FCC RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

LTE Digital Mobile Phone

ISSUED TO
Nubia Technology Co., Ltd

6/F, Tower A, Hans Innovation Mansion, North Ring Rd., No. 9018,
Hi-Tech Industrial Park, Nanshan District, Shenzhen, P. R. China

Tested by: Cao Shaodong
(Engineer)
Date Sep. 27, 2016

Approved by: Liao Jianming
(Technical Director)
Date Sep. 29. 2016

Report No.:	BL-SZ1680175-603
EUT Type:	LTE Digital Mobile Phone
Model Name:	NX531J, nubia Z11
Brand Name:	nubia
Test Standard:	47 CFR Part 15 Subpart C
FCC ID:	2AHJO-NX531J
Test conclusion:	Pass
Test Date:	Aug. 20, 2016 ~ Aug. 26, 2016
Date of Issue:	Sep. 29, 2016

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Sep. 29, 2016	Initial Issue

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20 to 25℃
Ambient Relative Humidity	45% - 55%
Ambient Pressure	100 kPa - 102 kPa

1.4 Announce

(1) The test report reference to the report template version v5.2.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Nubia Technology Co., Ltd.
Address	6/F, Tower A, Hans Innovation Mansion, North Ring Rd., No. 9018, Hi-Tech Industrial Park, Nanshan District, Shenzhen, P. R. China

2.2 Manufacturer Information

Manufacturer	Nubia Technology Co., Ltd.
Address	6/F, Tower A, Hans Innovation Mansion, North Ring Rd., No. 9018, Hi-Tech Industrial Park, Nanshan District, Shenzhen, P. R. China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Type	LTE Digital Mobile Phone
Model Name Under Test	NX531J
Series Model Name	NX531J, nubia Z11
Description of Model name differentiation	The equipment model NX531J and nubia Z11 are LTE Digital Mobile Phone, the electrical parameters and internal structure of circuit are same, only the model name is different.
Hardware Version	NX531J_V2AMB_B
Software Version	NX531J_ENCommon_V1.09
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA/HSPA + Band 2/4/5 4G Network FDD LTE Band 2/4/5/7/12/17 Bluetooth 3.0, Bluetooth 4.0 Low Energy (BLE), WIFI 802.11a,802.11b, 802.11g and 802.11n (HT20/40), 802.11ac GPS, GLONASS, NFC

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	Li3829T44P6h806435
	Serial No.	N/A
	Capacitance	2900 mAh
	Rated Voltage	3.85 V
	Limit Charge Voltage	4.4 V
Ancillary Equipment 2	Charger	
	Brand Name	nubia
	Model No.	STC-A5930A-Z
	Rated Voltage	100-240 V~ , 0.5 A, 50/60 Hz
	Limit Charge Voltage	5 V⎓, 3.0 A or 9 V⎓, 2.0 A or 12 V⎓, 1.5 A
Ancillary Equipment 3	Earphone	
	Length (Approx.)	1.0 m
Ancillary Equipment 4	USB Data Cable	
	Length (Approx.)	1.0 m

2.6 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

TX/ RX Operating Range		802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 1 to 11. 802.11n(40 MHz): 2.422 GHz - 2.452 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 3 to 9.
Modulation Type		DSSS, OFDM
Product Type		Indoor
Antenna System (eg., MIMO, Smart Antenna)		Cyclic Delay Diversity (CDD) for 802.11n Basic methodology with N_{ANT} transmit antennas, each with the same directional gain G_{ANT} dBi for 802.11b/g
Categorization as Correlated or Completely Uncorrelated		Categorization as Correlated
Antenna Type	Antenna 0 (ANT 0)	PIFA Antenna
	Antenna 1 (ANT 1)	
Antenna Gain	Antenna 0 (ANT 0)	1.60 dBi
	Antenna 1 (ANT 1)	1.60 dBi
Total directional gain for 802.11n	For power spectral density(PSD) measurements	1.6 dBi Formulas: Directional gain = G_{ANT} + Array Gain, *Array Gain = 10 log(N_{ANT}/N_{SS}) dB*. N_{SS} =2, G_{ANT} set equal to the gain of the antenna having the highest gain.
	For power measurements	1.6 dBi Formulas: Directional gain = G_{ANT} + Array Gain, *Array Gain* = 0.
	For Conducted Out-of-Band and Spurious Measurements	1.6 dBi Formulas: Directional gain = G_{ANT} + Array Gain, *Array Gain = 10 log(N_{ANT}/N_{SS}) dB*. N_{SS} =2, G_{ANT} set equal to the gain of the antenna having the highest gain.
Total directional gain for 802.11b/g	For power spectral density(PSD) measurements	4.6 dBi Formulas: Directional gain = G_{ANT} +10 log(N_{ANT}) dBi
	For power measurements	4.6 dBi Formulas: Directional gain = G_{ANT} +10 log(N_{ANT}) dBi
	For Conducted Out-of-Band and Spurious Measurements	4.6 dBi Formulas: Directional gain = G_{ANT} +10 log(N_{ANT}) dBi
About the Product		The equipment is LTE Digital Mobile Phone, it contains WIFI and Bluetooth Modules operating at 2.4 GHz ISM band.

Mode	Antenna		
	Antenna 0	Antenna 1	Antenna 0 + Antenna1
802.11b	√	√	√
802.11g	√	√	√
802.11n20	√	√	√
802.11n40	√	√	√

Note：All the configurations were tested, but only the Antenna 0 + Antenna1 was reported in this report.

Modulation technology	Modulation Type	Transfer Rate (Mbps)	The Frequency Equal to the Transmission Rate of Modulation Signal
DSSS (802.11b)	DBPSK	1	1 MHz
	DQPSK	2	
	CCK	5.5/ 11	1.375 MHz
OFDM (802.11g)	BPSK	6 / 9	1 MHz
	QPSK	12 / 18	
	16QAM	24 / 36	
	64QAM	48 / 54	
OFDM (802.11n-20MHz)	BPSK	6.5	1 MHz
	QPSK	13/19.5	
	16QAM	26/39	
	64QAM	52/58.5/65	
OFDM (802.11n-40MHz)	BPSK	13.5	1 MHz
	QPSK	27/40.5	
	16QAM	54/81/108	
	64QAM	121.5/135	

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	
Output Power	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
6dB Bandwidth	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9

Note: The above EUT information in section 2.4 and 2.6 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.7 Additional Instructions

EUT Software Settings:

Mode	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

During testing. Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

EUT Software Settings:

Power level setup in software		
Test Software Version	The project password is *#8615#	
Mode	Channel	Soft Set
802.11 b	All	12
802.11 g	All	12
802.11 n20	All	12
802.11 n40	All	12

Run software:

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C (10-1-15 Edition)	Miscellaneous Wireless Communications Services
2	KDB Publication 558074 D01v03r05	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
3	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC PART No.	Test Result	Verdict
1	Antenna Requirement	15.203; 15.247(b)	N/A	Pass[Note 1]
2	Output Power	15.247(b)	ANNEX A.1	Pass
3	6dB Bandwidth	15.247(a)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247(d)	ANNEX A.3	Pass
5	Band Edge(Authorized-band band-edge)	5.209; 15.247(d)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247(d)	ANNEX A.6	Pass
8	Band Edge(Restricted-band band-edge)	15.209; 15.247(d)	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247(e)	ANNEX A.8	Pass
Note 1: Please refer to section 5.1				

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	45% - 55%	
Atmospheric Pressure	100 kPa - 102 kPa	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
	LT (Low Temperature)	-20℃
	HT (High Temperature)	+60℃
Working Voltage of the EUT	NV (Normal Voltage)	3.85 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2016.07.13	2017.07.12
Vector Signal Generator	ROHDE&SCHWARZ	SMBV100A	177746	2016.07.13	2017.07.12
Signal Generator	ROHDE&SCHWARZ	SMB100A	260592	2016.07.13	2017.07.12
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2016.07.13	2017.07.12
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2015.10.15	2016.10.14
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2016.07.05	2017.07.04
LISN	SCHWARZBECK	NSLK 8127	8127-687	2016.07.05	2017.07.04
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2016.07.13	2017.07.12
Power Splitter	KMW	DCPD-LDC	1305003215	2016.07.13	2017.07.12
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2016.07.13	2017.07.12
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2016.07.13	2017.07.12
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2015.08.07	2016.08.06
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2015.07.22	2017.07.21
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2015.07.22	2017.07.21
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2015.07.22	2017.07.21
Test Antenna-Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2015.07.22	2017.07.21
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2015.02.28	2017.02.27
Shielded Enclosure	ChangNing	CN-130701	130703	--	--

4.3 MEASUREMENT UNCERTAINTY

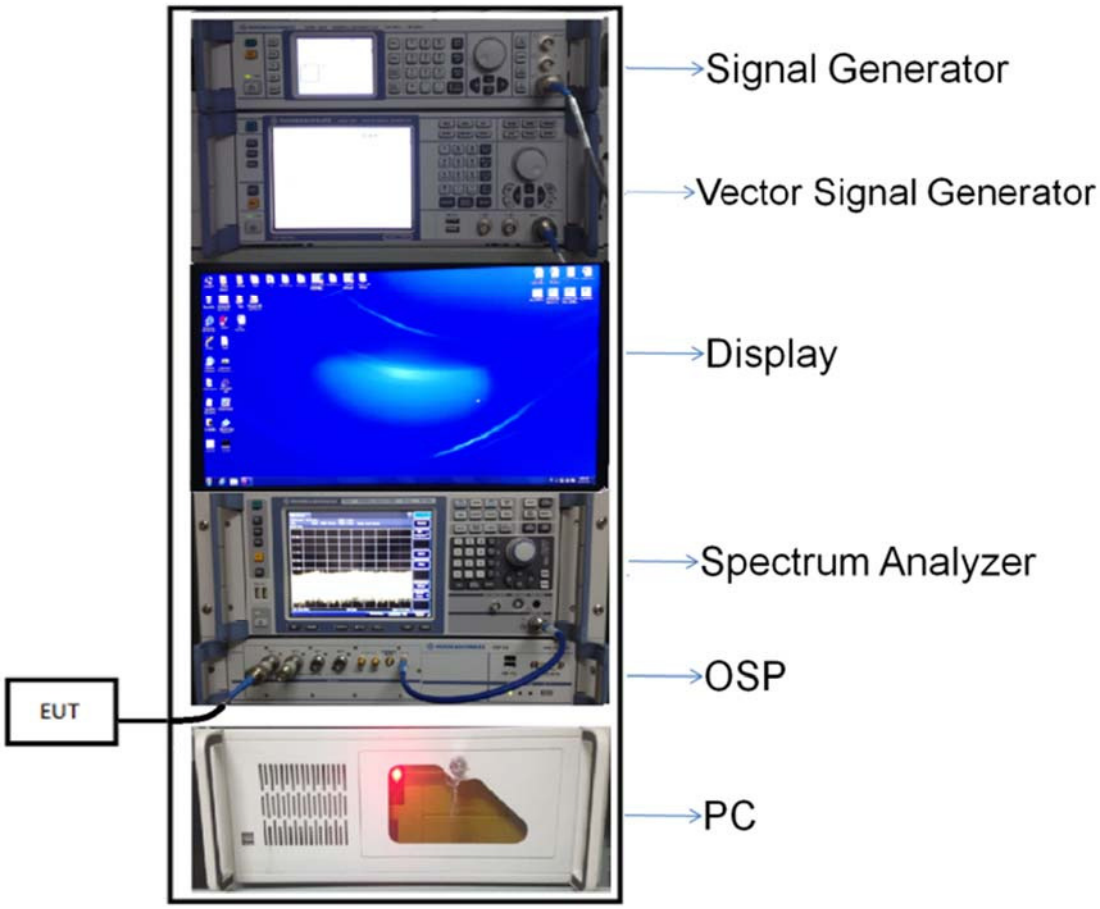
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Occupied Channel Bandwidth	±4%
RF output power, conducted	±1.4 dB
Power Spectral Density, conducted	±2.5 dB
Unwanted Emissions, conducted	±2.8 dB
All emissions, radiated	±5.4 dB
Temperature	±1°C
Humidity	±4%

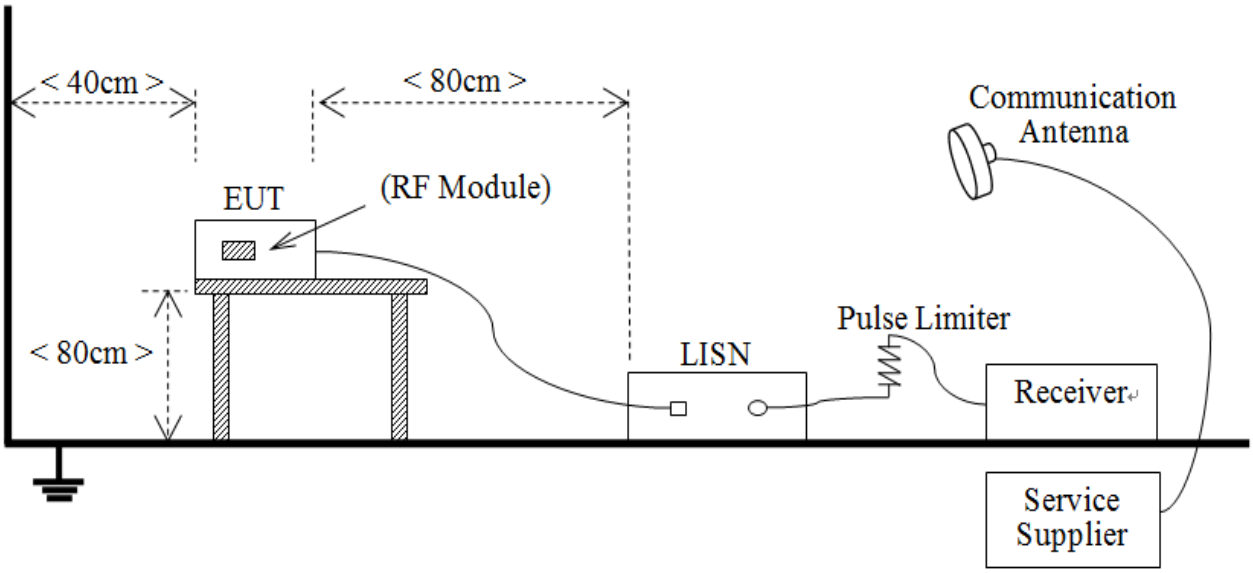
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



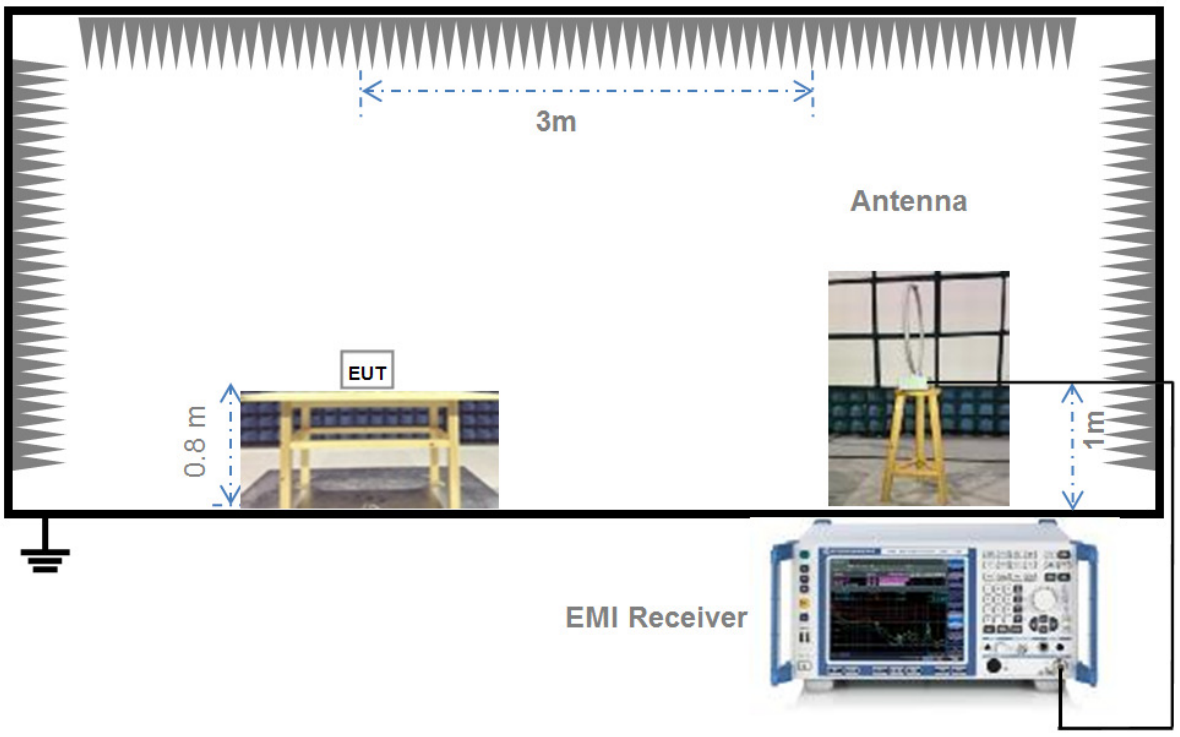
(Diagram 1)

4.4.2 For AC Power Supply Port Test



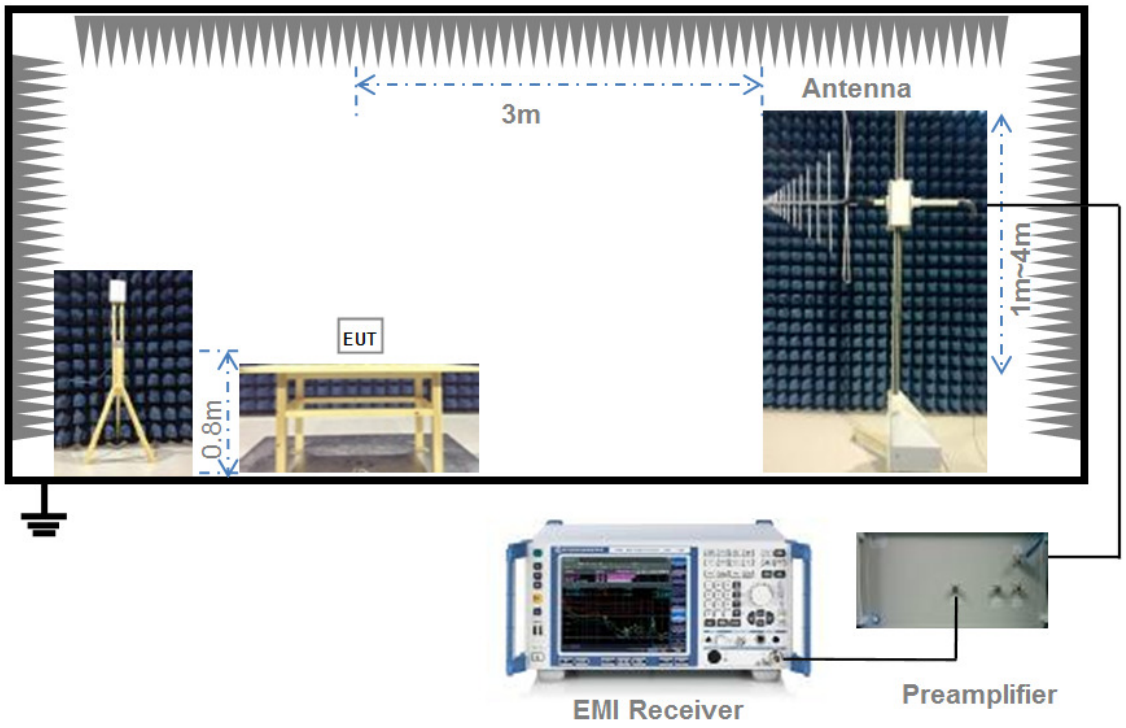
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



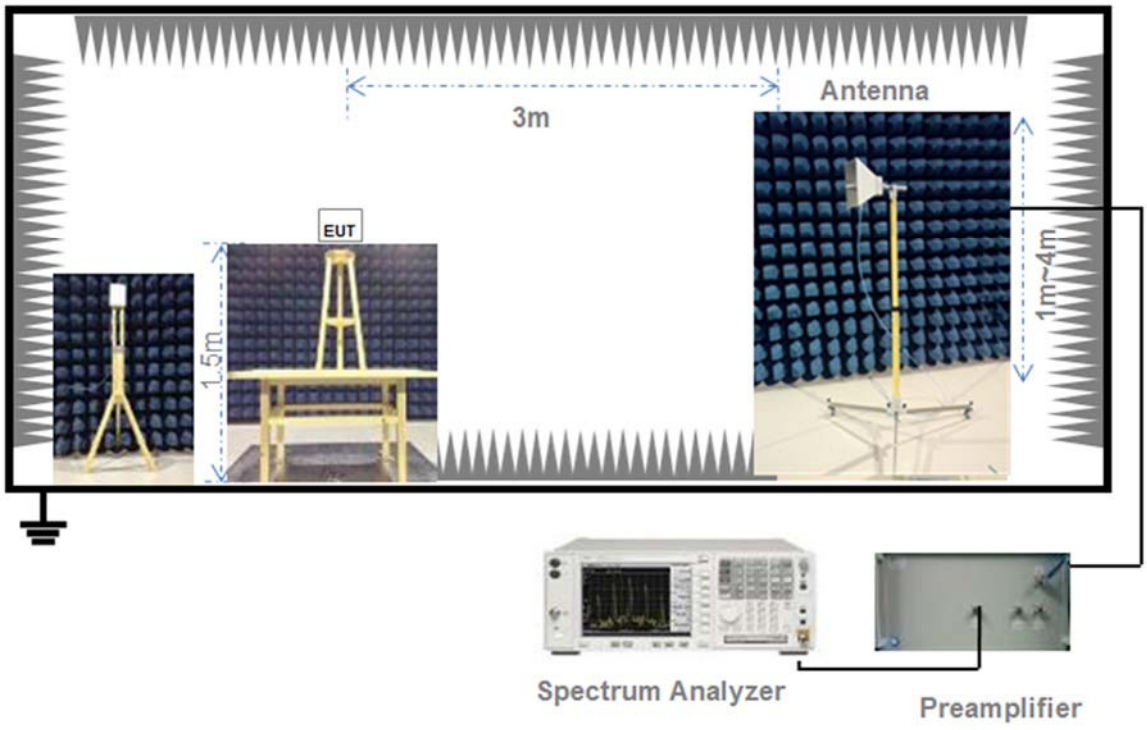
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.5 Measurement Results Explanation Example

4.5.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

4.5.2 For radiated band edges and spurious emission test:

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + the appropriate maximum ground reflection factor (dB)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Standard Applicable

FCC §15.203 & 15.247(b); RSS-247, 5.4 (6)

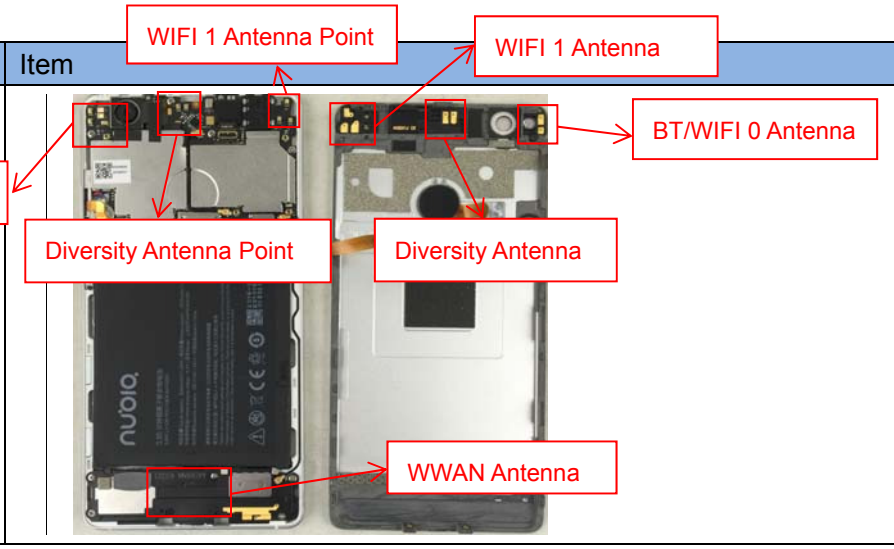
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is An embedded-in	An embedded-in antenna design is used.

Reference Documents	Item
Photo	

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Output Power

5.2.1 Test Limit

FCC § 15.247(b); RSS-247, 5.4 (4)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements.

5.2.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Maximum peak conducted output power

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

Maximum conducted (average) output power (Reporting Only)

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed

using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a

factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal as

described in Section 6.0.

c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

d) Adjust the measurement in dBm by adding 10log (1/x), where x is the duty cycle to the measurement result.

Measurements of duty cycle

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission.

Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

Set VBW ≥ RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 6dB Bandwidth

5.3.1 Limit

FCC §15.247(a); RSS-GEN, 6.6

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.

5.3.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ≥ 3 RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d); RSS-247, 5.5

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.

5.4.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

b) If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

c) In either case, attenuation to levels below the 15.209 general radiated emissions limits is not required.

The following procedures shall be used to demonstrate compliance to these limits. Note that these procedures can be used in either an antenna-port conducted or radiated test set-up. Radiated tests must conform to the test site requirements and utilize maximization procedures defined herein.

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ≥ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW ≥ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Emission level measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

Set the RBW = 100 kHz.

Set the VBW ≥ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Band Edge (Authorized-band band-edge)

5.5.1 Limit

FCC §15.247(d); RSS-GEN, 8.9, RSS-247, 5.5

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.

5.5.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The following procedures may be used to determine the peak or average field strength or power of an unwanted emission that is within 2 MHz of the authorized band edge. If a peak detector is utilized, use the procedure described in 13.2.1. Use the procedure described in 13.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., duty cycle $\geqslant$ 98%). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

Set span to 2 MHz

RBW = 100 kHz.

VBW $\geqslant$ 3 x RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)

Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Conducted Emission

5.6.1 Limit

FCC §15.207; RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.6.2 Test Setup

See section 4.4.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.6.4 Test Result

Please refer to ANNEX A.5.

5.7 Radiated Spurious Emission

5.7.1 Limit

FCC §15.209&15.247(c); RSS-247, 5.5

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), 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 (μV/m)	Measurement Distance (m)
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

Note:

1. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

2. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.7.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

f) Compare the resultant electric field strength level to the applicable limit.

g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

a) RBW = as specified in Table 1.

b) VBW ≥ 3 x RBW.

c) Detector = Peak.

d) Sweep time = auto.

e) Trace mode = max hold.

f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz

> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

a) The EUT shall be configured to operate at the maximum achievable duty cycle.

b) Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.

c) RBW = 1 MHz (unless otherwise specified).

d) VBW ≥ 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) ≤ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

f) Averaging type = power (i.e., RMS).

1) As an alternative, the detector and averaging type may be set for linear voltage averaging.

2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.

g) Sweep time = auto.

h) Perform a trace average of at least 100 traces.

i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is 10 log(1/x), where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is 20 log(1/x), where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.7.4 Test Result

Please refer to ANNEX A.6.

5.8 Band Edge (Restricted-band band-edge)

5.8.1 Limit

FCC §15.209&15.247(c); RSS-247, 5.5

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.8.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.8.4 Test Result

Please refer to ANNEX A.7.

5.9 Power Spectral density (PSD)

5.9.1 Limit

FCC §15.247(d); RSS-247, 5.2 (2)

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

5.9.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz $\leqslant$ RBW $\leqslant$ 100 kHz.

Set the VBW $\geqslant$ 3 RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.9.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 Output Power

Duty Cycle

Test Mode	ANT 0			ANT 1		
	Duty Cycle	T (ms)	1/T(kHz)	Duty Cycle	T (ms)	1/T(kHz)
802.11b	0.99	12.43	0.08	0.99	12.45	0.08
802.11g	0.93	2.04	0.49	0.94	2.04	0.49
802.11n-20 MHz	0.94	1.91	0.52	0.93	1.90	0.53
802.11n-40 MHz	0.85	0.91	1.10	0.85	0.91	1.10

Peak Power Test Data

802.11b Mode:

Channel	Measured Output Peak Power of ANT 0		Measured Output Peak Power of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	15.36	34.36	15.30	33.88	18.34	68.24	30	1000	Pass
Middle	15.53	35.73	14.91	30.97	18.24	66.70			Pass
High	15.57	36.06	14.84	30.48	18.23	66.54			Pass

802.11g Mode:

Channel	Measured Output Peak Power of ANT 0		Measured Output Peak Power of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	10.76	11.91	10.69	11.72	13.74	23.63	30	1000	Pass
Middle	11.51	14.16	10.37	10.89	13.99	25.05			Pass
High	11.82	15.21	10.05	10.12	14.03	25.32			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power of ANT 0		Measured Output Peak Power of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	11.07	12.79	10.5	11.22	13.80	24.01	30	1000	Pass
Middle	11.65	14.62	10.35	10.84	14.06	25.46			Pass
High	11.66	14.66	10.15	10.35	13.98	25.01			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power of ANT 0		Measured Output Peak Power of ANT 1		Total of output power		Limit		Verdict
	dBm	mW	dBm	mW	dBm	mW	dBm	mW	
Low	11.52	14.19	10.57	11.40	14.08	25.59	30	1000	Pass
Middle	11.05	12.74	10.49	11.19	13.79	23.93			Pass
High	11.08	12.82	10.73	11.83	13.92	24.65			Pass

A.2 Bandwidth

Test Data

802.11b Mode:

Channel	ANT 0		ANT 1		6 dB Bandwidth Limits (kHz)
	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	
Low	7.642	12.919	8.107	12.820	⩾500
Middle	8.131	13.107	8.118	12.928	⩾500
High	8.109	13.084	8.111	12.770	⩾500

802.11g Mode:

Channel	ANT 0		ANT 1		6 dB Bandwidth Limits (kHz)
	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	
Low	15.995	16.342	16.112	16.339	⩾500
Middle	16.382	16.395	16.362	16.352	⩾500
High	15.761	16.348	16.294	16.339	⩾500

802.11n-20MHz Mode:

Channel	ANT 0		ANT 1		6 dB Bandwidth Limits (kHz)
	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	
Low	16.002	17.545	16.797	17.518	⩾500
Middle	17.376	17.580	16.342	17.524	⩾500
High	16.383	17.551	16.554	17.500	⩾500

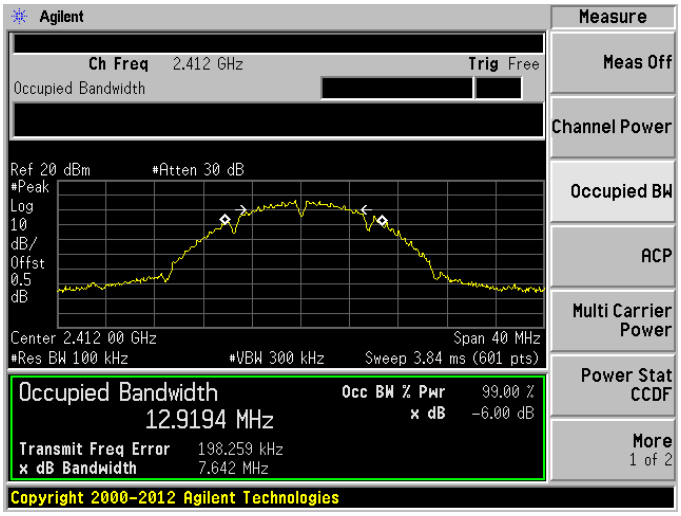
802.11n-40MHz Mode:

Channel	ANT 0		ANT 1		6 dB Bandwidth Limits (kHz)
	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	
Low	35.249	35.892	35.331	35.988	⩾500
Middle	35.881	36.115	35.525	35.971	⩾500
High	35.198	35.807	35.323	35.858	⩾500

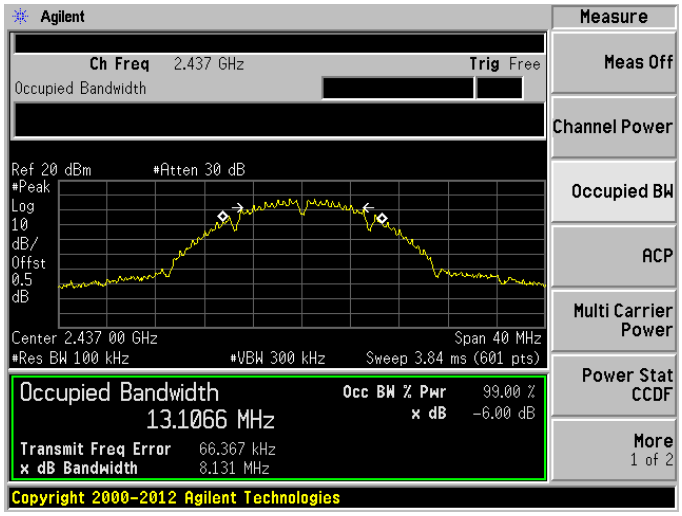
ANT 0

Test plots

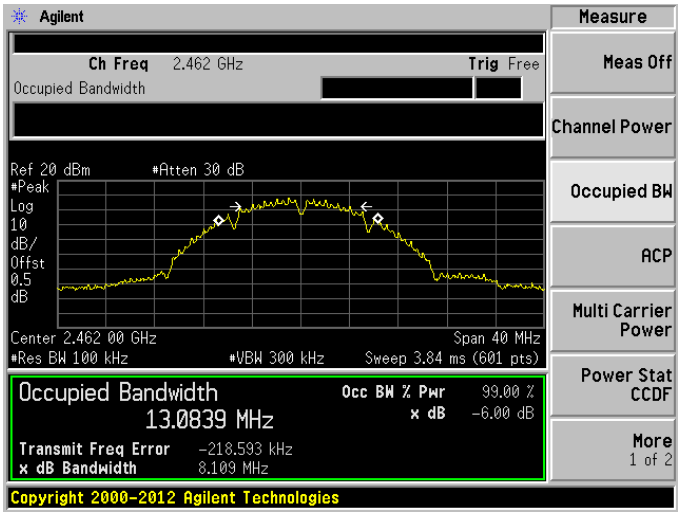
802.11b LOW CHANNEL



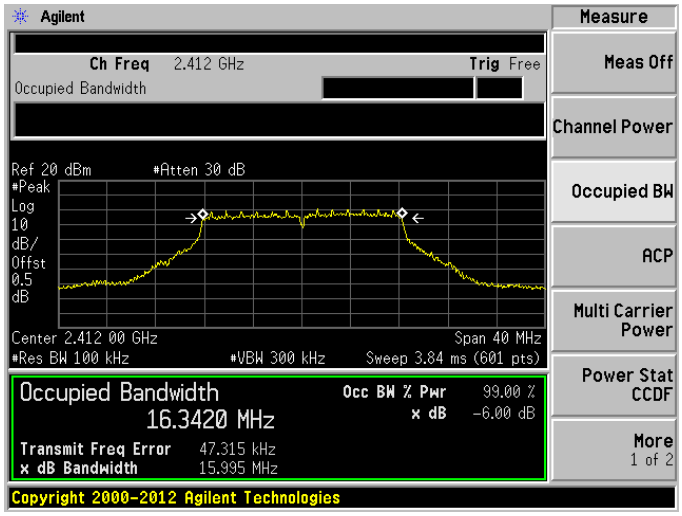
802.11b MIDDLE CHANNEL



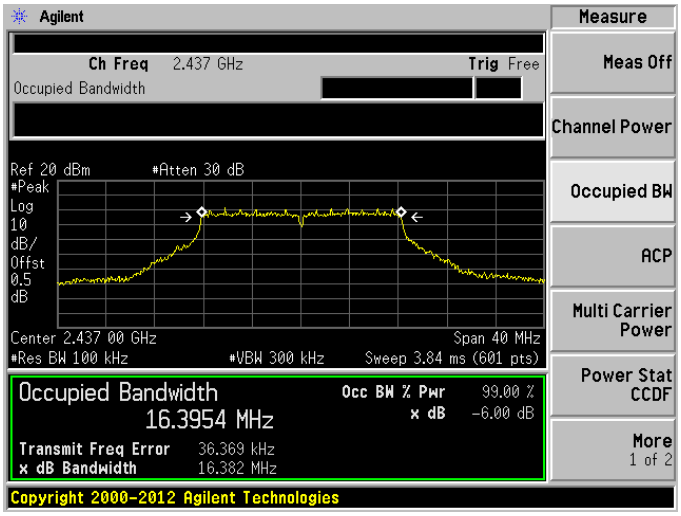
802.11b HIGH CHANNEL



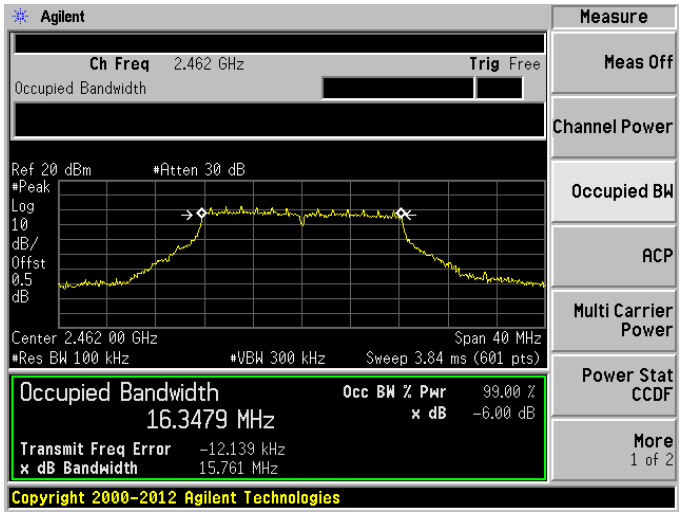
802.11g LOW CHANNEL



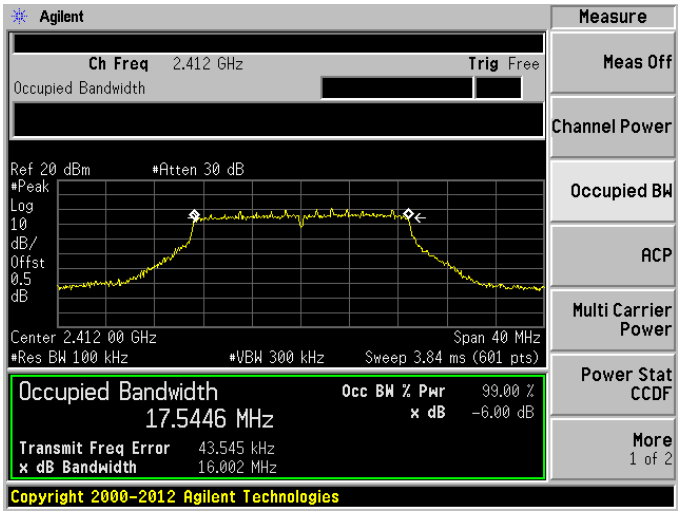
802.11g MIDDLE CHANNEL



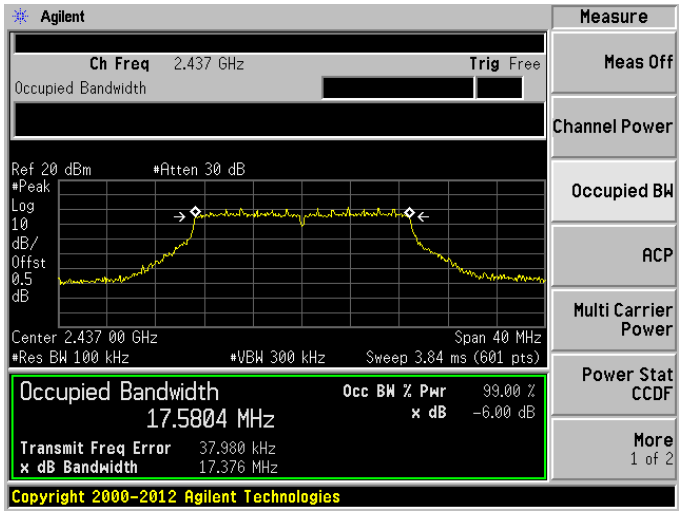
802.11g HIGH CHANNEL



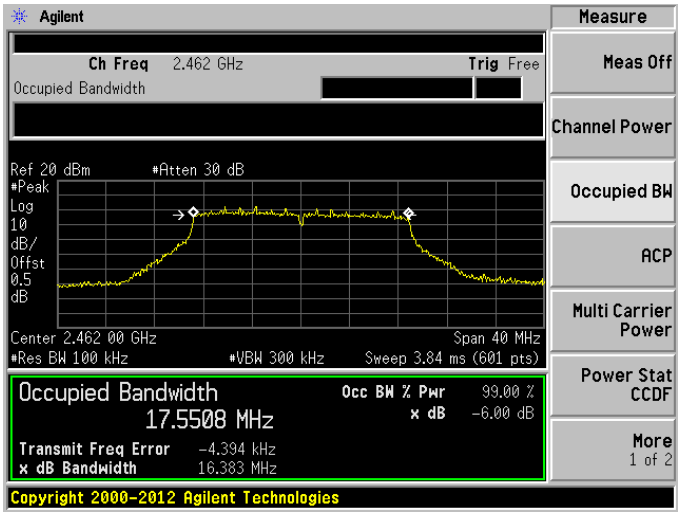
802.11n-20 MHz LOW CHANNEL



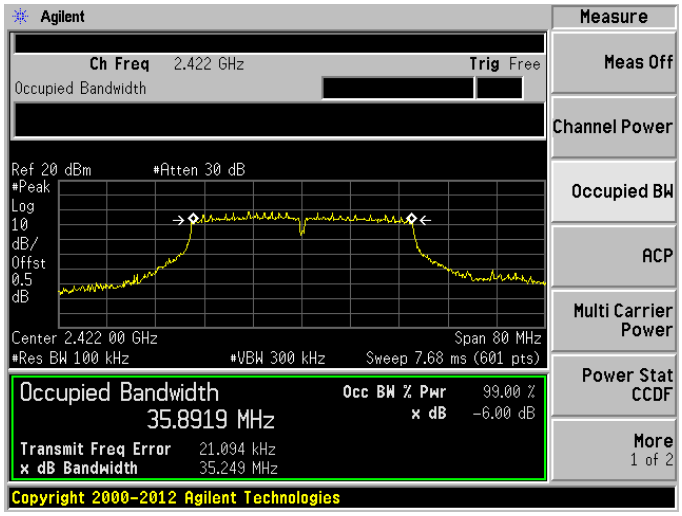
802.11 n-20 MHz MIDDLE CHANNEL



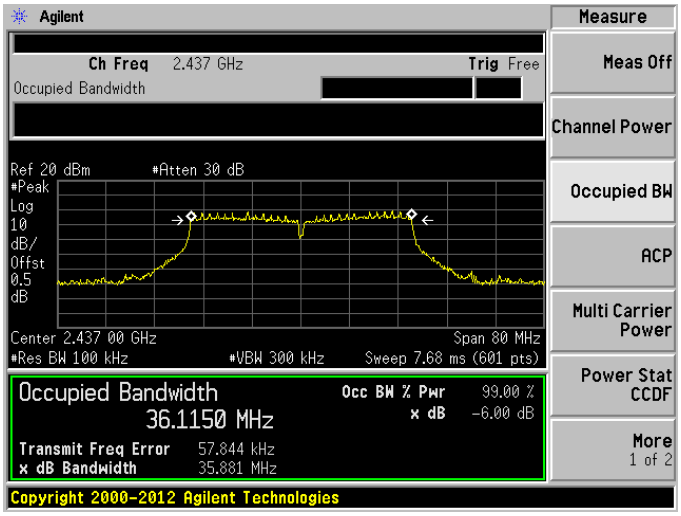
802.11n-20 MHz HIGH CHANNEL



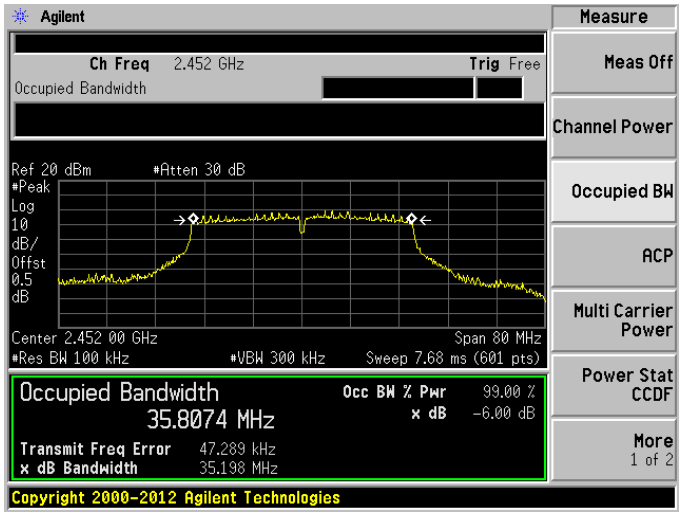
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



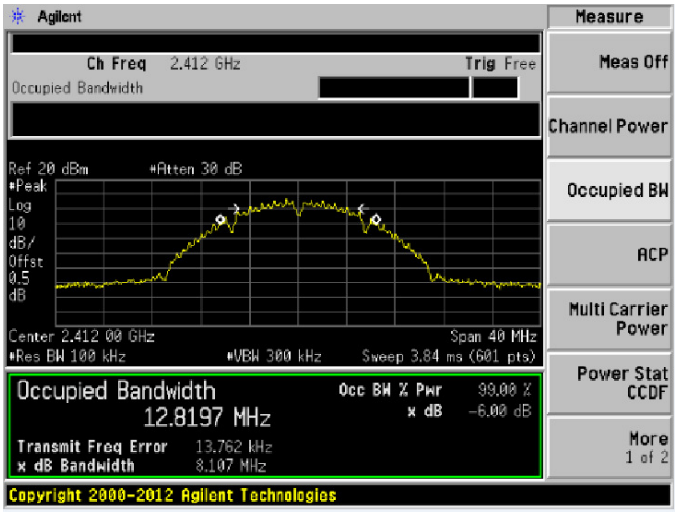
802.11n-40 MHz HIGH CHANNEL



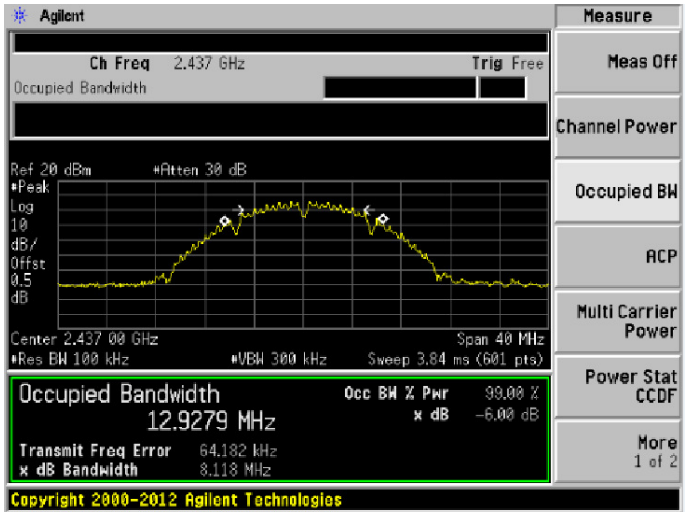
ANT 1

Test plots

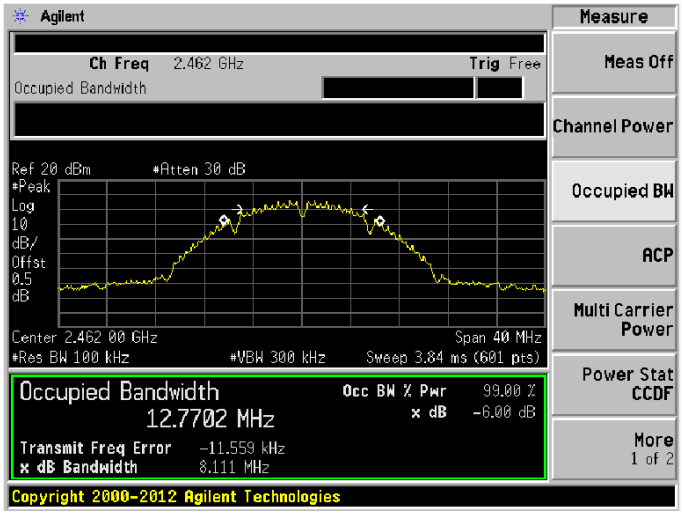
802.11b LOW CHANNEL



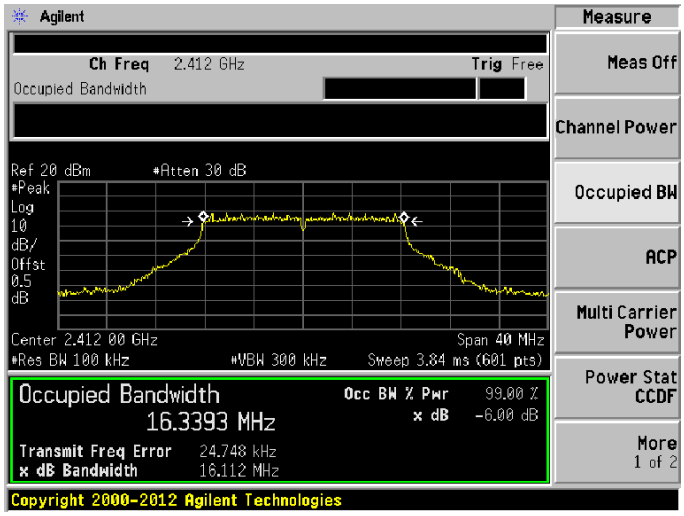
802.11b MIDDLE CHANNEL



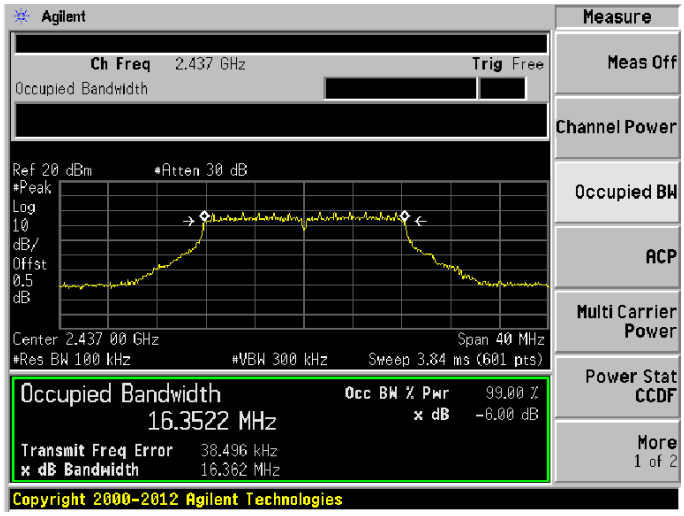
802.11b HIGH CHANNEL



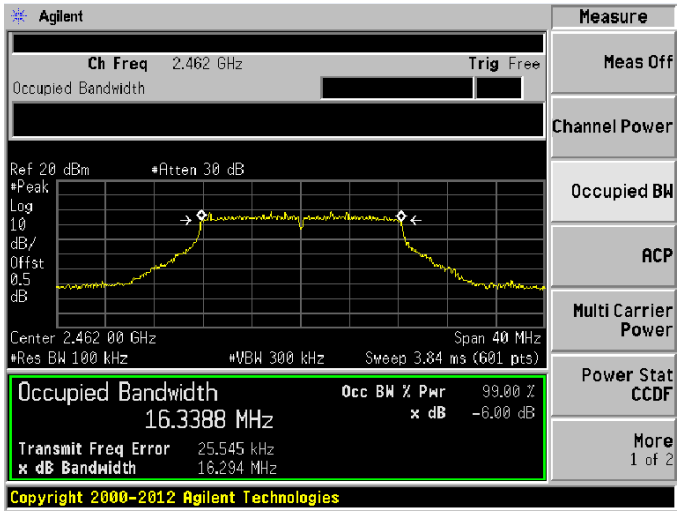
802.11g LOW CHANNEL



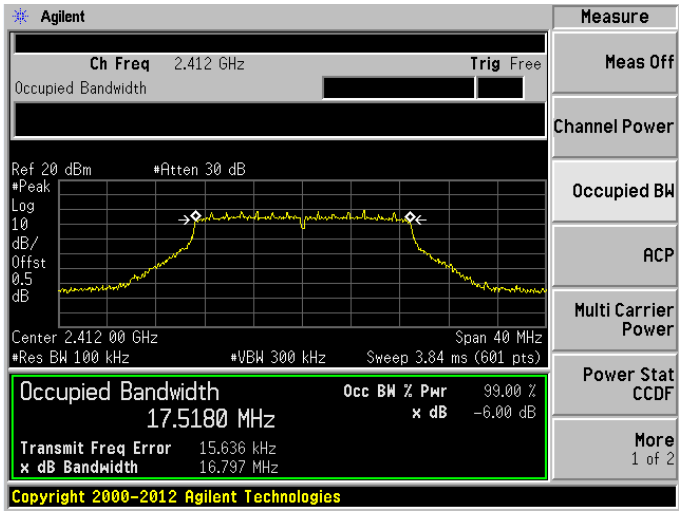
802.11g MIDDLE CHANNEL



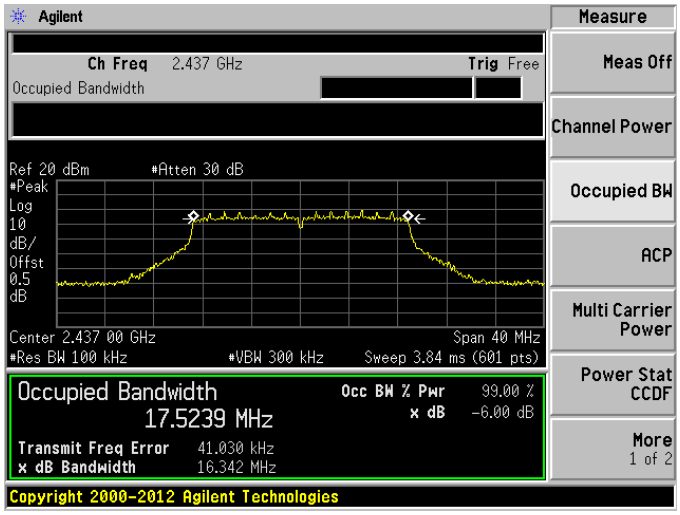
802.11g HIGH CHANNEL



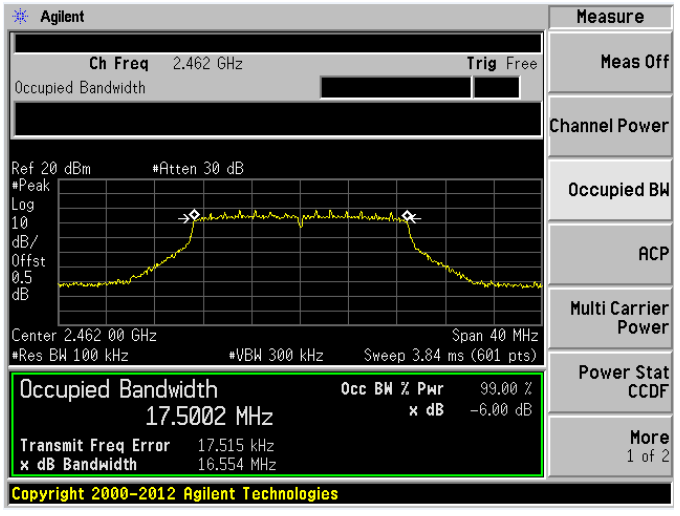
802.11n-20 MHz LOW CHANNEL



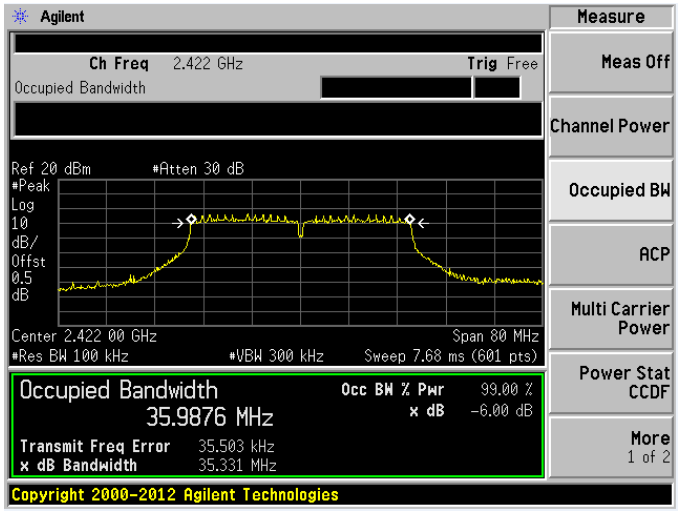
802.11 n-20 MHz MIDDLE CHANNEL



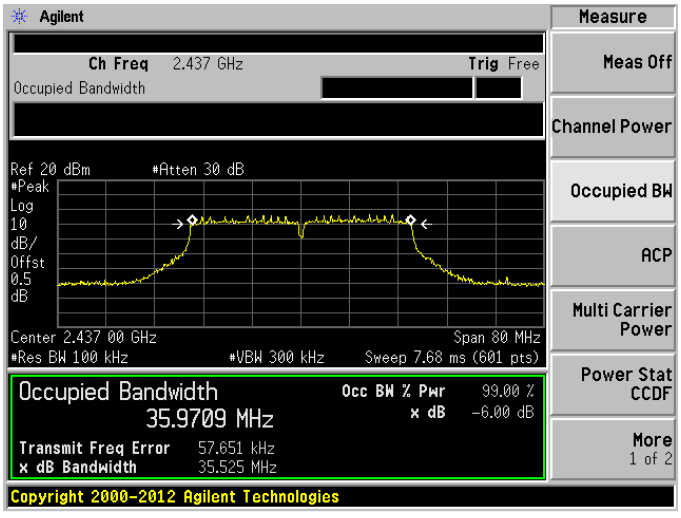
802.11n-20 MHz HIGH CHANNEL



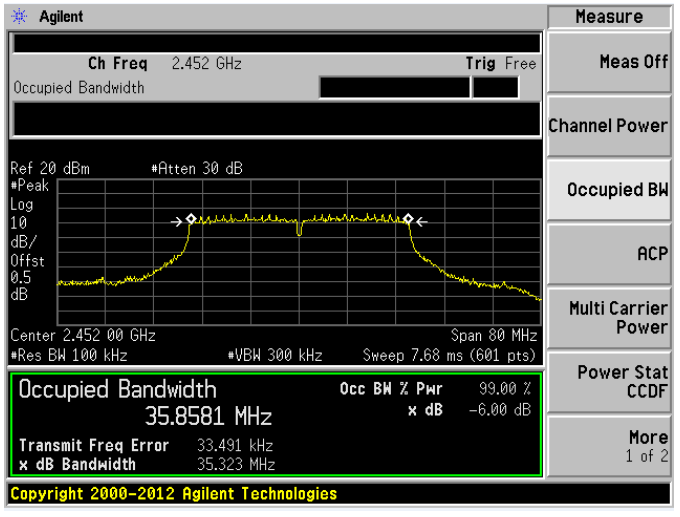
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



A.3 Conducted Spurious Emissions

Test Data

802.11b Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-54.39	7.41	-12.59	-54.40	5.91	-14.09	Pass
Middle	-54.82	7.41	-12.59	-54.54	4.61	-15.39	Pass
High	-54.94	7.83	-12.17	-55.36	6.01	-13.99	Pass

802.11g Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-53.94	0.45	-19.55	-54.66	-0.69	-20.69	Pass
Middle	-55.01	1.16	-18.84	-55.69	0.73	-19.27	Pass
High	-55.21	1.84	-18.16	-54.93	-0.96	-20.96	Pass

802.11n-20MHz Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-55.53	0.67	-19.33	-54.65	-0.86	-20.86	Pass
Middle	-54.50	1.17	-18.83	-55.40	-0.34	-20.34	Pass
High	-54.62	2.27	-17.73	-54.19	-0.96	-20.96	Pass

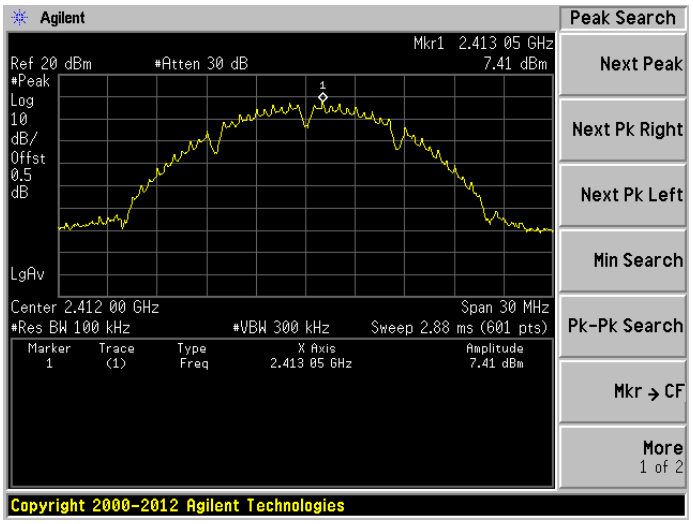
802.11n-40MHz Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-54.07	-1.02	-21.02	-54.22	-3.72	-23.72	Pass
Middle	-53.76	-1.26	-21.26	-54.15	-3.30	-23.30	Pass
High	-55.06	-0.33	-20.33	-54.07	-3.50	-23.50	Pass

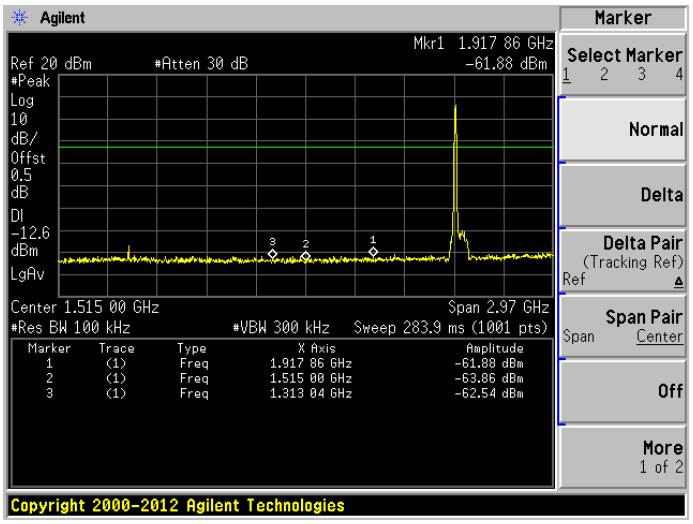
ANT 0

Test Plots

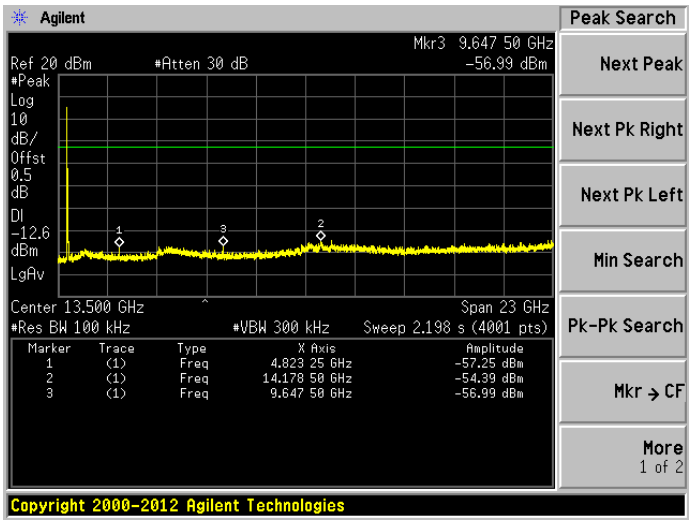
802.11b LOW CHANNEL CARRIER LEVEL



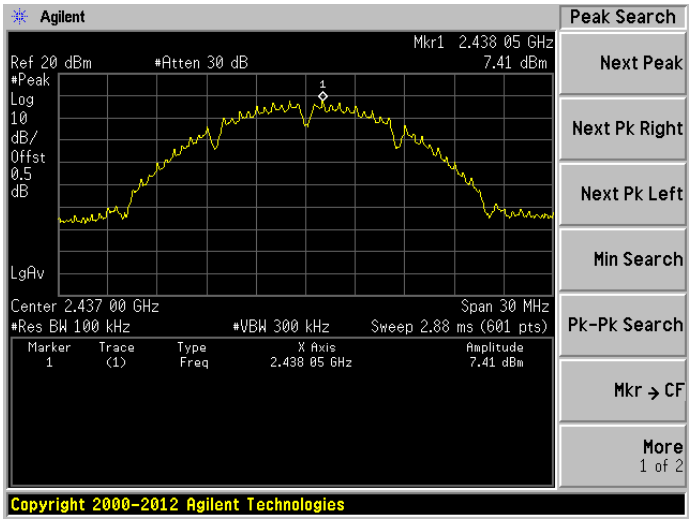
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



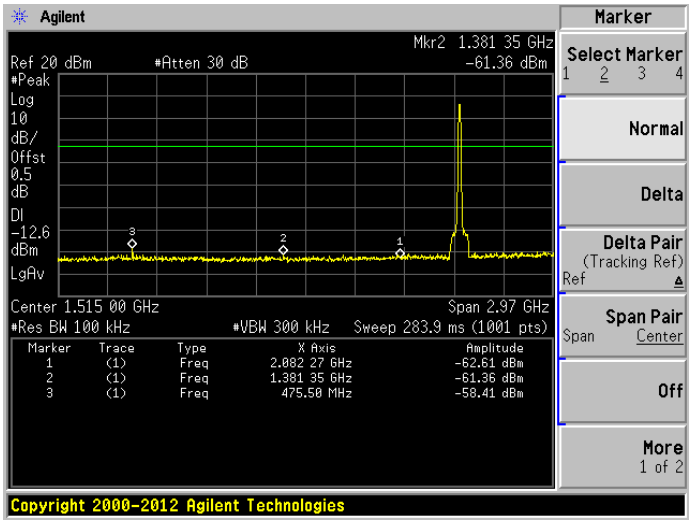
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



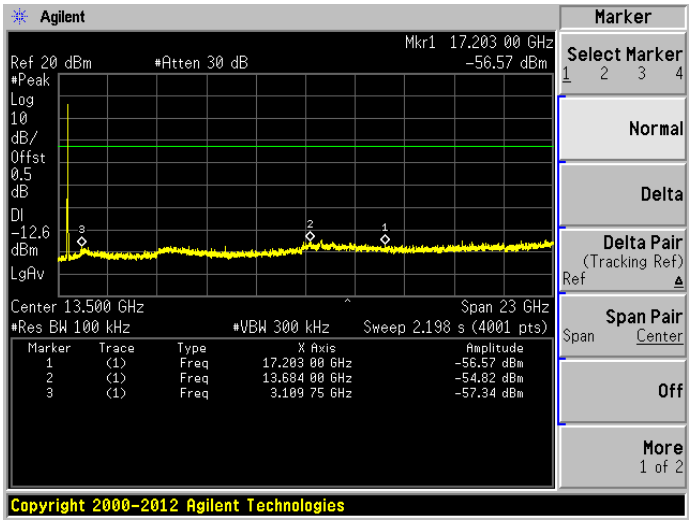
802.11b MIDDLE CHANNEL CARRIER LEVEL



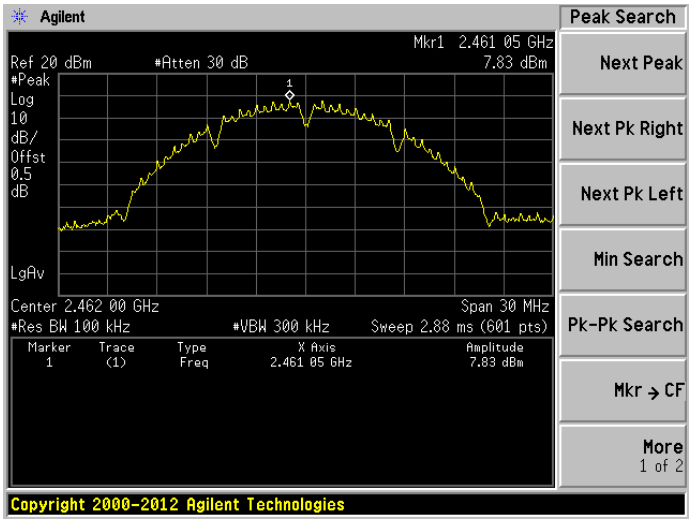
802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



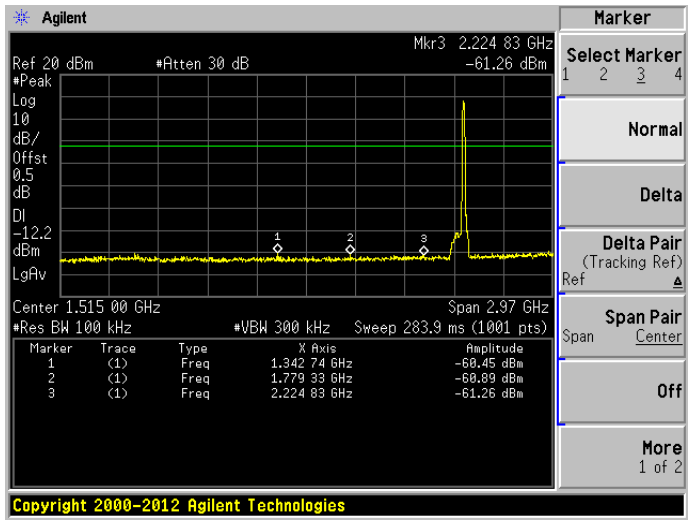
802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



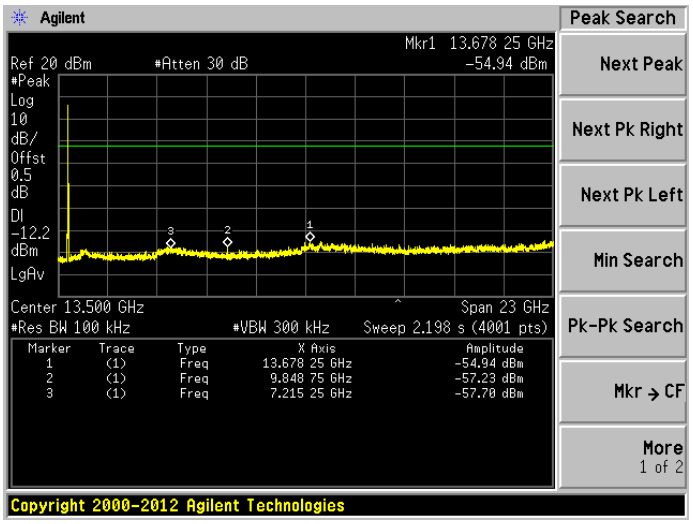
802.11b HIGH CHANNEL CARRIER LEVEL



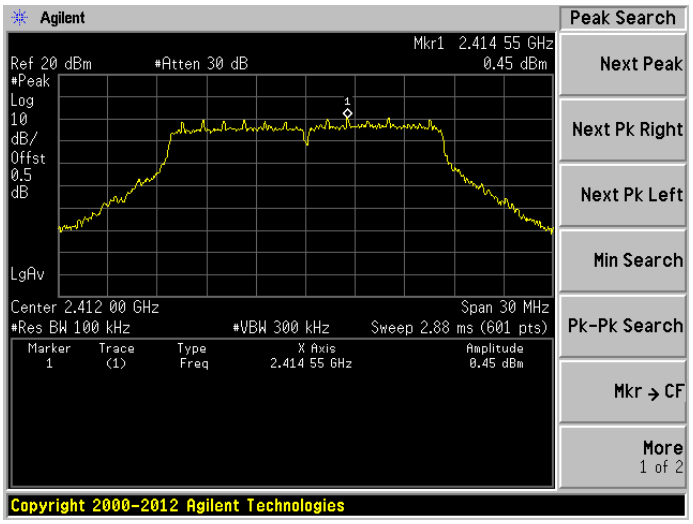
802.11b HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



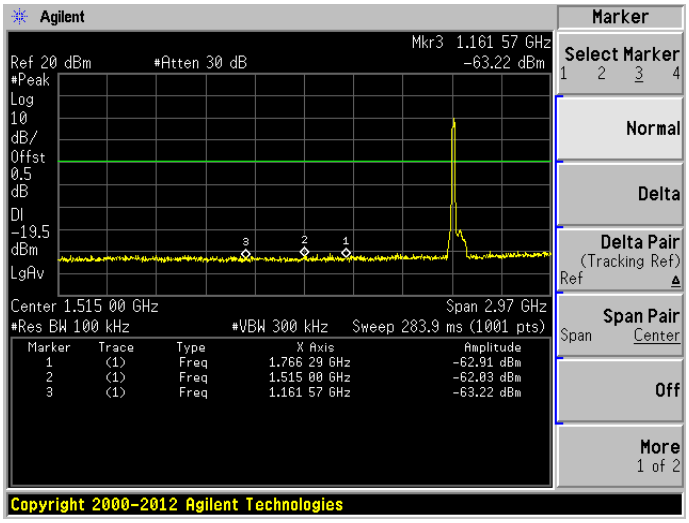
802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



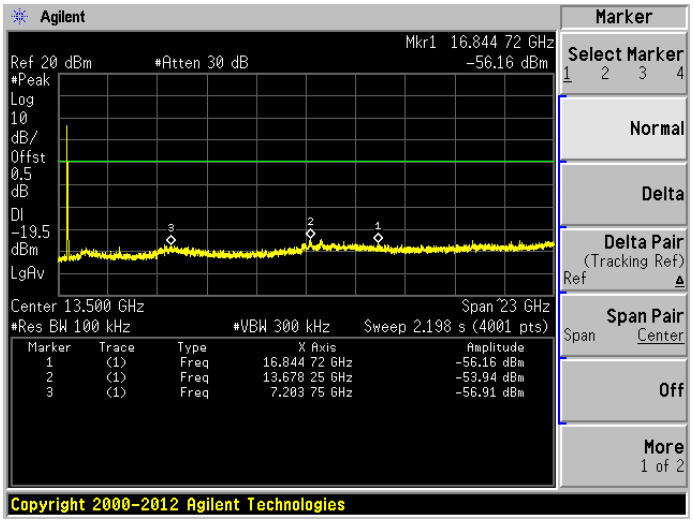
802.11g LOW CHANNEL CARRIER LEVEL



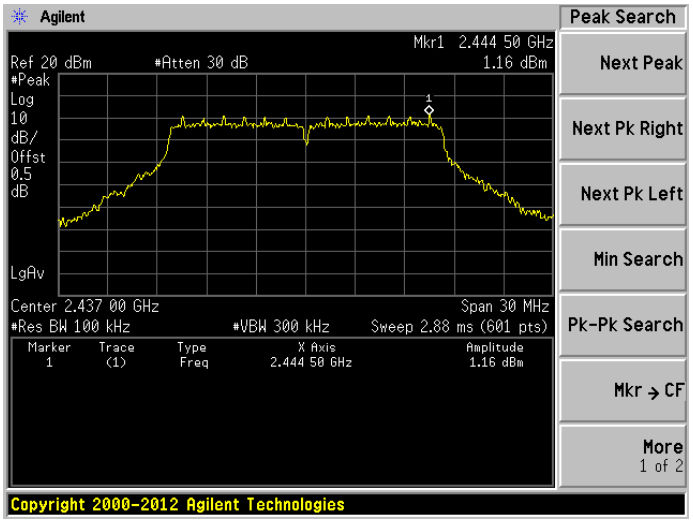
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



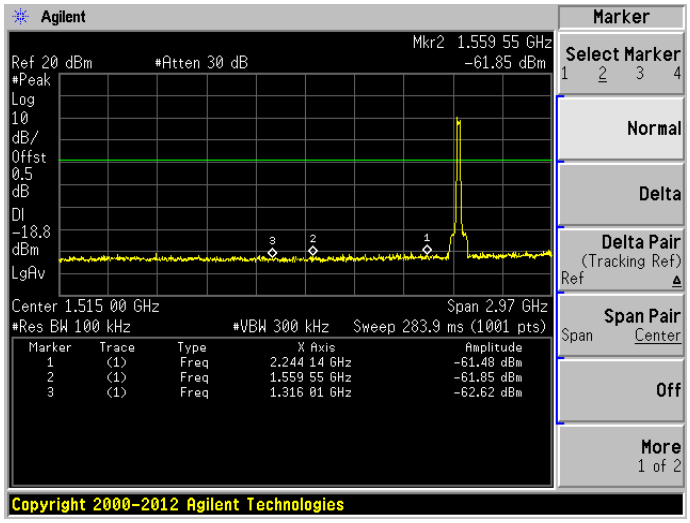
802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



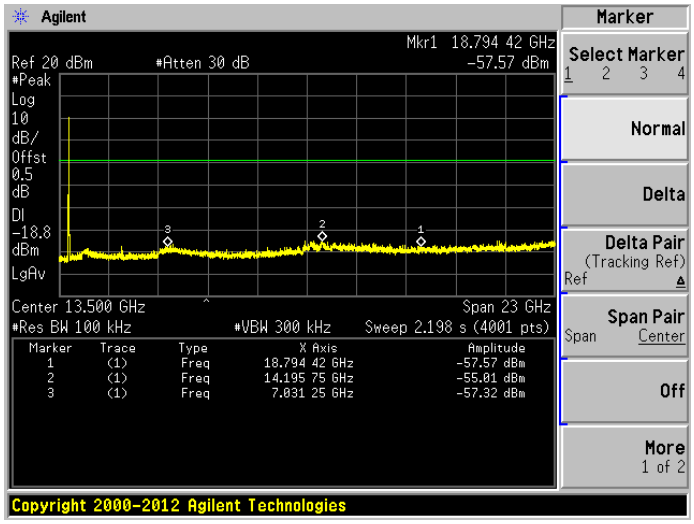
802.11g MIDDLE CHANNEL CARRIER LEVEL



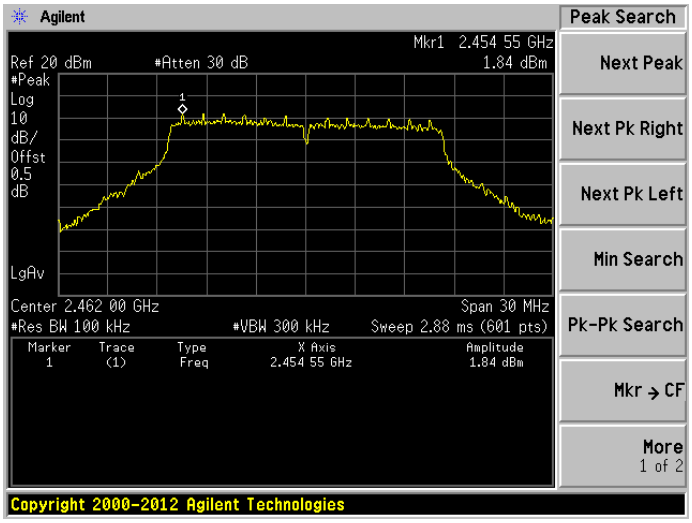
802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



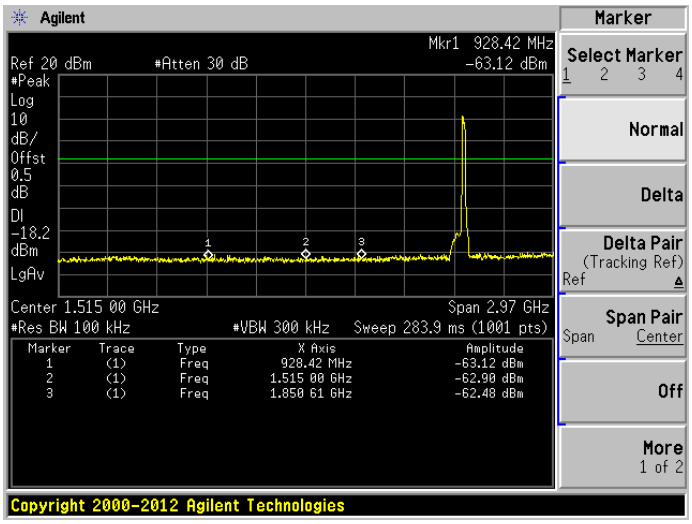
802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



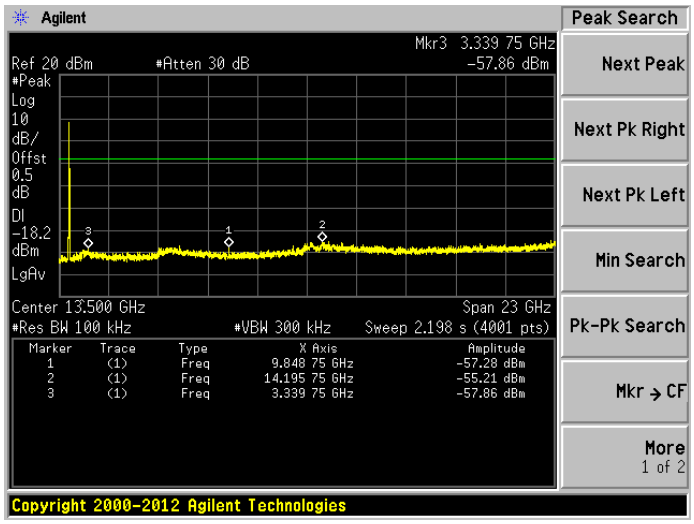
802.11g HIGH CHANNEL CARRIER LEVEL



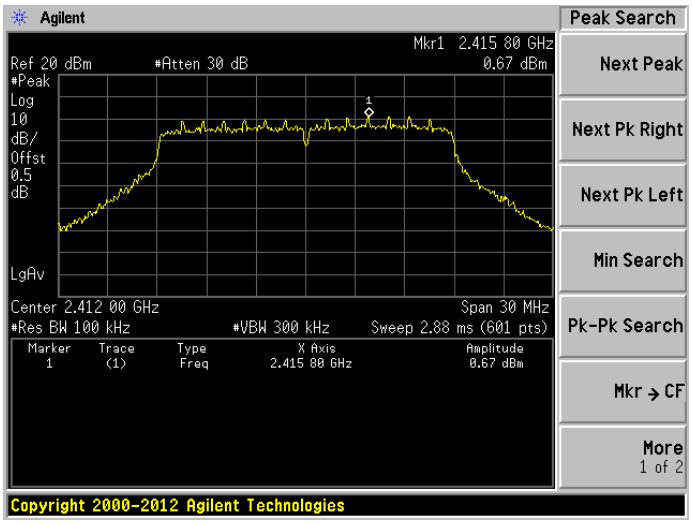
802.11g HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



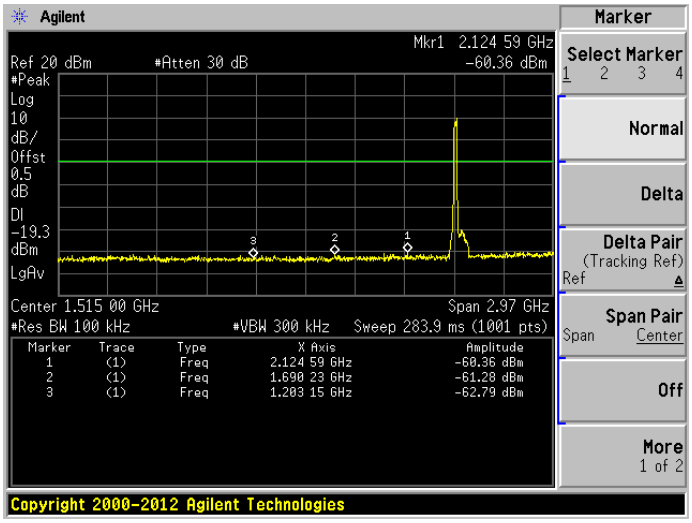
802.11g HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



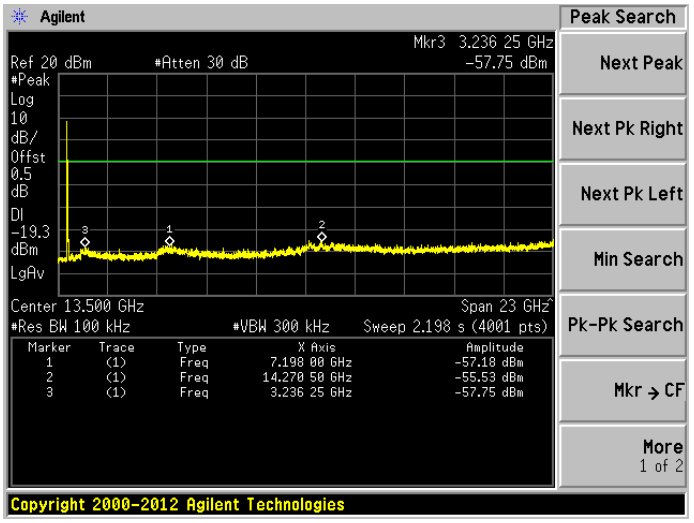
802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



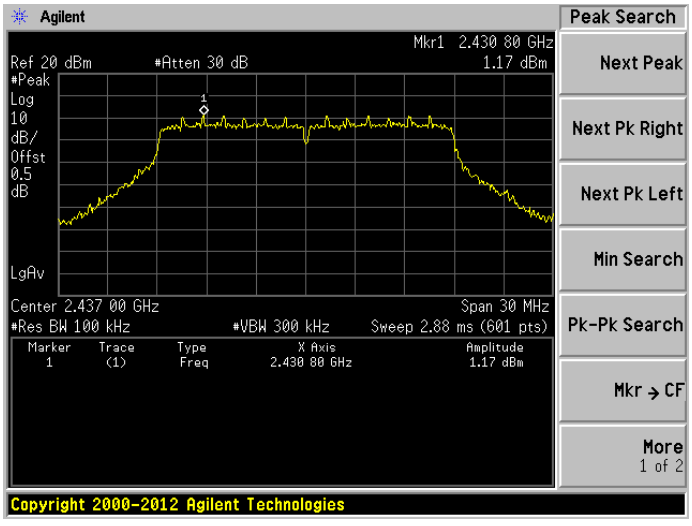
802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



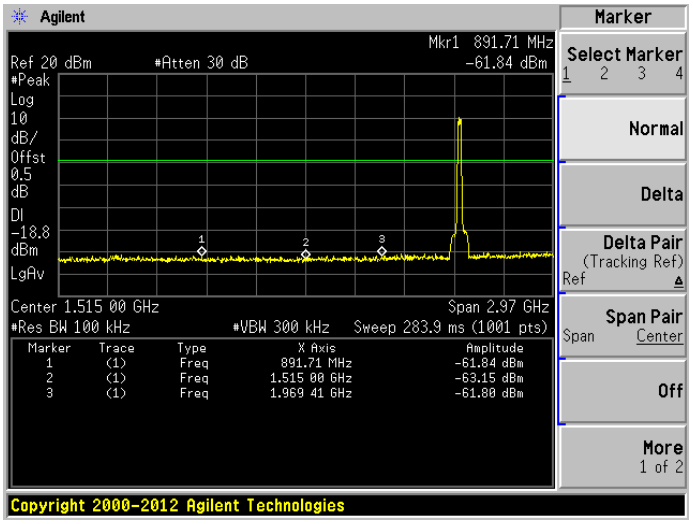
802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



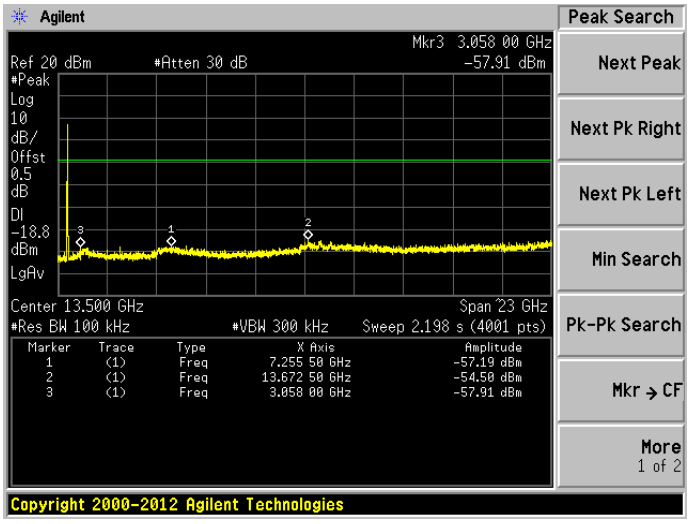
802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



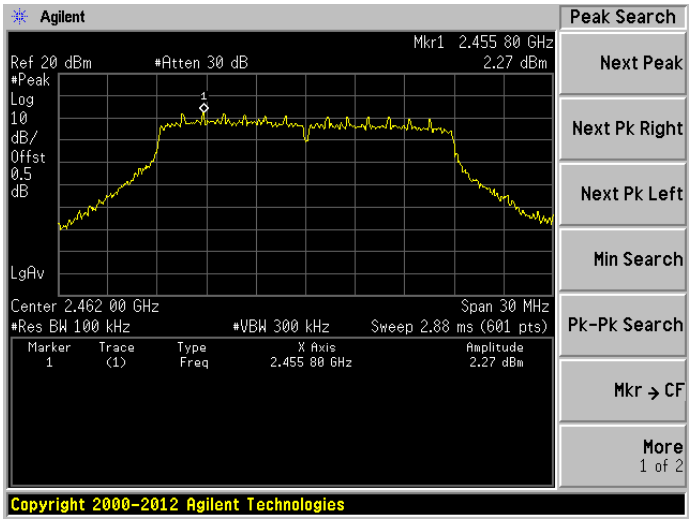
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



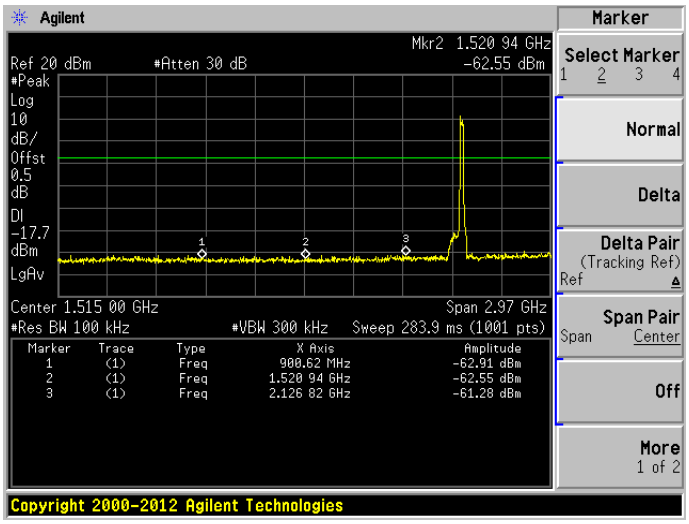
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



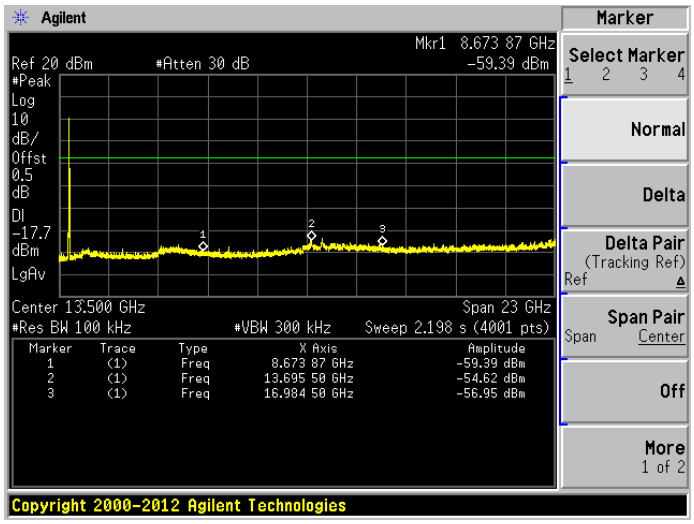
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



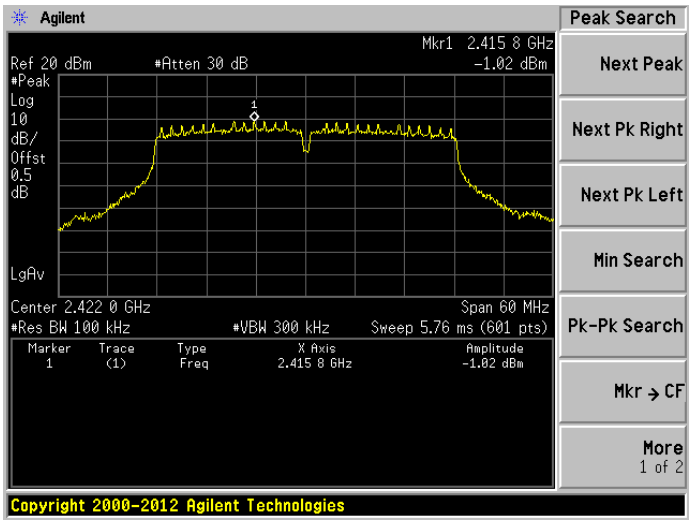
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



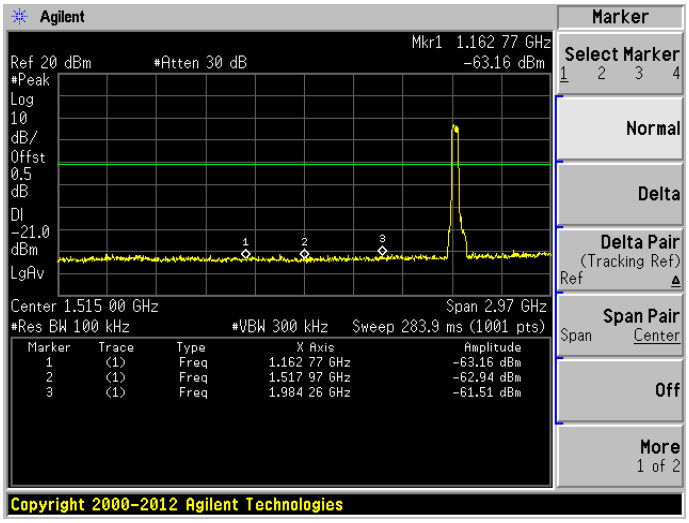
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



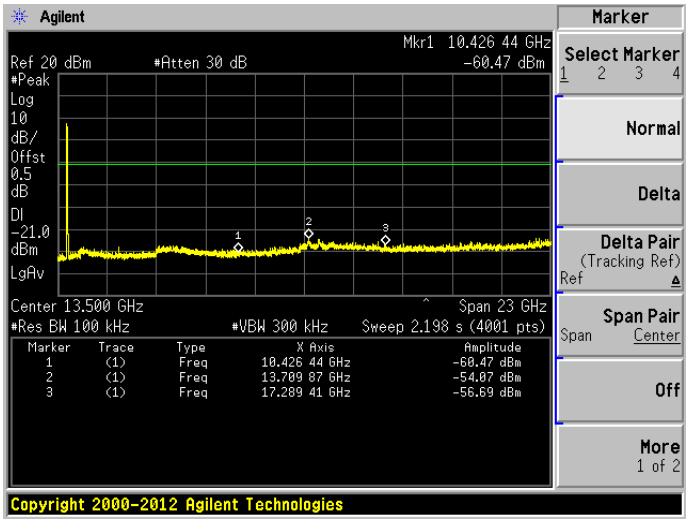
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



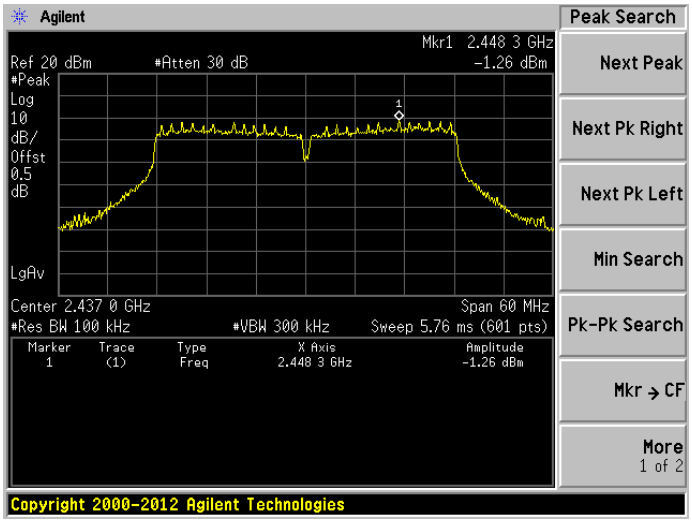
802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



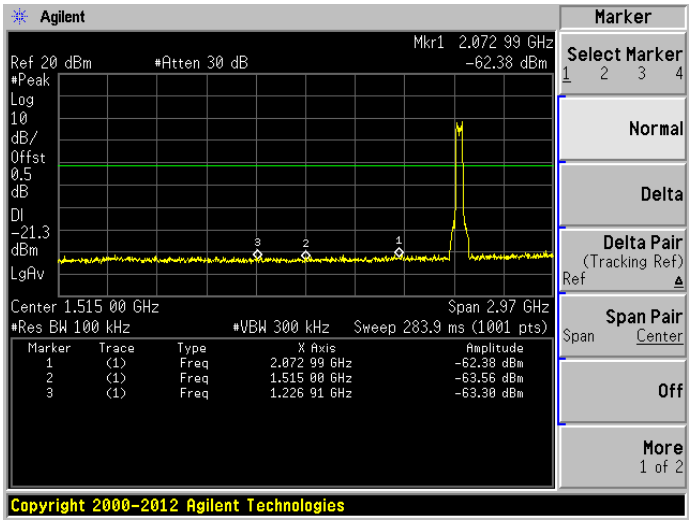
802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



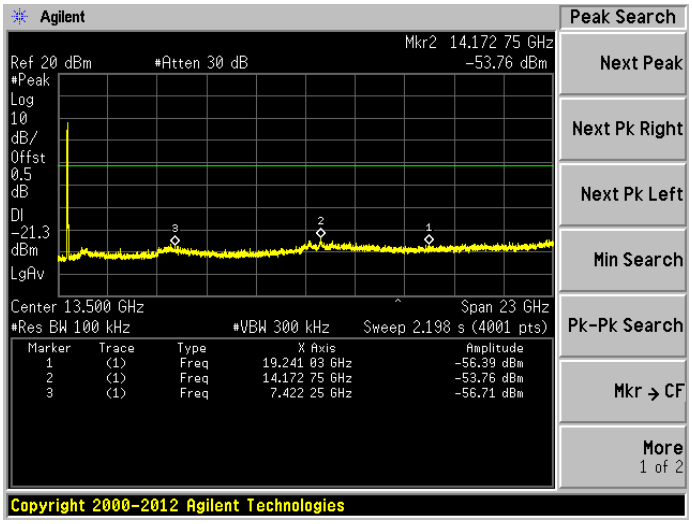
802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



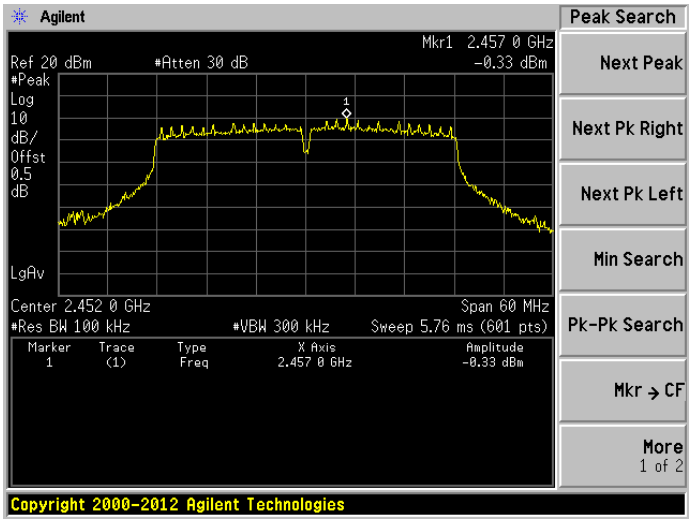
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



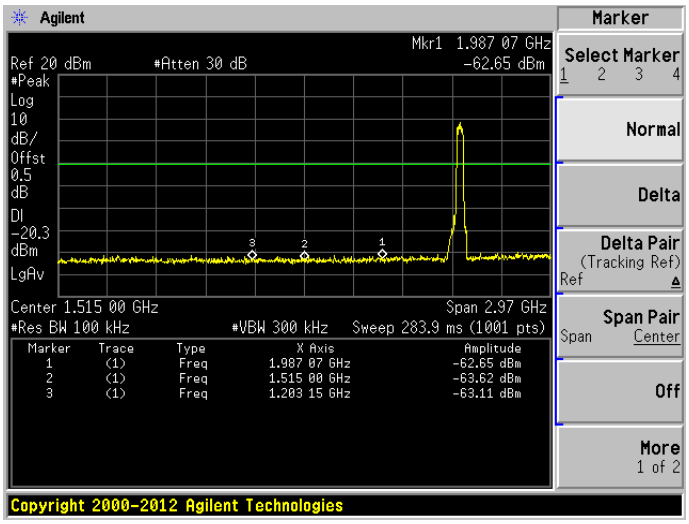
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



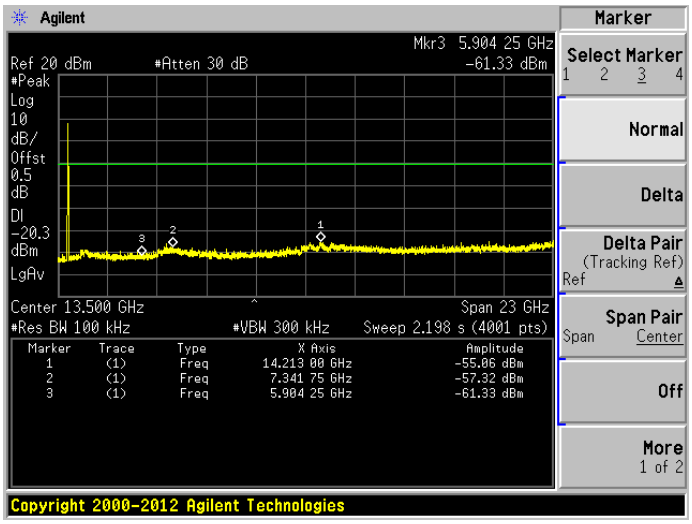
802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



802.11-n40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



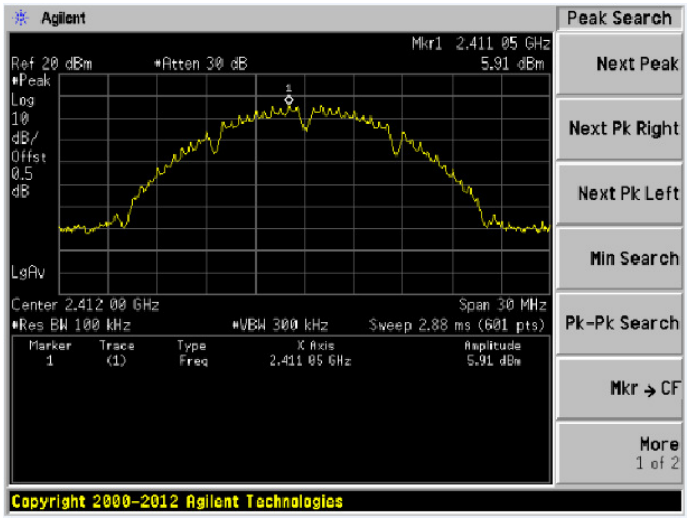
802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



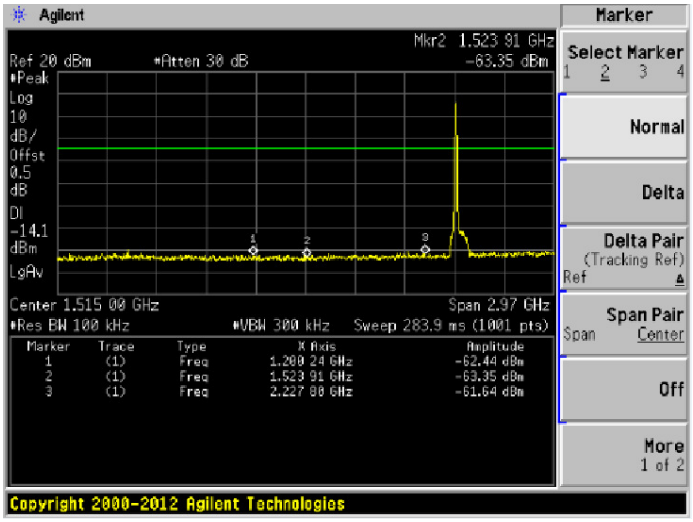
ANT 1

Test Plots

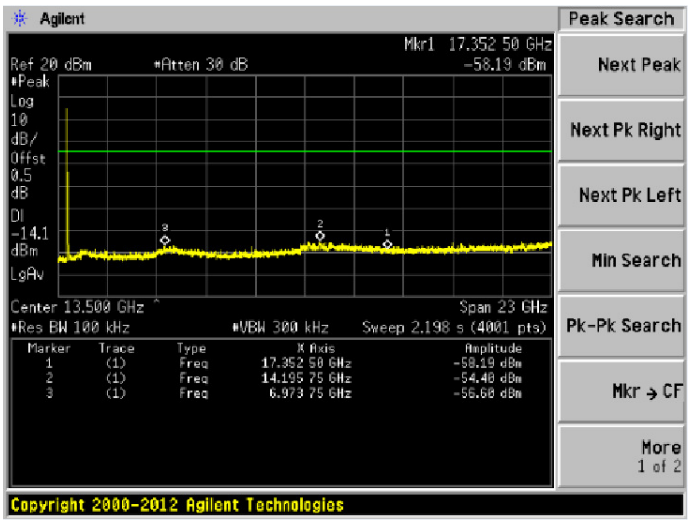
802.11b LOW CHANNEL CARRIER LEVEL



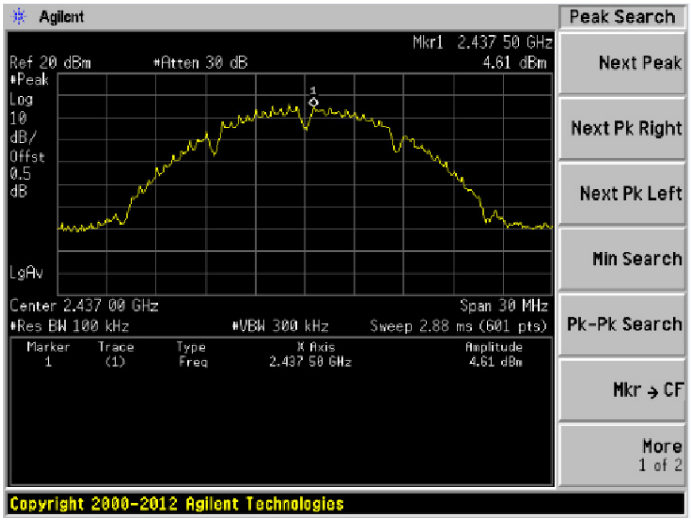
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



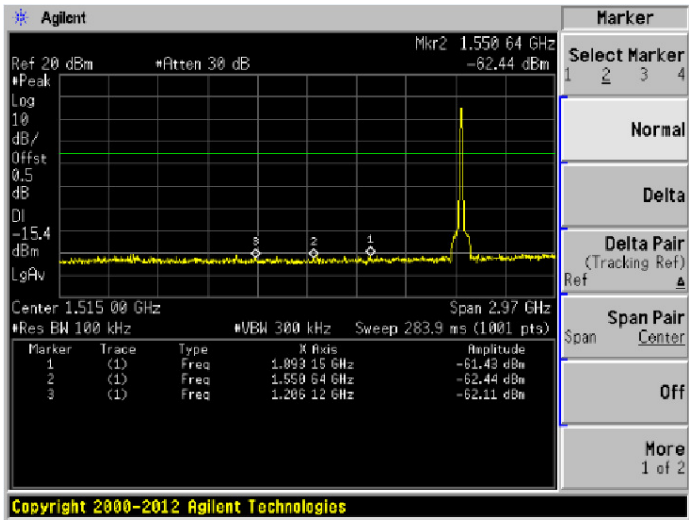
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



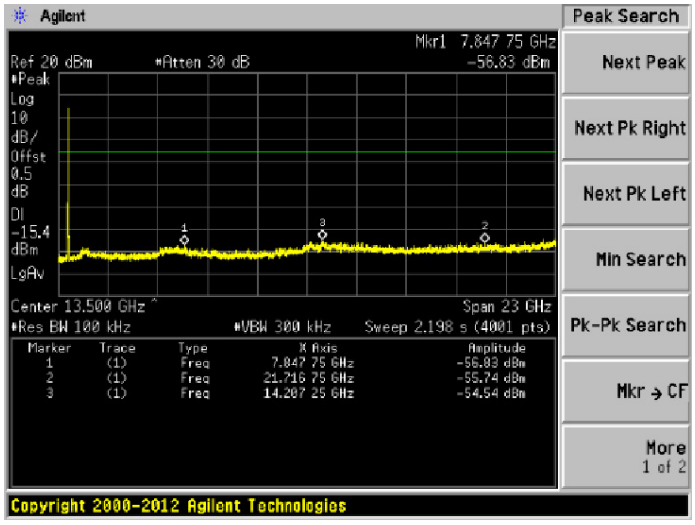
802.11b MIDDLE CHANNEL CARRIER LEVEL



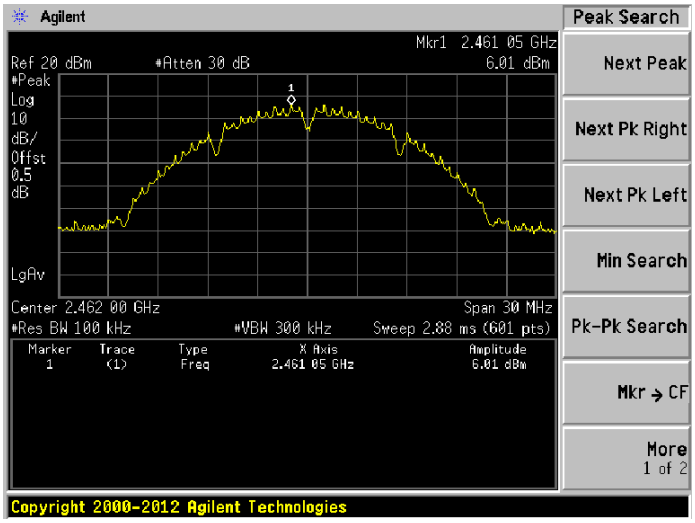
802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



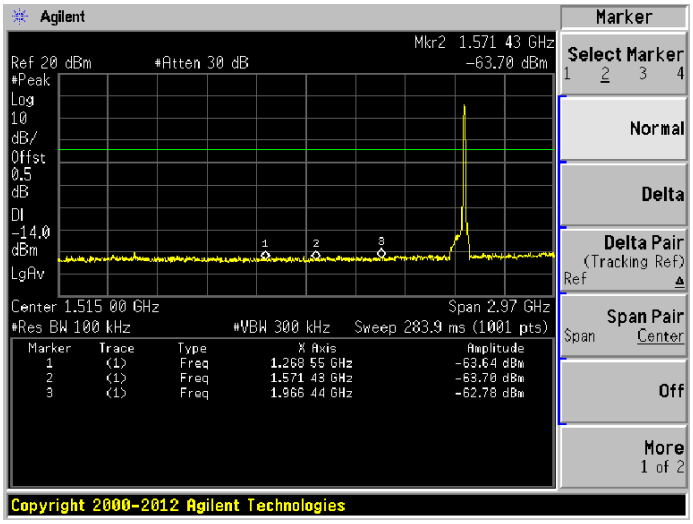
802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



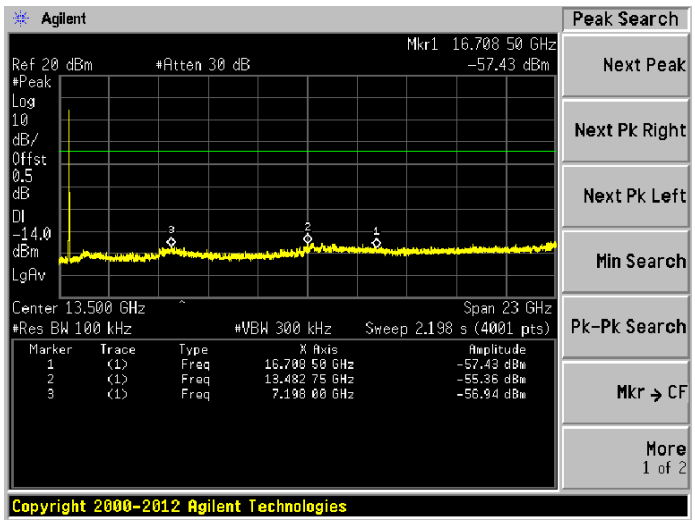
802.11b HIGH CHANNEL CARRIER LEVEL



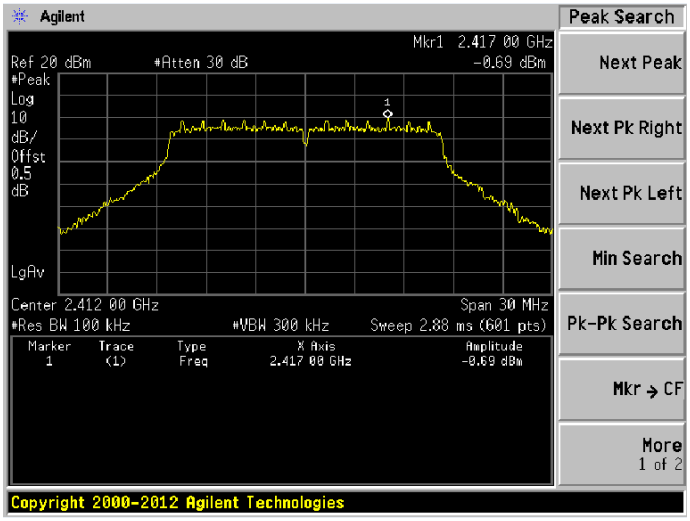
802.11b HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



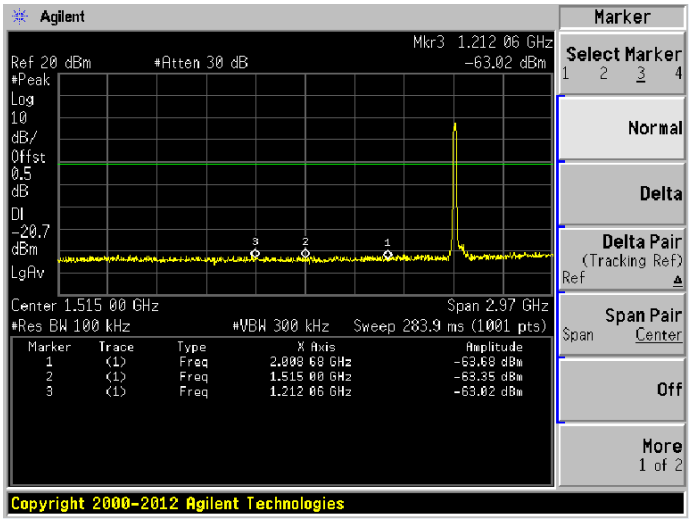
802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



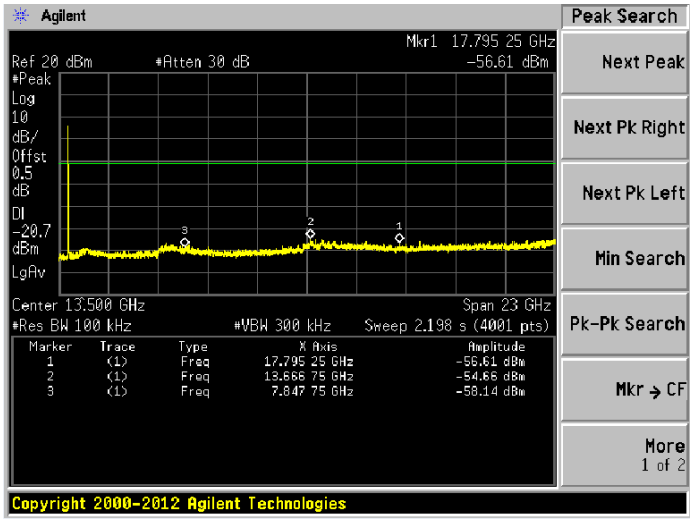
802.11g LOW CHANNEL CARRIER LEVEL



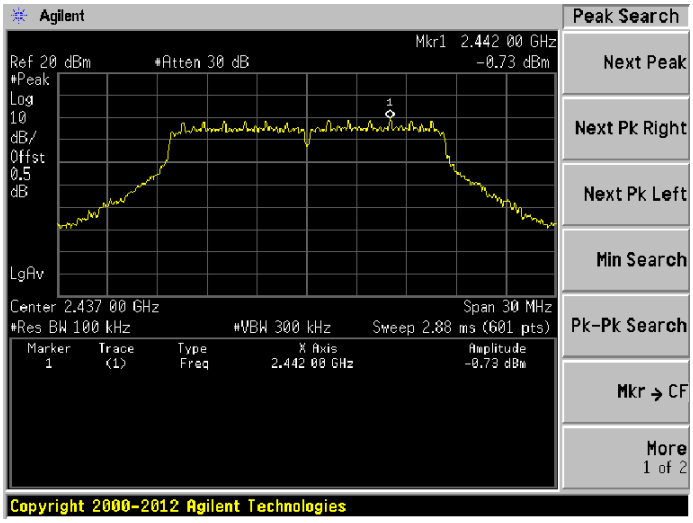
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



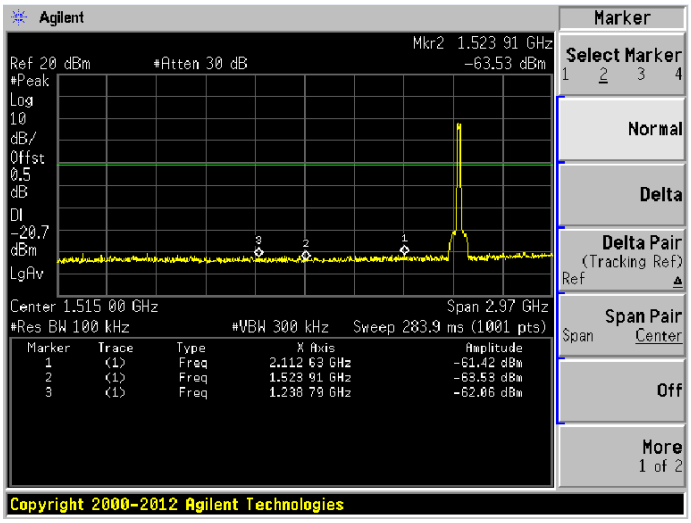
802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



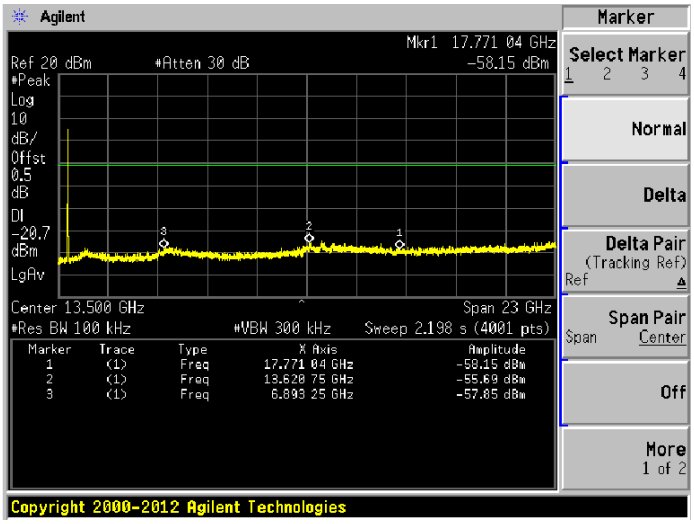
802.11g MIDDLE CHANNEL CARRIER LEVEL



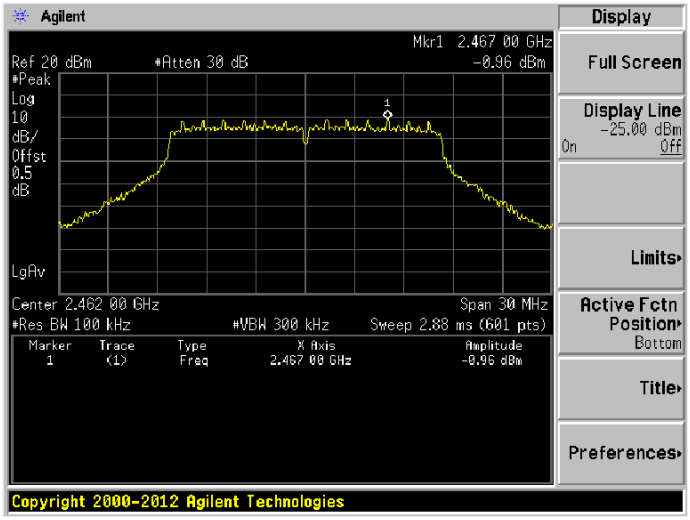
802.11g MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



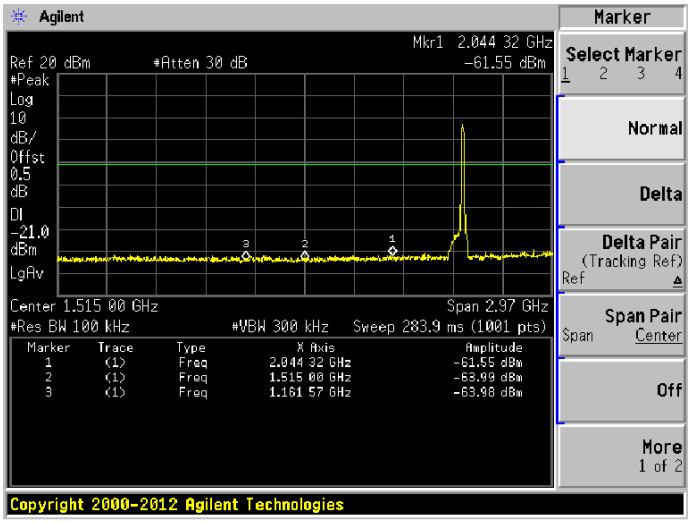
802.11g MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



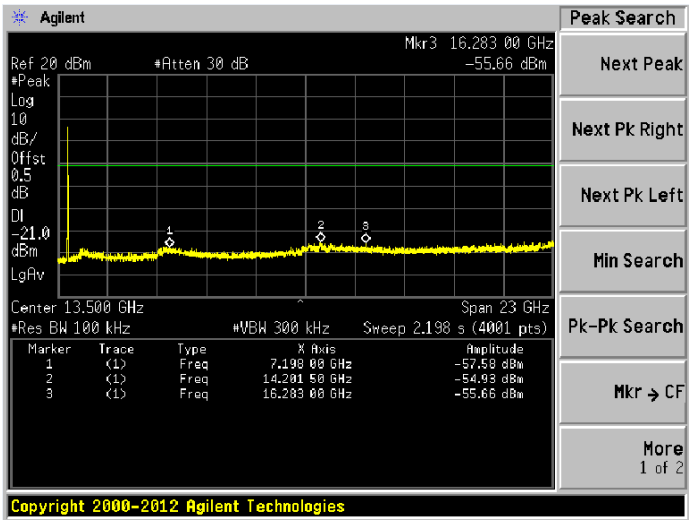
802.11g HIGH CHANNEL CARRIER LEVEL



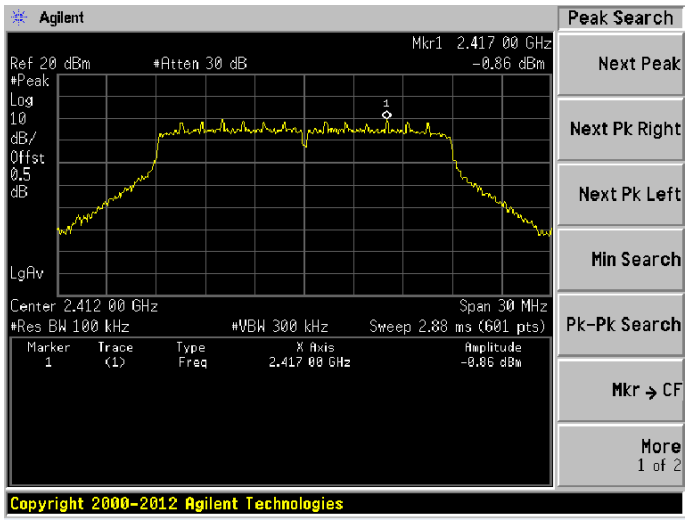
802.11g HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



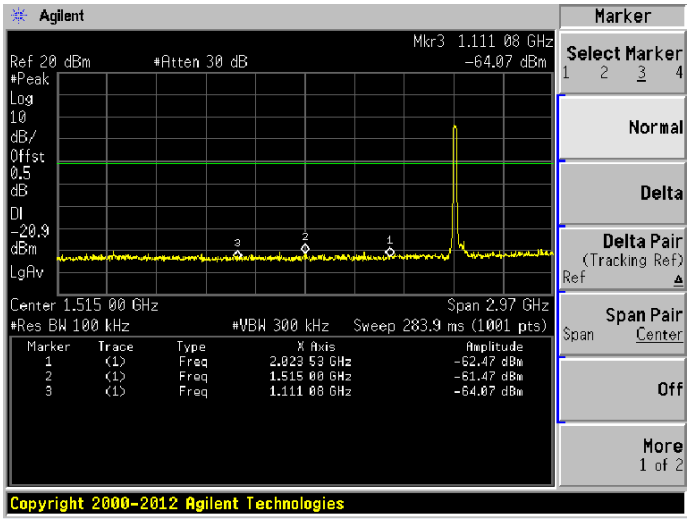
802.11g HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



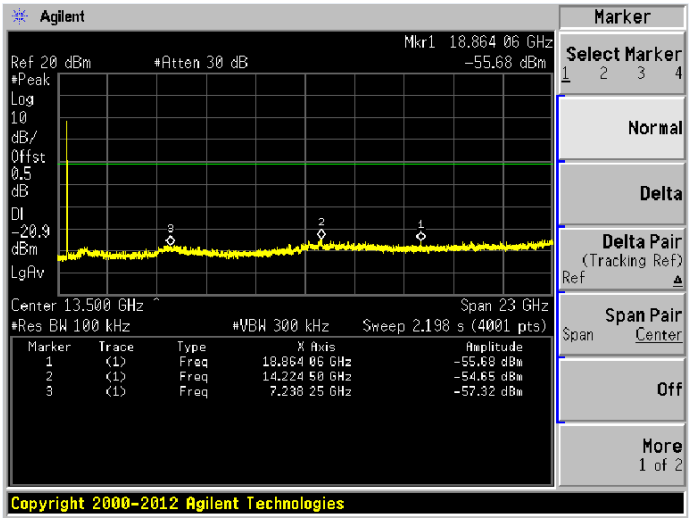
802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



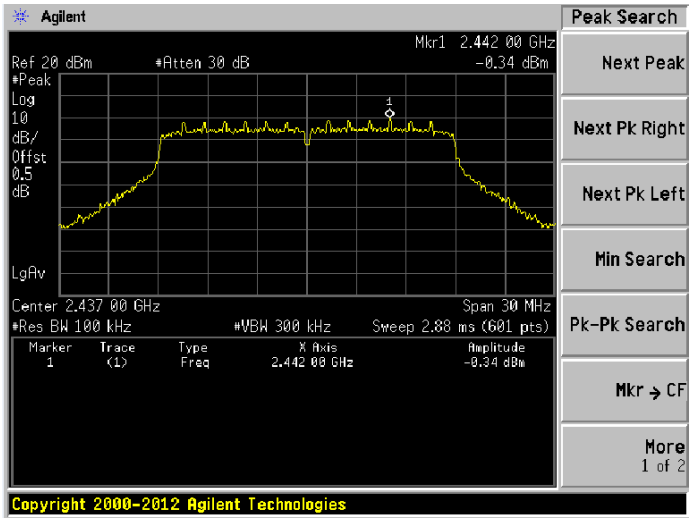
802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



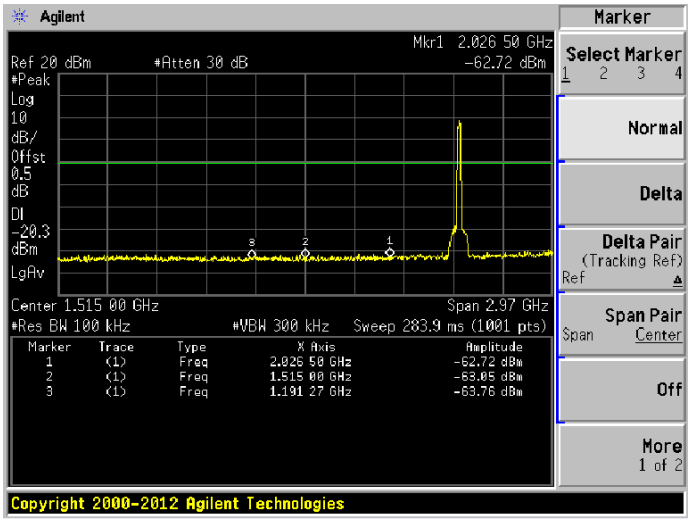
802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



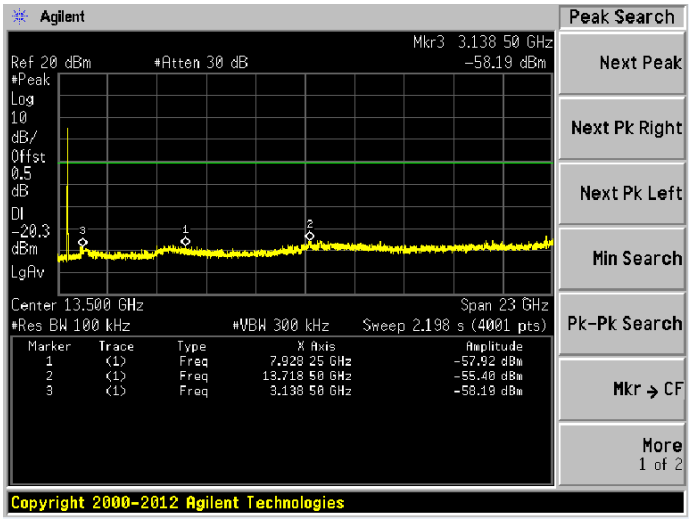
802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



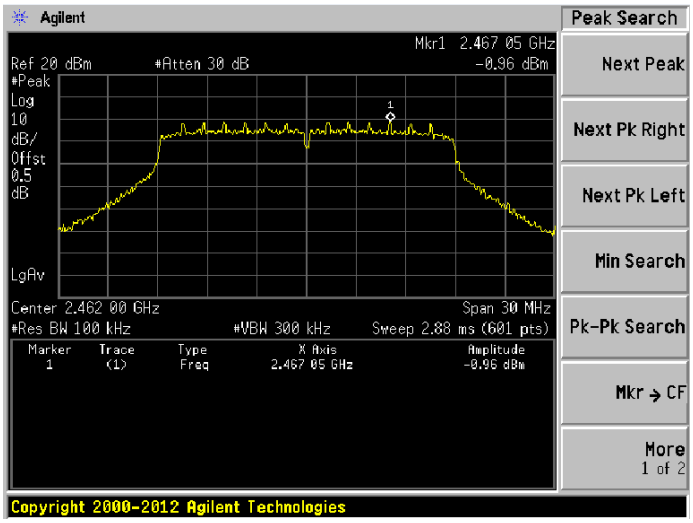
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



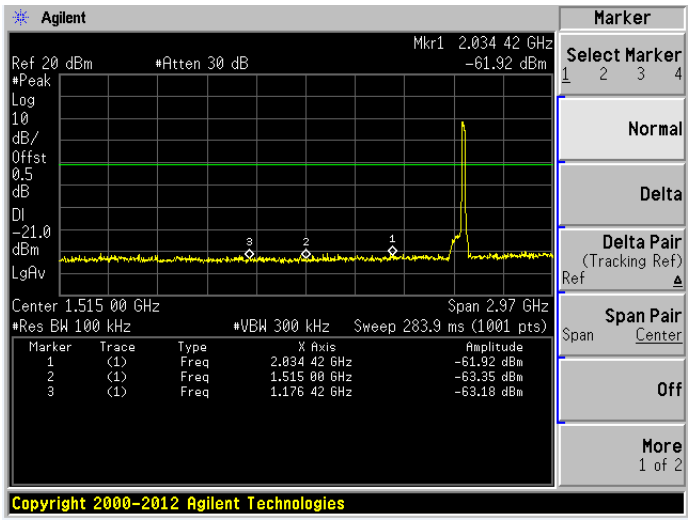
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



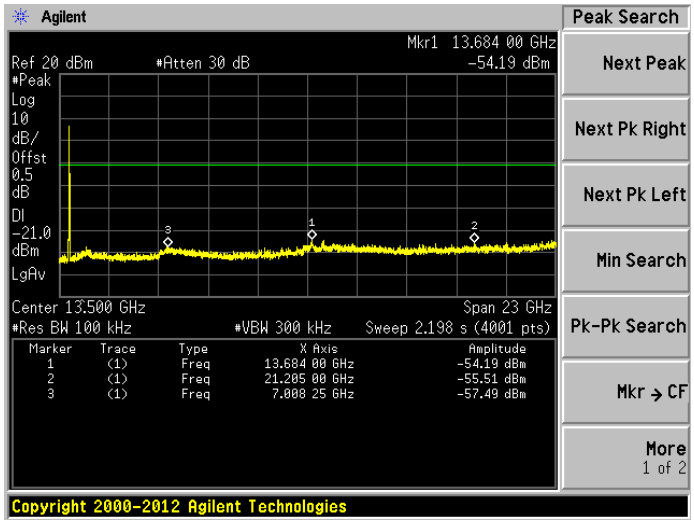
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



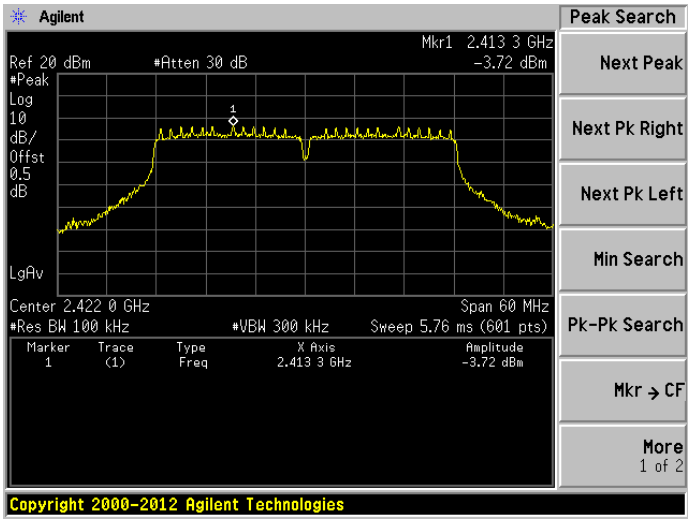
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



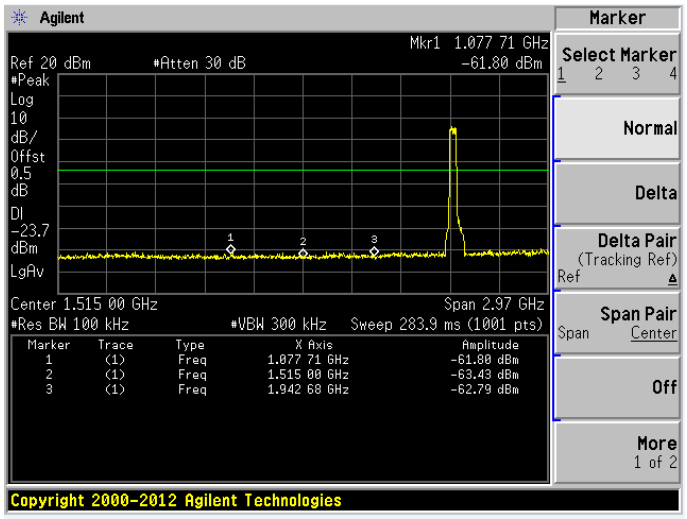
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



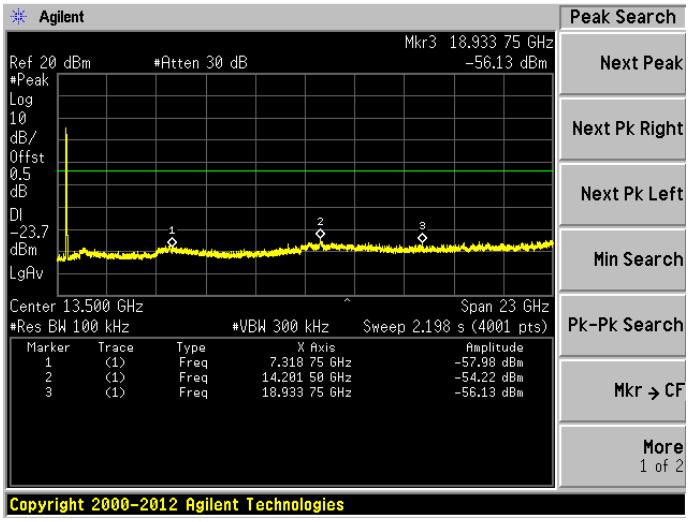
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



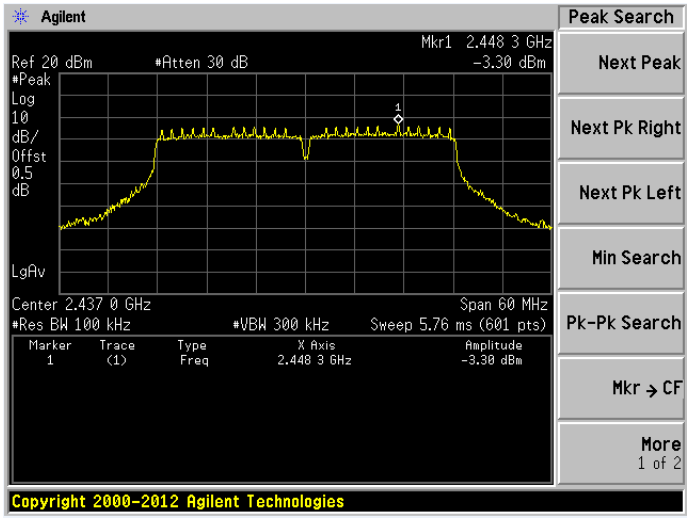
802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



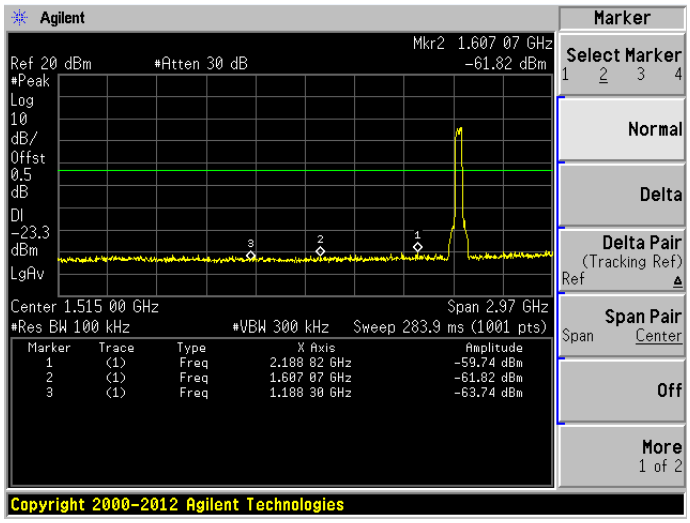
802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



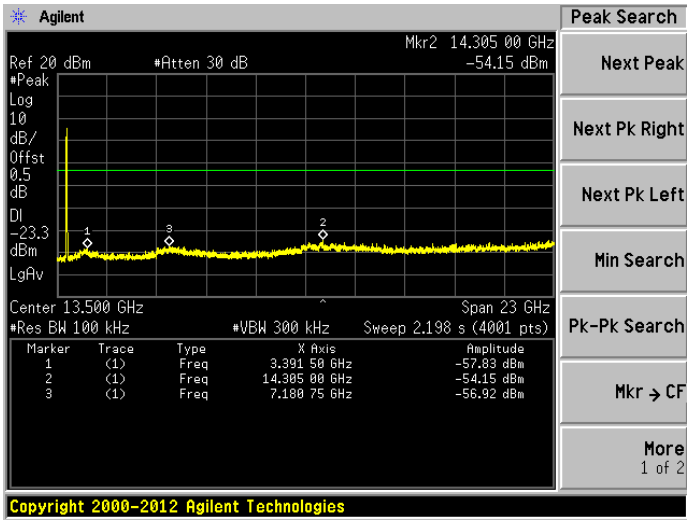
802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



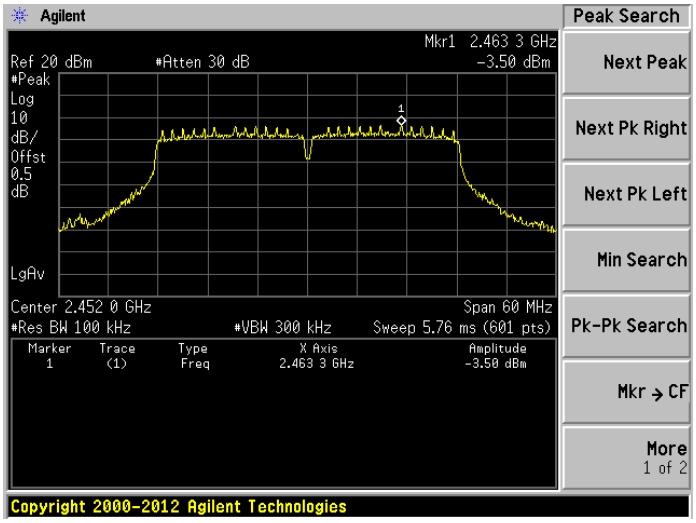
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



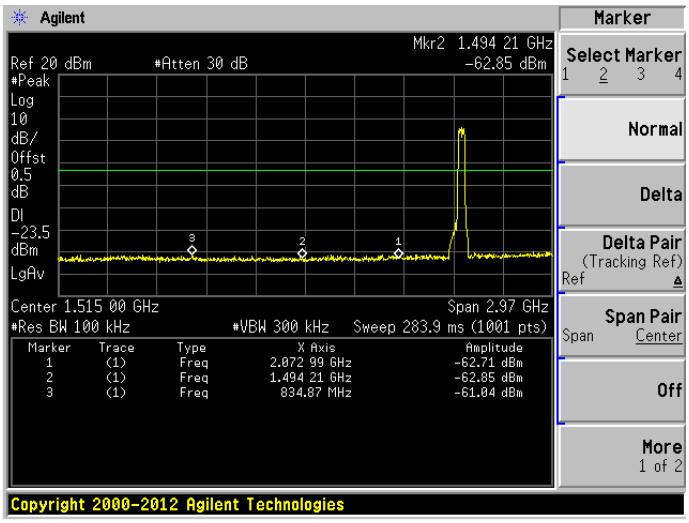
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



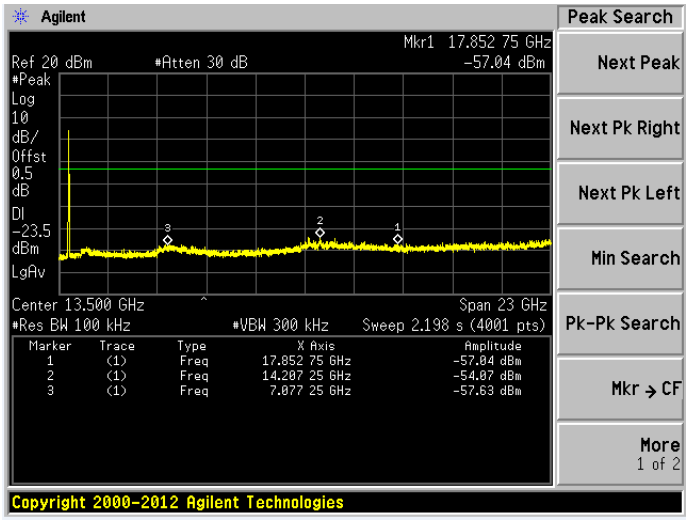
802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



802.11-n40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



A.4 Band Edge (Authorized-band band-edge)

Test Data

The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

802.11b Mode：

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-29.09	7.41	-12.59	-38.16	5.91	-14.09	Pass
High	-43.23	7.83	-12.17	-45.67	6.01	-13.99	Pass

802.11g Mode：

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-29.09	0.45	-19.55	-29.97	-0.69	-20.69	Pass
High	-43.23	1.84	-18.16	-45.6	-0.96	-20.96	Pass

802.11n-20 MHz Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-29.39	0.67	-19.33	-29.94	-0.86	-20.86	Pass
High	-42.67	2.27	-17.73	-45.32	-0.96	-20.96	Pass

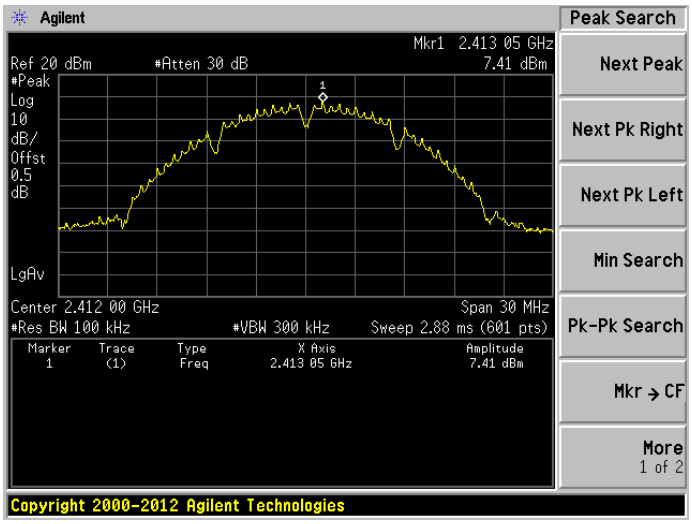
802.11n-40 MHz Mode:

Channel	ANT 0			ANT 1			Verdict
	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Measured Max. Out of Band Emission (dBm)	Limit (dBm)		
		Carrier Level	Calculated 20 dBc Limit		Carrier Level	Calculated 20 dBc Limit	
Low	-26.66	-1.02	-21.02	-28.88	-3.72	-23.72	Pass
High	-41.86	-0.33	-20.33	-44.28	-3.50	-23.50	Pass

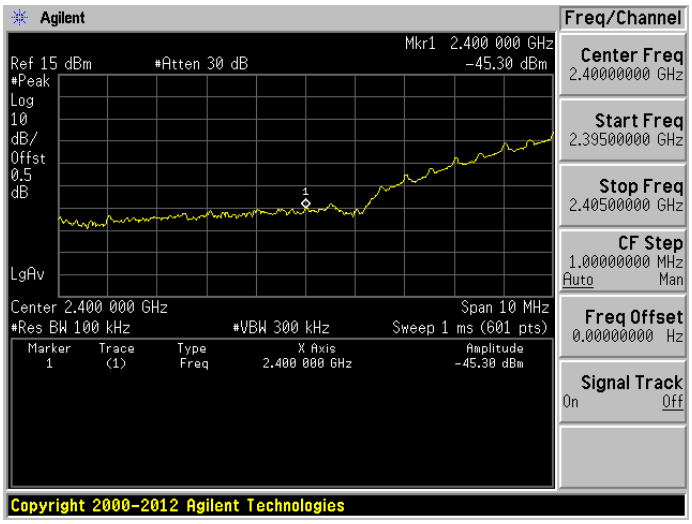
ANT 0

Test Plots

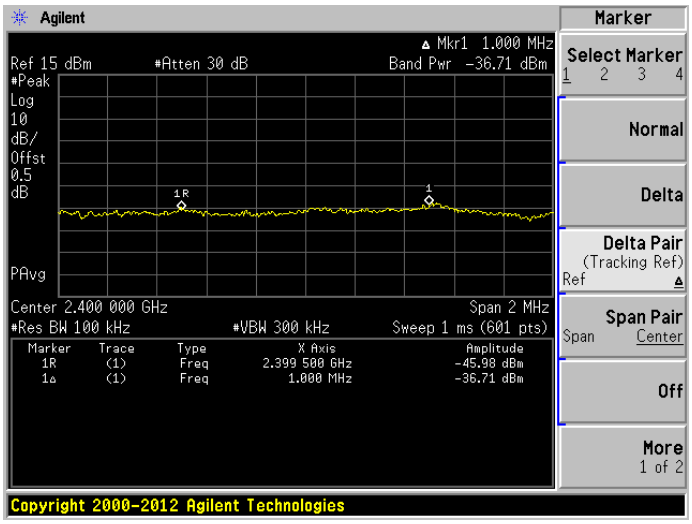
802.11b LOW CHANNEL, Carrier level



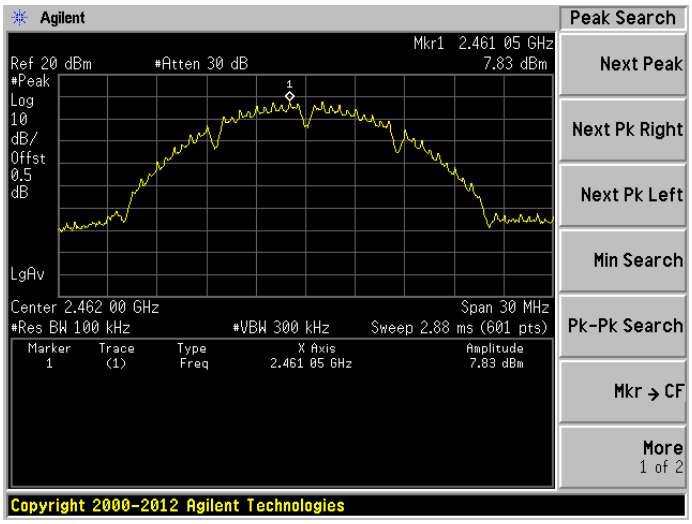
802.11b LOW CHANNEL, Reference level



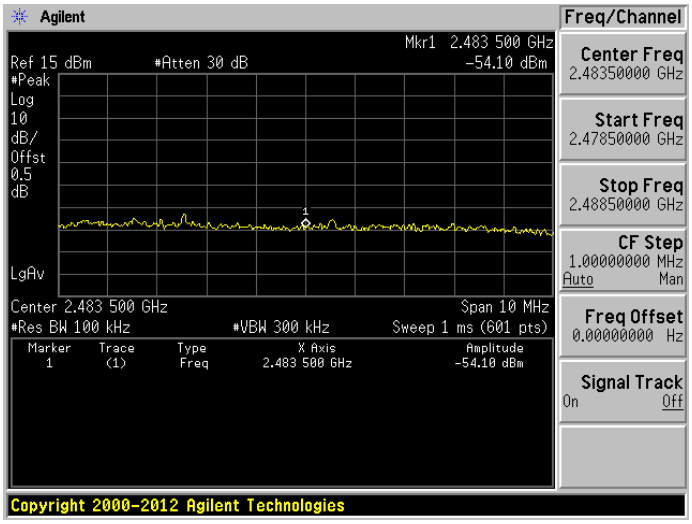
802.11b LOW CHANNEL, Band Edge



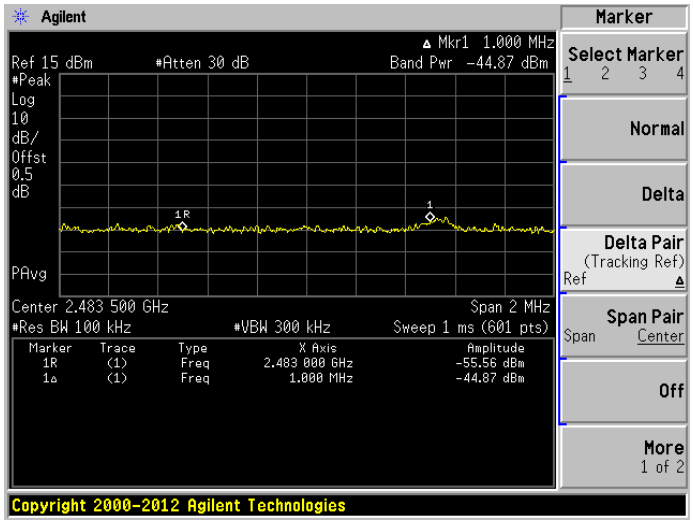
802.11b HIGH CHANNEL, Carrier level



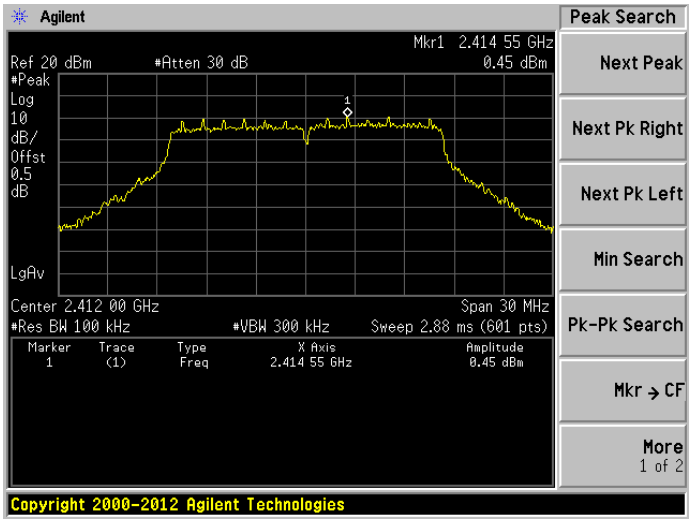
802.11b HIGH CHANNEL, Reference level



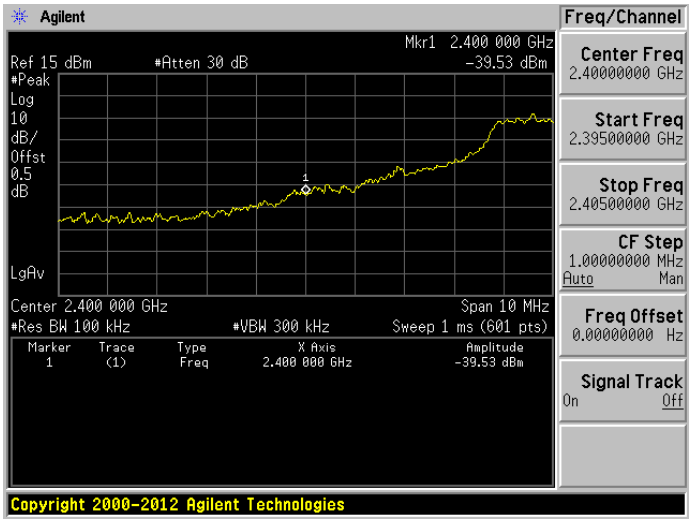
802.11b HIGH CHANNEL, Band Edge



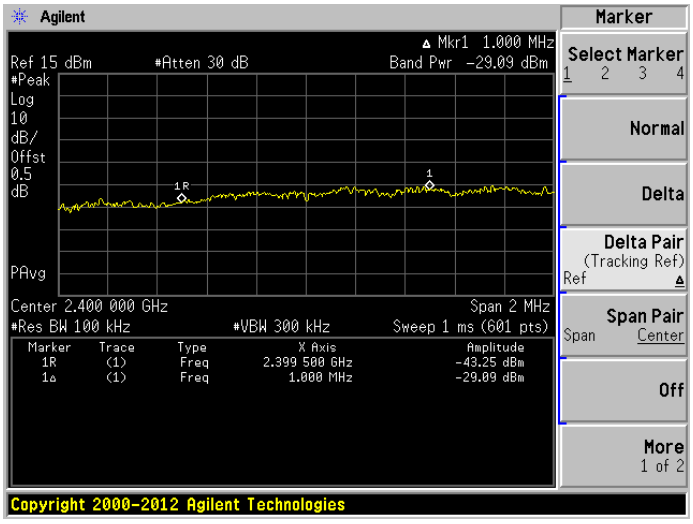
802.11g LOW CHANNEL, Carrier level



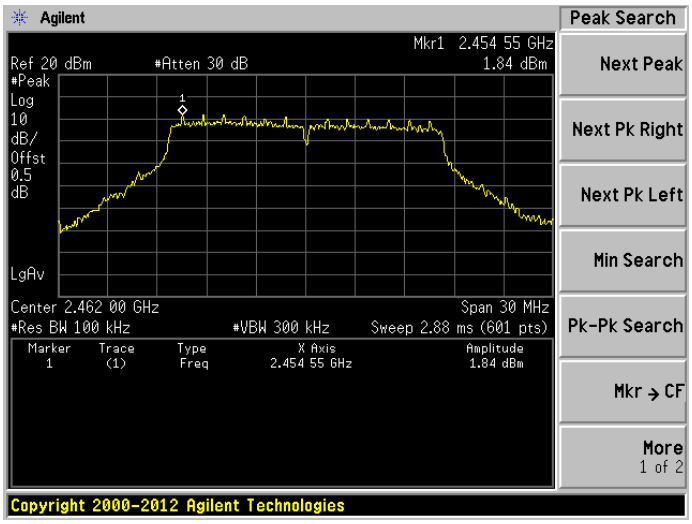
802.11g LOW CHANNEL, Reference level



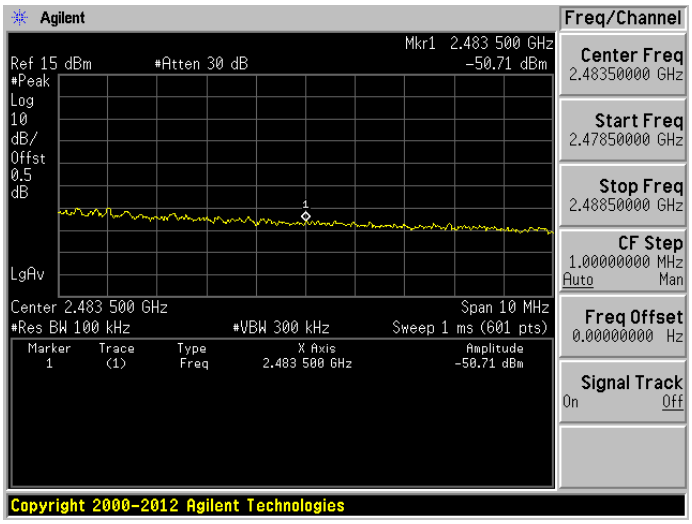
802.11g LOW CHANNEL, Band Edge



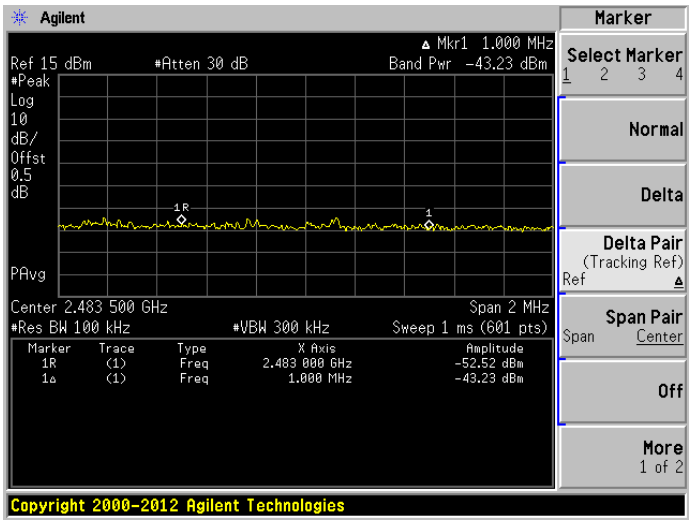
802.11g HIGH CHANNEL, Carrier level



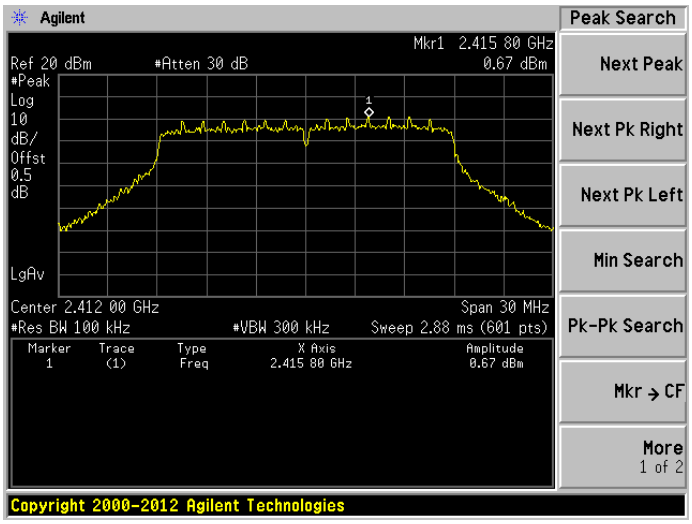
802.11g HIGH CHANNEL, Reference level



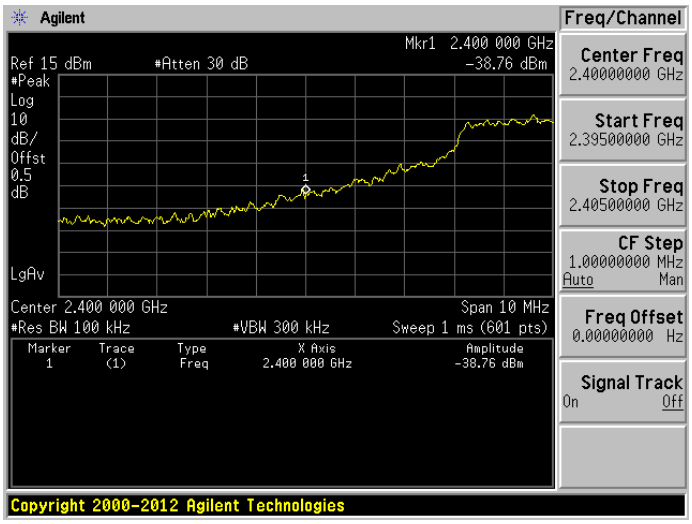
802.11g HIGH CHANNEL, Band Edge



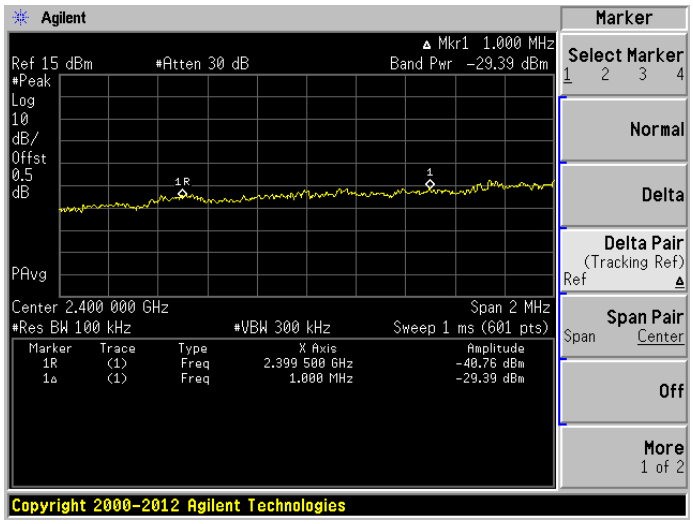
802.11n-20 MHz LOW CHANNEL, Carrier level



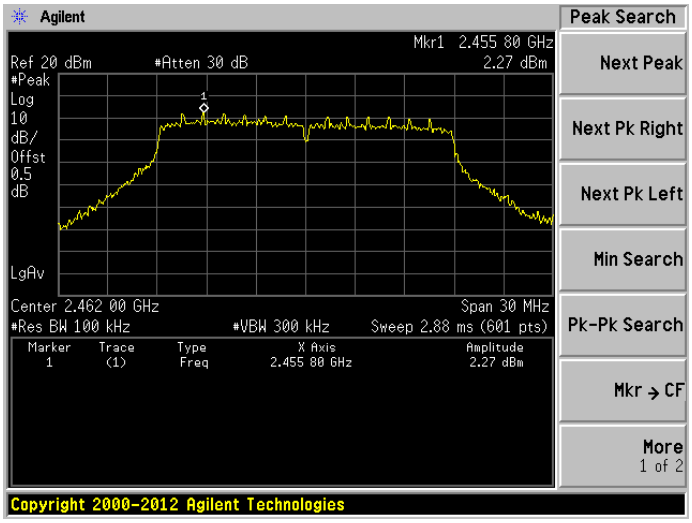
802.11n-20 MHz LOW CHANNEL, Reference level



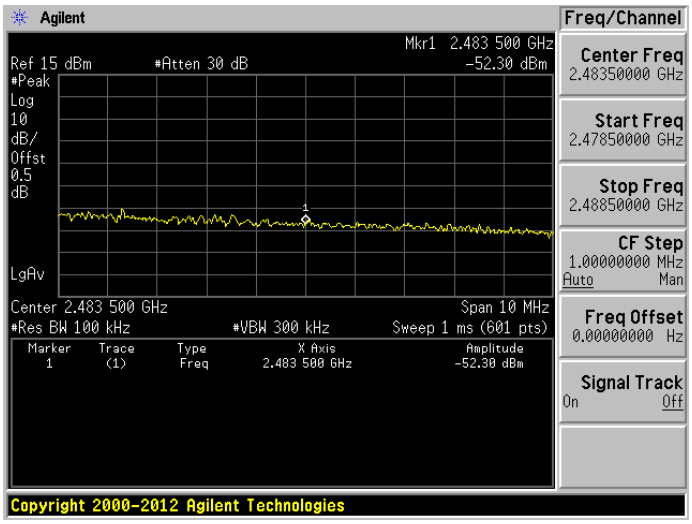
802.11n-20 MHz LOW CHANNEL, Band Edge



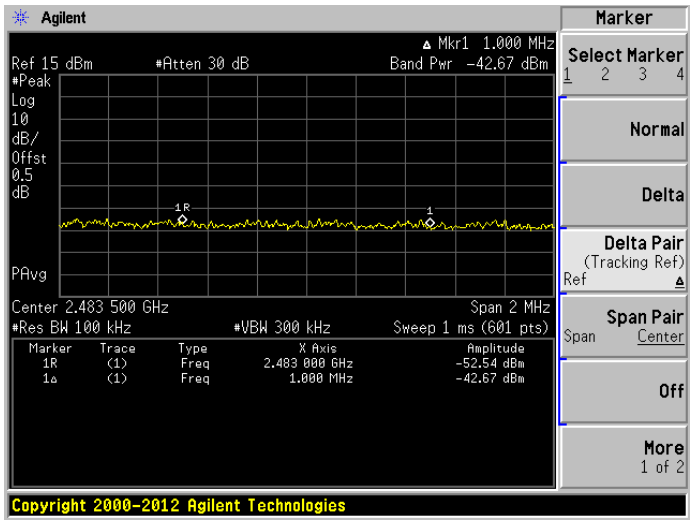
802.11n-20 MHz HIGH CHANNEL, Carrier level



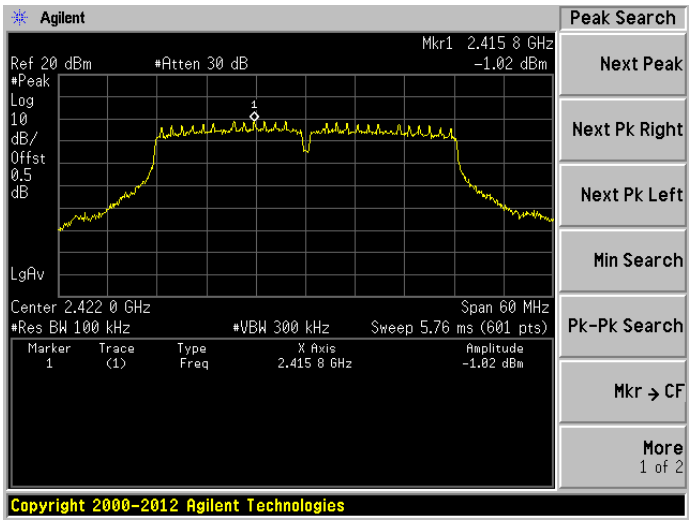
802.11n-20 MHz HIGH CHANNEL, Reference level



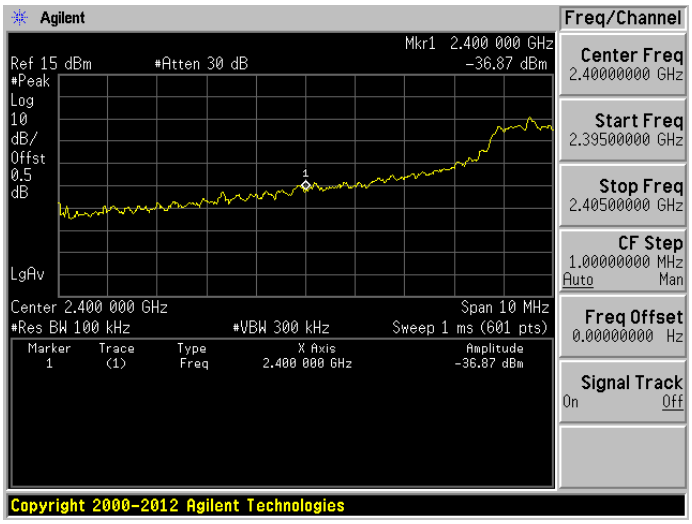
802.11n-20 MHz HIGH CHANNEL, Band Edge



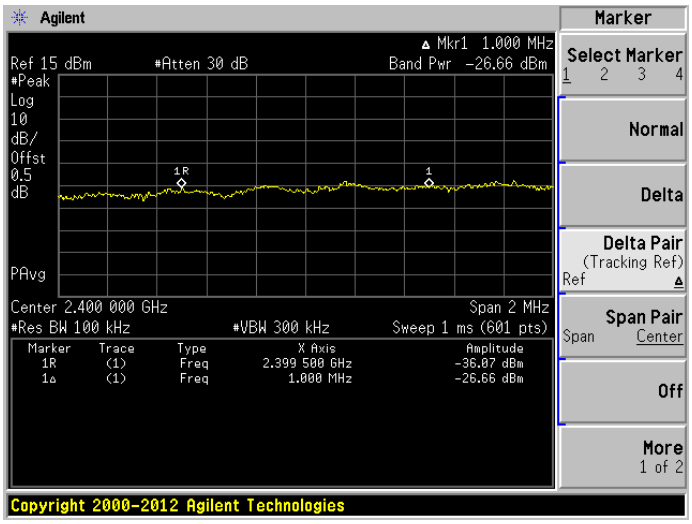
802.11n-40 MHz LOW CHANNEL, Carrier level



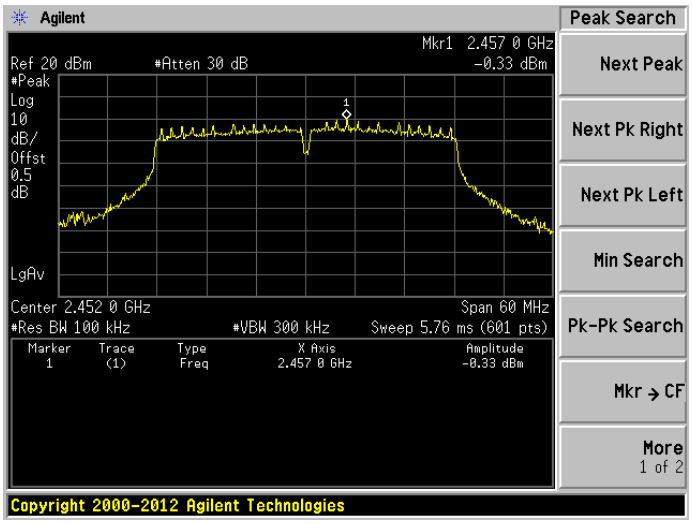
802.11n-40 MHz LOW CHANNEL, Reference level



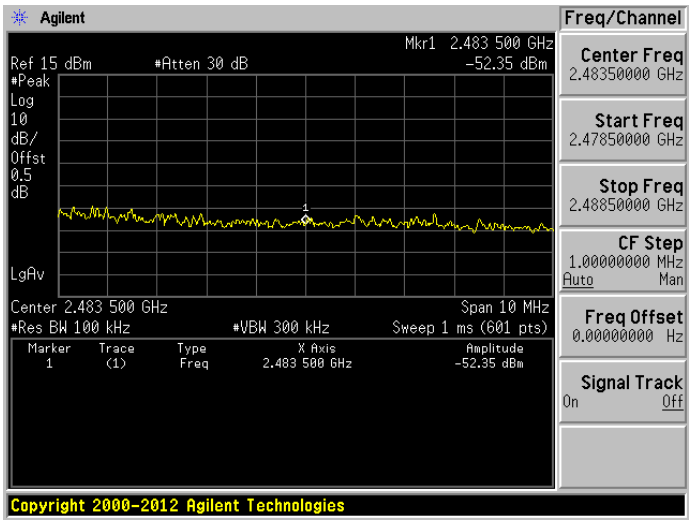
802.11n-40 MHz LOW CHANNEL, Band Edge



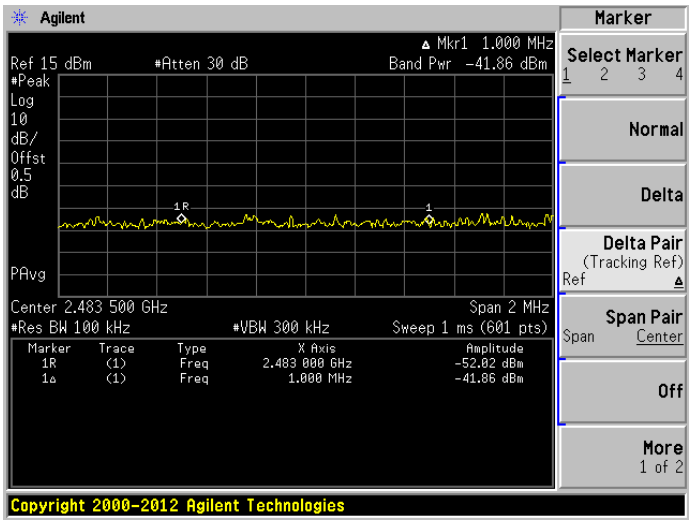
802.11n-40 MHz HIGH CHANNEL, Carrier level



802.11n-40 MHz HIGH CHANNEL, Reference level



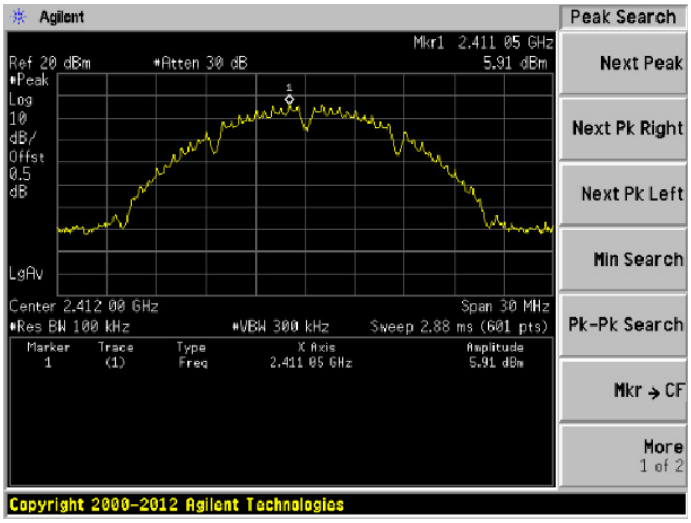
802.11n-40 MHz HIGH CHANNEL, Band Edge



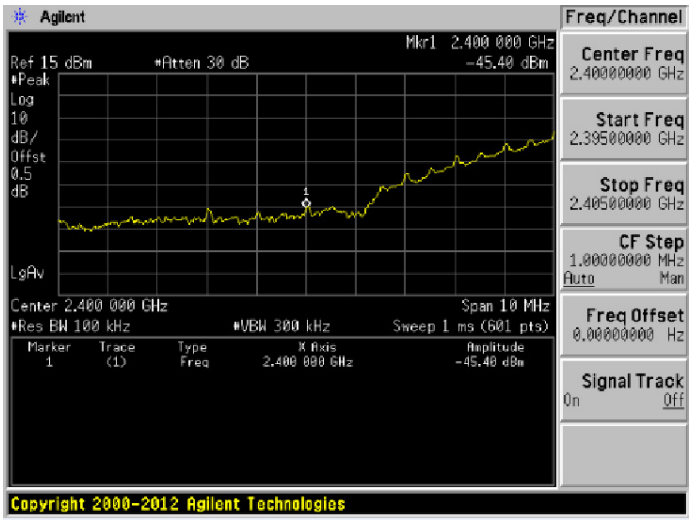
ANT 1

Test Plots

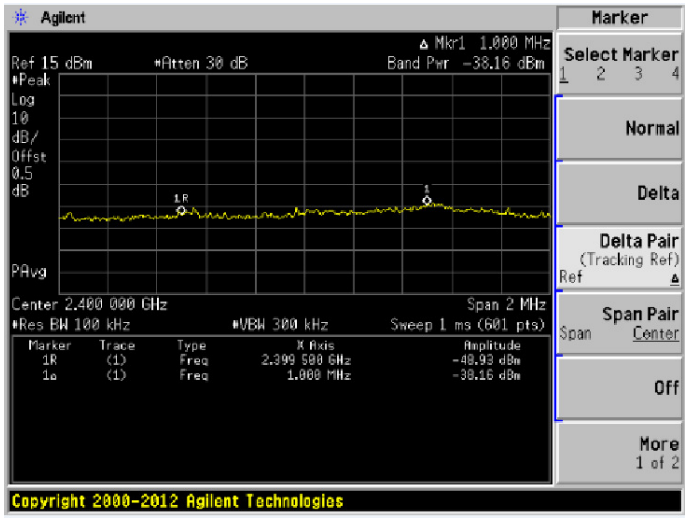
802.11b LOW CHANNEL, Carrier level



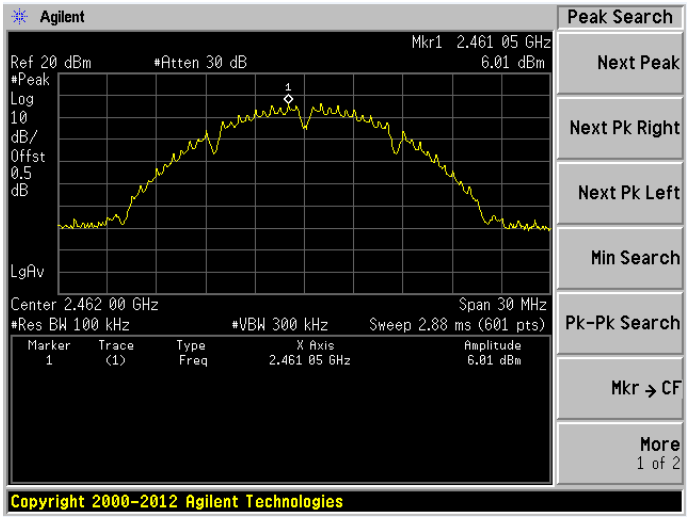
802.11b LOW CHANNEL, Reference level



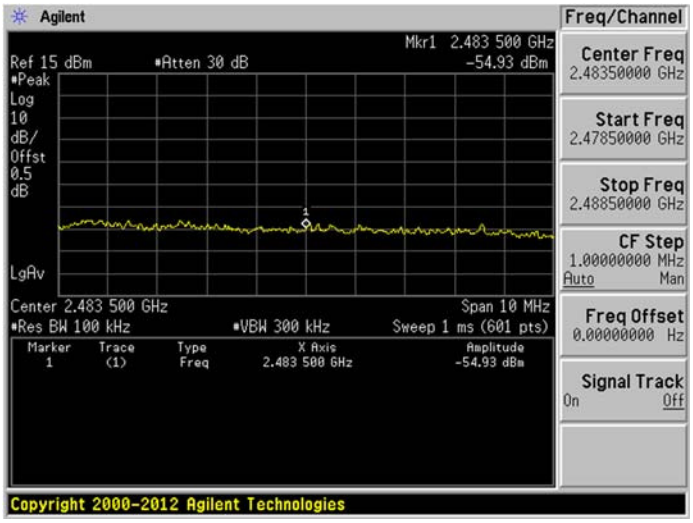
802.11b LOW CHANNEL, Band Edge



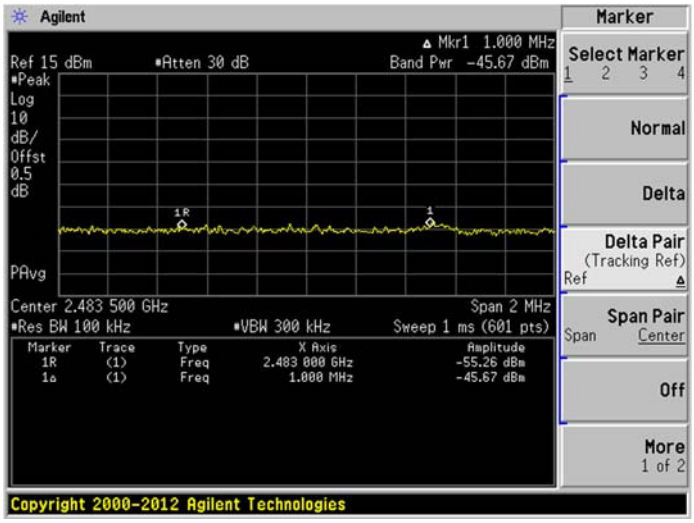
802.11b HIGH CHANNEL, Carrier level



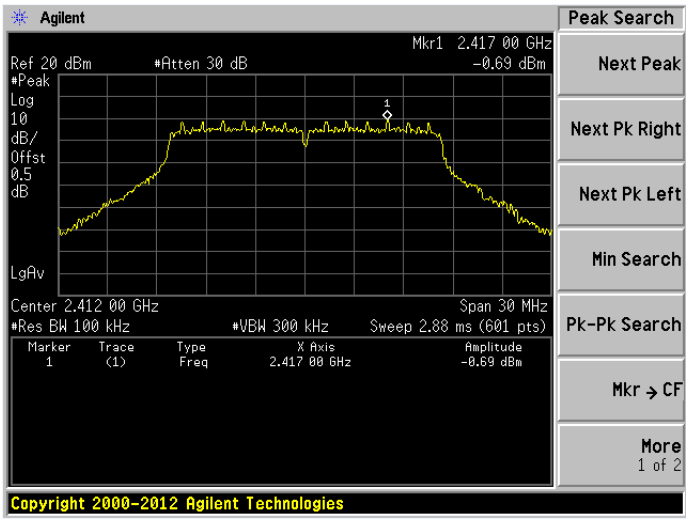
802.11b HIGH CHANNEL, Reference level



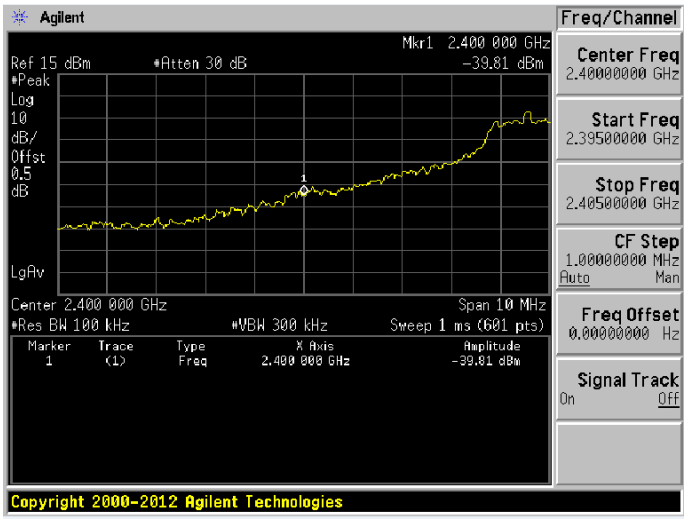
802.11b HIGH CHANNEL, Band Edge



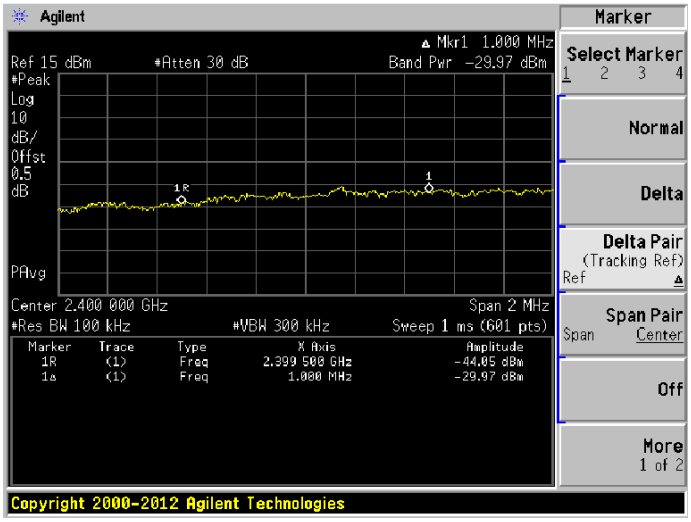
802.11g LOW CHANNEL, Carrier level



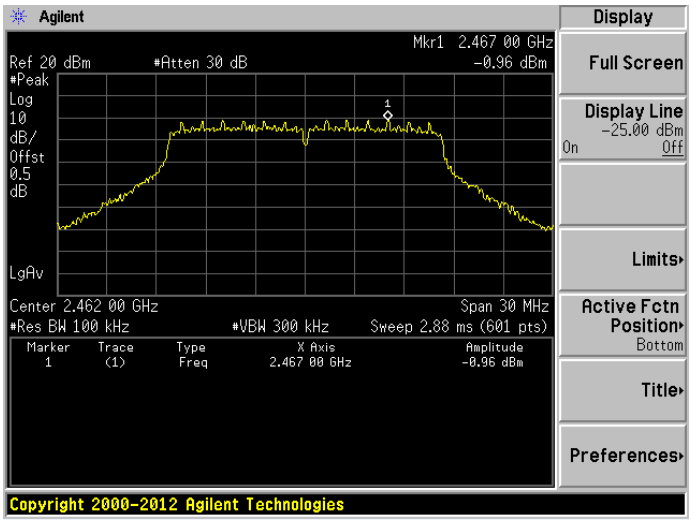
802.11g LOW CHANNEL, Reference level



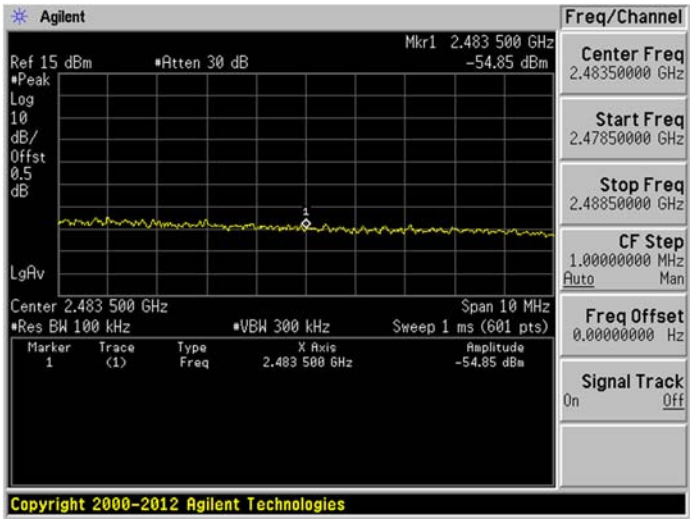
802.11g LOW CHANNEL, Band Edge



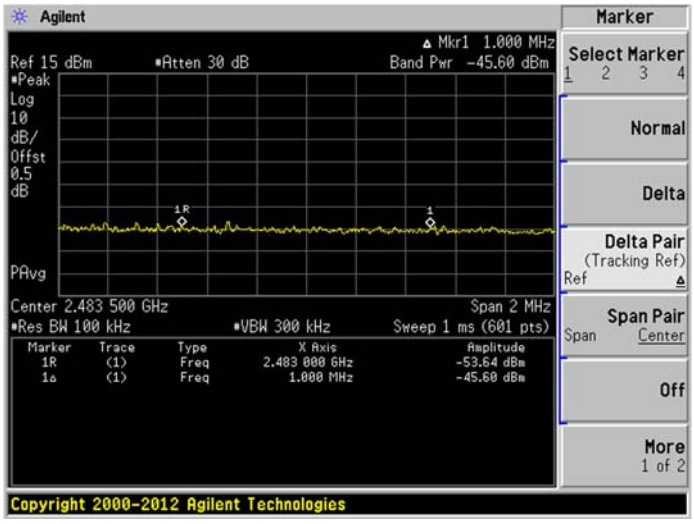
802.11g HIGH CHANNEL, Carrier level



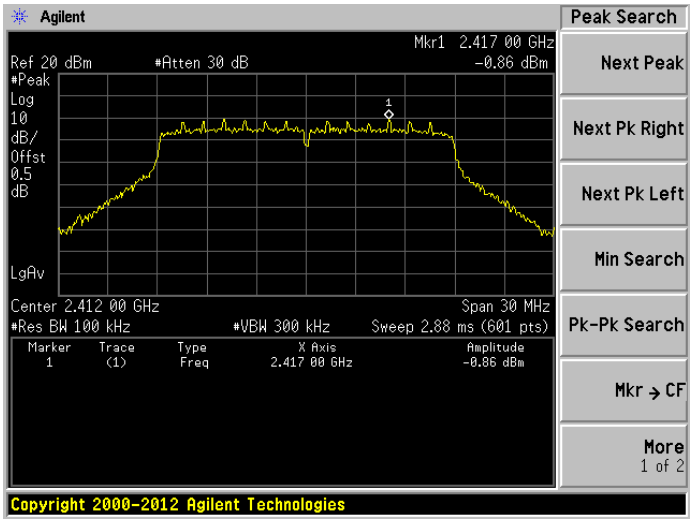
802.11g HIGH CHANNEL, Reference level



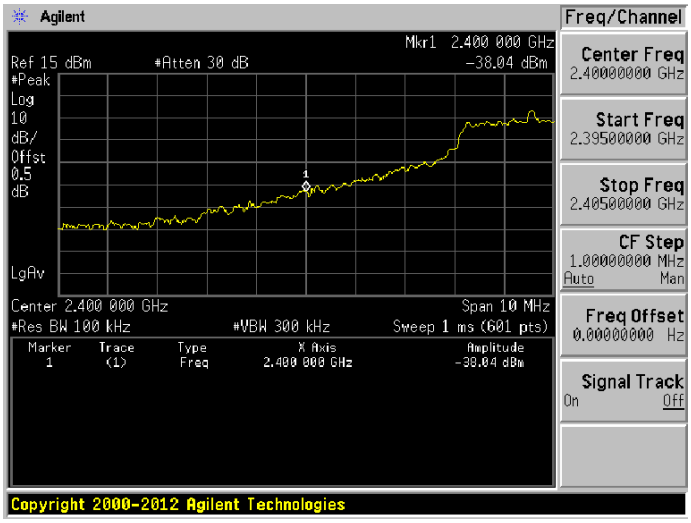
802.11g HIGH CHANNEL, Band Edge



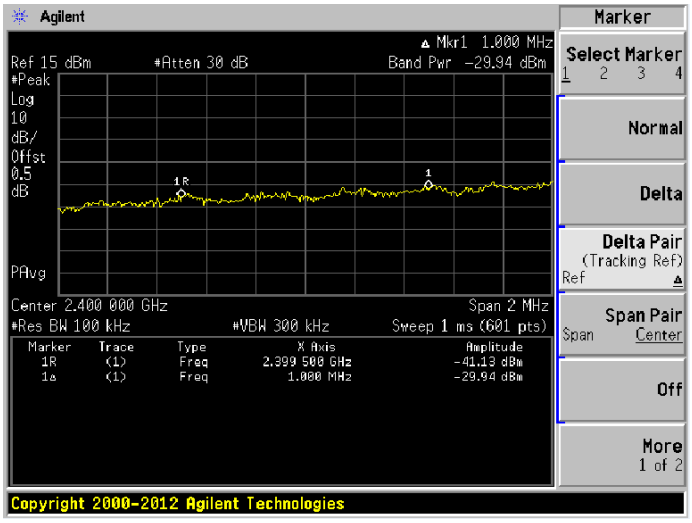
802.11n-20 MHz LOW CHANNEL, Carrier level



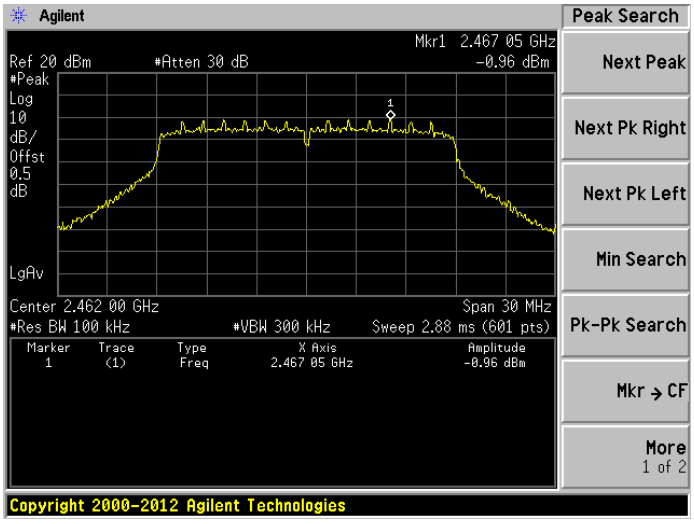
802.11n-20 MHz LOW CHANNEL, Reference level



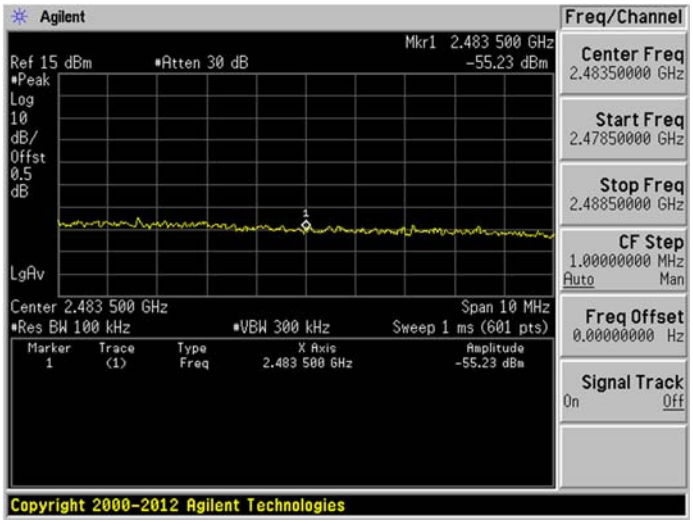
802.11n-20 MHz LOW CHANNEL, Band Edge



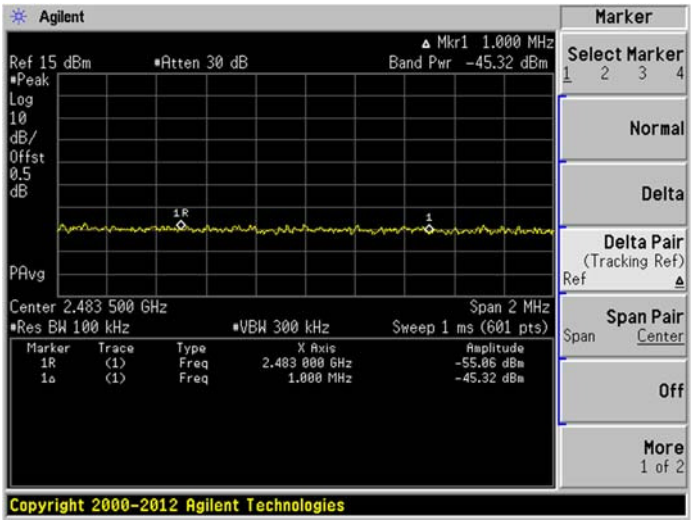
802.11n-20 MHz HIGH CHANNEL, Carrier level



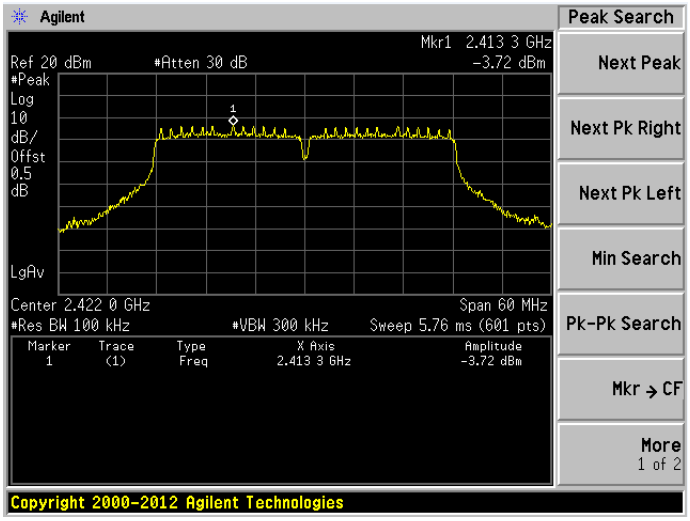
802.11n-20 MHz HIGH CHANNEL, Reference level



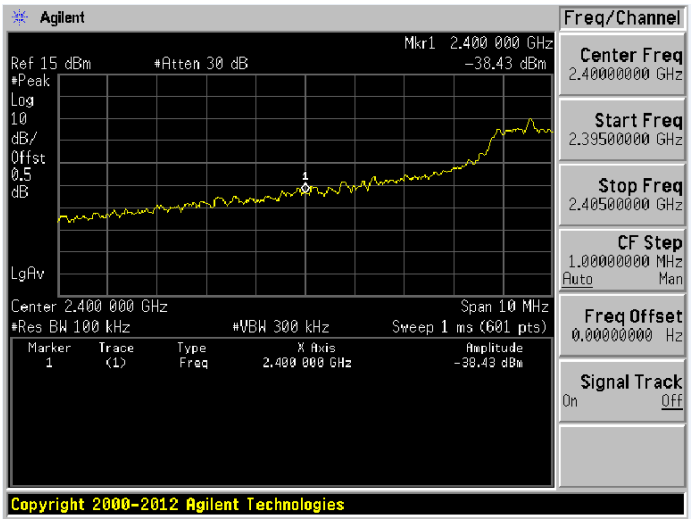
802.11n-20 MHz HIGH CHANNEL, Band Edge



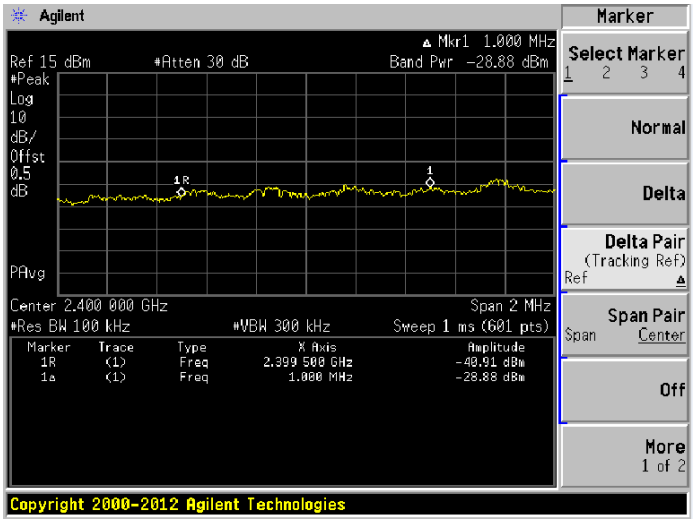
802.11n-40 MHz LOW CHANNEL, Carrier level



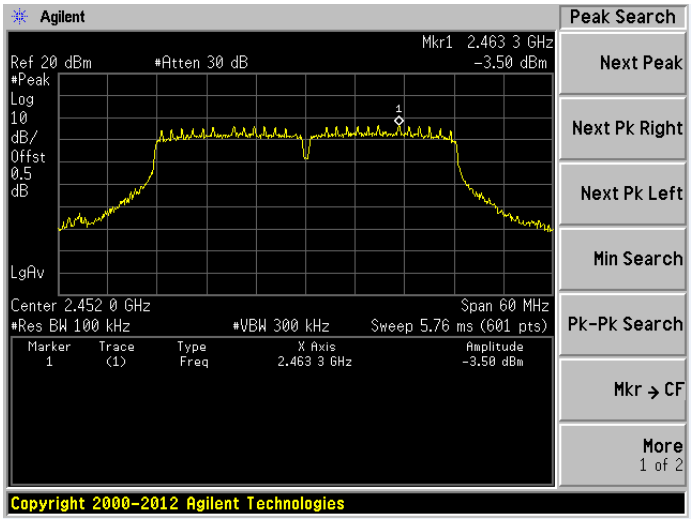
802.11n-40 MHz LOW CHANNEL, Reference level



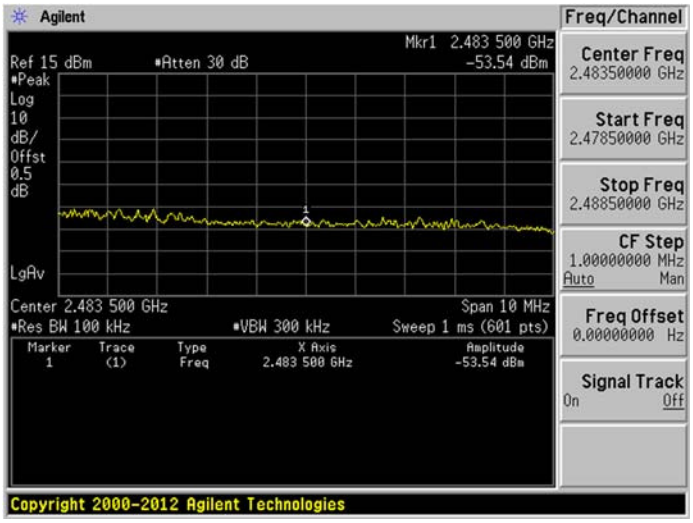
802.11n-40 MHz LOW CHANNEL, Band Edge



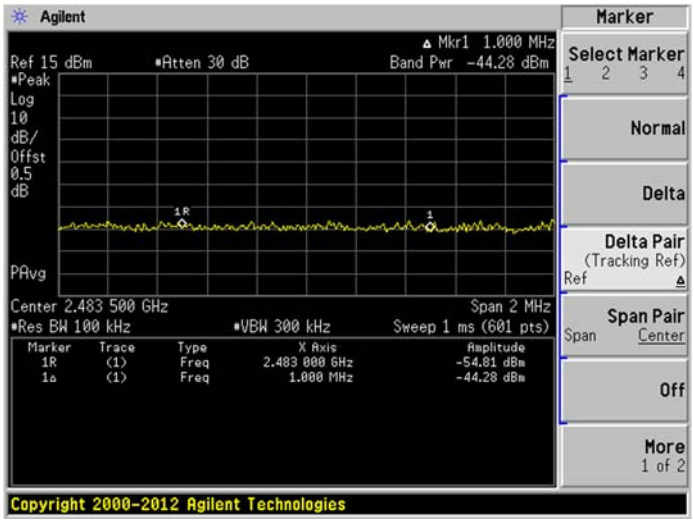
802.11n-40 MHz HIGH CHANNEL, Carrier level



802.11n-40 MHz HIGH CHANNEL, Reference level



802.11n-40 MHz HIGH CHANNEL, Band Edge

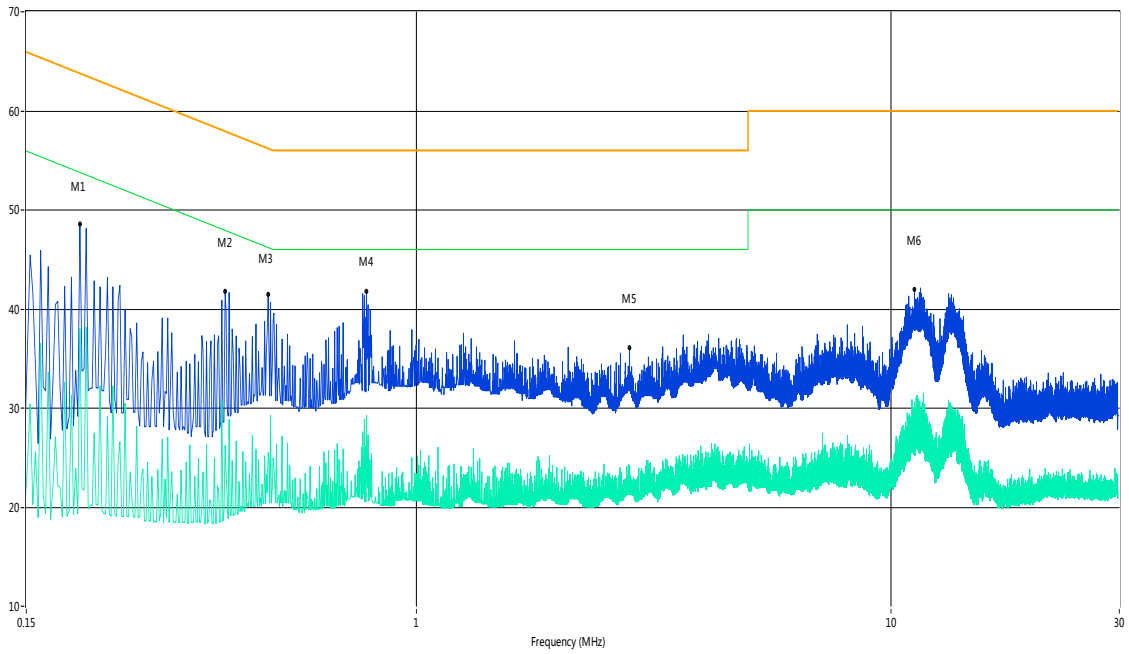


A.5 Conducted Emissions

Note: All configurations have been tested, only the worst configuration (802.11b High Channel) shown here.
Note 2: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

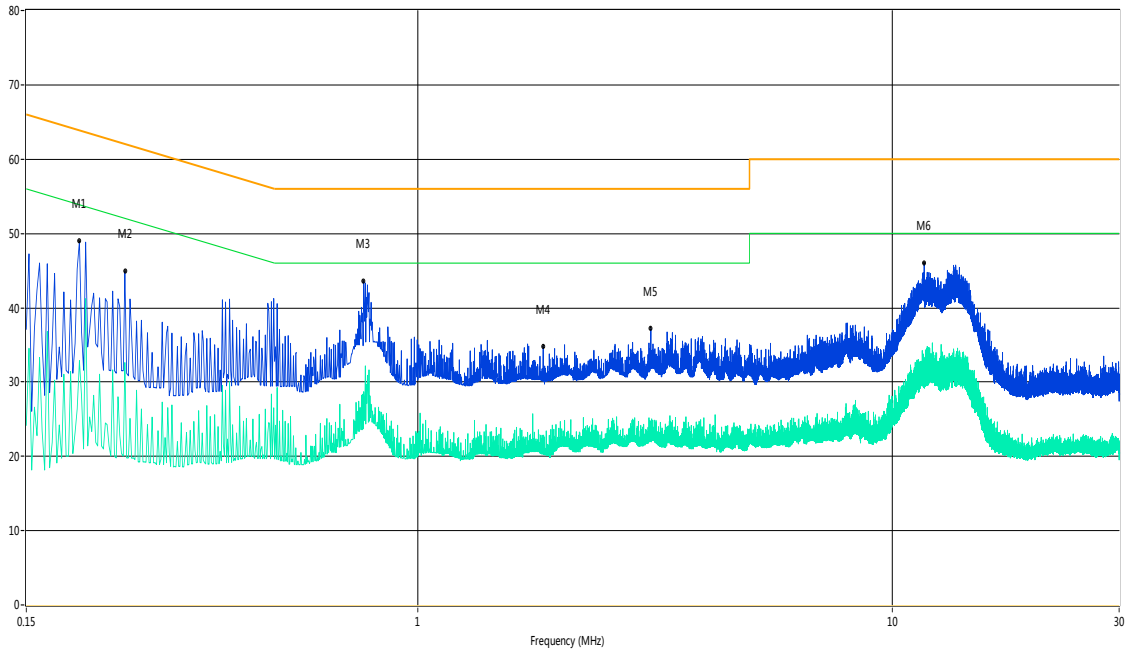
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.20	48.6	11.00	64.7	16.10	Peak	L Line	Pass
1**	0.20	38.0	11.00	54.7	16.70	AV	L Line	Pass
2	0.40	41.8	11.00	59.0	17.20	Peak	L Line	Pass
2**	0.40	26.2	11.00	49.0	22.80	AV	L Line	Pass
3	0.49	41.4	11.00	56.3	14.90	Peak	L Line	Pass
3**	0.49	25.5	11.00	46.3	20.80	AV	L Line	Pass
4	0.79	41.8	11.00	56.0	14.20	Peak	L Line	Pass
4**	0.79	29.3	11.00	46.0	16.70	AV	L Line	Pass
5	2.81	36.1	11.00	56.0	19.90	Peak	L Line	Pass
5**	2.81	24.2	11.00	46.0	21.80	AV	L Line	Pass
6	11.21	42.0	11.00	60.0	18.00	Peak	L Line	Pass
6**	11.21	30.6	11.00	50.0	19.40	AV	L Line	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.19	49.0	11.00	64.7	15.70	Peak	N Line	Pass
1**	0.19	32.9	11.00	54.7	21.80	AV	N Line	Pass
2	0.24	44.9	11.00	63.4	18.50	Peak	N Line	Pass
2**	0.24	32.6	11.00	53.4	20.80	AV	N Line	Pass
3	0.77	43.6	11.00	56.0	12.40	Peak	N Line	Pass
3**	0.77	28.7	11.00	46.0	17.30	AV	N Line	Pass
4	1.84	34.8	11.00	56.0	21.20	Peak	N Line	Pass
4**	1.84	22.8	11.00	46.0	23.20	AV	N Line	Pass
5	3.10	37.2	11.00	56.0	18.80	Peak	N Line	Pass
5**	3.10	24.8	11.00	46.0	21.20	AV	N Line	Pass
6	11.66	46.0	11.00	60.0	14.00	Peak	N Line	Pass
6**	11.66	32.8	11.00	50.0	17.20	AV	N Line	Pass

A.6 Radiated Emission

Note: The worst test data of each ports are below the limit 3db, So the total value of the two test antenna ports compliance with the limits.

ANT 0

Antenna-port Conducted test data

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + The appropriate maximum ground reflection factor (dB)

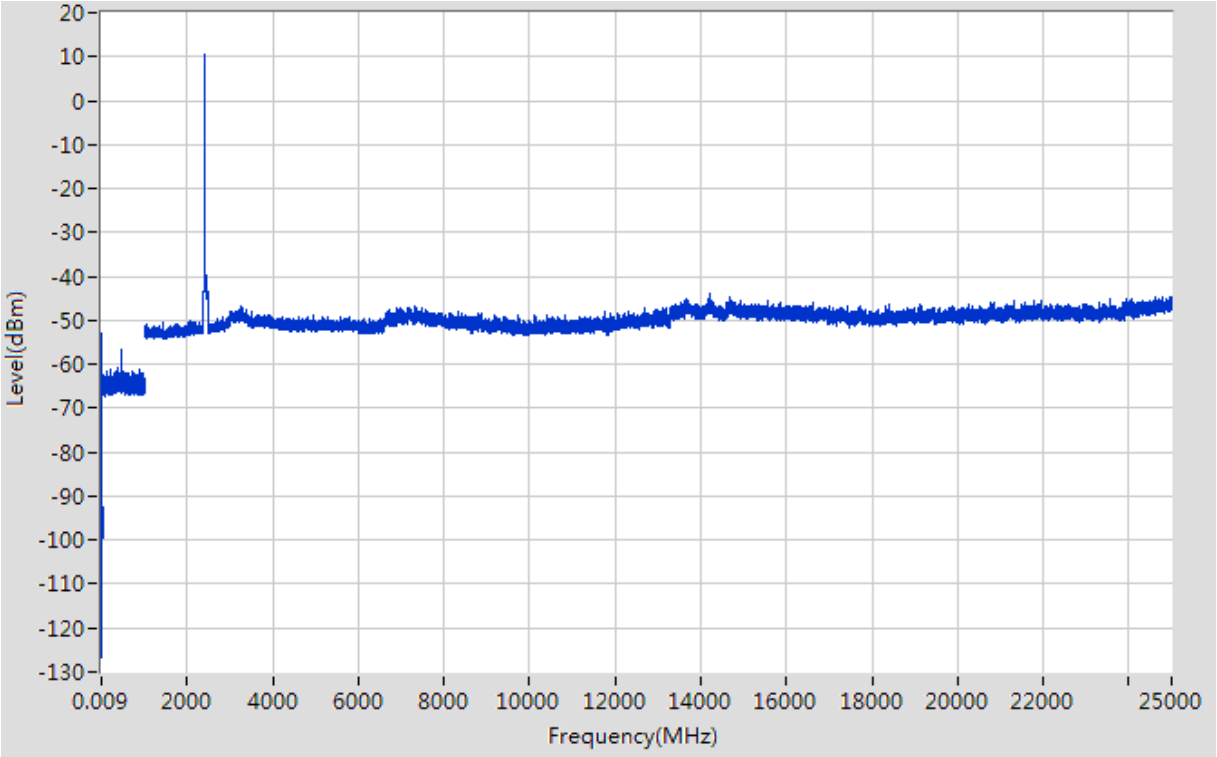
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11b: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.016	-86.35	6	3	2	QP	16.907	87.727	70.82	Note 2	Pass
3.001	-53.12	6	3	2	QP	50.137	87.727	37.59	Note 2	Pass
451.29	-56.72	4.7	3	2	QP	45.237	87.727	42.49	Note 2	Pass
876.475	-61.07	4.7	3	2	QP	40.887	87.727	46.84	Note 2	Pass
2412.706	10.47	0	3	2	PK	107.727	N/A	N/A	Note 1	N/A
	10.44		3	2	AV	107.692	N/A	N/A		N/A
3271.09	-46.79	0	3	2	PK	50.467	87.727	37.26	Note 2	Pass
	N/A		3	2	AV	N/A	67.727	N/A		Pass
14219.003	-44	0	3	2	PK	53.257	87.727	34.47	Note 2	Pass
	N/A		3	2	AV	N/A	67.727	N/A		Pass

Test Plots

LOW CHANNEL



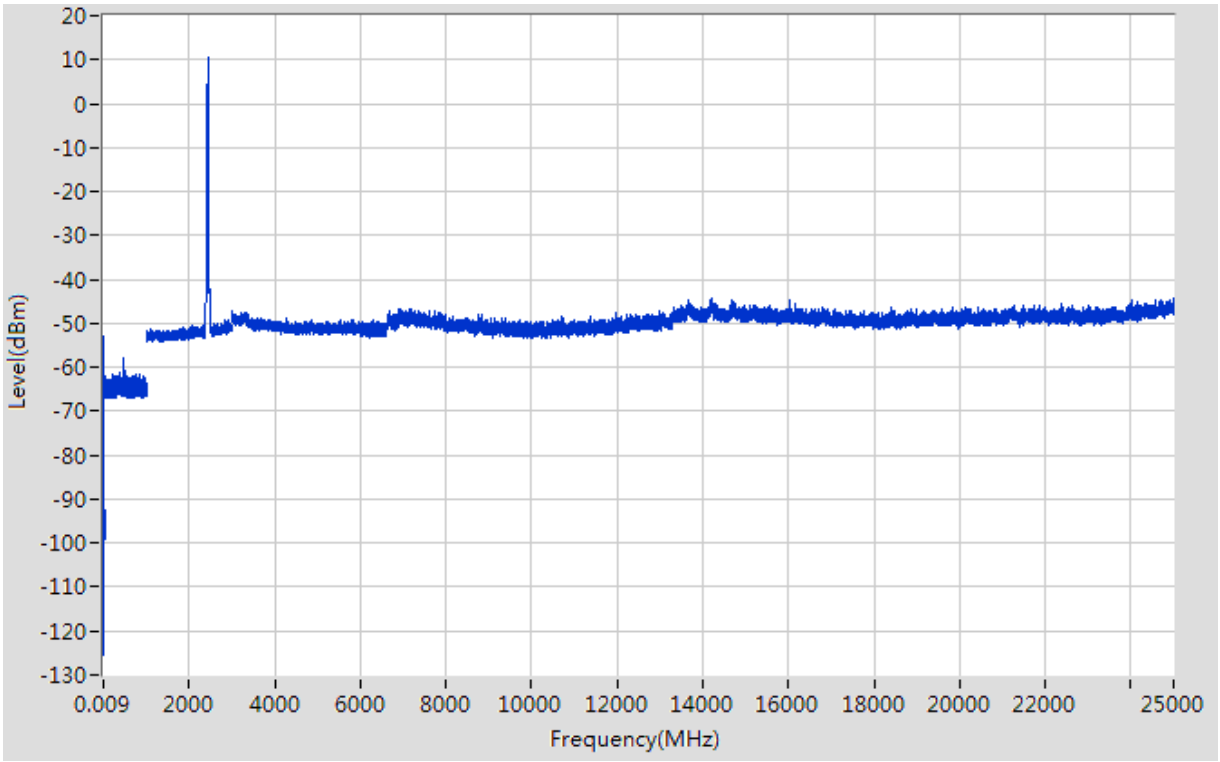
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11b: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-85.65	6	3	2	QP	17.607	87.687	70.08	Note 2	Pass
3.001	-52.87	6	3	2	QP	50.387	87.687	37.3	Note 2	Pass
476.295	-58.06	4.7	3	2	QP	43.897	87.687	43.79	Note 2	Pass
509.902	-60.94	4.7	3	2	QP	41.017	87.687	46.67	Note 2	Pass
2436.718	10.43	0	3	2	PK	107.687	N/A	N/A	Note 1	N/A
	10.39		3	2	AV	107.653	N/A	N/A		N/A
3013.004	-47.24	0	3	2	PK	50.017	87.687	37.67	Note 2	Pass
	N/A		3	2	AV	N/A	67.687	N/A		Pass
14202.001	-44.16	0	3	2	PK	53.097	87.687	34.59	Note 2	Pass
	N/A		3	2	AV	N/A	67.687	N/A		Pass

Test Plots

MIDDLE CHANNEL



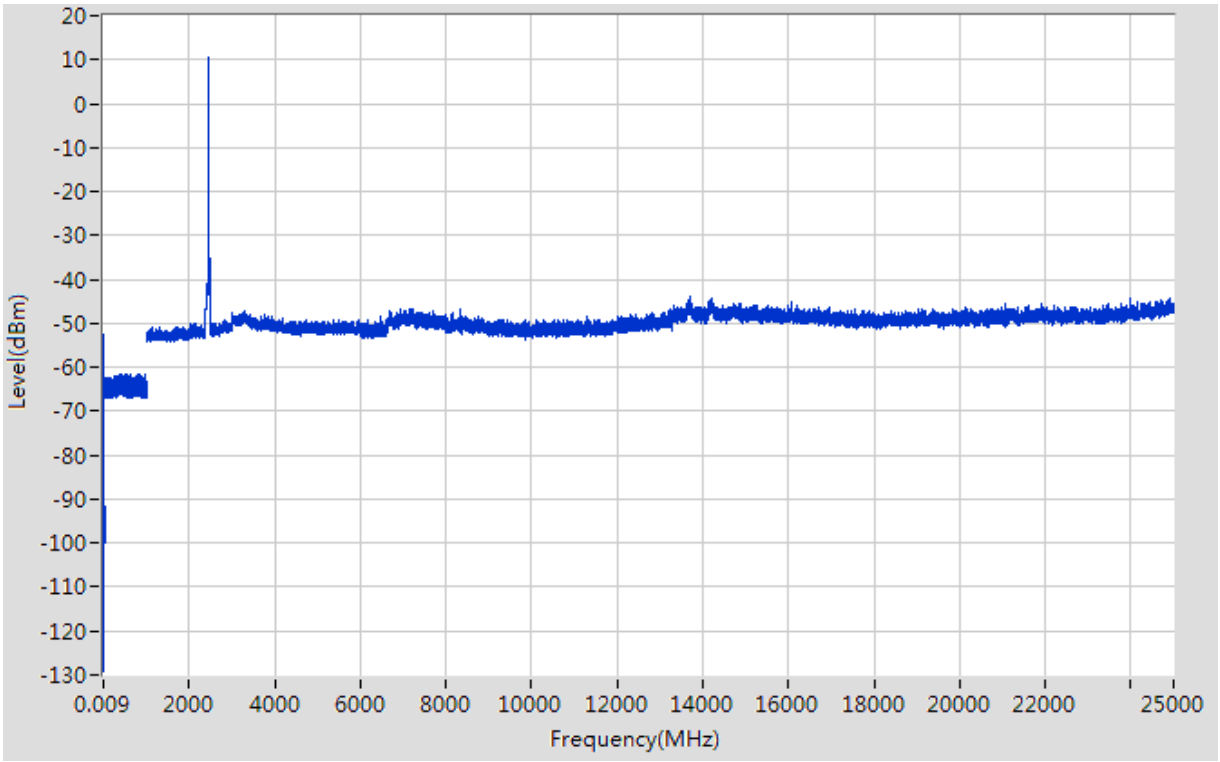
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11b: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.118	-87.27	6	3	2	QP	15.99	87.93	71.94	Note 2	Pass
3.001	-52.44	6	3	2	QP	50.82	87.93	37.11	Note 2	Pass
403.98	-61.63	4.7	3	2	QP	40.33	46.00	5.67	Note 2	Pass
952.891	-61.53	4.7	3	2	QP	40.43	87.93	47.50	Note 2	Pass
2460.73	10.67	0	3	2	PK	107.93	N/A	N/A	Note 1	N/A
	10.64		3	2	AV	107.89	N/A	N/A		N/A
3292.097	-47.28	0	3	2	PK	49.98	87.93	37.95	Note 2	Pass
	N/A		3	2	AV	N/A	67.93	N/A	Note 3	Pass
13700.94	-43.72	0	3	2	PK	53.54	87.93	34.39	Note 2	Pass
	N/A		3	2	AV	N/A	67.93	N/A	Note 3	Pass

Test Plots

HIGH CHANNEL



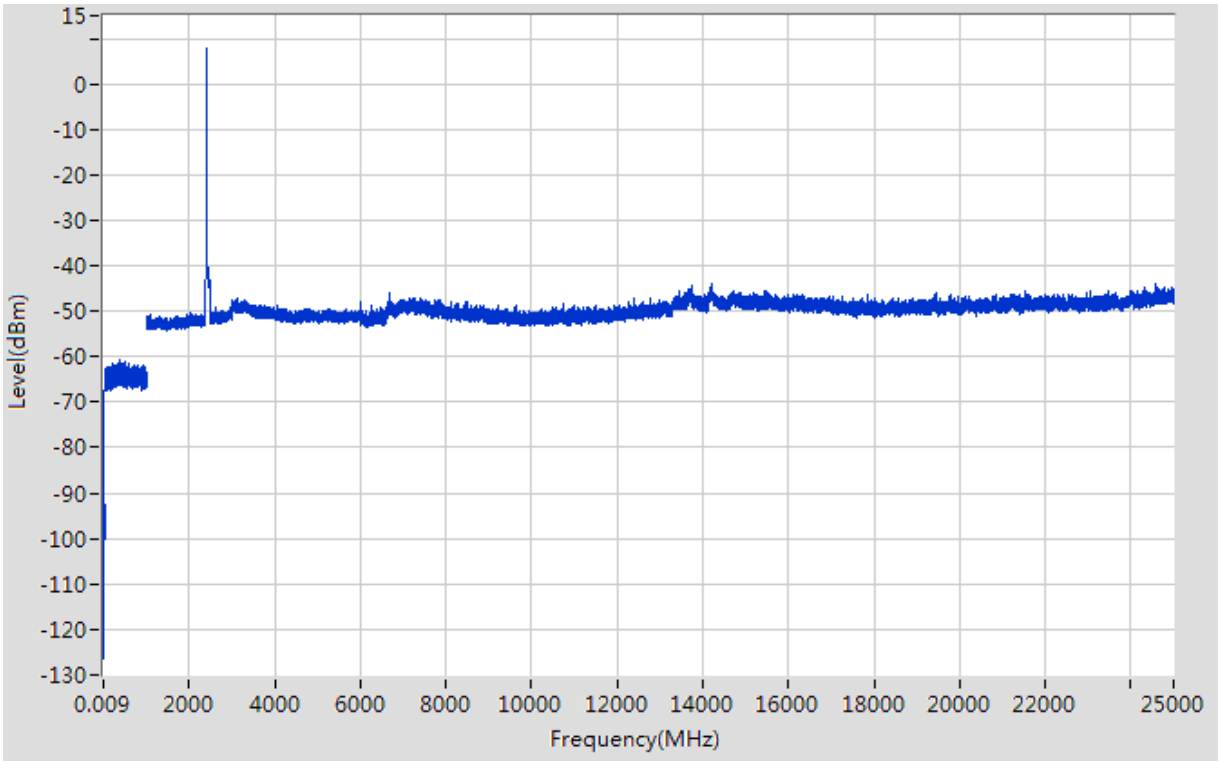
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11g: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.047	-87.22	6	3	2	QP	16.037	85.237	69.2	Note 2	Pass
9.753	-67.47	6	3	2	QP	35.787	85.237	49.45	Note 2	Pass
359.97	-60.79	4.7	3	2	QP	41.167	85.237	44.07	Note 2	Pass
579.016	-61.61	4.7	3	2	QP	40.347	85.237	44.89	Note 2	Pass
2415.708	7.98	0	3	2	PK	105.237	N/A	N/A	Note 1	N/A
	7.64		3	2	AV	104.904	N/A	N/A		N/A
3127.042	-46.98	0	3	2	PK	50.277	85.237	34.96	Note 2	Pass
	N/A		3	2	AV	N/A	65.237	N/A		Pass
24589.843	-43.9	0	3	2	PK	53.357	85.237	31.88	Note 2	Pass
	N/A		3	2	AV	N/A	65.237	N/A		Pass

Test Plots

LOW CHANNEL



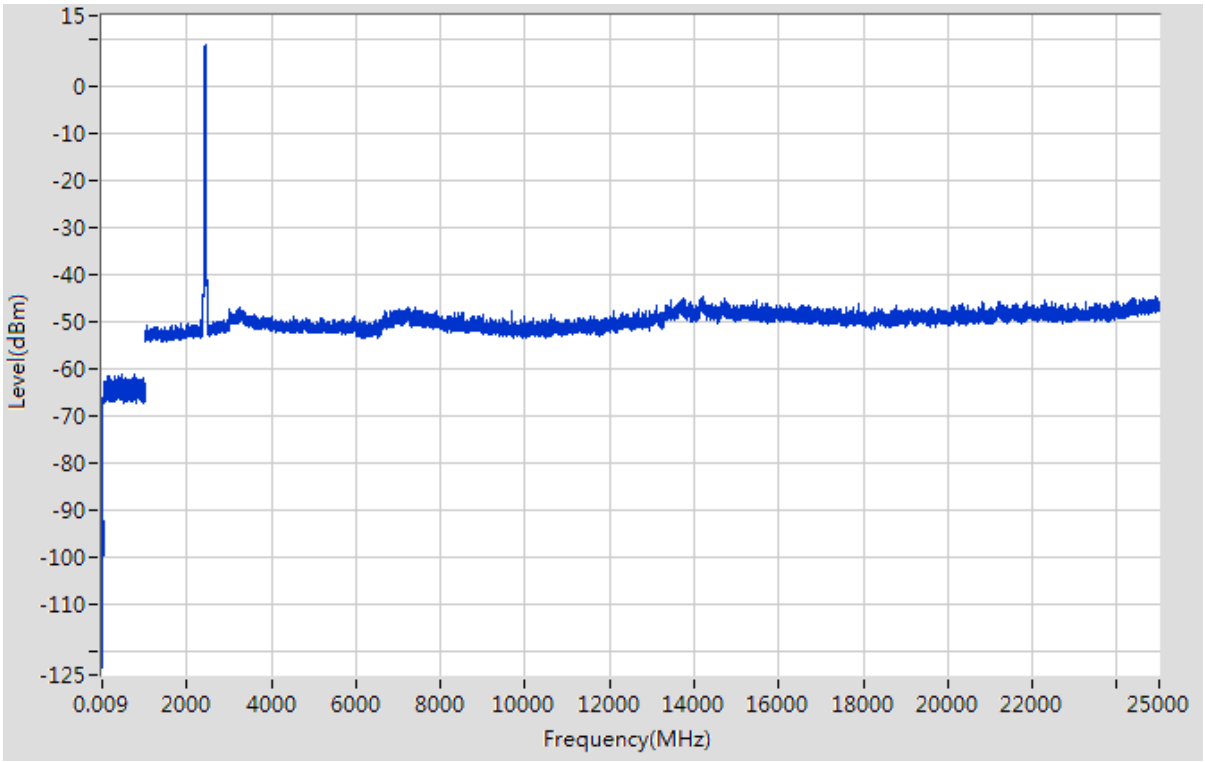
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11g: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.047	-85.36	6	3	2	QP	17.897	85.997	68.1	Note 2	Pass
9.753	-66.06	6	3	2	QP	37.197	85.997	48.8	Note 2	Pass
471.894	-61.1	4.7	3	2	QP	40.857	85.997	45.14	Note 2	Pass
757.451	-61.07	4.7	3	2	QP	40.887	85.997	45.11	Note 2	Pass
2441.721	8.74	0	3	2	PK	105.997	N/A	N/A	Note 1	N/A
	8.41		3	2	AV	105.664	N/A	N/A		N/A
3262.087	-47.11	0	3	2	PK	50.147	74	23.852	--	Pass
	N/A		3	2	AV	N/A	54	N/A		Pass
24931.974	-44.53	0	3	2	PK	52.727	85.997	33.27	Note 2	Pass
	N/A		3	2	AV	N/A	65.997	N/A		Pass

Test Plots

MIDDLE CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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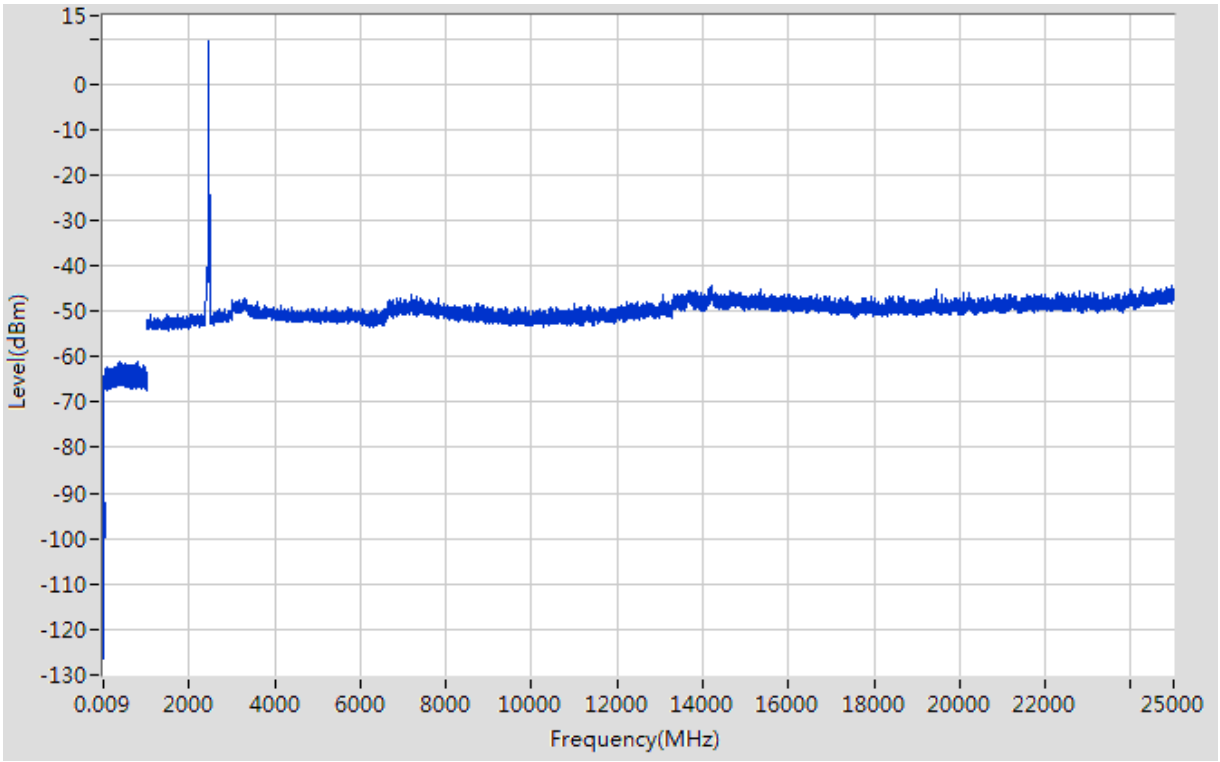
802.11g: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.047	-83.59	6	3	2	QP	19.667	86.777	67.11	Note 2	Pass
9.753	-64.2	6	3	2	QP	39.057	86.777	47.72	Note 2	Pass
387.276	-61.27	4.7	3	2	QP	40.687	86.777	46.09	Note 2	Pass
824.765	-61.28	4.7	3	2	QP	40.677	86.777	46.1	Note 2	Pass
2456.728	9.52	0	3	2	PK	106.777	N/A	N/A	Note 1	N/A
	9.18		3	2	AV	106.444	N/A	N/A		N/A
3300.1	-47.26	0	3	2	PK	49.997	86.777	36.78	Note 2	Pass
	N/A		3	2	AV	N/A	66.777	N/A		Pass
14215.003	-44.19	0	3	2	PK	53.067	86.777	33.71	Note 2	Pass
	N/A		3	2	AV	N/A	66.777	N/A		Pass

Test Plots

HIGH CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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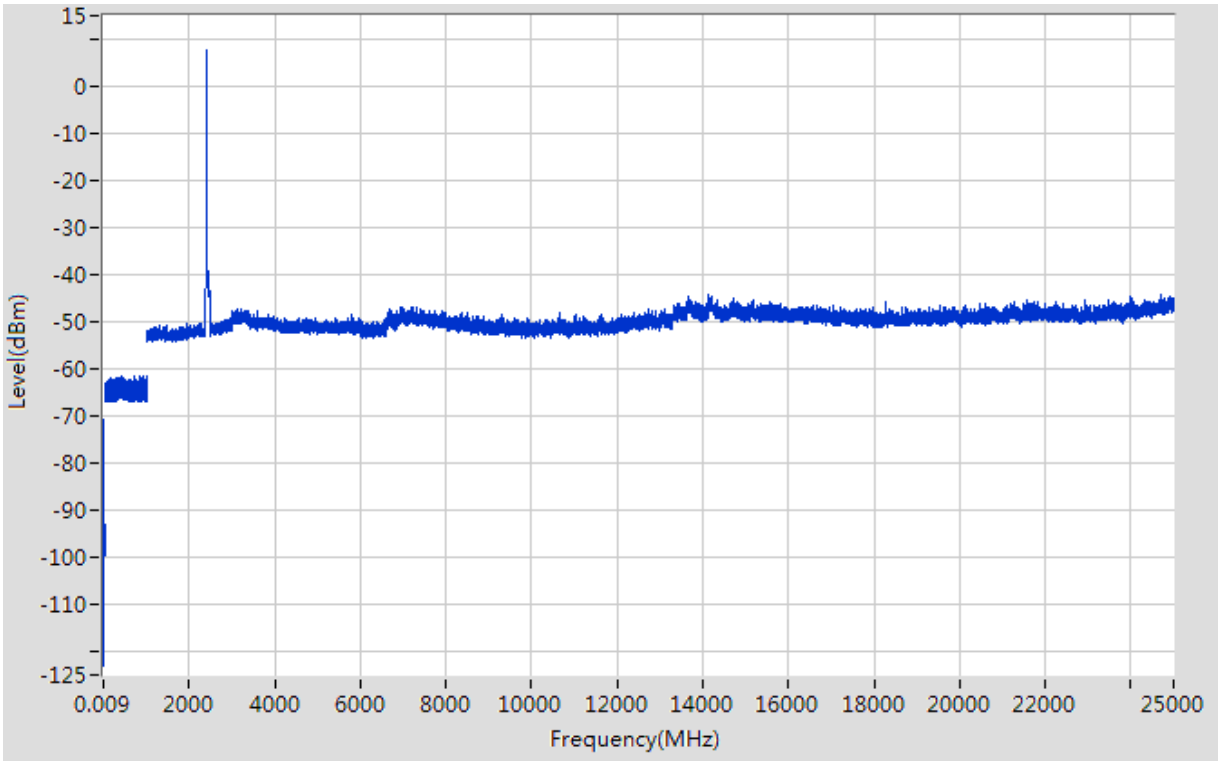
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.012	-88.61	6	3	2	QP	14.647	85.127	70.48	Note 2	Pass
1	-70.8	6	3	2	QP	32.457	85.127	52.67	Note 2	Pass
411.181	-61.72	4.7	3	2	QP	40.237	85.127	44.89	Note 2	Pass
932.787	-61.46	4.7	3	2	QP	40.497	85.127	44.63	Note 2	Pass
2418.709	7.87	0	3	2	PK	105.127	N/A	N/A	Note 1	N/A
	7.59		3	2	AV	104.851	N/A	N/A		N/A
3121.04	-47.32	0	3	2	PK	49.937	85.127	35.19	Note 2	Pass
	N/A		3	2	AV	N/A	65.127	N/A		Pass
14143.994	-44.16	0	3	2	PK	53.097	85.127	32.03	Note 2	Pass
	N/A		3	2	AV	N/A	65.127	N/A		Pass

Test Plots

LOW CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
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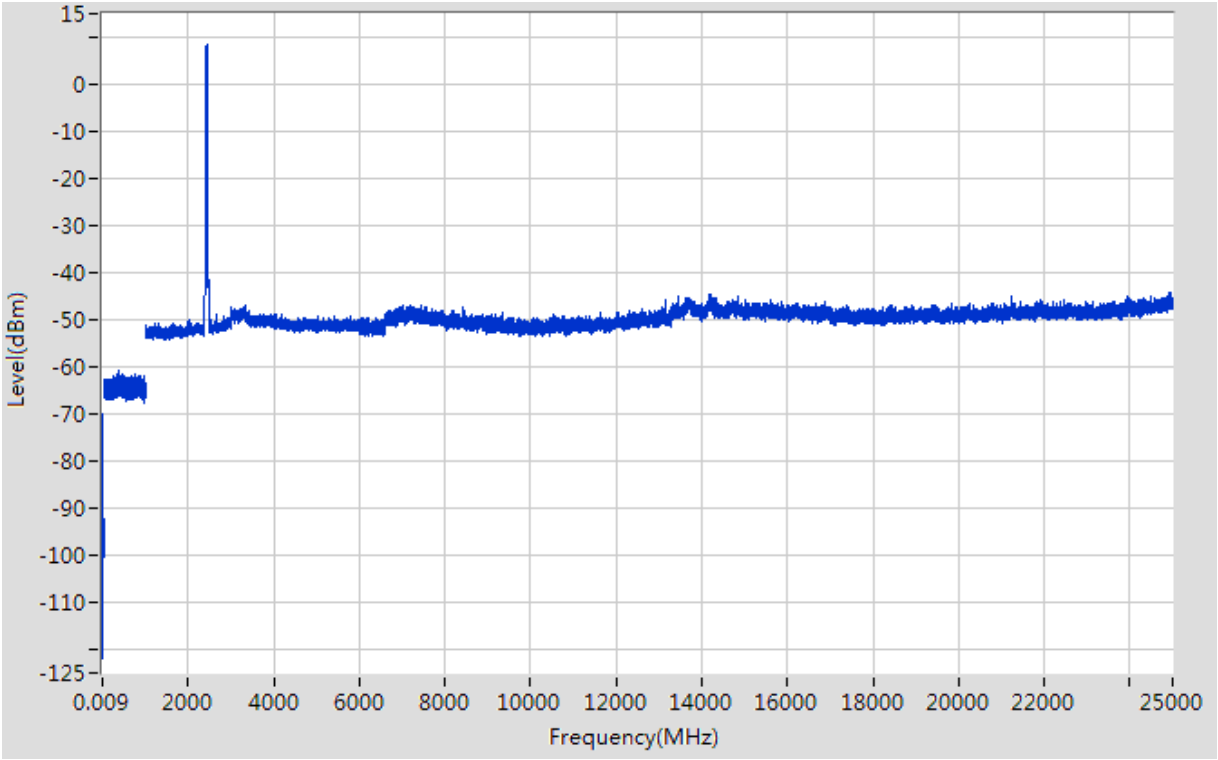
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.014	-87.33	6	3	2	QP	15.927	85.657	69.73	Note 2	Pass
0.75	-70.06	6	3	2	QP	33.197	85.657	52.46	Note 2	Pass
383.475	-60.86	4.7	3	2	QP	41.097	85.657	44.56	Note 2	Pass
768.554	-61.7	4.7	3	2	QP	40.257	85.657	45.4	Note 2	Pass
2443.722	8.4	0	3	2	PK	105.657	N/A	N/A	Note 1	N/A
	8.12		3	2	AV	105.381	N/A	N/A		N/A
3357.119	-47.11	0	3	2	PK	50.147	74	23.852	--	Pass
	N/A		3	2	AV	N/A	54	N/A		Pass
24901.963	-44.19	0	3	2	PK	53.067	85.657	32.59	Note 2	Pass
	N/A		3	2	AV	N/A	65.657	N/A		Pass

Test Plots

MIDDLE CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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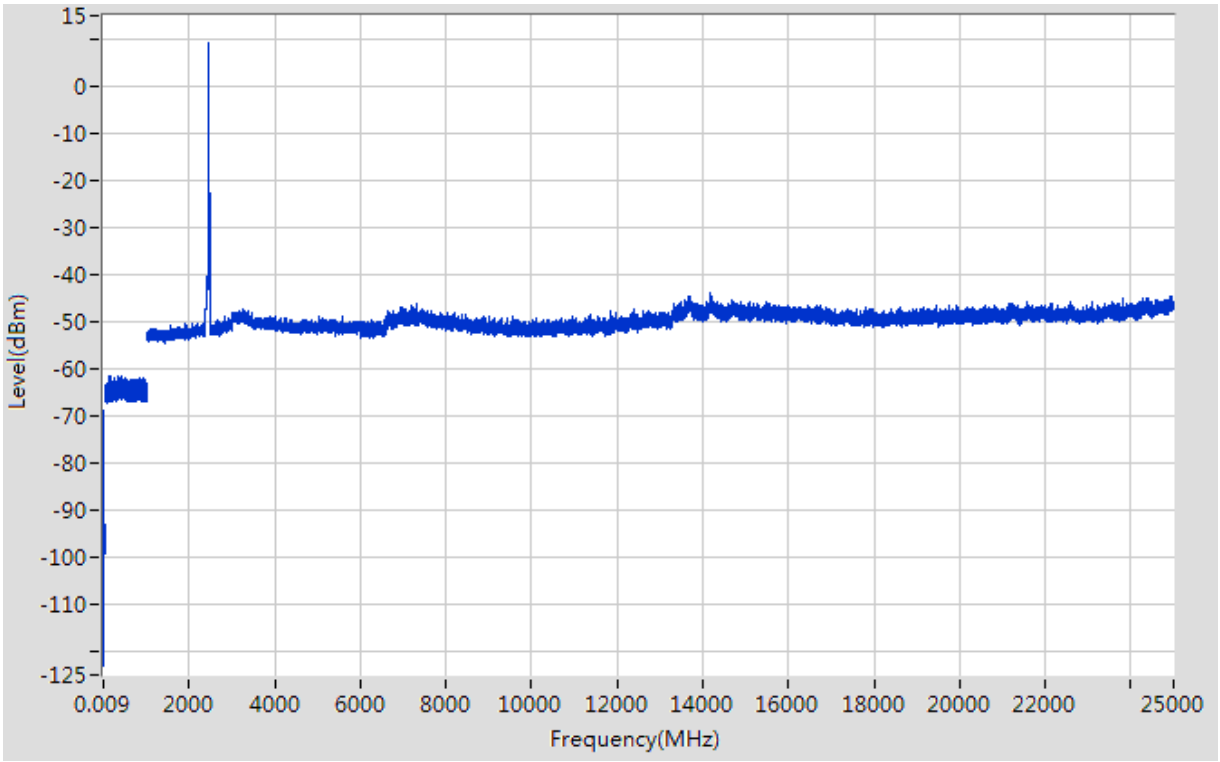
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.014	-86.61	6	3	2	QP	16.648	86.518	69.870	Note 2	Pass
1	-68.84	6	3	2	QP	34.418	86.518	52.100	Note 2	Pass
135.923	-61.44	4.7	3	2	QP	40.518	43.500	2.982	Note 2	Pass
509.602	-61.89	4.7	3	2	QP	40.068	86.518	46.450	Note 2	Pass
2456.728	9.26	0	3	2	PK	106.518	N/A	N/A	Note 1	N/A
	8.98		3	2	AV	106.242	N/A	N/A		N/A
3246.082	-47.29	0	3	2	PK	49.968	86.518	36.550	Note 2	Pass
	N/A		3	2	AV	N/A	66.518	N/A		Pass
14192	-43.73	0	3	2	PK	53.528	86.518	32.990	Note 2	Pass
	N/A		3	2	AV	N/A	66.518	N/A		Pass

Test Plots

HIGH CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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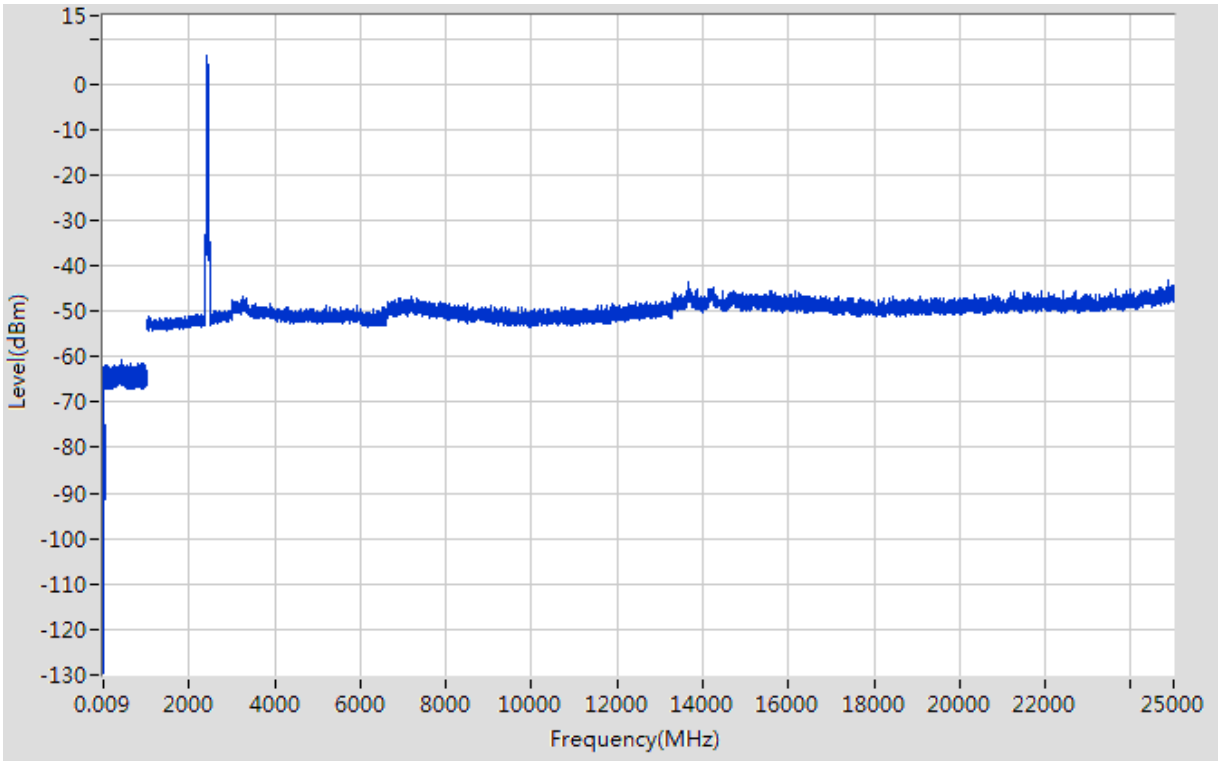
802.11n40: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-82.84	6	3	2	QP	20.418	83.508	63.090	Note 2	Pass
19.997	-62.15	6	3	2	QP	41.108	83.508	42.400	Note 2	Pass
424.884	-60.55	4.7	3	2	QP	41.408	83.508	42.100	Note 2	Pass
624.625	-61.42	4.7	3	2	QP	40.538	83.508	42.970	Note 2	Pass
2418.709	6.25	0	3	2	PK	103.508	N/A	N/A	Note 1	N/A
	5.52		3	2	AV	102.780	N/A	N/A		N/A
3242.081	-46.83	0	3	2	PK	50.428	83.508	33.080	Note 2	Pass
	N/A		3	2	AV	N/A	63.508	N/A		Pass
24885.956	-43.15	0	3	2	PK	54.108	83.508	29.400	Note 2	Pass
	N/A		3	2	AV	N/A	63.508	N/A		Pass

Test Plots

LOW CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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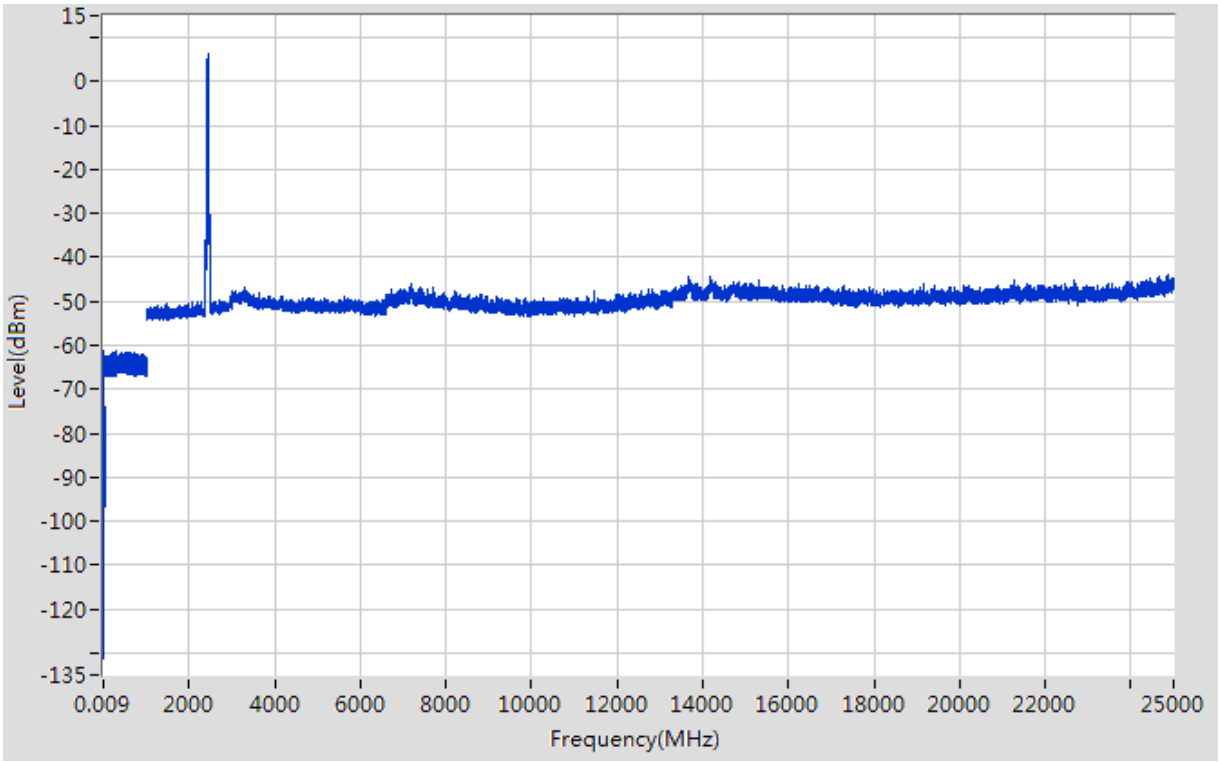
802.11n40: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.014	-82.77	6	3	2	QP	20.488	83.658	63.17	Note 2	Pass
20.007	-61.4	6	3	2	QP	41.858	83.658	41.8	Note 2	Pass
312.36	-61.17	4.7	3	2	QP	40.788	83.658	42.87	Note 2	Pass
504.201	-61.59	4.7	3	2	QP	40.368	83.658	43.29	Note 2	Pass
2450.725	6.4	0	3	2	PK	103.658	N/A	N/A	Note 1	N/A
	5.67		3	2	AV	102.930	N/A	N/A		N/A
3296.099	-46.95	0	3	2	PK	50.308	83.658	33.35	Note 2	Pass
	N/A		3	2	AV	N/A	63.658	N/A		Pass
24890.958	-43.82	0	3	2	PK	53.438	83.658	30.22	Note 2	Pass
	N/A		3	2	AV	N/A	63.658	N/A		Pass

Test Plots

MIDDLE CHANNEL



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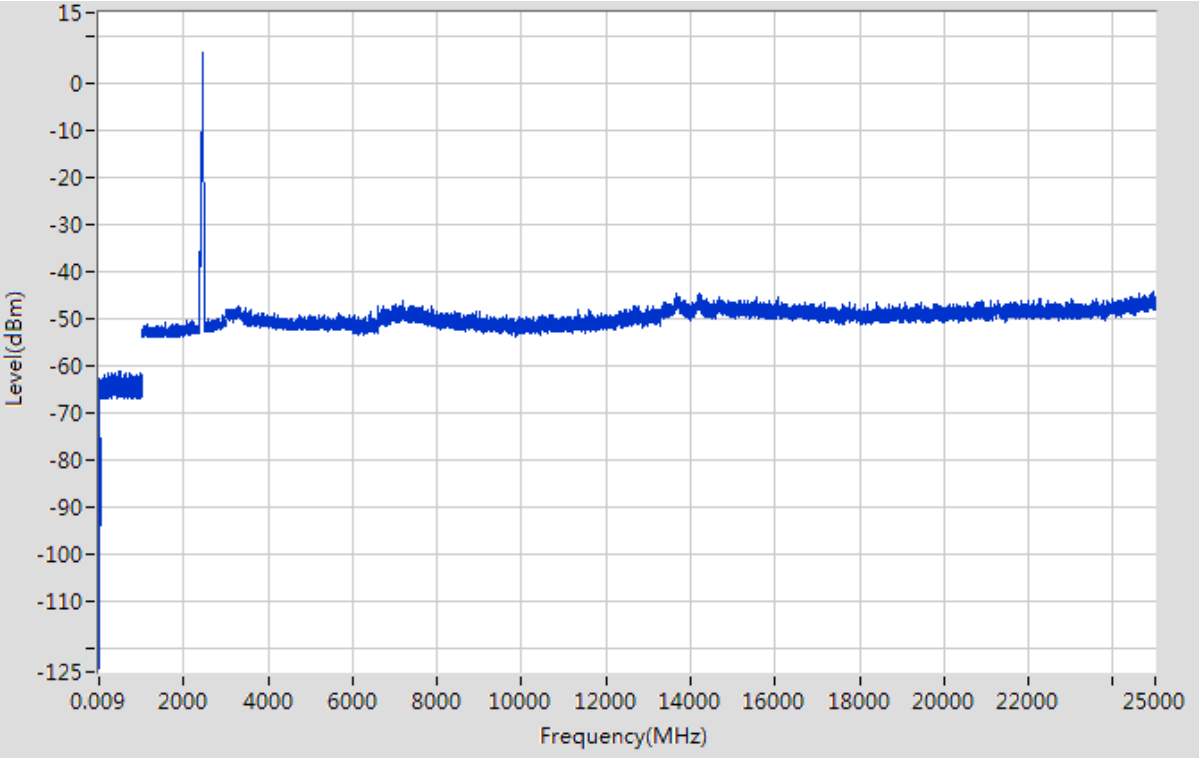
802.11n40: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-82.29	6	3	2	QP	20.968	83.878	62.91	Note 2	Pass
19.997	-62.56	6	3	2	QP	40.698	83.878	43.18	Note 2	Pass
499.4	-61.08	4.7	3	2	QP	40.878	83.878	43	Note 2	Pass
631.226	-61.44	4.7	3	2	QP	40.518	83.878	43.36	Note 2	Pass
2455.728	6.62	0	3	2	PK	103.878	N/A	N/A	Note 1	N/A
	5.89		3	2	AV	103.150	N/A	N/A		N/A
3290.097	-47.4	0	3	2	PK	49.858	83.878	34.02	Note 2	Pass
	N/A		3	2	AV	N/A	63.878	N/A		Pass
24961.985	-44.37	0	3	2	PK	52.888	83.878	30.99	Note 2	Pass
	N/A		3	2	AV	N/A	63.878	N/A		Pass

Test Plots

HIGH CHANNEL



ANT 1

Antenna-port Conducted test data

E = EIRP – 20log D + 104.8

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + The appropriate maximum ground reflection factor (dB)

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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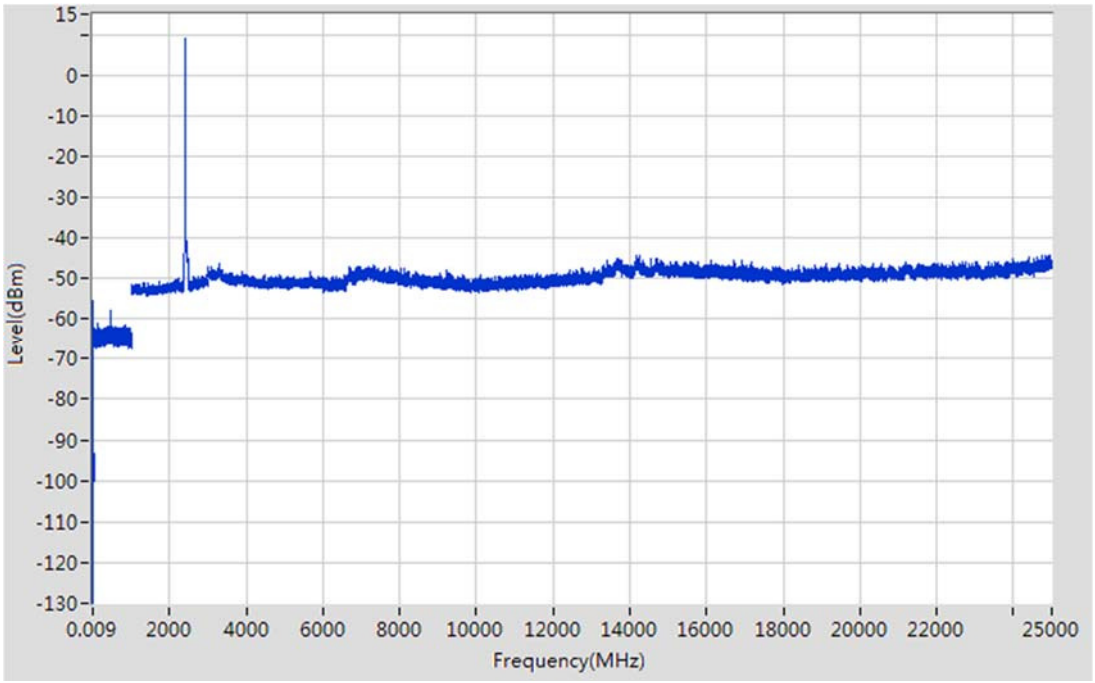
802.11b: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.110	-90.08	6	3	2	QP	13.178	86.268	73.09	Note 2	Pass
3.001	-55.44	6	3	2	QP	47.818	86.268	38.45	Note 2	Pass
451.290	-57.94	4.7	3	2	QP	44.018	86.268	42.25	Note 2	Pass
856.971	-61.57	4.7	3	2	QP	40.388	86.268	45.88	Note 2	Pass
2410.705	9.01	0	3	2	PK	106.268	N/A	N/A	Note 1	N/A
	8.98		3	2	AV	106.233	N/A	N/A		N/A
3318.106	-46.52	0	3	2	PK	50.738	86.268	35.53	Note 2	Pass
	N/A		3	2	AV	N/A	66.268	N/A		Pass
24832.936	-44.43	0	3	2	PK	52.828	86.268	33.44	Note 2	Pass
	N/A		3	2	AV	N/A	66.268	N/A		Pass

Test Plots

LOW CHANNEL



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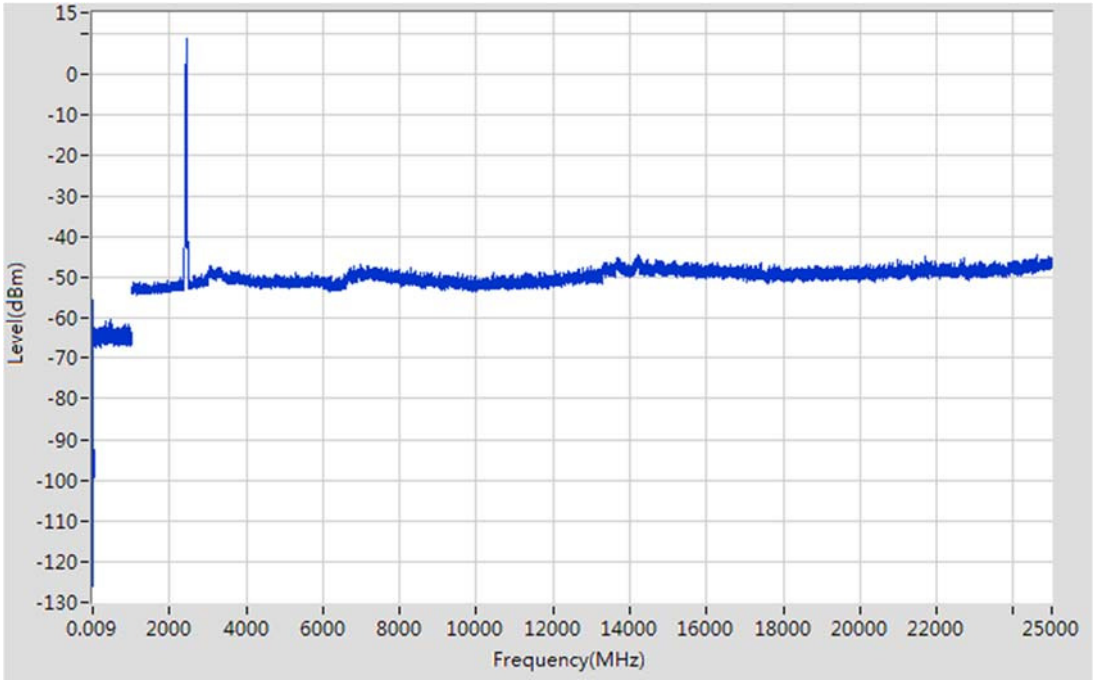
802.11b: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.039	-89.67	6	3	2	QP	13.588	86.058	72.47	Note 2	Pass
3.001	-55.62	6	3	2	QP	47.638	86.058	38.42	Note 2	Pass
476.295	-60.38	4.7	3	2	QP	41.578	86.058	44.48	Note 2	Pass
853.271	-61.51	4.7	3	2	QP	40.448	86.058	45.61	Note 2	Pass
2437.719	8.8	0	3	2	PK	106.058	N/A	N/A	Note 1	N/A
	8.77		3	2	AV	106.023	N/A	N/A		N/A
3032.011	-47.15	0	3	2	PK	50.108	86.058	35.95	Note 2	Pass
	N/A		3	2	AV	N/A	66.058	N/A		Pass
24618.854	-44.33	0	3	2	PK	52.928	86.058	33.13	Note 2	Pass
	N/A		3	2	AV	N/A	66.058	N/A		Pass

Test Plots

MIDDLE CHANNEL



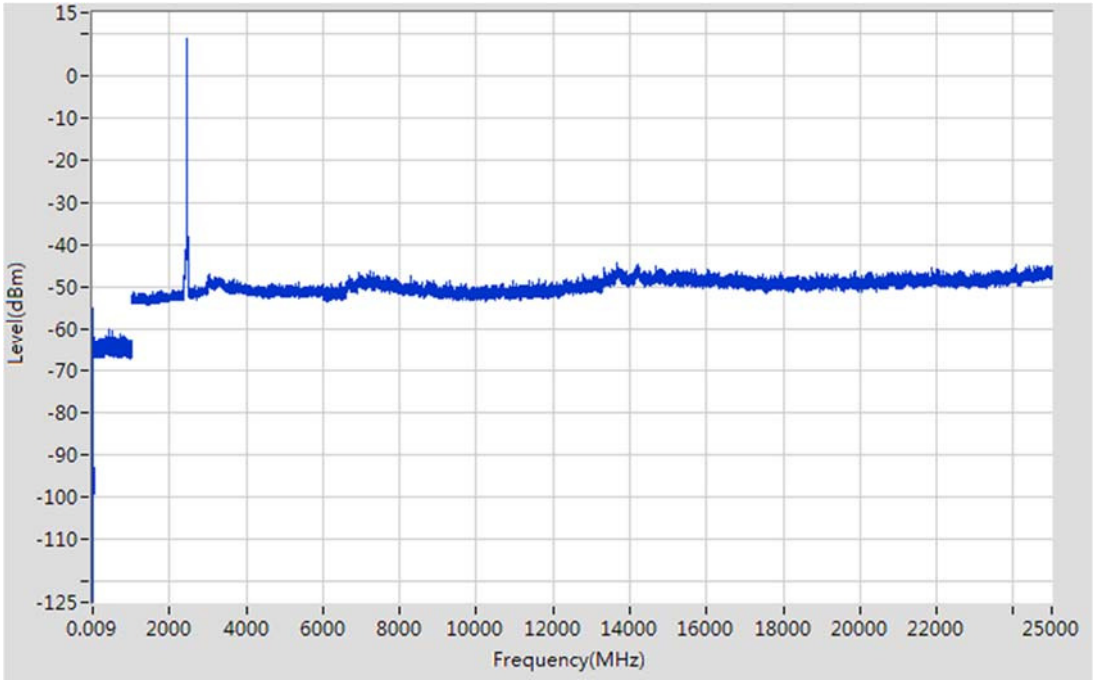
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11b: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.016	-85.3	6	3	2	QP	17.958	86.018	68.06	Note 2	Pass
3.001	-55.06	6	3	2	QP	48.198	86.018	37.82	Note 2	Pass
410.781	-60	4.7	3	2	QP	41.958	86.018	44.06	Note 2	Pass
506.801	-60.42	4.7	3	2	QP	41.538	86.018	44.48	Note 2	Pass
2461.731	8.76	0	3	2	PK	106.018	N/A	N/A	Note 1	N/A
	8.73		3	2	AV	105.983	N/A	N/A		N/A
3048.016	-47	0	3	2	PK	50.258	86.018	35.76	Note 2	Pass
	N/A		3	2	AV	N/A	66.018	N/A		Pass
13668.936	-44.11	0	3	2	PK	53.148	86.018	32.87	Note 2	Pass
	N/A		3	2	AV	N/A	66.018	N/A		Pass

Test Plots

HIGH CHANNEL



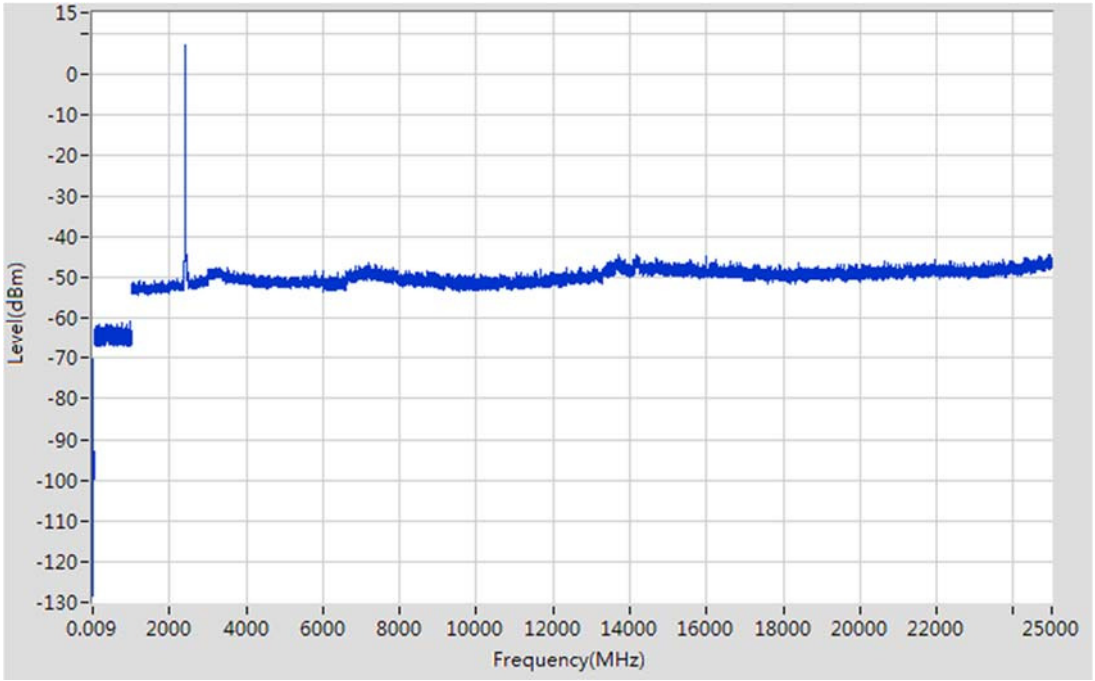
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11g: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.047	-89.62	6	3	2	QP	13.638	84.468	70.83	Note 2	Pass
9.753	-70.17	6	3	2	QP	33.088	84.468	51.38	Note 2	Pass
477.895	-61.41	4.7	3	2	QP	40.548	84.468	43.92	Note 2	Pass
956.991	-60.63	4.7	3	2	QP	41.328	84.468	43.14	Note 2	Pass
2413.707	7.21	0	3	2	PK	104.468	N/A	N/A	Note 1	N/A
	6.94		3	2	AV	104.193	N/A	N/A		N/A
3282.094	-47.43	0	3	2	PK	49.828	84.468	34.64	Note 2	Pass
	N/A		3	2	AV	N/A	64.468	N/A		Pass
24966.987	-44.16	0	3	2	PK	53.098	84.468	31.37	Note 2	Pass
	N/A		3	2	AV	N/A	64.468	N/A		Pass

Test Plots

LOW CHANNEL



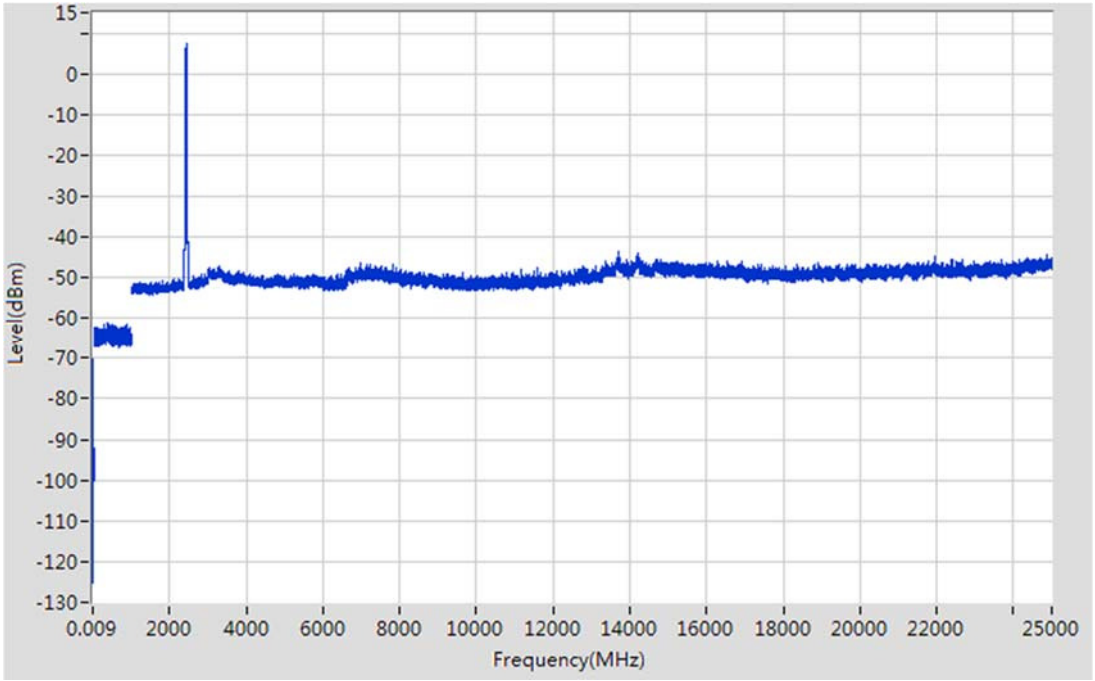
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11g: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.012	-91	6	3	2	QP	12.258	84.808	72.55	Note 2	Pass
9.753	-70.18	6	3	2	QP	33.078	84.808	51.73	Note 2	Pass
400.079	-61.22	4.7	3	2	QP	40.738	46.000	5.26	Note 2	Pass
883.577	-61.5	4.7	3	2	QP	40.458	84.808	44.35	Note 2	Pass
2438.719	7.55	0	3	2	PK	104.808	N/A	N/A	Note 1	N/A
	7.28		3	2	AV	104.533	N/A	N/A		N/A
3294.098	-47.17	0	3	2	PK	50.088	84.808	34.72	Note 2	Pass
	N/A		3	2	AV	N/A	64.808	N/A		Pass
13690.939	-43.5	0	3	2	PK	53.758	84.808	31.05	Note 2	Pass
	N/A		3	2	AV	N/A	64.808	N/A		Pass

Test Plots

MIDDLE CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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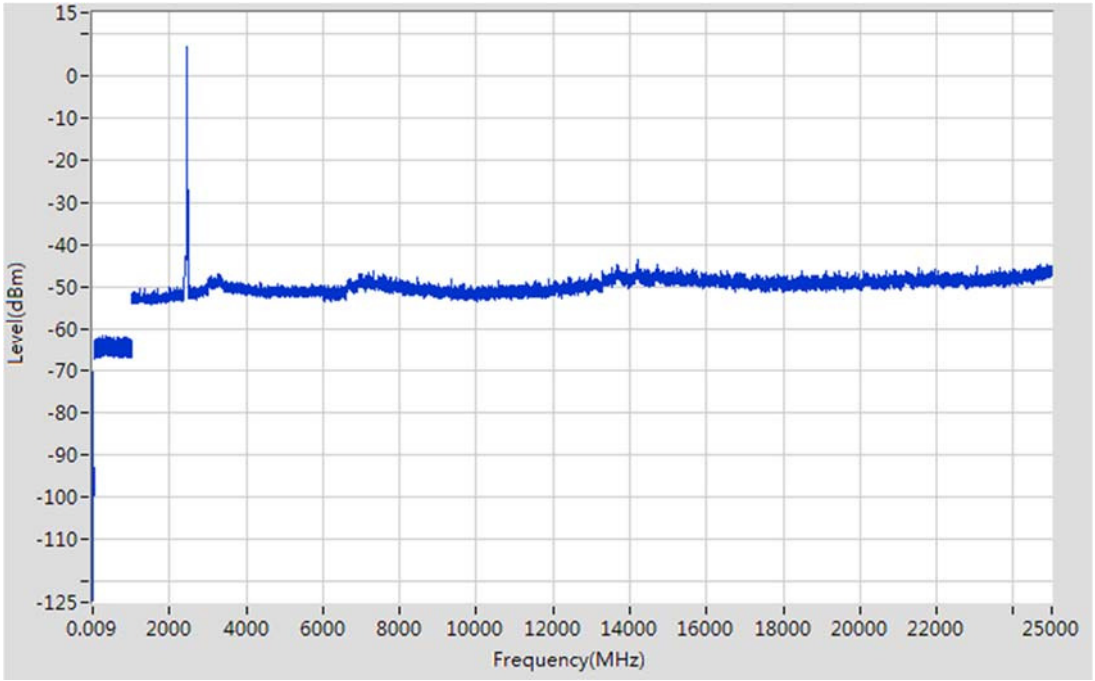
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11g: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.047	-90.52	6	3	2	QP	12.738	84.058	71.32	Note 2	Pass
9.753	-70.27	6	3	2	QP	32.988	84.058	51.07	Note 2	Pass
264.45	-61.58	4.7	3	2	QP	40.378	46.000	5.62	Note 2	Pass
692.338	-62.04	4.7	3	2	QP	39.918	84.058	44.14	Note 2	Pass
2463.732	6.8	0	3	2	PK	104.058	N/A	N/A	Note 1	N/A
	6.53		3	2	AV	103.783	N/A	N/A		N/A
3271.09	-47.1	0	3	2	PK	50.158	84.058	33.9	Note 2	Pass
	N/A		3	2	AV	N/A	64.058	N/A		Pass
14197.001	-43.49	0	3	2	PK	53.768	84.058	30.29	Note 2	Pass
	N/A		3	2	AV	N/A	64.058	N/A		Pass

Test Plots

HIGH CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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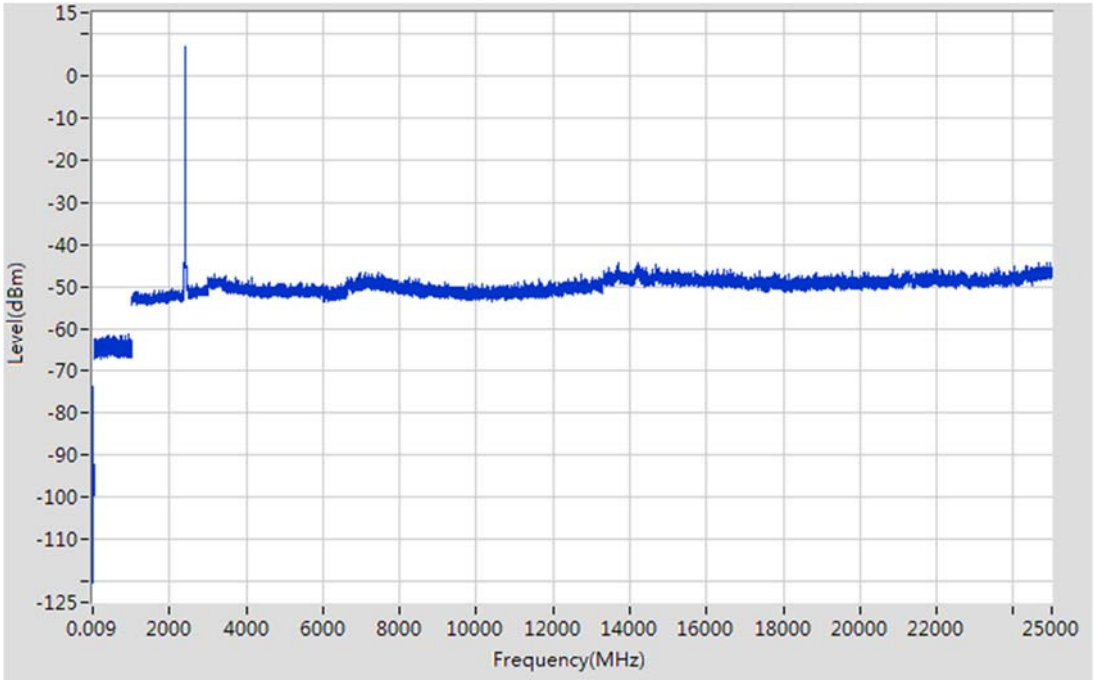
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.012	-90.81	6	3	2	QP	12.448	84.138	71.69	Note 2	Pass
1	-73.97	6	3	2	QP	29.288	84.138	54.85	Note 2	Pass
439.087	-61.45	4.7	3	2	QP	40.508	84.138	43.63	Note 2	Pass
938.588	-61.21	4.7	3	2	QP	40.748	84.138	43.39	Note 2	Pass
2413.707	6.88	0	3	2	PK	104.138	N/A	N/A	Note 1	N/A
	6.57		3	2	AV	103.825	N/A	N/A		N/A
3187.062	-47.11	0	3	2	PK	50.148	84.138	33.99	Note 2	Pass
	N/A		3	2	AV	N/A	64.138	N/A		Pass
24673.875	-44.16	0	3	2	PK	53.098	84.138	31.04	Note 2	Pass
	N/A		3	2	AV	N/A	64.138	N/A		Pass

Test Plots

LOW CHANNEL



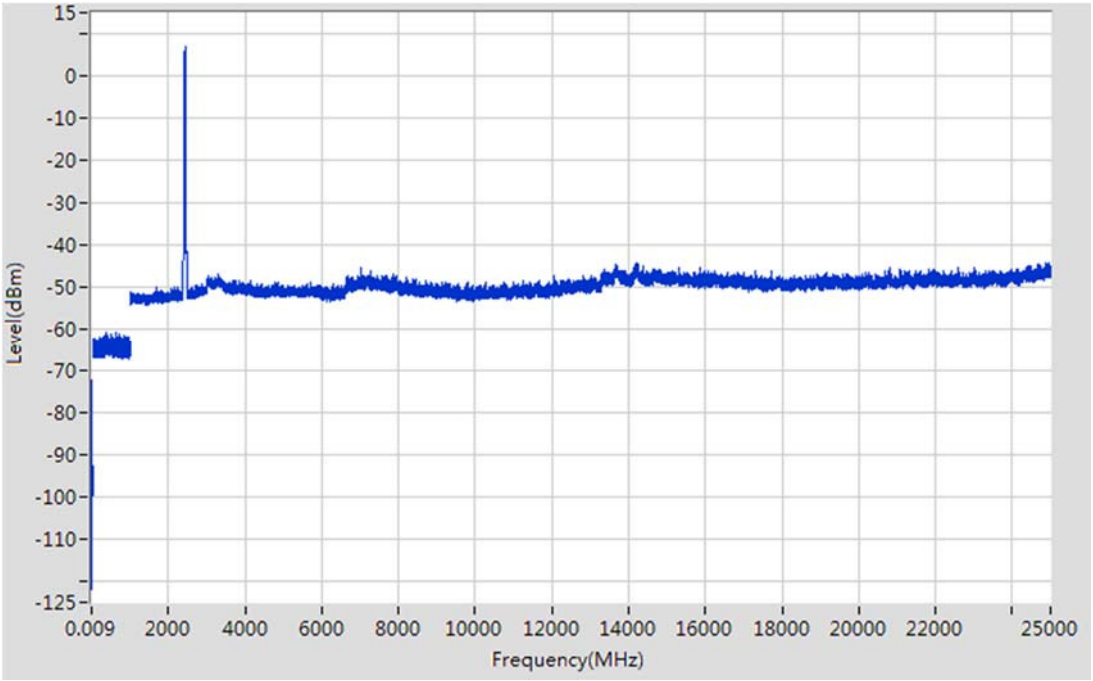
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.012	-91.27	6	3	2	QP	11.988	84.108	72.12	Note 2	Pass
1	-72.42	6	3	2	QP	30.838	84.108	53.27	Note 2	Pass
385.676	-60.74	4.7	3	2	QP	41.218	84.108	42.89	Note 2	Pass
646.629	-60.88	4.7	3	2	QP	41.078	84.108	43.03	Note 2	Pass
2438.719	6.85	0	3	2	PK	104.108	N/A	N/A	Note 1	N/A
	6.54		3	2	AV	103.795	N/A	N/A		N/A
3307.102	-46.73	0	3	2	PK	50.528	84.108	33.58	Note 2	Pass
	N/A		3	2	AV	N/A	64.108	N/A		Pass
24878.954	-44.14	0	3	2	PK	53.118	84.108	30.99	Note 2	Pass
	N/A		3	2	AV	N/A	64.108	N/A		Pass

Test Plots

MIDDLE CHANNEL



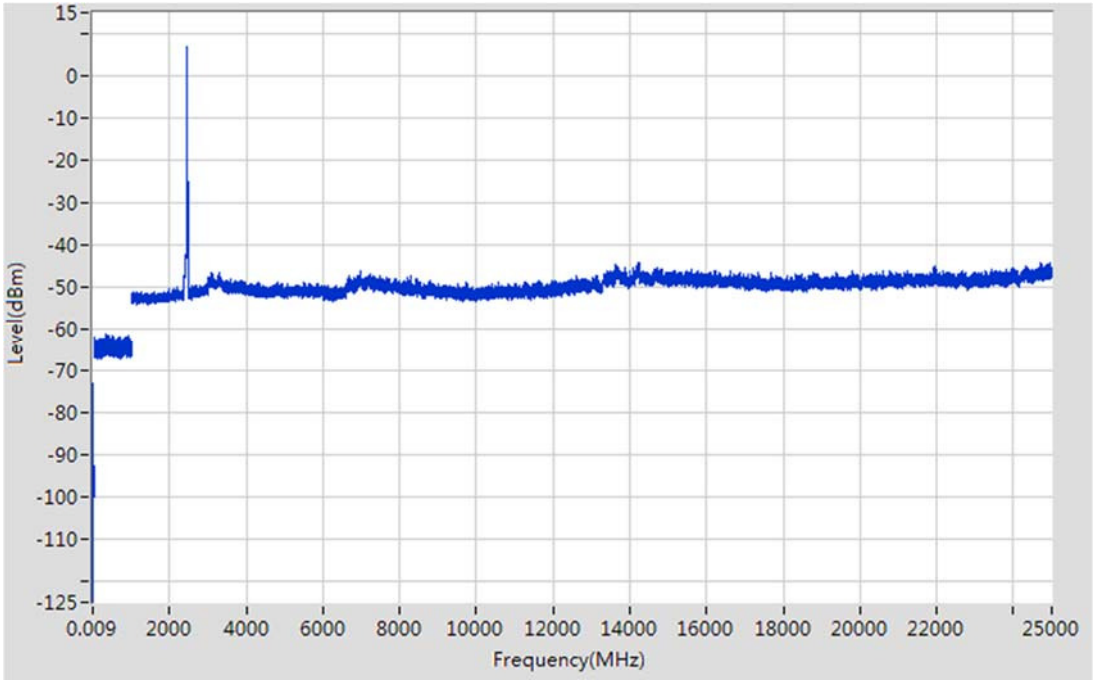
The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
And the maximum in-band gain of the antenna is 1.60 dBi.
Note 1: The frequency is fundamental signal which can be ignored.
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n20: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-90.21	6	3	2	QP	13.048	84.168	71.12	Note 2	Pass
1	-73.02	6	3	2	QP	30.238	84.168	53.93	Note 2	Pass
330.364	-61.19	4.7	3	2	QP	40.768	46.000	5.23	Note 2	Pass
520.904	-61.55	4.7	3	2	QP	40.408	84.168	43.76	Note 2	Pass
2463.732	6.91	0	3	2	PK	104.168	N/A	N/A	Note 1	N/A
	6.60		3	2	AV	103.855	N/A	N/A		N/A
3088.029	-46.41	0	3	2	PK	50.848	84.168	33.32	Note 2	Pass
	N/A		3	2	AV	N/A	64.168	N/A		Pass
24721.894	-44.12	0	3	2	PK	53.138	84.168	31.03	Note 2	Pass
	N/A		3	2	AV	N/A	64.168	N/A		Pass

Test Plots

HIGH CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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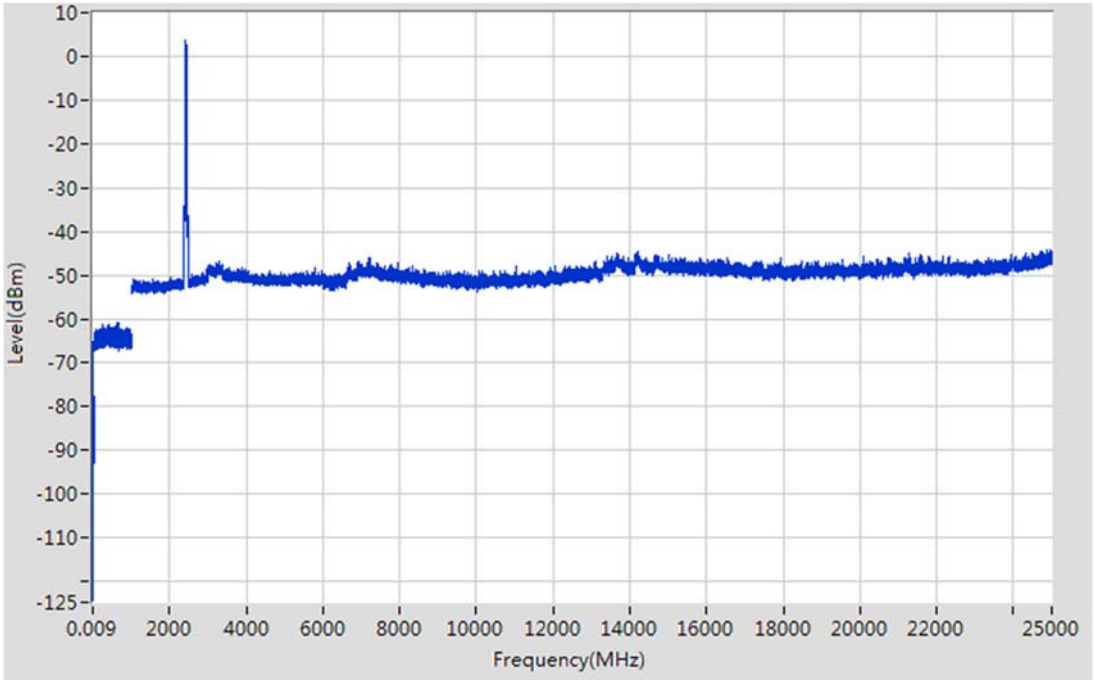
Note 3: Average measurement was not performed if peak level went lower than the average limit.
Note 4: The harmonic (3th ,4th , 5th,…etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

802.11n40: LOW CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-86.45	6	3	2	QP	16.808	81.008	64.2	Note 2	Pass
19.997	-65.36	6	3	2	QP	37.898	81.008	43.11	Note 2	Pass
271.451	-61.12	4.7	3	2	QP	40.838	46.000	5.16	Note 2	Pass
660.032	-60.87	4.7	3	2	QP	41.088	81.008	39.92	Note 2	Pass
2417.709	3.75	0	3	2	PK	101.008	N/A	N/A	Note 1	N/A
	3.07		3	2	AV	100.324	N/A	N/A		N/A
3287.096	-46.89	0	3	2	PK	50.368	81.008	30.64	Note 2	Pass
	N/A		3	2	AV	N/A	61.008	N/A		Pass
24865.949	-43.99	0	3	2	PK	53.268	81.008	27.74	Note 2	Pass
	N/A		3	2	AV	N/A	61.008	N/A		Pass

Test Plots

LOW CHANNEL



The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.
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Note 1: The frequency is fundamental signal which can be ignored.
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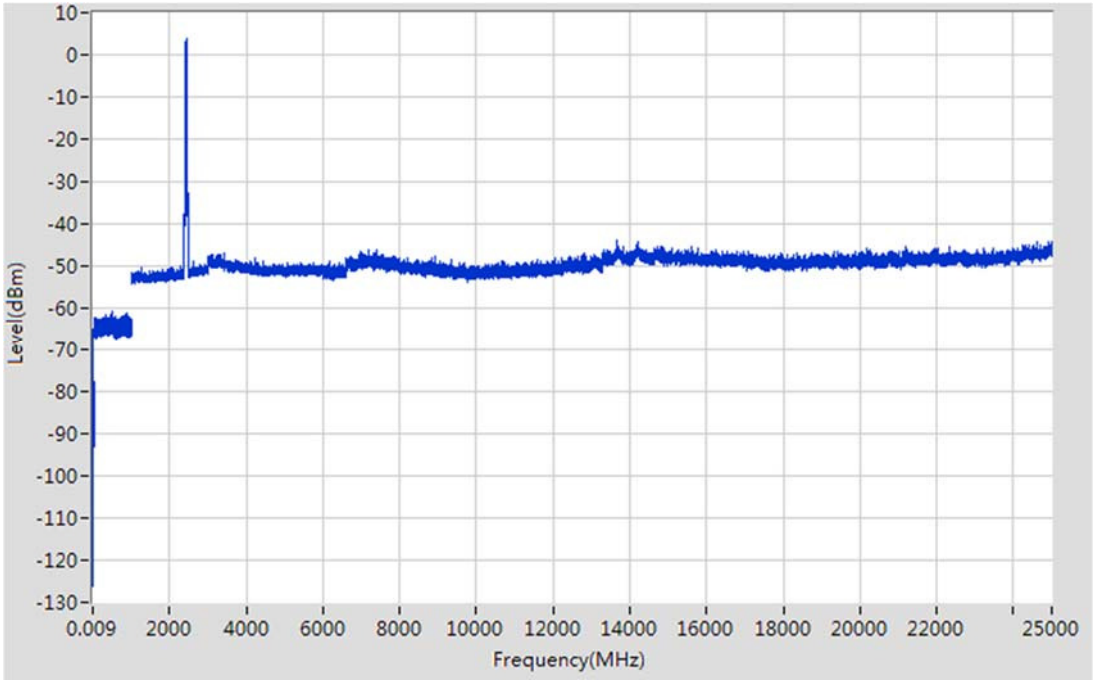
802.11n40: MIDDLE CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.014	-87.11	6	3	2	QP	16.148	80.918	64.77	Note 2	Pass
20.007	-65.06	6	3	2	QP	38.198	80.918	42.72	Note 2	Pass
496.499	-60.87	4.7	3	2	QP	41.088	80.918	39.83	Note 2	Pass
909.482	-61.1	4.7	3	2	QP	40.858	80.918	40.06	Note 2	Pass
2446.723	3.66	0	3	2	PK	100.918	N/A	N/A	Note 1	N/A
	2.98		3	2	AV	100.234	N/A	N/A		N/A
3432.144	-47	0	3	2	PK	50.258	80.918	30.66	Note 2	Pass
	N/A		3	2	AV	N/A	60.918	N/A		Pass
13680.938	-43.84	0	3	2	PK	53.418	80.918	27.5	Note 2	Pass
	N/A		3	2	AV	N/A	60.918	N/A		Pass

Test Plots

MIDDLE CHANNEL



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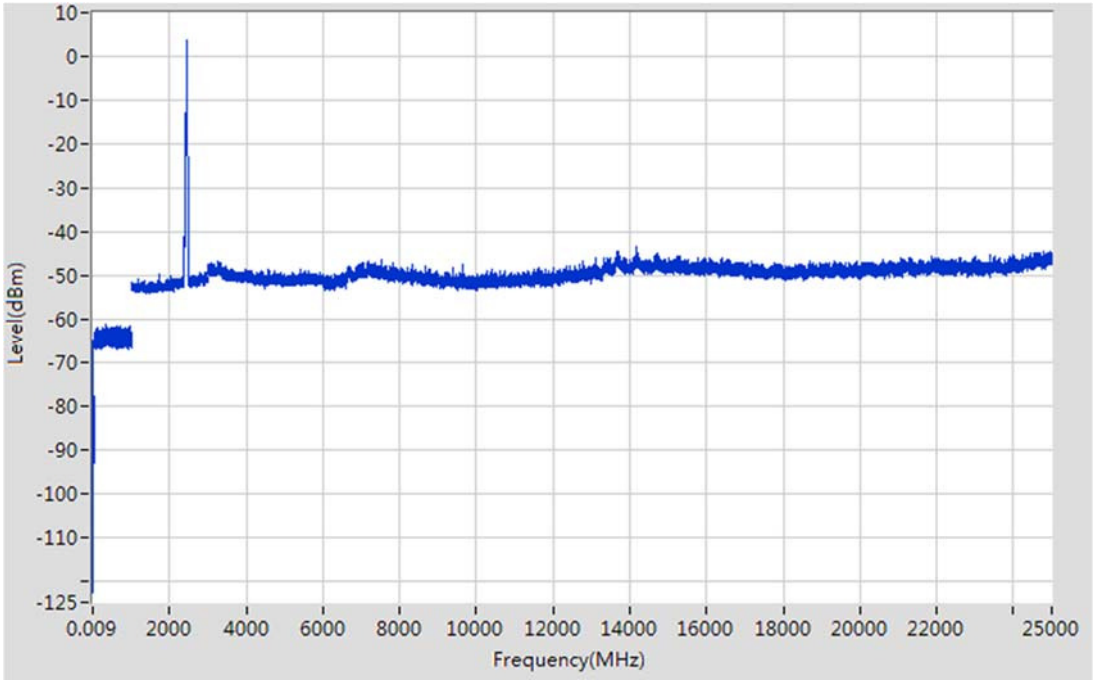
802.11n40: HIGH CHANNEL

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D (m)	Max gain (dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.013	-85.39	6	3	2	QP	17.868	80.958	63.09	Note 2	Pass
19.997	-64.93	6	3	2	QP	38.328	80.958	42.63	Note 2	Pass
350.168	-61.14	4.7	3	2	QP	40.818	80.958	40.14	Note 2	Pass
991.498	-61.42	4.7	3	2	QP	40.538	74.000	33.46	Note 2	Pass
2461.731	3.7	0	3	2	PK	100.958	N/A	N/A	Note 1	N/A
	3.02		3	2	AV	100.274	N/A	N/A		N/A
3256.085	-46.92	0	3	2	PK	50.338	80.958	30.62	Note 2	Pass
	N/A		3	2	AV	N/A	60.958	N/A		Pass
14188	-43.59	0	3	2	PK	53.668	80.958	27.29	Note 2	Pass
	N/A		3	2	AV	N/A	60.958	N/A		Pass

Test Plots

HIGH CHANNEL



Cabinet Radiated spurious emission test

Note 1: The symbol of “--” in the table which means not application.

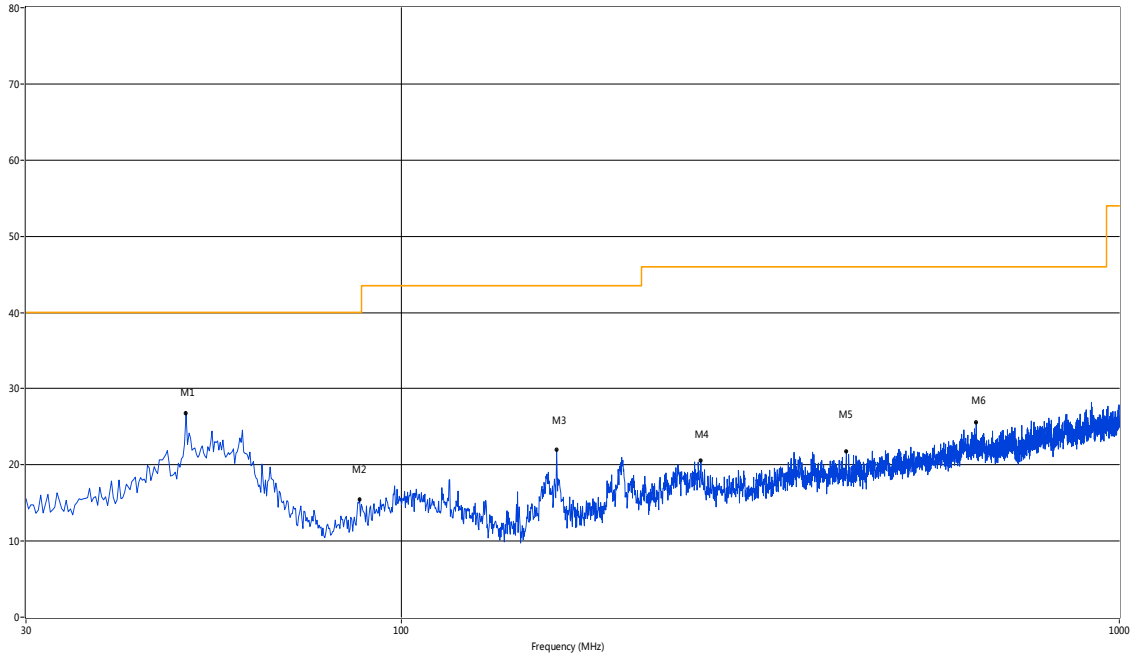
Note 2: For the test data above 1 GHz，According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note 4: The EUT is working in the Normal link mode below 1 GHz.

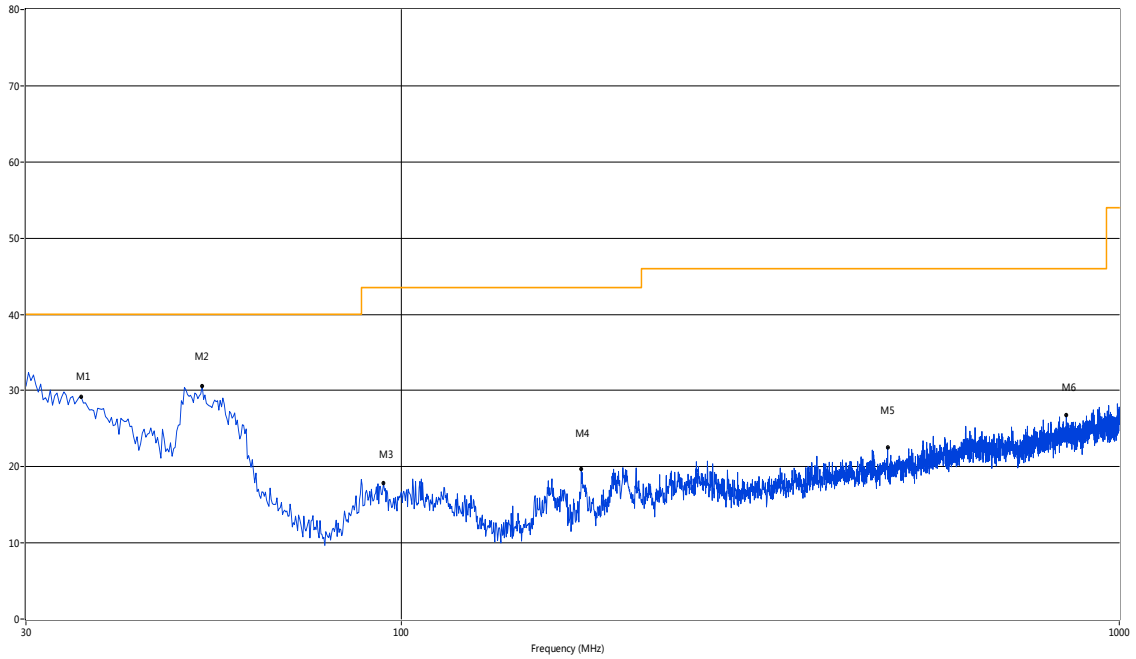
Test Data and Plots

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	50.12	26.75	-20.09	40.0	13.25	Peak	313.00	100	Horizontal	Pass
2	87.46	15.47	-24.48	40.0	24.53	Peak	28.60	100	Horizontal	Pass
3	164.55	21.97	-25.25	43.5	21.53	Peak	279.00	100	Horizontal	Pass
4	261.29	20.54	-21.58	46.0	25.46	Peak	190.00	100	Horizontal	Pass
5	416.69	21.72	-18.44	46.0	24.28	Peak	47.00	100	Horizontal	Pass
6	631.98	25.54	-14.82	46.0	20.46	Peak	80.00	100	Horizontal	Pass

30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	35.82	29.14	-22.26	40.0	10.86	Peak	329.30	100	Vertical	Pass
2	52.79	30.56	-20.19	40.0	9.44	Peak	97.70	100	Vertical	Pass
3	94.49	17.89	-22.97	43.5	25.61	Peak	0.30	100	Vertical	Pass
4	178.13	19.73	-24.62	43.5	23.77	Peak	38.10	100	Vertical	Pass
5	475.85	22.55	-17.79	46.0	23.45	Peak	5.30	100	Vertical	Pass
6	843.87	26.78	-11.97	46.0	19.22	Peak	360.70	100	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1361.64	43.10	-2.34	74	30.91	Peak	142.7	150	Horizontal	Pass
2	2720.28	44.83	1.49	74	29.17	Peak	246.5	150	Horizontal	Pass
3	4606.39	49.33	14.23	74	24.67	Peak	350.5	150	Horizontal	Pass
4	9346.92	47.75	14.22	74	26.25	Peak	57.3	150	Horizontal	Pass
5	16660.15	43.79	9.77	74	30.21	Peak	89.3	150	Horizontal	Pass
6	22134.78	47.22	11.80	74	26.78	Peak	242.8	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1317.42	42.08	-6.14	74	31.92	Peak	172.6	150	Vertical	Pass
2	1575.86	44.25	-4.52	74	29.75	Peak	288.9	150	Vertical	Pass
3	1780.81	43.28	-3.05	74	30.72	Peak	169.5	150	Vertical	Pass
4	10705.91	44.46	14.66	74	29.54	Peak	47.5	150	Vertical	Pass
5	16753.74	42.80	8.96	74	31.20	Peak	117.9	150	Vertical	Pass
6	24530.78	44.36	11.10	74	29.64	Peak	75.2	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2005.00	47.06	-4.40	74	26.94	Peak	238.7	150	Horizontal	Pass
2	2566.43	46.04	0.56	74	27.96	Peak	215.7	150	Horizontal	Pass
3	5229.77	49.57	13.62	74	24.43	Peak	62.7	150	Horizontal	Pass
4	6876.04	46.53	20.31	74	27.47	Peak	147.9	150	Horizontal	Pass
5	13852.33	42.55	13.13	74	31.45	Peak	45.8	150	Horizontal	Pass
6	19858.57	43.04	11.00	74	30.96	Peak	199.2	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1026.49	43.04	-6.05	74	30.96	Peak	304.9	150	Vertical	Pass
2	1546.86	40.70	-4.33	74	33.30	Peak	131.4	150	Vertical	Pass
3	1928.27	41.45	-3.29	74	32.55	Peak	145.4	150	Vertical	Pass
4	8695.51	46.64	16.96	74	27.36	Peak	291.9	150	Vertical	Pass
5	17596.09	44.11	9.37	74	29.89	Peak	134	150	Vertical	Pass
6	21975.04	45.97	10.00	74	28.03	Peak	310.7	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2182.82	42.19	-4.30	74	31.81	Peak	10.9	150	Horizontal	Pass
2	3263.74	45.25	9.02	74	28.75	Peak	176.5	150	Horizontal	Pass
3	4849.15	48.99	15.42	74	25.01	Peak	170.2	150	Horizontal	Pass
4	8953.83	44.14	14.38	74	29.86	Peak	229.1	150	Horizontal	Pass
5	15911.40	46.74	9.68	74	27.26	Peak	203.1	150	Horizontal	Pass
6	18667.22	44.58	11.26	74	29.42	Peak	248.3	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1157.46	42.03	-6.21	74	31.97	Peak	125.5	150	Vertical	Pass
2	1385.90	43.84	-4.23	74	30.16	Peak	23.8	150	Vertical	Pass
3	1952.26	45.11	-3.03	74	28.89	Peak	282.2	150	Vertical	Pass
4	8145.18	42.88	18.37	74	31.12	Peak	148.2	150	Vertical	Pass
5	17294.51	45.05	9.13	74	28.95	Peak	91.7	150	Vertical	Pass
6	19788.69	49.46	12.42	74	24.54	Peak	189.3	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1971.03	43.39	-4.03	74	30.61	Peak	255.6	150	Horizontal	Pass
2	3248.75	44.02	1.14	74	29.98	Peak	347	150	Horizontal	Pass
3	3692.31	46.48	14.57	74	27.52	Peak	37.8	150	Horizontal	Pass
4	10627.29	44.60	20.36	74	29.40	Peak	17.2	150	Horizontal	Pass
5	15391.43	46.91	9.51	74	27.09	Peak	298.9	150	Horizontal	Pass
6	22094.84	45.80	9.70	74	28.20	Peak	81.6	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1080.48	43.04	-6.21	74	30.96	Peak	317.3	150	Vertical	Pass
2	1450.89	41.48	-4.38	74	32.52	Peak	105.1	150	Vertical	Pass
3	1982.75	41.60	-2.98	74	32.40	Peak	39.1	150	Vertical	Pass
4	11031.61	49.54	17.14	74	24.47	Peak	25.9	150	Vertical	Pass
5	13217.97	44.74	9.13	74	29.27	Peak	179.3	150	Vertical	Pass
6	23332.78	45.40	13.20	74	28.60	Peak	41	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2130.87	42.10	-0.46	74	31.90	Peak	85.2	150	Horizontal	Pass
2	3047.95	47.59	9.41	74	26.41	Peak	329.3	150	Horizontal	Pass
3	4243.76	46.93	15.64	74	27.07	Peak	120	150	Horizontal	Pass
4	11840.27	47.10	19.68	74	26.90	Peak	97.6	150	Horizontal	Pass
5	12885.19	46.00	8.59	74	28.00	Peak	304.9	150	Horizontal	Pass
6	19539.10	45.27	12.52	74	28.74	Peak	116.9	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1190.95	40.11	-4.71	74	33.89	Peak	185.7	150	Vertical	Pass
2	1457.89	42.68	-4.63	74	31.32	Peak	210.8	150	Vertical	Pass
3	1929.27	43.89	-3.24	74	30.11	Peak	354.8	150	Vertical	Pass
4	9638.94	50.67	15.11	74	23.33	Peak	250.8	150	Vertical	Pass
5	16368.97	52.95	8.72	74	21.05	Peak	190.5	150	Vertical	Pass
6	19269.55	47.61	11.24	74	26.39	Peak	176	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2136.86	42.61	-4.31	74	31.39	Peak	186.3	150	Horizontal	Pass
2	3143.86	43.91	0.69	74	30.09	Peak	206.8	150	Horizontal	Pass
3	4021.98	52.45	14.18	74	21.55	Peak	100.9	150	Horizontal	Pass
4	9582.78	45.40	16.97	74	28.60	Peak	270	150	Horizontal	Pass
5	14517.89	43.95	9.47	74	30.05	Peak	346.9	150	Horizontal	Pass
6	23672.21	47.59	12.19	74	26.41	Peak	255.9	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1232.94	43.07	-4.86	74	30.93	Peak	41.4	150	Vertical	Pass
2	1487.38	41.83	-4.42	74	32.17	Peak	99.4	150	Vertical	Pass
3	1937.27	42.43	-4.19	74	31.57	Peak	269.6	150	Vertical	Pass
4	9223.38	48.21	20.13	74	25.79	Peak	280.1	150	Vertical	Pass
5	12738.77	48.08	11.51	74	25.92	Peak	90	150	Vertical	Pass
6	20567.39	46.73	11.63	74	27.27	Peak	99.1	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1983.02	40.67	-4.65	74	33.33	Peak	282.1	150	Horizontal	Pass
2	3485.51	44.47	1.64	74	29.53	Peak	324.4	150	Horizontal	Pass
3	4141.86	51.31	13.62	74	22.69	Peak	352.1	150	Horizontal	Pass
4	10425.13	46.80	20.52	74	27.20	Peak	207.3	150	Horizontal	Pass
5	13009.98	41.08	9.02	74	32.92	Peak	159.7	150	Horizontal	Pass
6	18469.63	46.37	8.52	74	27.63	Peak	283.8	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1158.96	41.93	-6.27	74	32.07	Peak	242.2	150	Vertical	Pass
2	1566.36	41.45	-4.19	74	32.55	Peak	287.3	150	Vertical	Pass
3	1955.26	44.36	-3.81	74	29.64	Peak	99.6	150	Vertical	Pass
4	10222.96	48.22	18.20	74	25.78	Peak	213.2	150	Vertical	Pass
5	16899.33	47.02	9.79	74	26.98	Peak	94.2	150	Vertical	Pass
6	20876.87	43.80	8.50	74	30.20	Peak	271.8	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1879.12	44.52	-0.99	74	29.48	Peak	271.8	150	Horizontal	Pass
2	3000.00	43.64	9.02	74	30.36	Peak	80.4	150	Horizontal	Pass
3	5559.44	51.39	14.72	74	22.61	Peak	101.2	150	Horizontal	Pass
4	10582.36	45.53	17.10	74	28.47	Peak	184.7	150	Horizontal	Pass
5	13009.98	43.89	9.15	74	30.11	Peak	81.8	150	Horizontal	Pass
6	24420.97	46.42	12.20	74	27.58	Peak	75.2	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1349.91	44.50	-5.83	74	29.50	Peak	72.4	150	Vertical	Pass
2	1421.40	39.74	-4.58	74	34.26	Peak	114	150	Vertical	Pass
3	1691.33	41.19	-4.17	74	32.81	Peak	2.8	150	Vertical	Pass
4	6696.34	43.24	14.12	74	30.76	Peak	208.7	150	Vertical	Pass
5	17471.30	49.22	9.67	74	24.78	Peak	358.3	150	Vertical	Pass
6	24291.18	48.98	11.94	74	25.02	Peak	207.4	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2474.53	39.94	-0.53	74	34.06	Peak	224.2	150	Horizontal	Pass
2	3191.81	45.80	1.97	74	28.20	Peak	216.9	150	Horizontal	Pass
3	5664.34	46.69	10.45	74	27.32	Peak	354.4	150	Horizontal	Pass
4	7370.22	43.49	18.24	74	30.51	Peak	324.5	150	Horizontal	Pass
5	17845.67	47.57	8.84	74	26.43	Peak	146.7	150	Horizontal	Pass
6	19369.38	44.78	13.79	74	29.22	Peak	20	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1177.96	41.45	-5.91	74	32.55	Peak	50.6	150	Vertical	Pass
2	1470.38	40.34	-4.49	74	33.66	Peak	85.6	150	Vertical	Pass
3	1734.82	41.07	-4.02	74	32.93	Peak	78.4	150	Vertical	Pass
4	11413.48	49.98	14.50	74	24.02	Peak	124.2	150	Vertical	Pass
5	17533.69	46.22	9.14	74	27.78	Peak	303.1	150	Vertical	Pass
6	23173.05	44.30	9.42	74	29.70	Peak	347.3	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1035.96	42.32	-4.45	74	31.68	Peak	92.5	150	Horizontal	Pass
2	2690.31	46.64	9.47	74	27.36	Peak	189.9	150	Horizontal	Pass
3	4519.48	48.49	15.15	74	25.52	Peak	143.9	150	Horizontal	Pass
4	10851.91	43.82	14.44	74	30.18	Peak	51.4	150	Horizontal	Pass
5	13020.38	43.47	9.15	74	30.53	Peak	35.4	150	Horizontal	Pass
6	23562.40	48.23	9.03	74	25.77	Peak	326.9	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1123.97	39.66	-5.51	74	34.34	Peak	12.8	150	Vertical	Pass
2	1578.36	42.67	-4.09	74	31.33	Peak	160	150	Vertical	Pass
3	1804.30	44.06	-4.31	74	29.94	Peak	346.8	150	Vertical	Pass
4	6123.54	47.97	14.37	74	26.04	Peak	278.1	150	Vertical	Pass
5	16951.33	47.62	19.56	74	26.38	Peak	54.2	150	Vertical	Pass
6	22893.51	47.92	8.38	74	26.09	Peak	258.7	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1823.18	44.92	-6.27	74	29.08	Peak	246.8	150	Horizontal	Pass
2	2960.04	46.35	9.11	74	27.65	Peak	178.5	150	Horizontal	Pass
3	5211.79	50.45	13.70	74	23.55	Peak	264.4	150	Horizontal	Pass
4	10324.04	44.65	14.30	74	29.35	Peak	355.2	150	Horizontal	Pass
5	12957.99	45.27	9.28	74	28.73	Peak	300.8	150	Horizontal	Pass
6	19069.88	49.62	9.57	74	24.38	Peak	140.5	150	Horizontal	Pass

1 GHz to 25 GHz, ANT V 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1244.44	42.78	-5.96	74	31.22	Peak	83.4	150	Vertical	Pass
2	1429.89	42.22	-4.44	74	31.78	Peak	96.3	150	Vertical	Pass
3	1628.84	43.71	-2.58	74	30.29	Peak	255.8	150	Vertical	Pass
4	9391.85	46.95	17.01	74	27.05	Peak	98.5	150	Vertical	Pass
5	15755.41	45.77	9.07	74	28.23	Peak	203.2	150	Vertical	Pass
6	24780.37	45.12	11.18	74	28.88	Peak	355.7	150	Vertical	Pass

1 GHz to 25 GHz, ANT H 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2078.92	40.79	-2.03	74	33.21	Peak	259.8	150	Horizontal	Pass
2	3191.81	47.51	2.37	74	26.50	Peak	273	150	Horizontal	Pass
3	5085.91	49.97	13.63	74	24.04	Peak	249.4	150	Horizontal	Pass
4	6853.58	47.67	14.93	74	26.33	Peak	119.1	150	Horizontal	Pass
5	16056.99	46.11	9.33	74	27.89	Peak	291.1	150	Horizontal	Pass
6	23981.70	46.75	9.55	74	27.25	Peak	75.9	150	Horizontal	Pass

A.7 Band Edge (Restricted-band band-edge)

Test Data (ANT 0 +ANT 1)

Note 1: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

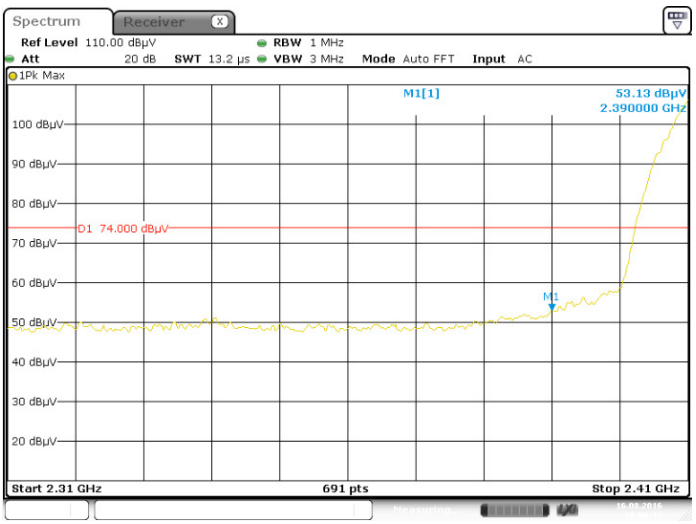
Note 2: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

Note 3: According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

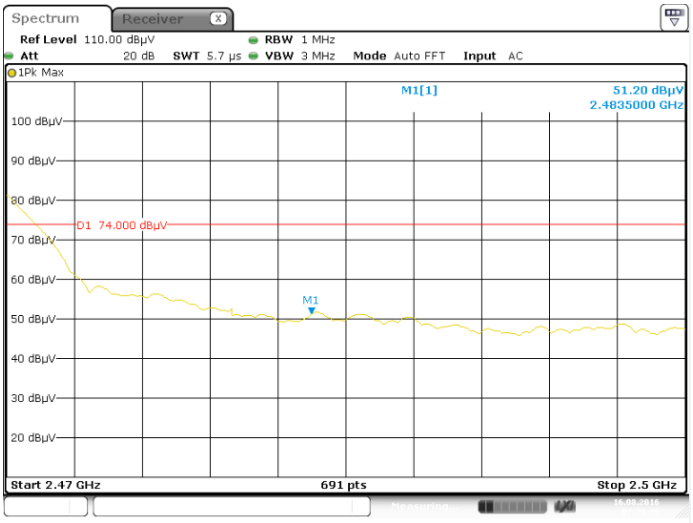
Test Mode	Test Channel	Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Remark	Verdict
802.11b	Low	2390	53.13	74	20.87	PEAK	Pass
		2390	--	54	--	AVERAGE	Pass
	HIGH	2483.5	51.2	74	22.8	PEAK	Pass
		2483.5	--	54	--	AVERAGE	Pass
802.11g	Low	2390	54.58	74	19.42	PEAK	Pass
		2390	40.54	54	13.46	AVERAGE	Pass
	HIGH	2483.5	52.66	74	21.34	PEAK	Pass
		2483.5	--	54	--	AVERAGE	Pass
802.11n20	Low	2390	57.08	74	16.92	PEAK	Pass
		2390	39.51	54	14.49	AVERAGE	Pass
	HIGH	2483.5	51.79	74	22.21	PEAK	Pass
		2483.5	--	54	--	AVERAGE	Pass
802.11n40	Low	2390	55.74	74	18.26	PEAK	Pass
		2390	41.53	54	12.47	AVERAGE	Pass
	HIGH	2483.5	54.08	74	19.92	PEAK	Pass
		2483.5	39.67	54	14.33	AVERAGE	Pass

802.11b Mode：

LOW CHANNEL, PEAK

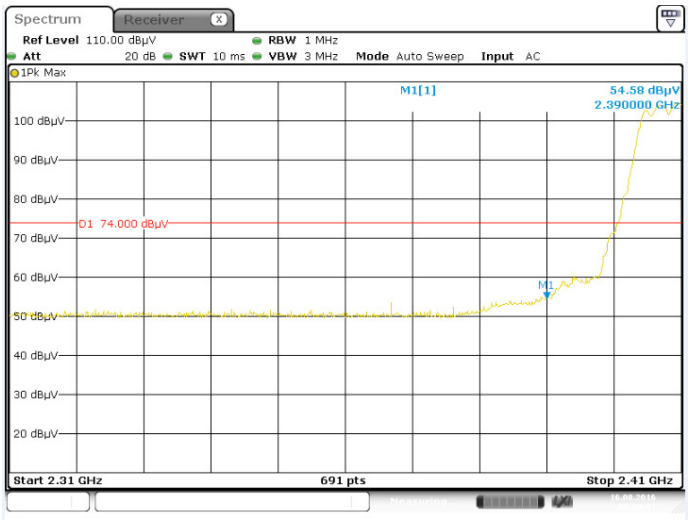


HIGH CHANNEL, PEAK

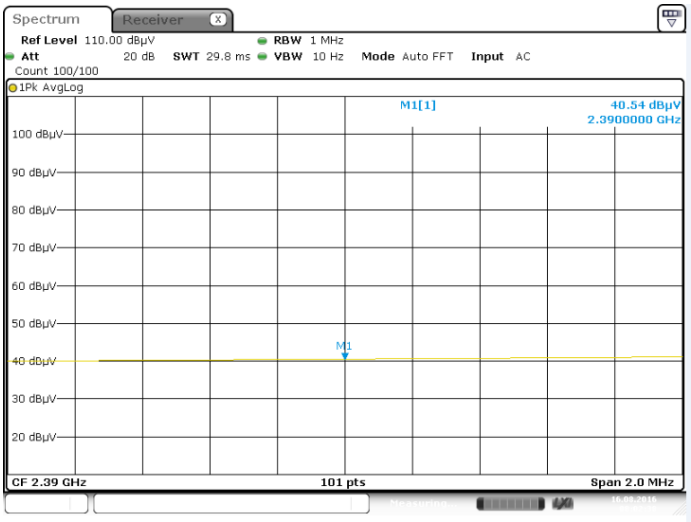


802.11g Mode：

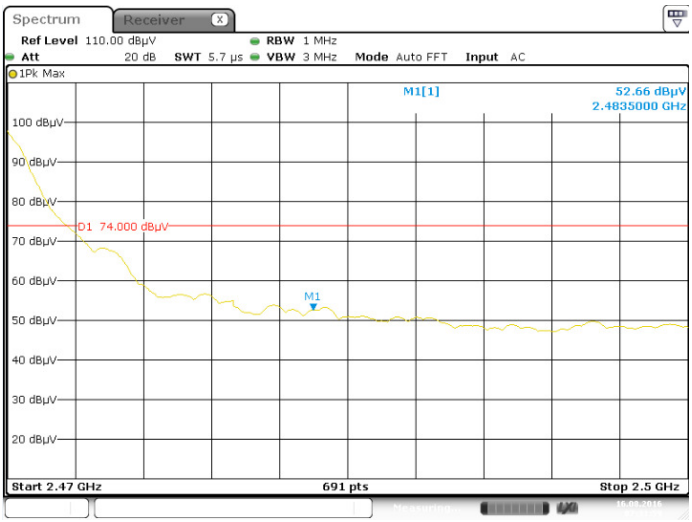
LOW CHANNEL, PEAK



LOW CHANNEL,AV

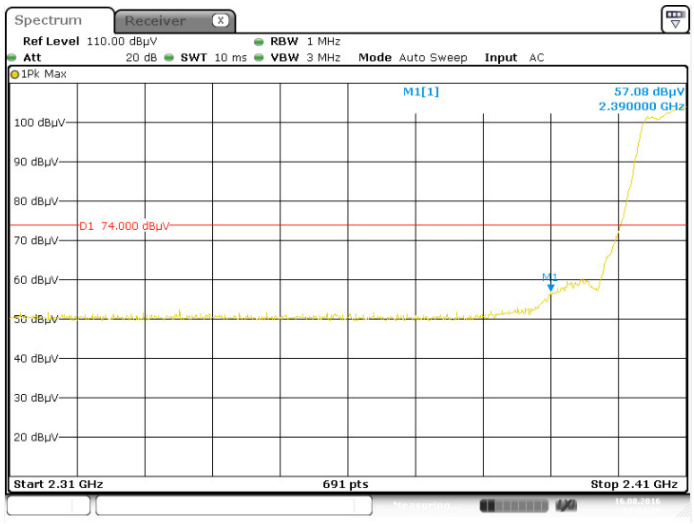


HIGH CHANNEL, PEAK

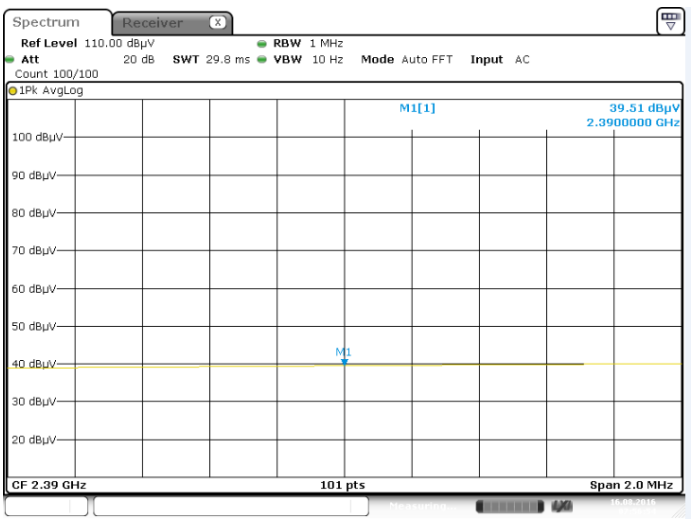


802.11n-20 MHz Mode：

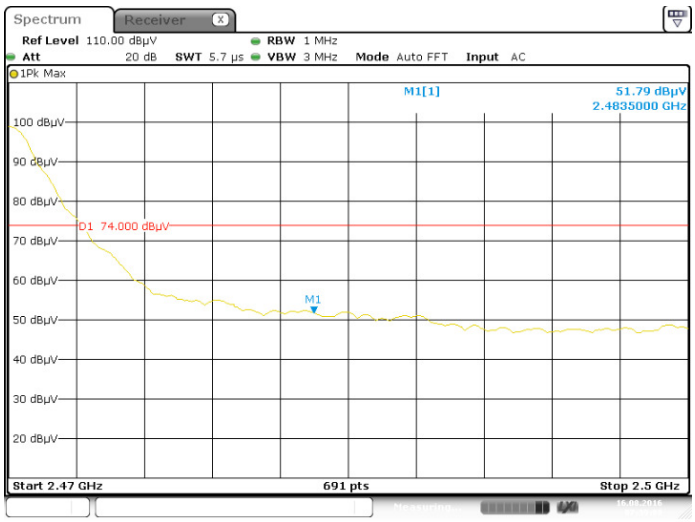
LOW CHANNEL, PEAK



LOW CHANNEL, AV

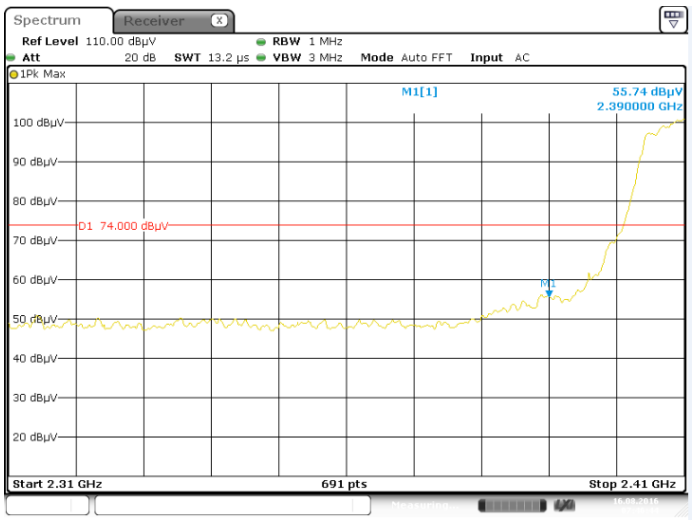


HIGH CHANNEL, PEAK

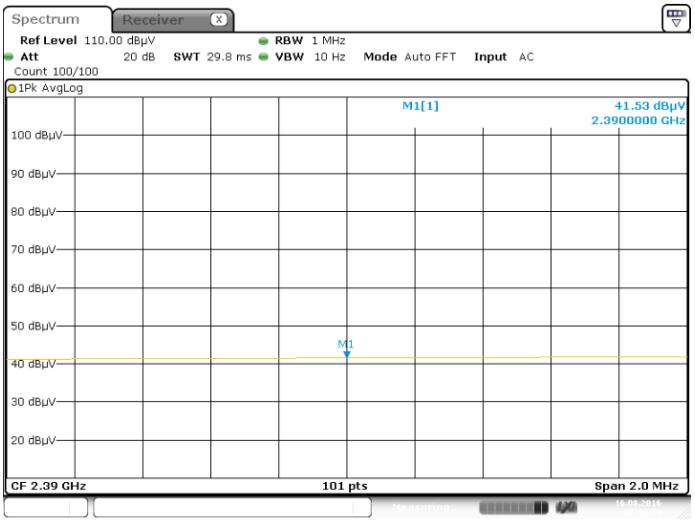


802.11n-40 MHz Mode：

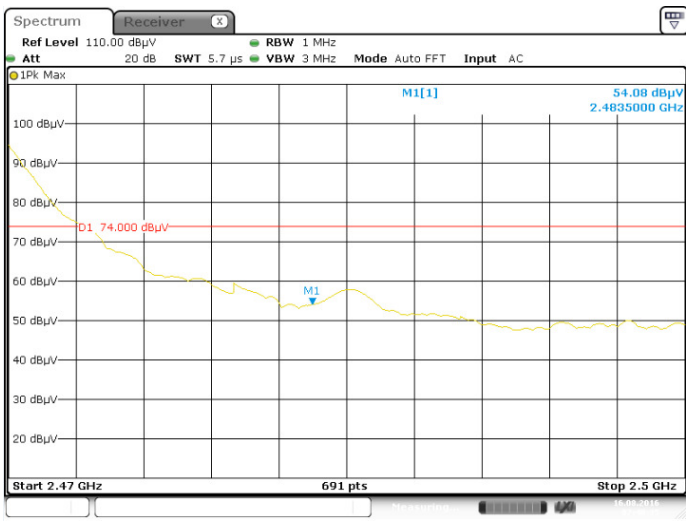
LOW CHANNEL, PEAK



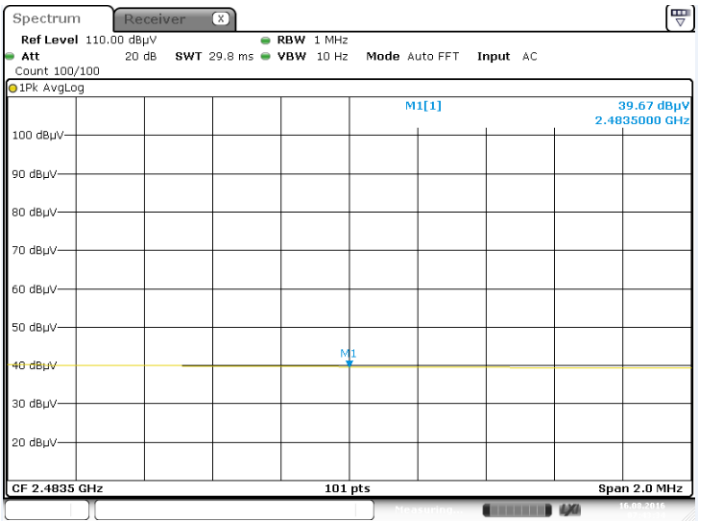
LOW CHANNEL, AV



HIGH CHANNEL, PEAK



HIGH CHANNEL, AV



A.8 Power Spectral Density (PSD)

Test Data

802.11b Mode:

Channel	Spectral power density (dBm/3kHz) of ANT 0	Spectral power density (dBm/3kHz) of ANT 1	Total of Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.67	-10.18	-6.91	8
Middle	-9.51	-11.34	-7.32	8
High	-9.70	-12.49	-7.86	8

802.11g Mode:

Channel	Spectral power density (dBm/3kHz) of ANT 0	Spectral power density (dBm/3kHz) of ANT 1	Total of Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-14.67	-18.38	-13.13	8
Middle	-15.36	-18.90	-13.77	8
High	-15.31	-17.39	-13.22	8

802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz) of ANT 0	Spectral power density (dBm/3kHz) of ANT 1	Total of Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-15.36	-18.03	-13.48	8
Middle	-15.88	-18.36	-13.94	8
High	-14.26	-17.08	-12.43	8

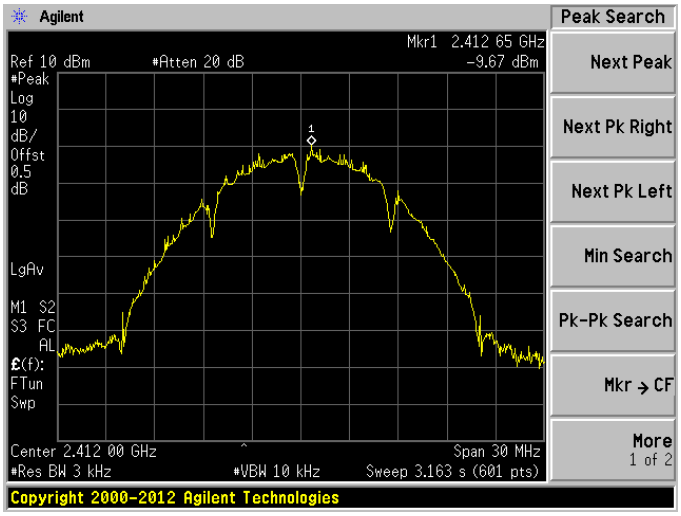
802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz) of ANT 0	Spectral power density (dBm/3kHz) of ANT 1	Total of Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-16.85	-20.06	-15.15	8
Middle	-17.97	-19.51	-15.66	8
High	-17.15	-20.80	-15.59	8

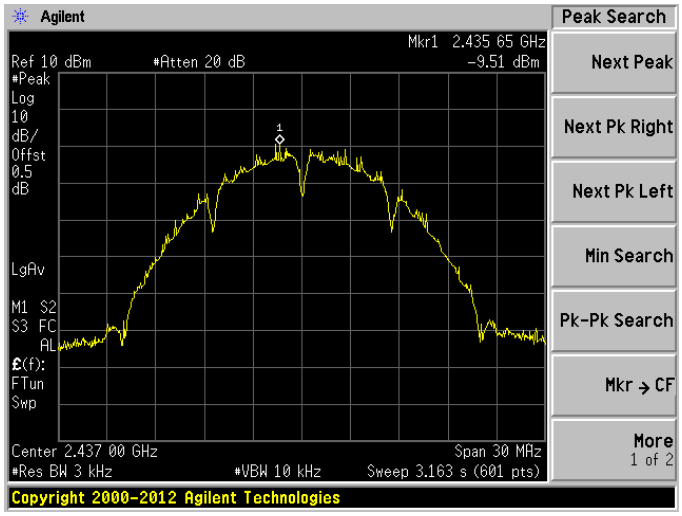
ANT 0

Test plots

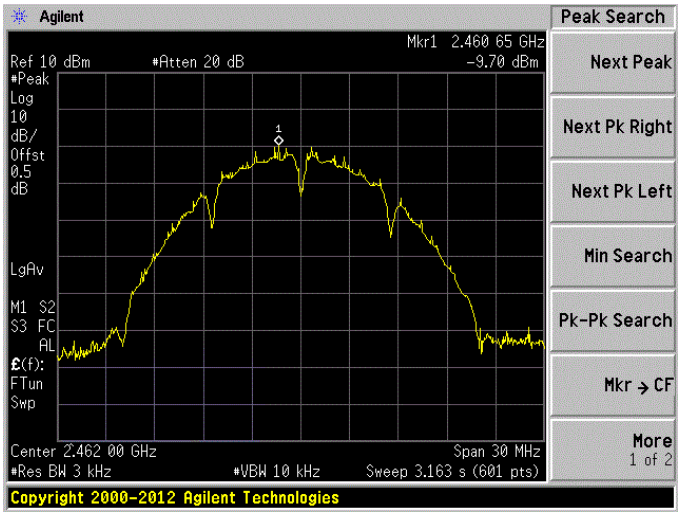
802.11b LOW CHANNEL



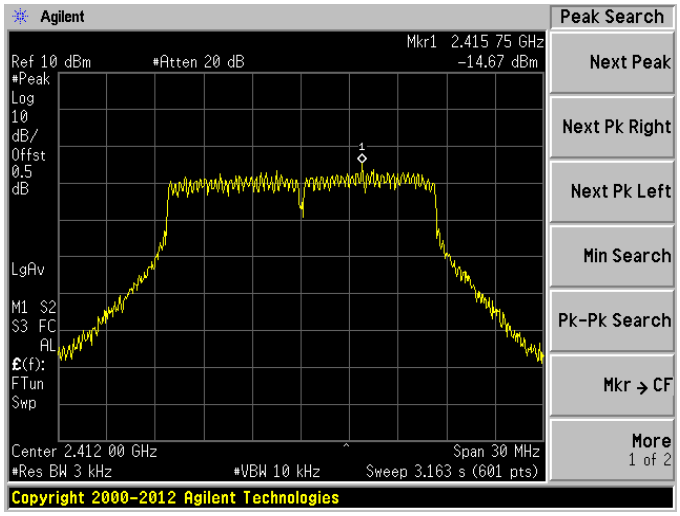
802.11b MIDDLE CHANNEL



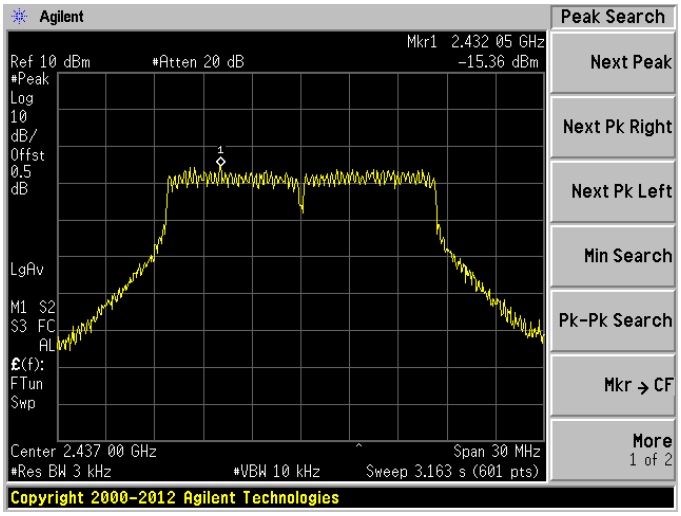
802.11b HIGH CHANNEL



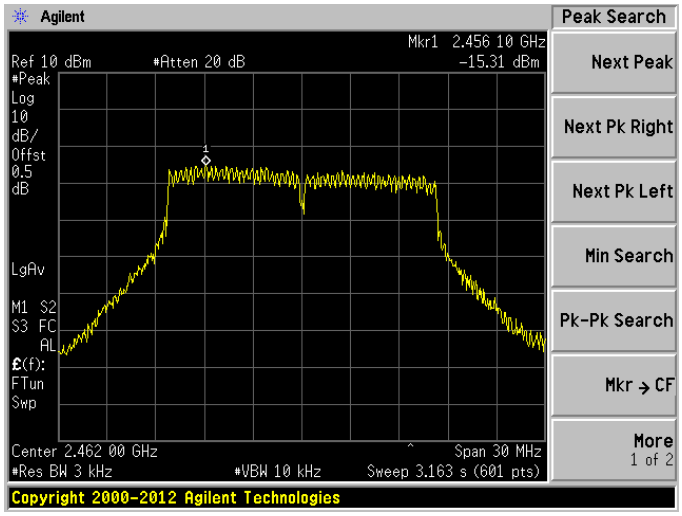
802.11g LOW CHANNEL



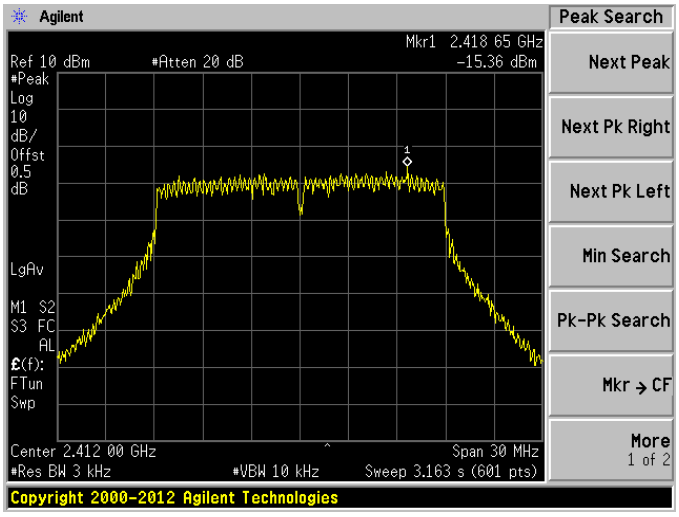
802.11g MIDDLE CHANNEL



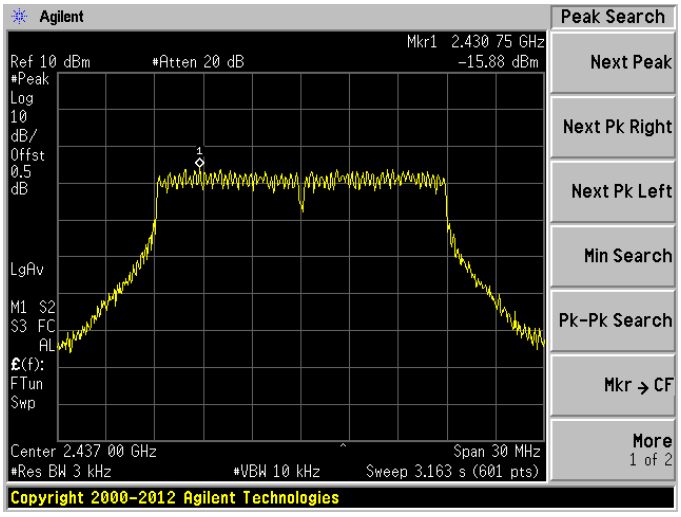
802.11g HIGH CHANNEL



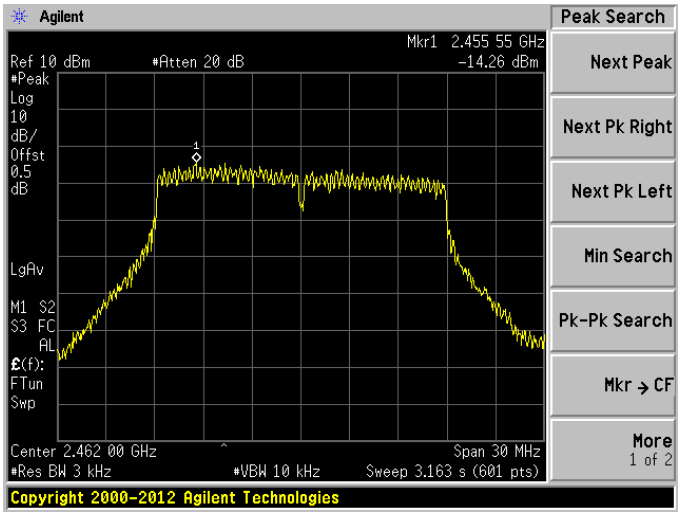
802.11n-20 MHz LOW CHANNEL



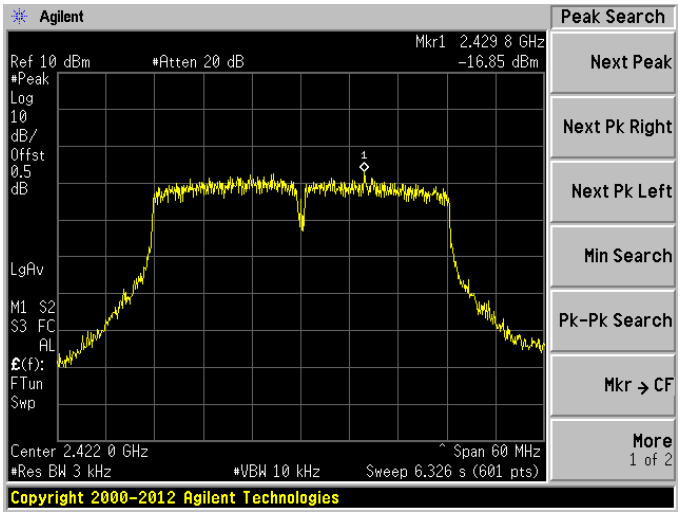
802.11 n-20 MHz MIDDLE CHANNEL



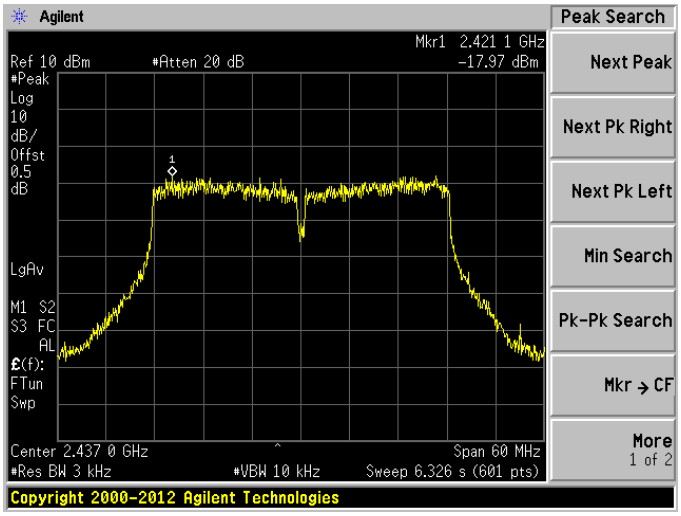
802.11n-20 MHz HIGH CHANNEL



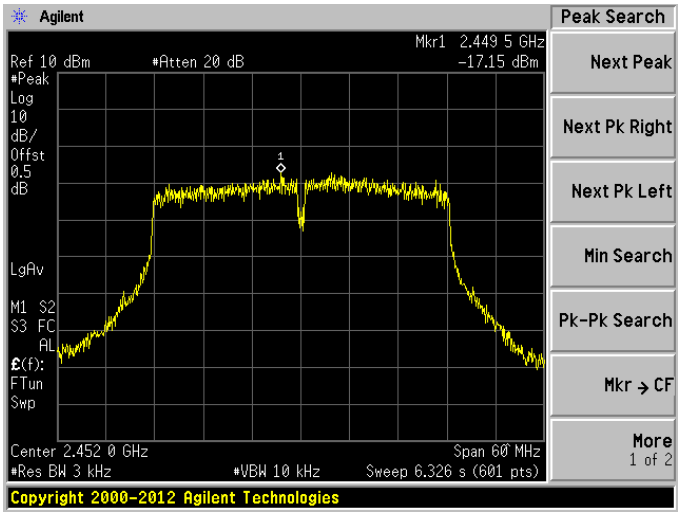
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



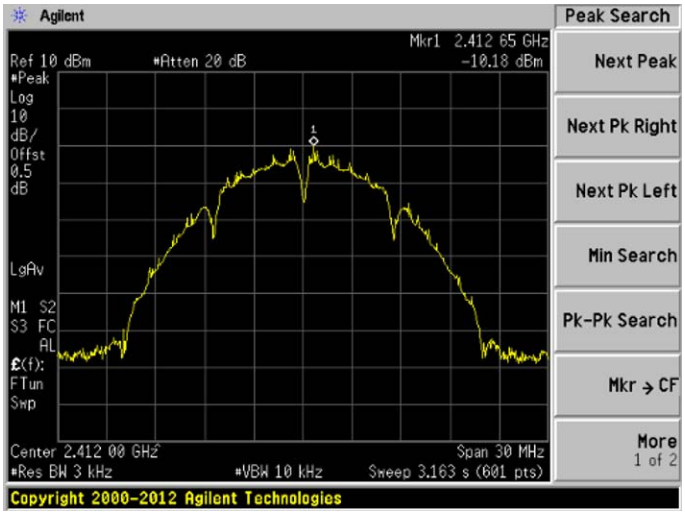
802.11n-40 MHz HIGH CHANNEL



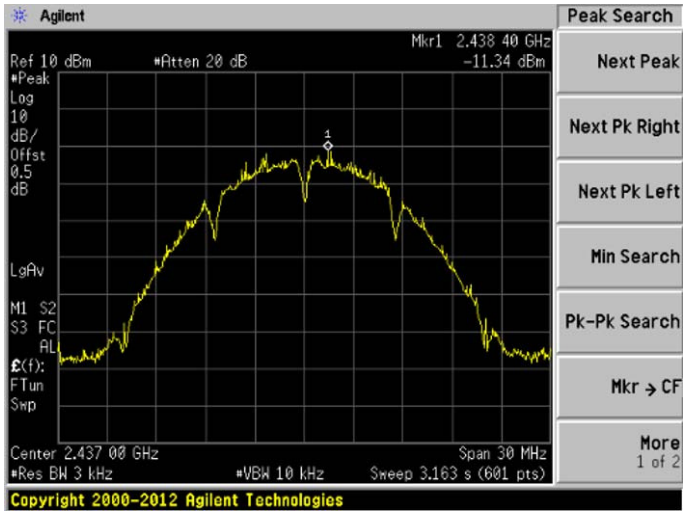
ANT 1

Test plots

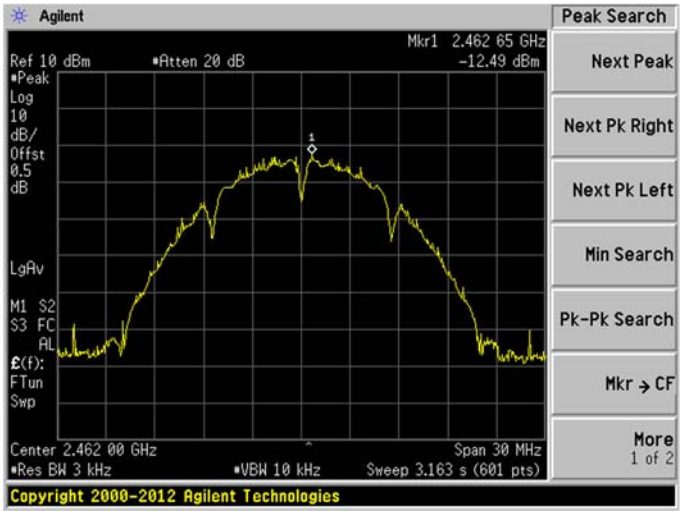
802.11b LOW CHANNEL



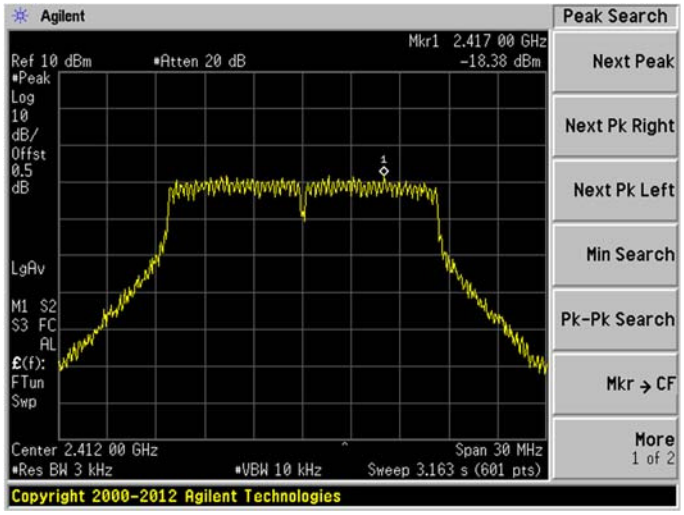
802.11b MIDDLE CHANNEL



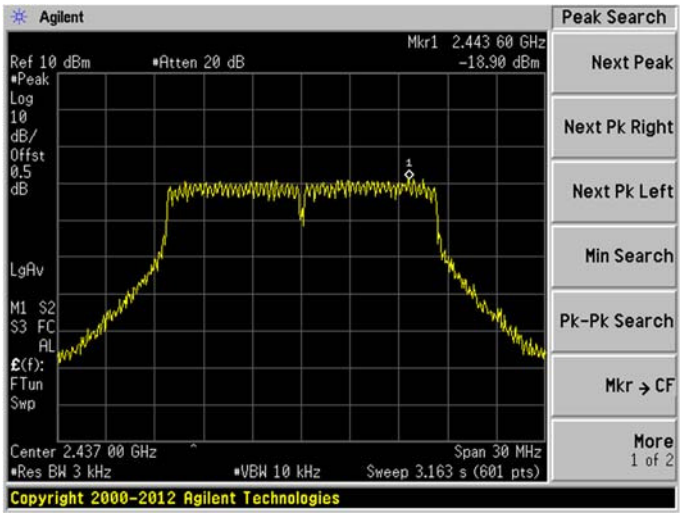
802.11b HIGH CHANNEL



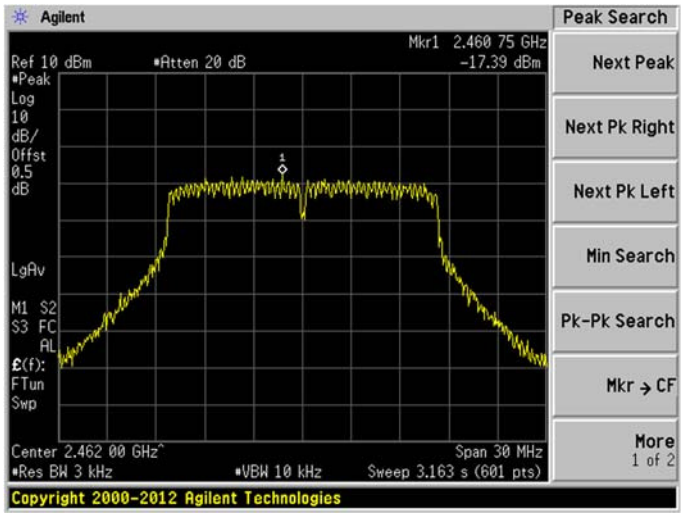
802.11g LOW CHANNEL



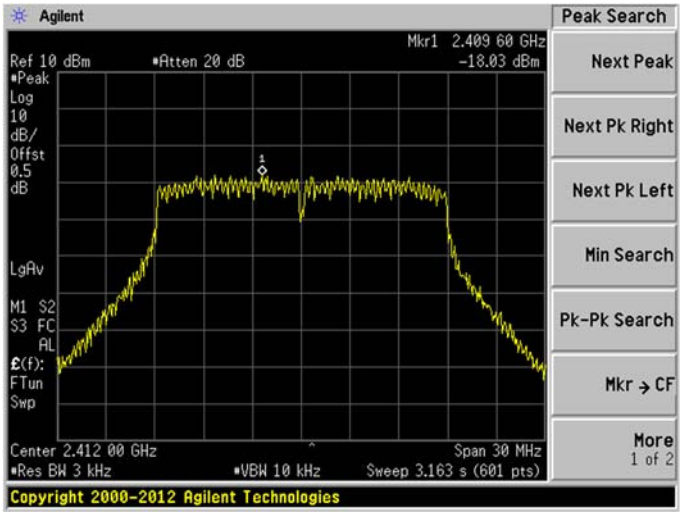
802.11g MIDDLE CHANNEL



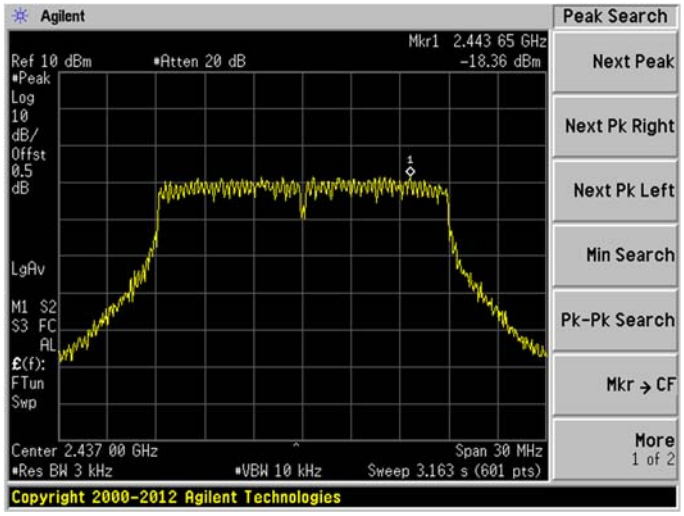
802.11g HIGH CHANNEL



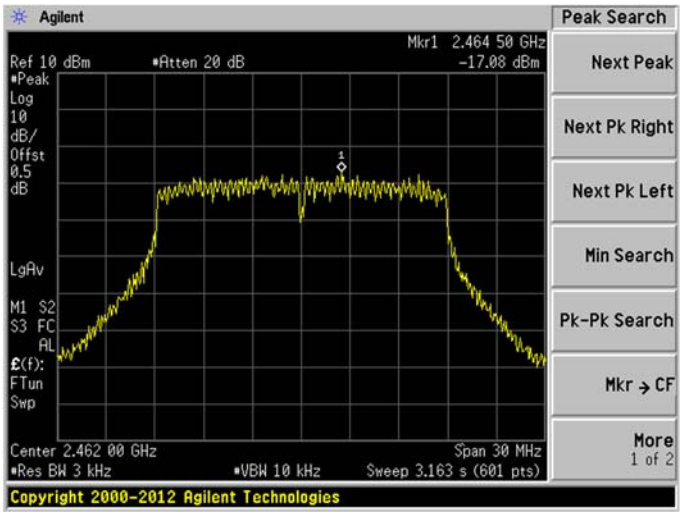
802.11n-20 MHz LOW CHANNEL



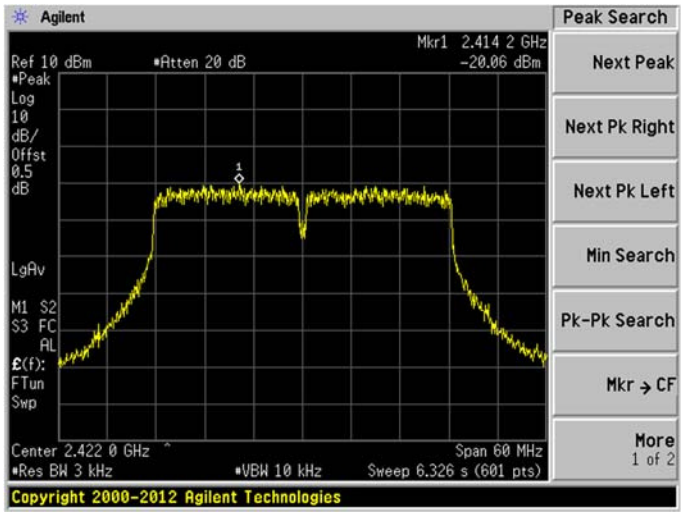
802.11 n-20 MHz MIDDLE CHANNEL



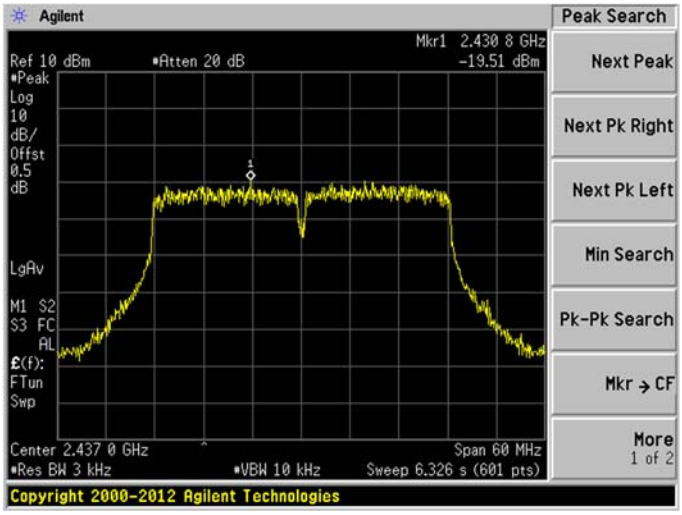
802.11n-20 MHz HIGH CHANNEL



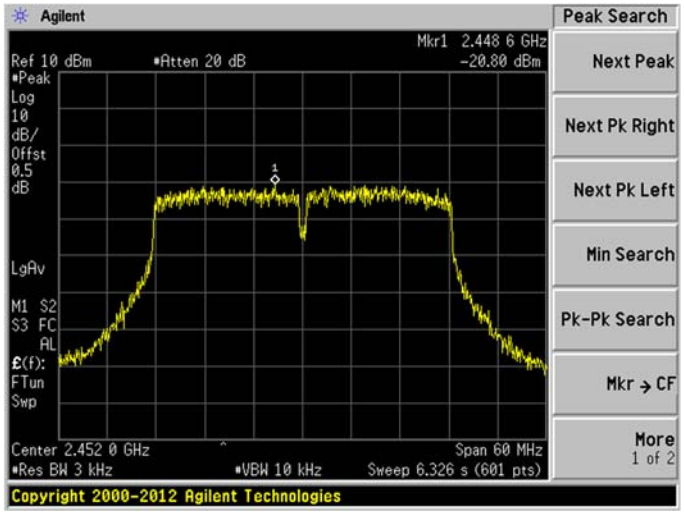
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ1680175-AR.pdf”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ1680175-AW.pdf”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ1680175-AI.pdf”.

--END OF REPORT--