FCC CFR47 PART 15 SUBPART E
CERTIFICATION
TEST REPORT

FOR

EUT

802.11a/b/g/n PCIExpress Minicard

MODEL NUMBER: AR5BXB72

FCC ID: PPD-AR5BXB72

REPORT NUMBER: 06U10365-2, Revision C

ISSUE DATE: JUNE 26, 2006

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	6/20/06	Initial Issue	MH
B	6/21/06	Revised calculations of legacy mode effective antenna gain, and measurements of legacy mode power and PPSD	MH
B1	6/22/06	Revised table on page 54 to show data that was cut off in Rev.B, and revised frequency ranges on table on page 6.	MH
C	6/26/06	Added conducted spurious data with combiner.	MH

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ATHEROS COMMUNICATIONS, INC.
5480 Great America Parkway
Santa Clara, CA 95054, USA

EUT DESCRIPTION: 802.11a/b/g/n PCIExpress Minicard

MODEL TESTED: AR5BXB72

SERIAL NUMBER: XB72-060-L0416

DATE TESTED: JUNE 11-26, 2006

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART E	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By: Tested By:

MIKE HECKROTTE
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The AR5BXB72 is designed for 802.11a/b/g/n applications using the AR541X/51XX chipset with a PCIExpress Minicard interface. It has three receive chains and two transmit chains (2x3 configuration).

The 2x3 configuration is implemented with two outside chains (Chain 0 and 2) as Tx/Rx and the middle chain (chain 1) as Rx only.

A 2x2 configuration is implemented by depopulating the middle receive chain; in this configuration the transmit chains are identical to the 2x3 configuration. The 2x2 version, when marketed, will have a unique model ID to differentiate it from the fully configured version.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5150 to 5250 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 - 5240	802.11a	11.95	15.67
5180 - 5240	802.11n HT20	14.50	28.18
5190 - 5230	802.11n HT40	16.36	43.25

5250 to 5350 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5260 - 5320	802.11a	18.03	63.53
5260 - 5320	802.11n HT20	20.48	111.69
5270 - 5310	802.11n HT40	21.23	132.74

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The 2x3 configuration utilizes a set of three identical PIFA antennas (maximum gain is 5.56 dBi from 5150 – 5350 MHz) or a set of three identical Monopole antennas (maximum gain is 4.4 dBi from 5150 – 5250 MHz and 6.2 dBi from 5250 – 5350 MHz).

Two identical antennas as otherwise described above are used in the 2x2 configuration.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was AR5002, ANWI Diagnostic Kernel Drive.

The test utility software used during testing was Art Software Revision 0.3 Build #4 Art 11n

5.5. WORST-CASE CONFIGURATION AND MODE

The 2x3 configuration was used for all testing in this report.

The worst-case data rates are determined to be as follows for each mode, based on the investigations by measuring the avarage power, peak power and PPSD across all the data rates, bandwidths, modulations and spatial stream modes.

Thus all emissions tests were made with following data rates:

- 802.11a mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation, Spatial Stream 1.
- 802.11n HT20 mode, 20 MHz Channel Bandwidth, MCS0, 6.5 Mb/s, OFDM Modulation, Spatial Stream 1.
- 802.11n HT40 mode, 40 MHz Channel Bandwidth, MCS0, 13.5 Mb/s, OFDM Modulation, Spatial Stream 1.

The worst-case configuration for tests below 1 GHz is the mode and channel with the highest power: 802.11b mode, mid channel.

Baseline testing demonstrated that the Power Spectral Density as measured through a combiner with both chains operating simultaneously is less than the sum of the Power Spectral Density of each individual chain when added linearly.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	IBM	Thindthind R52	L3-GR045	DoC
AC Adapter	IBM	92P1016	11S92P1016Z1ZAC65C71HZ	DoC

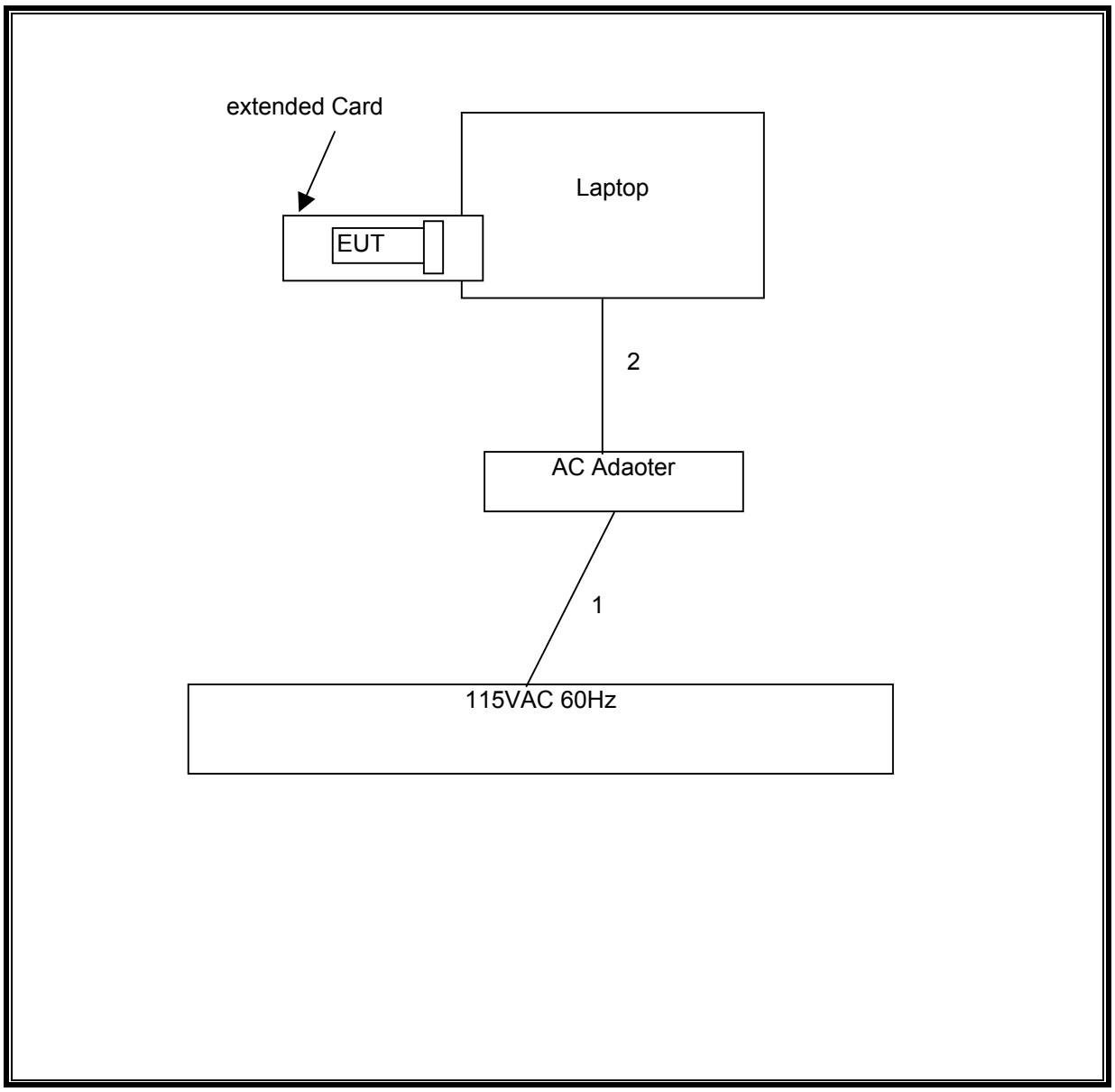
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA

TEST SETUP

The EUT is installed in a host laptop computer via a PCIExpress Minicard extender board during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	9/12/2006
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	8/17/2006
Antenna, Horn 26 ~ 40 GHz	ARA	MWH-2640/B	1029	4/13/2007
Preamplifier, 26 ~ 40 GHz	Miteq	NSP4000-SP2	924343	8/18/2006
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	12/19/2006
Peak / Average Power Sensor	Agilent / HP	E9327A	US40440755	12/2/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
EMI Test Receiver	R & S	ESHS 20	827129/006	11/3/2006
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2006

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 5150 TO 5350 MHz BAND

7.1.1. 99% BANDWIDTH AND 26 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth and 26 dB bandwidth functions are utilized.

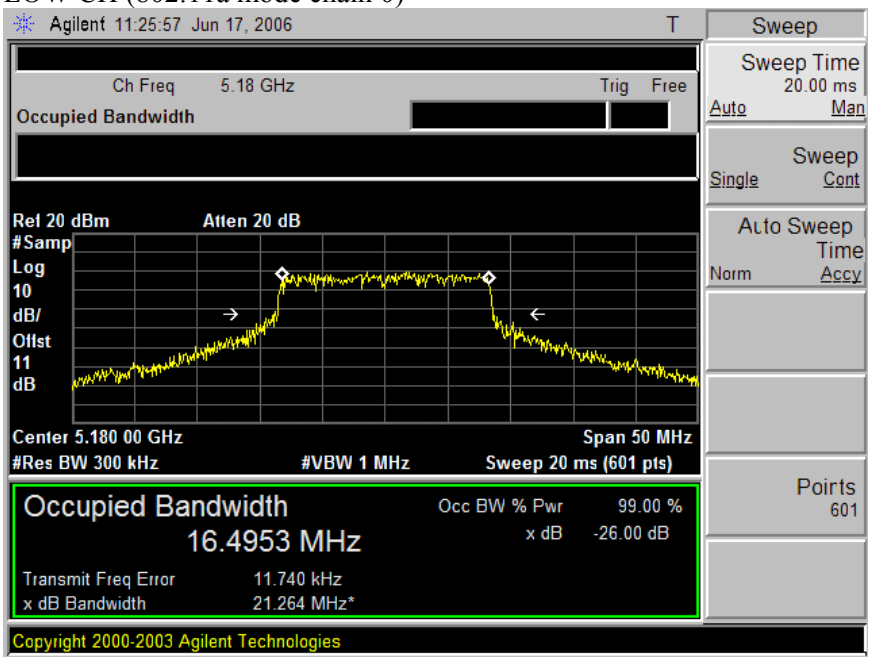
RESULTS

No non-compliance noted:

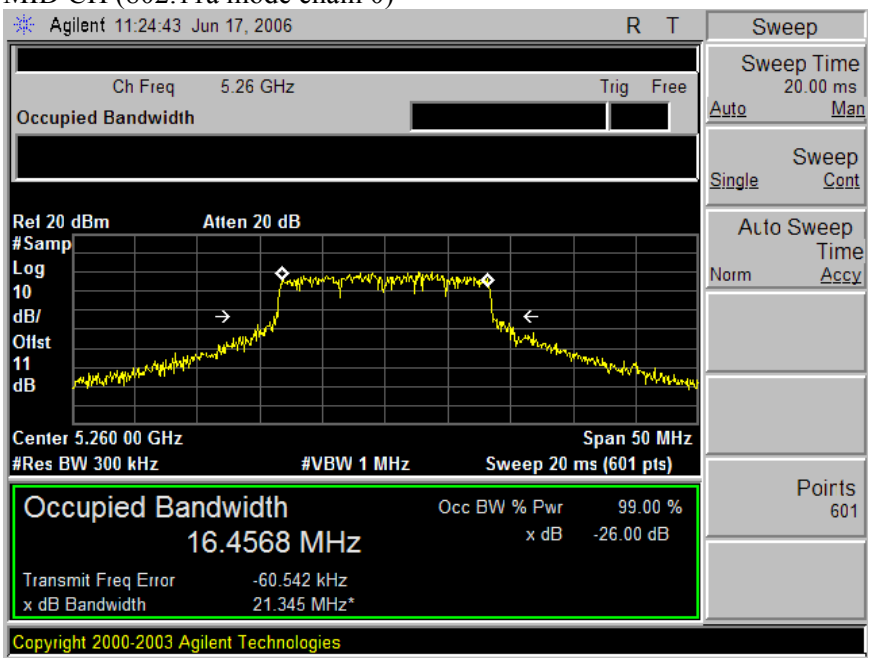
Mode Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	Worst Case 10 Log B (dB)
802.11a Mode						
Low	5180	16.4953	16.6098	21.264	21.585	13.34
Middle	5260	16.4568	16.4656	21.345	21.738	13.37
High	5320	16.4806	16.57	21.085	21.52	13.33
802.11n HT20 Mode						
Low	5180	17.6167	17.6742	23.858	23.63	13.78
Mid	5260	17.5446	17.6406	22.973	23.214	13.66
High	5320	17.7338	17.8187	22.789	22.893	13.60
802.11n HT40 Mode						
Low	5190	36.3069	36.2305	45.257	44.881	16.56
Mid	5260	36.335	36.4518	46.265	45.935	16.65
High	5310	36.0773	36.2888	47.263	45.817	16.75

(802.11a MODE CHAIN 0)

LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)



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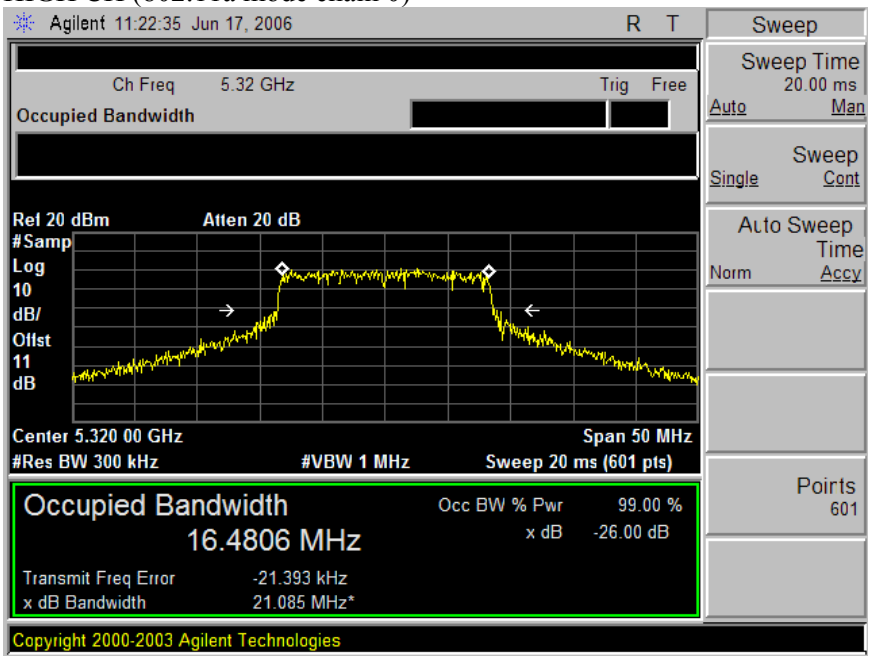
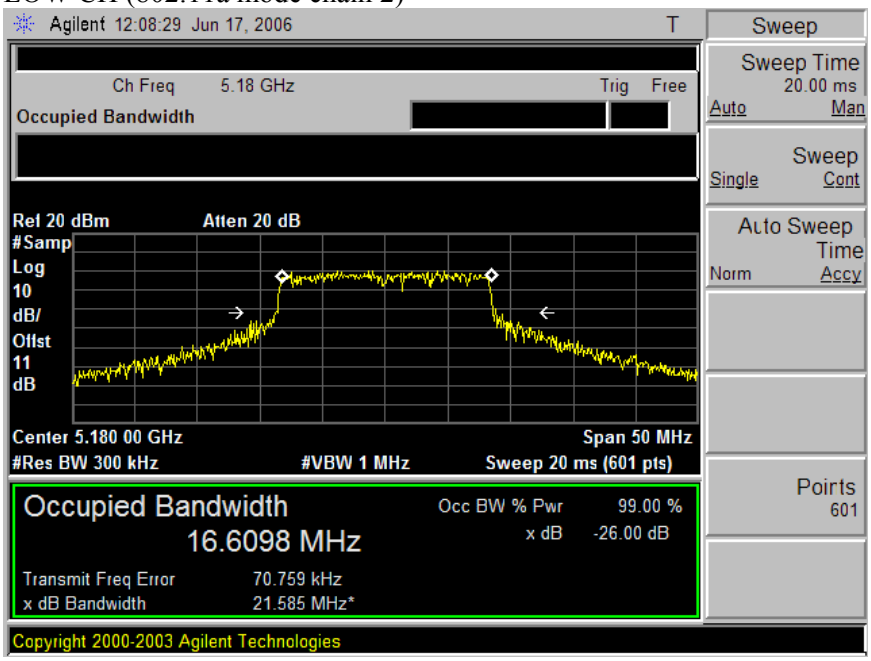


(802.11a MODE CHAIN 2)

LOW CH (802.11a mode chain 2)



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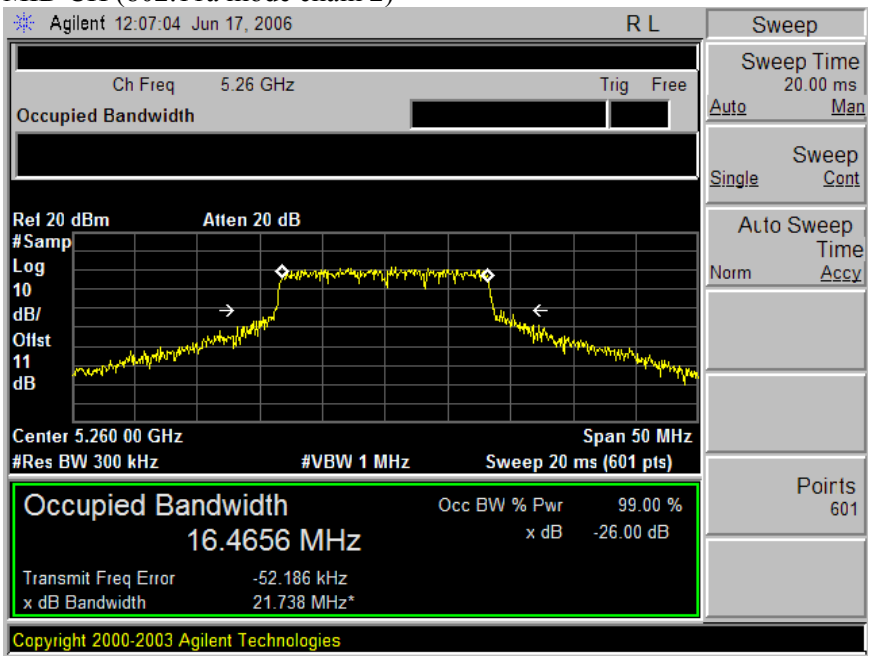
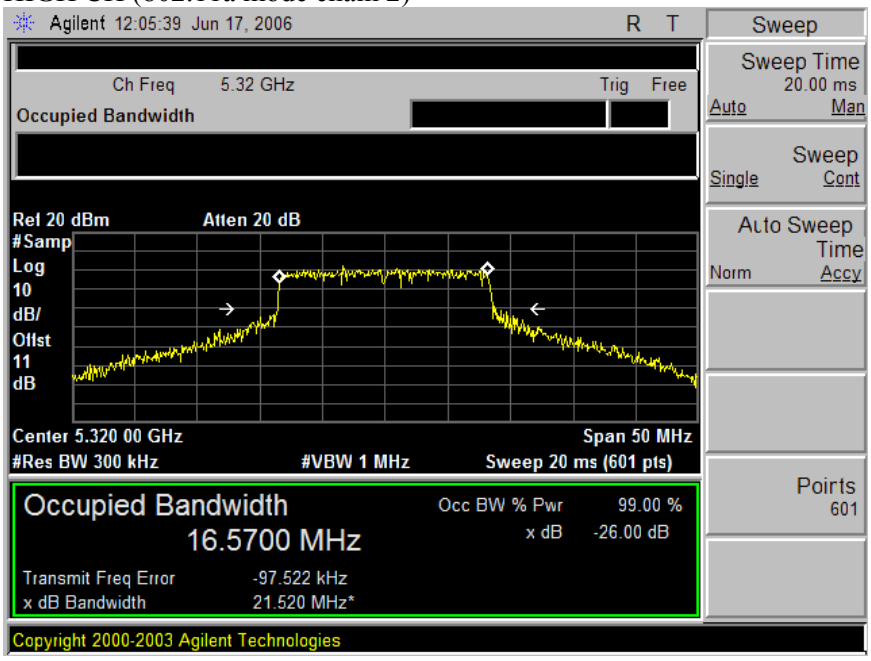
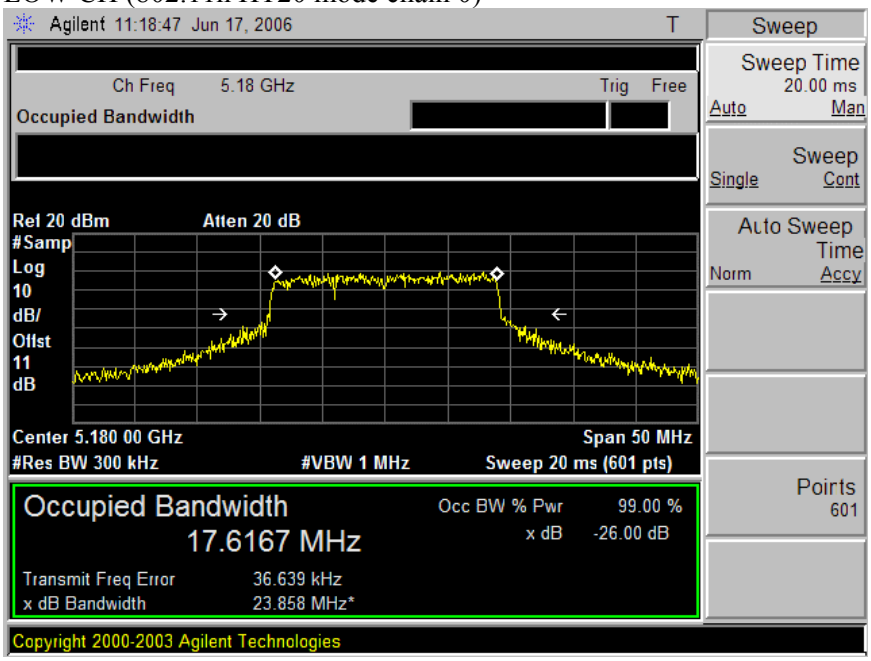


HIGH CH (802.11a mode chain 2)

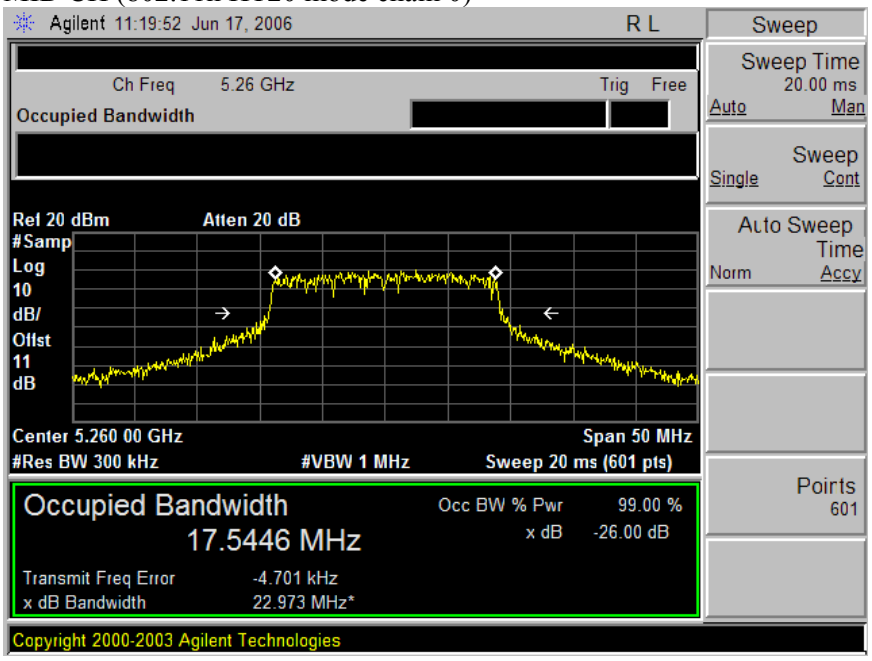


(802.11n HT20 MODE CHAIN 0)

LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)



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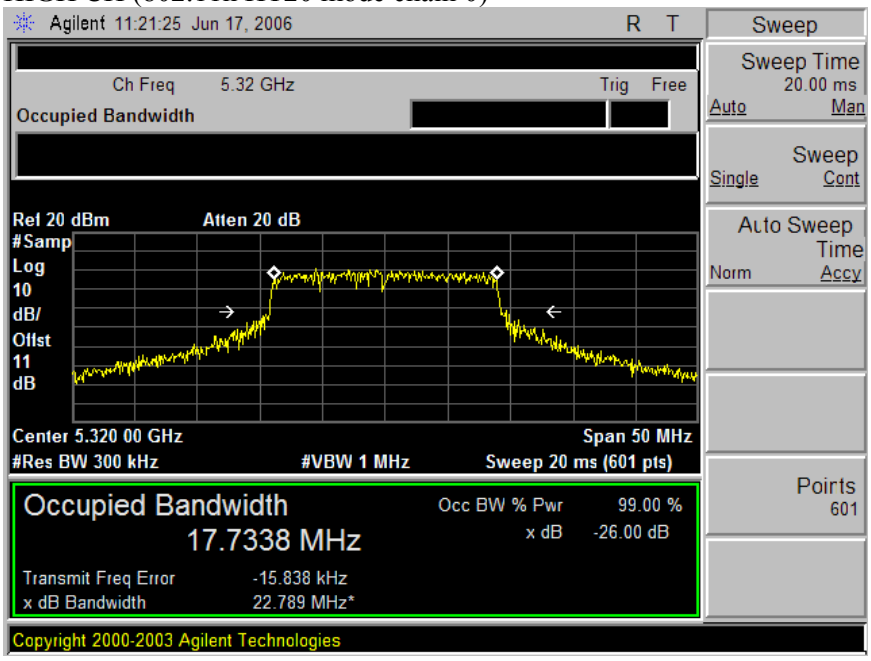
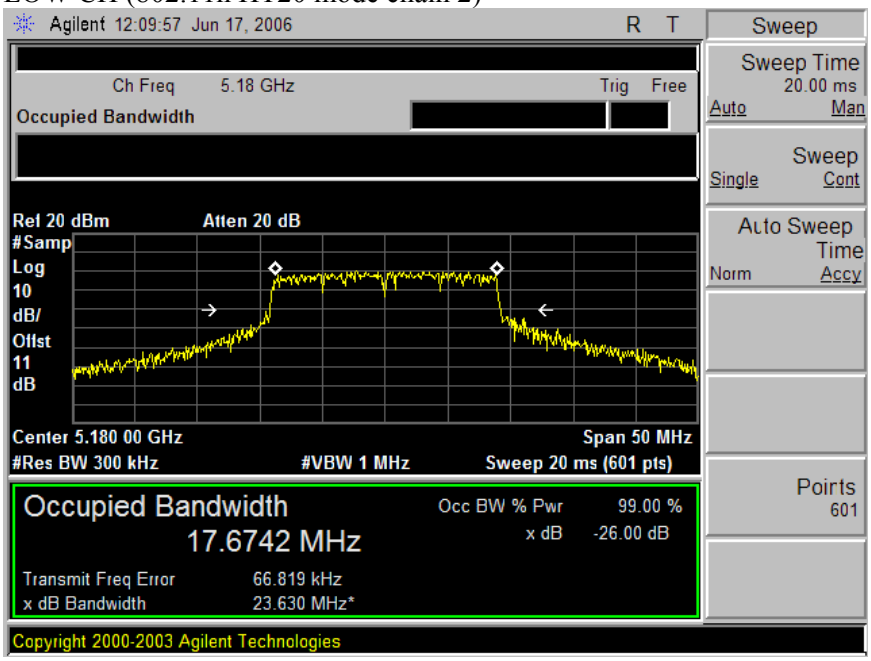
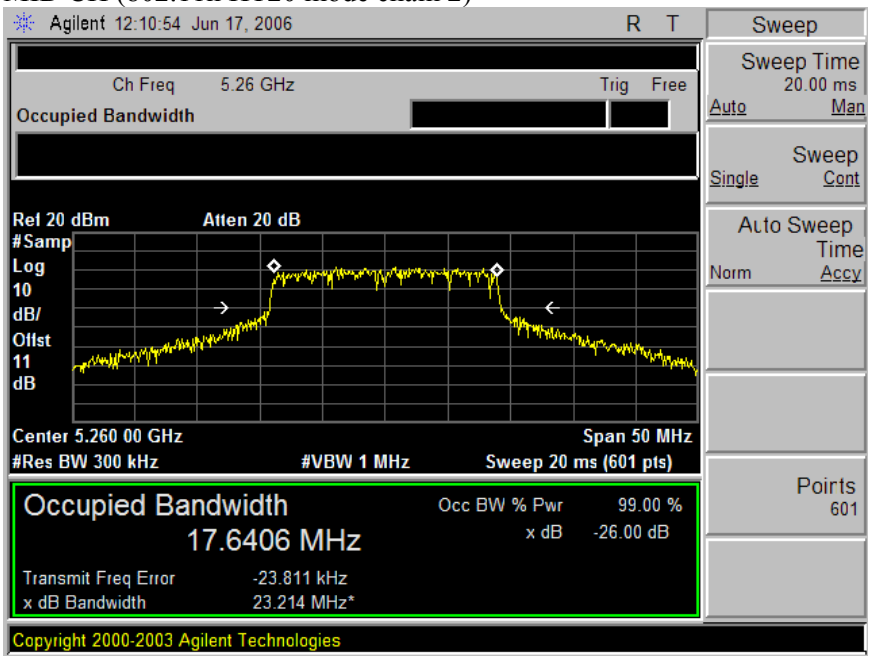


(802.11 HT20 MODE CHAIN 2)

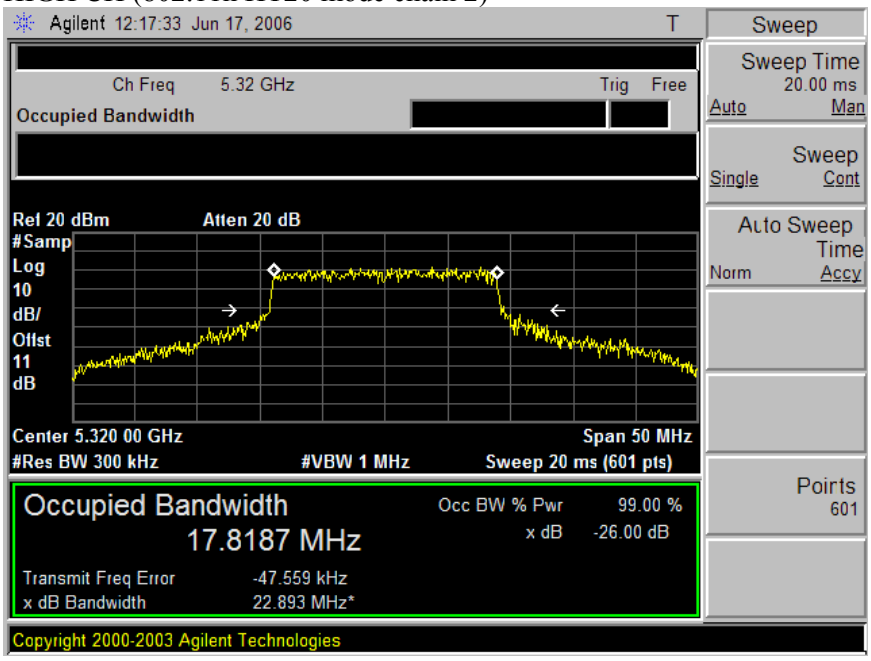
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

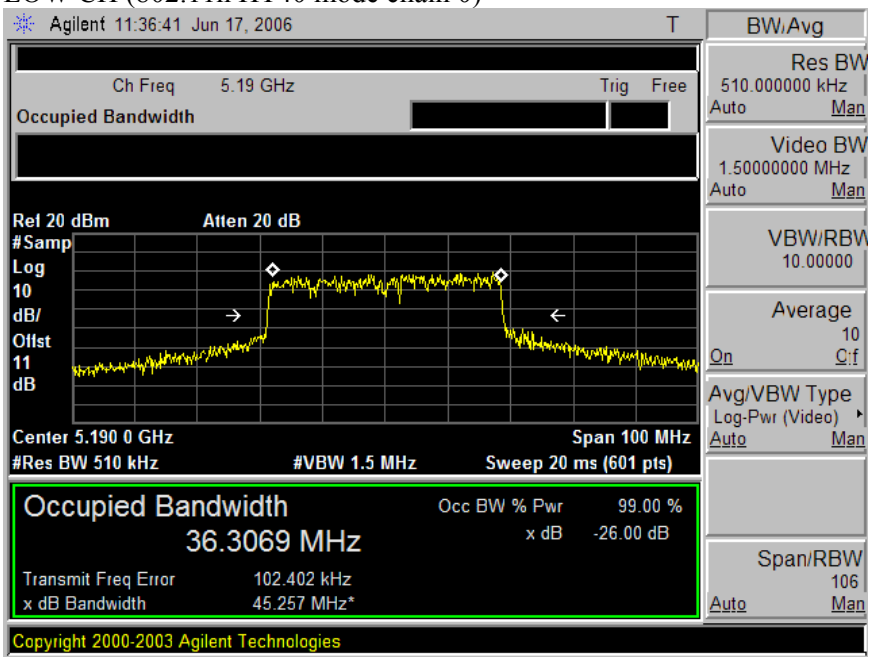


HIGH CH (802.11n HT20 mode chain 2)

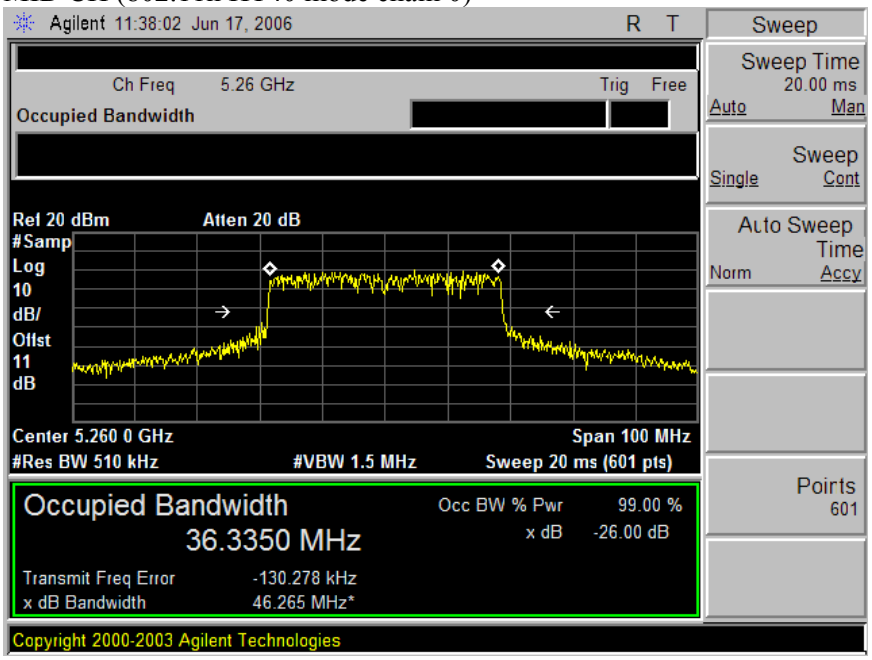


(802.11 HT40 MODE CHAIN 0)

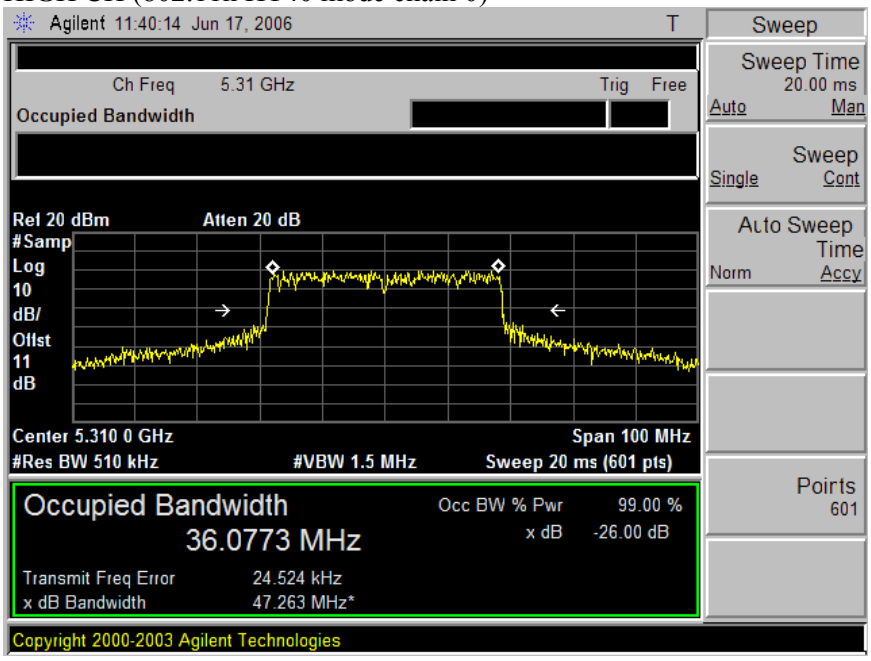
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

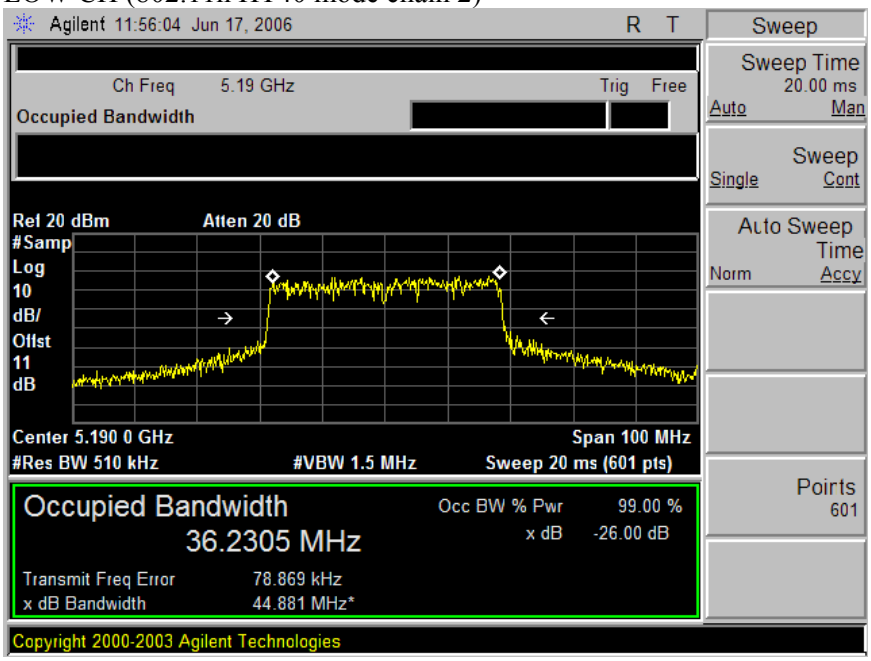


HIGH CH (802.11n HT40 mode chain 0)

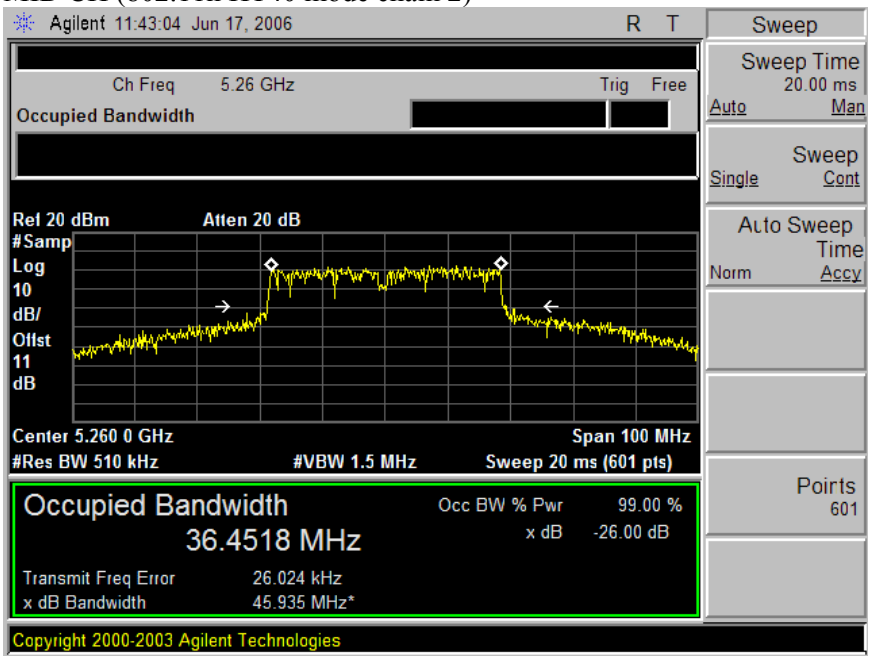


(802.11 HT40 MODE CHAIN 2)

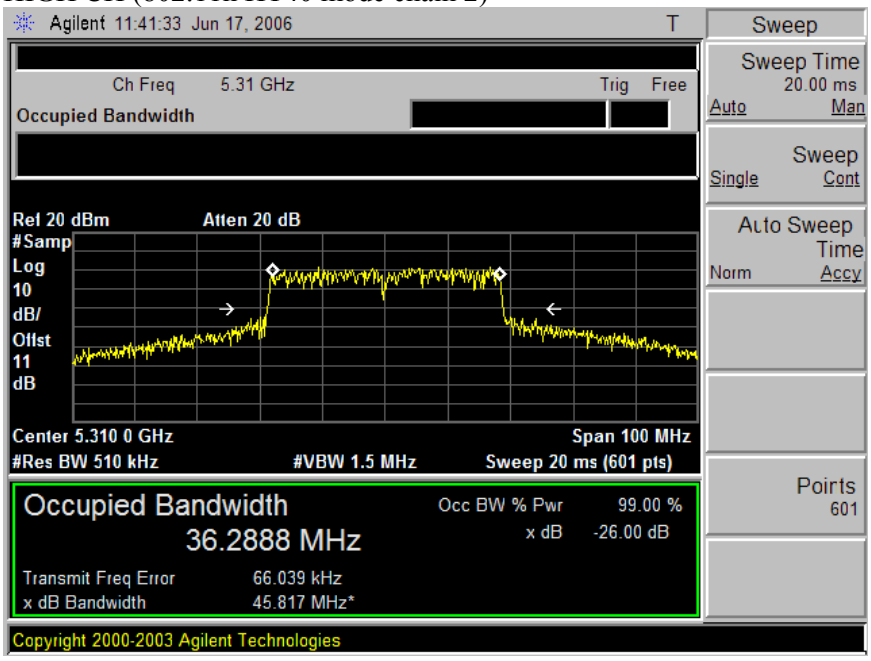
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.2. MAXIMUM POWER

LIMIT

§15.407 (a) (1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407 (a) (1) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

Each chain is measured separately and the total power is calculated using:

Total Power = 10 log (10^ (Chain 0 Power / 10) + 10^ (Chain 2 Power / 10))

LIMITS AND RESULTS

No non-compliance noted:

5150 to 5250 Band

Fixed Limit (dBm)	17
Antenna Gain (dBi)	5.56
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	8.57

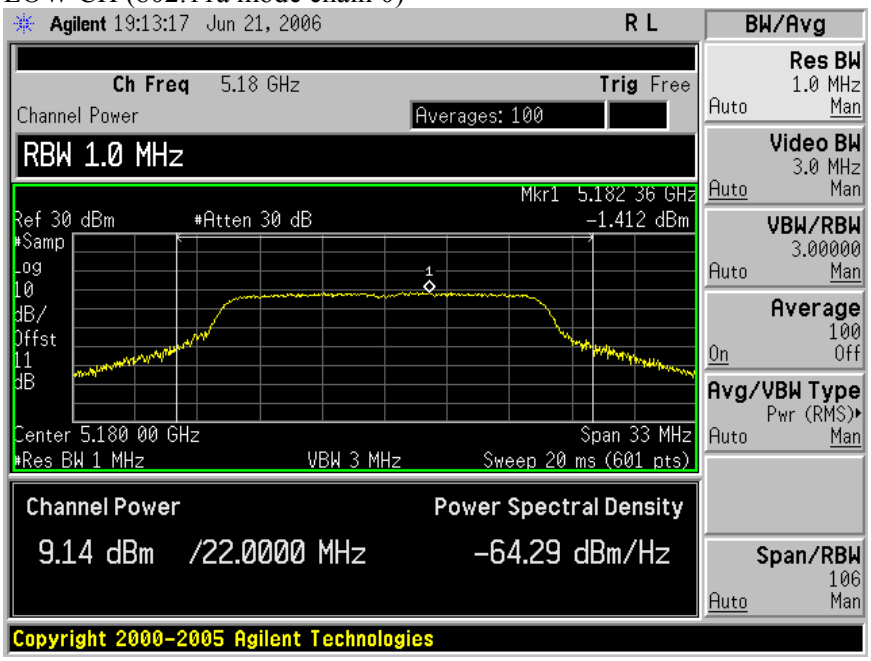
5250 to 5350 Band

Fixed Limit (dBm)	24
Antenna Gain (dBi)	6.2
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	9.21

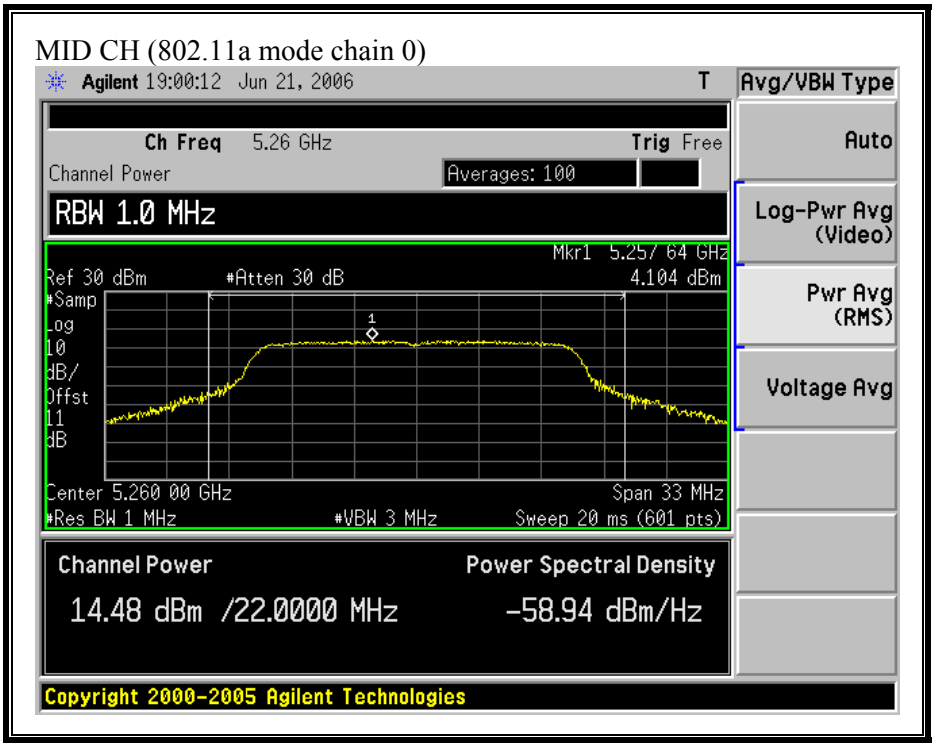
Mode Chan	Freq (MHz)	10LogB (dBm)	4+10LogB / 11+10LogB Limit (dBm)	Limit (dBm)	Chain 0 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)	Margin (dB)
802.11a Mode								
Low	5180	13.34	17.34	14.43	9.14	8.73	11.95	-2.48
Mid	5260	13.37	24.37	20.79	14.48	15.03	17.77	-3.02
High	5320	13.33	24.33	23.80	14.40	15.57	18.03	-5.77
802.11n HT20 Mode								
Low	5180	13.78	17.78	17.00	11.65	11.32	14.50	-2.50
Mid	5260	13.66	24.66	23.80	16.57	18.21	20.48	-3.32
High	5320	13.6	24.60	23.80	16.82	17.60	20.24	-3.56
802.11n HT40 Mode								
Low	5190	16.56	20.56	17.00	12.71	13.91	16.36	-0.64
Mid	5260	16.65	27.65	23.80	17.65	18.73	21.23	-2.57
High	5310	16.75	27.75	23.80	14.49	14.74	17.63	-6.17

(802.11a MODE CHAIN 0)

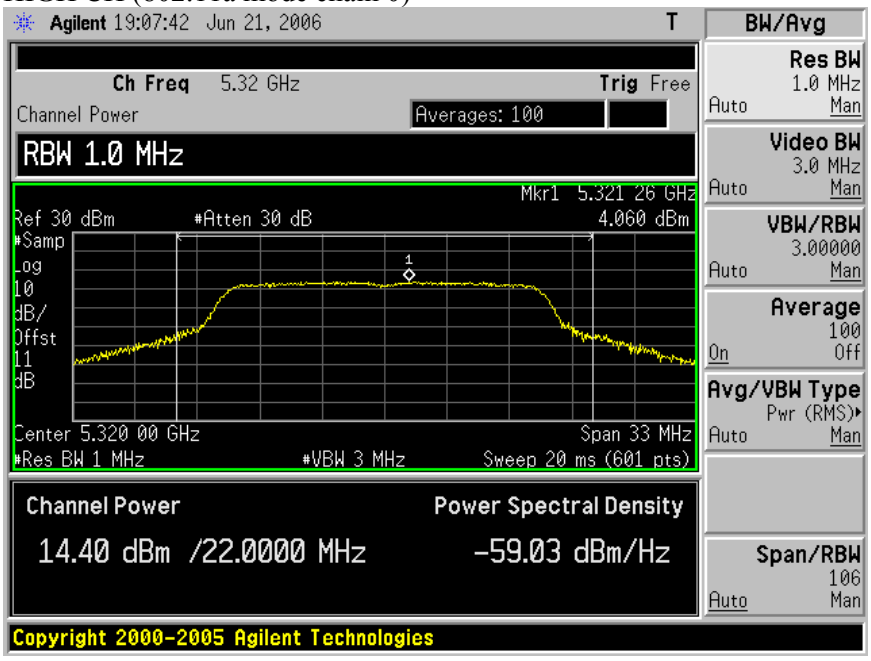
LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)

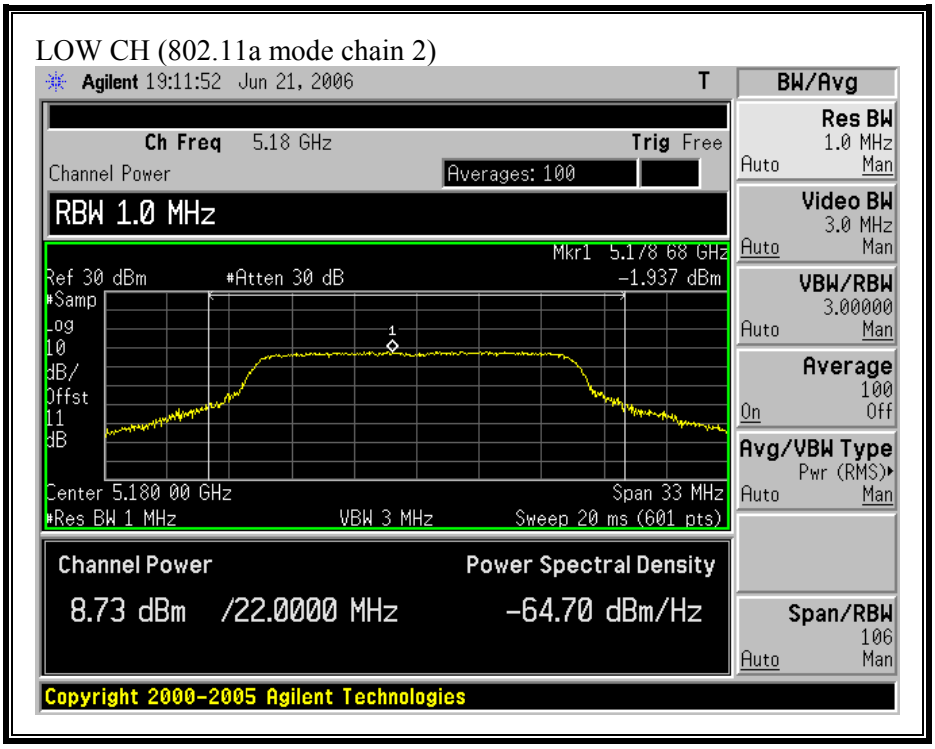


HIGH CH (802.11a mode chain 0)

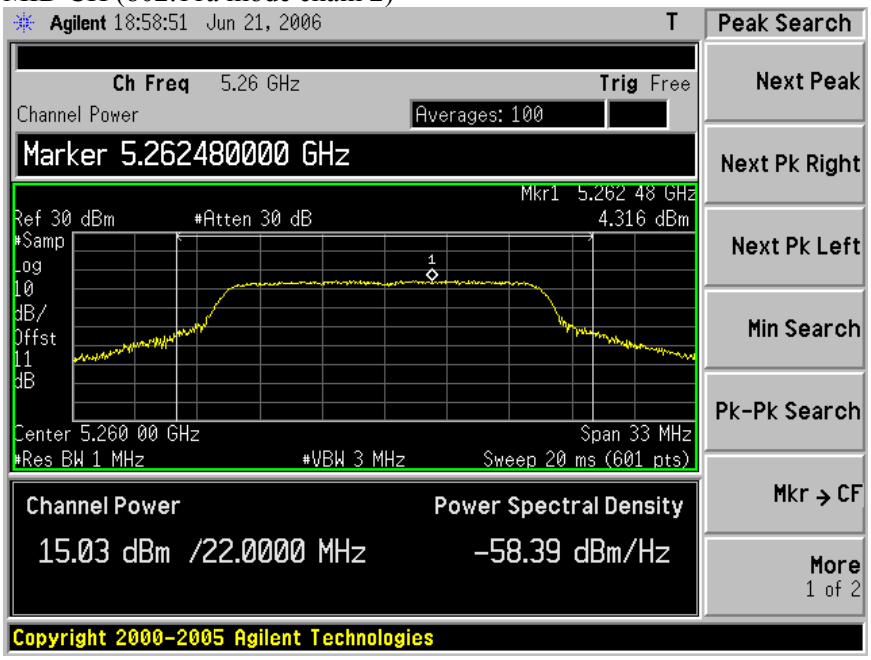


(802.11a MODE CHAIN 2)

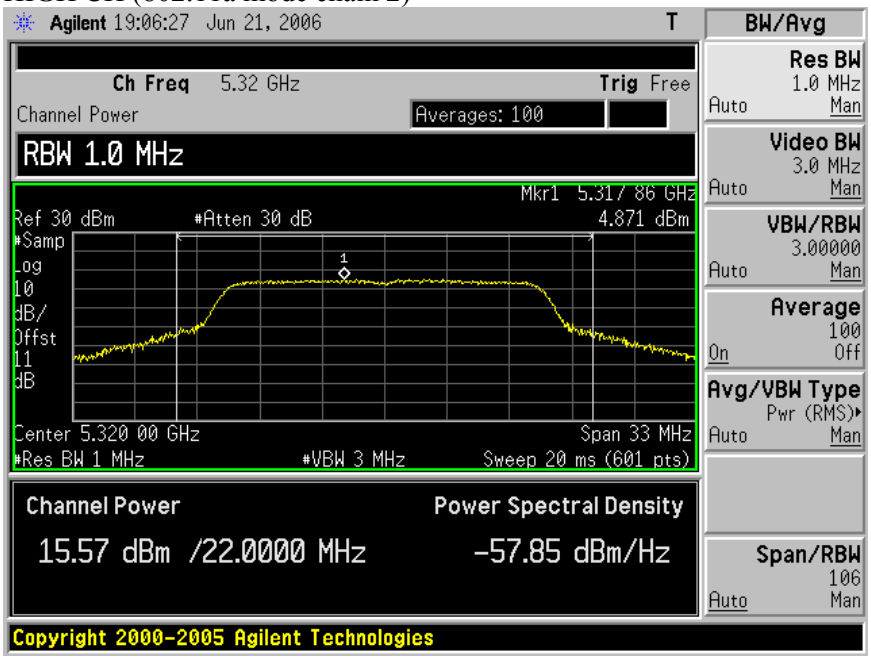
LOW CH (802.11a mode chain 2)



MID CH (802.11a mode chain 2)

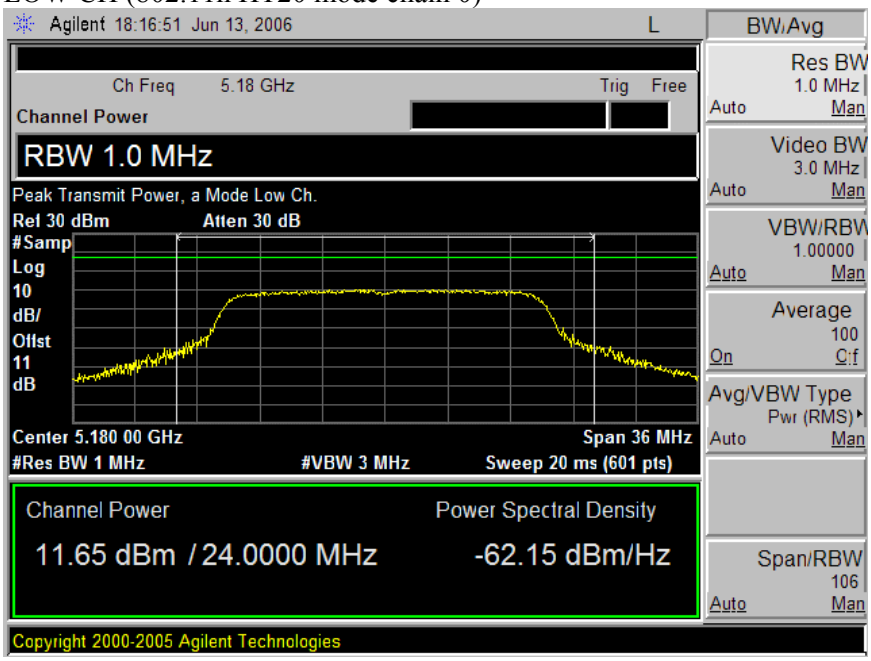


HIGH CH (802.11a mode chain 2)

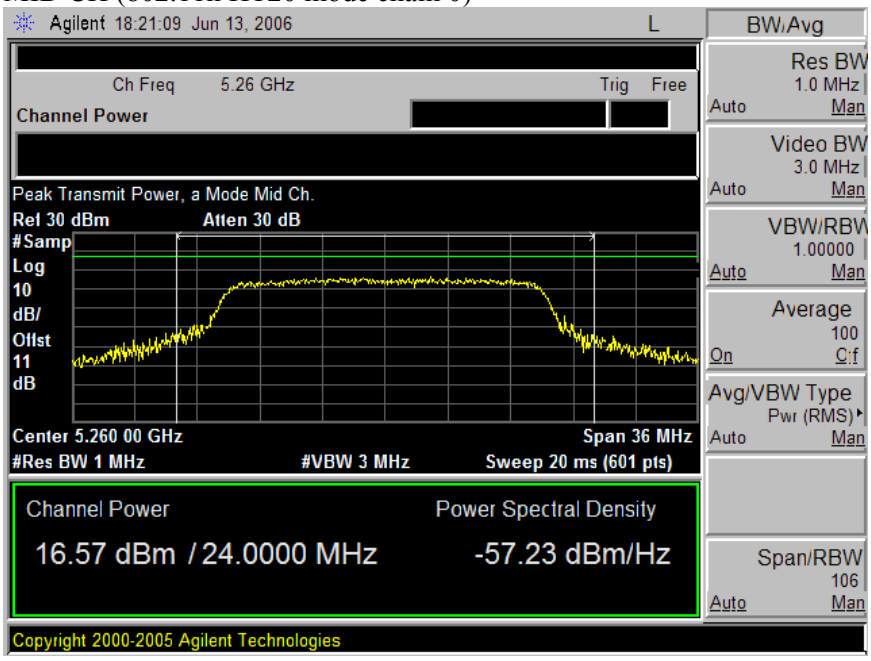


(802.11n HT20 MODE CHAIN 0)

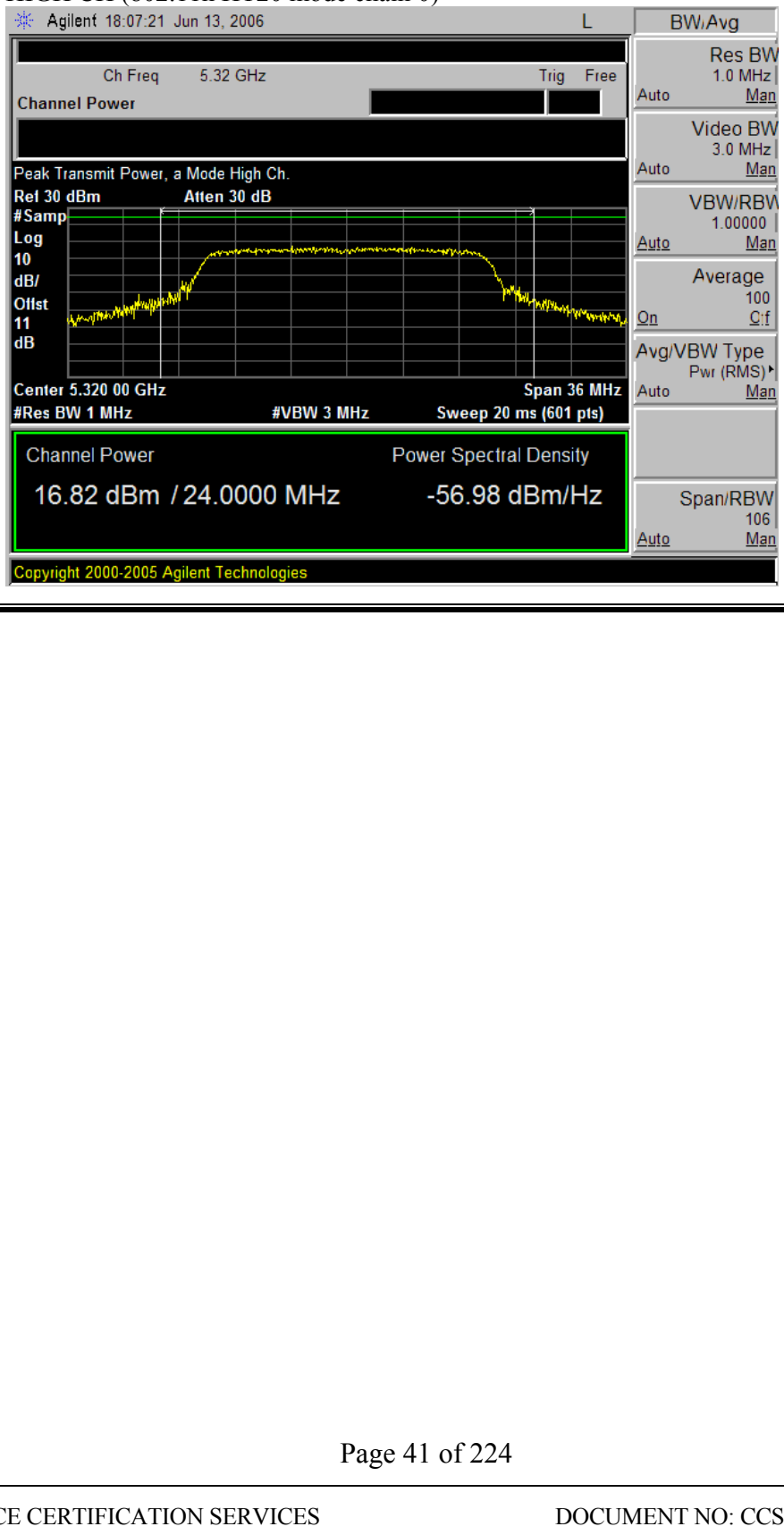
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

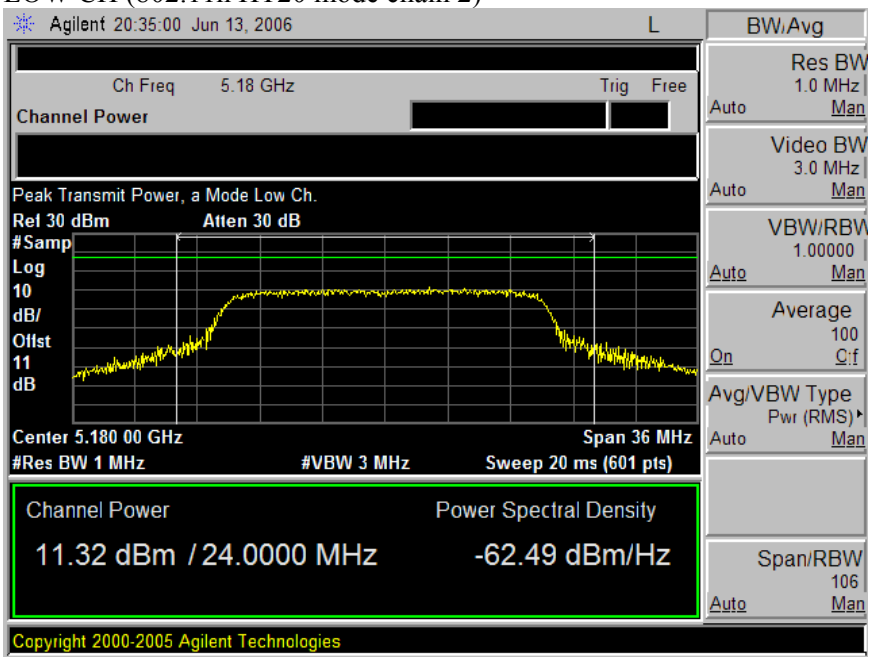


HIGH CH (802.11n HT20 mode chain 0)

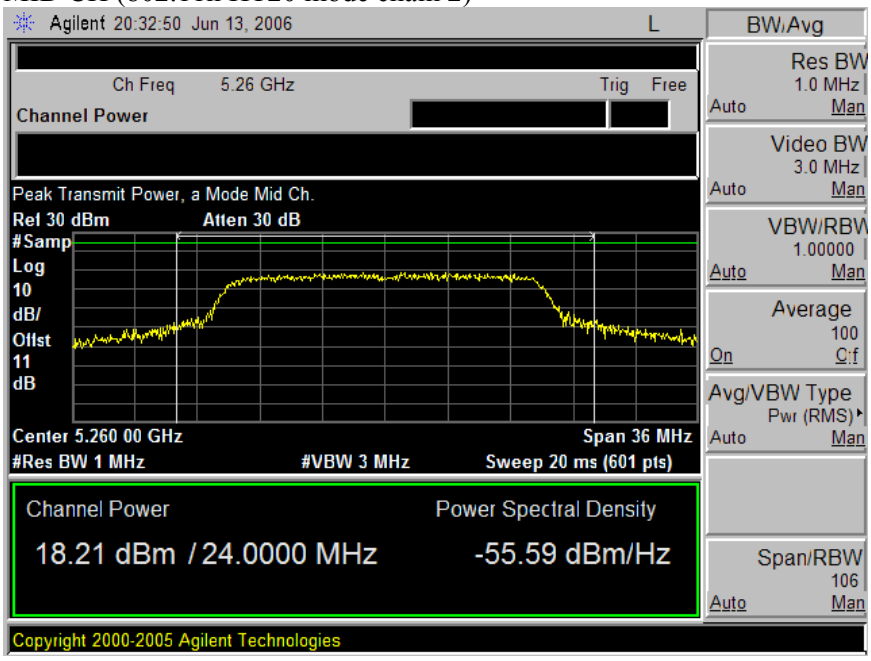


(802.11 HT20 MODE CHAIN 2)

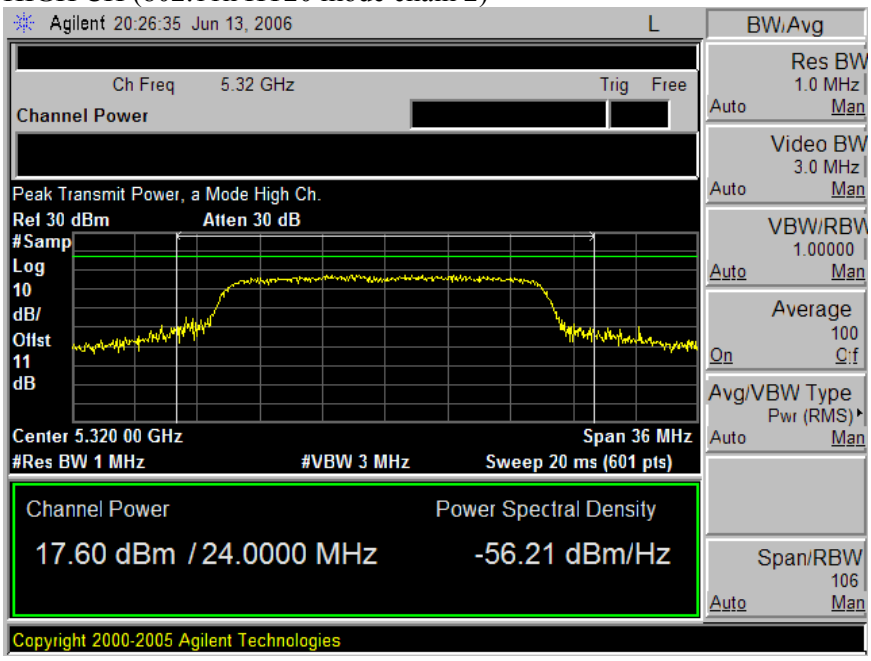
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

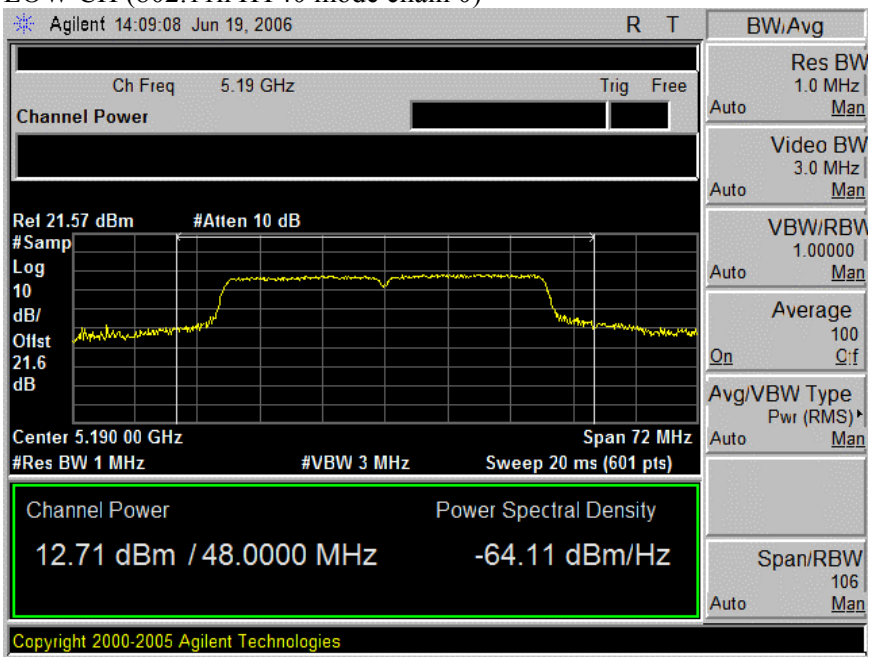


HIGH CH (802.11n HT20 mode chain 2)

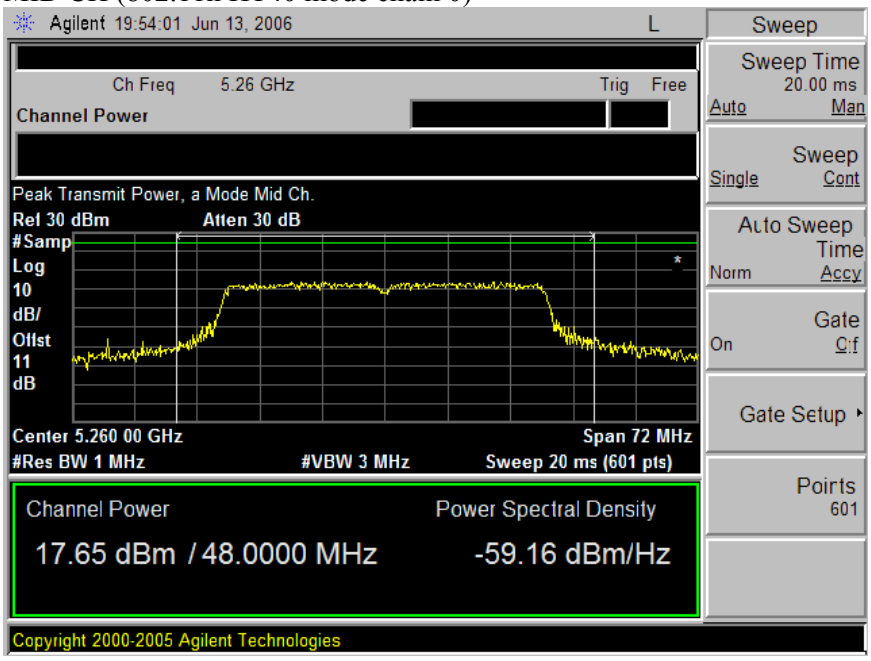


(802.11 HT40 MODE CHAIN 0)

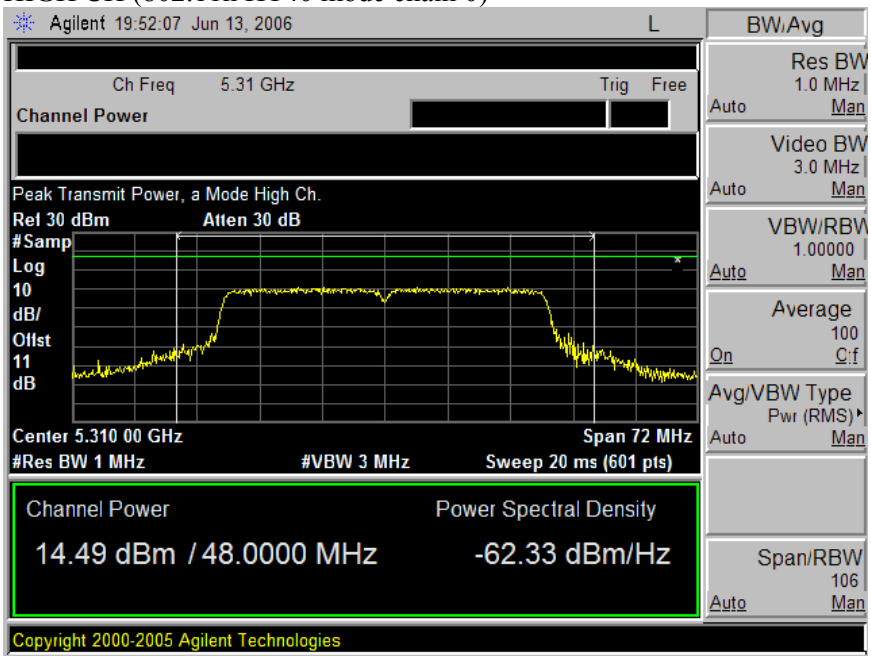
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

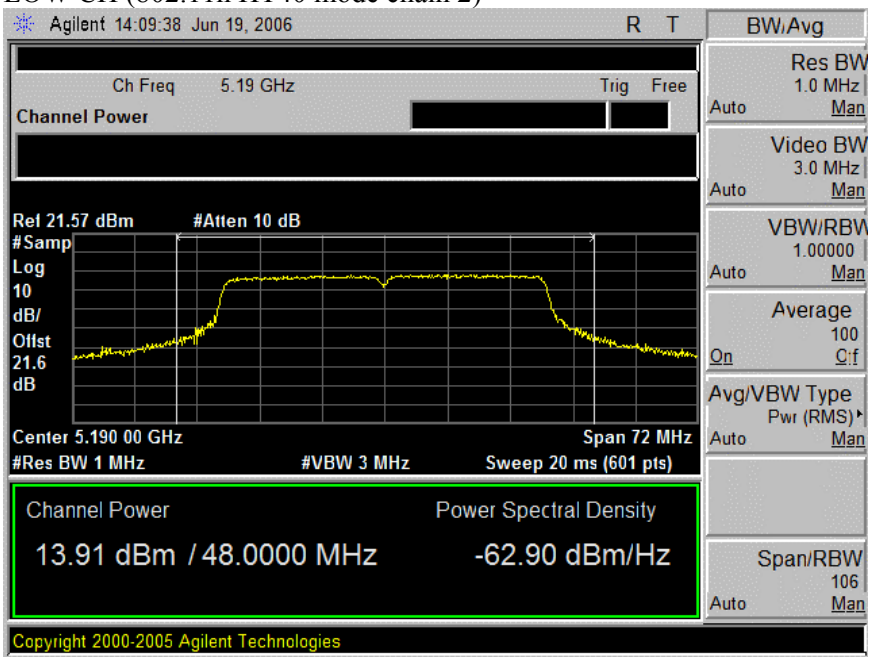


HIGH CH (802.11n HT40 mode chain 0)

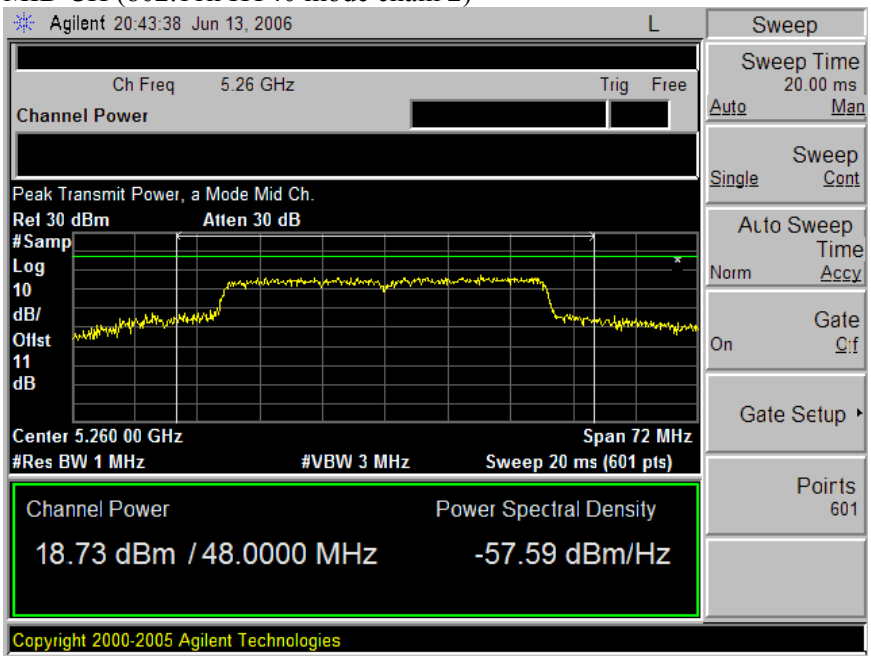


(802.11 HT40 MODE CHAIN 2)

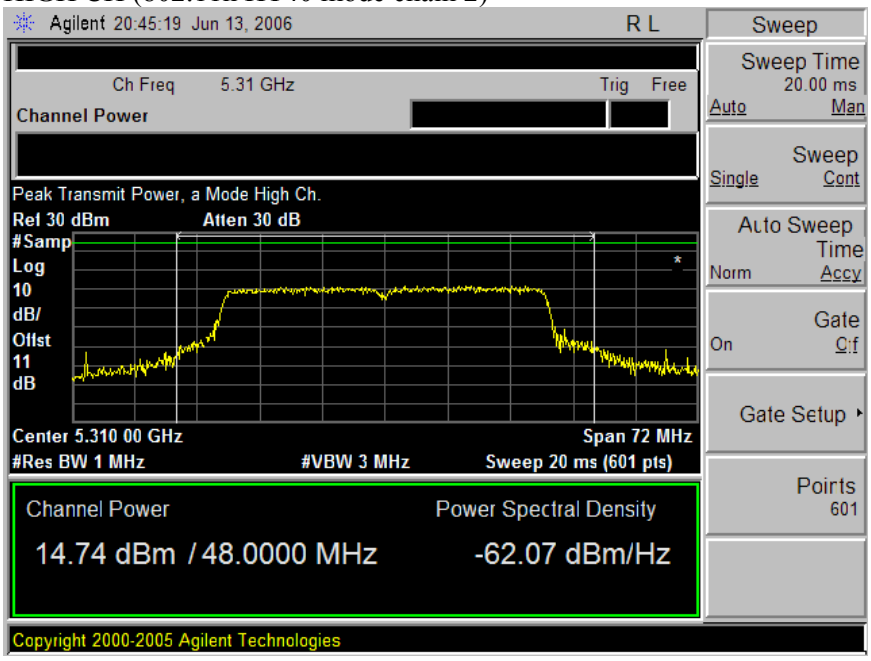
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.3. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

Each chain is measured separately and the total power is calculated using:

Total Power = 10 log (10^ (Chain 0 Power / 10) + 10^ (Chain 2 Power / 10))

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 11. dB (including 10 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Mode Channel	Frequency (MHz)	Average Power Chain 0 (dBm)	Average Power Chain 2 (dBm)	Average Power Total (dBm)
802.11a Mode				
Low	5180	8.68	8.5	11.6
Middle	5260	14.21	14.8	17.5
High	5320	14.01	15.0	17.6
802.11n HT20 Mode				
Low	5180	10.0	11.0	13.5
Middle	5260	15.9	18.1	20.1
High	5320	16.9	17.0	19.9
802.11n HT40 Mode				
Low	5190	12.3	13.7	16.1
Middle	5260	16.4	18.5	20.6
High	5310	14.2	14.6	17.4

7.1.4. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.407 (a) (1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407 (a) (1) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain = 6.2 dBi, therefore there is a reduction due to antenna gain.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

Each chain is measured separately and the total PPSD is calculated using:

Total PPSD = 10 log (10^ (Chain 0 PPSD / 10) + 10^ (Chain 2 PPSD / 10))

RESULTS

No non-compliance noted:

5150 to 5250 Band

Antenna Gain (dBi)	5.56
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	8.57

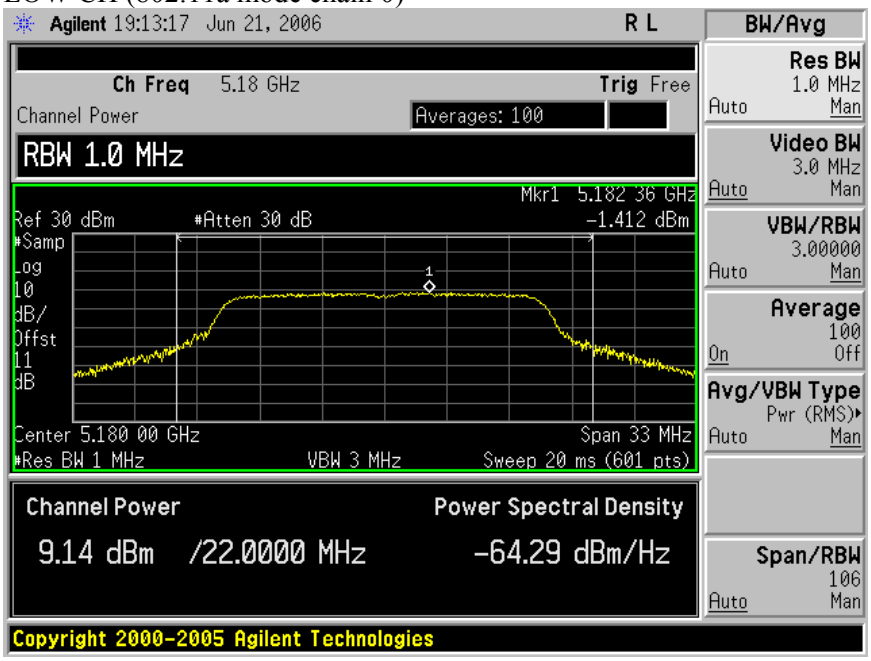
5250 to 5350 Band

Antenna Gain (dBi)	6.2
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	9.21

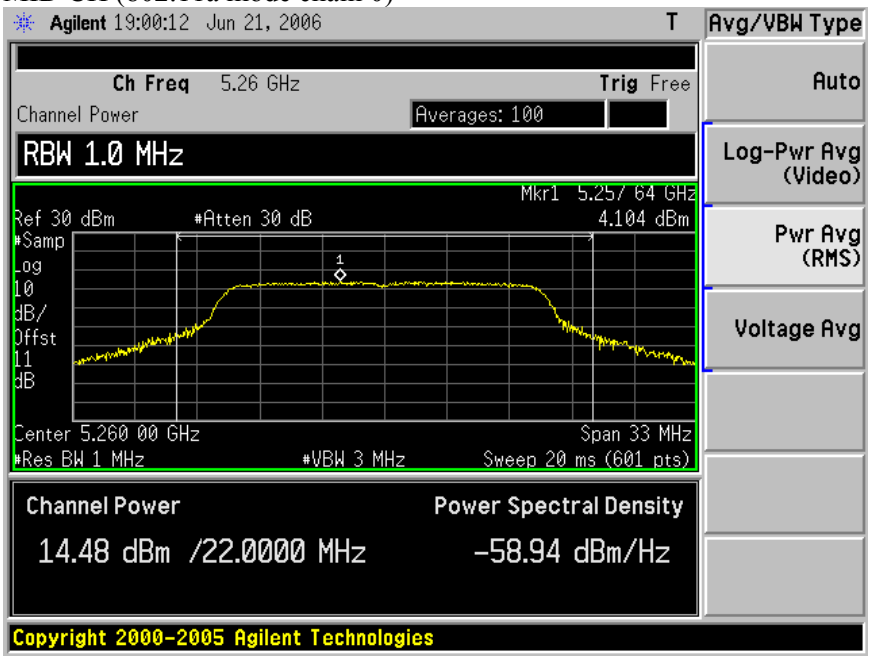
Mode Channel	Frequency (MHz)	PPSD Chain 0 (dBm)	PPSD Chain 2 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)
802.11a Mode						
Low	5180	-1.41	-1.94	1.34	1.43	-0.09
Middle	5260	4.10	4.32	7.22	7.79	-0.57
High	5320	4.06	4.87	7.49	7.79	-0.29
802.11n HT20 Mode						
Low	5180	0.61	0.38	3.51	4.00	-0.49
Middle	5260	6.83	7.51	10.20	10.80	-0.60
High	5320	7.15	6.90	10.03	10.80	-0.77
802.11n HT40 Mode						
Low	5190	0.56	0.68	3.63	4	-0.37
Middle	5260	4.10	6.10	8.23	11	-2.77
High	5310	0.63	1.06	3.86	11	-7.14

(802.11a MODE CHAIN 0)

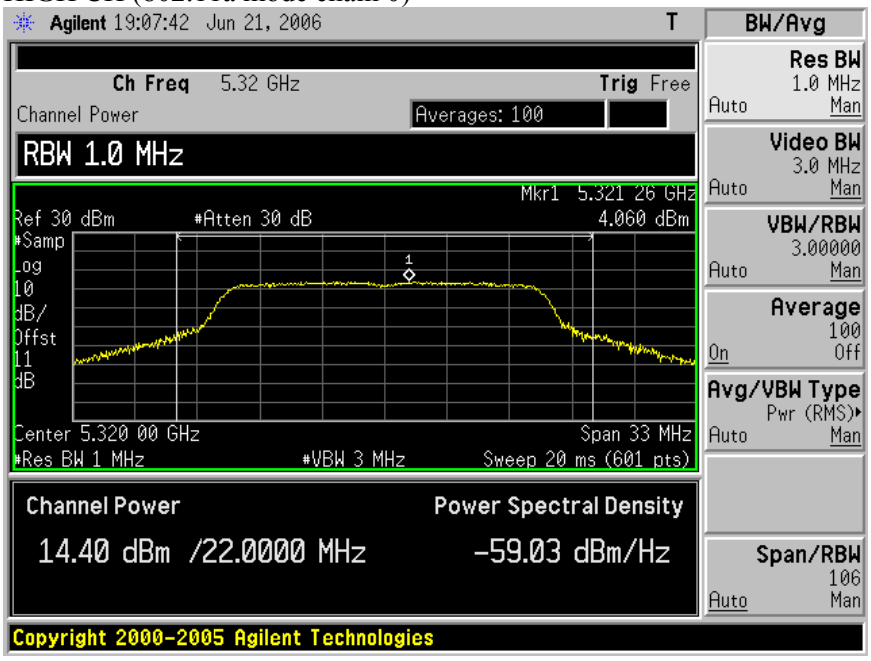
LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)

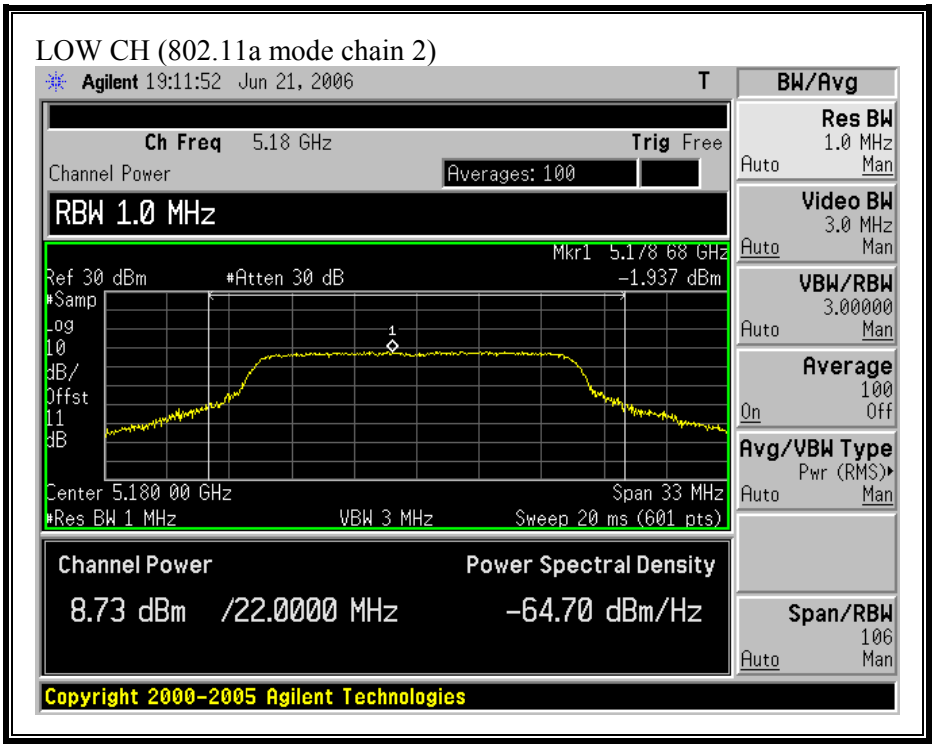


HIGH CH (802.11a mode chain 0)

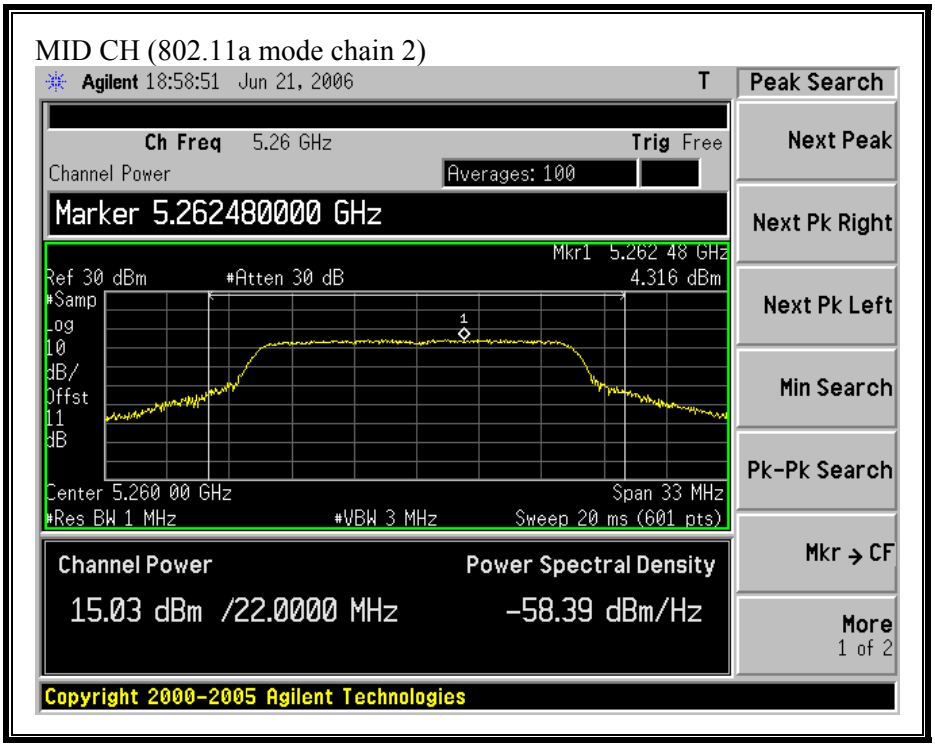


(802.11a MODE CHAIN 2)

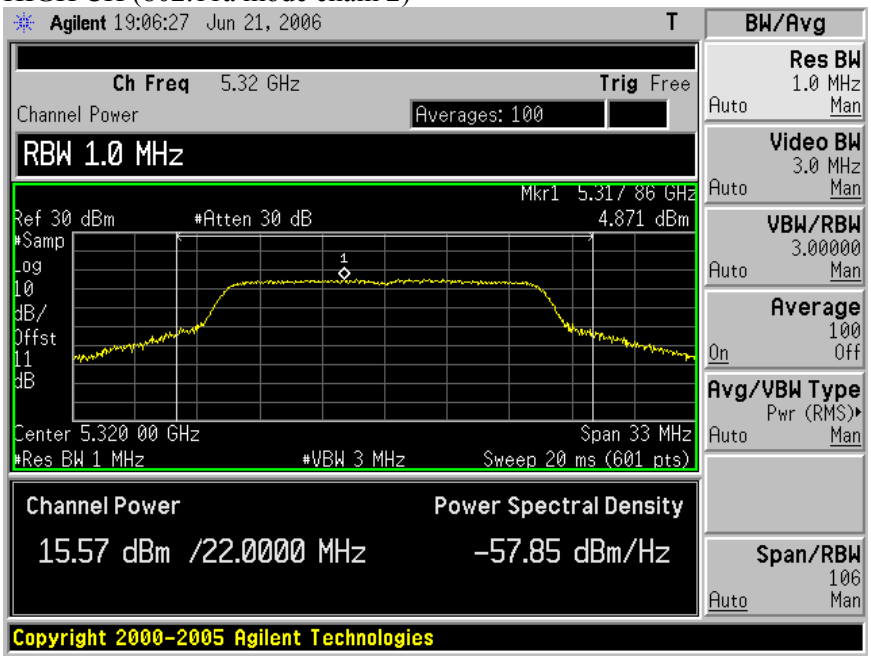
LOW CH (802.11a mode chain 2)



MID CH (802.11a mode chain 2)

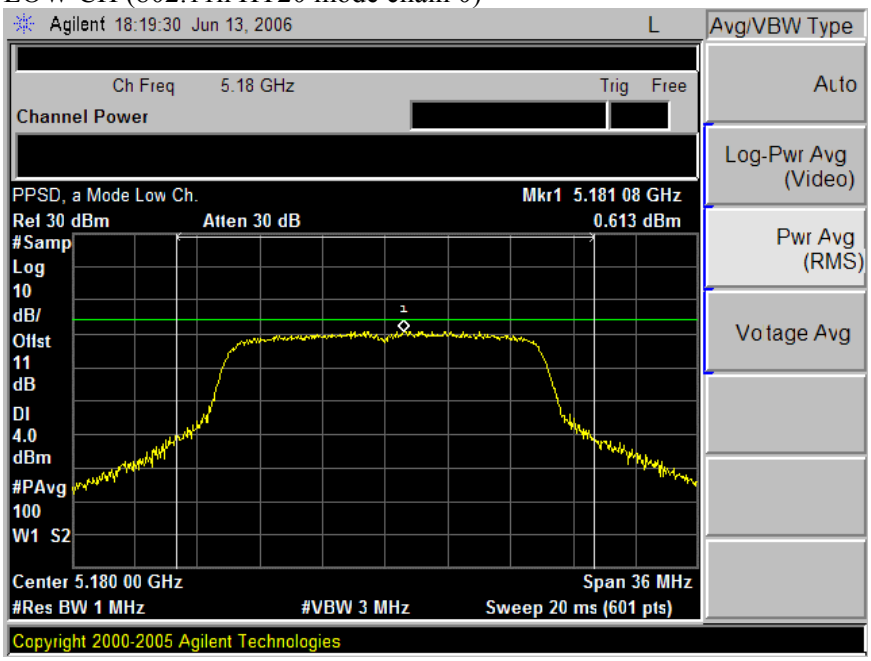


HIGH CH (802.11a mode chain 2)

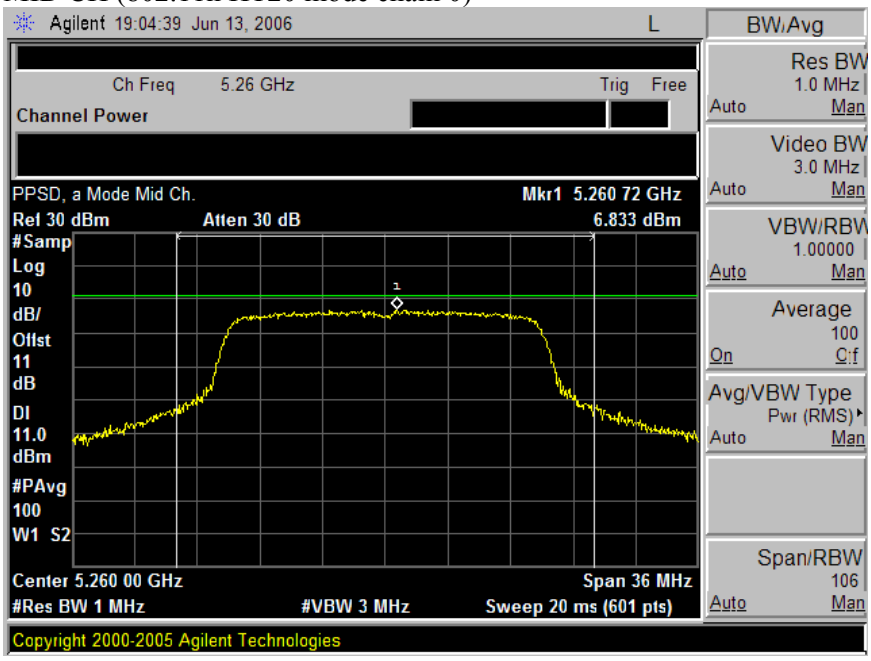


(802.11n HT20 MODE CHAIN 0)

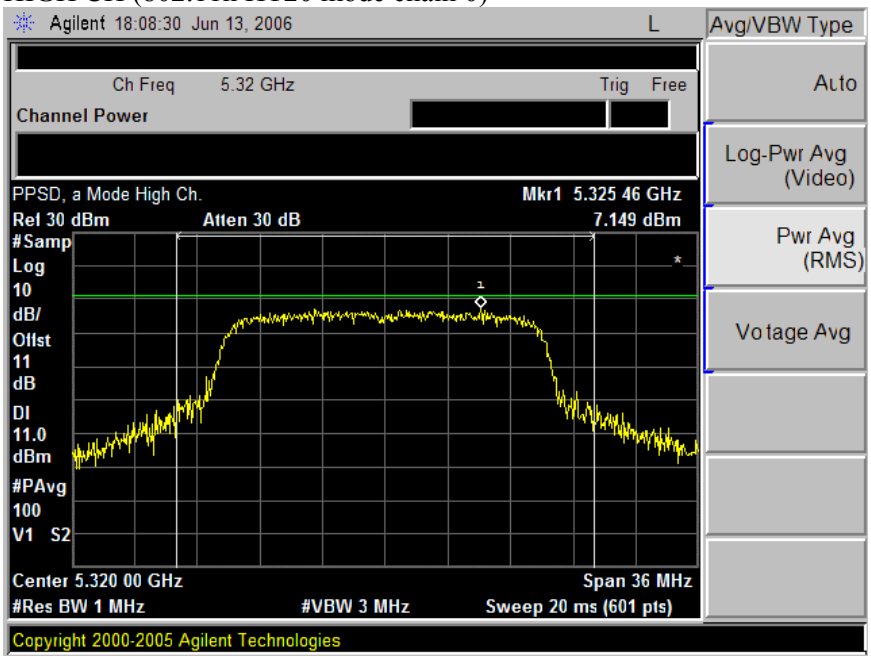
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

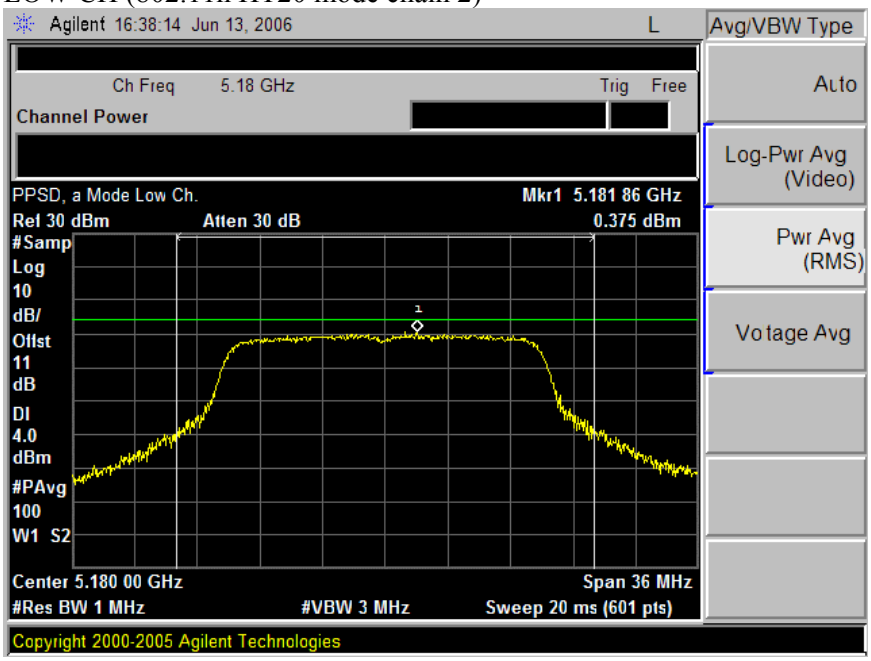


HIGH CH (802.11n HT20 mode chain 0)

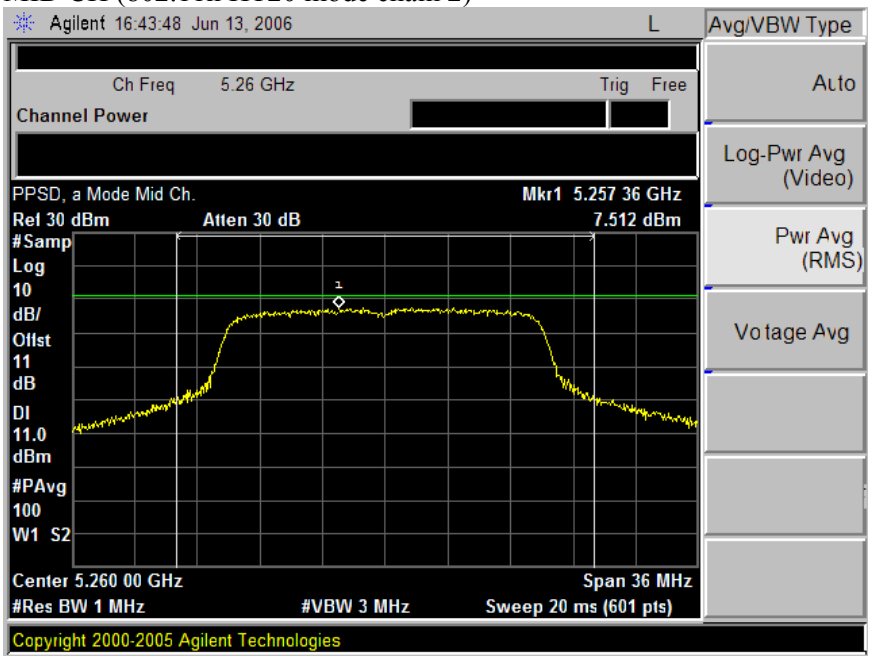


(802.11 HT20 MODE CHAIN 2)

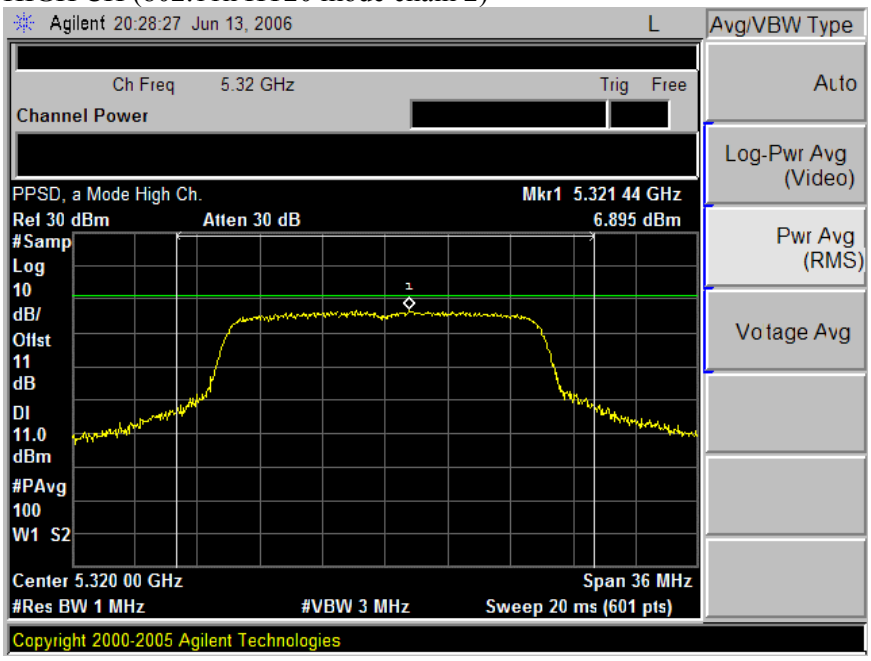
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

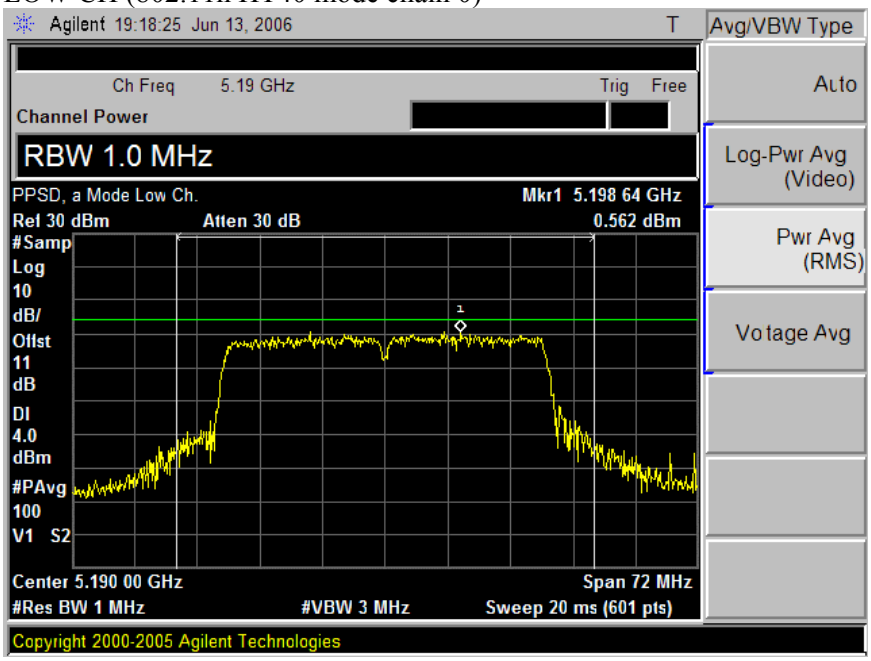


HIGH CH (802.11n HT20 mode chain 2)

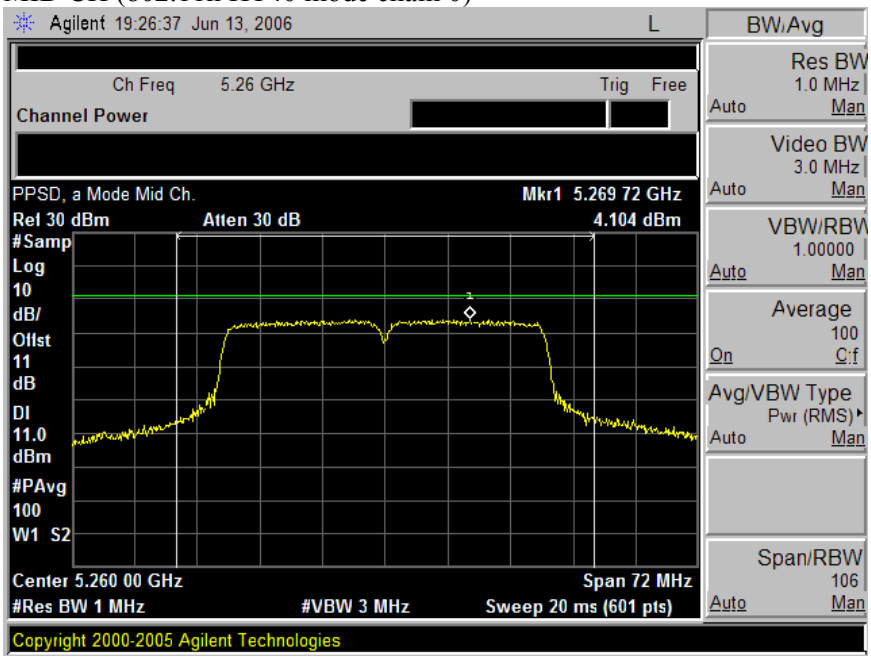


(802.11 HT40 MODE CHAIN 0)

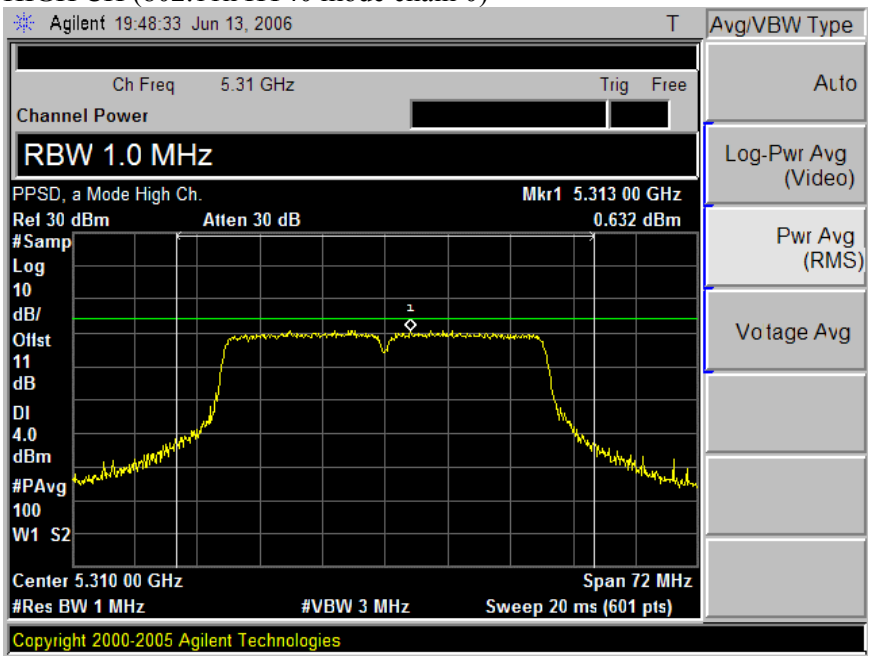
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

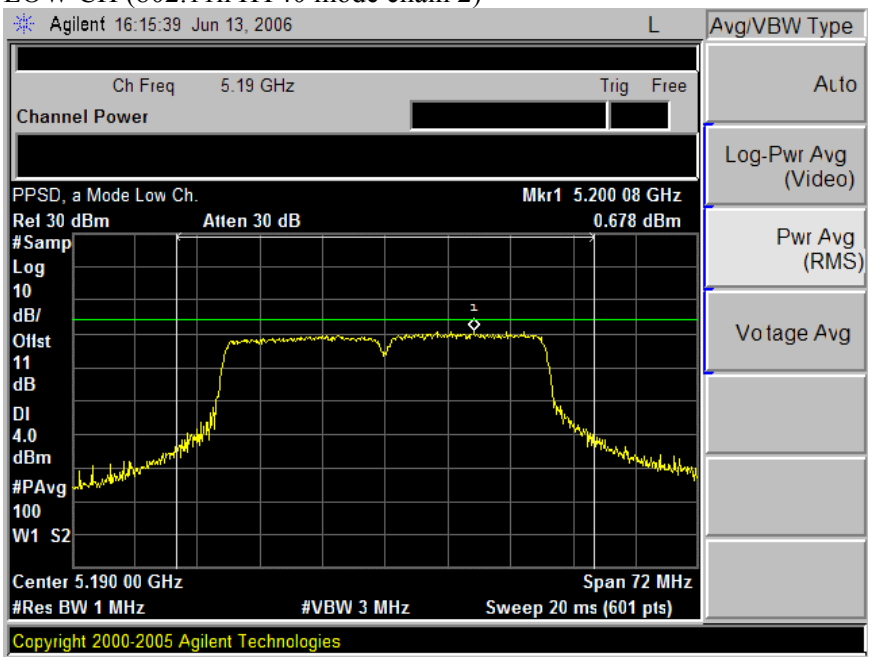


HIGH CH (802.11n HT40 mode chain 0)

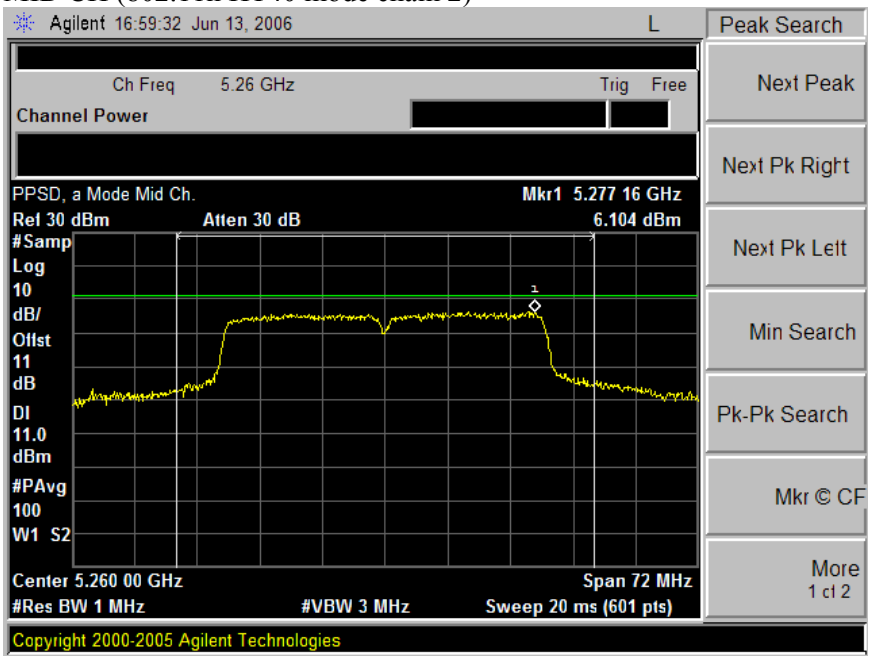


(802.11 HT40 MODE CHAIN 2)

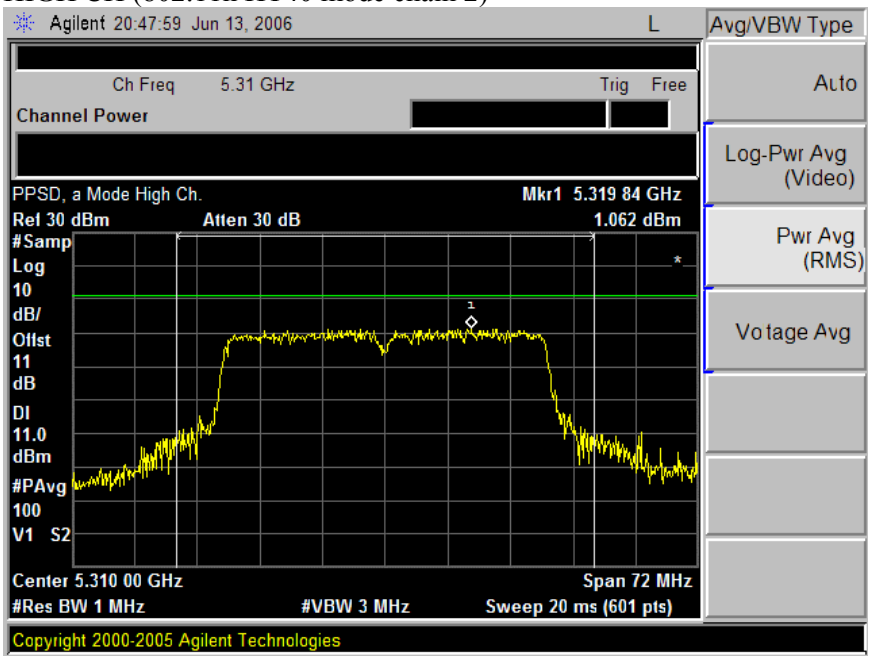
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.5. PEAK EXCURSION

LIMIT

§15.407 (a) (6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

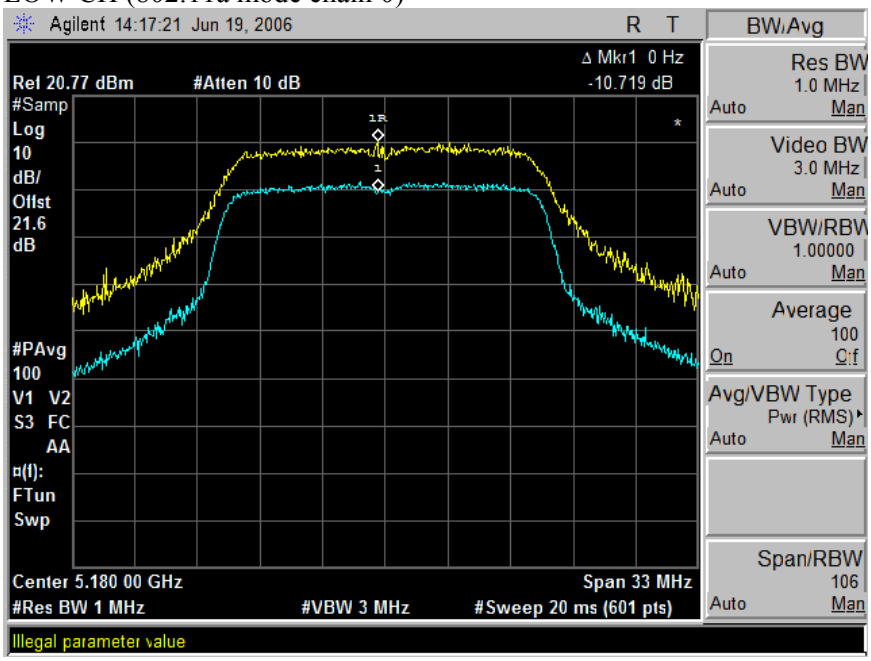
RESULTS

No non-compliance noted:

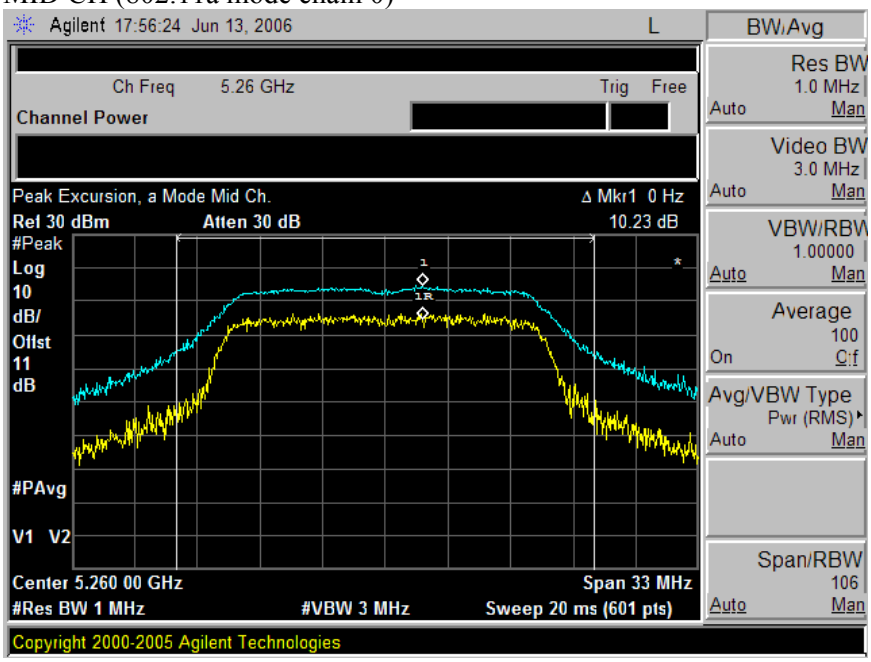
Mode Channel	Frequency (MHz)	Peak Excursion Chain 0 (dBm)	Peak Excursion Chain 2 (dBm)	Limit (dBm)	Worst Case Margin (dB)
802.11a Mode					
Low	5180	10.72	9.50	13	-2.28
Middle	5260	10.23	10.02	13	-2.77
High	5320	10.07	9.98	13	-2.93
802.11n HT20 Mode					
Low	5180	9.59	10.04	13	-2.96
Middle	5260	9.57	9.86	13	-3.14
High	5320	9.63	9.48	13	-3.37
802.11n HT40 Mode					
Low	5190	10.07	10.46	13	-2.54
Middle	5260	9.24	10.04	13	-2.96
High	5310	10.73	10.52	13	-2.27

(802.11a MODE CHAIN 0)

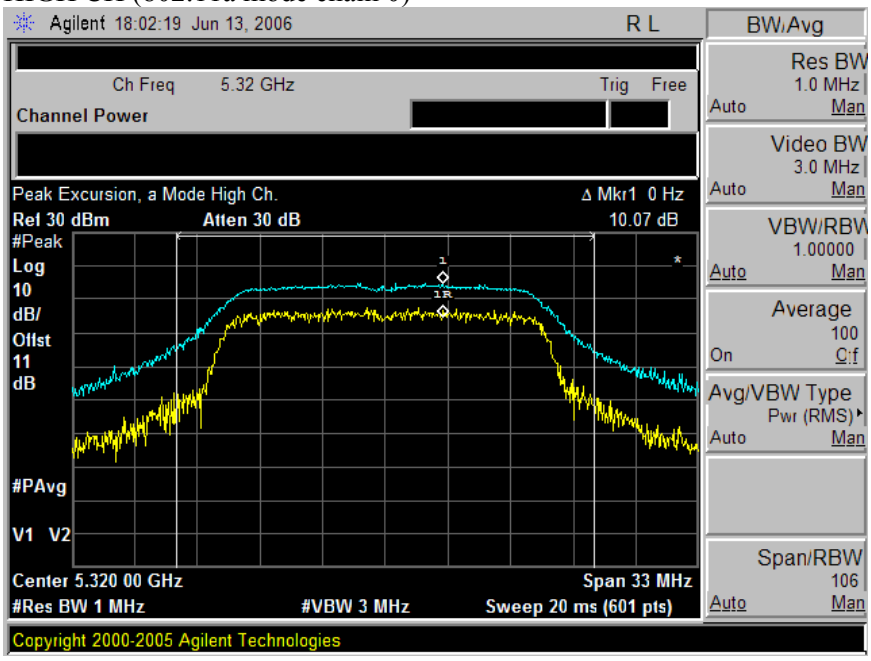
LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)

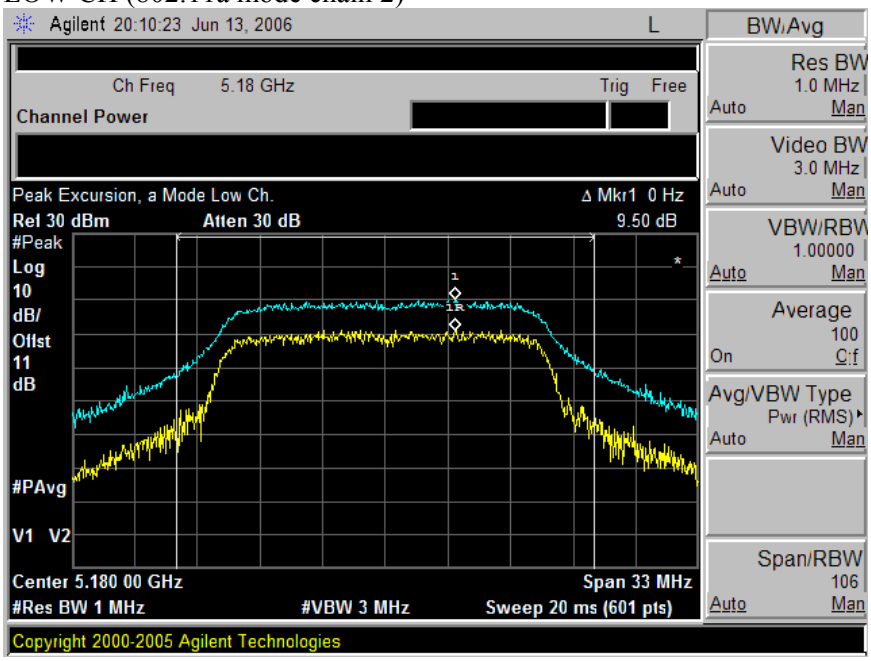


HIGH CH (802.11a mode chain 0)

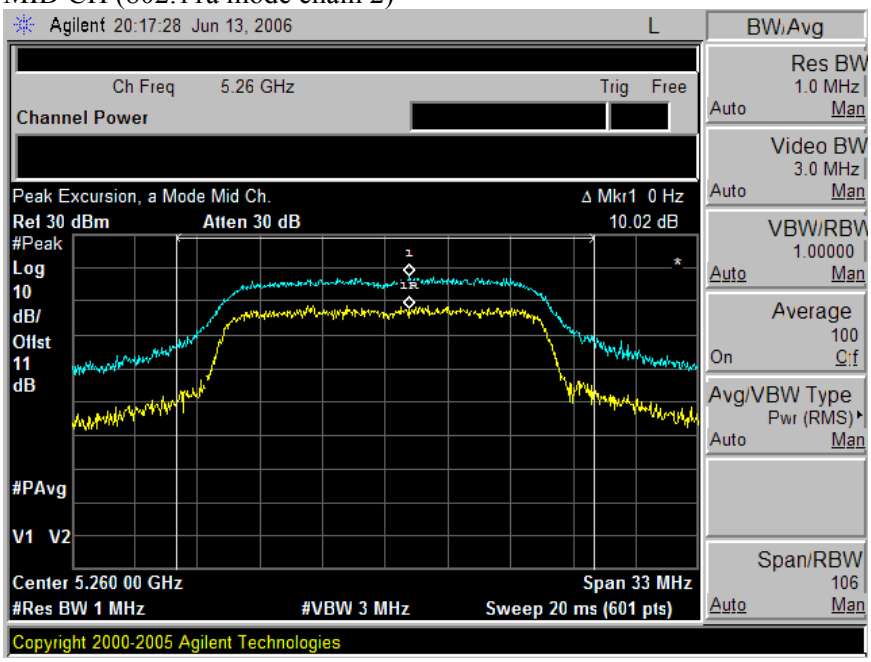


(802.11a MODE CHAIN 2)

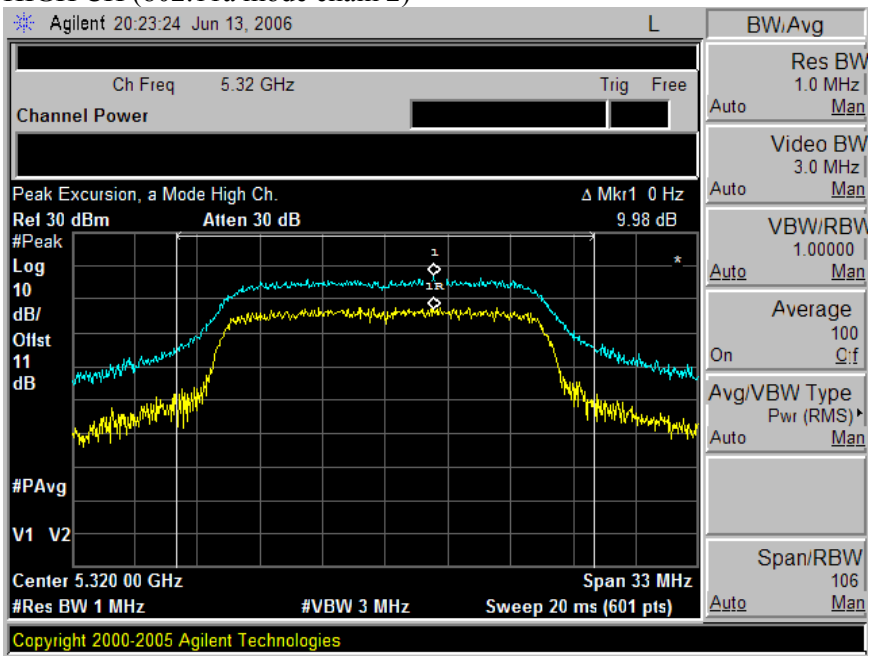
LOW CH (802.11a mode chain 2)



MID CH (802.11a mode chain 2)

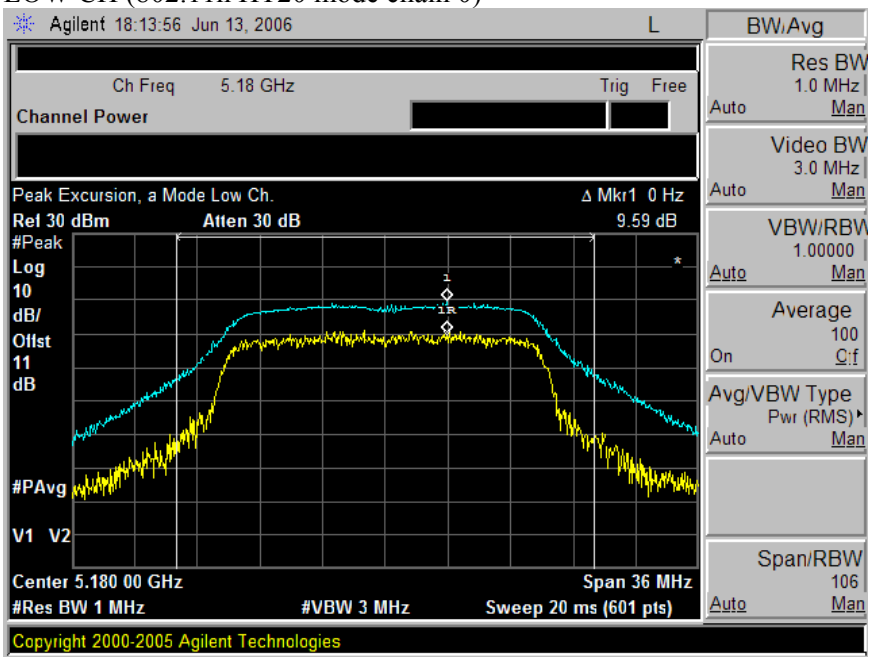


HIGH CH (802.11a mode chain 2)

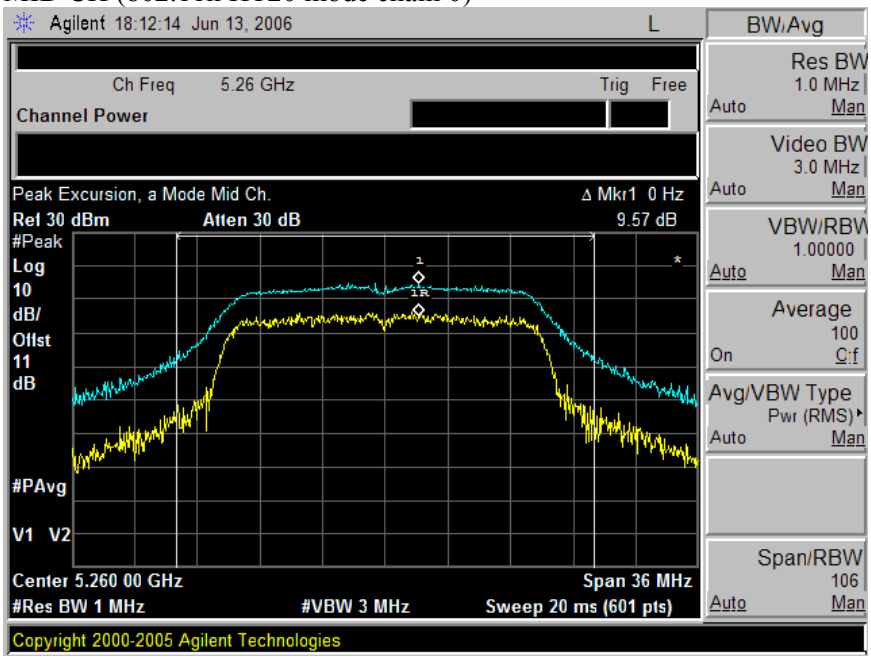


(802.11n HT20 MODE CHAIN 0)

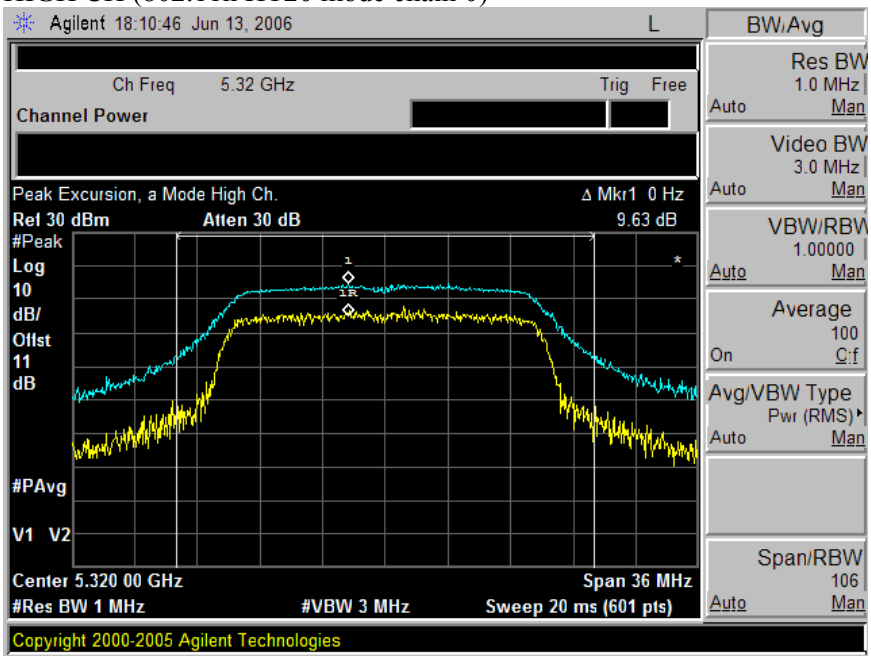
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

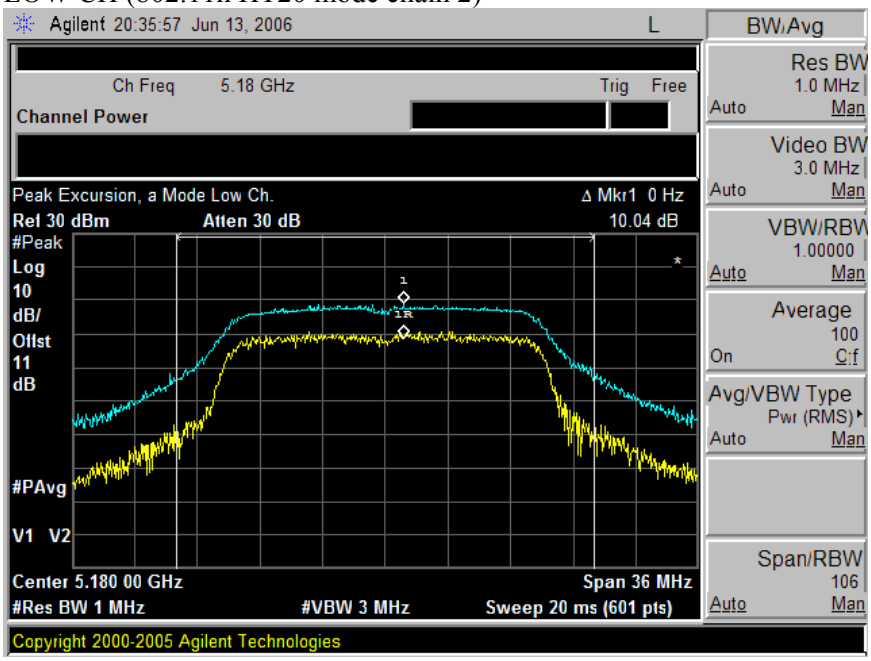


HIGH CH (802.11n HT20 mode chain 0)

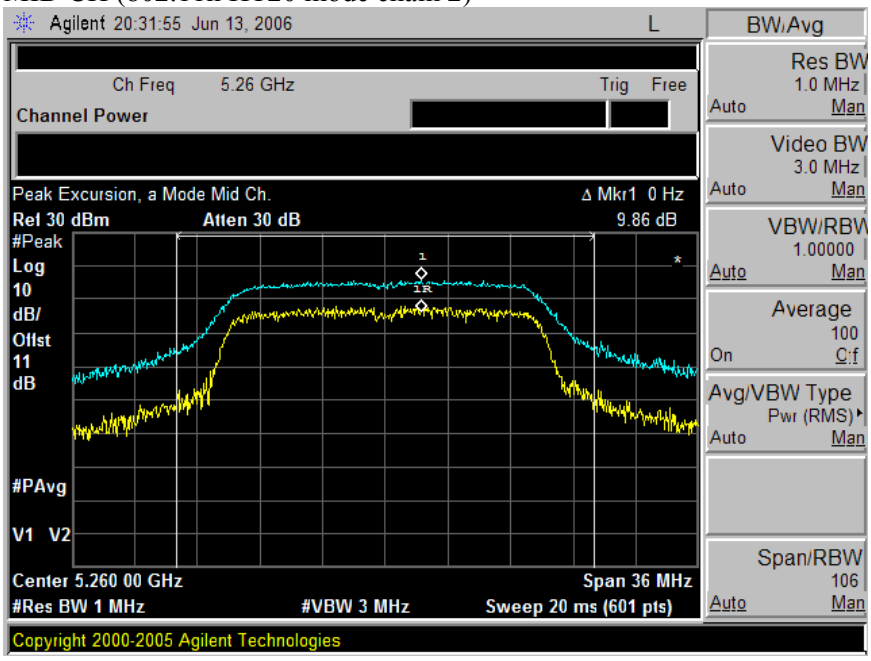


(802.11 HT20 MODE CHAIN 2)

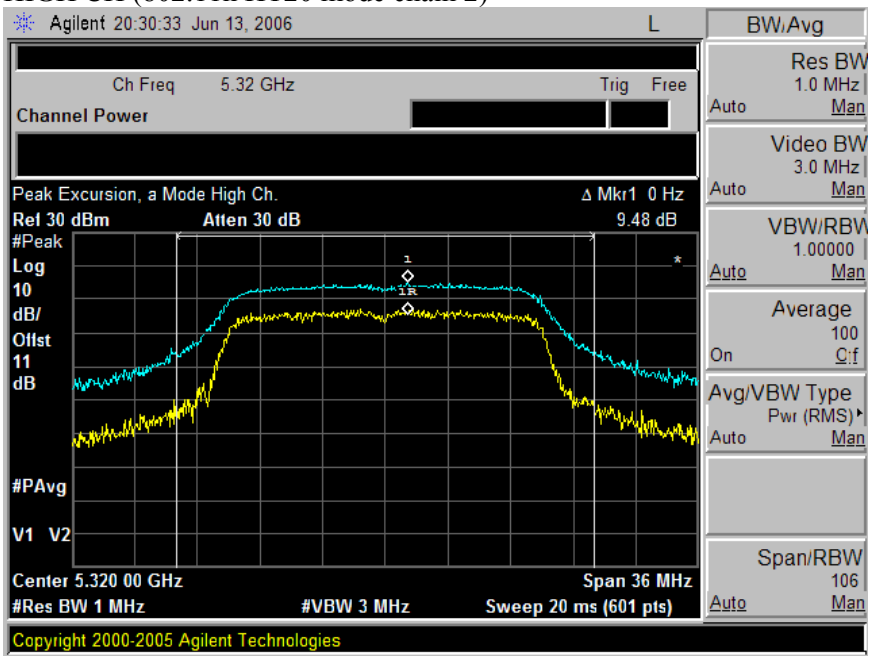
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

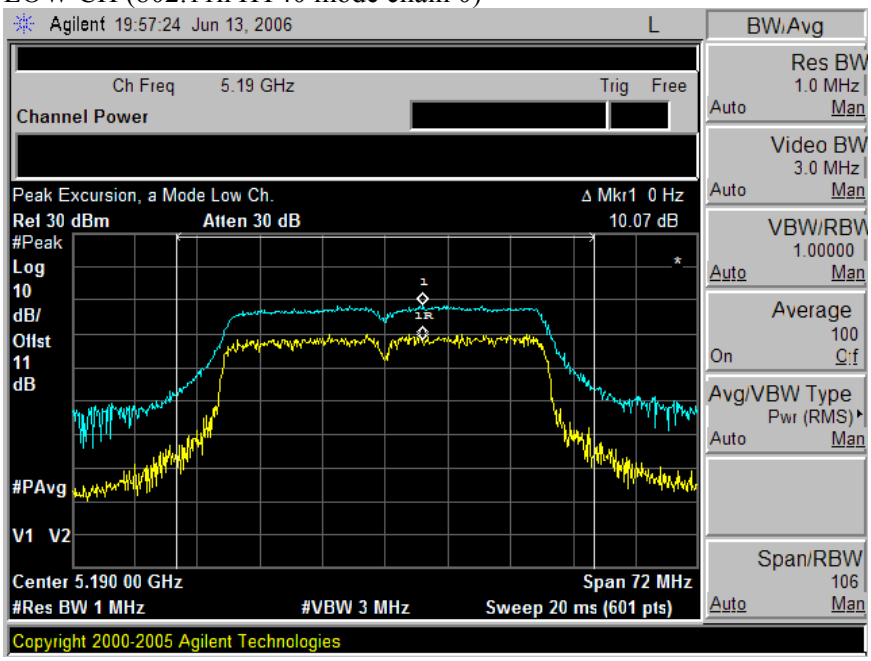


HIGH CH (802.11n HT20 mode chain 2)

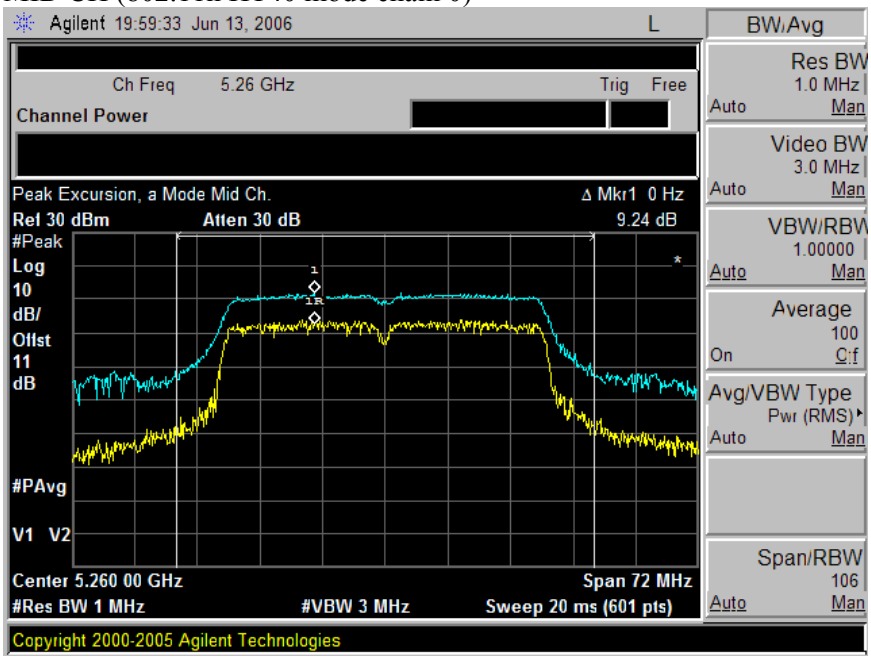


(802.11 HT40 MODE CHAIN 0)

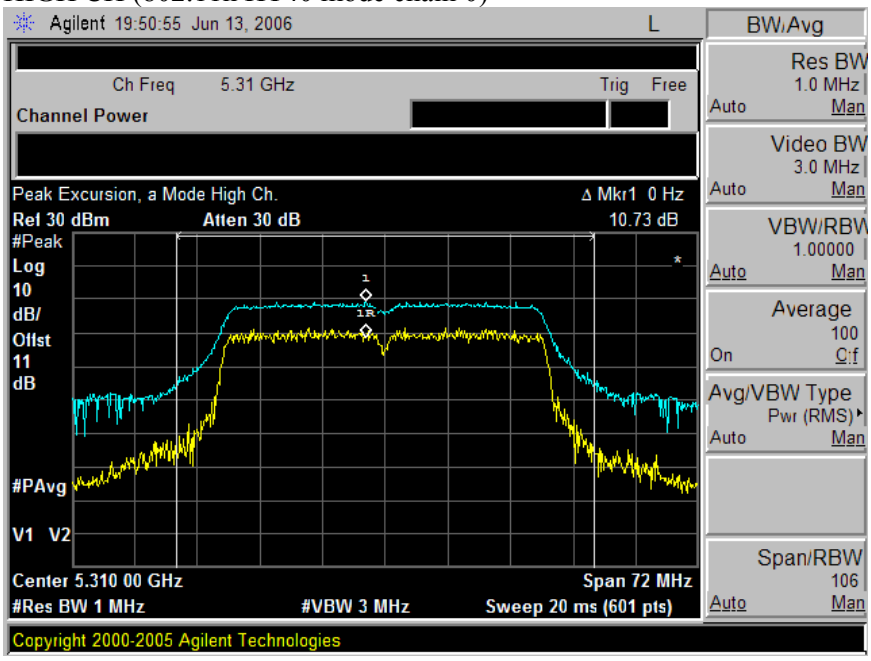
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

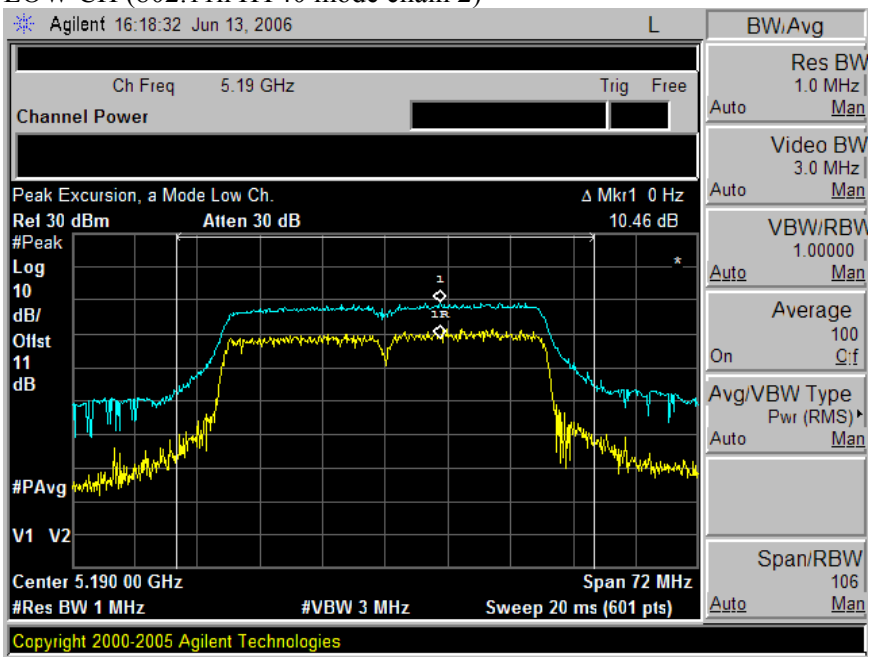


HIGH CH (802.11n HT40 mode chain 0)

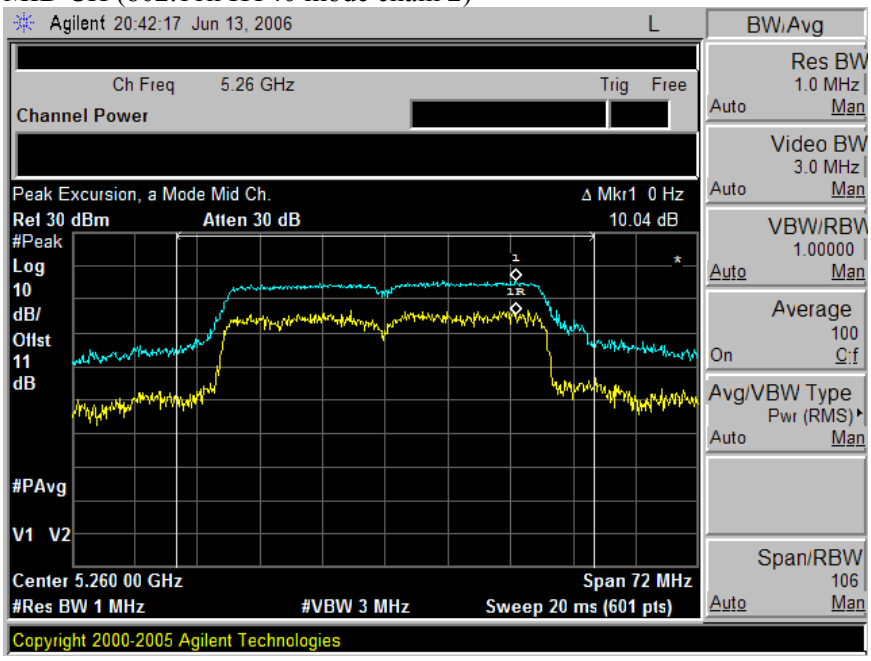


(802.11 HT40 MODE CHAIN 2)

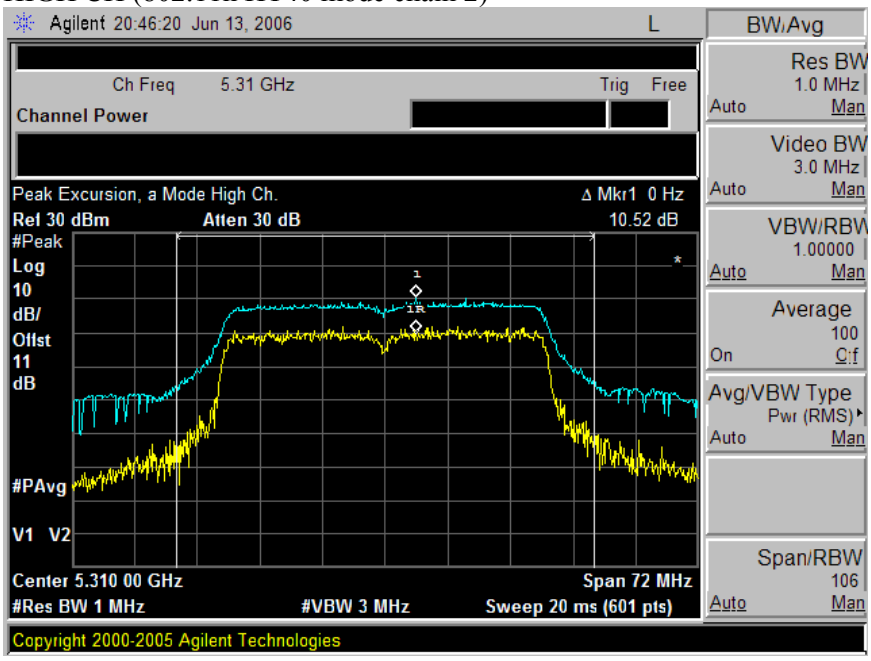
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.407 (b) (1 & 2) For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are 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 transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

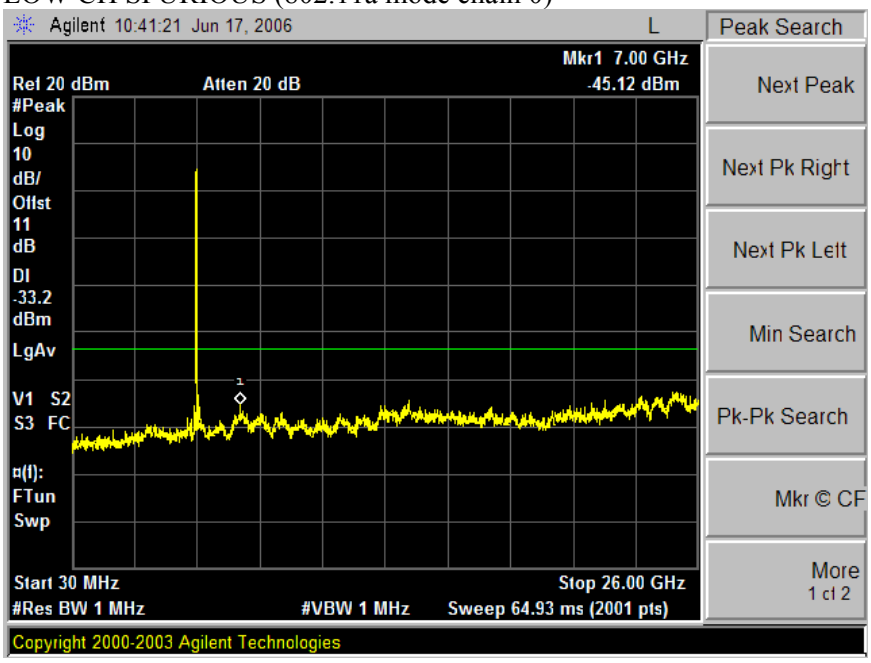
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

No non-compliance noted:

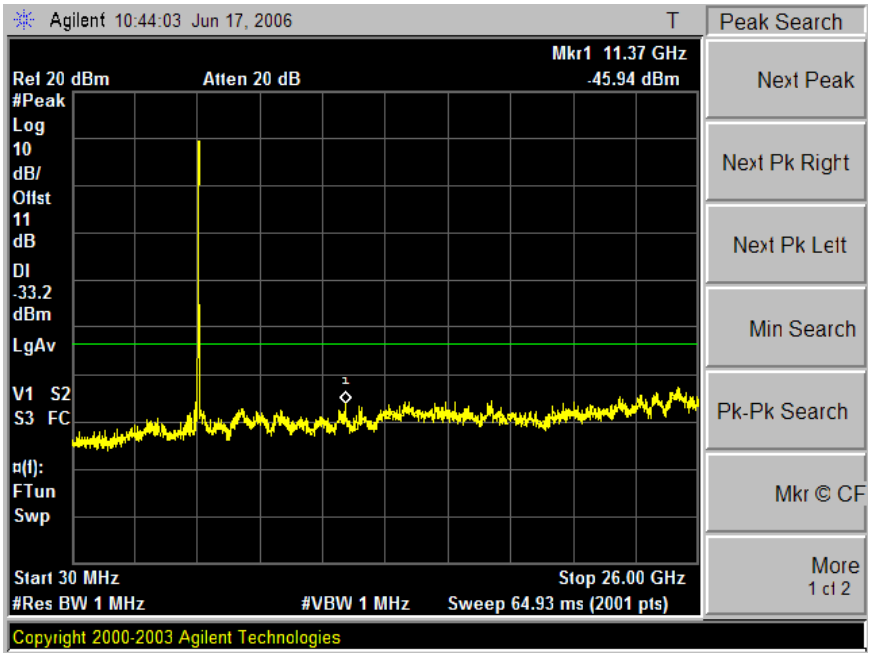
SPURIOUS EMISSIONS (802.11a MODE CHAIN 0)

LOW CH SPURIOUS (802.11a mode chain 0)

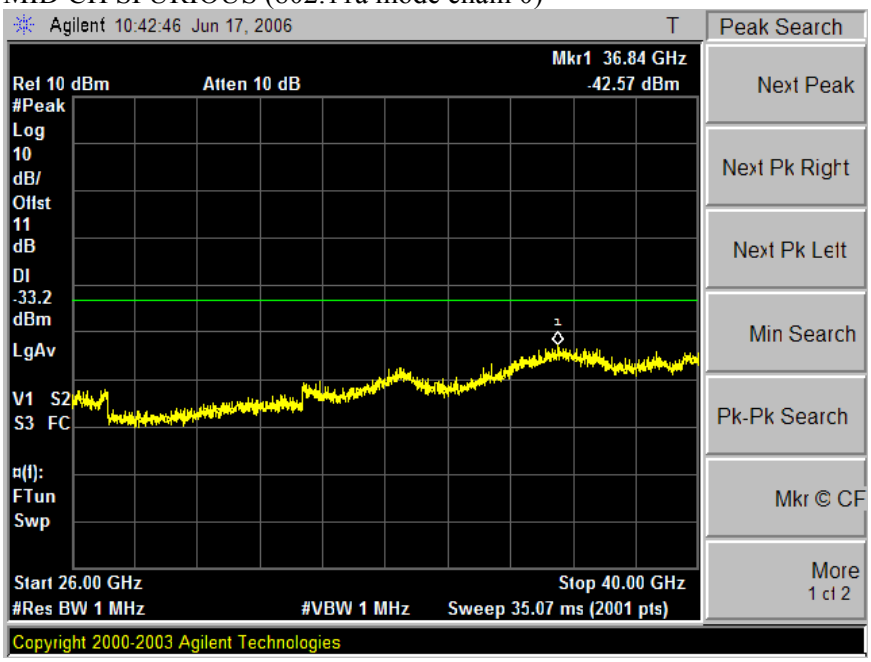


LOW CH SPURIOUS (802.11a mode chain 0)

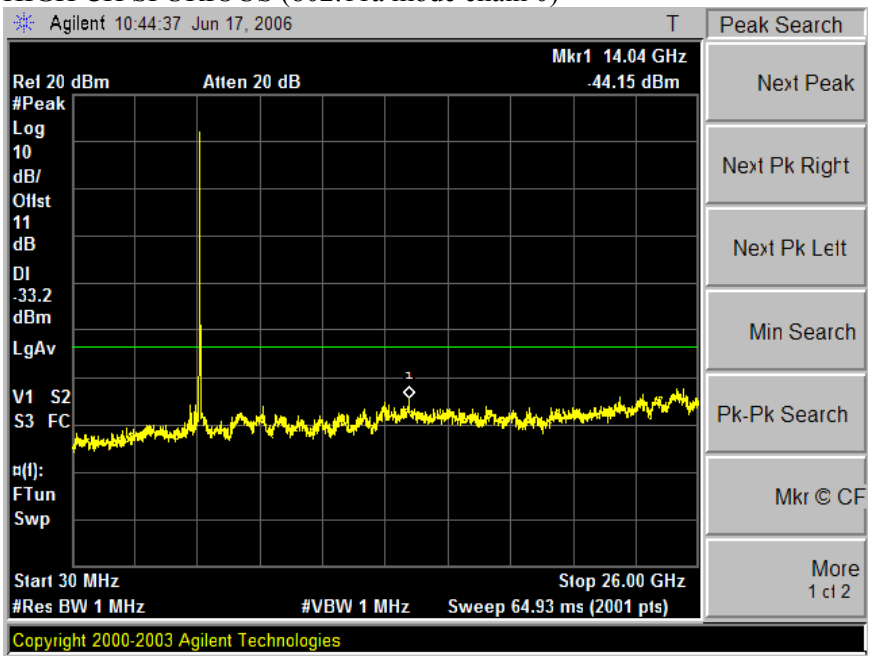
MID CH SPURIOUS (802.11a mode chain 0)



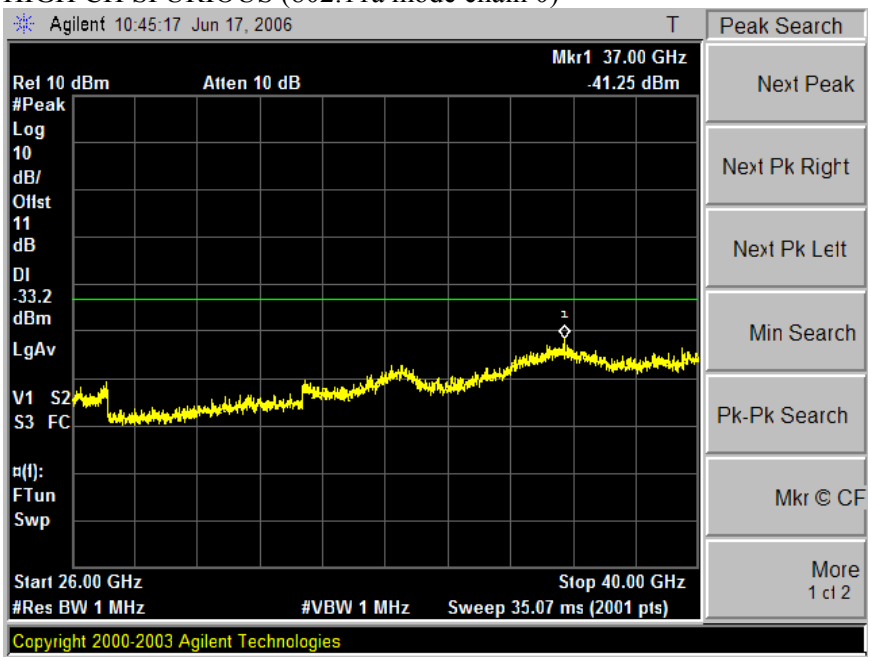
MID CH SPURIOUS (802.11a mode chain 0)



HIGH CH SPURIOUS (802.11a mode chain 0)

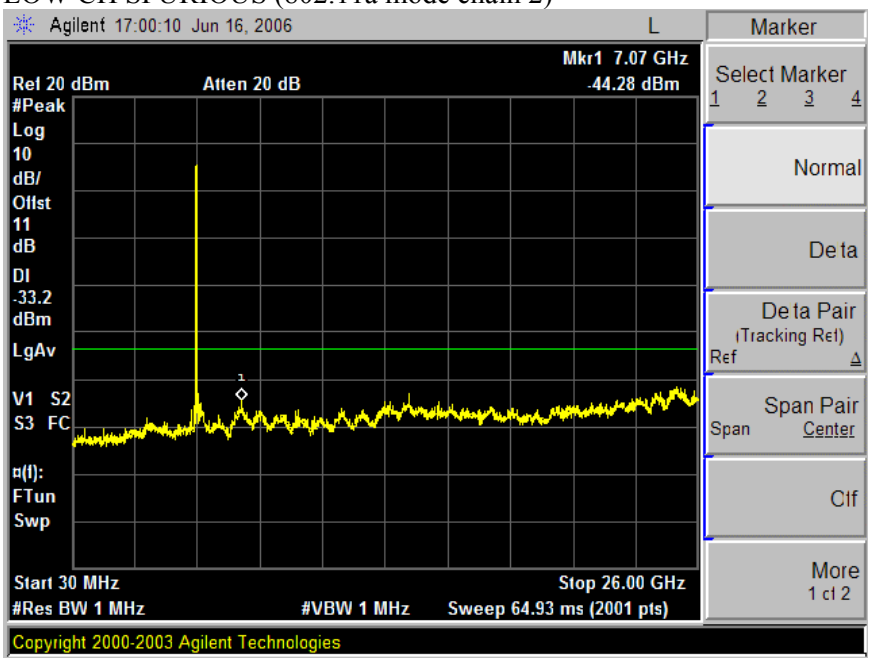


HIGH CH SPURIOUS (802.11a mode chain 0)

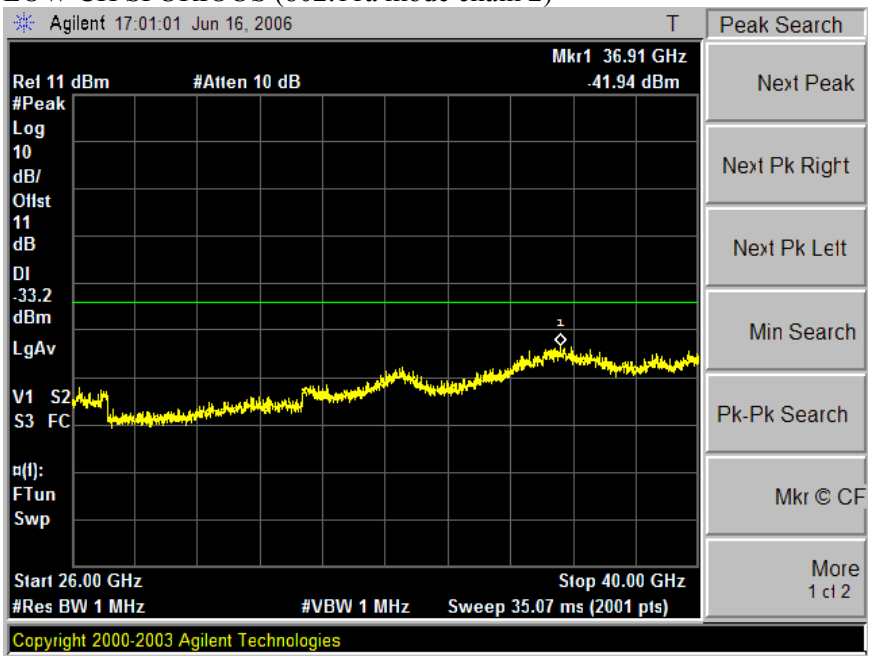


SPURIOUS EMISSIONS (802.11a MODE CHAIN 2)

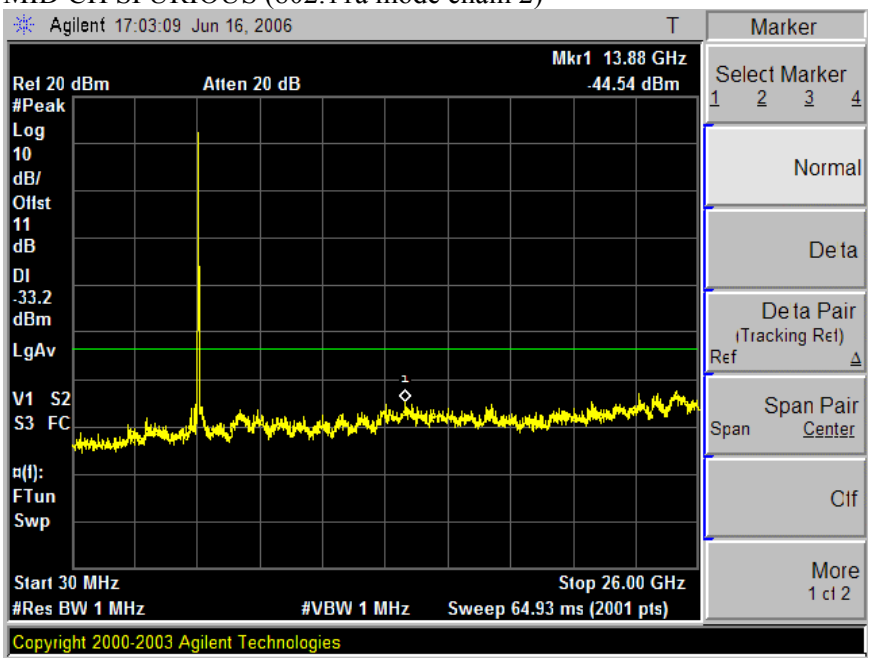
LOW CH SPURIOUS (802.11a mode chain 2)



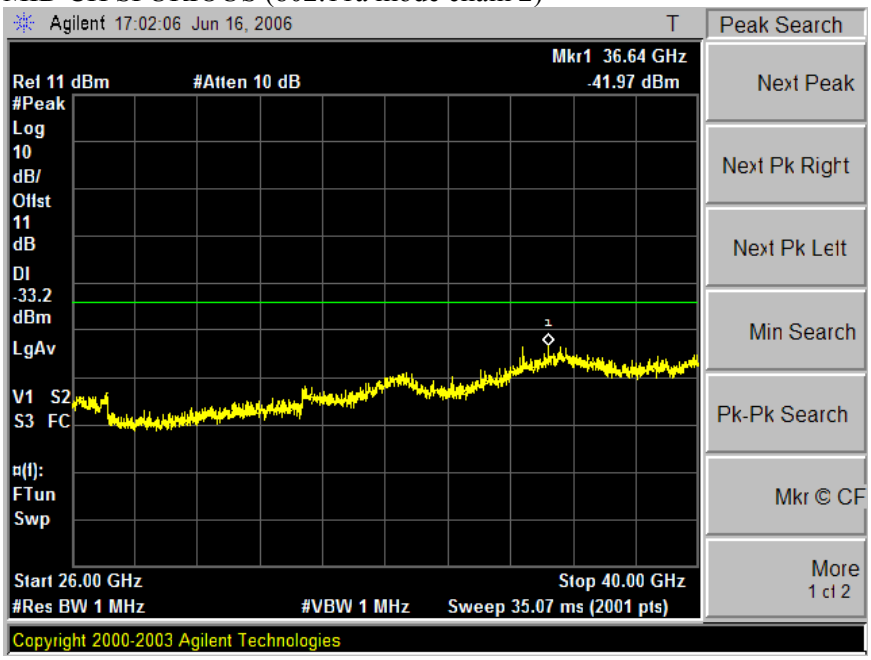
LOW CH SPURIOUS (802.11a mode chain 2)



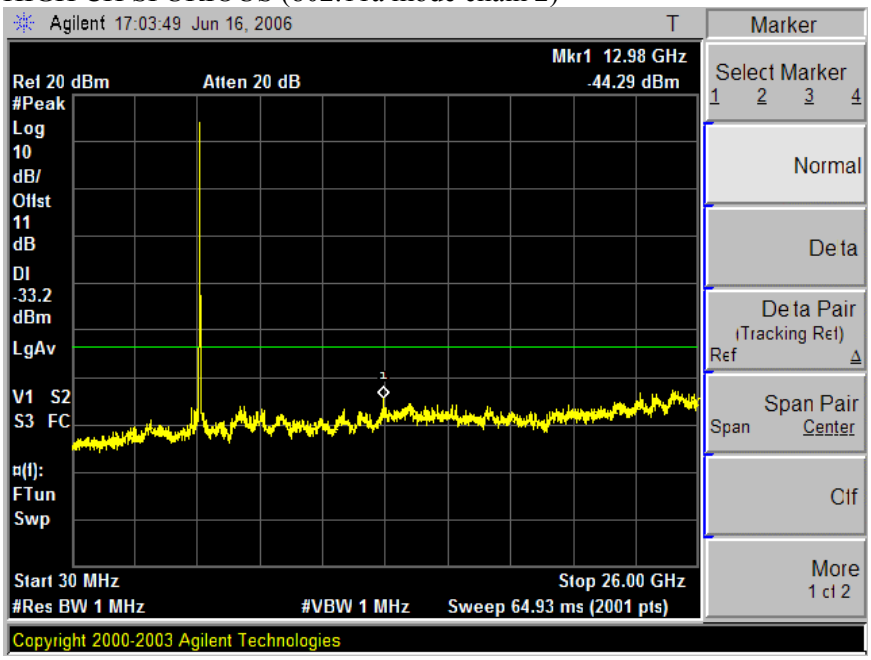
MID CH SPURIOUS (802.11a mode chain 2)



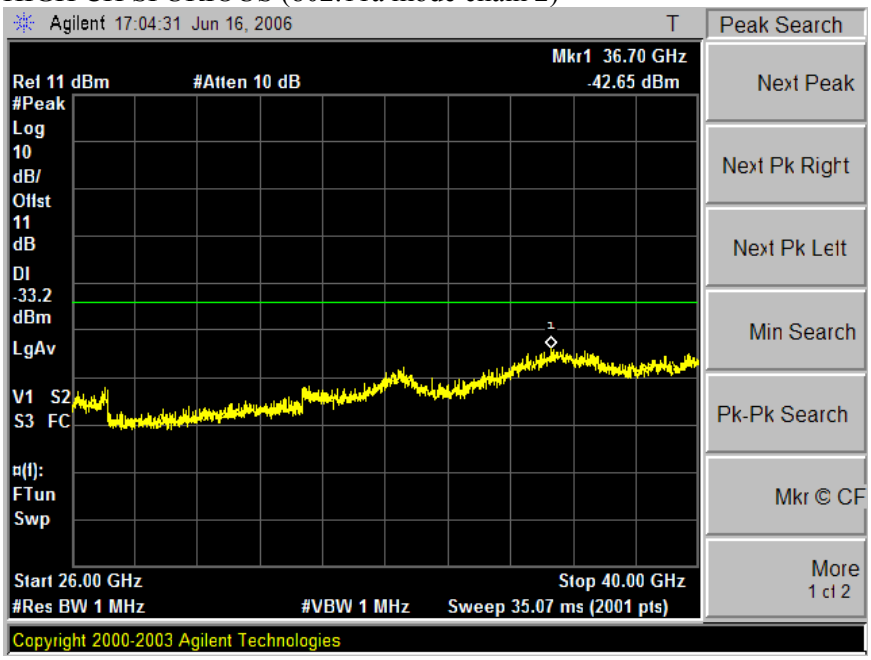
MID CH SPURIOUS (802.11a mode chain 2)



HIGH CH SPURIOUS (802.11a mode chain 2)

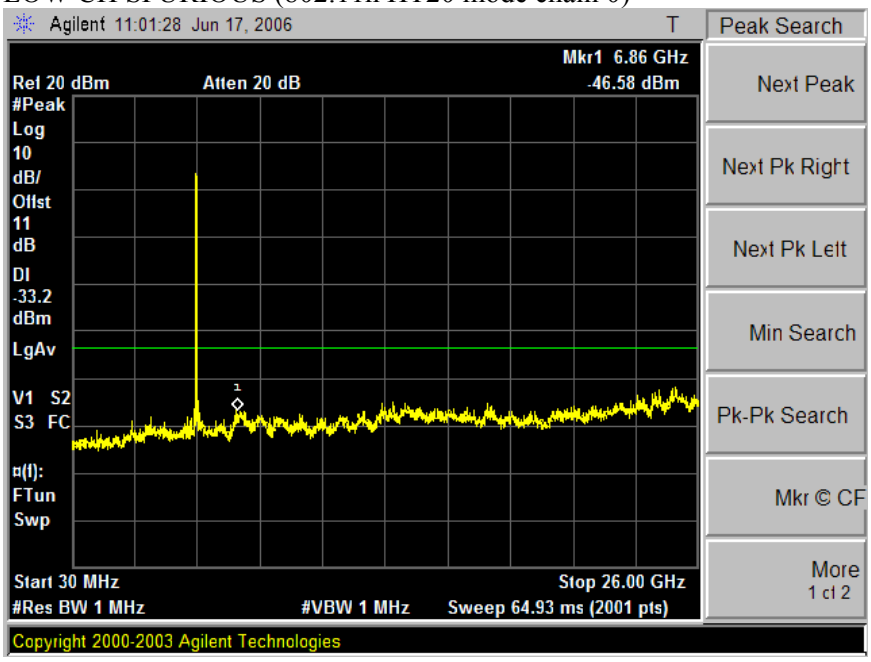


HIGH CH SPURIOUS (802.11a mode chain 2)

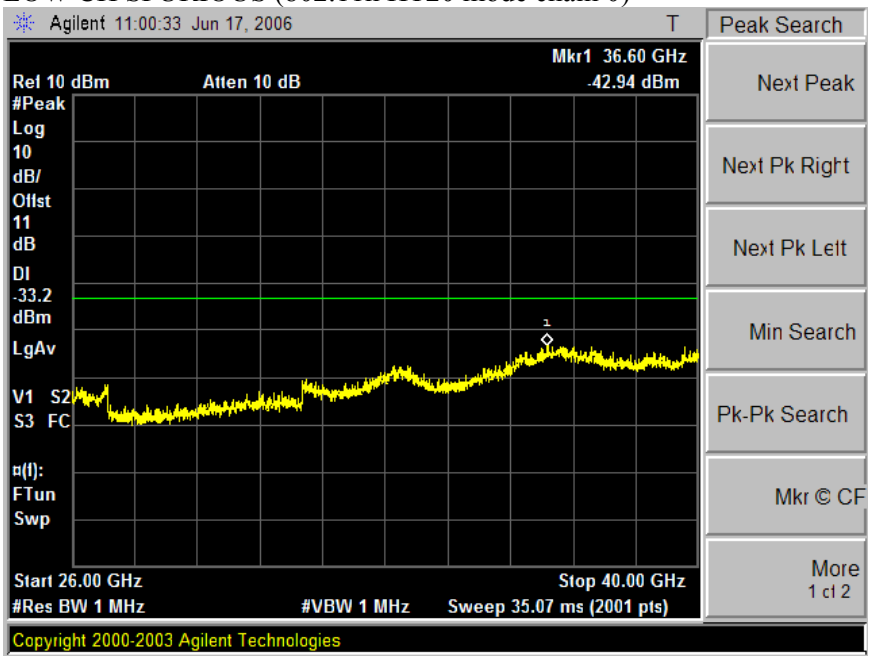


SPURIOUS EMISSIONS (802.11n HT20 MODE CHAIN 0)

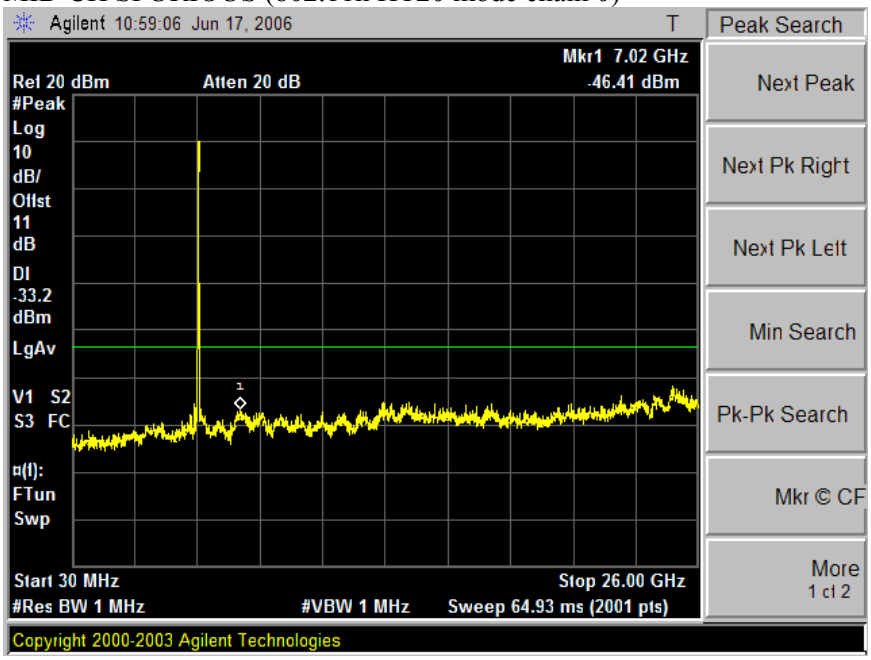
LOW CH SPURIOUS (802.11n HT20 mode chain 0)



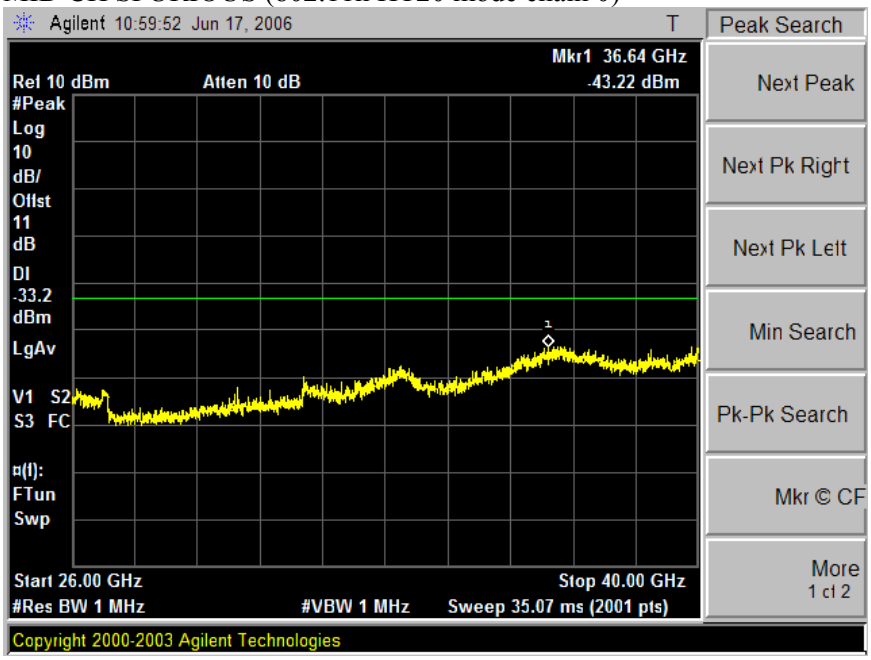
LOW CH SPURIOUS (802.11n HT20 mode chain 0)



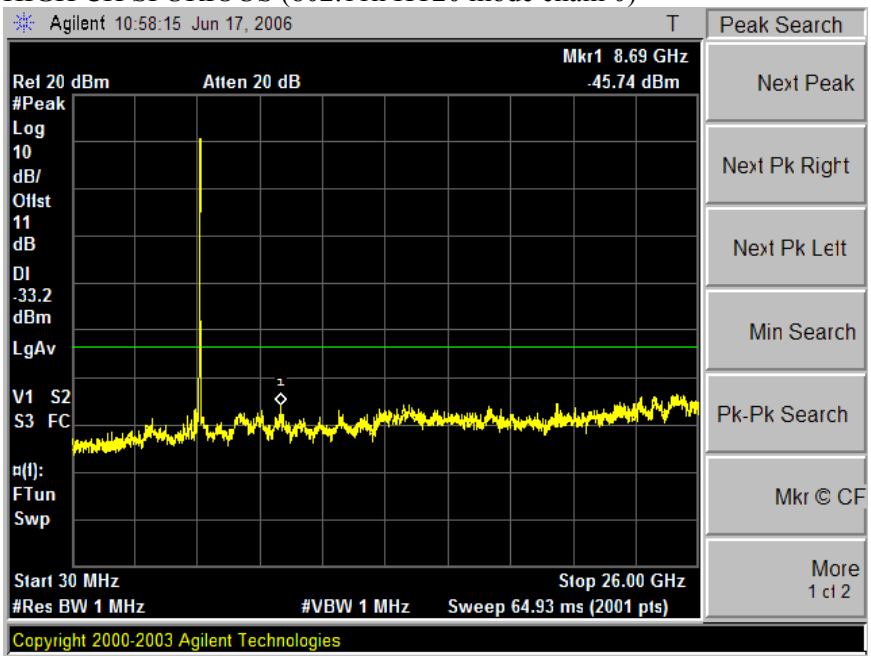
MID CH SPURIOUS (802.11n HT20 mode chain 0)



MID CH SPURIOUS (802.11n HT20 mode chain 0)



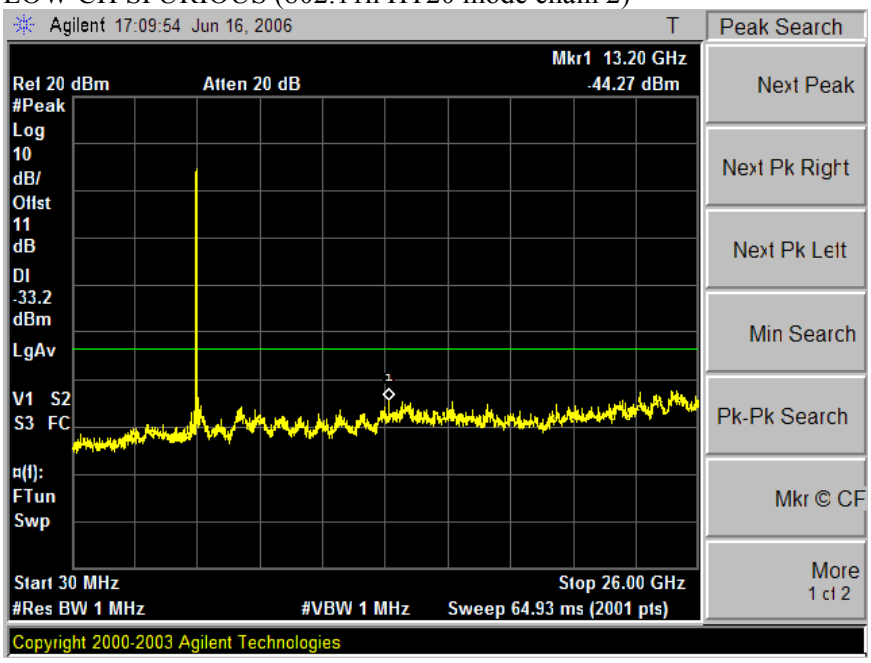
HIGH CH SPURIOUS (802.11n HT20 mode chain 0)



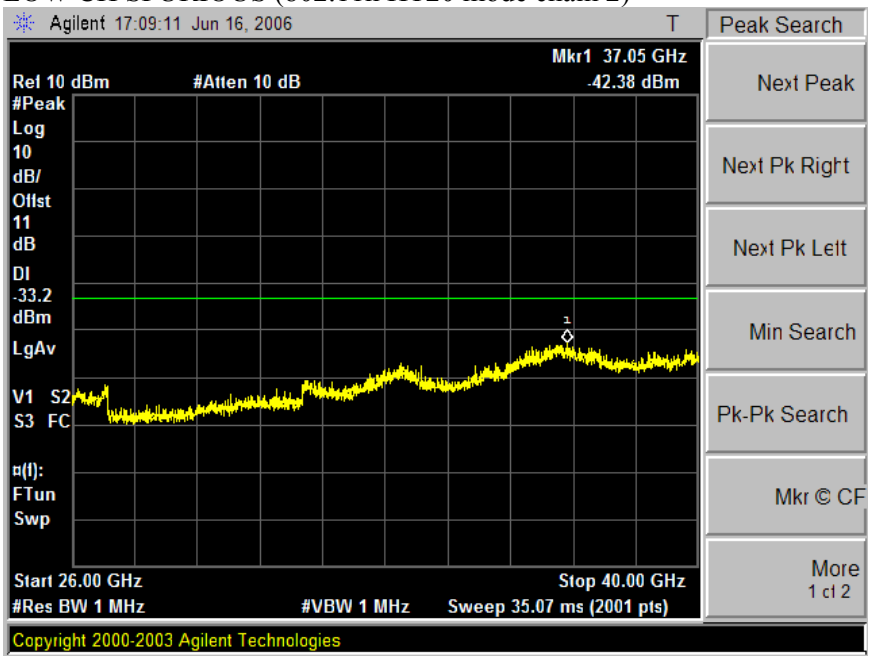
HIGH CH SPURIOUS (802.11n HT20 mode chain 0)

SPURIOUS EMISSIONS (802.11 HT20 MODE CHAIN 2)

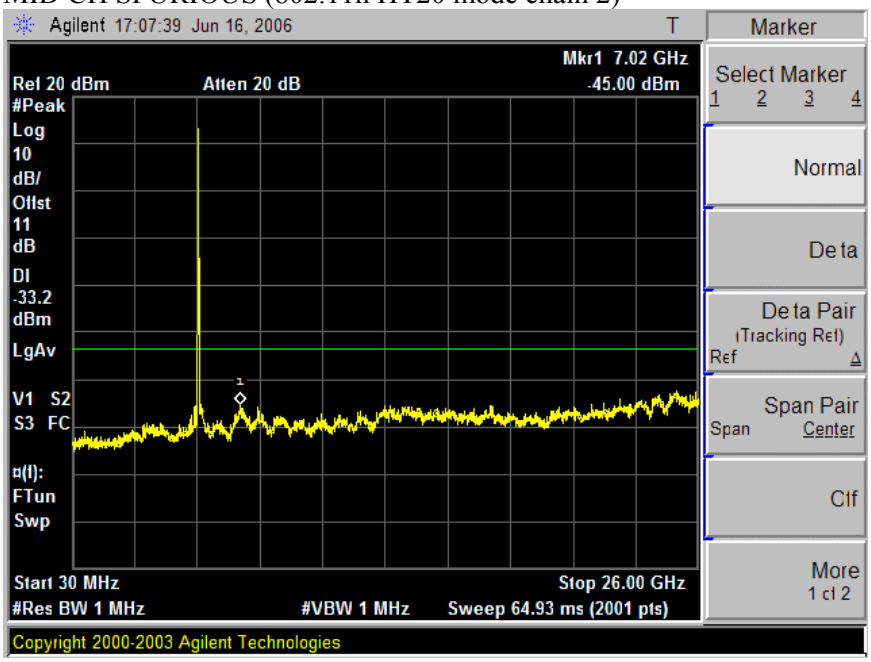
LOW CH SPURIOUS (802.11n HT20 mode chain 2)



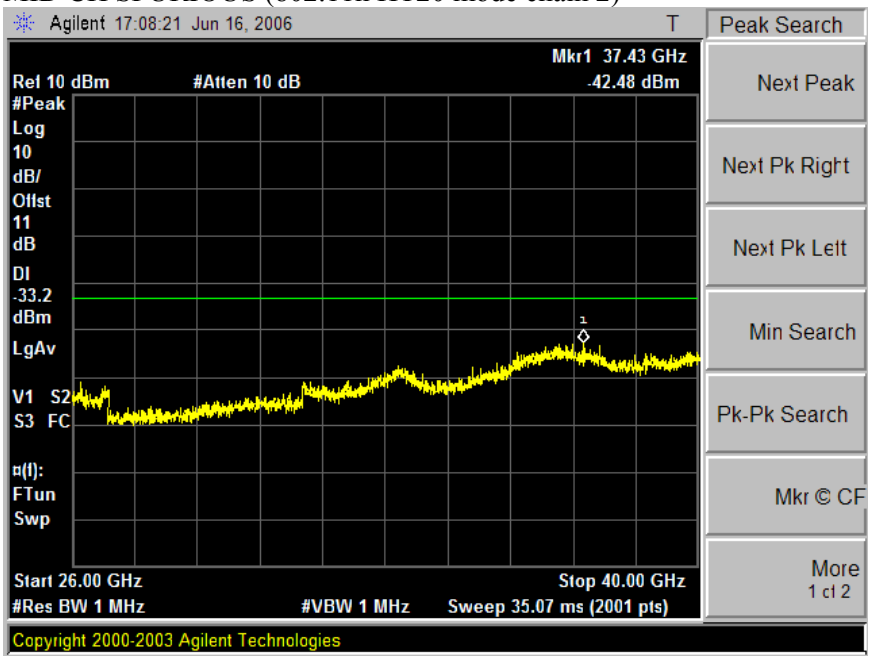
LOW CH SPURIOUS (802.11n HT20 mode chain 2)



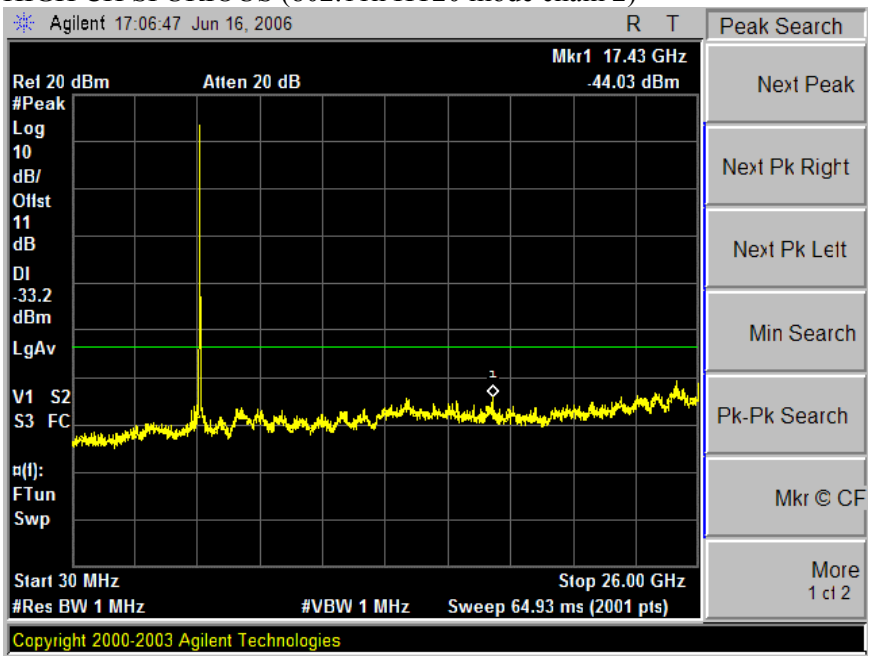
MID CH SPURIOUS (802.11n HT20 mode chain 2)



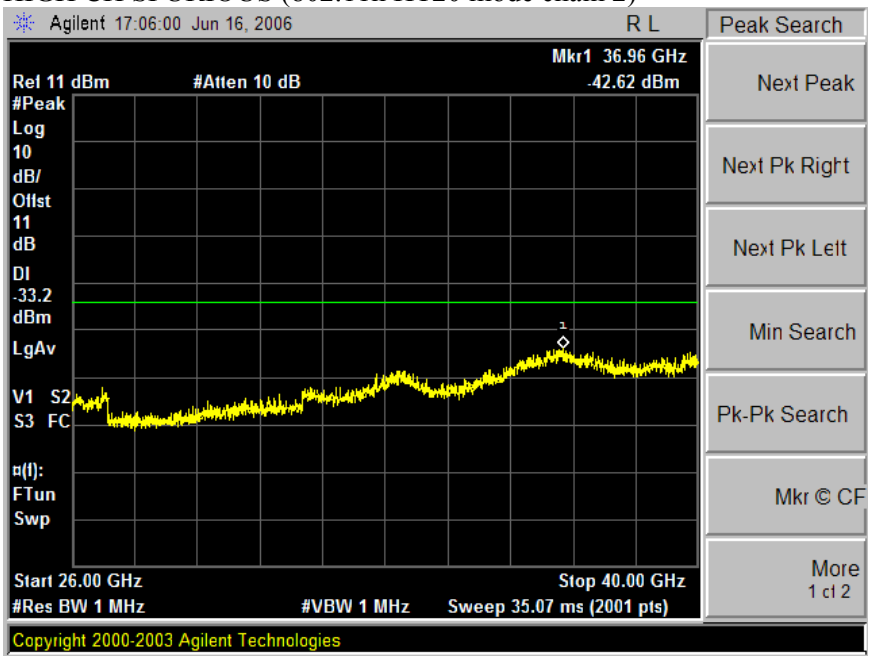
MID CH SPURIOUS (802.11n HT20 mode chain 2)



HIGH CH SPURIOUS (802.11n HT20 mode chain 2)

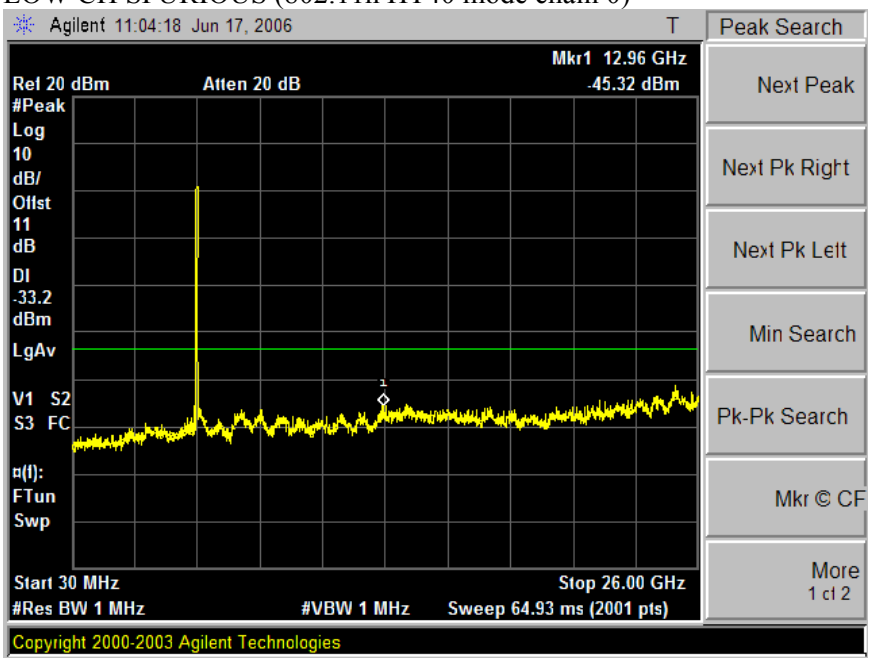


HIGH CH SPURIOUS (802.11n HT20 mode chain 2)

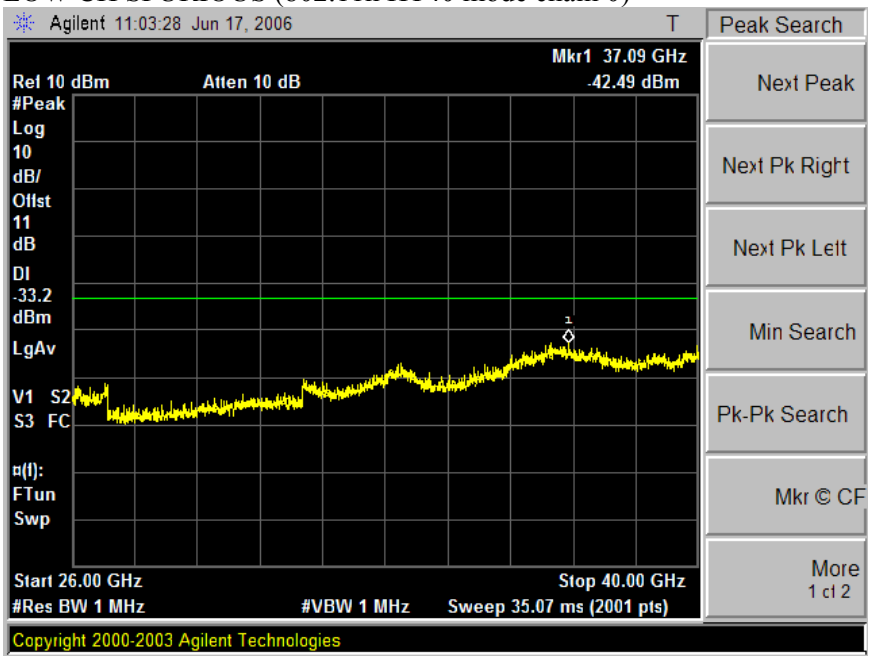


SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN 0)

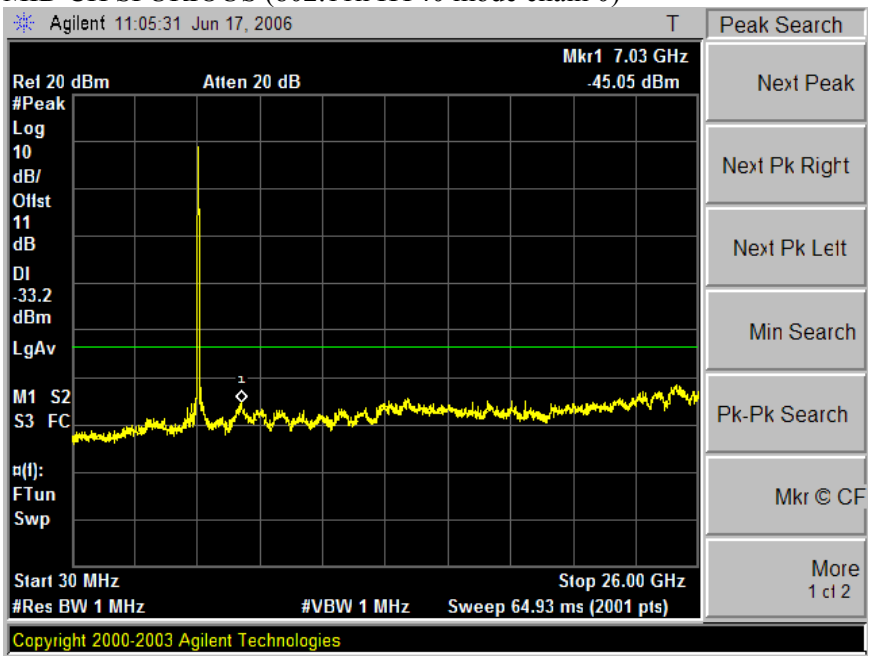
LOW CH SPURIOUS (802.11n HT40 mode chain 0)



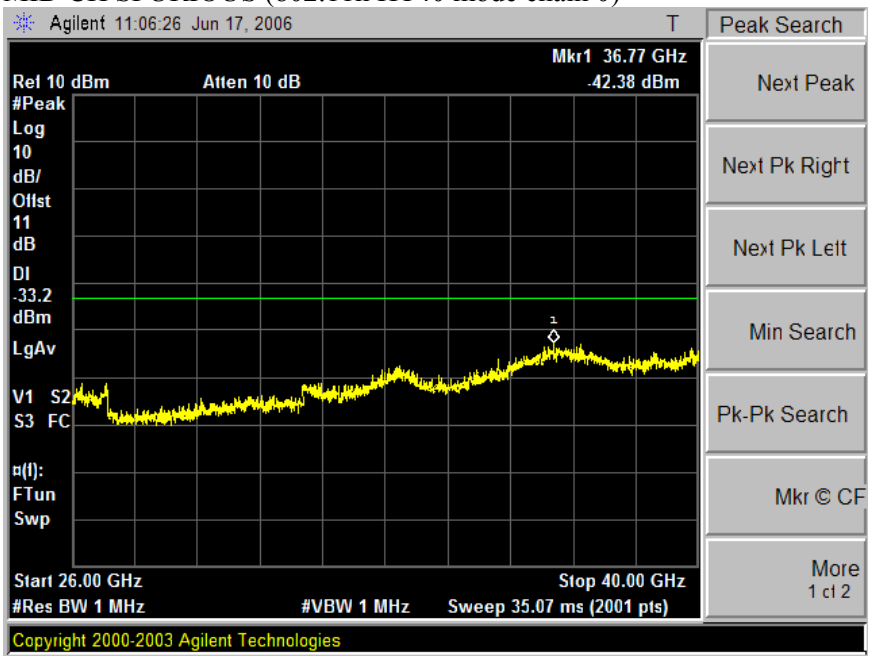
LOW CH SPURIOUS (802.11n HT40 mode chain 0)



MID CH SPURIOUS (802.11n HT40 mode chain 0)



MID CH SPURIOUS (802.11n HT40 mode chain 0)



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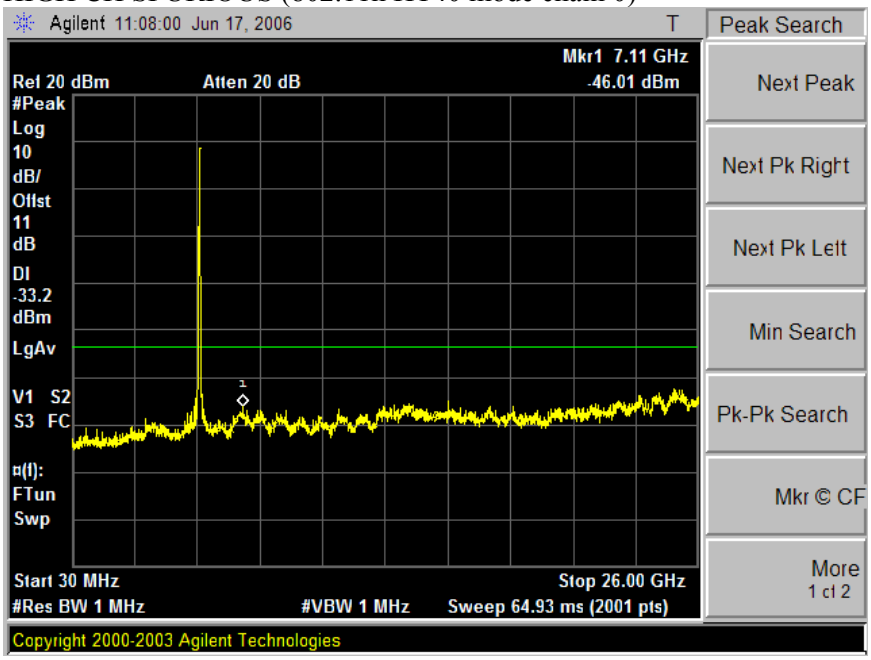
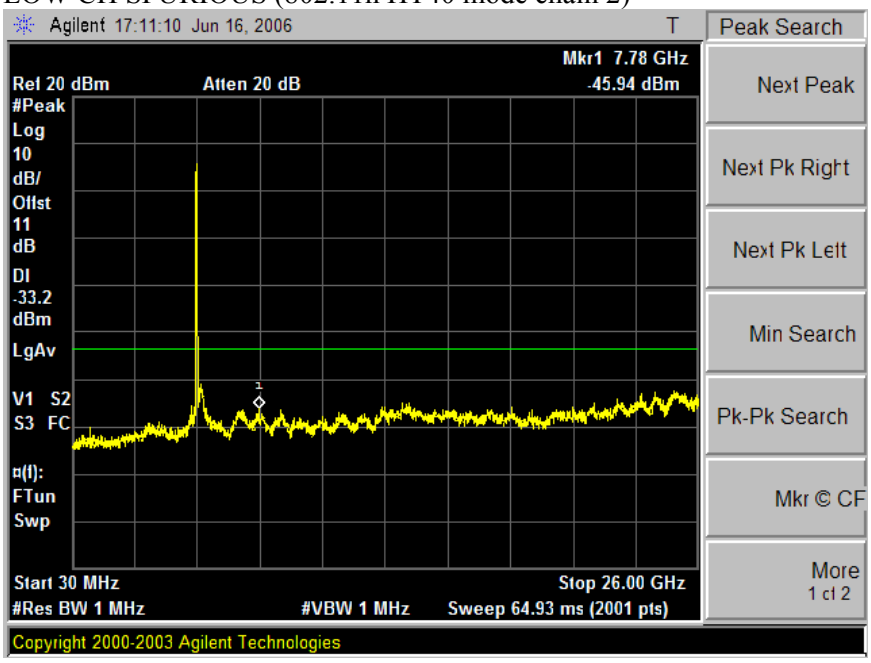


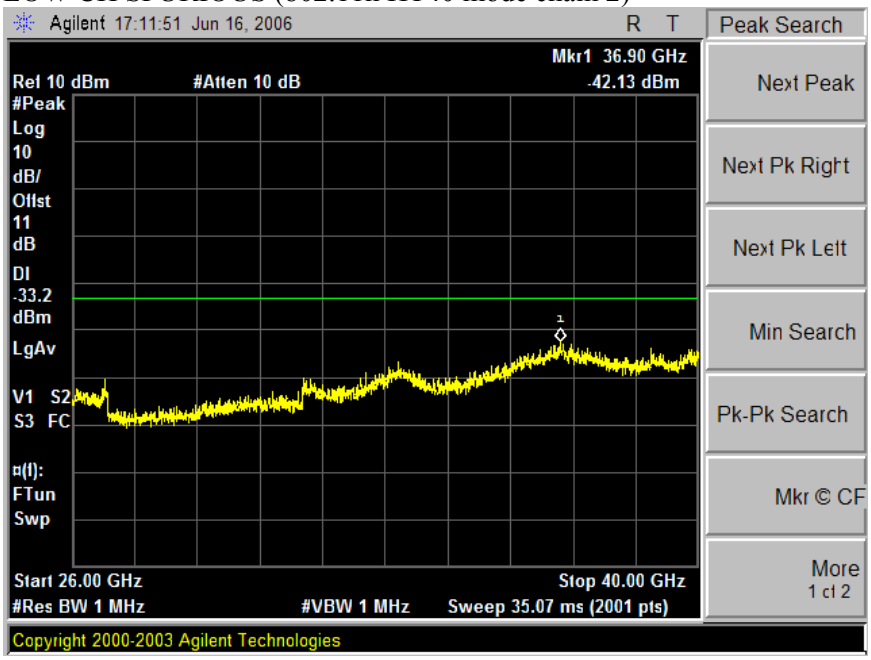
HIGH CH SPURIOUS (802.11n HT40 mode chain 0)

SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN 2)

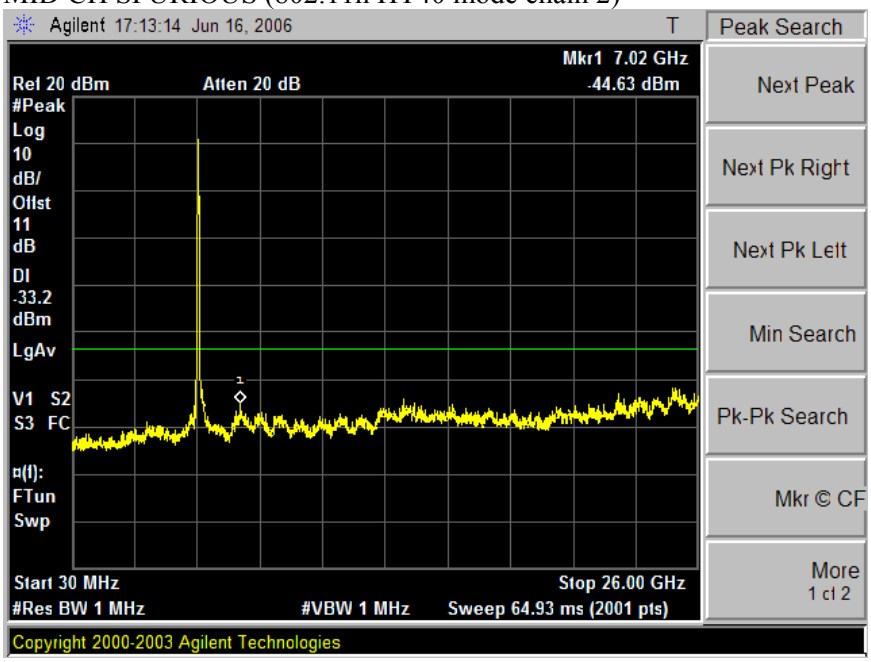
LOW CH SPURIOUS (802.11n HT40 mode chain 2)



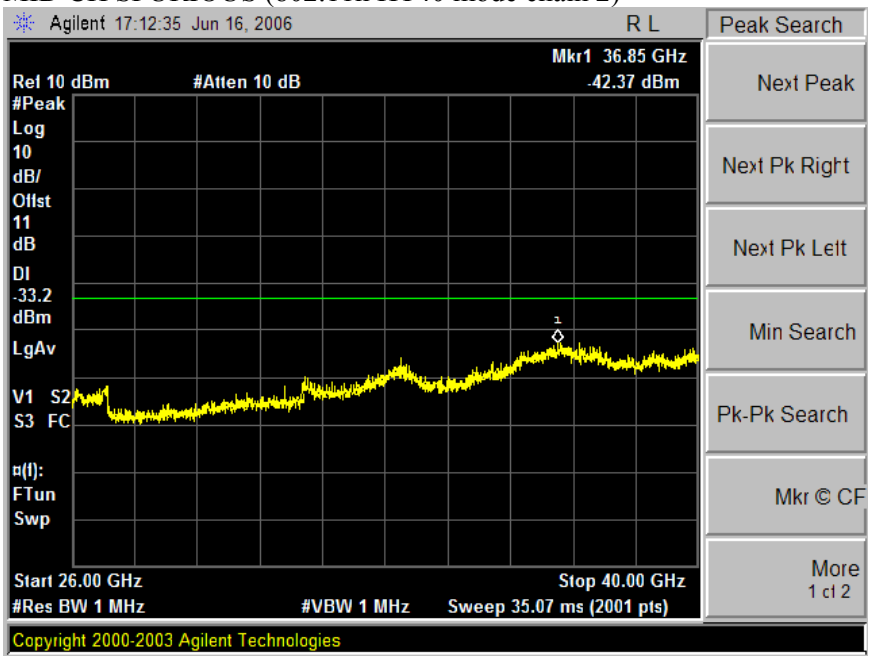
LOW CH SPURIOUS (802.11n HT40 mode chain 2)



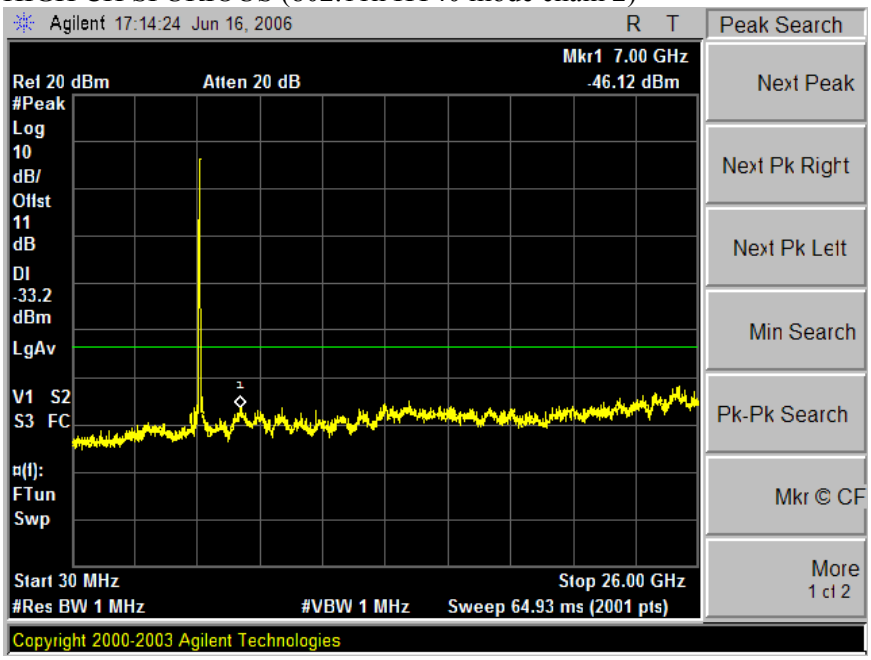
MID CH SPURIOUS (802.11n HT40 mode chain 2)



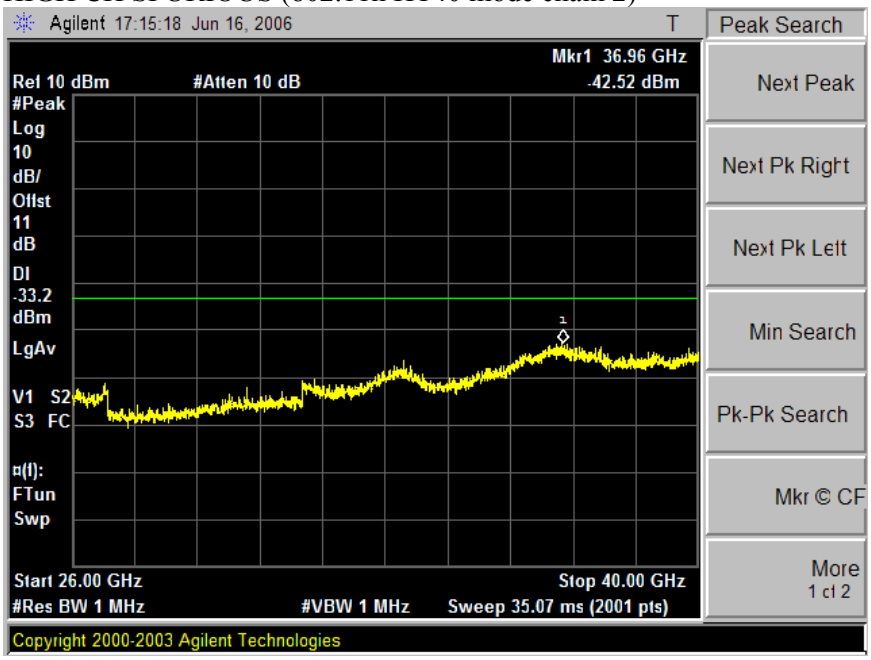
MID CH SPURIOUS (802.11n HT40 mode chain 2)



HIGH CH SPURIOUS (802.11n HT40 mode chain 2)

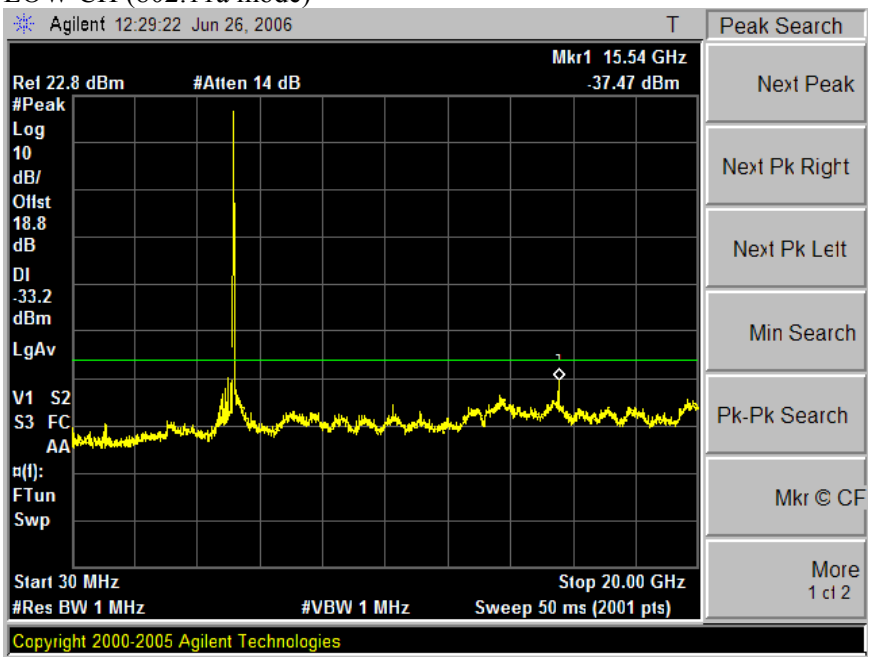


HIGH CH SPURIOUS (802.11n HT40 mode chain 2)

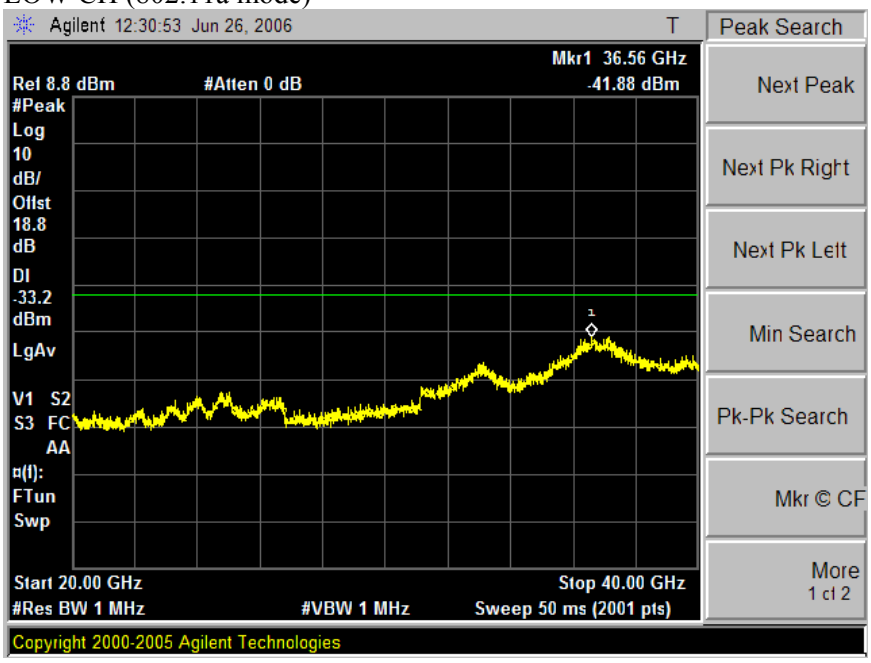


SPURIOUS EMISSIONS WITH COMBINER (802.11a MODE)

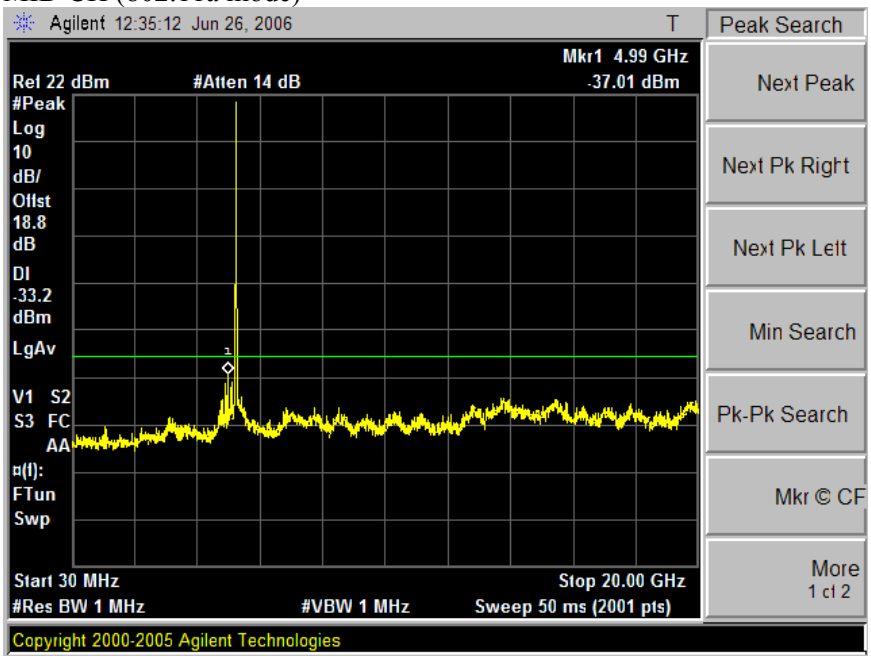
LOW CH (802.11a mode)



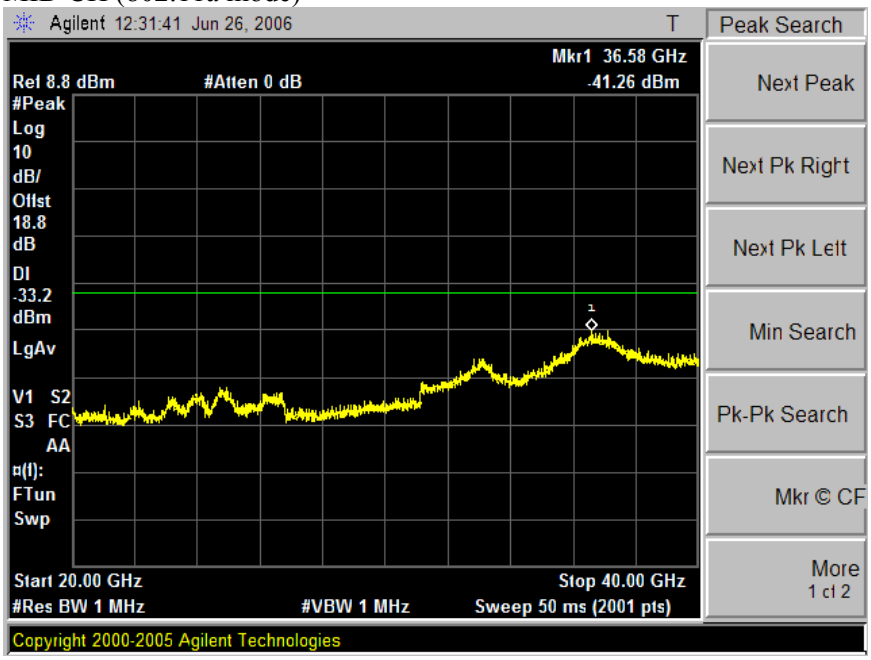
LOW CH (802.11a mode)



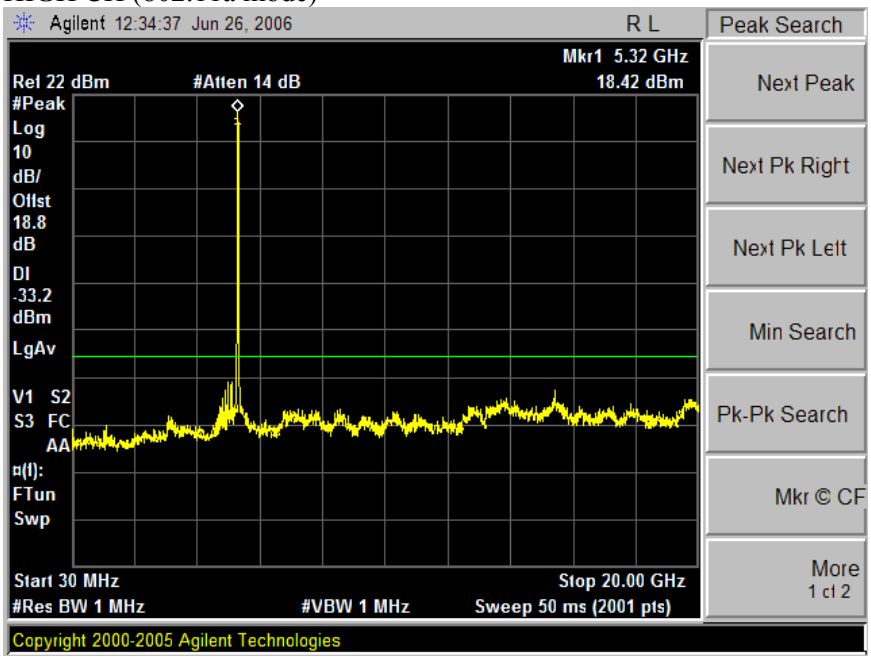
MID CH (802.11a mode)



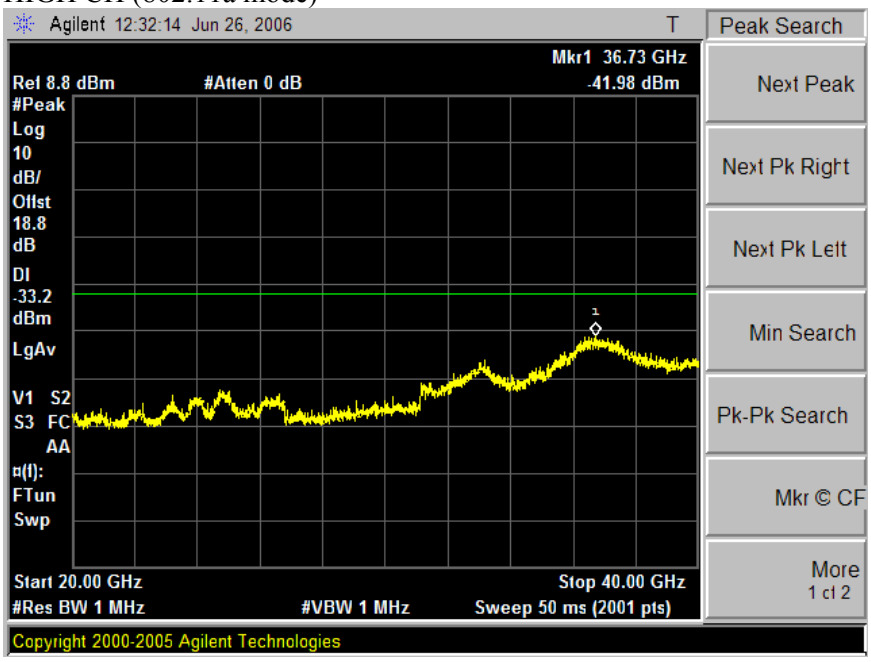
MID CH (802.11a mode)



HIGH CH (802.11a mode)

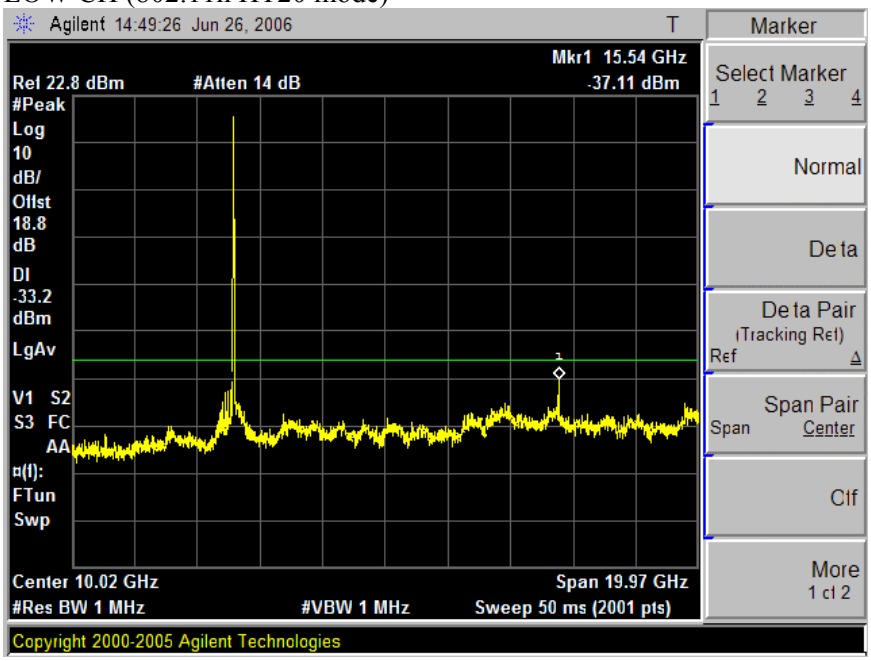


HIGH CH (802.11a mode)



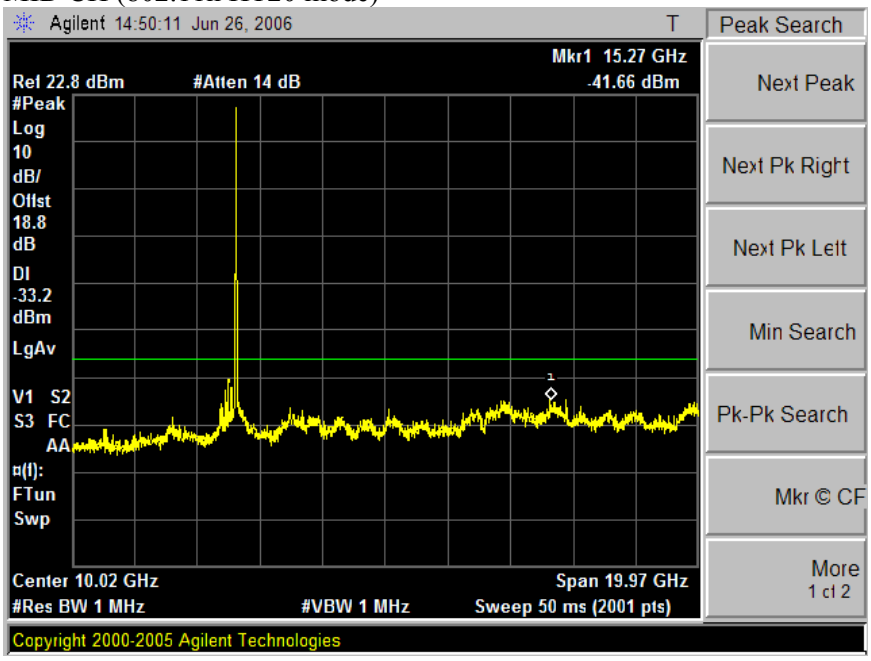
SPURIOUS EMISSIONS WITH COMBINER (802.11n HT20 MODE)

LOW CH (802.11n HT20 mode)

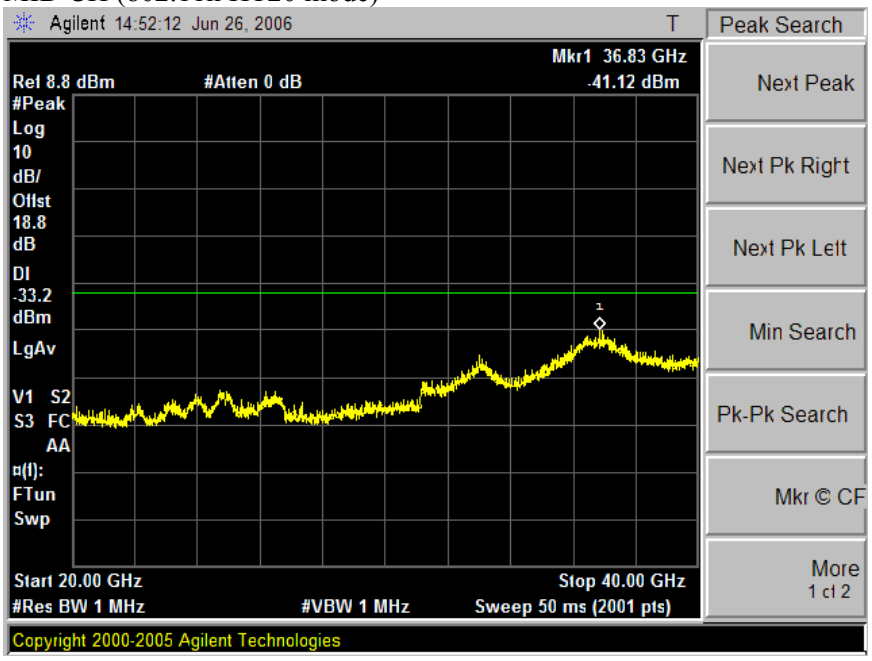


LOW CH (802.11n HT20 mode)

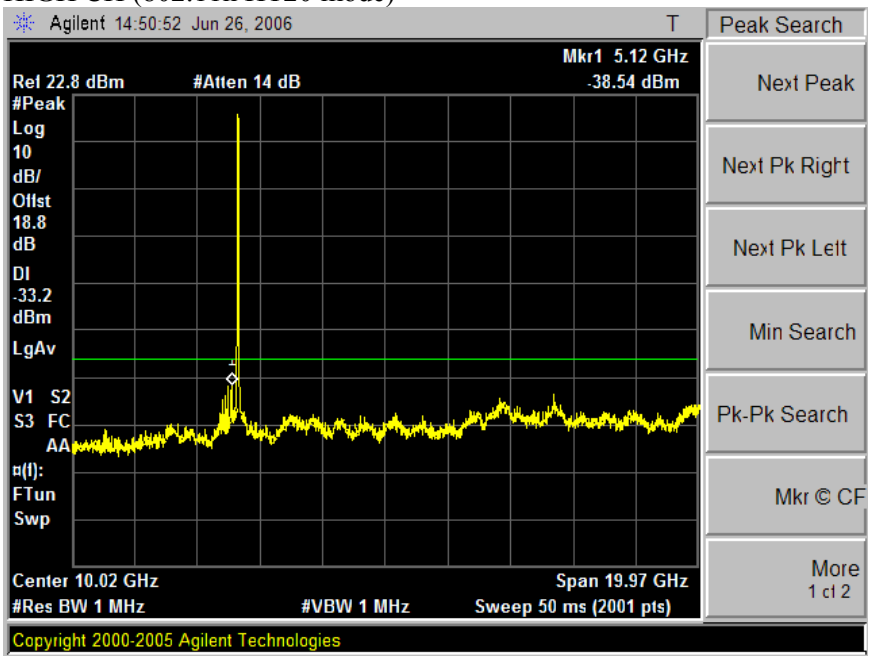
MID CH (802.11n HT20 mode)



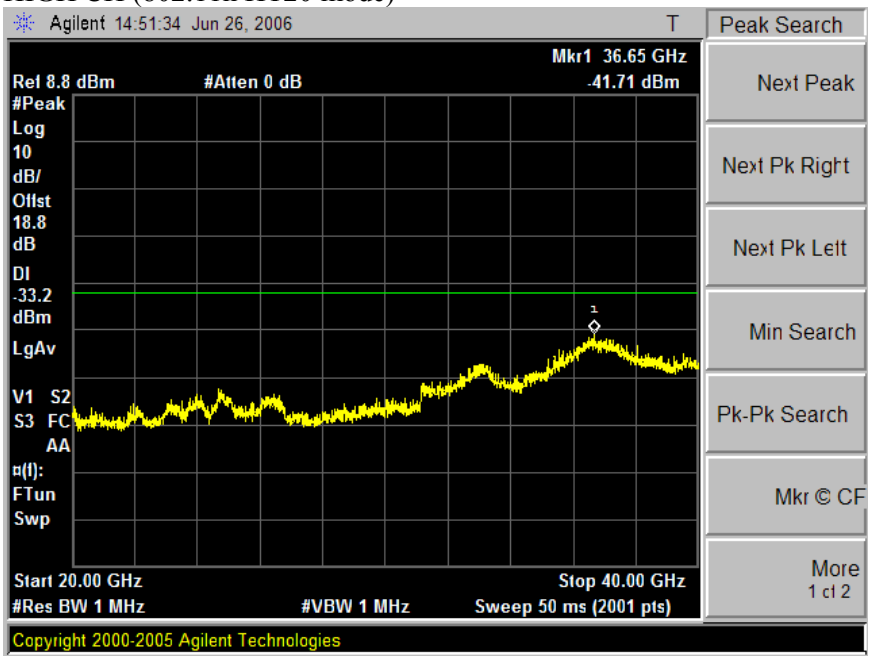
MID CH (802.11n HT20 mode)



HIGH CH (802.11n HT20 mode)

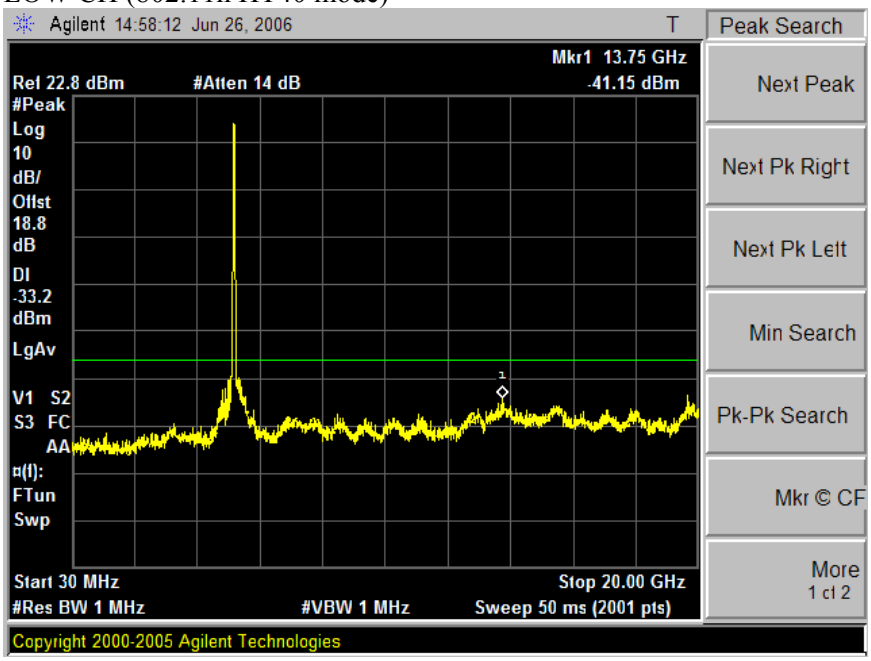


HIGH CH (802.11n HT20 mode)



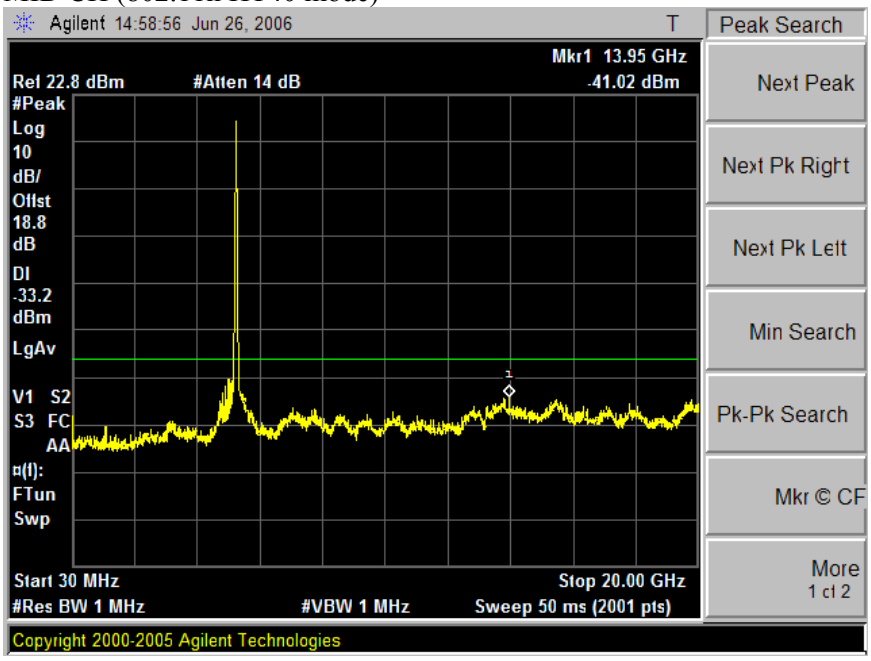
SPURIOUS EMISSIONS WITH COMBINER (802.11 HT40 MODE)

LOW CH (802.11n HT40 mode)

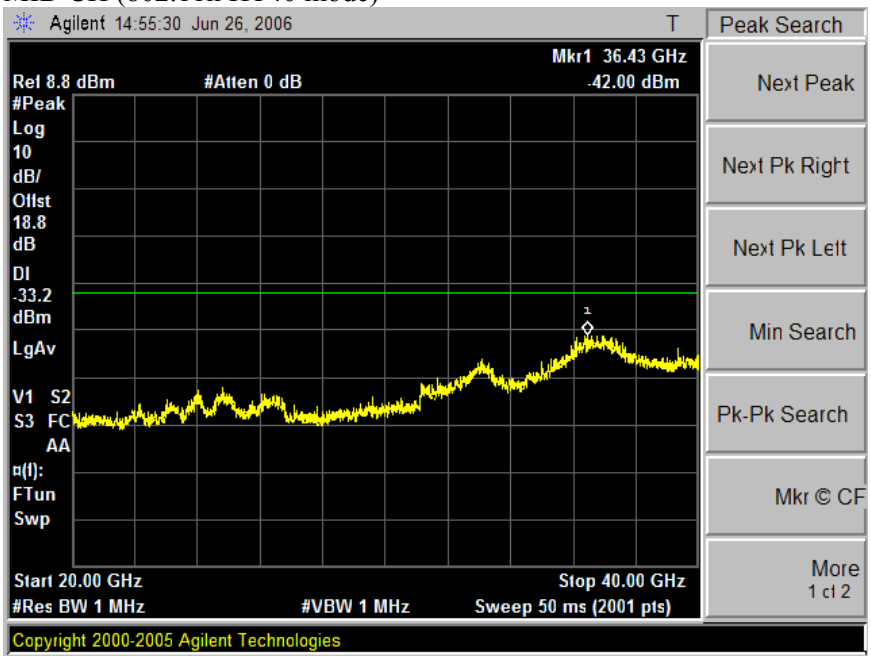


LOW CH (802.11n HT40 mode)

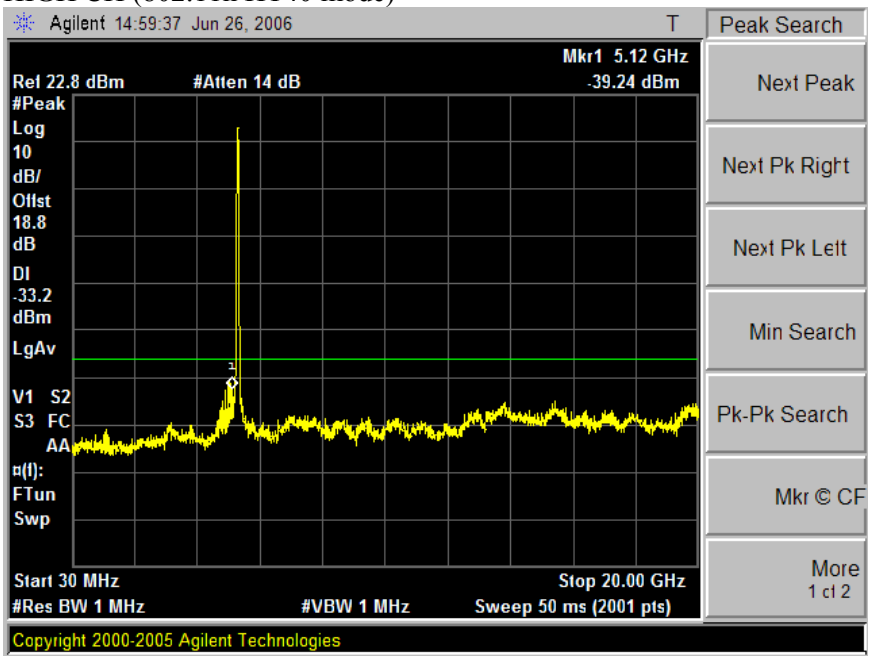
MID CH (802.11n HT40 mode)



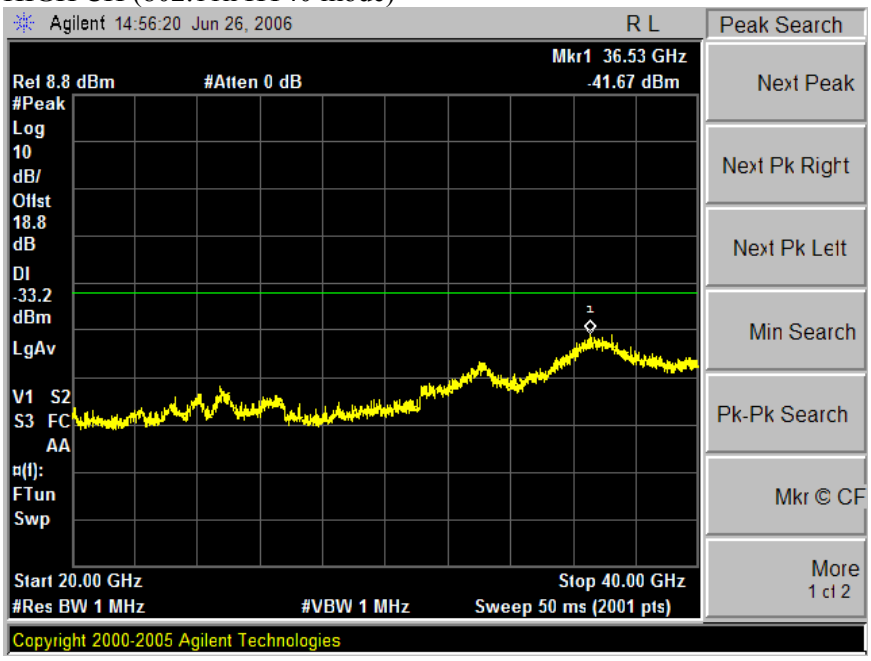
MID CH (802.11n HT40 mode)



HIGH CH (802.11n HT40 mode)



HIGH CH (802.11n HT40 mode)



7.2. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*($900/f^2$)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

CALCULATIONS

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E ^ 2 / 3770$

where

E = Field Strength in Volts/meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power Density in milliwatts/square centimeter

Combining equations yields:

$S = (30 * P * G) / (3770 * (d ^ 2))$

Changing to units of Power to mW and Distance to cm, using:

P (W) = P (mW) / 1000 and
d (m) = d (cm) / 100

and substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

yields

$S = 0.0795 * 10 ^ ((P + G) / 10) / (d^2)$

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW/cm^2

LIMITS

From §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm^2

RESULTS

No non-compliance noted: (MPE distance equals 20 cm)

Band	MPE Distance (cm)	Total Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)
5.2 GHz	20.0	21.23	6.20	0.11

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

7.3. RADIATED EMISSIONS

7.3.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each band.

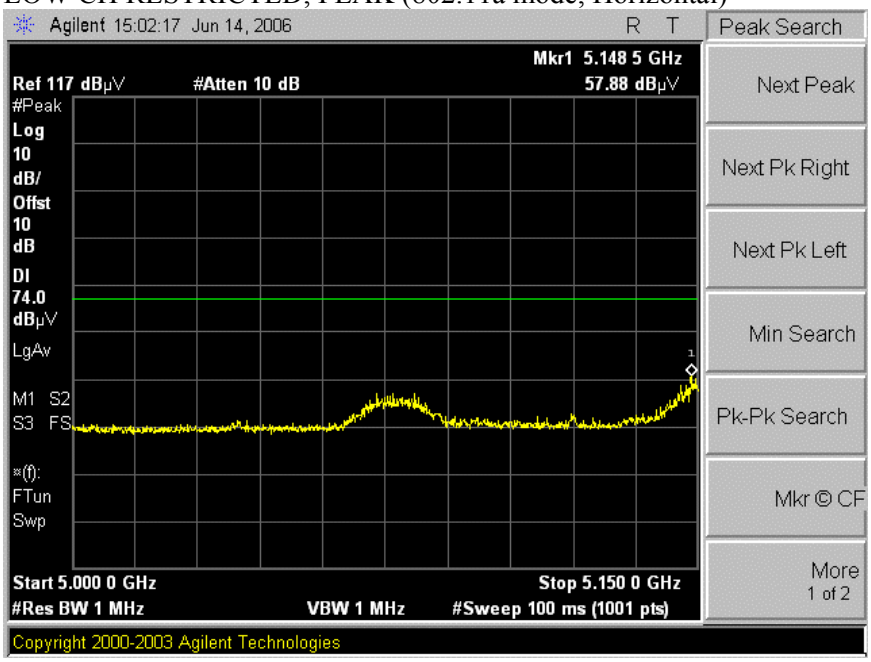
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Both transmitting chains were activated simultaneously and continuously during all radiated emissions tests.

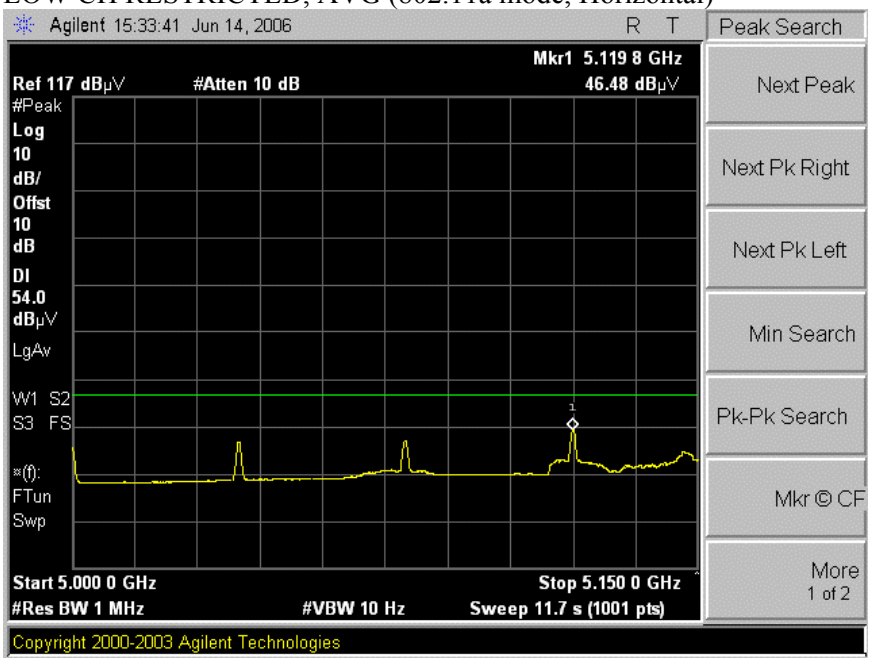
7.3.2. TRANSMITTER ABOVE 1 GHZ FOR 5150 TO 5350 MHz BAND WITH PIFA ANTENNAS

RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Horizontal)

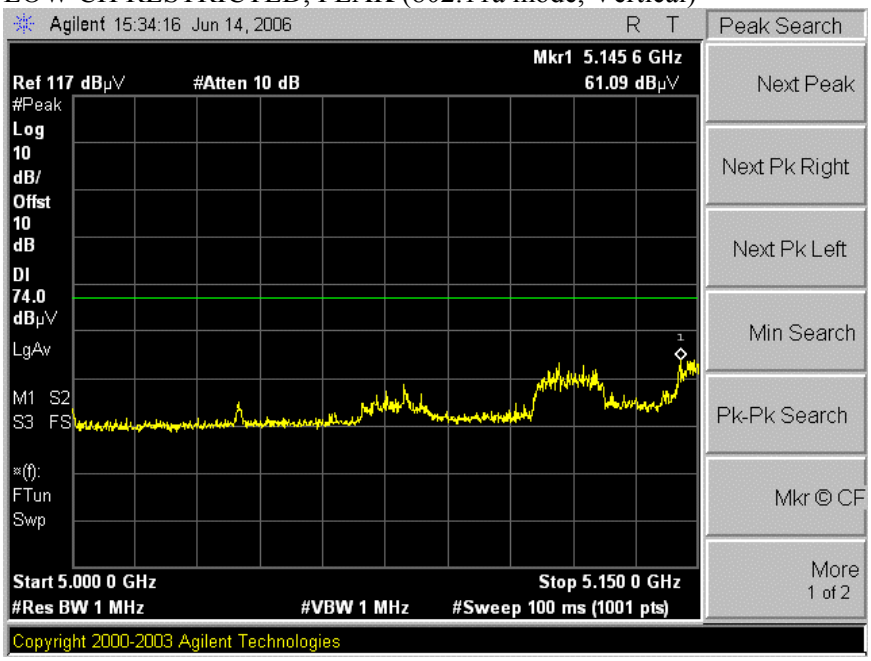


LOW CH RESTRICTED, AVG (802.11a mode, Horizontal)

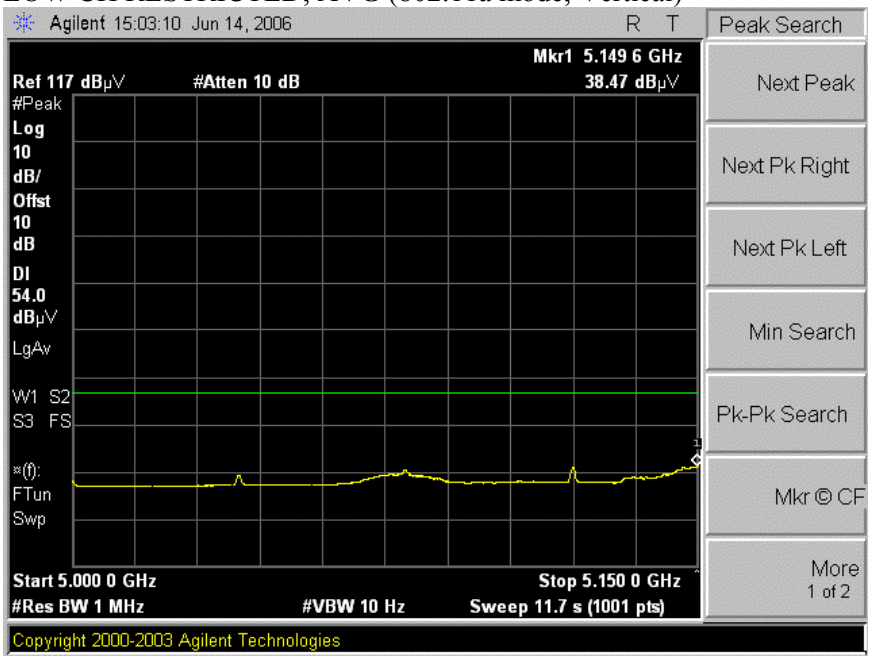


RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Vertical)

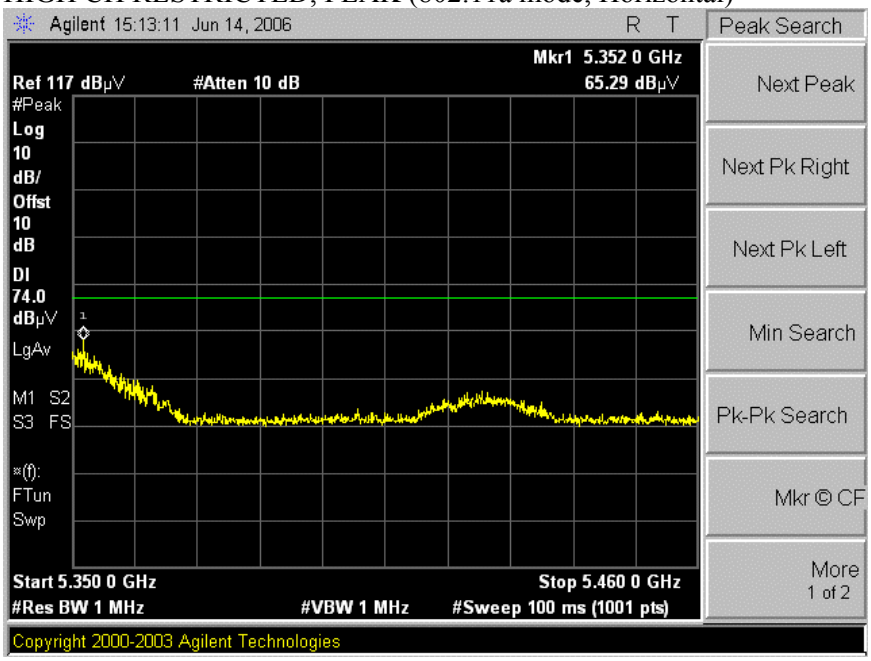


LOW CH RESTRICTED, AVG (802.11a mode, Vertical)

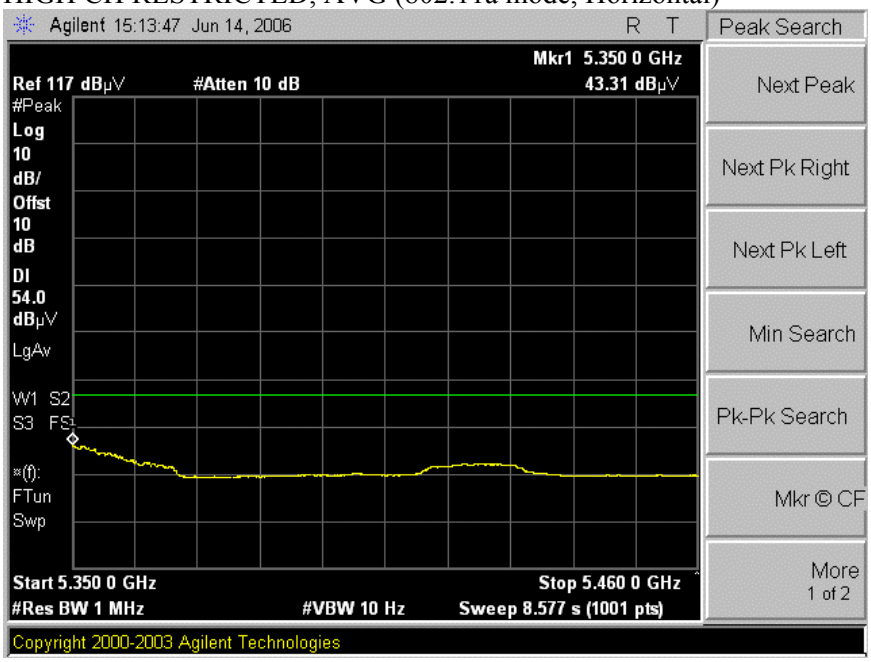


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Horizontal)

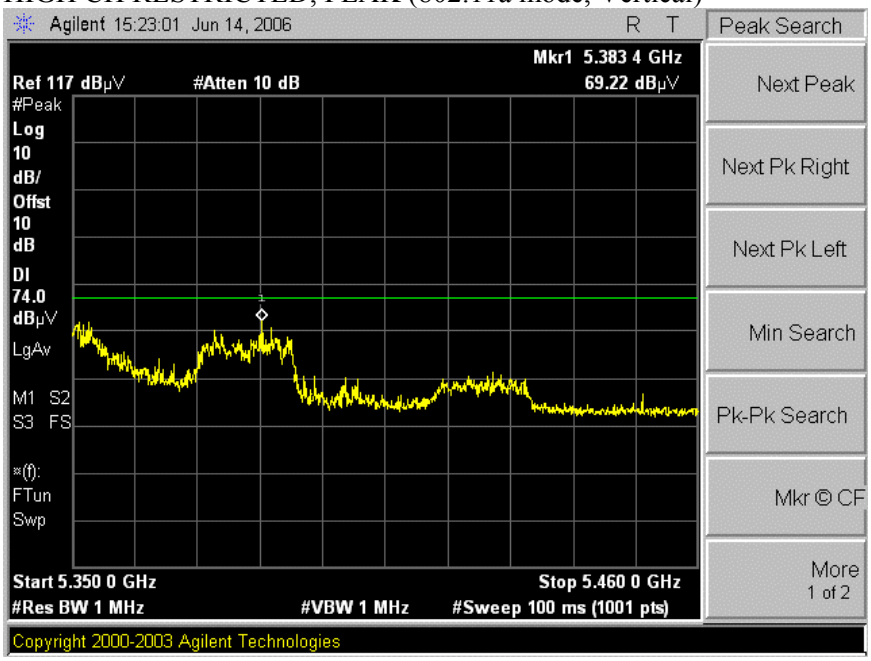


HIGH CH RESTRICTED, AVG (802.11a mode, Horizontal)

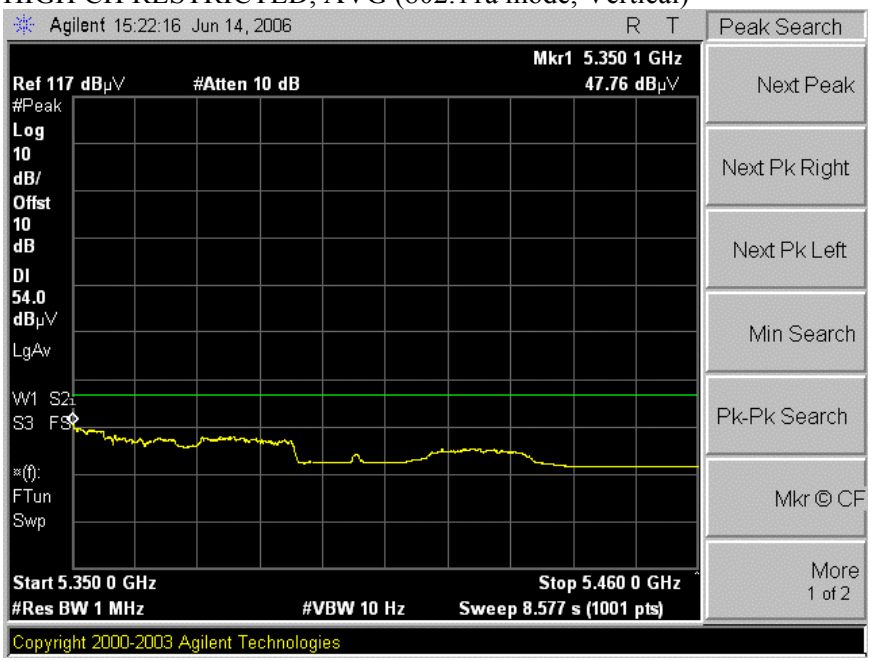


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11a mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company:ATHEROS
Project #:06U10365
EUT Descrip:802.11 n
Test Engineer:Devin Chang
Configuration:ED4 antenna
Mode:TX, 11a 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 5180MHz															
6.906	3.0	47.7	41.0	35.1	3.4	-34.3	0.0	0.0	51.9	45.2	74	54	-22.1	-8.8	V
10.360	3.0	42.8	33.2	36.7	3.8	-32.6	0.0	0.0	50.7	41.1	74	54	-23.3	-12.9	V
6.906	3.0	46.4	38.0	35.1	3.4	-34.3	0.0	0.0	50.6	42.2	74	54	-23.4	-11.8	H
10.360	3.0	47.8	35.3	36.7	3.8	-32.6	0.0	0.0	55.7	43.2	74	54	-18.3	-10.8	H
Mid Ch, 5260MHz															
7.013	3.0	46.0	37.3	35.1	3.4	-34.2	0.0	0.0	50.3	41.6	74	54	-23.7	-12.4	V
10.520	3.0	50.7	38.5	36.8	3.8	-32.6	0.0	0.0	58.6	46.4	74	54	-15.4	-7.6	V
7.013	3.0	45.3	38.1	35.1	3.4	-34.2	0.0	0.0	49.6	42.4	74	54	-24.4	-11.6	H
10.520	3.0	47.5	34.7	36.8	3.8	-32.6	0.0	0.0	55.4	42.6	74	54	-18.6	-11.4	H
High Ch.5320MHz															
7.093	3.0	44.5	36.3	35.1	3.4	-34.2	0.0	0.0	48.9	40.6	74	54	-25.1	-13.4	V
10.640	3.0	48.4	35.9	36.8	3.8	-32.6	0.0	0.0	56.4	44.0	74	54	-17.6	-10.0	V
7.093	3.0	46.6	39.0	35.1	3.4	-34.2	0.0	0.0	50.9	43.4	74	54	-23.1	-10.6	H
10.640	3.0	44.1	32.7	36.8	3.8	-32.6	0.0	0.0	52.1	40.7	74	54	-21.9	-13.3	H
		No other emissions were detected above system noise floor													

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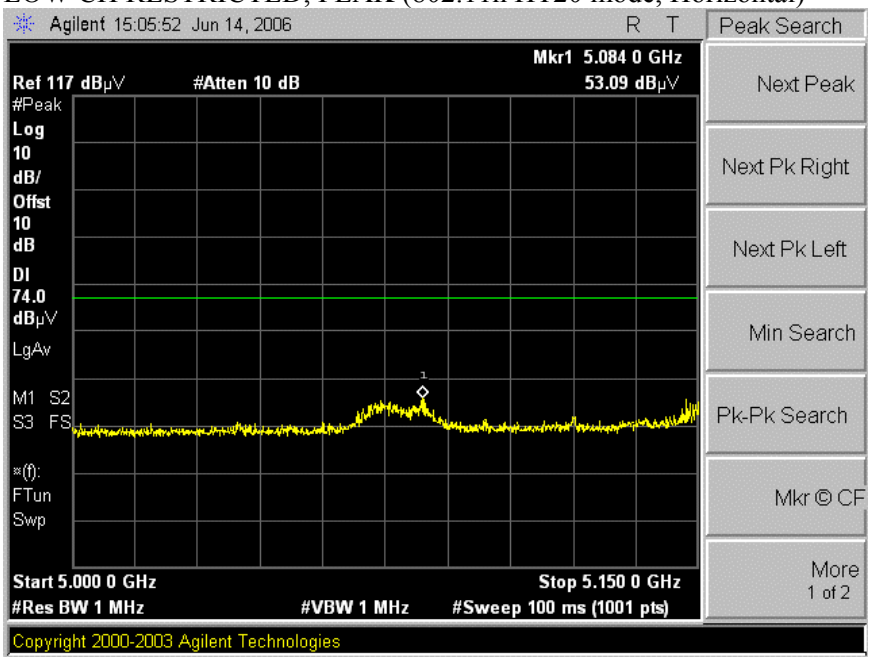
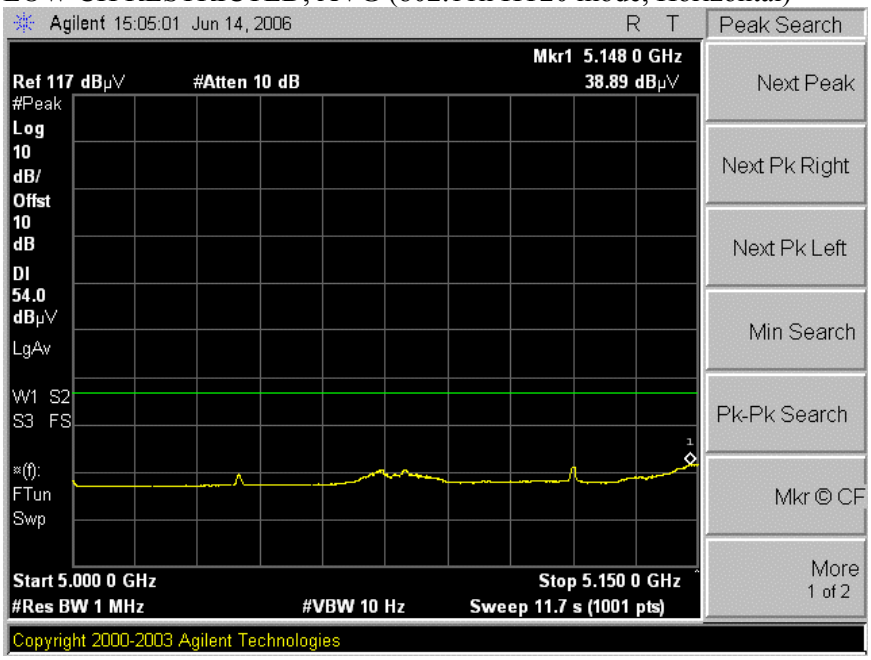
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (802.11n HT20 MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11n HT20 mode, Horizontal)

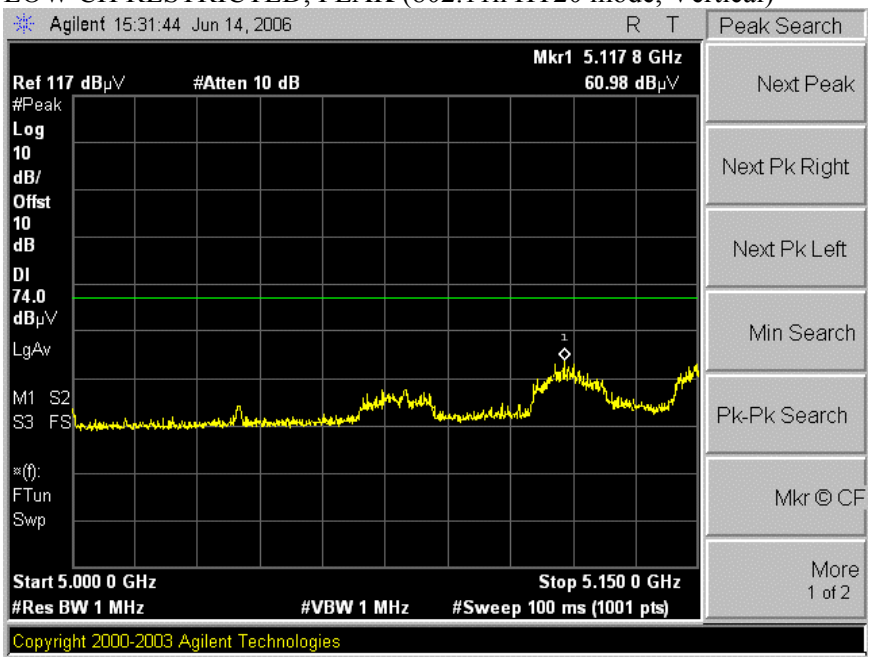


LOW CH RESTRICTED, AVG (802.11n HT20 mode, Horizontal)

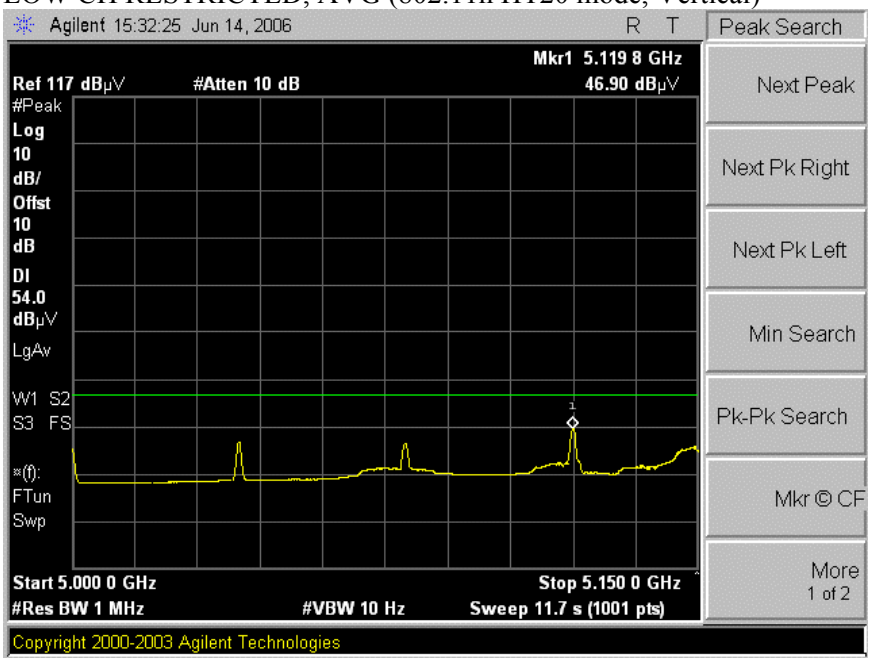


RESTRICTED BANDEDGE (802.11n HT20 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11n HT20 mode, Vertical)

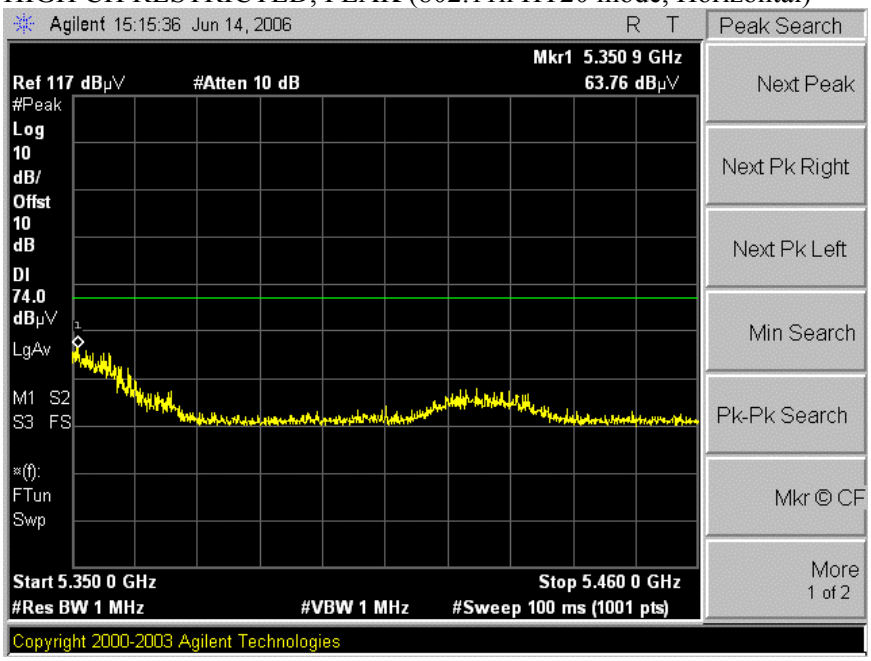


LOW CH RESTRICTED, AVG (802.11n HT20 mode, Vertical)

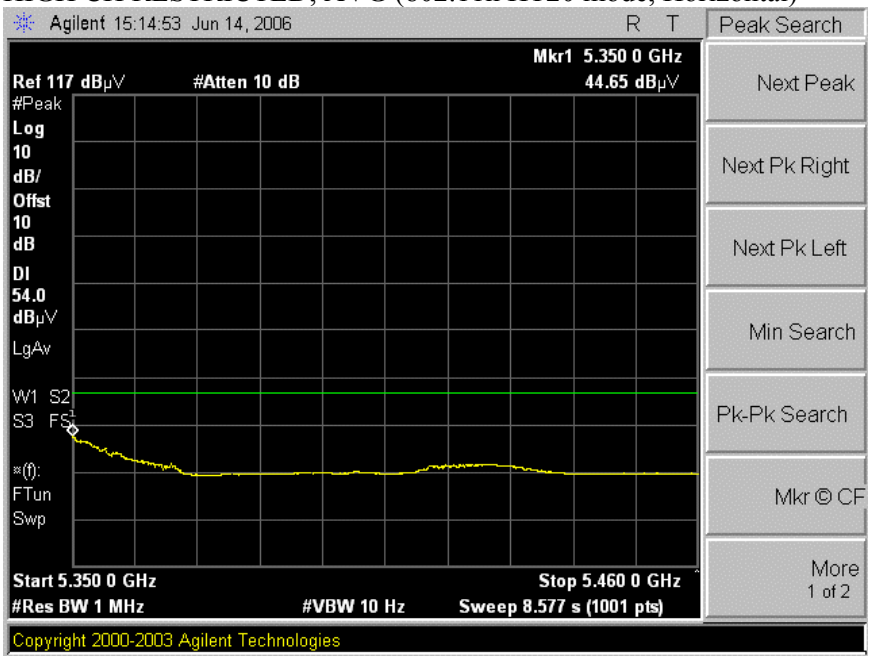


RESTRICTED BANDEDGE (802.11n HT20 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11n HT20 mode, Horizontal)



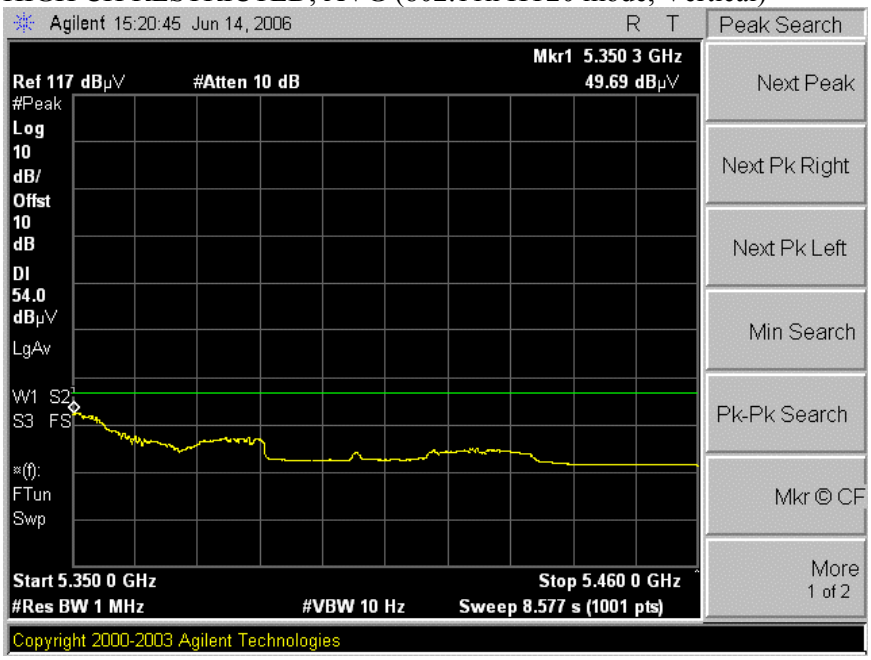
HIGH CH RESTRICTED, AVG (802.11n HT20 mode, Horizontal)



RESTRICTED BANDEDGE (802.11n HT20 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11n HT20 mode, Vertical)

HIGH CH RESTRICTED, AVG (802.11n HT20 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n HT20 MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: ATHEROS
Project #: 06U10365
EUT Descrip: 802.11 n
Test Engineer: Devin Chang
Configuration: ED4 antenna
Mode: TX, 11n HT20 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 5180MHz															
6.906	3.0	46.1	41.2	35.1	3.4	-34.3	0.0	0.0	50.3	45.4	74	54	-23.7	-8.6	V
10.360	3.0	49.4	37.5	36.7	3.8	-32.6	0.0	0.0	57.3	45.4	74	54	-16.7	-8.6	V
6.906	3.0	47.2	37.4	35.1	3.4	-34.3	0.0	0.0	51.4	41.6	74	54	-22.6	-12.4	H
10.360	3.0	47.9	36.4	36.7	3.8	-32.6	0.0	0.0	55.7	44.3	74	54	-18.3	-9.7	H
Mid Ch, 5260MHz															
7.013	3.0	45.1	37.7	35.1	3.4	-34.2	0.0	0.0	49.4	42.1	74	54	-24.6	-11.9	V
10.520	3.0	52.5	40.1	36.8	3.8	-32.6	0.0	0.0	60.4	48.0	74	54	-13.6	-6.0	V
7.013	3.0	46.6	39.1	35.1	3.4	-34.2	0.0	0.0	51.0	43.4	74	54	-23.0	-10.6	H
10.520	3.0	47.2	34.0	36.8	3.8	-32.6	0.0	0.0	55.2	41.9	74	54	-18.8	-12.1	H
High Ch, 5320MHz															
7.093	3.0	44.2	36.4	35.1	3.4	-34.2	0.0	0.0	48.6	40.7	74	54	-25.4	-13.3	V
10.640	3.0	47.6	36.0	36.8	3.8	-32.6	0.0	0.0	55.6	44.0	74	54	-18.4	-10.0	V
7.093	3.0	46.9	38.7	35.1	3.4	-34.2	0.0	0.0	51.3	43.1	74	54	-22.7	-10.9	H
10.640	3.0	43.6	31.7	36.8	3.8	-32.6	0.0	0.0	51.6	39.7	74	54	-22.4	-14.3	H
		No other emissions were detected above system noise floor													

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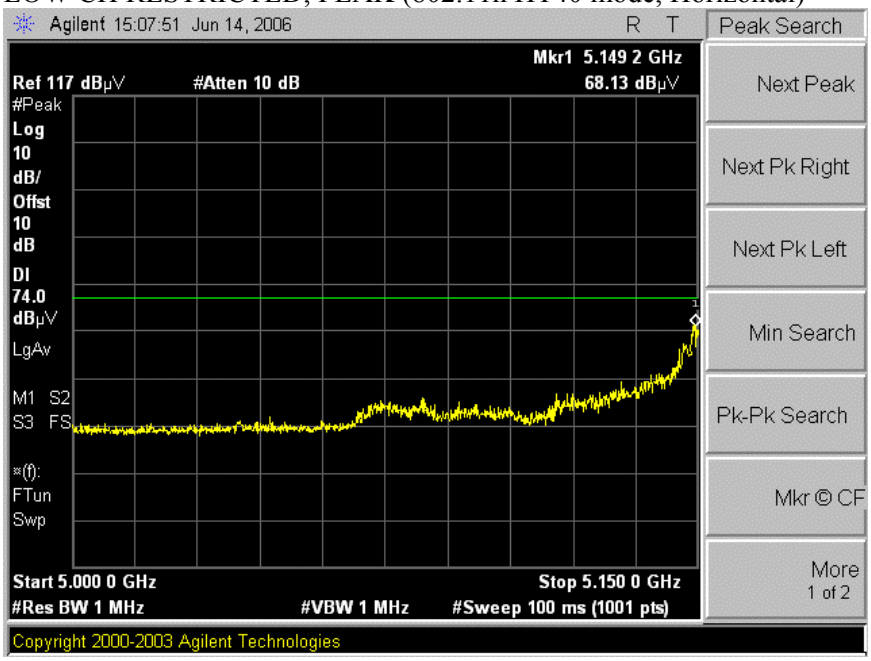
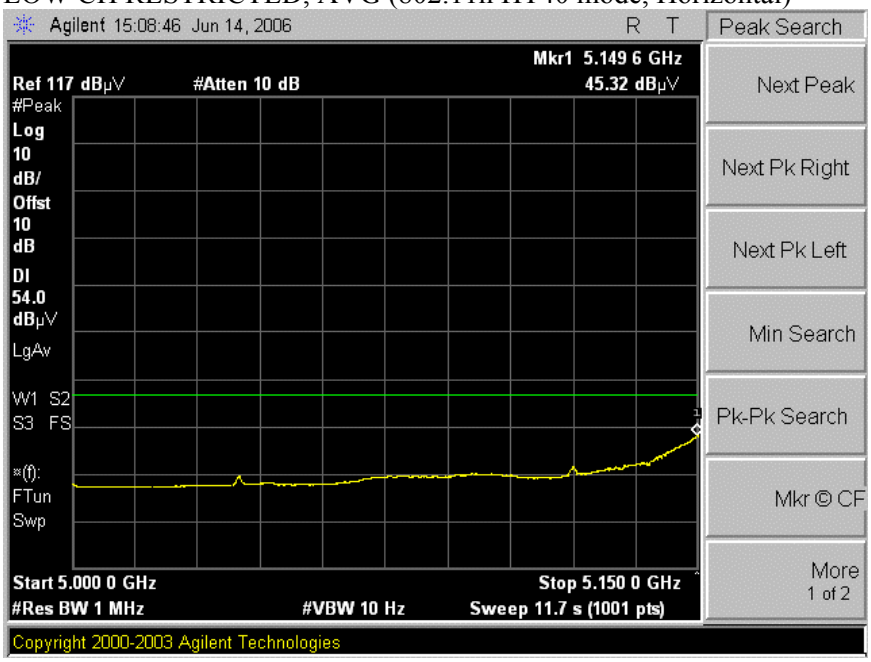
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (802.11n HT40 LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11n HT40 mode, Horizontal)

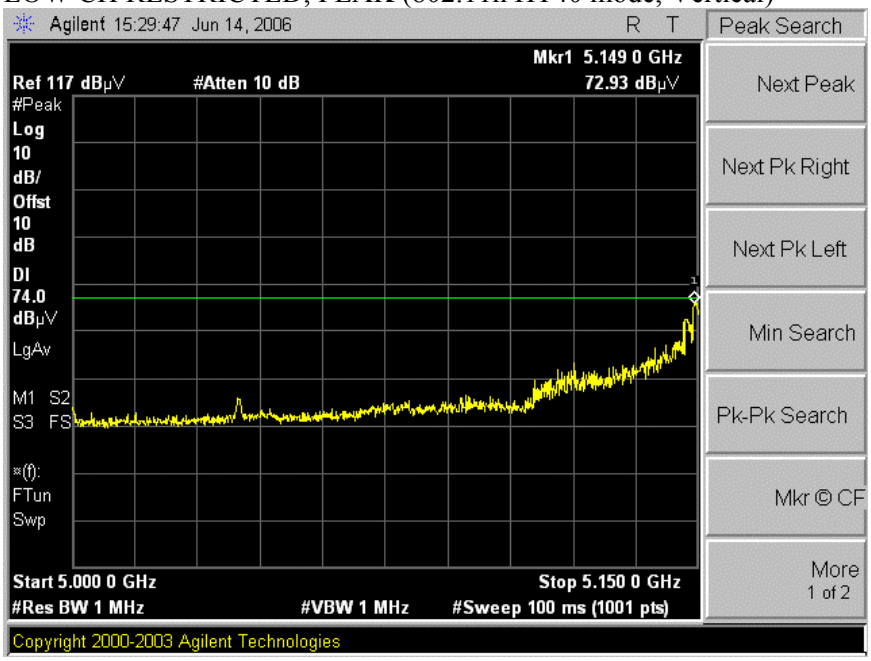


LOW CH RESTRICTED, AVG (802.11n HT40 mode, Horizontal)

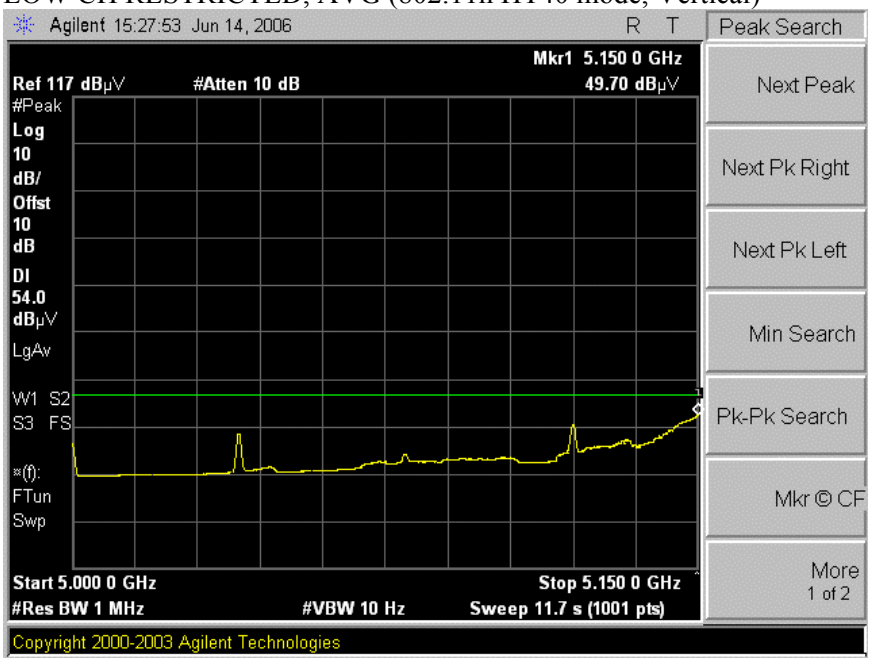


RESTRICTED BANDEDGE (802.11n HT40 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11n HT40 mode, Vertical)

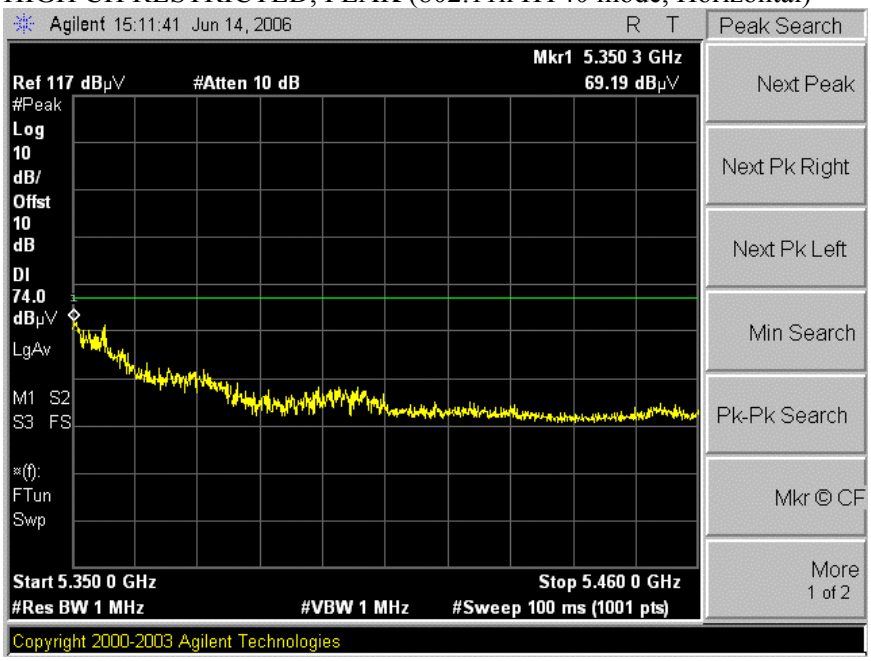


LOW CH RESTRICTED, AVG (802.11n HT40 mode, Vertical)

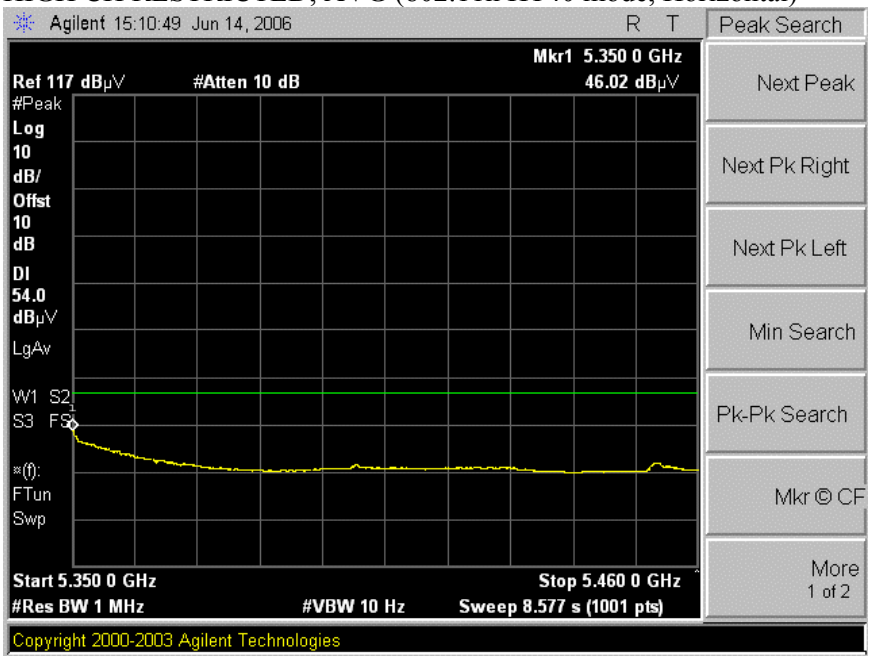


RESTRICTED BANDEDGE (802.11n HT40 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11n HT40 mode, Horizontal)

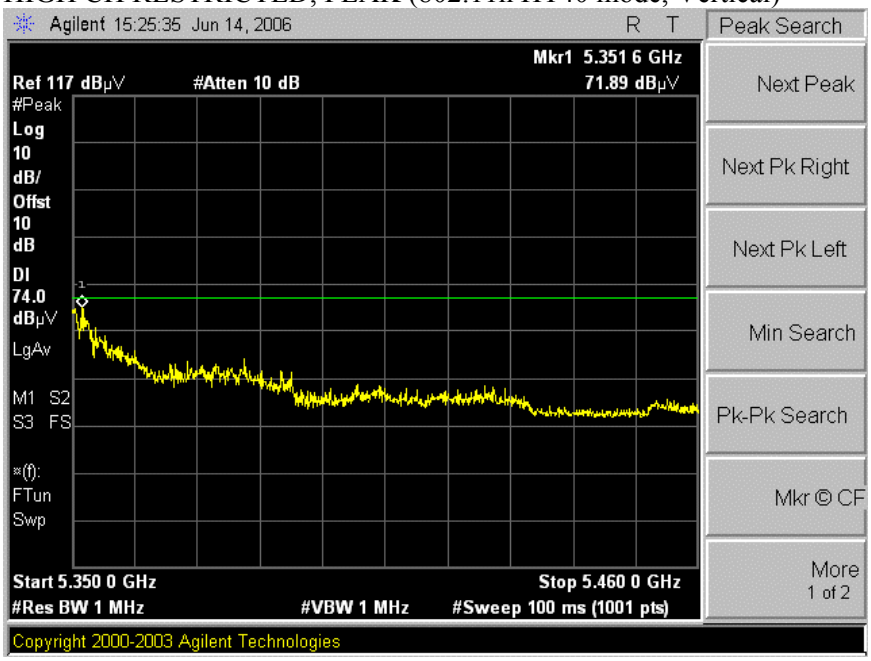


HIGH CH RESTRICTED, AVG (802.11n HT40 mode, Horizontal)

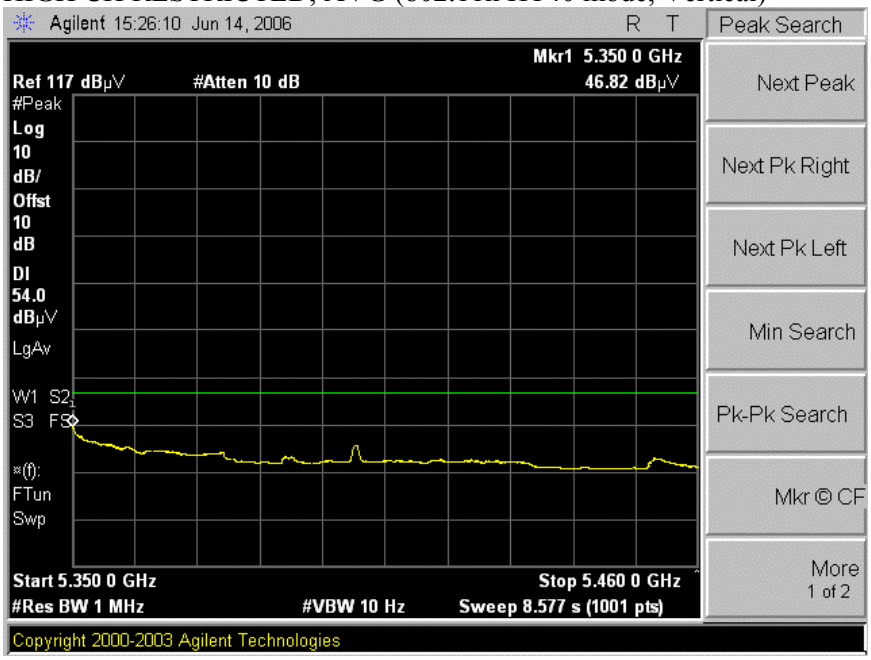


RESTRICTED BANDEDGE (802.11n HT40 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11n HT40 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11n HT40 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n HT40 MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: ATHEROS
Project #: 06U10365
EUT Descrip: 802.11 n
Test Engineer: Devin Chang
Configuration: ED4 antenna
Mode: TX, 11n HT40 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5190MHz															
6.920	3.0	46.1	41.1	35.1	3.4	-34.3	0.0	0.0	50.4	45.3	74	54	-23.6	-8.7	V
10.380	3.0	50.0	38.1	36.7	3.8	-32.6	0.0	0.0	57.9	46.0	74	54	-16.1	-8.0	V
6.920	3.0	46.7	38.6	35.1	3.4	-34.3	0.0	0.0	50.9	42.8	74	54	-23.1	-11.2	H
10.380	3.0	46.4	34.1	36.7	3.8	-32.6	0.0	0.0	54.3	42.0	74	54	-19.7	-12.0	H
Mid Ch. 5260MHz															
7.013	3.0	45.7	39.8	35.1	3.4	-34.2	0.0	0.0	50.0	44.1	74	54	-24.0	-9.9	V
10.520	3.0	50.1	38.2	36.8	3.8	-32.6	0.0	0.0	58.1	46.1	74	54	-15.9	-7.9	V
7.013	3.0	44.7	37.5	35.1	3.4	-34.2	0.0	0.0	49.0	41.8	74	54	-25.0	-12.2	H
10.520	3.0	47.6	35.9	36.8	3.8	-32.6	0.0	0.0	55.5	43.8	74	54	-18.5	-10.2	H
High Ch. 5310MHz															
7.080	3.0	44.1	36.8	35.1	3.4	-34.2	0.0	0.0	48.4	41.2	74	54	-25.6	-12.8	V
10.620	3.0	48.3	35.2	36.8	3.8	-32.6	0.0	0.0	56.3	43.2	74	54	-17.7	-10.8	V
7.080	3.0	45.3	38.3	35.1	3.4	-34.2	0.0	0.0	49.6	42.6	74	54	-24.4	-11.4	H
10.620	3.0	42.4	31.9	36.8	3.8	-32.6	0.0	0.0	50.4	39.9	74	54	-23.6	-14.1	H
	No other emissions were detected above system noise floor														

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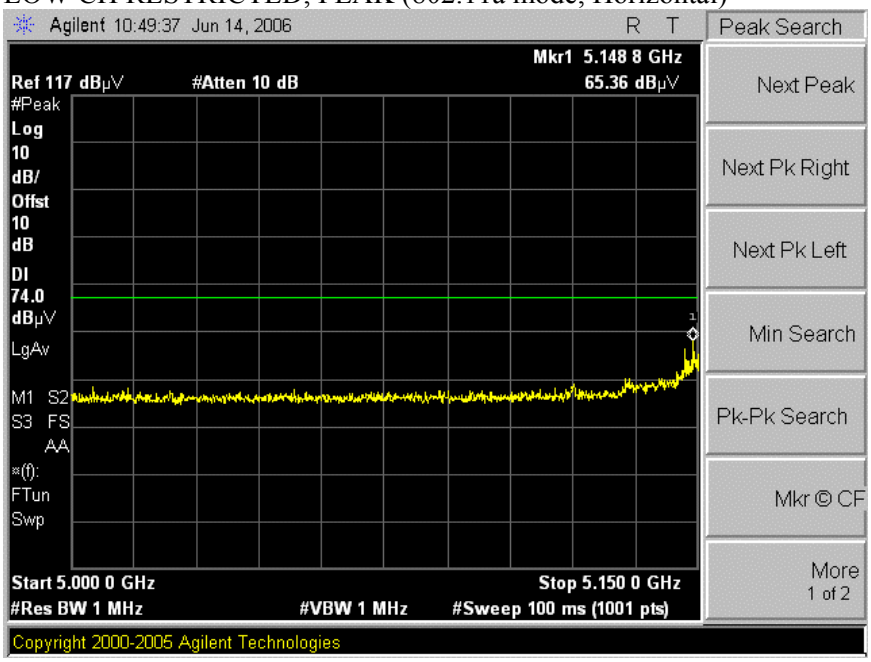
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

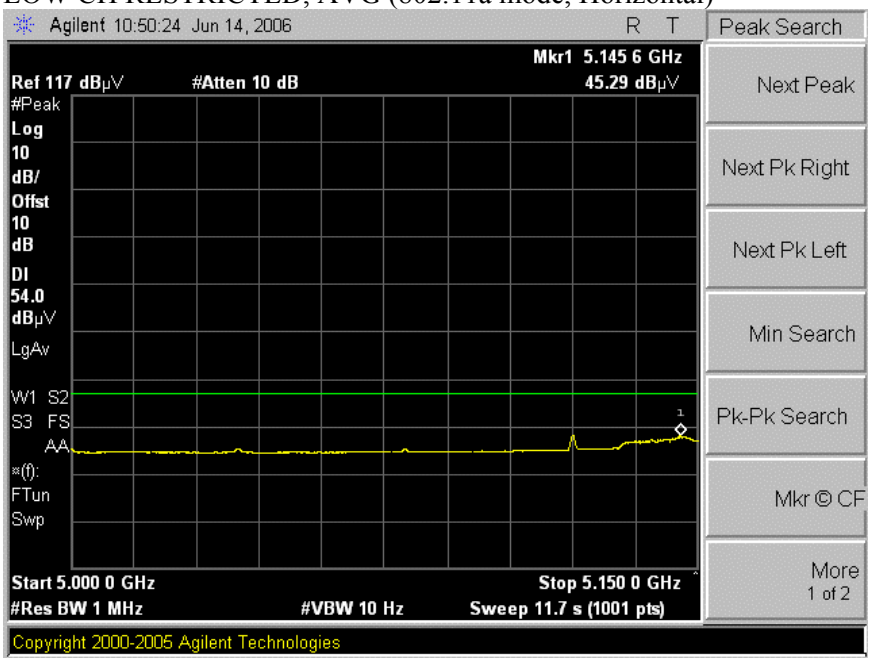
7.3.3. TRANSMITTER ABOVE 1 GHZ FOR 5150 TO 5350 MHz BAND WITH MONOPOLE ANTENNAS

RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Horizontal)

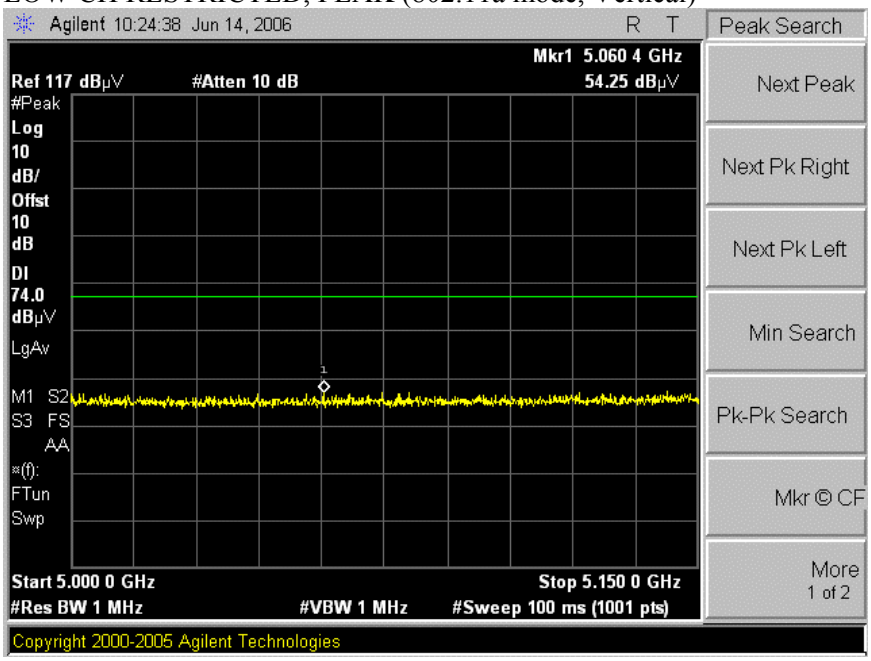


LOW CH RESTRICTED, AVG (802.11a mode, Horizontal)

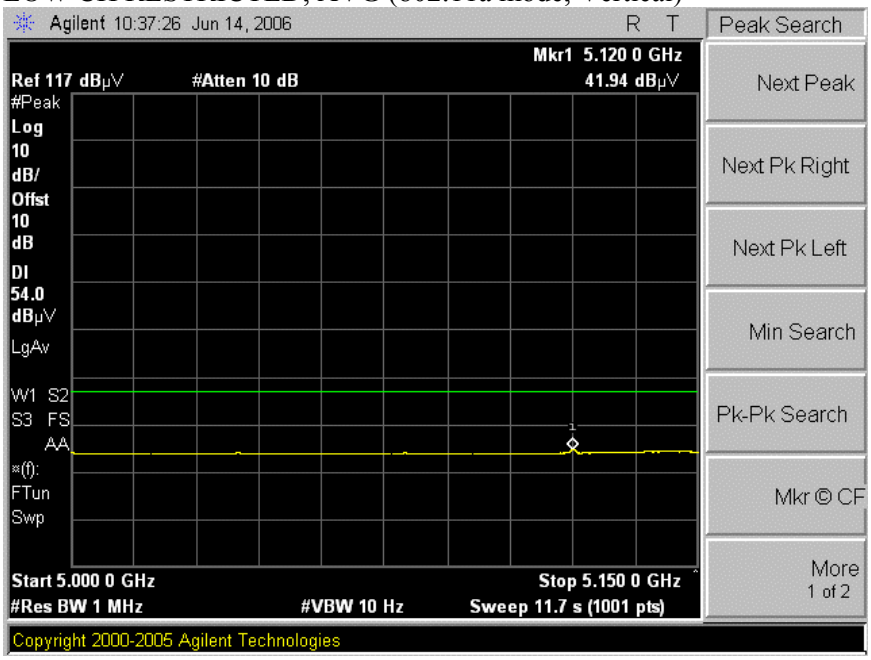


RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Vertical)

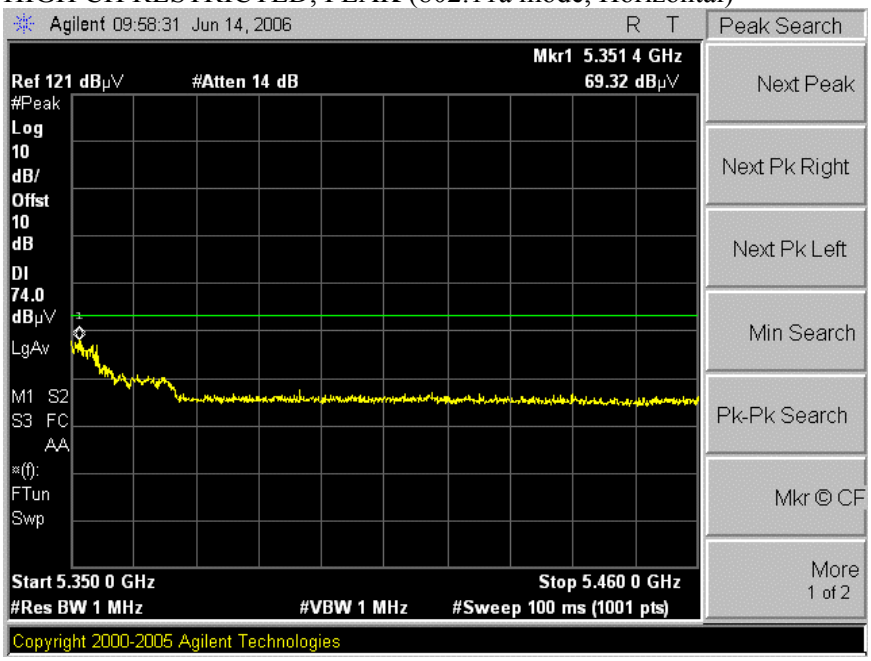


LOW CH RESTRICTED, AVG (802.11a mode, Vertical)

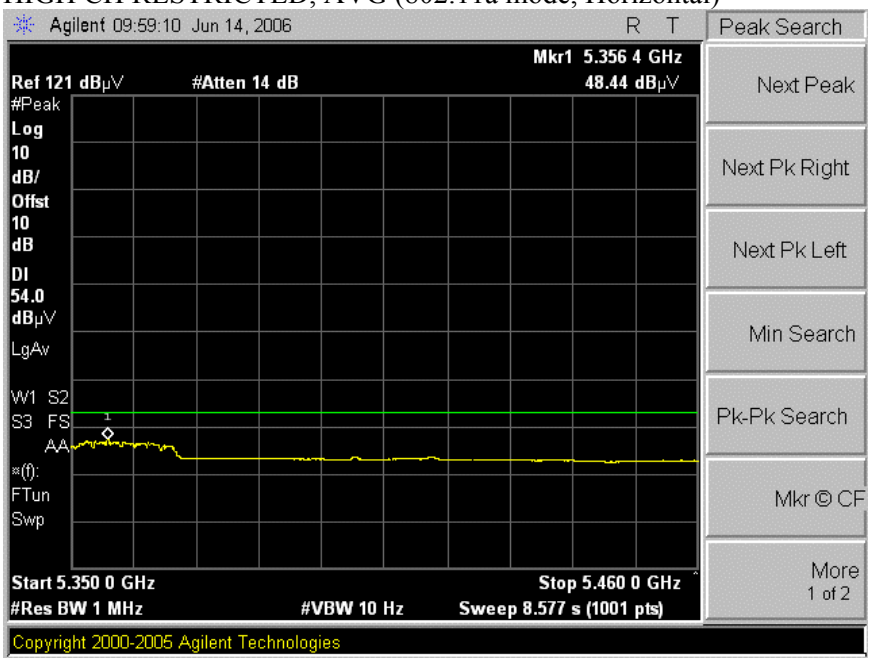


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Horizontal)

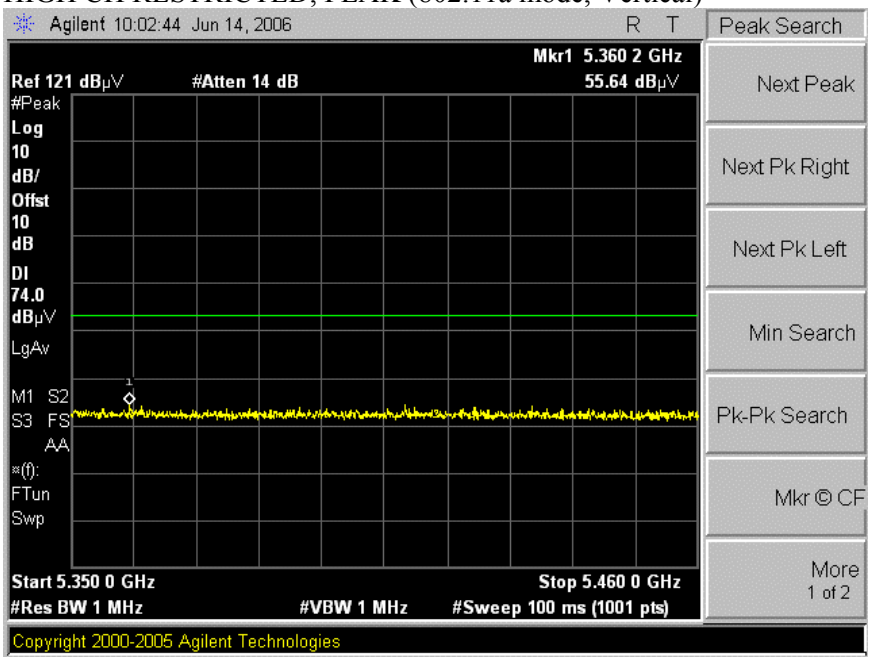


HIGH CH RESTRICTED, AVG (802.11a mode, Horizontal)

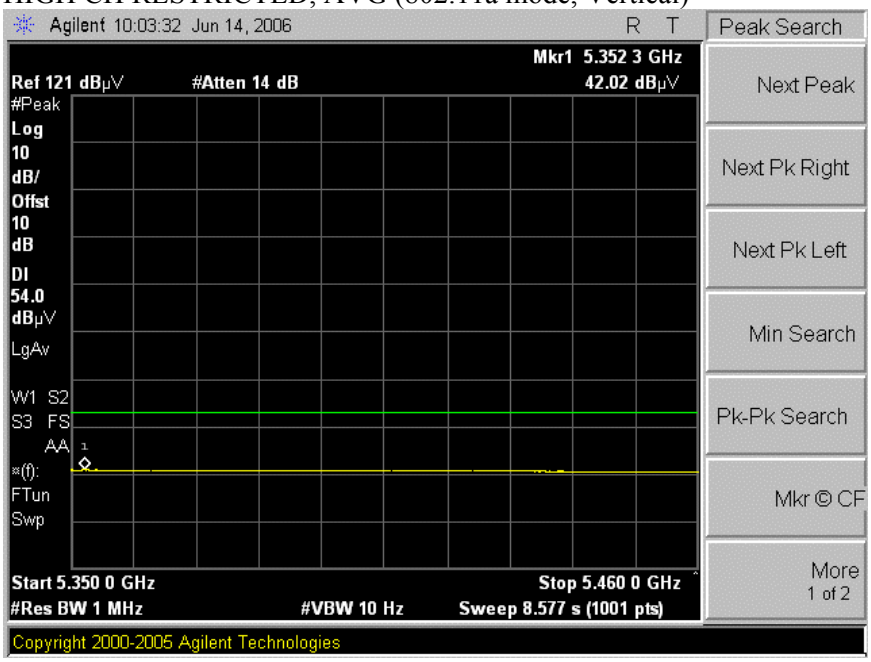


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11a mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: ATHEROS
Project #: 06U10365
EUT Descrip: 802.11 n
Test Engineer: Devin Chang
Configuration: Foxcon antenna
Mode: TX, 11a 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

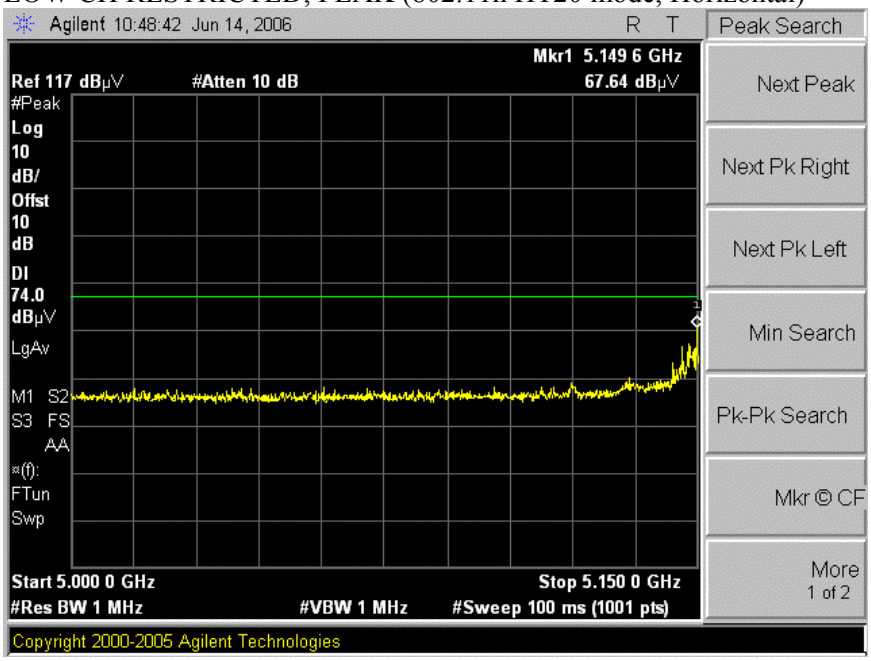
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5180MHz															
6.906	3.0	46.4	42.8	35.1	3.4	-34.3	0.0	0.0	50.6	47.0	74	54	-23.4	-7.0	V
10.360	3.0	43.9	34.2	36.7	3.8	-32.6	0.0	0.0	51.7	42.1	74	54	-22.3	-11.9	V
6.906	3.0	49.0	44.1	35.1	3.4	-34.3	0.0	0.0	53.2	48.3	74	54	-20.8	-5.7	H
10.360	3.0	44.3	32.5	36.7	3.8	-32.6	0.0	0.0	52.2	40.4	74	54	-21.8	-13.6	H
Mid Ch, 5260MHz															
7.013	3.0	52.8	40.2	35.1	3.4	-34.2	0.0	0.0	57.1	44.5	74	54	-16.9	-9.5	V
10.520	3.0	48.7	38.0	36.8	3.8	-32.6	0.0	0.0	56.6	45.9	74	54	-17.4	-8.1	V
7.013	3.0	44.0	39.9	35.1	3.4	-34.2	0.0	0.0	48.3	44.2	74	54	-25.7	-9.8	H
10.520	3.0	45.4	34.1	36.8	3.8	-32.6	0.0	0.0	53.3	42.0	74	54	-20.7	-12.0	H
High Ch.5320MHz															
7.093	3.0	47.5	41.9	35.1	3.4	-34.2	0.0	0.0	51.8	46.2	74	54	-22.2	-7.8	V
10.640	3.0	45.1	34.8	36.8	3.8	-32.6	0.0	0.0	53.1	42.8	74	54	-20.9	-11.2	V
7.093	3.0	44.7	39.4	35.1	3.4	-34.2	0.0	0.0	49.0	43.8	74	54	-25.0	-10.2	H
10.640	3.0	43.7	33.2	36.8	3.8	-32.6	0.0	0.0	51.7	41.2	74	54	-22.3	-12.8	H
	No other emissions were detected above system noise floor														

Rev. 5.1.6

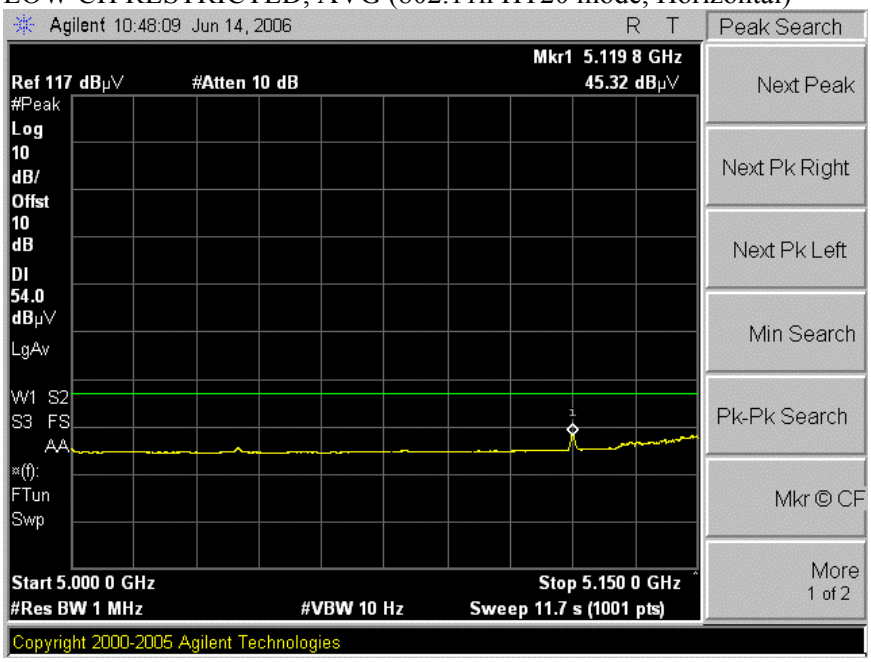
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (802.11n HT20 MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11n HT20 mode, Horizontal)

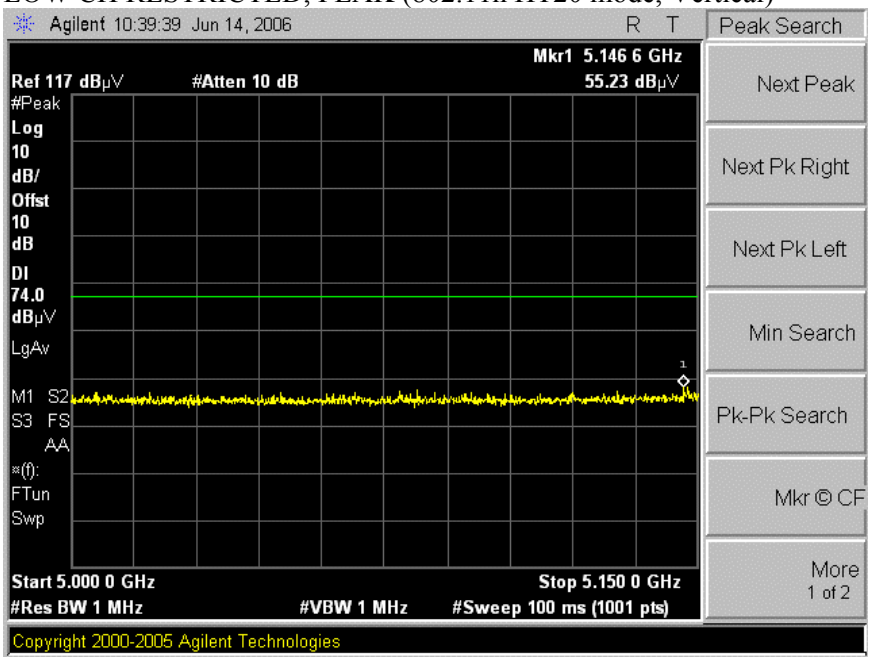


LOW CH RESTRICTED, AVG (802.11n HT20 mode, Horizontal)

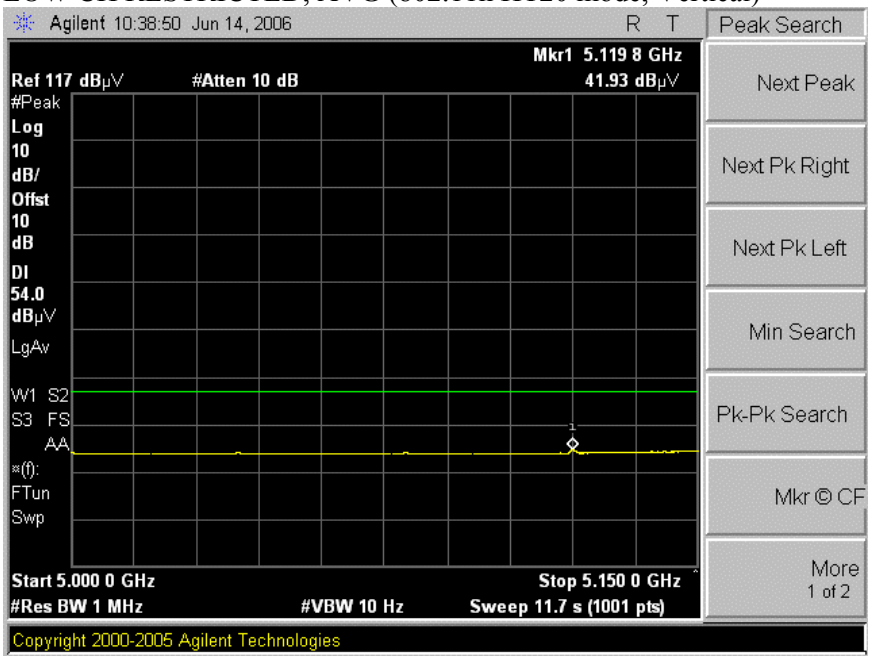


RESTRICTED BANDEDGE (802.11n HT20 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11n HT20 mode, Vertical)

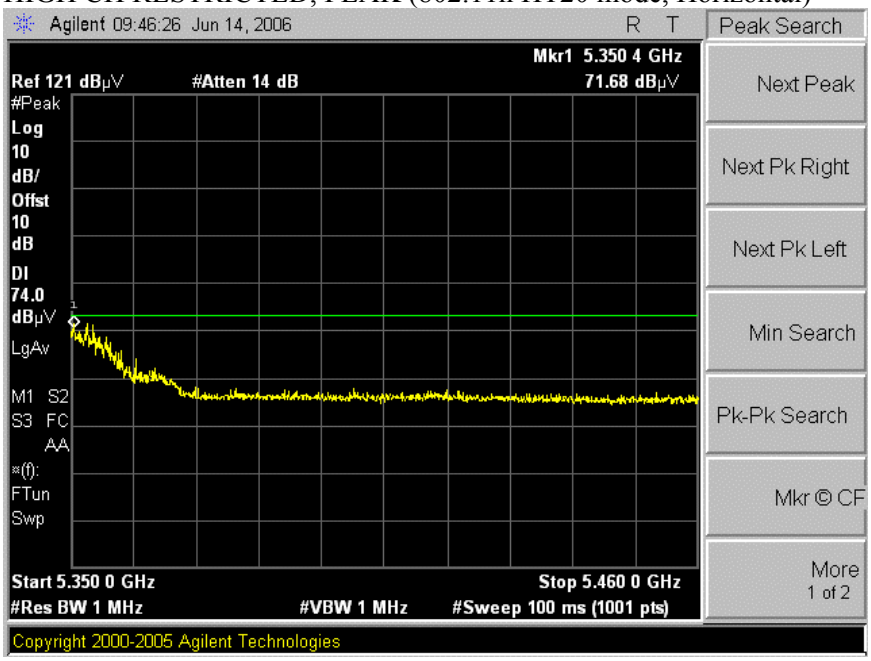


LOW CH RESTRICTED, AVG (802.11n HT20 mode, Vertical)

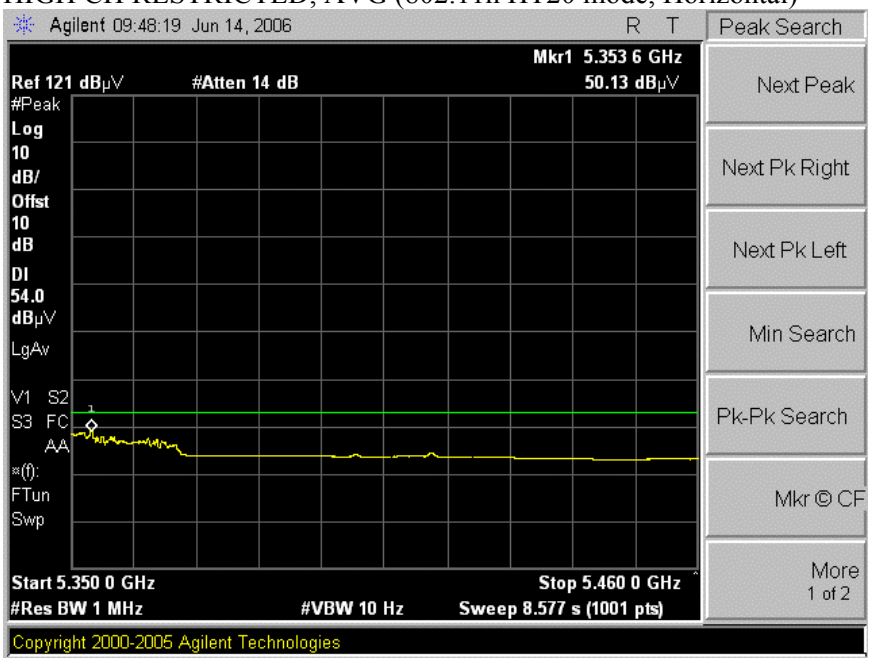


RESTRICTED BANDEDGE (802.11n HT20 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11n HT20 mode, Horizontal)

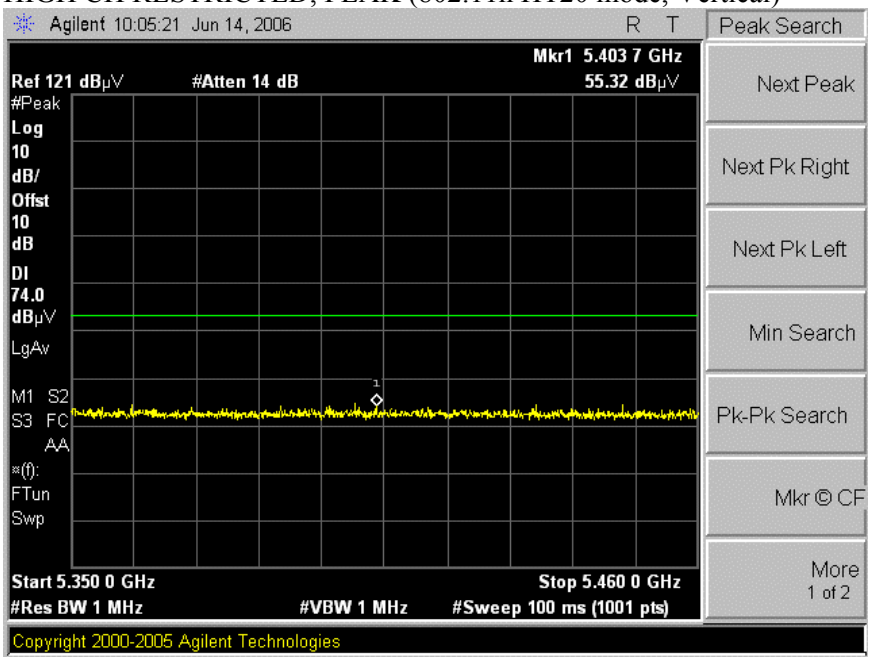


HIGH CH RESTRICTED, AVG (802.11n HT20 mode, Horizontal)

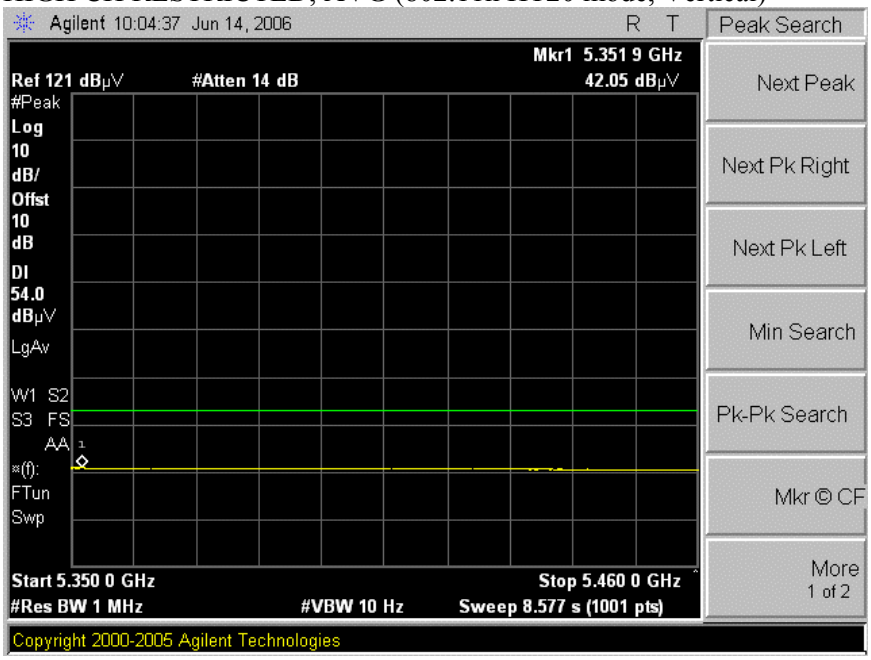


RESTRICTED BANDEDGE (802.11n HT20 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11n HT20 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11n HT20 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n HT20 MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company:ATHEROS
Project #:06U10365
EUT Descrip:802.11 n
Test Engineer:Devin Chang
Configuration:Foxcon antenna
Mode:TX, 11n HT20 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

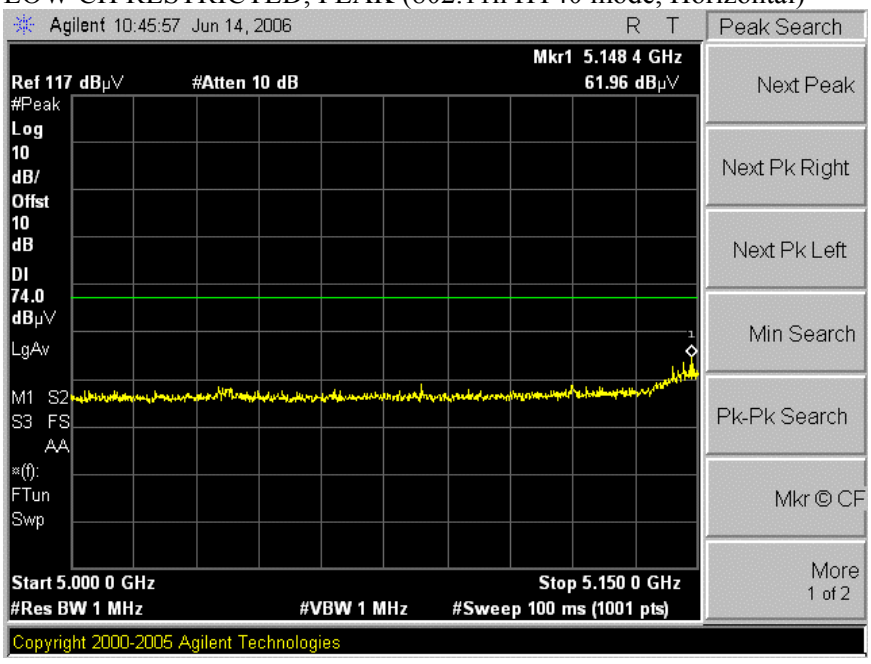
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5180MHz															
6.906	3.0	45.4	41.1	35.1	3.4	-34.3	0.0	0.0	49.6	45.3	74	54	-24.4	-8.7	V
10.360	3.0	42.3	33.8	36.7	3.8	-32.6	0.0	0.0	50.2	41.7	74	54	-23.8	-12.3	V
6.906	3.0	50.1	45.3	35.1	3.4	-34.3	0.0	0.0	54.3	49.5	74	54	-19.7	-4.5	H
10.360	3.0	43.9	32.7	36.7	3.8	-32.6	0.0	0.0	51.7	40.6	74	54	-22.3	-13.4	H
Mid Ch, 5260MHz															
7.013	3.0	51.3	40.1	35.1	3.4	-34.2	0.0	0.0	55.6	44.4	74	54	-18.4	-9.6	V
10.520	3.0	46.4	36.4	36.8	3.8	-32.6	0.0	0.0	54.3	44.4	74	54	-19.7	-9.6	V
7.013	3.0	45.7	40.1	35.1	3.4	-34.2	0.0	0.0	50.1	44.4	74	54	-23.9	-9.6	H
10.520	3.0	45.0	33.9	36.8	3.8	-32.6	0.0	0.0	52.9	41.8	74	54	-21.1	-12.2	H
High Ch.5320MHz															
7.093	3.0	47.4	42.4	35.1	3.4	-34.2	0.0	0.0	51.8	46.8	74	54	-22.2	-7.2	V
10.640	3.0	46.0	33.8	36.8	3.8	-32.6	0.0	0.0	54.0	41.8	74	54	-20.0	-12.2	V
7.093	3.0	47.9	38.7	35.1	3.4	-34.2	0.0	0.0	52.2	43.1	74	54	-21.8	-10.9	H
10.640	3.0	45.0	33.2	36.8	3.8	-32.6	0.0	0.0	53.0	41.2	74	54	-21.0	-12.8	H
No other emissions were detected above system noise floor															

Rev. 5.1.6

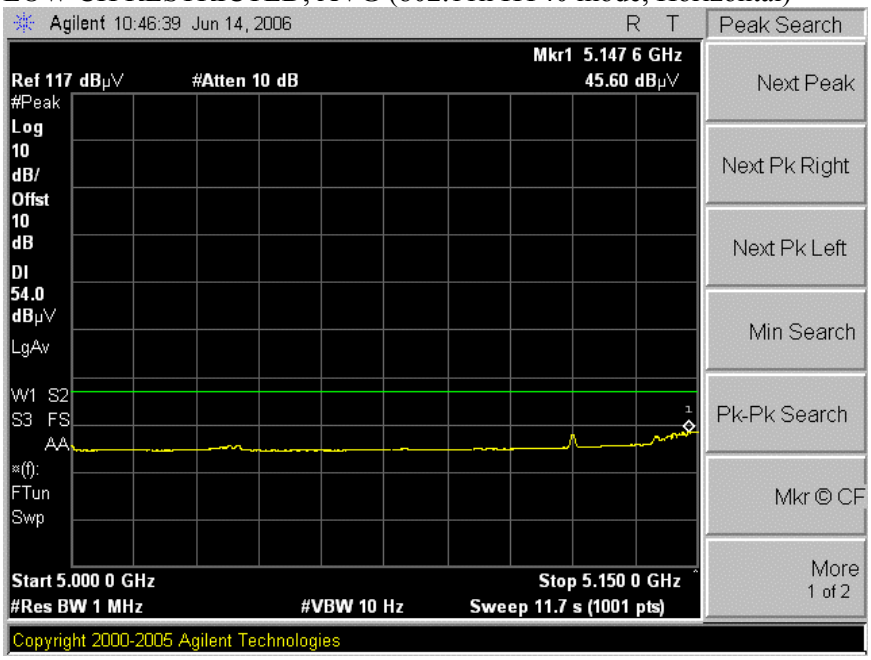
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (802.11n HT40 MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11n HT40 mode, Horizontal)

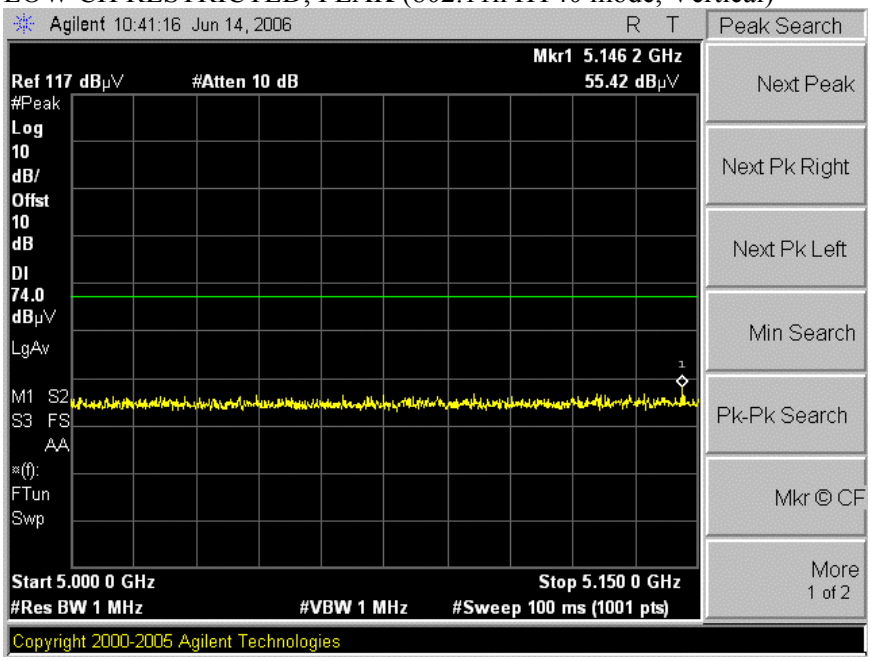


LOW CH RESTRICTED, AVG (802.11n HT40 mode, Horizontal)

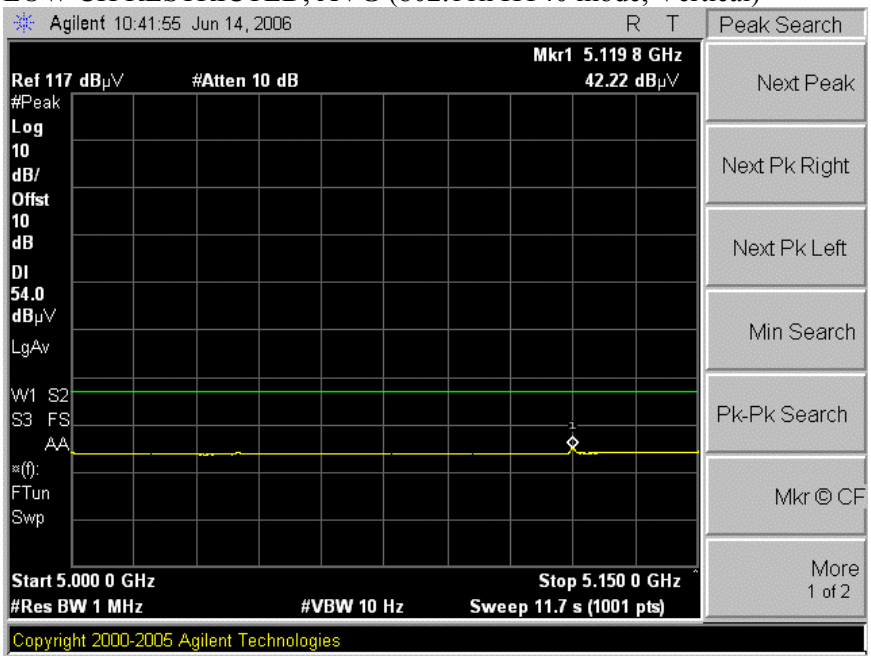


RESTRICTED BANDEDGE (802.11n HT40 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11n HT40 mode, Vertical)

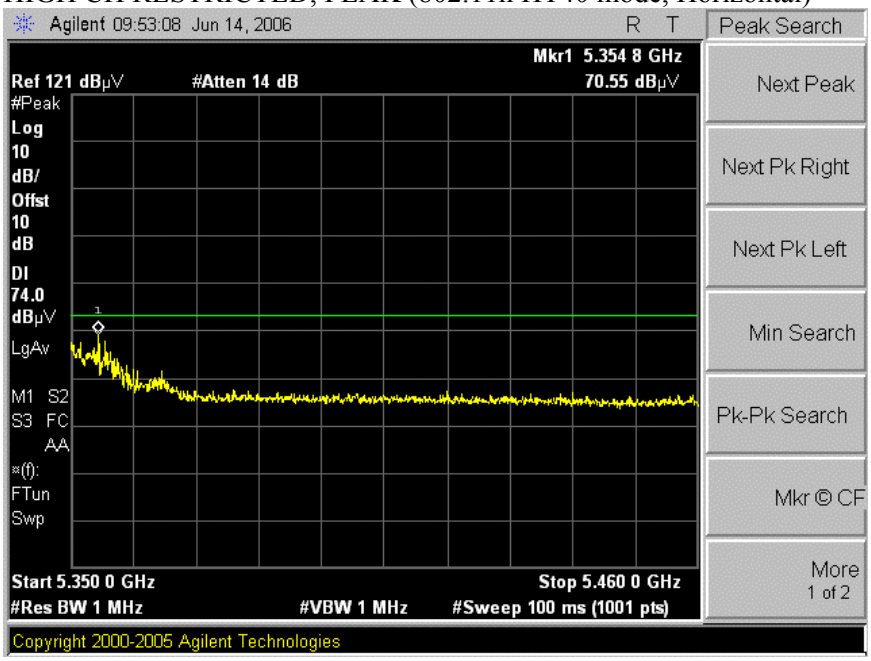


LOW CH RESTRICTED, AVG (802.11n HT40 mode, Vertical)

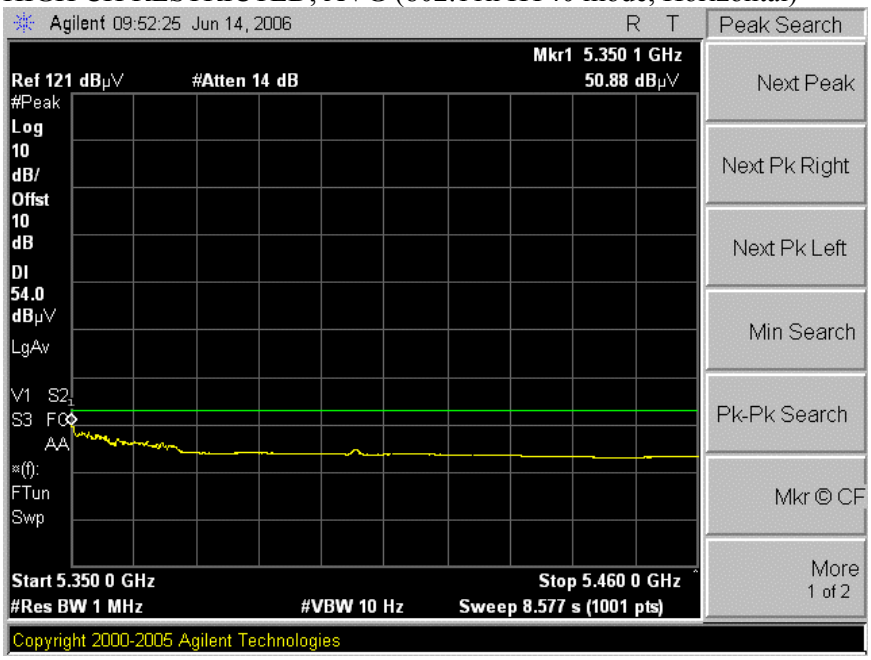


RESTRICTED BANDEDGE (802.11n HT40 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11n HT40 mode, Horizontal)

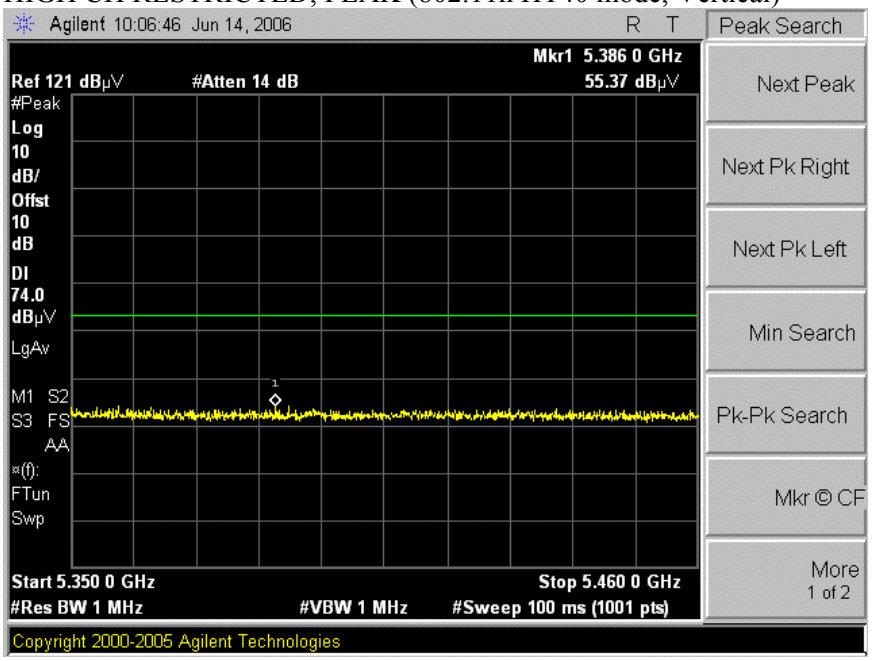


HIGH CH RESTRICTED, AVG (802.11n HT40 mode, Horizontal)

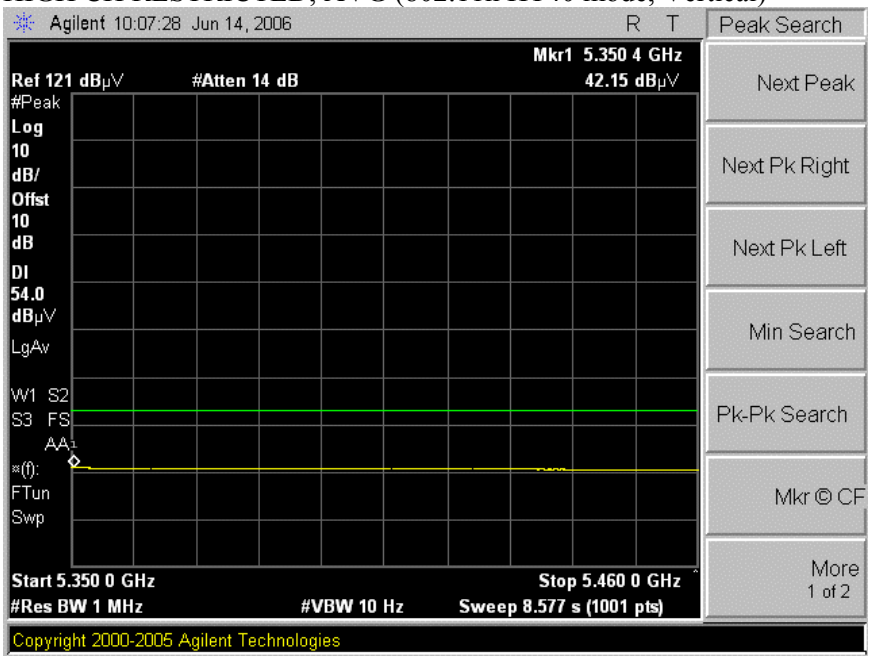


RESTRICTED BANDEDGE (802.11n HT40 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11n HT40 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11n HT40 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n HT40 MODE)

High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Company: ATHEROS
Project #: 06U10365
EUT Descrip: 802.11 n
Test Engineer: Devin Chang
Configuration: Foxcon antenna
Mode: TX, 11n HT40 5.2GHz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
Gordon 187207002		Gordon 203134001		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5190MHz															
6.920	3.0	45.3	44.2	35.1	3.4	-34.3	0.0	0.0	49.5	48.4	74	54	-24.5	-5.6	V
10.380	3.0	44.8	36.1	36.7	3.8	-32.6	0.0	0.0	52.6	44.0	74	54	-21.4	-10.0	V
6.920	3.0	48.9	43.8	35.1	3.4	-34.3	0.0	0.0	53.1	48.0	74	54	-20.9	-6.0	H
10.380	3.0	47.7	33.0	36.7	3.8	-32.6	0.0	0.0	55.5	40.9	74	54	-18.5	-13.1	H
Mid Ch. 5260MHz															
7.013	3.0	51.1	41.4	35.1	3.4	-34.2	0.0	0.0	55.4	45.7	74	54	-18.6	-8.3	V
10.520	3.0	47.9	38.9	36.8	3.8	-32.6	0.0	0.0	55.8	46.8	74	54	-18.2	-7.2	V
7.013	3.0	46.2	40.5	35.1	3.4	-34.2	0.0	0.0	50.5	44.8	74	54	-23.5	-9.2	H
10.520	3.0	47.1	33.7	36.8	3.8	-32.6	0.0	0.0	55.0	41.6	74	54	-19.0	-12.4	H
High Ch. 5310MHz															
7.080	3.0	48.5	41.5	35.1	3.4	-34.2	0.0	0.0	52.9	45.9	74	54	-21.1	-8.1	V
10.620	3.0	46.8	34.5	36.8	3.8	-32.6	0.0	0.0	54.8	42.5	74	54	-19.2	-11.5	V
7.080	3.0	43.6	39.7	35.1	3.4	-34.2	0.0	0.0	48.0	44.0	74	54	-26.0	-10.0	H
10.620	3.0	47.5	35.0	36.8	3.8	-32.6	0.0	0.0	55.5	43.0	74	54	-18.5	-11.0	H
	No other emissions were detected above system noise floor														

Rev. 5.1.6

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.3.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz WITH PIFA ANTENNAS

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL DATA

```
Condition: FCC CLASS-B HORIZONTAL
Test Operator:    : Chin Pang
Company:          : Atheros
Project #:        : 06U10365
Model:            : AR5BXB72
Configuration:    : EUT/Laptop
Mode of Operation: TX ( b mode Mid Ch with ED4 Antennas)
```

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	251.160	25.63	13.93	39.56	46.00	-6.44	Peak
2	373.380	21.29	17.46	38.75	46.00	-7.25	Peak
3	456.800	19.55	19.36	38.91	46.00	-7.09	Peak
4	609.090	22.14	21.66	43.80	46.00	-2.20	Peak
5	708.030	15.71	23.23	38.94	46.00	-7.06	Peak
6	807.940	17.99	24.69	42.68	46.00	-3.32	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL DATA

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Company: : Atheros
Project #: : 06U10365
Model: : AR5BXB72
Configuration: : EUT/Laptop
Mode of Operation: TX (b mode Mid Ch with ED4 Antennas)

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	48.430	28.04	10.29	38.33	40.00	-1.67	Peak
2	177.440	25.04	13.11	38.15	43.50	-5.35	Peak
3	371.440	22.16	17.44	39.60	46.00	-6.40	Peak
4	407.330	21.65	18.21	39.86	46.00	-6.14	Peak
5	567.380	19.12	21.12	40.24	46.00	-5.76	Peak
6	806.000	16.55	24.64	41.19	46.00	-4.81	Peak

7.3.5. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz WITH MONOPOLE ANTENNAS

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL

HORIZONTAL DATA

```
Condition: FCC CLASS-B HORIZONTAL
Test Operator:    : Chin Pang
Company:          : Atheros
Project #:        : 06U10365
Model:            : AR5BXB72
Configuration:    : EUT/Laptop
Mode of Operation: TX ( b mode Mid Ch with Foxconn Antenna)
```

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	150.280	22.34	14.10	36.44	43.50	-7.06	Peak
2	239.520	29.20	13.47	42.67	46.00	-3.33	QP
3	239.520	31.57	13.47	45.03	46.00	-0.97	Peak
4	303.540	27.70	15.75	43.45	46.00	-2.55	QP
5	303.540	28.71	15.75	44.46	46.00	-1.54	Peak
6	371.440	26.20	17.44	43.64	46.00	-2.36	QP
7	371.440	27.96	17.44	45.40	46.00	-0.60	Peak
8	405.390	23.83	18.18	42.01	46.00	-3.99	Peak
9	606.180	18.99	21.63	40.62	46.00	-5.38	Peak
10	707.060	16.80	23.20	40.00	46.00	-6.00	Peak
11	853.530	17.17	25.30	42.47	46.00	-3.53	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL

VERTICAL DATA

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Company: : Atheros
Project #: : 06U10365
Model: : AR5BXB72
Configuration: : EUT/Laptop
Mode of Operation: TX (b mode Mid Ch with Foxconn Antenna)

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	48.430	26.78	10.29	37.07	40.00	-2.93	Peak
2	305.480	24.68	15.80	40.48	46.00	-5.52	Peak
3	373.380	22.00	17.46	39.46	46.00	-6.54	Peak
4	403.450	21.55	18.12	39.67	46.00	-6.33	Peak
5	606.180	16.46	21.63	38.09	46.00	-7.91	Peak
6	706.090	17.19	23.17	40.36	46.00	-5.64	Peak
7	924.340	14.47	26.20	40.67	46.00	-5.33	Peak

7.4. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

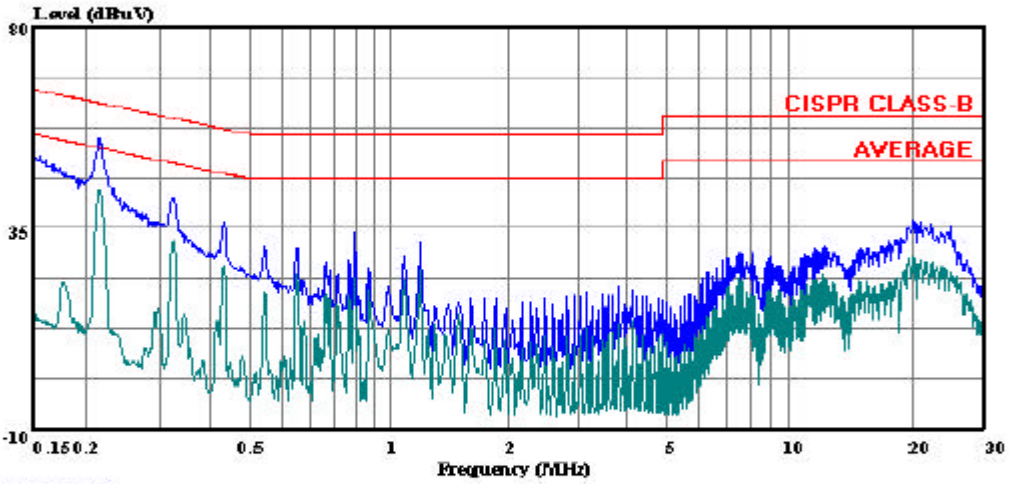
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.22	54.94	--	42.83	0.00	62.82	52.82	-7.88	-9.99	L1
0.33	45.00	--	31.89	0.00	59.45	49.45	-14.45	-17.56	L1
0.89	33.94	--	33.94	0.00	56.00	46.00	-22.06	-12.06	L1
0.22	50.22	--	39.72	0.00	62.82	52.82	-12.60	-13.10	L2
0.33	39.44	--	30.03	0.00	59.45	49.45	-20.01	-19.42	L2
0.89	34.90	--	33.89	0.00	56.00	46.00	-21.10	-12.11	L2
6 Worst Data									

LINE 1 RESULTS

Compliance Certification Services
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: FOXCONN.EMI Date: 06-16-2006 Time: 14:57:31



Trace: 5 Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Devin Chang
Project # : 06U10365
Company : Atheros
EUT configuration: EUT & laptop with Foxconn antenna
EUT mode : Transmitter
Power Source : 115 VAC, 60 Hz
: Line 1, Peak:(Blue), Average:(Green)

LINE 2 RESULTS