FCC PART 15.247
IC RSS-210, ISSUE 8, DEC 2010
TEST AND MEASUREMENT REPORT

For

Ruckus Wireless, Inc.

350 West Java Drive,

Sunnyvale, CA 94089, USA

FCC ID: S9G-MPE2N33A
IC: 5912A-MPE2N33A

Report Type:	**Product Type:**
CIIPC	802.11 b/g/n Wireless Module

Prepared By: Ning Ma

Report Number: R1206071-247-2.4GHz

Report Date: 2012-10-12

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1206071-247-2.4GHz	CIIPC report	2012-10-12

1 General Description

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *Ruckus Wireless, Inc*., and their product model: *MPE2N33A, with FCC ID: S9G-MPE2N33A, IC: 5912A-MPE2N33A* which will henceforth be referred to as the EUT (Equipment Under Test). The EUT is a dual band Wireless 802.11b/g/n wireless module.

1.2 Mechanical Description of EUT

The "EUT" measures approximately 6.*9cm (L) x 3.9cm (W) x 1.0cm (H)*, and weighs approximately 16.*0*g.

The test data gathered are from typical production sample, serial number: 123, provided by the manufacturer.

1.3 Objective

This report is prepared on behalf of *Ruckus Wireless, Inc.,* in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commissions rules and IC RSS-210 Issue 8, Dec 2010.

The objective is to add additional antenna with class II permissive change on the original application by determine compliance with FCC/IC rules for Antenna Requirements, Conducted Emissions, Occupied Bandwidth, Output Power, Power Spectral Density, Radiated and Conducted Spurious Emissions, and Band Edge. Please refer to the detail antenna list in the antenna requirement section.

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2: 2003, The Treatment of Uncertainty in EMC Measurements, the values ranging from $\pm$2.0 dB for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2003, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2009.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

The software used, 3CDaemon Version 2.0, Putty Version 0.60.0.0, and Art version 2.18.2 were provided by client and verified by Ning Ma to comply with the standard requirements being tested against.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Special Accessories

Manufacturer	Description	Model No.	Serial No.
Atheros Communications	Module Supporting Board	250-01865-020	PB92-020

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Dell	Laptop	Latitude E5420	CHZMLQ1

2.6 EUT Internal Configuration

NA: Only the module card was tested.

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Results
FCC §15.247(i), §2.1091 IC RSS-102	RF Exposure	Compliant
FCC §15.203 IC RSS-Gen §7.1.2	Antenna Requirement	Compliant
FCC §15.207(a) IC RSS-Gen §7.2.4	AC Line Conducted Emissions	NA [1]
FCC §15.247(d) IC RSS-210 §A8.5	Spurious Emissions at Antenna Port	NA [1]
FCC §15.205 IC RSS-210 §2.2	Restricted Bands	Compliant
FCC §15.209, §15.247 IC RSS-210 §A8.5	Radiated Spurious Emissions	Compliant
FCC §15.247(a)(2) IC RSS-210 §A8.2	6 dB Emission Bandwidth	NA [1]
FCC §15.247(b)(3) IC RSS-210 §A8.4	Maximum Peak Output Power	Compliant[2]
FCC §15.247(d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	Compliant[2]
FCC §15.247(e) IC RSS-210 §A8.2 (b)	Power Spectral Density	Compliant[2]
IC §RSS-210 §2.3 RSS-Gen §6	Receiver Spurious Emission	Compliant

Note: [1] Share with original application report results. (FCC ID: S9G-MPE2N33A)
[2] The 5 dBi antenna result share with original application report result. (FCC ID: S9G-MPE2N33A)

4 FCC §15.247(i), §2.1091 & IC RSS-102 - RF Exposure

4.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Before equipment certification is granted, the procedure of IC RSS-102 must be followed concerning the exposure of humans to RF fields.

According to RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Time Averaging (min)
0.003 - 1	280	2.19	-	6
1 - 10	280 / f	2.19 / f	-	6
10 - 30	28	2.19 / f	-	6
30 – 300	28	0.073	2*	6
300 – 1 500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	f / 150	6
1 500 – 15 000	61.4	0.163	10	6
15 000 – 150 000	61.4	0.163	10	$616000 / f^{1.2}$
150 000- 300 000	$0.158\ f^{0.5}$	$4.21 \times 10\ -4\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000 / f^{1.2}$

Note: *f* is frequency in MHz
* Power density limit is applicable at frequencies greater than 100 MHz

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 MPE Results

Antenna gain 5 dBi

Maximum peak output power at antenna input terminal (dBm):	25.72
Maximum peak output power at antenna input terminal (mW):	373.25
Prediction distance (cm):	20
Prediction frequency (MHz):	2462
Maximum Antenna Gain, typical (dBi):	5.0
Maximum Antenna Gain (numeric):	3.16
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.23
Power density of prediction frequency at 20.0 cm (W/m^2):	2.3
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

Antenna gain 9 dBi

Maximum peak output power at antenna input terminal (dBm):	23.46
Maximum peak output power at antenna input terminal (mW):	221.82
Prediction distance (cm):	20
Prediction frequency (MHz):	2452
Maximum Antenna Gain, typical (dBi):	9.0
Maximum Antenna Gain (numeric):	7.94
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.35
Power density of prediction frequency at 20.0 cm (W/m^2):	3.5
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

Antenna gain 19 dBi

Maximum peak output power at antenna input terminal (dBm):	16.95
Maximum peak output power at antenna input terminal (mW):	49.55
Prediction distance (cm):	20
Prediction frequency (MHz):	2412
Maximum Antenna Gain, typical (dBi):	19.0
Maximum Antenna Gain (numeric):	79.43
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.78
Power density of prediction frequency at 20.0 cm (W/m^2):	7.8
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	10

Device is compliance with the requirement MPE limit at 20 cm distance for the uncontrolled exposure.

5 FCC §15.203 & IC RSS-Gen §7.1.2 – Antenna Requirements

5.1 Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b)(4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

As per IC RSS-Gen §7.1.2: Transmitter Antenna

A transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

5.2 Antenna List

Manufacturer	Model	Gain (dBi)
Ruckus	ZoneFlex 7982 Omni	3
Ruckus	Corfu Omni	3
MARS	AT-0505-MP	5
Ruckus	TBolts3	6
Ruckus	TBolts2	9
MARS	AT-1901-DP	19

Note: The power setting was controlled by manufacture with different antenna configuration. The power setting of the different antenna will be set with the corresponded value and no more then the level reported.

6 FCC §15.205, §15.209, §15.247(d) & IC RSS-210 §A8.5 – Spurious Radiated Emissions

6.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(a) and RSS-210: Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

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

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 –167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

As per IC RSS-210 A8.5 Out-of-band Emissions, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2009. The specification used was the FCC 15 Subpart C and IC RSS-210 limits.

6.3 EUT Setup

The radiated emissions tests were performed using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15C, IC RSS-210/Gen limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

6.4 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
(2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

6.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to the indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, the Corrected Amplitude (CA) of 40.3 dBuV/m = indicated Amplitude reading (Ai) 32.5 dBuV + Antenna Factor (AF) 23.5dB + Cable Loss (CL) 3.7 dB + Attenuator (Atten) 10 dB - Amplifier Gain (Ga) 29.4 dB

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Limit

6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2012-03-21	1 year
Agilent	Spectrum Analyzer	E4440A	MY44303352	2012-05-10	1 year
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	-
Sunol Science Corp	Combination Antenna	JB3	A0020106-3	2012-06-29	1 year
EMCO	Horn antenna	3115	9511-4627	2012-10-03	1 year
Hewlett Packard	Pre-amplifier	8447D	2944A06639	2012-06-09	1 year
Mini-Circuits	Pre-amplifier	ZVA-183-S	570400946	2012-05-09	1 year

Statement of Traceability: BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.

6.7 Test Environmental Conditions

Temperature:	23 °C
Relative Humidity:	48 %
ATM Pressure:	101.8 kPa

The testing was performed by Ning Ma on 2012-06-29 in 5 meter chamber 3.

6.8 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15, Subpart C, section 15.205, 15.209 and 15.247 & IC RSS-210, RSS-Gen standard's radiated emissions limits, and had the worst margin of:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range**
-0.262	2483.5	Vertical	30 MHz- 25 GHz

Please refer to the following table and plots for specific test result details

6.9 Radiated Emissions Test Result Data

Radiated Emission at 3 meters,

Antenna gain 9 dBi

802.11b Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	76.68	195	100	V	28.118	2.94	0	107.738	-	-	Peak
2412	75.97	190	114	H	28.159	2.94	0	107.069	-	-	Peak
2412	72.38	195	100	V	28.118	2.94	0	103.438	-	-	Ave
2412	71.62	190	114	H	28.159	2.94	0	102.719	-	-	Ave
4824	34.35	180	100	V	32.603	4.06	27.5	43.513	74	-30.487	Peak
4824	34.52	190	100	H	32.629	4.06	27.5	43.709	74	-30.291	Peak
4824	19.22	180	100	V	32.603	4.06	27.5	28.383	54	-25.617	Ave
4824	19.24	190	100	H	32.629	4.06	27.5	28.429	54	-25.571	Ave
7236	34.93	187	100	V	35.453	4.93	26.8	48.513	87.738	-39.225	Peak
7236	34.9	185	100	H	35.478	4.93	26.8	48.508	87.069	-38.561	Peak
7236	19.79	187	100	V	35.453	4.93	26.8	33.373	83.438	-50.065	Ave
7236	19.7	185	100	H	35.478	4.93	26.8	33.308	82.719	-49.411	Ave
9648	33.57	183	100	V	37.66	5.82	27.7	49.35	87.738	-38.388	Peak
9648	33.62	189	100	H	37.663	5.82	27.7	49.403	87.069	-37.666	Peak
9648	18.95	183	100	V	37.66	5.82	27.7	34.73	83.438	-48.708	Ave
9648	18.94	189	100	H	37.663	5.82	27.7	34.723	82.719	-47.996	Ave
2390	30.3	195	100	V	28.118	2.94	0	61.358	74	-12.642	Peak
2390	30.66	190	112	H	28.159	2.94	0	61.759	74	-12.241	Peak
2390	16.31	195	100	V	28.118	2.94	0	47.368	54	-6.632	Ave
2390	17.38	190	112	H	28.159	2.94	0	48.479	54	-5.521	Ave
250	38.64	267	100	V	12.3	11.32	25.2	37.06	46	-8.94	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	57.63	190	100	V	28.118	2.94	0	88.688	-	-	Peak
2437	55.99	194	111	H	28.159	2.94	0	87.089	-	-	Peak
2437	52.95	190	100	V	28.118	2.94	0	84.008	-	-	Ave
2437	51.64	194	111	H	28.159	2.94	0	82.739	-	-	Ave
4874	33.54	175	100	V	32.603	4.06	27.4	42.803	74	-31.197	Peak
4874	33.89	182	100	H	32.629	4.06	27.4	43.179	74	-30.821	Peak
4874	19.15	175	100	V	32.603	4.06	27.4	28.413	54	-25.587	Ave
4874	19.11	182	100	H	32.629	4.06	27.4	28.399	54	-25.601	Ave
7311	33.98	181	100	V	35.453	4.93	26.8	47.563	74	-26.437	Peak
7311	34.38	185	100	H	35.478	4.93	26.8	47.988	74	-26.012	Peak
7311	19.71	181	100	V	35.453	4.93	26.8	33.293	54	-20.707	Ave
7311	19.7	185	100	H	35.478	4.93	26.8	33.308	54	-20.692	Ave
9748	33.59	185	100	V	37.66	5.82	27.7	49.37	68.688	-19.318	Peak
9748	33.54	184	100	H	37.663	5.82	27.7	49.323	67.089	-17.766	Peak
9748	18.96	185	100	V	37.66	5.82	27.7	34.74	64.008	-29.268	Ave
9748	18.96	184	100	H	37.663	5.82	27.7	34.743	62.739	-27.996	Ave
250	40.11	256	100	V	12.3	11.32	25.2	38.53	46	-7.47	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	81.5	192	100	V	28.272	2.94	0	112.712	-	-	Peak
2462	80.03	192	111	H	28.159	2.94	0	111.129	-	-	Peak
2462	77.11	192	100	V	28.272	2.94	0	108.322	-	-	Ave
2462	75.85	192	111	H	28.159	2.94	0	106.949	-	-	Ave
4924	34.99	188	100	V	32.732	4.1	27.4	44.422	74	-29.578	Peak
4924	34.81	192	100	H	32.8	4.1	27.4	44.31	74	-29.69	Peak
4924	22.54	188	100	V	32.732	4.1	27.4	31.972	54	-22.028	Ave
4924	23.11	192	100	H	32.8	4.1	27.4	32.61	54	-21.39	Ave
7386	33.71	187	100	V	36.049	4.89	26.9	47.749	74	-26.251	Peak
7386	33.49	188	100	H	36.143	4.89	26.9	47.623	74	-26.377	Peak
7386	18.82	187	100	V	36.049	4.89	26.9	32.859	54	-21.141	Ave
7386	18.81	188	100	H	36.143	4.89	26.9	32.943	54	-21.057	Ave
9848	34.4	184	100	V	38.024	5.77	27.7	50.494	92.712	-42.218	Peak
9848	33.03	190	100	H	38.059	5.77	27.7	49.159	91.129	-41.97	Peak
9848	18.02	184	100	V	38.024	5.77	27.7	34.114	88.322	-54.208	Ave
9848	17.98	190	100	H	38.059	5.77	27.7	34.109	86.949	-52.84	Ave
2483.5	35.06	192	100	V	28.118	2.94	0	66.118	74	-7.882	Peak
2483.5	32.32	192	111	H	28.422	2.94	0	63.682	74	-10.318	Peak
2483.5	19.21	192	100	V	28.118	2.94	0	50.268	54	-3.732	Ave
2483.5	17.77	192	111	H	28.422	2.94	0	49.132	54	-4.868	Ave
250	34.96	261	100	V	12.3	11.32	25.2	33.38	46	-12.62	QP

802.11 g Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	81.96	191	100	V	28.118	2.94	0	113.018	-	-	Peak
2412	79.57	183	115	H	28.159	2.94	0	110.669	-	-	Peak
2412	67.14	191	100	V	28.118	2.94	0	98.198	-	-	Ave
2412	66.68	183	115	H	28.159	2.94	0	97.779	-	-	Ave
4824	33.47	190	100	V	32.603	4.06	27.5	42.633	74	-31.367	Peak
4824	33.79	186	100	H	32.629	4.06	27.5	42.979	74	-31.021	Peak
4824	19.24	190	100	V	32.603	4.06	27.5	28.403	54	-25.597	Ave
4824	19.28	186	100	H	32.629	4.06	27.5	28.469	54	-25.531	Ave
7236	34.55	193	100	V	35.453	4.93	26.8	48.133	74	-25.867	Peak
7236	34.34	188	100	H	35.478	4.93	26.8	47.948	74	-26.052	Peak
7236	19.68	193	100	V	35.453	4.93	26.8	33.263	54	-20.737	Ave
7236	19.83	188	100	H	35.478	4.93	26.8	33.438	54	-20.562	Ave
9648	33.57	190	100	V	37.66	5.82	27.7	49.35	93.018	-43.668	Peak
9648	33.66	183	100	H	37.663	5.82	27.7	49.443	90.669	-41.226	Peak
9648	19.01	190	100	V	37.66	5.82	27.7	34.79	78.198	-43.408	Ave
9648	18.98	183	100	H	37.663	5.82	27.7	34.763	77.779	-43.016	Ave
2390	34.6	191	100	V	28.118	2.94	0	65.658	74	-8.342	Peak
2390	32.41	183	115	H	28.159	2.94	0	63.509	74	-10.491	Peak
2390	17.94	191	100	V	28.118	2.94	0	48.998	54	-5.002	Ave
2390	18.07	183	115	H	28.159	2.94	0	49.169	54	-4.831	Ave
250	33.51	260	100	V	12.3	11.32	25.2	31.93	46	-14.07	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	82.23	187	100	V	28.118	2.94	0	113.288	-	-	Peak
2437	79.72	196	110	H	28.159	2.94	0	110.819	-	-	Peak
2437	67.26	187	100	V	28.118	2.94	0	98.318	-	-	Ave
2437	66.45	196	110	H	28.159	2.94	0	97.549	-	-	Ave
4874	33.38	189	100	V	32.603	4.06	27.4	42.643	74	-31.357	Peak
4874	33.6	192	100	H	32.629	4.06	27.4	42.889	74	-31.111	Peak
4874	18.93	189	100	V	32.603	4.06	27.4	28.193	54	-25.807	Ave
4874	18.88	192	100	H	32.629	4.06	27.4	28.169	54	-25.831	Ave
7311	34.21	185	100	V	35.453	4.93	26.8	47.793	74	-26.207	Peak
7311	34.61	191	100	H	35.478	4.93	26.8	48.218	74	-25.782	Peak
7311	19.706	185	100	V	35.453	4.93	26.8	33.289	54	-20.711	Ave
7311	19.71	191	100	H	35.478	4.93	26.8	33.318	54	-20.682	Ave
9748	33.99	188	100	V	37.66	5.82	27.7	49.77	93.288	-43.518	Peak
9748	33.7	193	100	H	37.663	5.82	27.7	49.483	90.819	-41.336	Peak
9748	19.04	188	100	V	37.66	5.82	27.7	34.82	78.318	-43.498	Ave
9748	18.96	193	100	H	37.663	5.82	27.7	34.743	77.549	-42.806	Ave
250	40.22	270	100	V	12.3	11.32	25.2	38.64	46	-7.36	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	83.14	191	100	V	28.272	2.94	0	114.352	-	-	Peak
2462	80.11	188	111	H	28.159	2.94	0	111.209	-	-	Peak
2462	68.36	191	100	V	28.272	2.94	0	99.572	-	-	Ave
2462	67.02	188	111	H	28.159	2.94	0	98.119	-	-	Ave
4924	33.36	208	100	V	32.732	4.1	27.4	42.792	74	-31.208	Peak
4924	33.59	182	100	H	32.8	4.1	27.4	43.09	74	-30.91	Peak
4924	18.92	208	100	V	32.732	4.1	27.4	28.352	54	-25.648	Ave
4924	18.42	182	100	H	32.8	4.1	27.4	27.92	54	-26.08	Ave
7386	33.24	184	100	V	36.049	4.89	26.9	47.279	74	-26.721	Peak
7386	33.57	179	100	H	36.143	4.89	26.9	47.703	74	-26.297	Peak
7386	18.99	184	100	V	36.049	4.89	26.9	33.029	54	-20.971	Ave
7386	18.98	179	100	H	36.143	4.89	26.9	33.113	54	-20.887	Ave
9848	32.39	186	100	V	38.024	5.77	27.7	48.484	94.352	-45.868	Peak
9848	33.15	181	100	H	38.059	5.77	27.7	49.279	91.209	-41.93	Peak
9848	18.1	186	100	V	38.024	5.77	27.7	34.194	79.572	-45.378	Ave
9848	18.12	181	100	H	38.059	5.77	27.7	34.249	78.119	-43.87	Ave
2483.5	37.62	191	100	V	28.118	2.94	0	68.678	74	-5.322	Peak
2483.5	33.93	188	111	H	28.422	2.94	0	65.292	74	-8.708	Peak
2483.5	19.82	191	100	V	28.118	2.94	0	50.878	54	-3.122	Ave
2483.5	18.41	188	111	H	28.422	2.94	0	49.772	54	-4.228	Ave
250	41.56	270	100	V	12.3	11.32	25.2	39.98	46	-6.02	QP

802.11 n 40 Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz, measured at 3 meters											
2422	77.38	187	100	V	28.118	2.94	0	108.438	-	-	Peak
2422	74.36	192	110	H	28.159	2.94	0	105.459	-	-	Peak
2422	61.35	187	100	V	28.118	2.94	0	92.408	-	-	Ave
2422	60.59	192	110	H	28.159	2.94	0	91.689	-	-	Ave
4844	33.04	188	100	V	32.603	4.06	27.5	42.203	74	-31.797	Peak
4844	33.6	189	100	H	32.629	4.06	27.5	42.789	74	-31.211	Peak
4844	19.01	188	100	V	32.603	4.06	27.5	28.173	54	-25.827	Ave
4844	18.92	189	100	H	32.629	4.06	27.5	28.109	54	-25.891	Ave
7266	34.56	182	100	V	35.453	4.93	26.8	48.143	74	-25.857	Peak
7266	34.13	194	100	H	35.478	4.93	26.8	47.738	74	-26.262	Peak
7266	19.62	182	100	V	35.453	4.93	26.8	33.203	54	-20.797	Ave
7266	19.6	194	100	H	35.478	4.93	26.8	33.208	54	-20.792	Ave
9688	33.95	182	100	V	37.66	5.82	27.7	49.73	88.438	-38.708	Peak
9688	33.69	196	100	H	37.663	5.82	27.7	49.473	85.459	-35.986	Peak
9688	18.97	182	100	V	37.66	5.82	27.7	34.75	72.408	-37.658	Ave
9688	18.95	196	100	H	37.663	5.82	27.7	34.733	71.689	-36.956	Ave
2390	40.13	187	100	V	28.118	2.94	0	71.188	74	-2.812	Peak
2390	40.11	192	110	H	28.159	2.94	0	71.209	74	-2.791	Peak
2390	20.14	187	100	V	28.118	2.94	0	51.198	54	-2.802	Ave
2390	19.76	192	110	H	28.159	2.94	0	50.859	54	-3.141	Ave
250	43.06	259	100	V	12.3	11.32	25.2	41.48	46	-4.52	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	79.02	191	100	V	28.118	2.94	0	110.078	-	-	Peak
2437	76.62	190	112	H	28.159	2.94	0	107.719	-	-	Peak
2437	63.72	191	100	V	28.118	2.94	0	94.778	-	-	Ave
2437	62.63	190	112	H	28.159	2.94	0	93.729	-	-	Ave
4874	33.2	188	100	V	32.603	4.06	27.4	42.463	74	-31.537	Peak
4874	33.06	193	100	H	32.629	4.06	27.4	42.349	74	-31.651	Peak
4874	18.92	188	100	V	32.603	4.06	27.4	28.183	54	-25.817	Ave
4874	18.87	193	100	H	32.629	4.06	27.4	28.159	54	-25.841	Ave
7236	34.92	186	100	V	35.453	4.93	26.8	48.503	74	-25.497	Peak
7236	34.52	190	100	H	35.478	4.93	26.8	48.128	74	-25.872	Peak
7236	19.66	186	100	V	35.453	4.93	26.8	33.243	54	-20.757	Ave
7236	19.65	190	100	H	35.478	4.93	26.8	33.258	54	-20.742	Ave
9648	33.93	185	100	V	37.66	5.82	27.7	49.71	90.078	-40.368	Peak
9648	33.81	195	100	H	37.663	5.82	27.7	49.593	87.719	-38.126	Peak
9648	18.98	185	100	V	37.66	5.82	27.7	34.76	74.778	-40.018	Ave
9648	18.99	195	100	H	37.663	5.82	27.7	34.773	73.729	-38.956	Ave
250	41.05	262	100	V	12.3	11.32	25.2	39.47	46	-6.53	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2452 MHz, measured at 3 meters											
2462	79.01	187	100	V	28.272	2.94	0	110.222	-	-	Peak
2462	76.04	191	110	H	28.159	2.94	0	107.139	-	-	Peak
2462	63.46	187	100	V	28.272	2.94	0	94.672	-	-	Ave
2462	62.06	191	110	H	28.159	2.94	0	93.159	-	-	Ave
4924	32.94	186	100	V	32.732	4.1	27.4	42.372	74	-31.628	Peak
4924	33.1	193	100	H	32.8	4.1	27.4	42.6	74	-31.4	Peak
4924	18.21	186	100	V	32.732	4.1	27.4	27.642	54	-26.358	Ave
4924	18.15	193	100	H	32.8	4.1	27.4	27.65	54	-26.35	Ave
7386	33.92	185	100	V	36.049	4.89	26.9	47.959	74	-26.041	Peak
7386	33.4	191	100	H	36.143	4.89	26.9	47.533	74	-26.467	Peak
7386	18.99	185	100	V	36.049	4.89	26.9	33.029	54	-20.971	Ave
7386	19.01	191	100	H	36.143	4.89	26.9	33.143	54	-20.857	Ave
9848	32.98	189	100	V	38.024	5.77	27.7	49.074	90.222	-41.148	Peak
9848	32.69	190	100	H	38.059	5.77	27.7	48.819	87.139	-38.32	Peak
9848	18.06	189	100	V	38.024	5.77	27.7	34.154	74.672	-40.518	Ave
9848	18.02	190	100	H	38.059	5.77	27.7	34.149	73.159	-39.01	Ave
2483.5	41.95	187	100	V	28.118	2.94	0	73.008	74	-0.992	Peak
2483.5	39.17	191	110	H	28.422	2.94	0	70.532	74	-3.468	Peak
2483.5	20.14	187	100	V	28.118	2.94	0	51.198	54	-2.802	Ave
2483.5	18.37	191	110	H	28.422	2.94	0	49.732	54	-4.268	Ave
250	38.64	258	100	V	12.3	11.32	25.2	37.06	46	-8.94	QP

Antenna gain 19 dBi

802.11b Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	78.42	360	124	V	28.118	2.94	0	109.478	-	-	Peak
2412	79.58	360	122	H	28.159	2.94	0	110.679	-	-	Peak
2412	74.33	360	124	V	28.118	2.94	0	105.388	-	-	Ave
2412	75.46	360	122	H	28.159	2.94	0	106.559	-	-	Ave
4824	34.35	0	100	V	32.603	4.06	27.5	43.513	74	-30.487	Peak
4824	36	20	100	H	32.629	4.06	27.5	45.189	74	-28.811	Peak
4824	21.81	0	100	V	32.603	4.06	27.5	30.973	54	-23.027	Ave
4824	26.4	20	100	H	32.629	4.06	27.5	35.589	54	-18.411	Ave
7236	32.99	360	100	V	35.453	4.93	26.8	46.573	74	-27.427	Peak
7236	32.92	360	100	H	35.478	4.93	26.8	46.528	74	-27.472	Peak
7236	18.29	360	100	V	35.453	4.93	26.8	31.873	54	-22.127	Ave
7236	18.3	360	100	H	35.478	4.93	26.8	31.908	54	-22.092	Ave
9648	31.3	360	100	V	37.66	5.82	27.7	47.08	89.478	-42.398	Peak
9648	31.53	360	100	H	37.663	5.82	27.7	47.313	90.679	-43.366	Peak
9648	16.78	360	100	V	37.66	5.82	27.7	32.56	85.388	-52.828	Ave
9648	16.82	360	100	H	37.663	5.82	27.7	32.603	86.559	-53.956	Ave
2390	33.1	360	124	V	28.118	2.94	0	64.158	74	-9.842	Peak
2390	33.88	360	122	H	28.159	2.94	0	64.979	74	-9.021	Peak
2390	18.91	360	124	V	28.118	2.94	0	49.968	54	-4.032	Ave
2390	20.61	360	122	H	28.159	2.94	0	51.709	54	-2.291	Ave
250	40.02	248	100	V	12.3	11.32	25.2	38.44	46	-7.56	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	79.16	360	121	V	28.118	2.94	0	110.218	-	-	Peak
2437	78.61	360	122	H	28.159	2.94	0	109.709	-	-	Peak
2437	75.31	360	121	V	28.118	2.94	0	106.368	-	-	Ave
2437	74.71	360	122	H	28.159	2.94	0	105.809	-	-	Ave
4874	34.27	360	100	V	32.603	4.06	27.4	43.533	74	-30.467	Peak
4874	33.66	360	100	H	32.629	4.06	27.4	42.949	74	-31.051	Peak
4874	19.19	360	100	V	32.603	4.06	27.4	28.453	54	-25.547	Ave
4874	19.14	360	100	H	32.629	4.06	27.4	28.429	54	-25.571	Ave
7236	32.76	360	100	V	35.453	4.93	26.8	46.343	74	-27.657	Peak
7236	33.23	360	100	H	35.478	4.93	26.8	46.838	74	-27.162	Peak
7236	18.28	360	100	V	35.453	4.93	26.8	31.863	54	-22.137	Ave
7236	18.29	360	100	H	35.478	4.93	26.8	31.898	54	-22.102	Ave
9648	32.67	360	100	V	37.66	5.82	27.7	48.45	90.218	-41.768	Peak
9648	33.99	360	100	H	37.663	5.82	27.7	49.773	89.709	-39.936	Peak
9648	18.28	360	100	V	37.66	5.82	27.7	34.06	86.368	-52.308	Ave
9648	18.31	360	100	H	37.663	5.82	27.7	34.093	85.809	-51.716	Ave
250	39.29	255	100	V	12.3	11.32	25.2	37.71	46	-8.29	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	80.09	360	118	V	28.272	2.94	0	111.302	-	-	Peak
2462	79.67	360	117	H	28.159	2.94	0	110.769	-	-	Peak
2462	76.19	360	118	V	28.272	2.94	0	107.402	-	-	Ave
2462	75.51	360	117	H	28.159	2.94	0	106.609	-	-	Ave
4924	33.16	360	100	V	32.732	4.1	27.4	42.592	74	-31.408	Peak
4924	3442	360	100	H	32.8	4.1	27.4	3451.5	74	3377.5	Peak
4924	19.42	360	100	V	32.732	4.1	27.4	28.852	54	-25.148	Ave
4924	23.9	360	100	H	32.8	4.1	27.4	33.4	54	-20.6	Ave
7386	33.16	360	100	V	36.049	4.89	26.9	47.199	74	-26.801	Peak
7386	32.81	360	100	H	36.143	4.89	26.9	46.943	74	-27.057	Peak
7386	18.78	360	100	V	36.049	4.89	26.9	32.819	54	-21.181	Ave
7386	18.36	360	100	H	36.143	4.89	26.9	32.493	54	-21.507	Ave
9848	32.02	360	100	V	38.024	5.77	27.7	48.114	91.302	-43.188	Peak
9848	31.82	360	100	H	38.059	5.77	27.7	47.949	90.769	-42.82	Peak
9848	17.31	360	100	V	38.024	5.77	27.7	33.404	87.402	-53.998	Ave
9848	17.32	360	100	H	38.059	5.77	27.7	33.449	86.609	-53.16	Ave
2483.5	35.81	360	118	V	28.118	2.94	0	66.868	74	-7.132	Peak
2483.5	35.99	360	117	H	28.422	2.94	0	67.352	74	-6.648	Peak
2483.5	20.22	360	118	V	28.118	2.94	0	51.278	54	-2.722	Ave
2483.5	21.07	360	117	H	28.422	2.94	0	52.432	54	-1.568	Ave
250	39.06	251	100	V	12.3	11.32	25.2	37.48	46	-8.52	QP

802.11 g Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	84.5	360	120	V	28.118	2.94	0	115.558	-	-	Peak
2412	83.72	360	122	H	28.159	2.94	0	114.819	-	-	Peak
2412	68.88	360	120	V	28.118	2.94	0	99.938	-	-	Ave
2412	69.85	360	122	H	28.159	2.94	0	100.949	-	-	Ave
4824	33.96	360	100	V	32.603	4.06	27.5	43.123	74	-30.877	Peak
4824	35.61	360	100	H	32.629	4.06	27.5	44.799	74	-29.201	Peak
4824	19.85	360	100	V	32.603	4.06	27.5	29.013	54	-24.987	Ave
4824	21	360	100	H	32.629	4.06	27.5	30.189	54	-23.811	Ave
7236	32.68	360	100	V	35.453	4.93	26.8	46.263	74	-27.737	Peak
7236	32.73	360	100	H	35.478	4.93	26.8	46.338	74	-27.662	Peak
7236	18.29	360	100	V	35.453	4.93	26.8	31.873	54	-22.127	Ave
7236	18.76	360	100	H	35.478	4.93	26.8	32.368	54	-21.632	Ave
9648	31.52	360	100	V	37.66	5.82	27.7	47.3	95.558	-48.258	Peak
9648	31.27	360	100	H	37.663	5.82	27.7	47.053	94.819	-47.766	Peak
9648	17.22	360	100	V	37.66	5.82	27.7	33	79.938	-46.938	Ave
9648	17.27	360	100	H	37.663	5.82	27.7	33.053	80.949	-47.896	Ave
2390	35.23	360	120	V	28.118	2.94	0	66.288	74	-7.712	Peak
2390	35.9	360	122	H	28.159	2.94	0	66.999	74	-7.001	Peak
2390	20.2	360	120	V	28.118	2.94	0	51.258	54	-2.742	Ave
2390	21.87	360	122	H	28.159	2.94	0	52.969	54	-1.031	Ave
250	38.97	253	100	V	12.3	11.32	25.2	37.39	46	-8.61	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	84.72	360	125	V	28.118	2.94	0	115.778	-	-	Peak
2437	82.68	360	121	H	28.159	2.94	0	113.779	-	-	Peak
2437	69.93	360	125	V	28.118	2.94	0	100.988	-	-	Ave
2437	69.51	360	121	H	28.159	2.94	0	100.609	-	-	Ave
4874	33.99	360	100	V	32.603	4.06	27.4	43.253	74	-30.747	Peak
4874	33.59	360	100	H	32.629	4.06	27.4	42.879	74	-31.121	Peak
4874	19.13	360	100	V	32.603	4.06	27.4	28.393	54	-25.607	Ave
4874	19.15	360	100	H	32.629	4.06	27.4	28.439	54	-25.561	Ave
7236	32.46	360	100	V	35.453	4.93	26.8	46.043	74	-27.957	Peak
7236	32.85	360	100	H	35.478	4.93	26.8	46.458	74	-27.542	Peak
7236	18.44	360	100	V	35.453	4.93	26.8	32.023	54	-21.977	Ave
7236	18.45	360	100	H	35.478	4.93	26.8	32.058	54	-21.942	Ave
9648	33.01	360	100	V	37.66	5.82	27.7	48.79	95.778	-46.988	Peak
9648	32.92	360	100	H	37.663	5.82	27.7	48.703	93.779	-45.076	Peak
9648	18.27	360	100	V	37.66	5.82	27.7	34.05	80.988	-46.938	Ave
9648	18.29	360	100	H	37.663	5.82	27.7	34.073	80.609	-46.536	Ave
250	37.39	246	100	V	12.3	11.32	25.2	35.81	46	-10.19	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	85.24	360	121	V	28.272	2.94	0	116.452	-	-	Peak
2462	83.33	360	115	H	28.159	2.94	0	114.429	-	-	Peak
2462	70.14	360	121	V	28.272	2.94	0	101.352	-	-	Ave
2462	69.64	360	115	H	28.159	2.94	0	100.739	-	-	Ave
4924	33.8	360	100	V	32.732	4.1	27.4	43.232	74	-30.768	Peak
4924	33.84	360	100	H	32.8	4.1	27.4	43.34	74	-30.66	Peak
4924	19.58	360	100	V	32.732	4.1	27.4	29.012	54	-24.988	Ave
4924	19.9	360	100	H	32.8	4.1	27.4	29.4	54	-24.6	Ave
7386	32.74	360	100	V	36.049	4.89	26.9	46.779	74	-27.221	Peak
7386	33	360	100	H	36.143	4.89	26.9	47.133	74	-26.867	Peak
7386	18.79	360	100	V	36.049	4.89	26.9	32.829	54	-21.171	Ave
7386	18.96	360	100	H	36.143	4.89	26.9	33.093	54	-20.907	Ave
9848	31.3	360	100	V	38.024	5.77	27.7	47.394	96.452	-49.058	Peak
9848	31.76	360	100	H	38.059	5.77	27.7	47.889	94.429	-46.54	Peak
9848	17.3	360	100	V	38.024	5.77	27.7	33.394	81.352	-47.958	Ave
9848	17.34	360	100	H	38.059	5.77	27.7	33.469	80.739	-47.27	Ave
2483.5	39.05	360	121	V	28.118	2.94	0	70.108	74	-3.892	Peak
2483.5	36.19	360	115	H	28.422	2.94	0	67.552	74	-6.448	Peak
2483.5	22.54	360	121	V	28.118	2.94	0	53.598	54	-0.402	Ave
2483.5	21.33	360	115	H	28.422	2.94	0	52.692	54	-1.308	Ave
250	38.92	263	100	V	12.3	11.32	25.2	37.34	46	-8.66	QP

802.11 n 40 Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz, measured at 3 meters											
2422	76.79	360	121	V	28.118	2.94	0	107.848	-	-	Peak
2422	75.7	360	122	H	28.159	2.94	0	106.799	-	-	Peak
2422	61.98	360	121	V	28.118	2.94	0	93.038	-	-	Ave
2422	61.63	360	122	H	28.159	2.94	0	92.729	-	-	Ave
4844	34.83	360	100	V	32.603	4.06	27.5	43.993	74	-30.007	Peak
4844	34.01	360	100	H	32.629	4.06	27.5	43.199	74	-30.801	Peak
4844	19.63	360	100	V	32.603	4.06	27.5	28.793	54	-25.207	Ave
4844	19.65	360	100	H	32.629	4.06	27.5	28.839	54	-25.161	Ave
7266	32.91	360	100	V	35.453	4.93	26.8	46.493	74	-27.507	Peak
7266	33.32	360	100	H	35.478	4.93	26.8	46.928	74	-27.072	Peak
7266	19.02	360	100	V	35.453	4.93	26.8	32.603	54	-21.397	Ave
7266	18.98	360	100	H	35.478	4.93	26.8	32.588	54	-21.412	Ave
9688	30.99	360	100	V	37.66	5.82	27.7	46.77	87.848	-41.078	Peak
9688	31.31	360	100	H	37.663	5.82	27.7	47.093	86.799	-39.706	Peak
9688	17.39	360	100	V	37.66	5.82	27.7	33.17	73.038	-39.868	Ave
9688	17.37	360	100	H	37.663	5.82	27.7	33.153	72.729	-39.576	Ave
2390	39.87	360	121	V	28.118	2.94	0	70.928	74	-3.072	Peak
2390	40.13	360	122	H	28.159	2.94	0	71.229	74	-2.771	Peak
2390	19.73	360	121	V	28.118	2.94	0	50.788	54	-3.212	Ave
2390	19.99	360	122	H	28.159	2.94	0	51.089	54	-2.911	Ave
250	42.05	282	100	V	12.3	11.32	25.2	40.47	46	-5.53	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	77.35	360	125	V	28.118	2.94	0	108.408	-	-	Peak
2437	74.76	360	122	H	28.159	2.94	0	105.859	-	-	Peak
2437	61.72	360	125	V	28.118	2.94	0	92.778	-	-	Ave
2437	60.88	360	122	H	28.159	2.94	0	91.979	-	-	Ave
4874	34.1	360	100	V	32.603	4.06	27.4	41.403	74	-32.597	Peak
4874	34.13	360	100	H	32.629	4.06	27.4	41.349	74	-32.651	Peak
4874	19.61	360	100	V	32.603	4.06	27.4	26.553	54	-27.447	Ave
4874	19.62	360	100	H	32.629	4.06	27.4	26.569	54	-27.431	Ave
7236	33.84	360	100	V	35.453	4.93	26.8	47.423	74	-26.577	Peak
7236	34.06	360	100	H	35.478	4.93	26.8	47.668	74	-26.332	Peak
7236	18.91	360	100	V	35.453	4.93	26.8	32.493	54	-21.507	Ave
7236	18.94	360	100	H	35.478	4.93	26.8	32.548	54	-21.452	Ave
9648	32.14	360	100	V	37.66	5.82	27.7	47.92	88.408	-40.488	Peak
9648	32.06	360	100	H	37.663	5.82	27.7	47.843	85.859	-38.016	Peak
9648	17.29	360	100	V	37.66	5.82	27.7	33.07	72.778	-39.708	Ave
9648	17.28	360	100	H	37.663	5.82	27.7	33.063	71.979	-38.916	Ave
250	41.19	271	100	V	12.3	11.32	25.2	39.61	46	-6.39	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2452 MHz, measured at 3 meters											
2452	76.28	360	119	V	28.272	2.94	0	107.492	-	-	Peak
2452	73.39	360	121	H	28.159	2.94	0	104.489	-	-	Peak
2452	61.31	360	119	V	28.272	2.94	0	92.522	-	-	Ave
2452	59.97	360	121	H	28.159	2.94	0	91.069	-	-	Ave
4904	34.91	360	100	V	32.732	4.1	27.4	44.342	74	-29.658	Peak
4904	34.01	360	100	H	32.8	4.1	27.4	43.51	74	-30.49	Peak
4904	19.75	360	100	V	32.732	4.1	27.4	29.182	54	-24.818	Ave
4904	19.72	360	100	H	32.8	4.1	27.4	29.22	54	-24.78	Ave
7356	34	360	100	V	36.049	4.89	26.9	48.039	74	-25.961	Peak
7356	34.24	360	100	H	36.143	4.89	26.9	48.373	74	-25.627	Peak
7356	18.96	360	100	V	36.049	4.89	26.9	32.999	54	-21.001	Ave
7356	18.93	360	100	H	36.143	4.89	26.9	33.063	54	-20.937	Ave
9808	32.82	360	100	V	38.024	5.77	27.7	48.914	87.492	-38.578	Peak
9808	32.28	360	100	H	38.059	5.77	27.7	48.409	84.489	-36.08	Peak
9808	17.75	360	100	V	38.024	5.77	27.7	33.844	72.522	-38.678	Ave
9808	17.76	360	100	H	38.059	5.77	27.7	33.889	71.069	-37.18	Ave
2483.5	42.68	360	119	V	28.118	2.94	0	73.738	74	-0.262	Peak
2483.5	41.43	360	121	H	28.422	2.94	0	72.792	74	-1.208	Peak
2483.5	21.93	360	119	V	28.118	2.94	0	52.988	54	-1.012	Ave
2483.5	20.83	360	121	H	28.422	2.94	0	52.192	54	-1.808	Ave
250	39.61	269	100	V	12.3	11.32	25.2	38.03	46	-7.97	QP

Antenna gain 5 dBi

802.11b Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	79.42	0	131	V	28.118	2.94	0	110.478	-	-	Peak
2412	74.36	22	171	H	28.159	2.94	0	105.459	-	-	Peak
2412	75.5	0	131	V	28.118	2.94	0	106.558	-	-	Ave
2412	70.41	22	171	H	28.159	2.94	0	101.509	-	-	Ave
4824	36.47	45	100	V	32.603	4.06	27.5	45.633	74	-28.367	Peak
4824	33.93	77	100	H	32.629	4.06	27.5	43.119	74	-30.881	Peak
4824	29.42	45	100	V	32.603	4.06	27.5	38.583	54	-15.417	Ave
4824	21.37	77	100	H	32.629	4.06	27.5	30.559	54	-23.441	Ave
7236	32.29	0	100	V	35.453	4.93	26.8	45.873	74	-28.127	Peak
7236	32.03	0	100	H	35.478	4.93	26.8	45.638	74	-28.362	Peak
7236	18.34	0	100	V	35.453	4.93	26.8	31.923	54	-22.077	Ave
7236	18.92	0	100	H	35.478	4.93	26.8	32.528	54	-21.472	Ave
9648	30.77	0	100	V	37.66	5.82	27.7	46.55	90.478	-43.928	Peak
9648	31.22	0	100	H	37.663	5.82	27.7	47.003	85.459	-38.456	Peak
9648	16.79	0	100	V	37.66	5.82	27.7	32.57	86.558	-53.988	Ave
9648	18.15	0	100	H	37.663	5.82	27.7	33.933	81.509	-47.576	Ave
2390	36.49	0	131	V	28.118	2.94	0	67.548	74	-6.452	Peak
2390	36.32	22	171	H	28.159	2.94	0	67.419	74	-6.581	Peak
2390	22.81	0	131	V	28.118	2.94	0	53.868	54	-0.132	Ave
2390	22.5	22	171	H	28.159	2.94	0	53.599	54	-0.401	Ave
250	40.26	226	100	V	12.3	11.32	25.2	38.68	46	-7.32	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	82.08	338	126	V	28.118	2.94	0	113.138	-	-	Peak
2437	79.24	0	154	H	28.159	2.94	0	110.339	-	-	Peak
2437	78.47	338	126	V	28.118	2.94	0	109.528	-	-	Ave
2437	75.23	0	154	H	28.159	2.94	0	106.329	-	-	Ave
4874	37.92	41	100	V	32.603	4.06	27.4	47.183	74	-26.817	Peak
4874	35.75	20	100	H	32.629	4.06	27.4	45.039	74	-28.961	Peak
4874	32.08	41	100	V	32.603	4.06	27.4	41.343	54	-12.657	Ave
4874	29.09	20	100	H	32.629	4.06	27.4	38.379	54	-15.621	Ave
7236	33.18	0	100	V	35.453	4.93	26.8	46.763	74	-27.237	Peak
7236	32.63	0	100	H	35.478	4.93	26.8	46.238	74	-27.762	Peak
7236	18.27	0	100	V	35.453	4.93	26.8	31.853	54	-22.147	Ave
7236	18.22	0	100	H	35.478	4.93	26.8	31.828	54	-22.172	Ave
9648	31.17	0	100	V	37.66	5.82	27.7	46.95	93.138	-46.188	Peak
9648	31.02	0	100	H	37.663	5.82	27.7	46.803	90.339	-43.536	Peak
9648	16.88	0	100	V	37.66	5.82	27.7	32.66	89.528	-56.868	Ave
9648	17.62	0	100	H	37.663	5.82	27.7	33.403	86.329	-52.926	Ave
250	41.08	231	100	V	12.3	11.32	25.2	39.5	46	-6.5	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	80.09	360	118	V	28.272	2.94	0	111.302	-	-	Peak
2462	79.67	360	117	H	28.159	2.94	0	110.769	-	-	Peak
2462	76.19	360	118	V	28.272	2.94	0	107.402	-	-	Ave
2462	75.51	360	117	H	28.159	2.94	0	106.609	-	-	Ave
4924	33.16	360	100	V	32.732	4.1	27.4	42.592	74	-31.408	Peak
4924	3442	360	100	H	32.8	4.1	27.4	3451.5	74	3377.5	Peak
4924	19.42	360	100	V	32.732	4.1	27.4	28.852	54	-25.148	Ave
4924	23.9	360	100	H	32.8	4.1	27.4	33.4	54	-20.6	Ave
7386	33.16	360	100	V	36.049	4.89	26.9	47.199	74	-26.801	Peak
7386	32.81	360	100	H	36.143	4.89	26.9	46.943	74	-27.057	Peak
7386	18.78	360	100	V	36.049	4.89	26.9	32.819	54	-21.181	Ave
7386	18.36	360	100	H	36.143	4.89	26.9	32.493	54	-21.507	Ave
9848	32.02	360	100	V	38.024	5.77	27.7	48.114	91.302	-43.188	Peak
9848	31.82	360	100	H	38.059	5.77	27.7	47.949	90.769	-42.82	Peak
9848	17.31	360	100	V	38.024	5.77	27.7	33.404	87.402	-53.998	Ave
9848	17.32	360	100	H	38.059	5.77	27.7	33.449	86.609	-53.16	Ave
2483.5	35.81	360	118	V	28.118	2.94	0	66.868	74	-7.132	Peak
2483.5	35.99	360	117	H	28.422	2.94	0	67.352	74	-6.648	Peak
2483.5	22.58	30	105	V	28.118	2.94	0	53.638	54	-0.362	Ave
2483.5	22.61	20	197	H	28.422	2.94	0	53.972	54	-0.028	Ave
250	42.17	256	100	V	12.3	11.32	25.2	40.59	46	-5.41	QP

802.11 g Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz, measured at 3 meters											
2412	83.12	0	130	V	28.118	2.94	0	114.178	-	-	Peak
2412	77.37	22	168	H	28.159	2.94	0	108.469	-	-	Peak
2412	69.4	0	130	V	28.118	2.94	0	100.458	-	-	Ave
2412	65.13	22	168	H	28.159	2.94	0	96.229	-	-	Ave
4824	40.42	0	130	V	32.603	4.06	27.5	49.583	74	-24.417	Peak
4824	35.83	22	100	H	32.629	4.06	27.5	45.019	74	-28.981	Peak
4824	23.04	0	130	V	32.603	4.06	27.5	32.203	54	-21.797	Ave
4824	20.51	22	100	H	32.629	4.06	27.5	29.699	54	-24.301	Ave
7236	32.92	0	100	V	35.453	4.93	26.8	46.503	74	-27.497	Peak
7236	31.93	0	100	H	35.478	4.93	26.8	45.538	74	-28.462	Peak
7236	19.02	0	100	V	35.453	4.93	26.8	32.603	54	-21.397	Ave
7236	18.93	0	100	H	35.478	4.93	26.8	32.538	54	-21.462	Ave
9648	30.09	0	100	V	37.66	5.82	27.7	45.87	94.178	-48.308	Peak
9648	31.19	0	100	H	37.663	5.82	27.7	46.973	88.469	-41.496	Peak
9648	19.08	0	100	V	37.66	5.82	27.7	34.86	80.458	-45.598	Ave
9648	19.13	0	100	H	37.663	5.82	27.7	34.913	76.229	-41.316	Ave
2390	31.1	0	130	V	28.118	2.94	0	62.158	74	-11.842	Peak
2390	28.66	22	168	H	28.159	2.94	0	59.759	74	-14.241	Peak
2390	18.09	0	130	V	28.118	2.94	0	49.148	54	-4.852	Ave
2390	15.62	22	168	H	28.159	2.94	0	46.719	54	-7.281	Ave
250	44.08	277	100	V	12.3	11.32	25.2	42.5	46	-3.5	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	82.68	0	131	V	28.118	2.94	0	113.738	-	-	Peak
2437	77.27	20	238	H	28.159	2.94	0	108.369	-	-	Peak
2437	70.03	0	131	V	28.118	2.94	0	101.088	-	-	Ave
2437	64.97	20	238	H	28.159	2.94	0	96.069	-	-	Ave
4874	34.84	0	100	V	32.603	4.06	27.4	44.103	74	-29.897	Peak
4874	33.55	20	100	H	32.629	4.06	27.4	42.839	74	-31.161	Peak
4874	20.46	0	100	V	32.603	4.06	27.4	29.723	54	-24.277	Ave
4874	19.6	20	100	H	32.629	4.06	27.4	28.889	54	-25.111	Ave
7236	32.59	0	100	V	35.453	4.93	26.8	46.173	74	-27.827	Peak
7236	33.1	0	100	H	35.478	4.93	26.8	46.708	74	-27.292	Peak
7236	20.05	0	100	V	35.453	4.93	26.8	33.633	54	-20.367	Ave
7236	19.96	0	100	H	35.478	4.93	26.8	33.568	54	-20.432	Ave
9648	30.69	0	100	V	37.66	5.82	27.7	46.47	93.738	-47.268	Peak
9648	31.02	0	100	H	37.663	5.82	27.7	46.803	88.369	-41.566	Peak
9648	16.86	0	100	V	37.66	5.82	27.7	32.64	81.088	-48.448	Ave
9648	18.02	0	100	H	37.663	5.82	27.7	33.803	76.069	-42.266	Ave
250	43.18	264	100	V	12.3	11.32	25.2	41.6	46	-4.4	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2462 MHz, measured at 3 meters											
2462	83.59	0	133	V	28.272	2.94	0	114.802	-	-	2462
2462	78.81	20	236	H	28.159	2.94	0	109.909	-	-	2462
2462	71.11	0	133	V	28.272	2.94	0	102.322	-	-	2462
2462	65.67	20	236	H	28.159	2.94	0	96.769	-	-	2462
4924	43.1	25	100	V	32.732	4.1	27.4	52.532	74	-21.468	4924
4924	40.36	350	100	H	32.8	4.1	27.4	49.86	74	-24.14	4924
4924	25.09	25	100	V	32.732	4.1	27.4	34.522	54	-19.478	4924
4924	23.93	350	100	H	32.8	4.1	27.4	33.43	54	-20.57	4924
7386	31.91	0	100	V	36.049	4.89	26.9	45.949	74	-28.051	7386
7386	31.96	0	100	H	36.143	4.89	26.9	46.093	74	-27.907	7386
7386	18.83	0	100	V	36.049	4.89	26.9	32.869	54	-21.131	7386
7386	19.36	0	100	H	36.143	4.89	26.9	33.493	54	-20.507	7386
9848	31.19	0	100	V	38.024	5.77	27.7	47.284	94.802	-47.518	9848
9848	31.15	0	100	H	38.059	5.77	27.7	47.279	89.909	-42.63	9848
9848	16.99	0	100	V	38.024	5.77	27.7	33.084	82.322	-49.238	9848
9848	17.26	0	100	H	38.059	5.77	27.7	33.389	76.769	-43.38	9848
2483.5	33.98	0	133	V	28.118	2.94	0	65.038	74	-8.962	2483.5
2483.5	32.13	20	236	H	28.422	2.94	0	63.492	74	-10.508	2483.5
2483.5	19.02	0	133	V	28.118	2.94	0	50.078	54	-3.922	2483.5
2483.5	16.24	20	236	H	28.422	2.94	0	47.602	54	-6.398	2483.5
250	42.59	270	100	V	12.3	11.32	25.2	41.01	46	-4.99	QP

802.11 n 40 Mode:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz, measured at 3 meters											
2422	78.3	0	134	V	28.118	2.94	0	109.358	-	-	Peak
2422	73.32	21	162	H	28.159	2.94	0	104.419	-	-	Peak
2422	63.85	0	134	V	28.118	2.94	0	94.908	-	-	Ave
2422	59.55	21	162	H	28.159	2.94	0	90.649	-	-	Ave
4844	33.5	0	100	V	32.603	4.06	27.5	42.663	74	-31.337	Peak
4844	34.16	0	100	H	32.629	4.06	27.5	43.349	74	-30.651	Peak
4844	18.98	0	100	V	32.603	4.06	27.5	28.143	54	-25.857	Ave
4844	19.03	0	100	H	32.629	4.06	27.5	28.219	54	-25.781	Ave
7266	32.59	0	100	V	35.453	4.93	26.8	46.173	74	-27.827	Peak
7266	34.68	0	100	H	35.478	4.93	26.8	48.288	74	-25.712	Peak
7266	18.55	0	100	V	35.453	4.93	26.8	32.133	54	-21.867	Ave
7266	19.42	0	100	H	35.478	4.93	26.8	33.028	54	-20.972	Ave
9688	31.44	0	100	V	37.66	5.82	27.7	47.22	89.358	-42.138	Peak
9688	30.86	0	100	H	37.663	5.82	27.7	46.643	84.419	-37.776	Peak
9688	18.92	0	100	V	37.66	5.82	27.7	34.7	74.908	-40.208	Ave
9688	19.11	0	100	H	37.663	5.82	27.7	34.893	70.649	-35.756	Ave
2390	39.61	0	134	V	28.118	2.94	0	70.668	74	-3.332	Peak
2390	36.59	21	162	H	28.159	2.94	0	67.689	74	-6.311	Peak
2390	19.68	0	134	V	28.118	2.94	0	50.738	54	-3.262	Ave
2390	17.35	21	162	H	28.159	2.94	0	48.449	54	-5.551	Ave
250	40.85	282	100	V	12.3	11.32	25.2	39.27	46	-6.73	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Middle Channel 2437 MHz, measured at 3 meters											
2437	80.13	0	132	V	28.118	2.94	0	111.188	-	-	Peak
2437	75.66	20	165	H	28.159	2.94	0	106.759	-	-	Peak
2437	65.85	0	132	V	28.118	2.94	0	96.908	-	-	Ave
2437	61.95	20	165	H	28.159	2.94	0	93.049	-	-	Ave
4874	34.43	0	100	V	32.603	4.06	27.4	39.873	74	-34.127	Peak
4874	34.71	0	100	H	32.629	4.06	27.4	40.159	74	-33.841	Peak
4874	19.61	0	100	V	32.603	4.06	27.4	26.103	54	-27.897	Ave
4874	19.05	0	100	H	32.629	4.06	27.4	26.089	54	-27.911	Ave
7236	32.14	0	100	V	35.453	4.93	26.8	45.723	74	-28.277	Peak
7236	31.94	0	100	H	35.478	4.93	26.8	45.548	74	-28.452	Peak
7236	18.24	0	100	V	35.453	4.93	26.8	31.823	54	-22.177	Ave
7236	18.26	0	100	H	35.478	4.93	26.8	31.868	54	-22.132	Ave
9648	30.61	0	100	V	37.66	5.82	27.7	46.39	91.188	-44.798	Peak
9648	30.87	0	100	H	37.663	5.82	27.7	46.653	86.759	-40.106	Peak
9648	16.84	0	100	V	37.66	5.82	27.7	32.62	76.908	-44.288	Ave
9648	16.8	0	100	H	37.663	5.82	27.7	32.583	73.049	-40.466	Ave
250	40.57	265	100	V	12.3	11.32	25.2	38.99	46	-7.01	QP

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
High Channel 2452 MHz, measured at 3 meters											
2452	76.13	0	100	V	28.272	2.94	0	107.342	-	-	Peak
2452	70.81	22	199	H	28.159	2.94	0	101.909	-	-	Peak
2452	61.52	0	100	V	28.272	2.94	0	92.732	-	-	Ave
2452	57.39	22	199	H	28.159	2.94	0	88.489	-	-	Ave
4904	32.96	0	100	V	32.732	4.1	27.4	42.392	74	-31.608	Peak
4904	32.98	0	100	H	32.8	4.1	27.4	42.48	74	-31.52	Peak
4904	19.03	0	100	V	32.732	4.1	27.4	28.462	54	-25.538	Ave
4904	18.74	0	100	H	32.8	4.1	27.4	28.24	54	-25.76	Ave
7356	32.06	0	100	V	36.049	4.89	26.9	46.099	74	-27.901	Peak
7356	32.63	0	100	H	36.143	4.89	26.9	46.763	74	-27.237	Peak
7356	18.54	0	100	V	36.049	4.89	26.9	32.579	54	-21.421	Ave
7356	18.49	0	100	H	36.143	4.89	26.9	32.623	54	-21.377	Ave
9808	30.75	0	100	V	38.024	5.77	27.7	46.844	87.342	-40.498	Peak
9808	30.97	0	100	H	38.059	5.77	27.7	47.099	81.909	-34.81	Peak
9808	17.05	0	100	V	38.024	5.77	27.7	33.144	72.732	-39.588	Ave
9808	17.07	0	100	H	38.059	5.77	27.7	33.199	68.489	-35.29	Ave
2483.5	36.61	0	100	V	28.118	2.94	0	67.668	74	-6.332	Peak
2483.5	34.6	22	199	H	28.422	2.94	0	65.962	74	-8.038	Peak
2483.5	17.94	0	100	V	28.118	2.94	0	48.998	54	-5.002	Ave
2483.5	16.39	22	199	H	28.422	2.94	0	47.752	54	-6.248	Ave
250	38.96	248	100	V	12.3	11.32	25.2	37.38	46	-8.62	QP

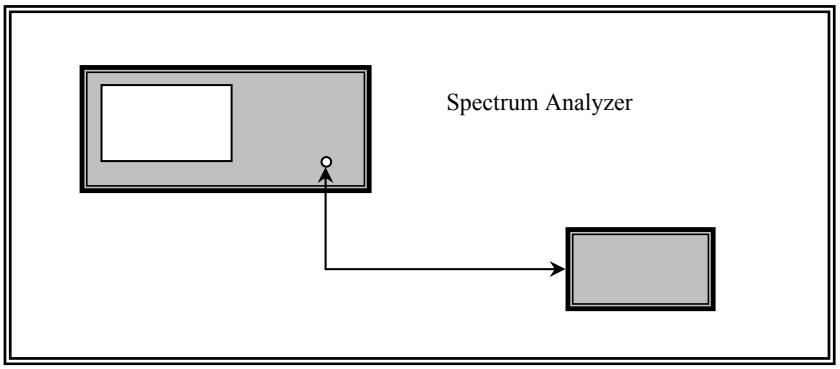
7 FCC §15.247(b) & IC RSS-210 §A8.4 - Peak Output Power Measurement

7.1 Applicable Standard

According to FCC §15.247(b) (3) and RSS-210 §A8.4 (4) for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

7.2 Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.



7.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-08-11	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

7.4 Test Environmental Conditions

Temperature:	23 °C
Relative Humidity:	46 %
ATM Pressure:	101.2 kPa

The testing was performed by Ning Ma on 2012-06-13 in RF site.

7.5 Test Results

Antenna gain 9 dBi

802.11b mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Max Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	19.96	19.74	19.46	19.96	27	-7.04	21
Middle	2437	20.9	21.64	19.37	21.64	27	-5.36	24
High	2462	19.95	18.79	18.46	19.95	27	-7.05	24

802.11g mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Max Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	19.63	19.46	19.58	19.63	27	-7.42	20.5
Middle	2437	18.91	19.46	17.96	19.46	27	-7.54	21
High	2462	18.93	17.51	17.28	18.93	27	-8.07	21

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Total Power (dBm))	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	18.72	18.65	18.69	23.46	27	-3.54	19.5
Middle	2437	19.51	20.14	18.64	24.24	27	-2.76	22
High	2462	19.05	18.09	17.33	22.99	27	-4.01	22

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Total Power (dBm))	Limit (dBm)	Margin (dB)	Power Setting
Low	2422	17.65	18.73	16.88	22.59	27	-4.41	19.5
Middle	2437	19.45	19.6	18.68	24.03	27	-2.97	22
High	2452	18.11	16.69	16.29	21.87	27	-5.13	20.5

Antenna gain 19 dBi

802.11b mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Max Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	16.47	16.95	16.05	16.95	17	-0.05	18
Middle	2437	15.78	16.68	14.89	16.68	17	-0.32	17.5
High	2462	16.87	15.24	14.83	16.87	17	-0.13	18

802.11g mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Max Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	16.7	16.19	16.06	16.7	17	-0.3	18
Middle	2437	16.03	16.45	15.48	16.45	17	-0.55	17.5
High	2462	16.78	15.08	14.9	16.78	17	-0.22	17.5

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Total Power (dBm))	Limit (dBm)	Margin (dB)	Power Setting
Low	2412	11.9	11.55	11.35	16.38	17	-0.62	13.5
Middle	2437	11.33	11.71	11.44	16.28	17	-0.72	13
High	2462	12.64	10.84	11.09	16.37	17	-0.63	12.5

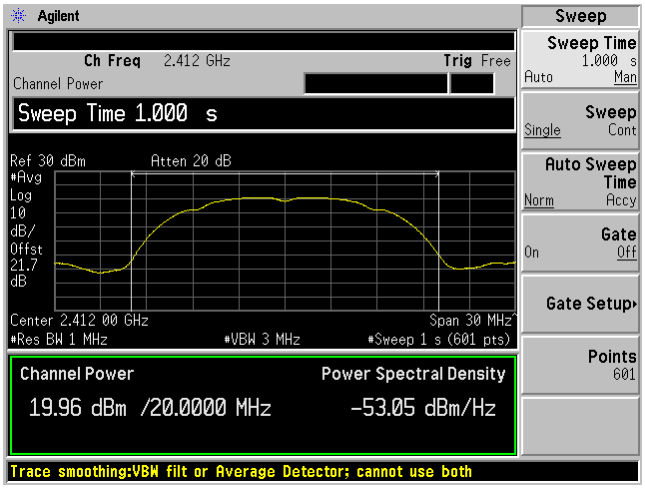
802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J1 Power (dBm)	TX Chain J2 Power (dBm)	TX Chain J3 Power (dBm)	Total Power (dBm))	Limit (dBm)	Margin (dB)	Power Setting
Low	2422	11.52	12.53	10.97	16.49	17	-0.51	13.5
Middle	2437	11.78	11.84	11.51	16.48	17	-0.52	13
High	2452	12.88	11.34	11.38	16.7	17	-0.3	14

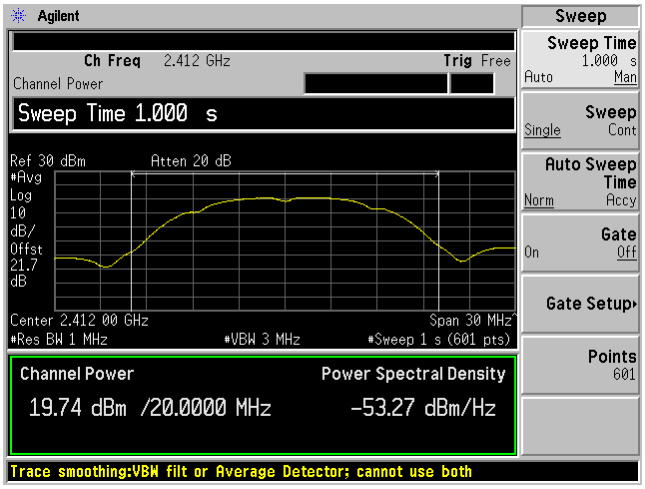
Antenna gain is 9 dBi

802.11 b mode

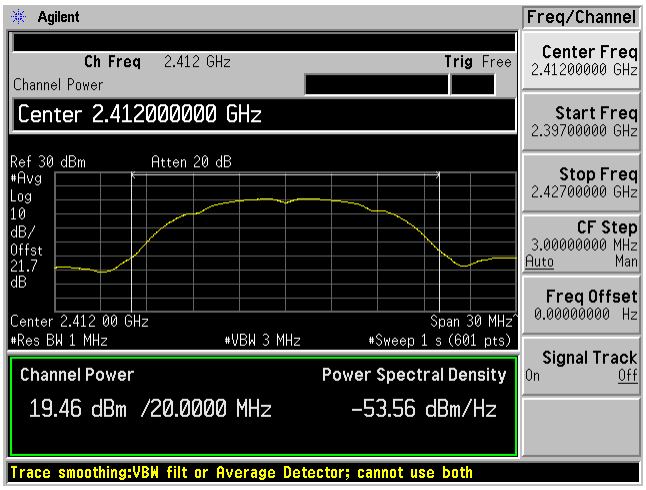
2412 MHz, Chain J1



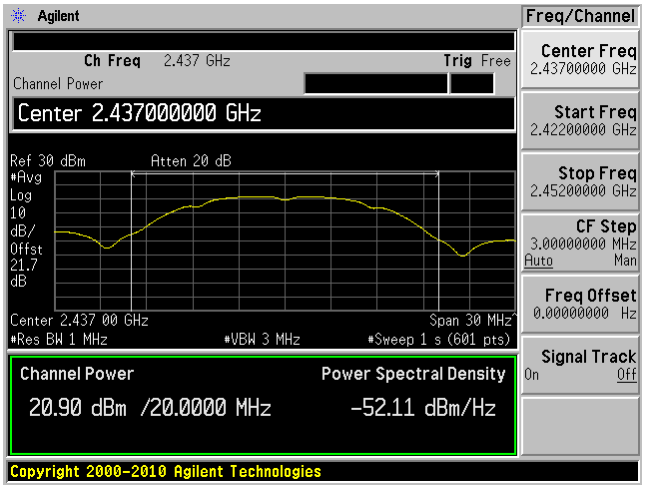
2412 MHz, Chain J2



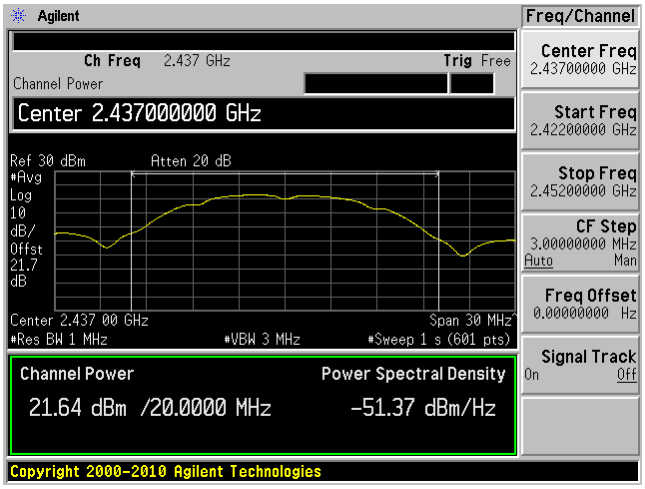
2412 MHz, Chain J3



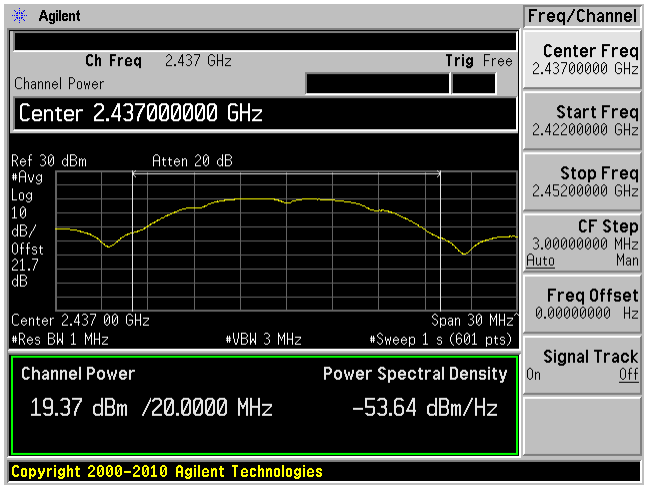
2437 MHz, Chain J1



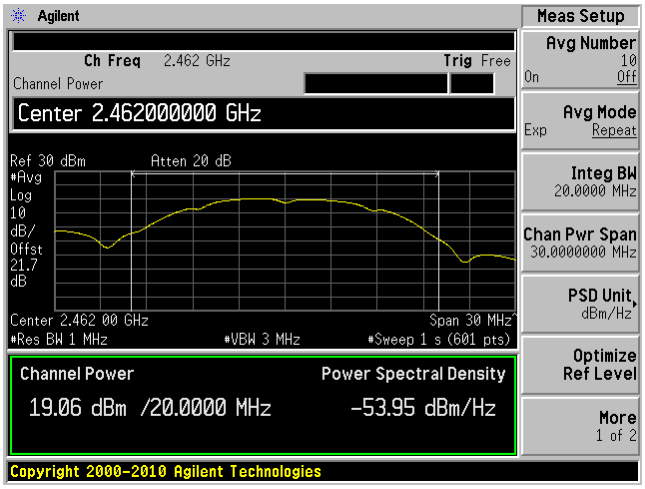
2437 MHz, Chain J2



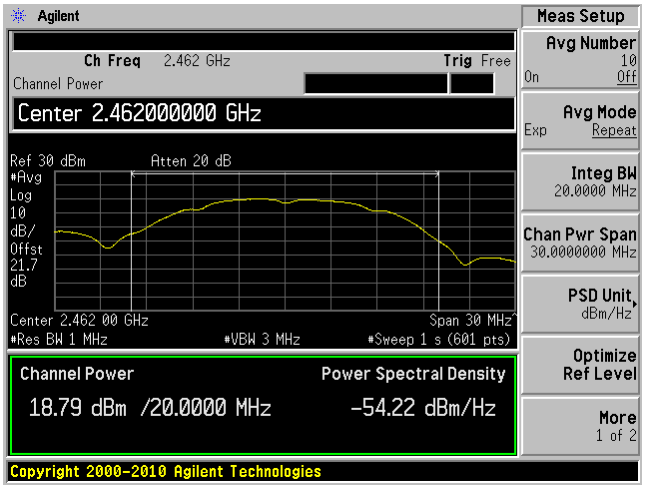
2437 MHz, Chain J3



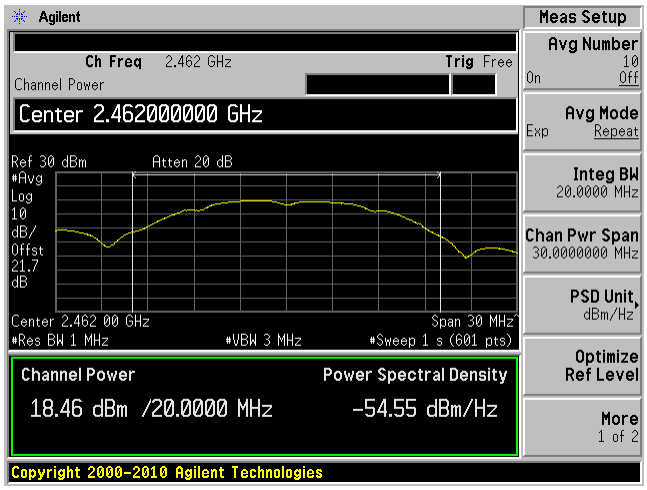
2462 MHz, Chain J1



2462 MHz, Chain J2

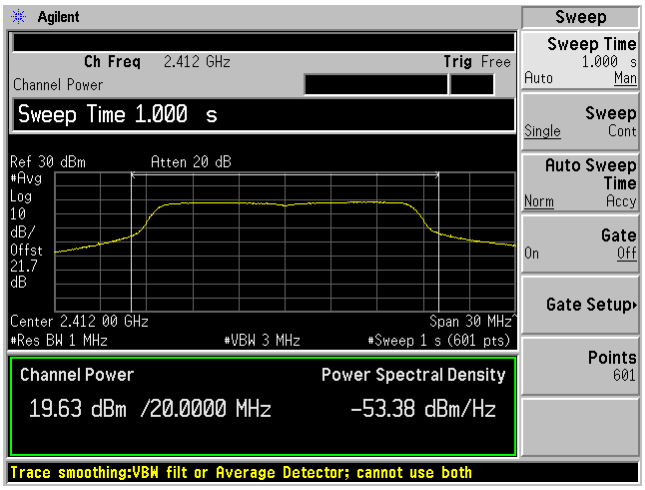


2462 MHz, Chain J3

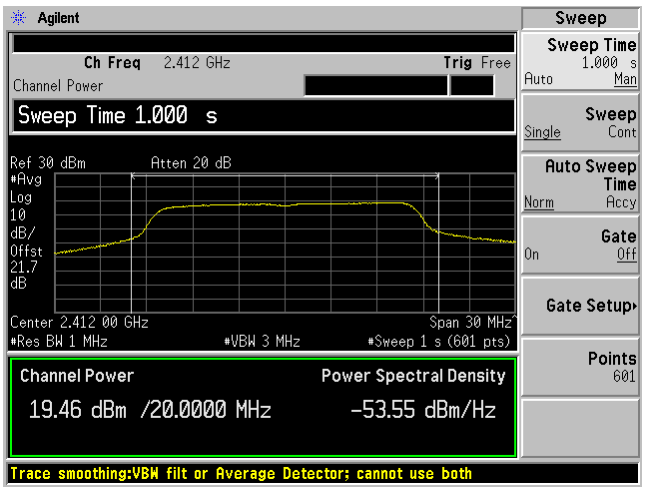


802.11 g mode

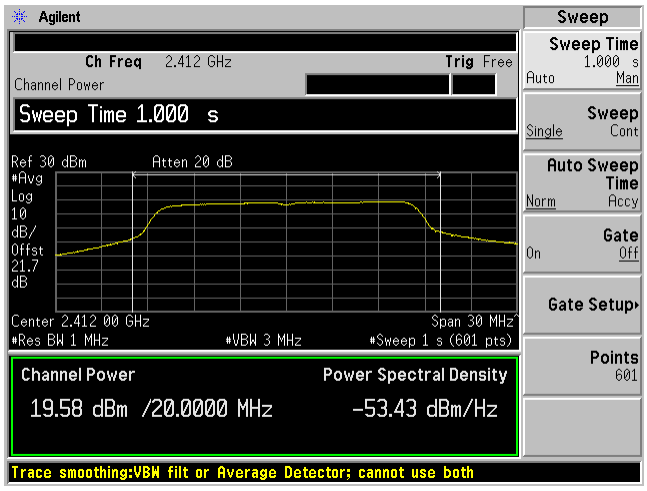
2412 MHz, Chain J1



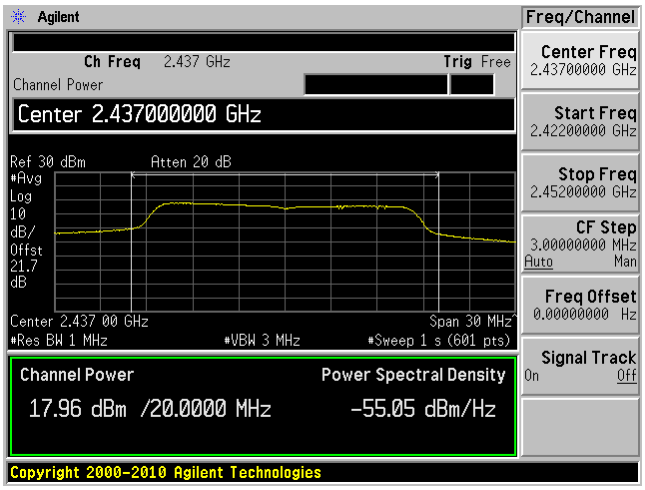
2412 MHz, Chain J2



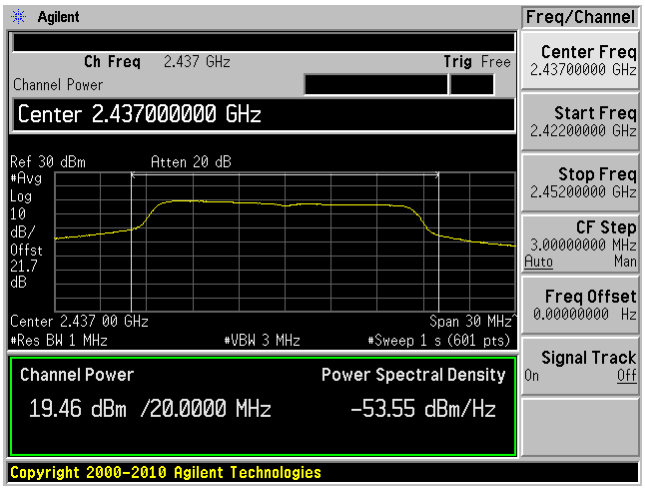
2412 MHz, Chain J3



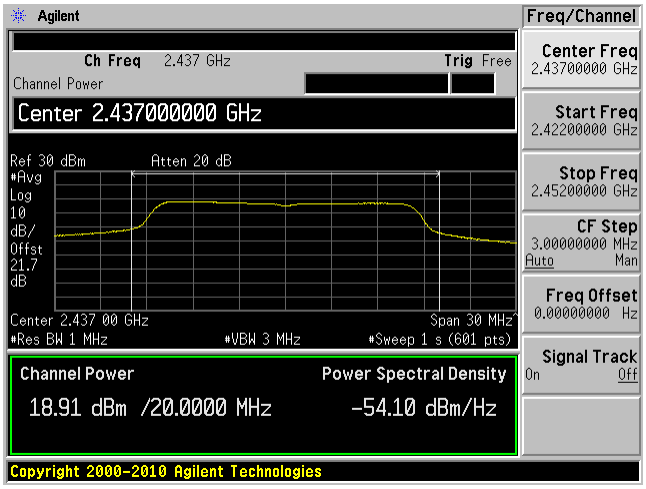
2437 MHz, Chain J1



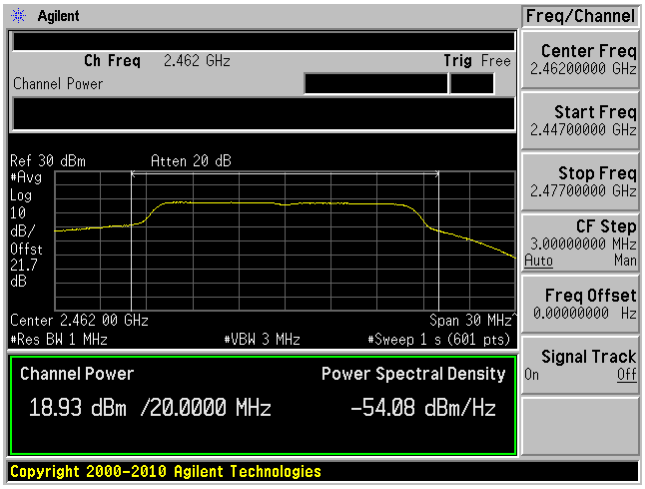
2437 MHz, Chain J2



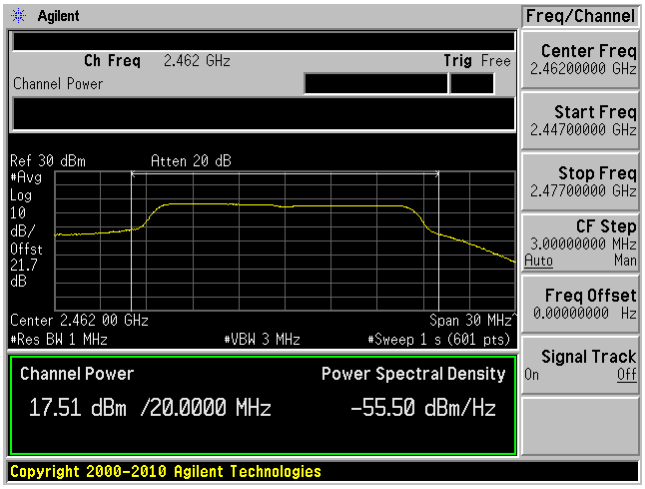
2437 MHz, Chain J3



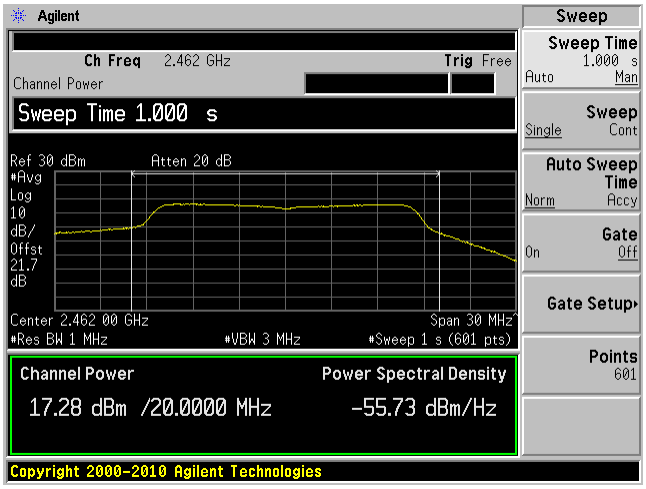
2462 MHz, Chain J1



2462 MHz, Chain J2

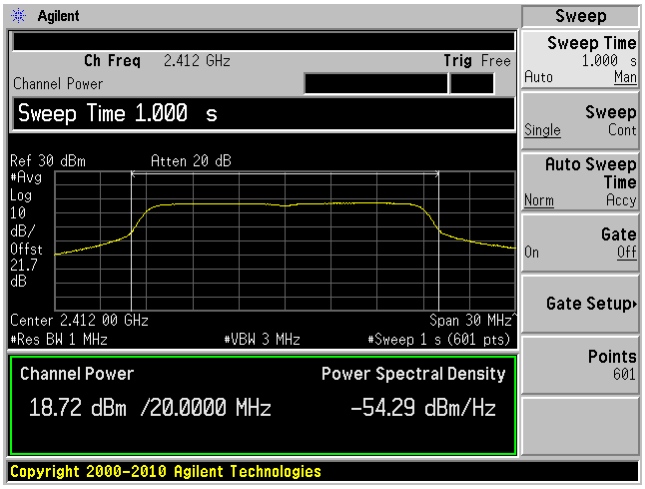


2462 MHz, Chain J3

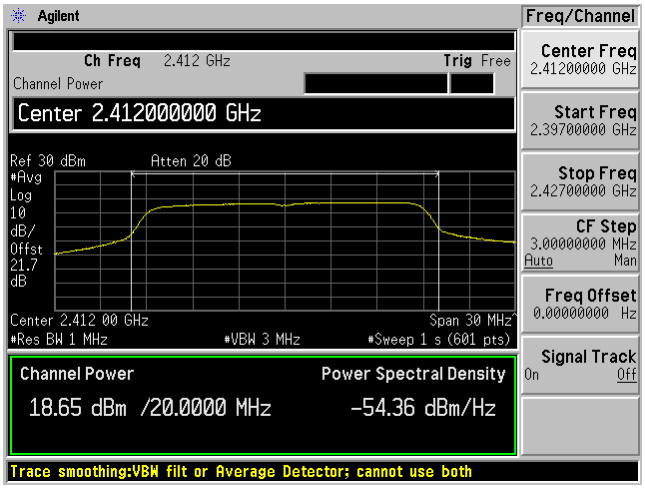


802.11 n 20 mode

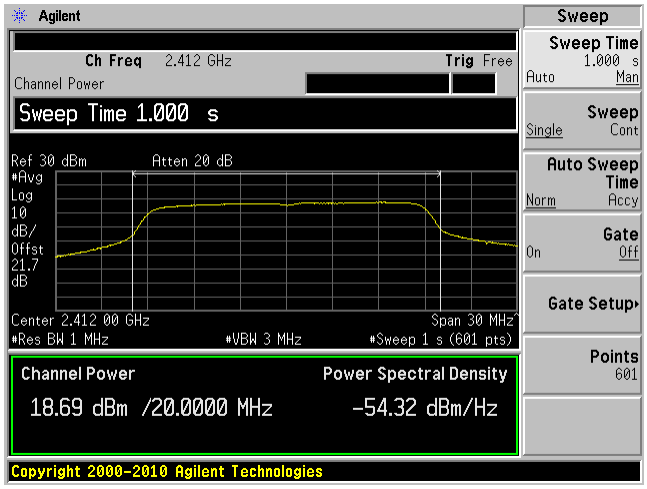
2412 MHz, Chain J1



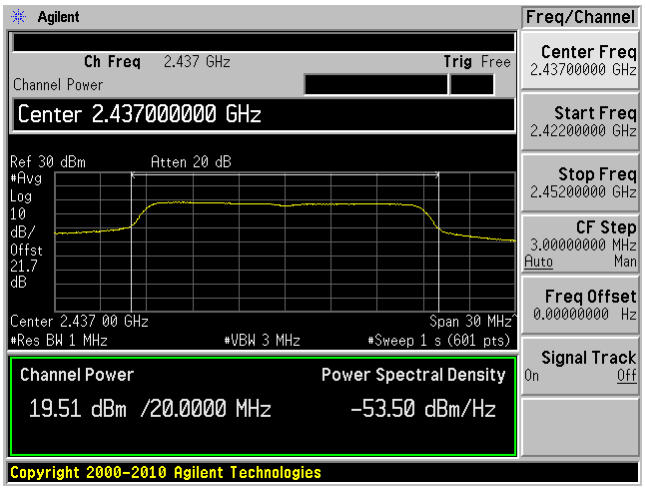
2412 MHz, Chain J2



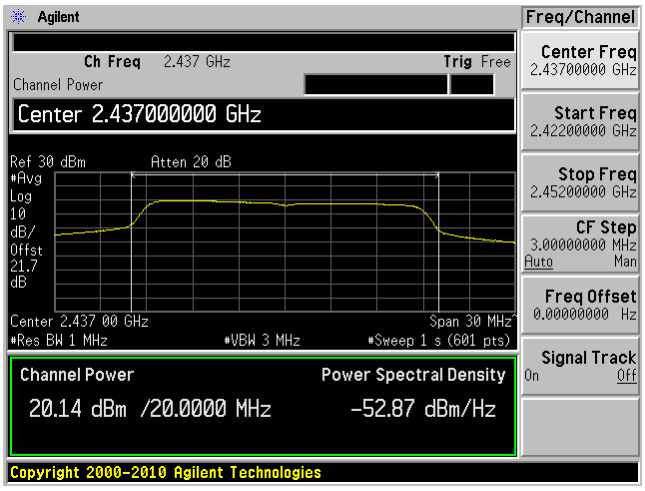
2412 MHz, Chain J3



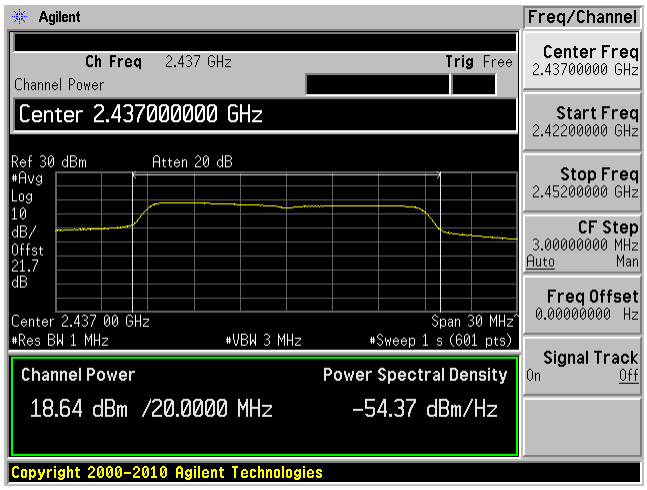
2437 MHz, Chain J1



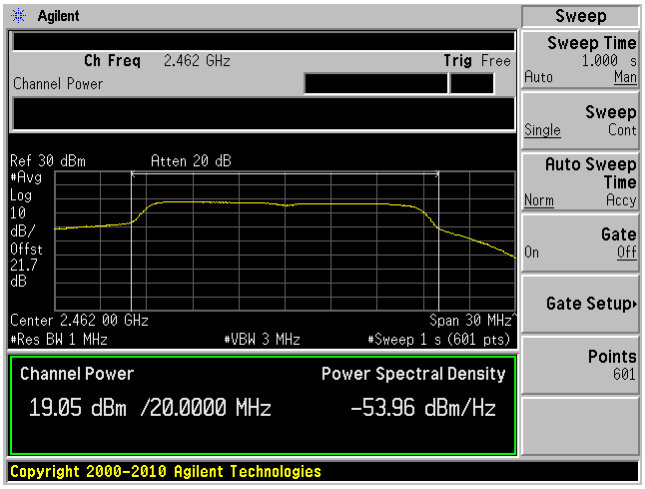
2437 MHz, Chain J2



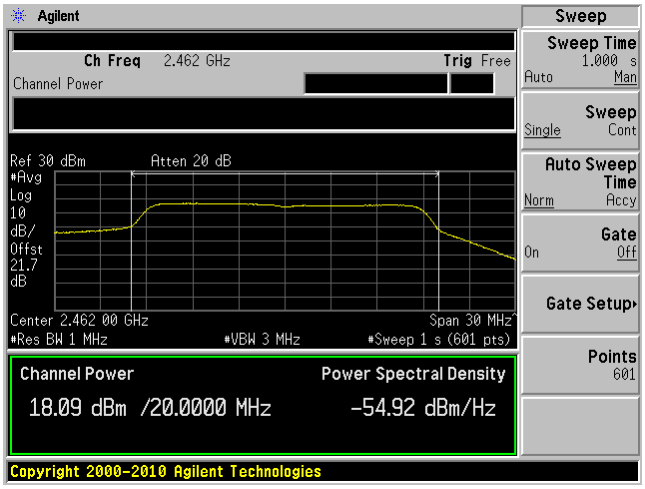
2437 MHz, Chain J3



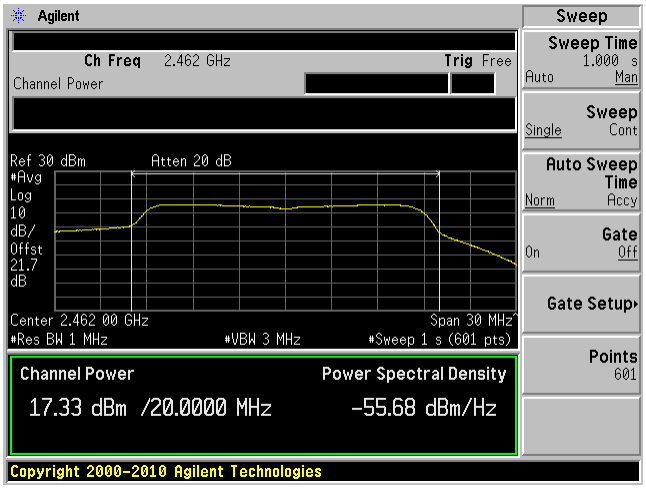
2462 MHz, Chain J1



2462 MHz, Chain J2

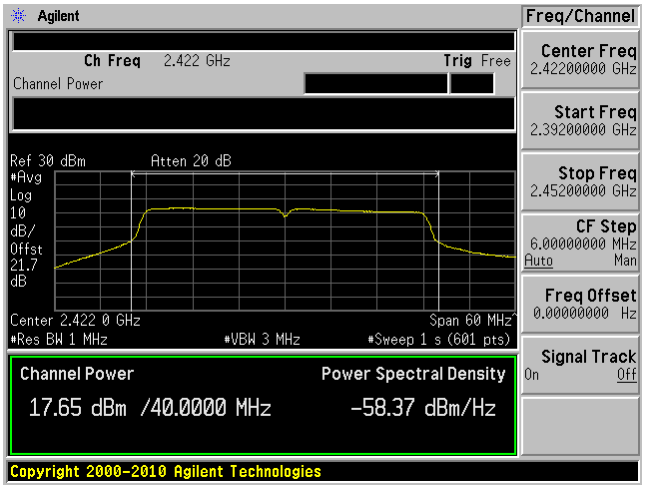


2462 MHz, Chain J3

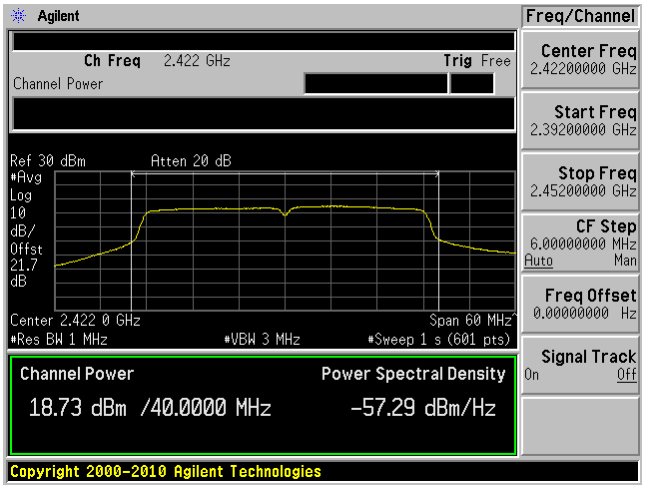


802.11 n 40 mode

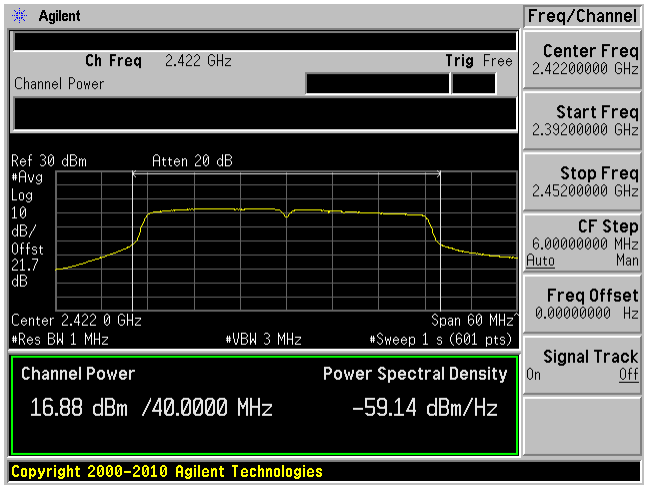
2422 MHz, Chain J1



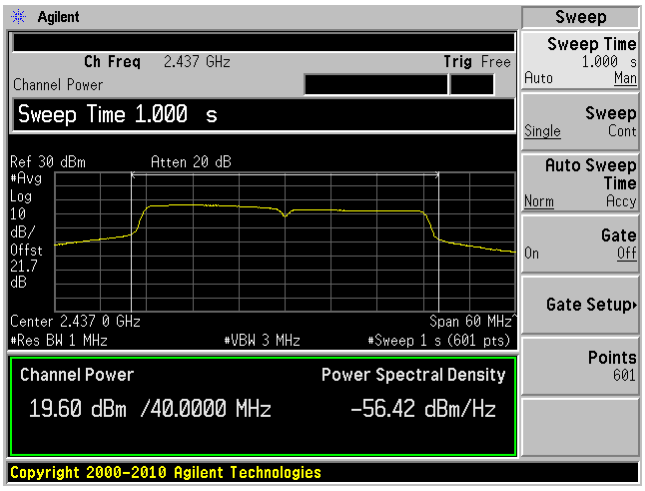
2422 MHz, Chain J2



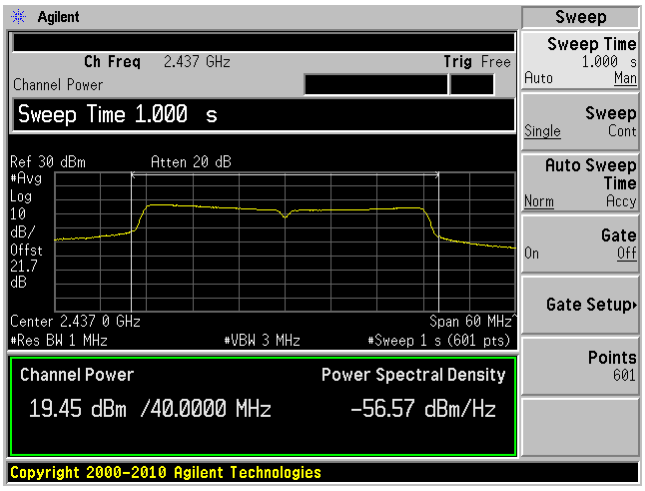
2422 MHz, Chain J3



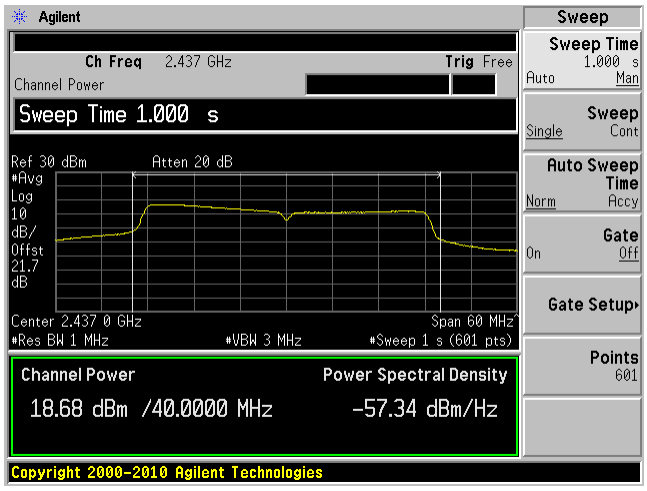
2437 MHz, Chain J1



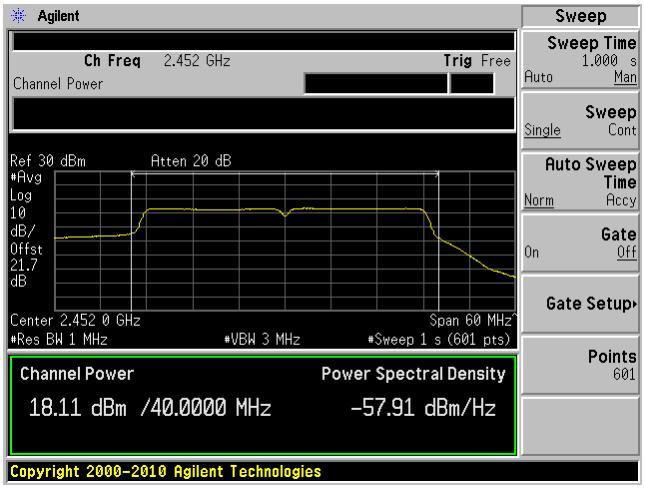
2437 MHz, Chain J2



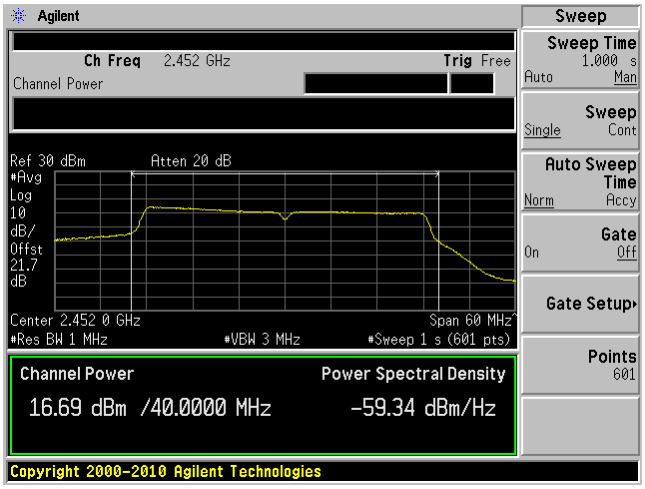
2437 MHz, Chain J3



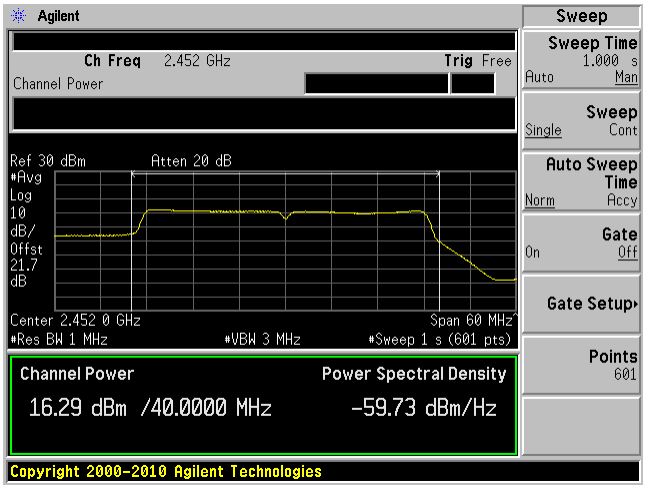
2452 MHz, Chain J1



2452 MHz, Chain J2



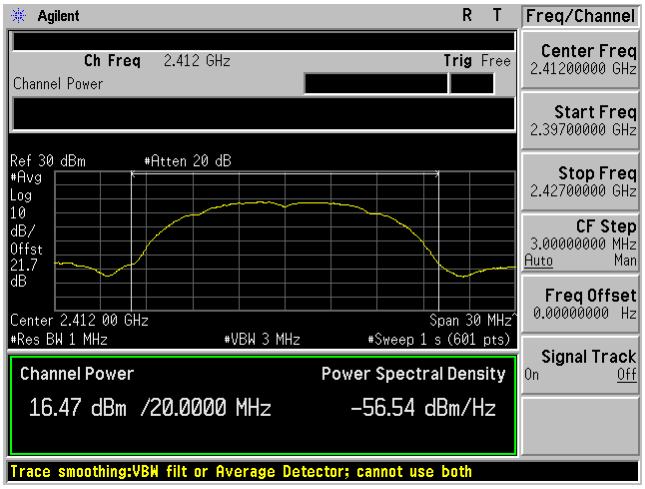
2452 MHz, Chain J3



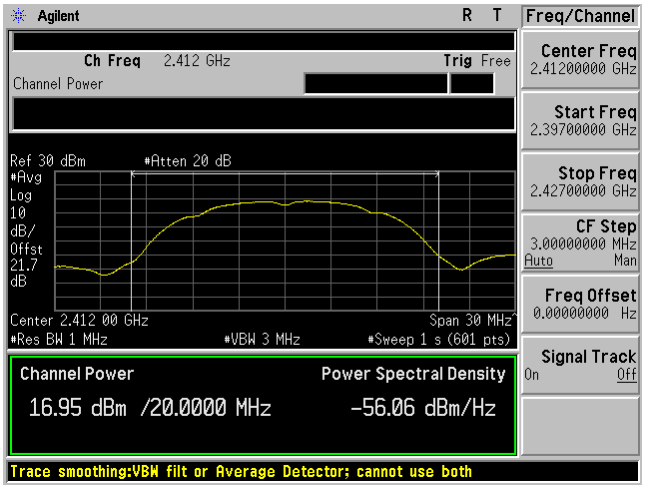
Antenna gain is 19 dBi

802.11 b mode

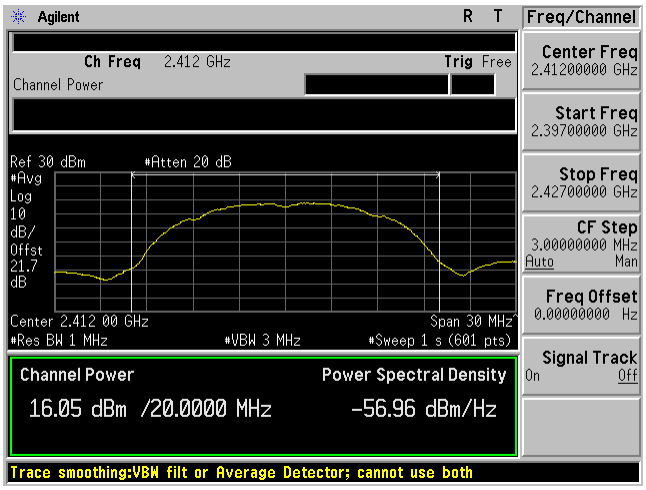
2412 MHz, Chain J1



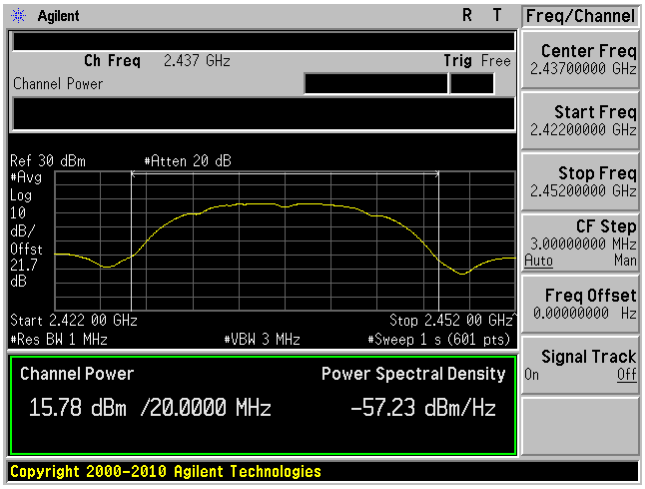
2412 MHz, Chain J2



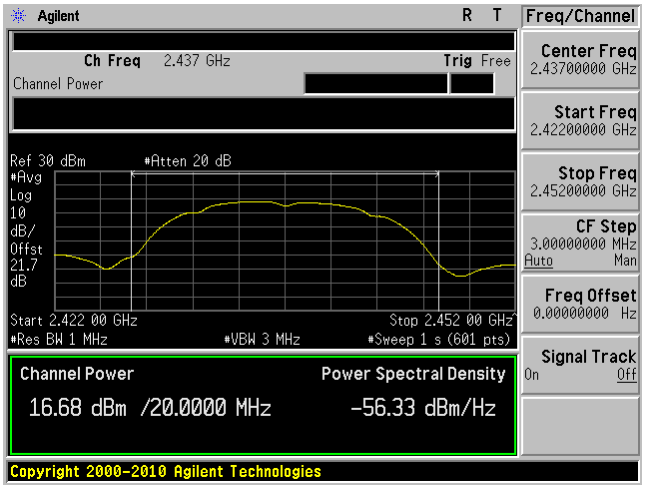
2412 MHz, Chain J3



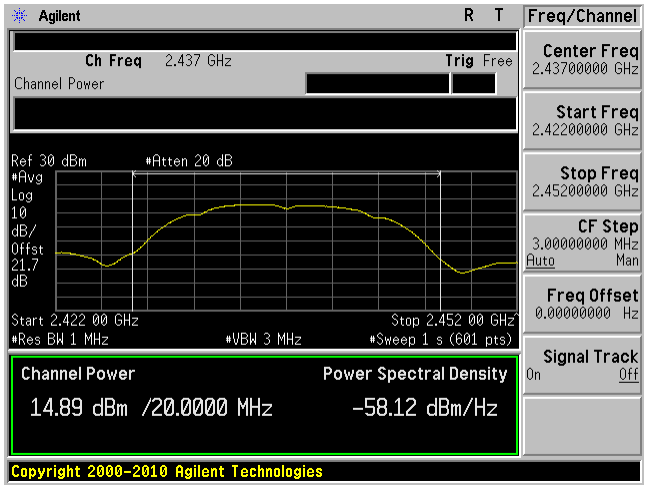
2437 MHz, Chain J1



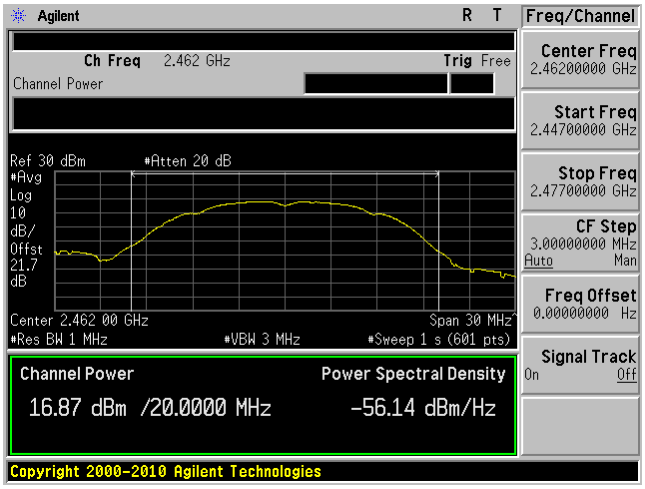
2437 MHz, Chain J2



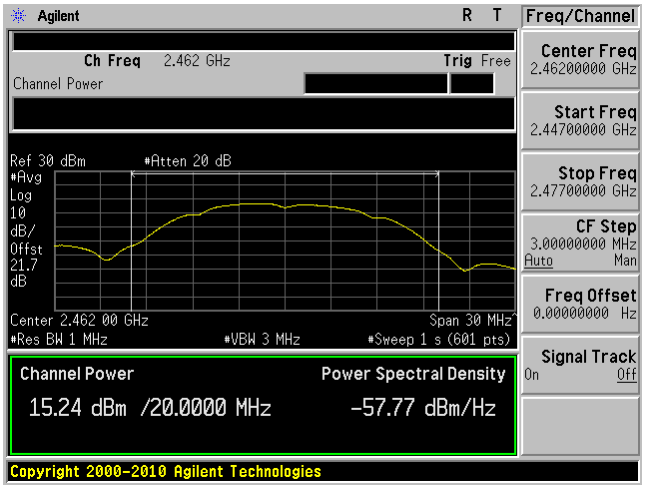
2437 MHz, Chain J3



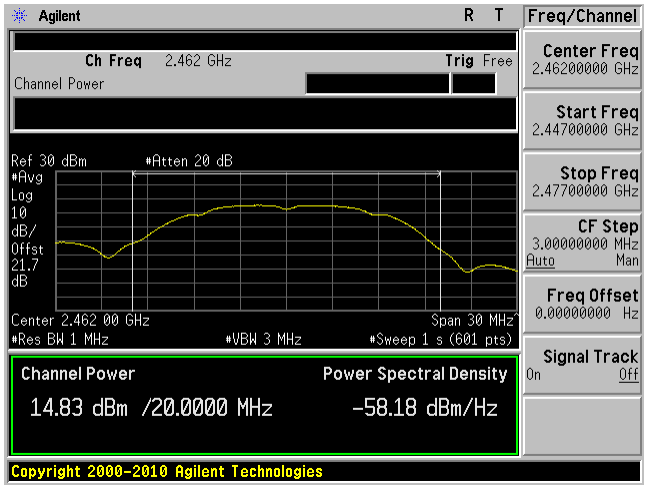
2462 MHz, Chain J1



2462 MHz, Chain J2

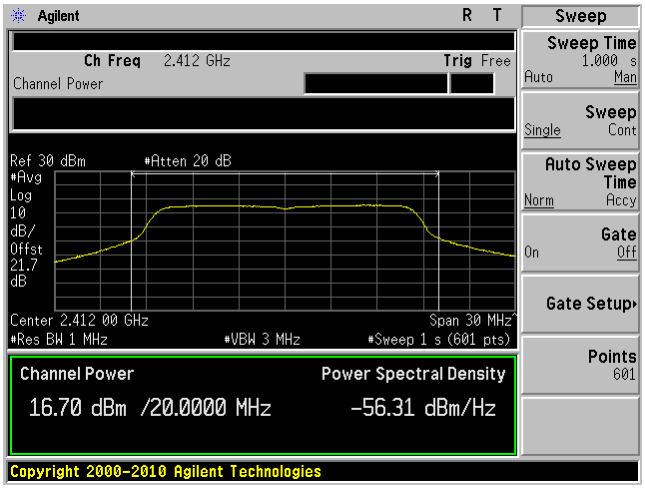


2462 MHz, Chain J3

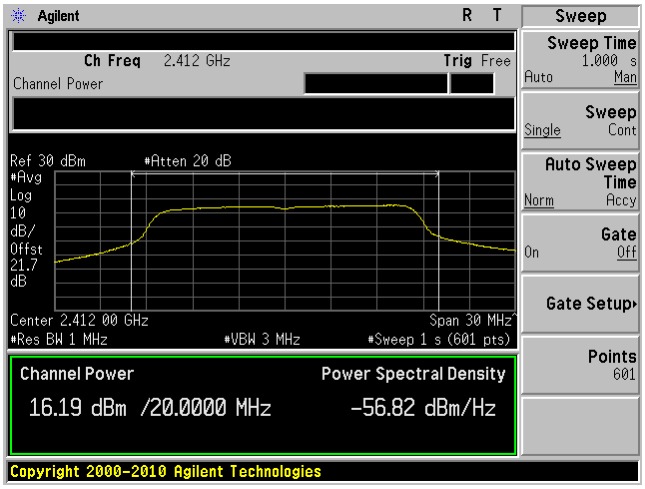


802.11 g mode

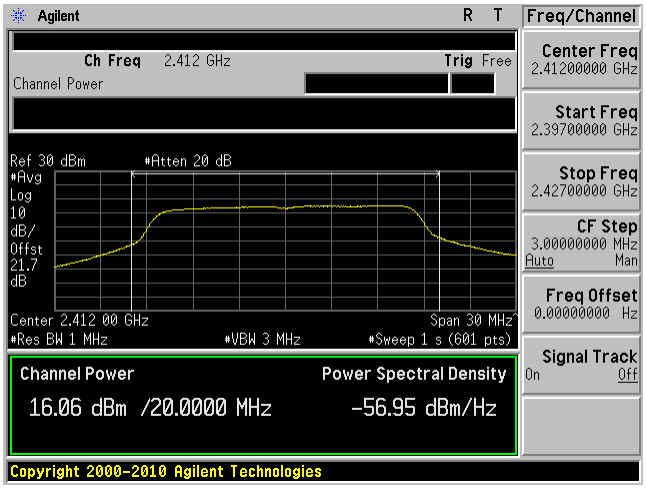
2412 MHz, Chain J1



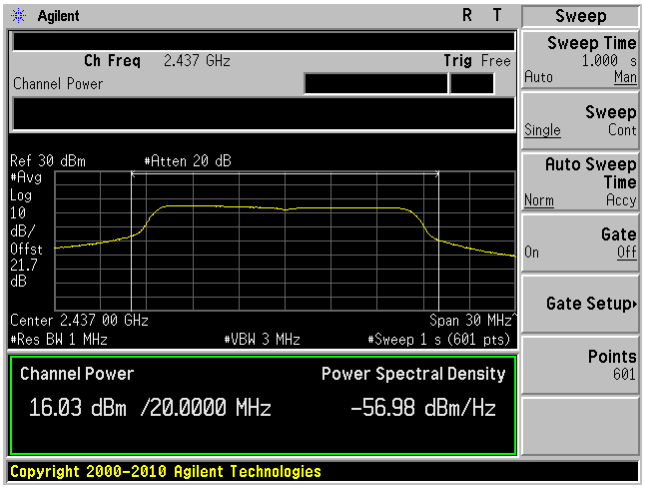
2412 MHz, Chain J2



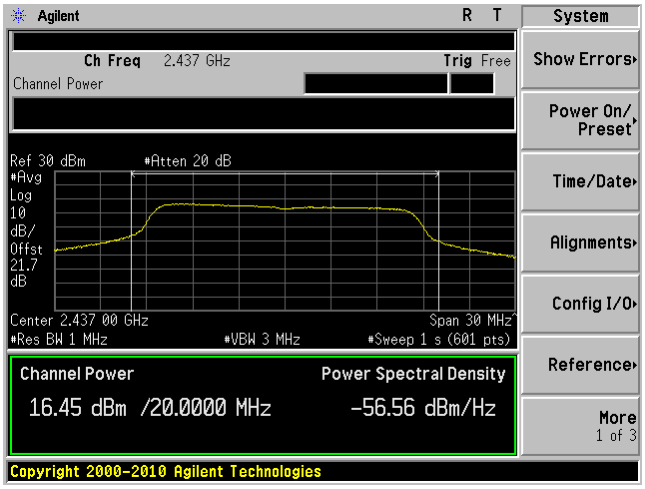
2412 MHz, Chain J3



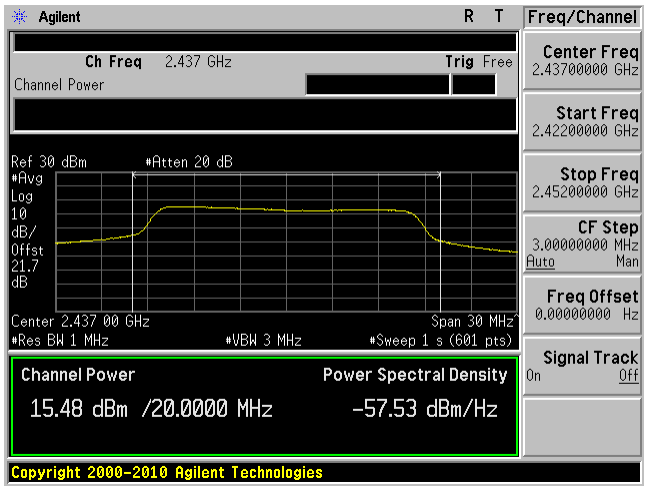
2437 MHz, Chain J1



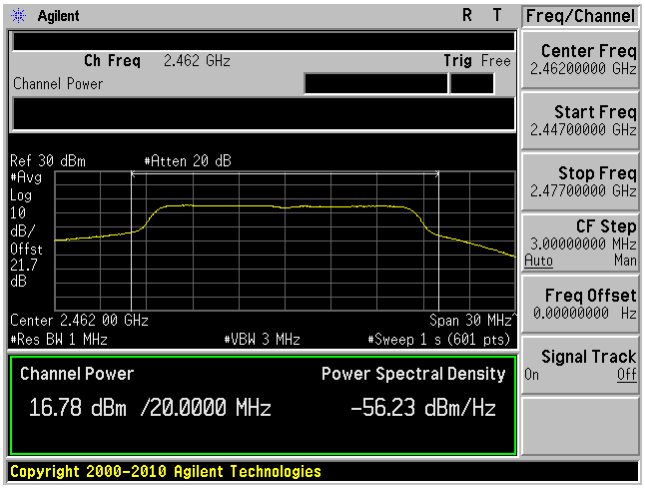
2437 MHz, Chain J2



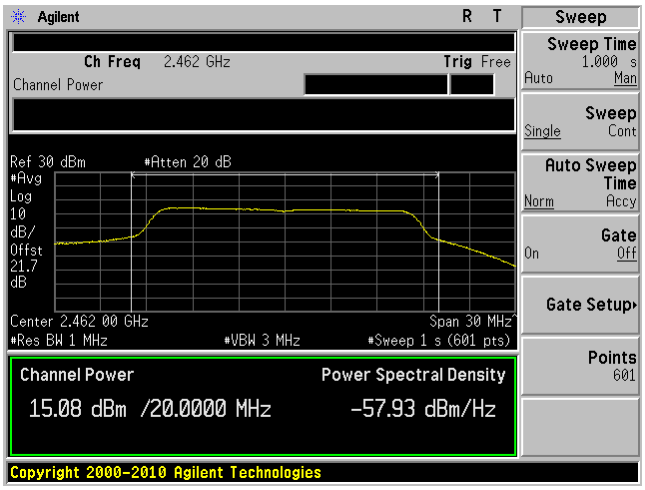
2437 MHz, Chain J3



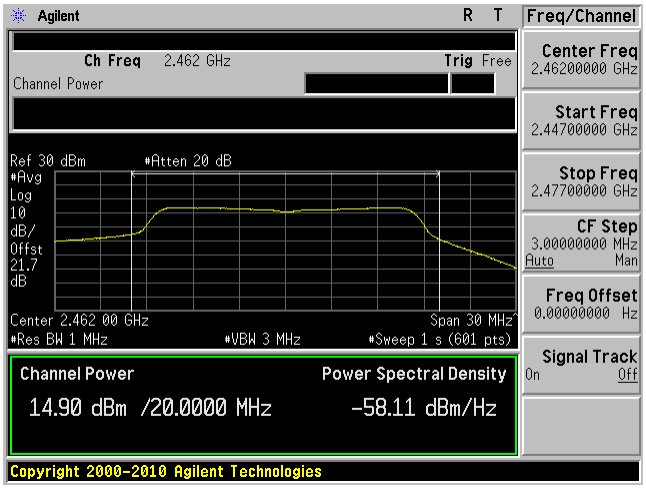
2462 MHz, Chain J1



2462 MHz, Chain J2

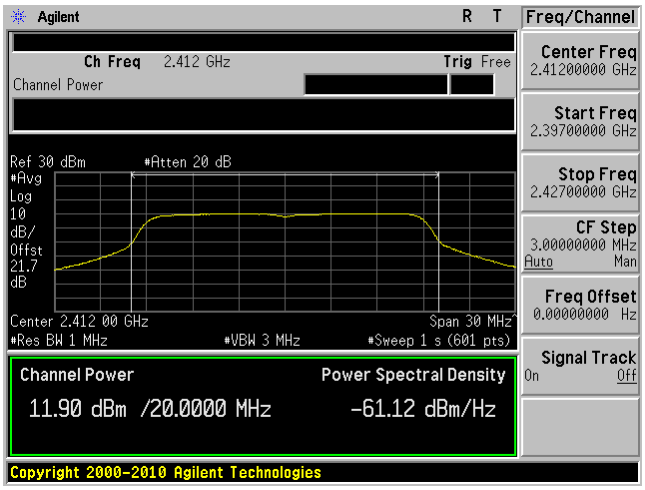


2462 MHz, Chain J3

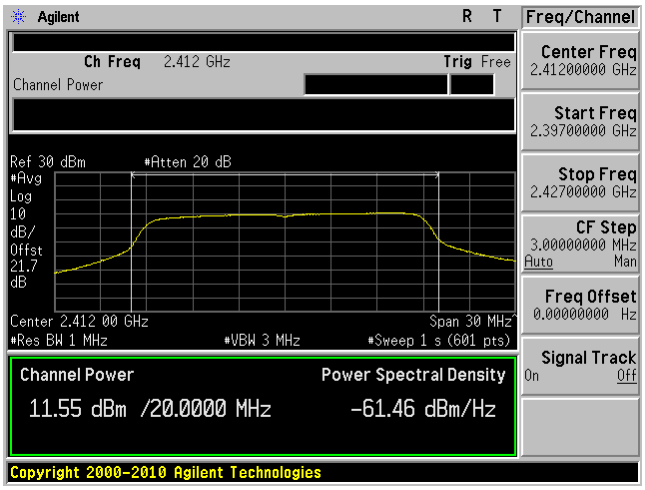


802.11 n 20 mode

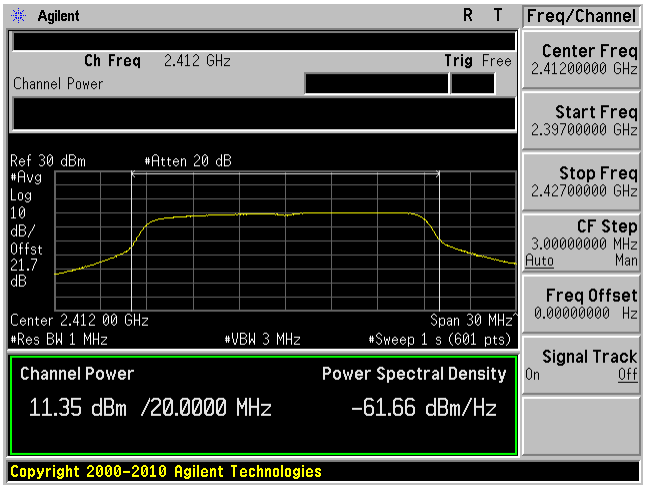
2412 MHz, Chain J1



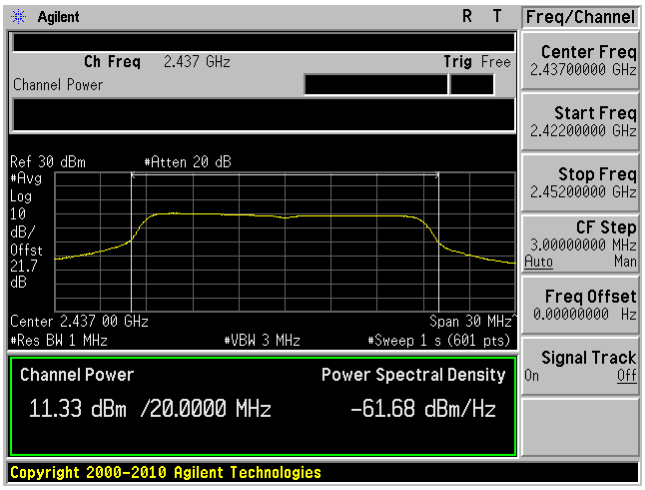
2412 MHz, Chain J2



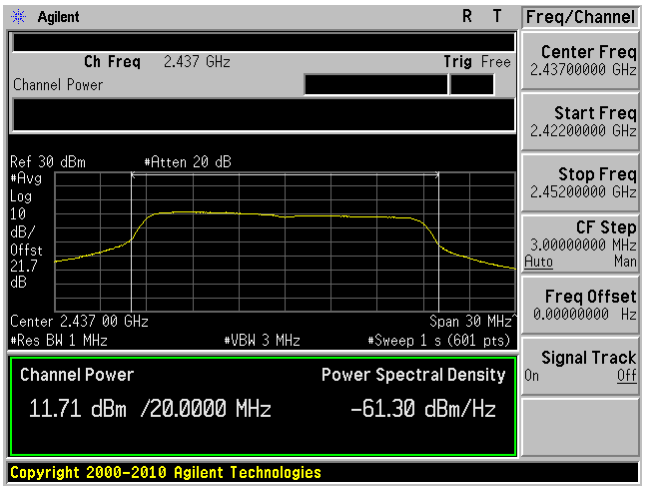
2412 MHz, Chain J3



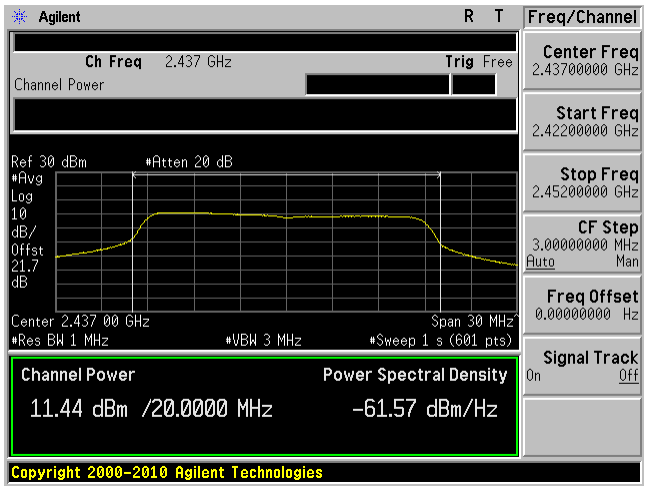
2437 MHz, Chain J1



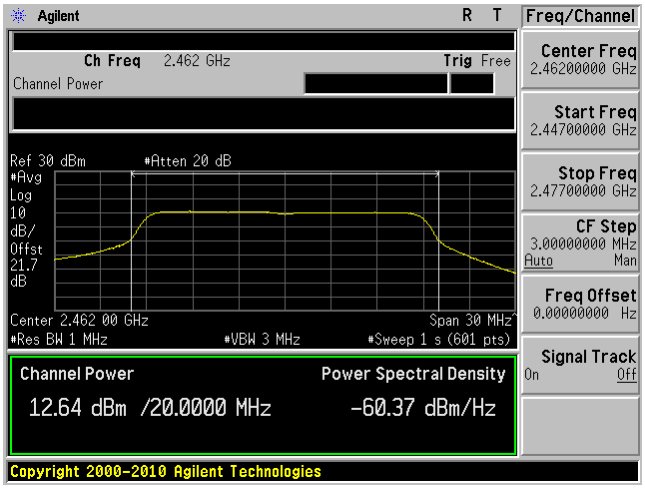
2437 MHz, Chain J2



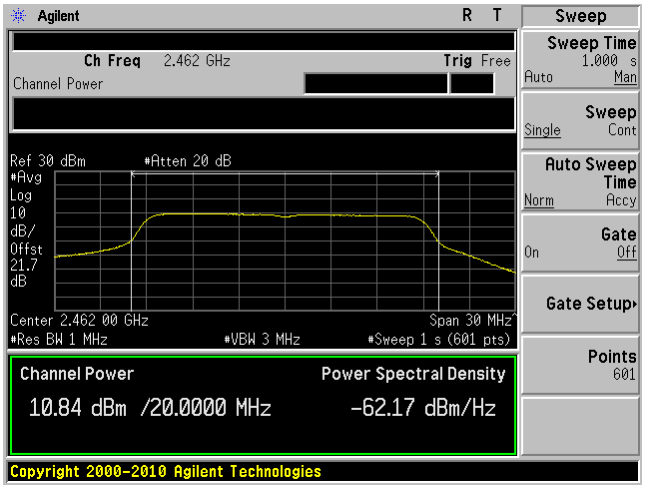
2437 MHz, Chain J3



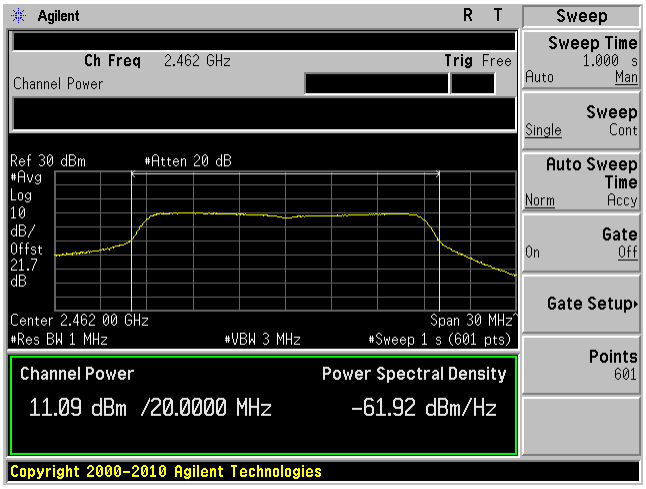
2462 MHz, Chain J1



2462 MHz, Chain J2

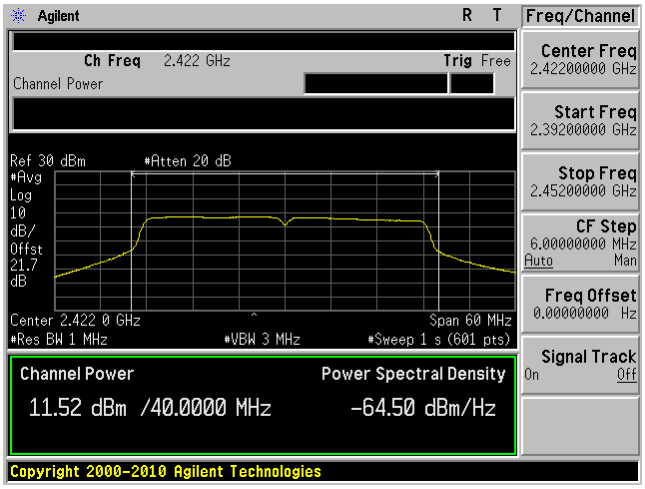


2462 MHz, Chain J3

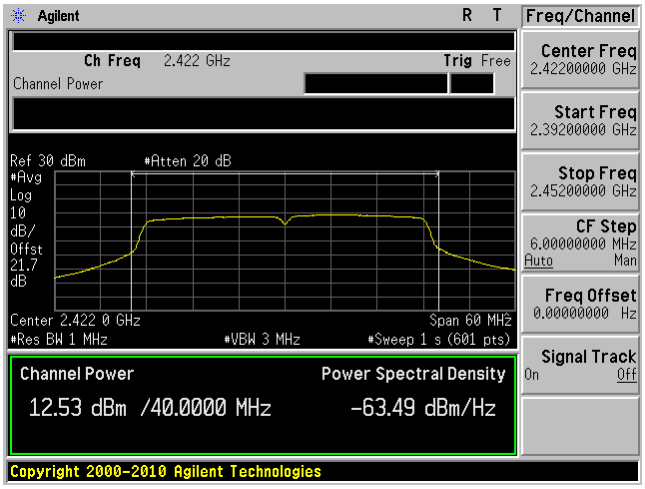


802.11 n 40 mode

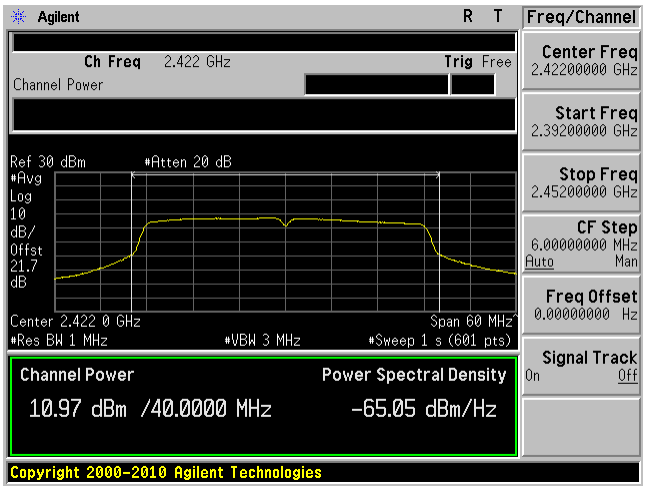
2422 MHz, Chain J1



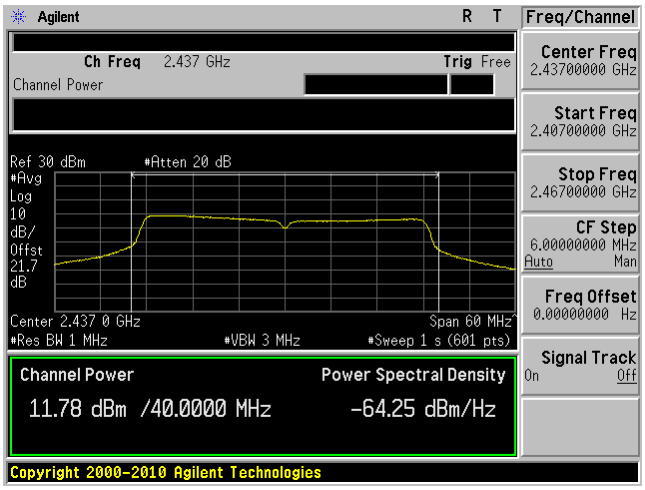
2422 MHz, Chain J2



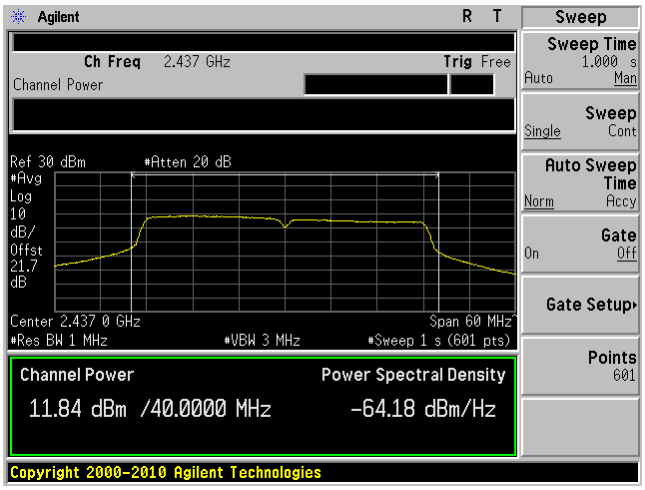
2422 MHz, Chain J3



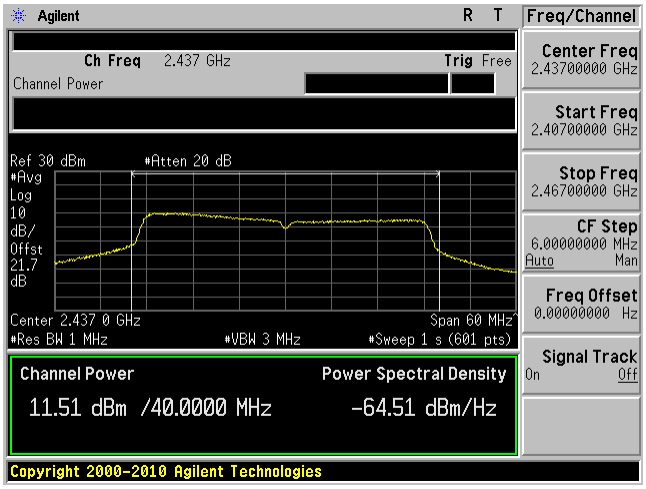
2437 MHz, Chain J1



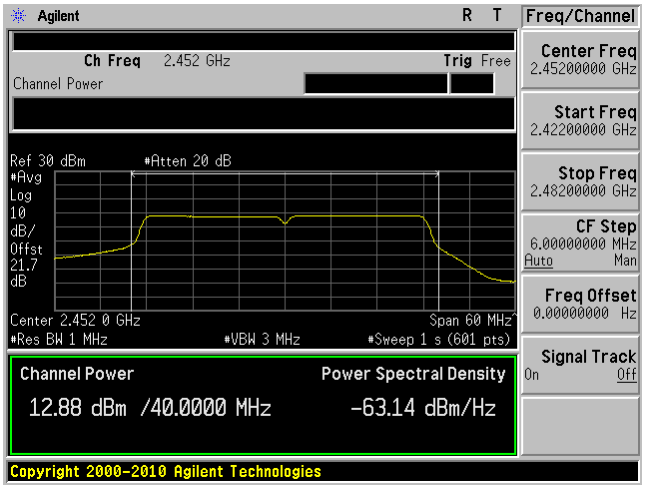
2437 MHz, Chain J2



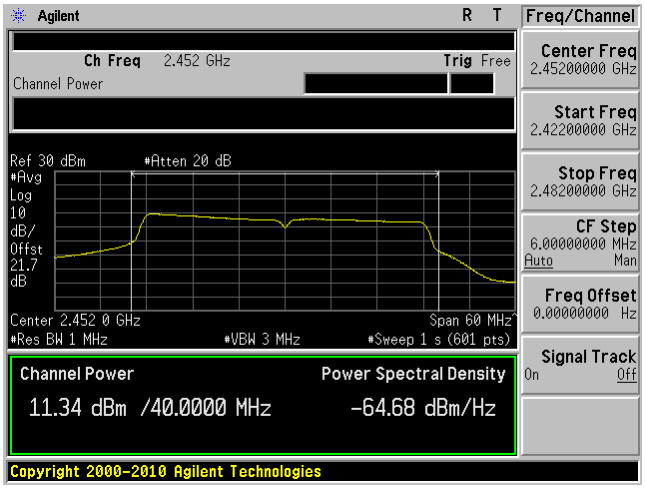
2437 MHz, Chain J3



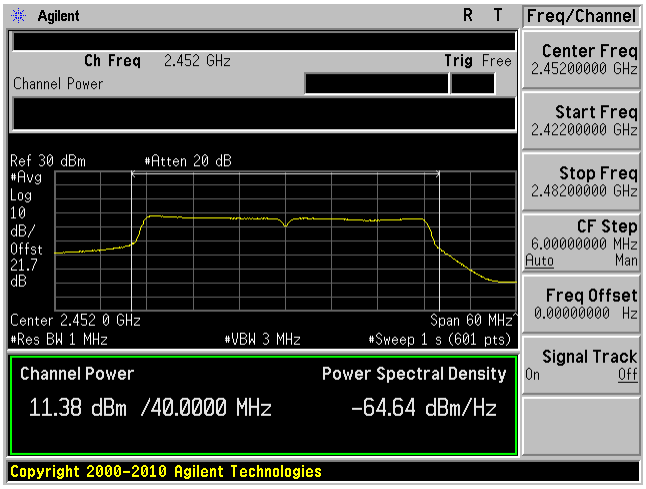
2452 MHz, Chain J1



2452 MHz, Chain J2



2452 MHz, Chain J3



8 FCC §15.247(d) & IC RSS-210 §A8.5 - 100 kHz Bandwidth of Band Edges

8.1 Applicable Standard

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c).

According to IC RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

8.2 Measurement Procedure

The measurement of unwanted emissions at the edge of the authorized frequency bands can be complicated by the leakage of RF energy from the fundamental emission into the RBW passband. Thus, for measurements at the band edges, a narrower resolution bandwidth (no less then 10 KHz) can be used within the first 1 MHz beyond the fundamental emission, provided that that measured energy is subsequently integration over the appropriate reference bandwidth (i.e., 100 KHz or 1 MHz). This integration can be performed using the band power function of the spectrum analyzer or by summing the spectral levels (in linear power units) over the appropriate reference bandwidth.

8.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-08-11	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

8.4 Test Environmental Conditions

Temperature:	24 °C
Relative Humidity:	43 %
ATM Pressure:	101.7 kPa

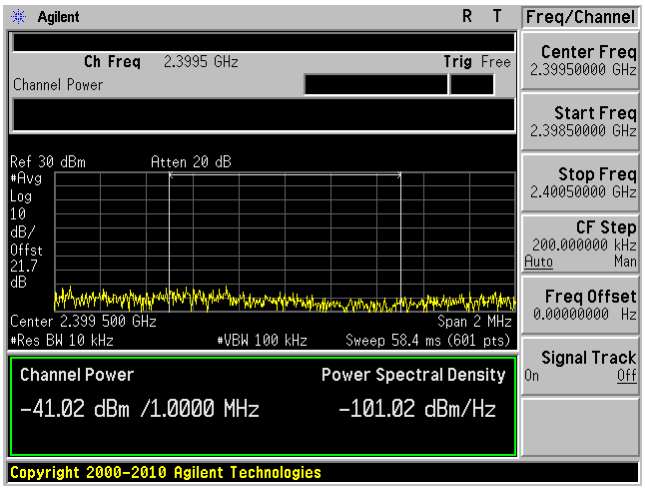
The testing was performed by Ning Ma on 2012-06-26in RF site.

8.5 Test Results

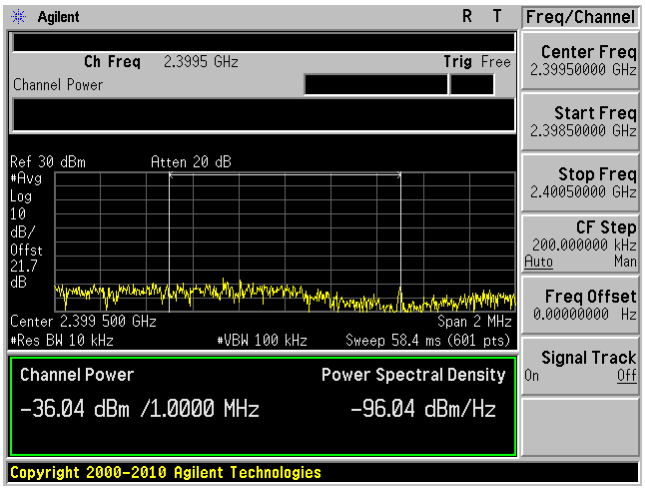
Please refer to following pages for plots of band edge.

Antenna gain is 9 dBi

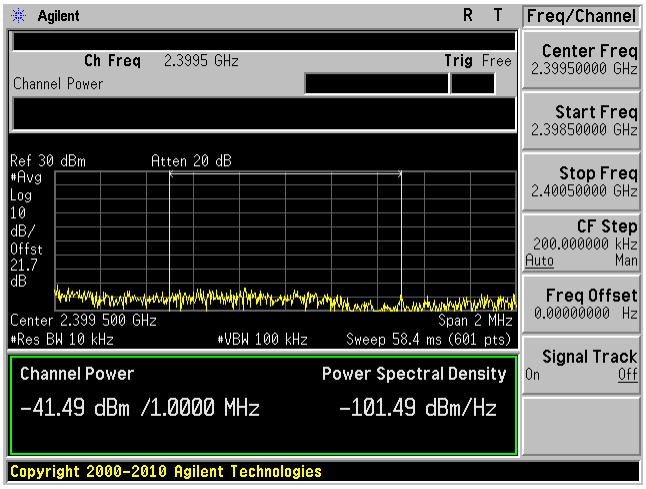
802.11b mode, Lowest Channel, Chain J1



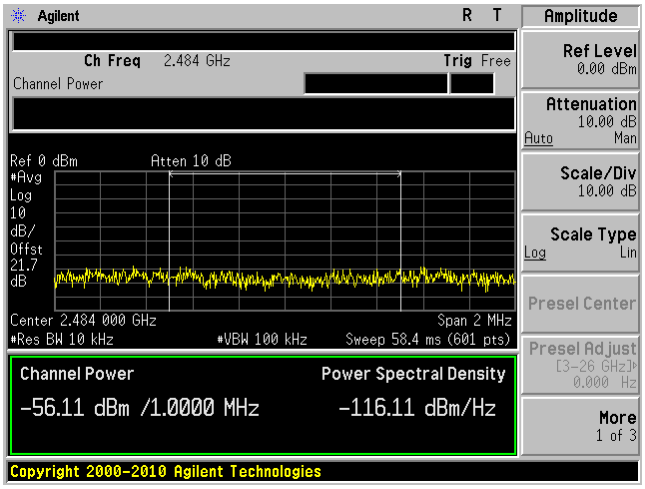
802.11b mode, Lowest Channel, Chain J2



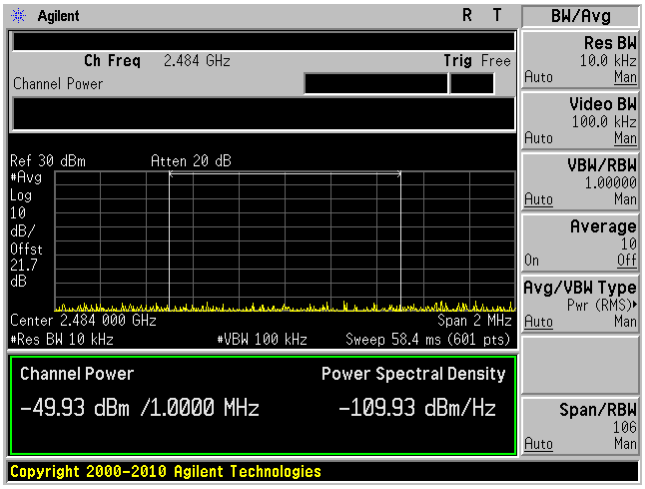
802.11b mode, Lowest Channel, Chain J3



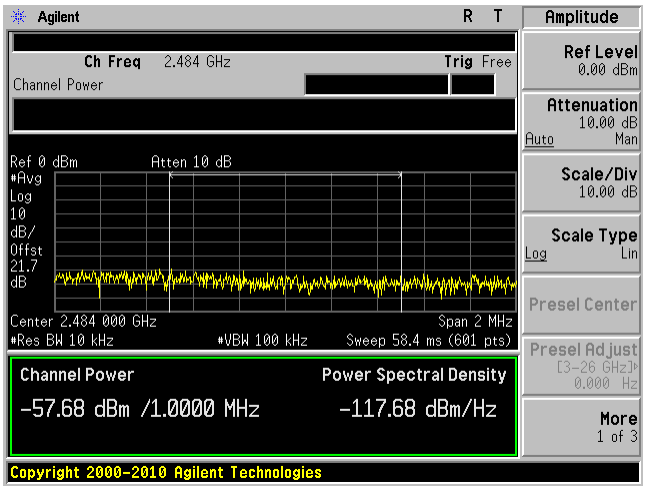
802.11b mode, Highest Channel, Chain J1



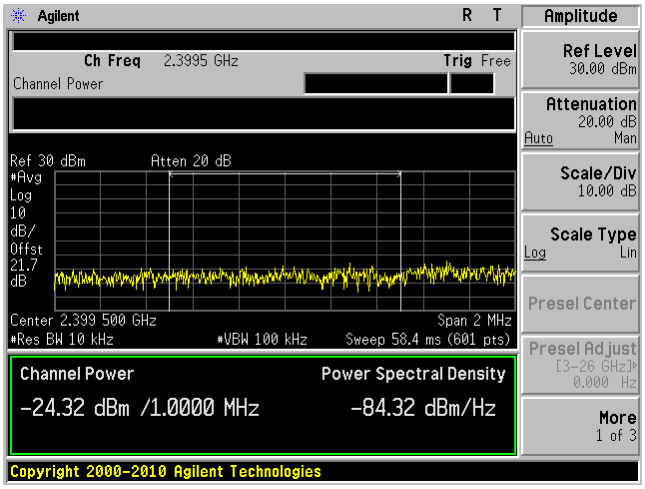
802.11b mode, Highest Channel, Chain J2



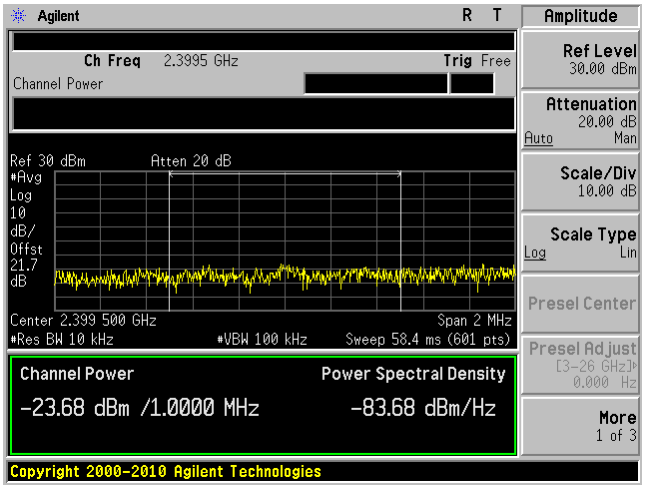
802.11b mode, Highest Channel, Chain J3



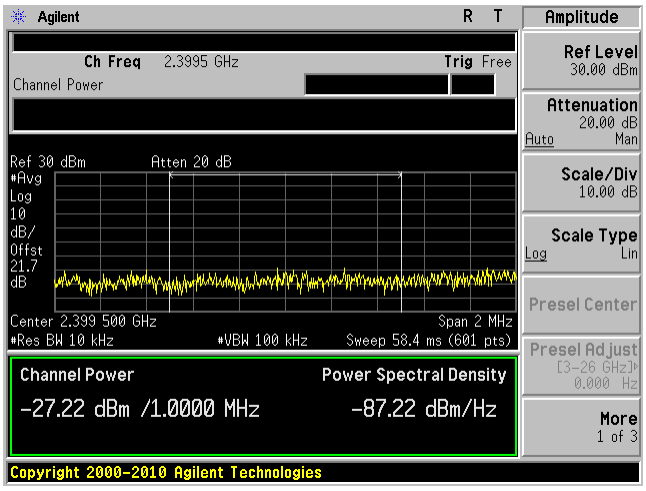
802.11g mode, Lowest Channel, Chain J1



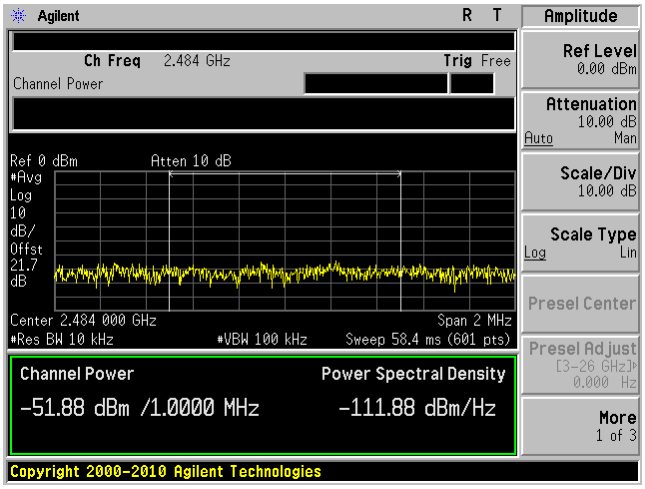
802.11g mode, Lowest Channel, Chain J2



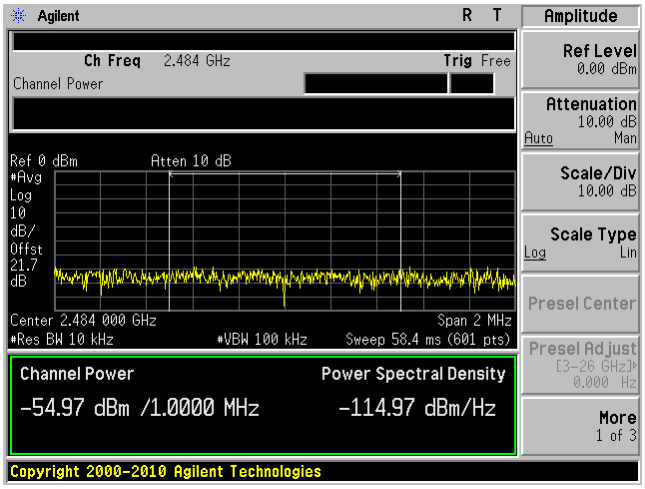
802.11g mode, Lowest Channel, Chain J3



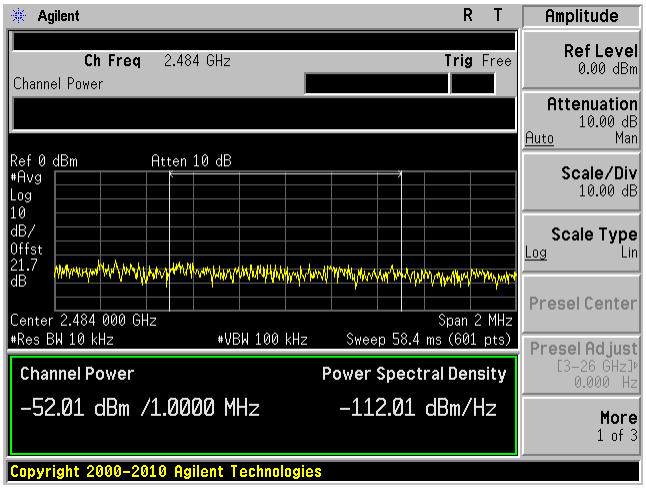
802.11g mode, Highest Channel, Chain J1



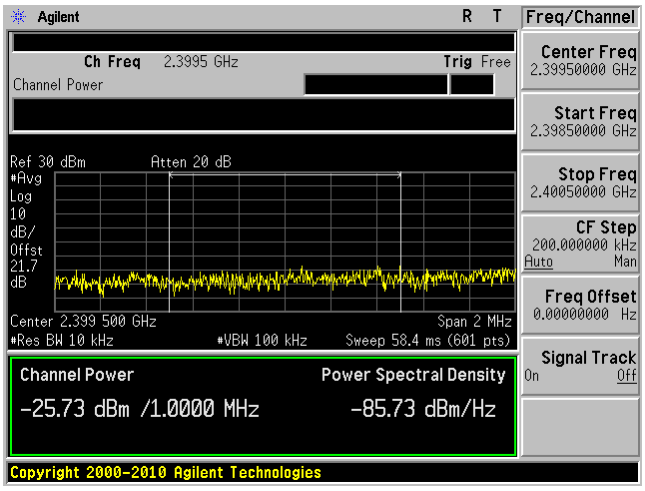
802.11g mode, Highest Channel, Chain J2



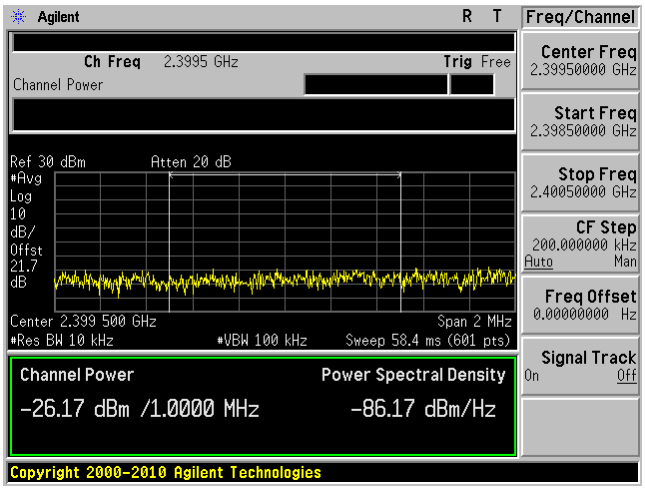
802.11g mode, Highest Channel, Chain J3



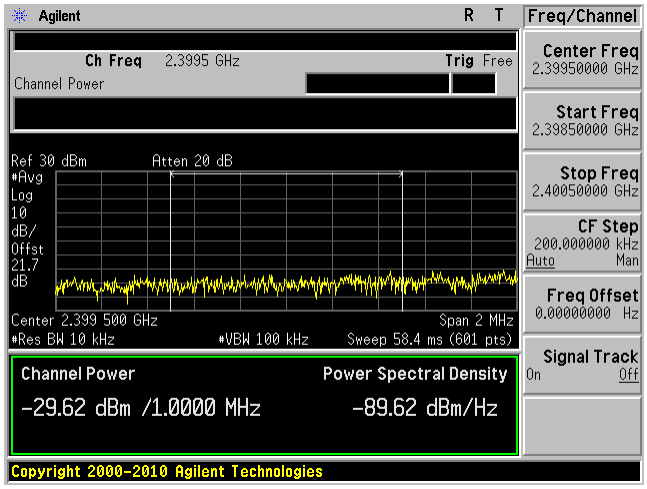
802.11n20 mode, Lowest Channel, Chain J1



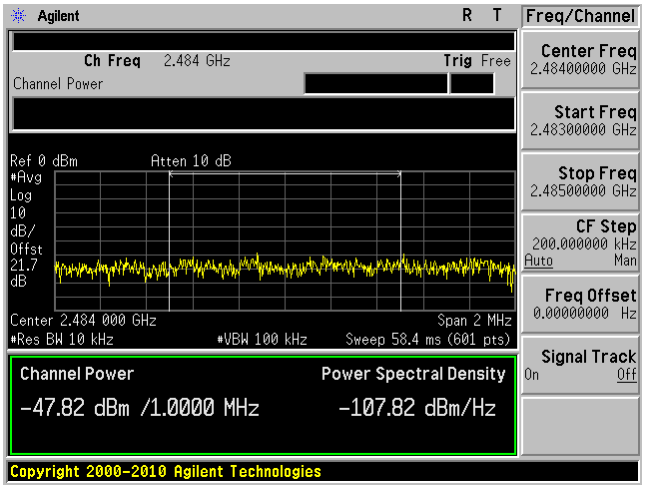
802.11 n20 mode, Lowest Channel, Chain J2



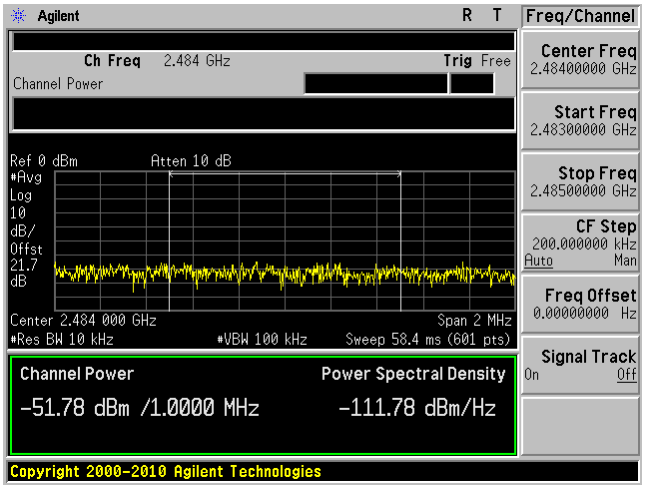
802.11n20 mode, Lowest Channel, Chain J3



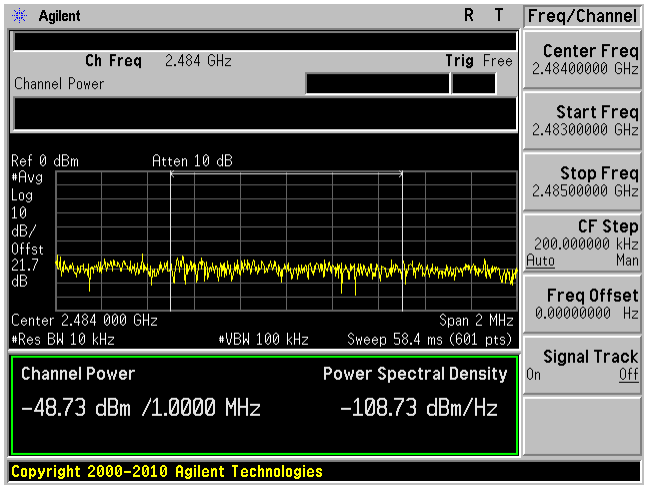
802.11n20 mode, Highest Channel, Chain J1



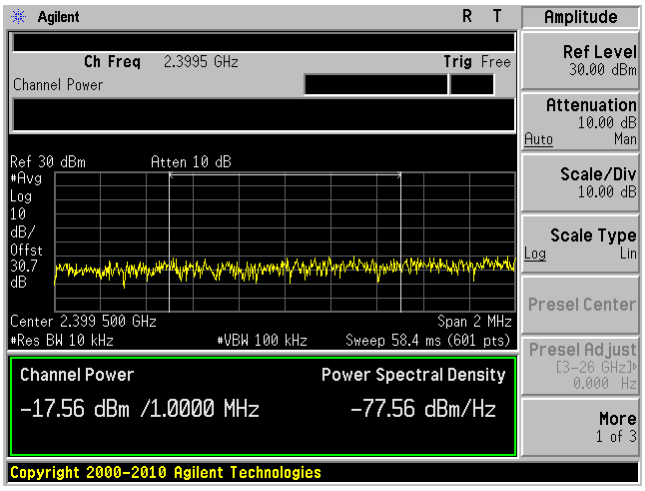
802.11n20 mode, Highest Channel, Chain J2



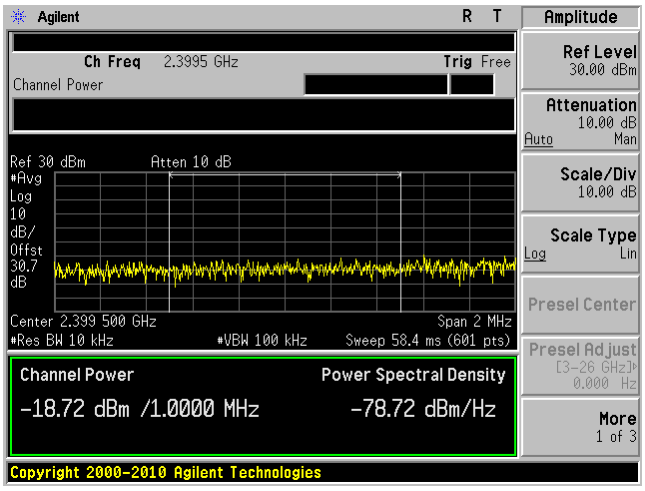
802.11n20 mode, Highest Channel, Chain J3



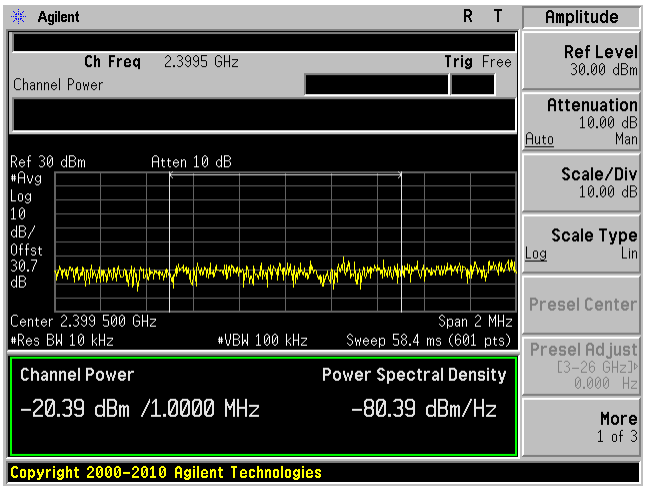
802.11n40 mode, Lowest Channel, Chain J1



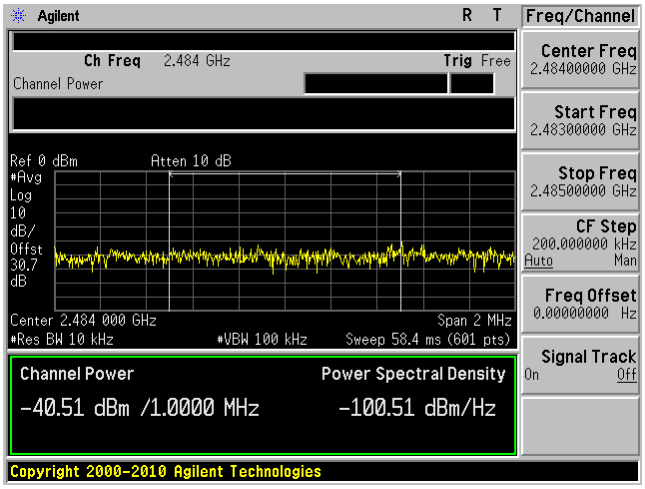
802.11n40 mode, Lowest Channel, Chain J2



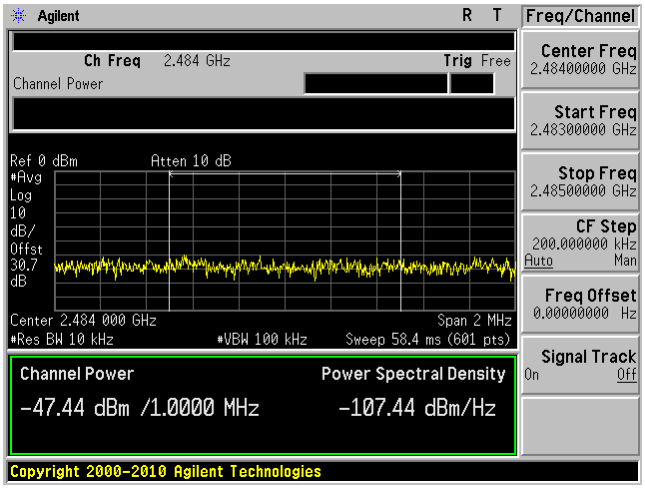
802.11n40 mode, Lowest Channel, Chain J3



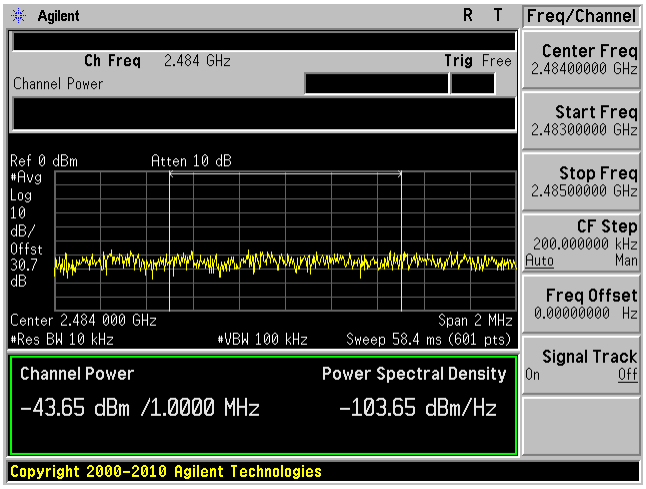
802.11n40 mode, Highest Channel, Chain J1



802.11n40 mode, Highest Channel, Chain J2

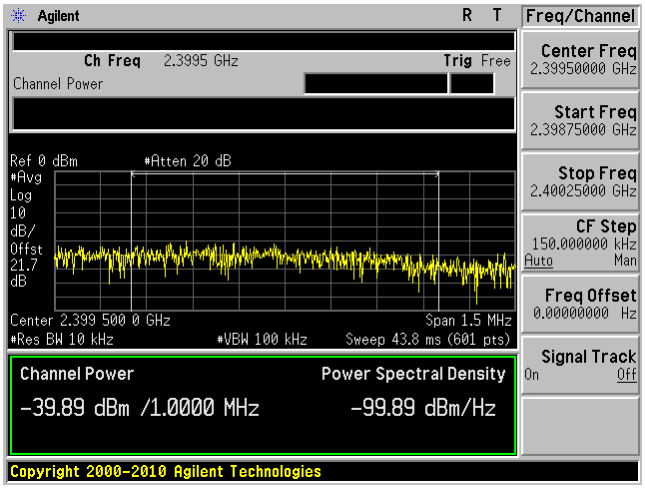


802.11n40 mode, Highest Channel, Chain 3

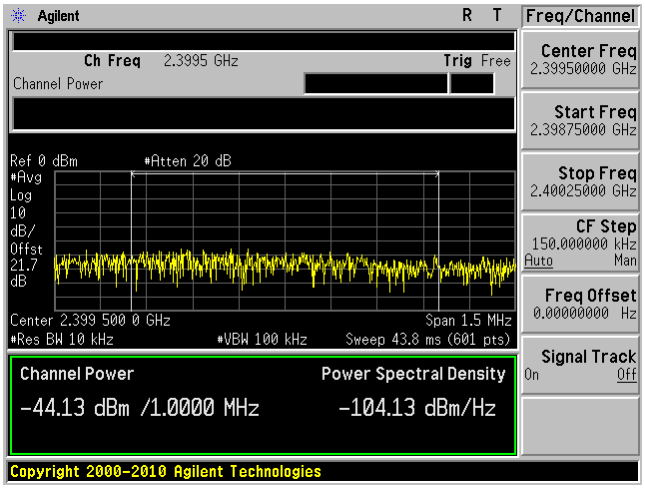


Antenna gain is 19 dBi

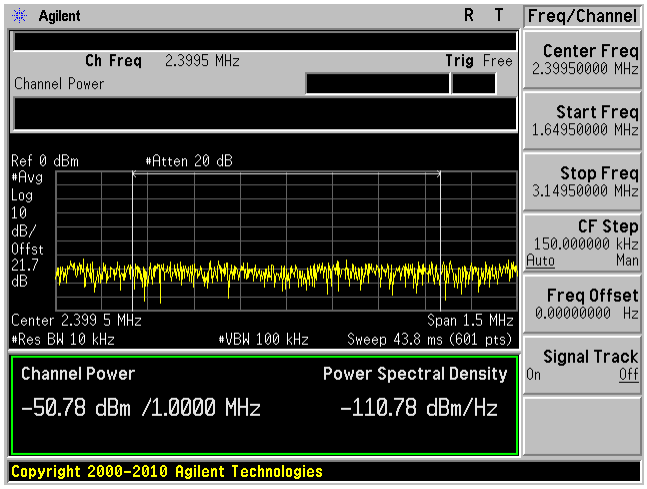
802.11b mode, Lowest Channel, Chain J1



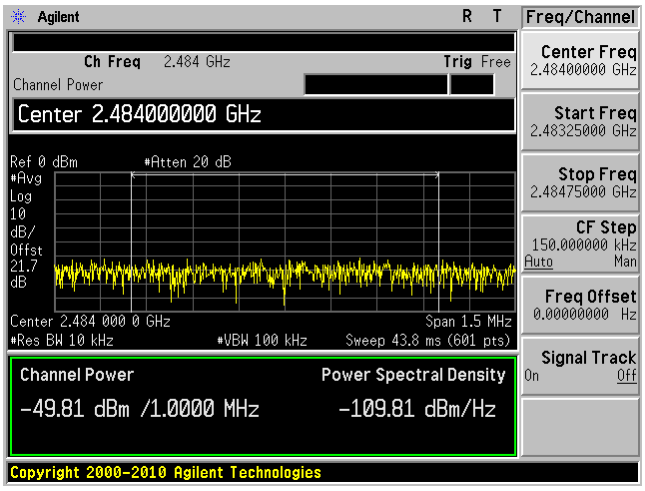
802.11b mode, Lowest Channel, Chain J2



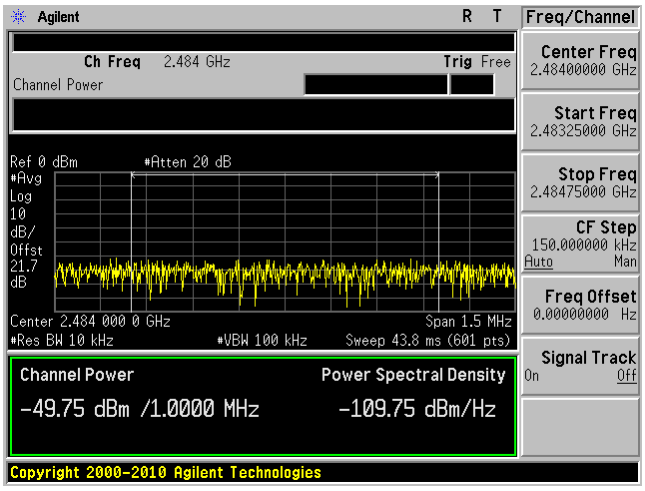
802.11b mode, Lowest Channel, Chain J3



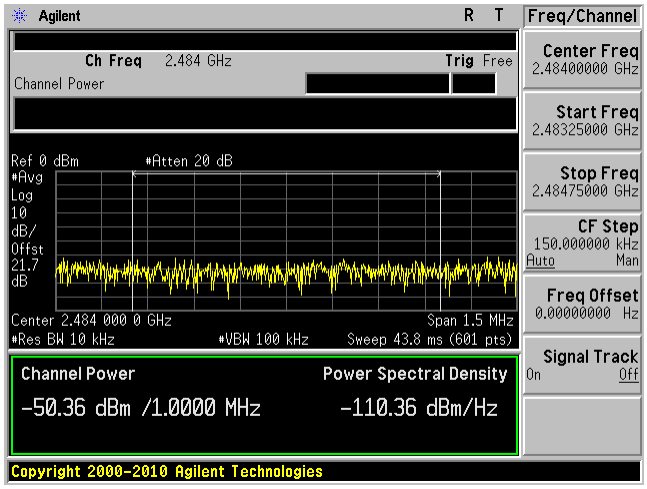
802.11b mode, Highest Channel, Chain J1



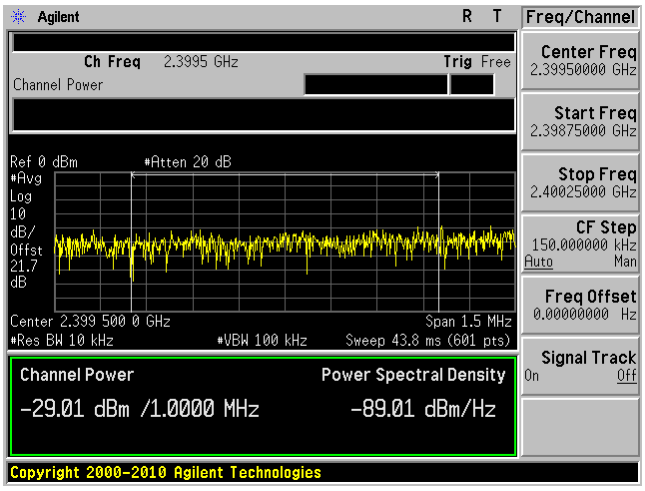
802.11b mode, Highest Channel, Chain J2



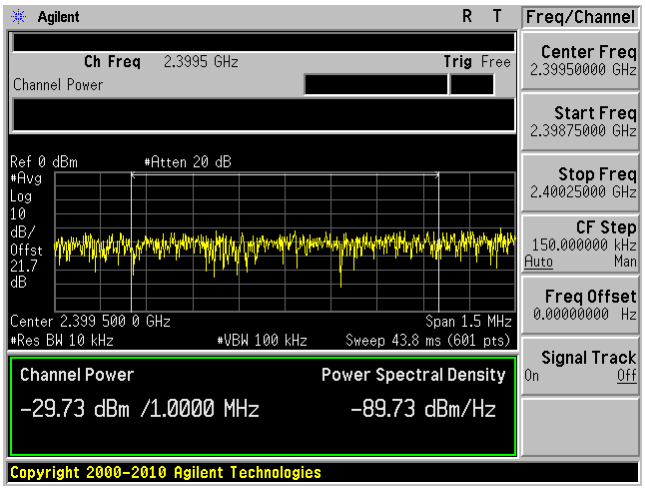
802.11b mode, Highest Channel, Chain J3



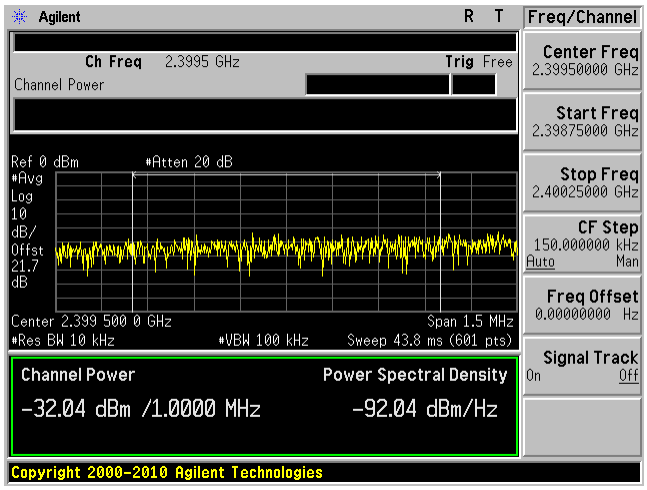
802.11g mode, Lowest Channel, Chain J1



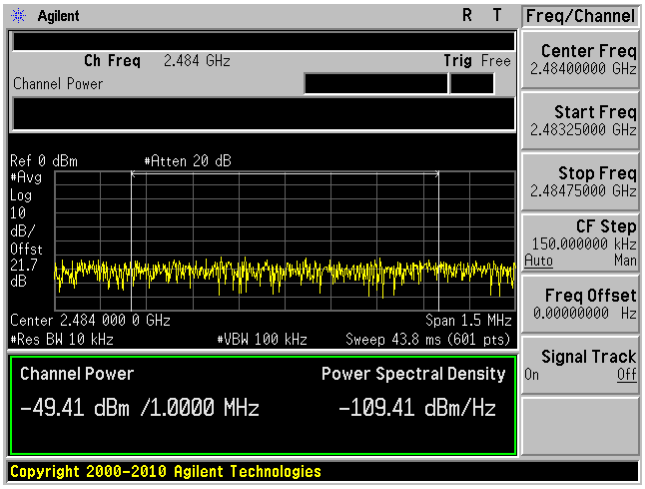
802.11g mode, Lowest Channel, Chain J2



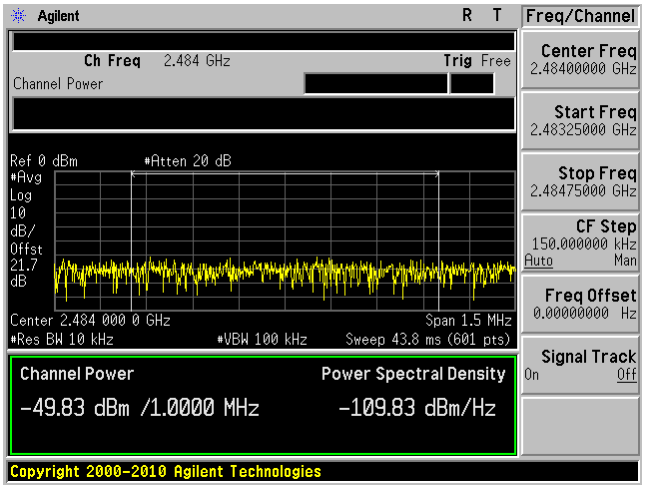
802.11g mode, Lowest Channel, Chain J3



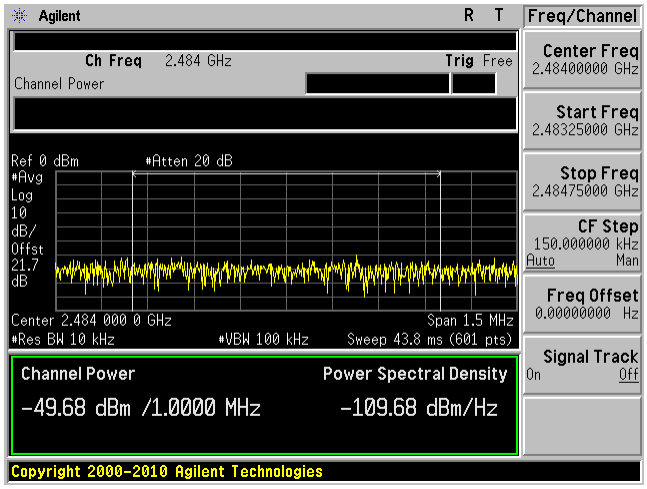
802.11g mode, Highest Channel, Chain J1



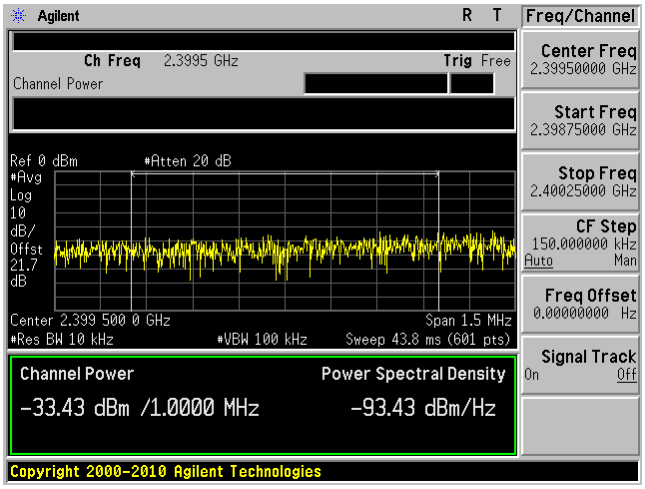
802.11g mode, Highest Channel, Chain J2



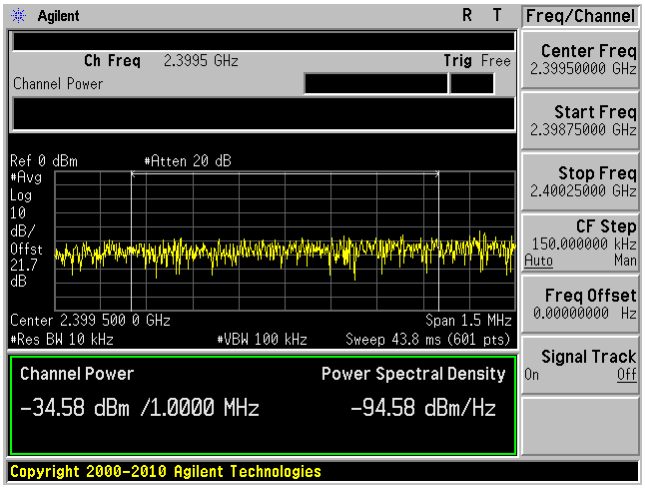
802.11g mode, Highest Channel, Chain J3



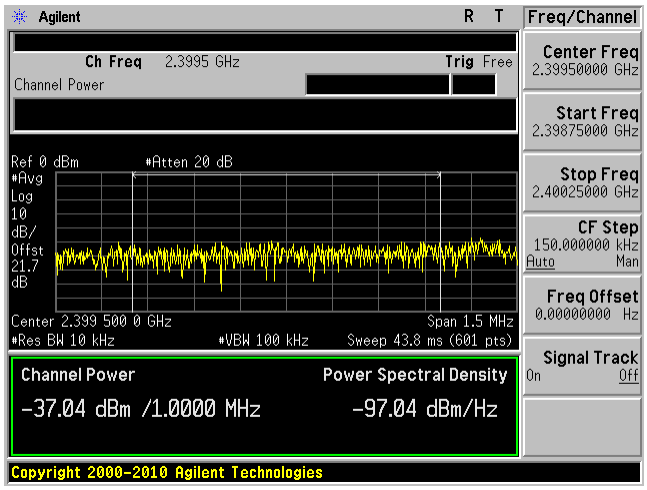
802.11n20 mode, Lowest Channel, Chain J1



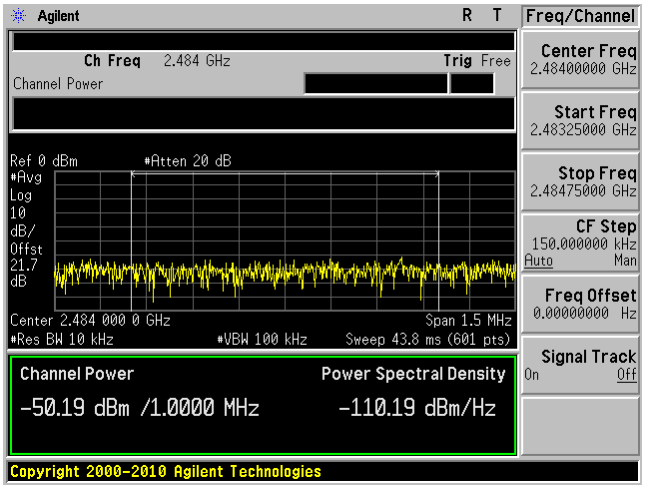
802.11 n20 mode, Lowest Channel, Chain J2



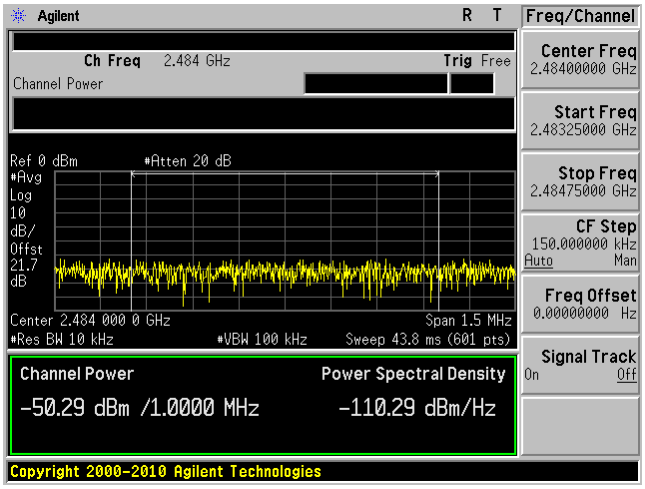
802.11n20 mode, Lowest Channel, Chain J3



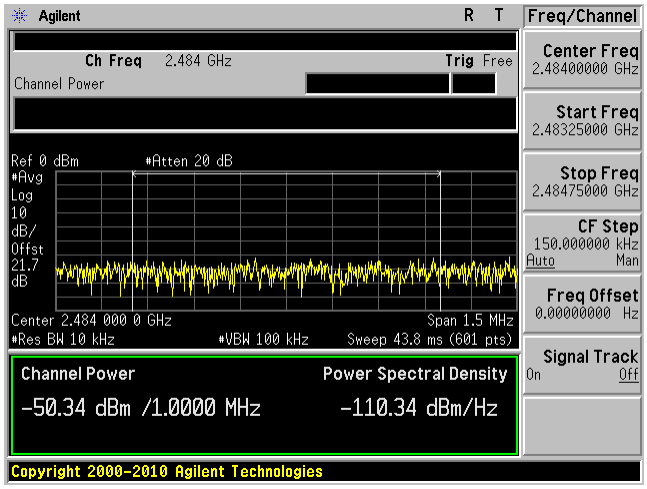
802.11n20 mode, Highest Channel, Chain J1



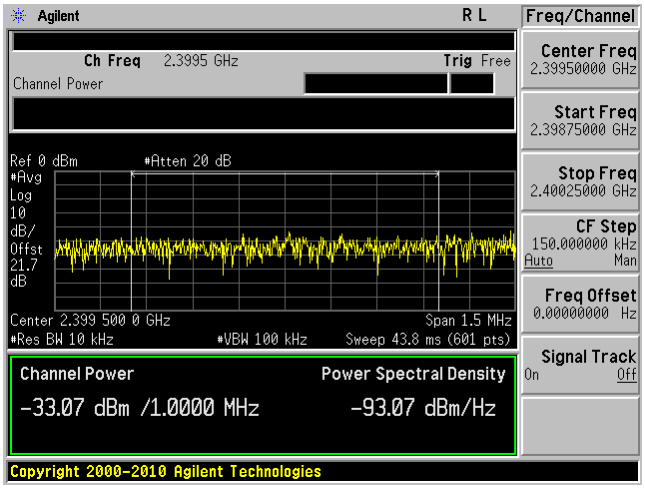
802.11n20 mode, Highest Channel, Chain J2



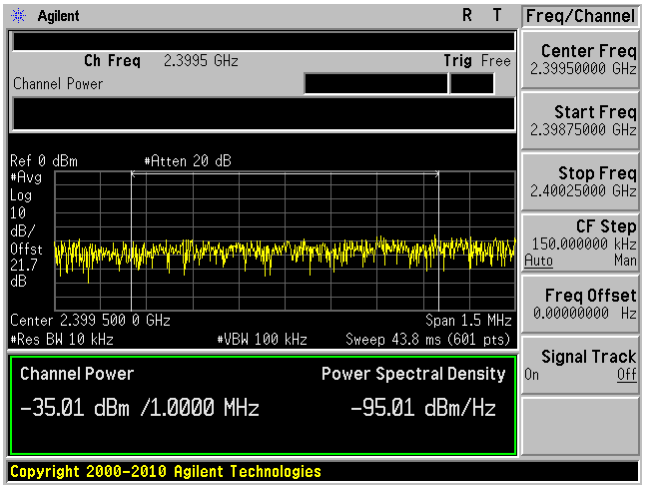
802.11n20 mode, Highest Channel, Chain J3



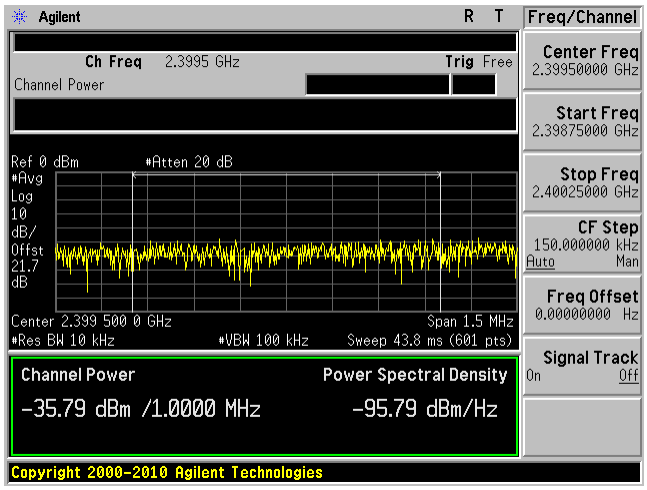
802.11n40 mode, Lowest Channel, Chain J1



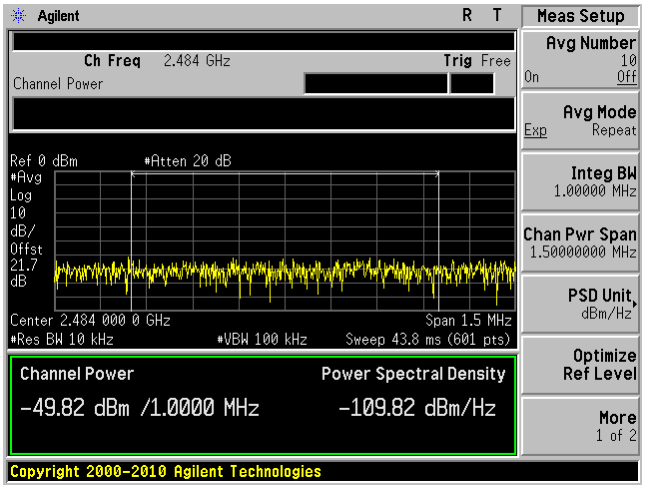
802.11n40 mode, Lowest Channel, Chain J2



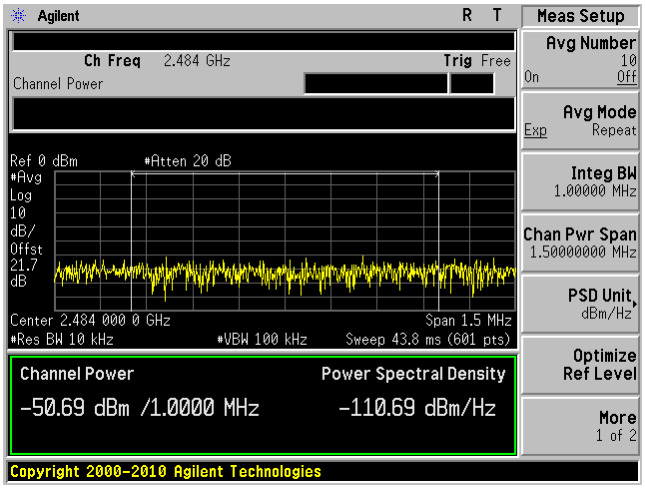
802.11n40 mode, Lowest Channel, Chain J3



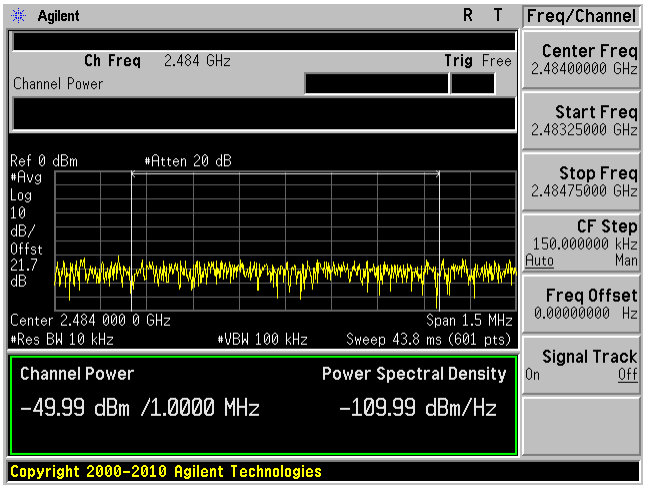
802.11n40 mode, Highest Channel, Chain J1



802.11n40 mode, Highest Channel, Chain J2



802.11n40 mode, Highest Channel, Chain 3



9 FCC §15.247(e) & IC RSS-210 §A8.2 (b) - Power Spectral Density

9.1 Applicable Standard

According to FCC §15.247 (e) and IC RSS-210 §A8.2 (b) , for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.2 Measurement Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW ≥ 300 kHz.
4. Set the span to 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).
11. The resulting peak PSD level must be ≤ 8 dBm.

9.3 Test Equipment List and Details

Manufacturers	Description	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	US44300386	2012-08-11	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

9.4 Test Environmental Conditions

Temperature:	25 °C
Relative Humidity:	45 %
ATM Pressure:	101.8 kPa

The testing was performed by Ning Ma on 2012-06-26 in RF site.

9.5 Test Results

Antenna gain is 9 dBi

802.11b mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Max Cord. PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	10.08	10.22	10.22	-4.98	8	-12.98	21
Middle	2437	11.23	12.58	10.15	-2.62	8	-10.62	24
High	2462	10.76	9.82	8.03	-4.44	8	-12.44	24

802.11g mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Max Cord. PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	9.79	9.74	10.1	-5.1	8	-6.5	20.5
Middle	2437	9.44	10.46	8.68	-4.74	8	-6.22	21
High	2462	9.49	8.33	7.66	-5.71	8	-9.81	21

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Cord. Total PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	-8.85	-8.53	-7.76	-2.07	8	-10.07	19.5
Middle	2437	-5.93	-6.64	-2.17	-0.03	8	-8.03	22
High	2462	-5.24	1.74	-5.86	-1.37	8	-9.37	22

802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Cord. Total PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2422	-9.75	-9.87	-10.89	-5.34	8	-13.34	19.5
Middle	2437	-8.41	-7.56	-5.12	-2.46	8	-10.46	22
High	2452	-9.29	-9.71	-9.26	-5.86	8	-13.86	20.5

Note: Cord. PDS = Measured PSD-15.2 dB

Antenna gain is 19 dBi

802.11b mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Max Cord. PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	6.88	7.42	7.29	-7.78	8	-15.78	18
Middle	2437	6.29	7.32	5.88	-7.88	8	-15.88	17.5
High	2462	7.87	5.68	5.39	-7.33	8	-15.33	18

802.11g mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Max Cord. PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	6.15	6.62	6.28	-8.58	8	-16.58	18
Middle	2437	5.58	6.77	5.81	-8.43	8	-16.43	17.5
High	2462	6.86	5.43	5.22	-9.77	8	-17.77	17.5

802.11n HT20 mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Cord. Total PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2412	1.54	2.32	1.19	-8.72	8	-16.72	13.5
Middle	2437	2.19	2.44	2.17	-8.16	8	-16.16	13
High	2462	2.43	1.01	1.29	-8.81	8	-16.81	12.5

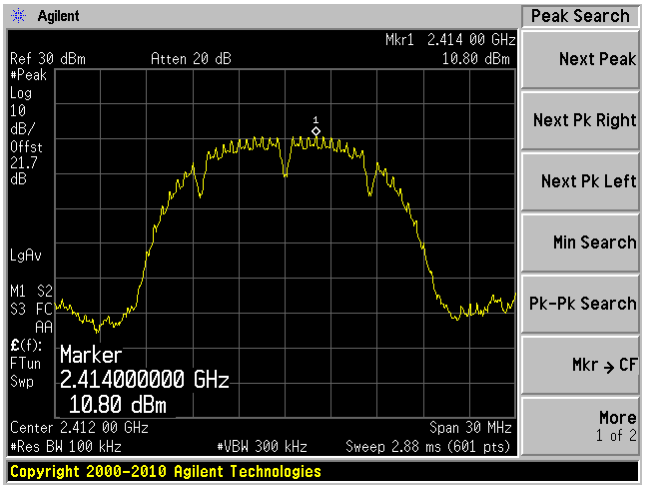
802.11n HT40 mode

Channel	Frequency (MHz)	TX Chain J1 PSD (dBm)	TX Chain J2 PSD (dBm)	TX Chain J3 PSD (dBm)	Cord. Total PSD (dBm)	Limit (dBm/3kHz)	Margin (dB)	Power Setting
Low	2422	-1.74	0.17	-1.55	-11.38	8	-19.38	13.5
Middle	2437	-0.35	-1.01	1.05	-10.45	8	-18.45	13
High	2452	-0.89	0.47	-1.05	-10.86	8	-18.86	14

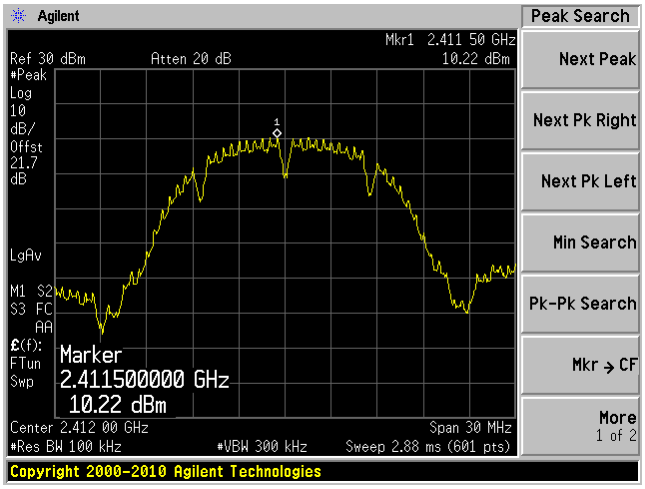
Note: Cord. PDS = Measured PSD-15.2 dB

Antenna gain is 9 dBi

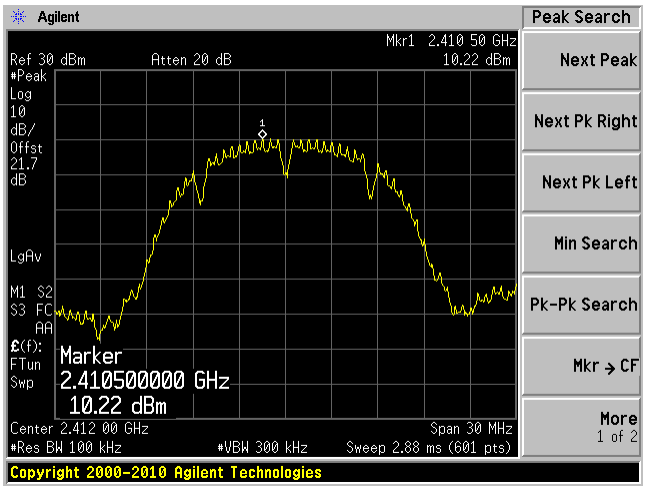
802.11b mode, Low Channel, Chain J1



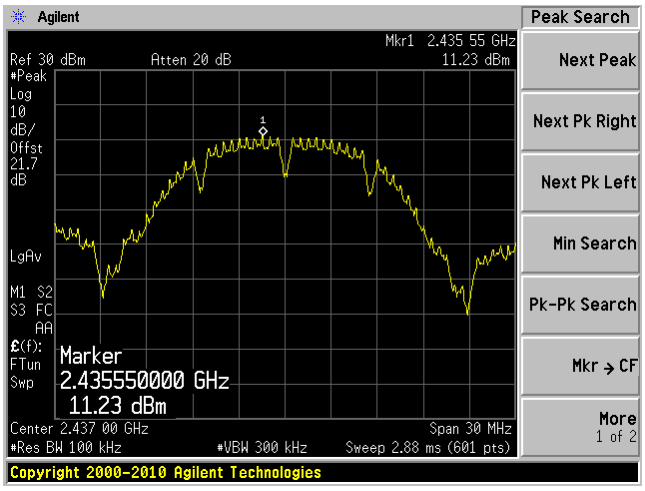
802.11b mode, Low Channel, Chain J2



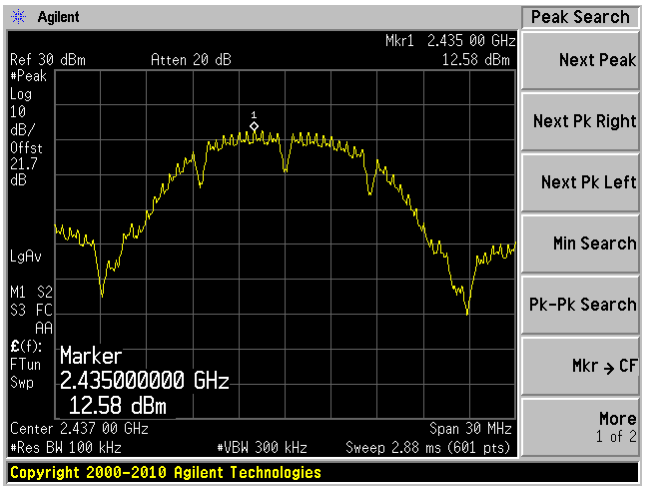
802.11b mode, Low Channel, Chain J3



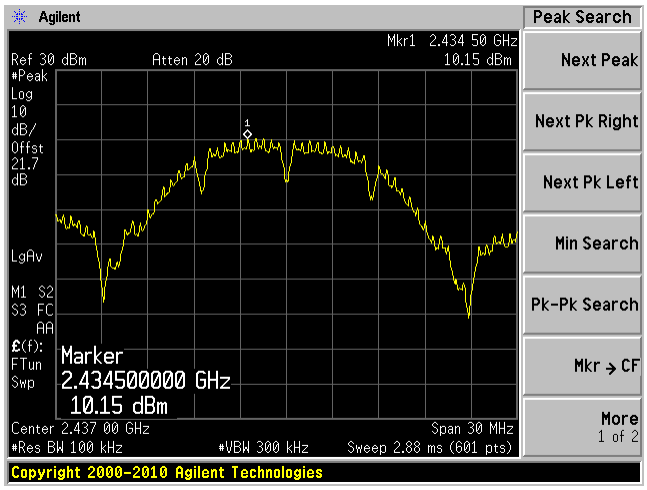
802.11b mode, Middle Channel, Chain J1



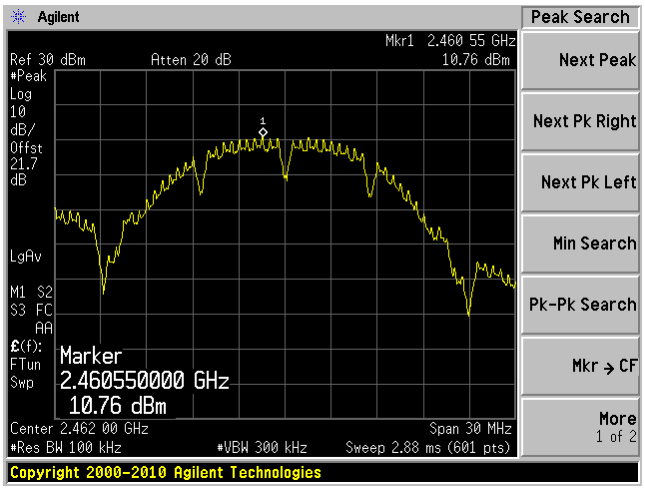
802.11b mode, Middle Channel, Chain J2



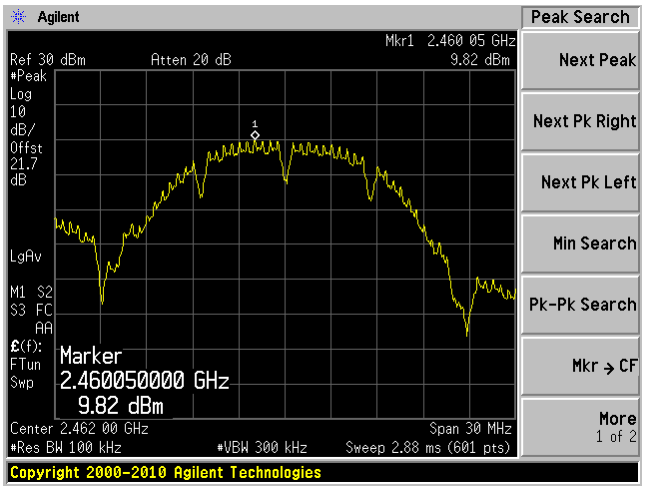
802.11b mode, Middle Channel, Chain J3



802.11b mode, High Channel, Chain J1



802.11b mode, High Channel, Chain J2



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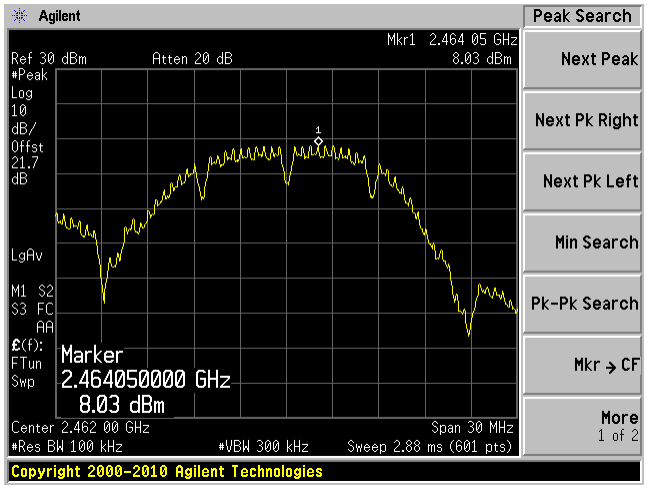
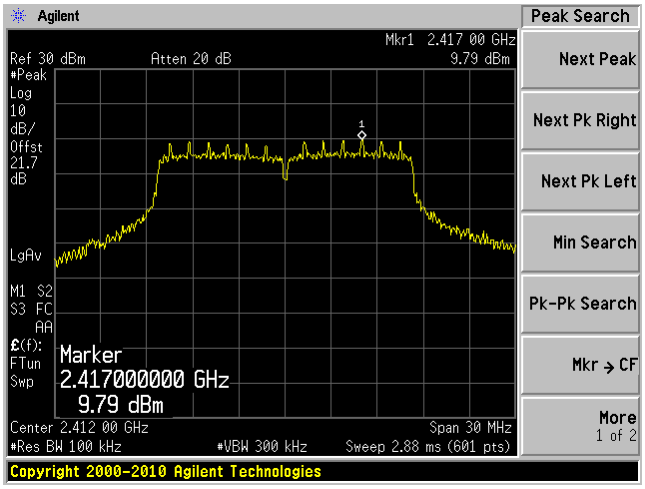
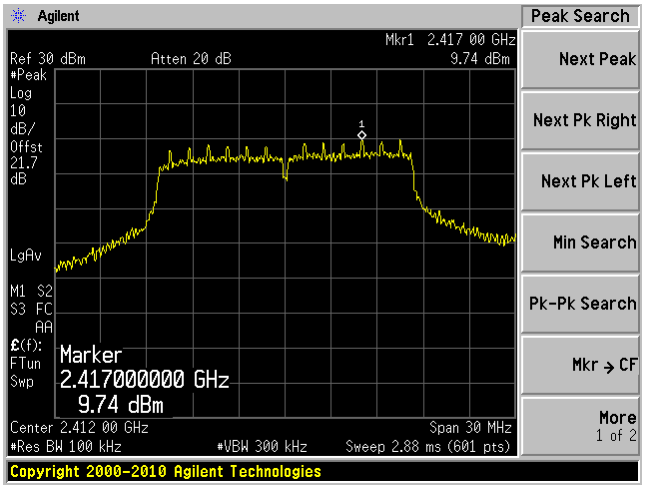


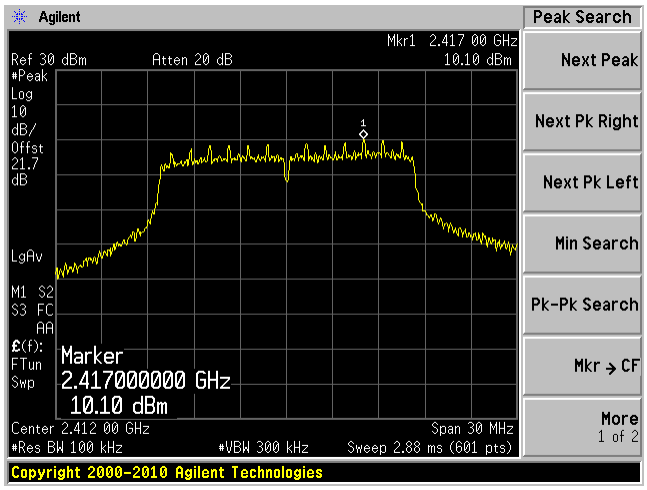
802.11g mode, Low Channel, Chain J1



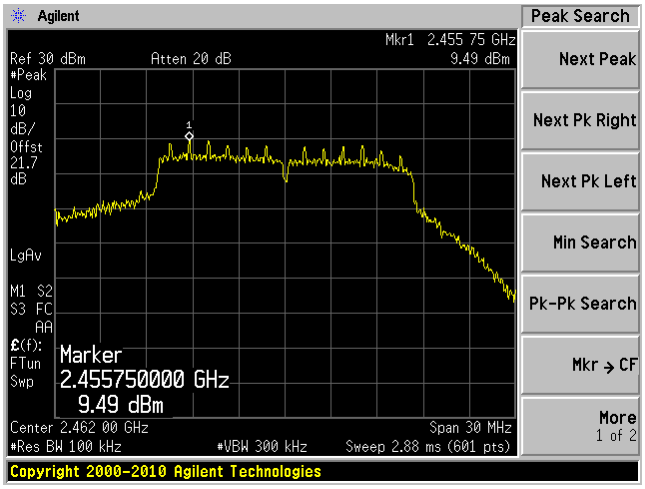
802.11g mode, Low Channel, Chain J2



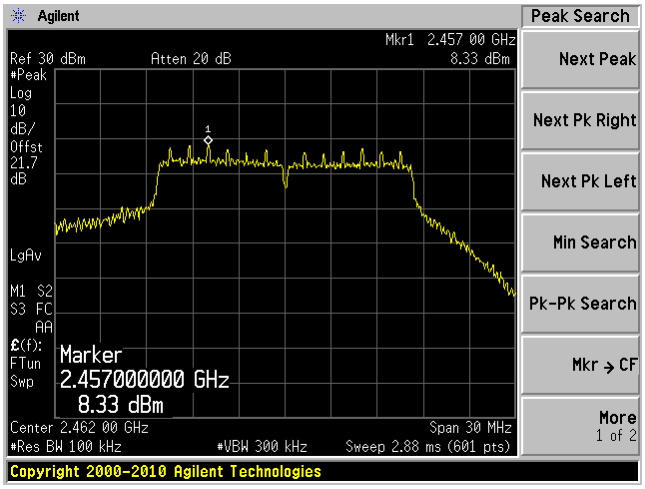
802.11g mode, Low Channel, Chain J3



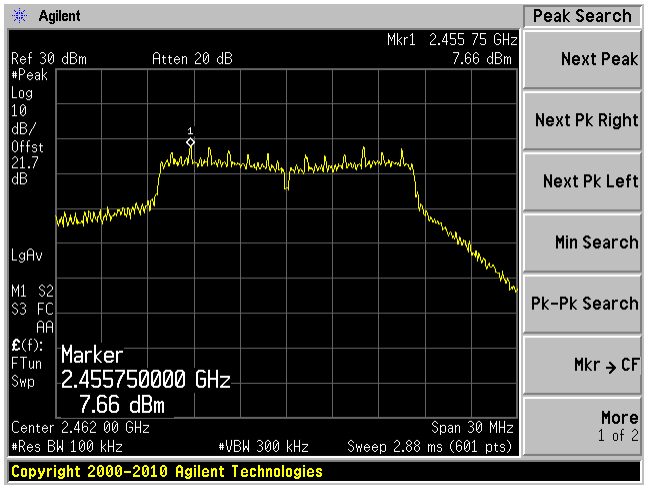
802.11g mode, Middle Channel, Chain J1



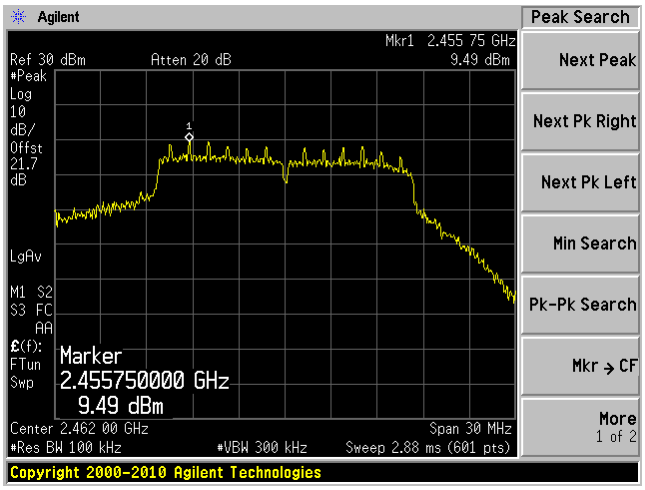
802.11g mode, Middle Channel, Chain J2



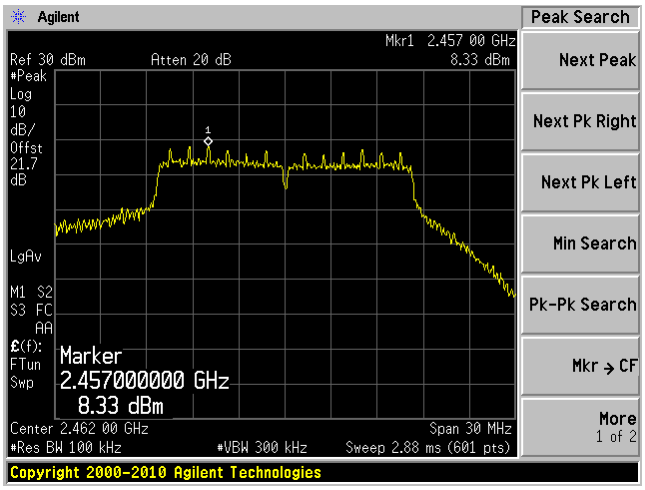
802.11g mode, Middle Channel, Chain J3



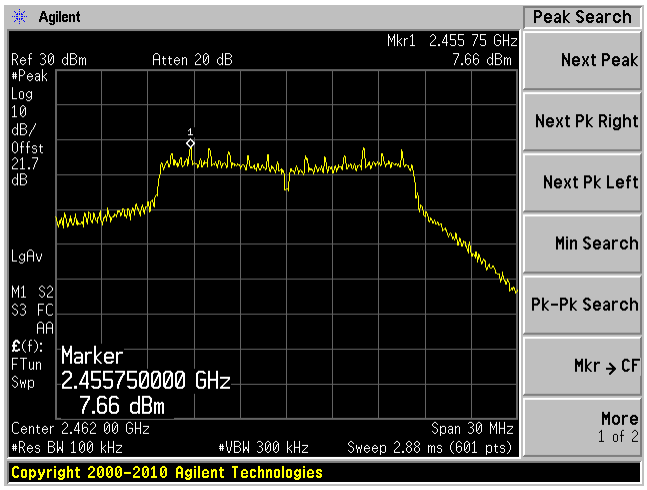
802.11g mode, High Channel, Chain J1



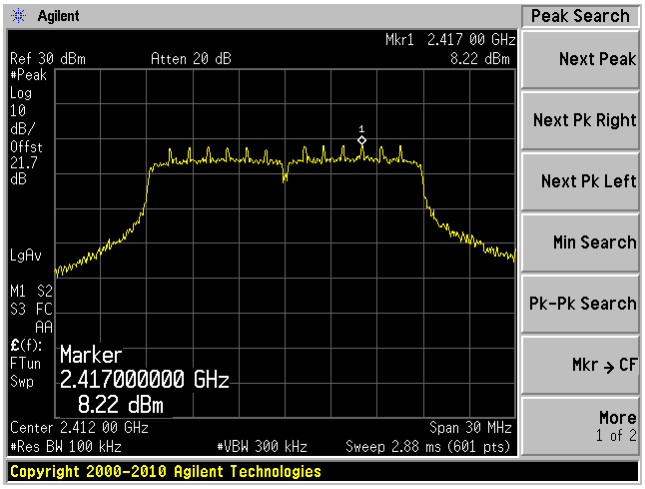
802.11g mode, High Channel, Chain J2



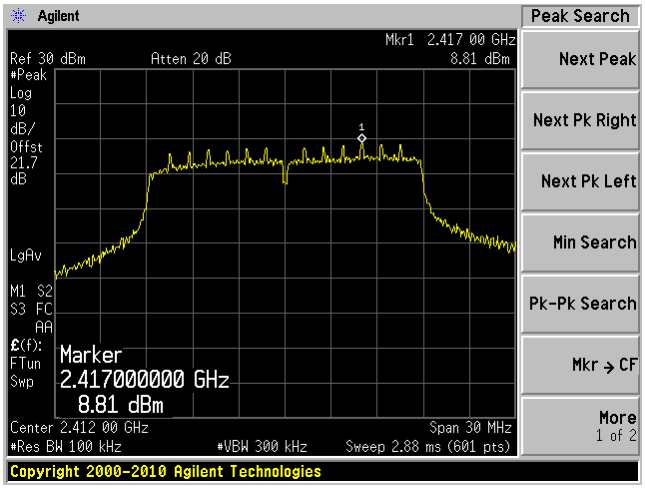
802.11g mode, High Channel, Chain J3



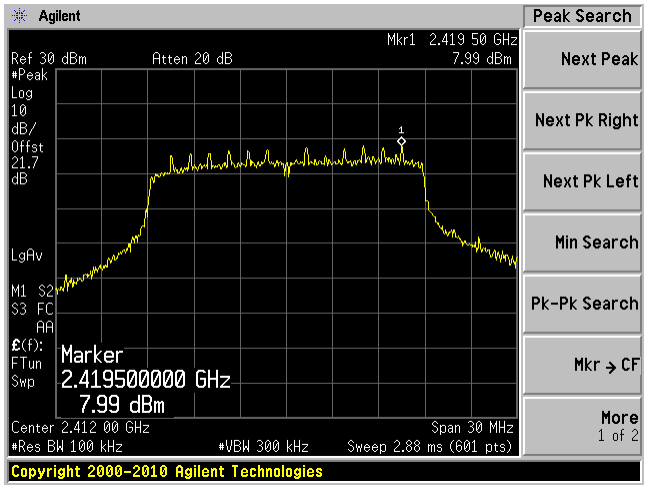
802.11n20 mode, Low Channel, Chain J1



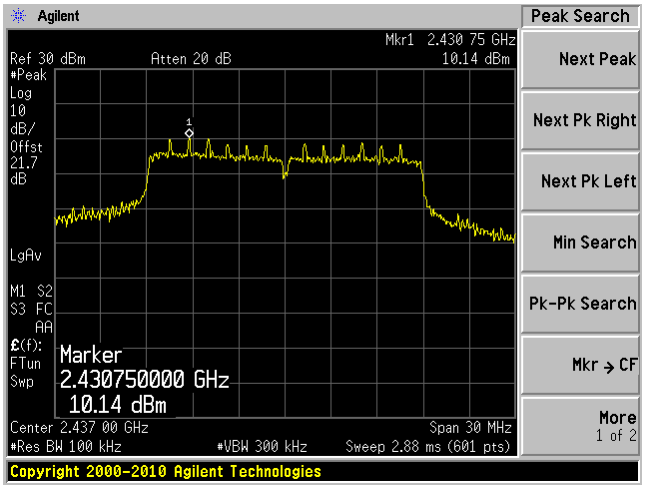
802.11n20 mode, Low Channel, Chain J2



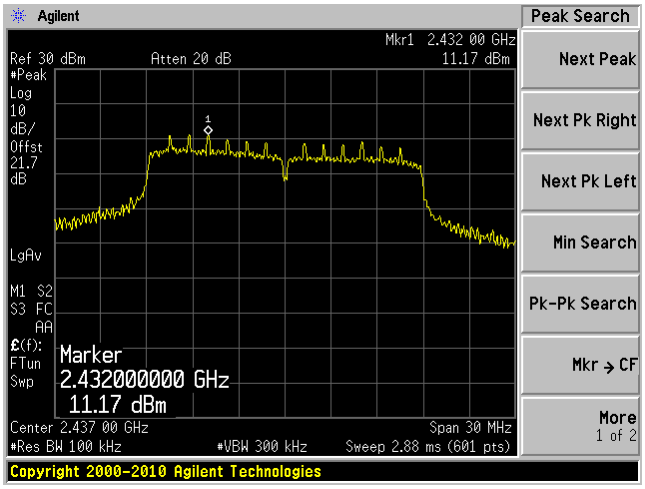
802.11n20 mode, Low Channel, Chain J3



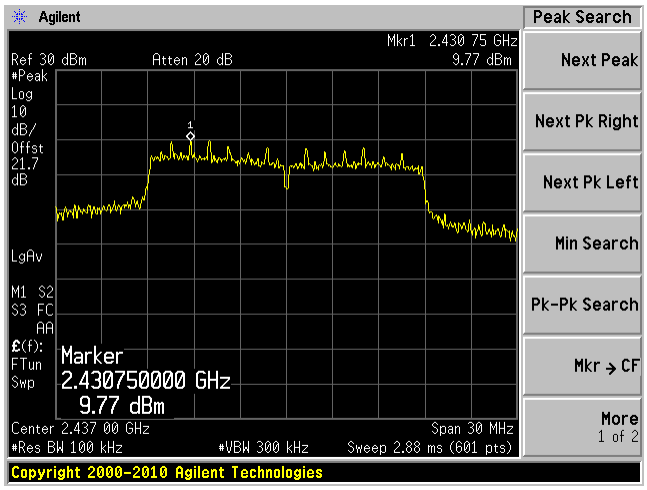
802.11n20 mode, Middle Channel, Chain J1



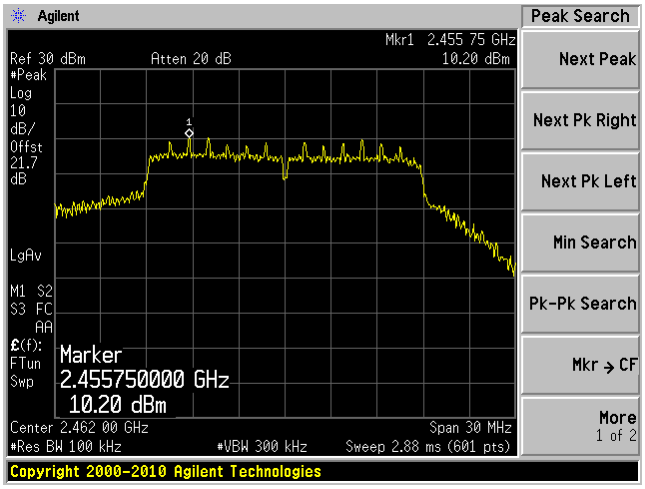
802.11n20 mode, Middle Channel, Chain J2



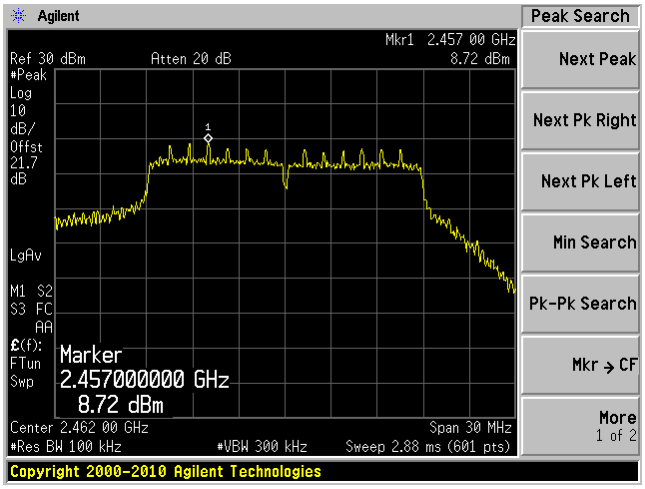
802.11n20 mode, Middle Channel, Chain J3



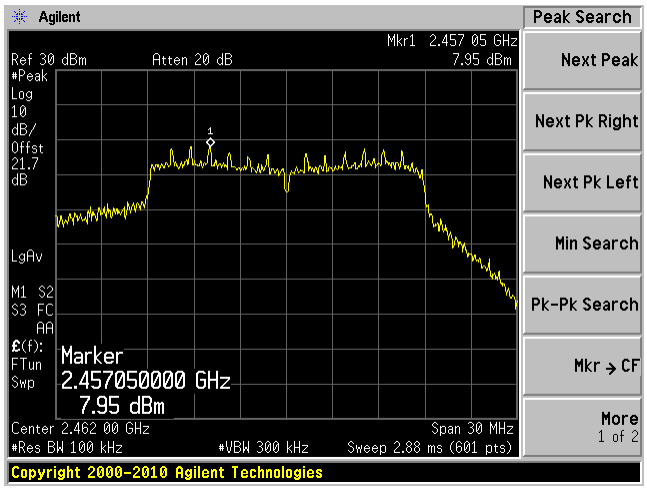
802.11n20 mode, High Channel, Chain J1



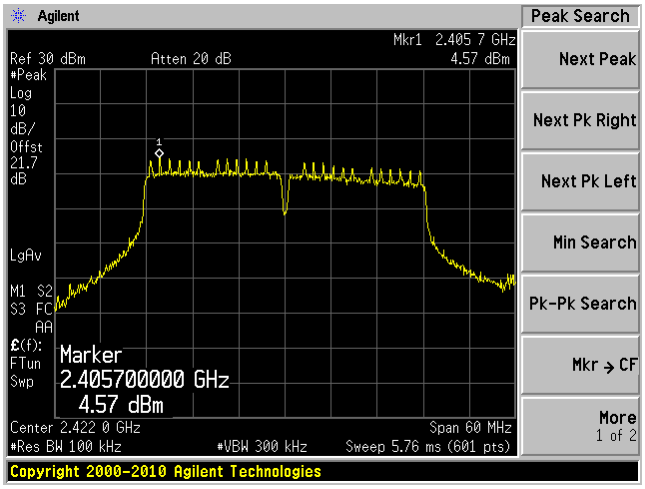
802.11n20 mode, High Channel, Chain J2



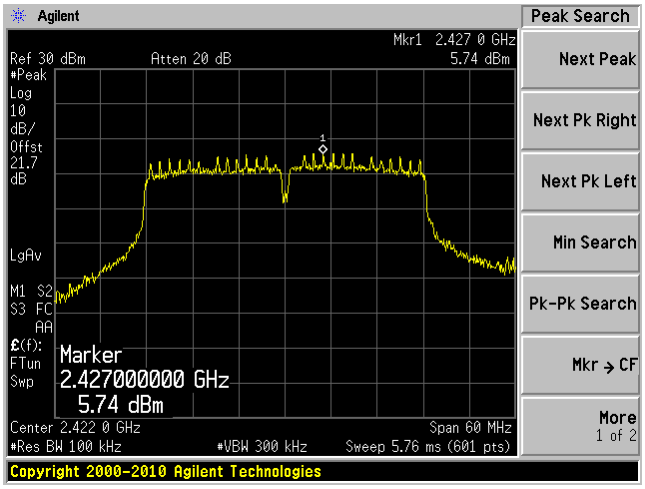
802.11n20 mode, High Channel, Chain J3



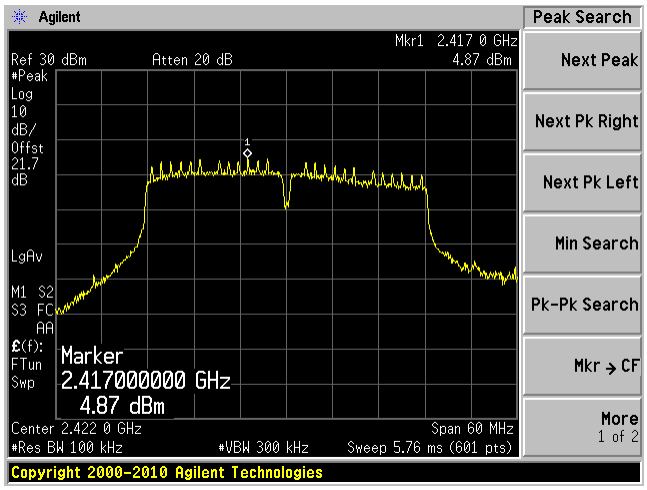
802.11n40 mode, Low Channel, Chain J1



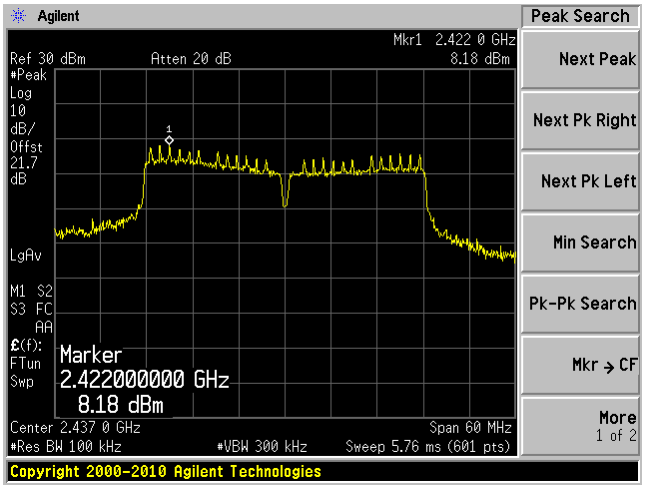
802.11 n40 mode, Low Channel, Chain J2



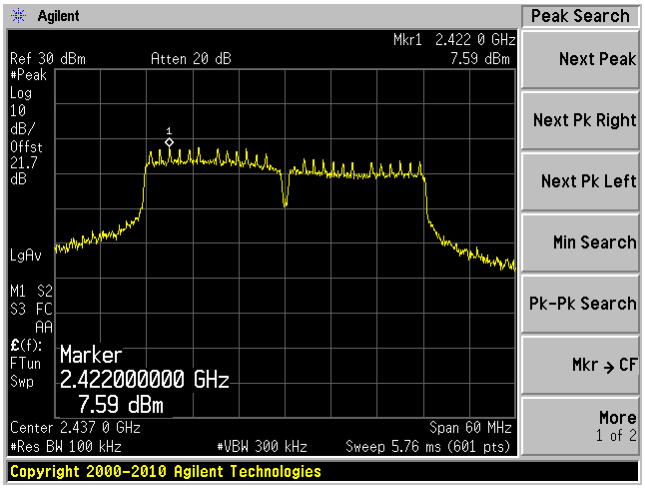
802.11n40 mode, Low Channel, Chain J3



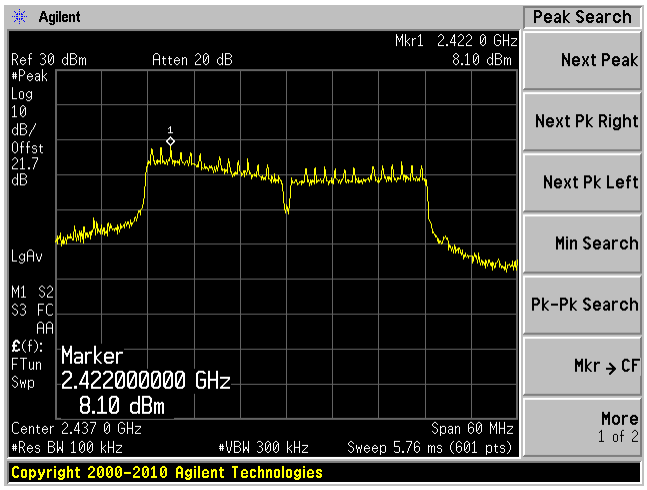
802.11n40 mode, Middle Channel, Chain J1



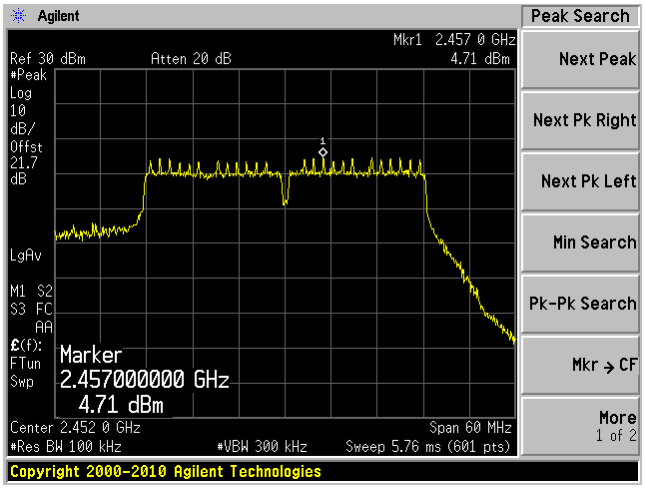
802.11n40 mode, Middle Channel, Chain J2



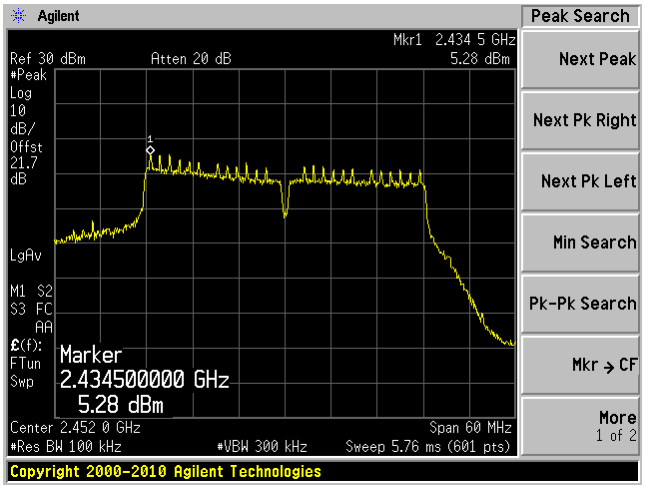
802.11n40 mode, Middle Channel, Chain J3



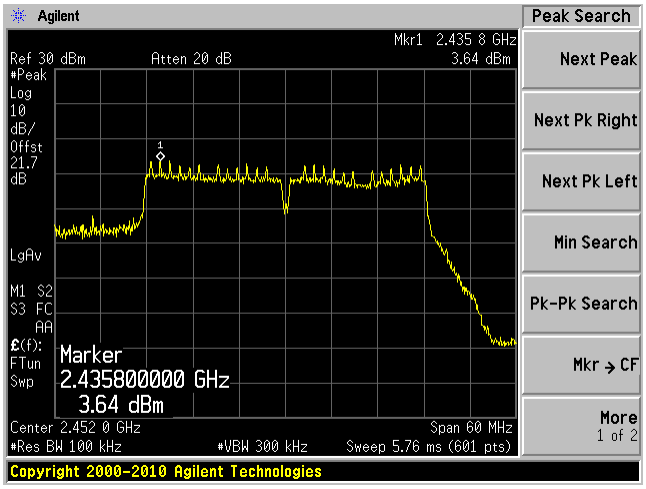
802.11n40 mode, High Channel, Chain J1



802.11n40 mode, High Channel, Chain J2

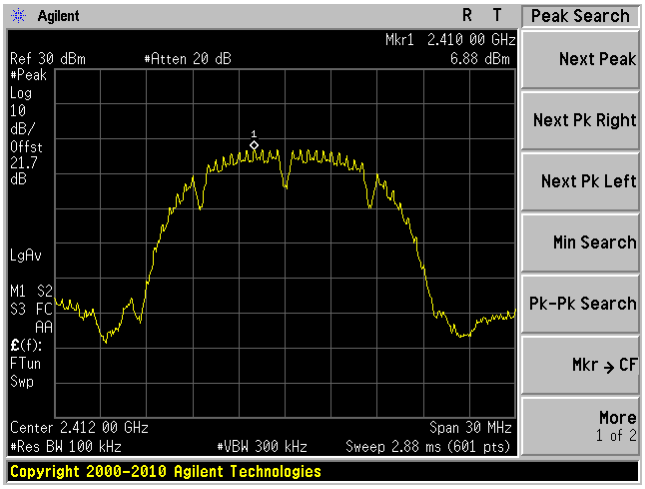


802.11n40 mode, High Channel, Chain J3

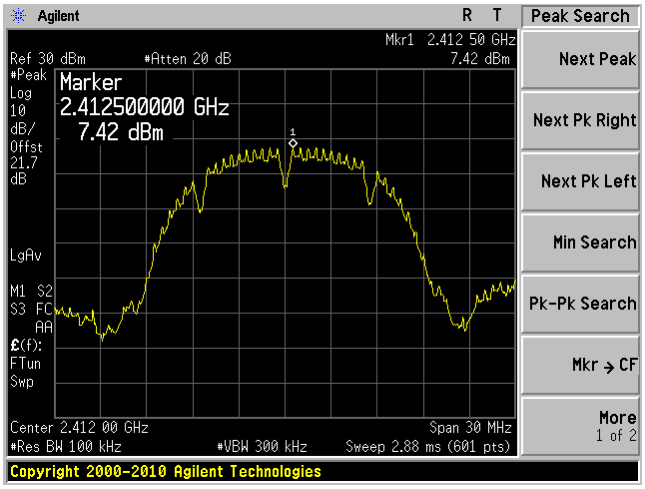


Antenna gain is 19 dBi

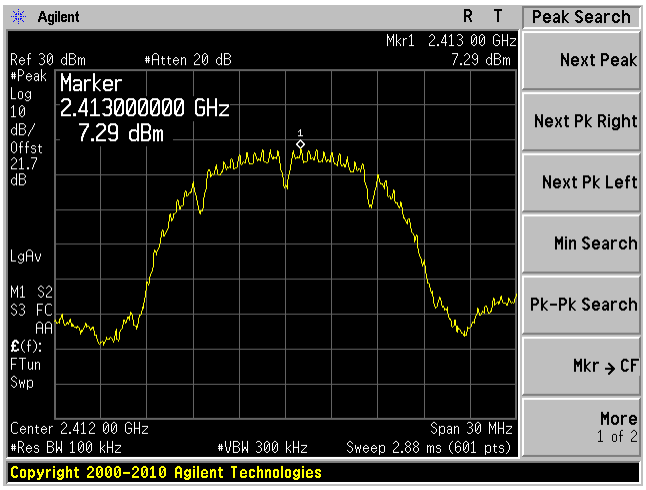
802.11b mode, Low Channel, Chain J1



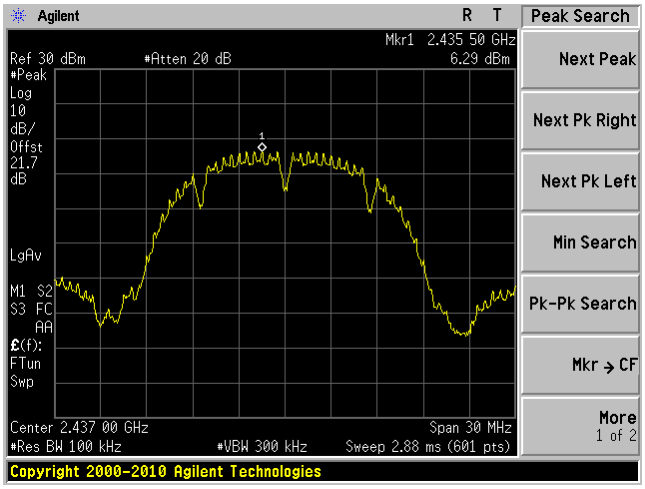
802.11b mode, Low Channel, Chain J2



802.11b mode, Low Channel, Chain J3



802.11b mode, Middle Channel, Chain J1



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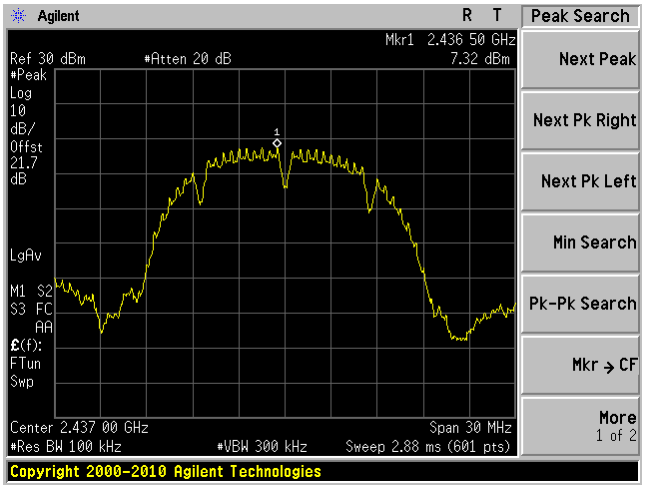
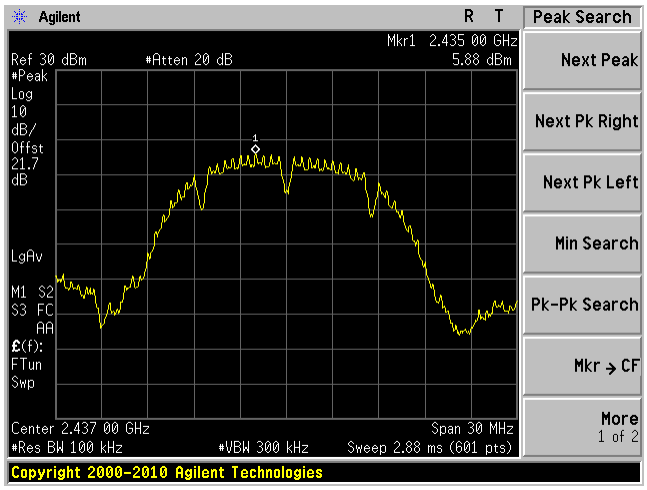
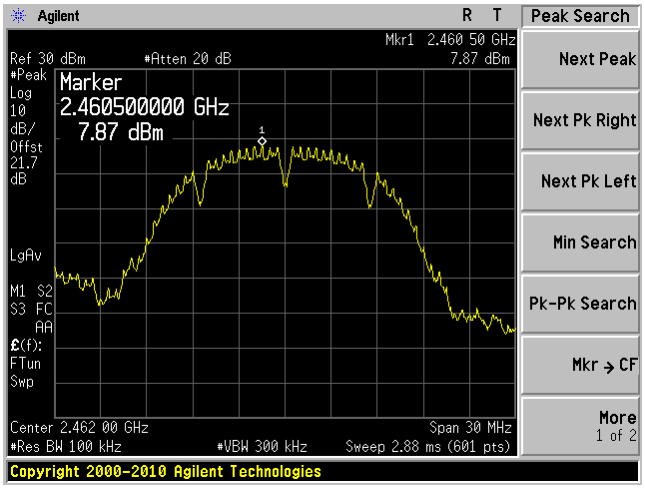


802.11b mode, Middle Channel, Chain J3



802.11b mode, High Channel, Chain J1



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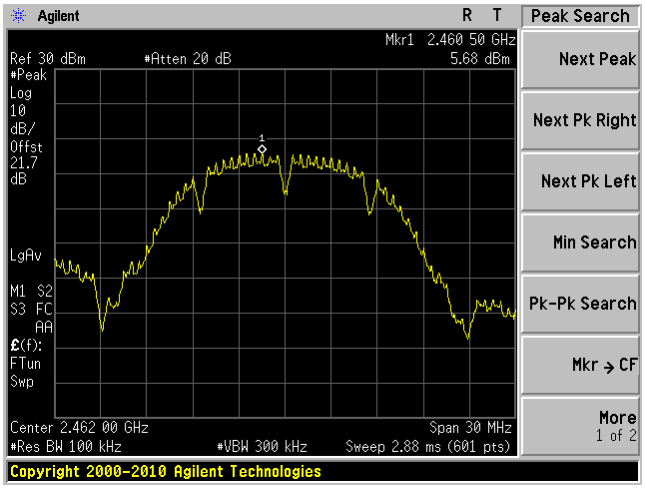
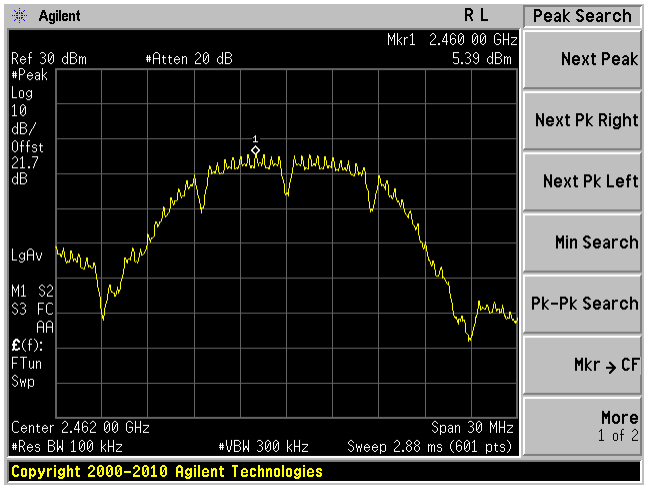
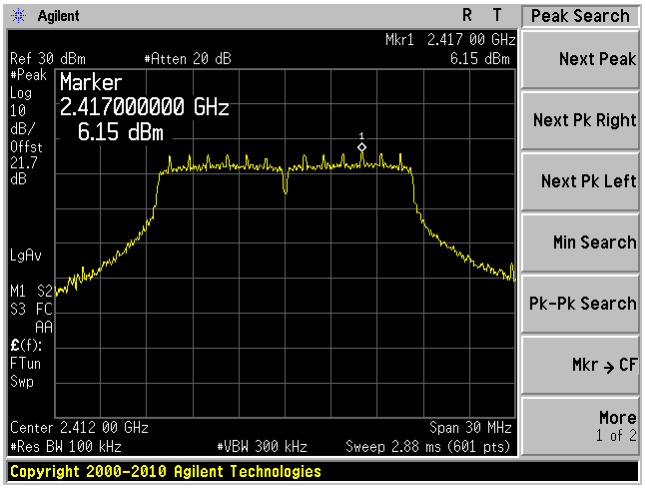


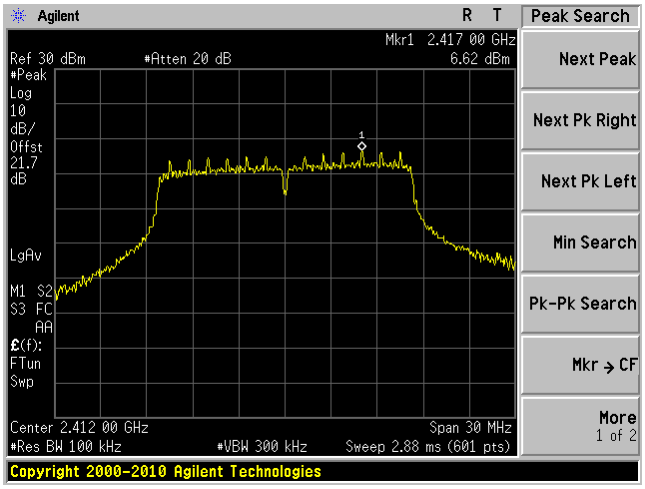
802.11b mode, High Channel, Chain J3



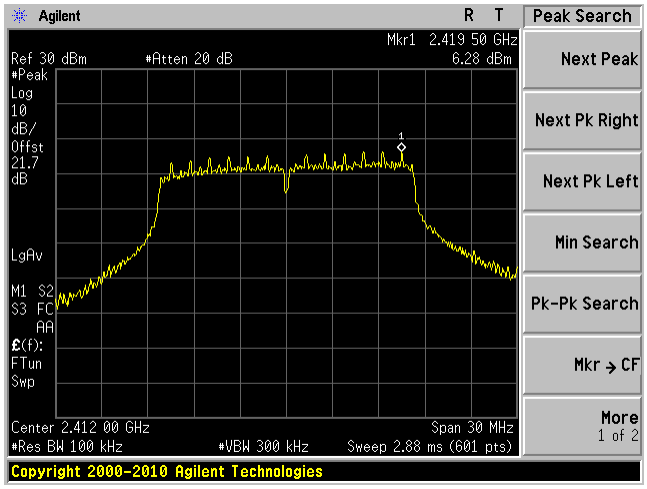
802.11g mode, Low Channel, Chain J1



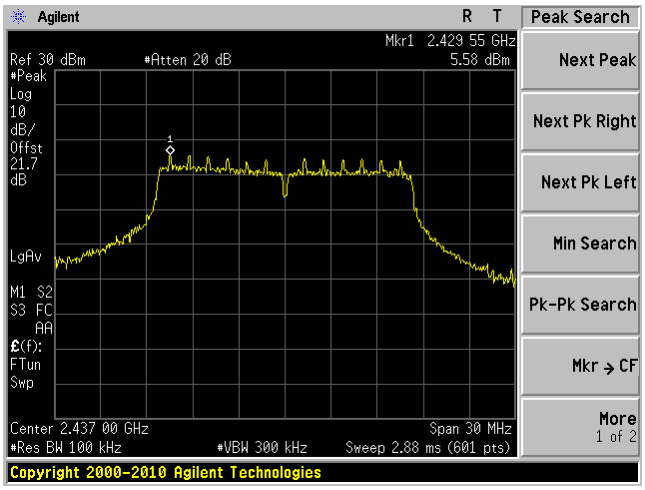
802.11g mode, Low Channel, Chain J2



802.11g mode, Low Channel, Chain J3



802.11g mode, Middle Channel, Chain J1



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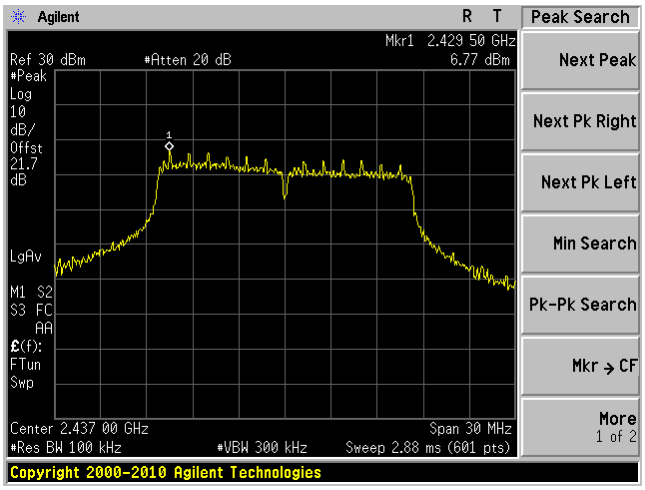
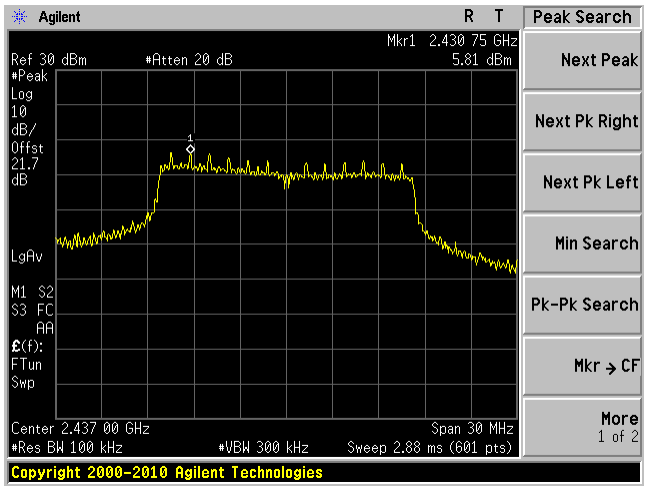
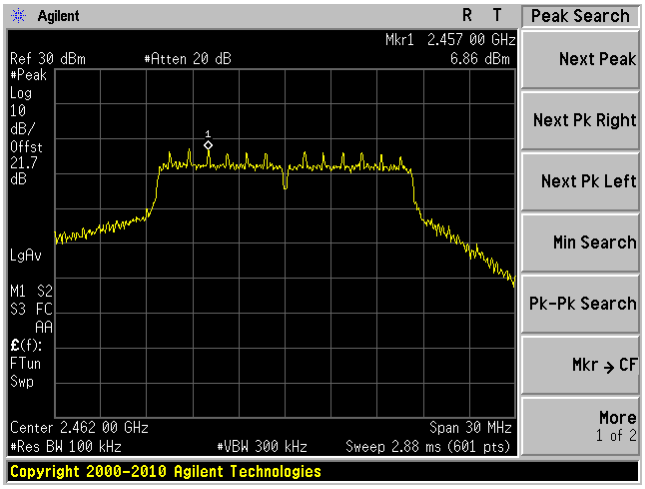


802.11g mode, Middle Channel, Chain J3



802.11g mode, High Channel, Chain J1



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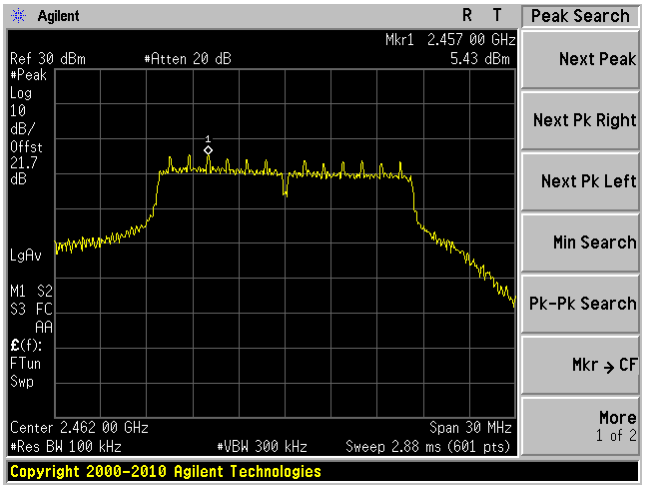
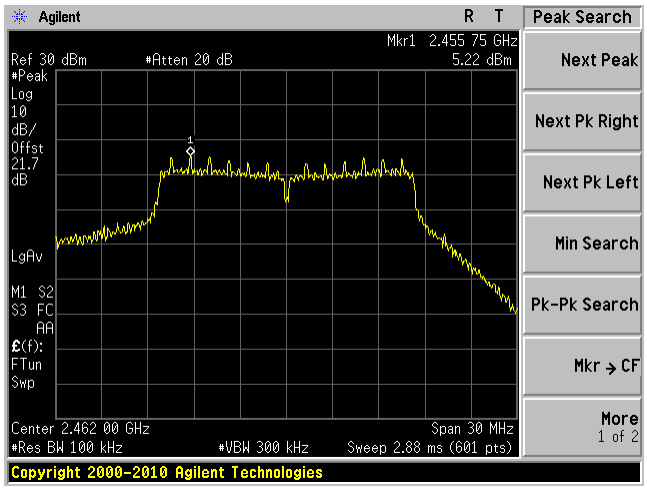
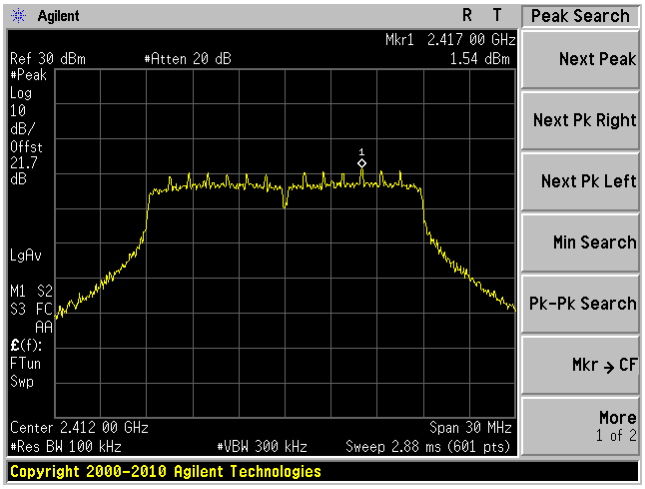


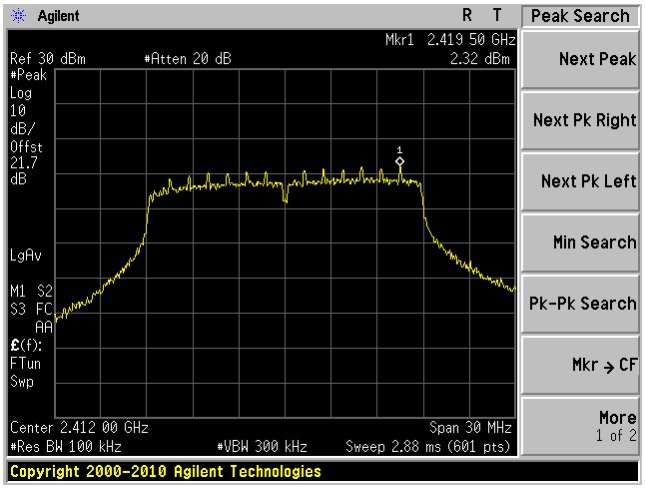
802.11g mode, High Channel, Chain J3



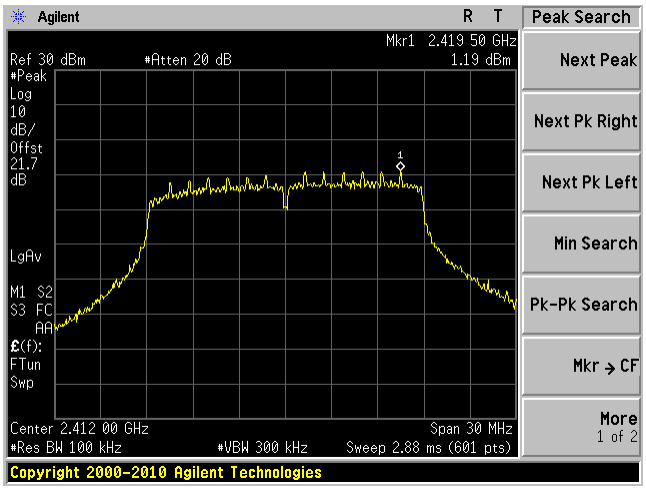
802.11n20 mode, Low Channel, Chain J1



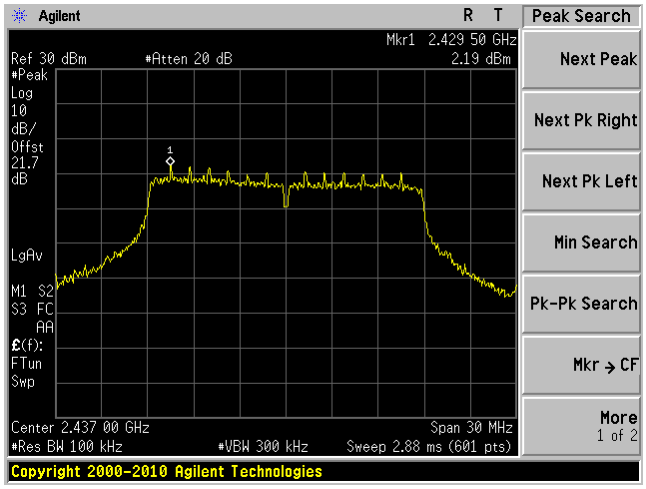
802.11n20 mode, Low Channel, Chain J2



802.11n20 mode, Low Channel, Chain J3



802.11n20 mode, Middle Channel, Chain J1



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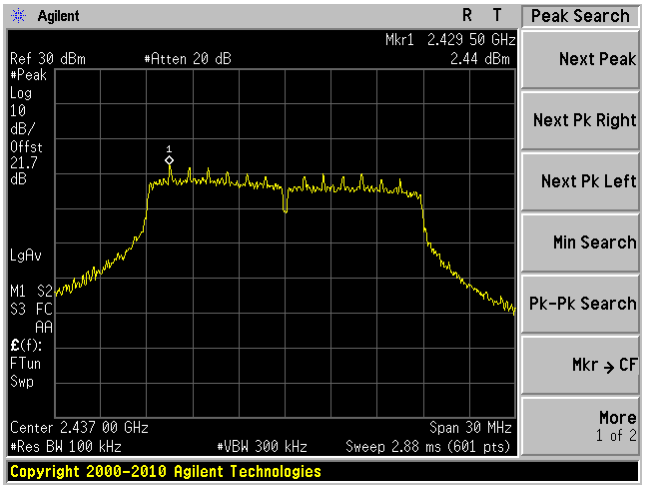
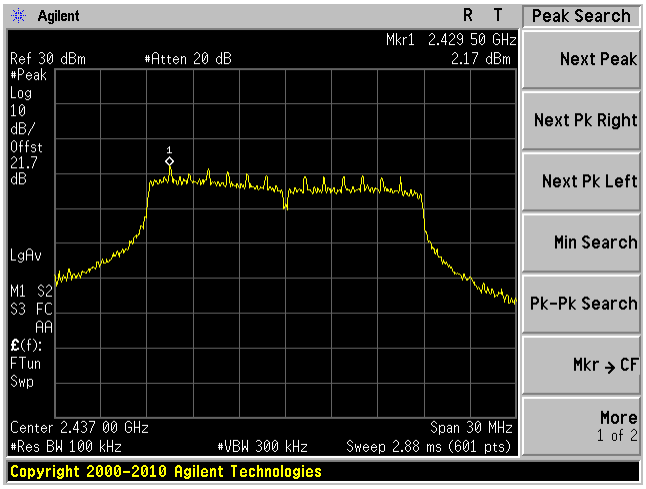
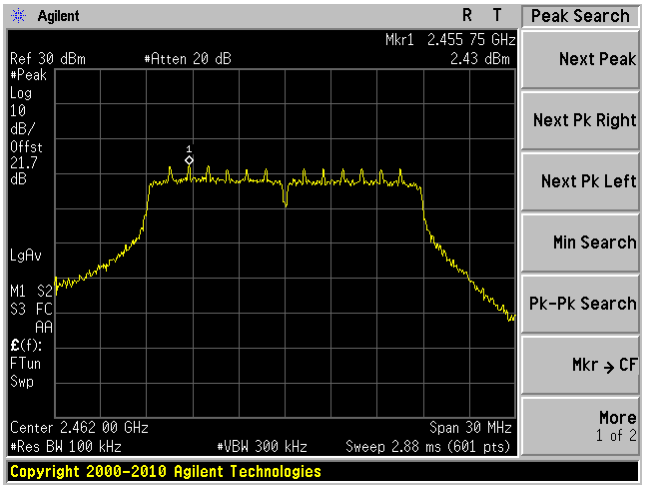


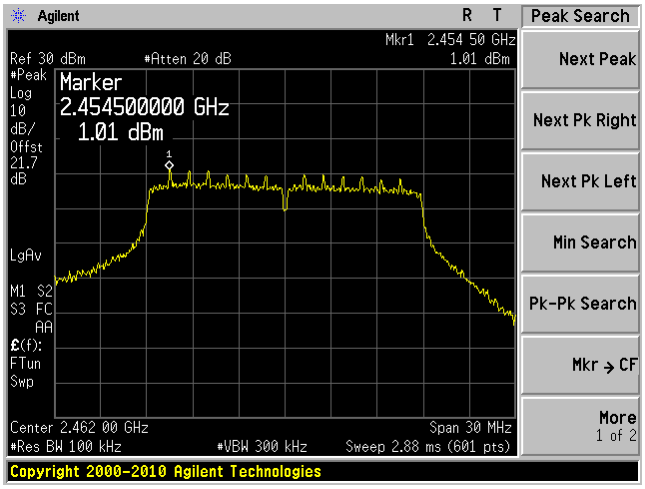
802.11n20 mode, Middle Channel, Chain J3



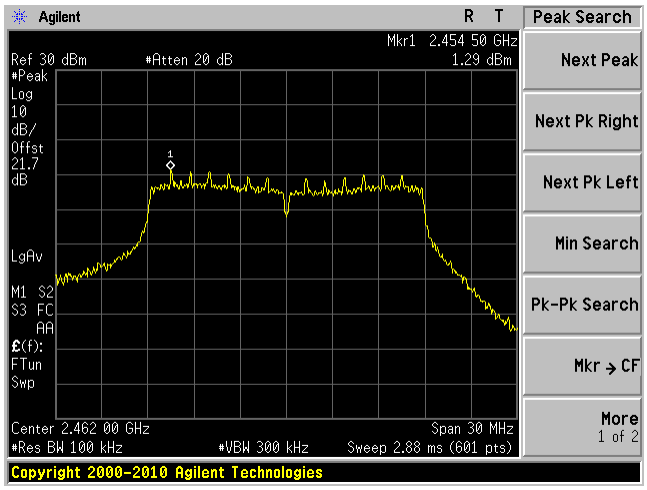
802.11n20 mode, High Channel, Chain J1



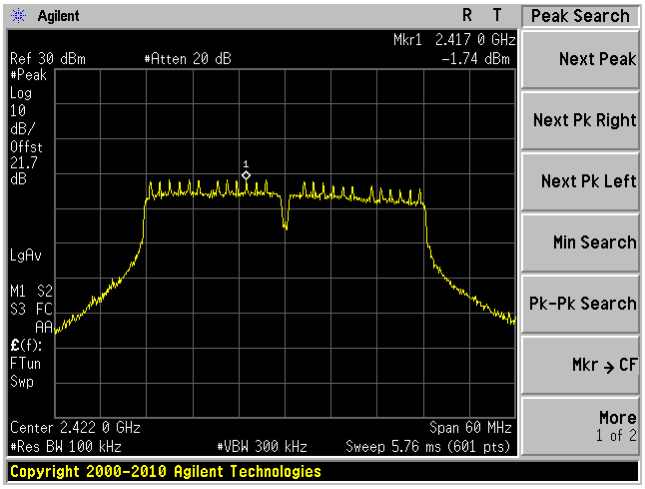
802.11n20 mode, High Channel, Chain J2



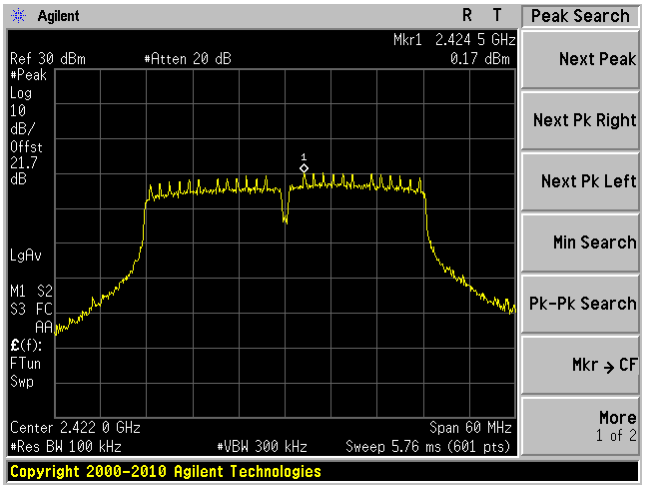
802.11n20 mode, High Channel, Chain J3



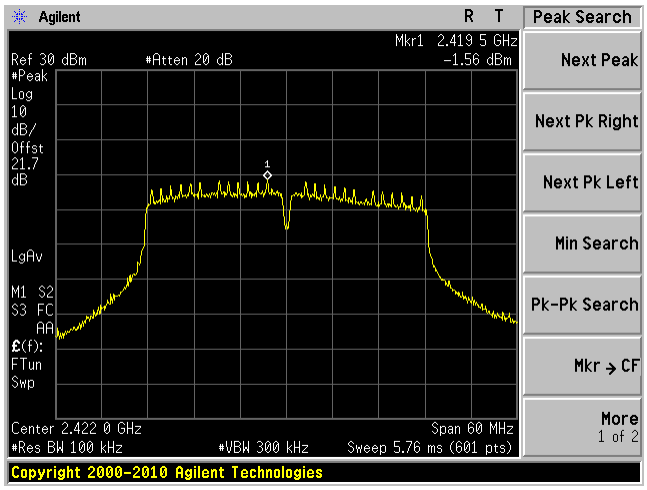
802.11n40 mode, Low Channel, Chain J1



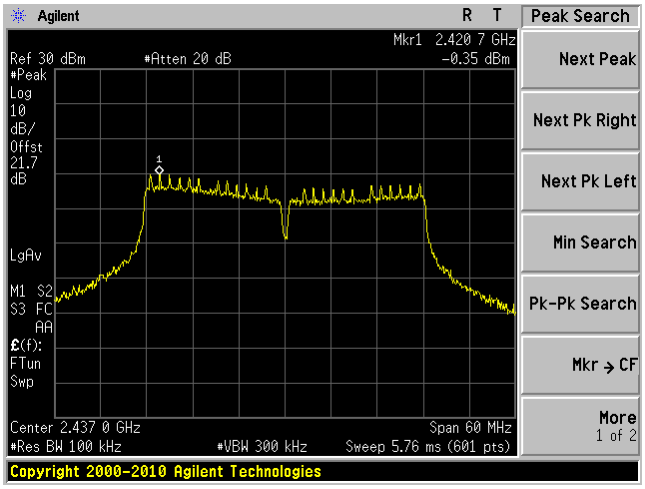
802.11 n40 mode, Low Channel, Chain J2



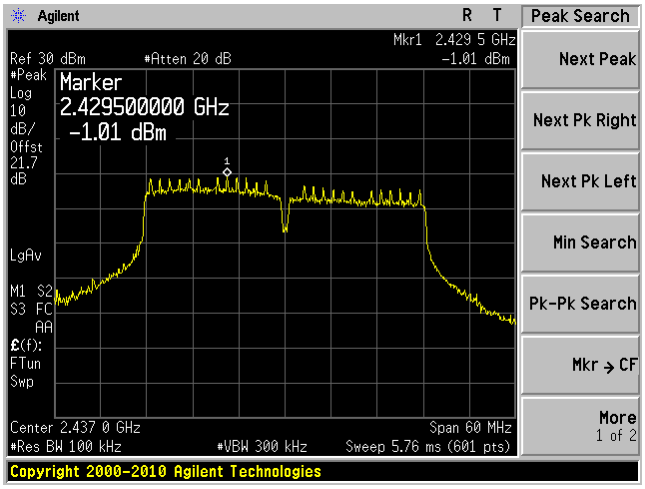
802.11n40 mode, Low Channel, Chain J3



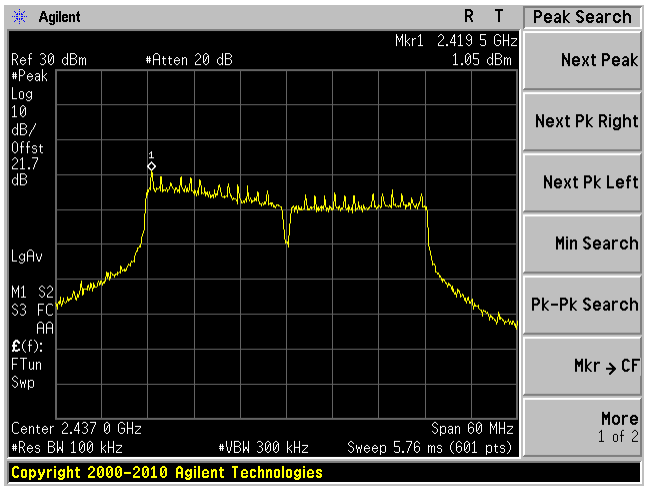
802.11n40 mode, Middle Channel, Chain J1



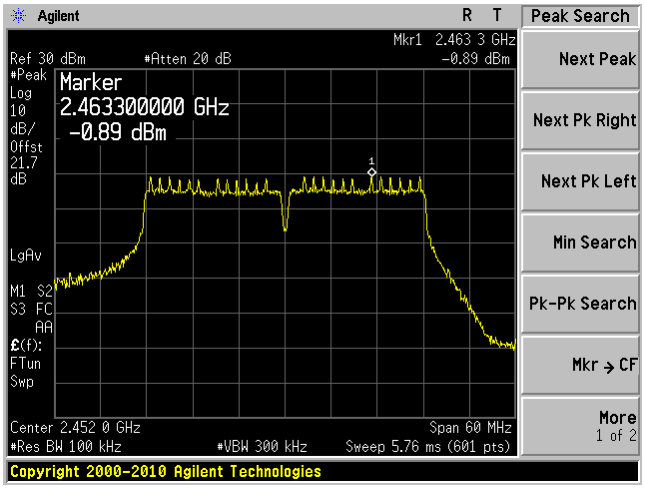
802.11n40 mode, Middle Channel, Chain J2



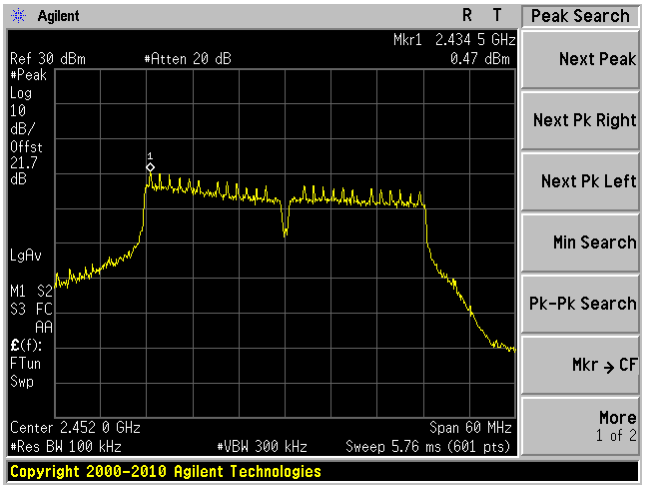
802.11n40 mode, Middle Channel, Chain J3



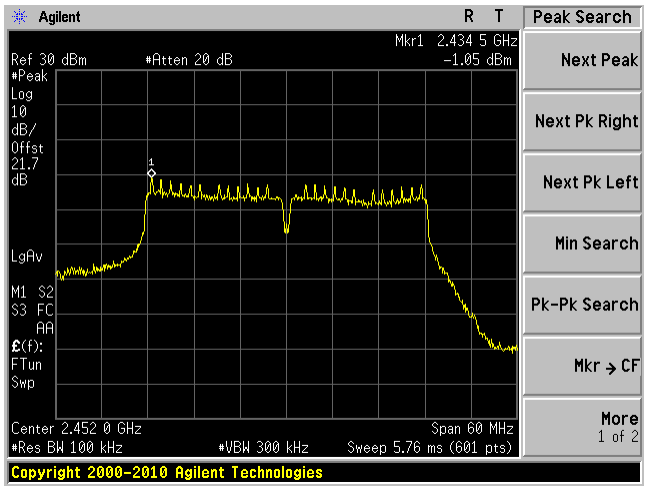
802.11n40 mode, High Channel, Chain J1



802.11n40 mode, High Channel, Chain J2



802.11n40 mode, High Channel, Chain J3



10 IC RSS-210 §2.3 & RSS-Gen §6 - Receiver Spurious Radiated Emissions

10.1 Applicable Standard

According to IC RSS-Gen §4.10, the receiver shall be operated in the normal receive mode near the mid-point of the band over which the receiver is designed to operate.

Unless otherwise specified in the applicable RSS, the radiated emission measurement is the standard measurement method (with the device's antenna in place) to measure receiver spurious emissions.

Radiated emission measurements are to be performed using a calibrated open-area test site.

For either method, the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz.

For emissions below 1 GHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector with the same measurement bandwidth as that for CISPR quasi-peak measurements. Above 1 GHz, measurements shall be performed using an average detector and a resolution bandwidth of 300 kHz to 1 MHz.

According to RSS-Gen §6.1, Table 2, the radiated limit of receiver spurious emissions

Frequency (MHz)	Field Strength (Microvolts/m at 3 meters)
30-88	100
88-216	150
216-960	200
Above 960	500

10.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2009.

10.3 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "**QP**" in the data table.

10.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Limit

10.5 Test Equipment Lists and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Interval
Sunol Science Corp	Combination Antenna	JB3	A020106-3	2011-06-29	1 year
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2011-03-21	1 year
Sunol Science Corp	System Controller	SC99V	122303-1	N/R	-
EMCO	Horn antenna	3115	9511-4627	2011-10-03	1 year
Agilent	PSA Series Spectrum Analyzer	E4440A	MY44303352	2011-05-10	1 year
HP	Pre-amplifier	8449B	3147A00400	2011-02-03	1 year

Statement of Traceability: BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.

10.6 Test Environmental Conditions

Temperature:	18~25 °C
Relative Humidity:	38~50 %
ATM Pressure:	101-102 kPa

The testing was performed by Quinn Jiang on 2012-01-17 and 2012-01-23 in 5 meter chamber 3.

10.7 Summary of Test Results

According to the test data, the EUT complied with the RSS-210/RSS-Gen, with the closest margins from the limit listed below:

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (GHz)**
-1.973	1200	Vertical	30 MHz-1GHz

10.8 Test Results

Radiated Emission at 3 meters,

Average Measurement

Antenna gain 9 dBi

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC	
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)
1200	50.11	255	159	V	25.257	2	27.29	50.077	54	-3.923
1200	51.33	200	100	H	25.257	2	27.29	51.297	54	-2.703
2800	40.82	279	100	V	28.449	3.2	27.58	44.889	54	-9.111
2800	40.02	46	100	H	28.449	3.2	27.58	44.089	54	-9.911
2000	43.01	269	100	V	27.184	2.65	27.53	45.314	54	-8.686
2000	44.82	334	100	H	27.184	2.65	27.53	47.124	54	-6.876
250	41.62	251	100	V	12.3	11.32	25.2	40.04	46	-5.96

Antenna gain 5 dBi

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC	
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)
1200	49.86	250	100	V	25.257	2	27.29	49.827	54	-4.173
1200	50.63	192	100	H	25.257	2	27.29	50.597	54	-3.403
2800	40.29	279	100	V	28.449	3.2	27.58	44.359	54	-9.641
2800	41.33	50	100	H	28.449	3.2	27.58	45.399	54	-8.601
2000	43.05	269	100	V	27.184	2.65	27.53	45.354	54	-8.646
2000	42.91	330	100	H	27.184	2.65	27.53	45.214	54	-8.786
250	40.55	253	100	V	12.3	11.32	25.2	38.97	46	-7.03

Antenna gain 19 dBi

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC	
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)
1200	52.06	263	100	V	25.257	2	27.29	52.027	54	-1.973
1200	50.69	188	100	H	25.257	2	27.29	50.657	54	-3.343
2800	43.62	255	100	V	28.449	3.2	27.58	47.689	54	-6.311
2800	42.18	42	100	H	28.449	3.2	27.58	46.249	54	-7.751
2000	43.05	266	100	V	27.184	2.65	27.53	45.354	54	-8.646
2000	42.27	300	100	H	27.184	2.65	27.53	44.574	54	-9.426
250	39.87	243	100	V	12.3	11.32	25.2	38.29	46	-7.71