

# Juniper Systems, Inc.

## Allegro MX WiFi Module

Report No. JUNI0005.1 Rev. 1

Report Prepared By



[www.nwemc.com](http://www.nwemc.com)

1-888-EMI-CERT

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EMC Test Report



22975 NW Evergreen Parkway  
Suite 400  
Hillsboro, Oregon 97124

**Certificate of Test**  
**Last Date of Testing: October 09, 2008**  
**Juniper Systems, Inc.**  
**Model: Allegro MX WiFi Module**

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions	FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074	Pass
AC Powerline Conducted Emissions	FCC 15.207:2007	ANSI C63.4:2003 KDB No. 558074	Pass
Peak Output Power	FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074	Pass
Occupied Bandwidth	FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074	Pass
Band Edge Compliance	FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074	Pass
Power Spectral Density	FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074	Pass
Spurious Conducted Emissions	FCC 15.247 (DTS):2007	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:**

Ethan Schoonover, Sultan Lab Manager



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	Added Peak Output Power, Occupied Bandwidth, Band Edge Compliance, Power Spectral Density, and Spurious Conducted Emissions data to this report	10/10/2008	40-90

**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.



**TÜV Product Service:** Included in TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV's CARAT Program requirements. Certificate No. USA0604C.



**TÜV Rheinland:** Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



**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



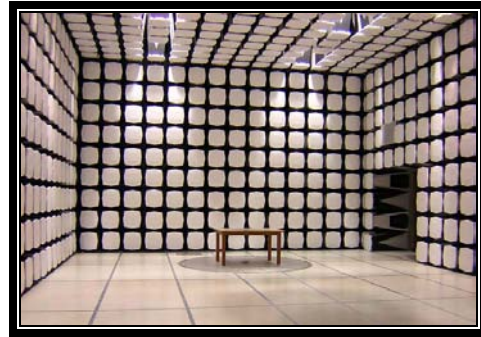
**MIC:** Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157*)



## SCOPE

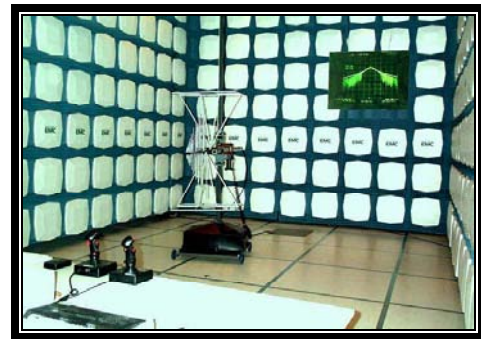
For details on the Scopes of our Accreditations, please visit:

<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 339<sup>th</sup> Ave. SE Sultan, WA 98294  
(888) 364-2378



## Party Requesting the Test

<b>Company Name:</b>	Juniper Systems, Inc.
<b>Address:</b>	1132 West 1700 North
<b>City, State, Zip:</b>	Logan, UT 84321
<b>Test Requested By:</b>	Kent Campbell
<b>Model:</b>	Allegro MX WiFi Module
<b>First Date of Test:</b>	September 3, 2008
<b>Last Date of Test:</b>	October 9, 2008
<b>Receipt Date of Samples:</b>	July 22, 2008
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

## Information Provided by the Party Requesting the Test

## Functional Description of the EUT (Equipment Under Test):

Ultra-rugged Field PC contains the Go WiFi! radio module.

## Testing Objective:

To demonstrate compliance to FCC 15.247 radiated and conducted emissions requirements.

## EUT Photo



**CONFIGURATION 1 JUNI0005****Software/Firmware Running during test**

Description	Version
Bluetest	None
RFUtil	None

**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth radio	Socket	BC04	None
802.11 radio	Socket	Go Wi-Fi!	None
Handheld PC	Juniper Systems, Inc.	Allegro Mx	beta prototype #61

**Peripherals in test setup boundary**

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 1	Ktec	KSAC1200100W1UV-1	None

**Remote Equipment Outside of Test Setup Boundary**

Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	PP01X	5743258993
Laptop power adapter	Dell	ADP-70EB	TH-0K8302-17971-4B8-KZ0G

**Cables**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial to USB	Yes	3.0m	No	Handheld PC	Laptop
USB	Yes	1.8m	No	Handheld PC	Unterminated
USB	Yes	1.2m	Yes	Handheld PC	Unterminated
DC	No	1.8	Yes	Handheld PC	AC Adapter 1
DC	No	1.3m	Yes	Laptop	Laptop power adapter
AC	No	1.6m	No	Laptop power adapter	AC Mains

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.



**CONFIGURATION 2 JUNI0005****Software/Firmware Running during test**

Description	Version
Bluetest	None
RFUtil	None

**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth radio	Socket	BC04	None
802.11 radio	Socket	Go Wi-Fi!	None
Handheld PC	Juniper Systems, Inc.	Allegro Mx	beta prototype #61

**Peripherals in test setup boundary**

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 1	Ktec	KSAC1200100W1UV-1	None

**Remote Equipment Outside of Test Setup Boundary**

Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	PP01X	5743258993
Laptop power adapter	Dell	ADP-70EB	TH-0K8302-17971-4B8-KZ0G

**Cables**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB	Yes	1.8m	No	Handheld PC	Unterminated
USB	Yes	1.2m	Yes	Handheld PC	Unterminated
DC	No	1.8	Yes	Handheld PC	AC Adapter 1
DC	No	1.3m	Yes	Laptop	Laptop power adapter
AC	No	1.6m	No	Laptop power adapter	AC Mains
Serial to USB	Yes	1.8m	No	Handheld PC	Laptop

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

**CONFIGURATION 3 JUNI0005****Software/Firmware Running during test**

Description	Version
Bluetest	None
RFUtil	None

**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth radio	Socket	BC04	None
802.11 radio	Socket	Go Wi-Fi!	None
Handheld PC	Juniper Systems, Inc.	Allegro Mx	beta prototype #61

**Peripherals in test setup boundary**

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 2	Phihong	PSM11R-120(JS)-R MV2	Engineering Sample #3

**Remote Equipment Outside of Test Setup Boundary**

Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	PP01X	5743258993
Laptop power adapter	Dell	ADP-70EB	TH-0K8302-17971-4B8-KZ0G

**Cables**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB	Yes	1.8m	No	Handheld PC	Unterminated
USB	Yes	1.2m	Yes	Handheld PC	Unterminated
DC	No	1.8m	No	Handheld PC	AC Adapter 2
DC	No	1.3m	Yes	Laptop	Laptop power adapter
AC	No	1.6m	No	Laptop power adapter	AC Mains
Serial to USB	Yes	1.8m	No	Handheld PC	Laptop

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

**CONFIGURATION 4 JUNI0005****Software/Firmware Running during test**

Description	Version
Bluetest	None

**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
802.11 radio	Socket	Go Wi-Fi!	None
Handheld PC	Juniper Systems, Inc.	Allegro Mx	beta prototype #63

**Peripherals in test setup boundary**

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 1	Ktec	KSAC1200100W1UV-1	None

**Cables**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC	No	1.8	Yes	Handheld PC	AC Adapter 1

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	9/3/2008	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.
2	9/4/2008	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was complete.
3	8/12/2008	Peak 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.
4	10/8/2008	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.
5	10/08/2008	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.
6	10/8/2008	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.
7	10/9/2008	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was complete.

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**

802.11(b), 1 Mbps  
802.11(b), 11 Mbps  
802.11(g), 6 Mbps  
802.11(g), 36 Mbps  
802.11(g), 54 Mbps

**CHANNELS TESTED**

Low channel, 2412 MHz  
Mid channel, 2437 MHz  
High channel, 2462 MHz

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz

**FREQUENCY RANGE INVESTIGATED**

Start Frequency 30 MHz Stop Frequency 26500 MHz

**SAMPLE CALCULATIONS**

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

**TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	ETS	3160-08	AIA	11/28/2007	12
EV12 Cables		Standard Gain Horn Cables	EVU	5/14/2008	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	5/14/2008	13
Antenna, Horn	ETS	3115	AIB	8/25/2008	24
EV12 Cables		Double Ridge Horn Cables	EVT	6/17/2008	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	6/17/2008	13
High Pass Filter	Micro-Tronics	50111	HGE	5/14/2008	13
Attenuator	Pasternack	PE7005-20	AUN	5/10/2008	13
EV01 Cables		6GHz Standard Gain Horn C	EVD	7/25/2007	16
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	7/25/2007	16
EV01 Cables		Standard Gain Horns Cables	EVF	10/23/2007	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	6/30/2008	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	6/30/2008	13
EV01 Cables		Double Ridge Horn Cables	EVB	5/19/2008	13
Antenna, Horn	EMCO	3115	AHC	8/12/2008	24
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/19/2008	13
EV01 Cables		Bilog Cables	EVA	5/19/2008	13
Antenna, Biconilog	EMCO	3141	AXE	1/15/2008	24
Pre-Amplifier	Miteq	AM-1616-1000	AOL	5/19/2008	13

**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.

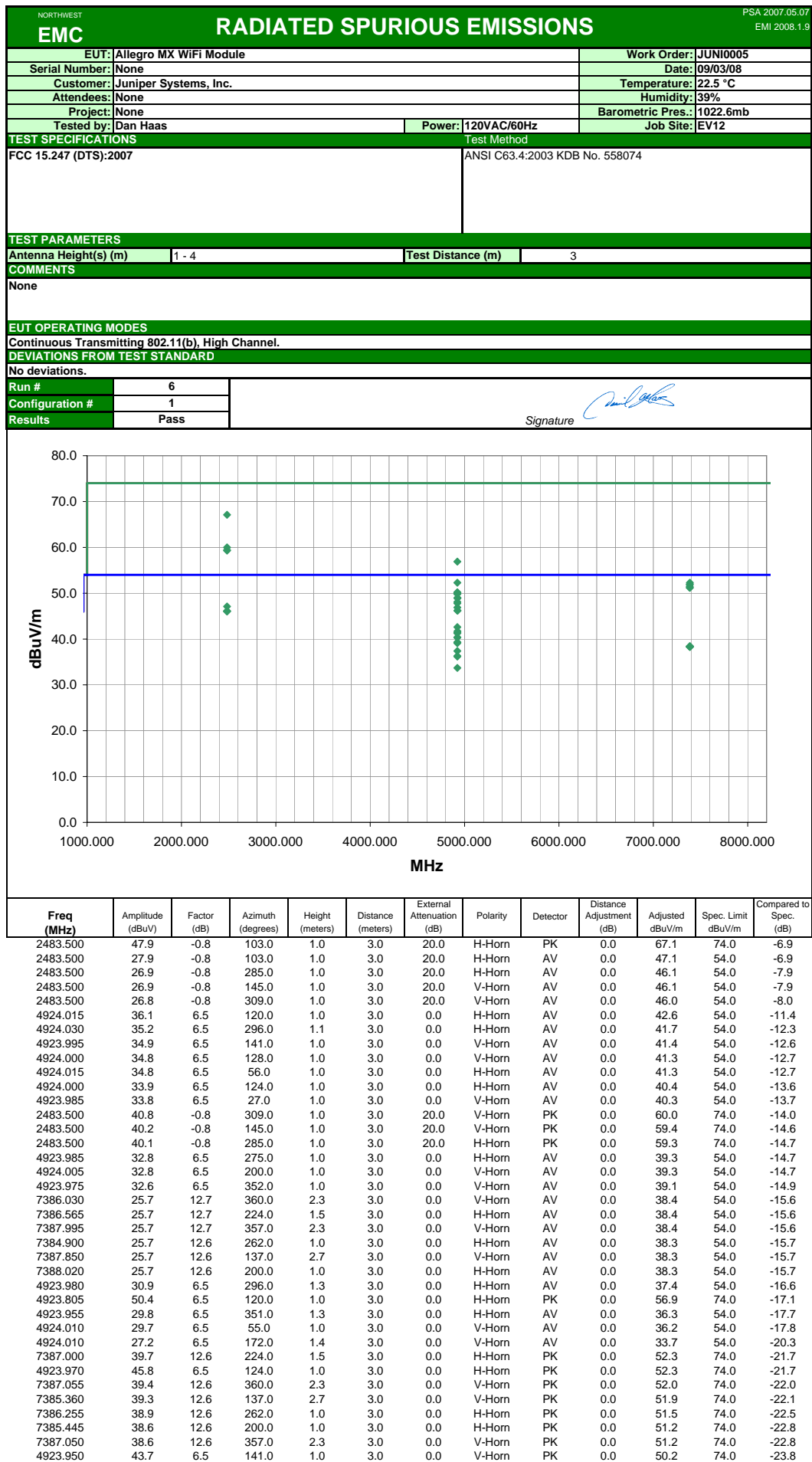
**MEASUREMENT UNCERTAINTY**

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. 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**

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.



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
4923.890	43.6	6.5	128.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.1	74.0	-23.9	54 Mbps, EUT upright.
4923.975	43.6	6.5	27.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.1	74.0	-23.9	6 Mbps, EUT on it's back.
4923.735	43.4	6.5	200.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.9	74.0	-24.1	36 Mbps, EUT upright.
4923.850	43.3	6.5	296.0	1.1	3.0	0.0	H-Horn	PK	0.0	49.8	74.0	-24.2	6 Mbps, EUT upright.
4924.210	42.5	6.5	56.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.0	74.0	-25.0	1 Mbps, EUT upright.
4924.160	42.4	6.5	275.0	1.0	3.0	0.0	H-Horn	PK	0.0	48.9	74.0	-25.1	11 Mbps, EUT upright.
4923.925	41.6	6.5	352.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.1	74.0	-25.9	6 Mbps, EUT on it's side.
4923.620	41.3	6.5	296.0	1.3	3.0	0.0	H-Horn	PK	0.0	47.8	74.0	-26.2	6 Mbps, EUT on it's back.
4923.675	40.4	6.5	351.0	1.3	3.0	0.0	H-Horn	PK	0.0	46.9	74.0	-27.1	6 Mbps, EUT on it's side.
4924.040	39.7	6.5	172.0	1.4	3.0	0.0	V-Horn	PK	0.0	46.2	74.0	-27.8	11 Mbps, EUT upright.
4924.150	39.7	6.5	55.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.2	74.0	-27.8	1 Mbps, EUT upright.



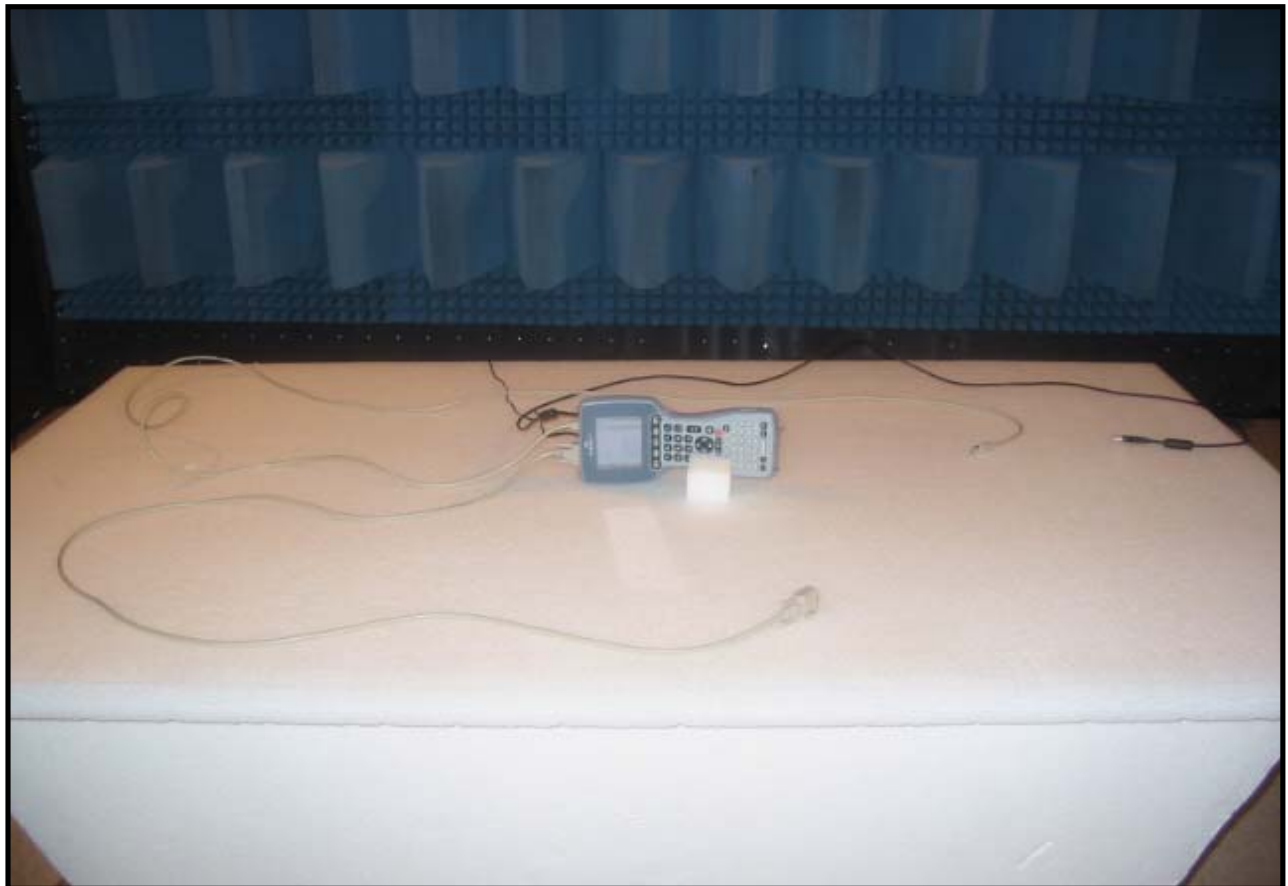
NORTHWEST		PSA 2007.05.07											
EMI 2008.1.9													
EMC													
EUT: Allegro MX WiFi Module		Work Order: JUNI0005											
Serial Number: None		Date: 09/03/08											
Customer: Juniper Systems, Inc.		Temperature: 22.5 °C											
Attendees: None		Humidity: 39%											
Project: None		Barometric Pres.: 1022.6mb											
Tested by: Dan Haas		Power: 120VAC/60Hz											
		Job Site: EV12											
TEST SPECIFICATIONS		Test Method											
FCC 15.247 (DTS):2007		ANSI C63.4:2003 KDB No. 558074											
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4											
Test Distance (m)		3											
COMMENTS													
None													
EUT OPERATING MODES													
Continuous Transmitting 802.11(b), Mid Channel.													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		7											
Configuration #		1											
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
4874.020	40.1	6.5	297.0	1.0	3.0	0.0	H-Horn	AV	0.0	46.6	54.0	-7.4	1 Mbps, EUT upright.
4873.990	35.6	6.5	274.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.1	54.0	-11.9	6 Mbps, EUT upright.
4873.985	35.5	6.5	268.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.0	54.0	-12.0	54 Mbps, EUT upright.
4874.015	35.2	6.5	122.0	1.0	3.0	0.0	H-Horn	AV	0.0	41.7	54.0	-12.3	11 Mbps, EUT upright.
7312.595	25.8	12.4	292.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.2	54.0	-15.8	6 Mbps, EUT upright.
7311.160	25.7	12.4	353.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.1	54.0	-15.9	36 Mbps, EUT upright.
7311.345	25.7	12.4	177.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.1	54.0	-15.9	6 Mbps, EUT upright.
7312.425	25.7	12.4	342.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.1	54.0	-15.9	54 Mbps, EUT upright.
7312.580	25.7	12.4	299.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.1	54.0	-15.9	11 Mbps, EUT upright.
7312.795	25.7	12.4	298.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.1	54.0	-15.9	36 Mbps, EUT upright.
7312.830	25.7	12.4	232.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.1	54.0	-15.9	54 Mbps, EUT upright.
7309.205	25.6	12.4	206.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.0	54.0	-16.0	1 Mbps, EUT upright.
7313.250	25.6	12.4	356.0	1.1	3.0	0.0	V-Horn	AV	0.0	38.0	54.0	-16.0	11 Mbps, EUT upright.
7312.560	25.5	12.4	245.0	1.0	3.0	0.0	H-Horn	AV	0.0	37.9	54.0	-16.1	1 Mbps, EUT upright.
4873.950	31.0	6.5	134.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.5	54.0	-16.5	54 Mbps, EUT upright.
4873.935	30.0	6.5	44.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.5	54.0	-17.5	36 Mbps, EUT upright.
4873.995	29.0	6.5	329.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.5	54.0	-18.5	6 Mbps, EUT upright.
4874.020	29.0	6.5	174.0	1.3	3.0	0.0	H-Horn	AV	0.0	35.5	54.0	-18.5	36 Mbps, EUT upright.
4873.875	28.0	6.5	12.0	1.0	3.0	0.0	V-Horn	AV	0.0	34.5	54.0	-19.5	11 Mbps, EUT upright.
4874.120	48.0	6.5	122.0	1.0	3.0	0.0	H-Horn	PK	0.0	54.5	74.0	-19.5	11 Mbps, EUT upright.
4873.750	46.7	6.5	274.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.2	74.0	-20.8	6 Mbps, EUT upright.
7311.270	39.8	12.4	206.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.2	74.0	-21.8	1 Mbps, EUT upright.
7310.490	39.7	12.4	298.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.1	74.0	-21.9	36 Mbps, EUT upright.
7311.130	39.7	12.4	342.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.1	74.0	-21.9	54 Mbps, EUT upright.
4873.755	45.5	6.5	268.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.0	74.0	-22.0	54 Mbps, EUT upright.
7311.465	39.4	12.4	232.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.8	74.0	-22.2	54 Mbps, EUT upright.
7310.260	39.3	12.4	245.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.7	74.0	-22.3	1 Mbps, EUT upright.
7312.330	39.1	12.4	299.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.5	74.0	-22.5	11 Mbps, EUT upright.
4873.920	44.9	6.5	297.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.4	74.0	-22.6	1 Mbps, EUT upright.
7310.985	39.0	12.4	177.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.4	74.0	-22.6	6 Mbps, EUT upright.
7310.750	38.9	12.4	292.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.3	74.0	-22.7	6 Mbps, EUT upright.
7311.770	38.8	12.4	353.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.2	74.0	-22.8	36 Mbps, EUT upright.
7310.930	38.5	12.4	356.0	1.1	3.0	0.0	V-Horn	PK	0.0	50.9	74.0	-23.1	11 Mbps, EUT upright.
4874.530	43.7	6.5	44.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.2	74.0	-23.8	36 Mbps, EUT upright.
4874.235	42.6	6.5	134.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.1	74.0	-24.9	54 Mbps, EUT upright.
4874.250	42.6	6.5	174.0	1.3	3.0	0.0	H-Horn	PK	0.0	49.1	74.0	-24.9	36 Mbps, EUT upright.

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
4874.095	42.3	6.5	329.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.8	74.0	-25.2	6 Mbps, EUT upright.
4873.580	41.7	6.5	12.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.2	74.0	-25.8	11 Mbps, EUT upright.

NORTHWEST		PSA 2007.05.07											
EMI 2008.1.9													
EMC													
EUT: Allegro MX WiFi Module		Work Order: JUNI0005											
Serial Number: None		Date: 09/03/08											
Customer: Juniper Systems, Inc.		Temperature: 22.5 °C											
Attendees: None		Humidity: 39%											
Project: None		Barometric Pres.: 1022.6mb											
Tested by: Dan Haas		Power: 120VAC/60Hz											
		Job Site: EV12											
TEST SPECIFICATIONS		Test Method											
FCC 15.247 (DTS):2007		ANSI C63.4:2003 KDB No. 558074											
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4											
Test Distance (m)		3											
COMMENTS													
None													
EUT OPERATING MODES													
Continuous Transmitting 802.11(b), Low Channel.													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		8											
Configuration #		1											
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
4824.030	41.7	6.3	191.0	1.0	3.0	0.0	H-Horn	AV	0.0	48.0	54.0	-6.0	1 Mbps, EUT upright.
4823.985	38.7	6.3	311.0	1.0	3.0	0.0	V-Horn	AV	0.0	45.0	54.0	-9.0	1 Mbps, EUT upright.
4823.985	33.2	6.3	169.0	1.8	3.0	0.0	H-Horn	AV	0.0	39.5	54.0	-14.5	6 Mbps, EUT upright.
4824.020	32.7	6.3	52.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.0	54.0	-15.0	11 Mbps, EUT upright.
4823.955	32.0	6.3	291.0	1.1	3.0	0.0	H-Horn	AV	0.0	38.3	54.0	-15.7	36 Mbps, EUT upright.
7251.430	25.9	12.3	101.0	1.3	3.0	0.0	H-Horn	AV	0.0	38.2	54.0	-15.8	36 Mbps, EUT upright.
7252.400	25.9	12.3	269.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.2	54.0	-15.8	1 Mbps, EUT upright.
7249.810	25.8	12.3	250.0	2.1	3.0	0.0	V-Horn	AV	0.0	38.1	54.0	-15.9	6 Mbps, EUT upright.
7250.290	25.8	12.3	146.0	1.3	3.0	0.0	H-Horn	AV	0.0	38.1	54.0	-15.9	11 Mbps, EUT upright.
4823.970	31.7	6.3	293.0	1.1	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0	54 Mbps, EUT upright.
7251.020	25.9	12.1	216.0	1.9	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0	54 Mbps, EUT upright.
7251.375	25.9	12.1	259.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0	6 Mbps, EUT upright.
7252.120	25.9	12.1	68.0	2.1	3.0	0.0	V-Horn	AV	0.0	38.0	54.0	-16.0	11 Mbps, EUT upright.
7250.140	25.8	12.1	357.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.9	54.0	-16.1	1 Mbps, EUT upright.
7250.475	25.8	12.1	125.0	2.1	3.0	0.0	V-Horn	AV	0.0	37.9	54.0	-16.1	54 Mbps, EUT upright.
7251.440	25.8	12.1	262.0	2.1	3.0	0.0	V-Horn	AV	0.0	37.9	54.0	-16.1	36 Mbps, EUT upright.
4823.945	31.5	6.3	144.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.8	54.0	-16.2	6 Mbps, EUT upright.
4823.995	31.5	6.3	47.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.8	54.0	-16.2	36 Mbps, EUT upright.
4823.995	29.8	6.3	44.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.1	54.0	-17.9	54 Mbps, EUT upright.
4824.030	27.9	6.3	178.0	1.1	3.0	0.0	H-Horn	AV	0.0	34.2	54.0	-19.8	11 Mbps, EUT upright.
4823.840	47.0	6.3	291.0	1.1	3.0	0.0	H-Horn	PK	0.0	53.3	74.0	-20.7	36 Mbps, EUT upright.
4824.240	46.7	6.3	293.0	1.1	3.0	0.0	H-Horn	PK	0.0	53.0	74.0	-21.0	54 Mbps, EUT upright.
4823.395	46.4	6.3	169.0	1.8	3.0	0.0	H-Horn	PK	0.0	52.7	74.0	-21.3	6 Mbps, EUT upright.
4823.970	46.3	6.3	47.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.6	74.0	-21.4	36 Mbps, EUT upright.
4823.985	46.0	6.3	52.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.3	74.0	-21.7	11 Mbps, EUT upright.
4823.880	45.7	6.3	191.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.0	74.0	-22.0	1 Mbps, EUT upright.
7249.255	39.7	12.3	259.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.0	74.0	-22.0	6 Mbps, EUT upright.
7249.460	39.7	12.3	357.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.0	74.0	-22.0	1 Mbps, EUT upright.
7249.740	39.3	12.3	125.0	2.1	3.0	0.0	V-Horn	PK	0.0	51.6	74.0	-22.4	54 Mbps, EUT upright.
7248.910	39.2	12.3	216.0	1.9	3.0	0.0	H-Horn	PK	0.0	51.5	74.0	-22.5	54 Mbps, EUT upright.
7250.615	39.2	12.3	250.0	2.1	3.0	0.0	V-Horn	PK	0.0	51.5	74.0	-22.5	6 Mbps, EUT upright.
7251.160	39.2	12.3	146.0	1.3	3.0	0.0	H-Horn	PK	0.0	51.5	74.0	-22.5	11 Mbps, EUT upright.
7250.630	39.1	12.3	101.0	1.3	3.0	0.0	H-Horn	PK	0.0	51.4	74.0	-22.6	36 Mbps, EUT upright.
7249.075	38.9	12.3	68.0	2.1	3.0	0.0	V-Horn	PK	0.0	51.2	74.0	-22.8	11 Mbps, EUT upright.
7249.555	38.9	12.3	262.0	2.1	3.0	0.0	V-Horn	PK	0.0	51.2	74.0	-22.8	36 Mbps, EUT upright.
7251.455	38.7	12.3	269.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.0	74.0	-23.0	1 Mbps, EUT upright.

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
4825.225	44.5	6.3	44.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.8	74.0	-23.2	54 Mbps, EUT upright.
4823.840	43.9	6.3	311.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.2	74.0	-23.8	1 Mbps, EUT upright.
4823.935	43.5	6.3	144.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.8	74.0	-24.2	6 Mbps, EUT upright.
4824.565	40.9	6.3	178.0	1.1	3.0	0.0	H-Horn	PK	0.0	47.2	74.0	-26.8	11 Mbps, EUT upright.

NORTHWEST		PSA 2007.05.07																							
EMI 2008.1.9																									
EMC																									
RADIATED SPURIOUS EMISSIONS																									
EUT: Allegro MX WiFi Module		Work Order: JUNI0005																							
Serial Number: None		Date: 09/03/08																							
Customer: Juniper Systems, Inc.		Temperature: 22.5 °C																							
Attendees: None		Humidity: 39%																							
Project: None		Barometric Pres.: 1022.6mb																							
Tested by: David Divergigelis		Power: 120VAC/60Hz																							
		Job Site: EV12																							
TEST SPECIFICATIONS		Test Method																							
FCC 15.247 (DTS):2007		ANSI C63.4:2003, KDB No. 558074																							
TEST PARAMETERS																									
Antenna Height(s) (m)		1 - 4																							
Test Distance (m)		3																							
COMMENTS																									
Please see comment for channel																									
EUT OPERATING MODES																									
Continuous Transmitting 802.11(b), 1Mbps																									
DEVIATIONS FROM TEST STANDARD																									
No deviations.																									
Run #		9																							
Configuration #		1																							
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
12310.820													37.1	-10.7	62.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.4	54.0	-27.6	High channel, EUT upright
12311.940													37.1	-10.7	211.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.4	54.0	-27.6	High channel, EUT upright
12062.070													37.3	-11.3	282.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.0	54.0	-28.0	Low channel, EUT upright
12061.830													37.2	-11.3	341.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.9	54.0	-28.1	Low channel, EUT upright
12187.080													36.4	-11.1	264.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.3	54.0	-28.7	Mid channel, EUT upright
12187.160													36.4	-11.1	247.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.3	54.0	-28.7	Mid channel, EUT upright
12310.000													50.4	-10.7	62.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.7	74.0	-34.3	High channel, EUT upright
12060.000													50.8	-11.3	341.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.5	74.0	-34.5	Low channel, EUT upright
12184.360													50.2	-11.1	264.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.1	74.0	-34.9	Mid channel, EUT upright
12310.750													49.7	-10.7	211.0	1.0	3.0	0.0	H-Horn	PK	0.0	39.0	74.0	-35.0	High channel, EUT upright
12061.490													50.1	-11.3	282.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.8	74.0	-35.2	Low channel, EUT upright
12185.390													48.7	-11.1	247.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.6	74.0	-36.4	Mid channel, EUT upright







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 BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), low channel
Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), high channel
Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), mid channel

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz

**CONFIGURATIONS INVESTIGATED**

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	ARG	12/7/2007	13 mo
High Pass Filter	T.T.E.	7766	HFG	2/5/2008	13 mo
EV07 Cables		Conducted Cables	EVG	5/2/2008	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	6/30/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	1/4/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIP	1/4/2008	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**

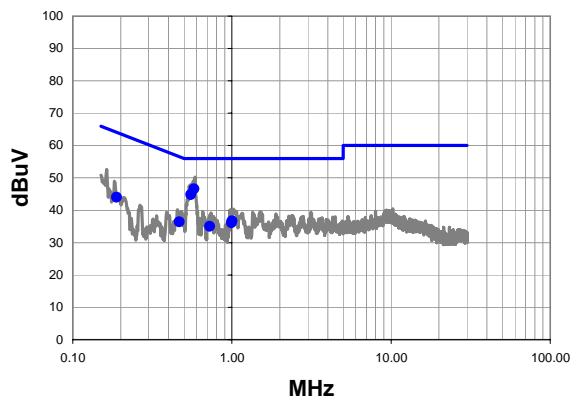
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated 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**

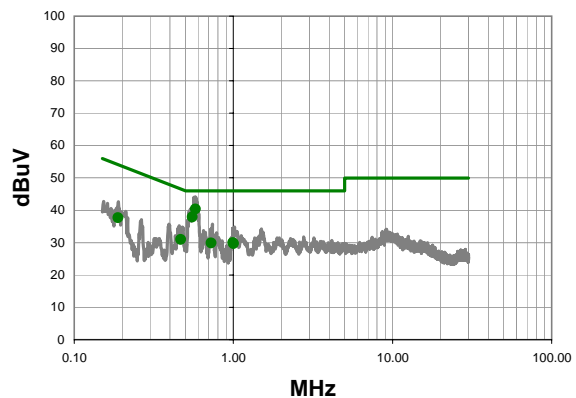
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 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.

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), mid channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	11	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

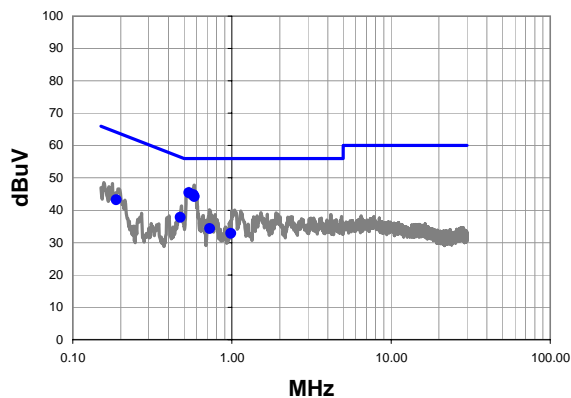
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.577	25.7	20.8	46.5	56.0	-9.5
0.551	23.9	20.9	44.8	56.0	-11.2
1.004	16.1	20.6	36.7	56.0	-19.3
0.994	15.5	20.6	36.1	56.0	-19.9
0.189	22.7	21.3	44.0	64.1	-20.1
0.468	15.5	20.9	36.4	56.5	-20.1
0.726	14.3	20.8	35.1	56.0	-20.9

Average Data - vs - Average Limit

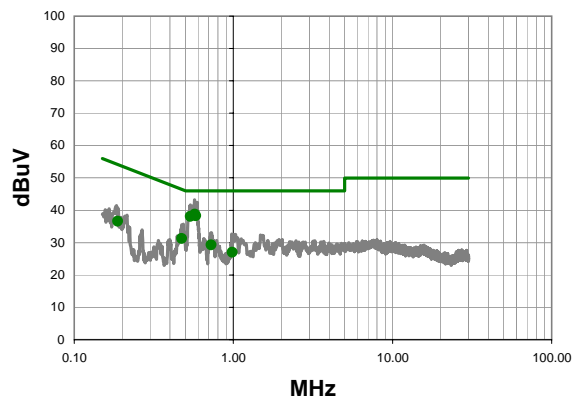
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.577	19.5	20.8	40.3	46.0	-5.7
0.551	17.0	20.9	37.9	46.0	-8.1
0.468	10.1	20.9	31.0	46.5	-15.5
0.994	9.4	20.6	30.0	46.0	-16.0
0.726	9.1	20.8	29.9	46.0	-16.1
1.004	9.1	20.6	29.7	46.0	-16.3
0.189	16.4	21.3	37.7	54.1	-16.4

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>	
<b>Project:</b>	None	<b>Temperature:</b>	23		
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40		
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett	
<b>EUT:</b>	Allegro MX WiFi Module				
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter				
<b>Customer:</b>	Juniper Systems, Inc.				
<b>Attendees:</b>	None				
<b>EUT Power:</b>	120VAC/60Hz				
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), mid channel				
<b>Deviations:</b>	No deviations.				
<b>Comments:</b>	None				
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003		
<b>Run #</b>	12	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b> 20	<b>Results</b> Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

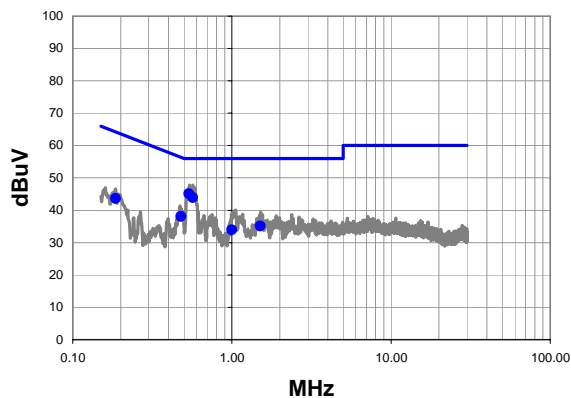
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.538	24.5	20.9	45.4	56.0	-10.6
0.574	24.0	20.8	44.8	56.0	-11.2
0.582	23.4	20.8	44.2	56.0	-11.8
0.473	16.9	20.9	37.8	56.5	-18.7
0.188	21.9	21.3	43.2	64.1	-20.9
0.724	13.6	20.8	34.4	56.0	-21.6
0.984	12.2	20.6	32.8	56.0	-23.2

Average Data - vs - Average Limit

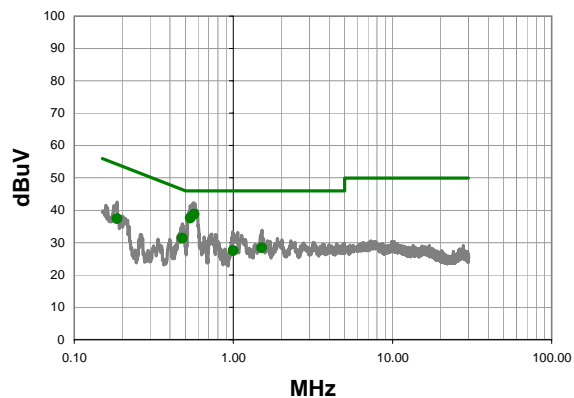
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.574	17.9	20.8	38.7	46.0	-7.3
0.582	17.4	20.8	38.2	46.0	-7.8
0.538	17.2	20.9	38.1	46.0	-7.9
0.473	10.4	20.9	31.3	46.5	-15.2
0.724	8.5	20.8	29.3	46.0	-16.7
0.188	15.3	21.3	36.6	54.1	-17.5
0.984	6.4	20.6	27.0	46.0	-19.0

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), high channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	13	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

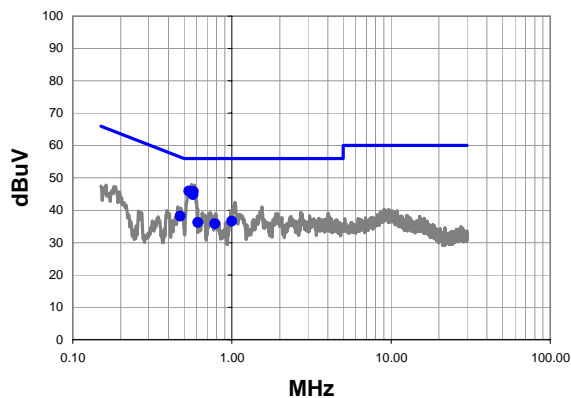
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.536	24.2	20.9	45.1	56.0	-10.9
0.568	23.1	20.9	44.0	56.0	-12.1
0.478	17.2	20.9	38.1	56.4	-18.3
0.186	22.3	21.3	43.6	64.2	-20.6
1.508	14.5	20.6	35.1	56.0	-20.9
0.999	13.3	20.6	33.9	56.0	-22.1

Average Data - vs - Average Limit

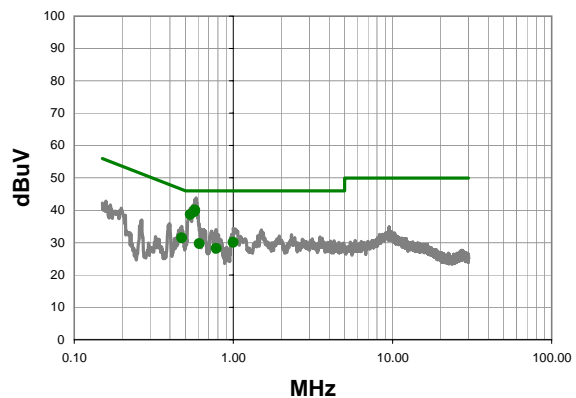
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.568	17.9	20.9	38.8	46.0	-7.3
0.536	16.7	20.9	37.6	46.0	-8.4
0.478	10.5	20.9	31.4	46.4	-15.0
0.186	16.0	21.3	37.3	54.2	-16.9
1.508	7.8	20.6	28.4	46.0	-17.6
0.999	6.9	20.6	27.5	46.0	-18.5

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), high channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	14	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	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)
0.536	25.0	20.9	45.9	56.0	-10.1
0.572	24.9	20.8	45.7	56.0	-10.3
0.570	24.0	20.8	44.8	56.0	-11.2
0.473	17.3	20.9	38.2	56.5	-18.3
1.000	16.0	20.6	36.6	56.0	-19.4
0.612	15.4	20.8	36.2	56.0	-19.8
0.783	15.1	20.7	35.8	56.0	-20.2

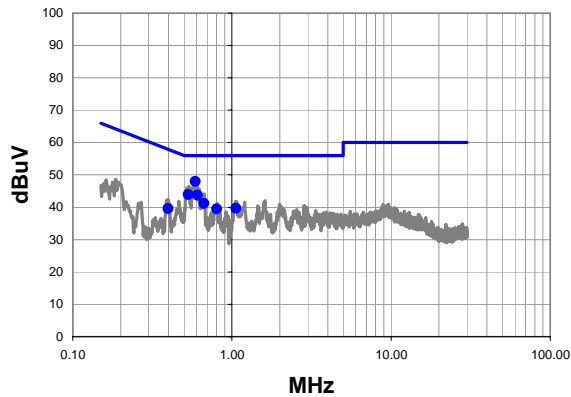
Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.572	19.2	20.8	40.0	46.0	-6.0
0.570	18.7	20.8	39.5	46.0	-6.5
0.536	17.8	20.9	38.7	46.0	-7.3
0.473	10.6	20.9	31.5	46.5	-15.0
1.000	9.5	20.6	30.1	46.0	-15.9
0.612	8.9	20.8	29.7	46.0	-16.3
0.783	7.5	20.7	28.2	46.0	-17.8

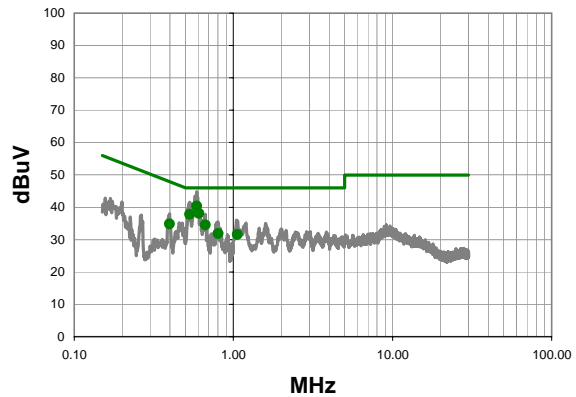


<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), low channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	15	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

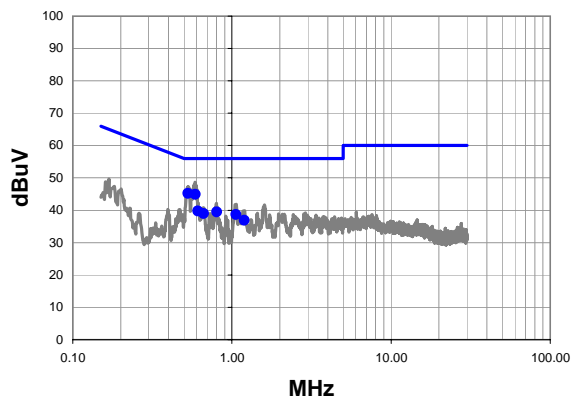
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.590	27.1	20.8	47.9	56.0	-8.1
0.531	23.0	20.9	43.9	56.0	-12.1
0.607	22.9	20.8	43.7	56.0	-12.3
0.667	20.4	20.8	41.2	56.0	-14.8
1.060	19.1	20.6	39.7	56.0	-16.3
0.802	18.8	20.7	39.5	56.0	-16.5
0.397	18.6	20.9	39.5	57.9	-18.4

Average Data - vs - Average Limit

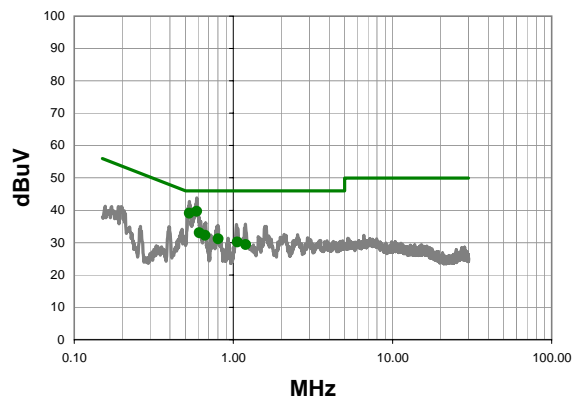
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.590	19.5	20.8	40.3	46.0	-5.7
0.607	17.3	20.8	38.1	46.0	-7.9
0.531	16.9	20.9	37.8	46.0	-8.2
0.667	13.7	20.8	34.5	46.0	-11.5
0.397	13.9	20.9	34.8	47.9	-13.1
0.802	11.1	20.7	31.8	46.0	-14.2
1.060	11.0	20.6	31.6	46.0	-14.4

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	3 - Basic Configuration - with PhiHong Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DT5) and 802.11(b) (1Mbps, 0101), low channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	16	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit

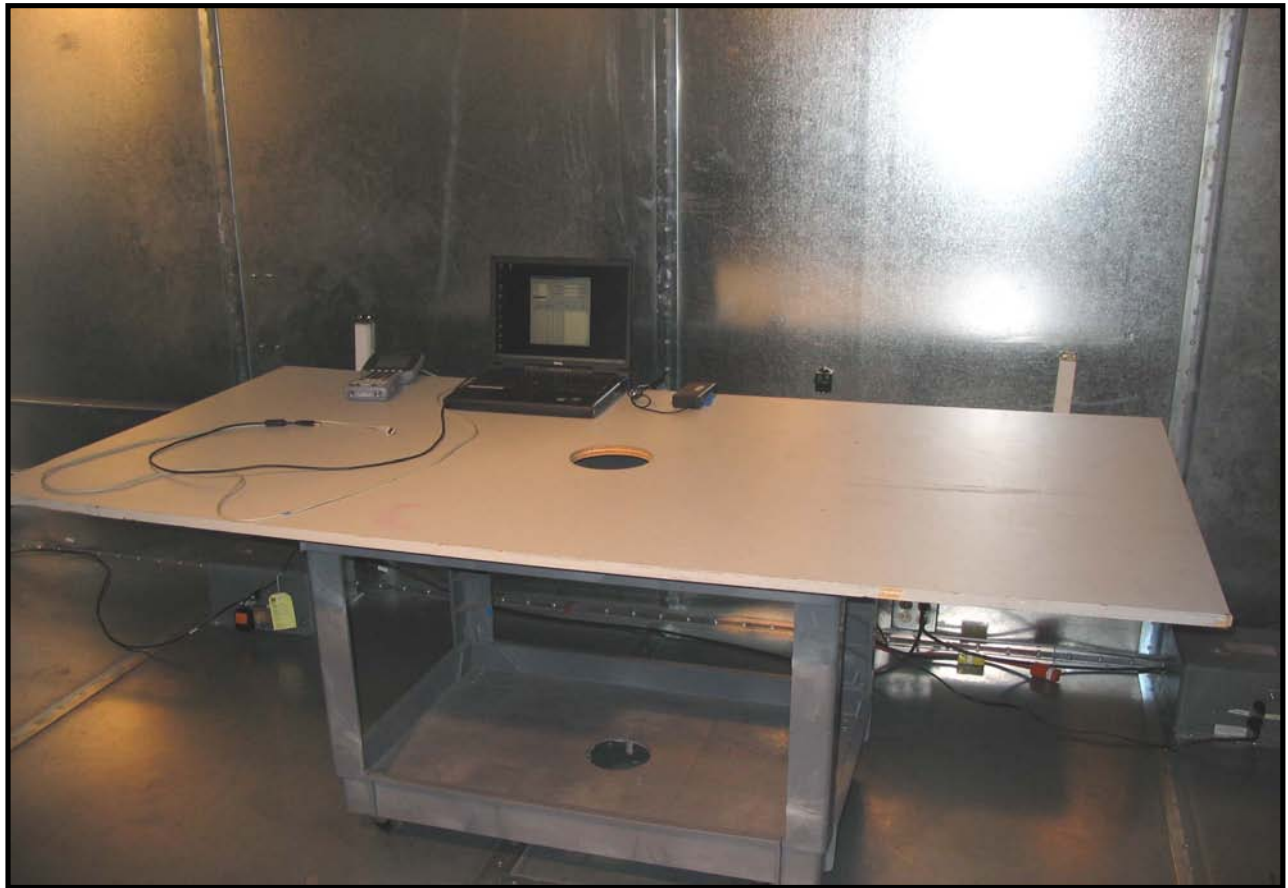


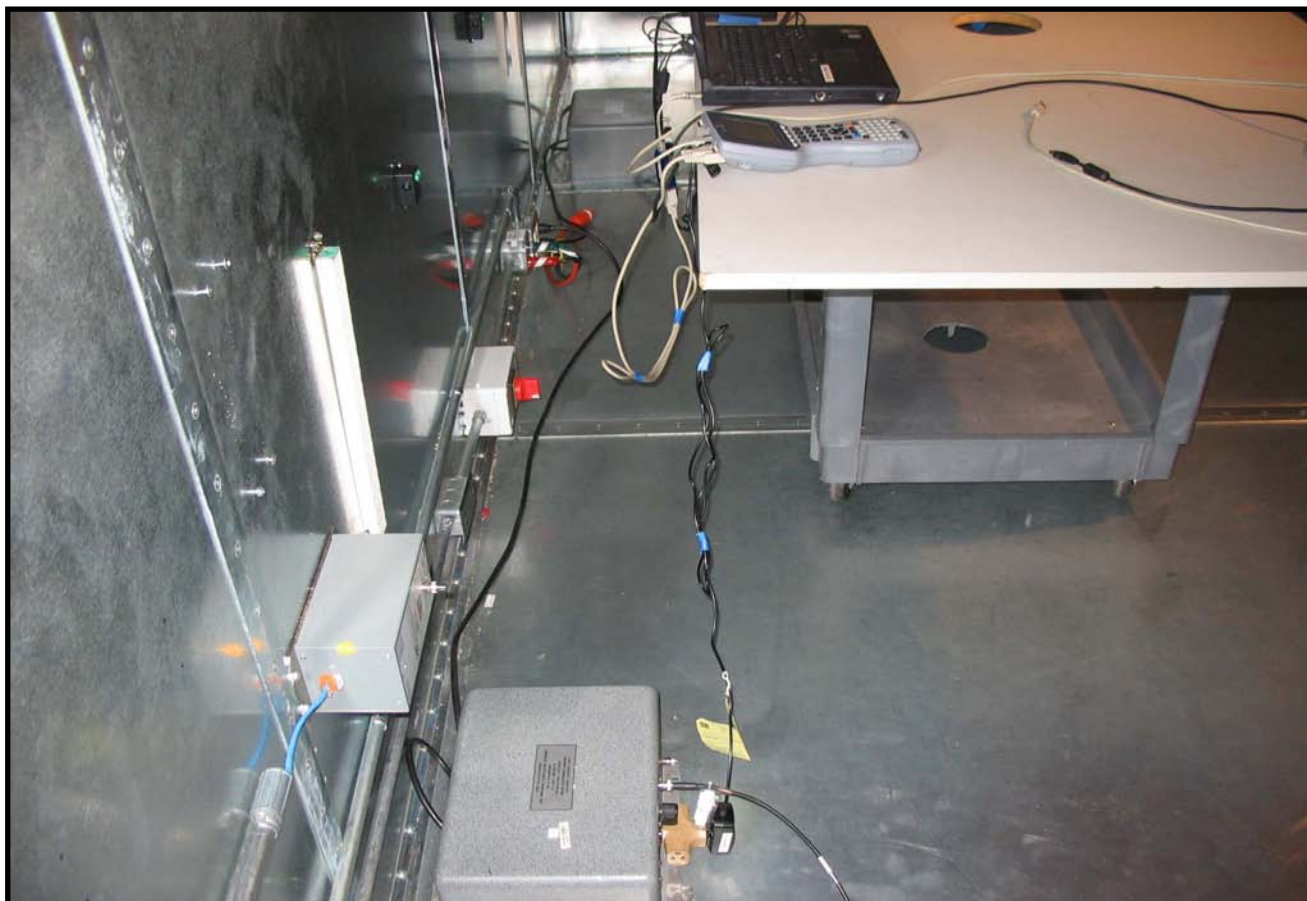
Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.529	24.3	20.9	45.2	56.0	-10.8
0.589	24.1	20.8	44.9	56.0	-11.1
0.611	18.9	20.8	39.7	56.0	-16.3
0.805	18.8	20.7	39.5	56.0	-16.5
0.664	18.2	20.8	39.0	56.0	-17.0
1.060	18.1	20.6	38.7	56.0	-17.3
1.196	16.3	20.6	36.9	56.0	-19.1

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.589	18.8	20.8	39.6	46.0	-6.4
0.529	18.2	20.9	39.1	46.0	-6.9
0.611	12.2	20.8	33.0	46.0	-13.0
0.664	11.5	20.8	32.3	46.0	-13.7
0.805	10.5	20.7	31.2	46.0	-14.8
1.060	9.6	20.6	30.2	46.0	-15.8
1.196	8.8	20.6	29.4	46.0	-16.6





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 BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), high channel
Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), mid channel
Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), low channel

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz

**CONFIGURATIONS INVESTIGATED**

2

**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	ARG	12/7/2007	13 mo
EV07 Cables		Conducted Cables	EVG	5/2/2008	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	6/30/2008	13 mo
High Pass Filter	T.T.E.	7766	HFG	2/5/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	1/4/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIP	1/4/2008	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**

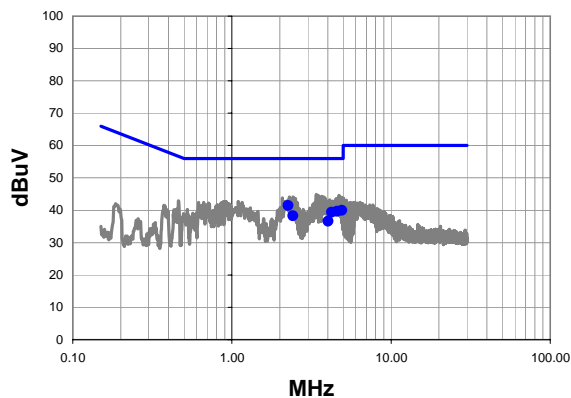
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated 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**

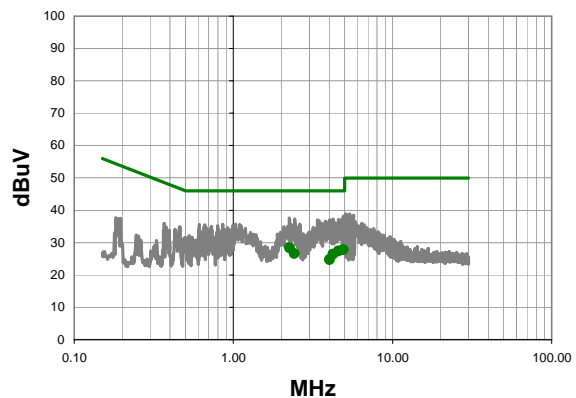
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 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.

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i>	
<b>Project:</b>	None	<b>Temperature:</b>	23		
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40		
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4		
				<b>Tested by:</b> Jennifer Herrett	
<b>EUT:</b>	Allegro MX WiFi Module				
<b>Configuration:</b>	2 - Basic Configuration - with Ktec Power Adapter				
<b>Customer:</b>	Juniper Systems, Inc.				
<b>Attendees:</b>	None				
<b>EUT Power:</b>	120VAC/60Hz				
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), low channel				
<b>Deviations:</b>	No deviations.				
<b>Comments:</b>	None				
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003		
<b>Run #</b>	1	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b>	20
				<b>Results</b>	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)
2.252	20.8	20.6	41.4	56.0	-14.6
4.900	19.3	20.6	39.9	56.0	-16.1
4.572	19.0	20.6	39.6	56.0	-16.4
4.236	18.7	20.6	39.3	56.0	-16.7
2.420	17.7	20.6	38.3	56.0	-17.7
4.028	16.0	20.6	36.6	56.0	-19.4

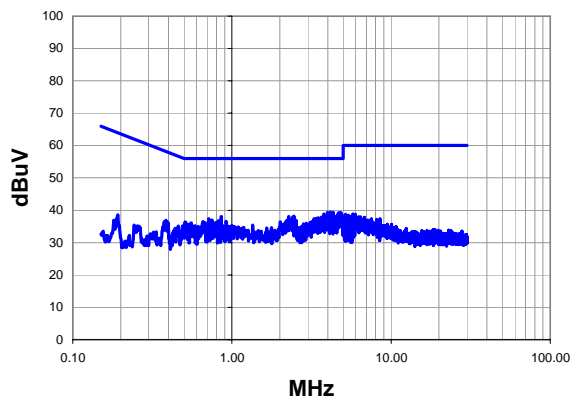
Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
2.252	7.8	20.6	28.4	46.0	-17.6
4.900	7.1	20.6	27.7	46.0	-18.3
4.572	6.8	20.6	27.4	46.0	-18.6
2.420	6.0	20.6	26.6	46.0	-19.4
4.236	5.8	20.6	26.4	46.0	-19.6
4.028	4.1	20.6	24.7	46.0	-21.3

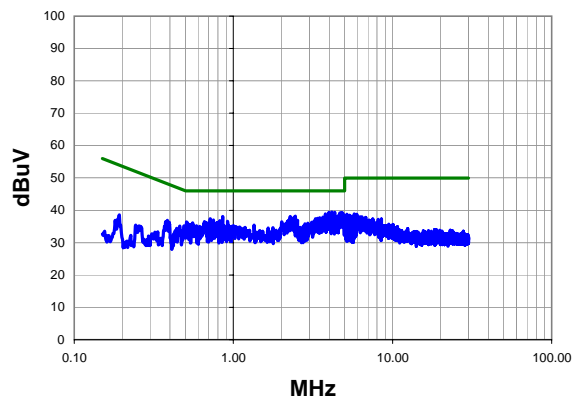


<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08				
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4	<b>Tested by:</b> Jennifer Herrett			
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	2 - Basic Configuration - with Ktec Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), low channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	2	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit




Peak Data - vs - Quasi Peak Limit

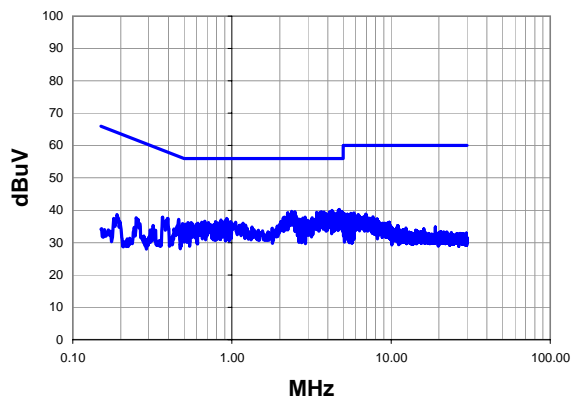
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.152	18.8	20.6	39.4	56.0	-16.6
4.328	18.7	20.6	39.3	56.0	-16.7
3.992	18.7	20.6	39.3	56.0	-16.7
4.784	18.6	20.6	39.2	56.0	-16.8
4.856	18.5	20.6	39.1	56.0	-16.9
4.656	18.5	20.6	39.1	56.0	-16.9
3.784	18.2	20.6	38.8	56.0	-17.2
4.224	18.1	20.6	38.7	56.0	-17.3
4.920	17.9	20.6	38.5	56.0	-17.5
2.456	17.6	20.6	38.2	56.0	-17.8
4.536	17.5	20.6	38.1	56.0	-17.9
4.040	17.5	20.6	38.1	56.0	-17.9
2.272	17.5	20.6	38.1	56.0	-17.9
0.855	17.4	20.7	38.1	56.0	-17.9
4.424	17.4	20.6	38.0	56.0	-18.0
3.648	17.3	20.6	37.9	56.0	-18.1
2.408	17.3	20.6	37.9	56.0	-18.1
3.488	17.1	20.6	37.7	56.0	-18.3
4.456	16.9	20.6	37.5	56.0	-18.5
3.936	16.9	20.6	37.5	56.0	-18.5

Peak Data - vs - Average Limit

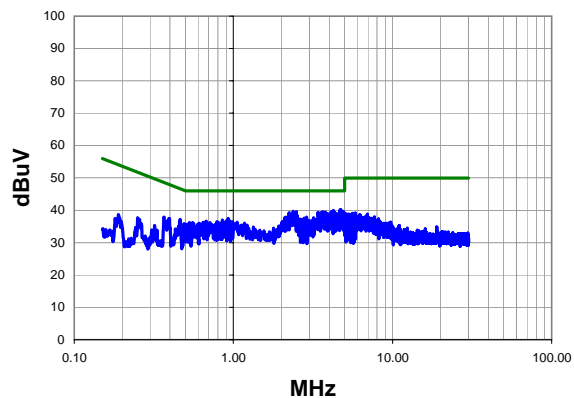
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.152	18.8	20.6	39.4	46.0	-6.6
4.328	18.7	20.6	39.3	46.0	-6.7
3.992	18.7	20.6	39.3	46.0	-6.7
4.784	18.6	20.6	39.2	46.0	-6.8
4.856	18.5	20.6	39.1	46.0	-6.9
4.656	18.5	20.6	39.1	46.0	-6.9
3.784	18.2	20.6	38.8	46.0	-7.2
4.224	18.1	20.6	38.7	46.0	-7.3
4.920	17.9	20.6	38.5	46.0	-7.5
2.456	17.6	20.6	38.2	46.0	-7.8
4.536	17.5	20.6	38.1	46.0	-7.9
4.040	17.5	20.6	38.1	46.0	-7.9
2.272	17.5	20.6	38.1	46.0	-7.9
0.855	17.4	20.7	38.1	46.0	-7.9
4.424	17.4	20.6	38.0	46.0	-8.0
3.648	17.3	20.6	37.9	46.0	-8.1
2.408	17.3	20.6	37.9	46.0	-8.1
3.488	17.1	20.6	37.7	46.0	-8.3
4.456	16.9	20.6	37.5	46.0	-8.5
3.936	16.9	20.6	37.5	46.0	-8.5

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08				
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4				
<b>EUT:</b> Allegro MX WiFi Module				<b>Tested by:</b> Jennifer Herrett			
<b>Configuration:</b> 2 - Basic Configuration - with Ktec Power Adapter							
<b>Customer:</b> Juniper Systems, Inc.							
<b>Attendees:</b> None							
<b>EUT Power:</b> 120VAC/60Hz							
<b>Operating Mode:</b> Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), mid channel							
<b>Deviations:</b> No deviations.							
<b>Comments:</b> None							
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	3	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

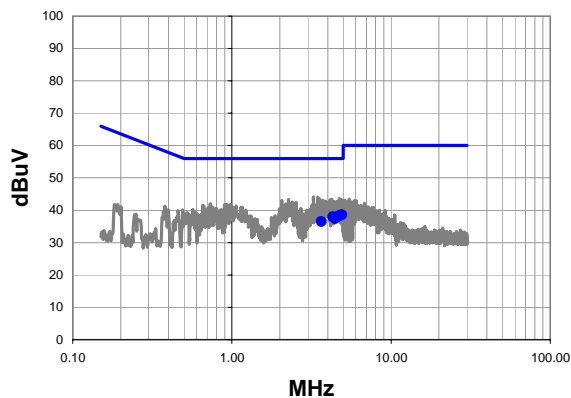
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.720	19.6	20.6	40.2	56.0	-15.8
4.656	19.4	20.6	40.0	56.0	-16.0
4.256	19.3	20.6	39.9	56.0	-16.1
2.376	19.1	20.6	39.7	56.0	-16.3
4.920	19.0	20.6	39.6	56.0	-16.4
2.488	19.0	20.6	39.6	56.0	-16.4
4.120	18.9	20.6	39.5	56.0	-16.5
3.656	18.9	20.6	39.5	56.0	-16.5
3.784	18.8	20.6	39.4	56.0	-16.6
3.408	18.8	20.6	39.4	56.0	-16.6
4.864	18.7	20.6	39.3	56.0	-16.7
4.784	18.7	20.6	39.3	56.0	-16.7
4.328	18.7	20.6	39.3	56.0	-16.7
3.584	18.7	20.6	39.3	56.0	-16.7
2.240	18.7	20.6	39.3	56.0	-16.7
4.984	18.5	20.7	39.2	56.0	-16.8
3.720	18.5	20.6	39.1	56.0	-16.9
3.504	18.5	20.6	39.1	56.0	-16.9
3.528	18.4	20.6	39.0	56.0	-17.0
4.400	18.3	20.6	38.9	56.0	-17.1

Peak Data - vs - Average Limit

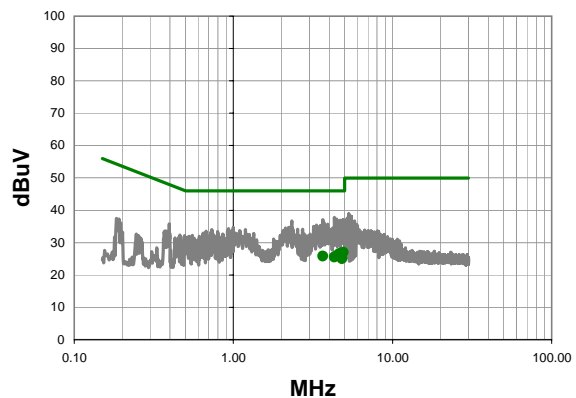
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.720	19.6	20.6	40.2	46.0	-5.8
4.656	19.4	20.6	40.0	46.0	-6.0
4.256	19.3	20.6	39.9	46.0	-6.1
2.376	19.1	20.6	39.7	46.0	-6.3
4.920	19.0	20.6	39.6	46.0	-6.4
2.488	19.0	20.6	39.6	46.0	-6.4
4.120	18.9	20.6	39.5	46.0	-6.5
3.656	18.9	20.6	39.5	46.0	-6.5
3.784	18.8	20.6	39.4	46.0	-6.6
3.408	18.8	20.6	39.4	46.0	-6.6
4.864	18.7	20.6	39.3	46.0	-6.7
4.784	18.7	20.6	39.3	46.0	-6.7
4.328	18.7	20.6	39.3	46.0	-6.7
3.584	18.7	20.6	39.3	46.0	-6.7
2.240	18.7	20.6	39.3	46.0	-6.7
4.984	18.5	20.7	39.2	46.0	-6.8
3.720	18.5	20.6	39.1	46.0	-6.9
3.504	18.5	20.6	39.1	46.0	-6.9
3.528	18.4	20.6	39.0	46.0	-7.0
4.400	18.3	20.6	38.9	46.0	-7.1

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08	<i>Jennifer Herrett</i> <b>Tested by:</b> Jennifer Herrett			
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4				
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	2 - Basic Configuration - with Ktec Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), mid channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	4	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit




Quasi Peak Data - vs - Quasi Peak Limit

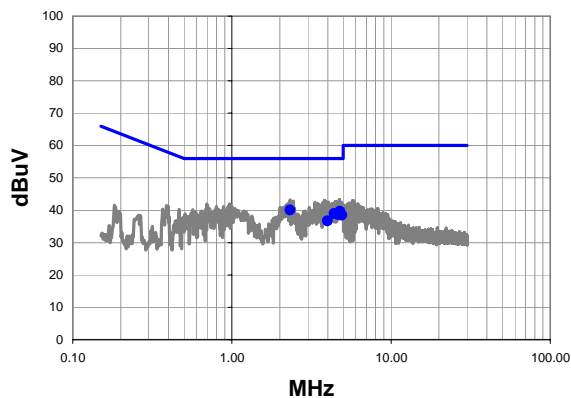
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.916	17.9	20.6	38.5	56.0	-17.5
4.820	17.8	20.6	38.4	56.0	-17.6
4.652	17.4	20.6	38.0	56.0	-18.0
4.320	17.3	20.6	37.9	56.0	-18.1
4.456	16.7	20.6	37.3	56.0	-18.7
3.656	15.9	20.6	36.5	56.0	-19.5

Average Data - vs - Average Limit

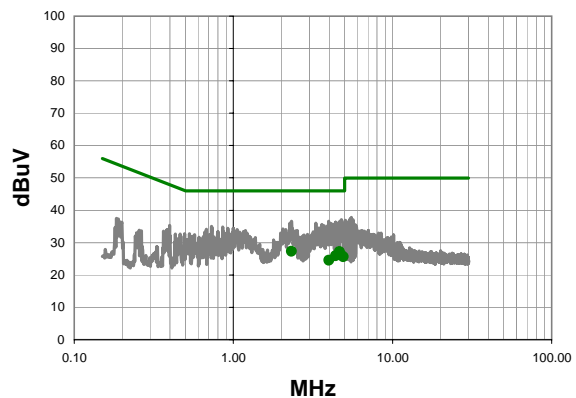
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
4.916	6.4	20.6	27.0	46.0	-19.0
4.652	6.0	20.6	26.6	46.0	-19.4
4.456	5.3	20.6	25.9	46.0	-20.1
3.656	5.2	20.6	25.8	46.0	-20.2
4.320	4.9	20.6	25.5	46.0	-20.5
4.820	4.4	20.6	25.0	46.0	-21.0

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08				
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4				
<b>EUT:</b>	Allegro MX WiFi Module						
<b>Configuration:</b>	2 - Basic Configuration - with Ktec Power Adapter						
<b>Customer:</b>	Juniper Systems, Inc.						
<b>Attendees:</b>	None						
<b>EUT Power:</b>	120VAC/60Hz						
<b>Operating Mode:</b>	Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), high channel						
<b>Deviations:</b>	No deviations.						
<b>Comments:</b>	None						
<b>Test Specifications</b> FCC 15.207:2007			<b>Test Method</b> ANSI C63.4:2003				
<b>Run #</b>	5	<b>Line:</b>	High Line	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit




Quasi Peak Data - vs - Quasi Peak Limit

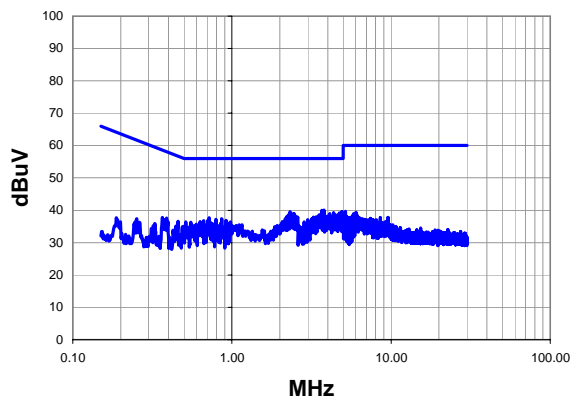
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
2.324	19.5	20.6	40.1	56.0	-15.9
4.780	19.0	20.6	39.6	56.0	-16.4
4.384	18.3	20.6	38.9	56.0	-17.1
4.644	18.0	20.6	38.6	56.0	-17.4
4.920	17.8	20.6	38.4	56.0	-17.6
3.988	16.1	20.6	36.7	56.0	-19.3

Average Data - vs - Average Limit

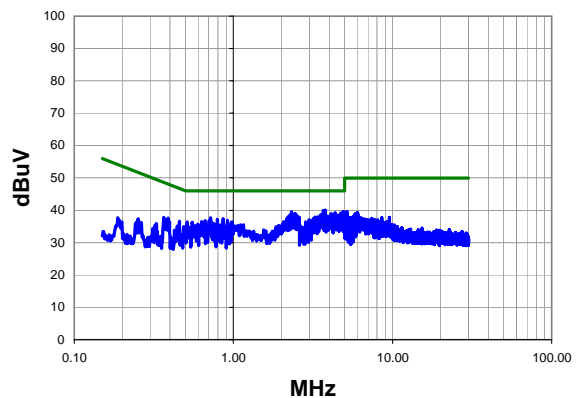
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
2.324	6.7	20.6	27.3	46.0	-18.7
4.644	6.6	20.6	27.2	46.0	-18.8
4.780	5.5	20.6	26.1	46.0	-19.9
4.384	5.3	20.6	25.9	46.0	-20.1
4.920	5.0	20.6	25.6	46.0	-20.4
3.988	3.9	20.6	24.5	46.0	-21.5

<b>Work Order:</b>	JUNI0005	<b>Date:</b>	09/04/08				
<b>Project:</b>	None	<b>Temperature:</b>	23				
<b>Job Site:</b>	EV10	<b>Humidity:</b>	40				
<b>Serial Number:</b>	None	<b>Barometric Pres.:</b>	1022.4				
<b>EUT:</b>		Allegro MX WiFi Module					
<b>Configuration:</b>		2 - Basic Configuration - with Ktec Power Adapter					
<b>Customer:</b>		Juniper Systems, Inc.					
<b>Attendees:</b>		None					
<b>EUT Power:</b>		120VAC/60Hz					
<b>Operating Mode:</b>		Transmitting BT (8DPSK/3DH5) and 802.11(b) (1 Mbps, 0101), high channel					
<b>Deviations:</b>		No deviations.					
<b>Comments:</b>		None					
<b>Test Specifications</b> FCC 15.207:2007				<b>Test Method</b> ANSI C63.4:2003			
<b>Run #</b>	6	<b>Line:</b>	Neutral	<b>Ext. Attenuation:</b>	20	<b>Results</b>	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit

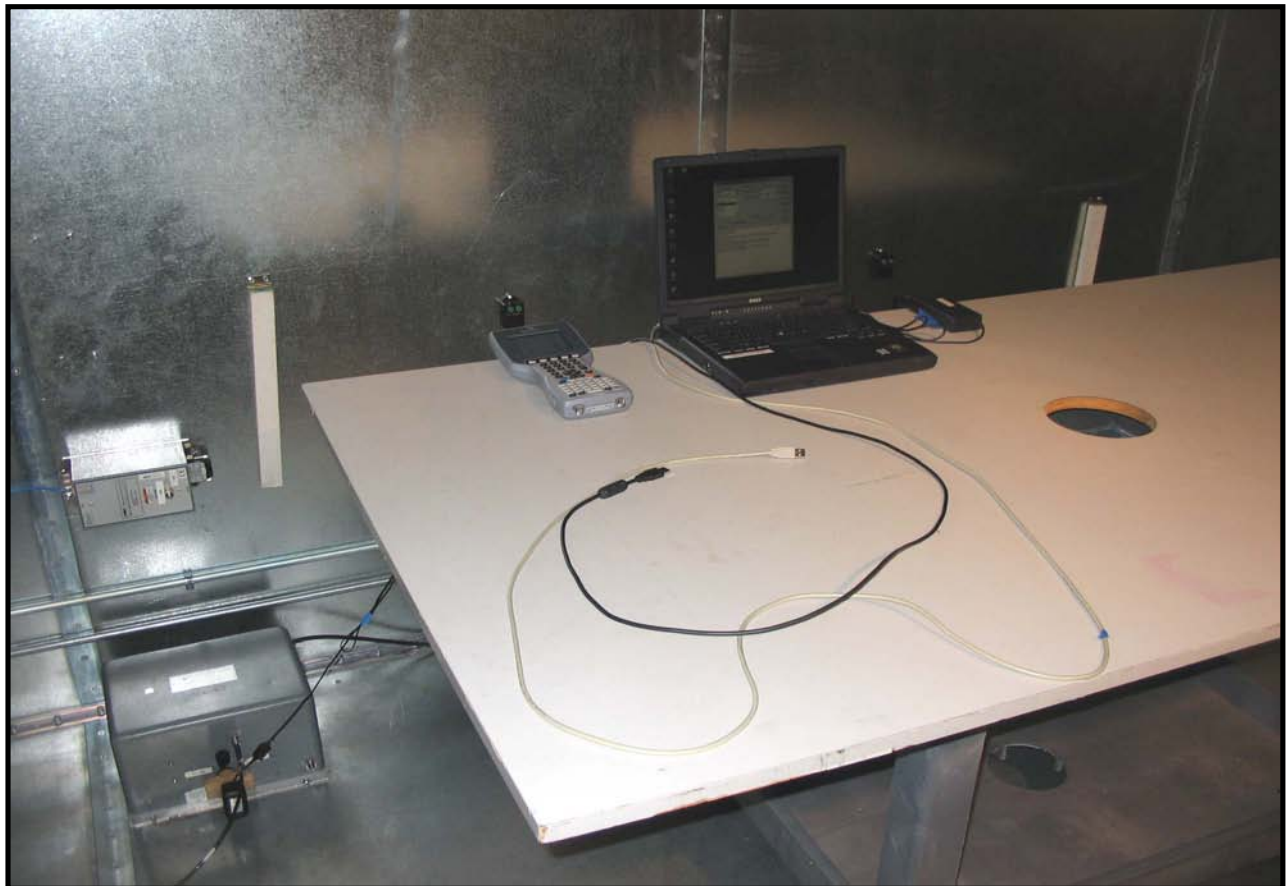


Peak Data - vs - Quasi Peak Limit

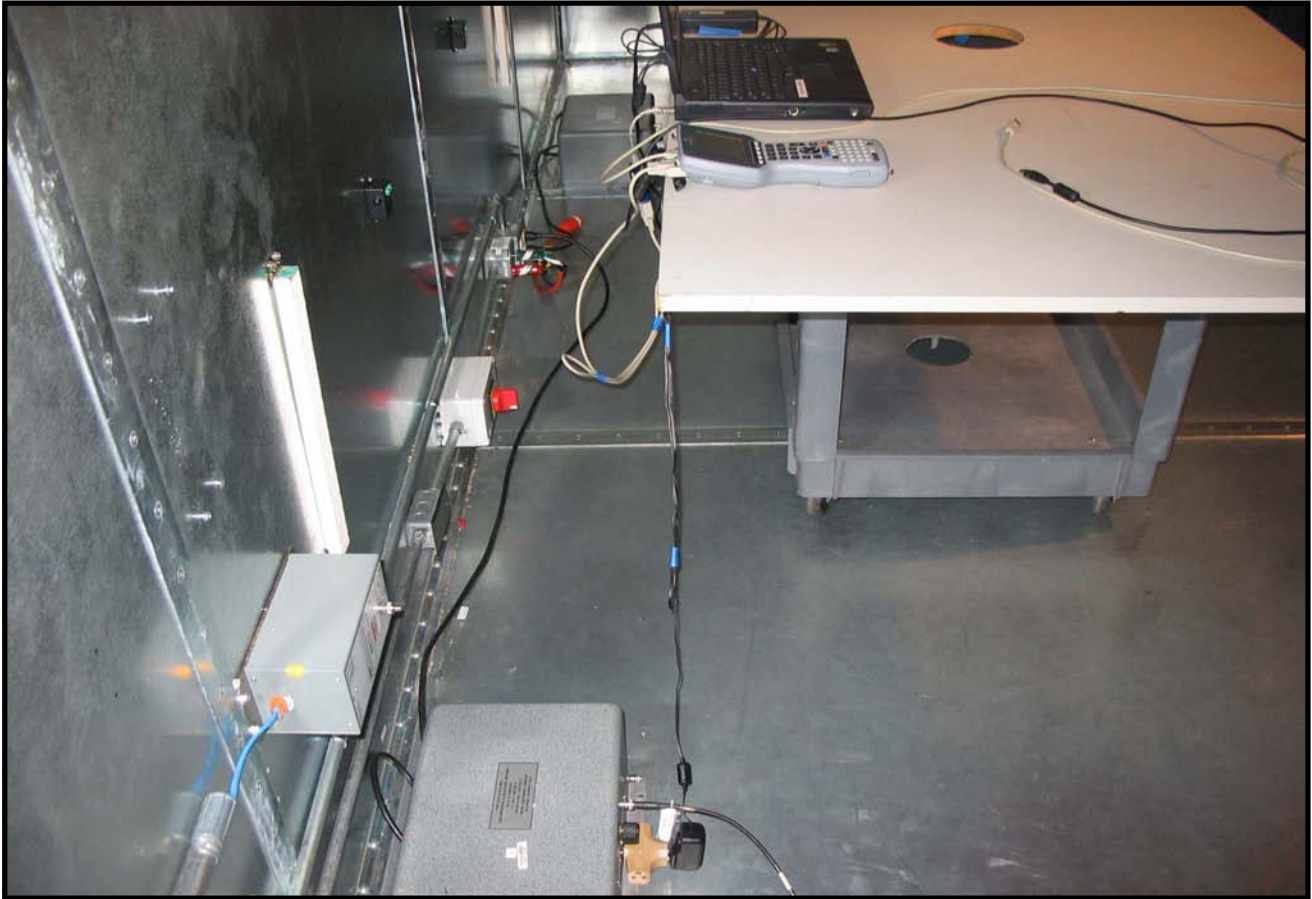
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.784	19.4	20.6	40.0	56.0	-16.0
3.672	19.3	20.6	39.9	56.0	-16.1
2.320	19.0	20.6	39.6	56.0	-16.4
4.912	18.9	20.6	39.5	56.0	-16.5
3.736	18.8	20.6	39.4	56.0	-16.6
4.344	18.6	20.6	39.2	56.0	-16.8
4.720	18.5	20.6	39.1	56.0	-16.9
2.432	18.4	20.6	39.0	56.0	-17.0
4.784	18.3	20.6	38.9	56.0	-17.1
4.112	18.3	20.6	38.9	56.0	-17.1
2.464	18.3	20.6	38.9	56.0	-17.1
4.384	18.1	20.6	38.7	56.0	-17.3
3.544	18.0	20.6	38.6	56.0	-17.4
2.264	18.0	20.6	38.6	56.0	-17.4
4.656	17.9	20.6	38.5	56.0	-17.5
4.984	17.8	20.7	38.5	56.0	-17.5
4.512	17.8	20.6	38.4	56.0	-17.6
4.048	17.7	20.6	38.3	56.0	-17.7
3.856	17.7	20.6	38.3	56.0	-17.7
2.520	17.6	20.6	38.2	56.0	-17.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.784	19.4	20.6	40.0	46.0	-6.0
3.672	19.3	20.6	39.9	46.0	-6.1
2.320	19.0	20.6	39.6	46.0	-6.4
4.912	18.9	20.6	39.5	46.0	-6.5
3.736	18.8	20.6	39.4	46.0	-6.6
4.344	18.6	20.6	39.2	46.0	-6.8
4.720	18.5	20.6	39.1	46.0	-6.9
2.432	18.4	20.6	39.0	46.0	-7.0
4.784	18.3	20.6	38.9	46.0	-7.1
4.112	18.3	20.6	38.9	46.0	-7.1
2.464	18.3	20.6	38.9	46.0	-7.1
4.384	18.1	20.6	38.7	46.0	-7.3
3.544	18.0	20.6	38.6	46.0	-7.4
2.264	18.0	20.6	38.6	46.0	-7.4
4.656	17.9	20.6	38.5	46.0	-7.5
4.984	17.8	20.7	38.5	46.0	-7.5
4.512	17.8	20.6	38.4	46.0	-7.6
4.048	17.7	20.6	38.3	46.0	-7.7
3.856	17.7	20.6	38.3	46.0	-7.7
2.520	17.6	20.6	38.2	46.0	-7.8







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	12/7/2007	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. 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. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting with each type of modulation available.



## EMC

## OCCUPIED BANDWIDTH

EUT:	Allegro MX WiFi Module	Work Order:	JUNI0022
Serial Number:	None	Date:	10/08/08
Customer:	Juniper Systems, Inc.	Temperature:	21°C
Attendees:	None	Humidity:	36%
Project:	None	Barometric Pres.:	1026.5 mb
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

Configuration #	4	Signature
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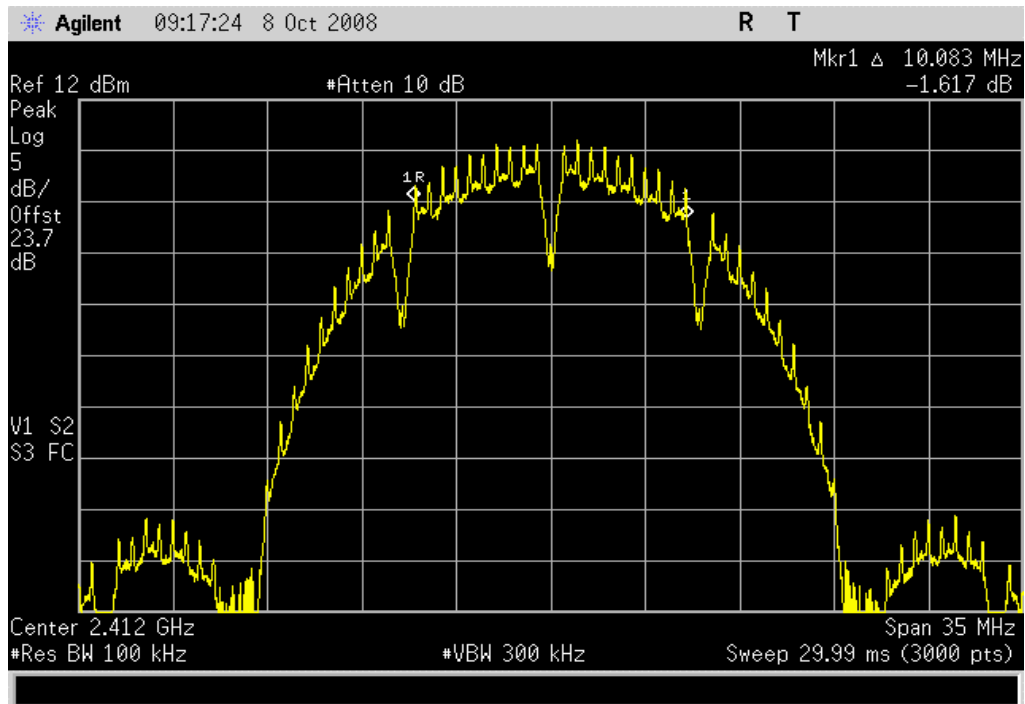
		Value	Limit	Results
802.11(b) 1 Mbps	Low Channel	10.08 MHz	> 500 kHz	Pass
	Mid Channel	10.08 MHz	> 500 kHz	Pass
	High Channel	10.08 MHz	> 500 kHz	Pass
802.11(b) 11 Mbps	Low Channel	9.71 MHz	> 500 kHz	Pass
	Mid Channel	9.71 MHz	> 500 kHz	Pass
	High Channel	9.72 MHz	> 500 kHz	Pass
802.11(g) 6 Mbps	Low Channel	16.13 MHz	> 500 kHz	Pass
	Mid Channel	16.13 MHz	> 500 kHz	Pass
	High Channel	16.29 MHz	> 500 kHz	Pass
802.11(g) 36 Mbps	Low Channel	16.40 MHz	> 500 kHz	Pass
	Mid Channel	16.42 MHz	> 500 kHz	Pass
	High Channel	16.42 MHz	> 500 kHz	Pass
802.11(g) 54 Mbps	Low Channel	16.39 MHz	> 500 kHz	Pass
	Mid Channel	16.39 MHz	> 500 kHz	Pass
	High Channel	16.41 MHz	> 500 kHz	Pass

## 802.11(b) 1 Mbps, Low Channel

Result: Pass

Value: 10.08 MHz

Limit: &gt; 500 kHz

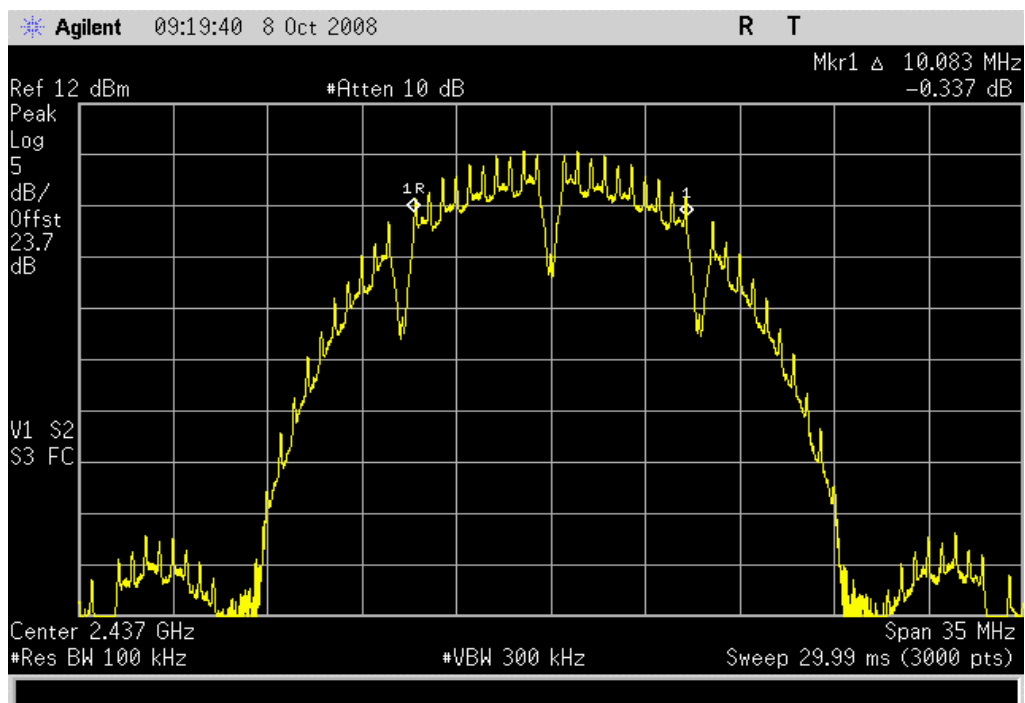


## 802.11(b) 1 Mbps, Mid Channel

Result: Pass

Value: 10.08 MHz

Limit: &gt; 500 kHz

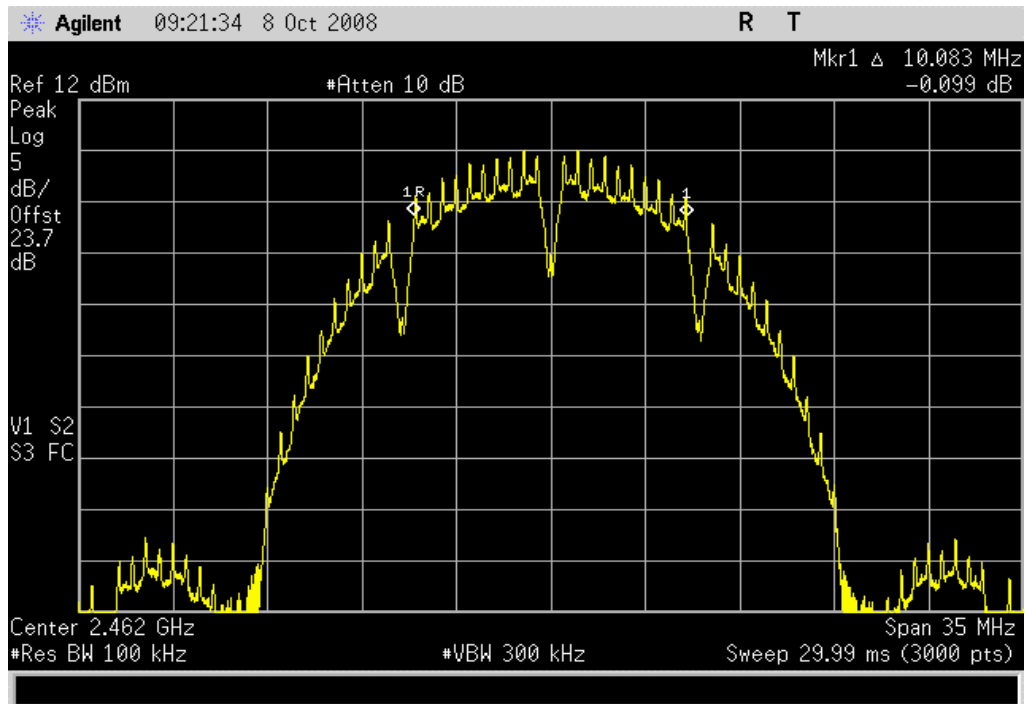


## 802.11(b) 1 Mbps, High Channel

Result: Pass

Value: 10.08 MHz

Limit: &gt; 500 kHz

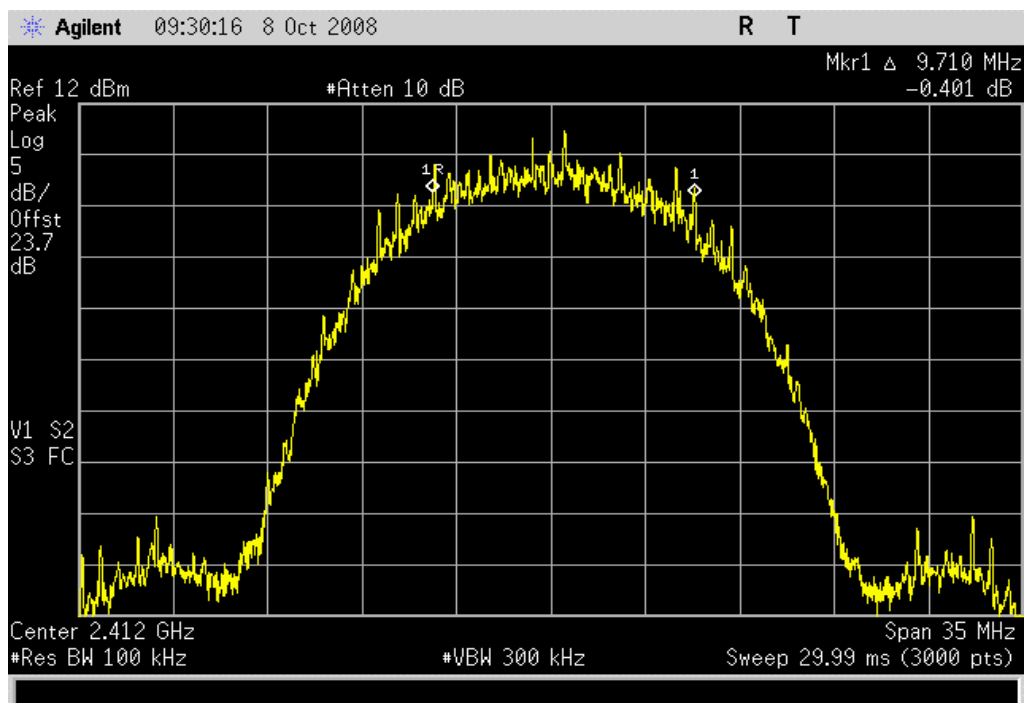


## 802.11(b) 11 Mbps, Low Channel

Result: Pass

Value: 9.71 MHz

Limit: &gt; 500 kHz

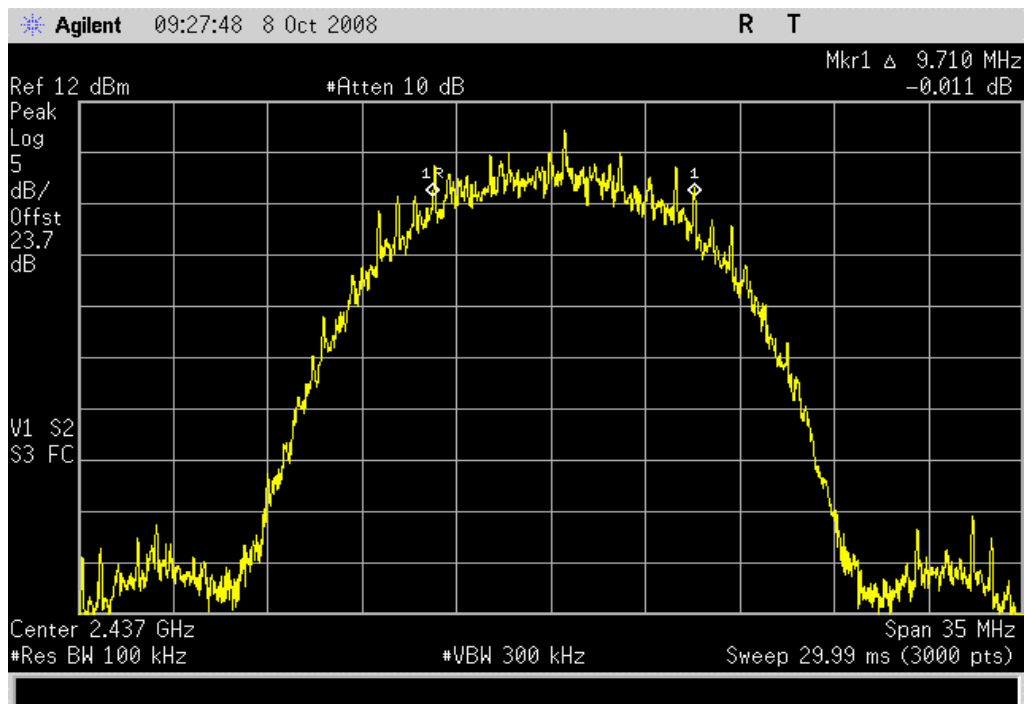


## 802.11(b) 11 Mbps, Mid Channel

Result: Pass

Value: 9.71 MHz

Limit: &gt; 500 kHz

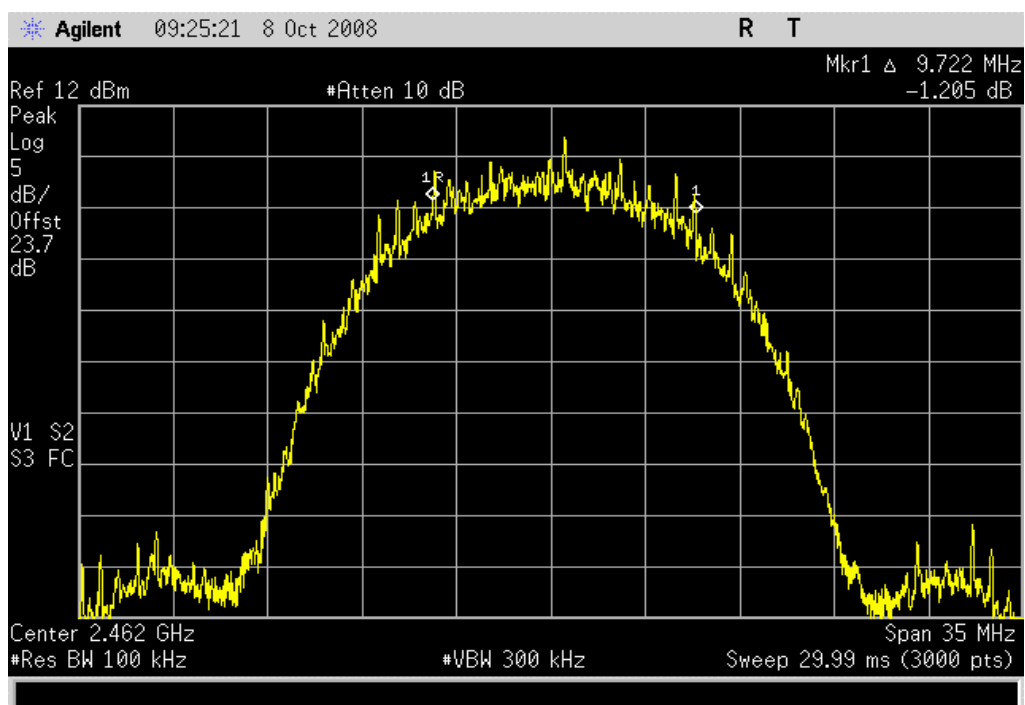


## 802.11(b) 11 Mbps, High Channel

Result: Pass

Value: 9.72 MHz

Limit: &gt; 500 kHz

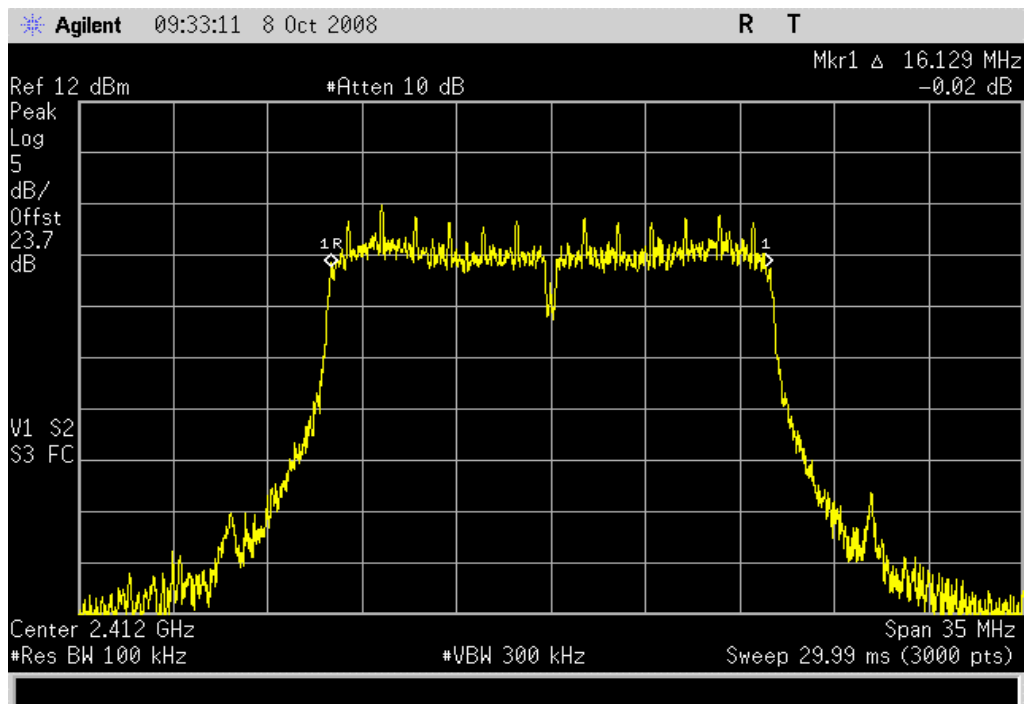


## 802.11(g) 6 Mbps, Low Channel

Result: Pass

Value: 16.13 MHz

Limit: &gt; 500 kHz

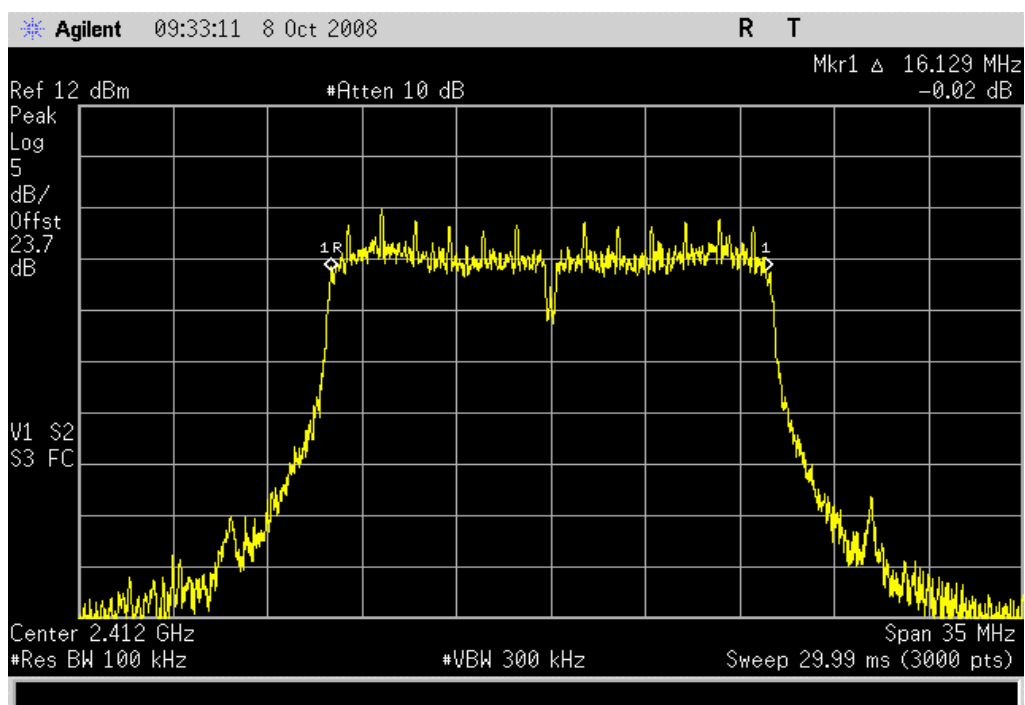


## 802.11(g) 6 Mbps, Mid Channel

Result: Pass

Value: 16.13 MHz

Limit: &gt; 500 kHz

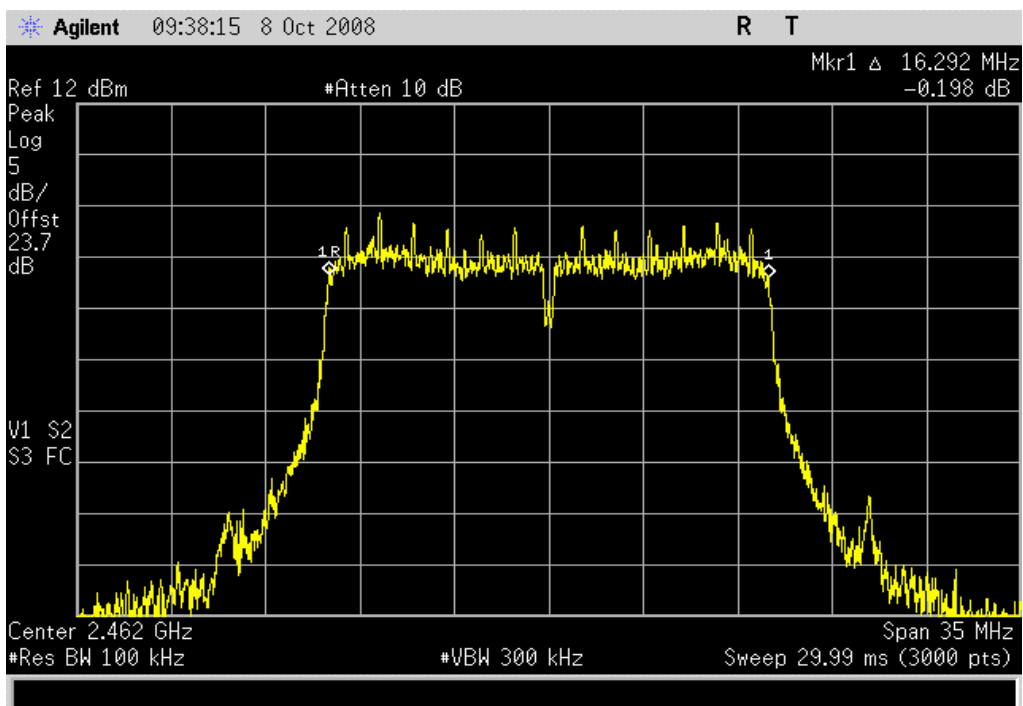


## 802.11(g) 6 Mbps, High Channel

Result: Pass

Value: 16.29 MHz

Limit: &gt; 500 kHz

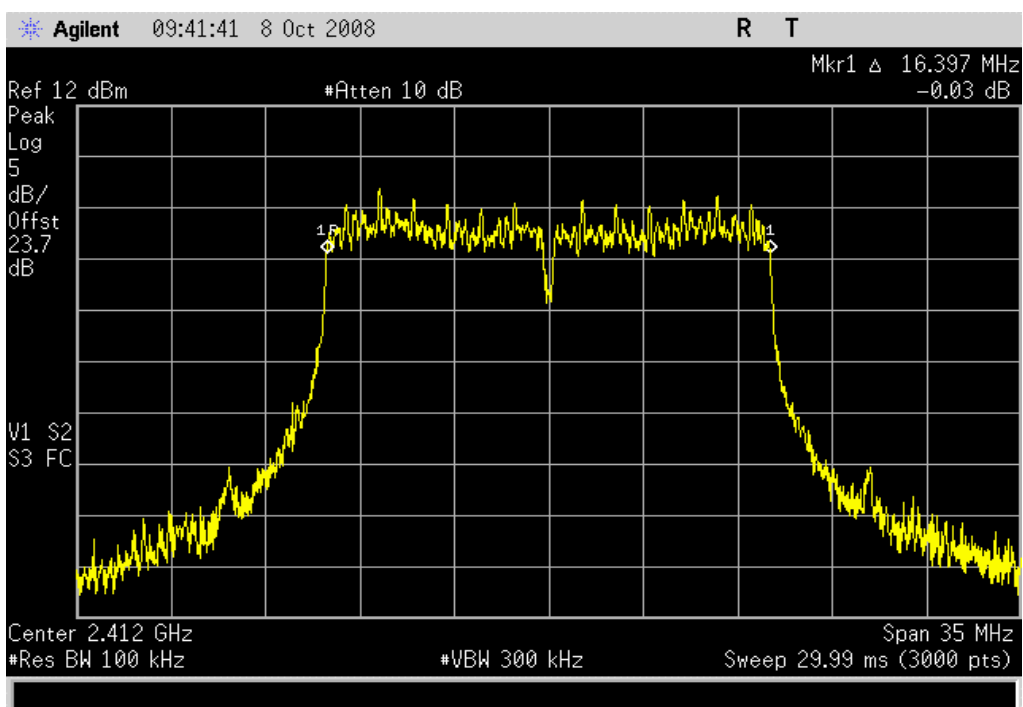


## 802.11(g) 36 Mbps, Low Channel

Result: Pass

Value: 16.40 MHz

Limit: &gt; 500 kHz

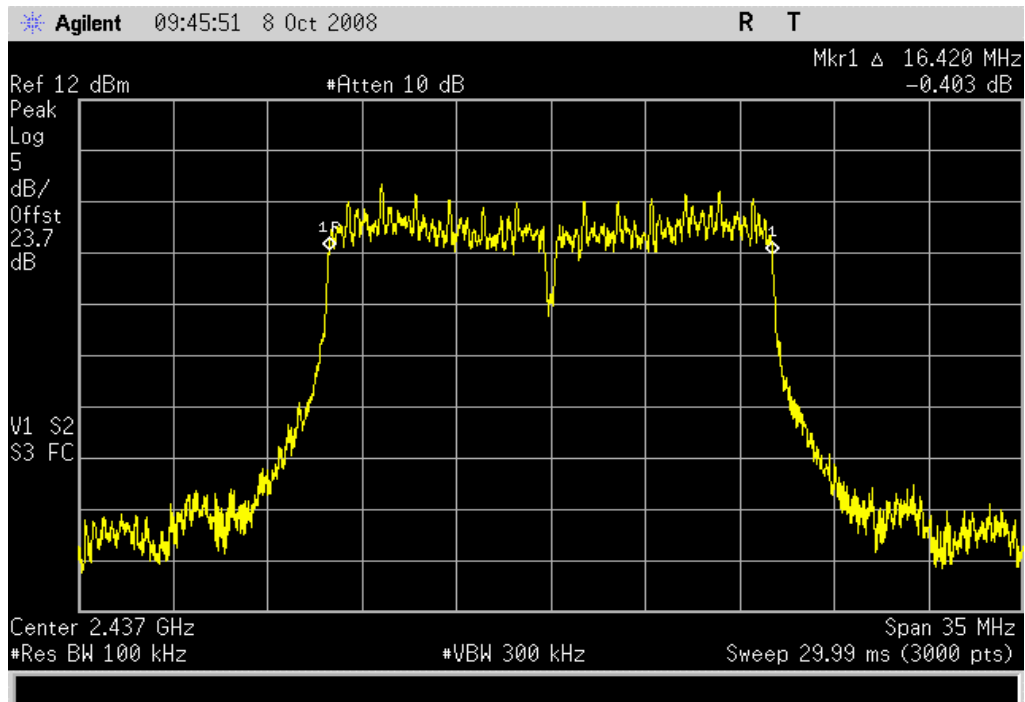


## 802.11(g) 36 Mbps, Mid Channel

Result: Pass

Value: 16.42 MHz

Limit: &gt; 500 kHz

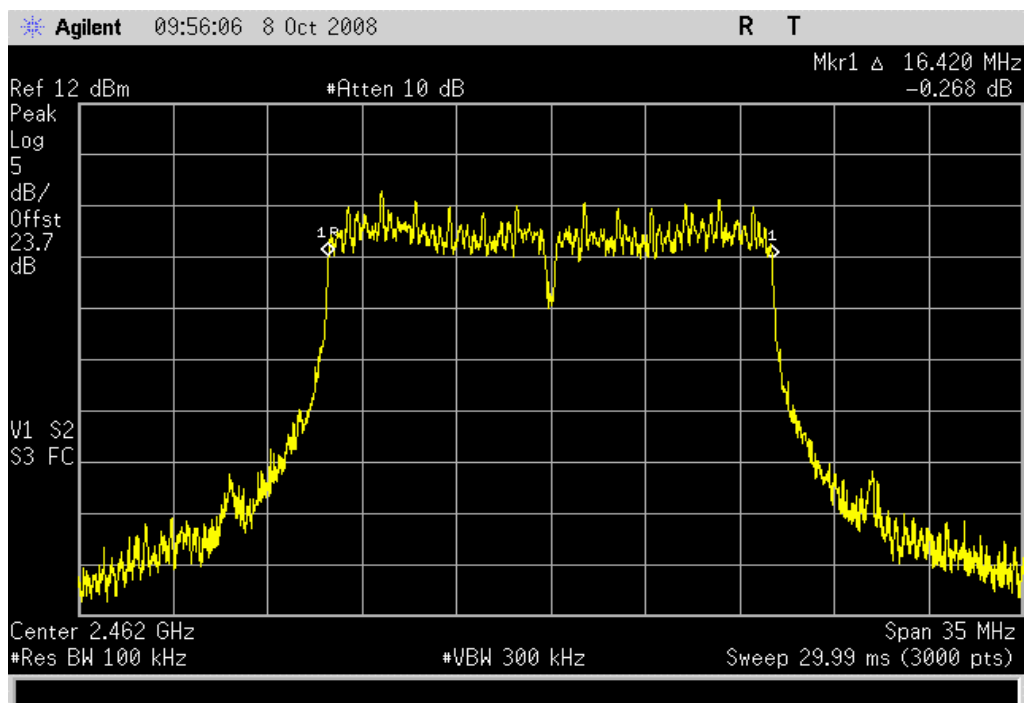


## 802.11(g) 36 Mbps, High Channel

Result: Pass

Value: 16.42 MHz

Limit: &gt; 500 kHz

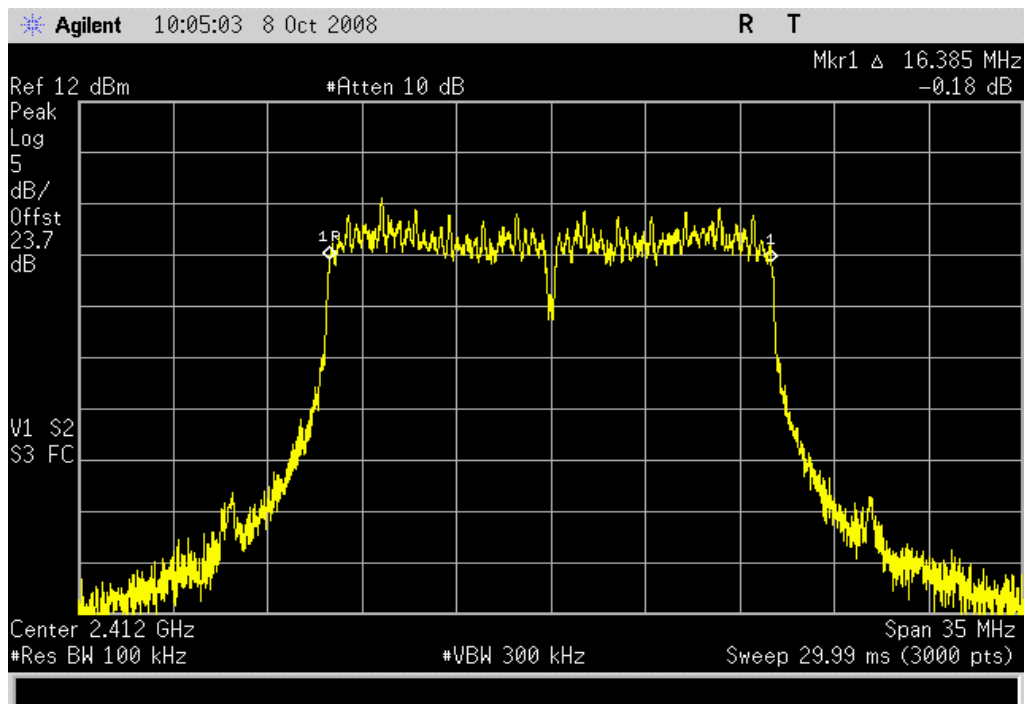


802.11(g) 54 Mbps, Low Channel

Result: Pass

Value: 16.39 MHz

Limit: &gt; 500 kHz

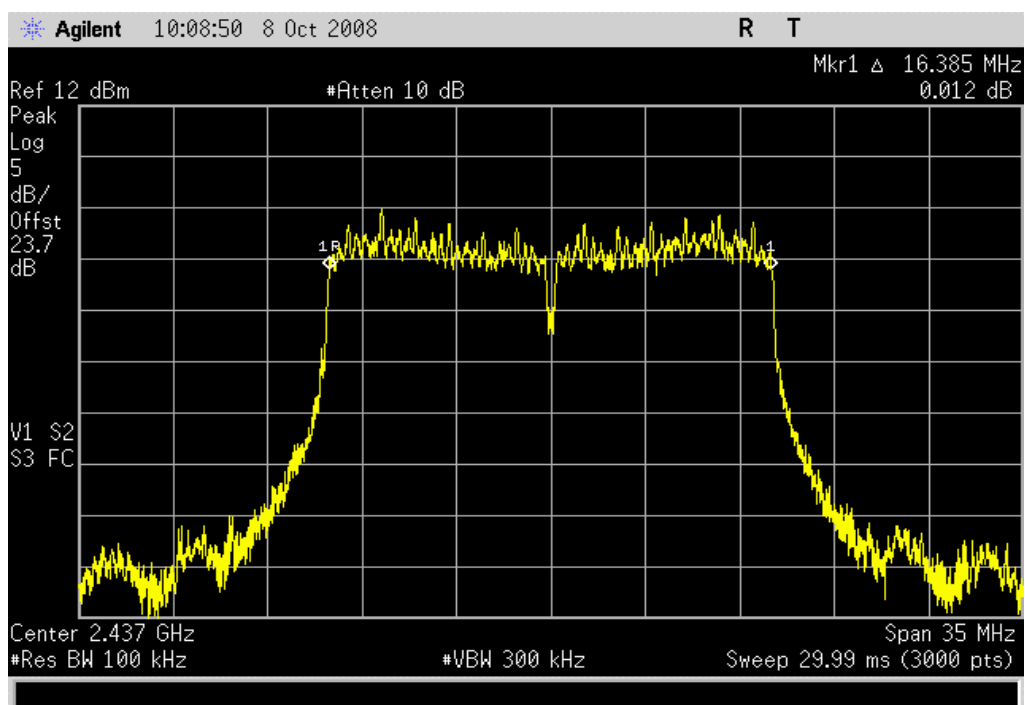


802.11(g) 54 Mbps, Mid Channel

Result: Pass

Value: 16.39 MHz

Limit: &gt; 500 kHz



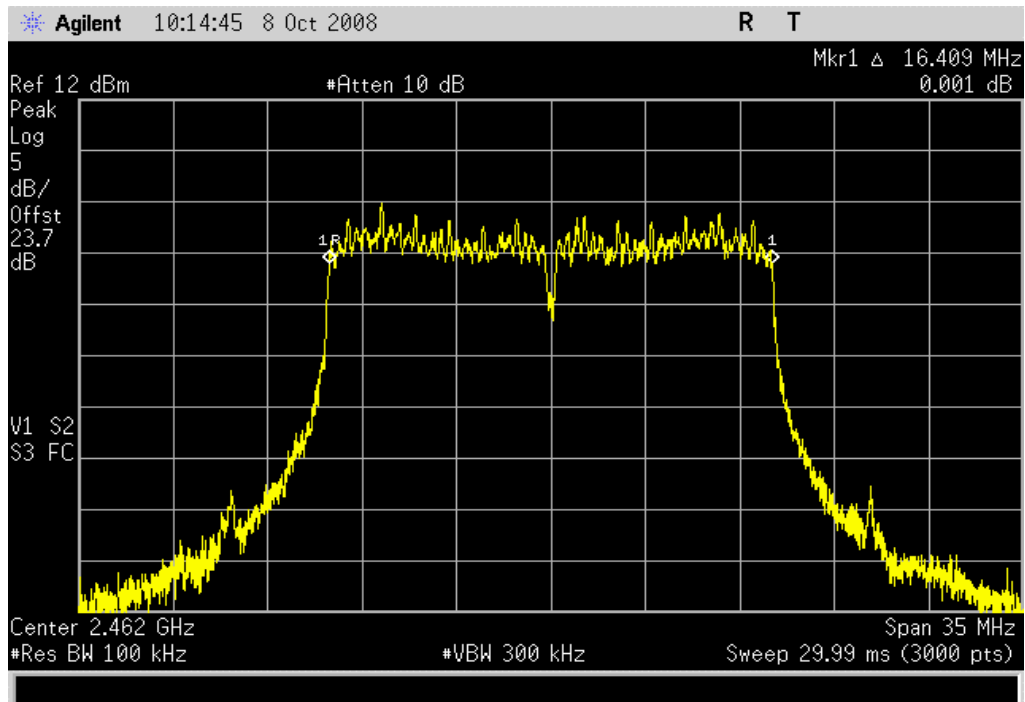


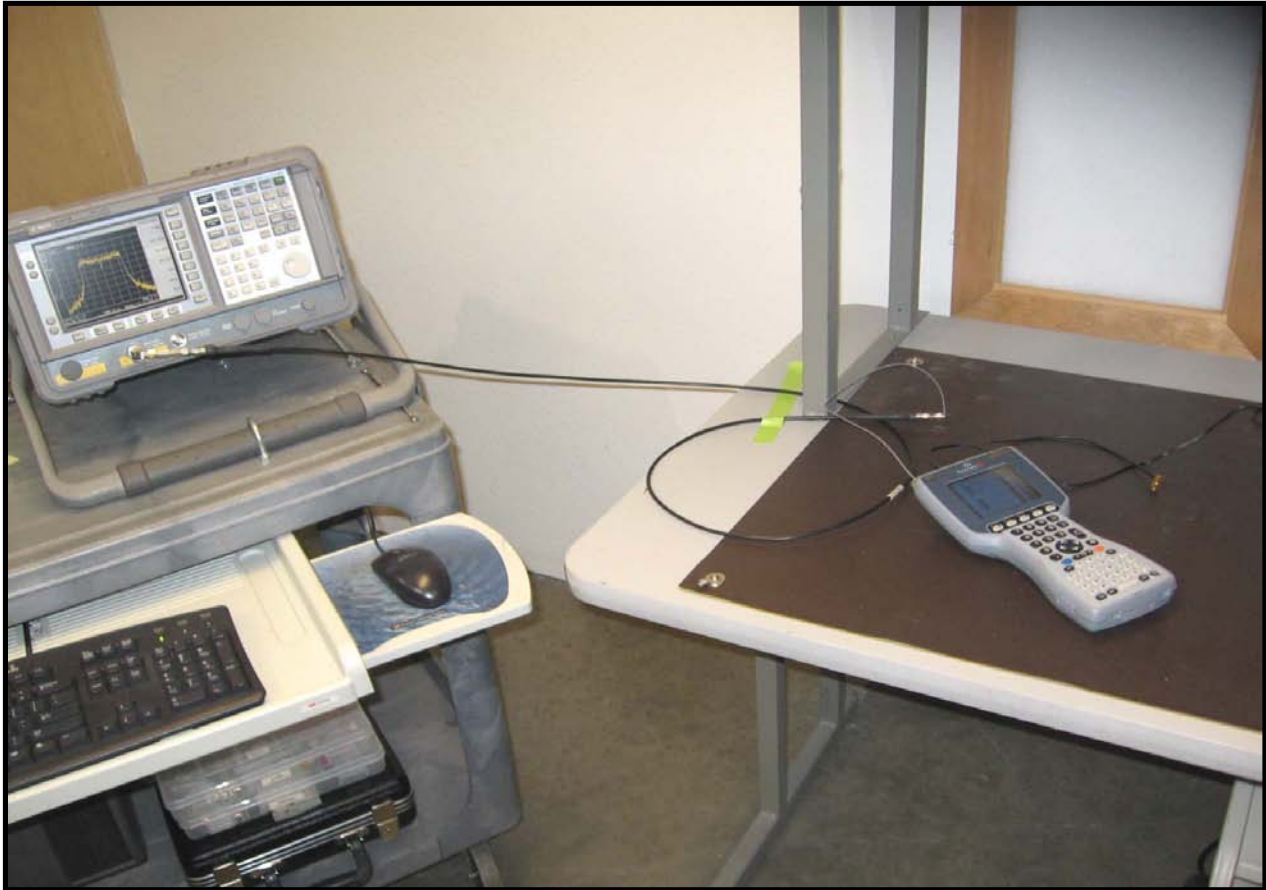
802.11(g) 54 Mbps, High Channel

Result: Pass

Value: 16.41 MHz

Limit: &gt; 500 kHz





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
Power Meter	Gigatronics	8651A	SPM	12/7/2007	13
Power Sensor	Gigatronics	80701A	SPL	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
RF Detector	RLC Electronics	CR-133-R	ZZA	NCR	0
Oscilloscope	Tektronix	TDS 3052	TOF	12/7/2007	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/7/2007	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. 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 output power was measured with the EUT set to low, medium, and high transmit frequencies. The EUT was transmitting at its maximum output power. The data rate of the radio was varied to determine the level that produced the highest output power.

The measurement was made using a direct connection between the RF output of the EUT and a RF detector diode. The DC output of the diode was measured with the oscilloscope. The signal generator, tuned to the transmit frequency, was then substituted for the EUT. The CW output of the signal generator was adjusted until the DC output of the RF detector diode match the peak level produced when connected to the EUT. To further reduce measurement error, the power meter and sensor were then used to measure the output power level of the signal generator.

**De Facto EIRP Limit:** Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

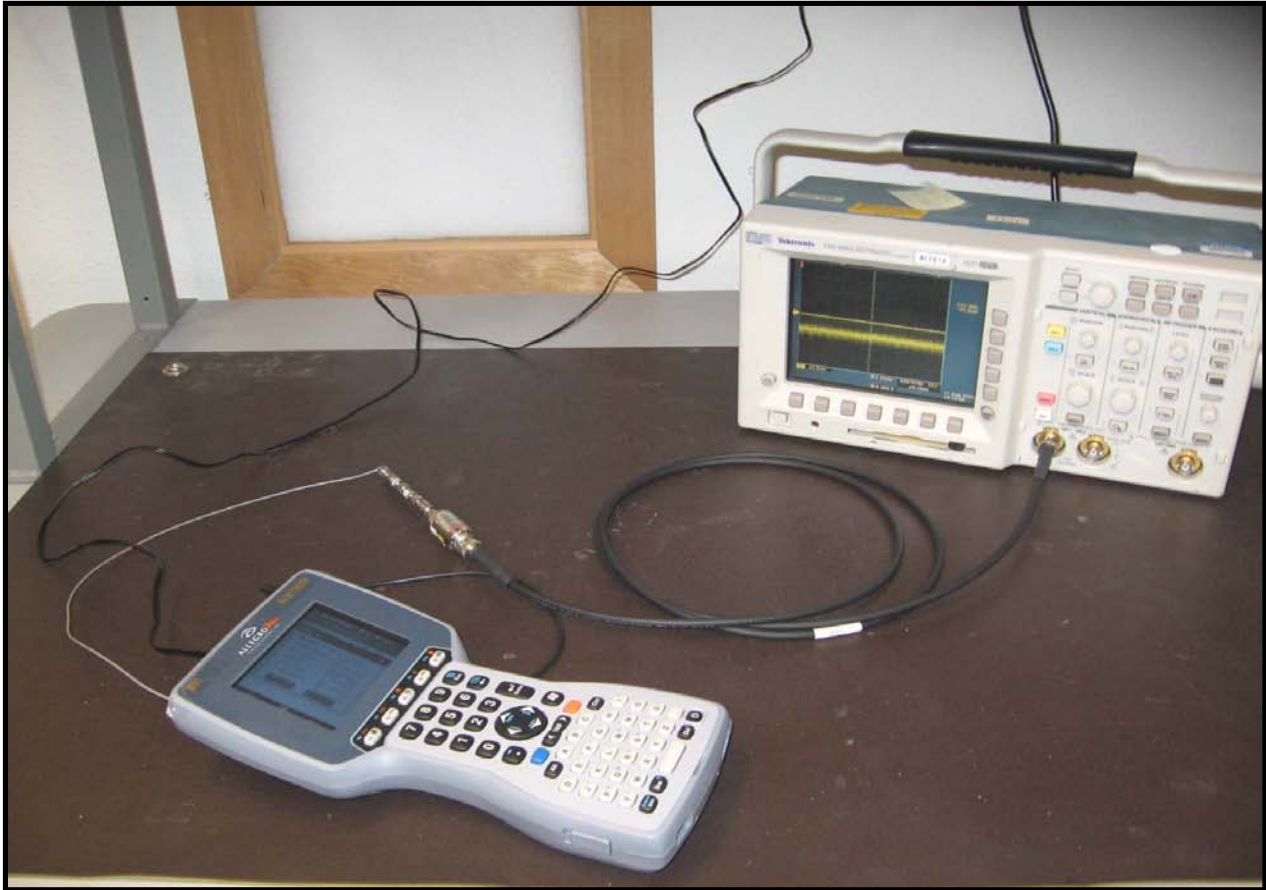
## PEAK OUTPUT POWER

## EMC

EUT: Allegro MX WiFi Module		Work Order: JUNI0005	
Serial Number: None		Date: 08/12/08	
Customer: Juniper Systems, Inc.		Temperature: 21°C	
Attendees: None		Humidity: 36%	
Project: None		Barometric Pres.: 1023.7 mb	
Tested by: Rod Peloquin		Power: 120VAC/60Hz	Job Site: EV06
TEST SPECIFICATIONS			
FCC 15.247 (DTS):2007		Test Method ANSI C63.4:2003 KDB No. 558074	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
No Deviations			
Configuration #	4	Signature 	
		Value	Limit
		Results	

Peak Output Power, Diode Detector Method

802.11(b)	1 Mbps			
Xmit Frequency	Channel	Power Meter	Power Meter	Limit
(MHz)		(dBm)	(mW)	(W)
2412	1	15.68	37.00	1.00
2437	6	15.42	34.90	1.00
2462	11	15.25	33.50	1.00
802.11(b)	11 Mbps			
Xmit Frequency	Channel	Power Meter	Power Meter	Limit
(MHz)		(dBm)	(mW)	(W)
2412	1	15.68	37.00	1.00
2437	6	15.42	34.90	1.00
2462	11	15.33	34.10	1.00
802.11(g)	6 Mbps			
Xmit Frequency	Channel	Power Meter	Power Meter	Limit
(MHz)		(dBm)	(mW)	(W)
2412	1	14.2	26.30	1.00
2437	6	15.31	34.00	1.00
2462	11	14.35	27.20	1.00
802.11(g)	36 Mbps			
Xmit Frequency	Channel	Power Meter	Power Meter	Limit
(MHz)		(dBm)	(mW)	(W)
2412	1	15.45	35.10	1.00
2437	6	15.42	34.90	1.00
2462	11	15.97	39.60	1.00
802.11(g)	54 Mbps			
Xmit Frequency	Channel	Power Meter	Power Meter	Limit
(MHz)		(dBm)	(mW)	(W)
2412	1	14.43	27.80	1.00
2437	6	14.58	28.70	1.00
2462	11	14.71	29.60	1.00



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	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Power Meter	Gigatronics	8651A	SPM	12/7/2007	13
Power Sensor	Gigatronics	80701A	SPL	12/7/2007	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/7/2007	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. 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 requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low 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 using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

## EMC

## BAND EDGE COMPLIANCE

EUT:	Allegro MX WiFi Module	Work Order:	JUNI0022
Serial Number:	None	Date:	10/08/08
Customer:	Juniper Systems, Inc.	Temperature:	21°C
Attendees:	None	Humidity:	36%
Project:	None	Barometric Pres.:	1026.5 mb
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No deviations

Configuration #	4	Signature
		

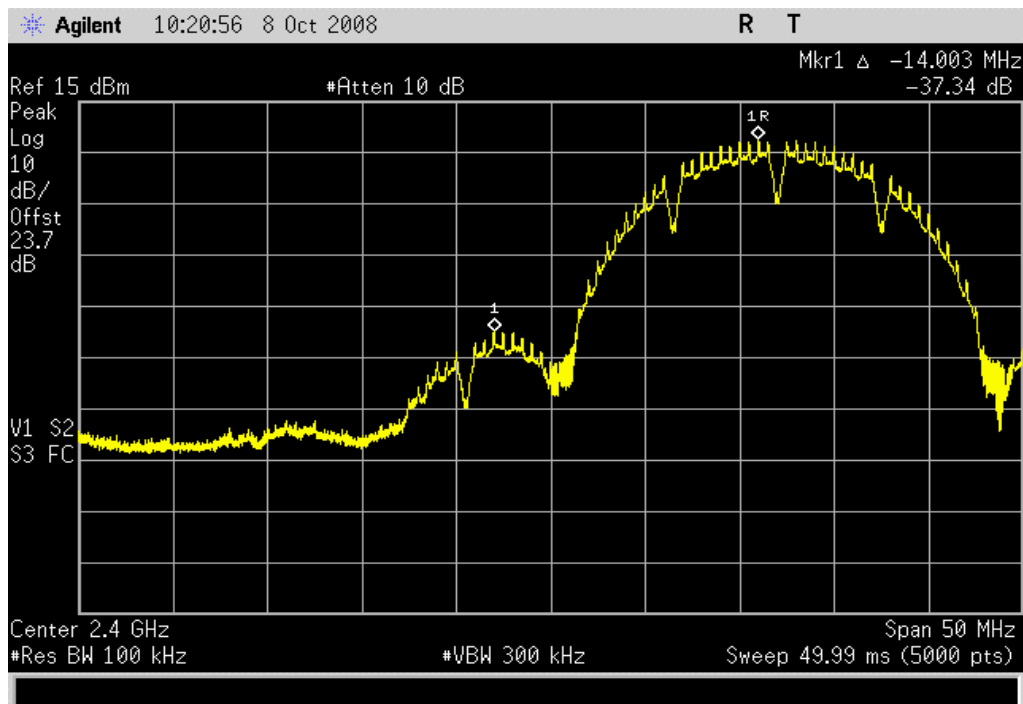
		Value	Limit	Results
802.11(b) 1 Mbps	Low Channel	-37.3 dBc	< -20 dBc	Pass
	High Channel	-56.1 dBc	< -20 dBc	Pass
802.11(b) 11 Mbps	Low Channel	-38.7 dBc	< -20 dBc	Pass
	High Channel	-56.6 dBc	< -20 dBc	Pass
802.11(g) 6 Mbps	Low Channel	-31.9 dBc	< -20 dBc	Pass
	High Channel	-41.6 dBc	< -20 dBc	Pass
802.11(g) 36 Mbps	Low Channel	-28.6 dBc	< -20 dBc	Pass
	High Channel	-41.1 dBc	< -20 dBc	Pass
802.11(g) 54 Mbps	Low Channel	-28.6 dBc	< -20 dBc	Pass
	High Channel	-40.5 dBc	< -20 dBc	Pass

802.11(b) 1 Mbps, Low Channel

Result: Pass

Value: -37.3 dBc

Limit: &lt; -20 dBc

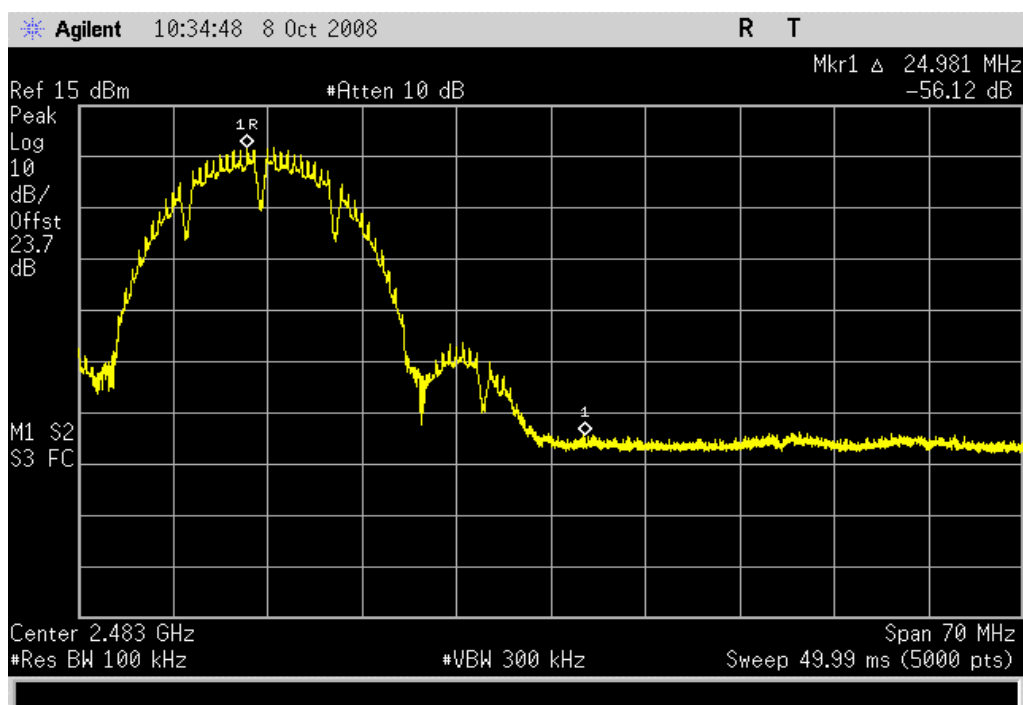


802.11(b) 1 Mbps, High Channel

Result: Pass

Value: -56.1 dBc

Limit: &lt; -20 dBc



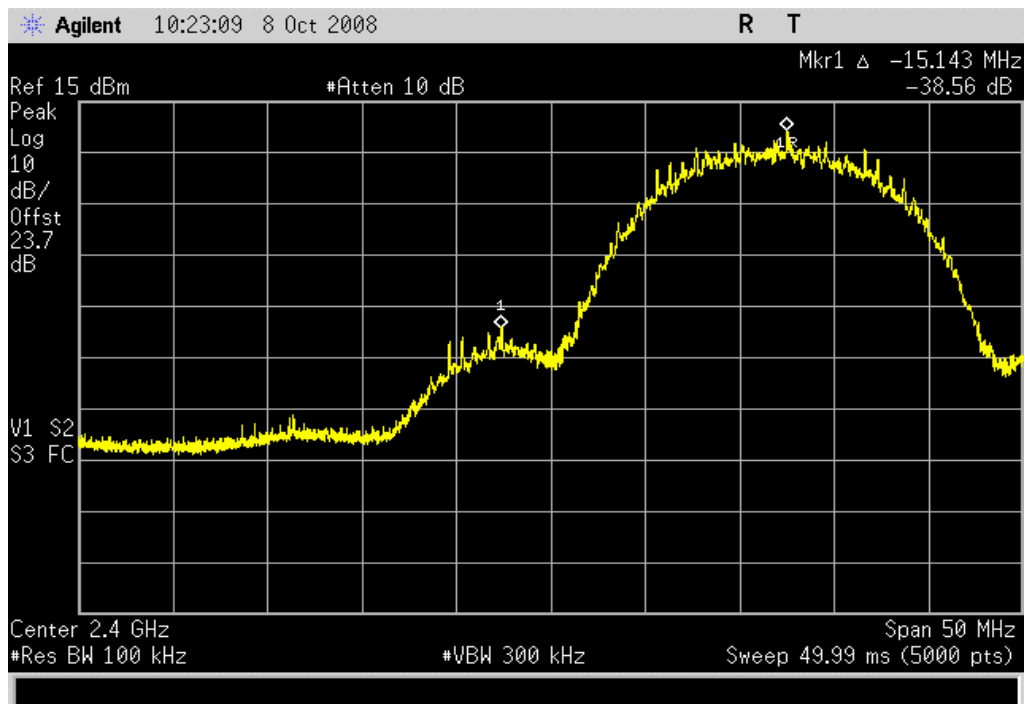


## 802.11(b) 11 Mbps, Low Channel

Result: Pass

Value: -38.7 dBc

Limit: &lt; -20 dBc

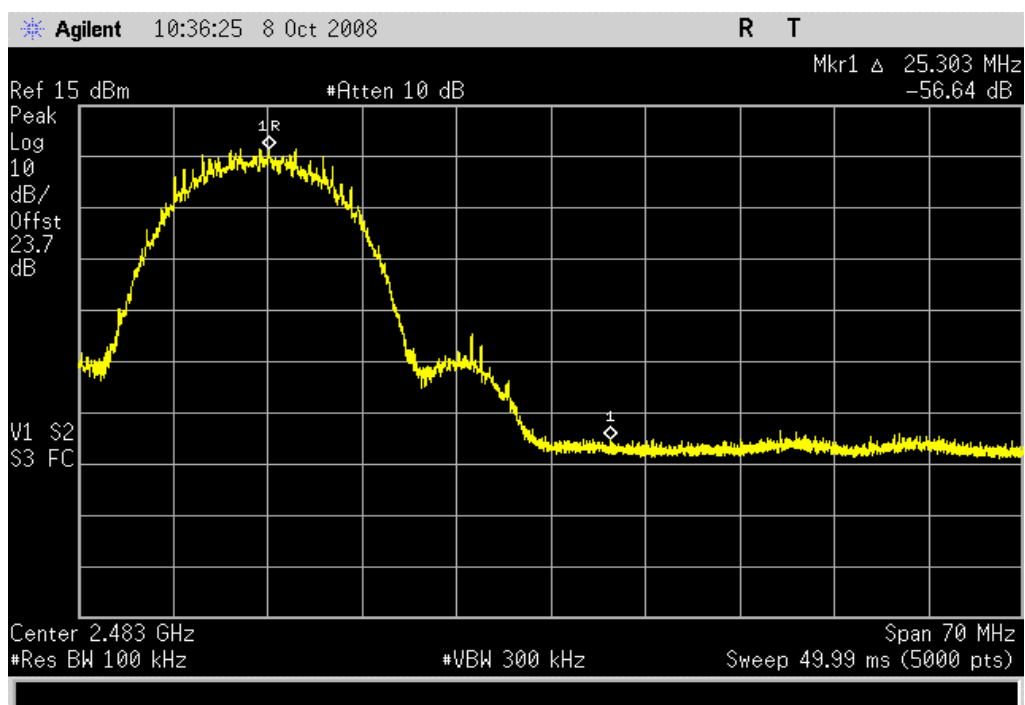


## 802.11(b) 11 Mbps, High Channel

Result: Pass

Value: -56.6 dBc

Limit: &lt; -20 dBc



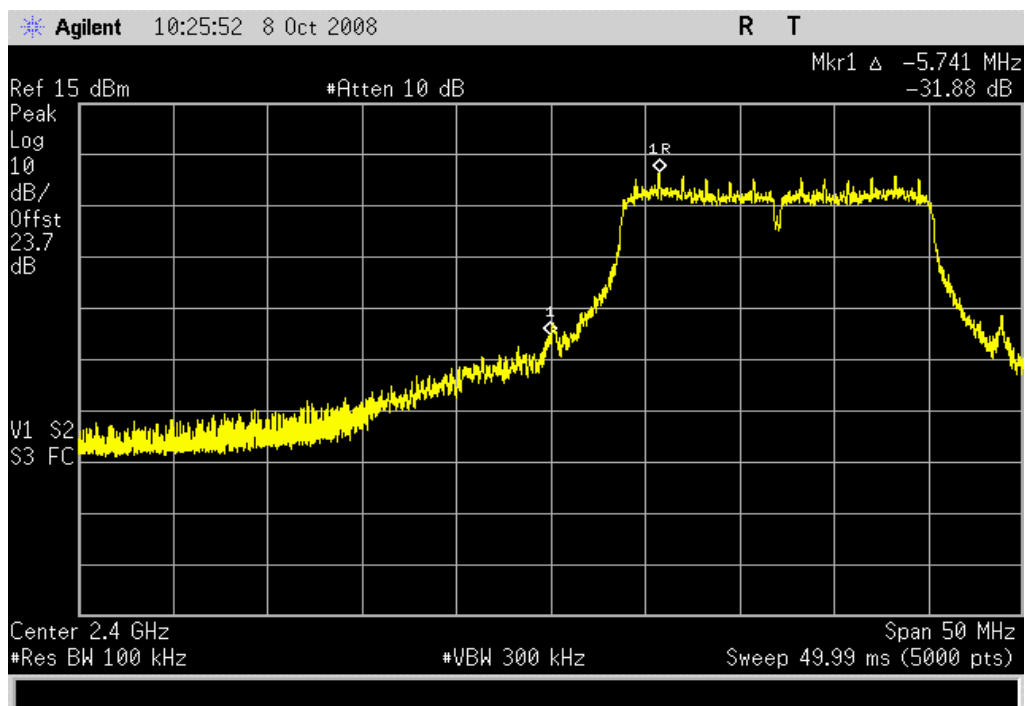
## BAND EDGE COMPLIANCE

802.11(g) 6 Mbps, Low Channel

Result: Pass

Value: -31.9 dBc

Limit: &lt; -20 dBc

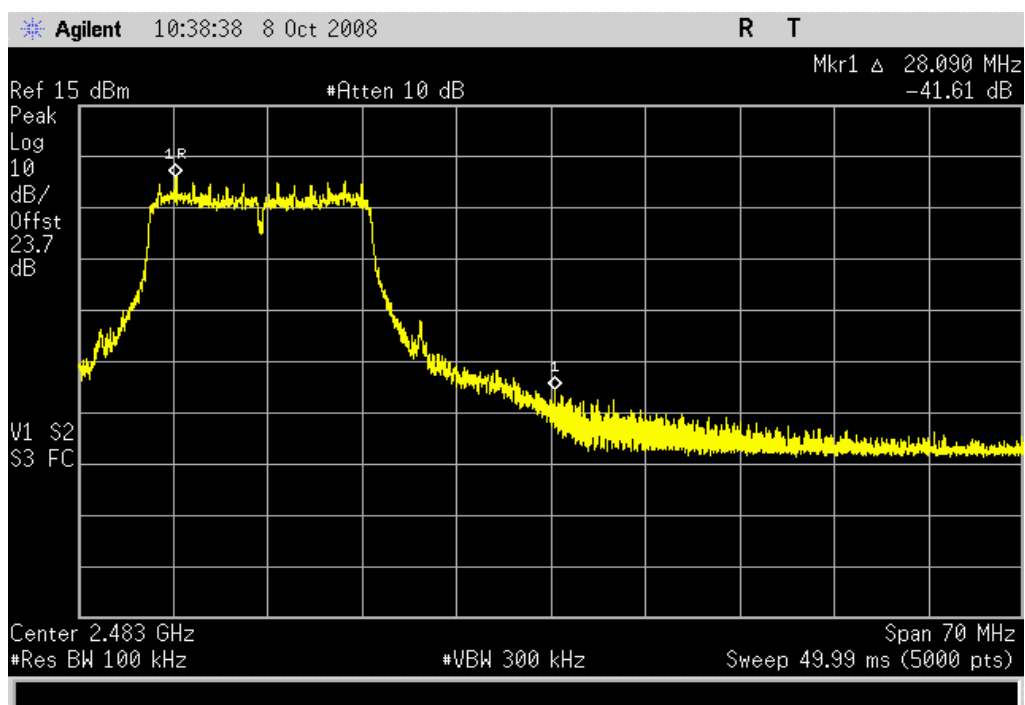


802.11(g) 6 Mbps, High Channel

Result: Pass

Value: -41.6 dBc

Limit: &lt; -20 dBc

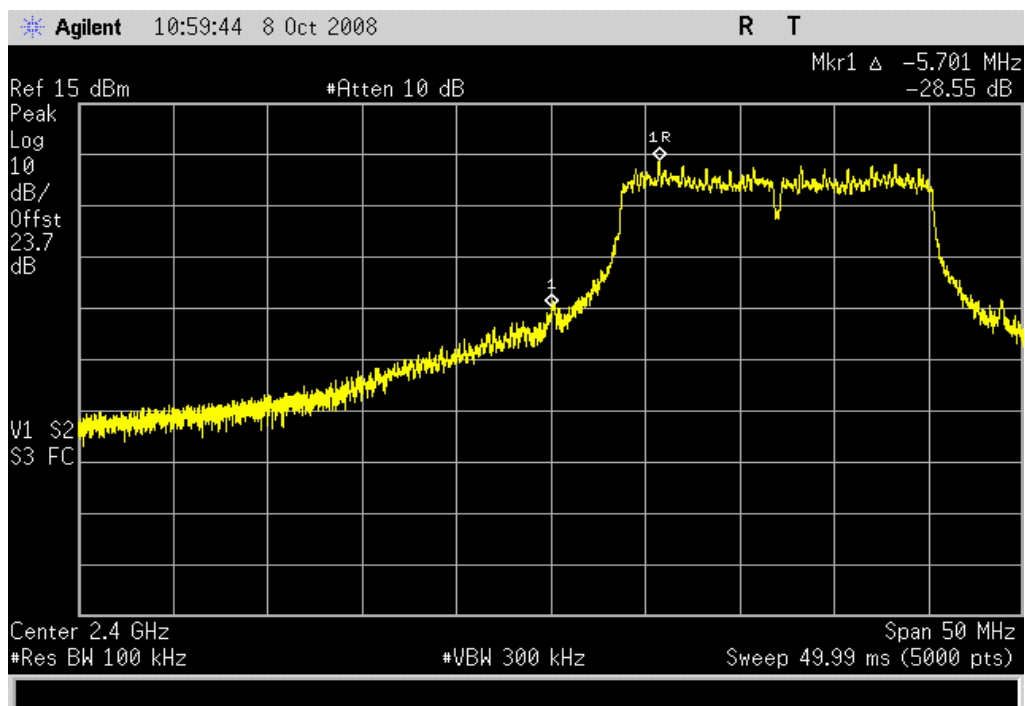


802.11(g) 36 Mbps, Low Channel

Result: Pass

Value: -28.6 dBc

Limit: &lt; -20 dBc

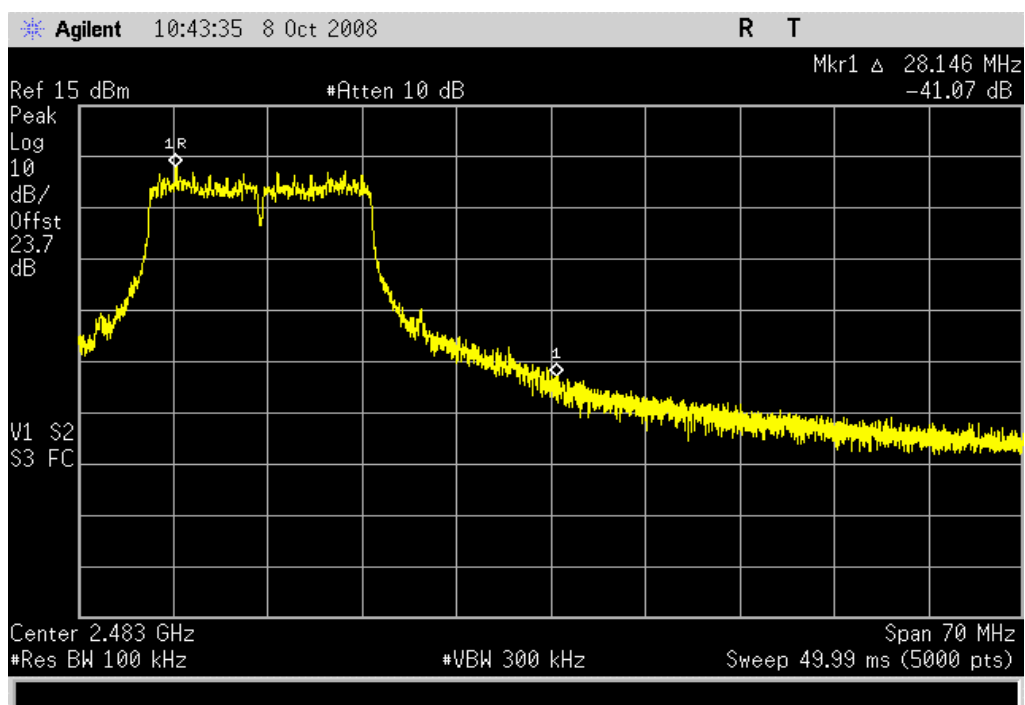


802.11(g) 36 Mbps, High Channel

Result: Pass

Value: -41.1 dBc

Limit: &lt; -20 dBc

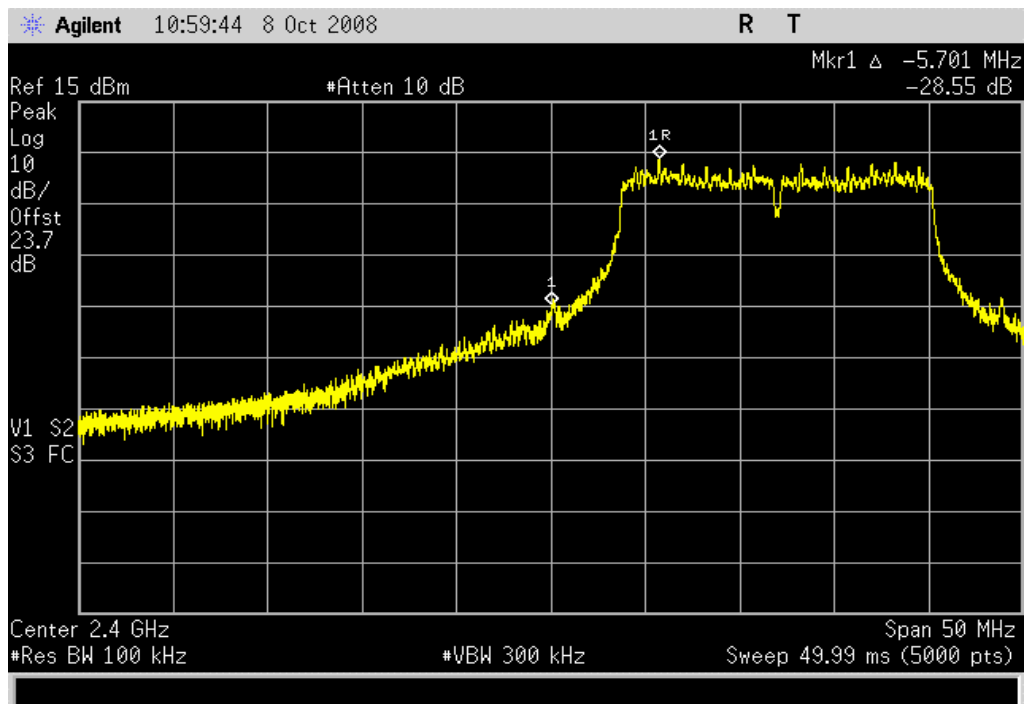


## 802.11(g) 54 Mbps, Low Channel

Result: Pass

Value: -28.6 dBc

Limit: &lt; -20 dBc

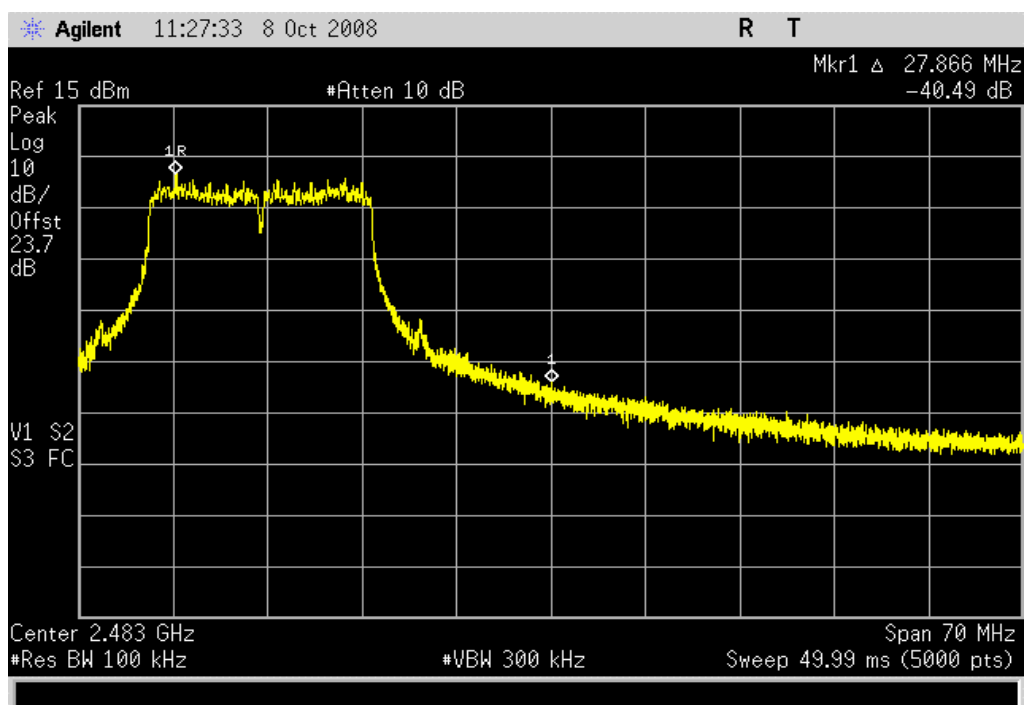


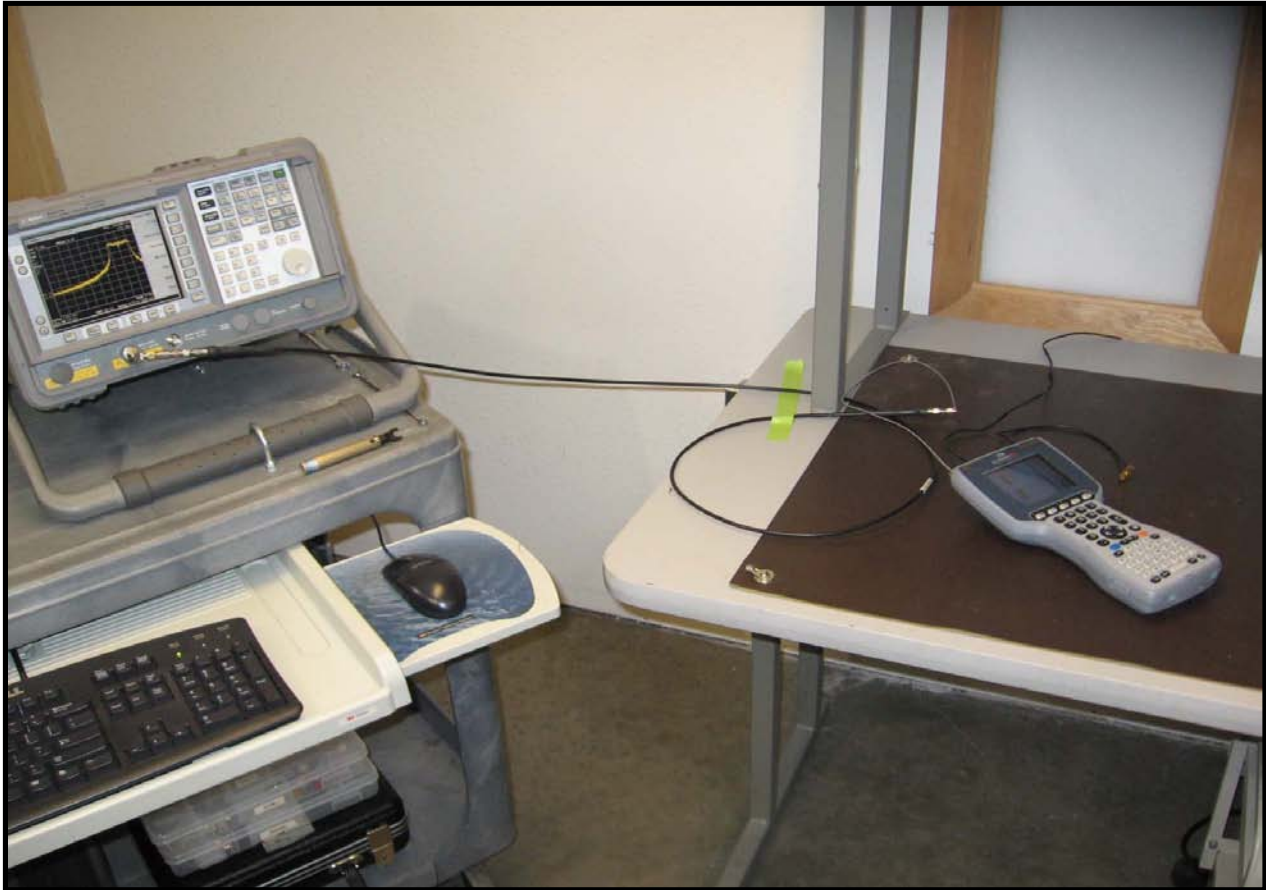
## 802.11(g) 54 Mbps, High Channel

Result: Pass

Value: -40.5 dBc

Limit: &lt; -20 dBc





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	E4446A	AAT	12/7/2007	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. 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.

## EMC

## SPURIOUS CONDUCTED EMISSIONS

EUT:	Allegro MX WiFi Module	Work Order:	JUNI0022
Serial Number:	None	Date:	10/09/08
Customer:	Juniper Systems, Inc.	Temperature:	21°C
Attendees:	None	Humidity:	36%
Project:	None	Barometric Pres.:	1026.5 mb
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

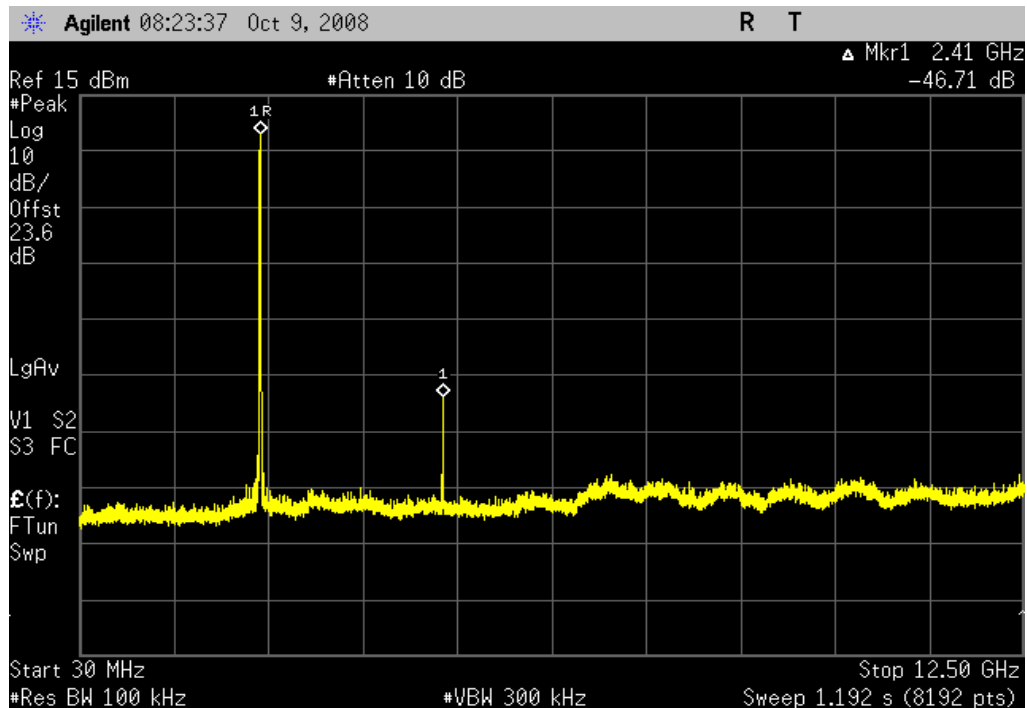
Configuration #	4	Signature 
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		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel			
	30MHz - 12.5GHz	-46.71 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-45.35 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-45.40 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel			
	30MHz - 12.5GHz	-46.14 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-45.43 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-44.49 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel			
	30MHz - 12.5GHz	-53.14 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-50.82 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-44.49 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel			
	30MHz - 12.5GHz	-54.33 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-52.66 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-51.25 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel			
	30MHz - 12.5GHz	-53.16 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-52.27 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-51.78 dBc	≤ -20 dBc	Pass
	12.4GHz-25GHz	< -50 dBc	≤ -20 dBc	Pass

802.11(b) 1 Mbps, Low Channel, 30MHz - 12.5GHz

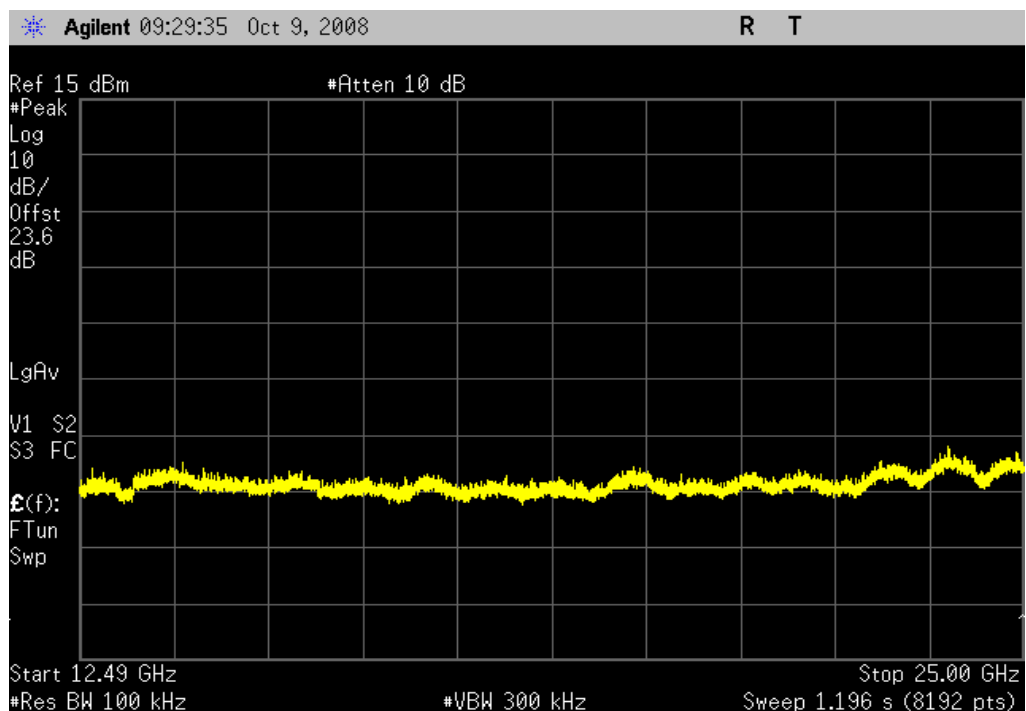
Result: Pass

Value: -46.71 dBc

Limit:  $\leq -20$  dBc

802.11(b) 1 Mbps, Low Channel, 12.4GHz-25GHz

Result: Pass

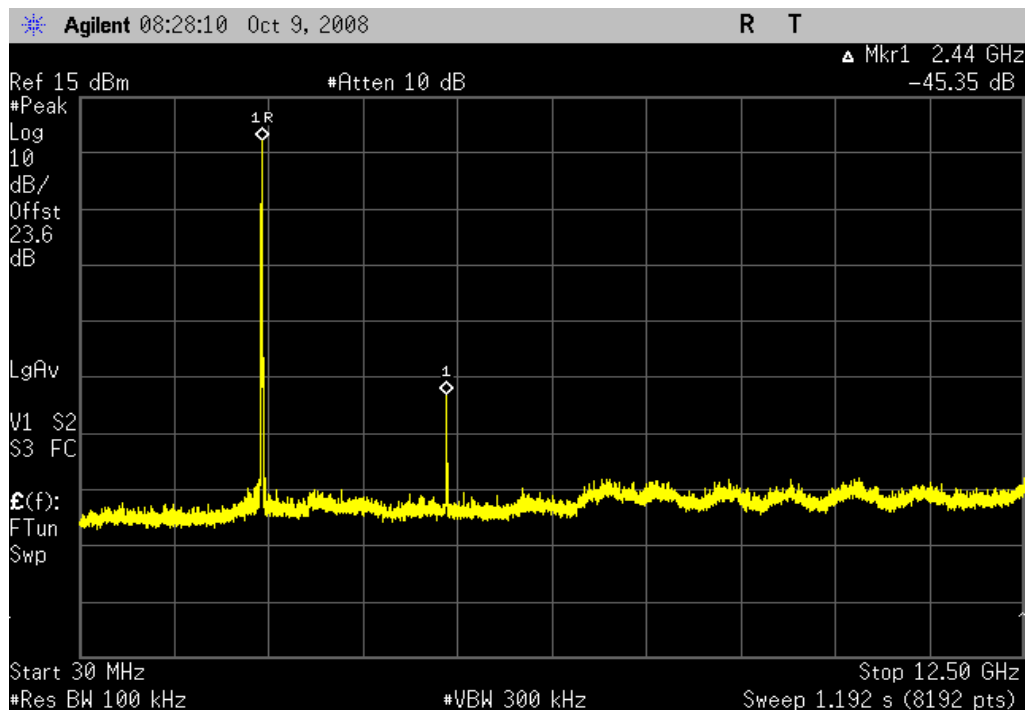
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc



802.11(b) 1 Mbps, Mid Channel, 30MHz - 12.5GHz

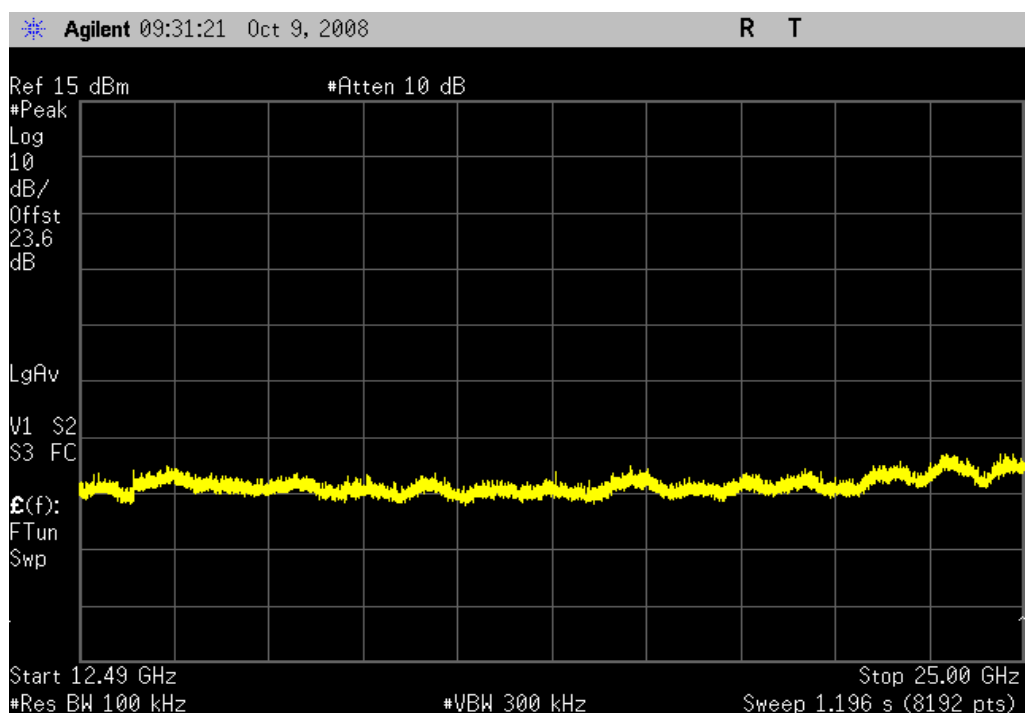
Result: Pass

Value: -45.35 dBc

Limit:  $\leq -20$  dBc

802.11(b) 1 Mbps, Mid Channel, 12.4GHz-25GHz

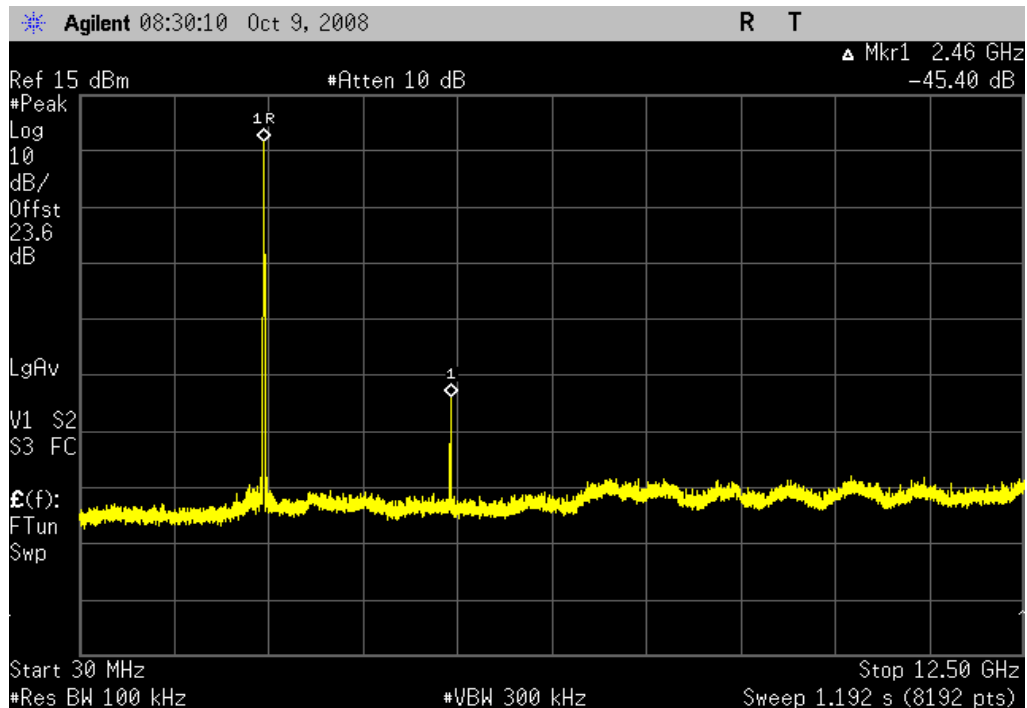
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(b) 1 Mbps, High Channel, 30MHz - 12.5GHz

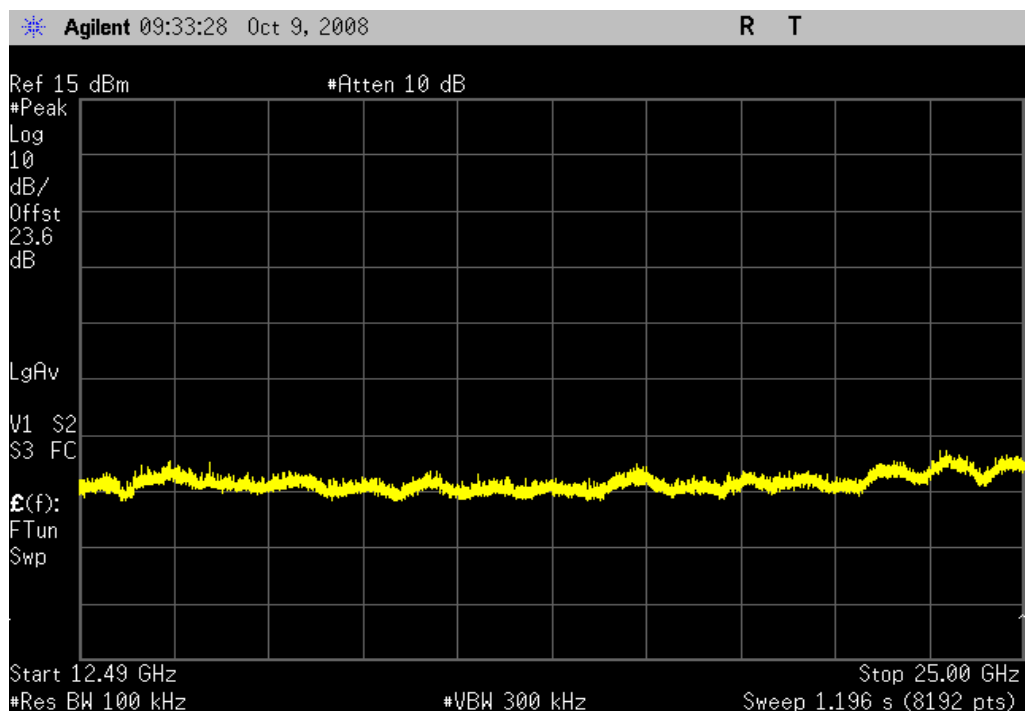
Result: Pass

Value: -45.40 dBc

Limit:  $\leq -20$  dBc

802.11(b) 1 Mbps, High Channel, 12.4GHz-25GHz

Result: Pass

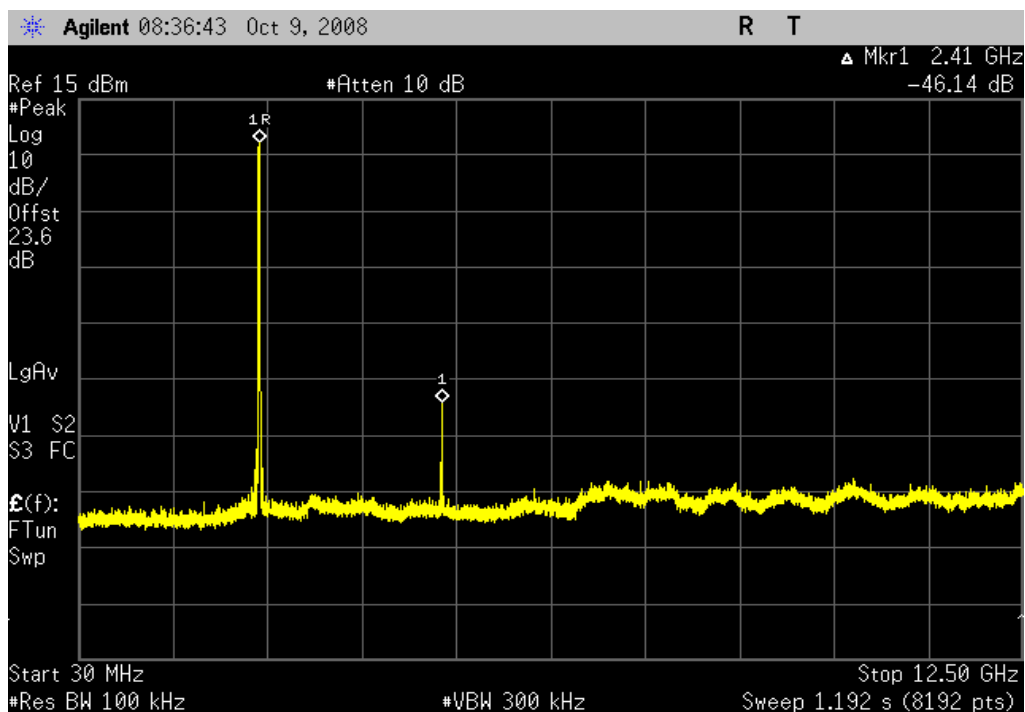
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

## SPURIOUS CONDUCTED EMISSIONS

802.11(b) 11 Mbps, Low Channel, 30MHz - 12.5GHz

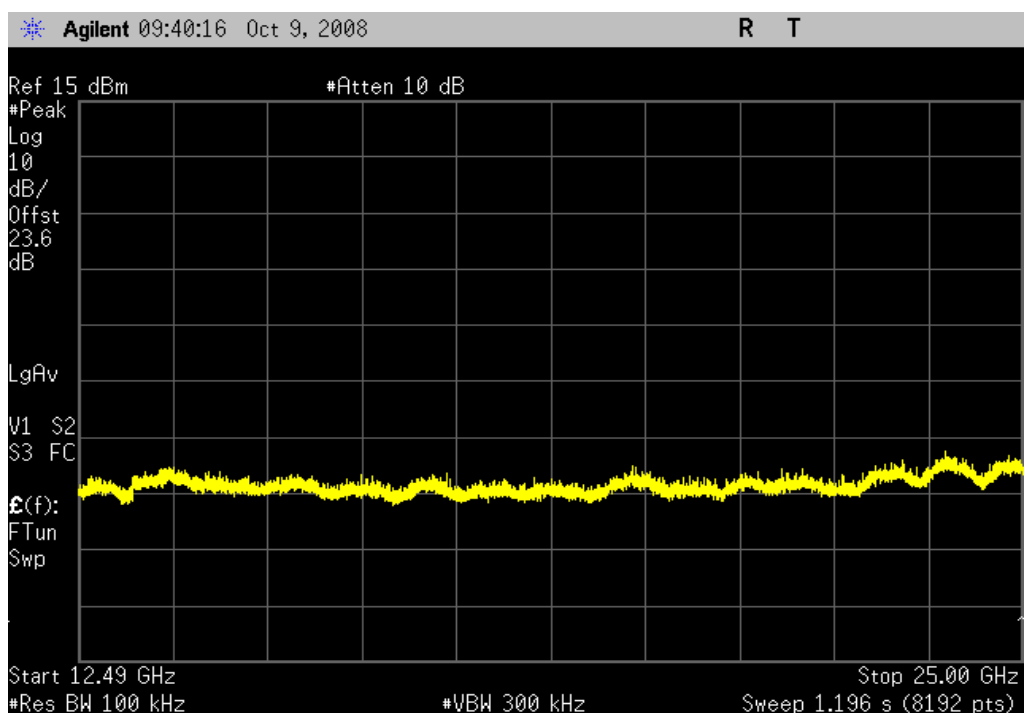
Result: Pass

Value: -46.14 dBc

Limit:  $\leq -20$  dBc

802.11(b) 11 Mbps, Low Channel, 12.4GHz-25GHz

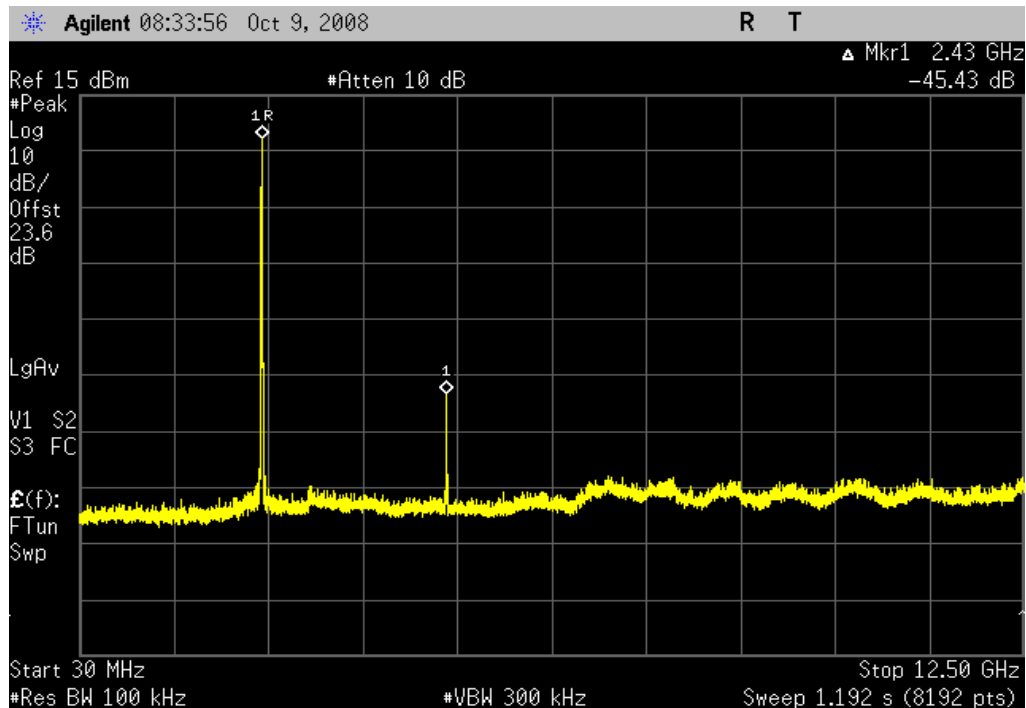
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(b) 11 Mbps, Mid Channel, 30MHz - 12.5GHz

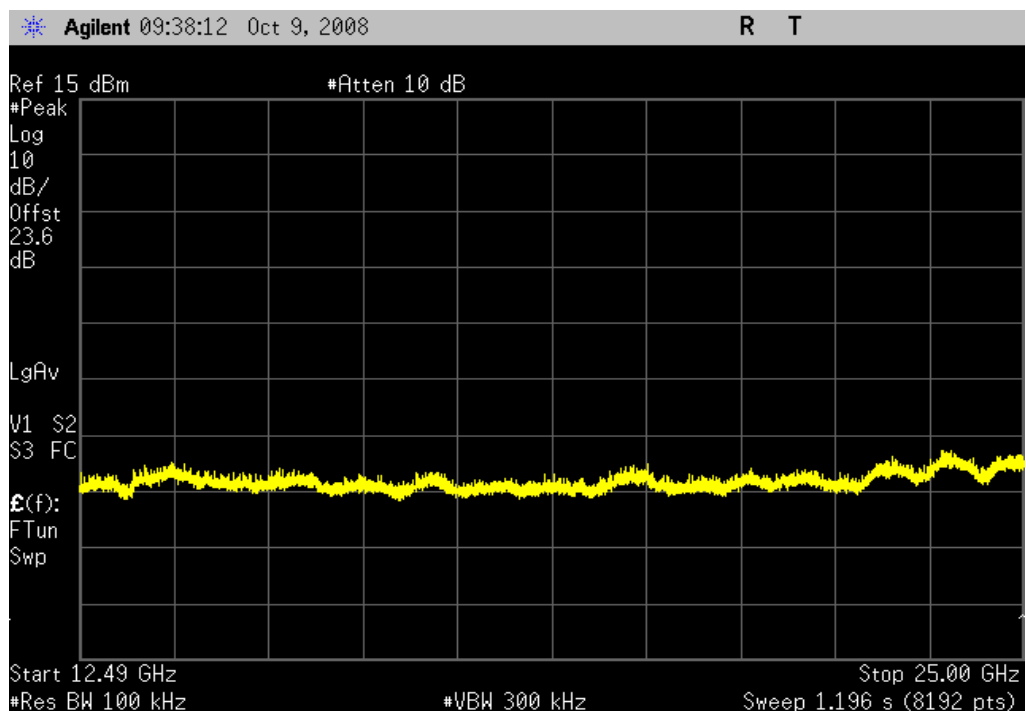
Result: Pass

Value: -45.43 dBc

Limit:  $\leq -20$  dBc

802.11(b) 11 Mbps, Mid Channel, 12.4GHz-25GHz

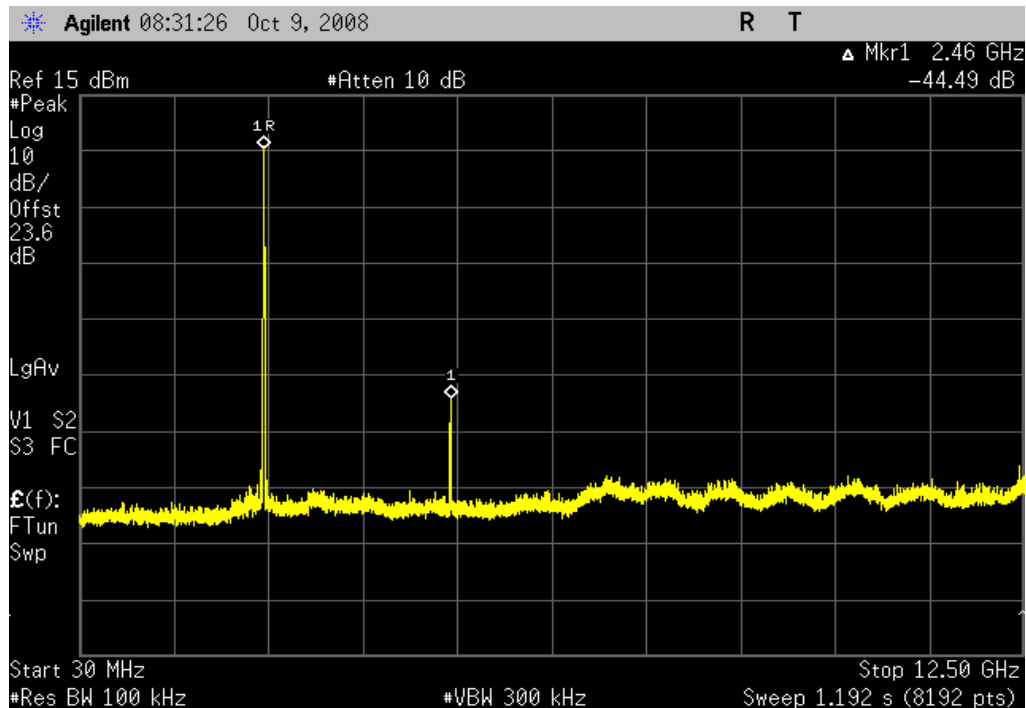
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(b) 11 Mbps, High Channel, 30MHz - 12.5GHz

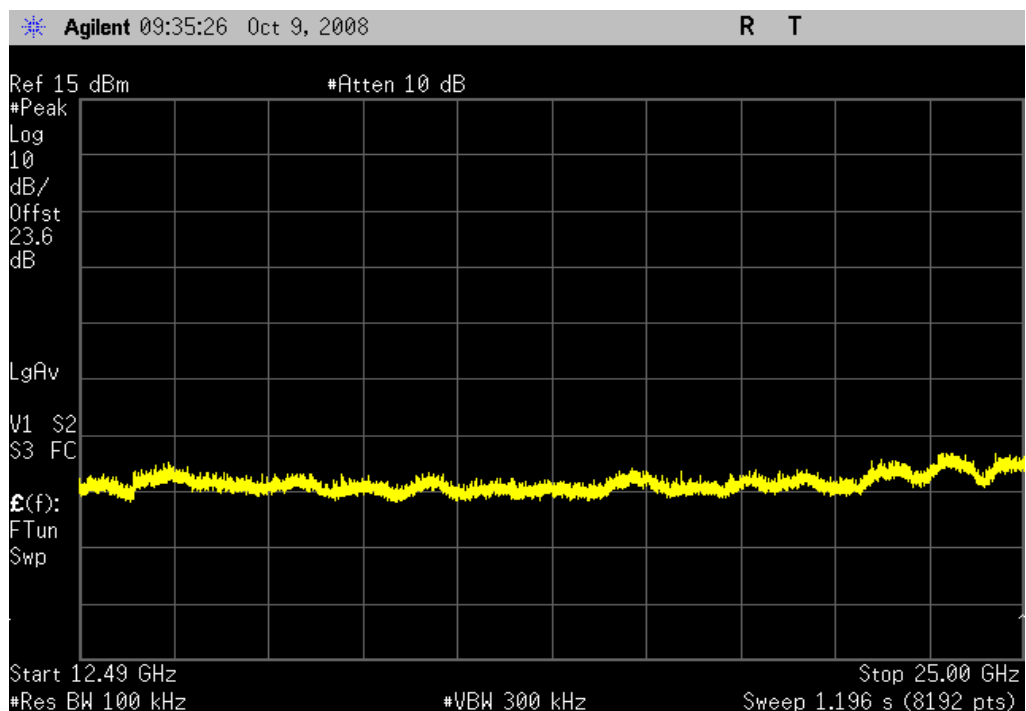
Result: Pass

Value: -44.49 dBc

Limit:  $\leq -20$  dBc

802.11(b) 11 Mbps, High Channel, 12.4GHz-25GHz

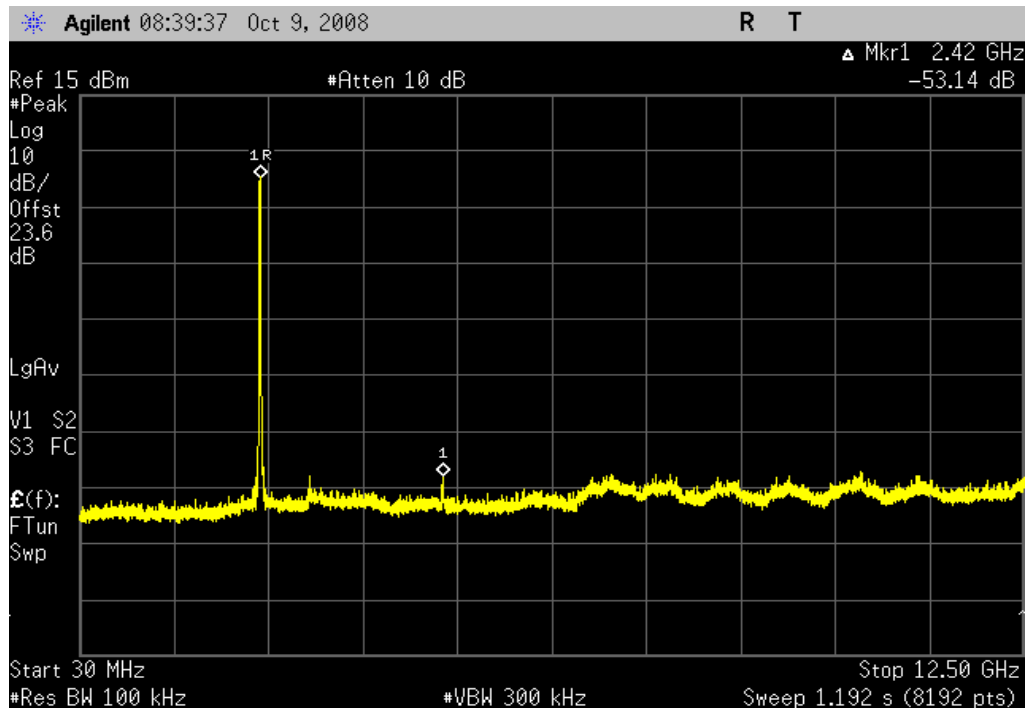
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(g) 6 Mbps, Low Channel, 30MHz - 12.5GHz

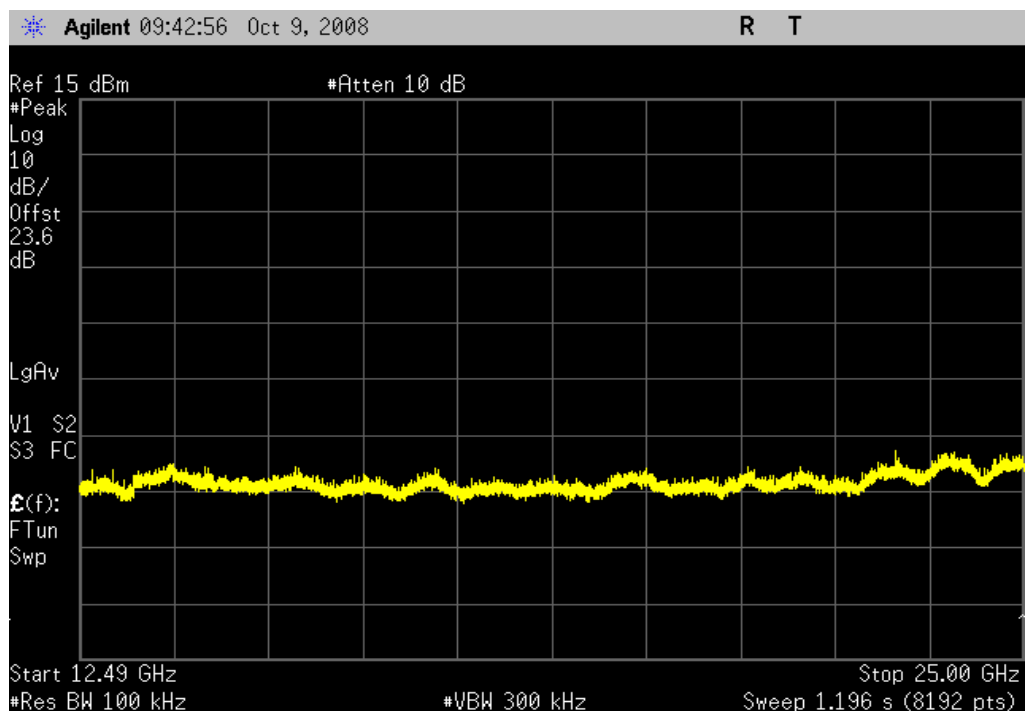
Result: Pass

Value: -53.14 dBc

Limit:  $\leq -20$  dBc

802.11(g) 6 Mbps, Low Channel, 12.4GHz-25GHz

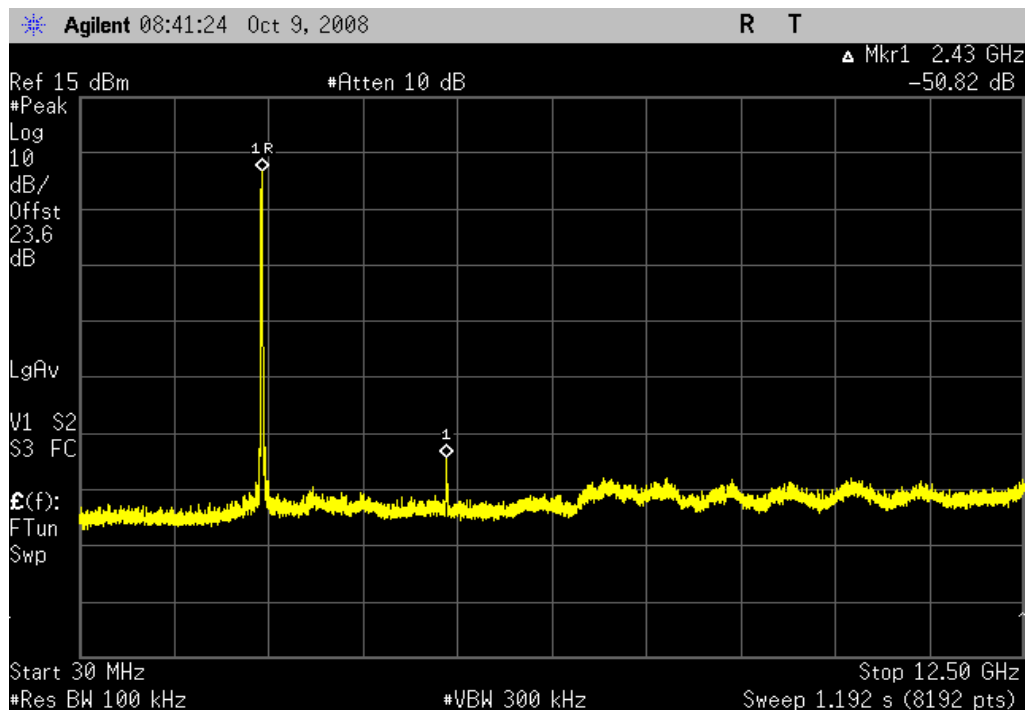
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(g) 6 Mbps, Mid Channel, 30MHz - 12.5GHz

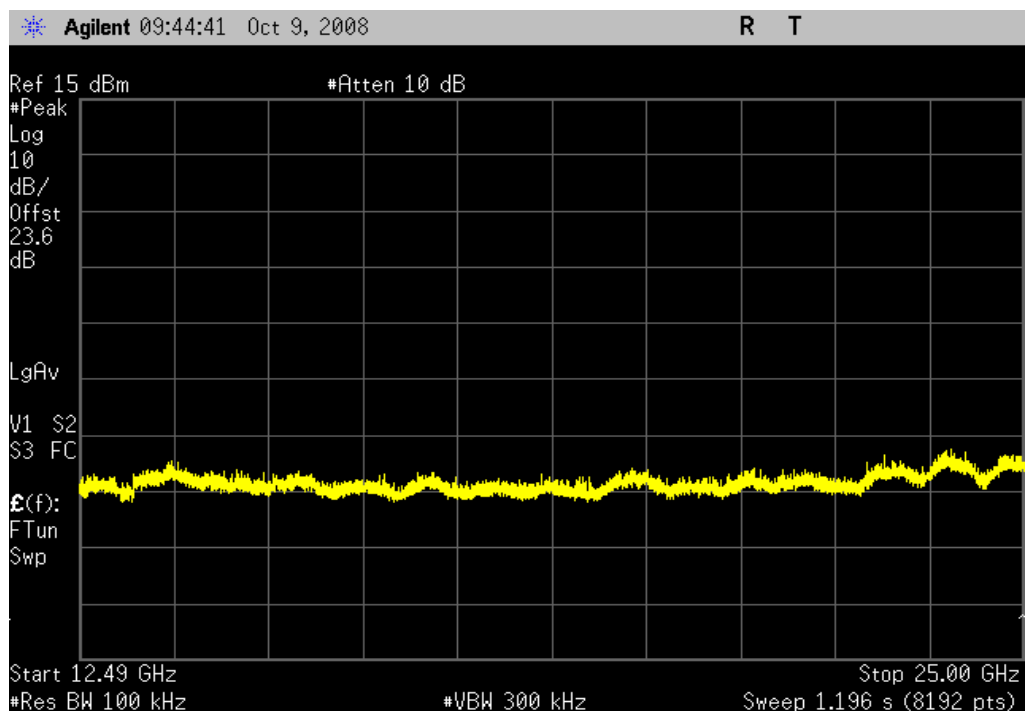
Result: Pass

Value: -50.82 dBc

Limit:  $\leq -20$  dBc

802.11(g) 6 Mbps, Mid Channel, 12.4GHz-25GHz

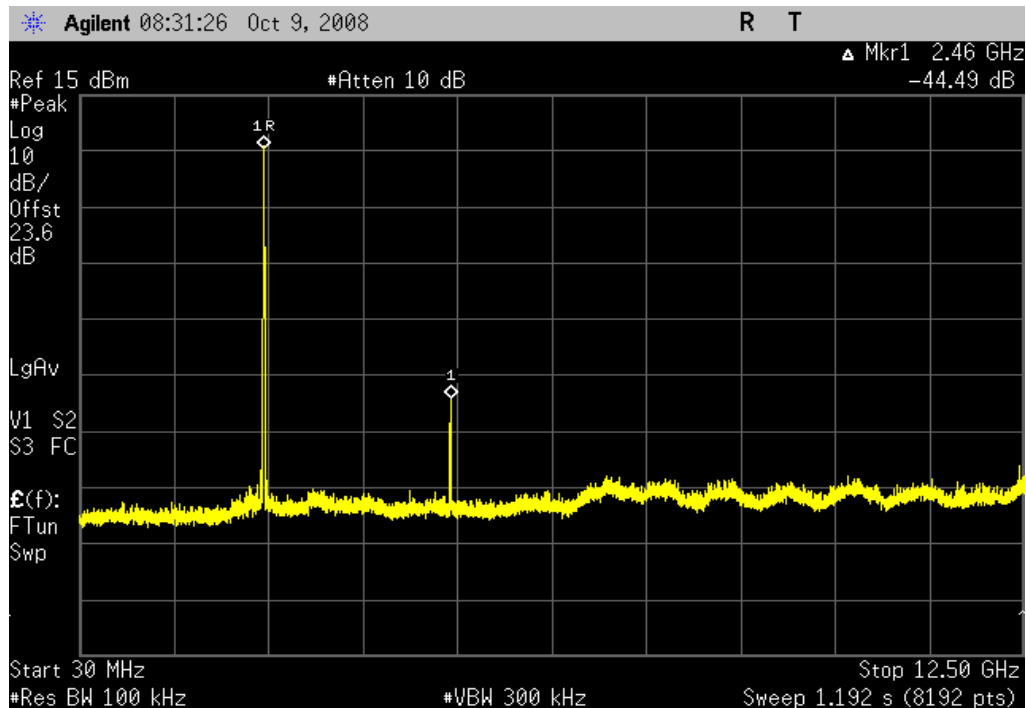
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(g) 6 Mbps, High Channel, 30MHz - 12.5GHz

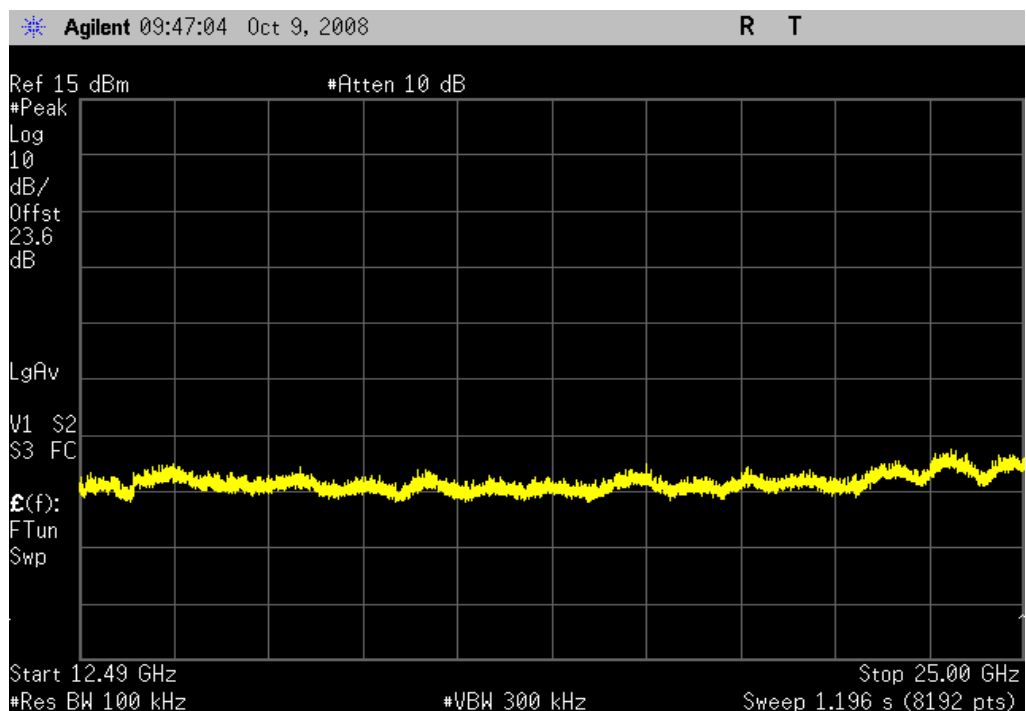
Result: Pass

Value: -44.49 dBc

Limit:  $\leq -20$  dBc

802.11(g) 6 Mbps, High Channel, 12.4GHz-25GHz

Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

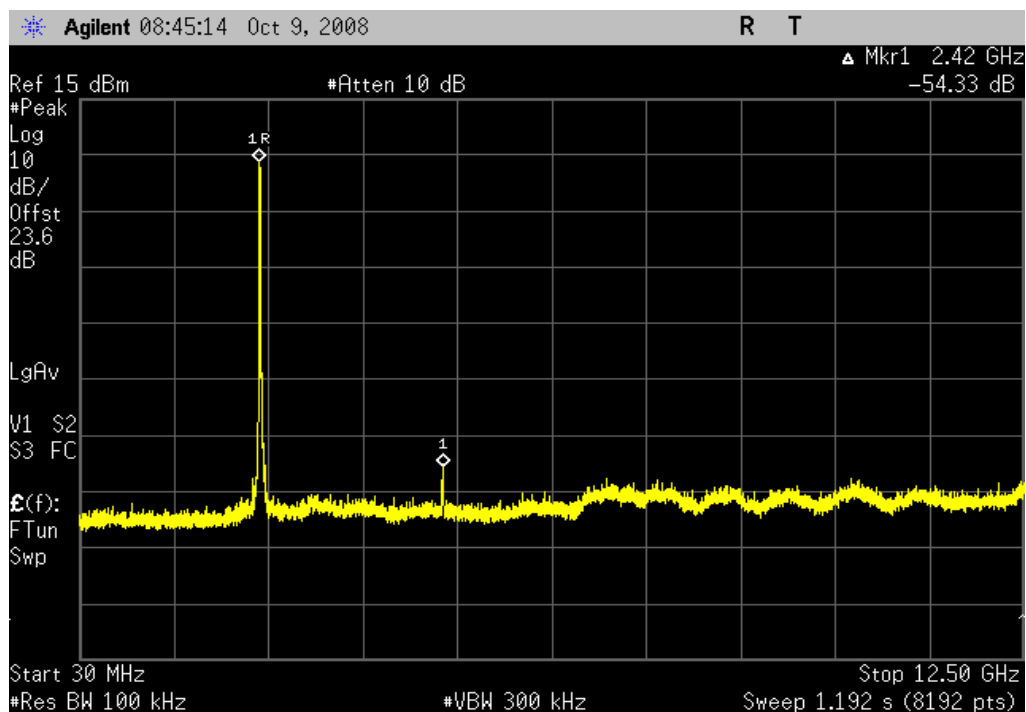


## SPURIOUS CONDUCTED EMISSIONS

802.11(g) 36 Mbps, Low Channel, 30MHz - 12.5GHz

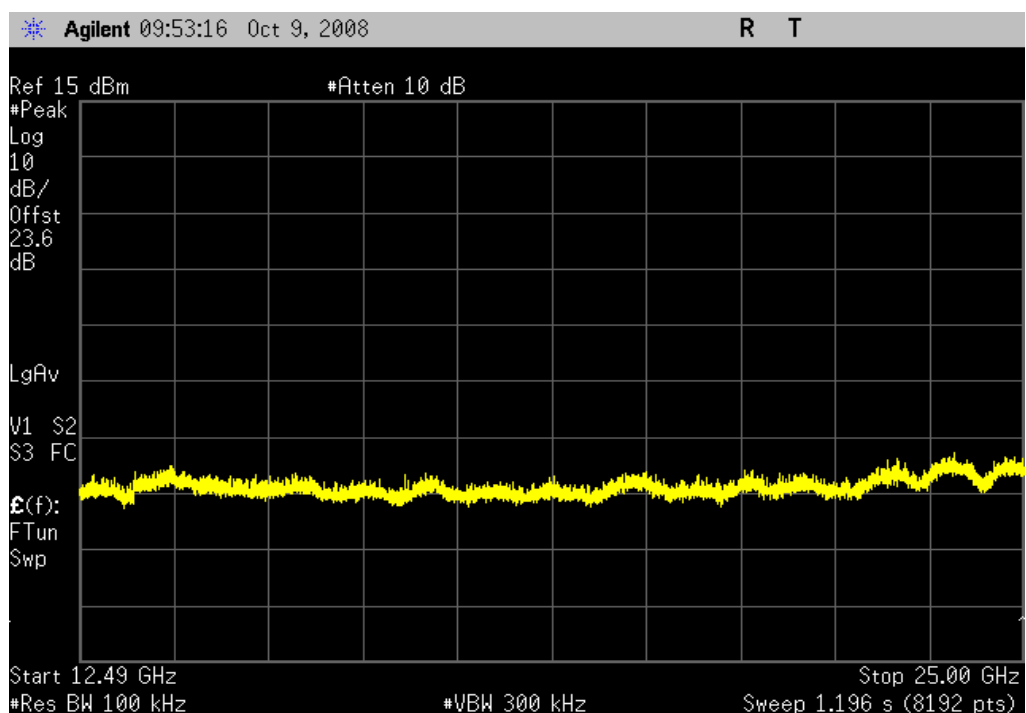
Result: Pass

Value: -54.33 dBc

Limit:  $\leq -20$  dBc

802.11(g) 36 Mbps, Low Channel, 12.4GHz-25GHz

Result: Pass

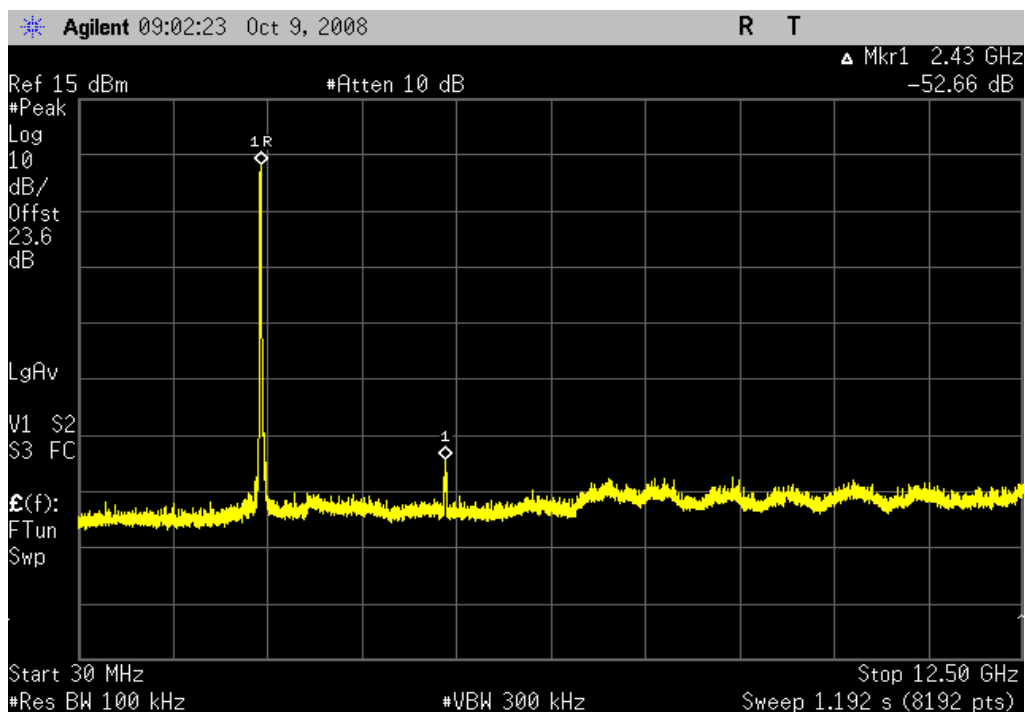
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

## SPURIOUS CONDUCTED EMISSIONS

802.11(g) 36 Mbps, Mid Channel, 30MHz - 12.5GHz

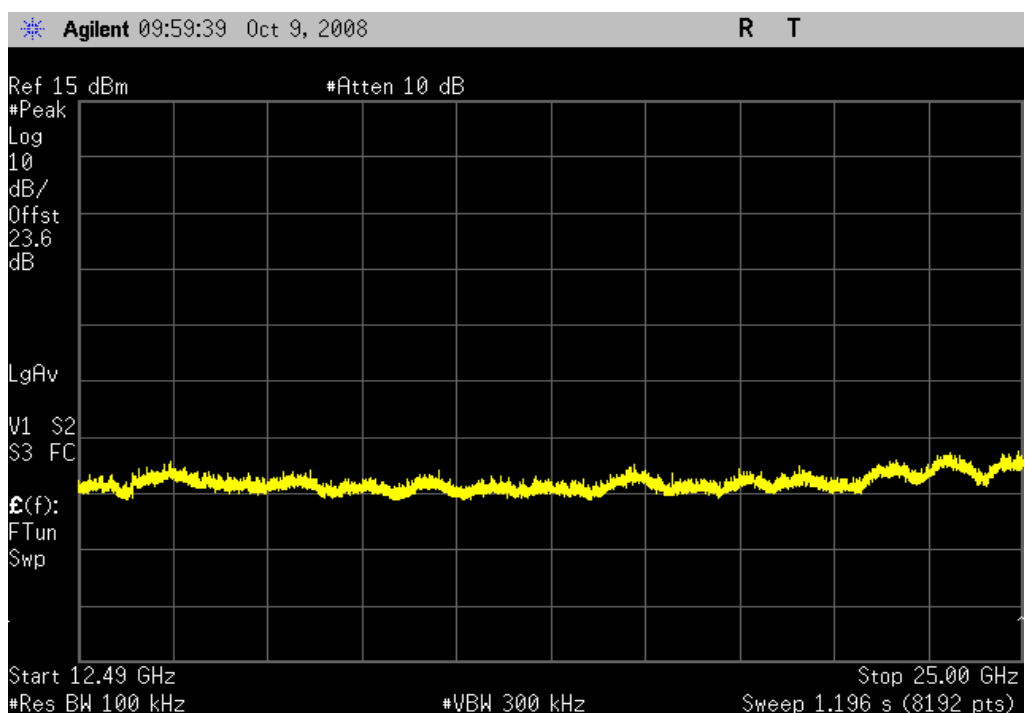
Result: Pass

Value: -52.66 dBc

Limit:  $\leq -20$  dBc

802.11(g) 36 Mbps, Mid Channel, 12.4GHz-25GHz

Result: Pass

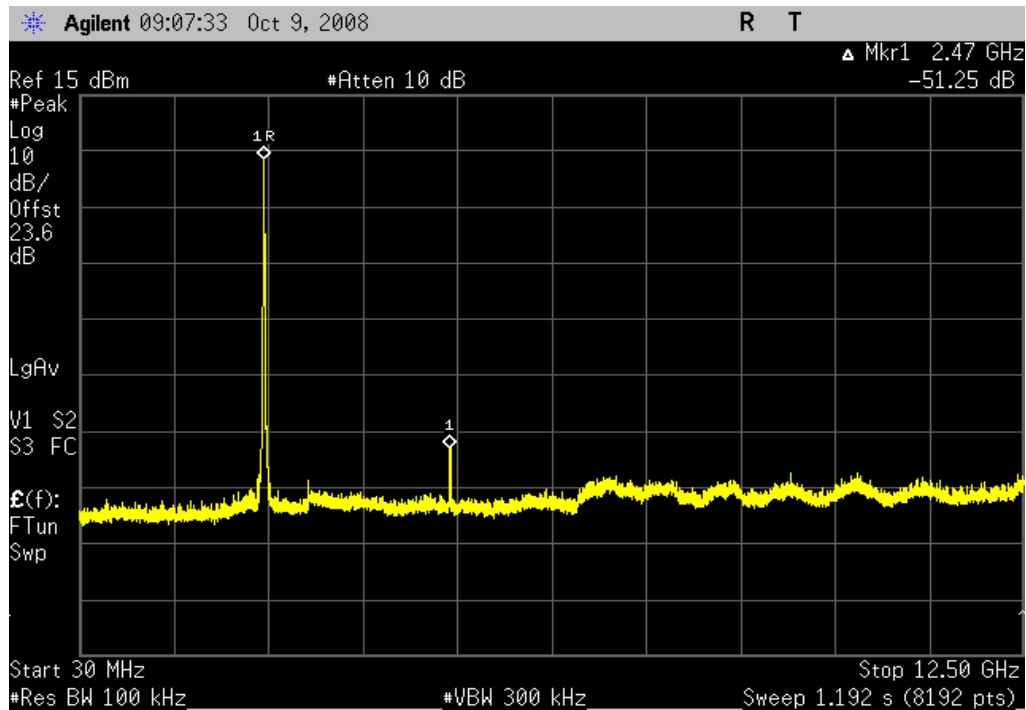
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

## SPURIOUS CONDUCTED EMISSIONS

802.11(g) 36 Mbps, High Channel, 30MHz - 12.5GHz

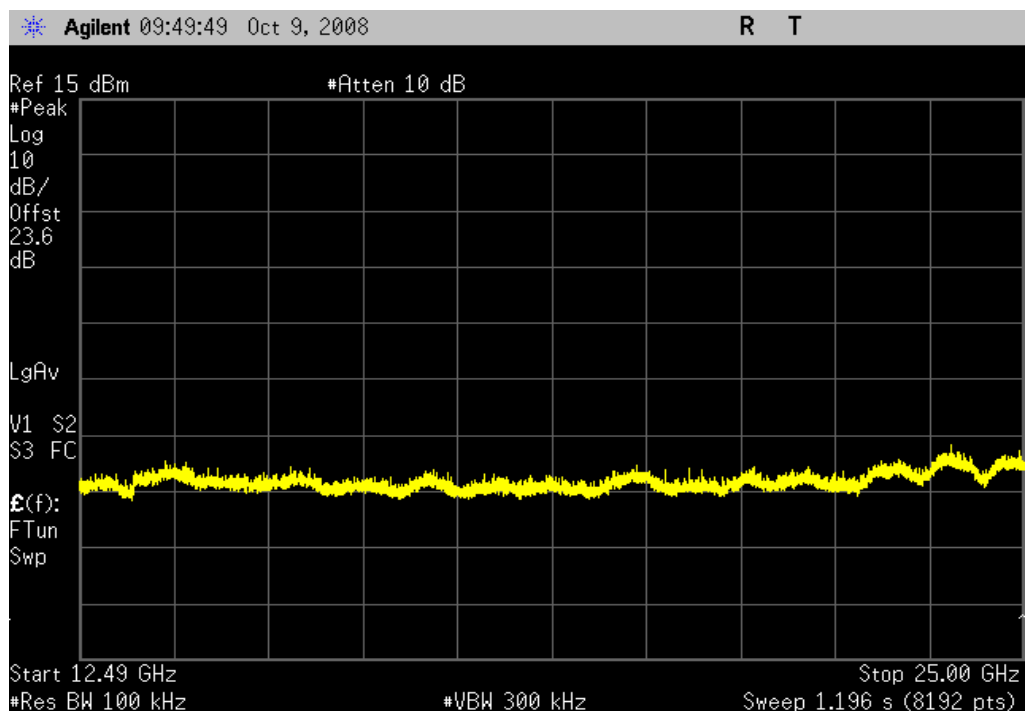
Result: Pass

Value: -51.25 dBc

Limit:  $\leq -20$  dBc

802.11(g) 36 Mbps, High Channel, 12.4GHz-25GHz

Result: Pass

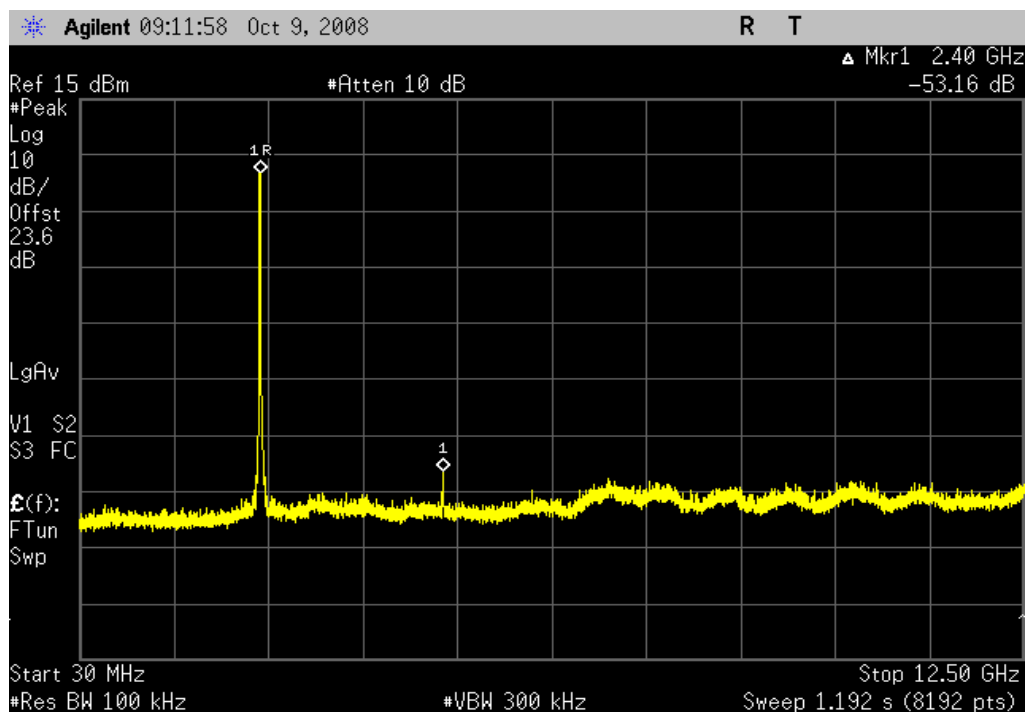
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

## SPURIOUS CONDUCTED EMISSIONS

802.11(g) 54 Mbps, Low Channel, 30MHz - 12.5GHz

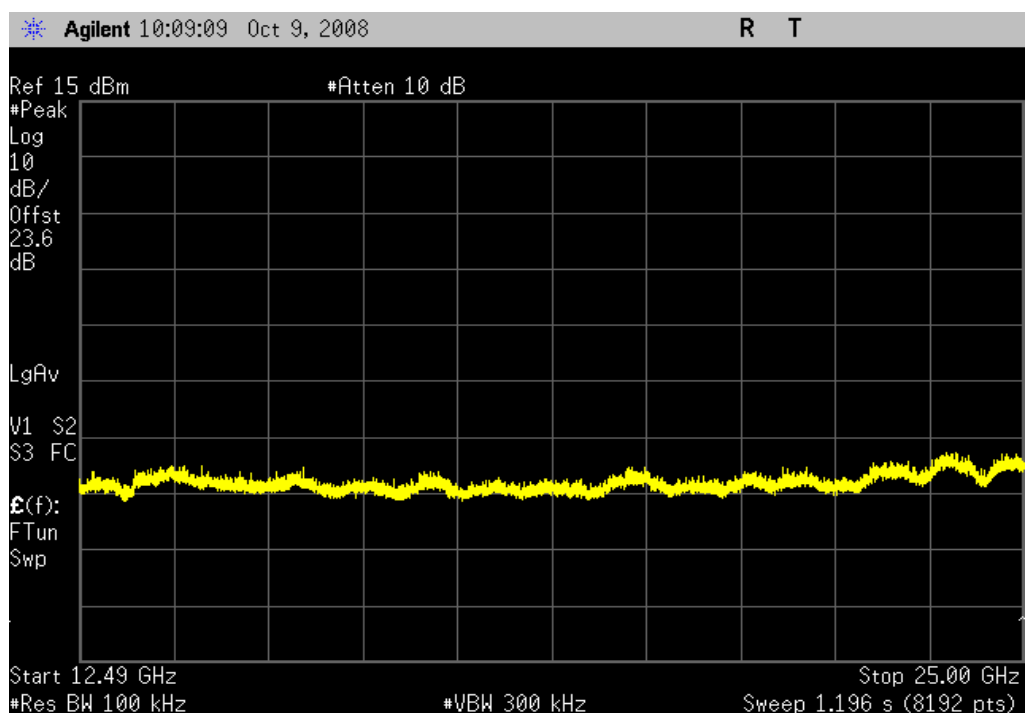
Result: Pass

Value: -53.16 dBc

Limit:  $\leq -20$  dBc

802.11(g) 54 Mbps, Low Channel, 12.4GHz-25GHz

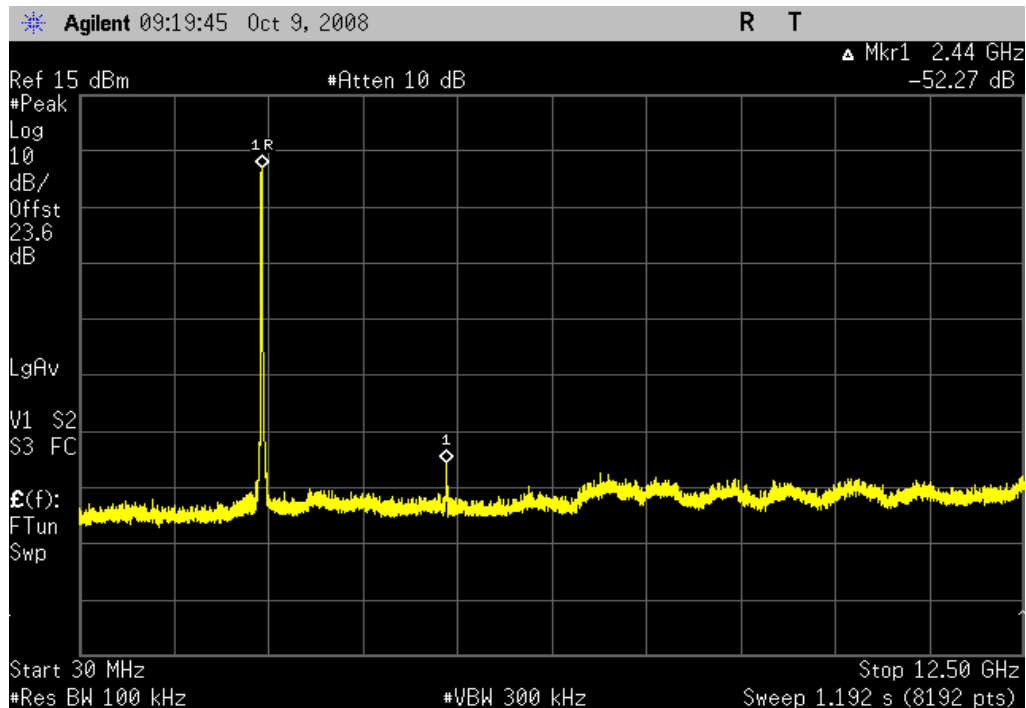
Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

802.11(g) 54 Mbps, Mid Channel, 30MHz - 12.5GHz

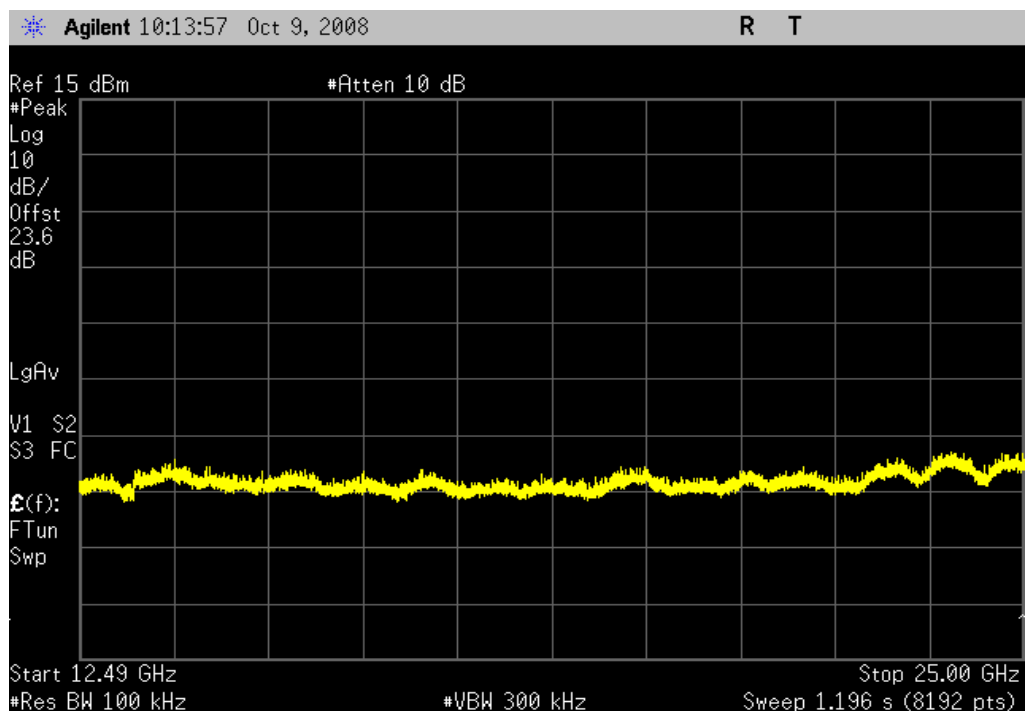
Result: Pass

Value: -52.27 dBc

Limit:  $\leq -20$  dBc

802.11(g) 54 Mbps, Mid Channel, 12.4GHz-25GHz

Result: Pass

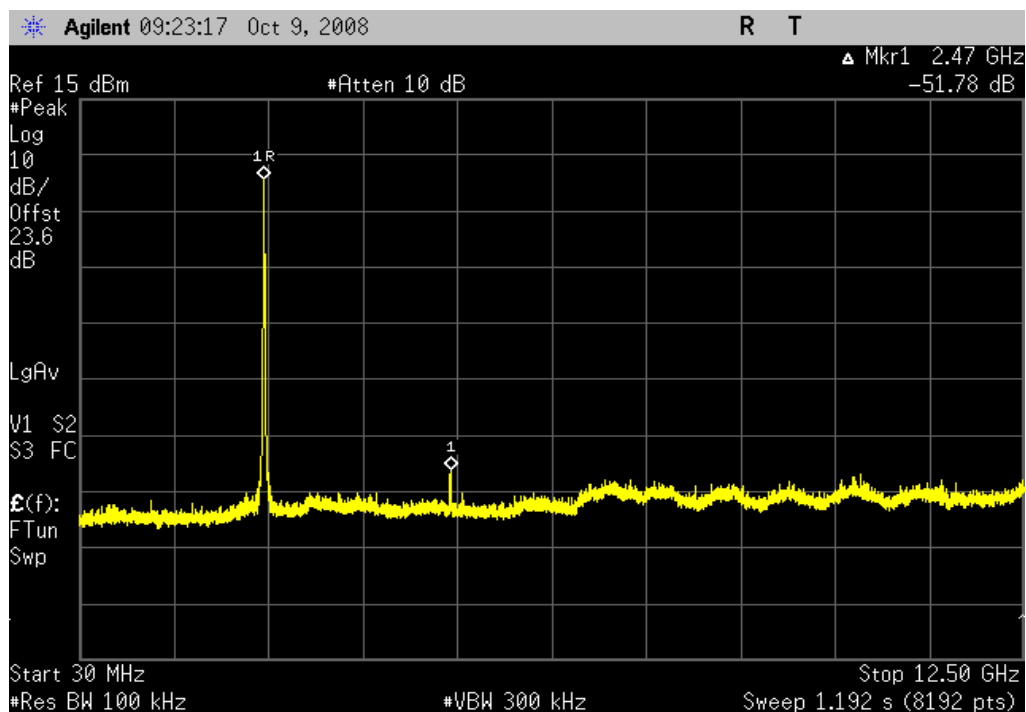
Value:  $< -50$  dBcLimit:  $\leq -20$  dBc

## SPURIOUS CONDUCTED EMISSIONS

802.11(g) 54 Mbps, High Channel, 30MHz - 12.5GHz

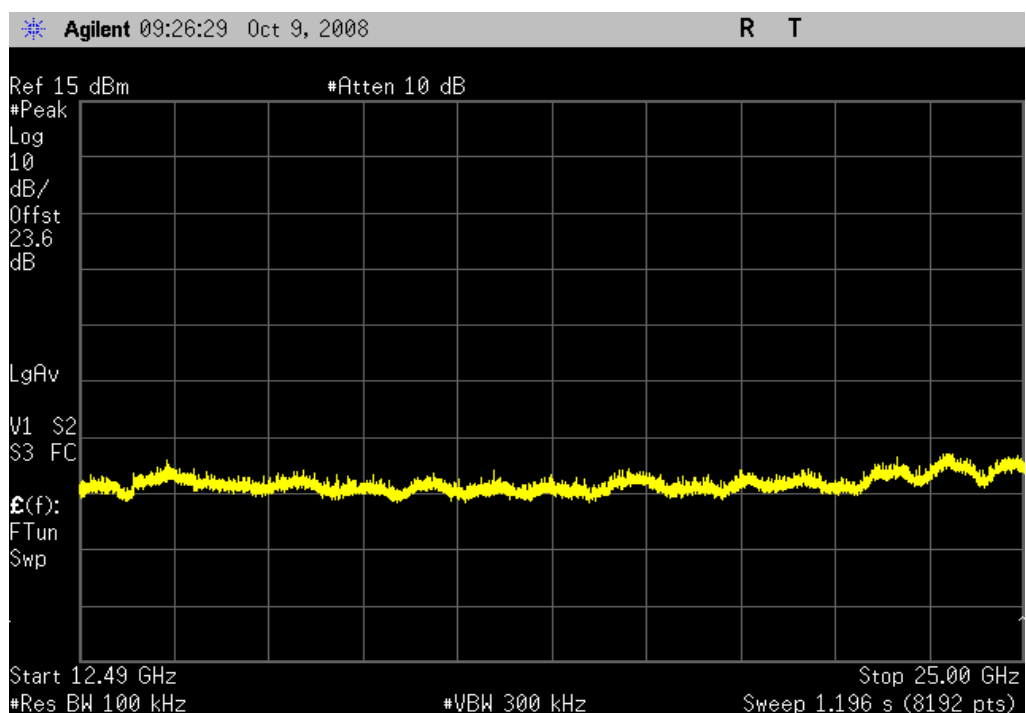
Result: Pass

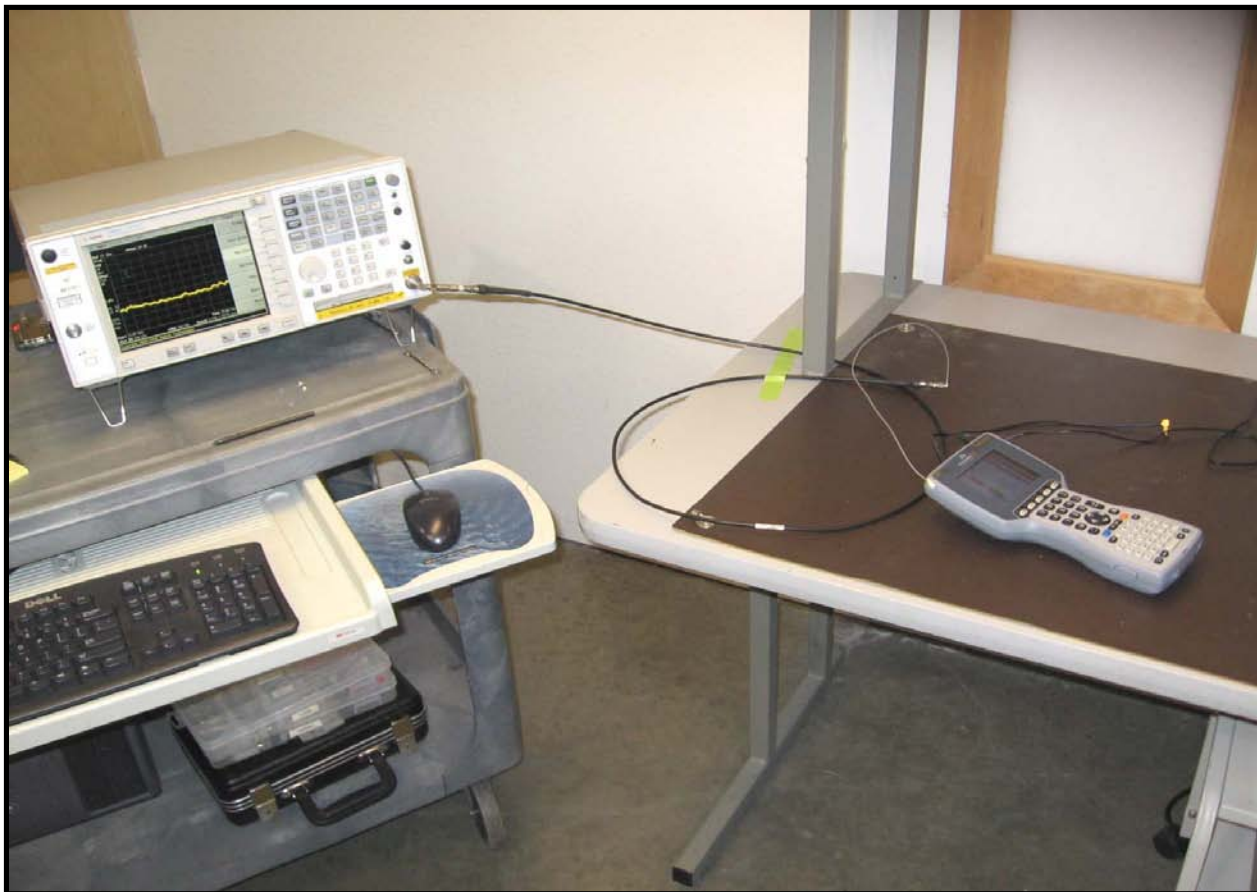
Value: -51.78 dBc

Limit:  $\leq -20$  dBc

802.11(g) 54 Mbps, High Channel, 12.4GHz-25GHz

Result: Pass

Value:  $< -50$  dBcLimit:  $\leq -20$  dBc



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	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Power Meter	Gigatronics	8651A	SPM	12/7/2007	13
Power Sensor	Gigatronics	80701A	SPL	12/7/2007	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/7/2007	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. 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."*



## EMC

## POWER SPECTRAL DENSITY

EUT:	Allegro MX WiFi Module	Work Order:	JUNI0022
Serial Number:	None	Date:	10/08/08
Customer:	Juniper Systems, Inc.	Temperature:	21°C
Attendees:	None	Humidity:	36%
Project:	None	Barometric Pres.:	1026.5 mb
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2007	ANSI C63.4:2003 KDB No. 558074

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

Configuration #	4	Signature 
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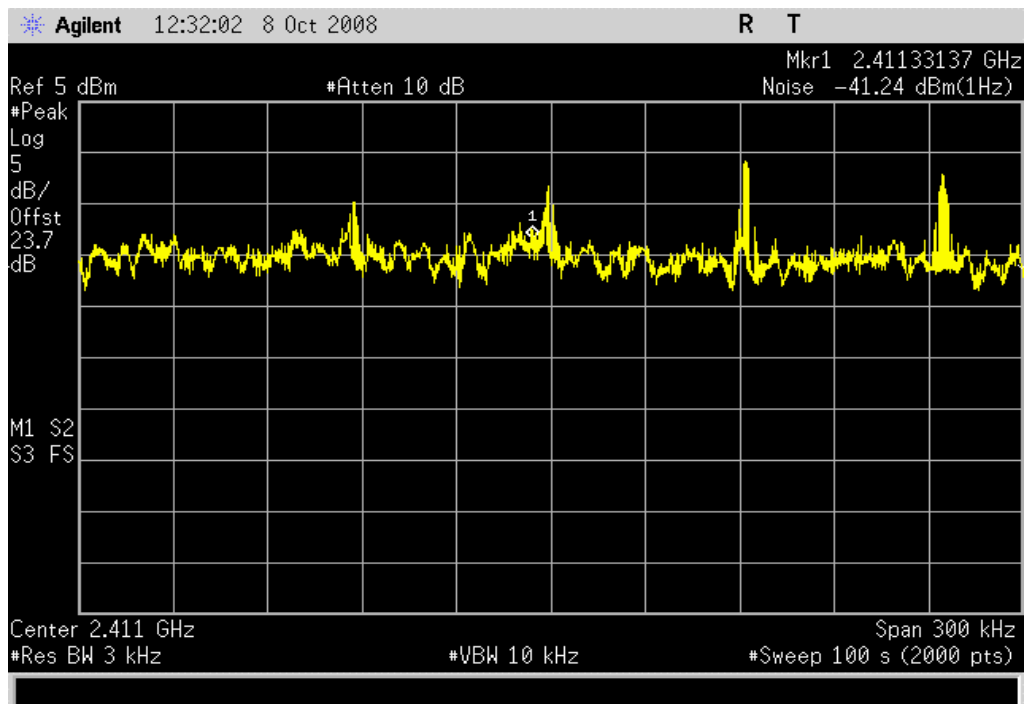
		Value	Limit	Results
802.11(b) 1 Mbps	Low Channel	-6.24 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-7.15 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-7.69 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(b) 11 Mbps	Low Channel	2.25 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	2.38 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	2.05 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 6 Mbps	Low Channel	-12.75 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-7.62 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-14.19 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 36 Mbps	Low Channel	-10.62 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-11.22 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-11.23 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 54 Mbps	Low Channel	-11.86 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-11.96 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-11.97 dBm / 3 kHz	8 dBm / 3 kHz	Pass

802.11(b) 1 Mbps, Low Channel

Result: Pass

Value: -6.24 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

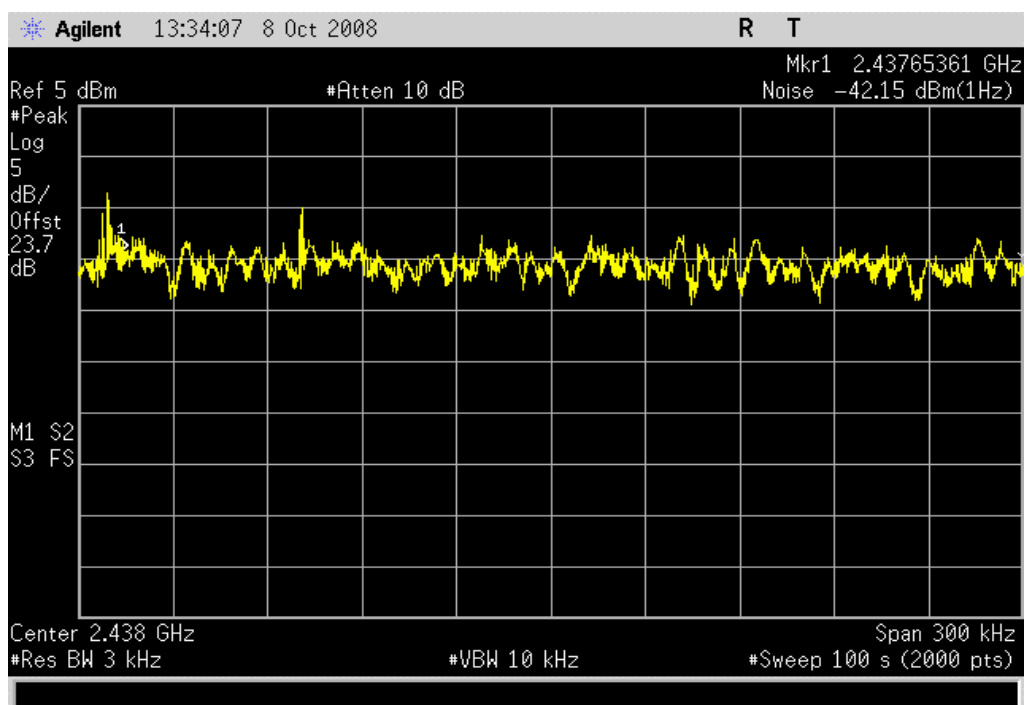


802.11(b) 1 Mbps, Mid Channel

Result: Pass

Value: -7.15 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

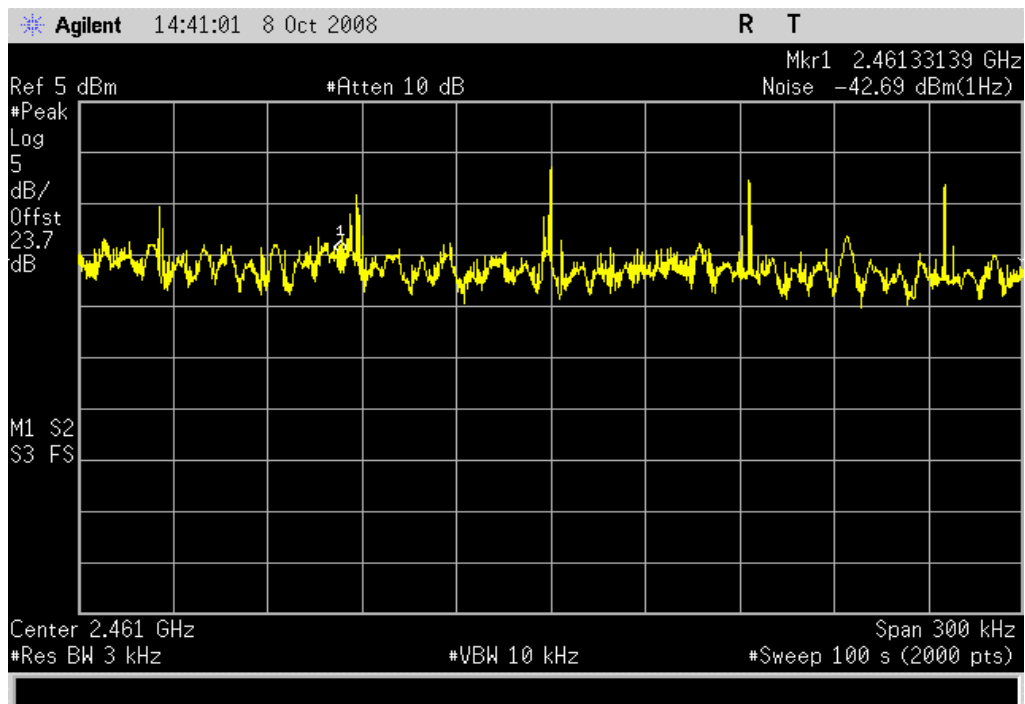


802.11(b) 1 Mbps, High Channel

Result: Pass

Value: -7.69 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

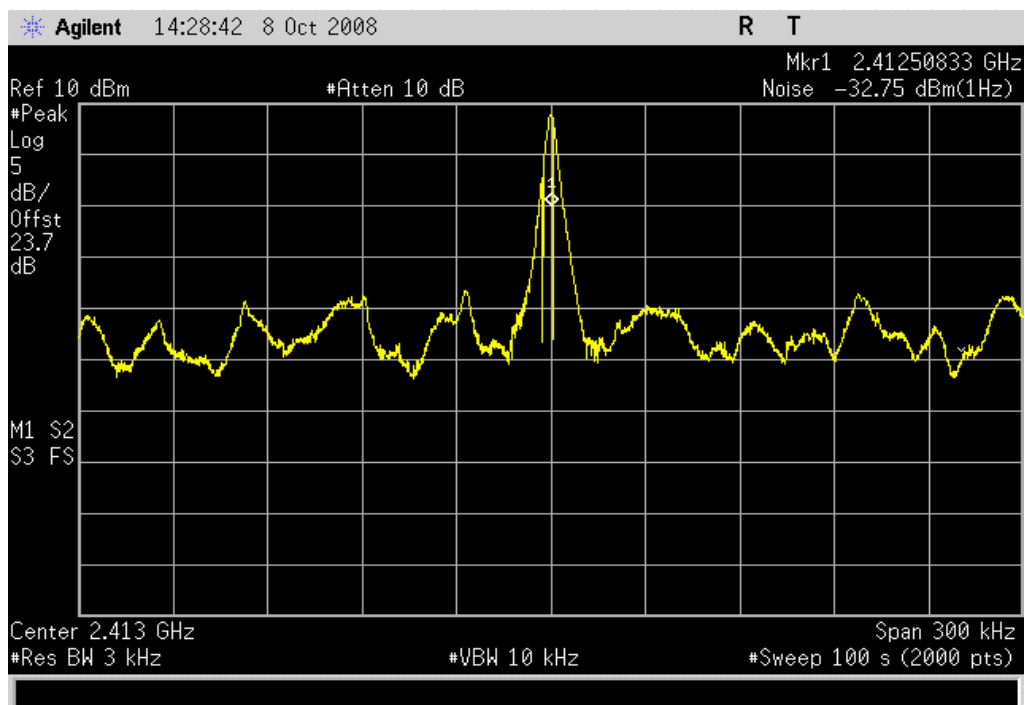


802.11(b) 11 Mbps, Low Channel

Result: Pass

Value: 2.25 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

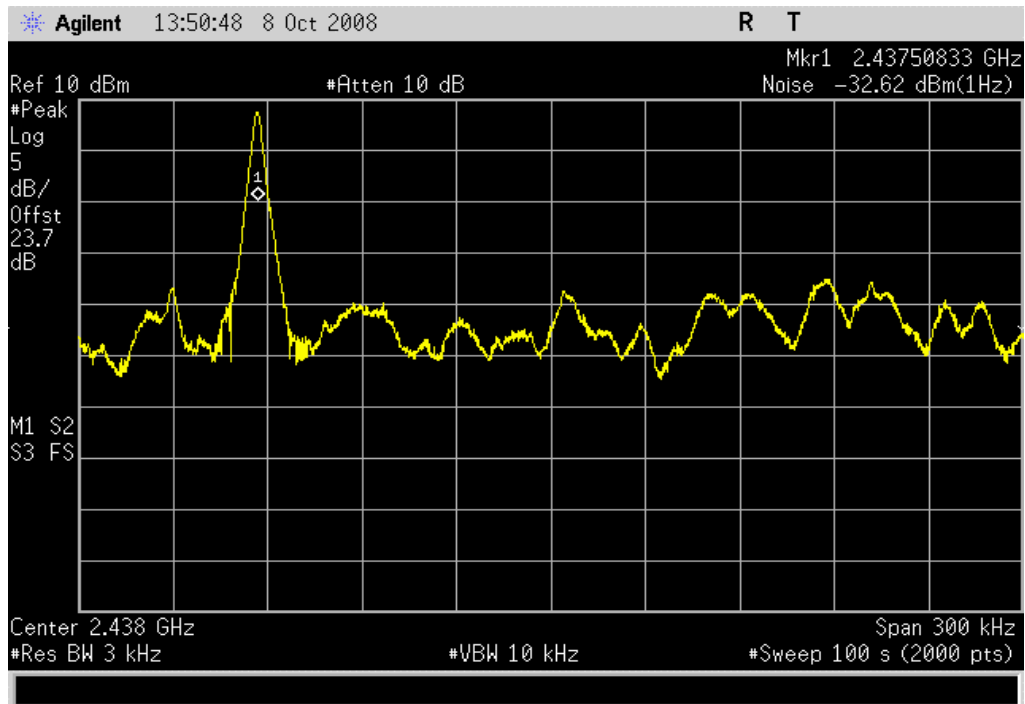


## 802.11(b) 11 Mbps, Mid Channel

Result: Pass

Value: 2.38 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

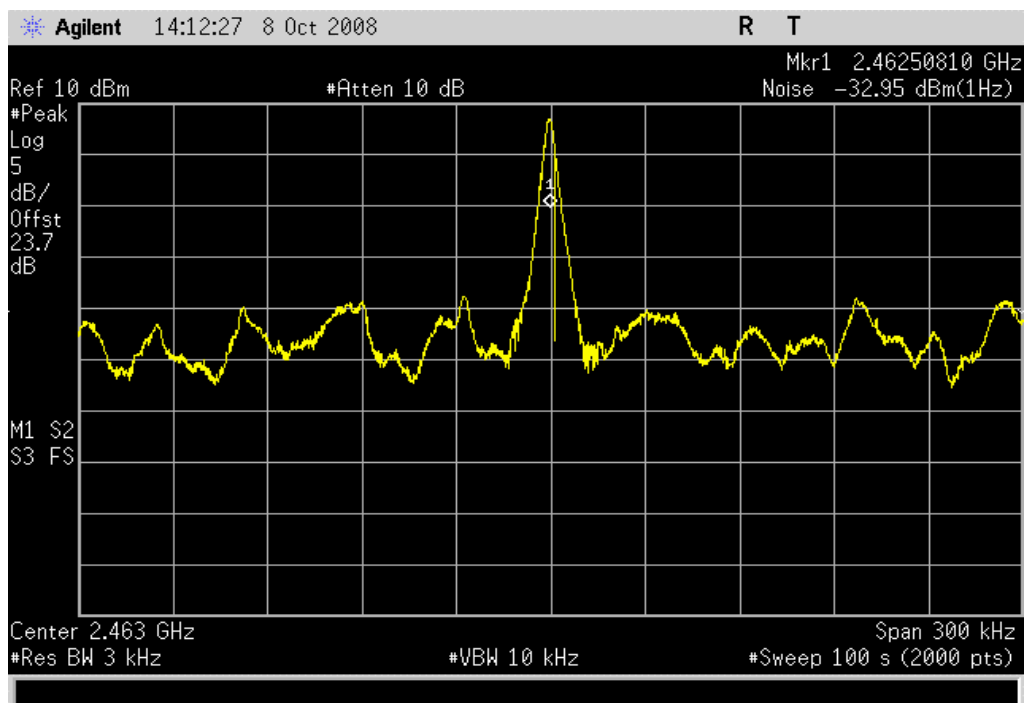


## 802.11(b) 11 Mbps, High Channel

Result: Pass

Value: 2.05 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

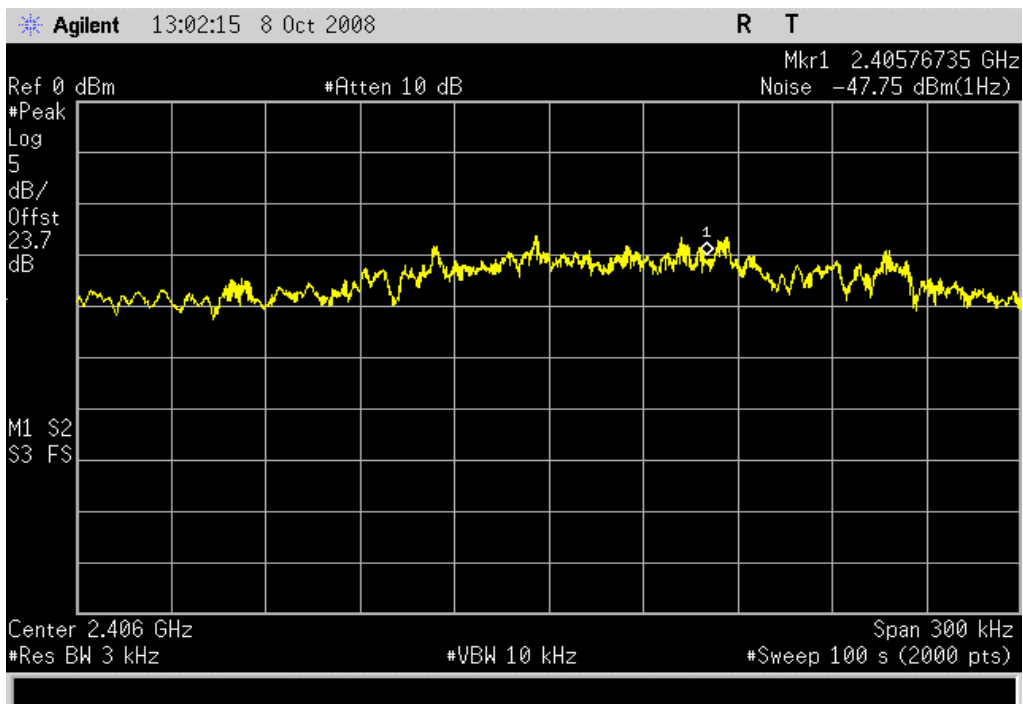


802.11(g) 6 Mbps, Low Channel

Result: Pass

Value: -12.75 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

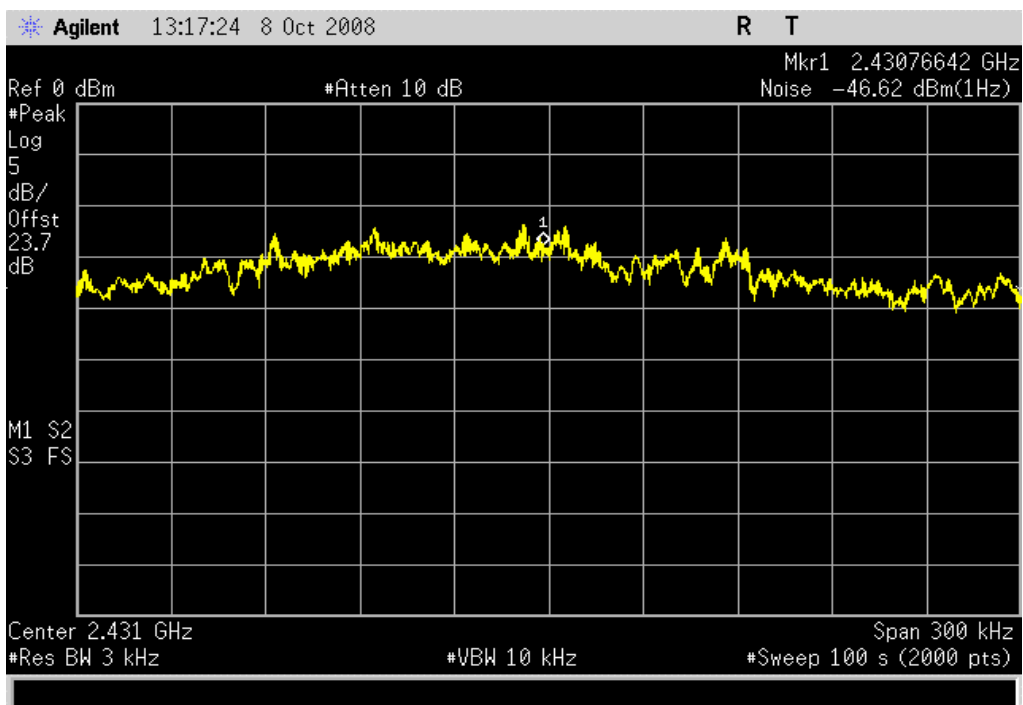


802.11(g) 6 Mbps, Mid Channel

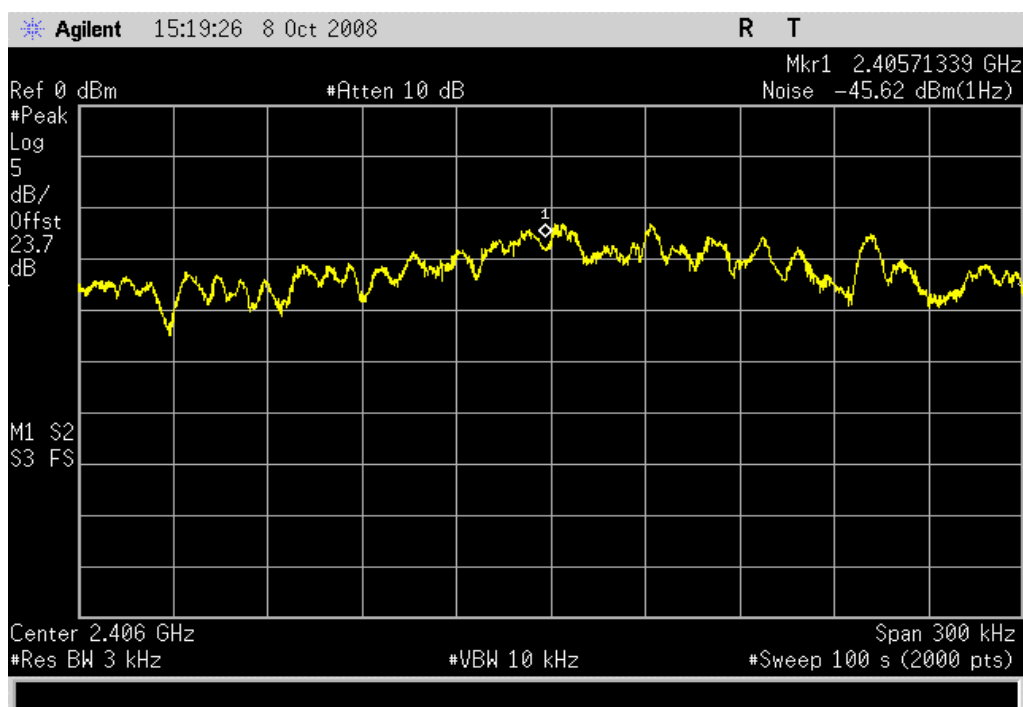
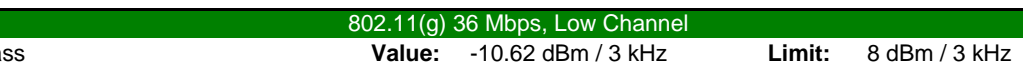
Result: Pass

Value: -7.62 dBm / 3 kHz

Limit: 8 dBm / 3 kHz



**Limit:** 8 dBm / 3 kHz

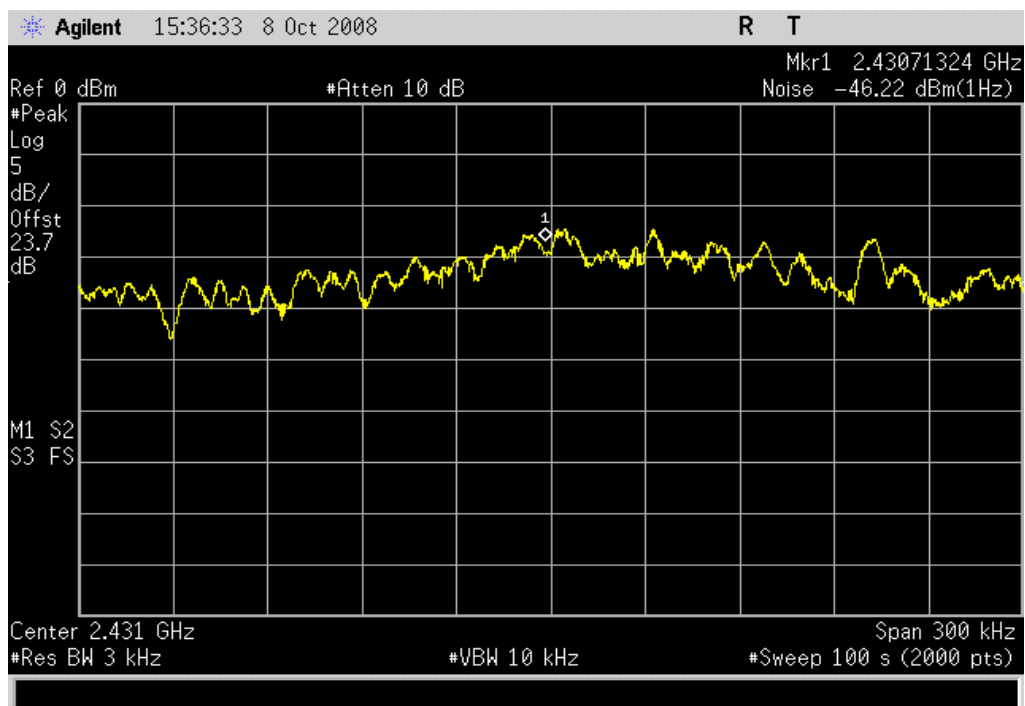


802.11(g) 36 Mbps, Mid Channel

Result: Pass

Value: -11.22 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

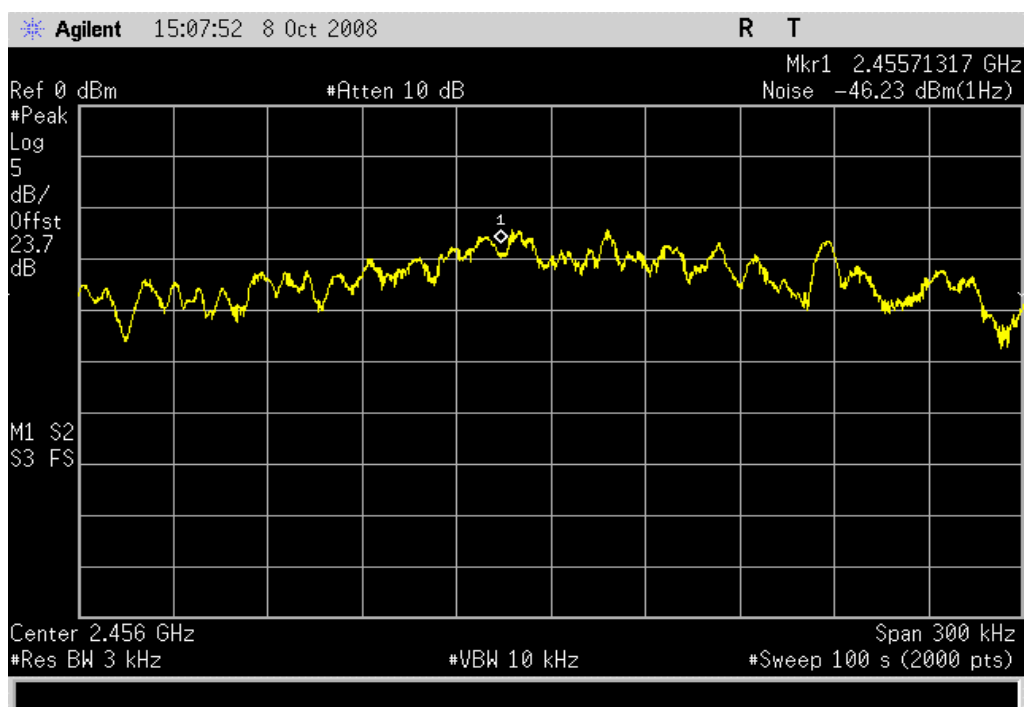


802.11(g) 36 Mbps, High Channel

Result: Pass

Value: -11.23 dBm / 3 kHz

Limit: 8 dBm / 3 kHz



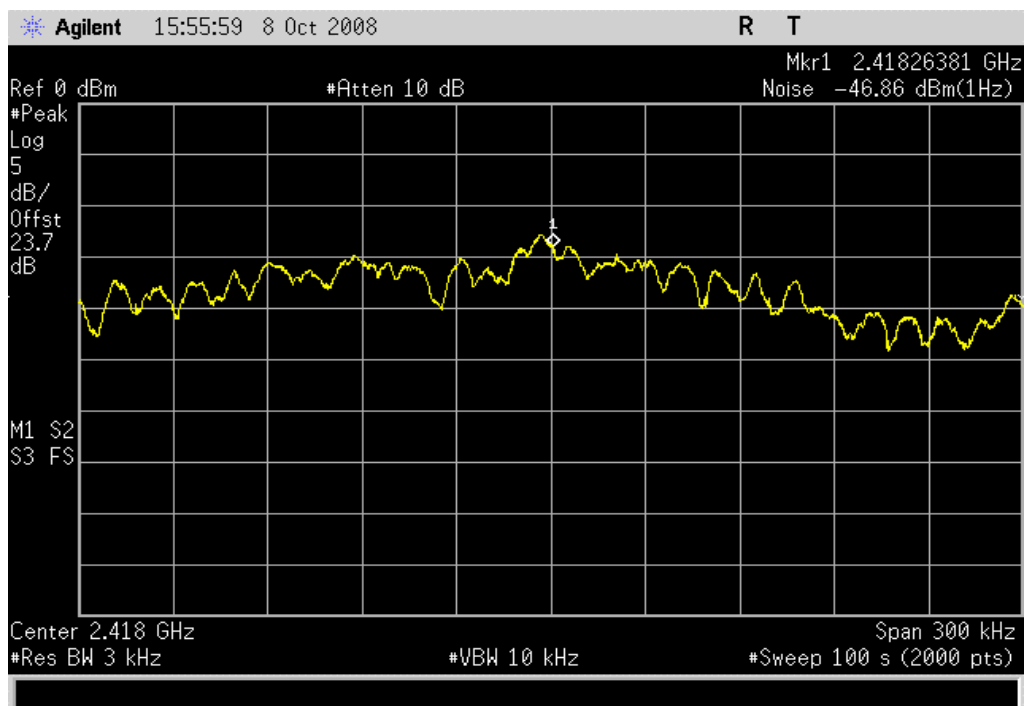
## POWER SPECTRAL DENSITY

802.11(g) 54 Mbps, Low Channel

Result: Pass

Value: -11.86 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

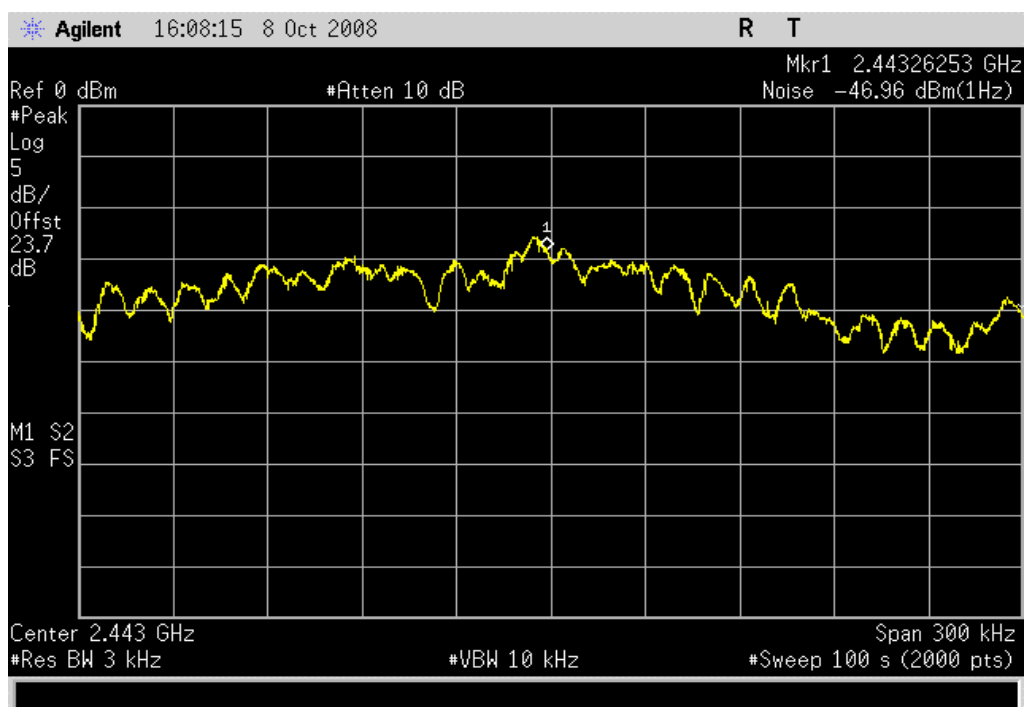


802.11(g) 54 Mbps, Mid Channel

Result: Pass

Value: -11.96 dBm / 3 kHz

Limit: 8 dBm / 3 kHz





## POWER SPECTRAL DENSITY

802.11(g) 54 Mbps, High Channel

Result: Pass

Value: -11.97 dBm / 3 kHz

Limit: 8 dBm / 3 kHz

