

## FCC CFR47 PART 15 SUBPART C CERTIFICATION TEST REPORT

FOR

EUT

# 802.11a/b/g/n PCIExpress Minicard

# **MODEL NUMBER: AR5BXB72**

# FCC ID: PPD-AR5BXB72

# **REPORT NUMBER: 06U10365-1, Revision C**

# **ISSUE DATE: JUNE 26, 2006**

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### **Revision History**

_	Issue		
Rev.	Date	Revisions	Revised By
	6/20/06	Initial Issue	MH
В	6/21/06	Clarified effective antenna gain for legacy mode, revised Max Power table header and selected 6 dB BW measurements in 2.4 band, clarified transmitter activation during radiated emissions tests	МН
С	6/26/06	Added conducted spurious data with combiner.	MH

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## **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME:	ATHEROS COMM 5480 Great America Santa Clara, CA 95	5
EUT DESCRIPTION:	802.11a/b/g/n PCIE	xpress Minicard
MODEL TESTED:	AR5BXB72	
SERIAL NUMBER:	XB72-060-L0416	
DATE TESTED:	JUNE 11-26, 2006	
	APPLICABLE	STANDARDS
STANDA	ARD	TEST RESULTS
FCC PART 15 S	UBPART C	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:

MH

MIKE HECKROTTE ENGINEERING MANAGER COMPLIANCE CERTIFICATION SERVICES

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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 <u>http://www.ccsemc.com</u>.

# 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%.

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# 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:

Frequency Range	Mode	<b>Total Output Power</b>	<b>Total Output Power</b>
(MHz)		(dBm)	( <b>mW</b> )
2412 - 2462	802.11b	23.74	236.59
2412 - 2462	802.11g	23.63	230.67
2412 - 2462	802.11 HT20	23.70	234.42
2422 - 2452	802.11 HT40	21.80	151.36

2400 to 2483.5 MHz Authorized Band

### 5725 to 5850 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	20.22	105.20
5745 - 5825	802.11n HT20	20.22	105.20
5755 - 5815	802.11n HT40	20.20	104.71

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The 2x3 configuration utilizes a set of three identical PIFA antennas (maximum gain is 3.62 dBi in the 2.4 GHz band and 4.76 dBi in the 5.8 GHz band) or a set of three identical Monopole antennas (maximum gain is 1.5 dBi in the 2.4 GHz band and 4.4 dBi in the 5.8 GHz band).

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:

- 802.11b mode, 20 MHz Channel Bandwidth, 1 Mb/s, CCK Modulation, Spatial Stream 1.
- 802.11g mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation, Spatial Stream 1.
- 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.

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## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

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

#### I/O CABLES

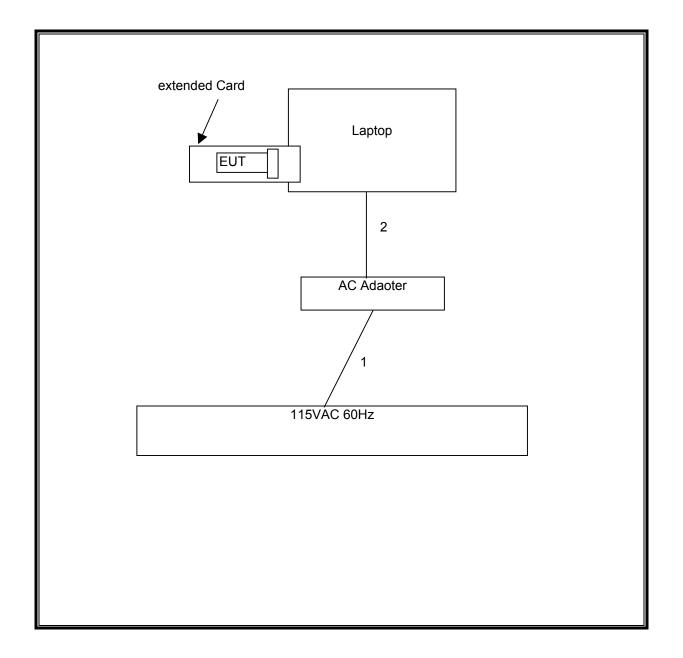
	I/O CABLE LIST								
Cable No.			Cable Type	Cable Length	Remarks				
		Ports							
1	AC	1	US 115V	Un-shielded	2m	NA			
2	DC	1	DC	Un-shielded	2m	NA			

#### 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.

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### **SETUP DIAGRAM FOR TESTS**



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# 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	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		

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# 7. LIMITS AND RESULTS

### 7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

### 7.1.1.6 dB BANDWIDTH

### <u>LIMIT</u>

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

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### **RESULTS**

No non-compliance noted:

Mode	Frequency	6 dB BW	6 dB BW	Minimum	Minimum
Channel		Chain 0	Chain 1	Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)	(kHz)

802.11b Mode

Low	2412	13000	12100	500	11600
Middle	2437	12000	12000	500	11500
High	2462	12030	12030	500	11530

802.11g Mode

Low	2412	16330	16400	500	15830
Middle	2437	16330	16370	500	15830
High	2462	16430	16500	500	15930

### 802.11n HT20 Mode

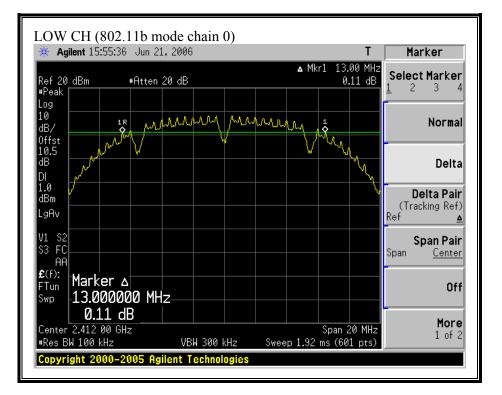
Low	2412	17600	17530	500	17030
Mid	2437	17570	17530	500	17030
High	2462	17600	17630	500	17100

### 802.11n HT40 Mode

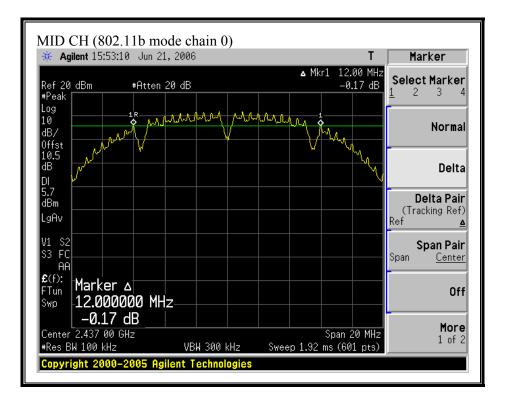
Low	2422	36250	36500	500	35750
Mid	2437	36420	36500	500	35920
High	2452	36250	36500	500	35750

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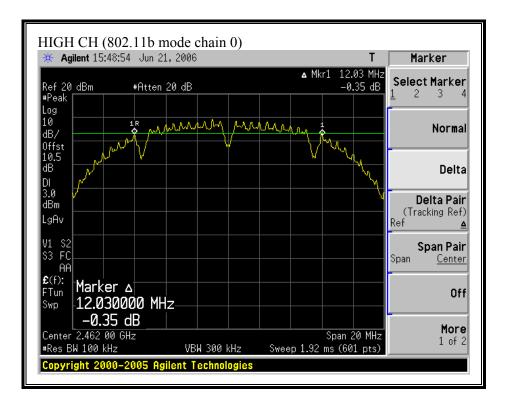
#### (802.11b MODE CHAIN 0)



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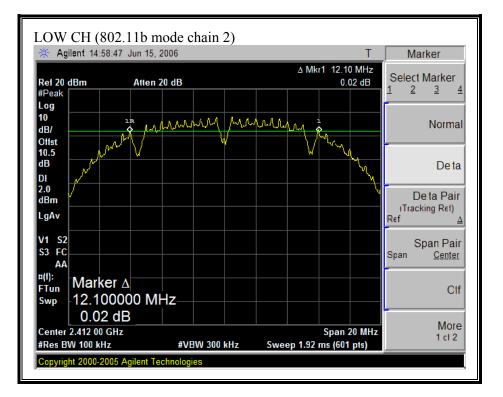


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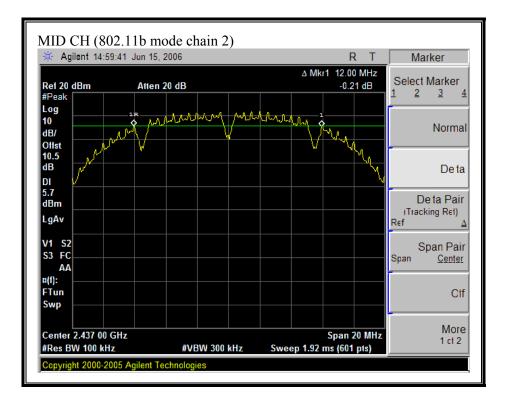


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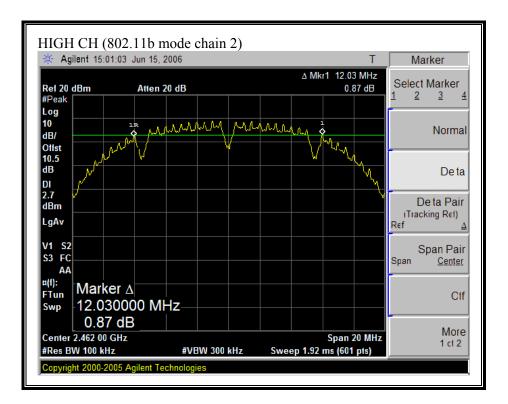
#### (802.11b MODE CHAIN 2)



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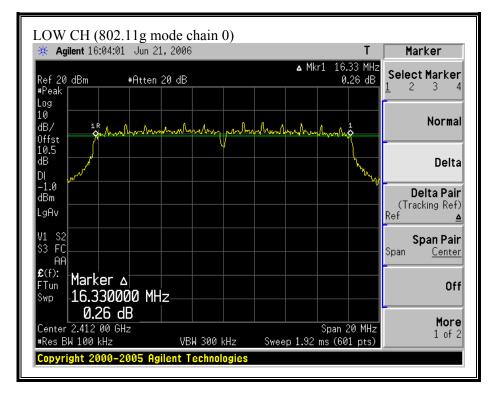


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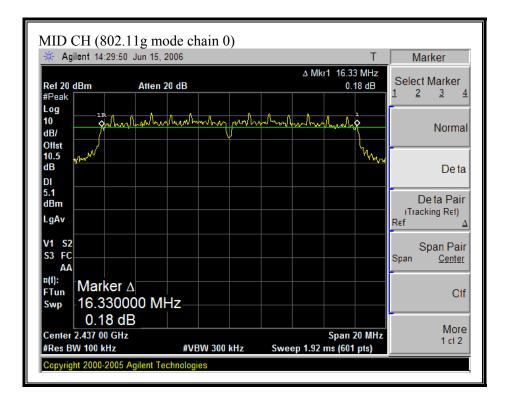


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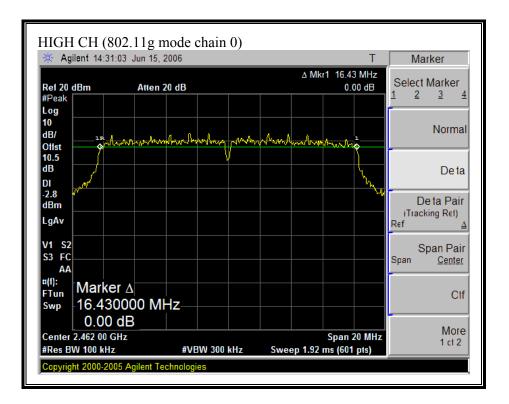
#### (802.11g MODE CHAIN 0)



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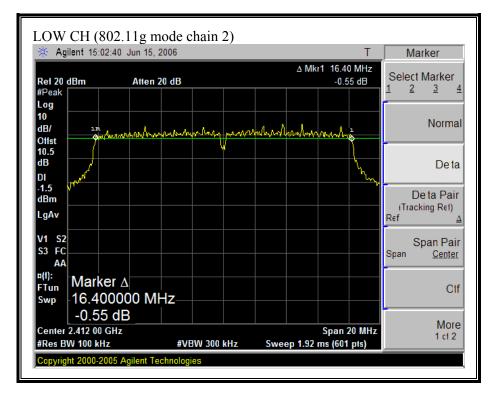


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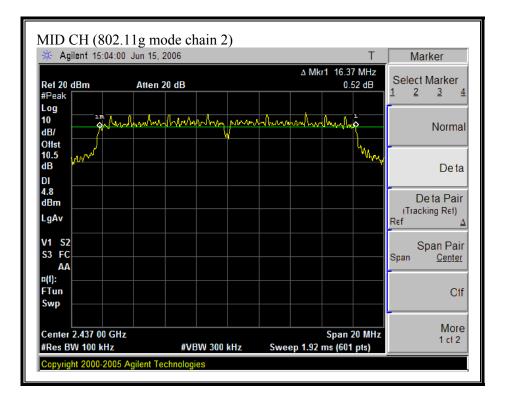


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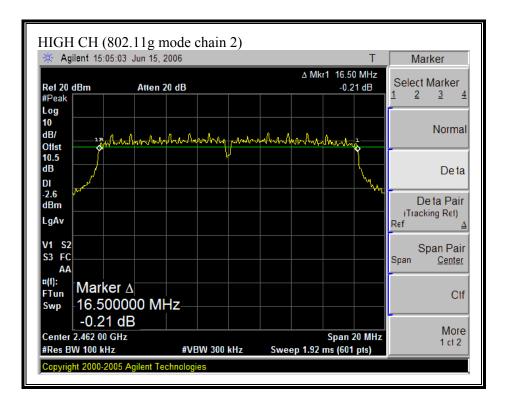
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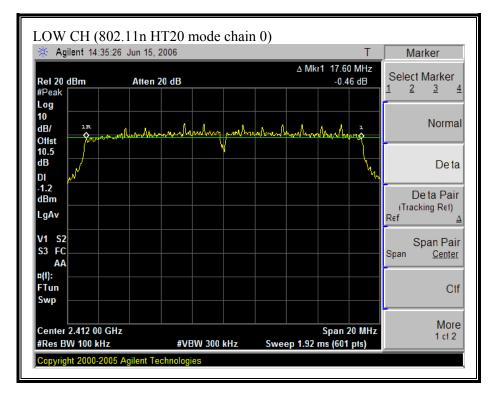


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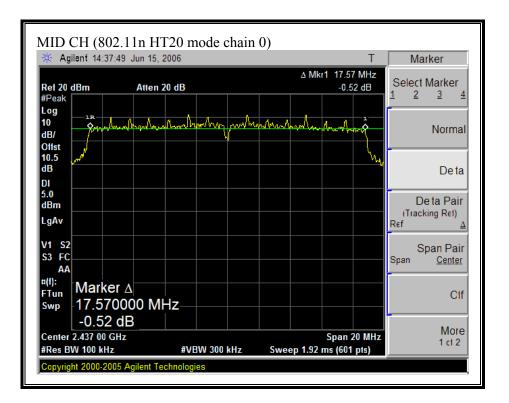


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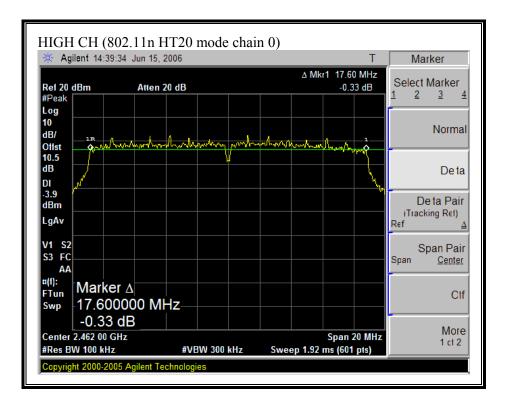
#### (802.11n HT20 MODE CHAIN 0)



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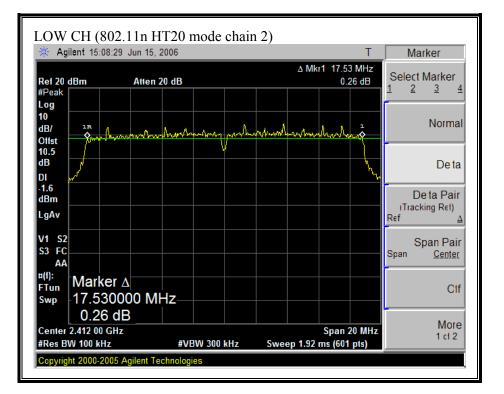


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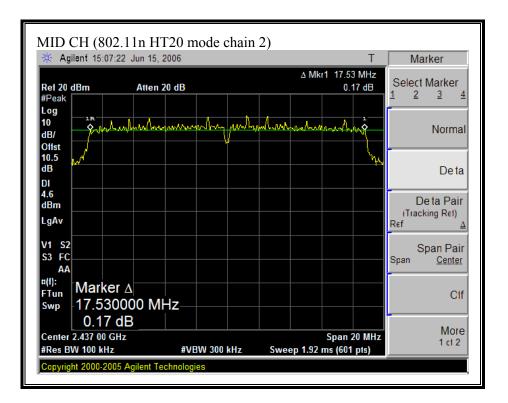


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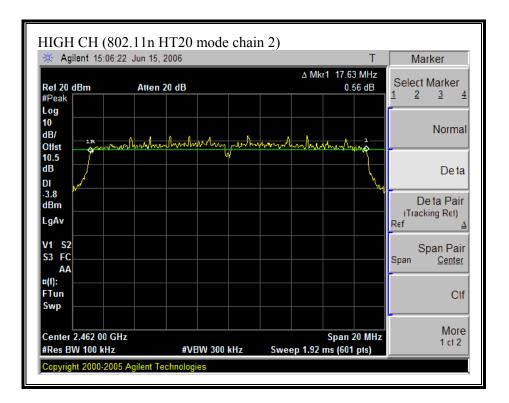
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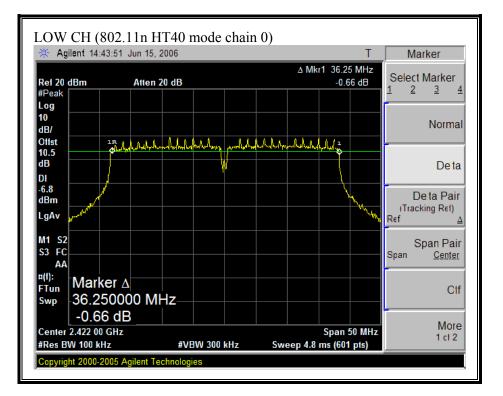


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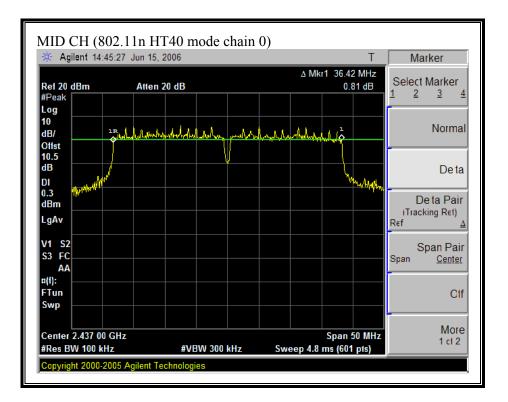


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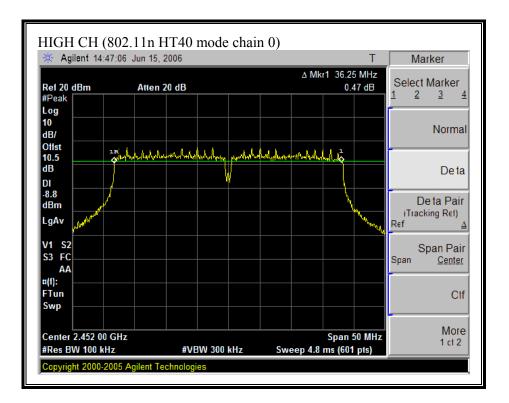
#### (802.11 HT40 MODE CHAIN 0)



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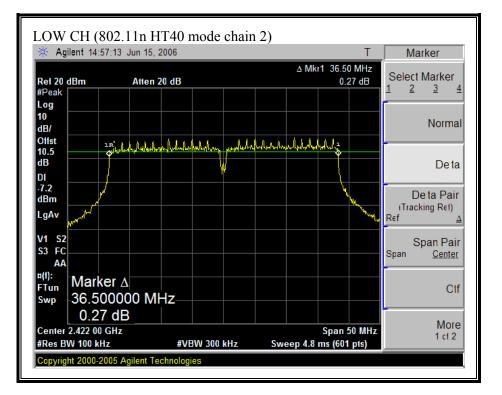


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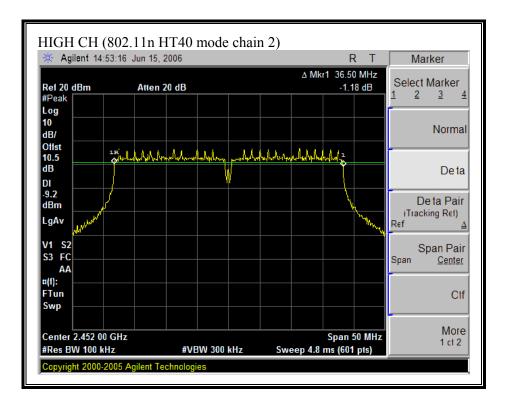
#### (802.11 HT40 MODE CHAIN 2)



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🔆 Agilei	nt 14:54	:47 J	un 15, 2	2006						Т	Marker
Ref 20 dB	m		Atten 2	0 dB				∆ Mk	r1 36.5 -1.0	0 MHz )7 dB	Select Marker
#Peak Log											1 2 3 4
10 dB/	1	r L	alabaha	Mahala	holdhan	marhada	Infyrhalw	called ded	waldoz		Normal
Offst 10.5						Ń			Ĩ		
dB DI	. Ma								L.	Maryhorn	Deita
	alween										- De ta Pair
LgAv											(Tracking Ref) Ref <u>∆</u>
V1 S2 S3 FC AA											Span Pair <sub>Span <u>Center</u></sub>
¤(f): FTun Swp											Clf
5 <b>m</b> þ											
Center 2.4 #Res BW					3W 300			eep 4.8		50 MHz	More 1 cf 2

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# 7.1.2. 99% BANDWIDTH AND 26 dB BANDWIDTH

### <u>LIMIT</u>

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.

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### **RESULTS**

No non-compliance noted:

Mode	Frequency	99% BW	99% BW	26 dB BW	26 dB BW
Channel		Chain 0	Chain 2	Chain 0	Chain 2
	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)

802.11b Mode

Low	2412	15.6056	15.5471	18.318	18.75
Middle	2437	15.5859	15.4618	18.504	18.86
High	2462	16.7115	16.4614	18.831	18.27

802.11g Mode

Low	2412	16.5306	16.4825	21.013	21.60
Middle	2437	16.4925	16.4694	21.232	21.42
High	2462	16.4723	16.4233	21.605	21.50

### 802.11n HT20 Mode

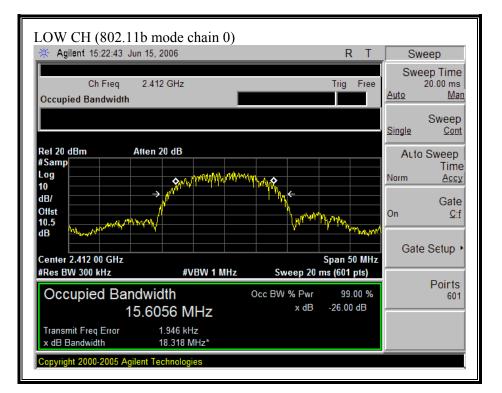
Low	2412	17.6962	17.5351	21.206	23.13
Mid	2437	17.8	17.7602	21.816	23.67
High	2462	17.6658	17.7898	22.974	23.18

### 802.11n HT40 Mode

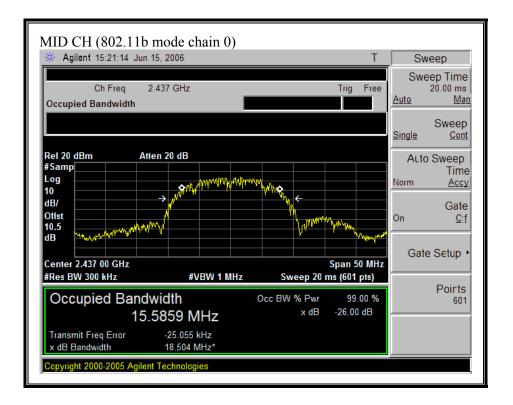
Low	2422	36.2066	36.3169	46.271	44.47
Mid	2437	36.3271	36.2187	45.77	46.74
High	2452	36.3204	36.0857	46.492	47.93

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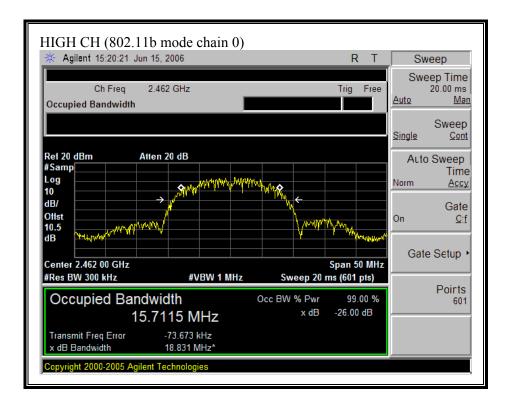
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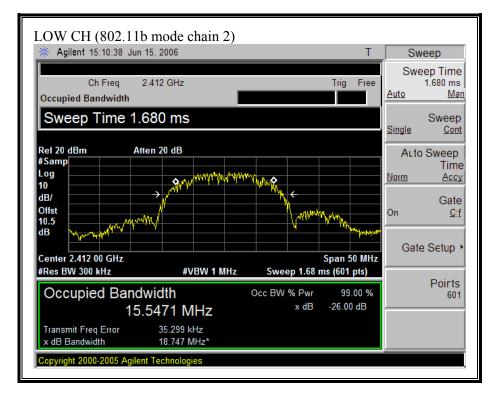


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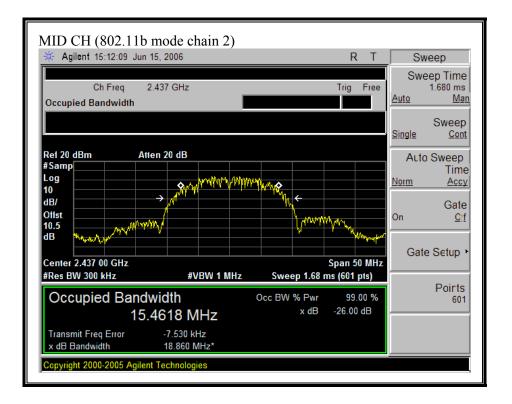


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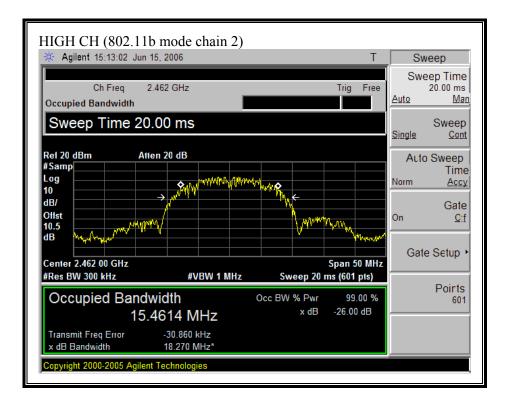
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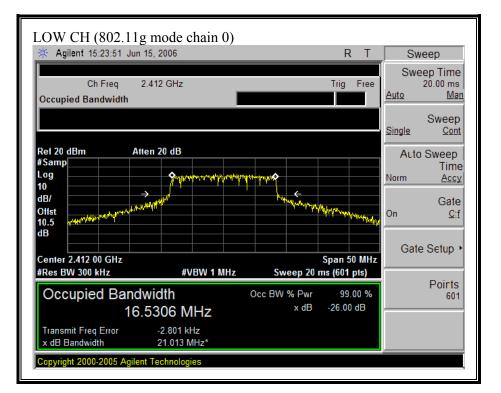


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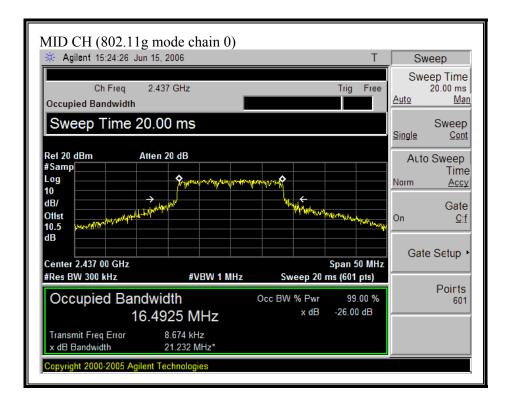


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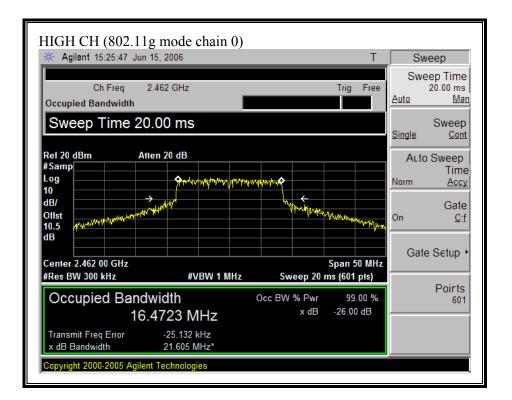
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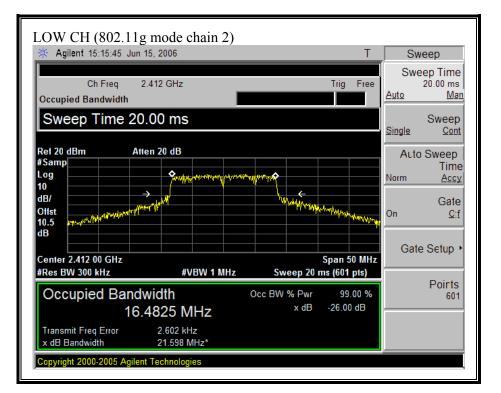


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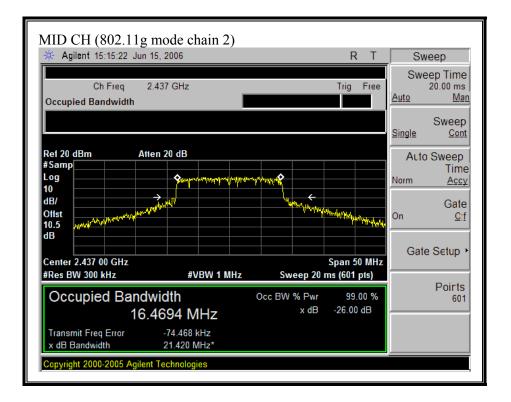


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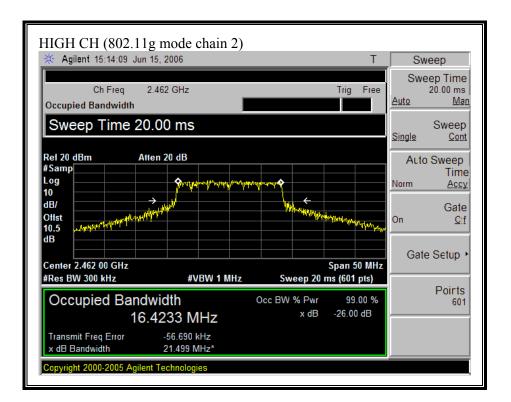
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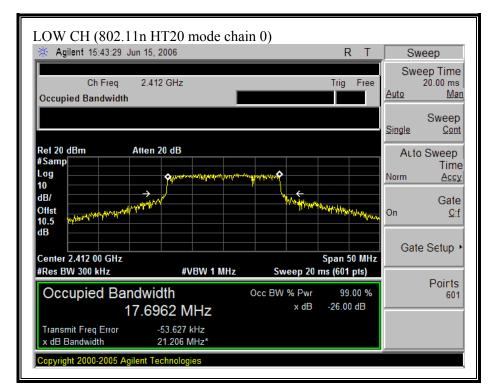


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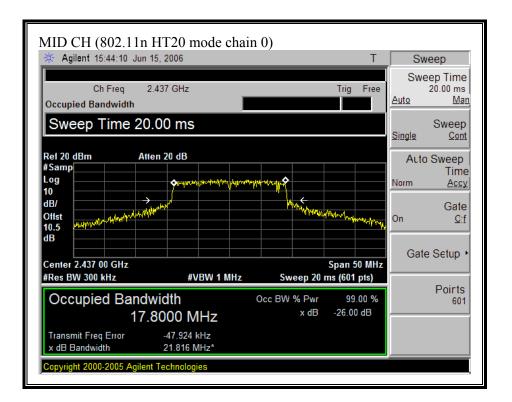


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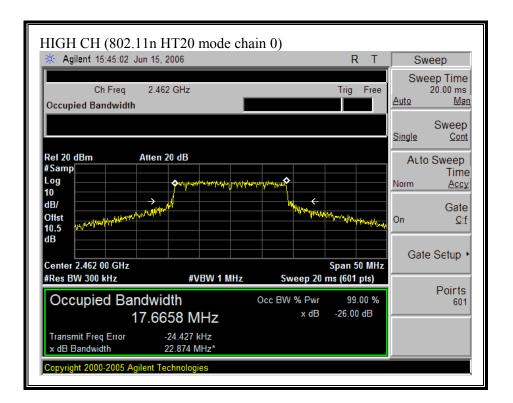
#### (802.11n HT20 MODE CHAIN 0)



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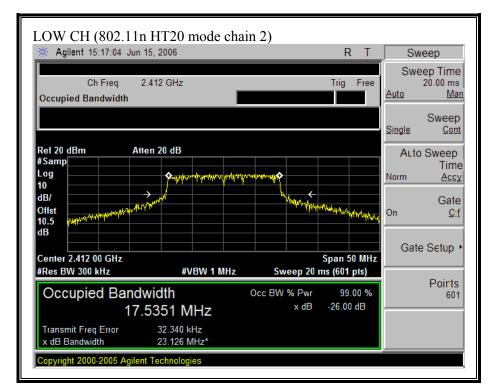


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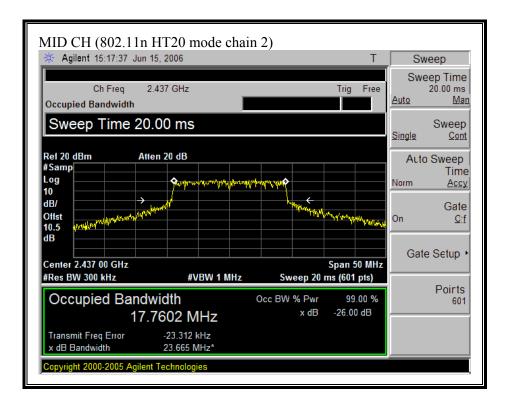


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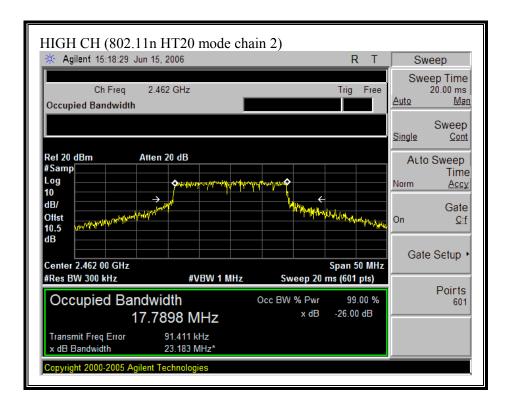
#### (802.11 HT20 MODE CHAIN 2)



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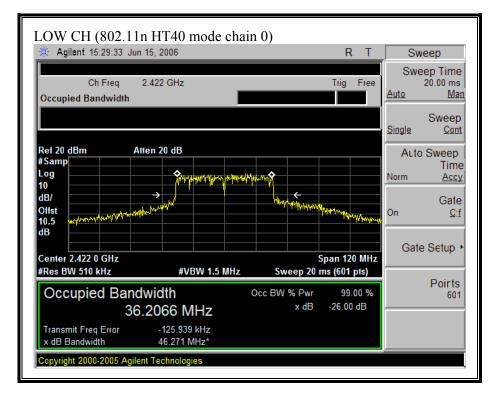


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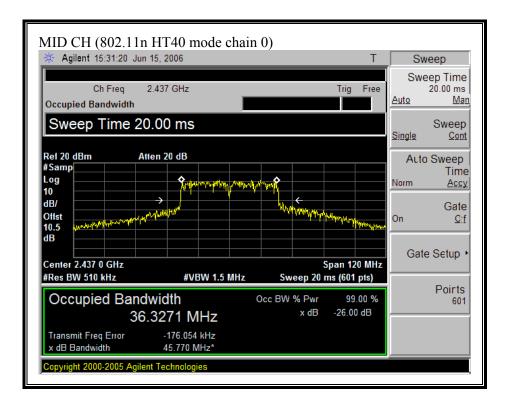


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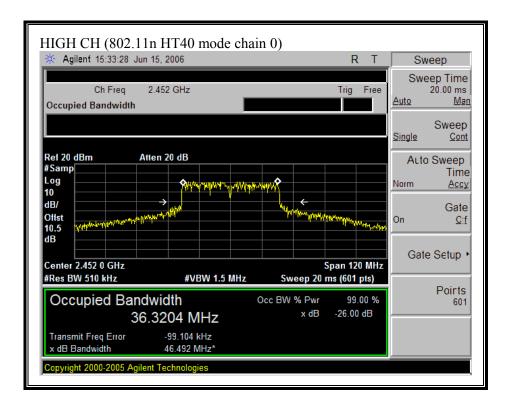
#### (802.11 HT40 MODE CHAIN 0)



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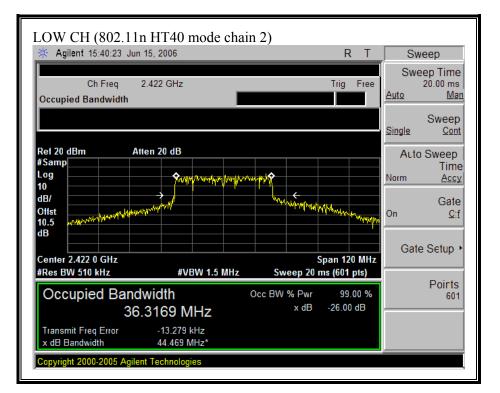


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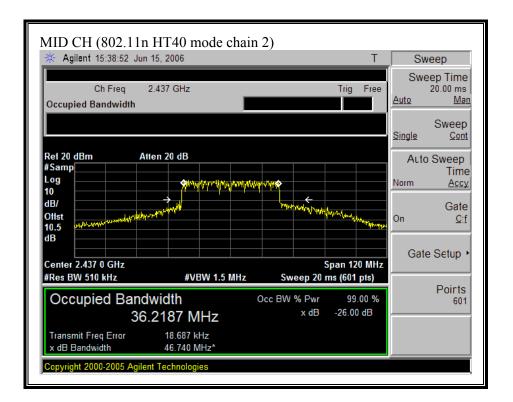


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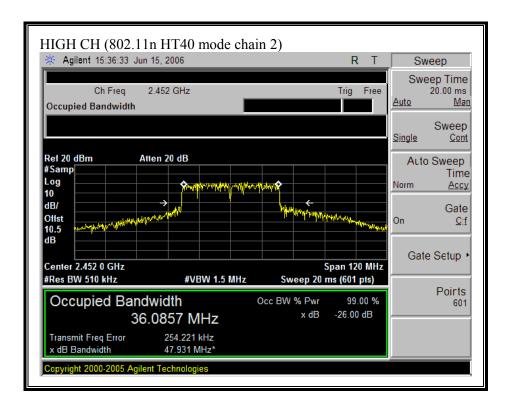
#### (802.11 HT40 MODE CHAIN 2)



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# 7.1.3. MAXIMUM OUTPUT POWER

# <u>LIMIT</u>

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The test is performed in accordance with Option 2 procedures in FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005. The transmitter operates continuously therefore Method # 1 is used.

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

Total Power =  $10 \log (10^{\circ} (Chain 0 Power / 10) + 10^{\circ} (Chain 2 Power / 10))$ 

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### **RESULTS**

The maximum antenna gain is 3.62dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is 3.62 + 10\*Log(2) = 6.63 dBi.

No non-compliance noted:

Mode	Frequency	Max Power	Max Power	Max Power	Limit	Margin
Channel		Chain 0	Chain 2	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)

802.11b Mode

Low	2412	16.91	16.95	19.94	29.4	-9.43
Middle	2437	20.43	21.01	23.74	29.4	-5.63
High	2462	17.19	17.56	20.39	29.4	-8.98

# 802.11g Mode

Low	2412	15.36	15.25	18.32	29.4	-11.05
Middle	2437	20.37	20.86	23.63	29.4	-5.74
High	2462	14.05	14.46	17.27	29.4	-12.10

# 802.11n HT20 Mode

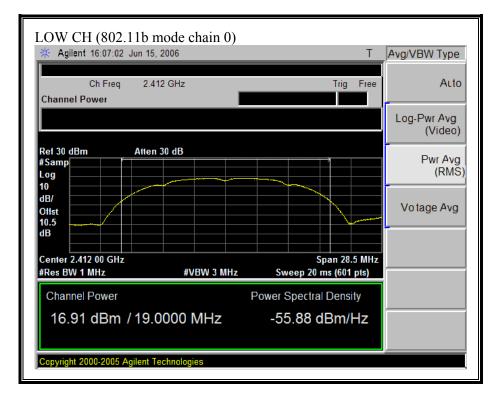
Low	2412	14.80	15.30	18.07	30.0	-11.93
Middle	2437	20.54	20.84	23.70	30.0	-6.30
High	2462	13.09	13.21	16.16	30.0	-13.84

# 802.11n HT40 Mode

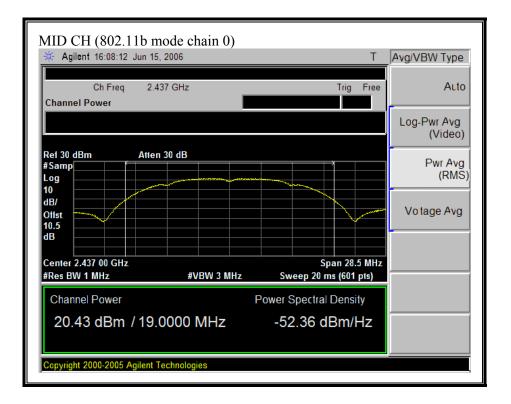
Low	2422	12.42	12.78	15.61	30.0	-14.39
Middle	2437	18.75	18.83	21.80	30.0	-8.20
High	2452	10.55	10.80	13.69	30.0	-16.31

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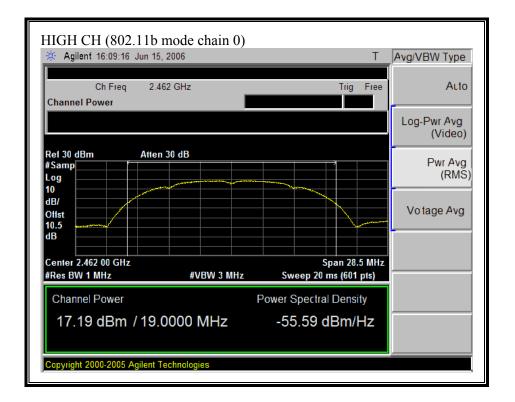
### (802.11b MODE CHAIN 0)



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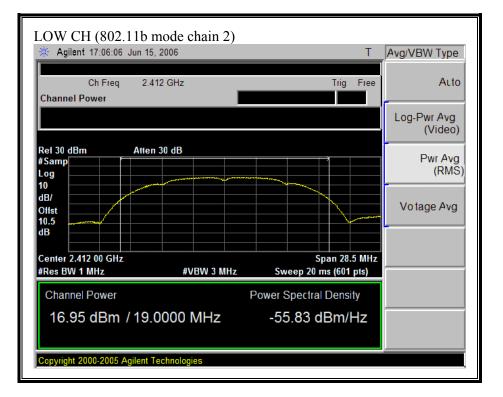


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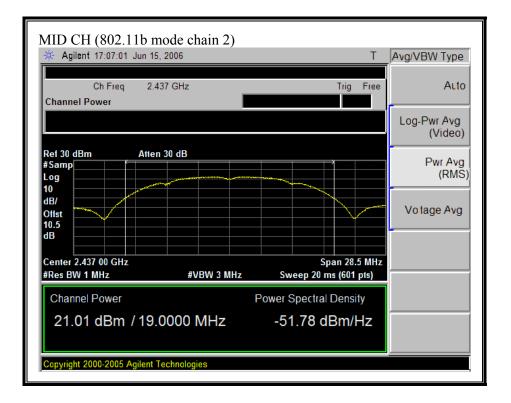


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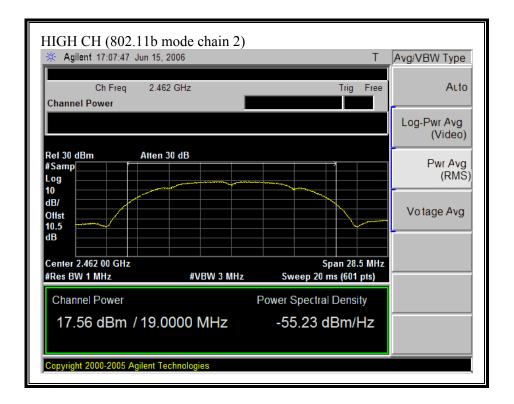
#### (802.11b MODE CHAIN 2)



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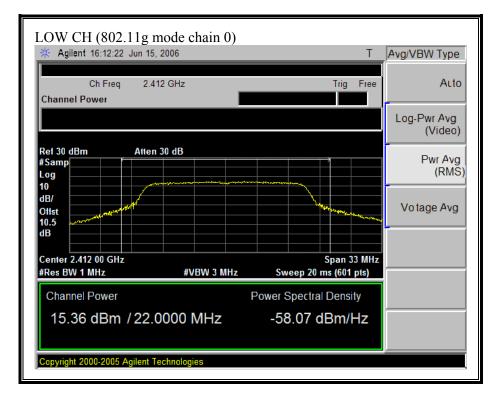


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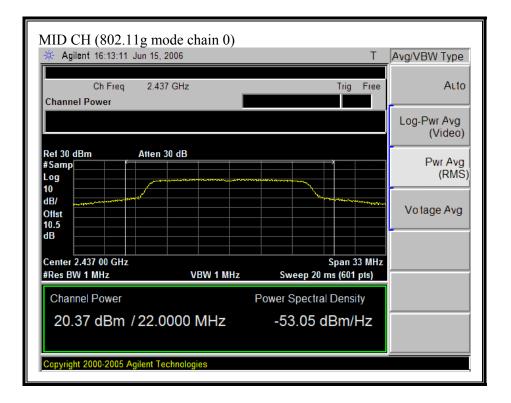


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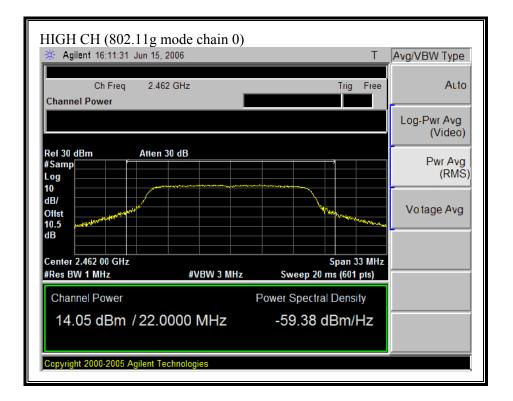
#### (802.11g MODE CHAIN 0)



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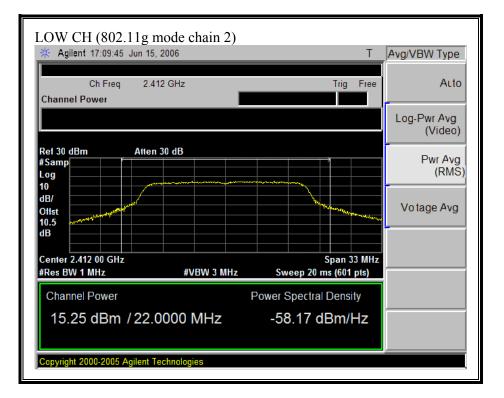


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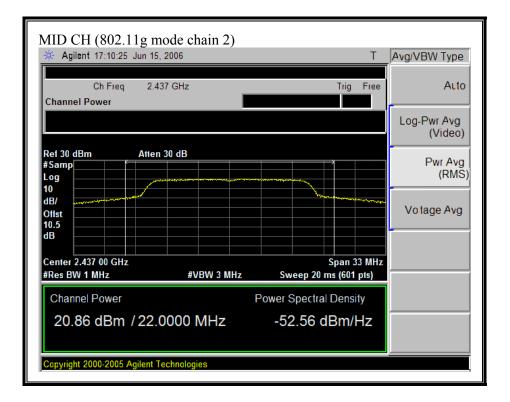


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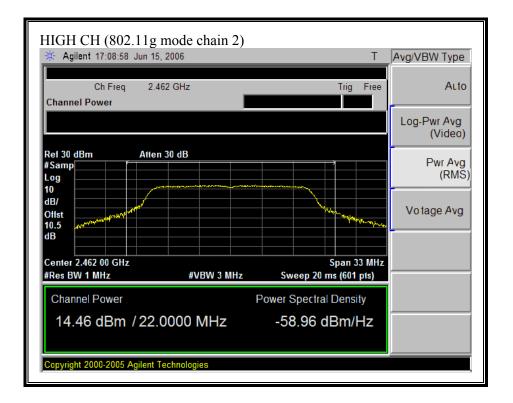
### (802.11g MODE CHAIN 2)



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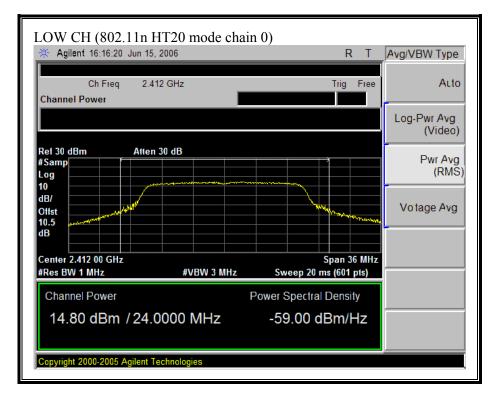


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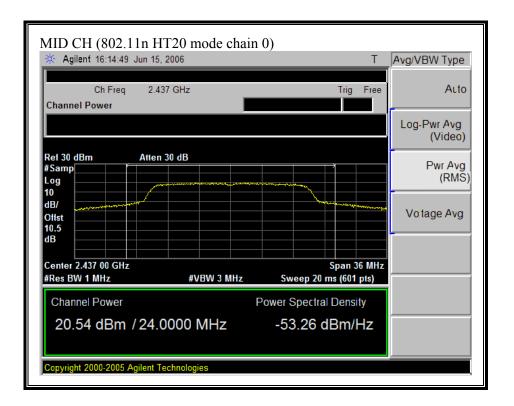


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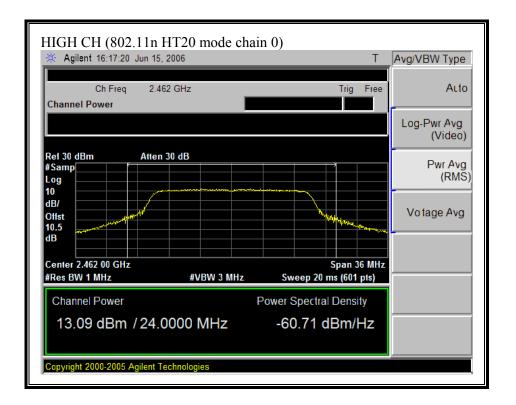
#### (802.11n HT20 MODE CHAIN 0)



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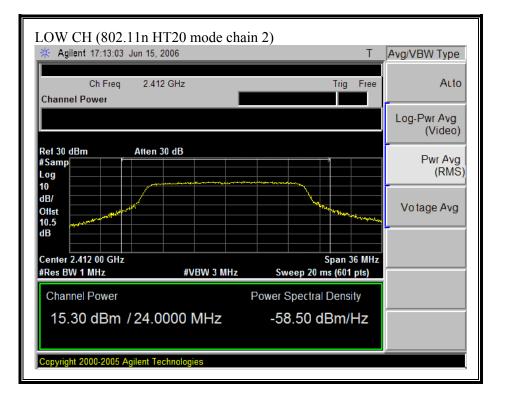


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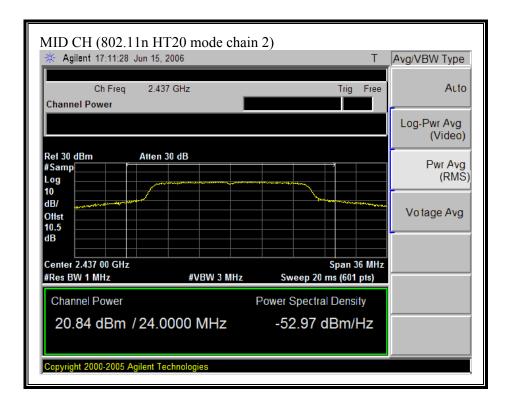


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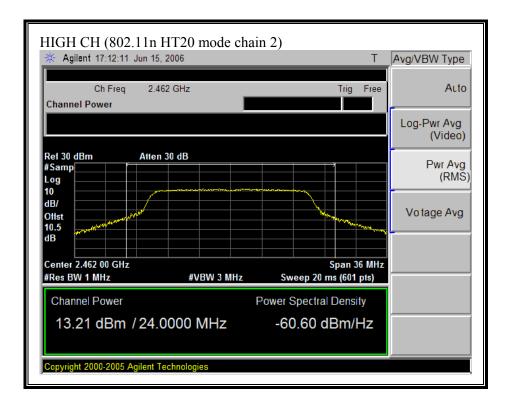
#### (802.11 HT20 MODE CHAIN 2)



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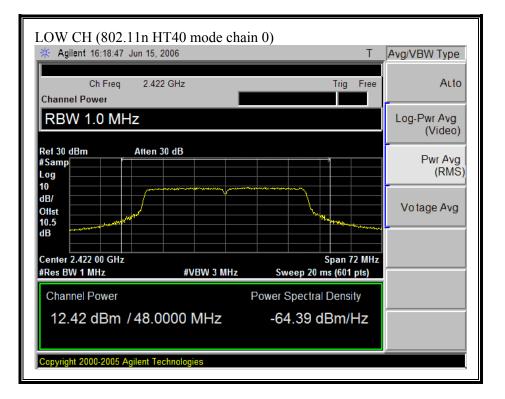


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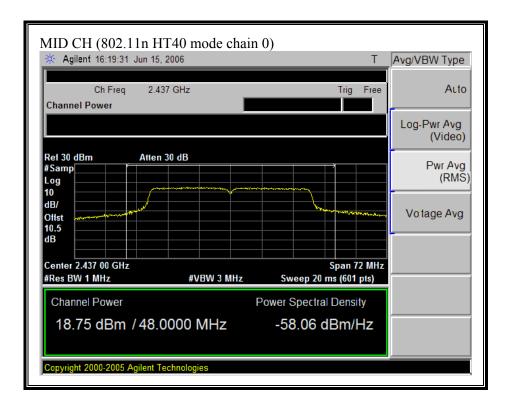


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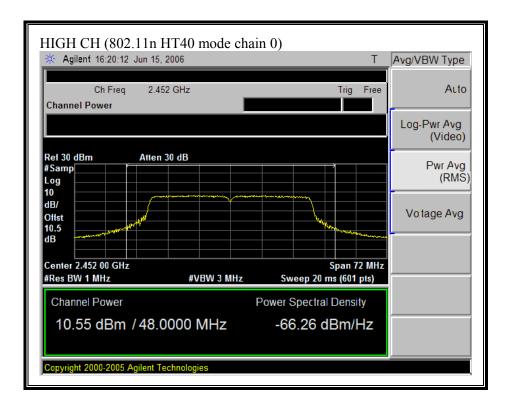
#### (802.11 HT40 MODE CHAIN 0)



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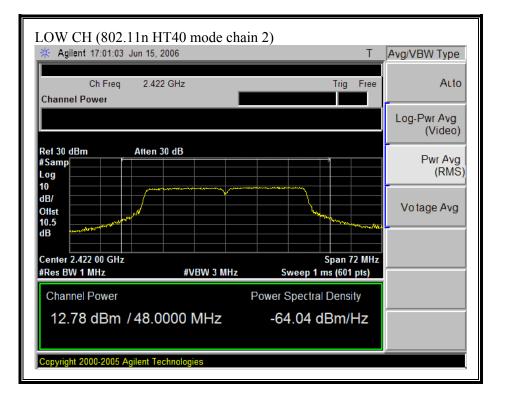


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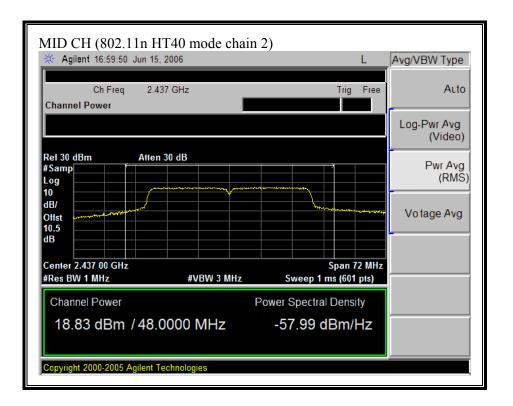


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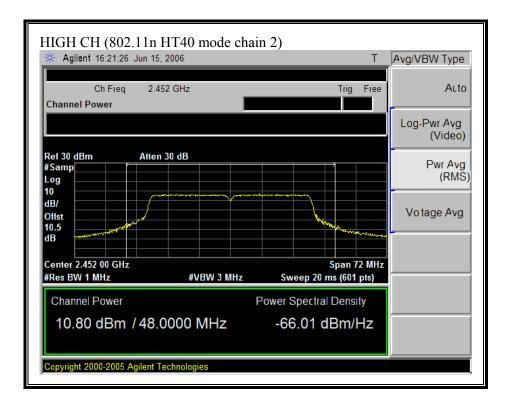
### (802.11 HT40 MODE CHAIN 2)



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# 7.1.4. 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 =  $10 \log (10^{\circ} (Chain 0 Power / 10) + 10^{\circ} (Chain 2 Power / 10))$ 

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## **RESULTS**

No non-compliance noted:

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Mode	Frequency	Average Power	Average Power	Average Power
Channel		Chain 0	Chain 2	Total
	(MHz)	(dBm)	(dBm)	(dBm)

802.11b Mode

Low	2412	17.1	16.9	20.0
Middle	2437	20.4	20.9	23.7
High	2462	17.4	17.6	20.5

# 802.11g Mode

Low	2412	15.2	15.1	18.1
Middle	2437	20.3	20.7	23.5
High	2462	13.8	14.2	17.0

# 802.11n HT20 Mode

Low	2412	15.1	15.1	18.1
Middle	2437	20.4	20.6	23.5
High	2462	12.5	12.8	15.7

# 802.11n HT40 Mode

Low	2422	12.0	12.2	15.1
Middle	2437	18.6	18.6	21.6
High	2452	10.3	10.3	13.3

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# 7.1.5. PEAK POWER SPECTRAL DENSITY

## <u>LIMIT</u>

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

## TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The test is performed in accordance with Option 2 procedures in FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005. The conditions for sample detection are satisfied. The PPSD is the highest level found across the emission in any 3 kHz band.

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

Total PPSD =  $10 \log (10^{\circ} (Chain 0 PPSD / 10) + 10^{\circ} (Chain 2 PPSD / 10))$ 

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## **RESULTS**

No non-compliance noted:

Mode	Frequency	PPSD	PPSD	PPSD	Limit	Margin
Channel		Chain 0	Chain 2	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)

## 802.11b Mode

Low	2412	-15.45	-15.72	-12.57	8	-20.57
Middle	2437	-11.94	-12.91	-9.39	8	-17.39
High	2462	-15.79	-15.86	-12.81	8	-20.81

## 802.11g Mode

Low	2412	-18.89	-18.36	-15.61	8	-23.61
Middle	2437	-13.47	-13.12	-10.28	8	-18.28
High	2462	-20.39	-19.17	-16.73	8	-24.73

## 802.11n HT20 Mode

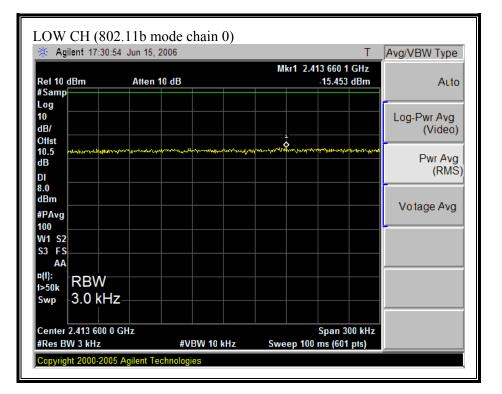
Low	2412	-19.13	-18.62	-15.86	8	-23.86
Middle	2437	-13.65	-13.42	-10.52	8	-18.52
High	2462	-21.81	-19.54	-17.52	8	-25.52

## 802.11n HT40 Mode

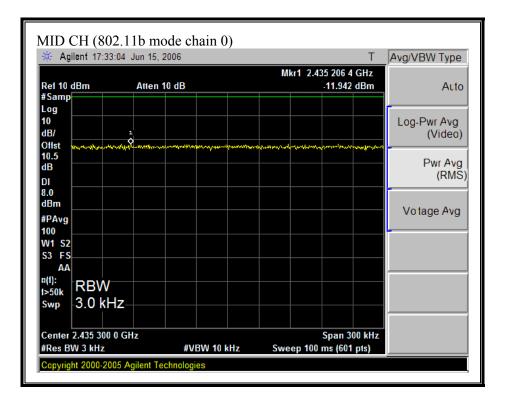
Low	2422	-25.58	-25.55	-22.55	8	-30.55
Middle	2437	-19.39	-18.63	-15.98	8	-23.98
High	2452	-27.07	-27.05	-24.05	8	-32.05

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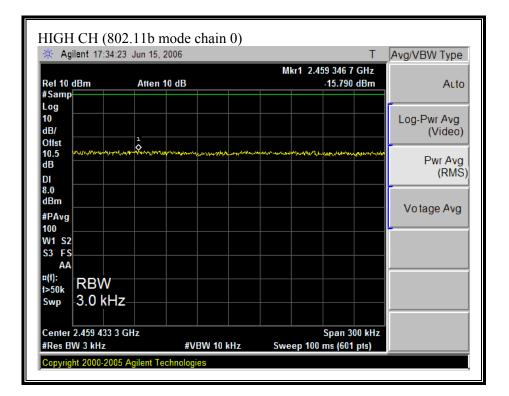
### (802.11b MODE CHAIN 0)



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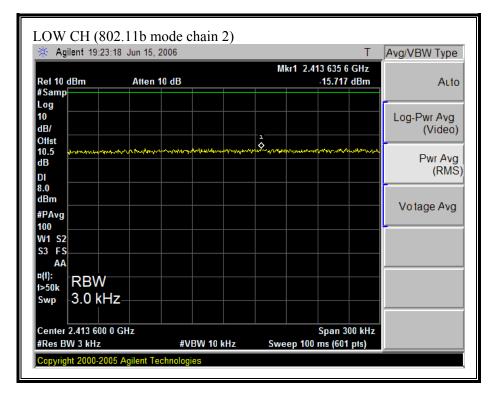


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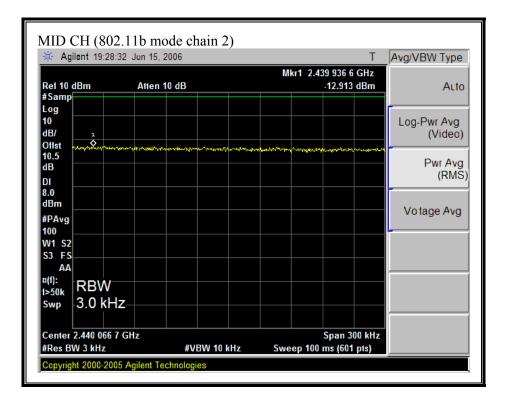


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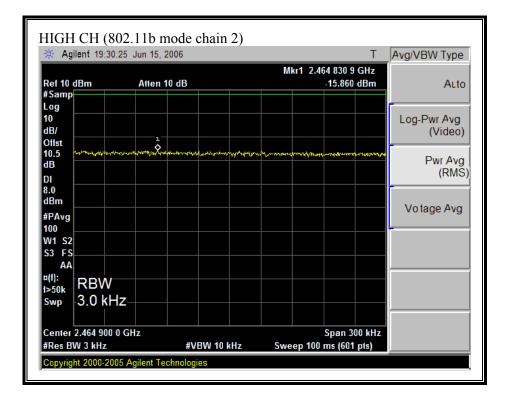
### (802.11b MODE CHAIN 2)



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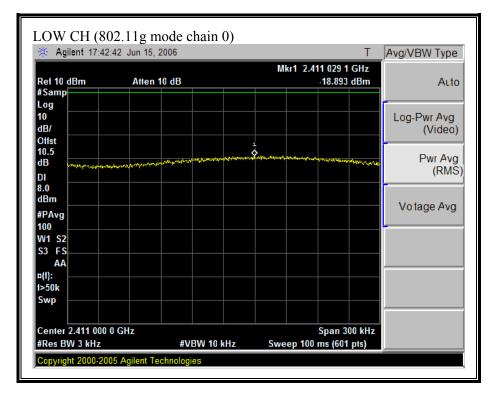


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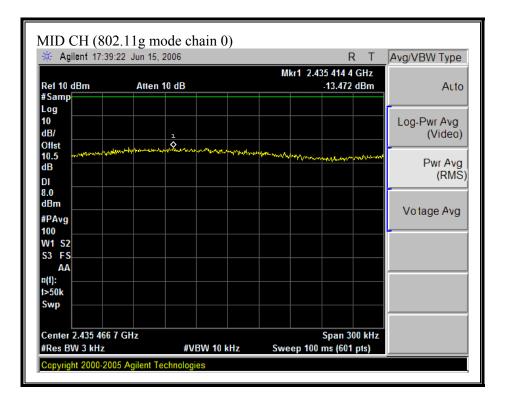


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## (802.11g MODE CHAIN 0)



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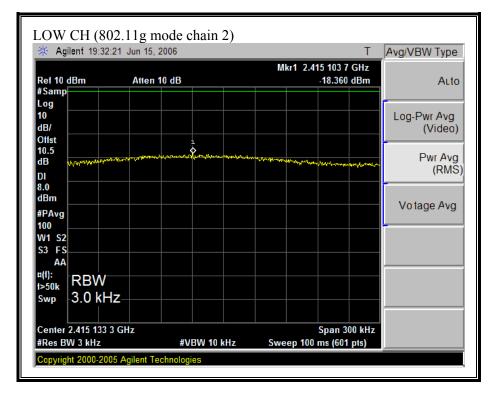


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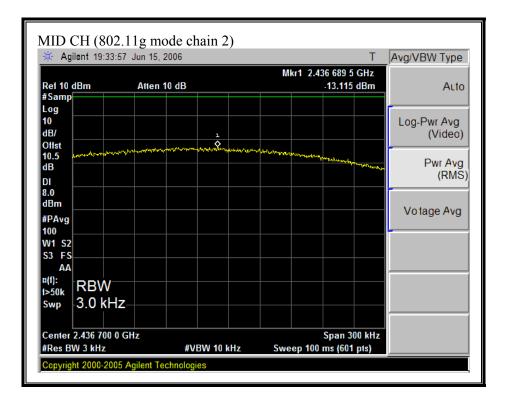
🔆 Agilent 17:3	6:09 Jun 15, 2006			/	Avg/VBW Type
Ref 10 dBm #Samp	Atten 10 dB		Mkr1 2.460 05 -20.3	8 0 GHz 85 dBm	Auto
Log 10 dB/ Olist 10.5	1				Log-Pwr Avg (Video)
dB DI 8.0 dBm		www.wheren have a second	an and a second s	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Pwr Avg (RMS)
#PAvg 100 W1 S2 S3 FS				-	Votage Avg
AA ¤(i): t>50k					
Swp Center 2.460 166 #Res BW 3 kHz		BW 10 kHz	Spar Sweep 100 ms (6	300 kHz	

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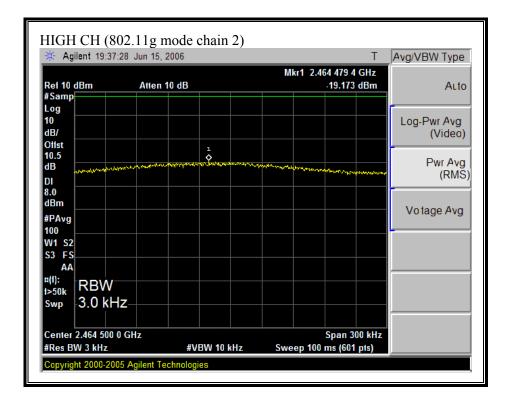
#### (802.11g MODE CHAIN 2)



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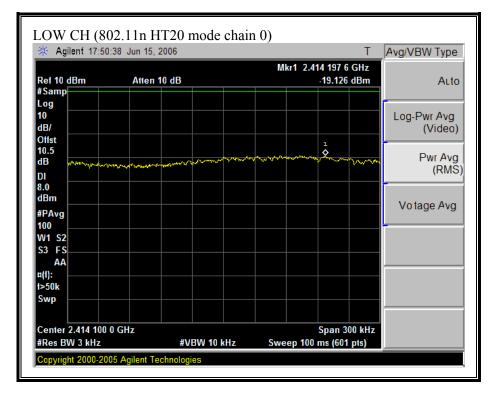


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#### (802.11n HT20 MODE CHAIN 0)



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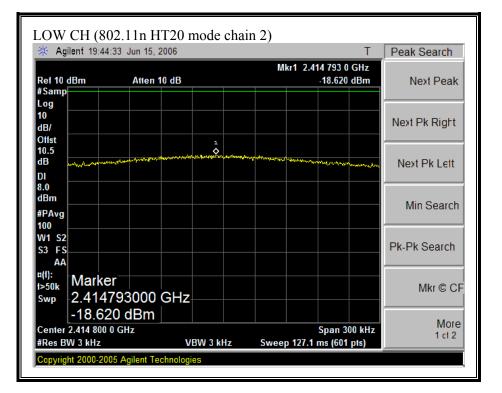
🔆 Agilent 19:0	13:53 Jun 15, 2006	T	Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1 2.438 561 1 GHz -13.651 dBm	Auto
#Samp Log 10 dB/ Offst 10.5 dB dB 8.0 dBm #PAvg 100 W1 S2	2 		Log-Pwr Avg (Video) Pwr Avg (RMS Vo tage Avg
S3 FS AA n(1):  >50k Swp 3.0 k Center 2.438 56 #Res BW 3 kHz	Hz	Span 300 kHz Sweep 100 ms (601 pts)	

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🔆 Agile	nt 19:06:32	Jun 15, 2006		T	Avg/VBW Type
Ref 10 dE	3m	Atten 10 dB		Mkr1 2.465 090 3 GHz -21.809 dBm	Auto
#Samp					
Log 10 dB/					Log-Pwr Avg (Video)
Offst 10.5 dB			1	when the the test of t	- Pwr Avg
DI ************************************	N-yazafiddan yn ymhydraedd	and the second			(RMS
#PAvg 100					Votage Avg
W1 S2 S3 FS AA					
¤(f): t>50k F	RBW				
Swp 🤇	3.0 kHz⊣ ∣				
Center 2. #Res BW	465 066 7 GI		W 10 kHz Sv	Span 300 kH veep 100 ms (601 pts)	z

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#### (802.11 HT20 MODE CHAIN 2)



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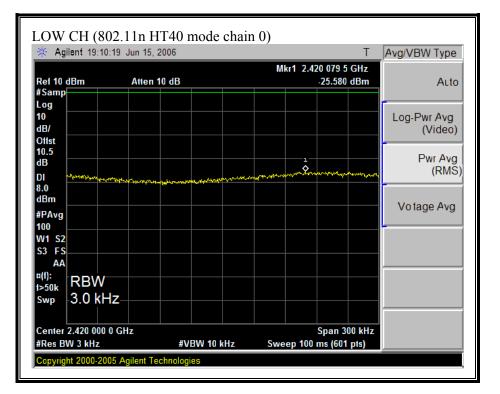
🔆 Agilent 19:41:	:07 Jun 15, 2006	Т	Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1 2.435 414 4 GHz -13.417 dBm	Auto
#Samp Log			
10 dB/	1		Log-Pwr Avg (Video)
Offst 10.5	warrand a brand and a strain a	and the second of the second o	
dB			Pwr Avg (RMS
DI			
dBm			Votage Avg
#PAvg 100			
W1 S2			
S3 FS			
¤(f):\/_			
I>50k Swp 3.0 kH	z		
Center 2.435 466	7 GHz	Span 300 kHz	

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🔆 Agilent 19:39:31	Juli 15, 2000		T	Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1 2.4	463 515 4 GHz -19.541 dBm	Auto
#Samp Log				
10 <sup>-</sup> dB/				Log-Pwr Avg (Video)
Offst 10.5 dB	new-lo- using an approximation of the second second	1	and an	Pwr Avg
DI				(RMS
#PAvg 100				Votage Avg
W1 S2 S3 FS AA				
n(f): I>50k RBW				
swp -3.0 kHz-				
Center 2.463 466 7 G	Hz		Span 300 kHz	

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#### (802.11 HT40 MODE CHAIN 0)



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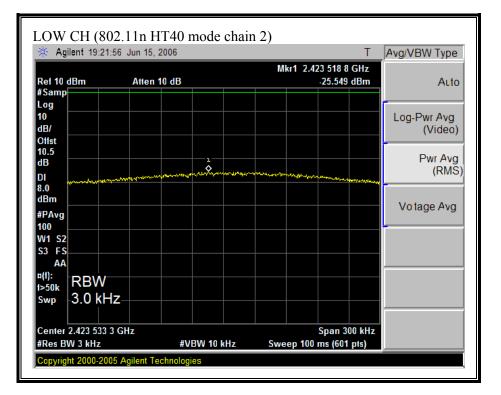
🔆 Agilent 19:12:	06 Jun 15, 2006	T	Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1 2.446 977 4 GHz -19.389 dBm	Auto
DI			Log-Pwr Avg (Video) Pwr Avg (RMS Votage Avg
100 W1 S2 S3 FS AA ¤(1): t>50k Swp - 3.0 kH		Span 300 kHz	

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	16 Jun 15, 2006		Т	Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1 2.4	456 691 6 GHz -27.073 dBm	Auto
#Samp Log				
10 dB/				Log-Pwr Avg (Video)
Offst 10.5 dB	i			Pwr Avg
DI warman	water and the second	hallemarghan and the ball	· · · · · · · · · · · · · · · · · · ·	(RMS
8.0 dBm		a second designed		
#PAvg 100				Votage Avg
W1 S2				
S3 FS				
POUK				
Swp 3.0 kH	Z			
	GHz		Span 300 kHz	1

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#### (802.11 HT40 MODE CHAIN 2)



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🔆 Agilent 19:20:38	Jun 15, 2006		T	Avg/VBW Type
Ref 10 dBm	Atten 10 dB		lkr1 2.440 105 4 GHz -18.634 dBm	Auto
#Samp Log				
10 dB/				Log-Pwr Avg (Video)
Offst 10.5 dB	fred a sugardina strategy and a		and and the second s	- Pwr Avg
DI				(RMS
dBm #PAvg 100				Voltage Avg
W1 S2 S3 FS				
swp 3.0 kHz				
Center 2.440 066 7 G #Res BW 3 kHz		10 kHz Swe	Span 300 kHz Span 300 kHz eep 100 ms (601 pts)	

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🔆 Agilent 19:17	:55 Jun 15, 2006			Avg/VBW Type
Ref 10 dBm	Atten 10 dB	Mkr1	2.458 236 6 GHz -27.046 dBm	Auto
#Samp				
Log 10 dB/				Log-Pwr Avg (Video)
Offst 10.5 dB		1		Pwr Avg (RMS
	with the second second second second	and the second	******/~*****/Ws-~*****	
8.0 - Marine Brand				
#PAvg				Voltage Avg
W1 S2				
S3 FS				
 ¤(i):  >50k RBW⁻				
swp 3.0 kH	z			
Center 2.458 200			Span 300 kHz	

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# 7.1.6. CONDUCTED SPURIOUS EMISSIONS

## LIMITS

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

Conducted power was measured using the Option 2 procedures, therefore the required attenuation is 30 dB.

## TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 150 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

No non-compliance noted:

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