Honeywell

51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)

EMC Test Report

July 18, 2007

Report No. HONE0011.1 Rev. 02

Report Prepared By

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

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: July 18, 2007
Honeywell
Model: 51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)

Emissions				
Test Description	**Specification**	**Test Method**	**Pass**	**Fail**
AC Powerline Conducted Emissions	FCC 15.207:2006	ANSI C63.4:2003	☒	☐
Occupied Bandwidth	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐
Output Power	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐
Band Edge Compliance	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐
Power Spectral Density	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐
Spurious Conducted Emissions	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐
Spurious Radiated Emissions	FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074	☒	☐

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

Test Facility

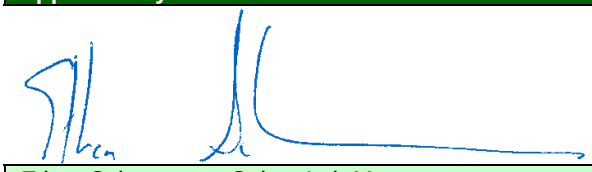
The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
41 Tesla Avenue
Irvine, CA 92618

Phone: (949) 861-8918 Fax: 861-8923

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:



Ethan Schoonover, Sultan Lab Manager

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

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

Revision Number	Description	Date	Page Number
01	Changed model name to “51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)” throughout report per client’s request.	7/31/07	1, 2, 8, 12-17, 20-26, 31, 42, 53, 61, 79
02	Remove “5.7GHz bands” from Product Description page.	8/16/07	7
02	Corrected Spurious Radiated Emissions test photos per client’s request.	8/16/07	86-87

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 212, Issue 1 (Provisional) 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.

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 TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV'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. 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

SCOPE

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

How important is it to understand performance criteria?

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. As the responsible party (manufacturer, importer, etc) it is your responsibility to take those results, compare them against the specifications and standards, then, if appropriate make a declaration of conformity. As the responsible party it makes sense that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria is used when performing immunity or susceptibility tests:

Performance Criteria 1:

- The EUT exhibited no change in performance when operating as specified by the manufacturer. In this case no changes were observed during the test.
- In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed. Basically nothing happened.

Performance Criteria 2:

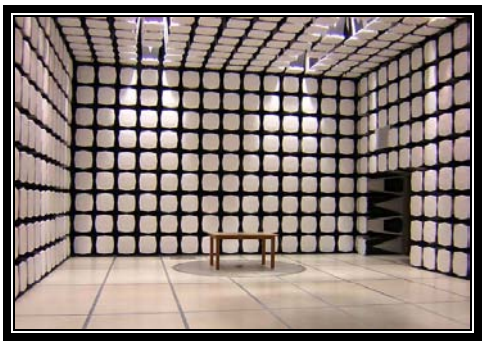
- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment recovered without any operator intervention, once the test signal was removed. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT was able to recover from those changes without any operator intervention, once the test signal was removed.

Performance Criteria 3:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment required some operator intervention in order to recover. This intervention may be in the form of changing EUT settings, or even resetting the system. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT required some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion of test.

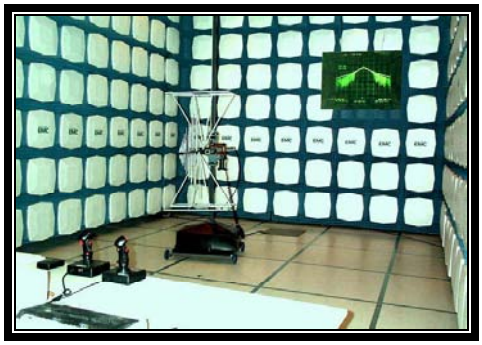
Performance Criteria 4:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment was damaged and would not recover. The data sheets will detail the exact phenomena observed.
- In most cases there is no specific criterion to compare this to; it typically ends the test. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. There was no recovery; the equipment would no longer function as intended.



California – Orange County Facility
Labs OC01 – OC13

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



Oregon – Evergreen Facility
Labs EV01 – EV11

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

Washington – Sultan Facility
Labs SU01 – SU07

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

Party Requesting the Test

Company Name:	Honeywell
Address:	2500 W. Union Hills Road
City, State, Zip:	Phoenix, AZ 85027
Test Requested By:	David Shipley
Model:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
First Date of Test:	May 3, 2007
Last Date of Test:	May 24, 2007
Receipt Date of Samples:	April 11, 2007
Equipment Design Stage:	Production
Equipment Condition:	No Damage

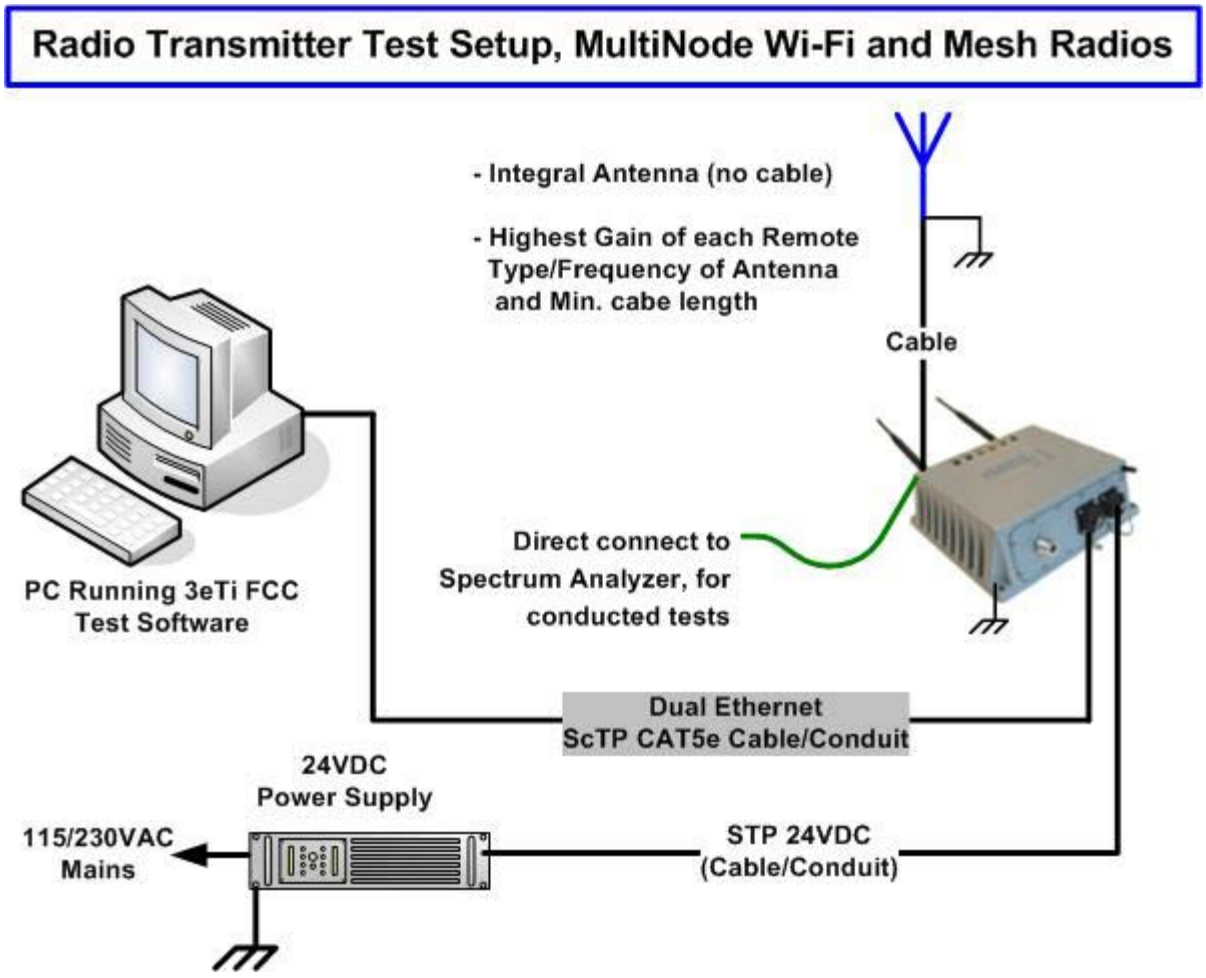
Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
DTS radio with variable output power operating in the 2.4 GHz band.

Testing Objective:
802.11a/b/g radio that is professionally installed. Adjustable power levels by the professional installers. Seeking Limited Modular Approval via TCB Certification under FCC 15.247.

CONFIGURATION 1 HONE0011

EUT
Description
Refer to the configuration document provided by the client below.



Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	5/3/2007	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	5/3/2007	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	5/3/2007	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	5/4/2007	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	5/18/2007	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	5/23/2007	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	5/24/2007	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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/g) 1Mbps, High Channel. Radio On.
802.11(b/g) 1Mbps, Mid Channel. Radio On.
802.11(b/g) 1Mbps, Low Channel. Radio On.

POWER SETTINGS INVESTIGATED
120VAC/60Hz

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-24-BNC	LIB	5/8/2006	13
OC11 cables a-b-e-f			OCM	1/8/2007	13
Receiver	Rohde & Schwartz	ESCI	ARF	12/14/2006	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, 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 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

NORTHWEST

EMC

CONDUCTED EMISSIONS

Version 2006.11.12
PSA-ESCI 2007.05.07

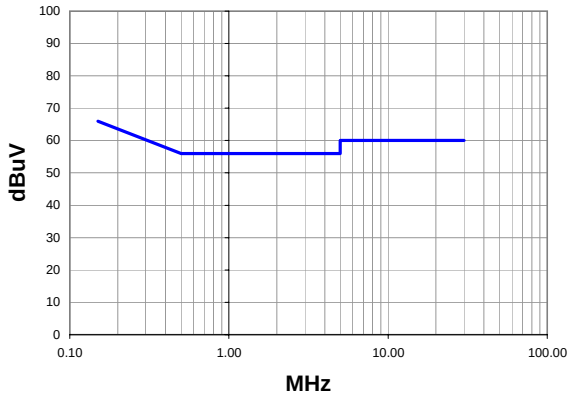
Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
Configuration:	1
Customer:	Honeywell
Attendees:	David Shipley
EUT Power:	120VAC/60Hz
Operating Mode:	802.11(b/g) 1Mbps, Low Channel. Radio On.
Deviations:	No deviations.
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.

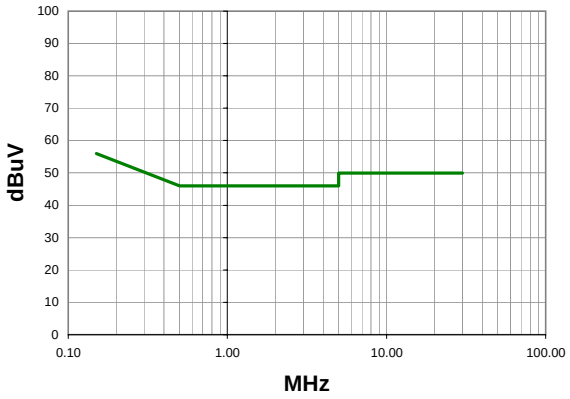
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	22	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

NORTHWEST

EMC

CONDUCTED EMISSIONS

Version 2006.11.12
PSA-ESCI 2007.05.07

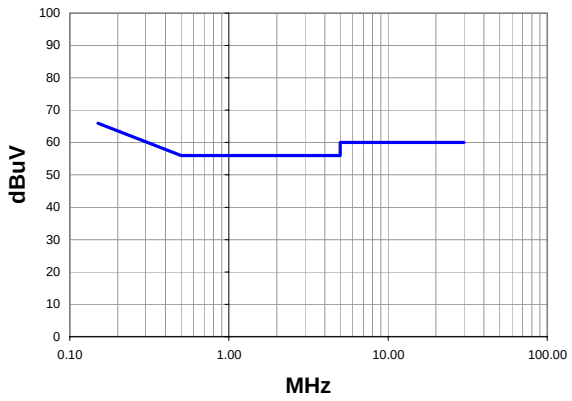
Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
Configuration:	1
Customer:	Honeywell
Attendees:	David Shipley
EUT Power:	120VAC/60Hz
Operating Mode:	802.11(b/g) 1Mbps, Low Channel. Radio On.
Deviations:	No deviations.
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.

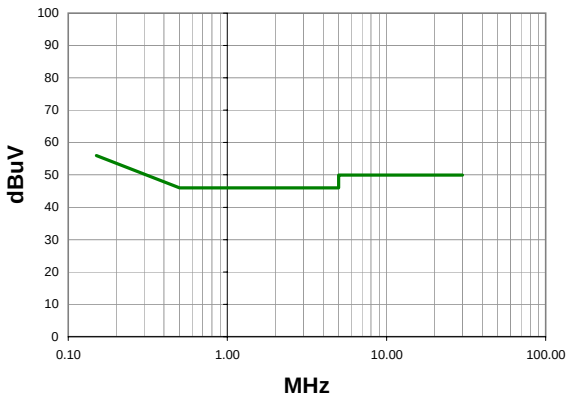
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	23	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

NORTHWEST

EMC

CONDUCTED EMISSIONS

Version 2006.11.12
PSA-ESCI 2007.05.07

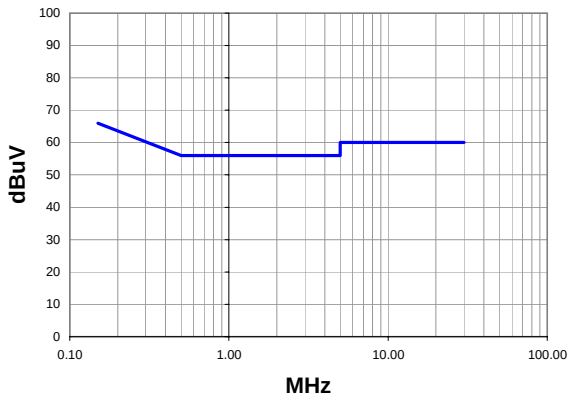
Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
Configuration:	1
Customer:	Honeywell
Attendees:	David Shipley
EUT Power:	120VAC/60Hz
Operating Mode:	802.11(b/g) 1Mbps, Mid Channel. Radio On.
Deviations:	No deviations.
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.

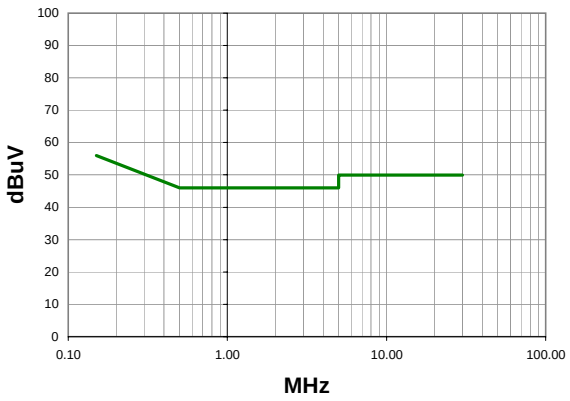
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	24	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

NORTHWEST

EMC

CONDUCTED EMISSIONS

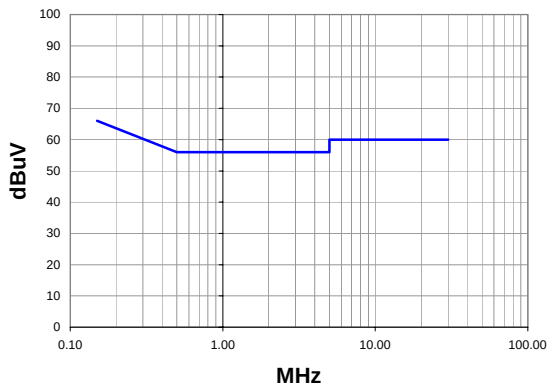
Version 2006.11.12
PSA-ESCI 2007.05.07

Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh
EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)				
Configuration:	1				
Customer:	Honeywell				
Attendees:	David Shipley				
EUT Power:	120VAC/60Hz				
Operating Mode:	802.11(b/g) 1Mbps, Mid Channel. Radio On.				
Deviations:	No deviations.				
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.				

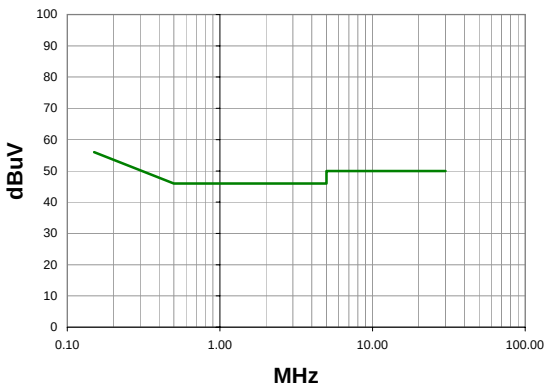
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	25	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

NORTHWEST

EMC

CONDUCTED EMISSIONS

Version 2006.11.12
PSA-ESCI 2007.05.07

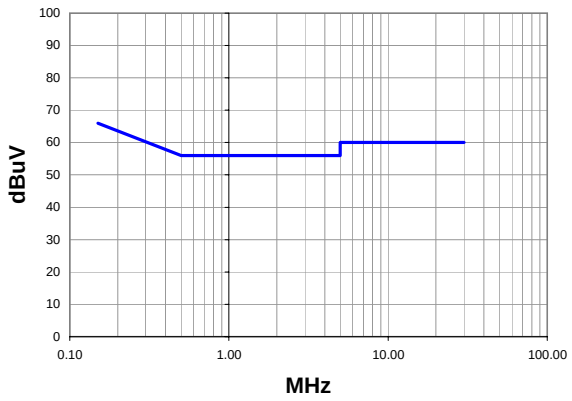
Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
Configuration:	1
Customer:	Honeywell
Attendees:	David Shipley
EUT Power:	120VAC/60Hz
Operating Mode:	802.11(b/g) 1Mbps, High Channel. Radio On.
Deviations:	No deviations.
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.

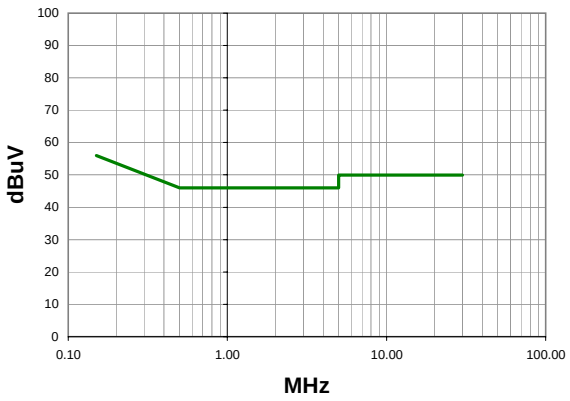
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	26	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

NORTHWEST

EMC

CONDUCTED EMISSIONS

Version 2006.11.12
PSA-ESCI 2007.05.07

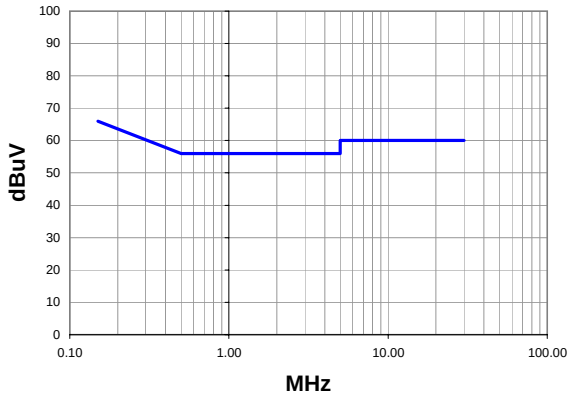
Work Order:	HONE0011	**Date:**	05/18/07		
Project:	None	**Temperature:**	23c		
Job Site:	OC06	**Humidity:**	32		
Serial Number:	None	**Barometric Pres.:**	30.08	**Tested by:**	Jaemi Suh

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)
Configuration:	1
Customer:	Honeywell
Attendees:	David Shipley
EUT Power:	120VAC/60Hz
Operating Mode:	802.11(b/g) 1Mbps, High Channel. Radio On.
Deviations:	No deviations.
Comments:	Compliance is based on Emission comparison between radio on and radio off plots. Plot should show no difference between radio on and off. Refer to Wistron FCC Grant NKRCM9 for radio conducted emissions compliance.

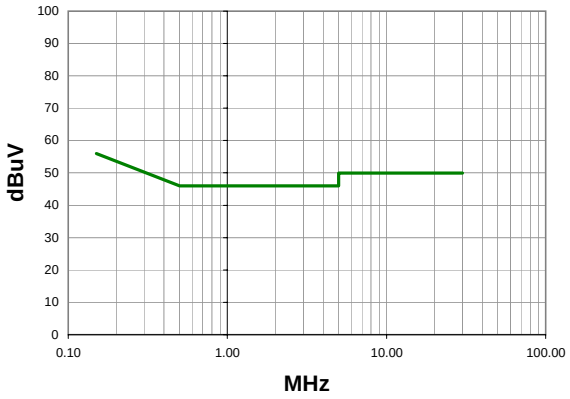
Test Specifications	**Test Method**
FCC 15.207:2006	ANSI C63.4:2003

Run #	27	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)

No Significant Radio Emissions observed

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 INVESTIGATED
Transmitting at 2462 MHz.
Transmitting at 2437 MHz.
Transmitting at 2412 MHz.

DATA RATES INVESTIGATED
1 MBpS
11 MBpS
6 MBpS
36 MBpS
54 MBpS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	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 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 at its maximum data rate in a no hop mode.

NORTHWEST EMC

OCCUPIED BANDWIDTH

XMit 2007.03.30

EUT:	**51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)**			**Work Order:**	**HONE0011**
Serial Number:	**None**			**Date:**	**05/03/07**
Customer:	**Honeywell**			**Temperature:**	**23c°C**
Attendees:	**David Shipley**			**Humidity:**	**41%**
Project:	**None**			**Barometric Pres.:**	**29.99**
Tested by:	**Jaemi Suh**	**Power:**	**24VDC**	**Job Site:**	**OC03**

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Power Setting = (40) in Test Software.

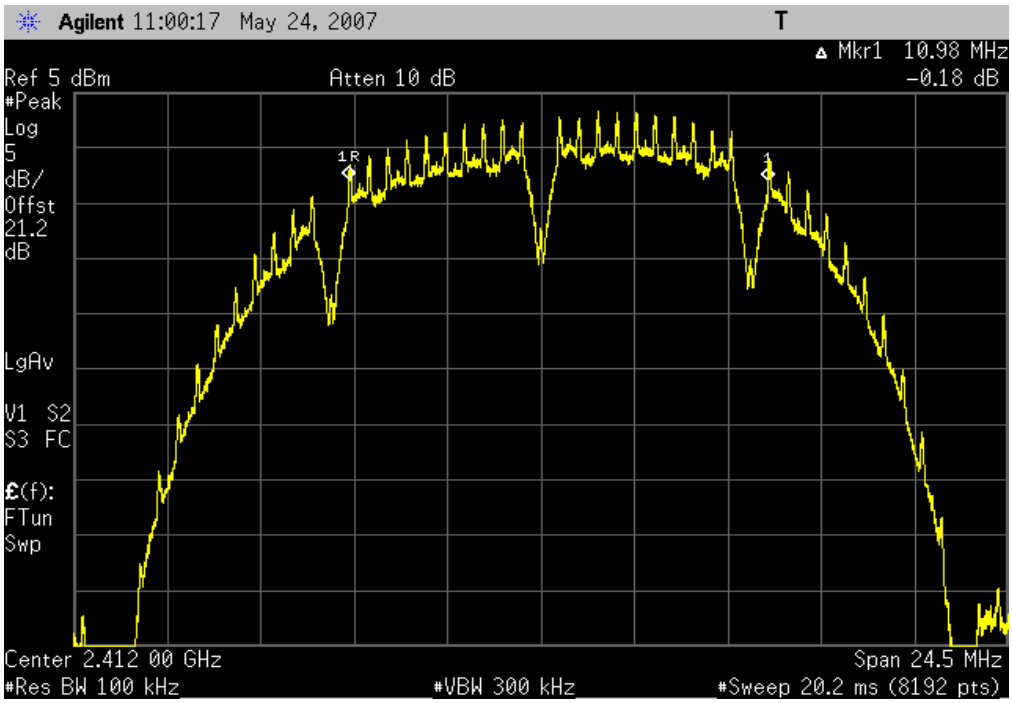
DEVIATIONS FROM TEST STANDARD

None

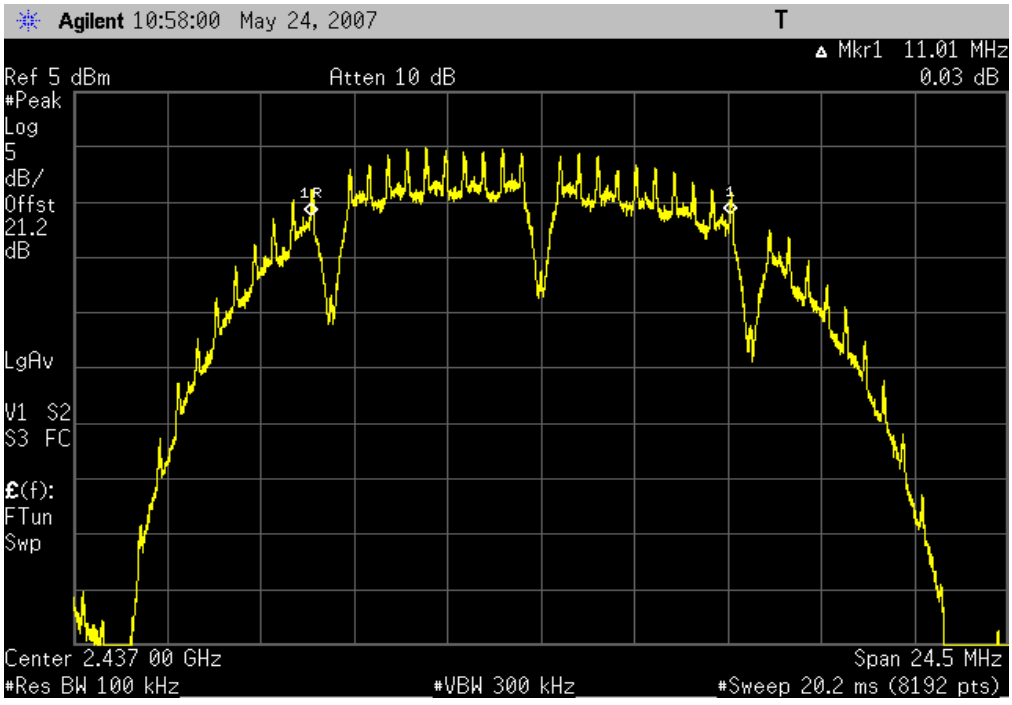
Configuration #	**1**	*Signature*

		Value	**Limit**	**Results**
802.11(b) 1 Mbps				
	Low Channel	10.98 MHz	> 500 kHz	Pass
	Mid Channel	11.01 MHz	> 500 KHz	Pass
	High Channel	12.05 MHz	> 500 KHz	Pass
802.11(b) 11 Mbps				
	Low Channel	11.0 MHz	> 500 KHz	Pass
	Mid Channel	11.02 MHz	>500 KHz	Pass
	High Channel	12.05 MHz	> 500 KHz	Pass
802.11(g) 6 Mbps				
	Low Channel	11.0 MHz	>500 KHz	Pass
	Mid Channel	12.06 MHz	> 500 KHz	Pass
	High Channel	12.05 MHz	> 500 KHz	Pass
802.11(g) 36 Mbps				
	Low Channel	10.98 MHz	> 500 KHz	Pass
	Mid Channel	12.04 MHz	> 500 KHz	Pass
	High Channel	12.04 MHz	> 500 KHz	Pass
802.11(g) 54 Mbps				
	Low Channel	10.99 MHz	> 500 KHz	Pass
	Mid Channel	11.03 MHz	> 500 KHz	Pass
	High Channel	12.04 MHz	> 500 KHz	Pass

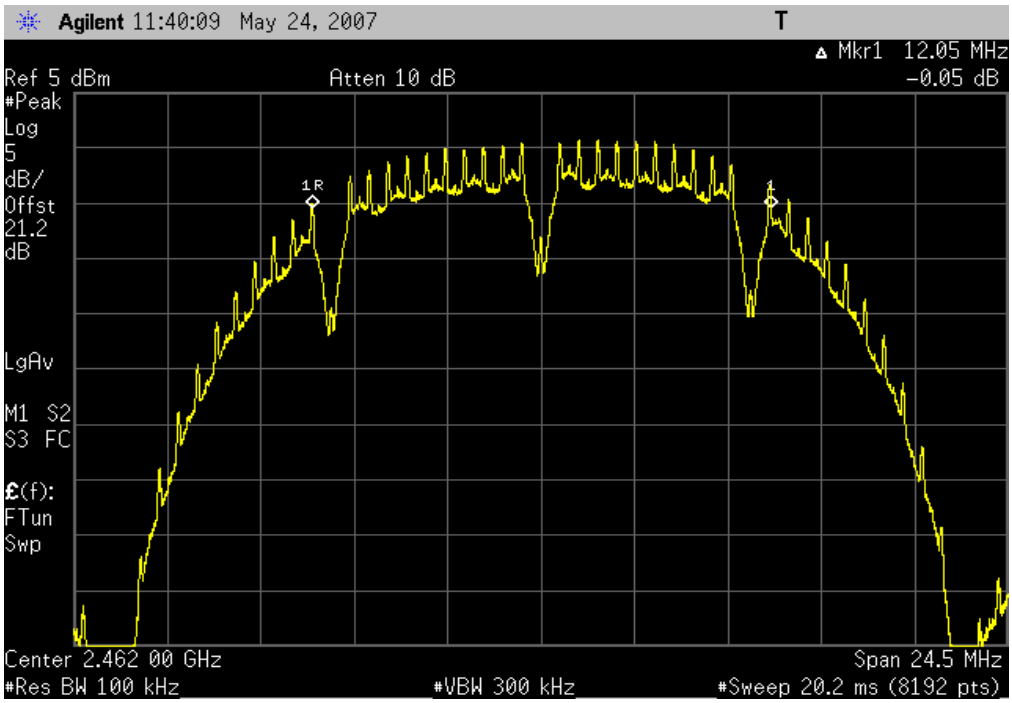
802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	10.98 MHz	**Limit:**	> 500 kHz



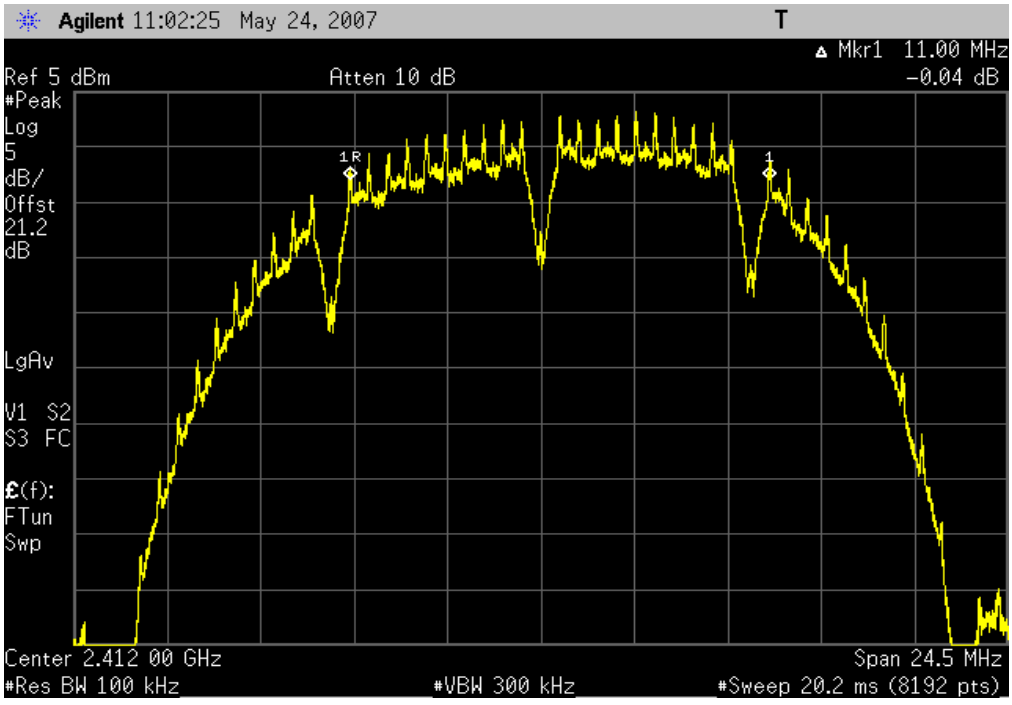
802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	11.01 MHz	**Limit:**	> 500 KHz



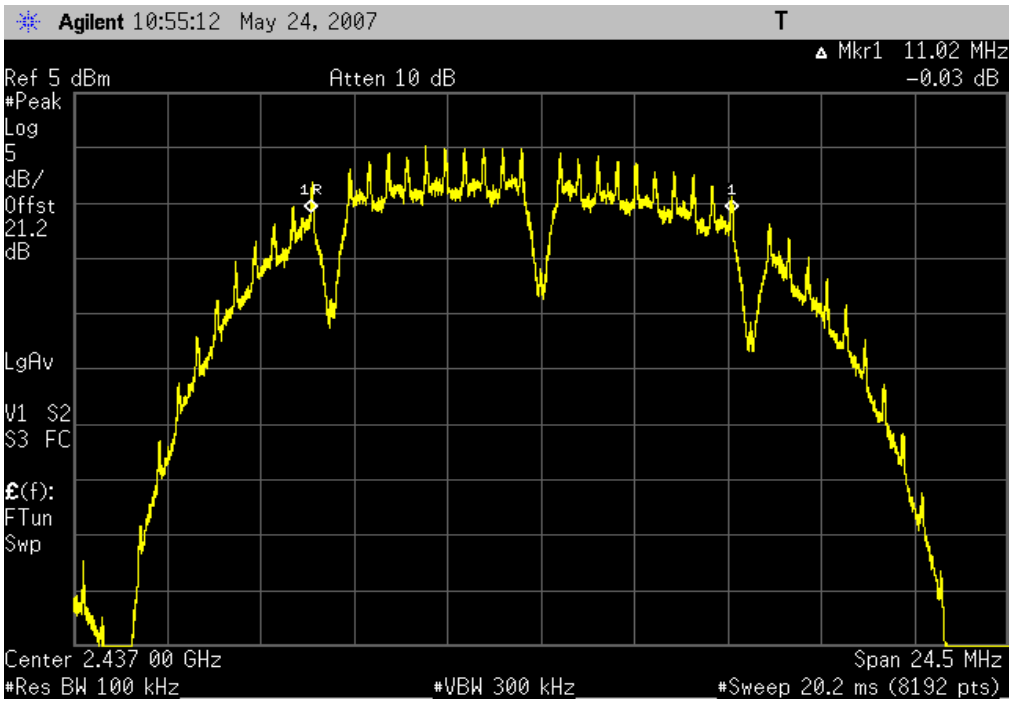
802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	12.05 MHz	**Limit:**	> 500 KHz



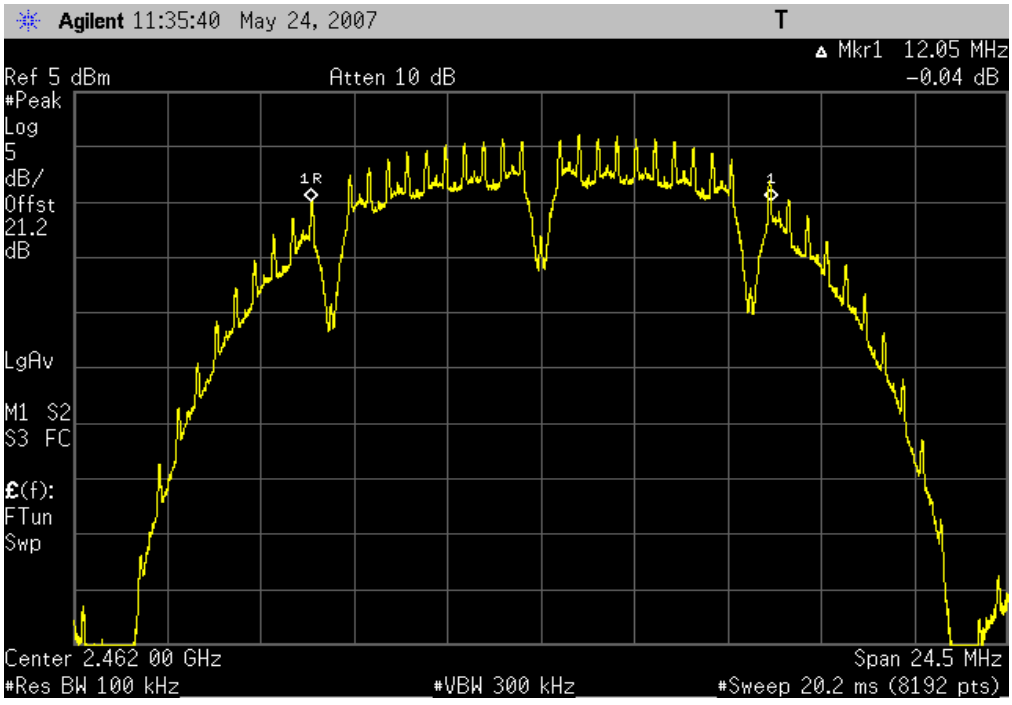
802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	11.0 MHz	**Limit:**	> 500 KHz



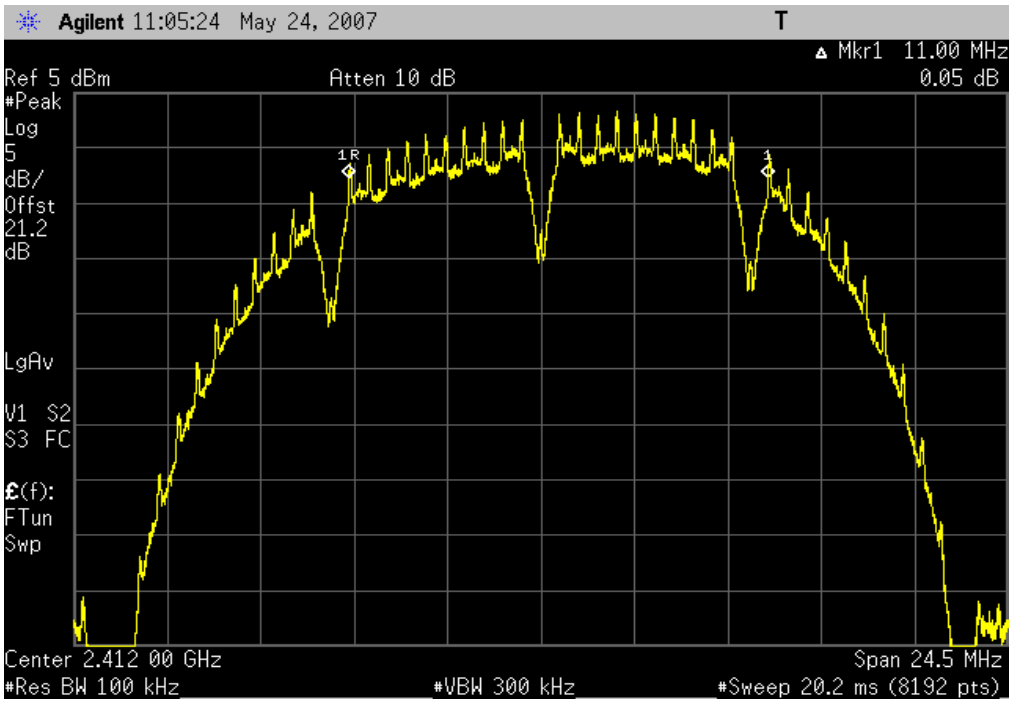
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	11.02 MHz	**Limit:**	>500 KHz



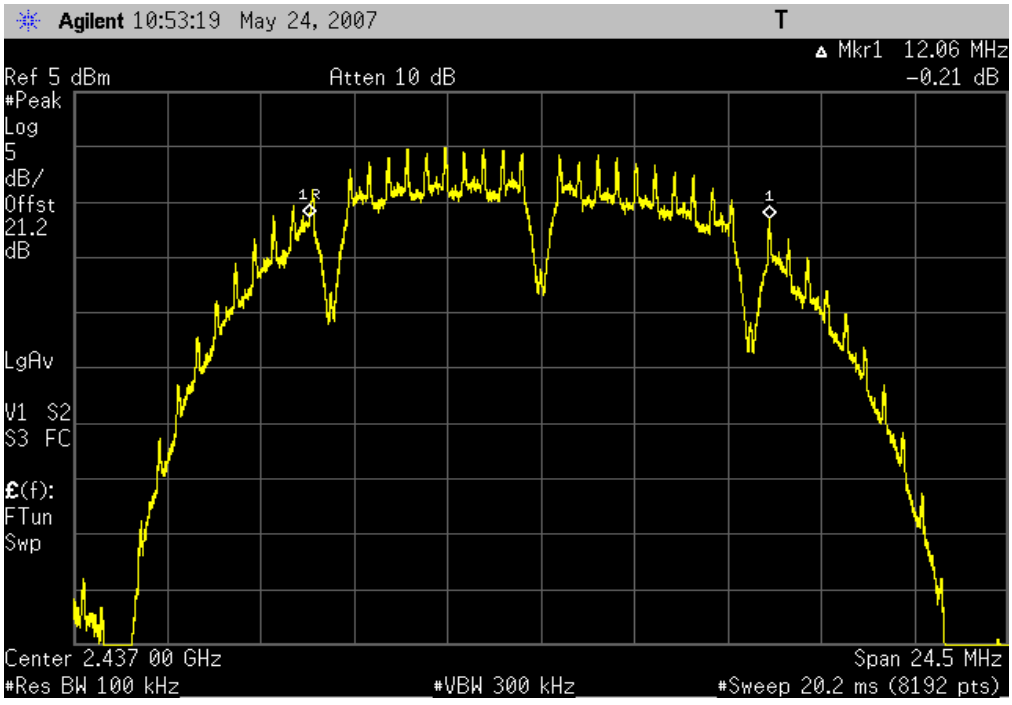
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	12.05 MHz	**Limit:**	> 500 KHz



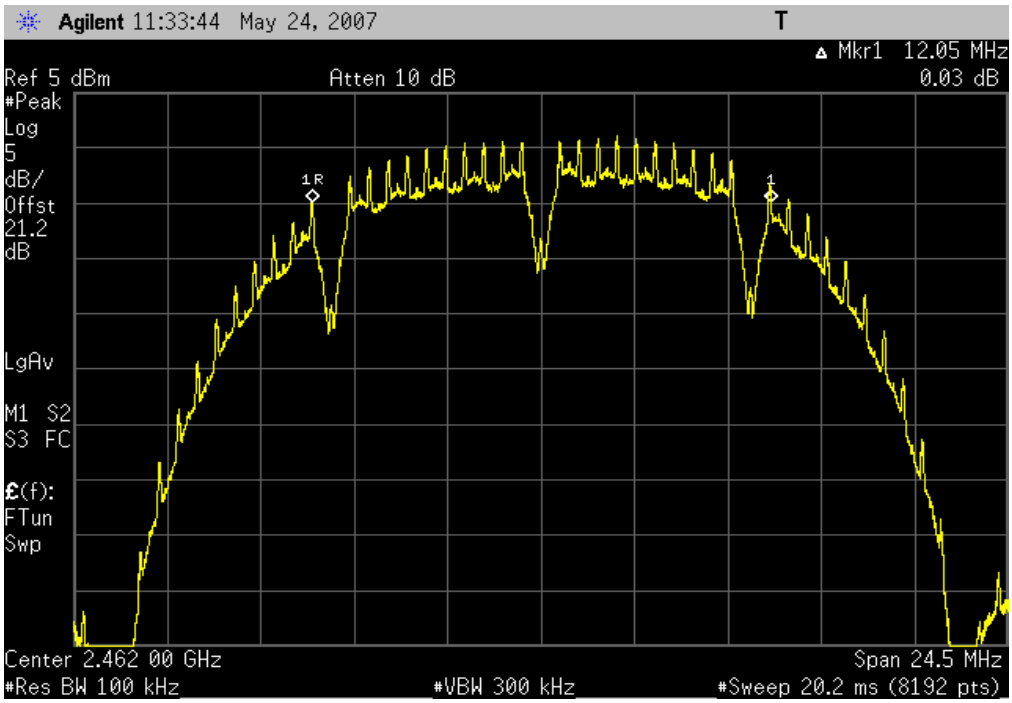
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	11.0 MHz	**Limit:**	>500 KHz



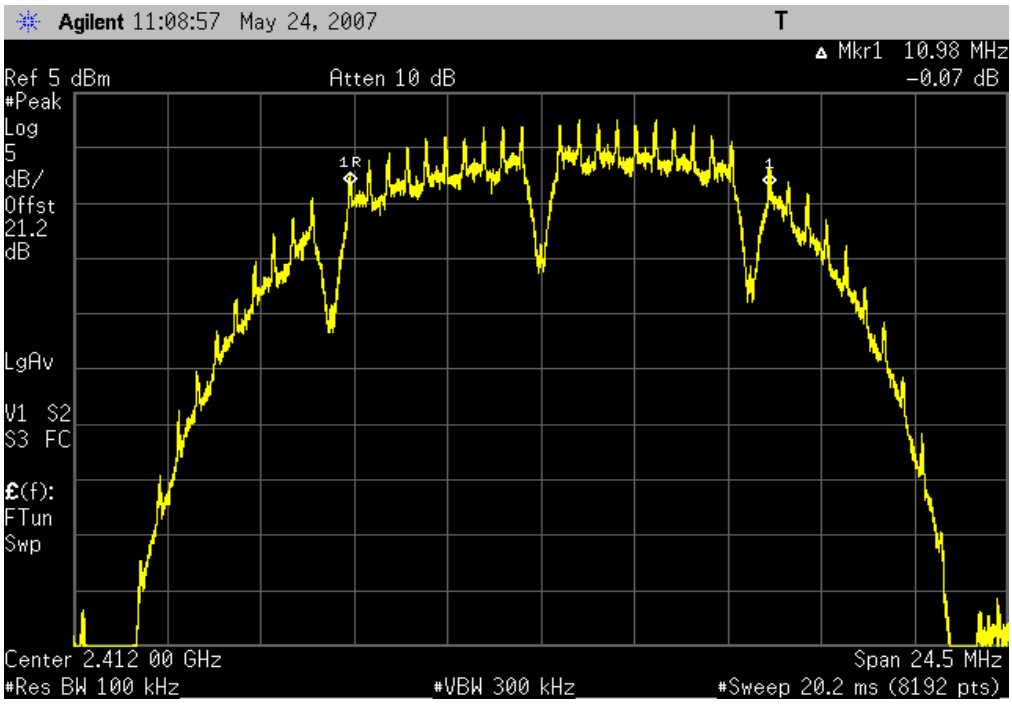
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.06 MHz	**Limit:**	> 500 KHz



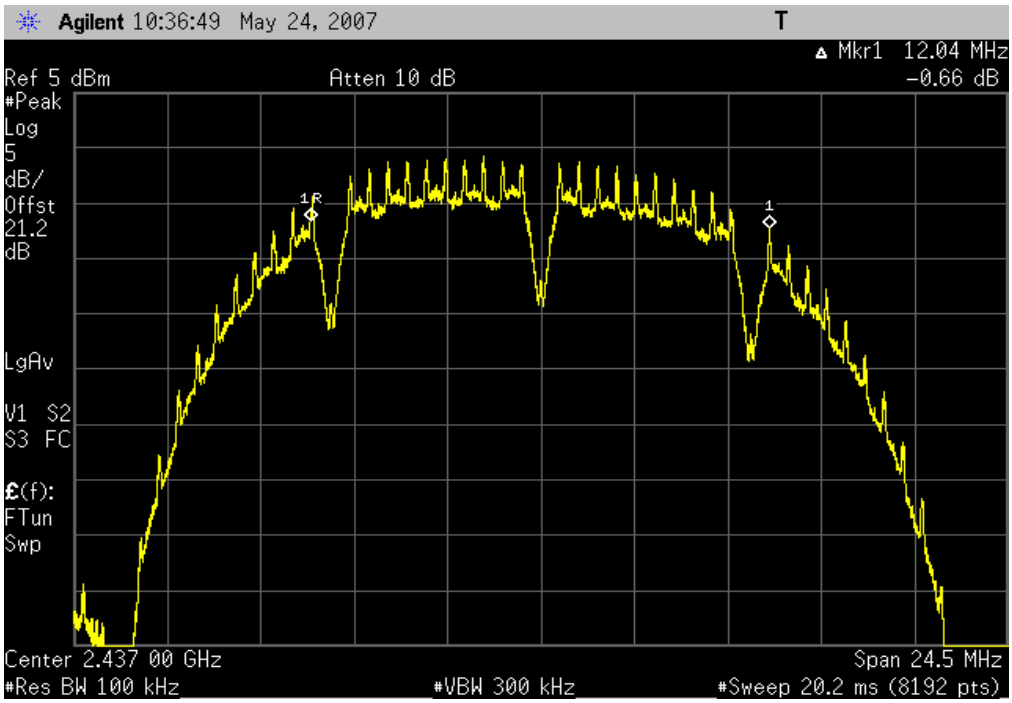
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	12.05 MHz	**Limit:**	> 500 KHz



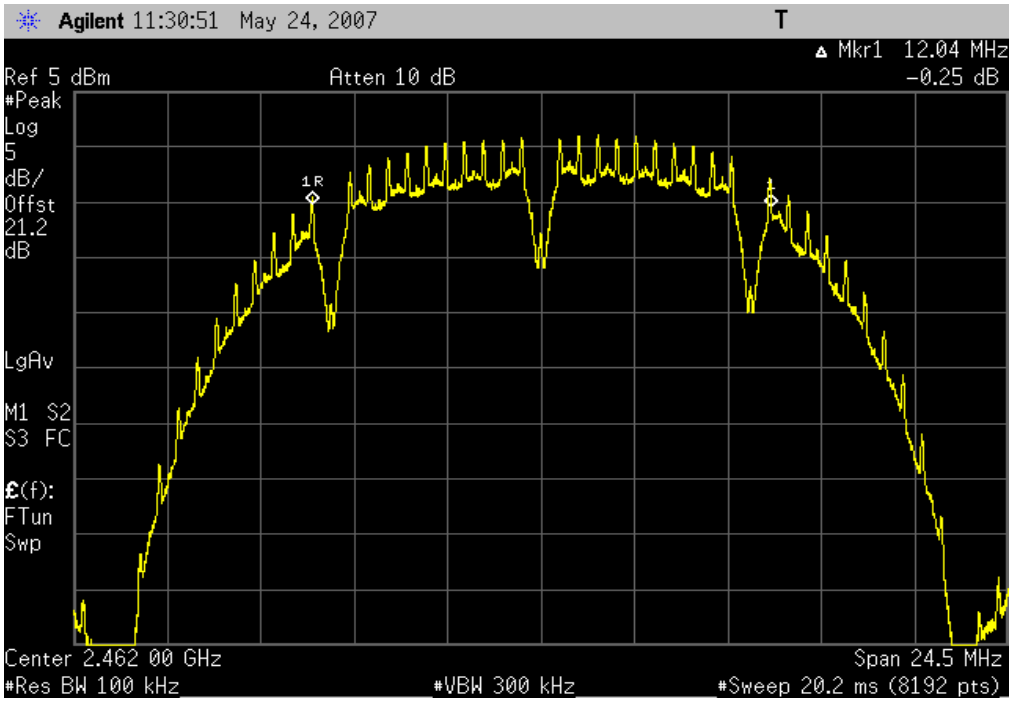
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	10.98 MHz	**Limit:**	> 500 KHz



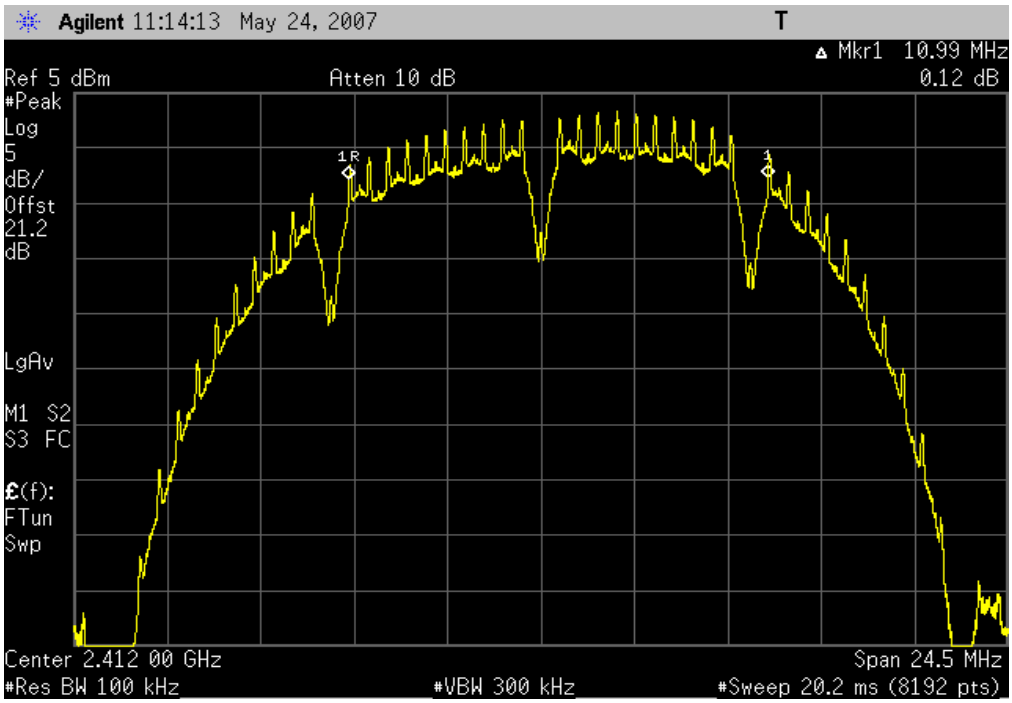
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	12.04 MHz	**Limit:**	> 500 KHz



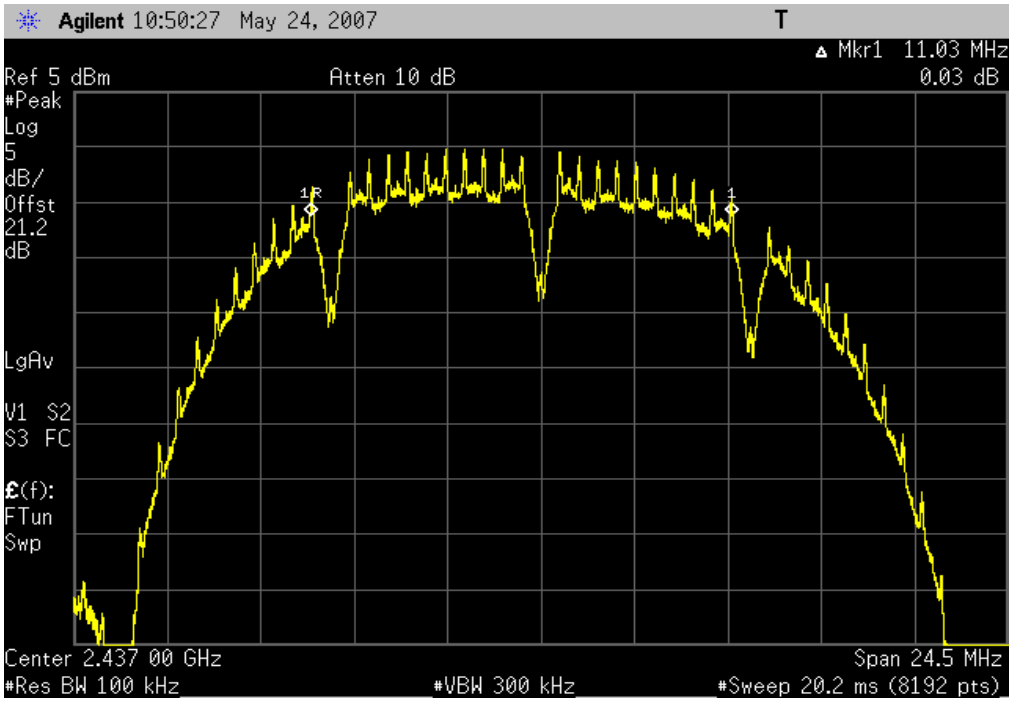
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	12.04 MHz	**Limit:**	> 500 KHz



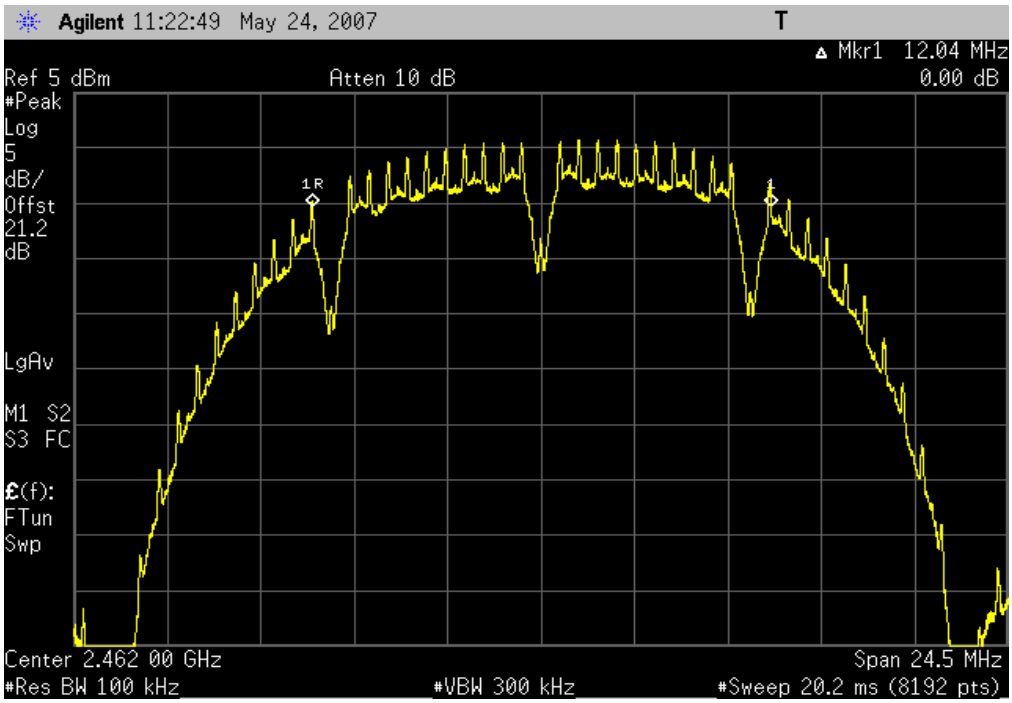
802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	10.99 MHz	**Limit:**	> 500 KHz

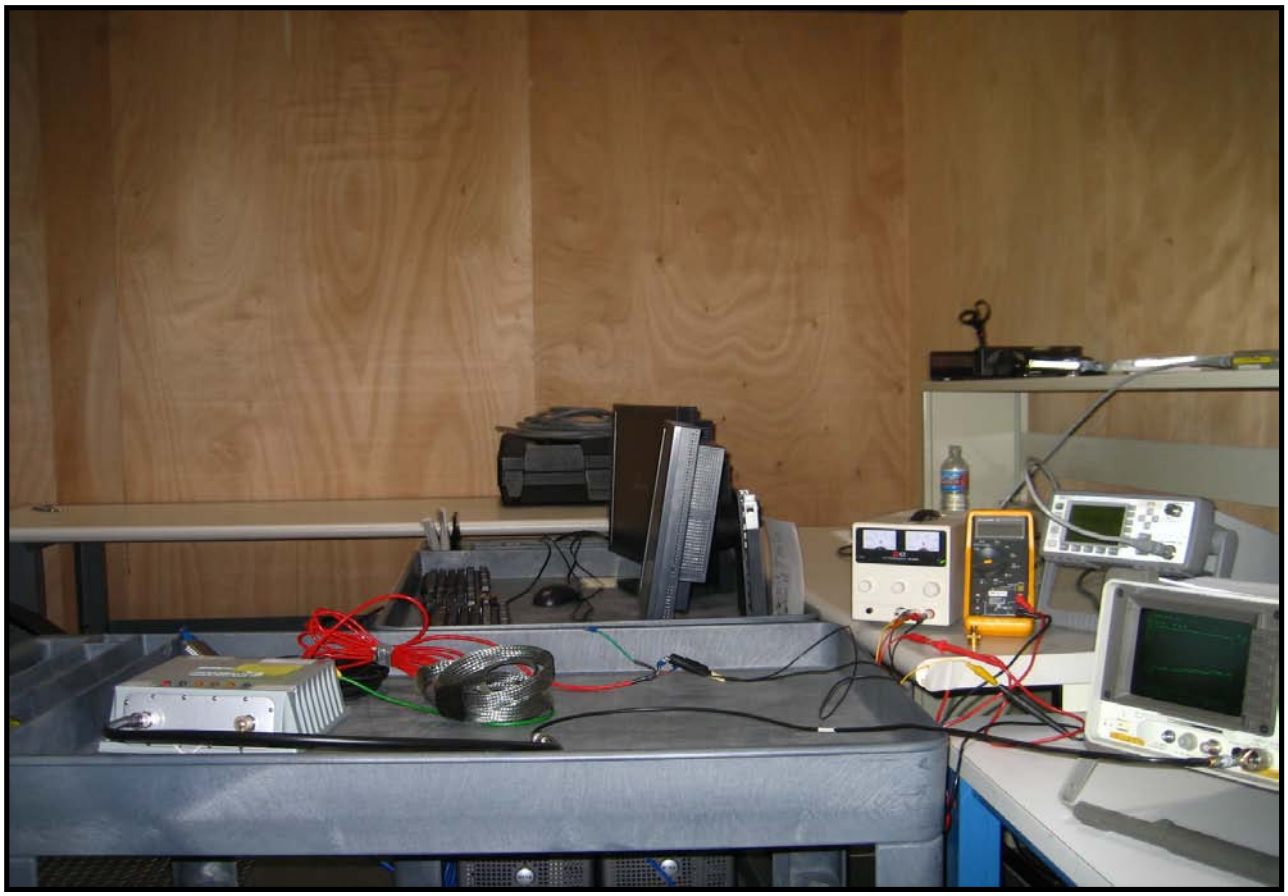


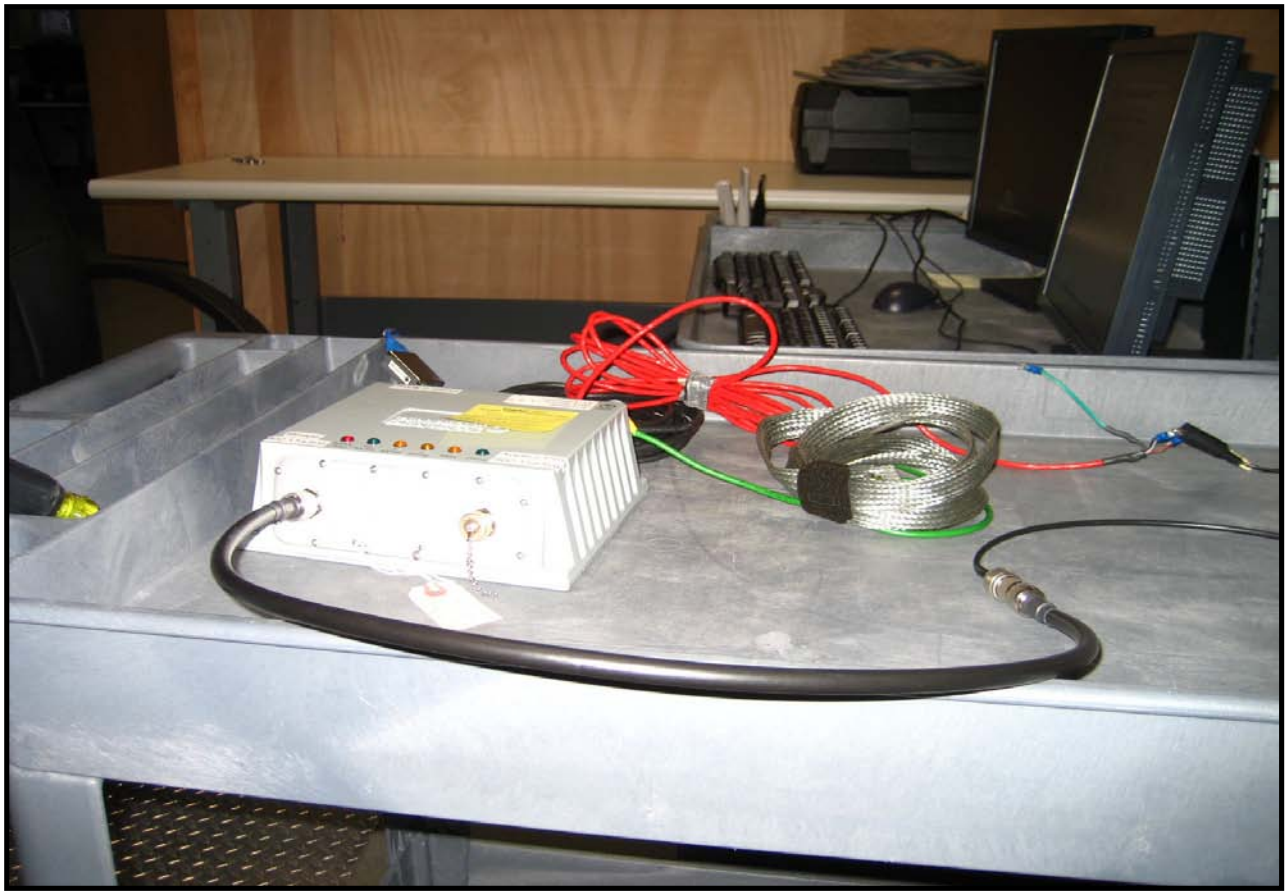
802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	11.03 MHz	**Limit:**	> 500 KHz



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	12.04 MHz	**Limit:**	> 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.

MODES OF OPERATION INVESTIGATED
Transmitting at 2462 MHz.
Transmitting at 2437 MHz.
Transmitting at 2412 MHz.

DATA RATES INVESTIGATED
1 MBpS
11 MBpS
6 MBpS
36 MBpS
54 MBpS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Sensor	Hewlett-Packard	8481H	SPB	11/1/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	11/1/2006	13
Spectrum Analyzer	Hewlett Packard	8593E	AAP	12/14/2006	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 measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

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

NORTHWEST EMC

OUTPUT POWER

XMit 2007.03.30

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)			Work Order:	HONE0011
Serial Number:	None			Date:	05/03/07
Customer:	Honeywell			Temperature:	22°C
Attendees:	David Shipley			Humidity:	44%
Project:	None			Barometric Pres.:	29.97
Tested by:	Jaemi Suh	Power:	24 VDC	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074

COMMENTS

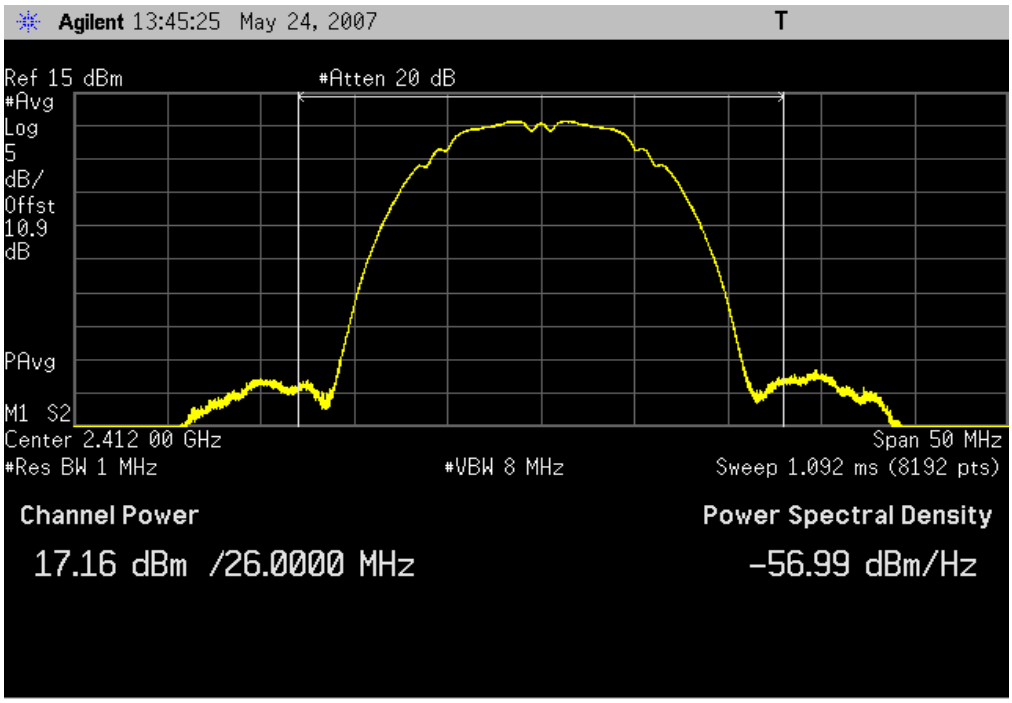
Power Setting = (40) in Test Software.
Antenna gain = 14dBm, Cable loss (1m cable) = 1dB.
EIRP Limit = 36dBm - 14dBm +1 dBm = 23dBm.

DEVIATIONS FROM TEST STANDARD

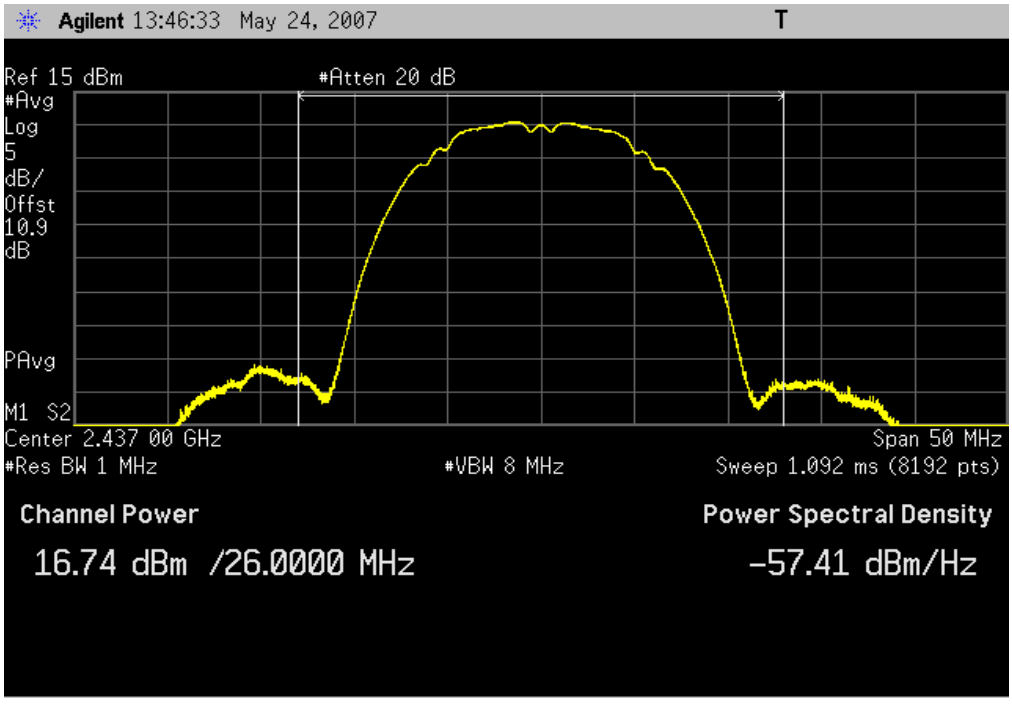
Configuration #	1	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	17.16 dBm	≤ 23 dBm	Pass
	Mid Channel	16.74 dBm	≤ 23 dBm	Pass
	High Channel	16.46 dBm	≤ 23 dBm	Pass
802.11(b) 11 Mbps				
	Low Channel	17.08 dBm	≤ 23 dBm	Pass
	Mid Channel	16.77 dBm	≤ 23 dBm	Pass
	High Channel	16.18 dBm	≤ 23 dBm	Pass
802.11(g) 6 Mbps				
	Low Channel	17.49 dBm	≤ 23 dBm	Pass
	Mid Channel	15.98 dBm	≤ 23 dBm	Pass
	High Channel	16.25 dBm	≤ 23 dBm	Pass
802.11(g) 36 Mbps				
	Low Channel	17.58 dBm	≤ 23 dBm	Pass
	Mid Channel	16.02 dBm	≤ 23 dBm	Pass
	High Channel	16.18 dBm	≤ 23 dBm	Pass
802.11(g) 54 Mbps				
	Low Channel	17.17 dBm	≤ 23 dBm	Pass
	Mid Channel	15.92 dBm	≤ 23 dBm	Pass
	High Channel	16.46 dBm	≤ 23 dBm	Pass

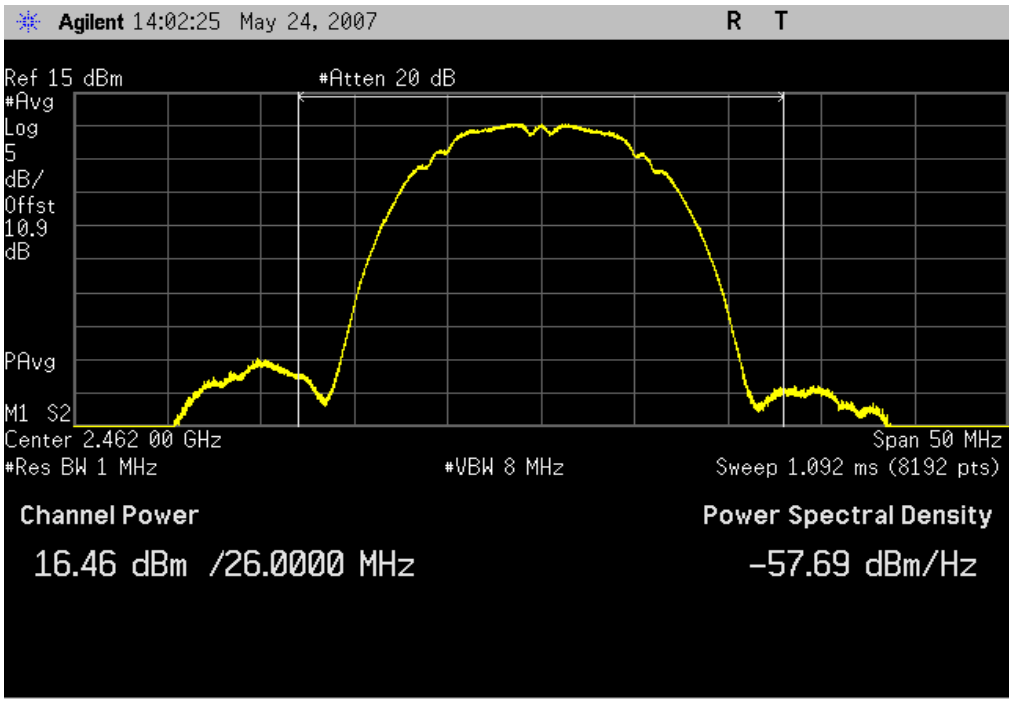
802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	17.16 dBm	**Limit:**	≤ 23 dBm



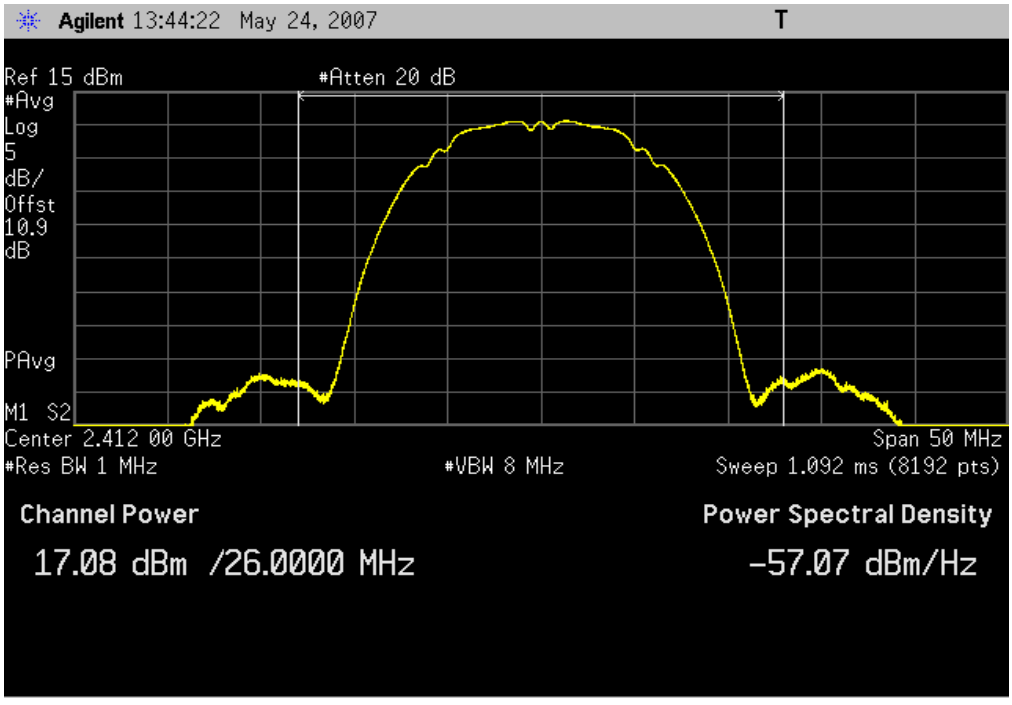
802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.74 dBm	**Limit:**	≤ 23 dBm



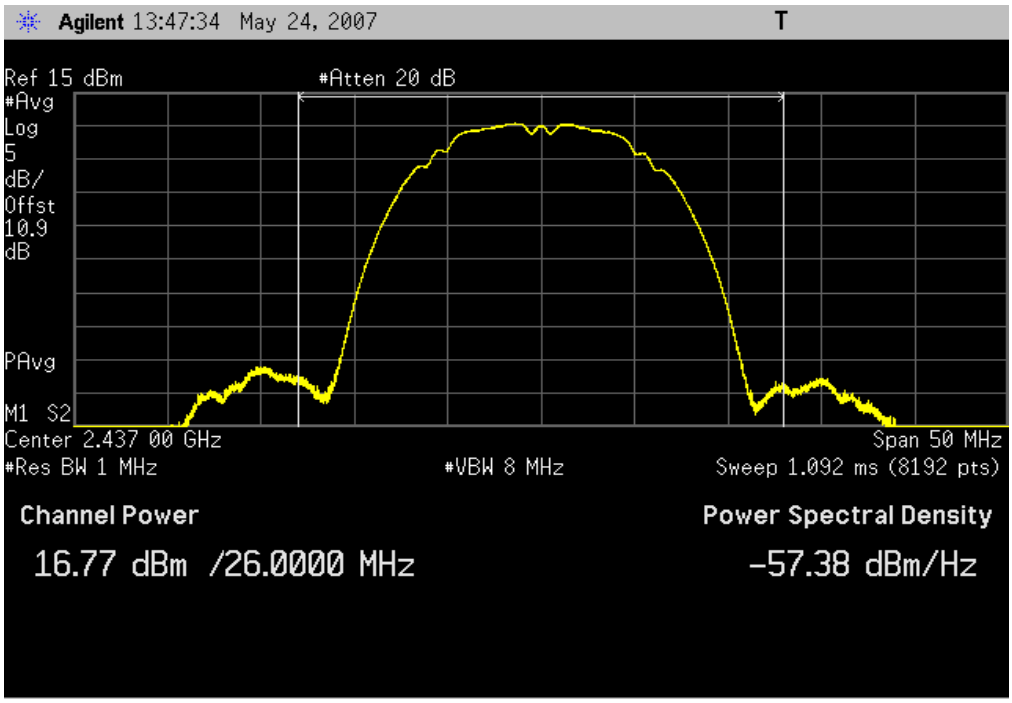
802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	16.46 dBm	**Limit:**	≤ 23 dBm



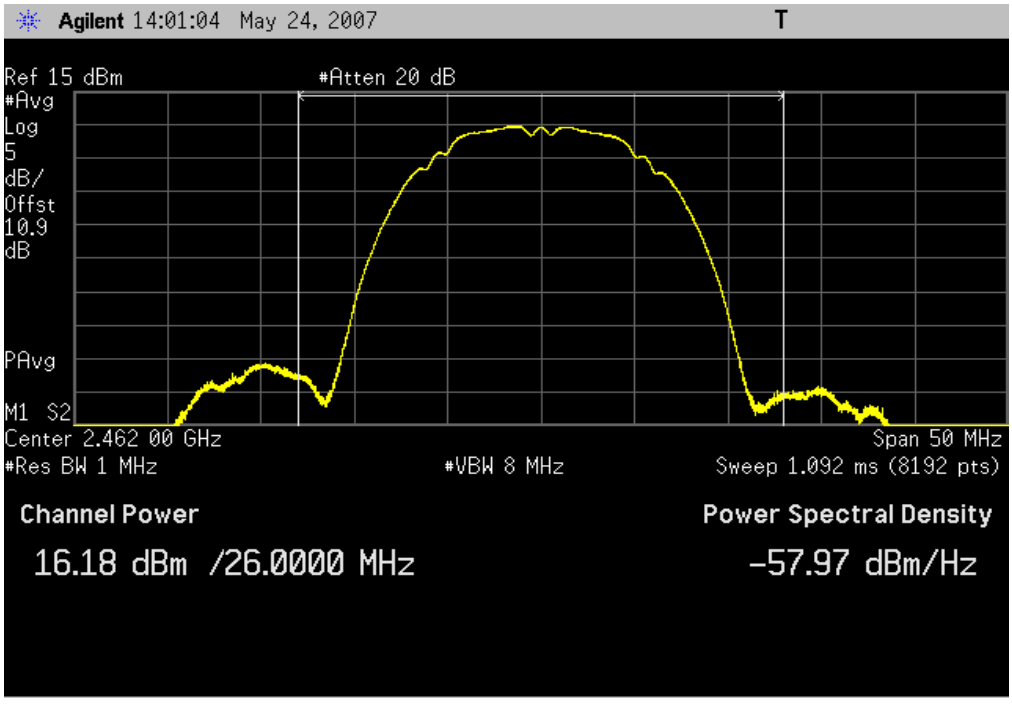
802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	17.08 dBm	**Limit:**	≤ 23 dBm



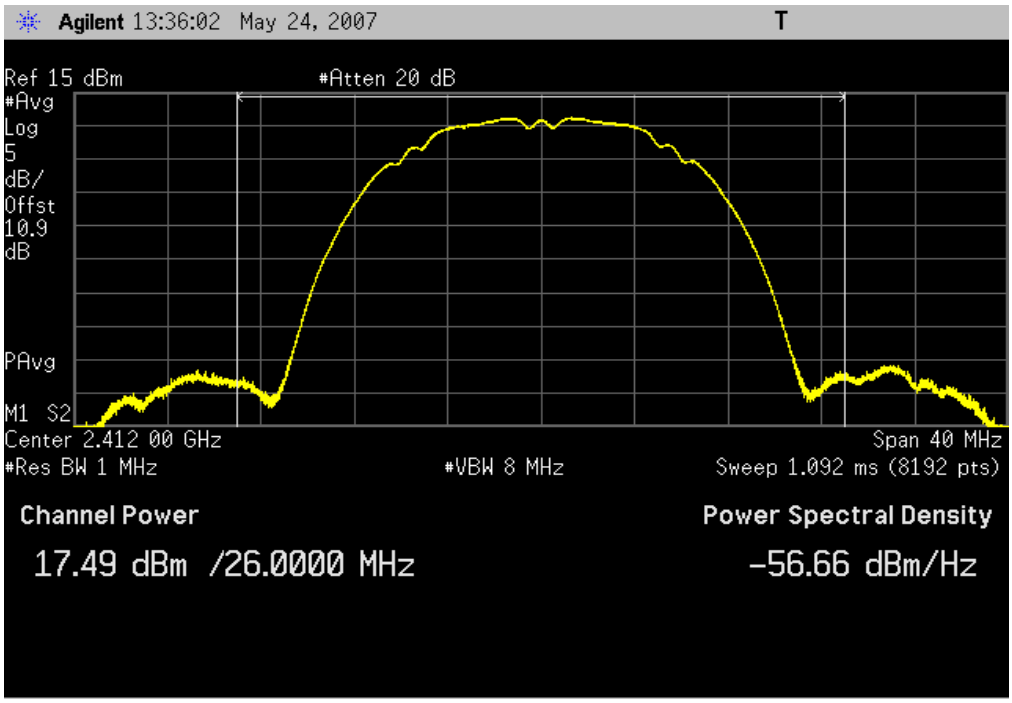
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.77 dBm	**Limit:**	≤ 23 dBm



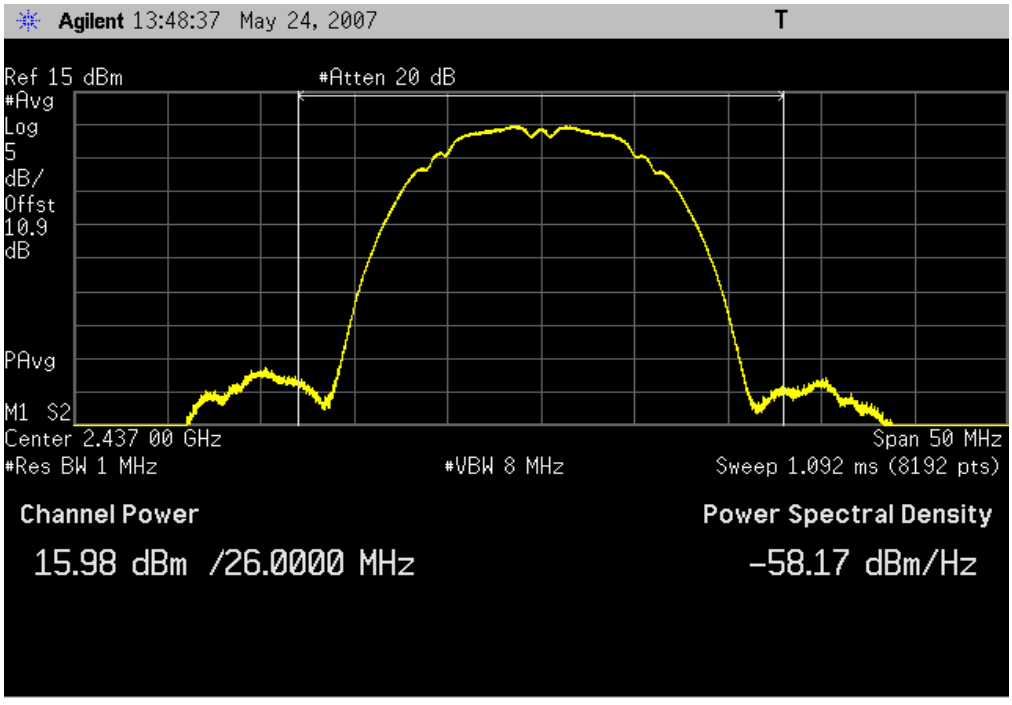
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	16.18 dBm	**Limit:**	≤ 23 dBm



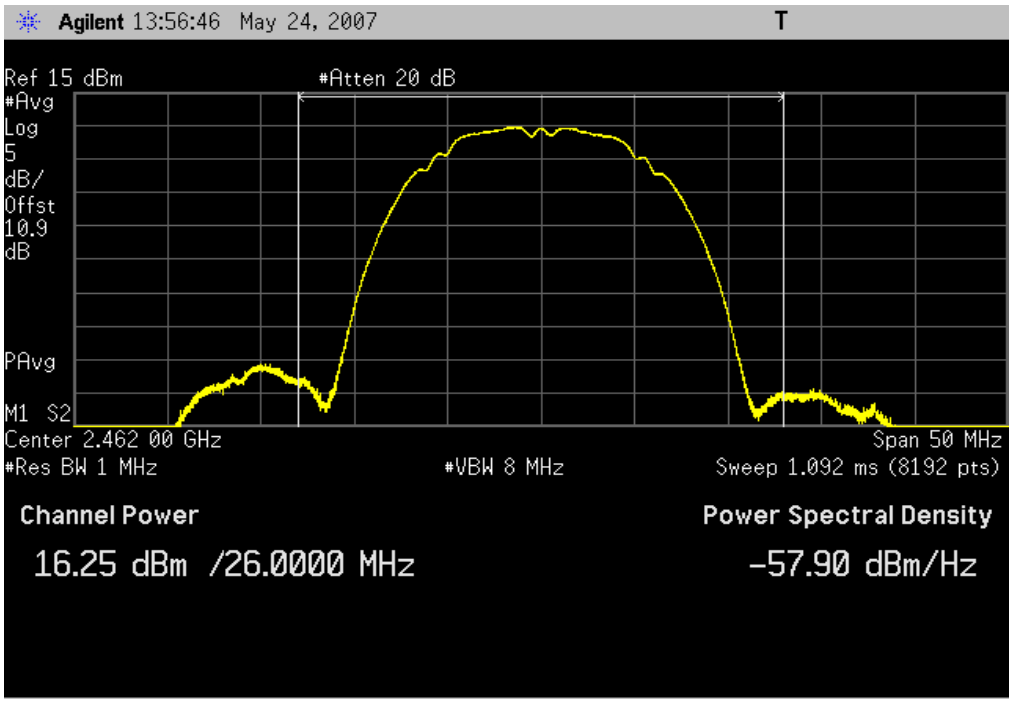
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	17.49 dBm	**Limit:**	≤ 23 dBm



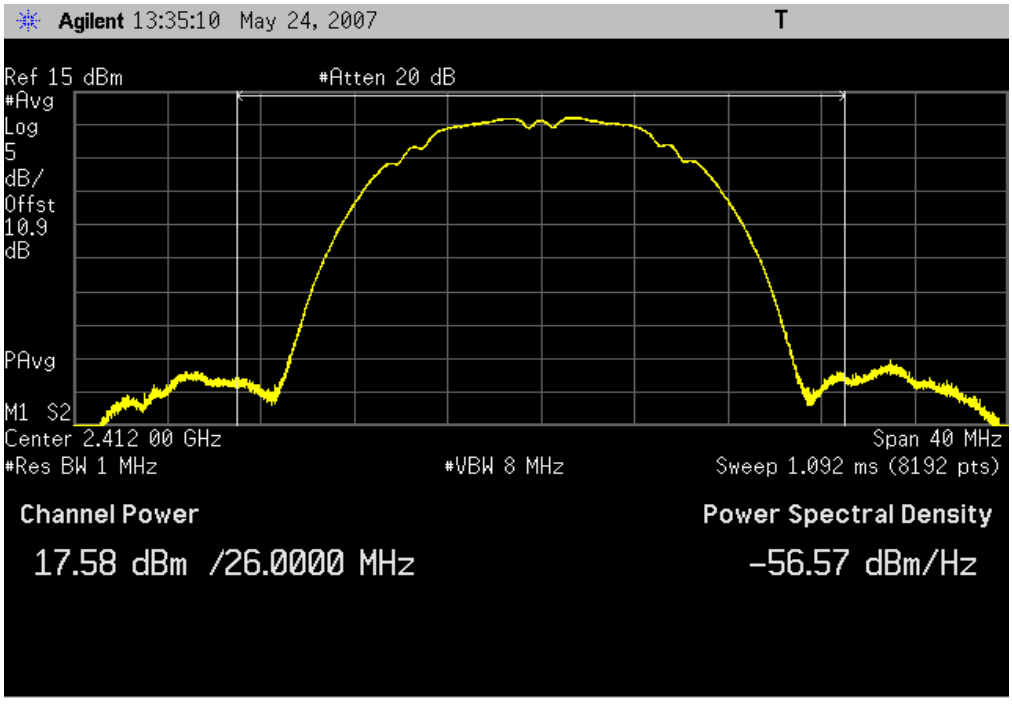
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	15.98 dBm	**Limit:**	≤ 23 dBm



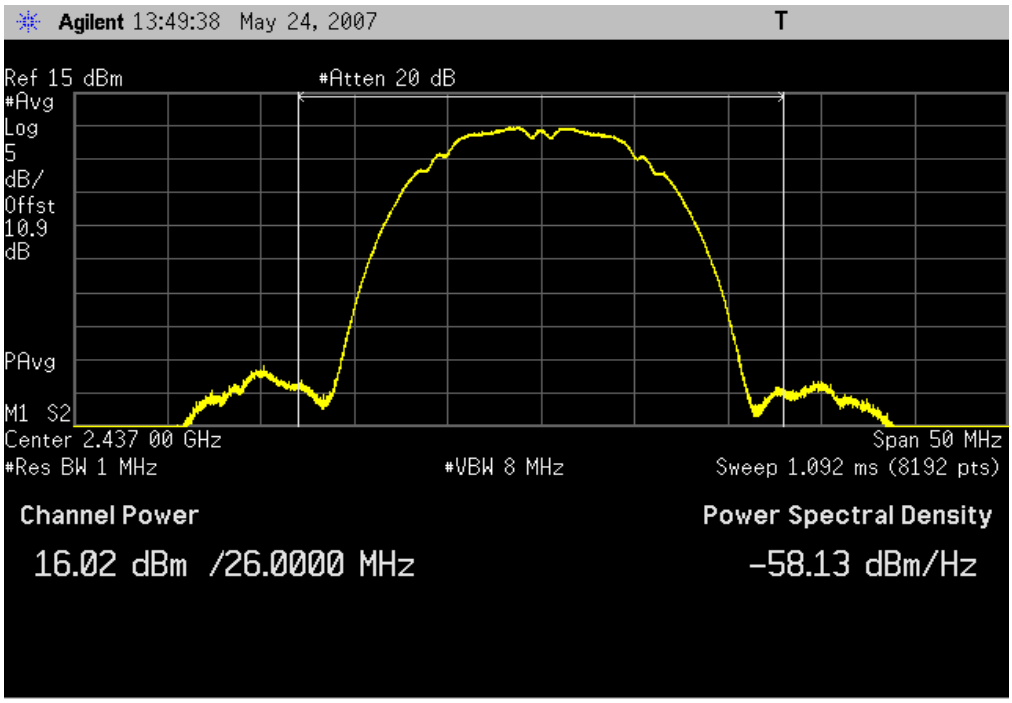
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	16.25 dBm	**Limit:**	≤ 23 dBm



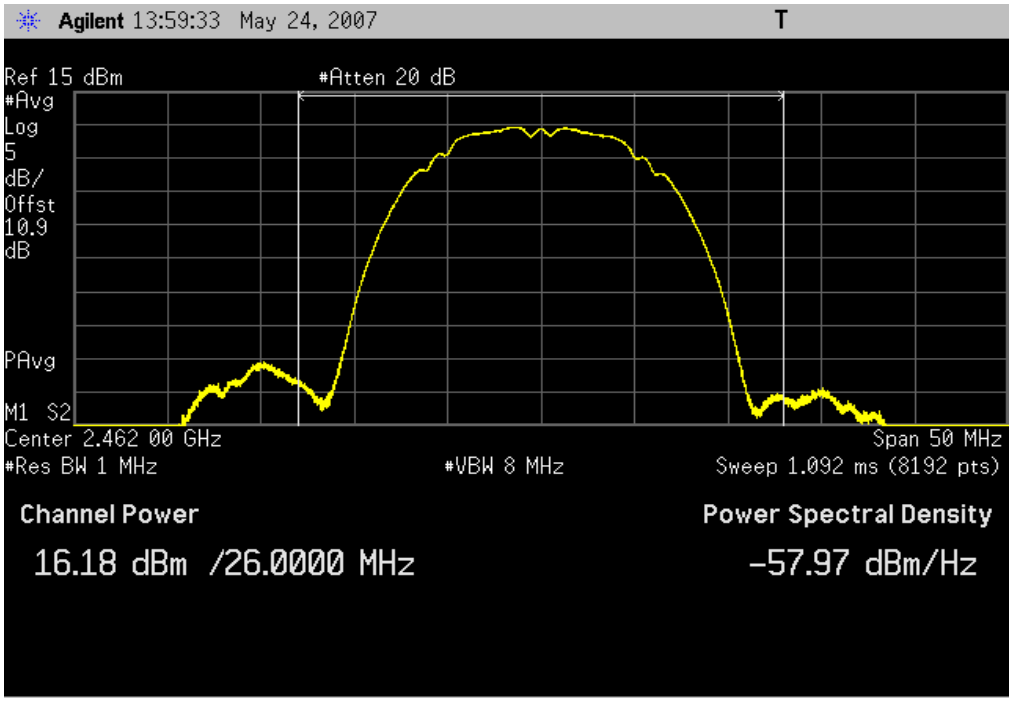
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	17.58 dBm	**Limit:**	≤ 23 dBm



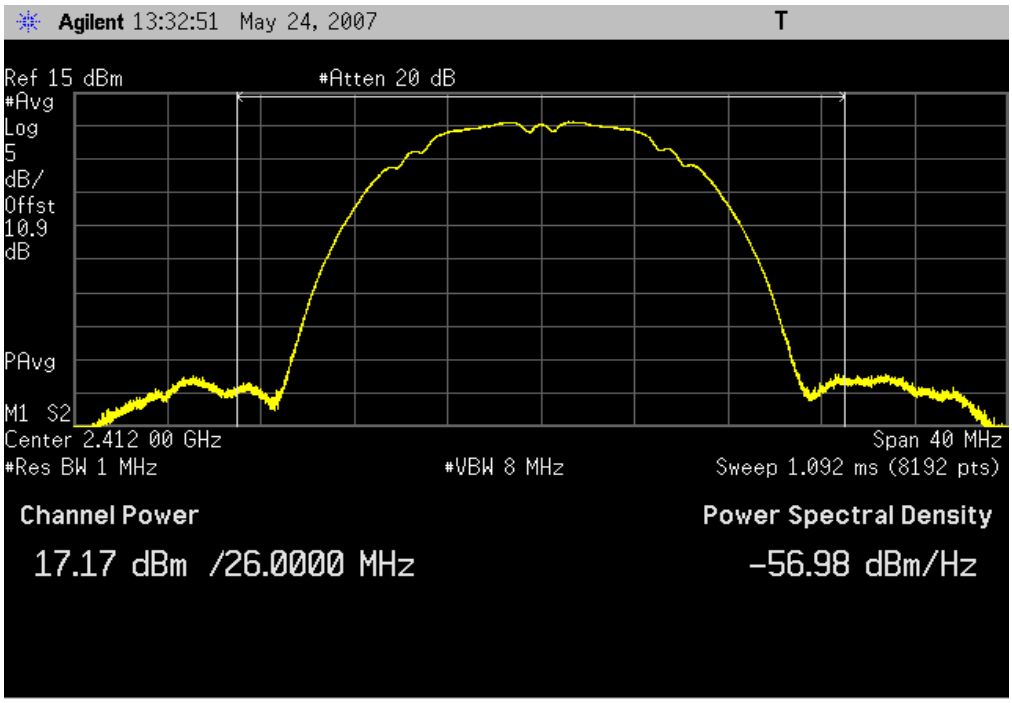
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	16.02 dBm	**Limit:**	≤ 23 dBm



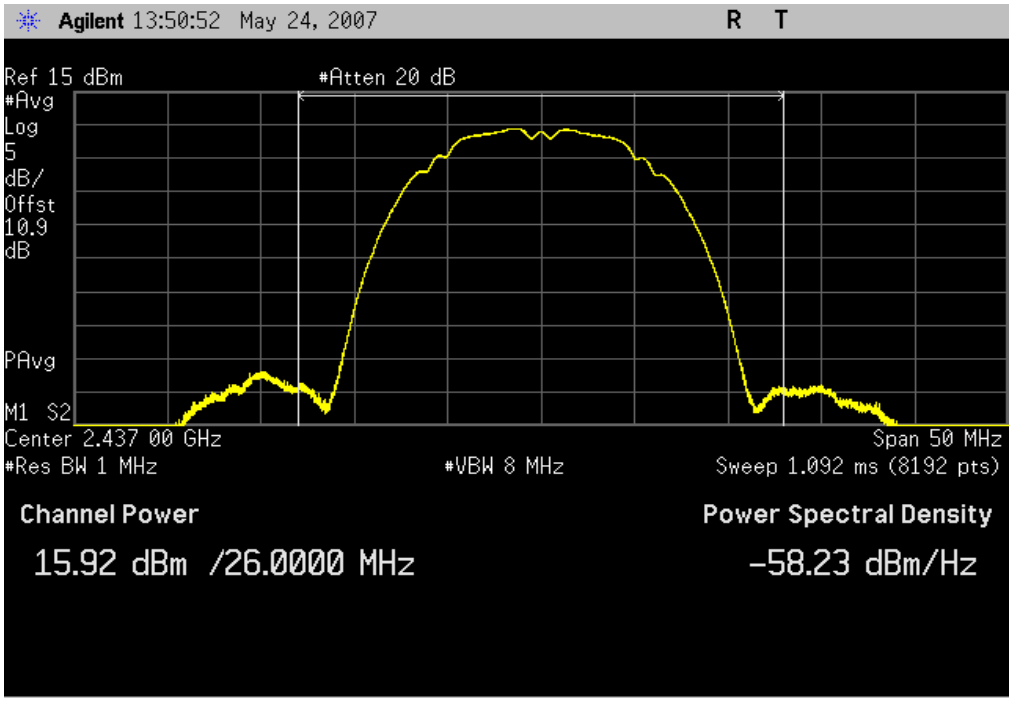
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	16.18 dBm	**Limit:**	≤ 23 dBm



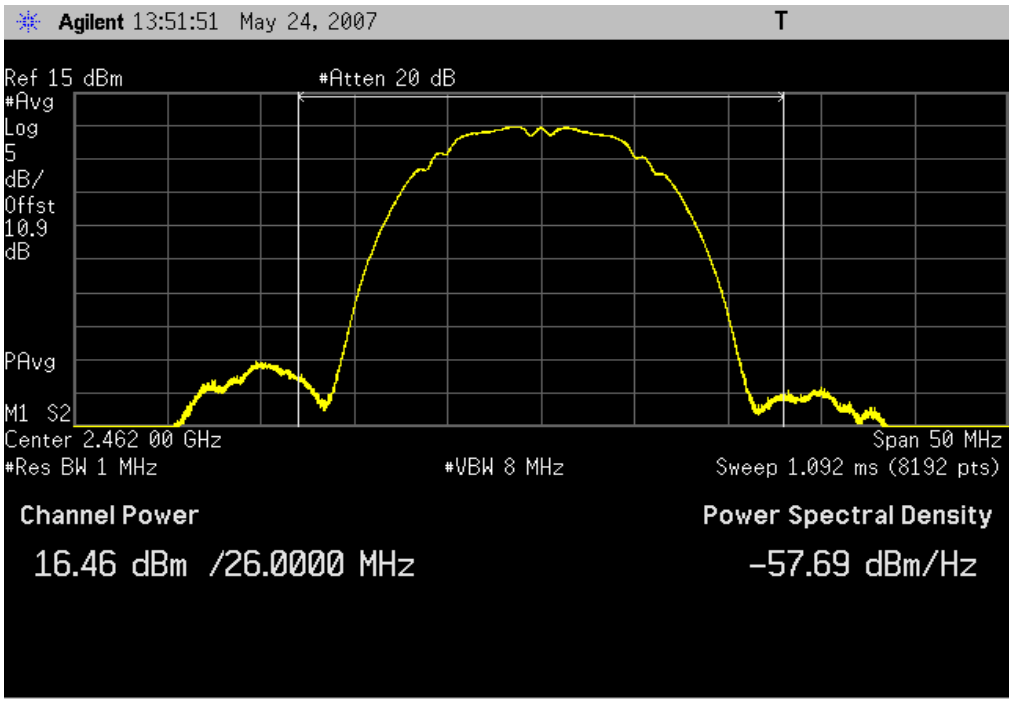
802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	17.17 dBm	**Limit:**	≤ 23 dBm

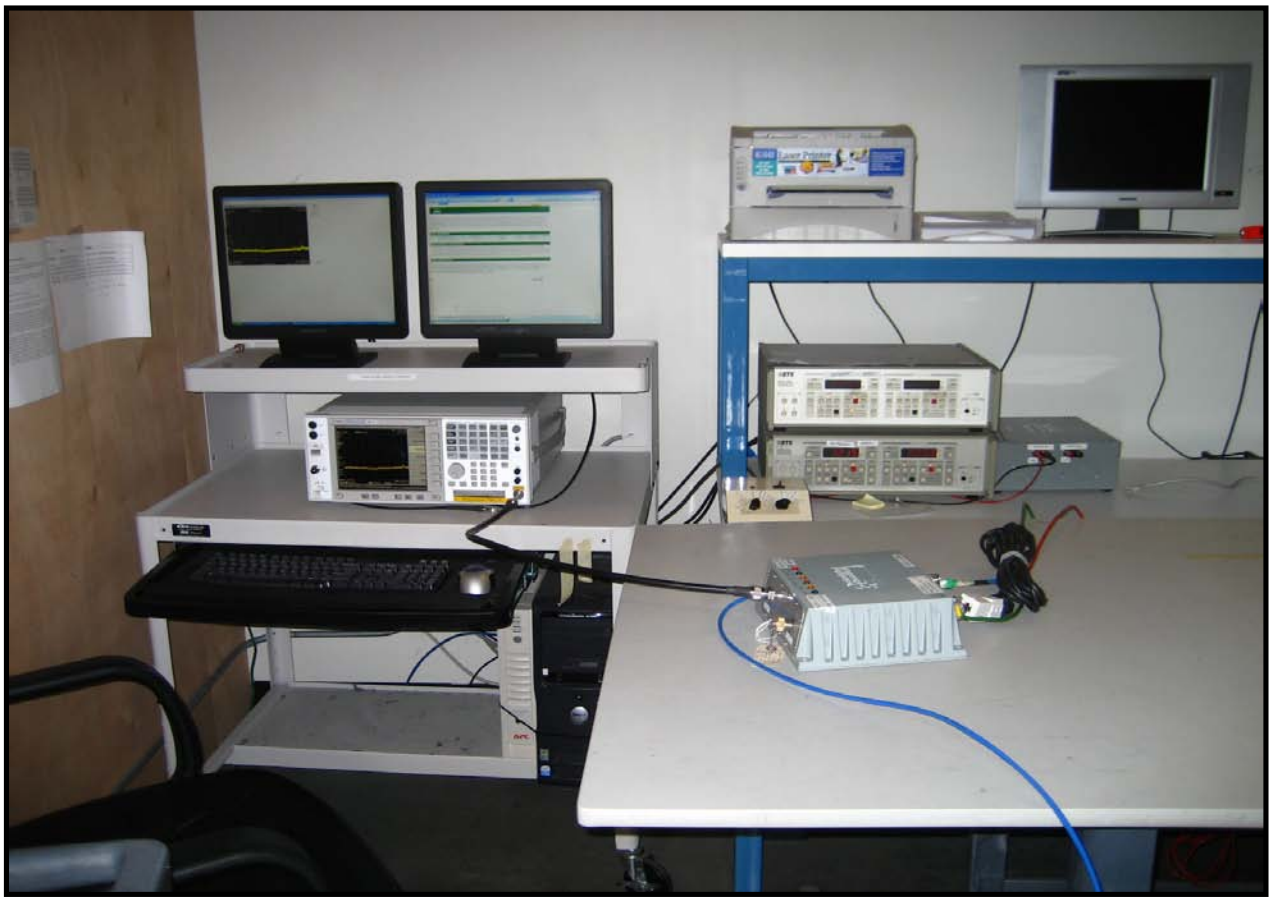


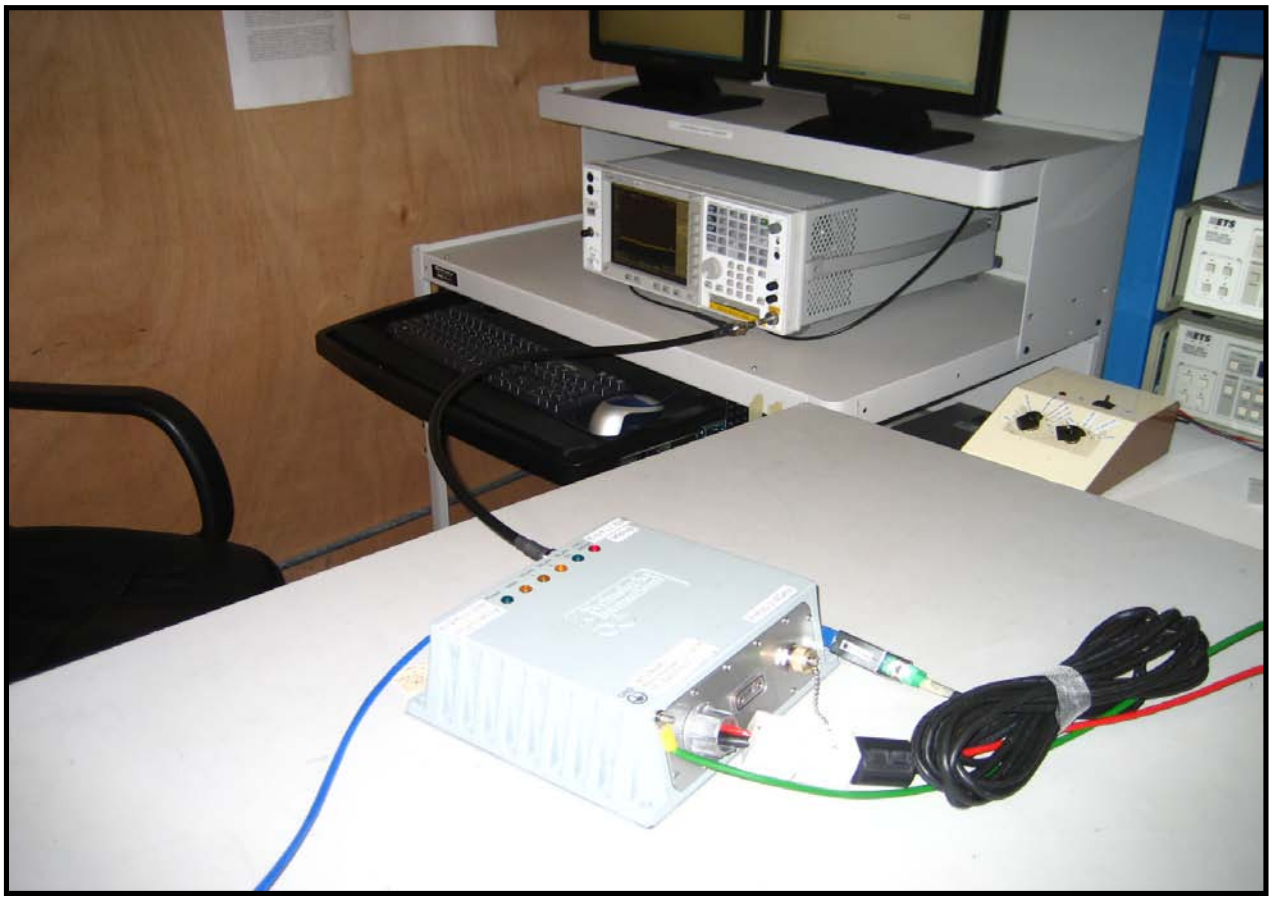
802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	15.92 dBm	**Limit:**	≤ 23 dBm



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	16.46 dBm	**Limit:**	≤ 23 dBm







BAND EDGE COMPLIANCE

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

MODES OF OPERATION INVESTIGATED
Transmitting at 2462 MHz.
Transmitting at 2412 MHz.

DATA RATES INVESTIGATED
1 MBpS
11 MBpS
6 MBpS
36 MBpS
54 MBpS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	13
Power Sensor	Hewlett-Packard	8481H	SPB	11/1/2006	13
Multimeter	Fluke	79 Series DMM	MMI	12/14/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	11/1/2006	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.

NORTHWEST EMC

BAND EDGE COMPLIANCE

XMit 2007.03.30

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/03/07
Customer:	Honeywell	Temperature:	22c°C
Attendees:	David Shipley	Humidity:	42%
Project:	None	Barometric Pres.:	29.97
Tested by:	Jaemi Suh	Power: 24 VDC	Job Site: OCO3

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Power Setting = (40) in Test Software.

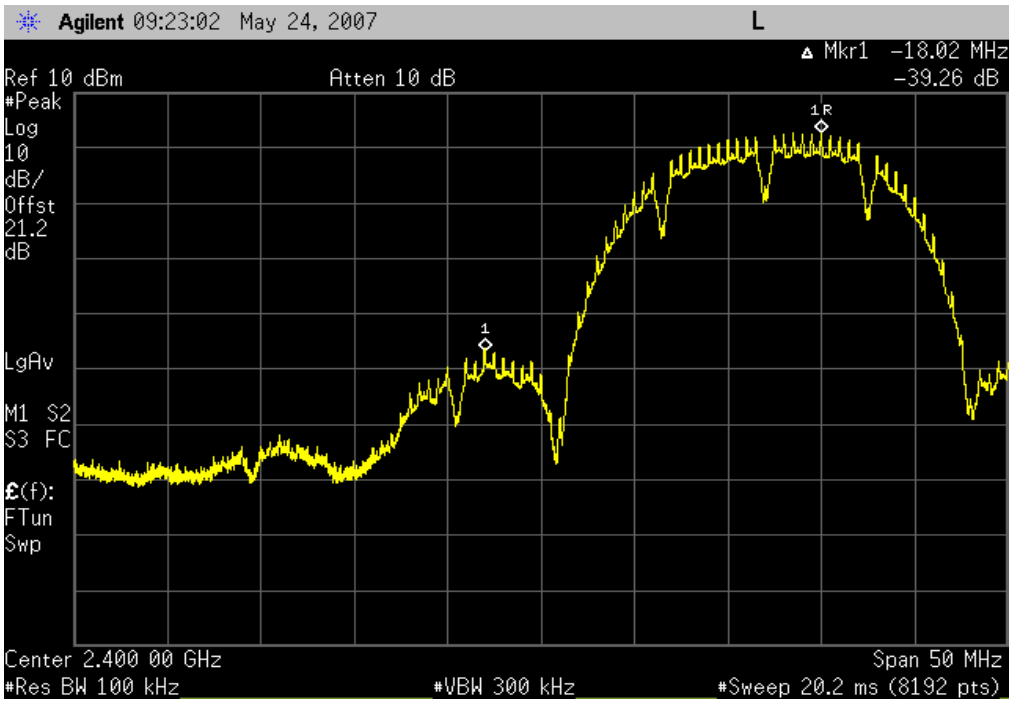
DEVIATIONS FROM TEST STANDARD

Configuration #	1	Signature

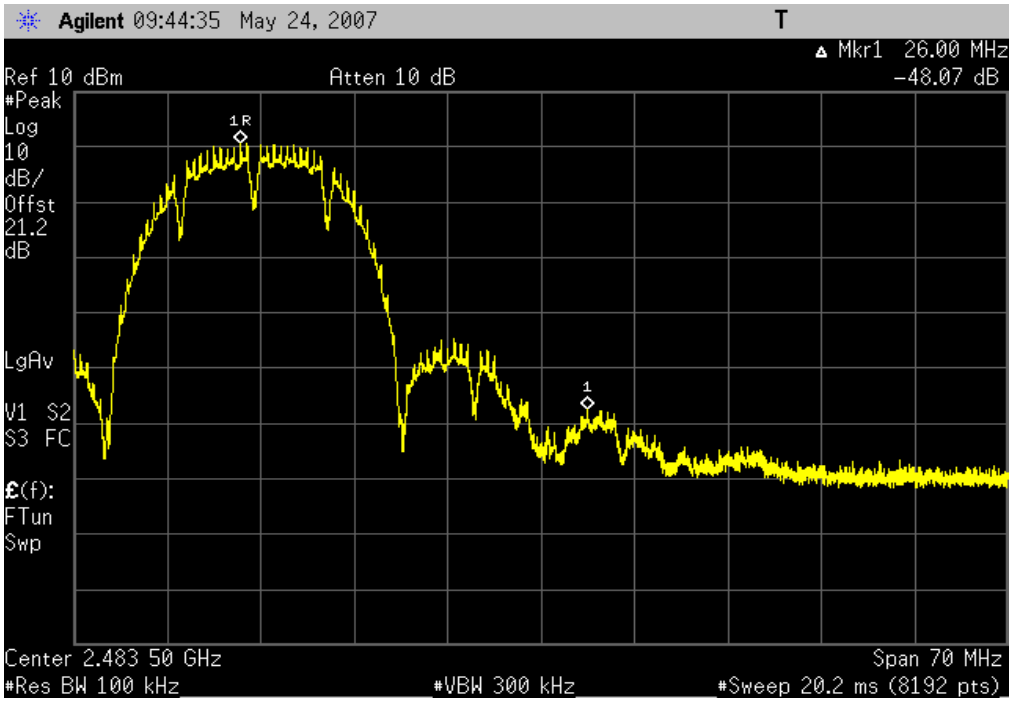
		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	- 39.26 dBc	≤ -20 dBc	Pass
	High Channel	- 48.07 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel	- 40.48 dBi	≤ -20 dBc	Pass
	High Channel	- 47.53 dBi	≤ -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel	- 38.91 dBc	≤ -20 dBc	Pass
	High Channel	- 46.27 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel	- 39.509 dBc	≤ -20 dBc	Pass
	High Channel	- 47.43 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel	- 39.24 dBc	≤ -20 dBc	Pass
	High Channel	- 49.87 dBc	≤ -20 dBc	Pass

BAND EDGE COMPLIANCE

802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	- 39.26 dBc	**Limit:**	≤ -20 dBc

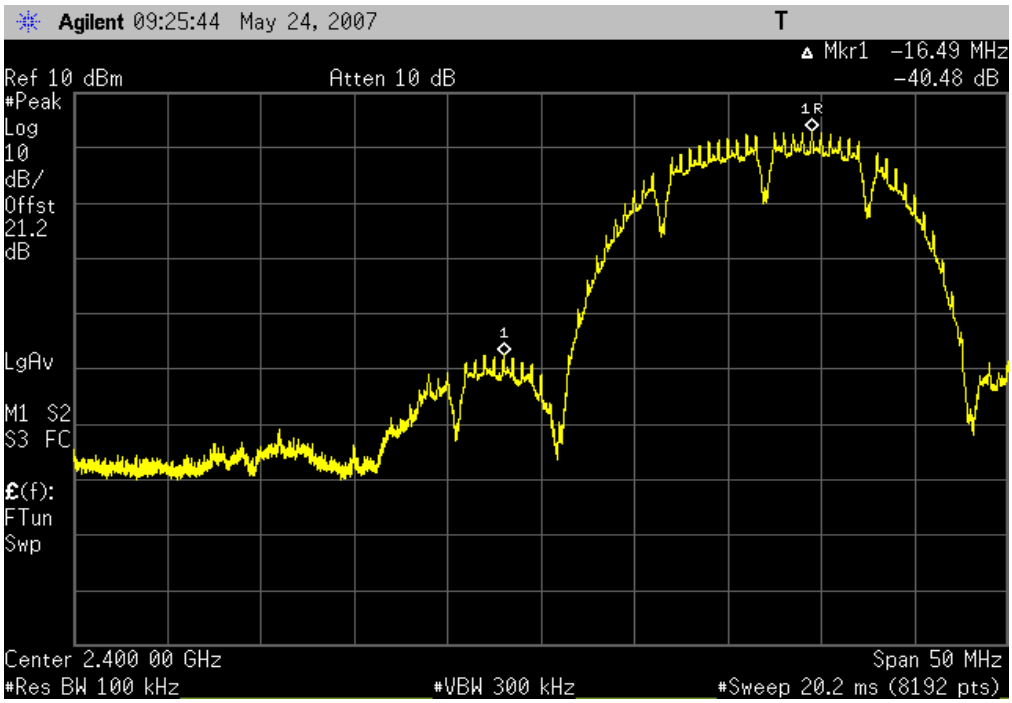


802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	- 48.07 dBc	**Limit:**	≤ -20 dBc

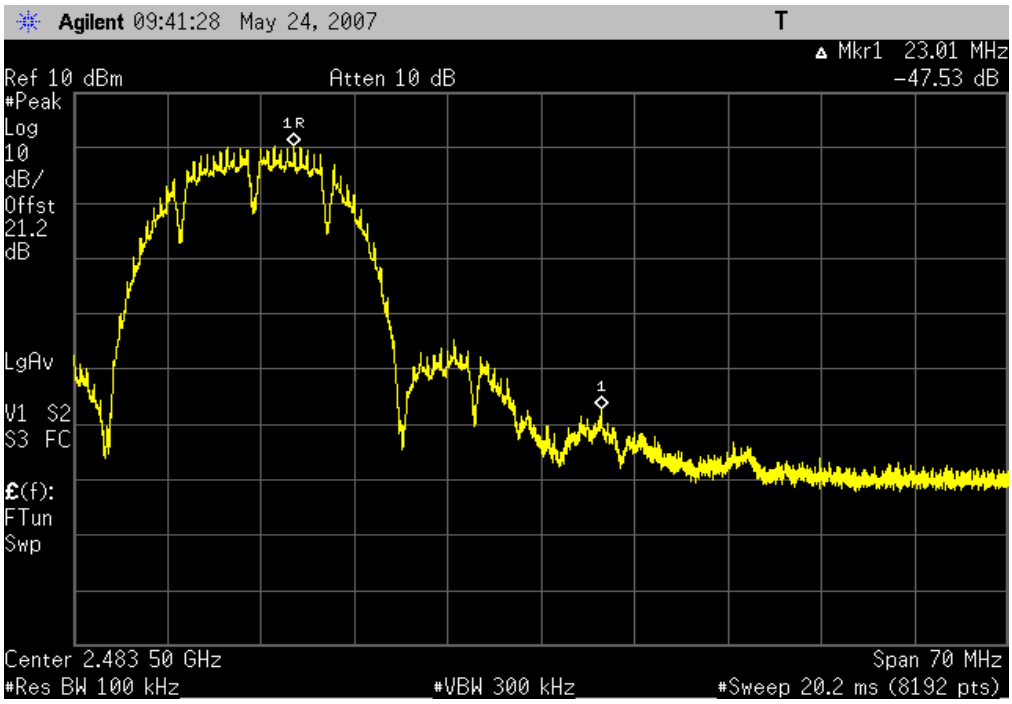


BAND EDGE COMPLIANCE

802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	- 40.48 dBi	**Limit:**	≤ -20 dBc

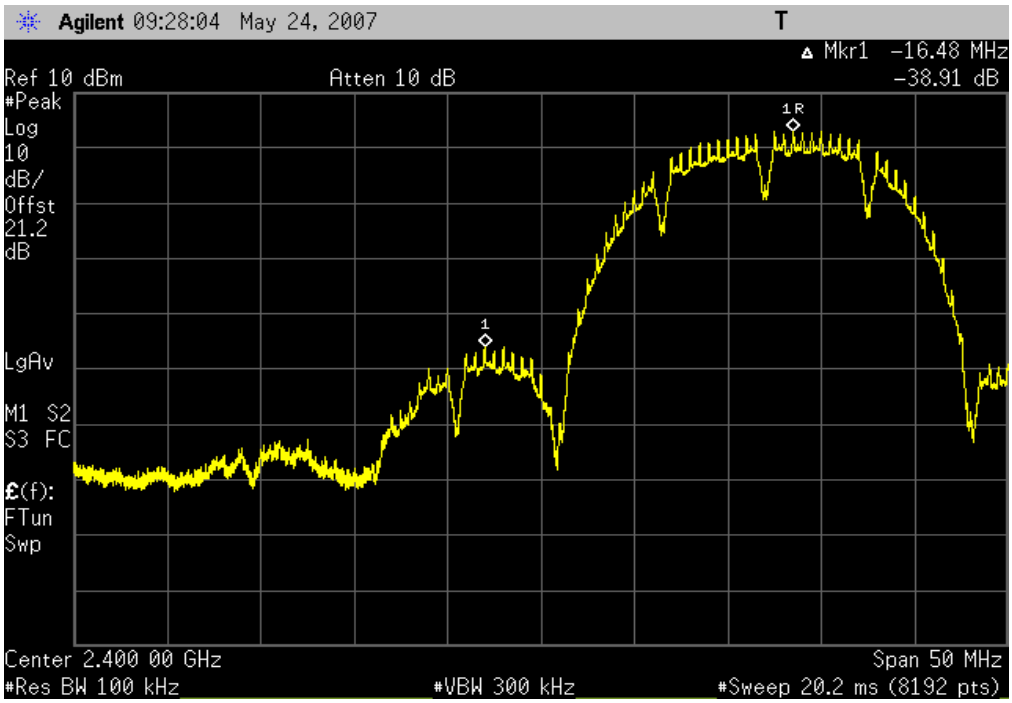


802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	- 47.53 dBi	**Limit:**	≤ -20 dBc

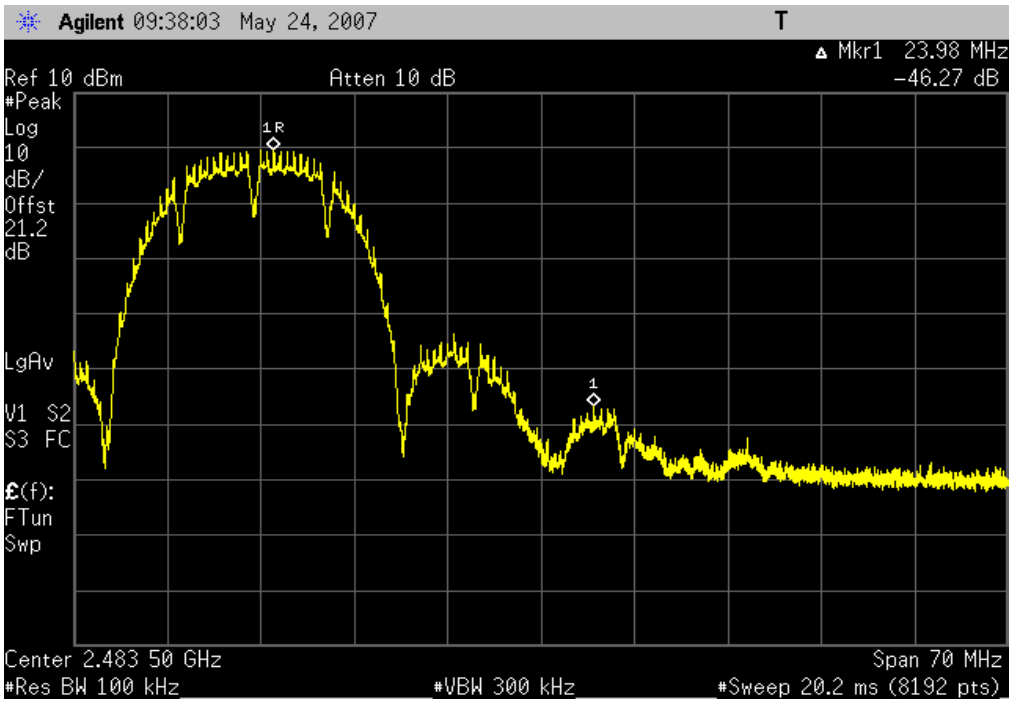


BAND EDGE COMPLIANCE

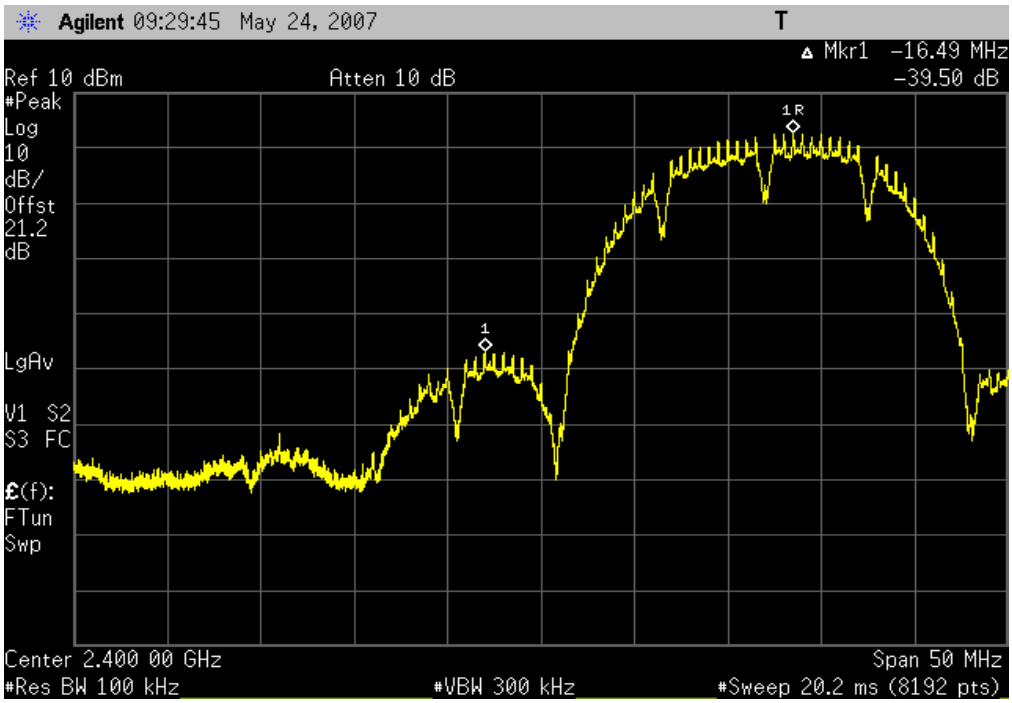
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	- 38.91 dBc	**Limit:**	≤ -20 dBc



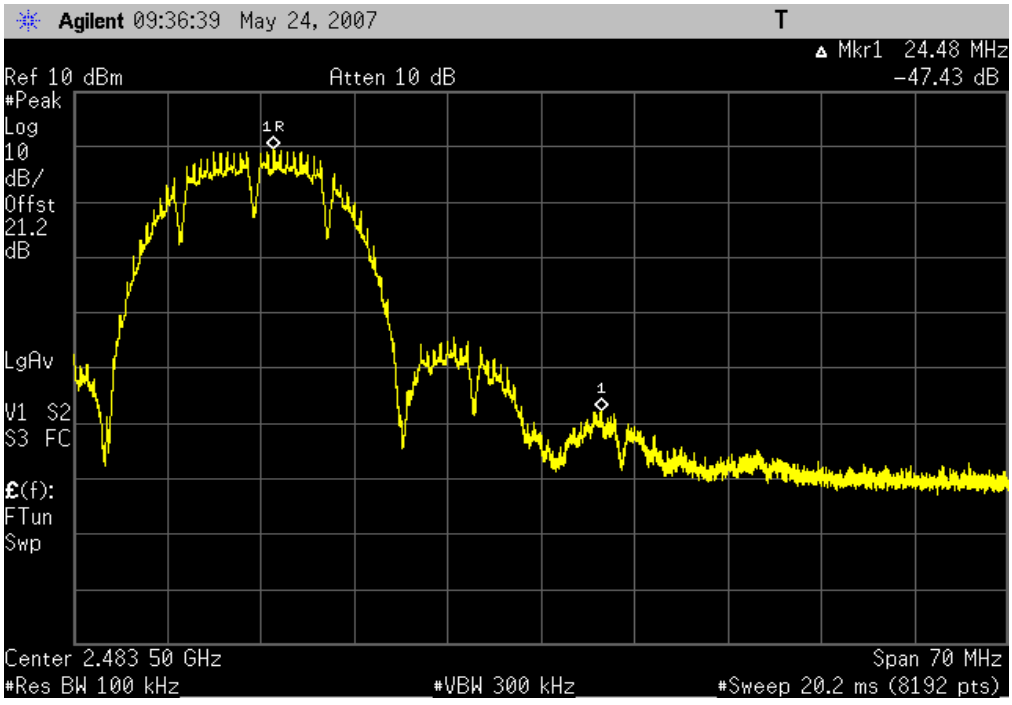
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	- 46.27 dBc	**Limit:**	≤ -20 dBc



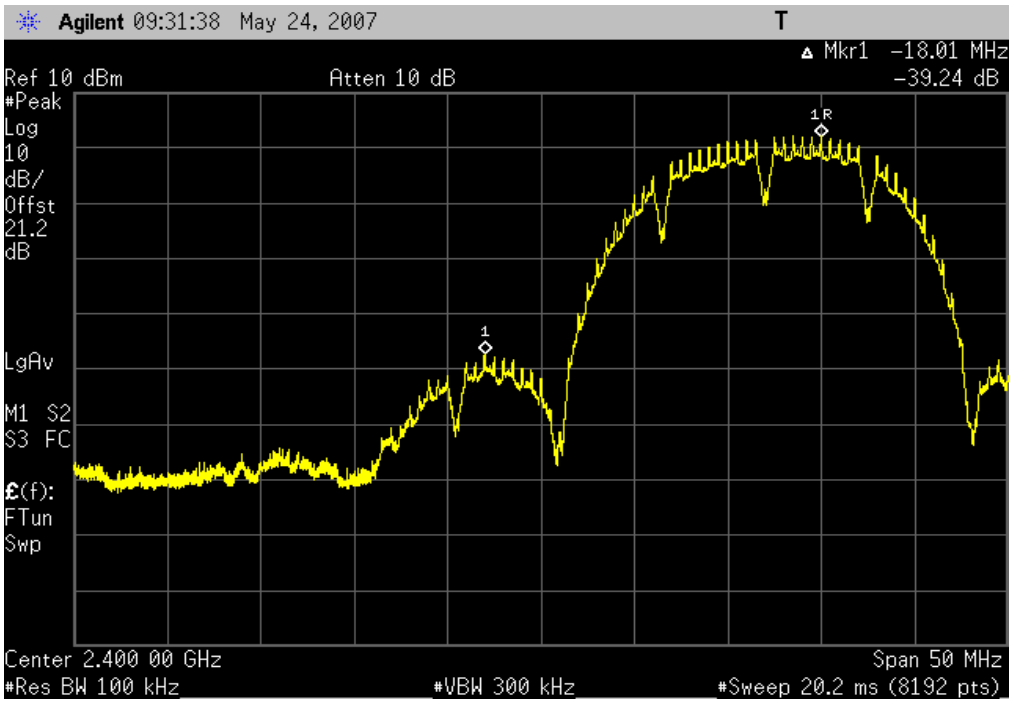
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	- 39.509 dBc	**Limit:**	≤ -20 dBc



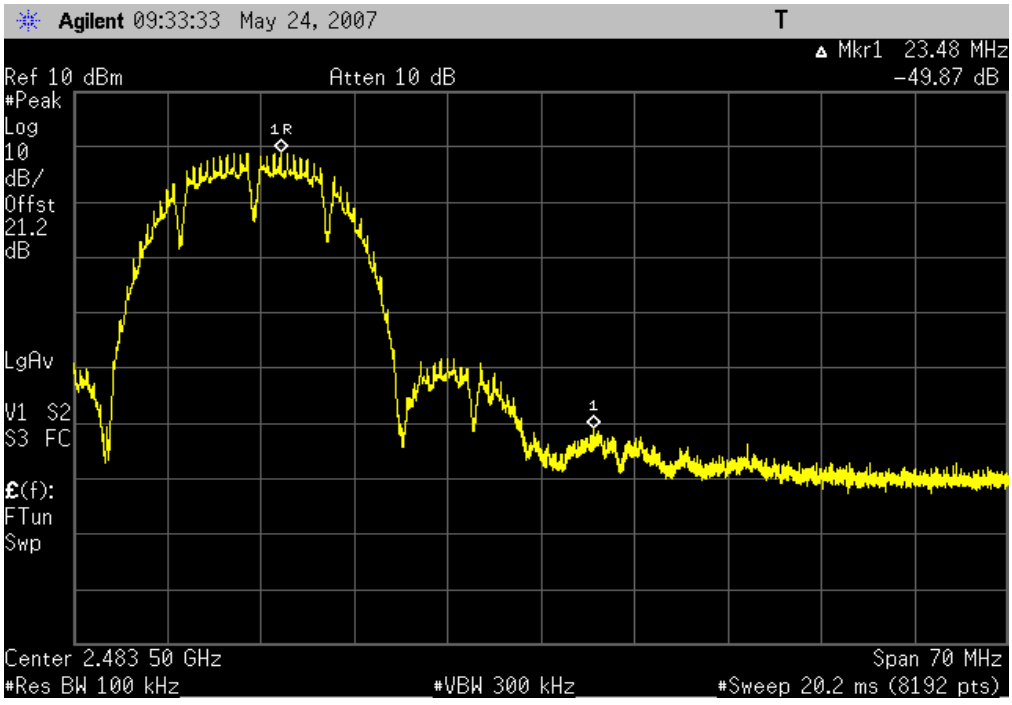
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	- 47.43 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	- 39.24 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	- 49.87 dBc	**Limit:**	≤ -20 dBc



POWER SPECTRAL DENSITY

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

MODES OF OPERATION INVESTIGATED
Transmitting at 2462 MHz.
Transmitting at 2437 MHz.
Transmitting at 2412 MHz.

DATA RATES INVESTIGATED
1 MBpS
11 MBpS
6 MBpS
36 MBpS
54 MBpS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	13
Power Sensor	Hewlett-Packard	8481H	SPB	11/1/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	11/1/2006	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 and high transmit frequencies. The measurement was made using a Biconilog antenna and a spectrum analyzer. The EUT was transmitting at its maximum data. Per the procedure outlined in FCC 97-114, 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 x 10^6 ÷ 3 x 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 34.8 dB for correction to 3 kHz."

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2007.03.30

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/04/07
Customer:	Honeywell	Temperature:	21°C
Attendees:	David Shipley	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Jaemi Suh	Power: 24 VDC	Job Site: OC03

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074

COMMENTS

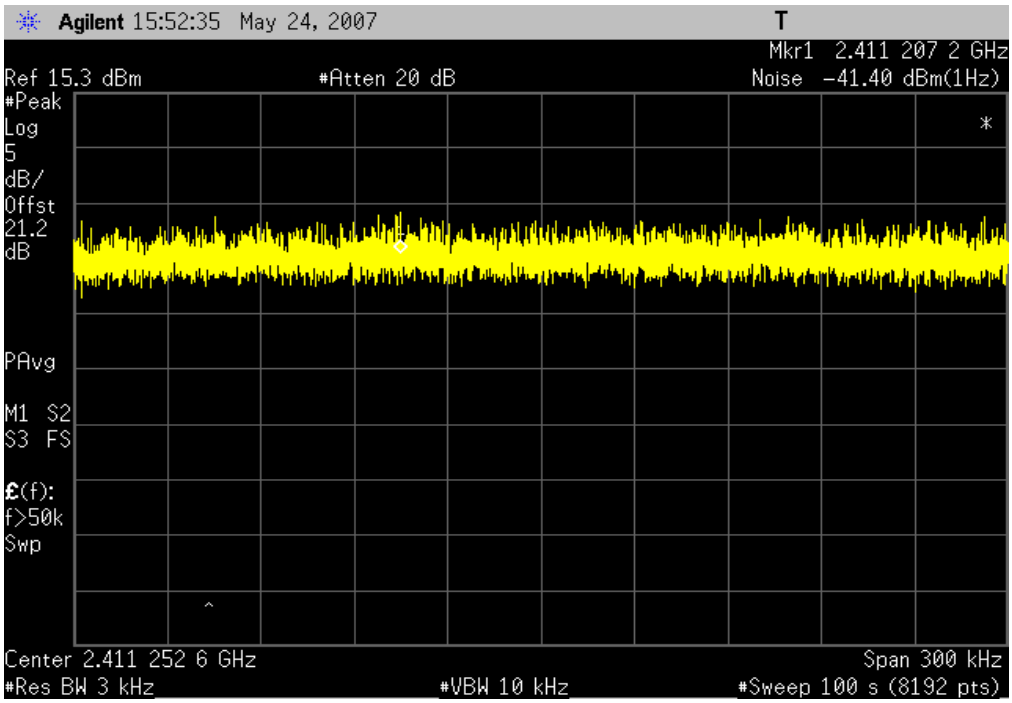
Power Output Setting on Computer = (40).

DEVIATIONS FROM TEST STANDARD

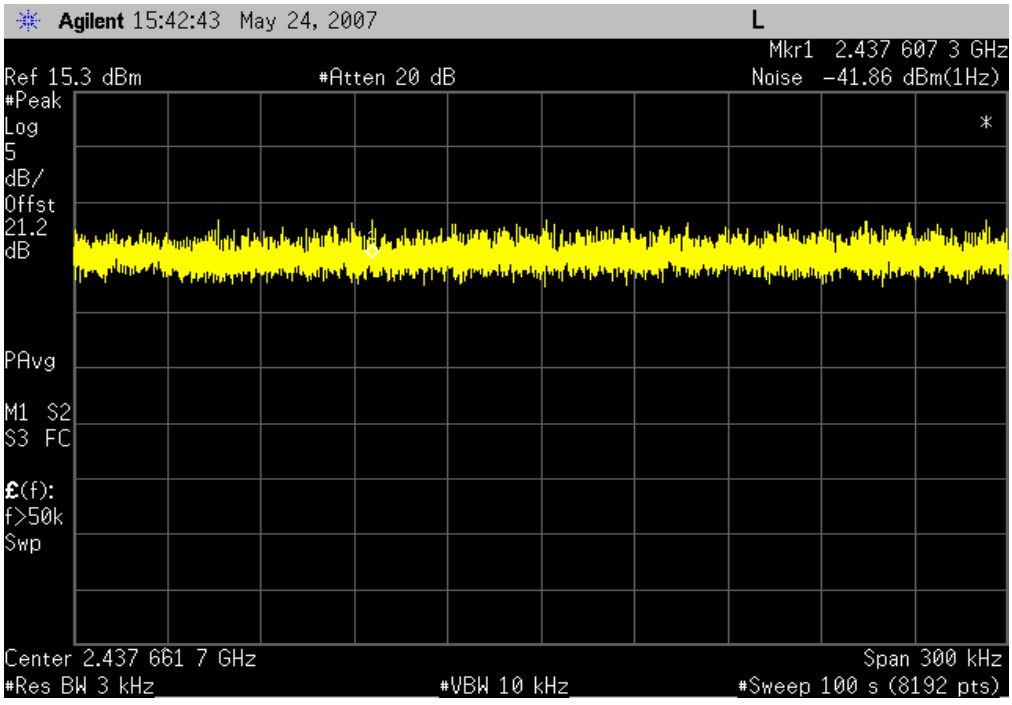
Configuration #	1	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel	-6.6 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	-7.06 dBm/ 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	- 17.05 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(b) 11 Mbps				
	Low Channel	- 6.26 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	- 6.88 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	-17.94 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 6 Mbps				
	Low Channel	- 6.71 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	- 7.44 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	- 17.55 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 36 Mbps				
	Low Channel	- 6.65 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	- 7.75 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	- 17.02 dBm / 3 kHz	8 dBm / 3 kHz	Pass
802.11(g) 54 Mbps				
	Low Channel	- 5.79 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel	- 8.1 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel	- 7.45 dBm / 3 kHz	8 dBm / 3 kHz	Pass

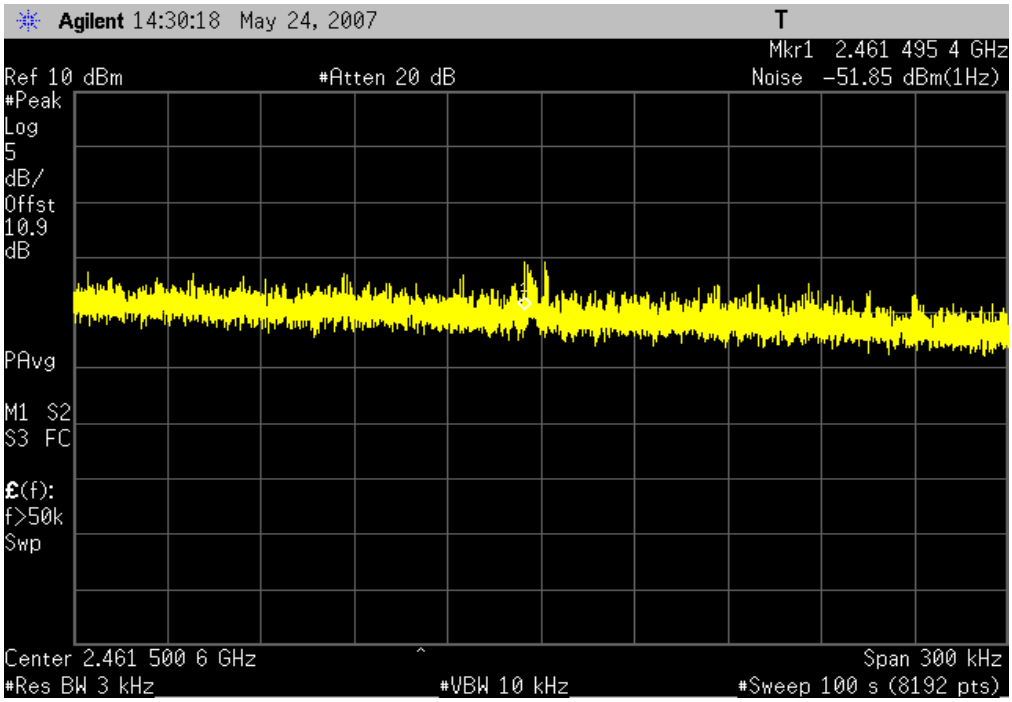
802.11(b) 1 Mbps, Low Channel					
Result:	Pass	**Value:**	-6.6 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



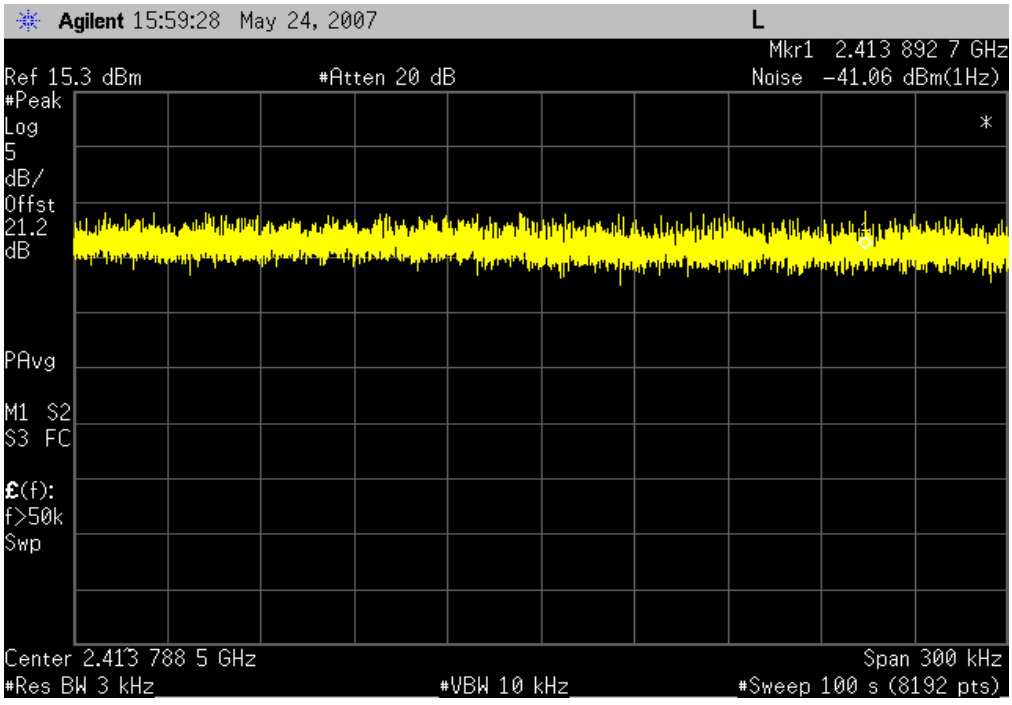
802.11(b) 1 Mbps, Mid Channel					
Result:	Pass	**Value:**	-7.06 dBm/ 3 kHz	**Limit:**	8 dBm / 3 kHz



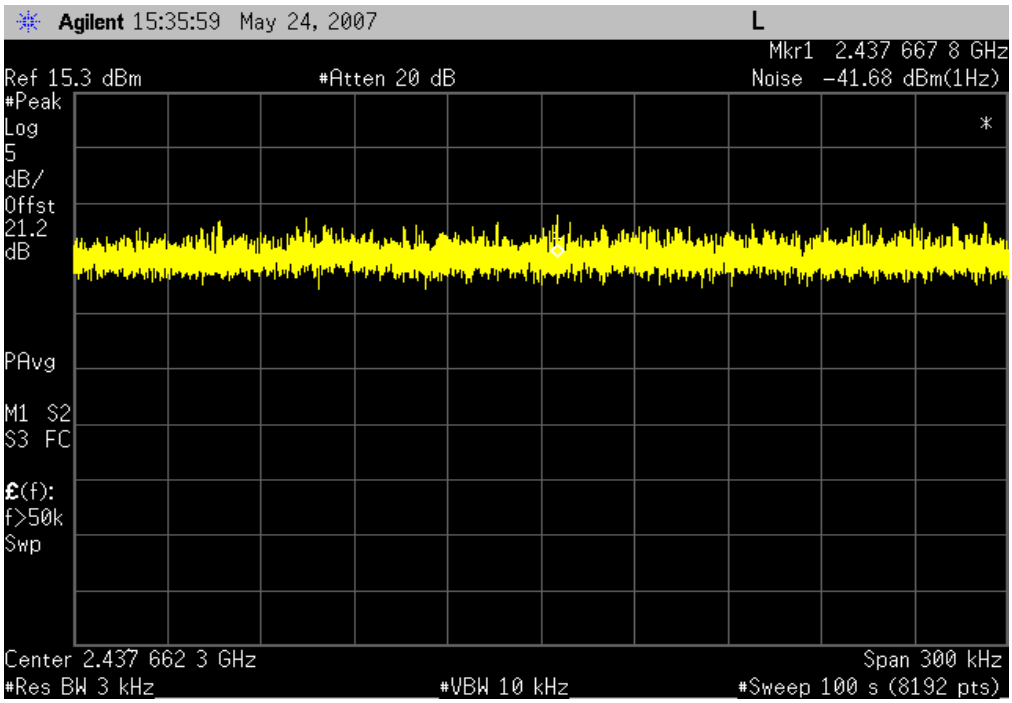
802.11(b) 1 Mbps, High Channel					
Result:	Pass	**Value:**	- 17.05 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



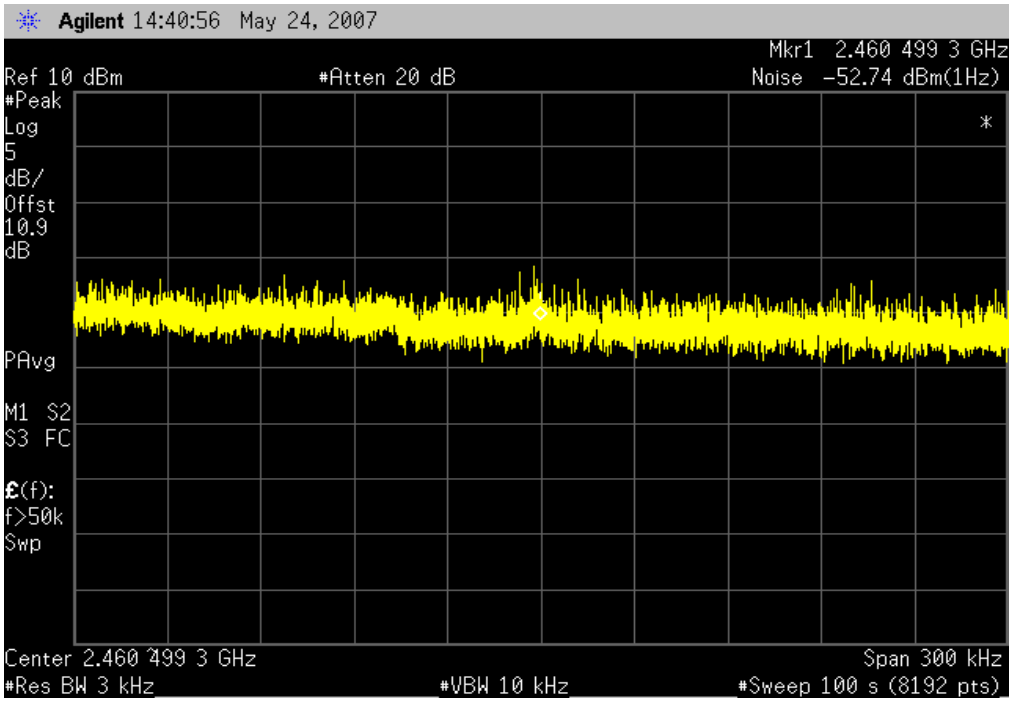
802.11(b) 11 Mbps, Low Channel					
Result:	Pass	**Value:**	- 6.26 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



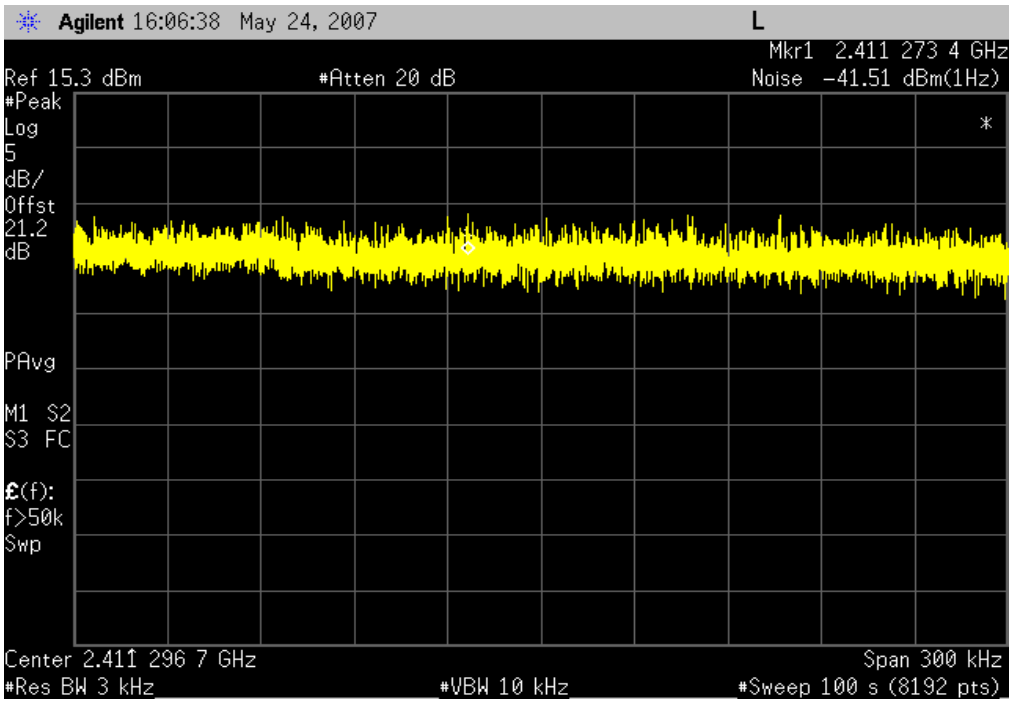
802.11(b) 11 Mbps, Mid Channel					
Result:	Pass	**Value:**	- 6.88 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



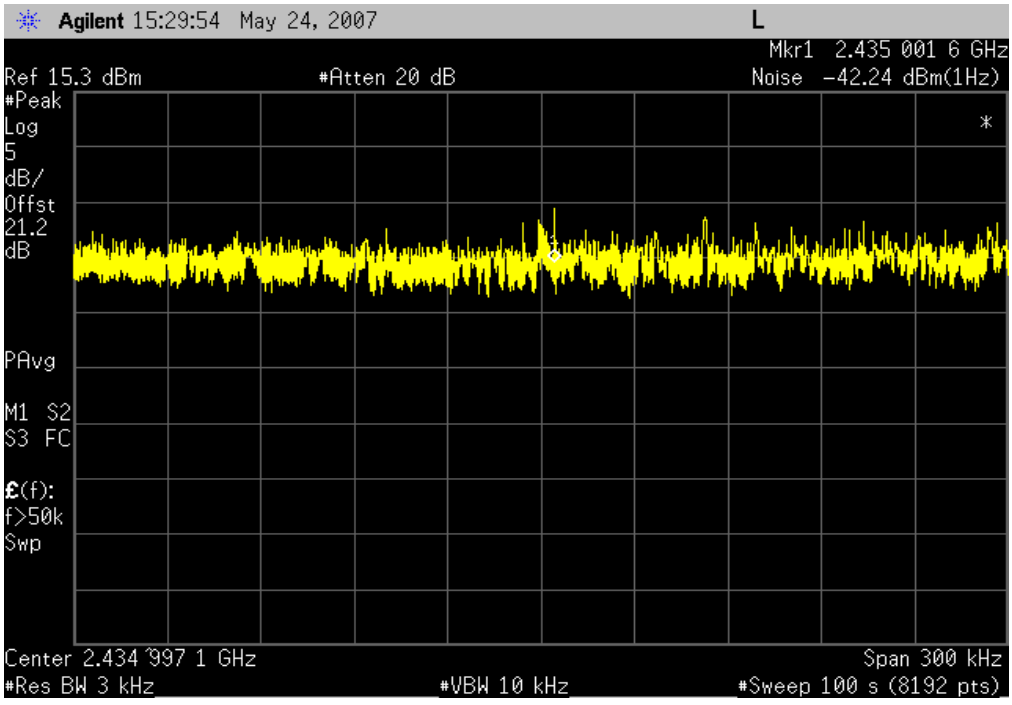
802.11(b) 11 Mbps, High Channel					
Result:	Pass	**Value:**	-17.94 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



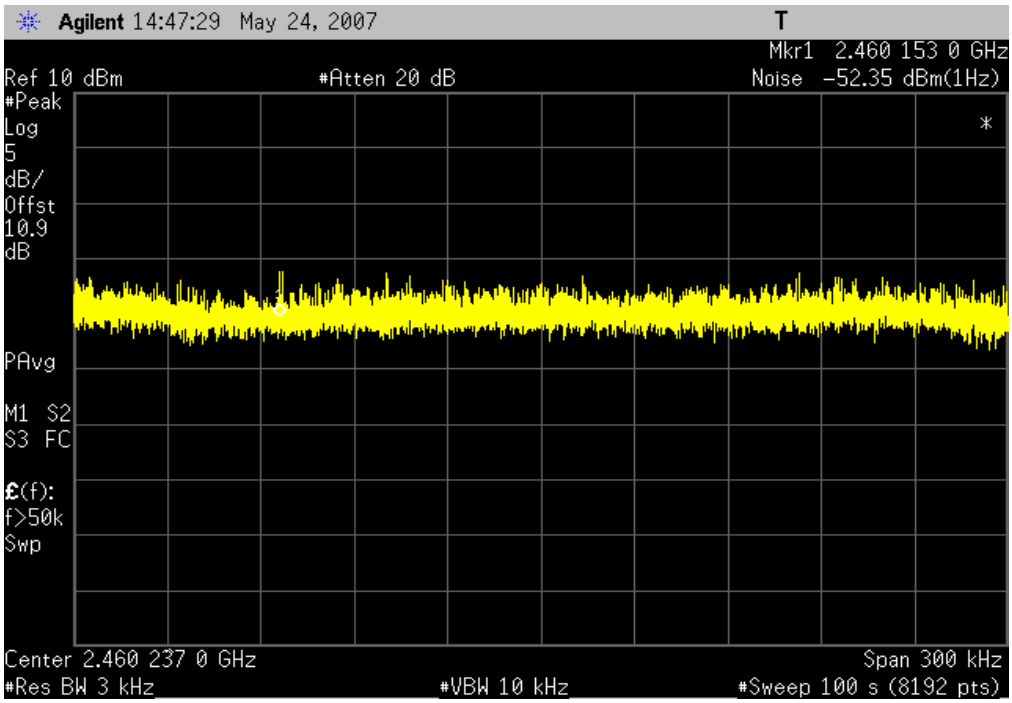
802.11(g) 6 Mbps, Low Channel					
Result:	Pass	**Value:**	- 6.71 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



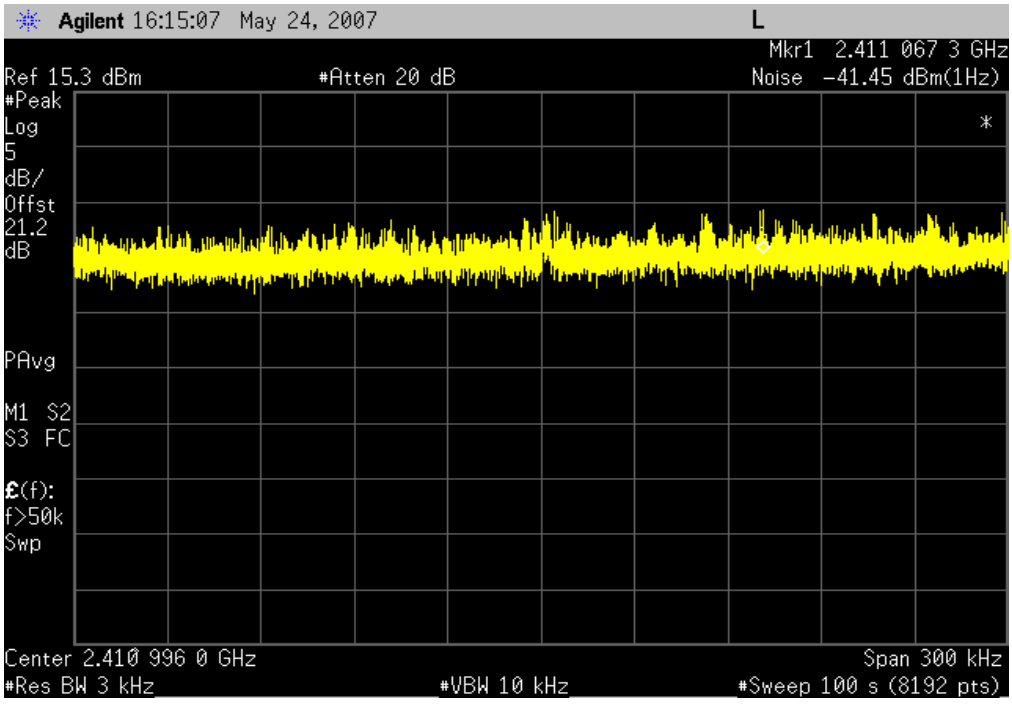
802.11(g) 6 Mbps, Mid Channel					
Result:	Pass	**Value:**	- 7.44 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



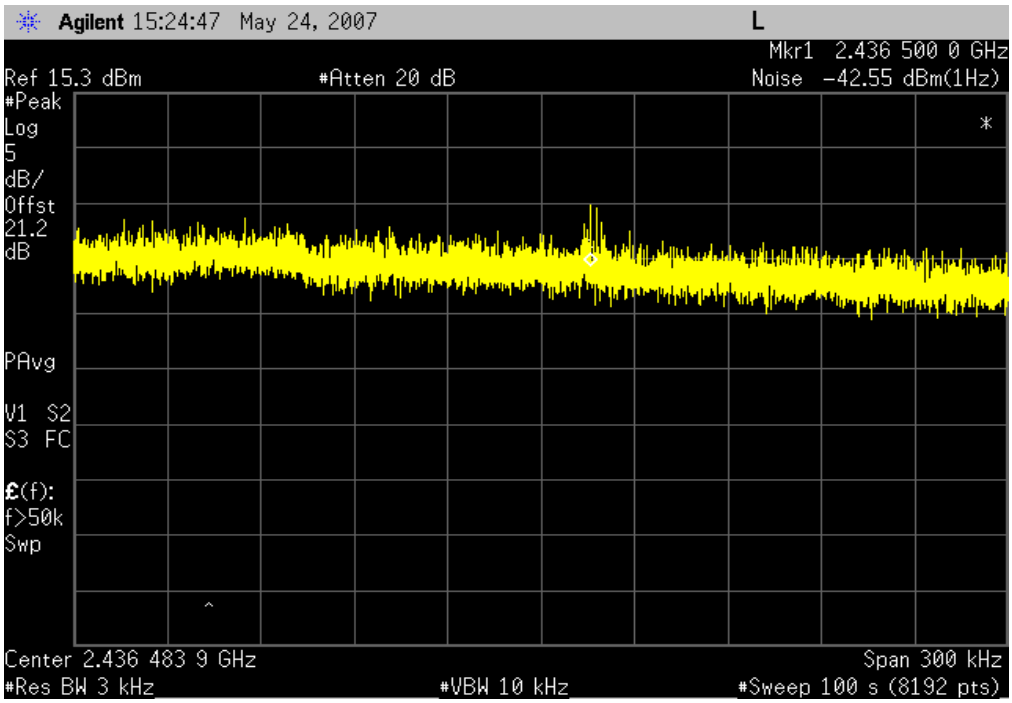
802.11(g) 6 Mbps, High Channel					
Result:	Pass	**Value:**	- 17.55 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



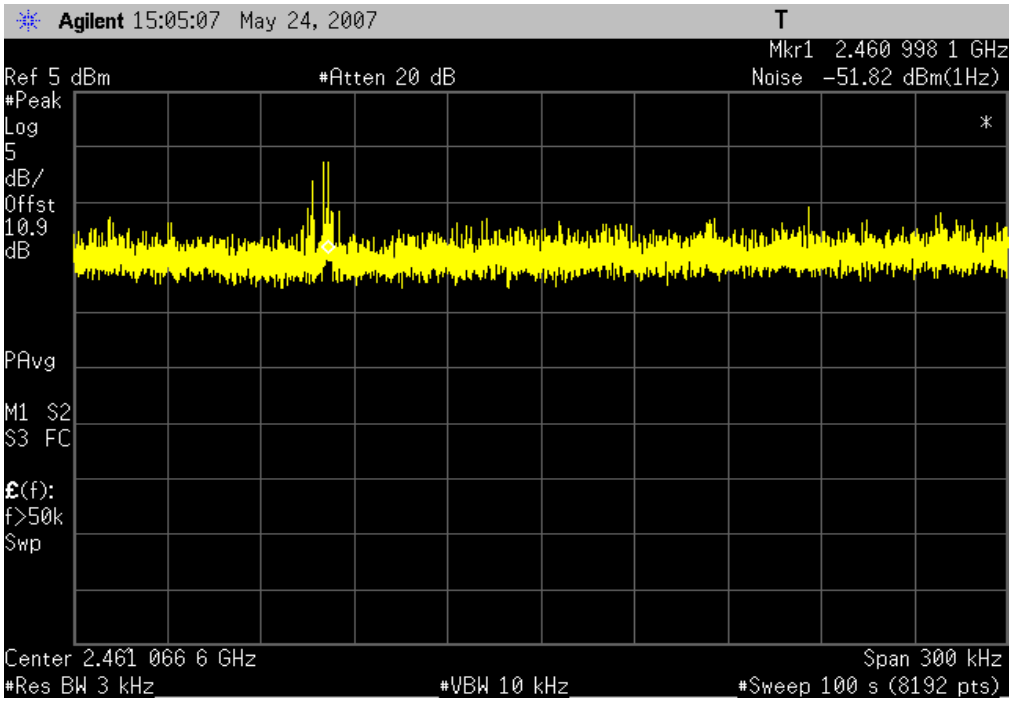
802.11(g) 36 Mbps, Low Channel					
Result:	Pass	**Value:**	- 6.65 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



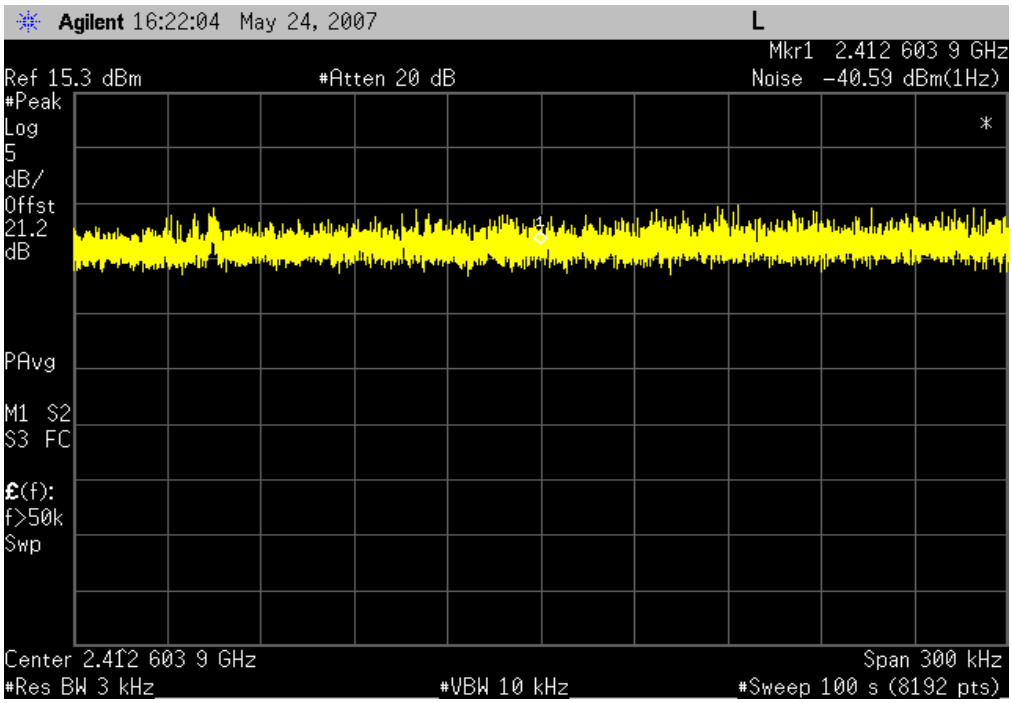
802.11(g) 36 Mbps, Mid Channel					
Result:	Pass	**Value:**	- 7.75 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



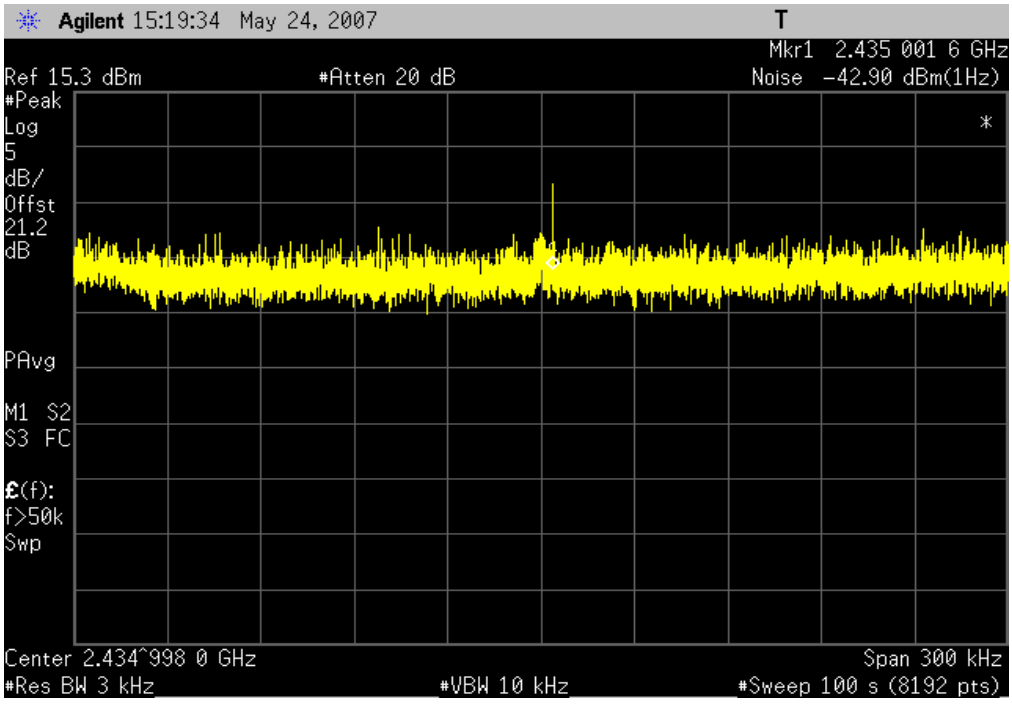
802.11(g) 36 Mbps, High Channel					
Result:	Pass	**Value:**	- 17.02 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



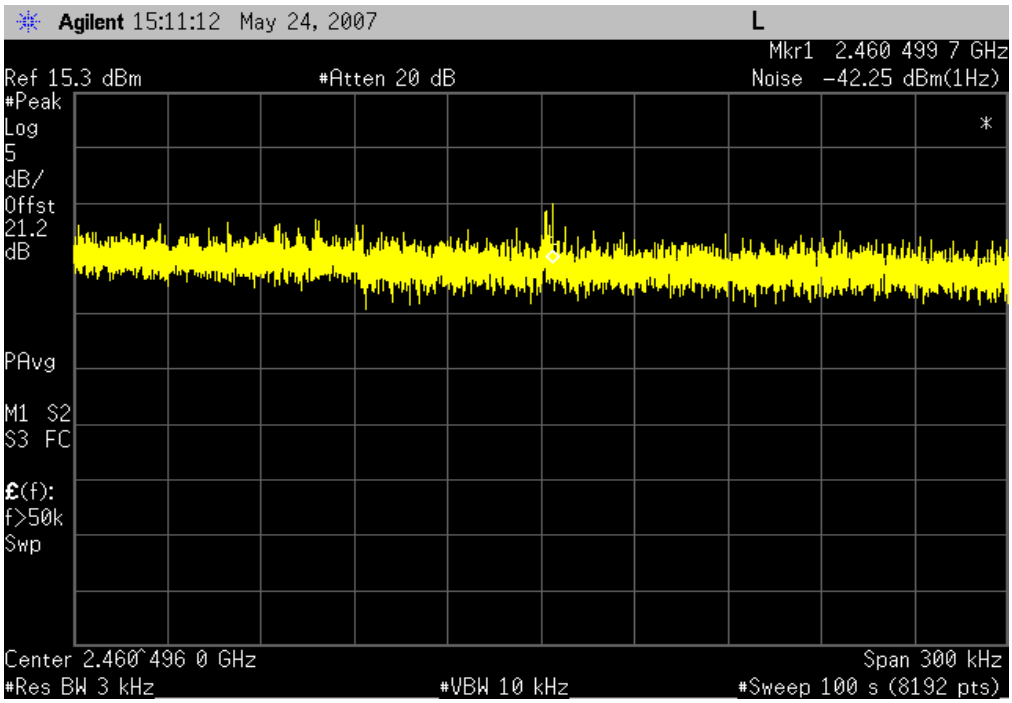
802.11(g) 54 Mbps, Low Channel					
Result:	Pass	**Value:**	- 5.79 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

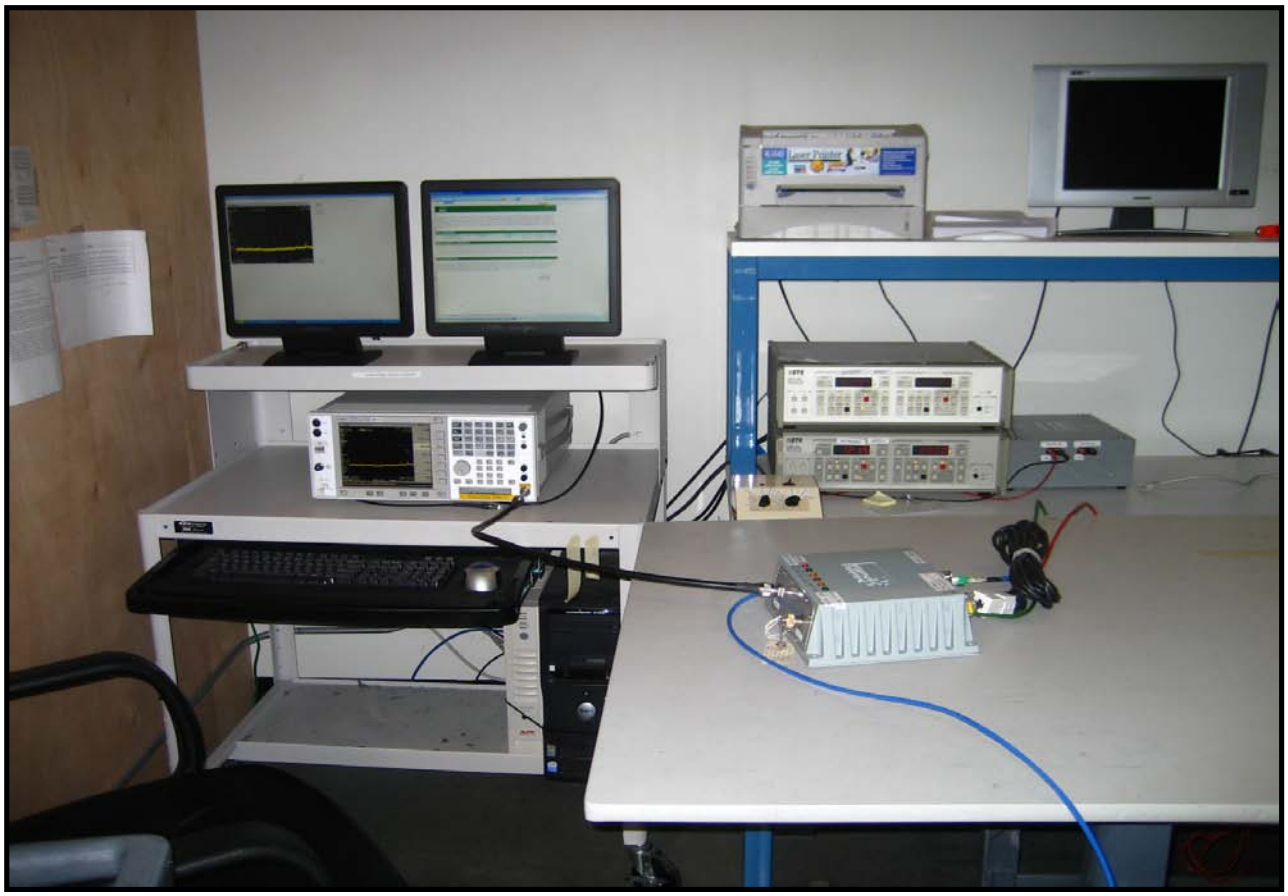


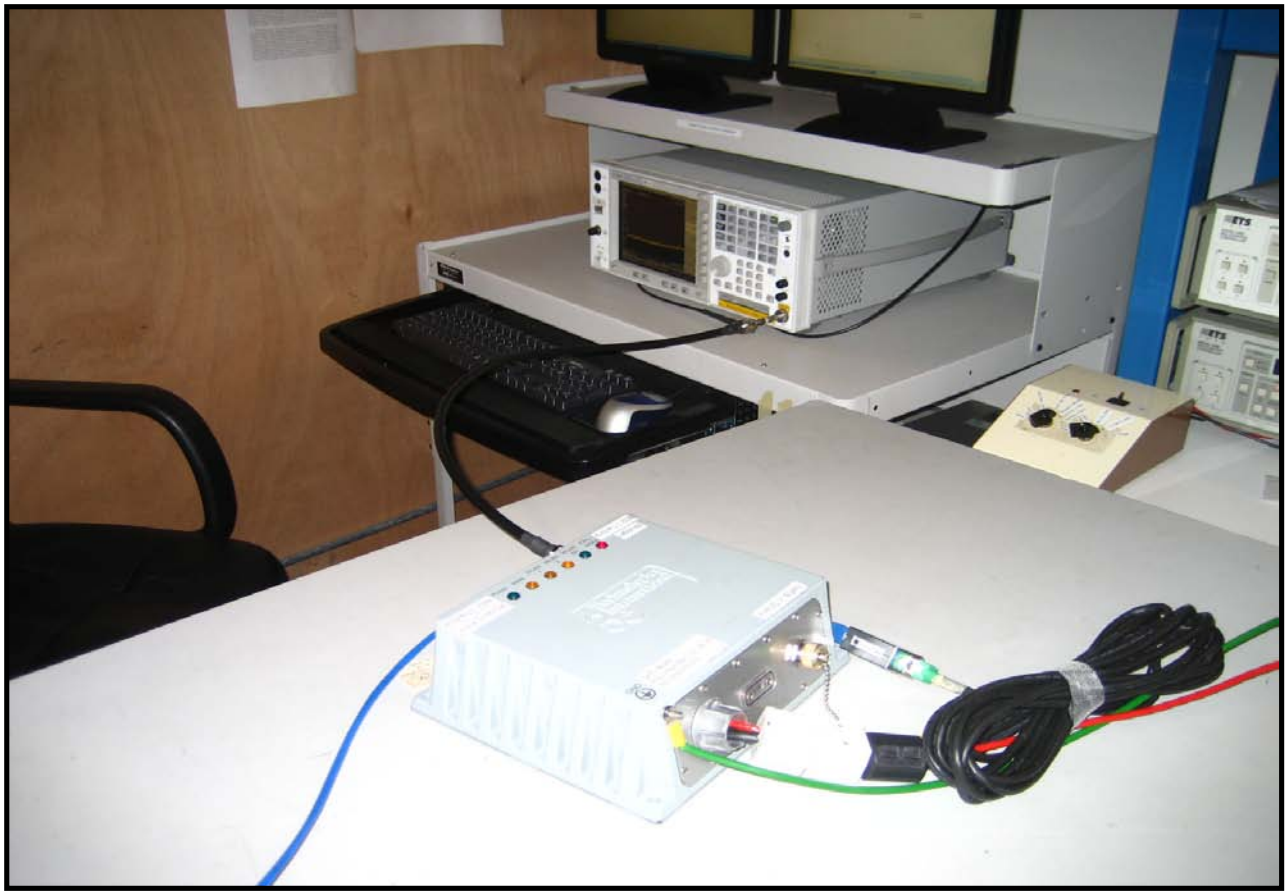
802.11(g) 54 Mbps, Mid Channel					
Result:	Pass	**Value:**	- 8.1 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



802.11(g) 54 Mbps, High Channel					
Result:	Pass	**Value:**	- 7.45 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz







SPURIOUS CONDUCTED EMISSIONS

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

MODES OF OPERATION INVESTIGATED
Transmitting at 2462 MHz.
Transmitting at 2437 MHz.
Transmitting at 2412 MHz.

DATA RATES INVESTIGATED
1 MBpS
11 MBpS
6 MBpS
36 MBpS
54 MBpS

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	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 spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2007.03.30

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)			Work Order:	HONE0011
Serial Number:	None			Date:	05/24/07
Customer:	Honeywell			Temperature:	23c°C
Attendees:	David Shipley			Humidity:	32%
Project:	None			Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power:	24 VDC	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2006	ANSI C63.4:2003 KDB No. 558074

COMMENTS

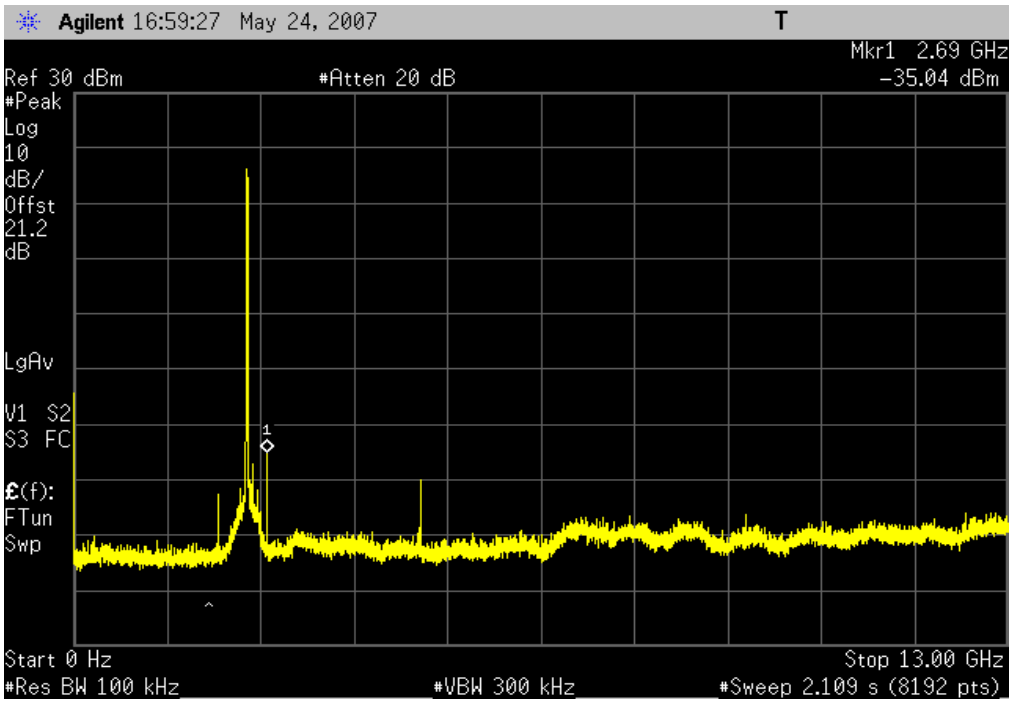
PC Power Setting = (40). High Output Power.

DEVIATIONS FROM TEST STANDARD

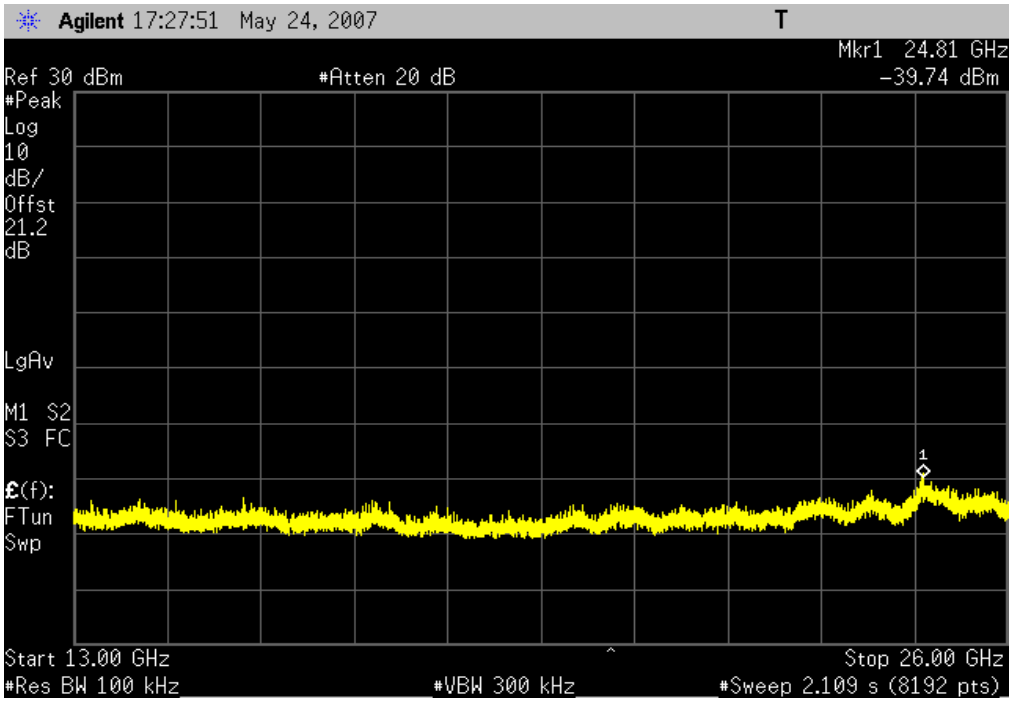
Configuration #	1	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel			
	0 - 13 GHz	- 35.04 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 13 GHz	- 34.49 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 13 GHz	- 33.92 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel			
	0 - 13 GHz	- 35.97 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 13 GHz	- 35.3	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 13 GHz	- 33.16	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel			
	0 - 13 GHz	- 35.71	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 13 GHz	- 34.54 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 13 GHz	- 33.65 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel			
	0 - 13 GHz	- 36.05 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 13 GHz	- 34.46 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 13 GHz	- 34.12 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel			
	0 - 13 GHz	- 35.54 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 13 GHz	- 34.97 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 13 GHz	- 34.15 dBc	≤ -20 dBc	Pass
	13 - 26 GHz	≤ -35 dBc	≤ -20 dBc	Pass

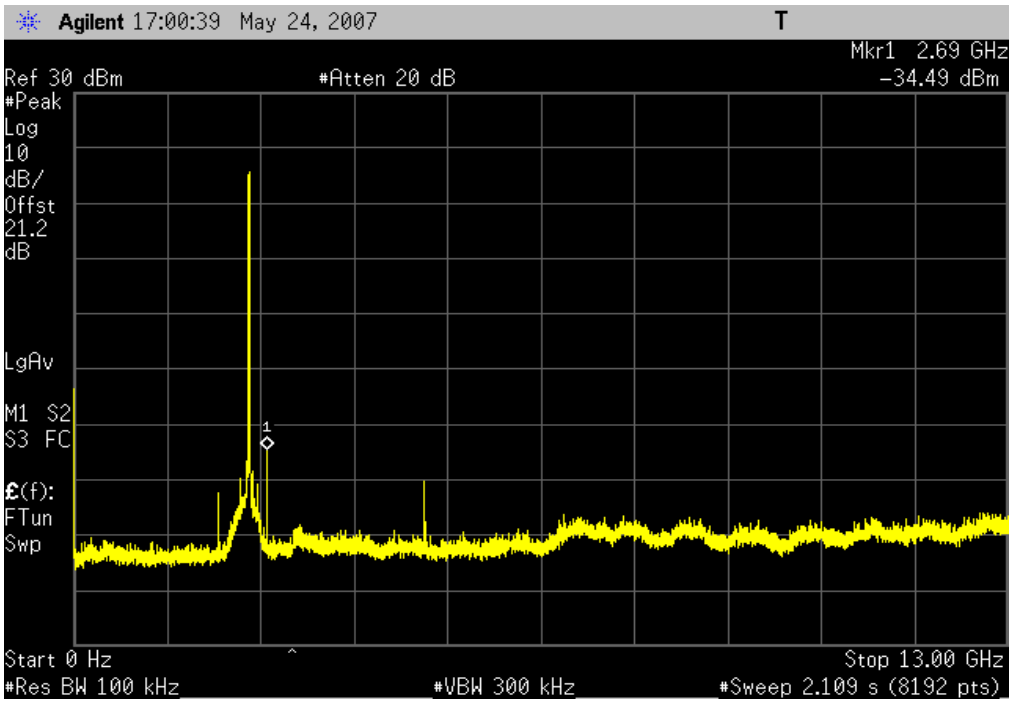
802.11(b) 1 Mbps, Low Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 35.04 dBc	**Limit:**	≤ -20 dBc



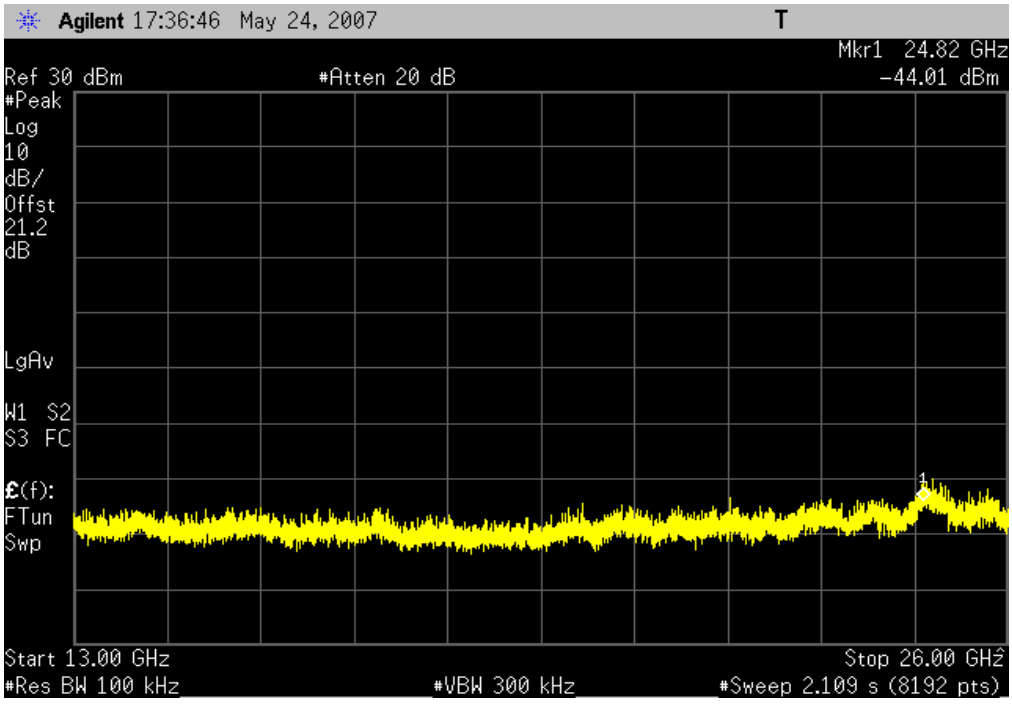
802.11(b) 1 Mbps, Low Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



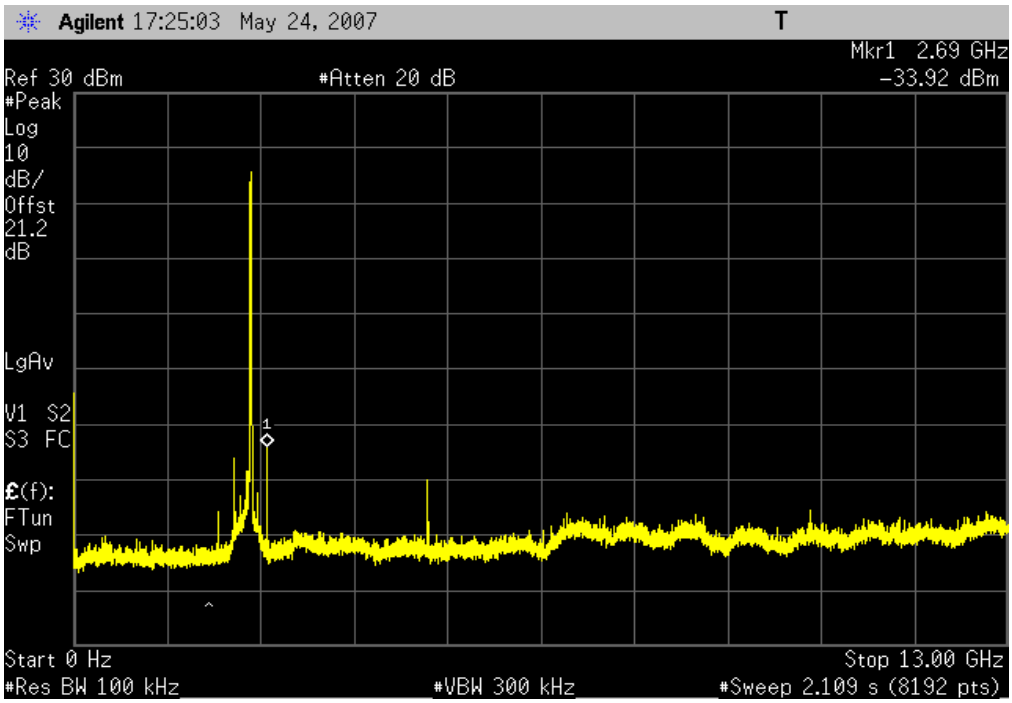
802.11(b) 1 Mbps, Mid Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.49 dBc	**Limit:**	≤ -20 dBc



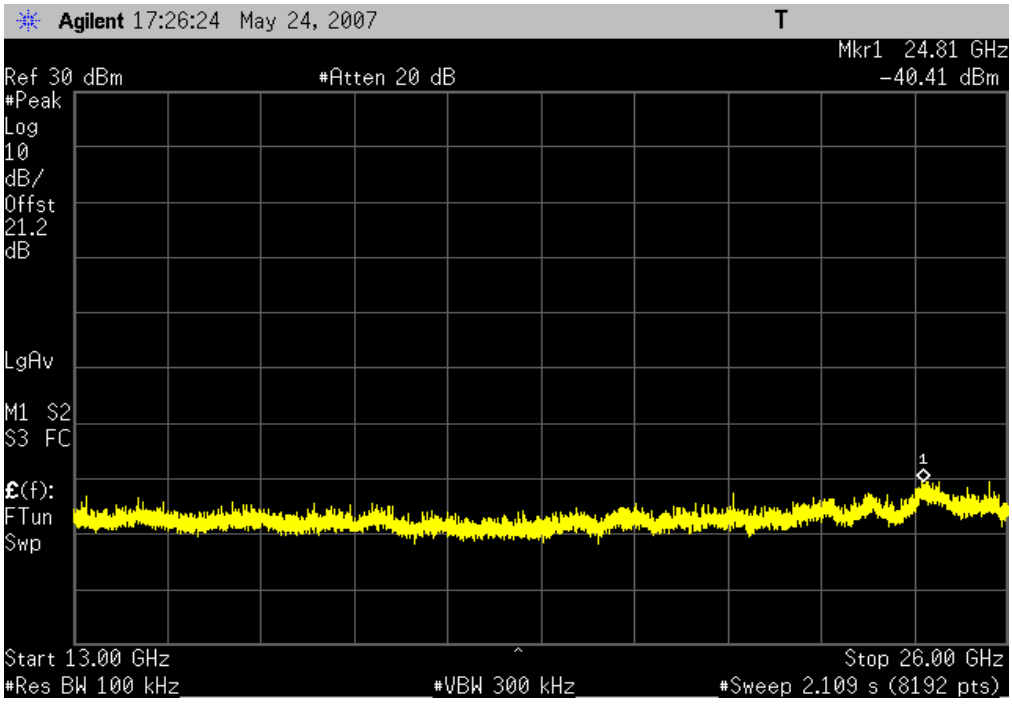
802.11(b) 1 Mbps, Mid Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



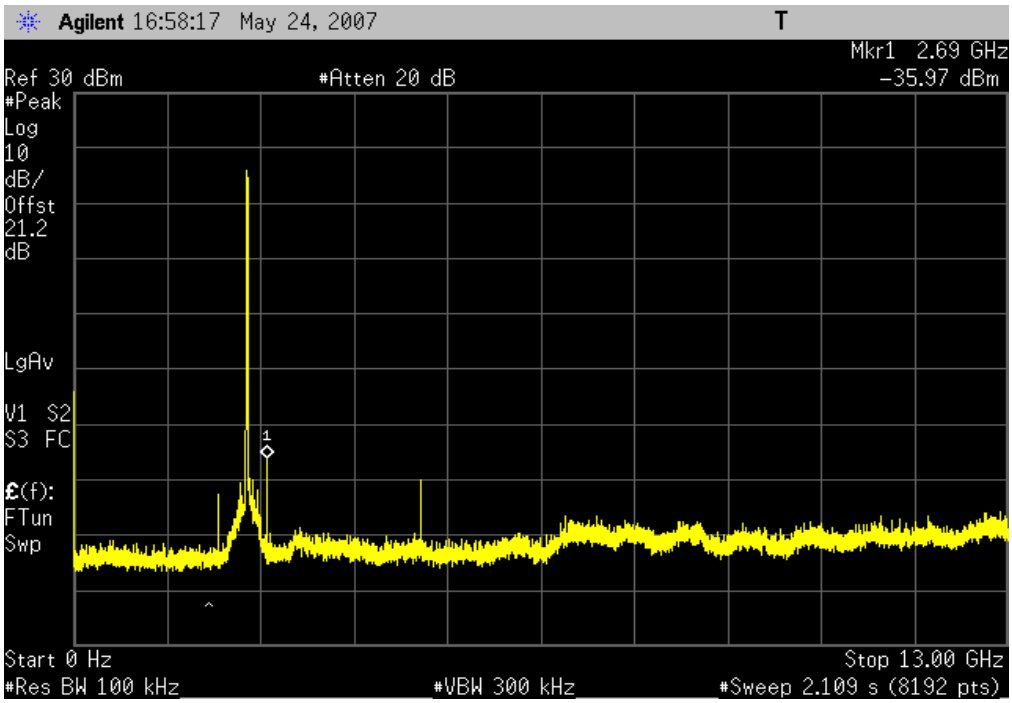
802.11(b) 1 Mbps, High Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 33.92 dBc	**Limit:**	≤ -20 dBc



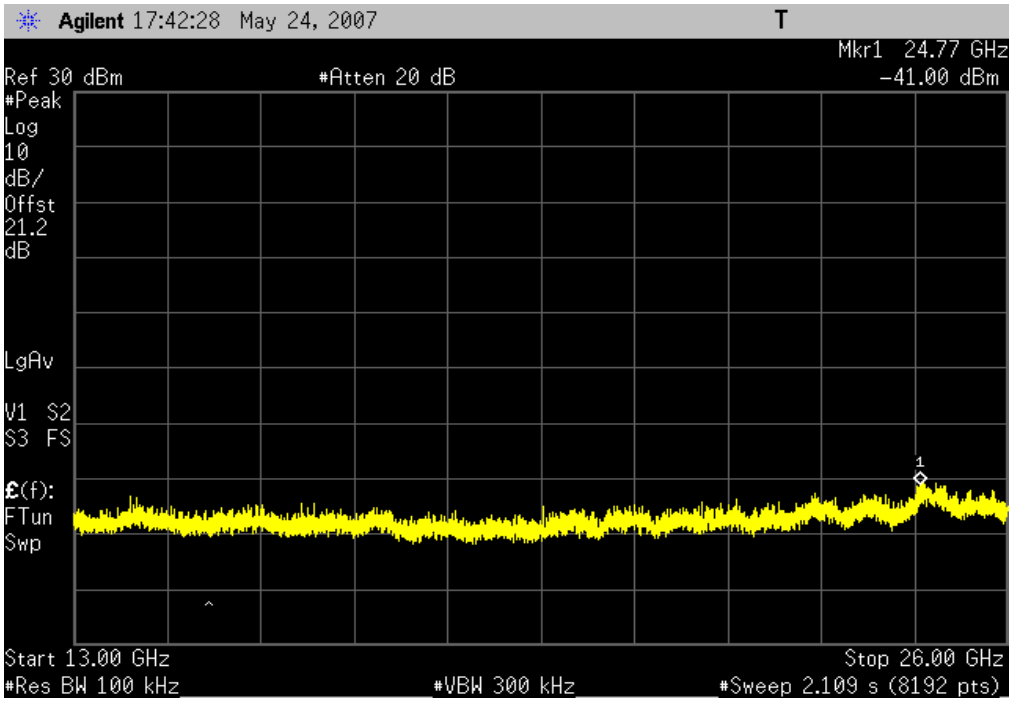
802.11(b) 1 Mbps, High Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



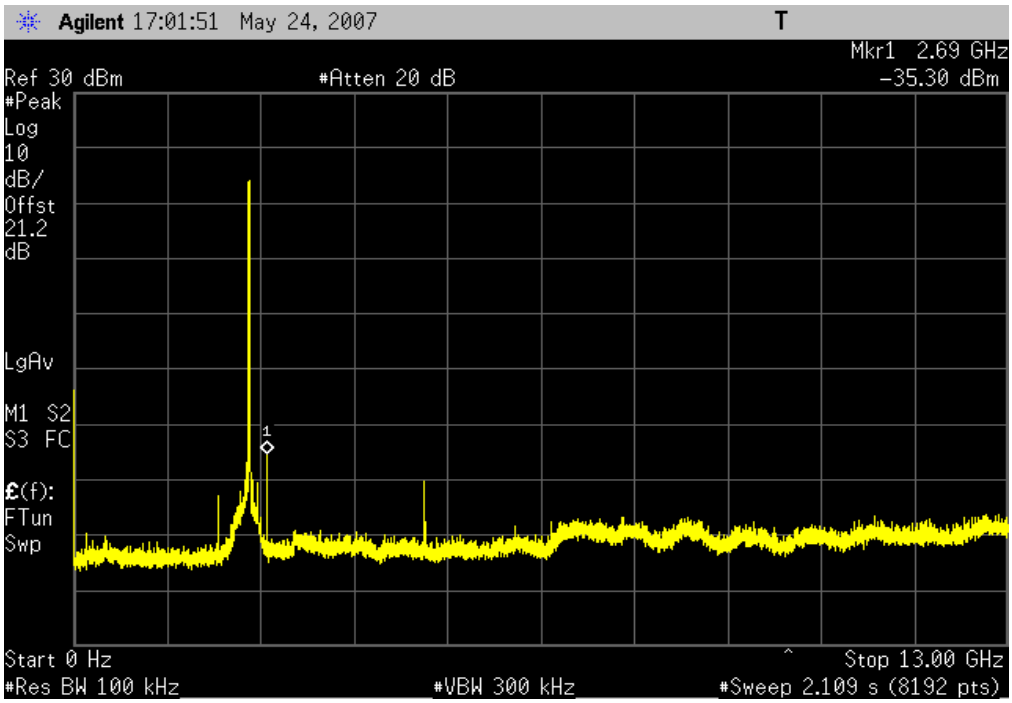
802.11(b) 11 Mbps, Low Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 35.97 dBc	**Limit:**	≤ -20 dBc



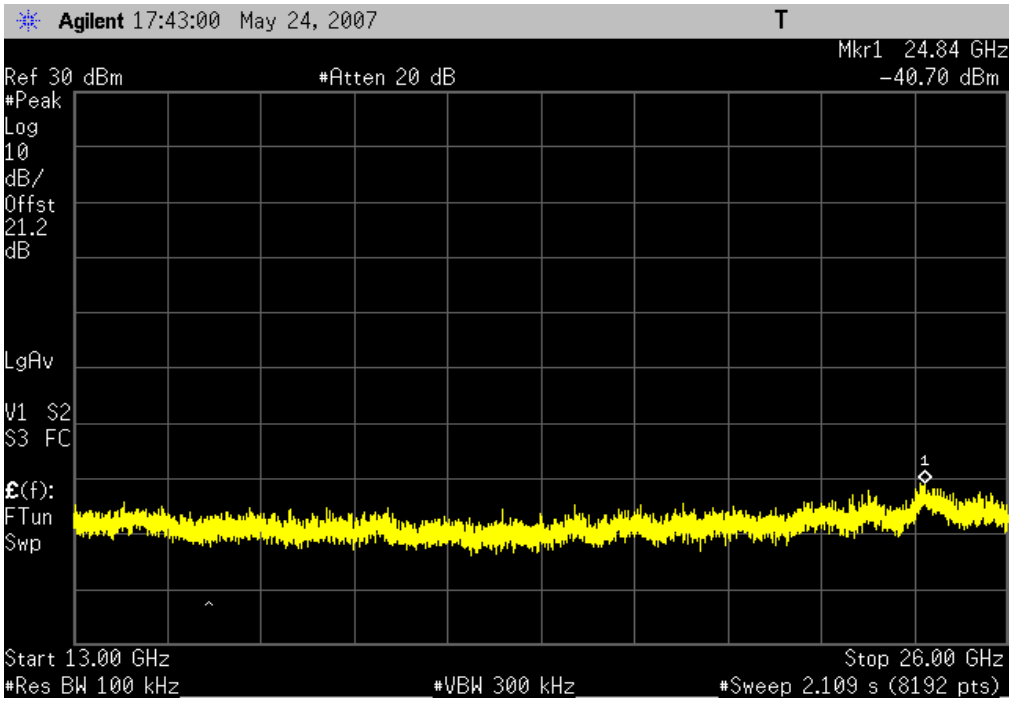
802.11(b) 11 Mbps, Low Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



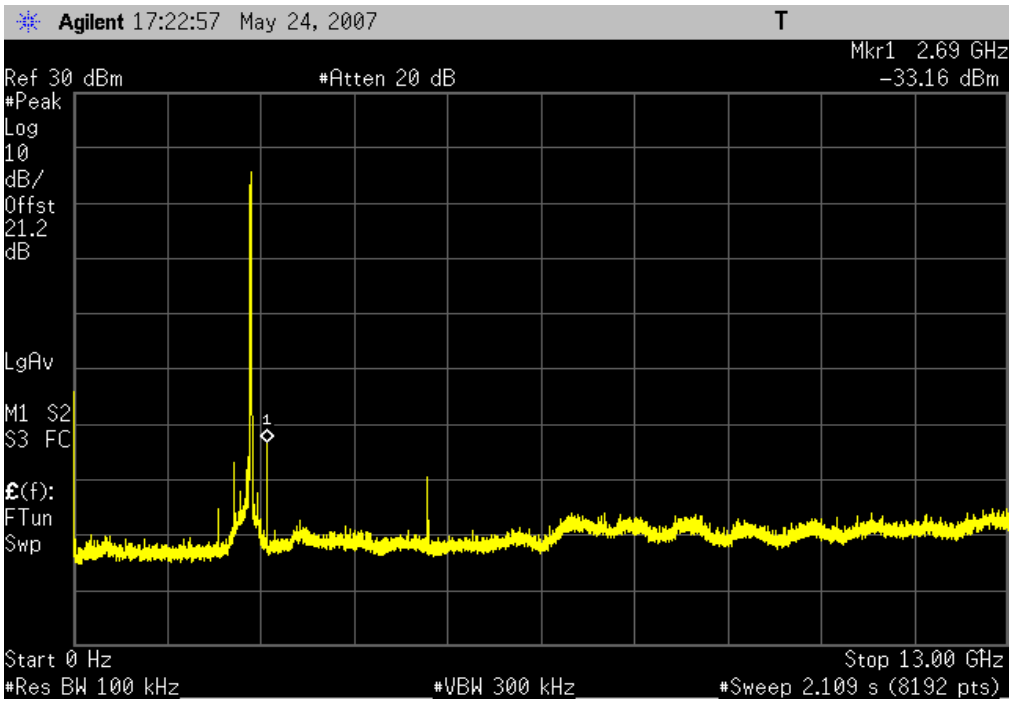
802.11(b) 11 Mbps, Mid Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 35.3	**Limit:**	≤ -20 dBc



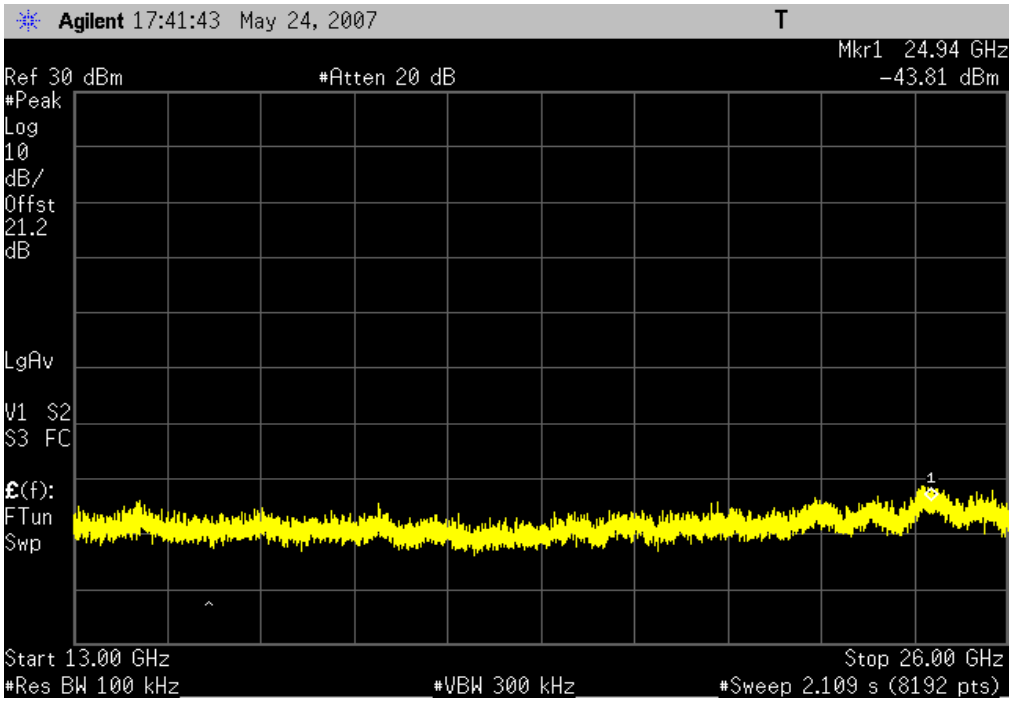
802.11(b) 11 Mbps, Mid Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



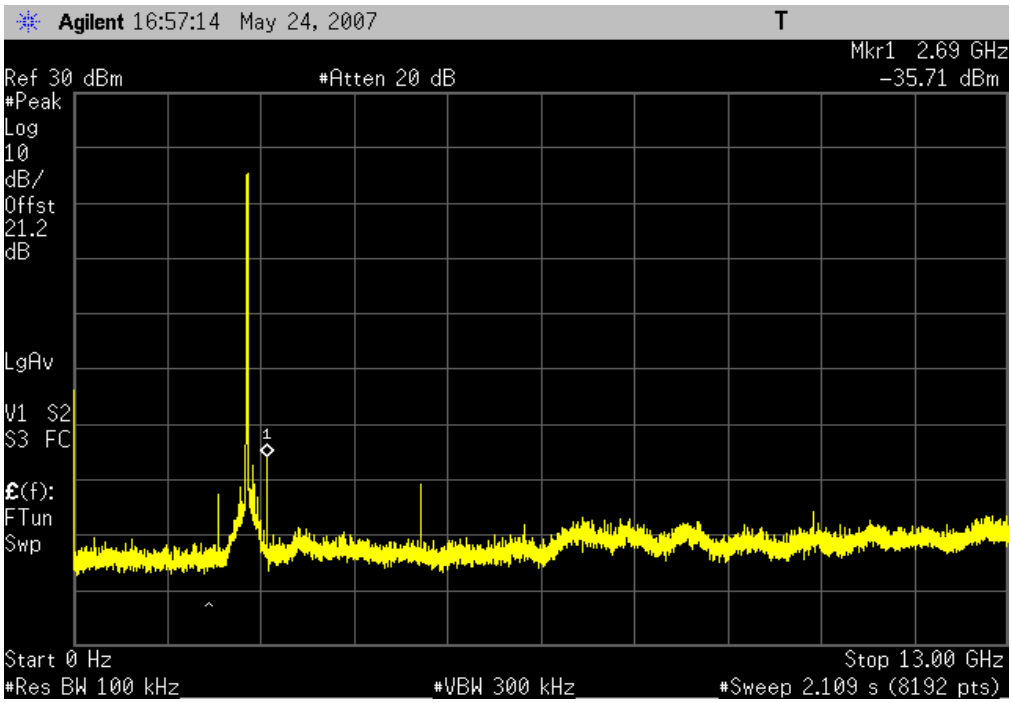
802.11(b) 11 Mbps, High Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 33.16	**Limit:**	≤ -20 dBc



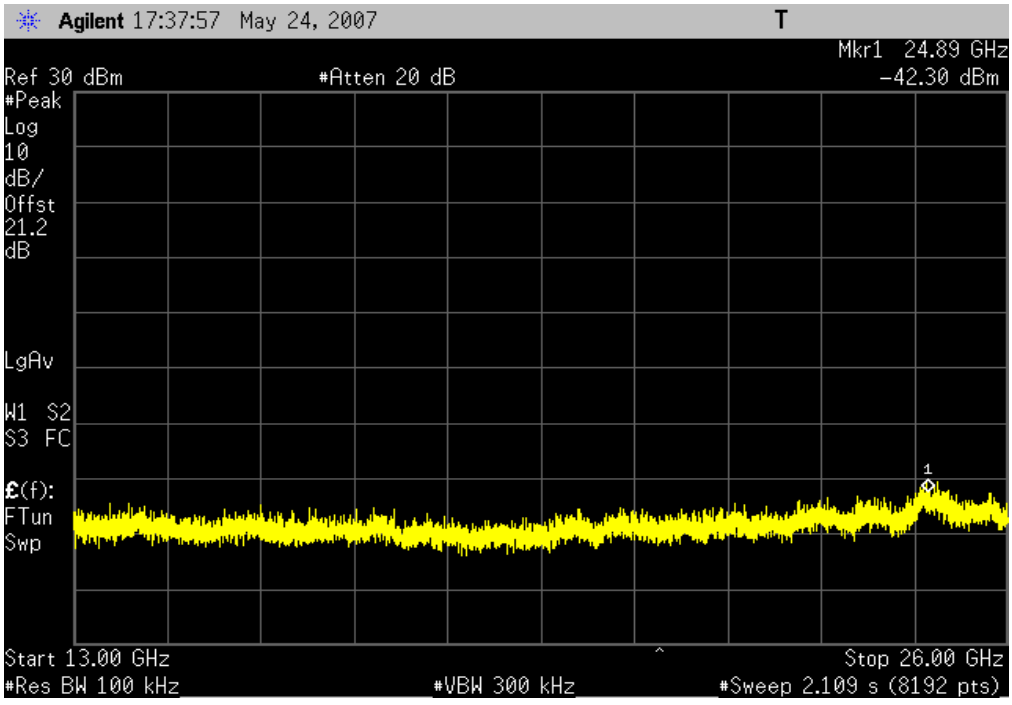
802.11(b) 11 Mbps, High Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



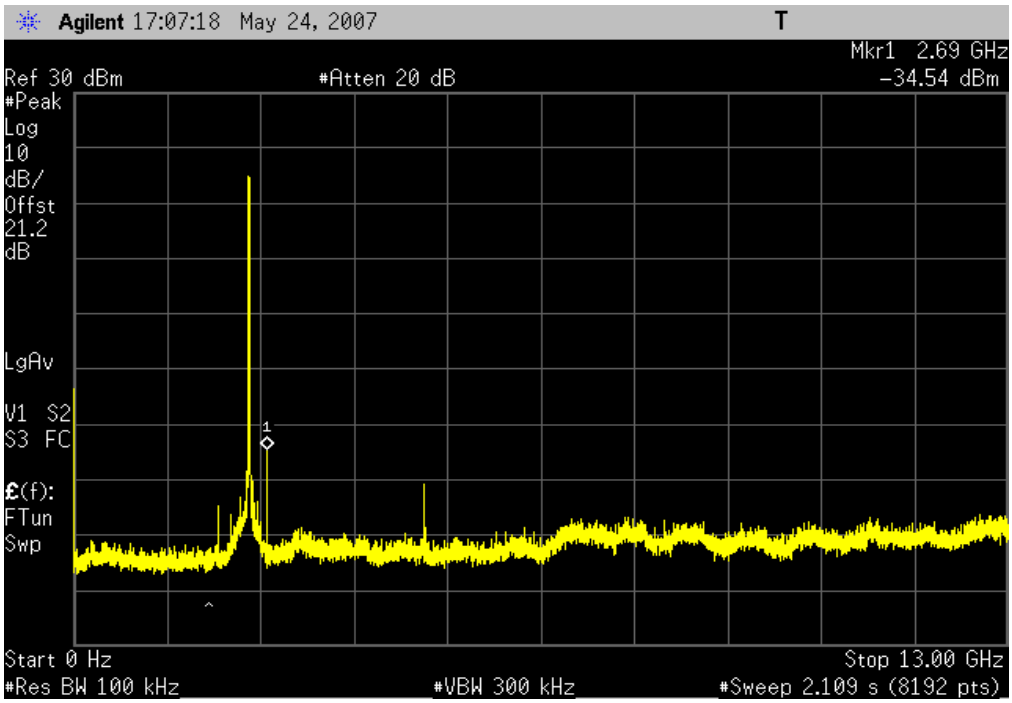
802.11(g) 6 Mbps, Low Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 35.71	**Limit:**	≤ -20 dBc



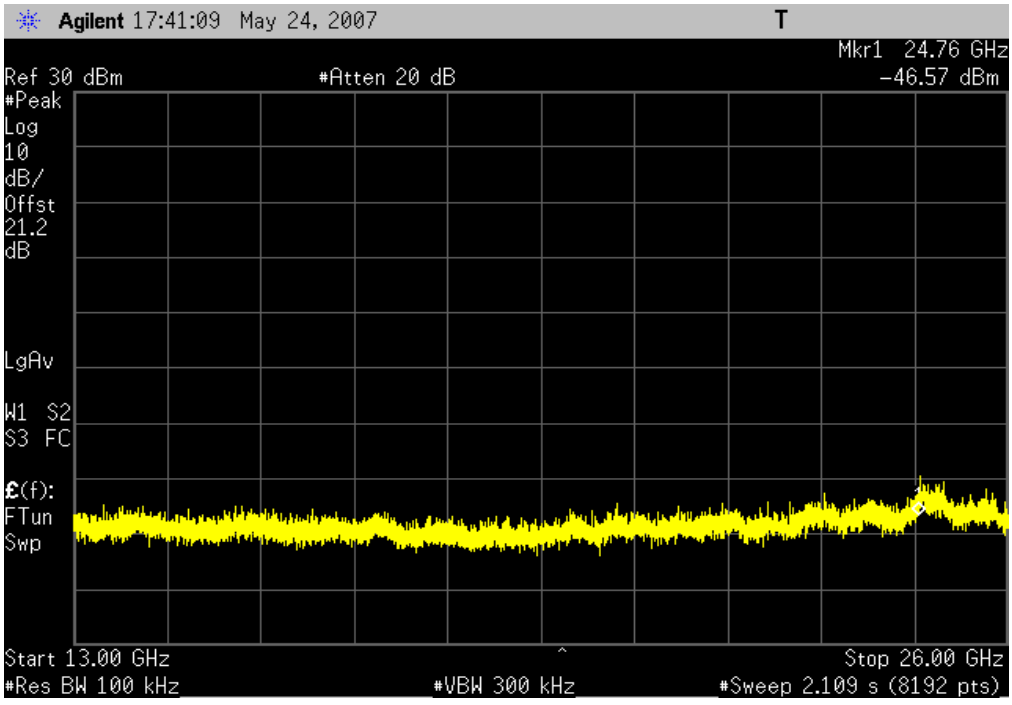
802.11(g) 6 Mbps, Low Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



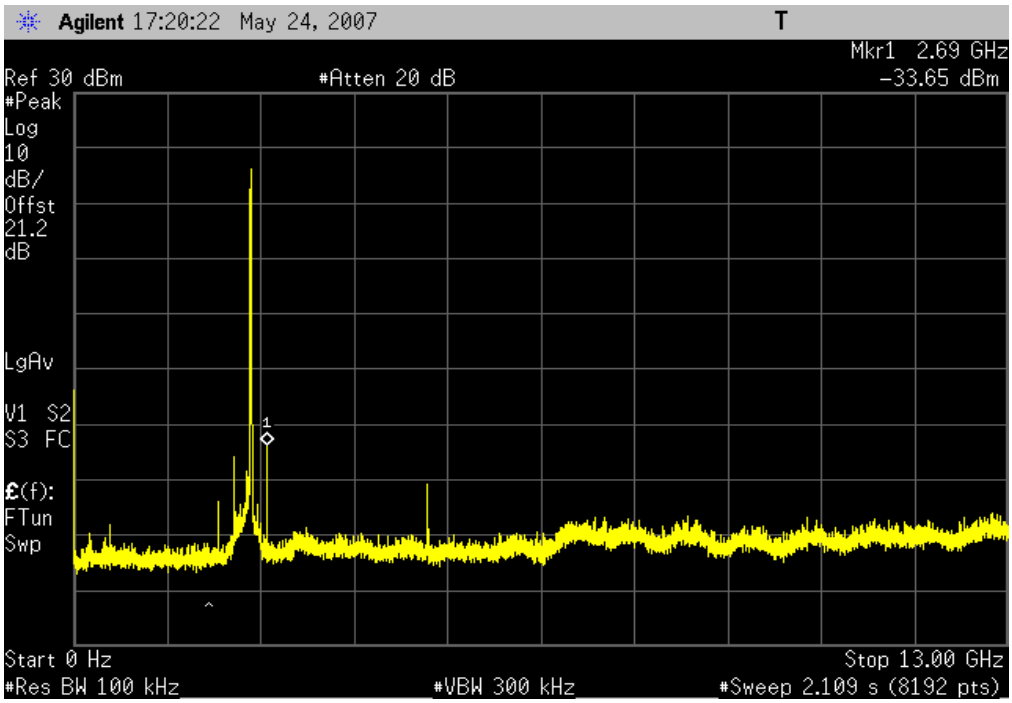
802.11(g) 6 Mbps, Mid Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.54 dBc	**Limit:**	≤ -20 dBc



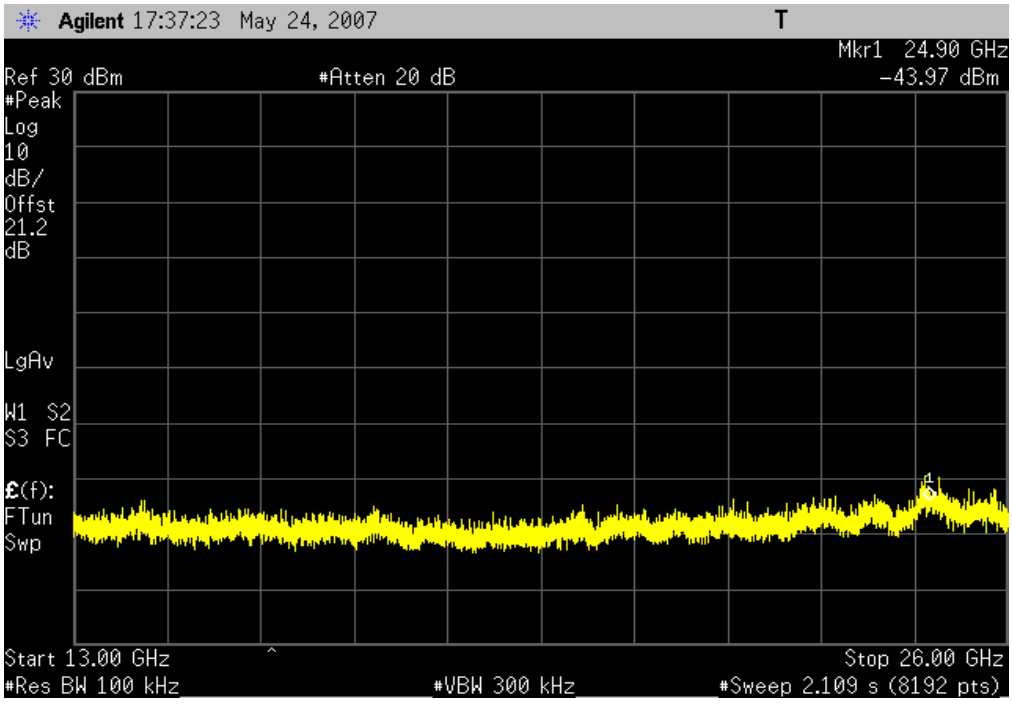
802.11(g) 6 Mbps, Mid Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



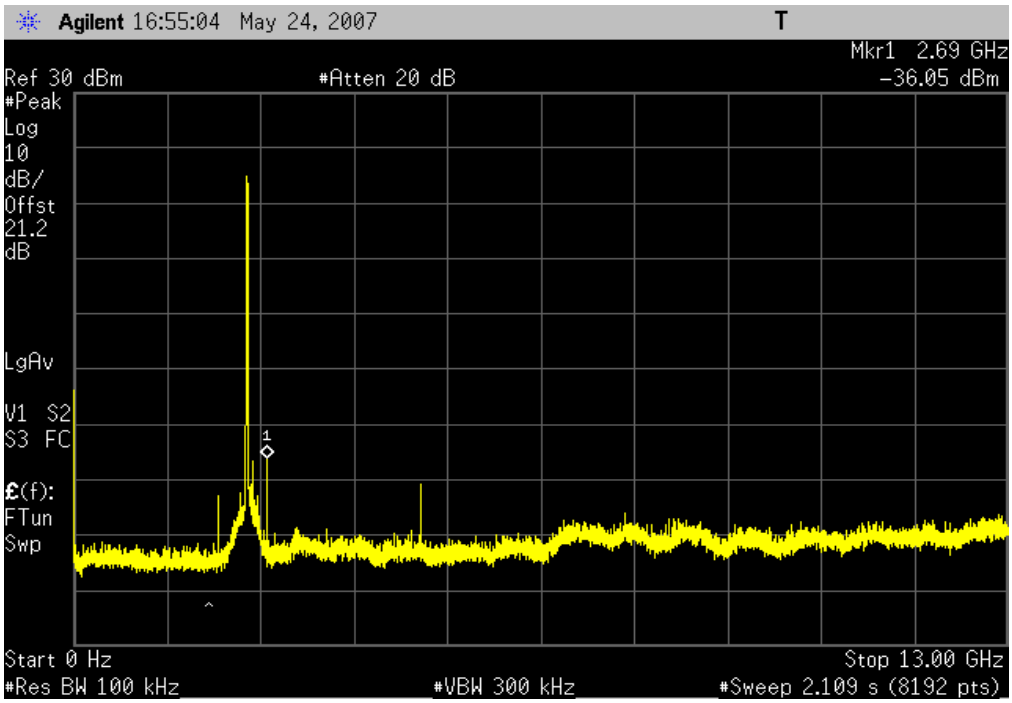
802.11(g) 6 Mbps, High Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 33.65 dBc	**Limit:**	≤ -20 dBc



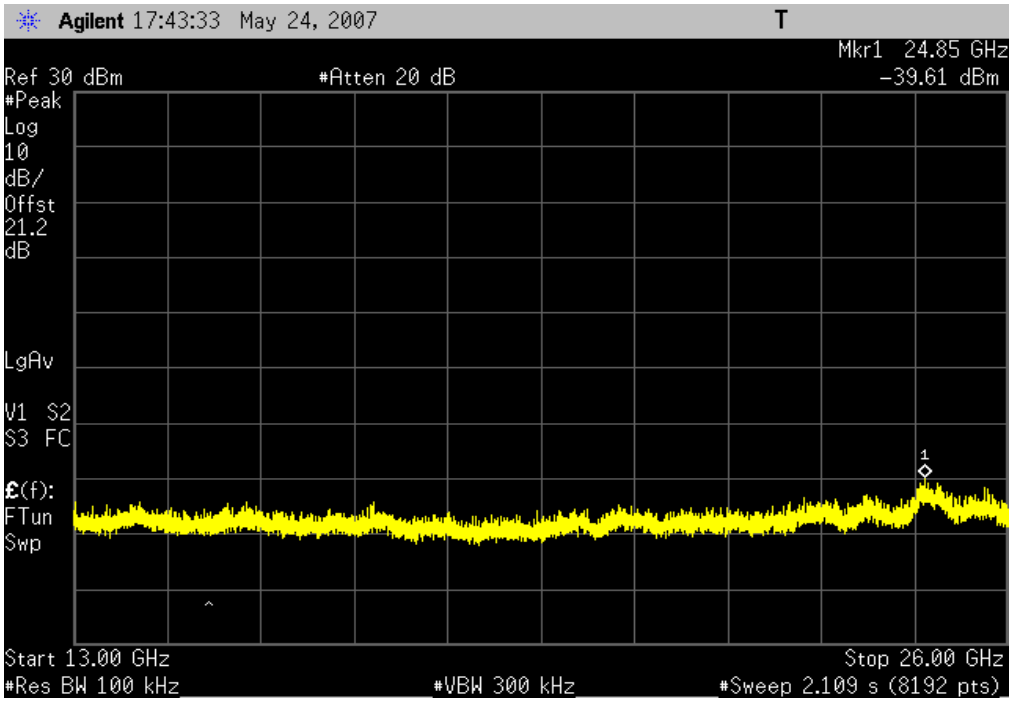
802.11(g) 6 Mbps, High Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



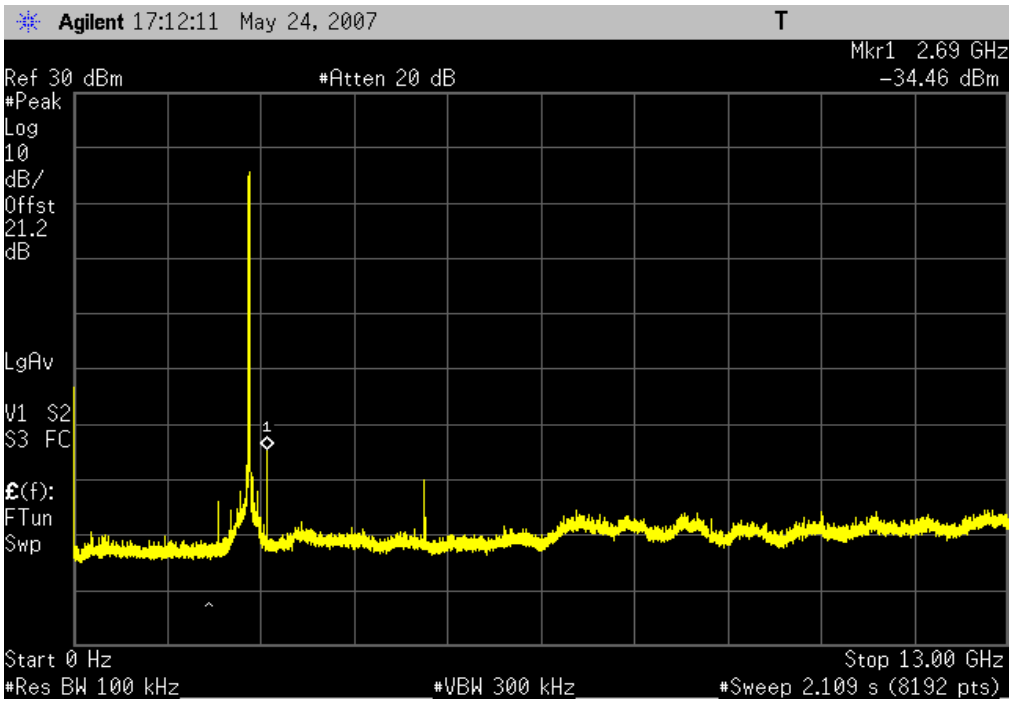
802.11(g) 36 Mbps, Low Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 36.05 dBc	**Limit:**	≤ -20 dBc



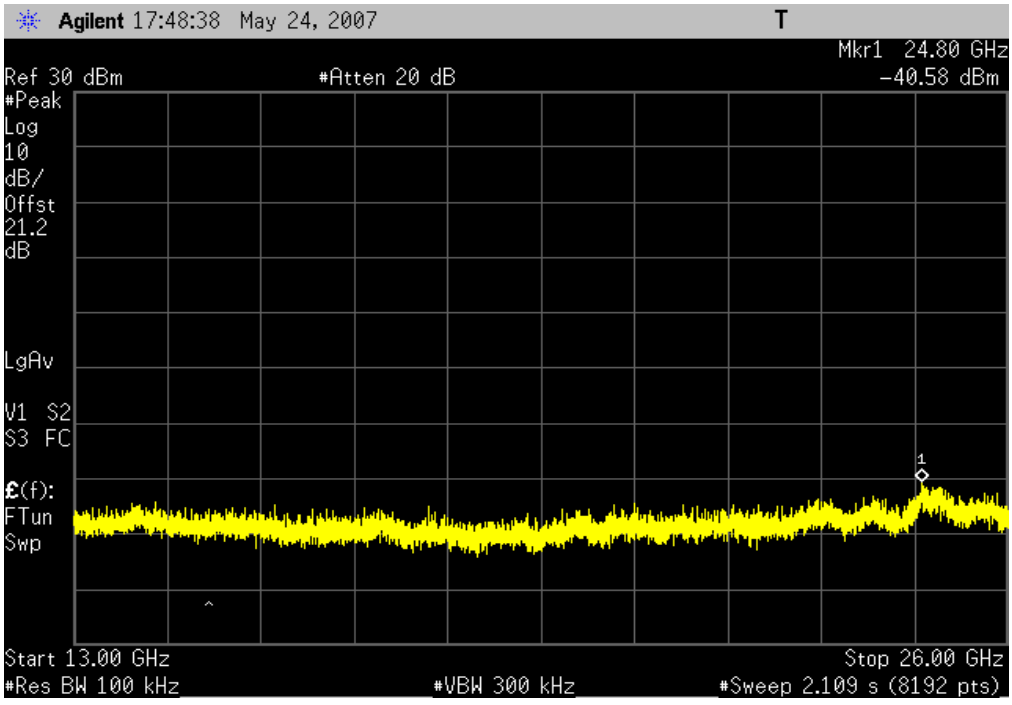
802.11(g) 36 Mbps, Low Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



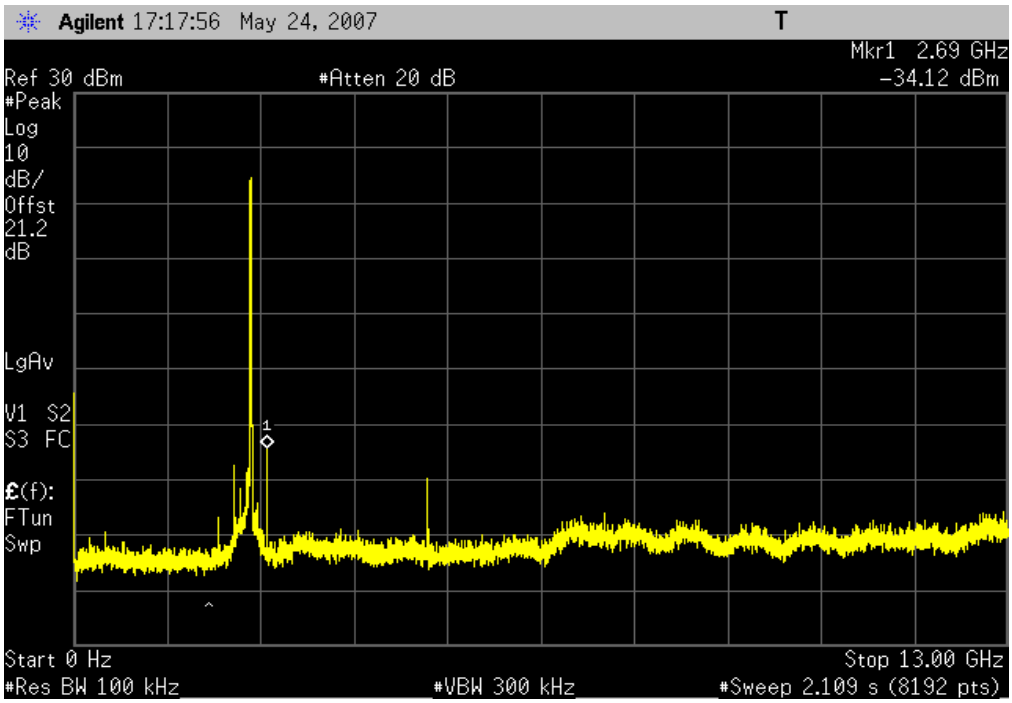
802.11(g) 36 Mbps, Mid Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.46 dBc	**Limit:**	≤ -20 dBc



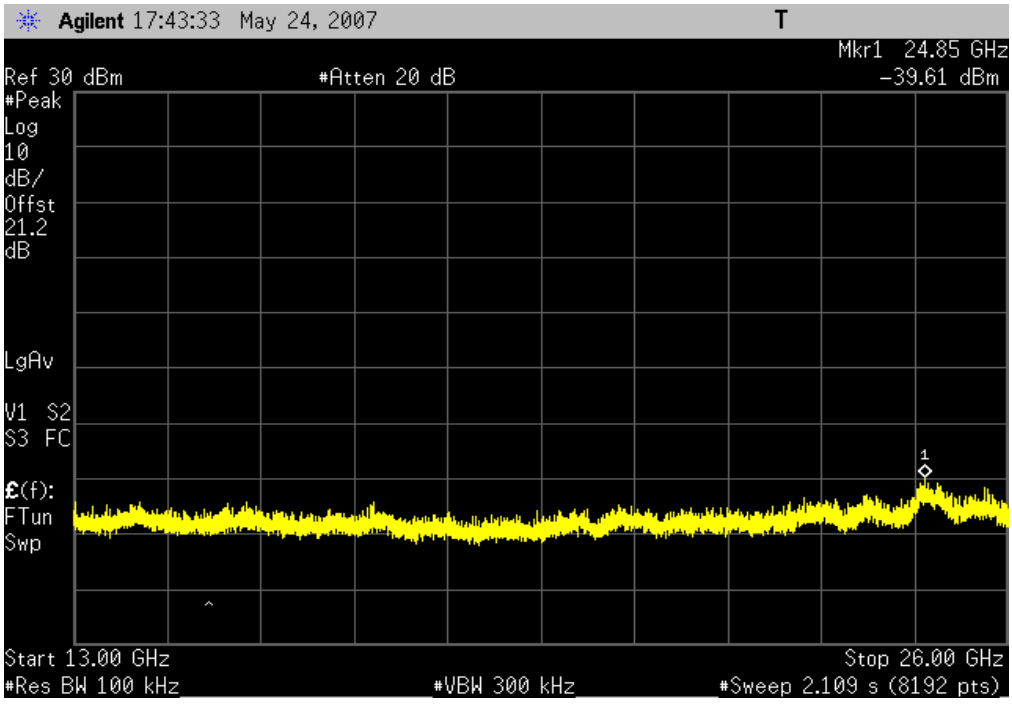
802.11(g) 36 Mbps, Mid Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



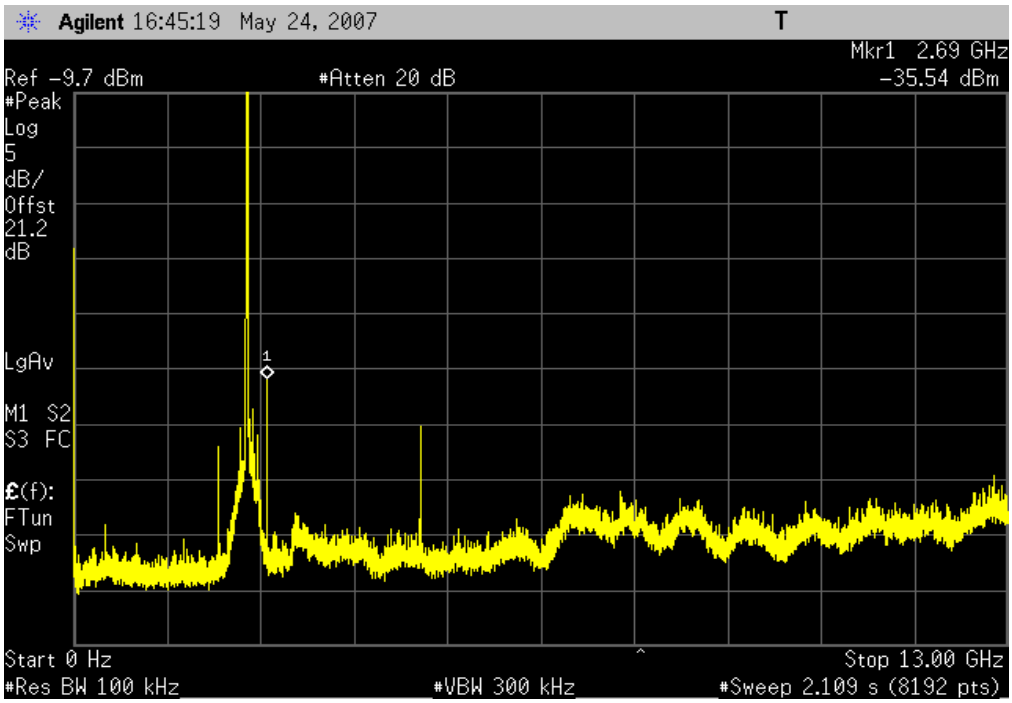
802.11(g) 36 Mbps, High Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.12 dBc	**Limit:**	≤ -20 dBc



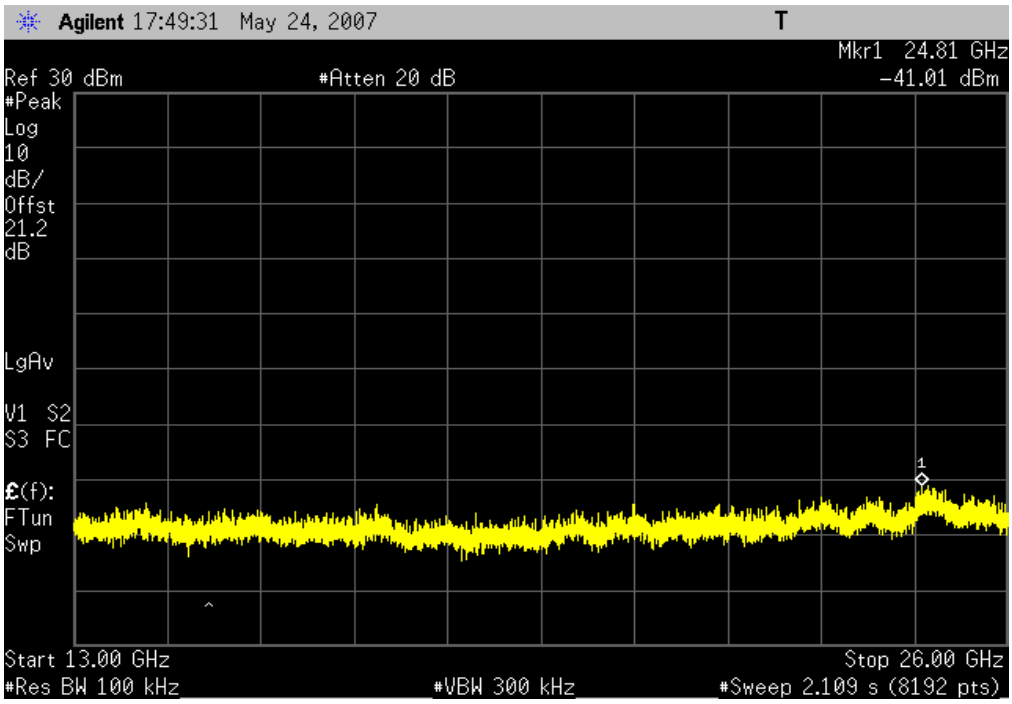
802.11(g) 36 Mbps, High Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



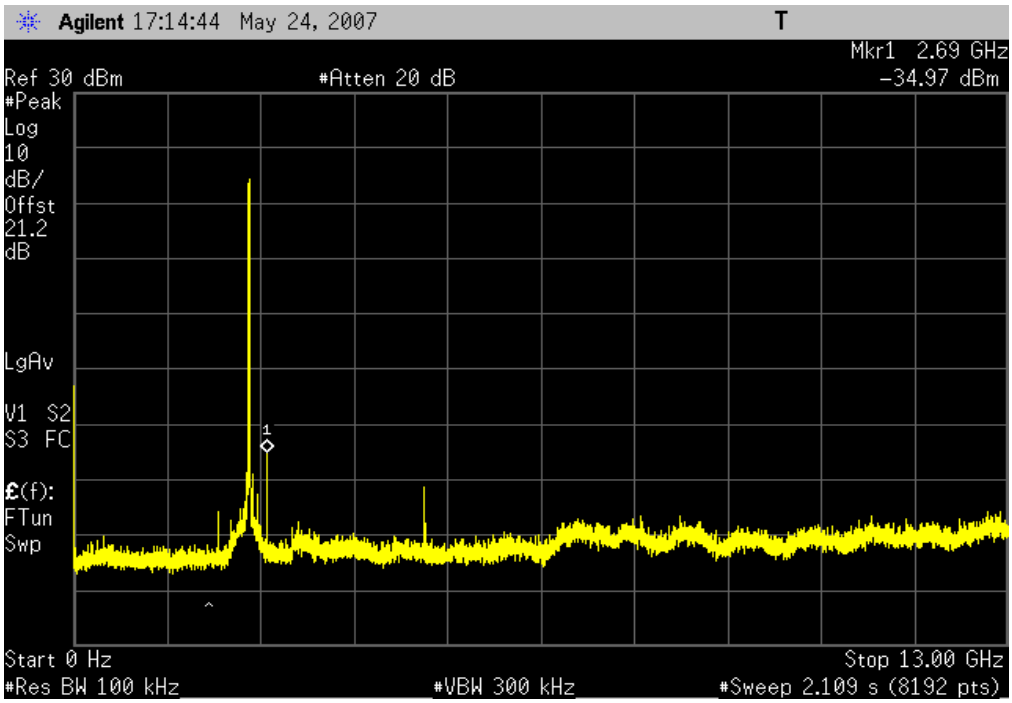
802.11(g) 54 Mbps, Low Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 35.54 dBc	**Limit:**	≤ -20 dBc



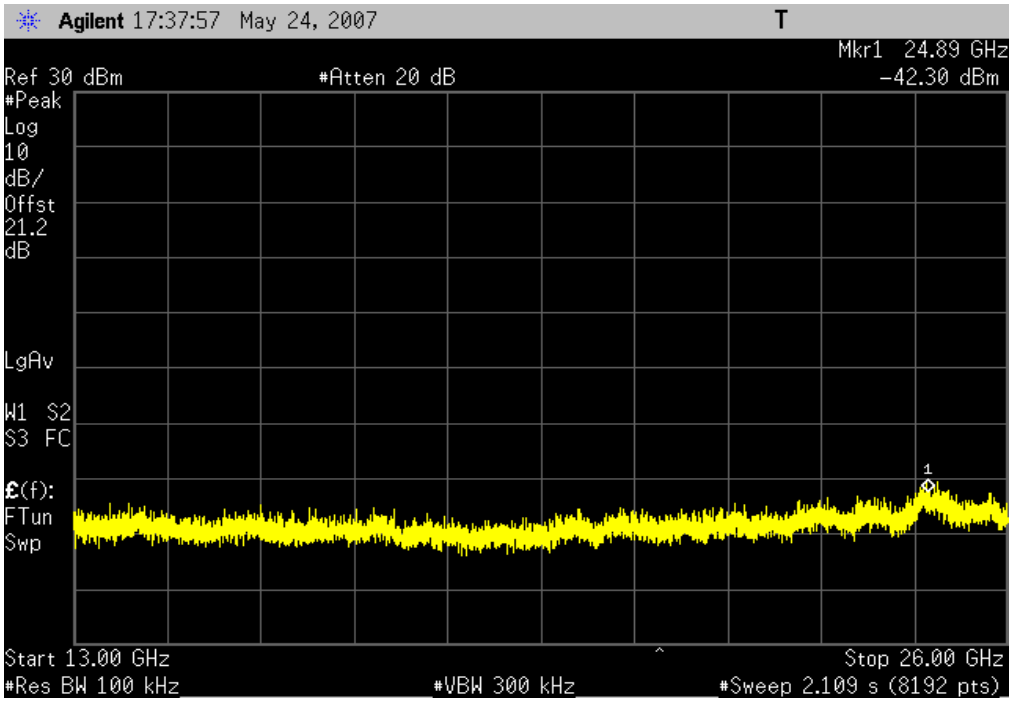
802.11(g) 54 Mbps, Low Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc



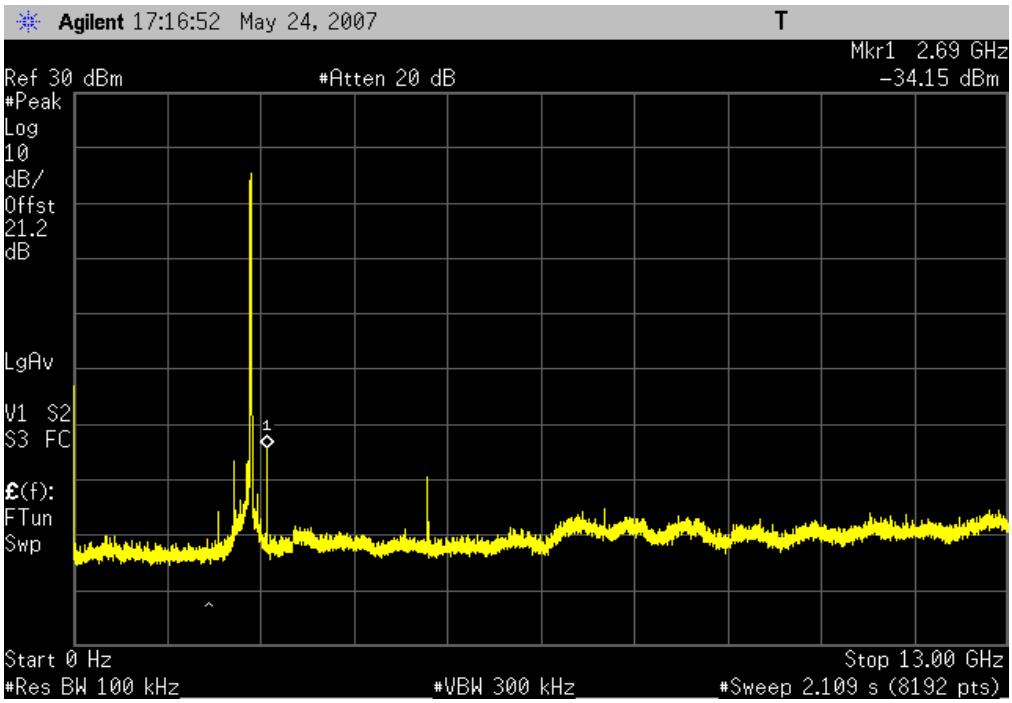
802.11(g) 54 Mbps, Mid Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.97 dBc	**Limit:**	≤ -20 dBc



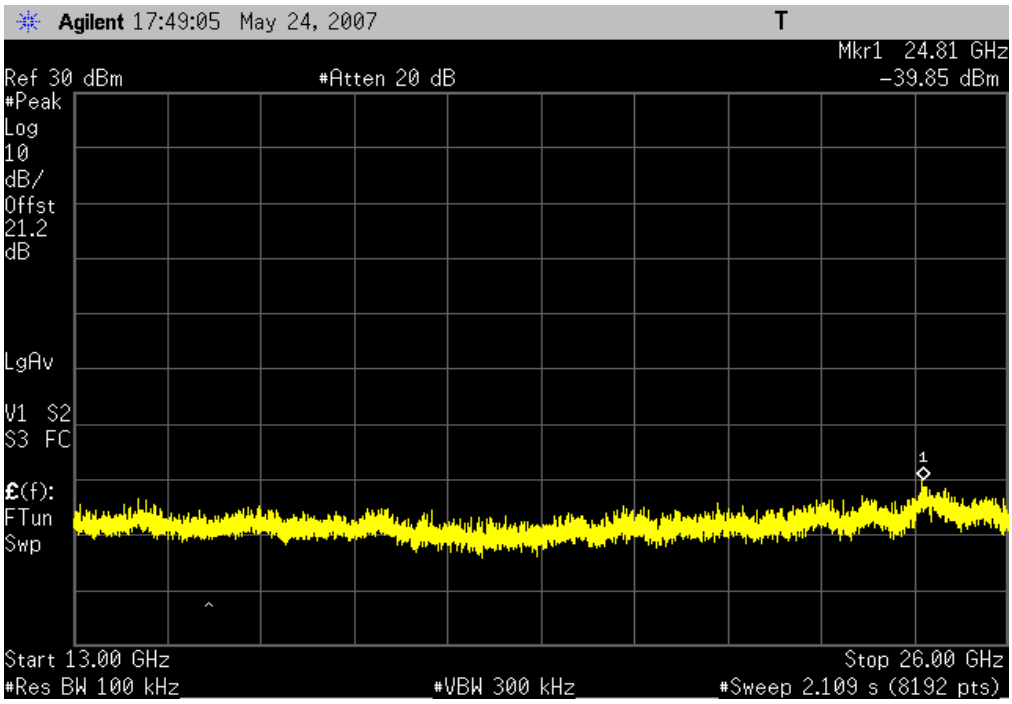
802.11(g) 54 Mbps, Mid Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc

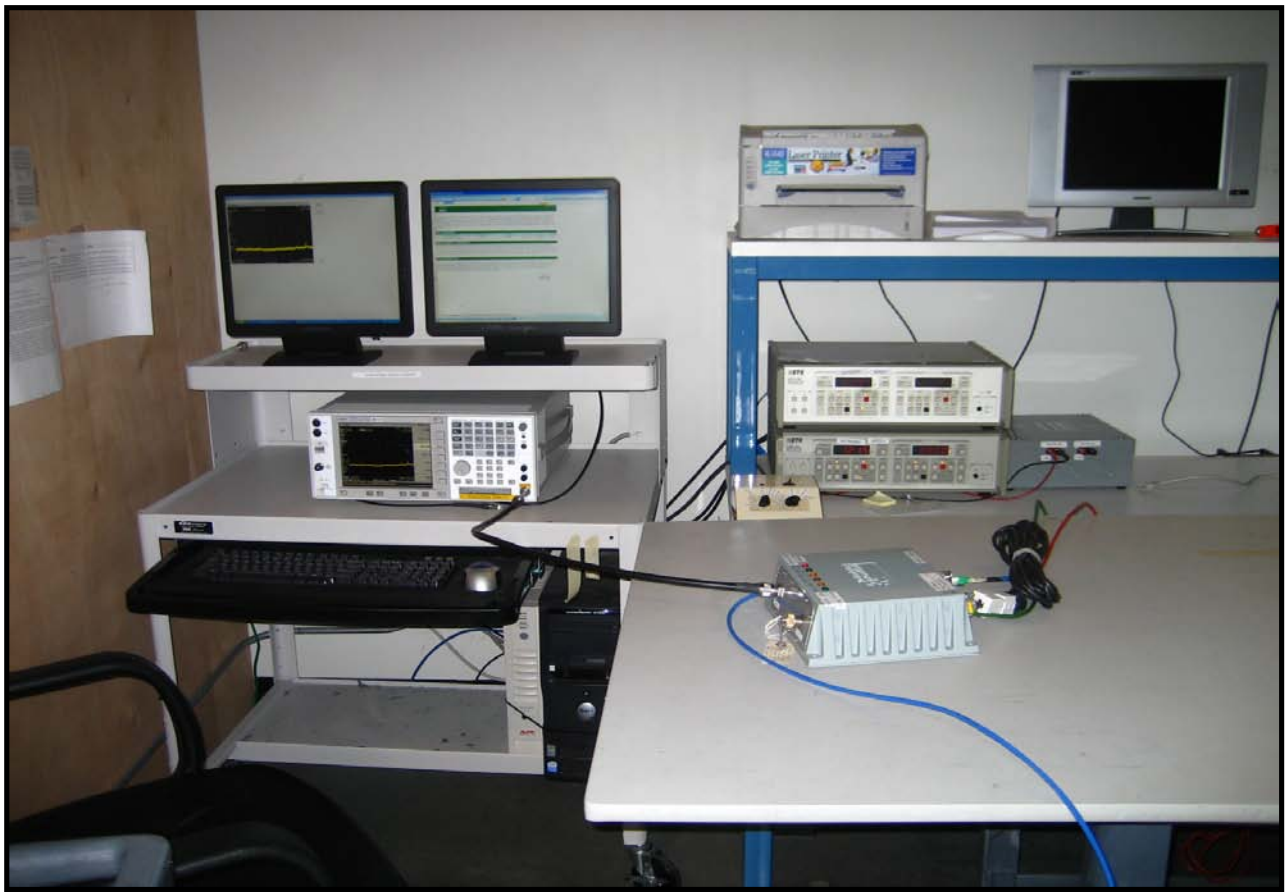


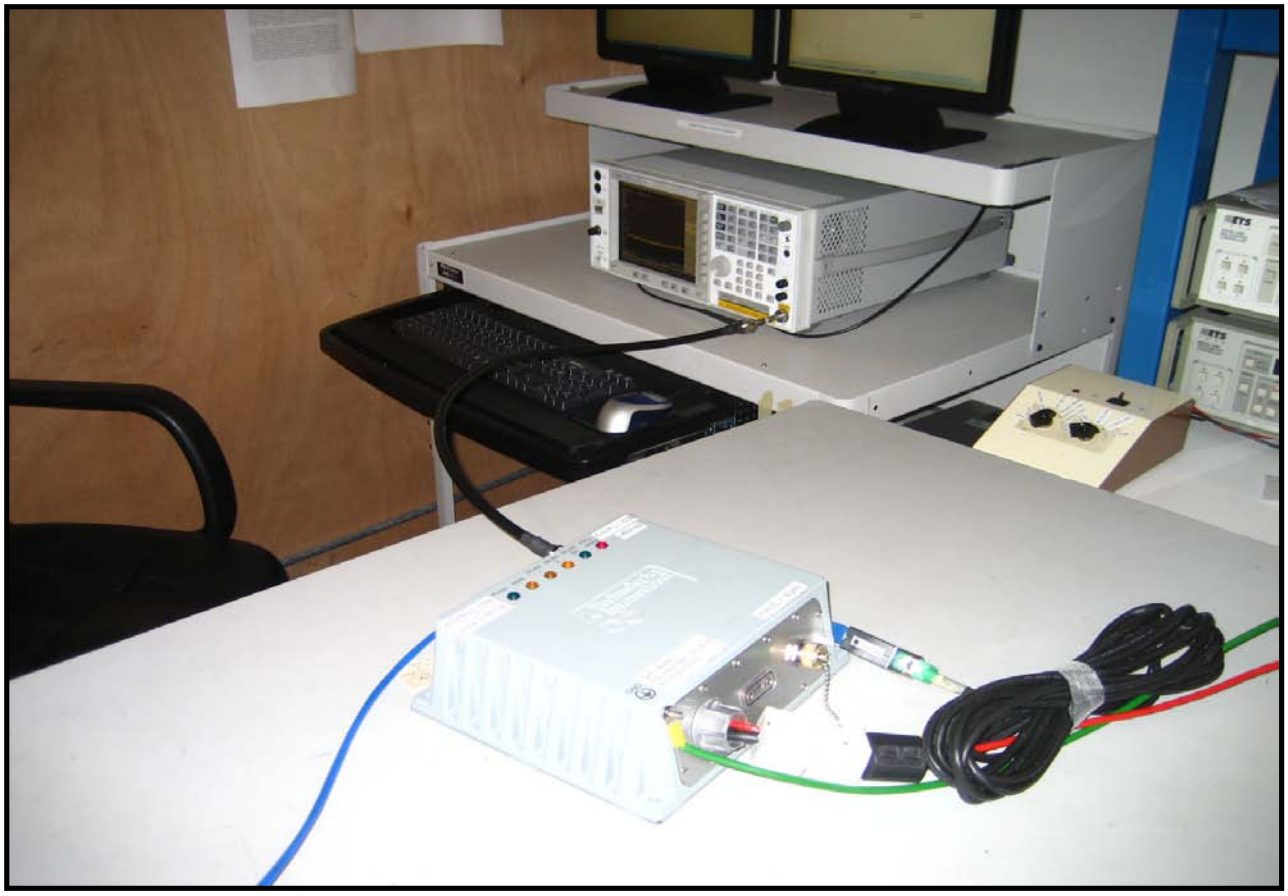
802.11(g) 54 Mbps, High Channel, 0 - 13 GHz					
Result:	Pass	**Value:**	- 34.15 dBc	**Limit:**	≤ -20 dBc



802.11(g) 54 Mbps, High Channel, 13 - 26 GHz					
Result:	Pass	**Value:**	≤ -35 dBc	**Limit:**	≤ -20 dBc







SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION INVESTIGATED
Transmitting at 2462 MHz. All Data Rates: 1, 11, 6, 36, 54 Mbps.
Transmitting at 2437 MHz. All Data Rates: 1, 11, 6, 36, 54 Mbps.
Transmitting at 2412 MHz. All Data Rates: 1, 11, 6, 36, 54 Mbps.

ANTENNAS INVESTIGATED
4.5 dBi Omni antenna
8 dBi Omni antenna
14 dBi Sector antenna

POWER SETTINGS INVESTIGATED
120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	26 GHz

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
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	7/11/2006	13
Antenna, Horn	EMCO	3160-09	AHN	NCR	0
OC10 SMA cable for 18-26 GHz			OCK	7/11/2006	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	12/29/2006	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	10/13/2006	12
Antenna, Horn	ETS	3160-08	AHT	NCR	0
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	10/13/2006	12
Antenna, Horn	ETS	3160-07	AHR	NCR	24
OC10 cables a,b,c,e,f Horn Cables			OCJ	1/14/2007	13
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	1/14/2007	13
Antenna, Horn	EMCO	3115	AHB	8/1/2005	24
OC 10 Cables a, b, c, I Cables			OCO	1/14/2007	13
Antenna, Biconilog	EMCO	3142	AXJ	3/14/2006	24
OC10 cables a,b,c,d Bilog			OCH	12/17/2006	13
Pre-Amplifier	Miteq	AM-1616-1000	AOM	12/17/2006	13
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	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

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

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.05.07
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	
Attendees:	David Shipley	Humidity:	0%
Project:	None	Barometric Pres.:	
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site:

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

TEST PARAMETERS

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

COMMENTS

PC Power Setting = (40). Low Channel. Data Rate: 1, 11, 6, 36 & 54 Mbps.
4.5 dBi Omni antenna

EUT OPERATING MODES

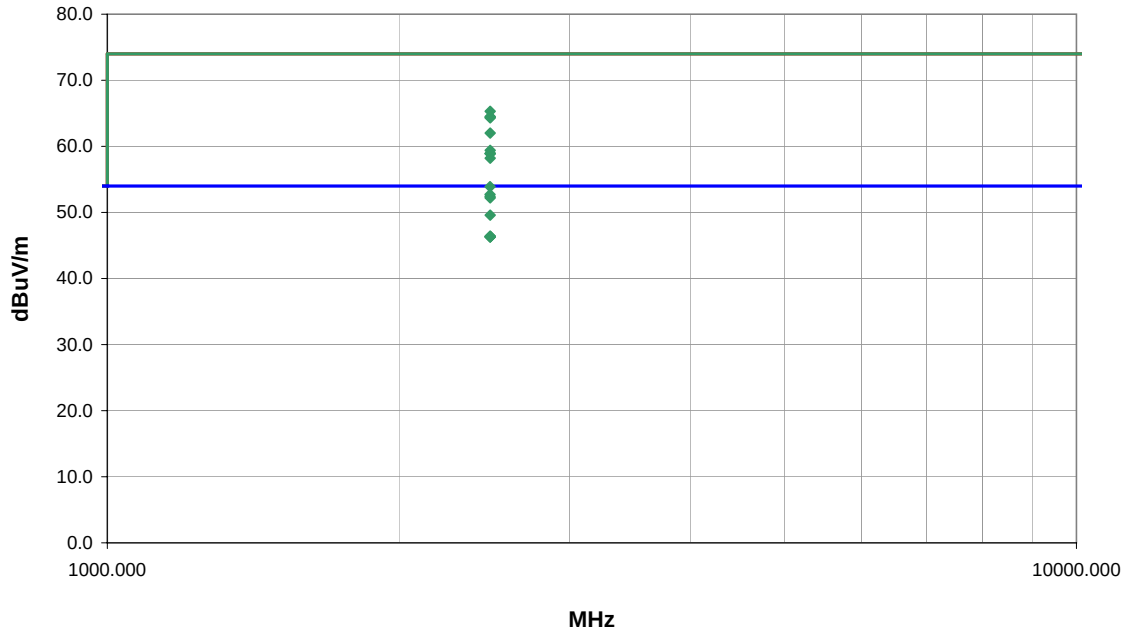
Transmitting at 2412MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	34
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
2483.071	32.5	1.4	314.0	1.3	3.0	20.0	V-Horn	AV	0.0	53.9	54.0	-0.1	11 Mbps
2483.039	31.3	1.4	311.0	1.2	3.0	20.0	V-Horn	AV	0.0	52.7	54.0	-1.3	54 Mbps
2483.055	31.0	1.4	314.0	1.3	3.0	20.0	V-Horn	AV	0.0	52.4	54.0	-1.6	36 Mbps
2483.321	30.8	1.4	359.0	1.4	3.0	20.0	V-Horn	AV	0.0	52.2	54.0	-1.8	1 Mbps
2483.571	28.2	1.4	305.0	1.0	3.0	20.0	V-Horn	AV	0.0	49.6	54.0	-4.4	6 Mbps
2483.579	25.0	1.4	1.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	1 Mbps
2483.675	25.0	1.4	244.0	1.6	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	11 Mbps
2483.494	24.9	1.4	94.0	1.6	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	54 Mbps
2483.617	24.9	1.4	218.0	1.6	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	36 Mbps
2483.754	24.9	1.4	102.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	6 Mbps
2483.333	43.9	1.4	359.0	1.4	3.0	20.0	V-Horn	PK	0.0	65.3	74.0	-8.7	1 Mbps
2483.381	43.1	1.4	314.0	1.3	3.0	20.0	V-Horn	PK	0.0	64.5	74.0	-9.5	36 Mbps
2483.294	43.0	1.4	311.0	1.2	3.0	20.0	V-Horn	PK	0.0	64.4	74.0	-9.6	54 Mbps
2483.252	42.9	1.4	314.0	1.3	3.0	20.0	V-Horn	PK	0.0	64.3	74.0	-9.7	11 Mbps
2483.635	40.6	1.4	305.0	1.0	3.0	20.0	V-Horn	PK	0.0	62.0	74.0	-12.0	6 Mbps
2483.715	38.0	1.4	244.0	1.6	3.0	20.0	H-Horn	PK	0.0	59.4	74.0	-14.6	11 Mbps
2483.256	37.5	1.4	102.0	1.0	3.0	20.0	H-Horn	PK	0.0	58.9	74.0	-15.1	6 Mbps
2483.296	37.5	1.4	94.0	1.6	3.0	20.0	H-Horn	PK	0.0	58.9	74.0	-15.1	54 Mbps
2483.308	37.5	1.4	218.0	1.6	3.0	20.0	H-Horn	PK	0.0	58.9	74.0	-15.1	36 Mbps
2483.372	36.8	1.4	1.0	1.0	3.0	20.0	H-Horn	PK	0.0	58.2	74.0	-15.8	1 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.01.31
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC06

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

TEST PARAMETERS

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

COMMENTS

PC Power Setting = (40). High Channel. Data Rate: 6 & 54 Mbps.
4.5 dBi Omni antenna

EUT OPERATING MODES

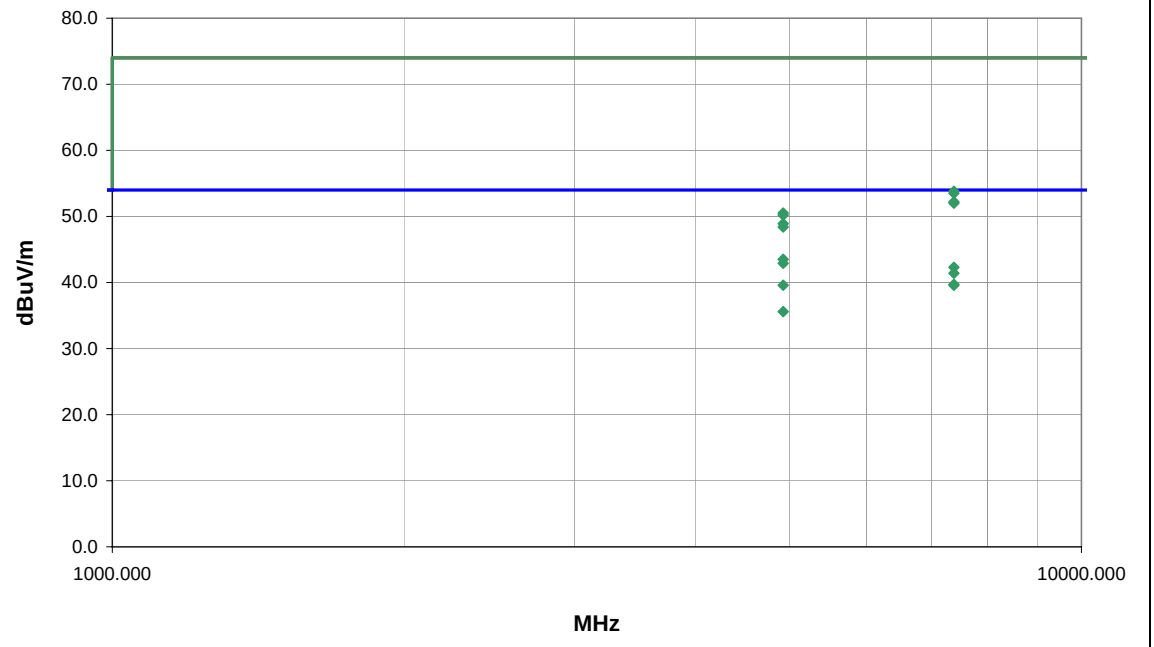
Transmitting at 2462 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	35
Configuration #	1
Results	Pass

NVLAP Lab Code 200629-0 *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
4923.982	32.8	10.7	1.0	1.4	0.0	0.0	V-Horn	AV	0.0	43.5	54.0	-10.5	54 Mbps
4923.949	32.2	10.7	260.0	1.4	0.0	0.0	H-Horn	AV	0.0	42.9	54.0	-11.1	54 Mbps
7385.615	27.0	15.3	338.0	1.3	0.0	0.0	V-Horn	AV	0.0	42.3	54.0	-11.7	54 Mbps
7385.547	26.1	15.3	344.0	1.3	0.0	0.0	V-Horn	AV	0.0	41.4	54.0	-12.6	6 Mbps
7385.651	24.4	15.3	352.0	1.0	0.0	0.0	H-Horn	AV	0.0	39.7	54.0	-14.3	54 Mbps
4923.948	28.9	10.7	253.0	1.3	0.0	0.0	H-Horn	AV	0.0	39.6	54.0	-14.4	6 Mbps
7386.232	24.3	15.3	359.0	1.0	0.0	0.0	H-Horn	AV	0.0	39.6	54.0	-14.4	6 Mbps
4923.860	24.9	10.7	329.0	1.4	0.0	0.0	V-Horn	AV	0.0	35.6	54.0	-18.4	6 Mbps
7386.231	38.5	15.3	338.0	1.3	0.0	0.0	V-Horn	PK	0.0	53.8	74.0	-20.2	54 Mbps
7386.239	38.2	15.3	344.0	1.3	0.0	0.0	V-Horn	PK	0.0	53.5	74.0	-20.5	6 Mbps
7386.171	36.9	15.3	352.0	1.0	0.0	0.0	H-Horn	PK	0.0	52.2	74.0	-21.8	54 Mbps
7385.965	36.7	15.3	359.0	1.0	0.0	0.0	H-Horn	PK	0.0	52.0	74.0	-22.0	6 Mbps
4924.014	39.8	10.7	1.0	1.4	0.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5	54 Mbps
4924.081	39.5	10.7	260.0	1.4	0.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8	54 Mbps
4924.050	38.2	10.7	253.0	1.3	0.0	0.0	H-Horn	PK	0.0	48.9	74.0	-25.1	6 Mbps
4923.976	37.7	10.7	329.0	1.4	0.0	0.0	V-Horn	PK	0.0	48.4	74.0	-25.6	6 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.01.31
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC06

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

TEST PARAMETERS

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

COMMENTS

PC Power Setting = (40). High Channel. Data Rate: 6 & 54 Mbps. Using a 10 Meter Cable.
8 dBi Omni antenna

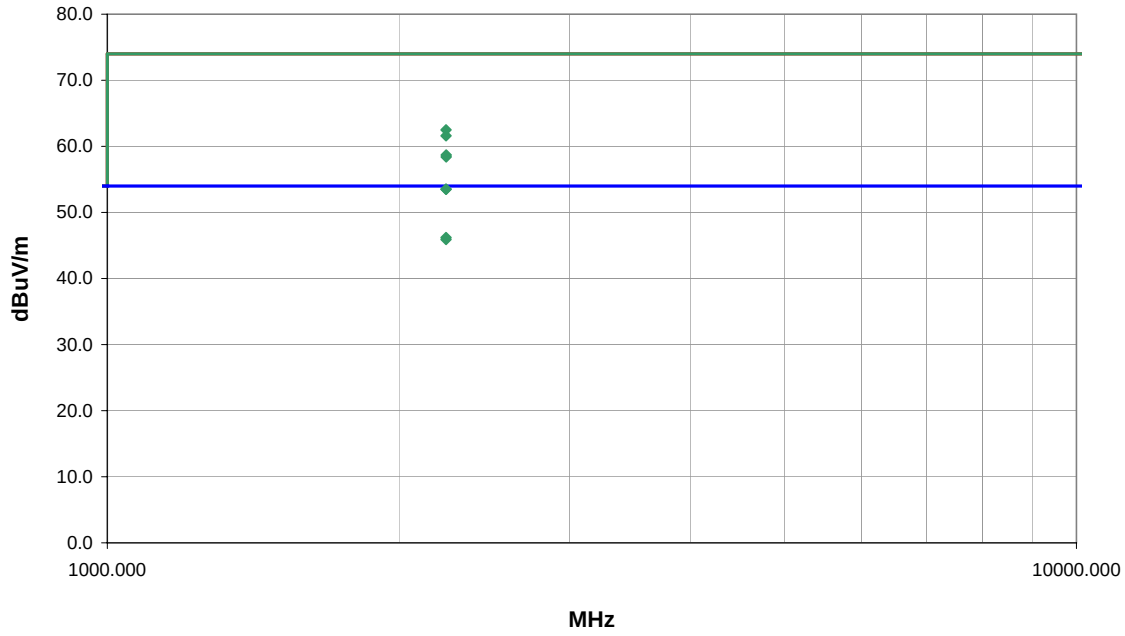
EUT OPERATING MODES

Transmitting at 2462 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	36		
Configuration #	1		
Results	Pass	NVLAP Lab Code 200629-0	*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
2236.018	32.6	0.9	317.0	1.4	0.0	20.0	V-Horn	AV	0.0	53.5	54.0	-0.5	54 Mbps
2236.045	32.6	0.9	320.0	1.5	0.0	20.0	V-Horn	AV	0.0	53.5	54.0	-0.5	5 Mbps
2235.961	25.3	0.9	307.0	1.6	0.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	54 Mbps
2235.858	25.0	0.9	249.0	1.7	0.0	20.0	H-Horn	AV	0.0	45.9	54.0	-8.1	5 Mbps
2235.927	41.6	0.9	317.0	1.4	0.0	20.0	V-Horn	PK	0.0	62.5	74.0	-11.5	54 Mbps
2236.097	40.7	0.9	320.0	1.5	0.0	20.0	V-Horn	PK	0.0	61.6	74.0	-12.4	5 Mbps
2237.131	37.8	0.9	307.0	1.6	0.0	20.0	H-Horn	PK	0.0	58.7	74.0	-15.3	54 Mbps
2237.103	37.5	0.9	249.0	1.7	0.0	20.0	H-Horn	PK	0.0	58.4	74.0	-15.6	5 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.01.31
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

TEST PARAMETERS

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

COMMENTS

PC Power Setting = (40). Mid Channel. Data Rate: 6 & 54 Mbps.
8 dBi Omni antenna

EUT OPERATING MODES

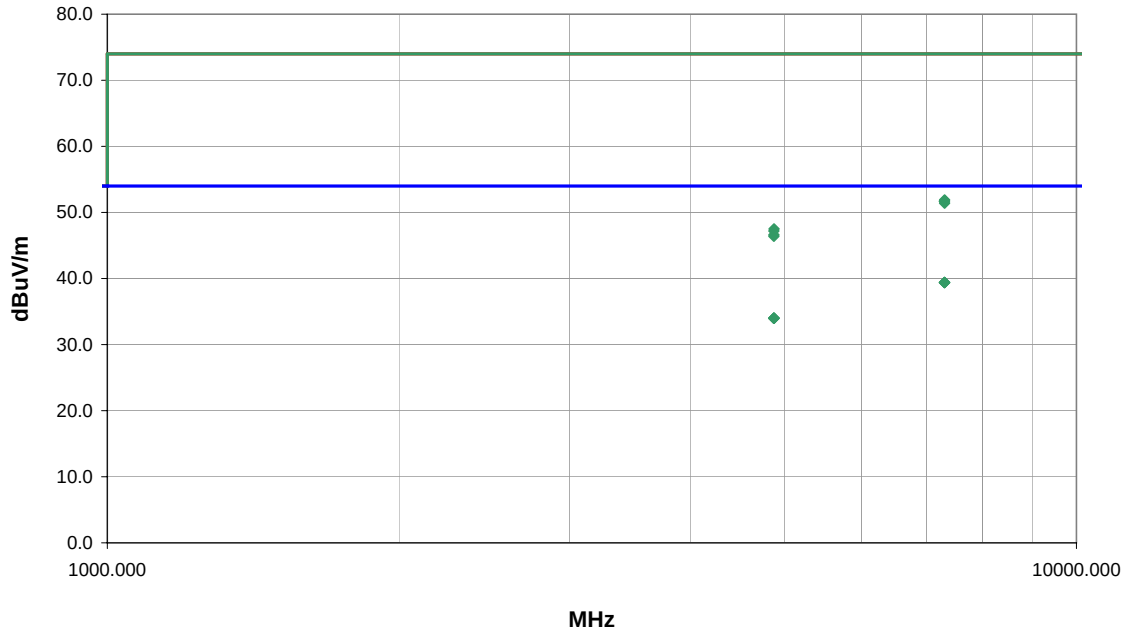
Transmitting at 2437 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	37
Configuration #	1
Results	Pass

NVLAP Lab Code 200629-0 *Signature*



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7308.619	24.5	14.9	175.0	3.3	3.0	0.0	V-Horn	AV	0.0	39.4	54.0	-14.6	54 Mbps
7309.042	24.5	14.9	137.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.4	54.0	-14.6	54 Mbps
7309.332	24.5	14.9	162.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.4	54.0	-14.6	6 Mbps
7309.866	24.5	14.9	357.0	3.4	3.0	0.0	V-Horn	AV	0.0	39.4	54.0	-14.6	6 Mbps
4872.637	23.4	10.6	121.0	3.6	3.0	0.0	H-Horn	AV	0.0	34.0	54.0	-20.0	54 Mbps
4873.189	23.4	10.6	343.0	1.0	3.0	0.0	H-Horn	AV	0.0	34.0	54.0	-20.0	6 Mbps
4873.799	23.4	10.6	140.0	1.5	3.0	0.0	V-Horn	AV	0.0	34.0	54.0	-20.0	54 Mbps
4874.663	23.4	10.6	114.0	1.8	3.0	0.0	V-Horn	AV	0.0	34.0	54.0	-20.0	6 Mbps
7309.802	37.0	14.9	162.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.9	74.0	-22.1	6 Mbps
7308.583	36.8	14.9	357.0	3.4	3.0	0.0	V-Horn	PK	0.0	51.7	74.0	-22.3	6 Mbps
7309.302	36.8	14.9	175.0	3.3	3.0	0.0	V-Horn	PK	0.0	51.7	74.0	-22.3	54 Mbps
7310.845	36.5	14.9	137.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.4	74.0	-22.6	54 Mbps
4874.245	36.9	10.6	343.0	1.0	3.0	0.0	H-Horn	PK	0.0	47.5	74.0	-26.5	6 Mbps
4872.854	36.6	10.6	140.0	1.5	3.0	0.0	V-Horn	PK	0.0	47.2	74.0	-26.8	54 Mbps
4872.642	36.0	10.6	121.0	3.6	3.0	0.0	H-Horn	PK	0.0	46.6	74.0	-27.4	54 Mbps
4873.537	35.8	10.6	114.0	1.8	3.0	0.0	V-Horn	PK	0.0	46.4	74.0	-27.6	6 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.01.31
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

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

COMMENTS

PC Power Setting = (40). Mid Channel. Data Rate: 1, 11, 6, 36 & 54 Mbps.
8 dBi Omni antenna

EUT OPERATING MODES

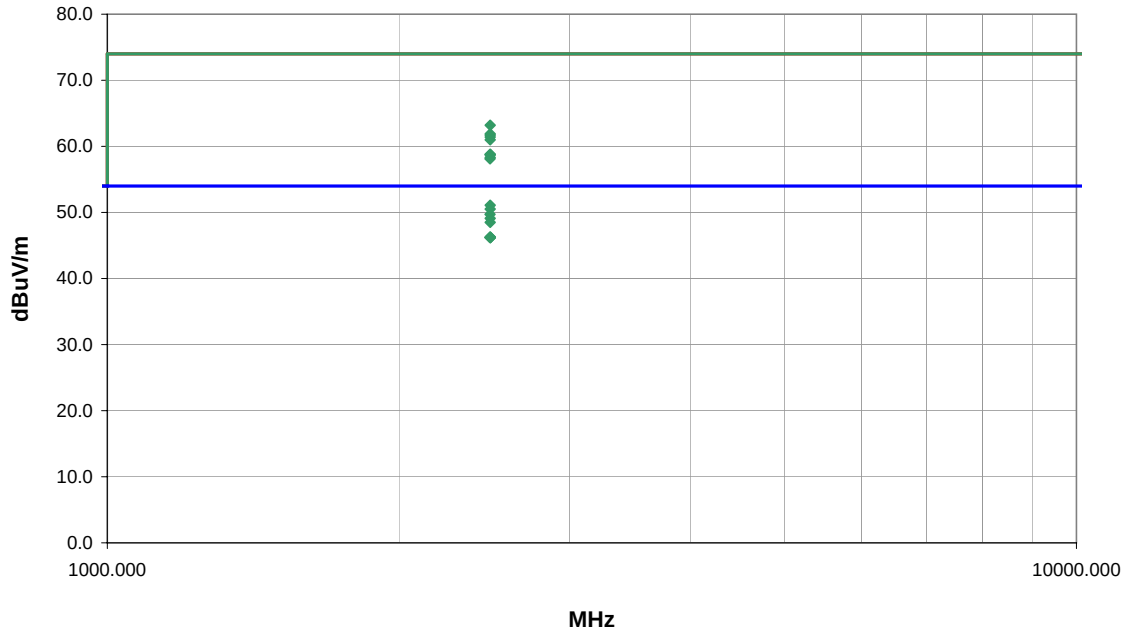
Transmitting at 2437 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	38
Configuration #	1
Results	Pass

NVLAP Lab Code 200629-0 *Signature*



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.817	29.7	1.4	180.0	1.4	0.0	20.0	V-Horn	AV	0.0	51.1	54.0	-2.9	1 Mbps
2483.212	29.1	1.4	178.0	1.2	0.0	20.0	V-Horn	AV	0.0	50.5	54.0	-3.5	6 Mbps
2483.036	28.3	1.4	165.0	1.3	0.0	20.0	V-Horn	AV	0.0	49.7	54.0	-4.3	36 Mbps
2483.299	27.7	1.4	91.0	1.3	0.0	20.0	V-Horn	AV	0.0	49.1	54.0	-4.9	54 Mbps
2483.709	27.1	1.4	245.0	1.5	0.0	20.0	V-Horn	AV	0.0	48.5	54.0	-5.5	11 Mbps
2483.429	24.9	1.4	324.0	1.4	0.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	1 Mbps
2483.517	24.8	1.4	177.0	1.5	0.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	6 Mbps
2483.608	24.8	1.4	0.0	1.6	0.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	36 Mbps
2483.962	24.8	1.4	160.0	1.4	0.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	11 Mbps
2484.338	24.8	1.4	163.0	1.0	0.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	54 Mbps
2483.527	41.8	1.4	180.0	1.4	0.0	20.0	V-Horn	PK	0.0	63.2	74.0	-10.8	1 Mbps
2483.252	40.5	1.4	178.0	1.2	0.0	20.0	V-Horn	PK	0.0	61.9	74.0	-12.1	6 Mbps
2483.370	40.3	1.4	165.0	1.3	0.0	20.0	V-Horn	PK	0.0	61.7	74.0	-12.3	36 Mbps
2483.506	40.0	1.4	245.0	1.5	0.0	20.0	V-Horn	PK	0.0	61.4	74.0	-12.6	11 Mbps
2483.319	39.6	1.4	91.0	1.3	0.0	20.0	V-Horn	PK	0.0	61.0	74.0	-13.0	54 Mbps
2483.302	37.4	1.4	0.0	1.6	0.0	20.0	H-Horn	PK	0.0	58.8	74.0	-15.2	36 Mbps
2483.720	37.4	1.4	324.0	1.4	0.0	20.0	H-Horn	PK	0.0	58.8	74.0	-15.2	1 Mbps
2483.419	37.3	1.4	160.0	1.4	0.0	20.0	H-Horn	PK	0.0	58.7	74.0	-15.3	11 Mbps
2483.597	36.9	1.4	177.0	1.5	0.0	20.0	H-Horn	PK	0.0	58.3	74.0	-15.7	6 Mbps
2483.109	36.7	1.4	163.0	1.0	0.0	20.0	H-Horn	PK	0.0	58.1	74.0	-15.9	54 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.05.07
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

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

COMMENTS

PC Power Setting = (40). High Channel. Data Rate: 1, 11, 6, 36 & 54 Mbps.
Sector Hyperlink Technologies antenna

EUT OPERATING MODES

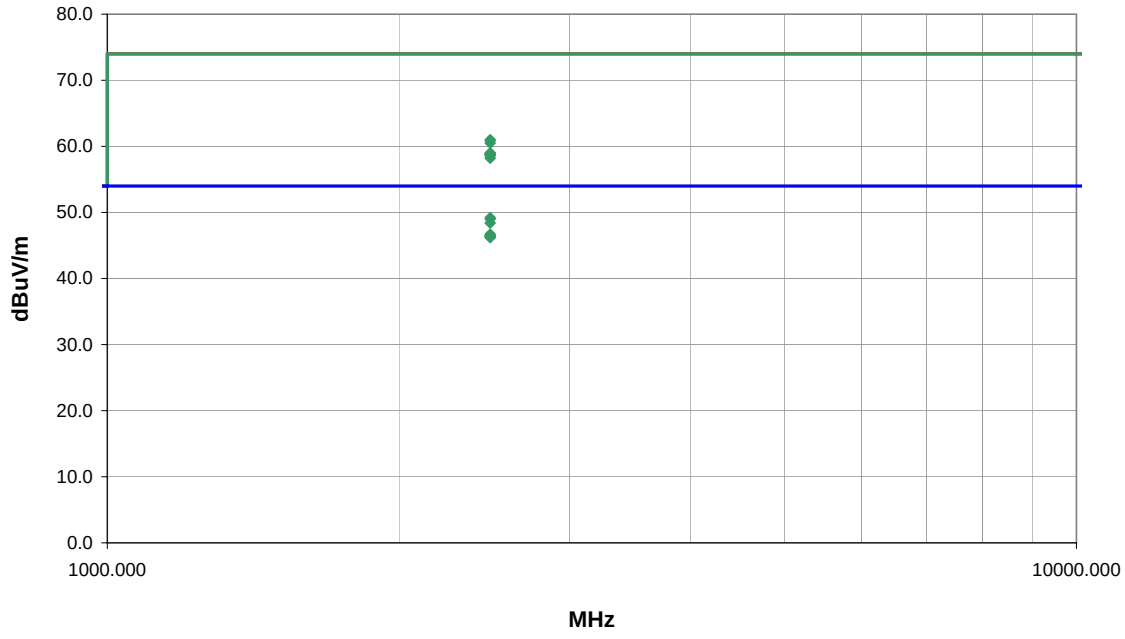
Transmitting at 2462 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	39
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
2483.240	27.8	1.4	272.0	2.1	0.0	20.0	H-Horn	AV	0.0	49.2	54.0	-4.8	54 Mbps
2483.193	27.6	1.4	267.0	2.6	0.0	20.0	H-Horn	AV	0.0	49.0	54.0	-5.0	36 Mbps
2483.151	27.0	1.4	284.0	2.4	0.0	20.0	H-Horn	AV	0.0	48.4	54.0	-5.6	11 Mbps
2483.813	25.3	1.4	1.0	2.3	0.0	20.0	H-Horn	AV	0.0	46.7	54.0	-7.3	1 Mbps
2483.352	25.1	1.4	163.0	1.0	0.0	20.0	V-Horn	AV	0.0	46.5	54.0	-7.5	1 Mbps
2483.149	25.0	1.4	313.0	1.3	0.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	36 Mbps
2483.199	25.0	1.4	174.0	1.4	0.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	11 Mbps
2483.368	25.0	1.4	360.0	2.6	0.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	6 Mbps
2483.327	24.9	1.4	137.0	1.4	0.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	6 Mbps
2483.452	24.8	1.4	225.0	1.3	0.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	54 Mbps
2483.702	39.6	1.4	267.0	2.6	0.0	20.0	H-Horn	PK	0.0	61.0	74.0	-13.0	36 Mbps
2483.602	39.5	1.4	272.0	2.1	0.0	20.0	H-Horn	PK	0.0	60.9	74.0	-13.1	54 Mbps
2483.323	39.1	1.4	284.0	2.4	0.0	20.0	H-Horn	PK	0.0	60.5	74.0	-13.5	11 Mbps
2483.268	37.6	1.4	1.0	2.3	0.0	20.0	H-Horn	PK	0.0	59.0	74.0	-15.0	1 Mbps
2483.251	37.5	1.4	174.0	1.4	0.0	20.0	V-Horn	PK	0.0	58.9	74.0	-15.1	11 Mbps
2483.650	37.5	1.4	163.0	1.0	0.0	20.0	V-Horn	PK	0.0	58.9	74.0	-15.1	1 Mbps
2483.720	37.4	1.4	313.0	1.3	0.0	20.0	V-Horn	PK	0.0	58.8	74.0	-15.2	36 Mbps
2483.632	37.3	1.4	360.0	2.6	0.0	20.0	H-Horn	PK	0.0	58.7	74.0	-15.3	6 Mbps
2483.608	37.2	1.4	137.0	1.4	0.0	20.0	V-Horn	PK	0.0	58.6	74.0	-15.4	6 Mbps
2483.578	36.8	1.4	225.0	1.3	0.0	20.0	V-Horn	PK	0.0	58.2	74.0	-15.8	54 Mbps

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.05.07
EMI 2006.4.26

EUT:	51153884-100, REVISION B, MULTINODE ASSEMBLY w/WISTRON CM9 RADIO MODULE (FCC ID NKRCM9)	Work Order:	HONE0011
Serial Number:	None	Date:	05/23/07
Customer:	Honeywell	Temperature:	23c
Attendees:	David Shipley	Humidity:	32%
Project:	None	Barometric Pres.:	30.08
Tested by:	Jaemi Suh	Power: 120VAC/60Hz	Job Site: OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions	ANSI C63.4

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

COMMENTS

PC Power Setting = (40). High Channel. Data Rate: 6 & 54 Mbps.
14 dBi Sector antenna

EUT OPERATING MODES

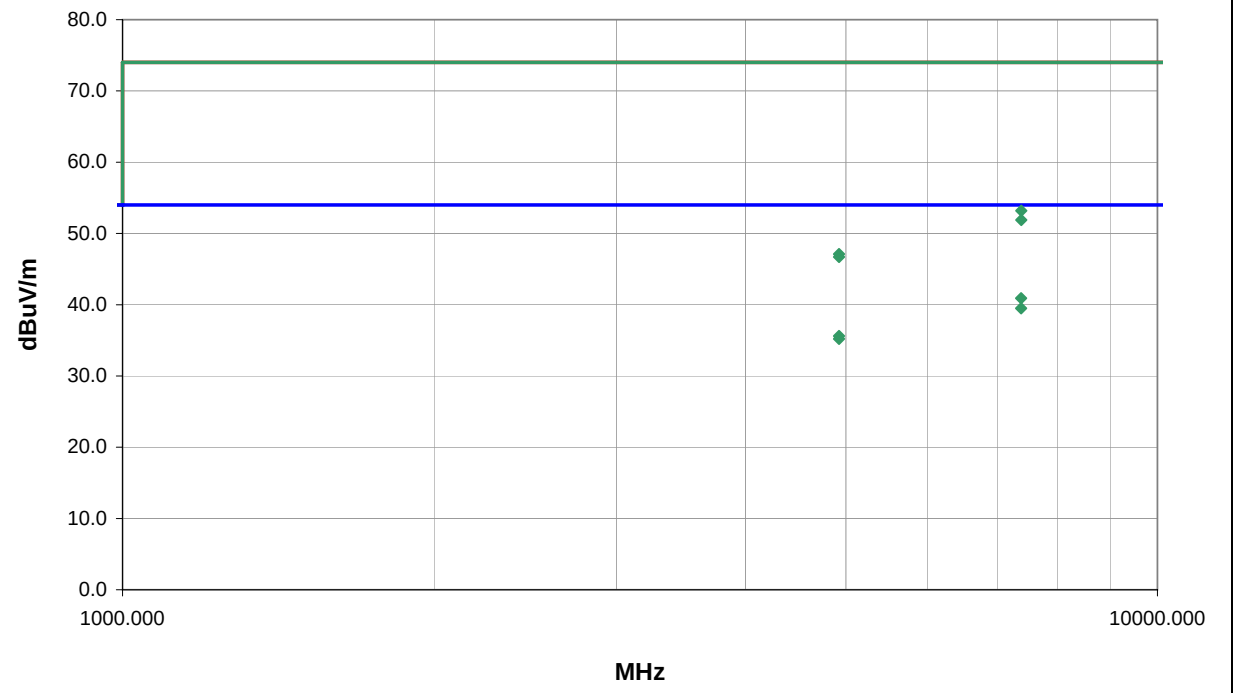
Transmitting at 2462 MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	40
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)
7384.628	25.6	15.3	96.0	1.7	3.0	0.0	H-Horn	AV	0.0	40.9	54.0	-13.1
7383.818	24.2	15.3	146.0	3.8	3.0	0.0	V-Horn	AV	0.0	39.5	54.0	-14.5
4923.965	24.9	10.7	22.0	1.6	3.0	0.0	V-Horn	AV	0.0	35.6	54.0	-18.4
4924.016	24.5	10.7	130.0	1.6	3.0	0.0	H-Horn	AV	0.0	35.2	54.0	-18.8
7387.110	37.9	15.3	96.0	1.7	3.0	0.0	H-Horn	PK	0.0	53.2	74.0	-20.8
7385.859	36.6	15.3	146.0	3.8	3.0	0.0	V-Horn	PK	0.0	51.9	74.0	-22.1
4923.859	36.4	10.7	22.0	1.6	3.0	0.0	V-Horn	PK	0.0	47.1	74.0	-26.9
4923.961	36.0	10.7	130.0	1.6	3.0	0.0	H-Horn	PK	0.0	46.7	74.0	-27.3