RF TEST REPORT

Test item	:	Tablet PC
Model No.	:	CREMA-0610L-B
Order No.	:	DEMC1308-02643
Date of receipt	:	2013-08-26
Test duration	:	2013-09-02 ~ 2013-11-05
Date of issue	:	2013-11-05
Use of report	:	FCC Original Grant

Applicant : Korea Electronic Publishing Hub
3F, Hanju Bldg, 76-1, Dongmak-ro, Mapo-gu, Seoul, Korea 121-829

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

Test specification	:	FCC Part 15 Subpart C 247 KDB558074 v03r01
Test environment	:	See appended test report
Test result	:	☒ Pass ☐ Fail

Tested by:	Witnessed by:	Reviewed by:
Engineer HongHee Lee	N/A	Technical Director Harvey Sung

Test Report Version

Test Report No.	Date	Description
DRTFCC1311-1067	Nov. 05, 2013	Initial issue

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1. GENERAL INFORMATION

Applicant	:	Korea Electronic Publishing Hub
Address	:	3F, Hanju Bldg, 76-1, Dongmak-ro, Mapo-gu, Seoul, Korea 121-829
FCC ID	:	2AA5ECREMA0610L
EUT	:	Tablet PC
Model	:	CREMA-0610L-B
Additional Model(s)	:	CREMA-0610L-W
Data ofTest	:	2013-09-02 ~ 2013-11-05
Contact person	:	Youngshin You

2. EUT DESCRIPTION

Product	Tablet PC
Model Name	CREMA-0610L-B, CREMA-0610L-W ※ 2 models are same mechanical, electrical and functional. ※ The only difference is the model name, which are changed for marketing purpose.
Power Supply	DC 3.7V
Frequency Range	2.4GHz Band ▪ 802.11b/g/n(20MHz): 2412 MHz ~ 2462 MHz
Max. RF Output Power	2.4GHz Band ▪ 802.11b: 5.85 dBm ▪ 802.11g: 9.22 dBm ▪ 802.11n (HT20): 9.22 dBm
Modulation Type	802.11b: DSSS/CCK 802.11g/n: OFDM
Antenna Specification	Internal Antenna (1TX ,1RX) ▪ 2.4GHz Band Max. peak gain : 3.37 dBi

3. SUMMARY OF TESTS

FCC Part Section(s)	RSS Section(s)	Parameter	Limit	Test Condition	Status Note 1
I. Transmitter Mode (TX)					
15.247(a)	RSS-210 [A8.2]	6 dB Bandwidth	> 500 kHz	Conducted	**C**
15.247(b)	RSS-210 [A8.4]	Transmitter Output Power	< 1Watt		**C**
15.247(d)	RSS-210 [A8.5]	Out of Band Emissions / Band Edge	20dBc in any 100kHz BW		**C**
15.247(e)	RSS-210 [A8.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz		**C**
-	RSS Gen [4.6.1]	Occupied Bandwidth (99%)	RSS-Gen(4.6.1)		**NA**
15.205 15.209	RSS-210 [A8.5]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	< FCC 15.209 limits	Radiated	**C**Note2
15.207	RSS-Gen [7.2.4]	AC Conducted Emissions	< FCC 15.207 limits	AC Line Conducted	**C**
15.203	-	Antenna Requirements	FCC 15.203	-	**C**

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This test item was performed in each axis and the worst case data was reported.

4. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 v03r1. And ANSI C63.10-2009 was used for EUT setup of radiated spurious emission and AC line conducted emission testing

4.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

4.3 GENERAL TEST PROCEDURES

Conducted Emissions

According to the requirements in Section 6.2 of ANSI C63.10, the EUT is placed on the turntable, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15MHz and 30 MHz using CISPR Quasi-peak and Average detector.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes according to the requirements in Section 6.3 of ANSI C63.10.

4.4 DESCRIPTION OF TEST MODES

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.

5. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

The open area test site(OATS) or semi anechoic chamber and conducted measurement facility used to collect the radiated and conducted test data are located at the 683-3, Yubang-Dong, Yongin-Si, Gyunggi-Do, 449-080, South Korea. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number : 678747

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and peak, quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.
All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

7. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203& RSS-Gen [7.1.2]:
“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

The internal antenna of this E.U.T is permanently attached using the soldering.
Therefore this E.U.T Complies with the requirement of §15.203

8. TEST RESULT

8.1 6dB Bandwidth

Test Requirements and limit, §15.247(a) & RSS-210 [A8.2]

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6dB bandwidth is 500 kHz.

▣ TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of **KDB558074 v03r1**.

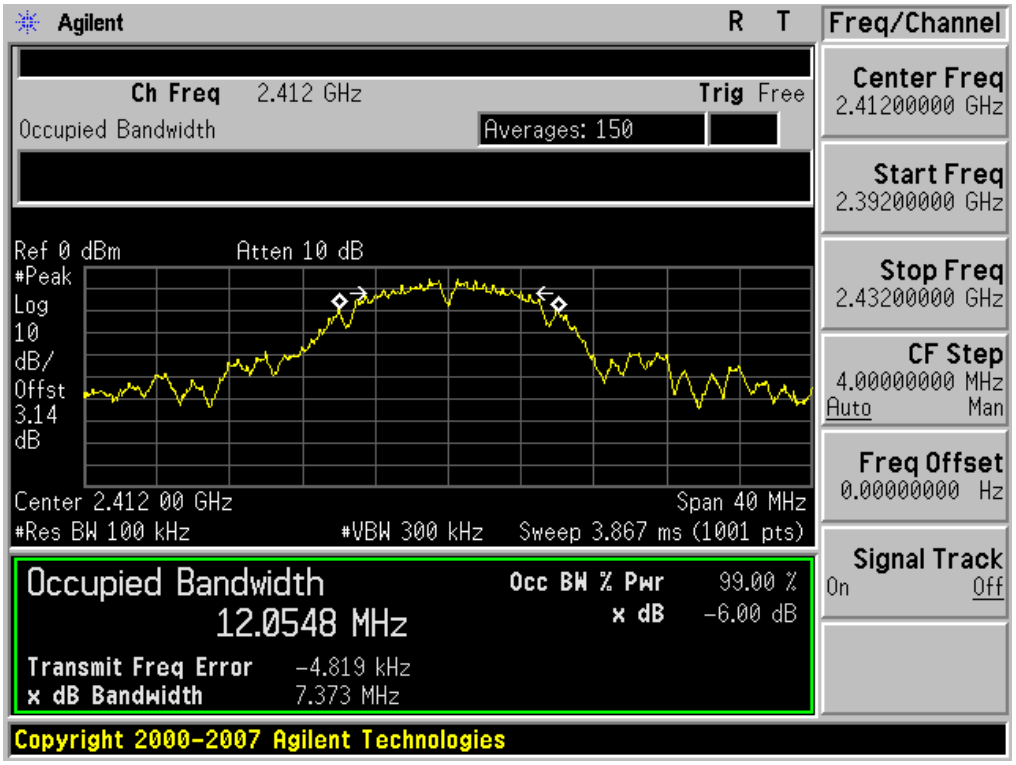
1. Set resolution bandwidth (RBW) = 100 KHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
   (RBW:100KHz/VBW:300KHz)
3. Detector = **Peak**.
4. Trace mode = **max hold**.
5. Sweep = **auto couple**.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outer most amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

▣ TEST RESULTS: Comply

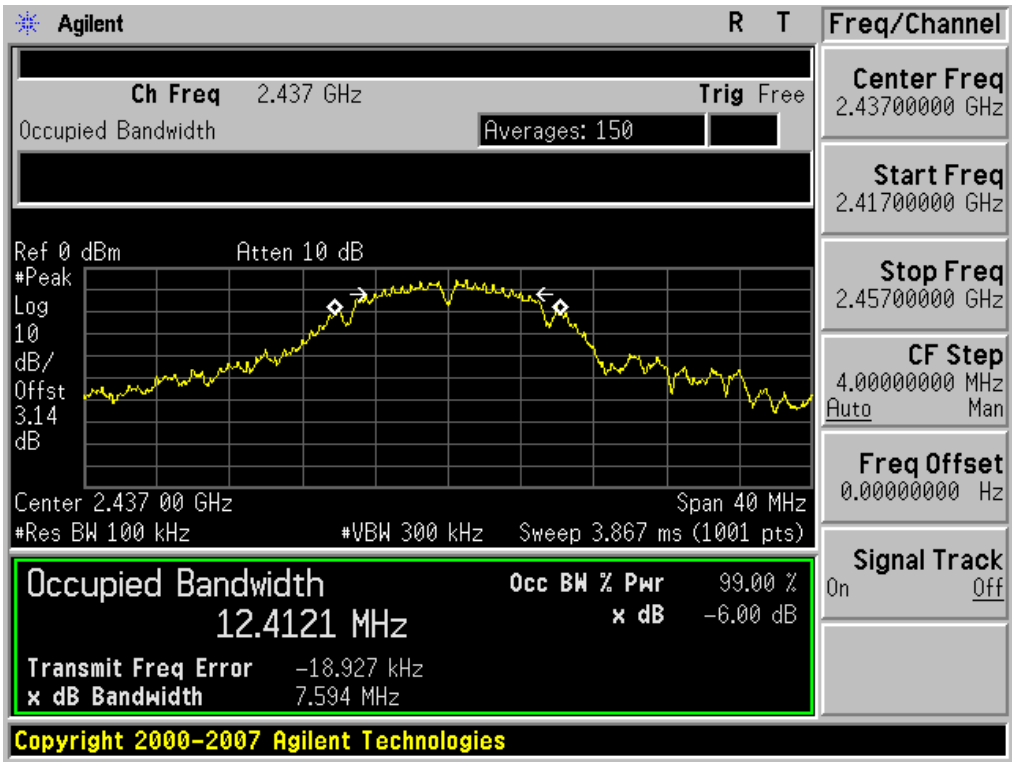
Test Mode	Data Rate	Frequency [MHz]	Test Results[MHz]
802.11b	1 Mbps	2412	7.373
		2437	7.594
		2462	7.865
802.11g	6 Mbps	2412	15.868
		2437	15.142
		2462	15.038
802.11n (20MHz)	MCS0	2412	15.740
		2437	15.755
		2462	15.582

▣ RESULT PLOTS

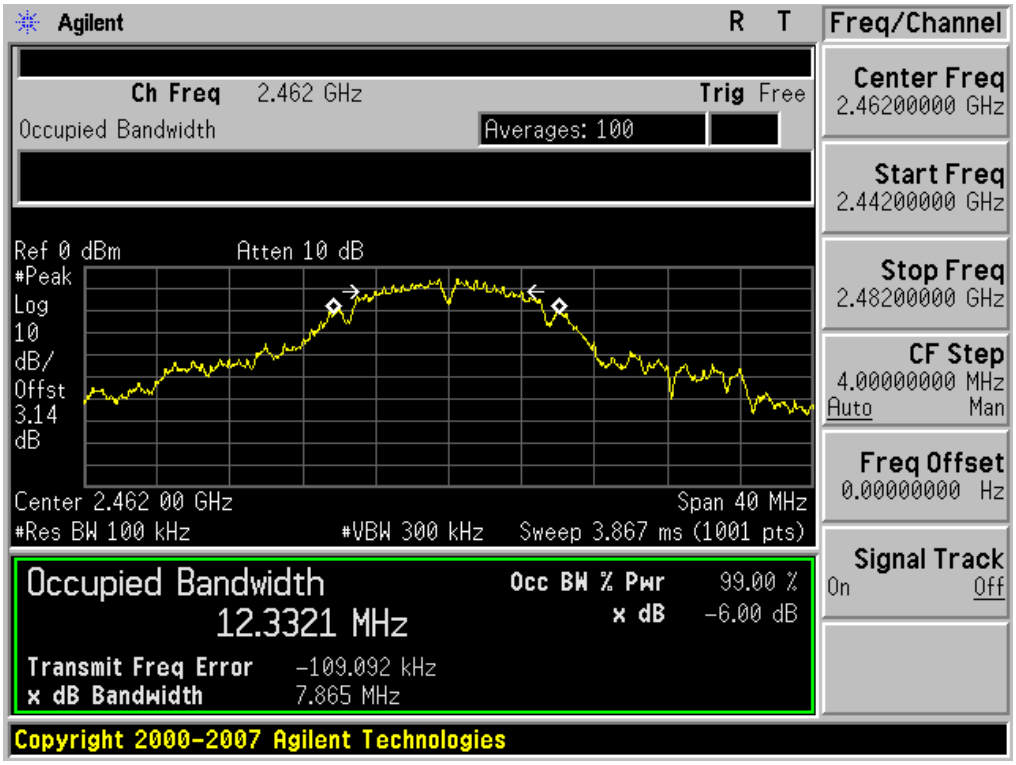
6 dB Bandwidth Test Mode: 802.11b & 1Mbps & 2412MHz



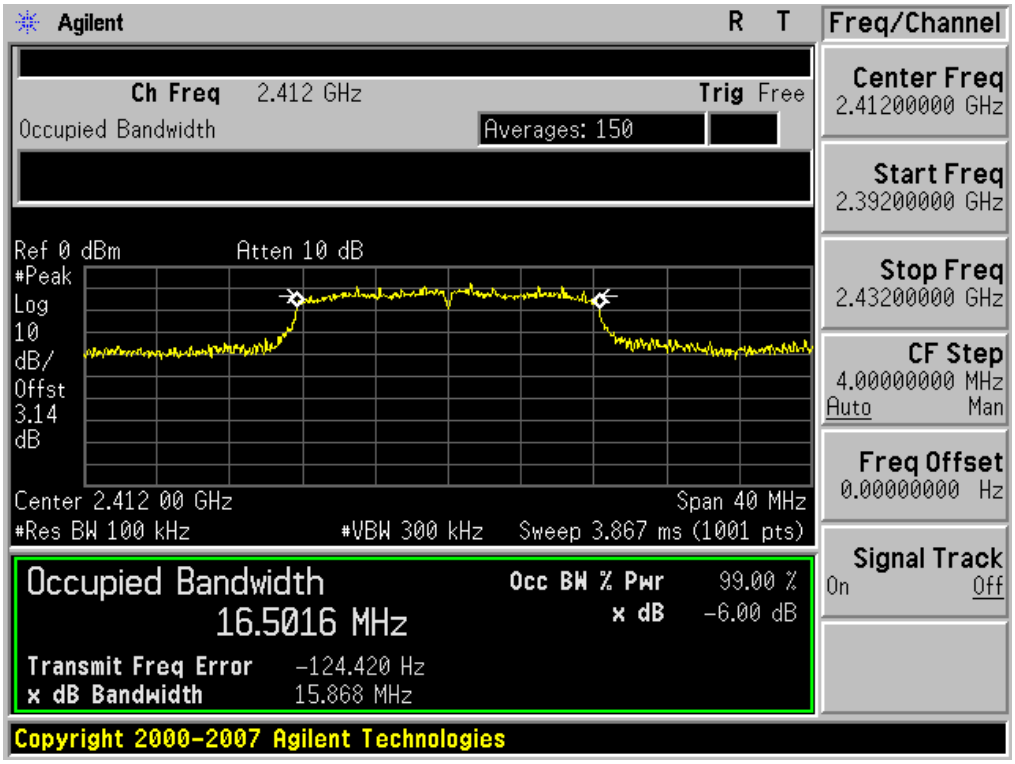
6 dB Bandwidth Test Mode: 802.11b & 1Mbps & 2437MHz



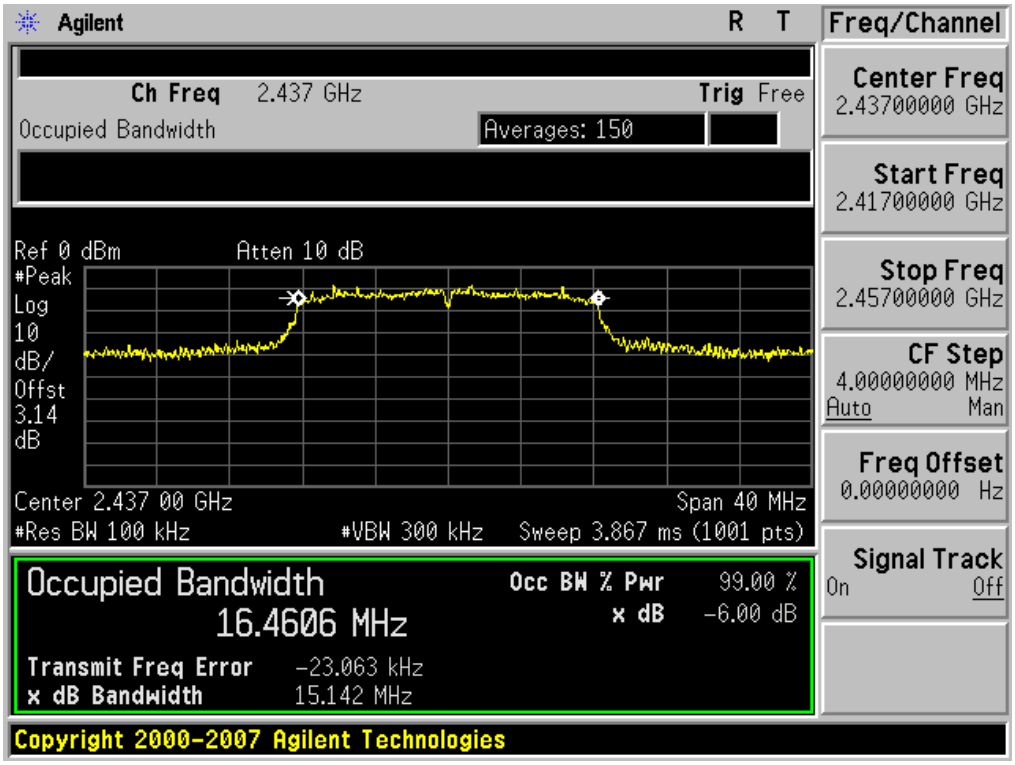
6 dB Bandwidth Test Mode: 802.11b & 1Mbps & 2462MHz



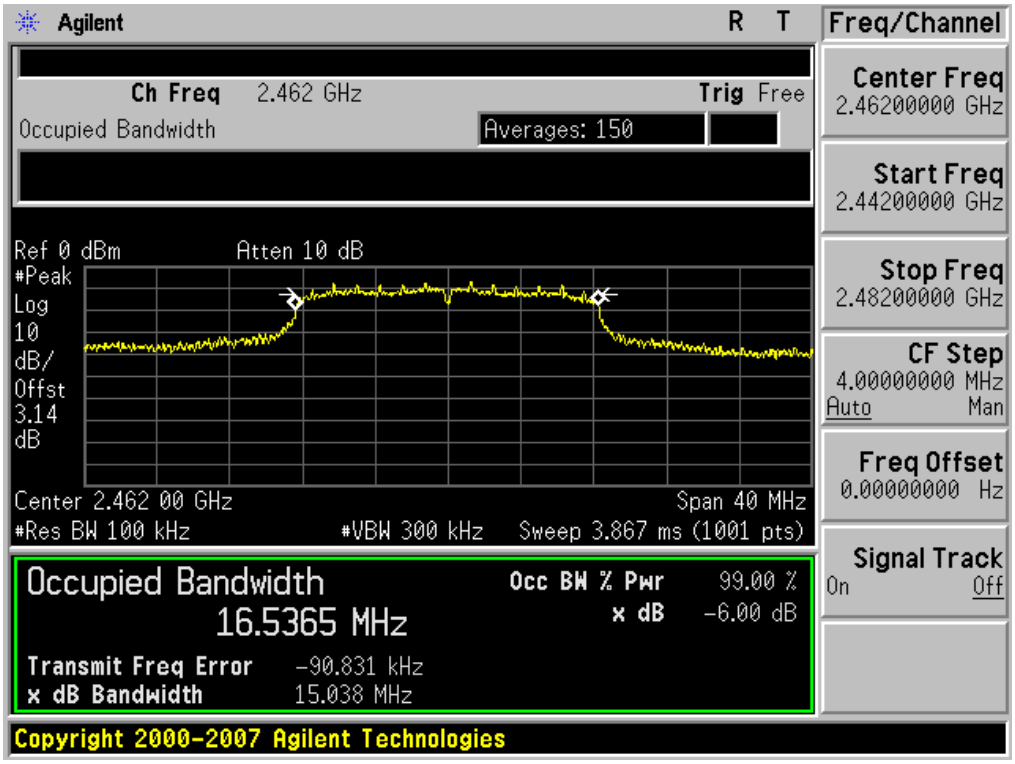
6 dB Bandwidth Test Mode: 802.11g & 6Mbps & 2412MHz



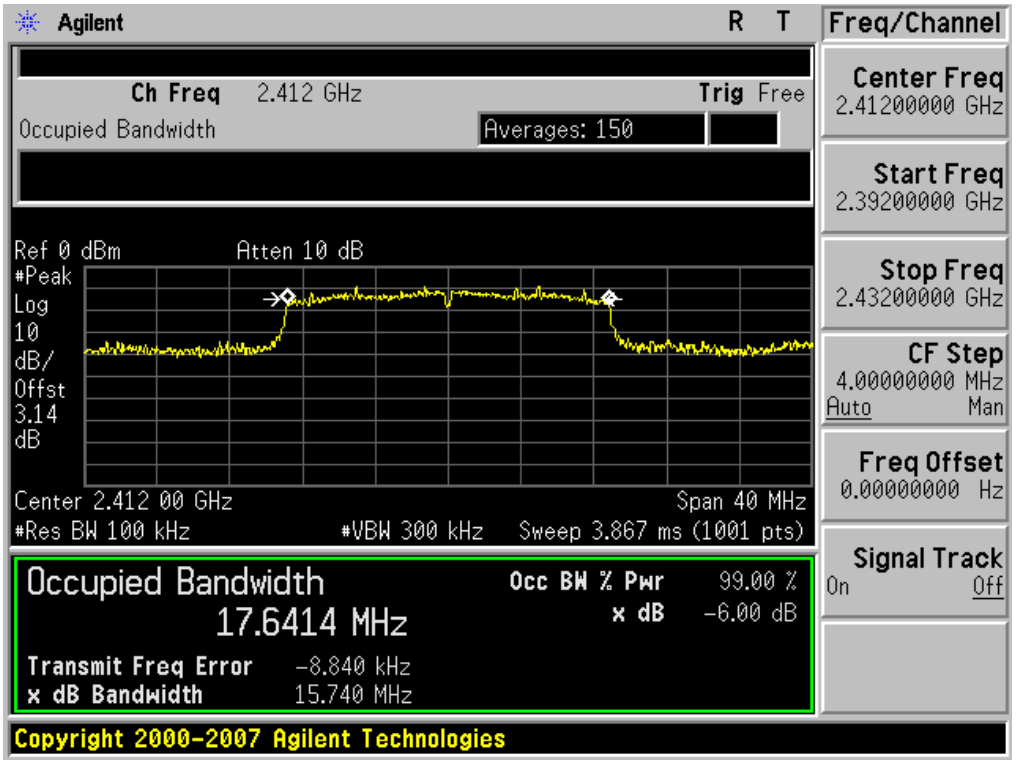
6 dB Bandwidth Test Mode: 802.11g & 6Mbps & 2437MHz



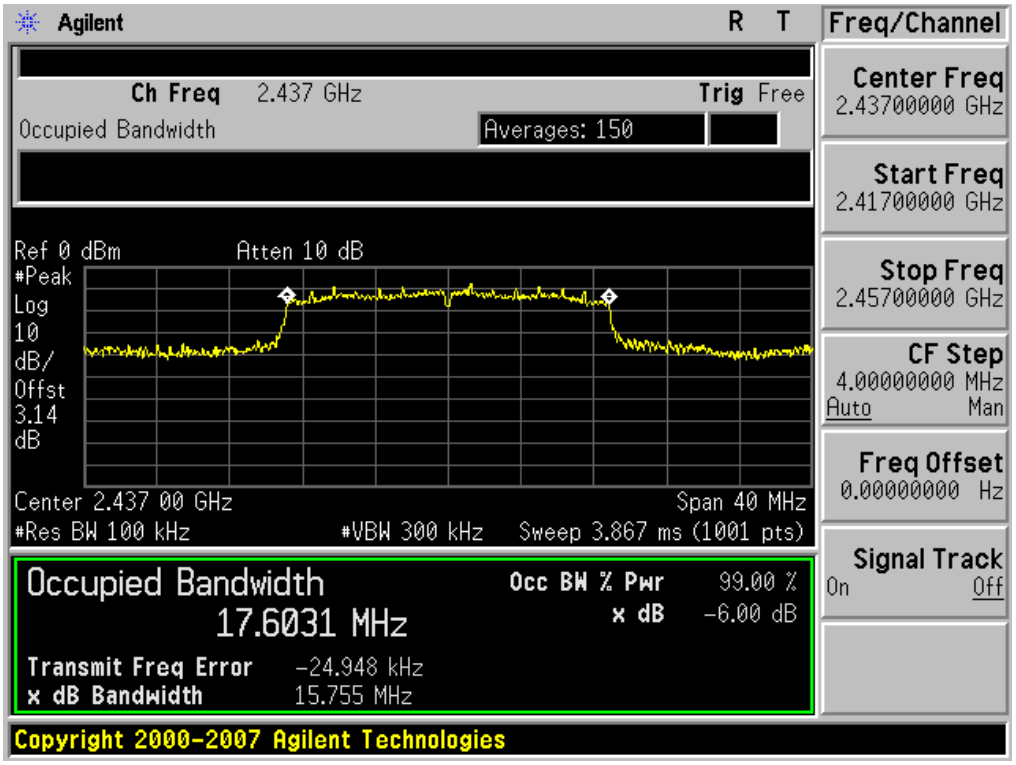
6 dB Bandwidth Test Mode: 802.11g & 6Mbps & 2462MHz



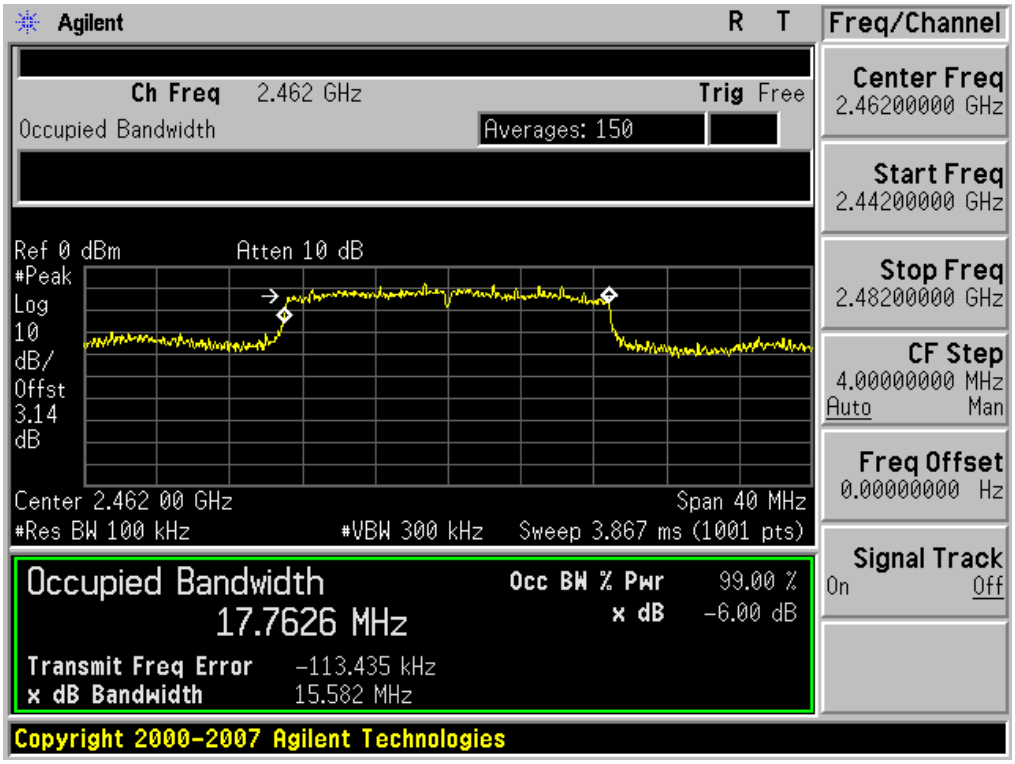
6 dB Bandwidth Test Mode: 802.11n & MCS0 & 2412MHz



6 dB Bandwidth Test Mode: 802.11n & MCS0 & 2437MHz



6 dB Bandwidth Test Mode: 802.11n & MCS0 & 2462MHz

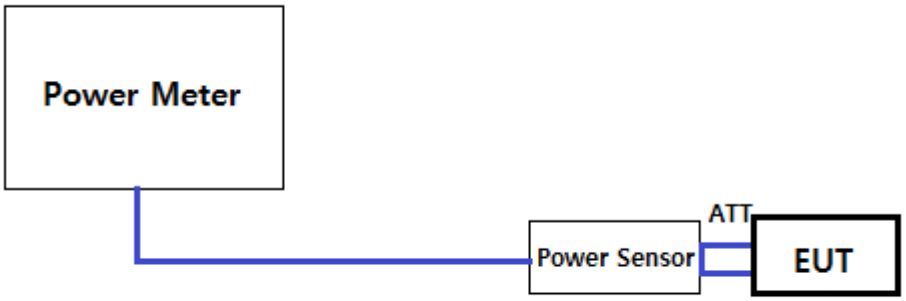


8.2 Maximum Peak Conducted Output Power

Test Requirements and limit, §15.247(b) & RSS-210 [A8.4]

The maximum permissible conducted output power is **1 Watt**.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE:

1. **PKPM1 Peak power meter method of KDB558074 v03r1**
   The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

2. **Method AVGPM-G (Measurement using a gated RF average power meter) of KDB558074 v03r1**
   The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

▣ TEST RESULTS: Comply

- **Measurement Data: Comply**

- **Test Results**

Mode	Channel	Frequency [MHz]	Detector	Test Result [dBm]							
				DATA RATE [Mbps]							
				1	2	5.5	11	N/A	N/A	N/A	N/A
802.11b	1	2412	PK	4.95	4.83	4.76	4.59	-	-	-	-
			AV	1.74	1.65	1.53	1.35	-	-	-	-
	6	2437	PK	5.24	5.19	5.17	5.15	-	-	-	-
			AV	2.25	2.22	2.14	1.97	-	-	-	-
	11	2462	PK	**5.85**	5.83	5.76	5.74	-	-	-	-
			AV	2.88	2.79	2.71	2.57	-	-	-	-

Mode	Channel	Frequency [MHz]	Detector	Test Result [dBm]							
				DATA RATE [Mbps]							
				6	9	12	18	24	36	48	54
802.11g	1	2412	PK	8.20	8.17	8.14	8.11	8.05	8.03	7.95	7.89
			AV	1.80	1.75	1.52	1.35	1.03	0.64	0.21	0.08
	6	2437	PK	8.60	8.54	8.51	8.48	8.43	8.37	8.32	8.29
			AV	2.18	2.11	1.95	1.76	1.47	1.06	0.87	0.60
	11	2462	PK	**9.22**	9.18	9.15	9.11	9.08	9.03	8.97	8.91
			AV	2.73	2.57	2.36	2.11	1.98	1.68	1.45	1.21

Mode	Channel	Frequency [MHz]	Detector	Test Result [dBm]							
				DATA RATE [MCS]							
				0	1	2	3	4	5	6	7
802.11n (HT20)	1	2412	PK	8.26	8.24	8.21	8.18	8.16	8.14	8.11	8.08
			AV	1.77	1.56	1.28	0.97	0.64	0.45	0.26	0.12
	6	2437	PK	8.63	8.60	8.58	8.54	8.52	8.50	8.47	8.45
			AV	2.11	1.88	1.65	1.45	1.27	0.98	1.67	0.43
	11	2462	PK	**9.22**	9.21	9.19	9.16	9.14	9.11	9.07	9.04
			AV	2.73	2.52	2.18	1.93	1.72	1.49	1.25	1.00

8.3 Maximum Power Spectral Density

Test requirements and limit, §15.247(e) & RSS-210 [A8.2]

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard –specifies a conducted power spectral density (PSD) limit of 8 dBm in any 3 kHz band segment within the fundamental EBW during any time interval of continuous transmission.

▣ TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE:

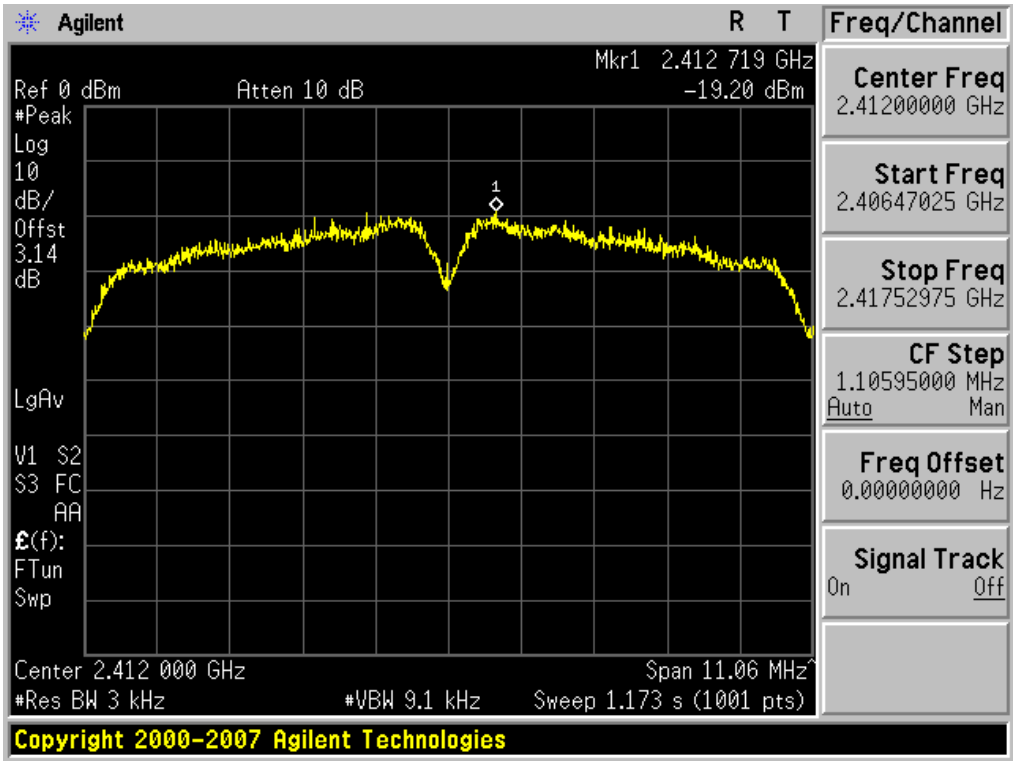
Method PKPSD of KDB558074 v03r1 is used.
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to **1.5 times** the DTS bandwidth.
3. Set the RBW to: **3 kHz ≤ RBW ≤ 100 kHz**.
4. Set the VBW ≥ **3 x RBW.**
5. Detector = **peak.**
6. Sweep time = **auto couple.**
7. Trace mode = **max hold.**
8. Allow trace to fully stabilize.
9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

▣TEST RESULTS: Comply

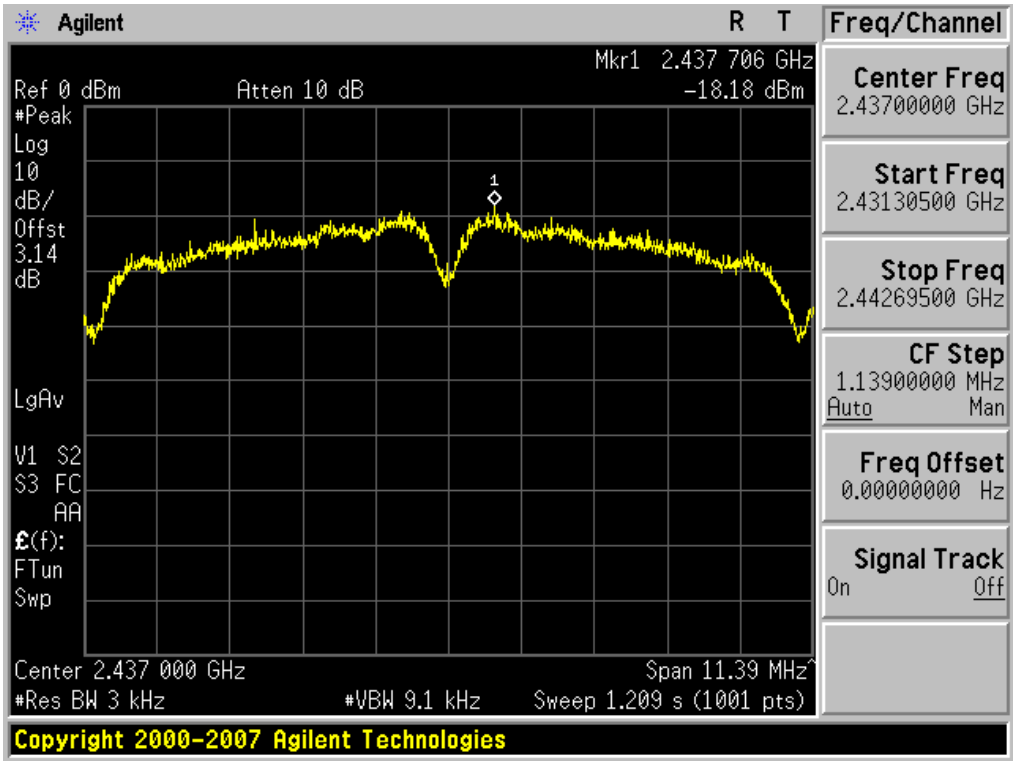
Test Mode	Data Rate	Frequency [MHz]	RBW	PKPSD [dBm]
802.11b	1Mbps	2412	3 kHz	- 19.20
		2437	3 kHz	- 18.18
		2462	3 kHz	- 18.58
802.11g	6Mbps	2412	3 kHz	- 22.00
		2437	3 kHz	- 22.96
		2462	3 kHz	- 21.82
802.11n HT20	MCS0	2412	3 kHz	- 22.25
		2437	3 kHz	- 21.28
		2462	3 kHz	- 21.64

▣ RESULT PLOTS

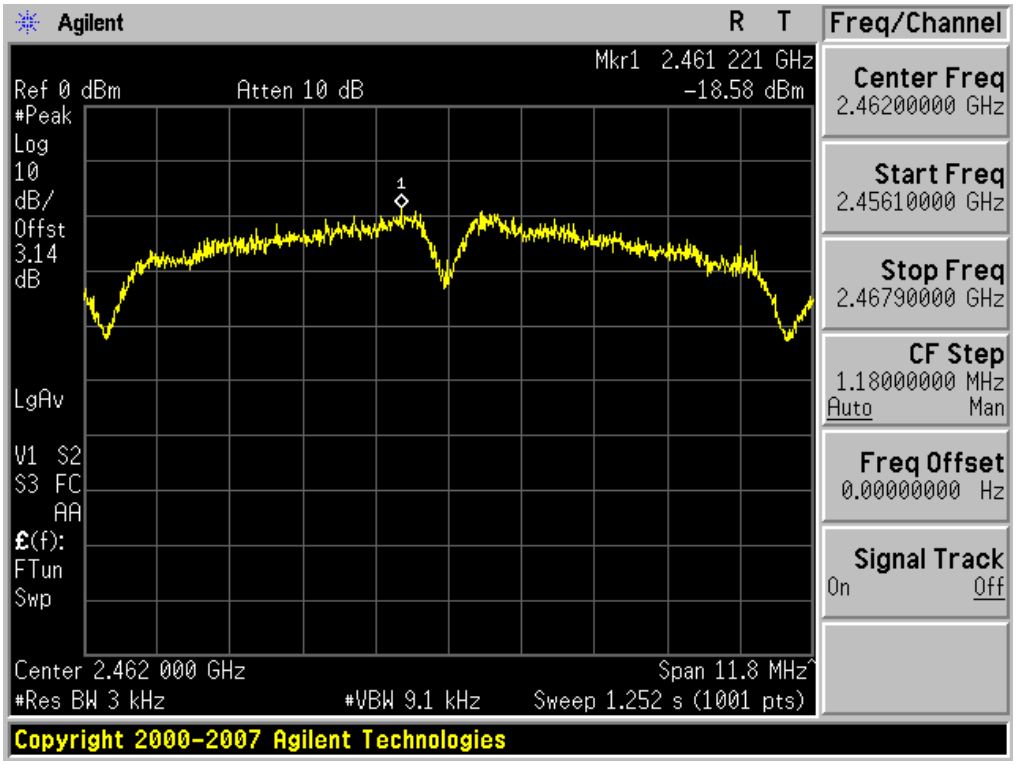
Maximum PKPSD Test Mode: 802.11b & 1Mbps & 2412MHz



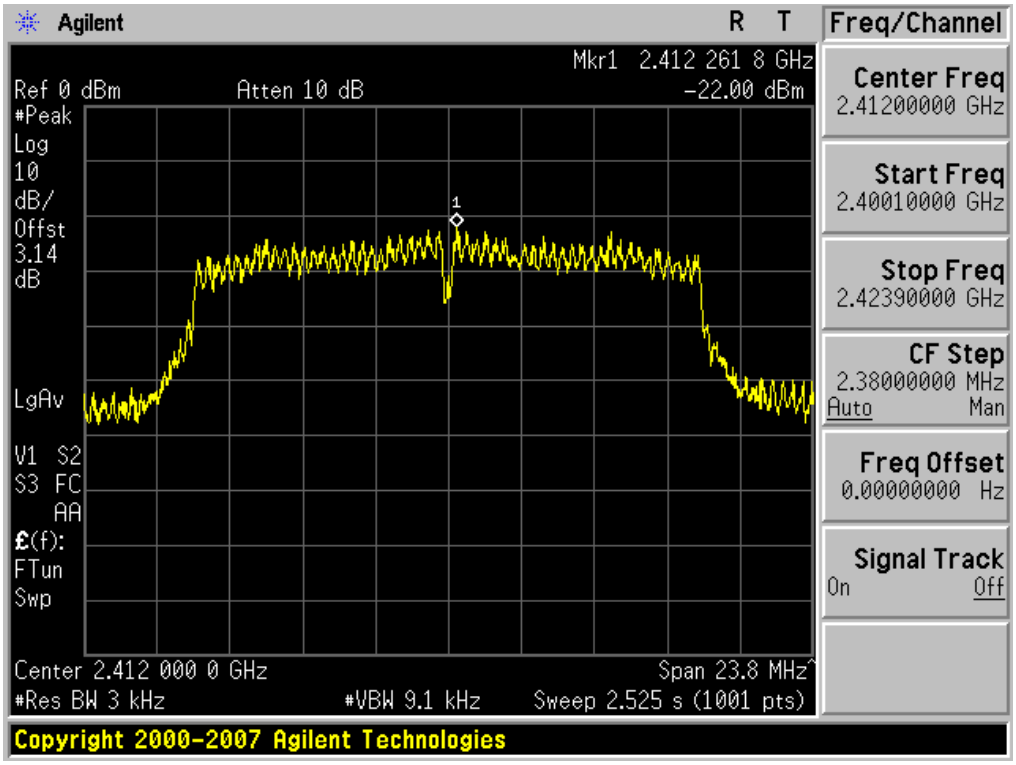
Maximum PKPSD Test Mode: 802.11b & 1Mbps & 2437MHz



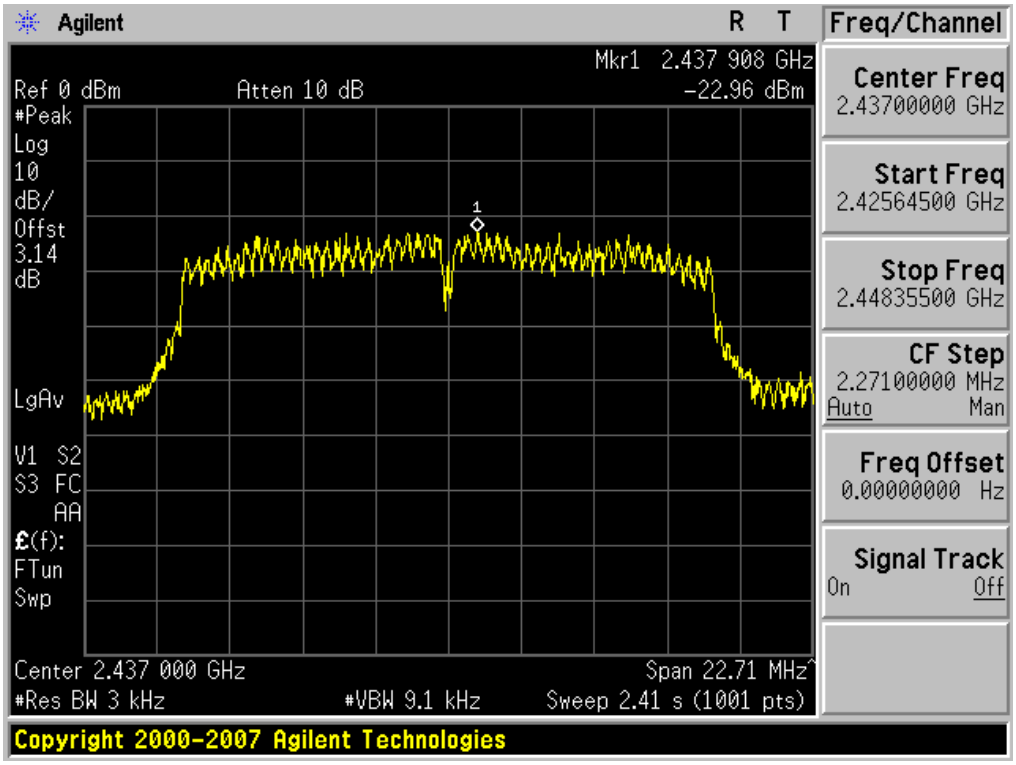
Maximum PKPSD Test Mode: 802.11b & 1Mbps & 2462MHz



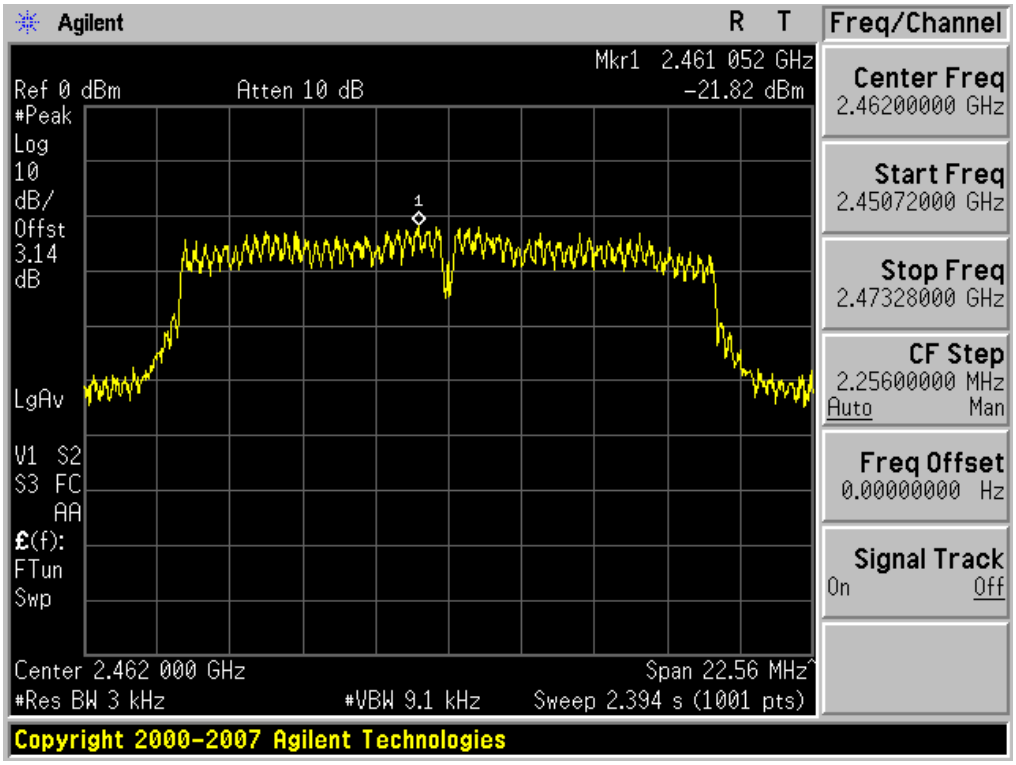
Maximum PKPSD Test Mode: 802.11g & 6Mbps & 2412MHz



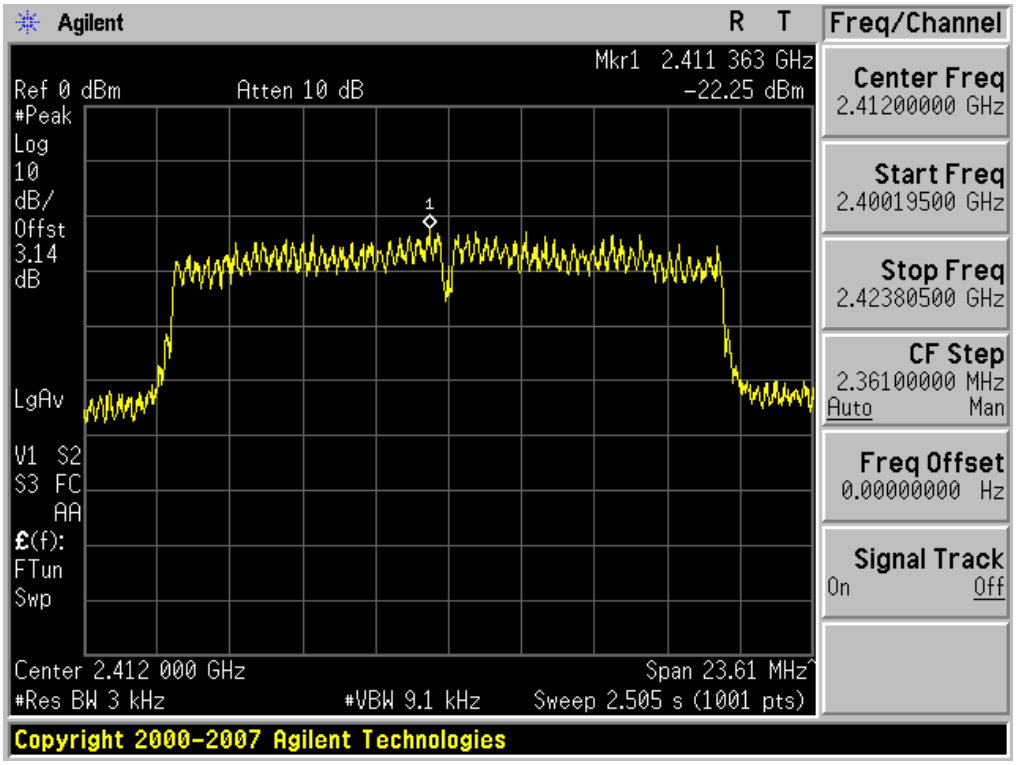
Maximum PKPSD Test Mode: 802.11g & 6Mbps & 2437MHz



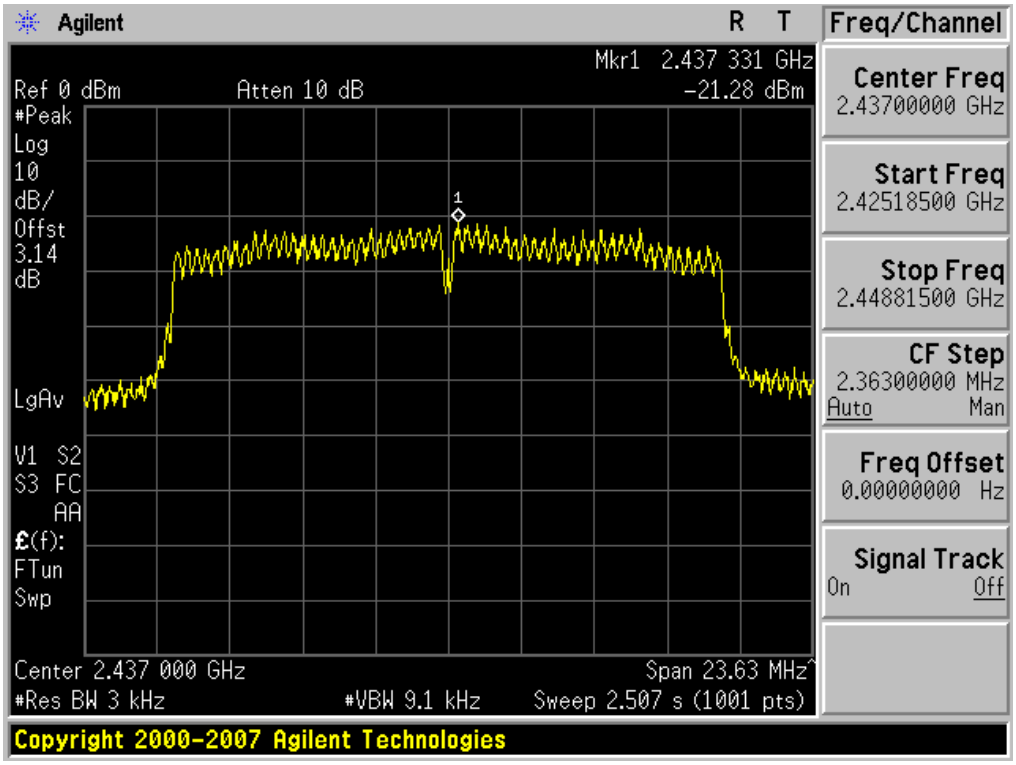
Maximum PKPSD Test Mode: 802.11g & 6Mbps & 2462MHz



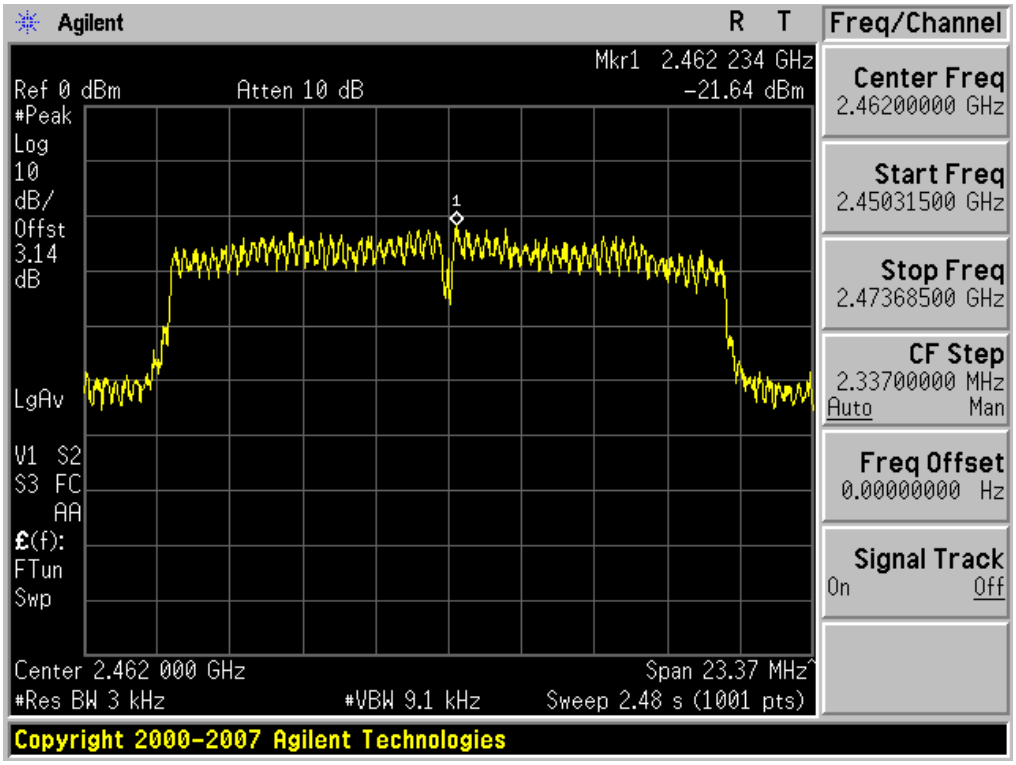
Maximum PKPSD Test Mode: 802.11n(HT20) & MCS0 & 2412MHz



Maximum PKPSD Test Mode: 802.11n(HT20) & MCS0 & 2437MHz



Maximum PKPSD Test Mode: 802.11n(HT20) & MCS0 & 2462MHz



8.4 Out of Band Emissions at the Band Edge / Conducted Spurious Emissions

Test requirements and limit, §15.247(d)

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If **the peak output power procedure** is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated **by at least 20 dB** relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in band average PSD level.

In either case, attenuation to levels below the general emission limits specified in **§15.209(a)** is not required.

▣ TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer.

- Measurement Procedure 1 – Reference Level

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to ≥ 1.5 times the DTS bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum PSD level

- Measurement Procedure 2 - Unwanted Emissions

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = **100 kHz.(Actual 1 MHz , See below note)**
3. Set the VBW ≥ **3 x RBW.(Actual 3 MHz, See below note)**
4. Detector = **peak**.
5. Ensure that the number of measurement points ≥ span/RBW
6. Sweep time = **auto couple.**
7. Trace mode = **max hold.**
8. **Allow the trace to stabilize** (this may take some time, depending on the extent of the span).
9. Use the peak marker function to determine the maximum amplitude level.

Note : The conducted unwanted emission was tested using S/A's spurious measurement function with total 11 measurement sub ranges.
The each of the 11 measurement sub ranges of the S/A's spurious measurement function were set as below.

RBW= 1 MHz, VBW= 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD,
SPAN = Max 3 GHz for each sub range below 15 GHz and Max 5 GHz for each sub range above 15 GHz ,
BINS = At least 9001 for each sub range below 15 GHz and At least 10001 for each sub range above 15 GHz,
Therefore BINS for each measurement sub range must be greater than 2 x SPAN/RBW.

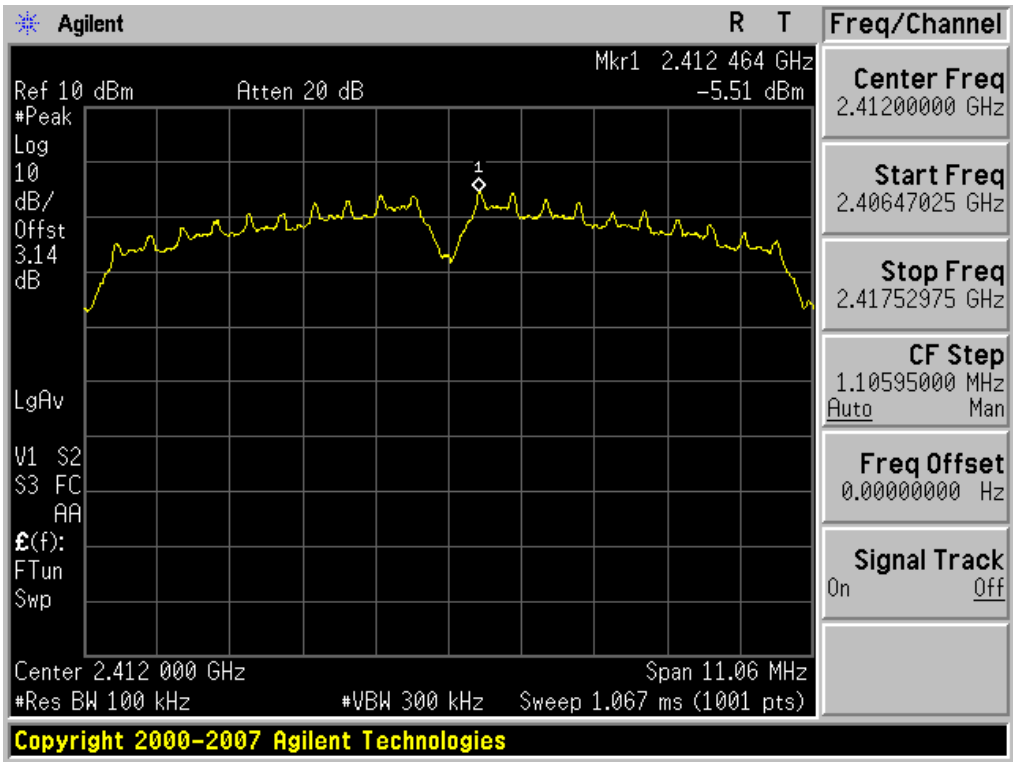
If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 KHz, VBW = 300KHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 KHz BW.

Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.

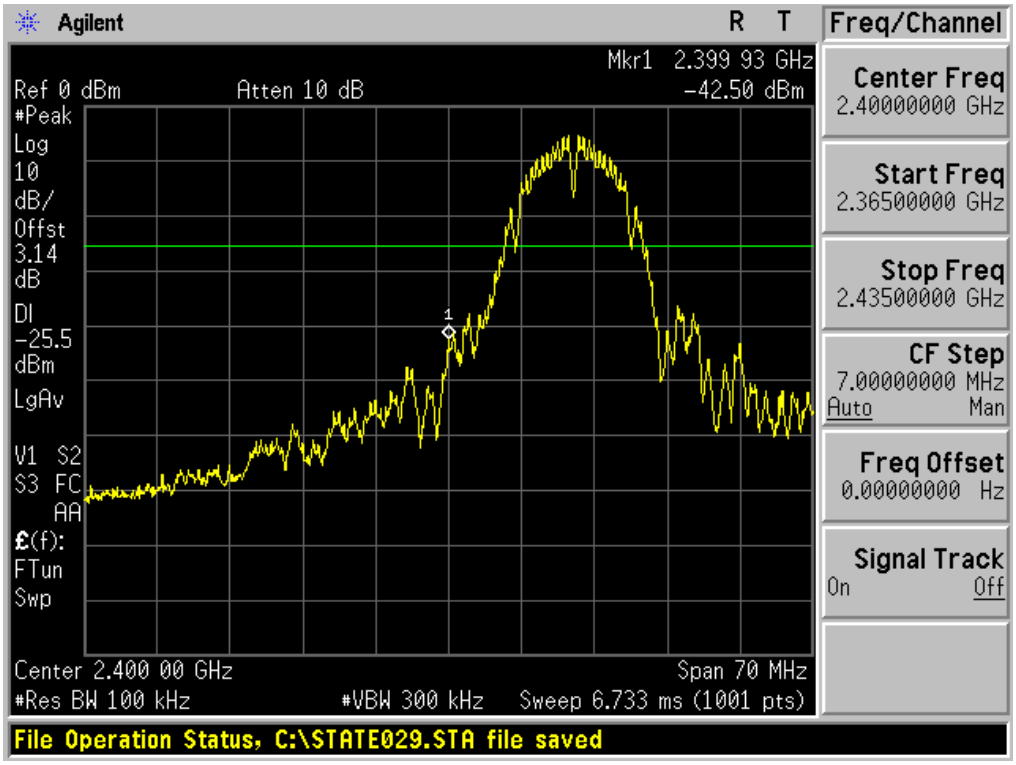
▣ RESULT PLOTS

802.11b & 1Mbps & 2412MHz

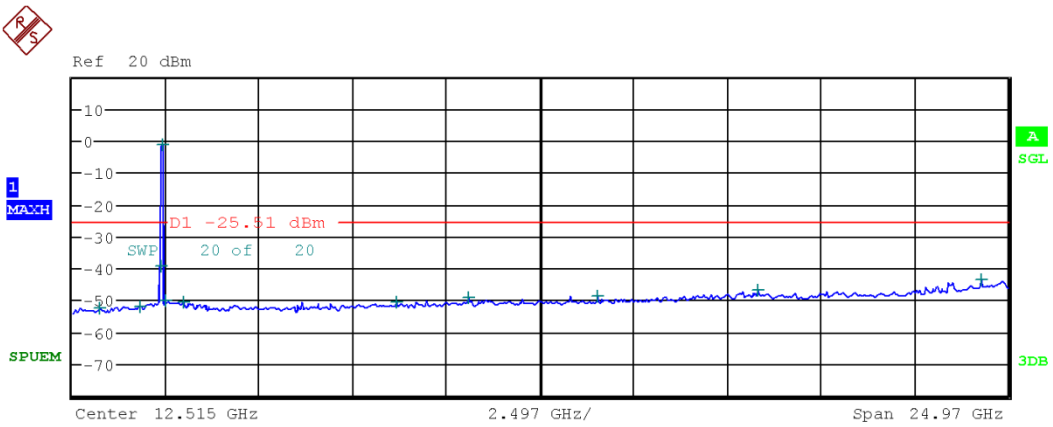
Reference



Low Band-edge



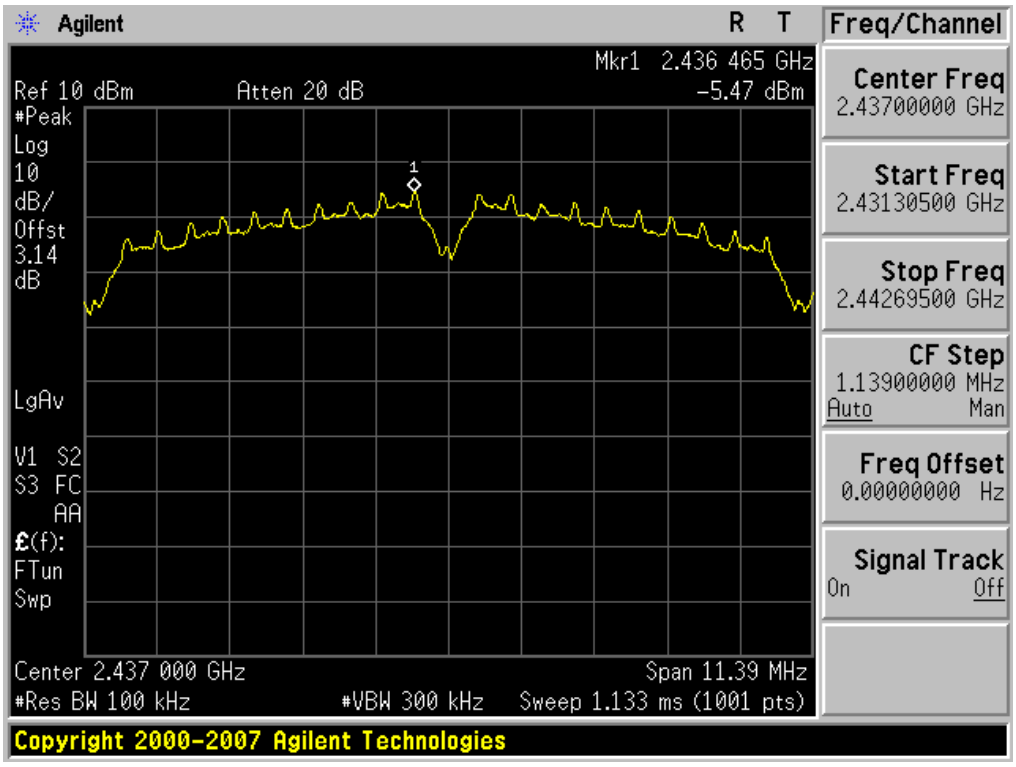
Conducted Spurious Emissions



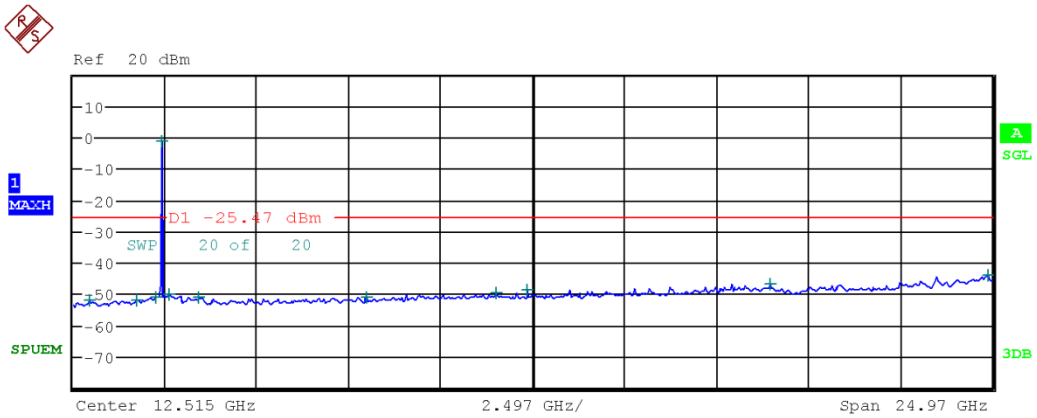
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	750.710000 M	-52.47	-200.00
1.000 G	2.000 G	1.00 M	1.832667 G	-51.90	-200.00
2.000 G	2.400 G	1.00 M	2.399960 G	-39.51	-200.00
2.400 G	2.483 G	1.00 M	2.413160 G	-1.42	-200.00
2.483 G	3.000 G	1.00 M	2.518209 G	-50.27	-200.00
3.000 G	6.000 G	1.00 M	3.003000 G	-50.83	-200.00
6.000 G	9.000 G	1.00 M	8.680333 G	-50.66	-200.00
9.000 G	12.000 G	1.00 M	10.603333 G	-49.39	-200.00
12.000 G	15.000 G	1.00 M	14.039333 G	-48.95	-200.00
15.000 G	20.000 G	1.00 M	18.325500 G	-46.97	-200.00
20.000 G	25.000 G	1.00 M	24.269500 G	-43.84	-200.00

802.11b & 1Mbps & 2437MHz

Reference



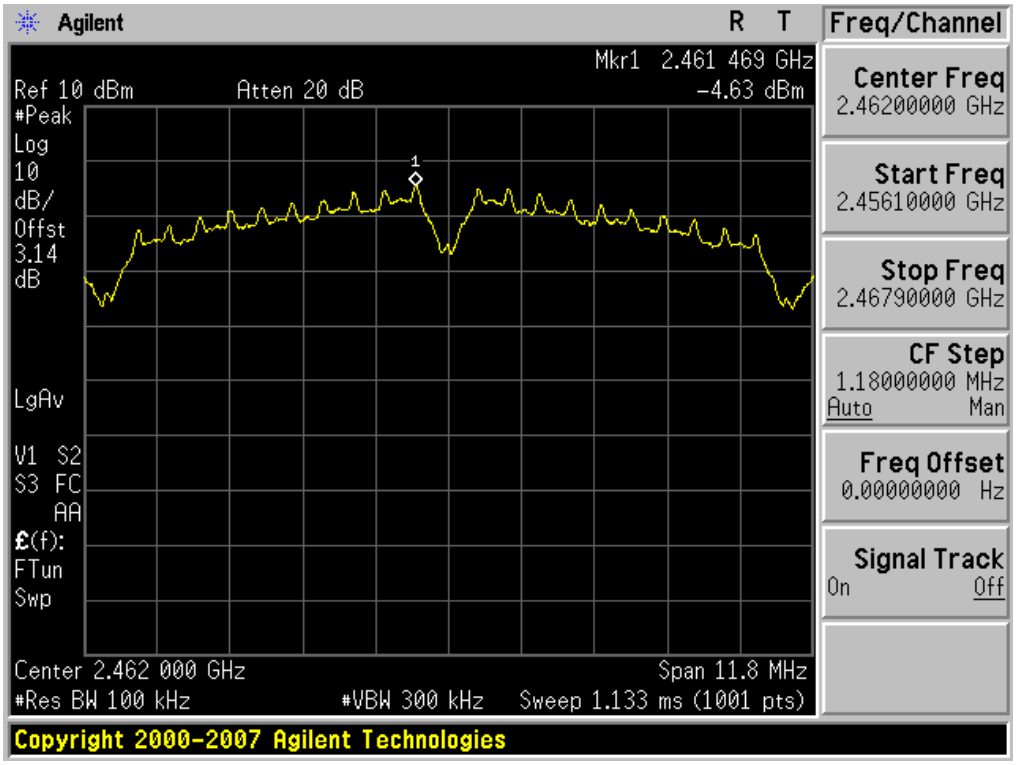
Conducted Spurious Emissions



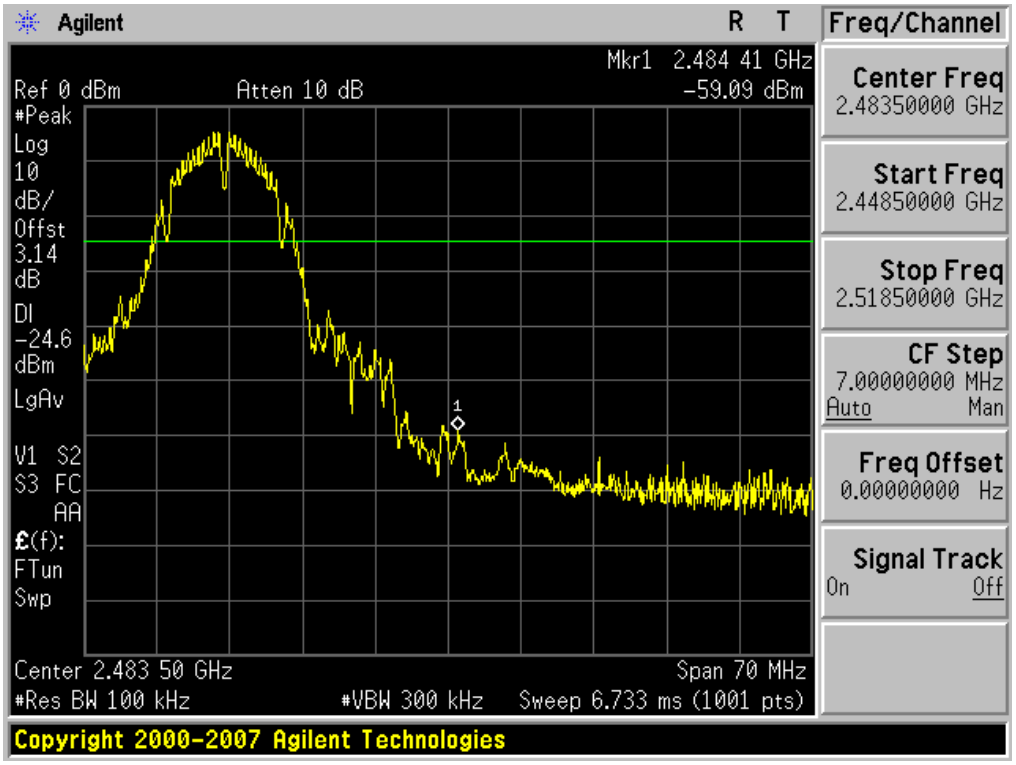
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	463.266667 M	-52.17	-200.00
1.000 G	2.000 G	1.00 M	1.763667 G	-52.06	-200.00
2.000 G	2.400 G	1.00 M	2.250920 G	-51.06	-200.00
2.400 G	2.483 G	1.00 M	2.438022 G	-1.24	-200.00
2.483 G	3.000 G	1.00 M	2.641033 G	-50.16	-200.00
3.000 G	6.000 G	1.00 M	3.438500 G	-50.93	-200.00
6.000 G	9.000 G	1.00 M	8.012333 G	-50.99	-200.00
9.000 G	12.000 G	1.00 M	11.530000 G	-49.92	-200.00
12.000 G	15.000 G	1.00 M	12.347667 G	-48.75	-200.00
15.000 G	20.000 G	1.00 M	18.953500 G	-46.90	-200.00
20.000 G	25.000 G	1.00 M	24.886500 G	-44.32	-200.00

802.11b & 1Mbps & 2462MHz

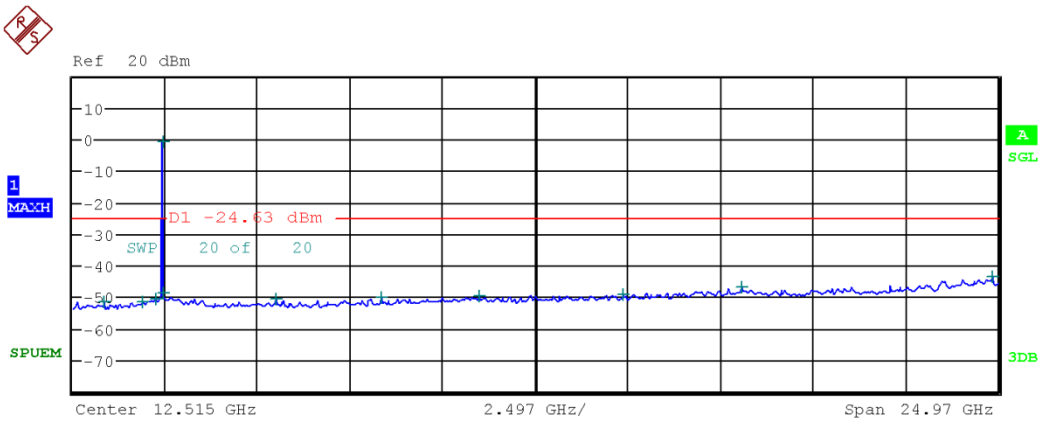
Reference



High Band-edge



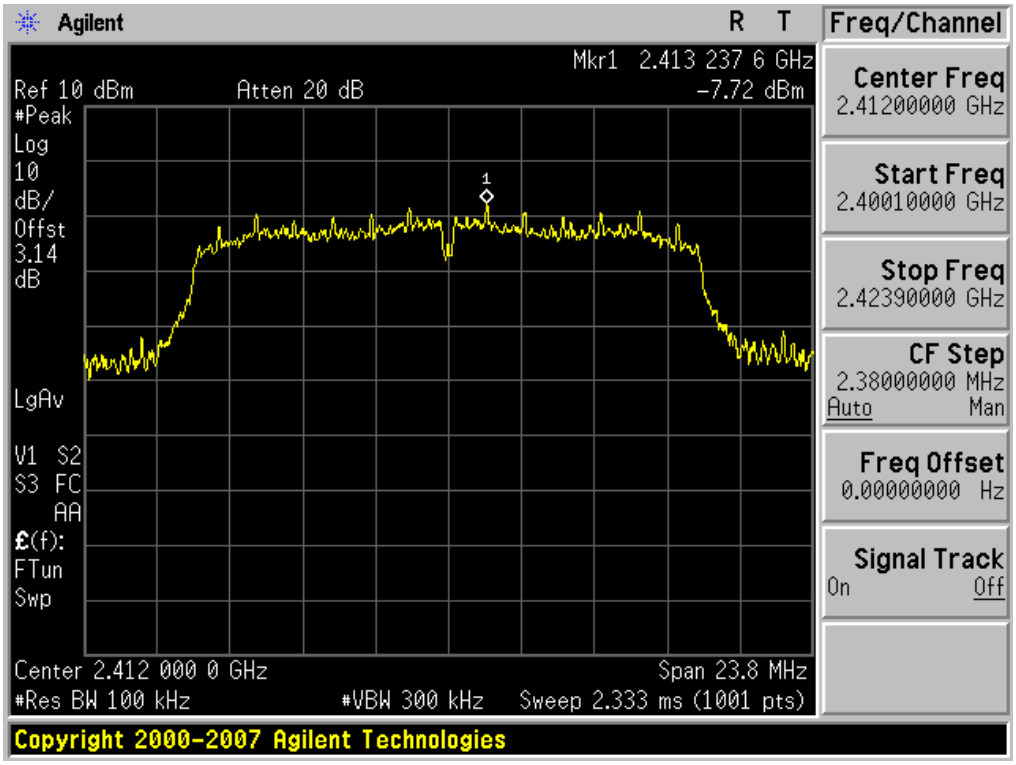
Conducted Spurious Emissions



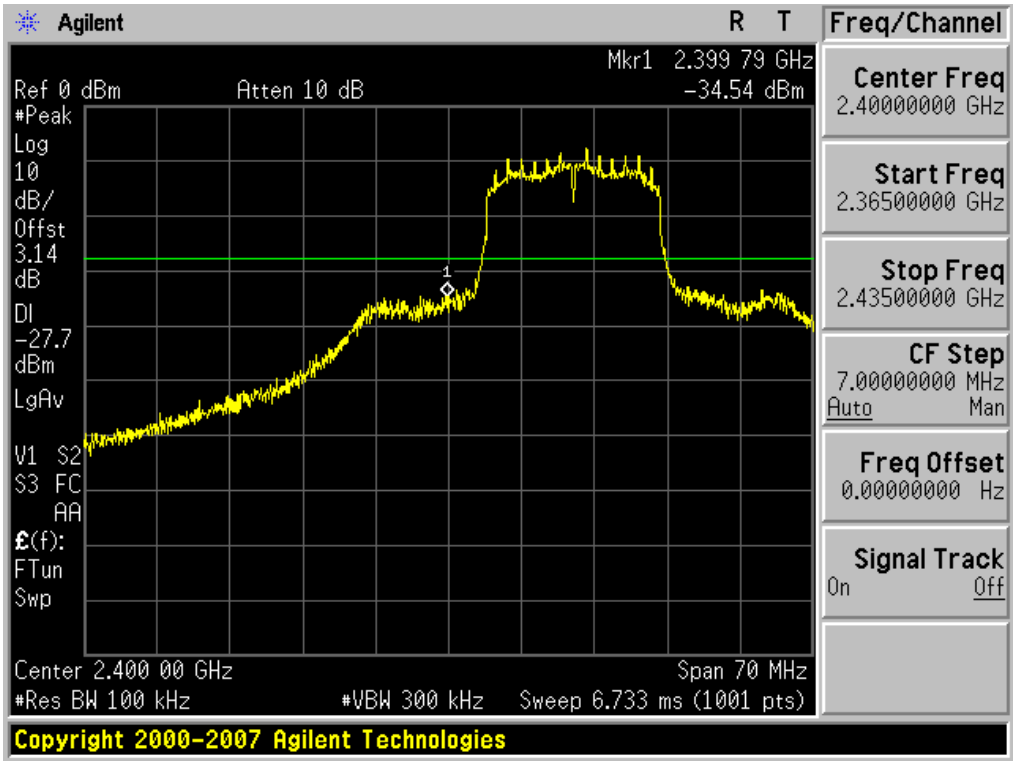
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	866.463333 M	-51.58	-200.00
1.000 G	2.000 G	1.00 M	1.896333 G	-51.37	-200.00
2.000 G	2.400 G	1.00 M	2.285200 G	-50.87	-200.00
2.400 G	2.483 G	1.00 M	2.462984 G	-0.90	-200.00
2.483 G	3.000 G	1.00 M	2.483965 G	-48.63	-200.00
3.000 G	6.000 G	1.00 M	5.493500 G	-50.66	-200.00
6.000 G	9.000 G	1.00 M	8.350333 G	-50.25	-200.00
9.000 G	12.000 G	1.00 M	10.997667 G	-49.85	-200.00
12.000 G	15.000 G	1.00 M	14.894333 G	-49.17	-200.00
15.000 G	20.000 G	1.00 M	18.082000 G	-47.10	-200.00
20.000 G	25.000 G	1.00 M	24.859000 G	-43.83	-200.00

802.11g & 6Mbps & 2412MHz

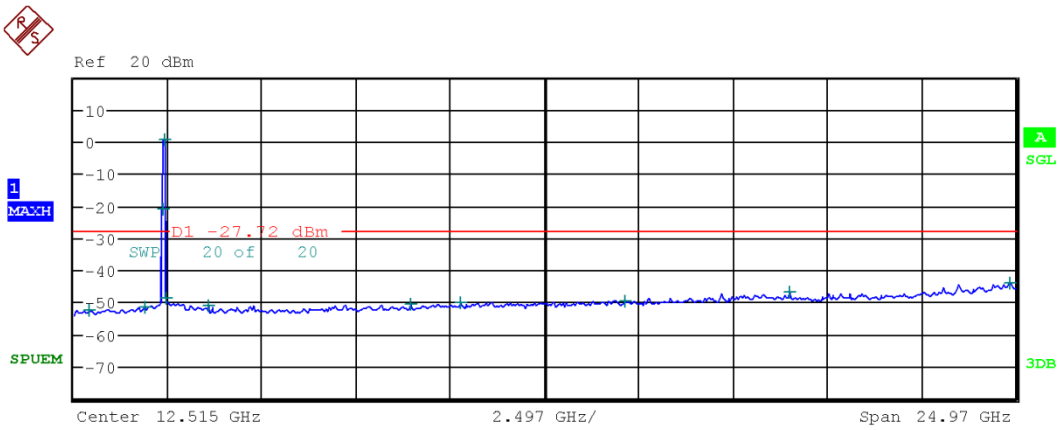
Reference



Low Band-edge



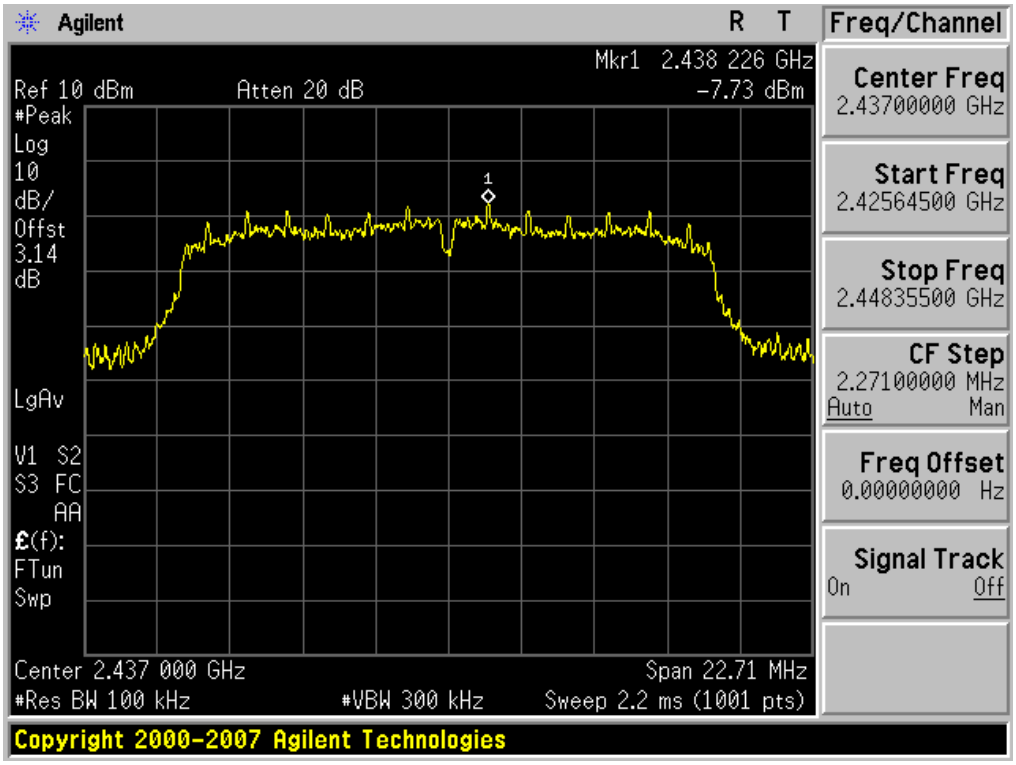
Conducted Spurious Emissions



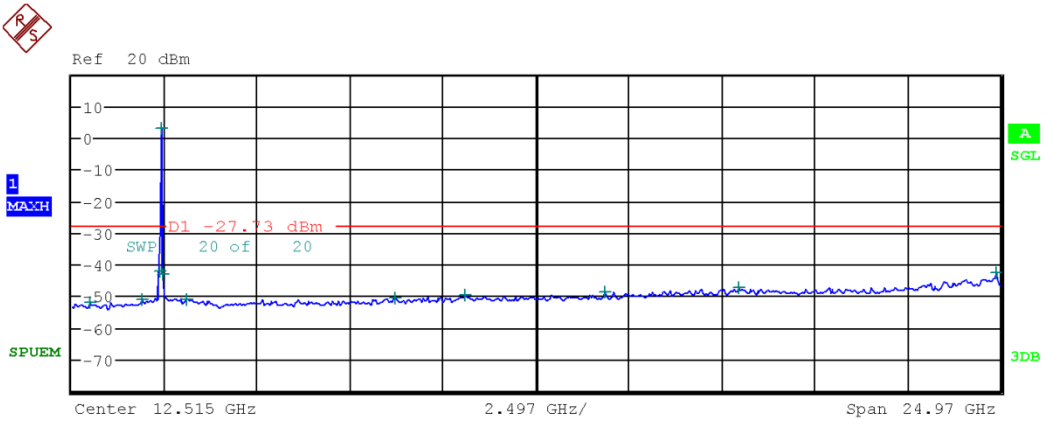
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	418.000000 M	-52.47	-200.00
1.000 G	2.000 G	1.00 M	1.904000 G	-51.50	-200.00
2.000 G	2.400 G	1.00 M	2.392960 G	-21.07	-200.00
2.400 G	2.483 G	1.00 M	2.413623 G	0.45	-200.00
2.483 G	3.000 G	1.00 M	2.483707 G	-48.76	-200.00
3.000 G	6.000 G	1.00 M	3.580000 G	-50.96	-200.00
6.000 G	9.000 G	1.00 M	8.945333 G	-50.80	-200.00
9.000 G	12.000 G	1.00 M	10.259333 G	-50.14	-200.00
12.000 G	15.000 G	1.00 M	14.651667 G	-49.48	-200.00
15.000 G	20.000 G	1.00 M	18.990000 G	-46.98	-200.00
20.000 G	25.000 G	1.00 M	24.829500 G	-44.32	-200.00

802.11g & 6Mbps & 2437MHz

Reference



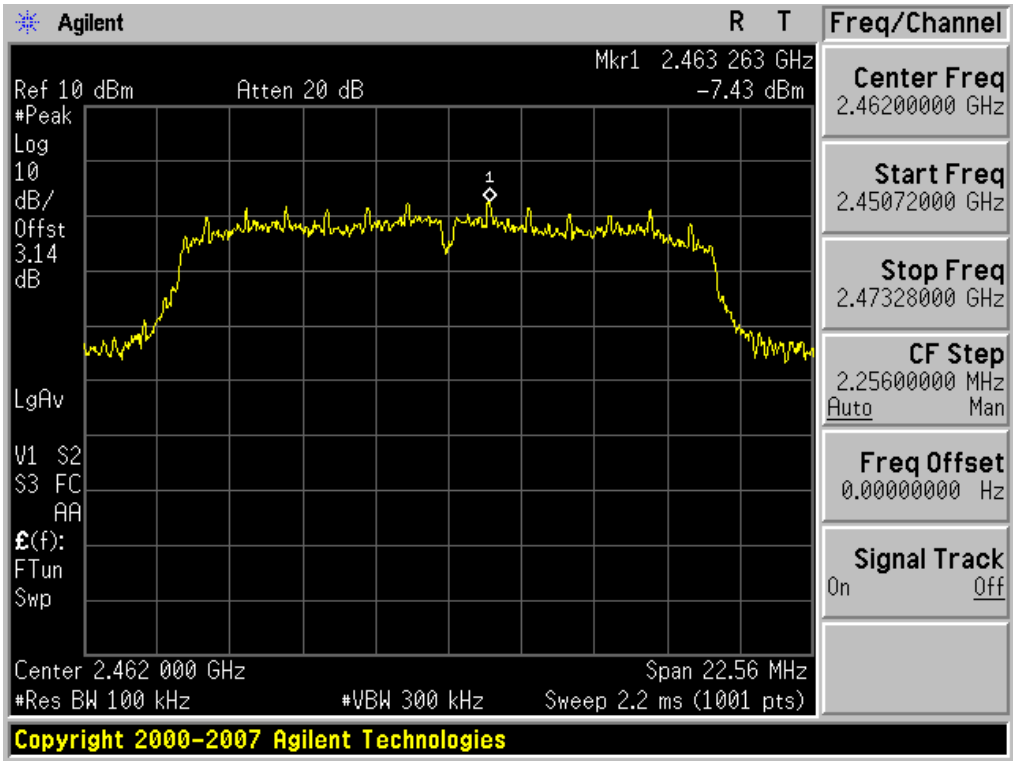
Conducted Spurious Emissions



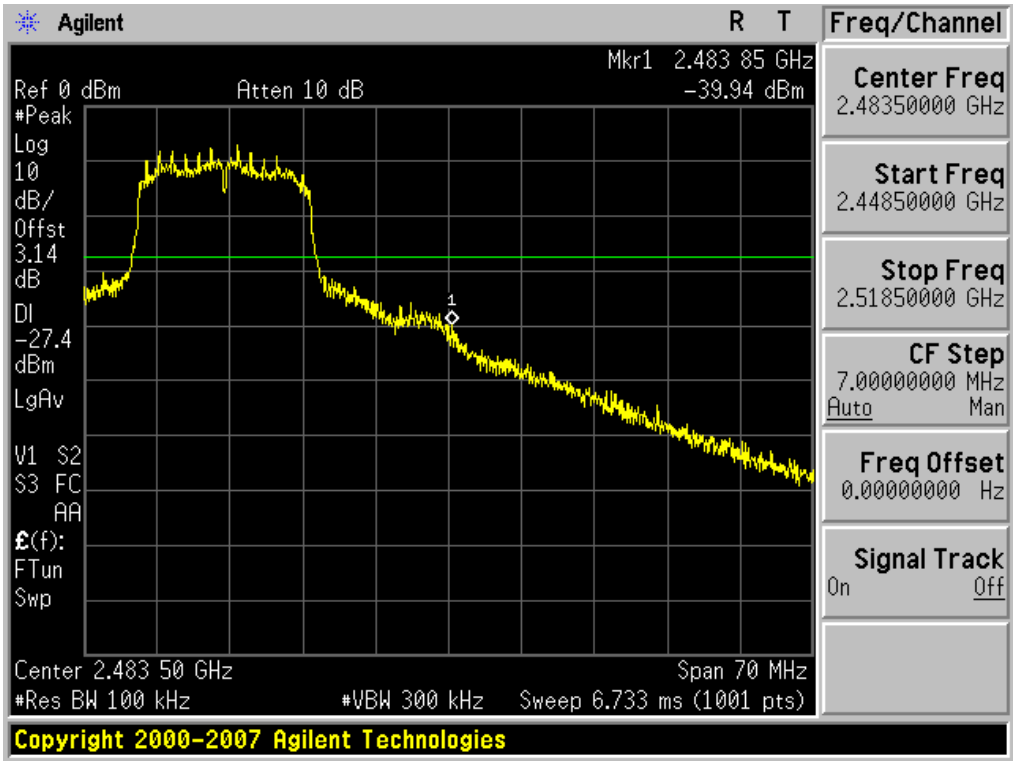
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	518.233333 M	-52.27	-200.00
1.000 G	2.000 G	1.00 M	1.917000 G	-51.35	-200.00
2.000 G	2.400 G	1.00 M	2.397160 G	-42.07	-200.00
2.400 G	2.483 G	1.00 M	2.437024 G	2.75	-200.00
2.483 G	3.000 G	1.00 M	2.487167 G	-43.19	-200.00
3.000 G	6.000 G	1.00 M	3.115500 G	-50.91	-200.00
6.000 G	9.000 G	1.00 M	8.727000 G	-50.79	-200.00
9.000 G	12.000 G	1.00 M	10.594000 G	-49.70	-200.00
12.000 G	15.000 G	1.00 M	14.367000 G	-48.93	-200.00
15.000 G	20.000 G	1.00 M	17.945500 G	-47.30	-200.00
20.000 G	25.000 G	1.00 M	24.873500 G	-42.81	-200.00

802.11g & 6Mbps & 2462MHz

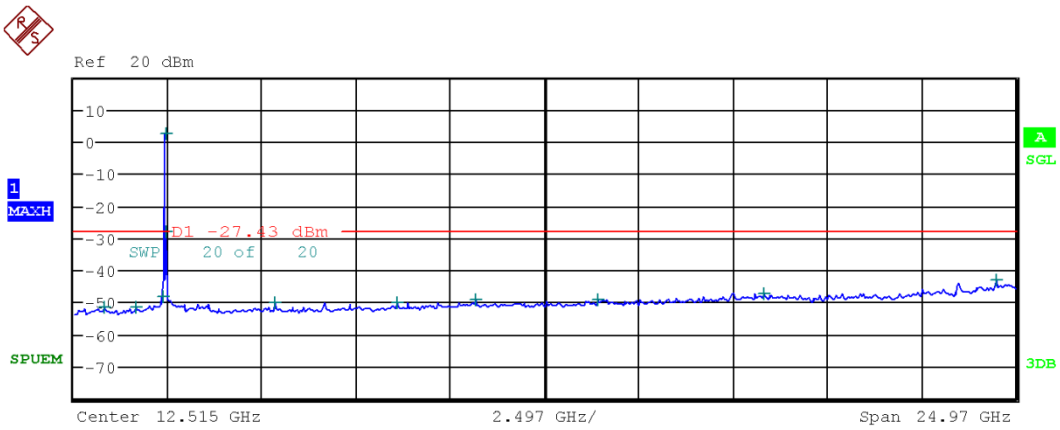
Reference



High Band-edge



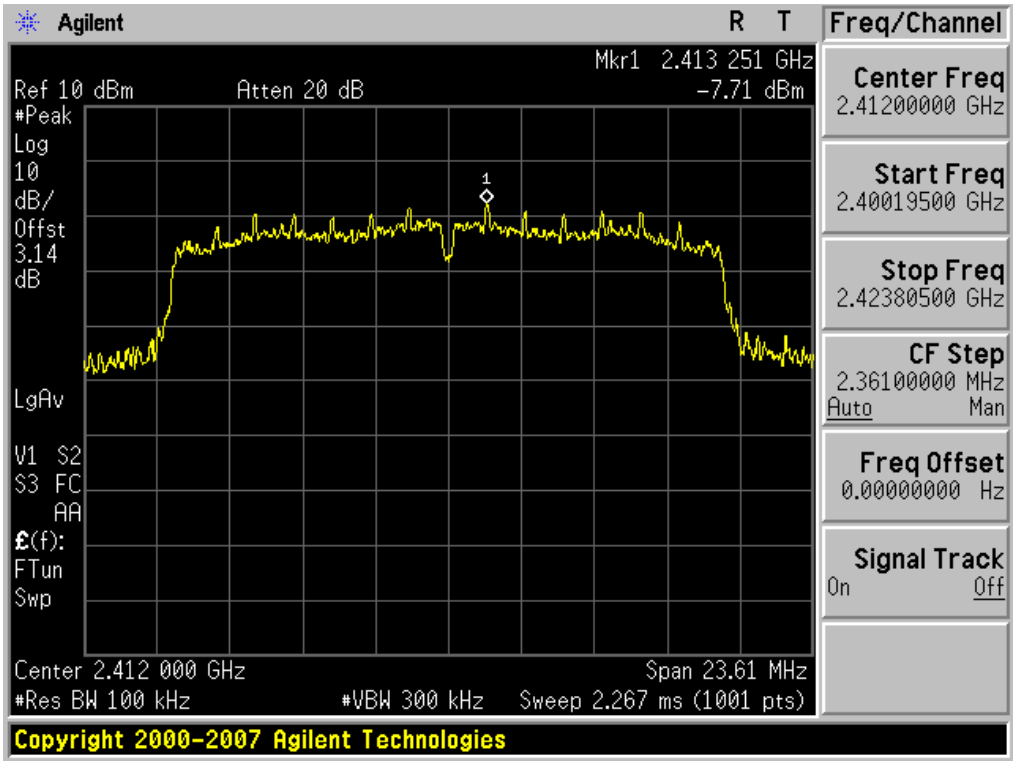
Conducted Spurious Emissions



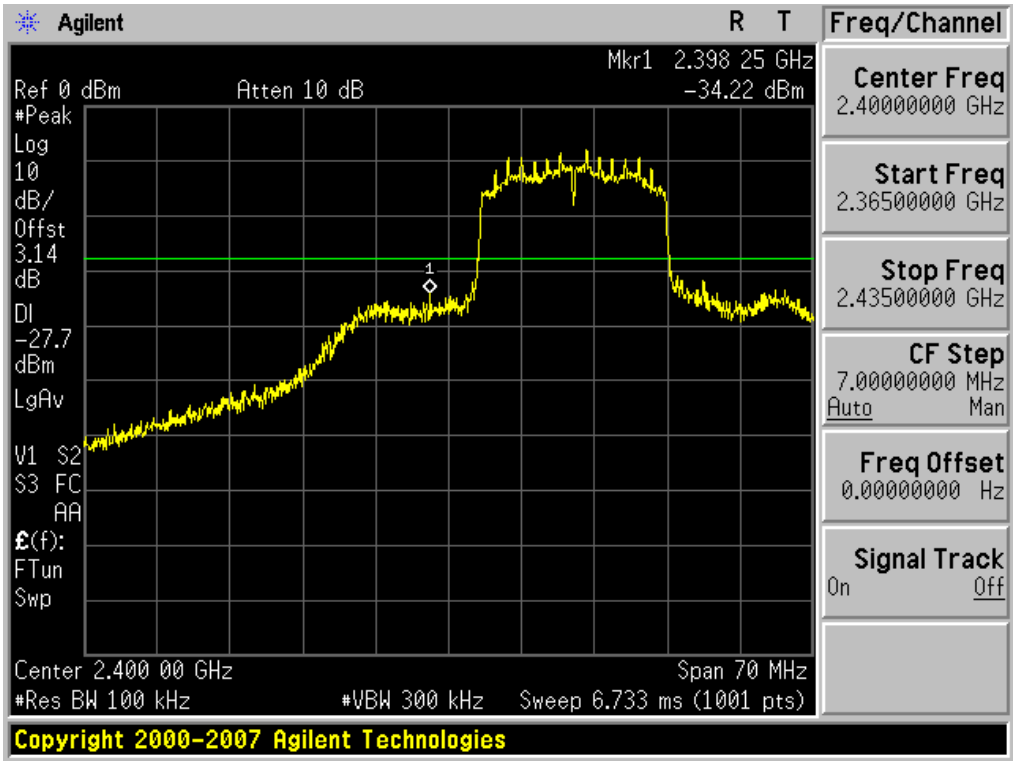
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	827.016667 M	-51.77	-200.00
1.000 G	2.000 G	1.00 M	1.681333 G	-51.65	-200.00
2.000 G	2.400 G	1.00 M	2.398720 G	-48.29	-200.00
2.400 G	2.483 G	1.00 M	2.462107 G	2.32	-200.00
2.483 G	3.000 G	1.00 M	2.483810 G	-28.21	-200.00
3.000 G	6.000 G	1.00 M	5.334000 G	-50.36	-200.00
6.000 G	9.000 G	1.00 M	8.585333 G	-50.03	-200.00
9.000 G	12.000 G	1.00 M	10.693667 G	-49.26	-200.00
12.000 G	15.000 G	1.00 M	13.912667 G	-49.11	-200.00
15.000 G	20.000 G	1.00 M	18.317500 G	-47.20	-200.00
20.000 G	25.000 G	1.00 M	24.495000 G	-43.26	-200.00

802.11n(HT20) & MCS0 & 2412MHz

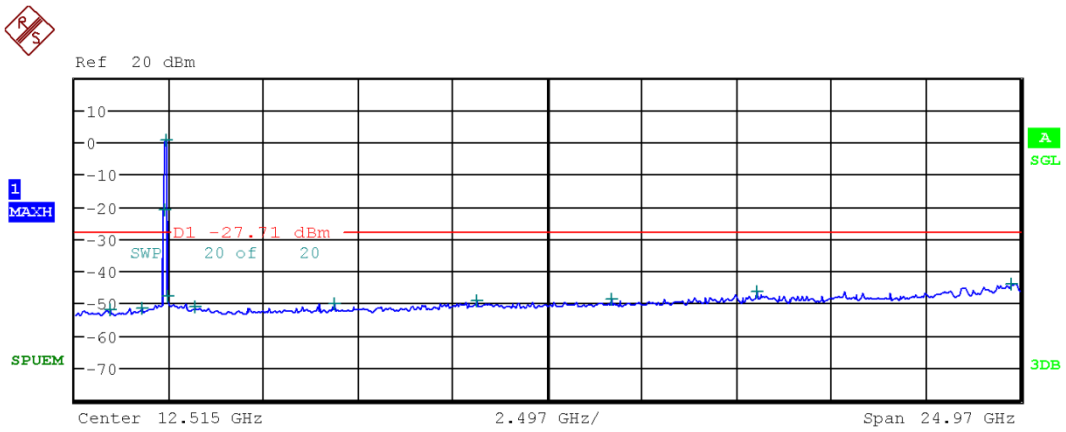
Reference



Low Band-edge



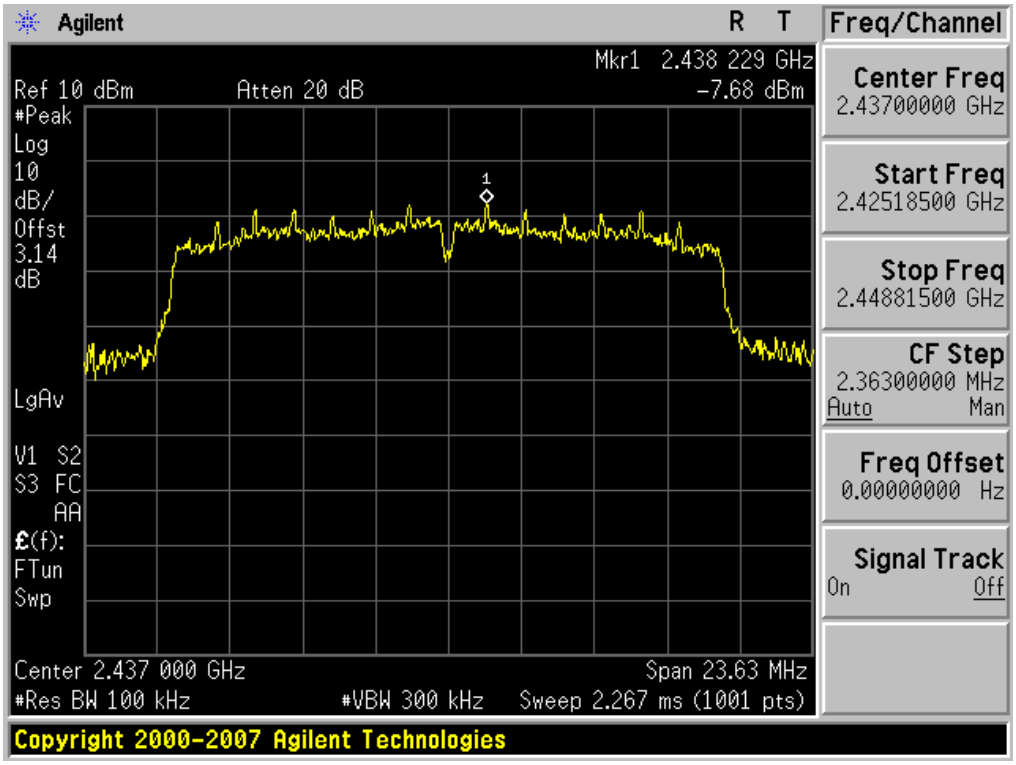
Conducted Spurious Emissions



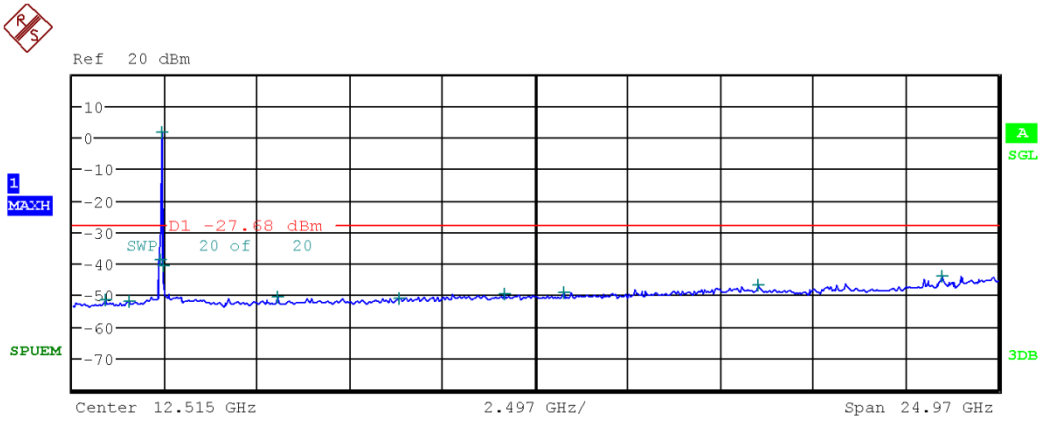
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	943.093333 M	-51.91	-200.00
1.000 G	2.000 G	1.00 M	1.771667 G	-51.38	-200.00
2.000 G	2.400 G	1.00 M	2.393320 G	-21.18	-200.00
2.400 G	2.483 G	1.00 M	2.411235 G	0.49	-200.00
2.483 G	3.000 G	1.00 M	2.487012 G	-47.67	-200.00
3.000 G	6.000 G	1.00 M	3.175000 G	-51.22	-200.00
6.000 G	9.000 G	1.00 M	6.883000 G	-50.26	-200.00
9.000 G	12.000 G	1.00 M	10.621000 G	-49.33	-200.00
12.000 G	15.000 G	1.00 M	14.215000 G	-48.89	-200.00
15.000 G	20.000 G	1.00 M	18.048000 G	-46.65	-200.00
20.000 G	25.000 G	1.00 M	24.759000 G	-44.25	-200.00

802.11n(HT20) & MCS0 & 2437MHz

Reference



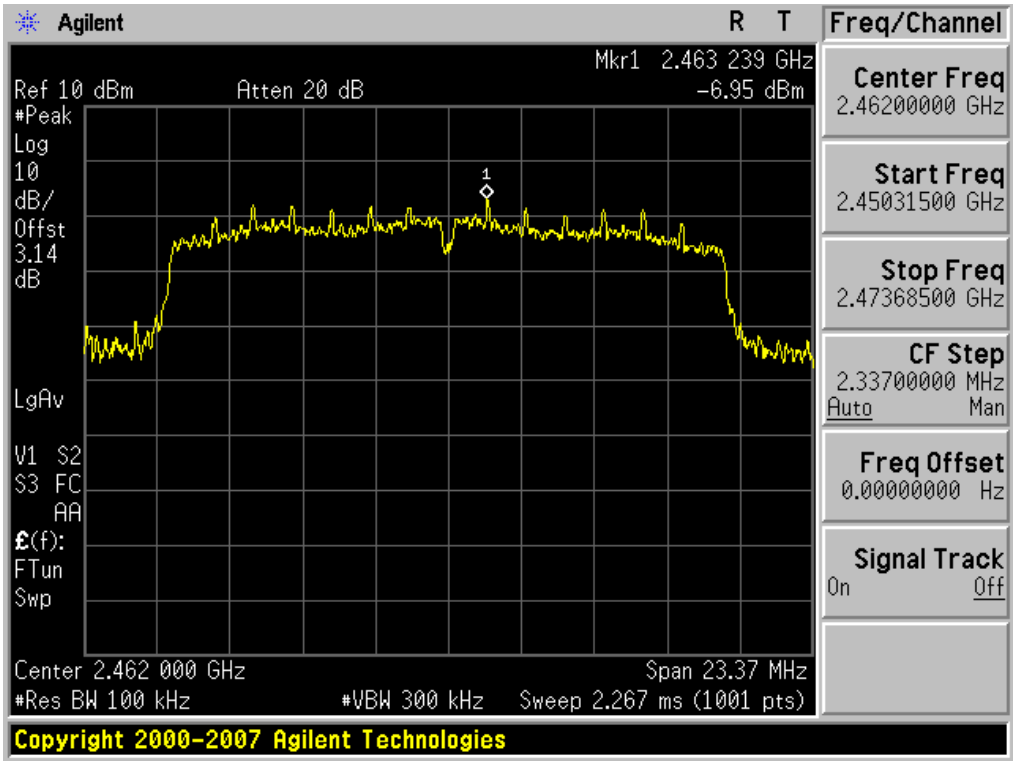
Conducted Spurious Emissions



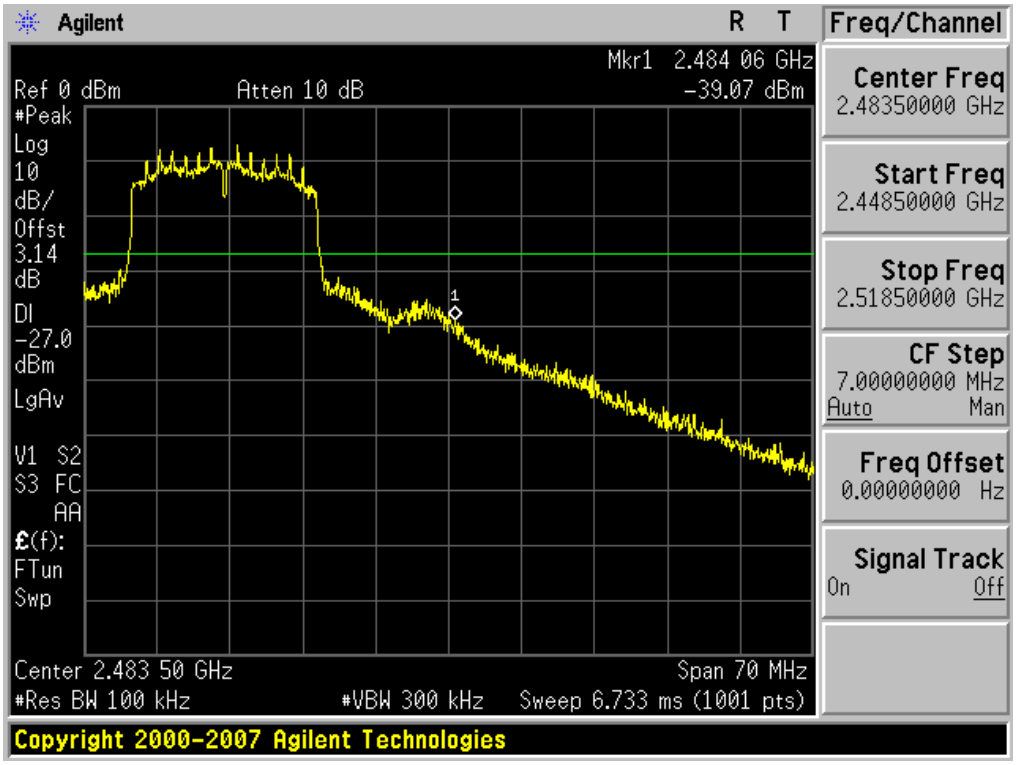
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	914.640000 M	-51.41	-200.00
1.000 G	2.000 G	1.00 M	1.532000 G	-51.86	-200.00
2.000 G	2.400 G	1.00 M	2.395560 G	-38.77	-200.00
2.400 G	2.483 G	1.00 M	2.436828 G	1.63	-200.00
2.483 G	3.000 G	1.00 M	2.485359 G	-40.82	-200.00
3.000 G	6.000 G	1.00 M	5.558000 G	-50.77	-200.00
6.000 G	9.000 G	1.00 M	8.814333 G	-51.13	-200.00
9.000 G	12.000 G	1.00 M	11.684667 G	-49.56	-200.00
12.000 G	15.000 G	1.00 M	13.289333 G	-49.46	-200.00
15.000 G	20.000 G	1.00 M	18.534500 G	-47.08	-200.00
20.000 G	25.000 G	1.00 M	23.482500 G	-44.19	-200.00

802.11n(HT20) & MCS0 & 2462MHz

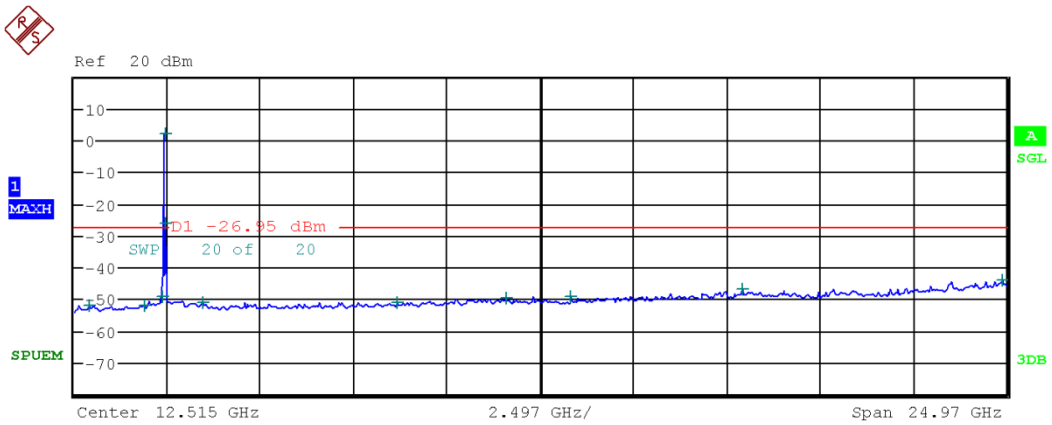
Reference



High Band-edge



Conducted Spurious Emissions



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	1.00 M	434.490000 M	-52.02	-200.00
1.000 G	2.000 G	1.00 M	1.901333 G	-52.03	-200.00
2.000 G	2.400 G	1.00 M	2.395000 G	-49.17	-200.00
2.400 G	2.483 G	1.00 M	2.459473 G	1.96	-200.00
2.483 G	3.000 G	1.00 M	2.483965 G	-26.28	-200.00
3.000 G	6.000 G	1.00 M	3.470000 G	-50.98	-200.00
6.000 G	9.000 G	1.00 M	8.666667 G	-51.01	-200.00
9.000 G	12.000 G	1.00 M	11.575333 G	-49.86	-200.00
12.000 G	15.000 G	1.00 M	13.297667 G	-49.18	-200.00
15.000 G	20.000 G	1.00 M	17.920500 G	-47.04	-200.00
20.000 G	25.000 G	1.00 M	24.887000 G	-44.12	-200.00

8.5 Radiated Spurious Emissions

Test Requirements and limit,§15.247(d), §15.205, §15.209& RSS-210 [A8.5], RSS-Gen [7.2.2]

In any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
0.009 – 0.490	2400/F(KHz)	300
0.490 – 1.705	24000/F(KHz)	30
1.705 – 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

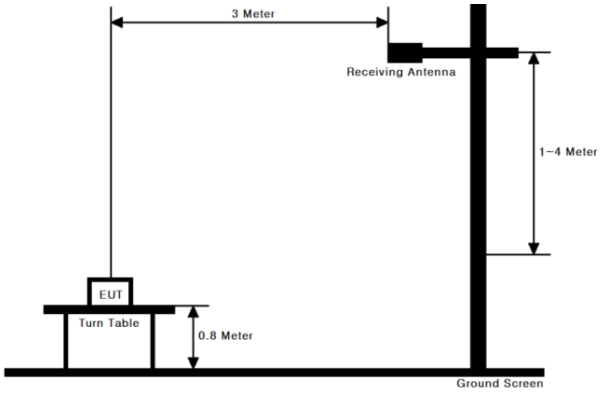
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	3600 ~ 4400	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	4.5 ~ 5.15	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	5.35 ~ 5.46	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	7.25 ~ 7.75	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	8.025 ~ 8.5	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.0 ~ 9.2	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	9.3 ~ 9.5	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	10.6 ~ 12.7	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900	13.25 ~ 13.4	
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240			
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

Test Configuration



▣ TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

▣ Measurement Instrument Setting for Radiated Emission Measurements.

Peak Measurement : 12.2.4 of KDB 558074 v03r1

RBW = As specified in below table , VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

Average Measurement : 12.2.5 of KDB 558074 v03r1

1. RBW = 1 MHz (unless otherwise specified).
2. VBW ≥ 3 x RBW.
3. Detector = RMS (Number of points ≥ 2 x Span / RBW)
4. Averaging type = power (i.e., RMS).
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Band	Duty Cycle (%)	T_{on}(ms)	T_{on}+ T_{off} (ms)	DCF = 10log(1/Duty) (dB)
802.11b	98.94	8.400	0.12	0.05
802.11g	92.64	1.385	0.73	0.33
2.4GHz 802.11n(HT20)	92.20	1.300	0.77	0.35
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Note. Not required duty cycle correction factor. (Duty cycle of greater than or equal to 98%.)

9KHz ~ 25GHz Data(*802.11b & 1Mbps*)

▪ Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.61	H	Z	PK	49.58	- 3.38	-	-	46.20	74.00	27.80
2389.84	H	Z	AV	38.26	- 3.38	0.05	-	34.93	54.00	19.07
4824.05	H	Z	PK	47.89	5.43	-	-	53.32	74.00	20.68
4824.01	H	Z	AV	43.01	5.43	0.05	-	48.49	54.00	5.51
-	-	-	-	-	-	-	-	-	-	-

▪ Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4873.90	H	Z	PK	47.77	5.64	-	-	53.41	74.00	20.59
4874.00	H	Z	AV	42.54	5.64	0.05	-	48.23	54.00	5.77
-	-	-	-	-	-	-	-	-	-	-

▪ Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.67	H	Z	PK	43.28	- 2.79	-	-	40.49	74.00	33.51
2483.55	H	Z	AV	33.70	- 2.79	0.05	-	30.96	54.00	23.04
4924.17	H	Z	PK	48.34	5.99	-	-	54.33	74.00	19.67
4924.00	H	Z	AV	43.16	5.99	0.05	-	49.20	54.00	4.80
-	-	-	-	-	-	-	-	-	-	-

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   So Distance Correction Factor :- 9.54dB = 20*log(1m/3m)
2. No other spurious and harmonic emissions were found greater than listed emissions on above table.
3. Above listed point data is the worst case data.
4. Sample Calculation.

   Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCF = Duty Cycle Correction Factor.

9KHz ~ 25GHz Data(*802.11g & 6Mbps*)

▪ Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.96	H	Z	PK	56.71	- 3.38	-	-	53.33	74.00	20.67
2389.94	H	Z	AV	42.23	- 3.38	0.33	-	39.18	54.00	14.82
4823.82	H	Z	PK	44.30	5.43	-	-	49.73	74.00	24.27
4823.78	H	Z	AV	34.04	5.43	0.33	-	39.80	54.00	14.20
-	-	-	-	-	-	-	-	-	-	-

▪ Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.18	H	Z	PK	46.06	5.64	-	-	51.70	74.00	22.30
4874.17	H	Z	AV	35.46	5.64	0.33	-	41.43	54.00	12.57
-	-	-	-	-	-	-	-	-	-	-

▪ Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.85	H	Z	PK	53.98	- 2.79	-	-	51.19	74.00	22.81
2483.67	H	Z	AV	40.95	- 2.79	0.33	-	38.49	54.00	15.51
4923.45	H	Z	PK	45.98	5.99	-	-	51.97	74.00	22.03
4923.82	H	Z	AV	35.29	5.99	0.33	-	41.61	54.00	12.39
-	-	-	-	-	-	-	-	-	-	-

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   So Distance Correction Factor :- 9.54dB = 20*log(1m/3m)
2. No other spurious and harmonic emissions were found greater than listed emissions on above table.
3. Above listed point data is the worst case data.
4. Sample Calculation.

   Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCF = Duty Cycle Correction Factor.

9KHz ~ 25GHz Data(*802.11n HT20 & MCS0*)

▪ Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.86	H	Z	PK	60.60	- 3.38	-	-	57.22	74.00	16.78
2389.91	H	Z	AV	44.38	- 3.38	0.35	-	41.35	54.00	12.65
4823.94	H	Z	PK	45.14	5.43	-	-	50.57	74.00	23.43
4823.96	H	Z	AV	34.69	5.43	0.35	-	40.47	54.00	13.53
-	-	-	-	-	-	-	-	-	-	-

▪ Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4873.86	H	Z	PK	45.76	5.64	-	-	51.40	74.00	22.60
4873.81	H	Z	AV	34.81	5.64	0.35	-	40.80	54.00	13.20
-	-	-	-	-	-	-	-	-	-	-

▪ Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.54	H	Z	PK	57.73	- 2.79	-	-	54.94	74.00	19.06
2483.65	H	Z	AV	43.03	- 2.79	0.35	-	40.59	54.00	13.41
4924.38	H	Z	PK	45.77	5.99	-	-	51.76	74.00	22.24
4924.34	H	Z	AV	34.91	5.99	0.35	-	41.25	54.00	12.75
-	-	-	-	-	-	-	-	-	-	-

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   So Distance Correction Factor :- 9.54dB = 20*log(1m/3m)
2. No other spurious and harmonic emissions were found greater than listed emissions on above table.
3. Above listed point data is the worst case data.
4. Sample Calculation.

   Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCF = Duty Cycle Correction Factor.

8.6 Power-line Conducted Emissions

Test Requirements and limit, §15.207& RSS-Gen [7.2.2]

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs for the actual connections between EUT and support equipment.

Test Mode

The all modes of EUT operation were investigated and the worst case mode was reported.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

▣ RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test Mode: 802.11b (2.4GHz Band)

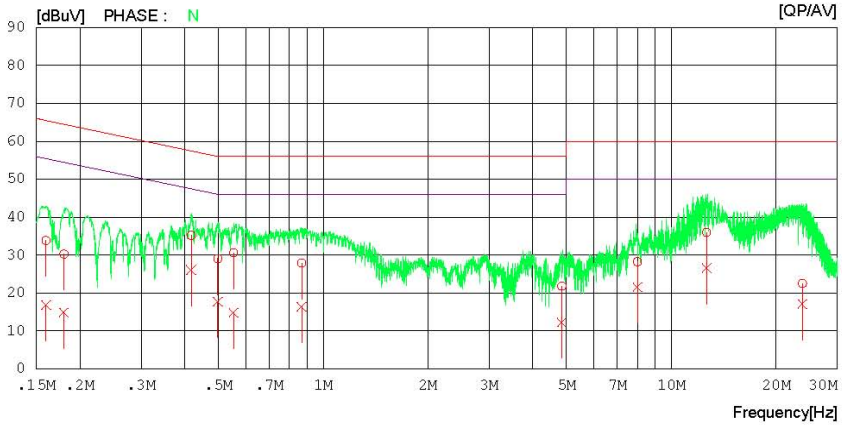
Digital EMC

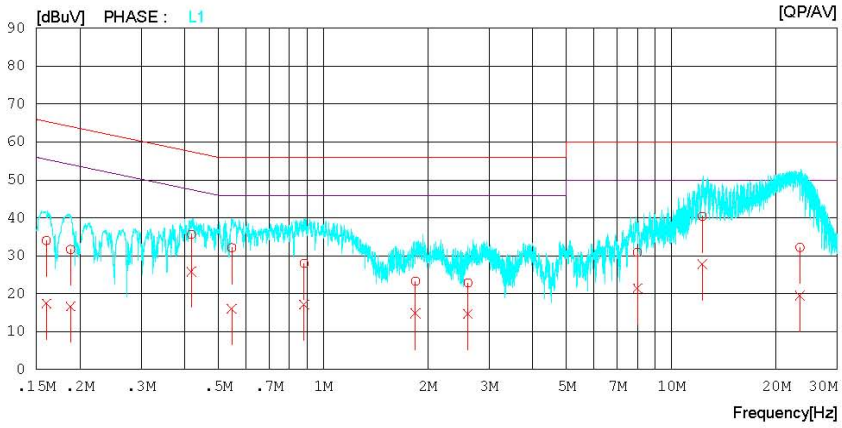
Results of Conducted Emission

Digital EMC
Date : 2013-11-05

Model No.	:	CREMA-0610L-B	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:	Identical prototype	Temp/Humi.	:	25 'C 51 % R.H.
Test Condition	:	WLAN	Operator	:	H.H.LEE
Memo	:	2.4GHz / 802.11b			

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (List)

Test Mode: 802.11b (2.4GHz Band)

Results of Conducted Emission

Digital EMC
Date : 2013-11-05

Model No.	: CREMA-0610L-B	Referrence No.	:
Type	:	Power Supply	: 120 V 60 Hz
Serial No.	: Identical prototype	Temp/Humi.	: 25 'C 51 % R.H.
Test Condition	: WLAN	Operator	: H.H.LEE

Memo : 2.4GHz / 802.11b

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15983	33.7	16.7	0.1	33.8	16.8	65.5	55.5	31.7	38.7	N
2	0.18002	30.2	14.7	0.1	30.3	14.8	64.5	54.5	34.2	39.7	N
3	0.41788	35.1	26.0	0.1	35.2	26.1	57.5	47.5	22.3	21.4	N
4	0.49817	29.0	17.7	0.1	29.1	17.8	56.0	46.0	26.9	28.2	N
5	0.55307	30.5	14.8	0.1	30.6	14.9	56.0	46.0	25.4	31.1	N
6	0.86757	27.7	16.1	0.2	27.9	16.3	56.0	46.0	28.1	29.7	N
7	4.84660	21.3	11.8	0.5	21.8	12.3	56.0	46.0	34.2	33.7	N
8	7.99560	27.8	21.1	0.4	28.2	21.5	60.0	50.0	31.8	28.5	N
9	12.63480	35.5	26.1	0.5	36.0	26.6	60.0	50.0	24.0	23.4	N
10	23.81820	21.8	16.4	0.7	22.5	17.1	60.0	50.0	37.5	32.9	N
11	0.16029	33.9	17.3	0.1	34.0	17.4	65.4	55.4	31.4	38.0	L1
12	0.18827	31.6	16.6	0.1	31.7	16.7	64.1	54.1	32.4	37.4	L1
13	0.41855	35.6	25.8	0.1	35.7	25.9	57.5	47.5	21.8	21.6	L1
14	0.54658	32.1	16.0	0.1	32.2	16.1	56.0	46.0	23.8	29.9	L1
15	0.88121	27.8	17.0	0.2	28.0	17.2	56.0	46.0	28.0	28.8	L1
16	1.84160	23.0	14.6	0.3	23.3	14.9	56.0	46.0	32.7	31.1	L1
17	2.60480	22.6	14.4	0.3	22.9	14.7	56.0	46.0	33.1	31.3	L1
18	7.99620	30.6	21.1	0.4	31.0	21.5	60.0	50.0	29.0	28.5	L1
19	12.27980	39.9	27.4	0.5	40.4	27.9	60.0	50.0	19.6	22.1	L1
20	23.43040	31.5	18.8	0.7	32.2	19.5	60.0	50.0	27.8	30.5	L1

8.7 Occupied Bandwidth

Test Requirements, RSS-Gen [4.6.1]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

▣ TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%.
The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted.
Where practical,a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

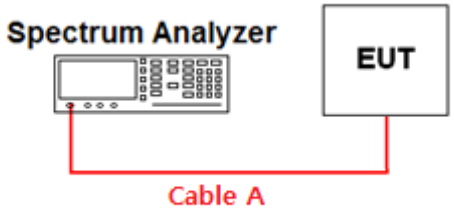
▣ TEST RESULTS: N/A

9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Horn Antenna	ETS	3115	2013.02.28	2015.02.28	00021097
Multimeter	HP	34401A	2013.02.27	2014.02.27	3146A13475
DC Power Supply	HP	6622A	2013.02.27	2014.02.27	3448A03760
Horn Antenna	ETS	3115	2012.02.20	2014.02.20	6419
Horn Antenna	A.H.Systems Inc.	SAS-574	2013.03.20	2015.03.20	154
Horn Antenna	A.H.Systems Inc.	SAS-574	2013.05.27	2015.05.27	155
PreAmplifier	Agilent	8449B	2013.02.27	2014.02.27	3008A00370
Vector Signal Generator	Rohde Schwarz	SMJ100A	2013.01.08	2014.01.08	100148
3dB Attenuator	Aeroflex/Weinschel	56-3	2013.09.12	2014.09.12	Y2342
Wideband Power Sensor	Rohde Schwarz	NRP-Z81	2013.05.27	2014.05.27	1137.9009.02-101001
Spectrum Analyzer	Agilent Technologies	E4440A	2013.10.24	2014.10.24	US45303051
Thermohygrometer	BODYCOM	BJ5478	2013.06.01	2014.06.01	120612-1
Thermohygrometer	BODYCOM	BJ5478	2013.06.01	2014.06.01	120612-2
Loop Antenna	Schwarzbeck	FMZB1513	2012.09.24	2014.09.24	1513-128
High-pass filter	Wainwright Instruments	WHKX3.0	2013.01.08	2014.01.08	12
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A / MA2490A	2013.03.06	2014.03.06	1306007 / 1249001
Signal Generator	Rohde Schwarz	SMF100A	2013.07.22	2014.07.22	102341
Amplifier	EMPOWER	BBS3Q7ELU	2013.09.12	2014.09.12	1020
BILOG ANTENNA	SCHAFFNER	CBL6112B	2012.11.06	2014.11.06	2737
CVCF	NF Electronic	4420	2013.09.12	2014.09.12	3049354420023
LISN	R&S	ESH2-Z5	2013.09.12	2014.09.12	828739/006
EMI TEST RECEIVER	R&S	ESCI	2013.02.27	2014.02.27	100364
EMI TEST RECEIVER	R&S	ESU	2013.01.08	2014.01.08	100014

APPENDIX I
Conducted Test set up Diagram & Path loss Information

▪Conducted Measurement(30MHz ~ 25GHz)



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	2.81	15	4.42
1	2.99	20	3.86
2412& 2437 & 2462	3.14	25	7.02
5	3.33	-	-
10	4.34	-	-

Note. 1: The path loss from EUT to Spectrum analyzer was measured and used for test.
Path loss (=S/A's offset value) = Cable A

Note. 2: For conducted spurious emissions, the path loss values were saved as the transducer factor on the spurious measurement function of the spectrum analyzer and the transducer factor of tested frequency is calculated and corrected automatically by the spectrum analyzer's measurement function.