



**Produkte**  
*Products*

<b>Prüfbericht - Nr.:</b> 02422602 001		<b>Seite 1 von 58</b>	
<i>Test Report No.:</i>		<i>Page 1 of 58</i>	
<b>Auftraggeber:</b> <i>Client:</i>	Redpine Signals Inc. 2107 N.First Street, Suite 680 San Jose, CA 95131-2019 U.S.A		
<b>Gegenstand der Prüfung:</b> <i>Test item:</i>	802.11 abgn MODULE		
<b>Bezeichnung:</b> <i>Identification:</i>	RS9110-N-11-03	<b>Serien-Nr.:</b> <i>Serial No.</i>	Engineering Sample
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>	1403011050	<b>Eingangsdatum:</b> <i>Date of receipt:</i>	07.08.2010
<b>Prüfart:</b> <i>Testing location:</i>	Refer Page 4 of 58 for test facilities		
<b>Prüfgrundlage:</b> <i>Test specification:</i>	FCC Part 15, Subpart C		
<b>Prüfergebnis:</b> <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The tests item passed the test specification(s).</i>		
<b>Prüflaboratorium:</b> <i>Testing Laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. Alpha Tower, Sigma Soft Tech Park, # 7, Whitefield Main Road, Varthur Kodi, Bangalore – 560066, India		
<b>geprüft / tested by:</b>		<b>kontrolliert / reviewed by:</b>	
10.06.2011	Vinay.N Engineer	13.06.2011	Kalyan Varma G Manager
			
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>
			<b>Name/Stellung</b> <i>Name/Position</i>
			<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other Aspects:</b>	FCC ID : XF6- RS9110N1103		
<b>Abkürzungen:</b>	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	<b>Abbreviations:</b>	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>			

**Test Result Summary**

<b>Clause</b>	<b>Test Item</b>	<b>Result</b>
FCC 15.247(b)(3)	Conducted Peak Output Power	Pass
FCC 15.247(a)(2)	6dB Bandwidth	Pass
FCC 15.247(e)	Power Spectral Density	Pass
FCC 15.247(d)	Band-edge compliance	Pass
FCC 15.209	Spurious Radiated Emissions	Pass
Section 15.205	Restricted Bands of Operation	Pass
FCC 15.207	AC Power Line Conducted Emissions	Pass

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## List of Test and Measurement Instruments

### Wipro Technologies, Bangalore

#### List of Test and Measurements

Equipment	Manufacturer	Type	S/N	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB40	100306	24.03.2012
Hybrid Log Periodic Antenna	TDK	HLP3003C	130334	21.03.2012
Broadband Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9170	9170-344	21.03.2012
Double Ridged Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9120D	9120D-687	21.03.2012
Pre-Amplifier	TDK-RFSolution	PA-02	100008	15.02.2012
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	27.01.2012

#### Testing Facilities

- 1) Wipro Technologies  
Survey No. 70,77,78 / 8A, Dodda Kannelli,  
Sarjapur Road, Bangalore – 560 035  
India
- 2) HCL Technologies  
73-74, Ground Floor,  
South Phase, Ambattur Estate,  
Ambattur, Chennai – 600058  
India

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## General Product Information

### Product Function and Intended Use

The Product has many applications.viz.

- Multi-mode cellular phones, smart phones, and PDAs needing Wi-Fi capability
- VoWiFi handsets
- Personal Media Players
- Digital still cameras and camcorders

### Ratings and System Details

Operating Frequency	2400 – 2483.5 MHz	
No. of channel	13	
Channel Spacing	5 MHz	
Transmitted Power	802.11b	15.15dBm
	802.11g	14.58dBm
	802.11n	14.87dBm
Modulation	802.11b	DSSS with DBPSK,DQPSK
	802.11g	OFDM with BPSK,QPSK, 16-QAM, 64-QAM
	802.11n	BPSK,QPSK,16-QAM,64-QAM
Data Rate	802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b:1,2, 5.5,11 Mbps	
Antenna Type	Chip	
Number of antenna	One	
Antenna Gain	0.5 dBi	
Supply Voltage	3.1-3.6 V DC	
Dimensions	104 mm x 34 mm x 12 mm	
Environmental	-40°C to +85°C	

#### Test Conditions:

**Voltage:** 110V AC, 60Hz

#### Environmental conditions:

**Temperature:** +23 °C    **RH:** 62%

**Note:** 5725 – 5850 MHz Band test results are covered in Test report : 02423392 001 and 5150MHz – 5350 MHz, 5470MHz – 5725MHz Band test results are covered in Test report : 02422603 001

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## Operation Descriptions

The RS9110-N-11-03 module is a complete IEEE802.11abgn Wi-Fi client device with an integrated MAC, baseband processor, RF transceiver and power amplifier. Based on the Redpine's Lite-FiTM RS9110 MAC/baseband processor, the module provides a complete end-to-end solution for ultra low power WLAN applications. It conforms to the draft 802.11n standard in single-stream mode for handheld devices and includes an embedded processor with a rich set of peripherals offering minimal load on a host processor, to which it can connect through SDIO and SPI interfaces. In a small form factor of 20 x 17.5 sq mm and operation on a single power supply, the RS9110-N-11-03 is ideal for integration into mobile phones and other handheld devices.

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## **Test Set-up and Operation Mode**

### **Principle of Configuration Selection**

**Emission:** The test was performed under continuous transmission to obtain the maximum emissions.

### **Test Operation and Test Software**

- Redpine's Lite-Fi™ device driver which was installed in a Personal Digital Assistant (PDA) was used to control channels, data rates and power levels

### **Special Accessories and Auxiliary Equipment**

The EUT was tested together with the following additional accessory:

- Personal Digital Assistant (PDA) for controlling different transmits channels, transmit profiles and power levels.

### **Countermeasures to achieve EMC Compliance**

- None

**Table of carrier frequencies**

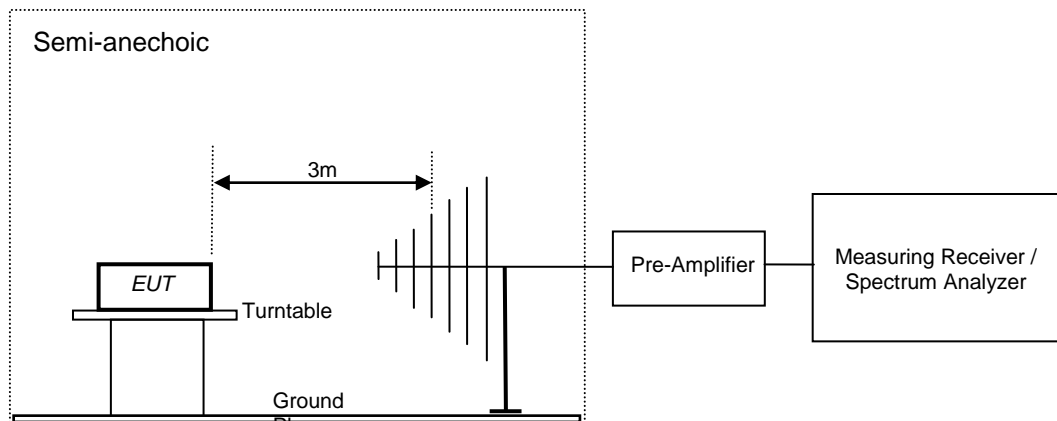
<b>Frequency Band</b>	<b>Channel No.</b>	<b>Frequency (MHz)</b>
2400 – 2483.5 MHz	1	2412
	2	2417
	3	2422
	4	2427
	5	2432
	6	2437
	7	2442
	8	2447
	9	2452
	10	2457
	11	2462
	12	2467
	13	2472



## Test Methodology

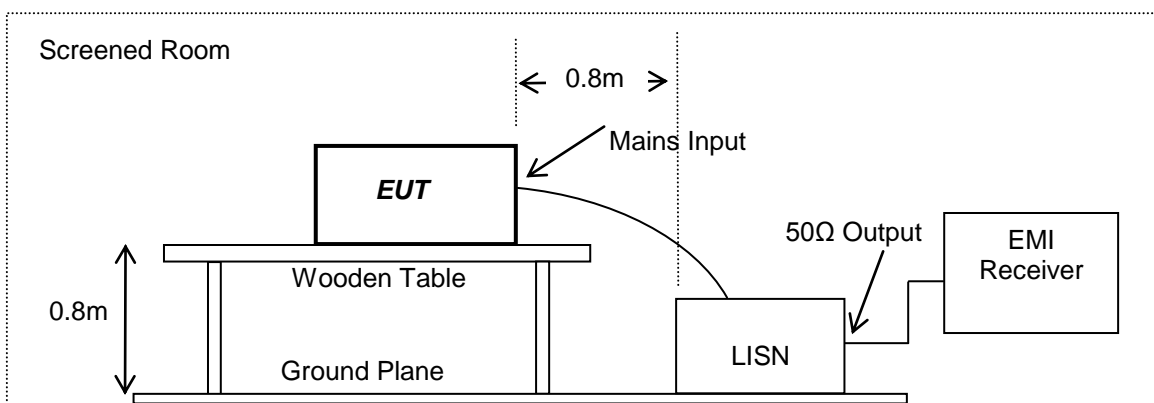
### Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.4-2003. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna. The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



### Conducted Emission Test on a.c. mains line

The equipment under test (EUT) was placed on a wooden table 80cm above the ground plane, the LISN was placed 80cm away from the EUT. The test was performed in accordance with ANSI C63.4: 2003, with the following: an initial measurement was performed in peak and average detection mode on the live and neutral lines. The pre-scan was performed by peak detection on both live and neutral conductors. Any emissions recorded within 20dB of the relevant limit line were re-measured using quasi-peak and average detections, the 6 worst cases were recorded in the table of results.



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## Test Results

### Conducted Peak Output Power

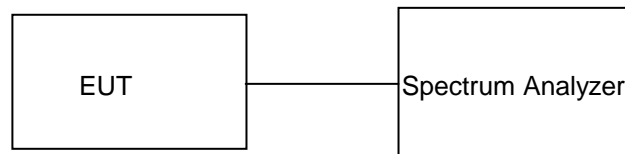
**Section 15.247(b) (3)**

**Result**

**Pass**

Test Specification	FCC Part 15 Subpart C
Measurement Bandwidth (RBW)	1 MHz
Requirement	<1 watt (30dBm) for Digital Transmission System.

**Test Method:**

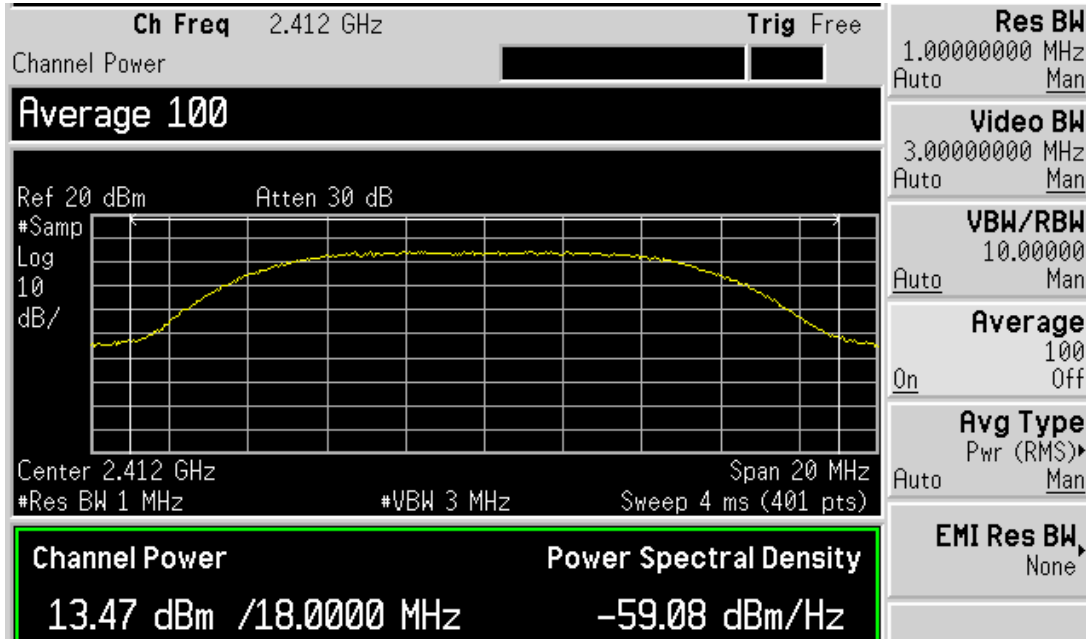


**Test Result:**

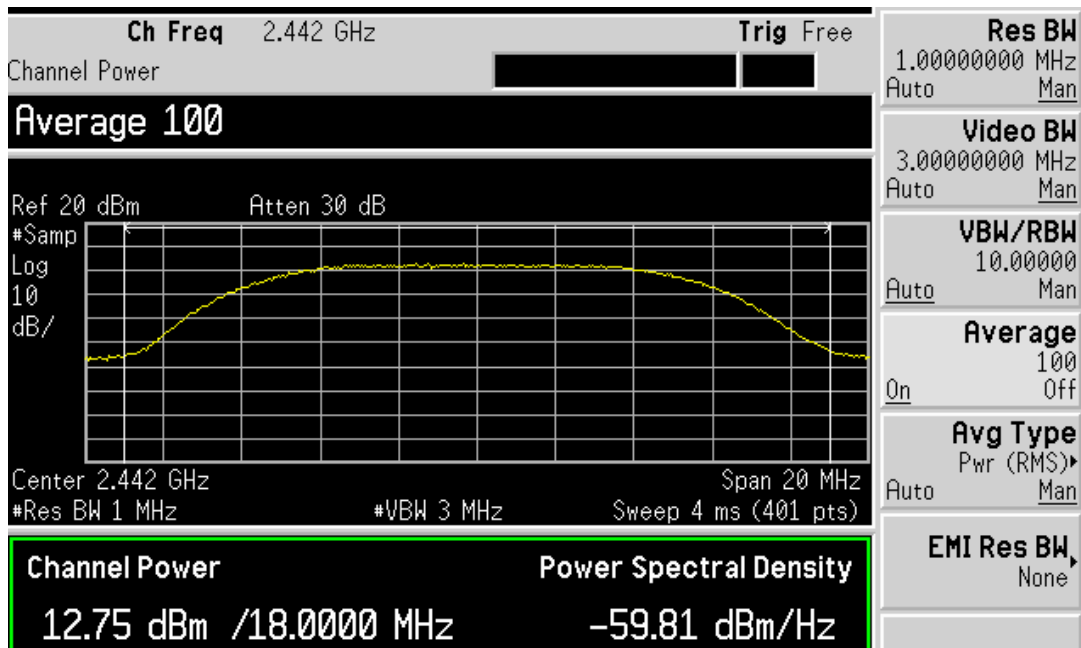
**Modulation: 802.11b**

Cable Loss: 1.68dB

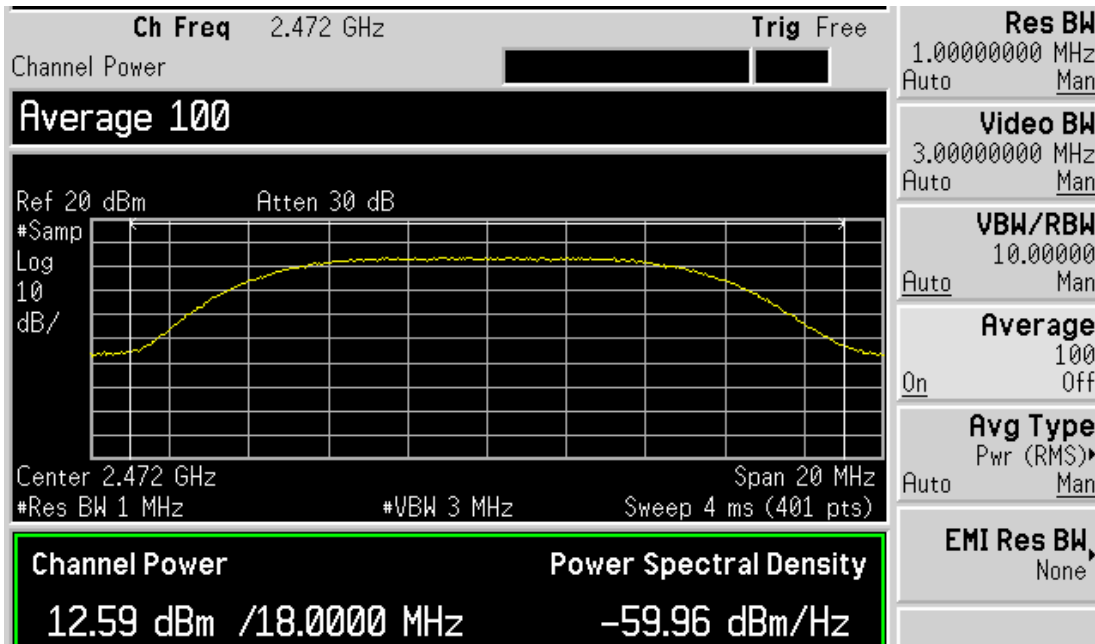
Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)
2412	13.47	1.68	15.15	30.00
2442	12.75	1.68	14.43	30.00
2472	12.59	1.68	14.27	30.00



Channel Frequency: 2412 MHz



Channel Frequency: 2442 MHz

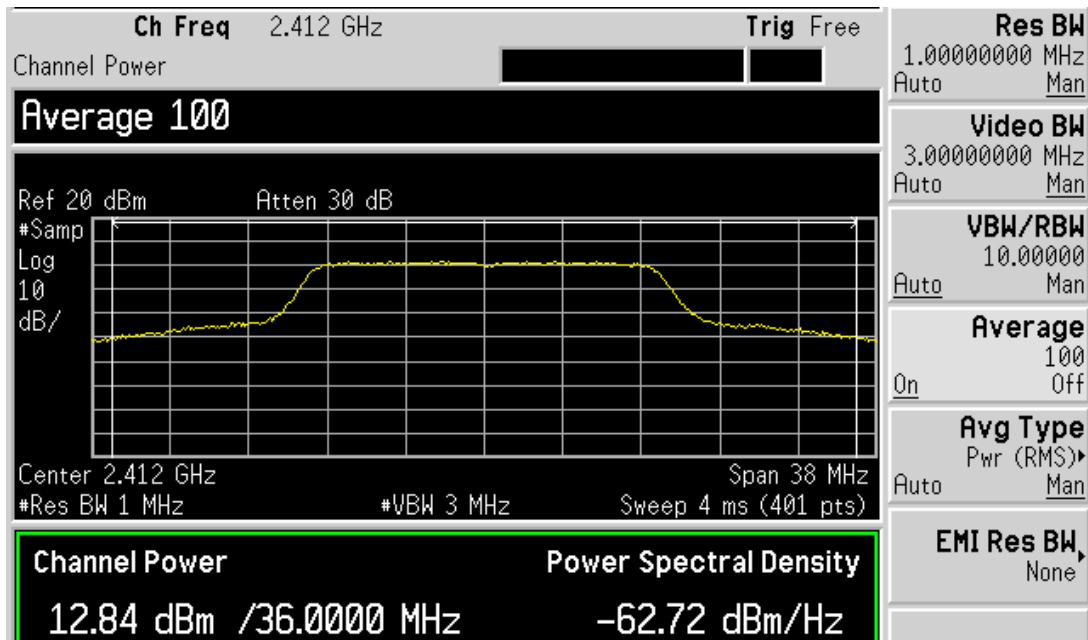


Channel Frequency: 2472 MHz

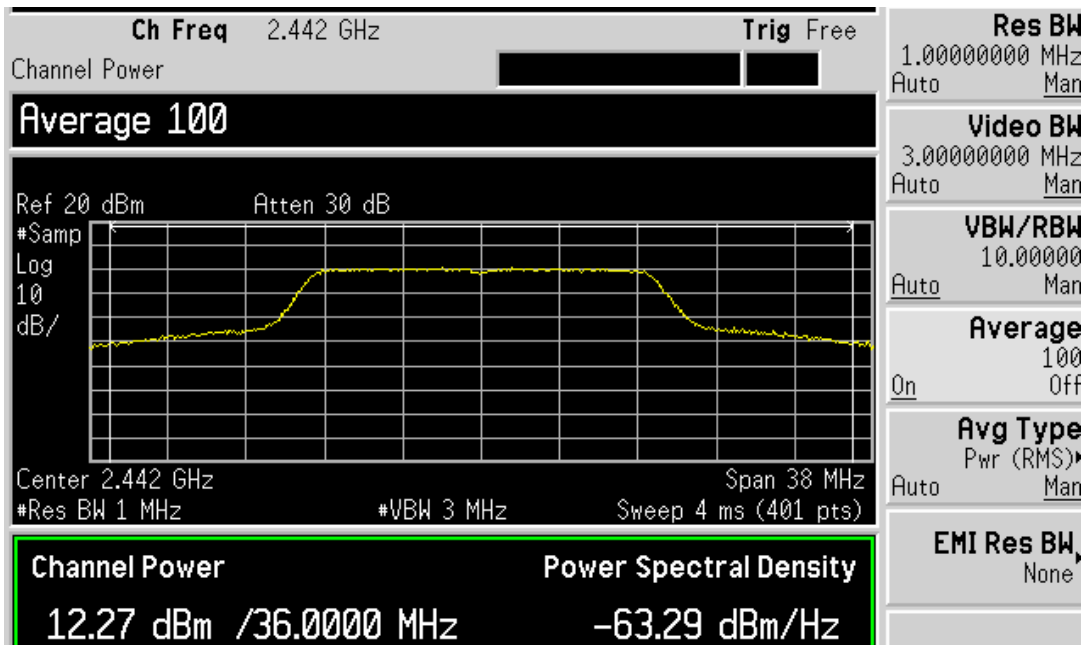
Modulation: 802.11g

Test Results:

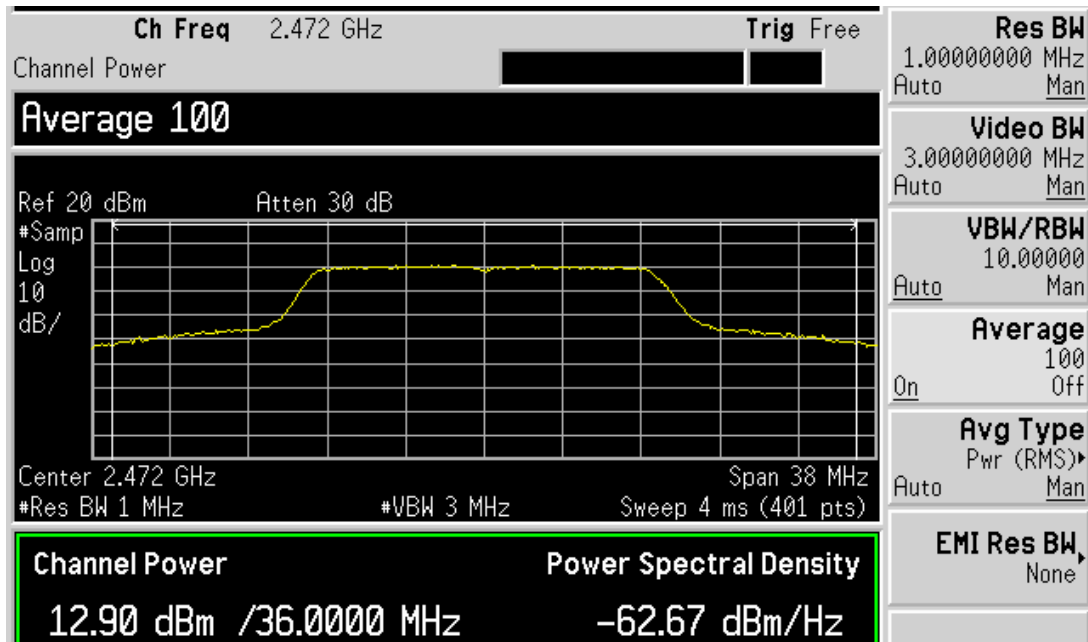
Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)
2412	12.84	1.68	14.52	30.00
2442	12.27	1.68	13.95	30.00
2472	12.90	1.68	14.58	30.00



Channel Frequency: 2412 MHz



Channel Frequency: 2442 MHz

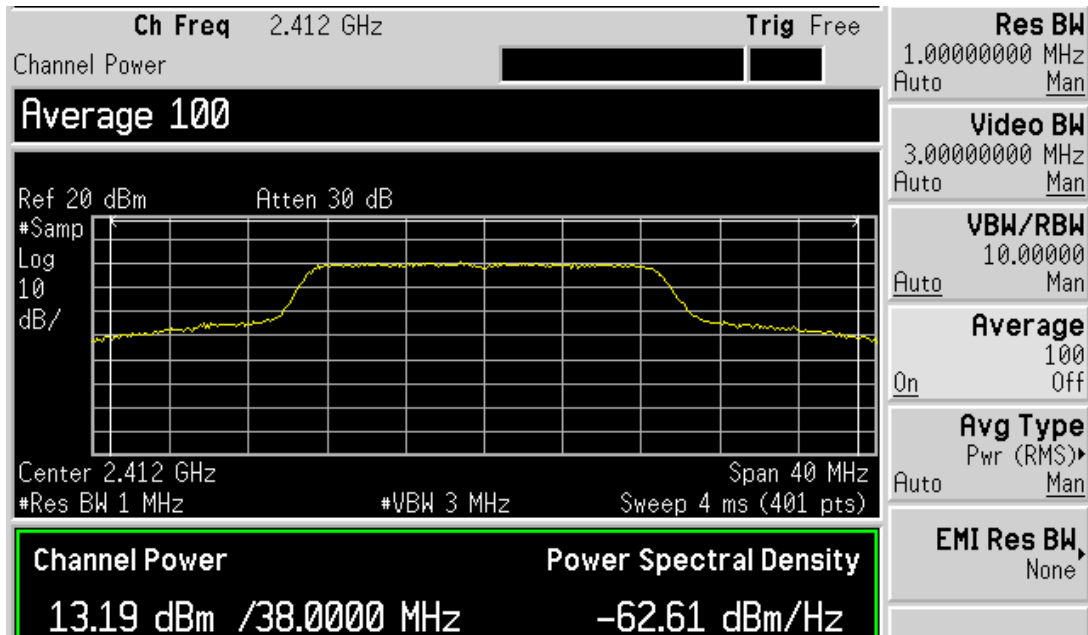


Channel Frequency: 2472 MHz

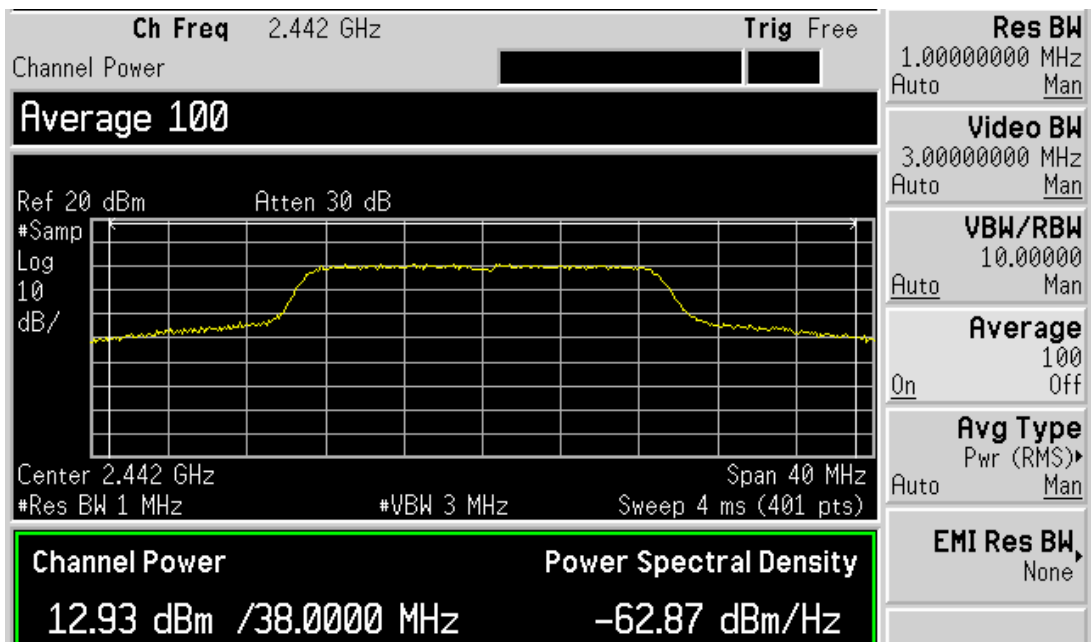
Modulation: 802.11n

Test Results:

Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)
2412	13.19	1.68	14.87	30.00
2442	12.93	1.68	14.61	30.00
2472	12.57	1.68	14.25	30.00

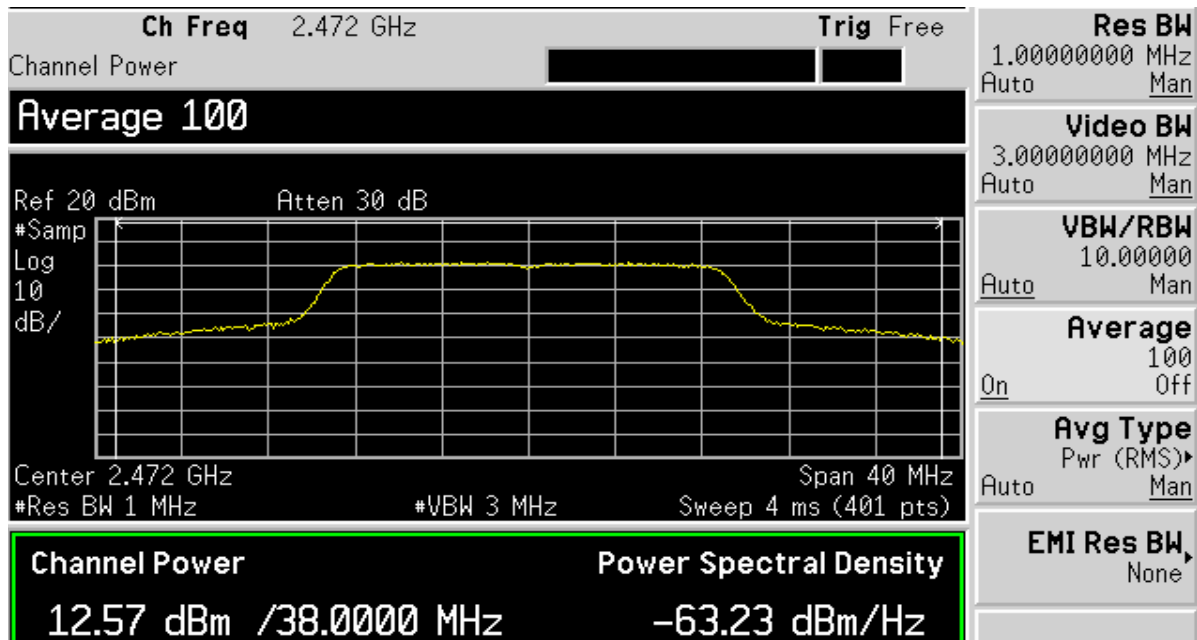


Channel Frequency: 2412 MHz



Channel Frequency: 2442 MHz

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Channel Frequency: 2472 MHz



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## Power Spectral Density

## Section 15.247(e)

Result

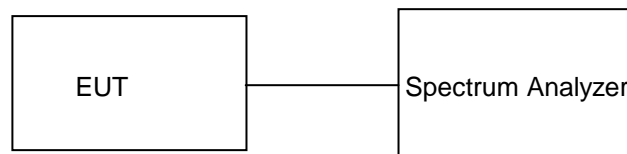
Pass

Test Specification  
Detector Function  
Requirement

FCC Part 15 Section 15.247 (e)  
Peak

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.

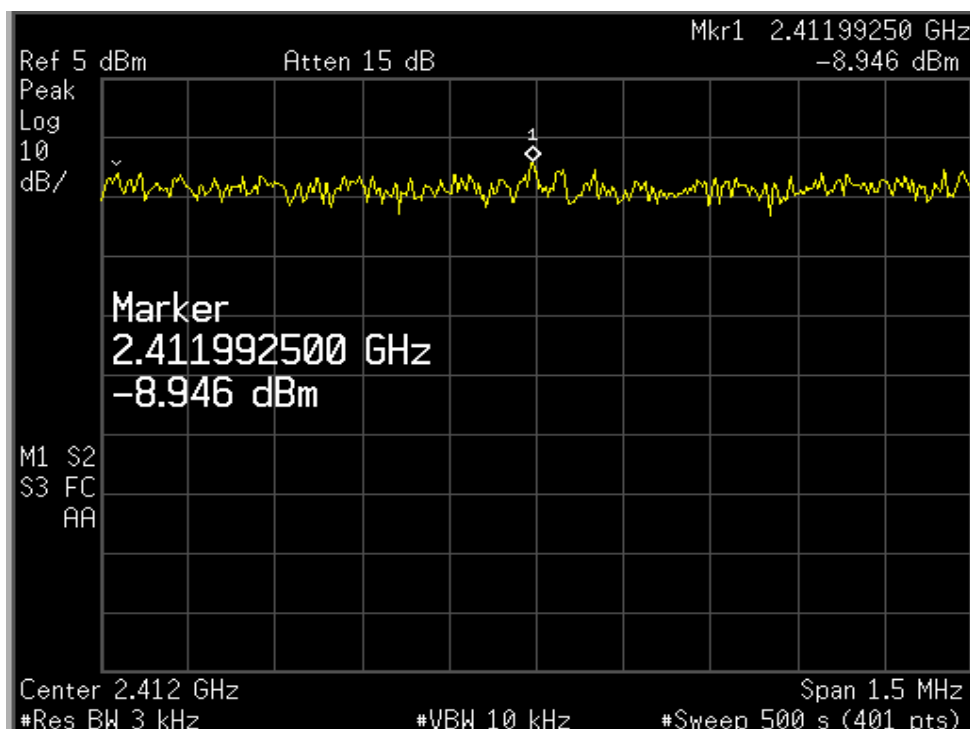
Test Method:



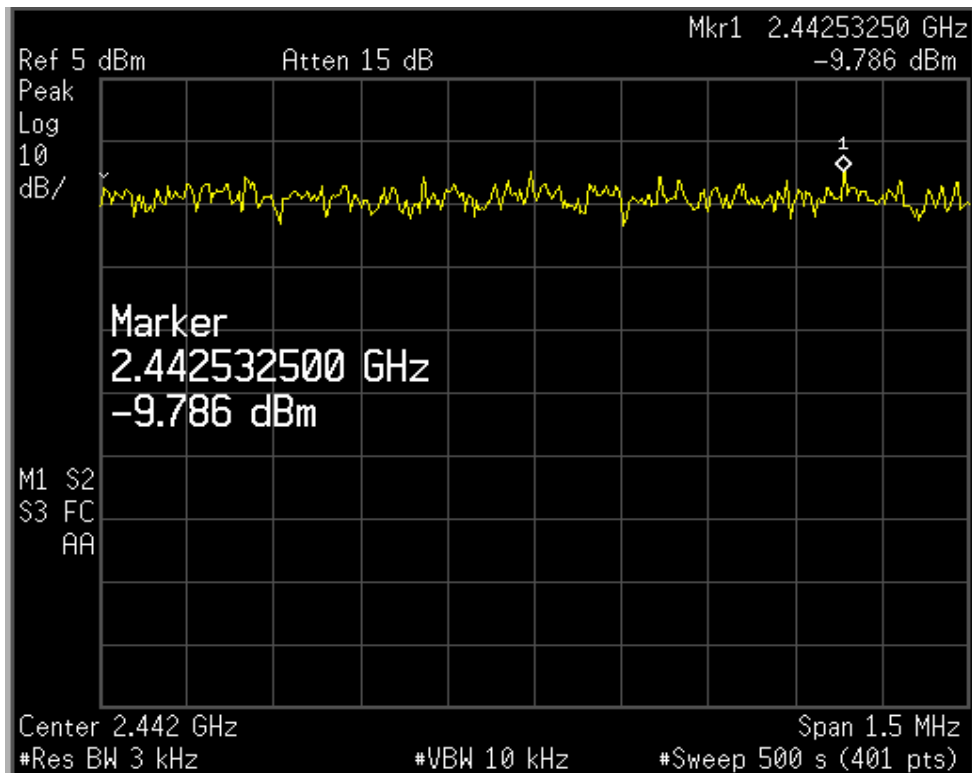
Test Result:

Modulation: 802.11b

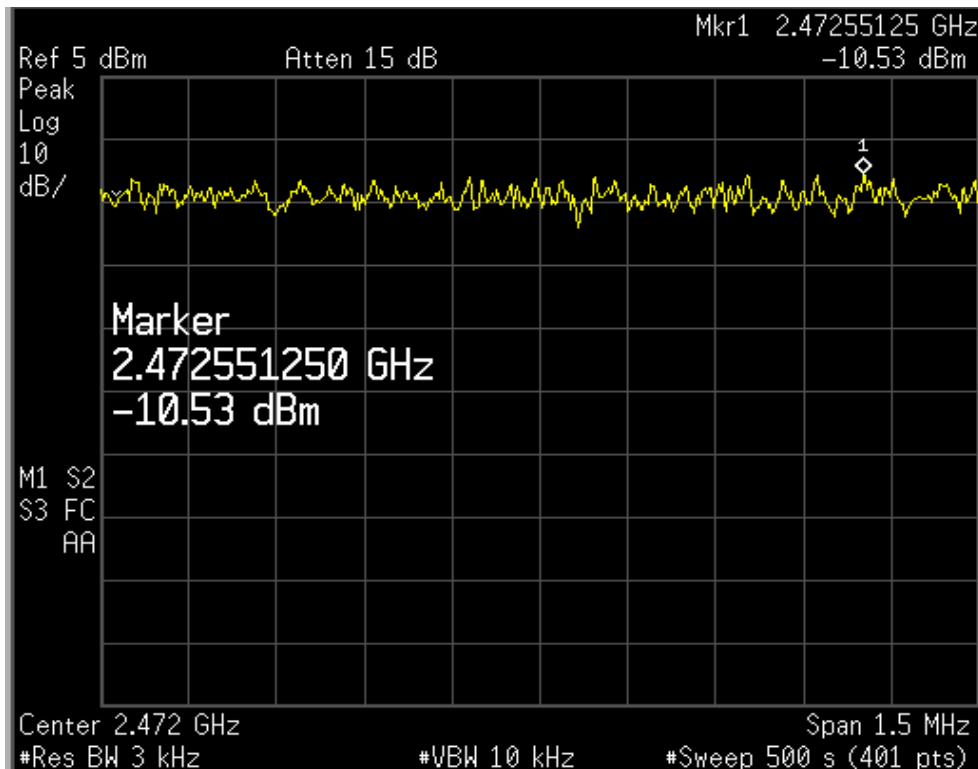
Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	PSD (dBm)	Limit (dBm)
2412	-08.94	1.68	-7.26	8.00
2442	-09.78	1.68	-8.10	8.00
2472	-10.53	1.68	-8.85	8.00



Channel Frequency: 2412 MHz



**Channel Frequency: 2442 MHz**



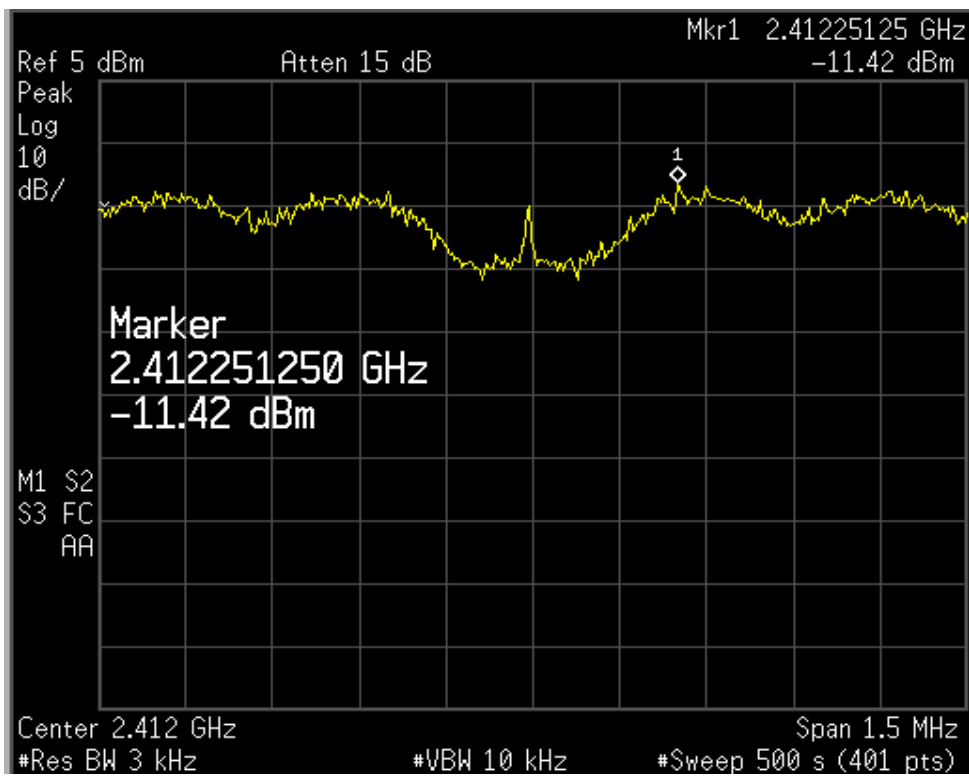
**Channel Frequency: 2472 MHz**

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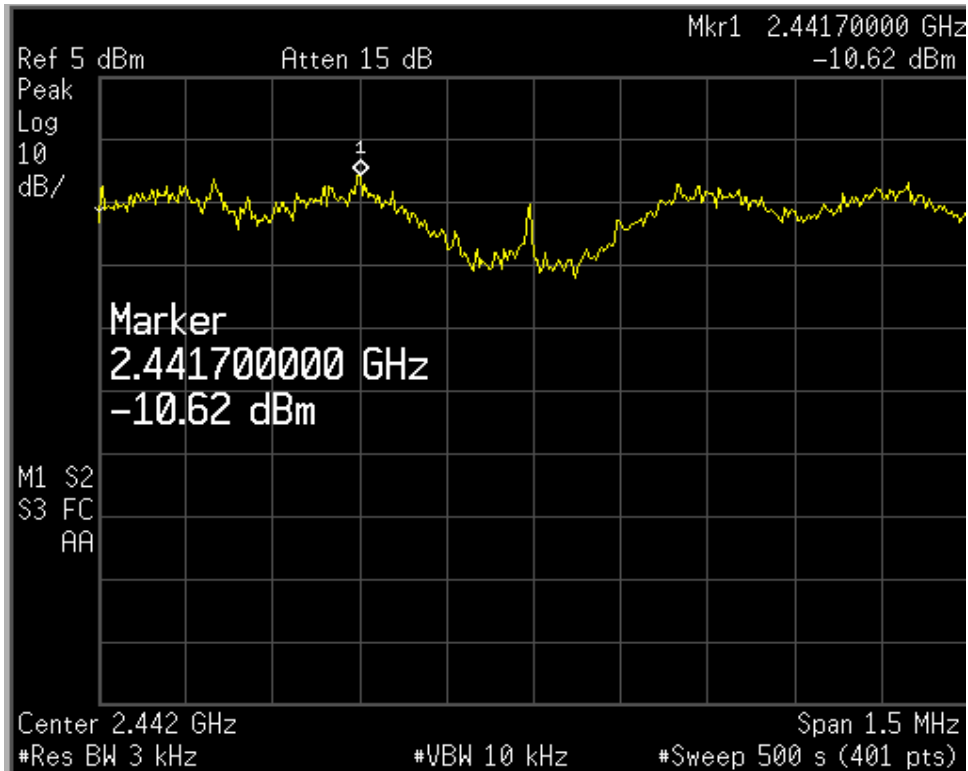
Modulation: 802.11g

**Test Results:**

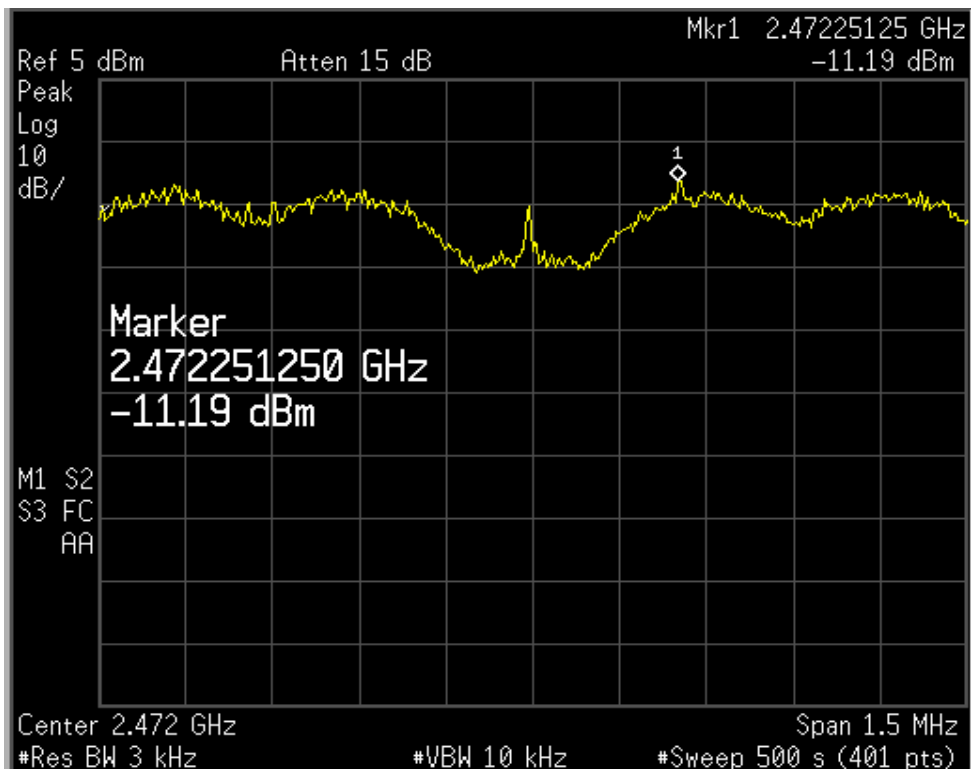
Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	PSD (dBm)	Limit (dBm)
2412	-11.42	1.68	-9.74	8.00
2442	-10.62	1.68	-8.94	8.00
2472	-11.19	1.68	-9.51	8.00



**Channel Frequency: 2412 MHz**



**Channel Frequency: 2442 MHz**



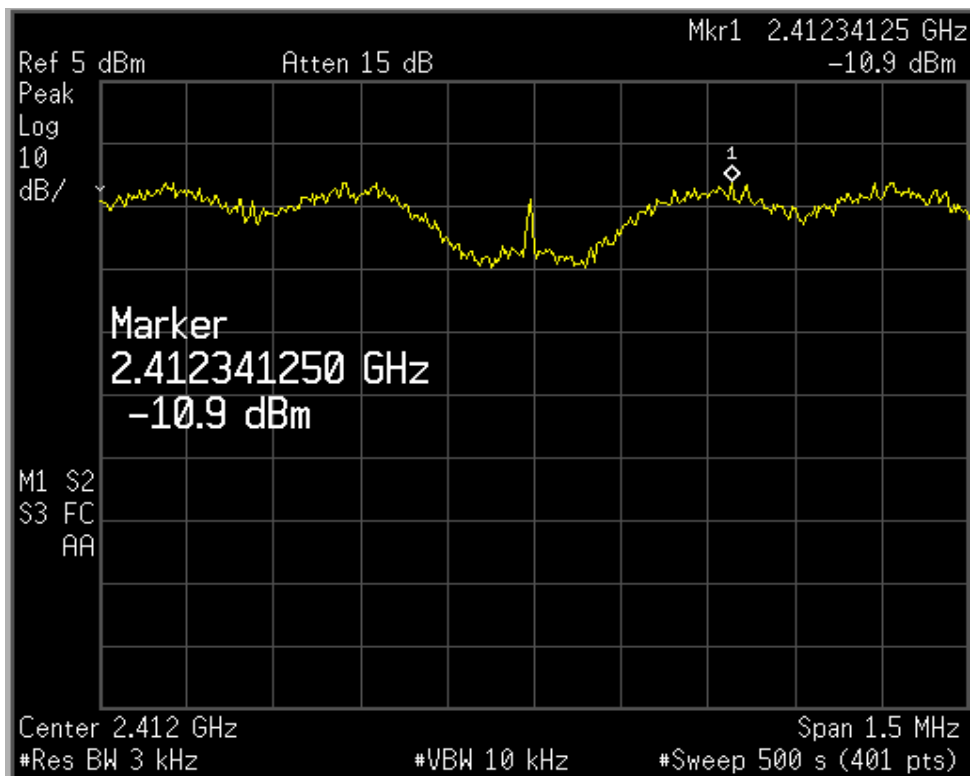
**Channel Frequency: 2472 MHz**

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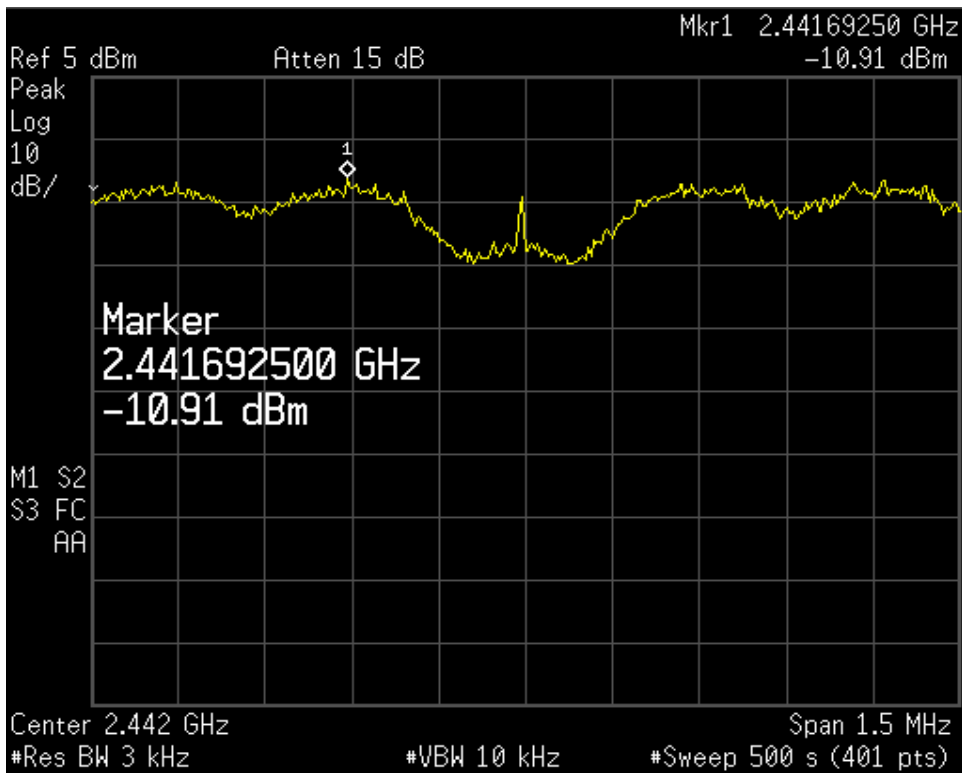
**Modulation: 802.11n**

**Test Results:**

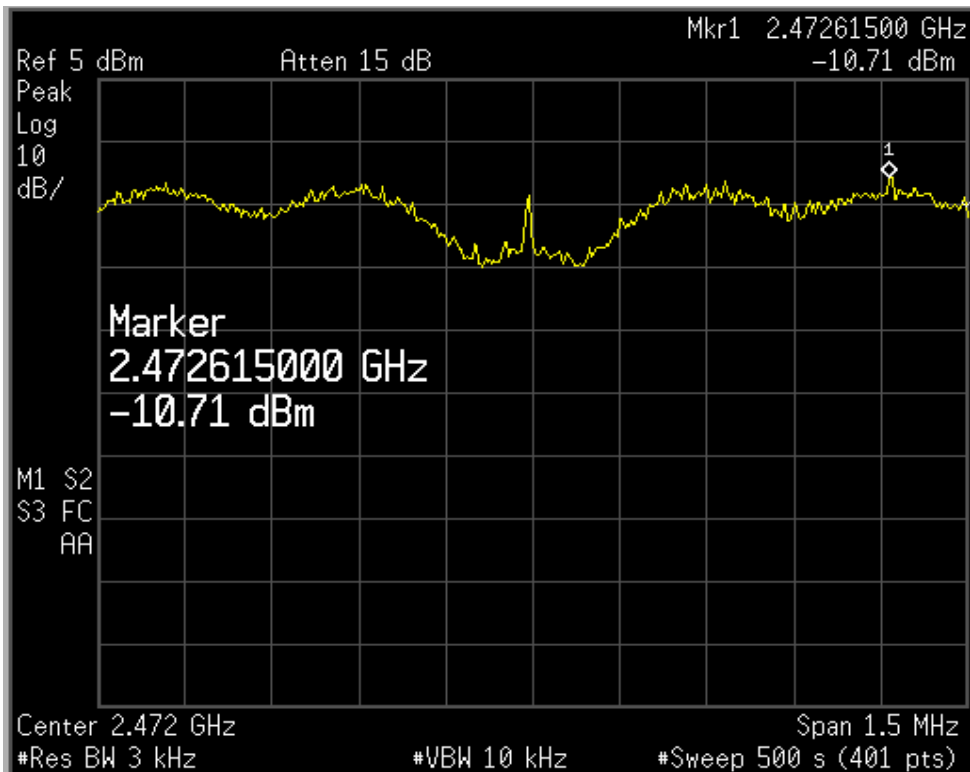
Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	PSD (dBm)	Limit (dBm)
2412	-10.90	1.68	-9.22	8.00
2442	-10.91	1.68	-9.23	8.00
2472	-10.71	1.68	-9.03	8.00



**Channel Frequency: 2414 MHz**



**Channel Frequency: 2442 MHz**



**Channel Frequency: 2472 MHz**

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### 6 dB Bandwidth

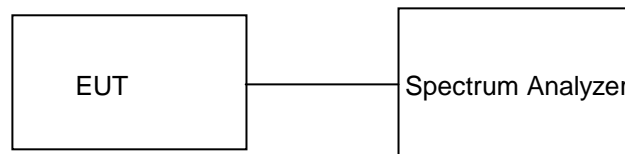
### Section 15.247(a)(2)

Result

Pass

Test Specification Requirement      FCC Part 15 Section 15.247 (a) (2)  
 The minimum 6 dB bandwidth shall be at least 500 kHz.

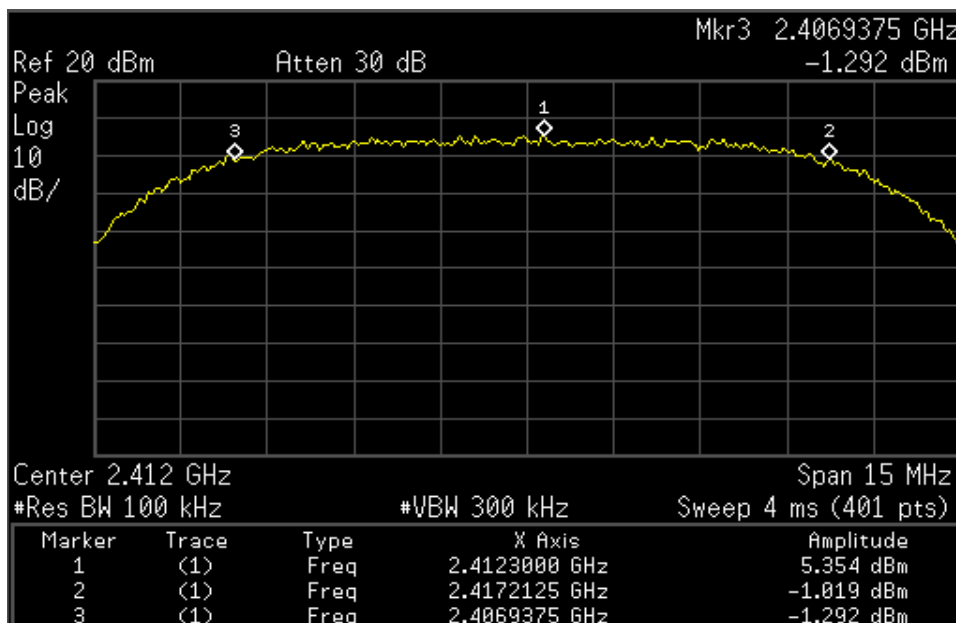
Test Method:



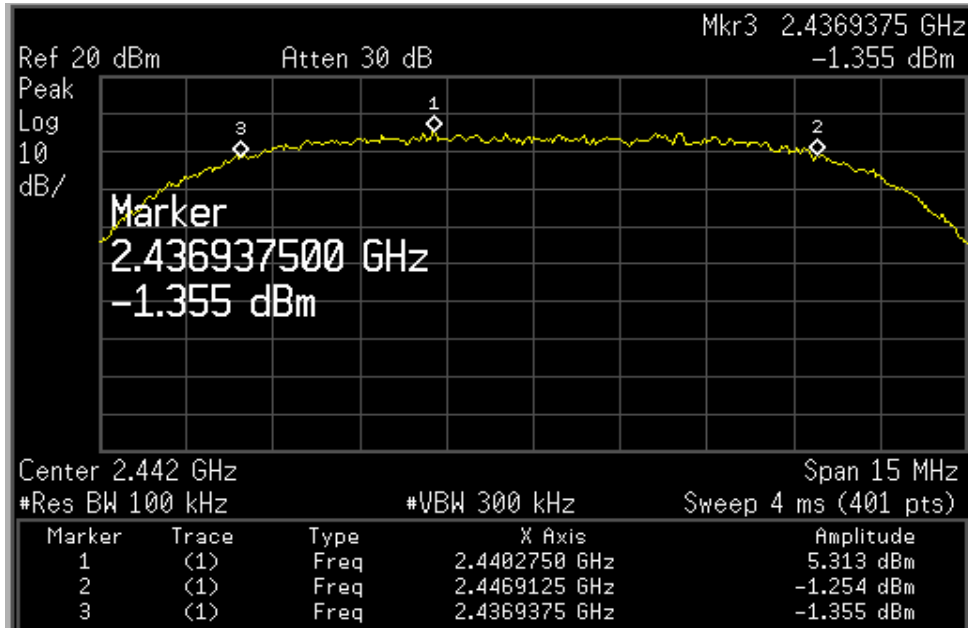
Test Result:

Modulation: 802.11b

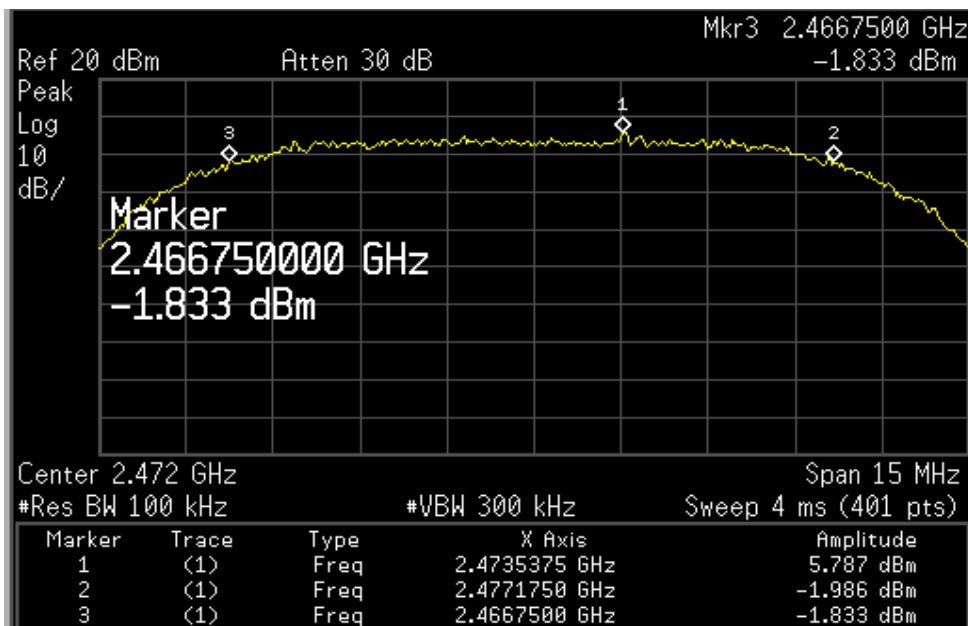
Carrier Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2412	2406.93	2417.21	10.28	12.20
2442	2436.93	2446.91	09.98	12.05
2472	2466.75	2477.17	10.42	12.38



Channel frequency: 2412 MHz

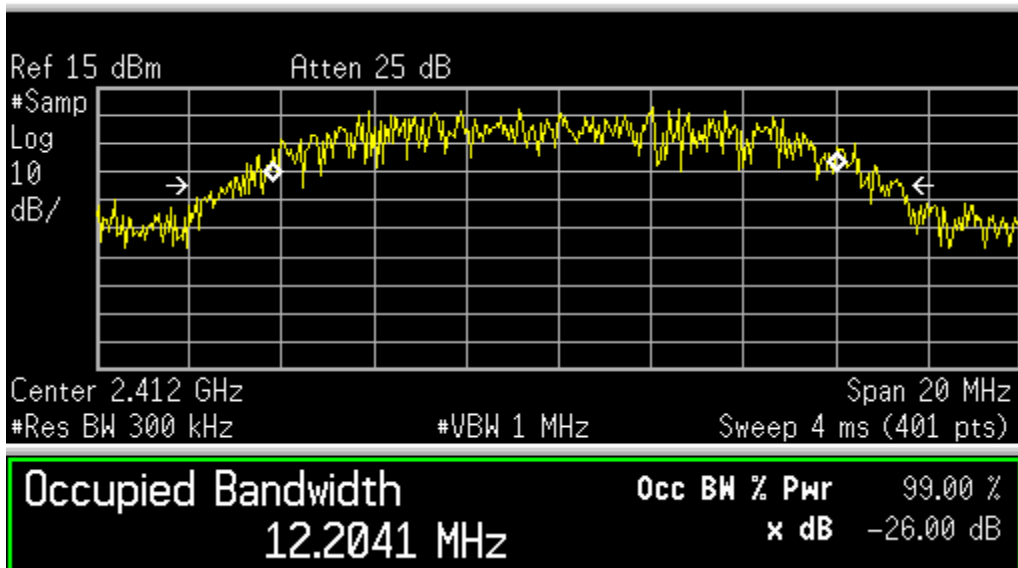


**Channel frequency: 2442 MHz**

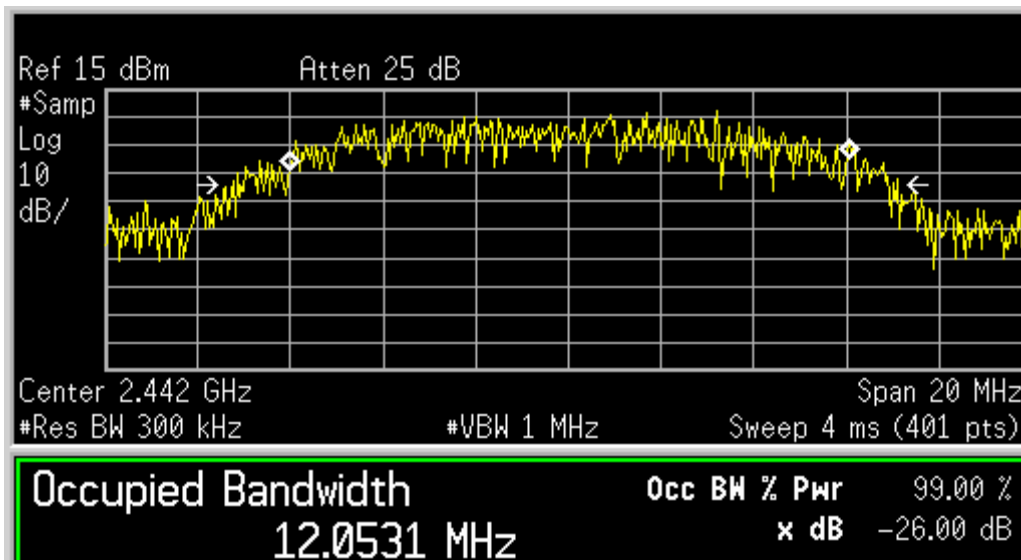


**Channel frequency: 2462 MHz**

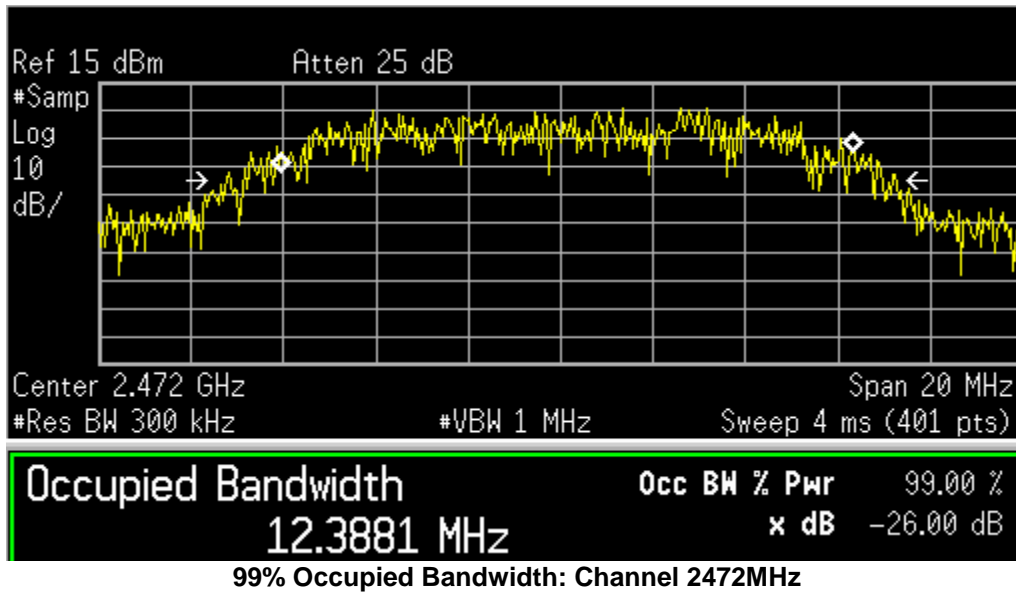




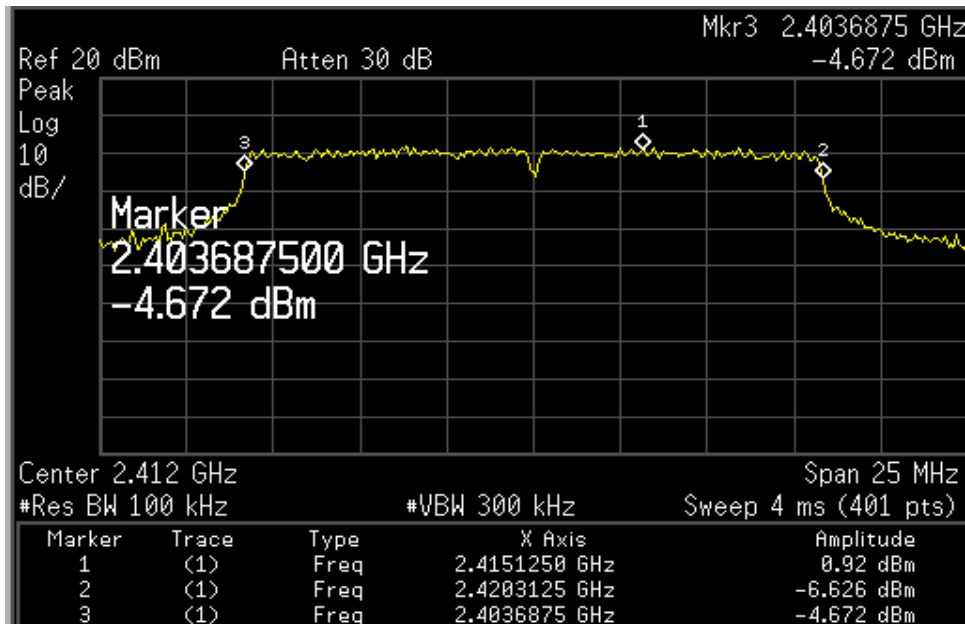
**99% Occupied Bandwidth: Channel 2412MHz**



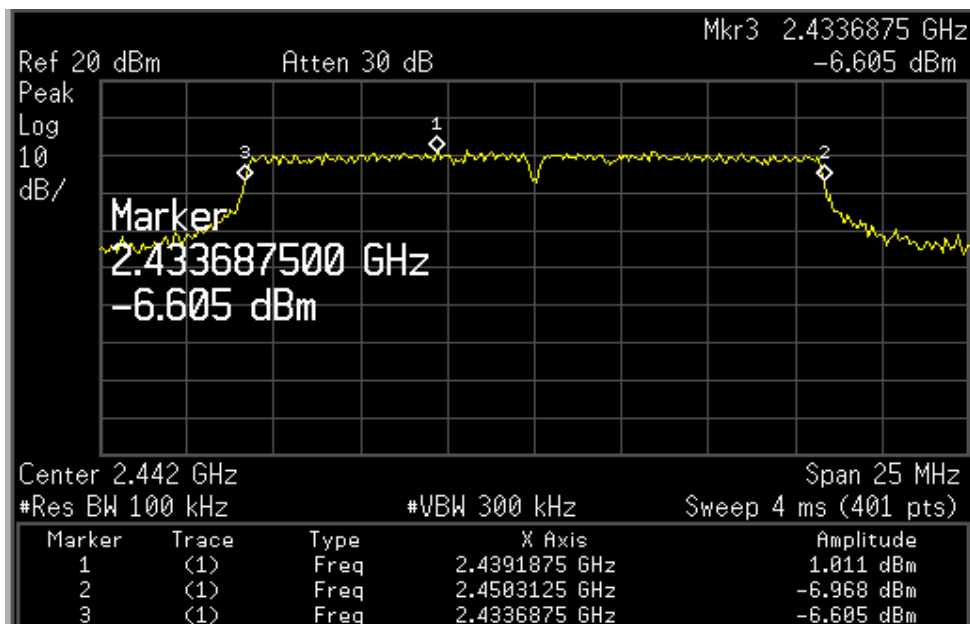
**99% Occupied Bandwidth: Channel 2442MHz**


**Modulation: 802.11g**

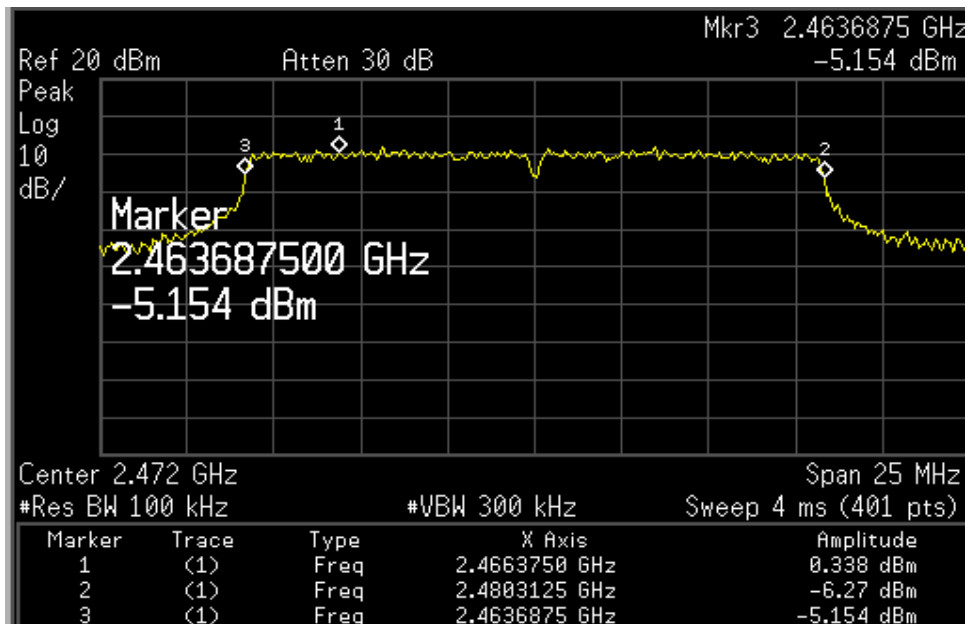
Carrier Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2412	2403.68	2420.31	16.63	16.62
2442	2433.68	2450.31	16.63	16.60
2472	2463.68	2480.31	16.63	16.54



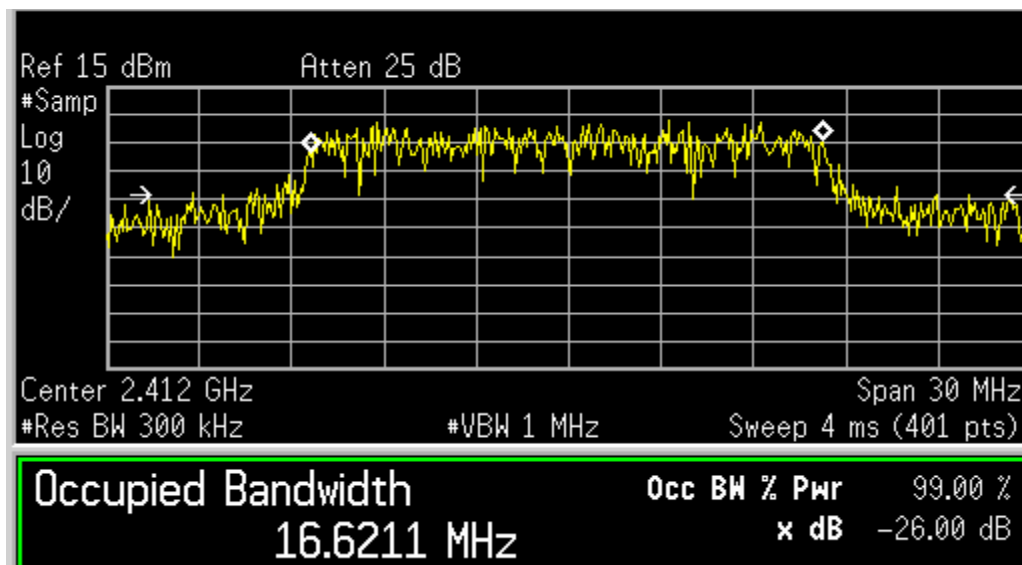
**Channel frequency: 2412 MHz**



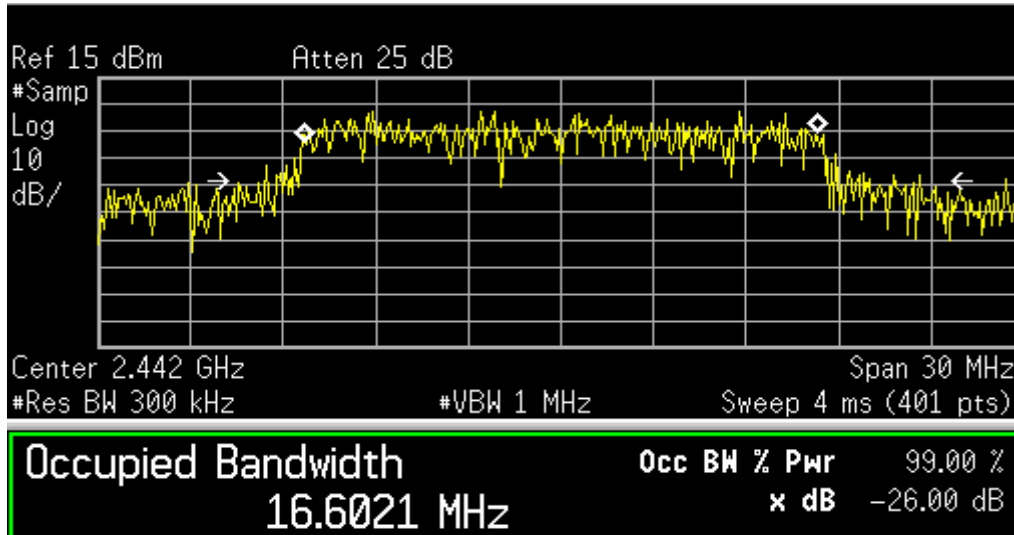
**Channel frequency: 2442 MHz**



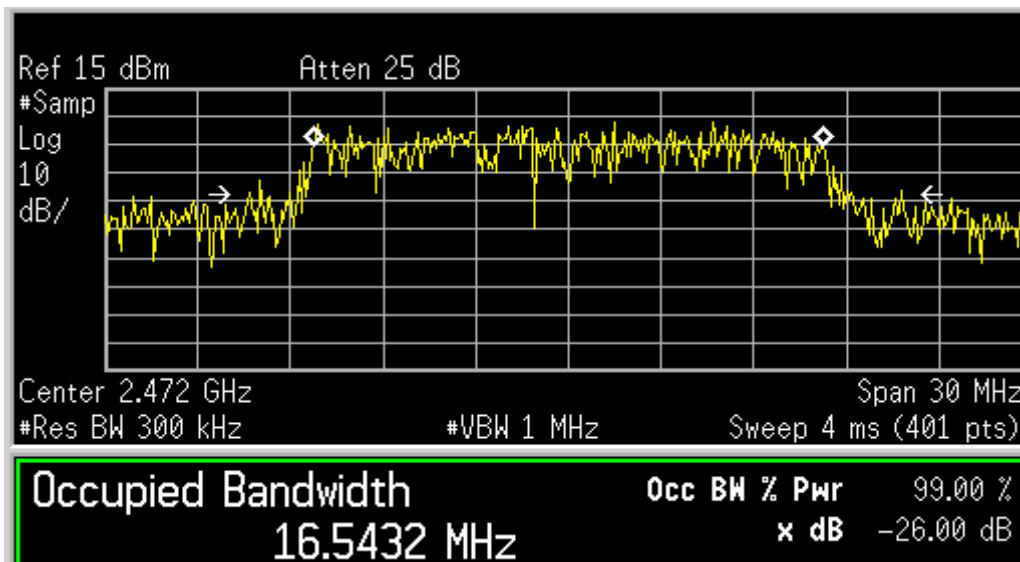
Channel frequency: 2472 MHz



99% Occupied Bandwidth: Channel 2412MHz



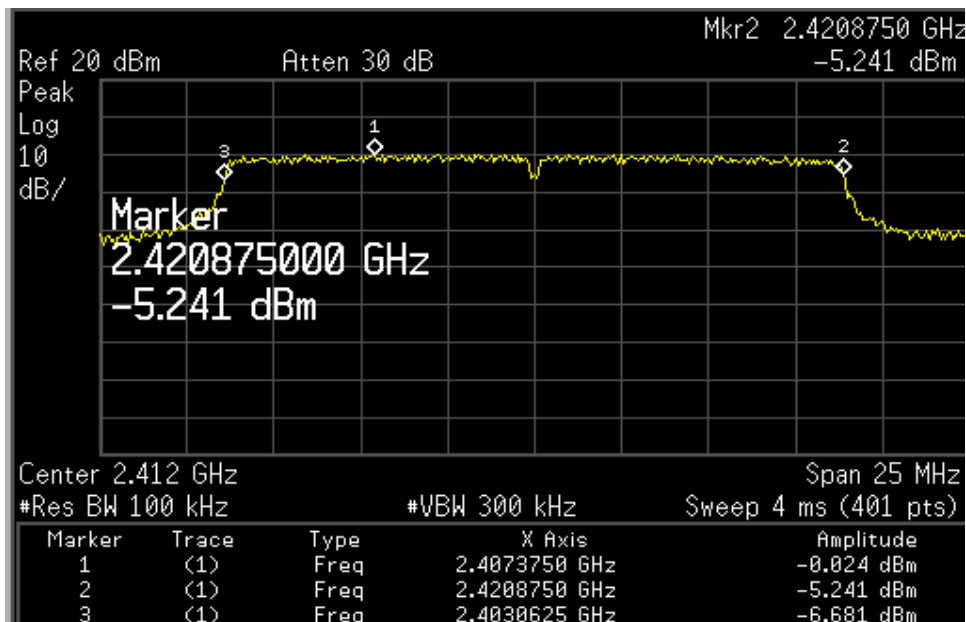
**99% Occupied Bandwidth: Channel 2442MHz**



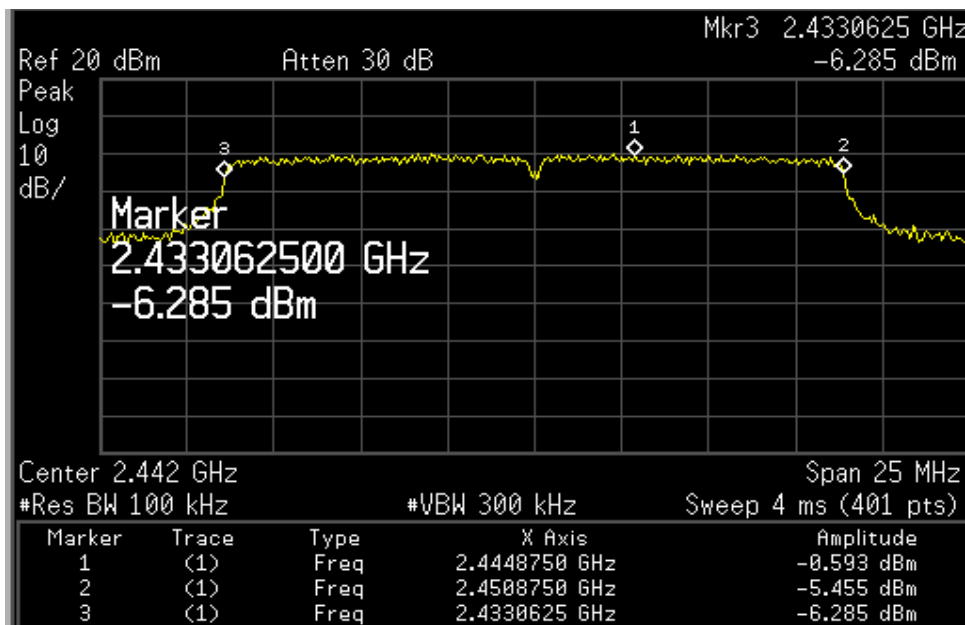
**99% Occupied Bandwidth: Channel 2472MHz**

Modulation: 802.11n

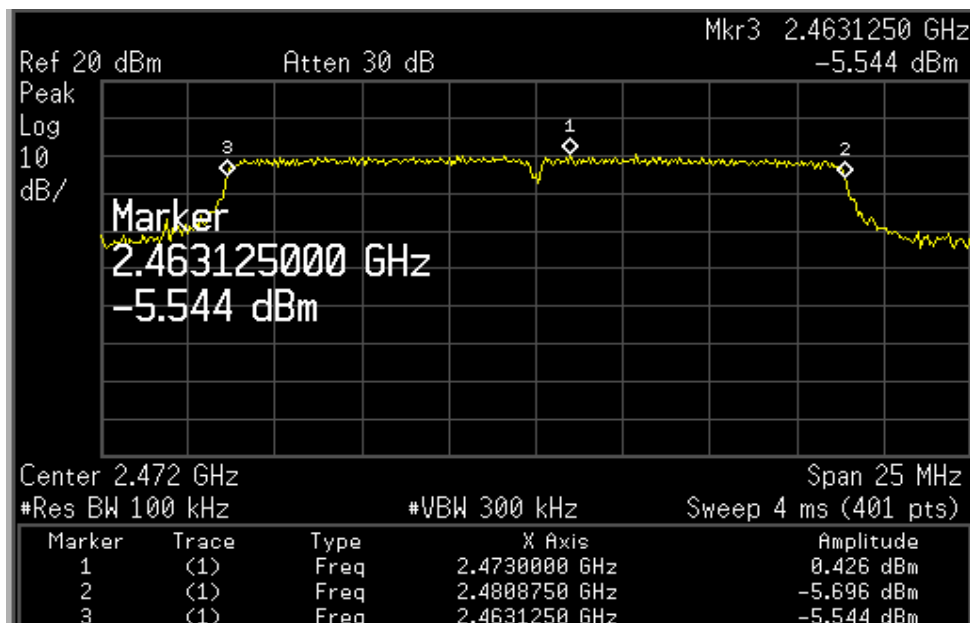
Carrier Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2412	2403.06	2420.87	17.81	17.76
2442	2433.06	2450.87	17.81	17.69
2462	2463.12	2480.87	17.75	17.56



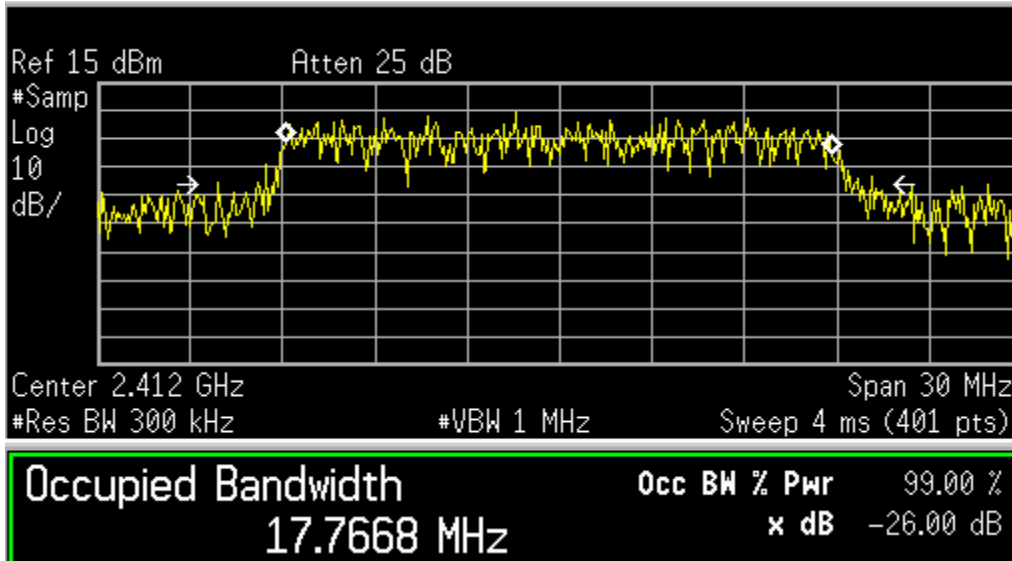
Channel frequency: 2412 MHz



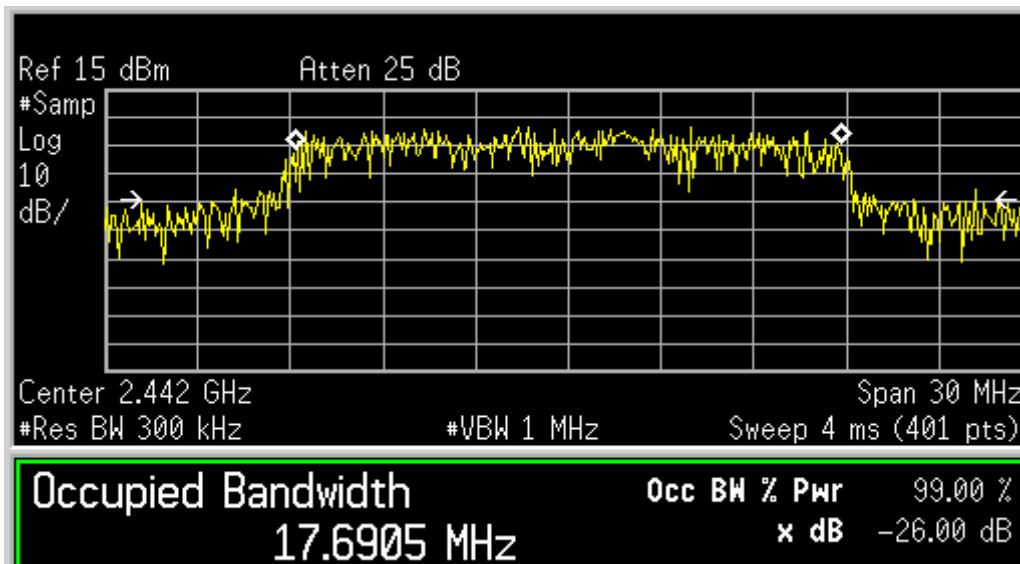
**Channel frequency: 2442 MHz**



**Channel frequency: 2472 MHz**

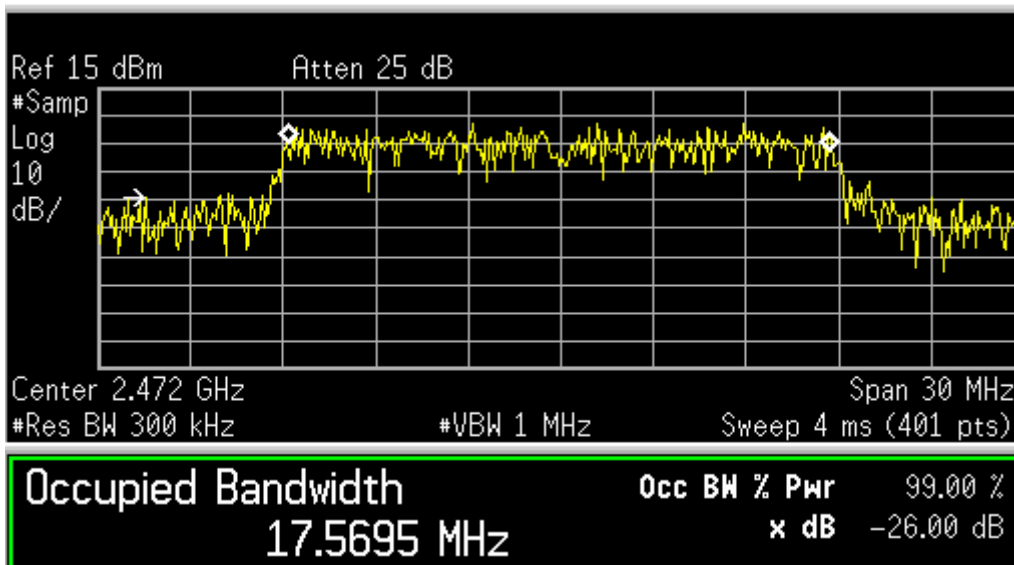


99% Occupied Bandwidth: Channel 2412MHz



99% Occupied Bandwidth: Channel 2442MHz





**99% Occupied Bandwidth: Channel 2472MHz**

## Band-edge Compliance

## Section 15.247(d)

Result

Pass

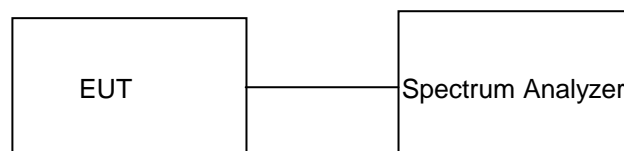
Test Specification  
Detector Function  
Requirement

FCC Part 15 C

Peak

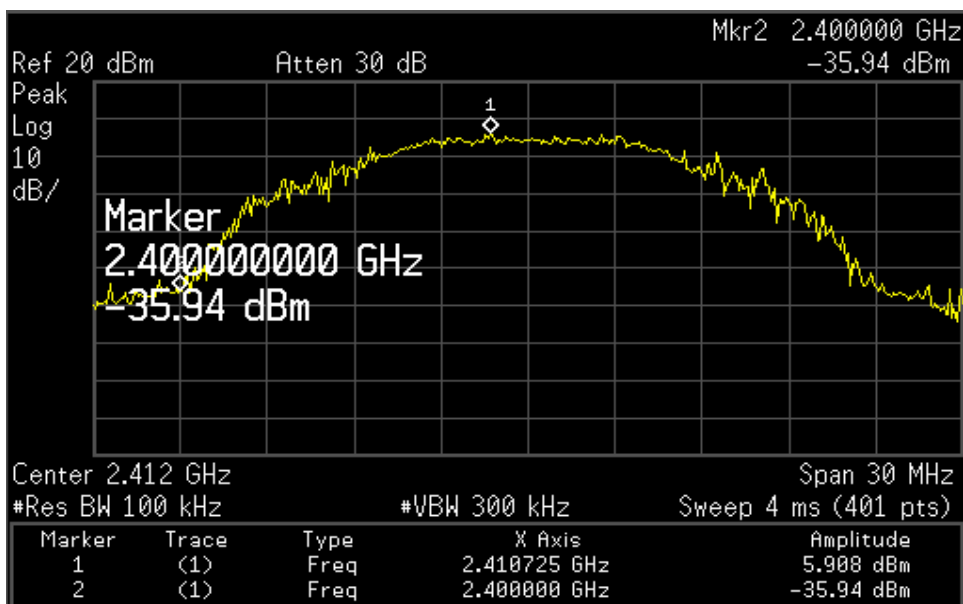
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method:

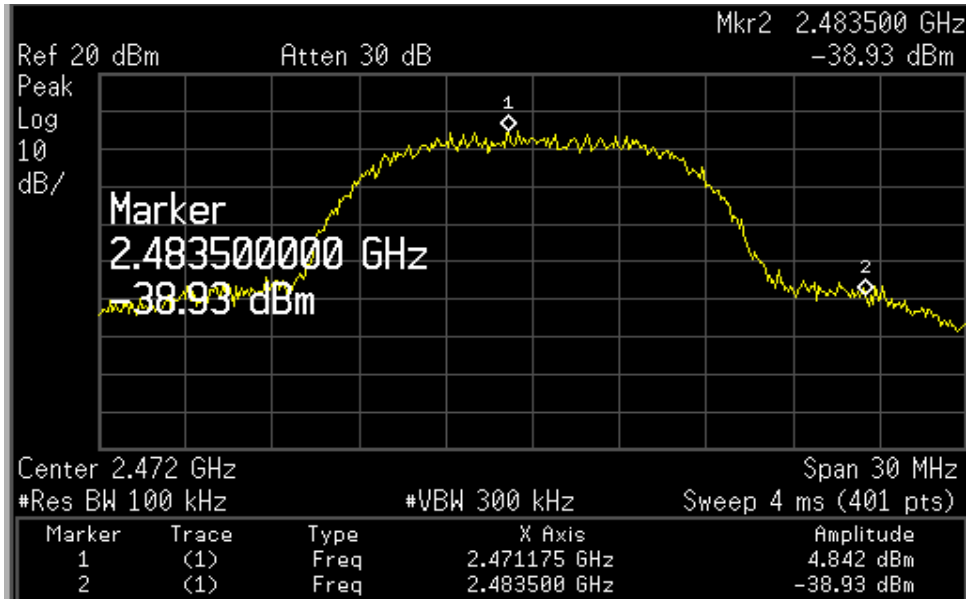


**Test Result:**
**Modulation: 802.11b**

Channel	Fundamental Frequency (MHz)	Value at Band Edge		Limit (dB)
		Frequency (MHz)	Value (dB)	
Low	2412	2400.00	-35.94	-20.00
High	2472	2483.50	-38.93	-20.00


**Channel Frequency: 2412 MHz**

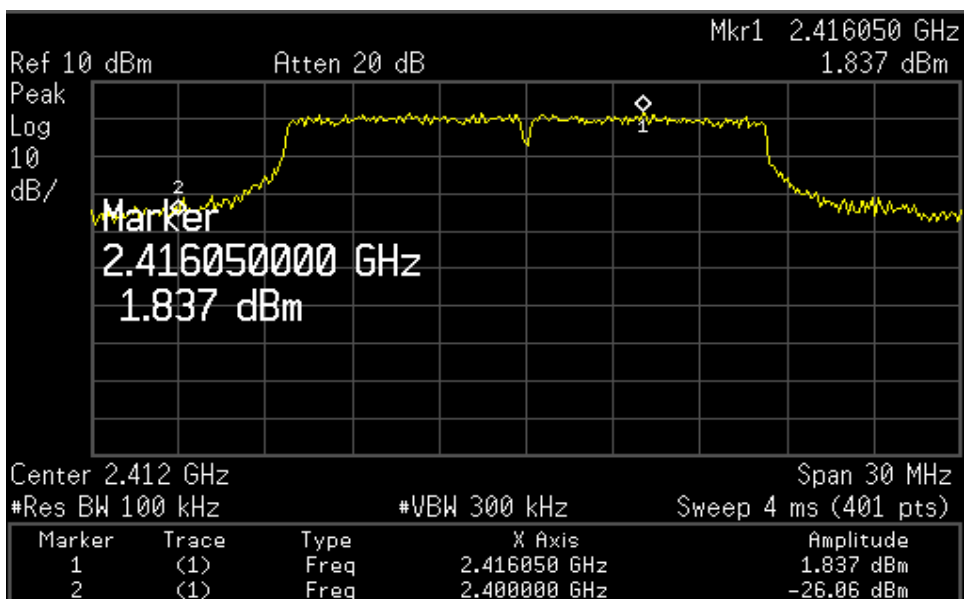
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**Channel Frequency: 2472 MHz**

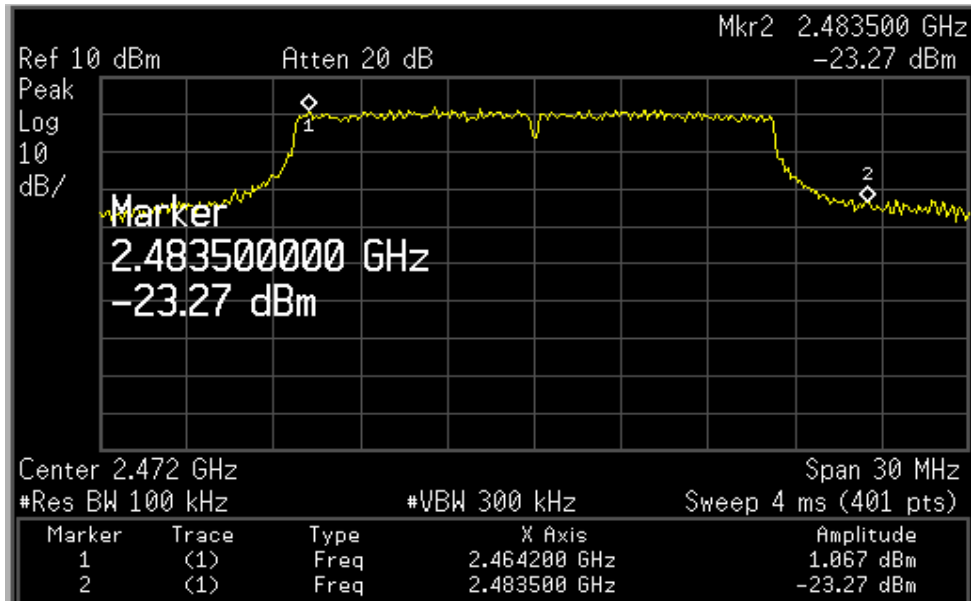
**Modulation: 802.11g**

Channel	Fundamental Frequency (MHz)	Value at Band Edge		Limit (dB)
		Frequency (MHz)	Value (dB)	
Low	2412	2400.00	-26.06	-20.00
High	2472	2483.50	-23.27	-20.00



**Channel Frequency: 2412 MHz**

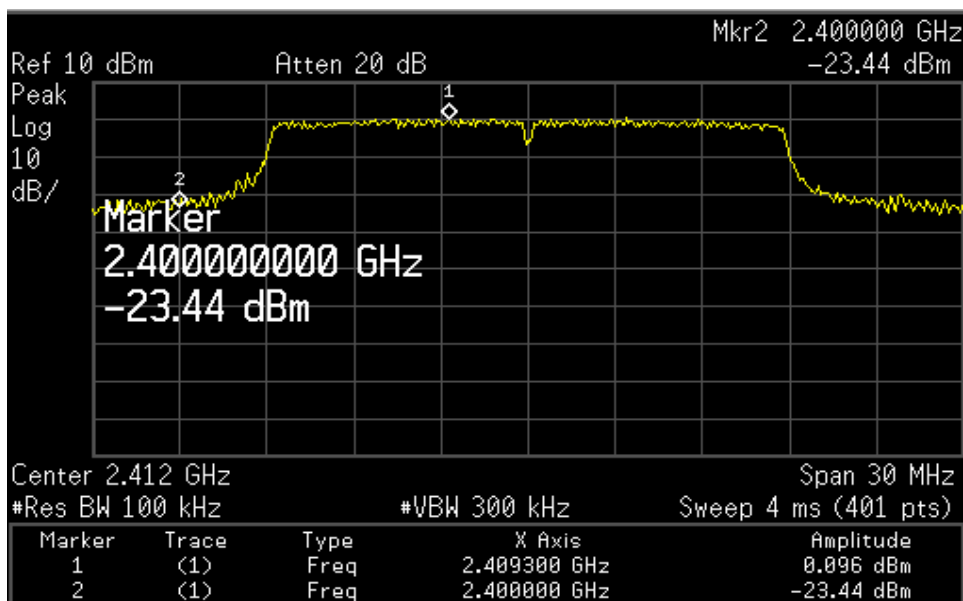
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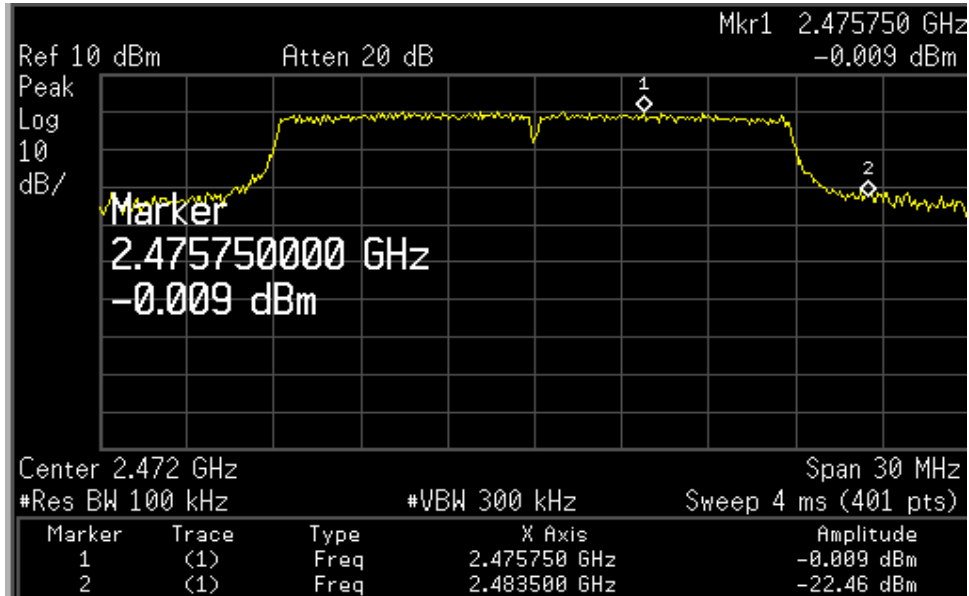
**Channel Frequency: 2472 MHz**

**Modulation: 802.11n**

Channel	Fundamental Frequency (MHz)	Value at Band Edge		Limit (dB)
		Frequency (MHz)	Value (dB)	
Low	2412	2400.00	-23.44	-20.00
High	2472	2483.50	-22.46	-20.00



**Channel Frequency: 2412 MHz**

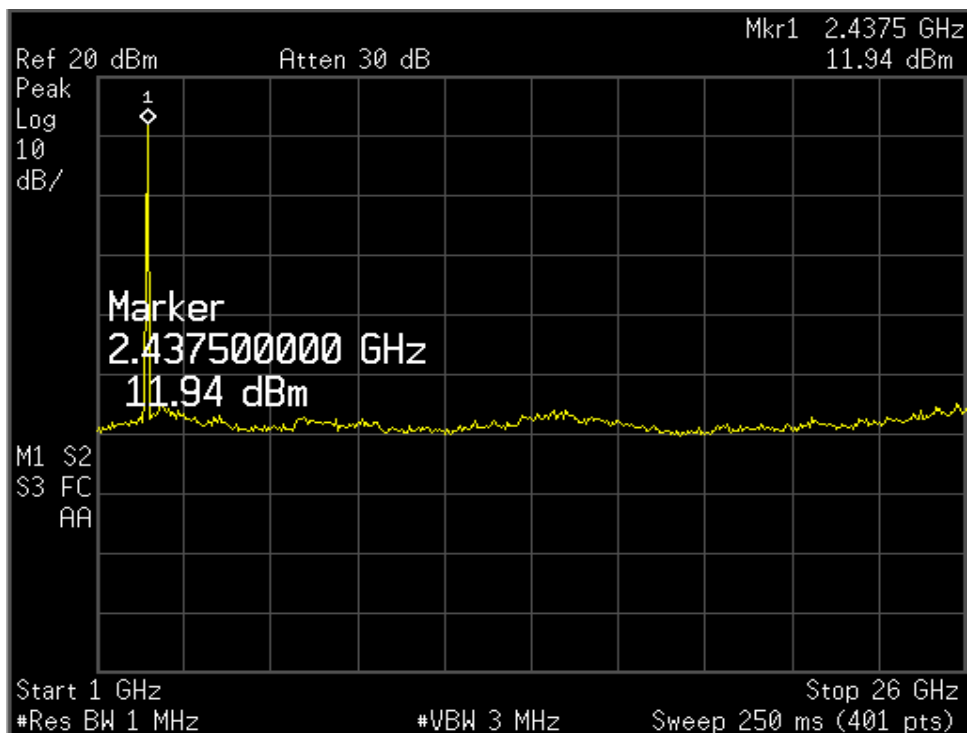
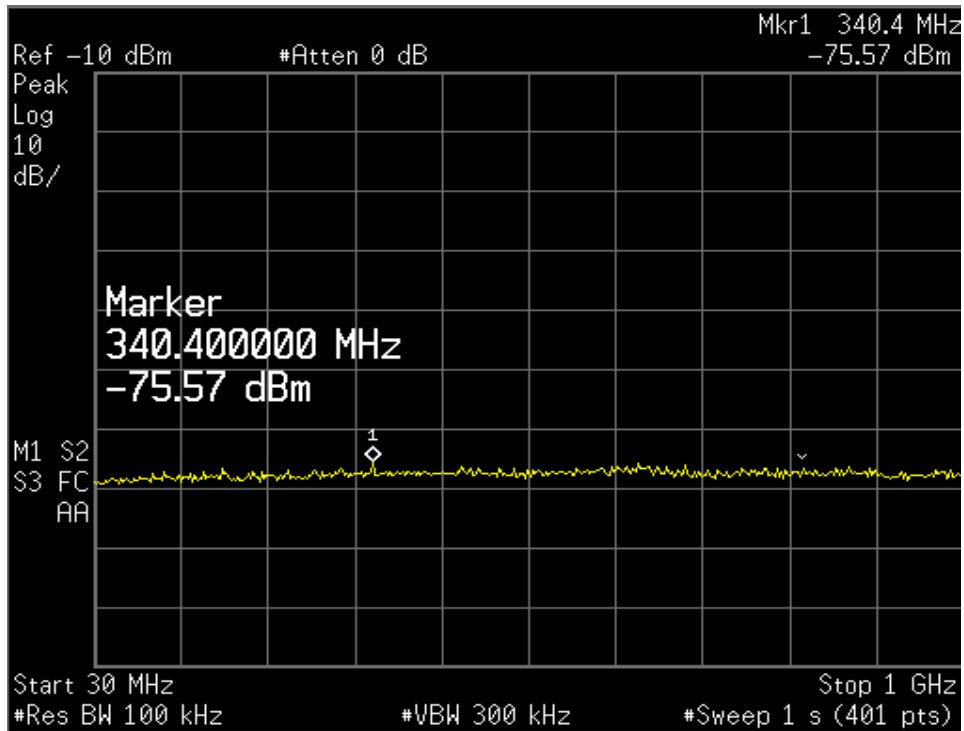


**Channel Frequency: 2472 MHz**

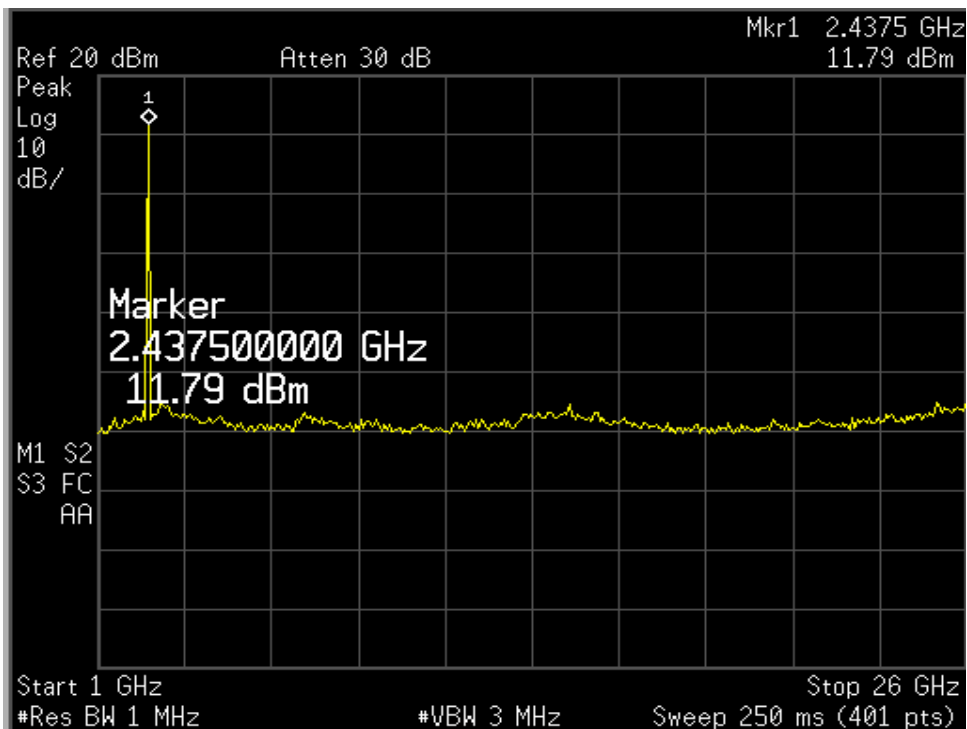
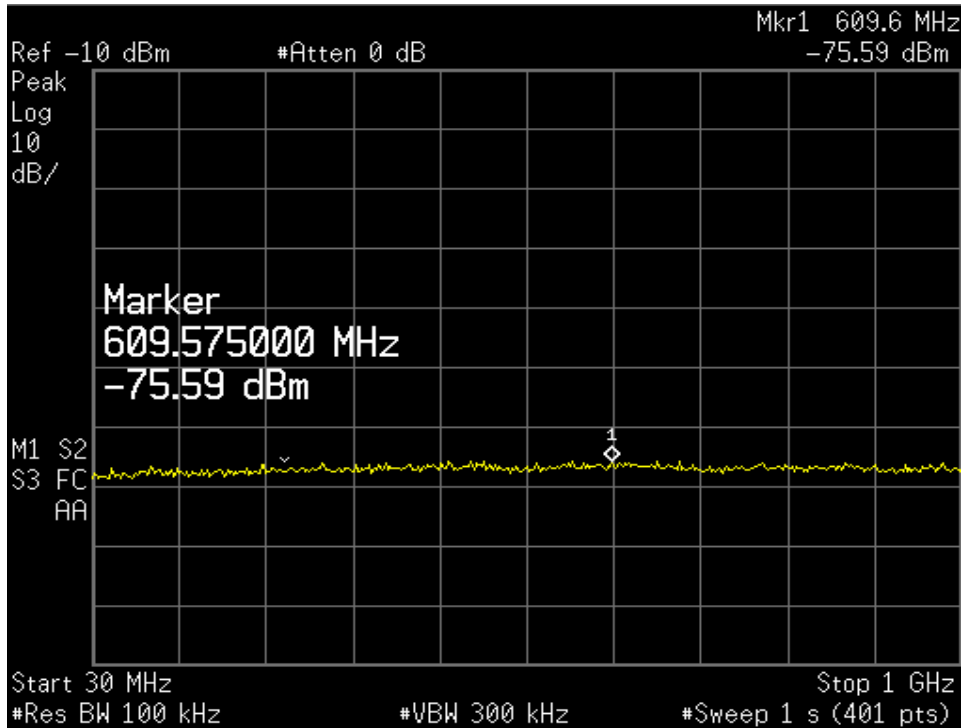
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**Conducted Spurious Emission**

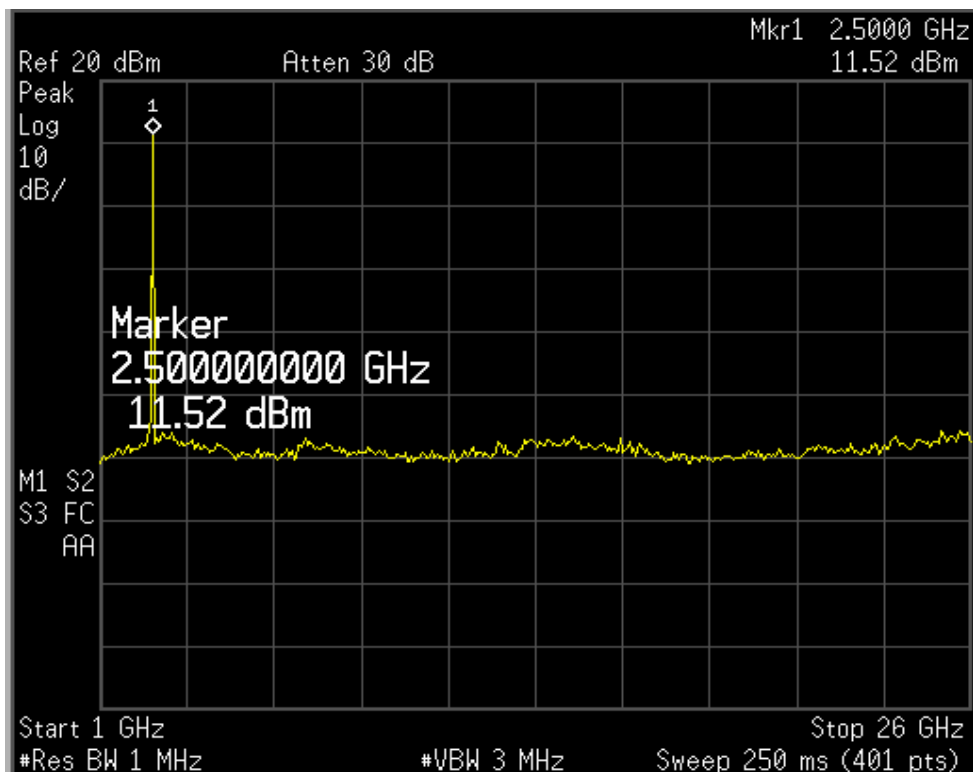
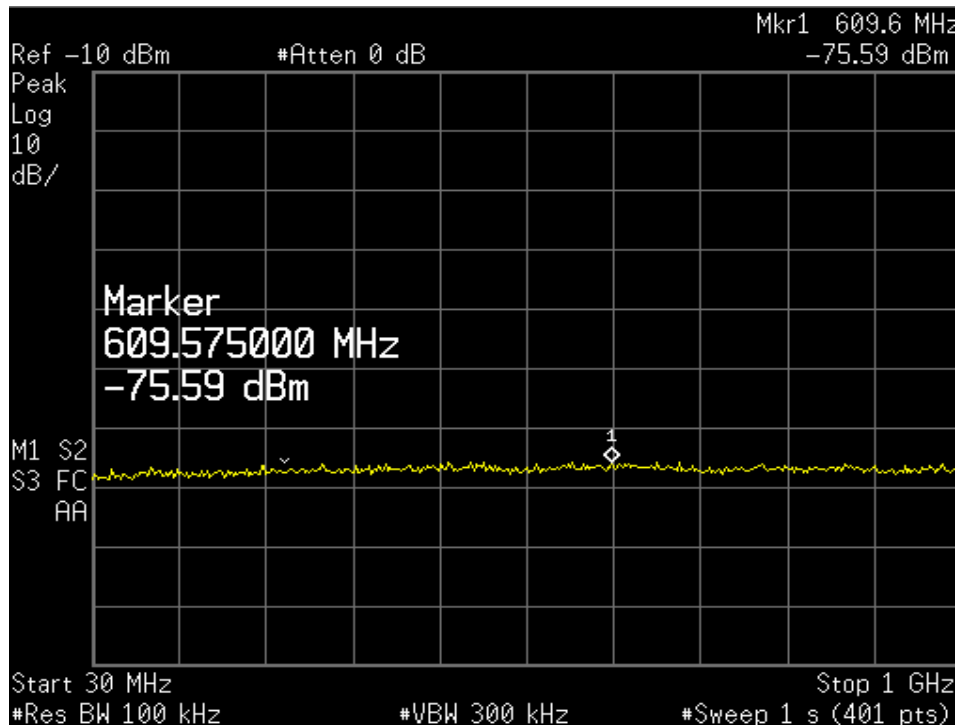
**Modulation: 802.11b**



**Channel frequency: 2412 MHz**



**Channel frequency: 2442 MHz**

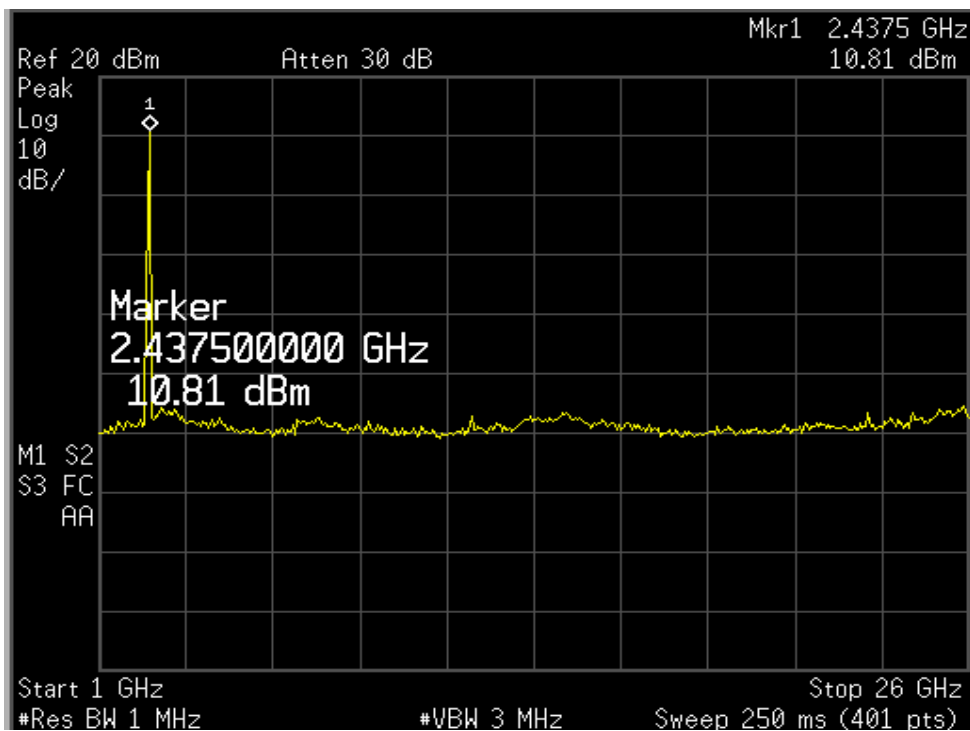
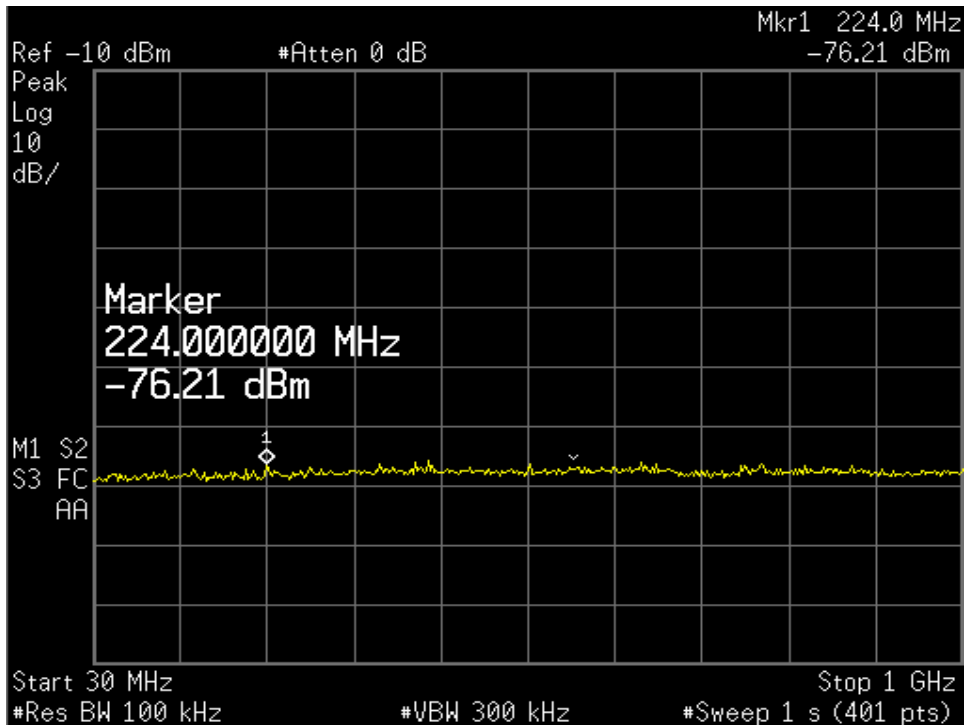


**Channel frequency: 2472 MHz**

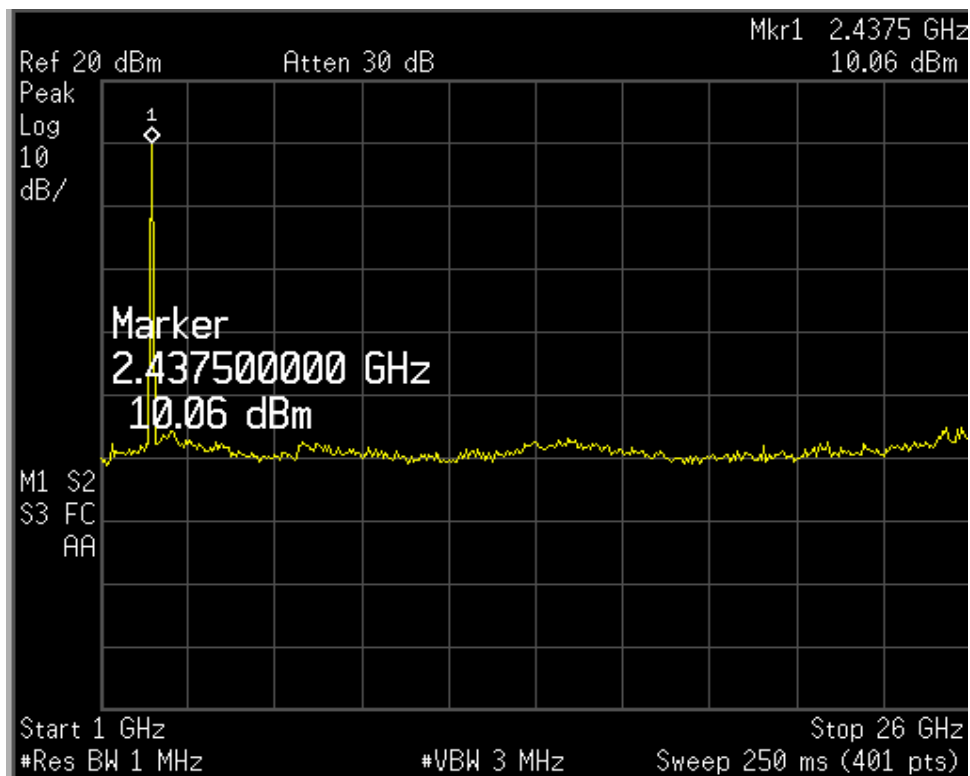
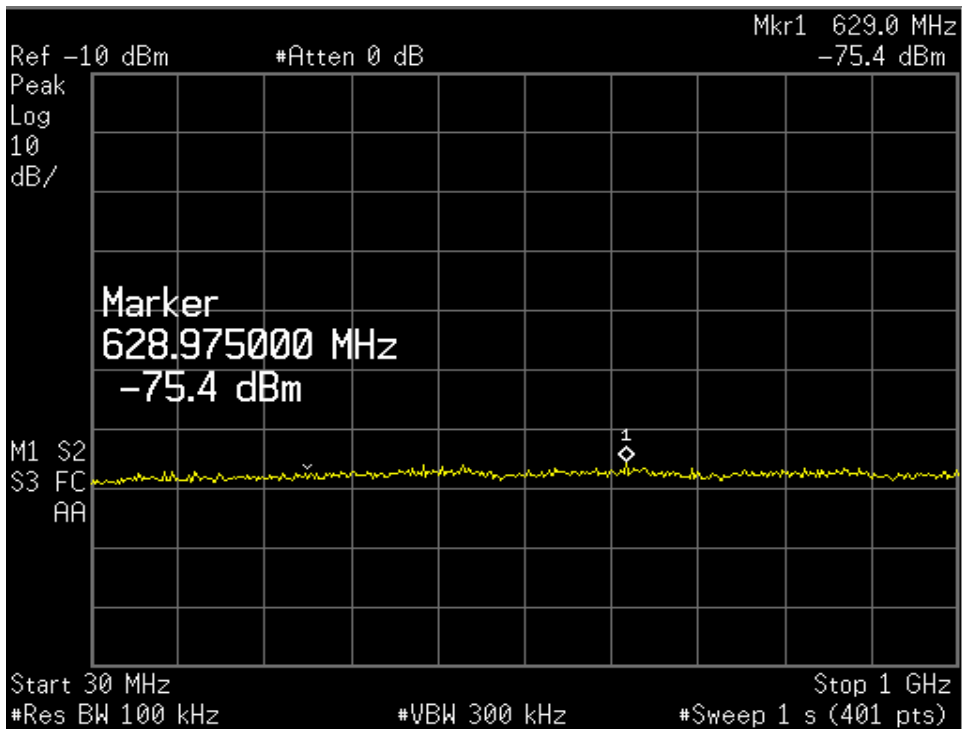


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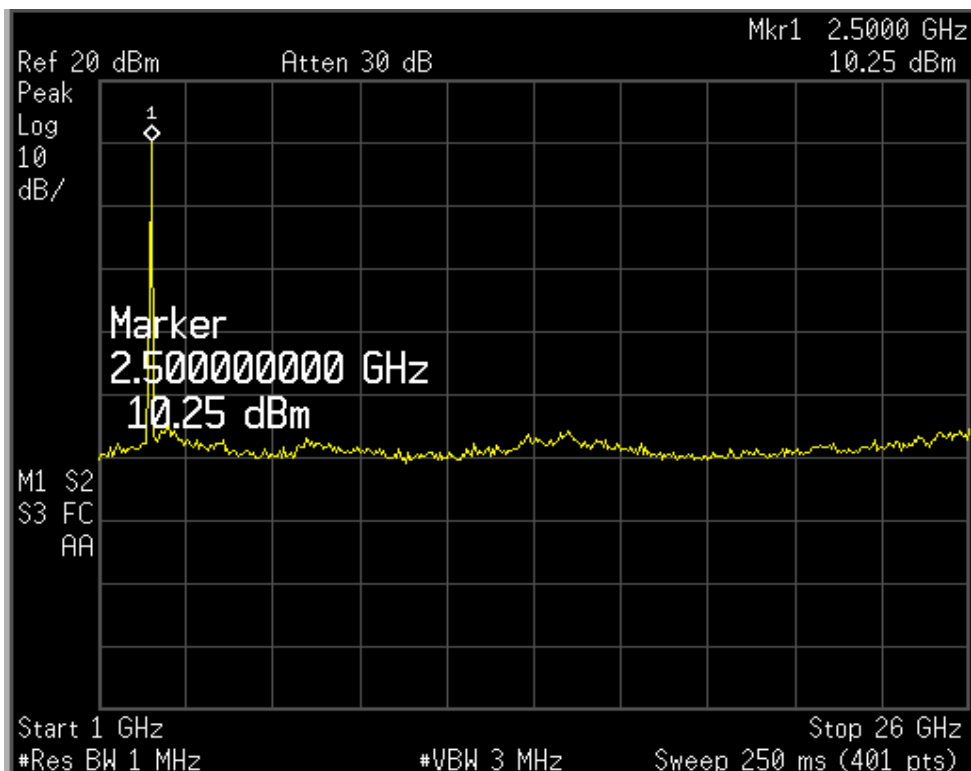
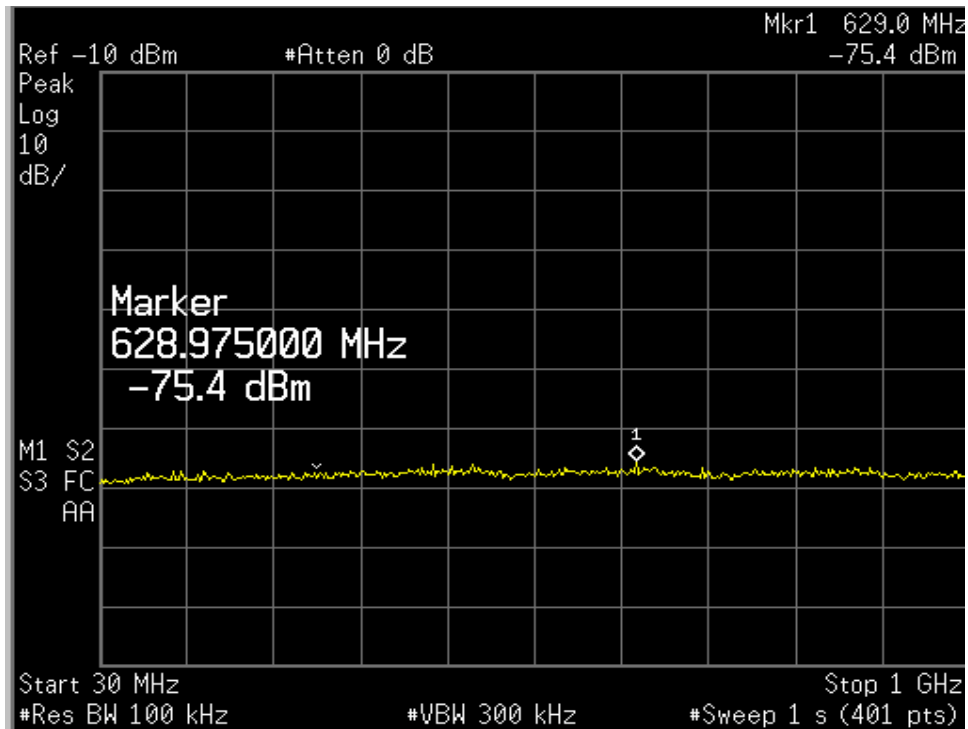
Modulation: 802.11g



Channel frequency: 2412 MHz



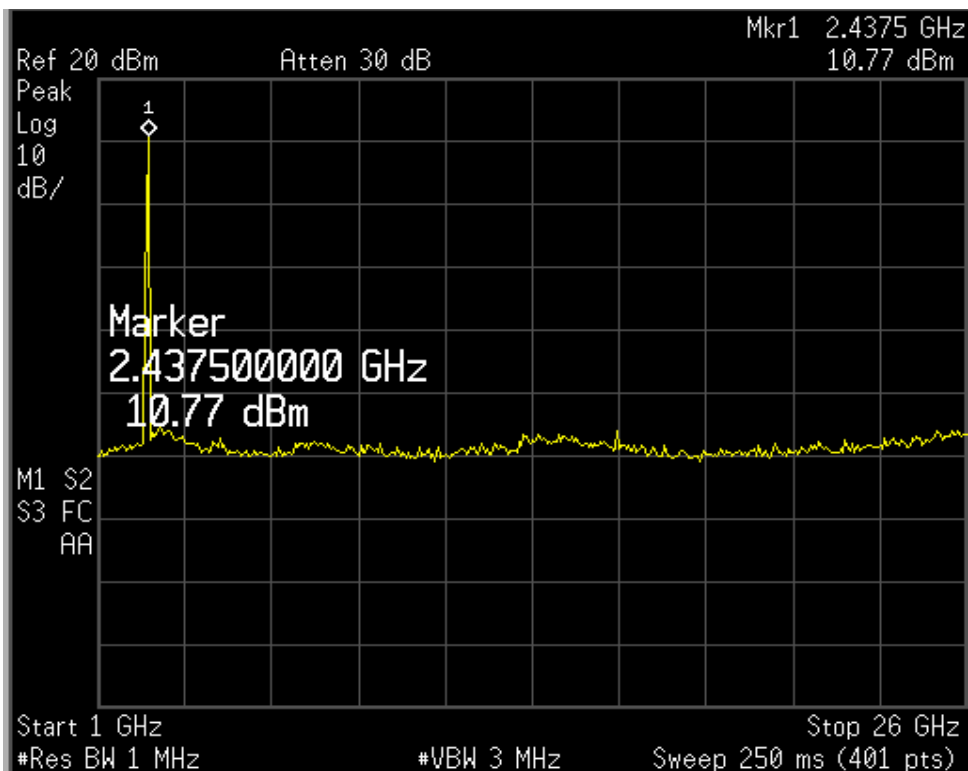
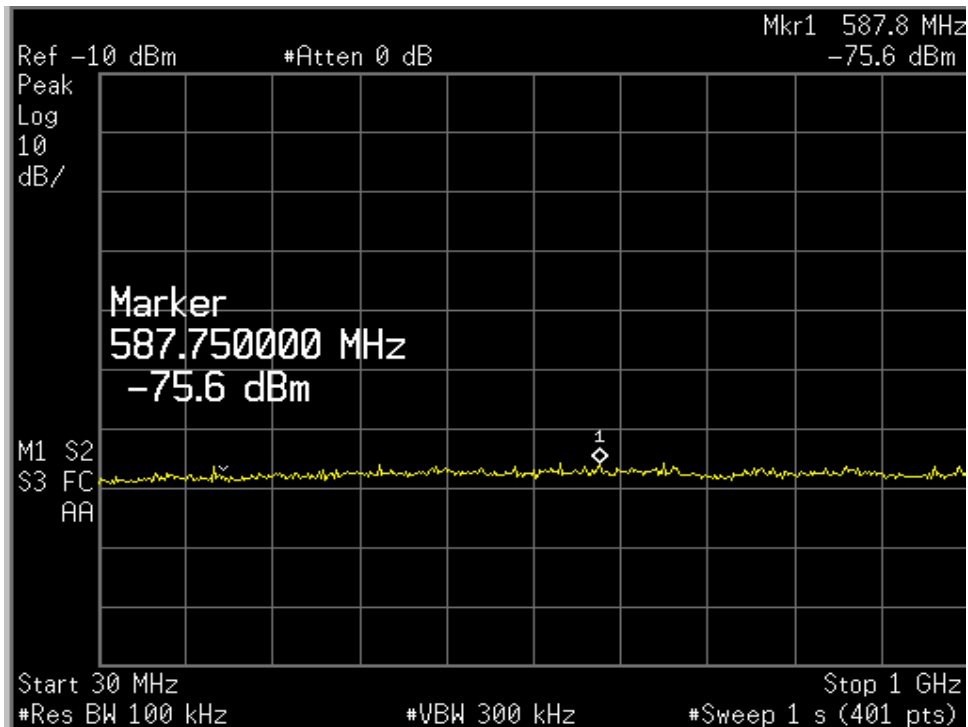
**Channel frequency: 2442 MHz**



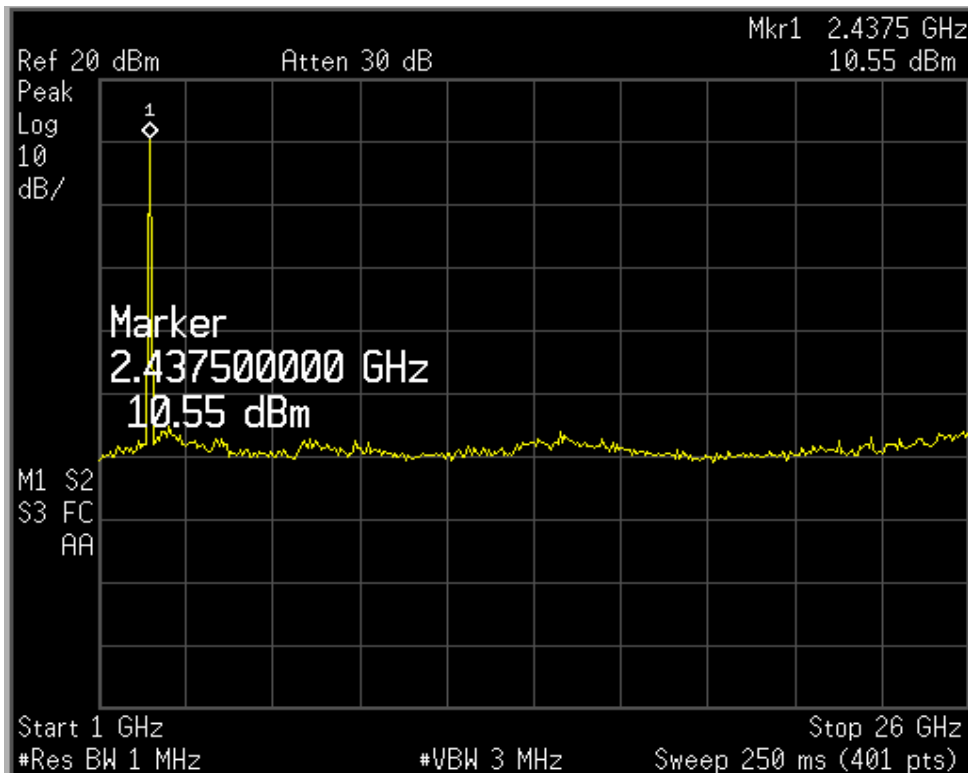
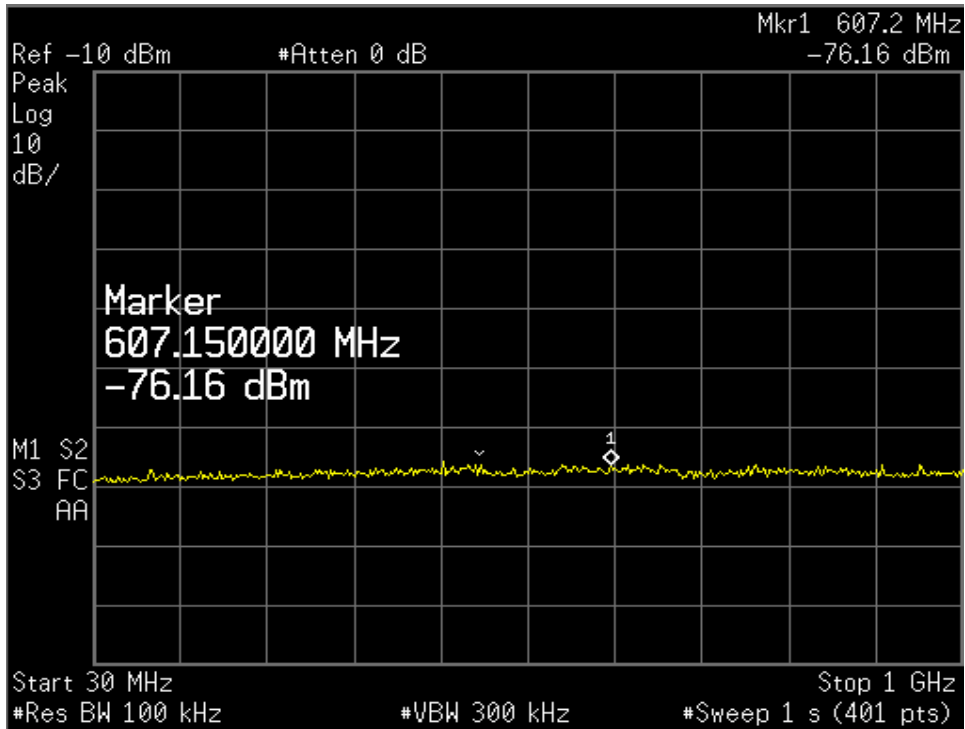
**Channel frequency: 2472 MHz**

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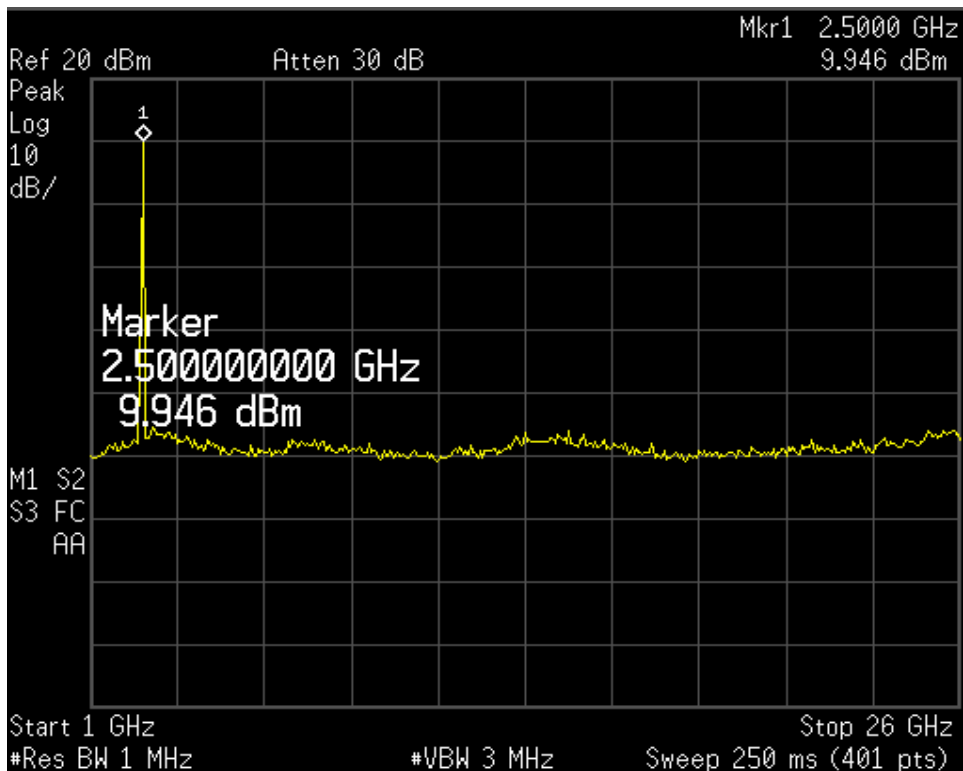
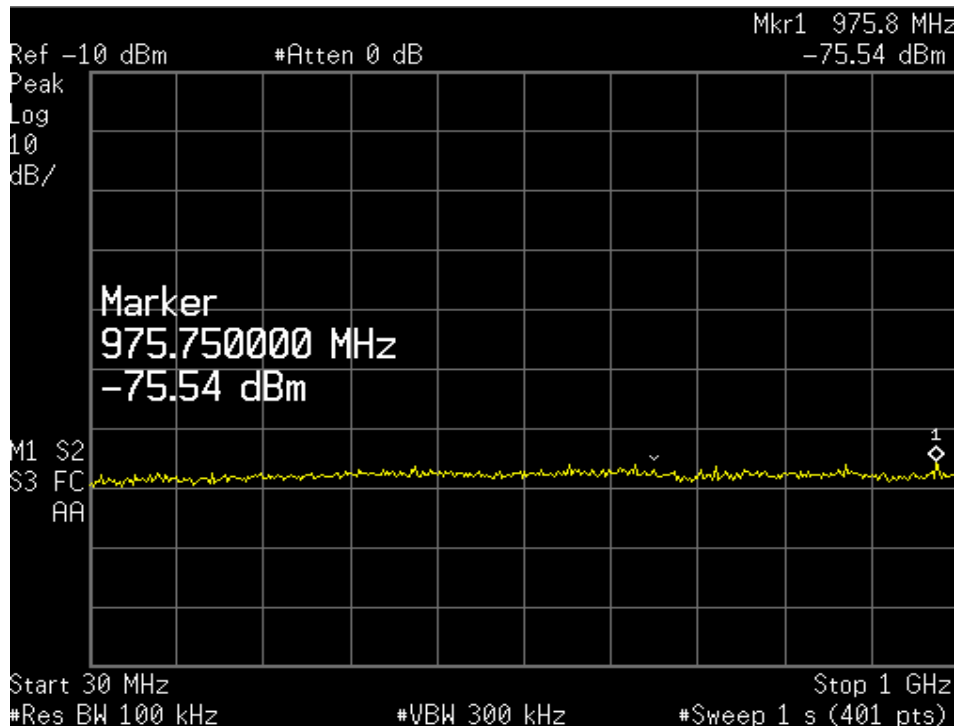
Modulation: 802.11n



Channel frequency: 2412 MHz



**Channel frequency: 2442 MHz**



**Channel frequency: 2472 MHz**

**Spurious Radiated Emissions**
**Section 15.209**
**Result**
**Pass**

Test Specification	FCC Part 15 Section 15.209
Test Method	ANSI C63.4-2003
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Average for frequency above 1GHz
Requirement	As per the limits mentioned in the bellow table

**Limit for Radiated Emission of Section 15.209:**

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength ( $\text{dB}\mu\text{V/m}$ )	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: \* the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88,50 – 53.80, 53.80 – 43.00 and 49.5dB $\mu\text{V/m}$  at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

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## Test result:

Modulation: 802.11b

Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
2412	V	33.36	26.90	40.00	-13.10
		37.64	31.30	40.00	-08.70
		40.00	32.80	40.00	-07.20
		44.12	26.30	40.00	-13.70
		87.76	27.10	40.00	-12.90
		146.56	26.20	43.50	-17.30
		170.32	27.70	43.50	-15.80
		200.00	31.50	43.50	-12.00
		440.00	41.40	46.00	-04.60
		479.96	35.50	46.00	-10.50
		519.98	43.40	46.00	-02.60
		599.96	38.20	46.00	-07.80
		950.51	32.50	46.00	-13.50
		2410.40(P)	90.80	-	*
		2410.40(Av)	78.52	-	*
		4824.00(P)	50.20	74.00	-23.80
	4824.00(Av)	45.50	54.00	-08.50	
	H	40.24	18.70	40.00	-21.30
		170.28	29.70	43.50	-13.80
		200.00	37.10	43.50	-06.40
		279.98	38.90	46.00	-07.10
		440.00	38.40	46.00	-07.60
		519.98	36.80	46.00	-09.20
		680.00	35.60	46.00	-10.40
		914.18	32.80	46.00	-13.20
		2409.20(P)	88.50	-	*
2409.20(Av)		74.62	-	*	
4824.00(P)	51.41	74.00	-22.59		
4824.00(Av)	43.20	54.00	-10.80		



<b>2442</b>	<b>V</b>	33.36	26.90	40.00	-13.10
		44.12	26.30	40.00	-13.70
		78.36	23.30	40.00	-16.70
		146.56	26.20	43.50	-17.30
		170.32	27.70	43.50	-15.80
		200.00	31.50	43.50	-12.00
		440.00	41.40	46.00	-04.60
		479.96	35.50	46.00	-10.50
		519.98	43.40	46.00	-02.60
		599.96	38.20	46.00	-07.80
		950.51	32.50	46.00	-13.50
		2442.40(P)	89.40	-	*
		2442.40(Av)	76.35	-	*
		4884.00(P)	49.32	74.00	-24.68
	4884.00(Av)	46.20	54.00	-07.80	
	<b>H</b>	200.00	37.10	43.50	-06.40
		279.98	38.90	46.00	-07.10
		440.00	38.40	46.00	-07.60
		519.98	36.80	46.00	-09.20
		680.00	35.60	46.00	-10.40
		914.18	32.80	46.00	-13.20
		2441.20(P)	80.60	-	*
		2441.20(Av)	71.36	-	*
		4883.00(P)	46.35	74.00	-27.65
4883.00(Av)		42.32	54.00	-11.68	
<b>2472</b>	<b>V</b>	33.36	26.90	40.00	-13.10
		37.64	31.30	40.00	-08.70
		40.00	32.80	40.00	-07.20
		44.12	26.30	40.00	-13.70
		78.36	23.30	40.00	-16.70
		87.76	27.10	40.00	-12.90
		146.56	26.20	43.50	-17.30
		170.32	27.70	43.50	-15.80
		200.00	31.50	43.50	-12.00
		440.00	41.40	46.00	-04.60

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		479.96	35.50	46.00	-10.50
		519.98	43.40	46.00	-02.60
		599.96	38.20	46.00	-07.80
		950.51	32.50	46.00	-13.50
		2472.20(P)	77.90	-	*
		2472.20(Av)	68.54	-	*
		4943.00(P)	51.20	74.00	-22.80
		4943.00(Av)	47.60	54.00	-06.40
	<b>H</b>	170.28	29.70	43.50	-13.80
		200.00	37.10	43.50	-06.40
		279.98	38.90	46.00	-07.10
		440.00	38.40	46.00	-07.60
		519.98	36.80	46.00	-09.20
		680.00	35.60	46.00	-10.40
		914.18	32.80	46.00	-13.20
		2473.20(P)	70.90	-	*
		2473.20(Av)	66.32	-	*
		4943.40(P)	52.30	74.00	-21.70
		4943.40(Av)	44.32	54.00	-09.68

\* - --> Fundamental Frequency  
P--> Peak Detector  
Av--> Average Detector

**Modulation: 802.11g**

Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
<b>2412</b>	<b>V</b>	34.00	26.20	40.00	-13.80
		37.60	31.50	40.00	-08.50
		40.00	32.40	40.00	-07.60
		13.96	26.40	40.00	-13.60
		78.52	23.00	40.00	-17.00
		87.96	28.40	40.00	-11.60
		139.88	24.70	43.50	-18.80
		159.96	28.30	43.50	-15.20
		200.00	31.20	43.50	-12.30

		399.98	39.40	46.00	-06.60
		440.00	40.30	46.00	-05.70
		519.98	40.00	46.00	-06.00
		599.96	38.90	46.00	-07.10
		957.86	32.70	46.00	-13.30
		2406.00(P)	86.70	-	*
		2406.00(Av)	78.61	-	*
		4824.00(P)	44.12	74.00	-29.88
		4824.00(Av)	37.20	54.00	-16.80
	<b>H</b>	170.20	29.30	43.50	-14.20
		200.00	37.00	43.50	-06.50
		279.98	37.10	46.00	08.90
		440.00	39.00	46.00	07.00
		519.98	32.20	46.00	13.80
		680.00	35.30	46.00	10.70
		943.46	32.70	46.00	13.30
		2404.80(P)	86.60	-	*
		2404.80(Av)	76.52	-	*
		4824.00(P)	42.81	74.00	-31.19
4824.00(Av)	34.30	54.00	-19.70		
<b>2442</b>	<b>V</b>	34.00	26.20	40.00	-13.80
		37.60	31.50	40.00	-08.50
		40.00	32.40	40.00	-07.60
		13.96	26.40	40.00	-13.60
		78.52	23.00	40.00	-17.00
		87.96	28.40	40.00	-11.60
		139.88	24.70	43.50	-18.80
		159.96	28.30	43.50	-15.20
		200.00	31.20	43.50	-12.30
		399.98	39.40	46.00	-06.60
		440.00	40.30	46.00	-05.70
		519.98	40.00	46.00	-06.00
		599.96	38.90	46.00	-07.10
		957.86	32.70	46.00	-13.30
		2441.80(P)	83.50	-	*
		2441.80(Av)	75.62	-	*
		4885.20(P)	44.85	74.00	-29.15
	4885.20(Av)	38.50	54.00	-15.50	
	<b>H</b>	170.20	29.30	43.50	-14.20
		200.00	37.00	43.50	-06.50
		279.98	37.10	46.00	-08.90

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		440.00	39.00	46.00	-07.00
		519.98	32.20	46.00	-13.80
		680.00	35.30	46.00	-10.70
		943.46	32.70	46.00	-13.30
		2430.40(P)	79.10	-	*
		2430.40(Av)	68.65	-	*
		4885.57(P)	42.36	74.00	-31.64
		4885.57(Av)	34.90	54.00	-19.10
<b>2472</b>	<b>V</b>	34.00	26.20	40.00	-13.80
		37.60	31.50	40.00	-08.50
		40.00	32.40	40.00	-07.60
		13.96	26.40	40.00	-13.60
		78.52	23.00	40.00	-17.00
		87.96	28.40	40.00	-11.60
		139.88	24.70	43.50	-18.80
		159.96	28.30	43.50	-15.20
		200.00	31.20	43.50	-12.30
		399.98	39.40	46.00	-06.60
		440.00	40.30	46.00	-05.70
		519.98	40.00	46.00	-06.00
		599.96	38.90	46.00	-07.10
		957.86	32.70	46.00	-13.30
	2473.20(P)	75.80	-	*	
	2473.20(Av)	75.80	-	*	
	4945.52(P)	45.21	74.00	-28.79	
	4945.52(Av)	39.10	54.00	-14.90	
	<b>H</b>	170.20	29.30	43.50	-14.20
		200.00	37.00	43.50	-06.50
		279.98	37.10	46.00	-08.90
		440.00	39.00	46.00	-07.00
		519.98	32.20	46.00	-13.80
		680.00	35.30	46.00	-10.70
		943.46	32.70	46.00	-13.30
		2474.85(P)	70.50	-	*
		2474.85(Av)	65.35	-	*
		4945.65(P)	42.80	74.00	-31.20
4945.65(Av)		35.80	54.00	-18.20	

\* - --> Fundamental Frequency

P--> Peak Detector

Av--> Average Detector

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Modulation: 802.11n

Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
2412	V	37.60	30.20	40.00	-09.80
		40.00	31.52	40.00	-08.48
		13.96	25.61	40.00	-14.39
		78.52	21.50	40.00	-18.50
		159.96	28.30	43.50	-15.20
		200.00	30.6	43.50	-12.90
		399.98	34.00	46.00	-12.00
		440.00	42.00	46.00	-4.00
		519.98	40.21	46.00	-05.79
		599.96	37.85	46.00	-08.15
		957.86	31.52	46.00	-14.48
		2406.00(P)	81.56	-	*
		2406.00(Av)	75.65	-	*
		4824.00(P)	41.20	74.00	-32.80
	4824.00(Av)	34.42	54.00	-19.58	
	H	32.00	10.23	40.00	-29.77
		136.28	20.65	43.50	-22.85
		137.36	21.50	43.50	-22.00
		170.20	28.60	43.50	-14.90
		200.00	37.00	43.50	-06.50
		279.98	37.12	46.00	-08.88
		440.00	38.20	46.00	-07.80
		519.98	32.20	46.00	-13.80
		680.00	34.57	46.00	-11.43
		943.46	32.70	46.00	-13.30
		2404.80(P)	80.42	-	*
2404.80(Av)		74.62	-	*	
4824.00(P)	35.62	74.00	-38.38		
4824.00(Av)	29.86	54.00	-24.14		

<b>2442</b>	<b>V</b>	37.60	30.25	40.00	-09.75
		40.00	31.65	40.00	-08.35
		13.96	26.4	40.00	-13.60
		78.52	22.62	40.00	-17.38
		87.96	27.64	40.00	-12.36
		139.88	24.7	43.50	-18.8
		159.96	24.01	43.50	-19.49
		200.00	30.06	43.50	-13.44
		399.98	38.56	46.00	-07.44
		440.00	38.62	46.00	-07.38
		519.98	39.65	46.00	-06.35
		599.96	37.54	46.00	-08.46
		957.86	31.2	46.00	-14.8
		2441.80(P)	79.82	-	*
		2441.80(Av)	71.64	-	*
	4885.20(P)	36.51	74.00	-37.49	
	4885.20(Av)	30.62	54.00	-23.38	
	<b>H</b>	170.20	29.30	43.50	-14.20
		200.00	37.00	43.50	-06.50
		279.98	37.10	46.00	-08.90
440.00		39.00	46.00	-07.00	
519.98		32.20	46.00	-13.80	
680.00		35.30	46.00	-10.70	
943.46		32.70	46.00	-13.30	
2440.40(P)		77.62	-	*	
2440.40(Av)		71.35	-	*	
4885.57(P)		34.51	74.00	-39.49	
4885.57(Av)	30.42	54.00	-23.58		
<b>2472</b>	<b>V</b>	37.60	30.50	40.00	-09.50
		40.00	32.40	40.00	-07.60
		13.96	24.40	40.00	-15.60
		78.52	23.00	40.00	-17.00
		87.96	28.40	40.00	-11.60
		139.88	22.70	43.50	-20.80

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		159.96	28.30	43.50	-15.20
		200.00	30.20	43.50	-13.30
		399.98	37.40	46.00	-08.60
		440.00	40.30	46.00	-05.70
		519.98	40.00	46.00	-06.00
		599.96	36.90	46.00	-09.10
		957.86	32.70	46.00	-13.30
		2473.20(P)	70.65	-	*
		2473.20(Av)	65.36	-	*
		4945.52(P)	41.23	74.00	-32.77
		4945.52(Av)	34.58	54.00	-19.42
	<b>H</b>	170.20	29.30	43.50	-14.20
		200.00	35.00	43.50	-08.50
		279.98	37.10	46.00	-08.90
		440.00	37.00	46.00	-09.00
		519.98	32.20	46.00	-13.80
		680.00	35.30	46.00	-10.70
		943.46	32.70	46.00	-13.30
		2474.85	68.91	-	*
		2474.85	62.78	-	*
		4945.65	35.62	74.00	-38.38
		4945.65	31.64	54.00	-22.36

\* - --> Fundamental Frequency

P--> Peak Detector

Av--> Average Detector

**Restricted Bands of Operation**
**Section 15.205**
**Result**
**Pass**

Test Specification	FCC Part 15 Section 15.205
Test Method	ANSI C63.4-2003
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	Peak and Average for frequency above 1GHz

Modulation	Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11b	2412	V	2390.00(P)	47.52	74.00	-26.48
			2390.00(Av)	42.00	54.00	-12.00
		H	2390.00(P)	45.64	74.00	-28.36
			2390.00(Av)	41.35	54.00	-12.65
	2472	V	2483.50(P)	45.14	74.00	-28.86
			2483.50(Av)	39.72	54.00	-14.28
		H	2483.50(P)	43.68	74.00	-30.32
			2483.50(Av)	38.15	54.00	-15.85
802.11g	2412	V	2390.00(P)	40.84	74.00	-33.16
			2390.00(Av)	35.01	54.00	-18.99
		H	2390.00(P)	39.48	74.00	-34.52
			2390.00(Av)	34.62	54.00	-19.38
	2472	V	2483.50(P)	47.74	74.00	-26.26
			2483.50(Av)	41.22	54.00	-12.78
		H	2483.50(P)	46.62	74.00	-27.38
			2483.50(Av)	42.55	54.00	-11.45
802.11n	2412	V	2390.00(P)	39.46	74.00	-34.54
			2390.00(Av)	34.62	54.00	-19.38
		H	2390.00(P)	40.24	74.00	-33.76
			2390.00(Av)	32.62	54.00	-21.38
	2472	V	2483.50(P)	46.85	74.00	-27.15
			2483.50(Av)	39.52	54.00	-14.48
		H	2483.50(P)	45.27	74.00	-28.73
			2483.50(Av)	40.32	54.00	-13.68

P---> Peak detector  
 Av-->Average Detector



**Conducted Emission Test on a.c. Power Line****Section 15.207****Result****Pass**

Test Specification : FCC Part 15 Section 15.207  
Test Method : ANSI C63.4-2003  
Testing Location : Screened room  
Measurement Bandwidth : 9kHz  
Frequency Range : 150kHz – 30MHz  
Supply Voltage : 110 Volt 60Hz AC (Supply to the host)

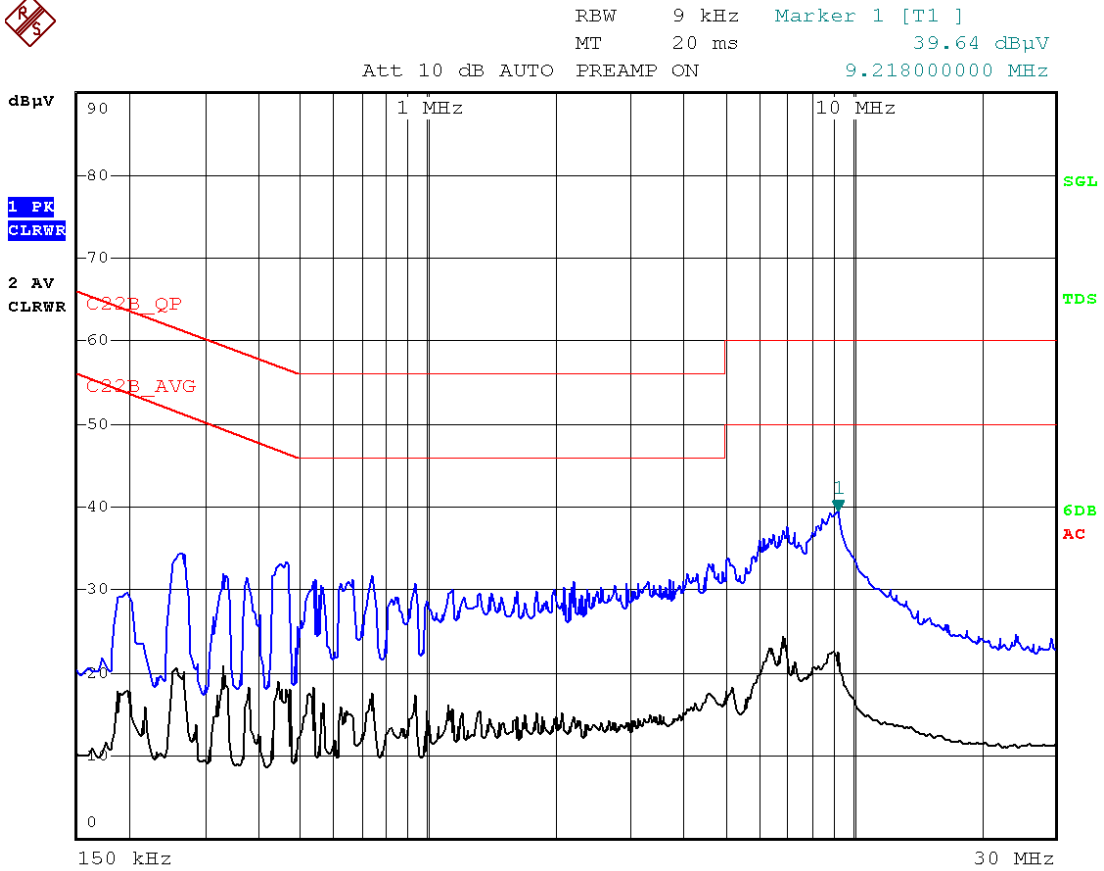
**Test Result:**

**Note:** The module was tested with the PDA for this test with supply 110V AC 60Hz

**Limit of section 15.207**

Frequency of emission (MHz)	QP Limit (dB $\mu$ V)	AV Limit (dB $\mu$ V/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

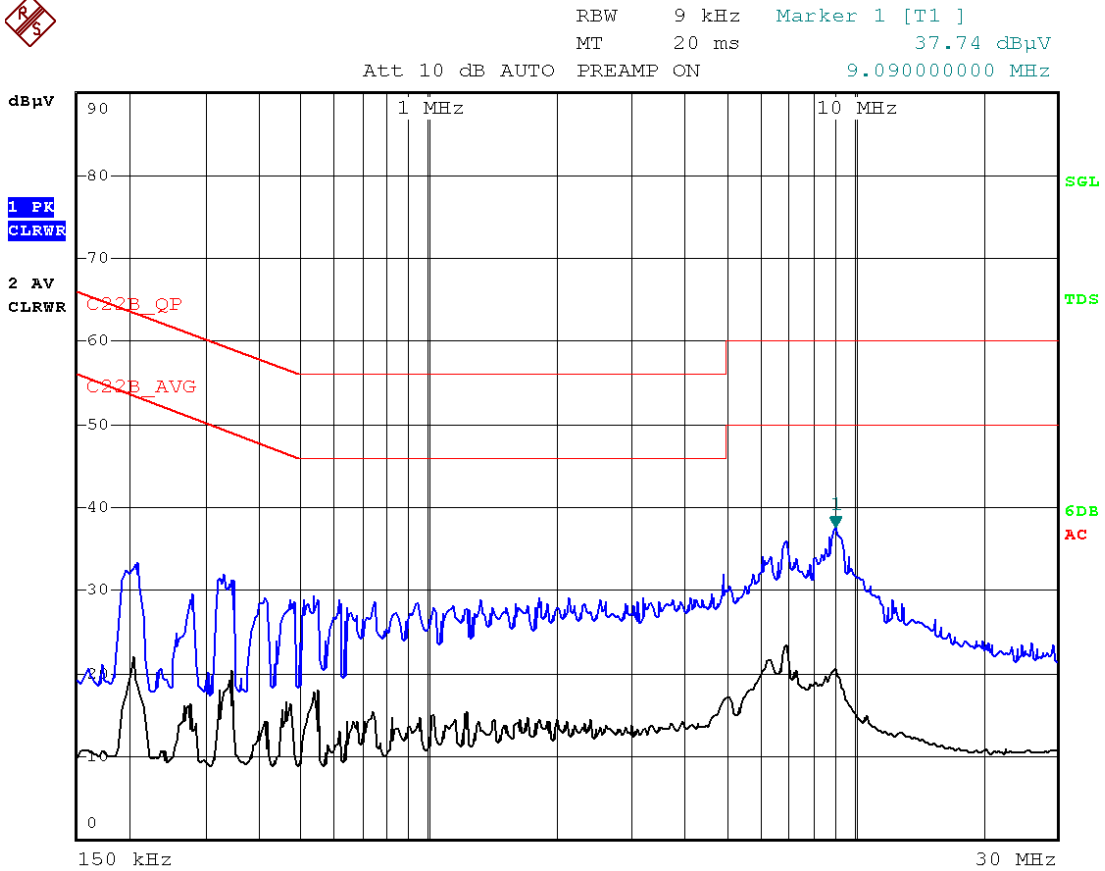
\* Decreases with the logarithm of the frequency



Plot: Line

EDIT PEAK LIST (Final Measurement Results)					
TRACE	FREQUENCY	LEVEL	dBµV	DELTA	LIMIT
Trace1:	C22B_QP				
Trace2:	C22B_AVG				
Trace3:	---				
1 Quasi Peak	462 kHz	30.36	L1	-26.29	
1 Quasi Peak	9.218 MHz	33.64	L1	-26.35	
2 Average	6.906 MHz	23.36	L1	-26.63	
1 Quasi Peak	742 kHz	28.07	L1	-27.92	
2 Average	534 kHz	17.23	L1	-28.76	
1 Quasi Peak	266 kHz	31.56	L1	-29.68	
2 Average	330 kHz	18.79	L1	-30.65	
2 Average	254 kHz	20.85	L1	-30.77	
2 Average	442 kHz	16.19	L1	-30.82	
1 Quasi Peak	330 kHz	27.59	L1	-31.85	

Table: Line



Plot: Neutral

EDIT PEAK LIST (Final Measurement Results)				
TRACE	FREQUENCY	LEVEL dBµV	DELTA	LIMIT dB
Trace1:	C22B_QP			
Trace2:	C22B_AVG			
Trace3:	---			
2 Average	6.918 MHz	22.31 N		-27.68
1 Quasi Peak	9.09 MHz	32.04 N		-27.95
2 Average	546 kHz	17.19 N		-28.80
2 Average	342 kHz	19.93 N		-29.22
1 Quasi Peak	538 kHz	25.90 N		-30.10
2 Average	462 kHz	15.69 N		-30.95
1 Quasi Peak	410 kHz	26.57 N		-31.07
1 Quasi Peak	330 kHz	28.00 N		-31.44
1 Quasi Peak	206 kHz	30.65 N		-32.70
2 Average	202 kHz	20.32 N		-33.20
2 Average	274 kHz	16.36 N		-34.62
1 Quasi Peak	278 kHz	24.50 N		-36.37

Table: Neutral