Microsoft Corporation

1395 and 1402

Report No. MCSO1416 Rev. 02

Report Prepared By

www.nwemc.com
1-888-EMI-CERT

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: June 5, 2009
Microsoft Corporation
Model: 1402

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Spurious Radiated Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Occupied Bandwidth	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Output Power	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Power Spectral Density	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Spurious Conducted Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Band Edge Compliance	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
AC Powerline Conducted Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**

Modifications made to the product
See the Modifications section of this report

Test Facility

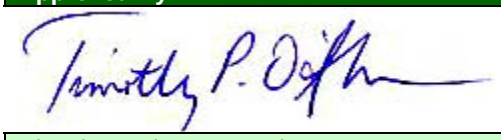
The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-1).

Approved By:



Timothy O'Shea, Operations Manager

NVLAP

NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
01	Changed EUT name from Pavo to 1402	8-3-09	1, 2, 7, 8, 9, 13, 24, 27, 35, 68, 79-84, 90-95
01	Added Customer Attestation to this report	8-3-09	11
02	New Output Power data	8-7-09	23-33

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2)*

CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).*

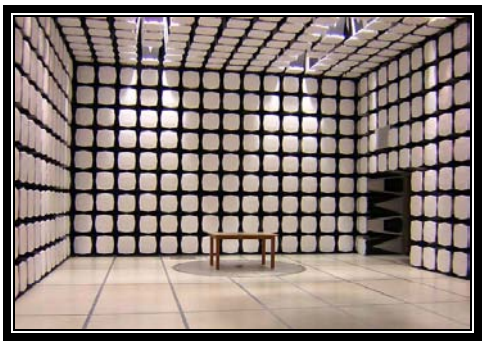
BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017). License No.SL2-IN-E-1017.

GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC: Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)*

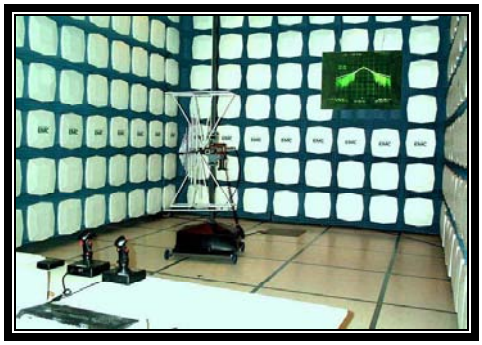
SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/



California – Orange County Facility
Labs OC01 – OC13

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



Oregon – Evergreen Facility
Labs EV01 – EV11

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826

Washington – Sultan Facility
Labs SU01 – SU07

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Test Requested By:	Ted Eckert
Model:	1395 and 1402
First Date of Test:	May 20, 2009
Last Date of Test:	June 5, 2009
Receipt Date of Samples:	May 20, 2009
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
802.11b/g radio

Testing Objective:
Seeking TCB certification under FCC 15.247.

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
http://www.microsoft.com/

Microsoft

29 June 2009

To whom it may concern;

The Microsoft Zune brand is a series of portable music players, also known as MP3 players. General information can be found at the Zune website, http://www.zune.net/.

The Zune HD is a portable music player using flash memory for data storage. The full specifications are available at http://www.zune.net/zunehd/. It connects to a computer either with a detachable USB cable or with an 802.11 b/g radio. The Zune HD is available in two models. Model 1395 is has 16 gigabytes of data storage and model 1402 has 32 gigabytes of storage. The two models are otherwise identical in every other aspect. Both models include an HD FM radio receiver. The Zune HD is capable of playing video and can connect to a television through a cable when placed in an optional docking station.

Regards,

Ted Eckert
Compliance Engineer
One Microsoft Way
Redmond WA, 98052
(425) 707-9205
ted.eckert@microsoft.com

CONFIGURATION 1 MCSO1416

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Personal Music Player - Direct connect	Microsoft	1402	000 019 491 815

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB AC Adapter - Direct unit	Delta	1128	00837702377

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB / Power Cable	Yes	1.5m	No	Personal Music Player - Direct connect	USB AC Adapter - Direct unit
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 MCSO1416

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Personal Music Player - Radiated	Microsoft	1402	000 025 791 815

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB AC Adapter - Radiated unit	Delta	1128	002487005742
Docking Station	Microsoft	Unknown	None
Headphones	Microsoft	Zune Premium Headphones	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB / Power Cable	Yes	1.5m	No	Docking Station	USB AC Adapter - Radiated unit
HDMI	Yes	2.0m	No	Docking Station	Unterminated
FM Antenna	PA	1.4m	PA	Docking Station	Terminated
Audio	PA	1.3m	PA	Docking Station	Headphones
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 MCSO1416

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Personal Music Player - Radiated	Microsoft	1402	000 025 791 815

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB AC Adapter - Radiated unit	Delta	1128	002487005742
Headphones	Microsoft	Zune Premium Headphones	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB / Power Cable	Yes	1.5m	No	Personal Music Player - Radiated unit	USB AC Adapter - Radiated unit
Audio	PA	1.3m	PA	Personal Music Player - Radiated	Headphones
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	5/20/2009	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	5/20/2009	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	5/21/2009	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	5/21/2009	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	5/21/2009	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	5/22/2009	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	6/5/2009	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	EUT remained at Northwest EMC following the test.	Scheduled testing was completed.

OCCUPIED BANDWIDTH

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies in the ISM band. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the required data rates available in 802.11(b)/(g).

NORTHWEST EMC

OCCUPIED BANDWIDTH

XMit 2008.12.29

EUT:	1402			**Work Order:**	MCSO1416
Serial Number:	00837702377			**Date:**	05/20/09
Customer:	Microsoft Corporation			**Temperature:**	22°C
Attendees:	Ted Eckert			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.15
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Analyzer offset by 2 dB to compensate for adapter cable. Radio operatated in continuous Transmit mode.

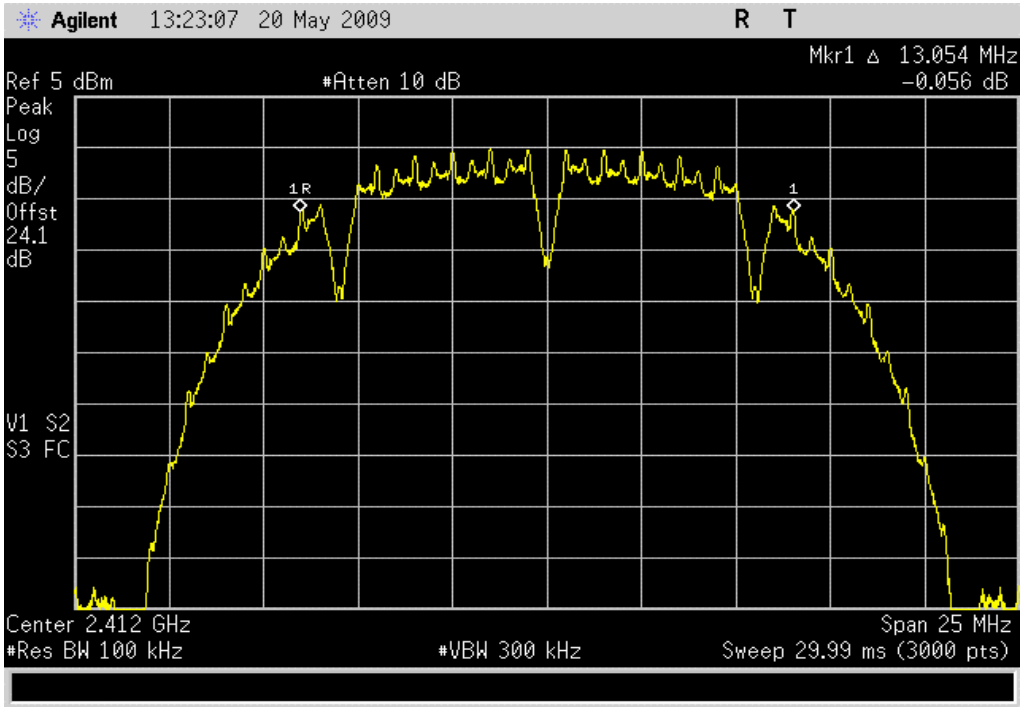
DEVIATIONS FROM TEST STANDARD

No Deviations

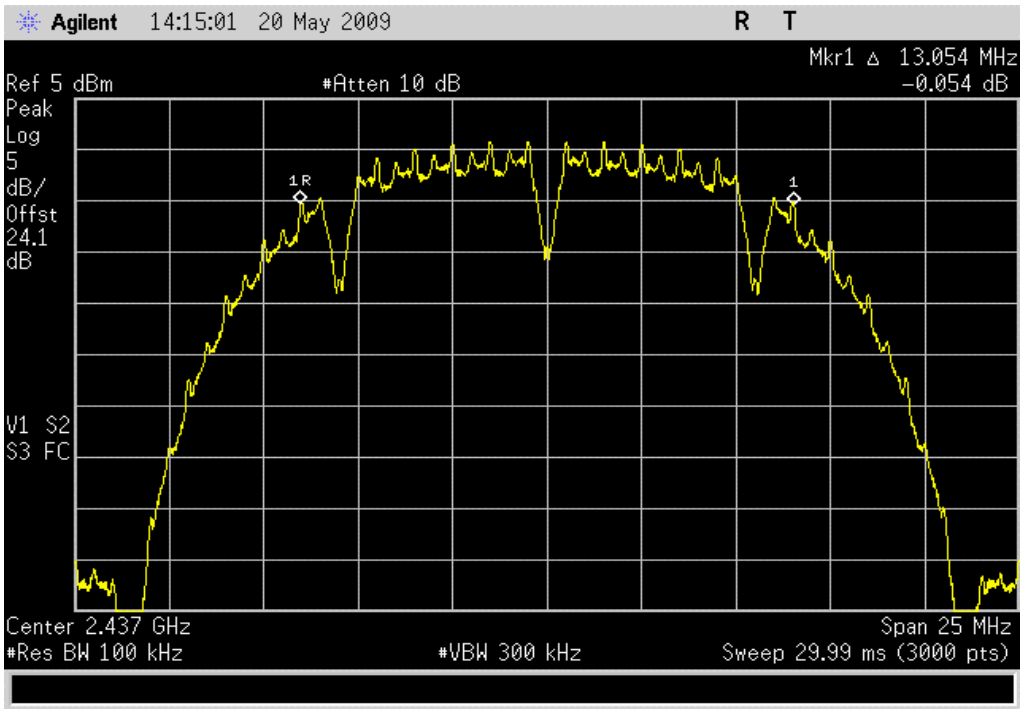
Configuration #	1	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	13.054 MHz	> 500 kHz	Pass
	Mid Channel	13.054 MHz	> 500 kHz	Pass
	High Channel	13.038 MHz	> 500 kHz	Pass
802.11(b) 11 Mbps				
	Low Channel	12.187 MHz	> 500 kHz	Pass
	Mid Channel	12.187 MHz	> 500 kHz	Pass
	High Channel	12.254 MHz	> 500 kHz	Pass
802.11(g) 6 Mbps				
	Low Channel	16.581 MHz	> 500 kHz	Pass
	Mid Channel	16.589 MHz	> 500 kHz	Pass
	High Channel	16.581 MHz	> 500 kHz	Pass
802.11(g) 36 Mbps				
	Low Channel	16.564 MHz	> 500 kHz	Pass
	Mid Channel	16.547 MHz	> 500 kHz	Pass
	High Channel	16.564 MHz	> 500 kHz	Pass
802.11(g) 54 Mbps				
	Low Channel	16.539 MHz	> 500 kHz	Pass
	Mid Channel	16.539 MHz	> 500 kHz	Pass
	High Channel	16.531 MHz	> 500 kHz	Pass

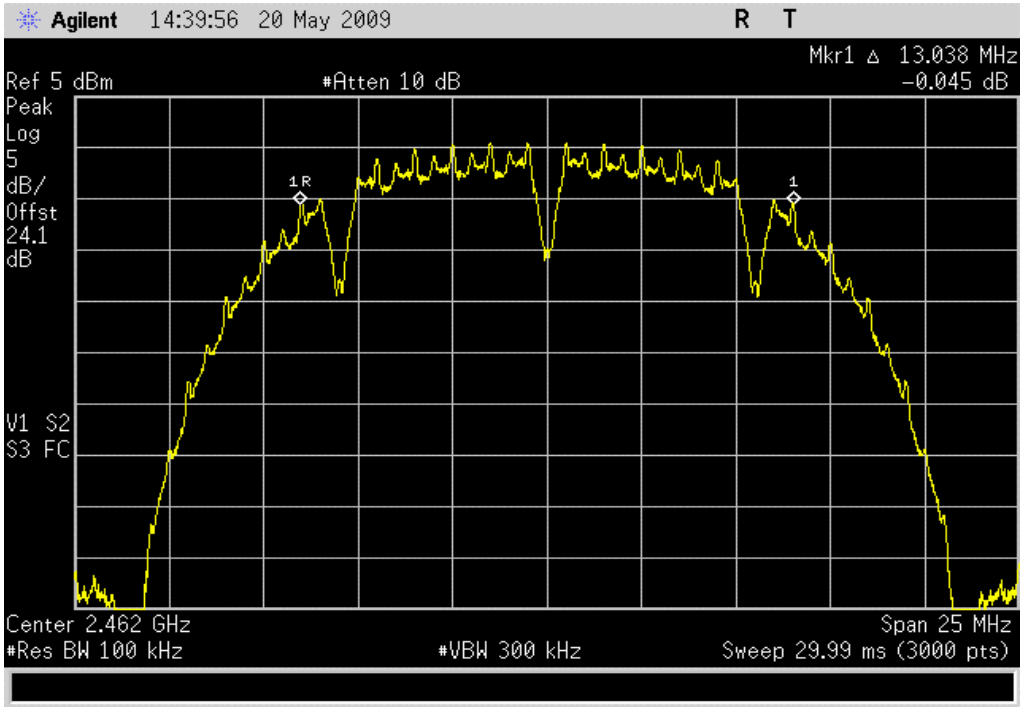
802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	13.054 MHz	**Limit:**	> 500 kHz



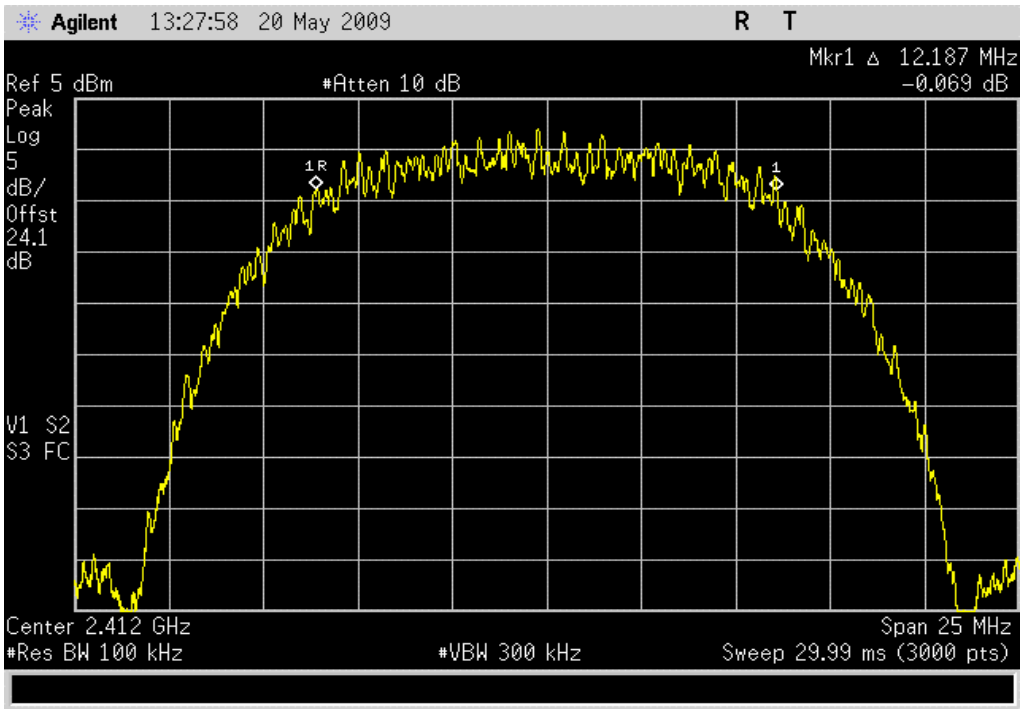
802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	13.054 MHz	**Limit:**	> 500 kHz



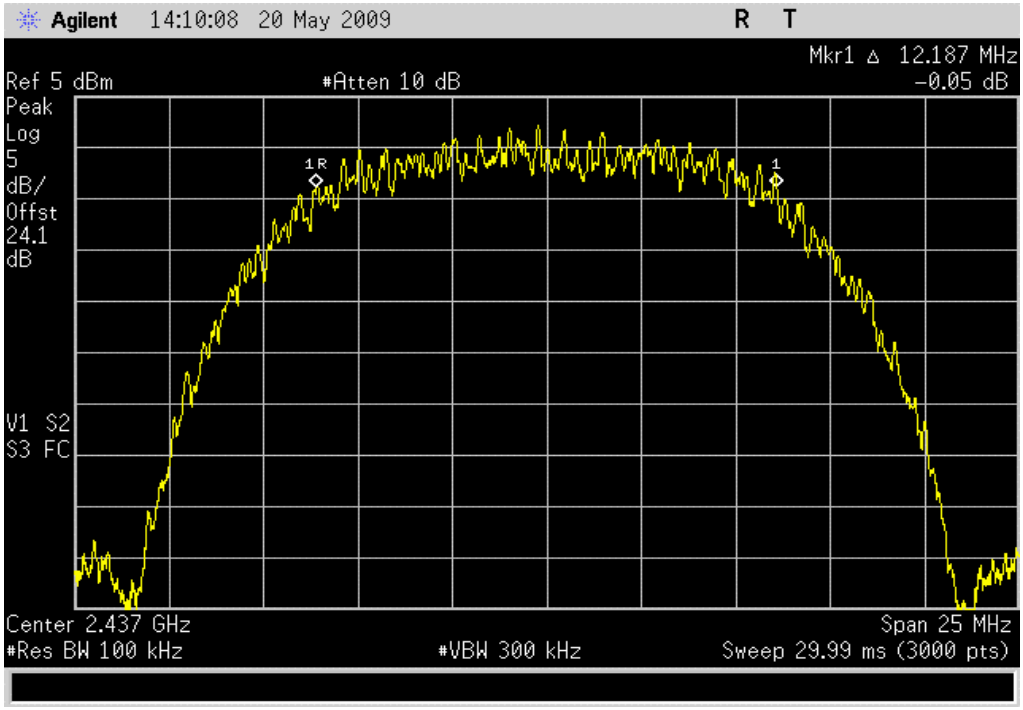
802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	13.038 MHz	**Limit:**	> 500 kHz



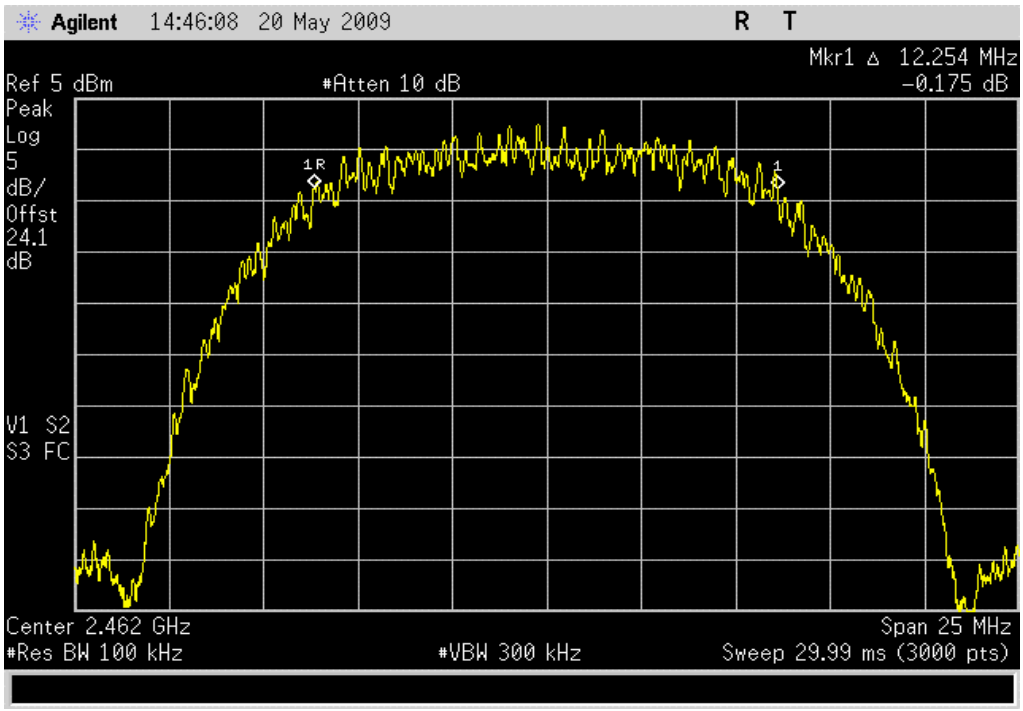
802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	12.187 MHz	**Limit:**	> 500 kHz



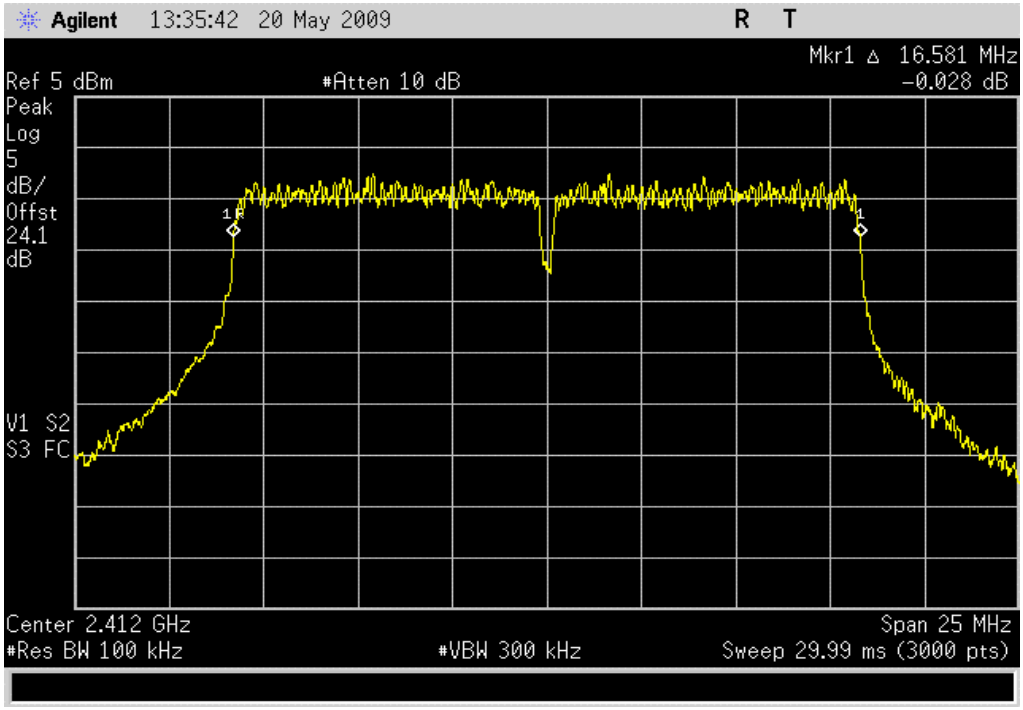
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.187 MHz	**Limit:**	> 500 kHz



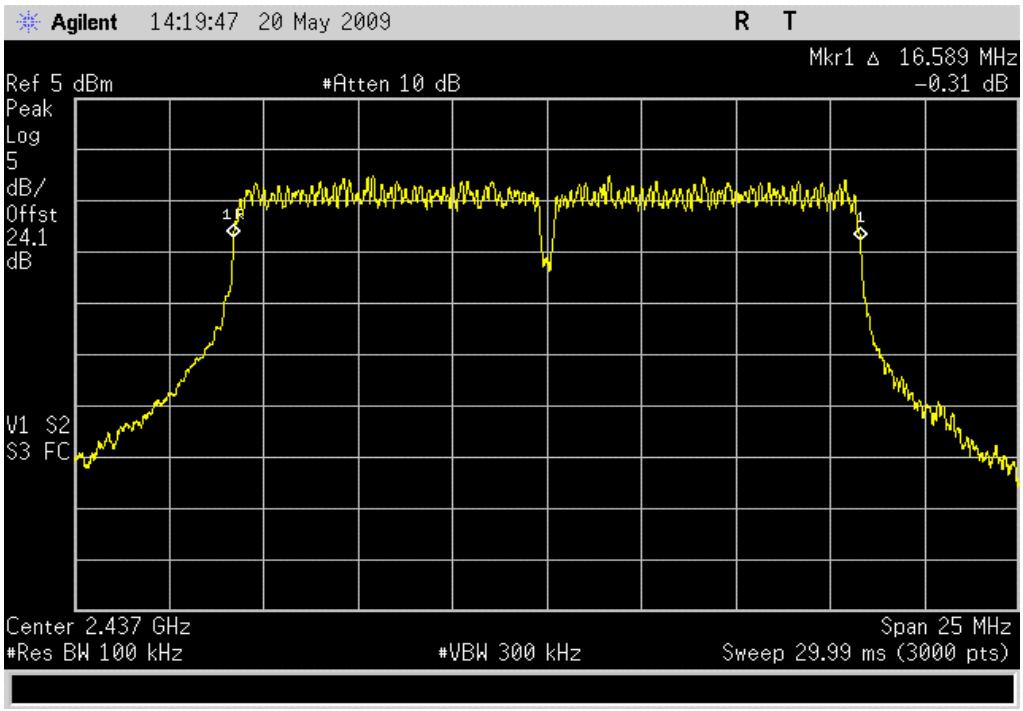
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	12.254 MHz	**Limit:**	> 500 kHz



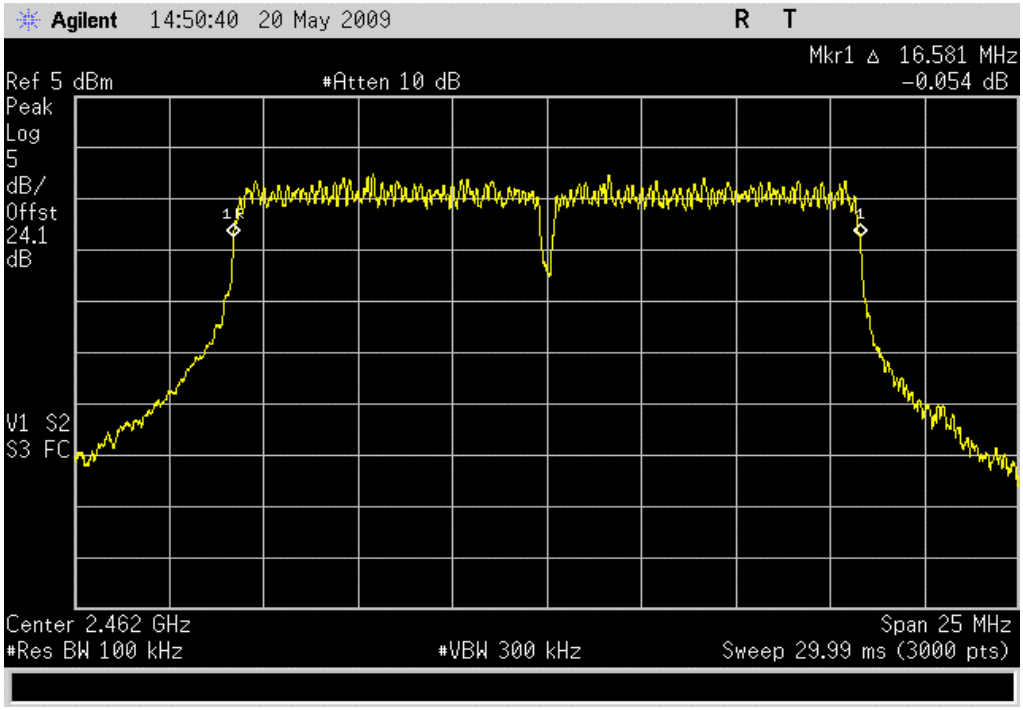
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	16.581 MHz	**Limit:**	> 500 kHz



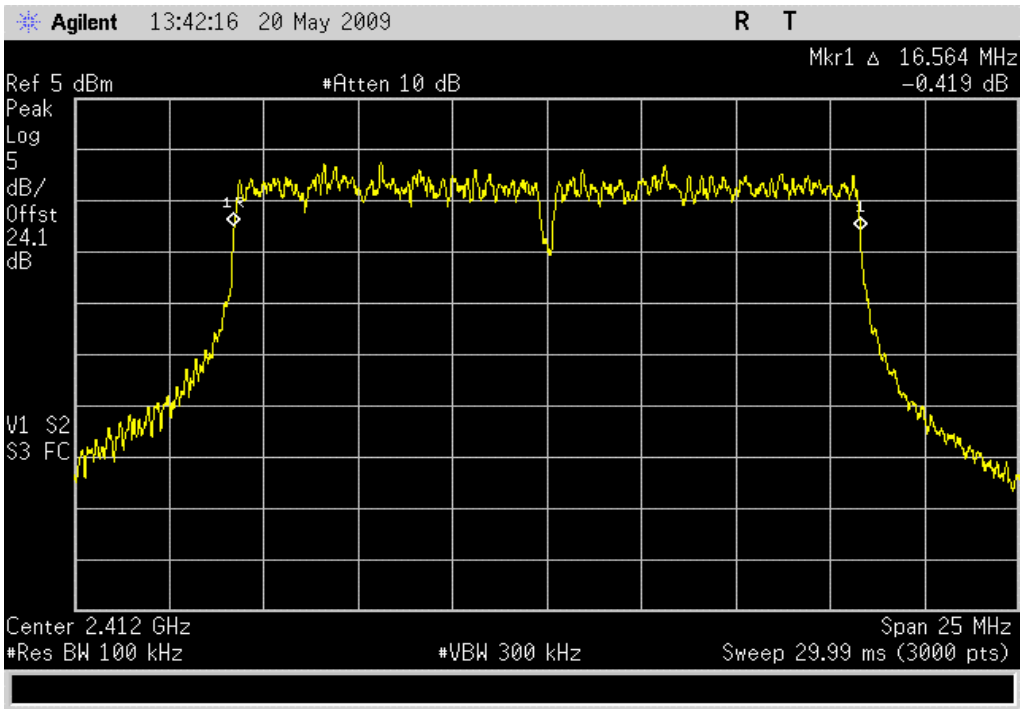
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.589 MHz	**Limit:**	> 500 kHz



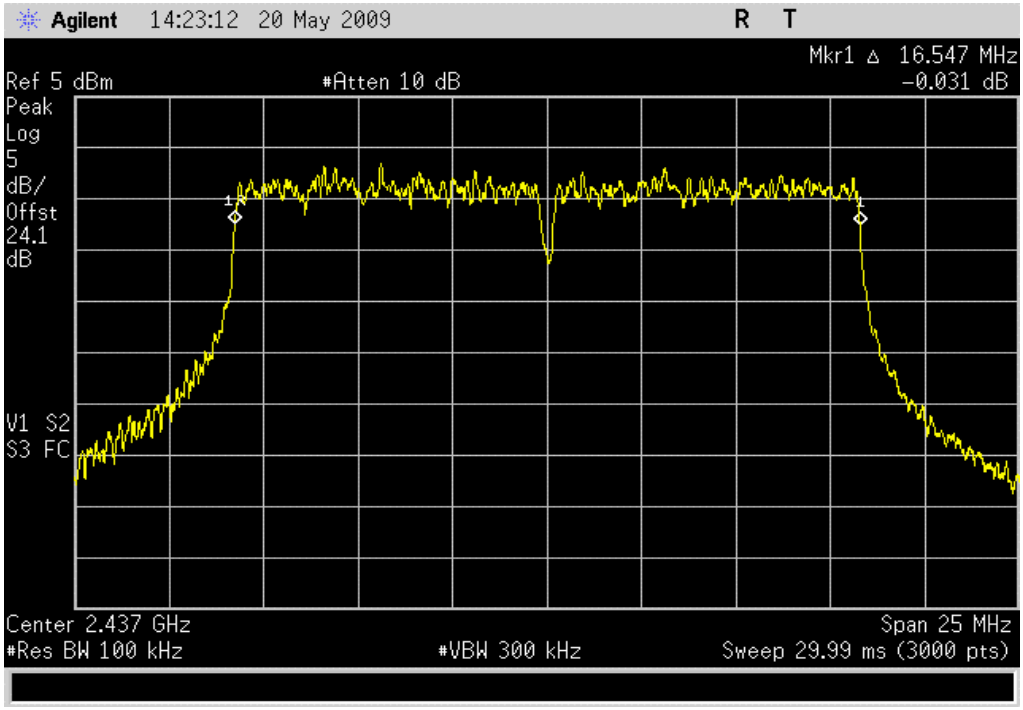
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	16.581 MHz	**Limit:**	> 500 kHz



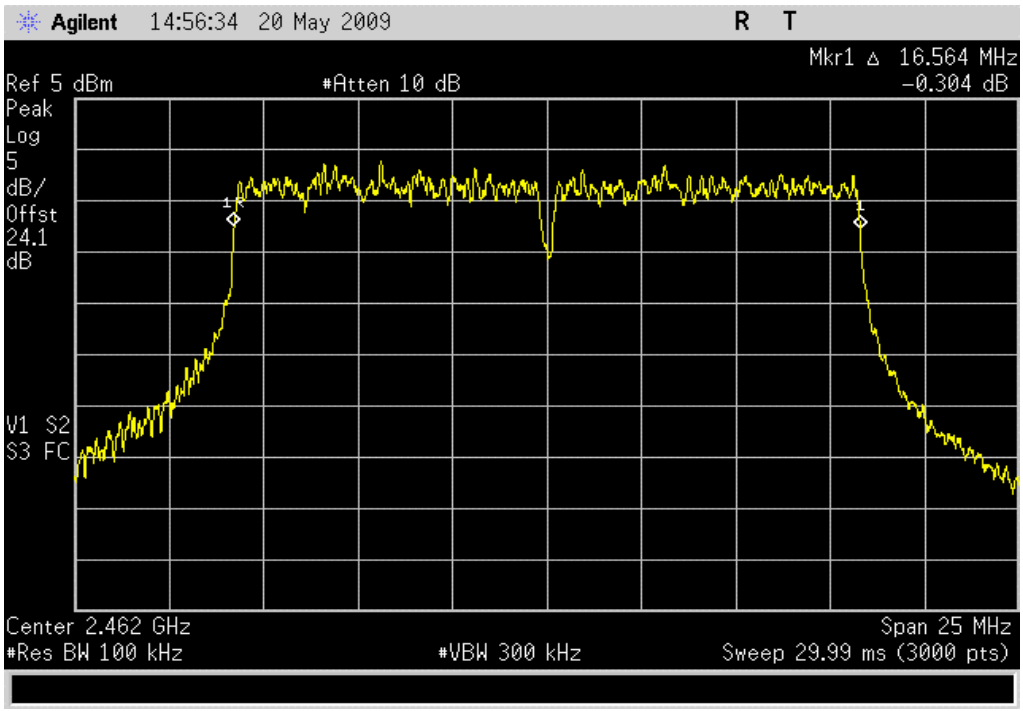
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	16.564 MHz	**Limit:**	> 500 kHz



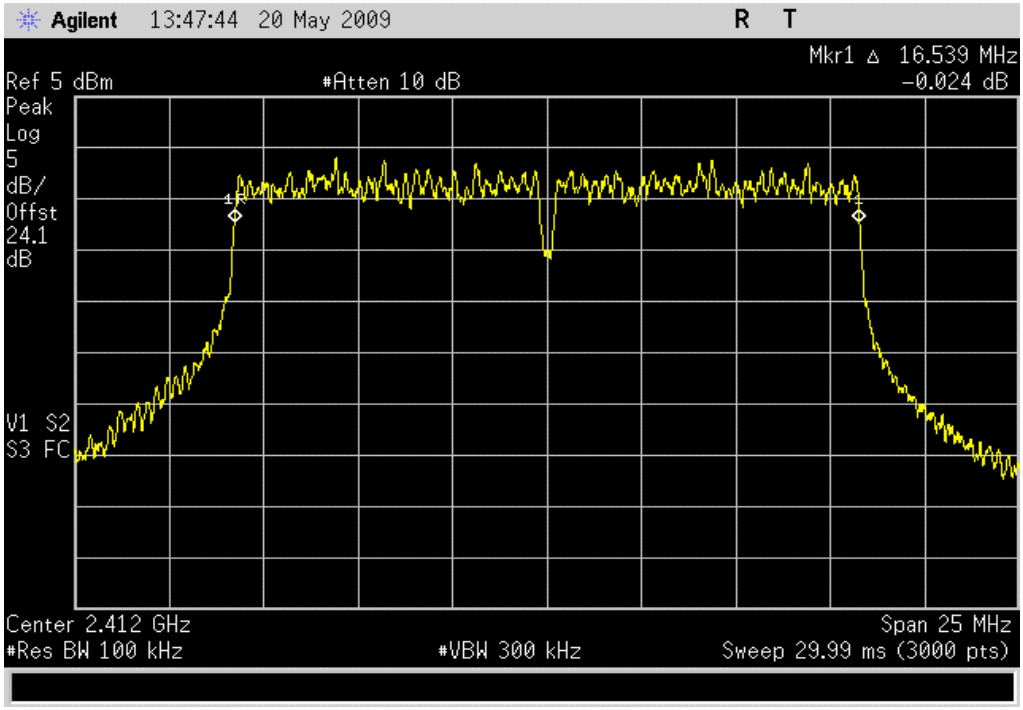
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.547 MHz	**Limit:**	> 500 kHz



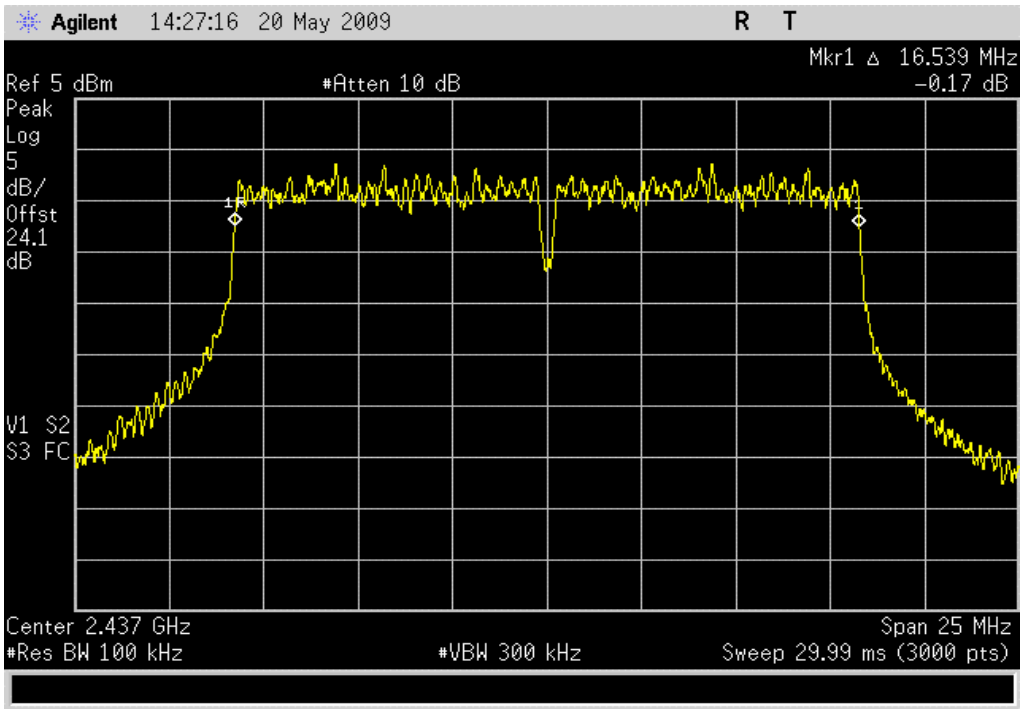
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	16.564 MHz	**Limit:**	> 500 kHz



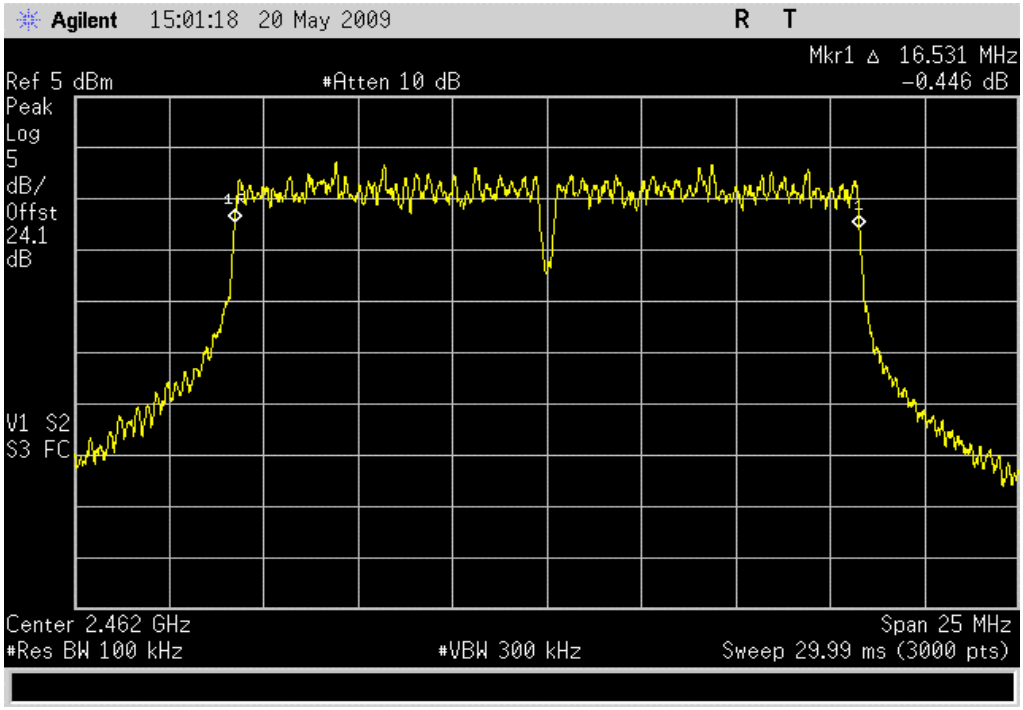
802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	16.539 MHz	**Limit:**	> 500 kHz



802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.539 MHz	**Limit:**	> 500 kHz



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	16.531 MHz	**Limit:**	> 500 kHz




zune

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
Power Meter	Gigatronics	8651A	SPM	12/10/2008	13
Power Sensor	Gigatronics	80701A	SPL	12/10/2008	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	13

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band, at each of the required data rates. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

- Prior to measuring peak transmit power; the emission bandwidth (B) was measured.
- Power was integrated across “B”, by using the channel power function of the spectrum analyzer and its default bandwidths.

NORTHWEST EMC

OUTPUT POWER - CHANNEL POWER

XMit 2009.03.05

EUT:	1402			**Work Order:**	MCSO1416
Serial Number:	00837702377			**Date:**	08/07/09
Customer:	Microsoft Corporation			**Temperature:**	22.5°C
Attendees:	None			**Humidity:**	49%
Project:	None			**Barometric Pres.:**	30.05 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Radio operated in 'Tx 99' mode. Compensation for antenna adapter cable is on data sheet, not within the analzyer reference level offset.

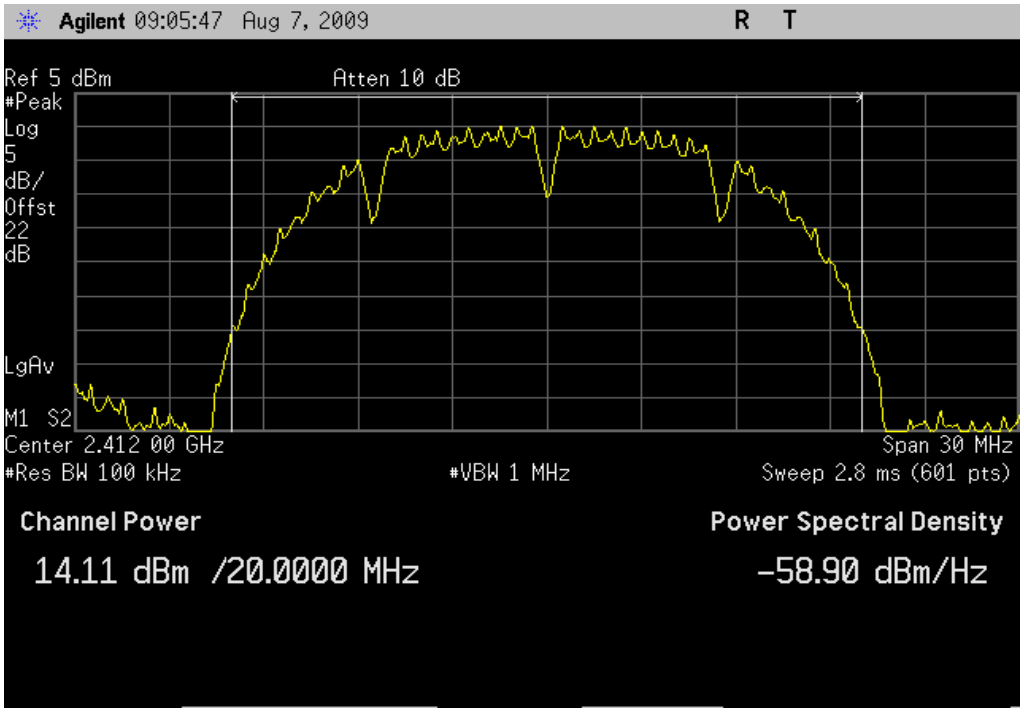
DEVIATIONS FROM TEST STANDARD

Configuration #	1	Signature

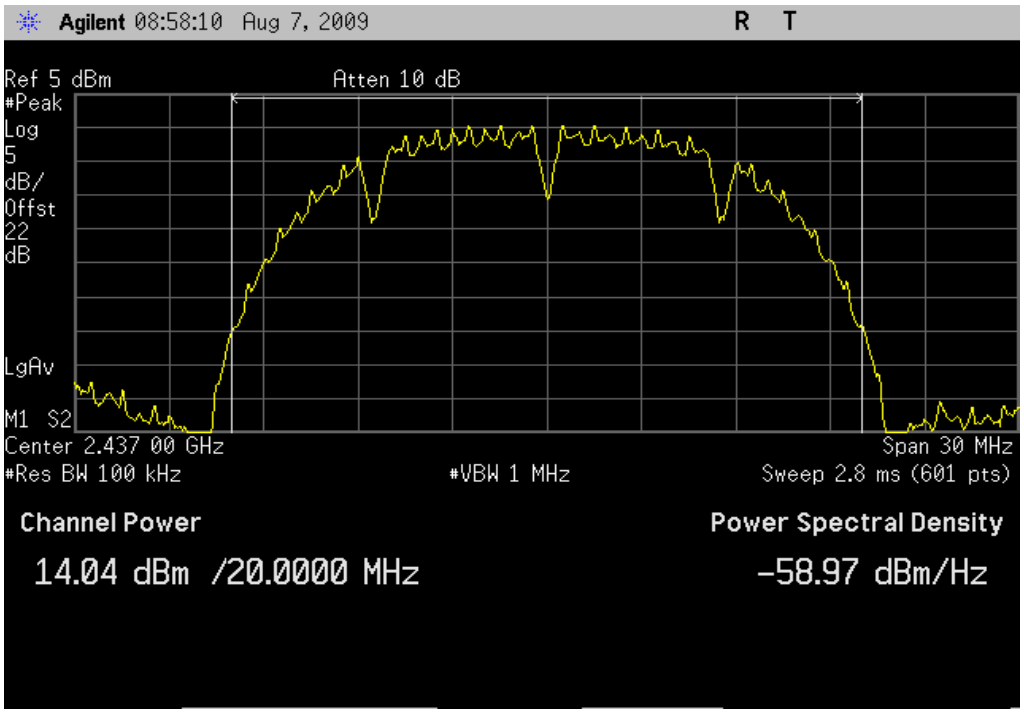
		Adapter Loss (dB)	Channel Power (dBm)	Ouput Power (dBm)	Limit (dBm)	Results
802.11(b) 1 Mbps						
	Low Channel	2.0	14.1	16.1	30	Pass
	Mid Channel	2.0	14.0	16.0	30	Pass
	High Channel	2.0	13.9	15.9	30	Pass
802.11(b) 11 Mbps						
	Low Channel	2.0	14.0	16.0	30	Pass
	Mid Channel	2.0	14.0	16.0	30	Pass
	High Channel	2.0	14.3	16.3	30	Pass
802.11(g) 6 Mbps						
	Low Channel	2.0	13.0	15.0	30	Pass
	Mid Channel	2.0	12.7	14.7	30	Pass
	High Channel	2.0	12.7	14.7	30	Pass
802.11(g) 36 Mbps						
	Low Channel	2.0	12.7	14.7	30	Pass
	Mid Channel	2.0	12.6	14.6	30	Pass
	High Channel	2.0	12.8	14.8	30	Pass
802.11(g) 54 Mbps						
	Low Channel	2.0	12.7	14.7	30	Pass
	Mid Channel	2.0	12.7	14.7	30	Pass
	High Channel	2.0	12.7	14.7	30	Pass

OUTPUT POWER - CHANNEL POWER

802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	14.11	**Limit:**	30

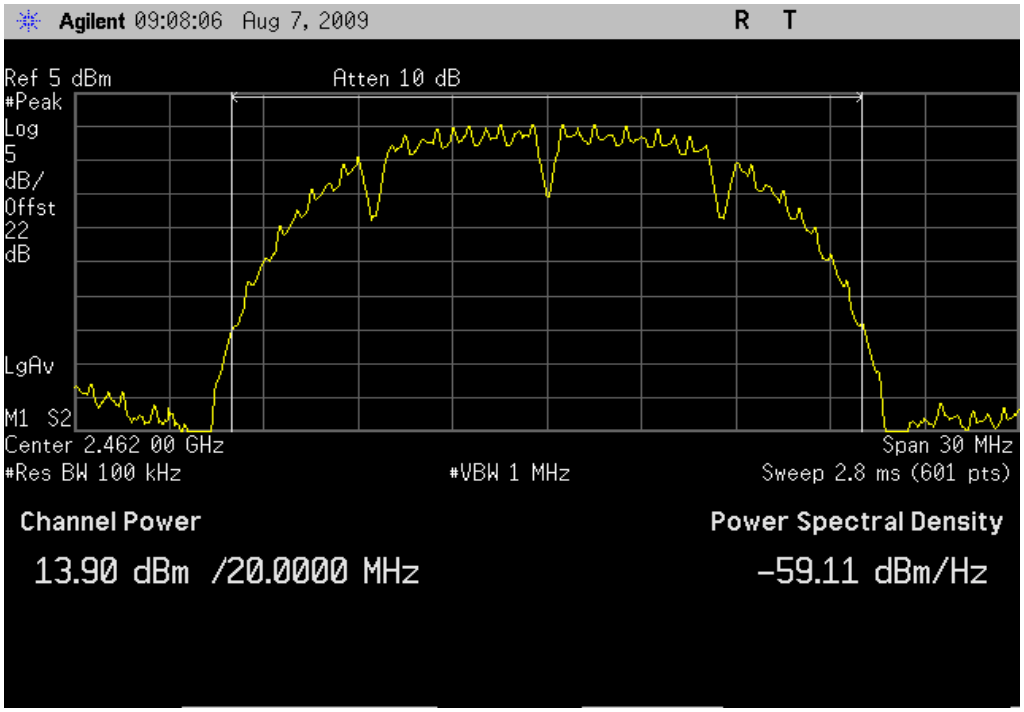


802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	14.04	**Limit:**	30

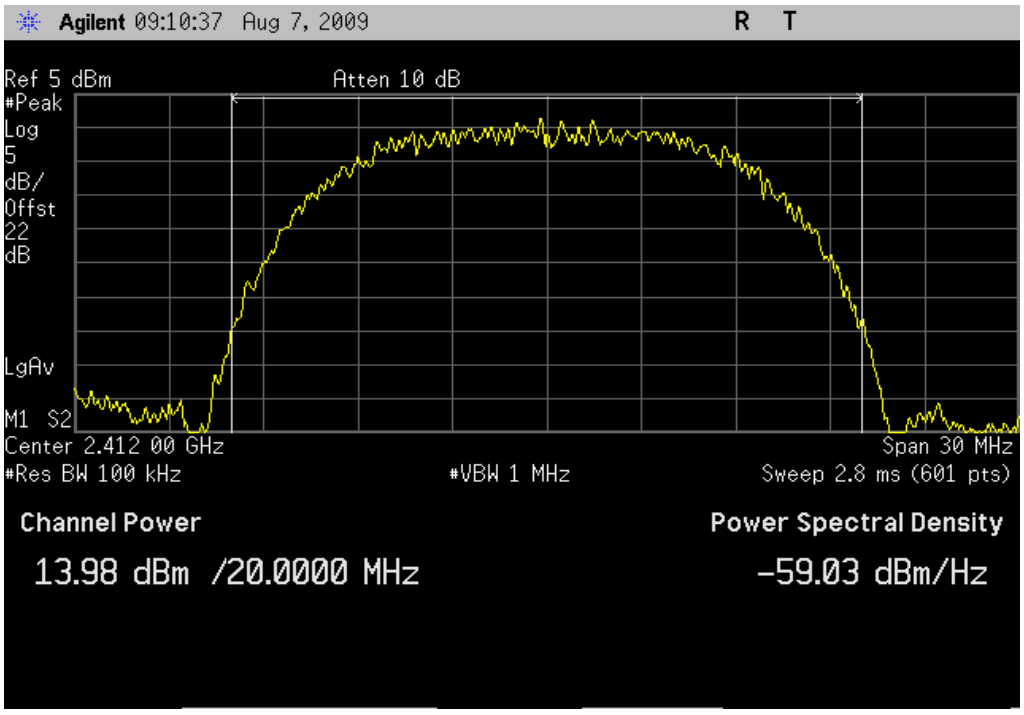


OUTPUT POWER - CHANNEL POWER

802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	13.90	**Limit:**	30

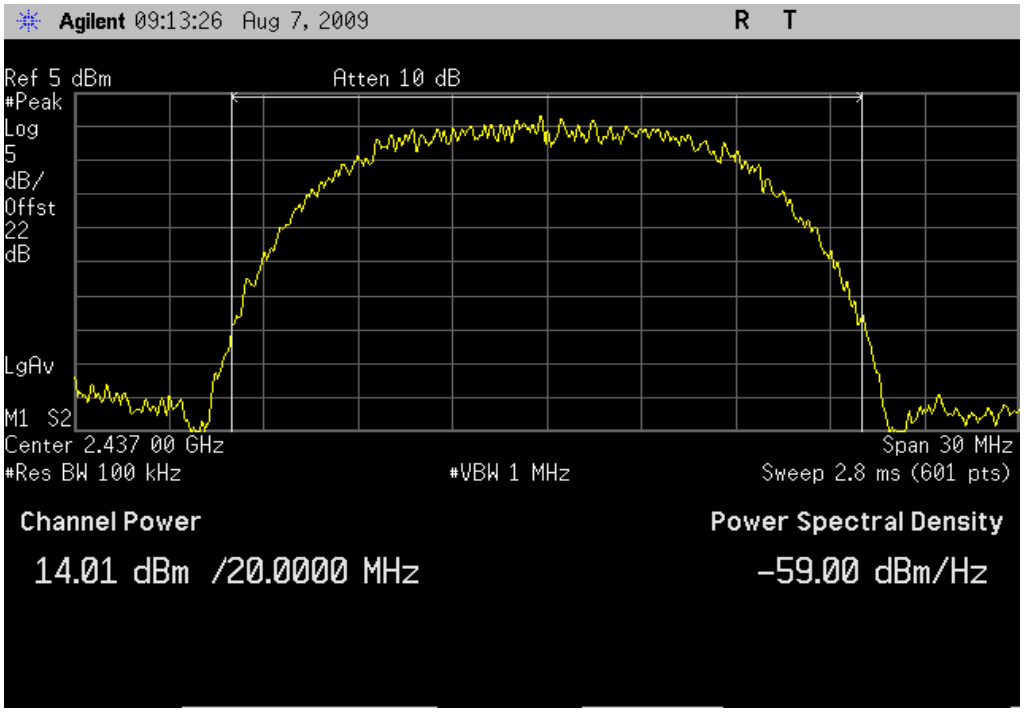


802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	13.98	**Limit:**	30

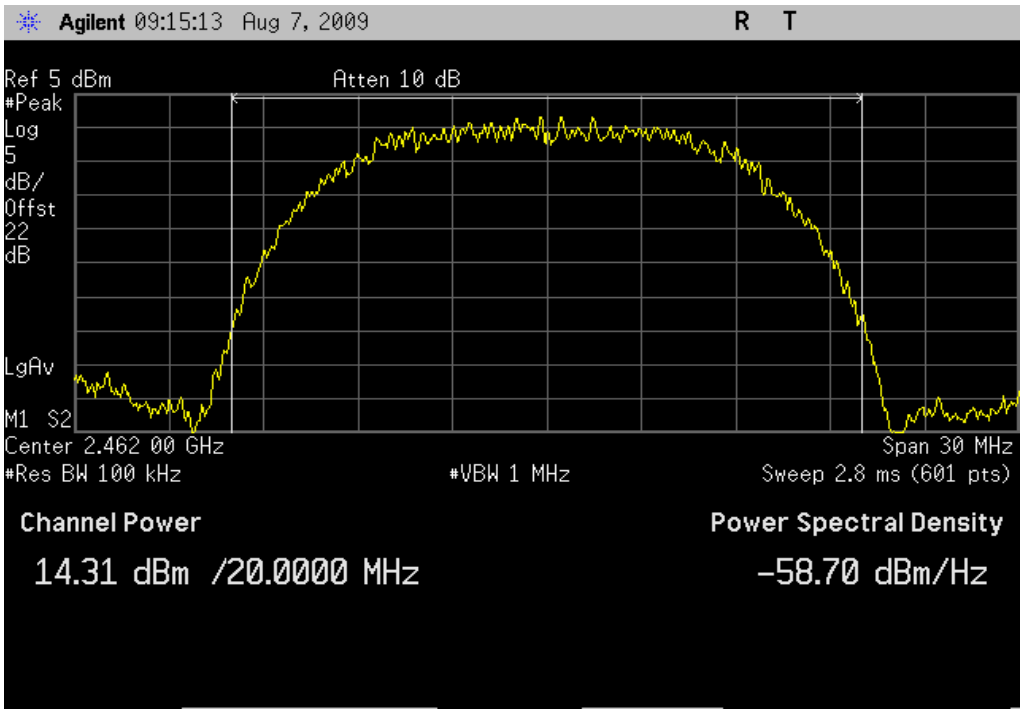


OUTPUT POWER - CHANNEL POWER

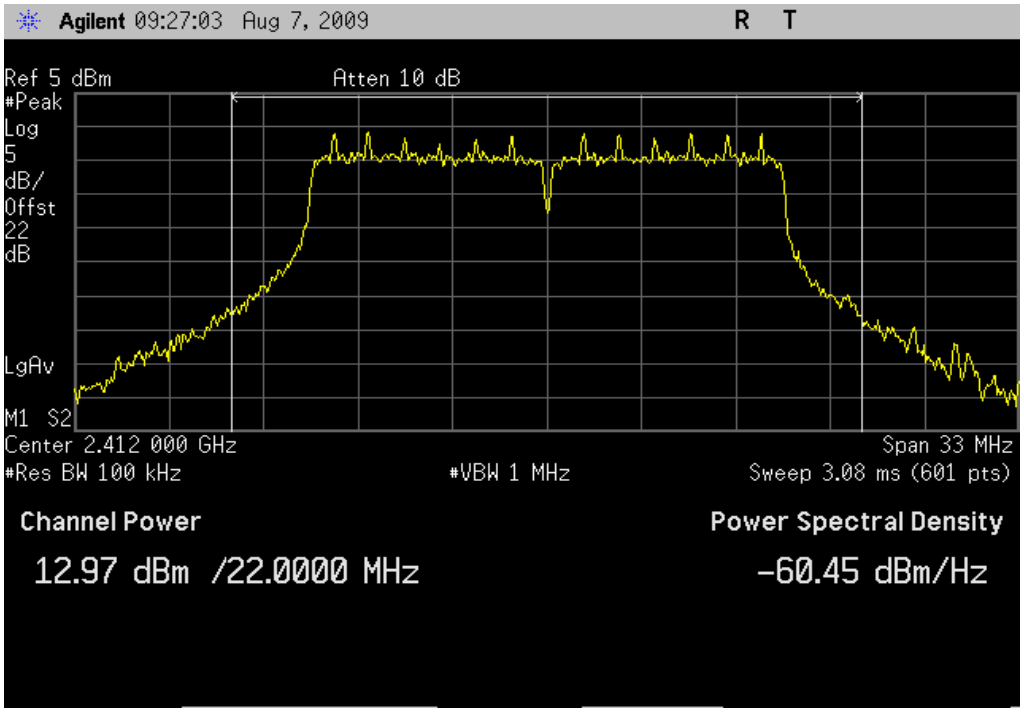
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	14.01	**Limit:**	30



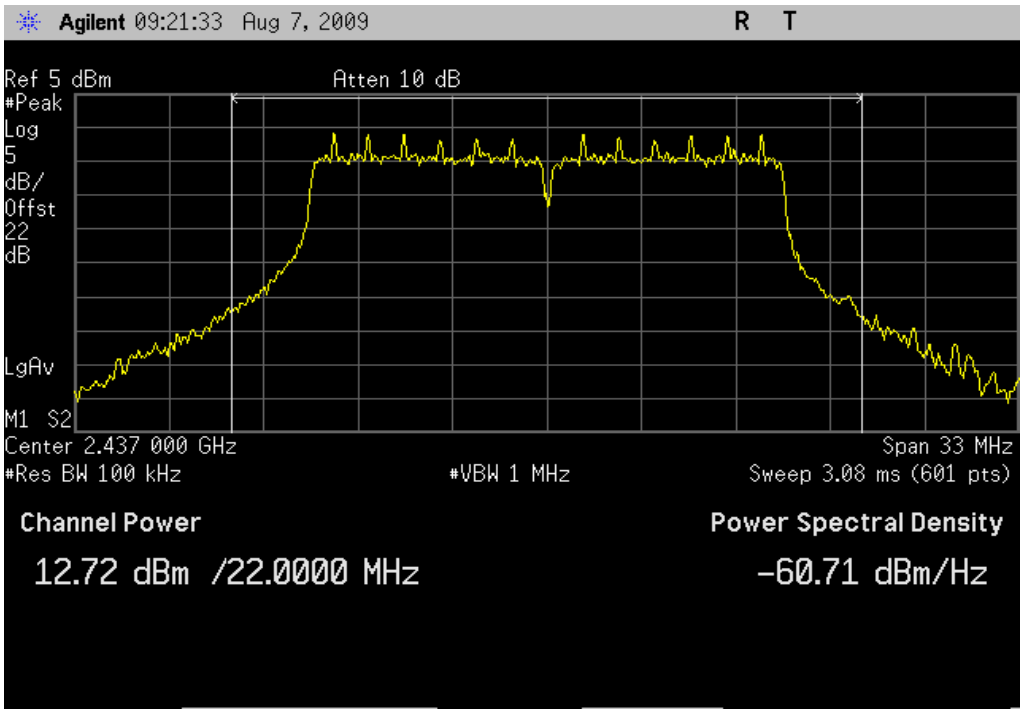
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	14.31	**Limit:**	30



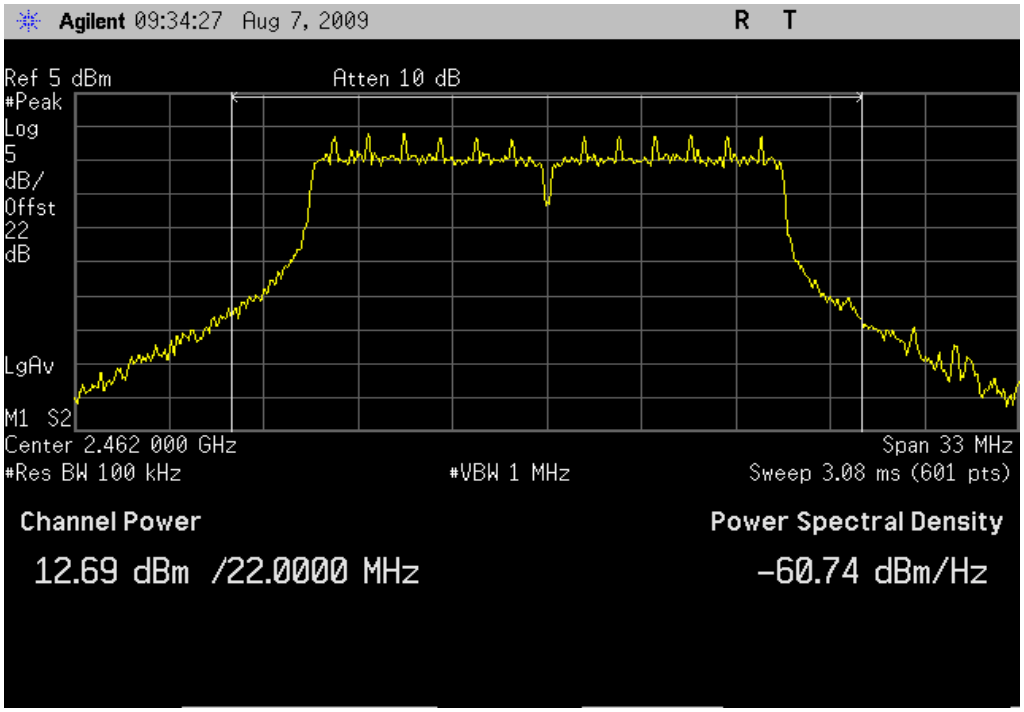
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	12.97	**Limit:**	30



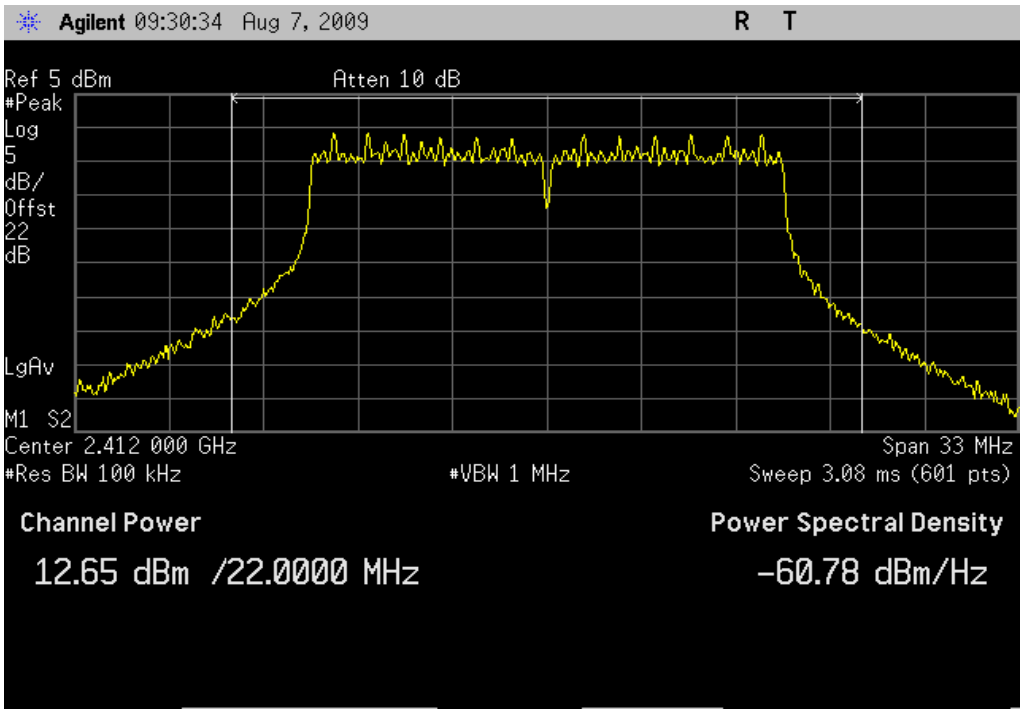
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.72	**Limit:**	30



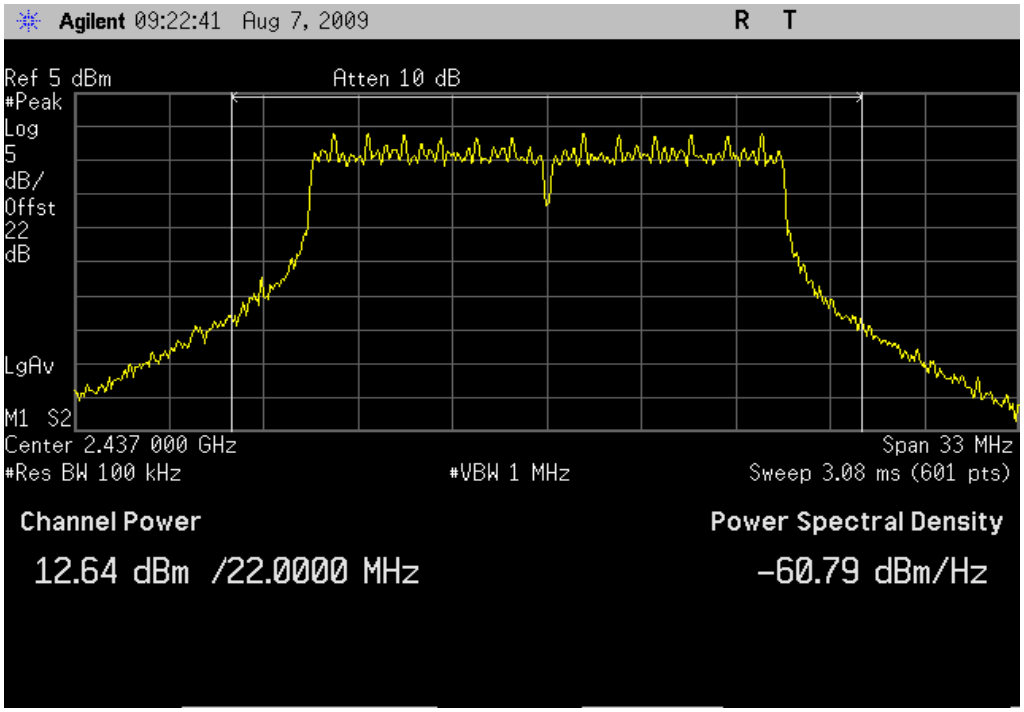
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	12.69	**Limit:**	30



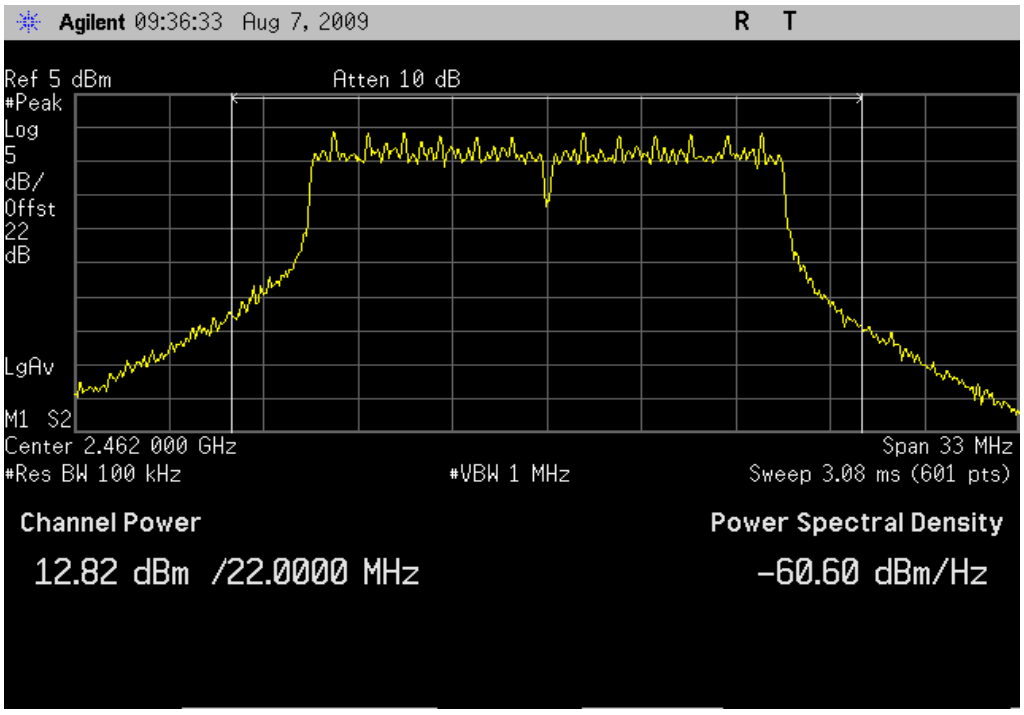
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	12.65	**Limit:**	30



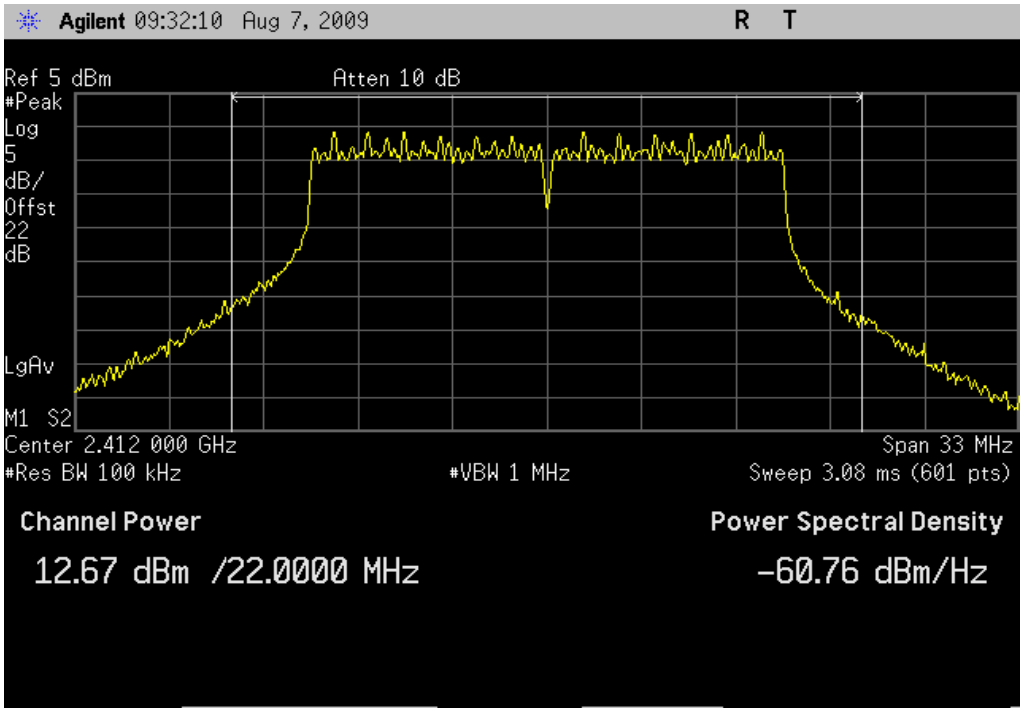
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.64	**Limit:**	30



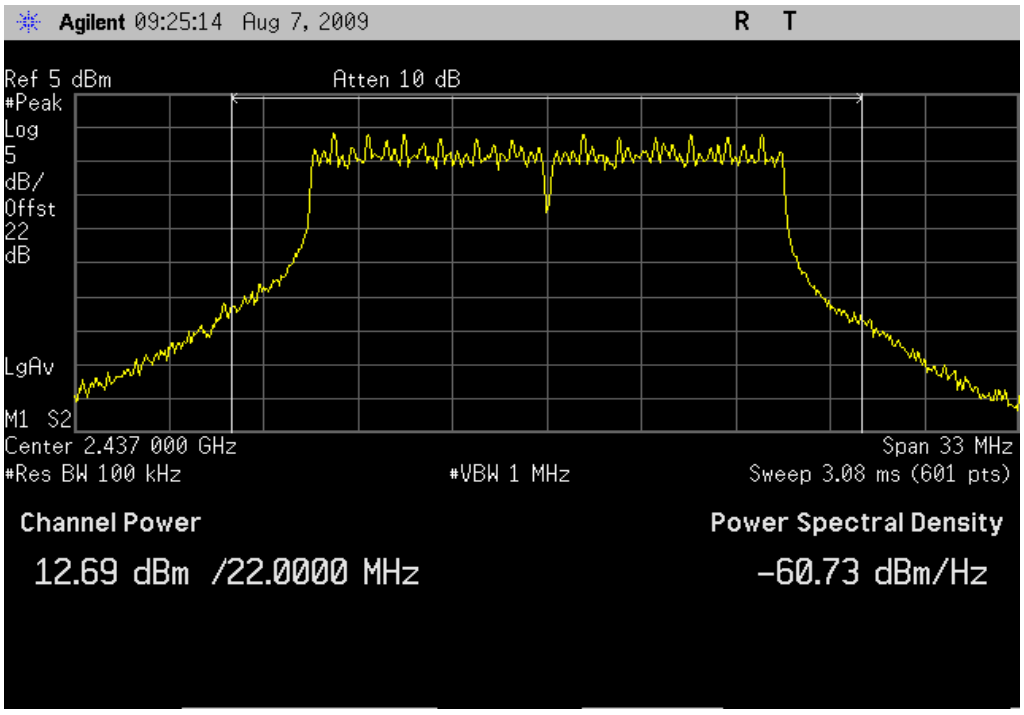
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	12.82	**Limit:**	30



802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	12.67	**Limit:**	30

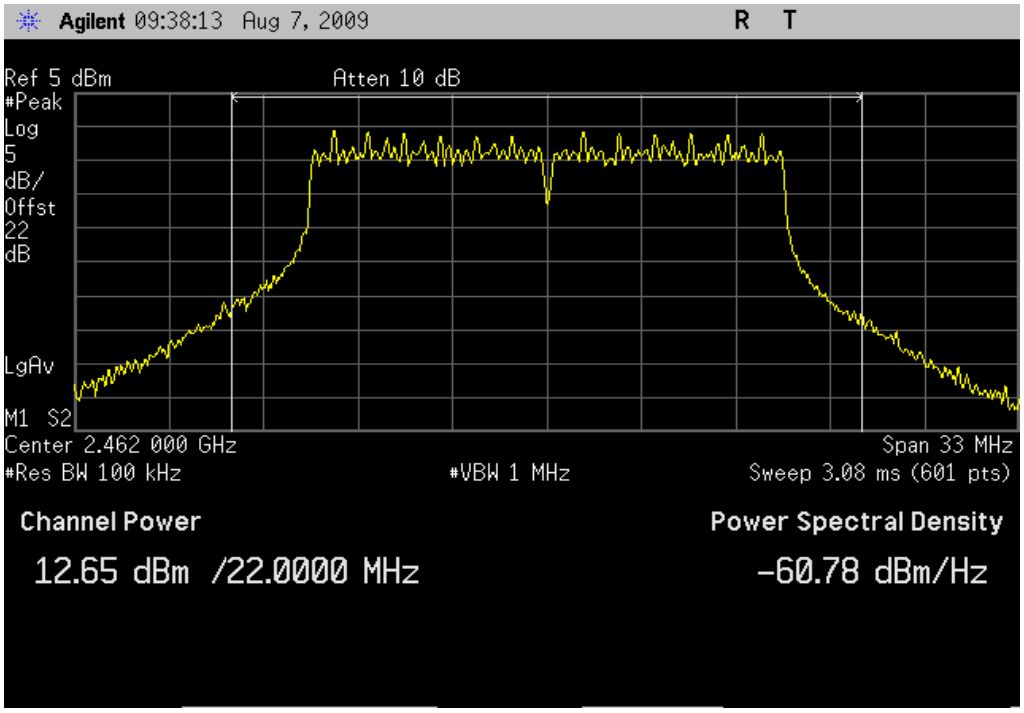


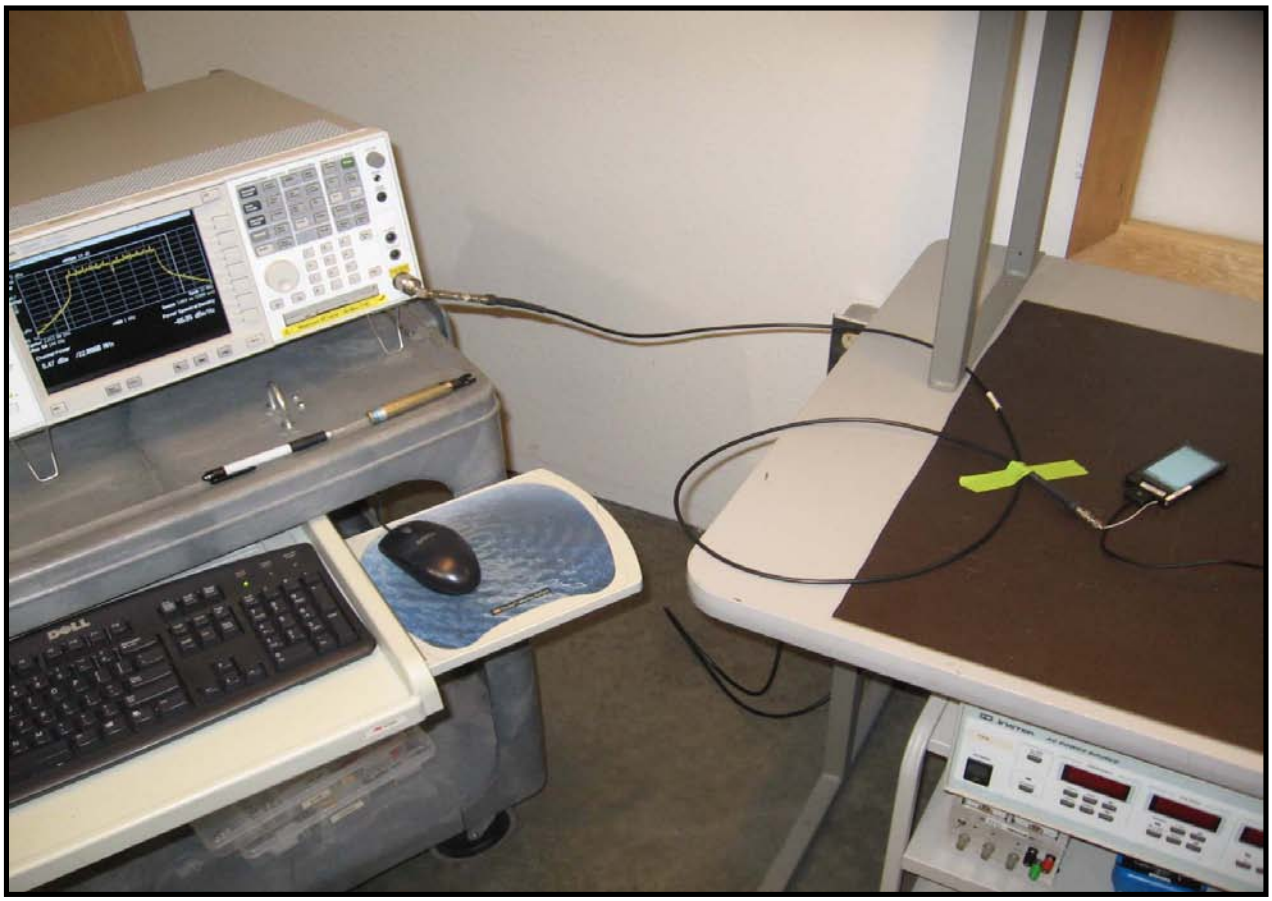
802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.69	**Limit:**	30

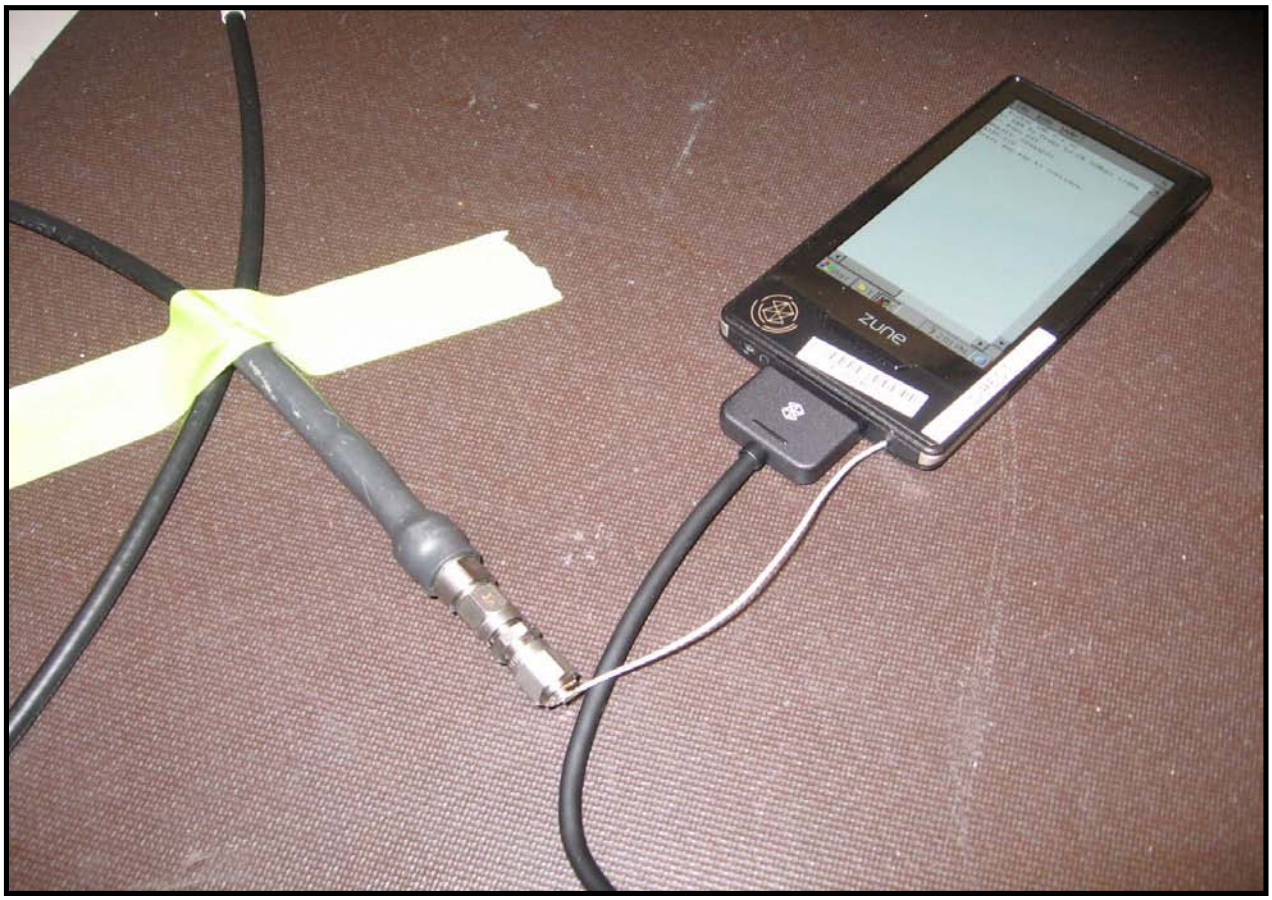


OUTPUT POWER - CHANNEL POWER

802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	12.65	**Limit:**	30



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BAND EDGE COMPLIANCE

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its lowest, middle, and maximum data rate available.

The spectrum was scanned across each band edge from at least 25 MHz below the band edge to 25 MHz above the band edge.

NORTHWEST EMC

BAND EDGE COMPLIANCE

XMit 2008.12.29

EUT:	1402			**Work Order:**	MCSO1416
Serial Number:	00837702377			**Date:**	05/20/09
Customer:	Microsoft Corporation			**Temperature:**	22°C
Attendees:	Ted Eckert			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.15
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Analyzer offset by 2 dB to compensate for adapter cable. Radio operatated in continuous Transmit mode.

DEVIATIONS FROM TEST STANDARD

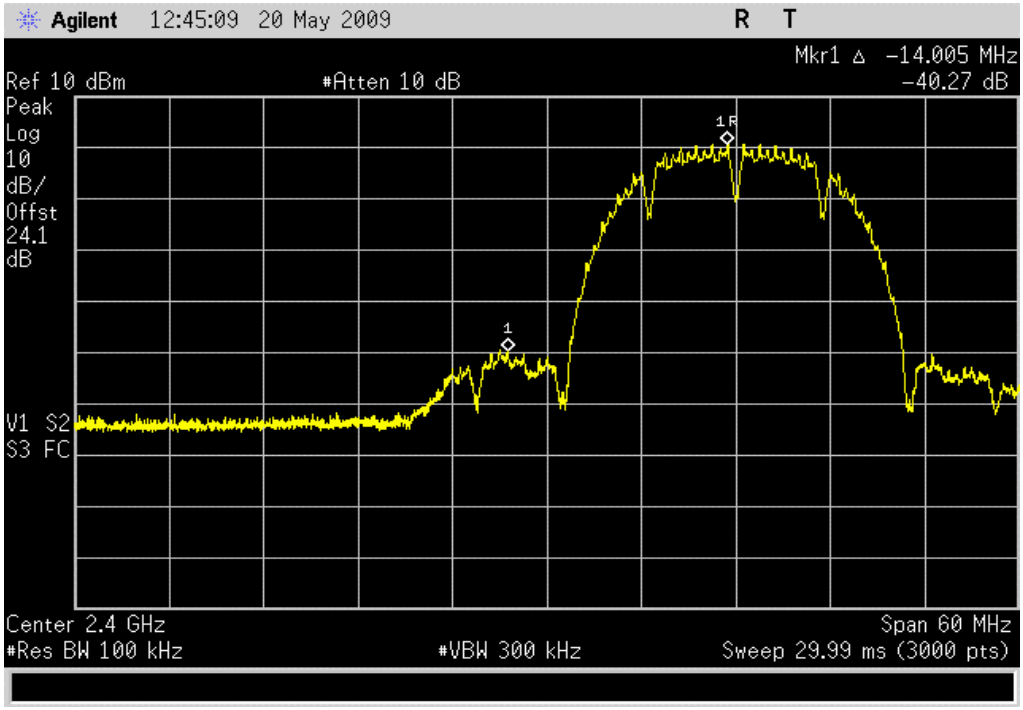
No Deviations

Configuration #	1	Signature

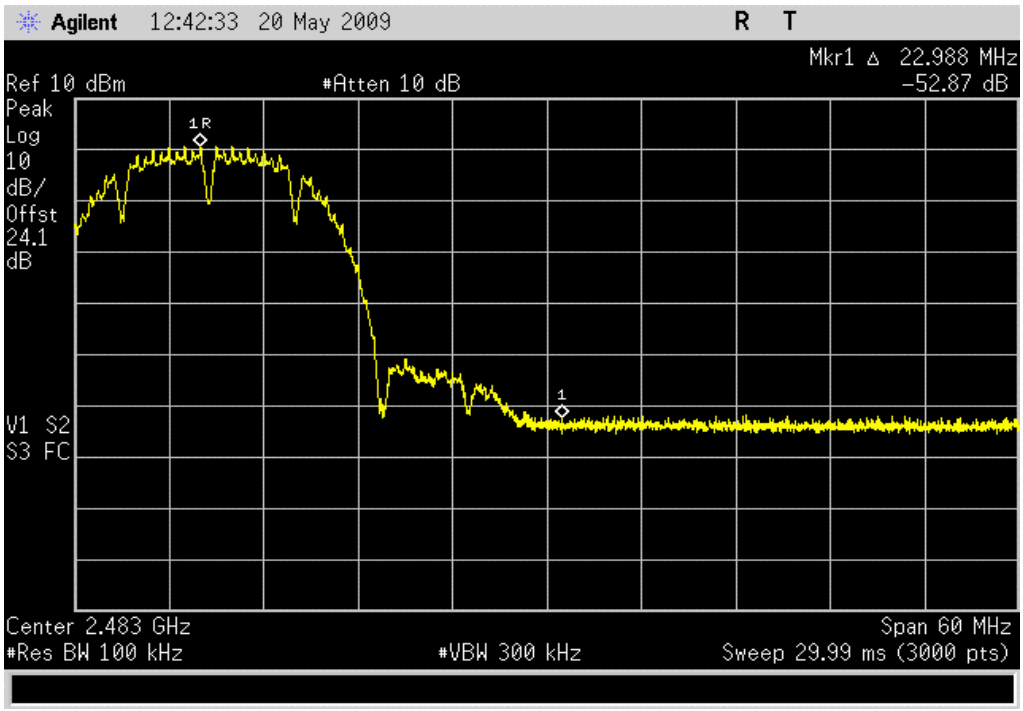
		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	-40.3 dBc	≤ -20 dBc	Pass
	High Channel	-52.9 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel	-41.8 dBc	≤ -20 dBc	Pass
	High Channel	-53.5 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel	-27.3 dBc	≤ -20 dBc	Pass
	High Channel	-44.7 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel	-28.1 dBc	≤ -20 dBc	Pass
	High Channel	-45.7 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel	-27.5 dBc	≤ -20 dBc	Pass
	High Channel	-46.5 dBc	≤ -20 dBc	Pass

BAND EDGE COMPLIANCE

802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	-40.3 dBc	**Limit:**	≤ -20 dBc

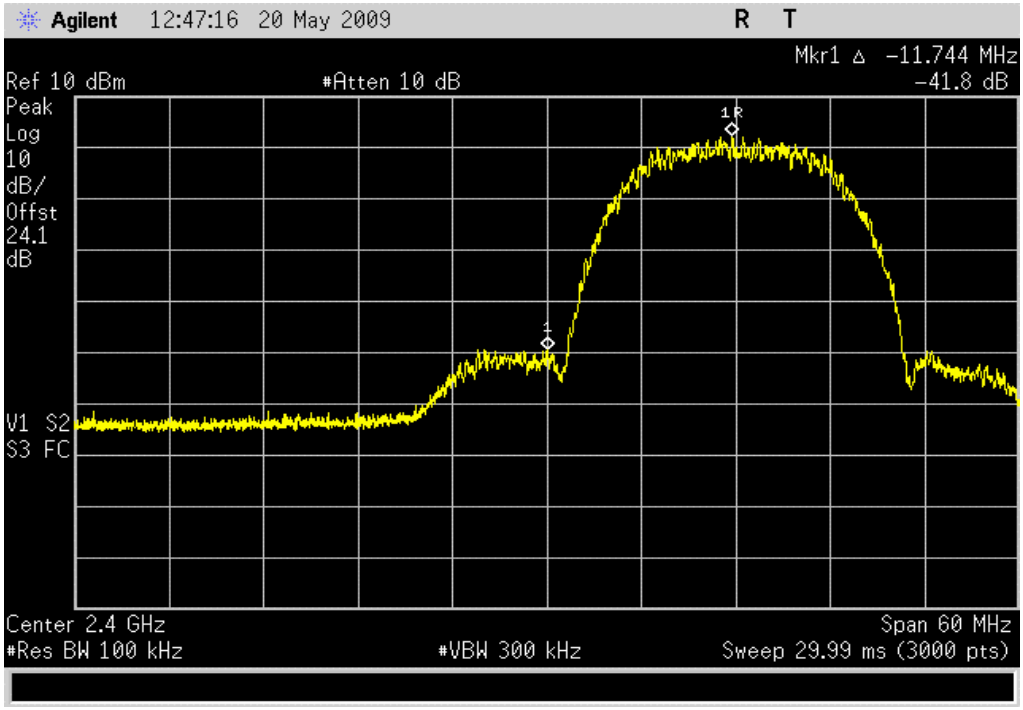


802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	-52.9 dBc	**Limit:**	≤ -20 dBc

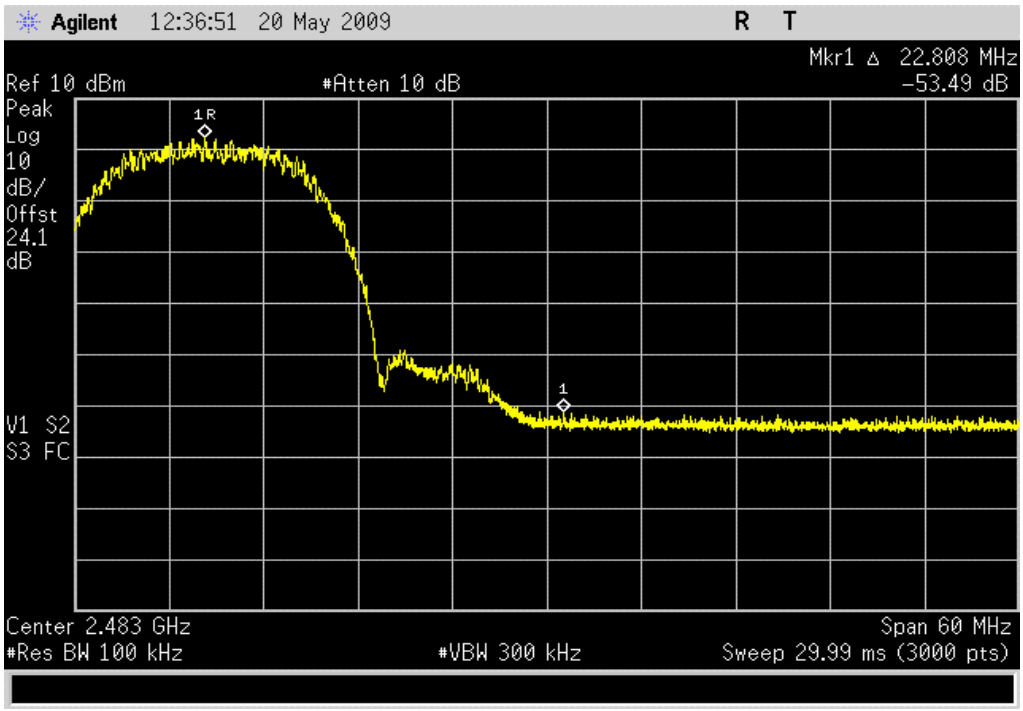


BAND EDGE COMPLIANCE

802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	-41.8 dBc	**Limit:**	≤ -20 dBc

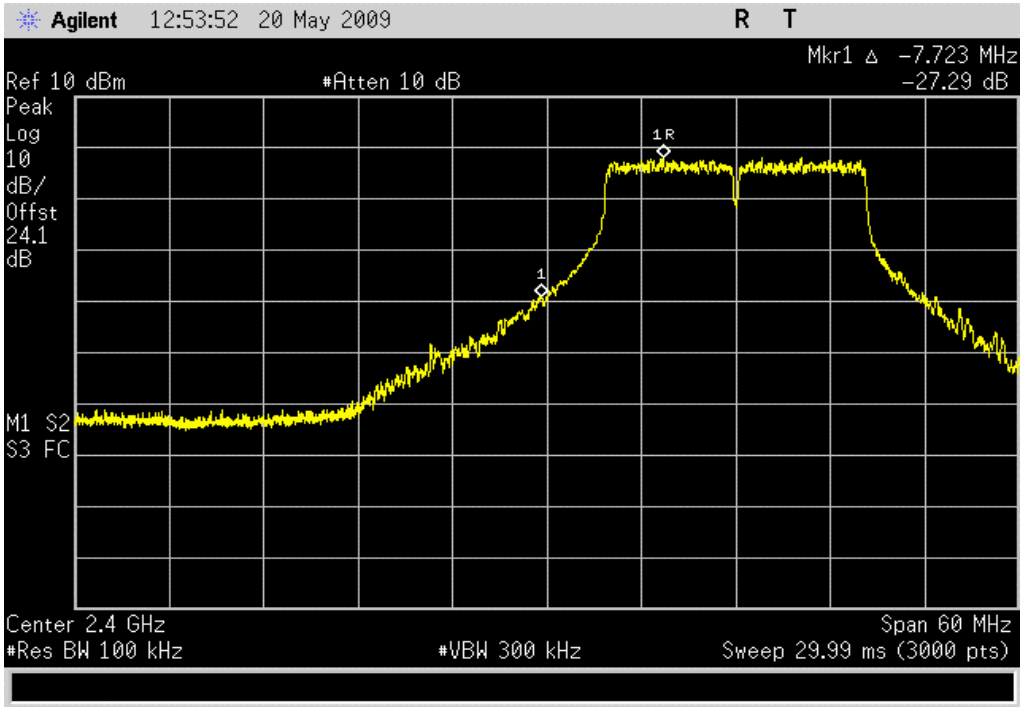


802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	-53.5 dBc	**Limit:**	≤ -20 dBc

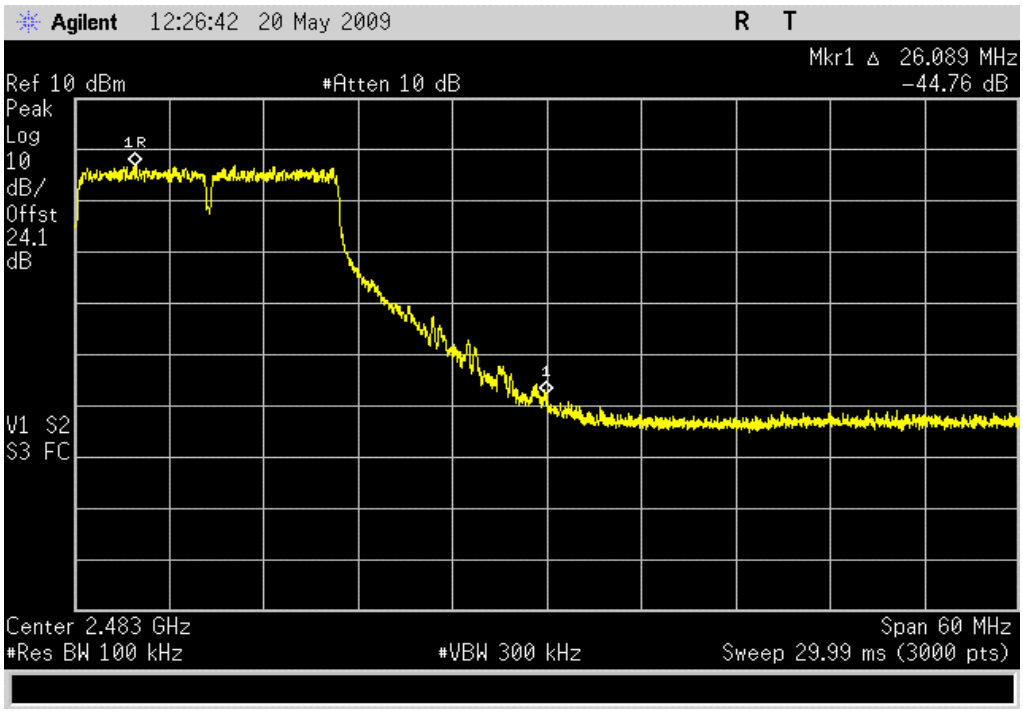


BAND EDGE COMPLIANCE

802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	-27.3 dBc	**Limit:**	≤ -20 dBc

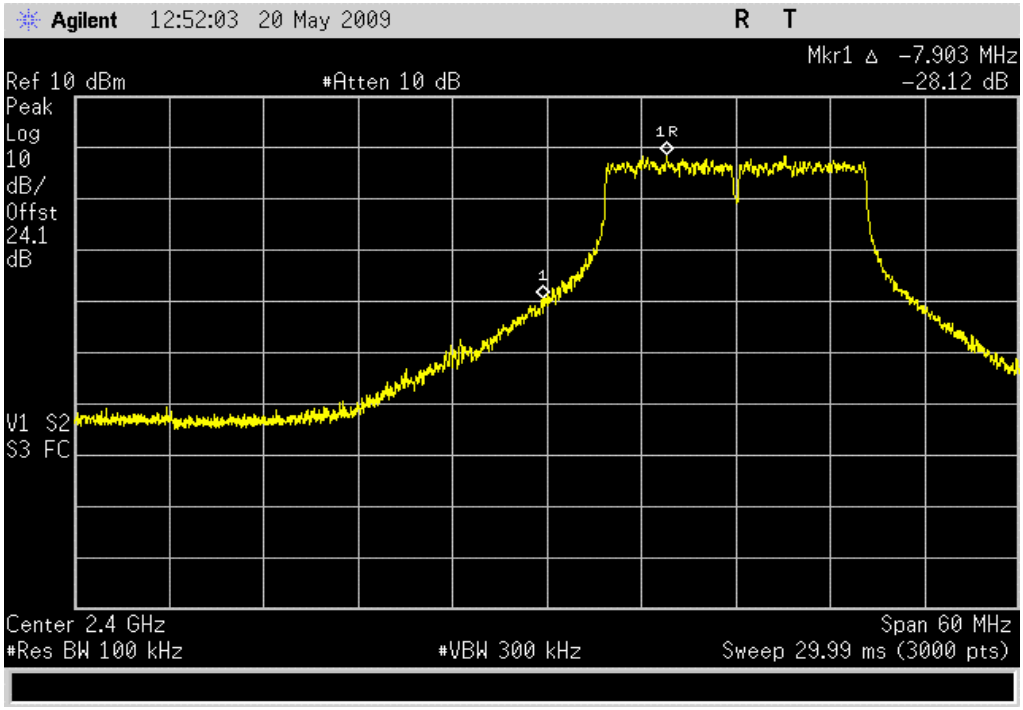


802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	-44.7 dBc	**Limit:**	≤ -20 dBc

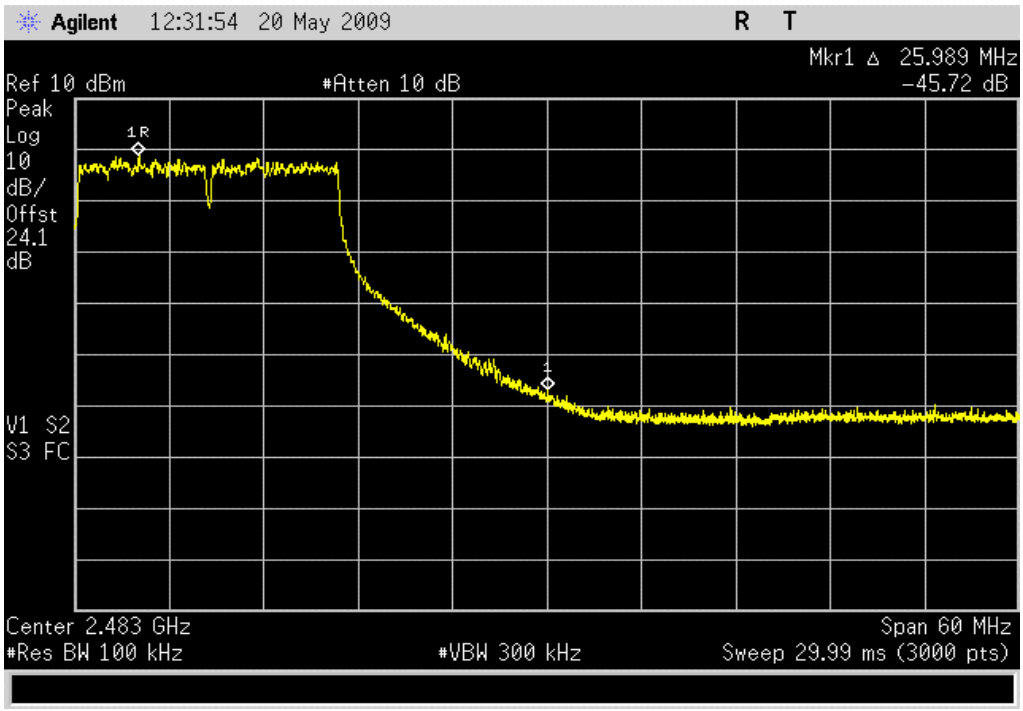


BAND EDGE COMPLIANCE

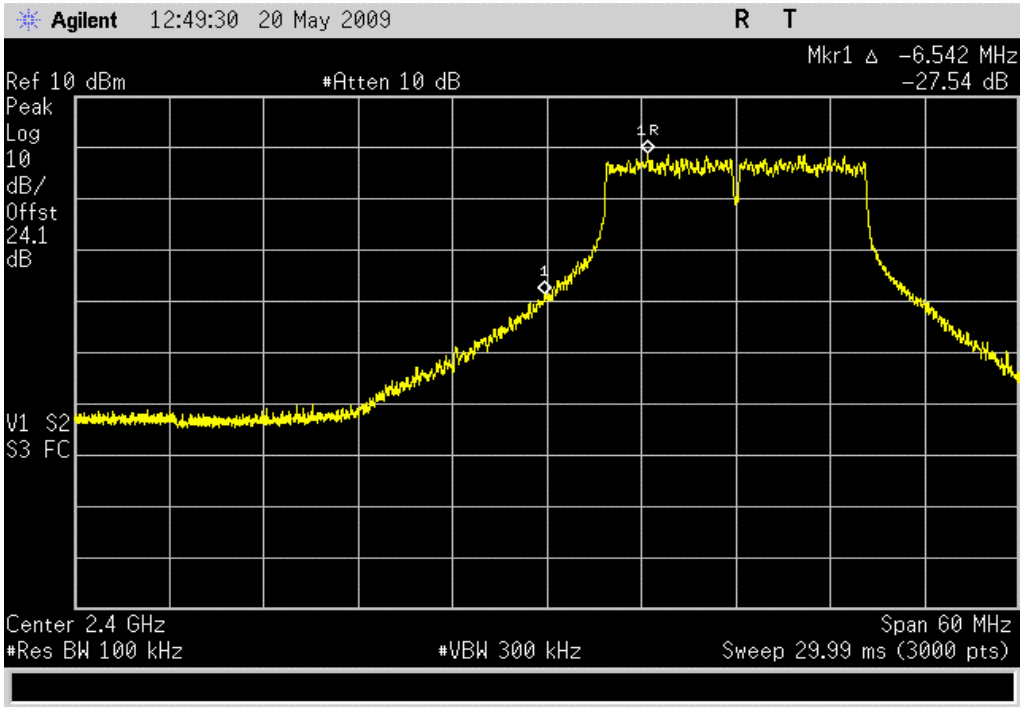
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	-28.1 dBc	**Limit:**	≤ -20 dBc



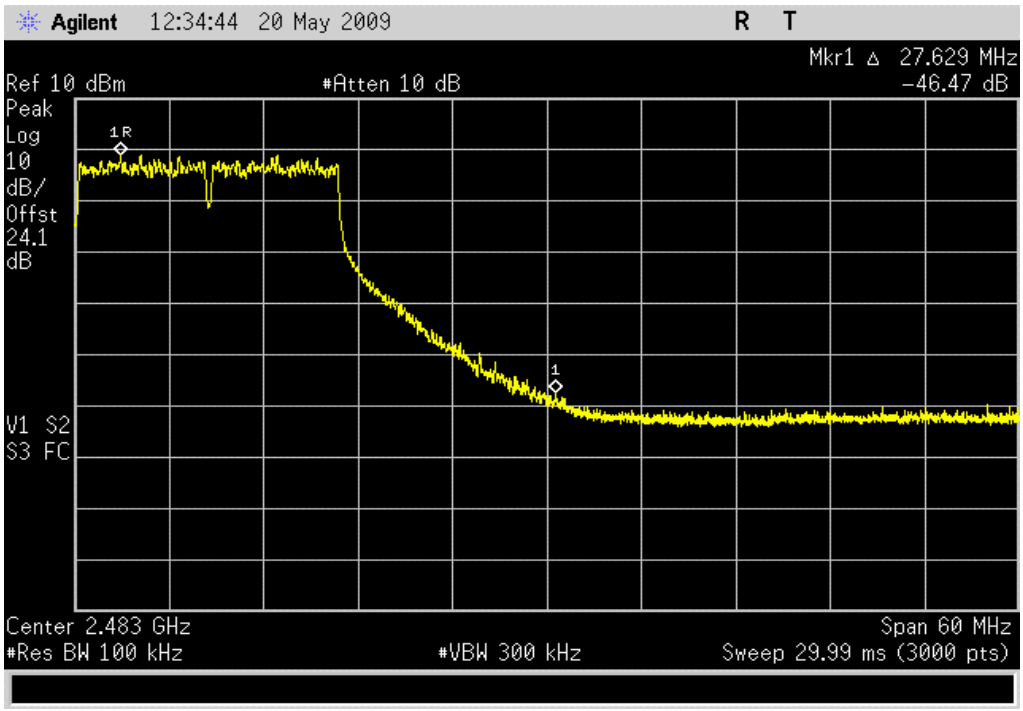
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	-45.7 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	-27.5 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	-46.5 dBc	**Limit:**	≤ -20 dBc

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SPURIOUS CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2008.12.29

EUT:	1402			**Work Order:**	MCSO1416
Serial Number:	00837702377			**Date:**	05/21/09
Customer:	Microsoft Corporation			**Temperature:**	22°C
Attendees:	Ted Eckert			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.15
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Analyzer offset by 2 dB to compensate for adapter cable. Radio operated in continuous Transmit mode.

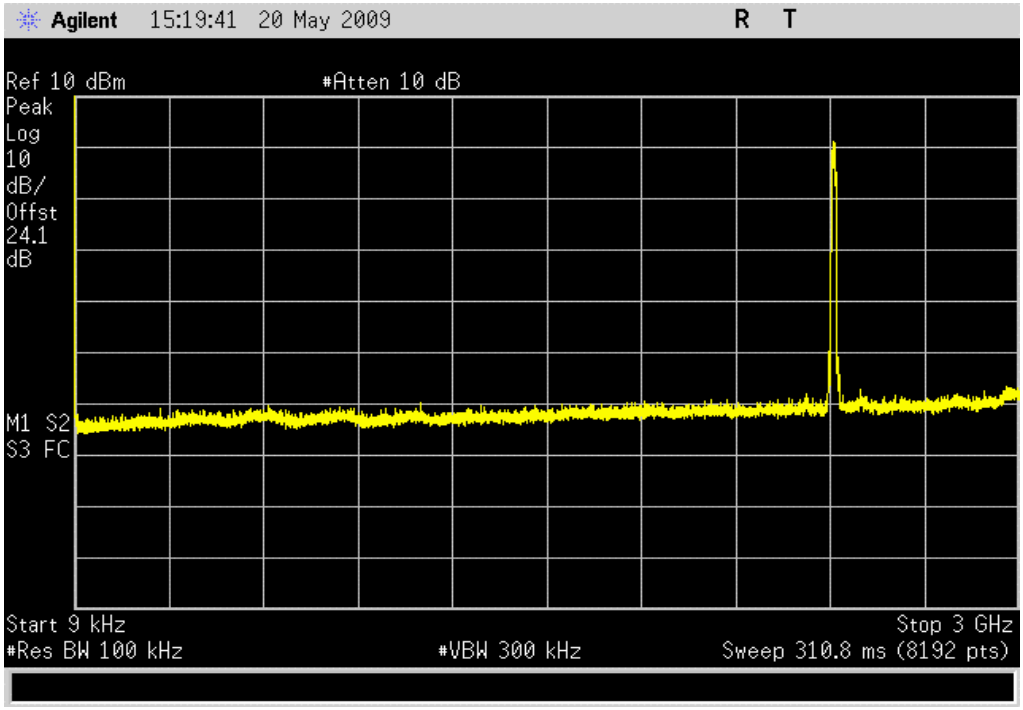
DEVIATIONS FROM TEST STANDARD

No Deviations

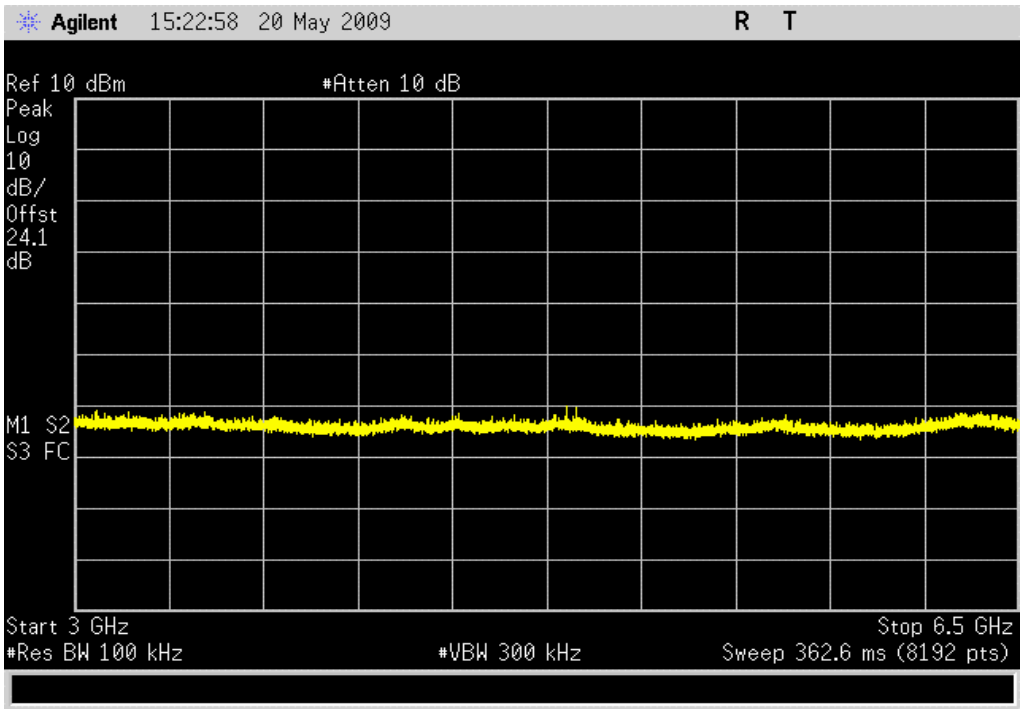
Configuration #	**1**	*Signature*

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	<-40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	<-40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass

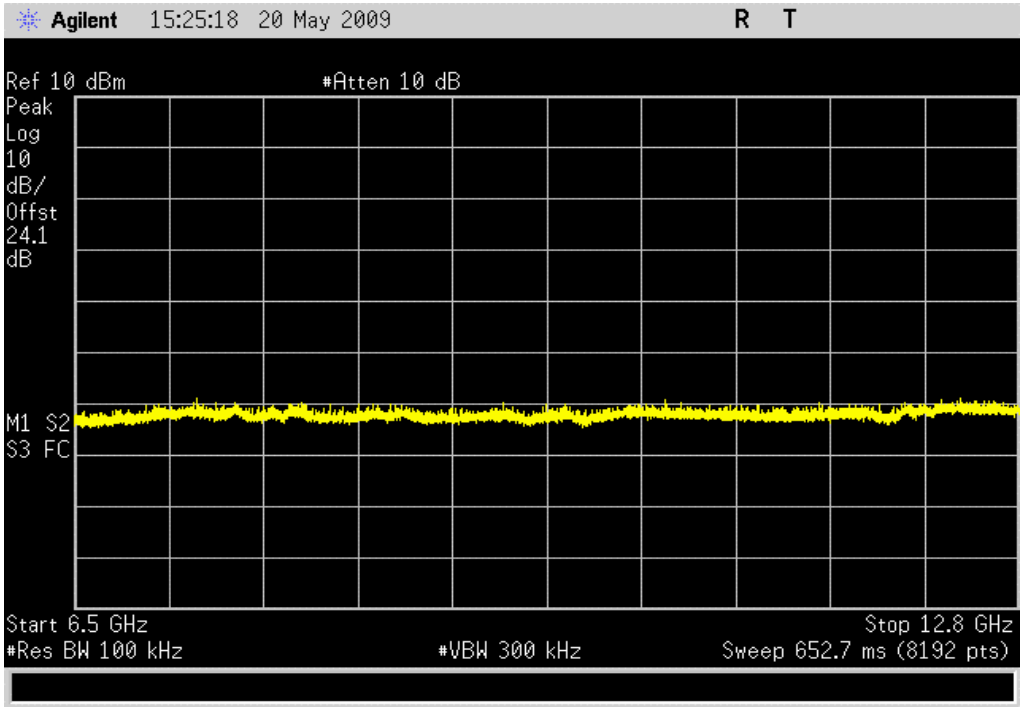
802.11(b) 1 Mbps, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



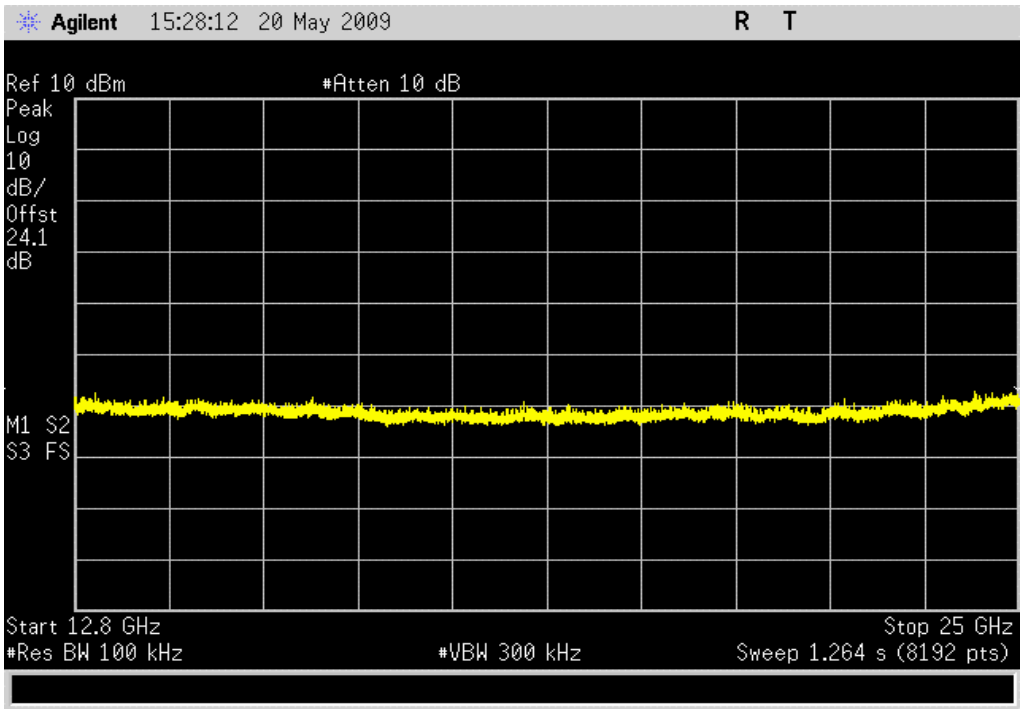
802.11(b) 1 Mbps, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



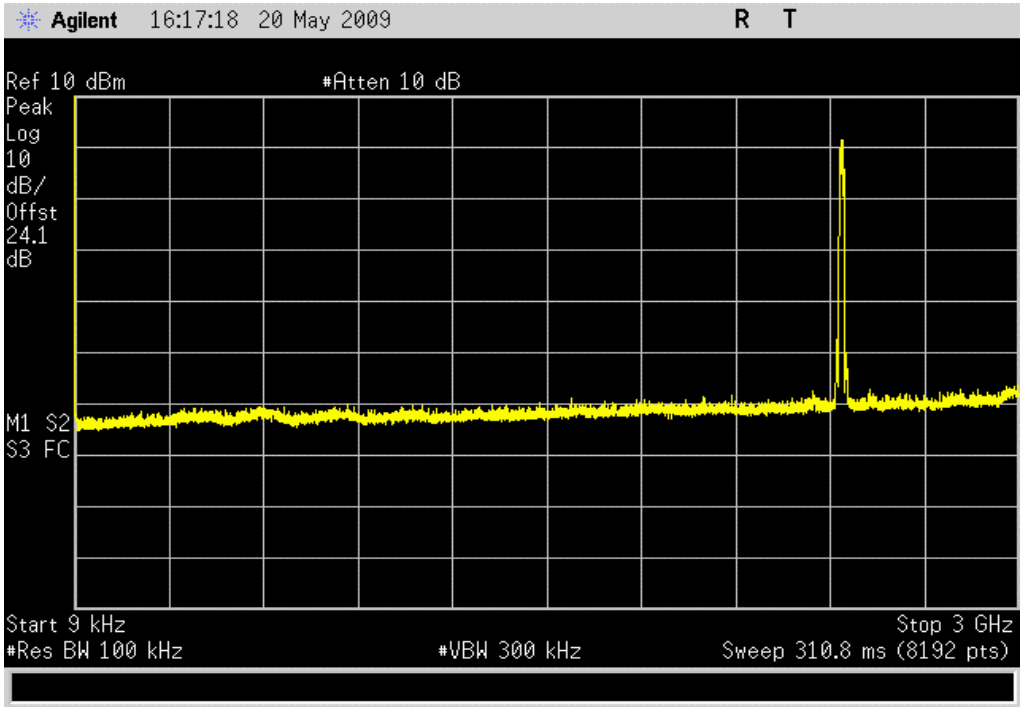
802.11(b) 1 Mbps, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



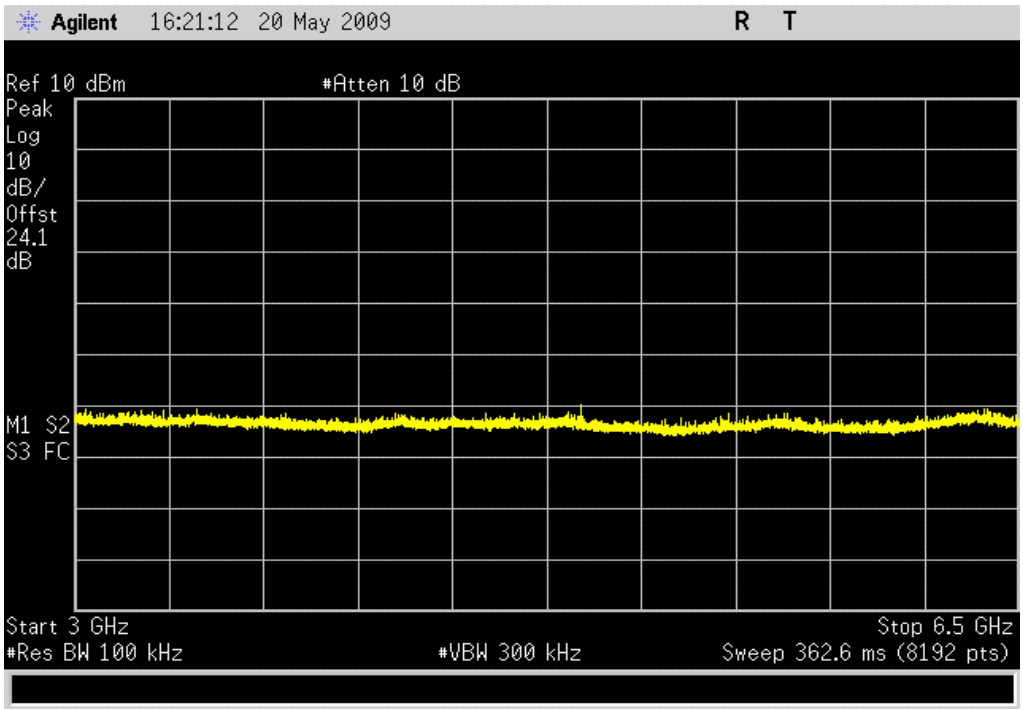
802.11(b) 1 Mbps, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



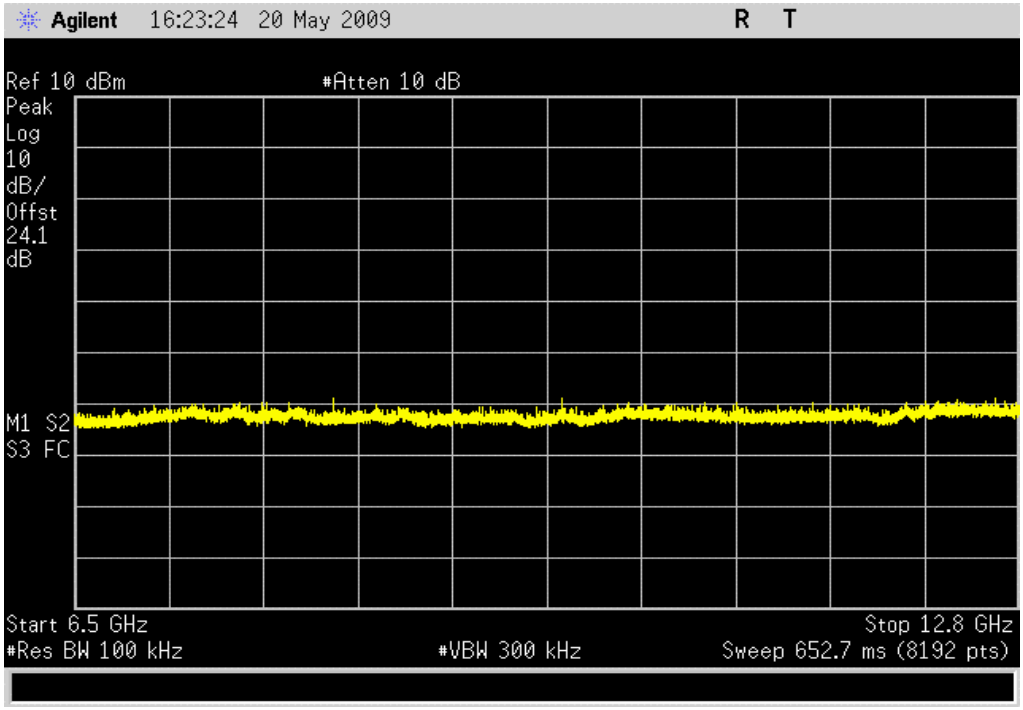
802.11(b) 1 Mbps, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



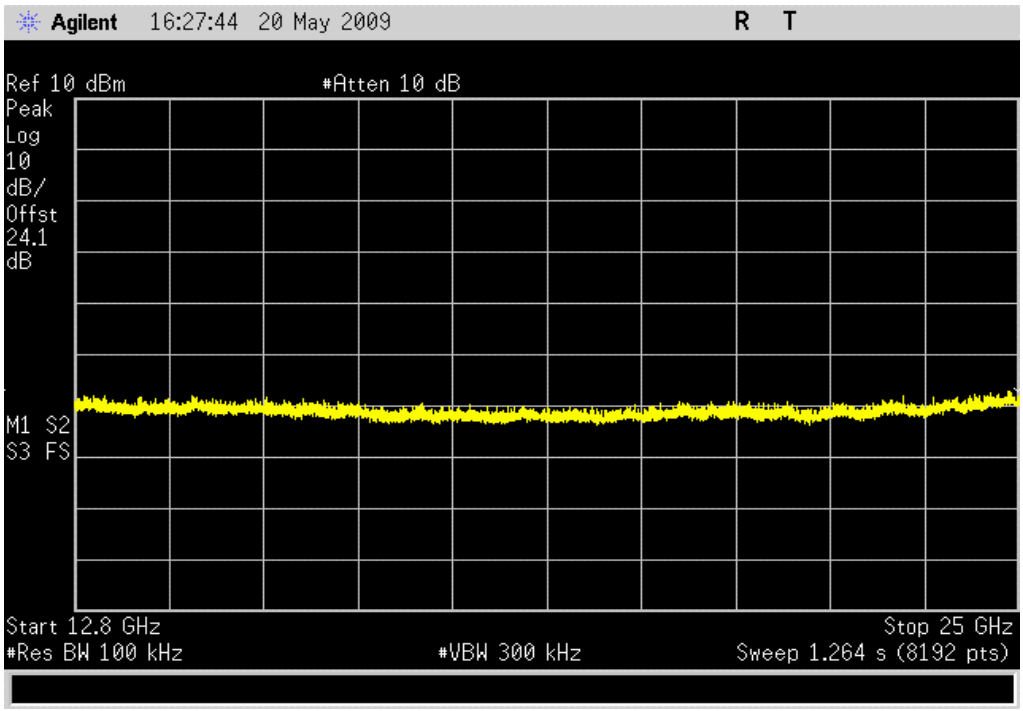
802.11(b) 1 Mbps, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



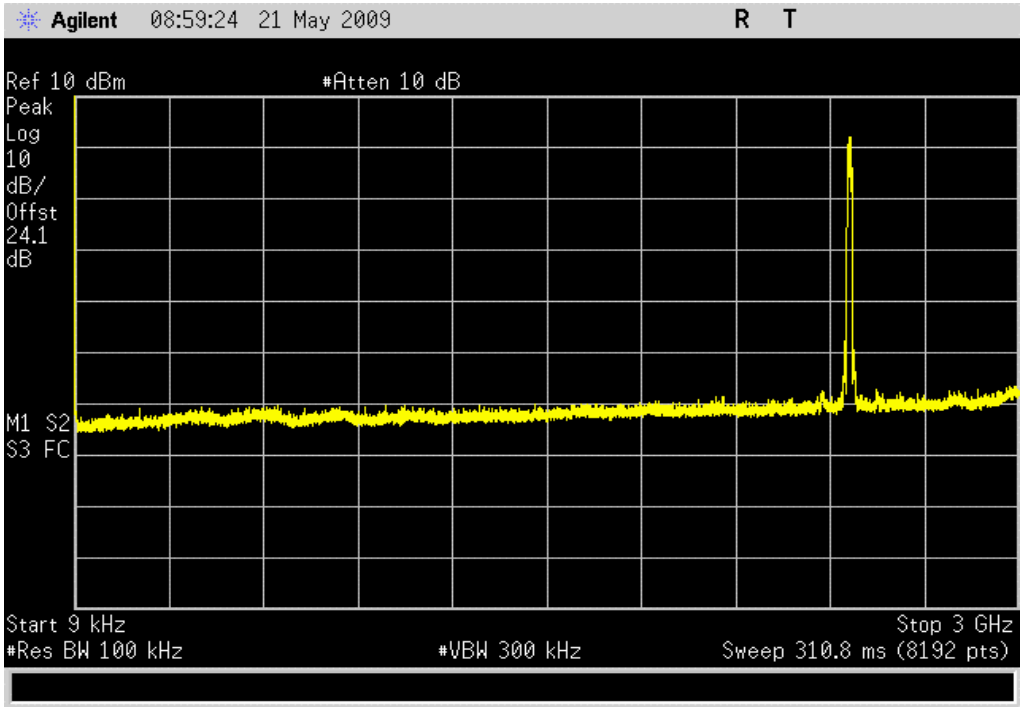
802.11(b) 1 Mbps, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	<-40 dBc	**Limit:**	≤ -20 dBc



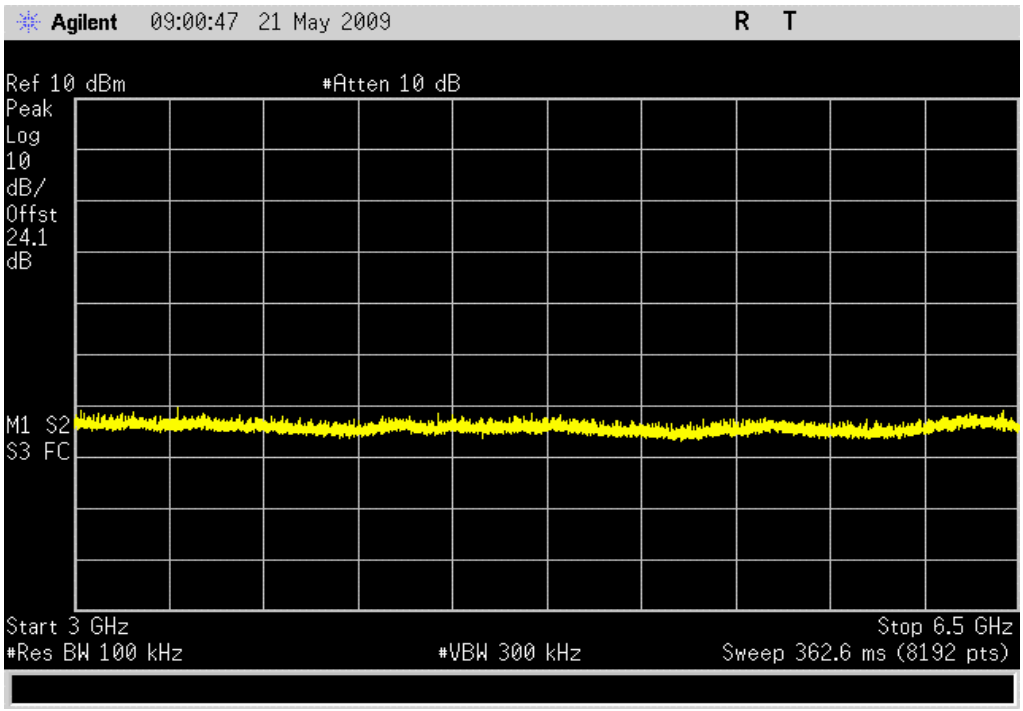
802.11(b) 1 Mbps, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



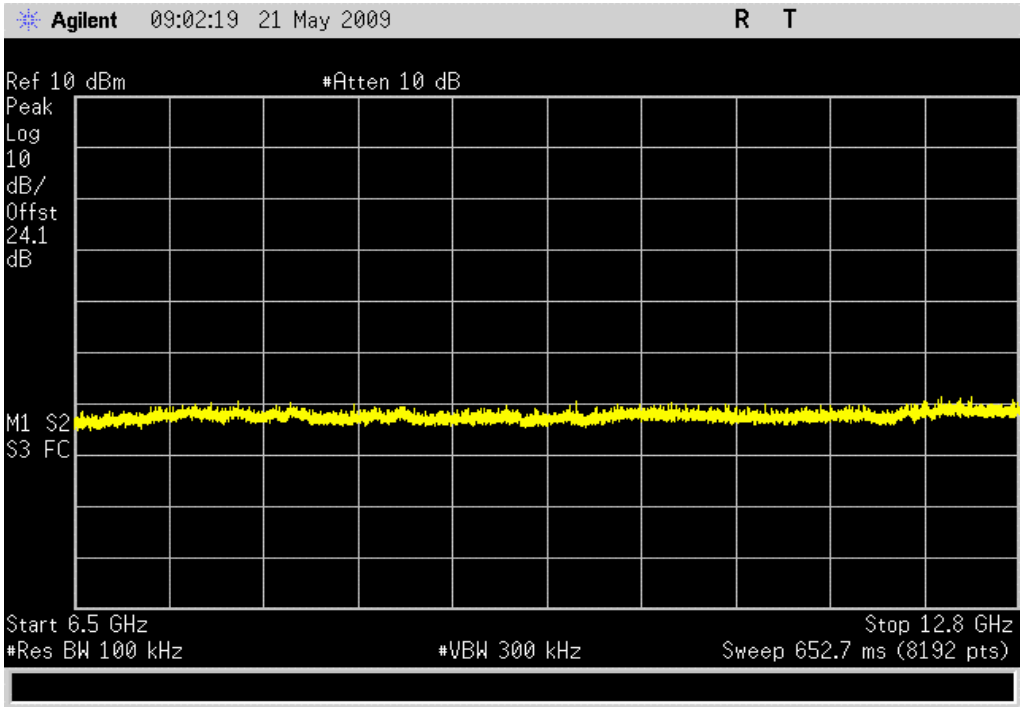
802.11(b) 1 Mbps, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	<-40 dBc	**Limit:**	≤ -20 dBc



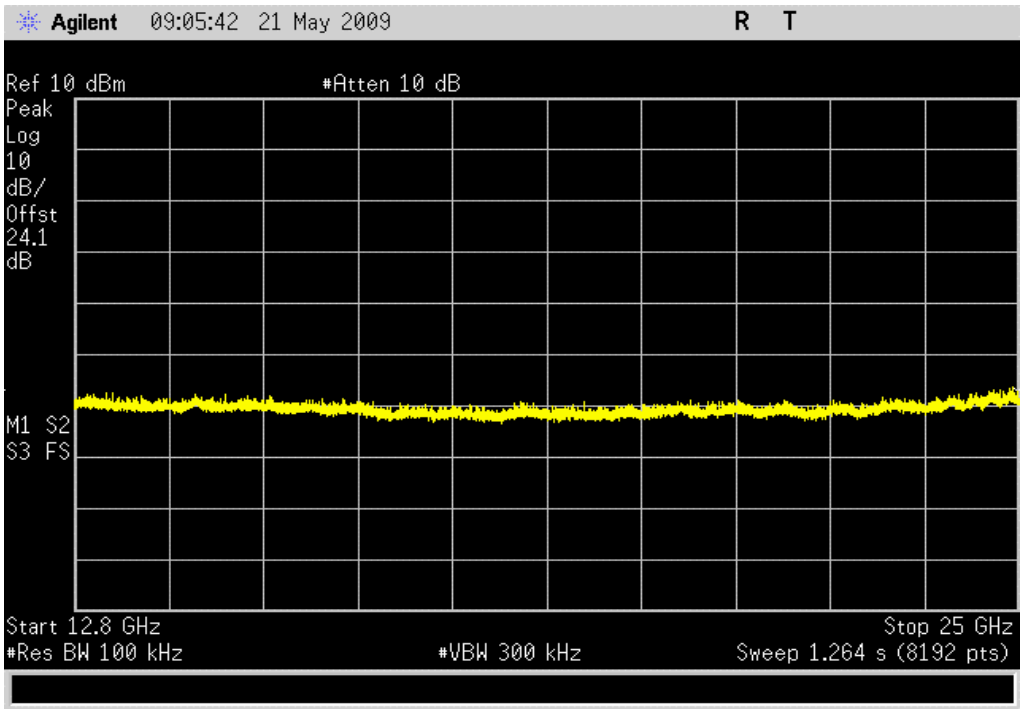
802.11(b) 1 Mbps, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



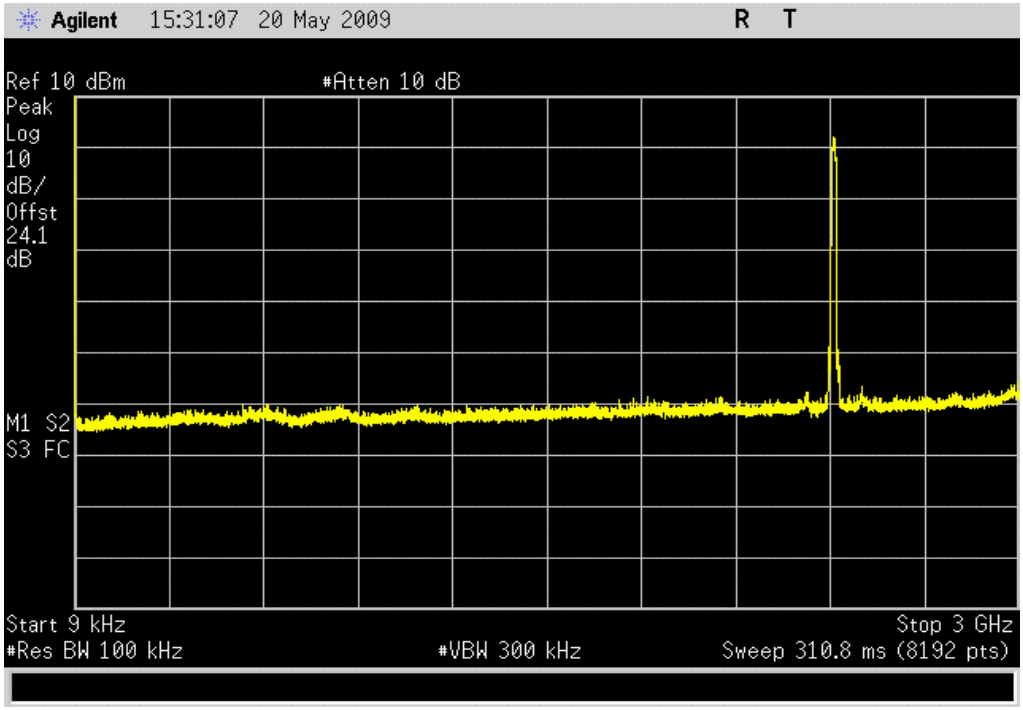
802.11(b) 1 Mbps, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



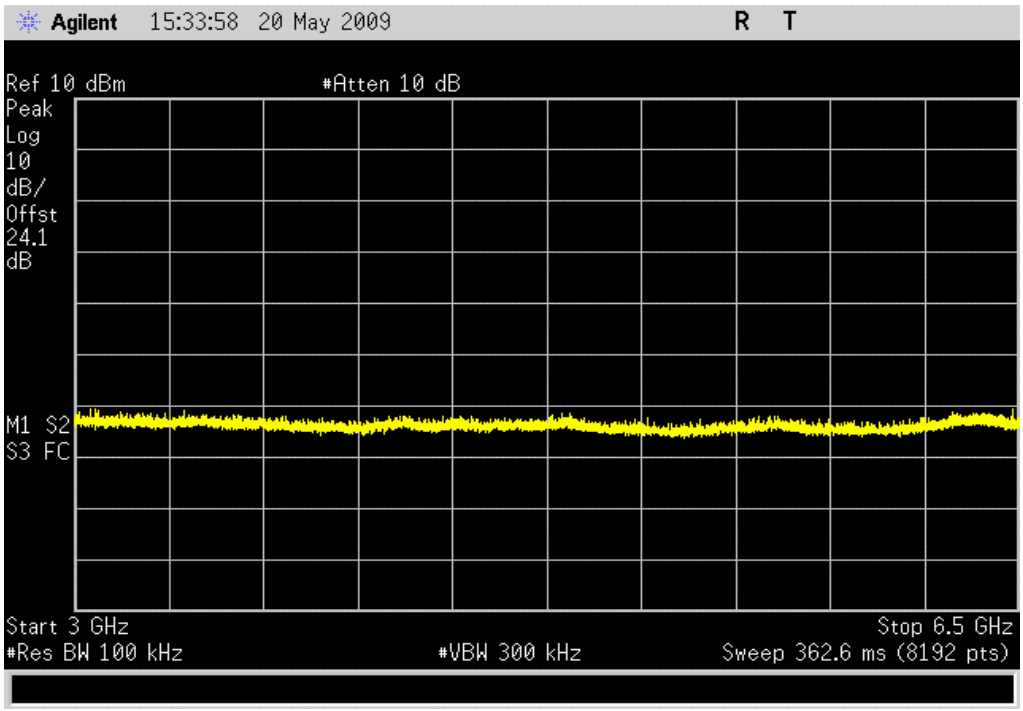
802.11(b) 1 Mbps, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



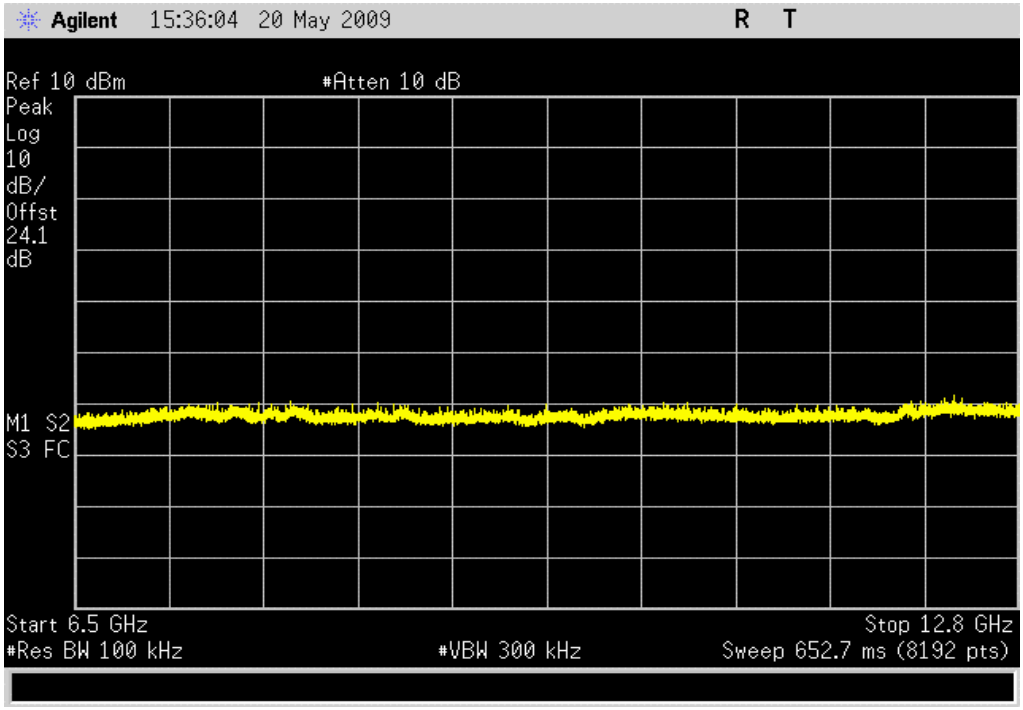
802.11(b) 11 Mbps, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



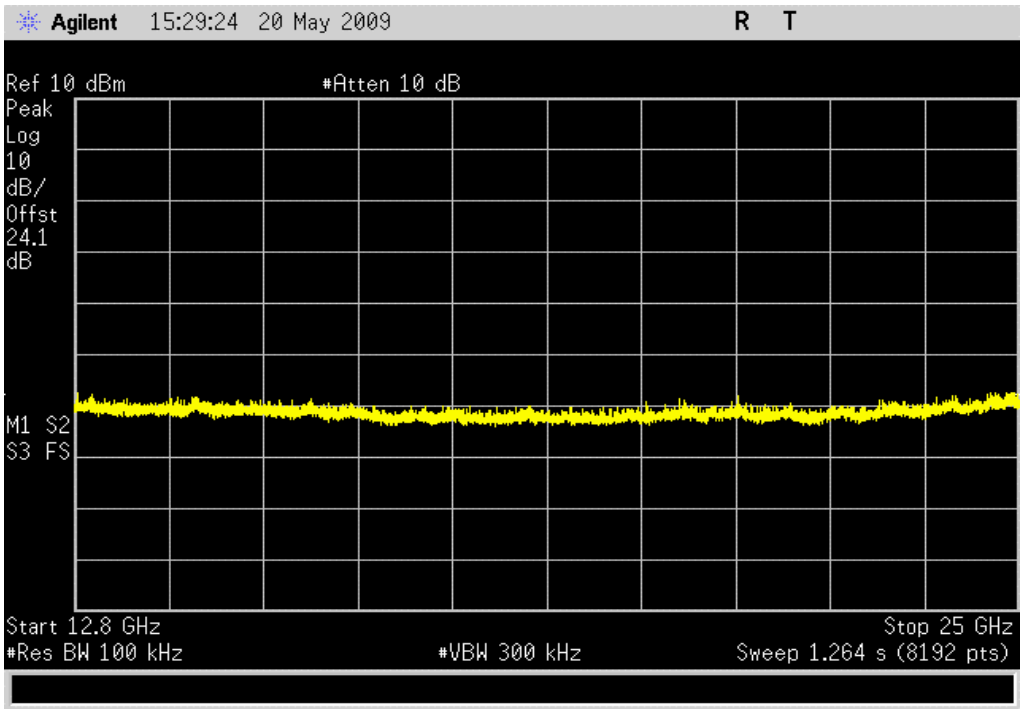
802.11(b) 11 Mbps, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



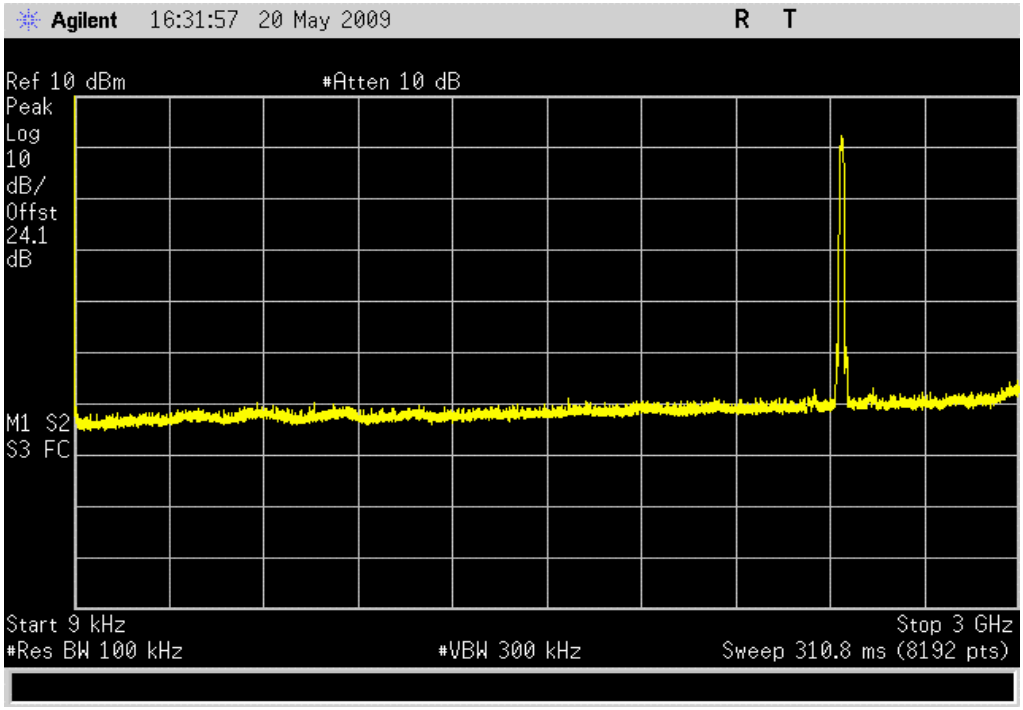
802.11(b) 11 Mbps, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



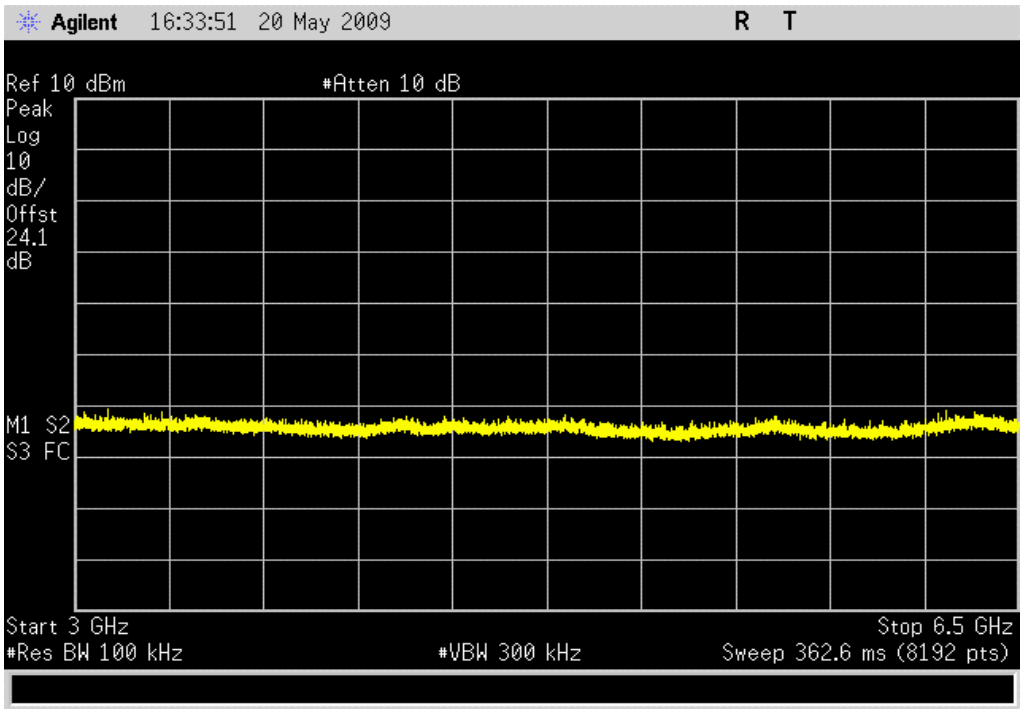
802.11(b) 11 Mbps, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



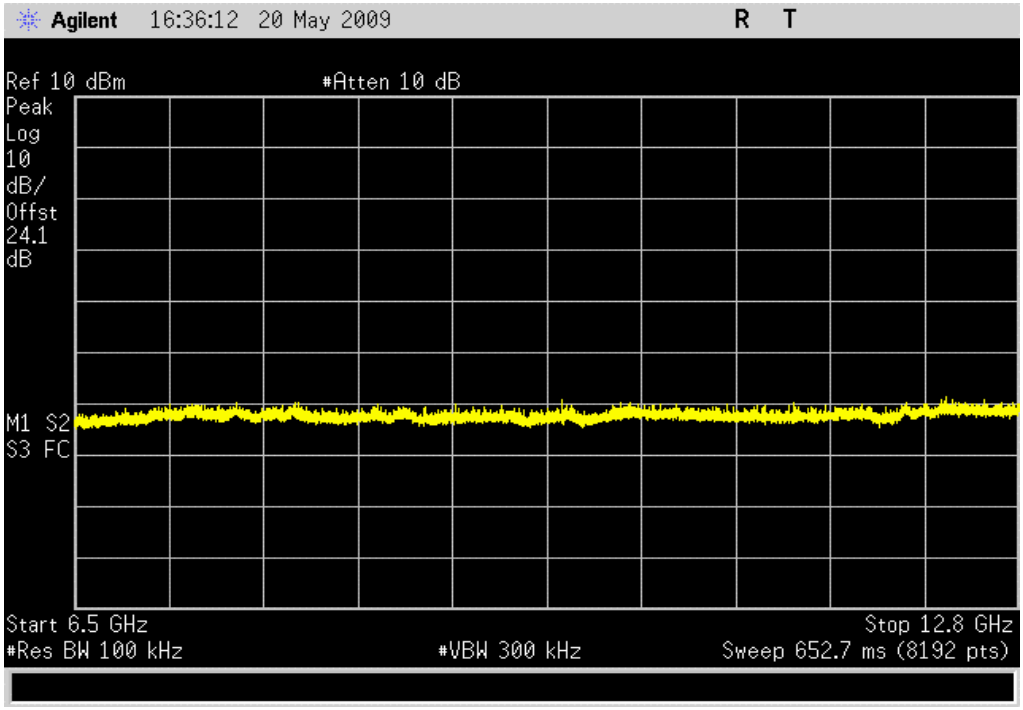
802.11(b) 11 Mbps, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



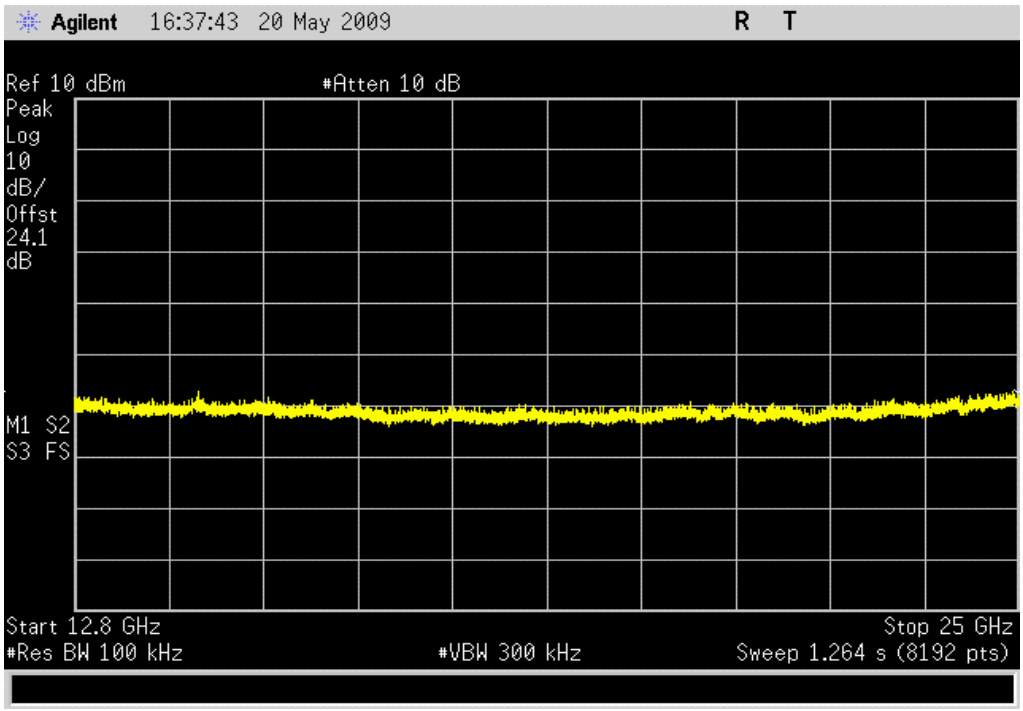
802.11(b) 11 Mbps, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



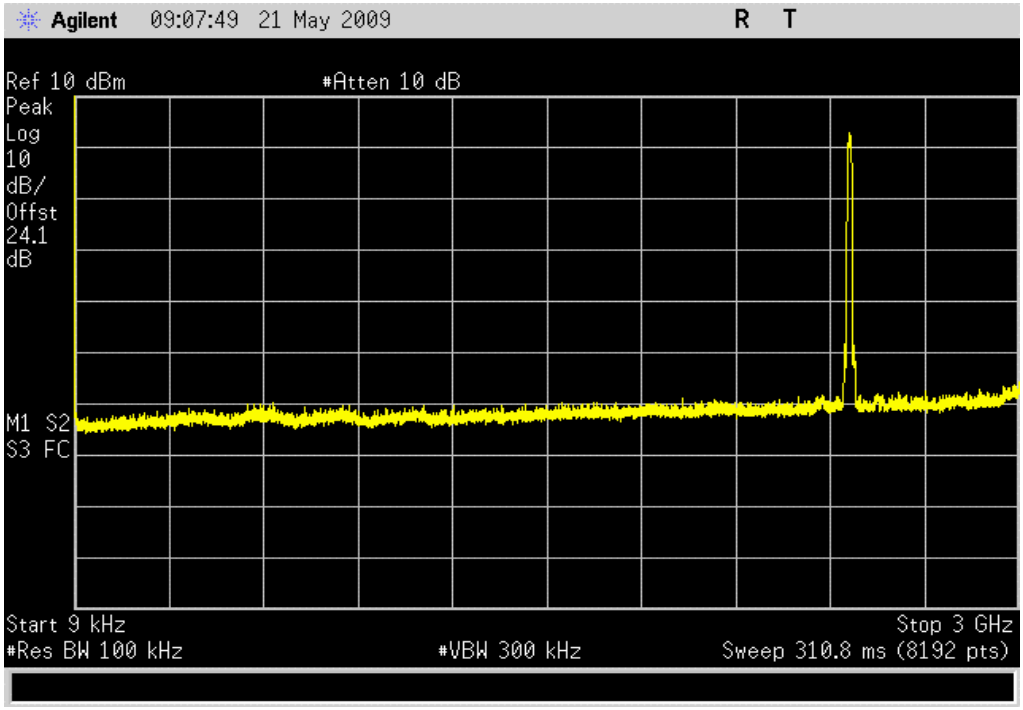
802.11(b) 11 Mbps, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



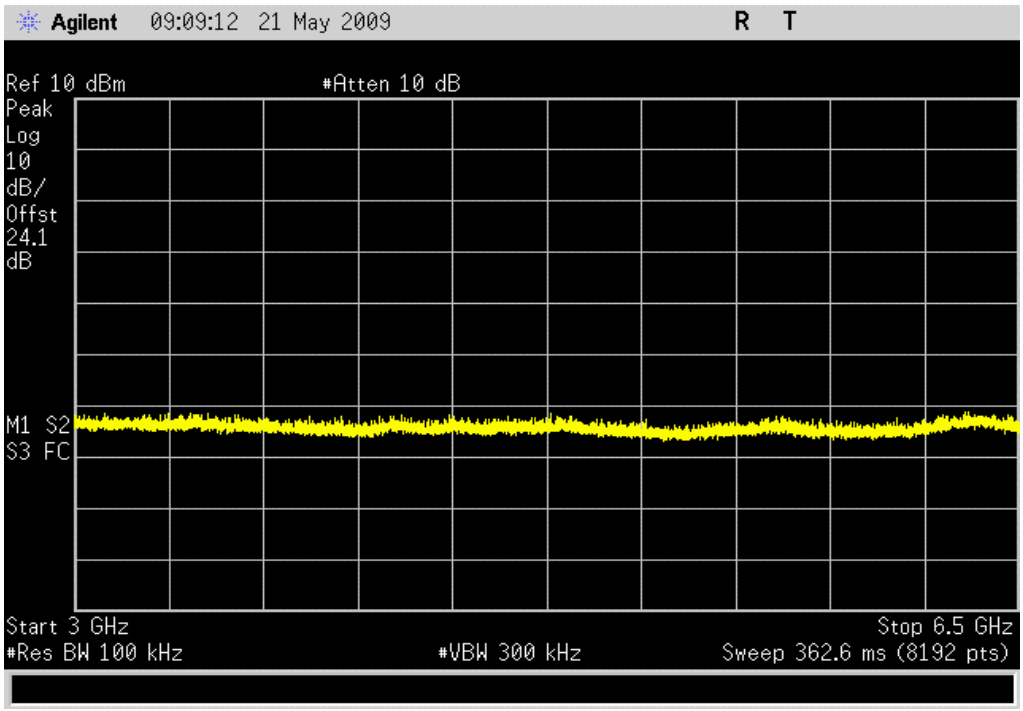
802.11(b) 11 Mbps, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



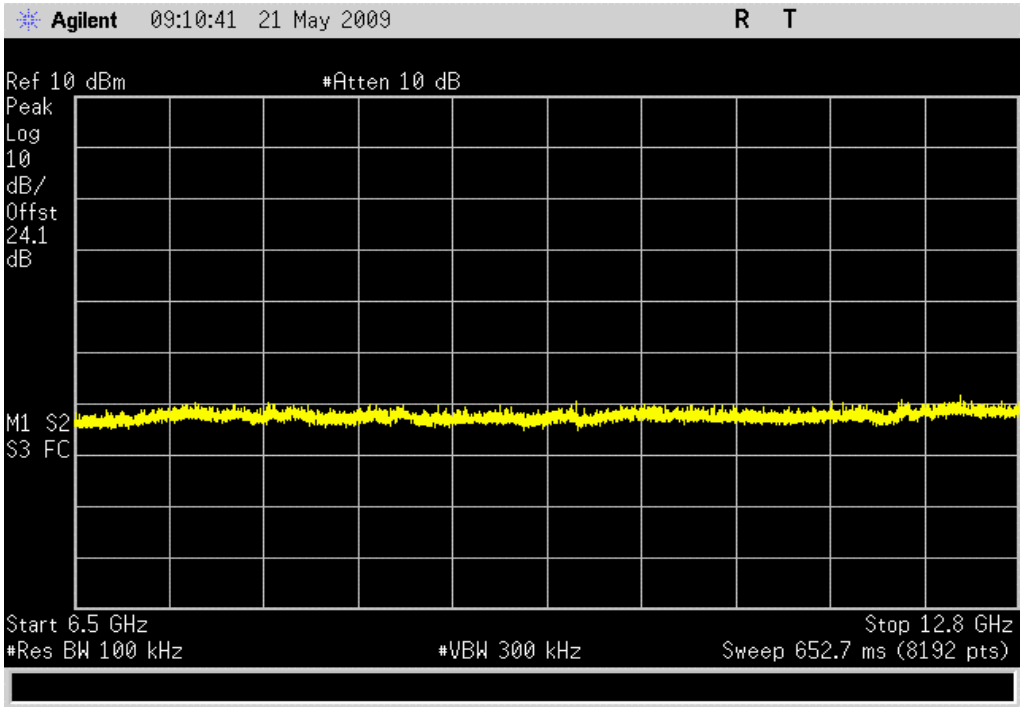
802.11(b) 11 Mbps, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



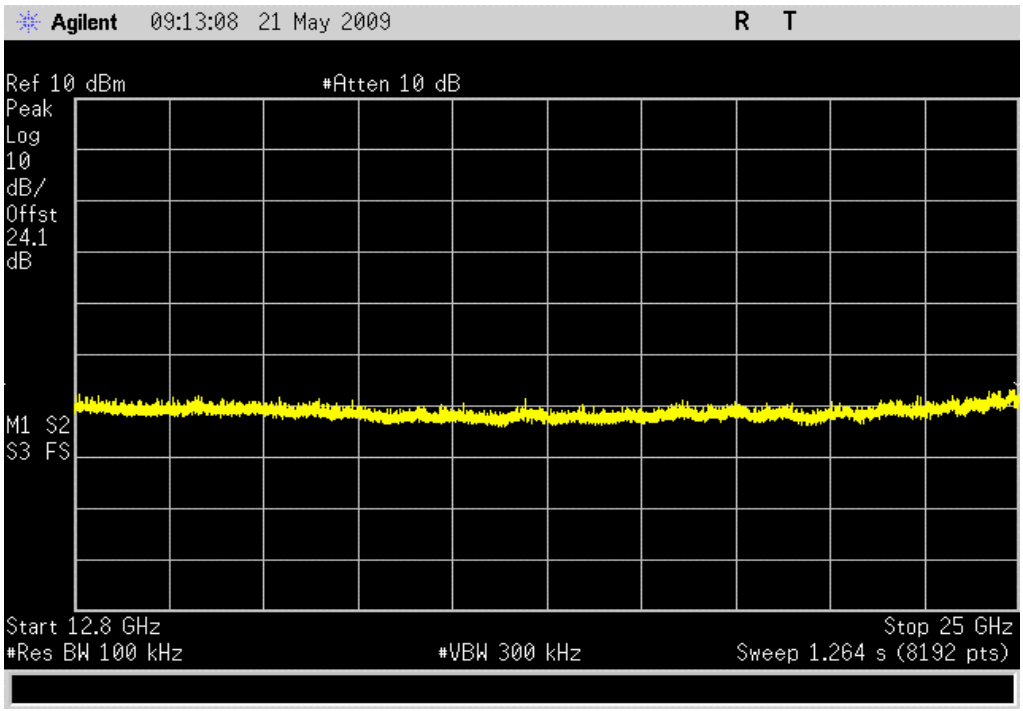
802.11(b) 11 Mbps, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



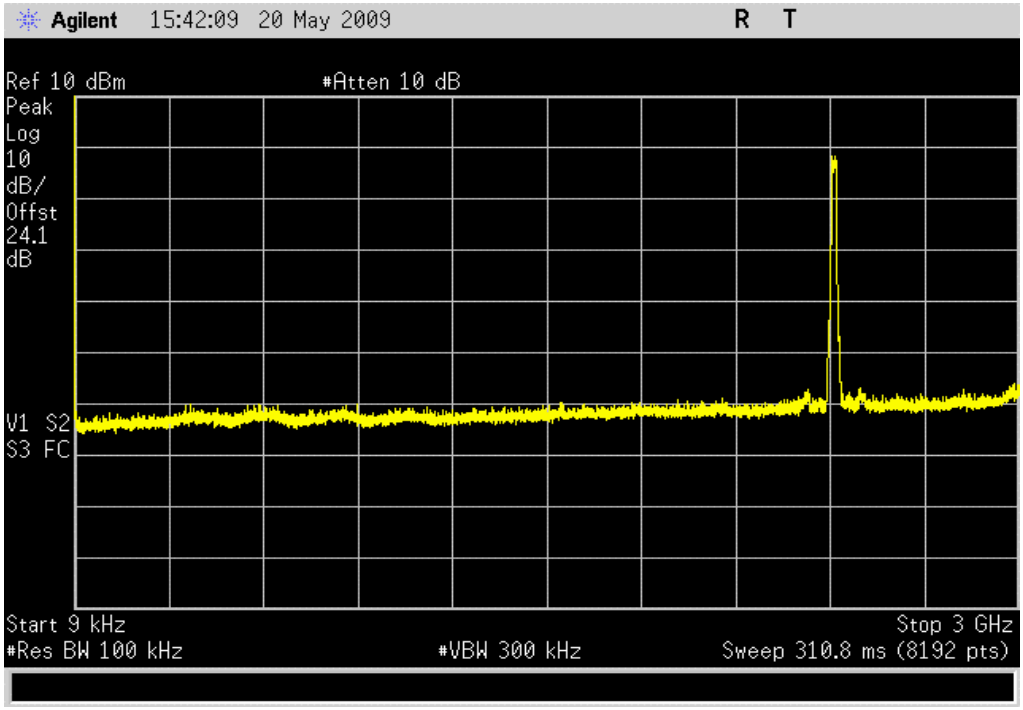
802.11(b) 11 Mbps, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



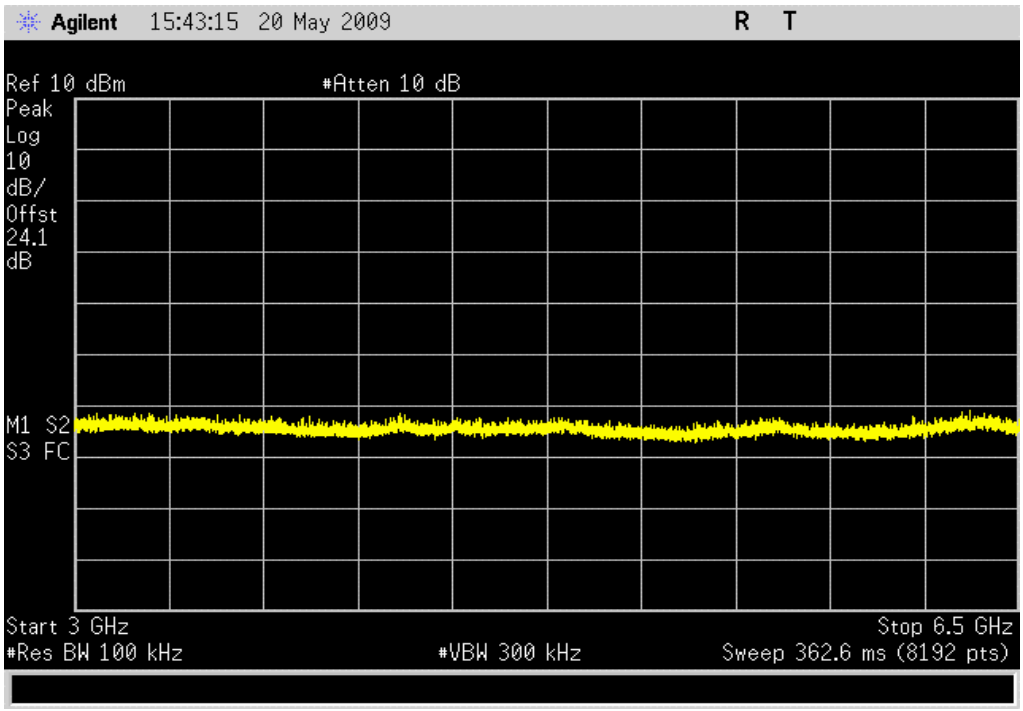
802.11(b) 11 Mbps, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



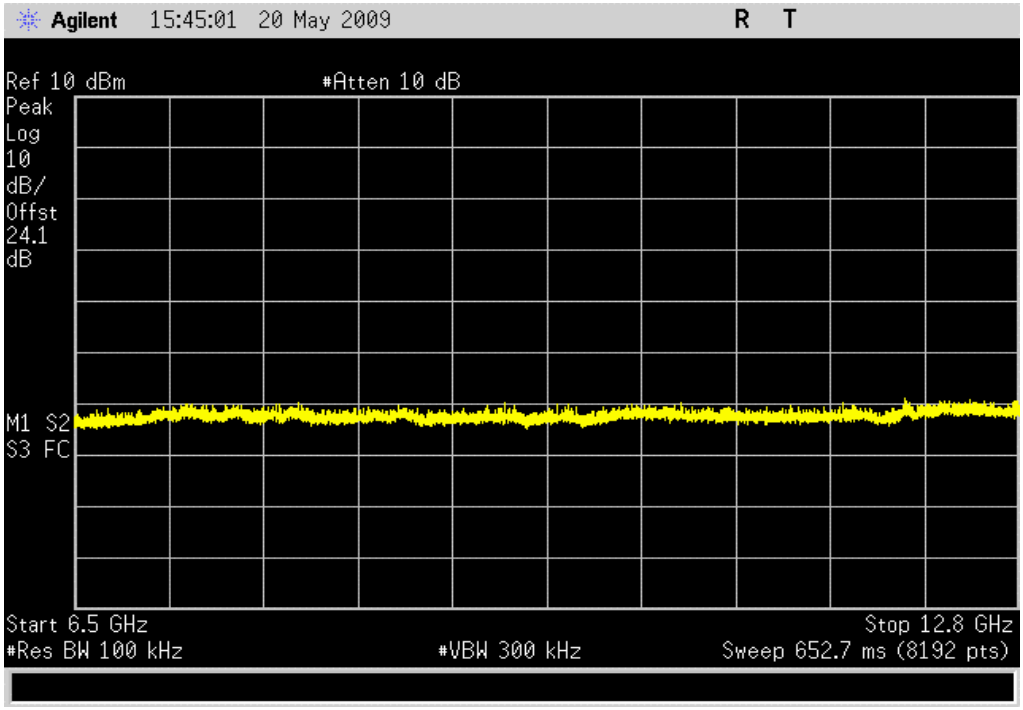
802.11(g) 6 Mbps, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



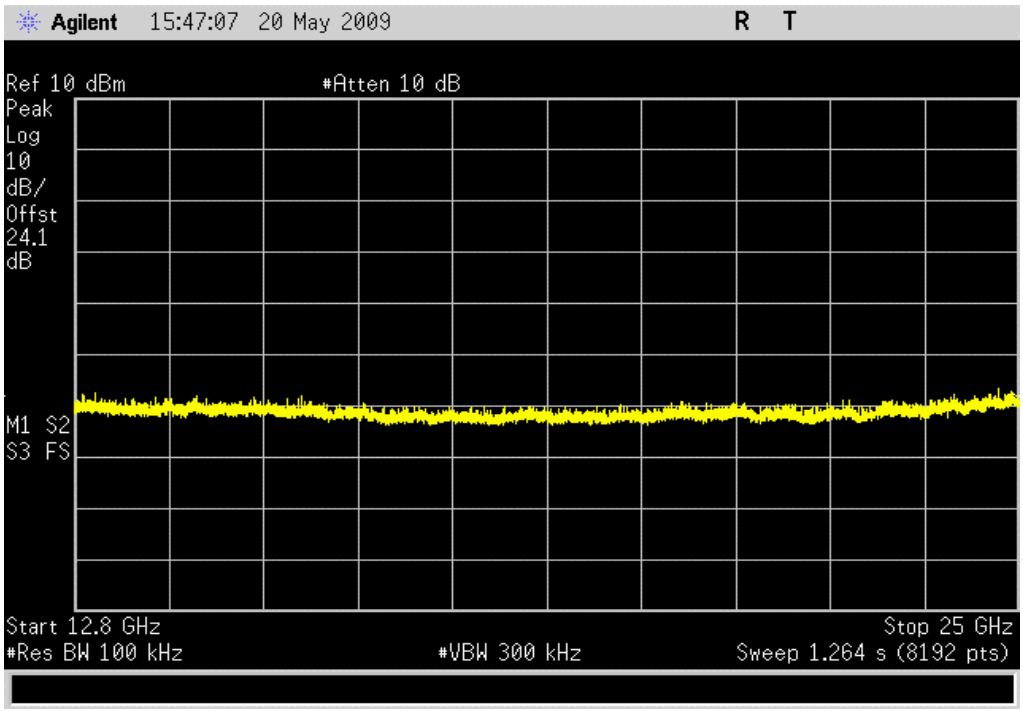
802.11(g) 6 Mbps, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



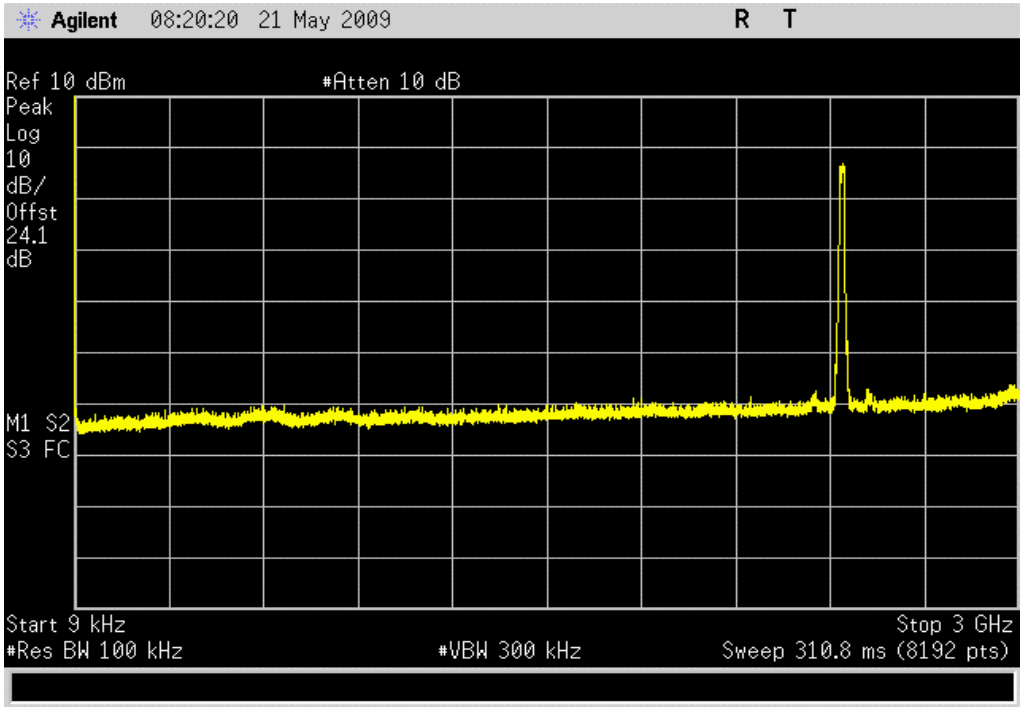
802.11(g) 6 Mbps, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



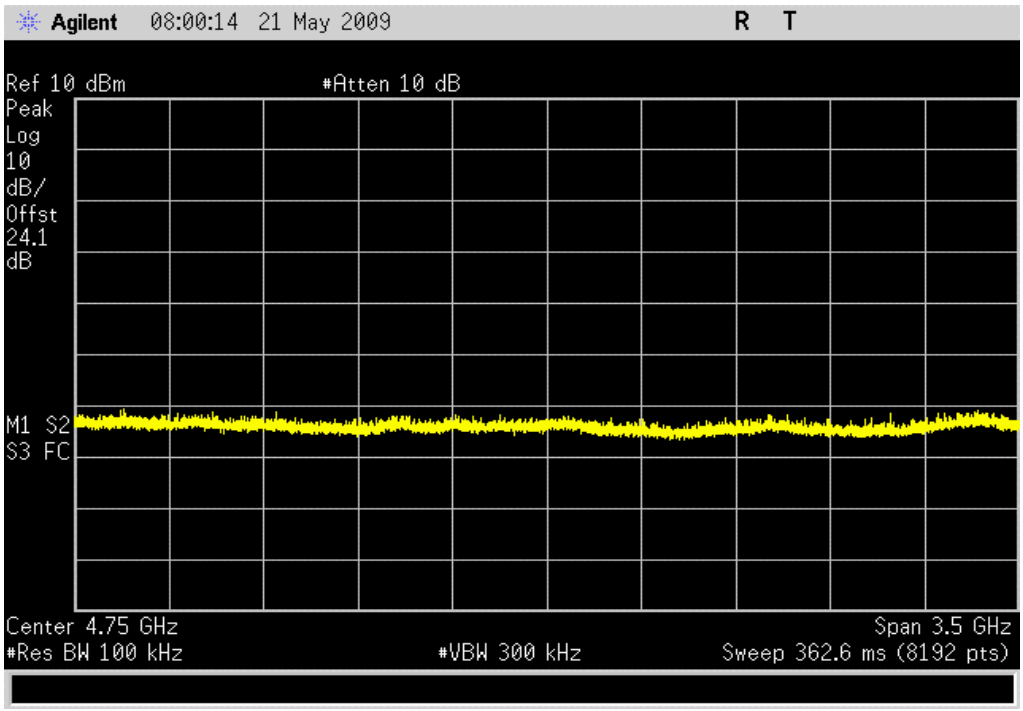
802.11(g) 6 Mbps, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



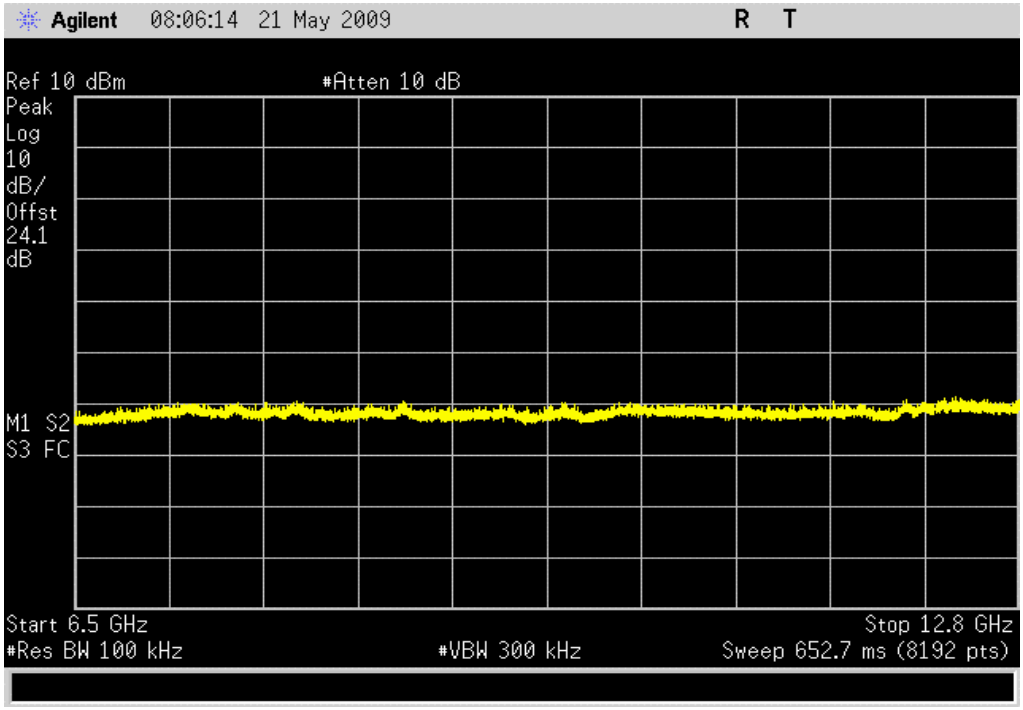
802.11(g) 6 Mbps, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



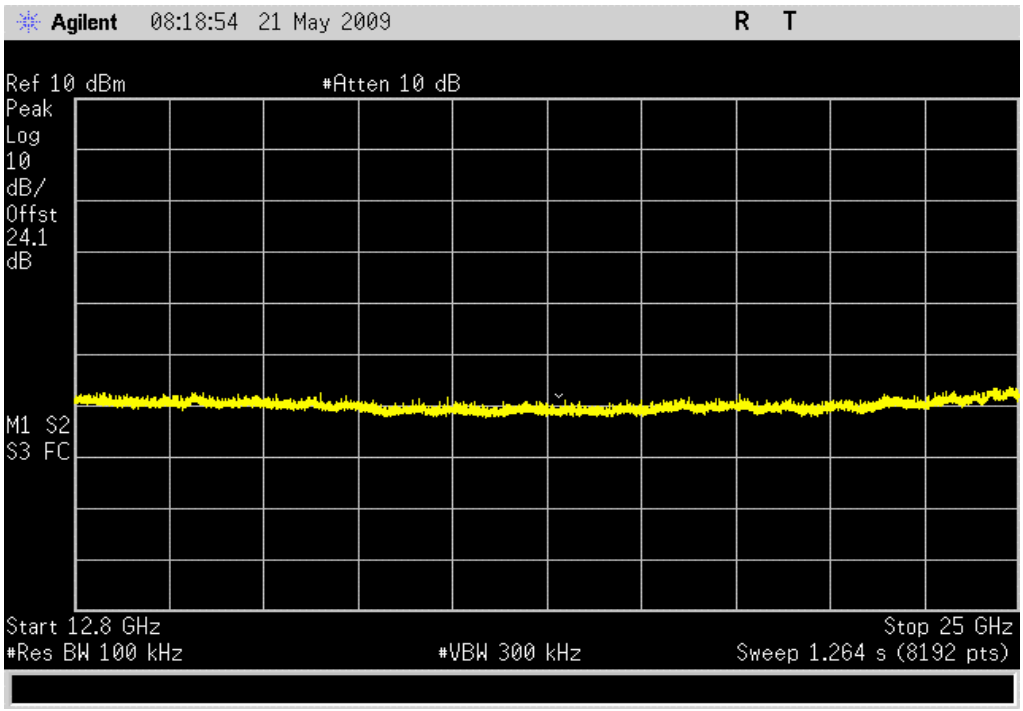
802.11(g) 6 Mbps, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



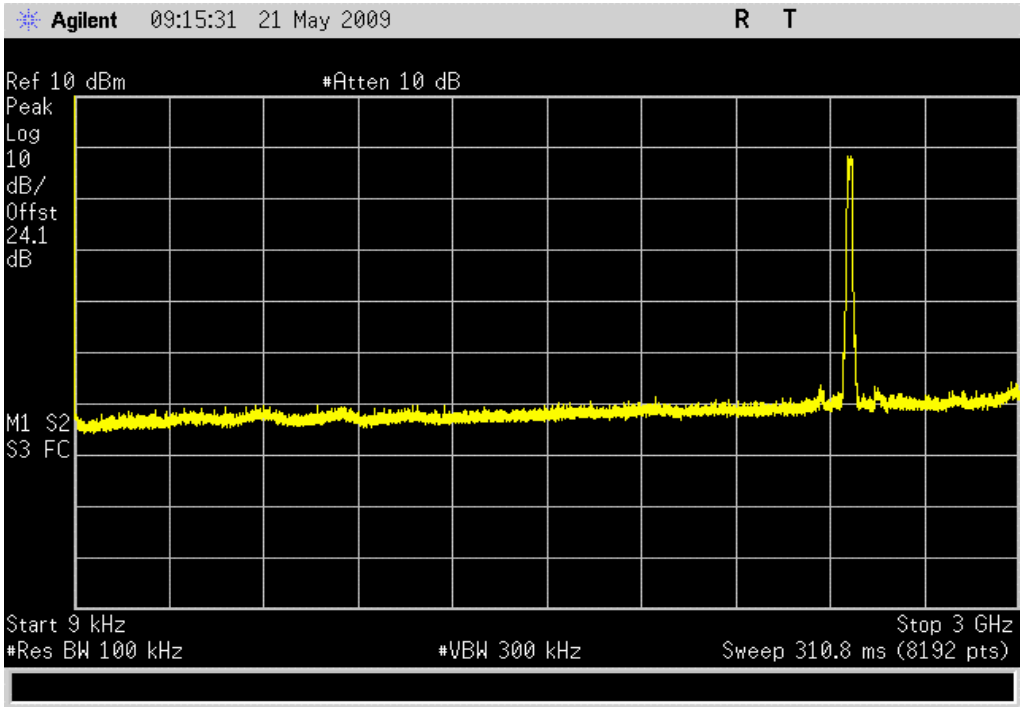
802.11(g) 6 Mbps, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



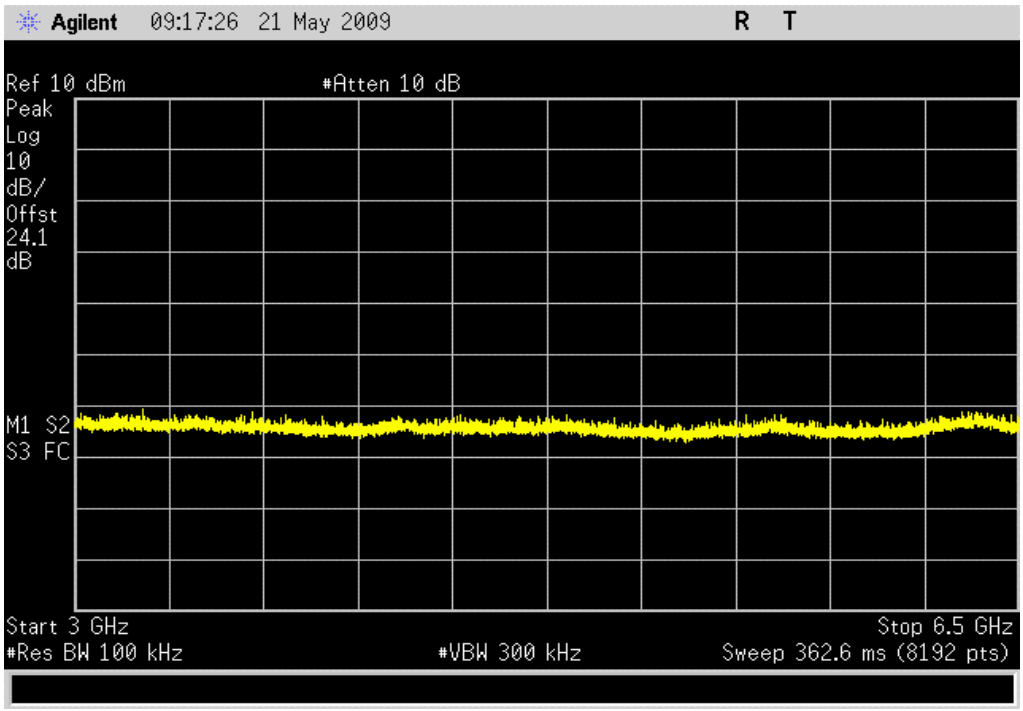
802.11(g) 6 Mbps, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



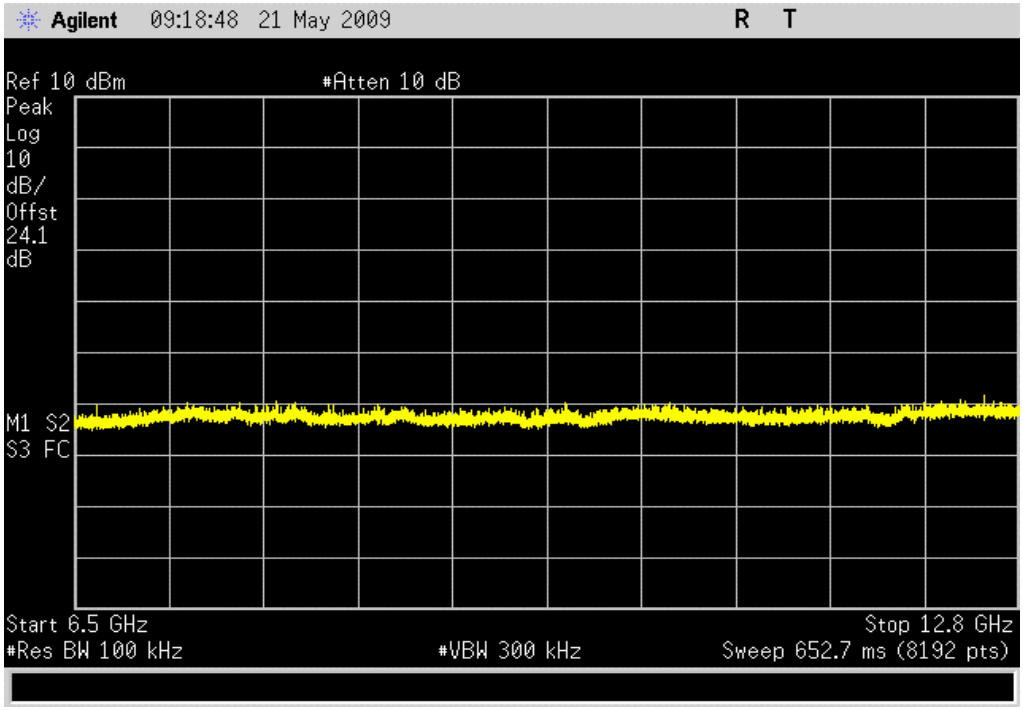
802.11(g) 6 Mbps, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



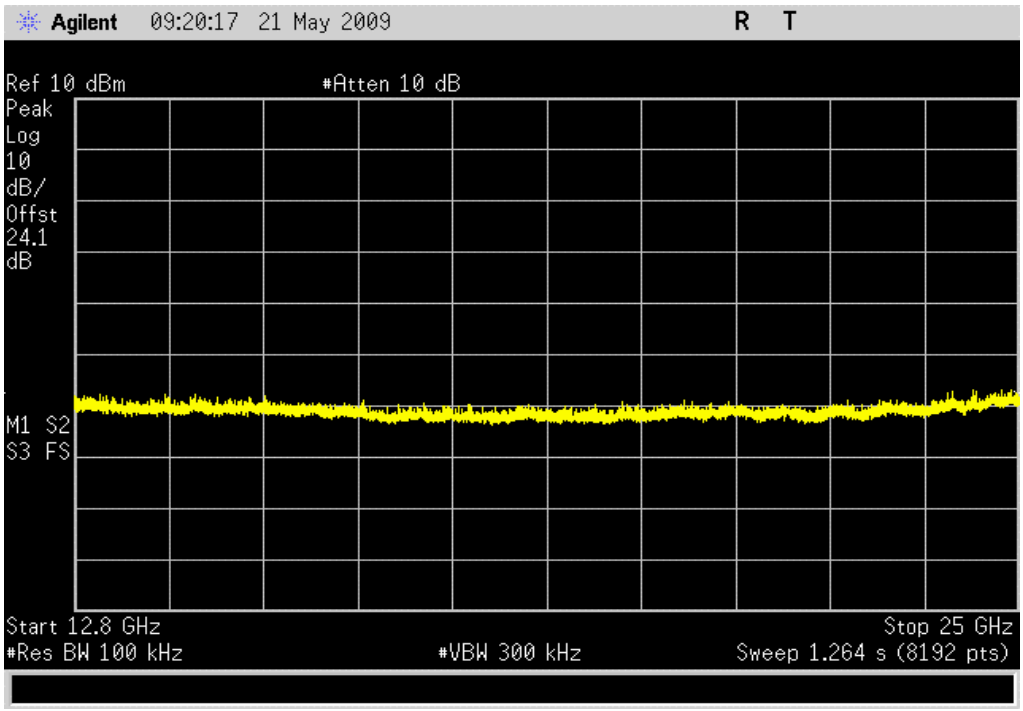
802.11(g) 6 Mbps, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



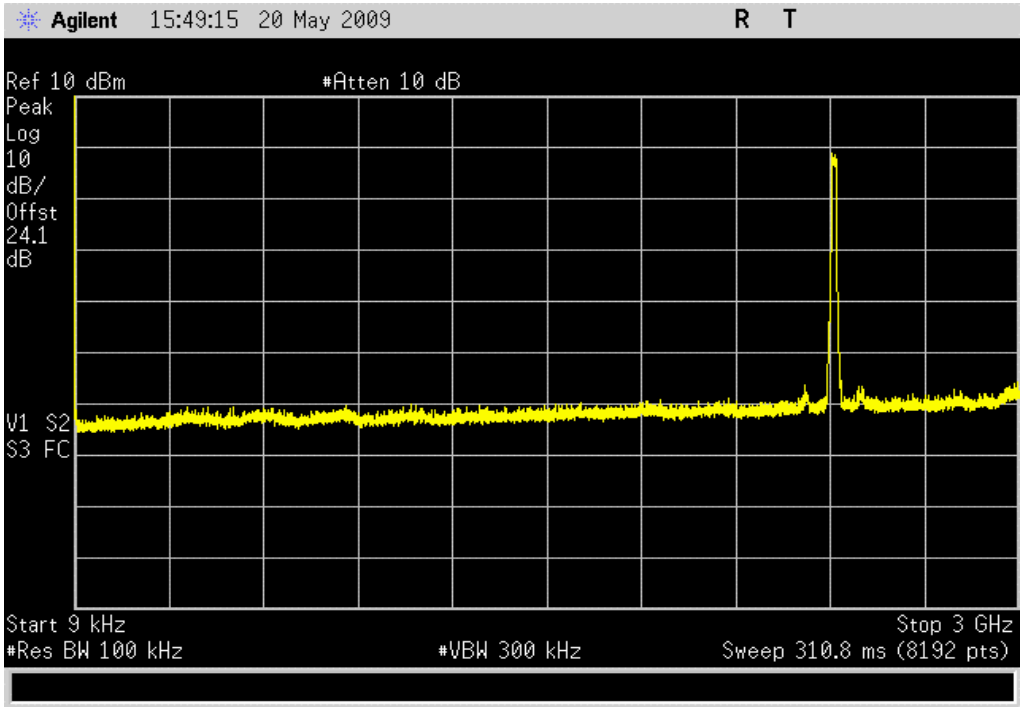
802.11(g) 6 Mbps, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



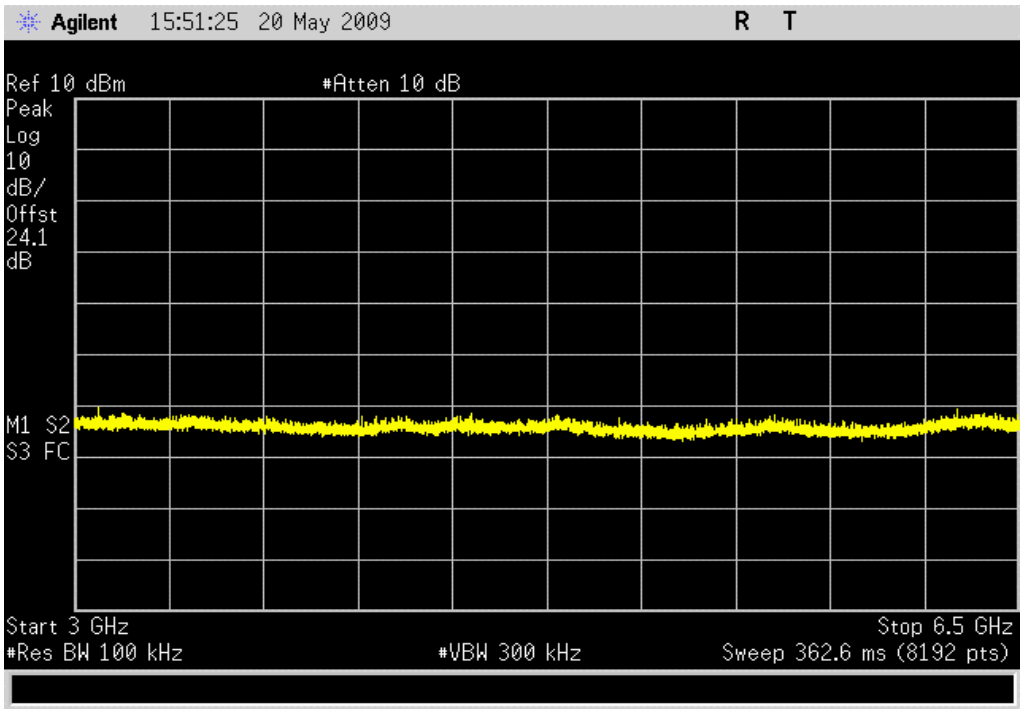
802.11(g) 6 Mbps, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



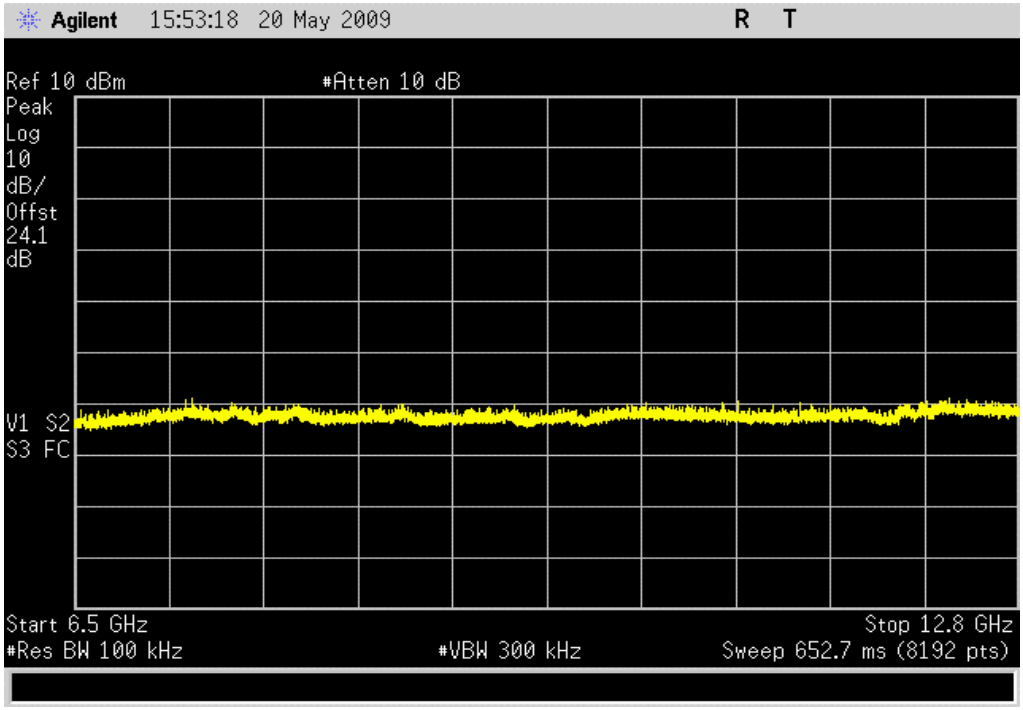
802.11(g) 36 Mbps, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



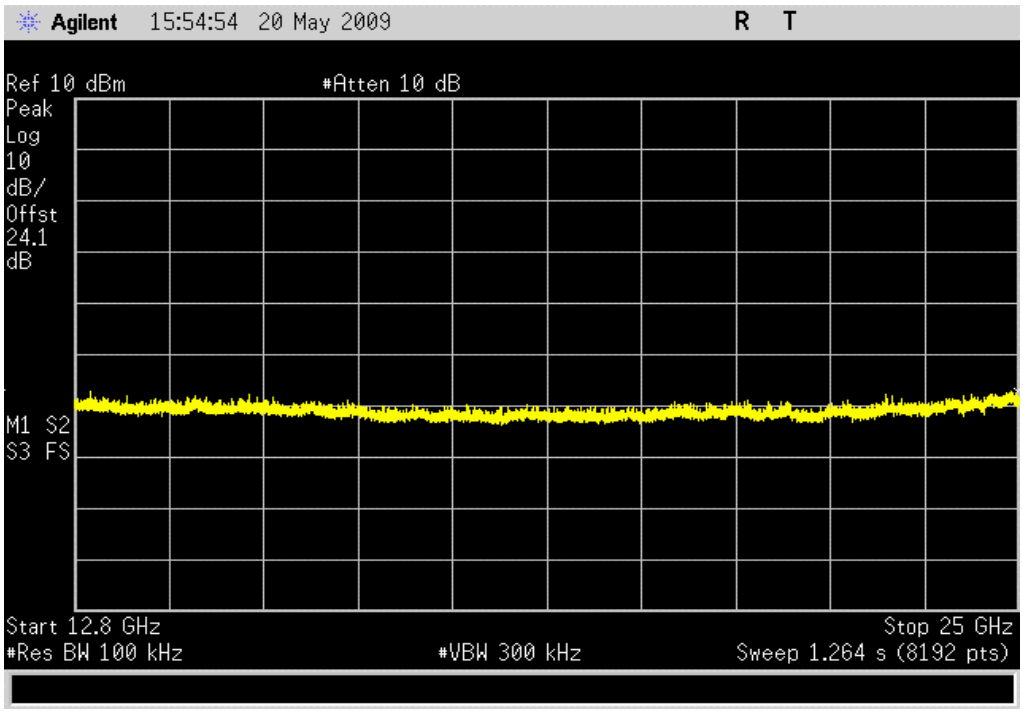
802.11(g) 36 Mbps, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



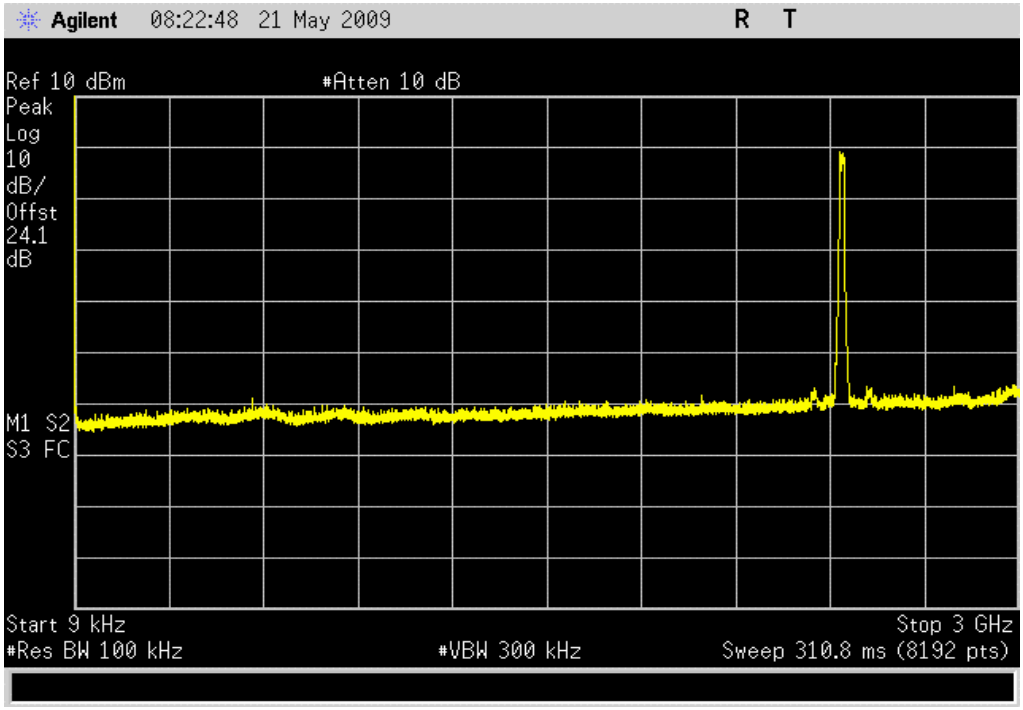
802.11(g) 36 Mbps, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



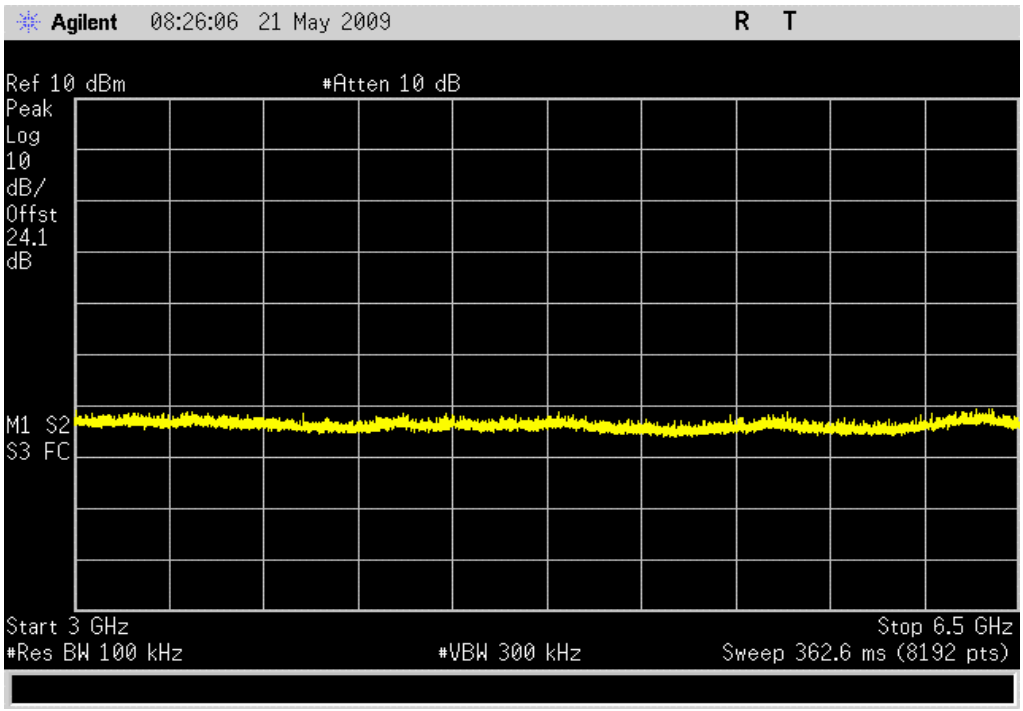
802.11(g) 36 Mbps, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



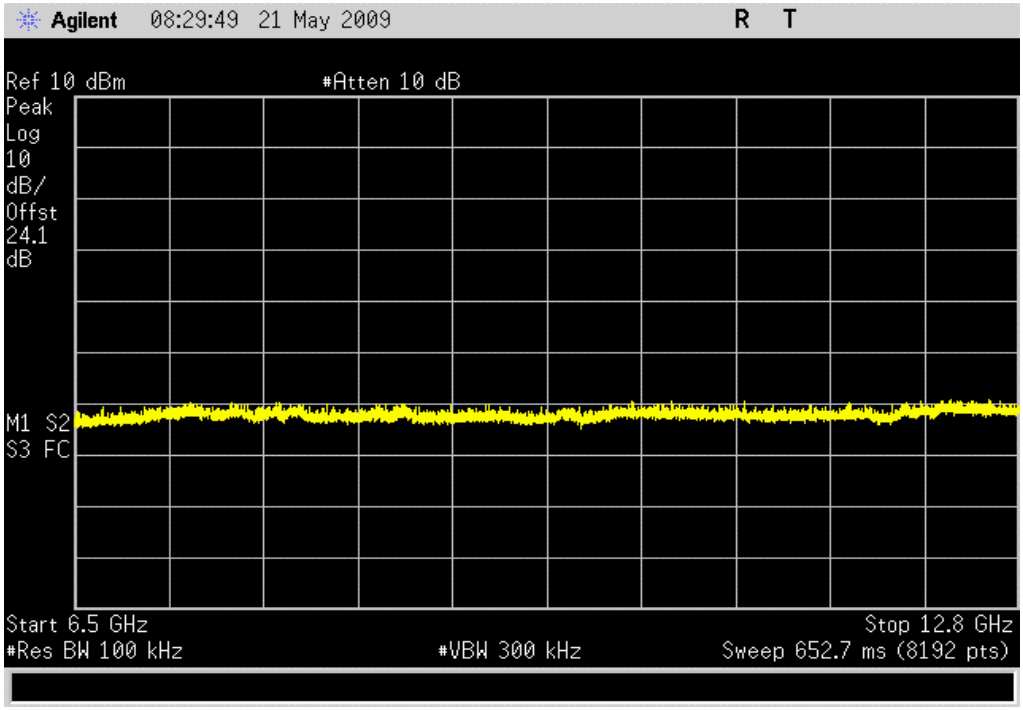
802.11(g) 36 Mbps, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



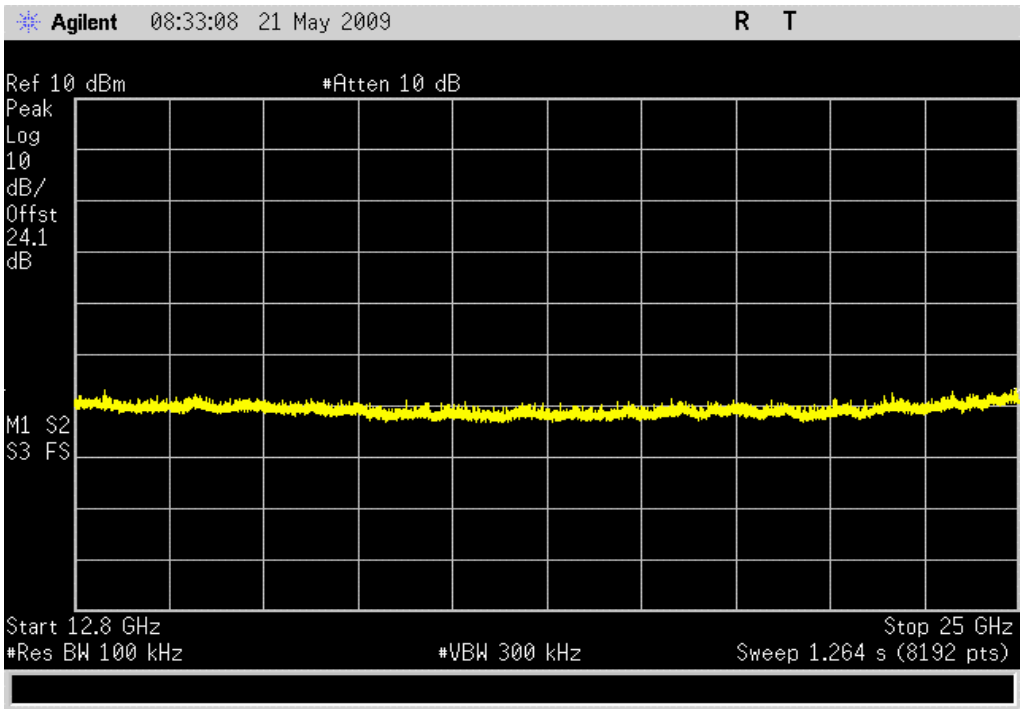
802.11(g) 36 Mbps, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



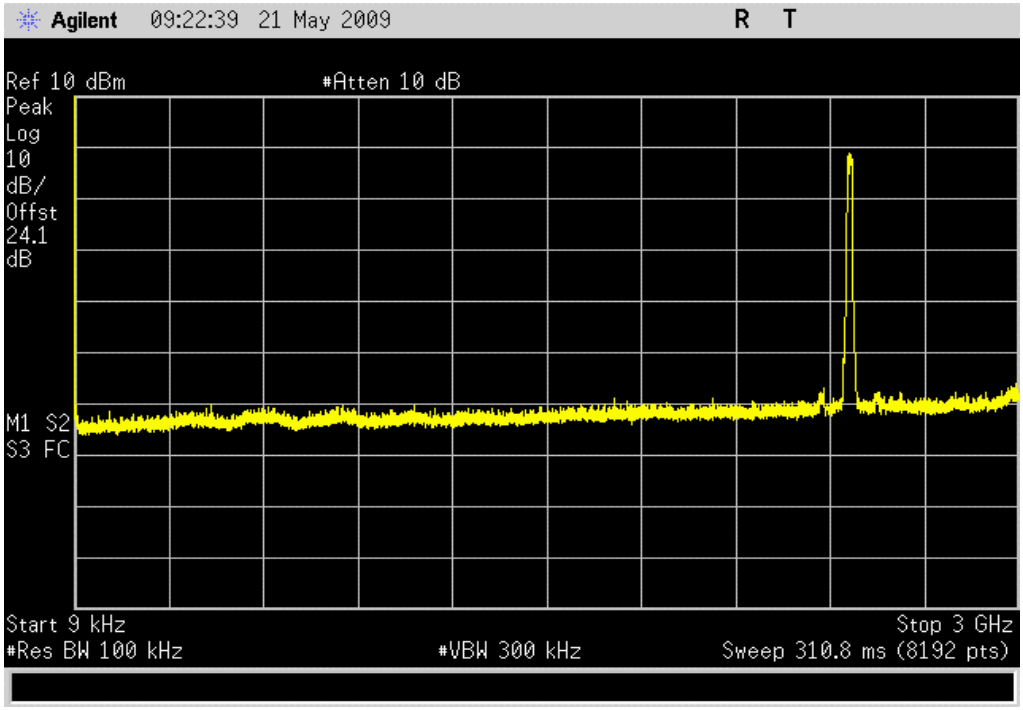
802.11(g) 36 Mbps, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



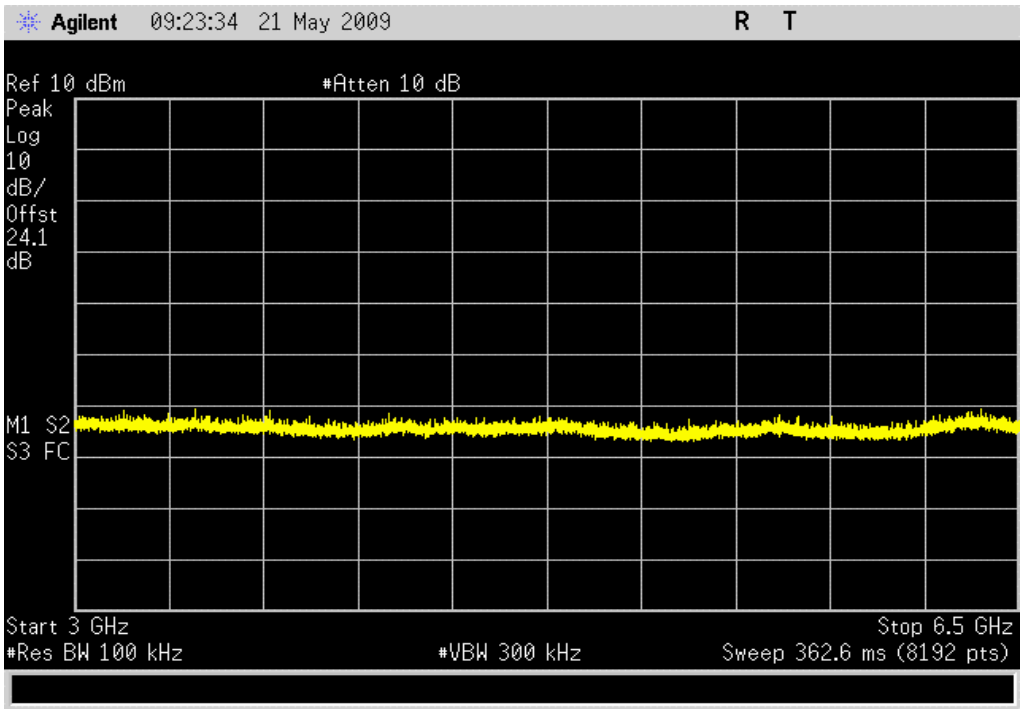
802.11(g) 36 Mbps, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



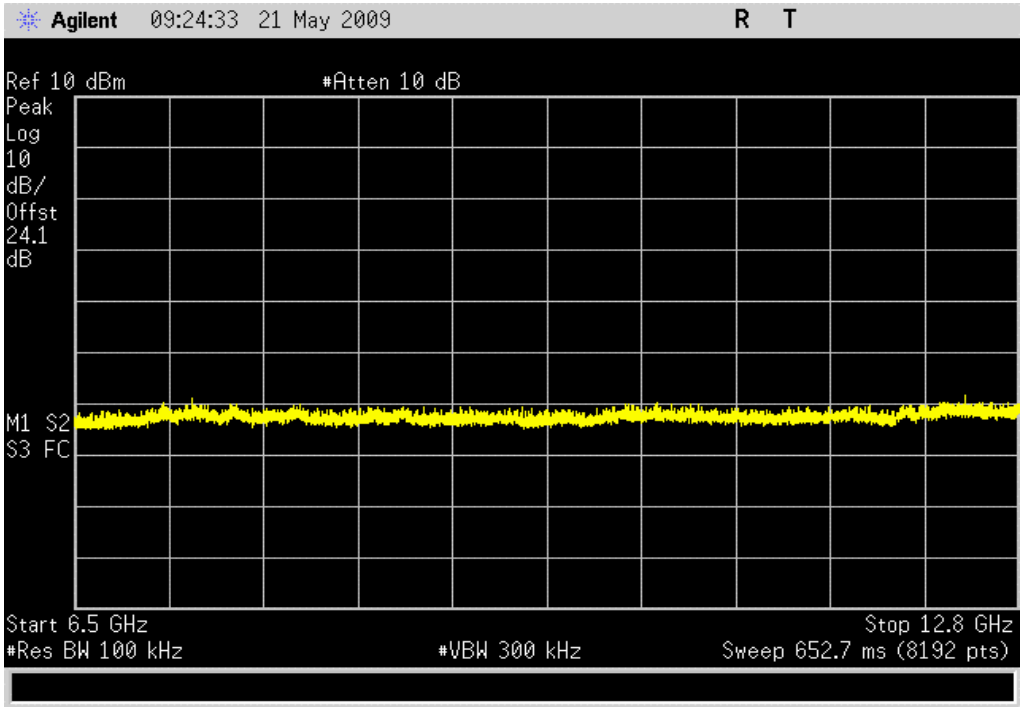
802.11(g) 36 Mbps, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



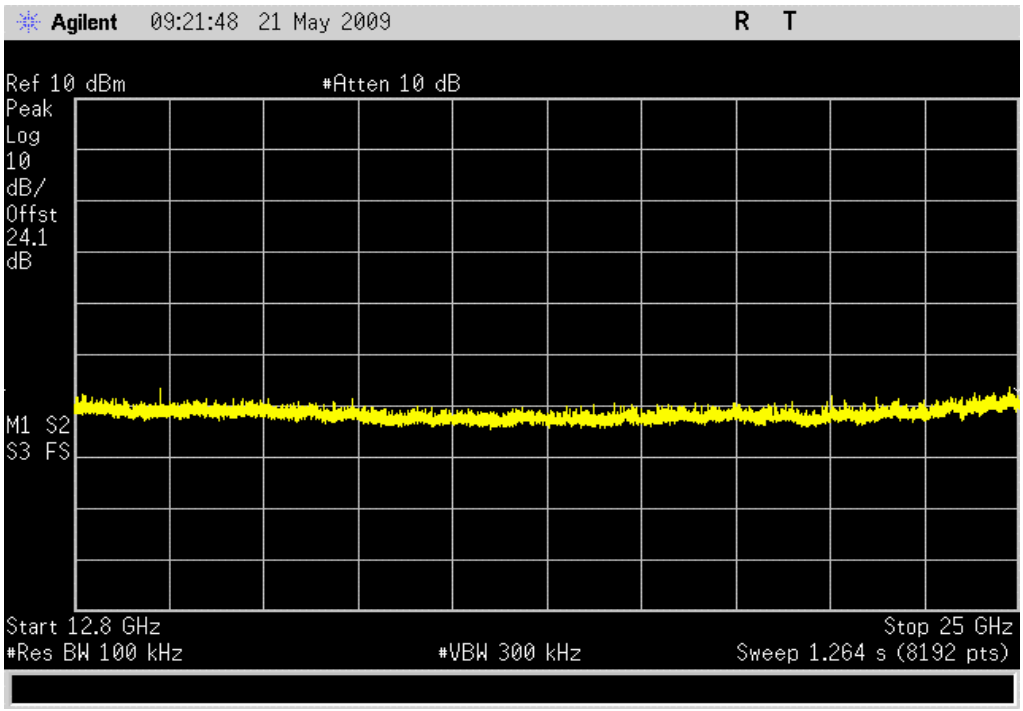
802.11(g) 36 Mbps, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



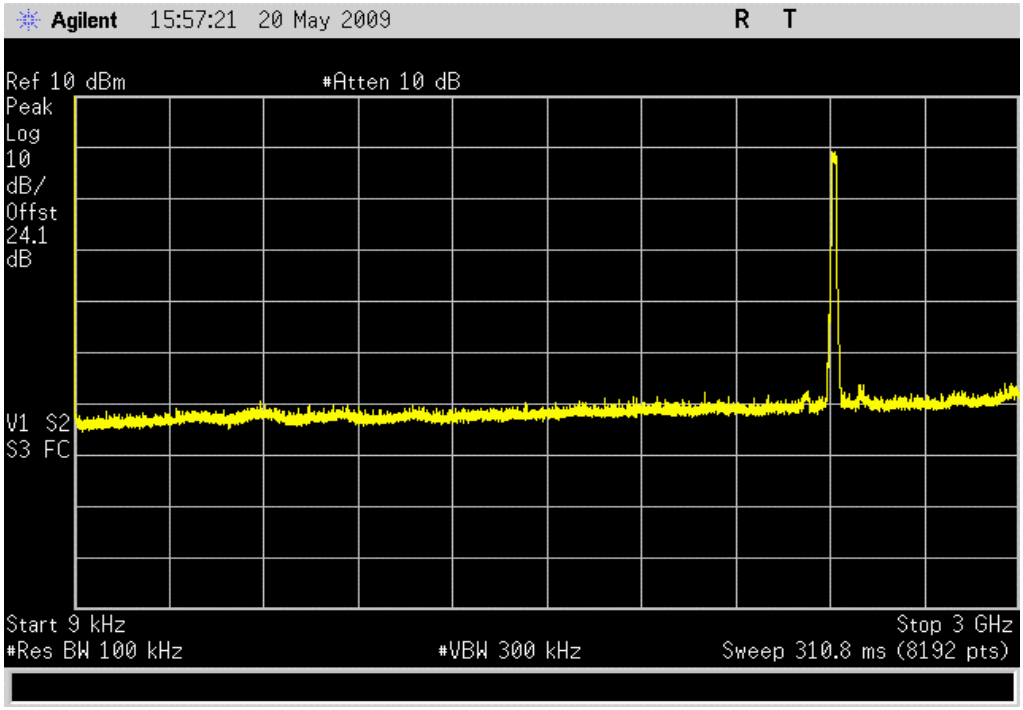
802.11(g) 36 Mbps, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



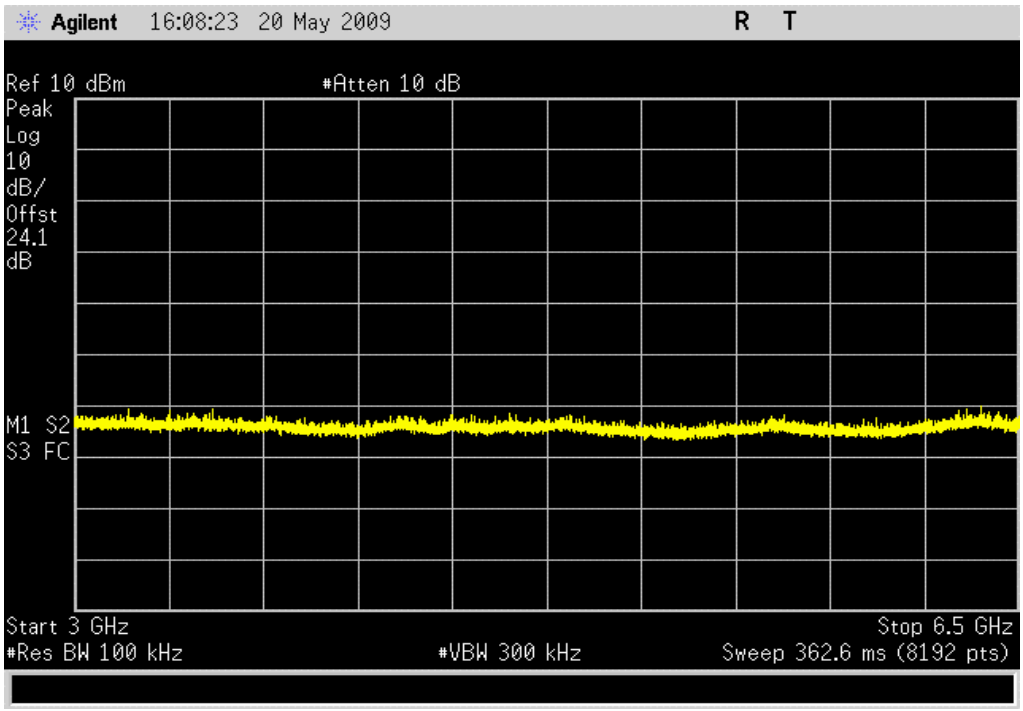
802.11(g) 36 Mbps, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



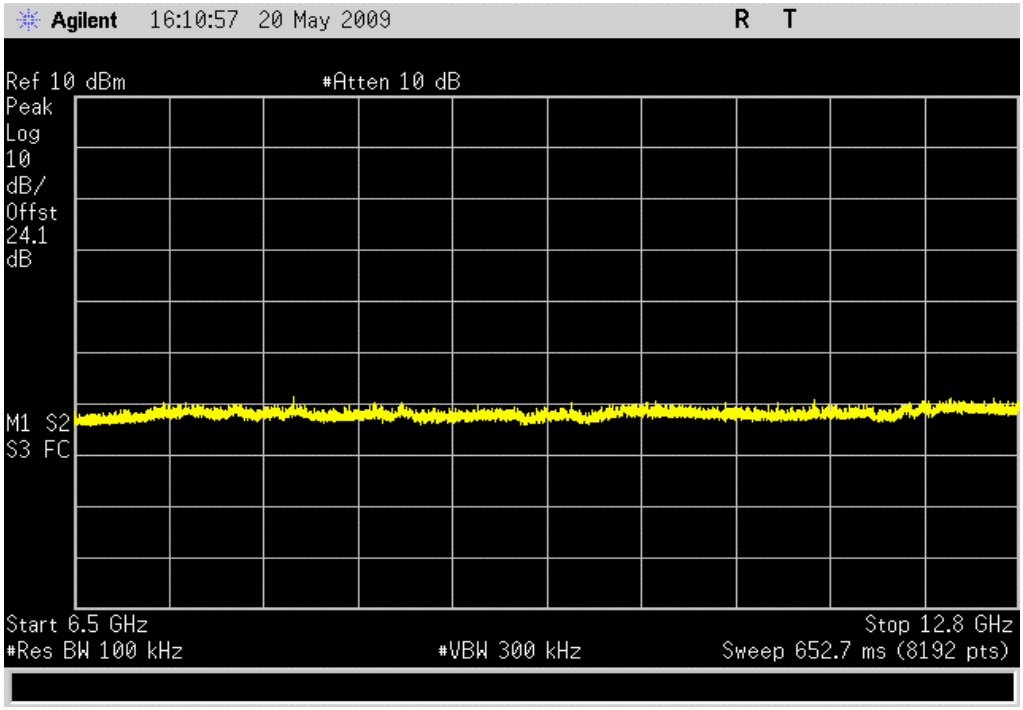
802.11(g) 54 Mbps, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



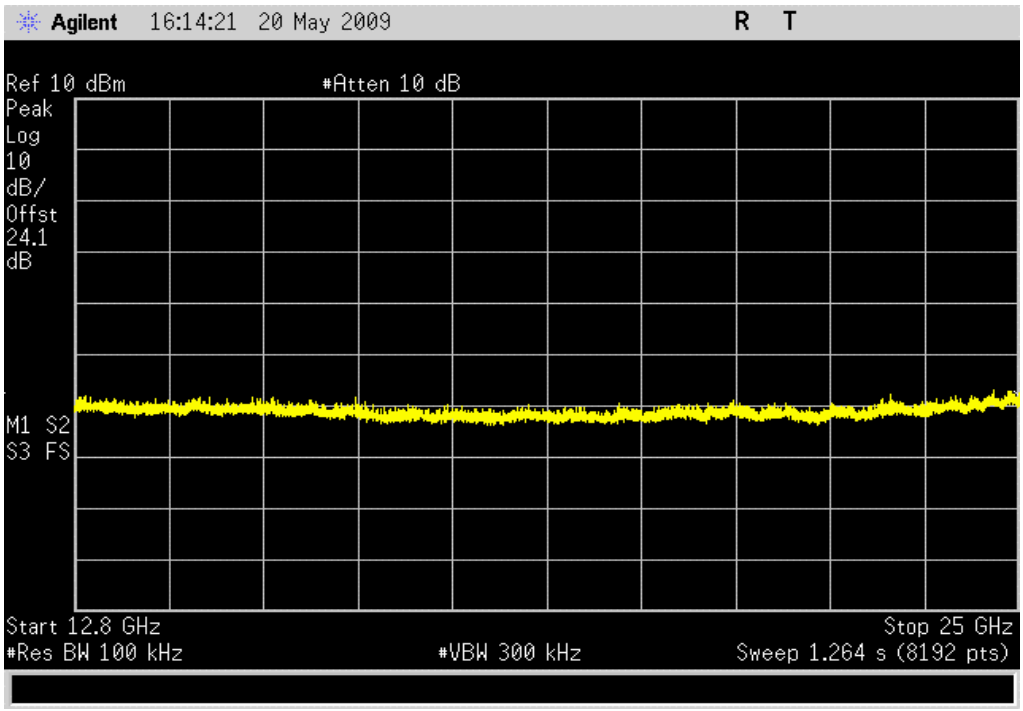
802.11(g) 54 Mbps, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



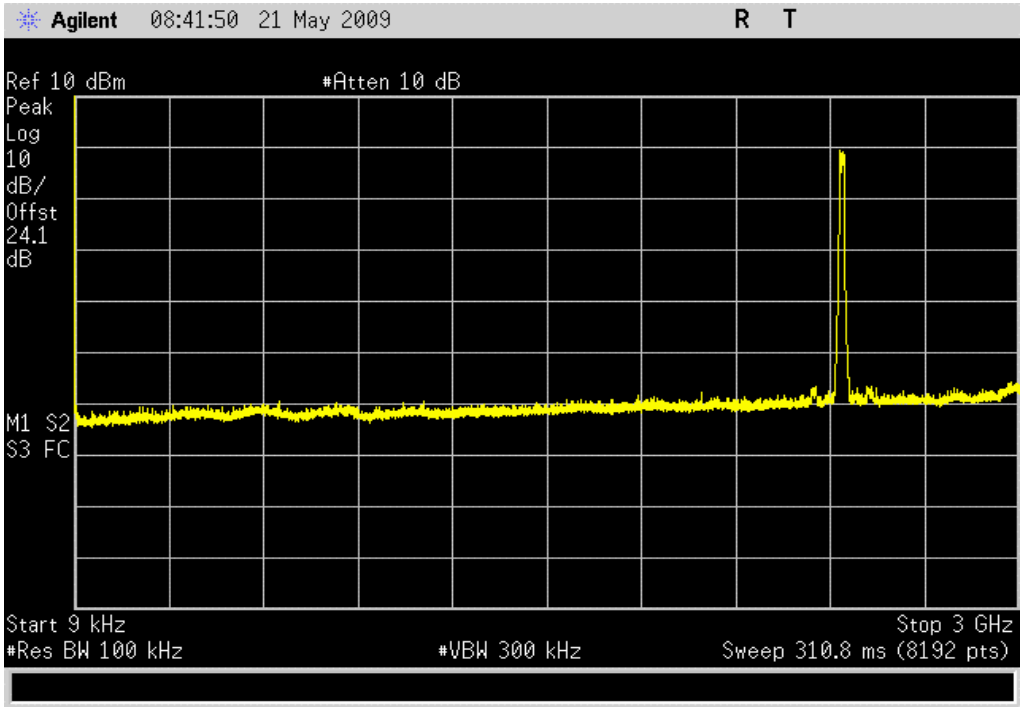
802.11(g) 54 Mbps, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



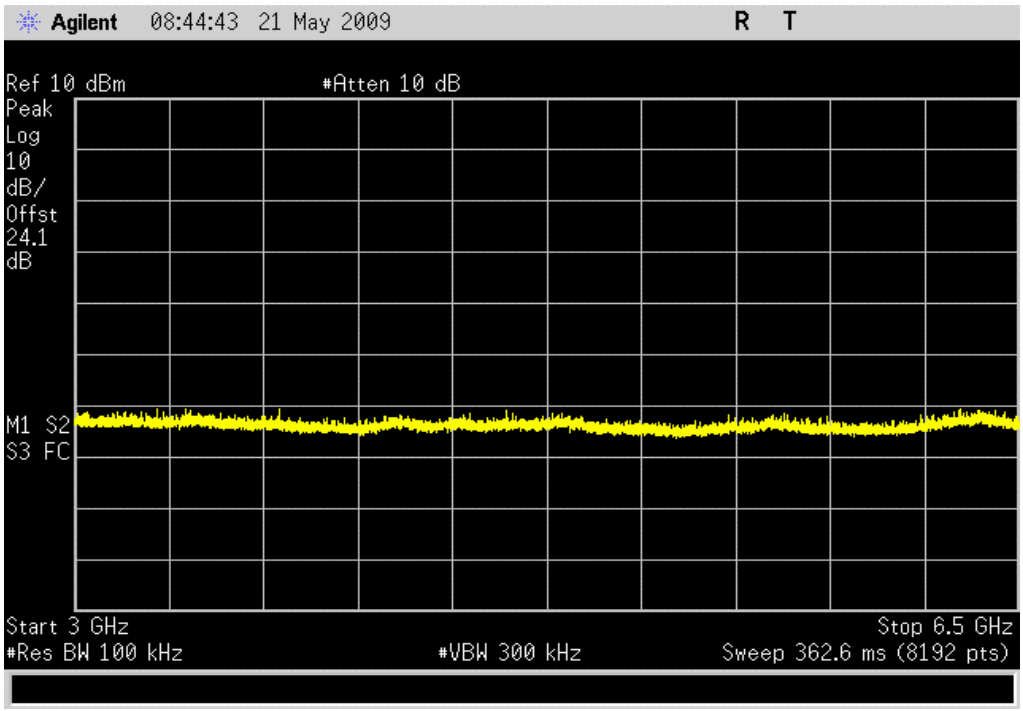
802.11(g) 54 Mbps, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



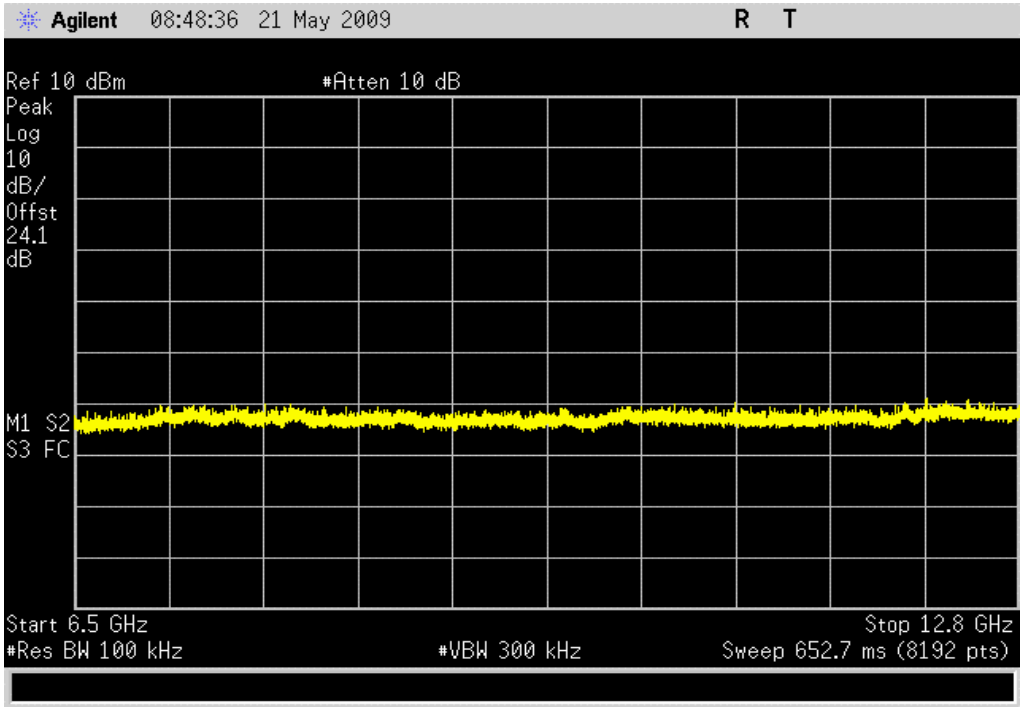
802.11(g) 54 Mbps, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



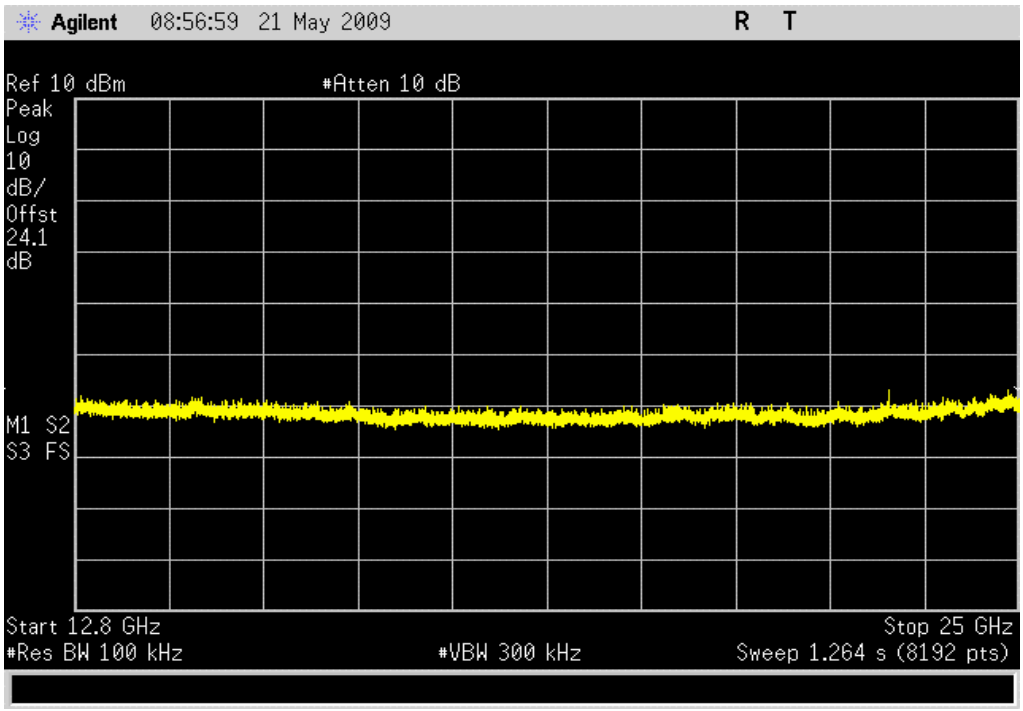
802.11(g) 54 Mbps, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



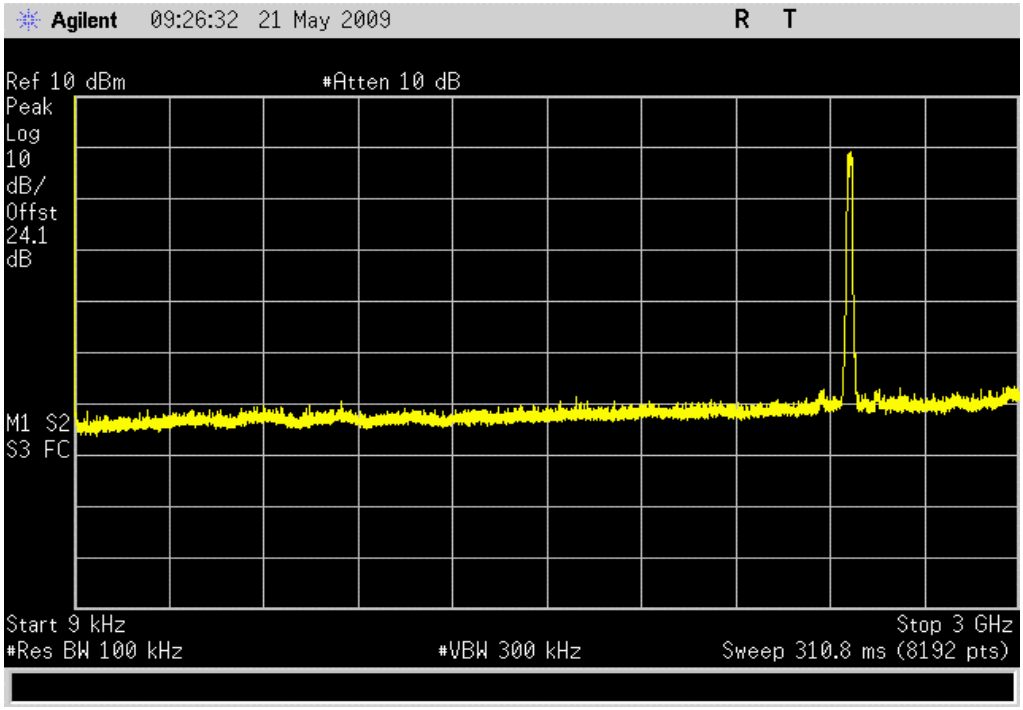
802.11(g) 54 Mbps, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



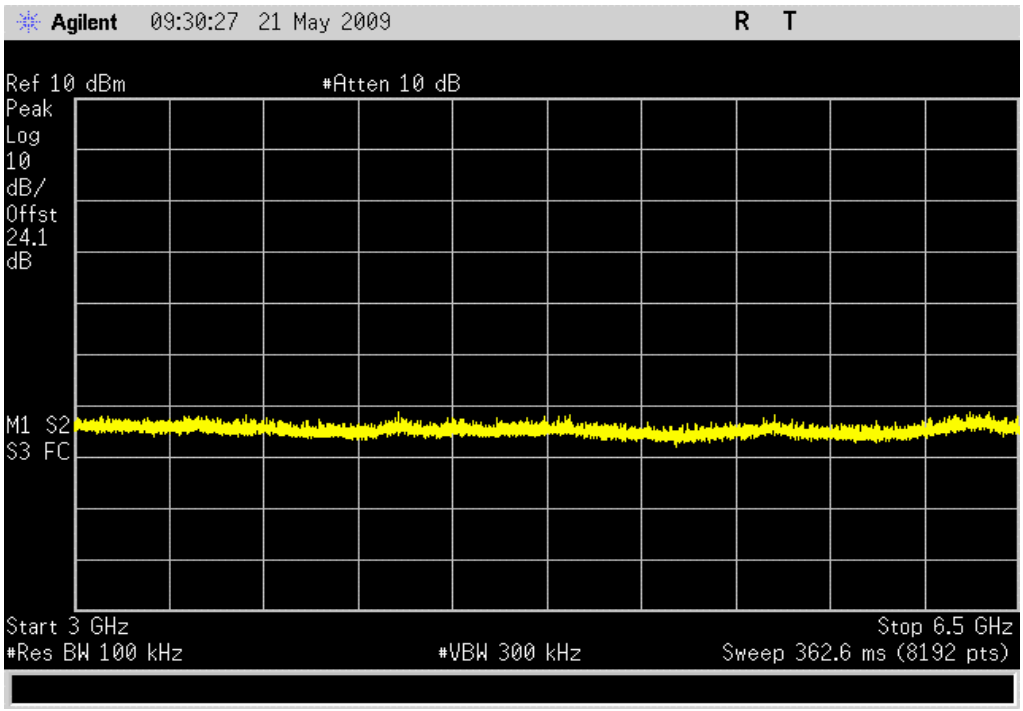
802.11(g) 54 Mbps, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



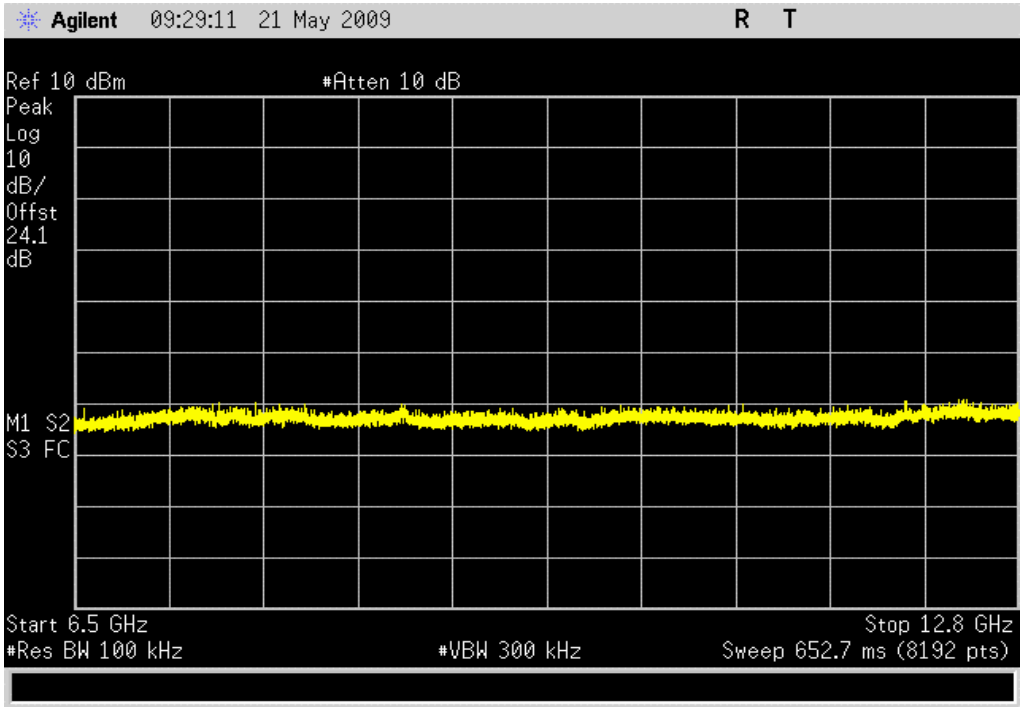
802.11(g) 54 Mbps, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



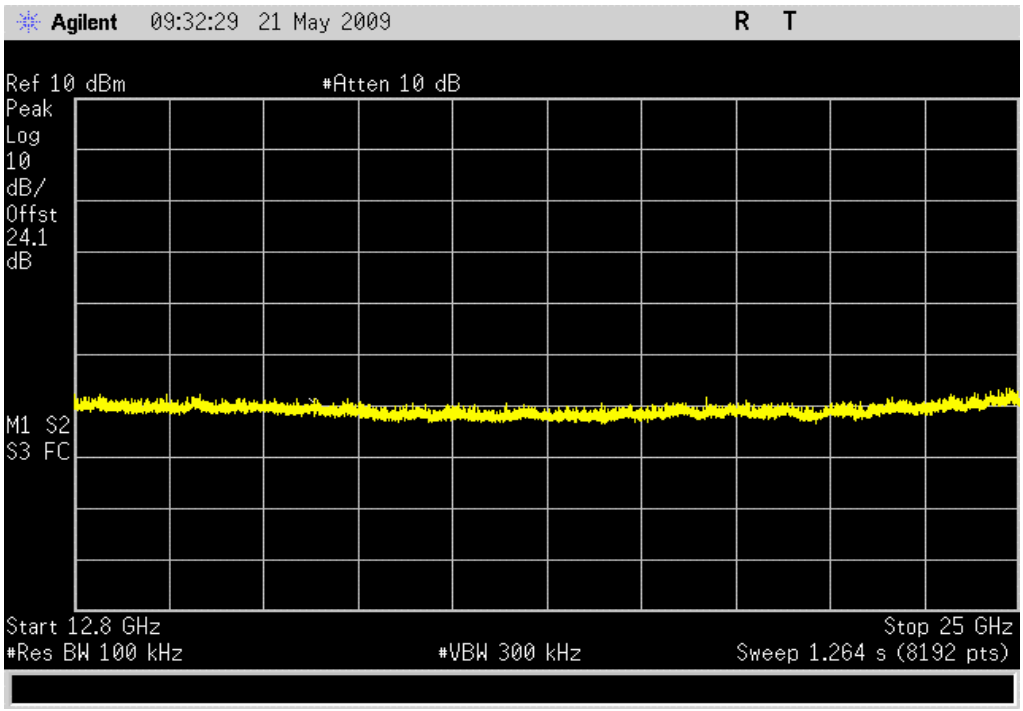
802.11(g) 54 Mbps, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



POWER SPECTRAL DENSITY

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Power Meter	Gigatronics	8651A	SPM	12/10/2008	13
Power Sensor	Gigatronics	80701A	SPL	12/10/2008	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/9/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate for each modulation type available. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

> The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35 dB for correction to 3 kHz."

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2008.12.29

EUT:	1402			Work Order:	MCSO1416
Serial Number:	000 019 491 815			Date:	05/21/09
Customer:	Microsoft Corporation			Temperature:	22°C
Attendees:	None			Humidity:	38%
Project:	None			Barometric Pres.:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Analyzer offset by 2 dB to compensate for adapter cable. Radio operated in 99% transmit mode.

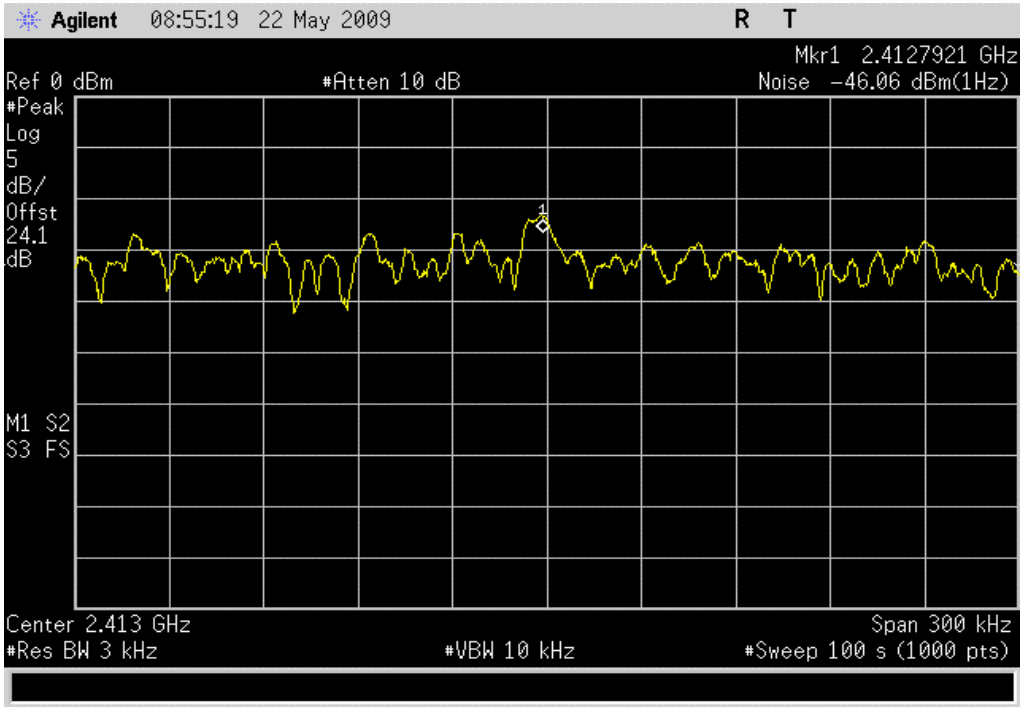
DEVIATIONS FROM TEST STANDARD

No Deviations

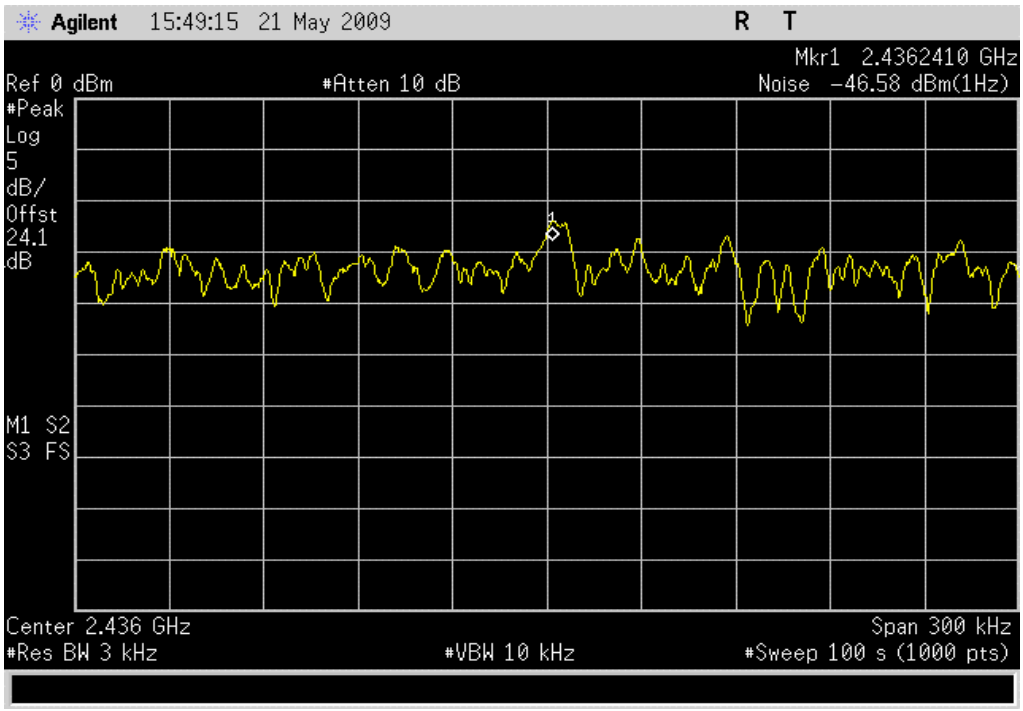
Configuration #	1	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	-11.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-11.8 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-11.1 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(b) 11 Mbps				
	Low Channel	-12.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-12.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-11.8 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 6 Mbps				
	Low Channel	-11.4 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-11.5 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-12.1 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 36 Mbps				
	Low Channel	-12.9 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-12.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-12.9 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 54 Mbps				
	Low Channel	-11.2 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-11.8 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-11.6 dBm / 3 kHz	8 dBm / 3 kHz	Pass

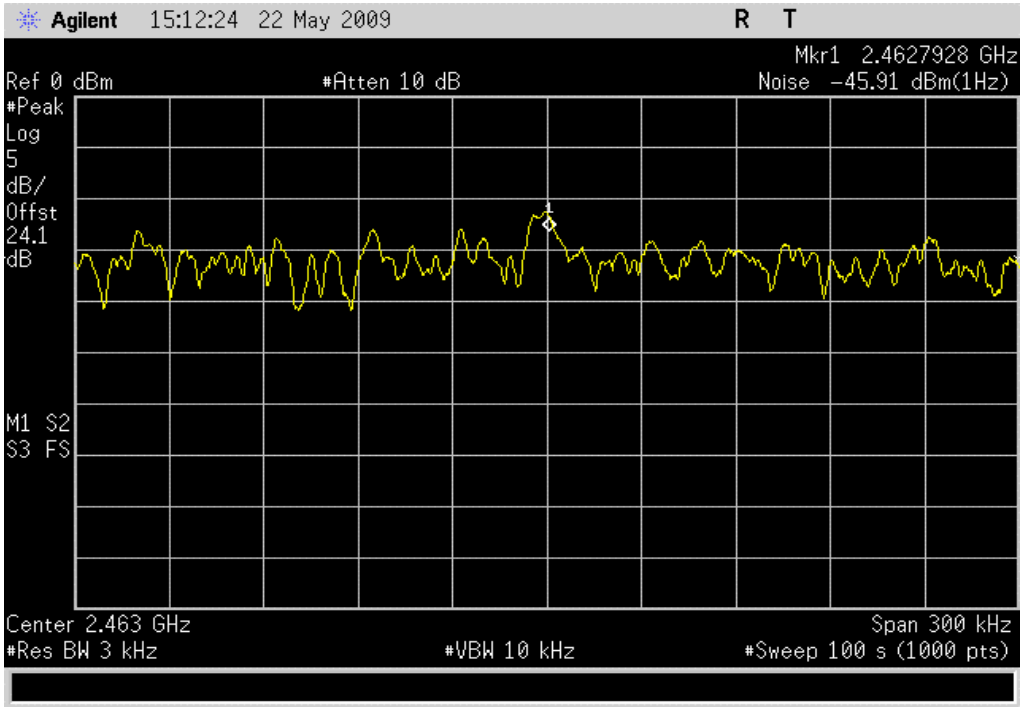
802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	-11.3 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



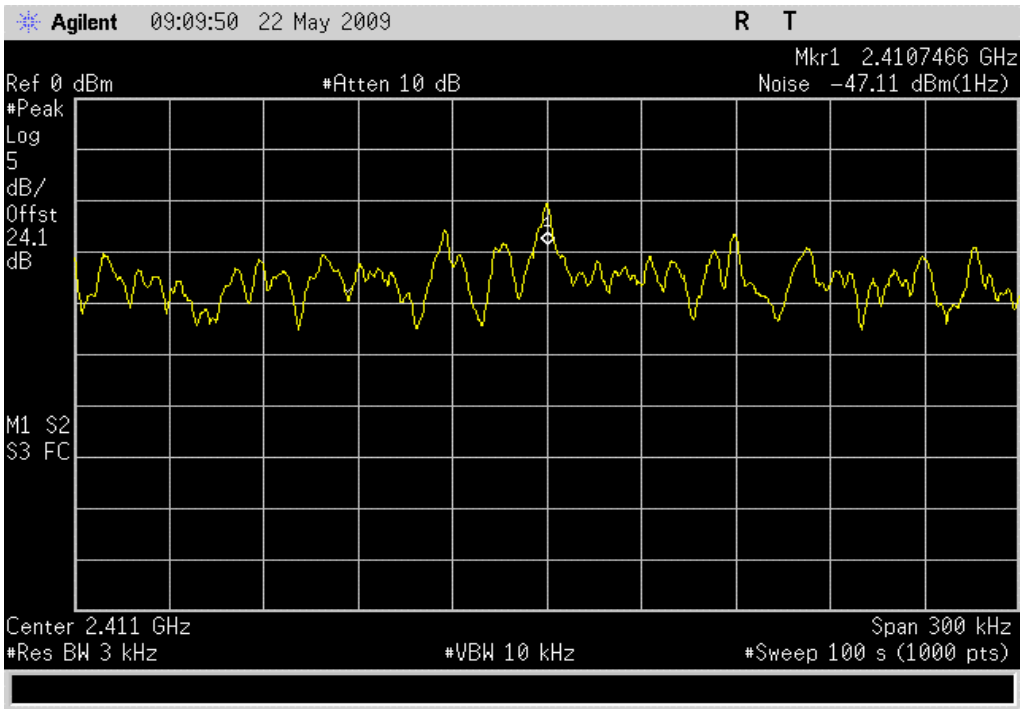
802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	-11.8 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



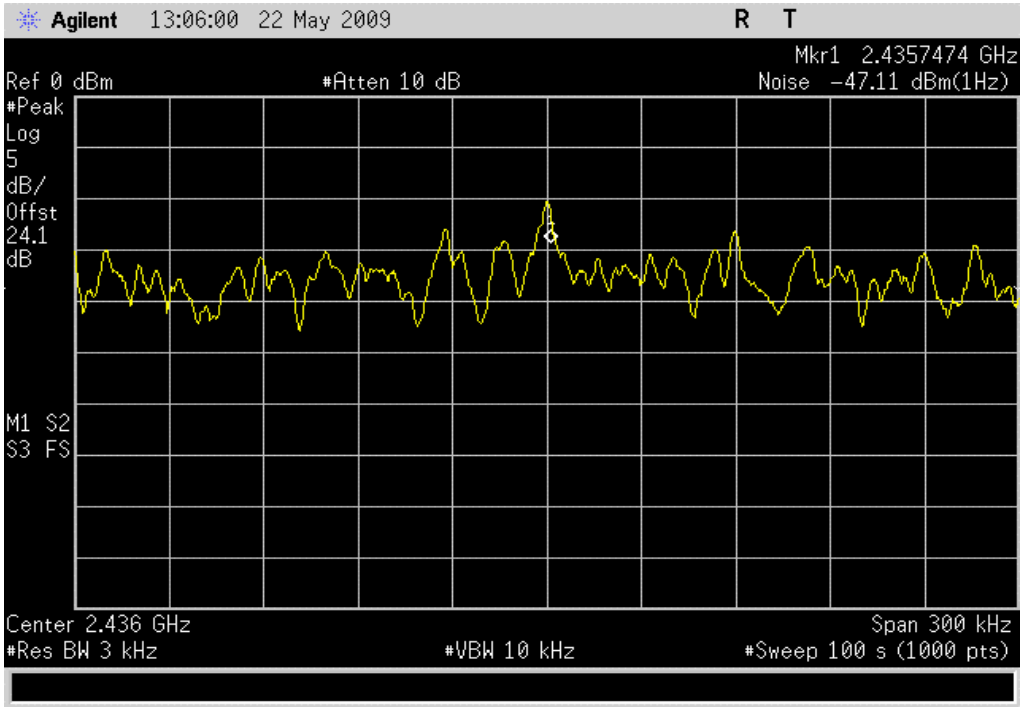
802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	-11.1 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



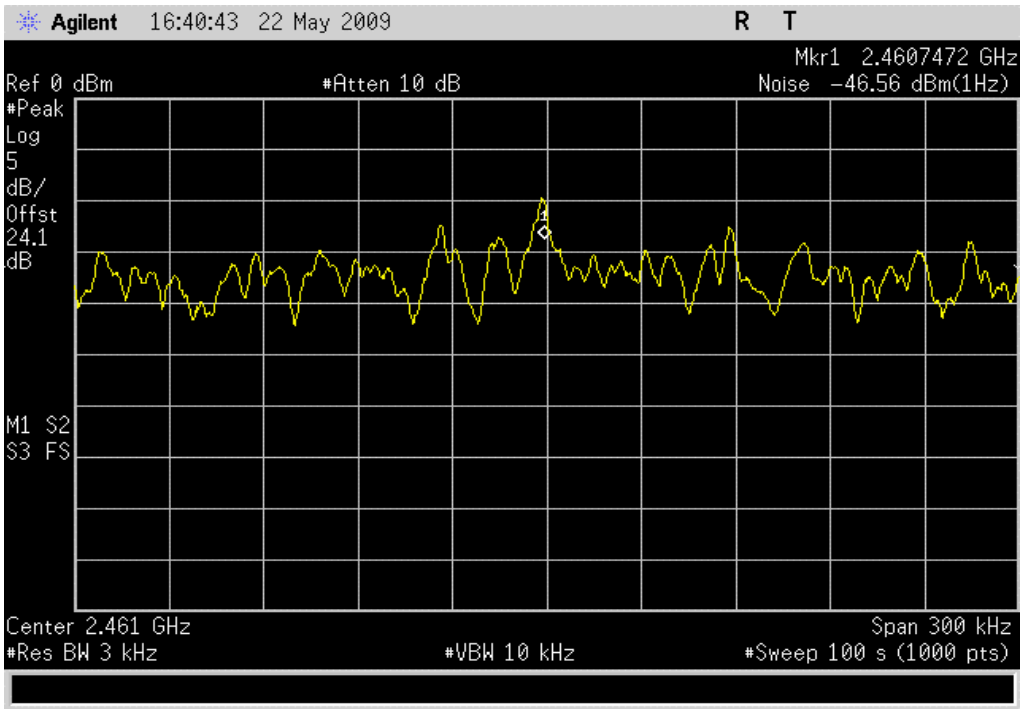
802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	-12.3 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



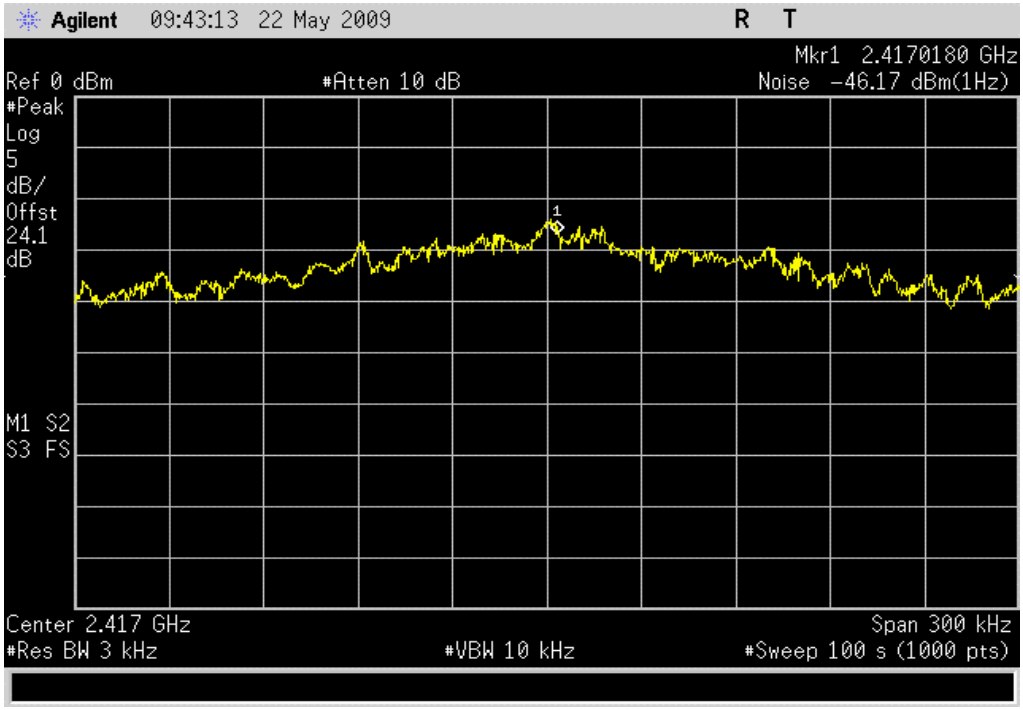
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	-12.3 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



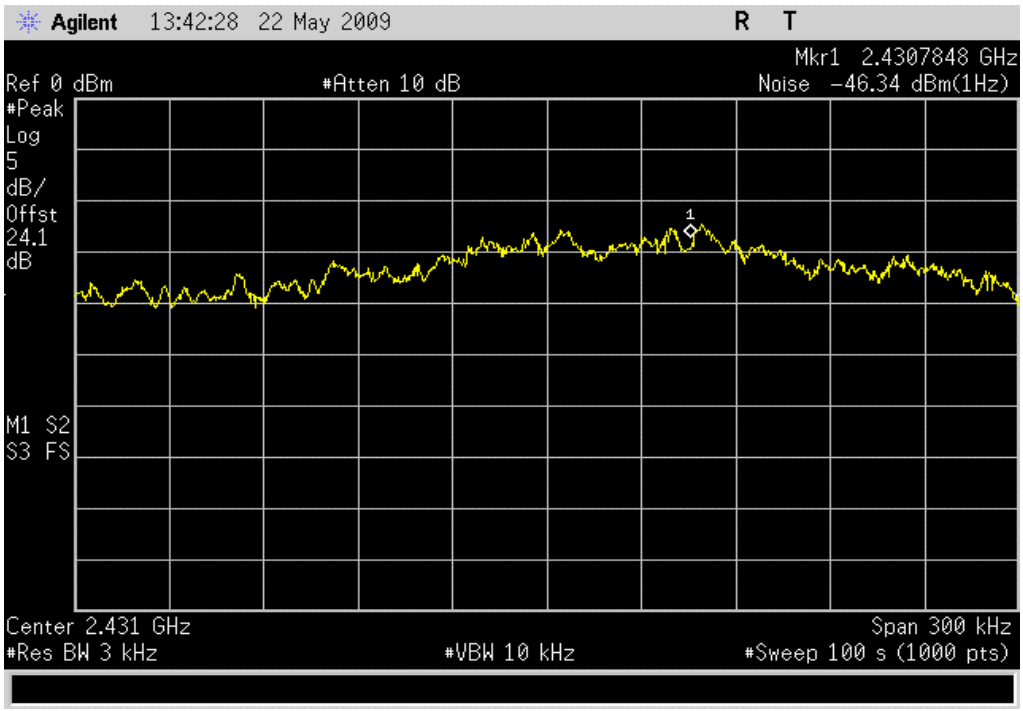
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	-11.8 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



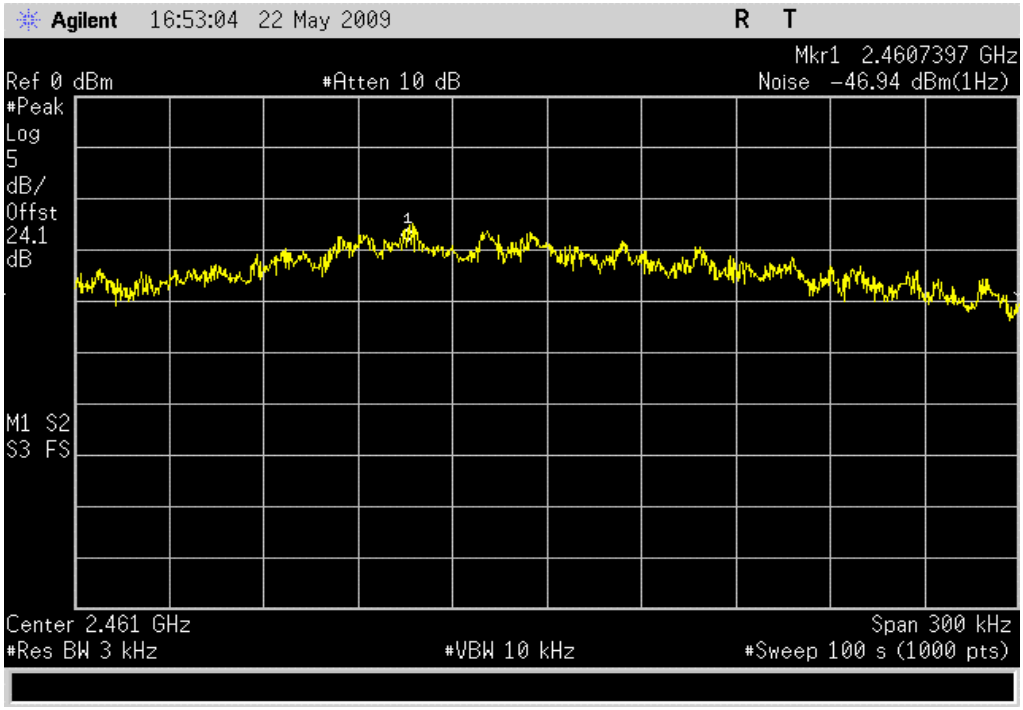
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	-11.4 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



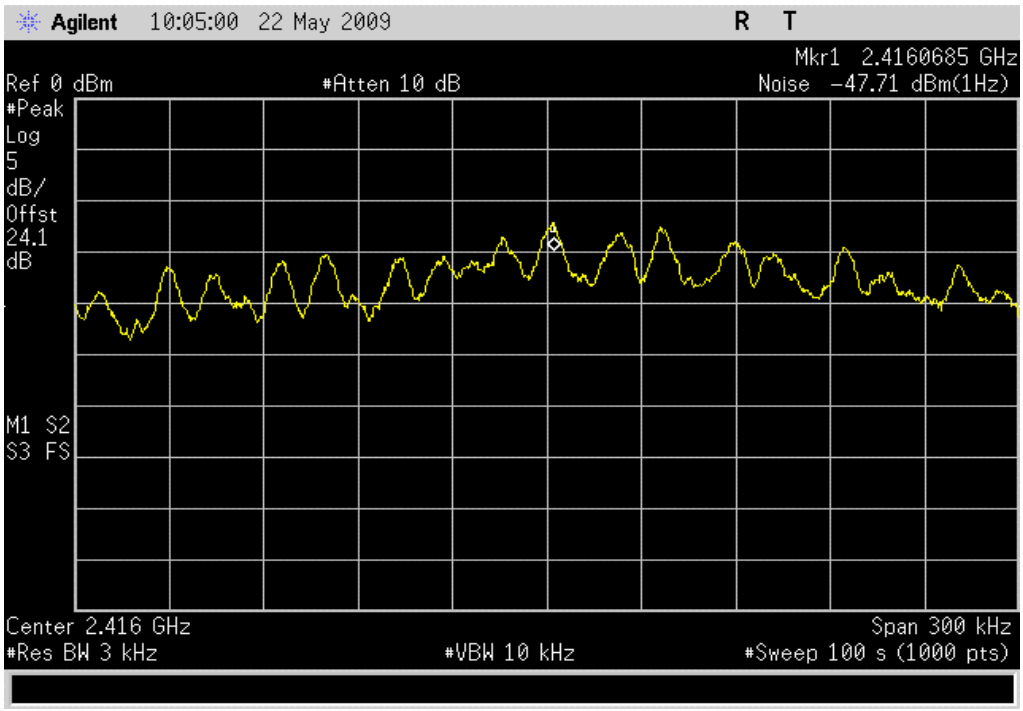
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	-11.5 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



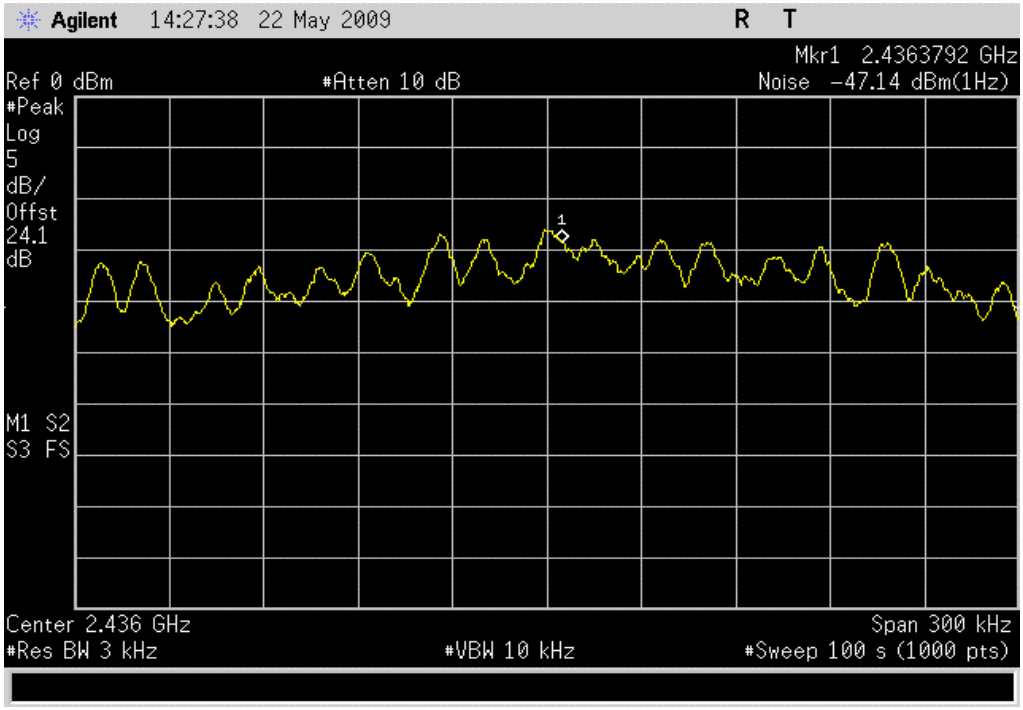
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	-12.1 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



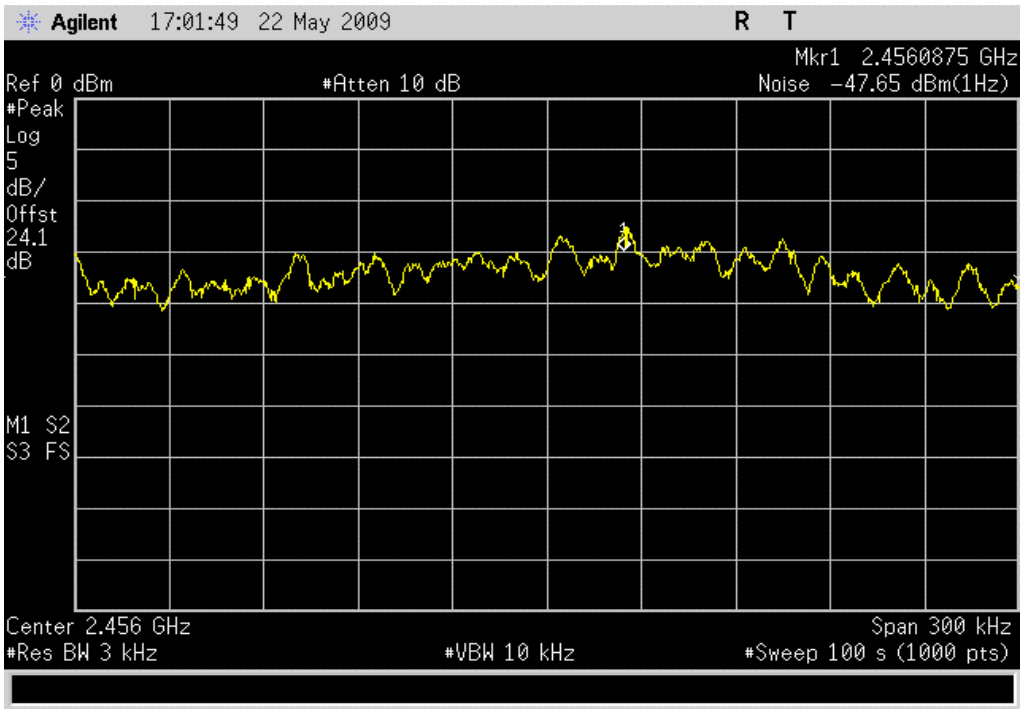
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	-12.9 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



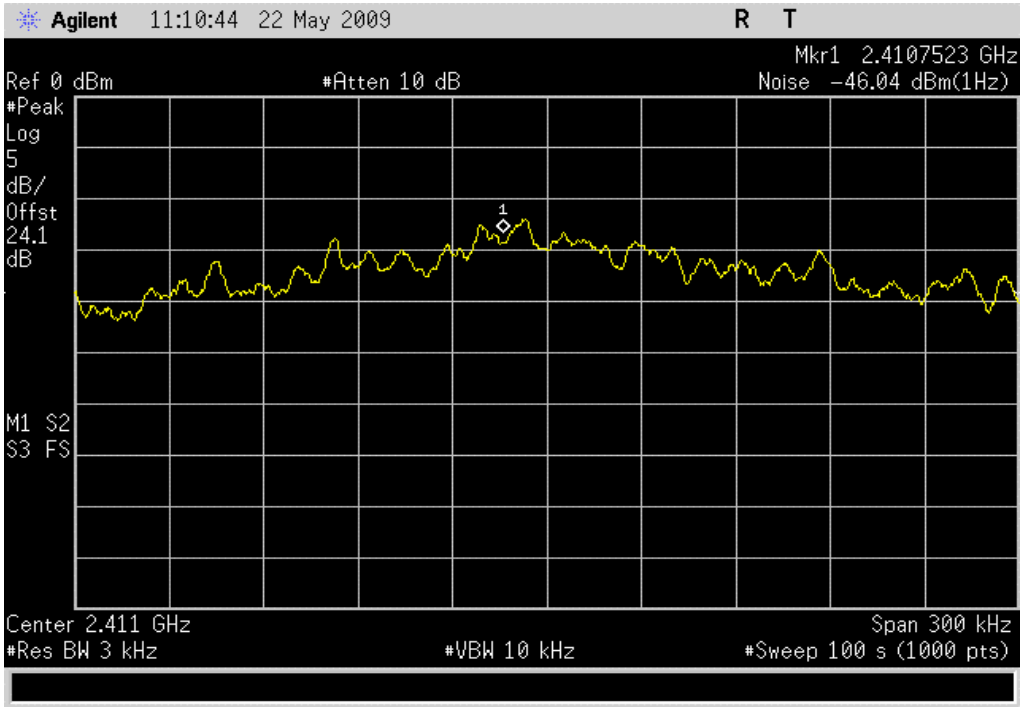
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	-12.3 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



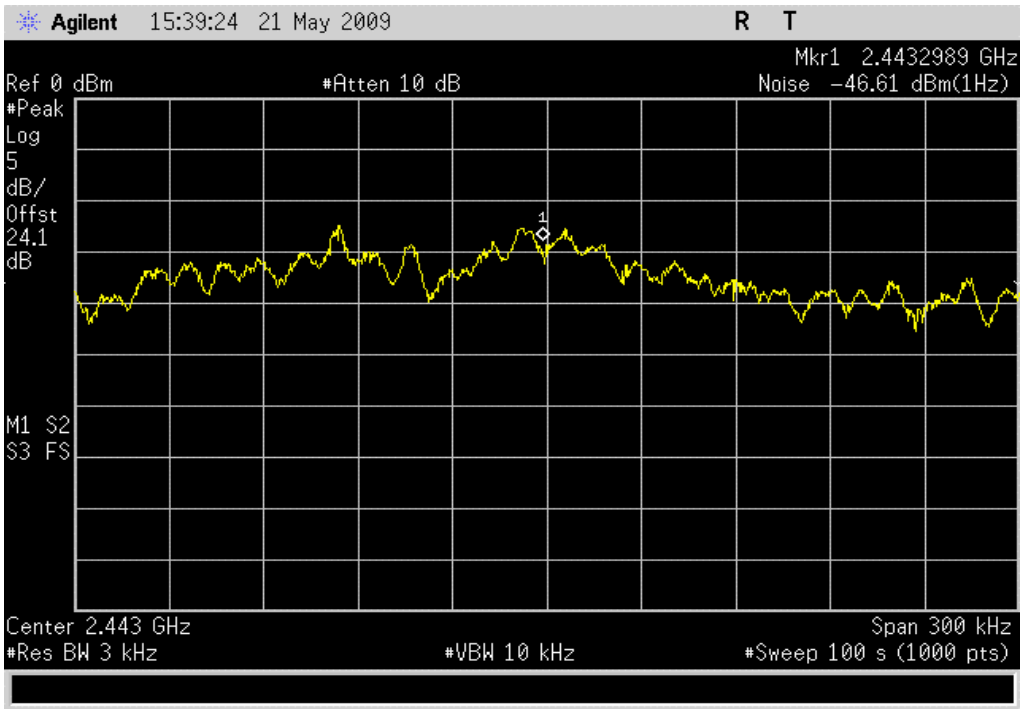
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	-12.9 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



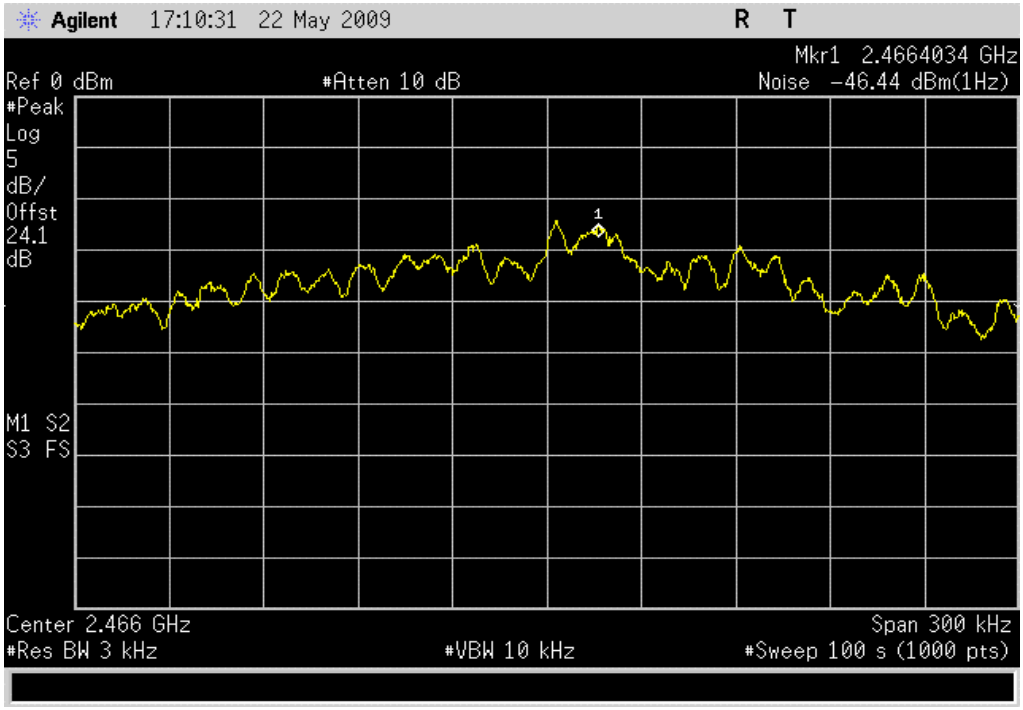
802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	-11.2 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



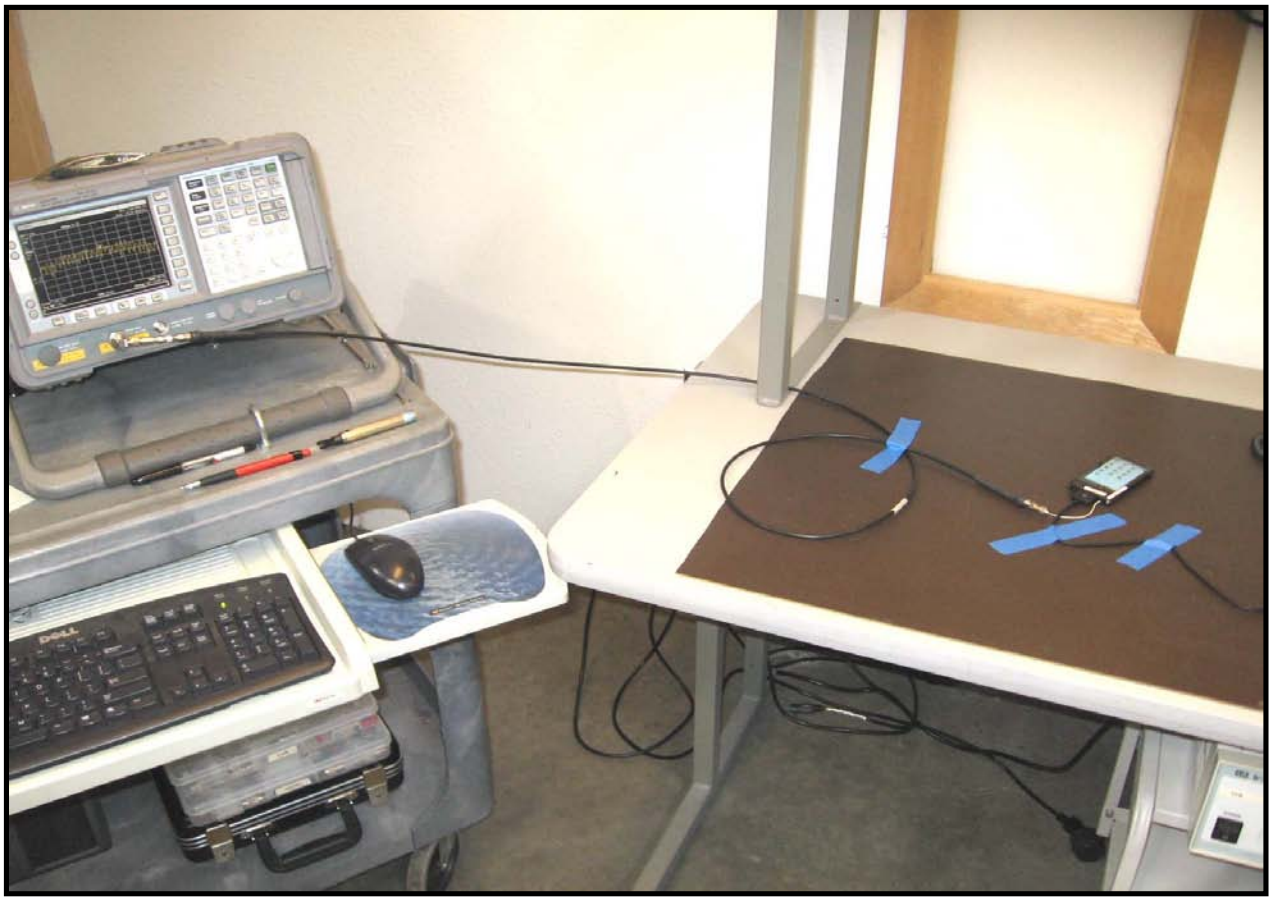
802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	-11.8 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	-11.6 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



POWER SPECTRAL DENSITY



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION
Transmitting 802.11(b), 1 Mbps
Transmitting 802.11(b), 11 Mbps
Transmitting 802.11(g), 6 Mbps
Transmitting 802.11(g), 36 Mbps
Transmitting 802.11(g), 54 Mbps

CHANNELS OF OPERATION
Low channel, 2412 MHz
Mid channel, 2437 MHz
High channel, 2462 MHz

CONFIGURATIONS TESTED
MCSO1416 - 2
MCSO1416 - 3
POWER SETTINGS INVESTIGATED
120VAC/60Hz

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAY	12/11/2008	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	5/21/2008	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	5/19/2008	13
Antenna, Biconilog	EMCO	3141	AXE	1/15/2008	24
EV01 Cables		Bilog Cables	EVA	5/19/2008	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/19/2008	13
Antenna, Horn	EMCO	3115	AHC	8/12/2008	24
EV01 Cables		Double Ridge Horn Cables	EVB	5/19/2008	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	6/30/2008	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
EV01 Cables		Standard Gain Horns Cables	EVF	11/13/2008	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	6/30/2008	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
EV01 Cables		Standard Gain Horns Cables	EVF	11/13/2008	13
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	12/2/2008	13
Antenna, Horn	ETS	3160-09	AHG	NCR	0
EV01 Cables		18-26GHz Standard Gain Horn Cable	EVD	12/2/2008	13

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Humidity:	38%
Project:	None	Barometric Pres.:	30.15
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

In docking station, fully populated.

EUT OPERATING MODES

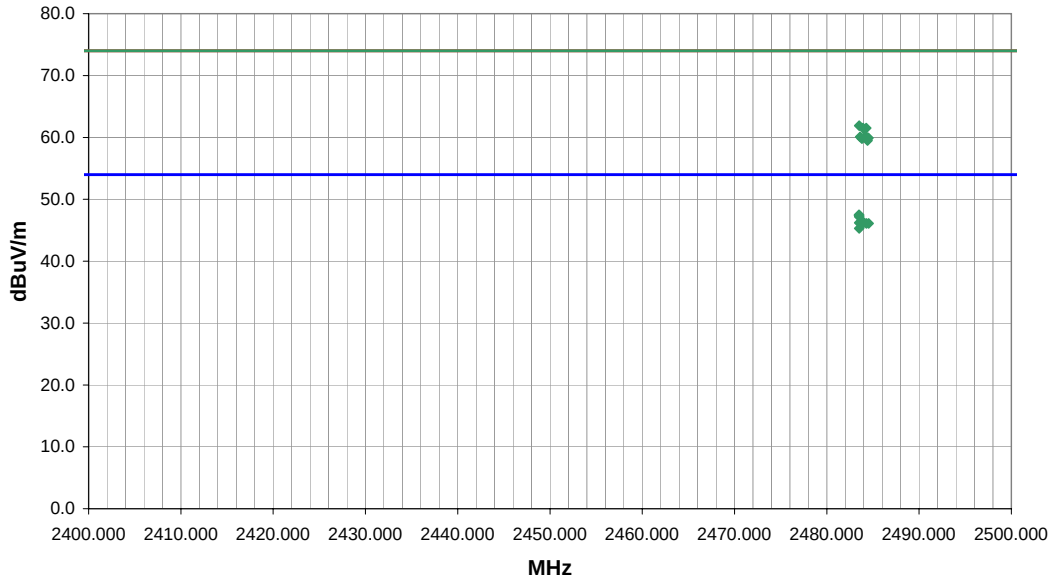
Transmitting 802.11, high channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	2
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.500	25.3	2.2	140.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.5	54.0	-6.5	802.11g, 36 Mbps
2483.500	25.2	2.2	137.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.4	54.0	-6.6	802.11g, 54 Mbps
2483.507	25.0	2.2	142.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.2	54.0	-6.8	802.11g, 6 Mbps
2483.887	24.2	2.2	45.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	802.11g, 36 Mbps
2483.502	24.0	2.2	181.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	802.11b, 1 Mbps
2483.920	23.9	2.2	114.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.1	54.0	-7.9	802.11b, 1 Mbps
2484.285	23.9	2.2	198.0	1.5	3.0	20.0	V-Horn	AV	0.0	46.1	54.0	-7.9	802.11b, 11 Mbps
2484.537	23.9	2.2	100.0	2.1	3.0	20.0	H-Horn	AV	0.0	46.1	54.0	-7.9	802.11b, 11 Mbps
2483.503	23.1	2.2	345.0	1.0	3.0	20.0	H-Horn	AV	0.0	45.3	54.0	-8.7	802.11g, 6 Mbps
2483.507	39.7	2.2	140.0	1.0	3.0	20.0	V-Horn	PK	0.0	61.9	74.0	-12.1	802.11g, 36 Mbps
2483.933	39.3	2.2	142.0	1.0	3.0	20.0	V-Horn	PK	0.0	61.5	74.0	-12.5	802.11g, 6 Mbps
2484.270	39.3	2.2	137.0	1.1	3.0	20.0	V-Horn	PK	0.0	61.5	74.0	-12.5	802.11g, 54 Mbps
2484.205	38.0	2.2	100.0	2.1	3.0	20.0	H-Horn	PK	0.0	60.2	74.0	-13.8	802.11b, 11 Mbps
2483.622	37.9	2.2	45.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.1	74.0	-13.9	802.11g, 36 Mbps
2484.488	37.7	2.2	198.0	1.5	3.0	20.0	V-Horn	PK	0.0	59.9	74.0	-14.1	802.11b, 11 Mbps
2484.498	37.7	2.2	181.0	1.0	3.0	20.0	V-Horn	PK	0.0	59.9	74.0	-14.1	802.11b, 1 Mbps
2483.805	37.6	2.2	114.0	1.0	3.0	20.0	H-Horn	PK	0.0	59.8	74.0	-14.2	802.11b, 1 Mbps
2484.407	37.3	2.2	345.0	1.0	3.0	20.0	H-Horn	PK	0.0	59.5	74.0	-14.5	802.11g, 6 Mbps

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Humidity:	38%
Project:	None	Barometric Pres.:	30.15
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

In docking station, fully populated.

EUT OPERATING MODES

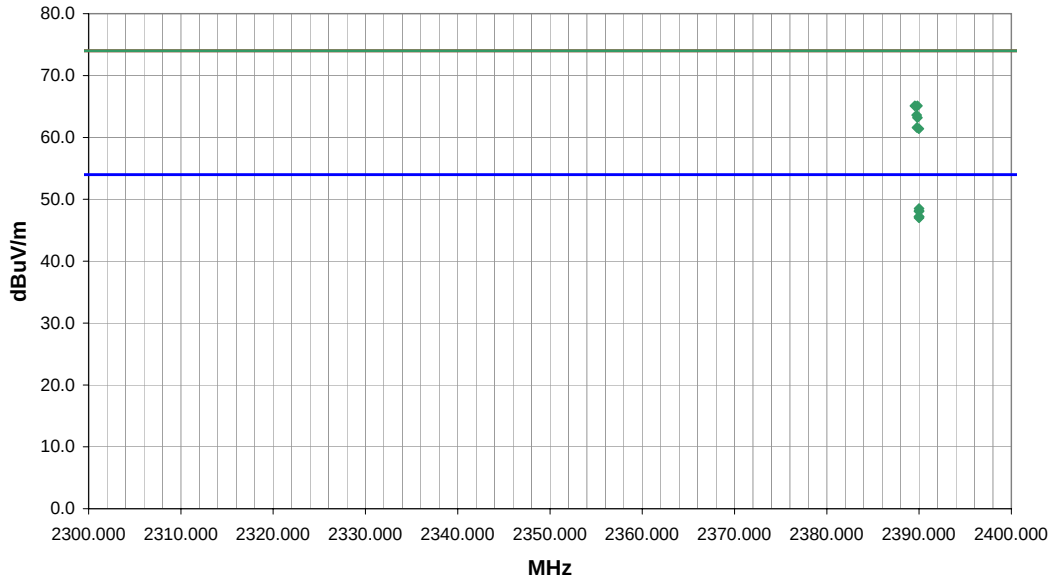
Transmitting 802.11(g), low channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	2
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2389.990	26.7	1.8	187.0	1.0	3.0	20.0	V-Horn	AV	0.0	48.5	54.0	-5.5	802.11g, 54 Mbps
2389.997	26.3	1.8	192.0	1.0	3.0	20.0	V-Horn	AV	0.0	48.1	54.0	-5.9	802.11g, 6 Mbps
2390.000	26.3	1.8	192.0	1.0	3.0	20.0	V-Horn	AV	0.0	48.1	54.0	-5.9	802.11g, 36 Mbps
2390.000	25.4	1.8	59.0	1.0	3.0	20.0	H-Horn	AV	0.0	47.2	54.0	-6.8	802.11g, 36 Mbps
2390.000	25.4	1.8	58.0	1.0	3.0	20.0	H-Horn	AV	0.0	47.2	54.0	-6.8	802.11g, 6 Mbps
2390.000	25.2	1.8	59.0	1.0	3.0	20.0	H-Horn	AV	0.0	47.0	54.0	-7.0	802.11g, 54 Mbps
2389.547	43.3	1.8	187.0	1.0	3.0	20.0	V-Horn	PK	0.0	65.1	74.0	-8.9	802.11g, 54 Mbps
2389.813	43.3	1.8	192.0	1.0	3.0	20.0	V-Horn	PK	0.0	65.1	74.0	-8.9	802.11g, 6 Mbps
2389.737	41.8	1.8	58.0	1.0	3.0	20.0	H-Horn	PK	0.0	63.6	74.0	-10.4	802.11g, 6 Mbps
2389.830	41.4	1.8	192.0	1.0	3.0	20.0	V-Horn	PK	0.0	63.2	74.0	-10.8	802.11g, 36 Mbps
2389.763	39.8	1.8	59.0	1.0	3.0	20.0	H-Horn	PK	0.0	61.6	74.0	-12.4	802.11g, 54 Mbps
2389.970	39.6	1.8	59.0	1.0	3.0	20.0	H-Horn	PK	0.0	61.4	74.0	-12.6	802.11g, 36 Mbps

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Humidity:	38%
Project:	None	Barometric Pres.:	30.15
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

EUT standalone with audio cable

EUT OPERATING MODES

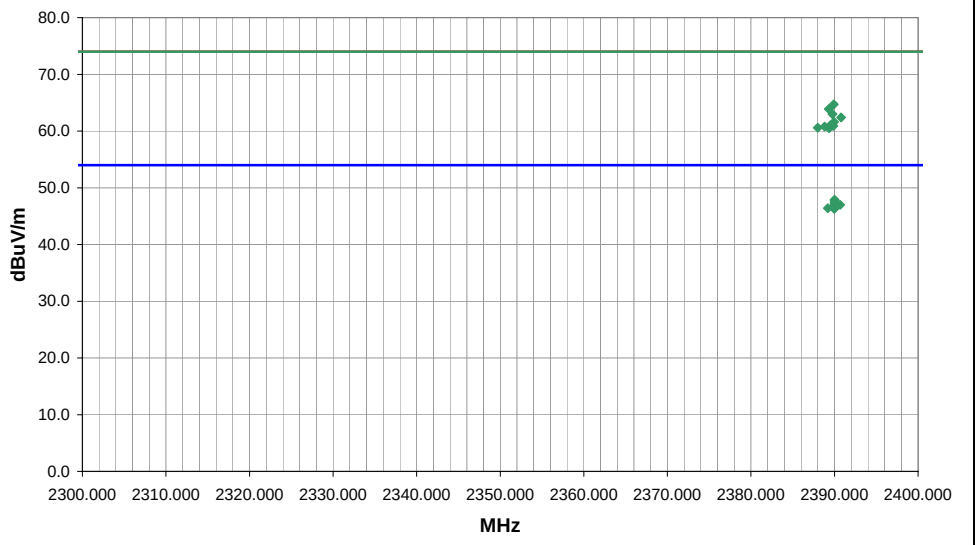
Transmitting 802.11(g), low channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	3
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2390.000	26.1	1.8	218.0	1.0	3.0	20.0	H-Horn	AV	0.0	47.9	54.0	-6.1	802.11g, 6 Mbps, EUT horizontal
2390.000	25.9	1.8	286.0	1.2	3.0	20.0	H-Horn	AV	0.0	47.7	54.0	-6.3	802.11g, 6 Mbps, EUT vertical
2389.997	25.5	1.8	220.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.3	54.0	-6.7	802.11g, 6 Mbps, EUT on side
2390.677	25.2	1.8	221.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.0	54.0	-7.0	802.11g, 6 Mbps, EUT vertical
2389.987	25.1	1.8	229.0	1.2	3.0	20.0	H-Horn	AV	0.0	46.9	54.0	-7.1	802.11g, 36 Mbps, EUT horizontal
2389.997	24.9	1.8	229.0	1.2	3.0	20.0	H-Horn	AV	0.0	46.7	54.0	-7.3	802.11g, 54 Mbps, EUT horizontal
2389.977	24.8	1.8	220.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.6	54.0	-7.4	802.11g, 36 Mbps, EUT on side
2389.193	24.6	1.8	220.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	802.11g, 54 Mbps, EUT on side
2390.000	24.6	1.8	163.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	802.11g, 6 Mbps, EUT on side
2389.963	24.5	1.8	121.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	802.11g, 6 Mbps, EUT horizontal
2389.903	42.9	1.8	218.0	1.0	3.0	20.0	H-Horn	PK	0.0	64.7	74.0	-9.3	802.11g, 6 Mbps, EUT horizontal
2389.310	42.1	1.8	286.0	1.2	3.0	20.0	H-Horn	PK	0.0	63.9	74.0	-10.1	802.11g, 6 Mbps, EUT vertical
2389.753	41.2	1.8	220.0	1.0	3.0	20.0	V-Horn	PK	0.0	63.0	74.0	-11.0	802.11g, 6 Mbps, EUT on side
2390.800	40.6	1.8	229.0	1.2	3.0	20.0	H-Horn	PK	0.0	62.4	74.0	-11.6	802.11g, 54 Mbps, EUT horizontal
2389.947	39.8	1.8	221.0	1.0	3.0	20.0	V-Horn	PK	0.0	61.6	74.0	-12.4	802.11g, 6 Mbps, EUT vertical
2389.493	39.2	1.8	229.0	1.2	3.0	20.0	H-Horn	PK	0.0	61.0	74.0	-13.0	802.11g, 36 Mbps, EUT horizontal
2389.847	39.1	1.8	163.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.9	74.0	-13.1	802.11g, 6 Mbps, EUT on side
2388.813	39.0	1.8	220.0	1.0	3.0	20.0	V-Horn	PK	0.0	60.8	74.0	-13.2	802.11g, 54 Mbps, EUT on side
2388.003	38.8	1.8	121.0	1.0	3.0	20.0	V-Horn	PK	0.0	60.6	74.0	-13.4	802.11g, 6 Mbps, EUT horizontal
2389.363	38.7	1.8	220.0	1.0	3.0	20.0	V-Horn	PK	0.0	60.5	74.0	-13.5	802.11g, 36 Mbps, EUT on side

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	23
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	30.85
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

In docking station, fully populated.

EUT OPERATING MODES

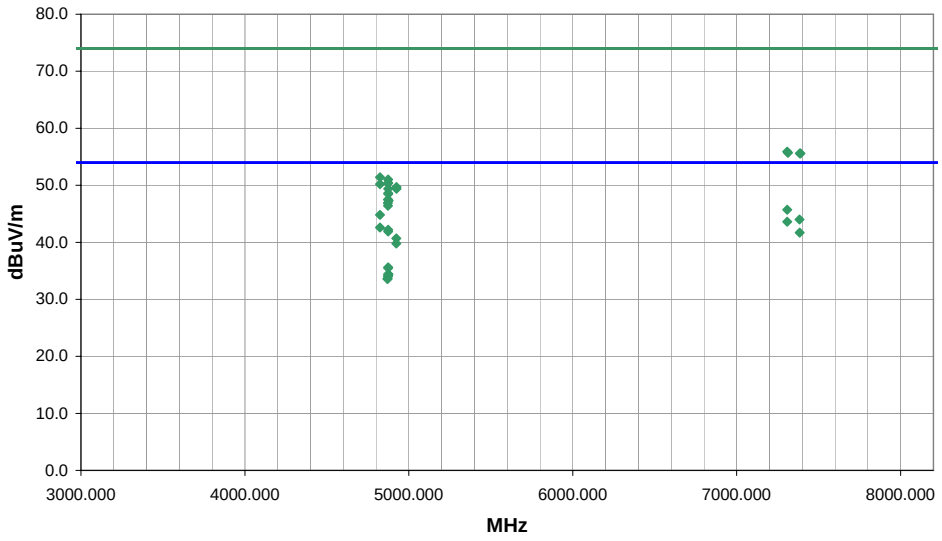
Transmitting 802.11

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Configuration #	2
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7308.267	30.2	15.5	36.0	1.5	3.0	0.0	H-Horn	AV	0.0	45.7	54.0	-8.3	Mid channel, 802.11b, 1 Mbps
4824.040	35.3	9.5	345.0	1.0	3.0	0.0	H-Horn	AV	0.0	44.8	54.0	-9.2	Low channel, 802.11b, 1 Mbps
7383.208	28.3	15.7	40.0	1.0	3.0	0.0	H-Horn	AV	0.0	44.0	54.0	-10.0	High channel, 802.11b, 1 Mbps
7308.300	28.1	15.5	262.0	1.1	3.0	0.0	V-Horn	AV	0.0	43.6	54.0	-10.4	Mid channel, 802.11b, 1 Mbps
4824.045	33.1	9.5	45.0	1.0	3.0	0.0	V-Horn	AV	0.0	42.6	54.0	-11.4	Low channel, 802.11b, 1 Mbps
4874.038	32.5	9.7	342.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.2	54.0	-11.8	Mid channel, 802.11b, 1 Mbps
4874.050	32.2	9.7	61.0	1.0	3.0	0.0	V-Horn	AV	0.0	41.9	54.0	-12.1	Mid channel, 802.11b, 1 Mbps
7384.567	26.0	15.7	351.0	1.0	3.0	0.0	V-Horn	AV	0.0	41.7	54.0	-12.3	High channel, 802.11b, 1 Mbps
4924.063	30.8	9.9	0.0	1.0	3.0	0.0	V-Horn	AV	0.0	40.7	54.0	-13.3	High channel, 802.11b, 1 Mbps
4924.002	29.9	9.9	352.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.8	54.0	-14.2	High channel, 802.11b, 1 Mbps
7308.133	40.4	15.5	36.0	1.5	3.0	0.0	H-Horn	PK	0.0	55.9	74.0	-18.1	Mid channel, 802.11b, 1 Mbps
7313.300	40.2	15.5	262.0	1.1	3.0	0.0	V-Horn	PK	0.0	55.7	74.0	-18.3	Mid channel, 802.11b, 1 Mbps
7385.017	39.9	15.7	351.0	1.0	3.0	0.0	V-Horn	PK	0.0	55.6	74.0	-18.4	High channel, 802.11b, 1 Mbps
7388.533	39.9	15.7	40.0	1.0	3.0	0.0	H-Horn	PK	0.0	55.6	74.0	-18.4	High channel, 802.11b, 1 Mbps
4874.150	25.9	9.7	58.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.6	54.0	-18.4	Mid channel, 802.11b, 11 Mbps
4874.077	25.8	9.7	360.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.5	54.0	-18.5	Mid channel, 802.11b, 11 Mbps
4874.200	24.7	9.7	352.0	1.0	3.0	0.0	H-Horn	AV	0.0	34.4	54.0	-19.6	Mid channel, 802.11g, 6 Mbps
4875.833	24.6	9.8	353.0	1.0	3.0	0.0	H-Horn	AV	0.0	34.4	54.0	-19.6	Mid channel, 802.11g, 36 Mbps
4873.943	24.4	9.7	0.0	1.0	3.0	0.0	V-Horn	AV	0.0	34.1	54.0	-19.9	Mid channel, 802.11g, 6 Mbps
4873.092	24.3	9.7	353.0	1.0	3.0	0.0	H-Horn	AV	0.0	34.0	54.0	-20.0	Mid channel, 802.11g, 54 Mbps

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	23
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	30.85
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

EUT standalone with audio cable

EUT OPERATING MODES

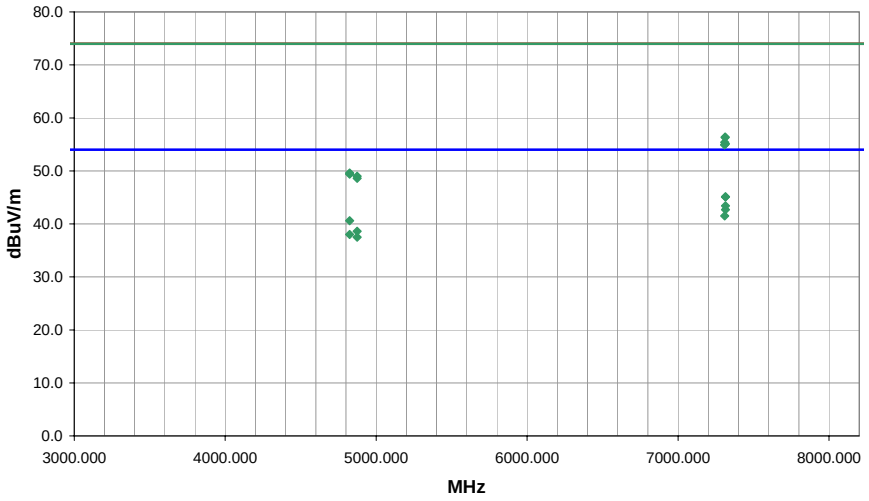
Transmitting 802.11

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	3
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7313.783	29.6	15.5	40.0	1.2	3.0	0.0	H-Horn	AV	0.0	45.1	54.0	-8.9	Mid channel, 802.11b, 1 Mbps, EUT vertical
7314.167	29.6	15.5	279.0	1.4	3.0	0.0	V-Horn	AV	0.0	45.1	54.0	-8.9	Mid channel, 802.11b, 1 Mbps, EUT on side
7313.983	27.9	15.5	196.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.4	54.0	-10.6	Mid channel, 802.11b, 1 Mbps, EUT vertical
7314.400	27.2	15.5	164.0	1.2	3.0	0.0	H-Horn	AV	0.0	42.7	54.0	-11.3	Mid channel, 802.11b, 1 Mbps, EUT on side
7308.083	26.0	15.5	237.0	1.0	3.0	0.0	H-Horn	AV	0.0	41.5	54.0	-12.5	Mid channel, 802.11b, 1 Mbps, EUT horizontal
4824.035	31.1	9.5	164.0	1.0	3.0	0.0	H-Horn	AV	0.0	40.6	54.0	-13.4	Low channel, 802.11b, 1 Mbps, EUT on side
4873.990	28.9	9.7	77.0	1.2	3.0	0.0	H-Horn	AV	0.0	38.6	54.0	-15.4	Mid channel, 802.11b, 1 Mbps, EUT vertical
4824.143	28.5	9.5	167.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.0	54.0	-16.0	Low channel, 802.11b, 1 Mbps, EUT on side
4874.123	27.8	9.7	166.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.5	54.0	-16.5	Mid channel, 802.11b, 1 Mbps, EUT on side
7311.383	40.9	15.5	279.0	1.4	3.0	0.0	V-Horn	PK	0.0	56.4	74.0	-17.6	Mid channel, 802.11b, 1 Mbps, EUTon side
7311.883	40.8	15.5	40.0	1.2	3.0	0.0	H-Horn	PK	0.0	56.3	74.0	-17.7	Mid channel, 802.11b, 1 Mbps, EUTvertical
7308.900	39.9	15.5	164.0	1.2	3.0	0.0	H-Horn	PK	0.0	55.4	74.0	-18.6	Mid channel, 802.11b, 1 Mbps, EUTon side
7314.050	39.6	15.5	237.0	1.0	3.0	0.0	H-Horn	PK	0.0	55.1	74.0	-18.9	Mid channel, 802.11b, 1 Mbps, EUThorizontal
7307.983	39.4	15.5	196.0	1.0	3.0	0.0	V-Horn	PK	0.0	54.9	74.0	-19.1	Mid channel, 802.11b, 1 Mbps, EUTvertical
4823.860	40.1	9.5	164.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.6	74.0	-24.4	Low channel, 802.11b, 1 Mbps, EUT on side
4823.780	39.9	9.5	167.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.4	74.0	-24.6	Low channel, 802.11b, 1 Mbps, EUT on side
4874.235	39.3	9.7	77.0	1.2	3.0	0.0	H-Horn	PK	0.0	49.0	74.0	-25.0	Mid channel, 802.11b, 1 Mbps, EUTvertical
4873.880	38.9	9.7	166.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.6	74.0	-25.4	Mid channel, 802.11b, 1 Mbps, EUT on side

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.4.13

EUT:	1402	Work Order:	MCSO1416
Serial Number:	000 025 791 815	Date:	05/22/09
Customer:	Microsoft Corporation	Temperature:	21
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	31.05
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

EUT standalone with audio cable

EUT OPERATING MODES

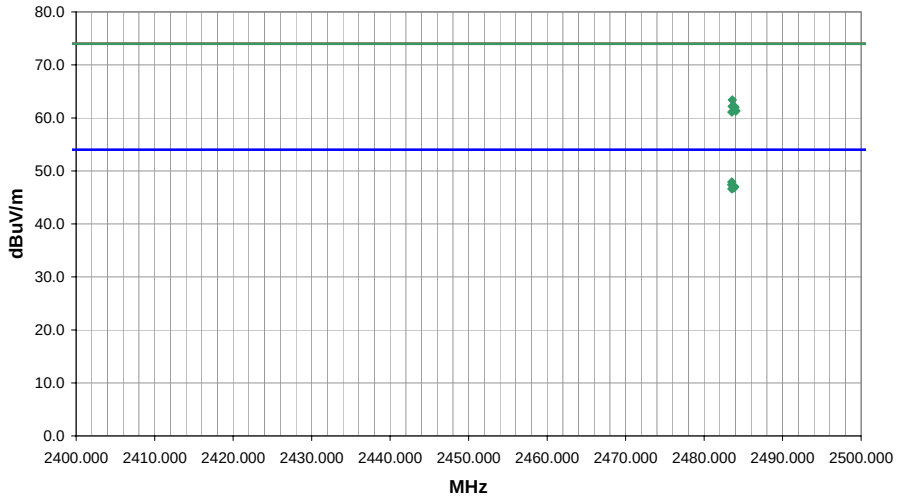
Transmitting 802.11

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Configuration #	3
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.530	25.7	2.2	218.0	1.2	3.0	20.0	V-Horn	AV	0.0	47.9	54.0	-6.1	High channel, 802.11g, 36 Mbps, EUT on side
2483.500	25.2	2.2	166.0	1.3	3.0	20.0	V-Horn	AV	0.0	47.4	54.0	-6.6	High channel, 802.11g, 6 Mbps, EUT on side
2483.691	24.9	2.2	154.0	1.2	3.0	20.0	H-Horn	AV	0.0	47.1	54.0	-6.9	High channel, 802.11g, 54 Mbps, EUT on side
2483.905	24.8	2.2	174.0	1.6	3.0	20.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g, 54 Mbps, EUT on side
2483.792	24.6	2.2	153.0	1.2	3.0	20.0	H-Horn	AV	0.0	46.8	54.0	-7.2	High channel, 802.11g, 6 Mbps, EUT on side
2483.528	24.4	2.2	107.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.6	54.0	-7.4	High channel, 802.11g, 36 Mbps, EUT on side
2483.597	41.2	2.2	218.0	1.2	3.0	20.0	V-Horn	PK	0.0	63.4	74.0	-10.6	High channel, 802.11g, 36 Mbps, EUT on side
2483.577	40.0	2.2	166.0	1.3	3.0	20.0	V-Horn	PK	0.0	62.2	74.0	-11.8	High channel, 802.11g, 6 Mbps, EUT on side
2483.848	39.9	2.2	174.0	1.6	3.0	20.0	V-Horn	PK	0.0	62.1	74.0	-11.9	High channel, 802.11g, 54 Mbps, EUT on side
2483.937	39.8	2.2	154.0	1.2	3.0	20.0	H-Horn	PK	0.0	62.0	74.0	-12.0	High channel, 802.11g, 54 Mbps, EUT on side
2484.055	39.1	2.2	153.0	1.2	3.0	20.0	H-Horn	PK	0.0	61.3	74.0	-12.7	High channel, 802.11g, 6 Mbps, EUT on side
2483.525	38.9	2.2	107.0	1.0	3.0	20.0	H-Horn	PK	0.0	61.1	74.0	-12.9	High channel, 802.11g, 36 Mbps, EUT on side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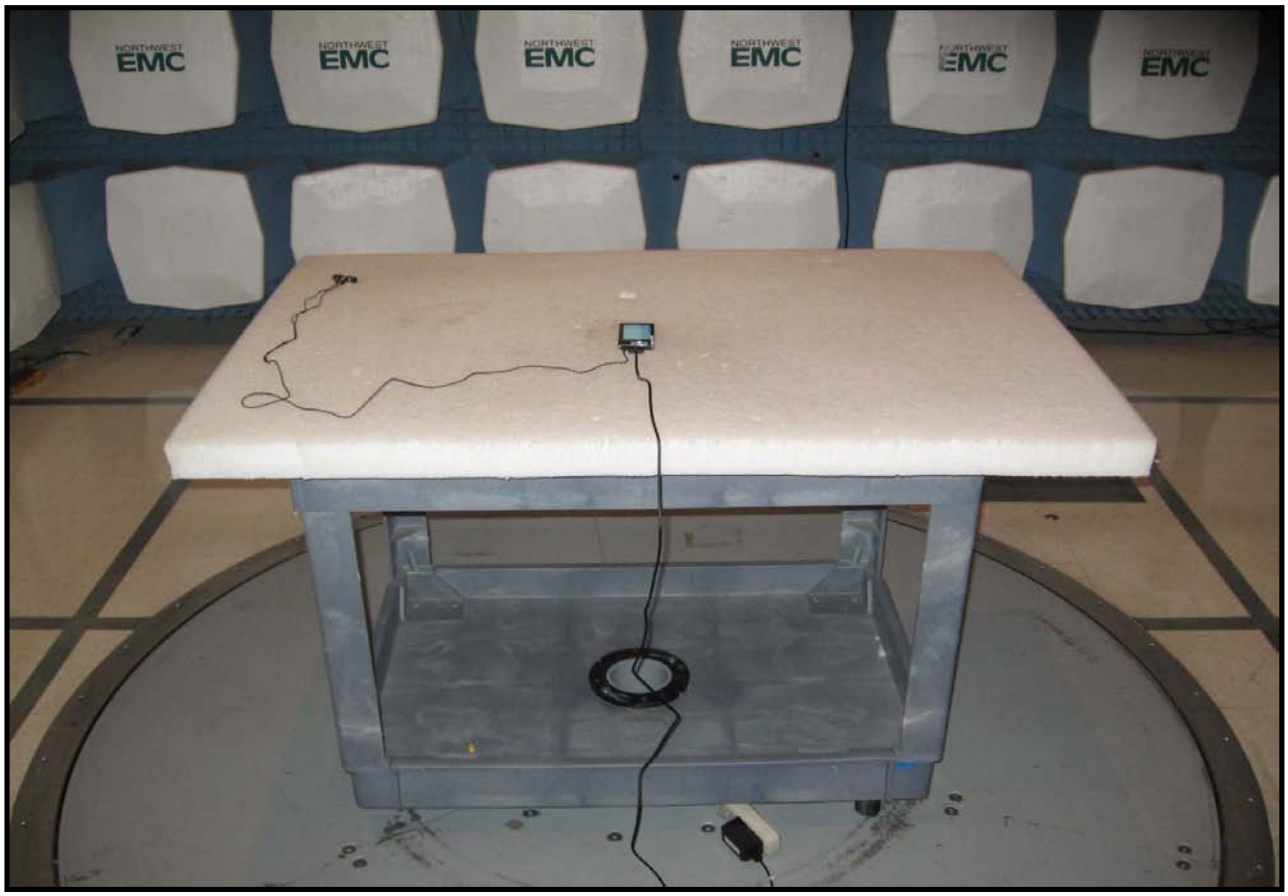
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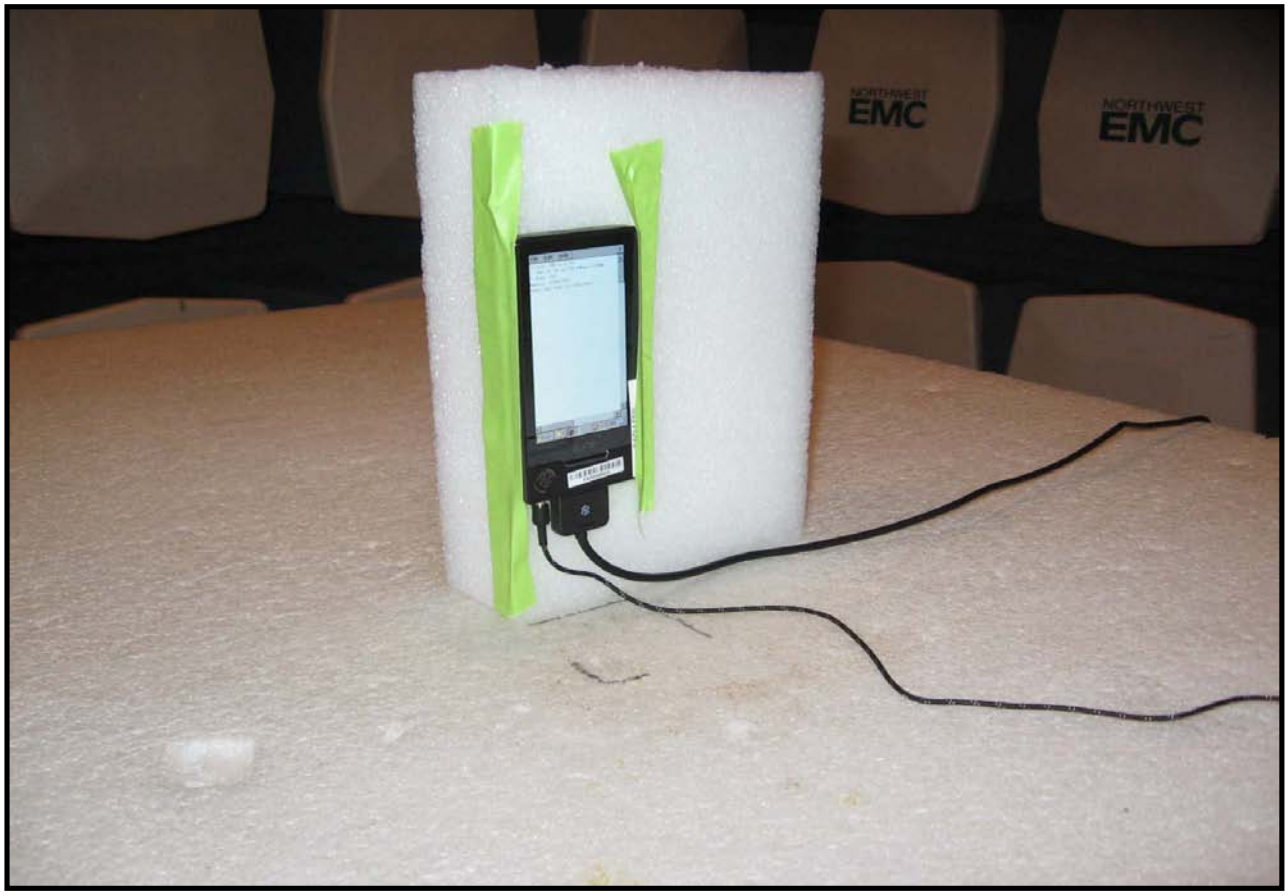
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AC POWERLINE CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION
Transmitting 802.11(g), 54 Mbps, high channel
Transmitting 802.11(g), 54 Mbps, mid channel
Transmitting 802.11(g), 54 Mbps, low channel

POWER SETTINGS INVESTIGATED
120V/60Hz

CONFIGURATIONS INVESTIGATED
MCSO1416 - 3

SAMPLE CALCULATIONS
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARH	8/28/2008	24 mo
High Pass Filter	T.T.E.	7766	HFG	2/23/2009	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	6/30/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	2/4/2009	13 mo
EV07 Cables		Conducted Cables	EVG	6/1/2008	13 mo

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm.

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AC POWERLINE CONDUCTED EMISSIONS

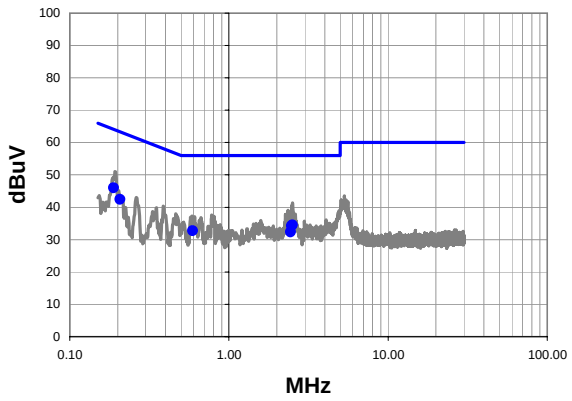
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, low channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

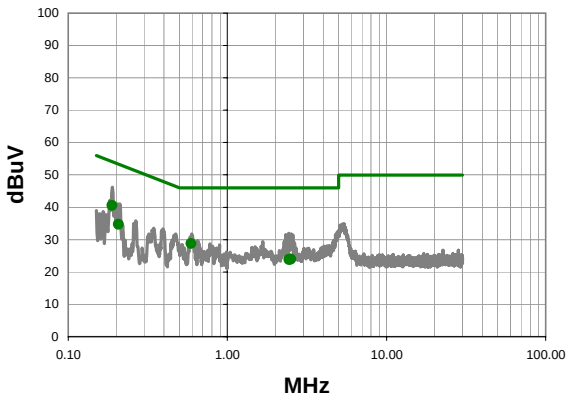
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	1	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.189	24.7	21.3	46.0	64.1	-18.1
0.207	21.4	21.1	42.5	63.3	-20.9
2.512	13.9	20.6	34.5	56.0	-21.5
2.476	13.6	20.6	34.2	56.0	-21.8
0.593	11.9	20.8	32.7	56.0	-23.3
2.436	11.7	20.6	32.3	56.0	-23.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.189	19.3	21.3	40.6	54.1	-13.5
0.593	7.9	20.8	28.7	46.0	-17.3
0.207	13.7	21.1	34.8	53.3	-18.6
2.476	3.3	20.6	23.9	46.0	-22.1
2.512	3.3	20.6	23.9	46.0	-22.1
2.436	3.2	20.6	23.8	46.0	-22.2

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AC POWERLINE CONDUCTED EMISSIONS

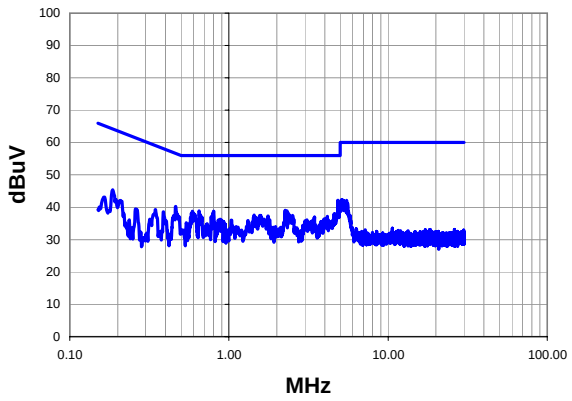
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, low channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

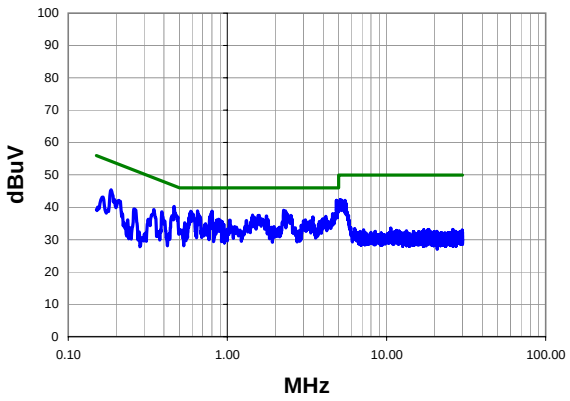
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	2	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.840	21.5	20.6	42.1	56.0	-13.9
0.463	19.4	20.9	40.3	56.6	-16.3
2.256	18.5	20.6	39.1	56.0	-16.9
2.320	18.3	20.6	38.9	56.0	-17.1
0.650	18.1	20.8	38.9	56.0	-17.1
0.801	18.1	20.7	38.8	56.0	-17.2
0.590	17.9	20.8	38.7	56.0	-17.3
2.280	17.9	20.6	38.5	56.0	-17.5
5.120	21.7	20.7	42.4	60.0	-17.6
2.352	17.7	20.6	38.3	56.0	-17.7
5.480	21.5	20.7	42.2	60.0	-17.8
5.240	21.5	20.7	42.2	60.0	-17.8
4.576	17.3	20.6	37.9	56.0	-18.1
0.662	16.9	20.8	37.7	56.0	-18.3
1.440	17.0	20.6	37.6	56.0	-18.4
1.568	16.9	20.6	37.5	56.0	-18.5
1.760	16.7	20.6	37.3	56.0	-18.7
5.570	20.6	20.7	41.3	60.0	-18.7
4.152	16.6	20.6	37.2	56.0	-18.8
0.186	24.1	21.3	45.4	64.2	-18.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.840	21.5	20.6	42.1	46.0	-3.9
0.463	19.4	20.9	40.3	46.6	-6.3
2.256	18.5	20.6	39.1	46.0	-6.9
2.320	18.3	20.6	38.9	46.0	-7.1
0.650	18.1	20.8	38.9	46.0	-7.1
0.801	18.1	20.7	38.8	46.0	-7.2
0.590	17.9	20.8	38.7	46.0	-7.3
2.280	17.9	20.6	38.5	46.0	-7.5
5.120	21.7	20.7	42.4	50.0	-7.6
2.352	17.7	20.6	38.3	46.0	-7.7
5.480	21.5	20.7	42.2	50.0	-7.8
5.240	21.5	20.7	42.2	50.0	-7.8
4.576	17.3	20.6	37.9	46.0	-8.1
0.662	16.9	20.8	37.7	46.0	-8.3
1.440	17.0	20.6	37.6	46.0	-8.4
1.568	16.9	20.6	37.5	46.0	-8.5
1.760	16.7	20.6	37.3	46.0	-8.7
5.570	20.6	20.7	41.3	50.0	-8.7
4.152	16.6	20.6	37.2	46.0	-8.8
0.186	24.1	21.3	45.4	54.2	-8.8

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AC POWERLINE CONDUCTED EMISSIONS

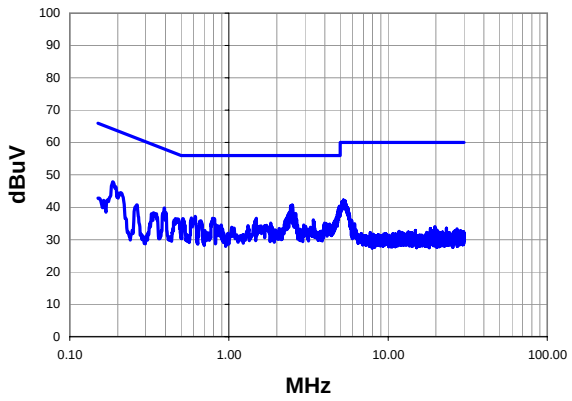
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, mid channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

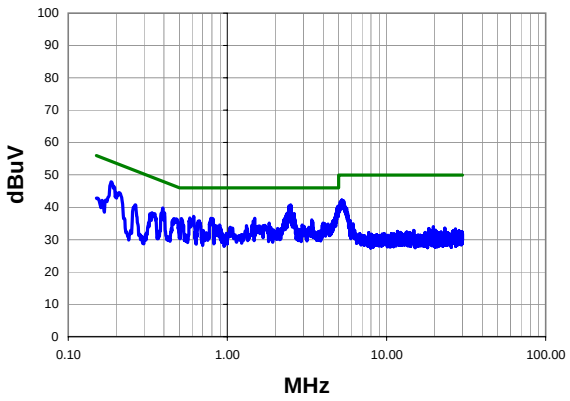
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	3	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
2.496	20.1	20.6	40.7	56.0	-15.3
2.512	19.9	20.6	40.5	56.0	-15.5
2.440	19.8	20.6	40.4	56.0	-15.6
4.944	19.7	20.6	40.3	56.0	-15.7
0.186	26.5	21.3	47.8	64.2	-16.4
5.240	21.6	20.7	42.3	60.0	-17.7
2.368	17.6	20.6	38.2	56.0	-17.8
2.624	17.5	20.6	38.1	56.0	-17.9
0.391	18.8	21.0	39.8	58.0	-18.3
0.614	16.4	20.8	37.2	56.0	-18.8
2.304	16.2	20.6	36.8	56.0	-19.2
0.789	15.9	20.7	36.6	56.0	-19.4
1.488	16.0	20.6	36.6	56.0	-19.4
0.512	15.6	20.9	36.5	56.0	-19.5
3.392	15.5	20.6	36.1	56.0	-19.9
0.461	15.6	20.9	36.5	56.7	-20.2
0.669	15.0	20.8	35.8	56.0	-20.2
1.456	15.1	20.6	35.7	56.0	-20.3
3.440	14.9	20.6	35.5	56.0	-20.5
0.264	19.7	21.0	40.7	61.3	-20.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
2.496	20.1	20.6	40.7	46.0	-5.3
2.512	19.9	20.6	40.5	46.0	-5.5
2.440	19.8	20.6	40.4	46.0	-5.6
4.944	19.7	20.6	40.3	46.0	-5.7
0.186	26.5	21.3	47.8	54.2	-6.4
5.240	21.6	20.7	42.3	50.0	-7.7
2.368	17.6	20.6	38.2	46.0	-7.8
2.624	17.5	20.6	38.1	46.0	-7.9
0.391	18.8	21.0	39.8	48.0	-8.3
0.614	16.4	20.8	37.2	46.0	-8.8
2.304	16.2	20.6	36.8	46.0	-9.2
0.789	15.9	20.7	36.6	46.0	-9.4
1.488	16.0	20.6	36.6	46.0	-9.4
0.512	15.6	20.9	36.5	46.0	-9.5
3.392	15.5	20.6	36.1	46.0	-9.9
0.461	15.6	20.9	36.5	46.7	-10.2
0.669	15.0	20.8	35.8	46.0	-10.2
1.456	15.1	20.6	35.7	46.0	-10.3
3.440	14.9	20.6	35.5	46.0	-10.5
0.264	19.7	21.0	40.7	51.3	-10.6

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AC POWERLINE CONDUCTED EMISSIONS

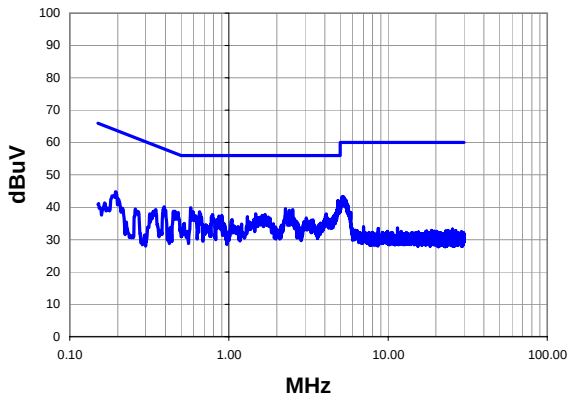
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, mid channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

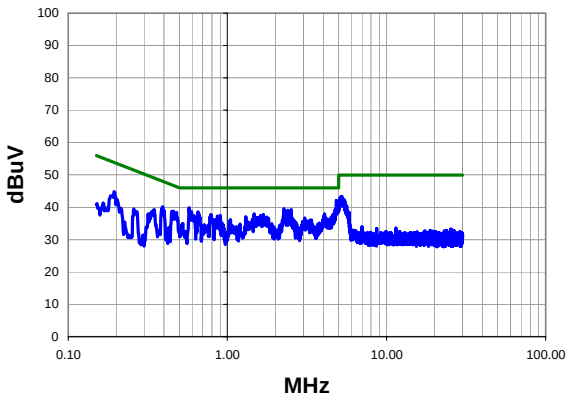
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	4	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.840	21.4	20.6	42.0	56.0	-14.0
4.928	20.9	20.6	41.5	56.0	-14.5
0.575	19.0	20.8	39.8	56.0	-16.2
2.264	19.0	20.6	39.6	56.0	-16.4
5.190	22.7	20.7	43.4	60.0	-16.6
2.512	18.7	20.6	39.3	56.0	-16.7
2.392	18.5	20.6	39.1	56.0	-16.9
0.653	17.8	20.8	38.6	56.0	-17.4
0.391	19.2	21.0	40.2	58.0	-17.9
1.472	17.4	20.6	38.0	56.0	-18.0
0.448	17.9	20.9	38.8	56.9	-18.1
4.080	17.2	20.6	37.8	56.0	-18.2
1.688	17.2	20.6	37.8	56.0	-18.2
0.789	17.0	20.7	37.7	56.0	-18.3
1.616	16.9	20.6	37.5	56.0	-18.5
0.903	16.8	20.6	37.4	56.0	-18.6
0.866	16.6	20.7	37.3	56.0	-18.7
1.304	16.5	20.6	37.1	56.0	-18.9
0.194	23.6	21.2	44.8	63.9	-19.1
4.472	16.2	20.6	36.8	56.0	-19.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.840	21.4	20.6	42.0	46.0	-4.0
4.928	20.9	20.6	41.5	46.0	-4.5
0.575	19.0	20.8	39.8	46.0	-6.2
2.264	19.0	20.6	39.6	46.0	-6.4
5.190	22.7	20.7	43.4	50.0	-6.6
2.512	18.7	20.6	39.3	46.0	-6.7
2.392	18.5	20.6	39.1	46.0	-6.9
0.653	17.8	20.8	38.6	46.0	-7.4
0.391	19.2	21.0	40.2	48.0	-7.9
1.472	17.4	20.6	38.0	46.0	-8.0
0.448	17.9	20.9	38.8	46.9	-8.1
4.080	17.2	20.6	37.8	46.0	-8.2
1.688	17.2	20.6	37.8	46.0	-8.2
0.789	17.0	20.7	37.7	46.0	-8.3
1.616	16.9	20.6	37.5	46.0	-8.5
0.903	16.8	20.6	37.4	46.0	-8.6
0.866	16.6	20.7	37.3	46.0	-8.7
1.304	16.5	20.6	37.1	46.0	-8.9
0.194	23.6	21.2	44.8	53.9	-9.1
4.472	16.2	20.6	36.8	46.0	-9.2

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

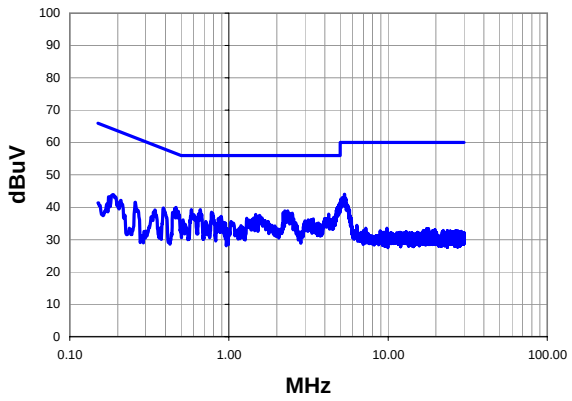
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, high channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

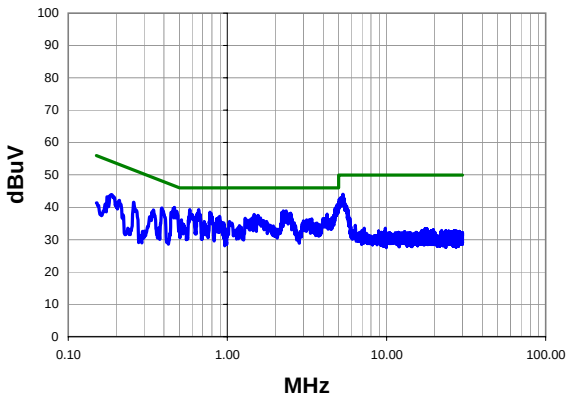
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	5	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
5.320	23.4	20.7	44.1	60.0	-15.9
0.465	19.1	20.9	40.0	56.6	-16.6
0.660	18.5	20.8	39.3	56.0	-16.7
0.580	18.4	20.8	39.2	56.0	-16.8
0.456	18.8	20.9	39.7	56.8	-17.1
2.344	18.3	20.6	38.9	56.0	-17.1
2.240	18.3	20.6	38.9	56.0	-17.1
0.777	17.8	20.7	38.5	56.0	-17.5
2.192	17.8	20.6	38.4	56.0	-17.6
2.496	17.6	20.6	38.2	56.0	-17.8
4.224	17.2	20.6	37.8	56.0	-18.2
1.472	17.2	20.6	37.8	56.0	-18.2
0.386	18.8	21.0	39.8	58.1	-18.4
1.560	16.9	20.6	37.5	56.0	-18.5
0.893	16.5	20.6	37.1	56.0	-18.9
0.876	16.1	20.7	36.8	56.0	-19.2
1.432	16.1	20.6	36.7	56.0	-19.3
1.296	16.0	20.6	36.6	56.0	-19.4
3.384	15.8	20.6	36.4	56.0	-19.6
2.552	15.8	20.6	36.4	56.0	-19.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
5.320	23.4	20.7	44.1	50.0	-5.9
0.465	19.1	20.9	40.0	46.6	-6.6
0.660	18.5	20.8	39.3	46.0	-6.7
0.580	18.4	20.8	39.2	46.0	-6.8
0.456	18.8	20.9	39.7	46.8	-7.1
2.344	18.3	20.6	38.9	46.0	-7.1
2.240	18.3	20.6	38.9	46.0	-7.1
0.777	17.8	20.7	38.5	46.0	-7.5
2.192	17.8	20.6	38.4	46.0	-7.6
2.496	17.6	20.6	38.2	46.0	-7.8
4.224	17.2	20.6	37.8	46.0	-8.2
1.472	17.2	20.6	37.8	46.0	-8.2
0.386	18.8	21.0	39.8	48.1	-8.4
1.560	16.9	20.6	37.5	46.0	-8.5
0.893	16.5	20.6	37.1	46.0	-8.9
0.876	16.1	20.7	36.8	46.0	-9.2
1.432	16.1	20.6	36.7	46.0	-9.3
1.296	16.0	20.6	36.6	46.0	-9.4
3.384	15.8	20.6	36.4	46.0	-9.6
2.552	15.8	20.6	36.4	46.0	-9.6

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

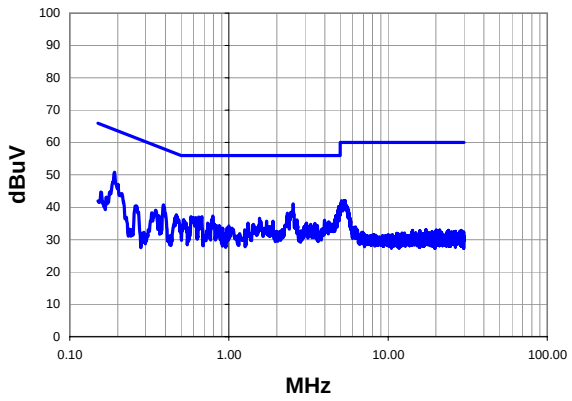
PSA-ESCI 2009.04.01
Version 2009.5.18

Work Order:	MCSO1416	**Date:**	06/05/09		
Project:	None	**Temperature:**	23		
Job Site:	EV07	**Humidity:**	36		
Serial Number:	000 025 791 815	**Barometric Pres.:**	30.85	**Tested by:**	Rod Peloquin
EUT:	1402				
Configuration:	3 - Radiated Spurious Emissions - Standalone				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmitting 802.11(g), 54 Mbps, high channel				
Deviations:	No deviations.				
Comments:	Standalone with headphones				

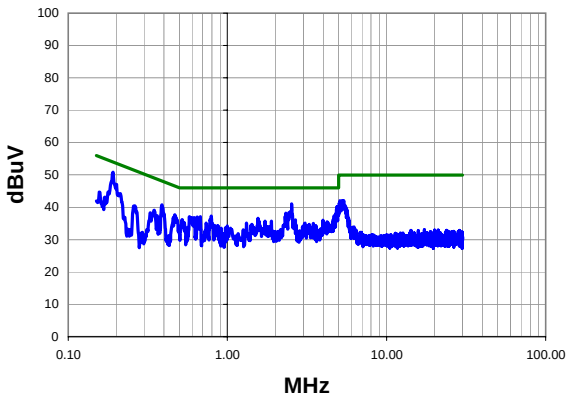
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2009		ANSI C63.4:2003

Run #	6	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.6	21.2	50.8	64.0	-13.2
2.536	20.4	20.6	41.0	56.0	-15.0
4.888	19.5	20.6	40.1	56.0	-15.9
4.848	18.6	20.6	39.2	56.0	-16.8
0.388	19.8	21.0	40.8	58.1	-17.4
2.328	17.6	20.6	38.2	56.0	-17.8
5.310	21.4	20.7	42.1	60.0	-17.9
5.100	21.4	20.7	42.1	60.0	-17.9
2.368	17.1	20.6	37.7	56.0	-18.3
4.696	16.7	20.6	37.3	56.0	-18.7
0.791	16.6	20.7	37.3	56.0	-18.7
2.312	16.6	20.6	37.2	56.0	-18.8
0.468	16.8	20.9	37.7	56.6	-18.8
0.675	16.3	20.8	37.1	56.0	-18.9
0.578	16.2	20.8	37.0	56.0	-19.0
0.645	16.2	20.8	37.0	56.0	-19.0
1.560	16.0	20.6	36.6	56.0	-19.4
0.519	15.3	20.9	36.2	56.0	-19.8
3.984	15.4	20.6	36.0	56.0	-20.0
0.346	18.1	21.0	39.1	59.1	-20.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.6	21.2	50.8	54.0	-3.2
2.536	20.4	20.6	41.0	46.0	-5.0
4.888	19.5	20.6	40.1	46.0	-5.9
4.848	18.6	20.6	39.2	46.0	-6.8
0.388	19.8	21.0	40.8	48.1	-7.4
2.328	17.6	20.6	38.2	46.0	-7.8
5.310	21.4	20.7	42.1	50.0	-7.9
5.100	21.4	20.7	42.1	50.0	-7.9
2.368	17.1	20.6	37.7	46.0	-8.3
4.696	16.7	20.6	37.3	46.0	-8.7
0.791	16.6	20.7	37.3	46.0	-8.7
2.312	16.6	20.6	37.2	46.0	-8.8
0.468	16.8	20.9	37.7	46.6	-8.8
0.675	16.3	20.8	37.1	46.0	-8.9
0.578	16.2	20.8	37.0	46.0	-9.0
0.645	16.2	20.8	37.0	46.0	-9.0
1.560	16.0	20.6	36.6	46.0	-9.4
0.519	15.3	20.9	36.2	46.0	-9.8
3.984	15.4	20.6	36.0	46.0	-10.0
0.346	18.1	21.0	39.1	49.1	-10.0