



Part 15C

TEST REPORT

Product Name	HSUPA/HSDPA/UMTS dualband/GSM quadband mobile phone
Model	Scribe5HD AWS
FCC ID	RAD330
Client	TCT Mobile Limited
Manufacturer	TCT Mobile Limited
Date of issue	April 9, 2013

TA Technology (Shanghai) Co., Ltd.

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GENERAL SUMMARY

Reference Standard(s)	<p>FCC CFR47 Part 15C (2012) Radio Frequency Devices 15.247 Operation within the bands 902-928 MHz,2400-2483.5 MHz, and 5725-5850MHz.</p> <p>ANSI C63.4 Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz. (2009)</p> <p>KDB 558074 D01 DTS Meas Guidance v03r01 Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247</p>
Conclusion	Test results refer to the Chapter 2 of this test report.
Comment	The test result only responds to the measured sample.

Approved by 初伟中
Director

Revised by 唐凯
RF Manager

Performed by 张生
RF Engineer

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1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

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1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Yang Weizhong
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company: TCT Mobile Limited
Address: 12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen,
Guangdong,P.R. China
City: Shenzhen
Postal Code: /
Country: P.R.China

1.4. Manufacturer Information

Company: TCT Mobile Limited
Address: 12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen,
Guangdong, P.R. China
City: Shenzhen
Postal Code: /
Country: P.R.China

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1.5. Information of EUT

General information

Product IMEI:	013507000011832
Hardware Version:	1.5
Software Version:	vA8D
Antenna Type:	Internal Antenna
Device Operating Configurations:	
Network Standards:	802.11b, 802.11g, 802.11n(HT20), 802.11n(HT40); (tested)
Power Supply:	Battery or Adapter
Max Conducted Power	19.9 dBm
Operating Frequency Range(s)	2400MHz~ 2483.5 MHz

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Equipment under Test (EUT) supports WiFi function.

The sample under test was provided by the Client.

Components list please refer to documents of the manufacturer.

1.6. Test Date

The test performed from March 28, 2013 to April 3, 2013.

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2. Test Information

2.1. Summary of test results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output –Conducted	15.247(b)(3)	PASS
2	Minimum 6dB bandwidth	15.247(a)(2)	PASS
3	Band Edges compliance	15.247(d)	PASS
4	Power spectral Density	15.247(e)	PASS
5	Conducted Spurious Emission	15.247	PASS

2.2. Peak Power Output –Conducted

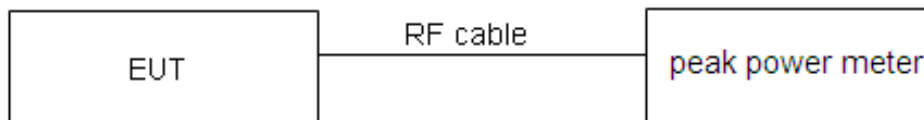
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~ 25°C	45% ~ 50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the peak power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use 5.2.1 Maximum Peak Conducted Output Power Level Method in KDB 558074 D01 for this test.

Test Setup



Limits

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt."

Peak Output Power	$\leq 1\text{W}$ (30dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44$ dB.

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Test Results: Pass

Network Standards	Data Rate	Peak Output Power (dBm)		
		CH 1	CH 6	CH 11
802.11b	1 Mbps	17.5	17.2	16.58
	2 Mbps	17.46	17.28	16.6
	5.5 Mbps	18.04	17.57	16.91
	11 Mbps	18.06	17.58	17.1
802.11g	6 Mbps	18.6	18.98	19.5
	9 Mbps	18.64	19.1	19.62
	12 Mbps	18.82	19.12	19.7
	18 Mbps	18.7	19	19.47
	24 Mbps	18.54	18.95	19.5
	36 Mbps	18.52	19.02	19.53
	48 Mbps	18.45	18.95	19.49
	54 Mbps	18.61	18.9	19.4
802.11n HT20	MCS0	18.27	18.22	19.59
	MCS1	18.3	19.2	19.6
	MCS2	18.41	19.14	19.52
	MCS3	18.46	19.28	19.65
	MCS4	18.42	19.21	19.61
	MCS5	18.4	19.15	19.58
	MCS6	18.38	19.11	19.42
	MCS7	16.52	17.28	17.94
Network Standards	Data Rate	Peak Output Power (dBm)		
		CH 3	CH 6	CH 9
802.11n HT40	MCS0	19.1	19.65	19.87
	MCS1	19.14	19.58	19.88
	MCS2	19.35	19.72	19.9
	MCS3	19.21	19.68	19.8
	MCS4	19.27	19.62	19.78
	MCS5	19.2	19.64	19.69
	MCS6	19.11	19.42	19.85
	MCS7	17.4	17.74	18.25

Note: 1. The maximum output power values are marked in bold.

2. The following items are on the data rate with the maximum output power values.

2.3. Occupied Bandwidth (6dB)

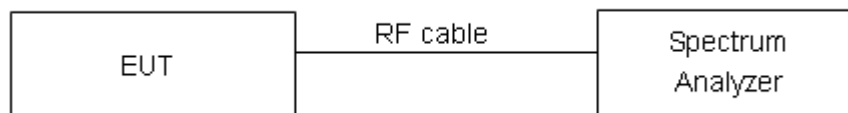
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.

Test Setup



Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

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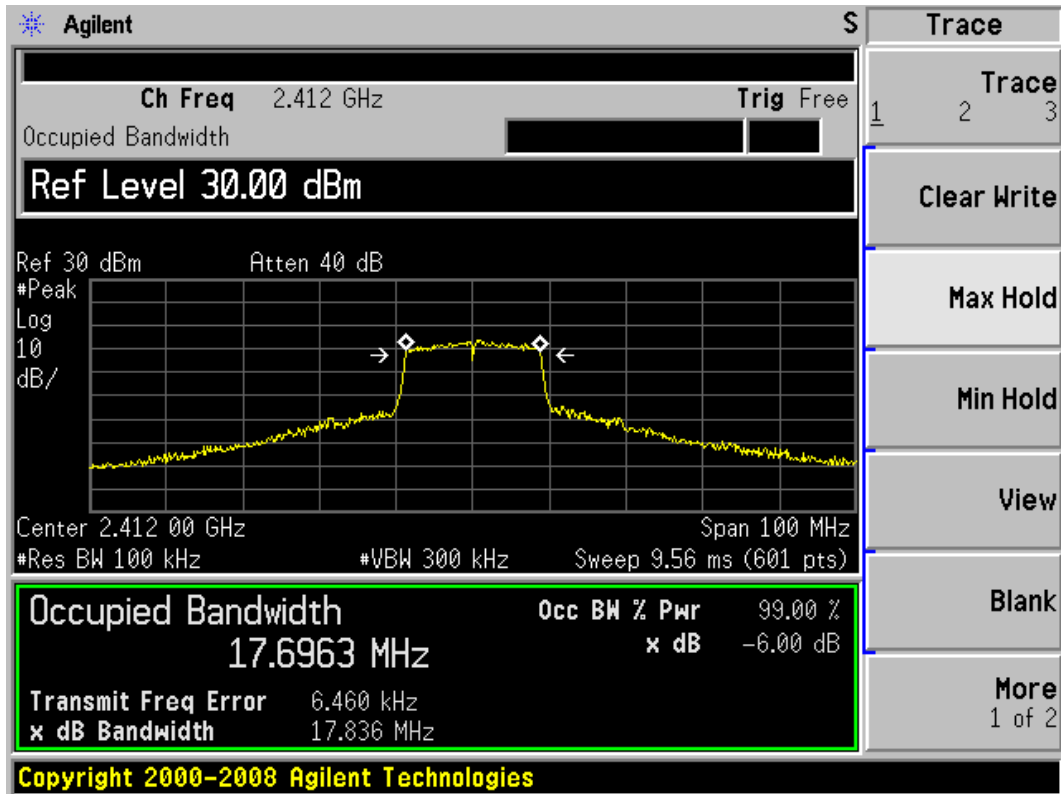
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Test Results:

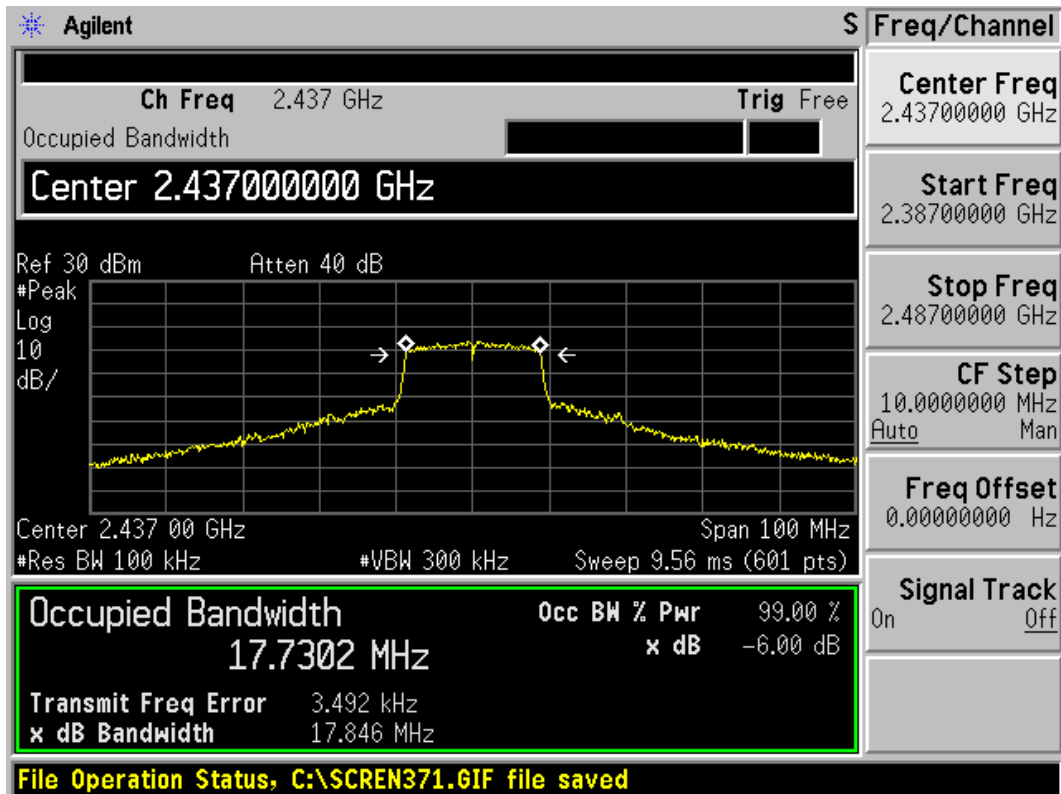
Network Standards	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Conclusion
802.11b	2412	17.836	PASS
	2437	17.846	PASS
	2462	17.833	PASS
802.11g	2412	16.400	PASS
	2437	16.098	PASS
	2462	16.130	PASS
802.11n HT20	2412	17.436	PASS
	2437	17.370	PASS
	2462	17.736	PASS
802.11n HT40	2422	35.600	PASS
	2437	35.454	PASS
	2452	35.390	PASS

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802.11b

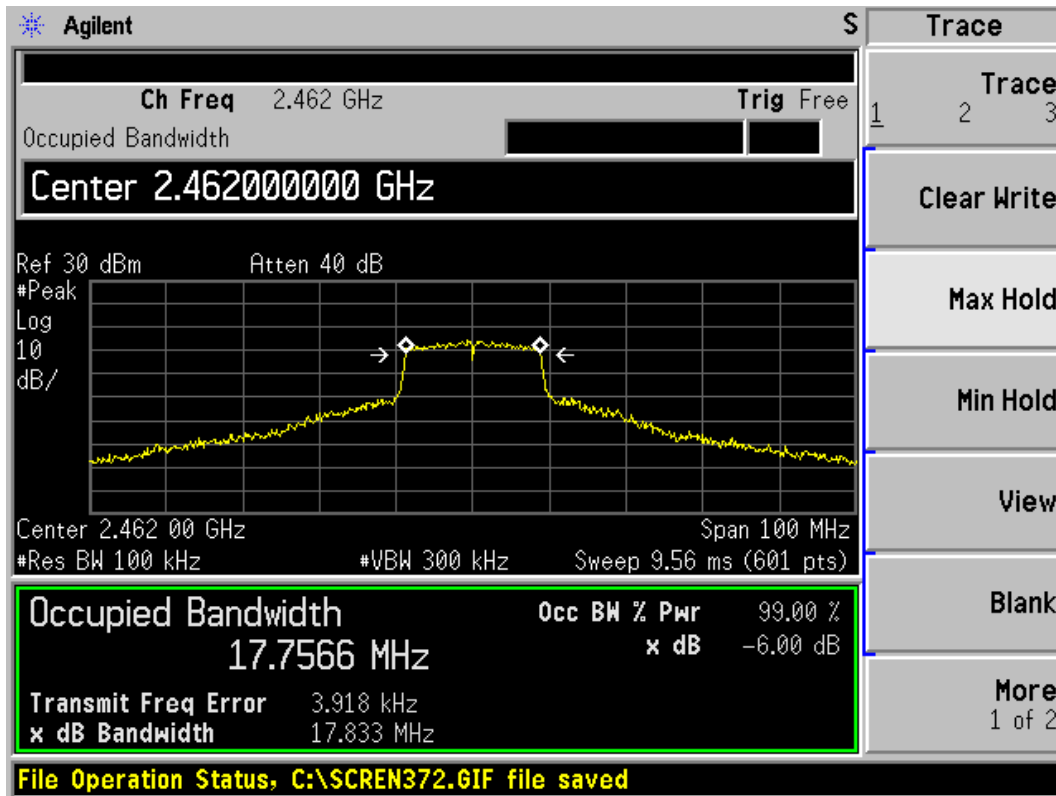


802.11b, Carrier frequency (MHz): 2412



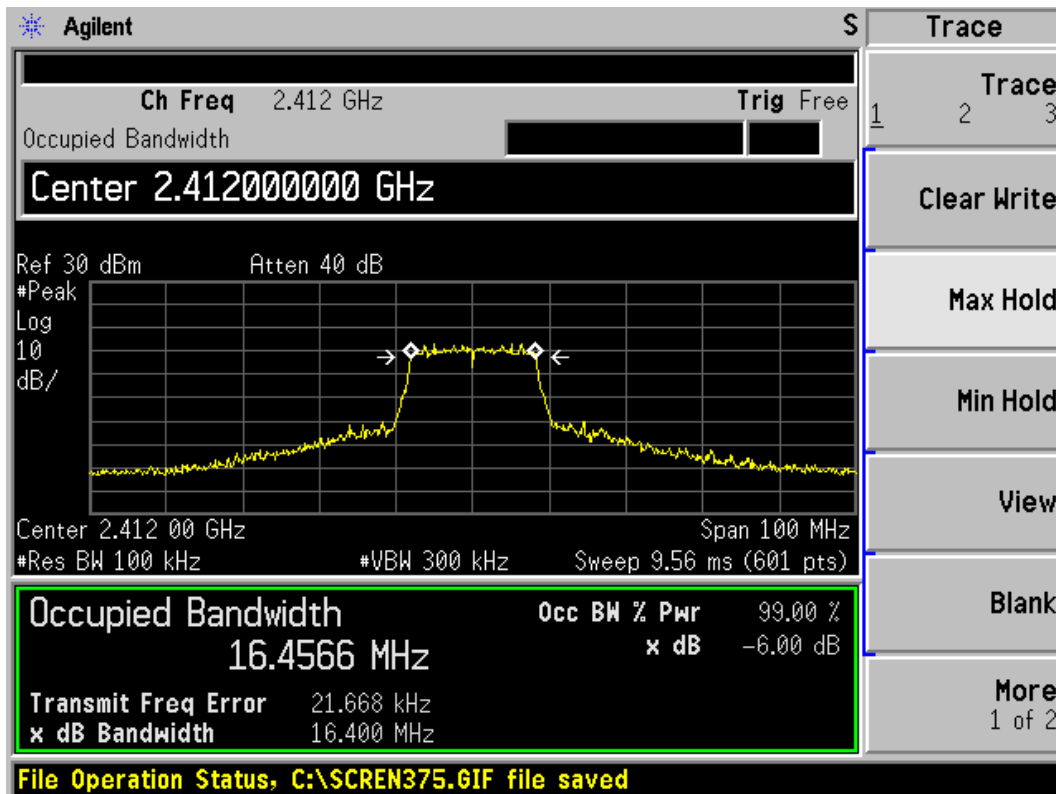
802.11b, Carrier frequency (MHz): 2437

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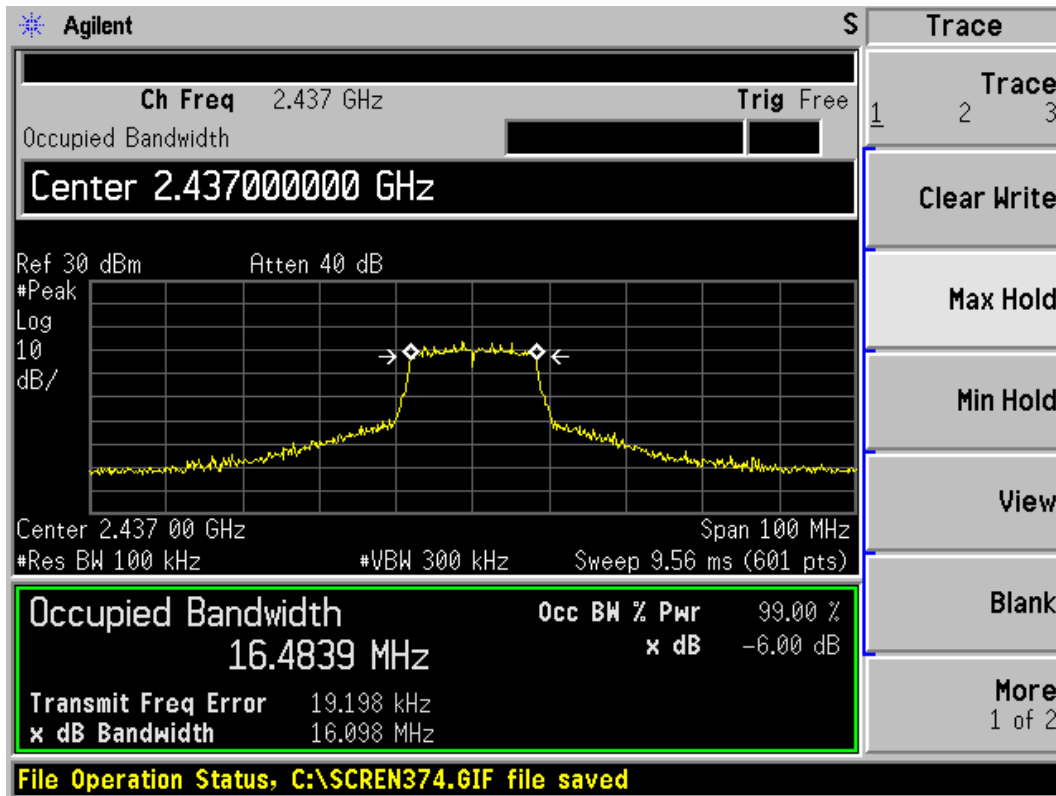
802.11b, Carrier frequency (MHz):2462

802.11g

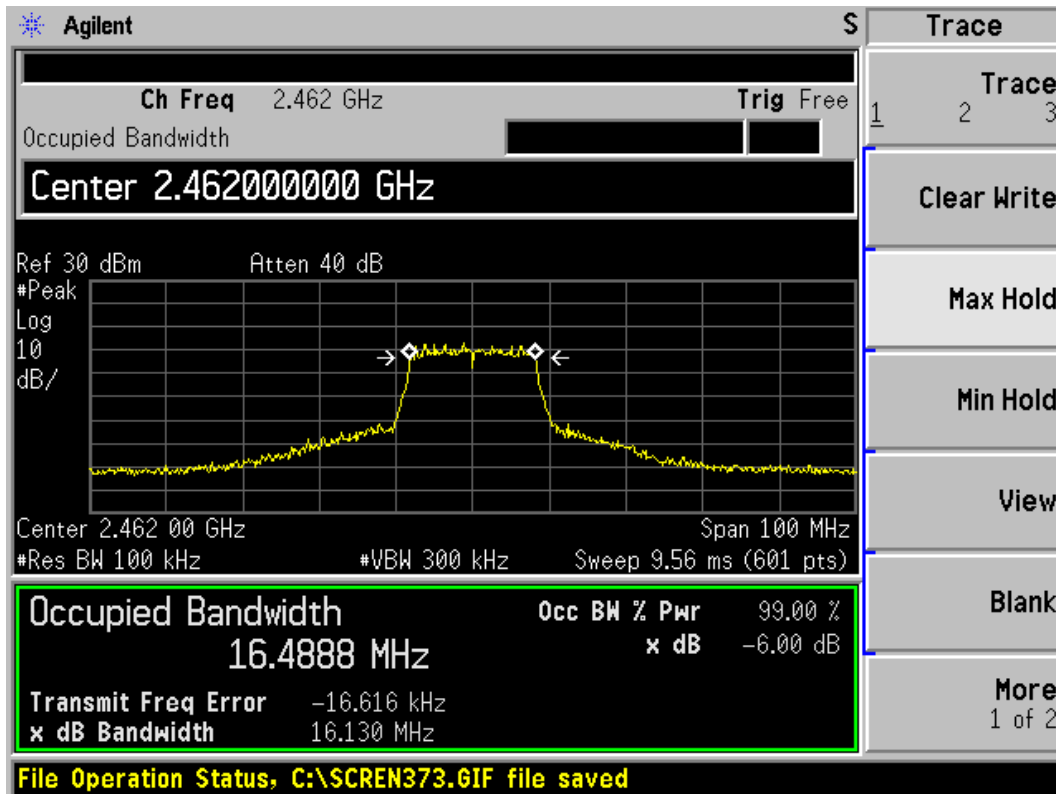


802.11g, Carrier frequency (MHz): 2412

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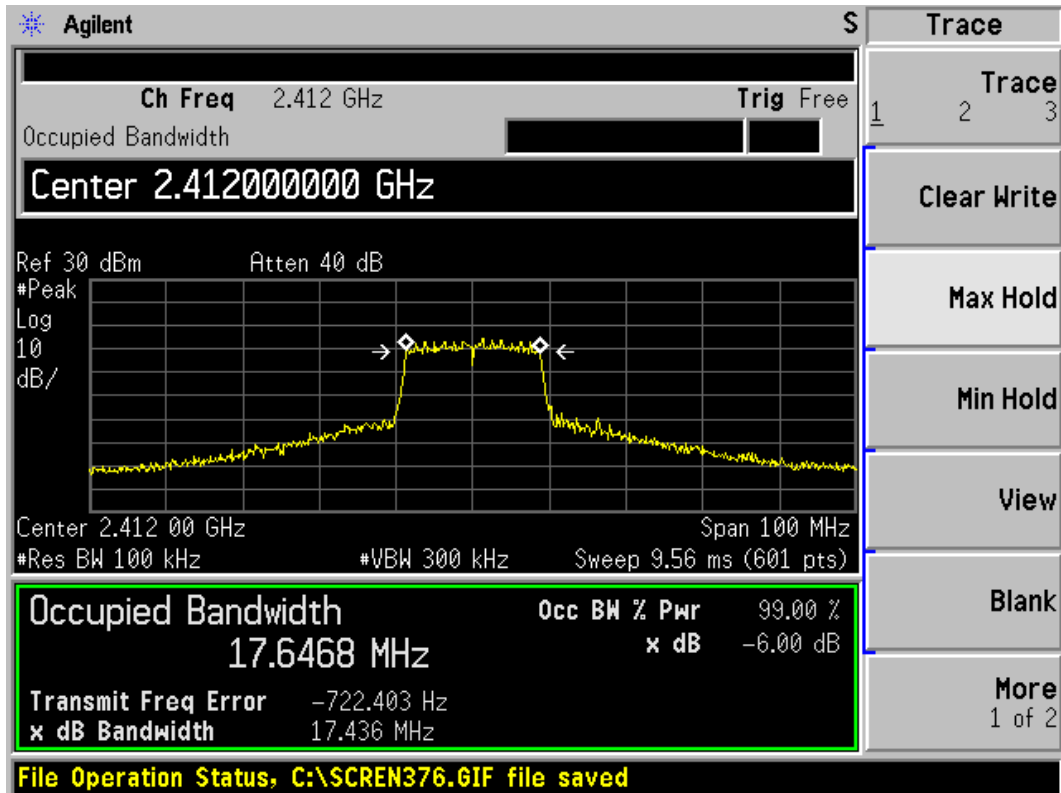
802.11g, Carrier frequency (MHz): 2437



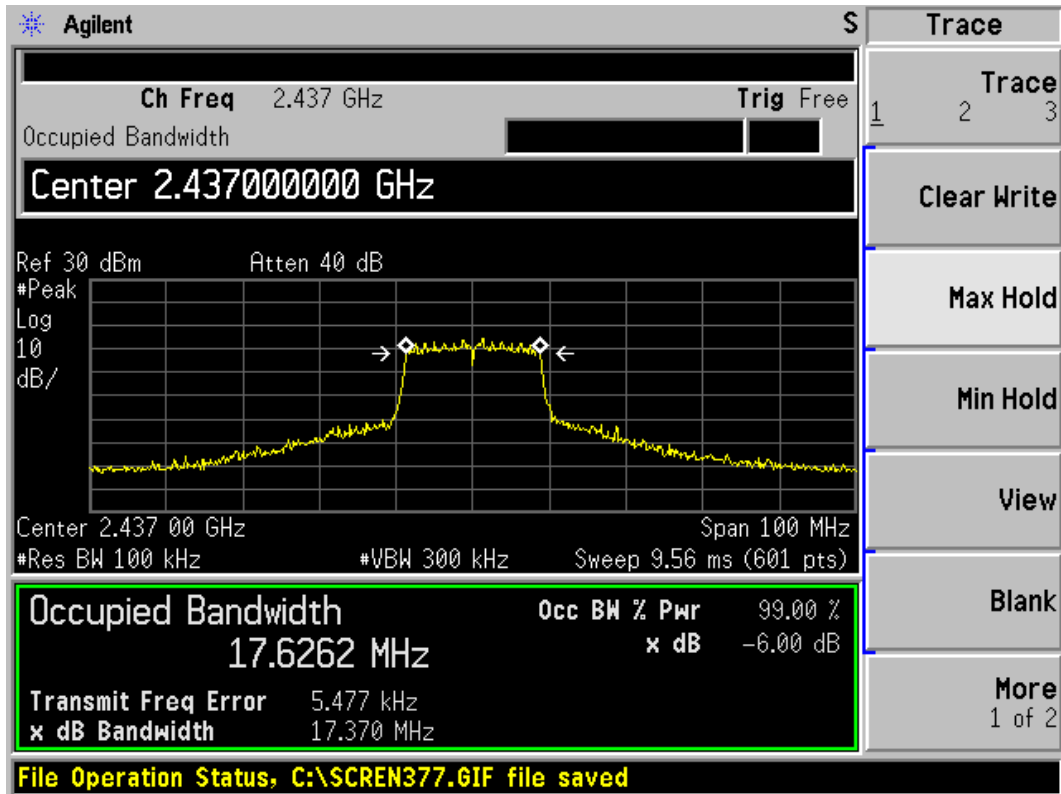
802.11g, Carrier frequency (MHz): 2462

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802.11n (HT20)

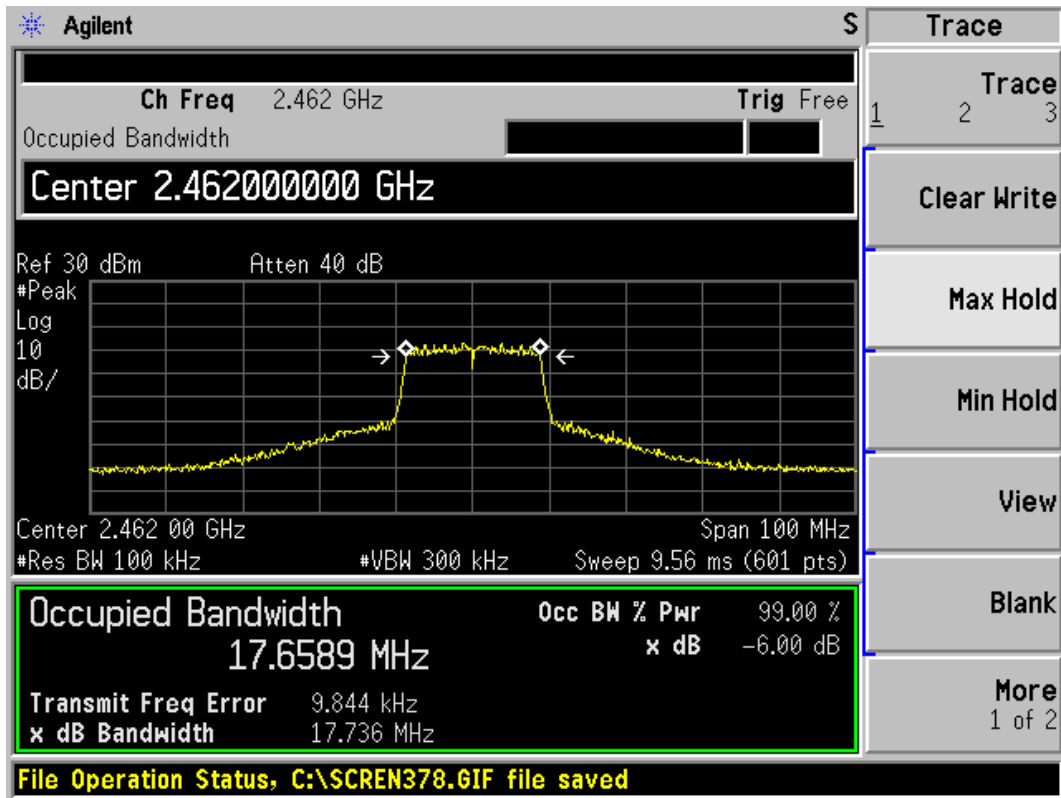


802.11n, Carrier frequency (MHz): 2412



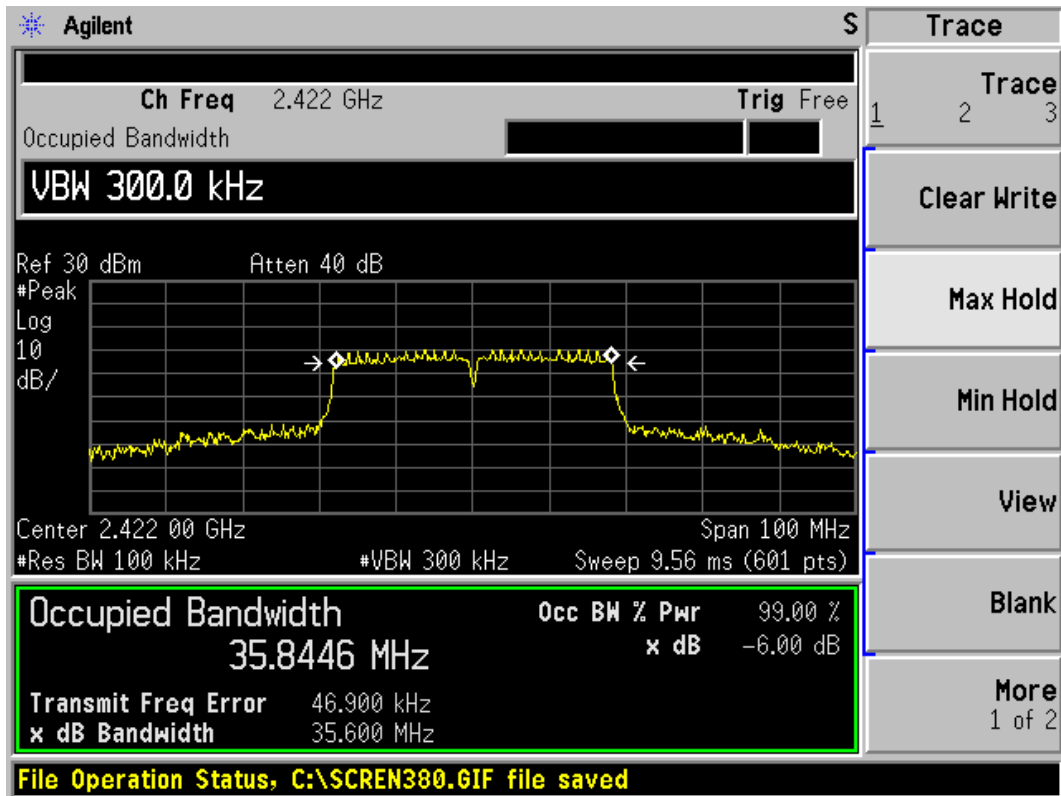
802.11n, Carrier frequency (MHz): 2437

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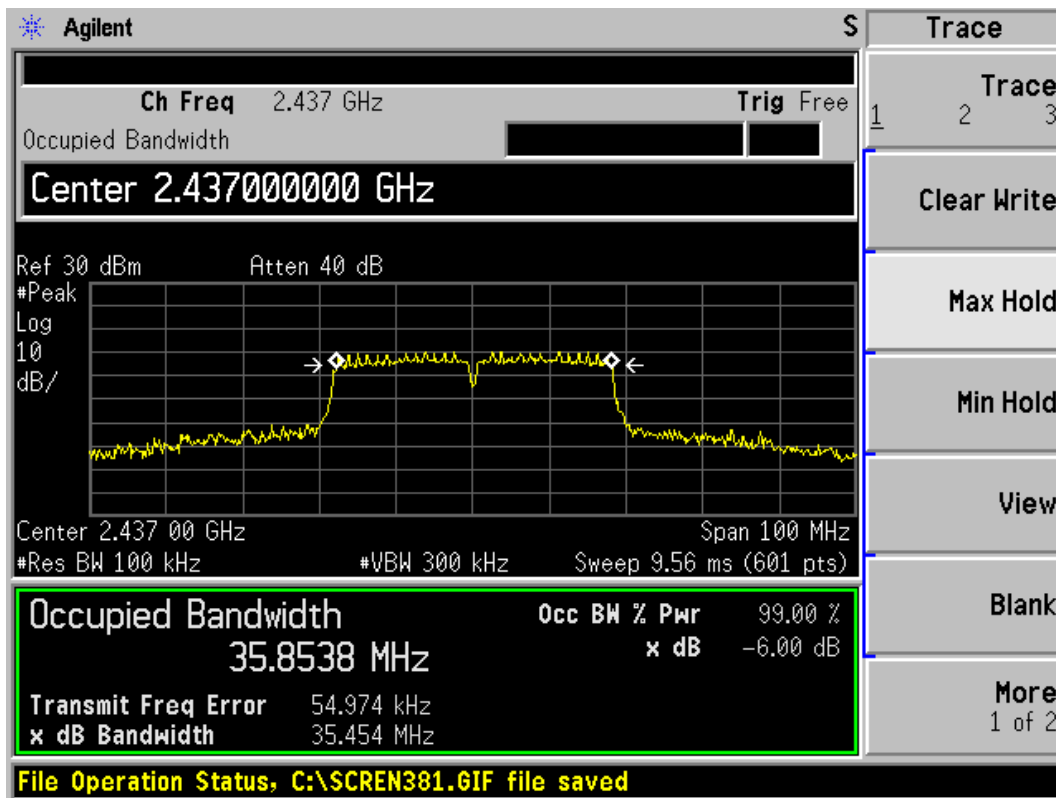
802.11n, Carrier frequency (MHz):2462

802.11n (HT40)

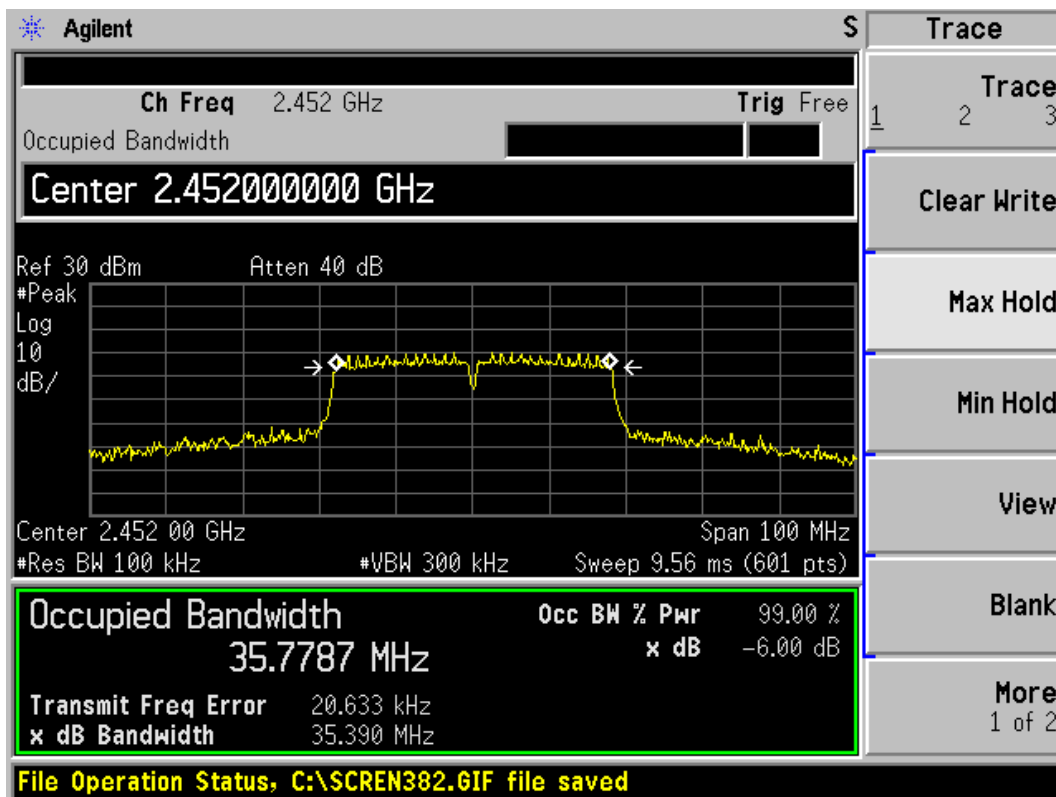


802.11n, Carrier frequency (MHz): 2422

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802.11n, Carrier frequency (MHz): 2437



802.11n, Carrier frequency (MHz):2452

2.4. Band Edge Compliance

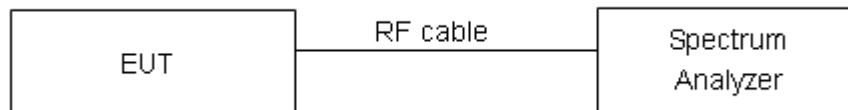
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100kHz and VBW is set to 300kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “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.”

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
2GHz-3GHz	1.407 dB

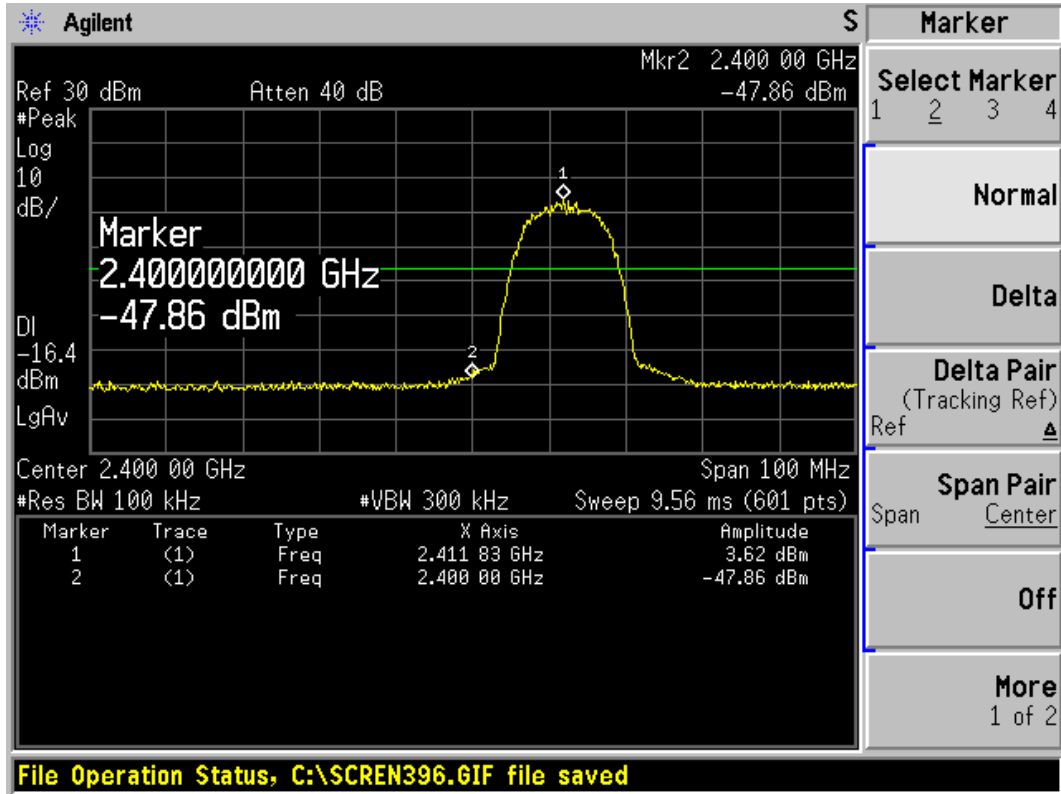
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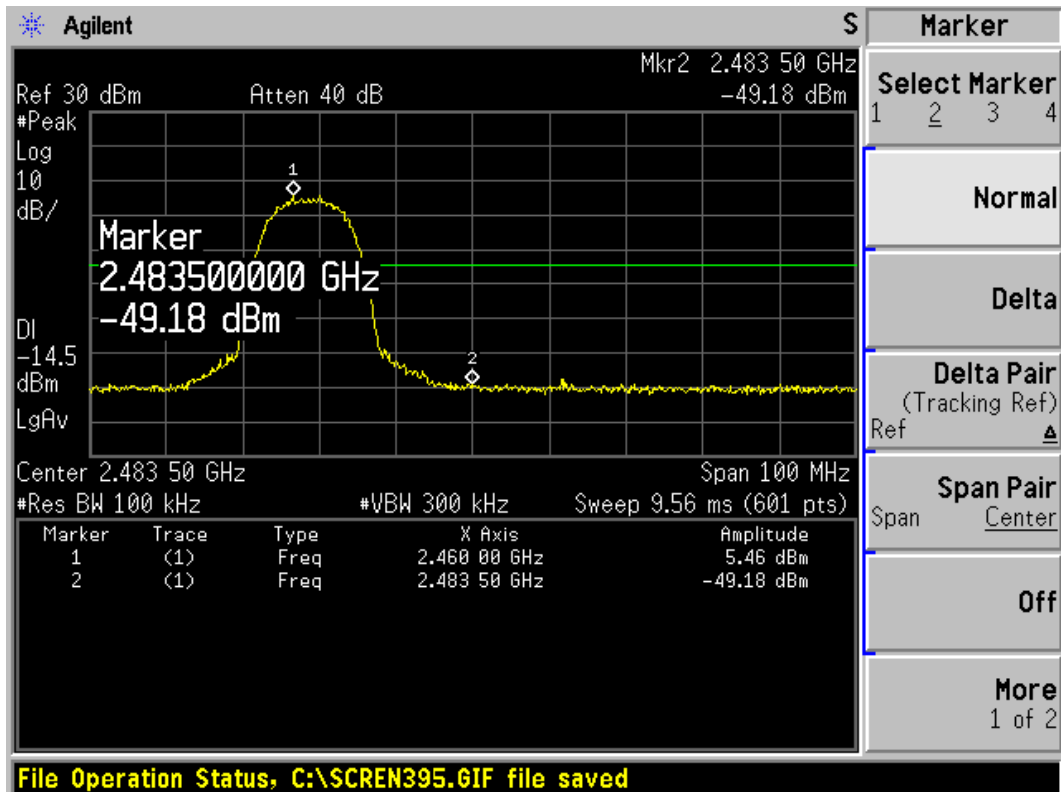
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Test Results: PASS

802.11b



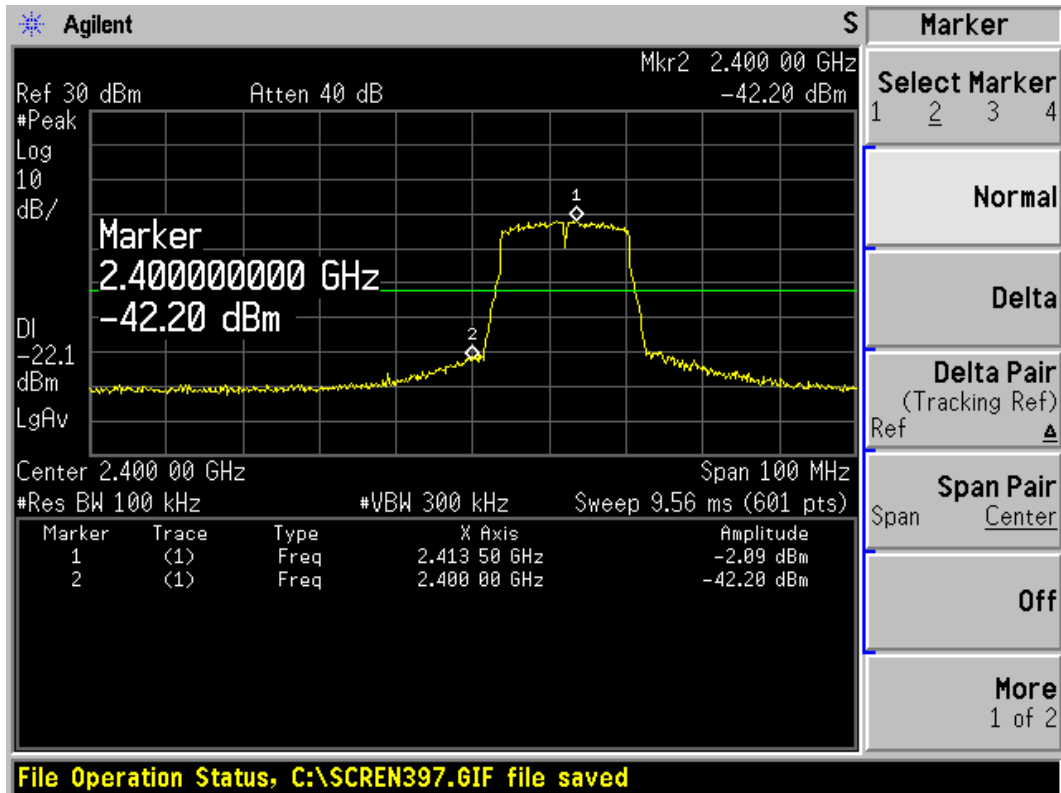
802.11b, Channel No.: 1



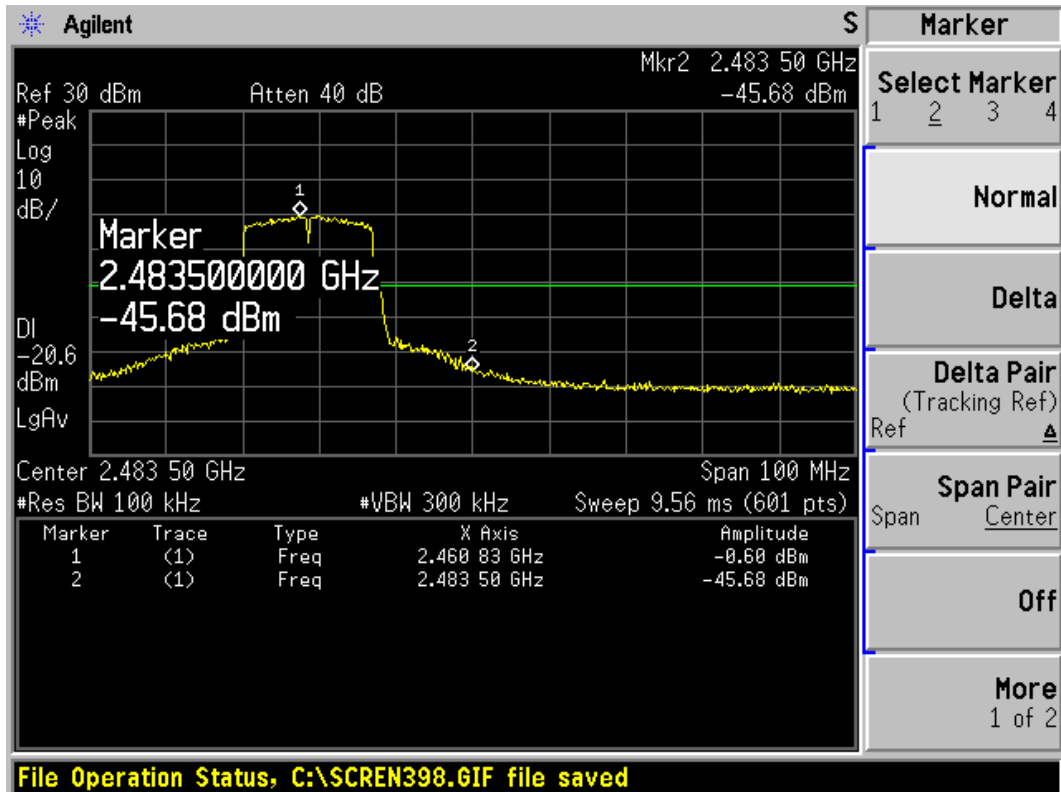
802.11b, Channel No.: 11

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802.11g



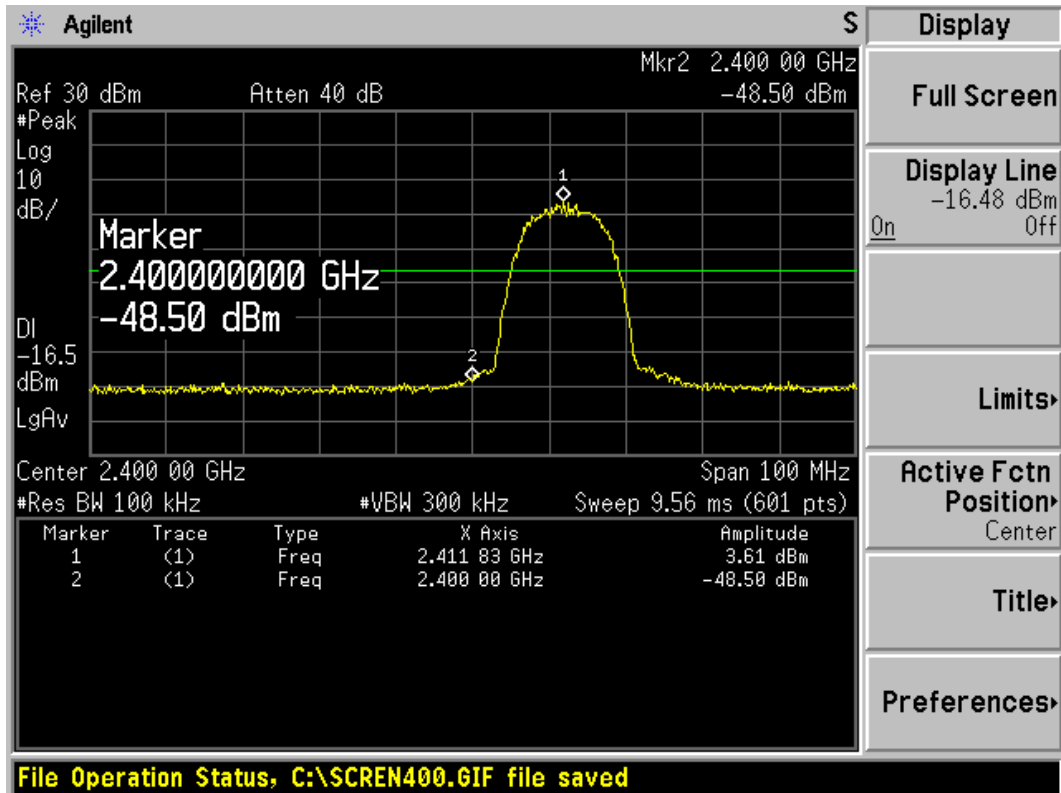
802.11g, Channel No.: 1



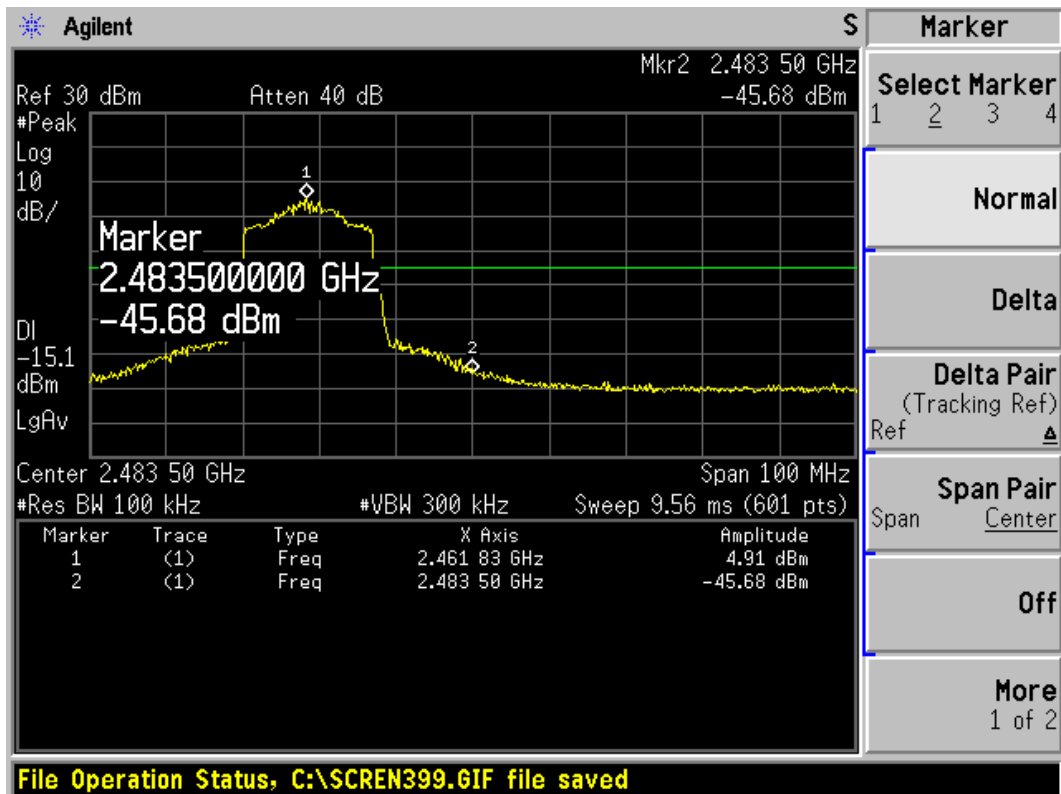
802.11g, Channel No.: 11

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802.11n (HT20)



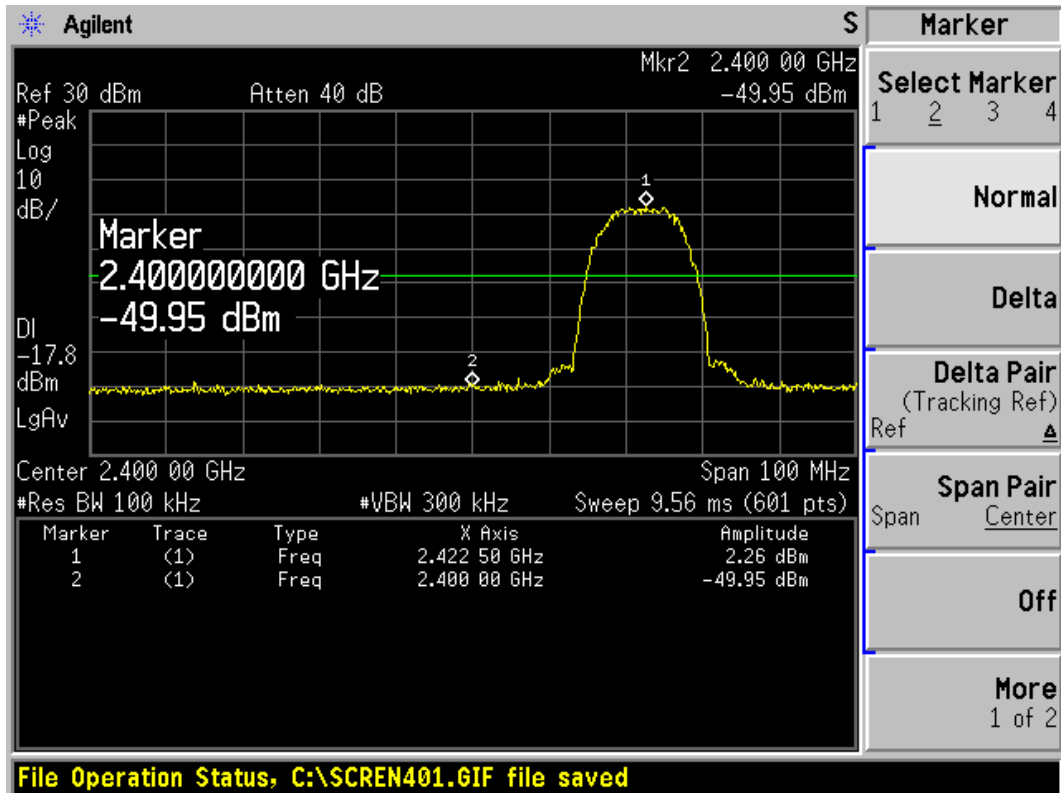
802.11n (HT20), Channel No.: 1



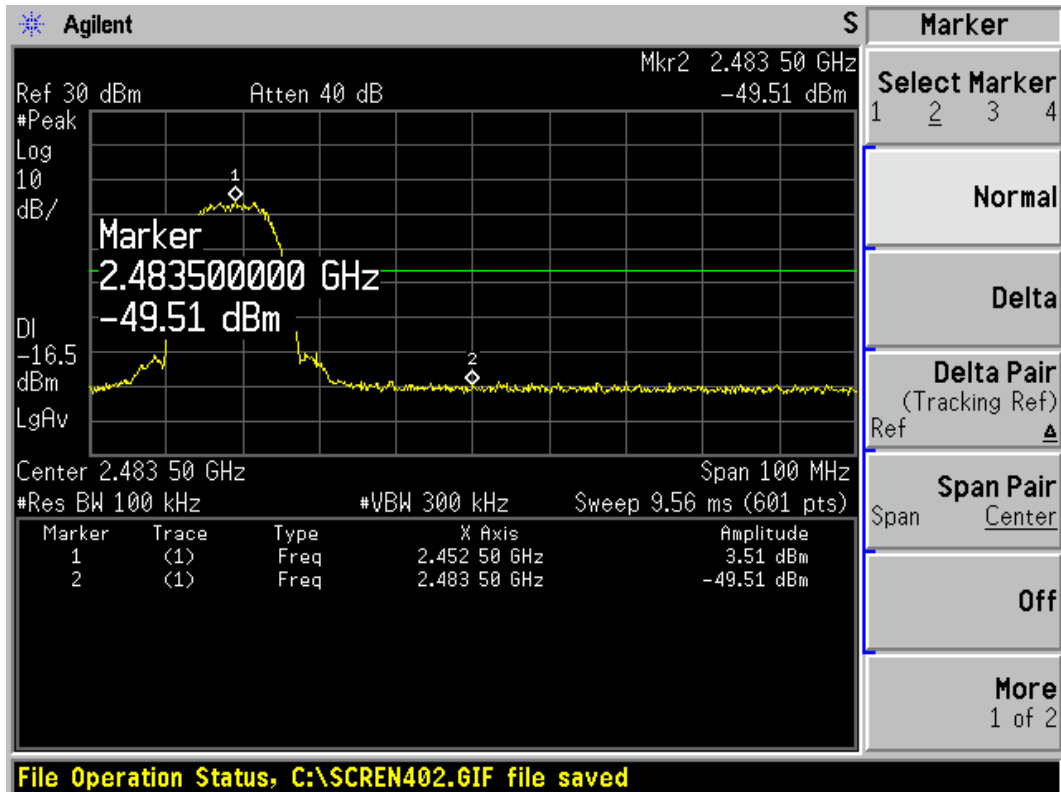
802.11n (HT20), Channel No.: 11

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802.11n (HT40)



802.11n (HT40), Channel No.: 3



802.11n (HT40), Channel No.: 9

2.5. Power Spectral Density

Ambient condition

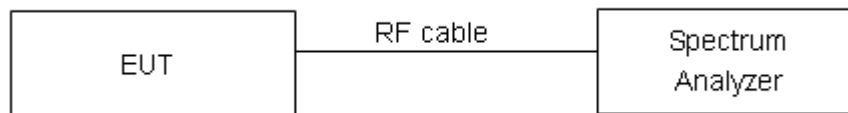
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Set the span to at least 1.5 times the DTS channel bandwidth. Sweep time = auto couple. Trace mode = max hold.

The peak power spectral density is recorded.

Test setup



Limits

Rule Part 15.247(e) specifies that " 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. "

Limits	$\leq 8 \text{ dBm} / 3\text{kHz}$
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.75\text{dB}$.

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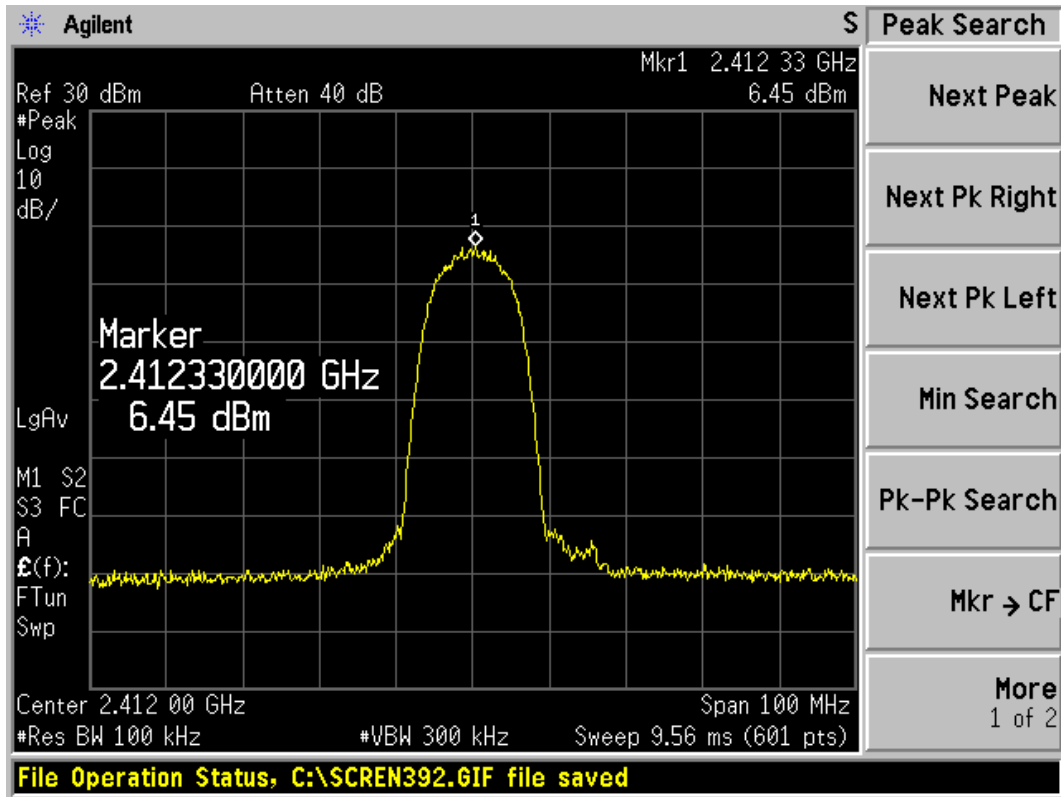
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Test Results:

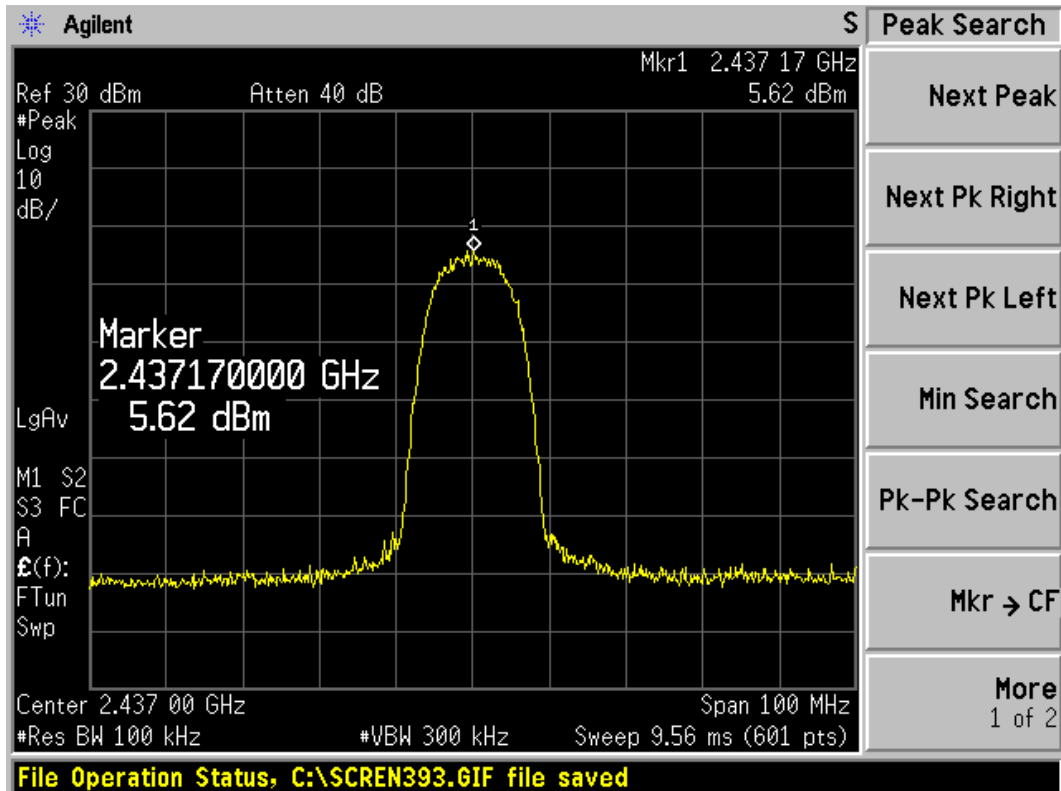
Network Standards	Channel Number	Power Spectral Density dBm / 100kHz	Conclusion
802.11b	1	6.45	PASS
	6	5.62	PASS
	11	4.95	PASS
802.11g	1	-0.52	PASS
	6	0.01	PASS
	11	0.25	PASS
802.11n HT20	1	-1.15	PASS
	6	-0.33	PASS
	11	-0.08	PASS
802.11n HT40	3	0.67	PASS
	6	0.55	PASS
	9	0.23	PASS

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802.11b

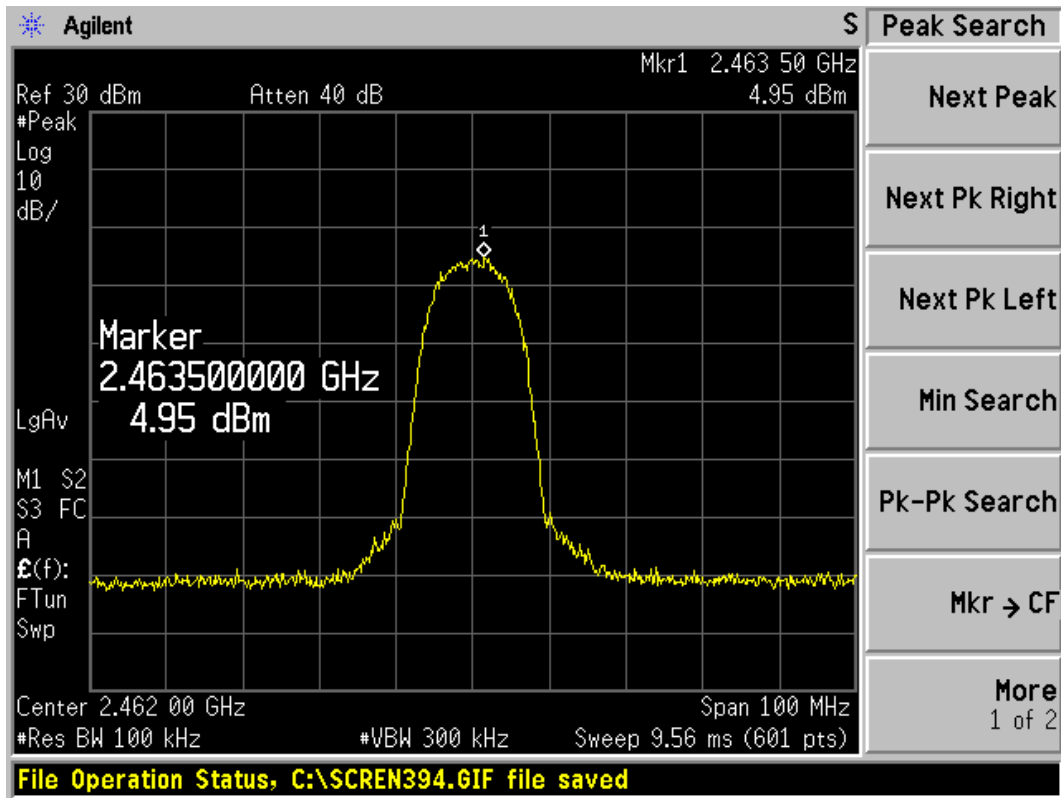


802.11b, Channel No.: 1



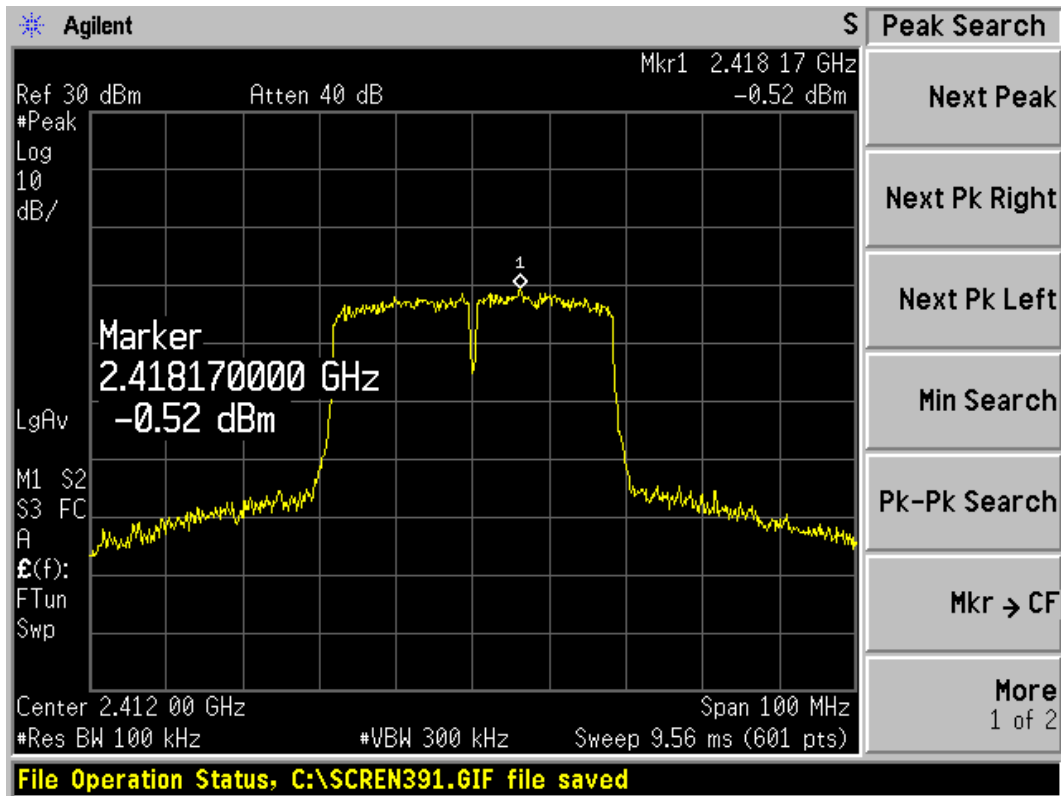
802.11b, Channel No.: 6

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802.11b, Channel No.: 11

802.11g

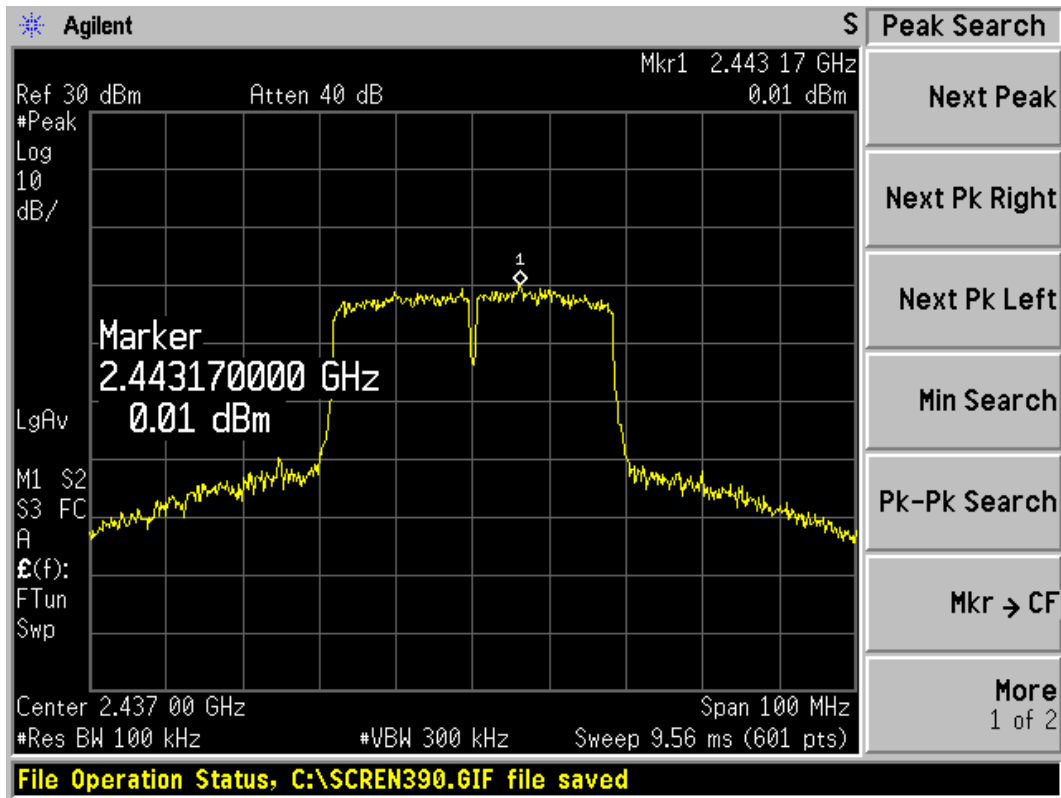


802.11g, Channel No.: 1

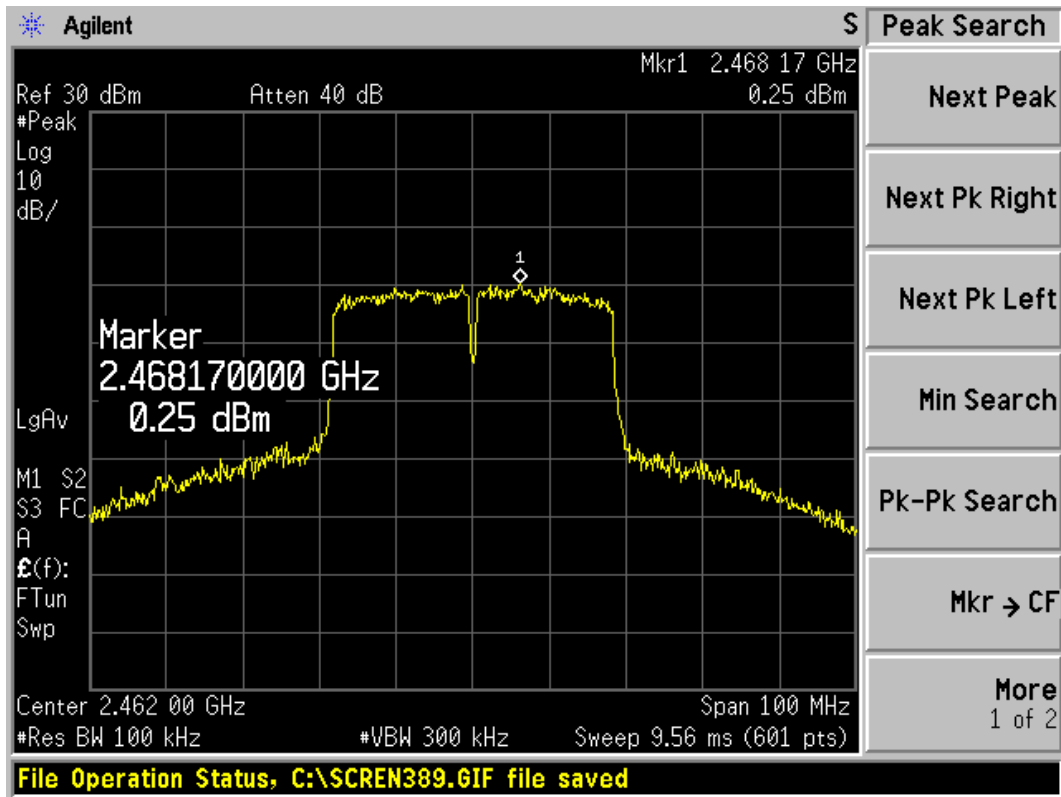
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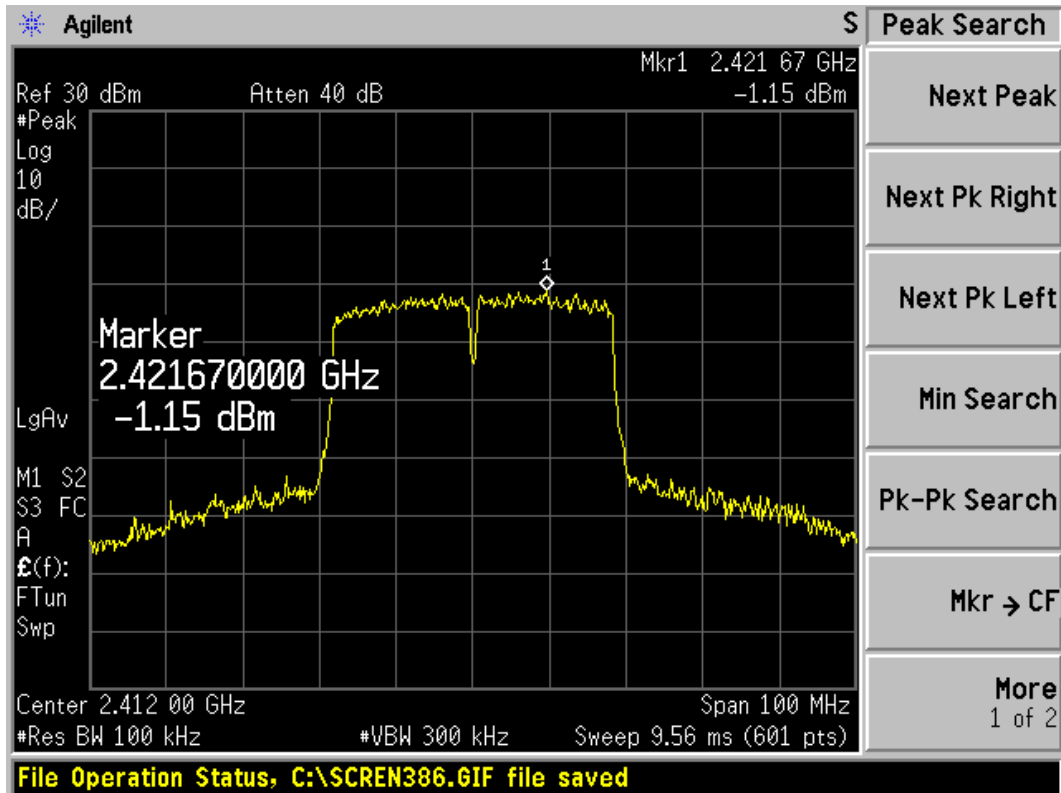
802.11g, Channel No.: 6



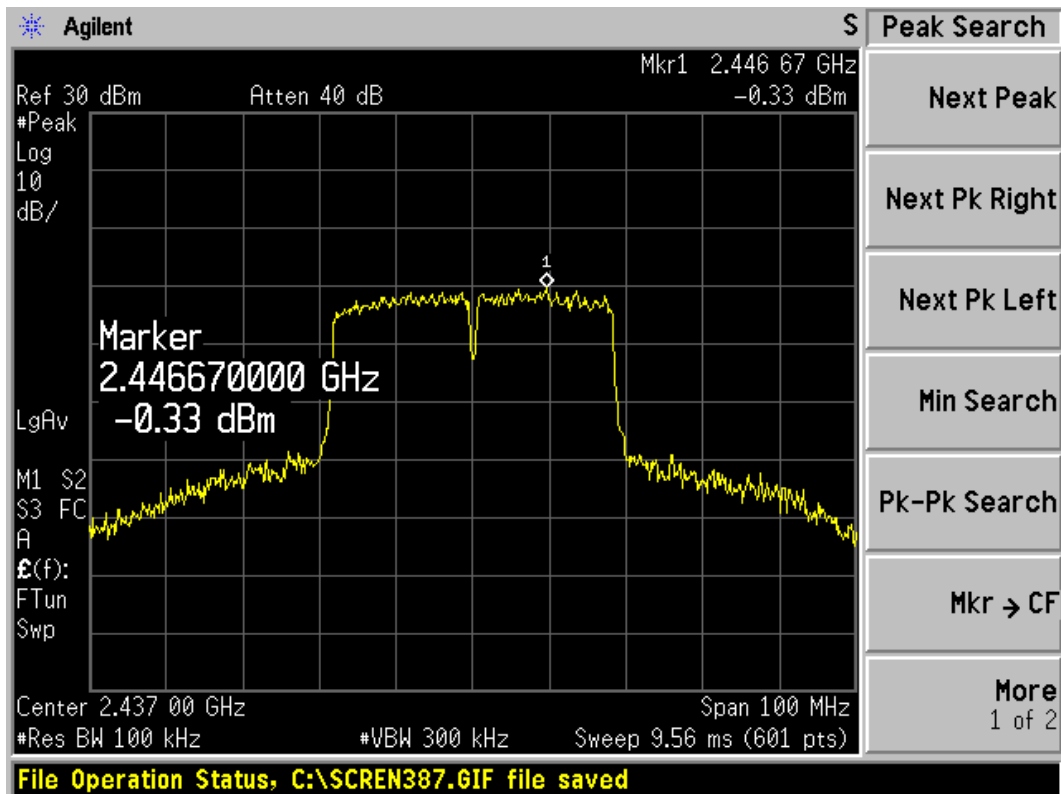
802.11g, Channel No.: 11

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802.11n (HT20)



802.11n (HT20), Channel No.: 1

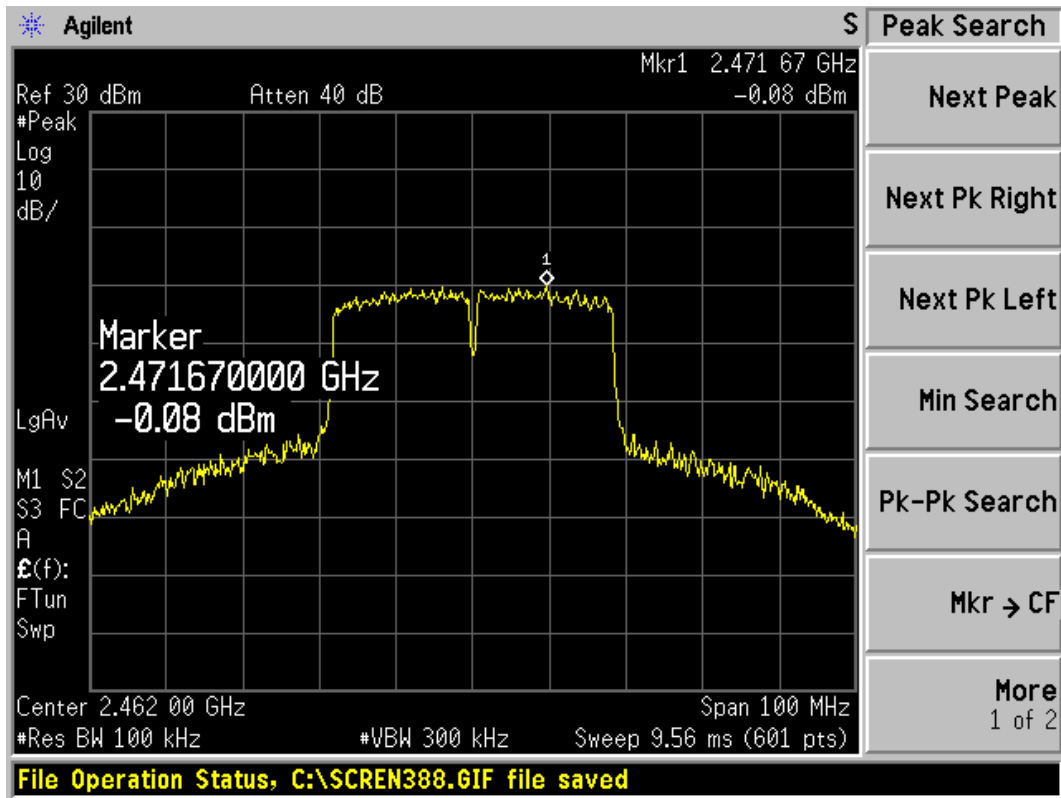


802.11n (HT20), Channel No.: 6

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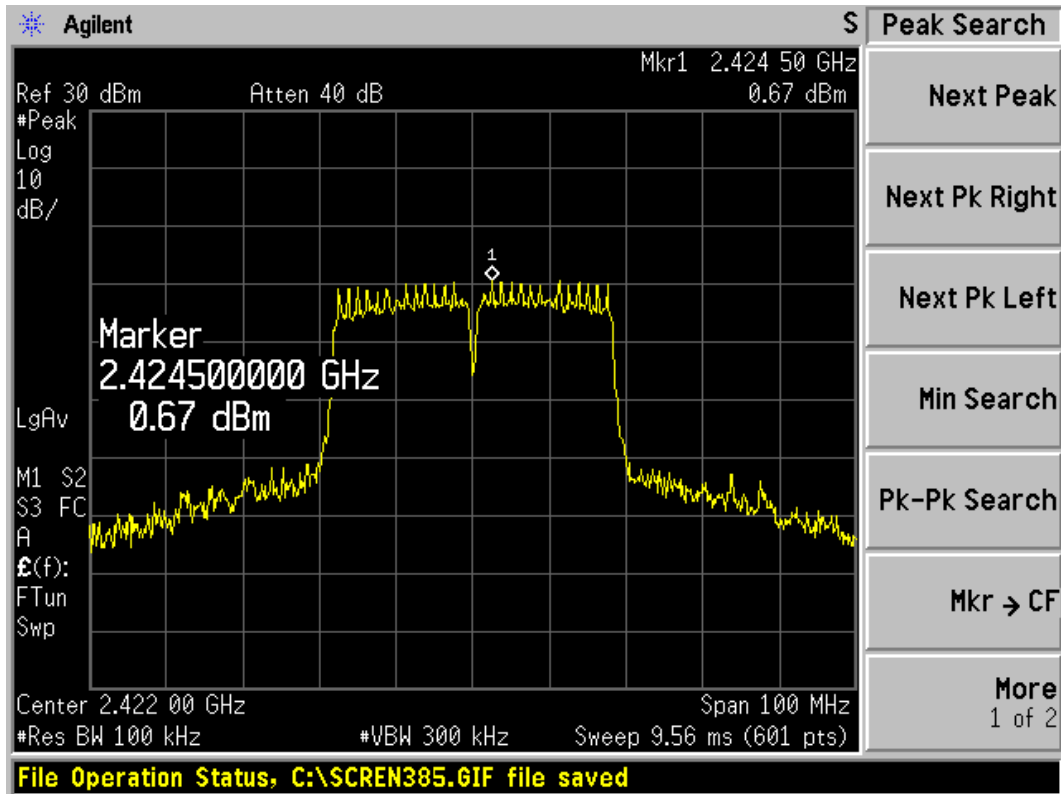
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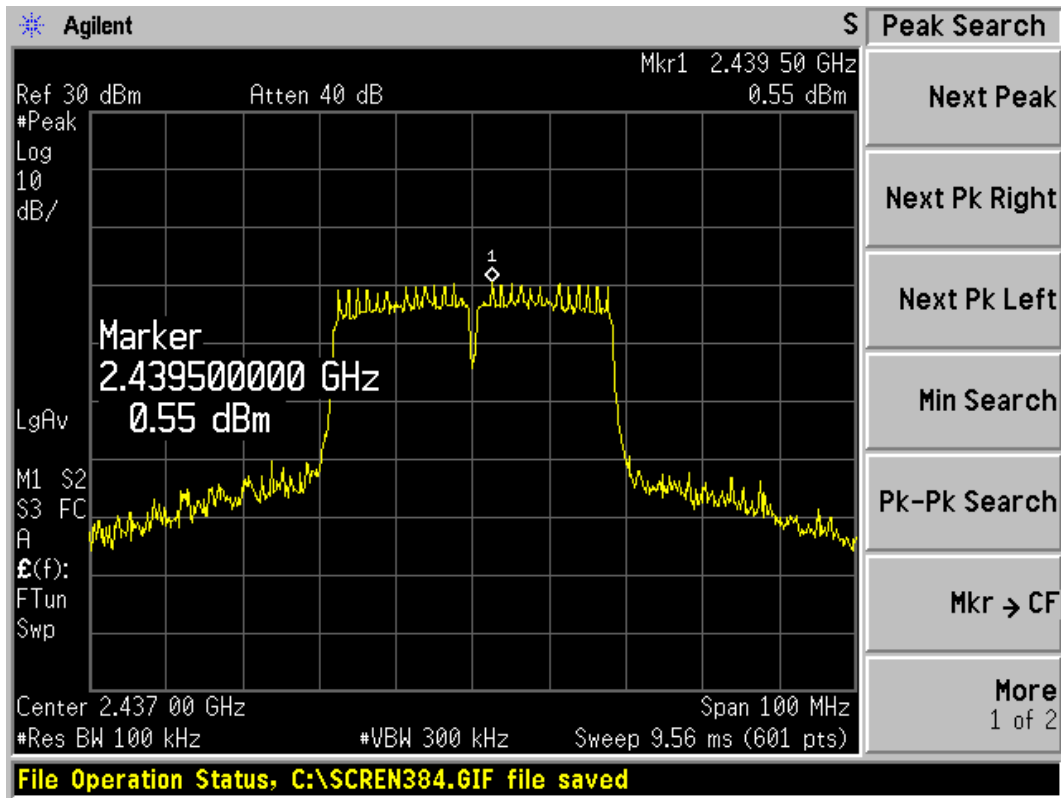
802.11n (HT20), Channel No.: 11

802.11n (HT40)

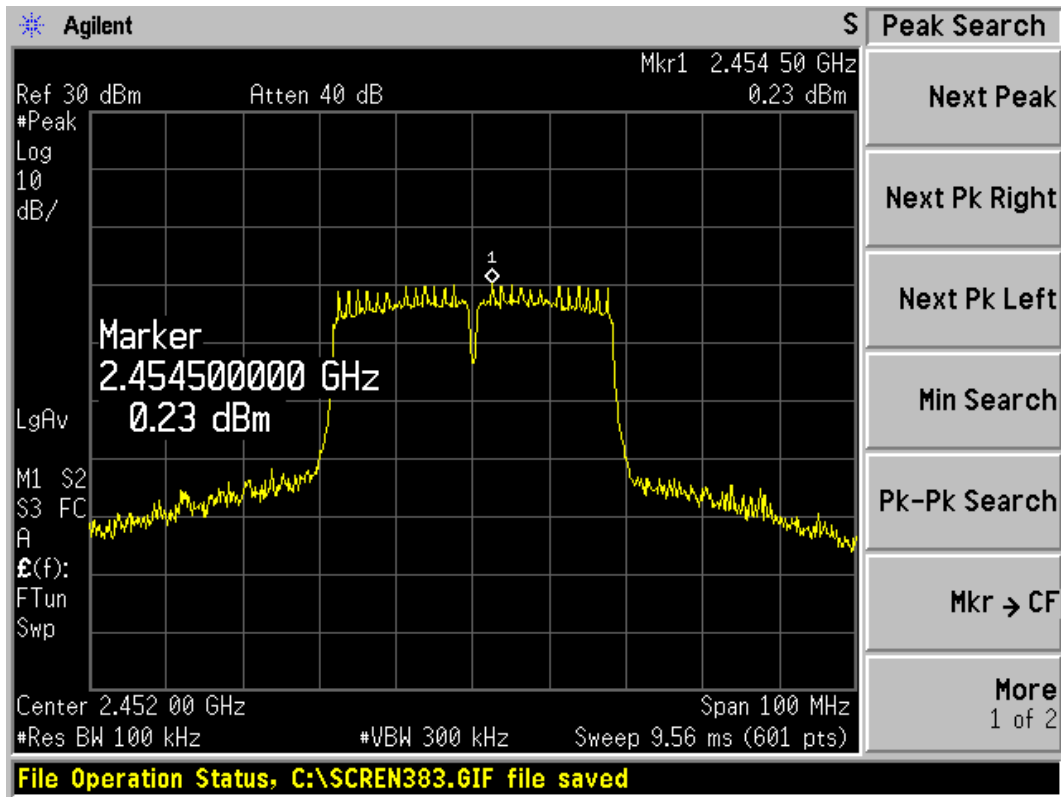


802.11n (HT40), Channel No.: 3

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802.11n (HT40), Channel No.: 6



802.11n (HT40), Channel No.: 9

2.6. Spurious RF Conducted Emissions

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

The test is in transmitting mode.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	18.06	≤-1.94
	2437	17.58	≤-2.42
	2462	17.1	≤-2.9
802.11g	2412	18.82	≤-1.18
	2437	19.12	≤-0.88
	2462	19.7	≤-0.3
802.11n HT20	2412	18.46	≤-1.54
	2437	19.28	≤-0.72
	2462	19.65	≤-0.35

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802.11n HT40	2422	19.35	≤ -0.65
	2437	19.72	≤ -0.28
	2452	19.9	≤ -0.1

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26.5GHz	1.407 dB

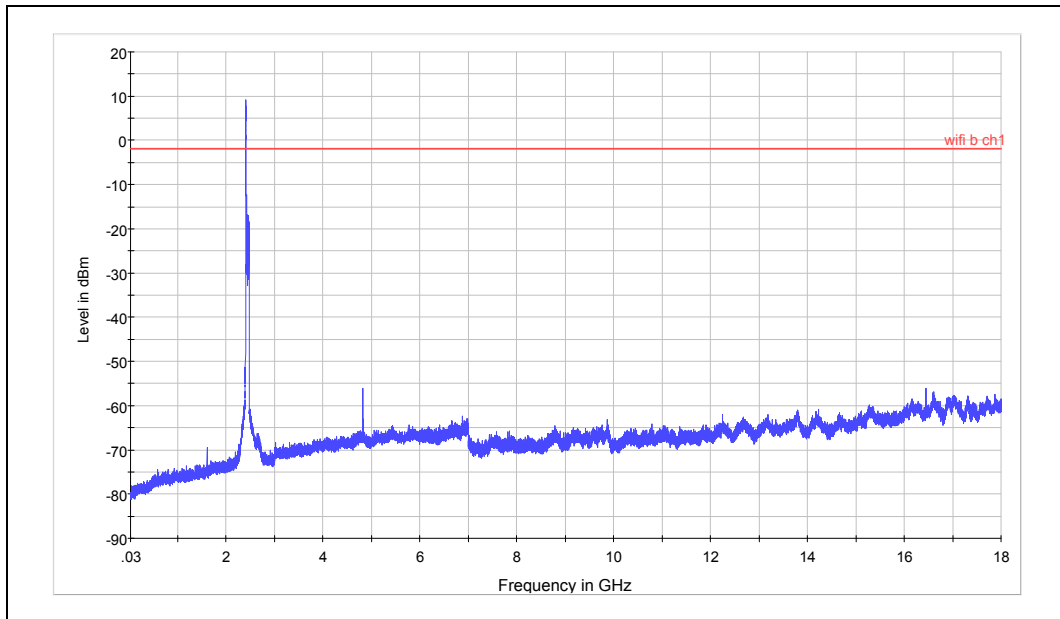
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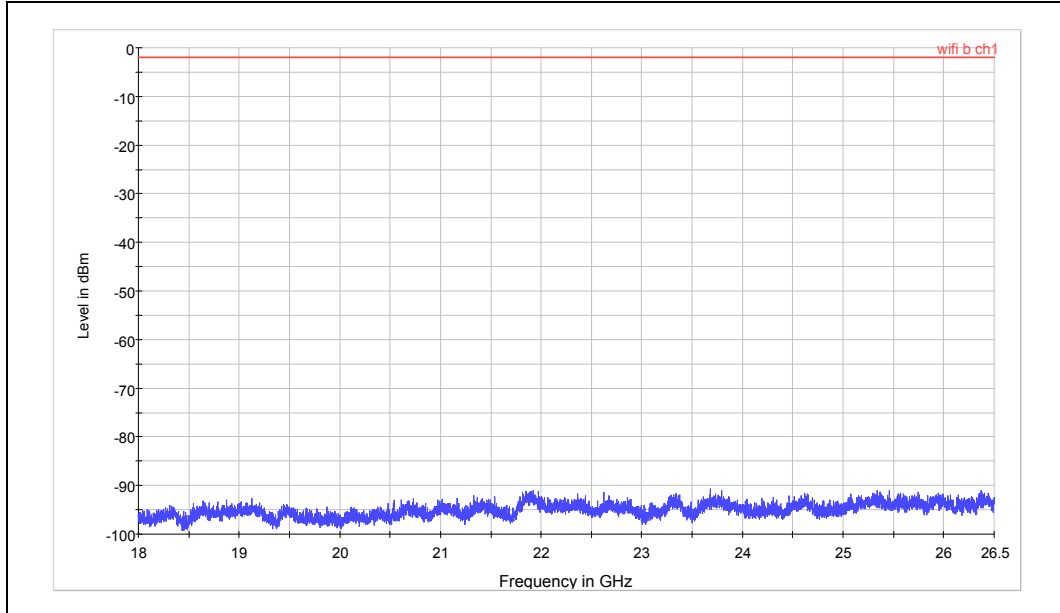
Test Results:

802.11b CH1



Note: The signal beyond the limit is carrier

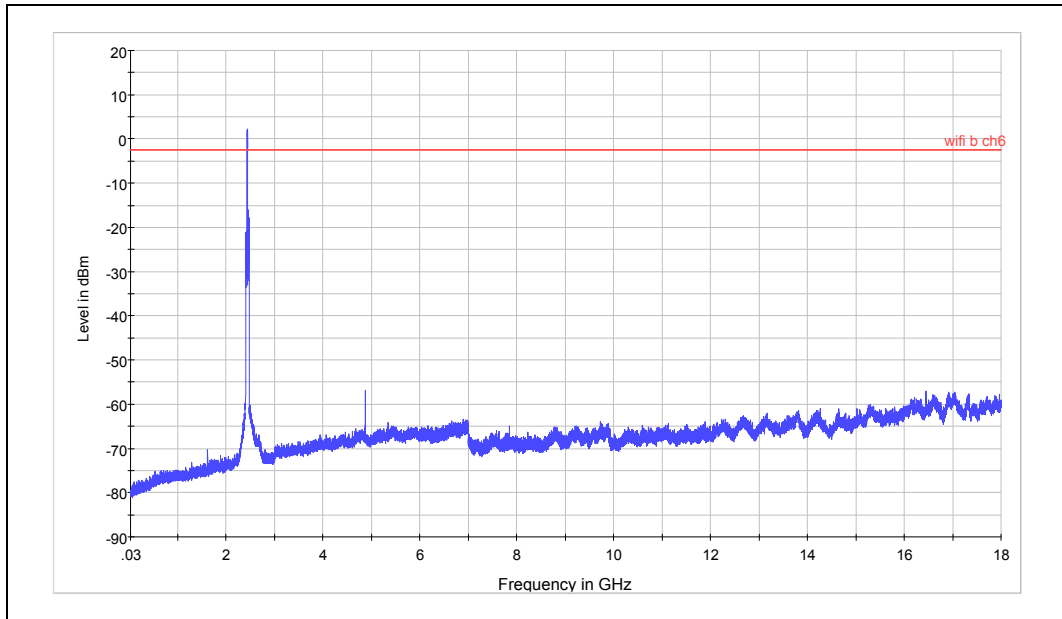
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

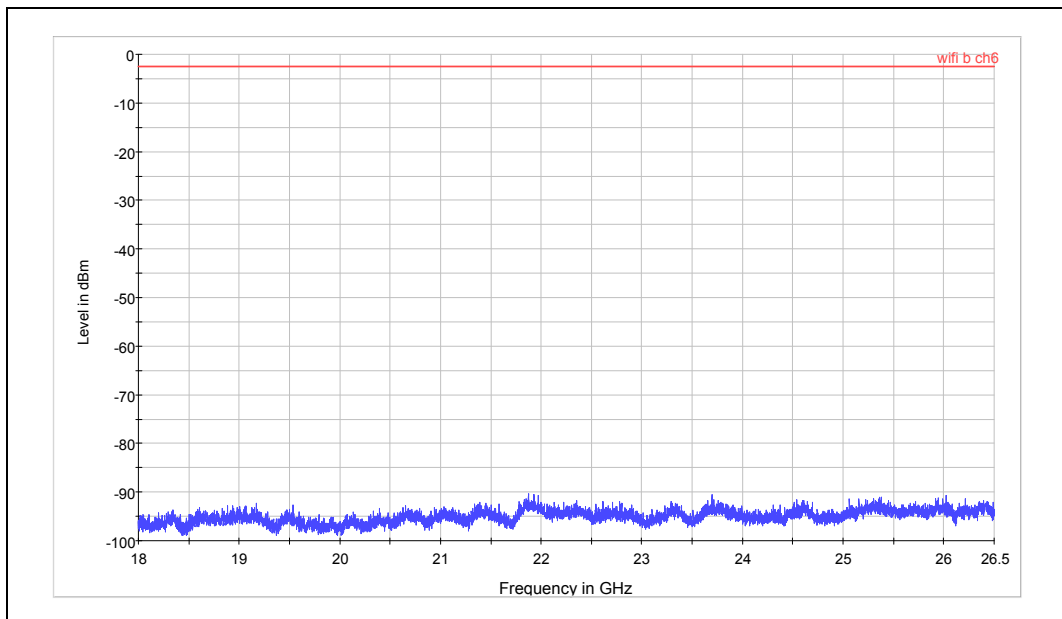
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802.11b CH6



Note: The signal beyond the limit is carrier

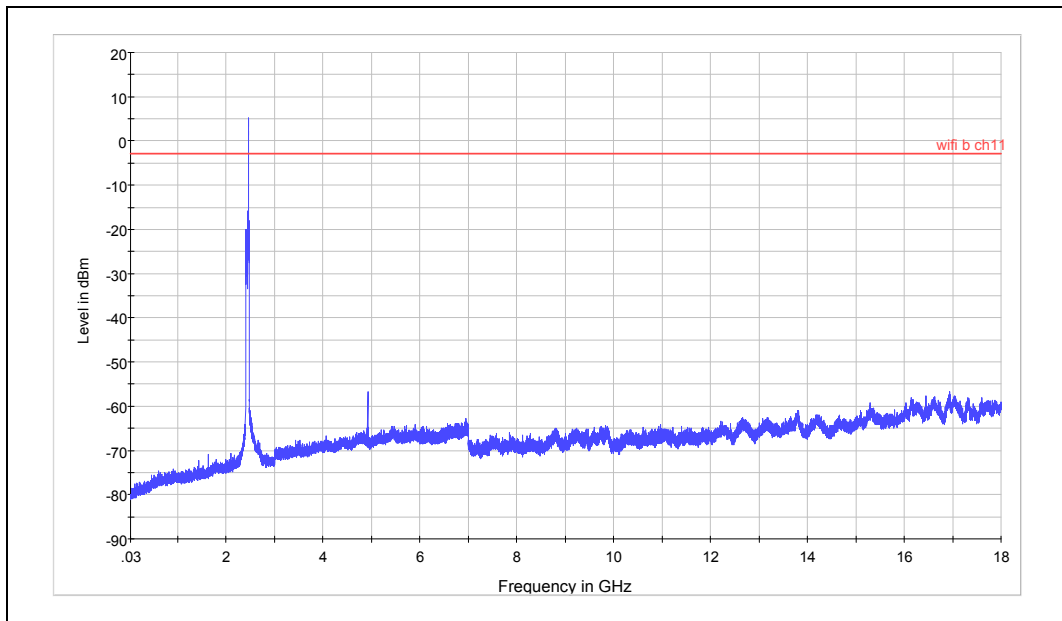
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

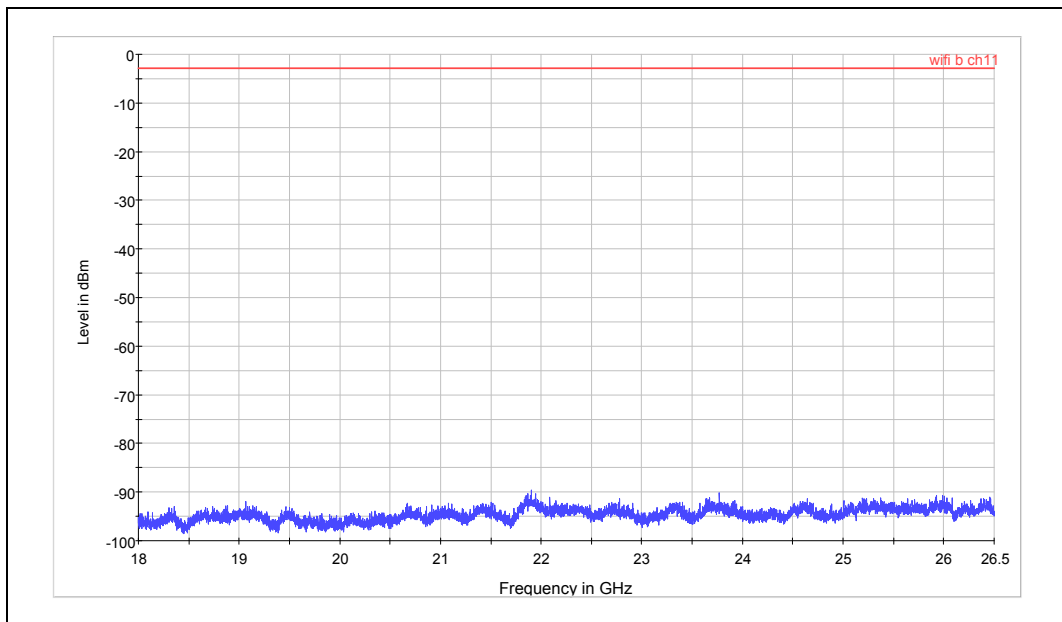
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802.11b CH11



Note: The signal beyond the limit is carrier

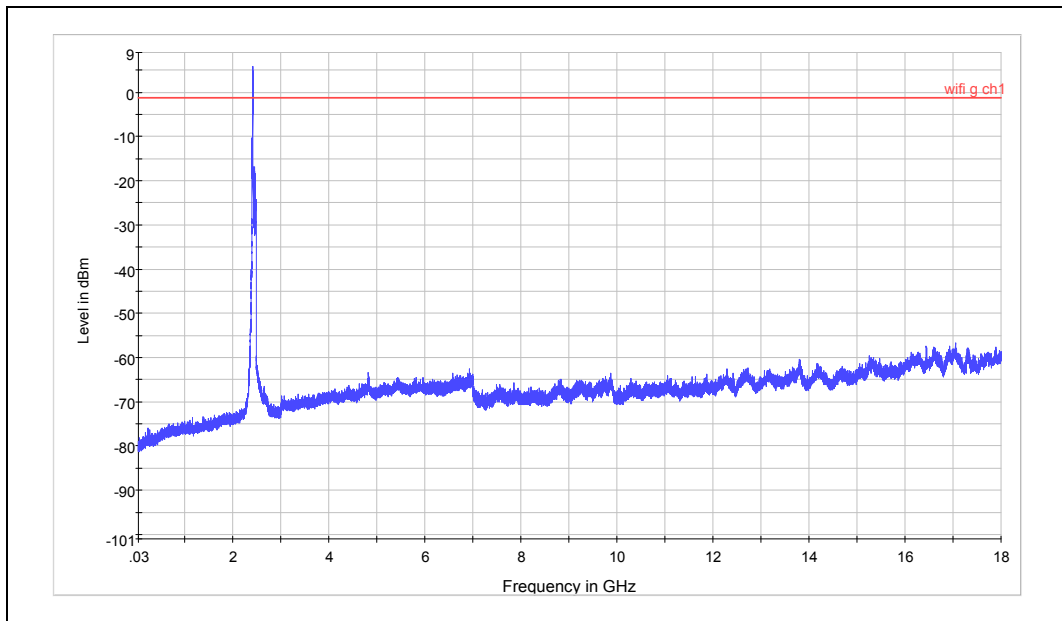
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

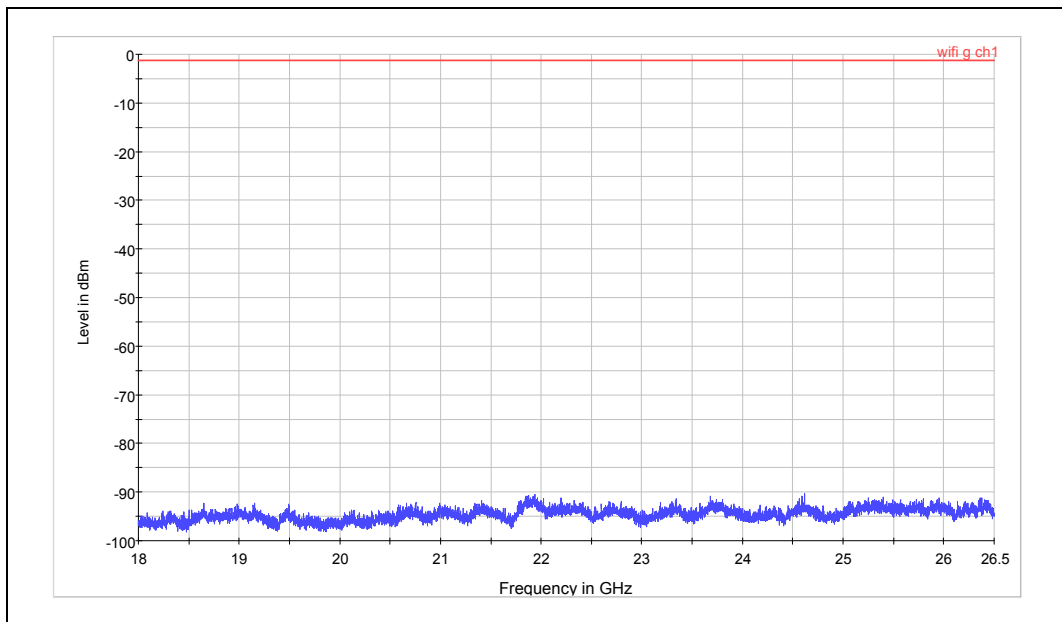
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802.11g CH1



Note: The signal beyond the limit is carrier

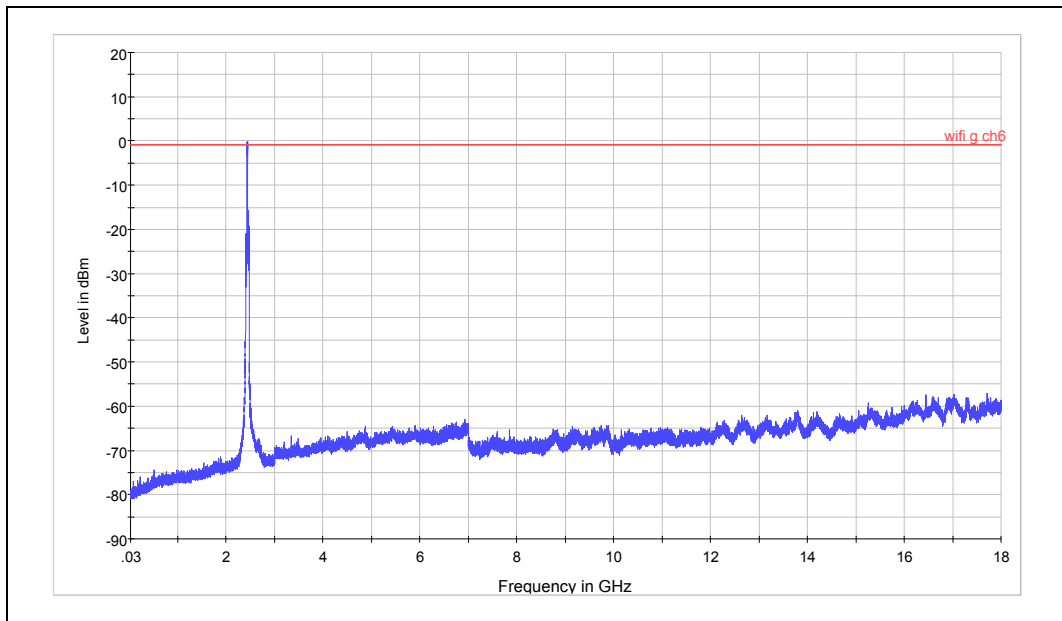
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

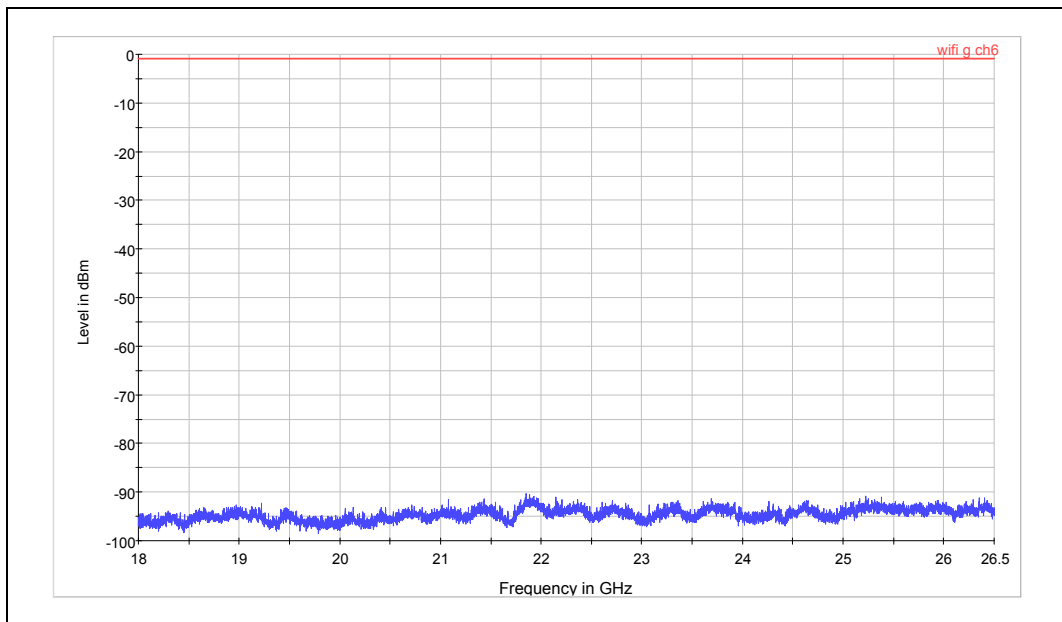
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802.11g CH6



Note: The signal beyond the limit is carrier

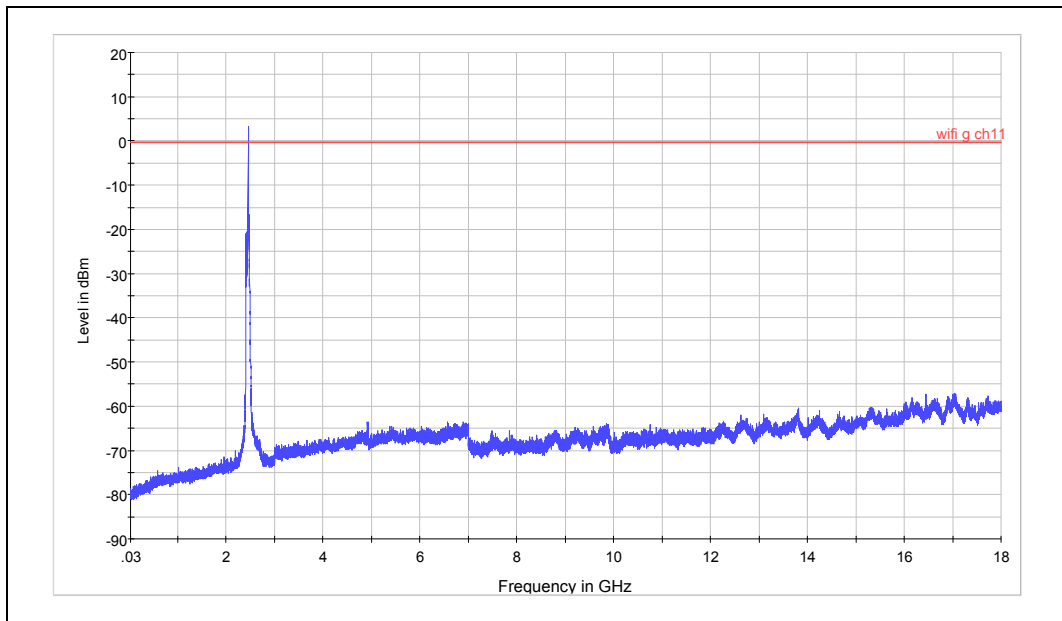
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

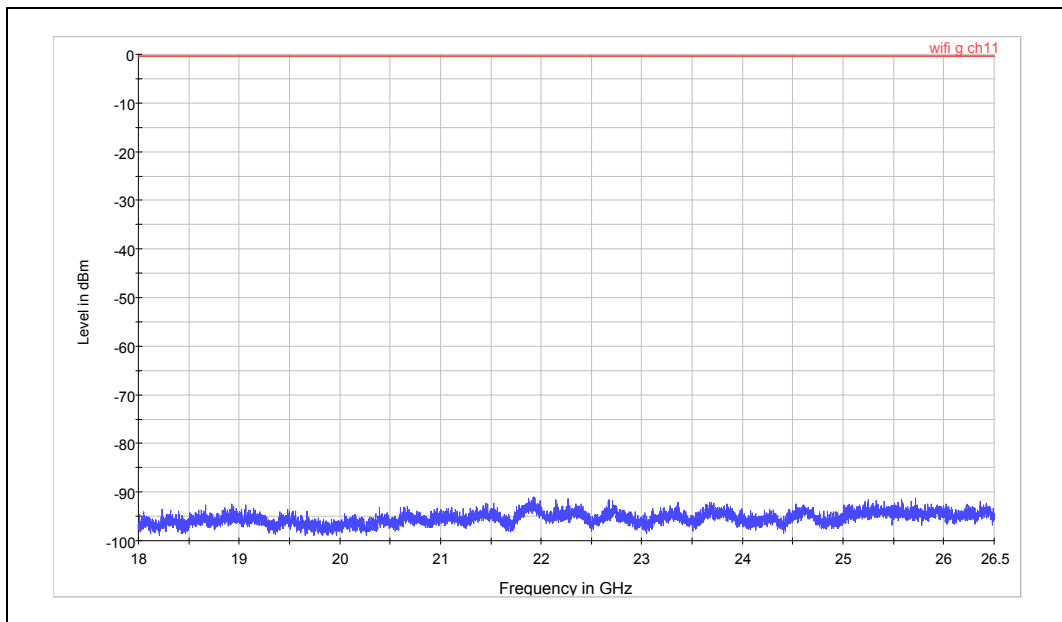
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802.11g CH11



Note: The signal beyond the limit is carrier

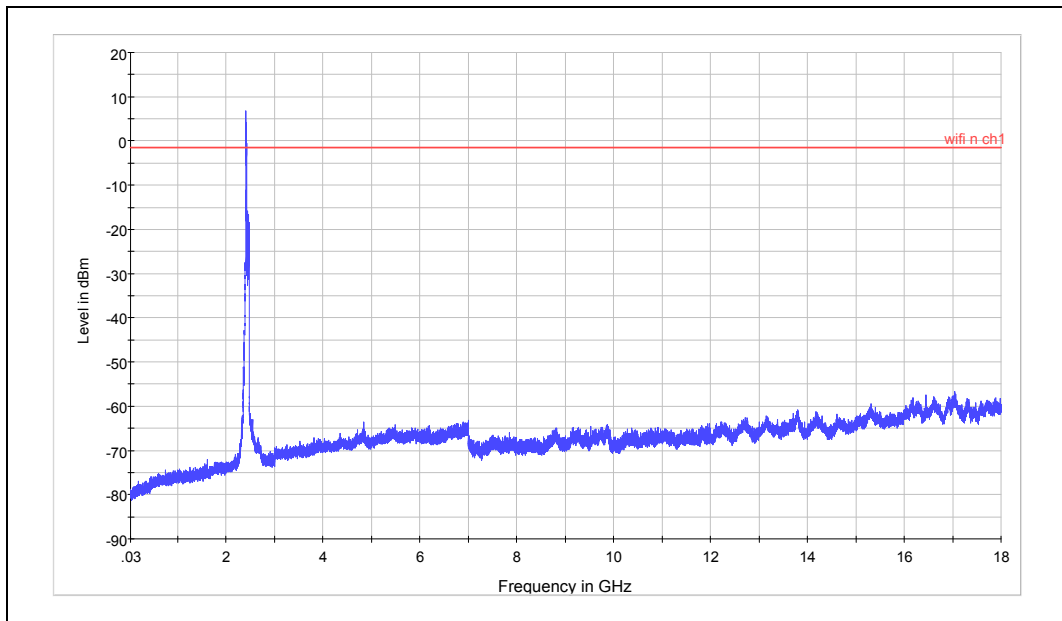
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

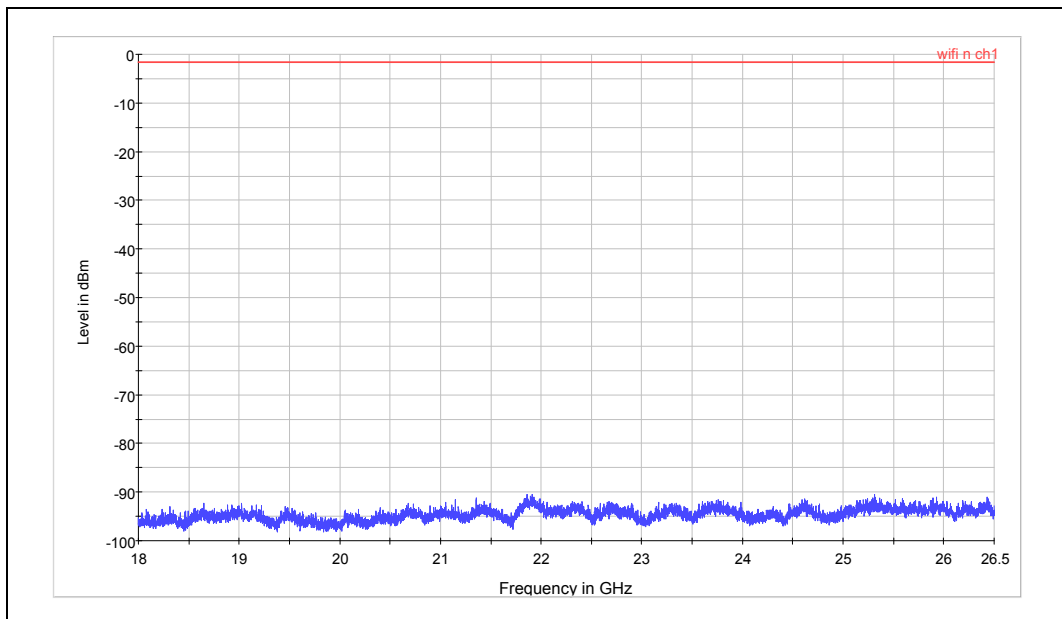
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802.11n (HT20) CH1



Note: The signal beyond the limit is carrier

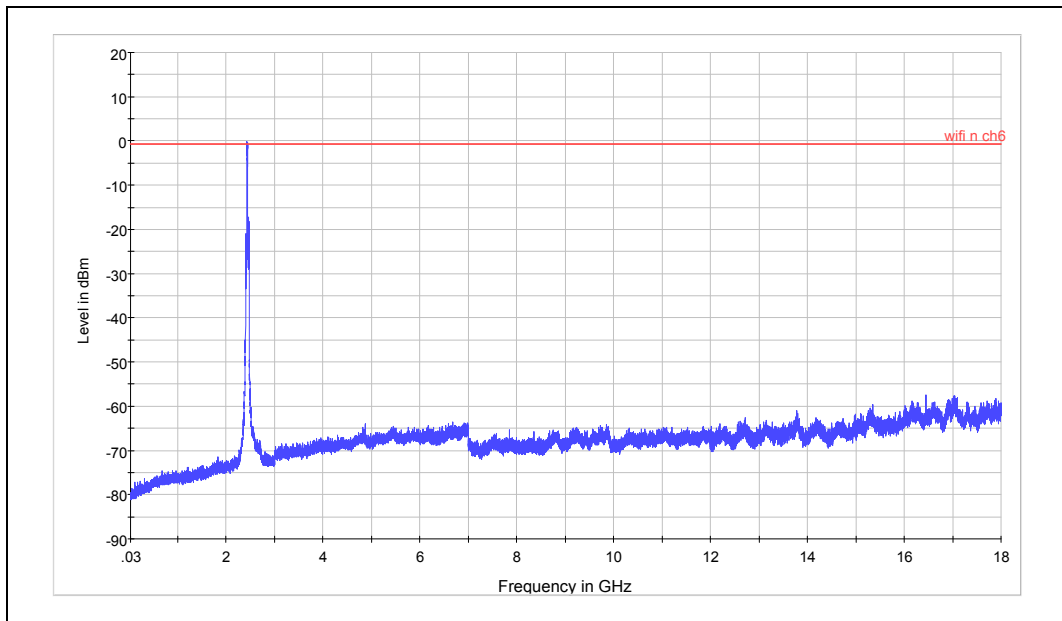
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

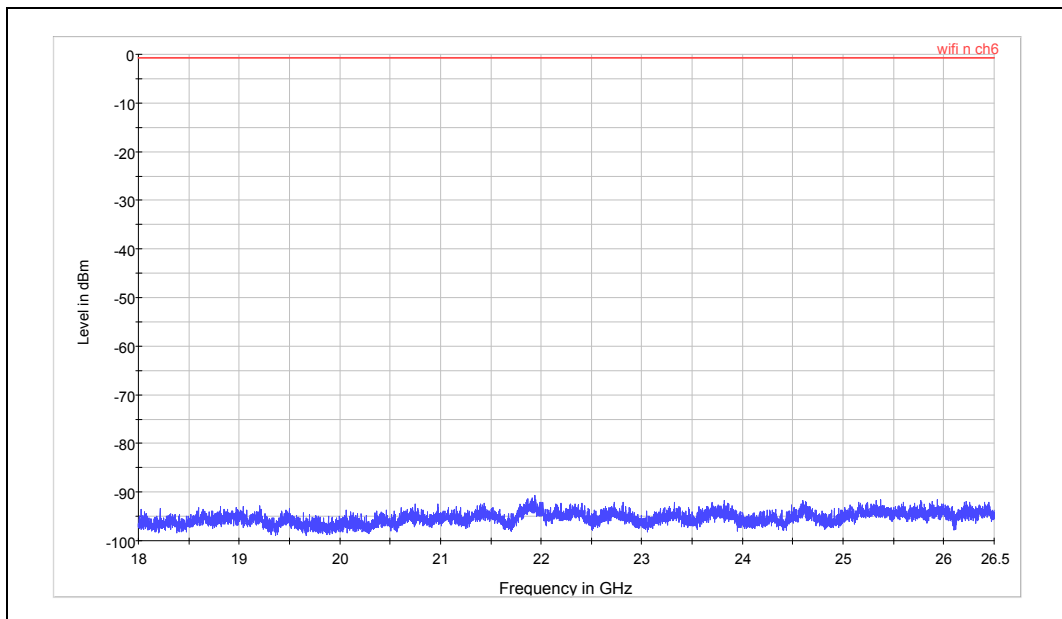
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802.11n (HT20) CH6



Note: The signal beyond the limit is carrier

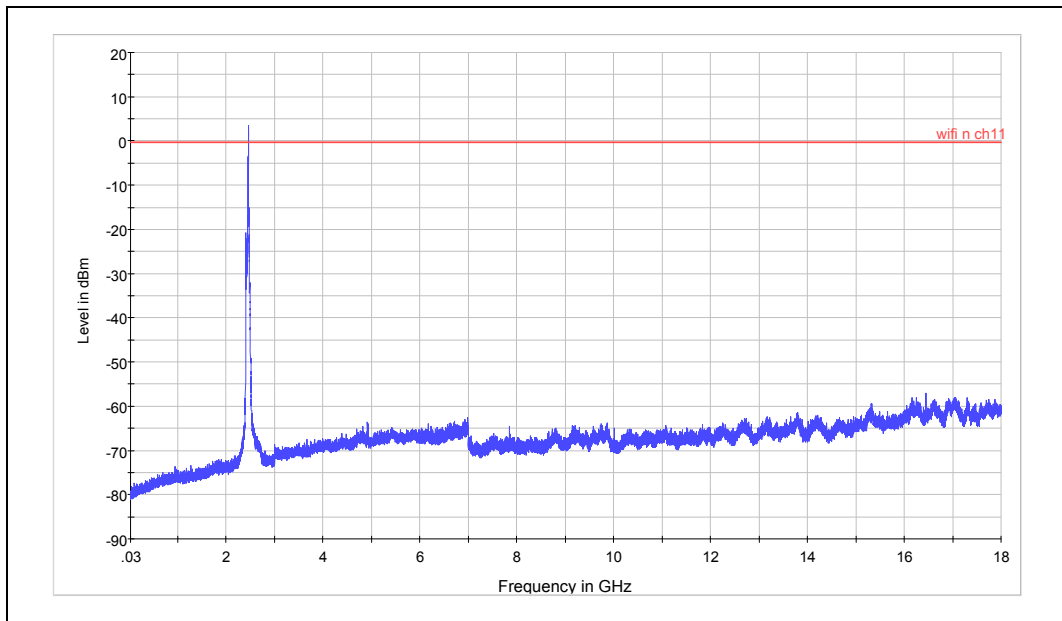
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

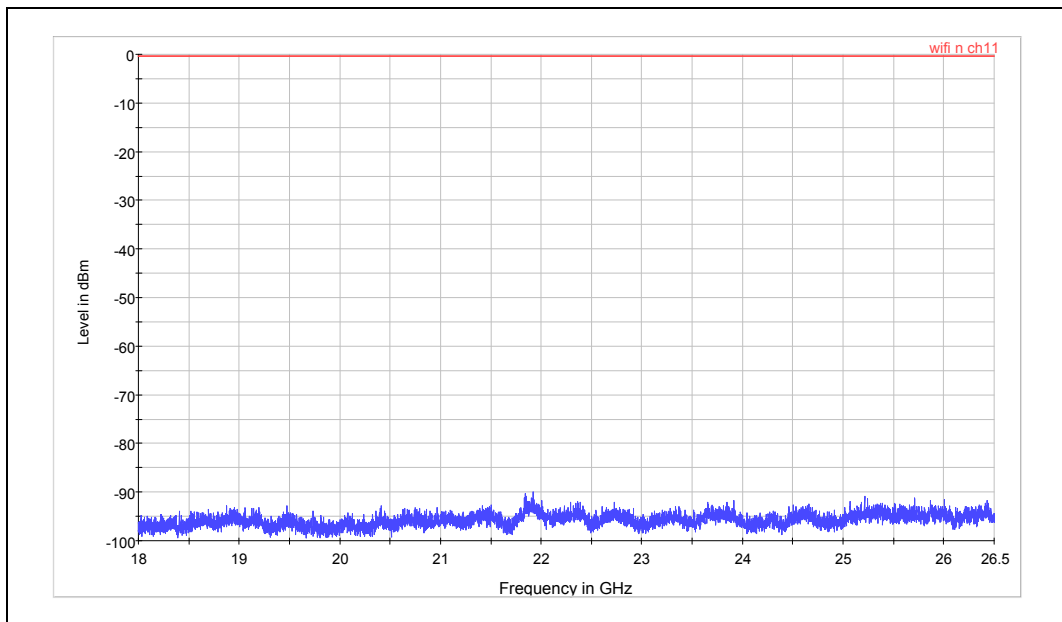
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802.11n (HT20) CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



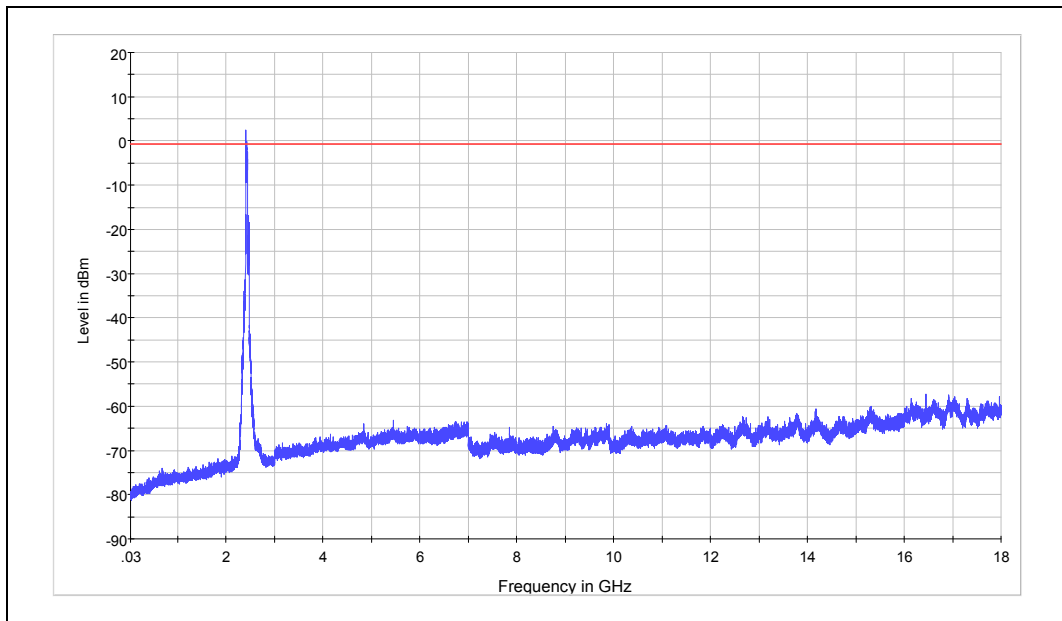
Spurious RF conducted emissions from 18GHz to 26.5GHz

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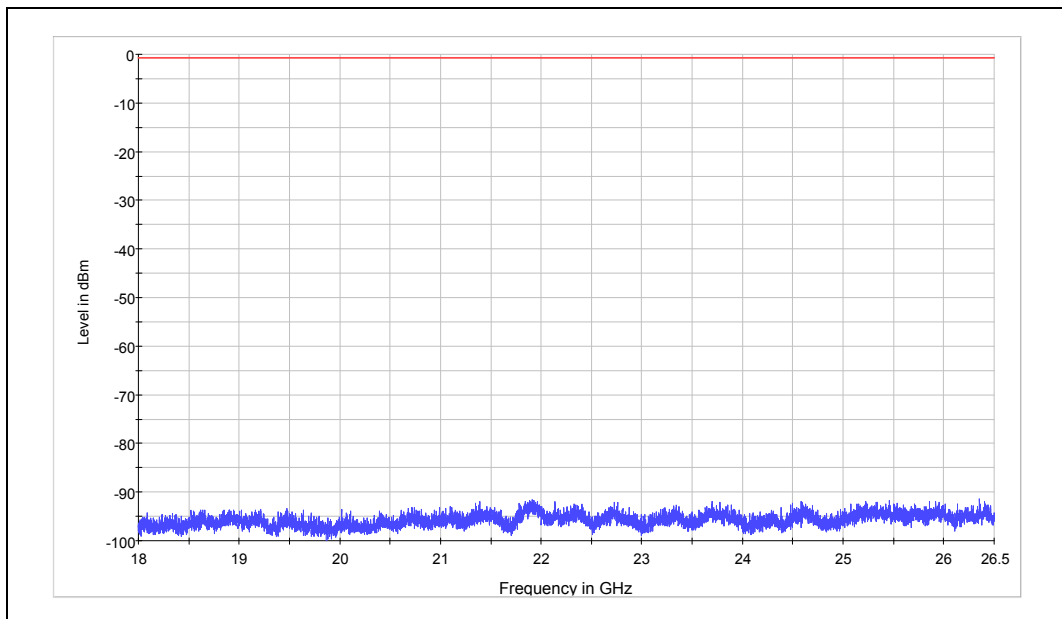
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802.11n (HT40) CH3



Note: The signal beyond the limit is carrier

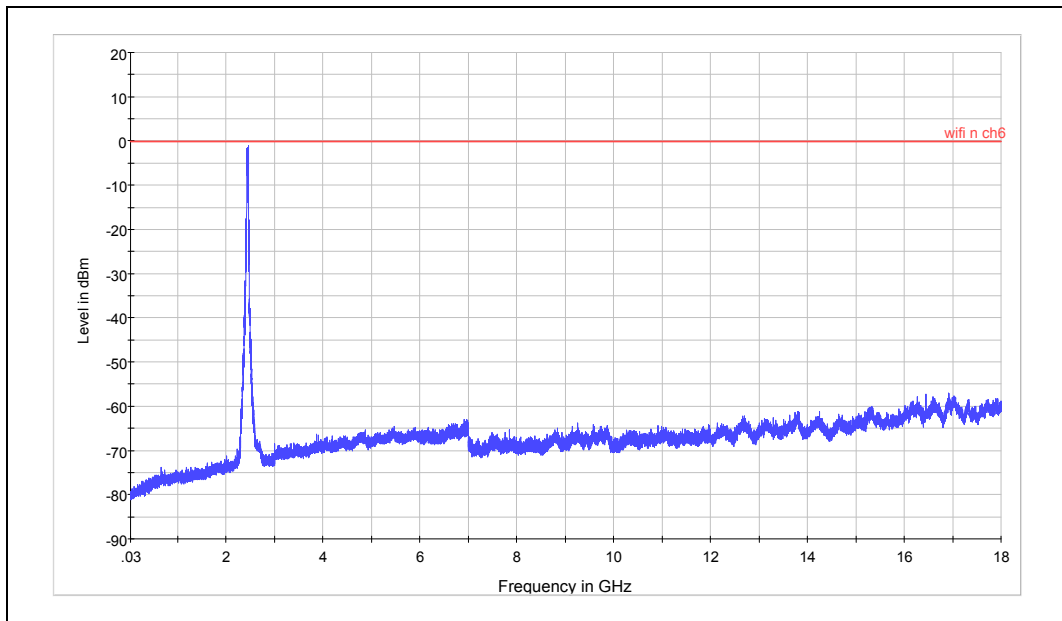
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

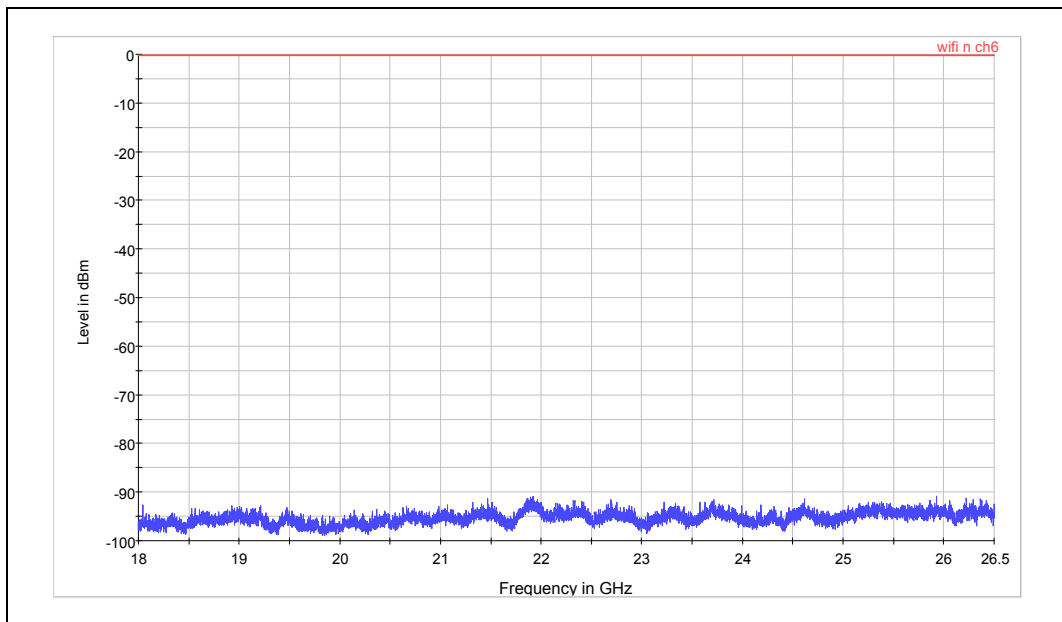
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802.11n (HT40) CH6



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



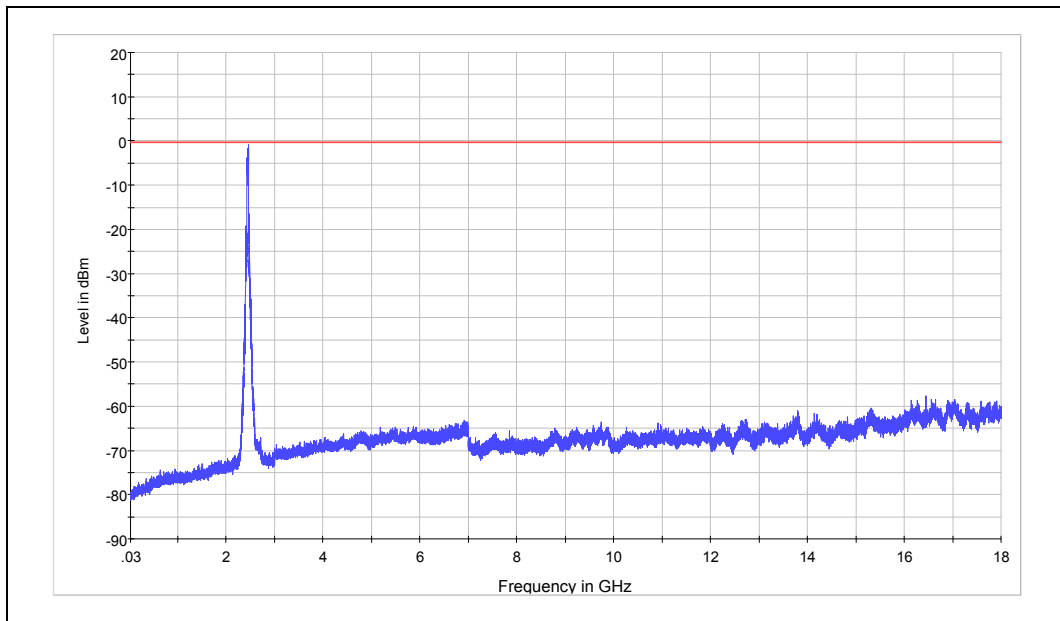
Spurious RF conducted emissions from 18GHz to 26.5GHz

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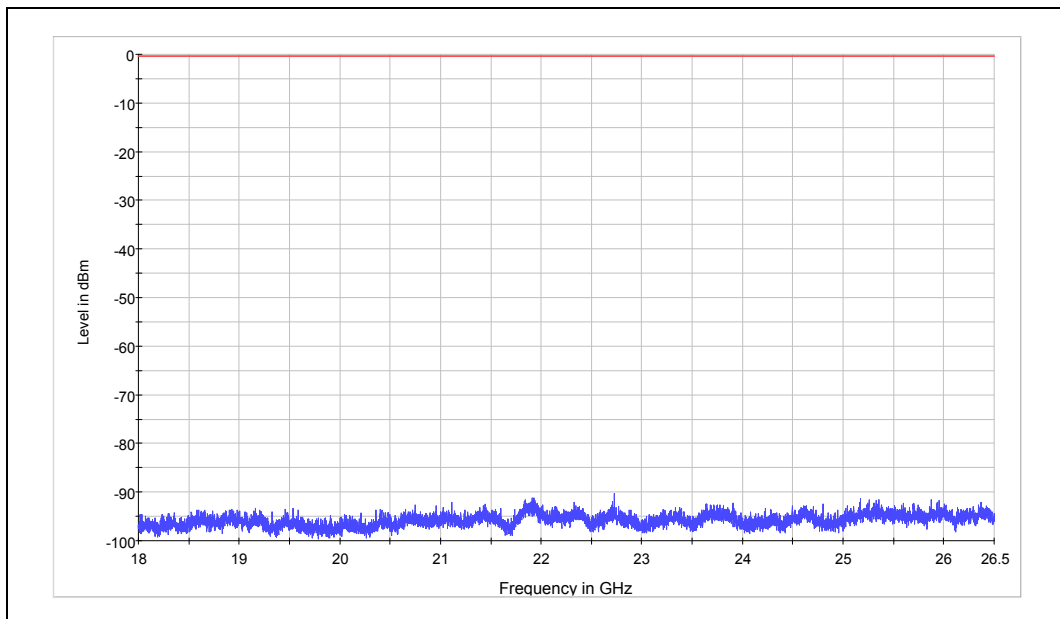
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802.11n (HT40) CH9



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

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3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Signal Analyzer	FSV30	R&S	100815	2012-06-30	One year
02	PSG Analog Signal Generator	E8257D	Agilent	MY49281101	2012-06-30	One year
03	ESG Vector Signal Generator	E4438C	Agilent	MY49070900	2012-06-30	One year
04	Spectrum Analyzer	E4445A	Agilent	MY46181146	2012-06-30	One year
05	Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
06	MOB COMMS DC SUPPLY	66319D	Agilent	MY43004105	2012-06-30	One year
07	Peak Power Analyzer	8990B	Agilent	51000109	2012-06-01	One year
08	Wideband Power Sensors	N1923A	Agilent	MY51220004	2012-06-01	One year

ANNEX A: The EUT Appearance



*****END OF REPORT *****