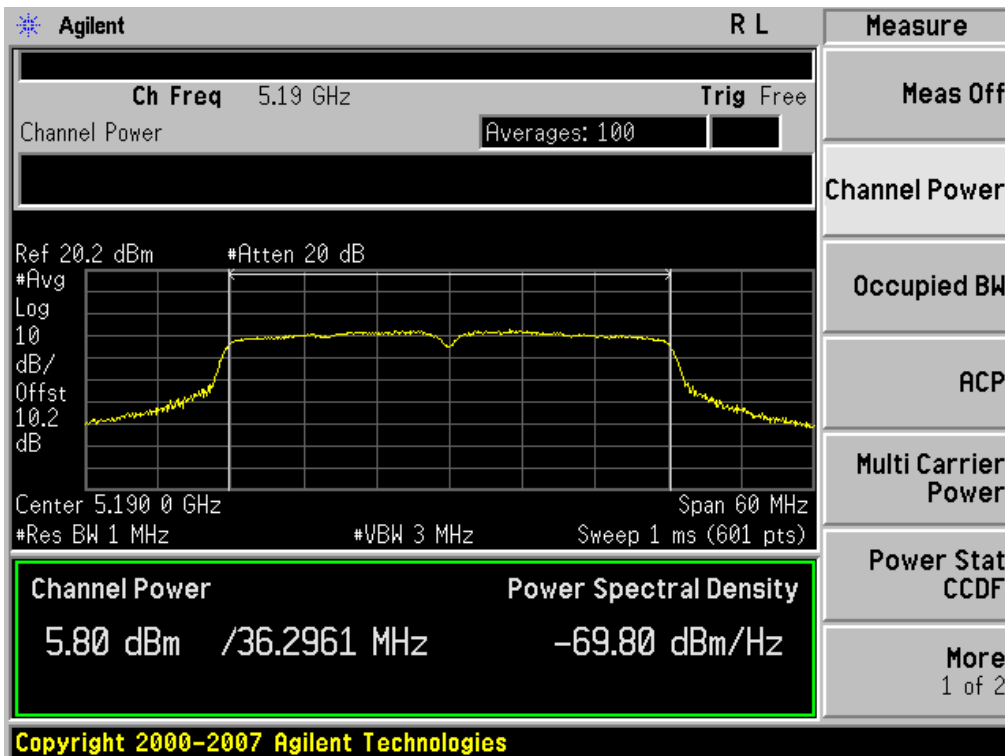
Conducted Output Power (802.11n-CH 38) 108 Mbps



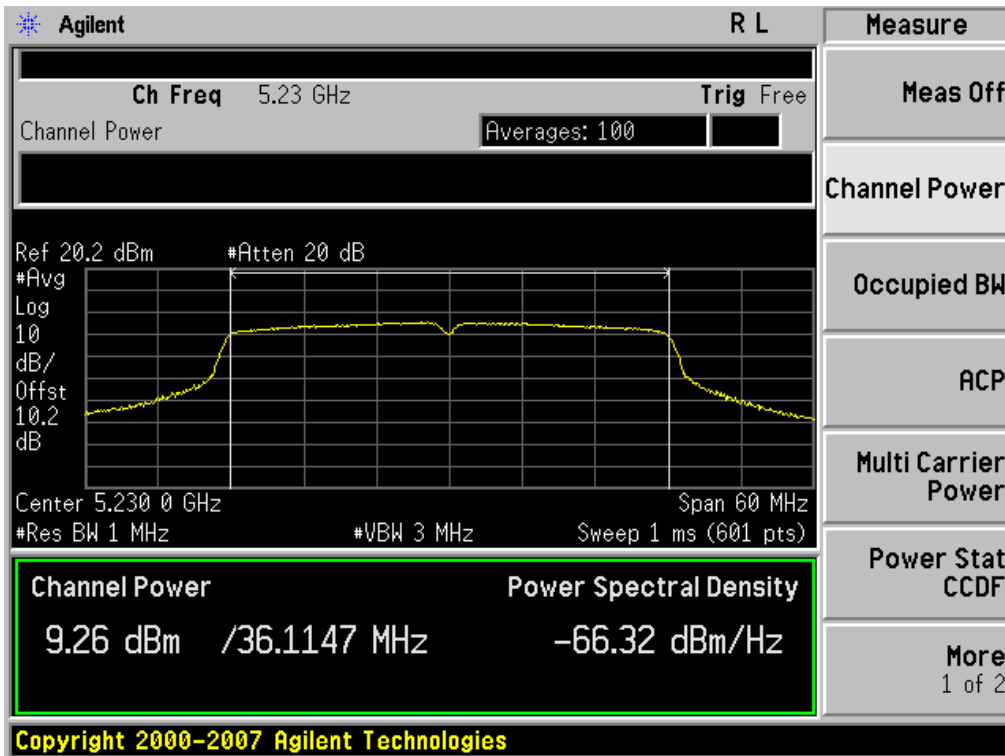
Conducted Output Power (802.11n-CH 38) 121.5 Mbps



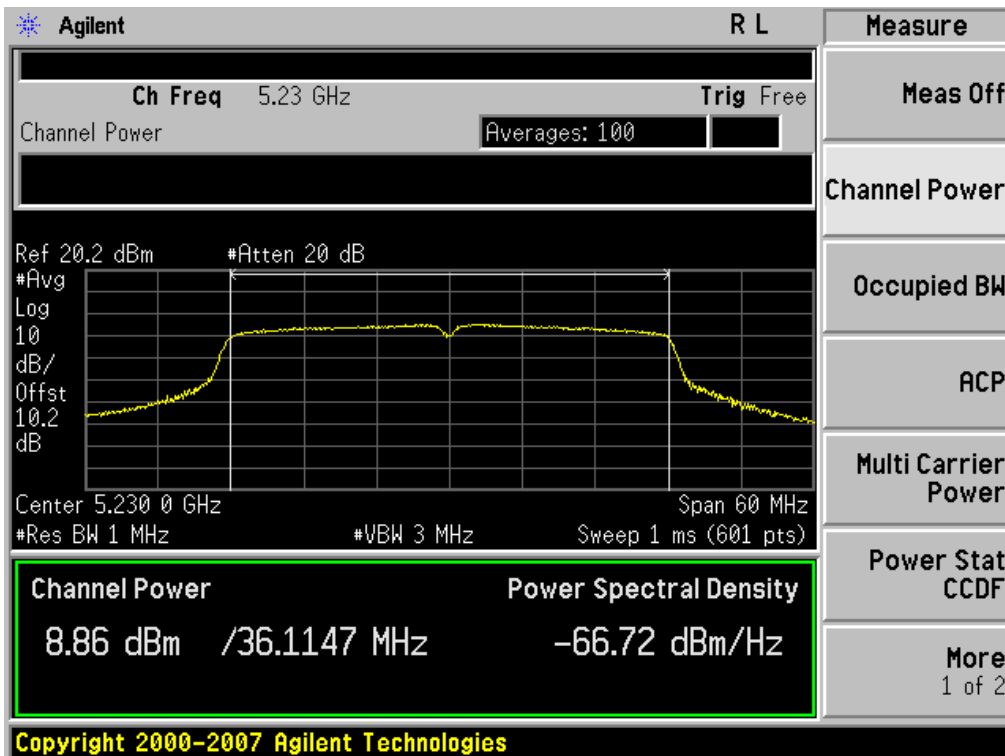
Conducted Output Power (802.11n-CH 38) 135 Mbps



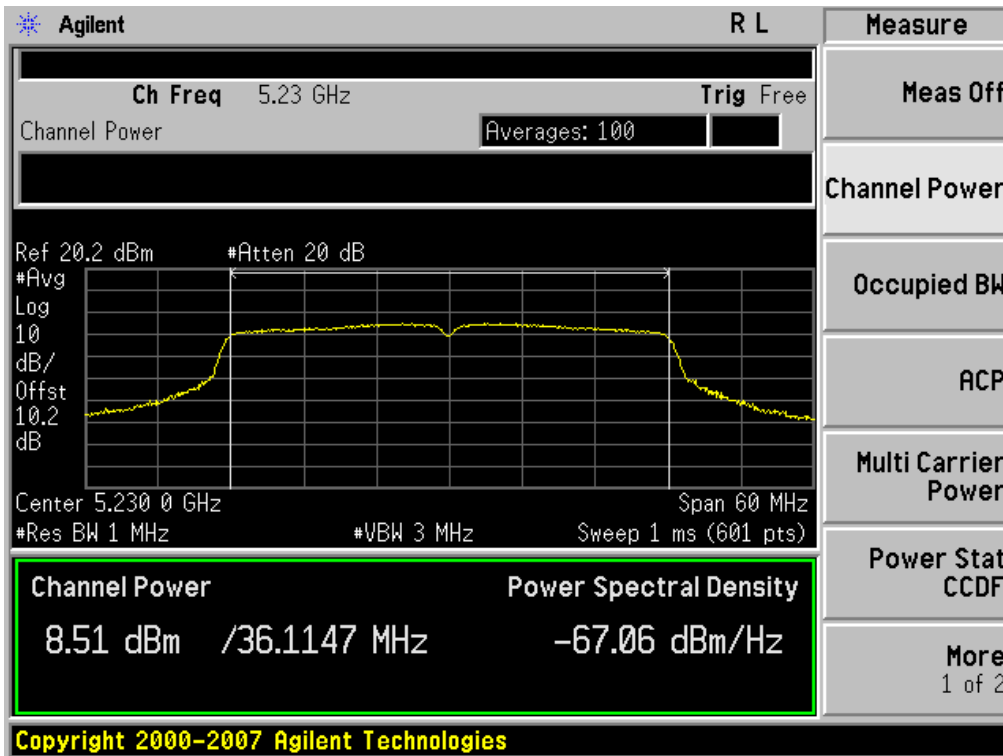
Conducted Output Power (802.11n-CH 46) 13.5 Mbps



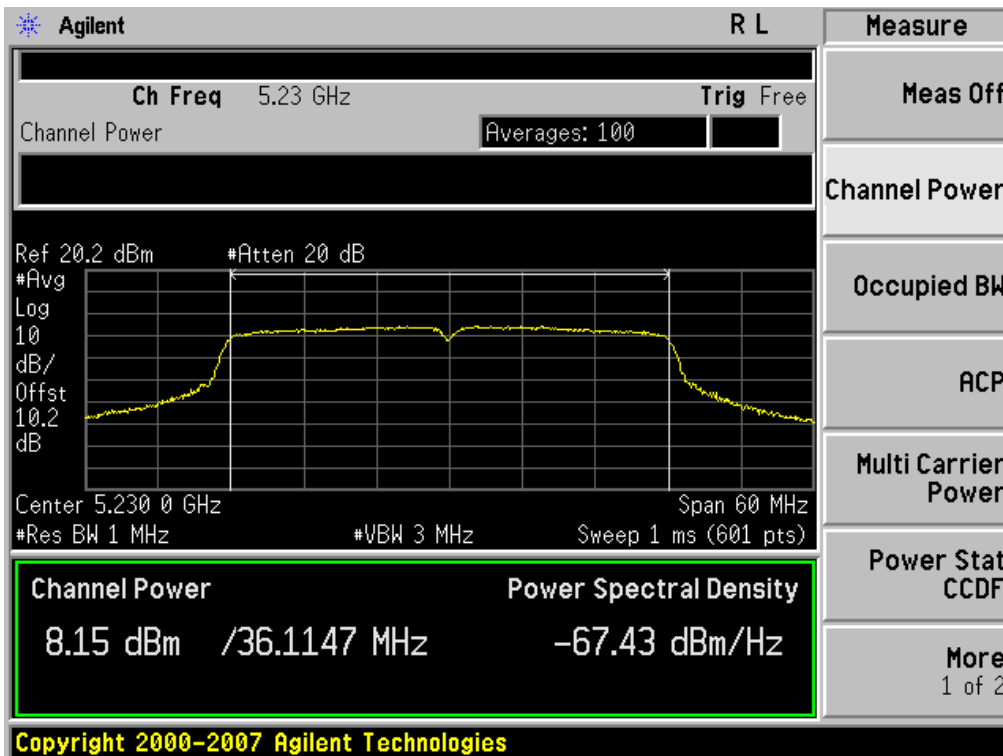
Conducted Output Power (802.11n-CH 46) 27 Mbps



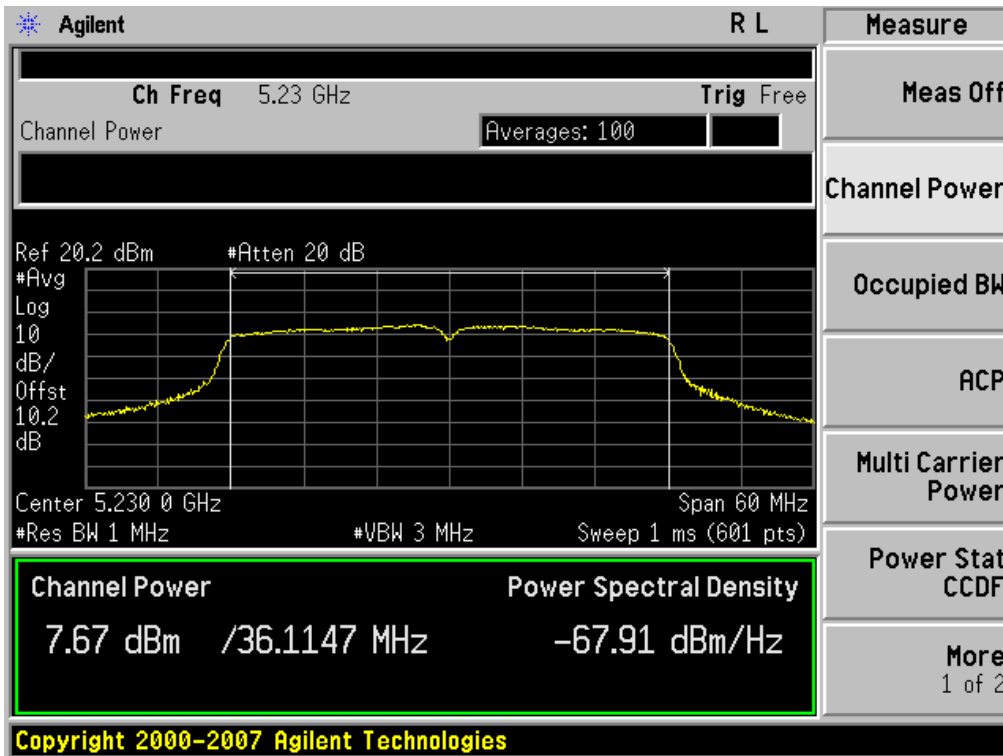
Conducted Output Power (802.11n-CH 46) 40.5 Mbps



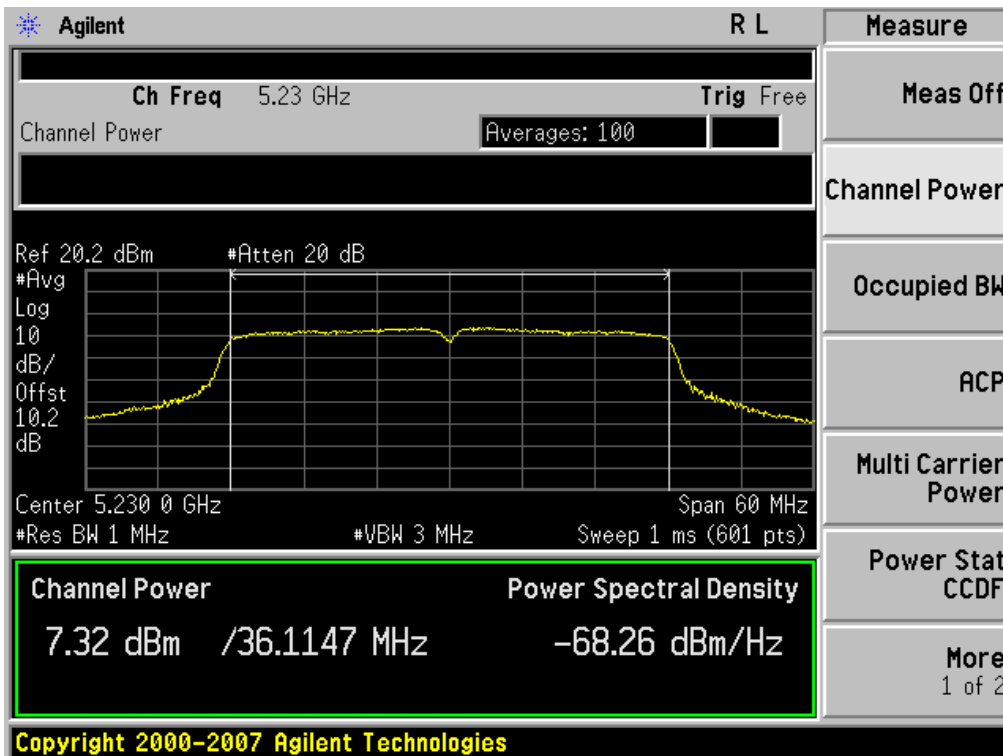
Conducted Output Power (802.11n-CH 46) 54 Mbps



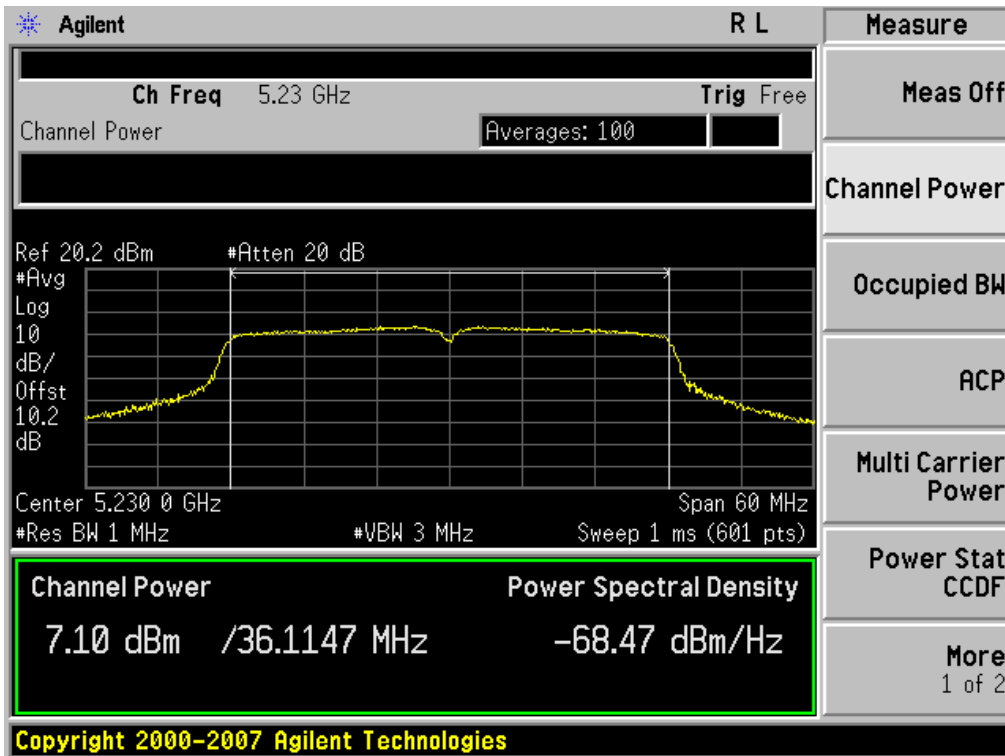
Conducted Output Power (802.11n-CH 46) 81 Mbps



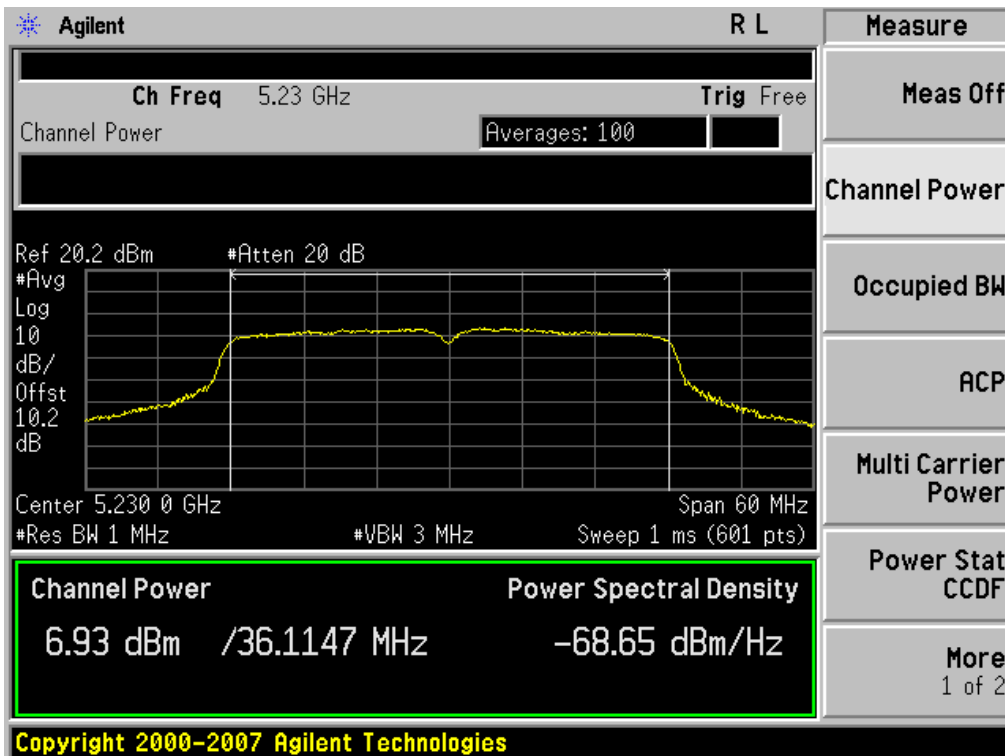
Conducted Output Power (802.11n-CH 46) 108 Mbps



Conducted Output Power (802.11n-CH 46) 121.5 Mbps

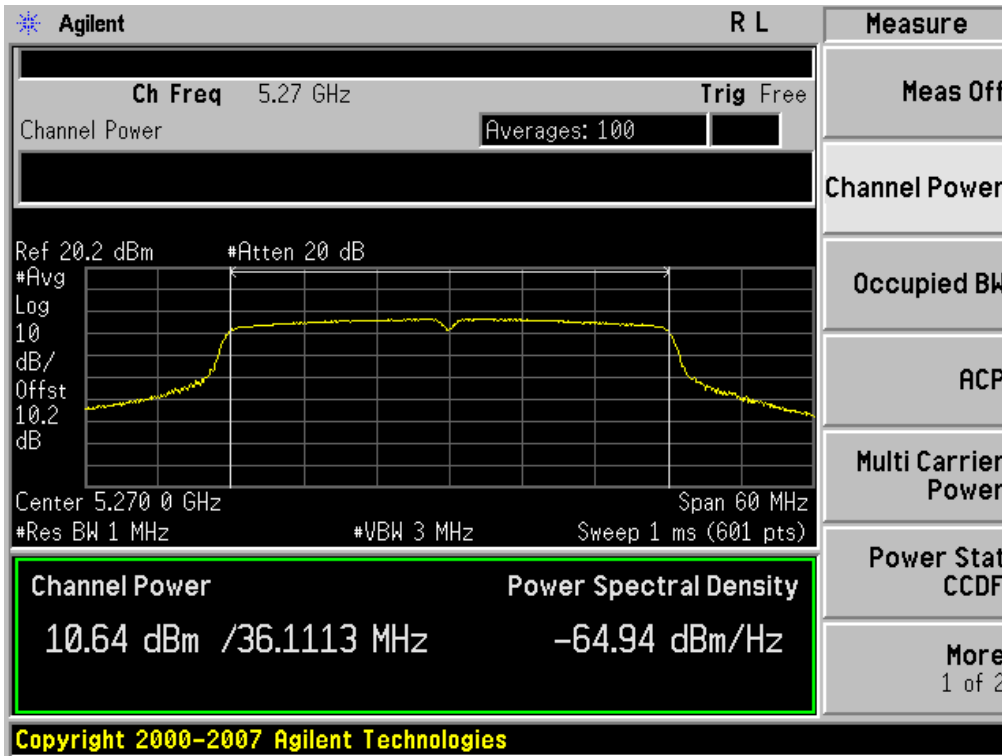


Conducted Output Power (802.11n-CH 46) 135 Mbps

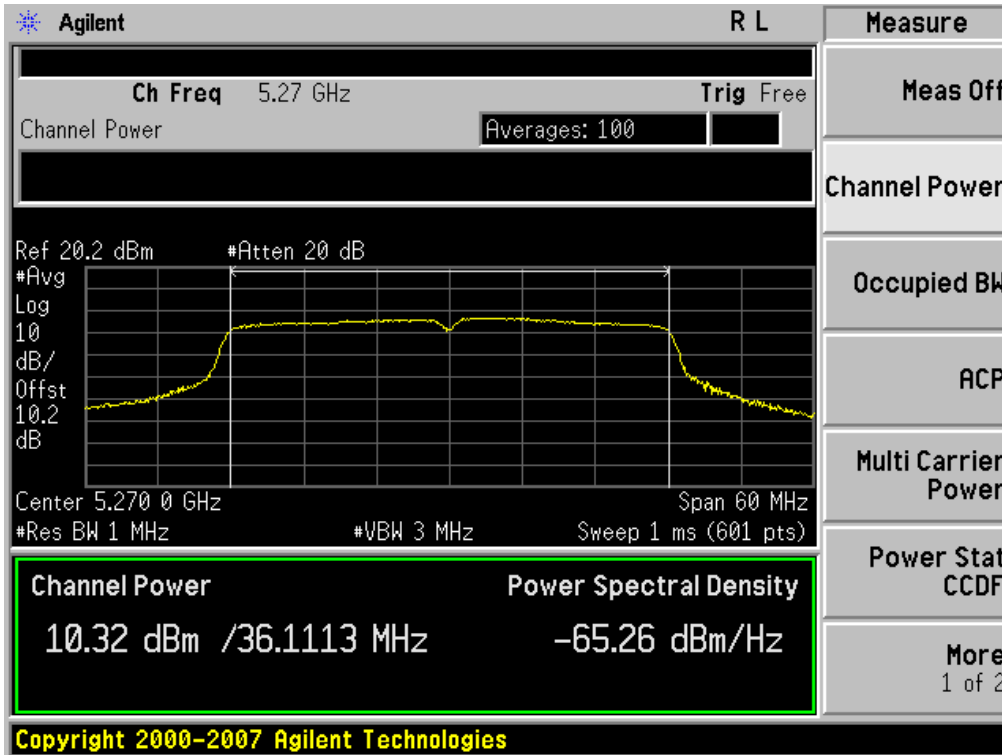


RESULT PLOTS (5270 MHz ~5310 MHz)

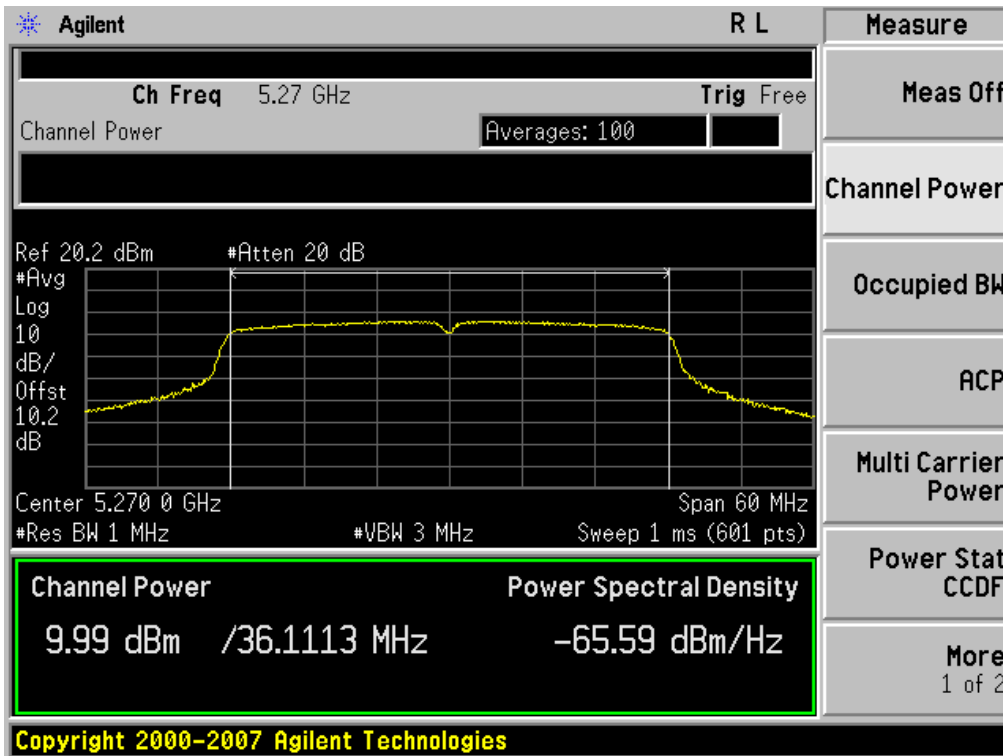
Conducted Output Power (802.11n-CH 54) 13.5 Mbps



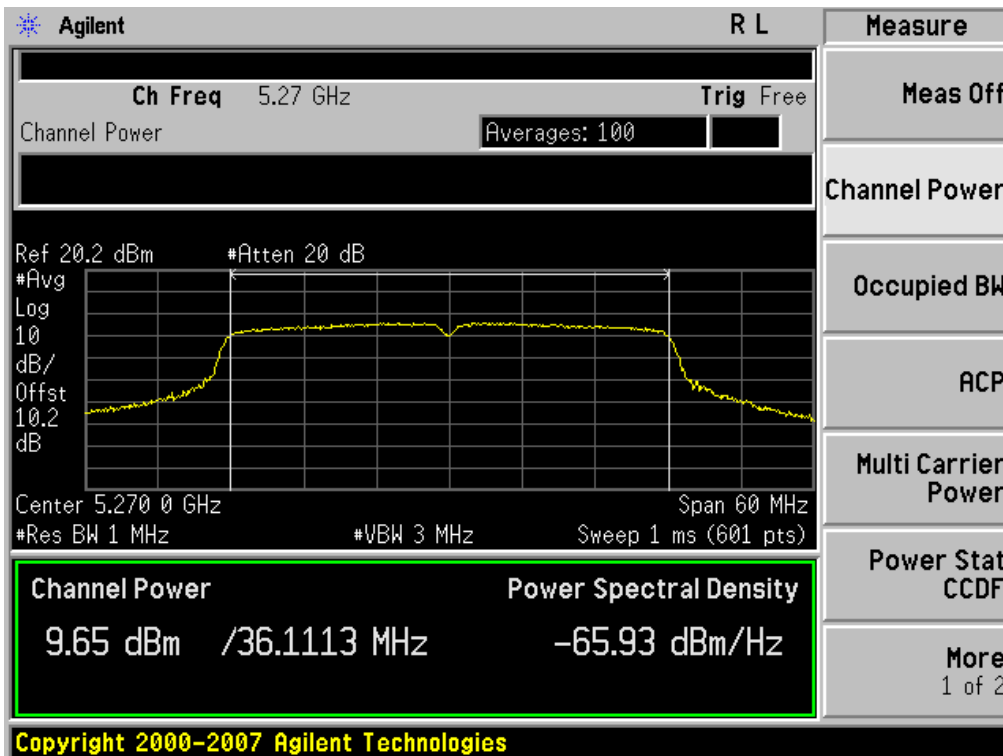
Conducted Output Power (802.11n-CH 54) 27 Mbps



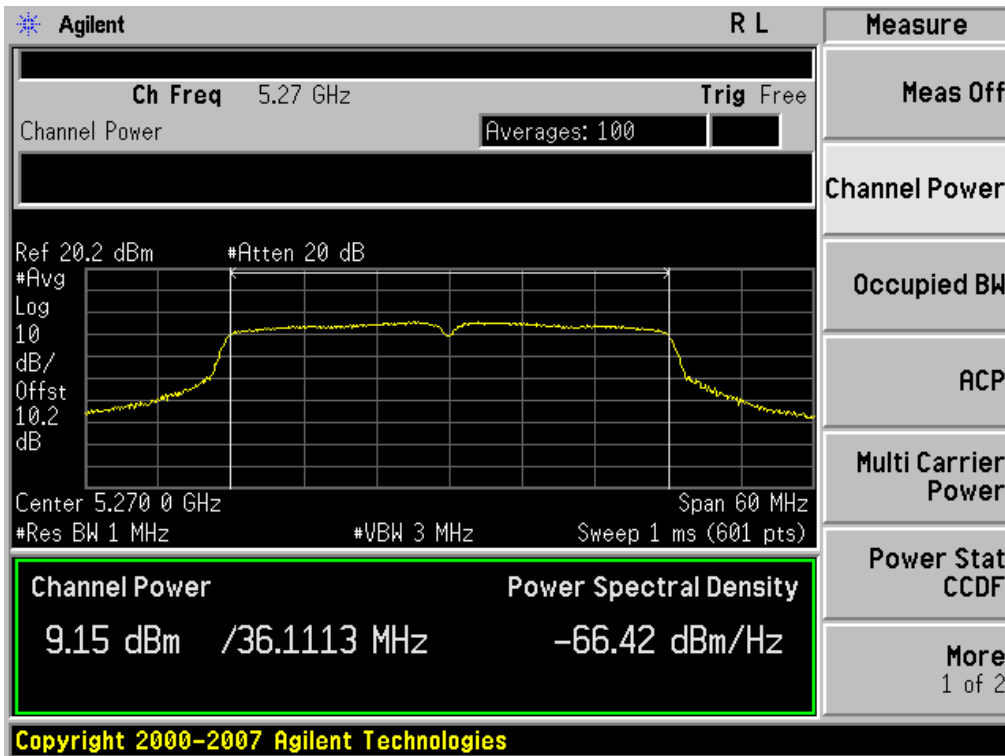
Conducted Output Power (802.11n-CH 54) 40.5 Mbps



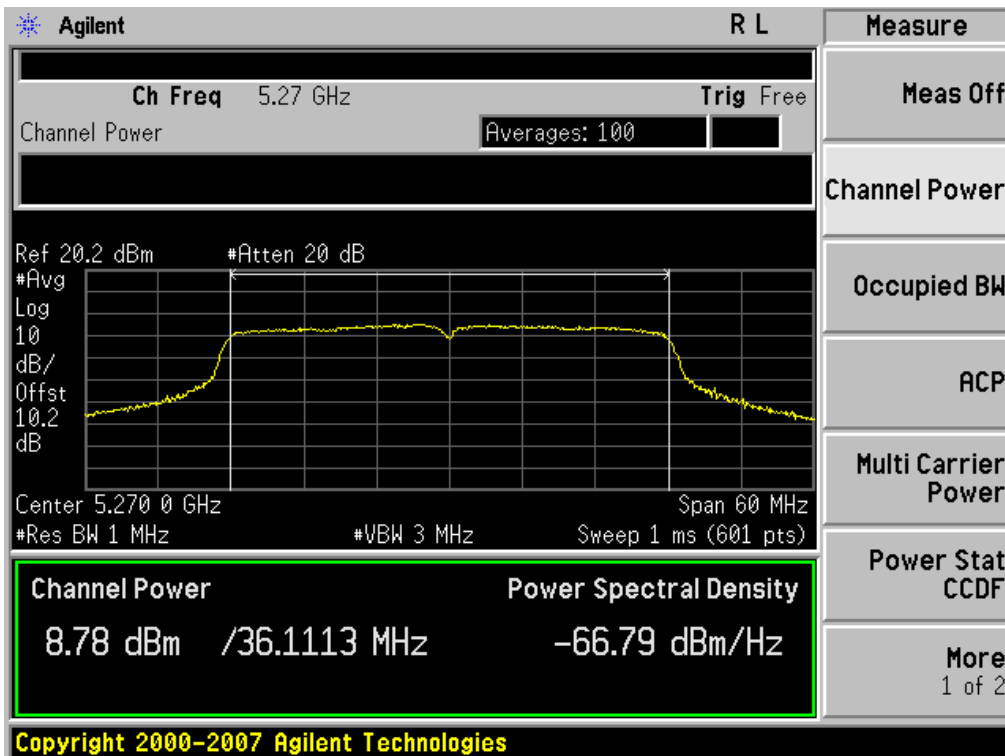
Conducted Output Power (802.11n-CH 54) 54 Mbps



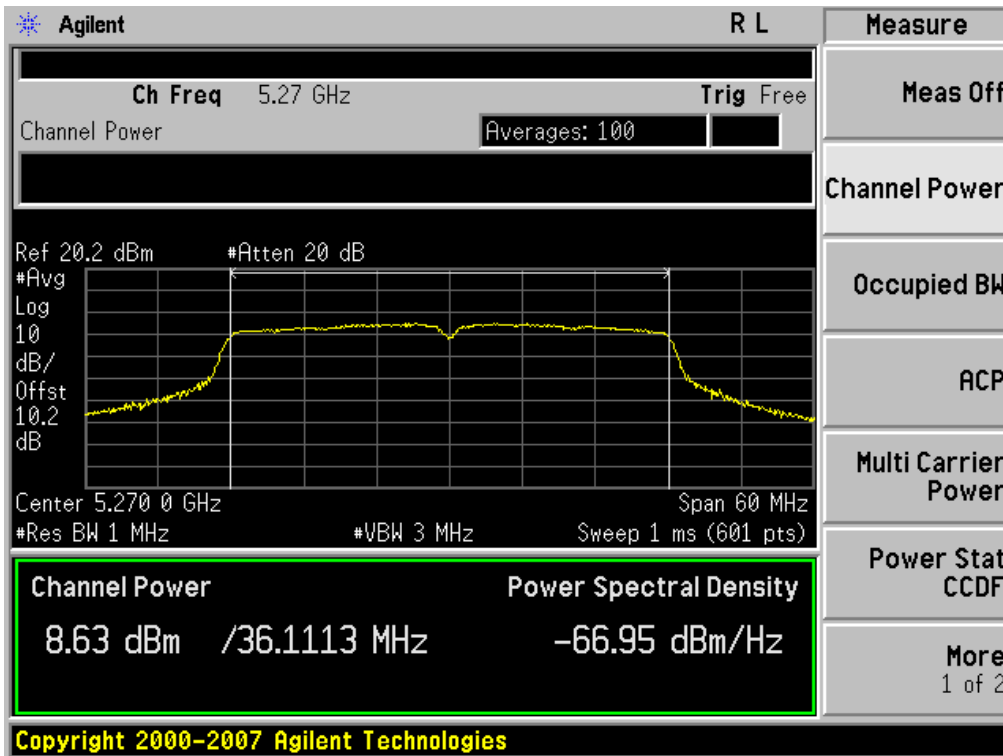
Conducted Output Power (802.11n-CH 54) 81 Mbps



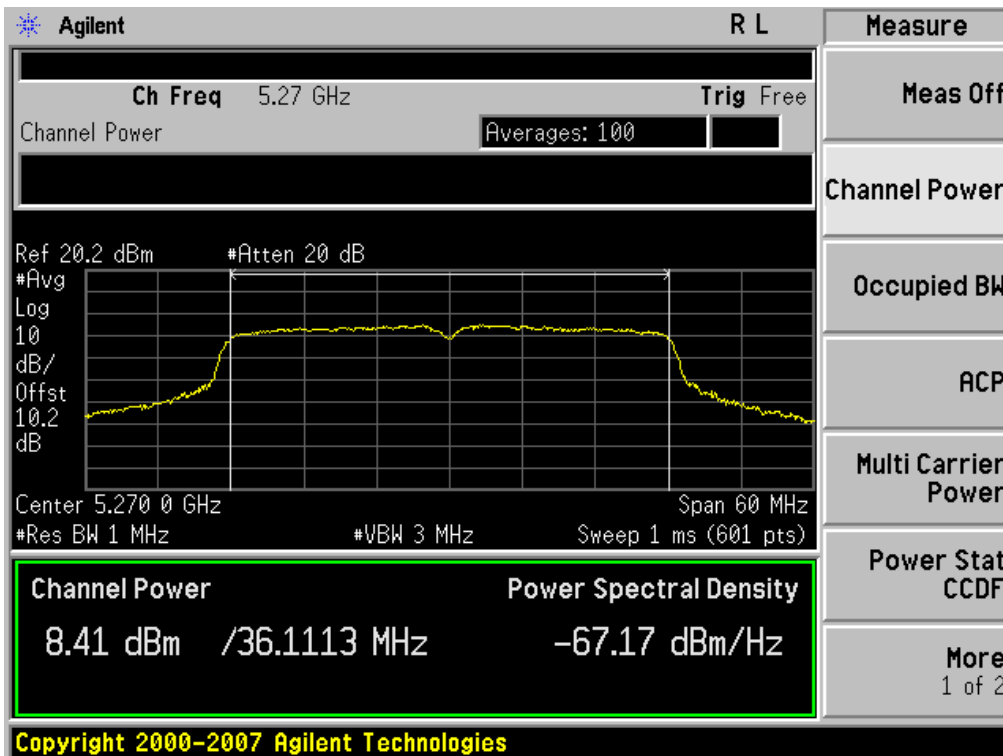
Conducted Output Power (802.11n-CH 54) 108 Mbps



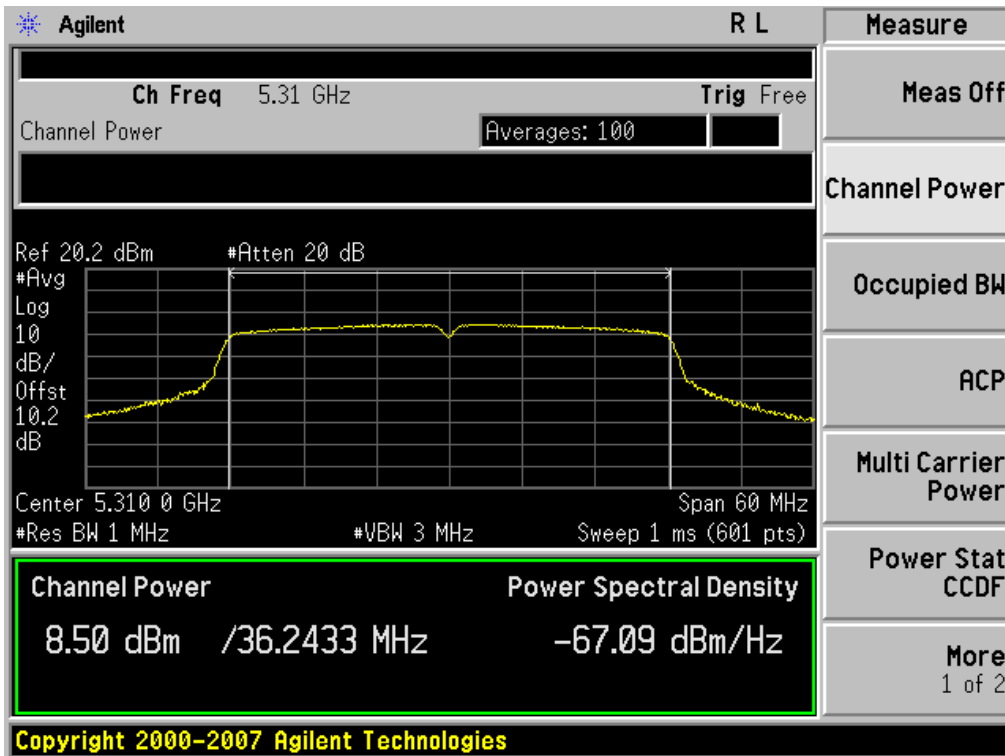
Conducted Output Power (802.11n-CH 54) 121.5 Mbps



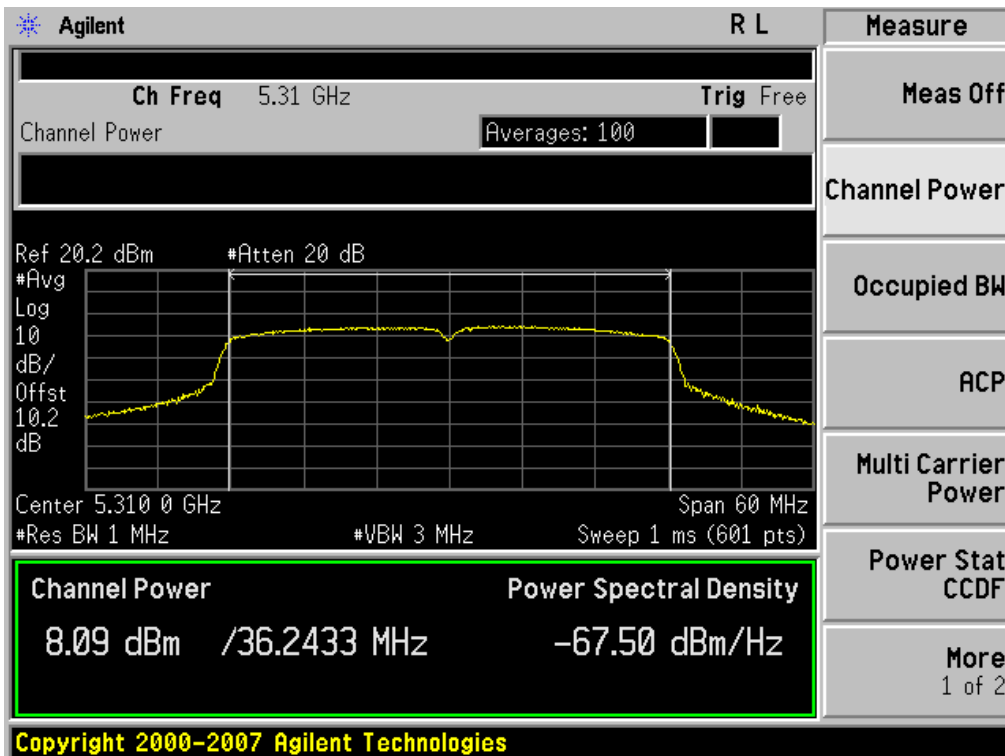
Conducted Output Power (802.11n-CH 54) 135 Mbps



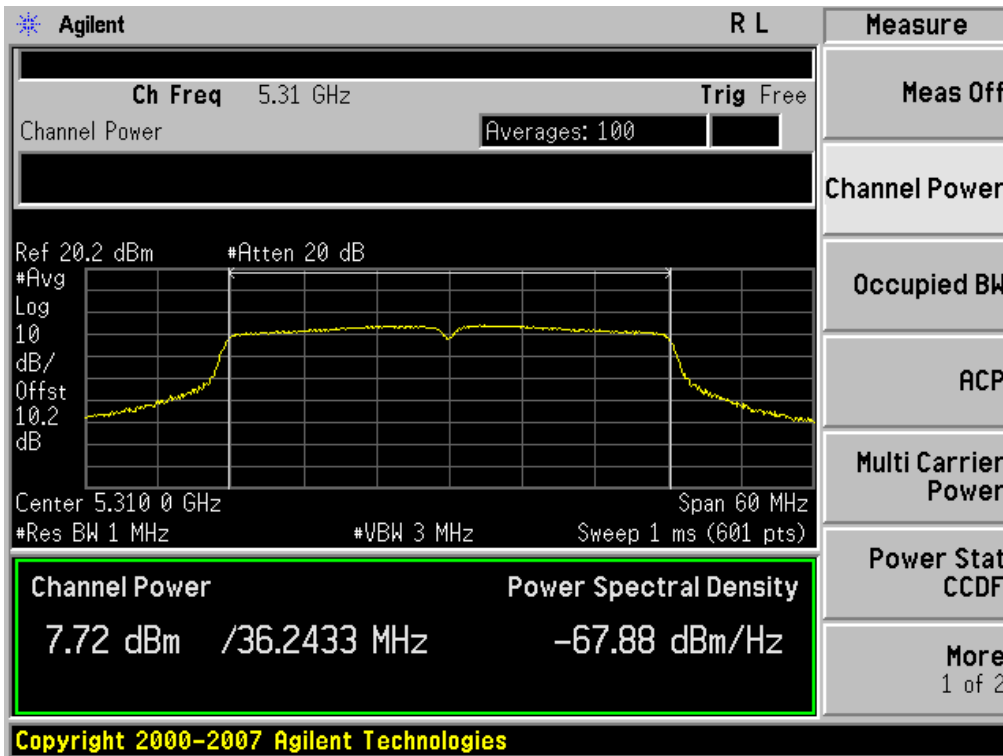
Conducted Output Power (802.11n-CH 62) 13.5 Mbps



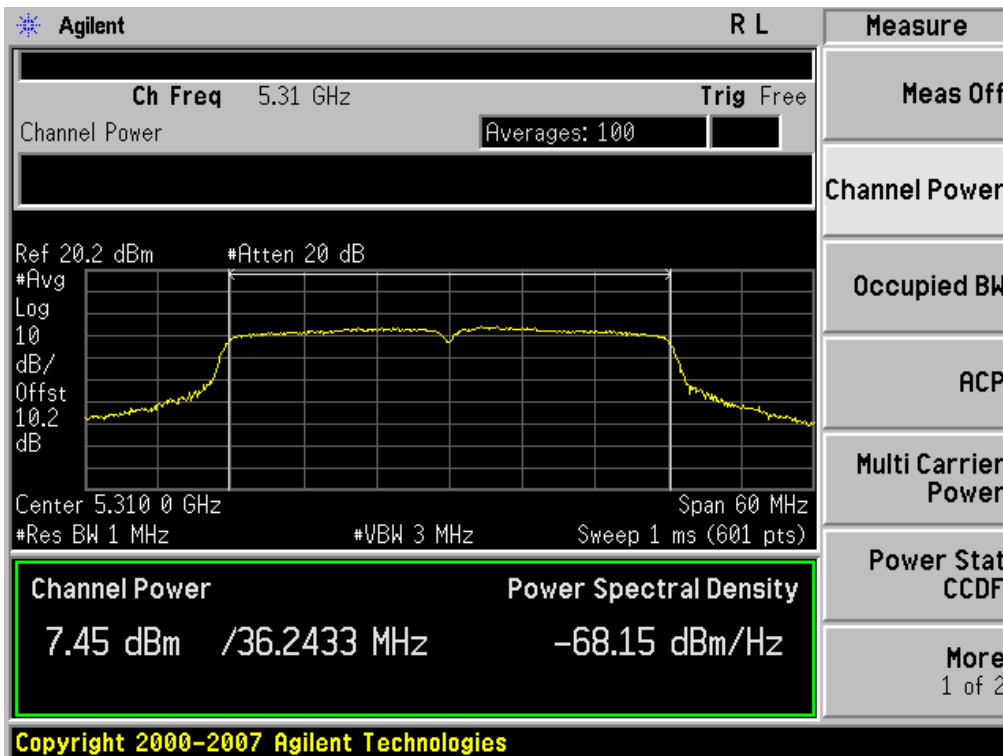
Conducted Output Power (802.11n-CH 62) 27 Mbps



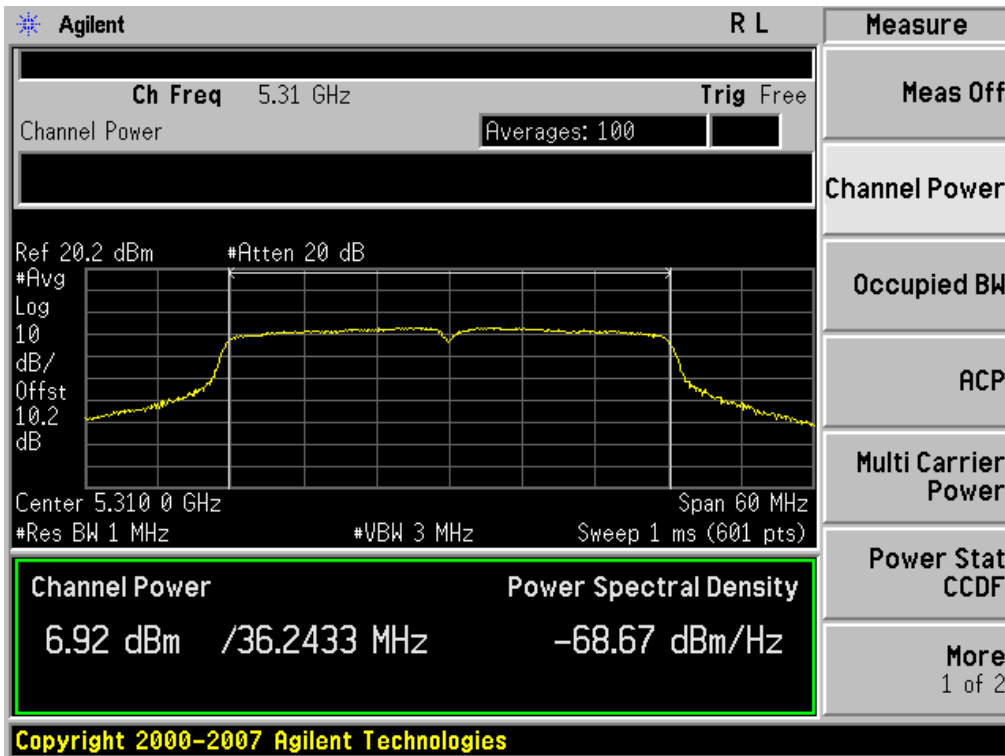
Conducted Output Power (802.11n-CH 62) 40.5 Mbps



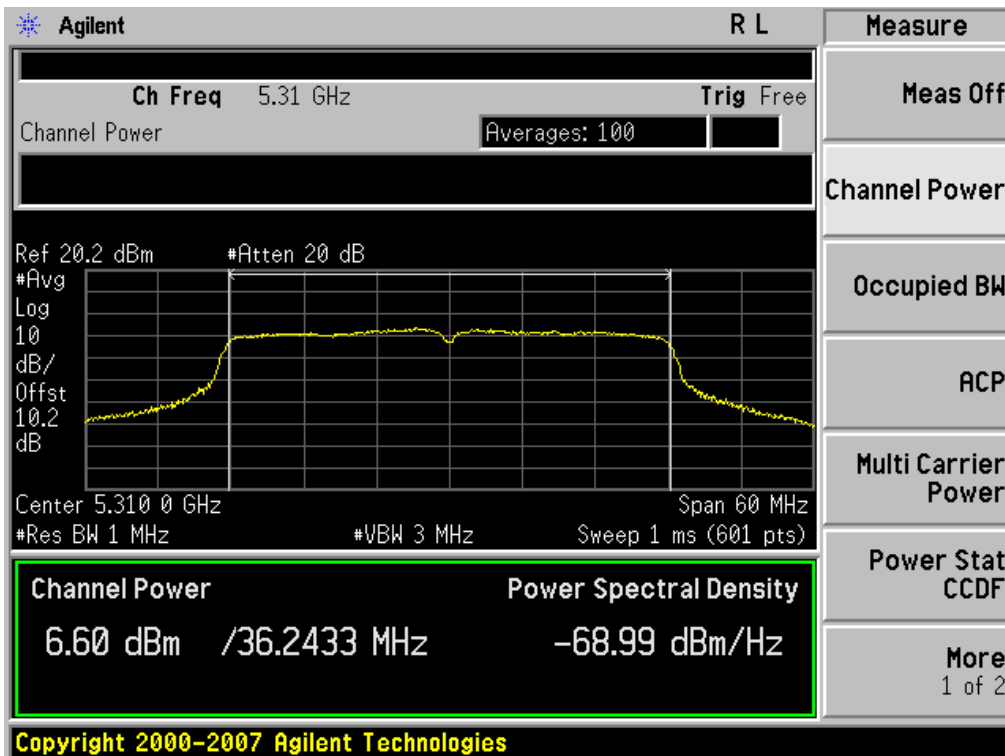
Conducted Output Power (802.11n-CH 62) 54 Mbps



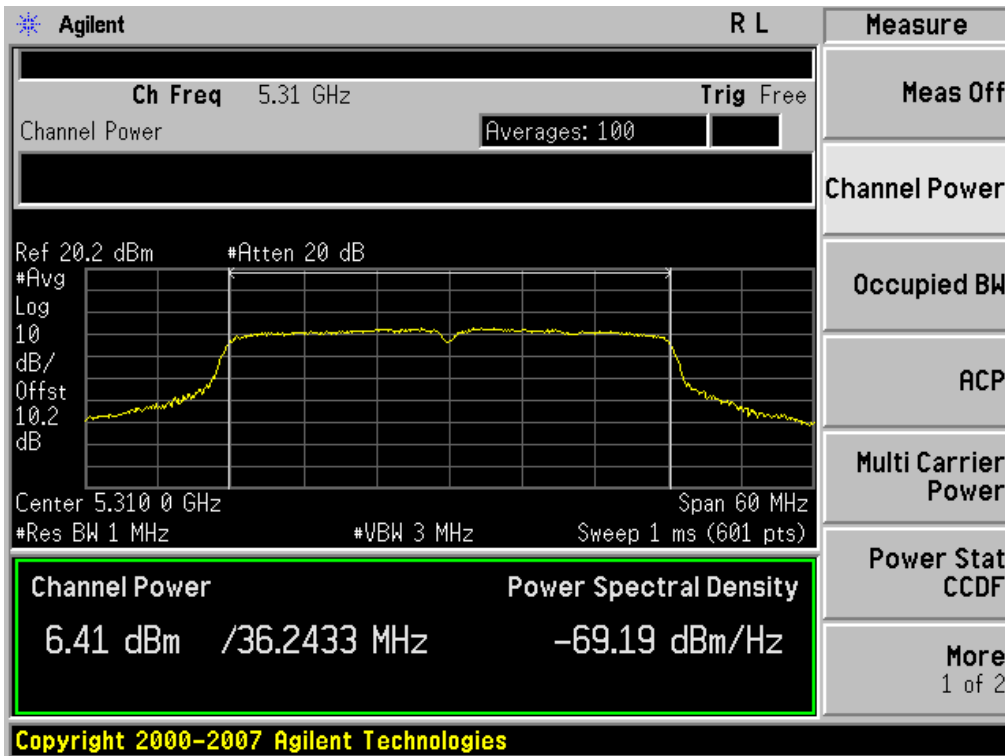
Conducted Output Power (802.11n-CH 62) 81 Mbps



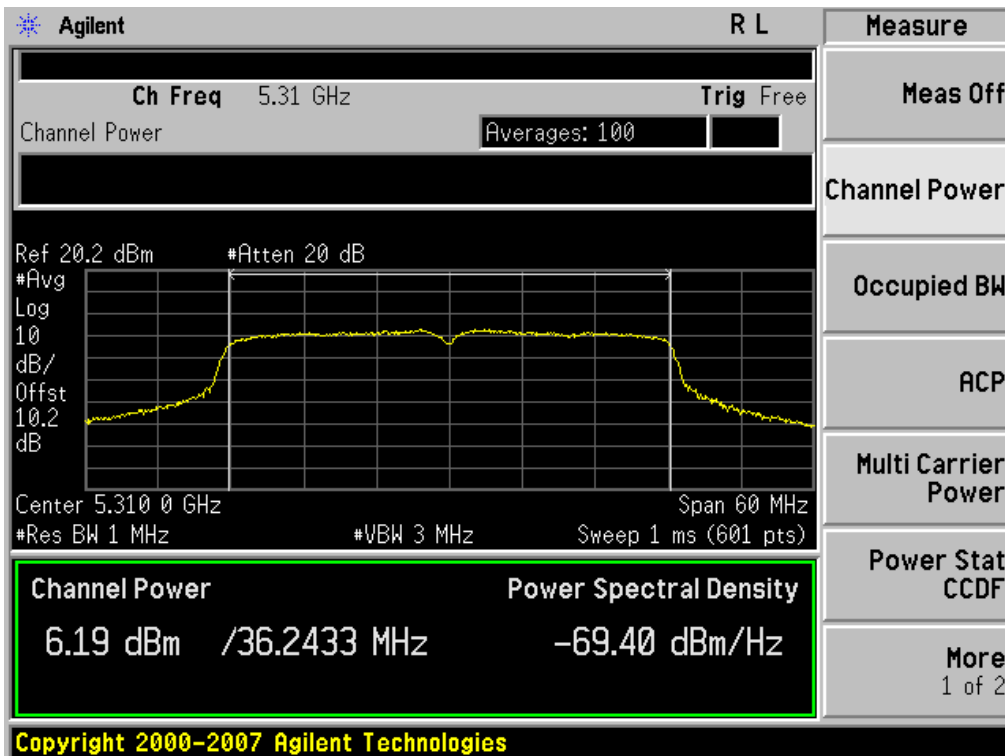
Conducted Output Power (802.11n-CH 62) 108 Mbps



Conducted Output Power (802.11n-CH 62) 121.5 Mbps

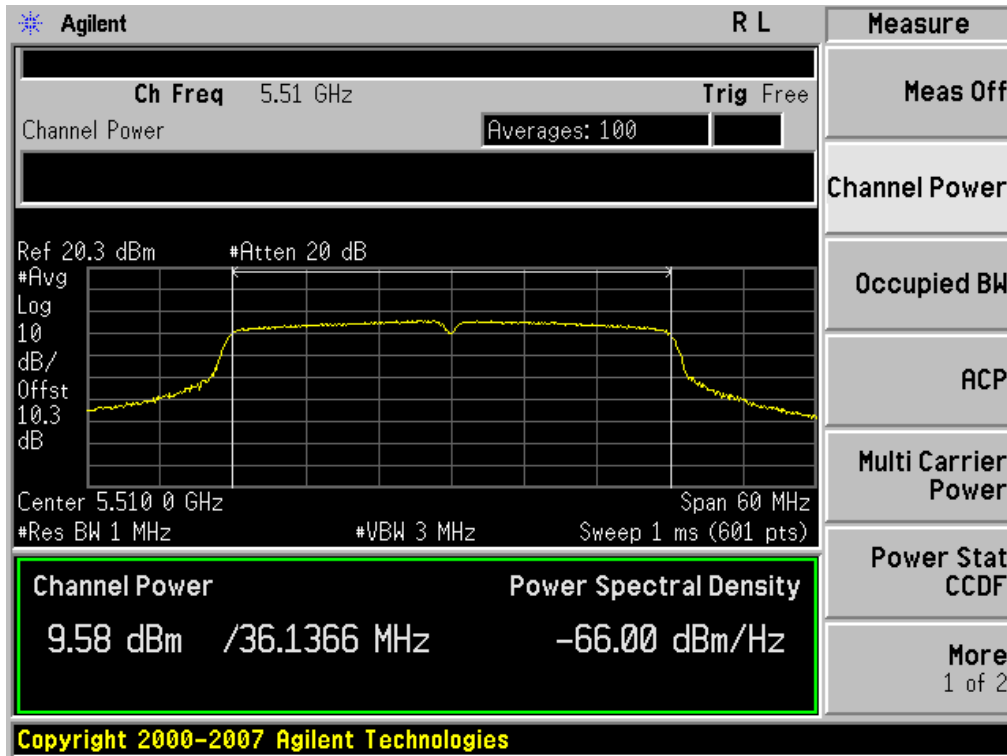


Conducted Output Power (802.11n-CH 62) 135 Mbps

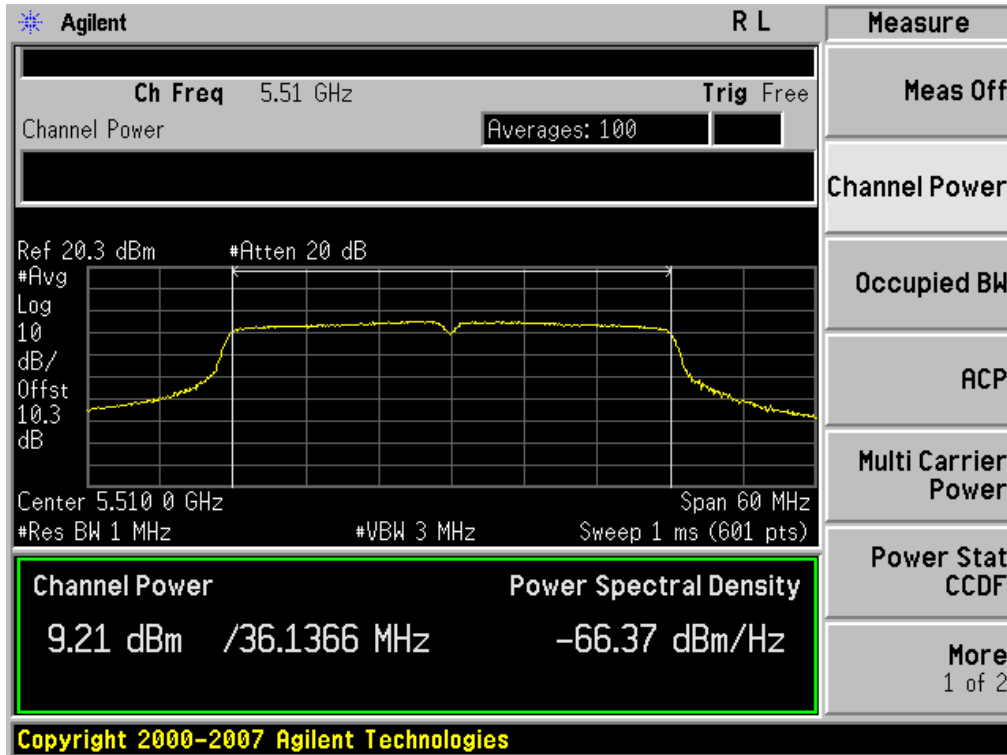


RESULT PLOTS (5510 MHz ~5670 MHz)

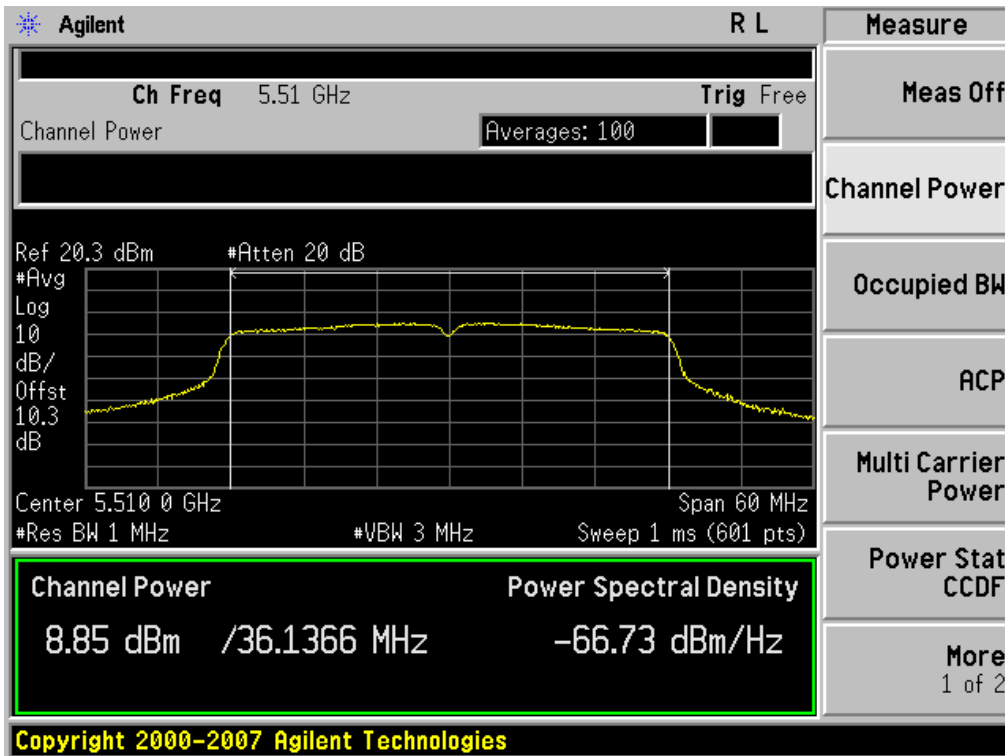
Conducted Output Power (802.11n-CH 102) 13.5 Mbps



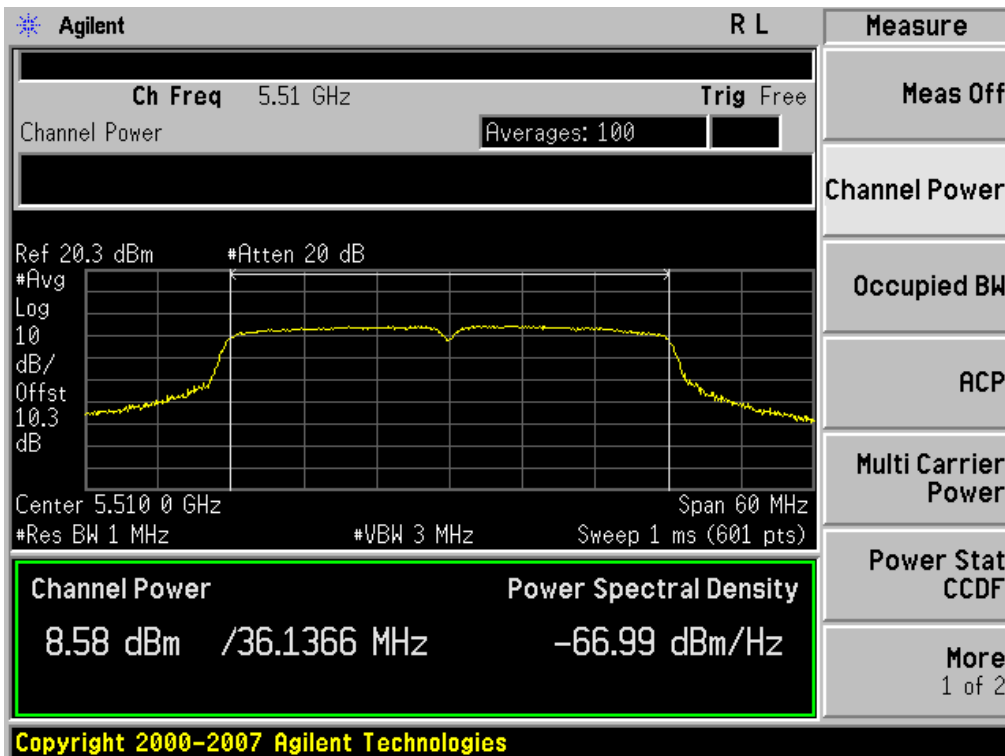
Conducted Output Power (802.11n-CH 102) 27 Mbps



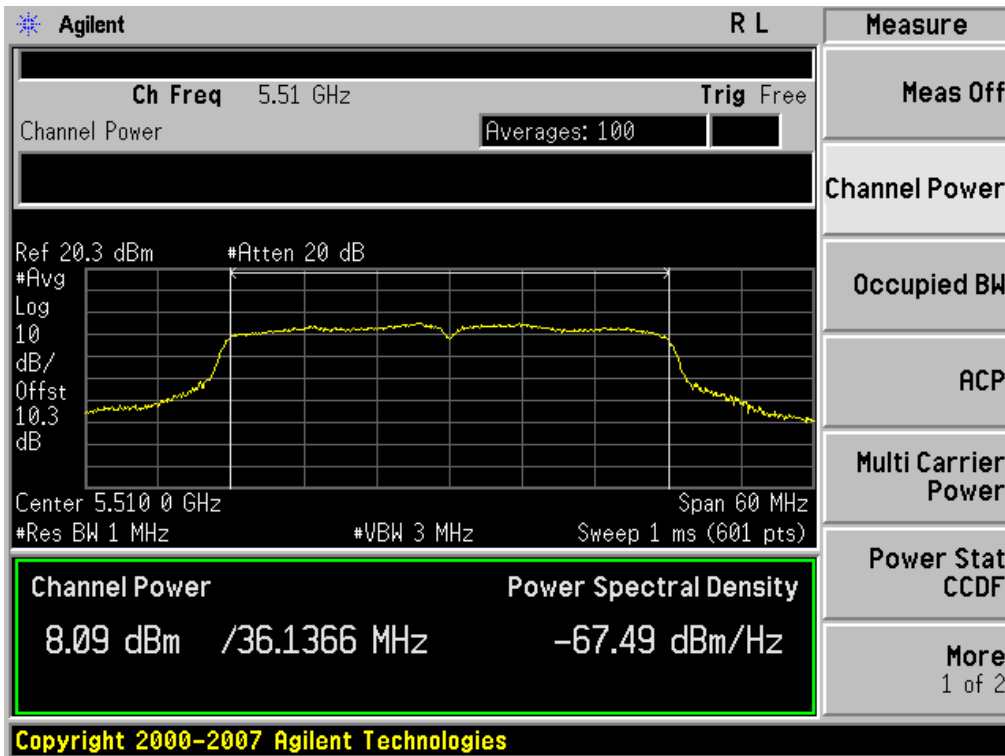
Conducted Output Power (802.11n-CH 102) 40.5 Mbps



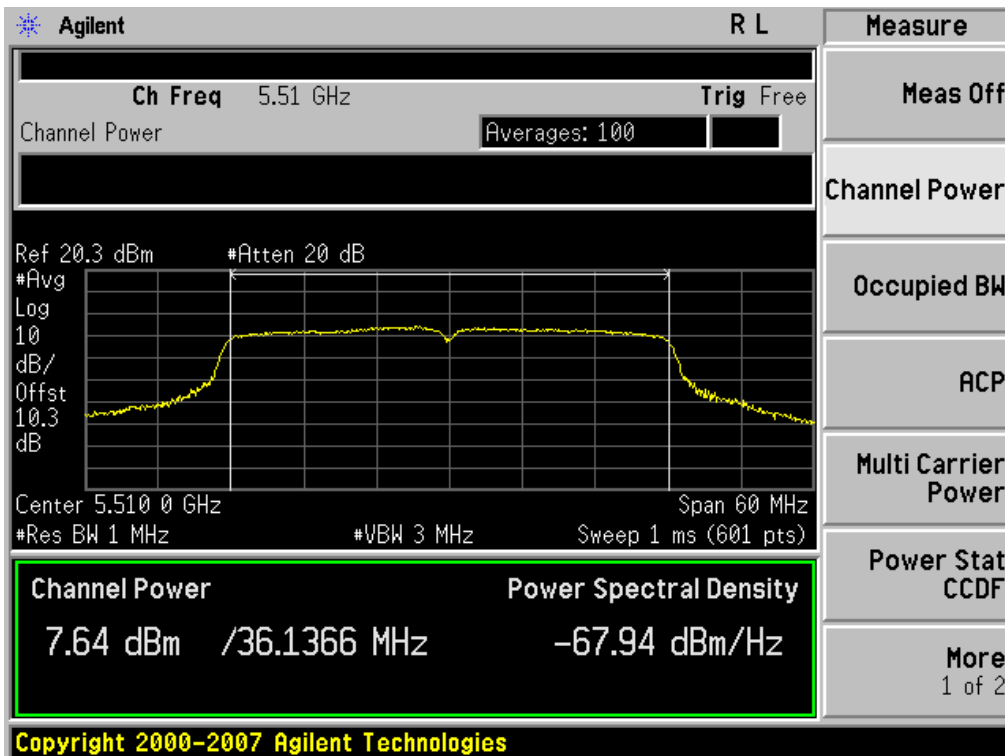
Conducted Output Power (802.11n-CH 102) 54 Mbps



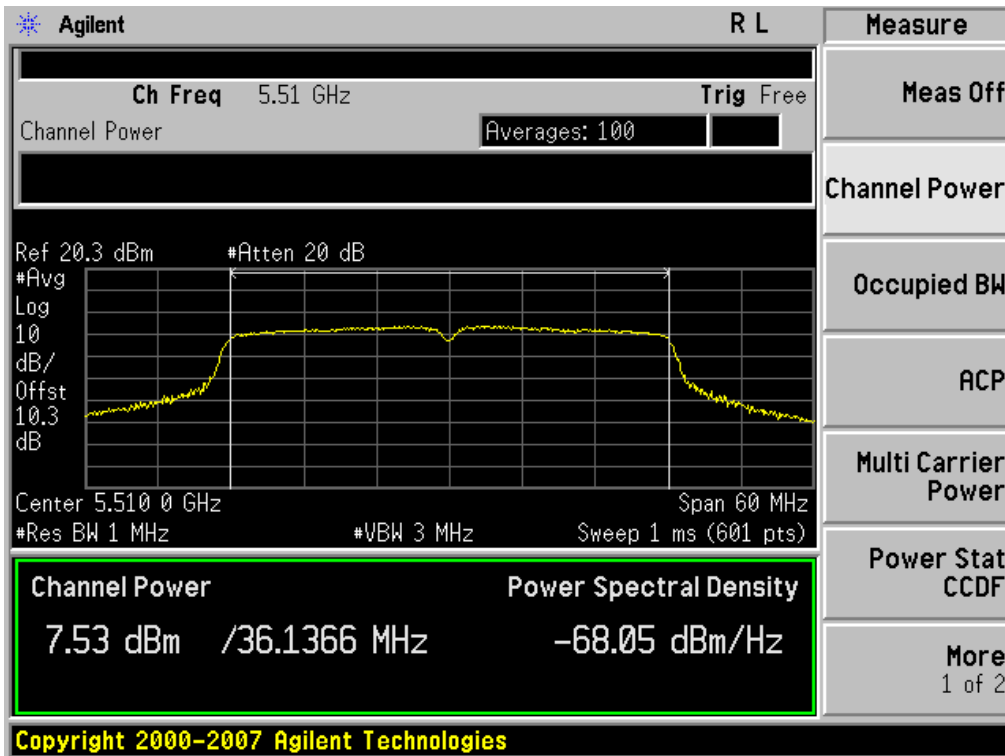
Conducted Output Power (802.11n-CH 102) 81 Mbps



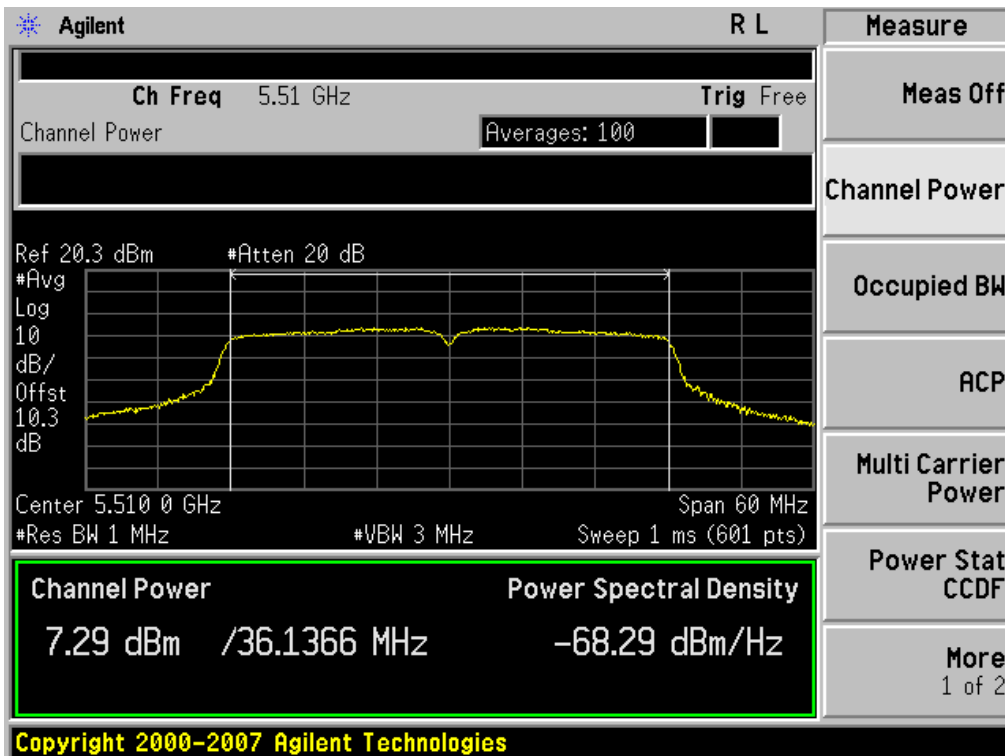
Conducted Output Power (802.11n-CH 102) 108 Mbps



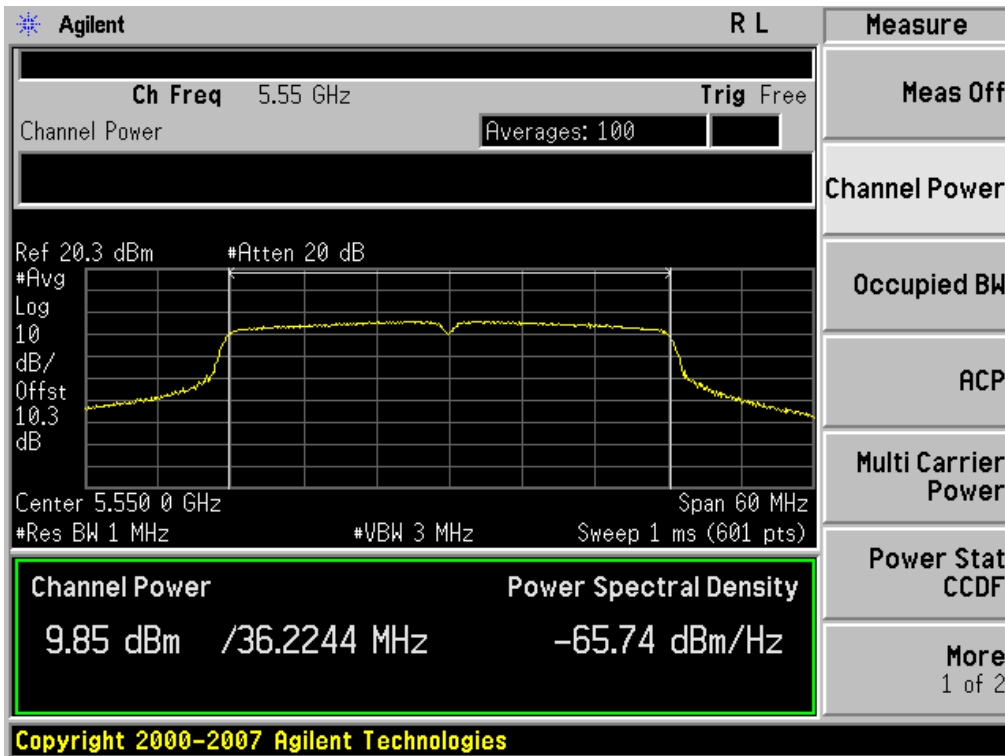
Conducted Output Power (802.11n-CH 102) 121.5 Mbps



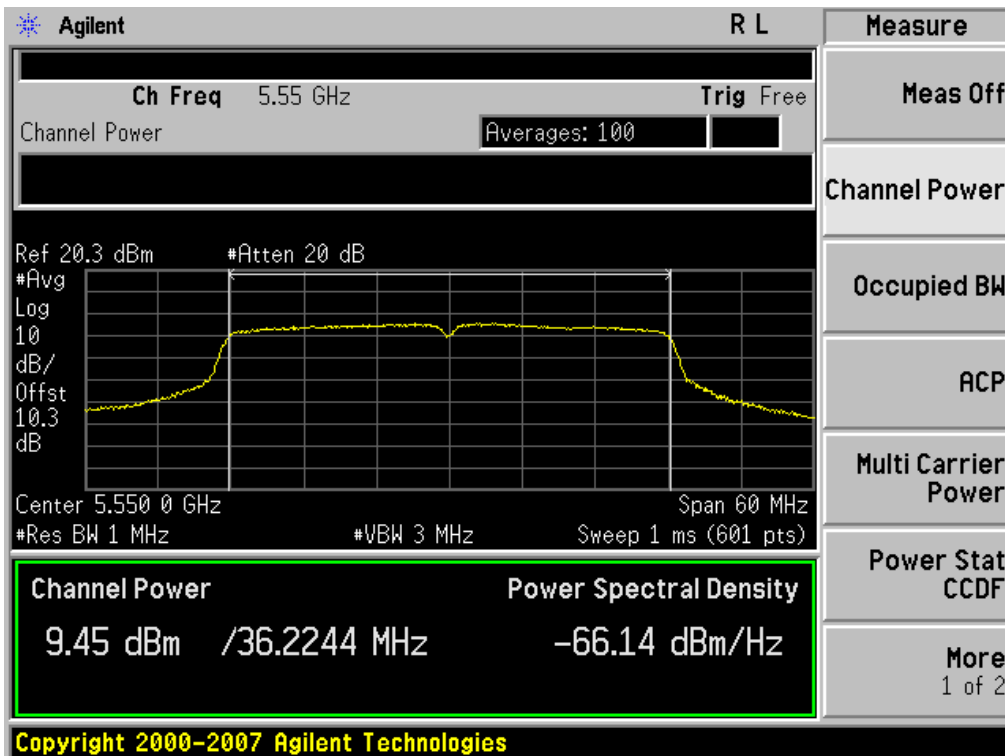
Conducted Output Power (802.11n-CH 102) 135 Mbps



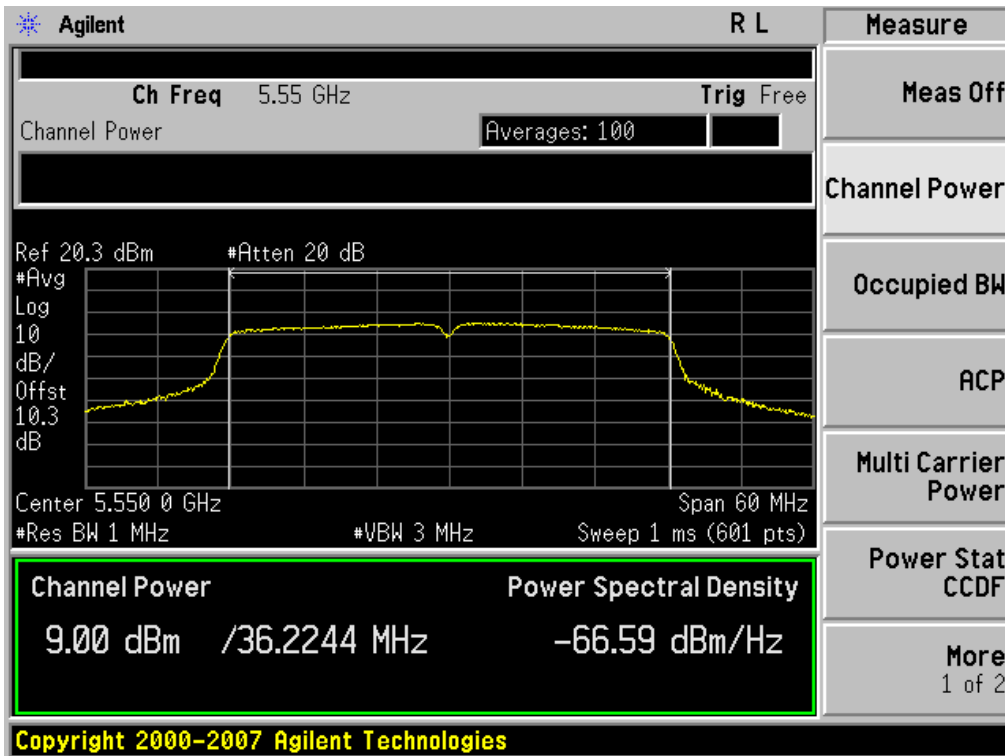
Conducted Output Power (802.11n-CH 110) 13.5 Mbps



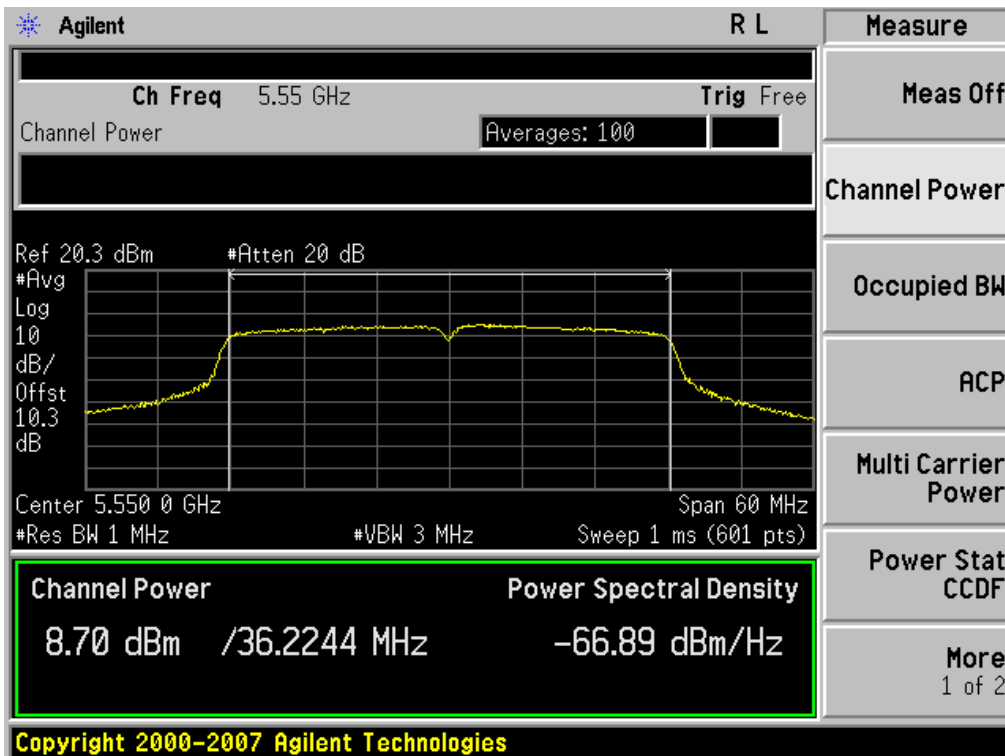
Conducted Output Power (802.11n-CH 110) 27 Mbps



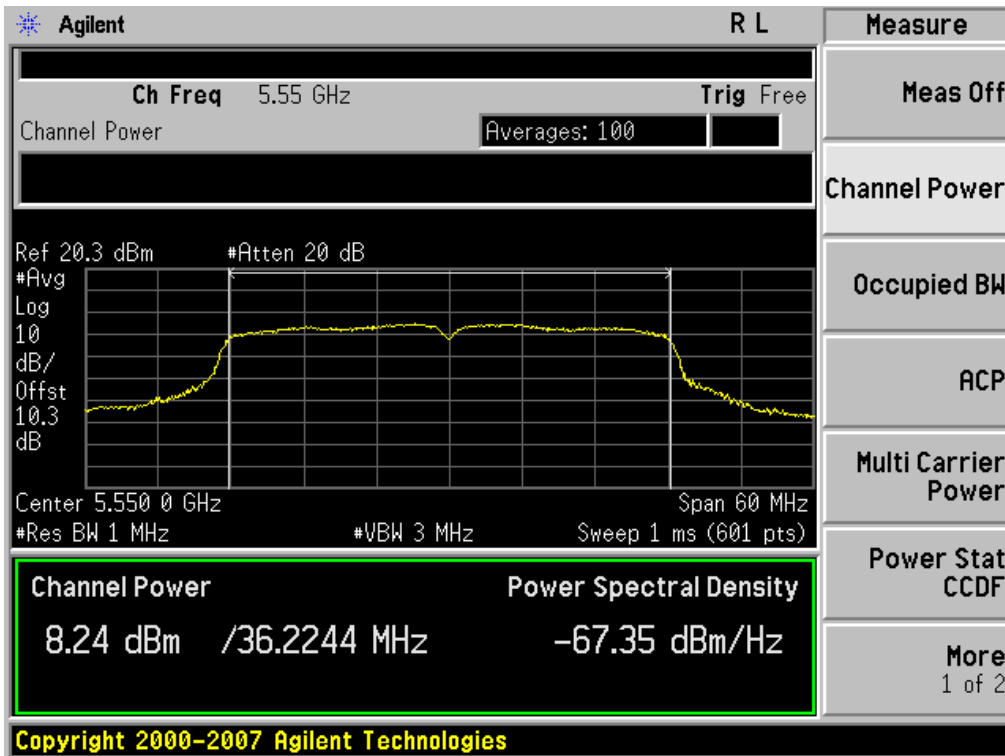
Conducted Output Power (802.11n-CH 110) 40.5 Mbps



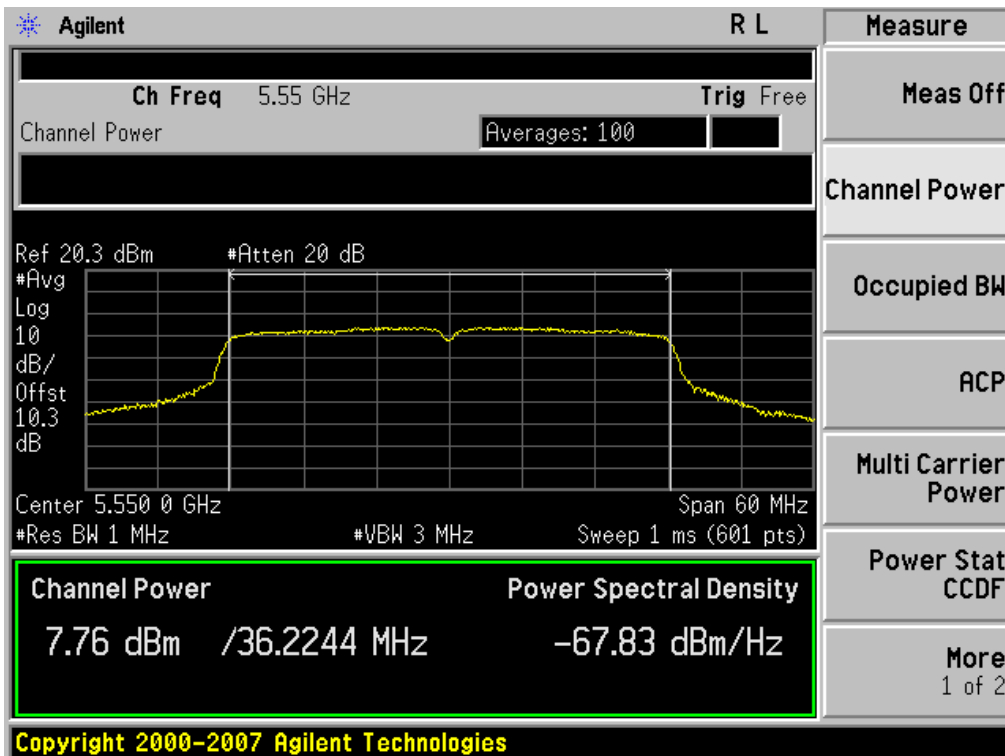
Conducted Output Power (802.11n-CH 110) 54 Mbps



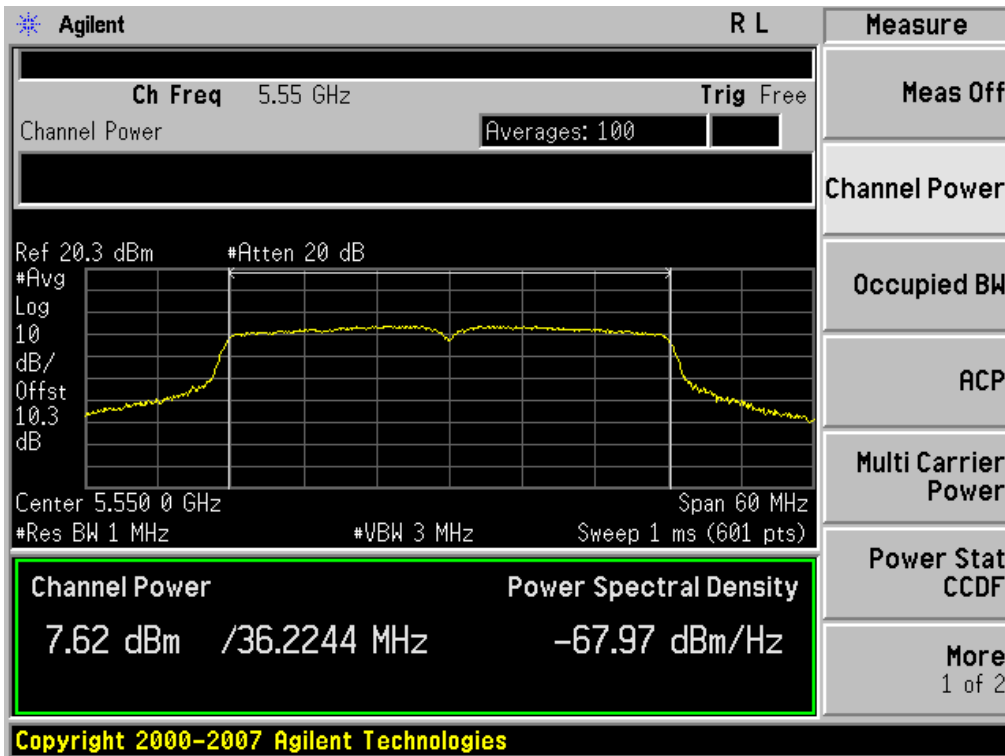
Conducted Output Power (802.11n-CH 110) 81 Mbps



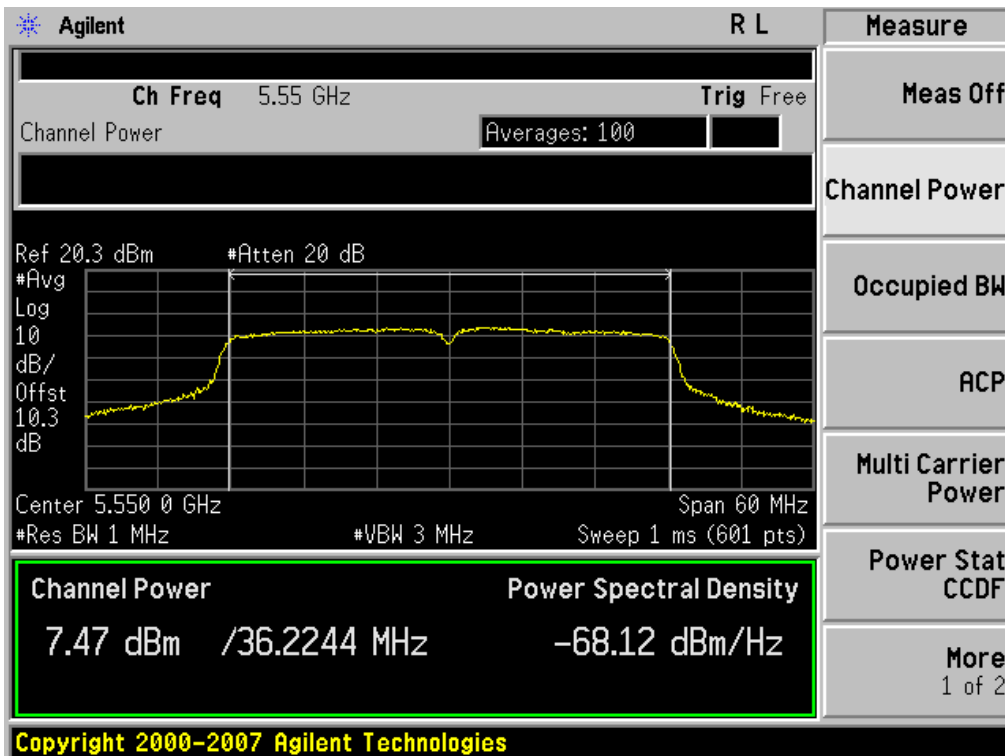
Conducted Output Power (802.11n-CH 110) 108 Mbps



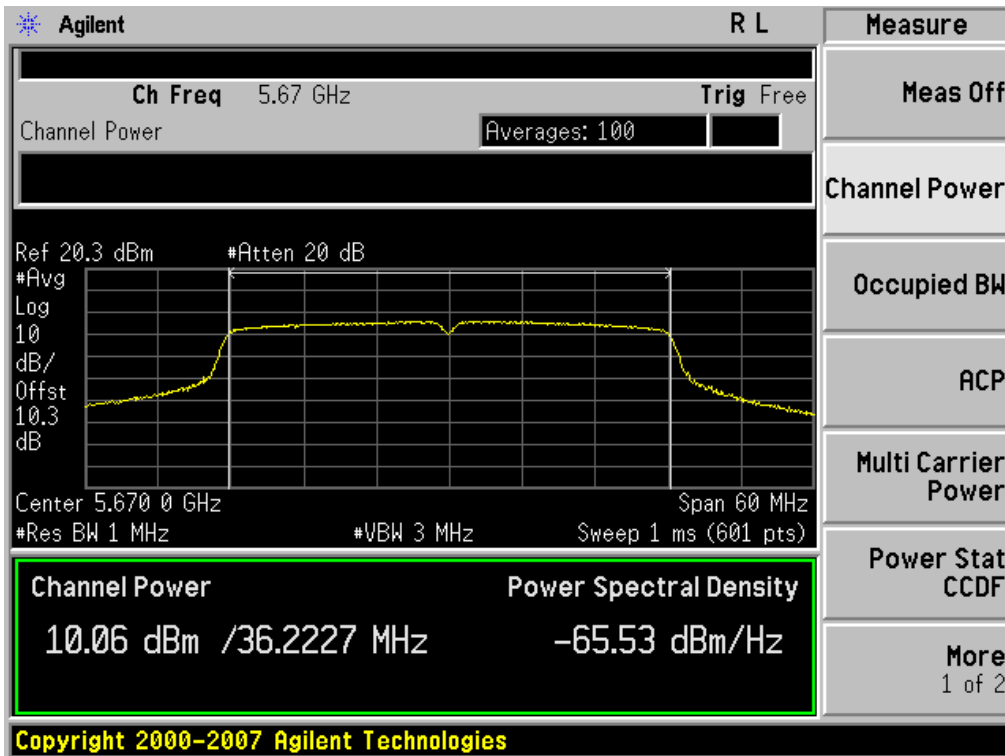
Conducted Output Power (802.11n-CH 110) 121.5 Mbps



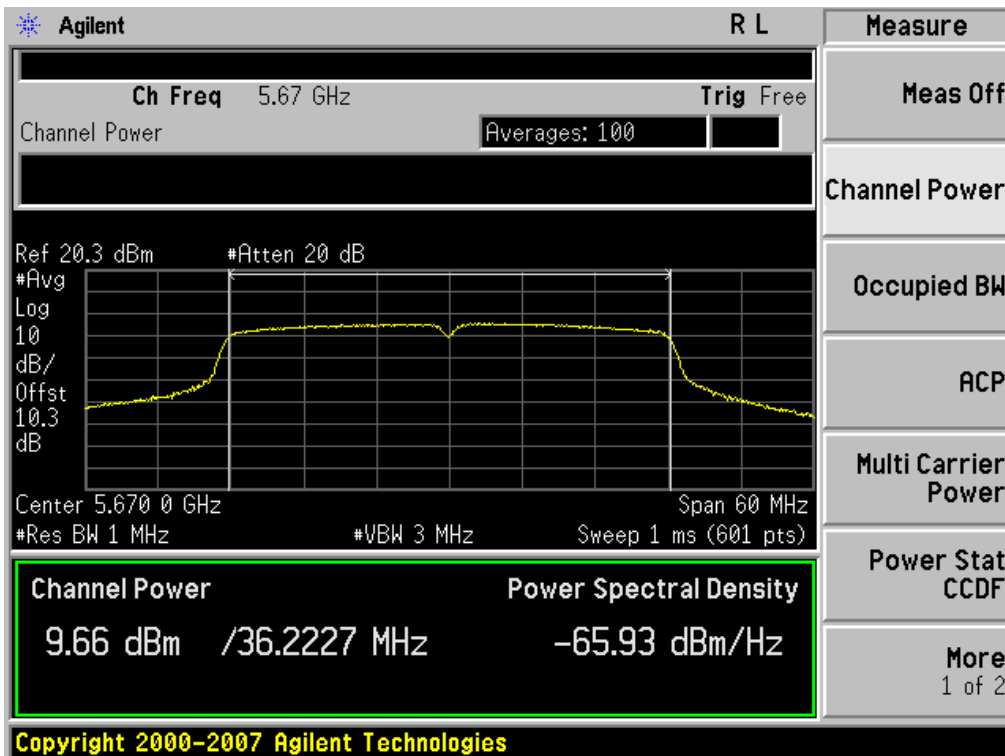
Conducted Output Power (802.11n-CH 110) 135 Mbps



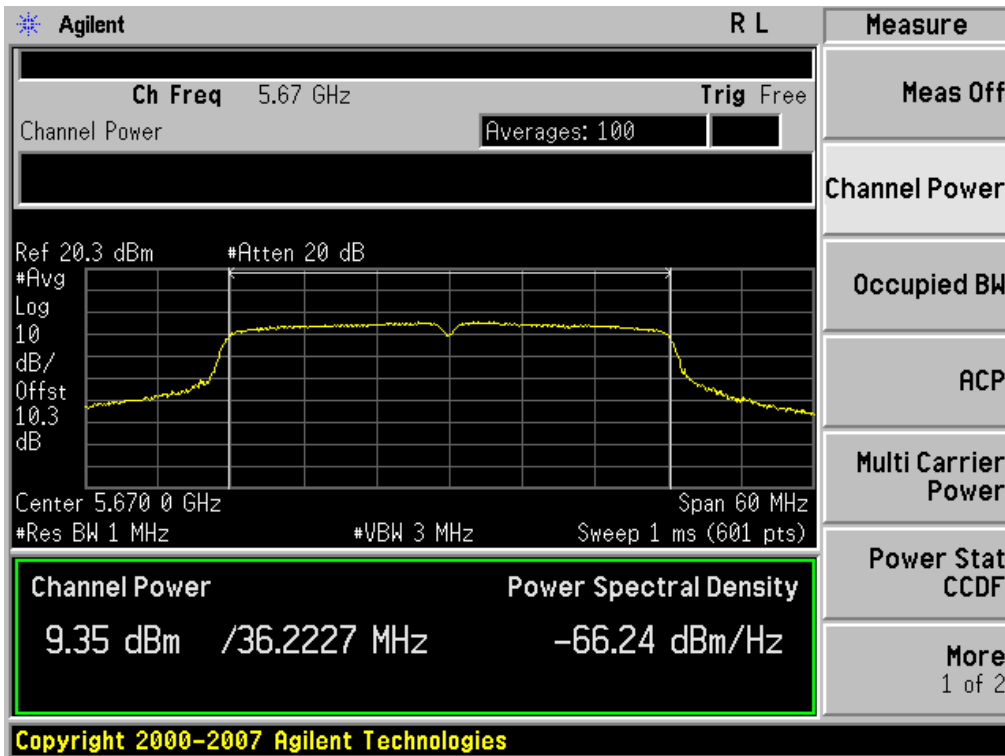
Conducted Output Power (802.11n-CH 134) 13.5 Mbps



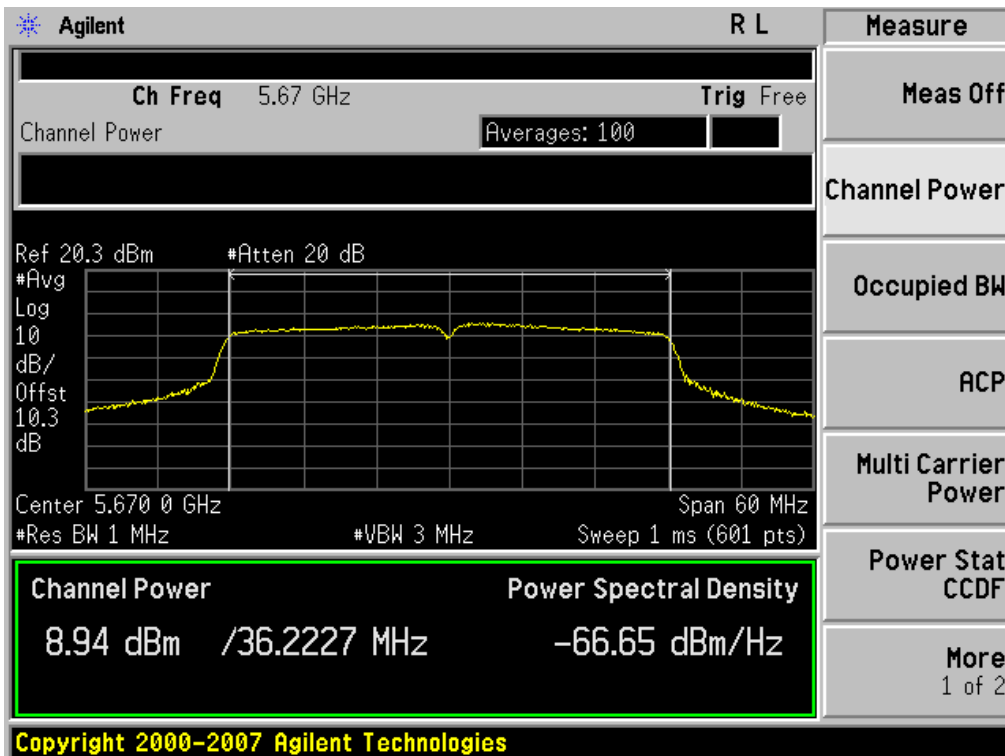
Conducted Output Power (802.11n-CH 134) 27 Mbps



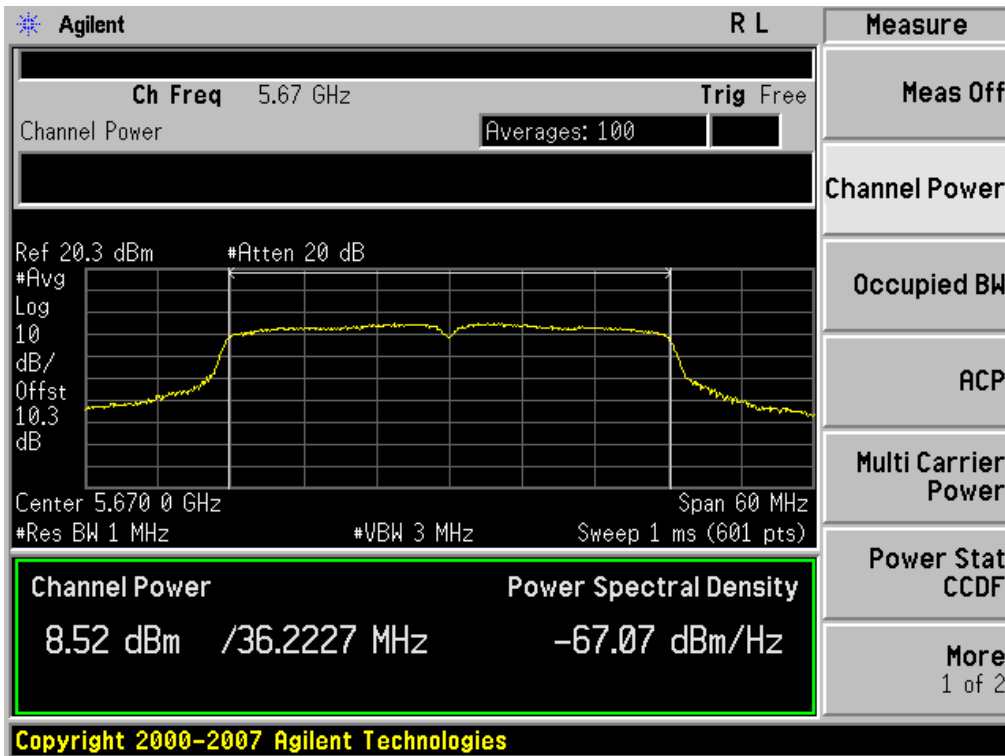
Conducted Output Power (802.11n-CH 134) 40.5 Mbps



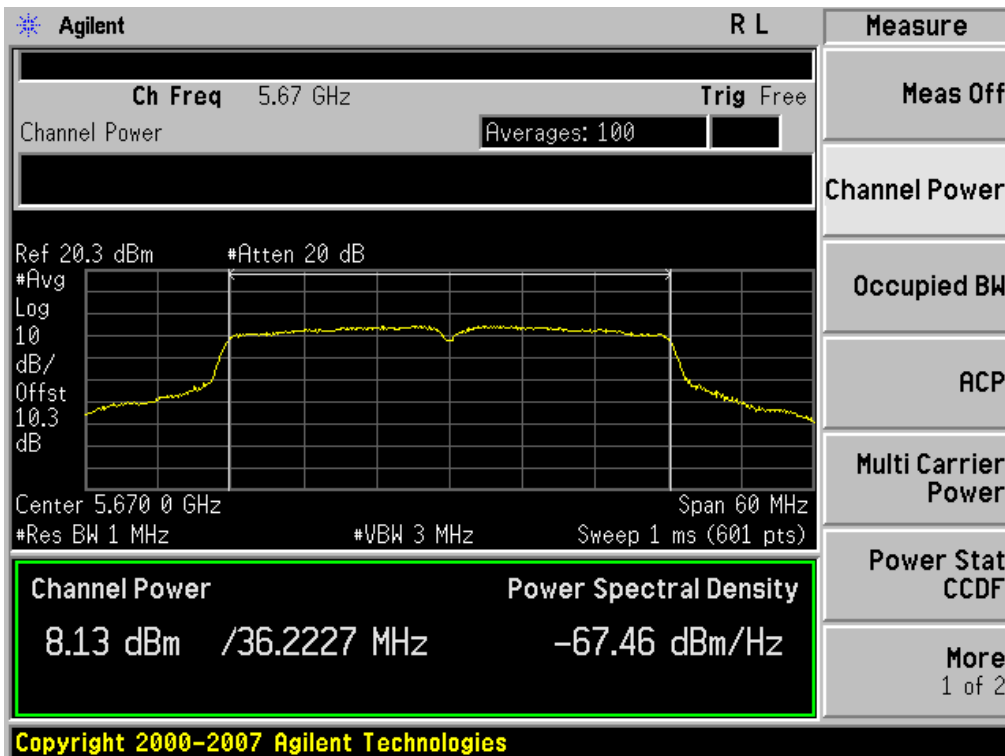
Conducted Output Power (802.11n-CH 134) 54 Mbps



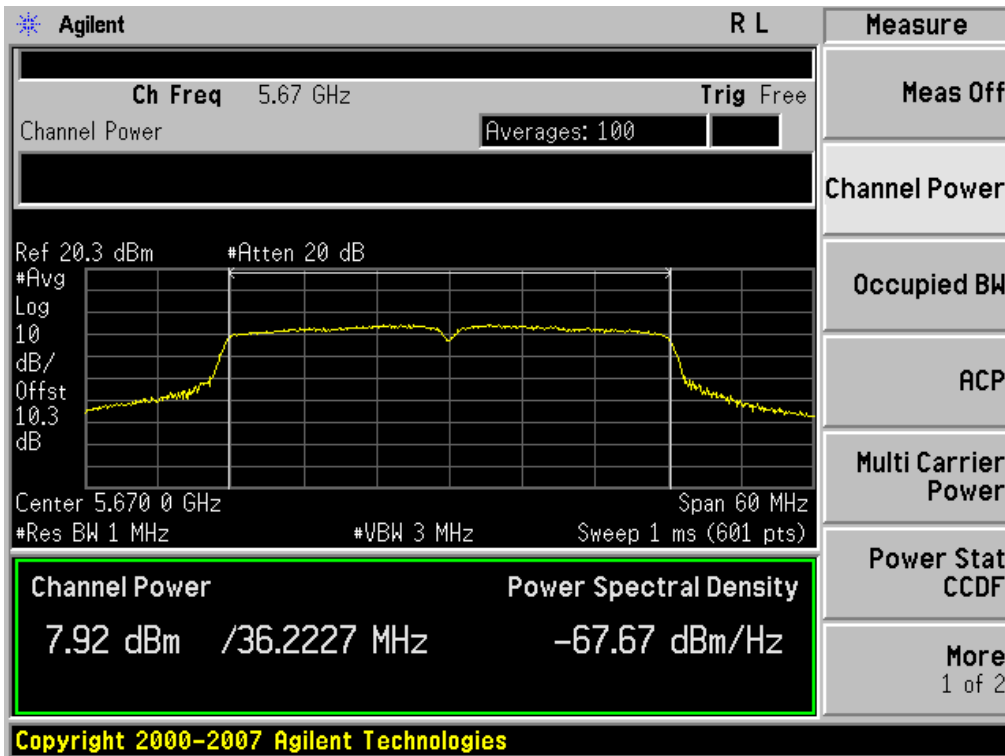
Conducted Output Power (802.11n-CH 134) 81 Mbps



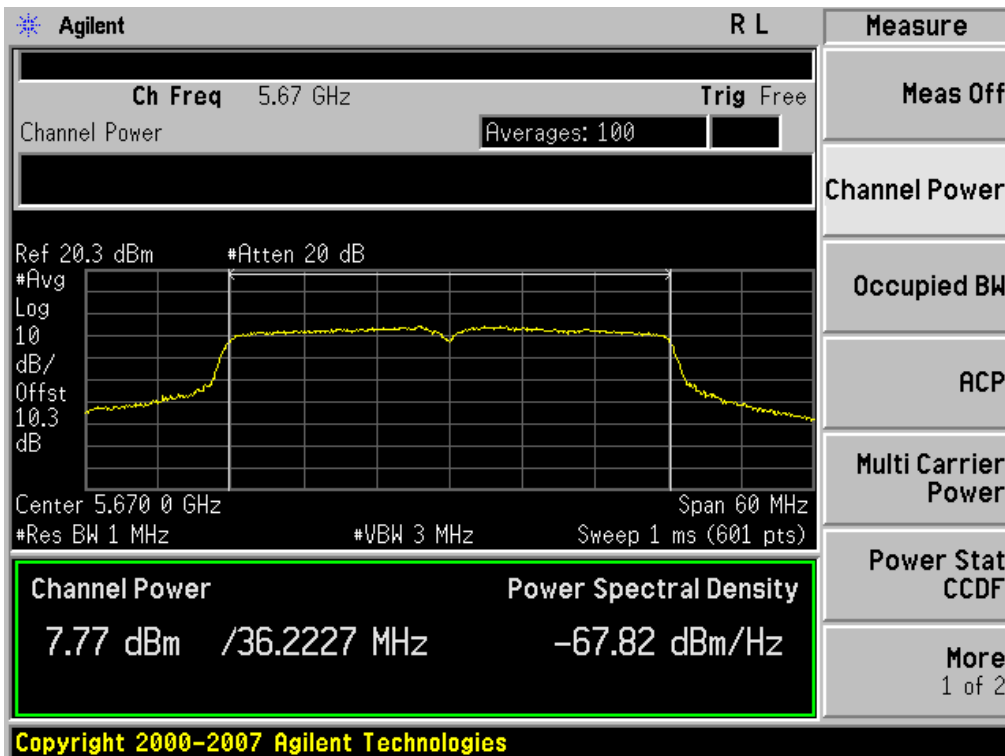
Conducted Output Power (802.11n-CH 134) 108 Mbps



Conducted Output Power (802.11n-CH 134) 121.5 Mbps



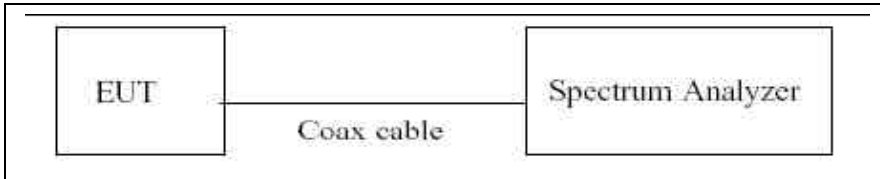
Conducted Output Power (802.11n-CH 134) 135 Mbps



8.4 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

We tested according to Method in KDB 789033(issued 04/08/2013).

The spectrum analyzer is set to :

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz.
3. VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2*span/RBW.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

▣ Sample Calculation

PSD = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = -5 dBm + 10 dB + 0.8 dB + 0.21 dB = 16.01 dBm

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. HCTR1306FR05-3	Date of Issue: July 01, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.26
	5190	10.22
	5200	10.18
	5230	10.19
	5240	10.19
UNII 2	5260	10.18
	5270	10.17
	5300	10.14
	5310	10.11
	5320	10.09
UNII 3	5500	10.20
	5510	10.20
	5550	10.23
	5580	10.24
	5670	10.36
	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				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11a	3.664	0.21	3.874	4	Pass
5200	40		3.496	0.21	3.706	4	Pass
5240	48		3.763	0.21	3.973	4	Pass
5260	52	802.11a	3.517	0.31	3.827	11	Pass
5300	60		2.450	0.58	3.03	11	Pass
5320	64		2.192	1.33	3.522	11	Pass
5500	100	802.11a	1.902	0.21	2.112	11	Pass
5580	116		2.783	0.40	3.183	11	Pass
5700	140		1.457	0.40	1.857	11	Pass

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11n	-2.191	0.22	-1.971	4	Pass
5200	40	20MHz BW	-1.501	0.22	-1.281	4	Pass
5240	48		-0.070	0.22	0.150	4	Pass
5260	52	802.11n	0.009	0.78	0.789	11	Pass
5300	60	20MHz	-1.277	0.42	-0.857	11	Pass
5320	64	BW	-1.367	0.22	-1.147	11	Pass
5500	100	802.11n	-2.435	0.6	-1.835	11	Pass
5580	116	20MHz	0.254	0.42	0.674	11	Pass
5700	140	BW	-1.647	0.22	-1.427	11	Pass

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11n	-5.522	0.43	-5.092	4	Pass
5230	46	40MHz BW	-3.877	0.43	-3.447	4	Pass
5270	54	802.11n	-2.547	0.78	-1.767	11	Pass
5310	62	40MHz BW	-4.793	0.43	-4.363	11	Pass
5510	102	802.11n	-2.924	0.43	-2.494	11	Pass
5550	110	40MHz BW	-3.197	0.43	-2.767	11	Pass
5670	134		-2.614	0.43	-2.184	11	Pass