



Product Service

FCC - TEST REPORT

Report Number : **68.850.10.057.01** Date of Issue: 17 January 2011

Model : **RG-AP220-E, RG-AP220-SE**

Product Type : Wireless Access Point

Applicant : Fujian Ruijie Networks Co., Ltd.

Address : 19#Building, Juyuanzhou Industrial Park, No.618 Jinshan Avenue

Cangshan District, Fuzhou

Production Facility : WNC (Kunshan) Corporation

Address : No.88, Central Avenue, Export Processing Zone, Kunshan

: Development Area, Kunshan City, Jiangzhou

Test Result : **Positive** **Negative**

Total pages including Appendices : 177

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test site 1:

Company name: Jiangsu TÜV Product Service Ltd. – Shenzhen Branch
6th Floor, H Hall,
Century Craftwork Culture Square,
No. 4001, Fuqiang Road,
Futian District 518048,
Shenzhen,P.R.C.

Telephone: 86 755 8828 6998

Fax: 86 755 8828 5299

Test site 2:

Company name: Audix Technology (shenzhen) Co.,Ltd
Block Shenzhen, Science & Industry Park,
Nantou, Shenzhen,
Guangdong,
China

Telephone: 86 755 2663 9496

Fax: 86 755 2663 2877



3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product: Wireless Access Point
Model no.: RG-AP220-E
Brand Name: Ruijie
Options and accessories: NIL
Rating: DC 48V, 25W
RF Transmission Frequency: 2412-2462MHz, 5745-5825 MHz
Description of the EUT: Wireless Device
Remark: Test with adaptor: FSP025-1ADF07B made by FSP Group Inc
Input: AC 100-240V, 50-60Hz, 0.8A
Output: DC 48V, 0.52A

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook pc	DELL	D430	----



Product Service

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition	Pages	Test Result			Test location
		Pass	Fail	N/A	
15.207 Conducted Emission AC Power Port	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247 (b) (1) Conducted peak output power	12	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247(d) Band edge compliance of RF emissions	16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247(d) Spurious RF conducted emissions	39	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247(d) 15.209 Spurious radiated emissions	101	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247(a)(2) 6dB bandwidth	110	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2
15.247(e) Power spectral density	146	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test site 2

6 General Remarks

Remarks

The only difference between two models is that RG-AP220-E has two same radio modules, RG-AP220-SE only has one radio module. So all the tests were applied on RG-AP220-E, RG-AP220-SE is deemed to fulfill relevant all requirement without further testing.

This submittal(s) (test report) is intended for the Class 2 permissive change of WLAN a/b/g/n mini-PCI Module, Model No.: DNMA-83, FCC ID: NKR-DNMA83.

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements.


- **Does not** fulfill the general approval requirements.


Sample Received Date: 30 September 2010


Testing Start Date: 30 September 2010

Testing End Date: 11 January 2011

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

Tested By	<u>2011-03-02</u>	<u>Sunny Lu</u>	
Test Lab Engineer	Date	Name	

Prepared By	<u>2011-03-02</u>	<u>Cookies Bu</u>	
Project Engineer	Date	Name	

Reviewed By	<u>2011-03-02</u>	<u>Paul Yu</u>	
Assistant EMC Manager	Date	Name	

7 Technical Requirement

7.1 Conducted Emission

Test Method

- 1 The EUT was placed on a table, which is 0.8m above ground plane
- 2 The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
- 3 Maximum procedure was performed to ensure EUT compliance
- 4 A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions from both sides of AC line

Limit

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

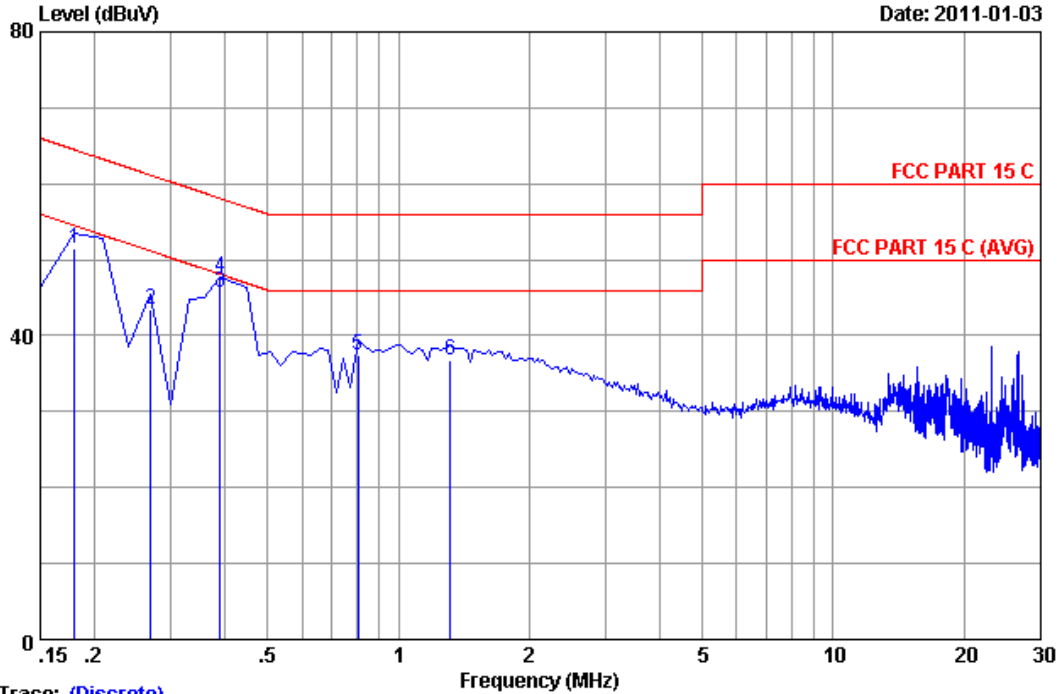
Decreasing linearly with logarithm of the frequency

Conducted Emission

Data: 3

File: D:\DATA\2010 test data\T\TUV\20110102.EM6 (7)

Date: 2011-01-03



Trace: (Discrete)

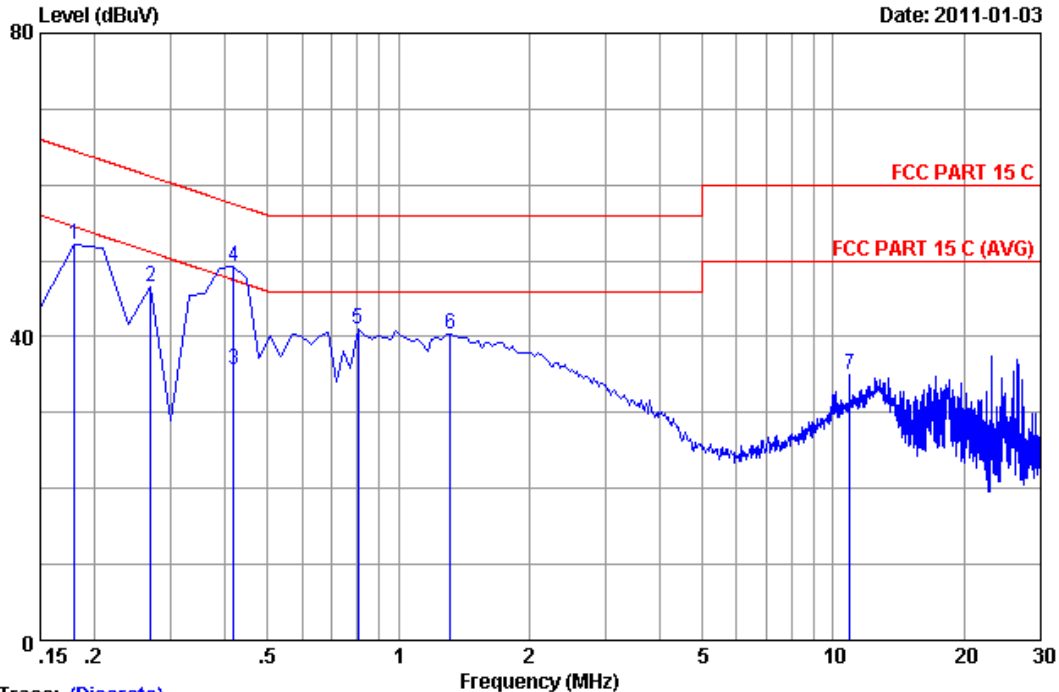
Site no :1#conduction Data No :3
 Dis./Ant. **: 2010 ESH2-Z5 LINE
 Limit :FCC PART 15 C
 Env./Ins. :29.5°C/55% Engineer :Paul Tian
 EUT :AP220-E
 Power Rating :AC 120V/60Hz
 Test Mode :Tx Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17985	0.22	9.88	41.35	51.45	64.49	13.04	QP
2	0.26940	0.22	9.88	33.30	43.40	61.14	17.74	QP
3	0.38880	0.24	9.88	35.47	45.59	58.09	12.50	QP
4	0.38880	0.24	9.88	37.47	47.59	58.09	10.50	QP
5	0.80670	0.24	9.89	27.26	37.39	56.00	18.61	QP
6	1.314	0.23	9.89	26.72	36.84	56.00	19.16	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Conducted Emission

Data: 4 File: D:\DATA\2010 test data\TUV\20110102.EM6 (7) Date: 2011-01-03



Trace: (Discrete)

Site no :1#conduction Data No :4
 Dis./Ant. **: 2010 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 C
 Env./Ins. :29.5°C/55% Engineer :Paul Tian
 EUT :AP220-E
 Power Rating :AC 120V/60Hz
 Test Mode :Tx Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17985	0.21	9.88	42.14	52.23	64.49	12.26	QP
2	0.26940	0.21	9.88	36.56	46.65	61.14	14.49	QP
3	0.41865	0.22	9.88	25.60	35.70	47.47	11.77	Average
4	0.41865	0.22	9.88	39.15	49.25	57.47	8.22	QP
5	0.80670	0.24	9.89	30.97	41.10	56.00	14.90	QP
6	1.314	0.25	9.89	30.25	40.39	56.00	15.61	QP
7	10.896	0.45	10.00	24.60	35.05	60.00	24.95	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Dec.18, 11
L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Mar.30, 11
L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 11
Terminator	Hubersuhner	50Ω	No. 1	May.08, 11
Terminator	Hubersuhner	50Ω	No. 2	May.08, 11
RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 11
Coaxial Switch	Anritsu	MP59B	M55367	May.08, 11
Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 11

7.2 Conducted peak output power

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Limits for conducted peak output power measurements

Frequency Range MHz	Limit W	Limit dBm
2400-2483	≤1	≤30
5745-5825	≤1	≤30

Conducted peak output power

IEEE 802.11b modulation (1Mbps) Test Result

Channel	Channel Frequency (MHz)	Antenna Port	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)	Result
CH1	2412	Chain0	1	15.03	30	Pass
CH1	2412	Chain1	1	14.90	30	Pass
CH1	2412	Chain2	1	14.93	30	Pass
CH6	2437	Chain0	1	15.20	30	Pass
CH6	2437	Chain1	1	14.45	30	Pass
CH6	2437	Chain2	1	15.18	30	Pass
CH11	2462	Chain0	1	15.70	30	Pass
CH11	2462	Chain1	1	15.34	30	Pass
CH11	2462	Chain2	1	16.08	30	Pass

IEEE 802.11g modulation (6Mbps) Test Result

Channel	Channel Frequency (MHz)	Antenna Port	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)	Result
CH1	2412	Chain0	6	17.28	30	Pass
CH1	2412	Chain1	6	16.63	30	Pass
CH1	2412	Chain2	6	17.51	30	Pass
CH6	2437	Chain0	6	17.23	30	Pass
CH6	2437	Chain1	6	16.48	30	Pass
CH6	2437	Chain2	6	17.52	30	Pass
CH11	2462	Chain0	6	16.96	30	Pass
CH11	2462	Chain1	6	16.94	30	Pass
CH11	2462	Chain2	6	17.14	30	Pass



IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Channel	Channel Frequency (MHz)	Antenna Port	Data Rate (Mbps)	Output Power (dBm)	Total Power (dBm)	Limit (dBm)	Result
CH1	2412	Chain0	6.5	19.17	23.85	30	Pass
CH1	2412	Chain1	6.5	18.75			
CH1	2412	Chain2	6.5	19.30			
CH6	2437	Chain0	6.5	19.13	23.91	30	Pass
CH6	2437	Chain1	6.5	18.89			
CH6	2437	Chain2	6.5	19.37			
CH11	2462	Chain0	6.5	18.55	23.82	30	Pass
CH11	2462	Chain1	6.5	19.27			
CH11	2462	Chain2	6.5	19.29			
CH149	5745	Chain0	6.5	19.97	24.95	30	Pass
CH149	5745	Chain1	6.5	20.32			
CH149	5745	Chain2	6.5	20.23			
CH157	5785	Chain0	6.5	19.94	25.12	30	Pass
CH157	5785	Chain1	6.5	20.92			
CH157	5785	Chain2	6.5	20.12			
CH165	5825	Chain0	6.5	20.56	26.05	30	Pass
CH165	5825	Chain1	6.5	21.90			
CH165	5825	Chain2	6.5	21.26			

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Channel	Channel Frequency (MHz)	Antenna Port	Data Rate (Mbps)	Output Power (dBm)	Total Power (dBm)	Limit (dBm)	Result
CH3	2422	Chain0	13.5	14.05	18.77	30	Pass
CH3	2422	Chain1	13.5	13.53			
CH3	2422	Chain2	13.5	14.38			
CH6	2437	Chain0	13.5	14.12	18.80	30	Pass
CH6	2437	Chain1	13.5	13.44			
CH6	2437	Chain2	13.5	14.47			
CH9	2452	Chain0	13.5	14.08	18.67	30	Pass
CH9	2452	Chain1	13.5	13.96			
CH9	2452	Chain2	13.5	13.66			
CH151	5755	Chain0	13.5	16.70	21.45	30	Pass
CH151	5755	Chain1	13.5	16.84			
CH151	5755	Chain2	13.5	16.49			
CH159	5795	Chain0	13.5	16.39	21.40	30	Pass
CH159	5795	Chain1	13.5	16.95			
CH159	5795	Chain2	13.5	16.52			

IEEE 802.11a modulation (6Mbps) Test Result

Channel	Channel Frequency (MHz)	Antenna Port	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)	Result
CH149	5745	Chain0	6	19.80	30	Pass
CH149	5745	Chain1	6	19.54	30	Pass
CH149	5745	Chain2	6	19.65	30	Pass
CH157	5785	Chain0	6	20.20	30	Pass
CH157	5785	Chain1	6	20.42	30	Pass
CH157	5785	Chain2	6	20.03	30	Pass
CH165	5825	Chain0	6	20.30	30	Pass
CH165	5825	Chain1	6	21.42	30	Pass
CH165	5825	Chain2	6	20.46	30	Pass



Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08 2011

7.3 Band edge compliance of RF emissions

Test Method

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBW to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100kHz, to measure the conducted peak band edge.

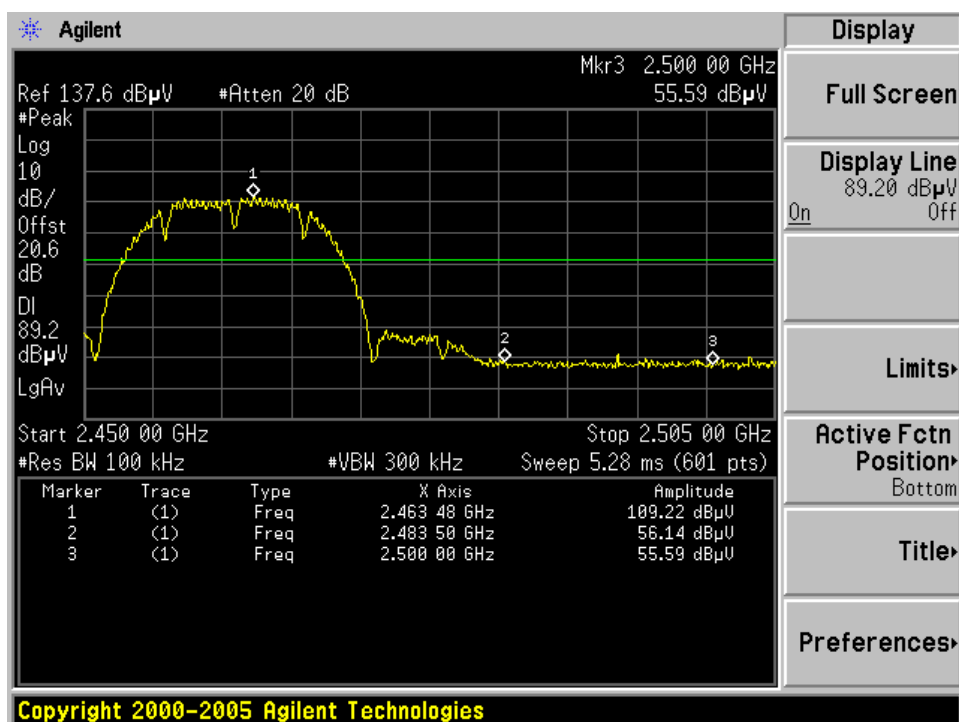
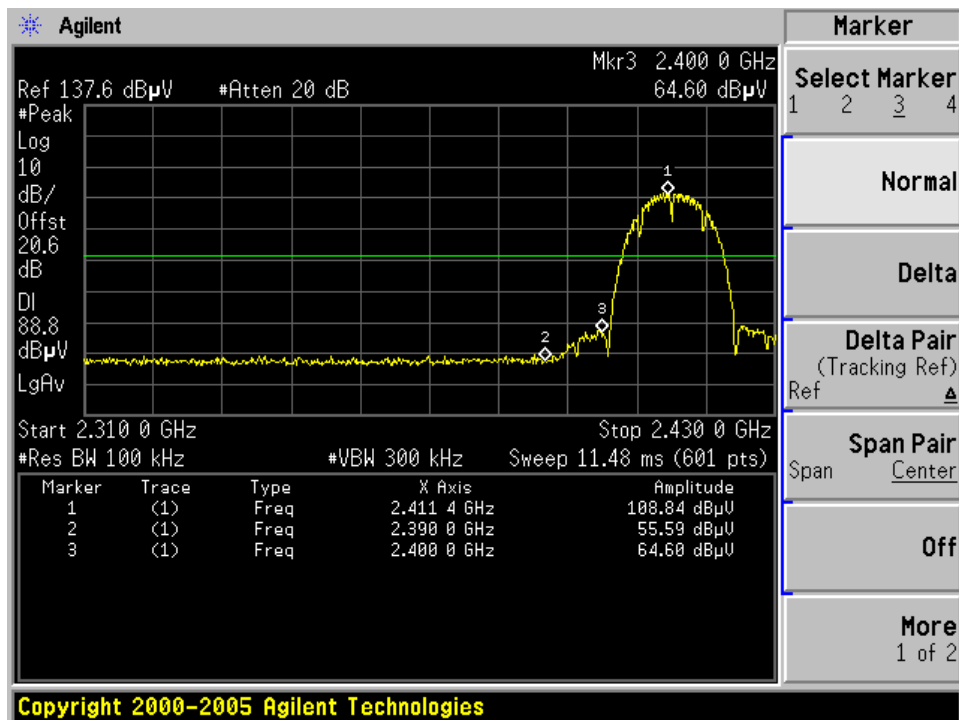
Limits

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator 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, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

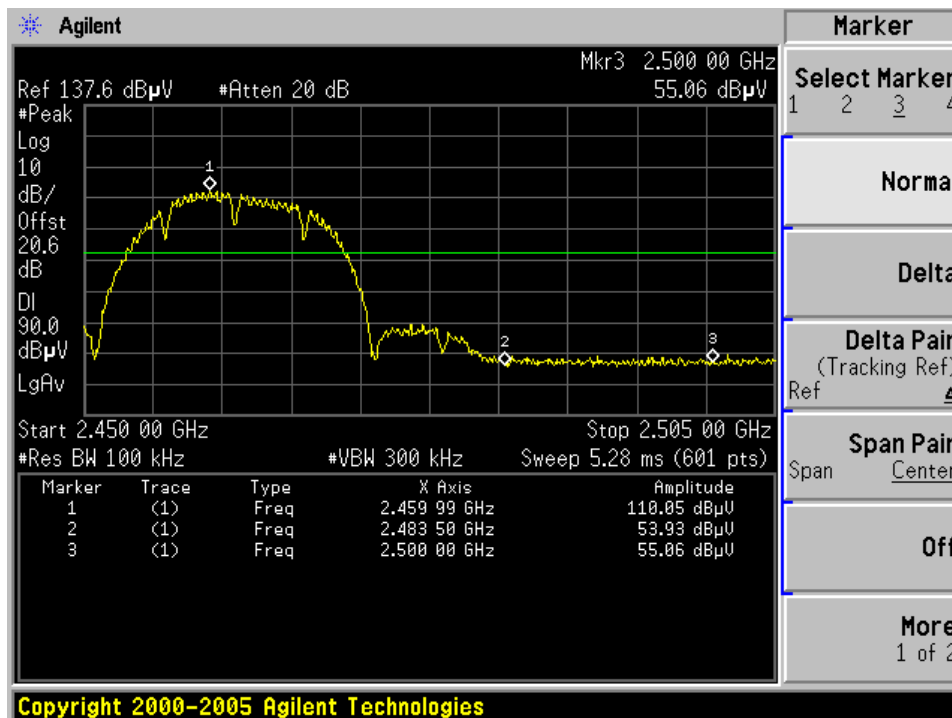
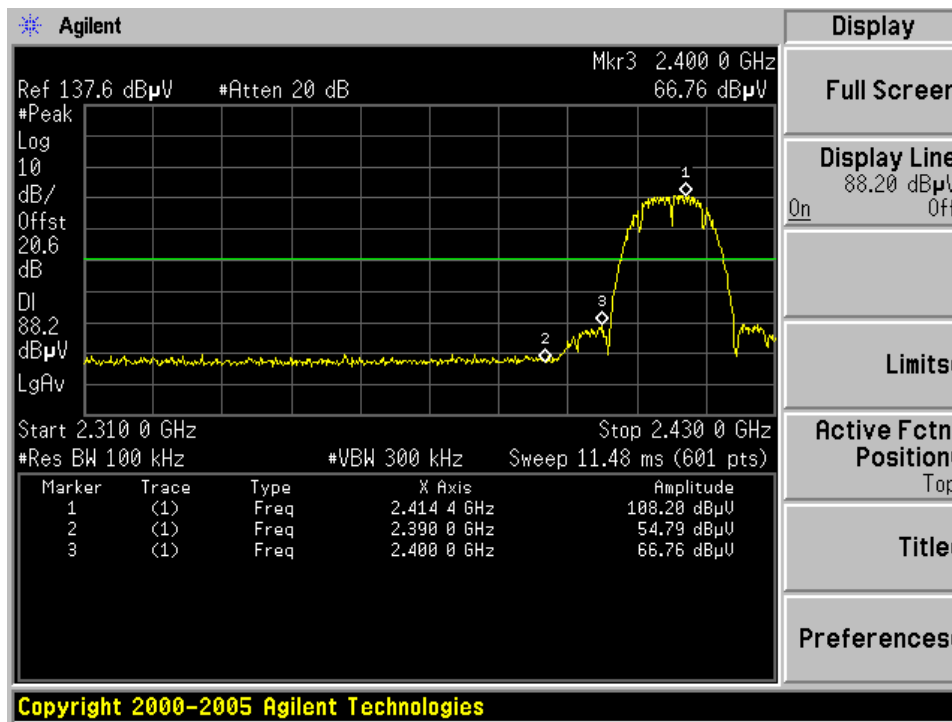
Band edge and compliance of RF emissions

2412-2462MHz Band:

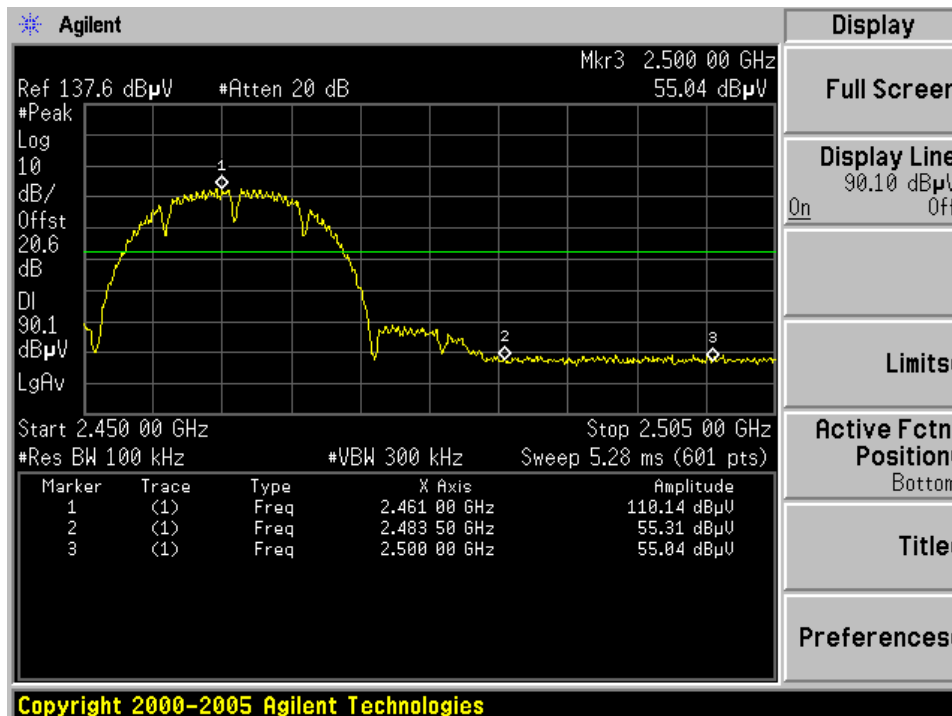
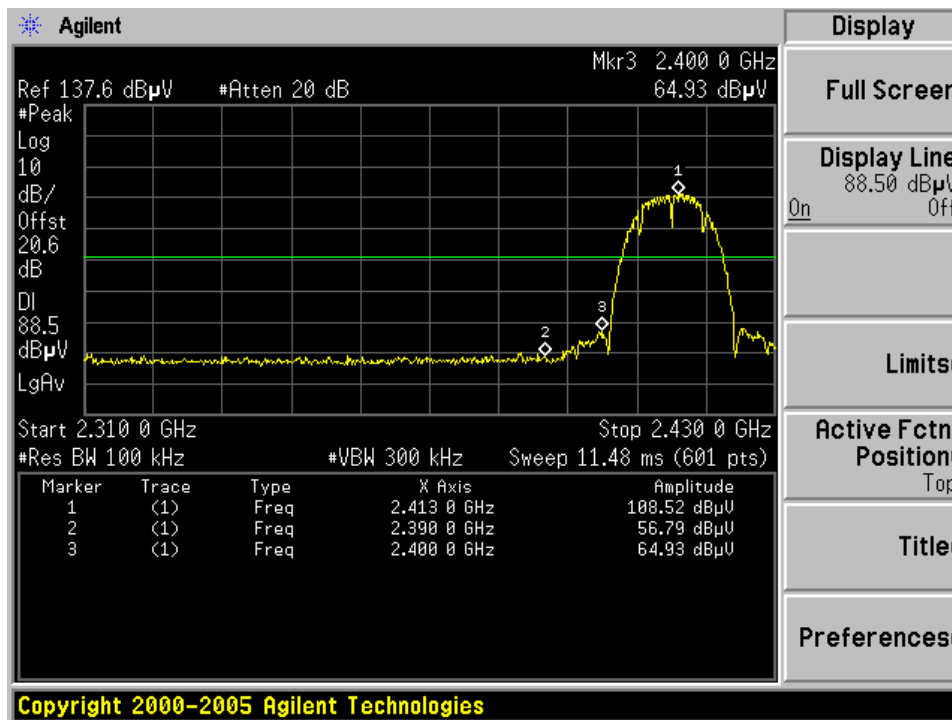
IEEE 802.11b modulation (1 Mbps) Test Result
Chain0:



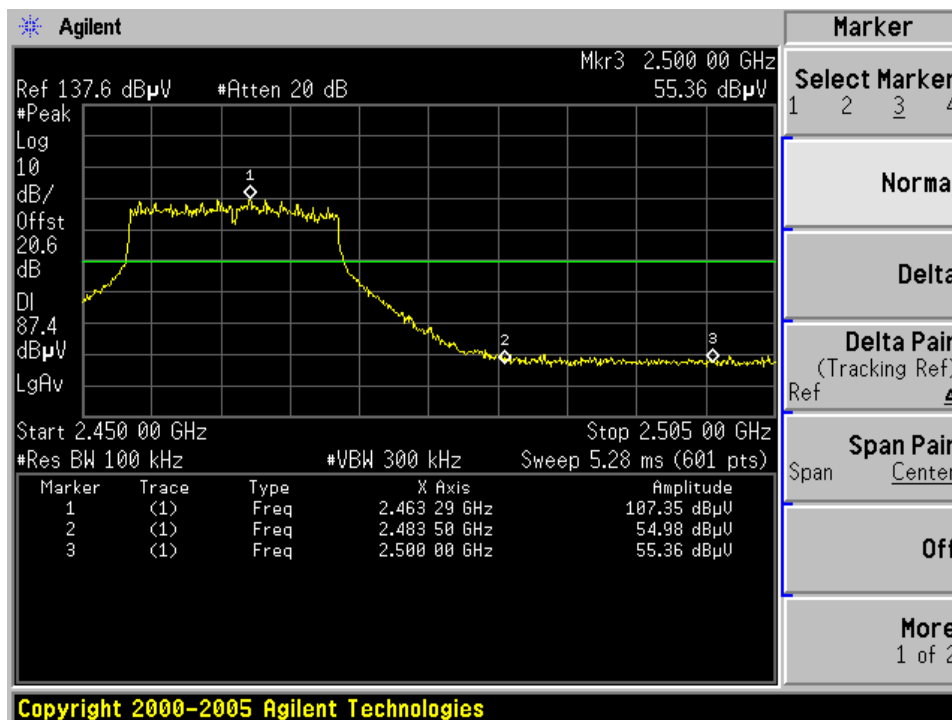
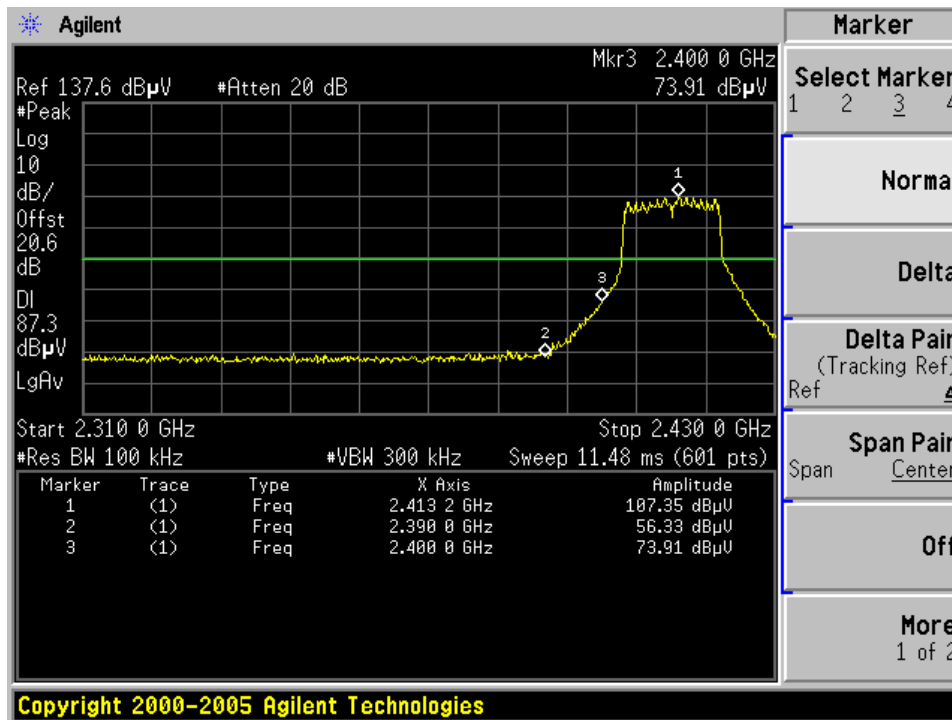
Chain1:



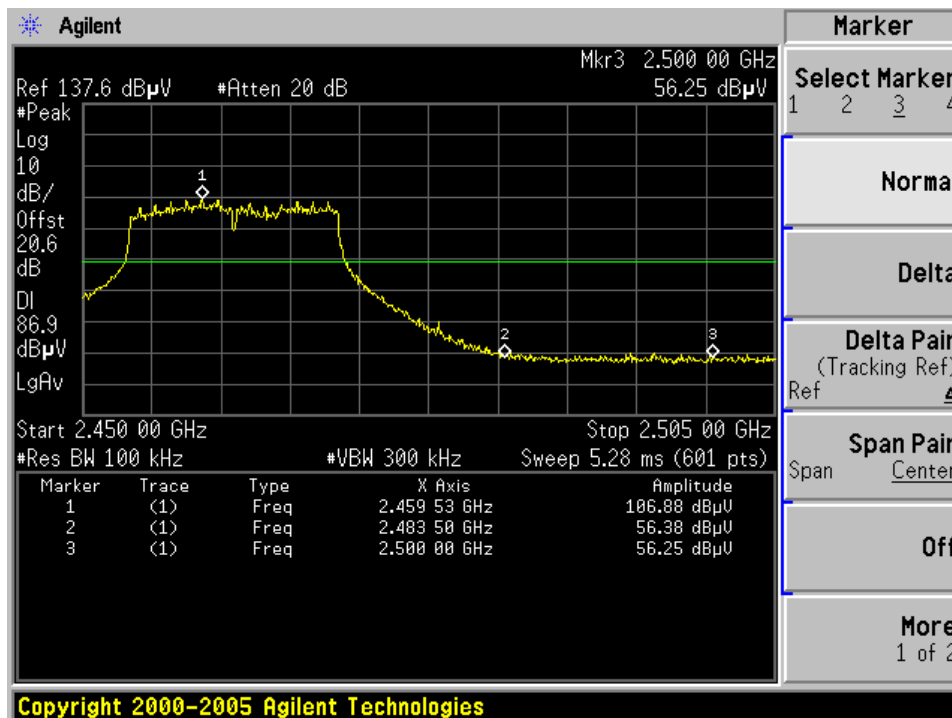
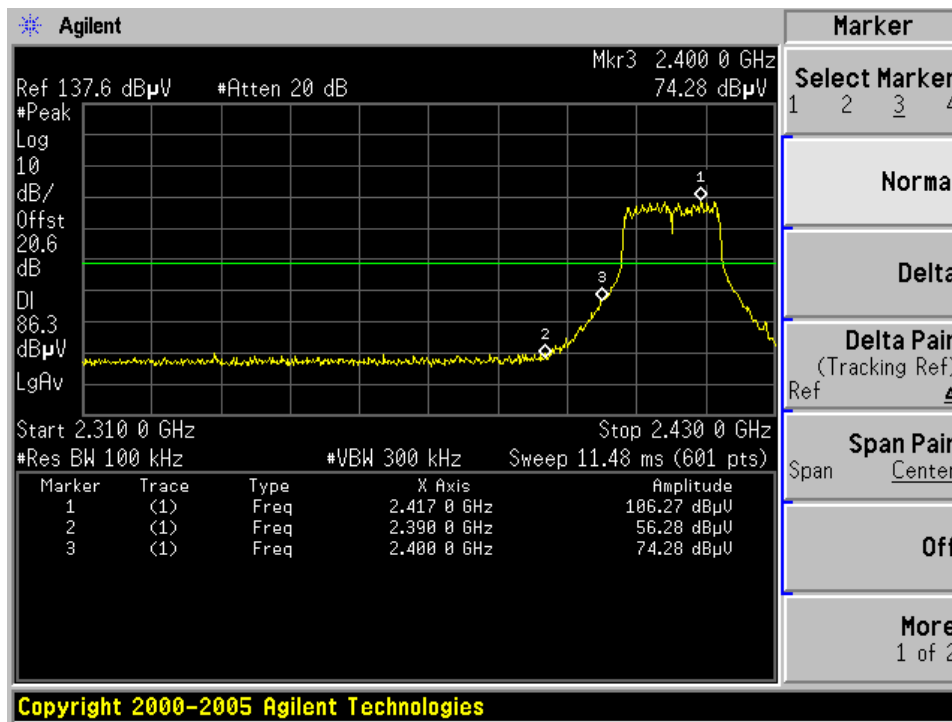
Chain2:



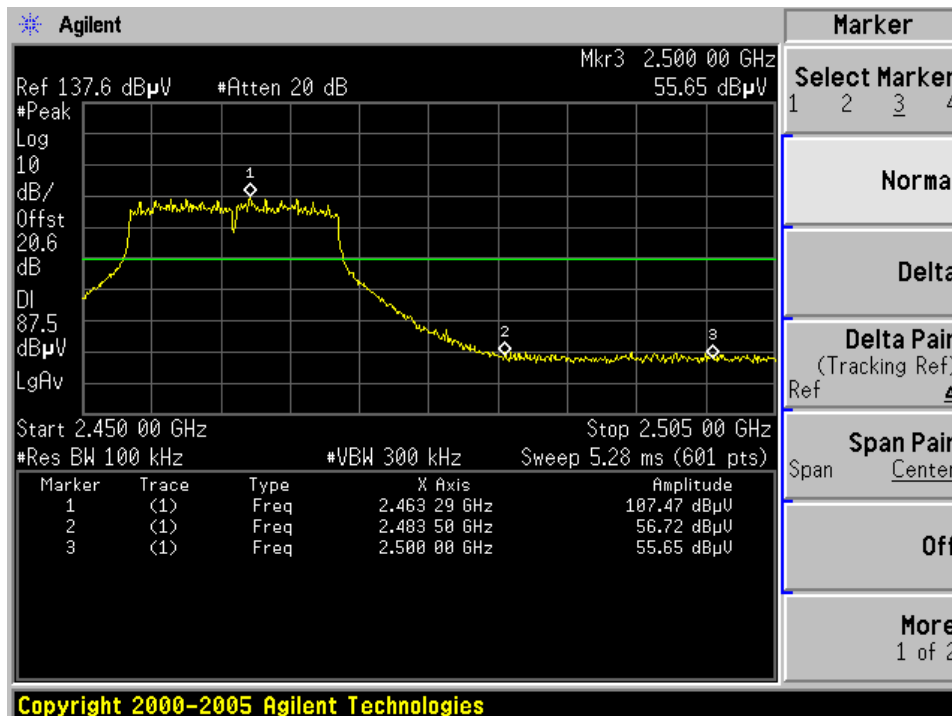
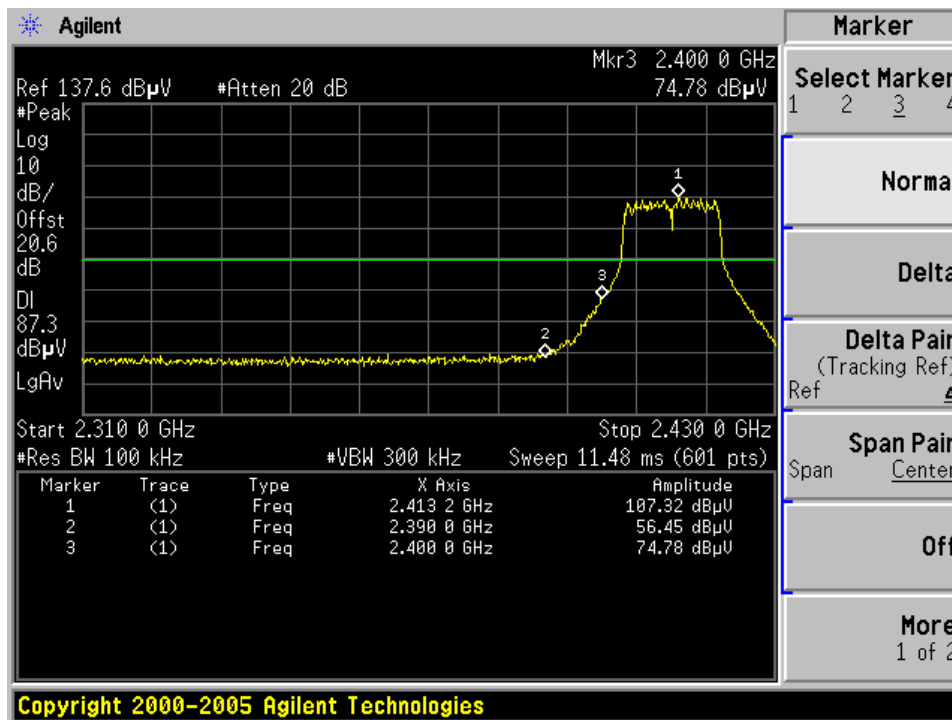
IEEE 802.11g modulation (6 Mbps) Test Result Chain0:



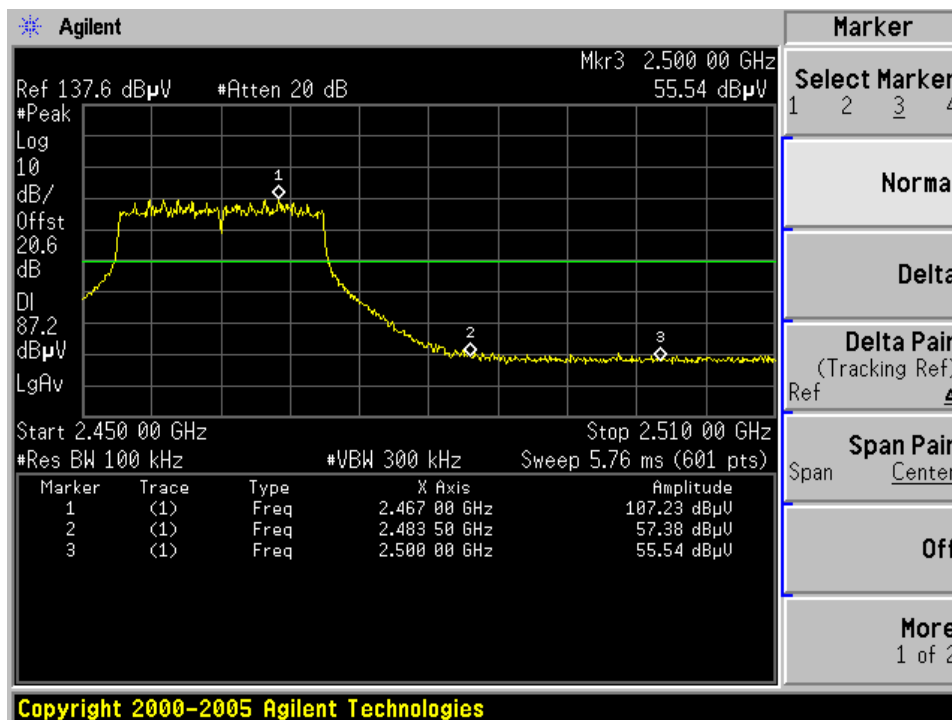
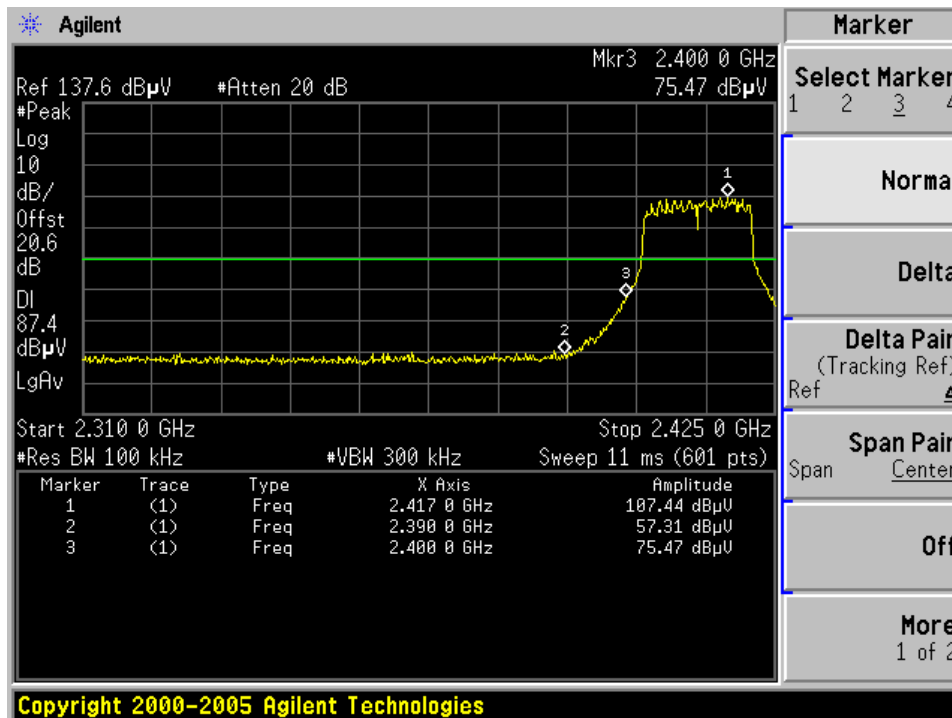
Chain1:



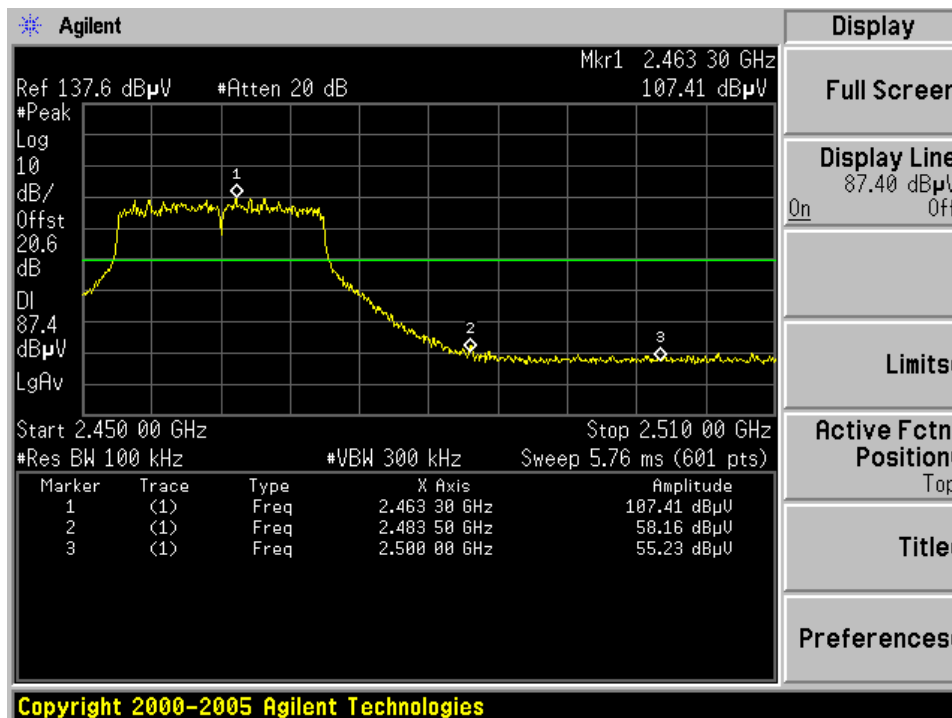
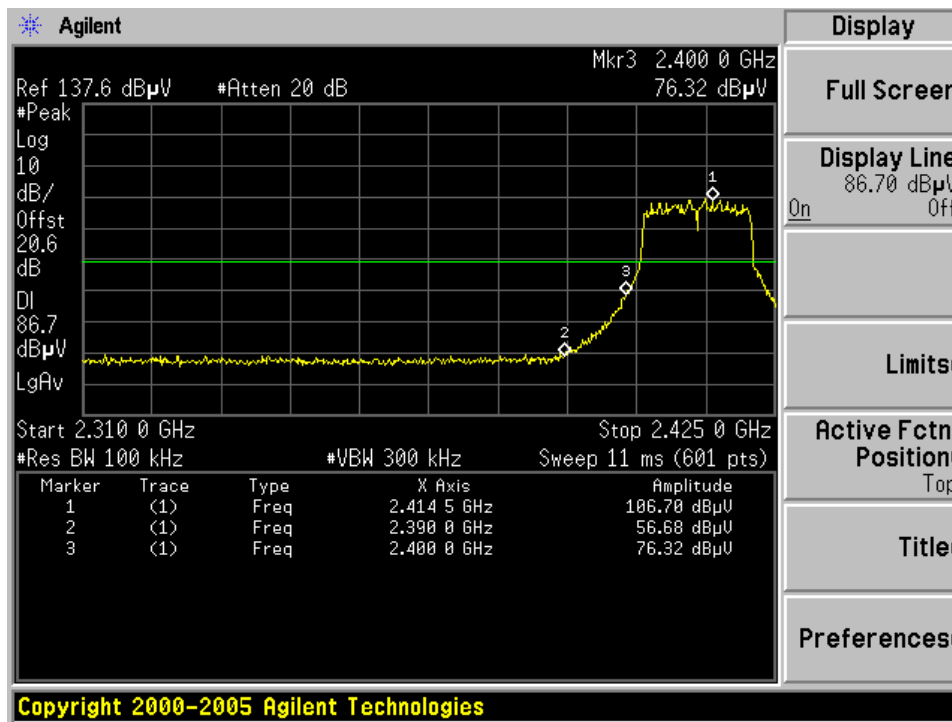
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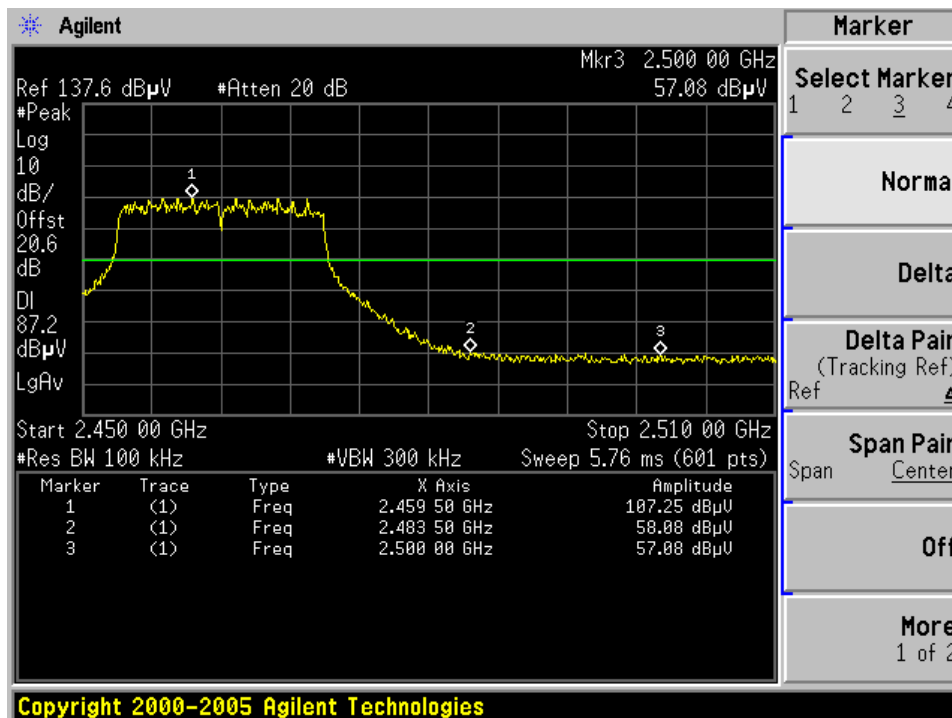
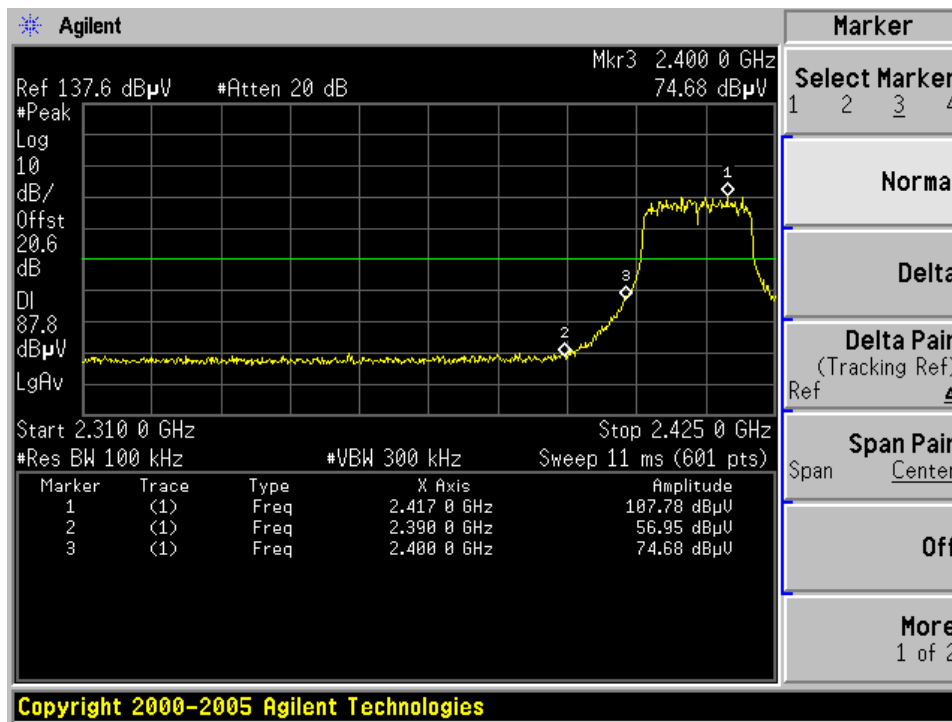
IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result
Chain0:



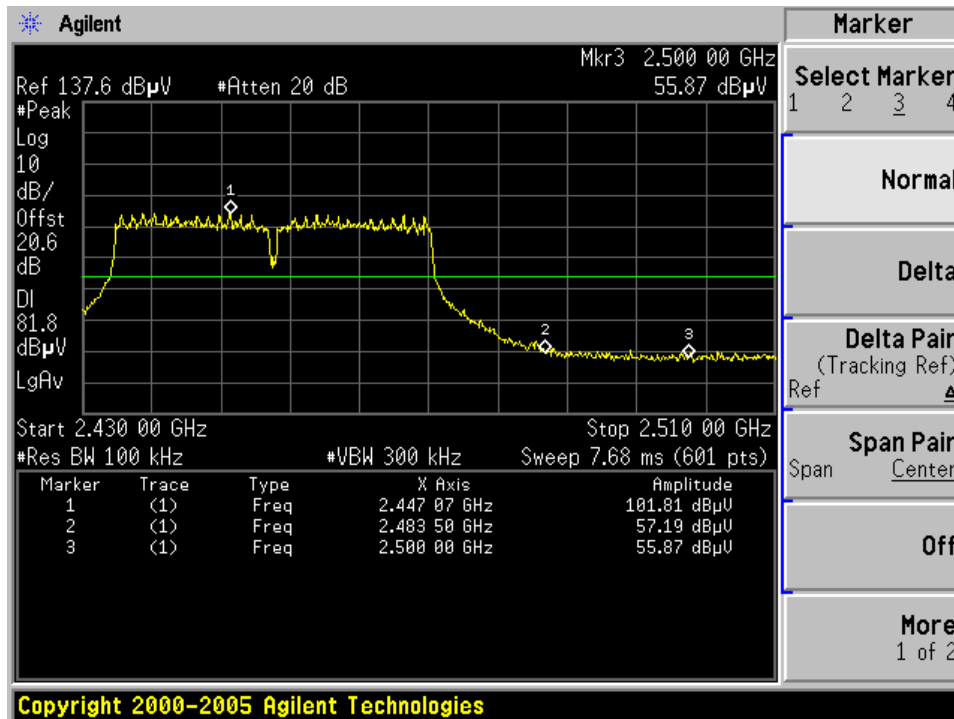
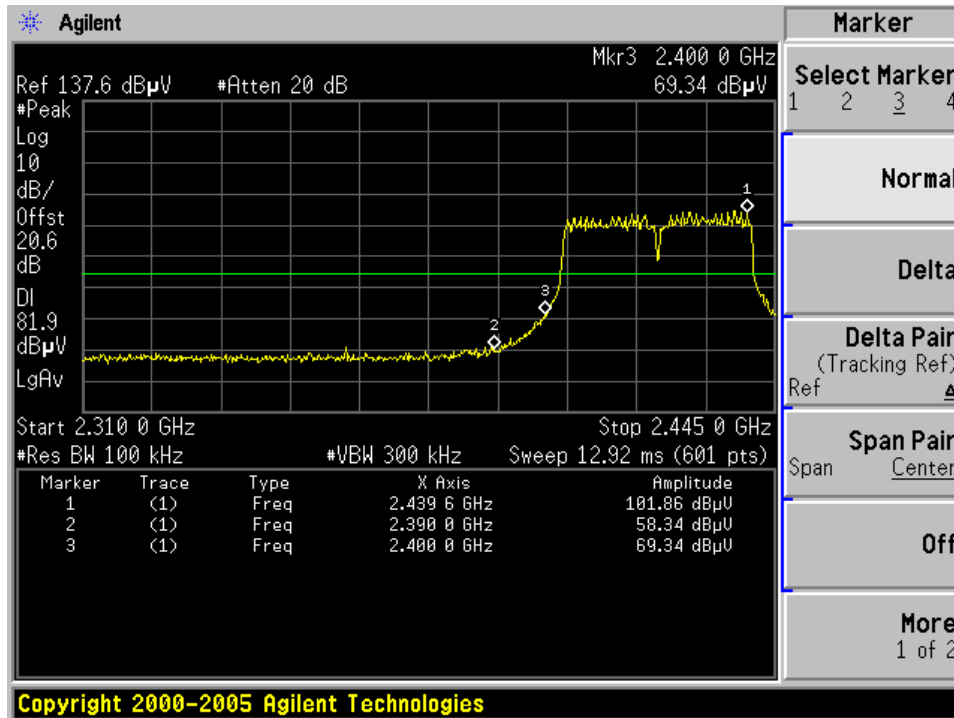
Chain1:



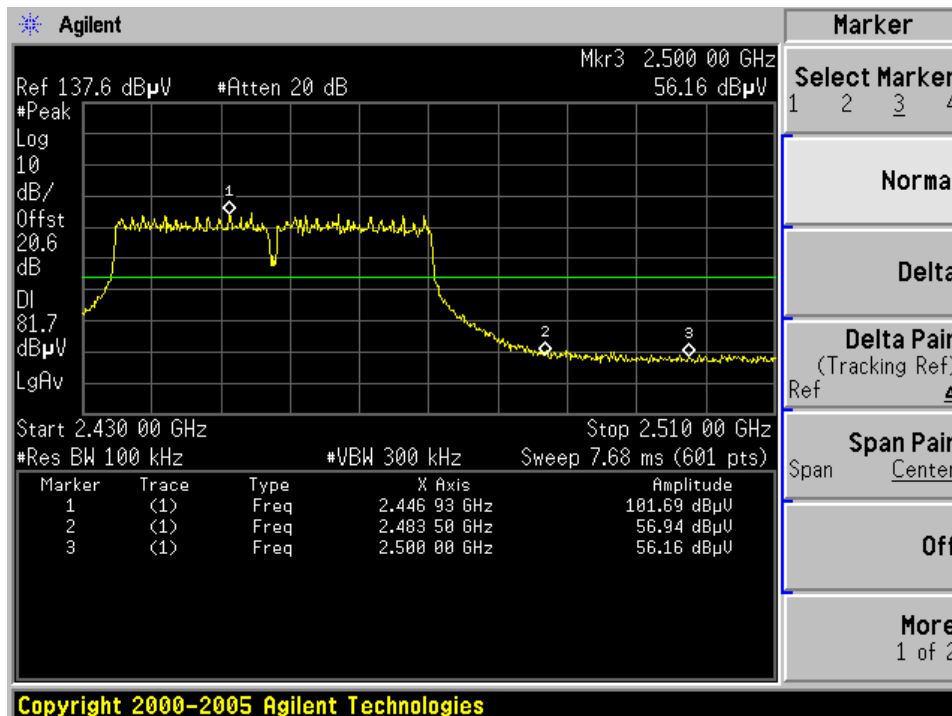
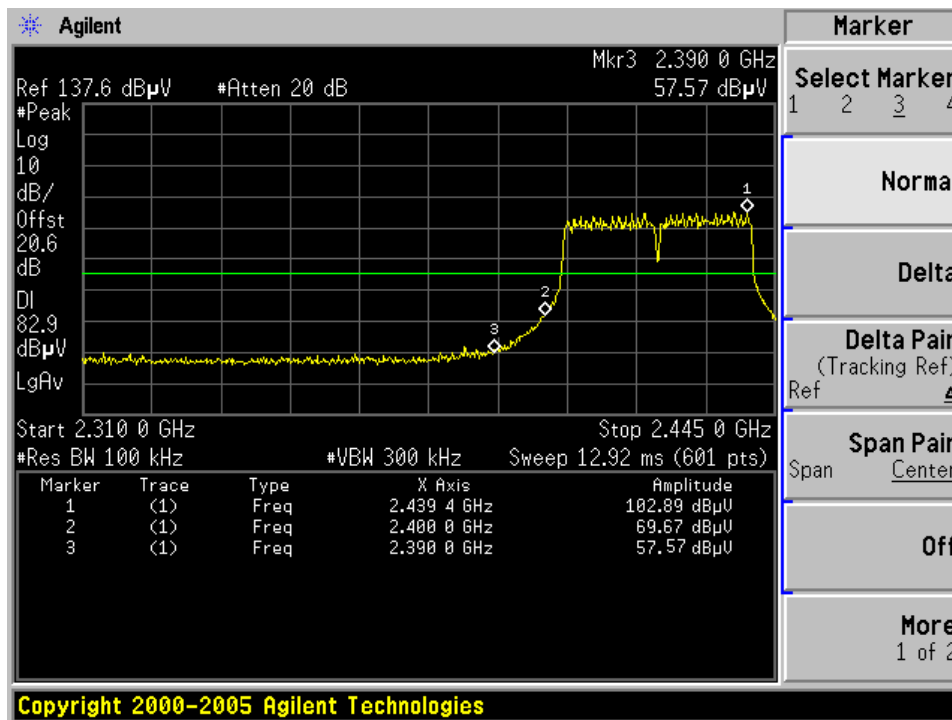
Chain2:



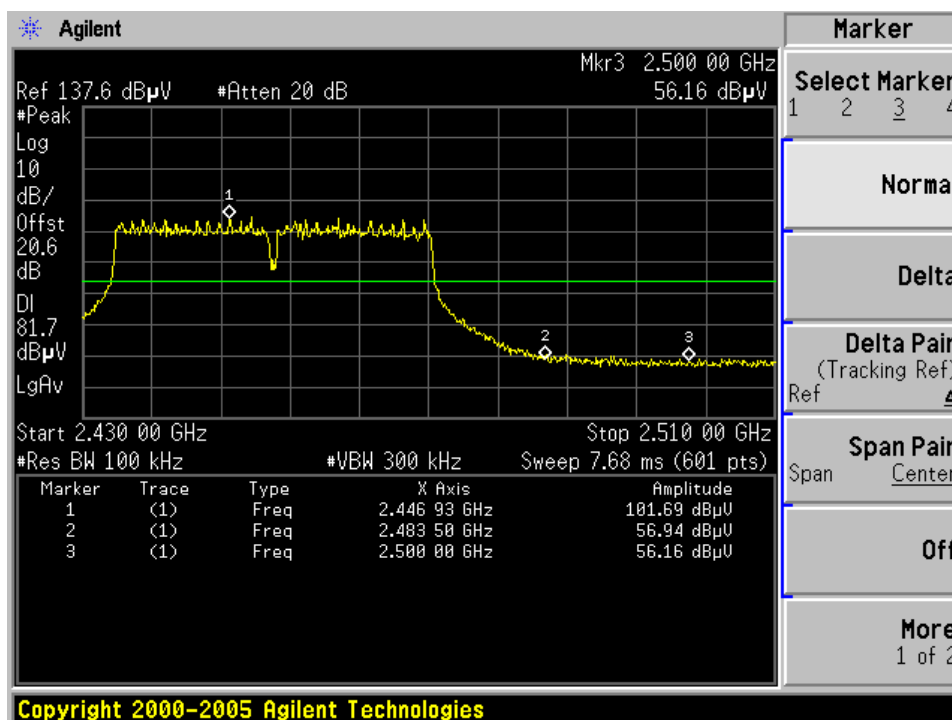
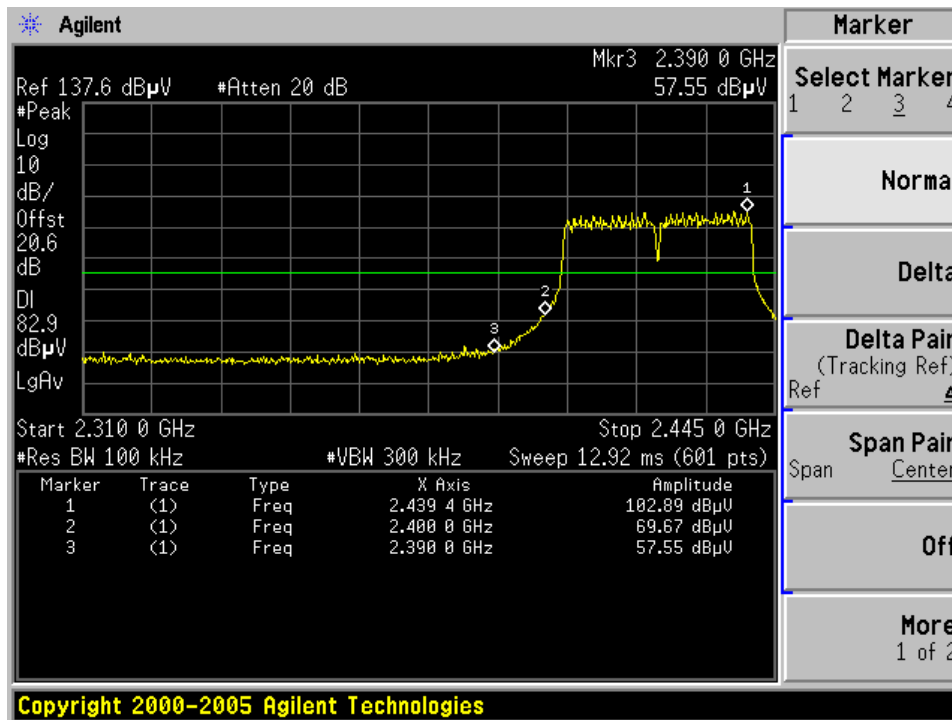
IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result Chain0:



Chain1:

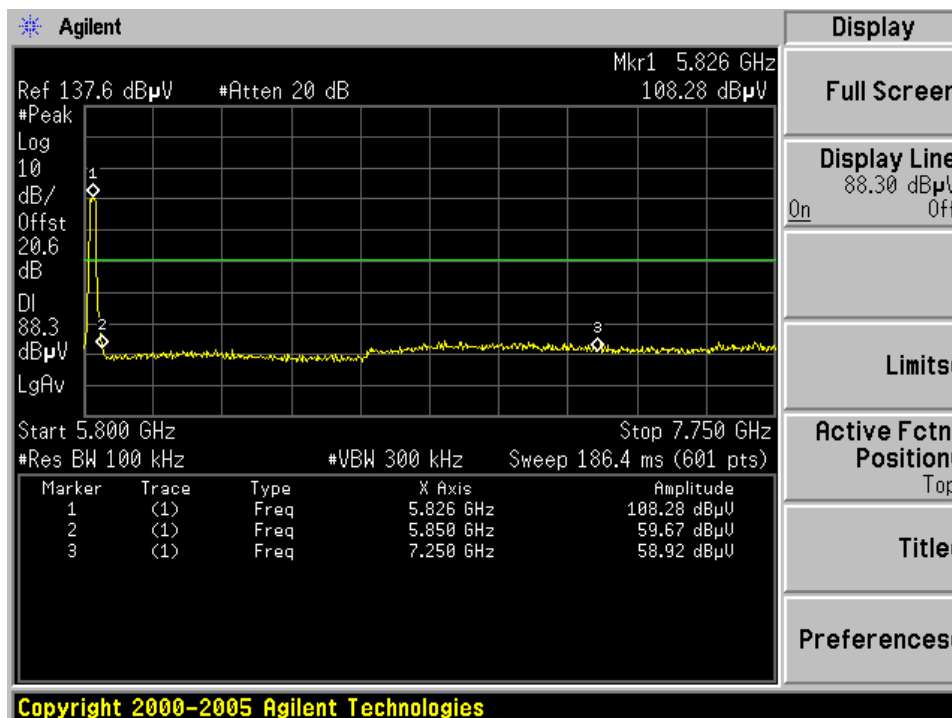
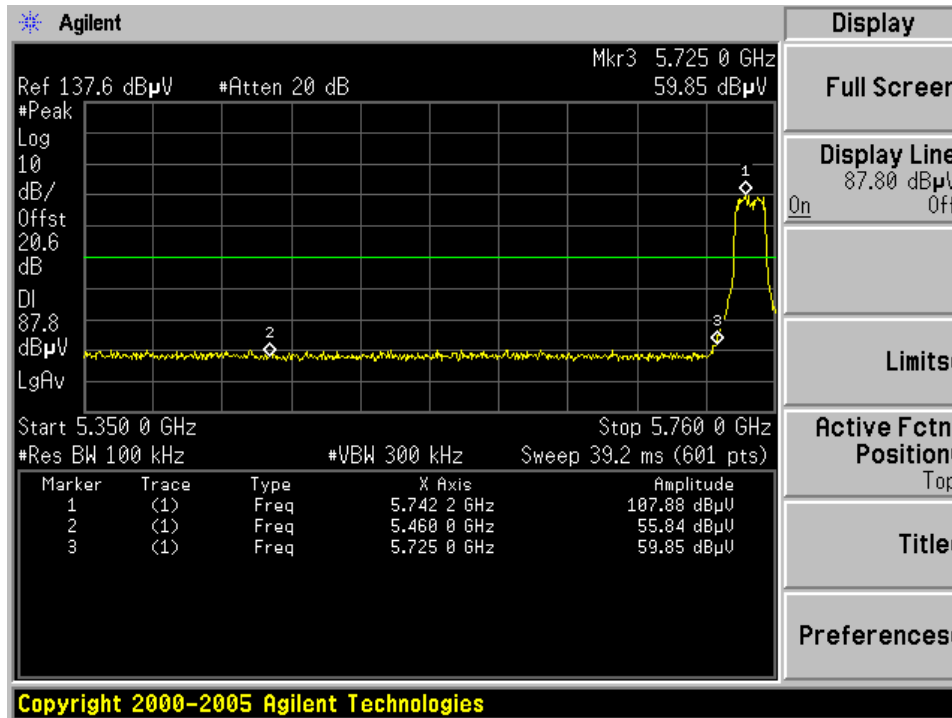


Chain2:

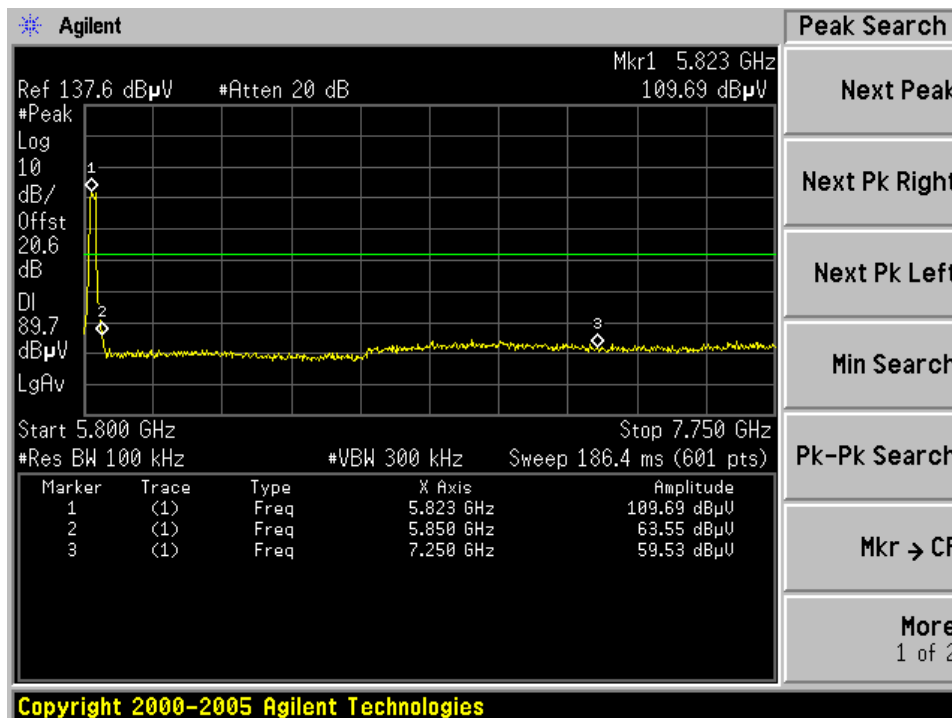
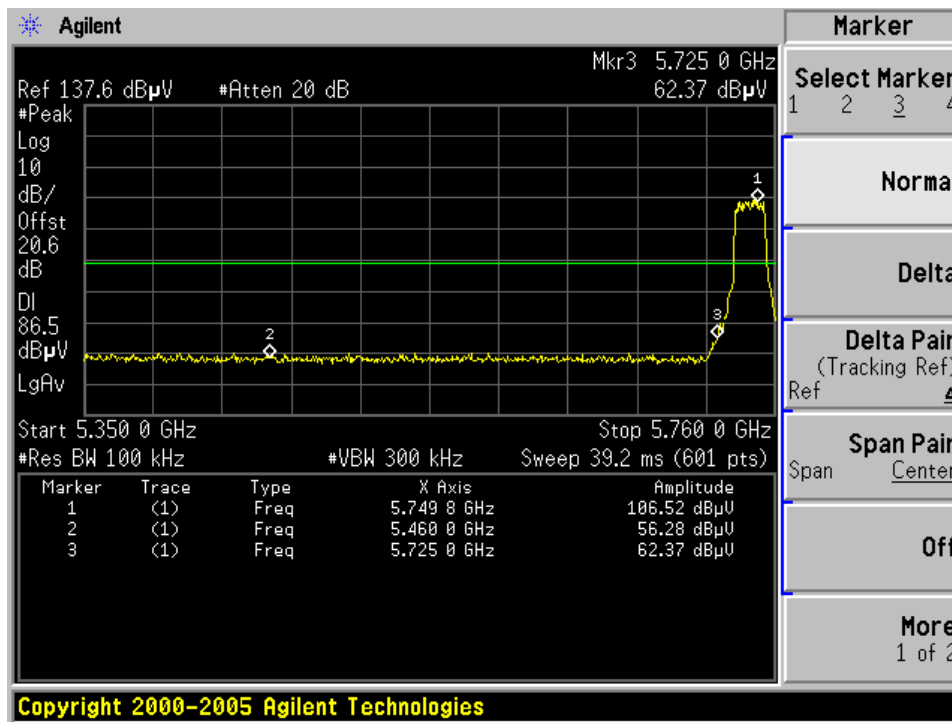


5745-5825MHz Band:

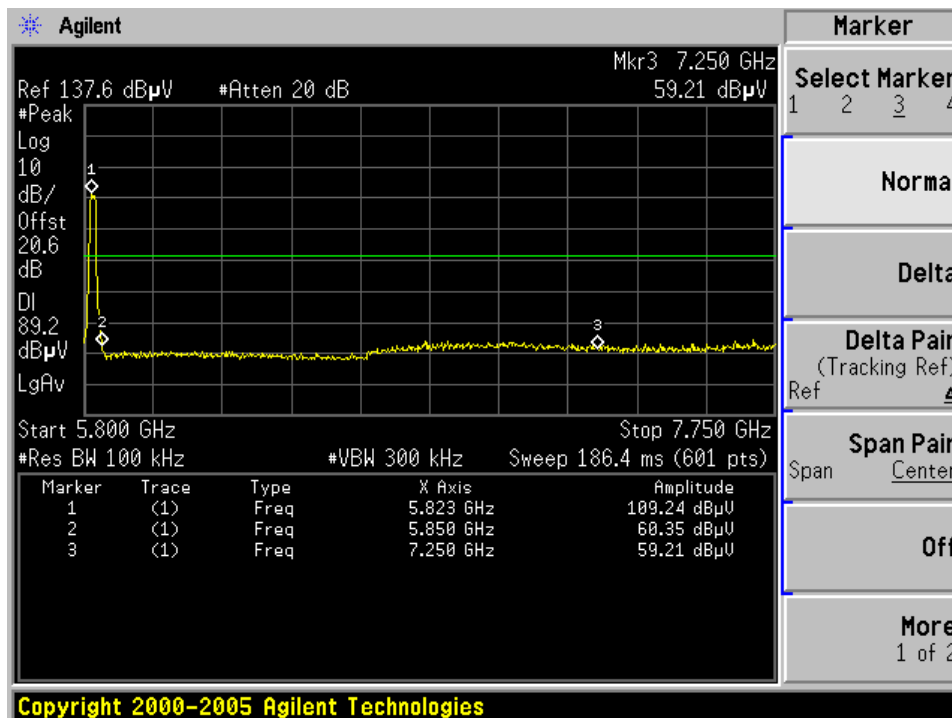
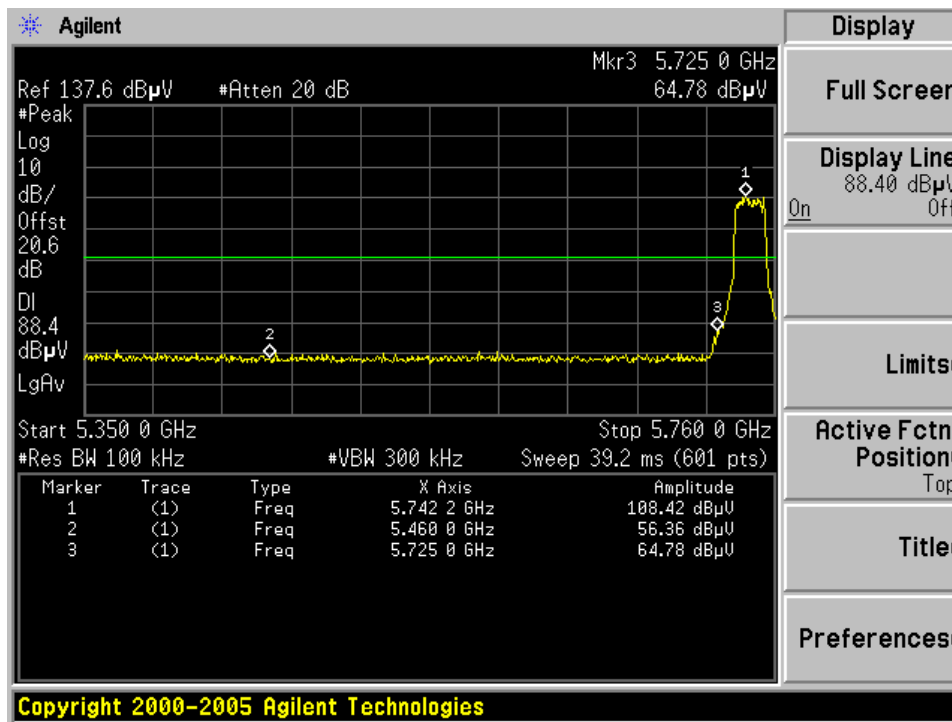
IEEE 802.11a modulation (6 Mbps) Test Result
Chain0:



Chain1:

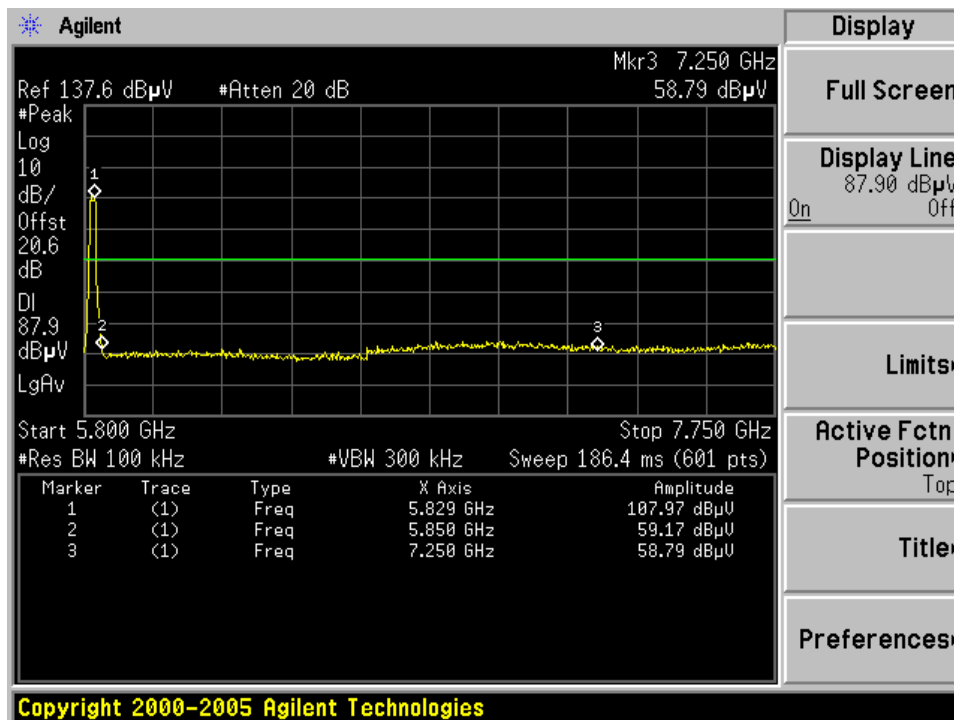
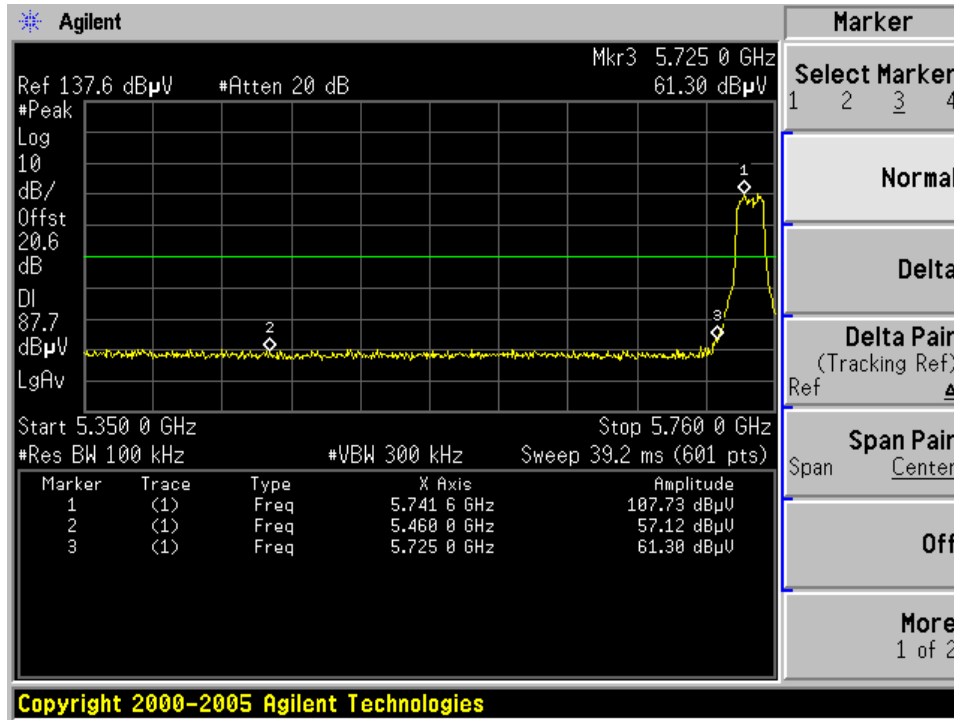


Chain2:

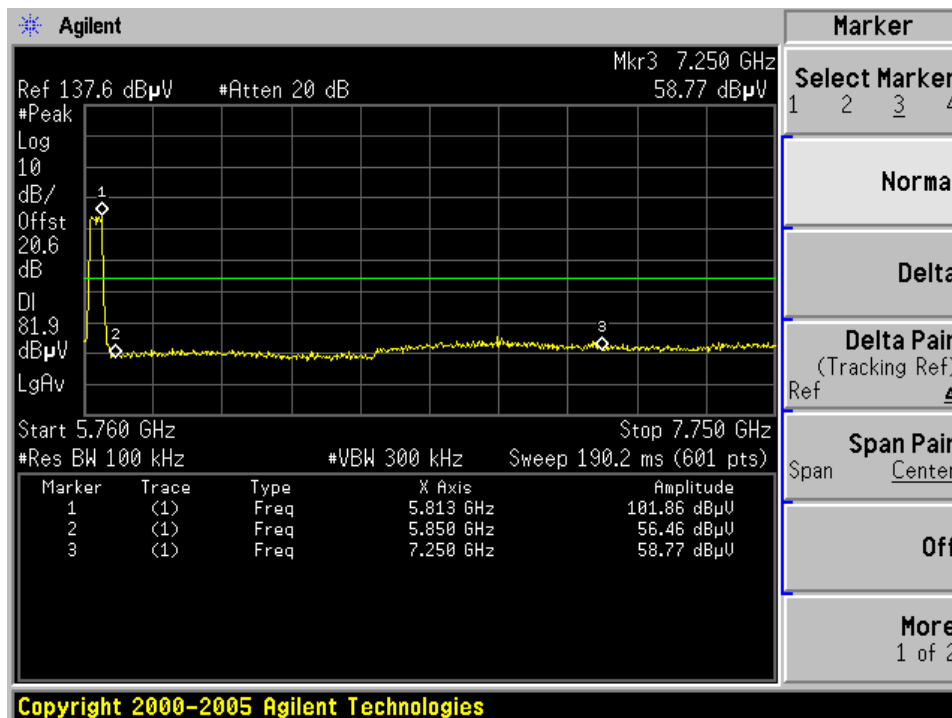
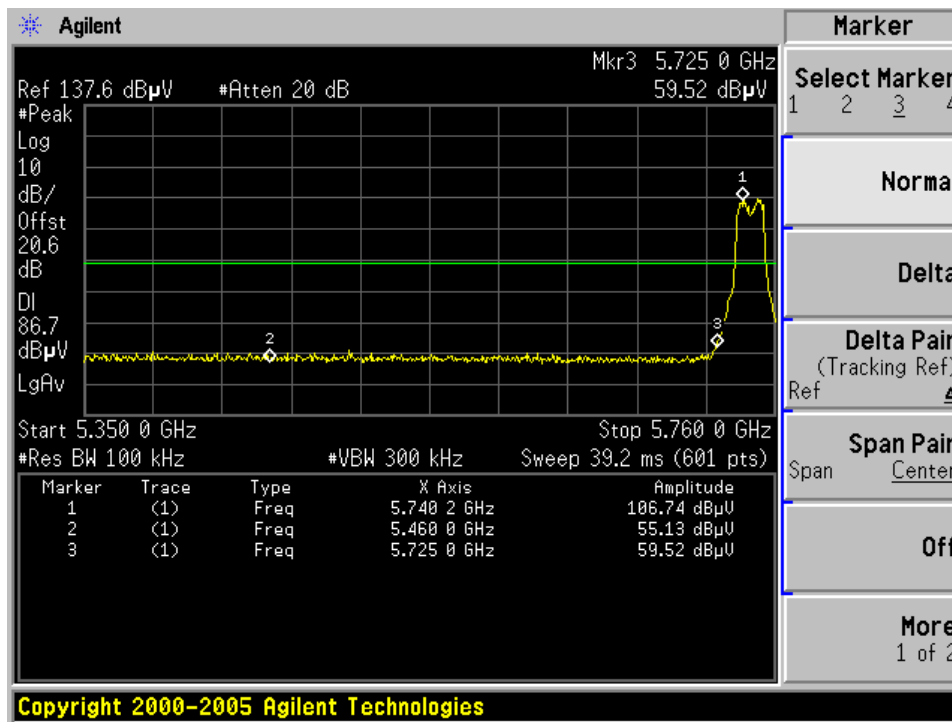


IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result

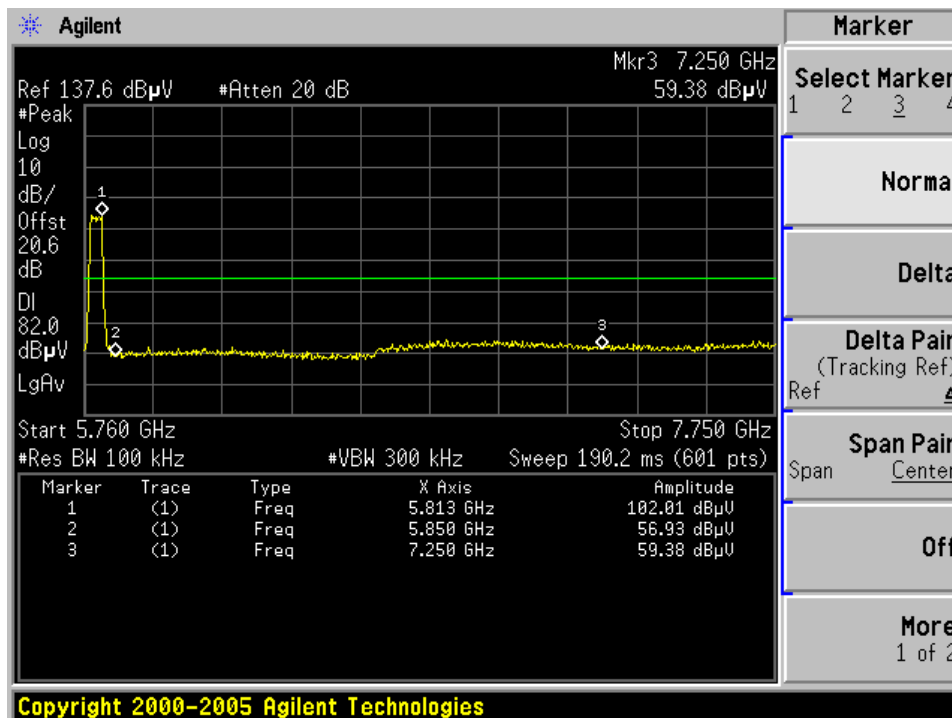
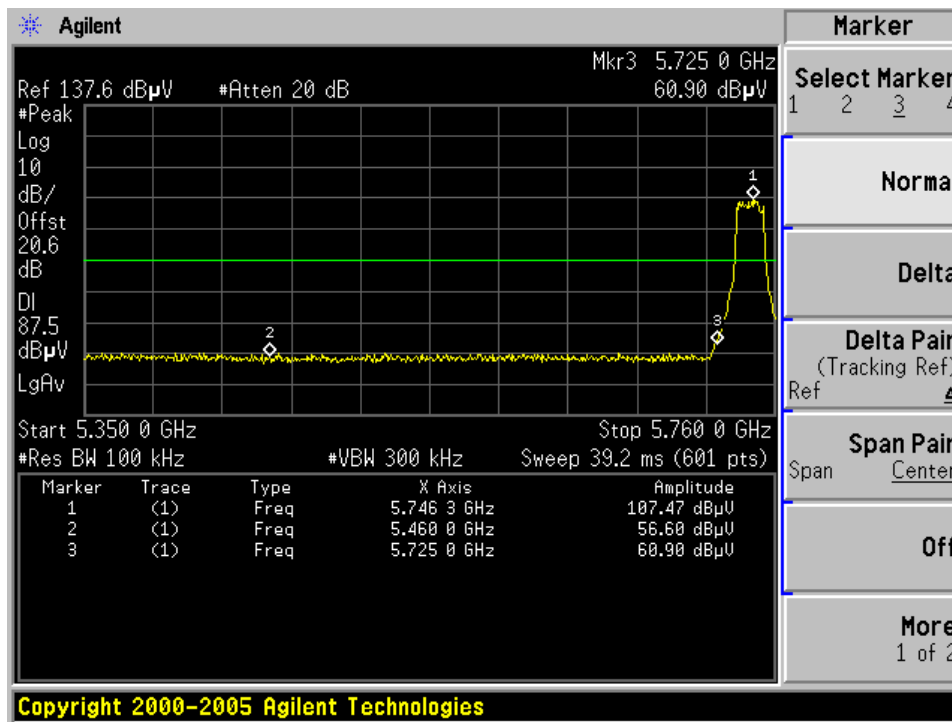
Chain0:



Chain1:

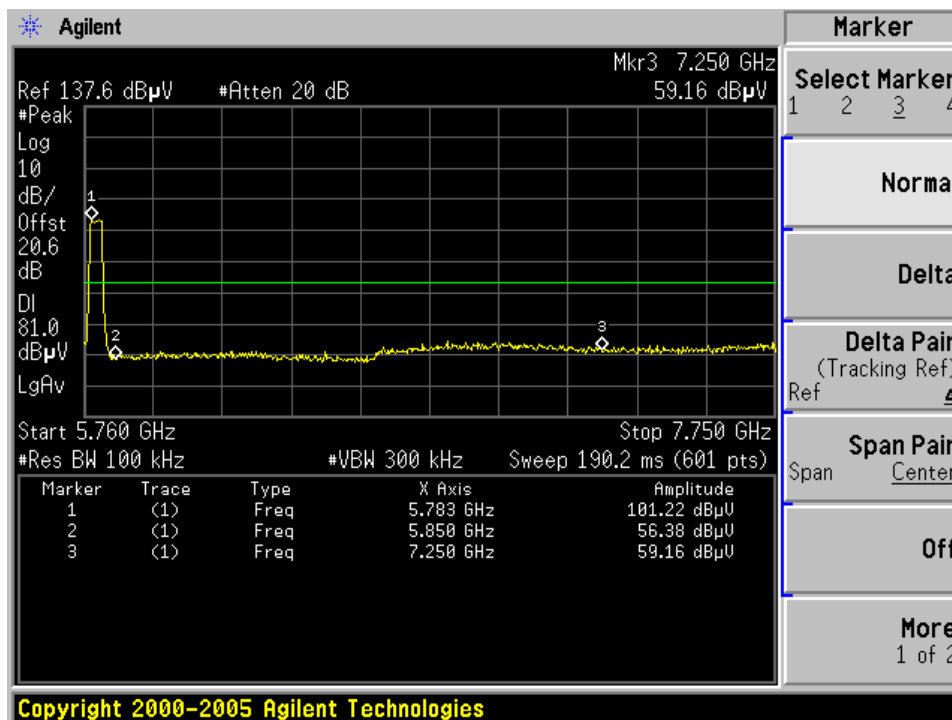
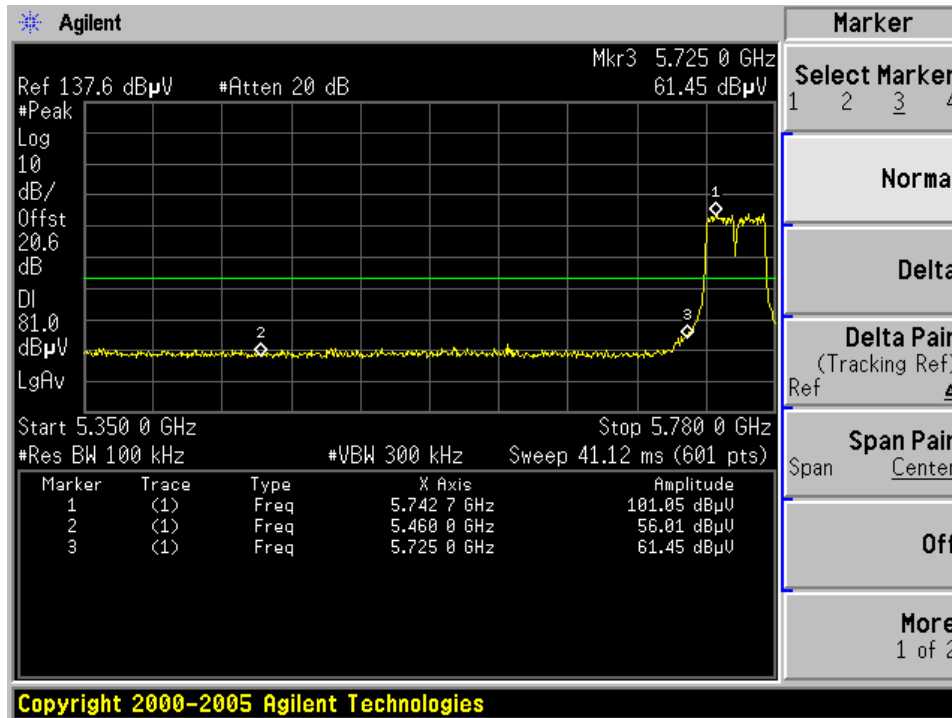


Chain2:

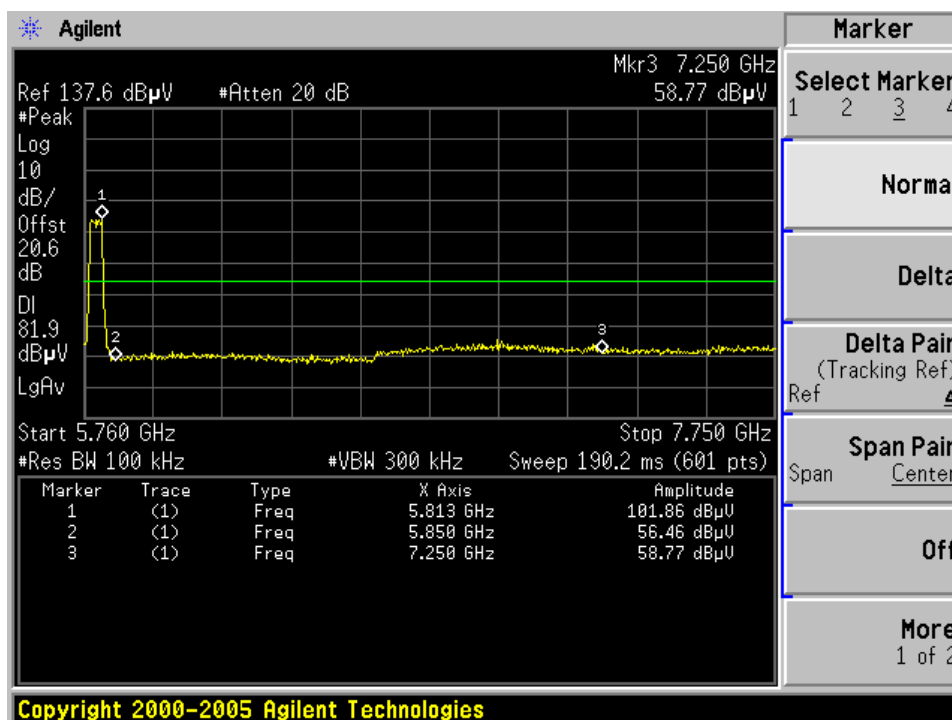
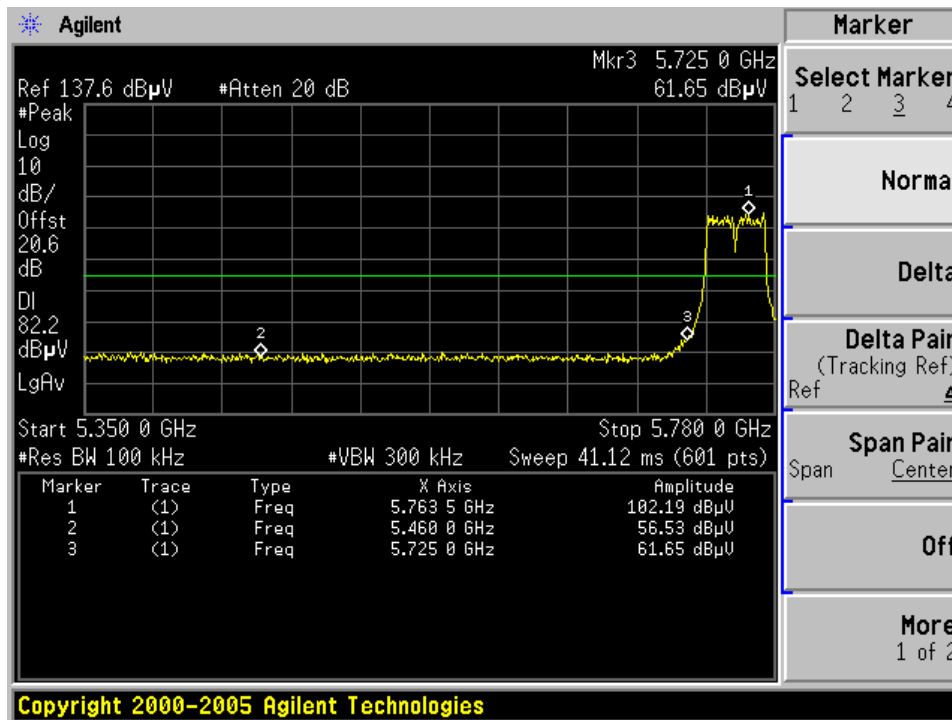


IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result

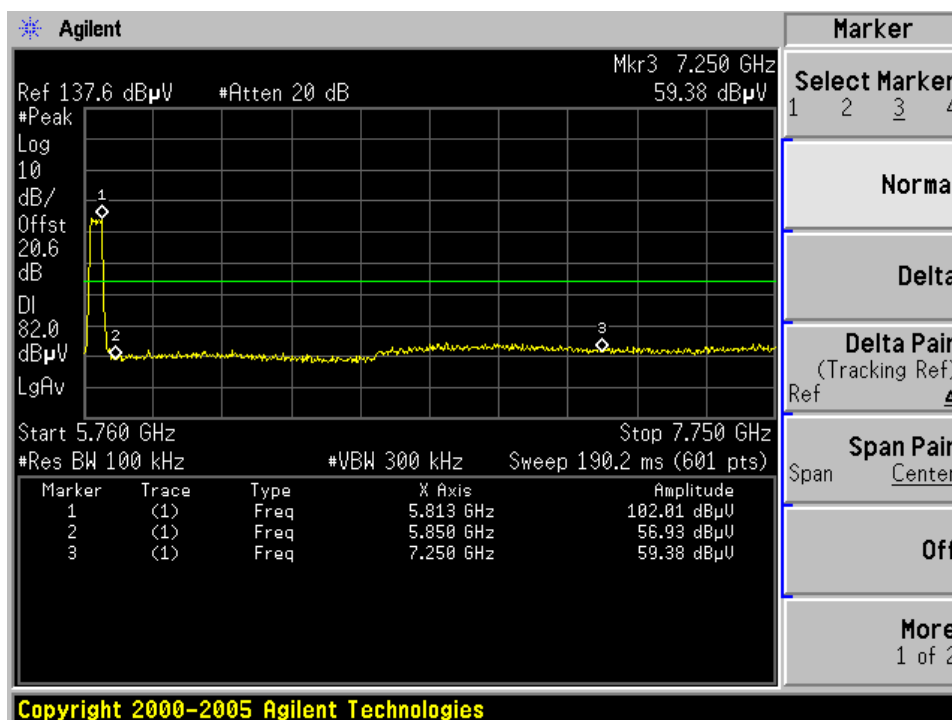
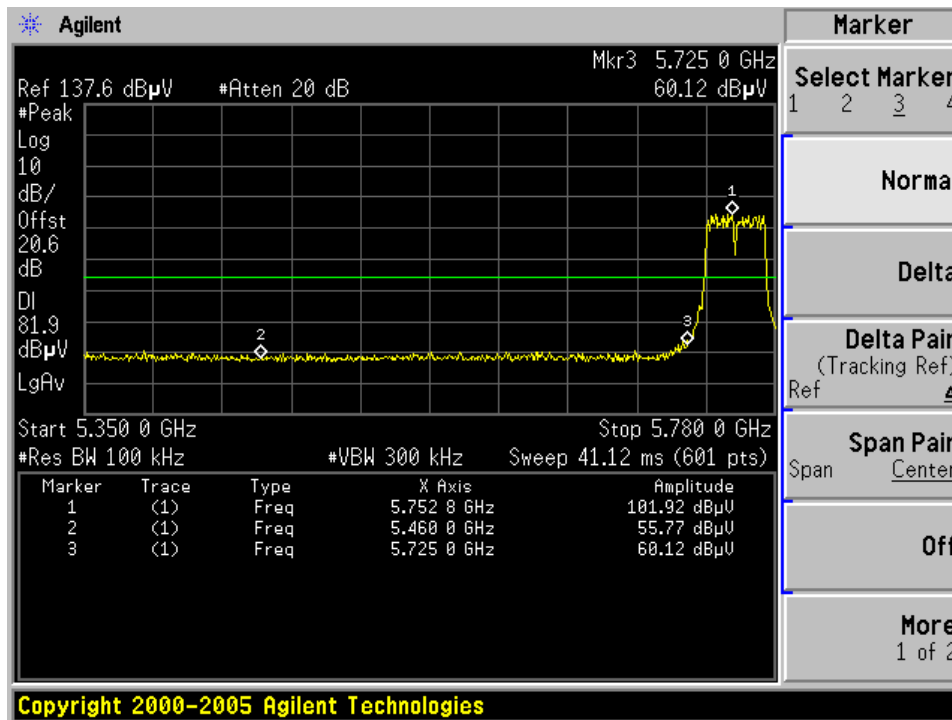
Chain0:



Chain1:



Chain2:





Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 08, 2011
Amp	HP	8449B	3008A02495	May 08, 2011
Antenna	EMCO	3115	9607-4877	May 17, 2011
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2011
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2011

7.4 Spurious RF conducted emissions

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The resolution bandwidth(RBW) and the video bandwidth (VBW) of the spectrum analyzer were respectively set to 100kHz and 100kHz.

Limit

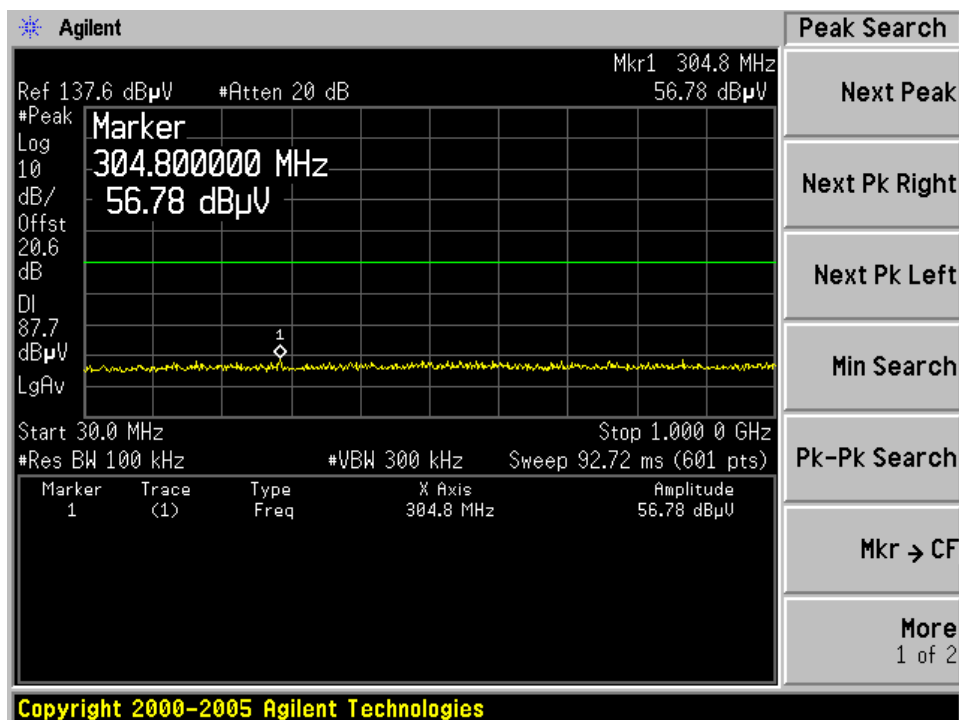
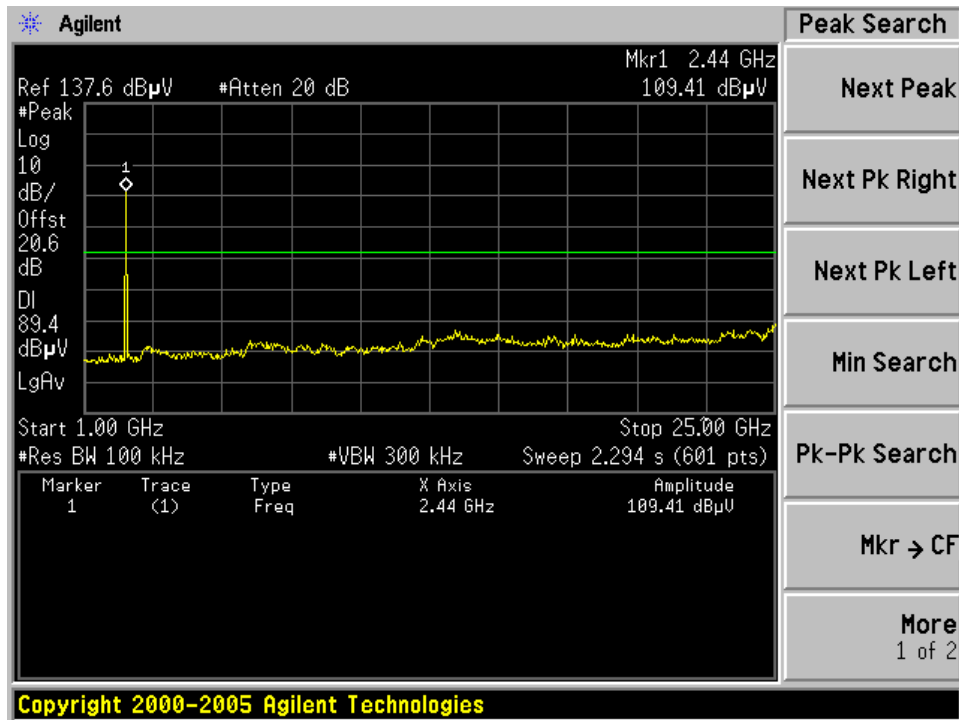
Frequency Range MHz	Limit (dBc)
1000-25000	-20

Spurious RF conducted emissions

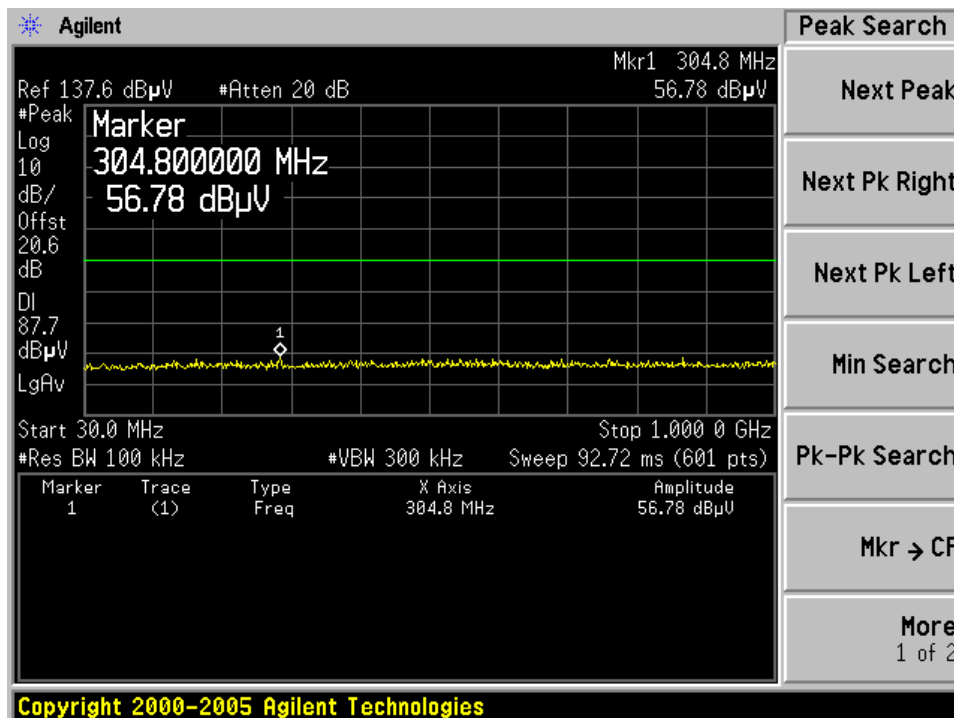
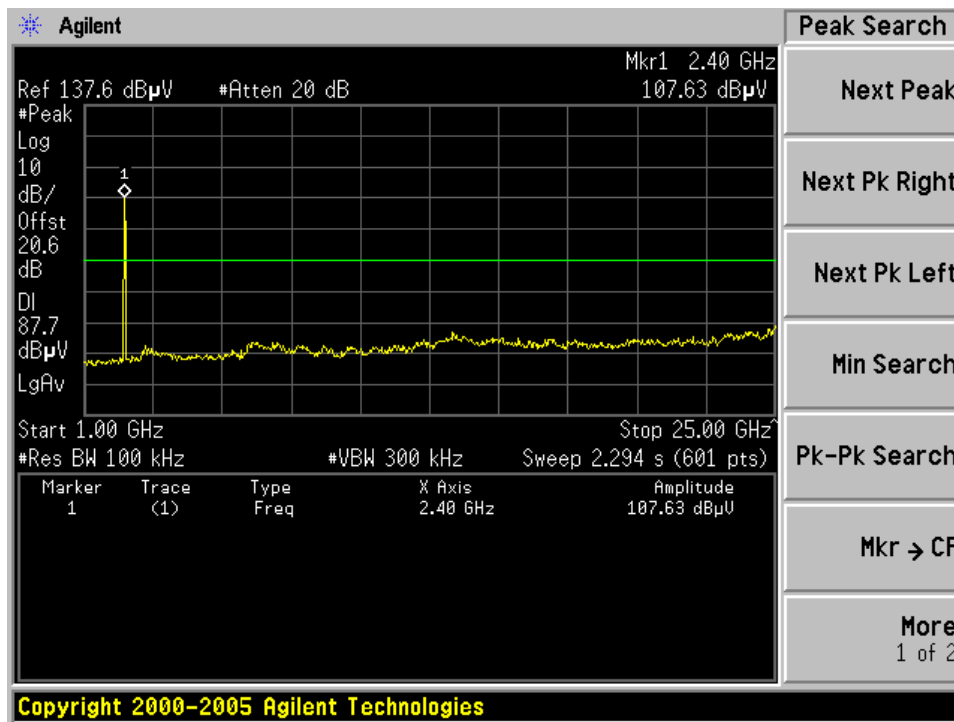
IEEE 802.11b modulation (1 Mbps) Test Result

2412MHz:

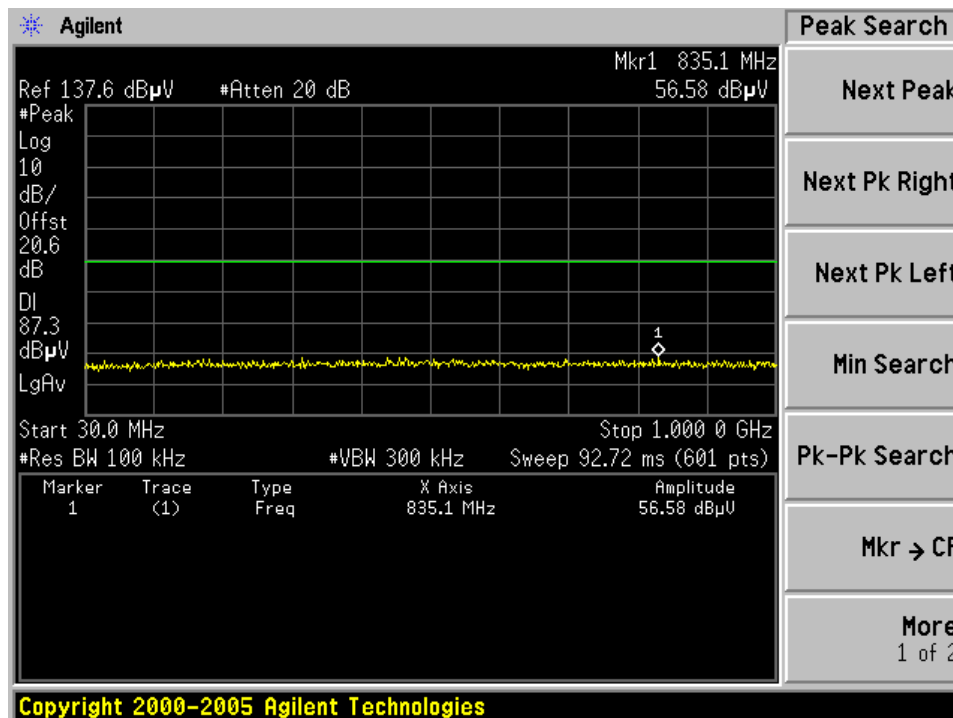
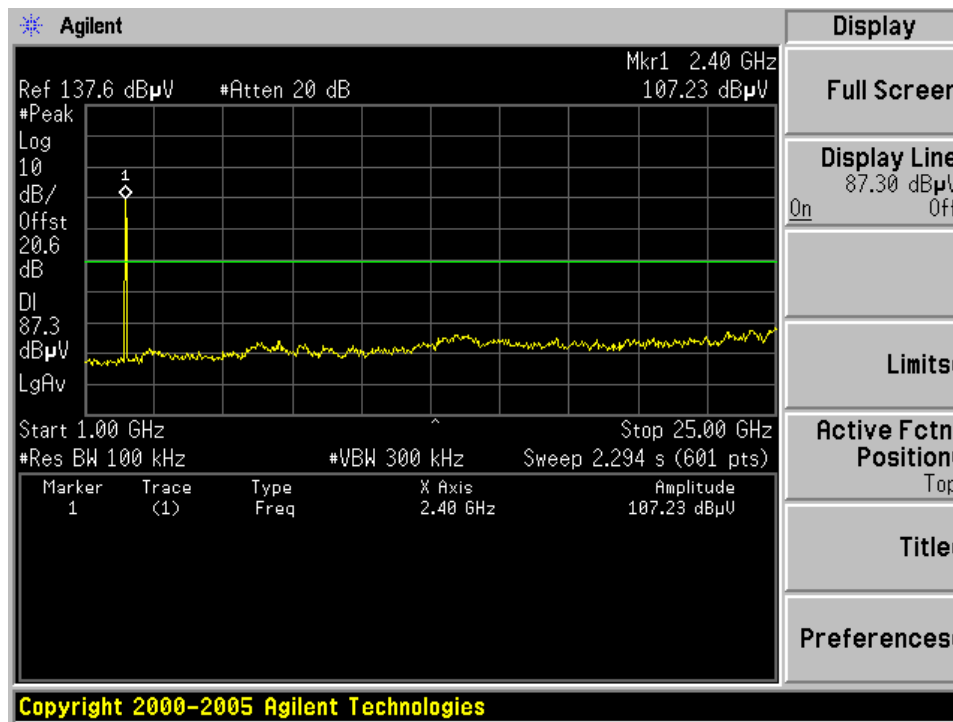
Chain0:



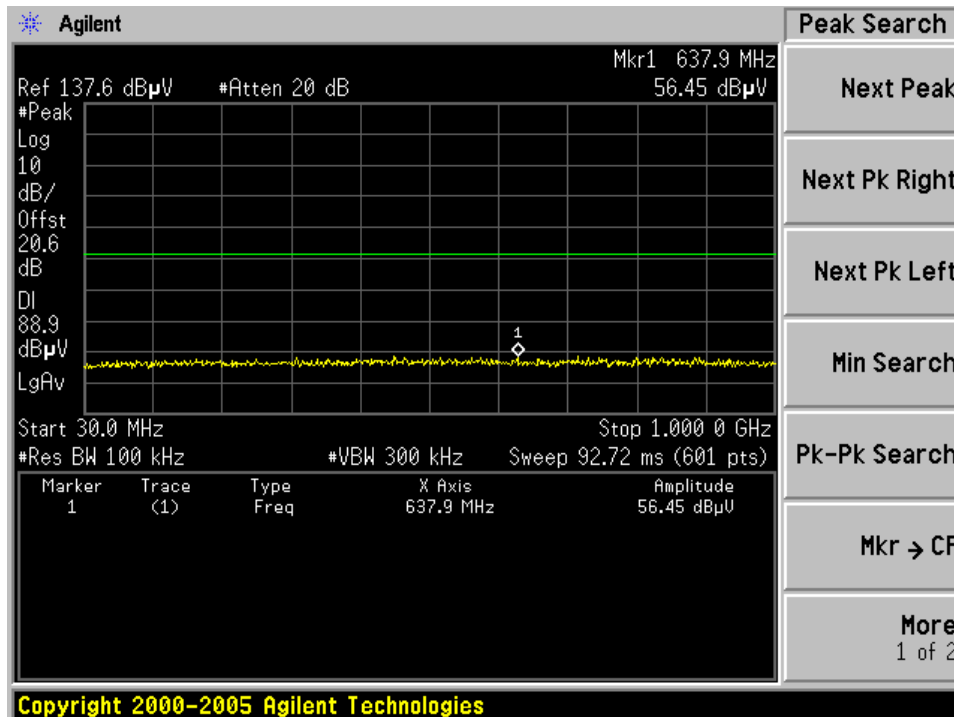
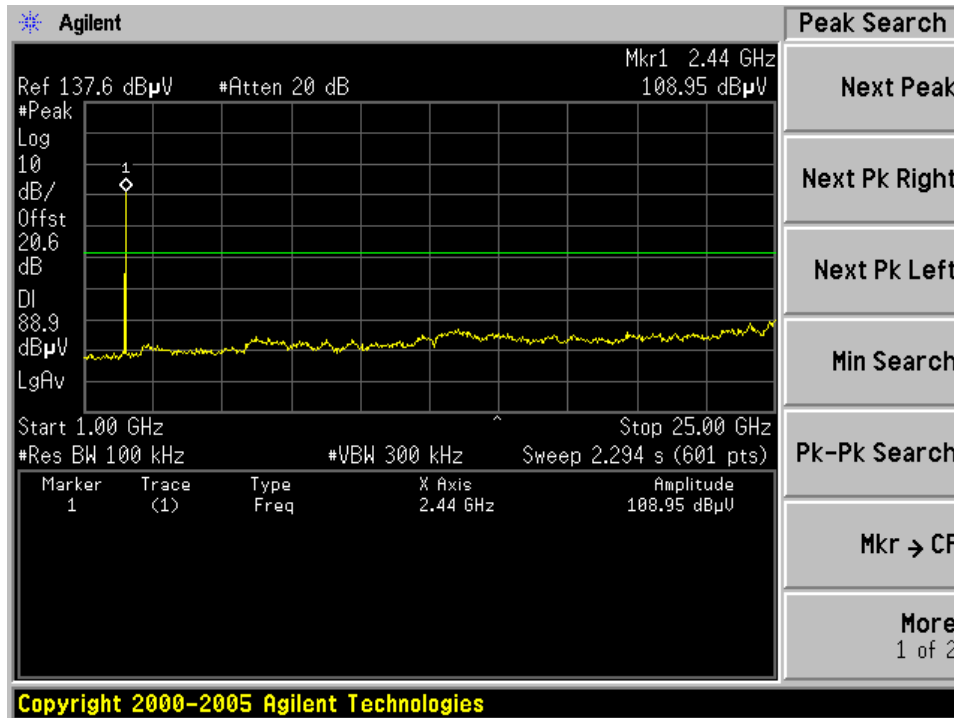
Chain1:



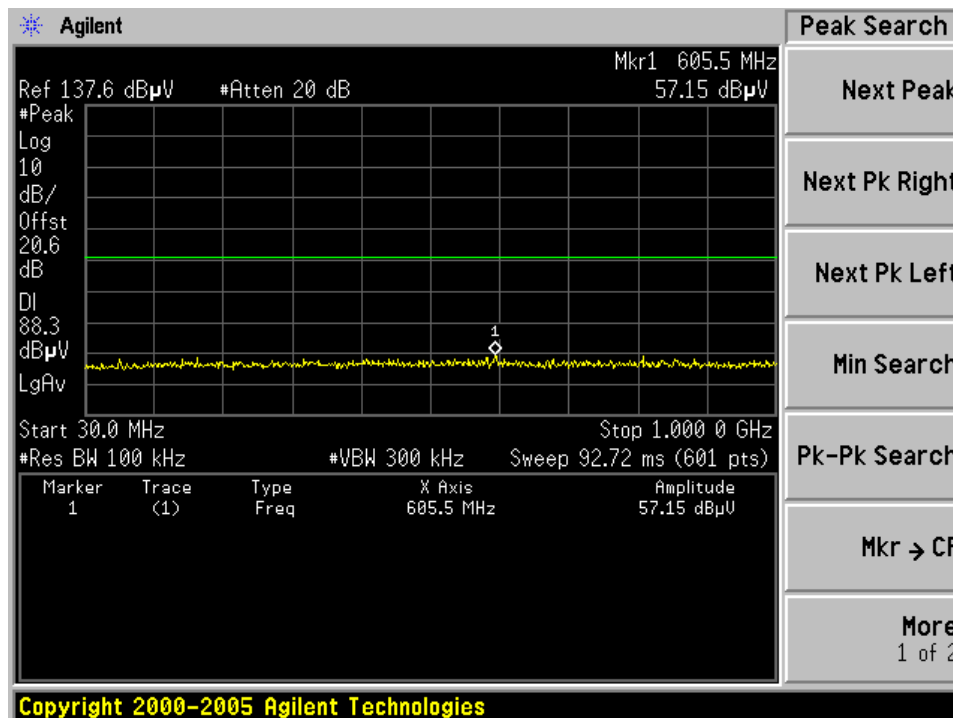
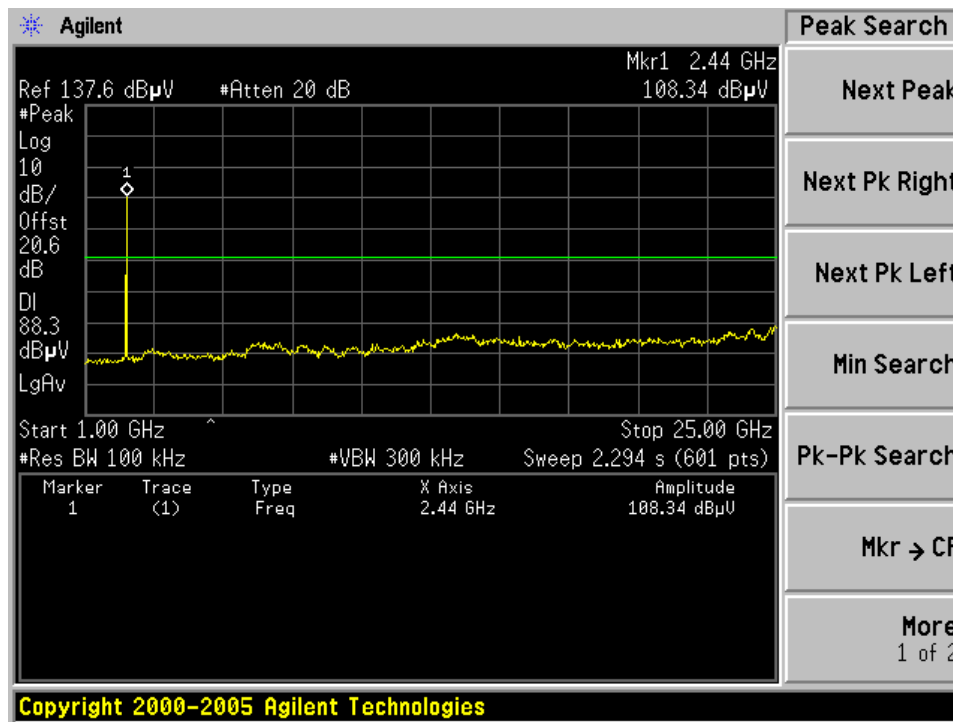
Chain2:



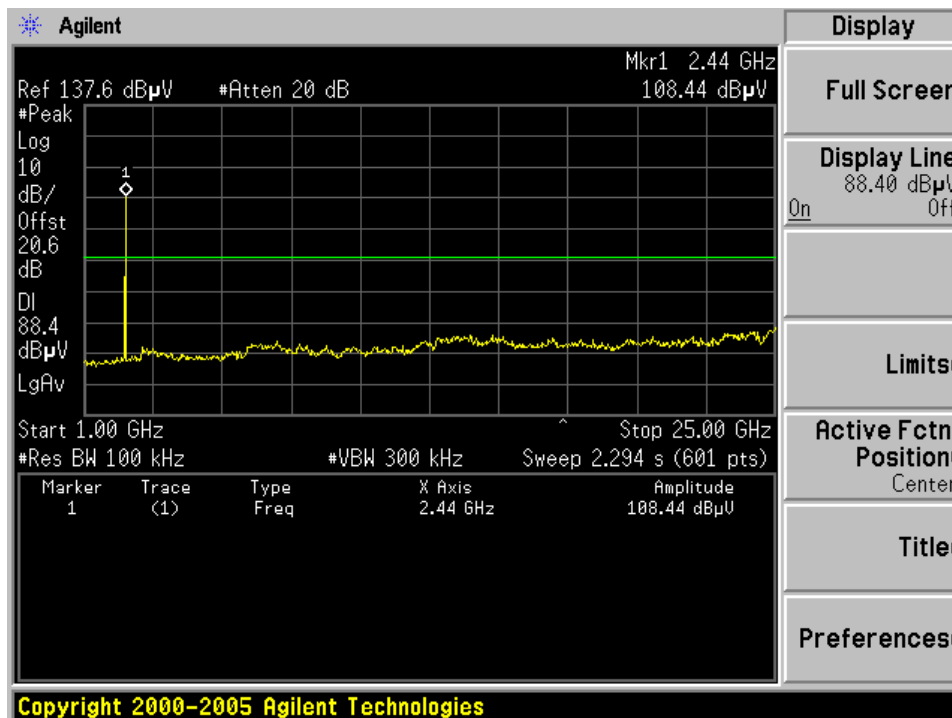
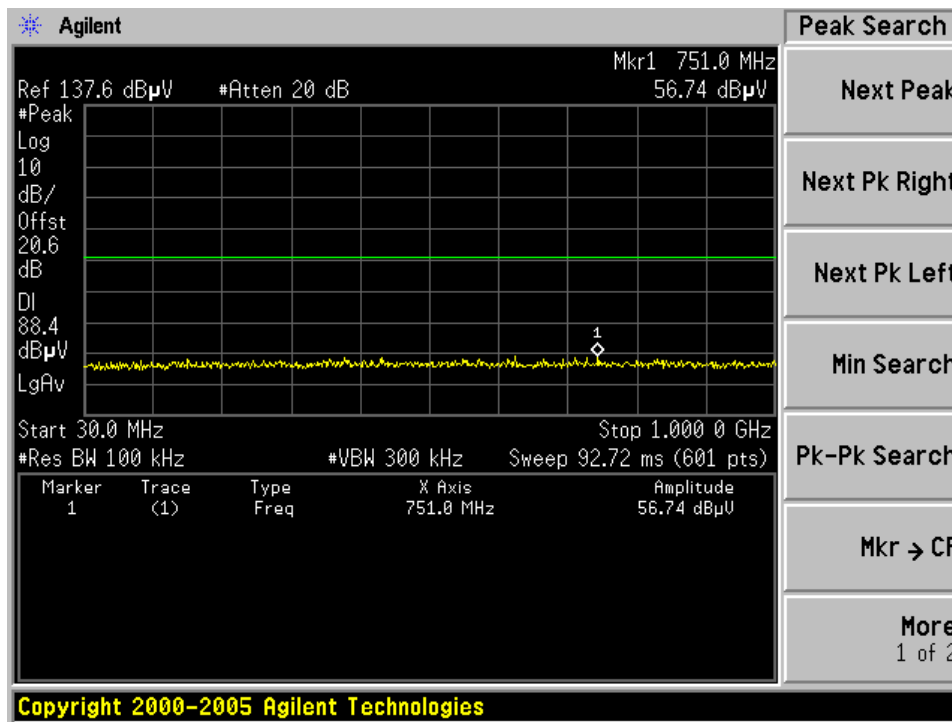
2437MHz
Chain 0:



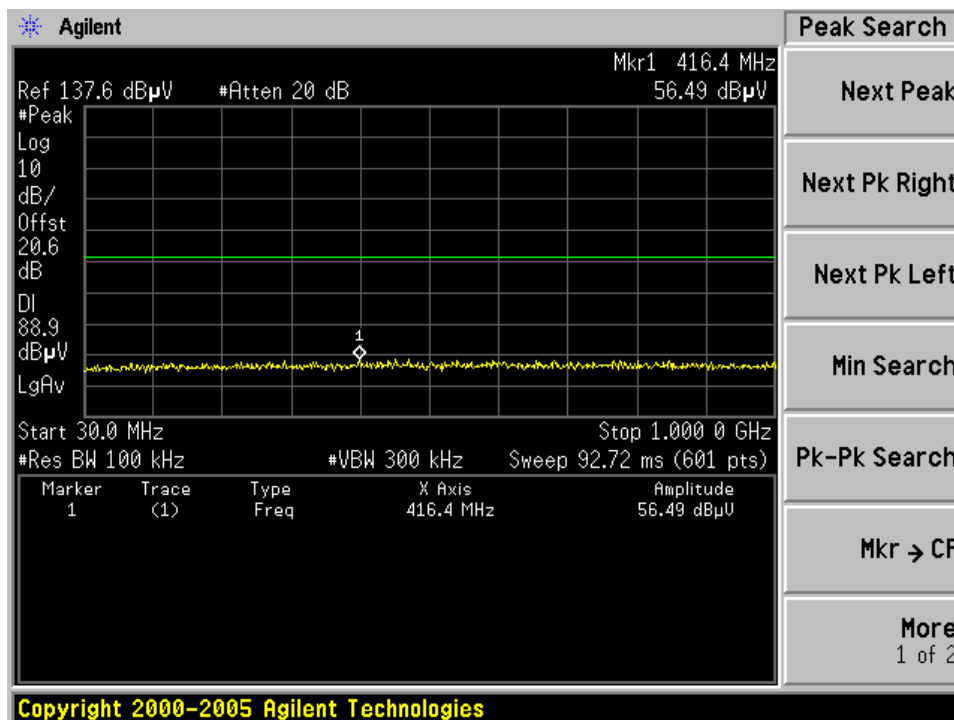
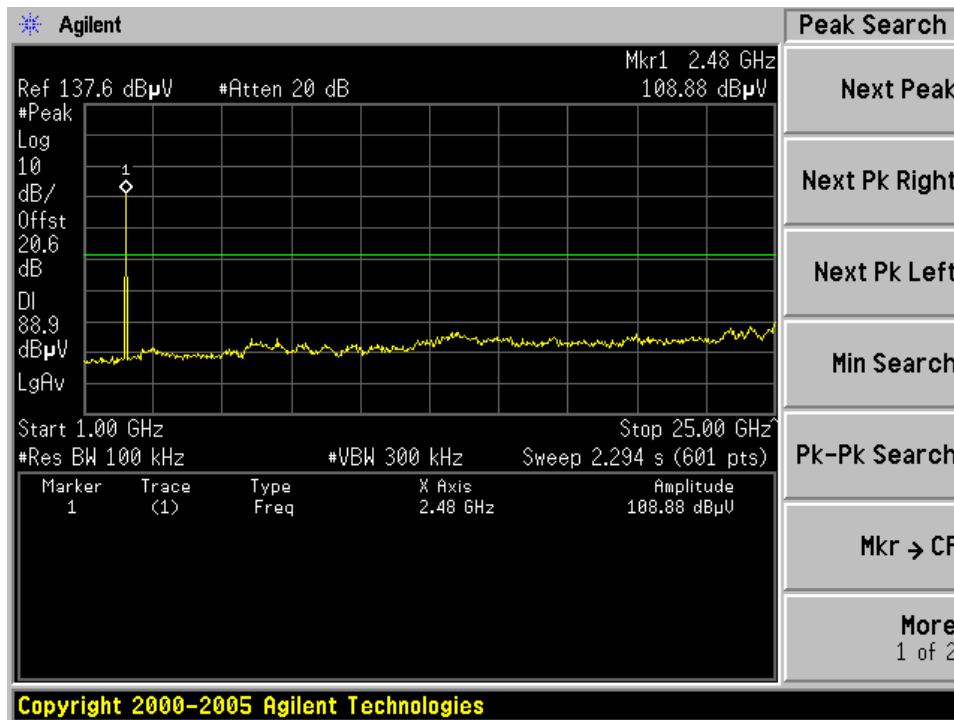
Chain1:



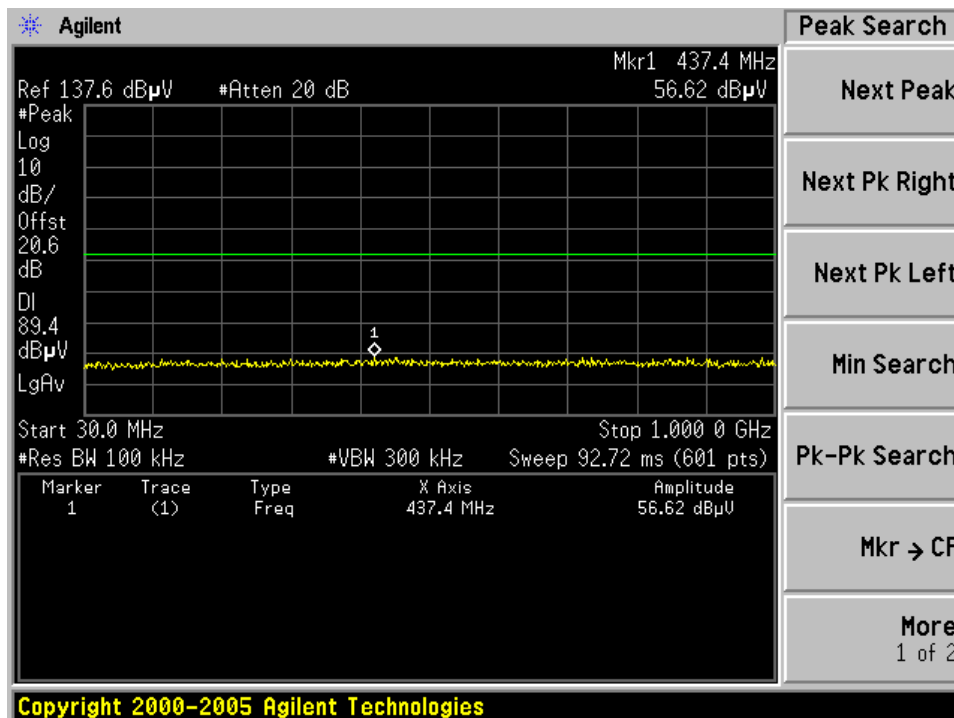
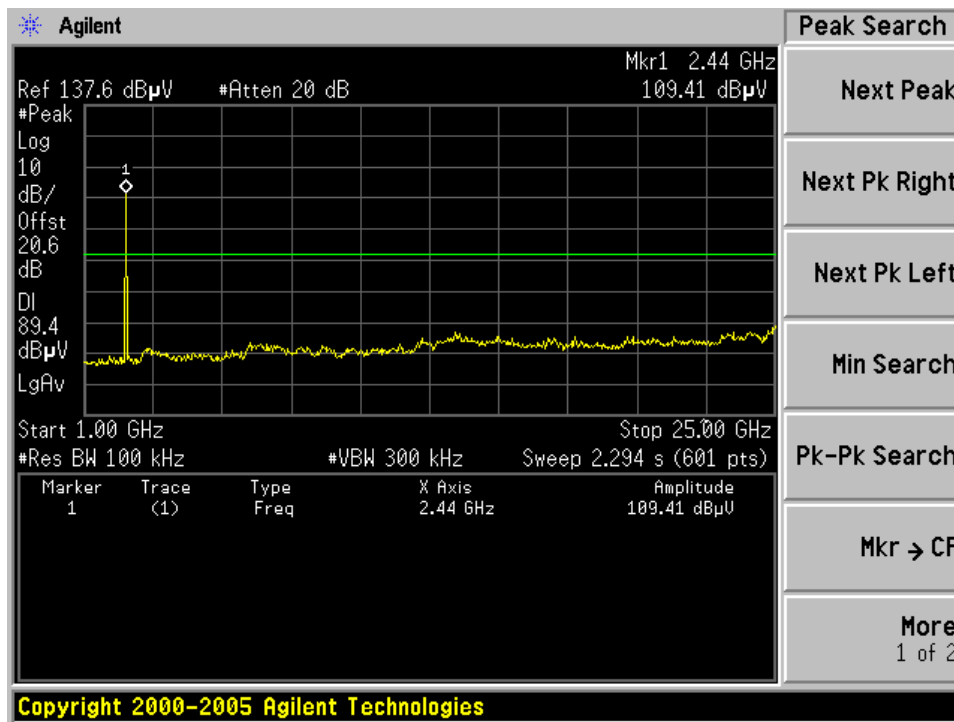
Chain 2



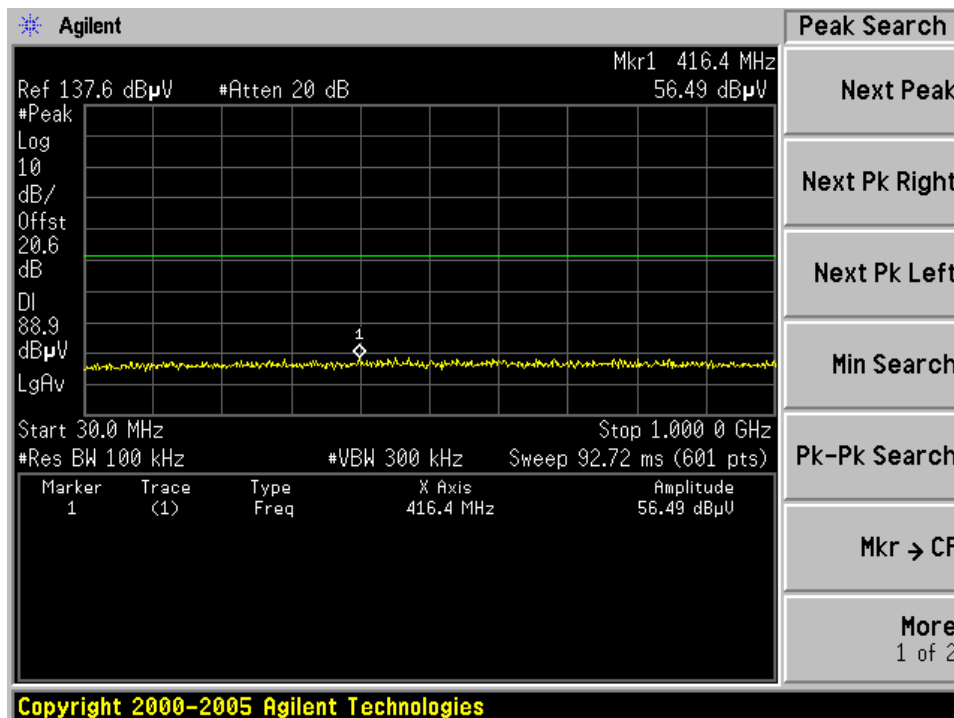
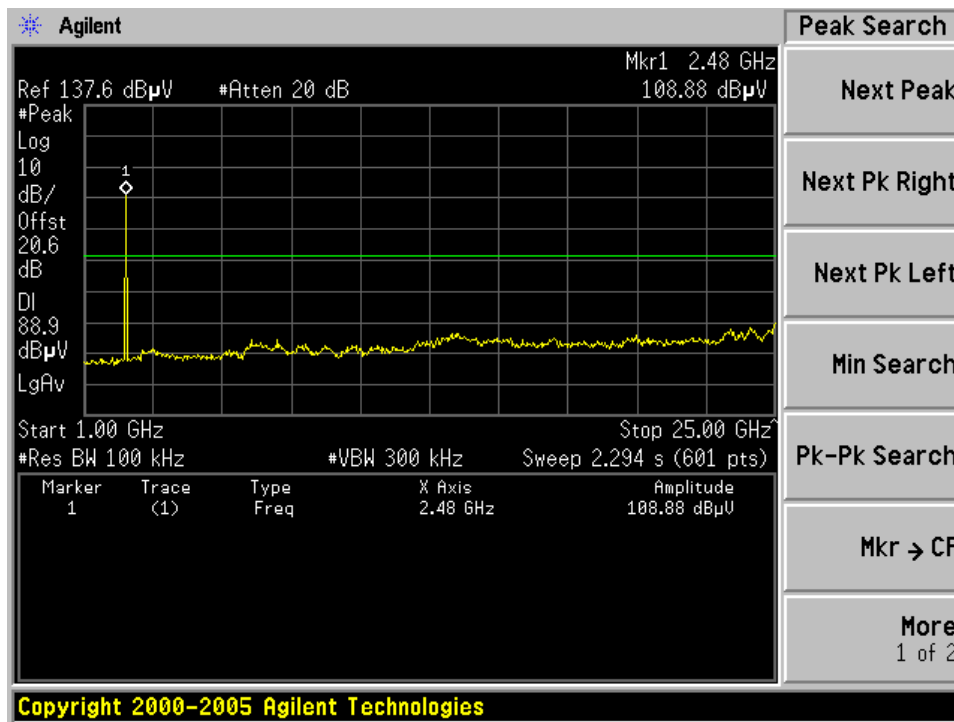
2462MHz
Chain 0:



Chain 1:



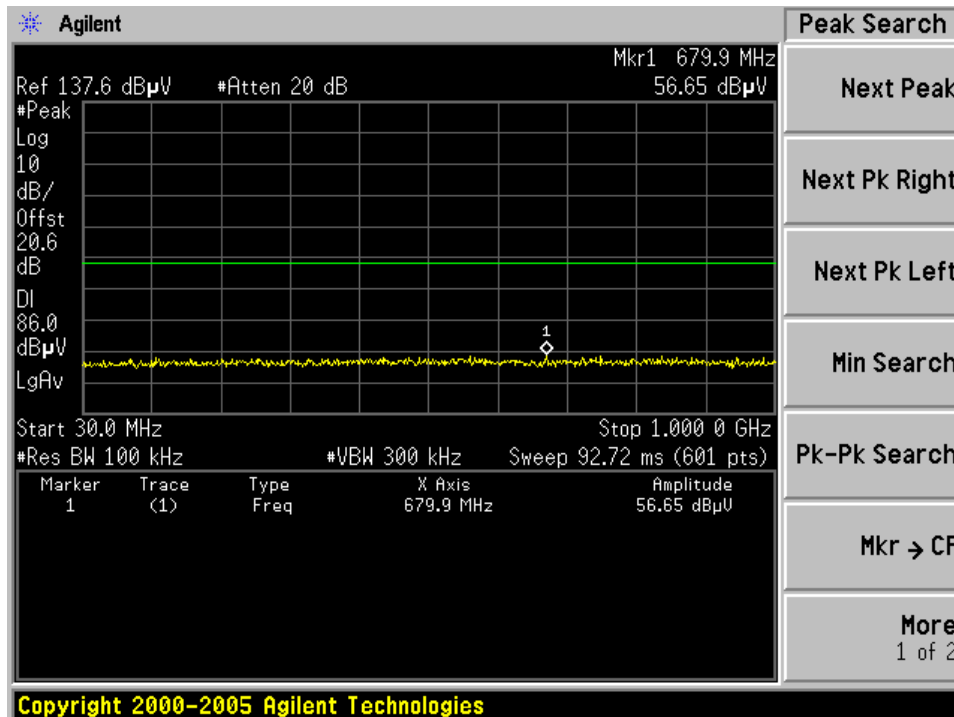
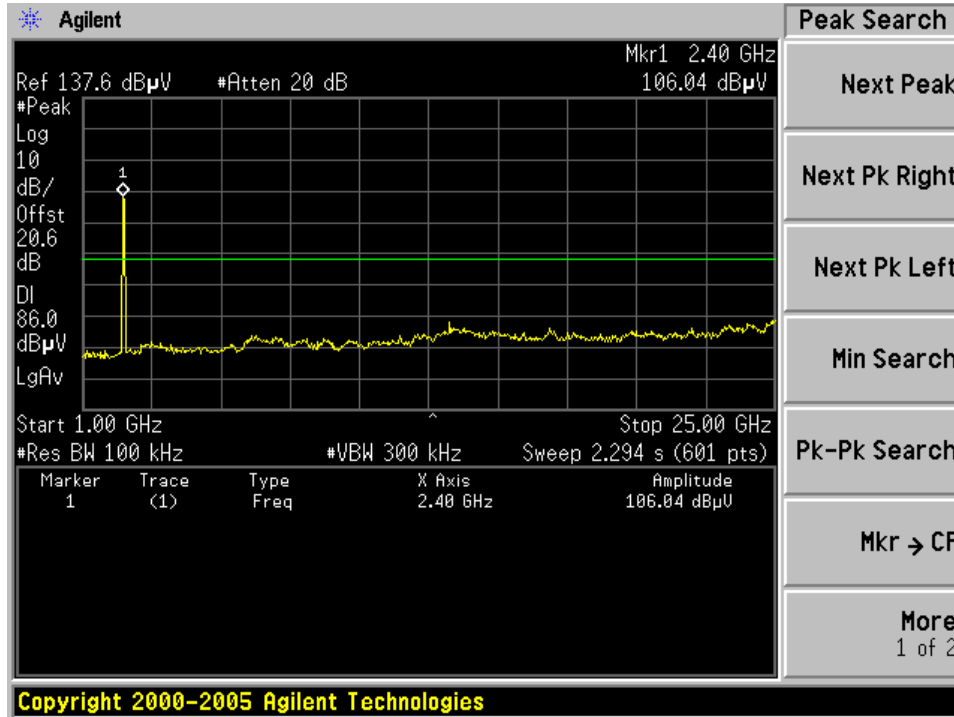
Chain 2:



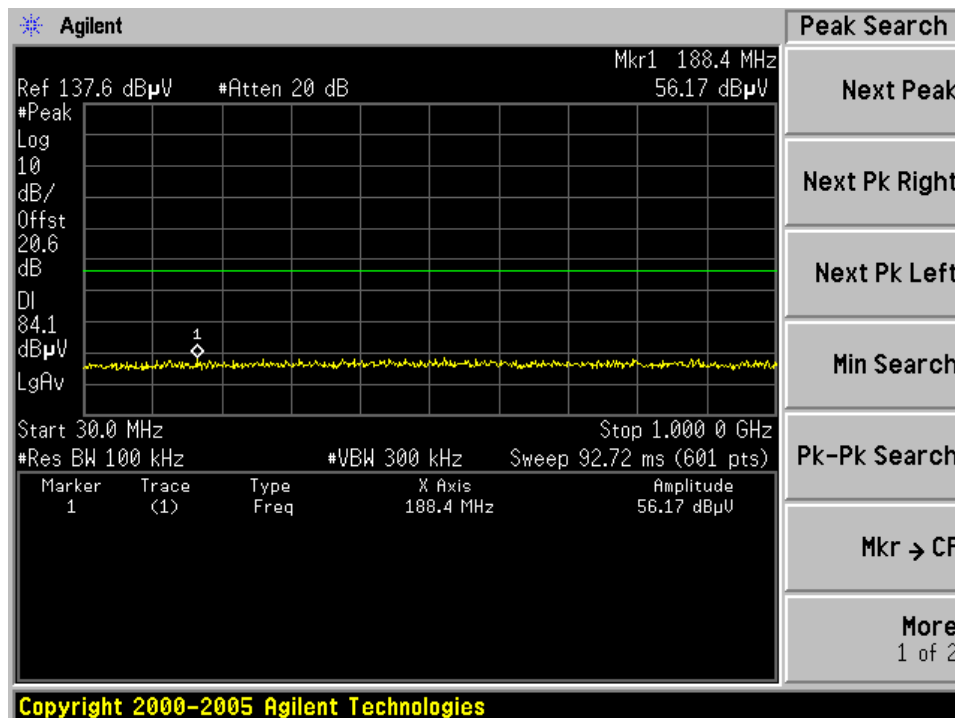
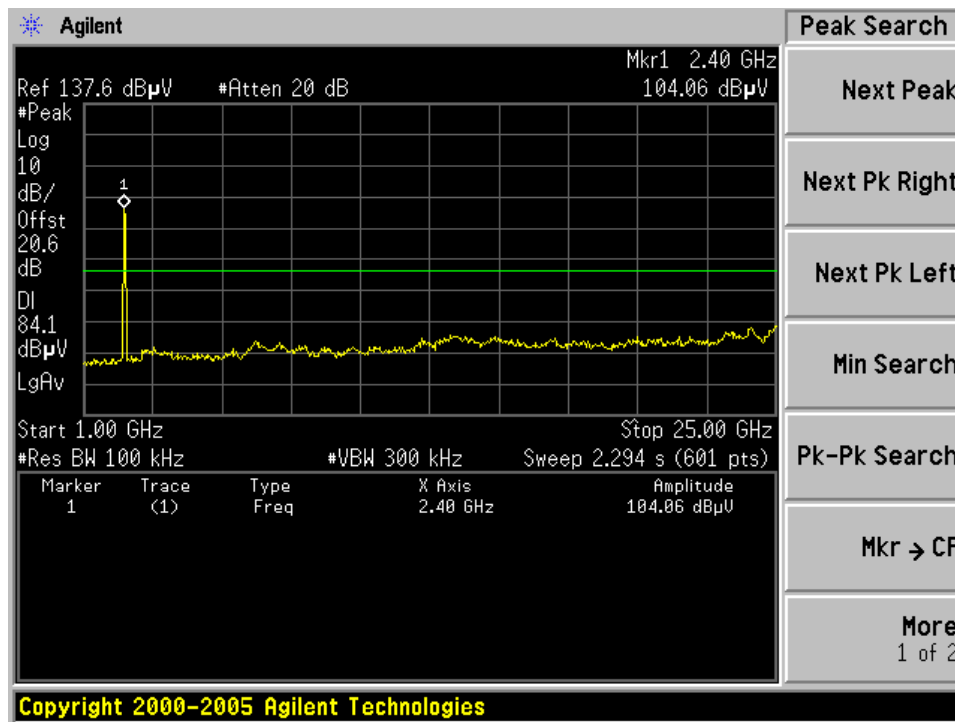
IEEE 802.11g modulation (6 Mbps) Test Result

2412MHz:

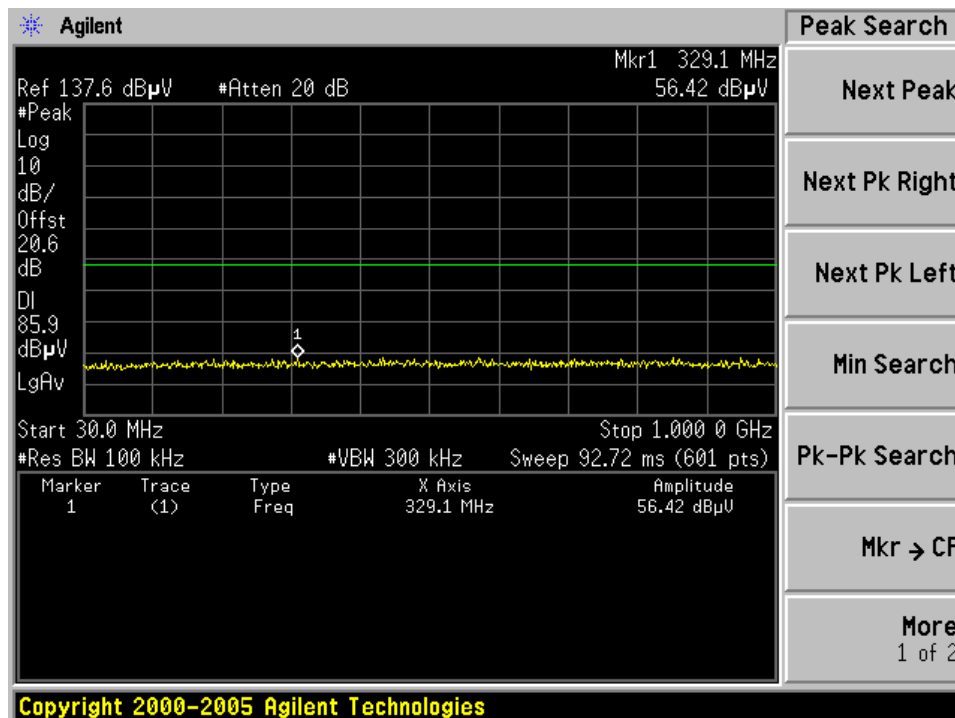
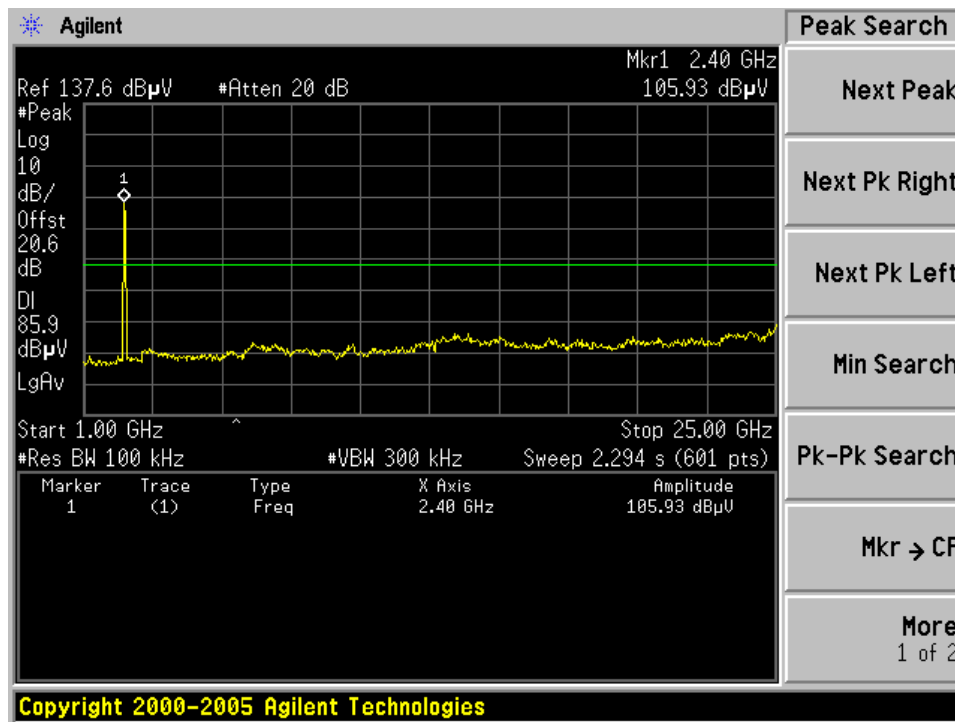
Chain 0:



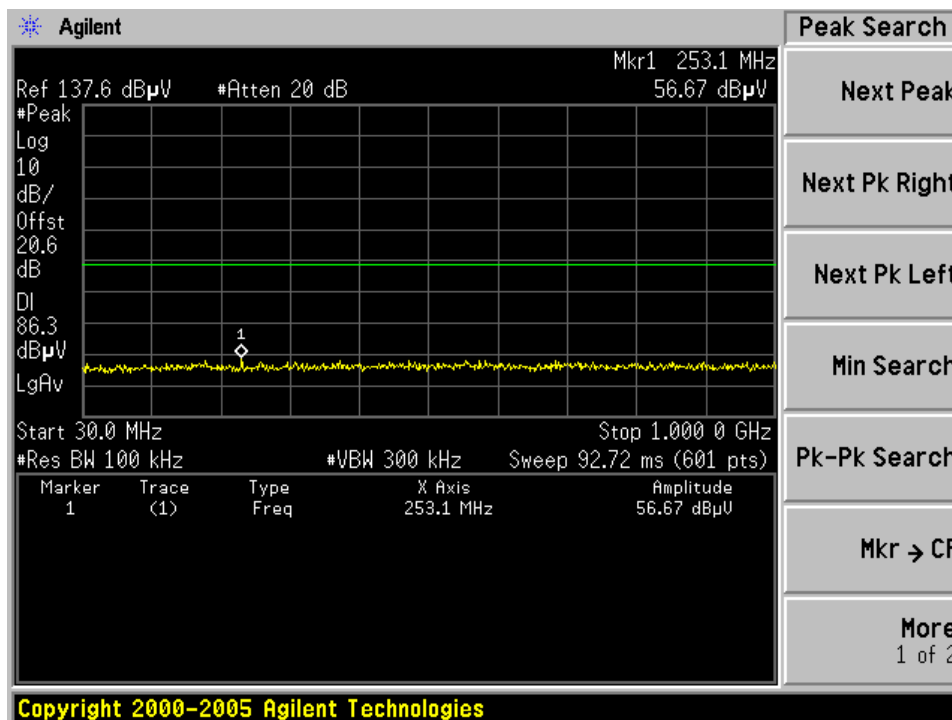
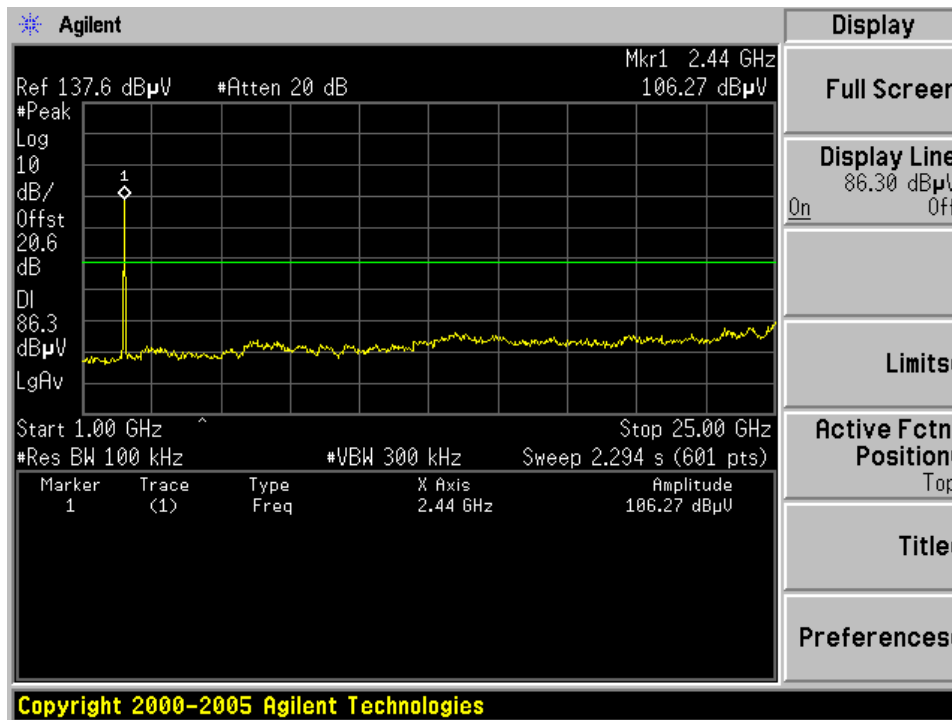
Chain 1:



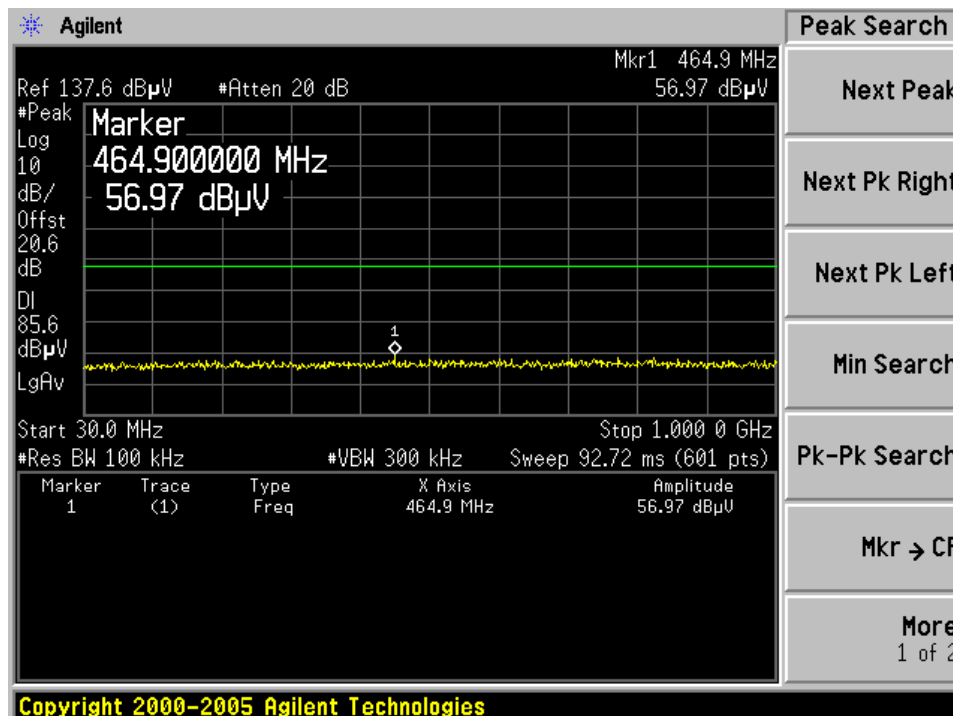
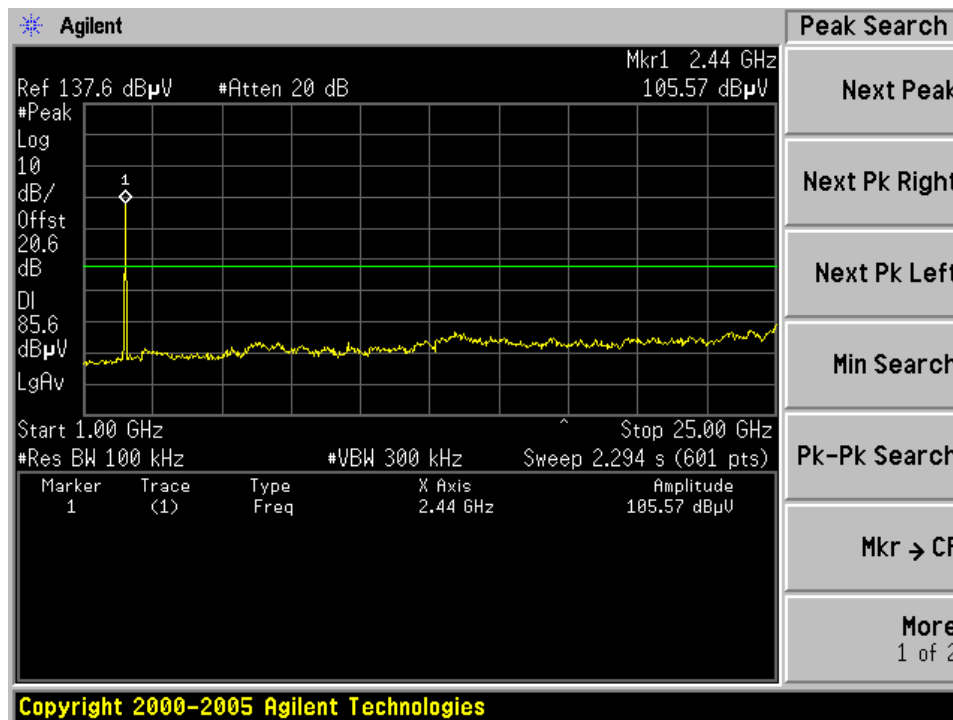
Chain 2:



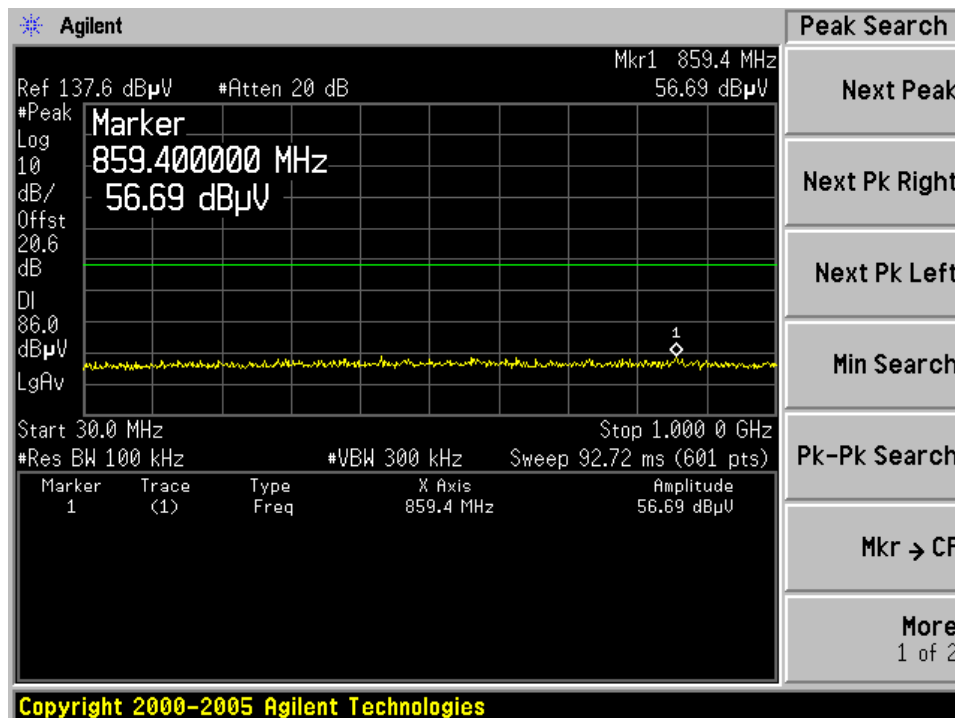
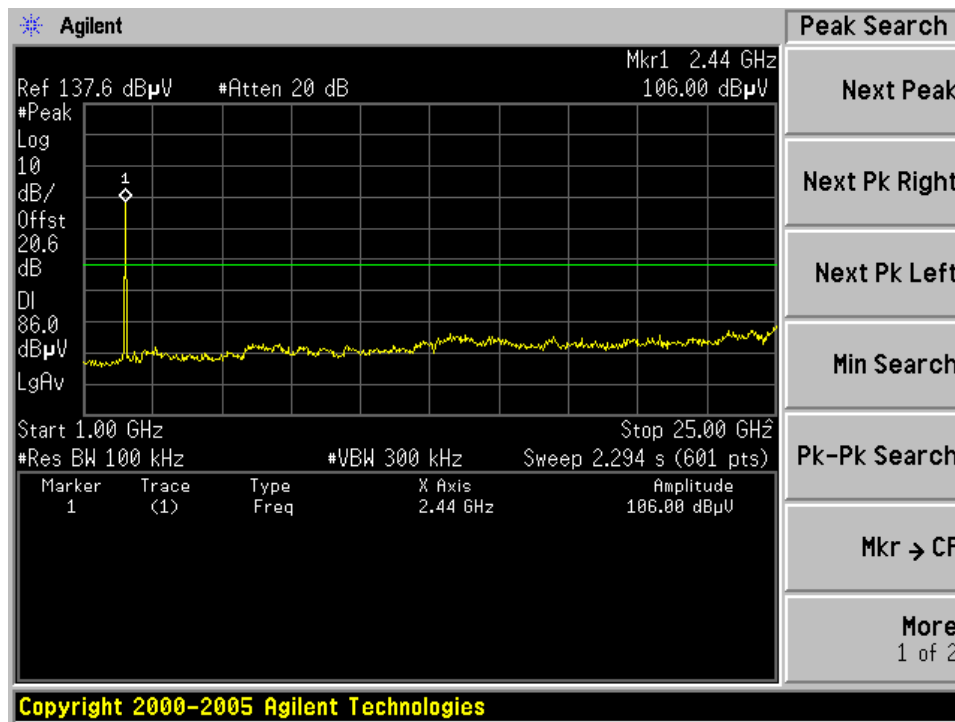
2437MHz:
Chain0:



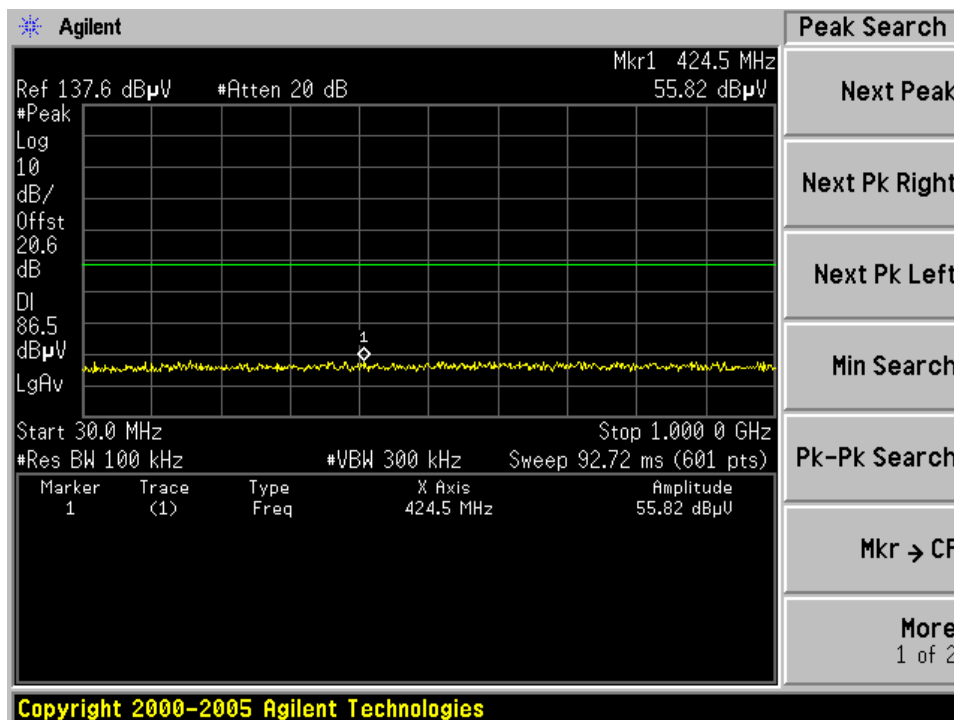
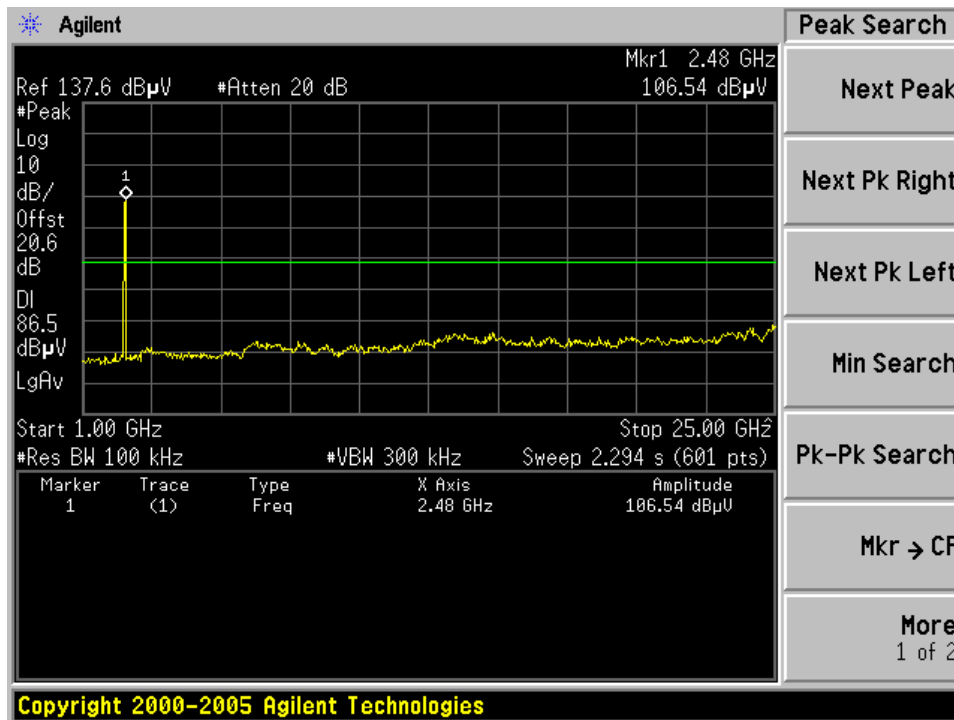
Chain1:



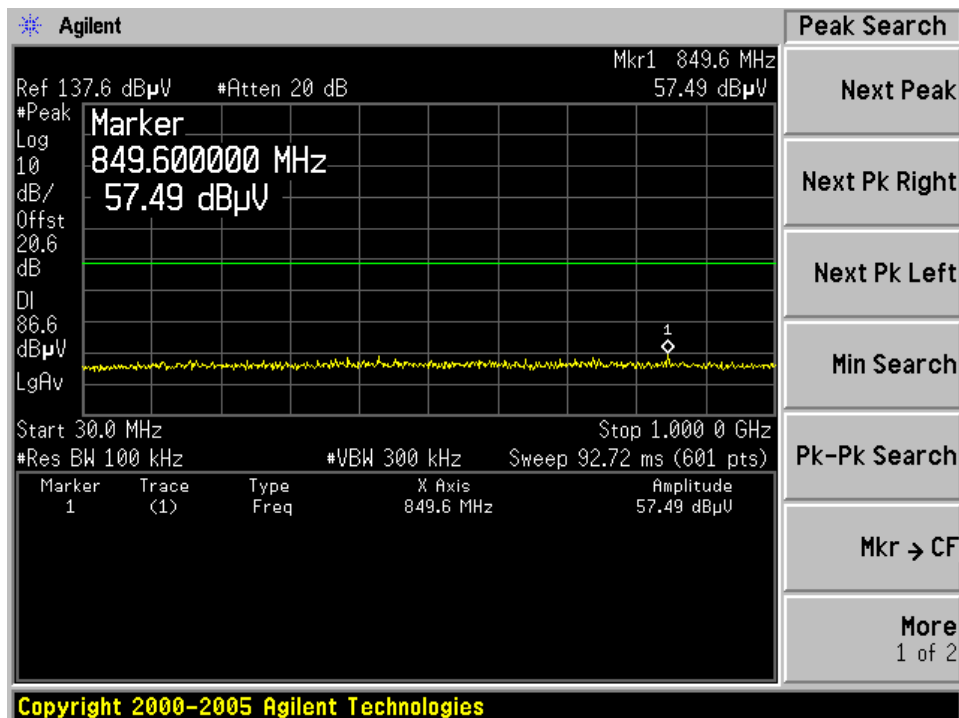
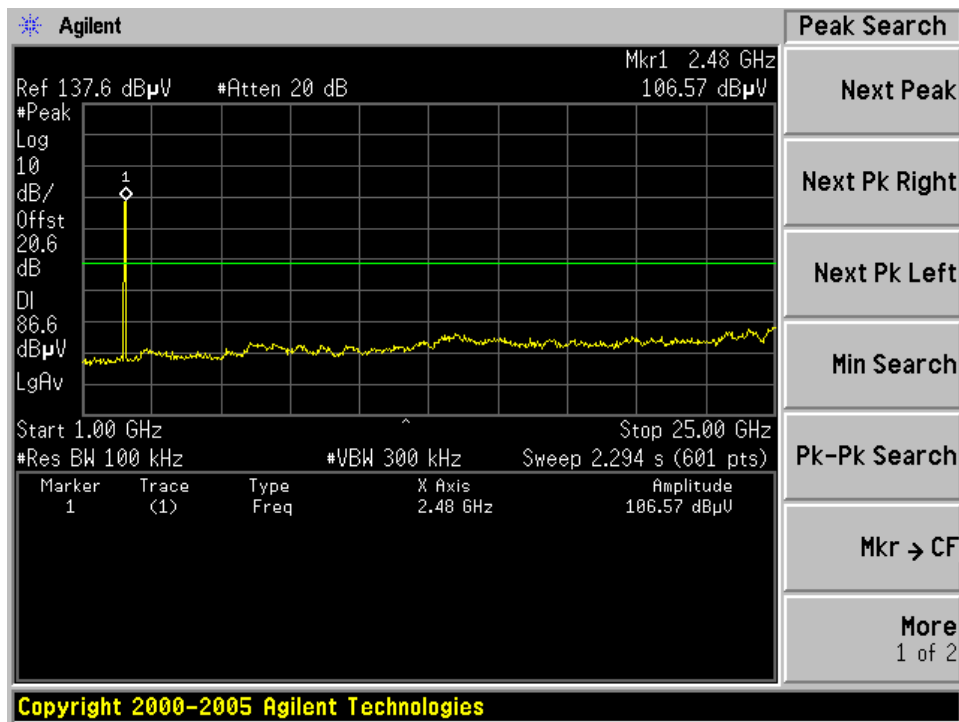
Chain 2:



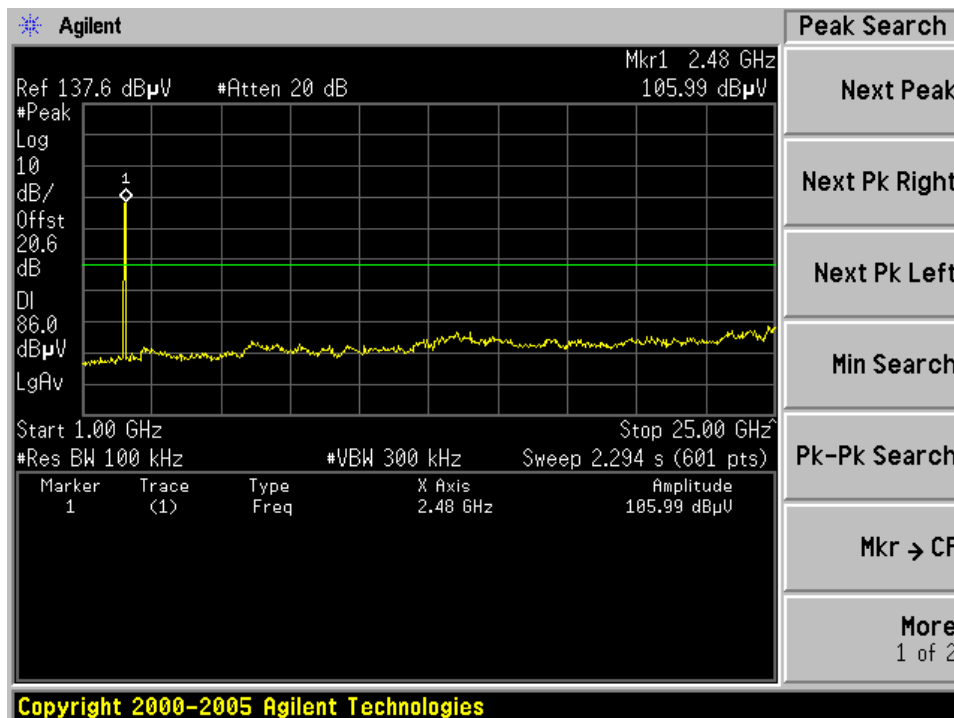
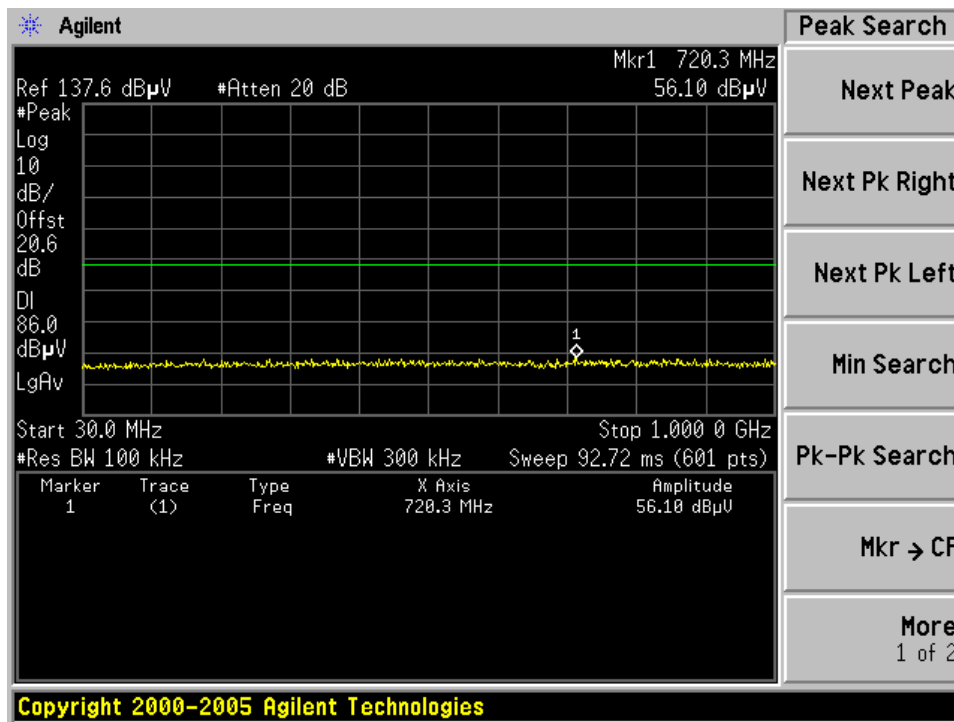
2462MHz:
Chain 0:



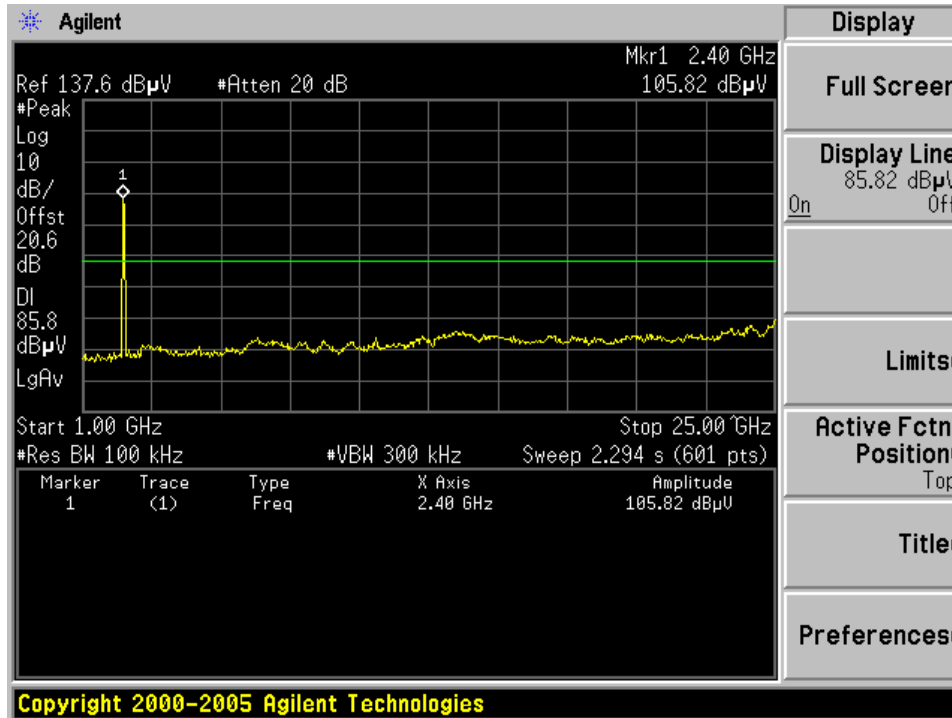
Chain1:



Chain 2:



IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result
 2412MHz:
 Chain 0:



Display

Full Screen

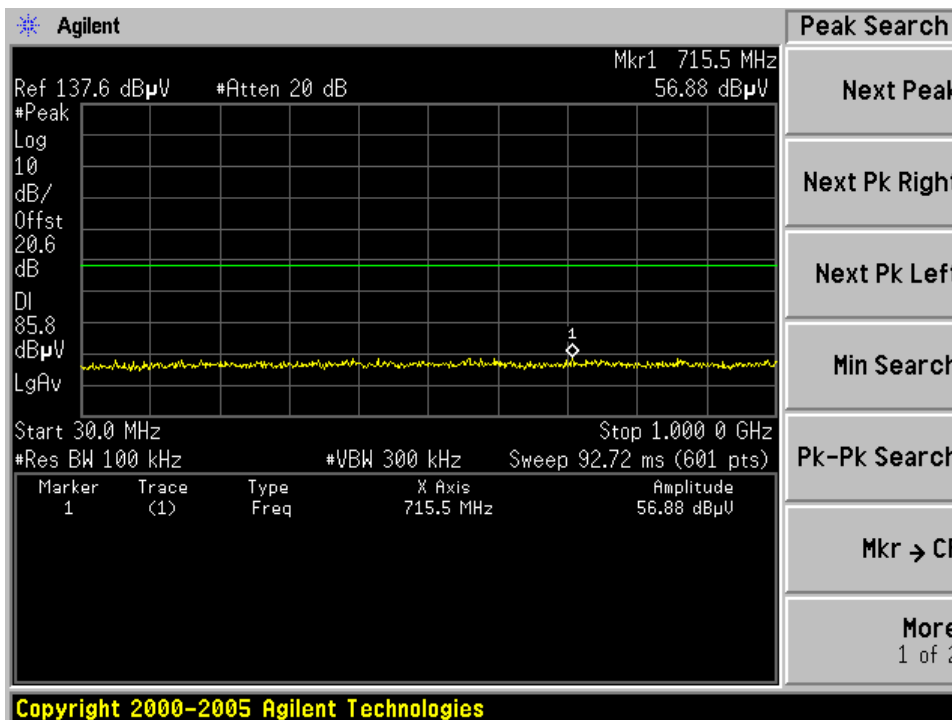
Display Line 85.82 dB μ V On Off

Limits

Active Fctn Position Top

Title

Preferences



Peak Search

Next Peak

Next Pk Right

Next Pk Left

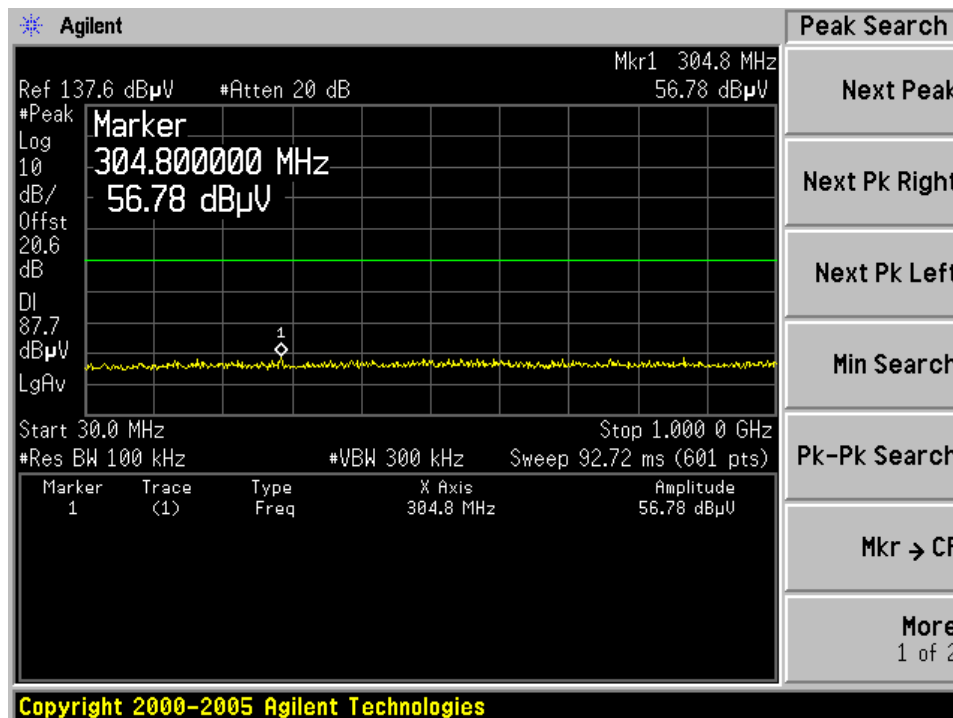
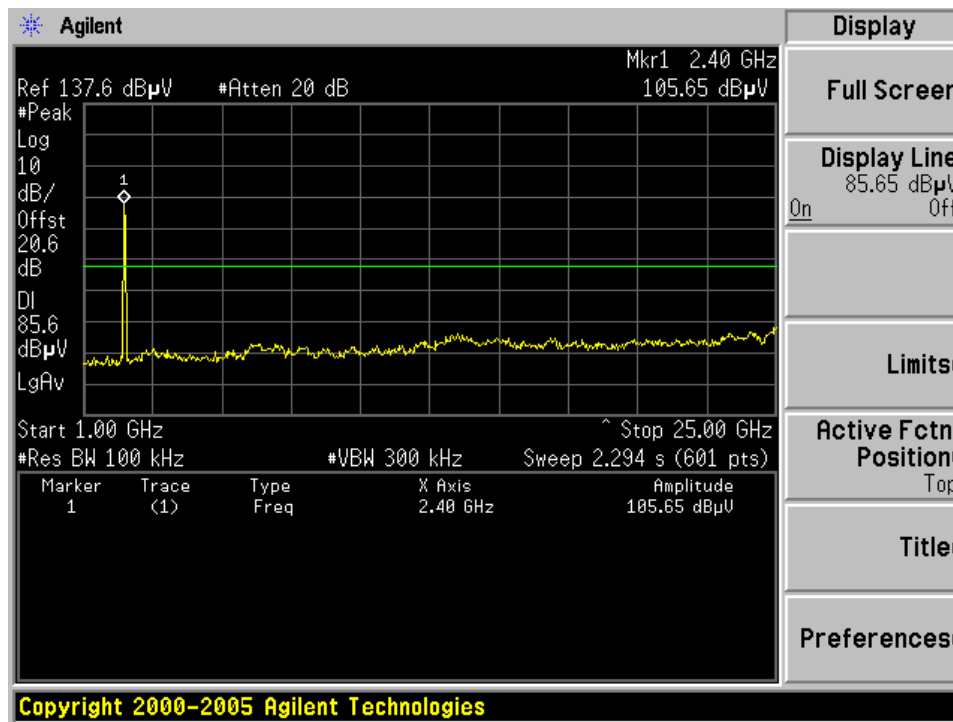
Min Search

PK-PK Search

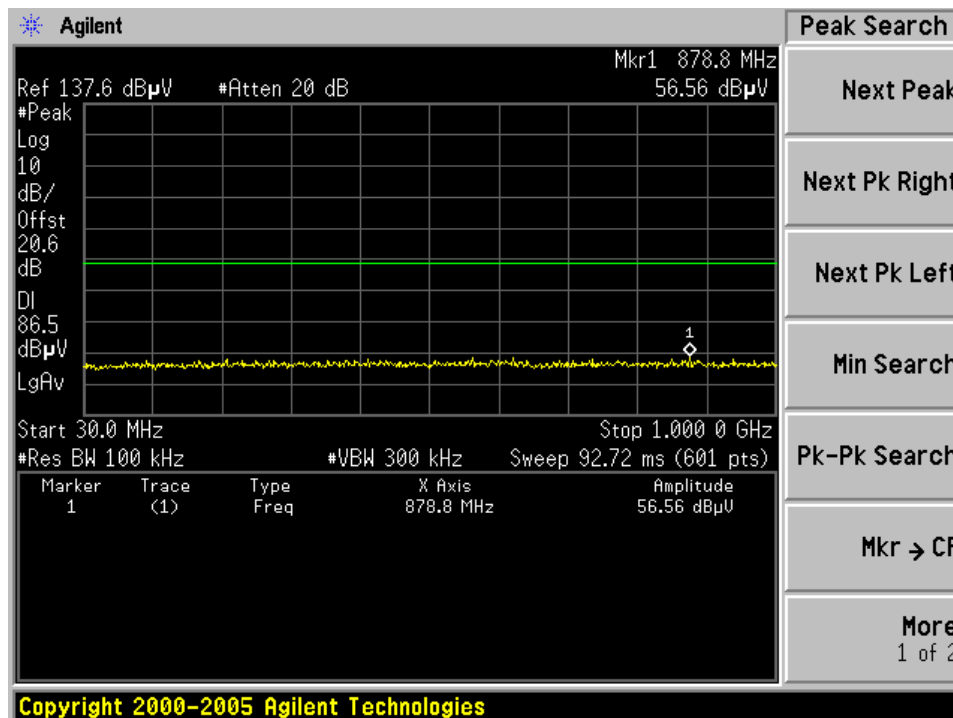
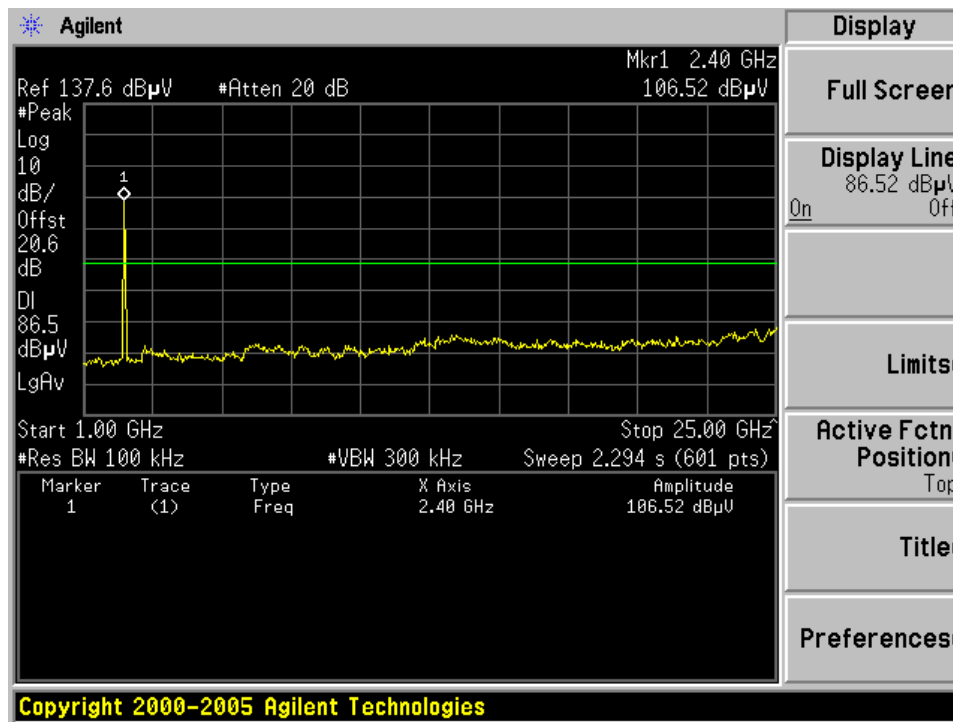
Mkr \rightarrow CF

More 1 of 2

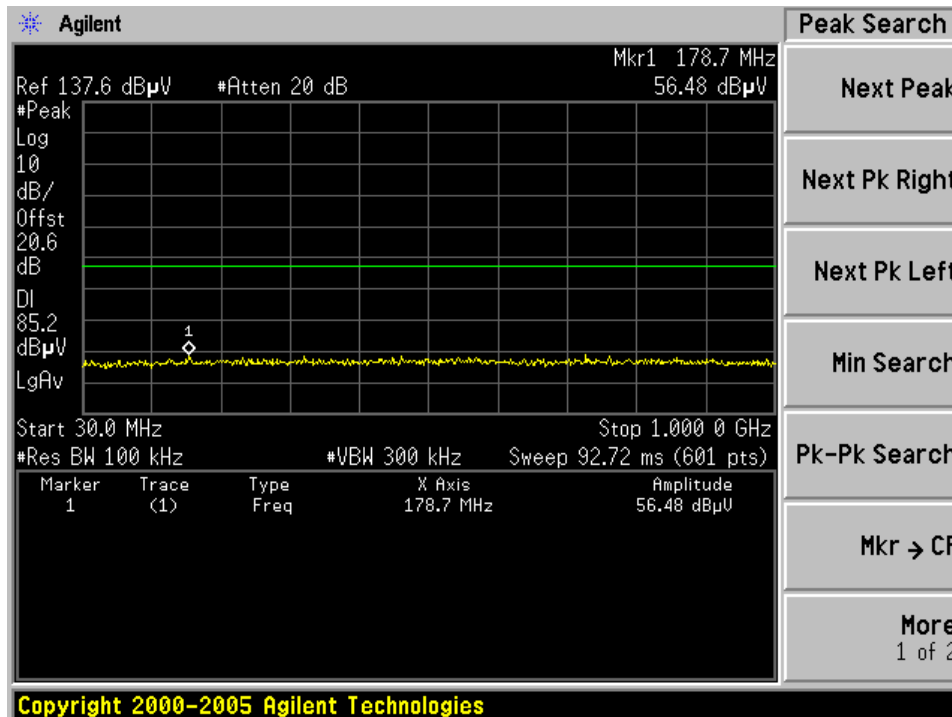
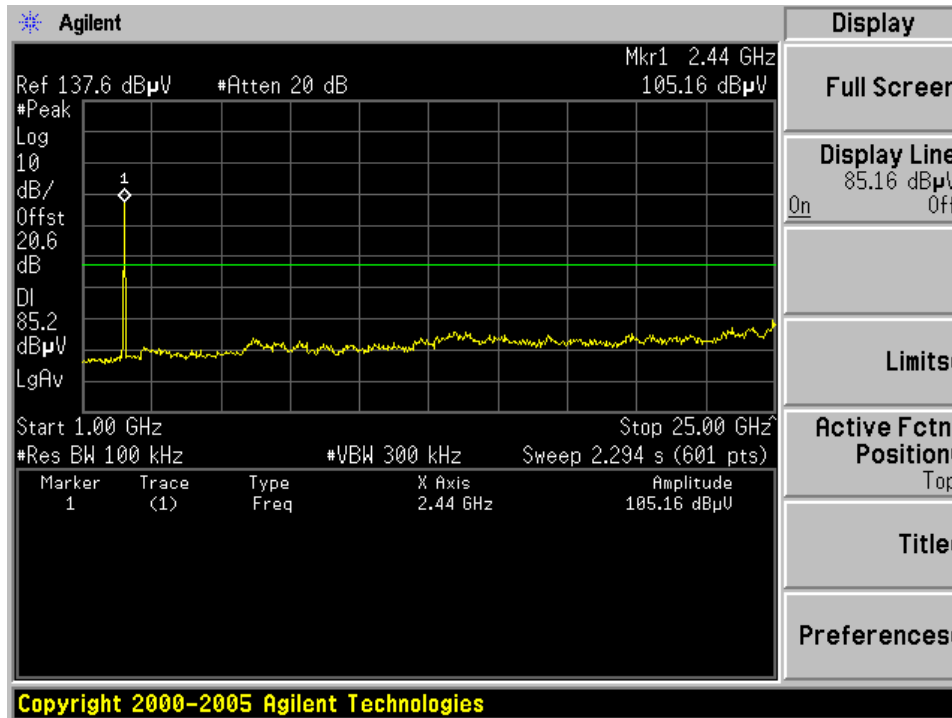
Chain 1:



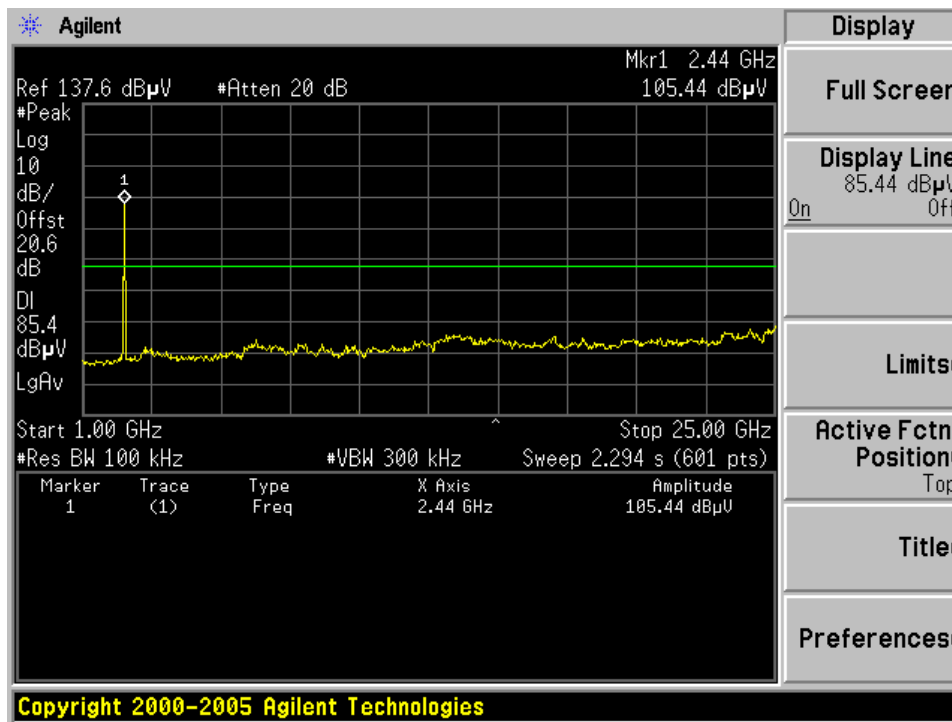
Chain 2:



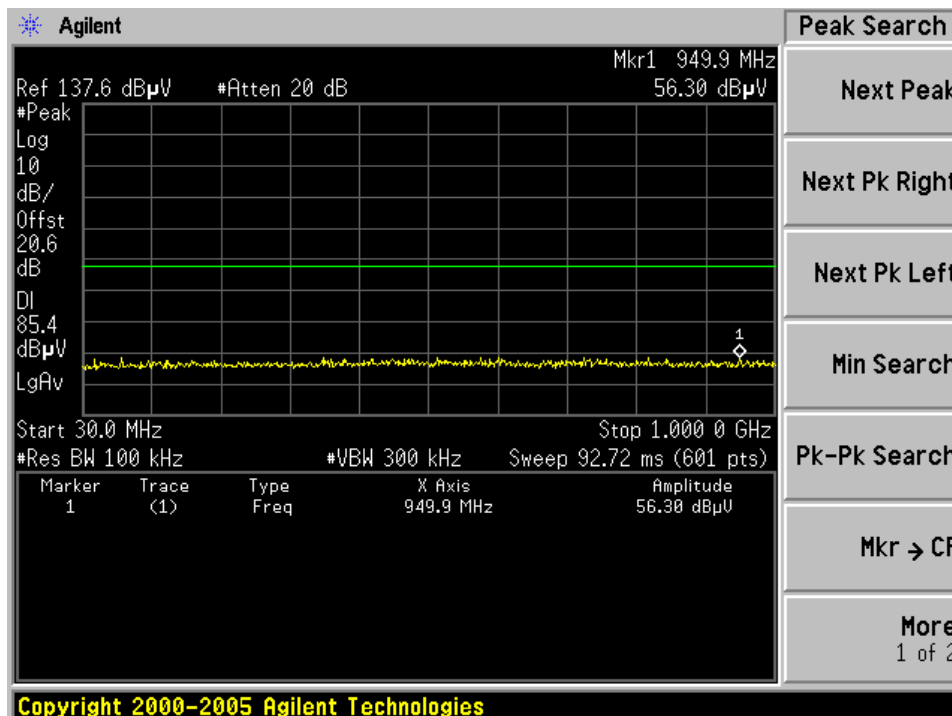
2437MHz:
Chain 0:



Chain 1:

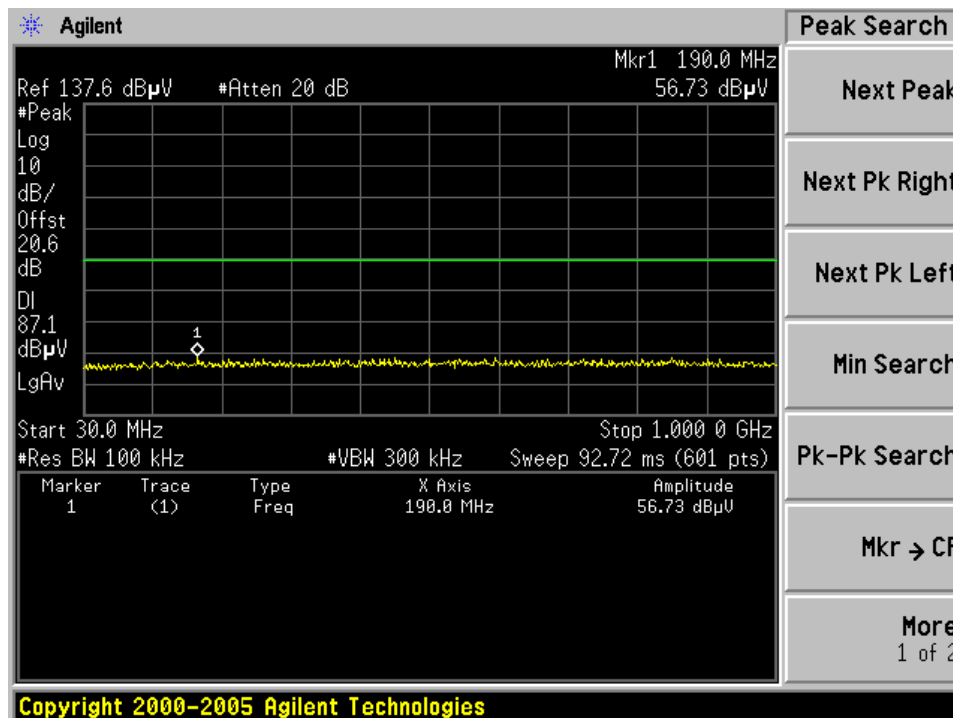
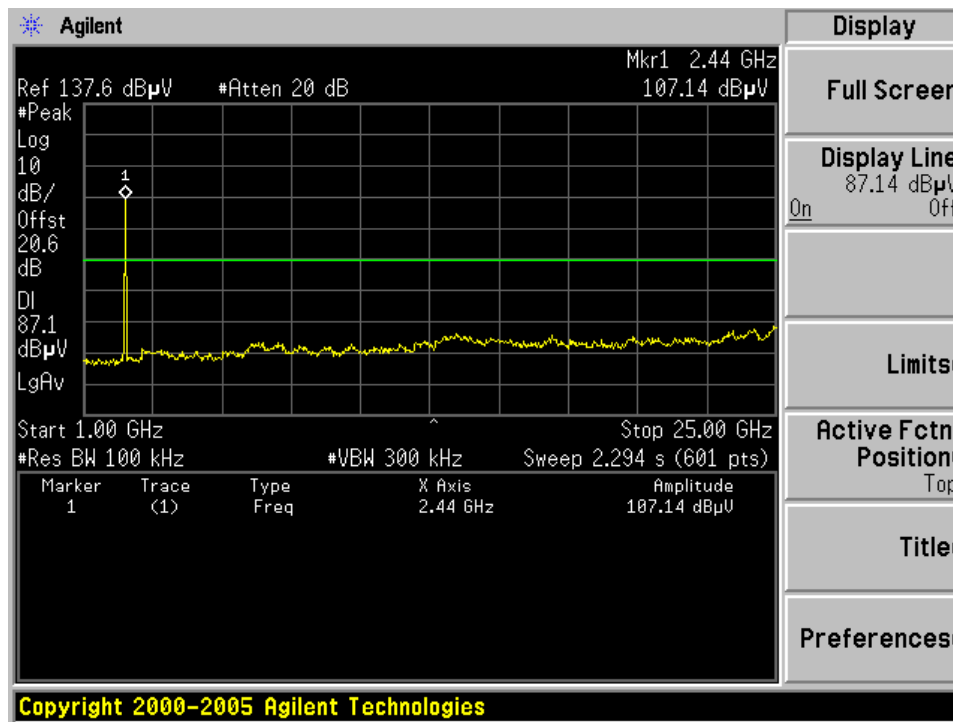


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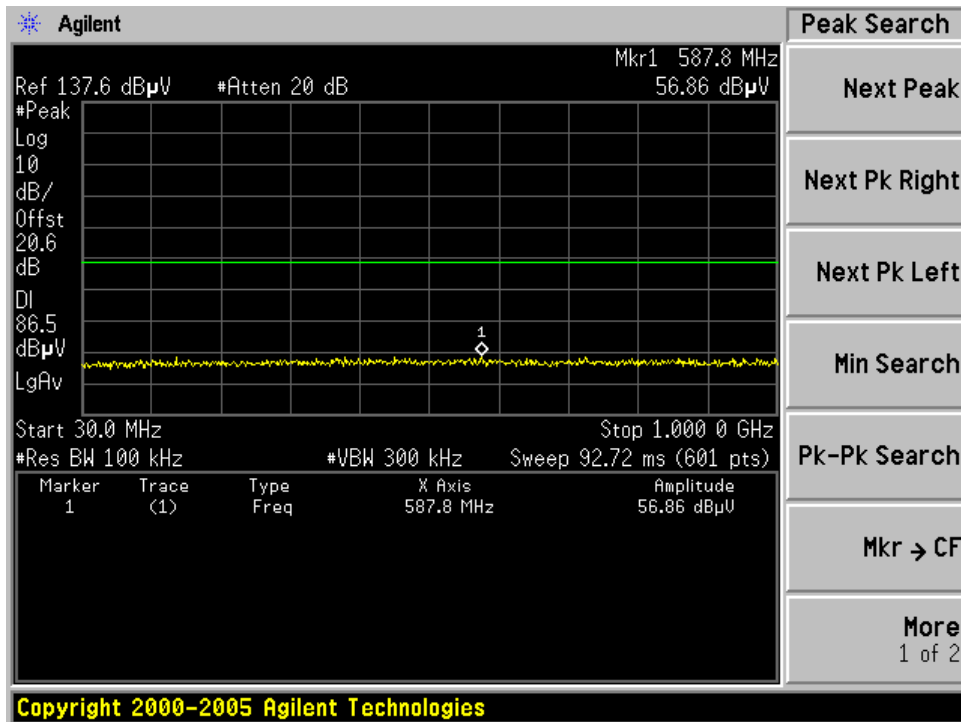
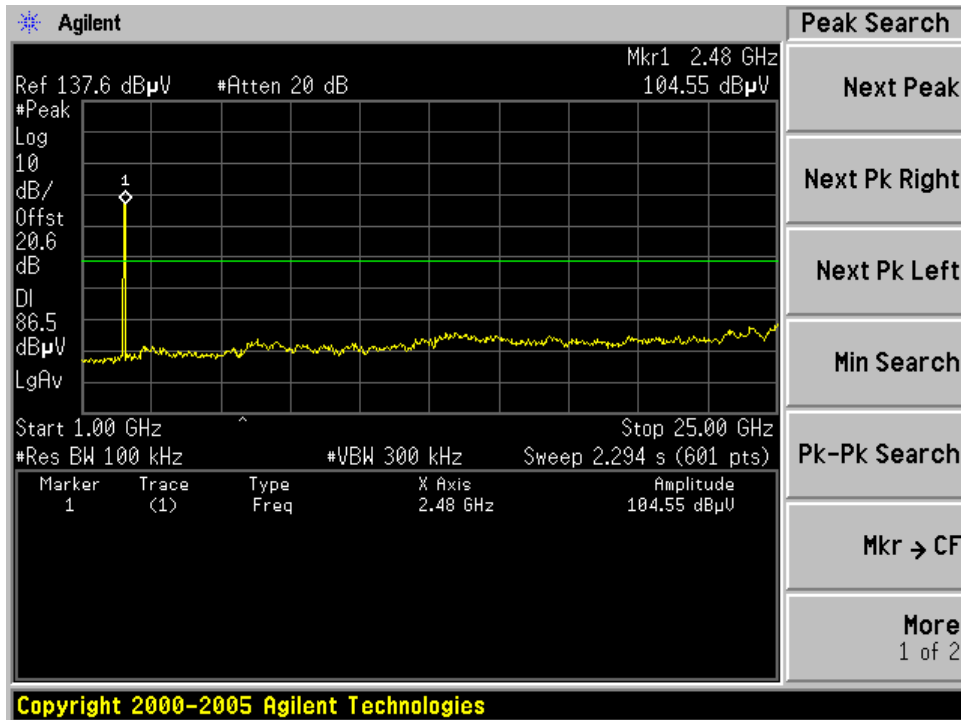


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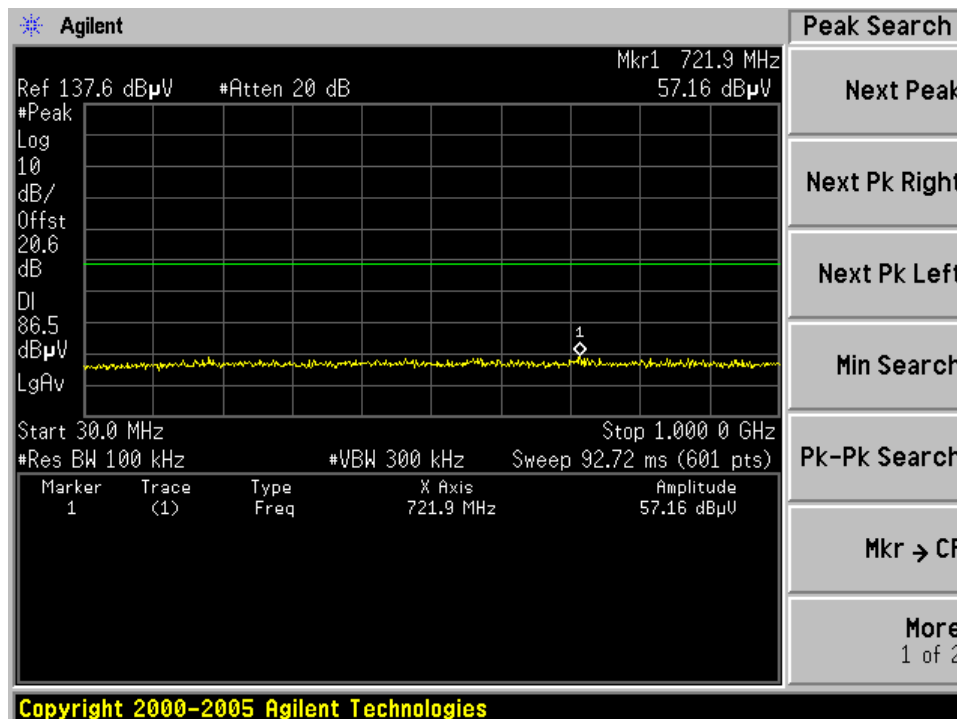
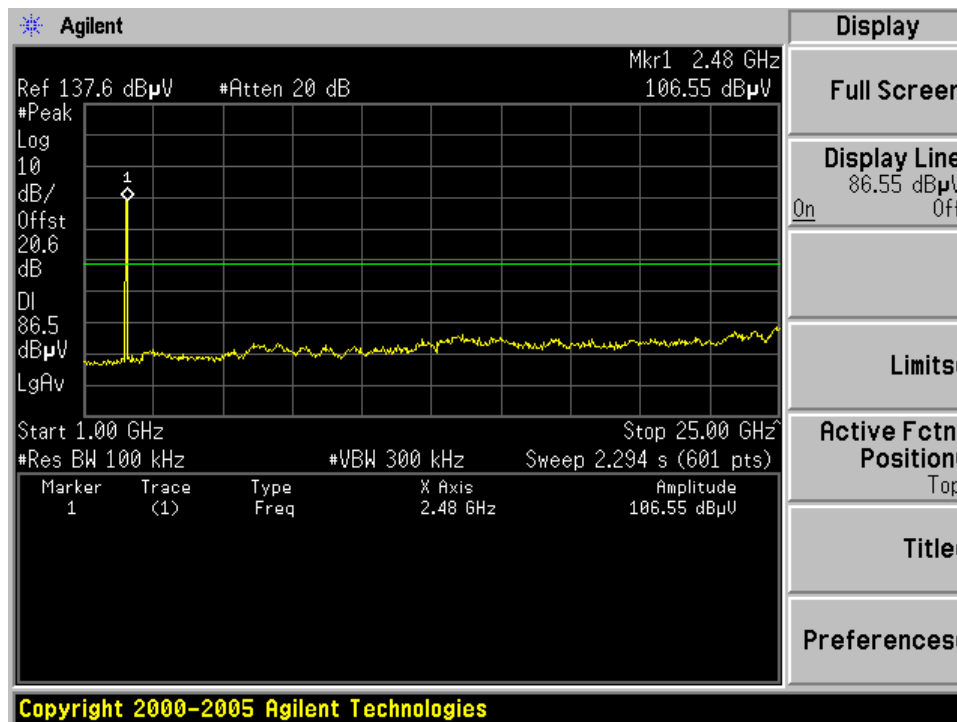
Chain 2:



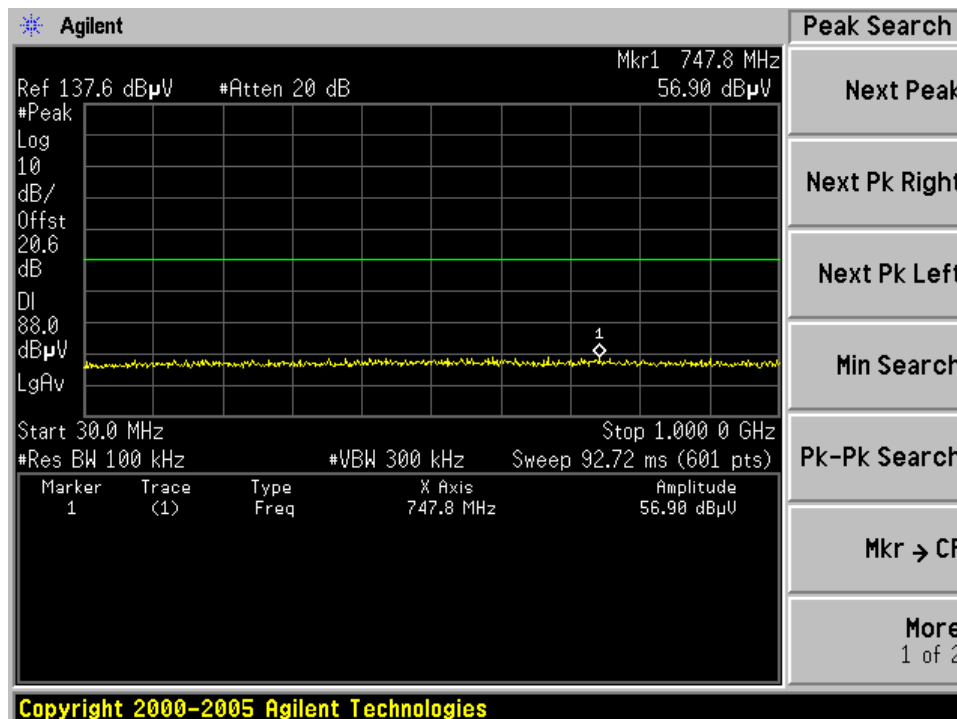
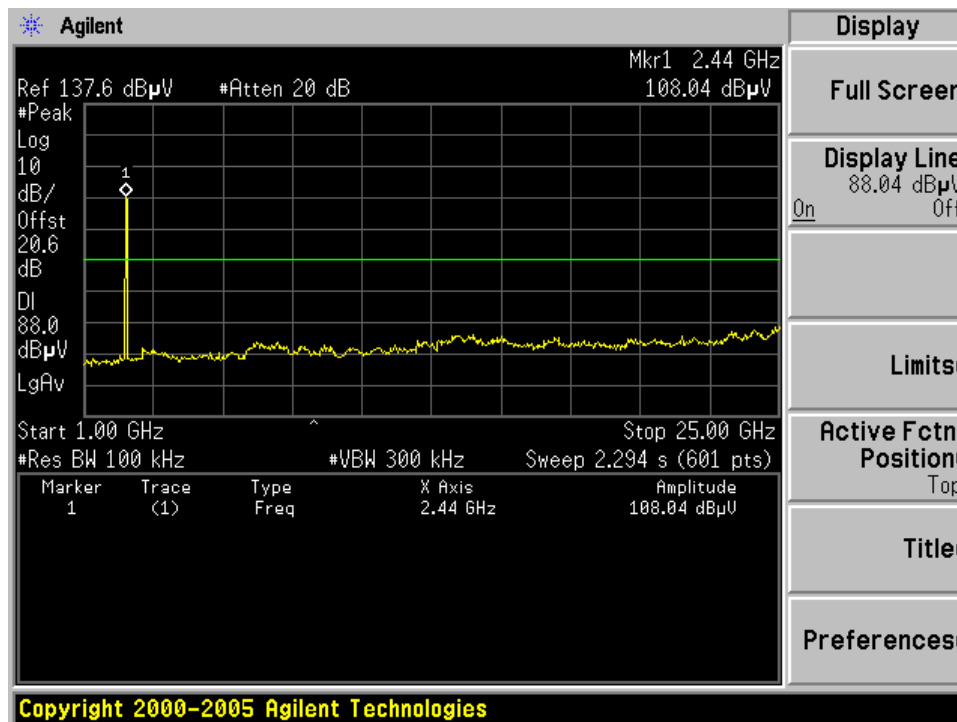
2462MHz:
Chain 0:



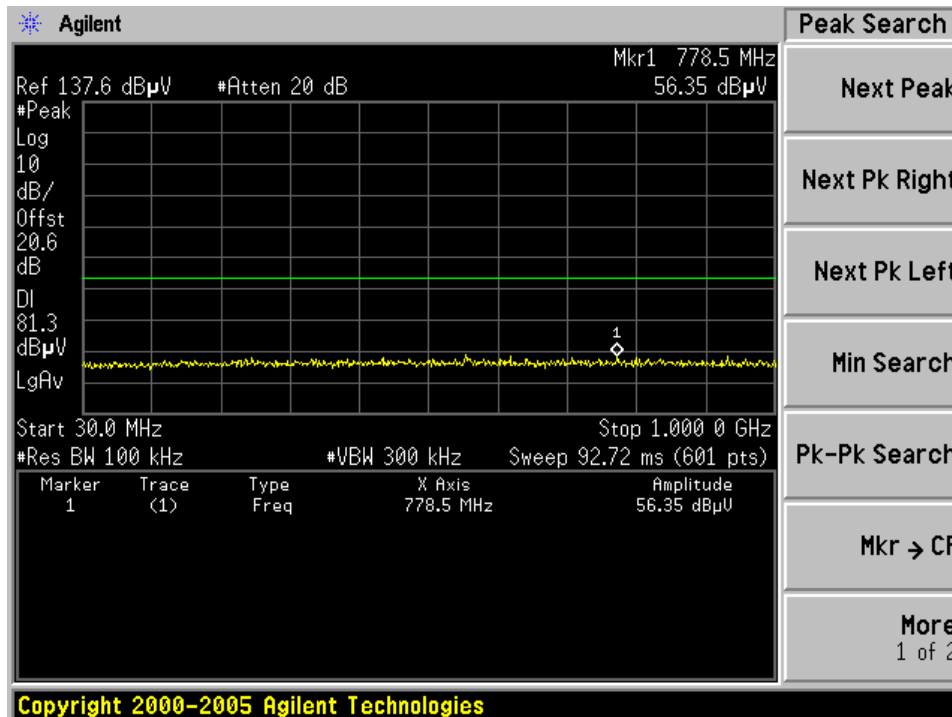
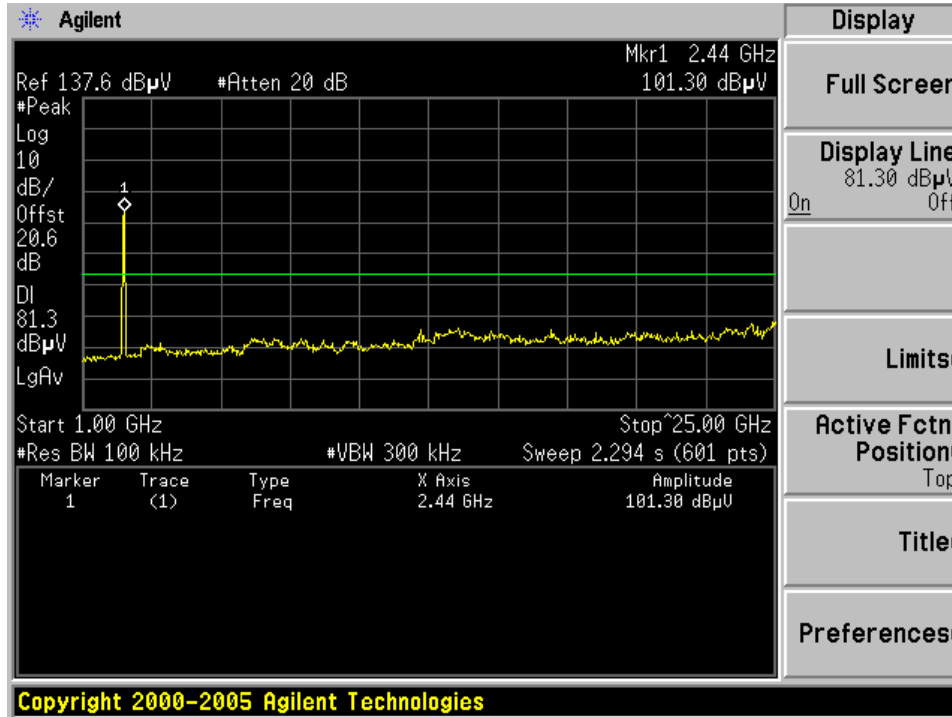
Chain 1:



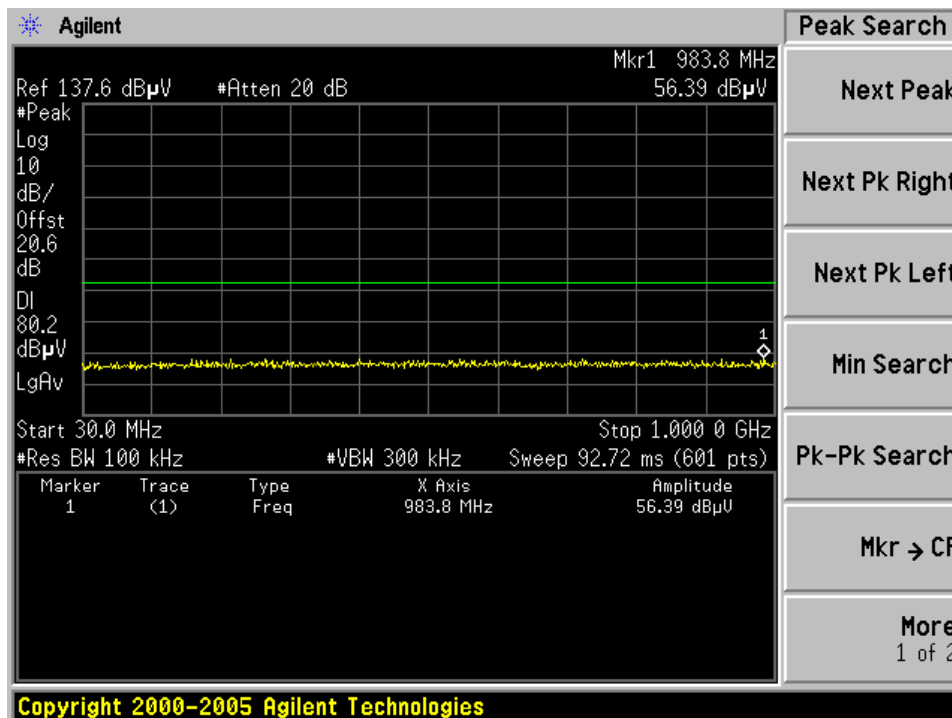
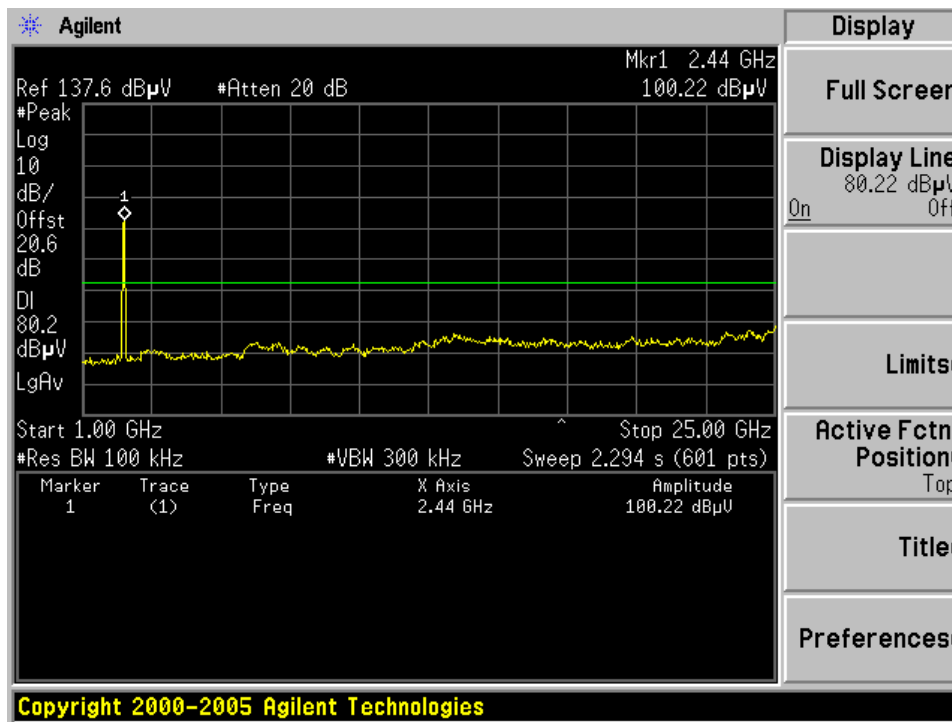
Chain 2:



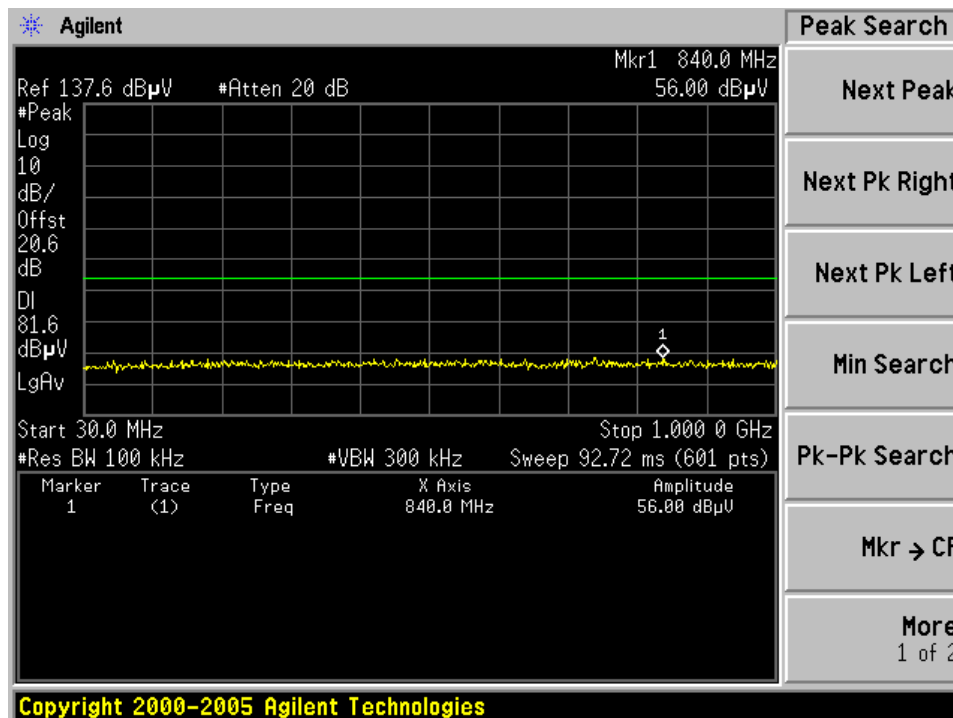
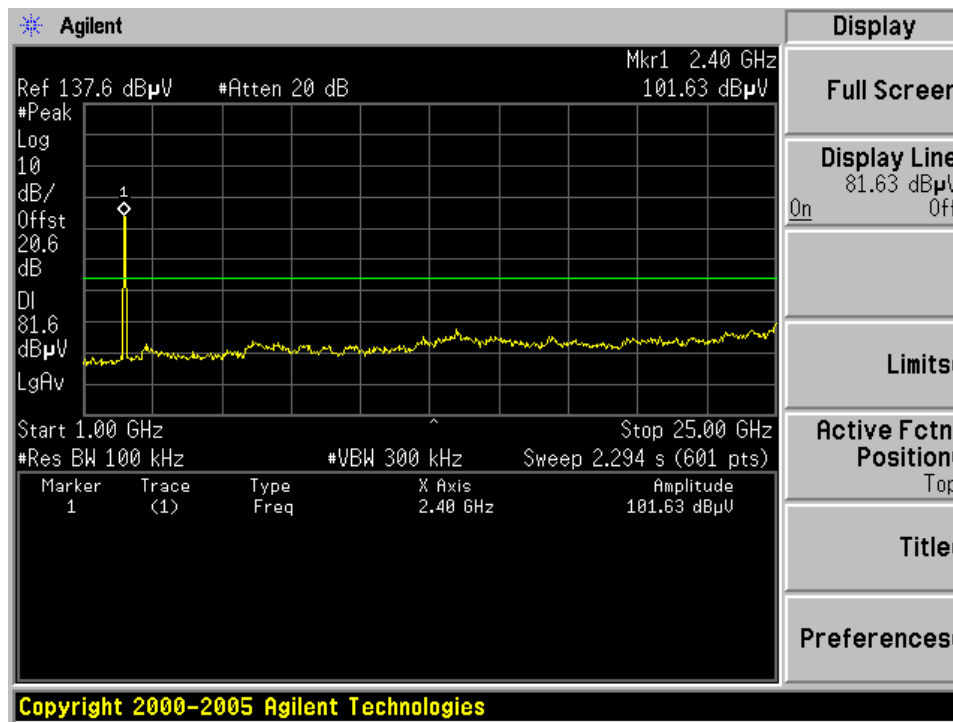
IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result
 2422MHz
 Chain 0:



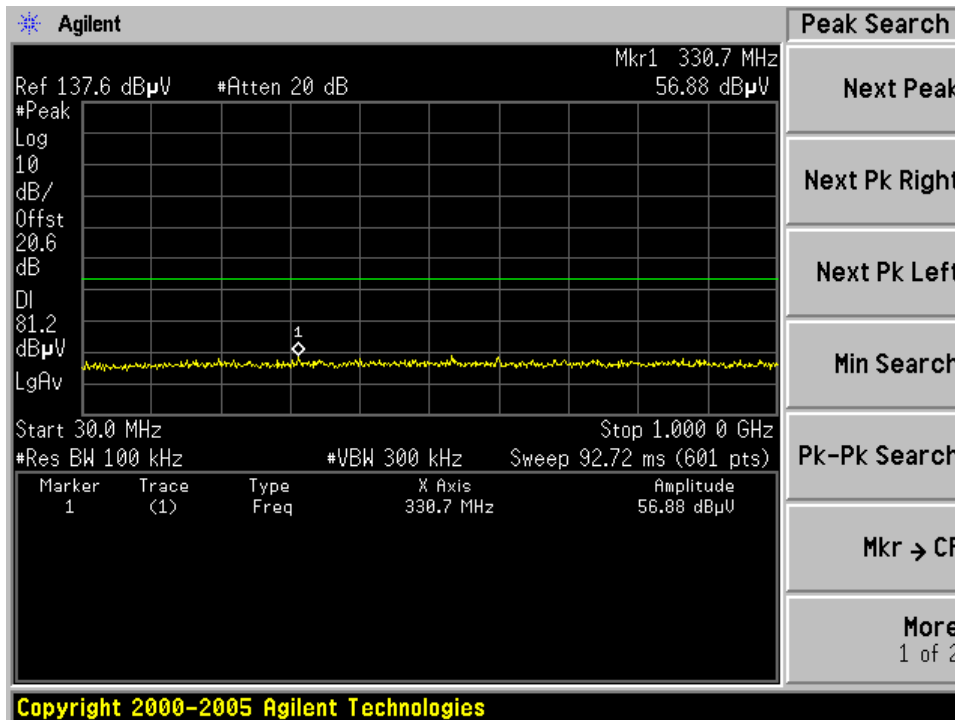
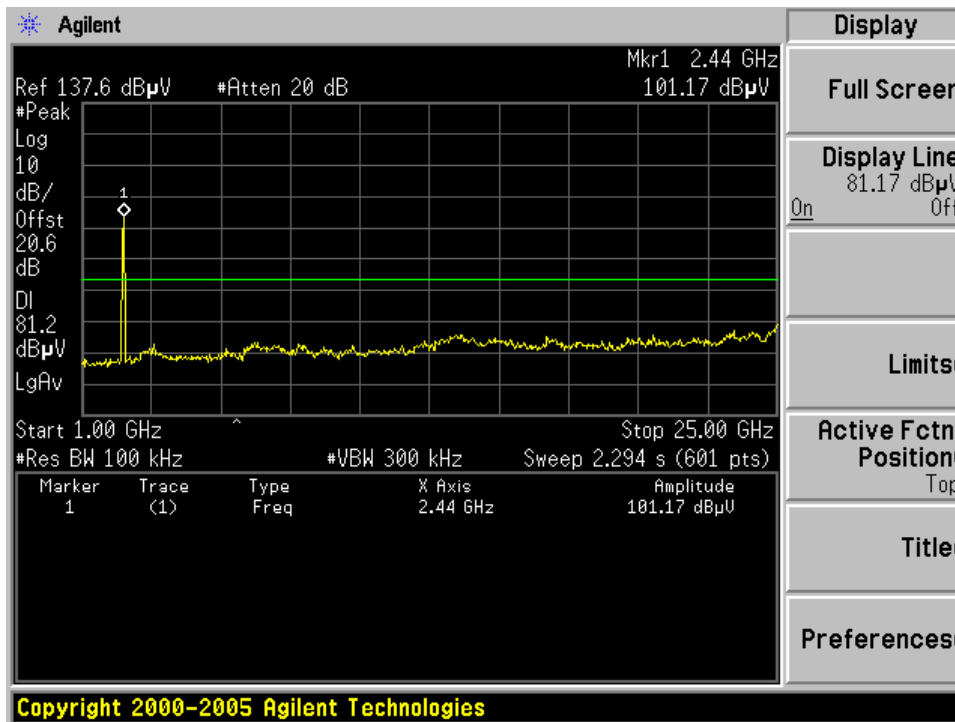
Chain 1:



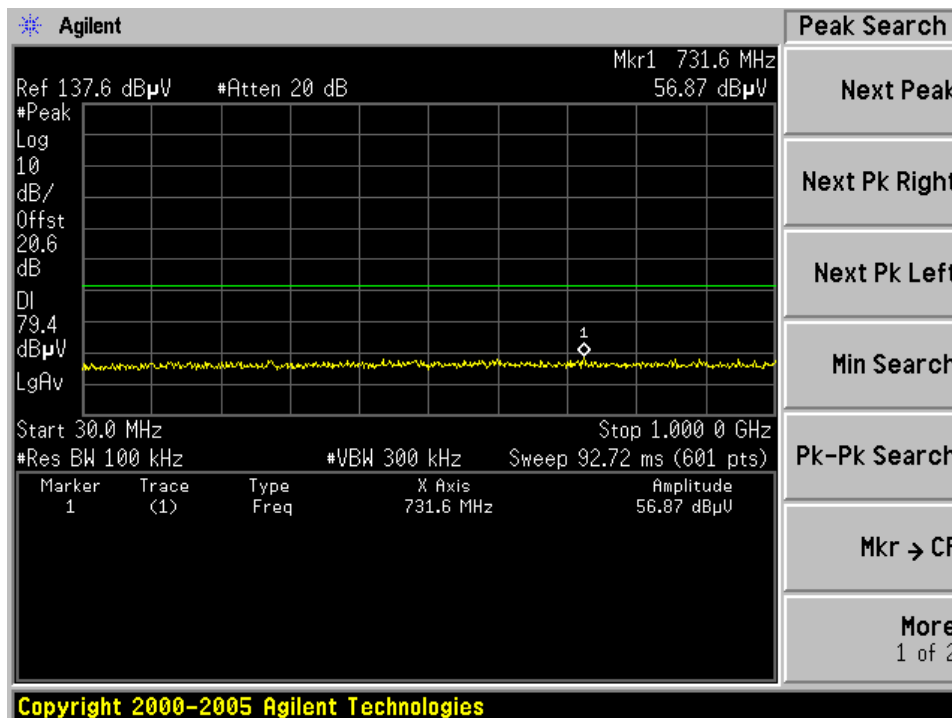
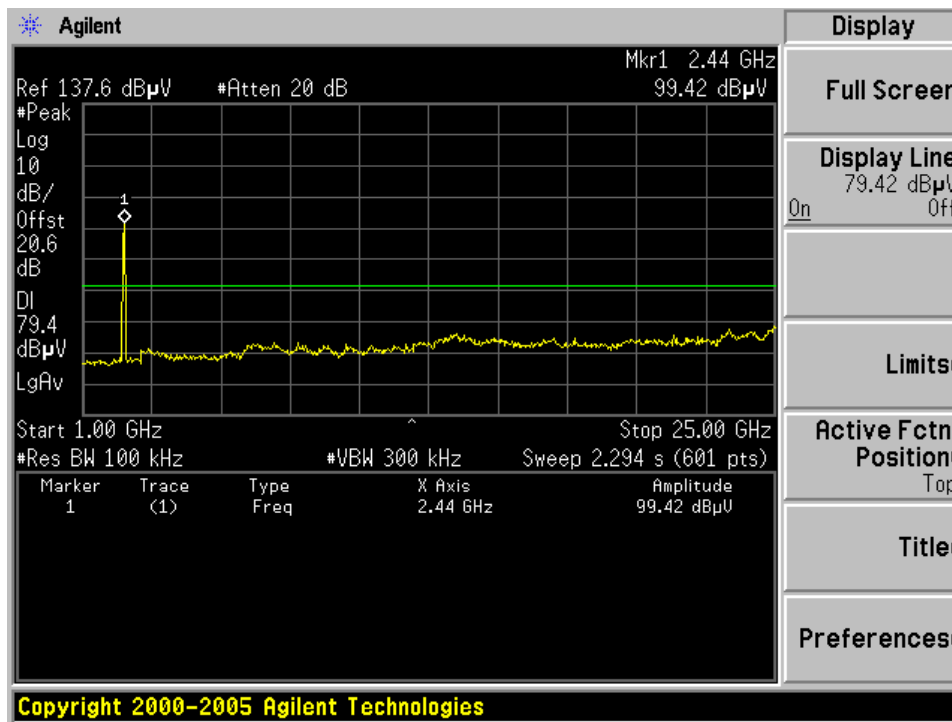
Chain 2:



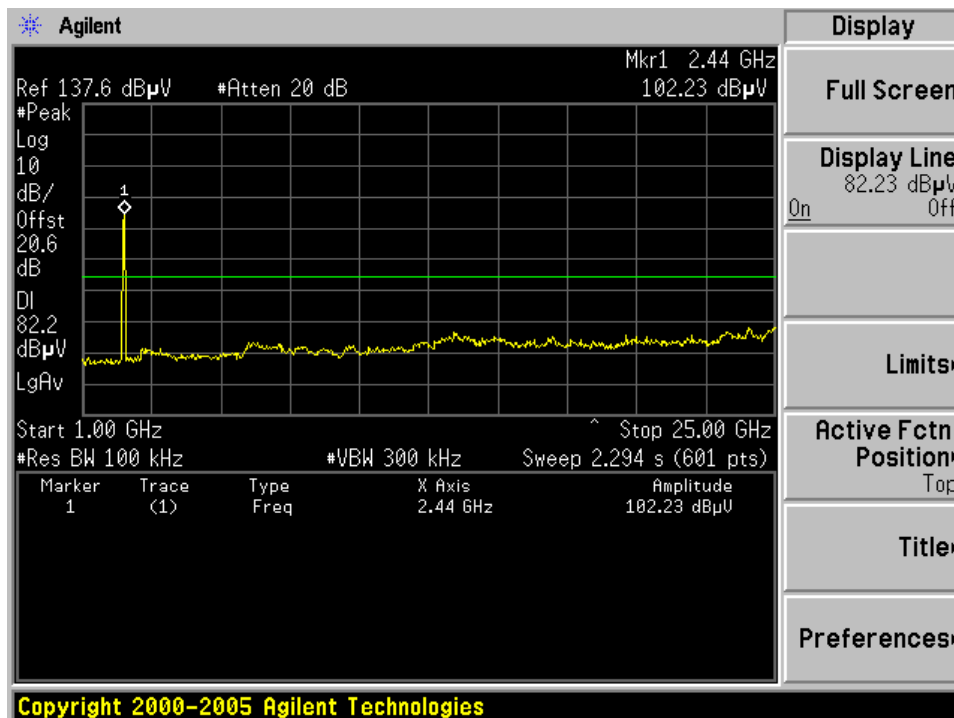
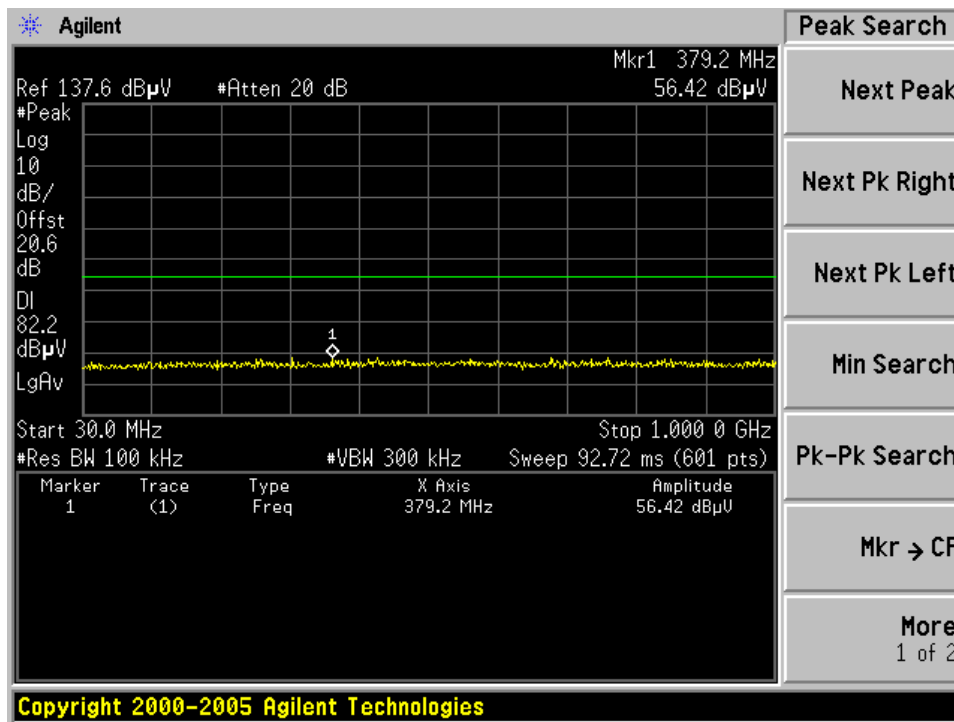
2437MHz:
Chain 0:



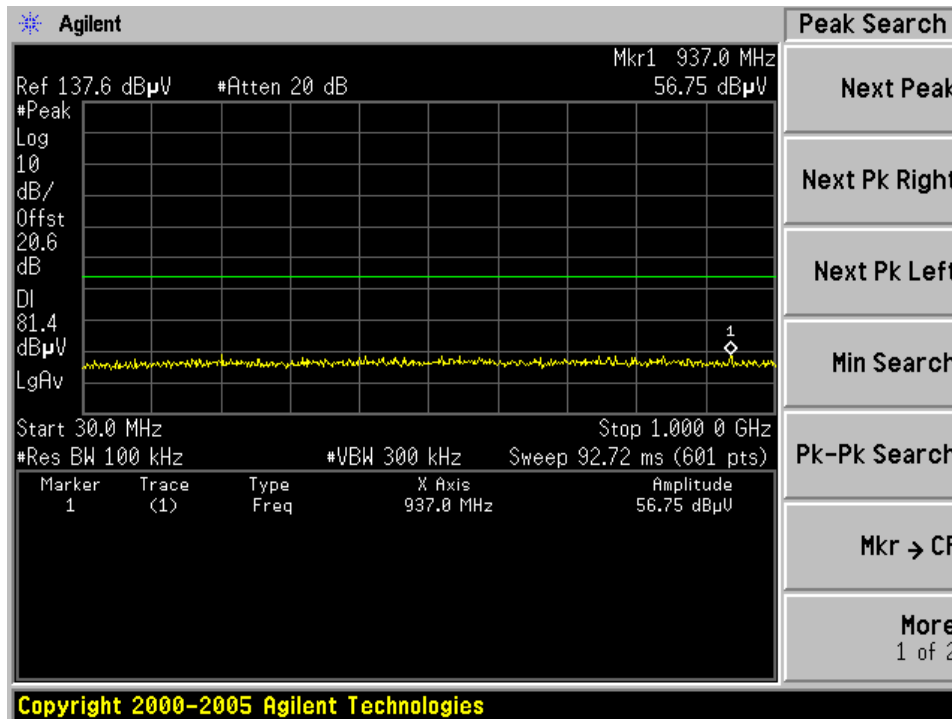
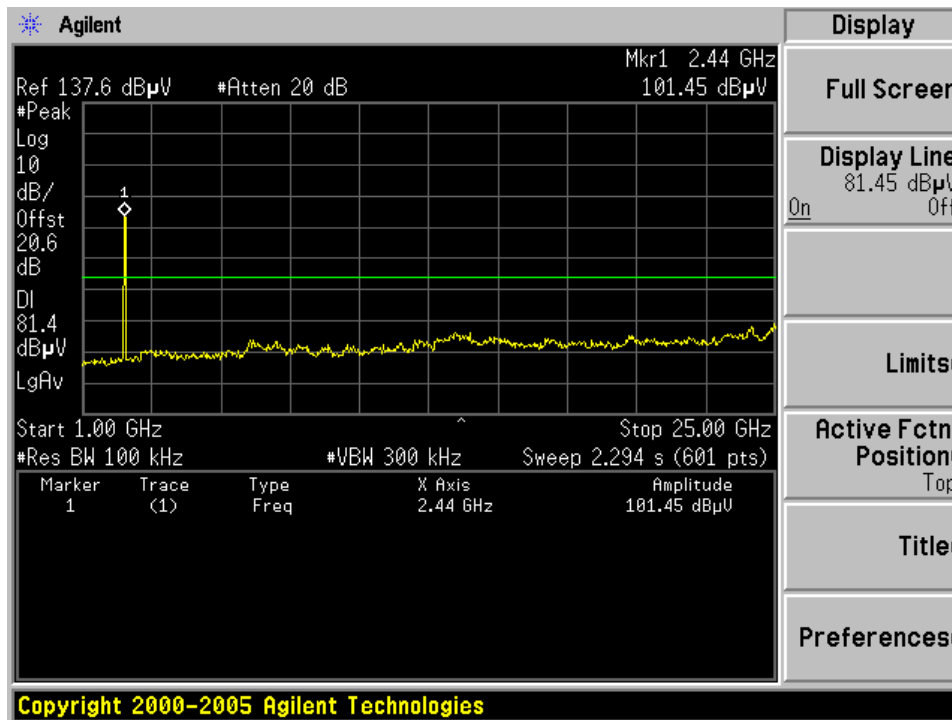
Chain 1:



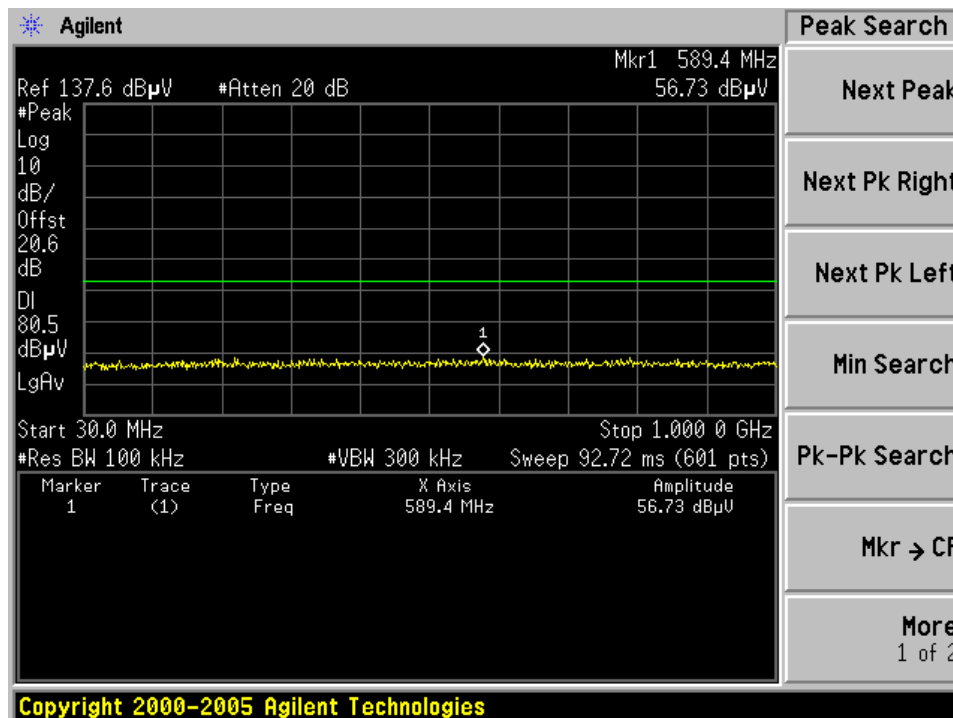
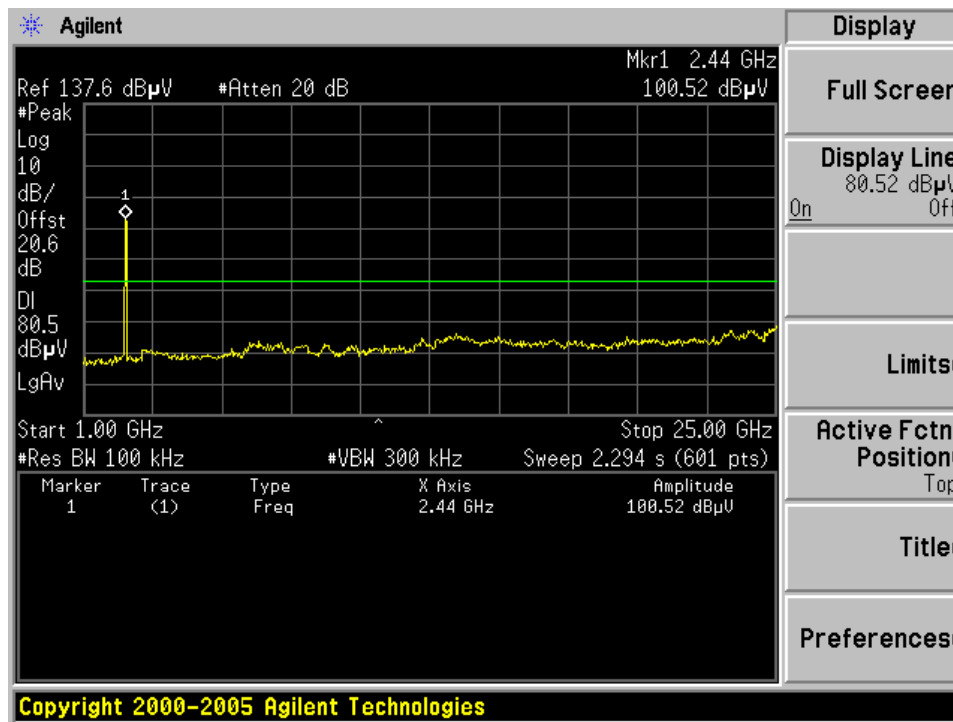
Chain 2:



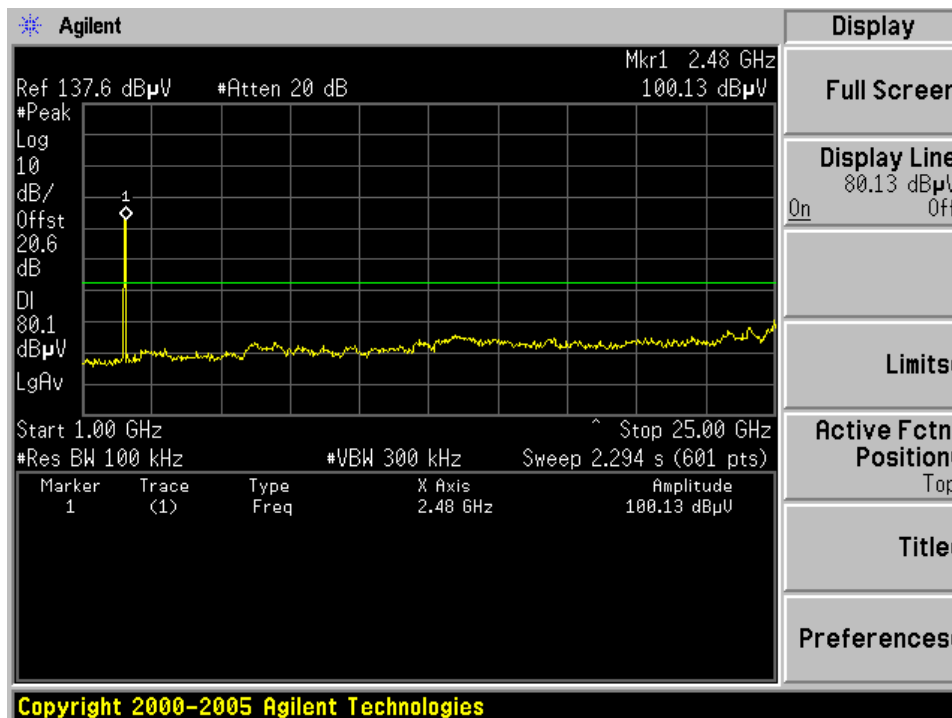
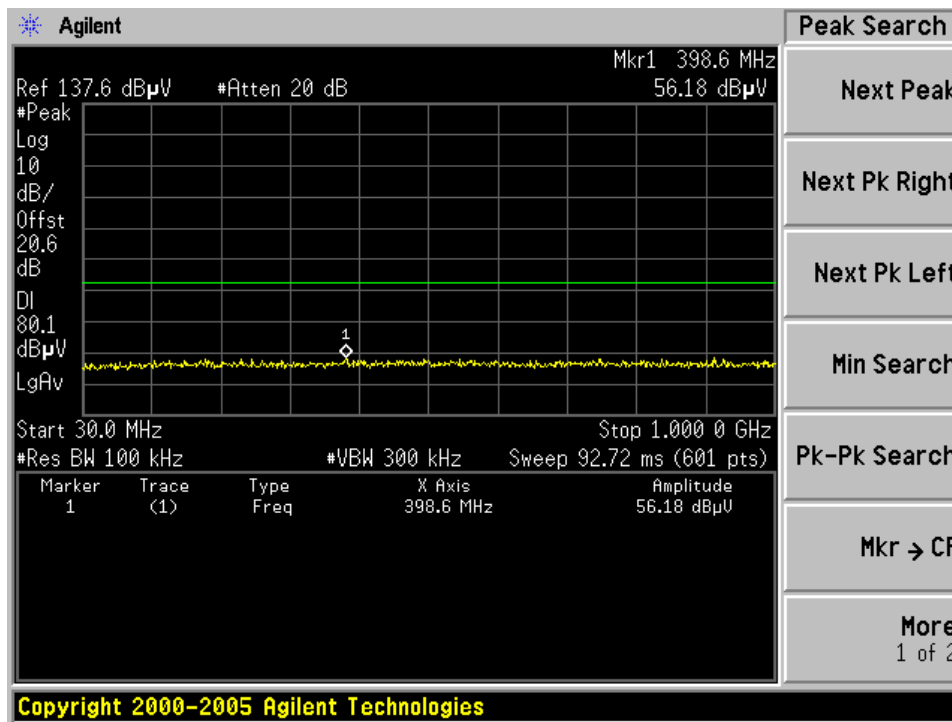
2452MHz:
Chain 0:



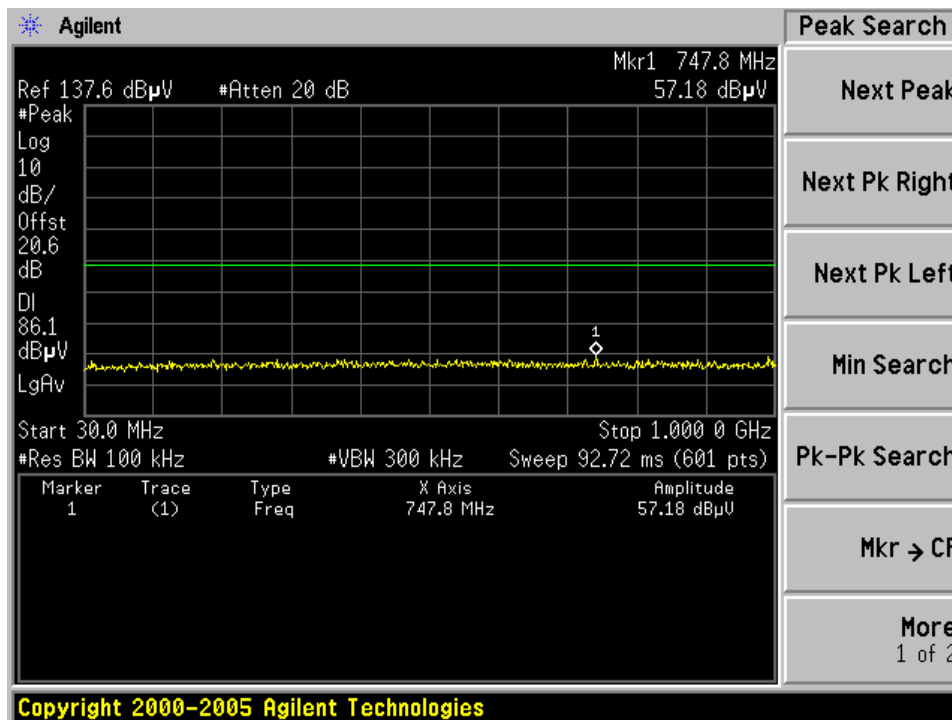
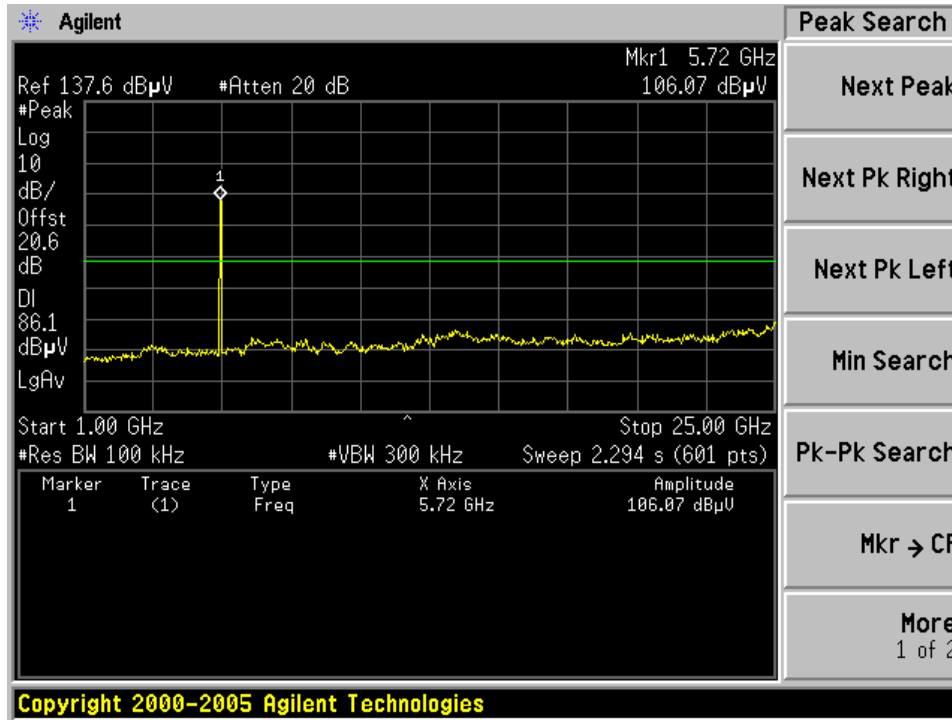
Chain 1:



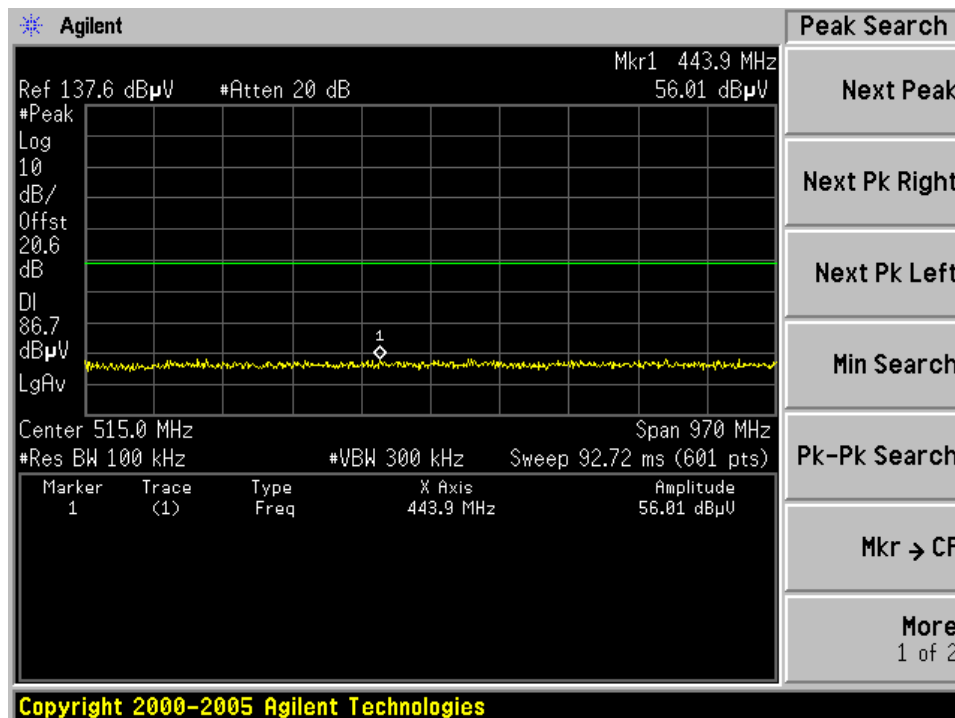
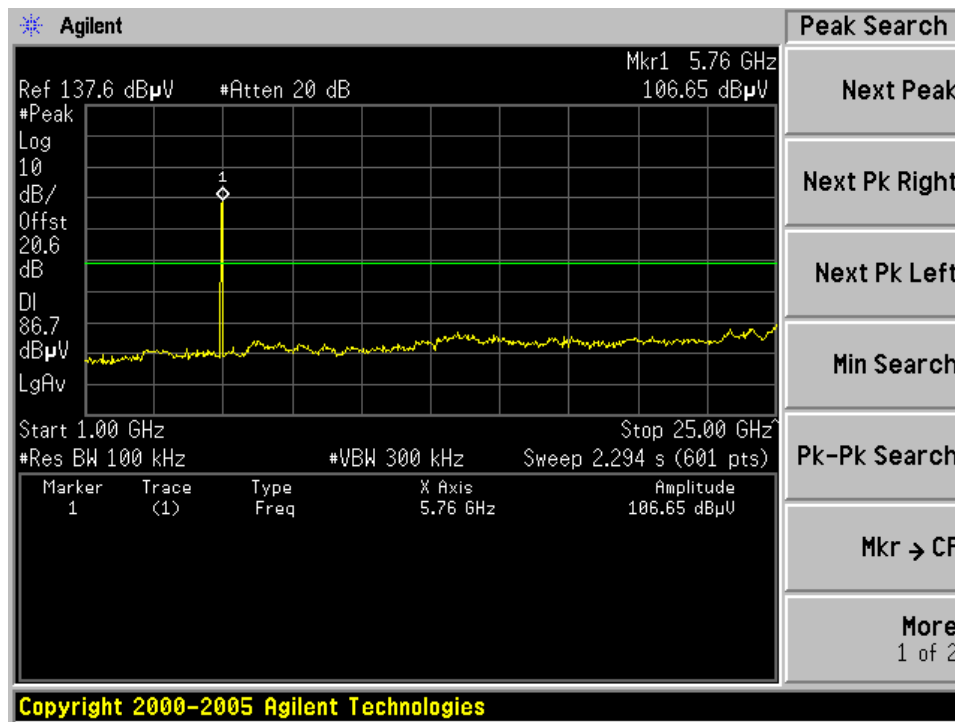
Chain 2:



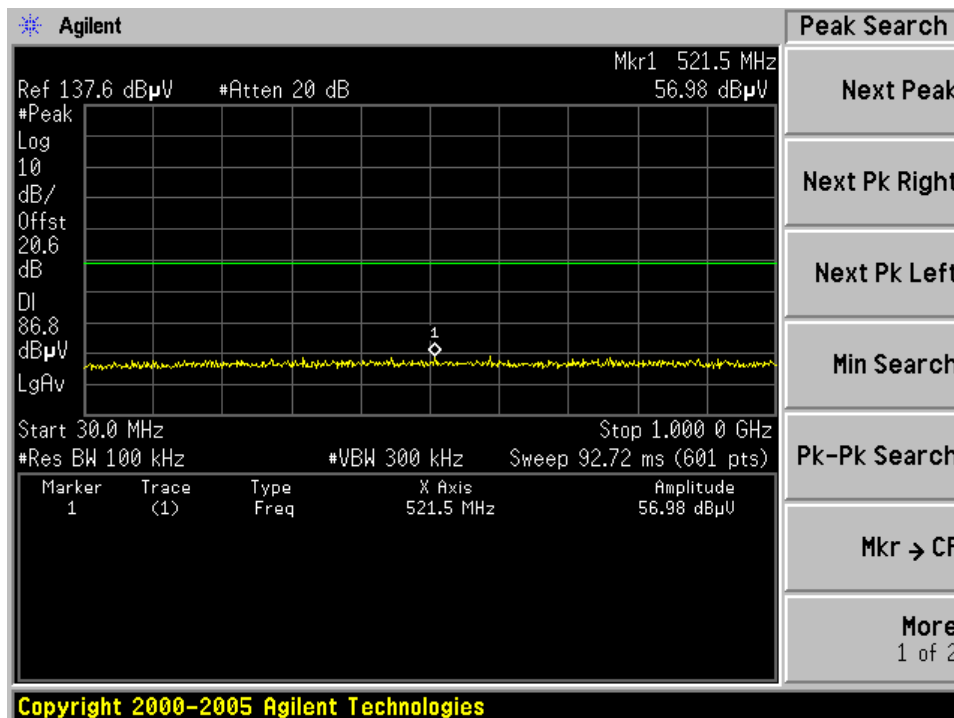
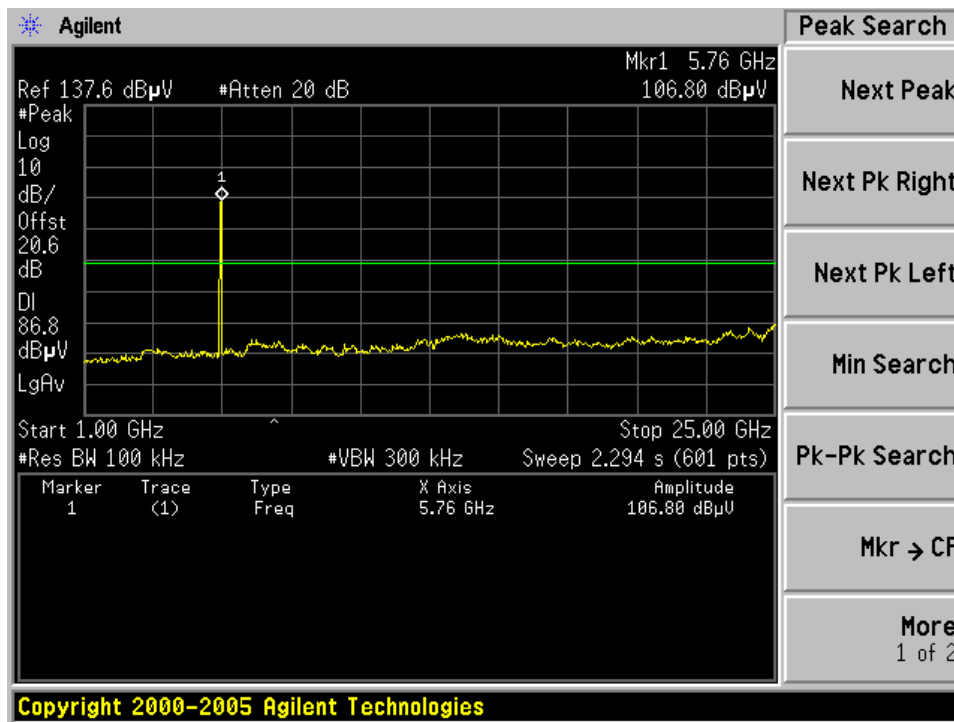
IEEE 802.11a modulation (6 Mbps) Test Result
 5745MHz:
 Chain 0:



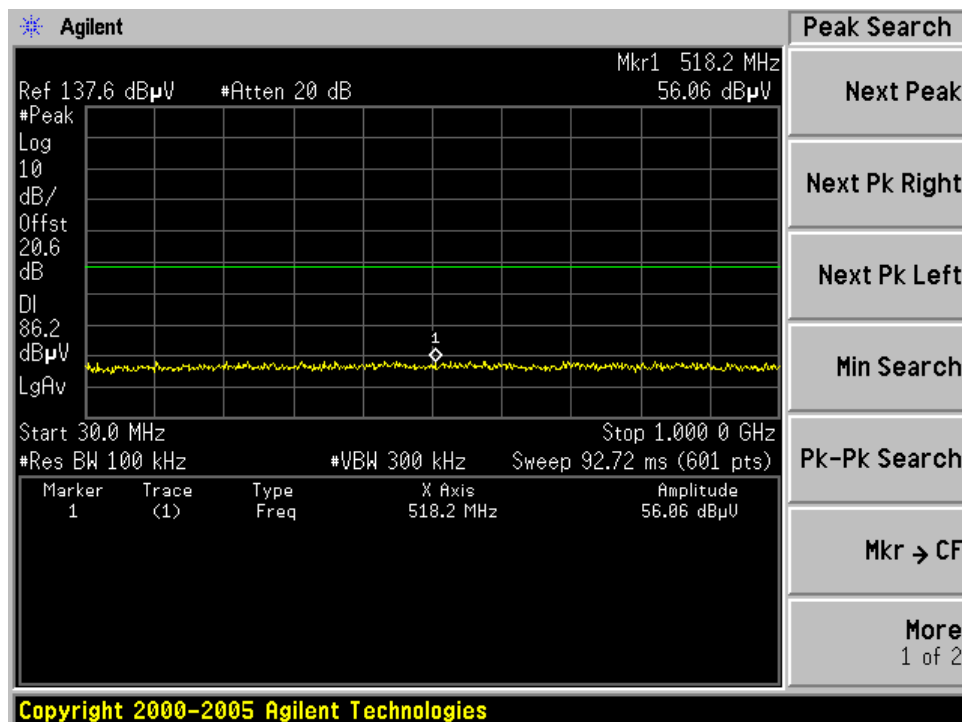
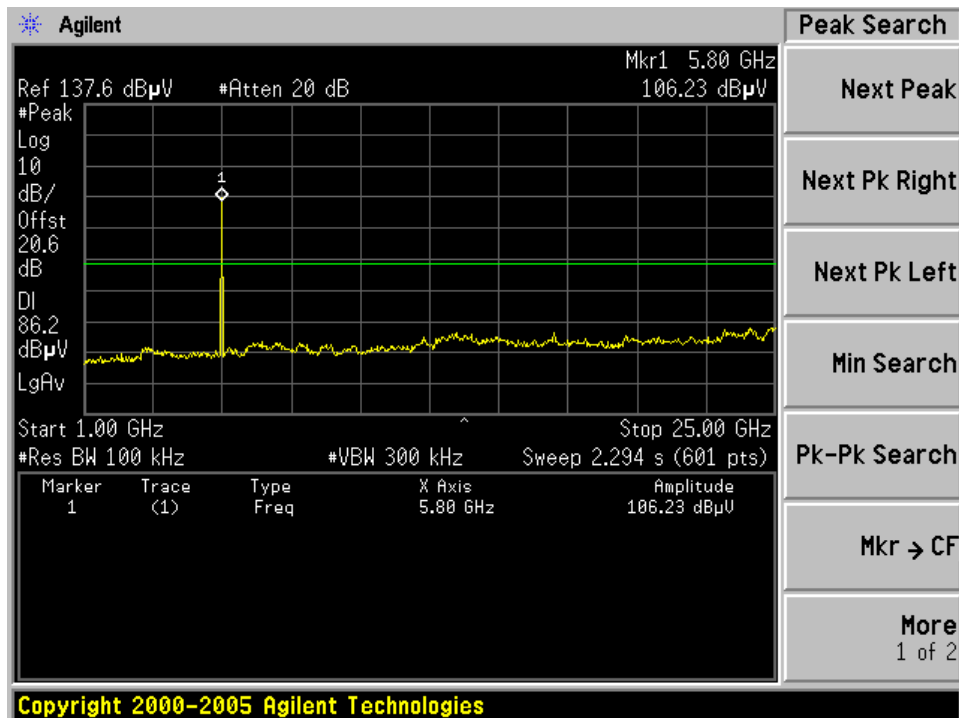
Chain 1:



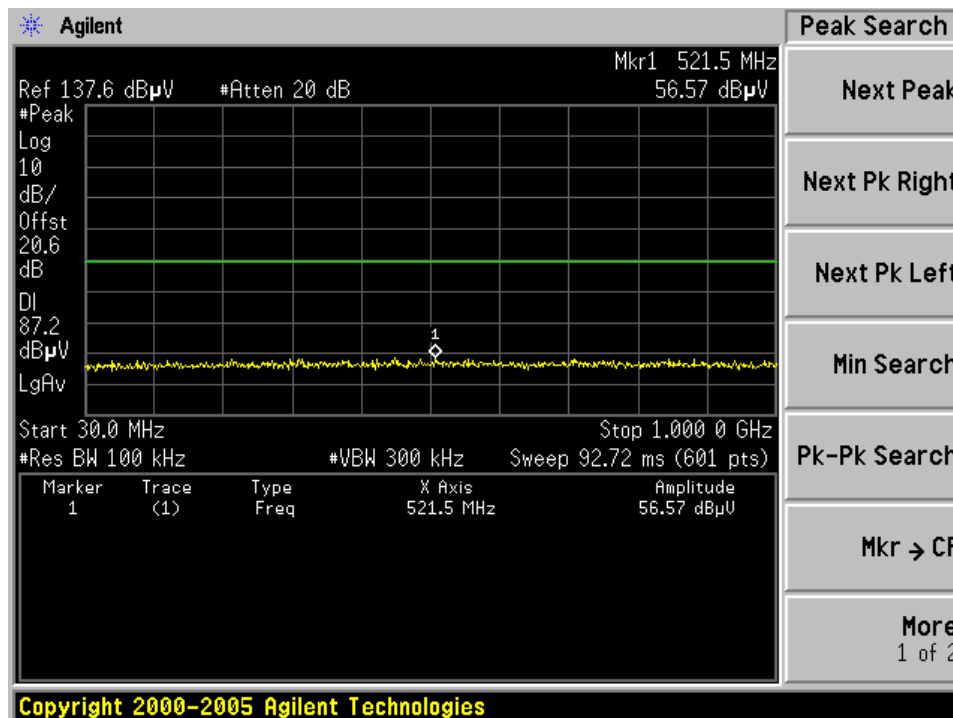
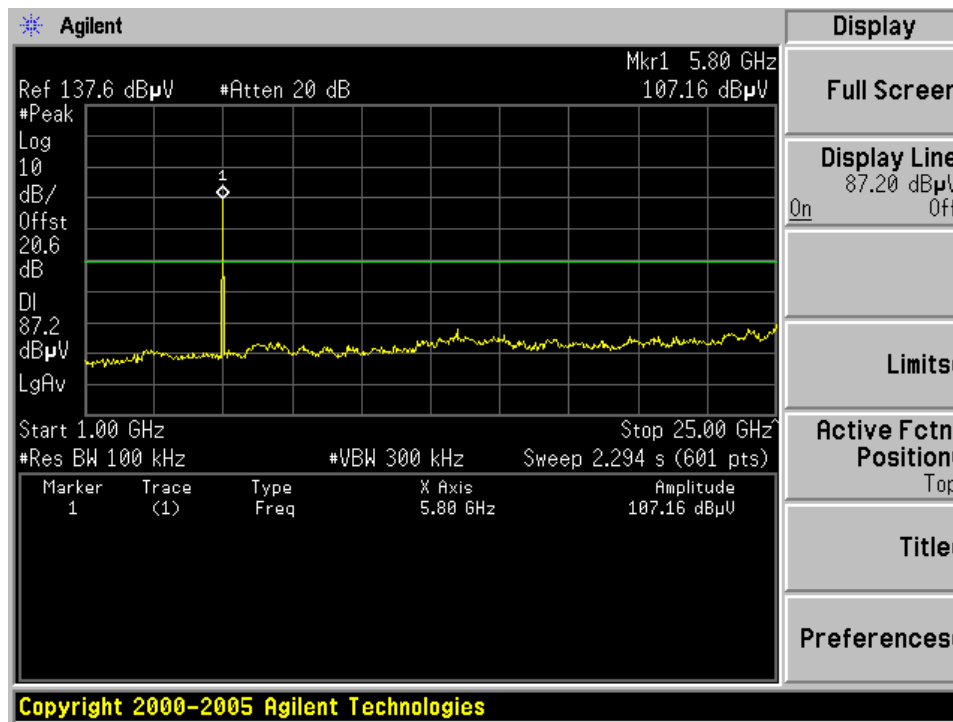
Chain 2:



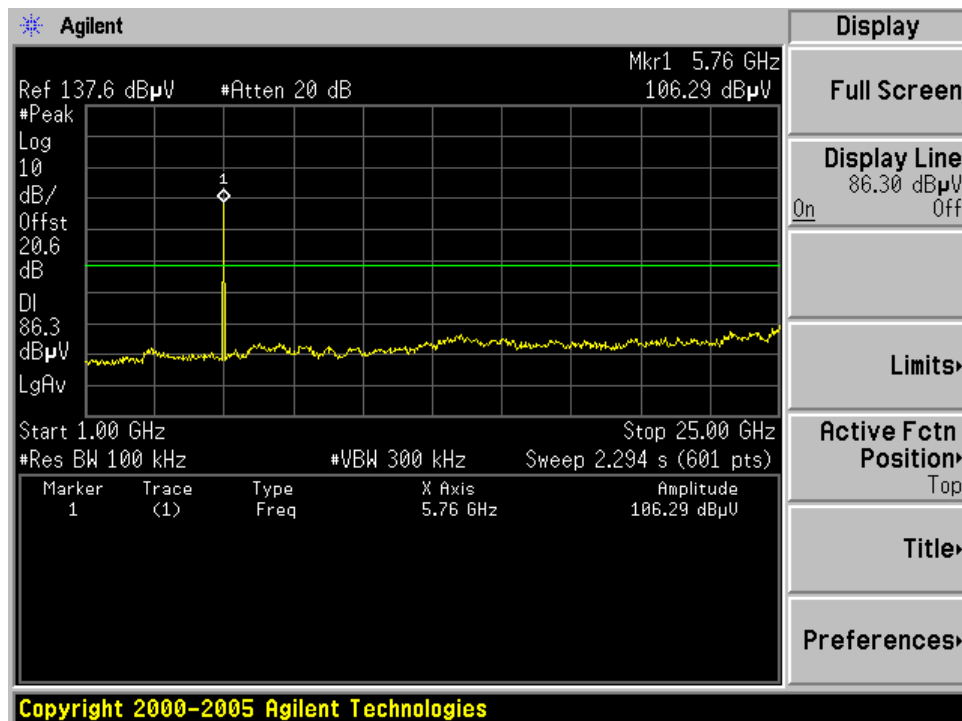
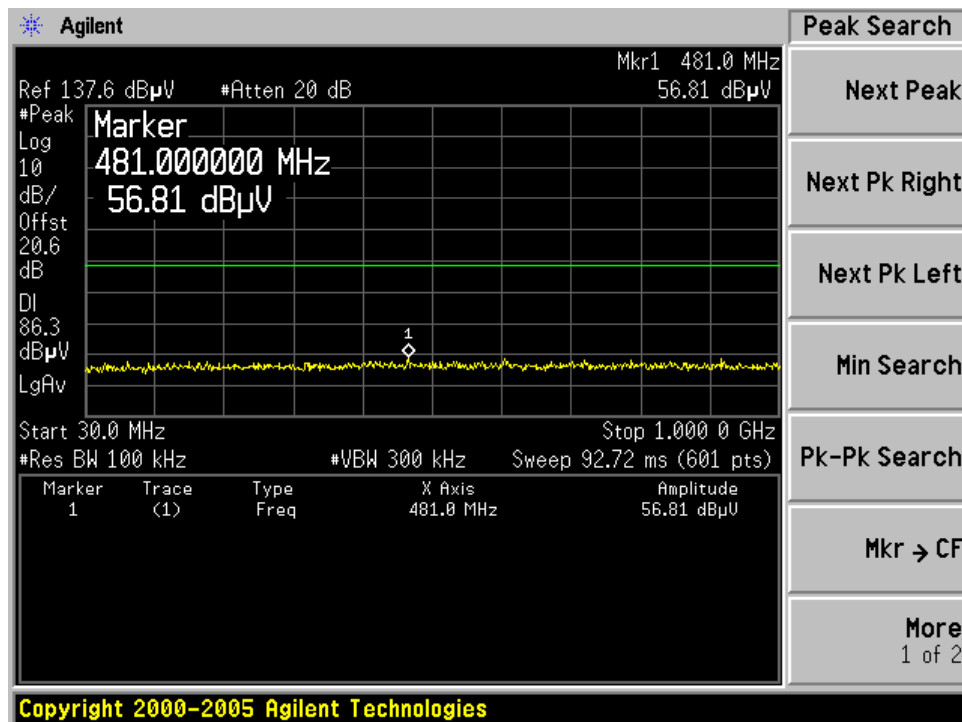
5785MHz:
Chain 0:



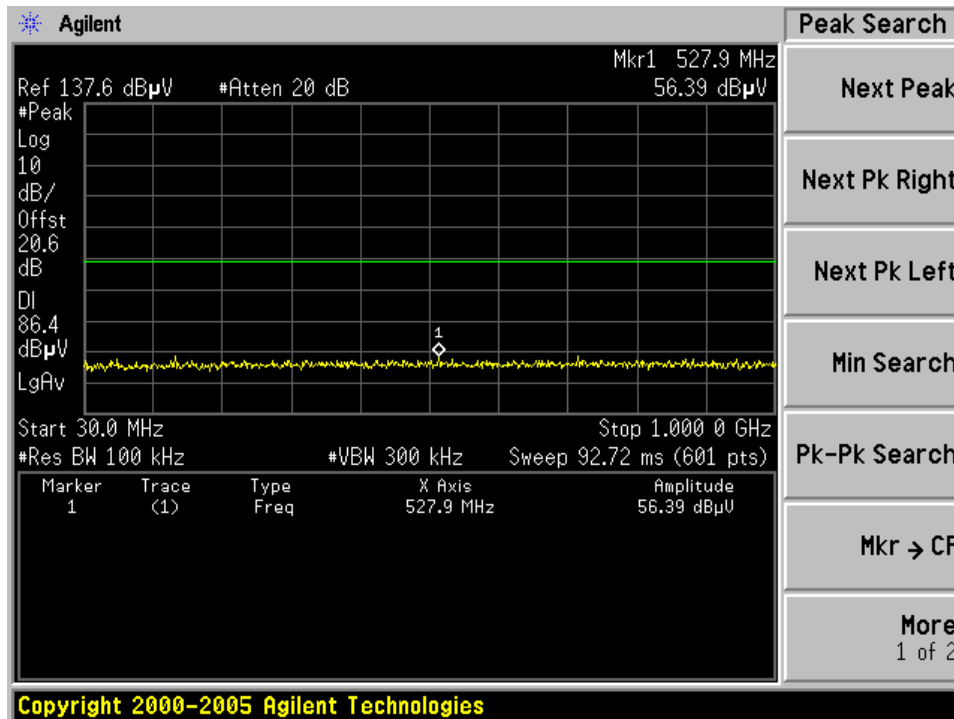
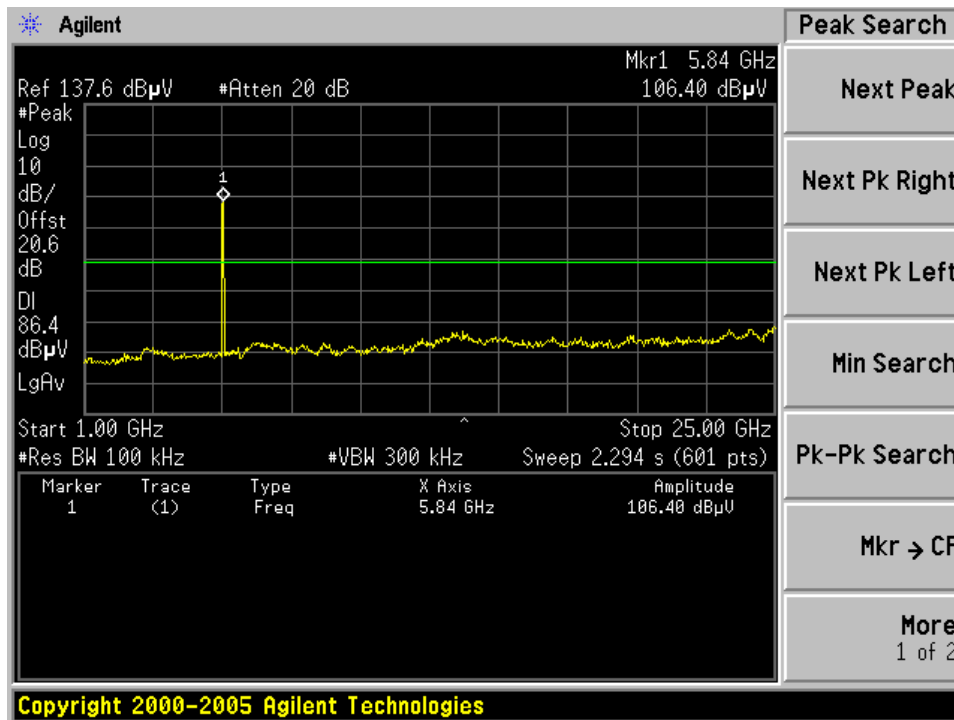
Chain 1:



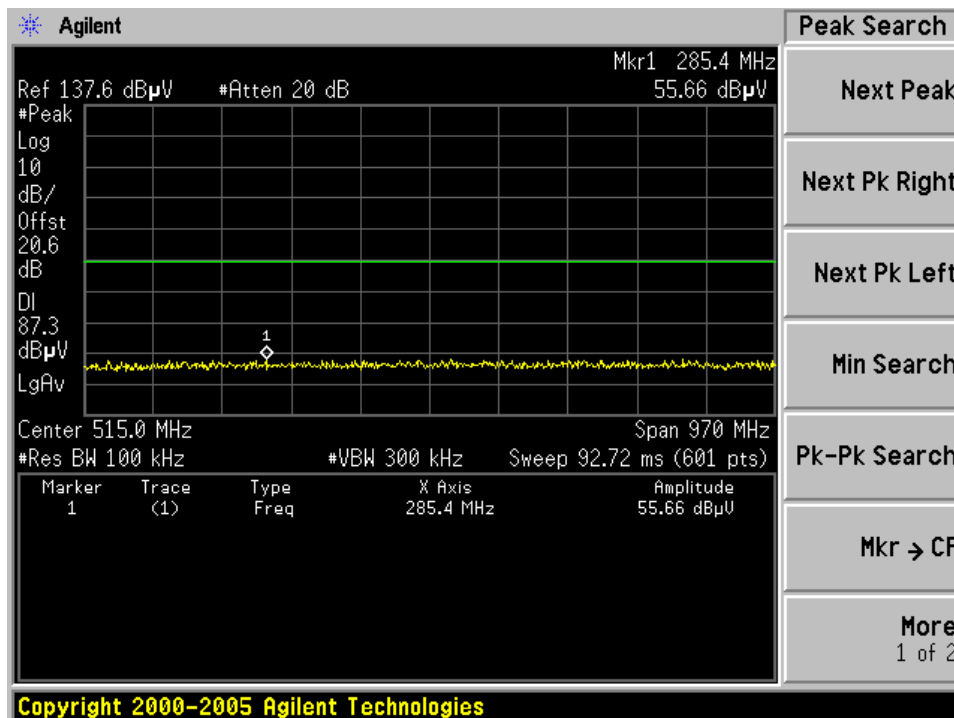
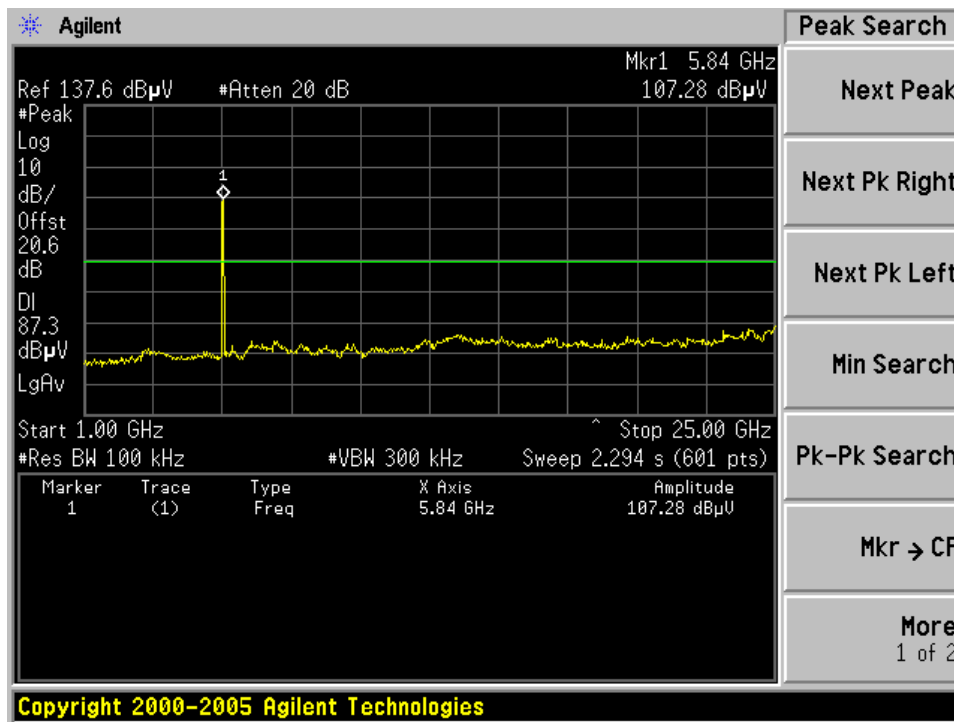
Chain 2:



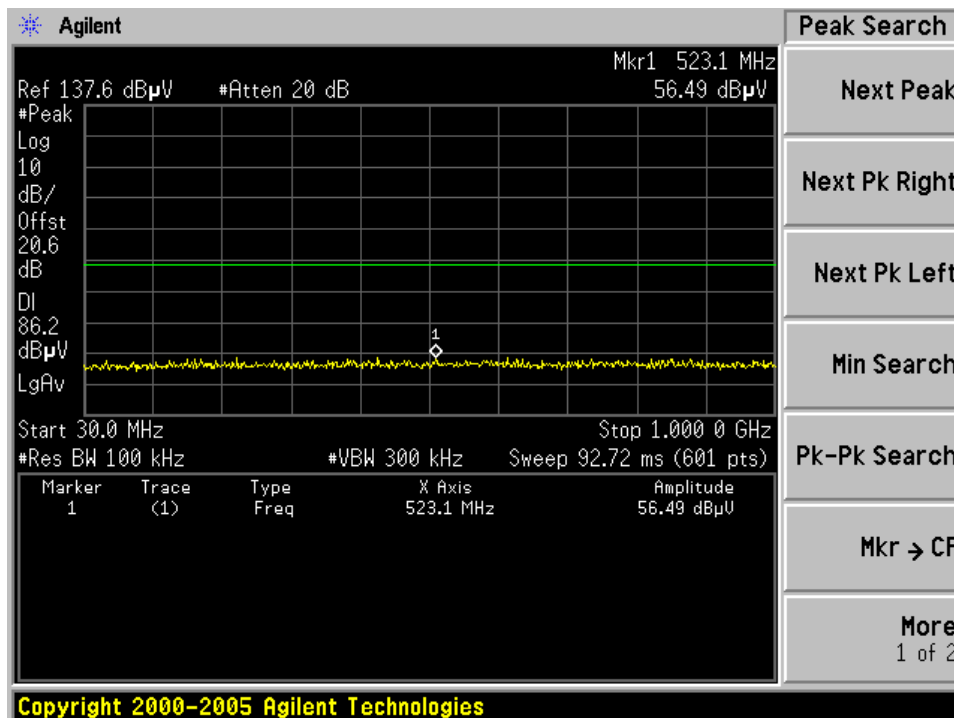
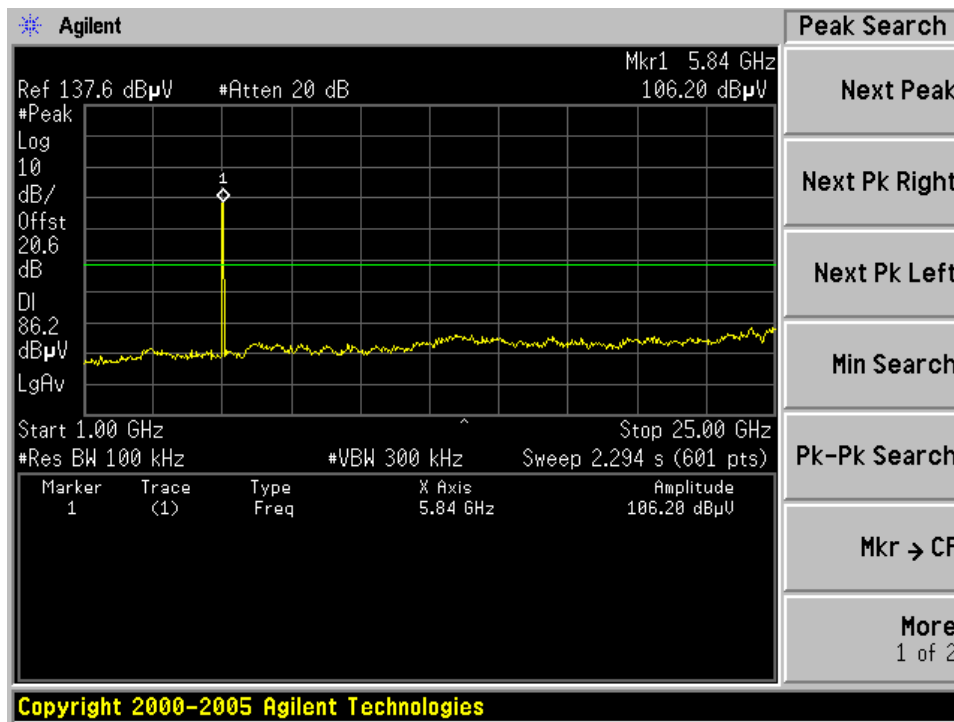
5825MHz:
Chain 0:



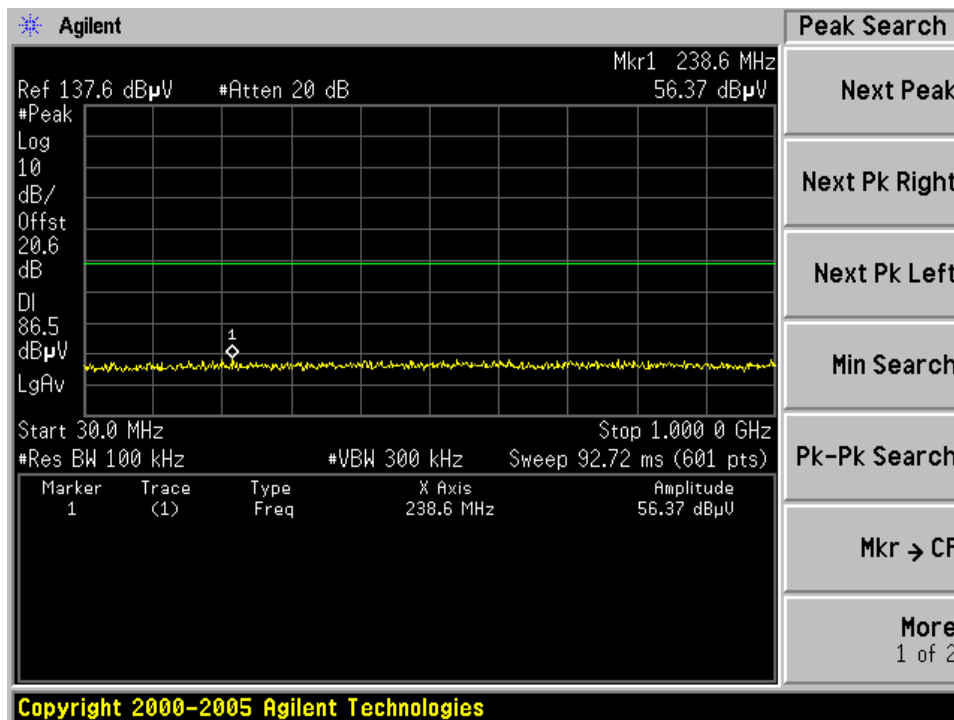
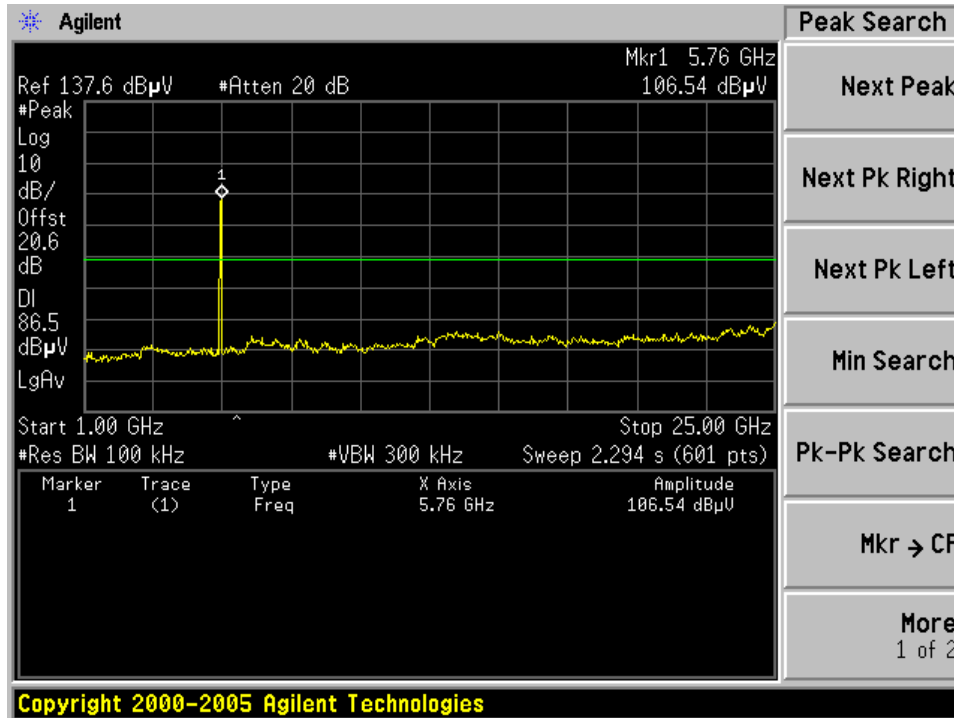
Chain 1:



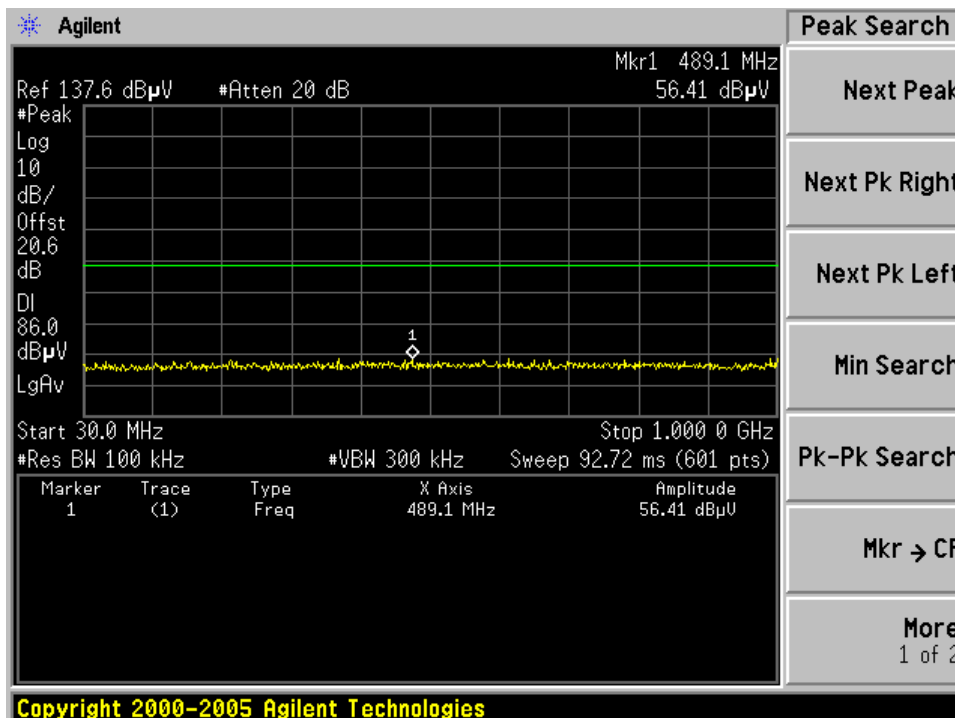
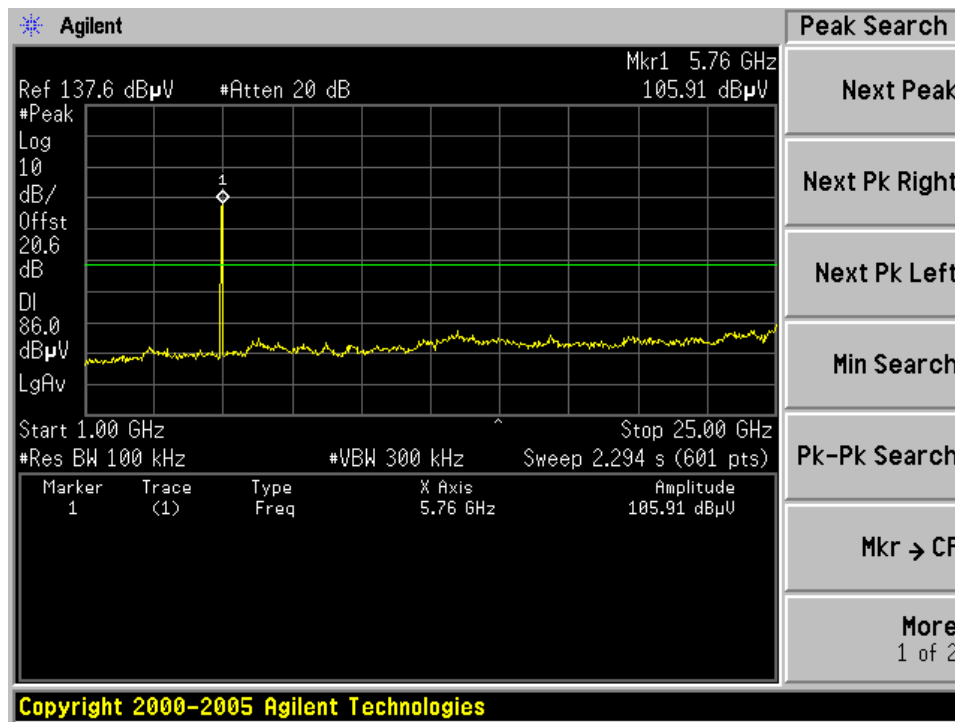
Chain 2:



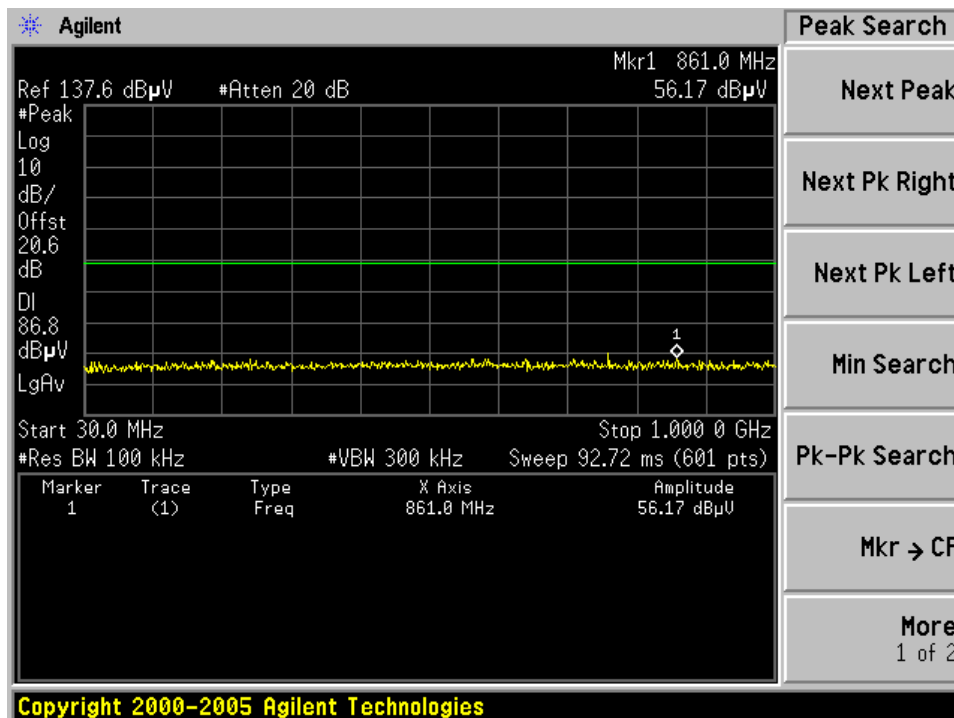
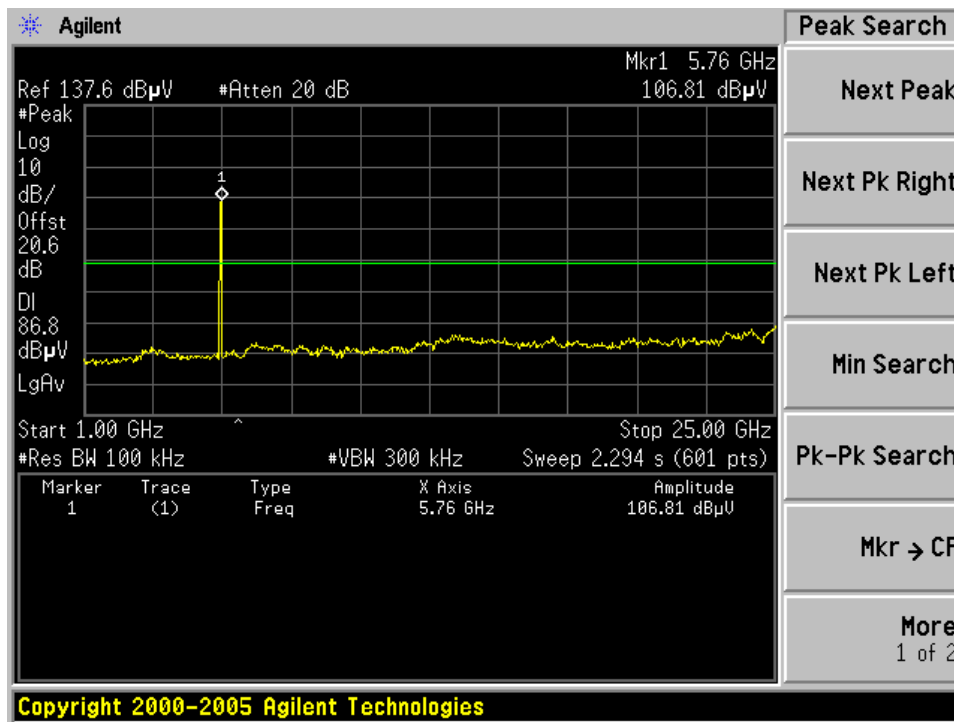
IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result
 5745MHz
 Chain 0:



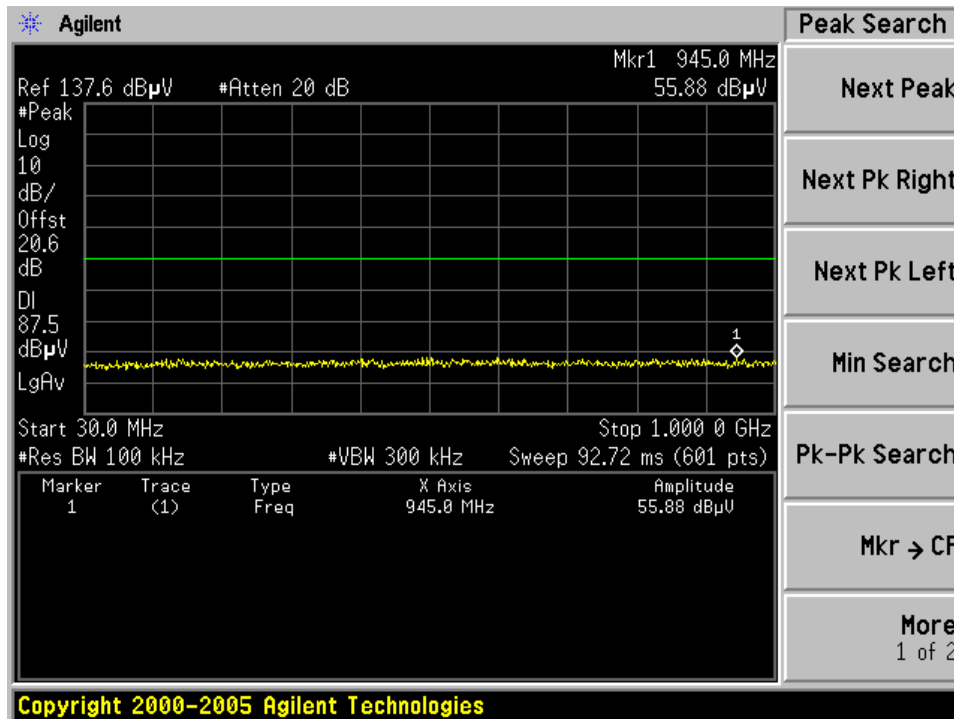
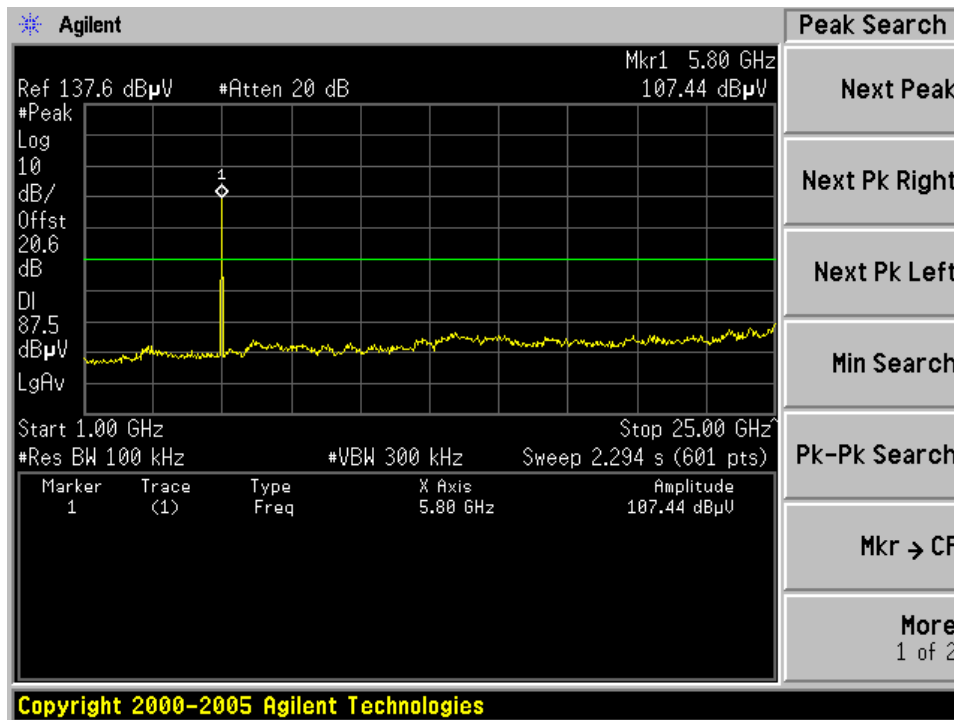
Chain 1:



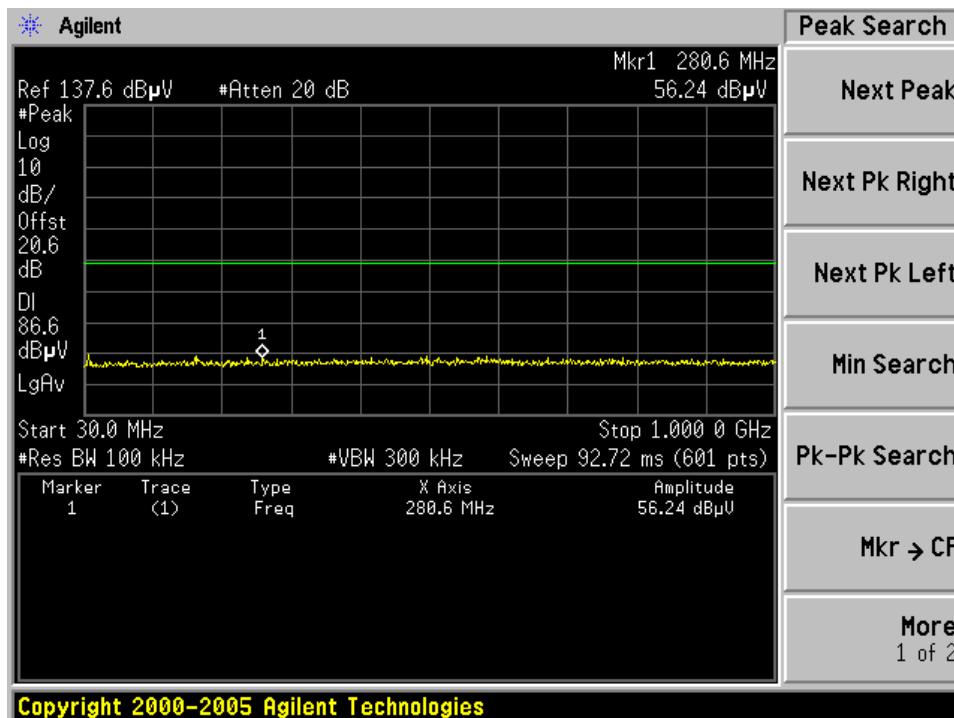
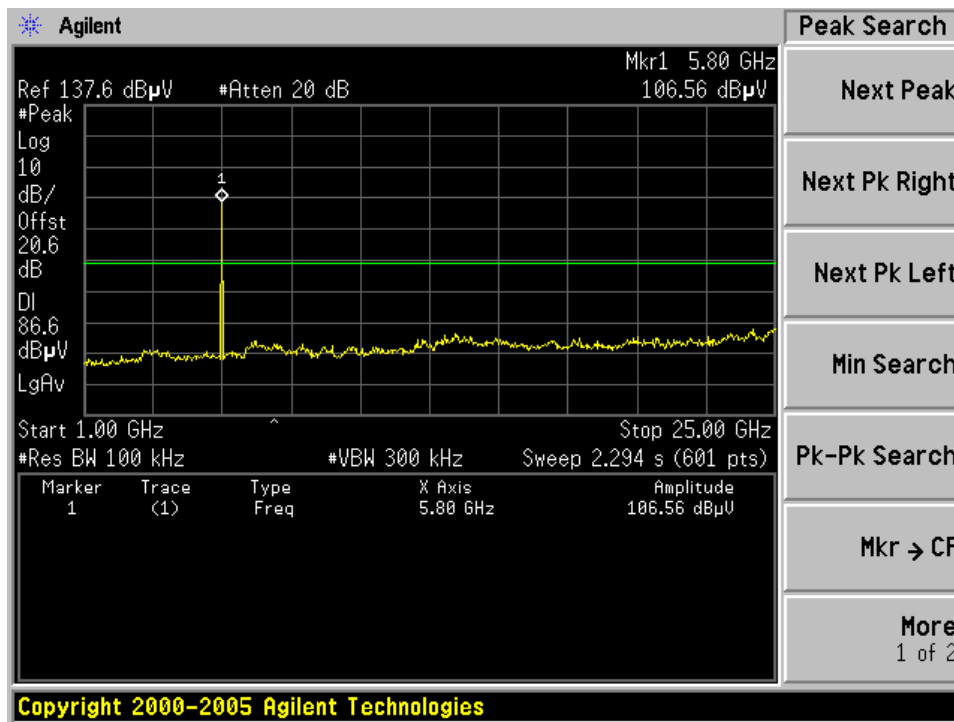
Chain 2:



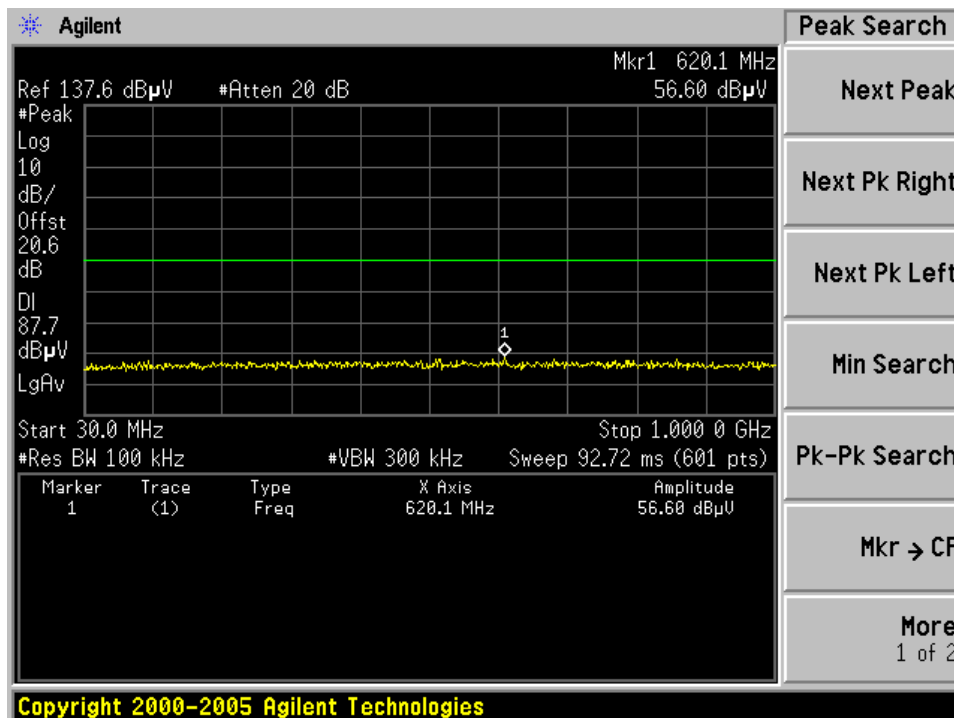
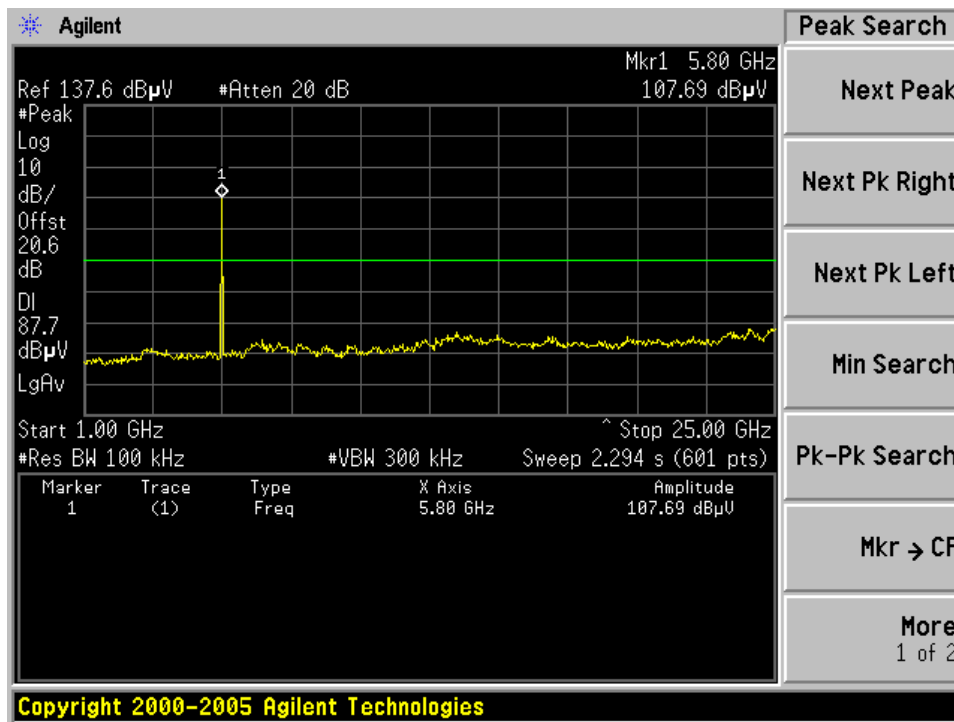
5785MHz:
Chain 0:



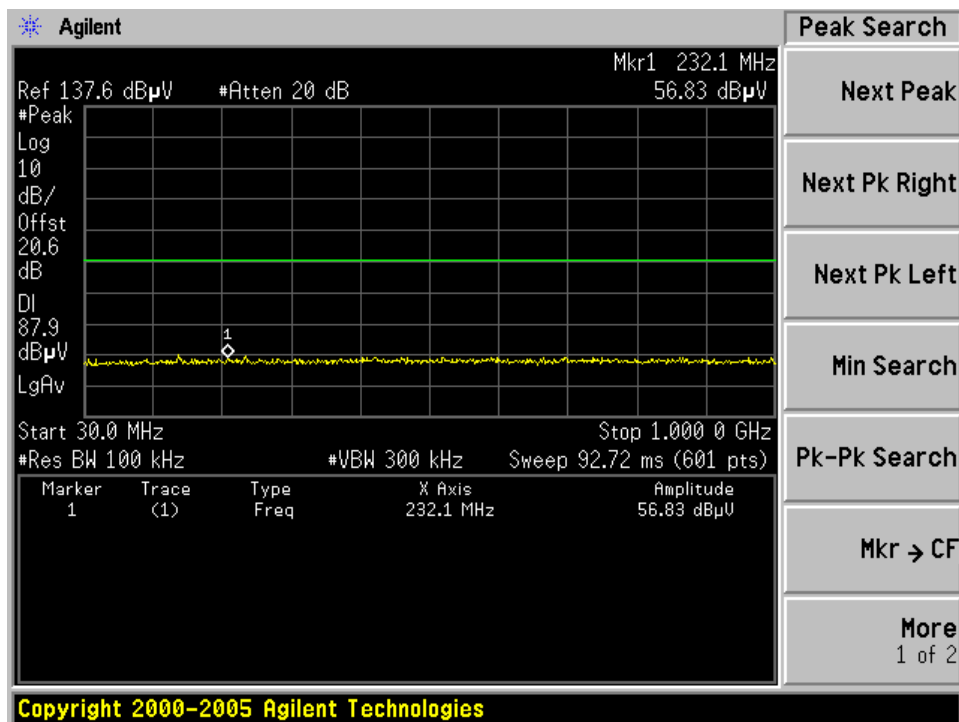
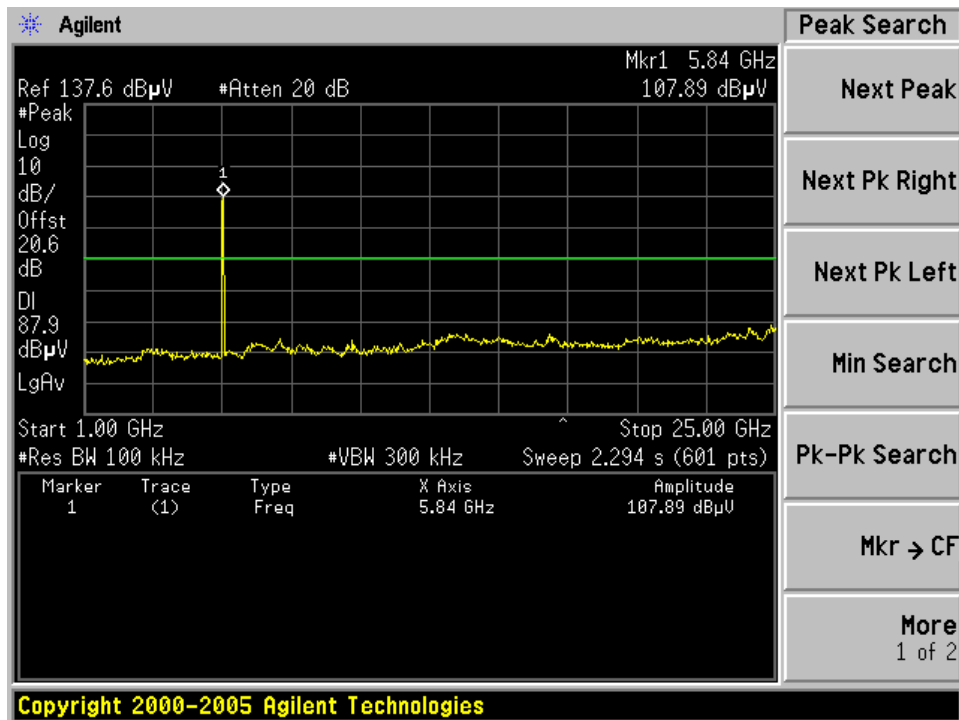
Chain 1:



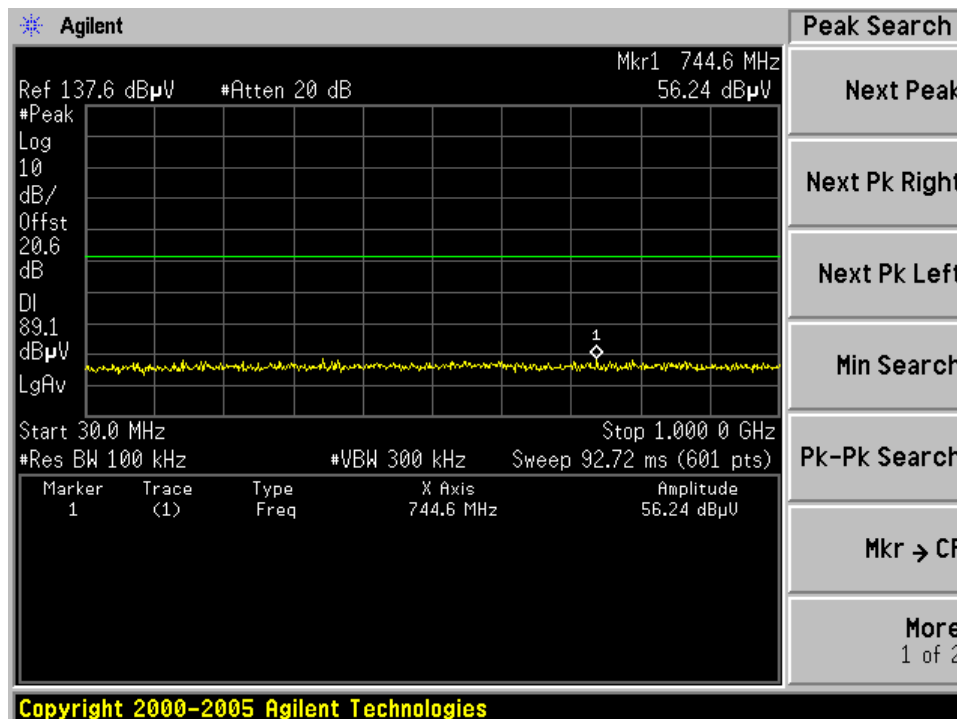
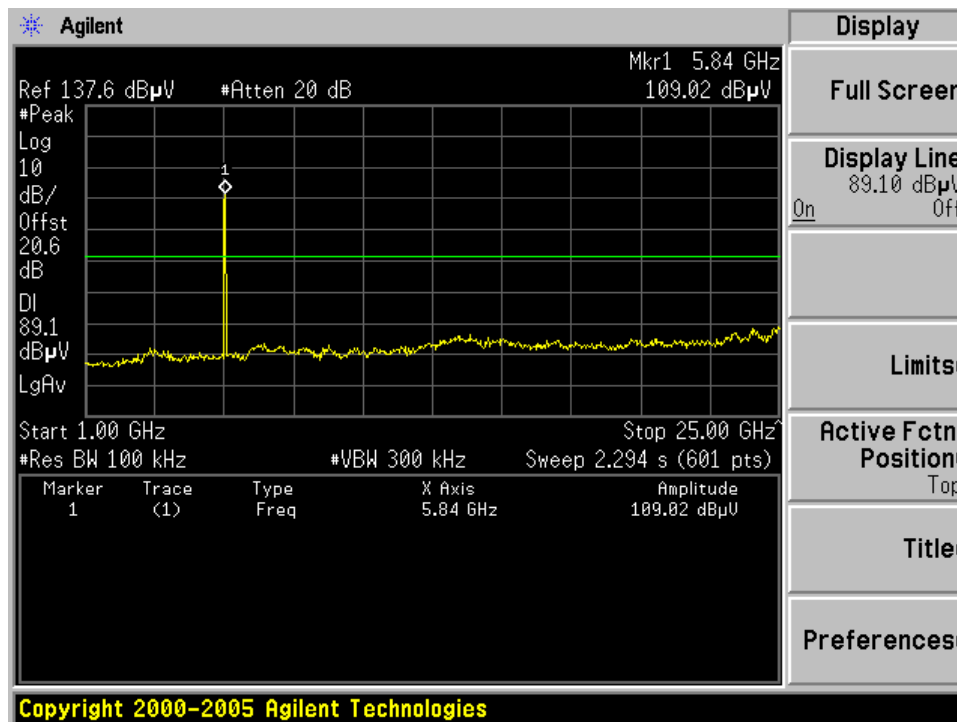
Chain 2:



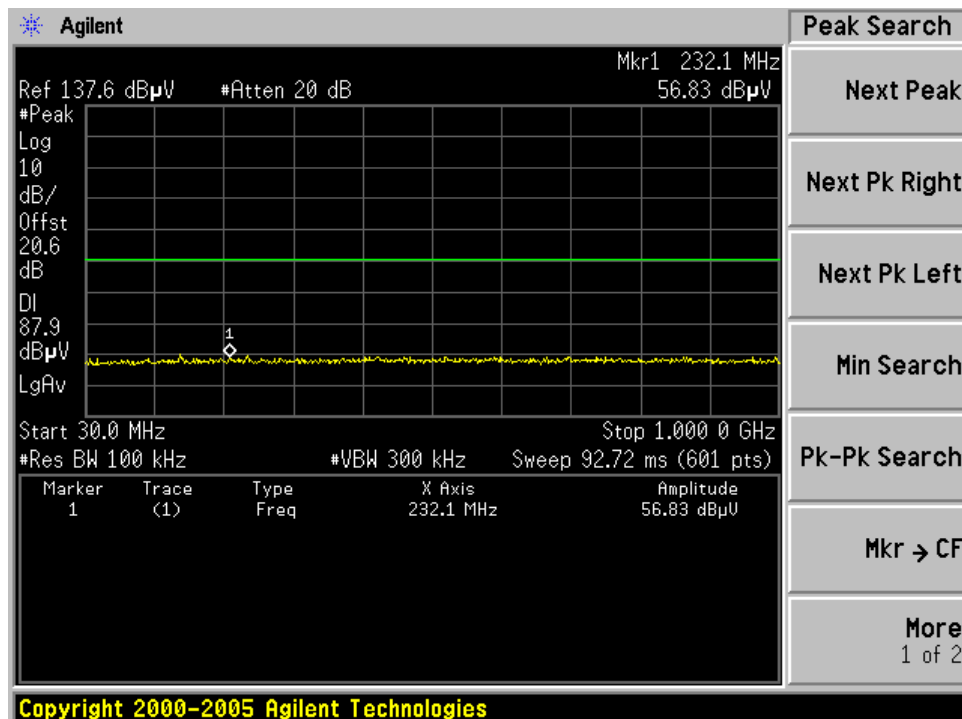
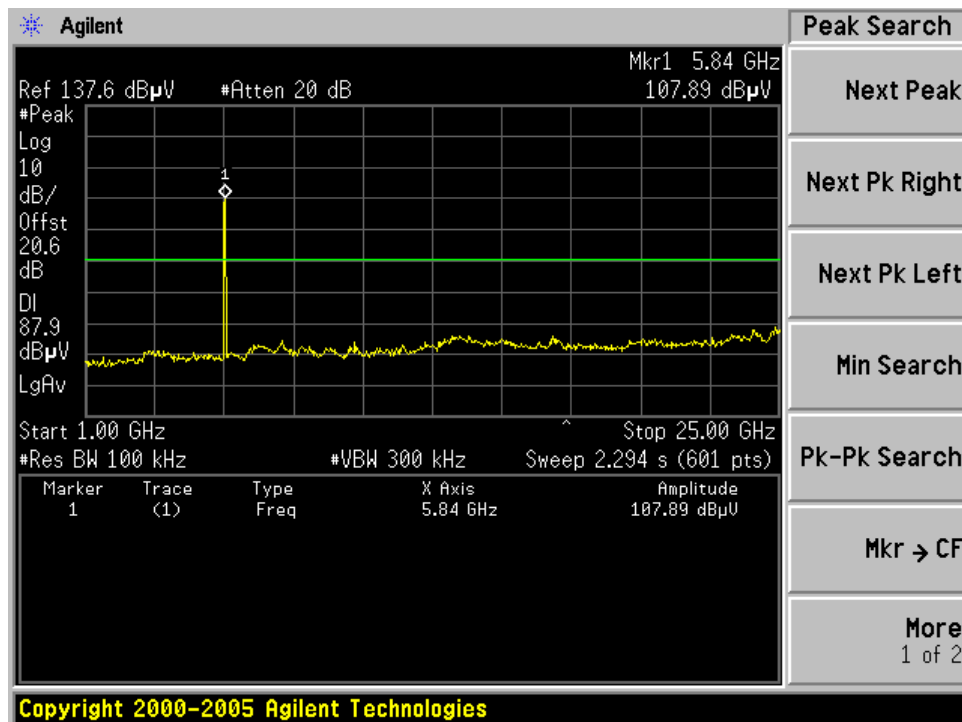
5825MHz:
Chain 0:



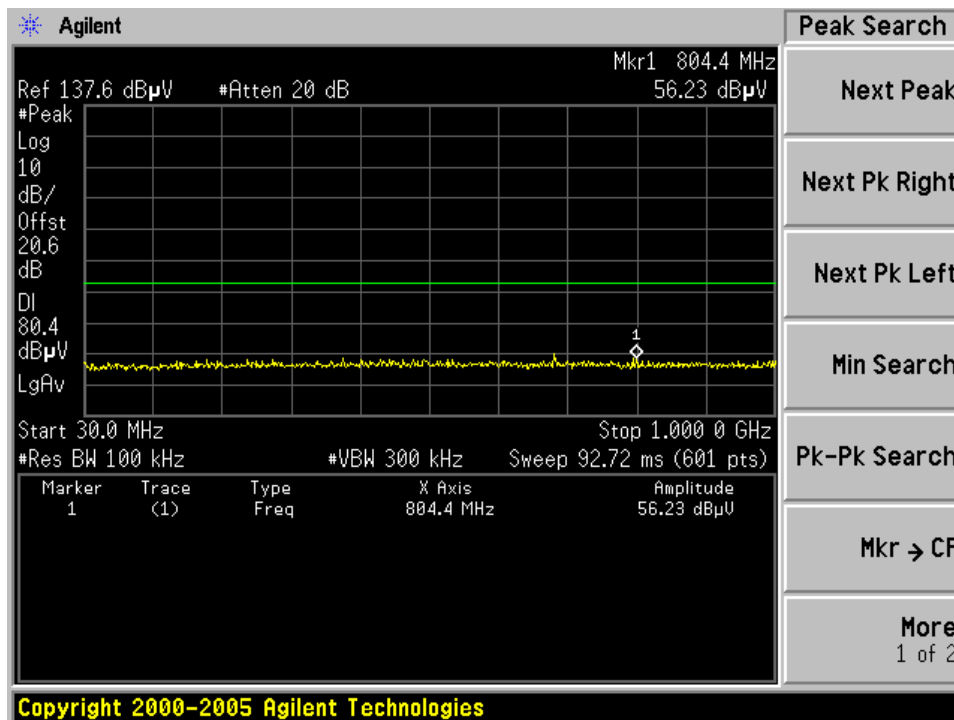
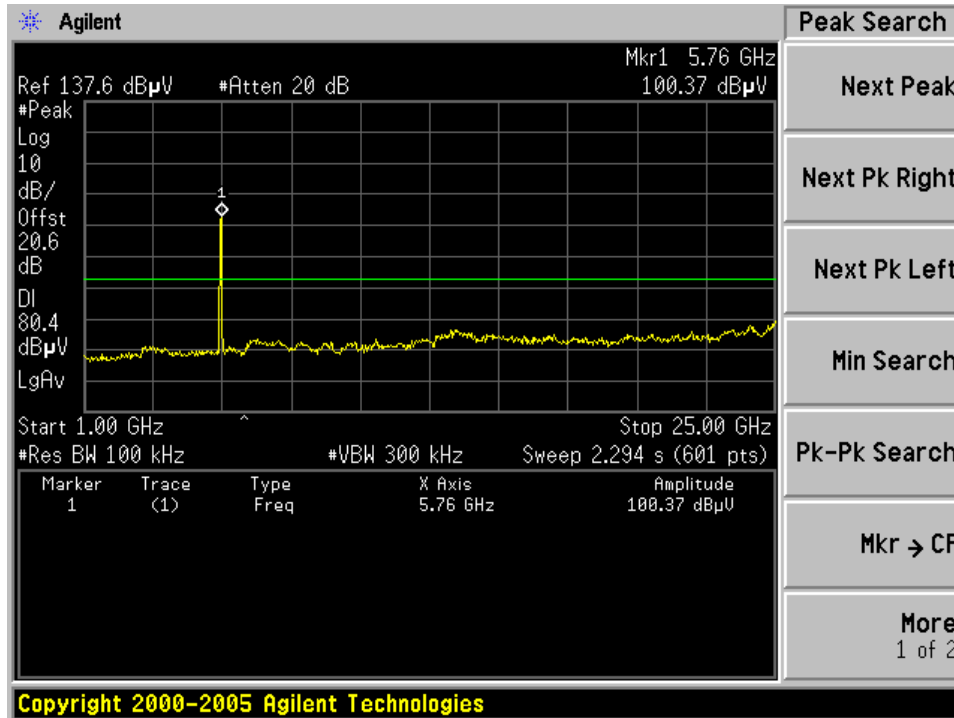
Chain1:



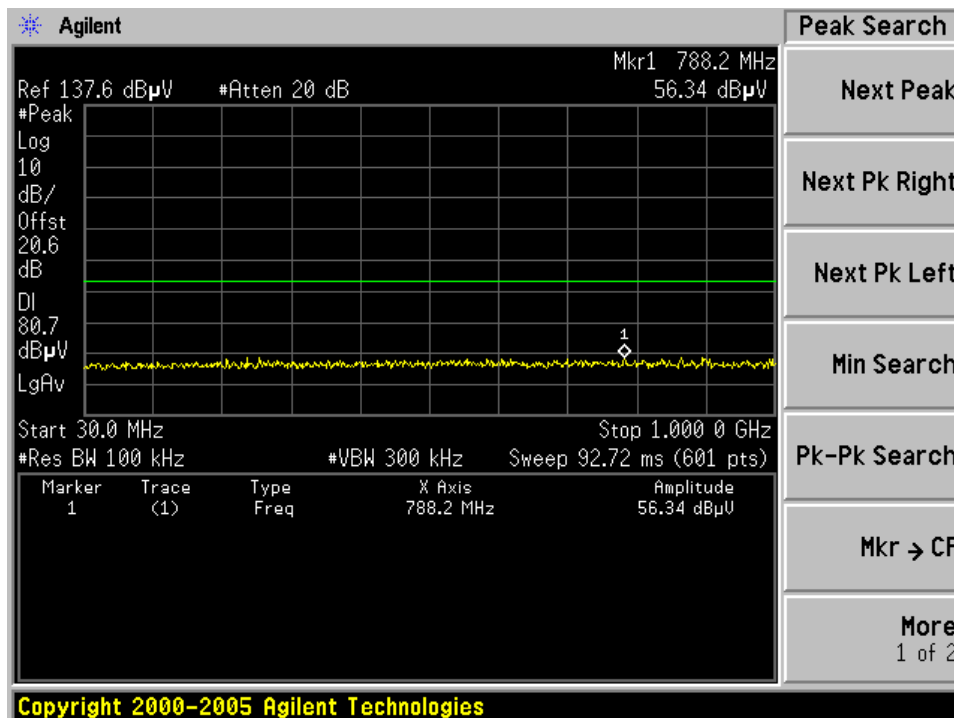
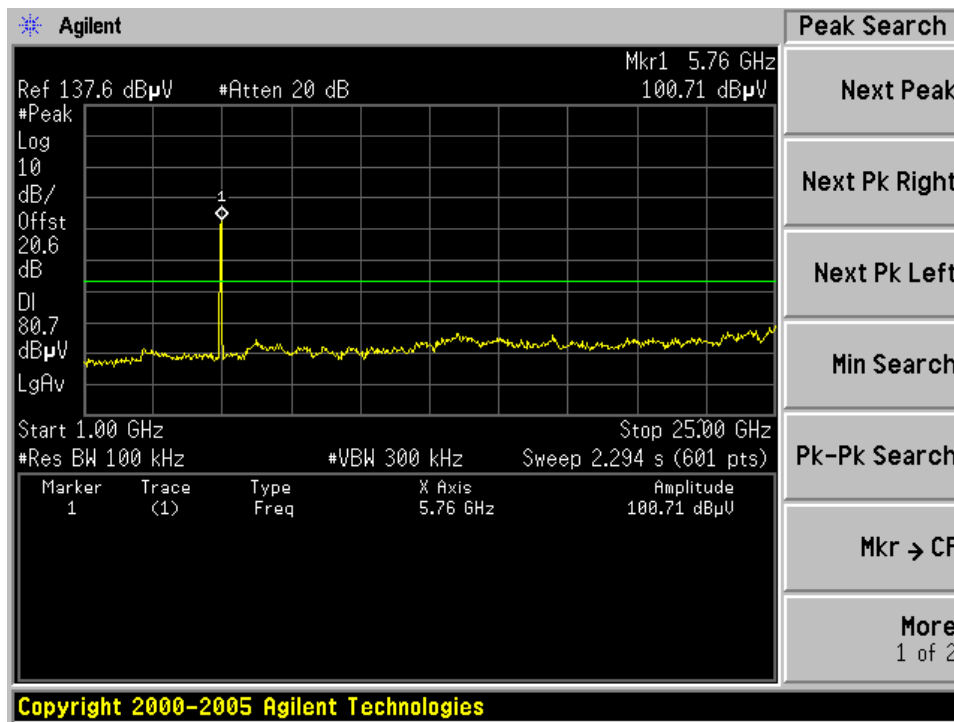
Chain2:



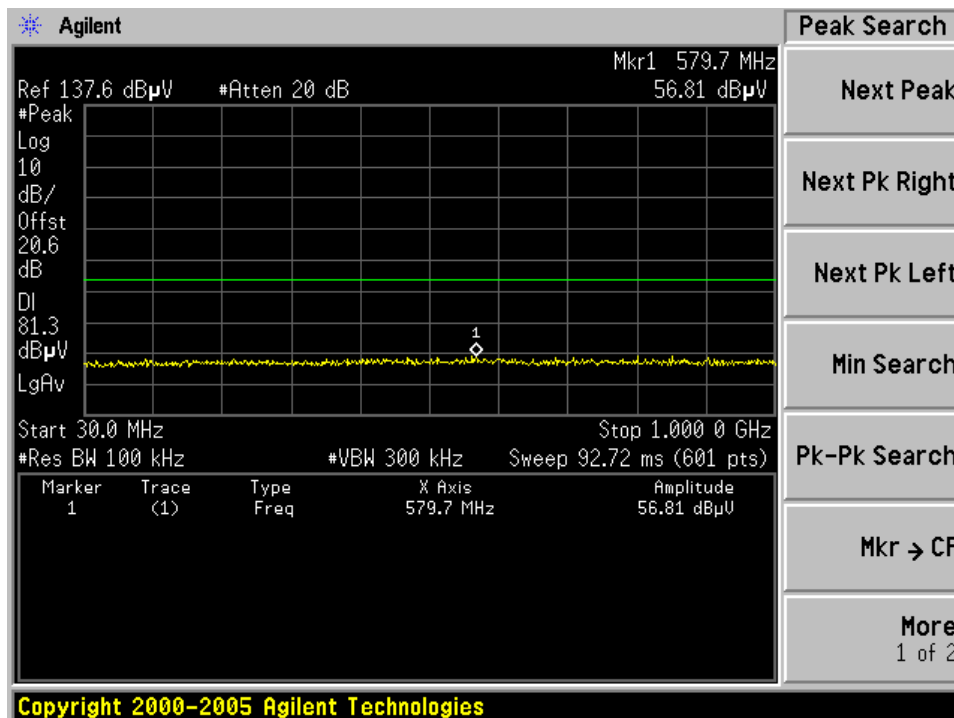
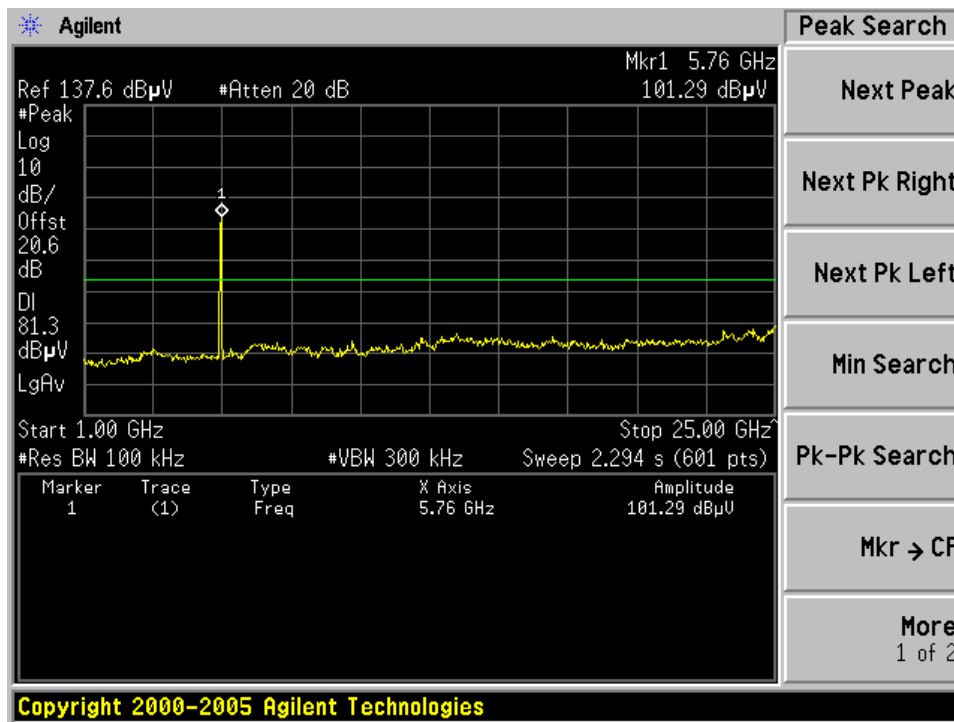
IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result
 5755MHz
 Chain 0:



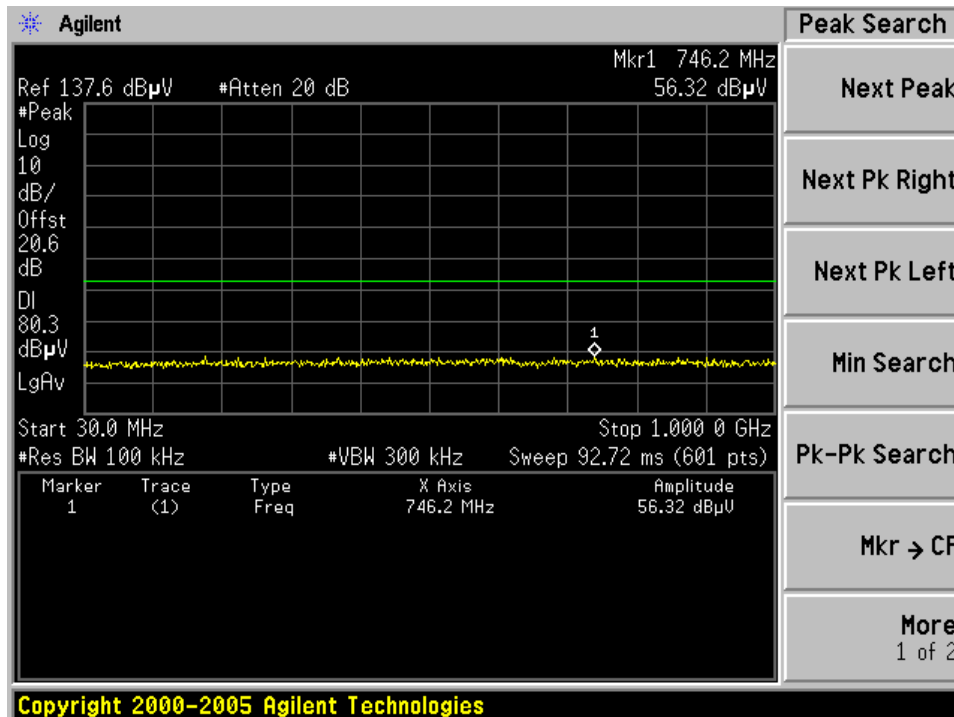
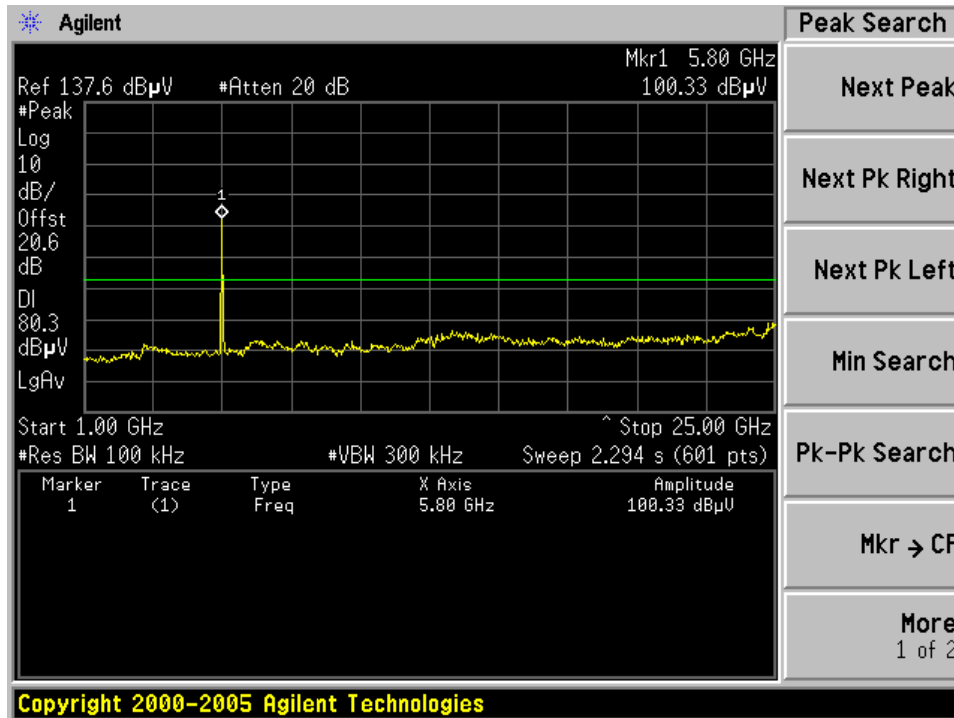
Chain 1:



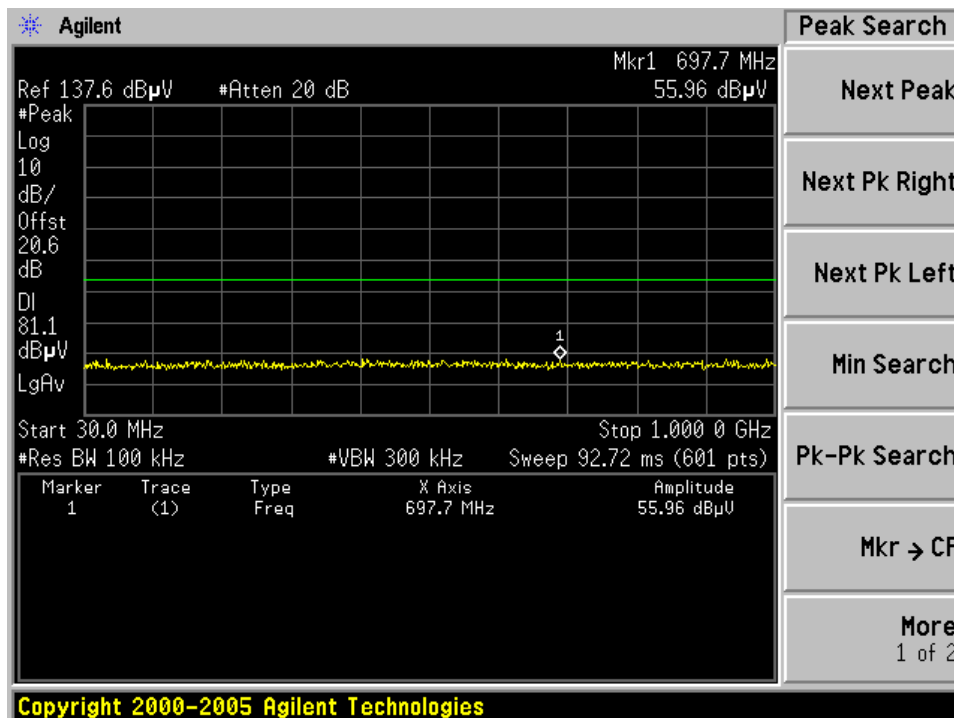
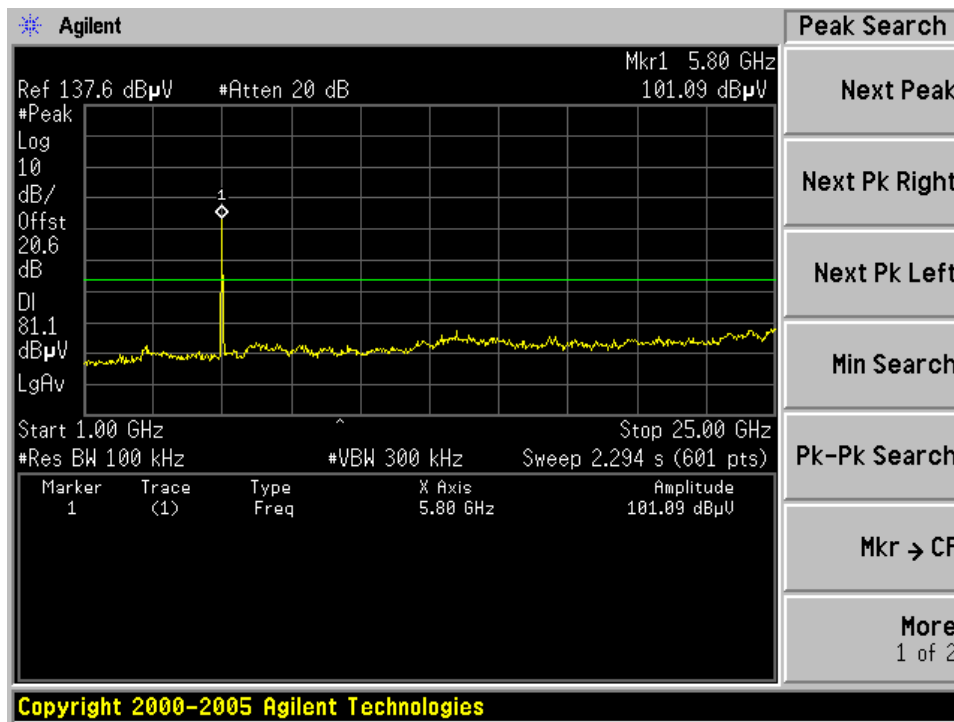
Chain 2:



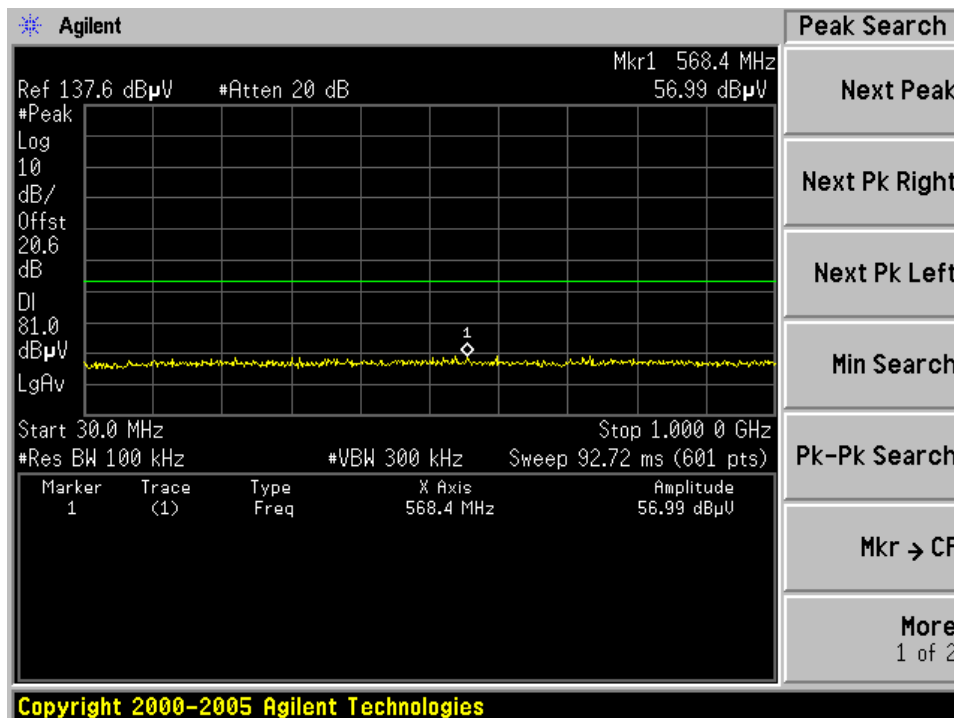
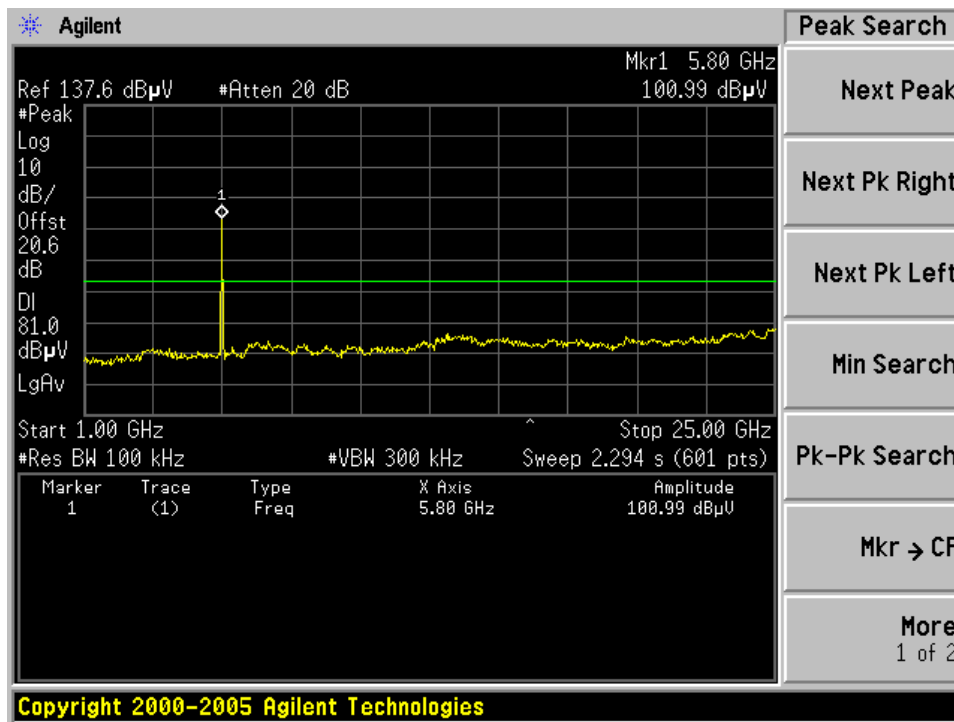
5795MHz
Chain 0:



Chain 1:



Chain 2:





Product Service

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2011

7.5 Spurious radiated emissions

Test Method

- 1 The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2 The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
- 3 EUT is set 3m 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 Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Limit

Frequency MHz	Field Strength uV/m	Field Strength dB μ V/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Radiated Emission

IEEE 802.11b modulation (1 Mbps) Test Result

Indicated		Detector (PK/QP)	Polar (H/V)	Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)										
749.74	12.50	QP	V	22.00	4.70	/	39.20	46	6.80	Pass
750.02	17.45	QP	H	22.00	4.70	/	44.15	46	1.85	Pass
4824.00	44.10	PK	V	34.32	10.64	35.08	53.98	74	20.02	Pass
4824.00	43.56	PK	H	34.32	10.64	35.08	53.44	74	20.56	Pass
2390.00	56.85	PK	V	29.44	7.39	36.62	57.06	74	16.94	Pass
2390.00	47.66	PK	H	29.44	7.39	36.62	47.87	74	26.13	Pass
CH6 (2437 MHz)										
4874.00	43.65	PK	V	34.41	10.69	35.03	53.72	74	20.28	Pass
4874.00	42.36	PK	H	34.41	10.69	35.03	52.43	74	21.57	Pass
CH11 (2462 MHz)										
4924.00	45.63	PK	V	34.49	10.76	34.98	55.90	74	18.10	Pass
4924.00	44.36	PK	H	34.49	10.76	34.98	54.63	74	19.37	Pass
2483.50	55.57	PK	V	29.49	7.58	36.60	56.04	74	17.96	Pass
2483.50	55.70	PK	H	29.49	7.58	36.60	56.17	74	17.83	Pass

Indicated		Detector (AV)	Polar (H/V)	Correction Factor				FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Duty Cycle Factor (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)											
4824.00	30.71	AV	V	34.32	10.64	35.08	0	40.59	54	13.41	Pass
4824.00	30.45	AV	H	34.32	10.64	35.08	0	40.33	54	13.67	Pass
2390.00	45.04	AV	V	29.44	7.39	36.62	0	45.25	54	8.75	Pass
2390.00	35.91	AV	H	29.44	7.39	36.62	0	36.12	54	17.88	Pass
CH6 (2437 MHz)											
4874.00	30.24	AV	V	34.41	10.69	35.03	0	40.31	54	13.69	Pass
4874.00	30.01	AV	H	34.41	10.69	35.03	0	40.08	54	13.92	Pass
CH11 (2462 MHz)											
4924.00	30.75	AV	V	34.49	10.76	34.98	0	41.02	54	12.98	Pass
4924.00	30.22	AV	H	34.49	10.76	34.98	0	40.49	54	13.51	Pass
2483.50	44.97	AV	V	29.49	7.58	36.60	0	45.44	54	8.56	Pass
2483.50	43.45	AV	H	29.49	7.58	36.60	0	43.92	54	10.08	Pass

Remark:

- (1) PK Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor
 AV Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor-Duty Cycle factor
 QP Emission Level= Reading +Cable Loss+ Antenna Factor
- (2) The emission levels that are 20dB below the official limits are not reported.

Radiated Emission

IEEE 802.11g modulation (6 Mbps) Test Result

Indicated		Detector (PK/QP)	Polar (H/V)	Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)										
749.74	12.52	QP	V	22.00	4.70	/	39.22	46	6.78	Pass
750.00	17.50	QP	H	22.00	4.70	/	44.20	46	1.80	Pass
4824.00	44.14	PK	V	34.32	10.64	35.08	54.02	74	19.98	Pass
4824.00	43.61	PK	H	34.32	10.64	35.08	53.49	74	20.51	Pass
2390.00	64.25	PK	V	29.44	7.39	36.62	64.46	74	9.54	Pass
2390.00	56.02	PK	H	29.44	7.39	36.62	56.23	74	17.77	Pass
CH6 (2437 MHz)										
4874.00	44.15	PK	V	34.41	10.69	35.03	54.22	74	19.78	Pass
4874.00	43.65	PK	H	34.41	10.69	35.03	53.72	74	20.28	Pass
CH11 (2462 MHz)										
4924.00	45.69	PK	V	34.49	10.76	34.98	55.96	74	18.04	Pass
4924.00	43.65	PK	H	34.49	10.76	34.98	53.92	74	20.08	Pass
2483.50	61.54	PK	V	29.49	7.58	36.60	62.01	74	11.99	Pass
2483.50	47.35	PK	H	29.49	7.58	36.60	47.82	74	26.18	Pass

Indicated		Detector (AV)	Polar (H/V)	Correction Factor				FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Duty Cycle Factor (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)											
4824.00	30.86	AV	V	34.32	10.64	35.08	-5.15	45.89	54	8.11	Pass
4824.00	30.87	AV	H	34.32	10.64	35.08	-5.15	45.90	54	8.10	Pass
2390.00	45.83	AV	V	29.44	7.39	36.62	-5.15	51.19	54	2.81	Pass
2390.00	43.70	AV	H	29.44	7.39	36.62	-5.15	49.06	54	4.94	Pass
CH6 (2437 MHz)											
4874.00	30.25	AV	V	34.41	10.69	35.03	-5.15	45.47	54	8.53	Pass
4874.00	30.01	AV	H	34.41	10.69	35.03	-5.15	45.23	54	8.77	Pass
CH11 (2462 MHz)											
4924.00	30.69	AV	V	34.49	10.76	34.98	-5.15	46.11	54	7.89	Pass
4924.00	30.54	AV	H	34.49	10.76	34.98	-5.15	45.96	54	8.04	Pass
2483.50	44.83	AV	V	29.49	7.58	36.60	-5.15	50.45	54	3.55	Pass
2483.50	36.04	AV	H	29.49	7.58	36.60	-5.15	41.66	54	12.34	Pass

Remark:

- (1) PK Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor
 AV Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor-Duty Cycle factor
 QP Emission Level= Reading +Cable Loss+ Antenna Factor
- (2) The emission levels that are 20dB below the official limits are not reported.

Radiated Emission

IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result

Indicated		Detector (PK/QP)	Polar (H/V)	Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)										
749.74	12.55	QP	V	22.00	4.70	/	39.25	46	6.75	Pass
750.00	17.53	QP	H	22.00	4.70	/	44.23	46	1.77	Pass
4824.00	44.37	PK	V	34.32	10.64	35.08	54.25	74	19.75	Pass
4824.00	42.70	PK	H	34.32	10.64	35.08	52.58	74	21.42	Pass
2390.00	67.60	PK	V	29.44	7.39	36.62	67.81	74	6.19	Pass
2390.00	56.11	PK	H	29.44	7.39	36.62	56.32	74	17.68	Pass
CH6 (2437 MHz)										
4874.00	45.02	PK	V	34.41	10.69	35.03	55.09	74	18.91	Pass
4874.00	44.65	PK	H	34.41	10.69	35.03	54.72	74	19.28	Pass
CH11 (2462 MHz)										
4924.00	44.65	PK	V	34.49	10.76	34.98	54.92	74	19.08	Pass
4924.00	43.68	PK	H	34.49	10.76	34.98	53.95	74	20.05	Pass
2483.50	65.49	PK	V	29.49	7.58	36.60	65.96	74	8.04	Pass
2483.50	55.51	PK	H	29.49	7.58	36.60	55.98	74	18.02	Pass
CH149 (5745 MHz)										
11490.00	36.01	PK	V	38.60	16.96	33.53	58.04	74	15.96	Pass
11490.00	34.03	PK	H	38.60	16.96	33.53	56.06	74	17.94	Pass
5460.00	43.69	PK	V	35.86	11.38	34.62	56.31	74	17.69	Pass
5460.00	46.81	PK	H	35.86	11.38	34.62	59.43	74	14.57	Pass
CH157 (5785 MHz)										
11570.00	37.91	PK	V	38.57	17.03	33.39	60.12	74	13.88	Pass
11570.00	34.69	PK	H	38.57	17.03	33.39	56.90	74	17.10	Pass
CH165 (5825 MHz)										
11650.00	38.52	PK	V	38.54	17.09	33.28	60.87	74	13.13	Pass
11650.00	33.56	PK	H	38.54	17.09	33.28	55.91	74	18.09	Pass
7250.00	46.91	PK	V	37.00	13.35	33.95	63.31	74	10.69	Pass
7250.00	47.85	PK	H	37.00	13.35	33.95	64.25	74	9.75	Pass



Indicated		Detector (AV)	Polar (H/V)	Correction Factor				FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dBμV/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Duty Cycle Factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
CH1 (2412 MHz)											
4824.00	30.22	AV	V	34.32	10.64	35.08	-6.76	46.86	54	7.14	Pass
4824.00	30.05	AV	H	34.32	10.64	35.08	-6.76	46.69	54	7.31	Pass
2390.00	45.81	AV	V	29.44	7.39	36.62	-6.76	52.78	54	1.22	Pass
2390.00	43.76	AV	H	29.44	7.39	36.62	-6.76	50.73	54	3.27	Pass
CH6 (2437 MHz)											
4874.00	30.05	AV	V	34.41	10.69	35.03	-6.76	40.12	54	13.88	Pass
4874.00	30.11	AV	H	34.41	10.69	35.03	-6.76	40.18	54	13.82	Pass
CH11 (2462 MHz)											
4924.00	30.59	AV	V	34.49	10.76	34.98	-6.76	47.62	54	6.38	Pass
4924.00	30.24	AV	H	34.49	10.76	34.98	-6.76	47.27	54	6.73	Pass
2483.50	45.06	AV	V	29.49	7.58	36.60	-6.76	52.29	54	1.71	Pass
2483.50	43.51	AV	H	29.49	7.58	36.60	-6.76	50.74	54	3.26	Pass
CH149 (5745 MHz)											
11490.00	23.31	AV	V	38.60	16.96	33.53	-6.76	52.1	54	1.9	Pass
11490.00	23.38	AV	H	38.60	16.96	33.53	-6.76	52.17	54	1.83	Pass
5460.00	32.64	AV	V	35.86	11.38	34.62	-6.76	52.02	54	1.98	Pass
5460.00	32.23	AV	H	35.86	11.38	34.62	-6.76	51.61	54	2.39	Pass
CH157 (5785 MHz)											
11570.00	23.98	AV	V	38.57	17.03	33.39	-6.76	52.95	54	1.05	Pass
11570.00	23.14	AV	H	38.57	17.03	33.39	-6.76	52.11	54	1.89	Pass
CH165 (5825 MHz)											
11650.00	23.55	AV	V	38.54	17.09	33.28	-6.76	52.66	54	1.34	Pass
11650.00	23.57	AV	H	38.54	17.09	33.28	-6.76	52.68	54	1.32	Pass
7250.00	29.59	AV	V	37.00	13.35	33.95	-6.76	52.75	54	1.25	Pass
7250.00	29.56	AV	H	37.00	13.35	33.95	-6.76	52.72	54	1.28	Pass

Remark:

- (1) PK Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor
 AV Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor-Duty Cycle factor
 QP Emission Level= Reading +Cable Loss+ Antenna Factor
- (2) The emission levels that are 20dB below the official limits are not reported.

Radiated Emission

IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result

Indicated		Detector (PK/QP)	Polar (H/V)	Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dB μ V/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
CH1 (2412 MHz)										
749.74	12.52	QP	V	22.00	4.70	/	39.22	46	6.78	Pass
750.00	17.49	QP	H	22.00	4.70	/	44.22	46	1.81	Pass
4824.00	44.72	PK	V	34.35	10.67	35.05	54.69	74	19.31	Pass
4824.00	43.69	PK	H	34.35	10.67	35.05	53.66	74	20.34	Pass
2390.00	70.72	PK	V	29.44	7.39	36.62	70.93	74	3.07	Pass
2390.00	54.24	PK	H	29.44	7.39	36.62	54.45	74	19.55	Pass
CH6 (2437 MHz)										
4874.00	44.52	PK	V	34.41	10.69	35.03	54.59	74	19.41	Pass
4874.00	43.62	PK	H	34.41	10.69	35.03	53.69	74	20.31	Pass
CH11 (2462 MHz)										
4924.00	44.65	PK	V	34.46	10.74	35.00	54.85	74	19.15	Pass
4924.00	43.41	PK	H	34.46	10.74	35.00	53.61	74	20.39	Pass
2483.50	70.74	PK	V	29.49	7.58	36.60	71.21	74	2.79	Pass
2483.50	53.96	PK	H	29.49	7.58	36.60	54.43	74	19.57	Pass
CH151 (5755 MHz)										
11510.00	37.88	PK	V	38.60	16.98	33.5	59.96	74	14.04	Pass
11510.00	34.78	PK	H	38.60	16.98	33.5	56.86	74	17.14	Pass
5460.00	46.73	PK	V	35.86	11.38	34.62	59.35	74	14.65	Pass
5460.00	46.03	PK	H	35.86	11.38	34.62	58.65	74	15.35	Pass
CH159 (5795 MHz)										
11590.00	36.80	PK	V	38.57	16.04	33.39	58.02	74	15.98	Pass
11590.00	35.31	PK	H	38.57	16.04	33.39	56.53	74	17.47	Pass
7250.00	47.66	PK	V	36.00	13.35	33.95	63.06	74	10.94	Pass
7250.00	49.06	PK	H	36.00	13.35	33.95	64.46	74	9.54	Pass



Indicated		Detector (AV)	Polar (H/V)	Correction Factor				FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dBµV/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Duty Cycle Factor (dB)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
CH1 (2412 MHz)											
4824.00	30.46	AV	V	34.35	10.67	35.05	-9.15	49.58	54	4.42	Pass
4824.00	30.11	AV	H	34.35	10.67	35.05	-9.15	49.23	54	4.77	Pass
2390.00	41.35	AV	V	29.44	7.39	36.62	-9.15	50.71	54	3.29	Pass
2390.00	36.68	AV	H	29.44	7.39	36.62	-9.15	46.04	54	7.96	Pass
CH6 (2437 MHz)											
4874.00	30.21	AV	V	34.41	10.69	35.03	-9.15	49.43	54	4.57	Pass
4874.00	30.01	AV	H	34.41	10.69	35.03	-9.15	49.23	54	4.77	Pass
CH11 (2462 MHz)											
4924.00	30.21	AV	V	34.46	10.74	35.00	-9.15	49.56	54	4.44	Pass
4924.00	30.15	AV	H	34.46	10.74	35.00	-9.15	49.50	54	4.50	Pass
2483.50	40.76	AV	V	29.49	7.58	36.60	-9.15	50.38	54	3.62	Pass
2483.50	36.47	AV	H	29.49	7.58	36.60	-9.15	46.09	54	7.91	Pass
CH151 (5755 MHz)											
11510.00	21.14	AV	V	38.60	16.98	33.5	-9.15	52.37	54	1.63	Pass
11510.00	21.04	AV	H	38.60	16.98	33.5	-9.15	52.27	54	1.73	Pass
5460.00	30.50	AV	V	35.86	11.38	34.62	-9.15	52.27	54	1.73	Pass
5460.00	30.07	AV	H	35.86	11.38	34.62	-9.15	51.84	54	2.16	Pass
CH159 (5795 MHz)											
11590.00	21.45	AV	V	38.57	16.04	33.39	-9.15	51.82	54	2.18	Pass
11590.00	21.48	AV	H	38.57	16.04	33.39	-9.15	51.85	54	2.15	Pass
7250.00	28.59	AV	V	36.00	13.35	33.95	-9.15	53.14	54	0.86	Pass
7250.00	28.61	AV	H	36.00	13.35	33.95	-9.15	53.16	54	0.84	Pass

Remark:

- (1) PK Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor
 AV Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor-Duty Cycle factor
 QP Emission Level= Reading +Cable Loss+ Antenna Factor
- (2) The emission levels that are 20dB below the official limits are not reported.

Radiated Emission

IEEE 802.11a modulation (6 Mbps) Test Result

Indicated		Detector (PK/AV)	Polar (H/V)	Correction Factor			FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dBμV/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
CH149 (5745 MHz)										
749.74	12.54	QP	V	22.00	4.70	/	39.24	46	6.76	Pass
750.00	17.45	QP	H	22.00	4.70	/	44.15	46	1.85	Pass
11490.00	35.76	PK	H	38.60	16.96	33.53	57.79	74	16.21	Pass
11490.00	36.32	PK	V	38.60	16.96	33.53	58.35	74	15.65	Pass
5460.00	46.33	PK	V	35.86	11.38	34.62	58.95	74	15.05	Pass
5460.00	47.05	PK	H	35.86	11.38	34.62	59.67	74	14.33	Pass
CH157 (5785 MHz)										
11570.00	35.89	PK	V	38.57	17.03	33.39	59.10	74	14.90	Pass
11570.00	35.73	PK	H	38.57	17.03	33.39	58.94	74	15.06	Pass
CH165 (5825 MHz)										
11650.00	36.78	PK	V	38.54	17.09	33.28	59.13	74	14.87	Pass
11650.00	34.30	PK	H	38.54	17.09	33.28	56.65	74	17.35	Pass
7250.00	44.13	PK	V	37.00	13.35	33.95	60.53	74	13.47	Pass
7250.00	47.97	PK	H	37.00	13.35	33.95	64.37	74	9.63	Pass

Indicated		Detector (PK/AV)	Polar (H/V)	Correction Factor				FCC Part 15.247/15.209			
Frequency (MHz)	Receiver Reading (dBμV/m)			Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Duty Cycle Factor (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
CH149 (5745 MHz)											
11490.00	26.86	AV	V	38.60	16.96	33.53	-5.09	52.98	54	1.02	Pass
11490.00	25.36	AV	H	38.60	16.96	33.53	-5.09	52.48	54	1.52	Pass
5460.00	32.48	AV	V	35.86	11.38	34.62	-5.09	50.19	54	3.81	Pass
5460.00	32.20	AV	H	35.86	11.38	34.62	-5.09	49.91	54	4.09	Pass
CH157 (5785 MHz)											
11570.00	25.65	AV	V	38.57	17.03	33.39	-5.09	52.95	54	1.05	Pass
11570.00	25.12	AV	H	38.57	17.03	33.39	-5.09	52.42	54	1.58	Pass
CH165 (5825 MHz)											
11650.00	26.42	AV	V	38.54	17.09	33.28	-5.09	52.86	54	1.14	Pass
11650.00	25.05	AV	H	38.54	17.09	33.28	-5.09	52.49	54	1.51	Pass
7250.00	29.59	AV	V	37.00	13.35	33.95	-5.09	51.08	54	2.92	Pass
7250.00	29.61	AV	H	37.00	13.35	33.95	-5.09	51.10	54	2.90	Pass

Remark:

- (1) PK Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor
 AV Emission Level= Reading +Cable Loss+ Antenna Factor - Amplifier factor-Duty Cycle factor
 QP Emission Level= Reading +Cable Loss+ Antenna Factor
- (2) The emission levels that are 20dB below the official limits are not reported

**Test Equipment List**

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 08, 2011
Amp	HP	8449B	3008A02495	May 08, 2011
Antenna	EMCO	3115	9607-4877	May 17, 2011
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2011
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2011

7.6 6 dB bandwidth

Test Method

- 1 Place the EUT on the table and set it in the transmitting mode.
- 2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3 Mark the peak frequency and -6dB (upper and lower) frequency.

Limit

Limit [kHz]

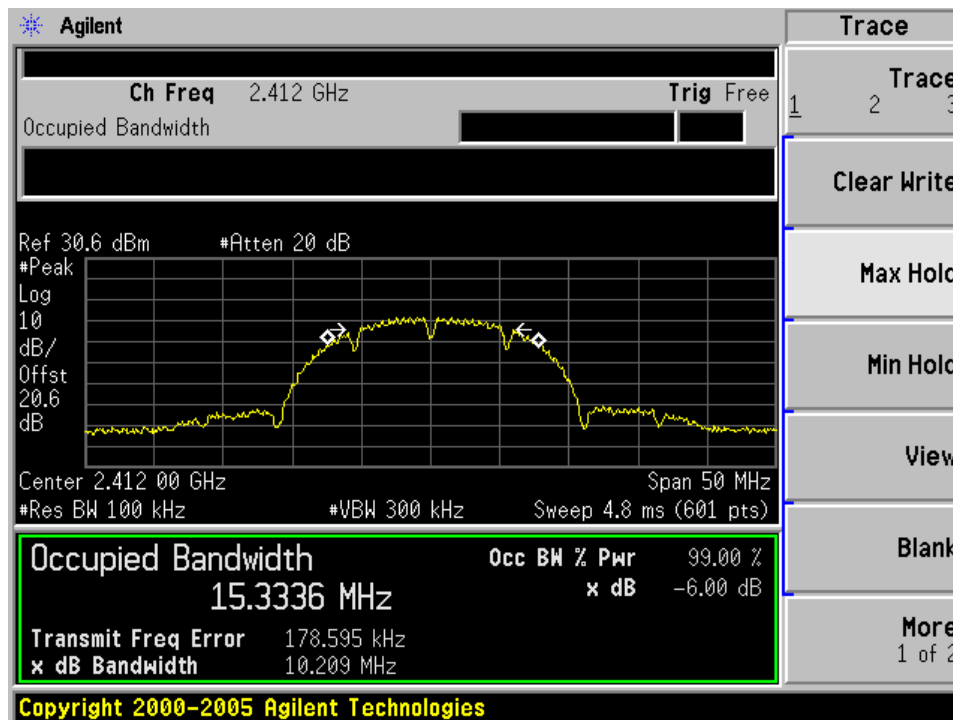
≥ 500

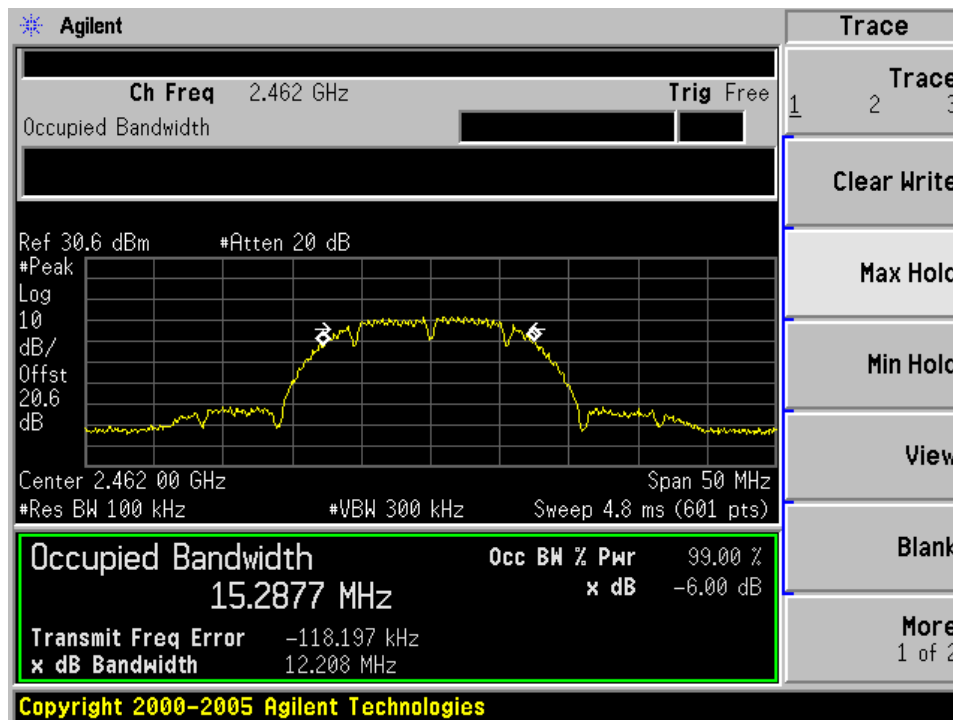
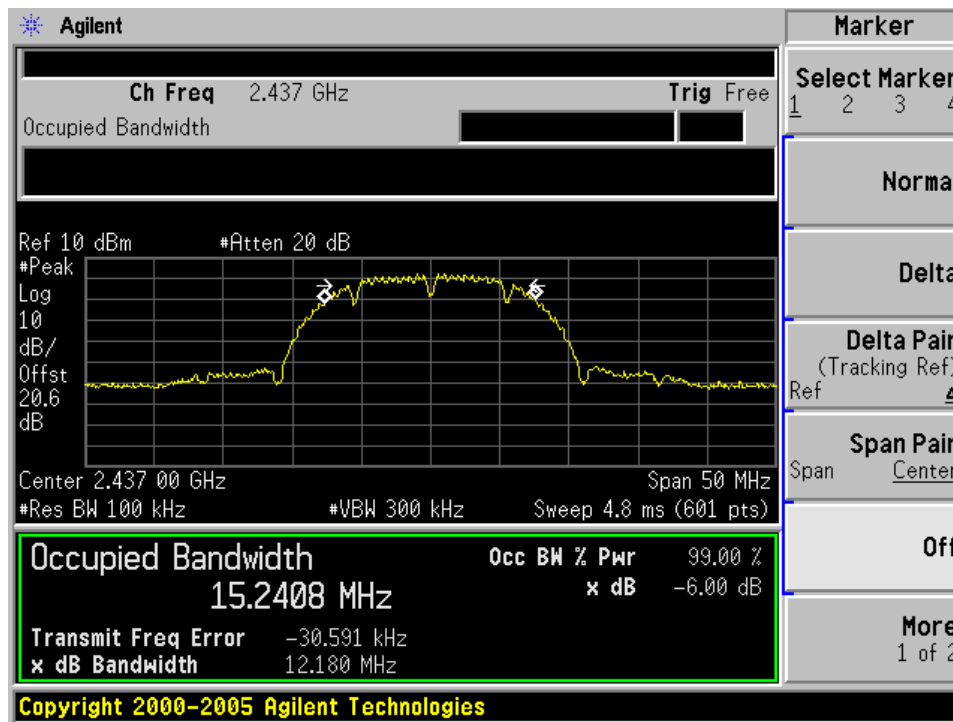
6 dB bandwidth

IEEE 802.11b modulation (1Mbps) Test Result

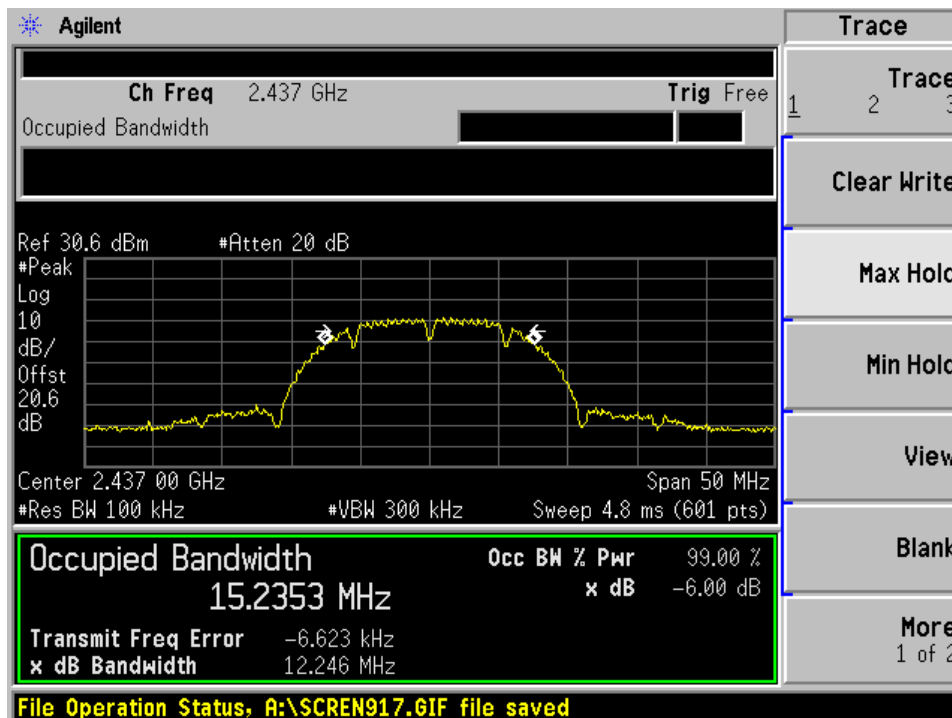
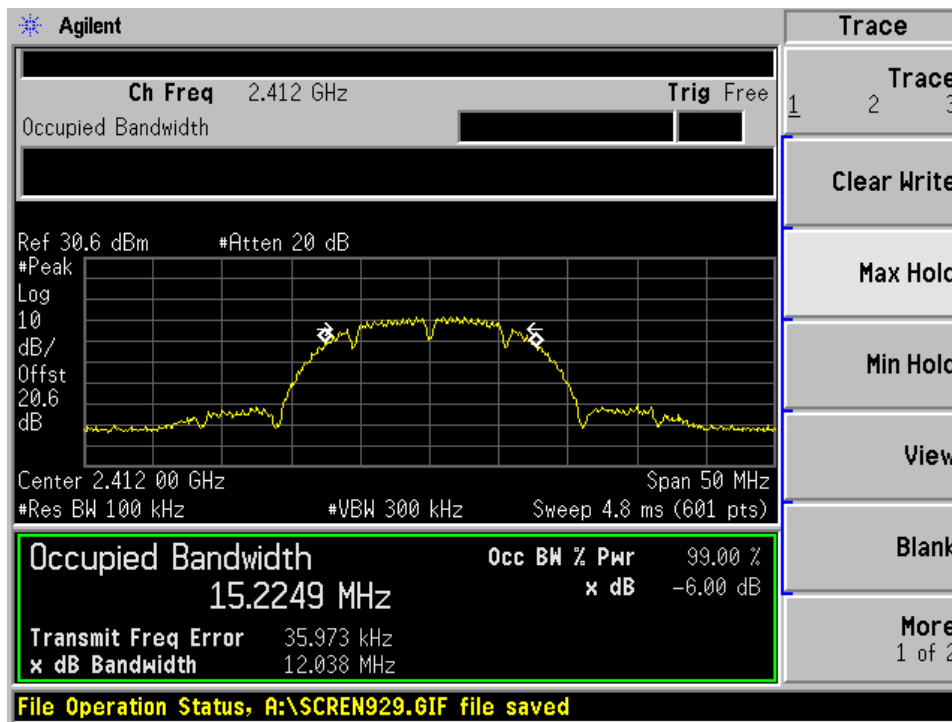
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain0					
Ch1	2412	1	10.209	>500	Pass
Ch6	2437	1	12.180	>500	Pass
Ch11	2462	1	12.208	>500	Pass
Chain1					
Ch1	2412	1	12.038	>500	Pass
Ch6	2437	1	12.246	>500	Pass
Ch11	2462	1	11.112	>500	Pass
Chain1					
Ch1	2412	1	11.121	>500	Pass
Ch6	2437	1	11.152	>500	Pass
Ch11	2462	1	11.126	>500	Pass

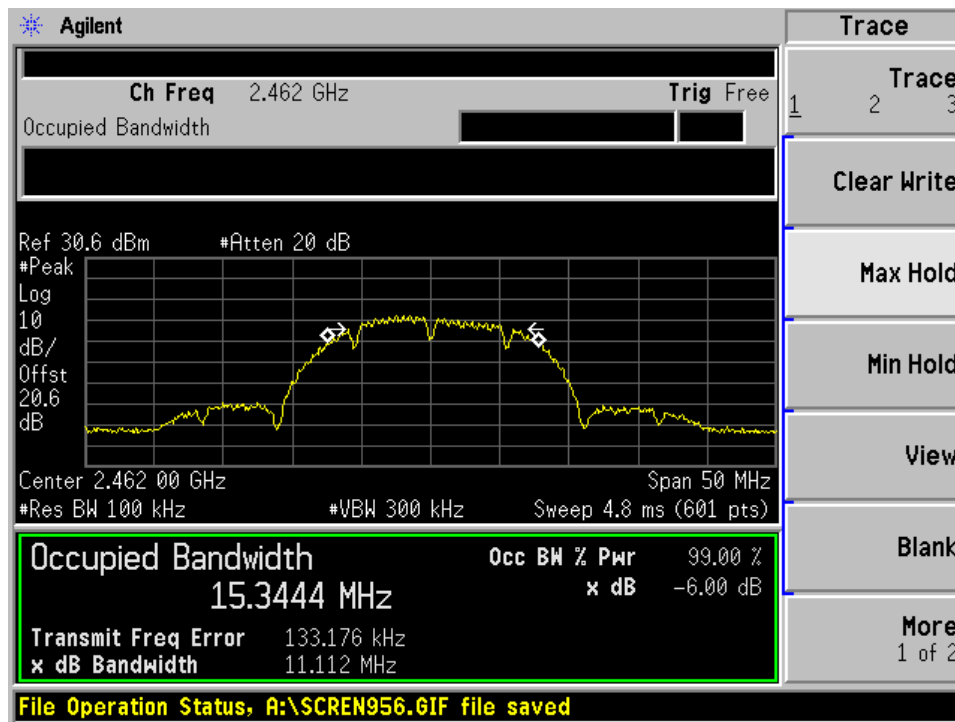
Chain 0:



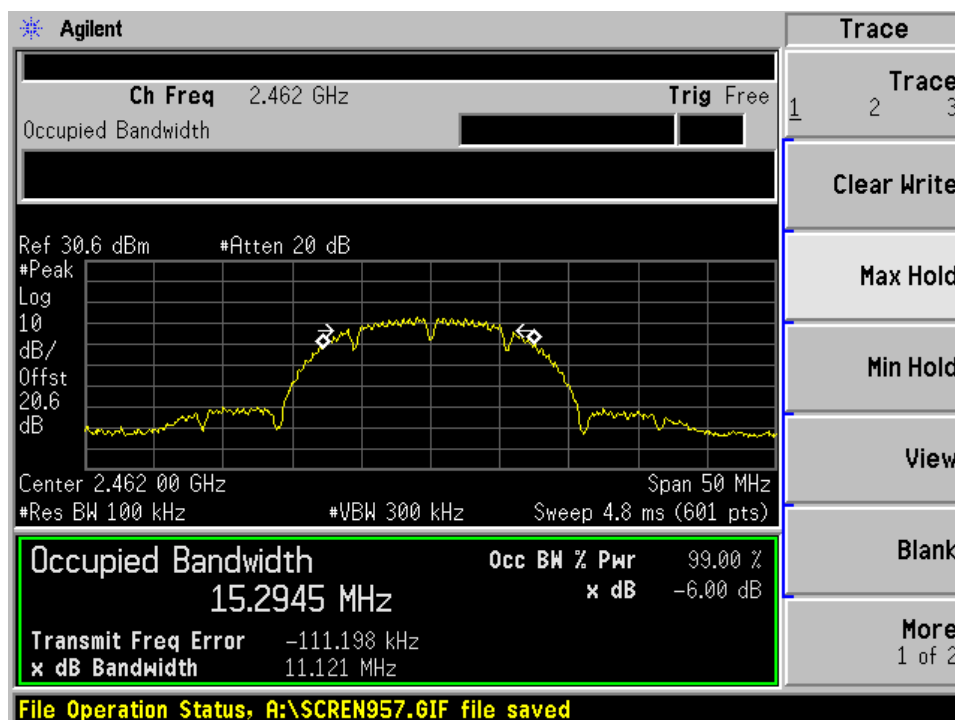


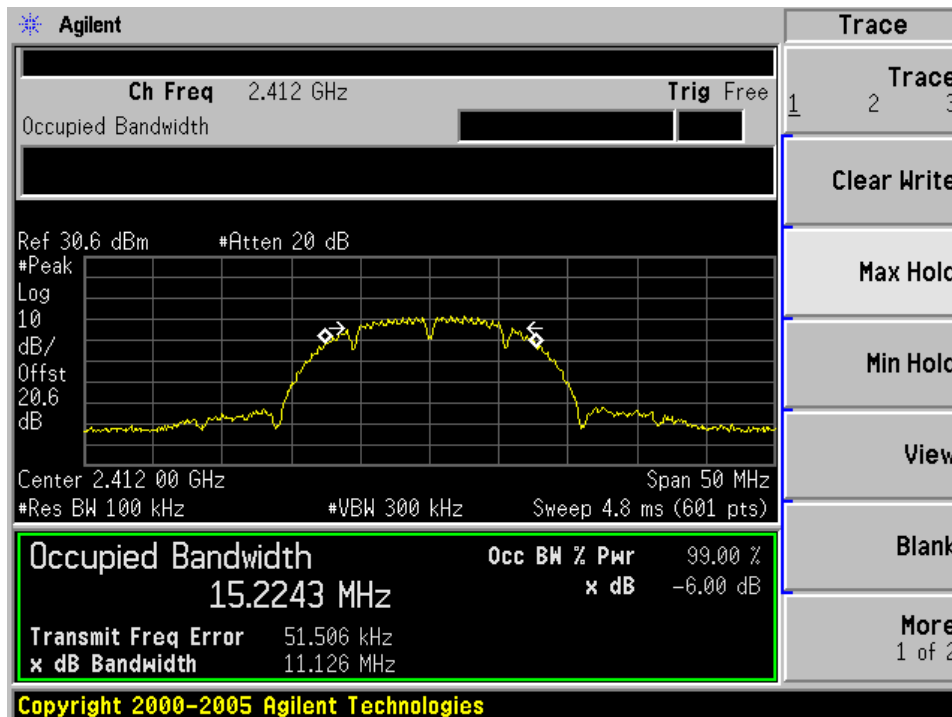
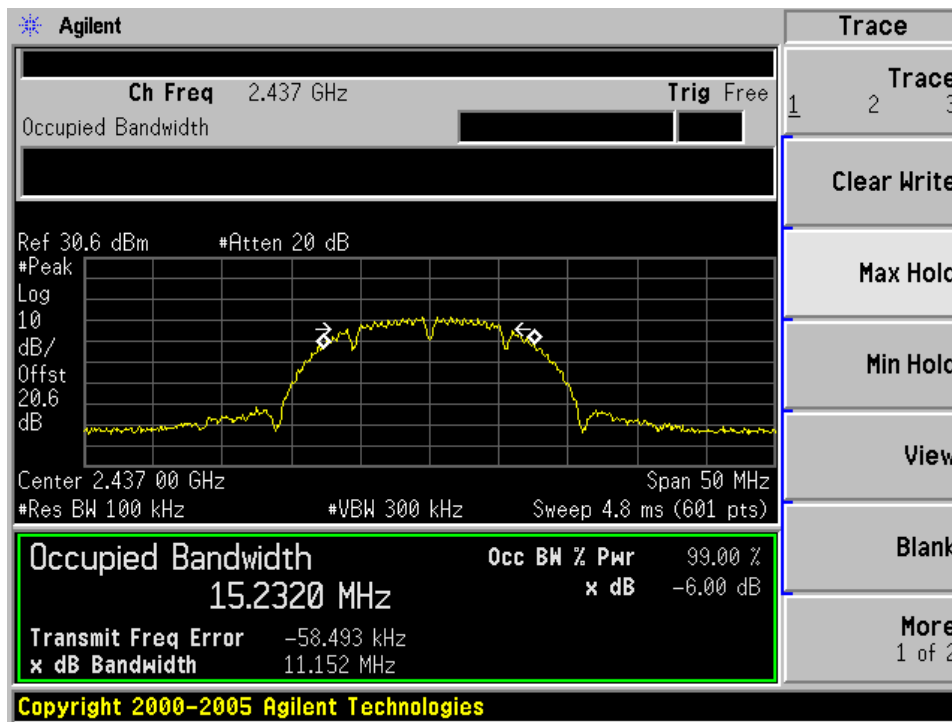
Chain 1:





Chain 2:



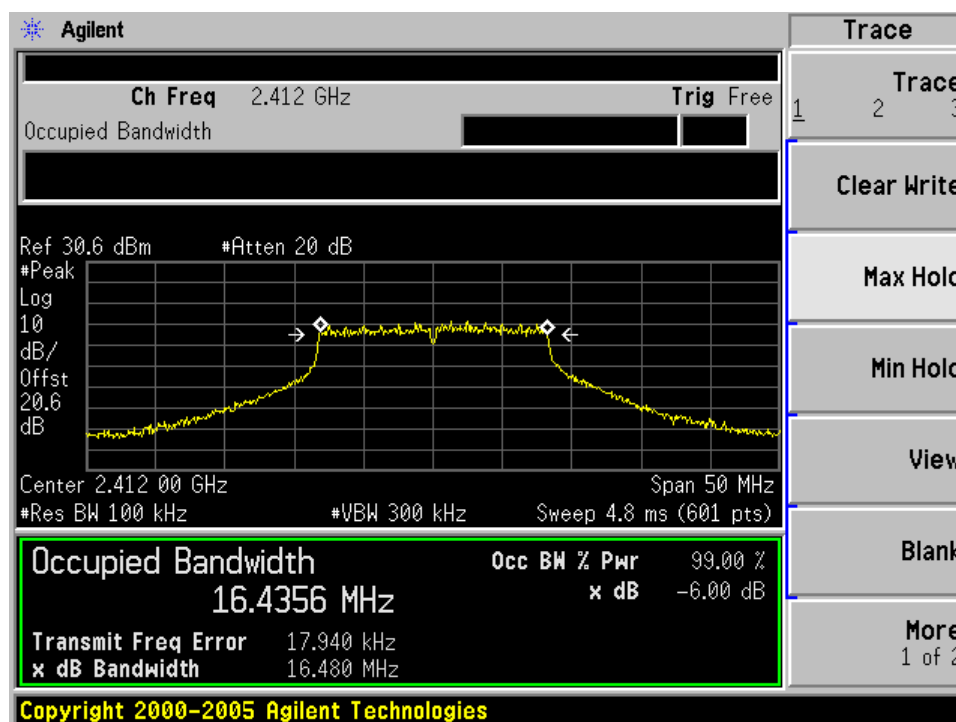


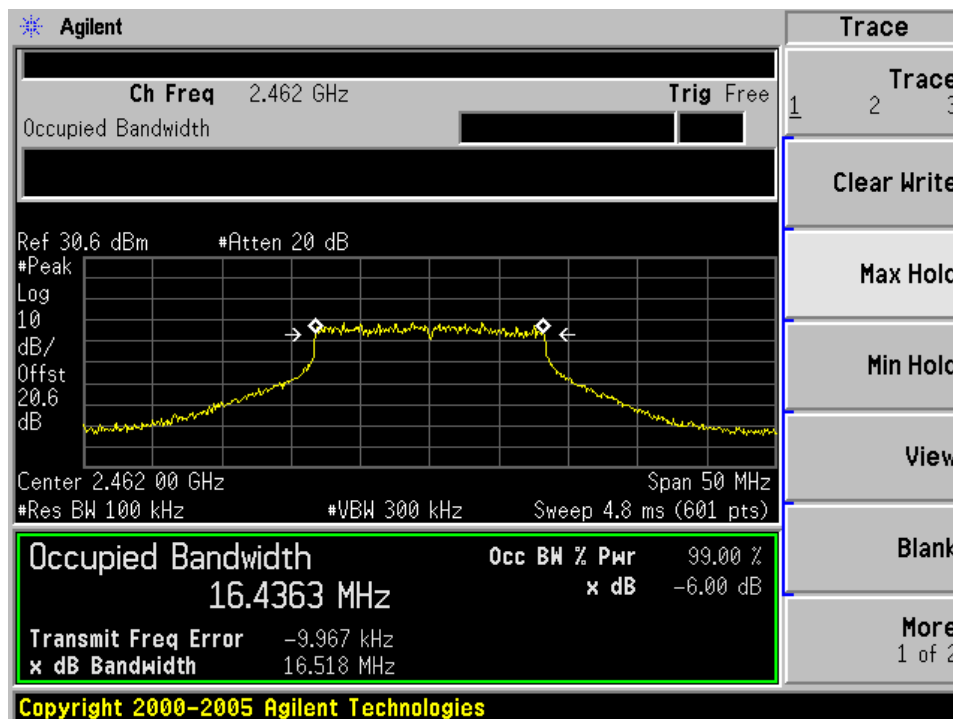
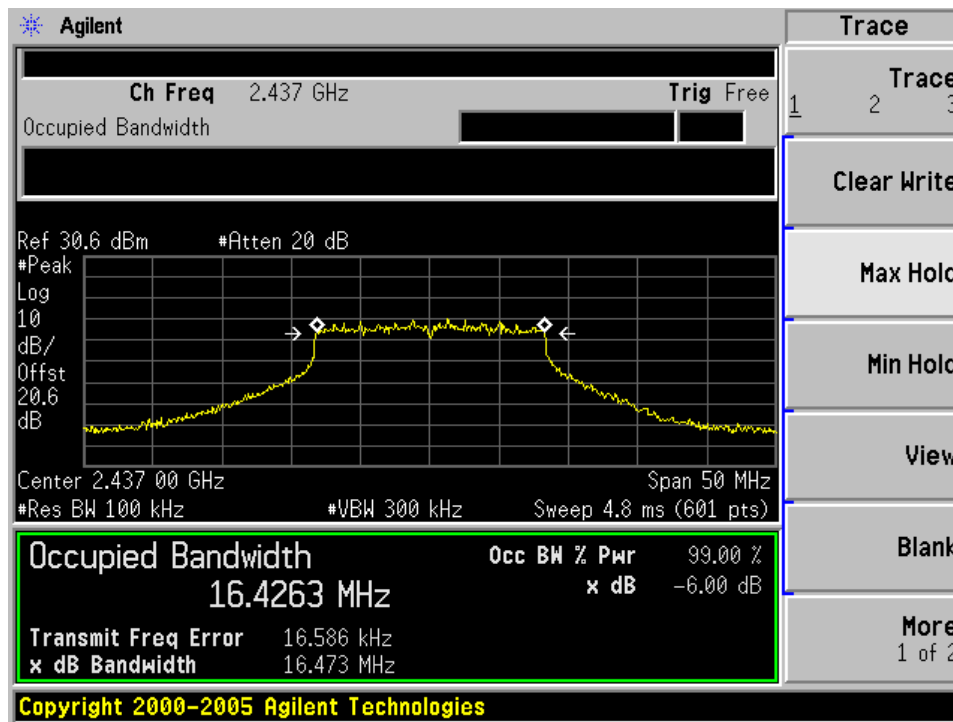
6 dB bandwidth

IEEE 802.11g modulation (6Mbps) Test Result

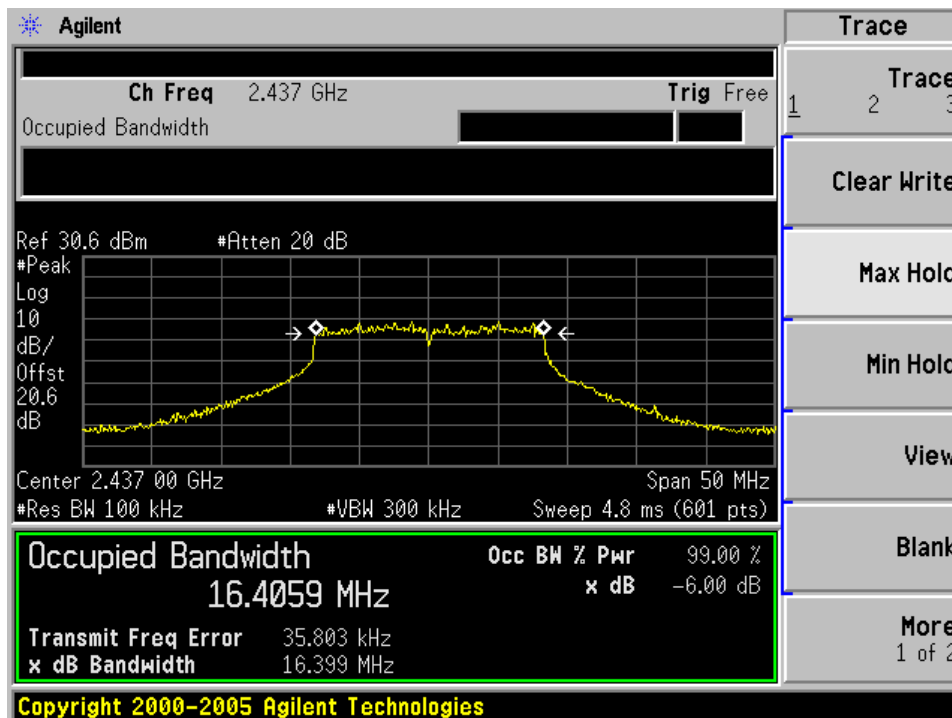
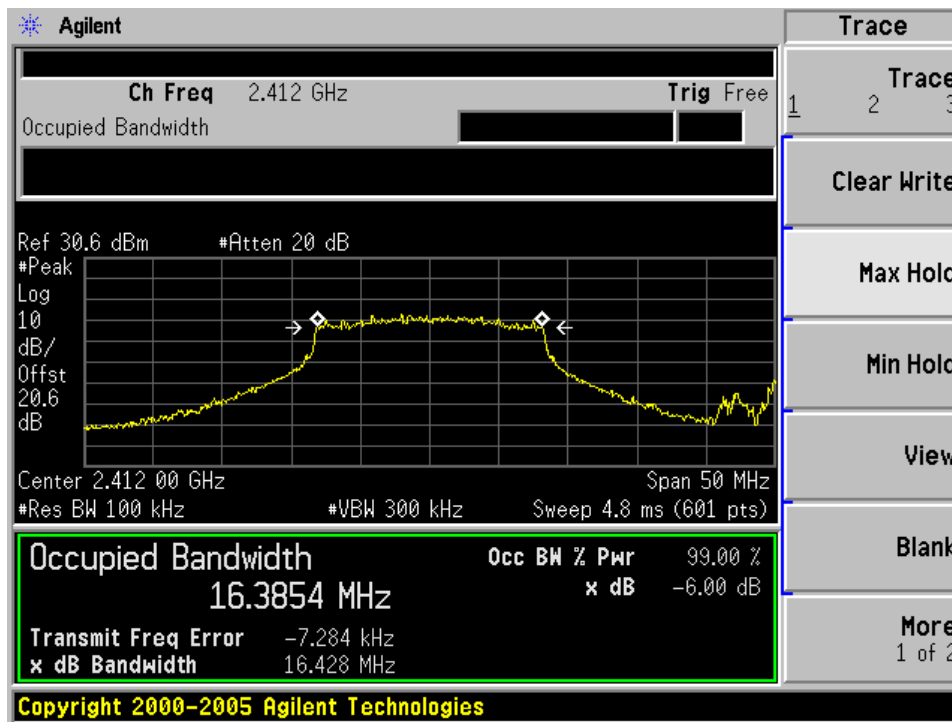
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain 0					
Ch1	2412	6	16.480	>500	Pass
Ch6	2437	6	16.473	>500	Pass
Ch11	2462	6	16.518	>500	Pass
Chain 1					
Ch1	2412	6	16.428	>500	Pass
Ch6	2437	6	16.399	>500	Pass
Ch11	2462	6	16.463	>500	Pass
Chain 2					
Ch1	2412	6	16.436	>500	Pass
Ch6	2437	6	16.468	>500	Pass
Ch11	2462	6	16.451	>500	Pass

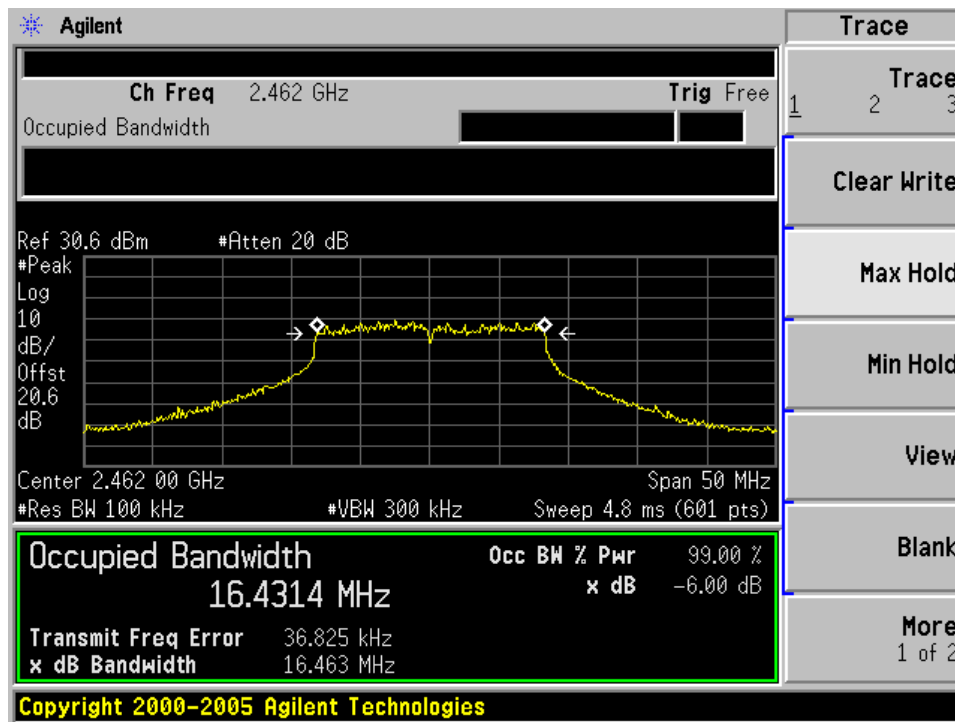
Chain 0:



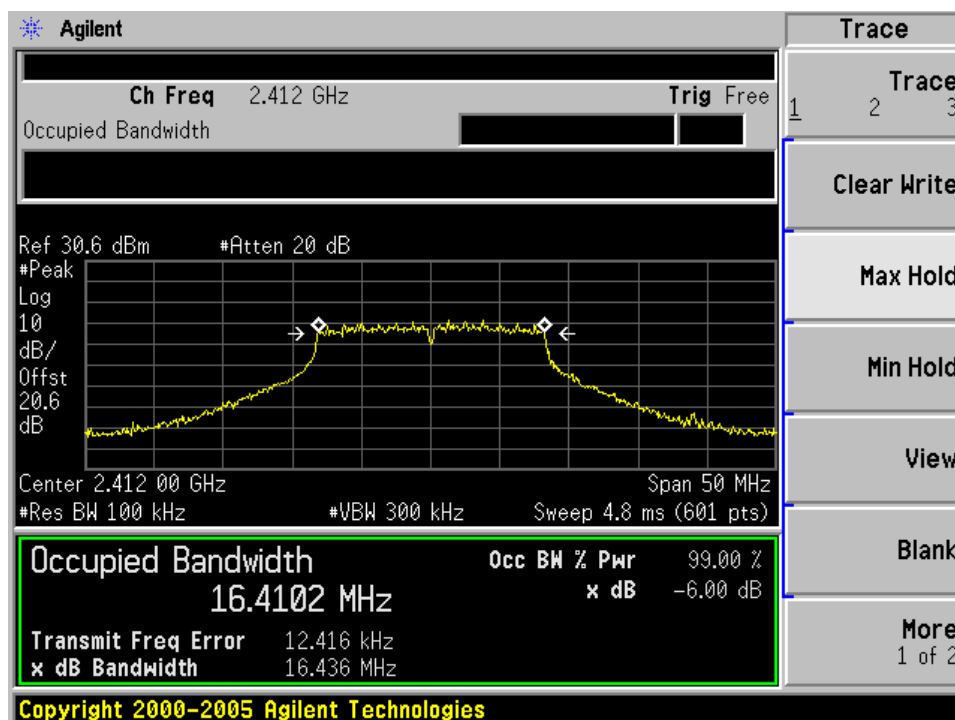


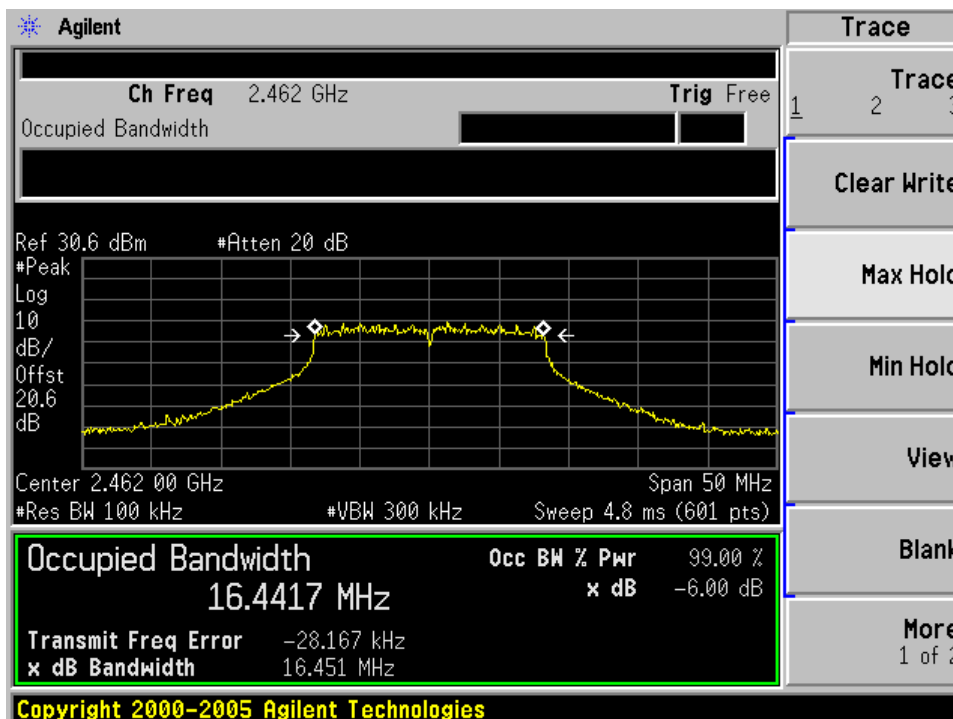
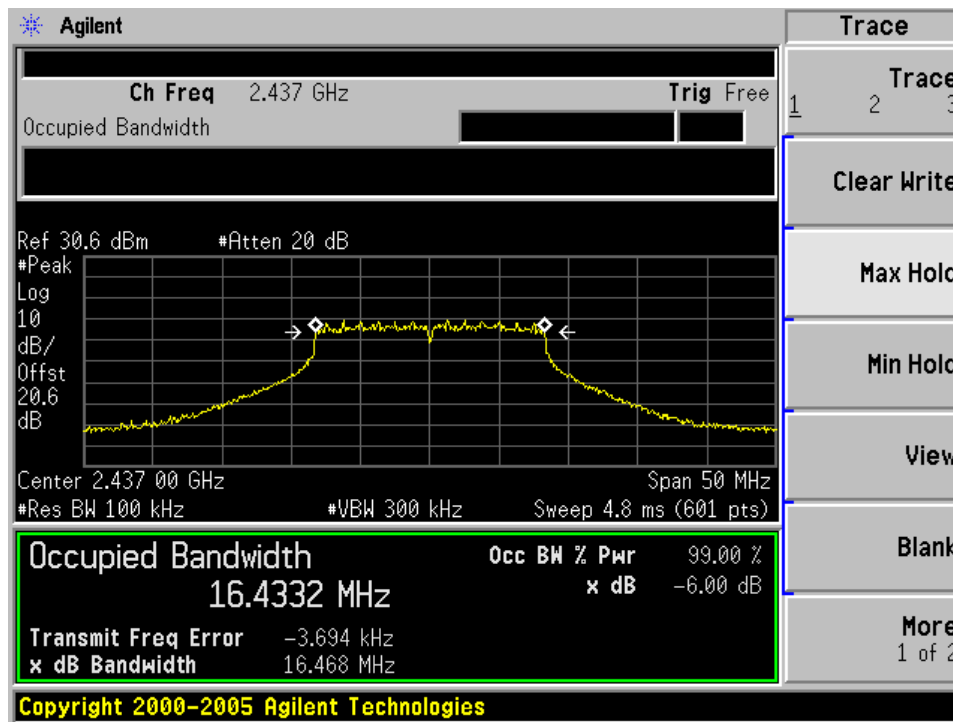
Chain 1:





Chain 2:



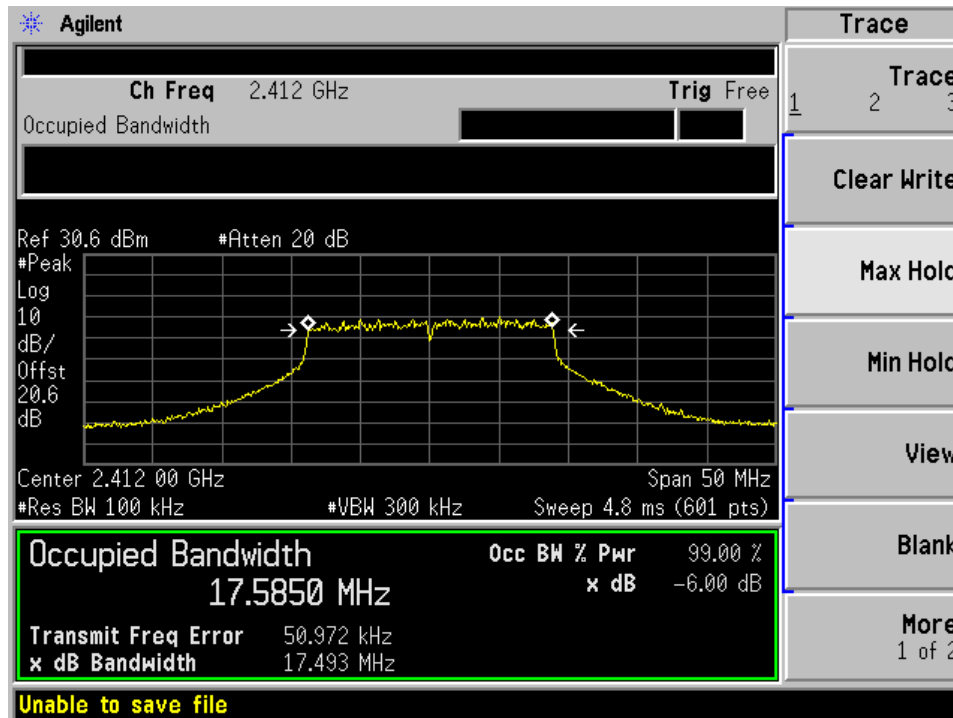


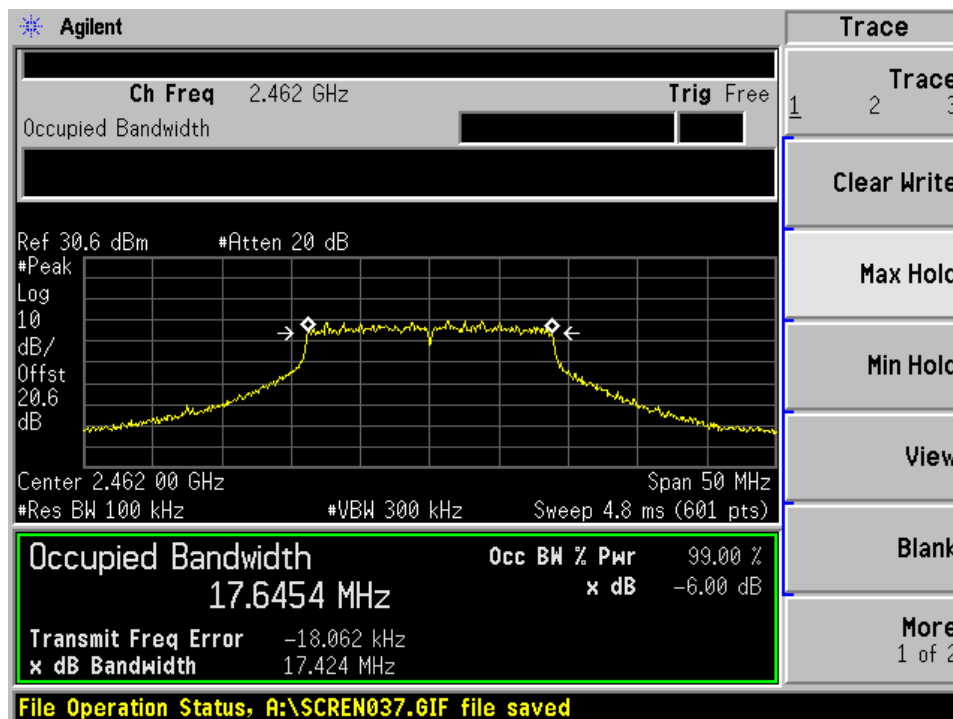
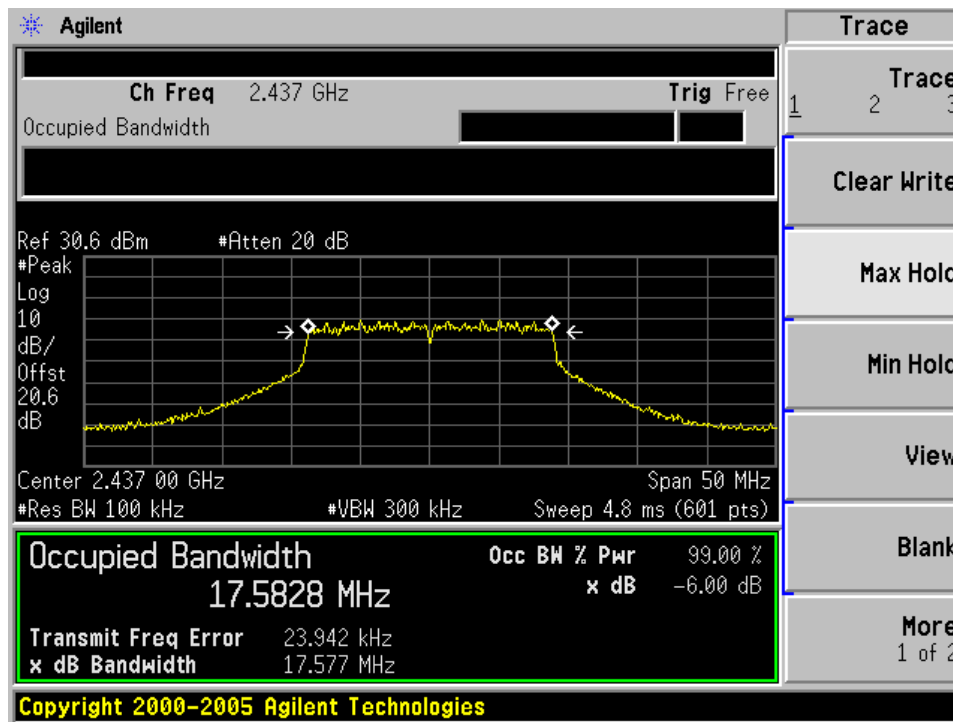
6 dB bandwidth

IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

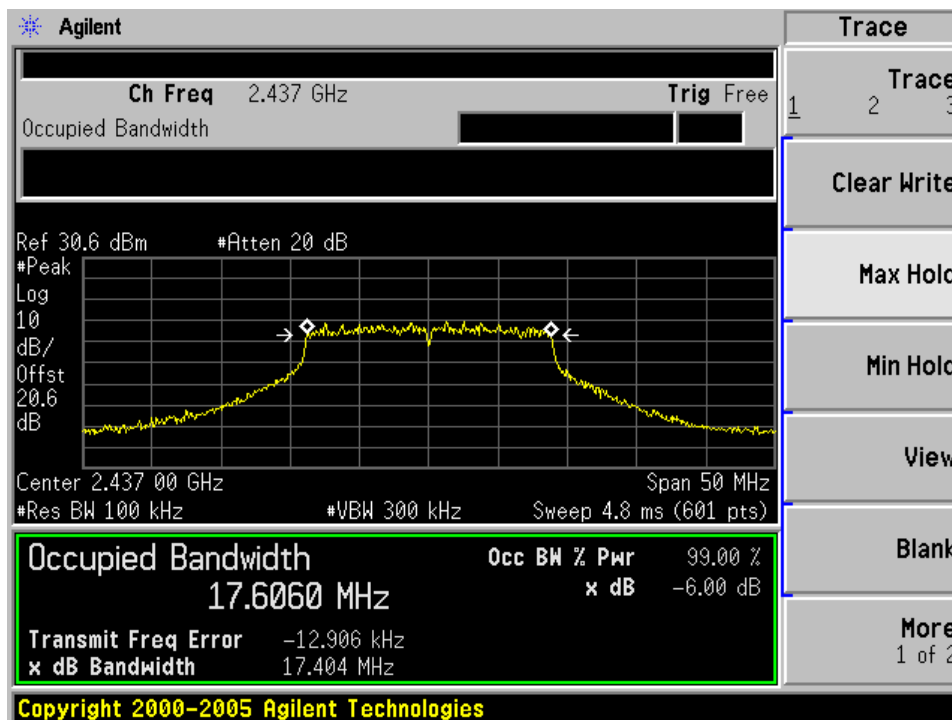
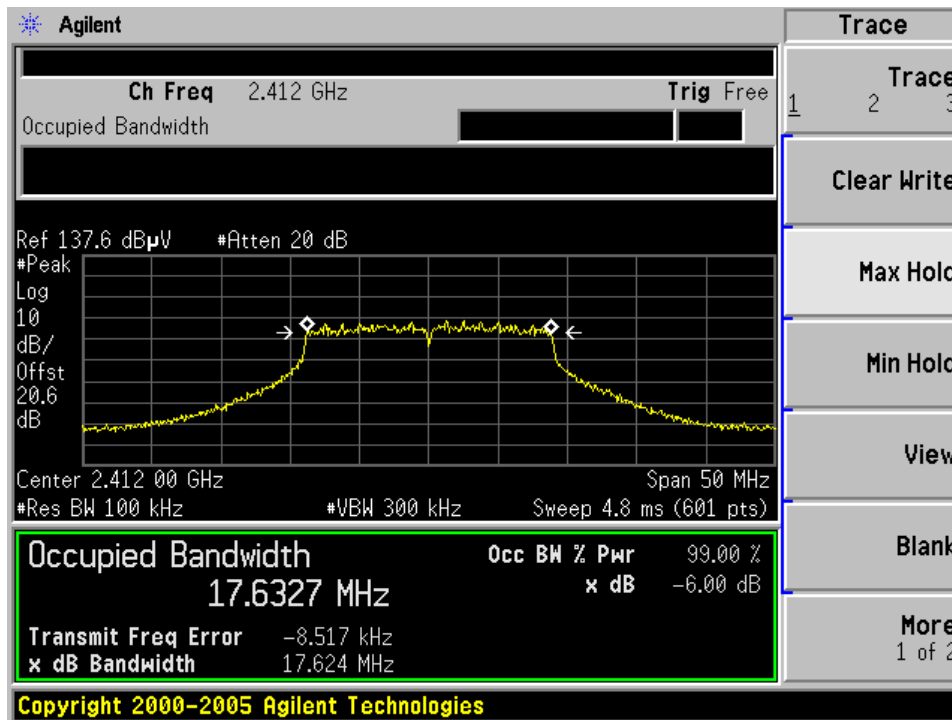
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain0					
Ch1	2412	6.5	17.493	>500	Pass
Ch6	2437	6.5	17.577	>500	Pass
Ch11	2462	6.5	17.424	>500	Pass
Chain1					
Ch1	2412	6.5	17.624	>500	Pass
Ch6	2437	6.5	17.404	>500	Pass
Ch11	2462	6.5	17.421	>500	Pass
Chain1					
Ch1	2412	6.5	17.428	>500	Pass
Ch6	2437	6.5	17.661	>500	Pass
Ch11	2462	6.5	17.426	>500	Pass

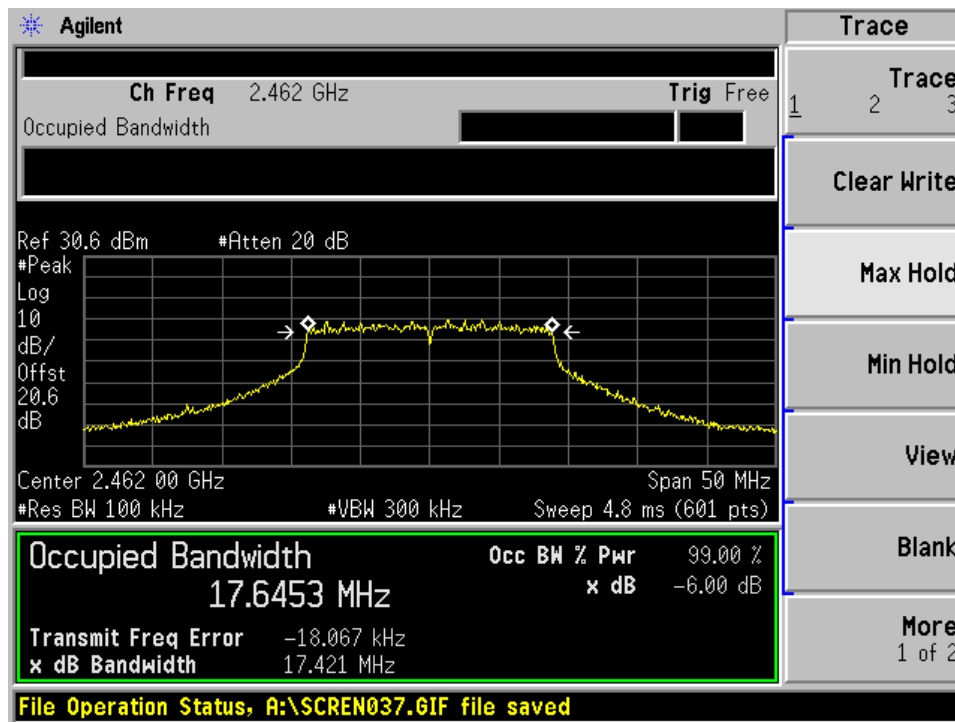
Chain 0:



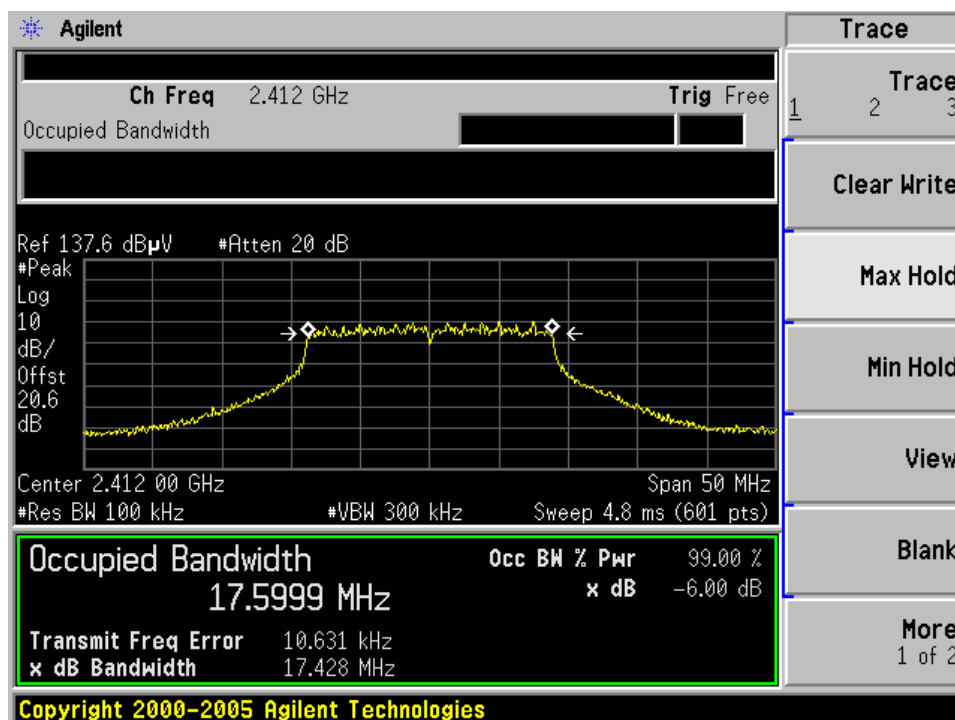


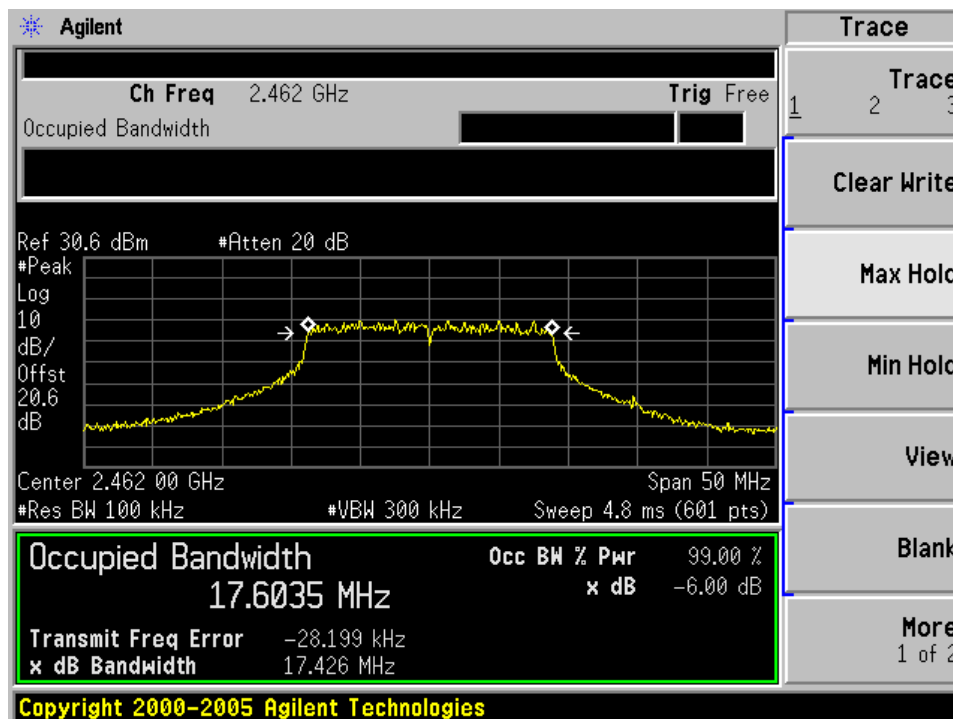
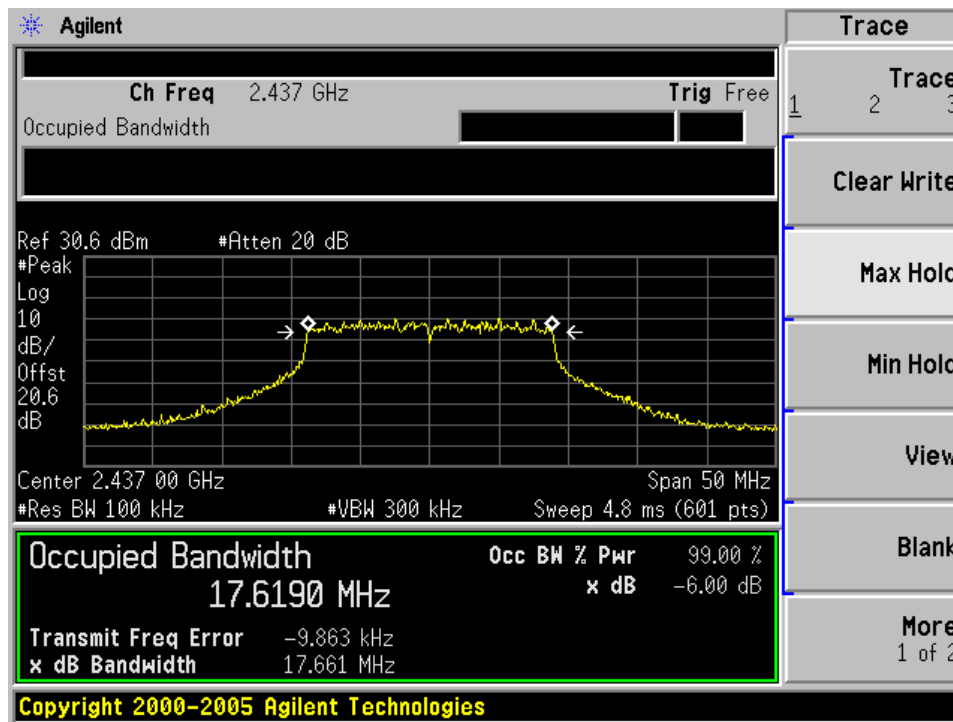
Chain 1:





Chain 2:



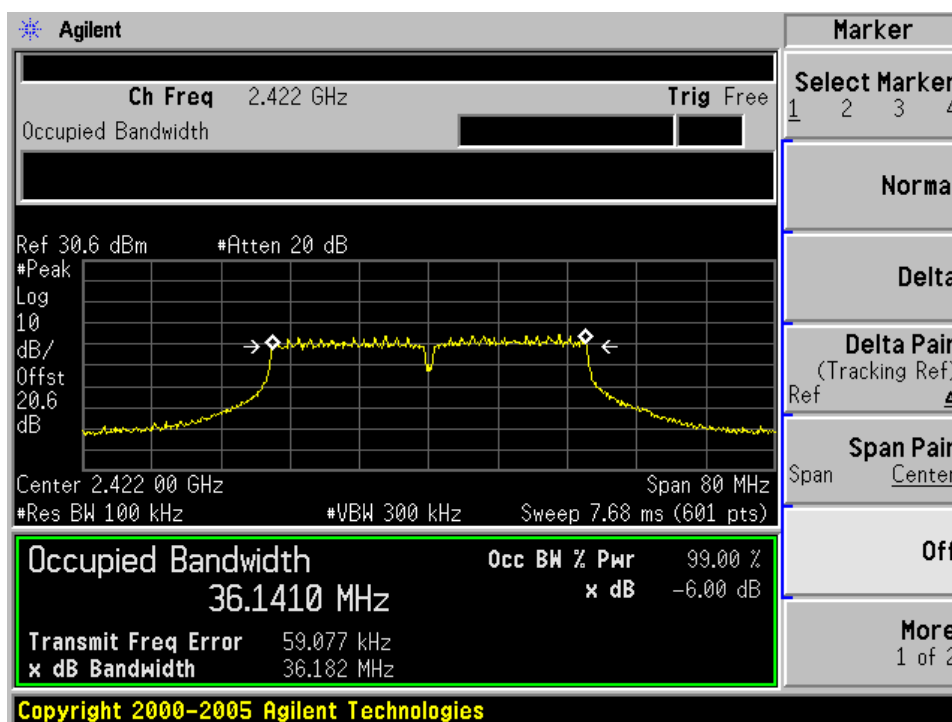


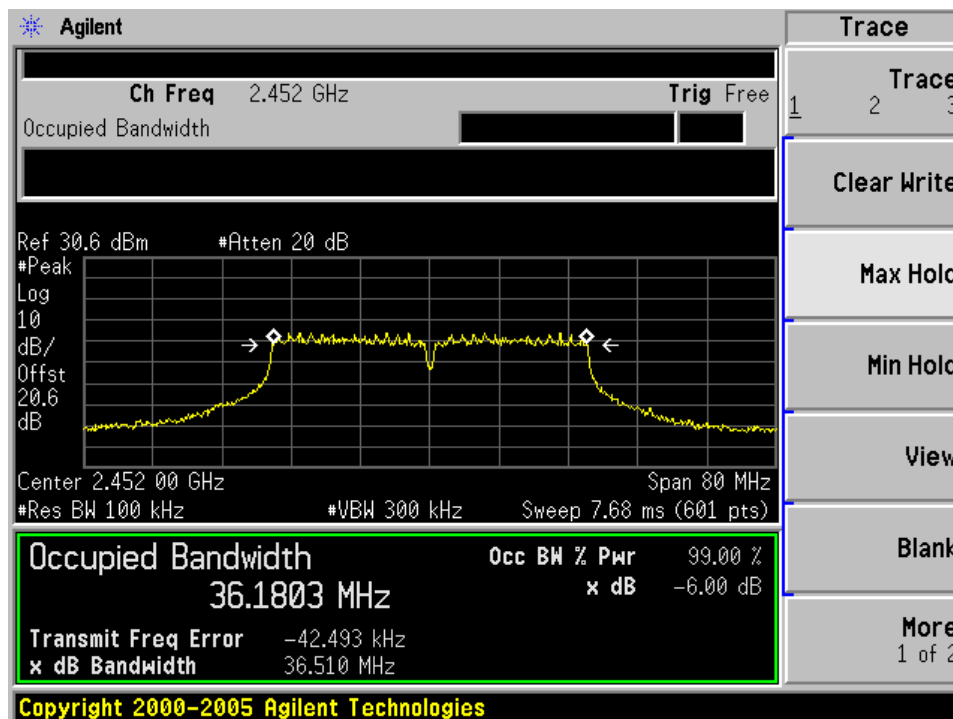
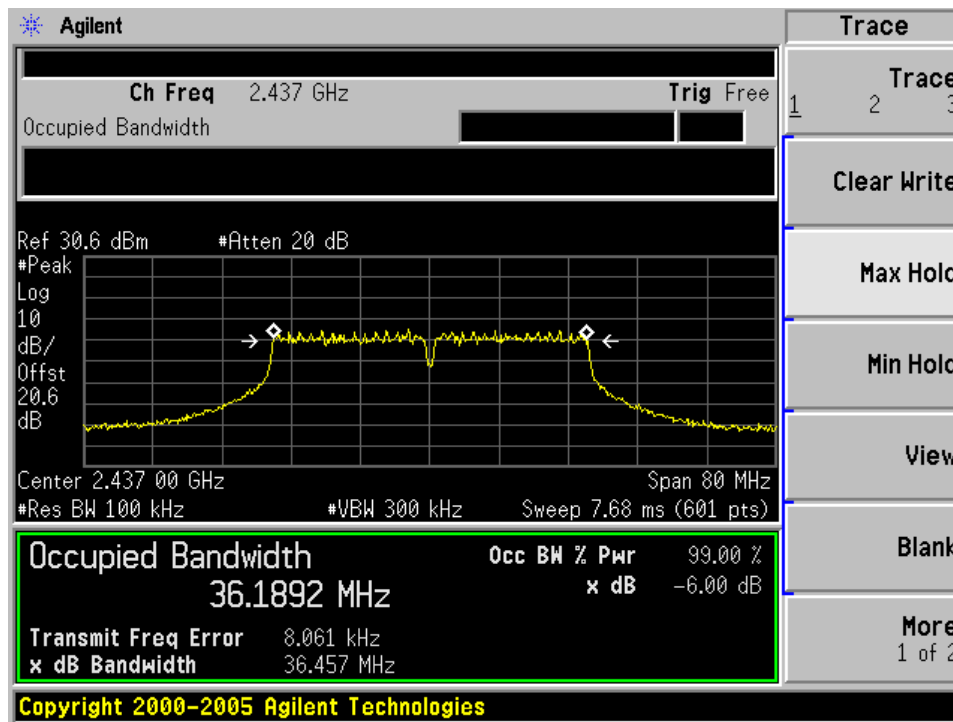
6 dB bandwidth

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

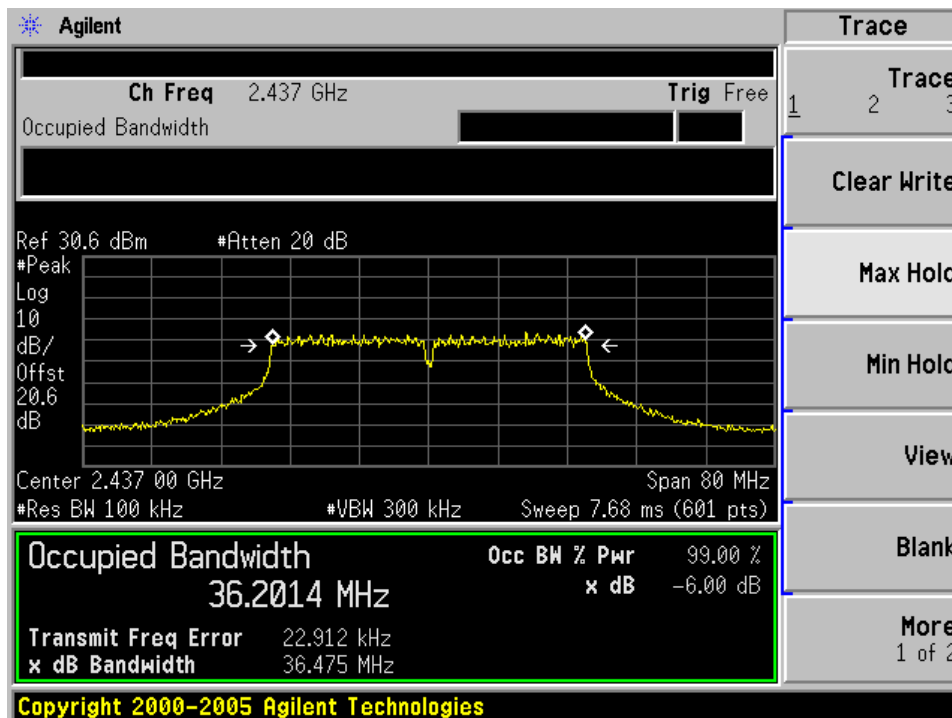
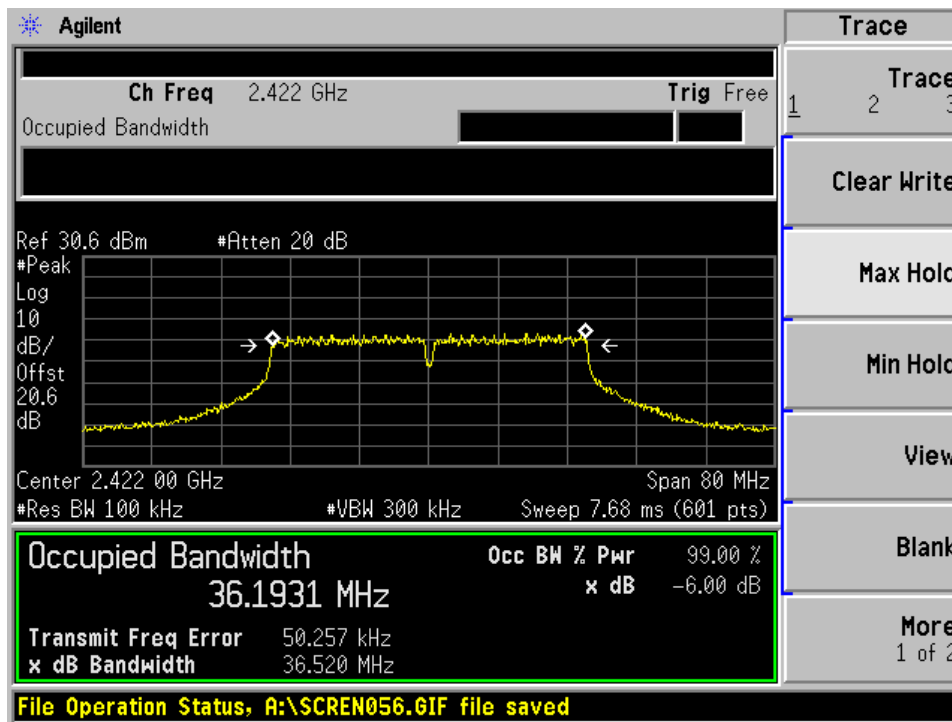
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain0					
Ch3	2422	13.5	36.182	>500	Pass
Ch6	2437	13.5	36.457	>500	Pass
Ch9	2452	13.5	36.510	>500	Pass
Chain1					
Ch3	2422	13.5	36.520	>500	Pass
Ch6	2437	13.5	36.475	>500	Pass
Ch9	2452	13.5	36.554	>500	Pass
Chain1					
Ch3	2422	13.5	36.993	>500	Pass
Ch6	2437	13.5	36.475	>500	Pass
Ch9	2452	13.5	36.518	>500	Pass

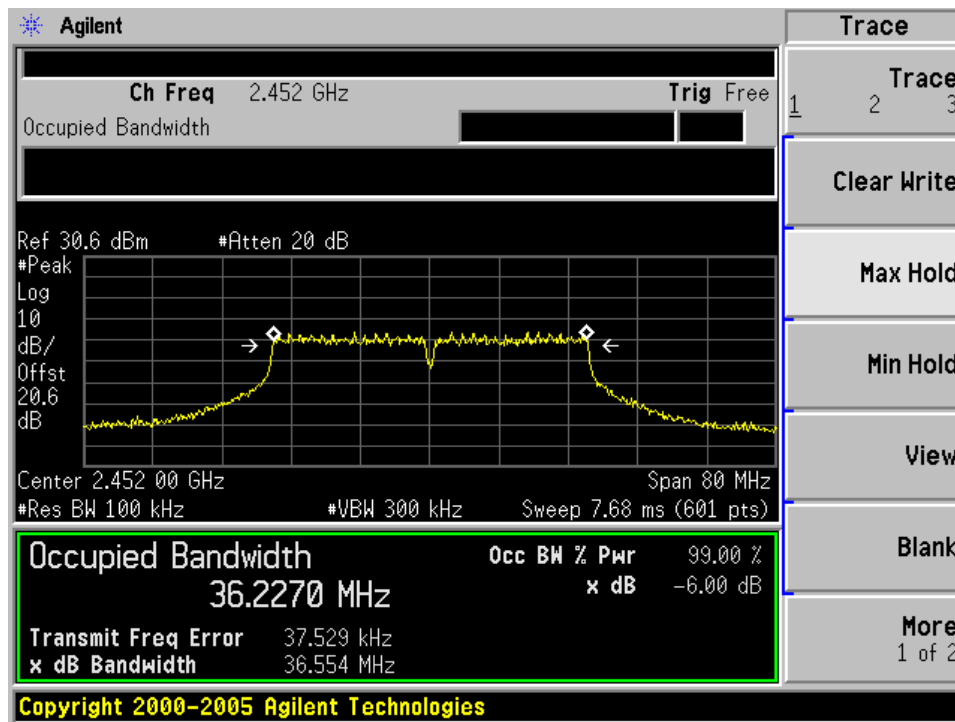
Chain 0:



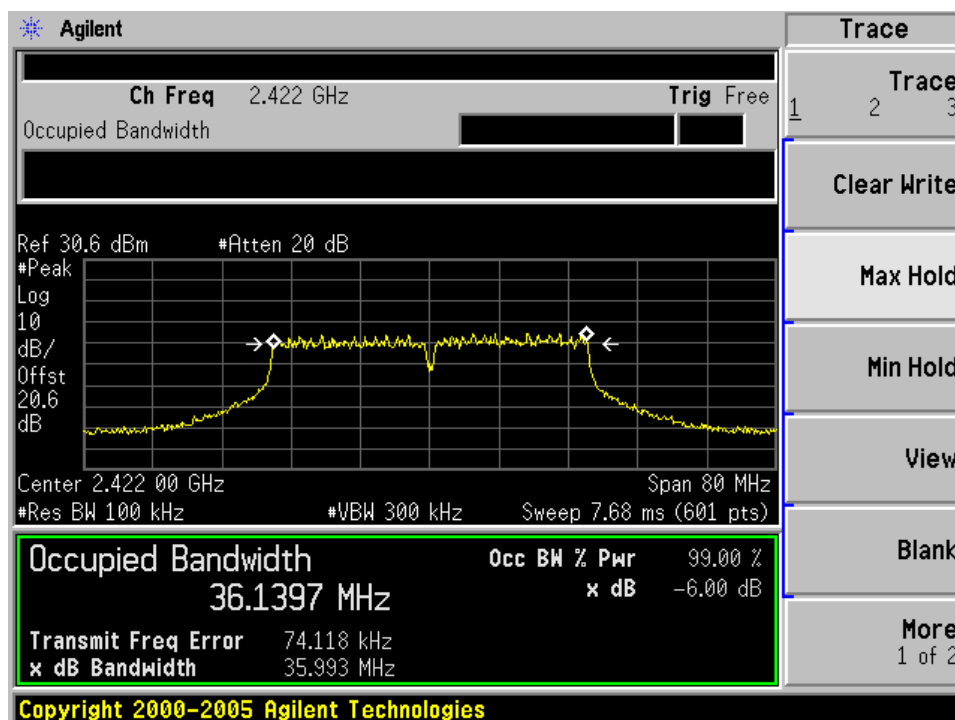


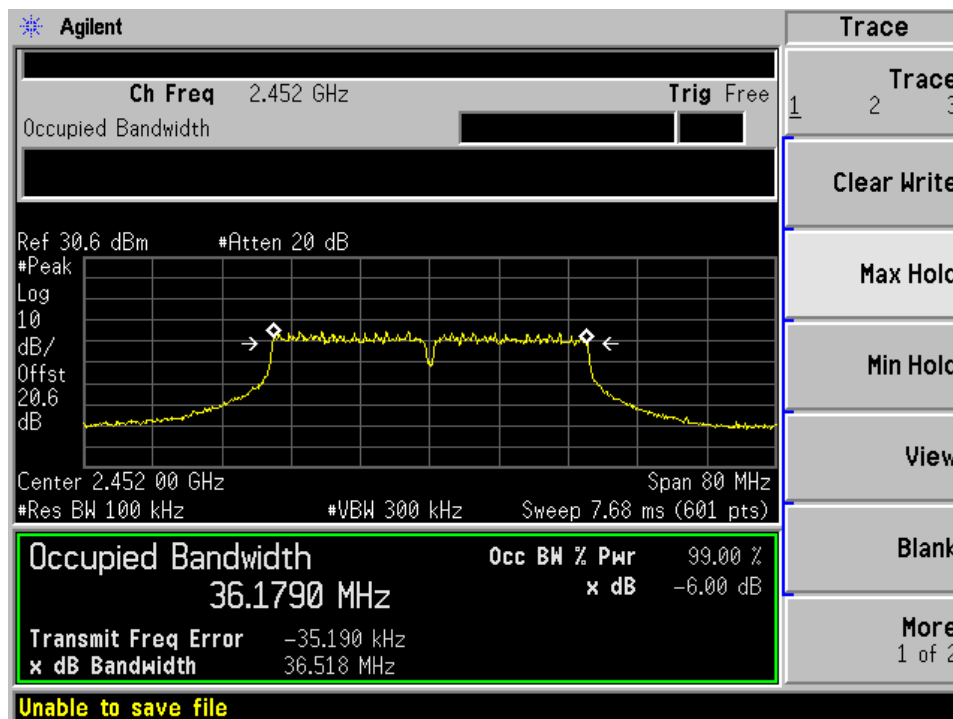
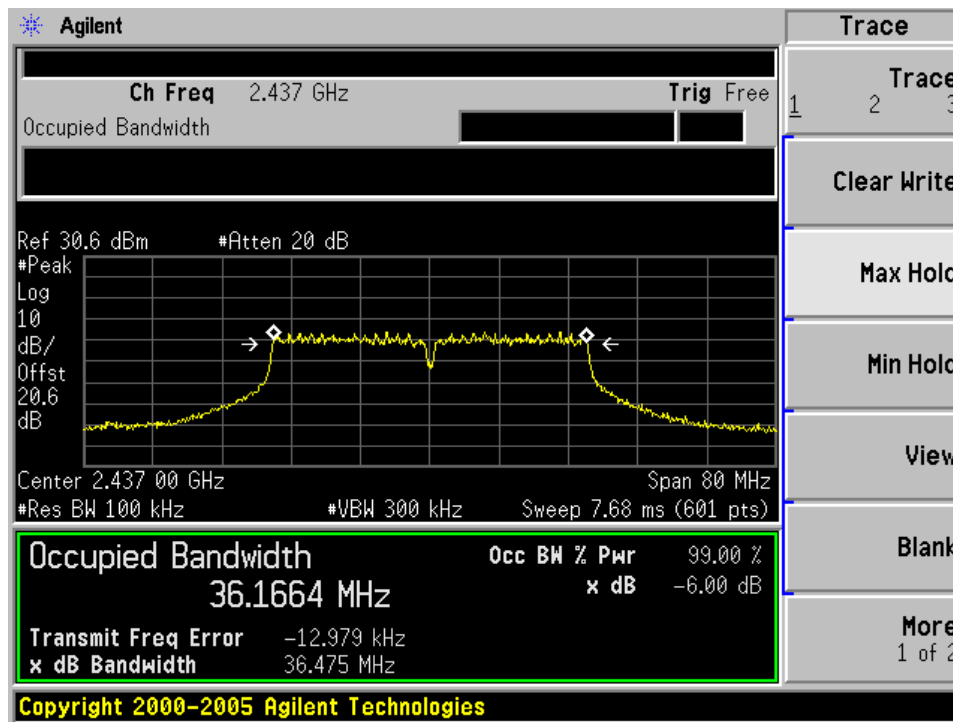
Chain 1:





Chain 2:



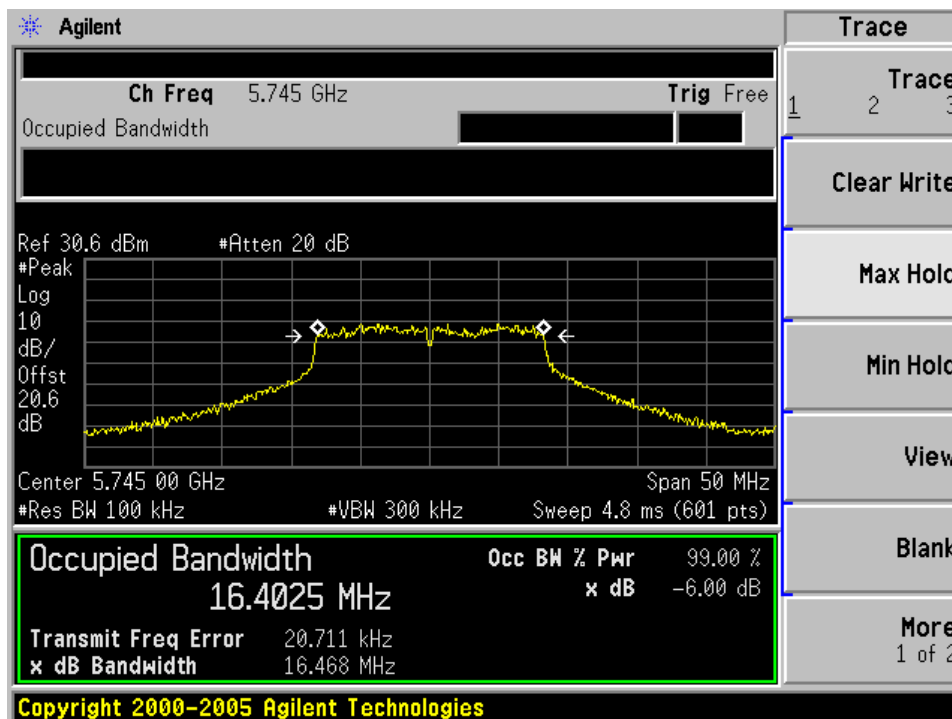


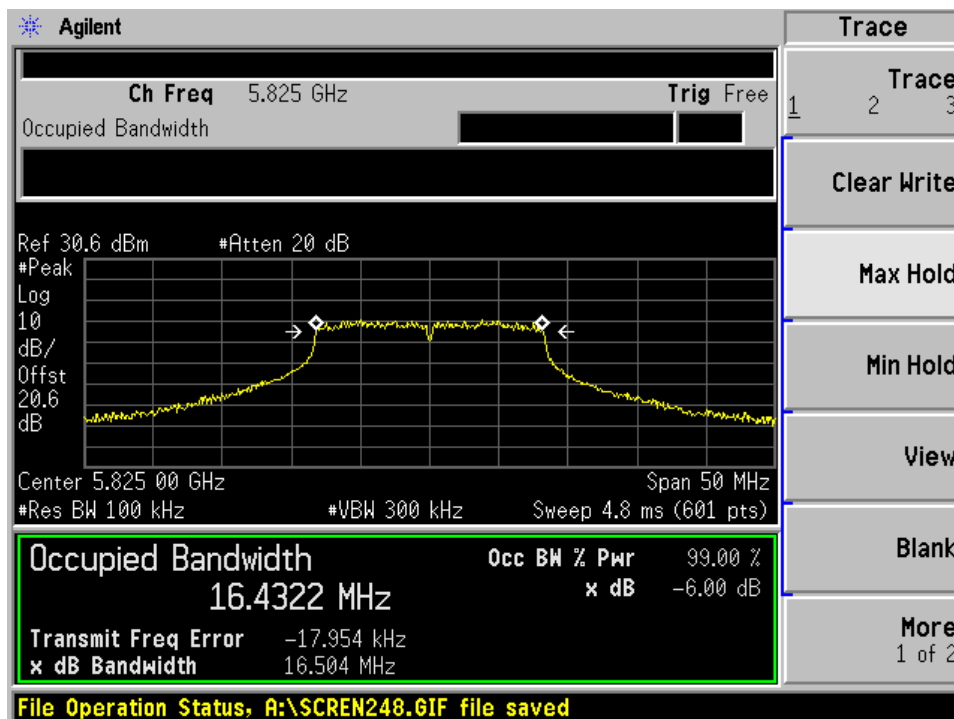
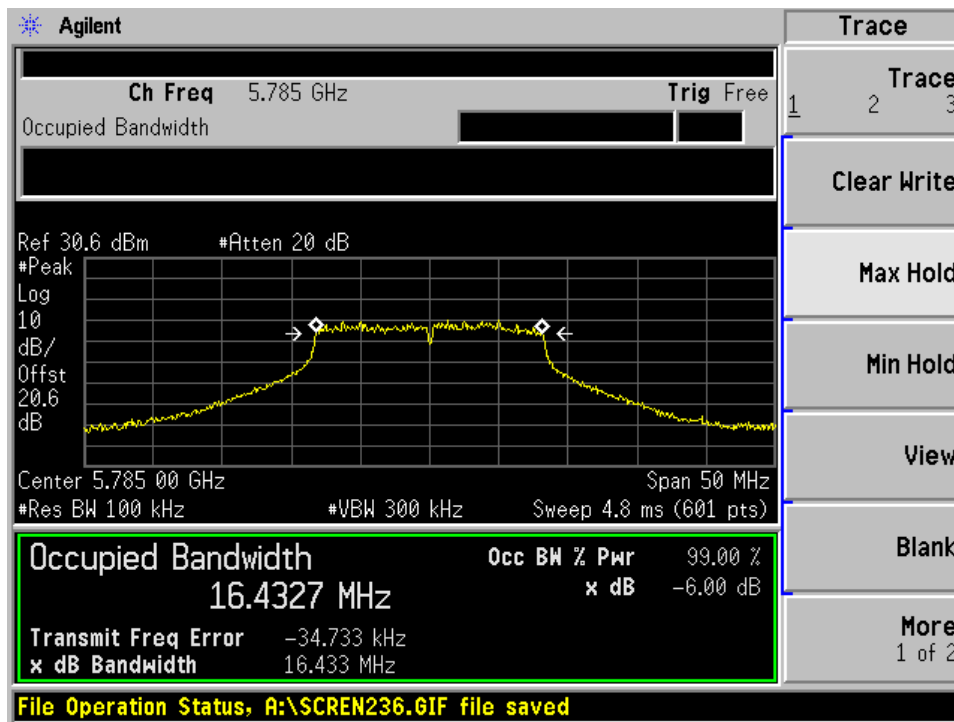
6 dB bandwidth

IEEE 802.11a modulation (6Mbps) Test Result

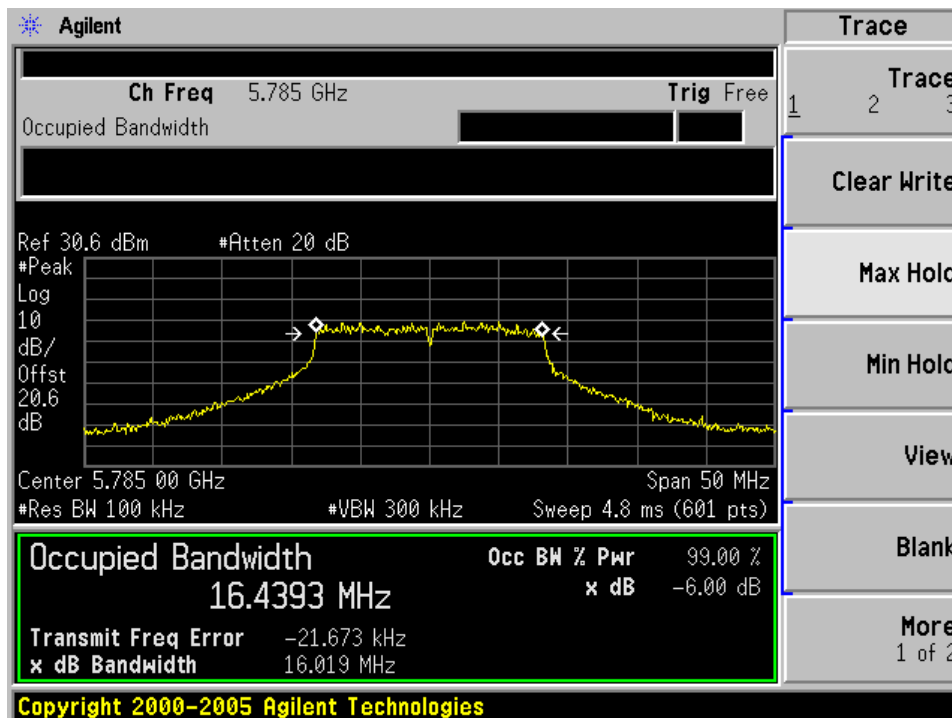
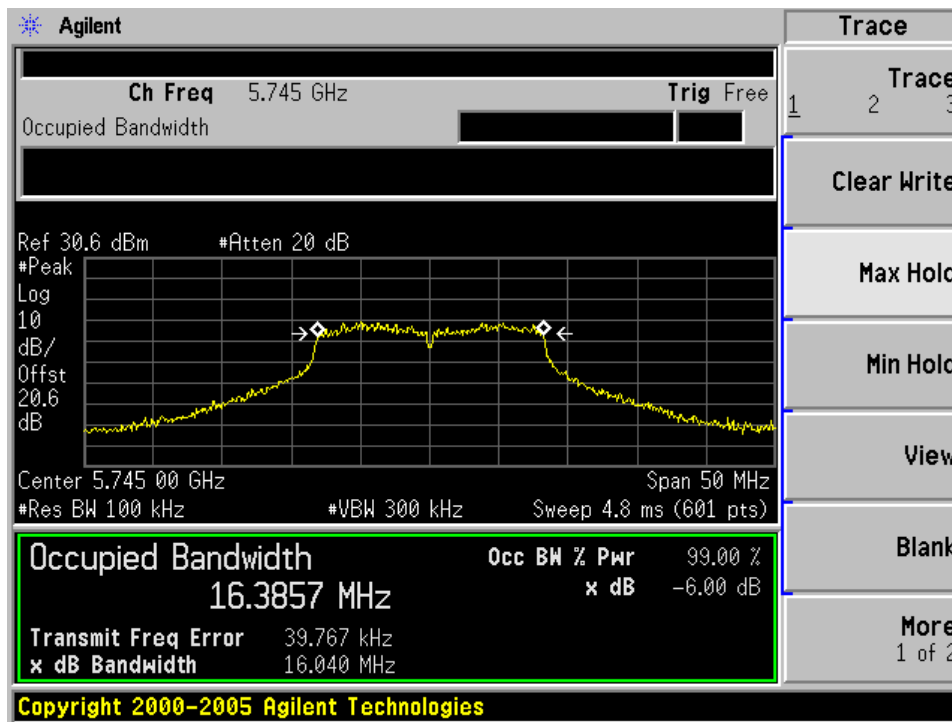
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain 0					
Ch149	5745	6	16.468	>500	Pass
Ch157	5785	6	16.433	>500	Pass
Ch1165	5825	6	16.504	>500	Pass
Chain 1					
Ch149	5745	6	16.040	>500	Pass
Ch157	5785	6	16.019	>500	Pass
Ch1165	5825	6	16.478	>500	Pass
Chain 2					
Ch149	5745	6	16.465	>500	Pass
Ch157	5785	6	16.466	>500	Pass
Ch1165	5825	6	16.473	>500	Pass

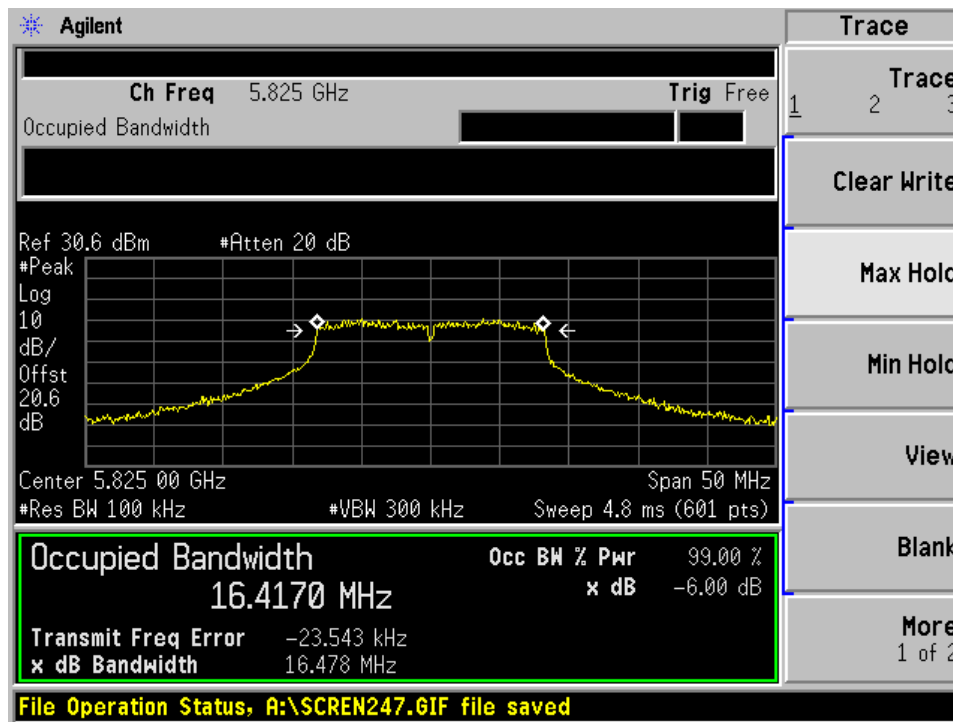
Chain 0:



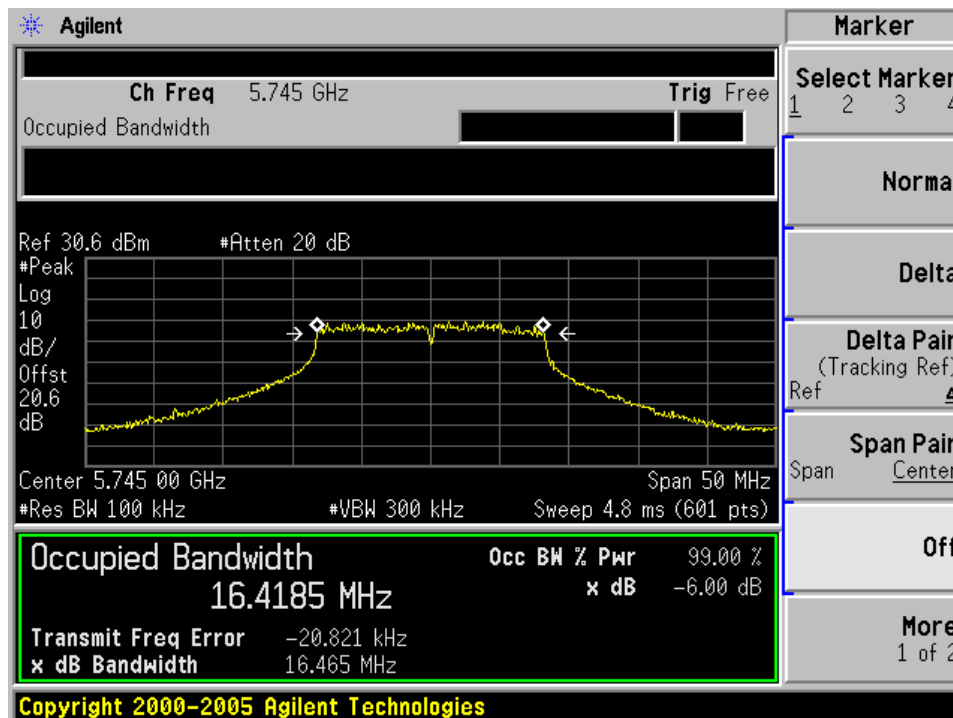


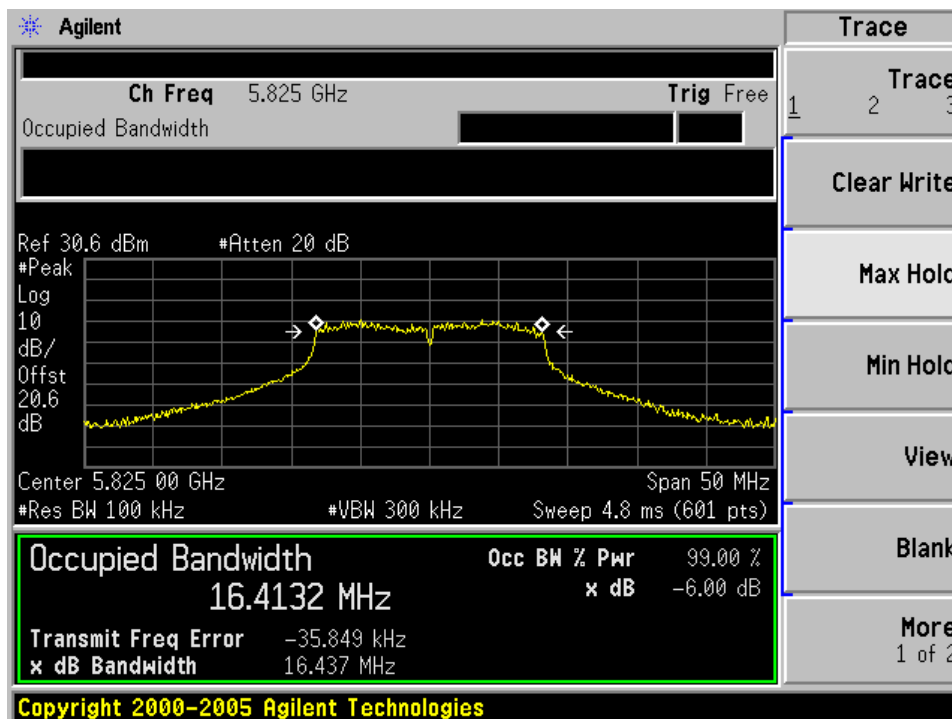
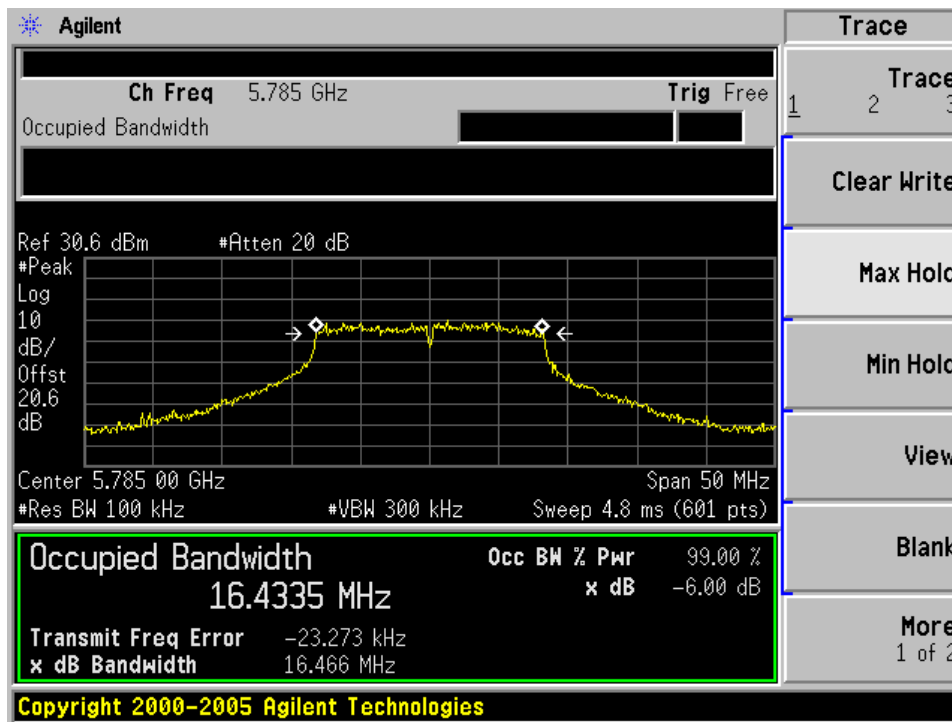
Chain 1:





Chain 2:



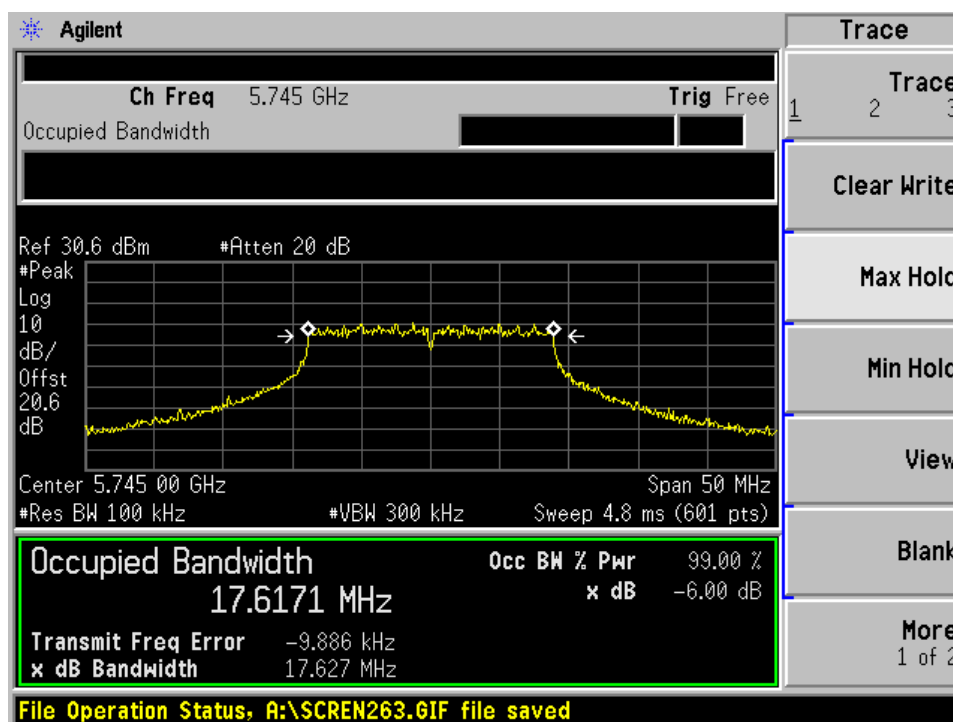


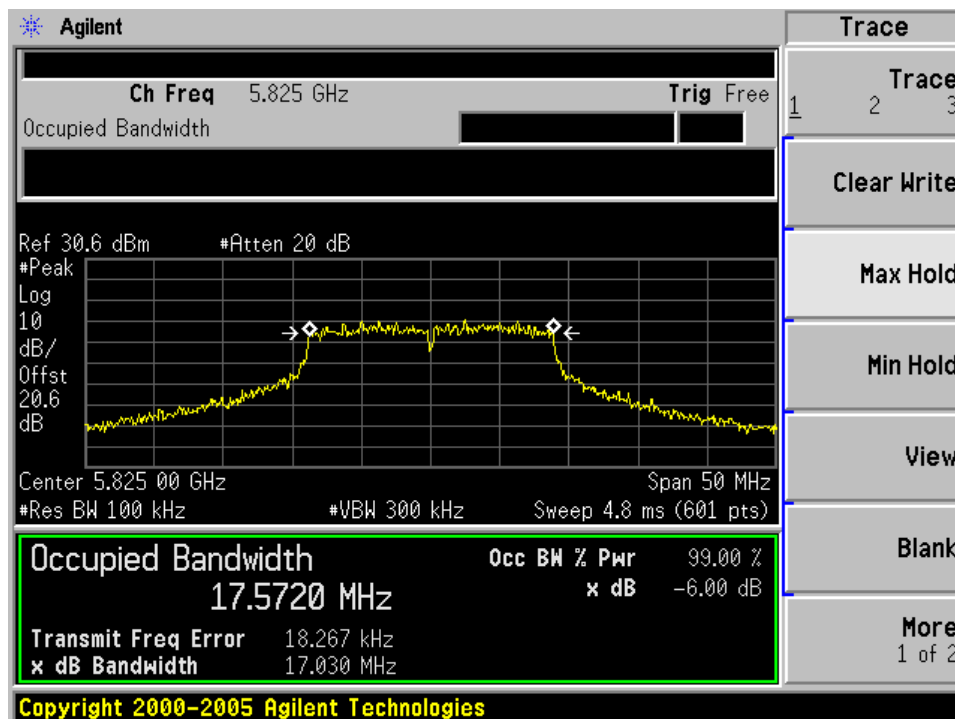
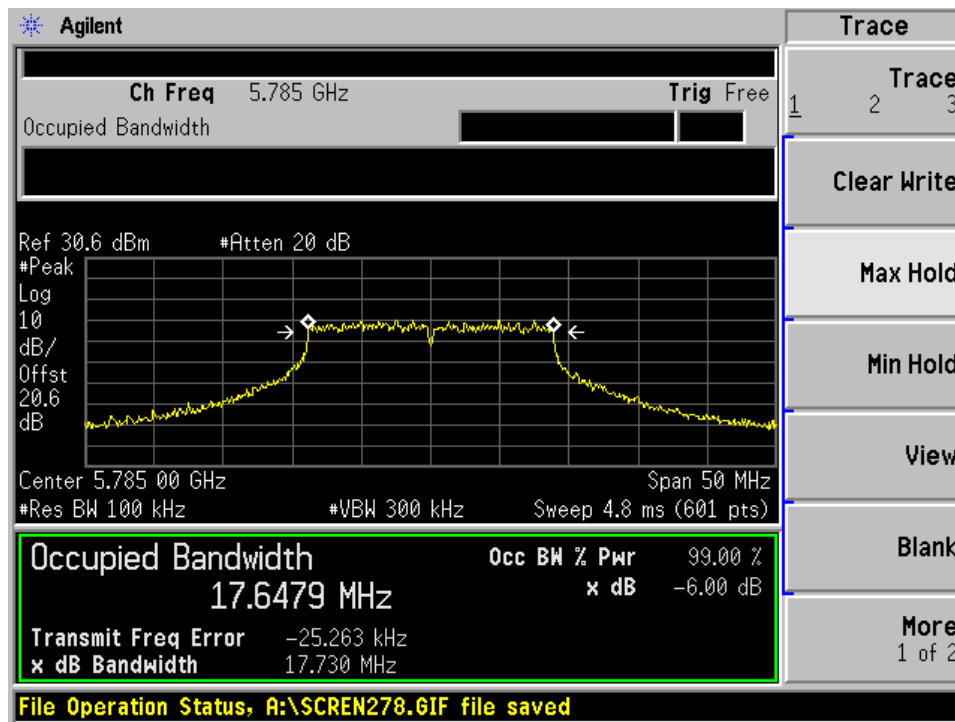
6 dB bandwidth

IEEE 802.11nHT 20 modulation (6.5Mbps) Test Result

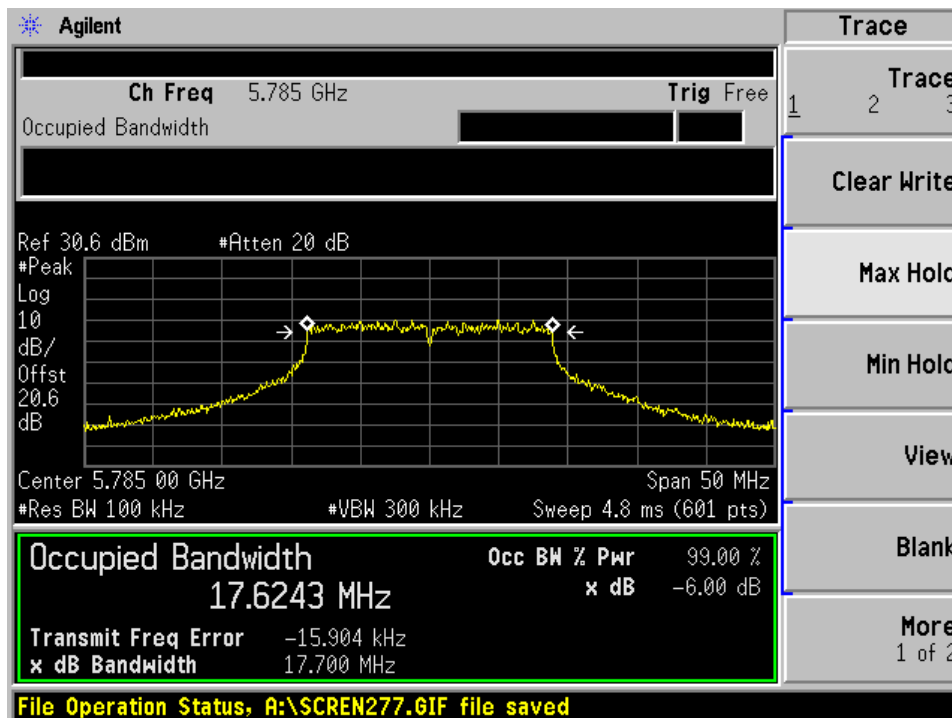
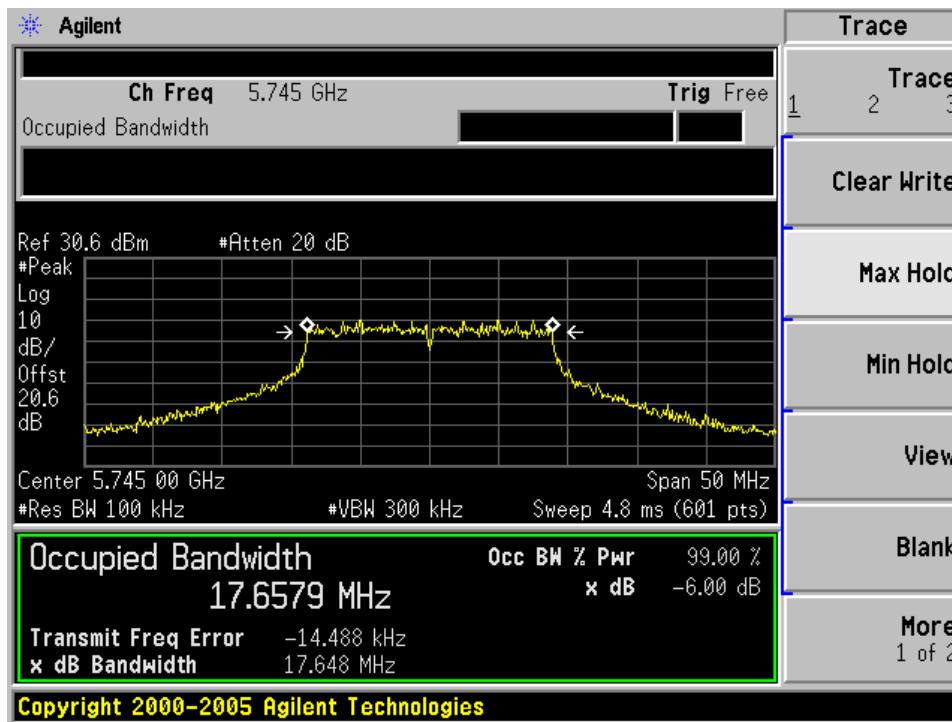
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain 0					
Ch149	5745	6.5	17.627	>500	Pass
Ch157	5785	6.5	17.730	>500	Pass
Ch1165	5825	6.5	17.030	>500	Pass
Chain 1					
Ch149	5745	6.5	17.648	>500	Pass
Ch157	5785	6.5	17.700	>500	Pass
Ch1165	5825	6.5	17.704	>500	Pass
Chain 2					
Ch149	5745	6.5	17.263	>500	Pass
Ch157	5785	6.5	17.701	>500	Pass
Ch1165	5825	6.5	17.484	>500	Pass

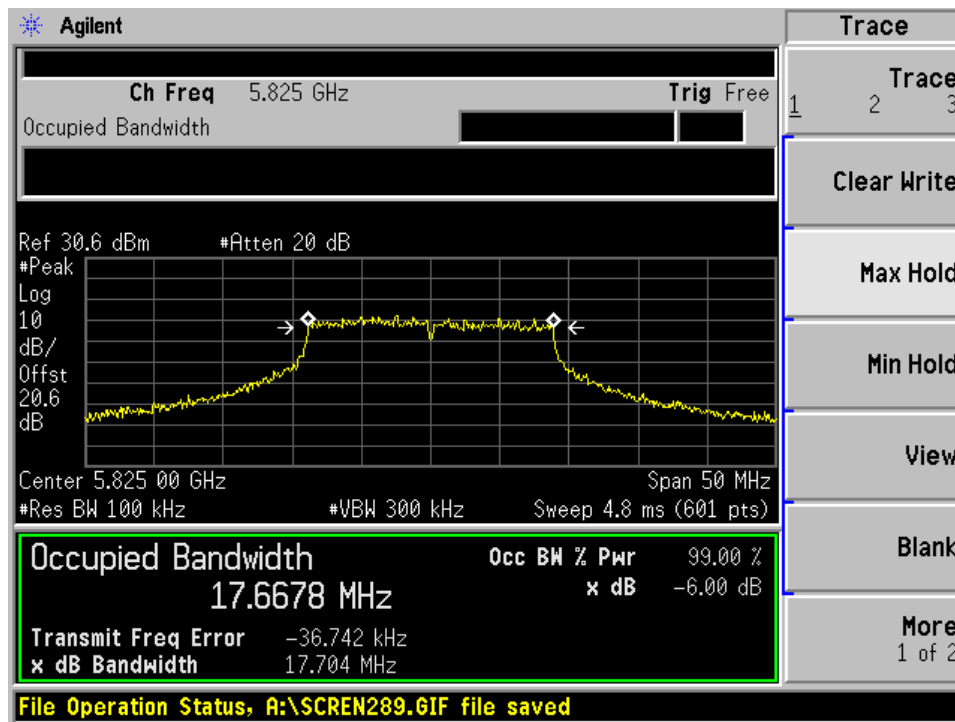
Chain 0:



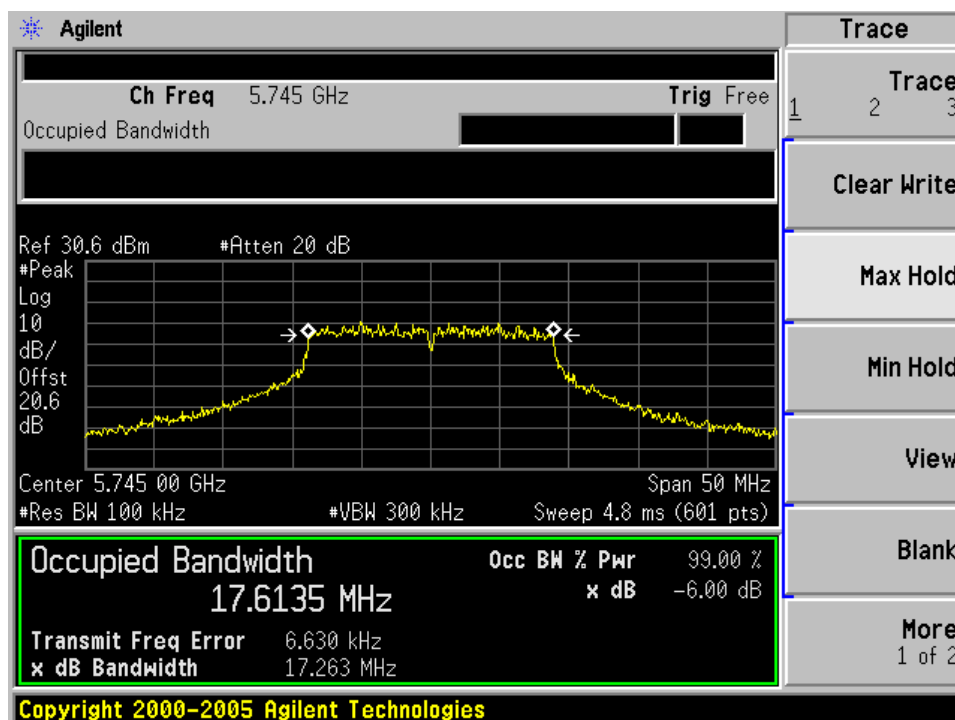


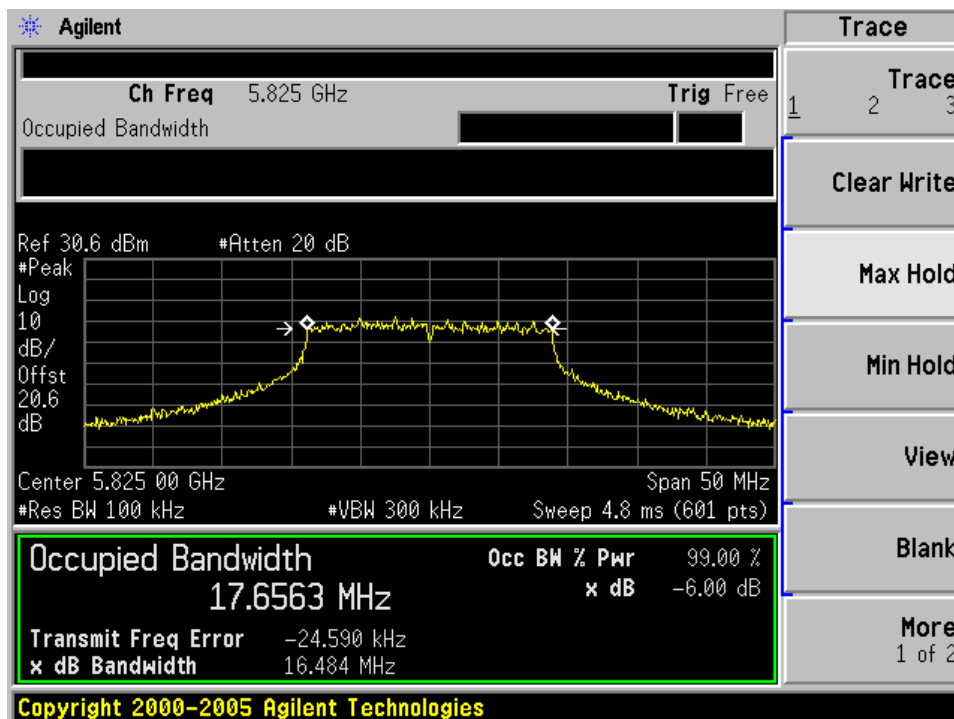
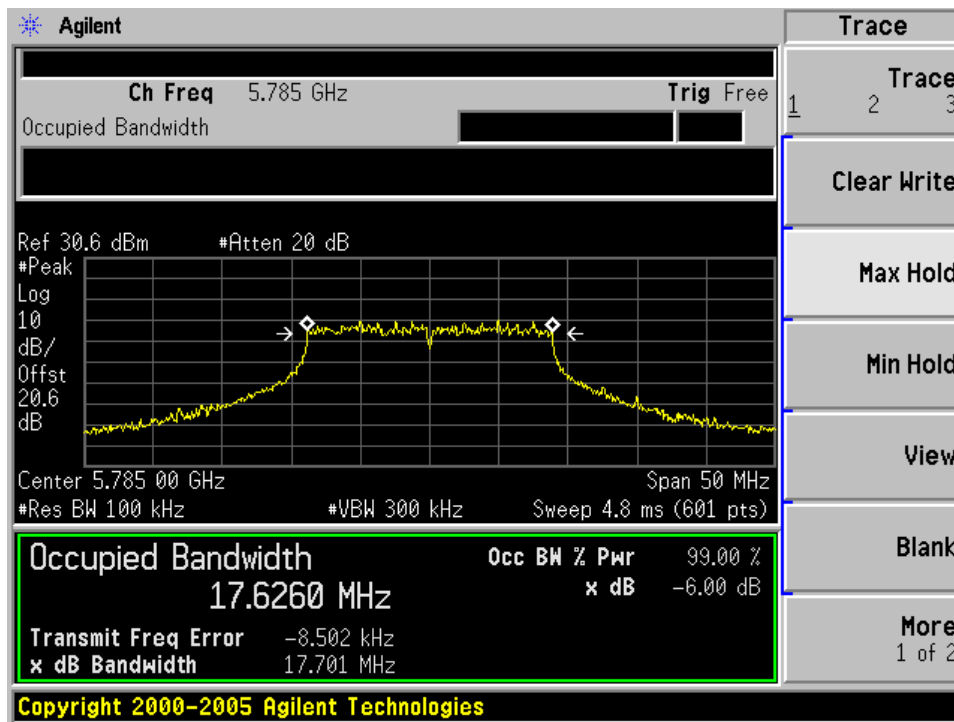
Chain 1:





Chain 2:



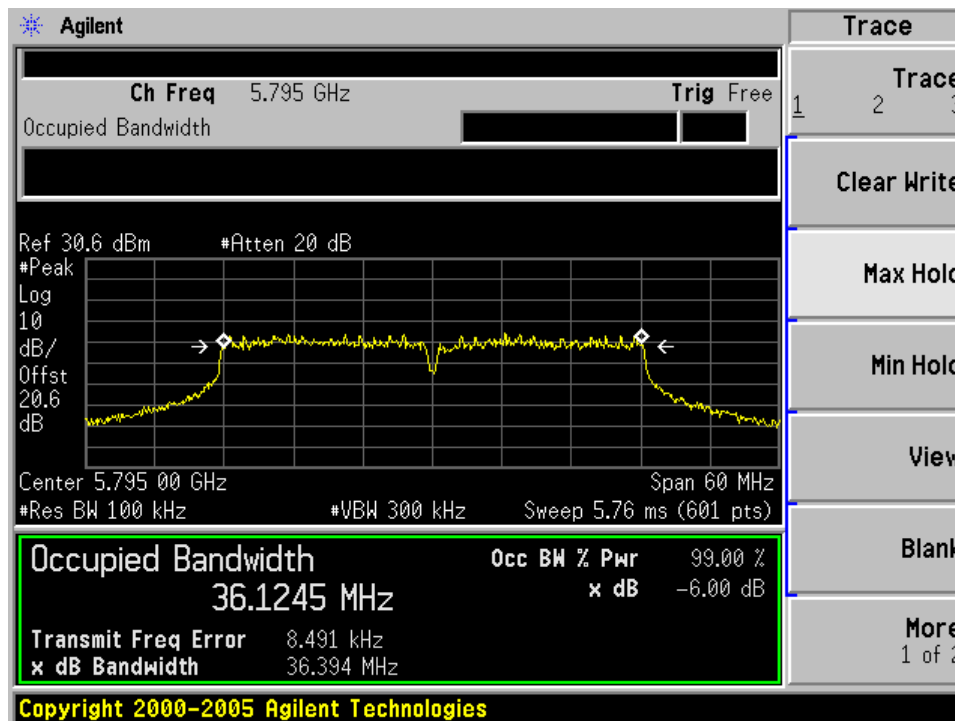


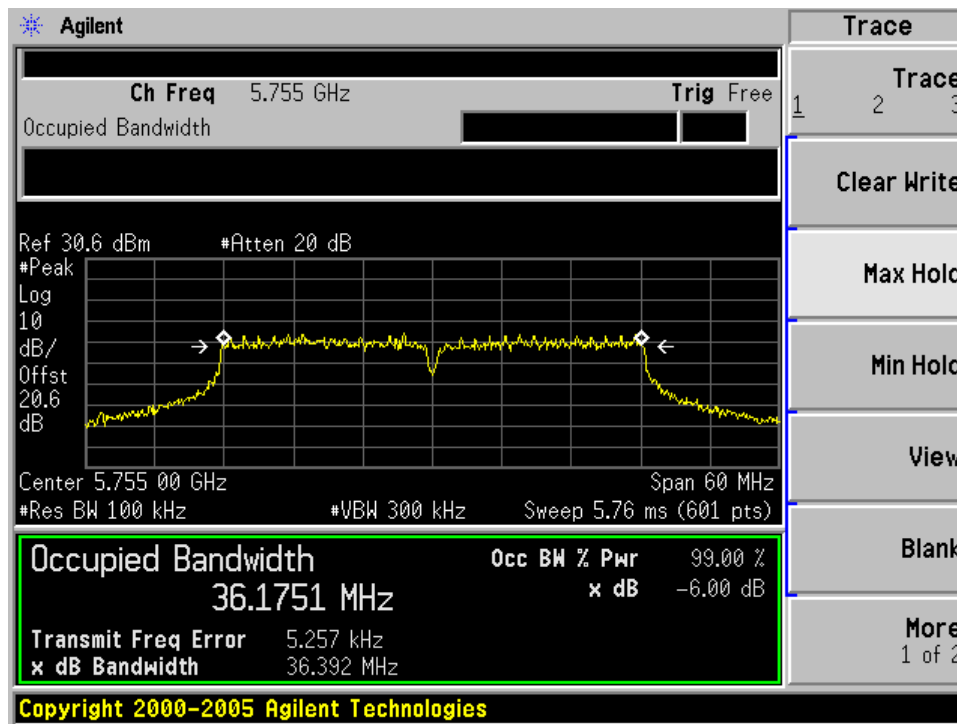
6 dB bandwidth

IEEE 802.11nHT 20 modulation (6.5Mbps) Test Result

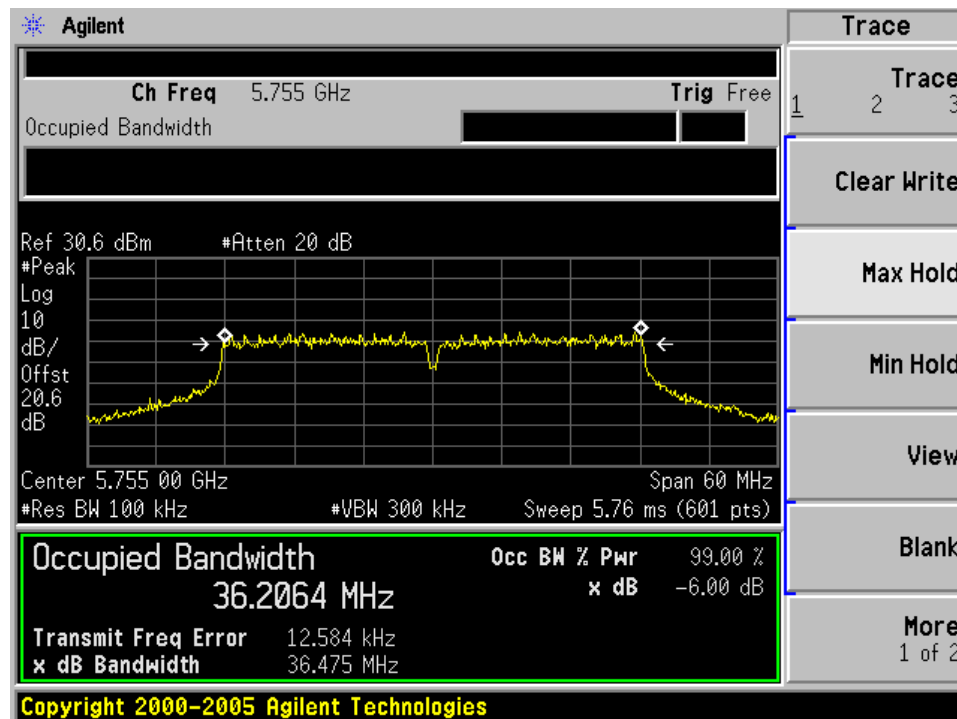
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)	Result
Chain 0					
Ch151	5755	13.5	36.394	>500	Pass
Ch159	5795	13.5	36.392	>500	Pass
Chain 1					
Ch151	5755	13.5	36.475	>500	Pass
Ch159	5795	13.5	36.414	>500	Pass
Chain 2					
Ch151	5755	13.5	36.482	>500	Pass
Ch159	5795	13.5	36.430	>500	Pass

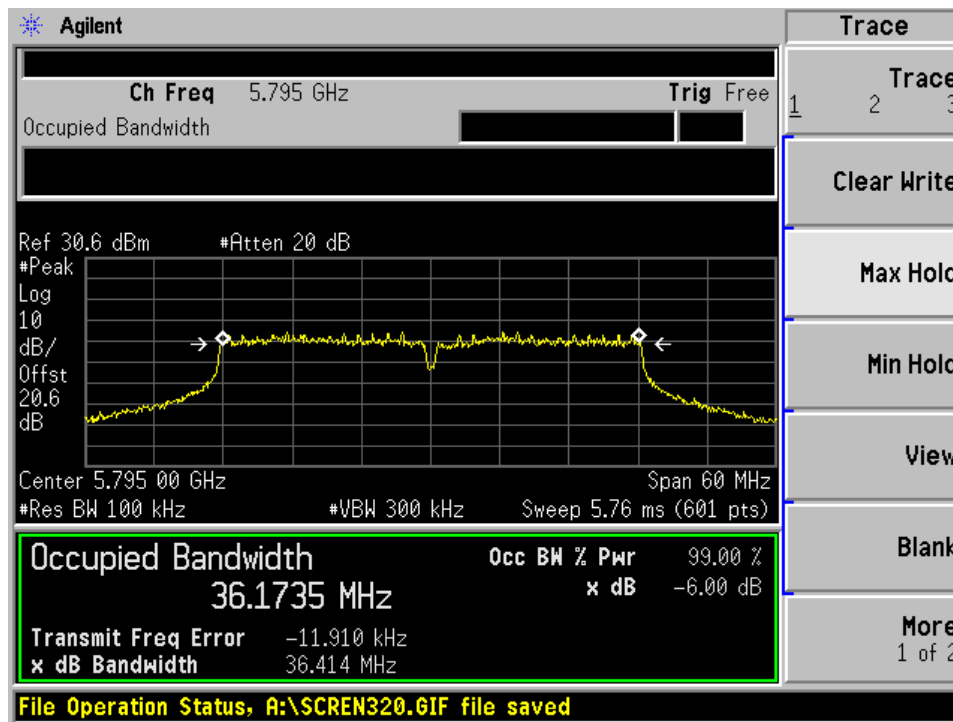
Chain 0:



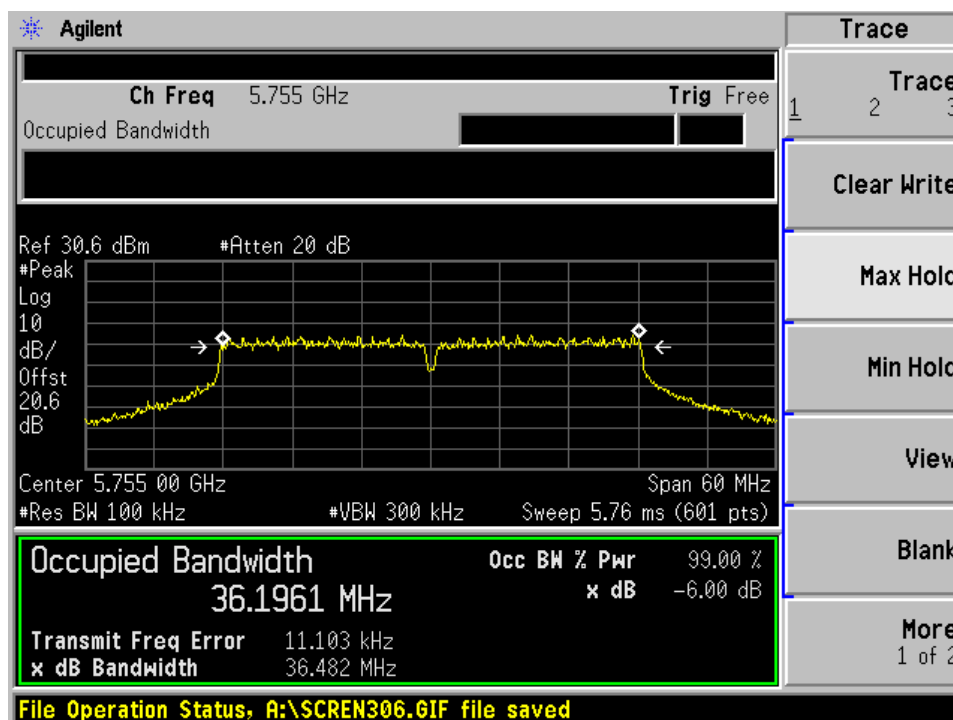


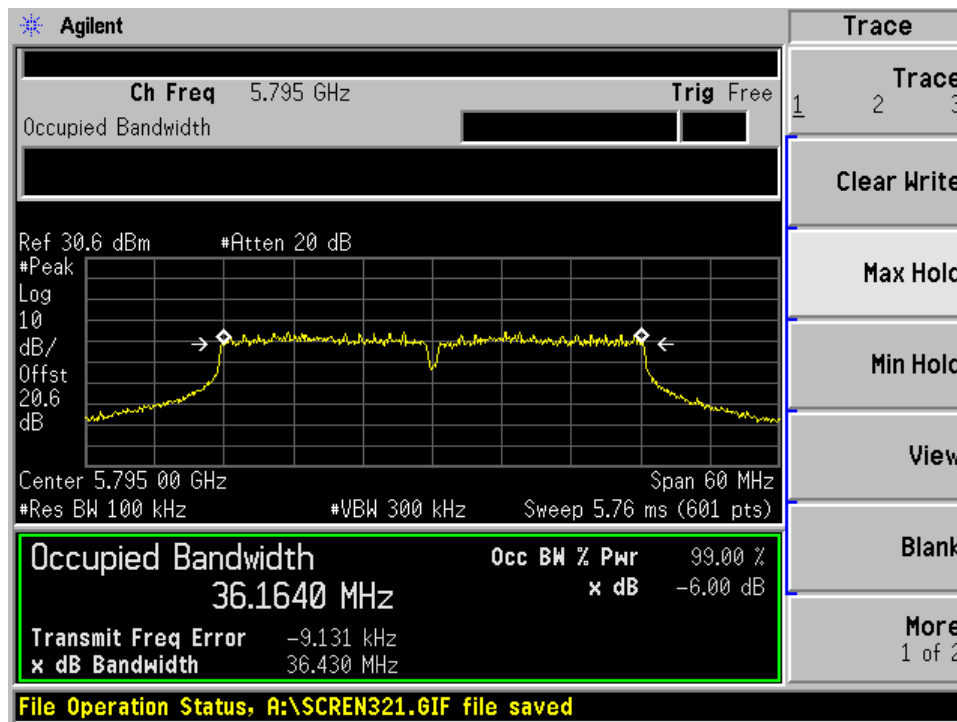
Chain 1:





Chain 2:







Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	MY41440292	May 08, 2011

7.7 Power spectral density

Test Method

- 1 Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2 Set the spectrum analyzer as RBW = 3 kHz, VBW = 10 kHz, Span = 300kHz, Sweep = 100 s
- 3 Record the max reading.

Limit

Limit
dBm / 3 kHz

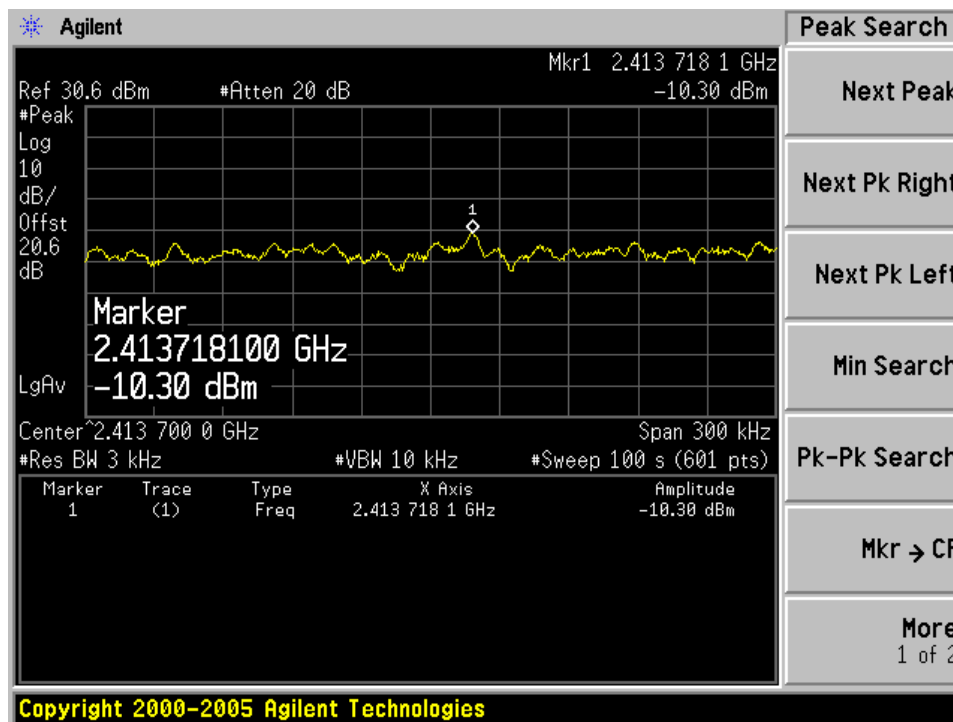
8

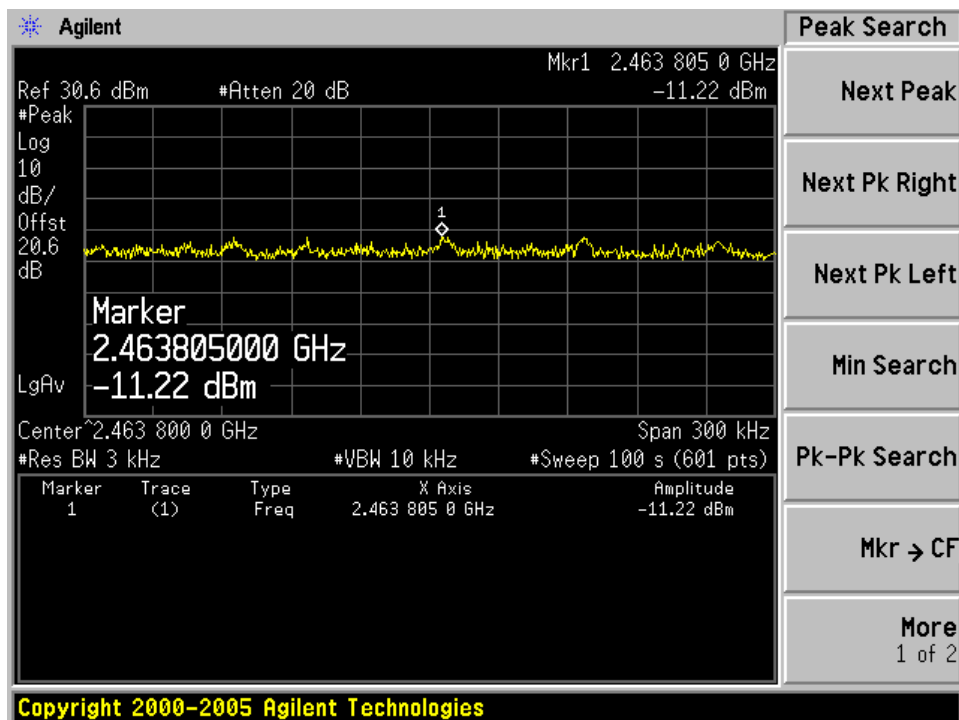
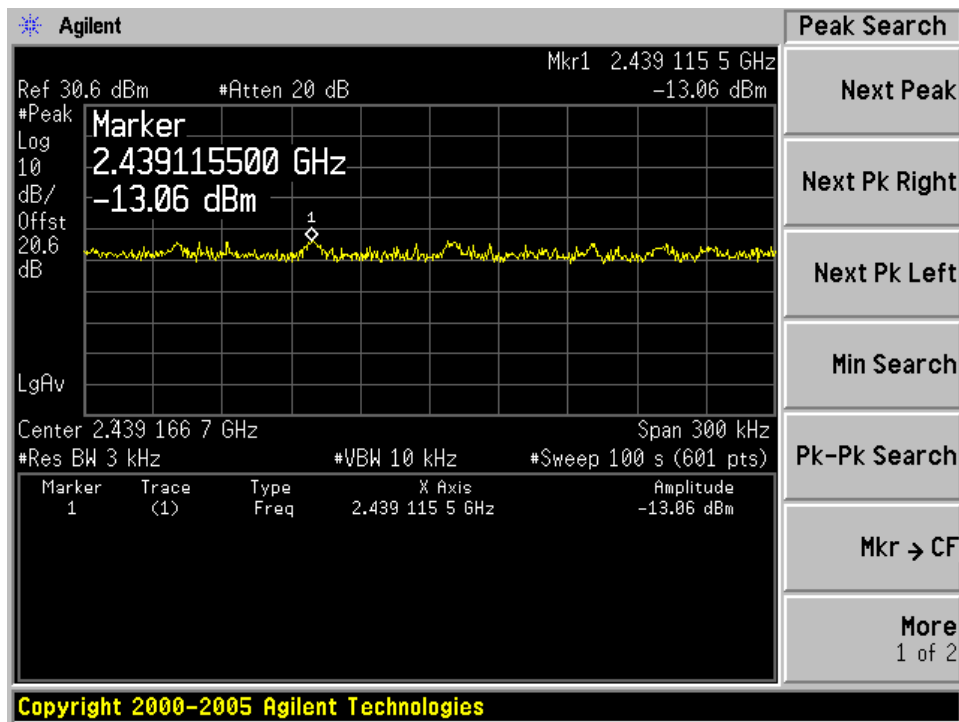
Power spectral density

IEEE 802.11b modulation (1Mbps) Test Result

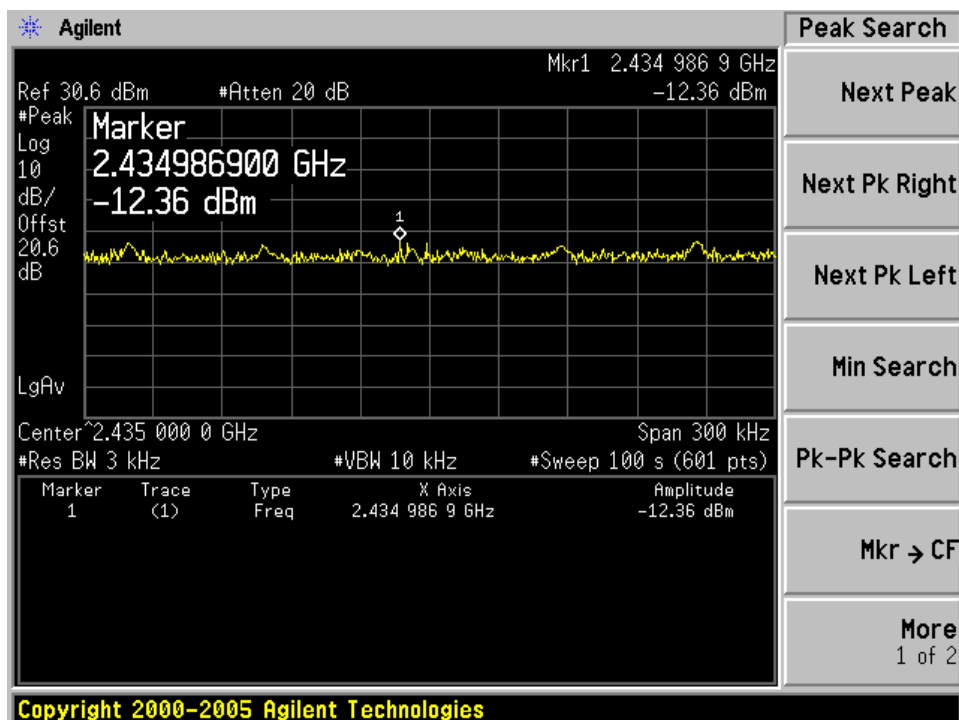
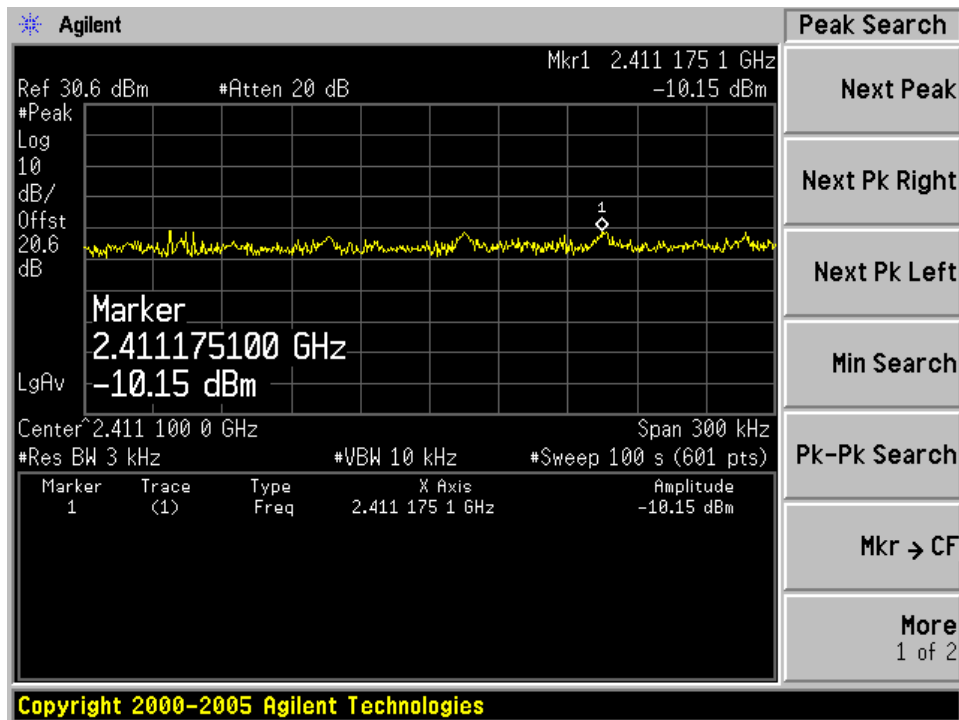
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
CH1 (Chain0)	2412	1	-10.30	8	Pass
CH1 (Chain1)	2412	1	-13.06	8	Pass
CH1 (Chain2)	2412	1	-11.22	8	Pass
CH6 (Chain0)	2437	1	-10.15	8	Pass
CH6 (Chain1)	2437	1	-12.36	8	Pass
CH6 (Chain2)	2437	1	-10.44	8	Pass
CH11 (Chain0)	2462	1	-9.22	8	Pass
CH11 (Chain1)	2462	1	-11.27	8	Pass
CH11 (Chain2)	2462	1	-12.24	8	Pass

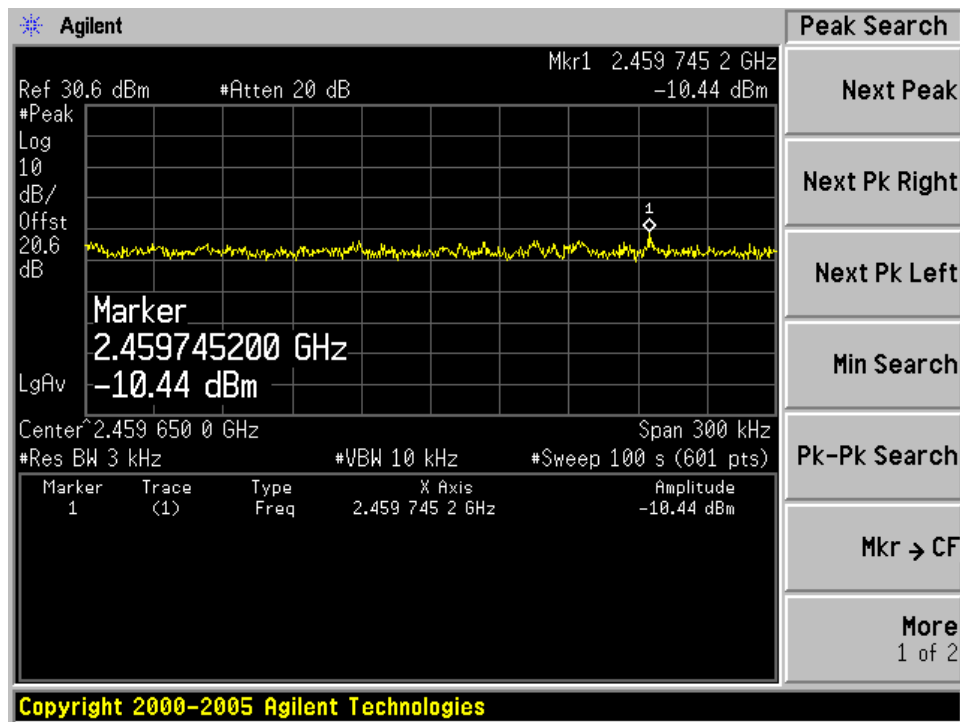
Chain 0:



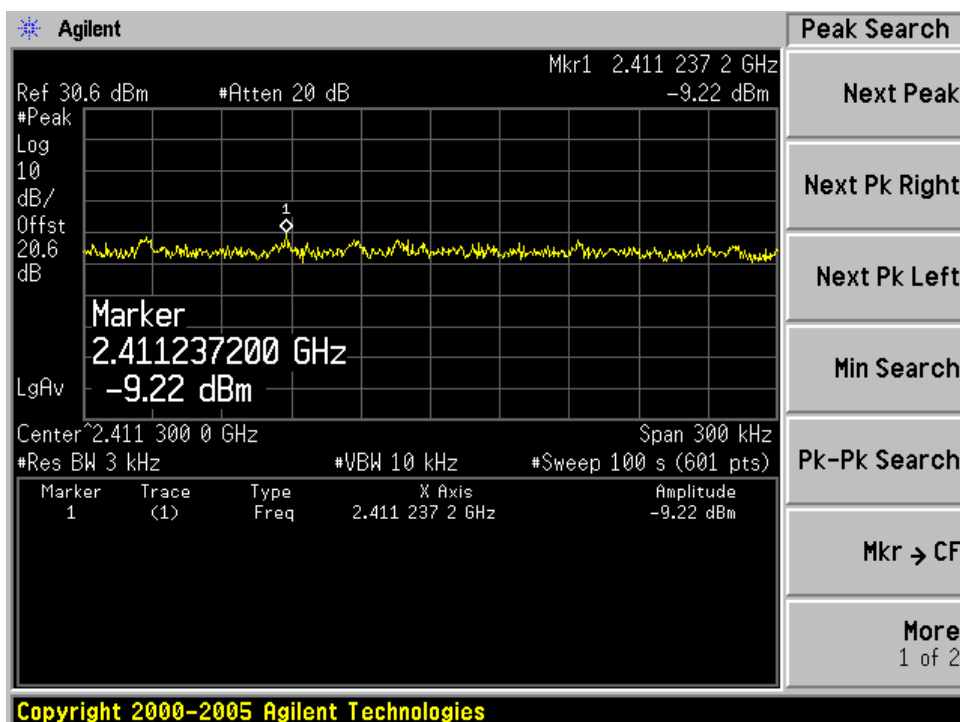


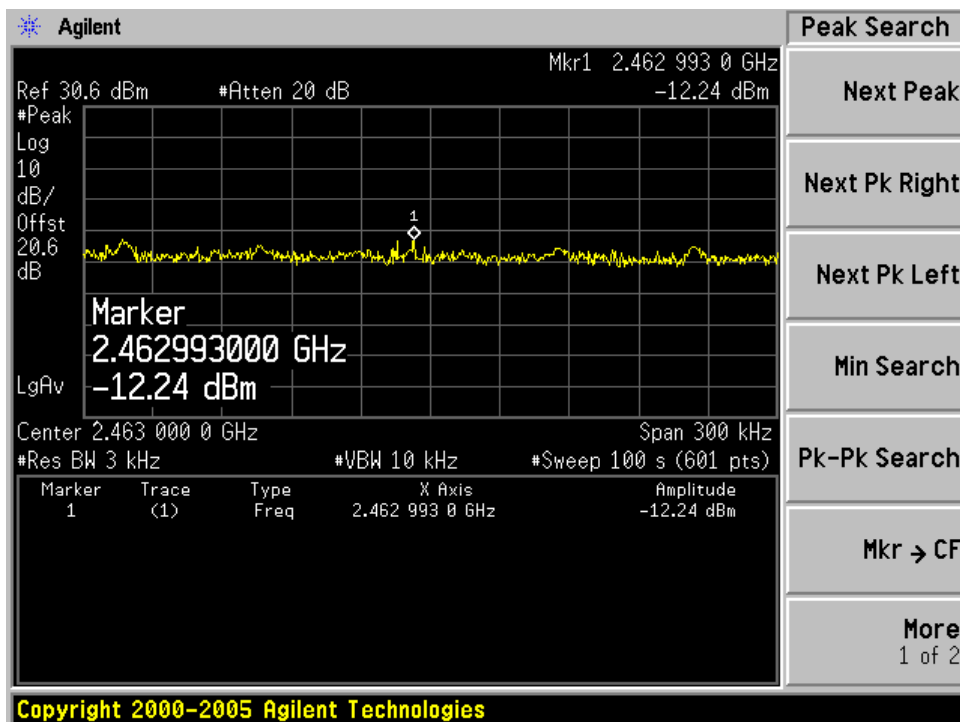
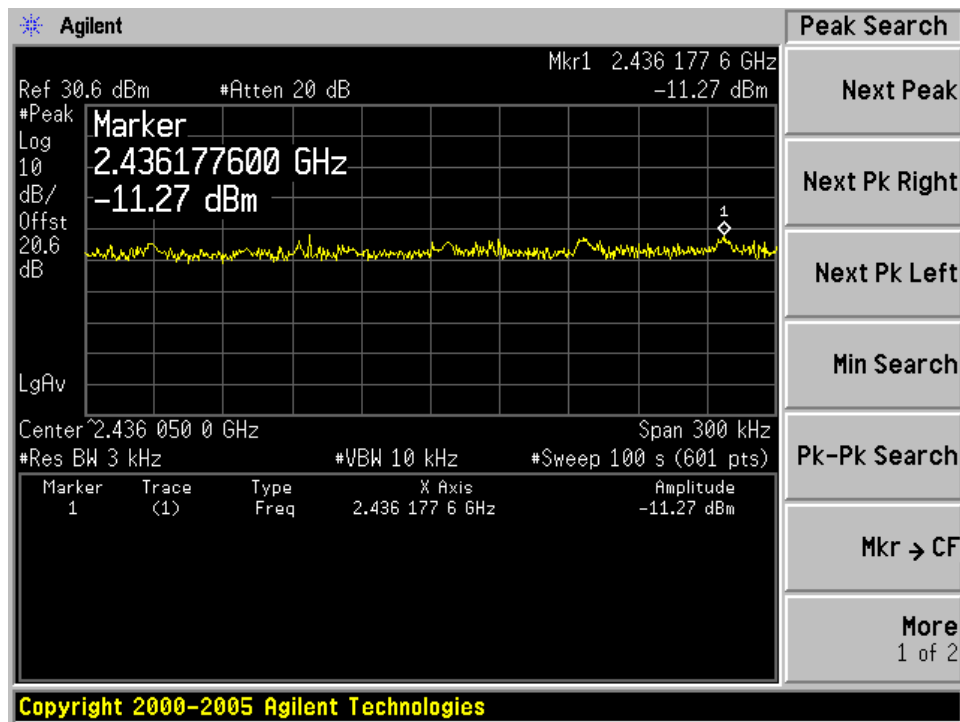
Chain 1:





Chain 2:



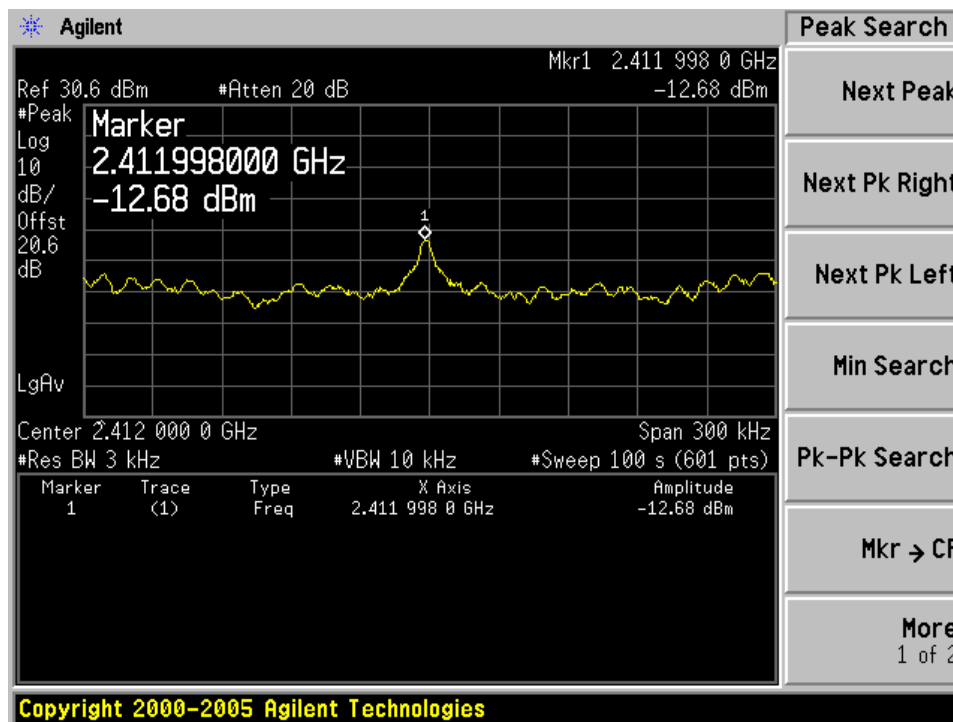


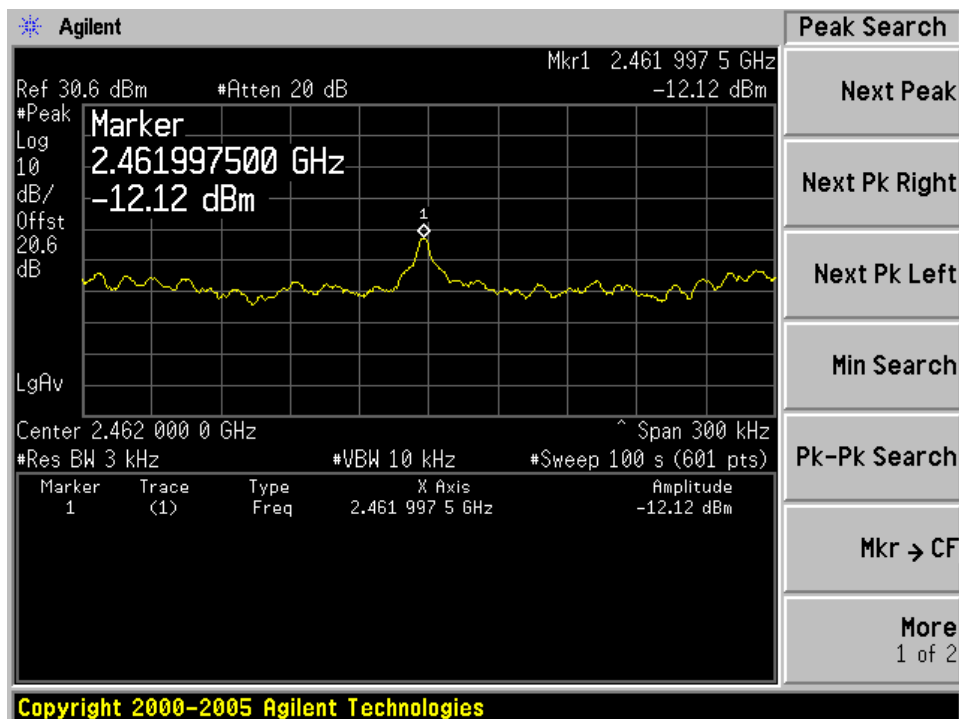
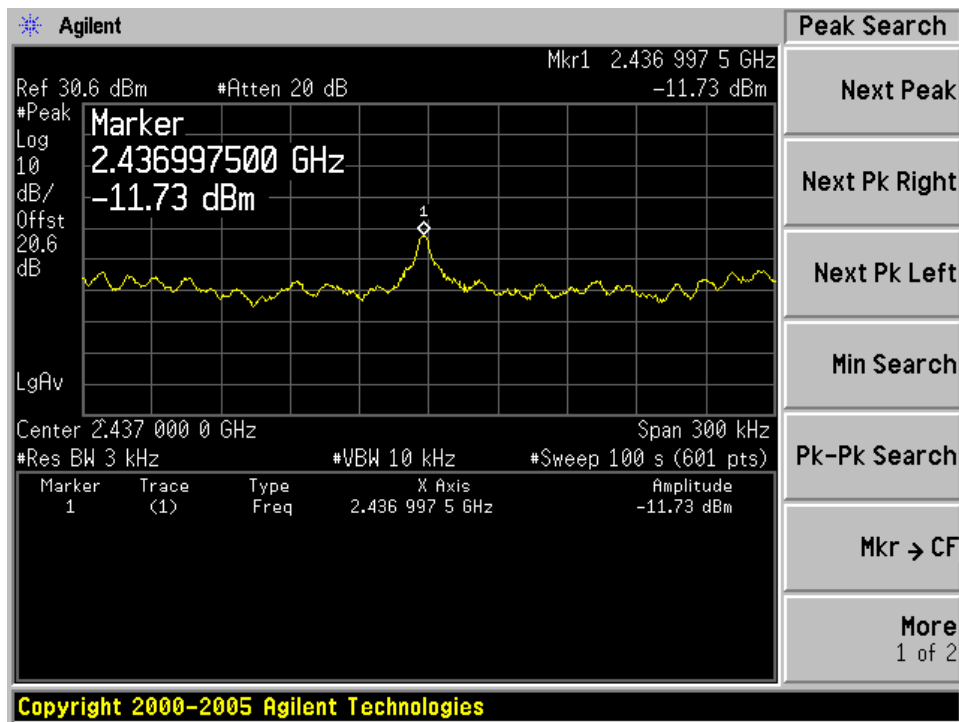
Power spectral density

IEEE 802.11g modulation (6Mbps) Test Result

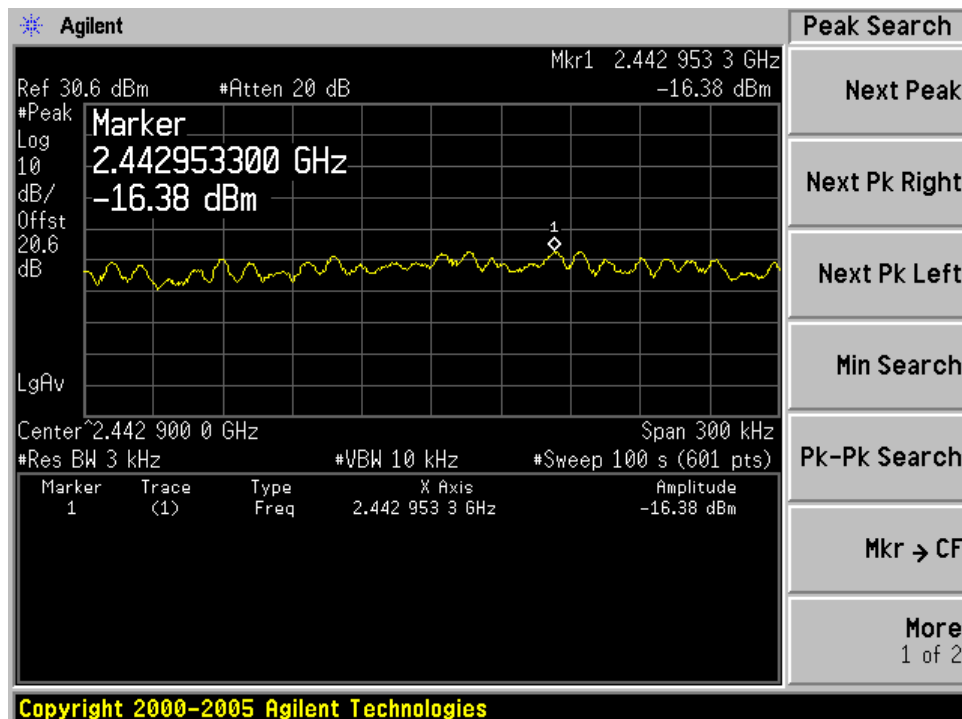
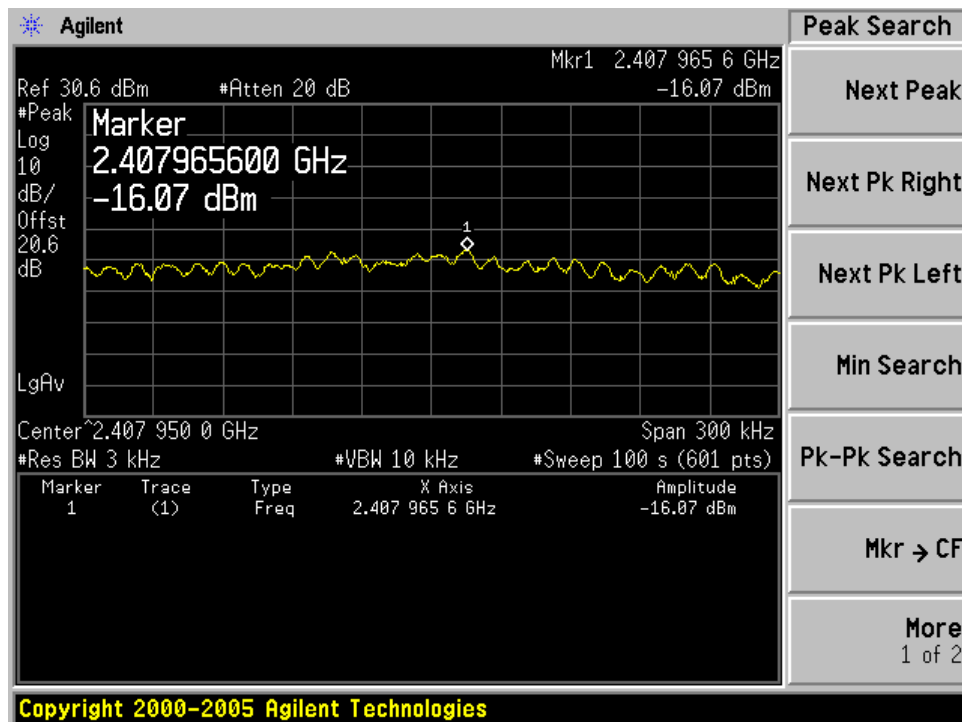
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
CH1 (Chain0)	2412	1	-12.68	8	Pass
CH1 (Chain1)	2412	1	-16.07	8	Pass
CH1 (Chain2)	2412	1	-15.47	8	Pass
CH6 (Chain0)	2437	1	-11.73	8	Pass
CH6 (Chain1)	2437	1	-16.38	8	Pass
CH6 (Chain2)	2437	1	-15.39	8	Pass
CH11 (Chain0)	2462	1	-12.12	8	Pass
CH11 (Chain1)	2462	1	-15.81	8	Pass
CH11 (Chain2)	2462	1	-16.63	8	Pass

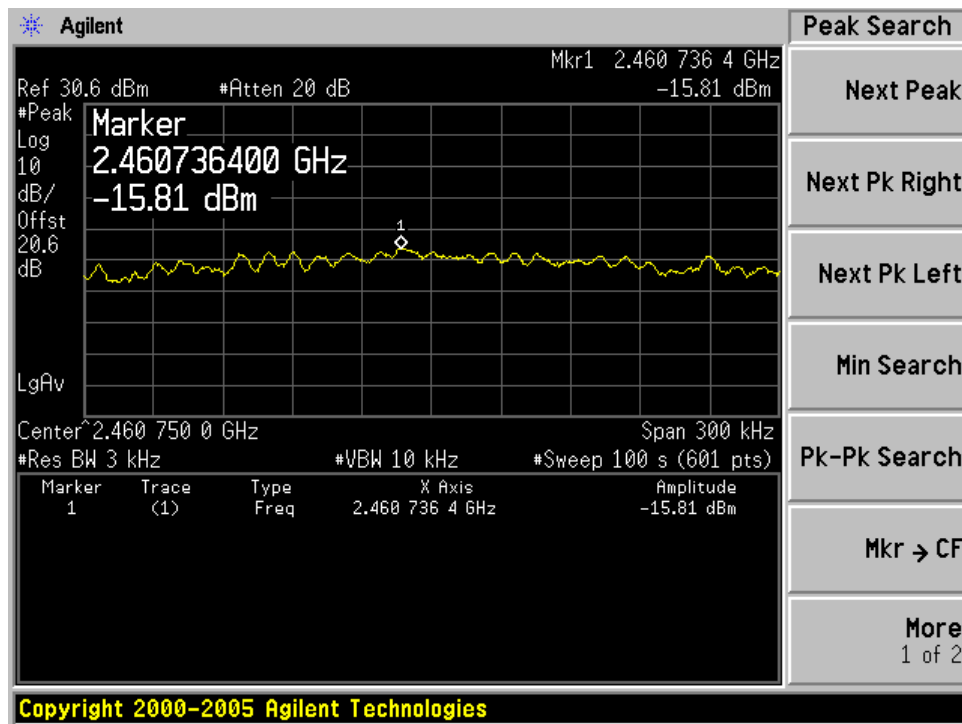
Chain 0:



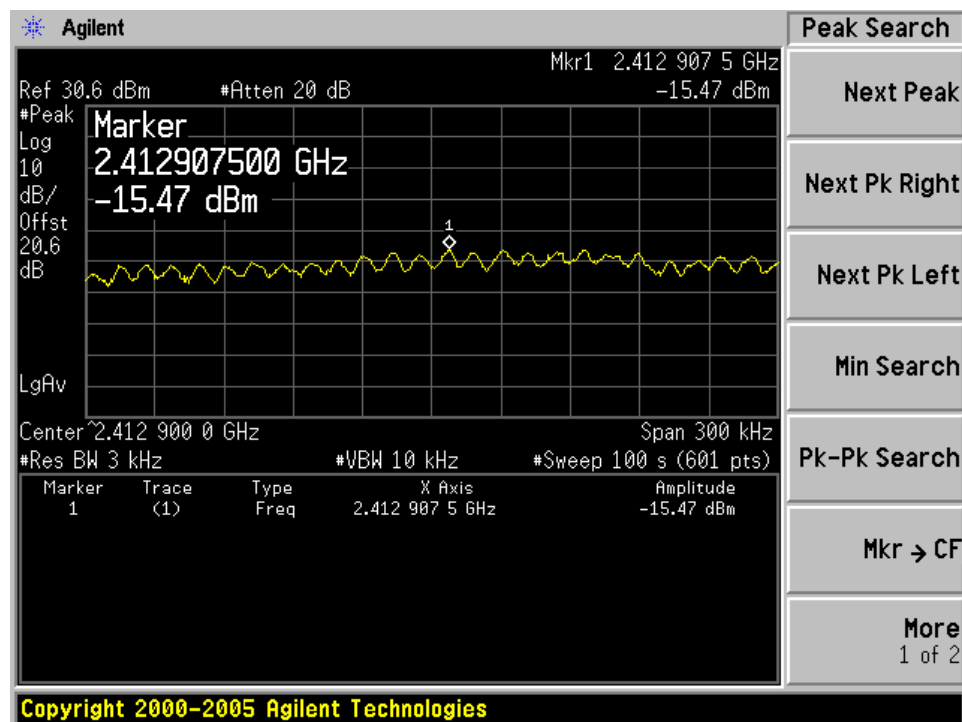


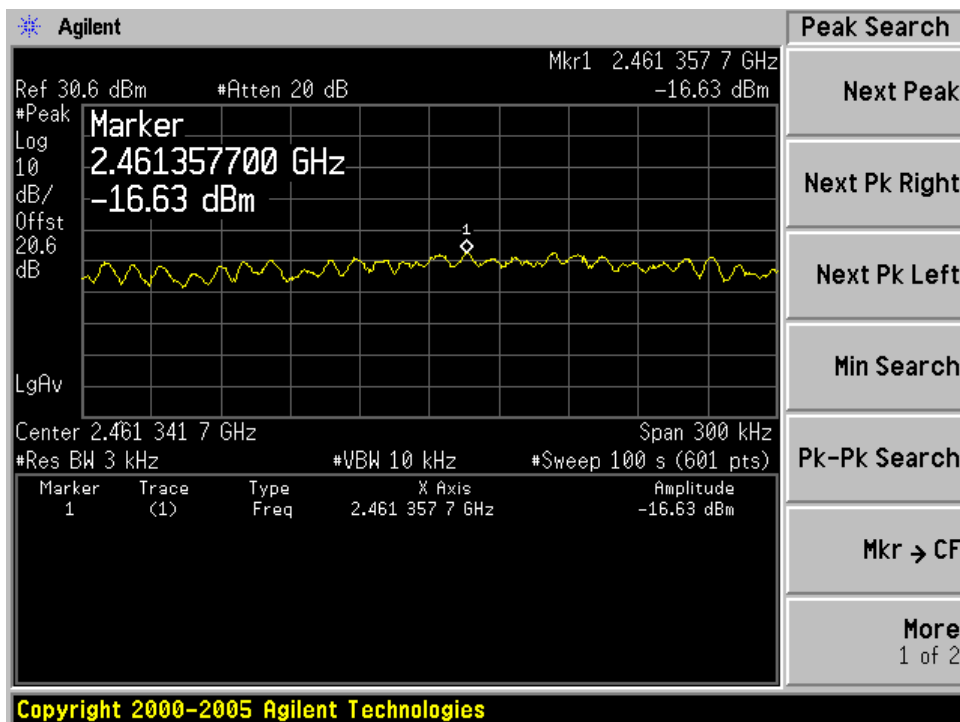
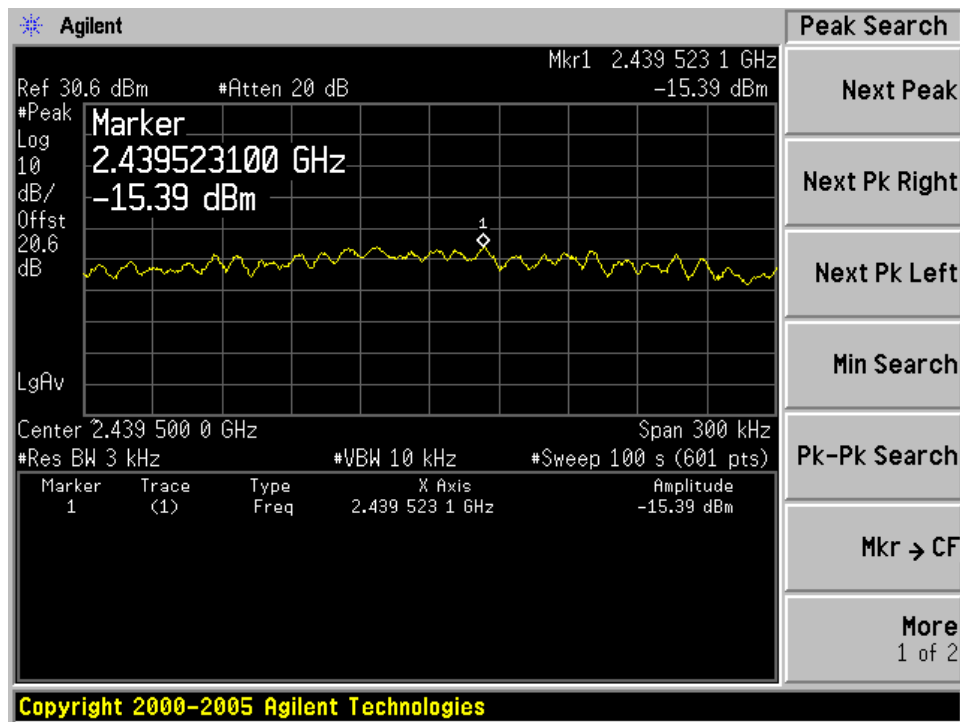
Chain 1:





Chain 2:



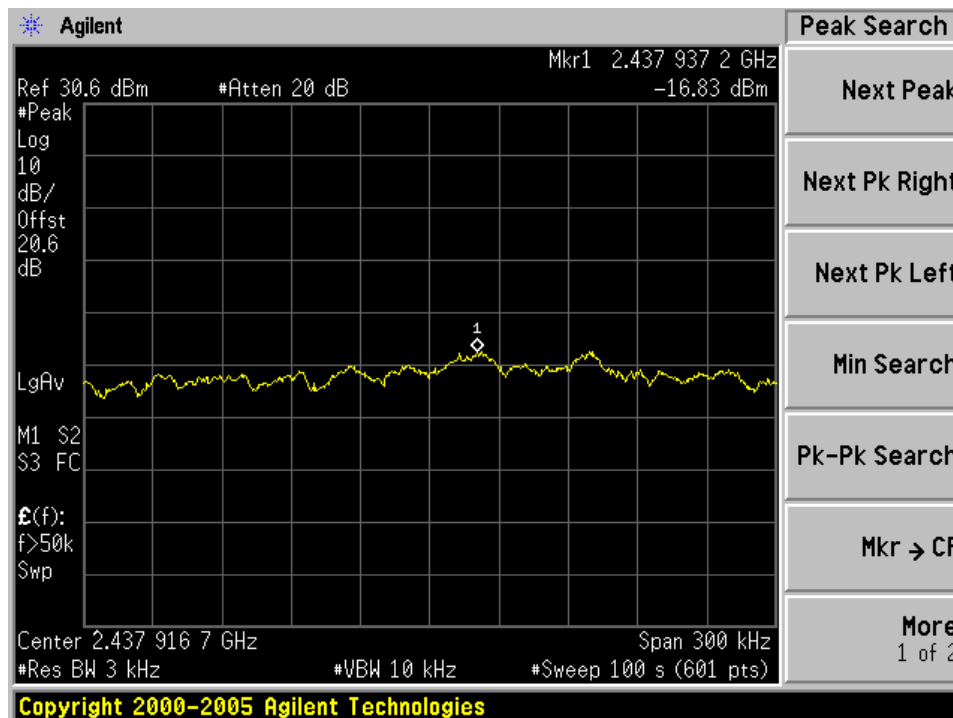
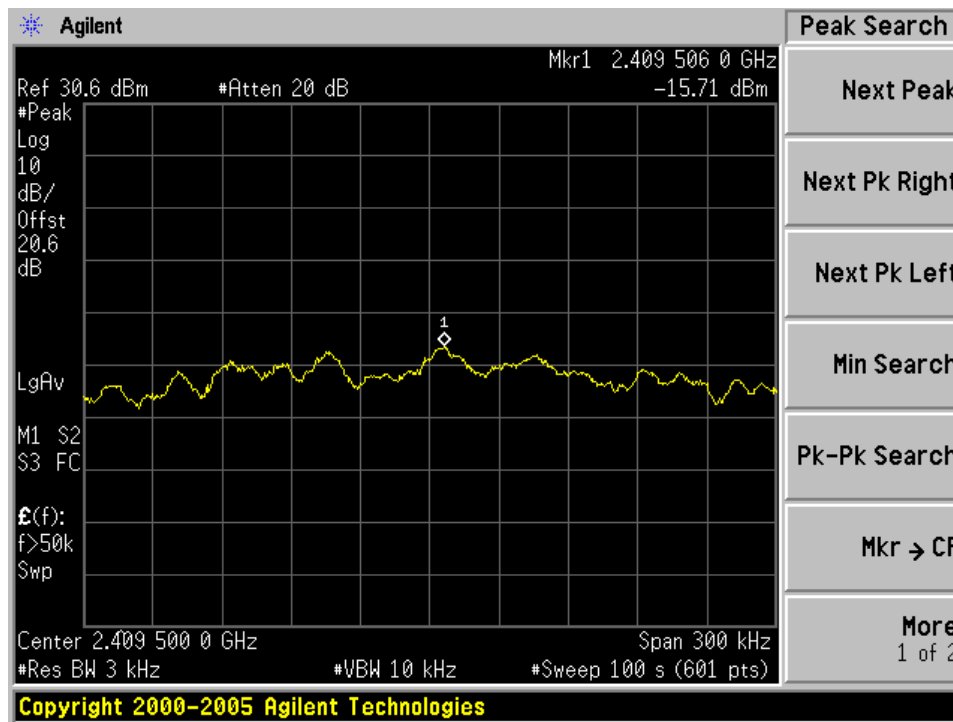


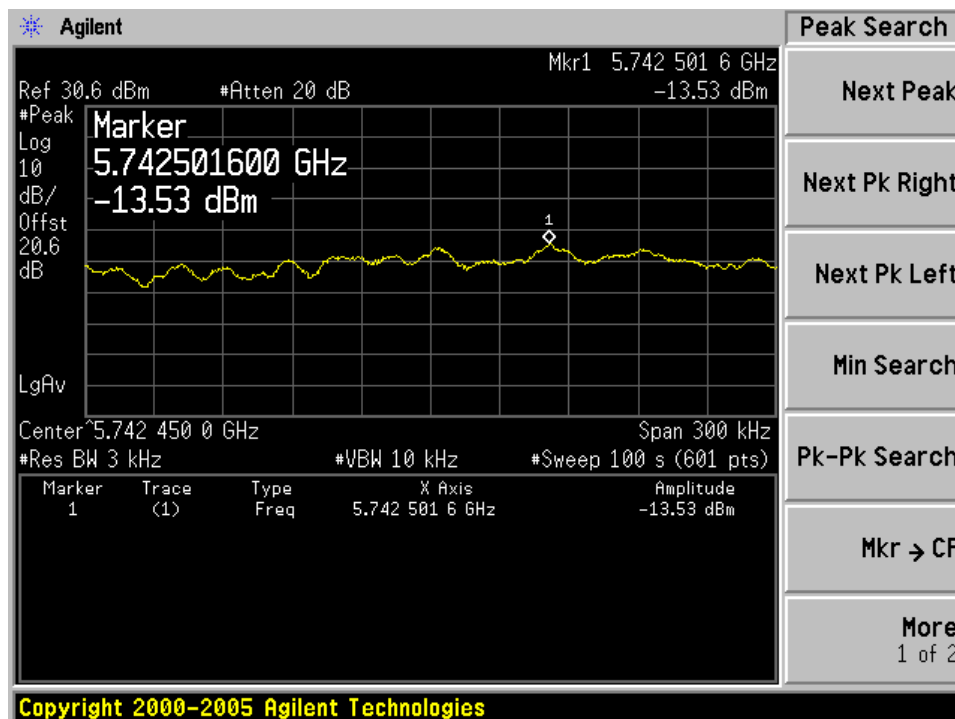
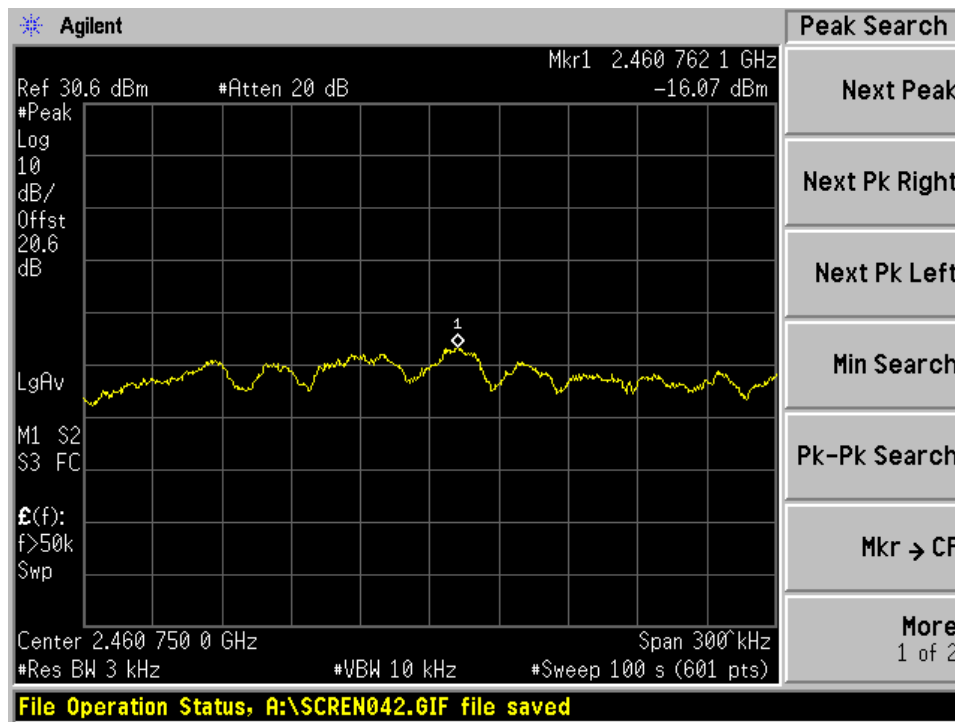
Power spectral density

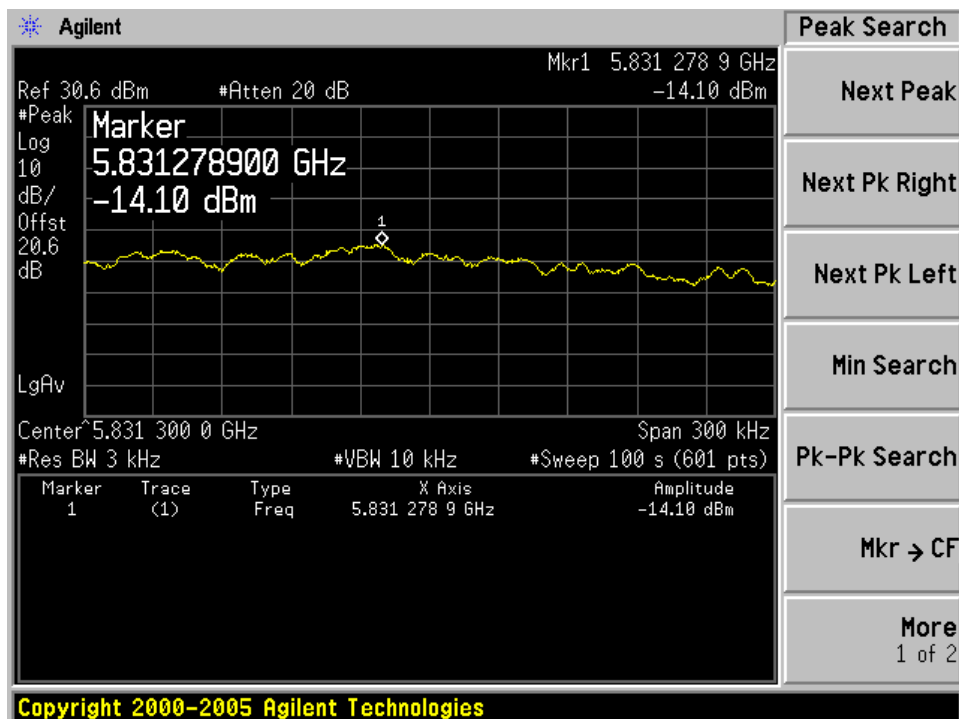
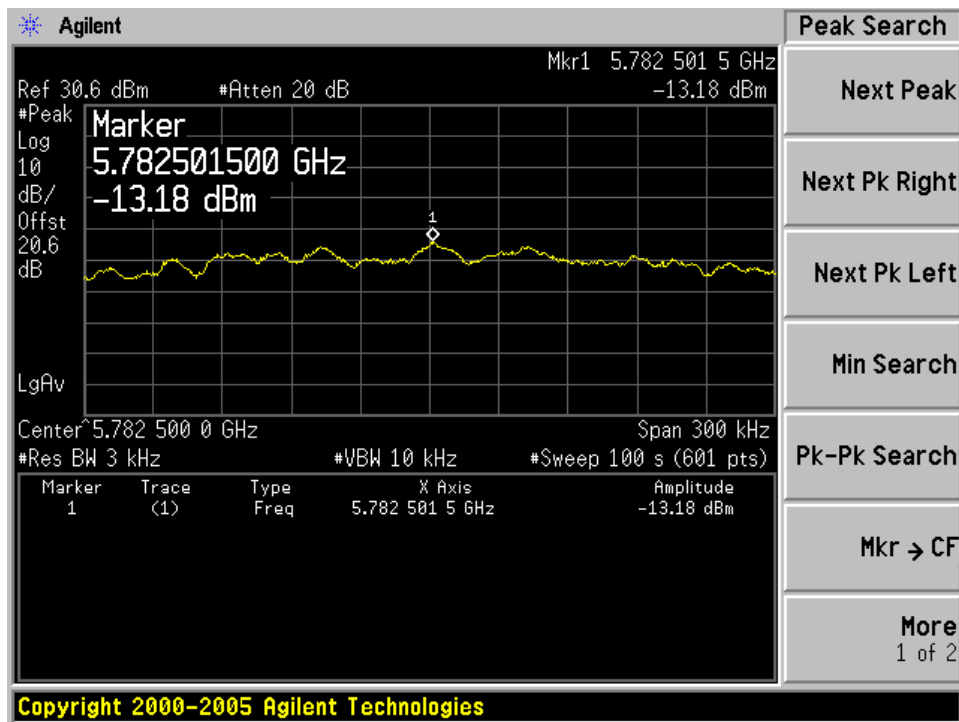
IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/3kHz)	Total Power Spectral Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
CH1 (Chain0)	2412	6.5	-15.70	-10.51	8	Pass
CH1 (Chain1)	2412	6.5	-14.89			
CH1 (Chain2)	2412	6.5	-15.29			
CH6 (Chain0)	2437	6.5	-16.83	-12.08	8	Pass
CH6 (Chain1)	2437	6.5	-16.63			
CH6 (Chain2)	2437	6.5	-17.10			
CH11 (Chain0)	2462	6.5	-16.07	-10.70	8	Pass
CH11 (Chain1)	2462	6.5	-16.10			
CH11 (Chain2)	2462	6.5	-14.46			
CH149 (Chain0)	5745	6.5	-15.53	-9.46	8	Pass
CH149 (Chain1)	5745	6.5	-14.07			
CH149 (Chain2)	5745	6.5	-13.37			
CH157 (Chain0)	5785	6.5	-13.18	-8.79	8	Pass
CH157 (Chain1)	5785	6.5	-13.03			
CH157 (Chain2)	5785	6.5	-14.66			
CH165 (Chain0)	5825	6.5	-14.10	-7.67	8	Pass
CH165 (Chain1)	5825	6.5	-11.07			
CH165 (Chain2)	5825	6.5	-12.67			

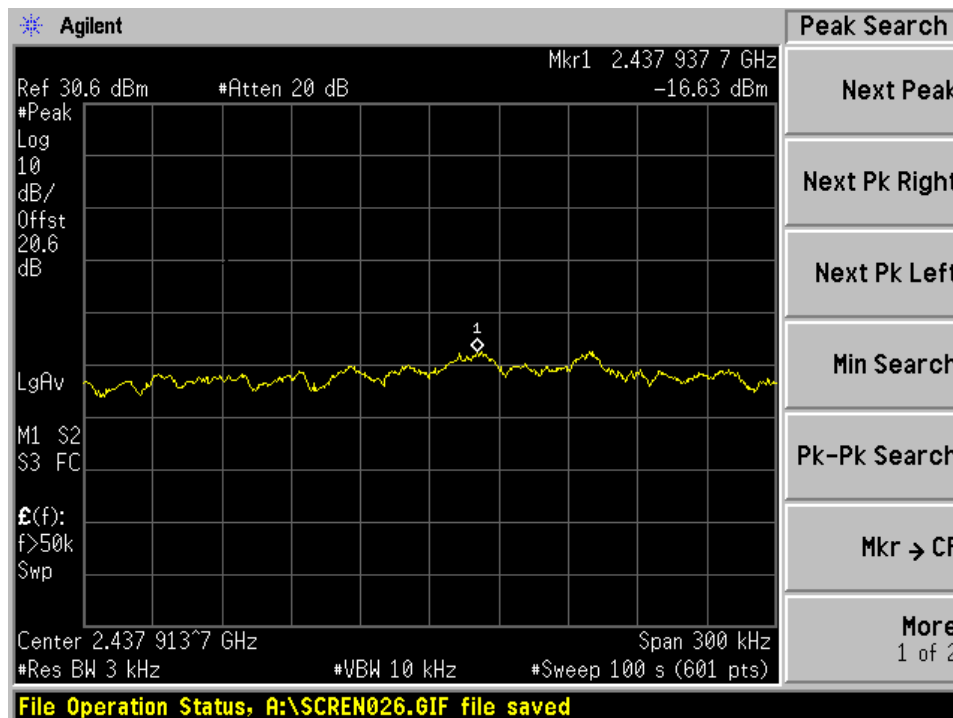
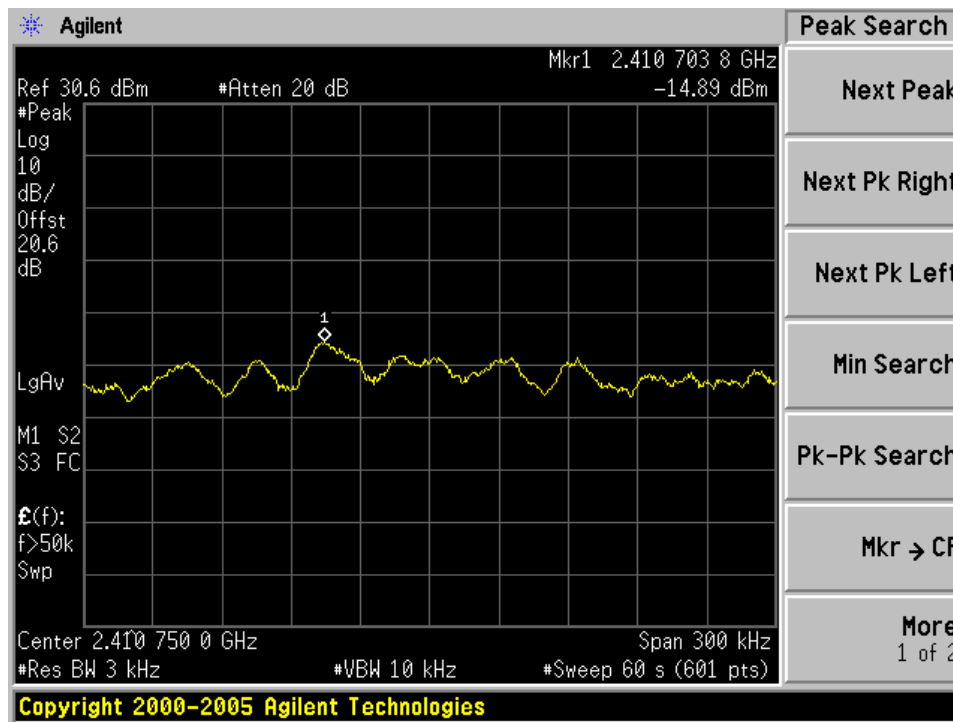
Chain 0:

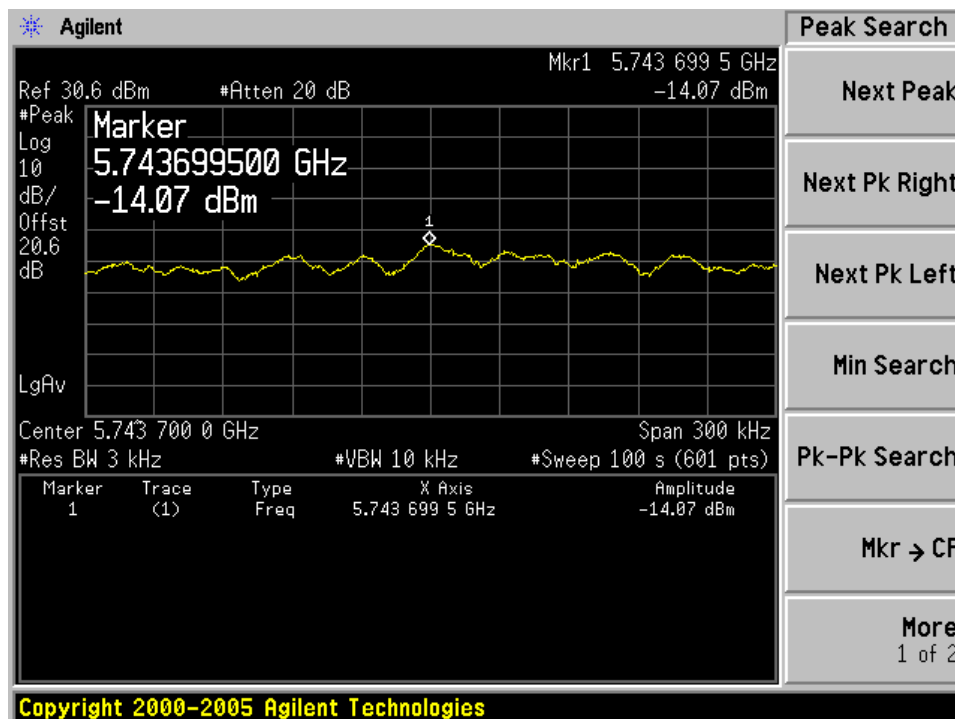
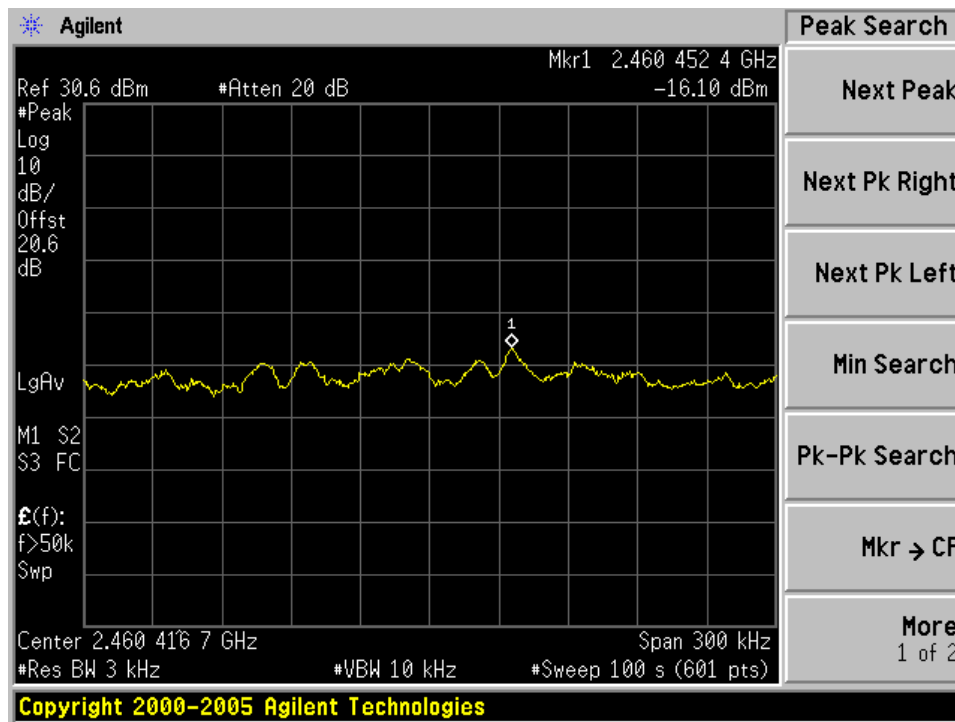


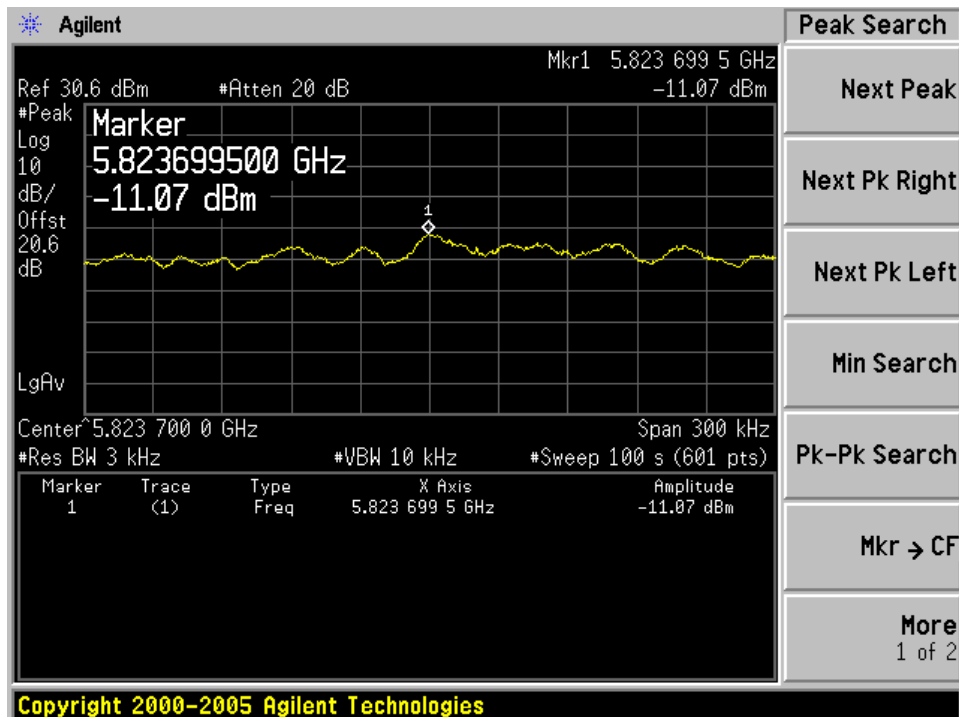
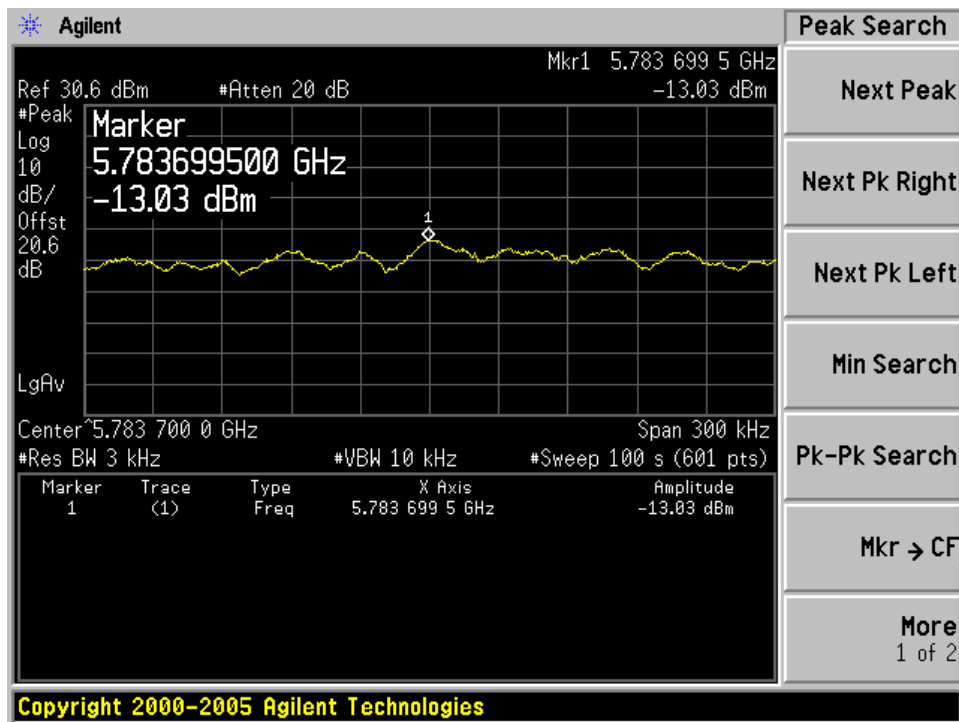




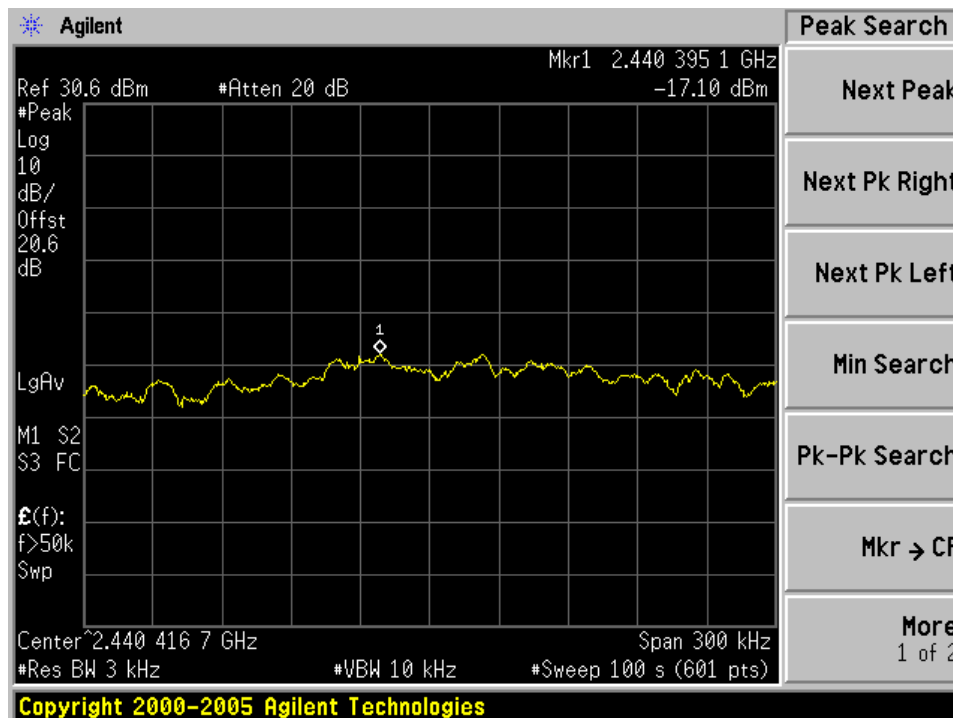
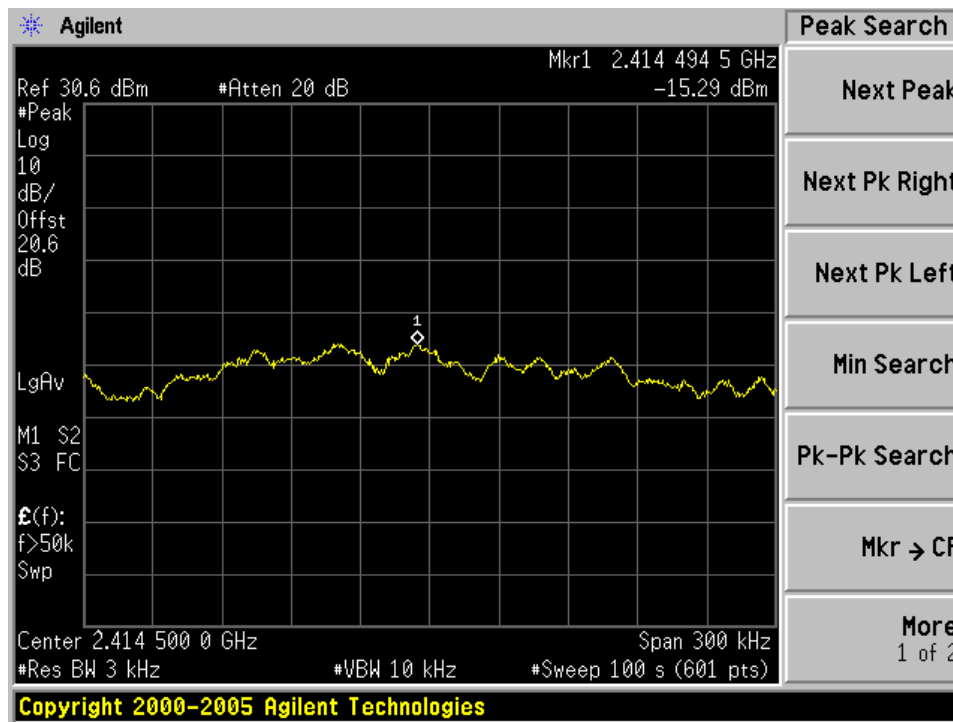
Chain 1:

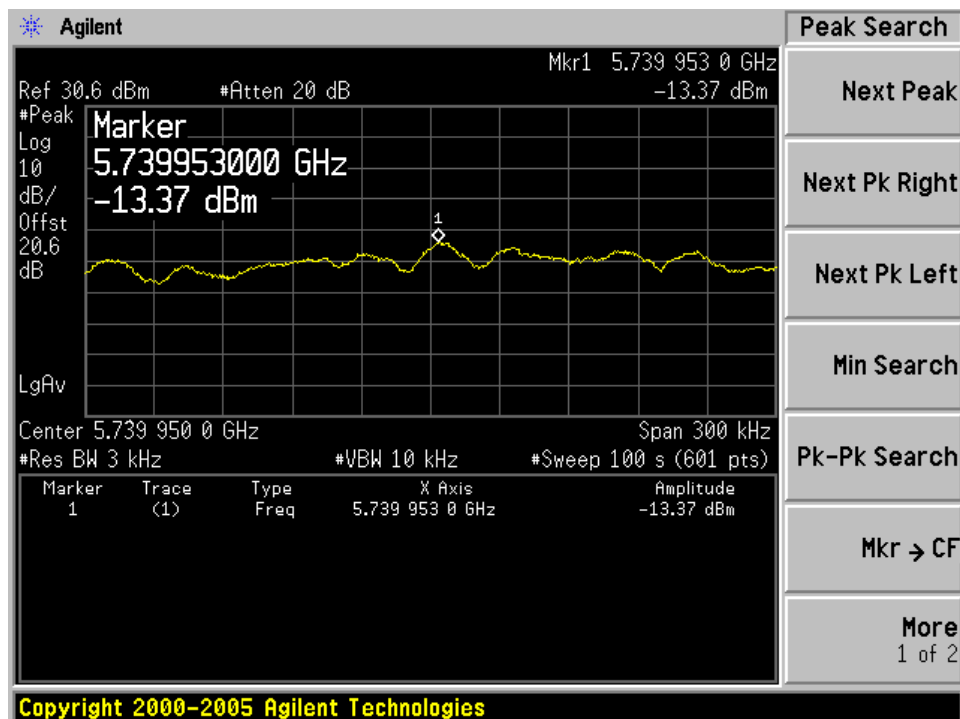
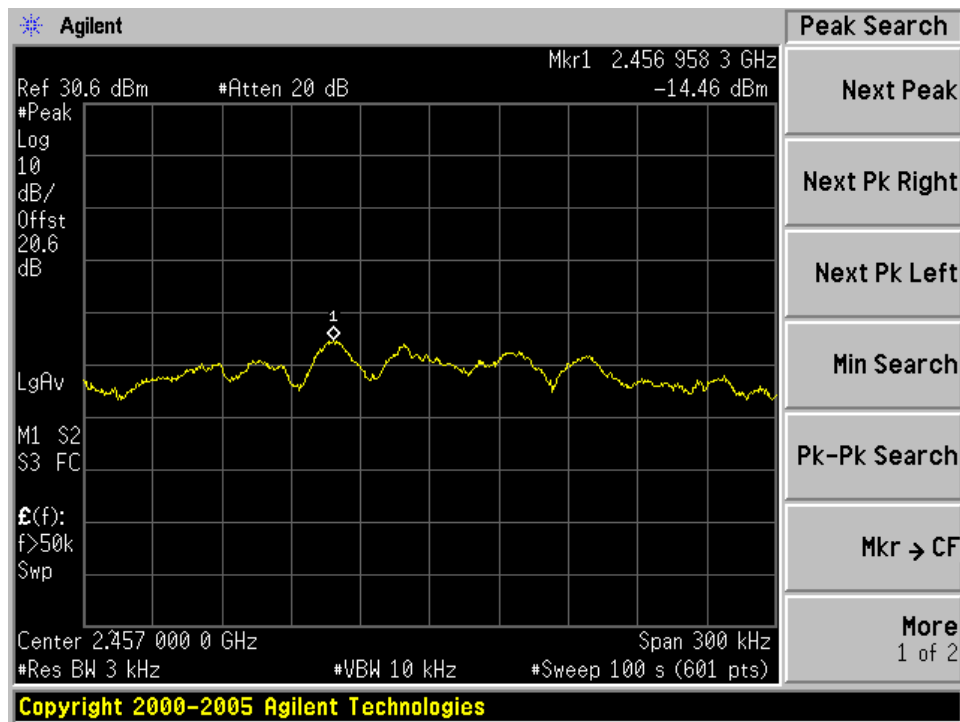


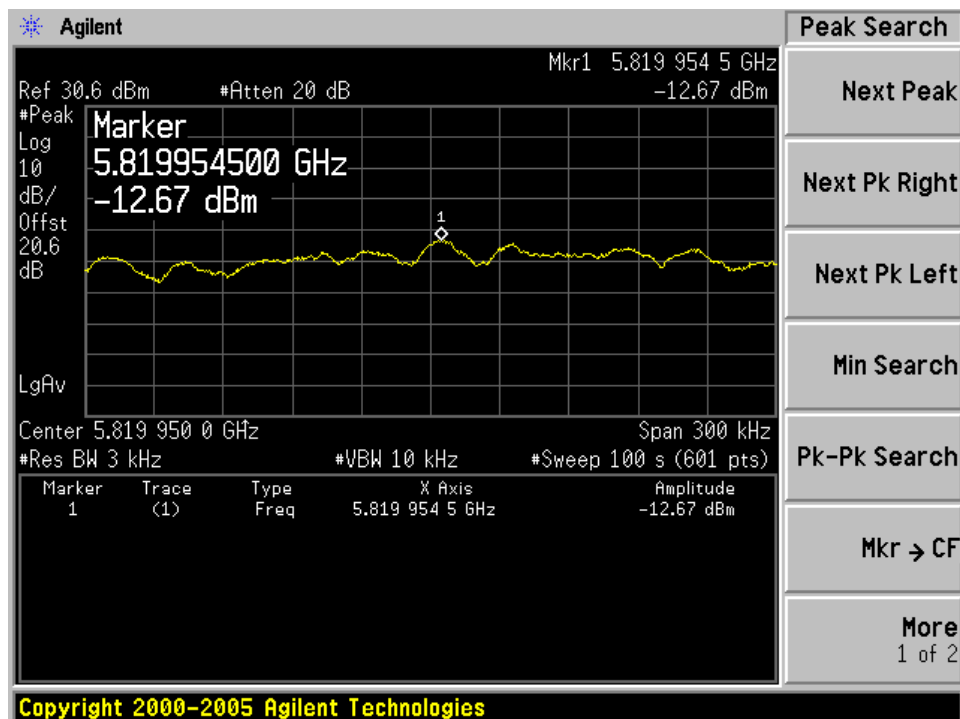
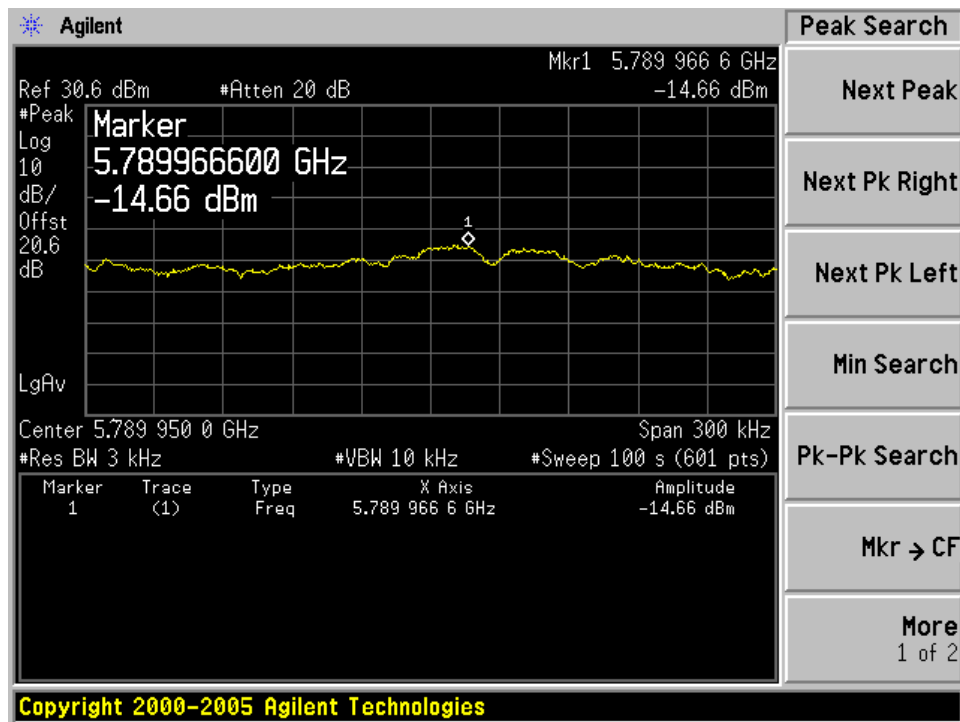




Chain 2:





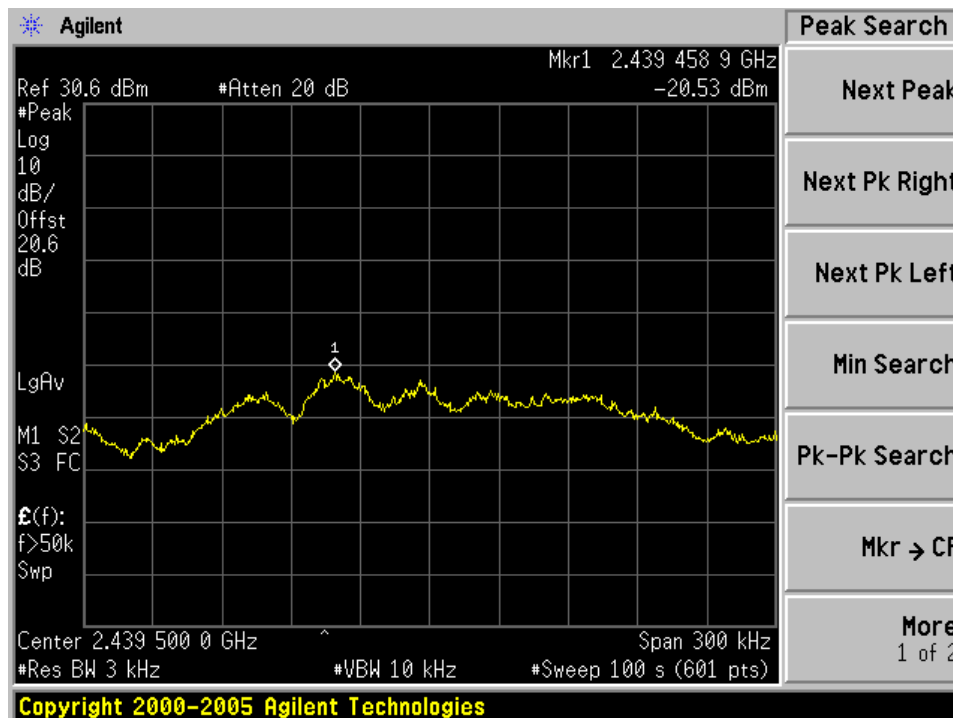
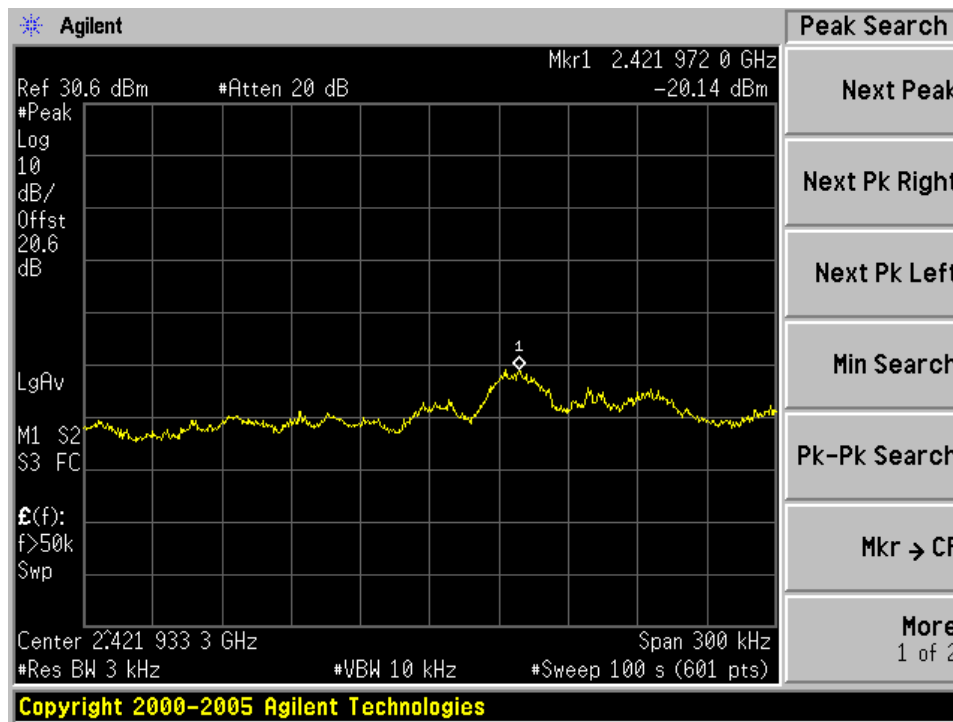


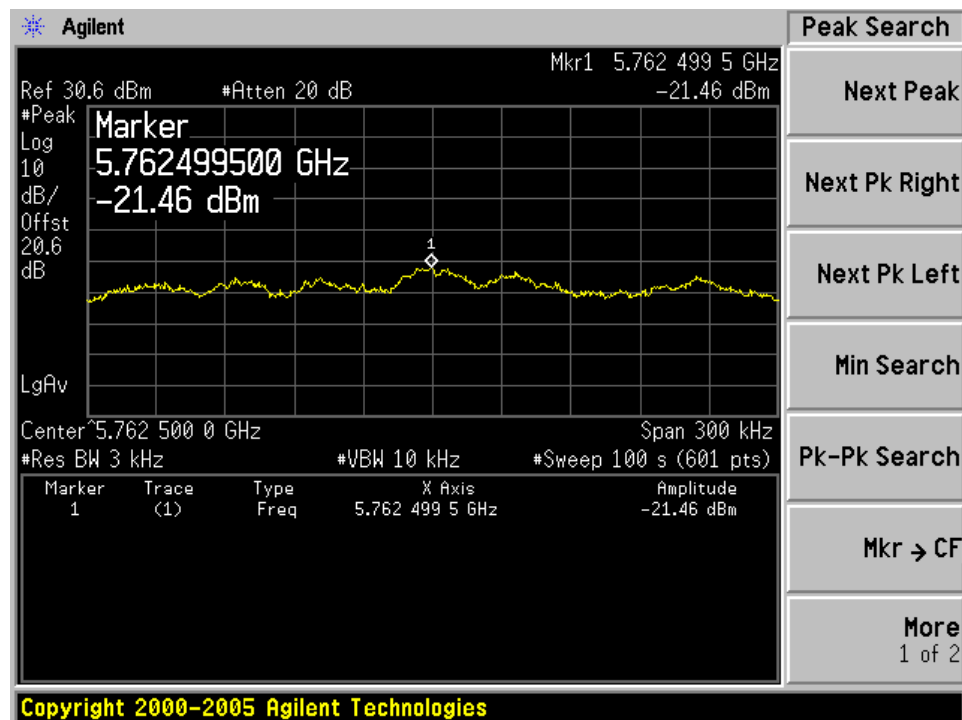
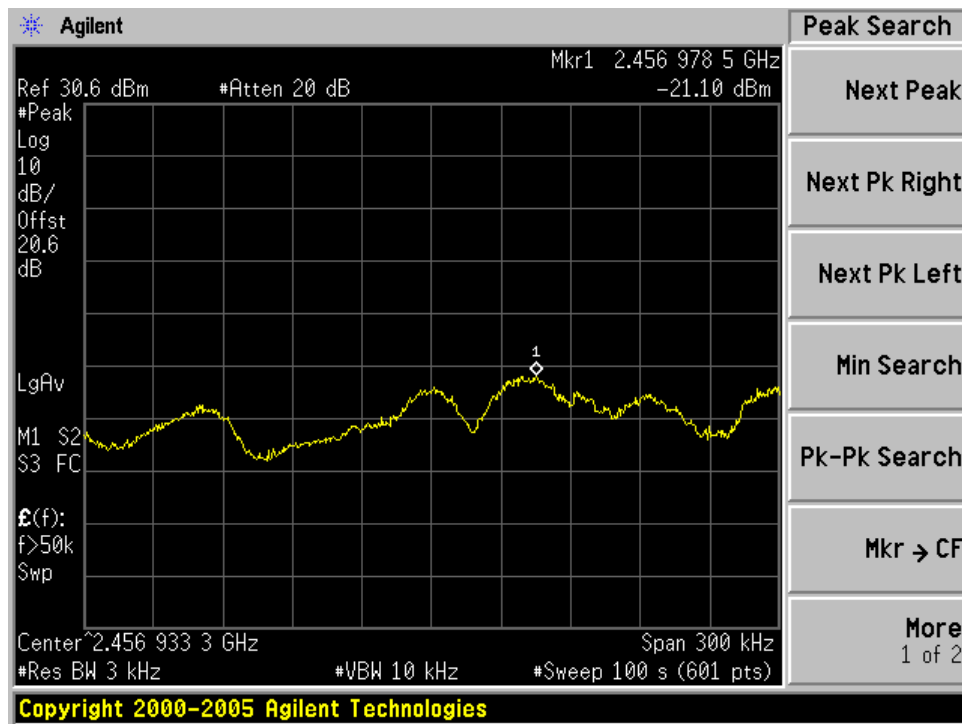
Power spectral density

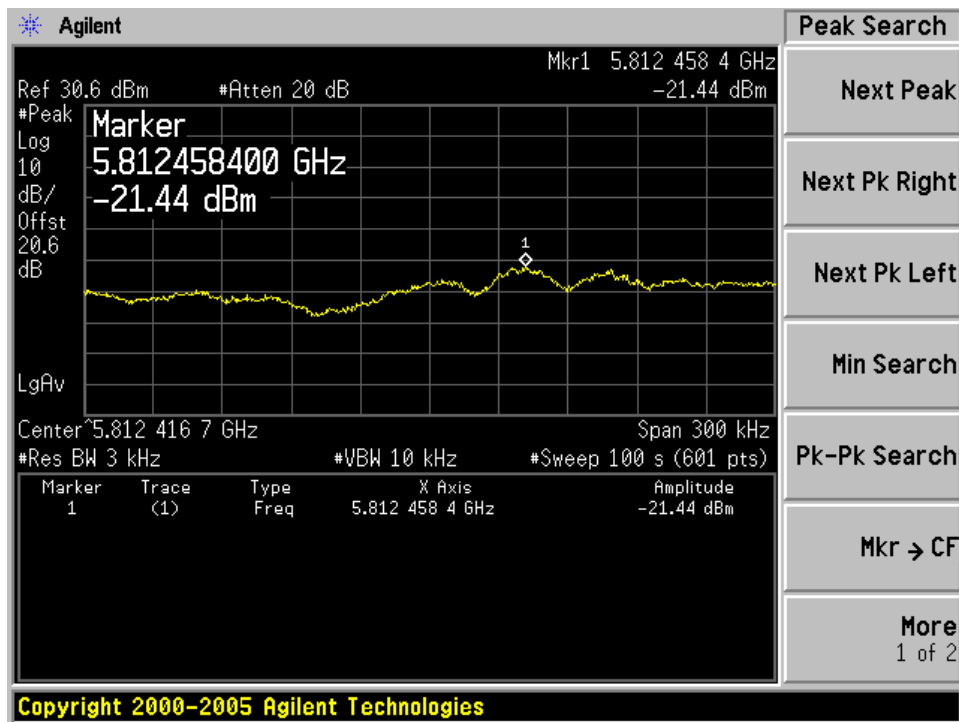
IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Power Spectral Density (dBm/3kHz)	Total Power Spectral Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
CH3 (Chain0)	2422	13.5	-20.14	-16.26	8	Pass
CH3 (Chain1)	2422	13.5	-22.80			
CH3 (Chain2)	2422	13.5	-20.58			
CH6 (Chain0)	2437	13.5	-20.53	-16.48	8	Pass
CH6 (Chain1)	2437	13.5	-22.17			
CH6 (Chain2)	2437	13.5	-21.22			
CH9 (Chain0)	2452	13.5	-21.10	-16.78	8	Pass
CH9 (Chain1)	2452	13.5	-22.78			
CH9 (Chain2)	2452	13.5	-20.99			
CH151 (Chain0)	5755	13.5	-21.46	-16.36	8	Pass
CH151(Chain1)	5755	13.5	-20.53			
CH151 (Chain2)	5755	13.5	-21.48			
CH159 (Chain0)	5795	13.5	-21.44	-16.00	8	Pass
CH159 (Chain1)	5795	13.5	-20.44			
CH159 (Chain2)	5795	13.5	-20.50			

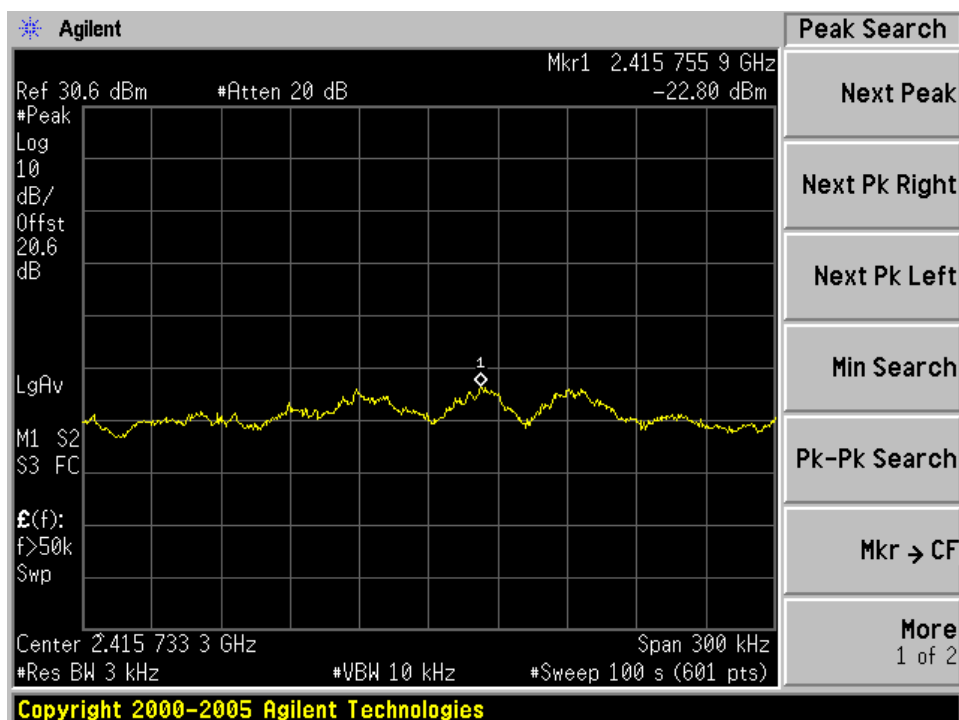
Chain 0:

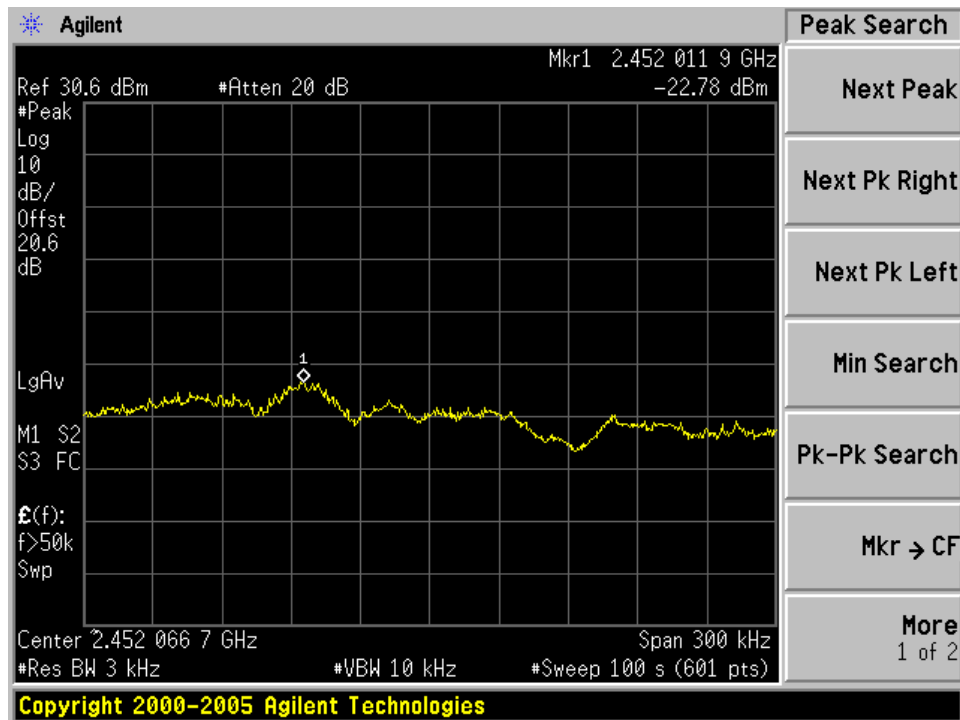
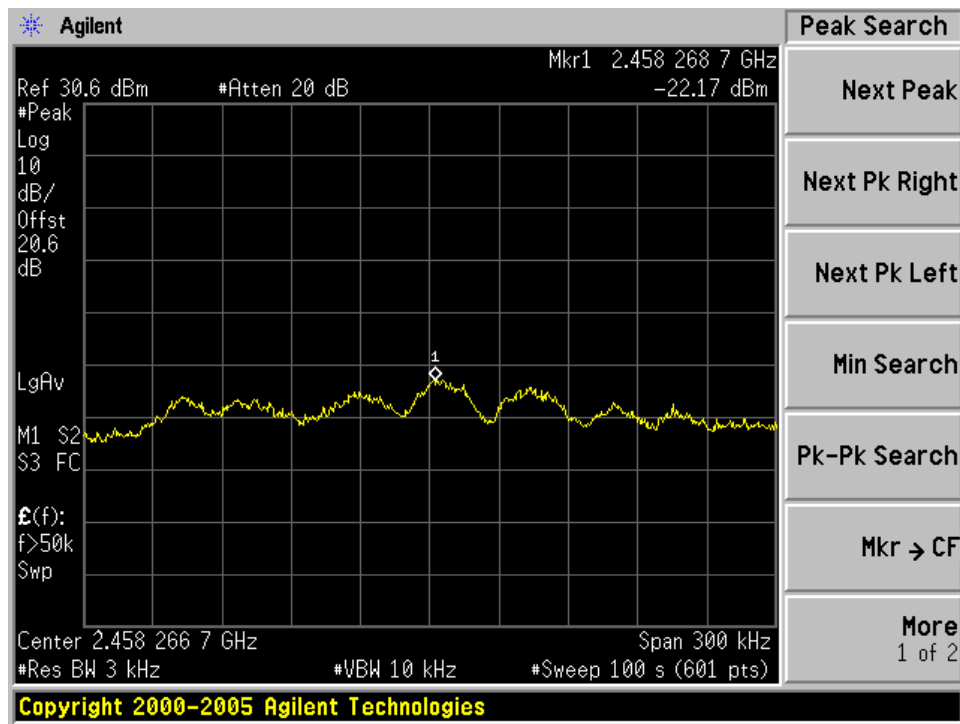


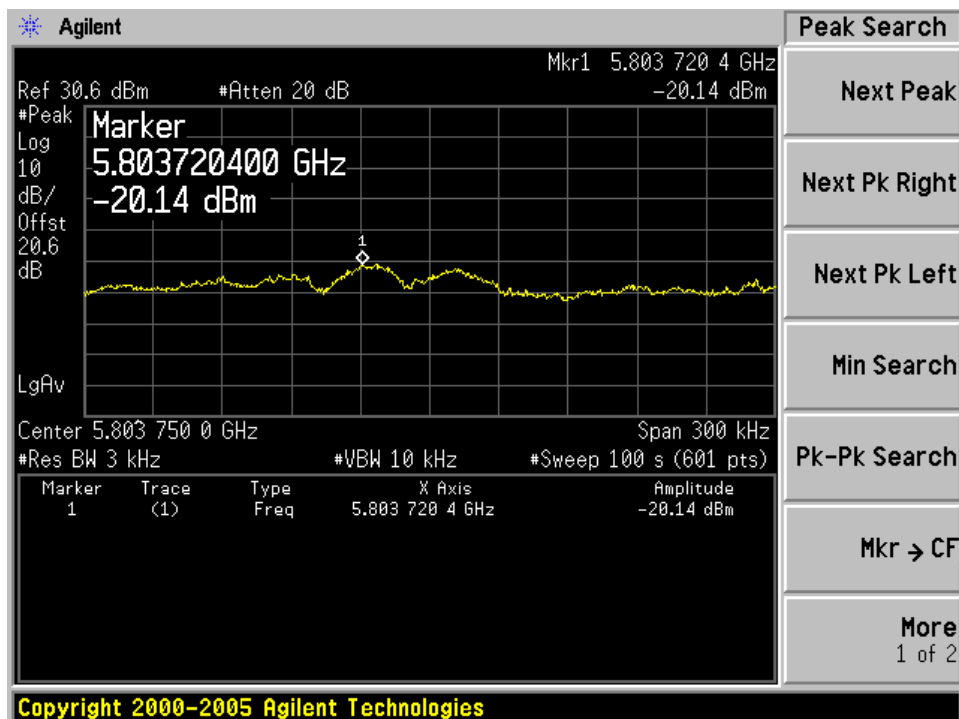
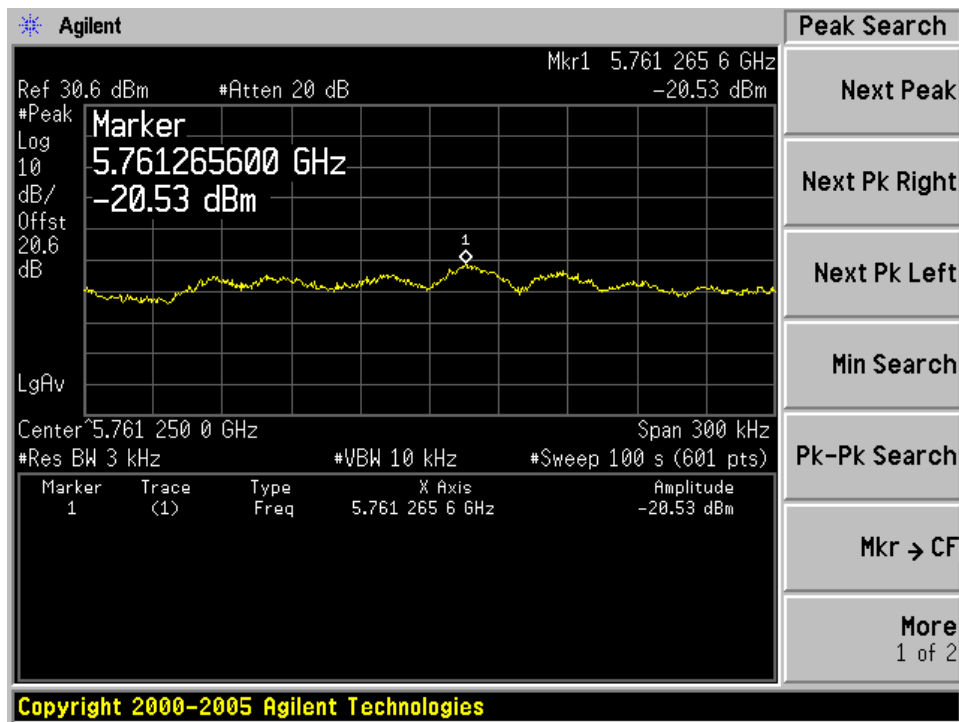




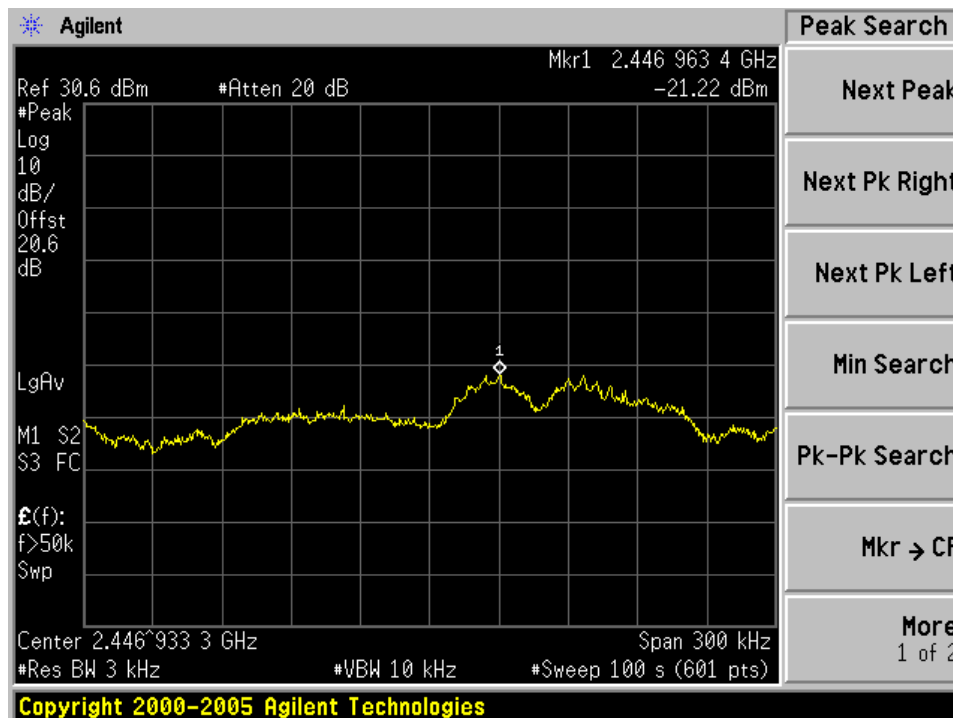
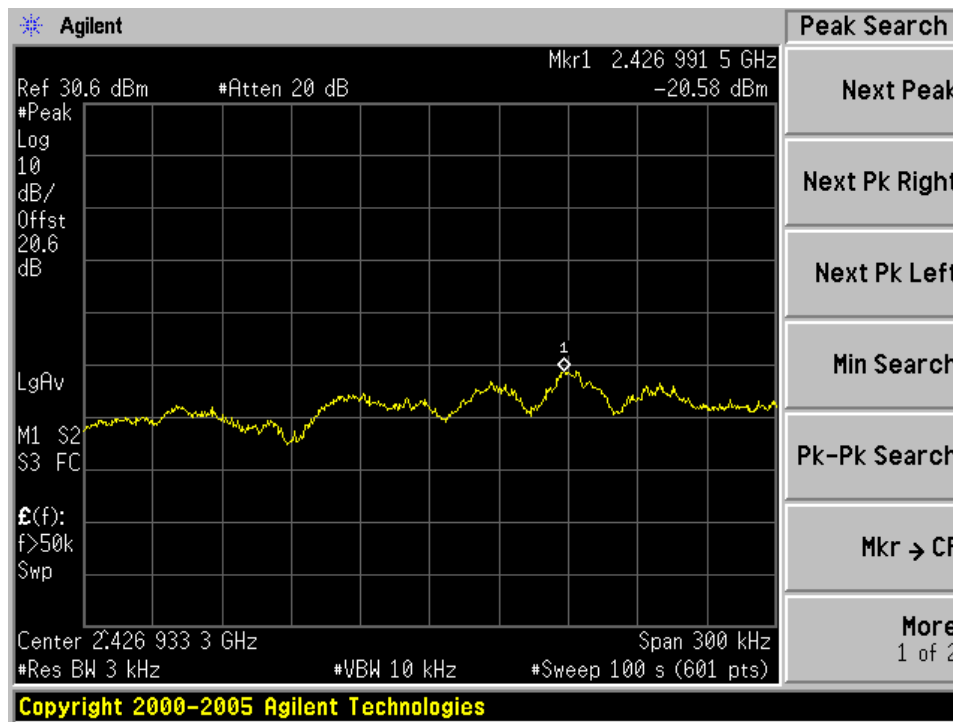
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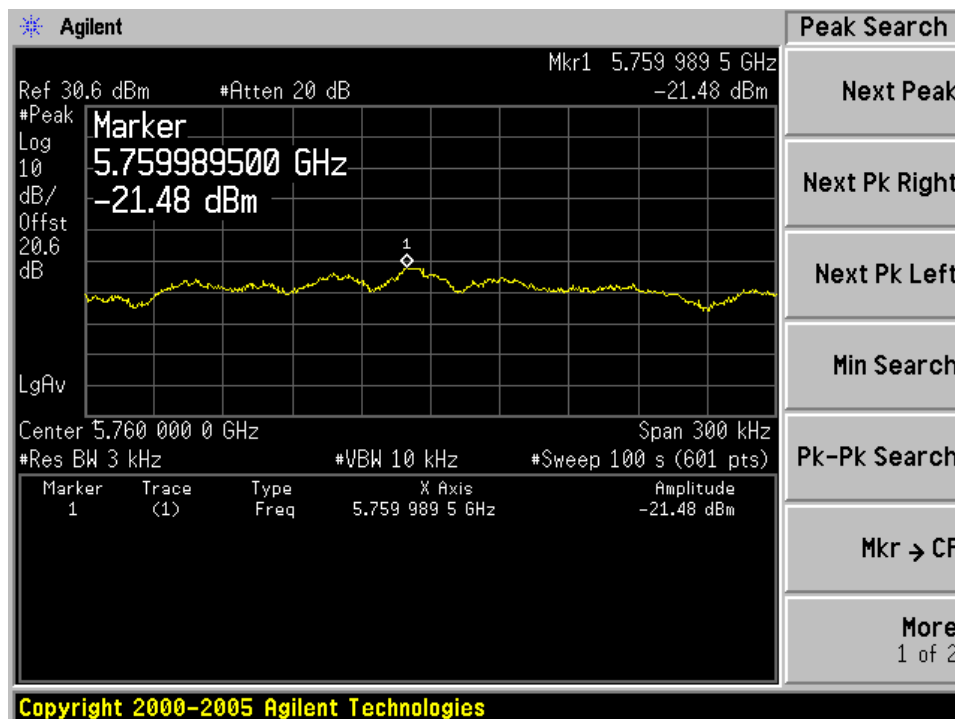
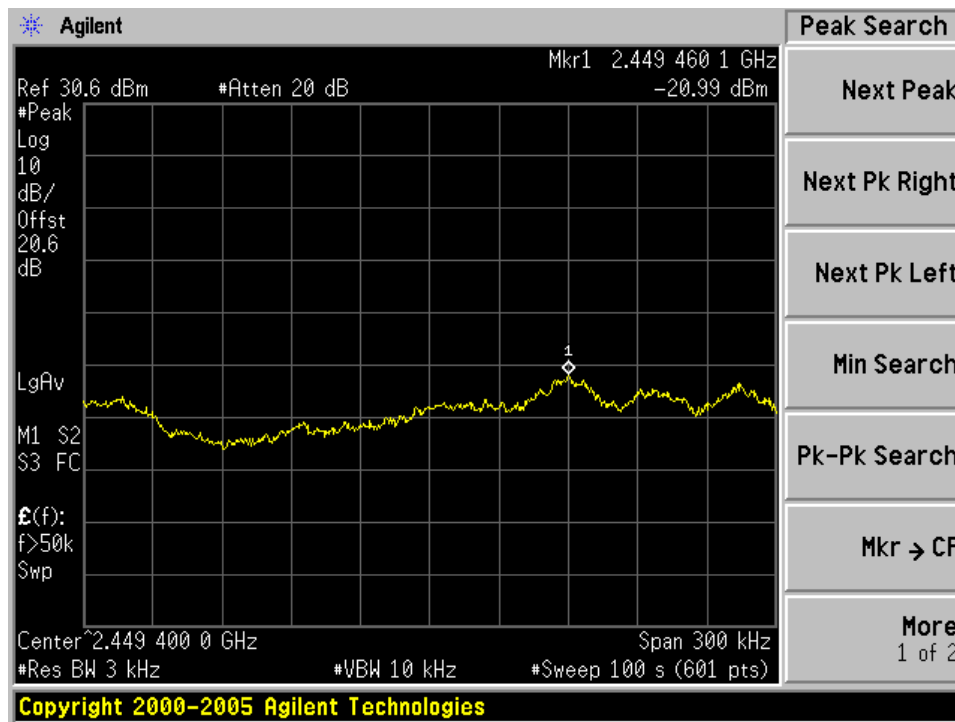






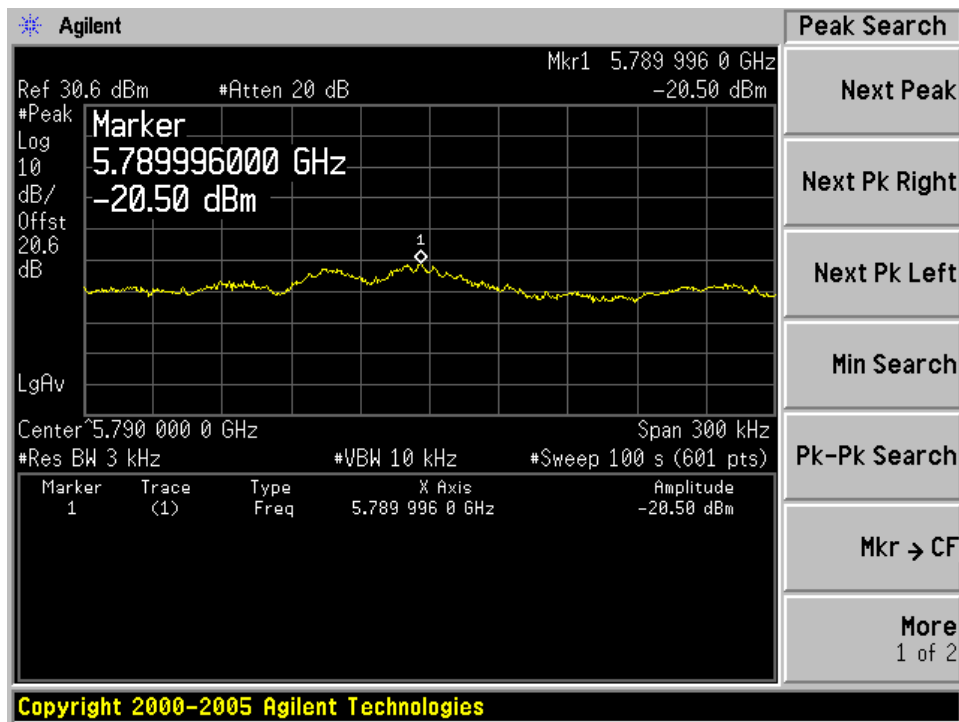
Chain 2:







Product Service





Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 8, 2011

8 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dB μ V/m)	U=4.6dB; k=2(30MHz-1GHz)
CE	Disturbance Voltage (dB μ V)	U=3.3dB; k=2