TEST REPORT

Date: 2012-06-15
Report No.: 68.870.12.024.01F

Applicant:	Shenzhen Yichen Technology Development Co., LTD 5F, No.1, Honghualing 2nd Industrial Zone, Xili Town, Nanshan District, 518055 Shenzhen, Guangdong, People's Republic Of China.	
Description of Samples:	Model name:	Intelligent Wireless Router
	Brand name:	JCG
	Model no.:	JHR-N926R, JHR-N936R, JHR-N946R, JHR-N956R, JHR-N966R,JHR-976R, JHR-986R, JHR-996R
	FCCID:	HHOYC002
Date Samples Received:	2012-06-01	
Date Tested:	2012-06-01 to 2012-06-11	
Investigation Requested:	FCC Part 15 Subpart C, Section 15.247	
Conclusions:	The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.	
Remarks:	----	

Checked by:

John Zhi
Project Engineer
Wireless & Telecom department

Approved by:-

Nicolas Cheng
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Appendix A

Photos of Test Setup

Appendix B

External EUT Photos

Appendix C

Internal EUT Photos

1.0 General Details

1.1 Test Laboratory

SEM.Test Compliance Services Co., Ltd.
EMC Laboratory registered by FCC with
FCC Registration Number: 994117

Test By: Susan Su

Susan Su

1.2 Applicant Details

Applicant

Shenzhen Yichen Technology Development Co., LTD
5F, No.1, Honghualing 2nd Industrial Zone, Xili Town,
Nanshan District, 518055 Shenzhen, Guangdong,
People's Republic Of China.

Manufacturers

Shenzhen Yichen Technology Development Co., LTD
5F, No.1, Honghualing 2nd Industrial Zone, Xili Town,
Nanshan District, 518055 Shenzhen, Guangdong,
People's Republic Of China.

1.3 Equipment Under Test [EUT]

Description of EUT

Product Description:	Intelligent Wireless Router
Model No.:	JHR-N926R, JHR-N936R, JHR-N946R, JHR-N956R, JHR-N966R,JHR-976R, JHR-986R, JHR-996R
Brand Name:	JCG
FCCID:	HHOYC002
Rating:	DC12V, 1A powered by AC/DC adapter Model : HKA01212010-2F, XKD-C1000IC12.0-12W
Operated Frequency:	2412 -2462 MHz
Modulation:	BPSK, QPSK, CCK and OFDM (BPSK/QPSK/16-QAM/ 64-QAM)
No. of Operated Channel:	11 (802.11b/g/nHT20) 7 (802.11nHT40)
Data Rate:	802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 24, 36, 48, 54Mbps; 802.11nHT20: MCS0-15，Support up to 150Mbps 802.11nHT40: MCS0-15, Support up to 300Mbps
Accessories and Auxiliary Equipments:	AC/DC power adaptor.
Antenna Type:	2x4dBi Fixed Antenna
Manufacture of Antenna:	SHENZHEN FLY ELECTRONIC CO., LTD
Antenna Gain:	4dBi
Antenna Model:	N/A

General Operation of EUT

The Equipment Under Test (EUT) is a Intelligent Wireless Router System operated at 2.4GHz. DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g/n Operation Principle:
This Systems using embedded MIMO RF transceiver consists of two receivers and two transmitters used to form a complete 2.4GHz ISM band Wireless LAN application. The EUT shall be simultaneous transmission at the antenna 0 and antenna 1 for 802.11g , 802.11n HT20 or HT40, 802.11b mode shall be transmission only single antenna (antenna 0 or antenna 1).

As per client declaration, the model JHR-N936R, JHR-N946R, JHR-N956R, JHR-N966R,JHR-976R, JHR-986R, JHR-996R, which utilize the identical circuit design, PCB layout, shielding and interface with the model JHR-N926R, only the cosmetic is difference. Therefore the mainly perform test on JHR-N926R model.

Description of Test Modes

The EUT has been tested under operating condition.
Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate (worst case) are chosen for the final testing.
IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.
IEEE802.11nHT20: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with MCS0 data rate (worst case) are chosen for the final testing.
IEEE802.11nHT40: Channel 3(2422MHz), Channel 6(2437MHz) and Channel 9(2452MHz) with MCS0 data rate (the worst case) are chosen for the final testing.

1.4 Related Submittal(s) Grants

This is a signal application subject to Certificate Authorization.

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2009 and ANSI C63.4: 2003 for FCC Verification

2.2 Test Standards and Results Summary Tables

Test Condition	Test Requirement	Test Result	
		Pass	N/A
Number of Frequency Hopping	Section 15.247 (a1)	☐	☒
6dB Bandwidth Measurement	Section 15.247 (a2)	☒	☐
Power Spectral Density	Section 15.247 (e)	☒	☐
Pseudorandom Hopping Algorithm	Section 15.247 (a1)	☐	☒
Band Edge Measurement	Section 15.247	☒	☐
Maximum Output Power	Section 15.247 (b3)	☒	☐
Out of Band Emission	Section 15.247 (d)	☒	☐
Radiated Emission in Restricted Band	Section 15.247 (d)	☒	☐
Conducted Emission on AC Mains	Section 15.207	☒	☐
RF Exposure	Section 15.247 (i)	☒	☐
Antenna Requirement	Section 15.203	☒ See note 1	☐

Note 1 : The EUT uses a permanently attached antenna, which in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

Remark: N/A - Not Applicable

3.0 Test Methodology

3.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*On a standard emission test site with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 994117.

3.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + System Factor
System Factor = AF + CF + FA – PA

Where FS = Net Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer / Test Receiver in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

3.3 Conducted Emissions

The test was performed in accordance with ANSI C63.4: 2003, with the following: initial measurements were performed in peak and average detection modes on the live line of personal computer, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

4.0 Test Results

4.1 6 dB Bandwidth Measurement

Test Requirement:	FCC part 15 section 15.247 (a2)
Test Date:	2012-06-08
Mode of Operation:	Transmitting continuously mode.
Detector Function:	Max Hold

Result: PASS

Test Setup:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Antenna 0

For 802.11B Mode

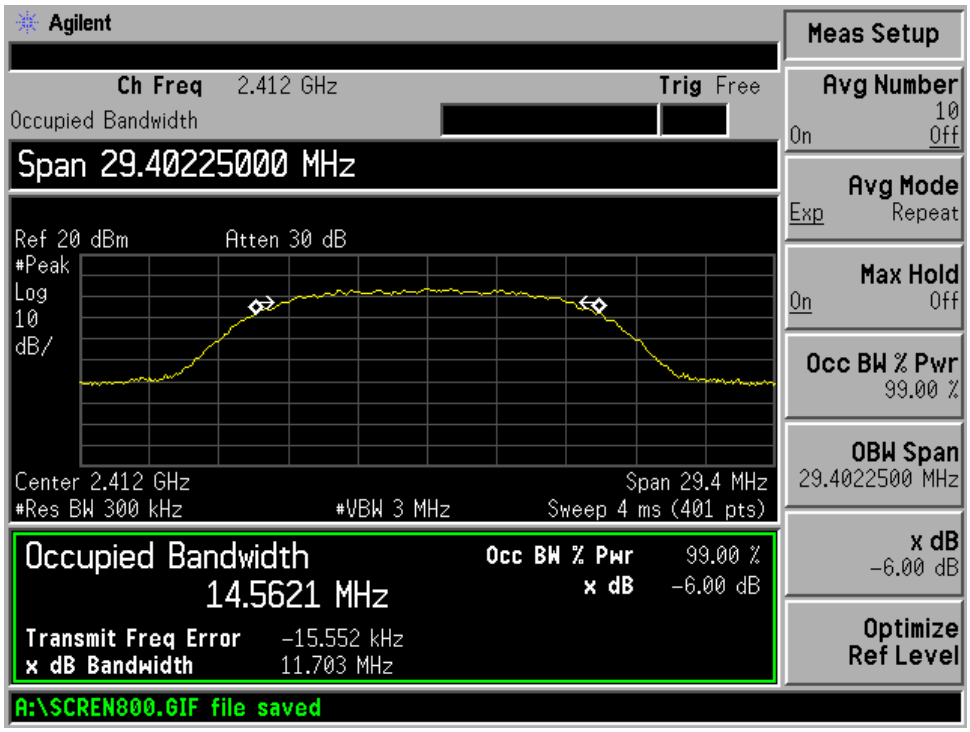
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	11.703
Middle	2437	11.932
Highest	2462	11.953

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

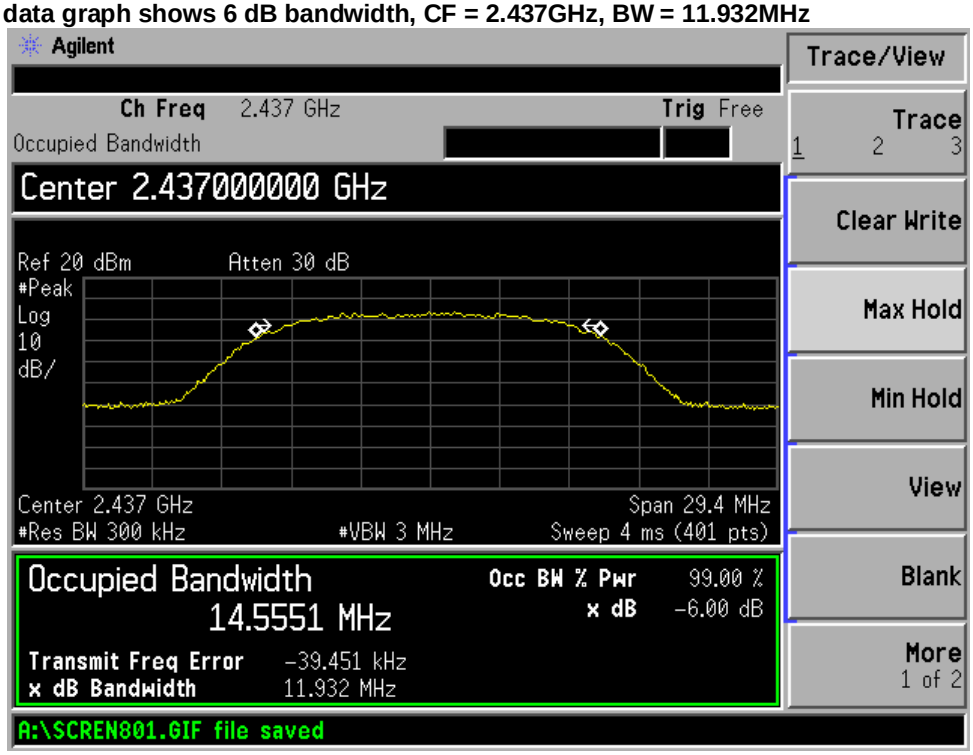
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

For 802.11B Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 11.703 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 11.932MHz



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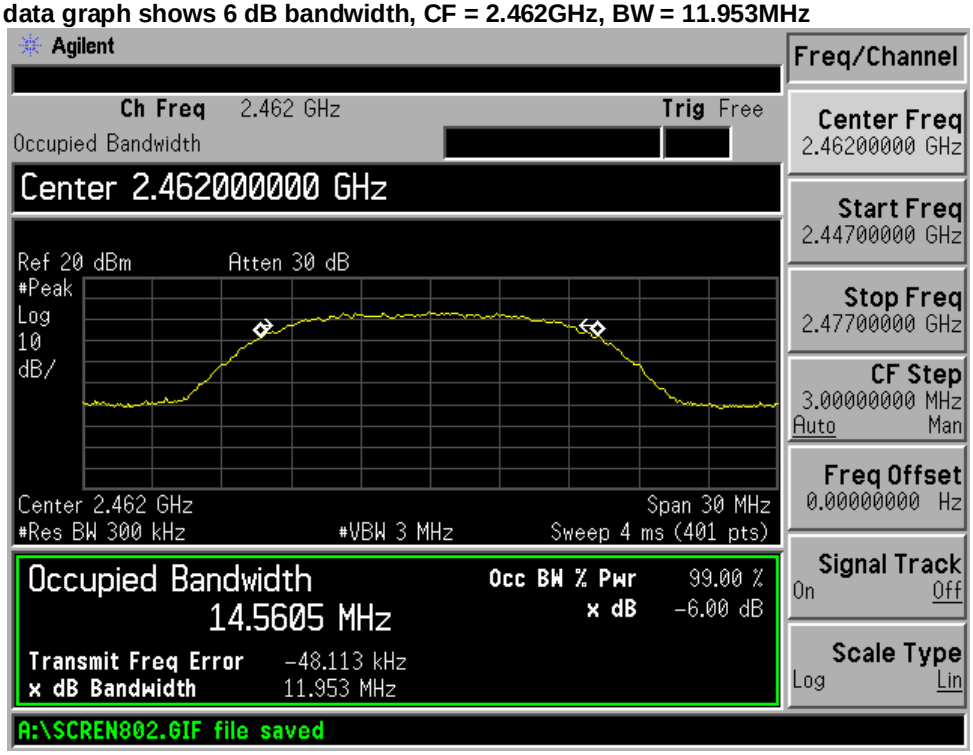
No. 4001,Fuqiang Road, Futian District, Shenzhen, China.

Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 11.953MHz



For 802.11G Mode

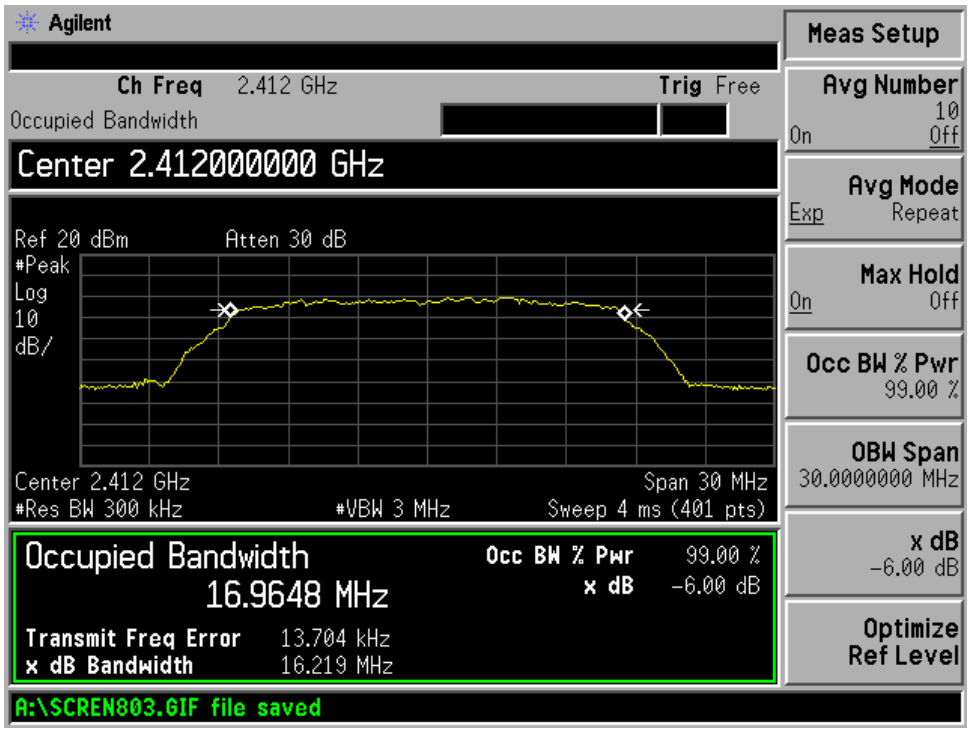
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.219
Middle	2437	16.251
Highest	2462	16.556

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

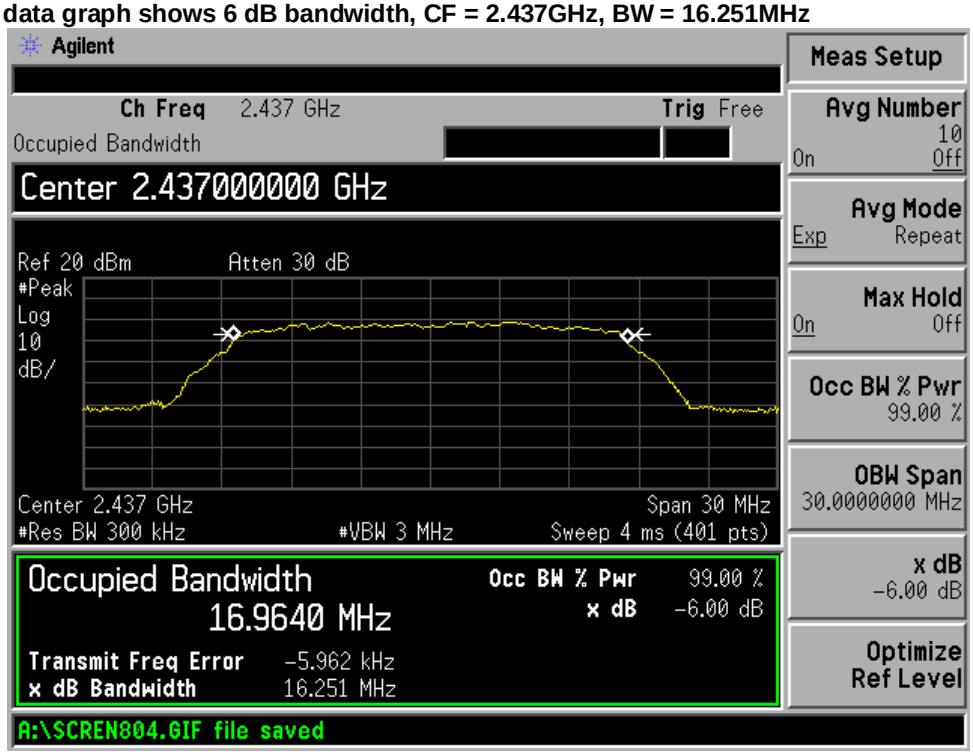
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

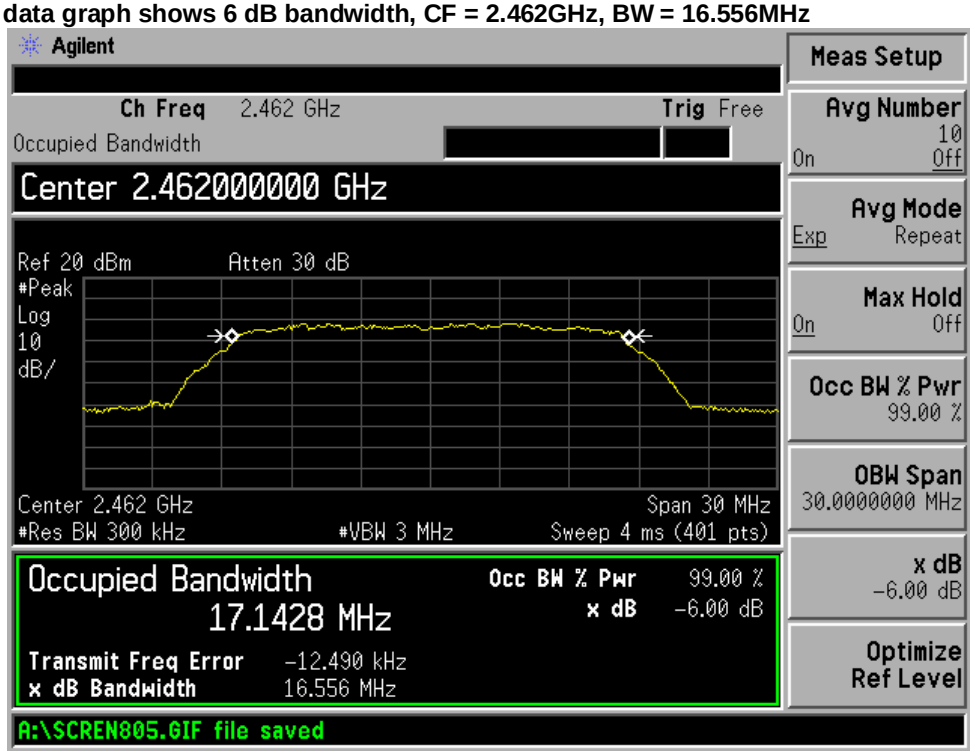
For 802.11G Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.219 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.251MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.556MHz



For 802.11N HT20 Mode

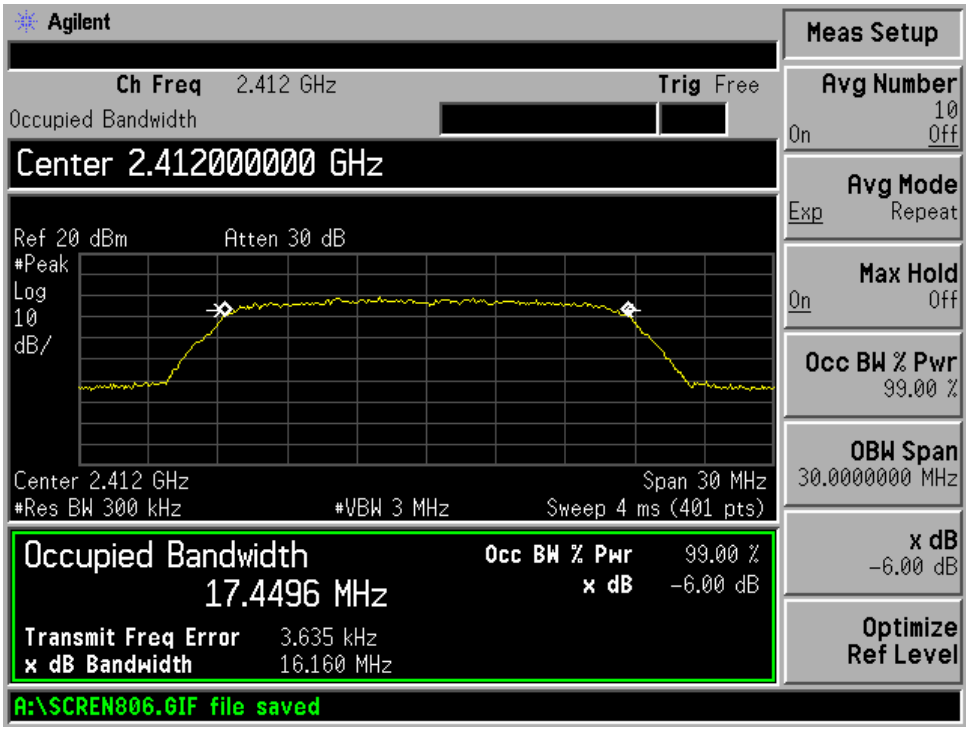
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.160
Middle	2437	16.489
Highest	2462	16.699

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

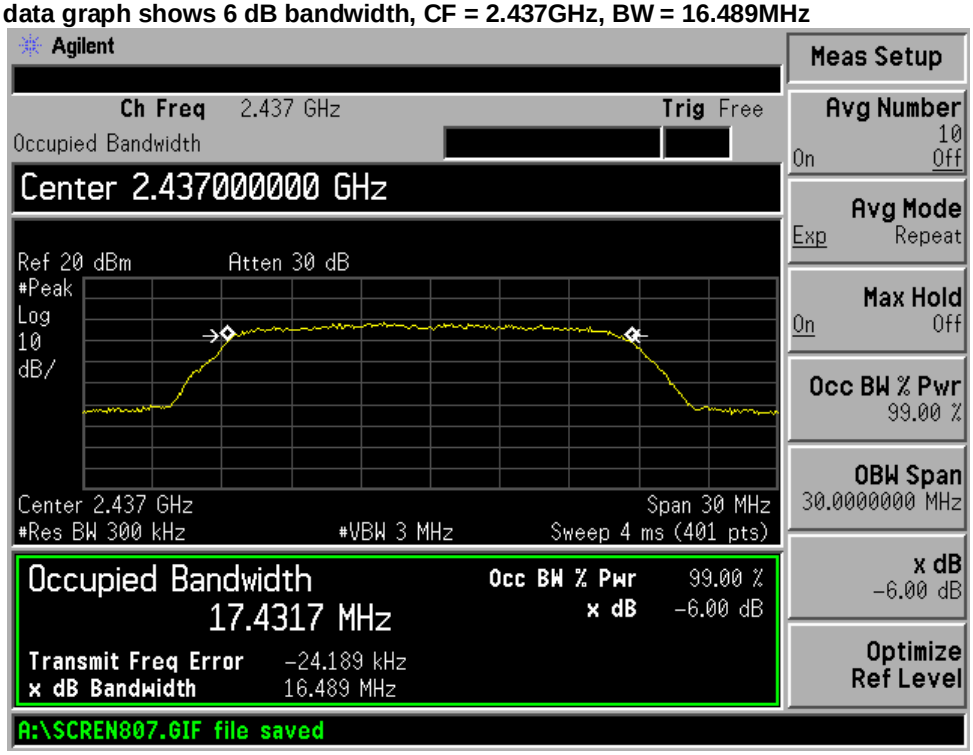
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

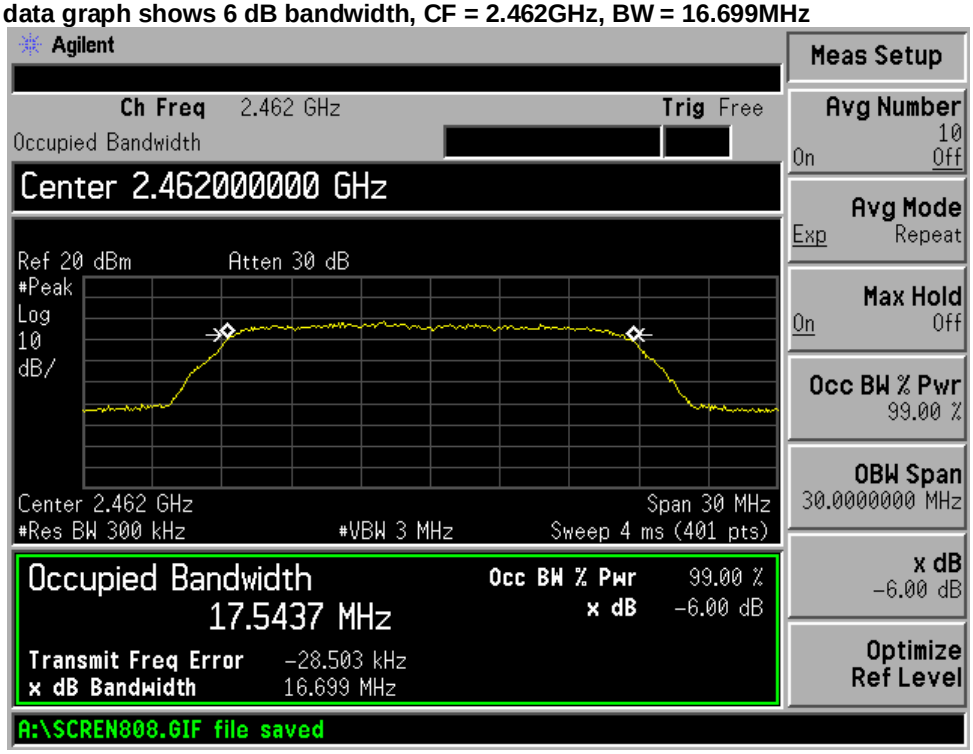
For 802.11N HT20 Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.160 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.489MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.699MHz



For 802.11N HT40 Mode

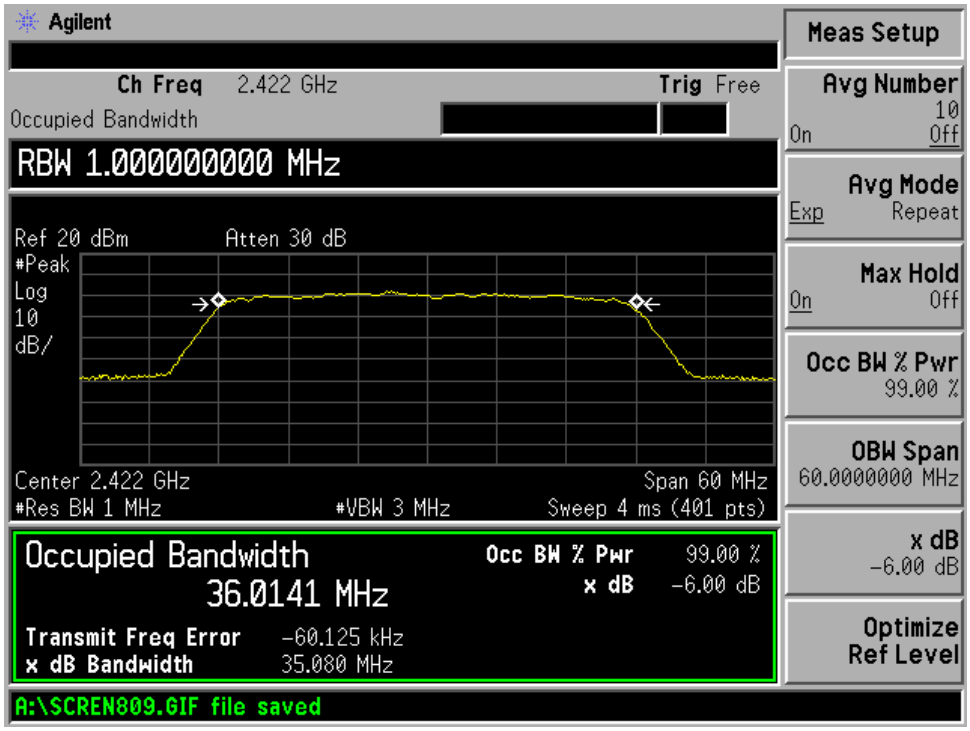
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2422	35.080
Middle	2437	34.386
Highest	2452	34.760

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

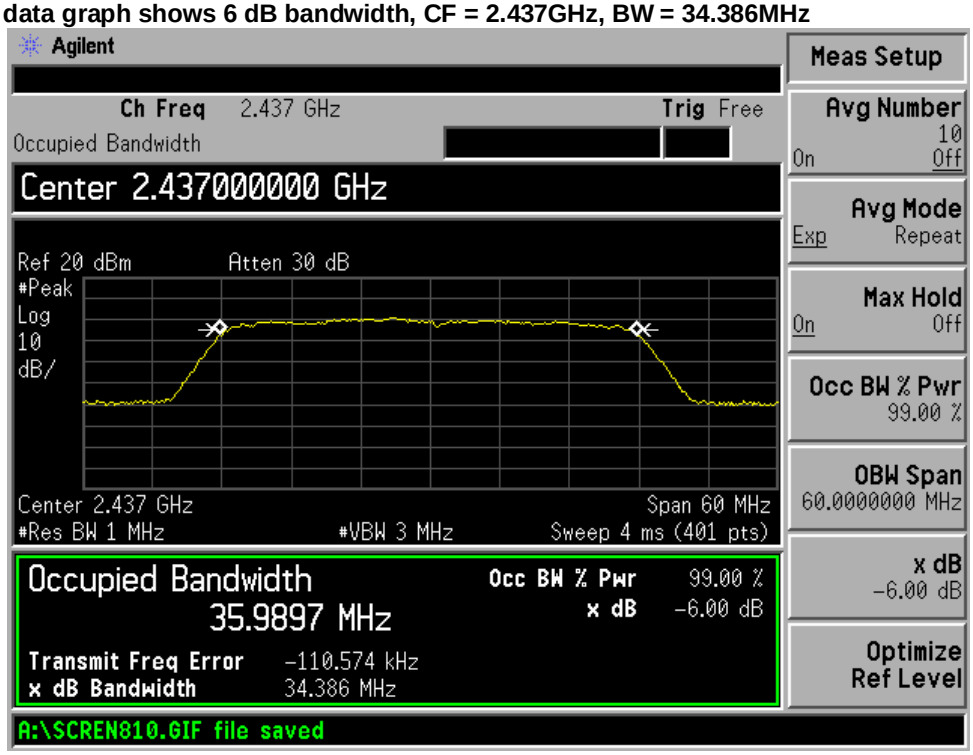
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

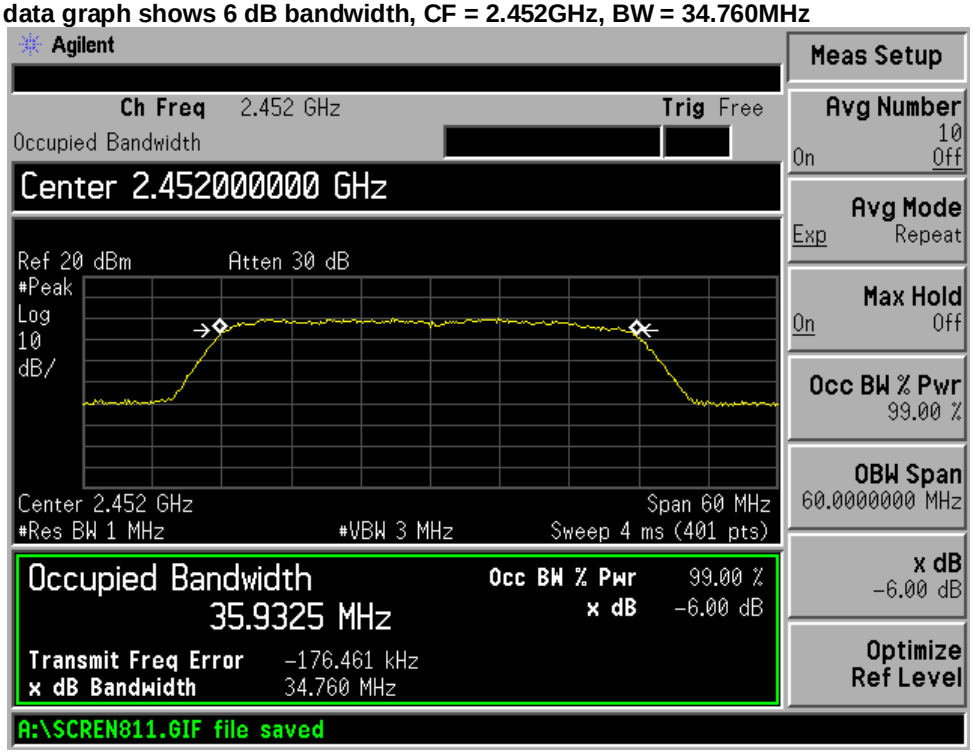
For 802.11N HT40 Mode
Result data graph shows 6 dB bandwidth, CF = 2.422GHz, BW = 35.080 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 34.386MHz



Result data graph shows 6 dB bandwidth, CF = 2.452GHz, BW = 34.760MHz



Antenna 1

For 802.11B Mode

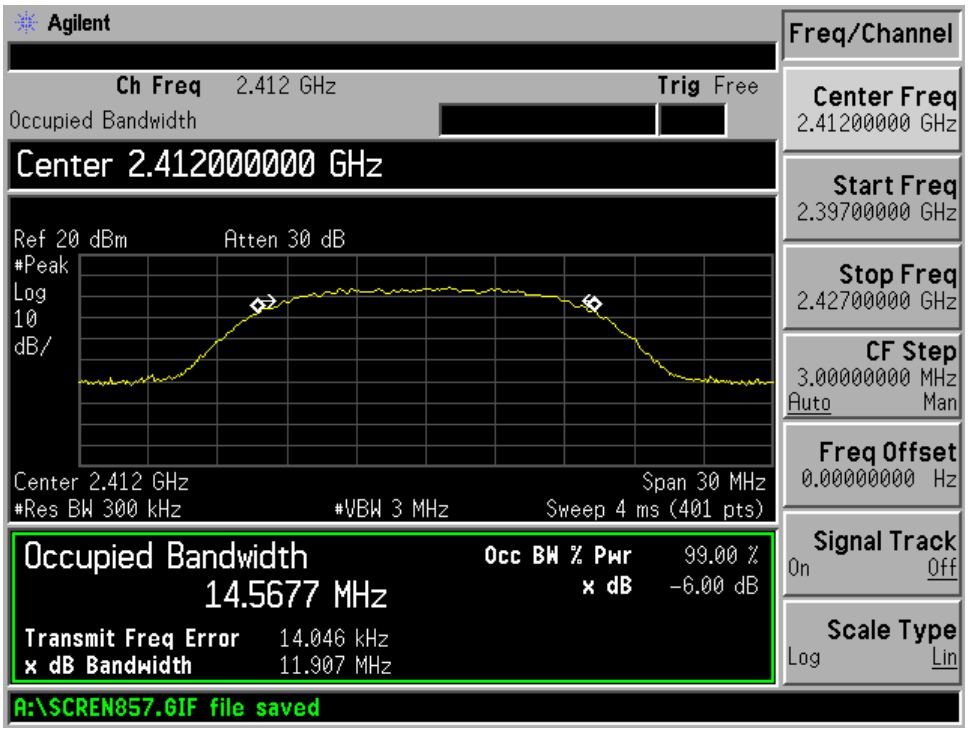
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	11.907
Middle	2437	11.854
Highest	2462	11.958

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

For 802.11B Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 11.907 MHz



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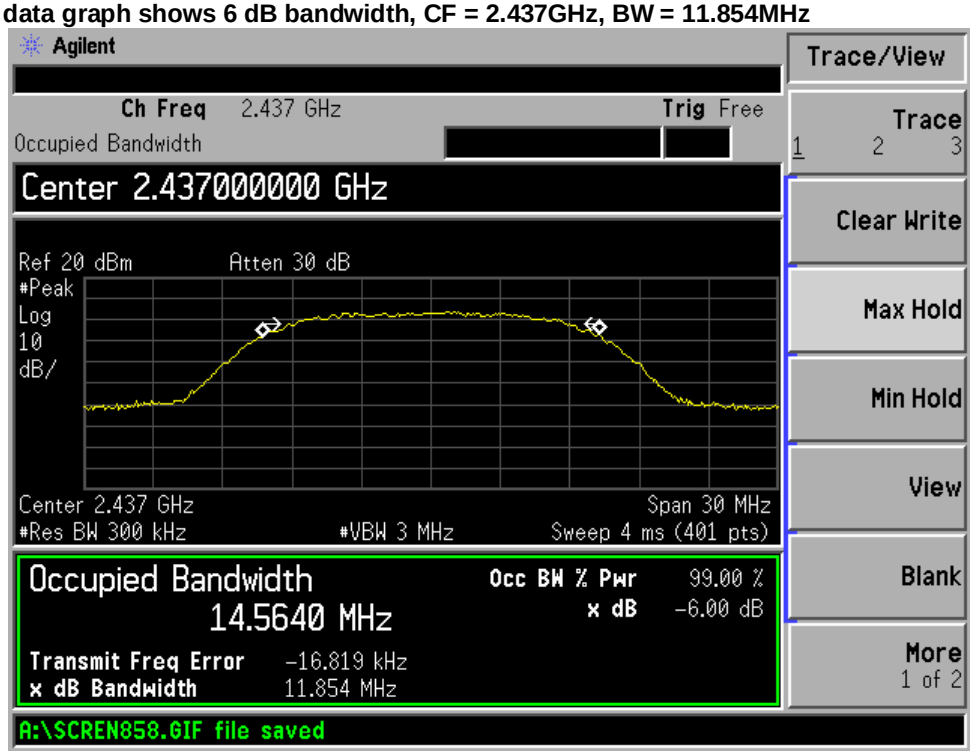
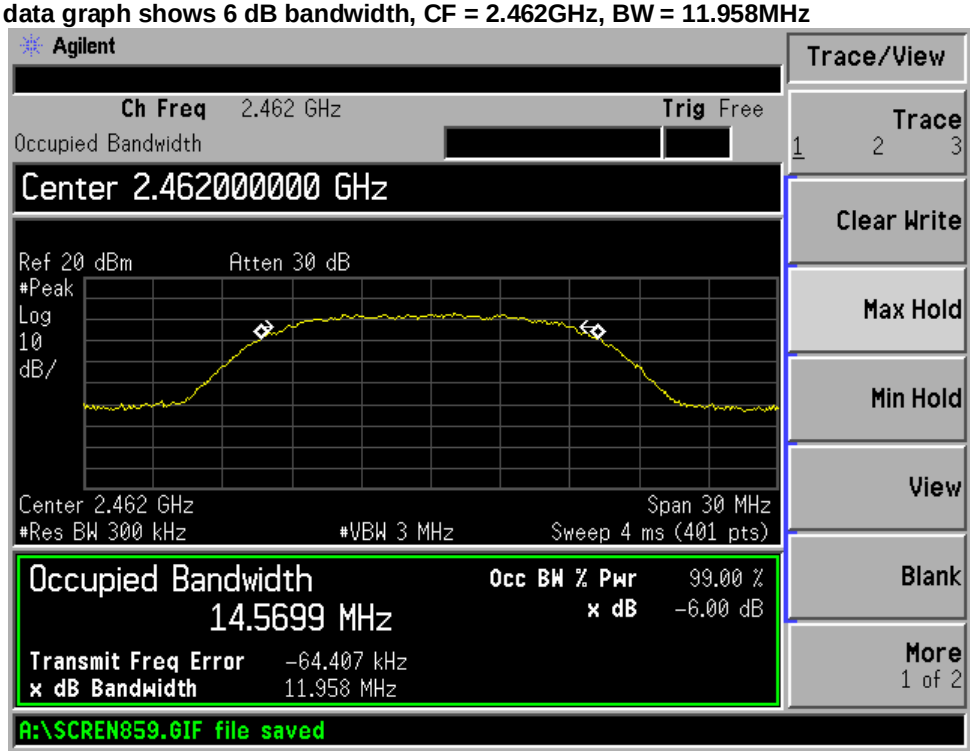
Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 11.854MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 11.958MHz



For 802.11G Mode

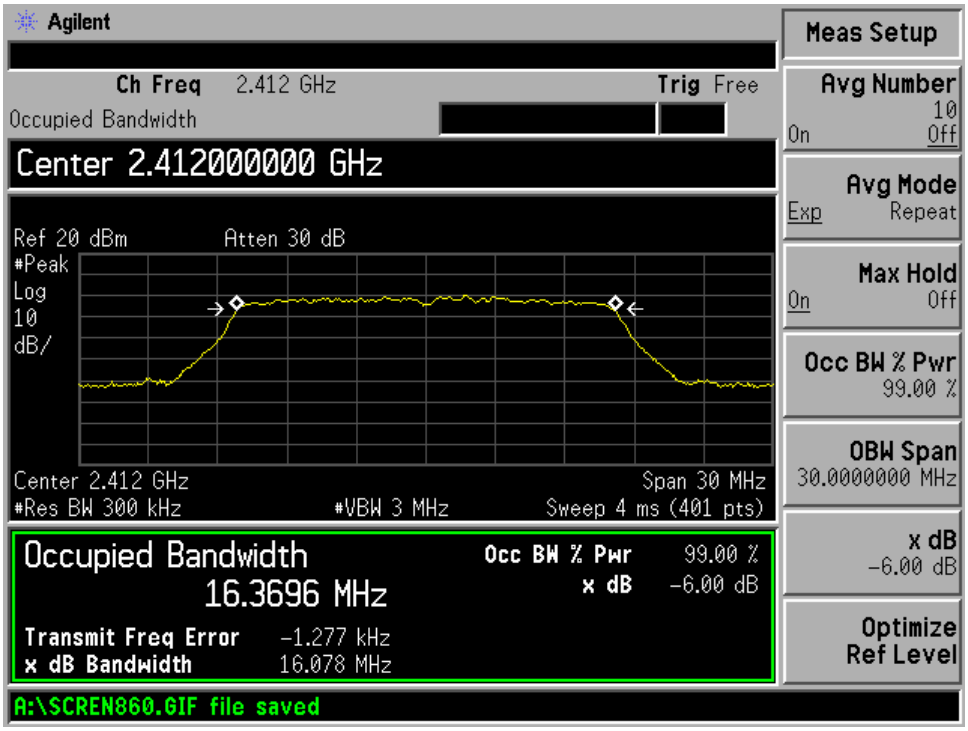
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.078
Middle	2437	16.108
Highest	2462	16.081

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

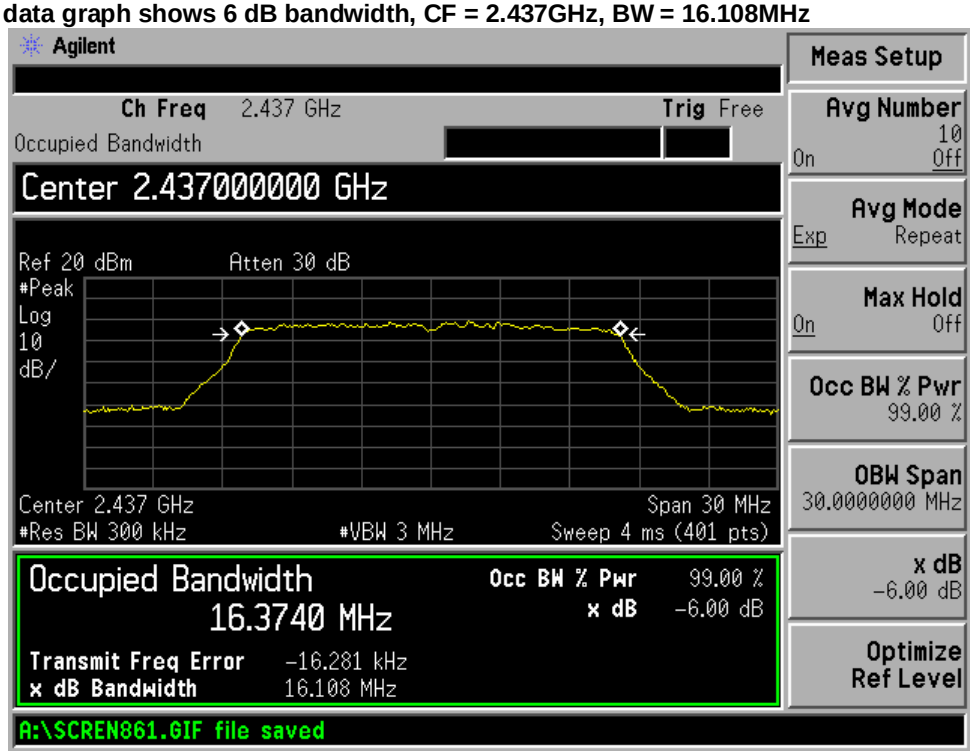
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

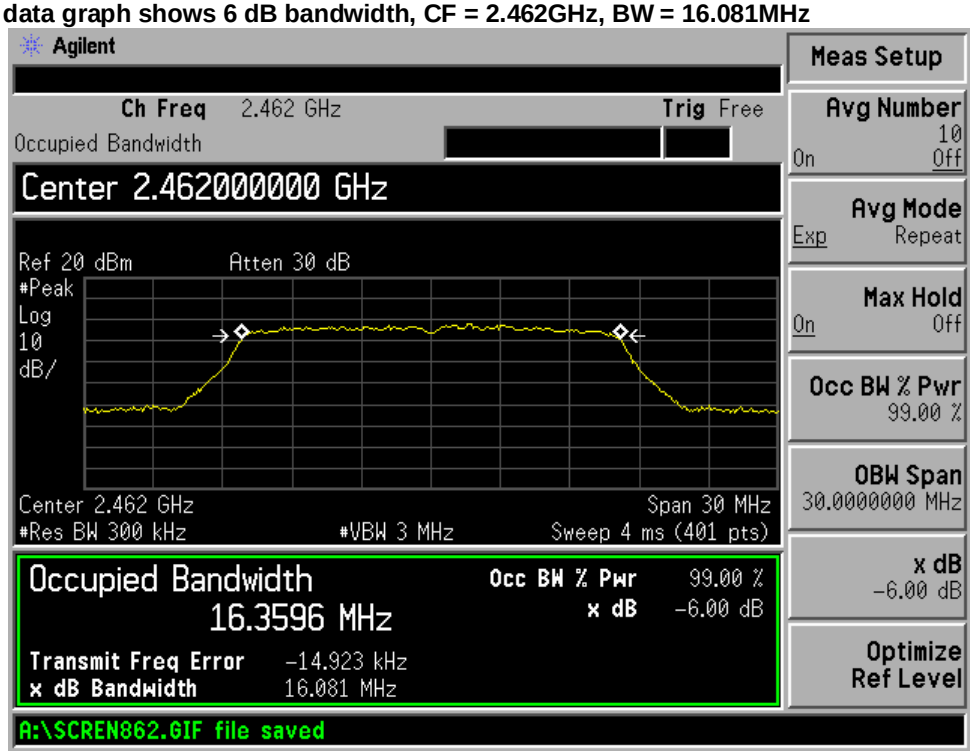
For 802.11G Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.078MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.108MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.081MHz



For 802.11N HT20 Mode

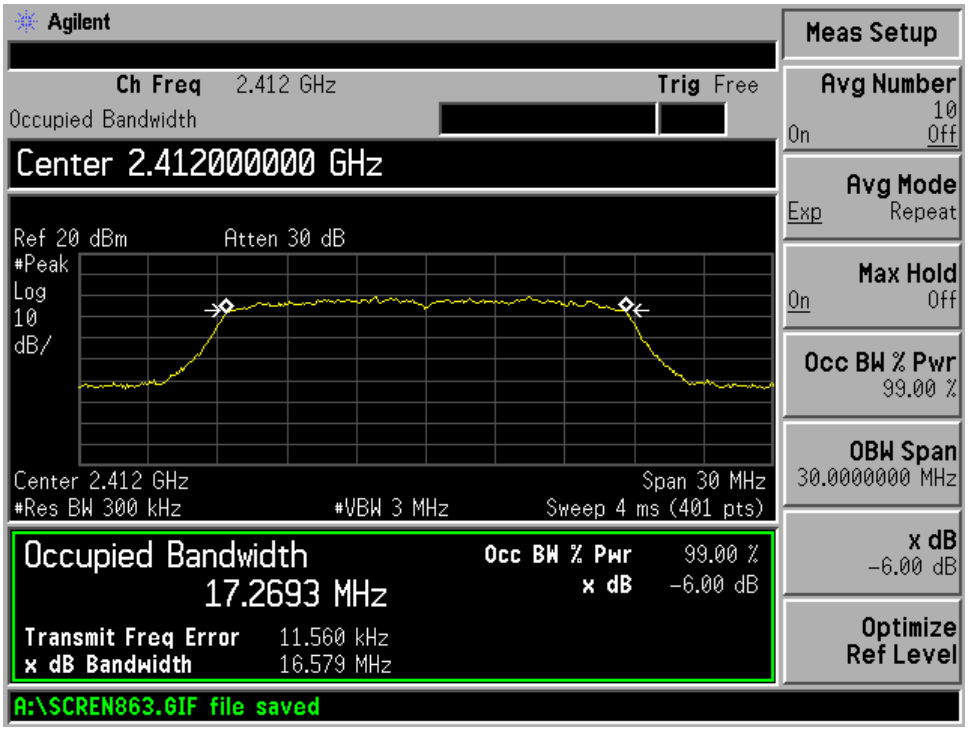
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.579
Middle	2437	16.603
Highest	2462	16.504

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

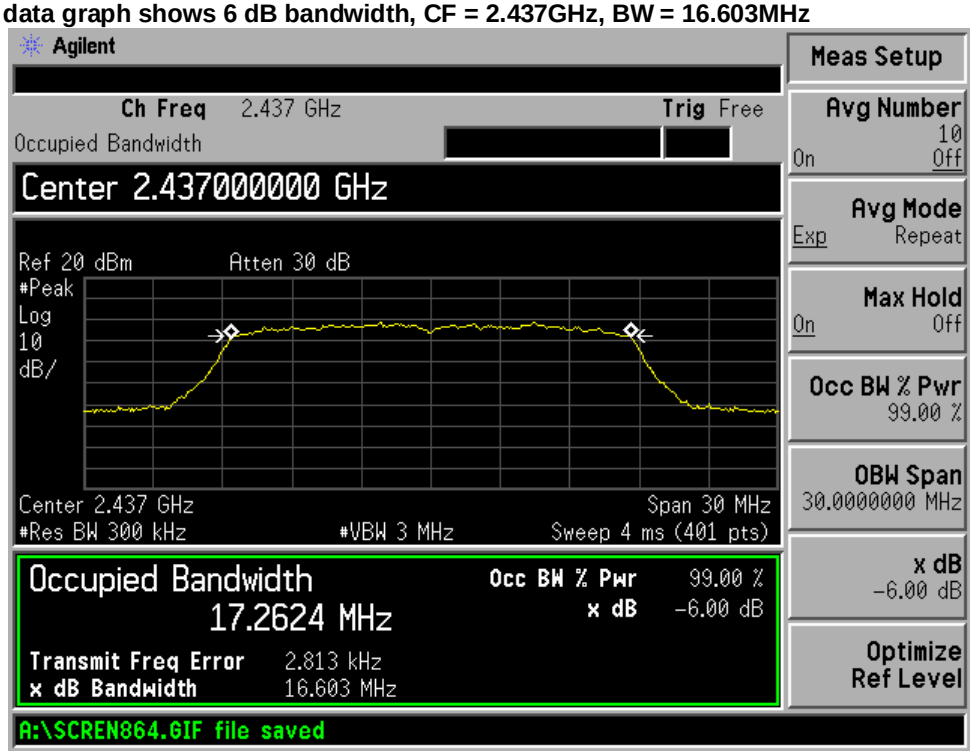
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

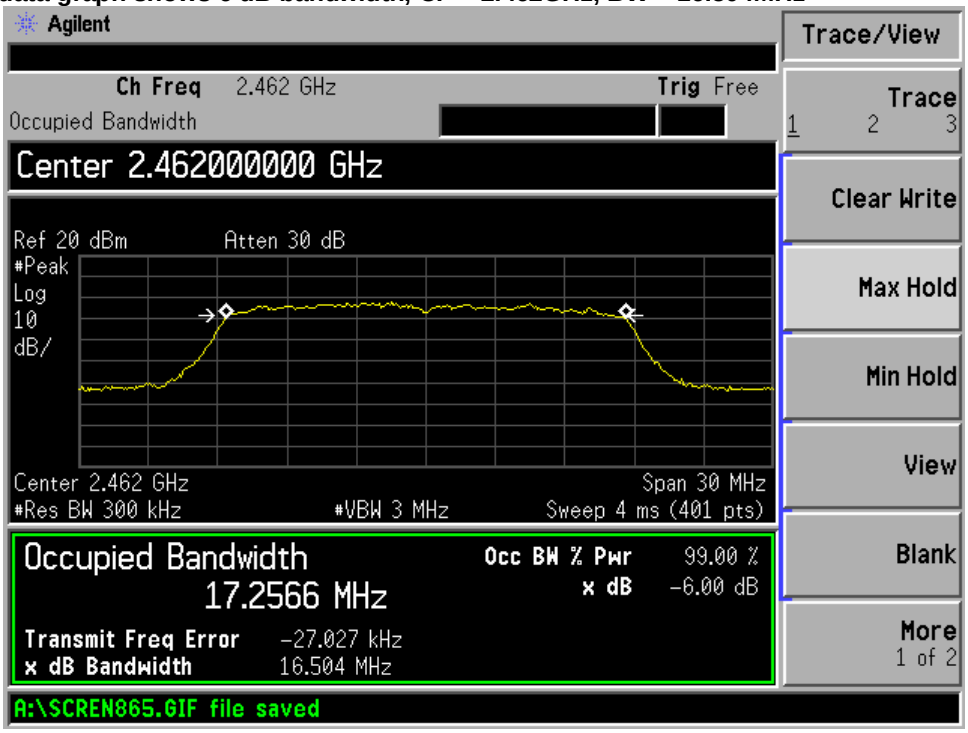
For 802.11N HT20 Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.579 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.603MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.504MHz



For 802.11N HT40 Mode

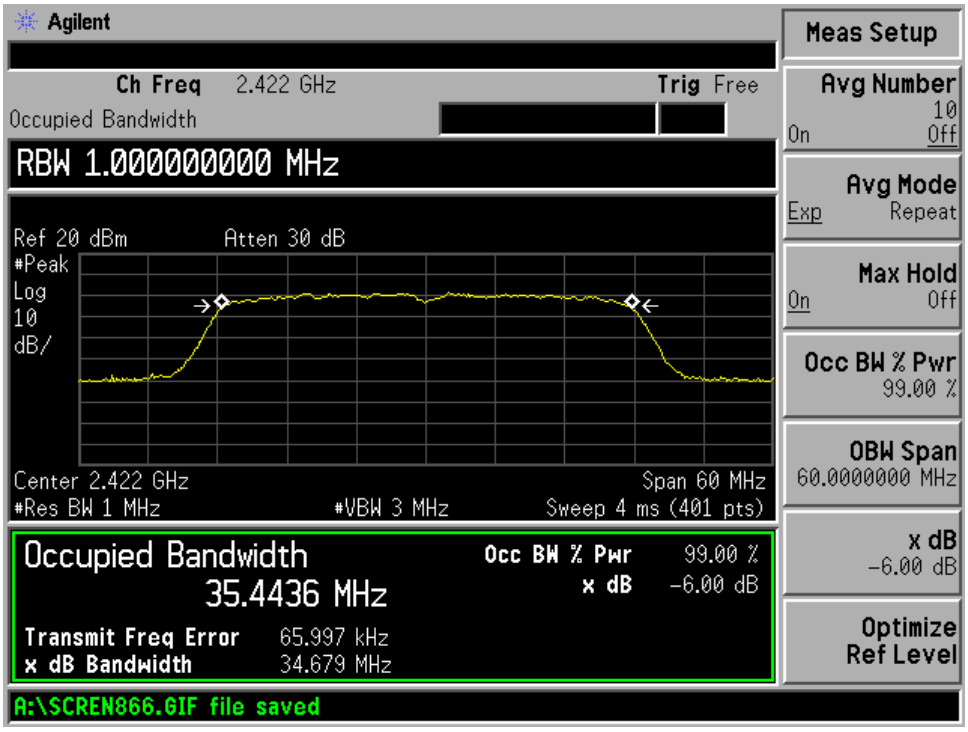
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2422	34.679
Middle	2437	34.410
Highest	2452	38.720

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

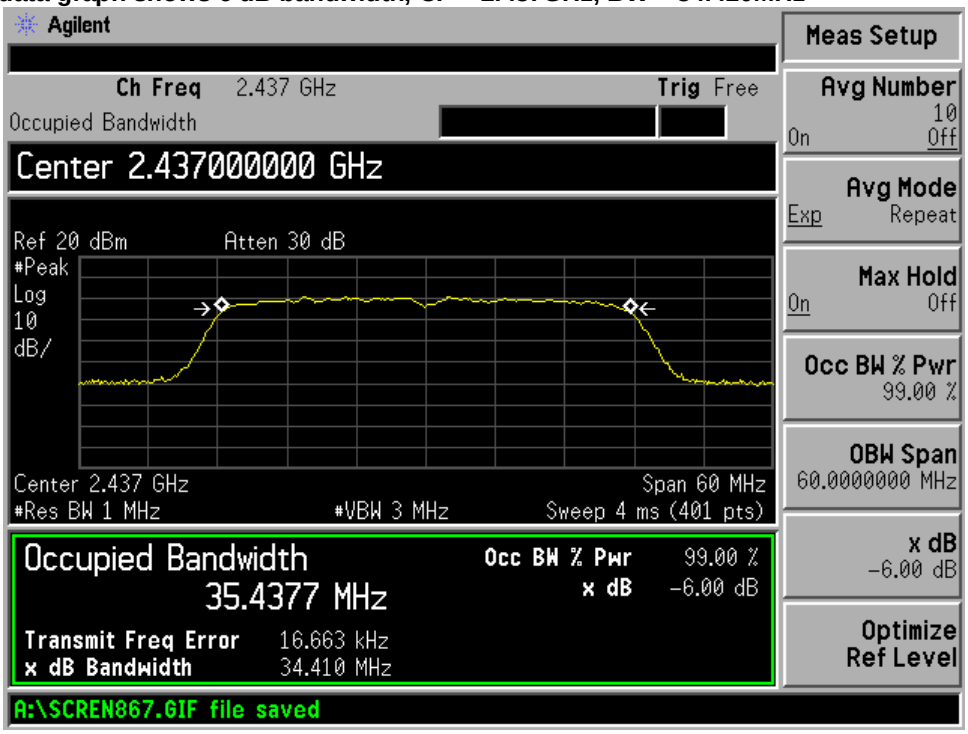
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

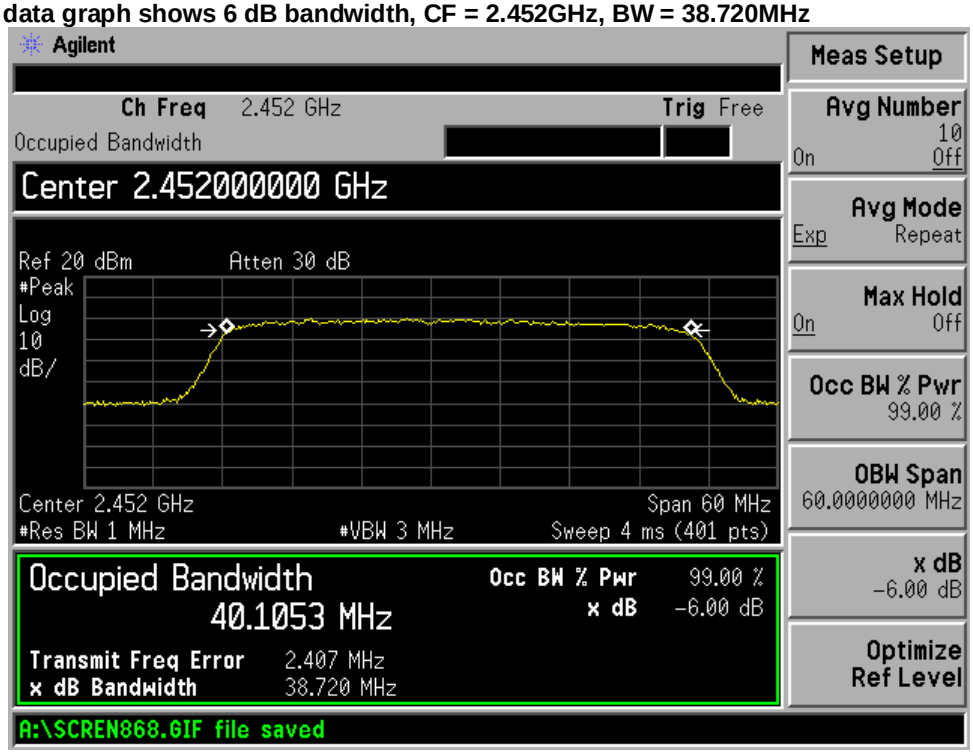
For 802.11N HT40 Mode
Result data graph shows 6 dB bandwidth, CF = 2.422GHz, BW = 34.679 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 34.410MHz



Result data graph shows 6 dB bandwidth, CF = 2.452GHz, BW = 38.720MHz



4.2 Power Spectral Density

Test Requirement: FCC part 15 section 15.247 (e)
Test Date: 2012-06-08
Mode of Operation: Transmitting continuously mode
Detector Function: Average

Result : PASS

Measured Result :

For 802.11b

Test mode	Test channel	Antenna 0 Reading dBm/100kHz	Antenna 1 Reading dBm/100kHz	Antenna 0 Corrected dBm/3kHz	Antenna 1 Corrected dBm/3kHz	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-7.093	-11.990	-22.293	-27.190	8
	Mid channel (2437MHz)	-8.110	-12.710	-23.310	-27.910	8
	High channel (2462MHz)	-8.159	-11.760	-23.359	-26.960	8

For 802.11g

Test mode	Test channel	Antenna 0 Reading dBm/100kHz	Antenna 1 Reading dBm/100kHz	Corrected dBm/3kHz	Limit dBm/3kHz
802.11g	Low channel (2412MHz)	-12.98	-13.13	-25.24	8
	Middle channel (2437MHz)	-13.60	-13.62	-25.80	8
	High channel (2462MHz)	-13.97	-14.69	-26.50	8

For 802.11n HT20/HT40

Test mode	Test channel	Antenna 0 Reading dBm/100kHz	Antenna 1 Reading dBm/100kHz	Corrected dBm/3kHz	Limit dBm/3kHz
802.11n HT20 (MCS0)	Low channel (2412MHz)	-13.18	-12.97	-25.26	8
	Middle channel (2437MHz)	-13.71	-13.35	-25.72	8
	High channel (2462MHz)	-14.47	-14.81	-26.83	8
802.11n HT40 (MCS0)	Low channel (2422MHz)	-16.17	-16.74	-28.64	8
	Middle channel (2437MHz)	-17.02	-17.23	-29.31	8
	High channel (2452MHz)	-17.33	-17.73	-29.72	8

Note:

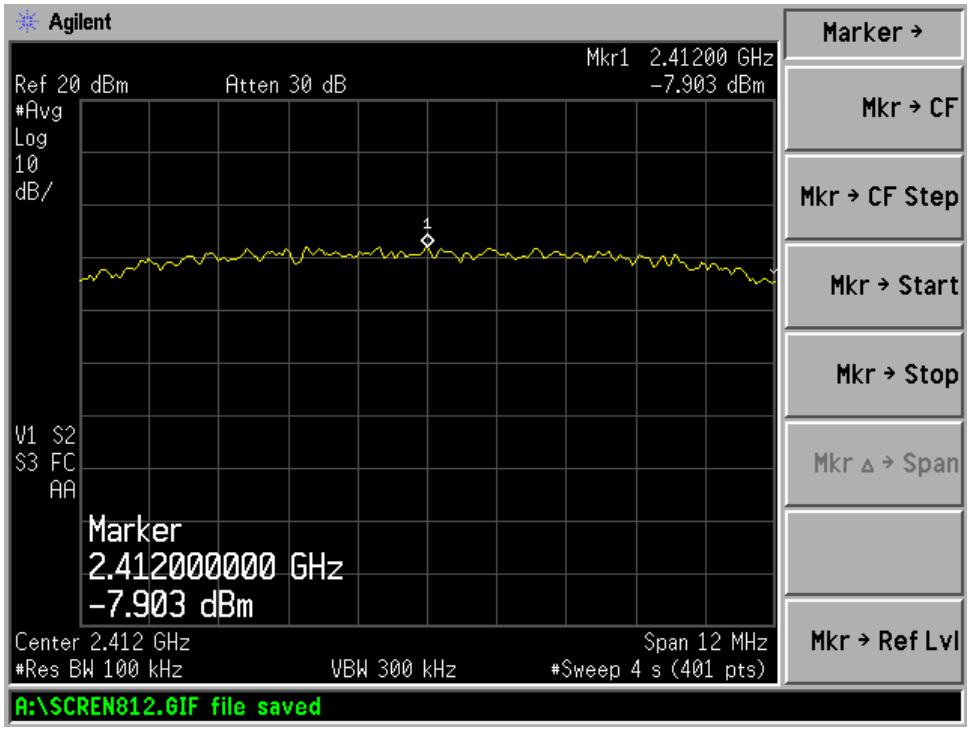
1. *The EUT shall be simultaneous transmission at the Antenna 0 and Antenna 1 for 802.11g, 802.11n HT20 or HT40, 802.11b mode shall be transmission only single Antenna (Antenna 0 or Antenna 1).*
2. *Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).*

Above testing data is included of 0.5dB cable loss which between antenna port and spectrum.

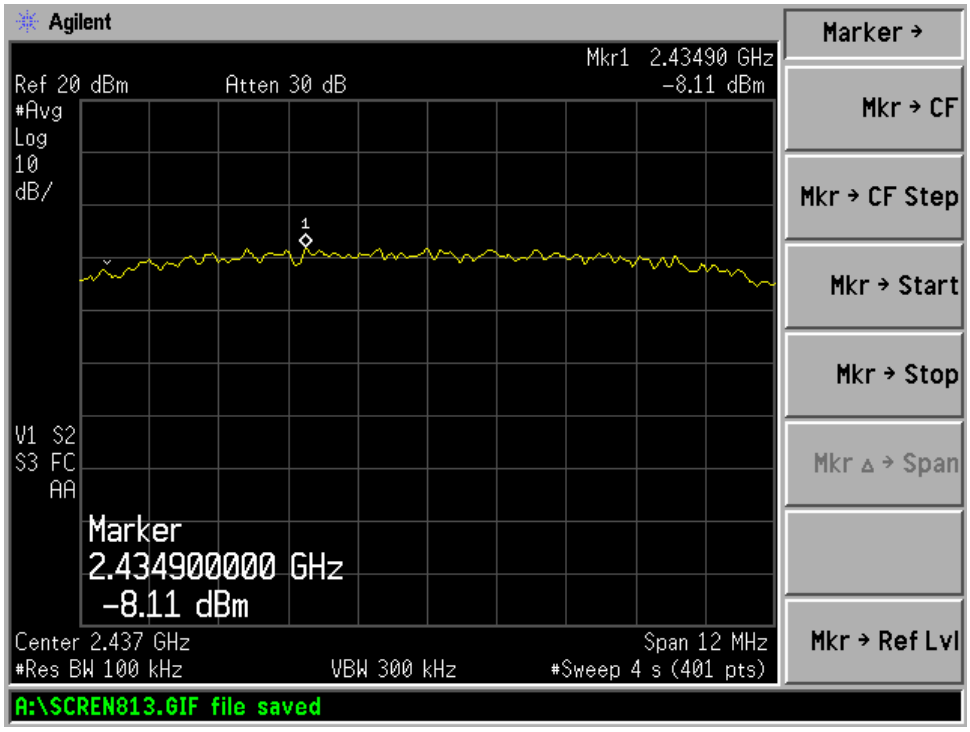
Limits for power spectral density [Section 15.247 (e)]:

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

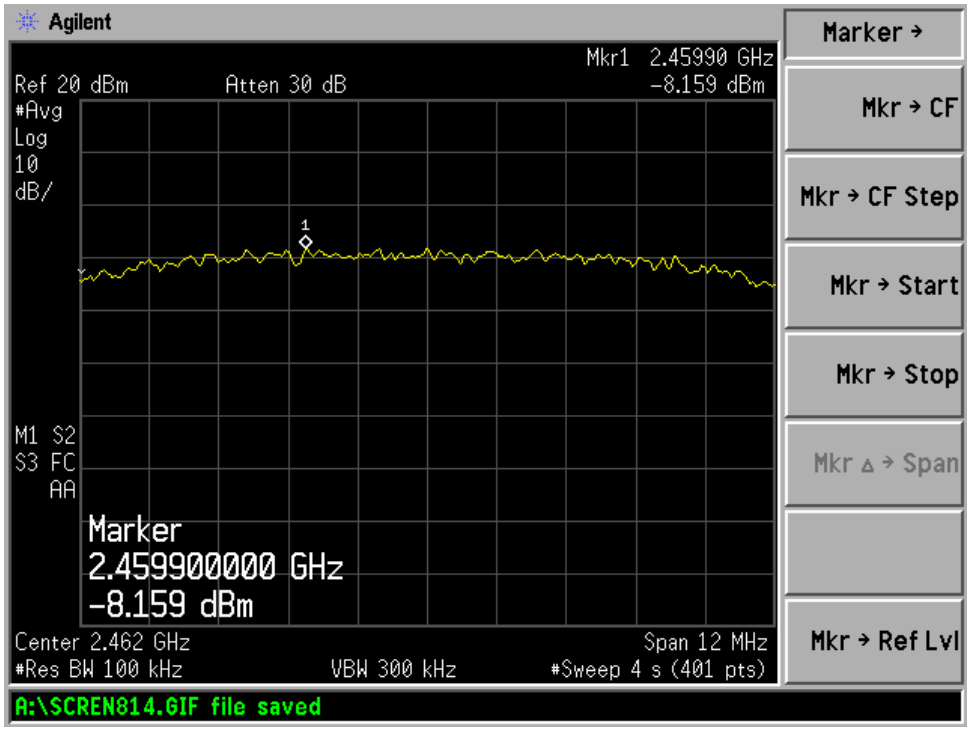
Antenna 0
For 802.11B Mode
Result data graph shows Low channel power spectrum density is -7.903dBm at 100kHz RBW



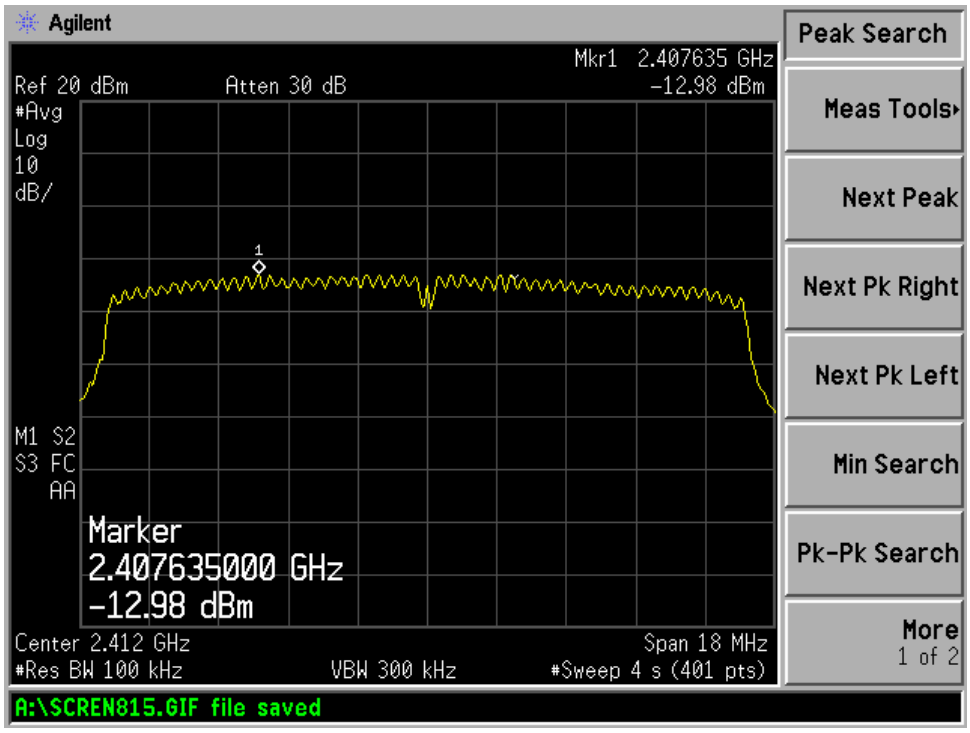
Result data graph shows middle channel power spectrum density is -8.11dBm at 100kHz RBW



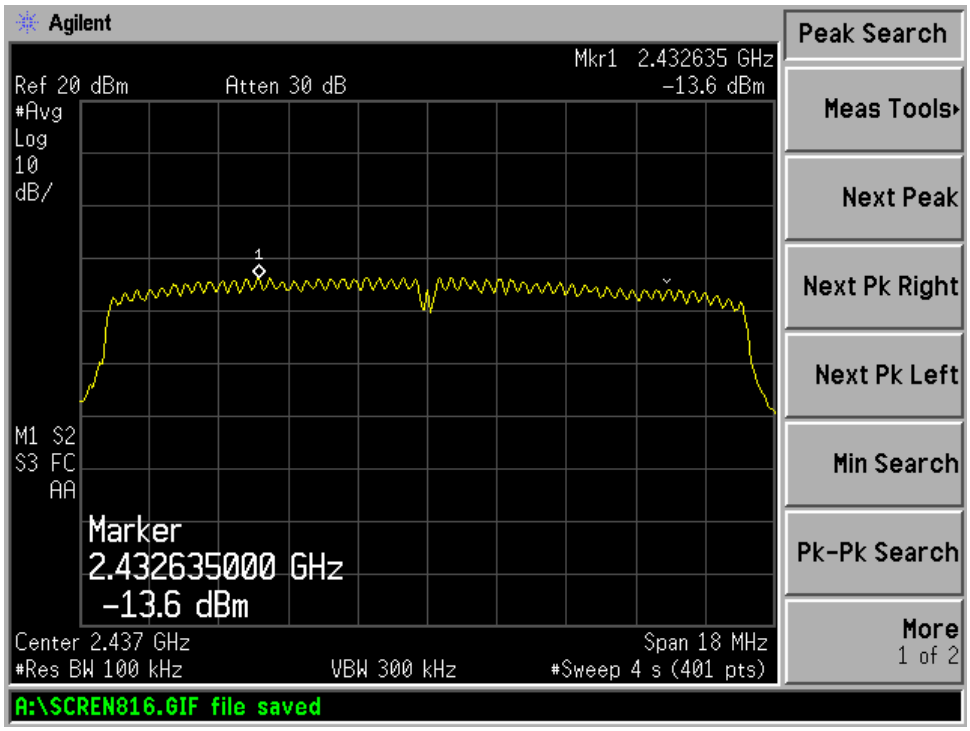
Result data graph shows high channel power spectrum density is -8.159dBm at 100kHz RBW



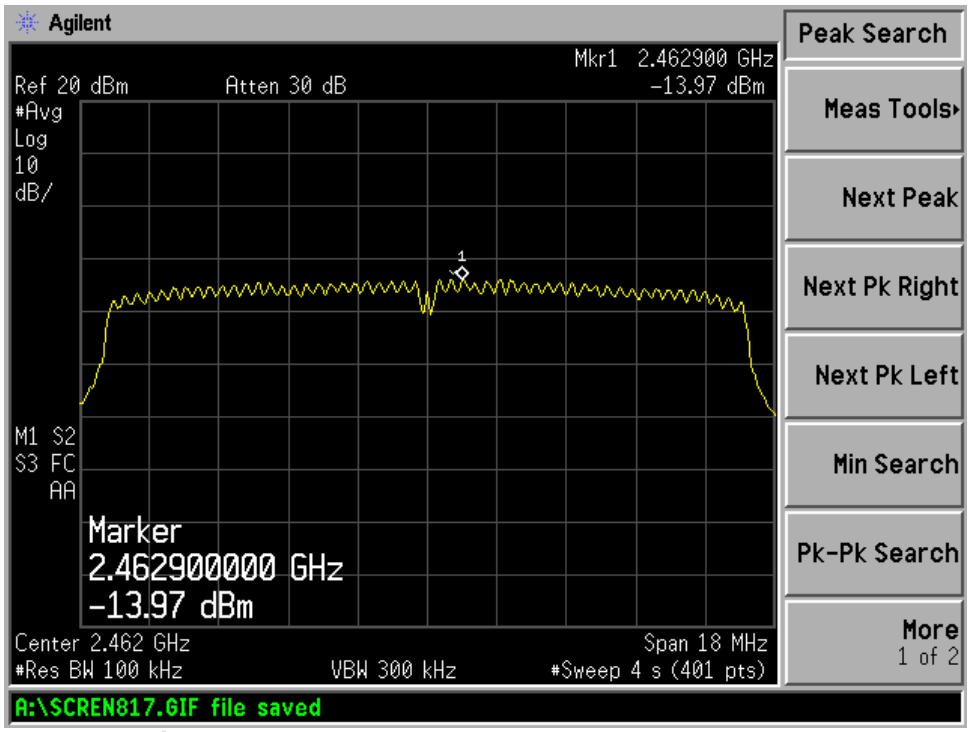
For 802.11G Mode
Result data graph shows Low channel power spectrum density is -12.98dBm at 100kHz RBW



Result data graph shows middle channel power spectrum density is -13.6dBm at 100kHz RBW

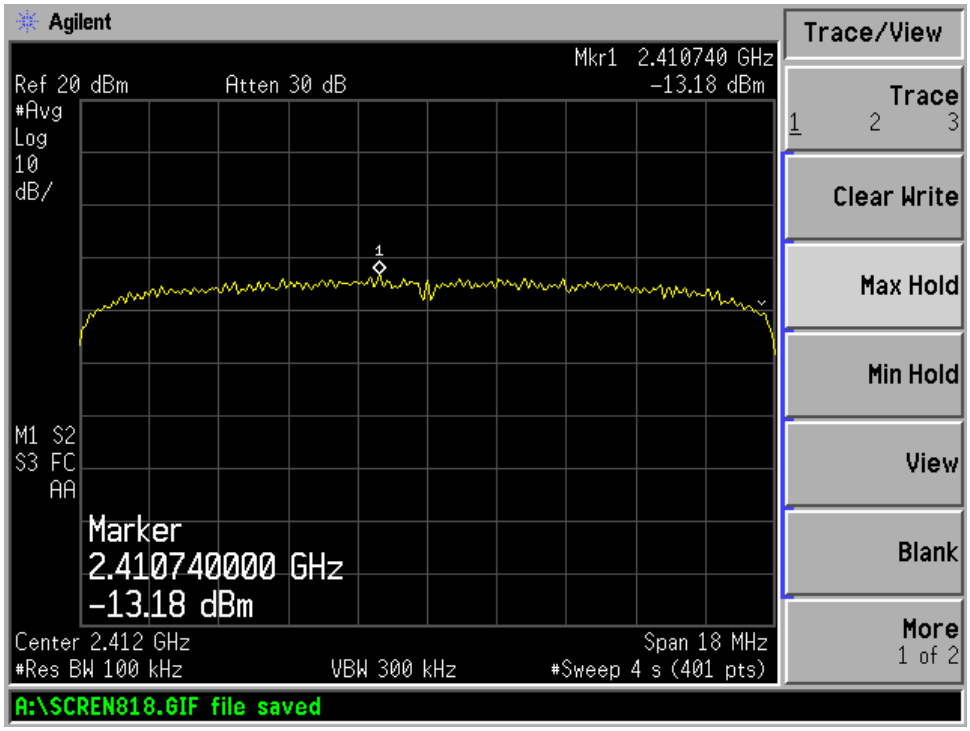


Result data graph shows high channel power spectrum density is -13.97dBm at 100kHz RBW

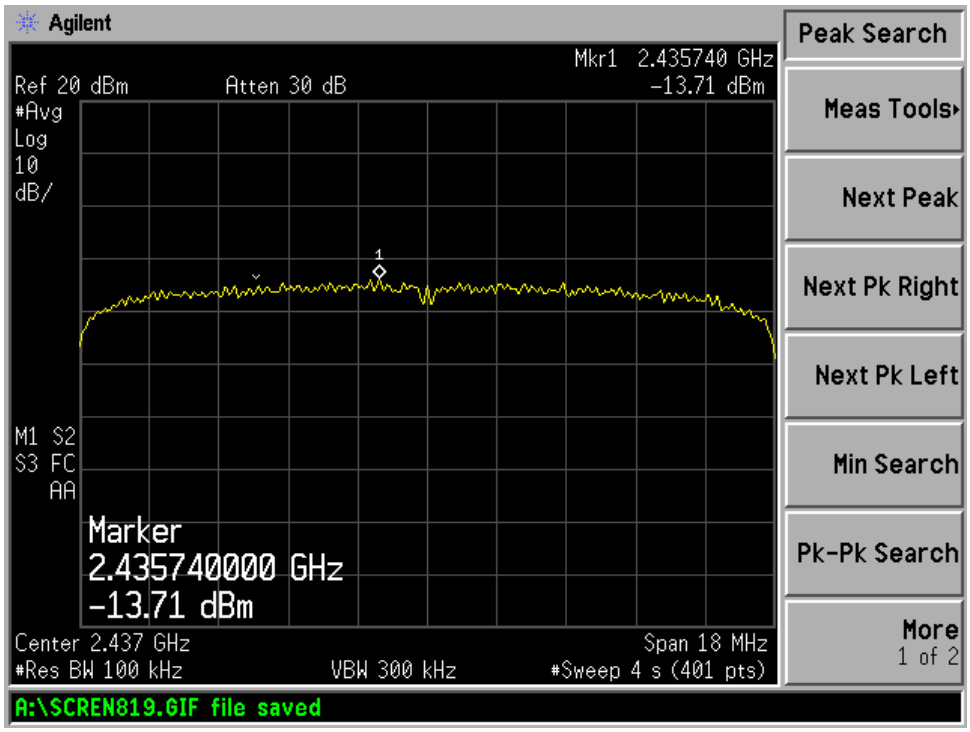


For 802.11HT20 Mode

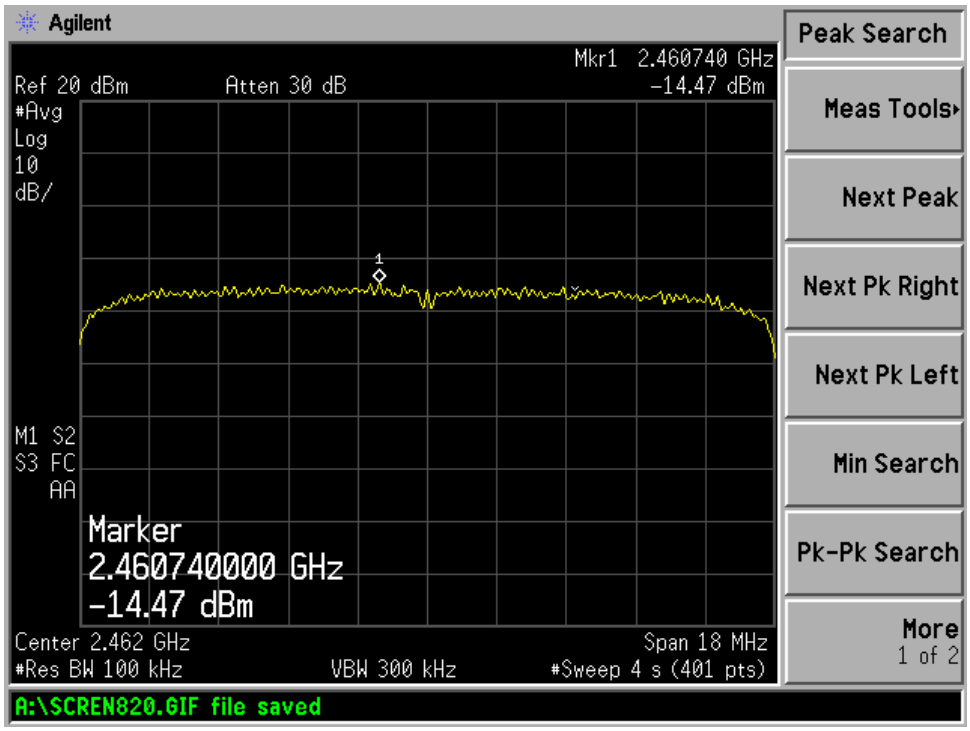
Result data graph shows Low channel power spectrum density is -13.18dBm at 100kHz RBW



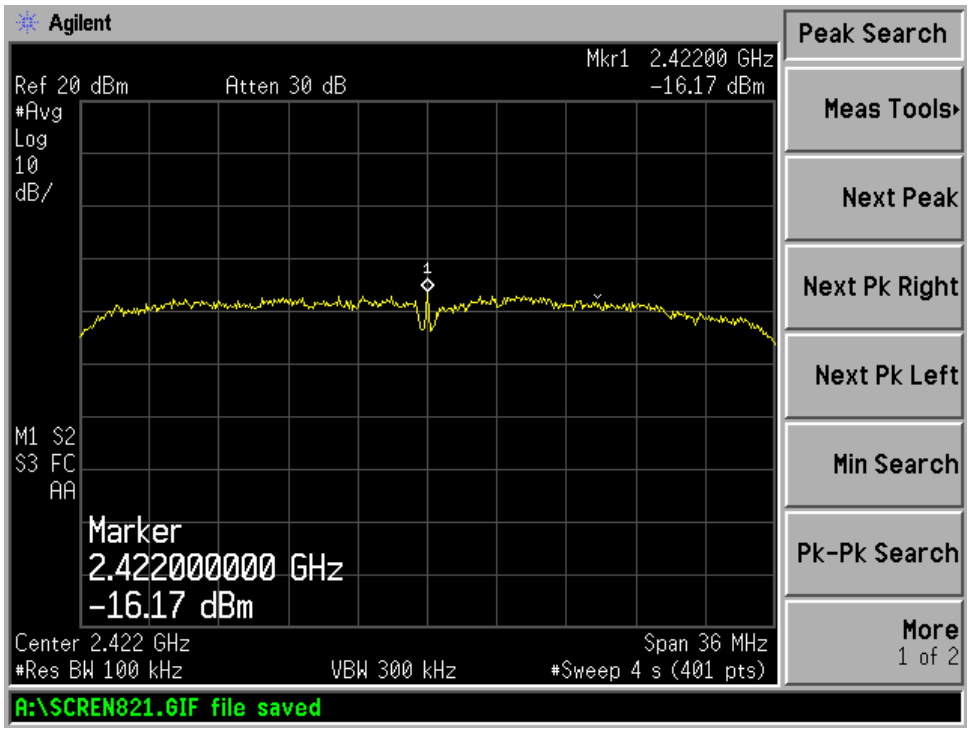
Result data graph shows middle channel power spectrum density is -13.71dBm at 100kHz RBW



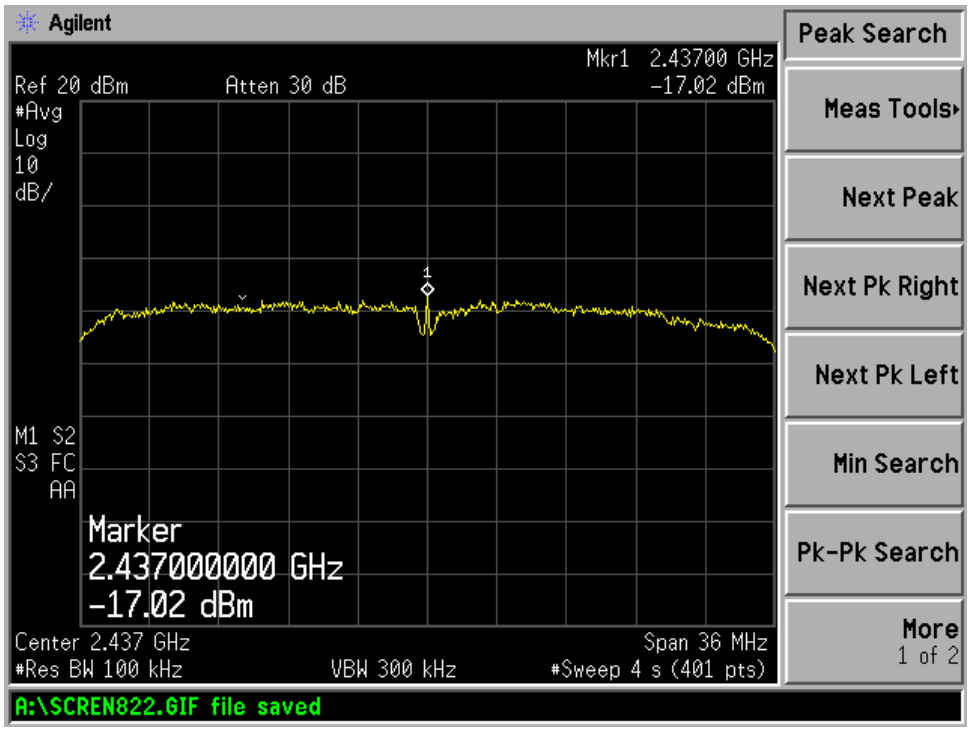
Result data graph shows high channel power spectrum density is -14.47dBm at 100kHz RBW



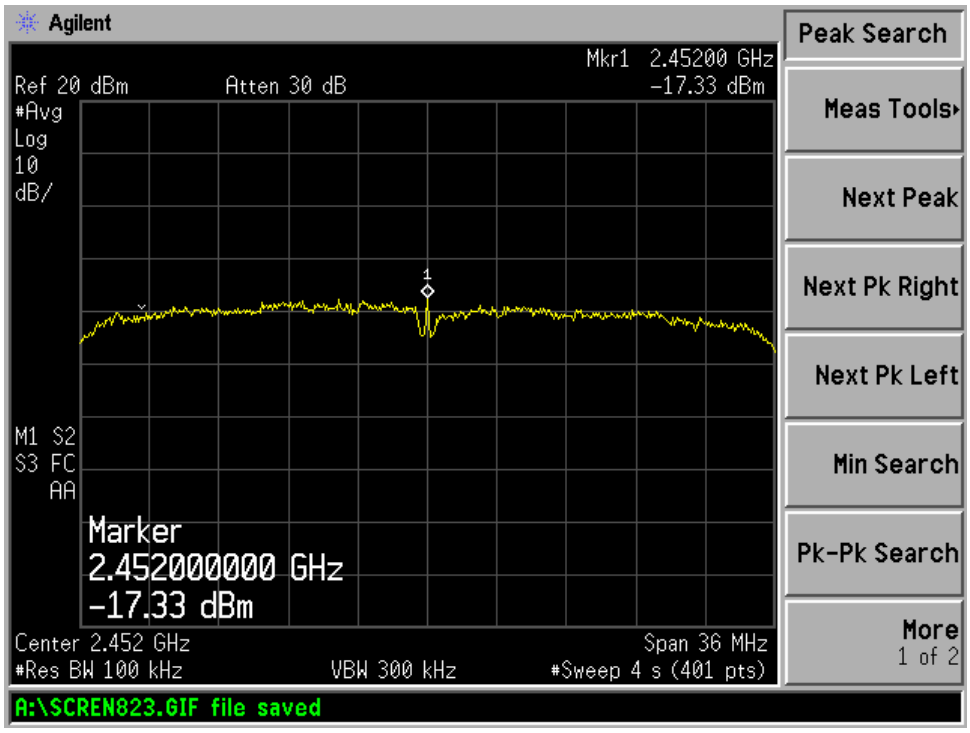
For 802.11HT40 Mode
Result data graph shows Low channel power spectrum density is -16.17dBm at 100kHz RBW



Result data graph shows middle channel power spectrum density is -17.02dBm at 100kHz RBW



Result data graph shows high channel power spectrum density is -17.33dBm at 100kHz RBW



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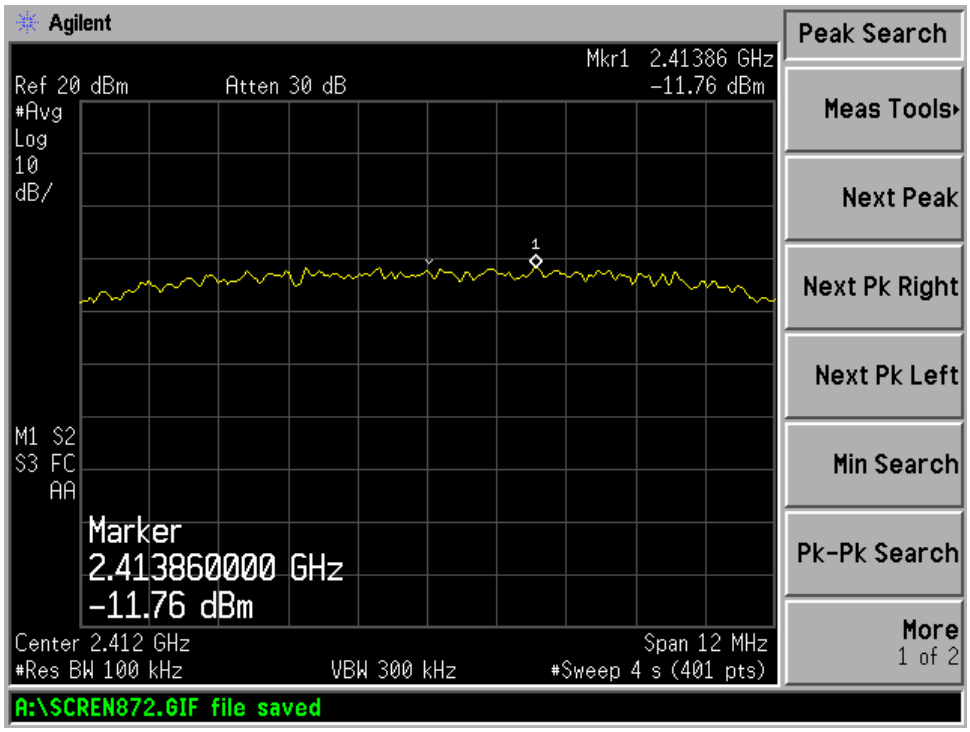
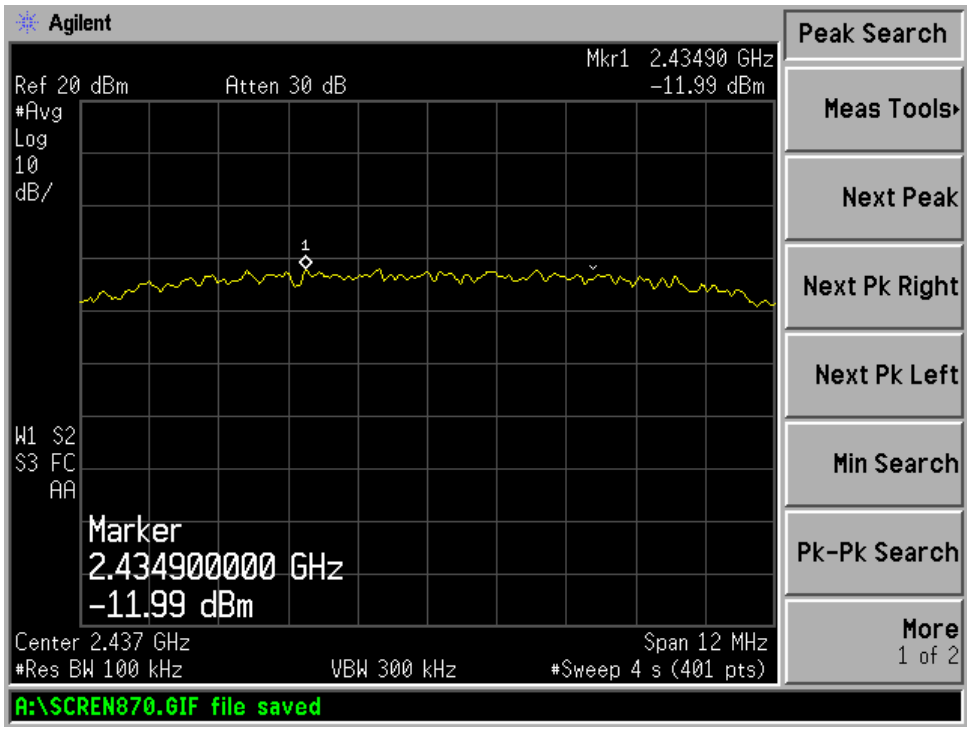
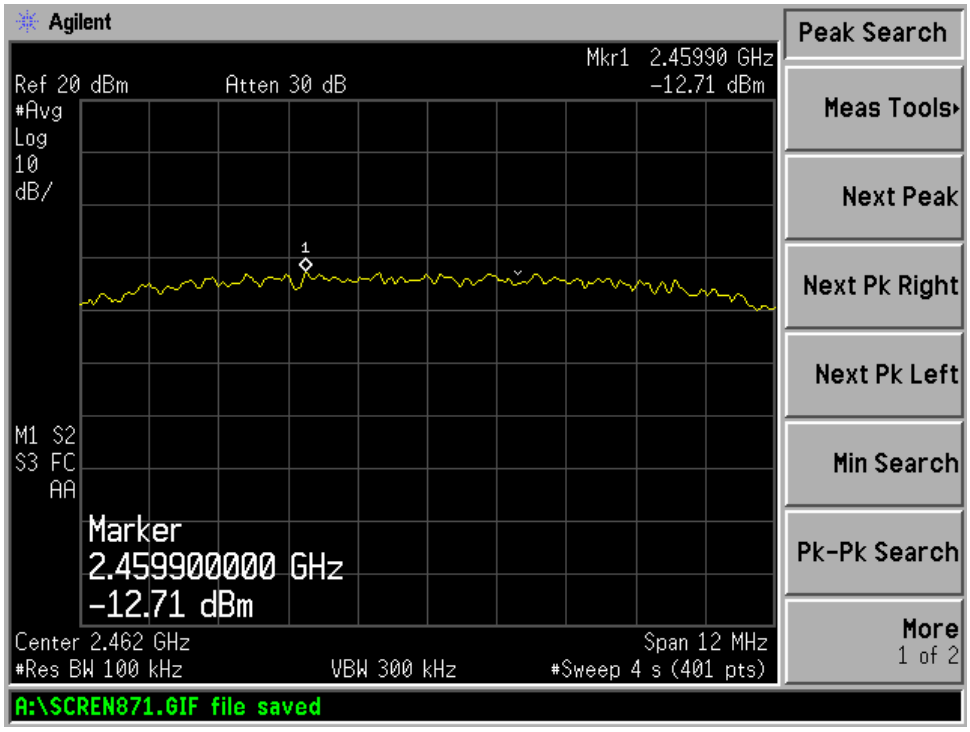
Antenna 1
For 802.11B Mode
Result data graph shows Low channel power spectrum density is -11.76dBm at 100kHz RBW



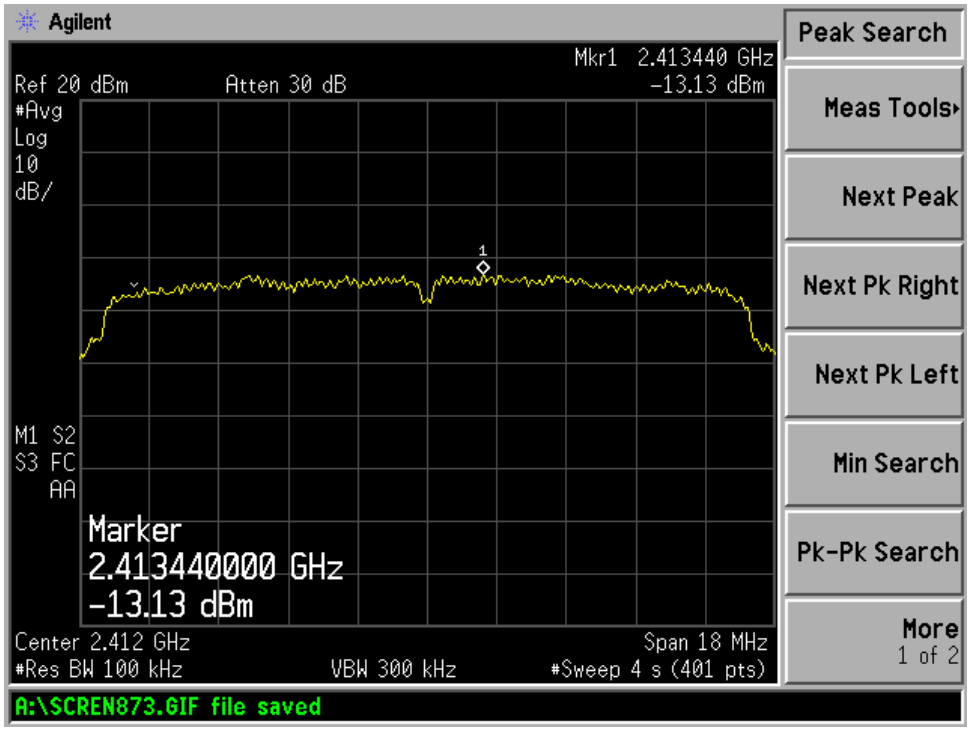
Result data graph shows middle channel power spectrum density is -11.99dBm at 100kHz RBW



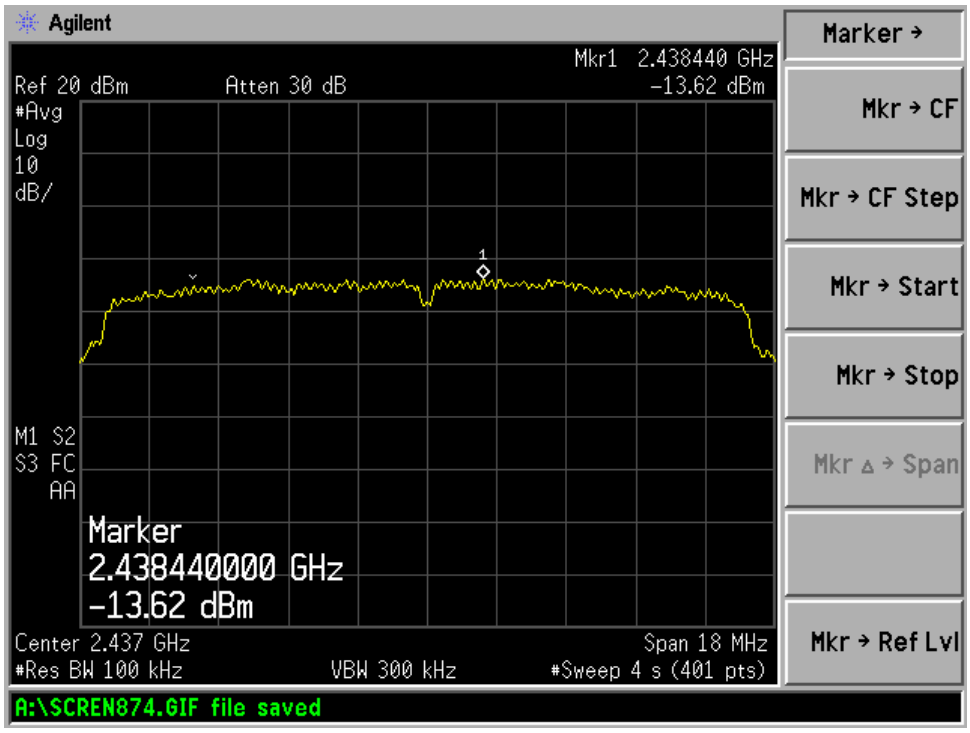
Result data graph shows high channel power spectrum density is -12.71dBm at 100kHz RBW



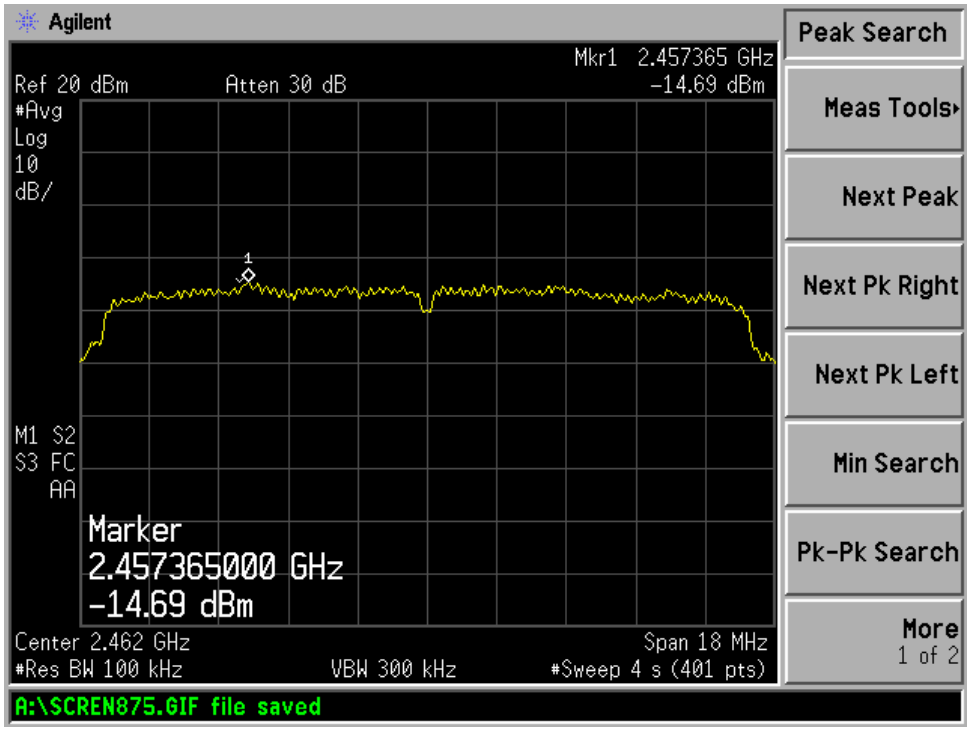
For 802.11G Mode
Result data graph shows Low channel power spectrum density is -13.13dBm at 100kHz RBW



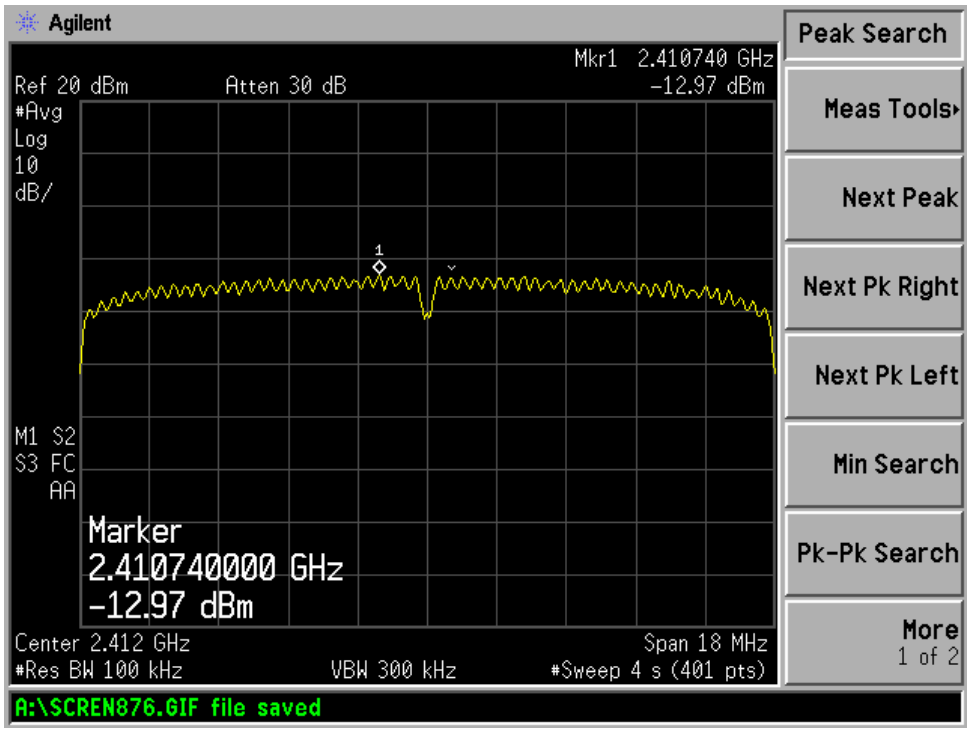
Result data graph shows middle channel power spectrum density is -13.62dBm at 100kHz RBW



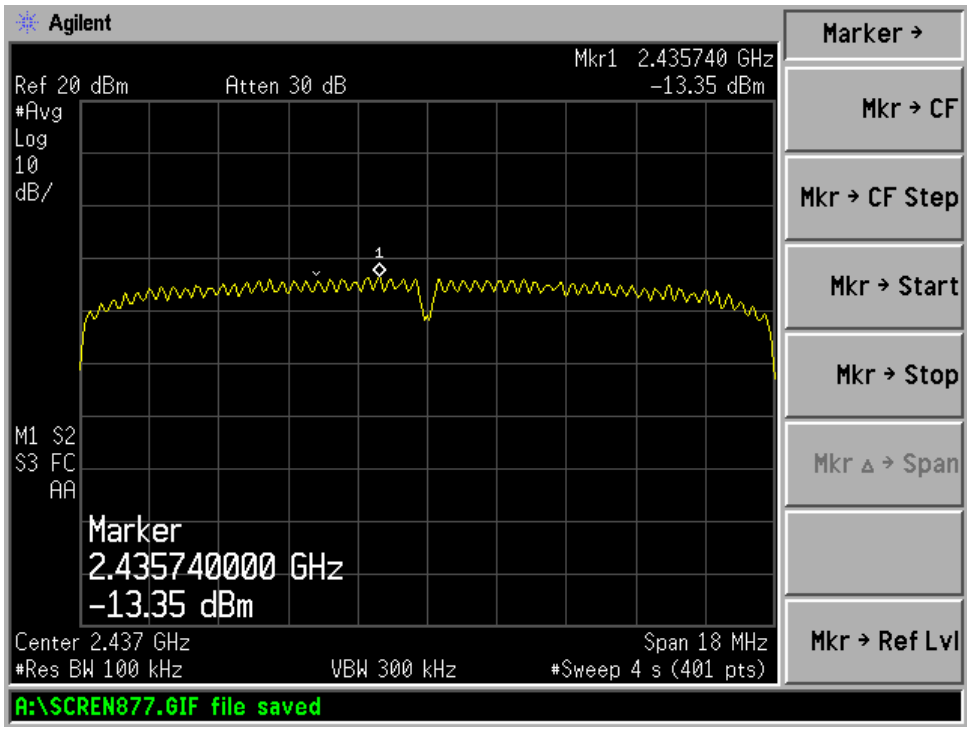
Result data graph shows high channel power spectrum density is -14.69dBm at 100kHz RBW



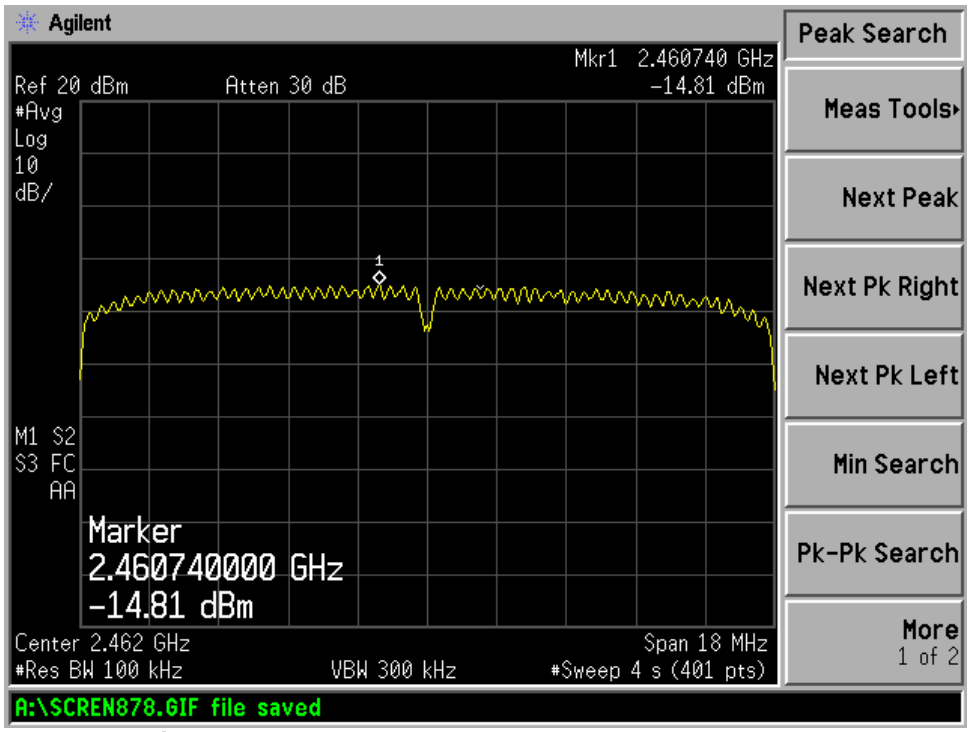
For 802.11HT20 Mode
Result data graph shows Low channel power spectrum density is -12.97dBm at 100kHz RBW



Result data graph shows middle channel power spectrum density is -13.35dBm at 100kHz RBW

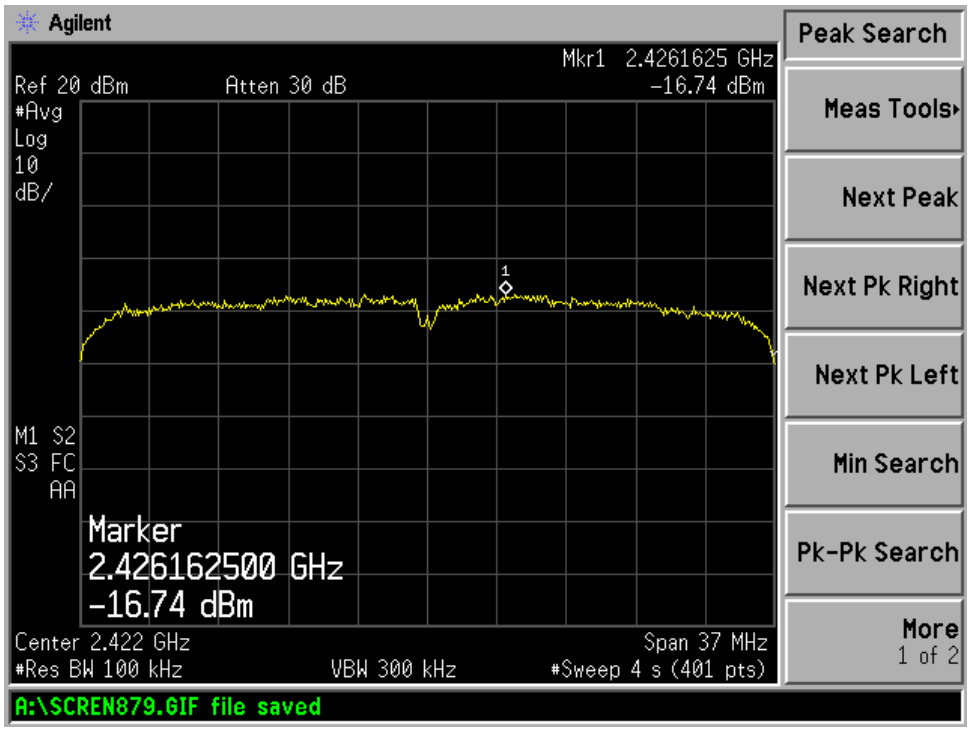


Result data graph shows high channel power spectrum density is -14.81dBm at 100kHz RBW

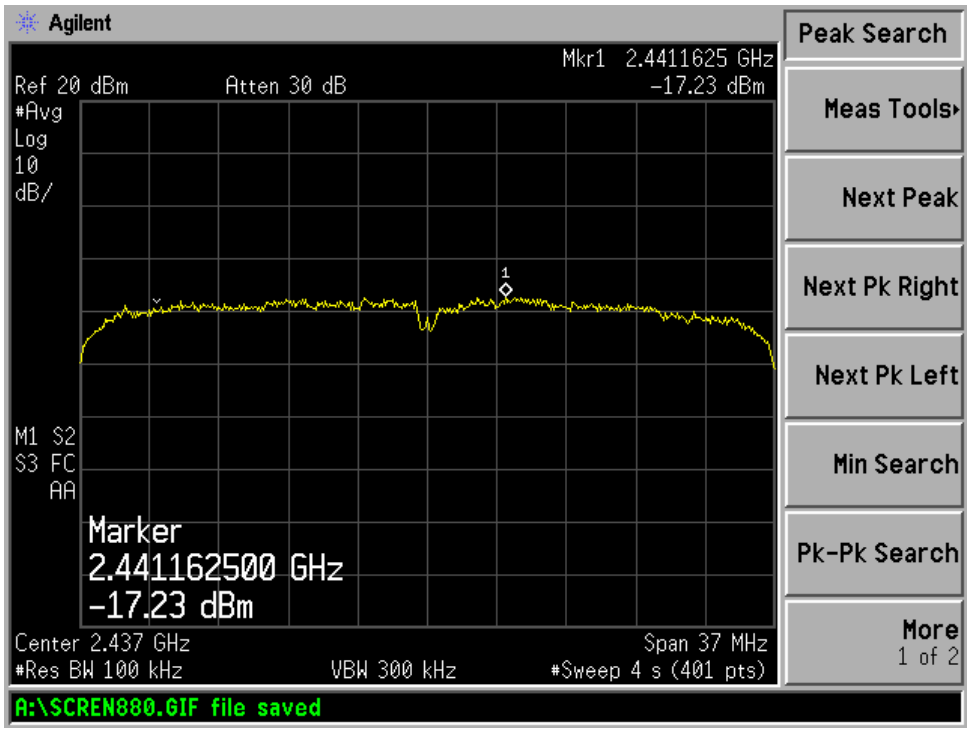


For 802.11HT40 Mode

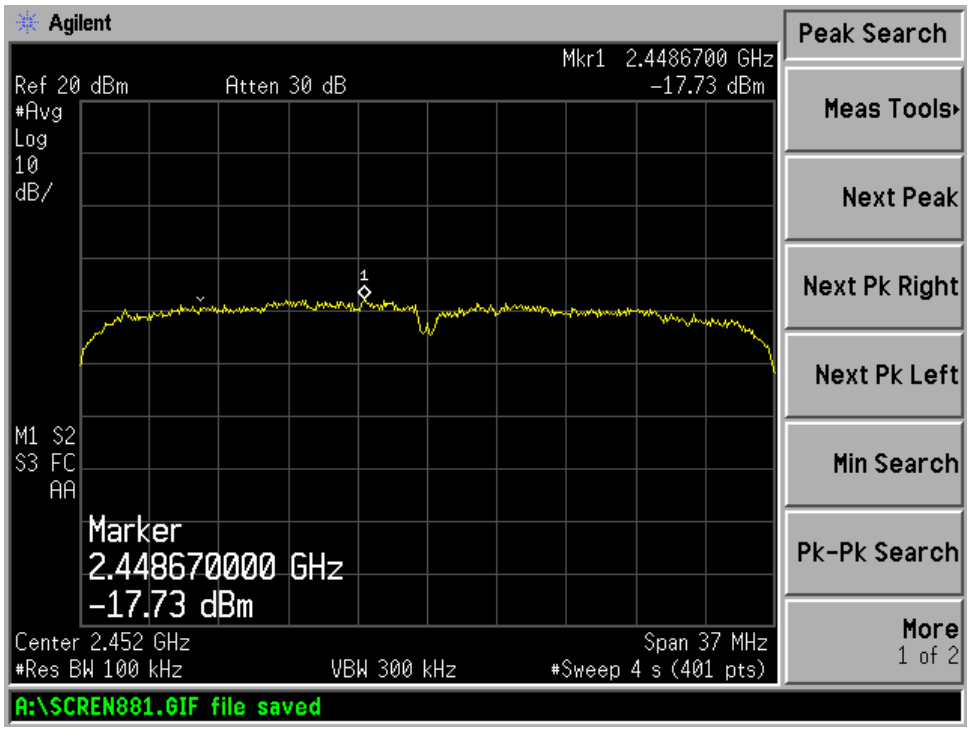
Result data graph shows Low channel power spectrum density is -16.74dBm at 100kHz RBW



Result data graph shows middle channel power spectrum density is -17.23dBm at 100kHz RBW



Result data graph shows high channel power spectrum density is -17.73dBm at 100kHz RBW



4.3 Band Edge Measurement

Test Requirement:	FCC part 15 section 15.247
Test Date:	2012-06-07
Mode of Operation:	Transmitting continuously mode.
Detector Function:	Max Hold

Result: PASS

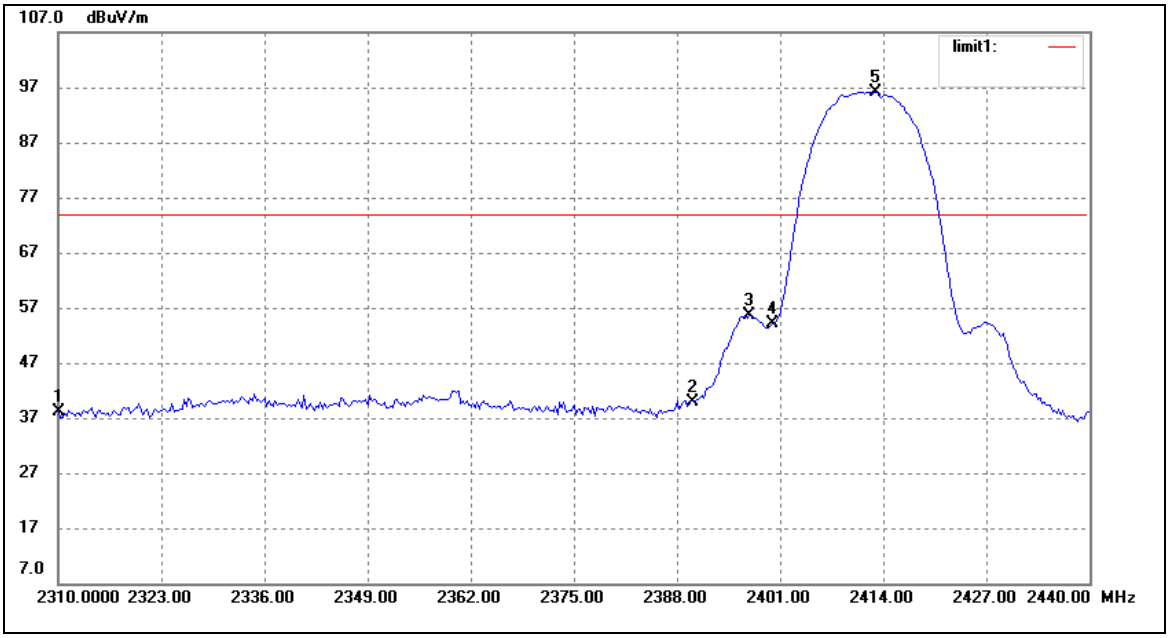
Measured Result :

Refer to the diagram and table, it shows the frequency of lower band edge and upper band edge is 2.412GHz and 2.462GHz separately.

Limits of Band Edge for Carrier Frequencies Operated within the Bands [Section 15.247]:

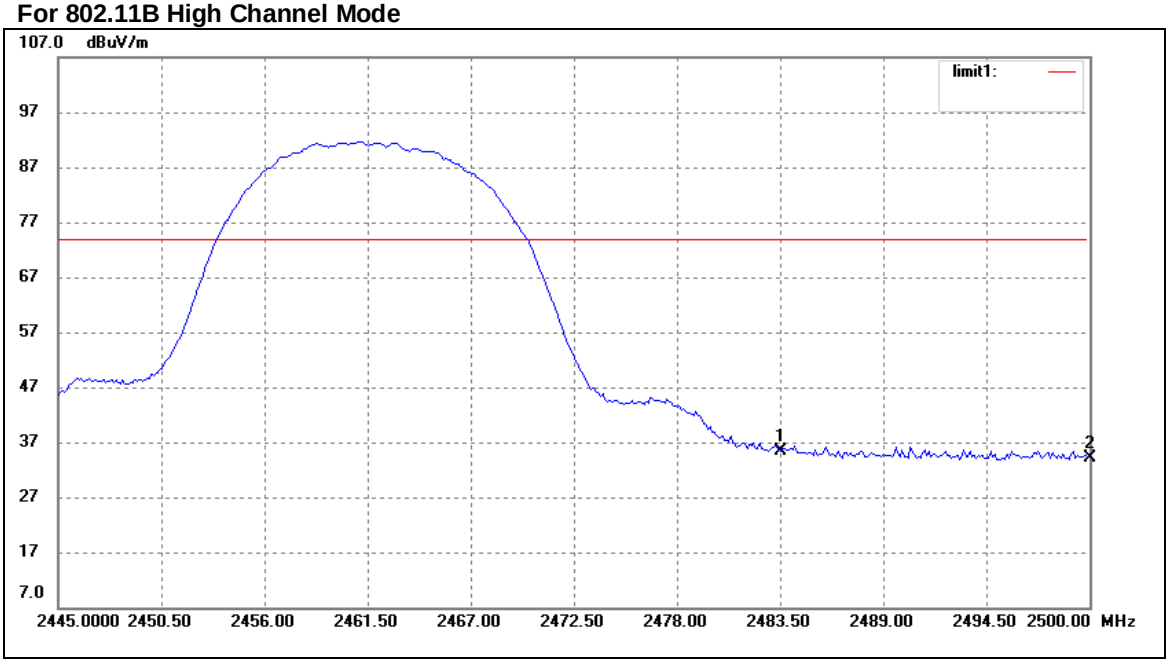
The carrier frequencies should operate within 2400-2483.5MHz.

Result data graph shows the frequency of lowest channel.
For 802.11B Low Channel Mode (Antenna 0):



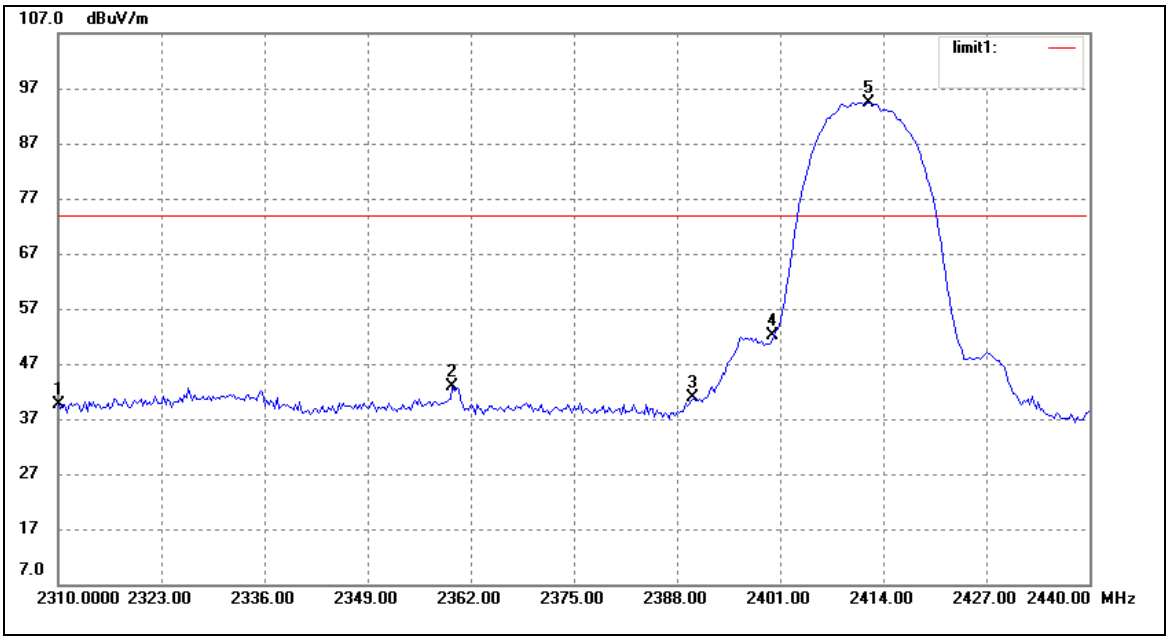
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	49.75	-11.72	38.03	74.00	-35.97	peak
2	2390.000	51.70	-11.75	39.95	74.00	-34.05	peak
3	2397.100	67.33	-11.75	55.58	74.00	-18.42	peak
4	2400.000	65.96	-11.75	54.21	74.00	-19.79	peak
5	2412.960	108.00	-11.76	96.24	fundamental		peak

For 802.11B High Channel Mode



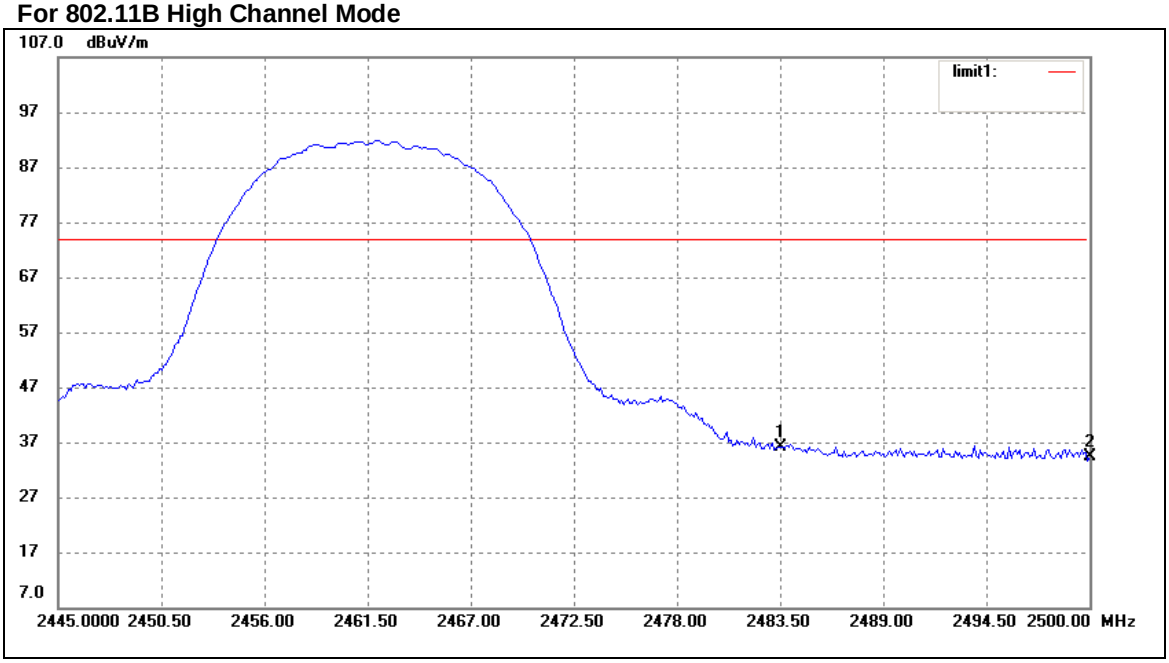
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	47.04	-11.78	35.26	74.00	-38.74	peak
2	2500.000	45.94	-11.78	34.16	74.00	-39.84	peak

For 802.11B Low Channel Mode (Antenna 1):



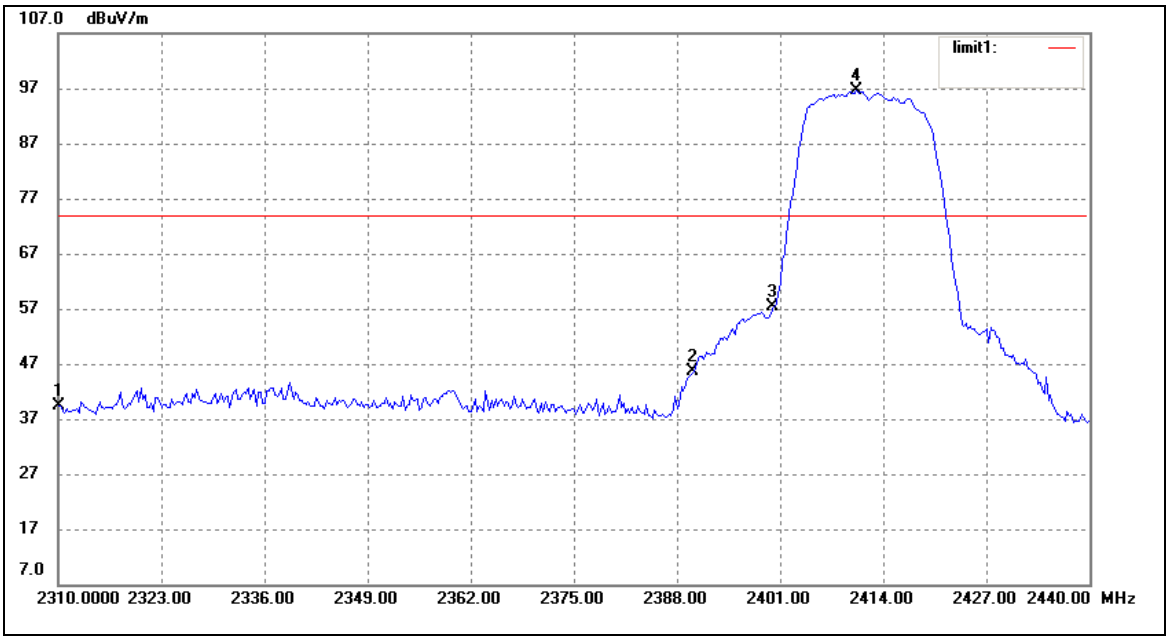
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	51.41	-11.72	39.69	74.00	-34.31	peak
2	2359.660	54.64	-11.74	42.90	74.00	-31.10	peak
3	2390.000	52.74	-11.75	40.99	74.00	-33.01	peak
4	2400.000	63.93	-11.75	52.18	74.00	-21.82	peak
5	2412.180	106.12	-11.75	94.37	fundamental		peak

For 802.11B High Channel Mode



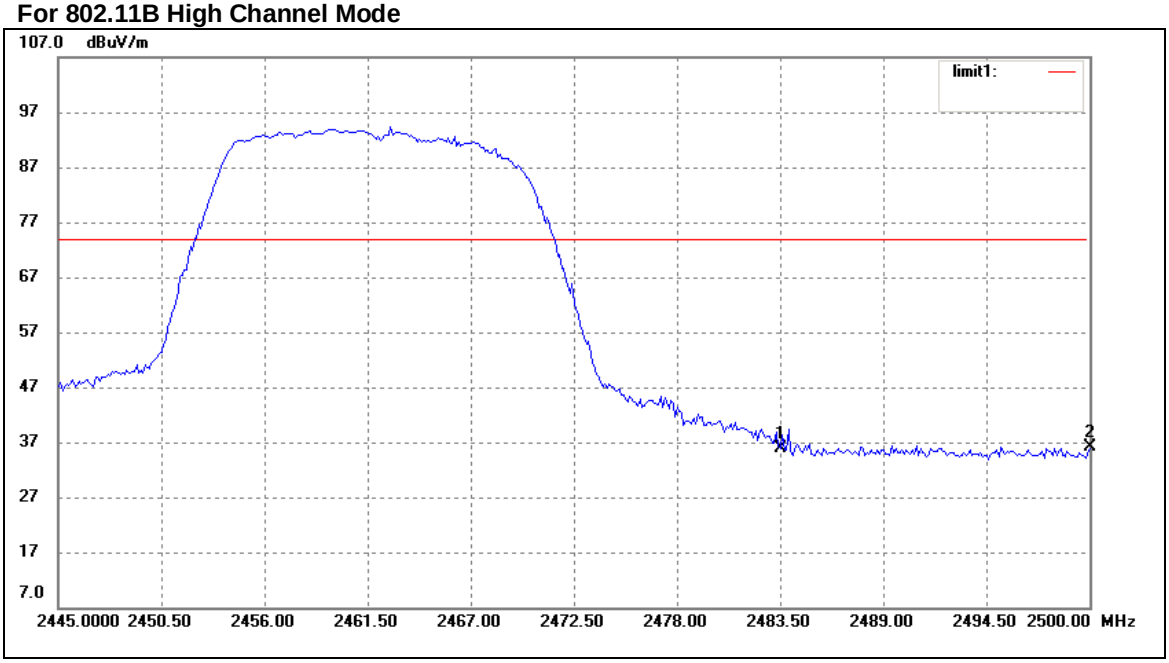
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	47.99	-11.78	36.21	74.00	-37.79	peak
2	2500.000	46.27	-11.78	34.49	74.00	-39.51	peak

For 802.11G Low Channel Mode



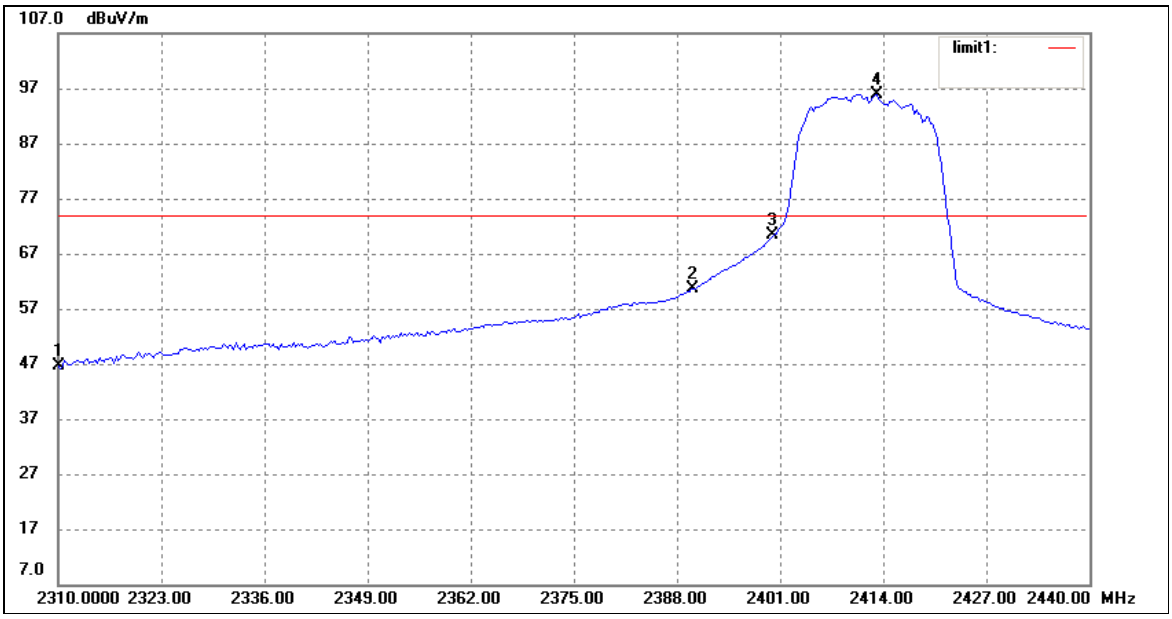
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	51.10	-11.72	39.38	74.00	-34.62	peak
2	2390.000	57.48	-11.75	45.73	74.00	-28.27	peak
3	2400.000	69.07	-11.75	57.32	74.00	-16.68	peak
4	2410.620	108.27	-11.75	96.52	fundamental		peak

For 802.11B High Channel Mode



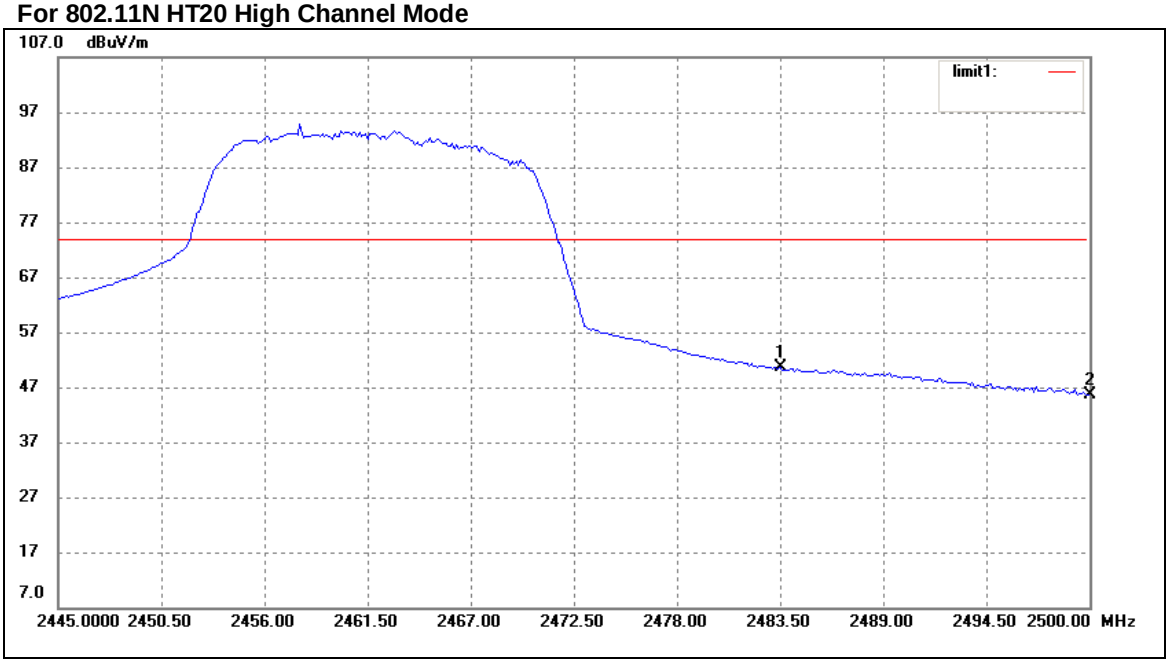
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	47.59	-11.78	35.81	74.00	-38.19	Peak
2	2500.000	47.99	-11.78	36.21	74.00	-37.79	Peak

For 802.11N HT20 Low Channel Mode



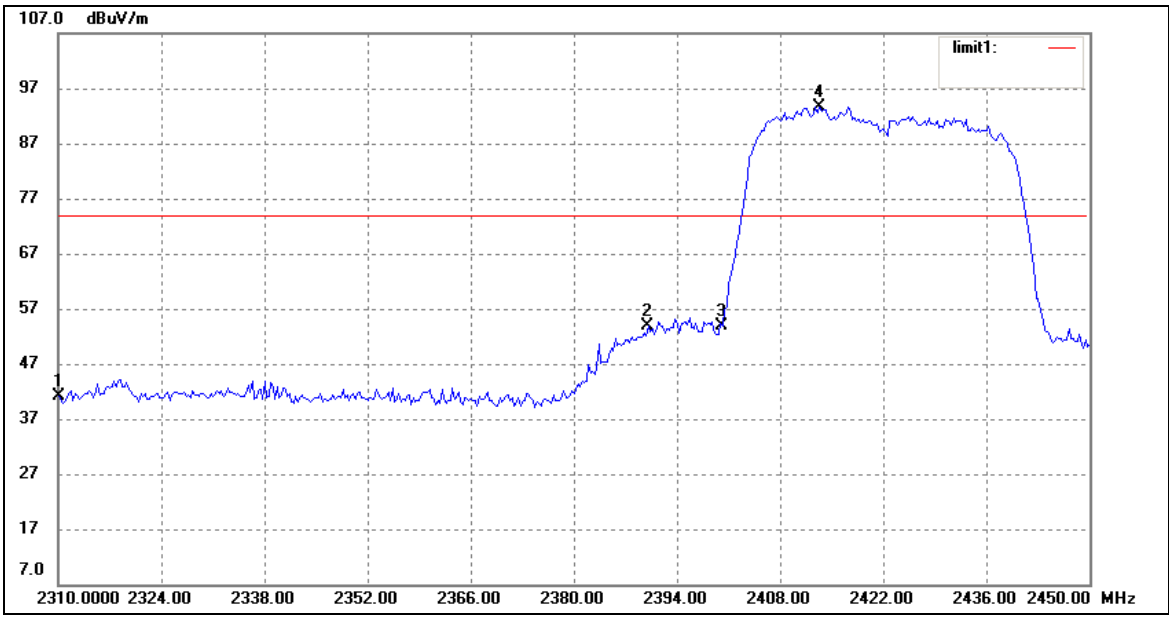
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	58.35	-11.72	46.63	74.00	-27.37	peak
2	2390.000	72.35	-11.75	60.60	74.00	-13.40	peak
3	2400.000	82.22	-11.75	70.47	74.00	-3.53	peak
5	2413.220	107.71	-11.76	95.95	fundamental		peak

For 802.11N HT20 High Channel Mode



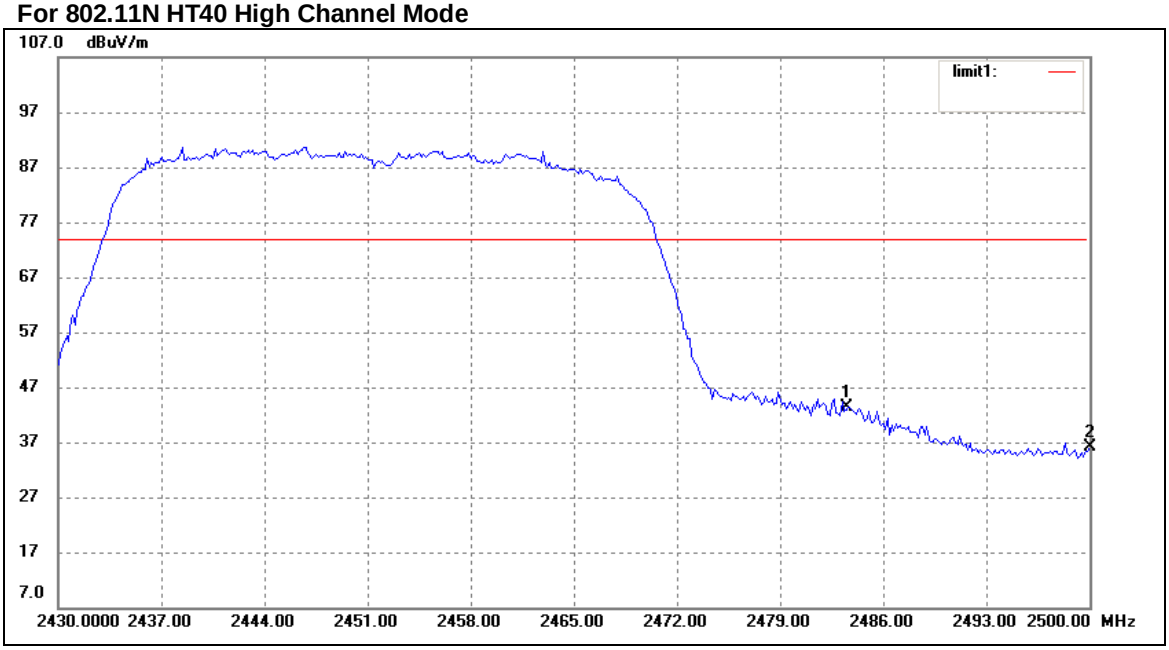
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	62.38	-11.78	50.60	74.00	-23.40	Peak
2	2500.000	57.33	-11.78	45.55	74.00	-28.45	Peak

For 802.11N HT40 Low Channel Mode



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	52.85	-11.72	41.13	74.00	-32.87	peak
2	2390.000	65.71	-11.75	53.96	74.00	-20.04	peak
3	2400.000	65.65	-11.75	53.90	74.00	-20.10	peak
4	2413.320	105.38	-11.76	93.62	fundamental		peak

For 802.11N HT40 High Channel Mode



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	55.15	-11.78	43.37	74.00	-30.63	Peak
2	2500.000	47.88	-11.78	36.10	74.00	-37.90	Peak

4.4 Maximum Output Power

Test Requirement:	FCC part 15 section 15.247 (b3)
Test Method:	ANSI C63.4:2003
Test Date:	2012-06-08
Mode of Operation:	Transmitting continuously mode.
Detector Function:	Average
Measurement BW:	RBW 1MHz ; VBW 3MHz

Test Procedure :

According to section 15.247(b)-power output of the KDB-558074 (2012), the method #1 of the power output option2 was used, the following is the measurement procedure.

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.

2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz.

4. Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode.

5. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”.

6. Trace average 100 traces in power averaging mode.

7. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges.

Result : PASS

Transmitting Mode: Transmits continuously

For 802.11b/g

Test mode	Frequency MHz	Reading Antenna 0 (dBm)	Reading Antenna 1 (dBm)	Output power Antenna 0 (W)	Output power Antenna 1 (W)	Total Power (W)	Limit W
802.11b (1M)	2412	9.54	9.19	0.00899	0.00830	/	1
	2437	8.81	8.79	0.00760	0.00757	/	1
	2462	8.21	8.27	0.00662	0.00671	/	1
802.11g (6M)	2412	5.54	5.72	0.00358	0.00373	0.00731	1
	2437	5.04	5.29	0.00319	0.00338	0.00657	1
	2462	4.64	4.60	0.00291	0.00288	0.00579	1

For 802.11n HT20/HT40

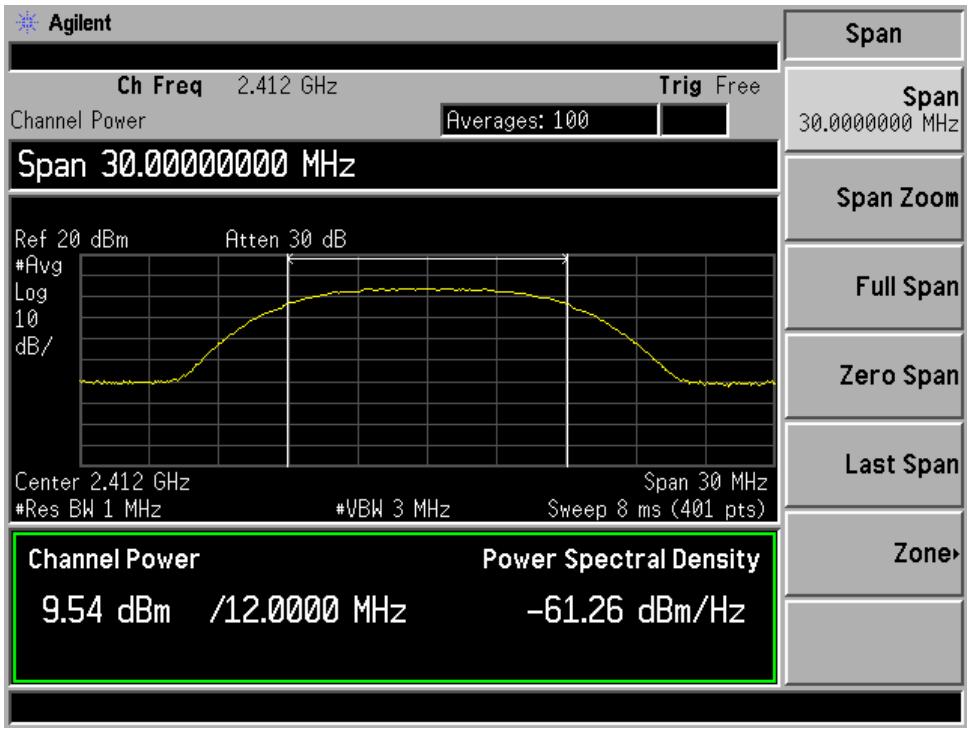
Test mode	Frequency MHz	Reading Antenna 0 (dBm)	Reading Antenna 1 (dBm)	Output power Antenna 0 (W)	Output power Antenna 1 (W)	Total Power (W)	Limit W
802.11n HT20 (MCS0)	2412	5.79	5.67	0.00379	0.00369	0.00748	1
	2437	5.40	5.03	0.00347	0.00318	0.00665	1
	2462	4.76	4.12	0.00299	0.00258	0.00557	1
802.11n HT40 (MCS0)	2422	5.10	5.65	0.00324	0.003673	0.00691	1
	2437	4.66	5.05	0.00292	0.00320	0.00612	1
	2452	4.43	4.39	0.00277	0.00275	0.00552	1

Note: *The EUT shall be simultaneous transmission at the Antenna 0 and Antenna 1 for 802.11g, 802.11n HT20 or HT40, 802.11b mode shall be transmission only single Antenna (Antenna 0 or Antenna 1).*
Above testing data is included of 0.5dB cable loss which between antenna port and spectrum.

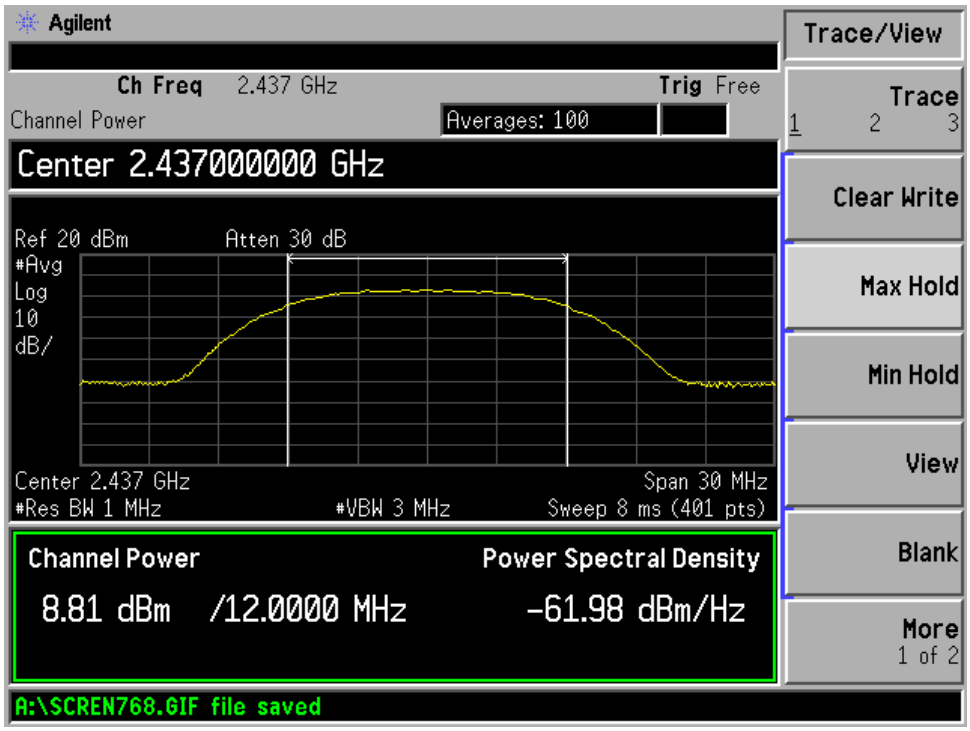
Limits for Maximum Output Power [Section 15.247 (b3)]:

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

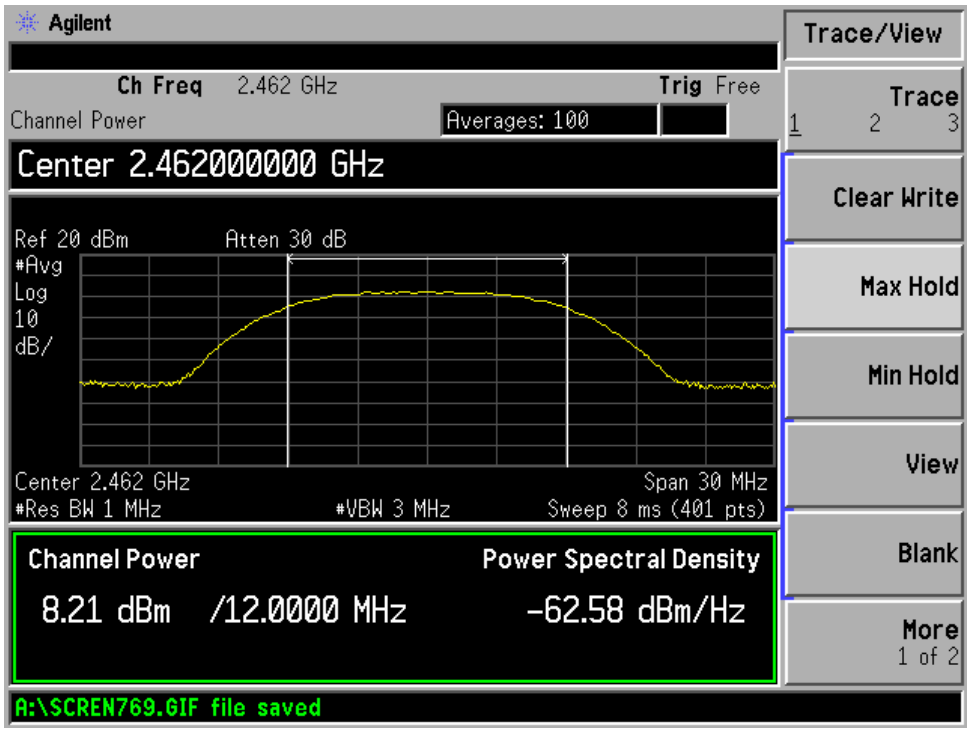
For 802.11B 1Mbps Mode (Antenna 0)
Result data graph shows Low channel conducted power = 9.54dBm



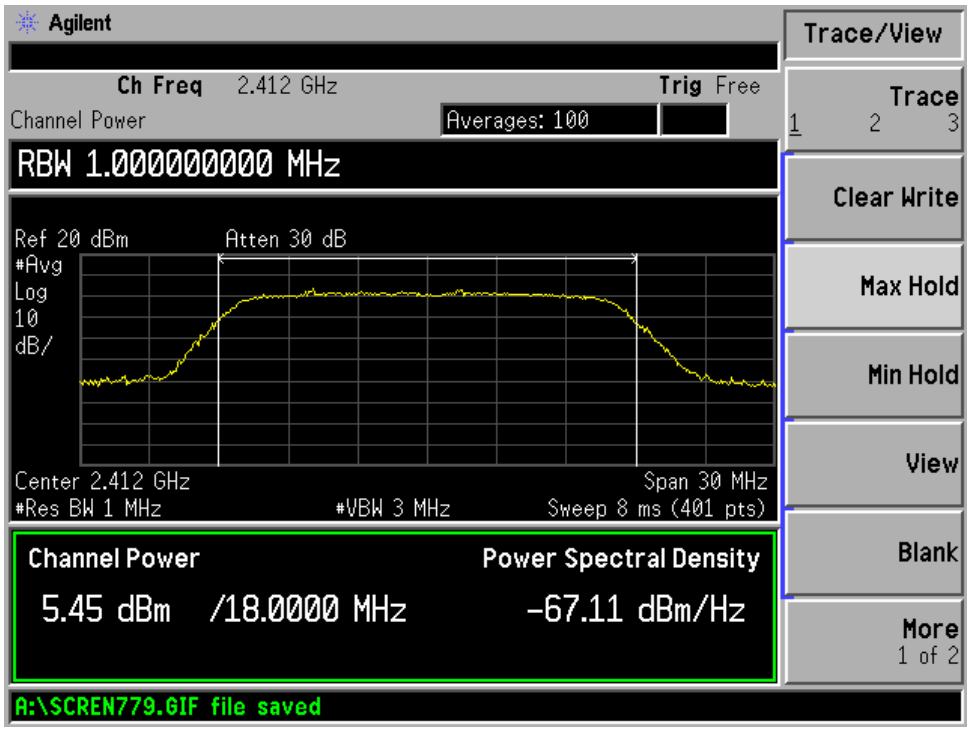
Result data graph shows middle channel conducted power = 8.81dBm



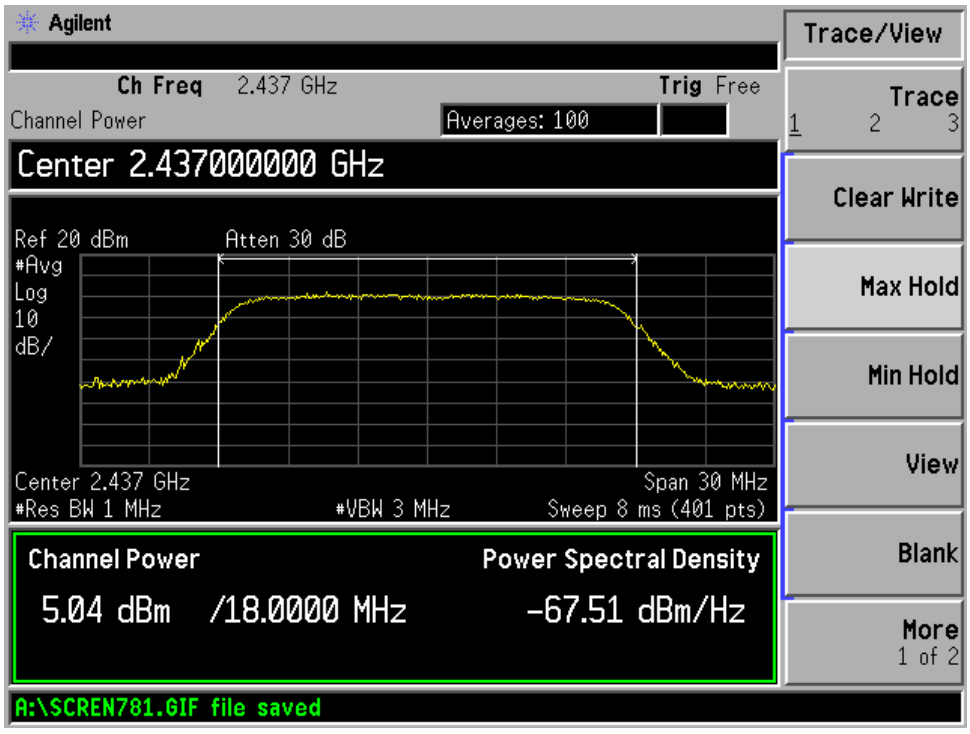
Result data graph shows high channel conducted power = 8.21dBm



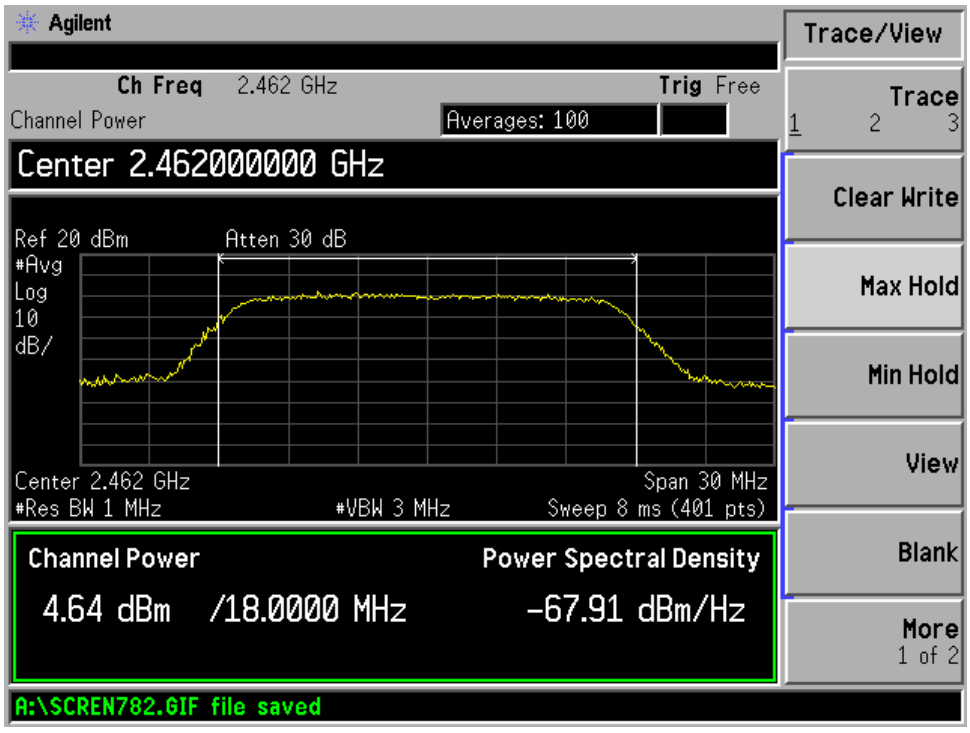
For 802.11G 6Mbps Mode
Result data graph shows Low channel conducted power = 5.45dBm



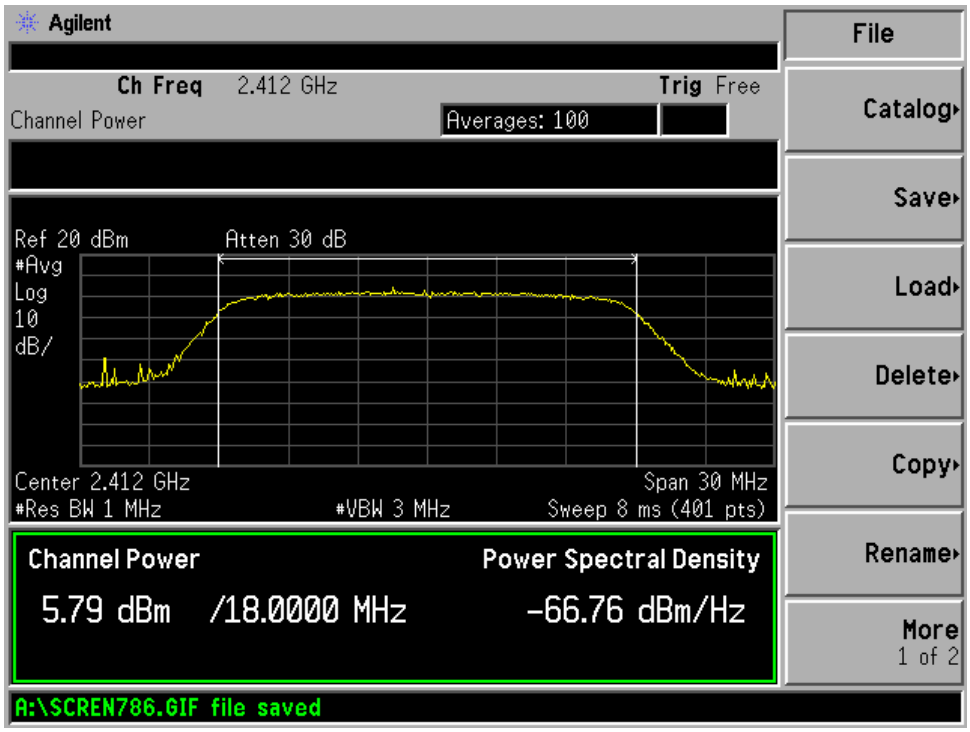
Result data graph shows middle channel conducted power = 5.04dBm



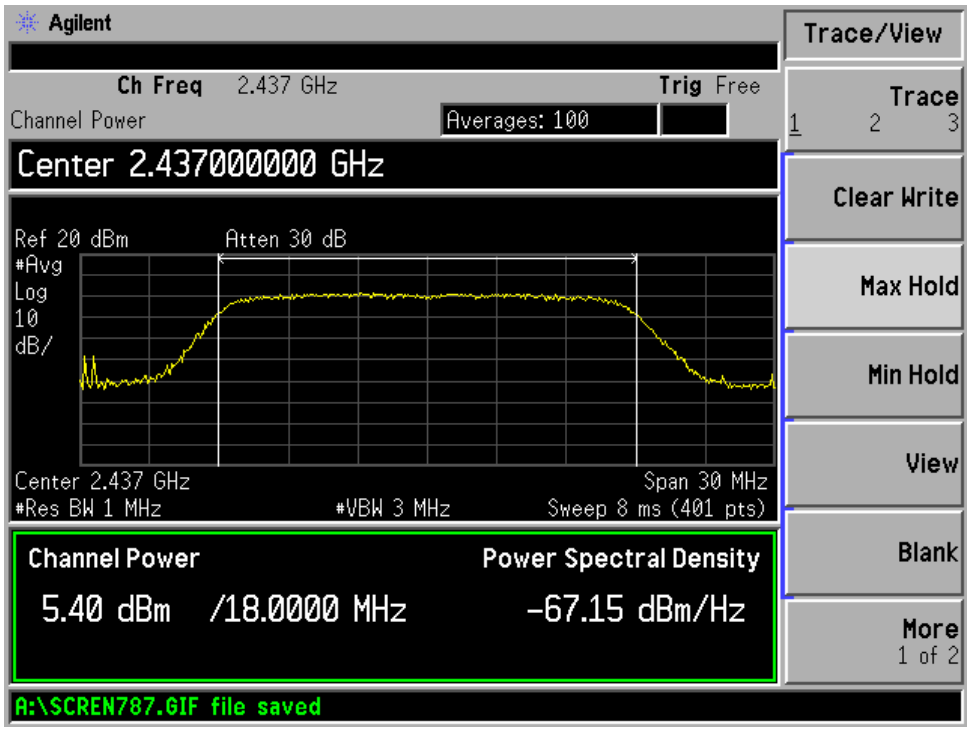
Result data graph shows high channel conducted power = 4.64dBm



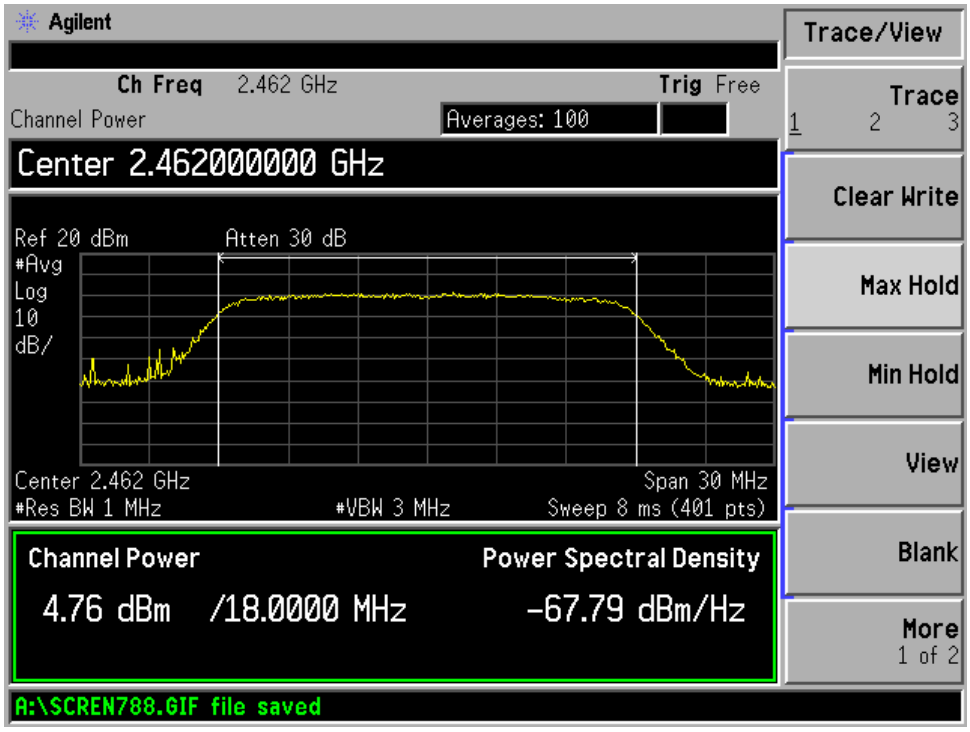
For 802.11N HT20 MCS0Mbps Mode
Result data graph shows Low channel conducted power = 5.79dBm



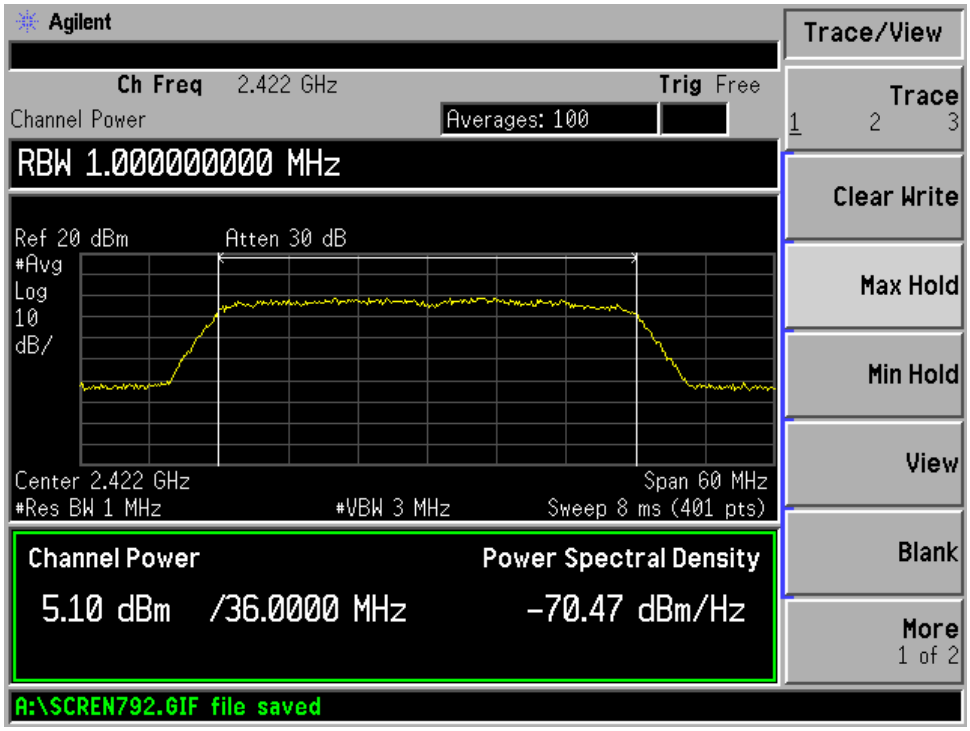
Result data graph shows middle channel conducted power = 5.40dBm



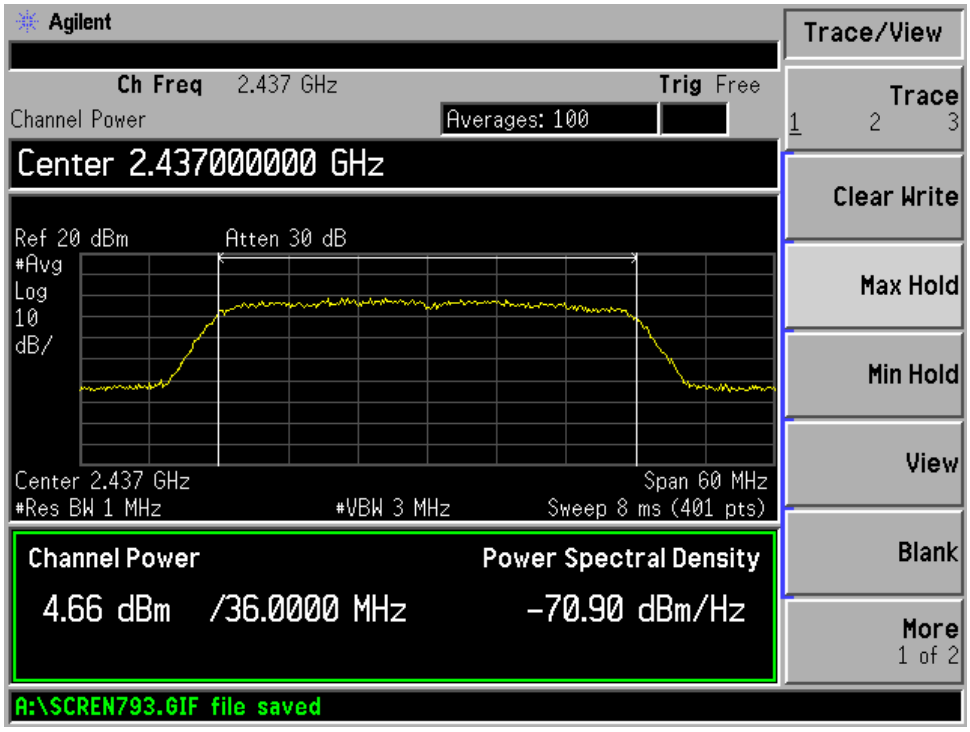
Result data graph shows high channel conducted power = 4.76dBm



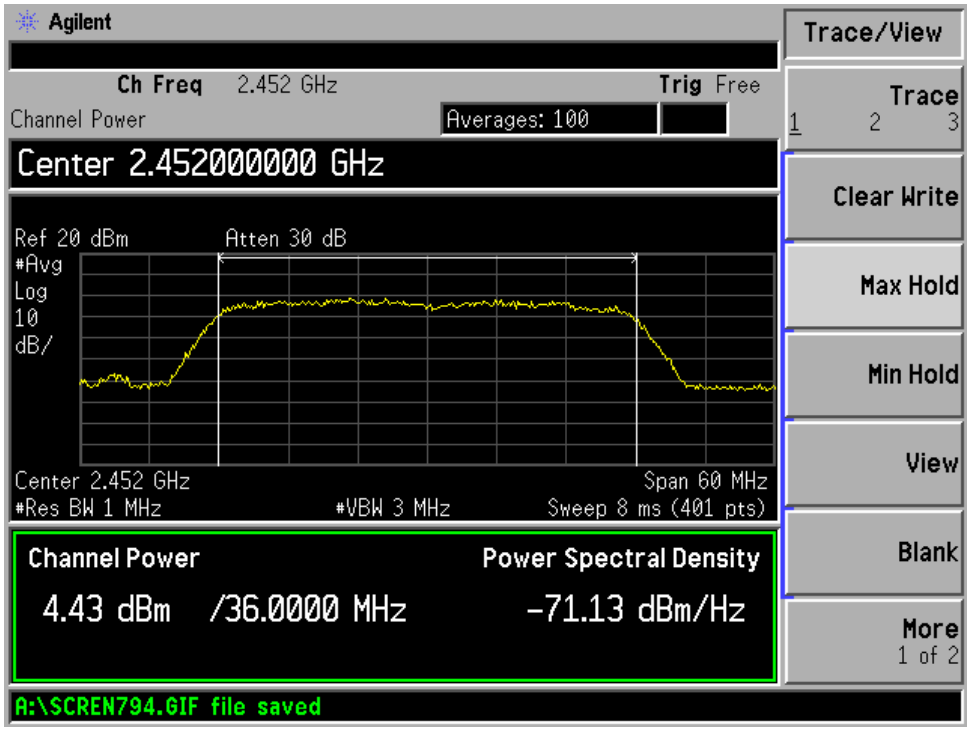
For 802.11N HT40 MCS0 Mbps Mode
Result data graph shows Low channel conducted power = 5.10dBm



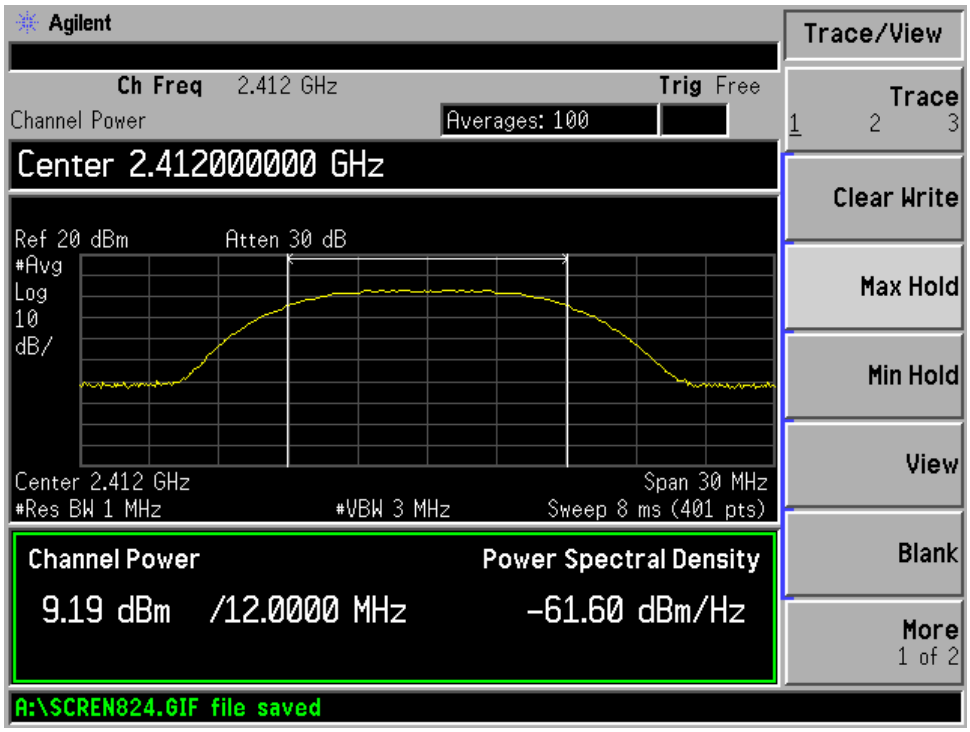
Result data graph shows middle channel conducted power = 4.66dBm



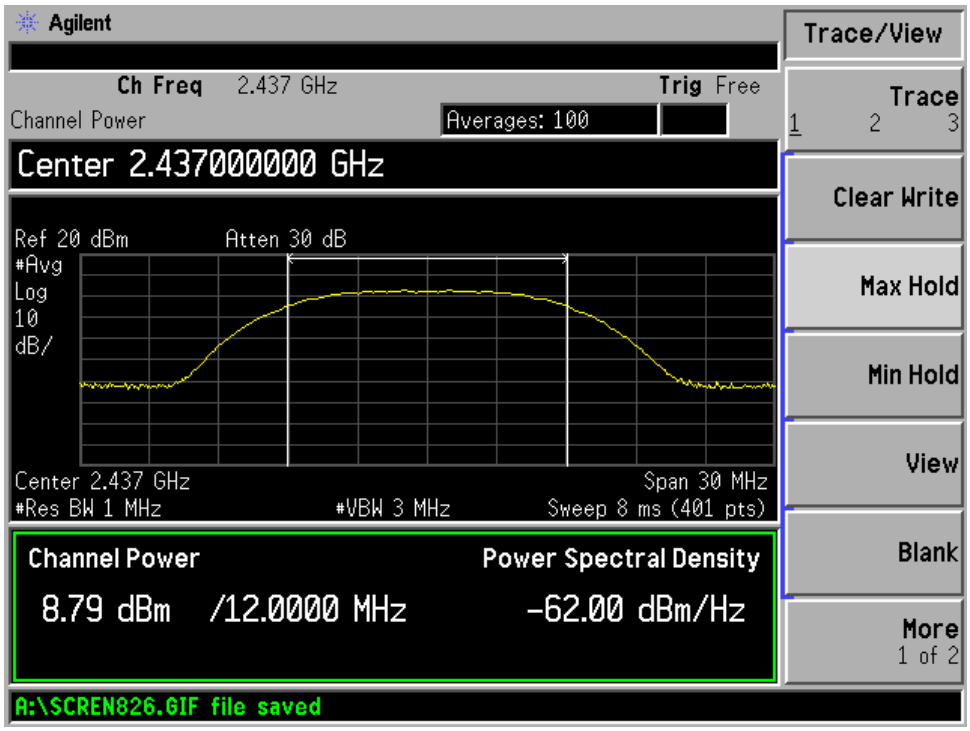
Result data graph shows high channel conducted power = 4.43dBm



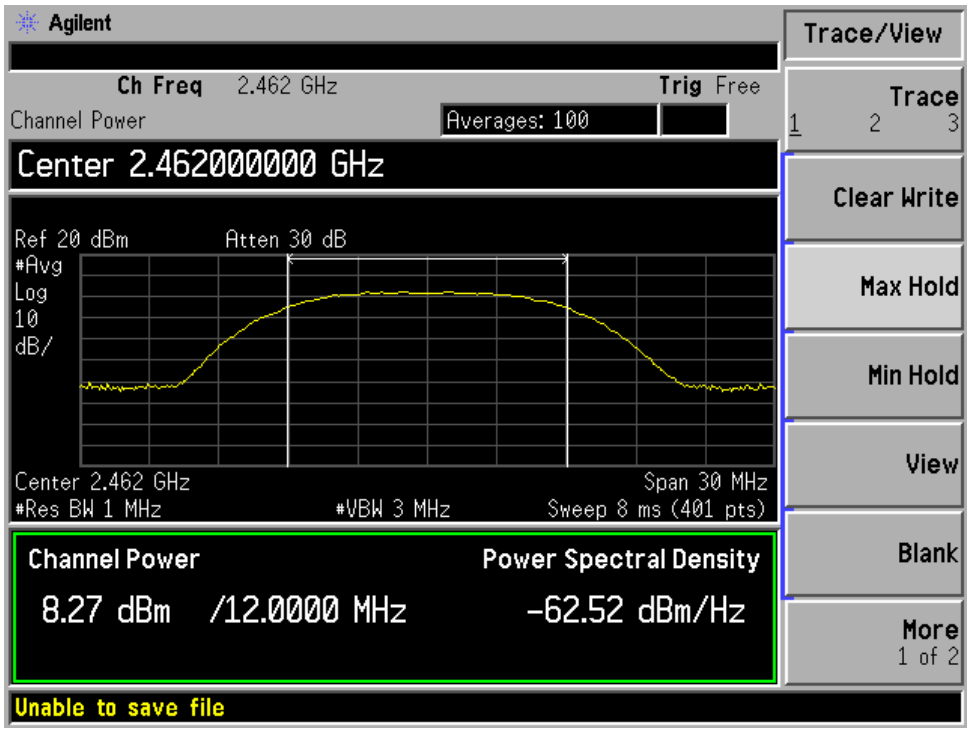
For 802.11B 1Mbps Mode (Antenna 1)
Result data graph shows Low channel conducted power = 9.19dBm



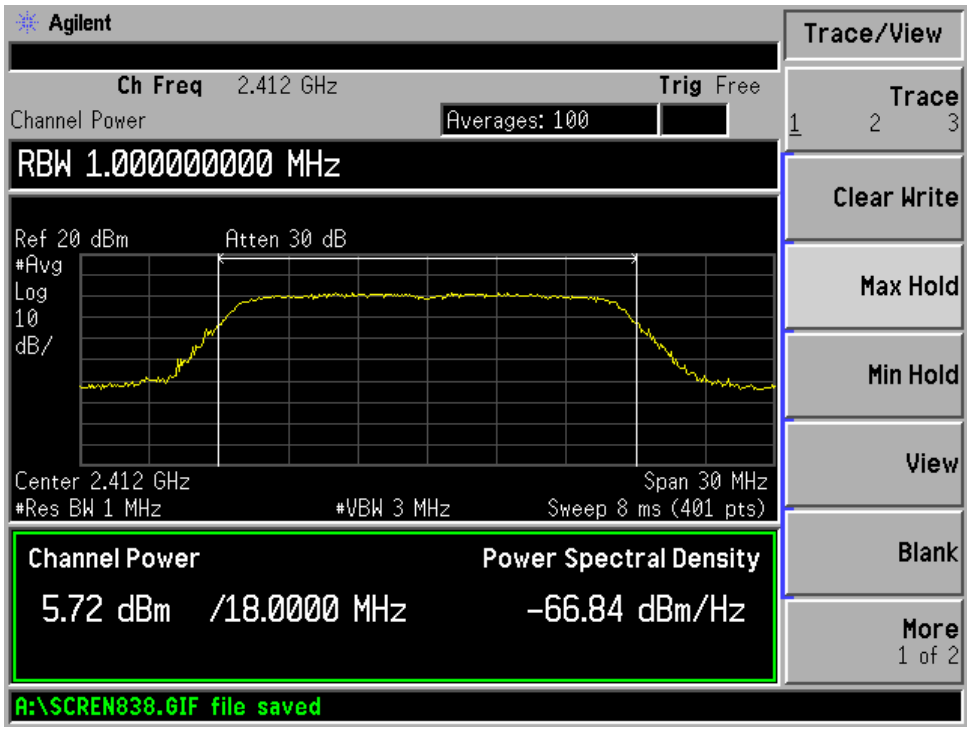
Result data graph shows middle channel conducted power = 8.79dBm



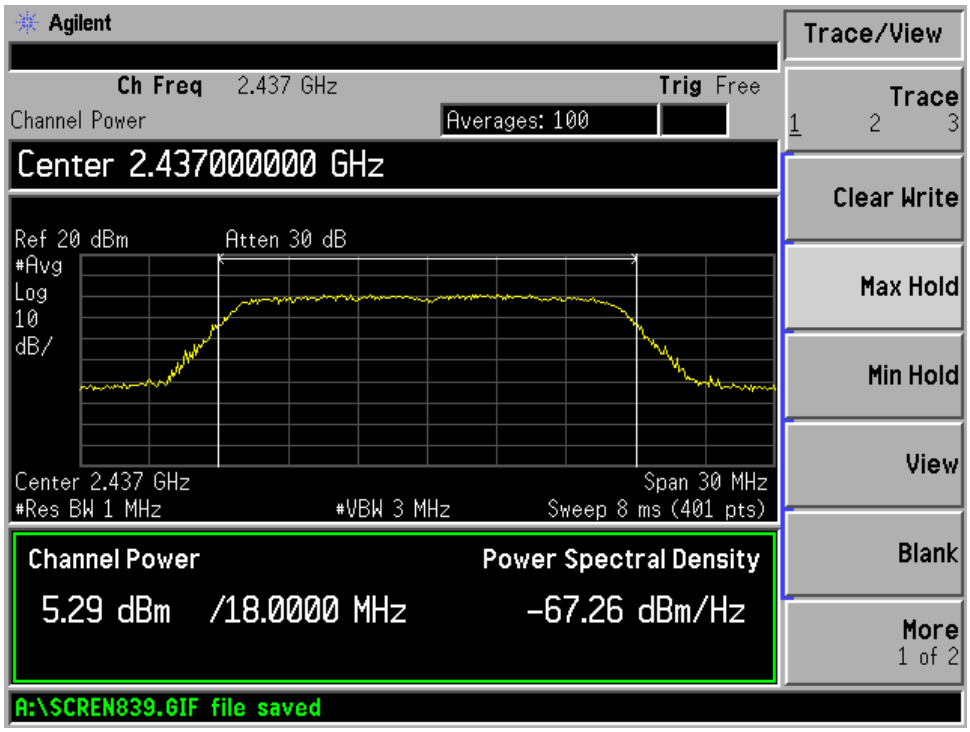
Result data graph shows high channel conducted power = 8.27dBm



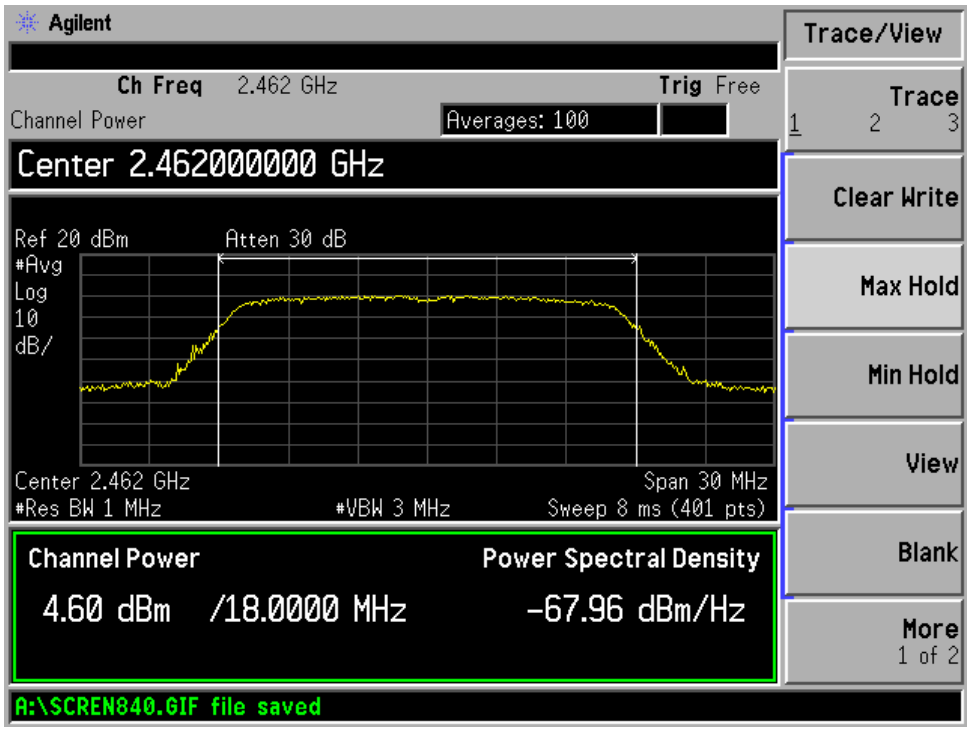
For 802.11G 6Mbps Mode
Result data graph shows Low channel conducted power = 5.72dBm



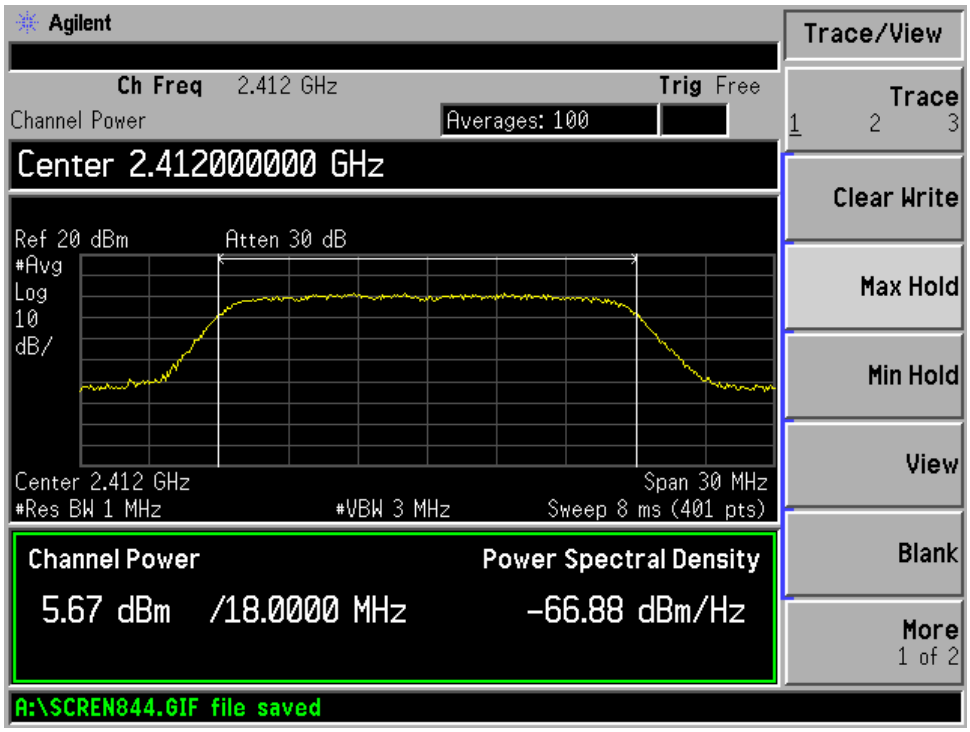
Result data graph shows middle channel conducted power = 5.29dBm



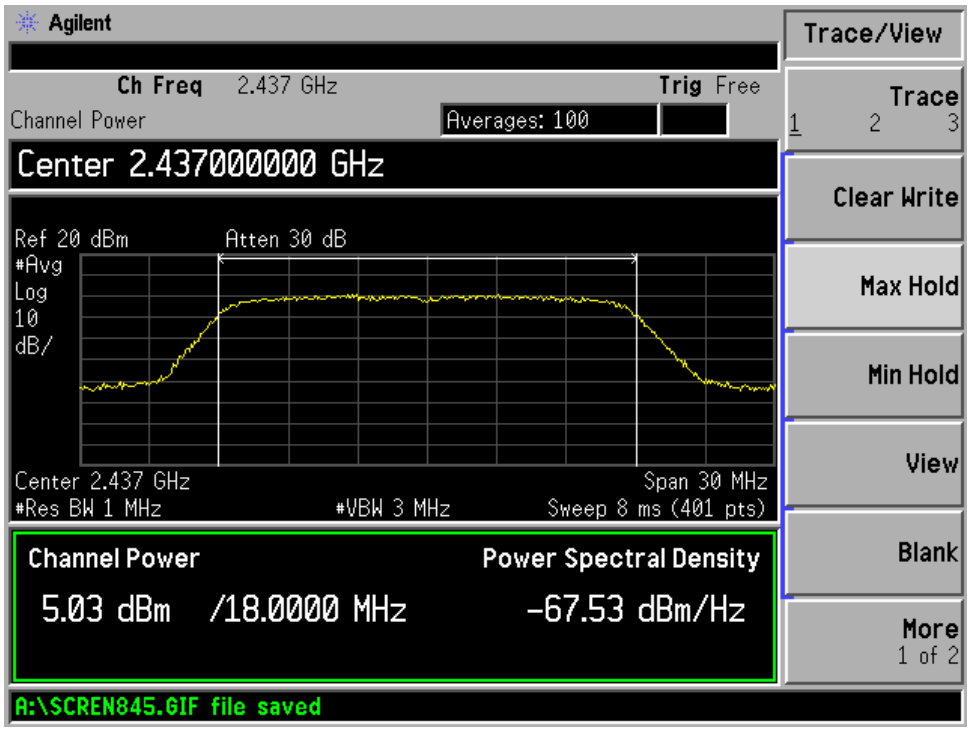
Result data graph shows high channel conducted power = 4.60dBm



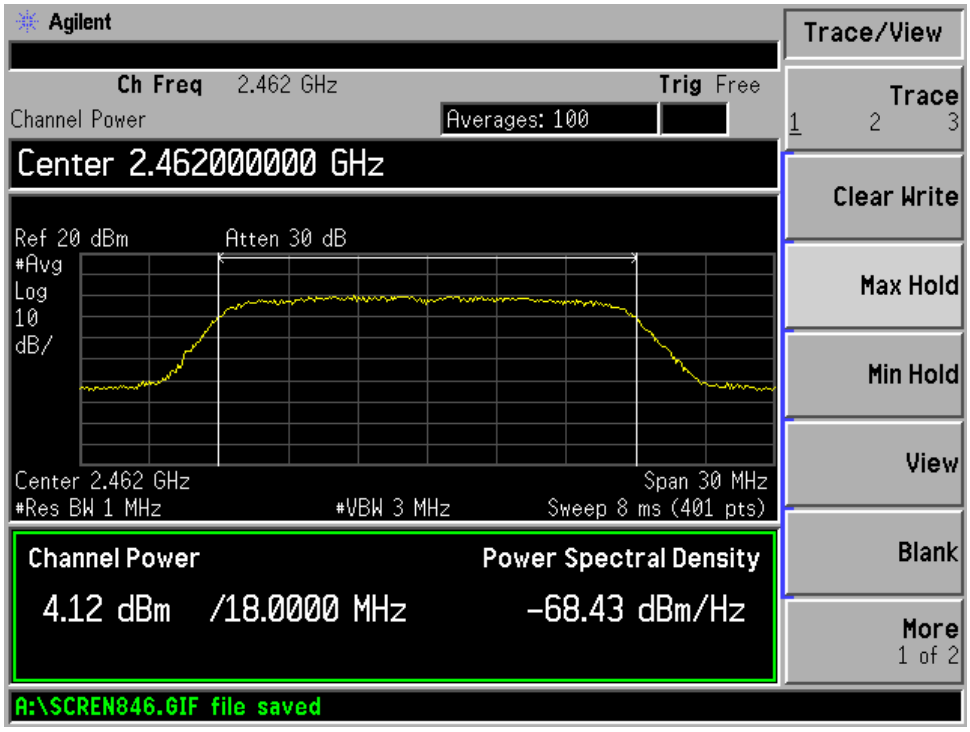
For 802.11N HT20 MCS0Mbps Mode
Result data graph shows Low channel conducted power = 5.67dBm



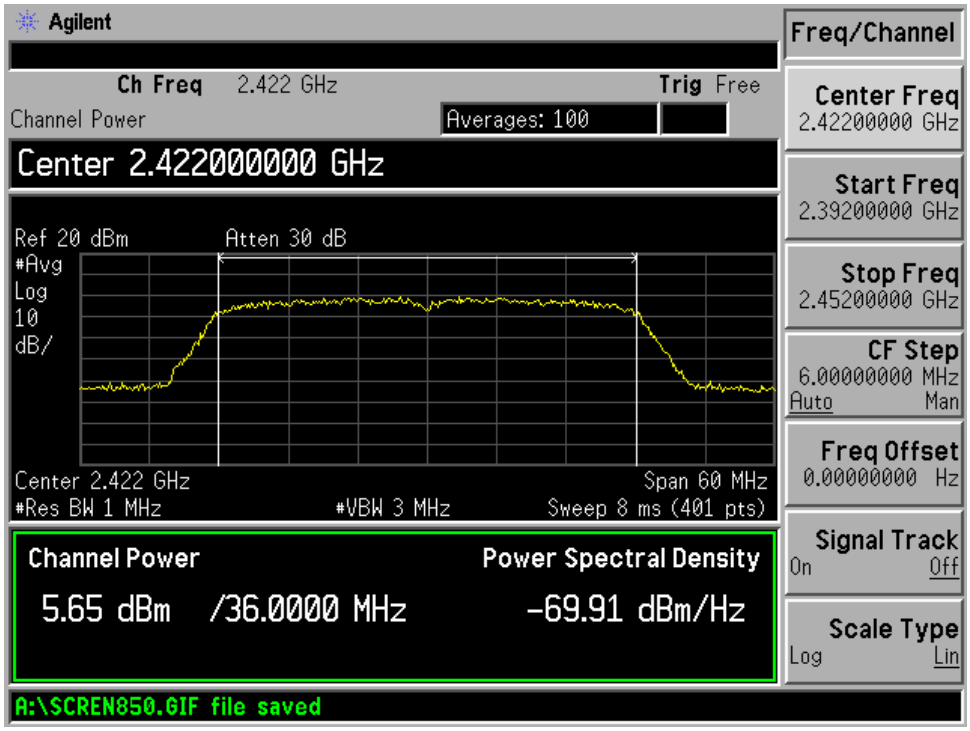
Result data graph shows middle channel conducted power = 5.03dBm



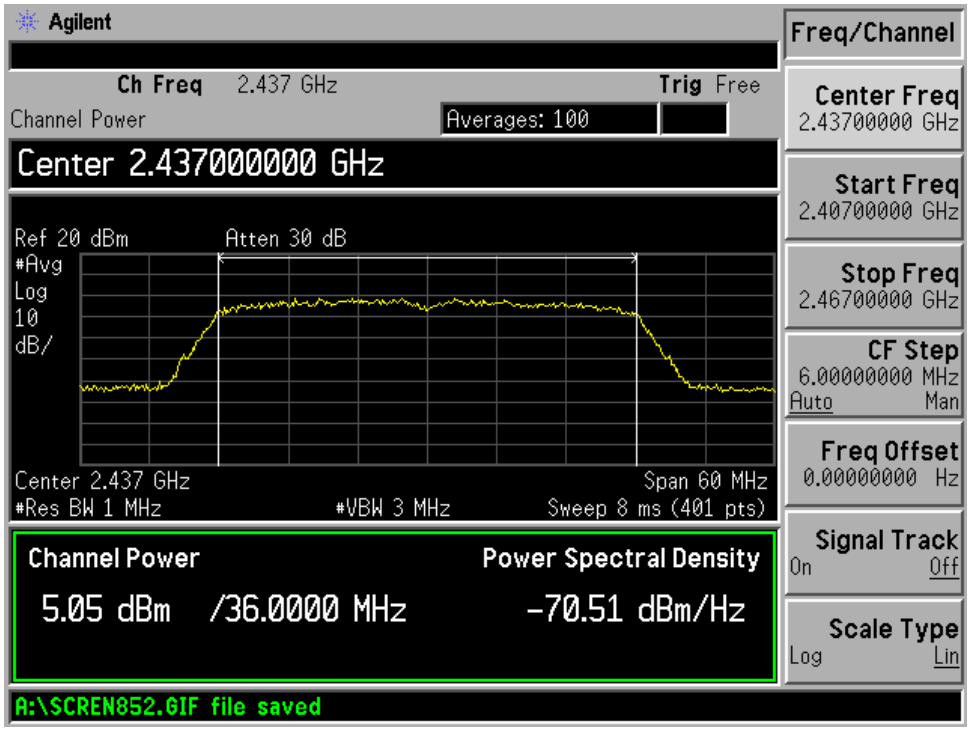
Result data graph shows high channel conducted power = 4.12dBm



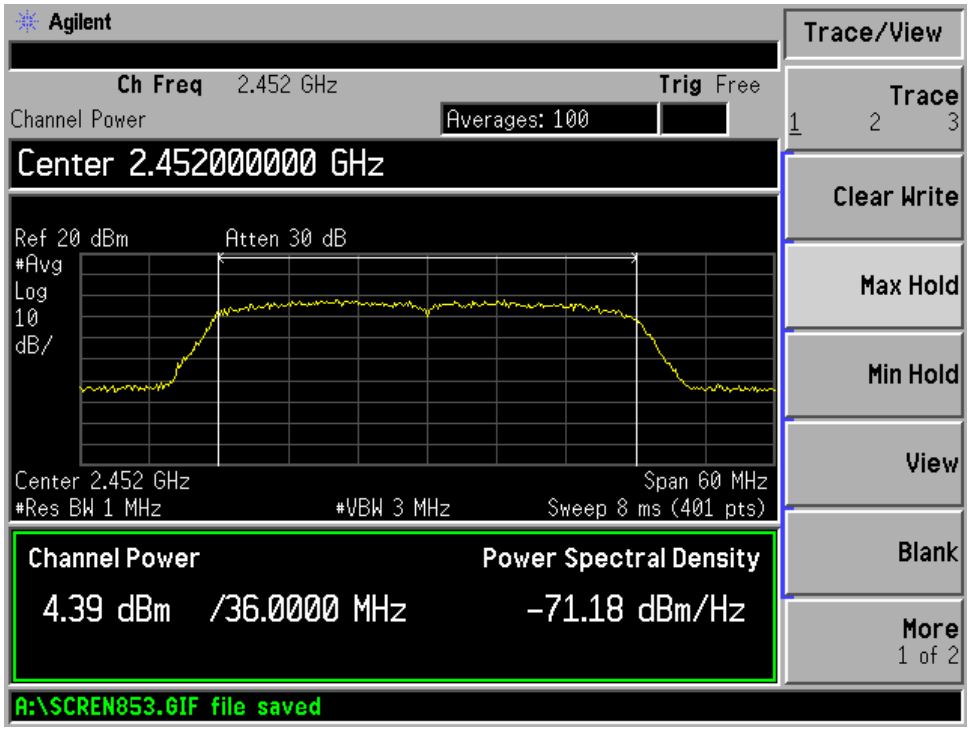
For 802.11N HT40 MCS0 Mbps Mode
Result data graph shows Low channel conducted power = 5.65dBm



Result data graph shows middle channel conducted power = 5.05dBm



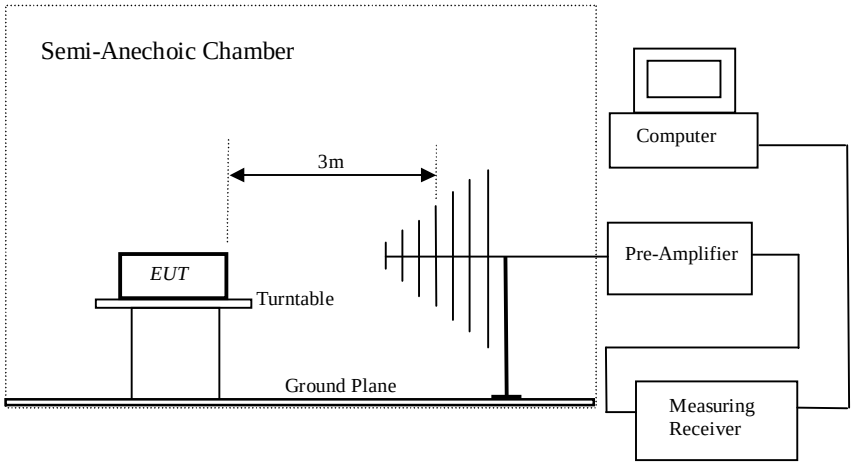
Result data graph shows high channel conducted power = 4.39dBm



4.5 Out of Band Emissions and Emissions in Restricted Bands

Test Requirement:	FCC part 15 section 15.247 (d)
Test Method:	ANSI C63.4:2003
Test Date:	2012-06-07
Mode of Operation:	Transmitting continuously mode.
Detector Function:	Peak
Measurement BW:	RBW 100KHz ; VBW 300KHz

Test Setup:



Result : PASS

Out of Frequency Band Emissions:

For out of band emissions that are close to or exceed 20dB attenuation requirement, and emission falls into restricted band, radiated emission was performed in order to show compliance with the general radiated emission requirement.

Result Summary:

Refer to Figure 10 to 11 for the emission data graph, result shows that the significant emissions detected are with more than 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Limits for Out of Frequency Band Emission [Section 15.247 (d)]:

In any 100kHz 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 100kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in Section 15.209(a) is not required.

Limit for Radiated Emission Falling in Restricted Bands [Section 15.209]:

Frequency (MHz)	Field Strength [μV/m]	Field Strength [dBμV/m]
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

Radiated emissions, which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209.

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

For IEEE 802.11b Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Lowest Channel							
124.5690	32.68	4.53	37.21	43.50	-6.29	peak	H
176.8878	28.50	3.73	32.23	43.50	-11.27	peak	H
249.4250	30.54	7.27	37.81	46.00	-8.19	peak	H
642.8613	23.77	15.14	38.91	46.00	-7.09	peak	H
33.0950	24.34	8.56	32.90	40.00	-7.10	peak	V
51.4807	25.60	6.49	32.09	40.00	-7.91	peak	V
57.9993	27.89	5.87	33.76	40.00	-6.24	peak	V
69.1141	30.89	2.80	33.69	40.00	-6.31	peak	V
124.5690	28.77	4.53	33.30	43.50	-10.20	peak	V
900.1474	22.87	19.38	42.25	46.00	-3.75	peak	V
Antenna 0							
4832.823	51.23	-3.85	47.38	74.00	-26.62	peak	H
4832.823	38.18	-3.85	34.33	54.00	-19.67	AVG	H
8861.783	47.74	3.72	51.46	74.00	-22.54	peak	H
8905.934	35.55	3.81	39.36	54.00	-14.64	AVG	H
4832.823	59.33	-3.85	55.48	74.00	-18.52	peak	V
4832.823	45.79	-3.85	41.94	54.00	-12.06	AVG	V
8905.934	47.92	3.81	51.73	74.00	-22.27	peak	V
8905.934	35.70	3.81	39.51	54.00	-14.49	AVG	V
Antenna 1							
4954.419	46.87	-3.50	43.37	74.00	-30.63	peak	H
5181.052	34.10	-2.70	31.40	54.00	-22.60	AVG	H
8905.934	34.96	3.81	38.77	54.00	-15.23	AVG	H
8950.306	46.58	3.90	50.48	74.00	-23.52	peak	H
4832.823	51.97	-3.85	48.12	74.00	-25.88	peak	V
4832.823	37.52	-3.85	33.67	54.00	-20.33	AVG	V
8905.934	34.96	3.81	38.77	54.00	-15.23	AVG	V
8994.898	46.68	3.99	50.67	74.00	-23.33	peak	V

For IEEE 802.11b Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Middle Channel							
124.5690	32.32	4.53	36.85	43.50	-6.65	peak	H
178.1327	28.78	3.74	32.52	43.50	-10.98	peak	H
251.1804	28.44	7.34	35.78	46.00	-10.22	peak	H
642.8613	21.36	15.14	36.50	46.00	-9.50	peak	H
900.1474	17.72	19.38	37.10	46.00	-8.90	peak	H
39.4372	23.65	9.60	33.25	40.00	-6.75	peak	V
51.8430	26.80	6.45	33.25	40.00	-6.75	peak	V
57.9993	25.57	5.87	31.44	40.00	-8.56	peak	V
124.5690	30.79	4.53	35.32	43.50	-8.18	peak	V
249.4250	28.02	7.27	35.29	46.00	-10.71	peak	V
900.1474	20.52	19.38	39.90	46.00	-6.10	peak	V
Antenna 0							
4881.099	49.19	-3.71	45.48	74.00	-28.52	peak	H
4881.099	36.67	-3.71	32.96	54.00	-21.04	AVG	H
8861.783	47.40	3.72	51.12	74.00	-22.88	peak	H
8905.934	35.35	3.81	39.16	54.00	-14.84	AVG	H
4881.099	57.78	-3.71	54.07	74.00	-19.93	peak	V
4881.099	43.37	-3.71	39.66	54.00	-14.34	AVG	V
8861.783	47.65	3.72	51.37	74.00	-22.63	peak	V
8905.934	35.38	3.81	39.19	54.00	-14.81	AVG	V
Antenna 1							
5155.367	47.22	-2.79	44.43	74.00	-29.57	peak	H
5391.193	34.99	-1.92	33.07	54.00	-20.93	AVG	H
8905.934	46.92	3.81	50.73	74.00	-23.27	peak	H
8905.934	34.90	3.81	38.71	54.00	-15.29	AVG	H
4881.099	50.90	-3.71	47.19	74.00	-26.81	peak	V
4881.099	36.60	-3.71	32.89	54.00	-21.11	AVG	V
8905.934	34.99	3.81	38.80	54.00	-15.20	AVG	V
8950.306	47.07	3.90	50.97	74.00	-23.03	peak	V

For IEEE 802.11b Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Highest Channel							
124.5690	32.14	4.53	36.67	43.50	-6.83	peak	H
178.1327	29.90	3.74	33.64	43.50	-9.86	peak	H
249.4250	28.84	7.27	36.11	46.00	-9.89	peak	H
642.8613	21.67	15.14	36.81	46.00	-9.19	peak	H
900.1474	19.88	19.38	39.26	46.00	-6.74	peak	H
32.4059	24.36	8.44	32.80	40.00	-7.20	peak	V
57.9993	27.14	5.87	33.01	40.00	-6.99	peak	V
69.1141	31.09	2.80	33.89	40.00	-6.11	peak	V
124.5690	29.49	4.53	34.02	43.50	-9.48	peak	V
642.8613	20.82	15.14	35.96	46.00	-10.04	peak	V
900.1474	23.67	19.38	43.05	46.00	-2.95	peak	V
Antenna 0							
4929.857	48.32	-3.57	44.75	74.00	-29.25	peak	H
4929.857	36.06	-3.57	32.49	54.00	-21.51	AVG	H
8905.934	48.04	3.81	51.85	74.00	-22.15	peak	H
8905.934	35.36	3.81	39.17	54.00	-14.83	AVG	H
4929.857	53.87	-3.57	50.30	74.00	-23.70	peak	V
4929.857	40.95	-3.57	37.38	54.00	-16.62	AVG	V
8861.783	47.71	3.72	51.43	74.00	-22.57	peak	V
8905.934	35.29	3.81	39.10	54.00	-14.90	AVG	V
Antenna 1							
4507.999	45.78	-4.79	40.99	74.00	-33.01	peak	H
4979.103	34.38	-3.43	30.95	54.00	-23.05	AVG	H
8905.934	46.53	3.81	50.34	74.00	-23.66	peak	H
8905.934	34.80	3.81	38.61	54.00	-15.39	AVG	H
4929.857	49.12	-3.57	45.55	54.00	-8.45	peak	V
4929.857	35.87	-3.57	32.30	74.00	-41.70	AVG	V
8905.934	46.54	3.81	50.35	54.00	-3.65	peak	V
8905.934	34.45	3.81	38.26	74.00	-35.74	AVG	V

For IEEE 802.11g Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Lowest Channel							
124.5690	33.14	4.53	37.67	43.50	-5.83	peak	H
249.4250	30.76	7.27	38.03	46.00	-7.97	peak	H
499.4247	24.92	12.18	37.10	46.00	-8.90	peak	H
900.1474	20.81	19.38	40.19	46.00	-5.81	peak	H
4832.823	47.40	-3.85	43.55	74.00	-30.45	peak	H
4832.823	35.53	-3.85	31.68	54.00	-22.32	AVG	H
8905.934	47.59	3.81	51.40	74.00	-22.60	peak	H
8905.934	35.30	3.81	39.11	54.00	-14.89	AVG	H
33.0950	23.60	8.56	32.16	40.00	-7.84	peak	V
51.8430	25.64	6.45	32.09	40.00	-7.91	peak	V
57.9993	26.15	5.87	32.02	40.00	-7.98	peak	V
124.5690	29.64	4.53	34.17	43.50	-9.33	peak	V
249.4250	24.00	7.27	31.27	46.00	-14.73	peak	V
900.1474	23.21	19.38	42.59	46.00	-3.41	peak	V
4832.823	54.73	-3.85	50.88	74.00	-23.12	peak	V
4832.823	40.02	-3.85	36.17	54.00	-17.83	AVG	V
8905.934	47.68	3.81	51.49	74.00	-22.51	peak	V
8905.934	35.42	3.81	39.23	54.00	-14.77	AVG	V
Middle Channel							
32.4059	21.81	8.44	30.25	40.00	-9.75	peak	H
124.5690	33.95	4.53	38.48	43.50	-5.02	peak	H
251.1804	29.26	7.34	36.60	46.00	-9.40	peak	H
900.1474	18.39	19.38	37.77	46.00	-8.23	peak	H
4905.418	47.04	-3.65	43.39	74.00	-30.61	peak	H
4905.418	34.67	-3.65	31.02	54.00	-22.98	AVG	H
8861.783	47.38	3.72	51.10	74.00	-22.90	peak	H
8905.934	35.36	3.81	39.17	54.00	-14.83	AVG	H
38.8879	22.49	9.50	31.99	40.00	-8.01	peak	V
57.9993	26.19	5.87	32.06	40.00	-7.94	peak	V
69.6005	29.57	2.65	32.22	40.00	-7.78	peak	V
124.5690	28.84	4.53	33.37	43.50	-10.13	peak	V
251.1804	23.56	7.34	30.90	46.00	-15.10	peak	V
900.1474	22.73	19.38	42.11	46.00	-3.89	peak	V
4881.099	53.49	-3.71	49.78	74.00	-24.22	peak	V
4881.099	37.94	-3.71	34.23	54.00	-19.77	AVG	V
8861.783	47.36	3.72	51.08	74.00	-22.92	peak	V
8905.934	35.32	3.81	39.13	54.00	-14.87	AVG	V
Highest Channel							
124.5690	33.59	4.53	38.12	43.50	-5.38	peak	H
251.1804	28.45	7.34	35.79	46.00	-10.21	peak	H
297.2241	22.47	10.04	32.51	46.00	-13.49	peak	H
499.4247	23.59	12.18	35.77	46.00	-10.23	peak	H
642.8613	20.14	15.14	35.28	46.00	-10.72	peak	H
900.1474	20.98	19.38	40.36	46.00	-5.64	peak	H
4954.419	34.85	-3.50	31.35	54.00	-22.65	AVG	H
5003.909	47.59	-3.36	44.23	74.00	-29.77	peak	H
8905.934	47.23	3.81	51.04	74.00	-22.96	peak	H
8905.934	35.30	3.81	39.11	54.00	-14.89	AVG	H
37.5479	22.50	9.29	31.79	40.00	-8.21	peak	V

69.1141	29.26	2.80	32.06	40.00	-7.94	peak	V
124.5690	26.73	4.53	31.26	43.50	-12.24	peak	V
249.4250	23.05	7.27	30.32	46.00	-15.68	peak	V
642.8613	21.76	15.14	36.90	46.00	-9.10	peak	V
900.1474	19.97	19.38	39.35	46.00	-6.65	peak	V
4929.857	50.88	-3.57	47.31	74.00	-26.69	peak	V
4929.857	36.69	-3.57	33.12	54.00	-20.88	AVG	V
8861.783	47.71	3.72	51.43	74.00	-22.57	peak	V
8905.934	35.31	3.81	39.12	54.00	-14.88	AVG	V

For IEEE 802.11n/HT20 Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Lowest Channel							
124.5690	34.29	4.53	38.82	43.50	-4.68	peak	H
176.8878	27.59	3.73	31.32	43.50	-12.18	peak	H
251.1804	28.84	7.34	36.18	46.00	-9.82	peak	H
499.4247	24.34	12.18	36.52	46.00	-9.48	peak	H
900.1474	20.57	19.38	39.95	46.00	-6.05	peak	H
4929.857	35.05	-3.57	31.48	54.00	-22.52	AVG	H
5003.909	47.27	-3.36	43.91	74.00	-30.09	peak	H
8905.934	47.39	3.81	51.20	74.00	-22.80	peak	H
8905.934	35.23	3.81	39.04	54.00	-14.96	AVG	H
36.7662	22.64	9.16	31.80	40.00	-8.20	peak	V
51.8430	27.03	6.45	33.48	40.00	-6.52	peak	V
58.4074	25.01	5.83	30.84	40.00	-9.16	peak	V
124.5690	28.97	4.53	33.50	43.50	-10.00	peak	V
251.1804	25.94	7.34	33.28	46.00	-12.72	peak	V
900.1474	21.53	19.38	40.91	46.00	-5.09	peak	V
4832.823	51.95	-3.85	48.10	74.00	-25.90	peak	V
4832.823	38.46	-3.85	34.61	54.00	-19.39	AVG	V
8861.783	47.76	3.72	51.48	74.00	-22.52	peak	V
8905.934	35.32	3.81	39.13	54.00	-14.87	AVG	V
Middle Channel							
32.4059	21.59	8.44	30.03	40.00	-9.97	peak	H
124.5690	33.04	4.53	37.57	43.50	-5.93	peak	H
251.1804	28.62	7.34	35.96	46.00	-10.04	peak	H
499.4247	20.19	12.18	32.37	46.00	-13.63	peak	H
900.1474	18.88	19.38	38.26	46.00	-7.74	peak	H
4954.419	46.81	-3.50	43.31	74.00	-30.69	peak	H
4979.103	34.91	-3.43	31.48	54.00	-22.52	AVG	H
8861.783	35.19	3.72	38.91	54.00	-15.09	AVG	H
8950.306	48.07	3.90	51.97	74.00	-22.03	peak	H
34.5173	24.83	8.80	33.63	40.00	-6.37	peak	V
51.8430	26.07	6.45	32.52	40.00	-7.48	peak	V
60.0691	24.36	5.67	30.03	40.00	-9.97	peak	V
124.5690	30.02	4.53	34.55	43.50	-8.95	peak	V
251.1804	25.63	7.34	32.97	46.00	-13.03	peak	V
900.1474	20.12	19.38	39.50	46.00	-6.50	peak	V
4832.823	51.95	-3.85	48.10	74.00	-25.90	peak	V
4832.823	38.46	-3.85	34.61	54.00	-19.39	AVG	V
8905.934	48.10	3.81	51.91	74.00	-22.09	peak	V
8905.934	35.40	3.81	39.21	54.00	-14.79	AVG	V
Highest Channel							
33.0950	20.31	8.56	28.87	40.00	-11.13	peak	H
124.5690	28.48	4.53	33.01	43.50	-10.49	peak	H
251.1804	28.48	7.34	35.82	46.00	-10.18	peak	H
4929.857	34.85	-3.57	31.28	54.00	-22.72	AVG	H
4979.103	46.77	-3.43	43.34	74.00	-30.66	peak	H
8905.934	49.06	3.81	52.87	74.00	-21.13	peak	H
8905.934	35.30	3.81	39.11	54.00	-14.89	AVG	H
32.4059	24.76	8.44	33.20	40.00	-6.80	peak	V
51.8430	25.83	6.45	32.28	40.00	-7.72	peak	V

69.1141	28.37	2.80	31.17	40.00	-8.83	peak	V
124.5690	30.28	4.53	34.81	43.50	-8.69	peak	V
249.4250	22.95	7.27	30.22	46.00	-15.78	peak	V
900.1474	24.82	19.38	44.20	46.00	-1.80	peak	V
4929.857	35.96	-3.57	32.39	54.00	-21.61	AVG	V
4954.419	47.40	-3.50	43.90	74.00	-30.10	peak	V
8861.783	47.97	3.72	51.69	74.00	-22.31	peak	V
8905.934	35.17	3.81	38.98	54.00	-15.02	AVG	V

For IEEE 802.11n/HT40 Mode

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Polarization
Lowest Channel							
124.5690	33.84	4.53	38.37	43.50	-5.13	peak	H
178.1327	28.83	3.74	32.57	43.50	-10.93	peak	H
249.4250	25.12	7.27	32.39	46.00	-13.61	peak	H
499.4247	20.60	12.18	32.78	46.00	-13.22	peak	H
4954.419	47.30	-3.50	43.80	74.00	-30.20	peak	H
4954.419	34.78	-3.50	31.28	54.00	-22.72	AVG	H
8905.934	35.29	3.81	39.10	54.00	-14.90	AVG	H
8994.898	47.36	3.99	51.35	74.00	-22.65	peak	H
34.5173	22.28	8.80	31.08	40.00	-8.92	peak	V
51.8430	25.33	6.45	31.78	40.00	-8.22	peak	V
57.9993	26.95	5.87	32.82	40.00	-7.18	peak	V
69.1141	28.78	2.80	31.58	40.00	-8.42	peak	V
642.8613	20.17	15.14	35.31	46.00	-10.69	peak	V
900.1474	21.95	19.38	41.33	46.00	-4.67	peak	V
4954.419	46.75	-3.50	43.25	74.00	-30.75	peak	V
4954.419	34.75	-3.50	31.25	54.00	-22.75	AVG	V
8905.934	47.20	3.81	51.01	74.00	-22.99	peak	V
8905.934	35.25	3.81	39.06	54.00	-14.94	AVG	V
Middle Channel							
31.9546	20.93	8.37	29.30	40.00	-10.70	peak	H
124.5690	34.27	4.53	38.80	43.50	-4.70	peak	H
251.1804	27.97	7.34	35.31	46.00	-10.69	peak	H
734.4913	16.10	17.68	33.78	46.00	-12.22	peak	H
900.1474	17.67	19.38	37.05	46.00	-8.95	peak	H
4979.103	34.68	-3.43	31.25	54.00	-22.75	AVG	H
5003.909	46.94	-3.36	43.58	74.00	-30.42	peak	H
8905.934	47.48	3.81	51.29	74.00	-22.71	peak	H
8905.934	35.16	3.81	38.97	54.00	-15.03	AVG	H
36.0007	24.04	9.04	33.08	40.00	-6.92	peak	V
51.8430	25.38	6.45	31.83	40.00	-8.17	peak	V
58.4074	27.98	5.83	33.81	40.00	-6.19	peak	V
68.6310	28.74	2.96	31.70	40.00	-8.30	peak	V
642.8613	20.98	15.14	36.12	46.00	-9.88	peak	V
900.1474	21.45	19.38	40.83	46.00	-5.17	peak	V
4881.099	48.66	-3.71	44.95	74.00	-29.05	peak	V
4881.099	36.11	-3.71	32.40	54.00	-21.60	AVG	V
8905.934	35.24	3.81	39.05	54.00	-14.95	AVG	V
8950.306	46.91	3.90	50.81	74.00	-23.19	peak	V
Highest Channel							
32.4059	20.89	8.44	29.33	40.00	-10.67	peak	H
124.5690	31.78	4.53	36.31	43.50	-7.19	peak	H
251.1804	28.68	7.34	36.02	46.00	-9.98	peak	H
900.1474	18.27	19.38	37.65	46.00	-8.35	peak	H
4905.418	47.46	-3.65	43.81	74.00	-30.19	peak	H
4954.419	34.66	-3.50	31.16	54.00	-22.84	AVG	H
8905.934	35.11	3.81	38.92	54.00	-15.08	AVG	H
8950.306	48.15	3.90	52.05	74.00	-21.95	peak	H
33.0950	25.19	8.56	33.75	40.00	-6.25	peak	V
51.8430	25.52	6.45	31.97	40.00	-8.03	peak	V

69.1141	28.30	2.80	31.10	40.00	-8.90	peak	V
124.5690	27.72	4.53	32.25	43.50	-11.25	peak	V
642.8613	19.50	15.14	34.64	46.00	-11.36	peak	V
900.1474	18.72	19.38	38.10	46.00	-7.90	peak	V
4905.418	35.63	-3.65	31.98	54.00	-22.02	AVG	V
4929.857	46.84	-3.57	43.27	74.00	-30.73	peak	V
8861.783	47.30	3.72	51.02	74.00	-22.98	peak	V
8905.934	35.15	3.81	38.96	54.00	-15.04	AVG	V

Remark: Only background noise was measured from 12GHz-26GHz.

Result Summary:

1) Communication mode: All other emissions are more than 20dB below FCC part 15.209 limit.
2) No further spurious emissions found between 30 MHz and lowest internal used/generated frequency and from 30MHz to 1GHz.
3) Test data is base on the worst case lowest channel's emission data graph from 30MHz-26GHz.

Remarks:

1. " * " Radiated emissions which fall in the restricted bands as defined in Section 15.205(a).

2. Emission level with more than 20dB below the FCC required limit is not mentioned in table.

3. Delta to Limit = Field strength (dBµV/m) – Limit (dBµV/m).

4. Calculated measurement uncertainty: 9kHz -30MHz: 1.8dB.
30MHz -1GHz: 5.2dB.
1GHz -18GHz: 5.1dB.

4.6 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC part 15 Section 15.207 Class B
Test Method:	ANSI C63.4:2003
Test Date:	2012-06-07
Mode of Operation:	Transmitting continuously mode
Detector Function:	CISPR Quasi Peak
Measurement BW:	100 kHz
Worst Case Channel:	802.11b Lowest Channel 1Mbps

Results: PASS

- Refer following the result data graph.

Limits for Conducted Emission [Section 15.207]:

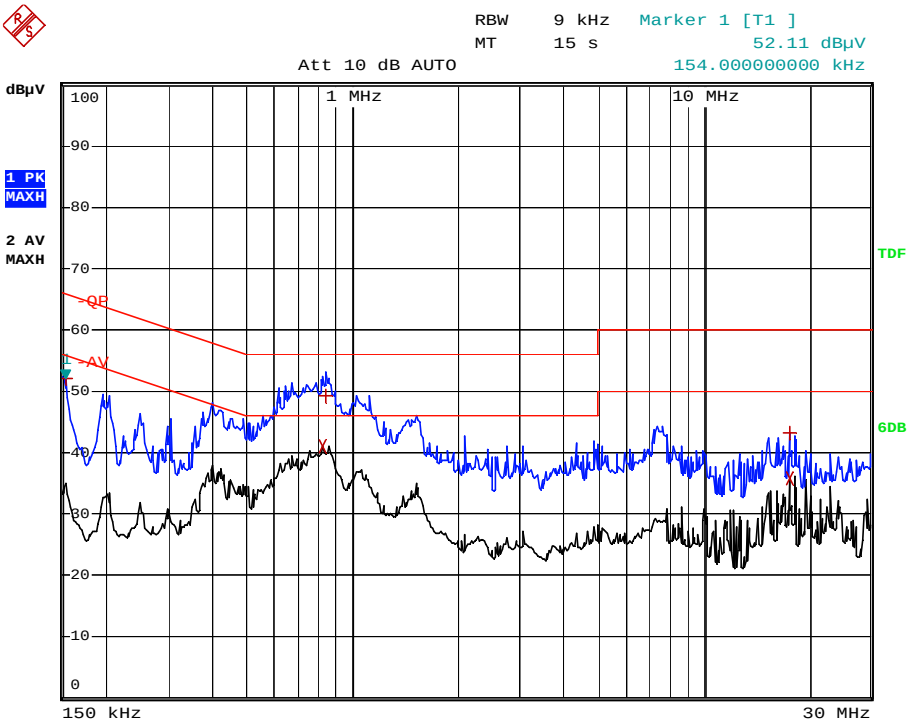
Frequency Range [MHz]	Quasi-Peak Limit [dBμV]	Average Limit [dBμV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

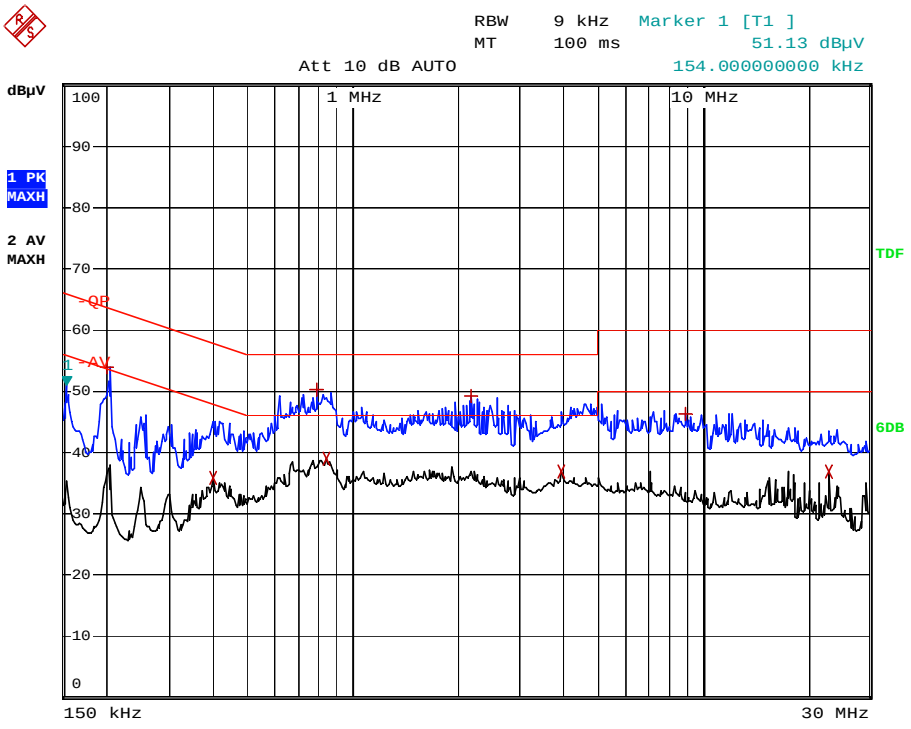
Remarks:
Calculated measurement uncertainty: ±2.8dB

Result data graph shows the conducted emission (Live and Neutral).
For Adapter 1: HKA01212010-2F

Line Port



Neutral Port



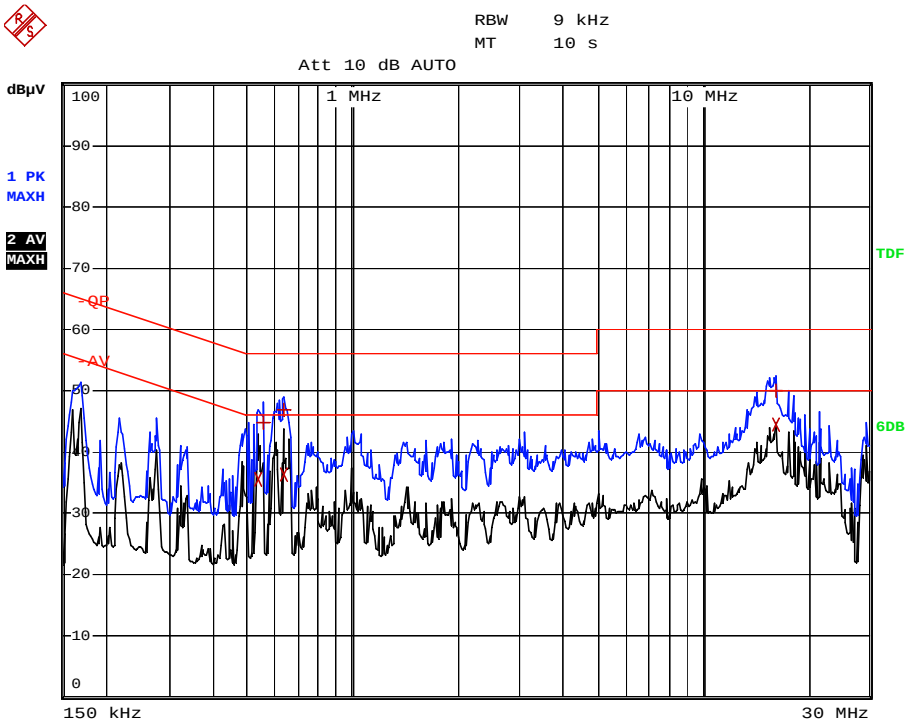
TÜV SÜD China.
6th Floor, H Hall, Century Craftwork Culture Square,
No. 4001,Fuqiang Road, Futian District, Shenzhen, China.

Result data table shows the conducted emission (Live and Neutral).

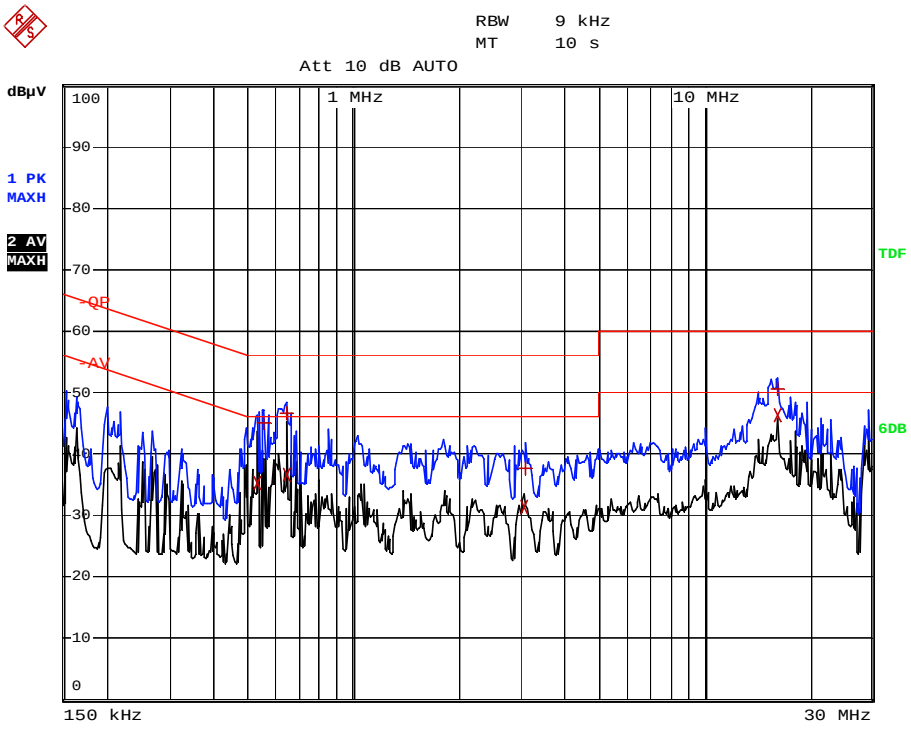
Frequency (MHz)	Detector (QP/AV)	Phase	Result (dBµV)	Limit (dBµV)	Margin
0.154	QP	L	52.11	65.77	-13.66
0.822	AV	L	41.00	46.00	-5.00
0.838	QP	L	49.26	56.00	-6.74
17.694	AV	L	35.96	50.00	-14.04
17.698	QP	L	43.23	60.00	-16.77
0.202	QP	N	53.91	63.52	-9.61
0.398	AV	N	35.72	47.89	-12.17
0.786	QP	N	50.18	56.00	-5.82
0.838	AV	N	39.08	46.00	-6.92
2.194	QP	N	49.32	56.00	-6.68
3.958	AV	N	36.86	46.00	-9.14
8.954	QP	N	46.44	60.00	-13.56
23.130	AV	N	36.99	50.00	-13.01

Result data graph shows the conducted emission (Live and Neutral).
For Adapter 2: XKD-C1000IC120-12.0W

Line Port



Neutral Port



TÜV SÜD China.
6th Floor, H Hall, Century Craftwork Culture Square,
No. 4001,Fuqiang Road, Futian District, Shenzhen, China.

Result data table shows the conducted emission (Live and Neutral).

Frequency (MHz)	Detector (QP/AV)	Phase	Result (dBµV)	Limit (dBµV)	Margin
0.534	AV	L	35.49	46.00	-10.51
0.554	QP	L	44.71	56.00	-11.29
0.634	AV	L	36.34	46.00	-9.66
0.638	QP	L	46.97	56.00	-9.03
16.166	QP	L	50.02	60.00	-9.98
16.166	AV	L	44.50	50.00	-5.50
0.530	AV	N	35.30	46.00	-10.70
0.554	QP	N	44.98	56.00	-11.02
0.642	QP	N	46.58	56.00	-9.42
0.642	AV	N	36.55	46.00	-9.45
3.062	AV	N	31.28	46.00	-14.72
3.090	QP	N	37.72	56.00	-18.28
16.166	QP	N	50.42	59.99	-9.57
16.230	AV	N	46.27	50.00	-3.73

5.0 RF Exposure Compliance Requirement

Test Requirement: FCC part 15 section 15.247 (i)
Test Method: FCC part 15 section 1.1307 (b1)
OET Bulletin 65, Edition 01-01

Results: PASS

Systems operation under the provision of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the Commission's guideline,
The EUT is considered as a mobile device according to OET Bulletin 65, Edition 01-01, therefore distance to human body of min. 20cm is determined.

Frequency Band:	2.412GHz ~2.462GHz
Device Category:	☐ Portable (< 20cm separation) ☒ Mobile (>20cm separation) ☐ Others :
Exposure Classification:	☐ Occupational/ Controlled exposure ☒ General Population / Uncontrolled exposure
Max Transmit Power	22.59mW
Antenna Gain	4dBi (Numeric gain:2.51)
Evaluation Applied:	☒ MPE Evaluation ☐ SAR Evaluation

MPE calculation:

Refer to clause 4.4 of this test report, it shows that The maximum output power = 9.54dBm,
The maximum radiated power(EIRP)=the maximum output power+ antenna gain
=9.54dBm+4dBi=13.54dBm=22.59mW

The power density at 20cm from the antenna : = EIRP / 4π R²
= 0.004496mW / cm²

Limits for General Population/Uncontrolled Exposure [OET Bulletin 65, Edition 01-01]:

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

6.0 List of Measurement Equipment

Radiated Emission

Manufacturer	Equipment	Model No.	Serial No.	Cal. Date	Due Date
R&S	Spectrum Analyzer	FSP30	836079/035	2012-03-28	2013-03-27
R&S	Test Receiver	ESI26	838786/013	2012-03-28	2013-03-27
Albatross Projects	Anechoic chamber	MCDC	---	2011-12-20	2012-12-19
SCHWARZBECK	Trilog Broadband Antenna	VULB9163	9163-333	2012-02-25	2013-02-24
ETS	Horn Antenna	3117	00086197	2012-02-25	2013-02-24
Agilent	Pre-amplifier	8447F	3113A06717	2012-03-28	2013-03-27
Compliance Direction	Pre-amplifier	PAP-0118	24002	2012-03-28	2013-03-27
Anechoic chamber	Albatross Projects	MCDC	----	2012-03-20	2013-03-19

Line Conducted

Manufacturer	Equipment	Model No.	Serial No.	Cal. Date	Due Date
Rohde & Schwarz	EMI Test Receiver	ESPI	101611	2012-03-28	2013-03-27
Schwarz beck	L.I.S.N	NSLK8126	8126-224	2012-03-28	2013-03-27
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	100911	2012-03-28	2013-03-27
EMCO	AMN	3825/2	11967C	2012-03-28	2013-03-27
FCC	Current Probe	F-33-4	091684	2012-03-28	2013-03-27

N/A Not Applicable or Not Available