



APPENDIX D – ORIGINAL FCC REPORT – RS9113SB – FCC ID:XF6-RS9113SB

Produkte
Products

Prüfbericht - Nr.: 19660127 001		Seite 1 von 119	
<i>Test Report No.:</i>		<i>Page 1 of 119</i>	
Auftraggeber: <i>Client:</i>		Redpine Signals Inc 2107 N.First Street, Suite 680, San Jose, CA 95131-2019 United States	
Gegenstand der Prüfung: <i>Test item:</i>		Single Band Combo Module	
Bezeichnung: <i>Identification:</i>	RS9113SB	Serien-Nr.: <i>Serial No.</i>	Engineering Sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	1803050028	Eingangsdatum: <i>Date of receipt:</i>	08.09.2014
Prüfort: <i>Testing location:</i>	Refer Page 4 of 119 for test facilities		
Prüfgrundlage: <i>Test specification:</i>	FCC Part 15: Subpart C Section 15.247 ANSI C63.4-2009		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test items passed the test specification(s).</i>		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India FCC Registration No.: 176555		
geprüft / tested by:		kontrolliert / reviewed by:	
08.12.2014 Vinay N Test Engineer 		08.12.2014 Raghavendra Kulkarni Manager 	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
Sonstiges / Other Aspects:		FCC ID : XF6-RS9113SB	
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
<p>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.</p> <p><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></p>			

Test Result Summary

Clause	Test Item	Result
FCC 15.247(b) (3)	Maximum Average Conducted Output Power	Pass
FCC 15.247(a) (2)	6dB Bandwidth	Pass
FCC 15.247(e)	Maximum Power Spectral Density	Pass
FCC 15.247(d)	Band-edge compliance	Pass
FCC 15.209 / FCC 15.205	Spurious Radiated Emissions and Restricted Bands of Operation	Pass
FCC 15.207	Conducted emission test on a.c Power line	Pass

Note: Conducted measurements are done according to the procedure given in KDB No. **558074**
D01 DTS Meas Guidance v03r02

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List of Test and Measurement Instruments

TUV Rheinland (India) Pvt. Ltd. , Bangalore

Equipment	Manufacturer	Model	S/N	Calibration Due Date
EMI Test Receiver	Rohde &Schwarz	ESU 40	100288	04.10.2015
Hybrid Log Periodic antenna	ETS Lindgren	3142D	00081354	26.07.2015
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	23.03.2015
Double-Ridged Waveguide Horn Antenna	ETS Lindgren	116794	00133356	01.09.2015
Emission Horn Antenna	ETS Lindgren	116706	00107323	24.08.2015
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	11.04.2015
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	27.03.2015

Testing Facilities:

- 1) TUV Rheinland (India) Private Limited
No. 108, West Wing
Electronic city Phase I
Bangalore – 560100

General Product Information

Product Function and Intended Use

The RS9113 module integrates a multi-threaded MAC processor with integrated analog peripherals and support for digital peripherals, baseband digital signal processor, analog front-end, crystal oscillator, calibration OTP memory, single band RF transceiver, single-band high-power amplifiers, baluns, diplexers, diversity switch and Quad-SPI Flash thus providing a fully-integrated solution for embedded wireless applications. The RS9113 based chips and modules leverage and improve upon Redpine's proven low power innovations from Lite-FTM products (RS9110) and provide WLAN 802.11n, BT4.0 and ZigBee convergence solution for integration into mobile and M2M communication devices. It can connect to a host processor through SDIO, USB, SPI or UART interfaces.

Ratings and System Details

Operating Frequency Range	2400MHz – 2483.50MHz	
No. of channel	11 – Wi-Fi 15 – Zigbee 79 - BT Classic 40 – BT LE	
Channel Spacing	5MHz – Wi-Fi, Zigbee 1MHz – BT Classic 2MHz – BT LE	
Transmitted Power	802.11b	16.62 dBm
	802.11g	16.47 dBm
	802.11n	16.72 dBm
	Bluetooth LE	16.11 dBm
	Zigbee	13.07 dBm
Data Rate	802.11b: 1,2, 5.5,11 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 14.4, 21.7, 28.9, 39, 57.8, 65Mbps Bluetooth – 1,2,3 Mbps Zigbee – 250Kbps	
Number of antenna	One	
Antenna Gain and Antenna type	PCB Trace Antenna, 0.5dBi	
Supply Voltage to Module	3.1V – 3.6V DC from Host device	
Environmental	Operational Temperature: -40°C to 85° C	

Test Conditions:

Supply Voltage: 5V DC from USB

Environmental conditions:

Temperature: +24 °C RH: 62%

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Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with 100% duty cycle duty on low, mid and high channel.

Test Operation and Test Software

Test software was used to enable the transmission with 100% duty cycle, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

- None

Test Modes – Data Rates and Modulations

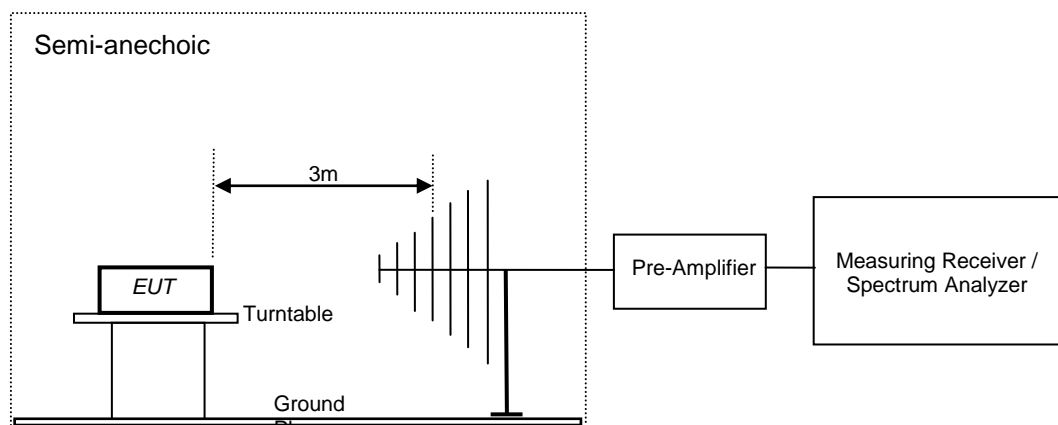
For Radiated spurious emissions, the tests were performed for all data rates and only worst case results are reported in this report.

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Test Methodology

Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.4-2009. 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.



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Test Results

Maximum Average Conducted Output Power

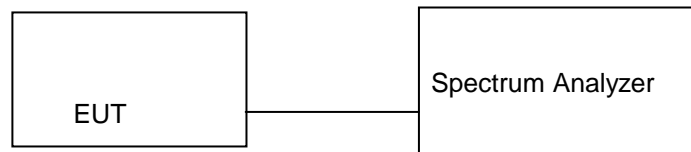
Section 15.247(b) (3)

Result

Pass

Test Specification	FCC Part 15 Subpart C
Measurement Bandwidth (RBW)	300 kHz/1MHz
Requirement	<1 watt (30dBm).

Test Method:

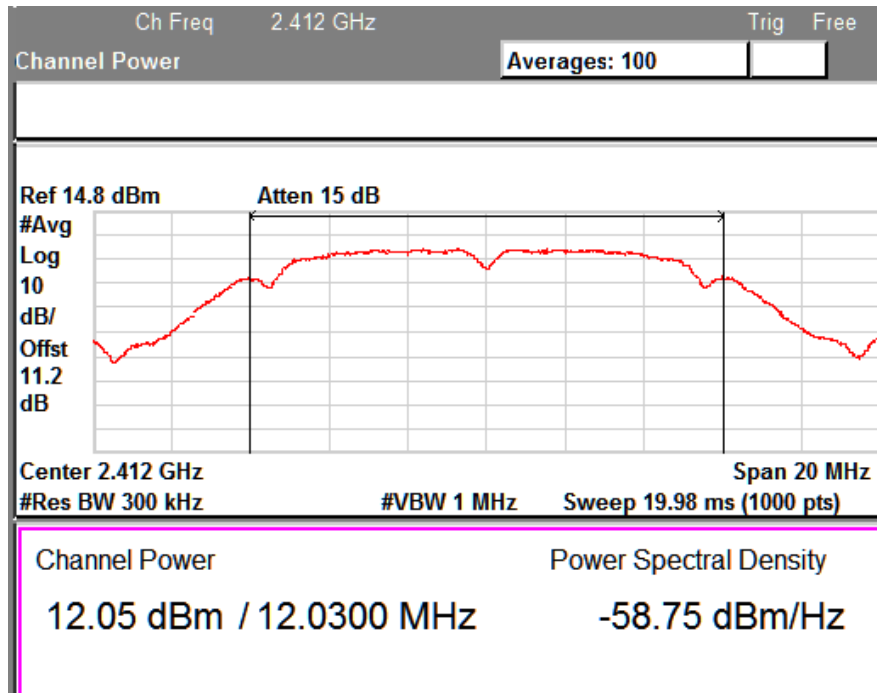


Note: For measurement of Maximum Average conducted output power method AVGSA-1 was used

Test Result: Wi-Fi

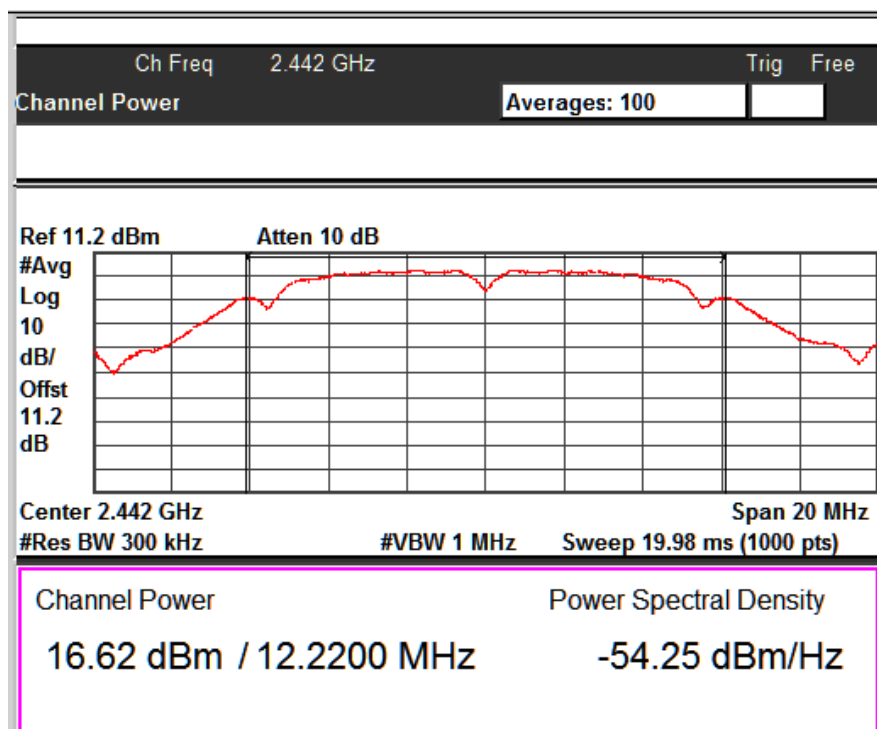
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
b	1	2412.00	12.05	30.00	-17.95
		2442.00	16.62	30.00	-13.38
		2462.00	12.25	30.00	-17.75
	11	2412.00	12.20	30.00	-17.80
		2442.00	16.47	30.00	-13.53
		2462.00	14.89	30.00	-15.11

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Data rate: 1 Mbps

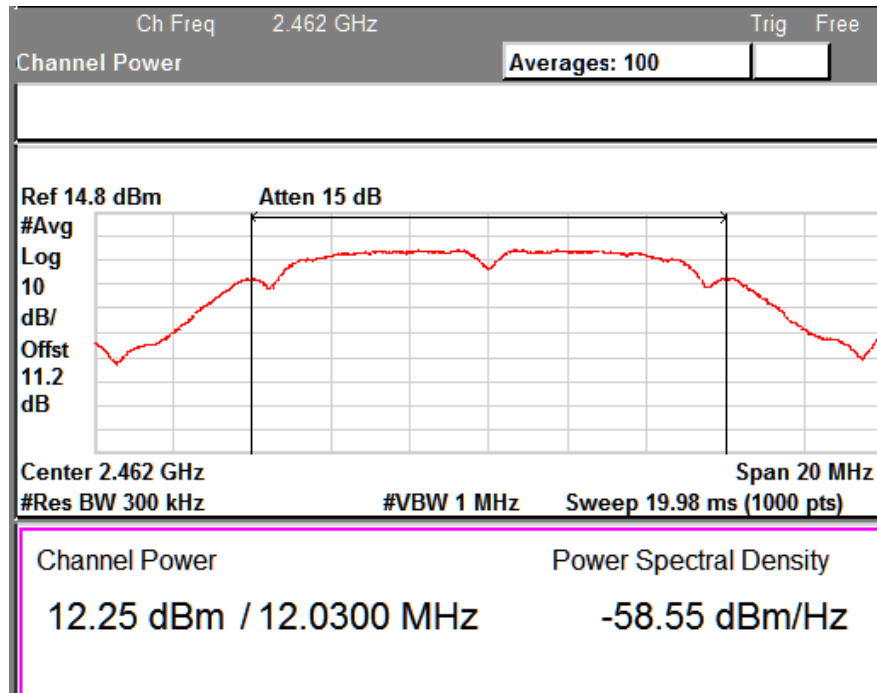
Channel Frequency: 2412 MHz



Data rate: 1 Mbps

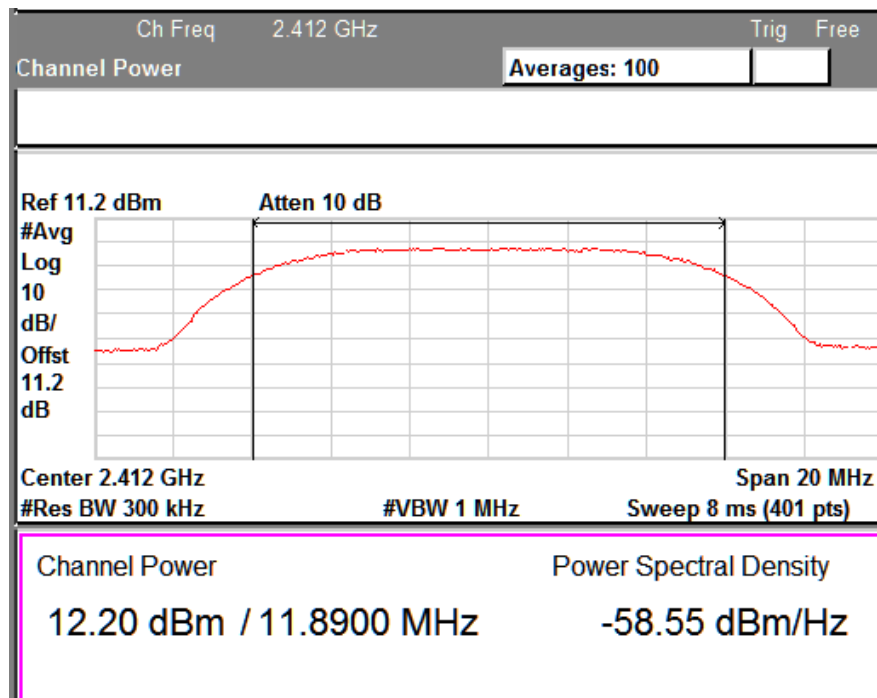
Channel Frequency: 2442 MHz

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Data rate: 1 Mbps

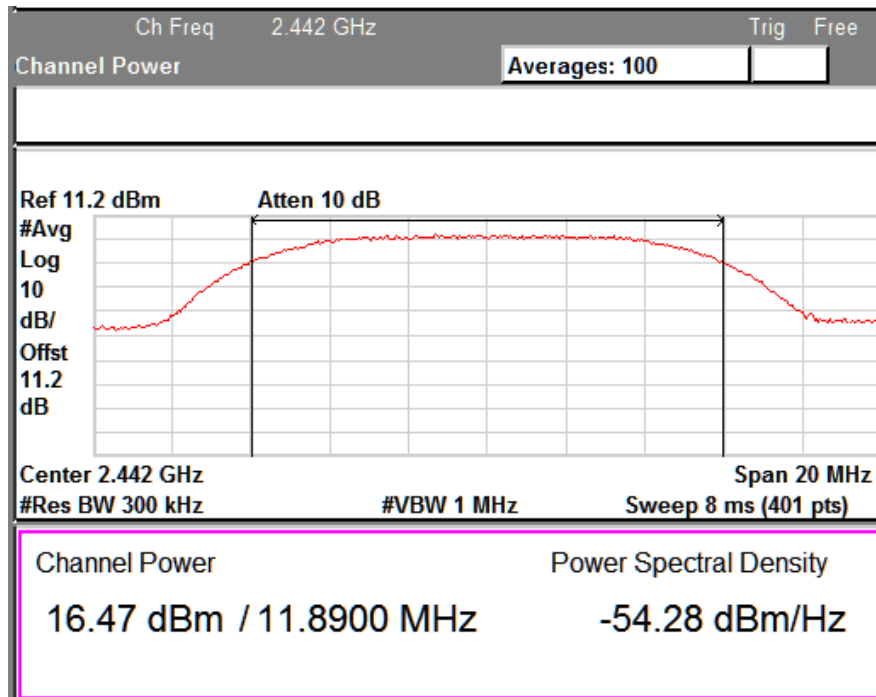
Channel Frequency: 2462 MHz



Data rate: 11 Mbps

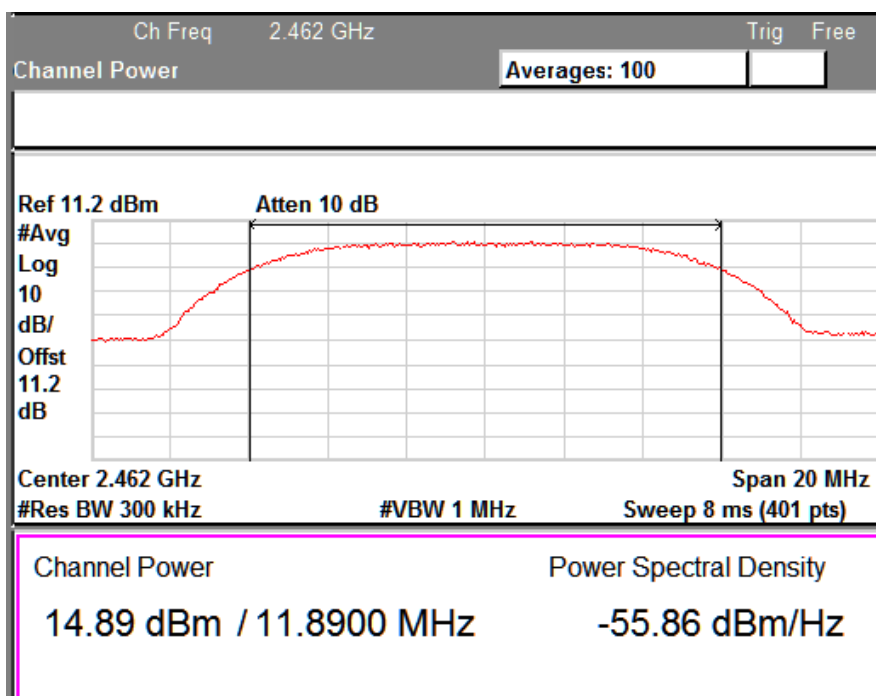
Channel Frequency: 2412 MHz

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Data rate: 11 Mbps

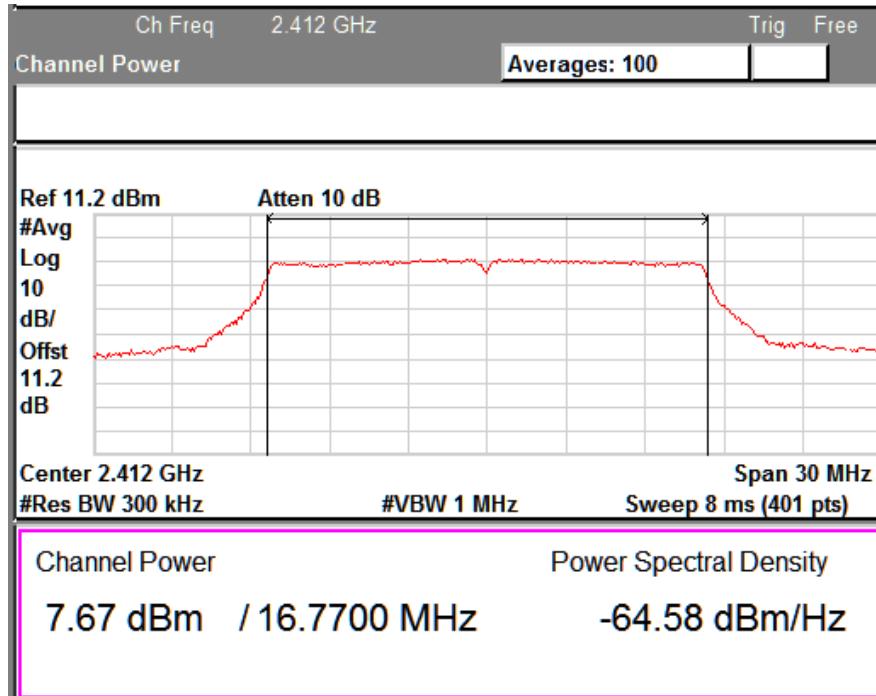
Channel Frequency: 2442 MHz



Data rate: 11 Mbps

Channel Frequency: 2462 MHz

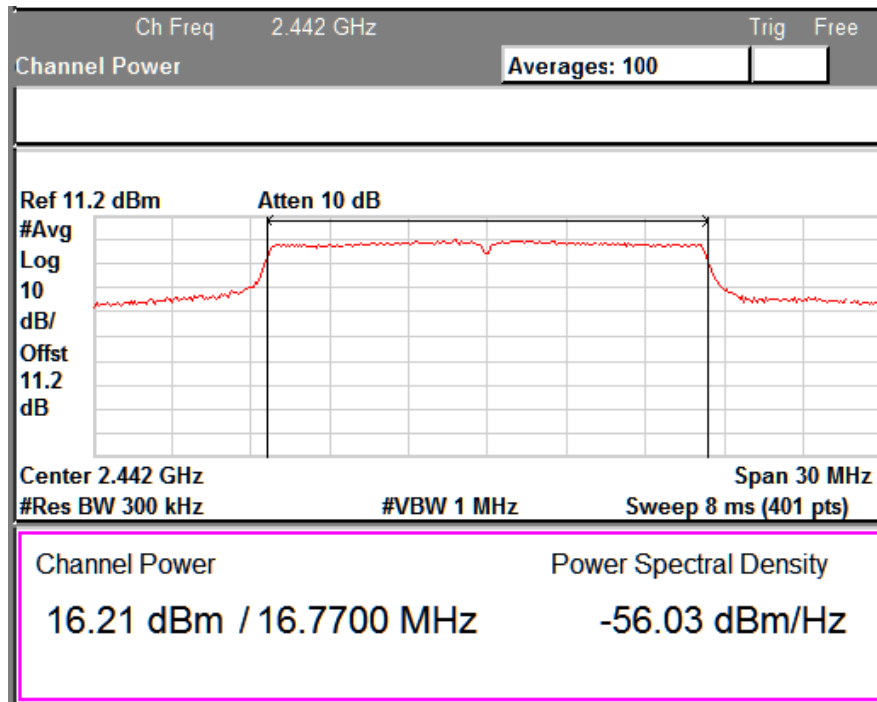
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
g	6	2412.00	7.67	30.00	-22.33
		2442.00	16.21	30.00	-13.79
		2462.00	7.48	30.00	-22.52
	24	2412.00	7.62	30.00	-22.38
		2442.00	16.33	30.00	-13.67
		2462.00	7.50	30.00	-22.50
	54	2412.00	7.68	30.00	-22.32
		2442.00	16.47	30.00	-13.53
		2462.00	7.58	30.00	-22.42



Data rate: 6 Mbps

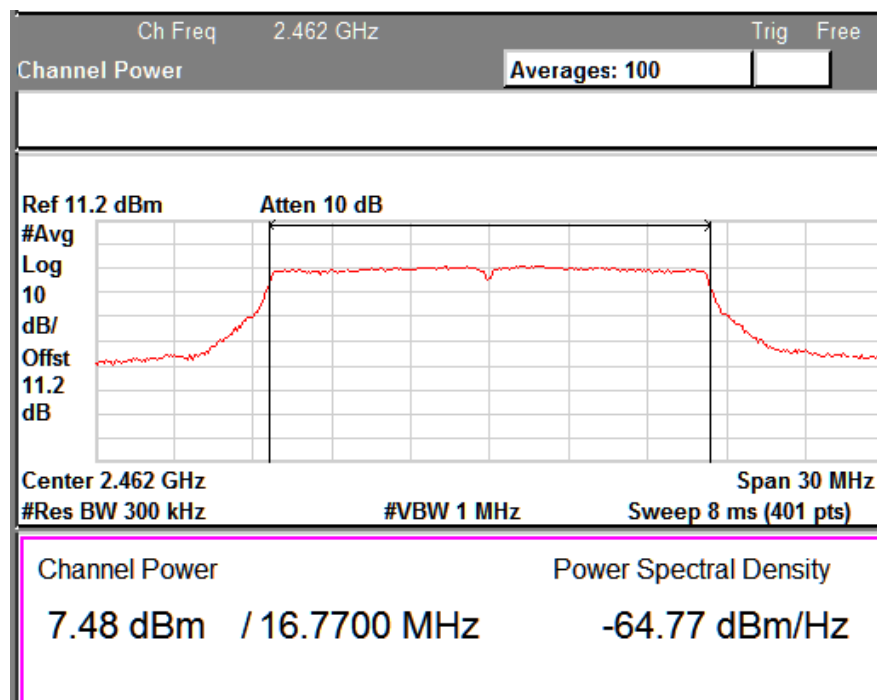
Channel Frequency: 2412 MHz

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Data rate: 6 Mbps

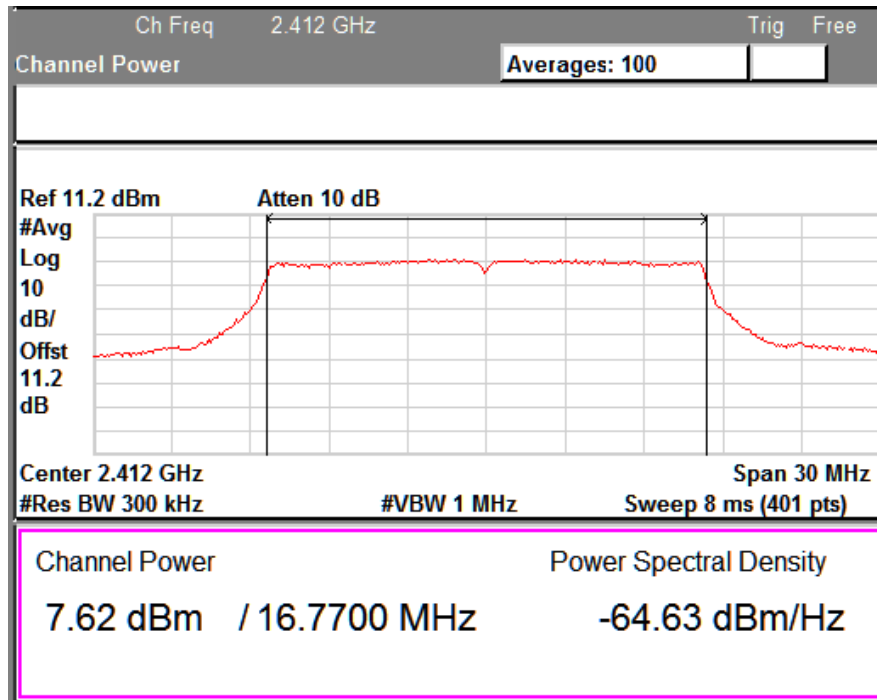
Channel Frequency: 2442 MHz



Data rate: 6 Mbps

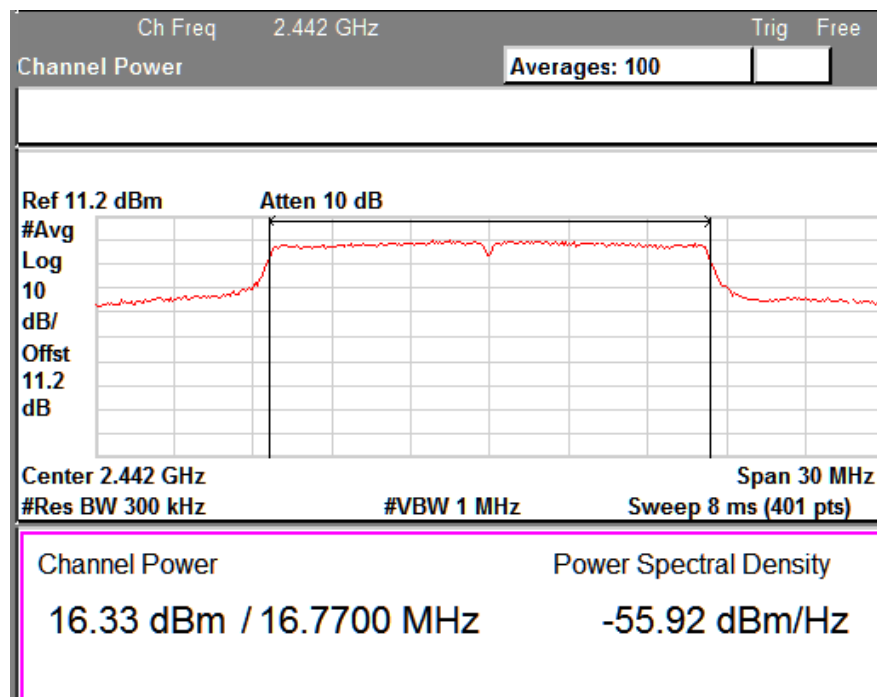
Channel Frequency: 2462 MHz

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Data rate: 24 Mbps

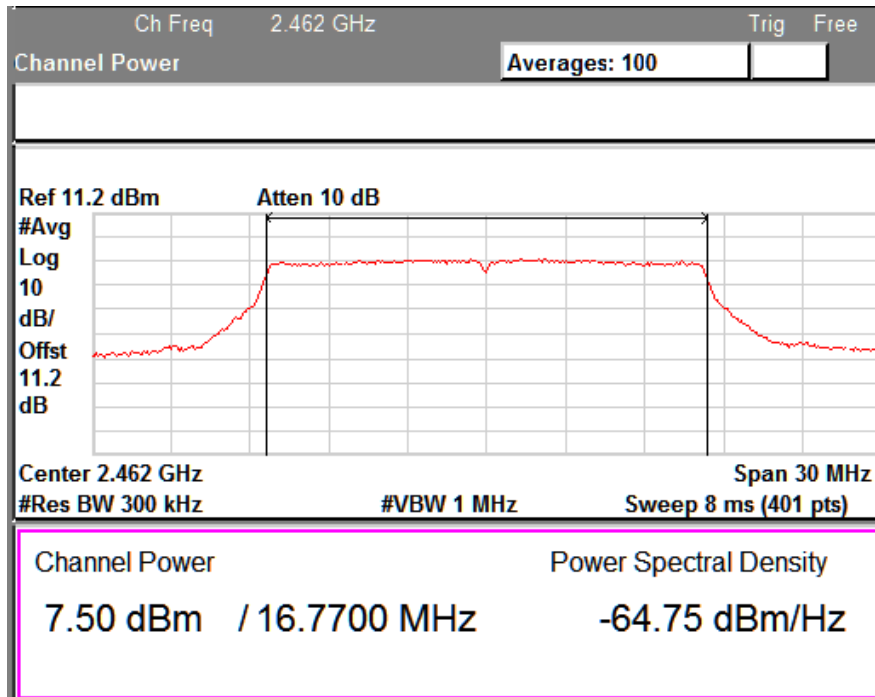
Channel Frequency: 2412 MHz



Data rate: 24 Mbps

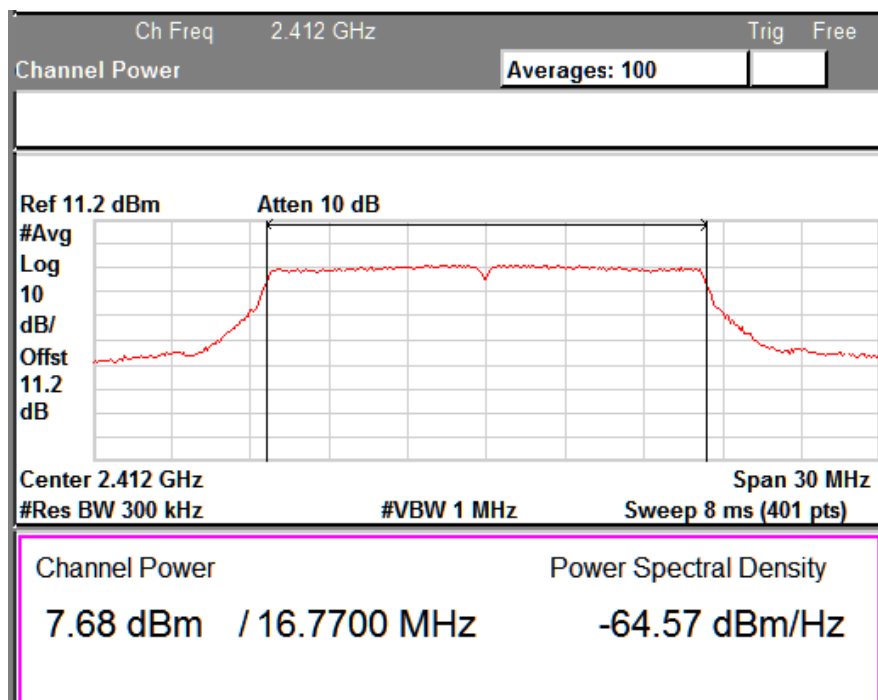
Channel Frequency: 2442 MHz

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Data rate: 24 Mbps

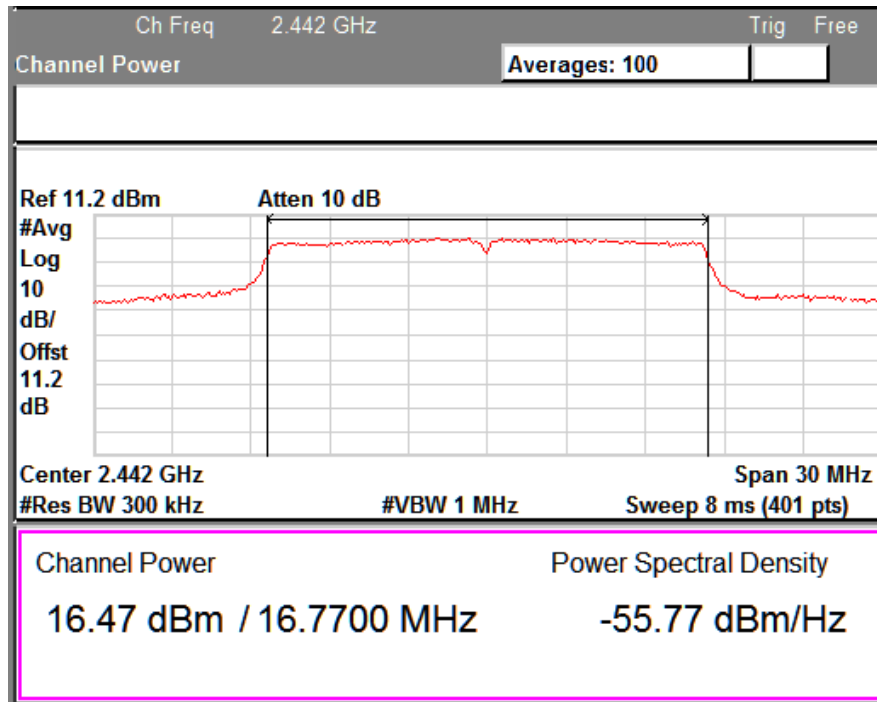
Channel Frequency: 2462 MHz



Data rate: 54 Mbps

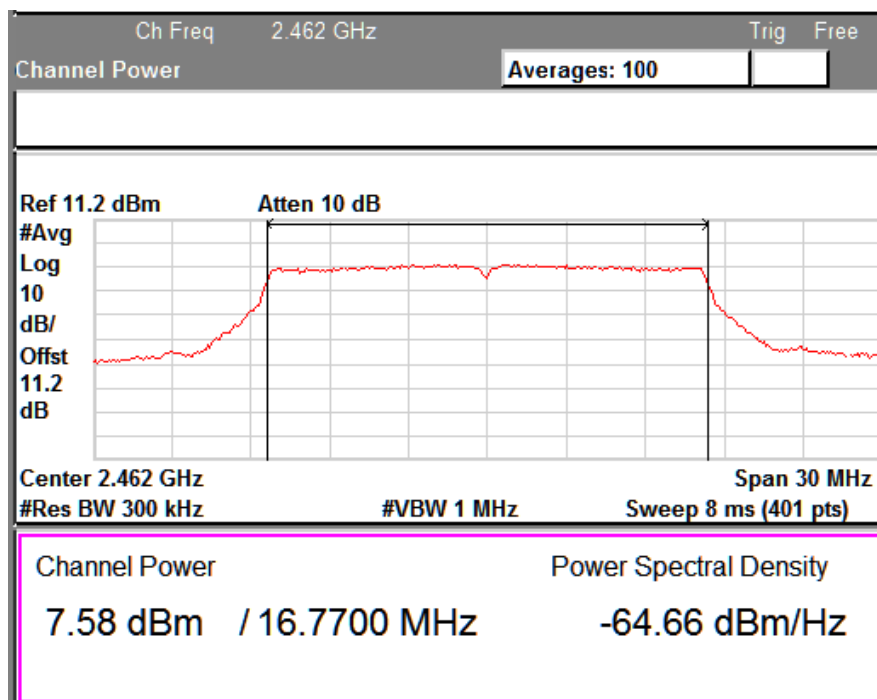
Channel Frequency: 2412 MHz

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Data rate: 54 Mbps

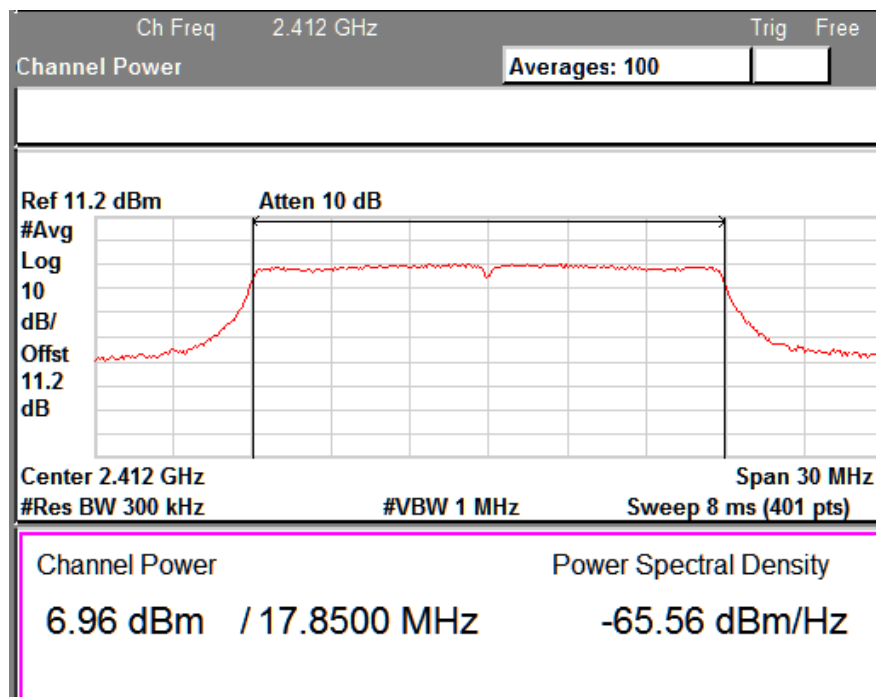
Channel Frequency: 2442 MHz



Data rate: 54 Mbps

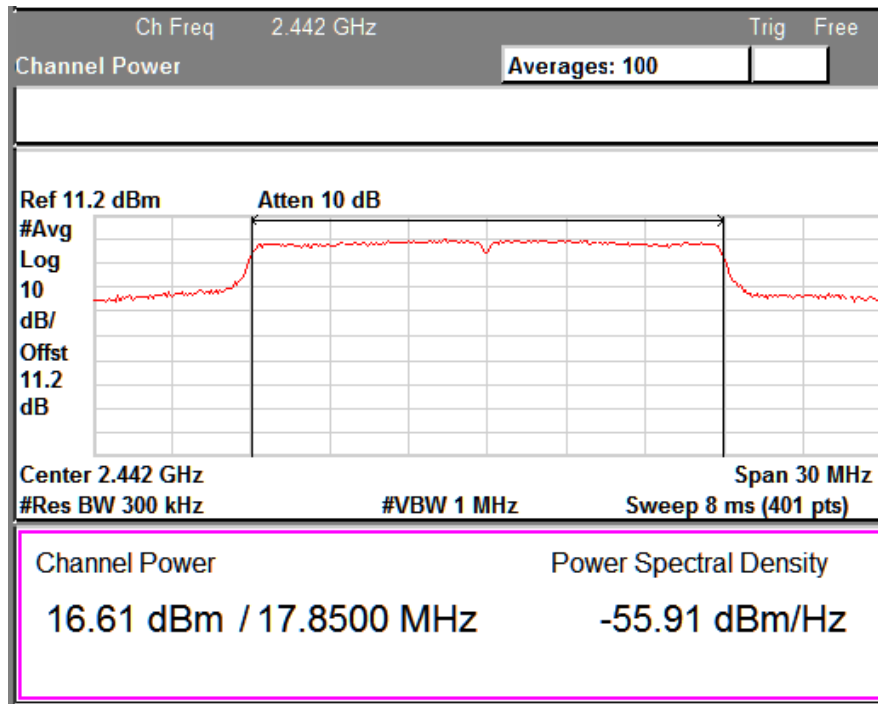
Channel Frequency: 2462 MHz

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
n	6.5	2412.00	6.96	30.00	-23.04
		2442.00	16.61	30.00	-13.39
		2462.00	6.91	30.00	-23.09
	39	2412.00	6.82	30.00	-23.18
		2442.00	16.72	30.00	-13.28
		2462.00	6.93	30.00	-23.07
	65	2412.00	6.82	30.00	-23.18
		2442.00	16.47	30.00	-13.53
		2462.00	6.66	30.00	-23.34



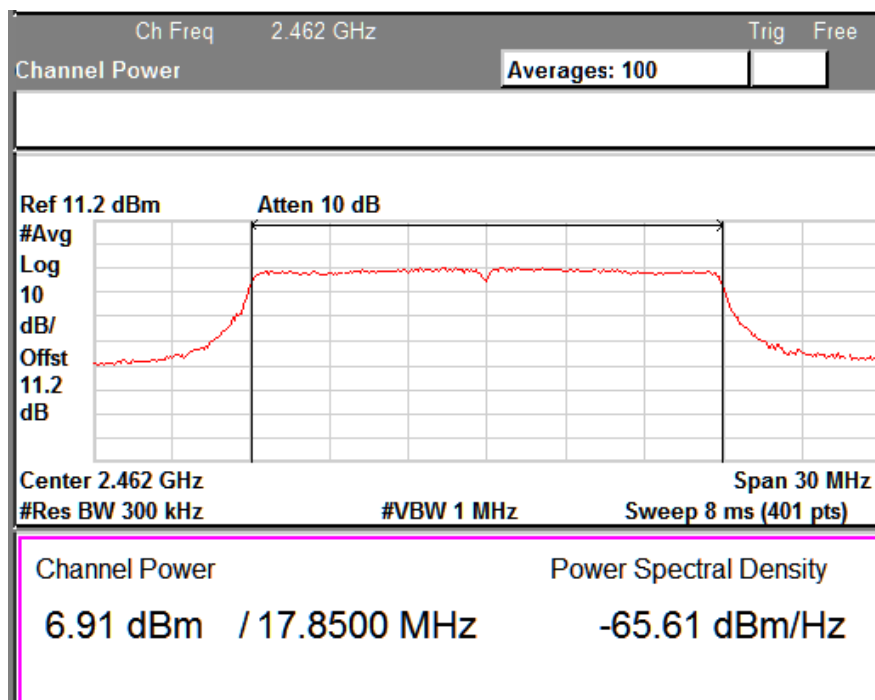
Data Rate: 6.5 Mbps

Channel Frequency: 2412 MHz



Data Rate: 6.5 Mbps

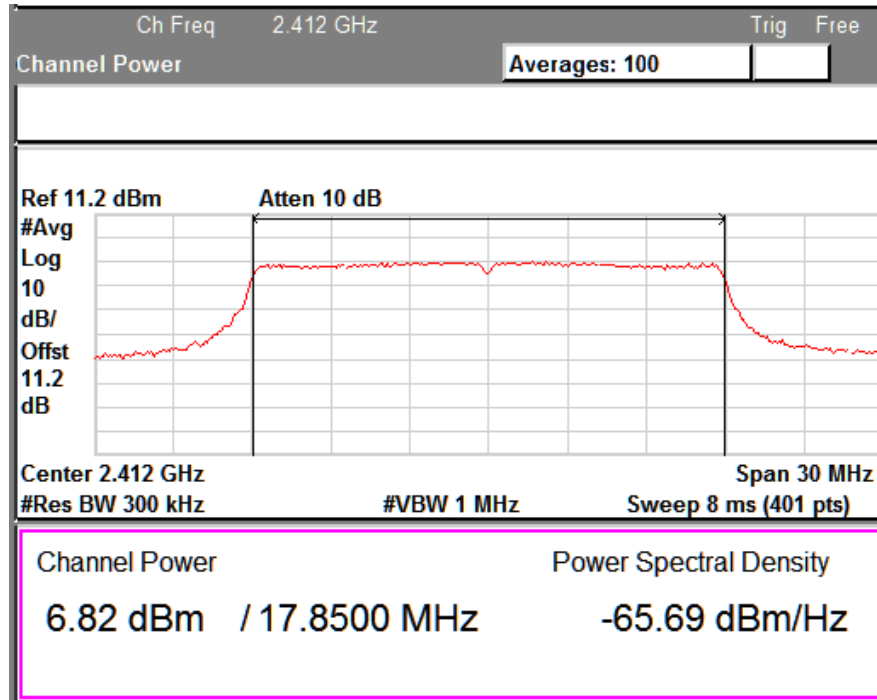
Channel Frequency: 2442 MHz



Data Rate: 6.5 Mbps

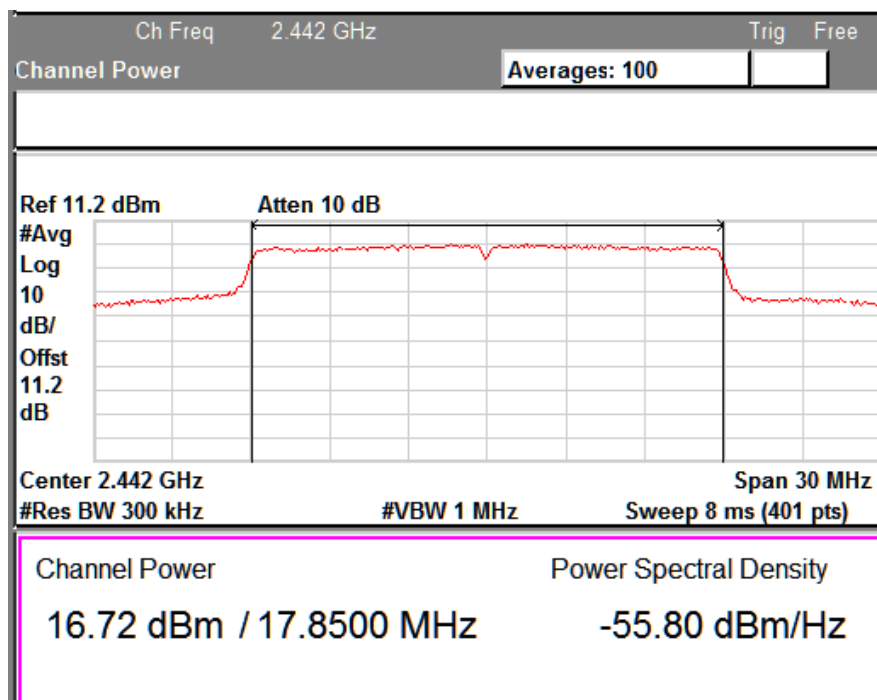
Channel Frequency: 2462 MHz

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Data Rate: 39 Mbps

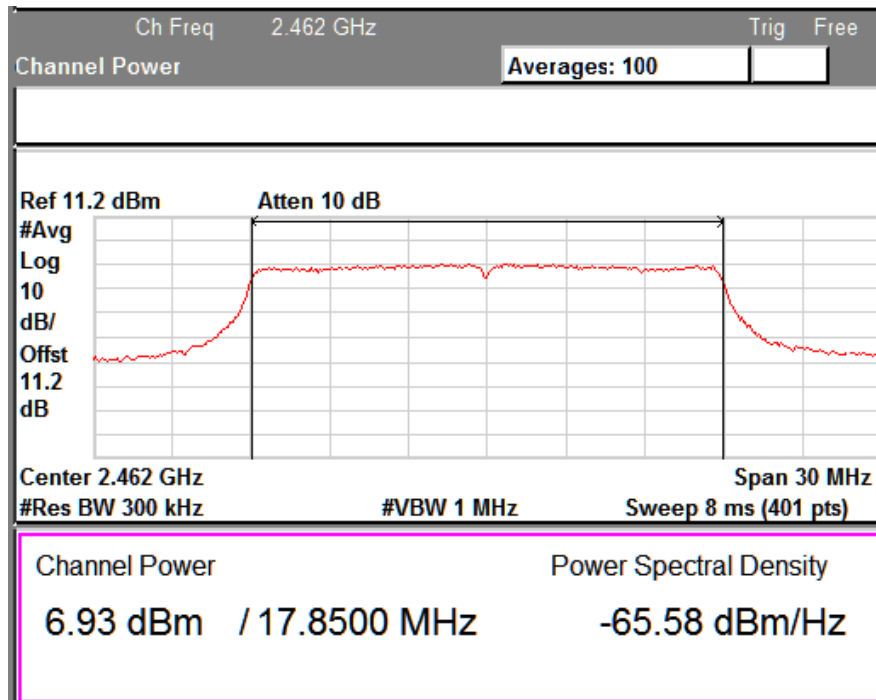
Channel Frequency: 2412 MHz



Data Rate: 39 Mbps

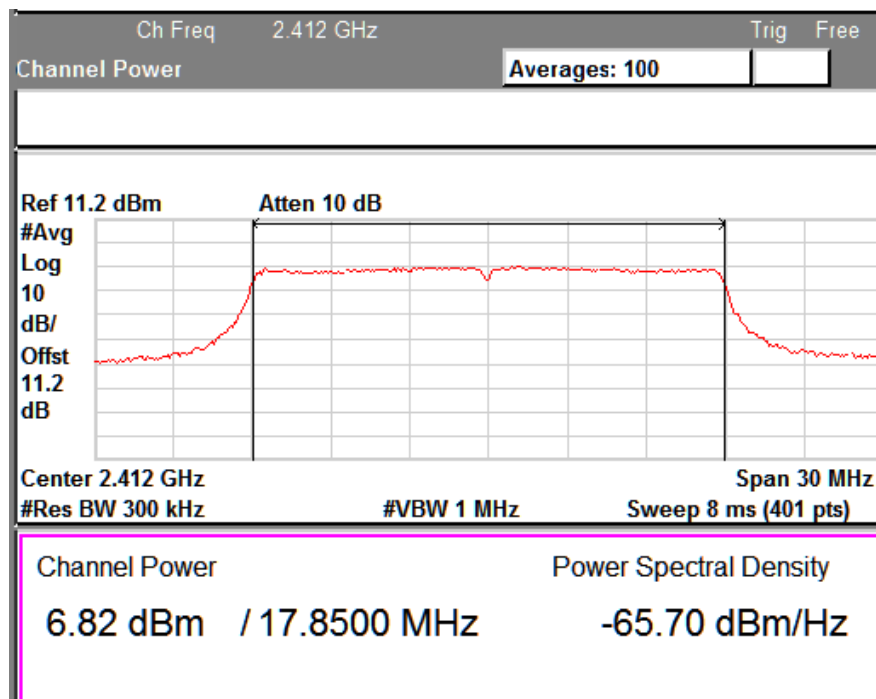
Channel Frequency: 2442 MHz

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Data Rate: 39 Mbps

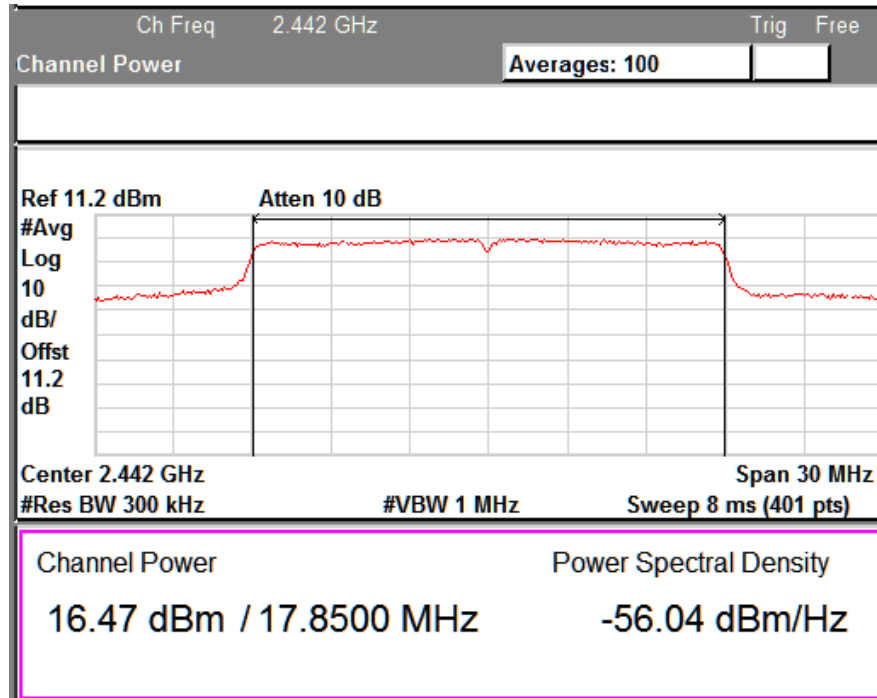
Channel Frequency: 2462 MHz



Data Rate: 65 Mbps

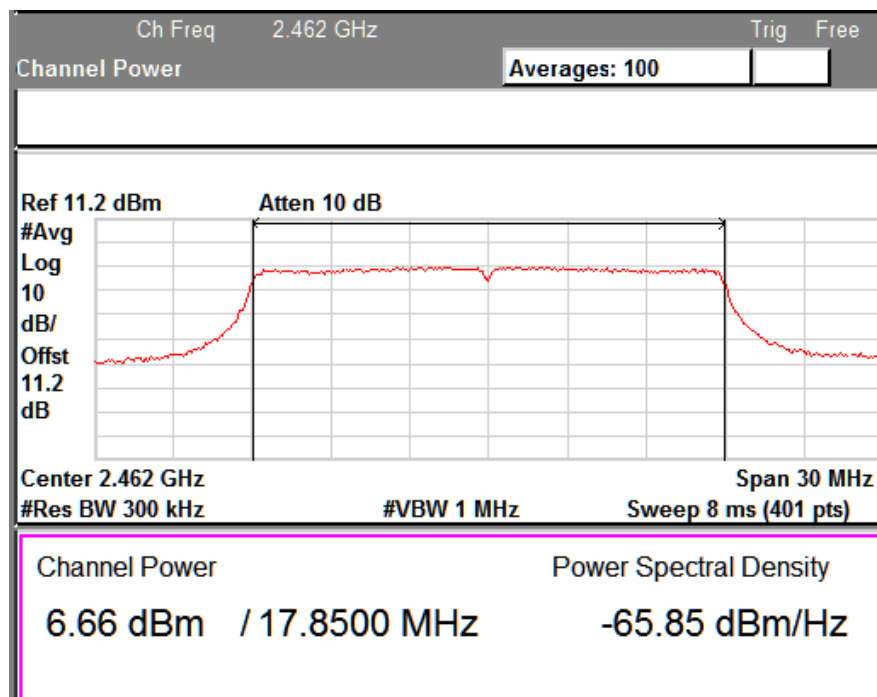
Channel Frequency: 2412 MHz

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Data Rate: 65 Mbps

Channel Frequency: 2442 MHz

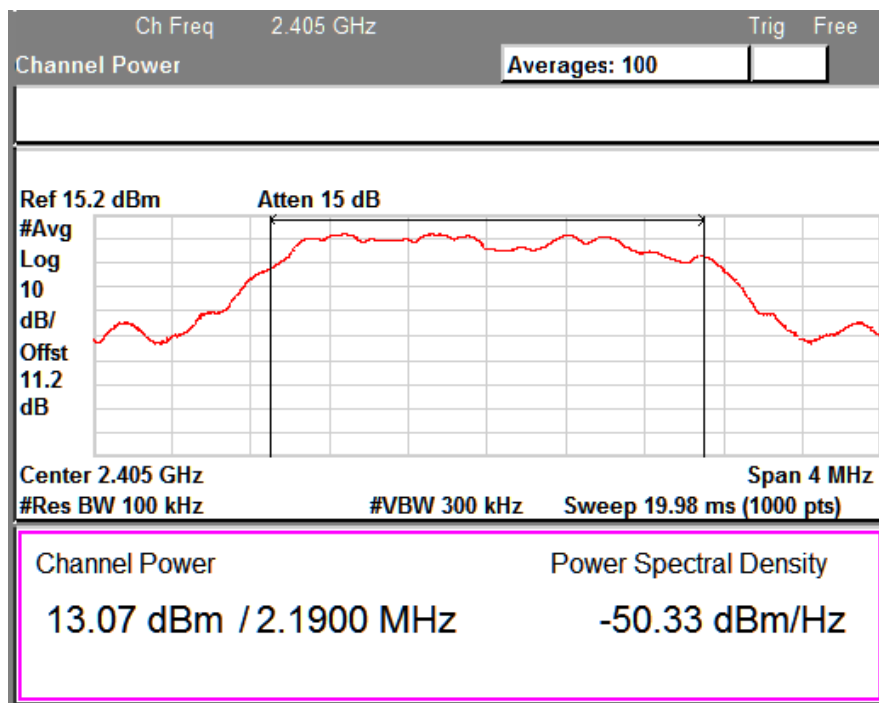


Data Rate: 65 Mbps

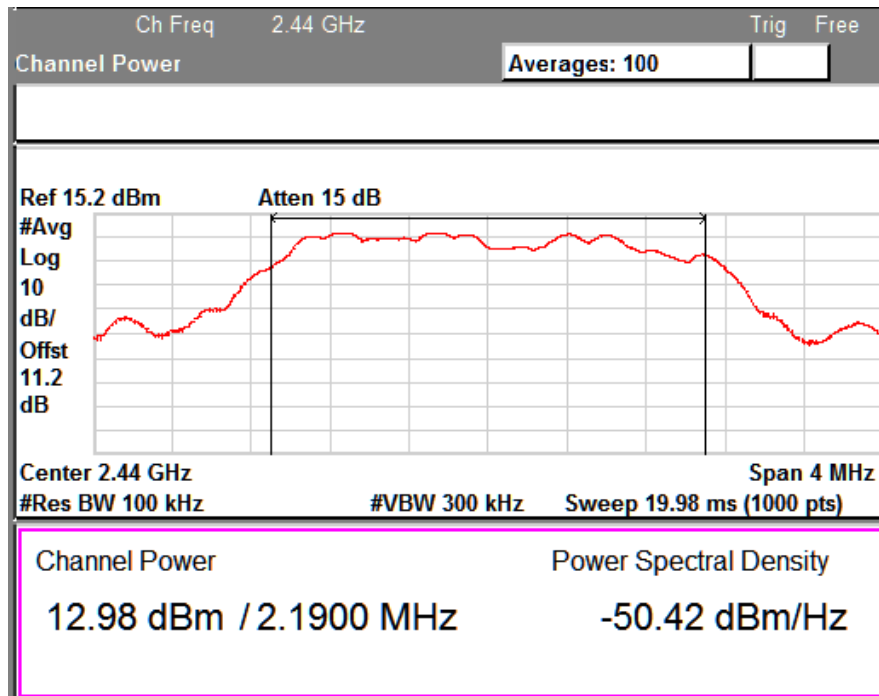
Channel Frequency: 2462 MHz

Test Result: ZigBee

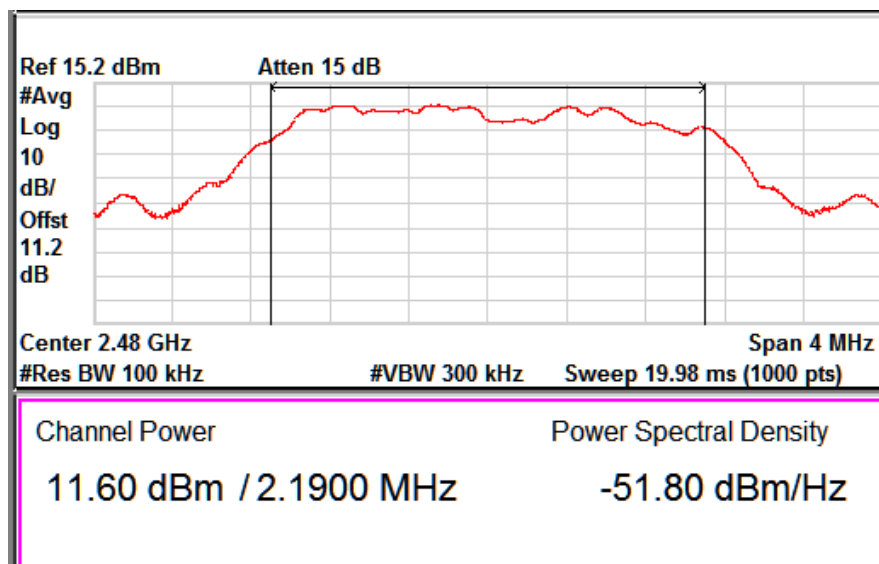
Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
2405.00	13.07	30.00	-16.93
2440.00	12.98	30.00	-17.02
2480.00	11.60	30.00	-18.40



Channel Frequency: 2405 MHz



Channel Frequency: 2440 MHz

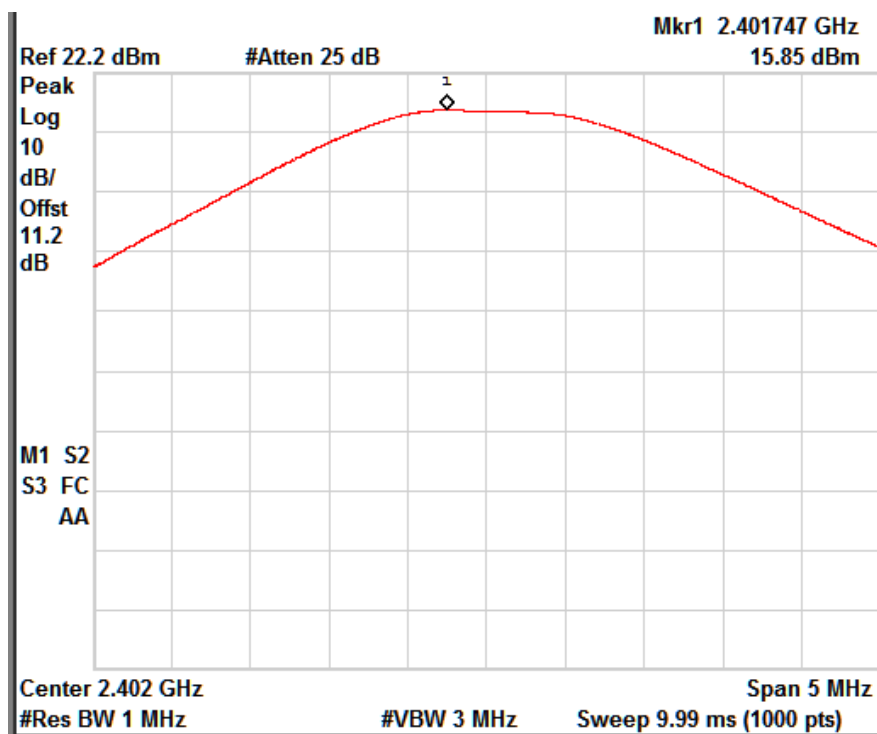


Channel Frequency: 2480 MHz

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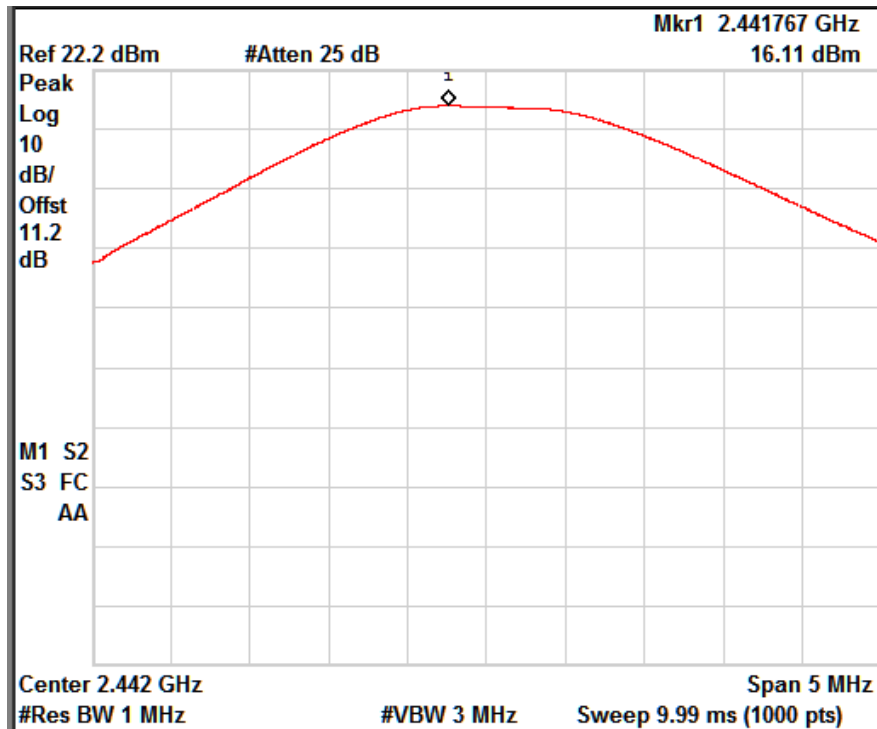
Test Result: Bluetooth LE

Channel Frequency (MHz)	Total Power (dBm)	Limit (dBm)	Margin (dB)
2402.00	15.85	30.00	-14.15
2442.00	16.11	30.00	-13.89
2480.00	15.17	30.00	-14.83

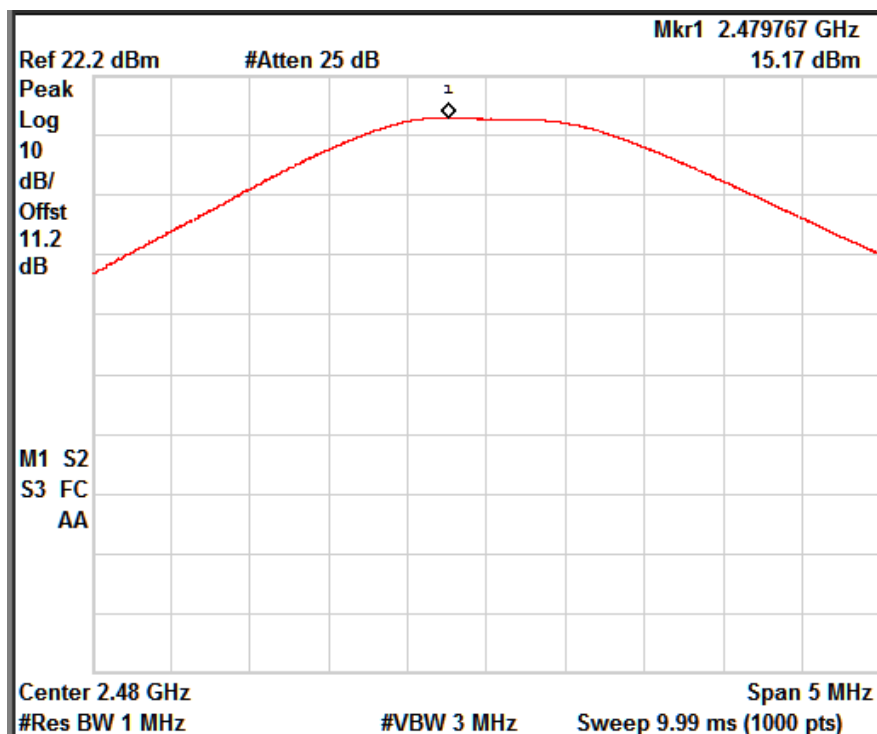


Channel Frequency: 2402 MHz

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Channel Frequency: 2440 MHz



Channel Frequency: 2480 MHz

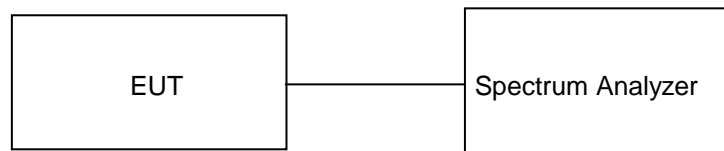
Maximum Power Spectral Density**Section 15.247(e)****Result****Pass**

Test Specification
Detector Function
Requirement

FCC Part 15 Section 15.247 (e)
Peak

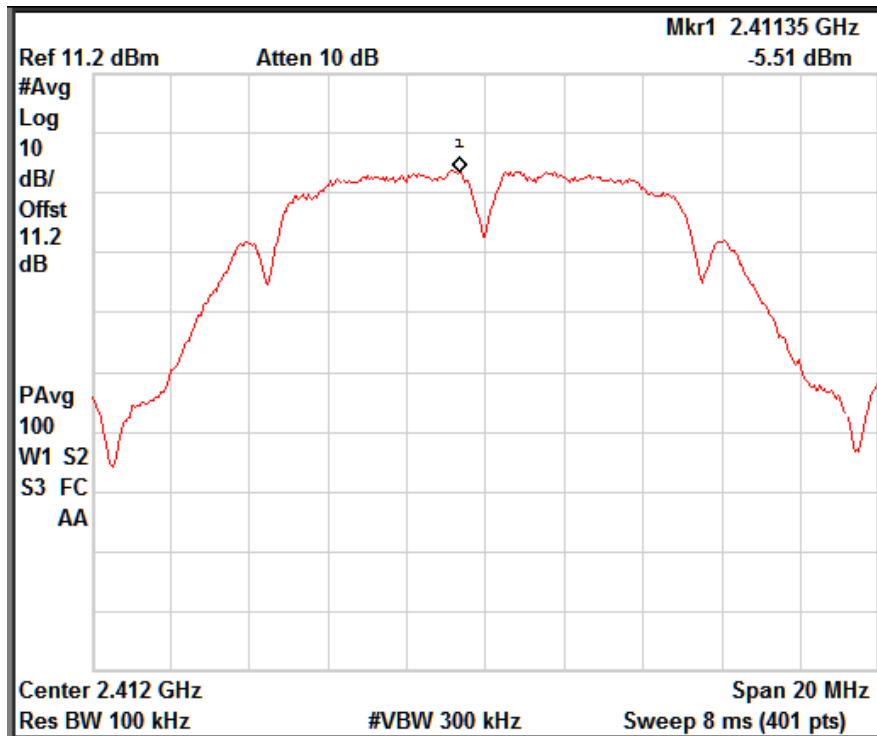
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm.

Note: For measurement of Maximum power spectral density option 1 was used

Test Method:**Test Result:**

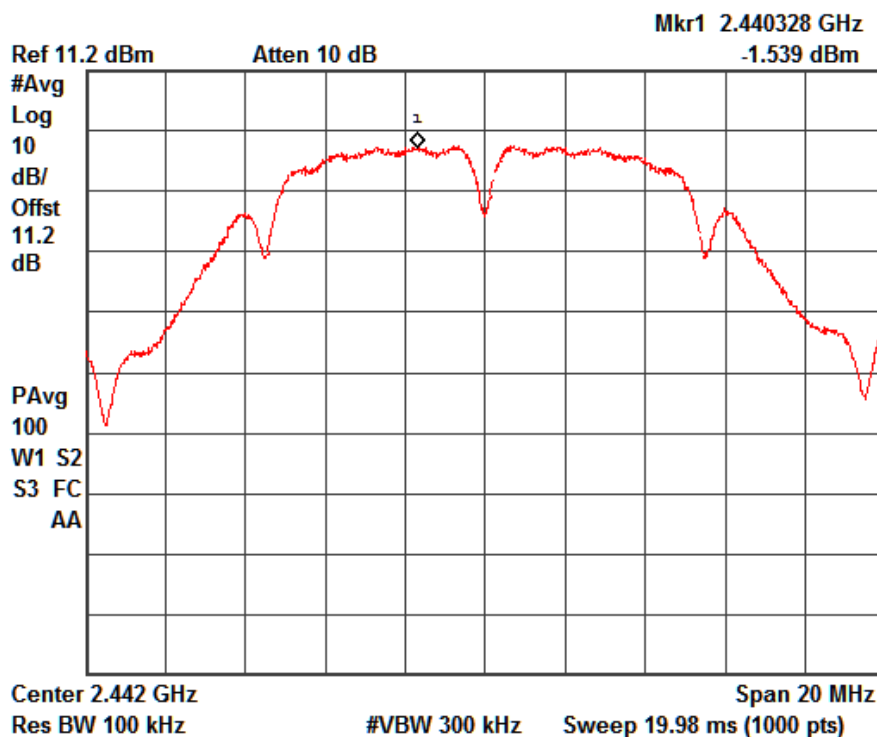
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
b	1	2412.00	-5.51	8.00	-13.51
		2442.00	-1.53	8.00	-9.53
		2462.00	-5.92	8.00	-13.92
	11	2412.00	-5.82	8.00	-13.82
		2442.00	-2.94	8.00	-10.94
		2462.00	-3.37	8.00	-11.37

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Data rate: 1 Mbps

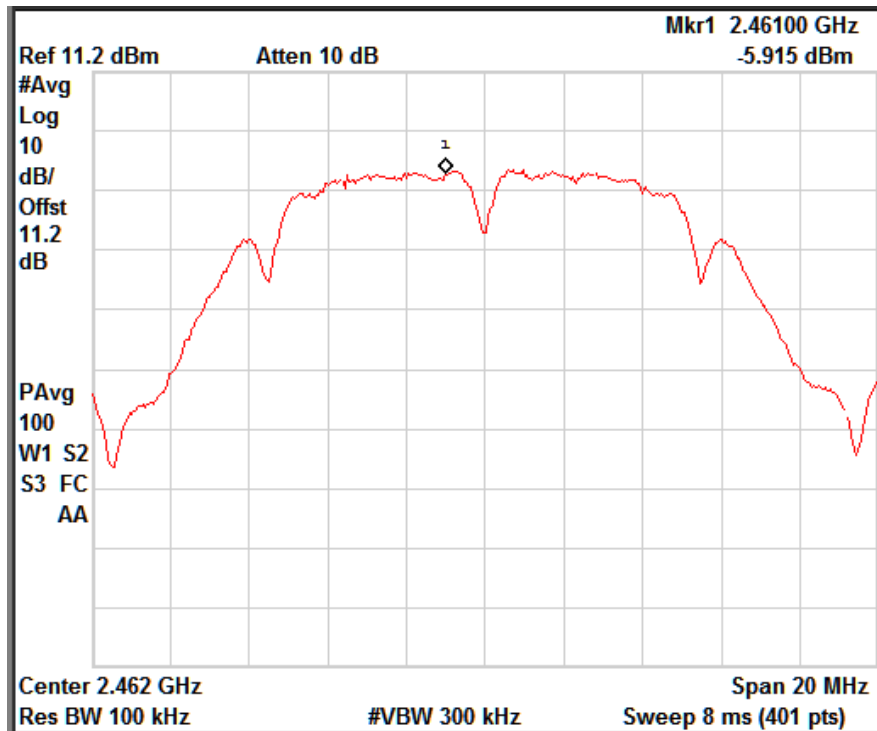
Channel Frequency: 2412 MHz



Data rate: 1 Mbps

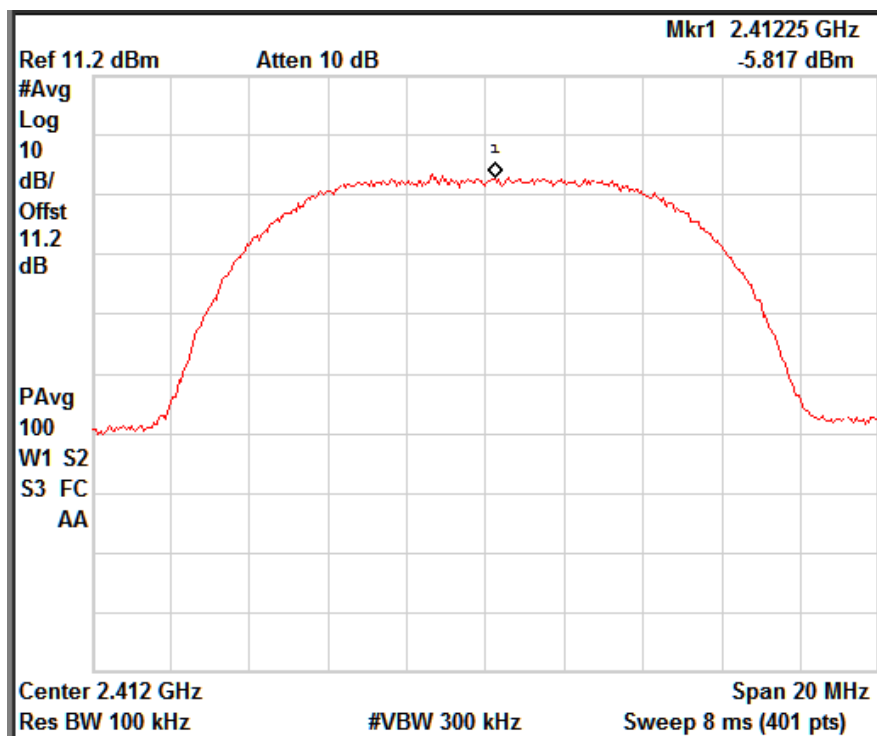
Channel Frequency: 2442 MHz

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Data rate: 1 Mbps

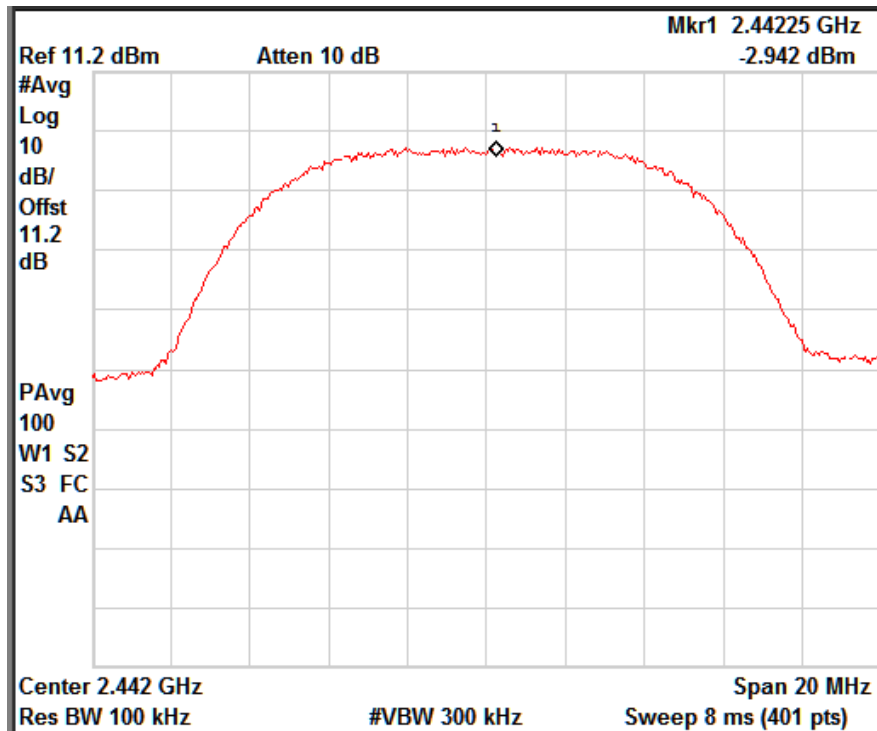
Channel Frequency: 2462 MHz



Data rate: 11 Mbps

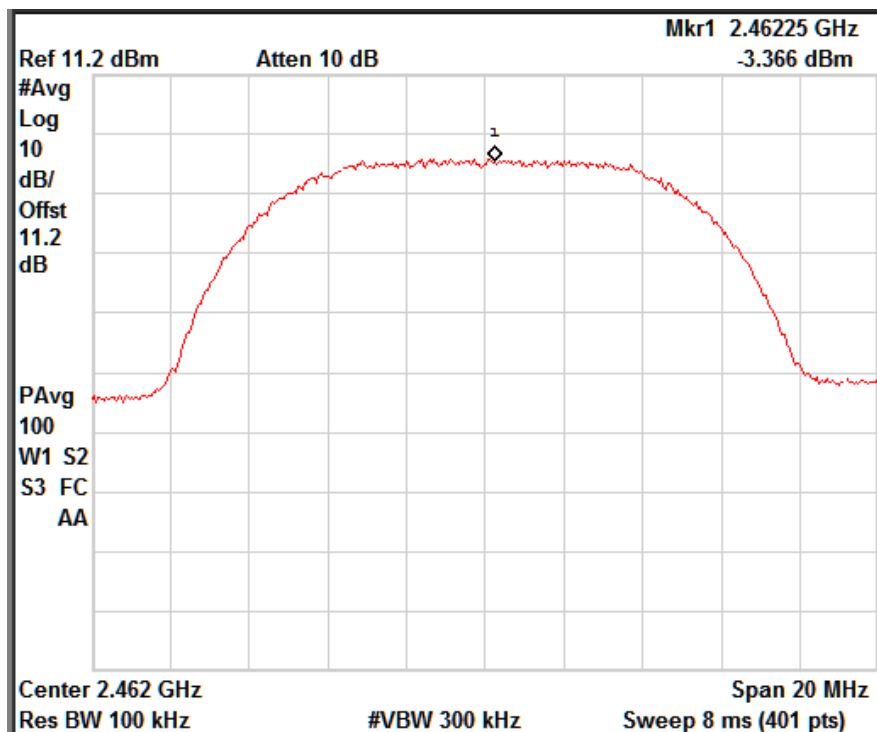
Channel Frequency: 2412 MHz

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Data rate: 11 Mbps

Channel Frequency: 2442 MHz

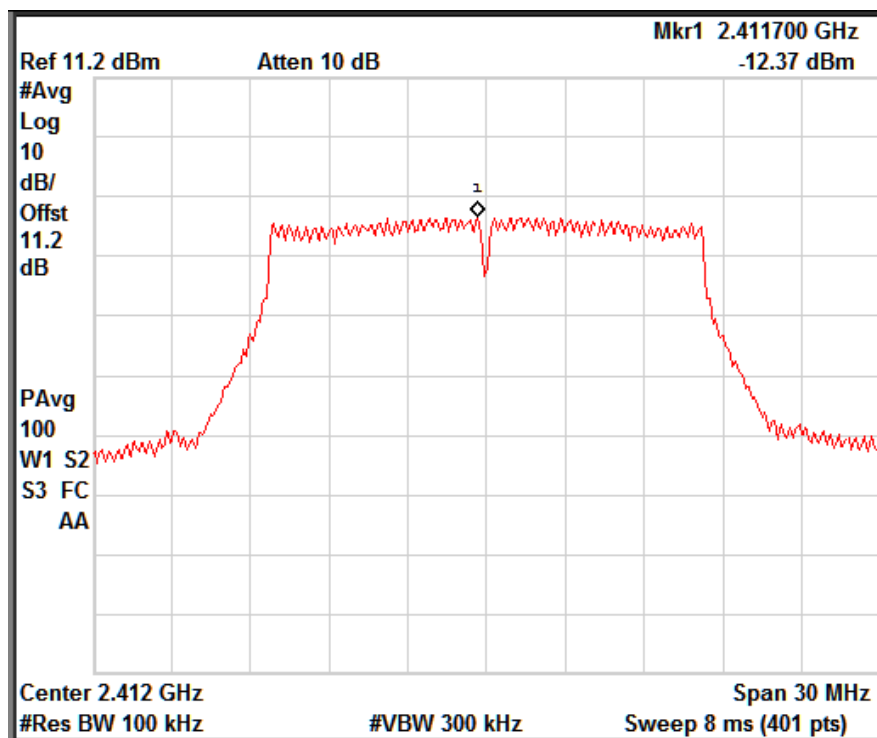


Data rate: 11 Mbps

Channel Frequency: 2462 MHz

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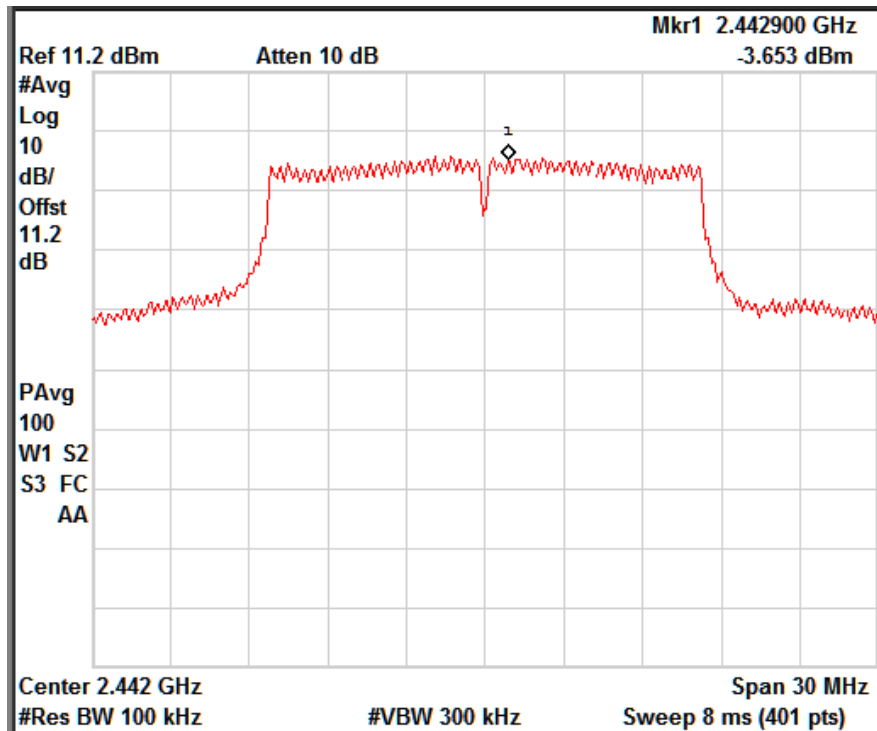
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
g	6	2412.00	-12.37	8.00	-20.37
		2442.00	-3.65	8.00	-11.65
		2462.00	-11.95	8.00	-19.95
	24	2412.00	-11.85	8.00	-19.85
		2442.00	-3.30	8.00	-11.30
		2462.00	-12.93	8.00	-20.93
	54	2412.00	-12.31	8.00	-20.31
		2442.00	-2.68	8.00	-10.68
		2462.00	-12.20	8.00	-20.20



Data rate: 6 Mbps

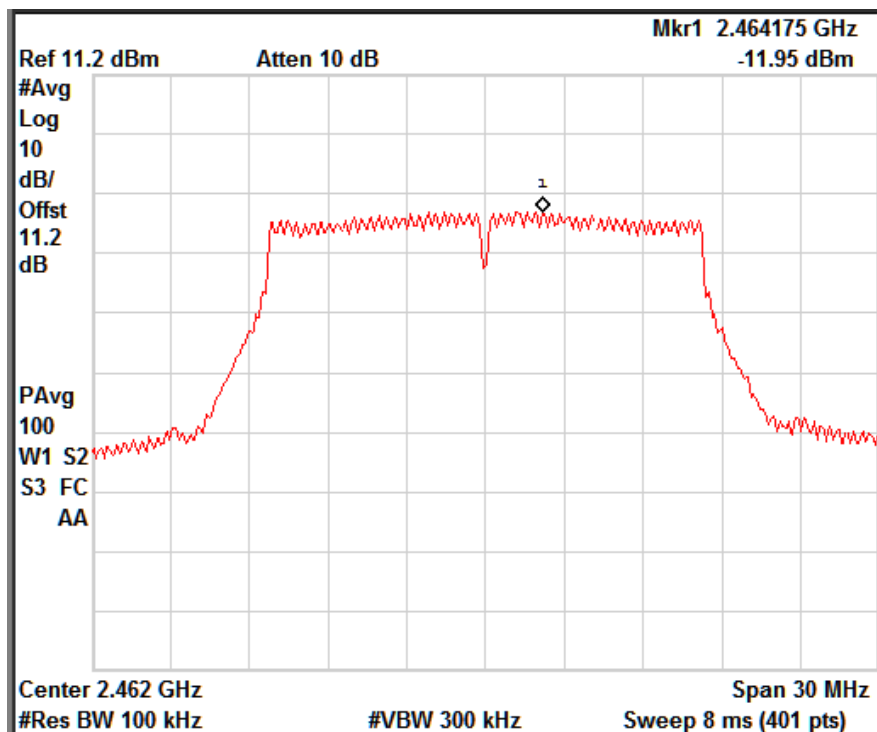
Channel Frequency: 2412 MHz

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Data rate: 6 Mbps

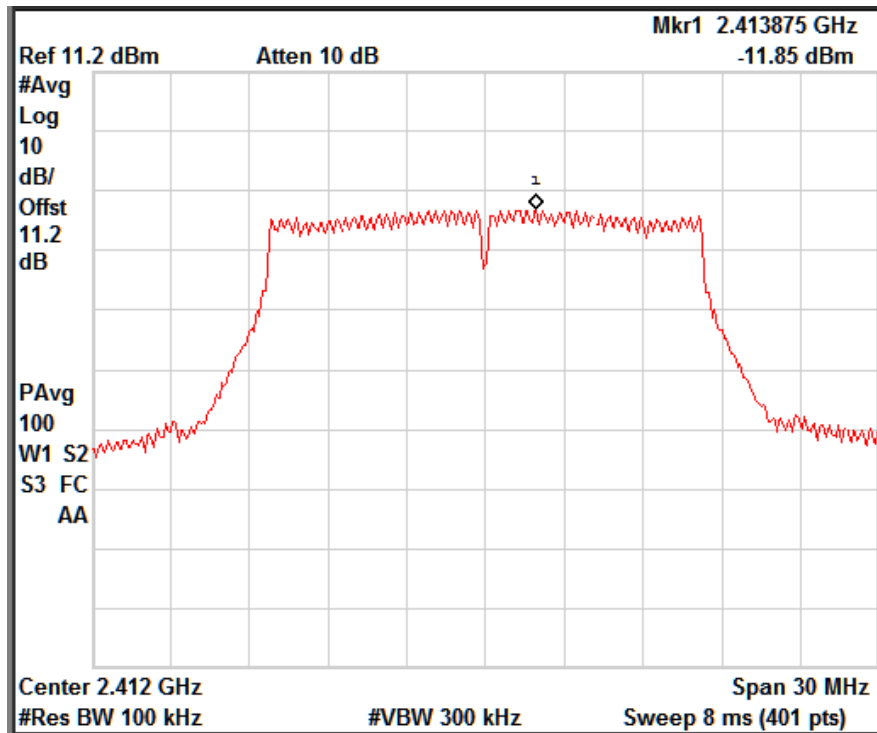
Channel Frequency: 2442 MHz



Data rate: 6 Mbps

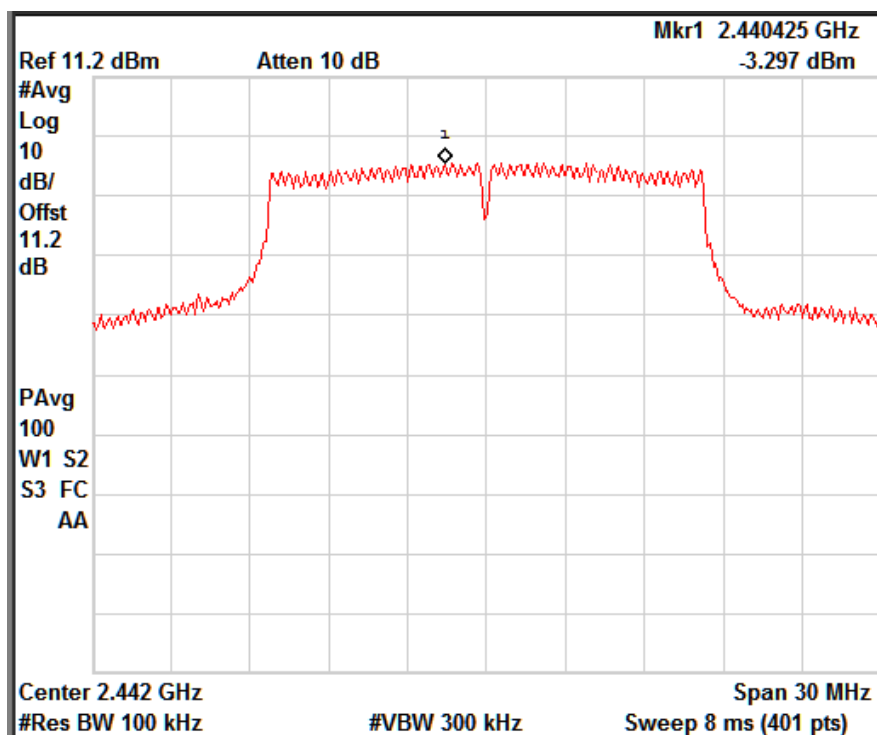
Channel Frequency: 2462 MHz

www.tuv.com



Data rate: 24 Mbps

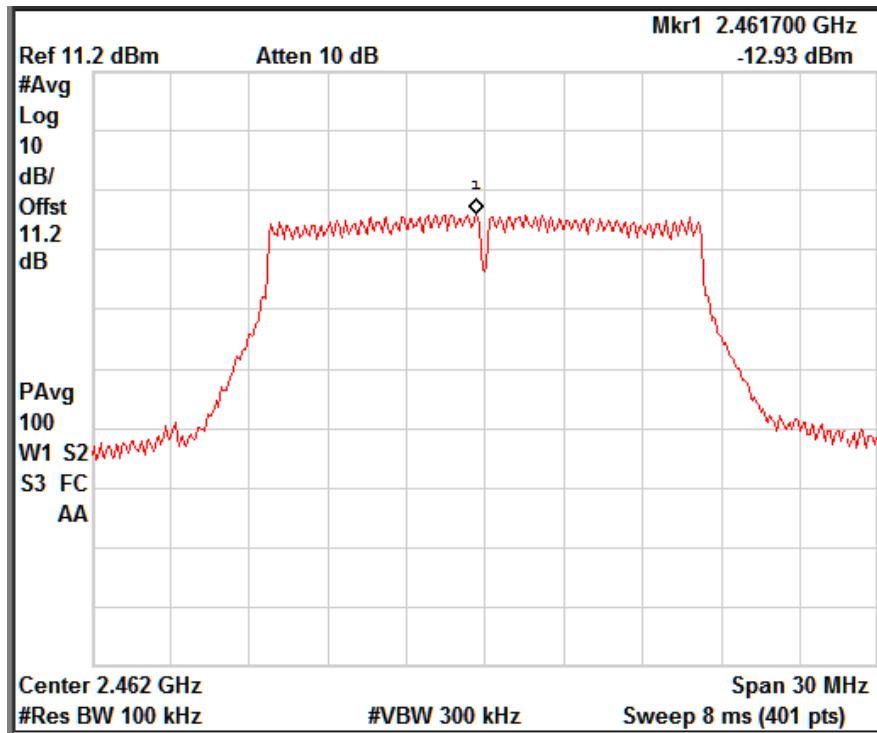
Channel Frequency: 2412 MHz



Data rate: 24 Mbps

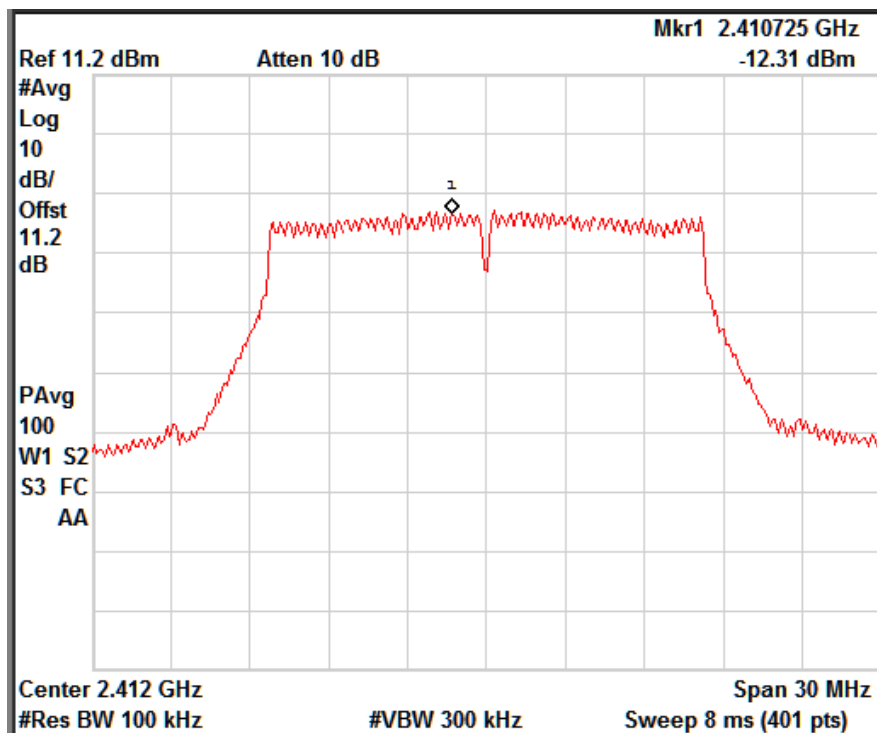
Channel Frequency: 2442 MHz

www.tuv.com



Data rate: 24 Mbps

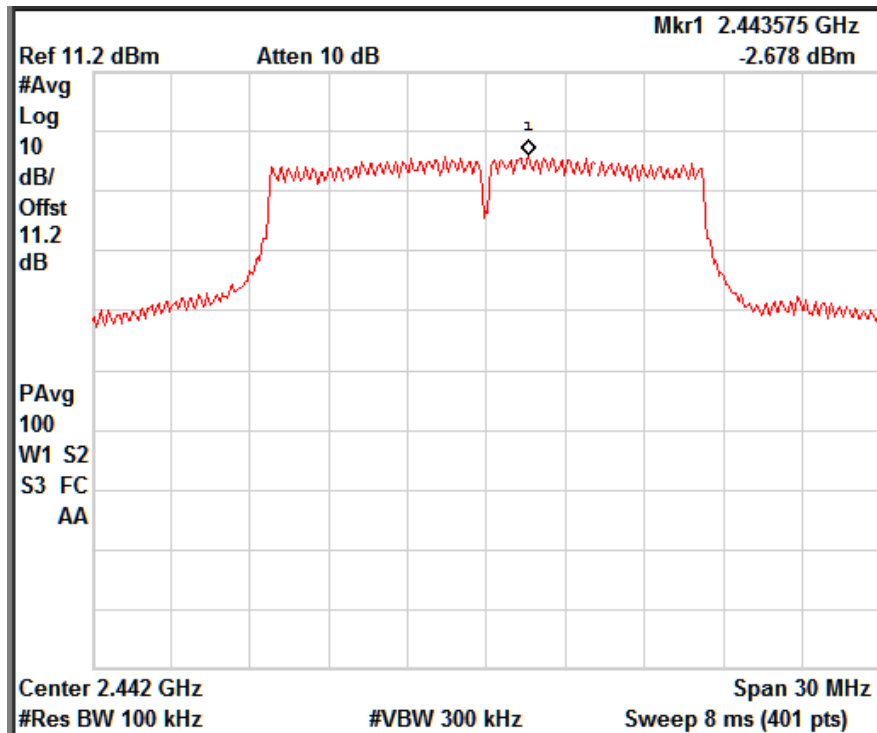
Channel Frequency: 2462 MHz



Data rate: 54 Mbps

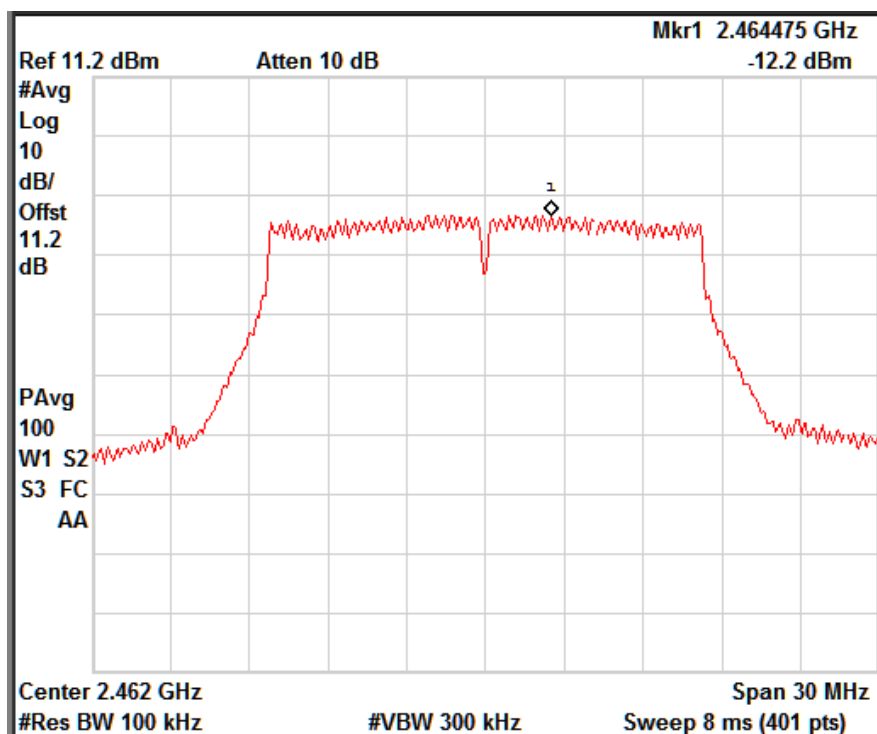
Channel Frequency: 2412 MHz

www.tuv.com



Data rate: 54 Mbps

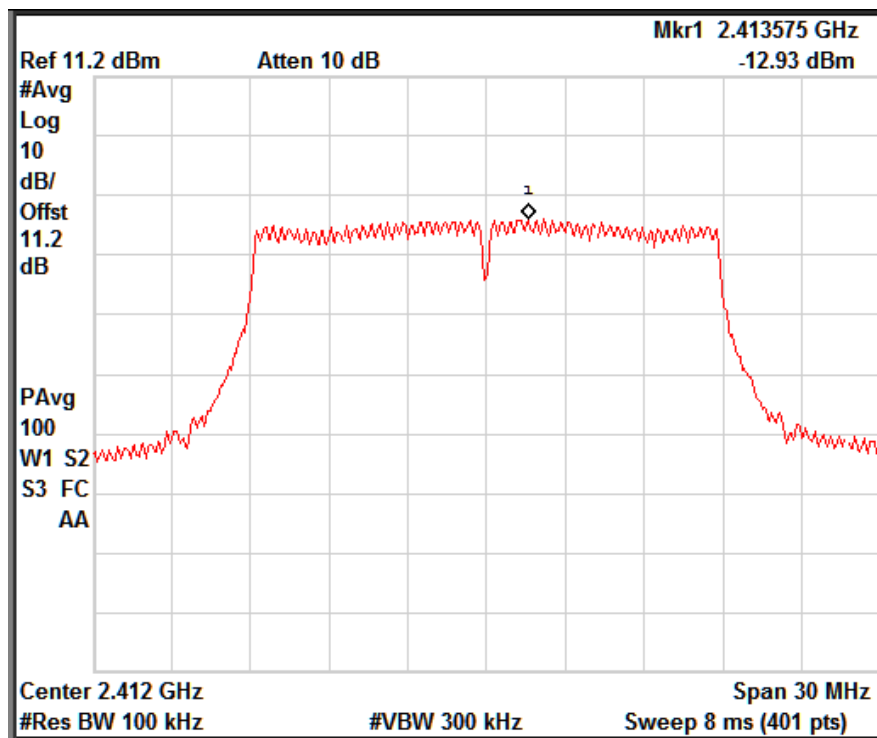
Channel Frequency: 2442 MHz



Data rate: 54 Mbps

Channel Frequency: 2462 MHz

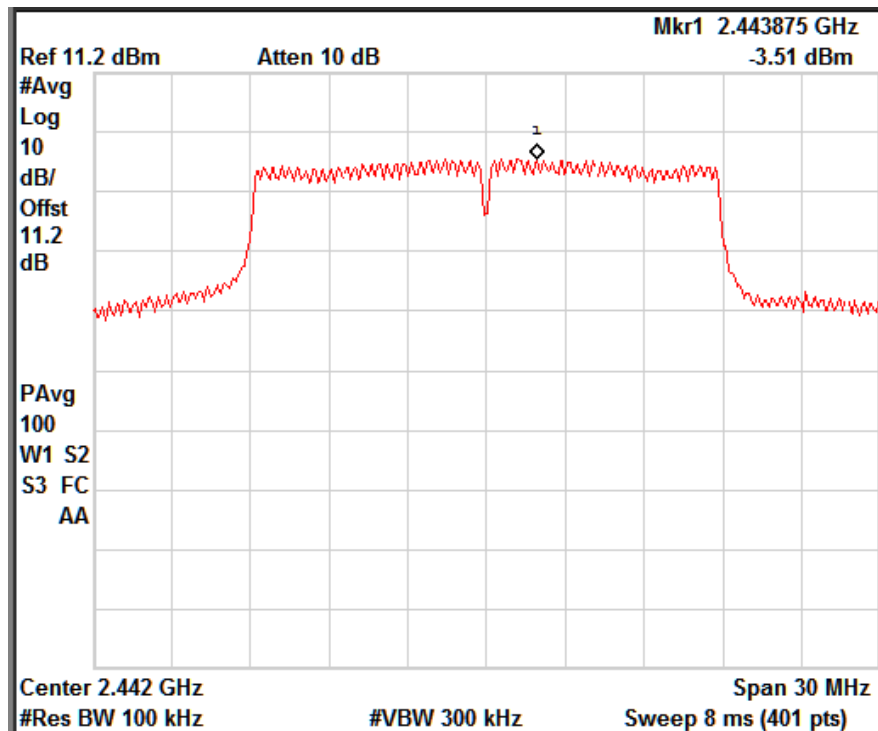
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
n	6.5	2412.00	-12.93	8.00	-20.93
		2442.00	-3.51	8.00	-11.51
		2462.00	-13.27	8.00	-21.27
	39	2412.00	-13.30	8.00	-21.30
		2442.00	-3.57	8.00	-11.57
		2462.00	-12.78	8.00	-20.78
	65	2412.00	-12.58	8.00	-20.58
		2442.00	-3.24	8.00	-11.24
		2462.00	-13.23	8.00	-21.23



Data rate: 6.5 Mbps

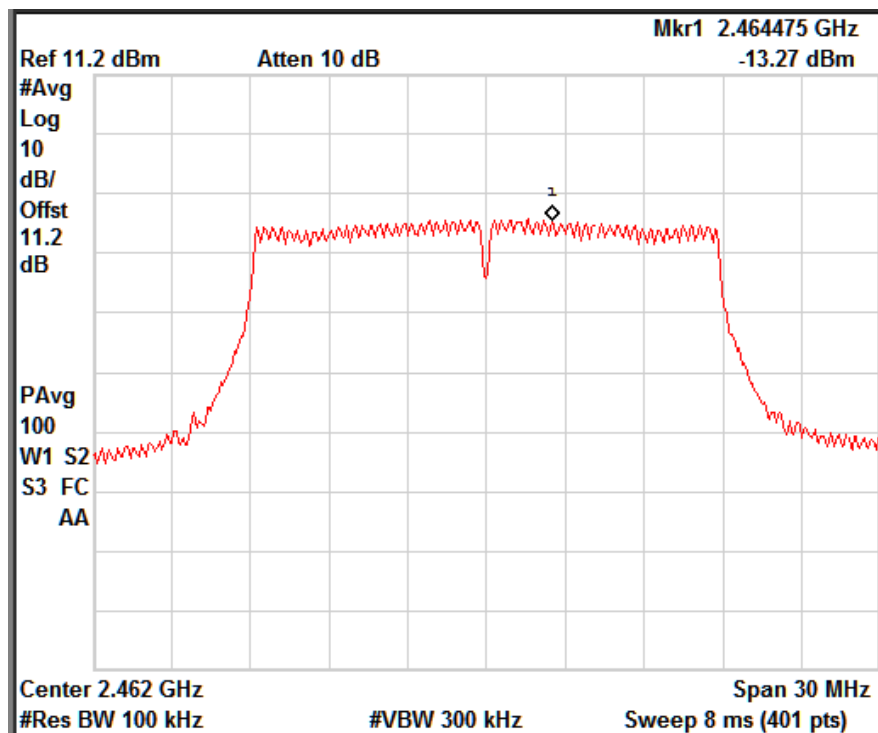
Channel Frequency: 2412 MHz

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Data rate: 6.5 Mbps

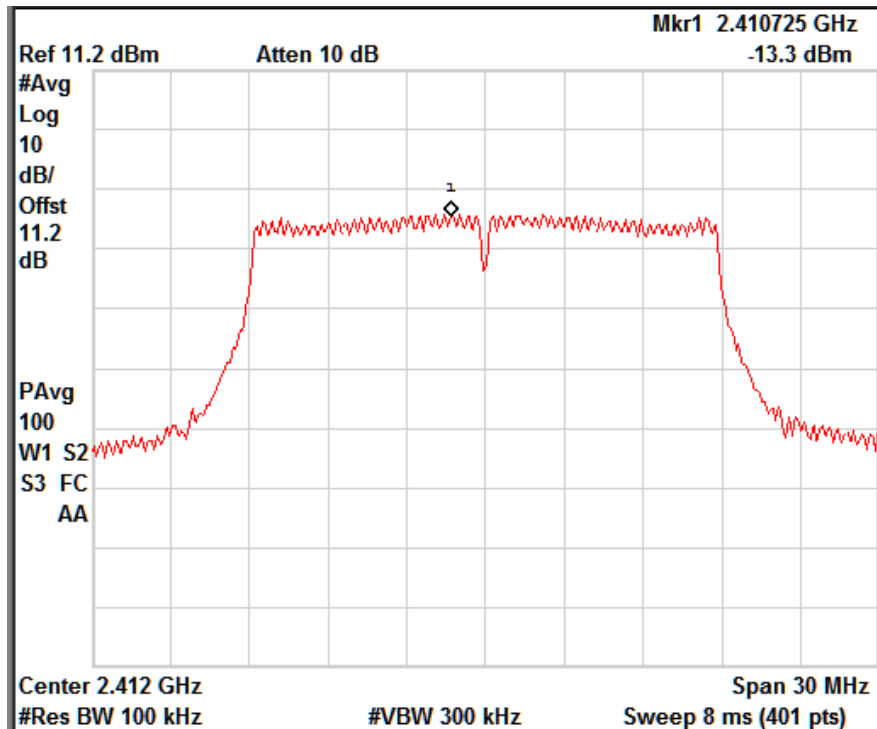
Channel Frequency: 2442 MHz



Data rate: 6.5 Mbps

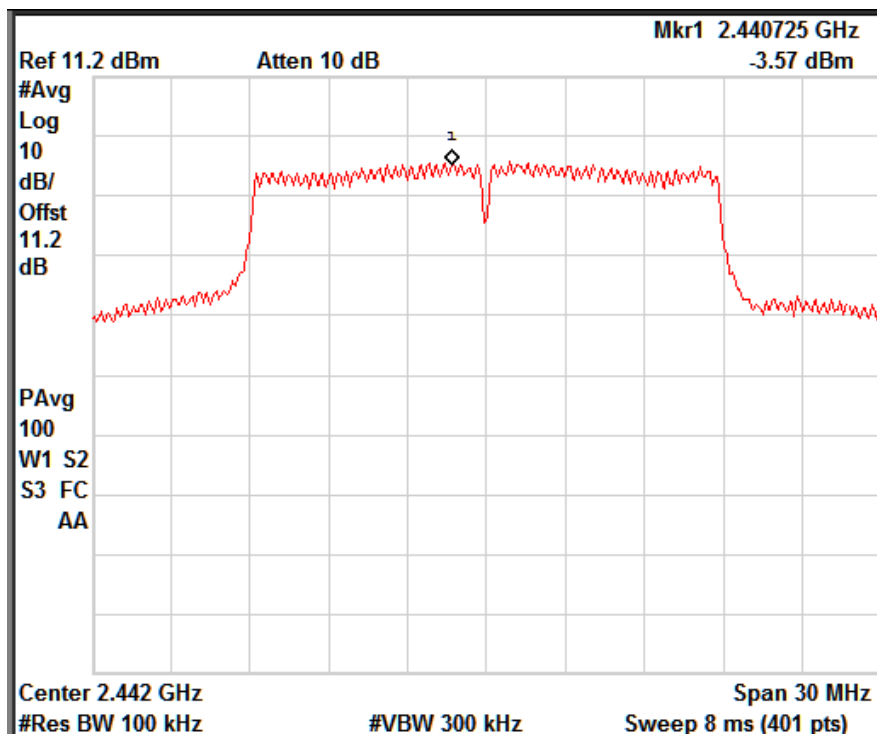
Channel Frequency: 2462 MHz

www.tuv.com



Data rate: 39 Mbps

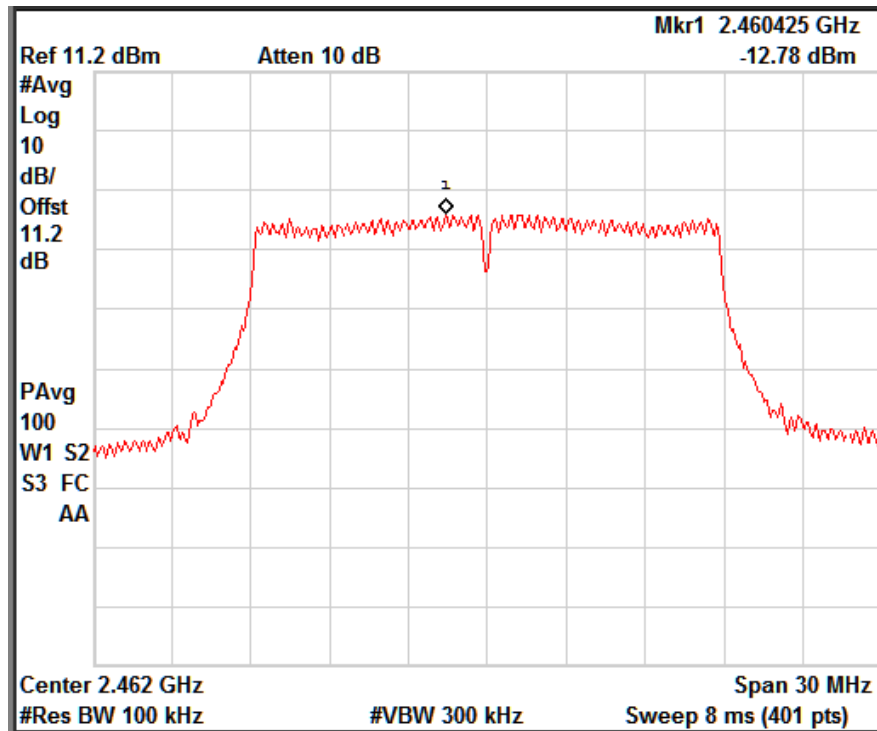
Channel Frequency: 2412 MHz



Data rate: 39 Mbps

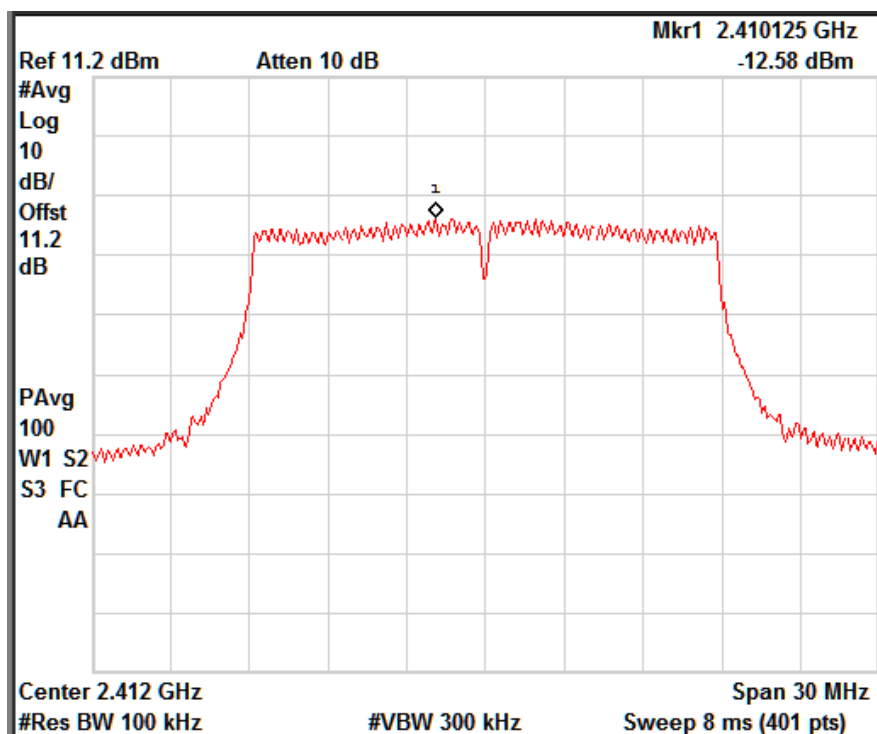
Channel Frequency: 2442 MHz

www.tuv.com



Data rate: 39 Mbps

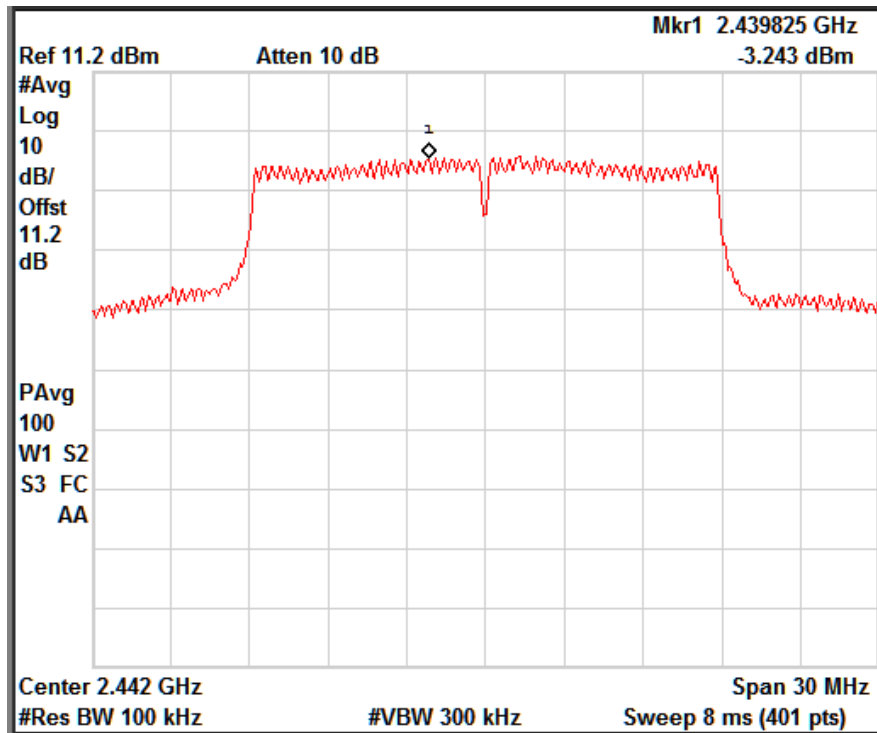
Channel Frequency: 2462 MHz



Data rate: 65 Mbps

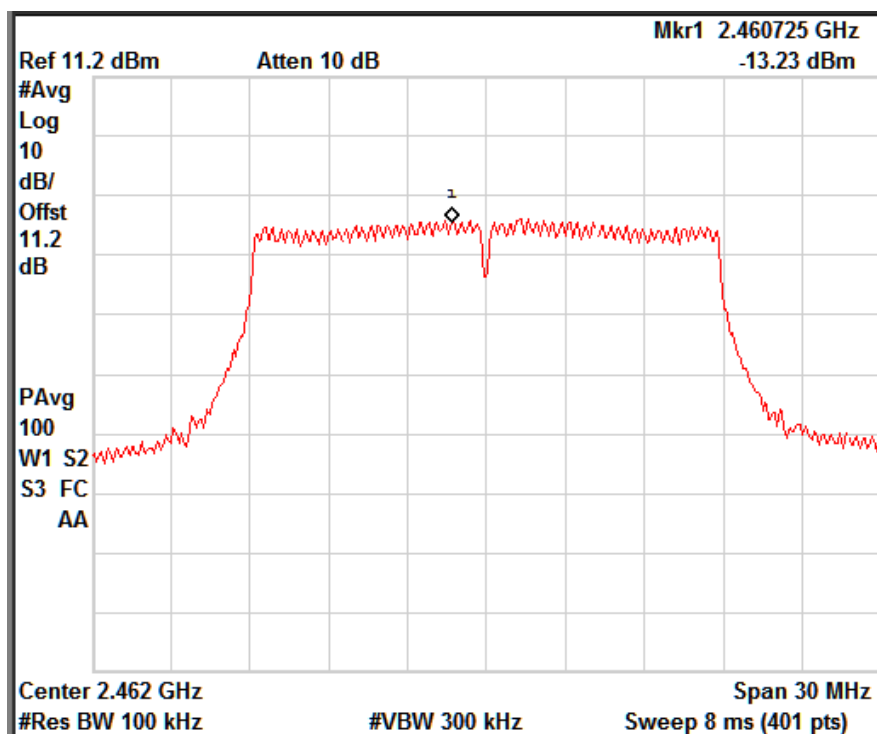
Channel Frequency: 2412 MHz

www.tuv.com



Data rate: 65 Mbps

Channel Frequency: 2442 MHz



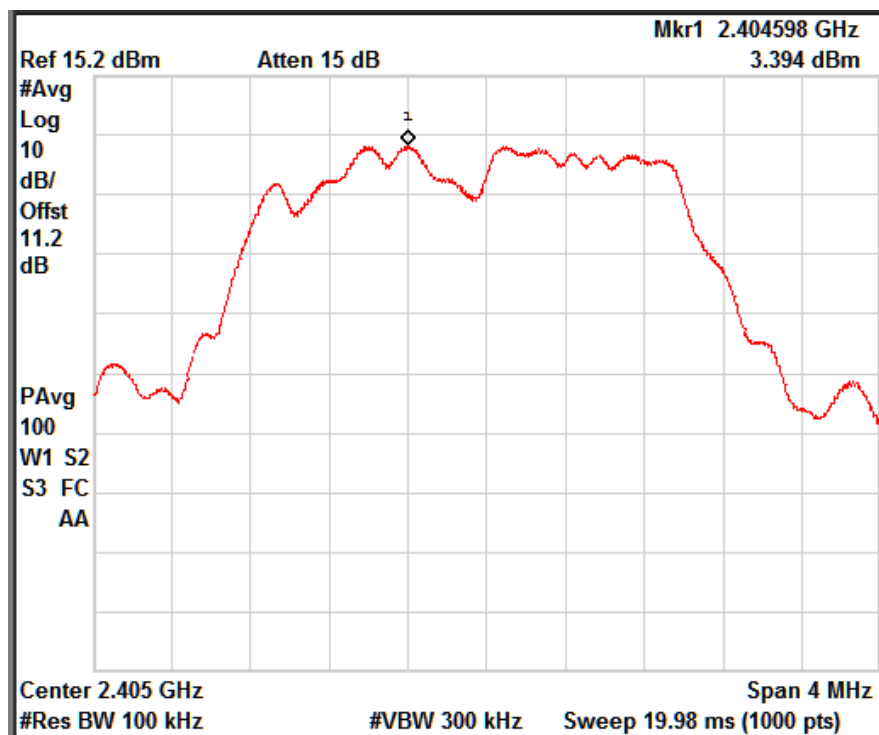
Data rate: 65 Mbps

Channel Frequency: 2462 MHz

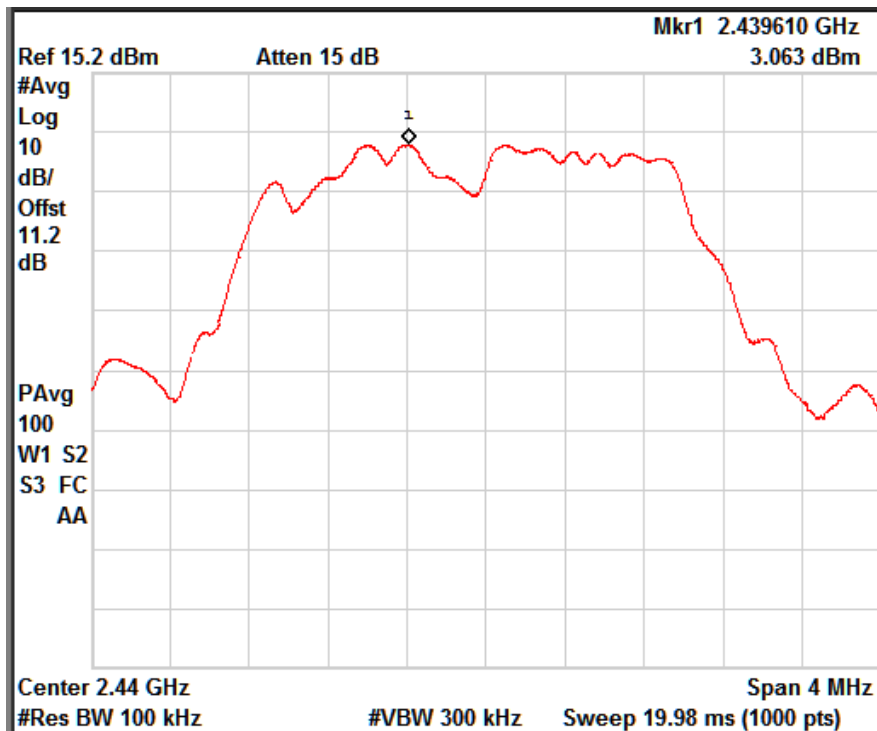
www.tuv.com

Test Result: ZigBee

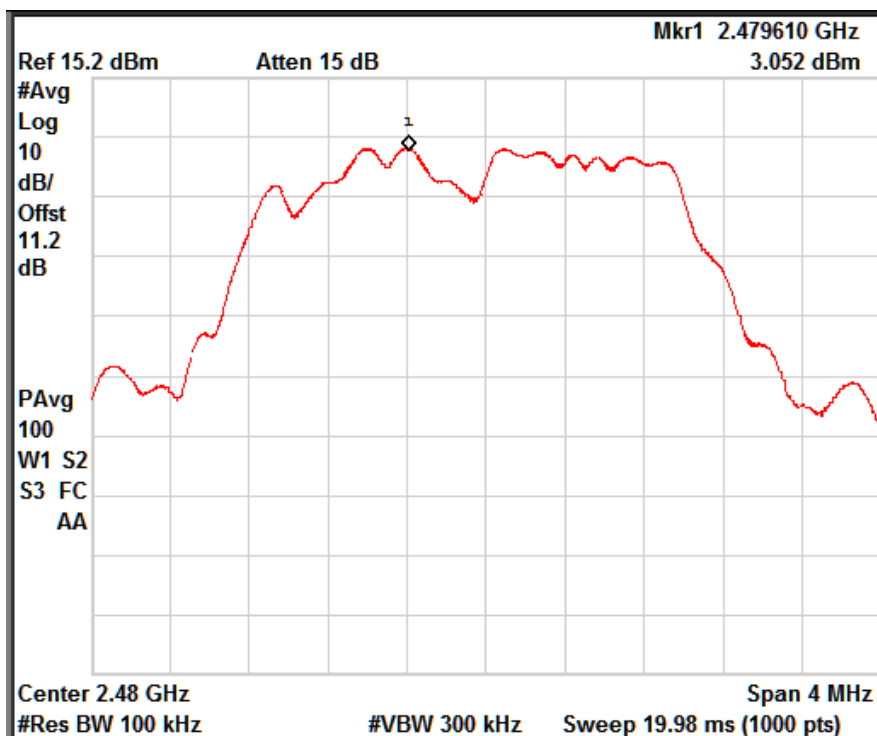
Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
2405.00	3.39	8.00	-4.61
2440.00	3.06	8.00	-4.94
2480.00	3.05	8.00	-4.95



Channel Frequency: 2405 MHz



Channel Frequency: 2440 MHz

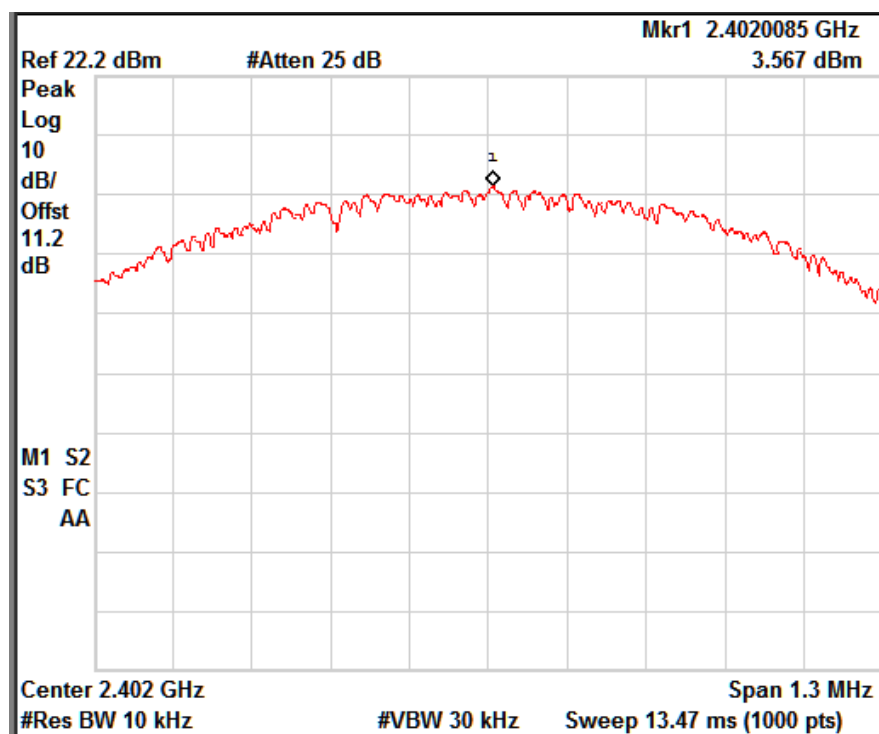


Channel Frequency: 2480 MHz

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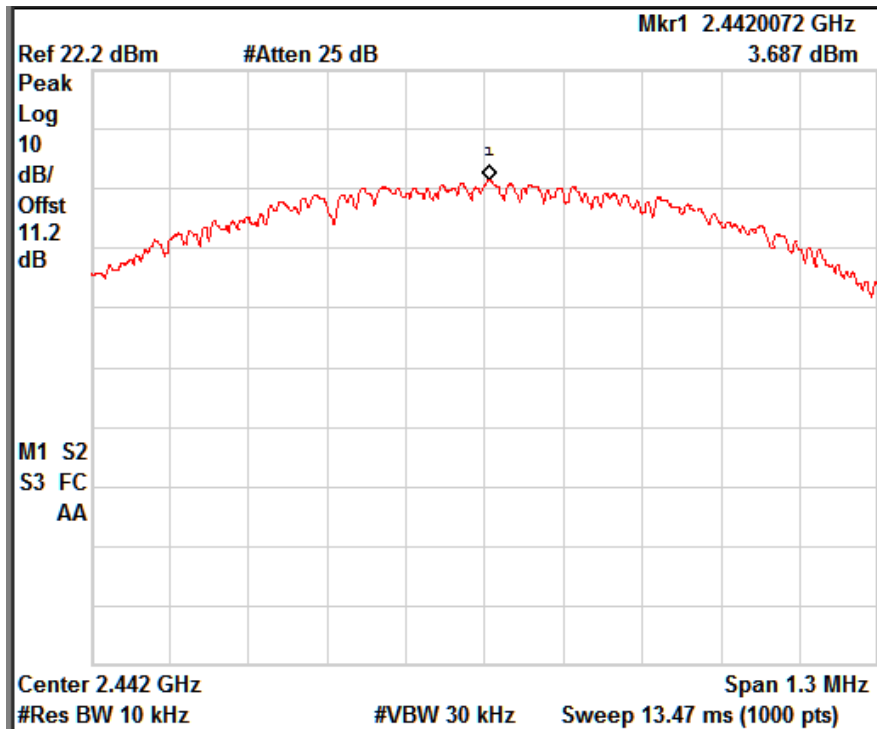
Test Result: Bluetooth LE

Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
2402.00	3.57	8.00	-4.43
2442.00	3.69	8.00	-4.31
2480.00	3.17	8.00	-4.83

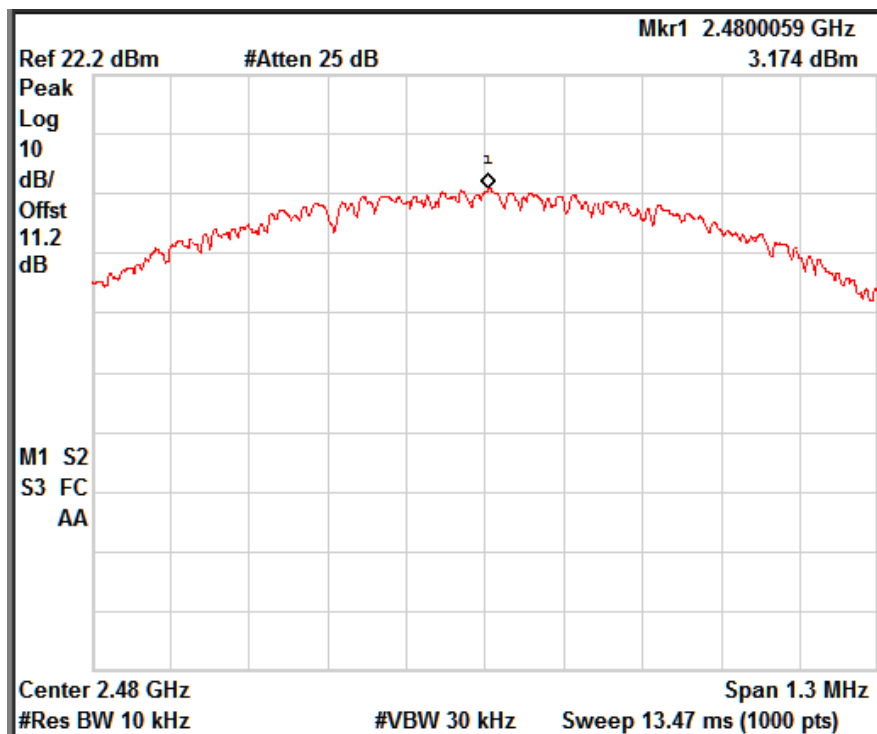


Channel Frequency: 2402 MHz

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Channel Frequency: 2442 MHz



Channel Frequency: 2480 MHz

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6 dB Bandwidth

Section 15.247(a) (2)

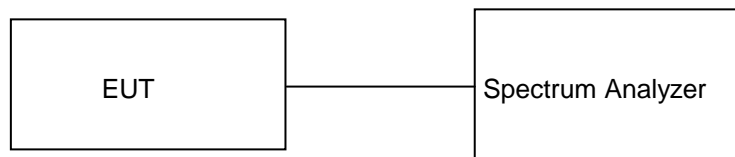
Result

Pass

Test Specification
Requirement

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

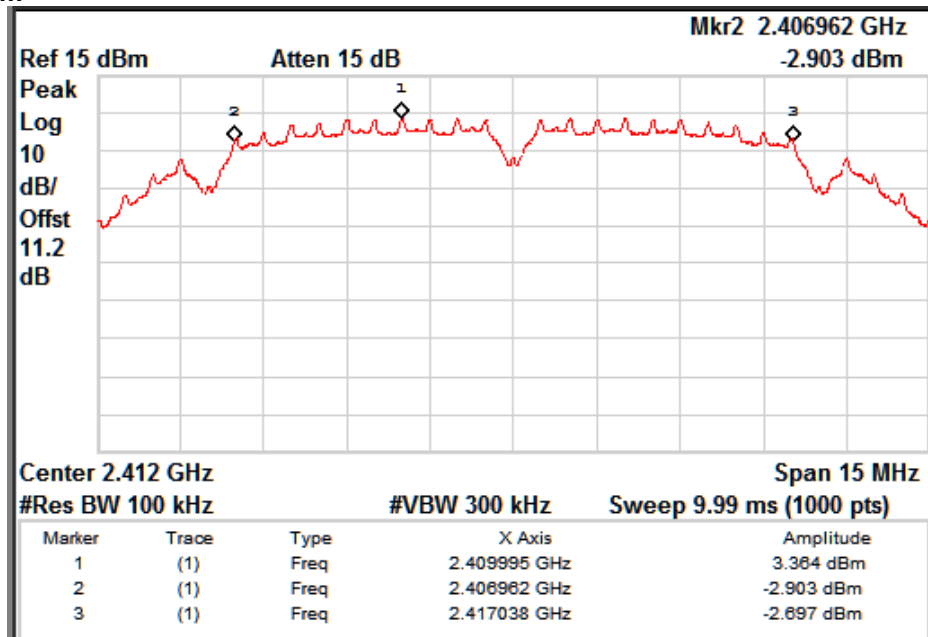
Test Method:



Test Result:

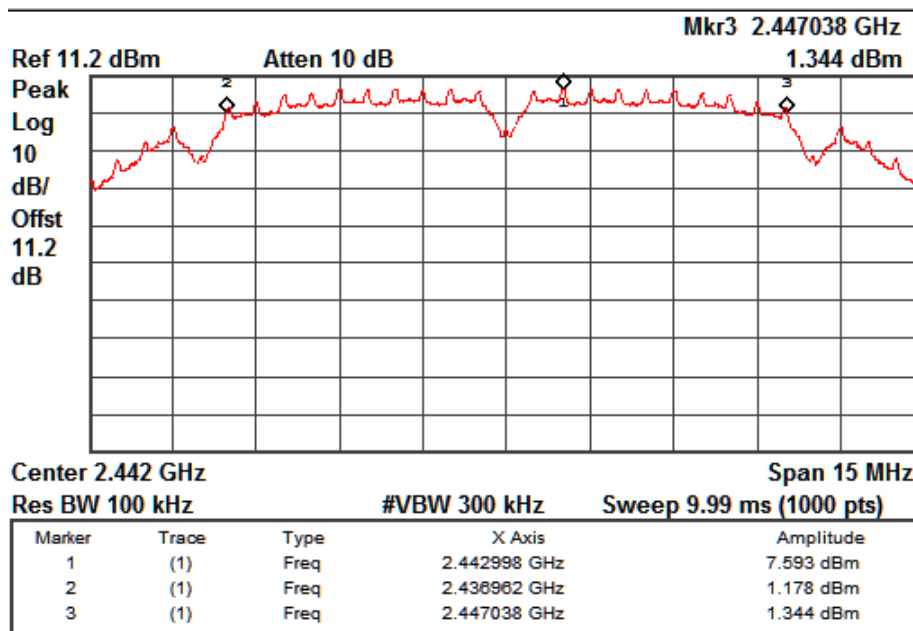
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
b	1	2412.00	2406.962	2417.038	10.076	12.034
		2442.00	2436.962	2447.038	10.076	12.220
		2462.00	2456.962	2467.038	10.076	12.025
	11	2412.00	2407.203	2416.812	9.609	11.822
		2442.00	2437.293	2446.782	9.489	11.899
		2462.00	2457.173	2466.797	9.624	11.809

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Data Rate: 1 Mbps

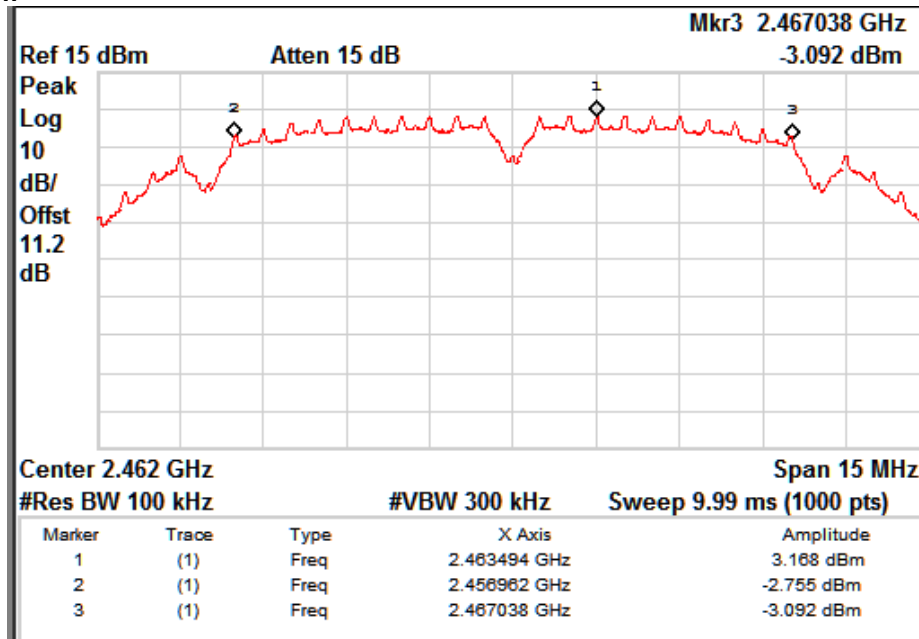
Channel frequency: 2412 MHz



Data Rate: 1 Mbps

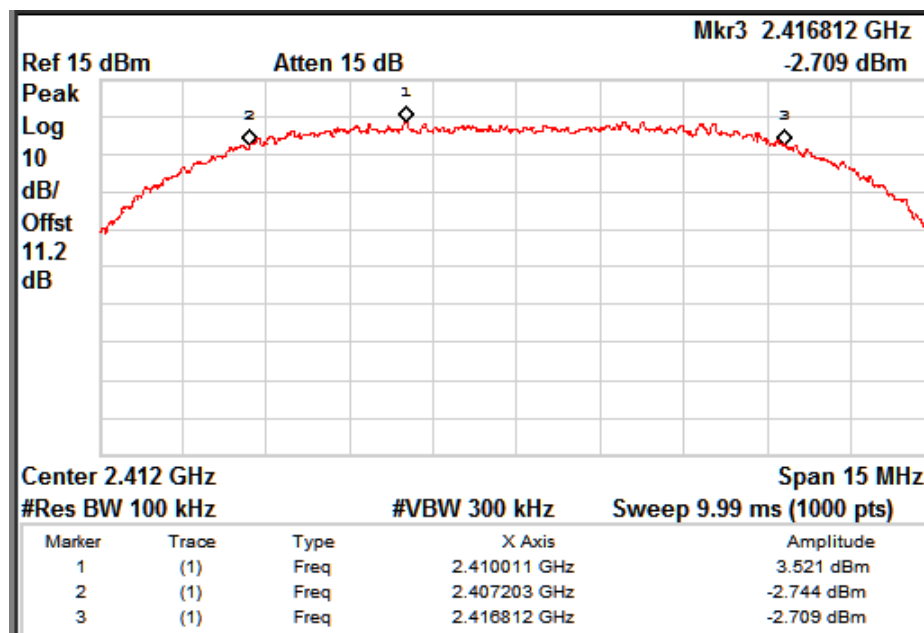
Channel frequency: 2442 MHz

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Data Rate: 1 Mbps

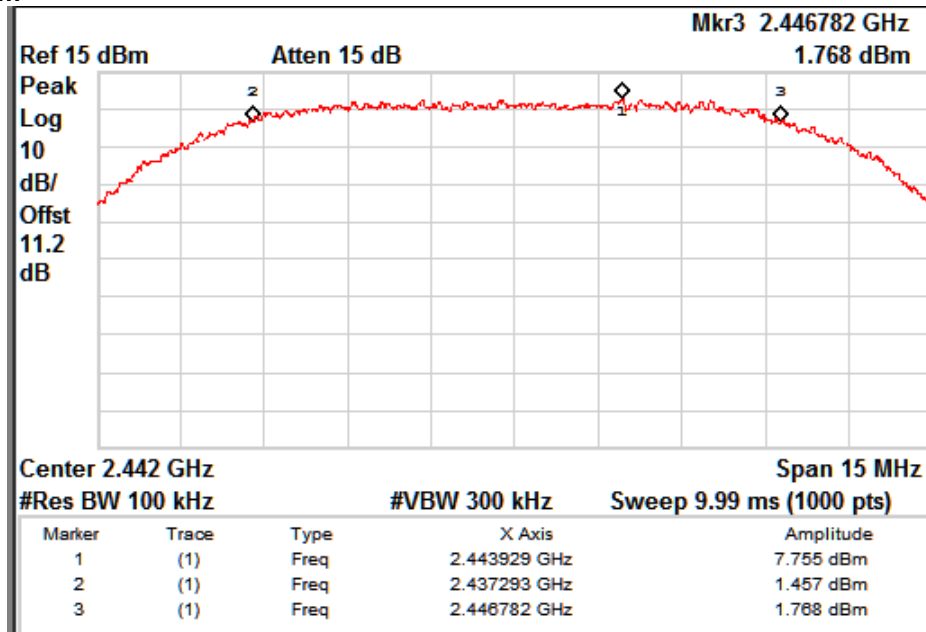
Channel frequency: 2462 MHz



Data Rate: 11 Mbps

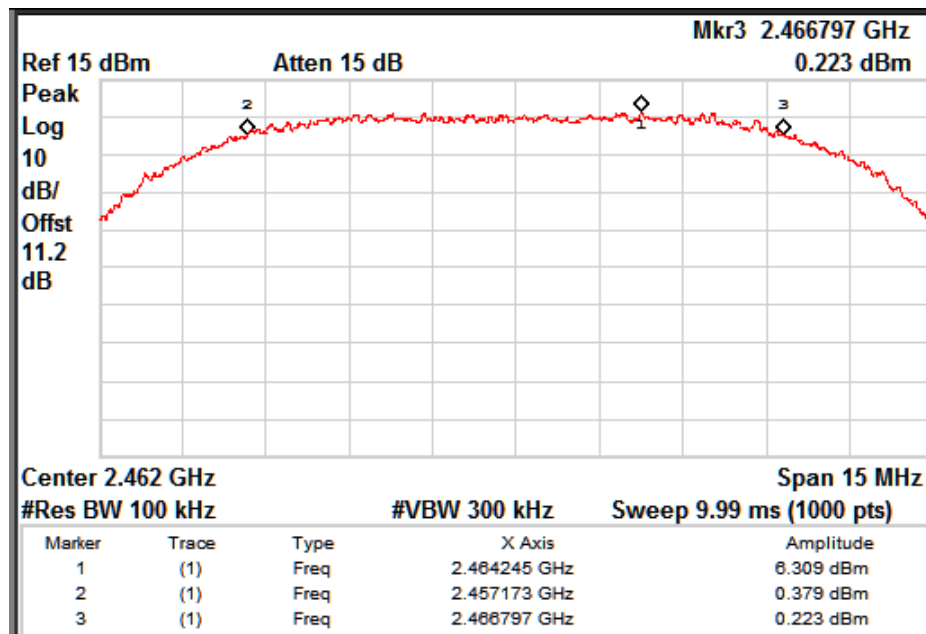
Channel frequencies: 2412 MHz

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Data Rate: 11 Mbps

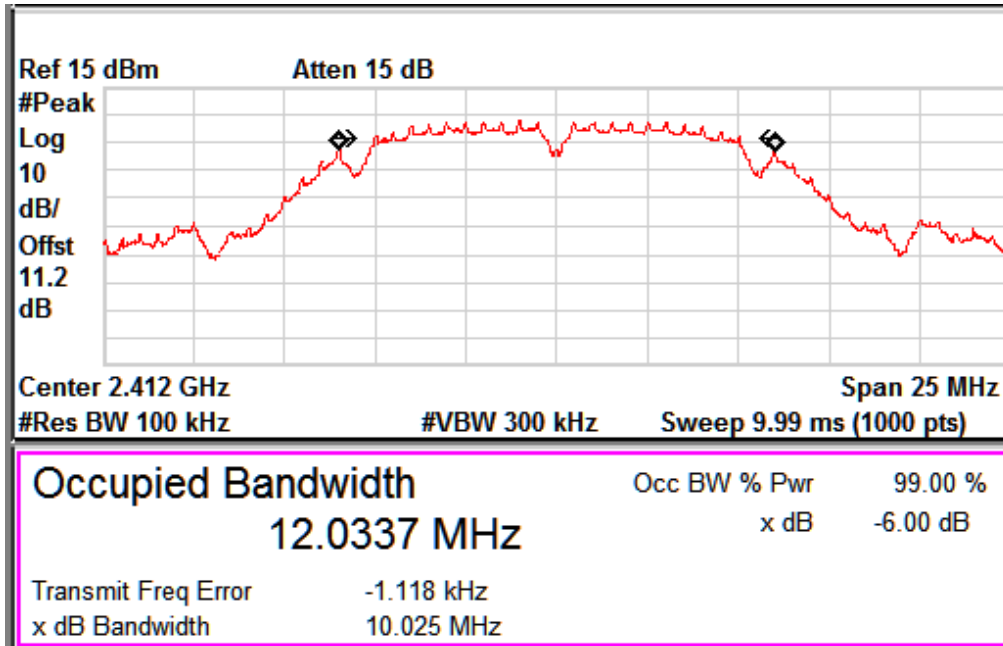
Channel frequency: 2442 MHz



Data Rate: 11 Mbps

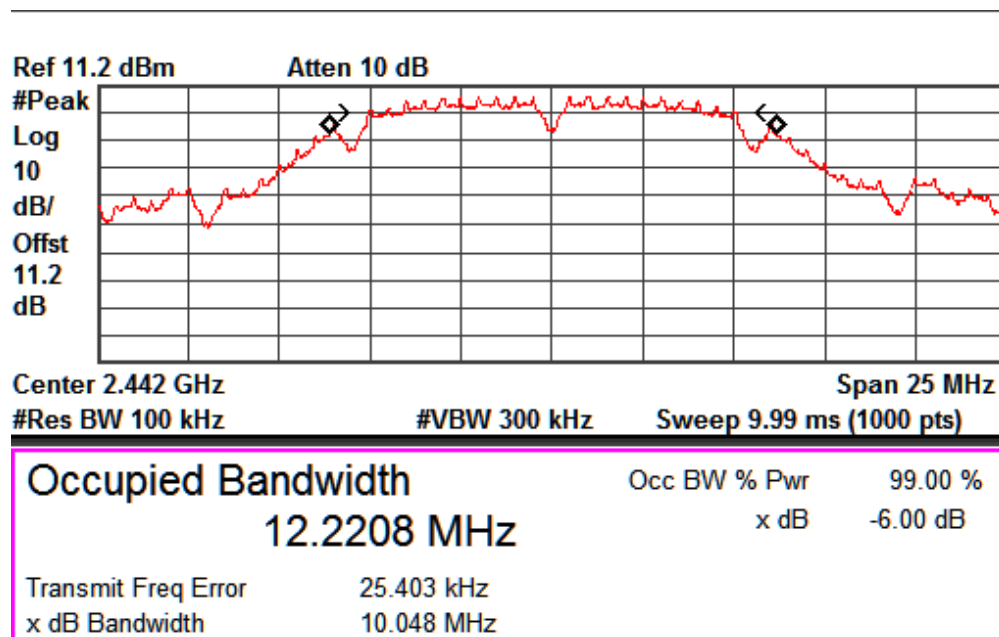
Channel frequency: 2462 MHz

www.tuv.com



Data rate: 1 Mbps

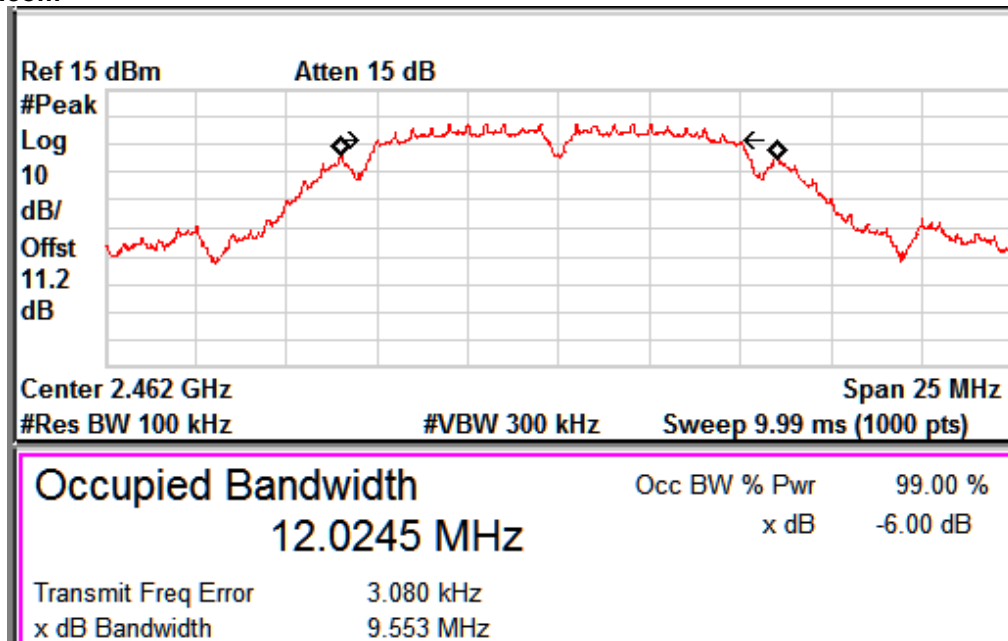
99% Occupied Bandwidth: Channel 2412MHz



Data rate: 1 Mbps

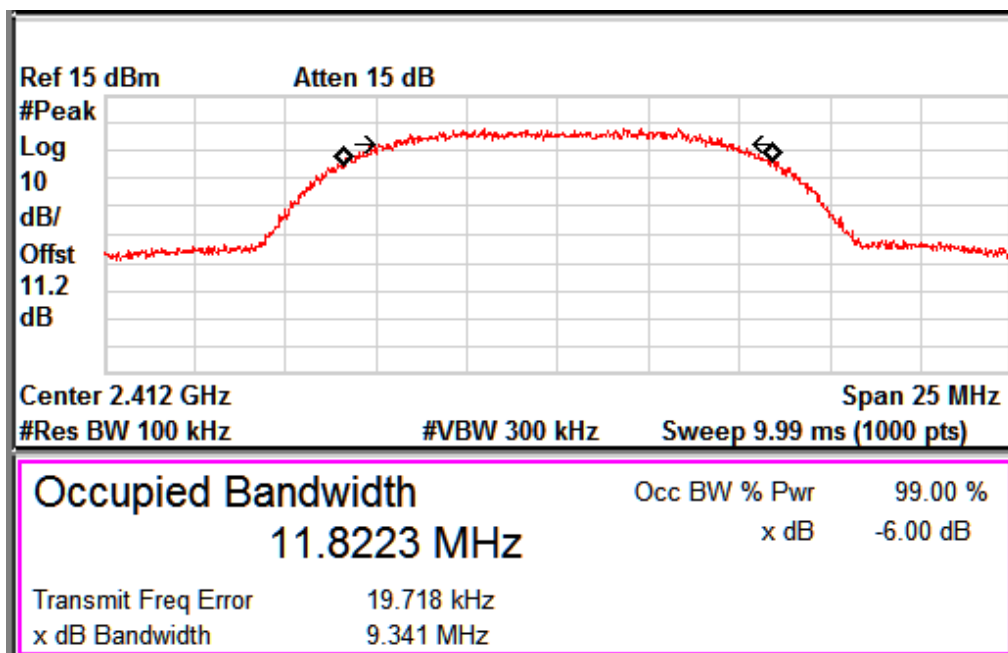
99% Occupied Bandwidth: Channel 2442MHz

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Data rate: 1 Mbps

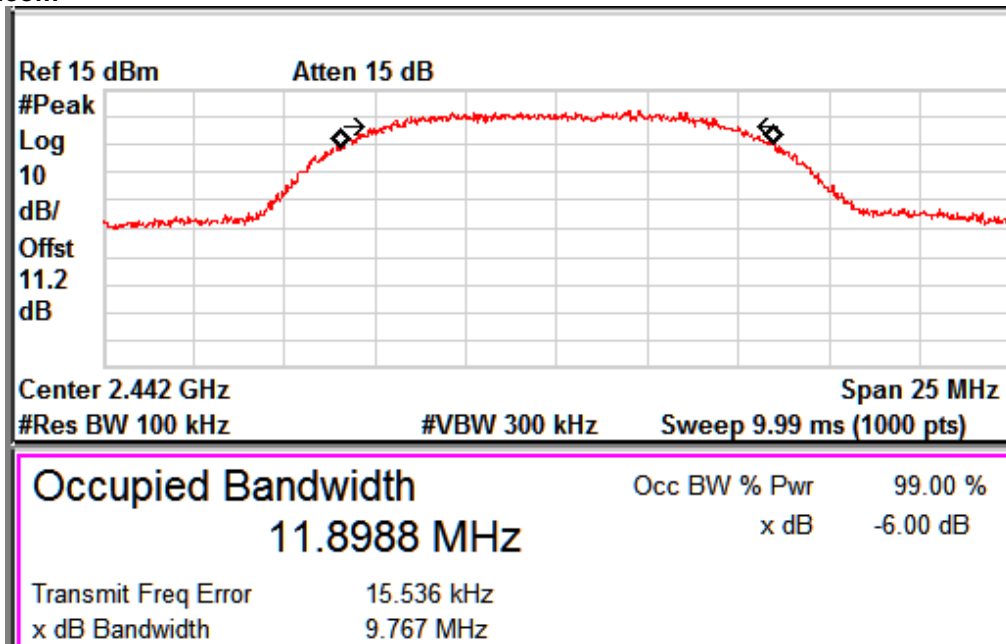
99% Occupied Bandwidth: Channel 2462MHz



Data rate: 11 Mbps

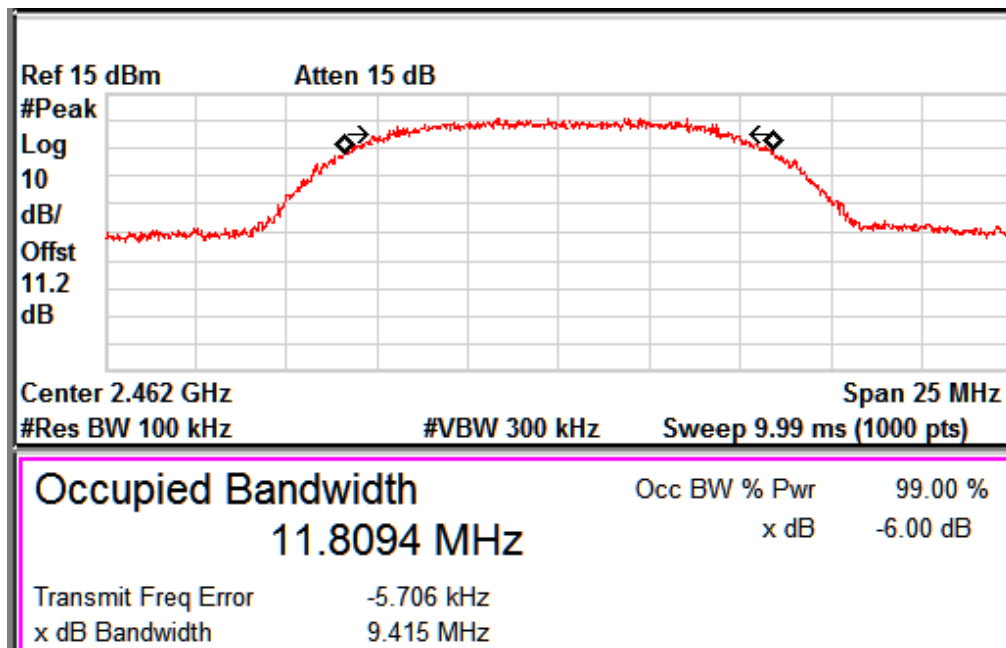
99% Occupied Bandwidth: Channel 2412MHz

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Data rate: 11 Mbps

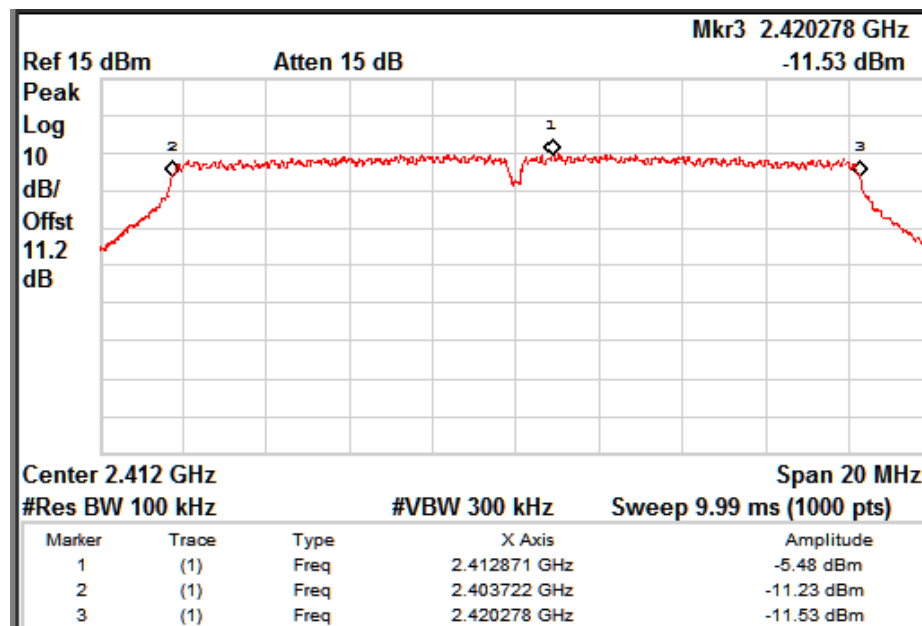
99% Occupied Bandwidth: Channel 2442MHz



Data rate: 11 Mbps

99% Occupied Bandwidth: Channel 2462MHz

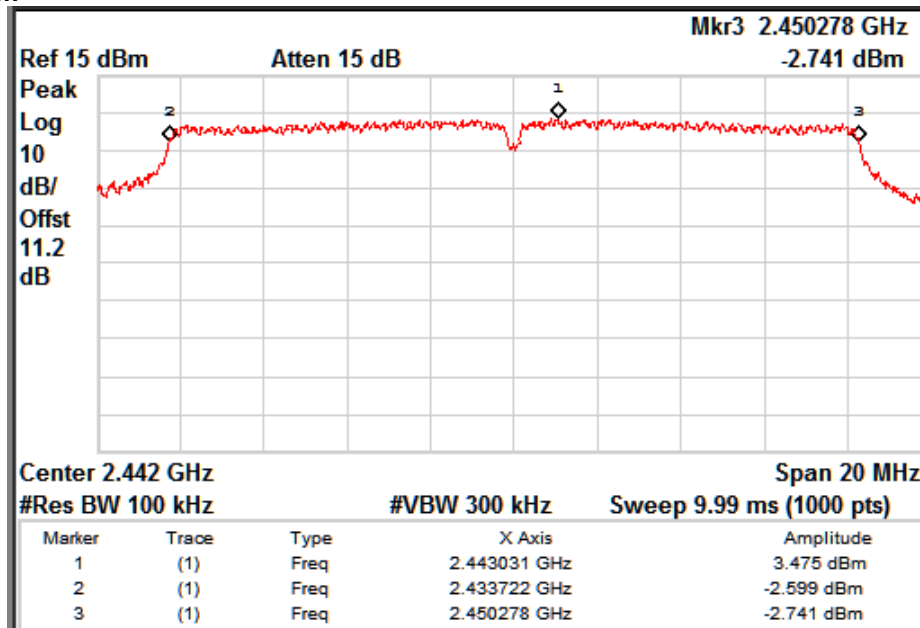
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
g	6	2412.00	2403.722	2420.278	16.556	16.468
		2442.00	2433.722	2450.278	16.556	16.774
		2462.00	2453.742	2470.278	16.536	16.497
	24	2412.00	2403.722	2420.278	16.556	16.443
		2442.00	2433.702	2450.278	16.576	16.539
		2462.00	2453.722	2470.258	16.536	16.439
	54	2412.00	2403.722	2420.278	16.556	16.451
		2442.00	2433.702	2450.278	16.576	16.561
		2462.00	2453.722	2470.278	16.556	16.452



Data Rate: 6 Mbps

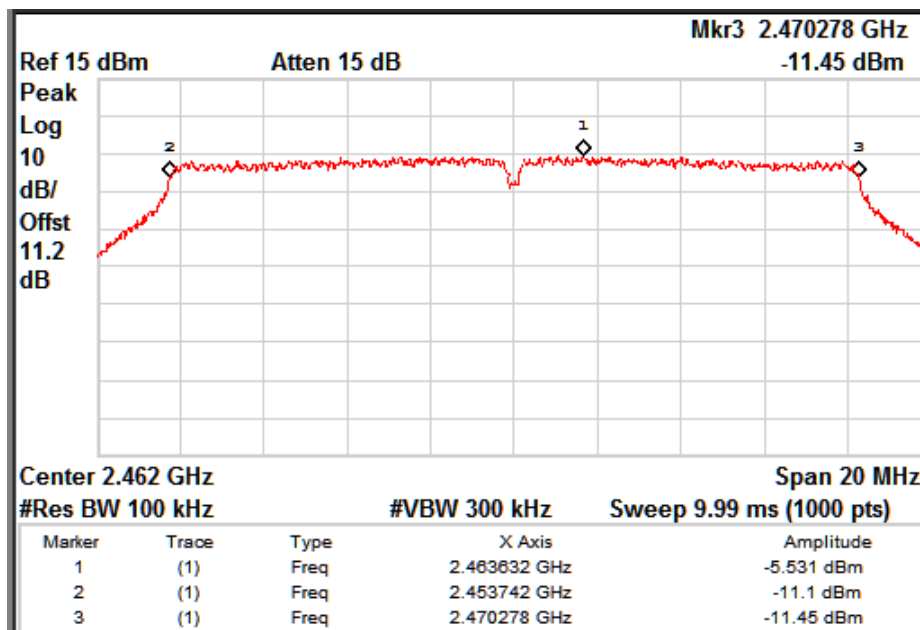
Channel frequencies: 2412 MHz

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Data Rate: 6 Mbps

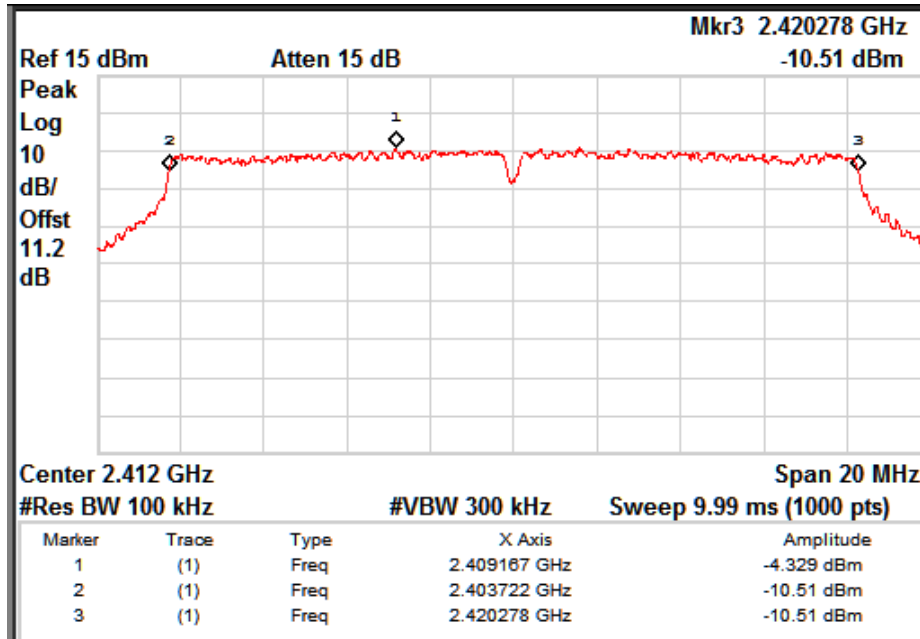
Channel frequencies: 2442 MHz



Data Rate: 6 Mbps

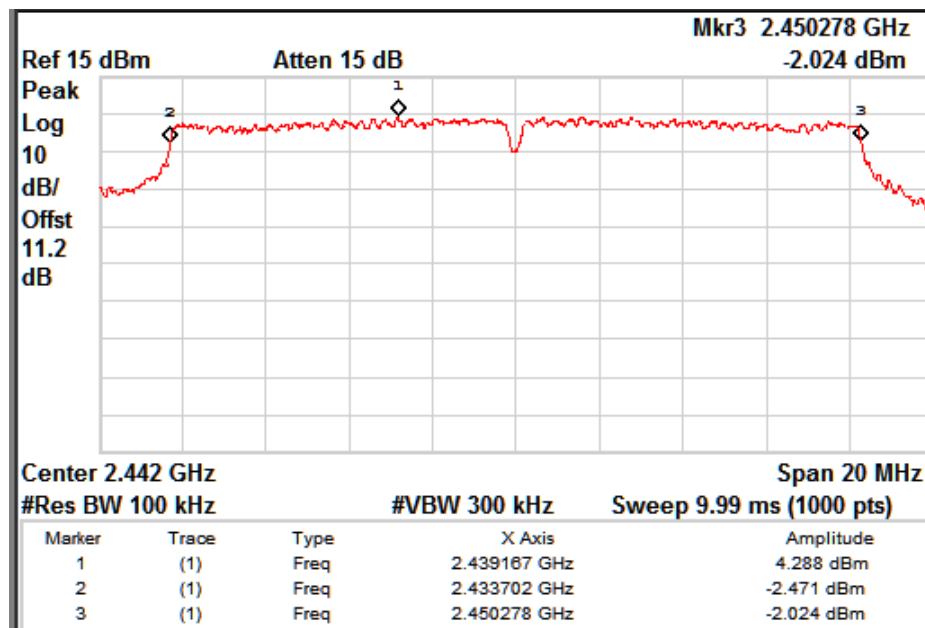
Channel frequencies: 2462 MHz

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Data Rate: 24 Mbps

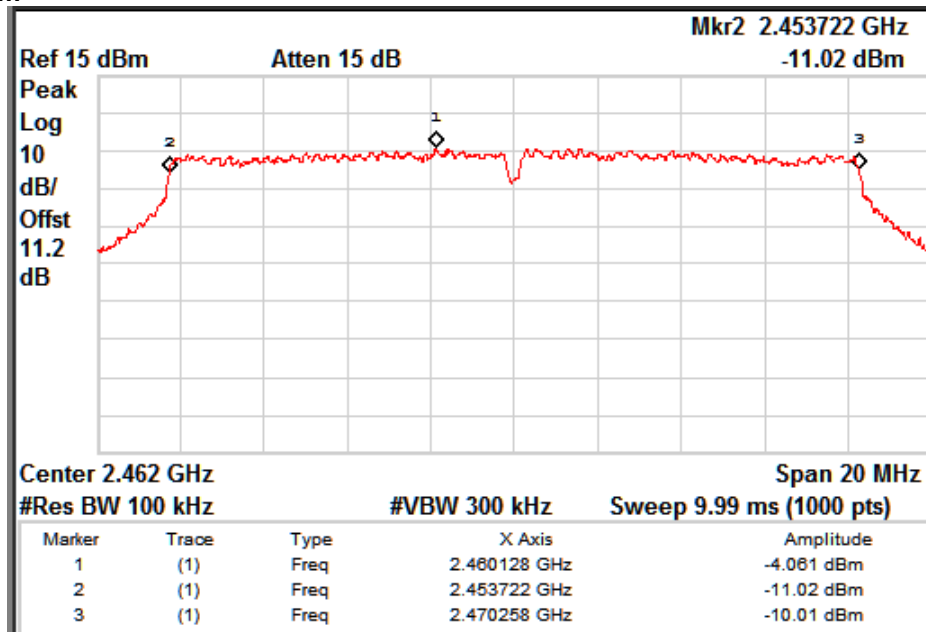
Channel frequencies: 2412 MHz



Data Rate: 24 Mbps

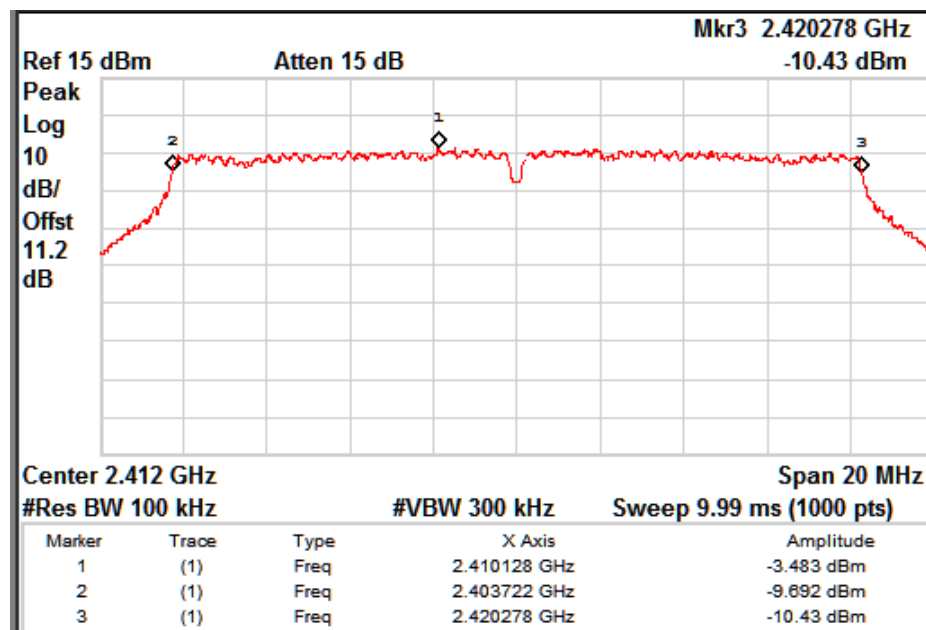
Channel frequencies: 2442 MHz

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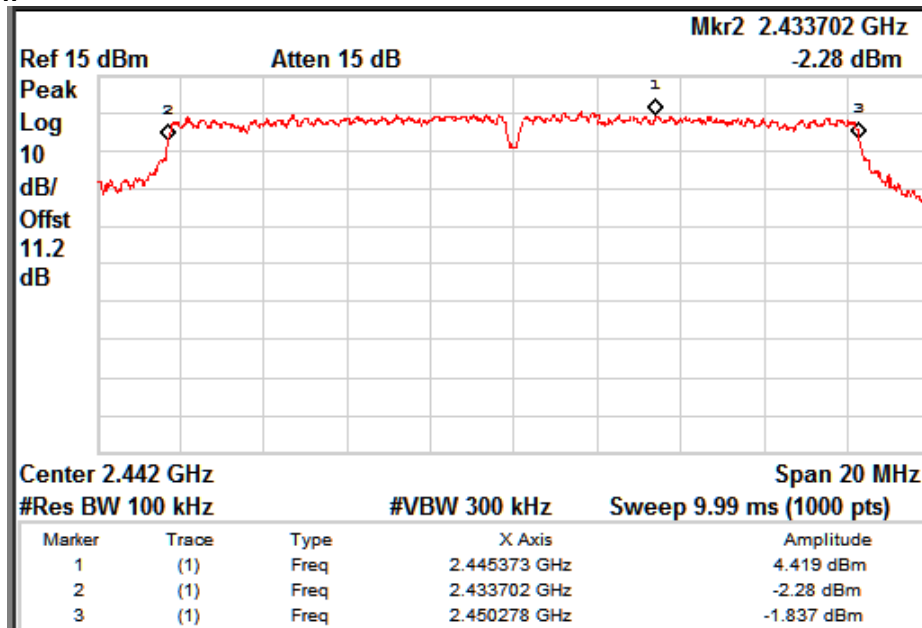
Data Rate: 24 Mbps

Channel frequencies: 2462 MHz



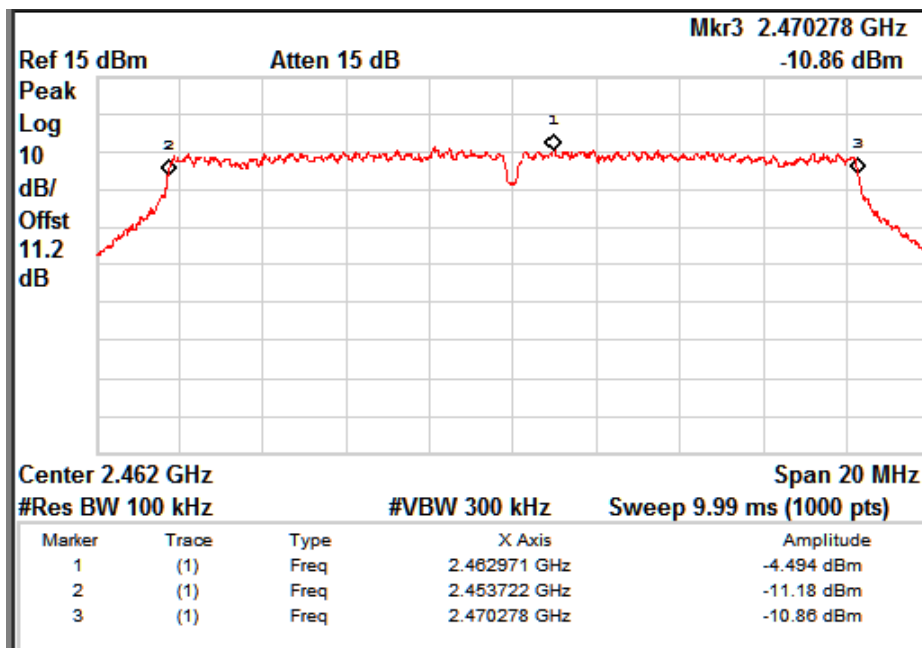
Data Rate: 54 Mbps

Channel frequencies: 2412 MHz



Data Rate: 54 Mbps

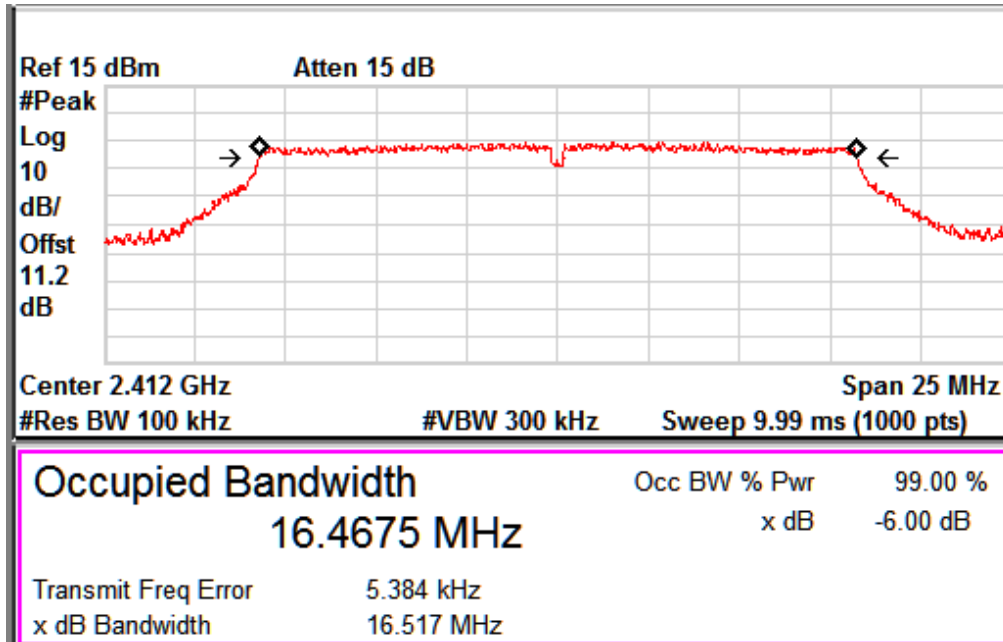
Channel frequencies: 2442MHz



Data Rate: 54 Mbps

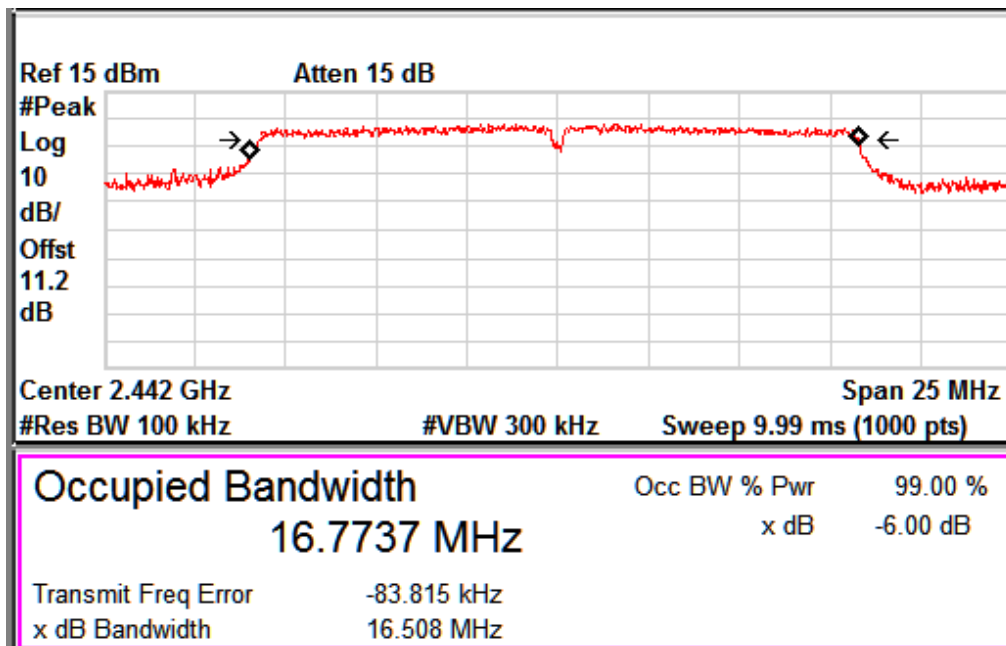
Channel frequencies: 2472 MHz

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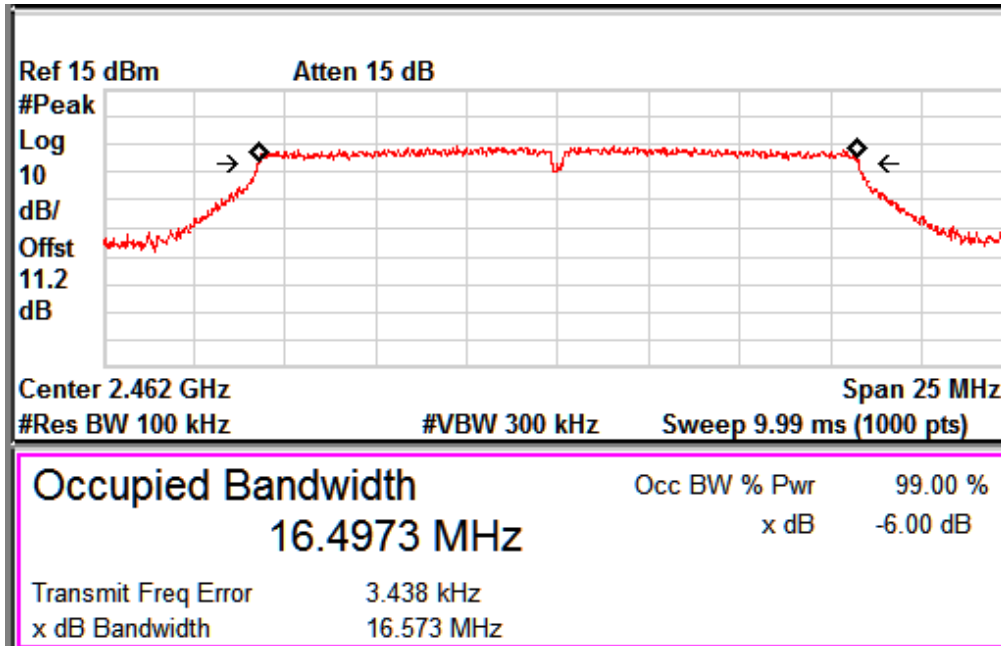
Data Rate: 6 Mbps

99% Occupied Bandwidth: Channel 2412MHz



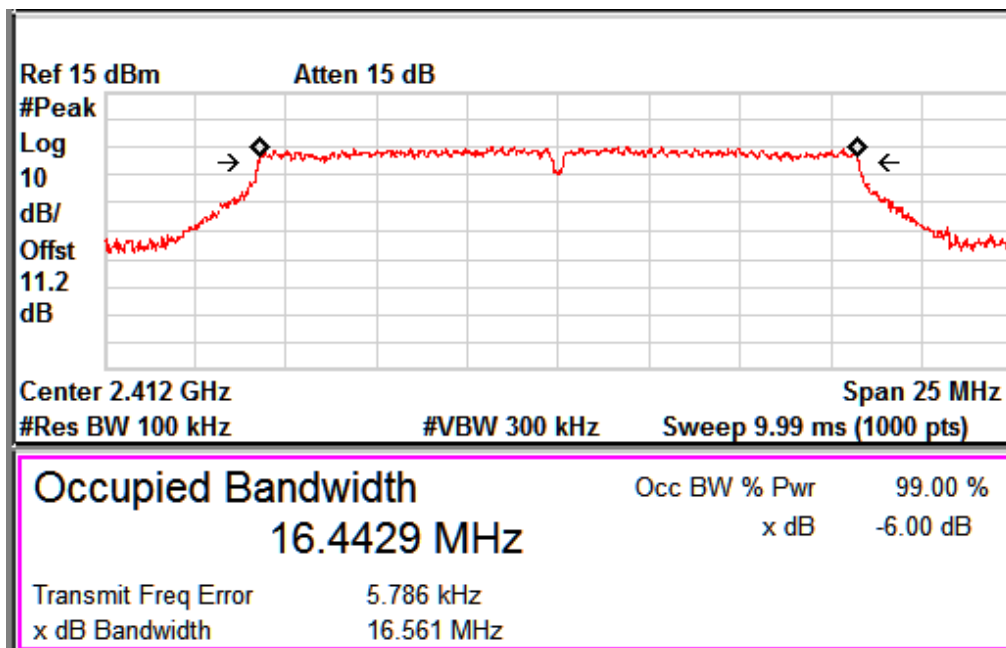
Data Rate: 6 Mbps

99% Occupied Bandwidth: Channel 2442MHz



Data Rate: 6 Mbps

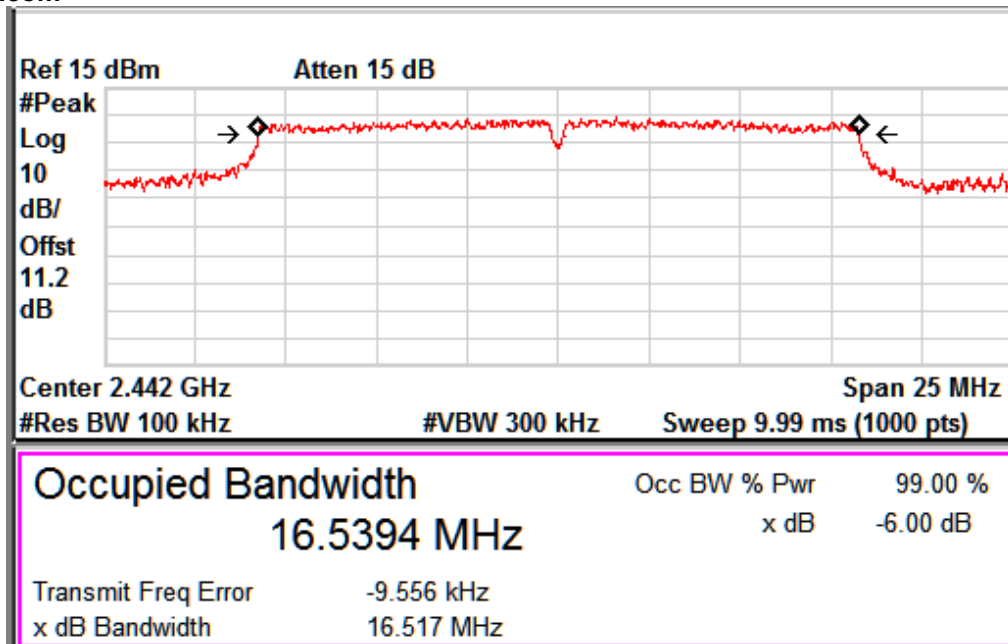
99% Occupied Bandwidth: Channel 2462MHz



Data Rate: 24 Mbps

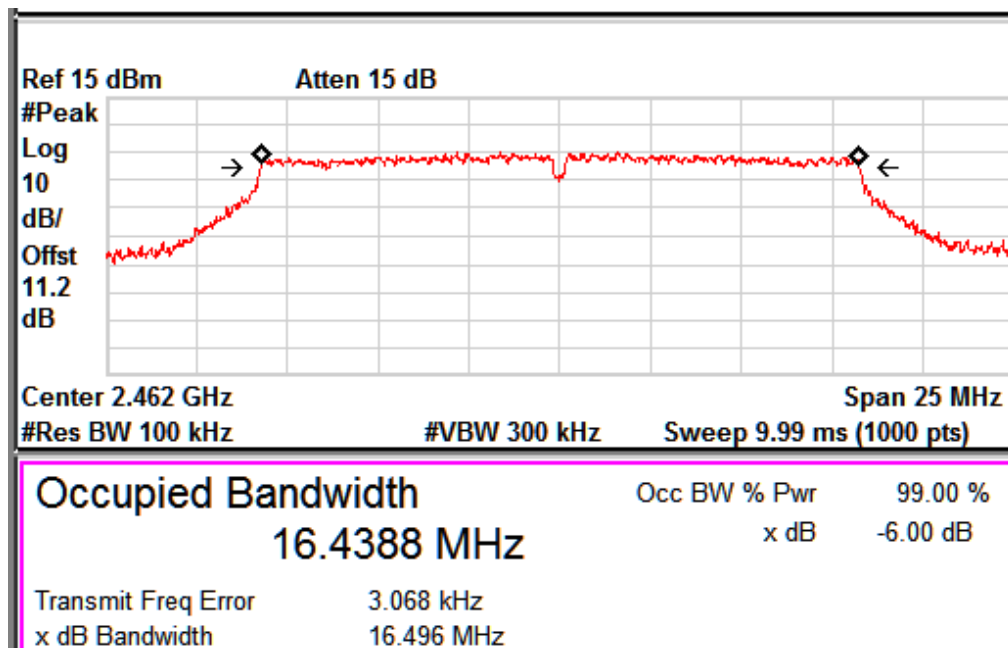
99% Occupied Bandwidth: Channel 2412MHz

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Data Rate: 24 Mbps

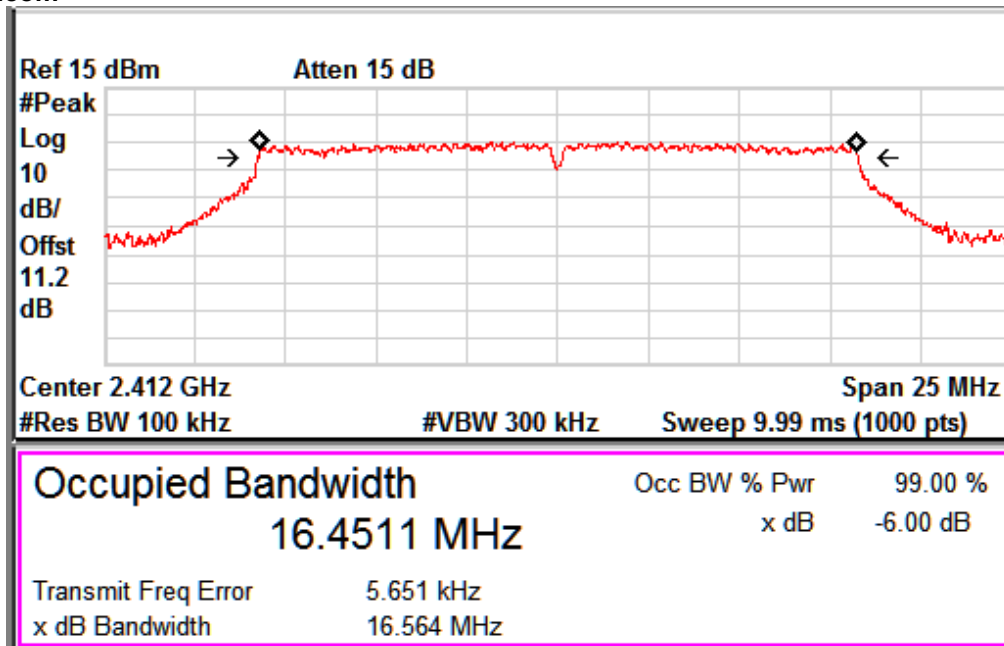
99% Occupied Bandwidth: Channel 2442MHz



Data Rate: 24 Mbps

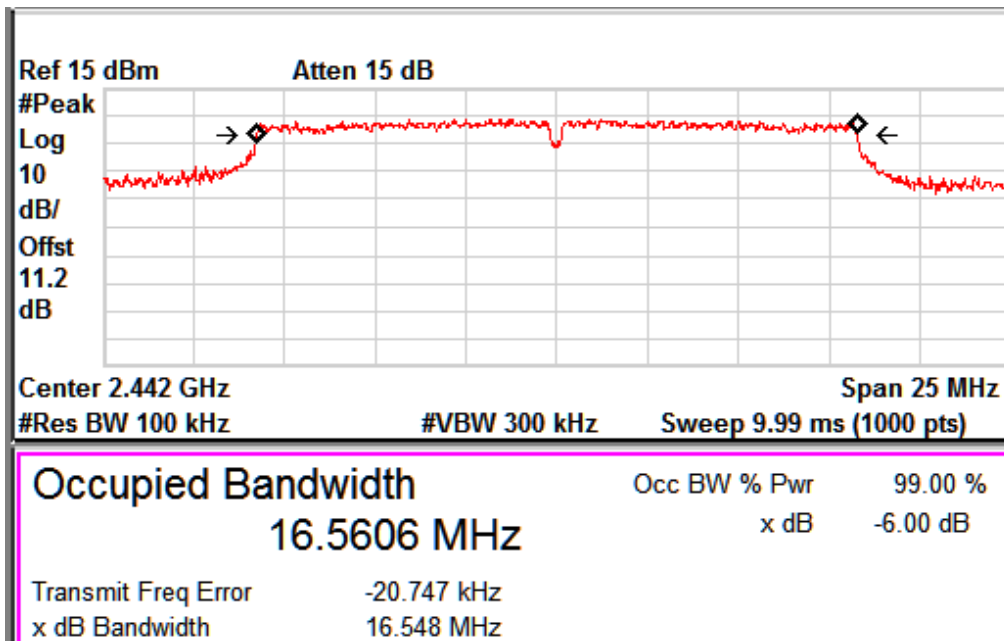
99% Occupied Bandwidth: Channel 2462MHz

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Data Rate: 54 Mbps

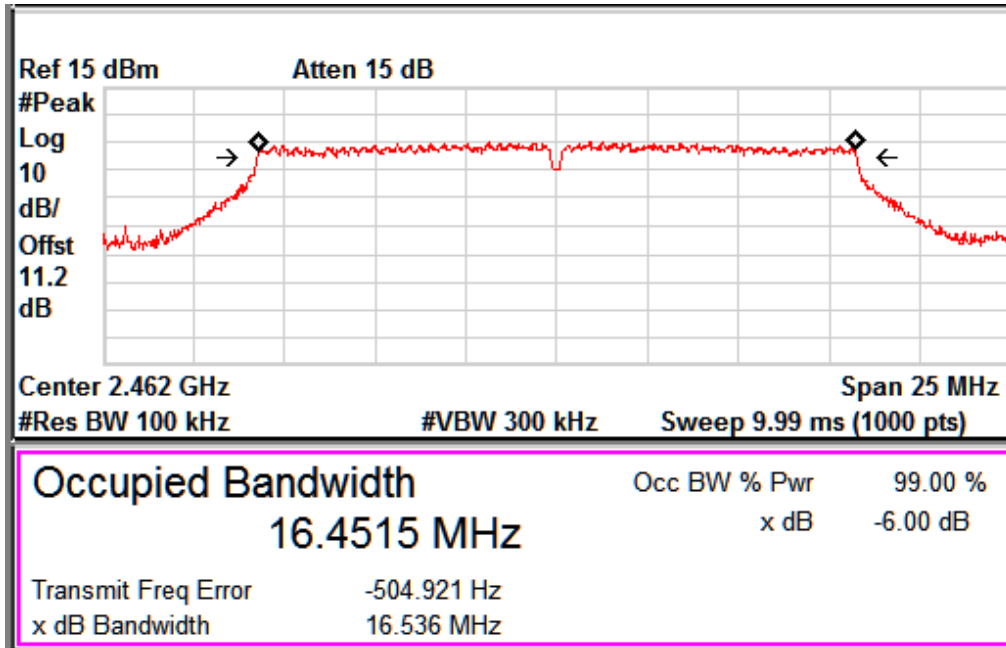
99% Occupied Bandwidth: Channel 2412MHz



Data Rate: 54 Mbps

99% Occupied Bandwidth: Channel 2442MHz

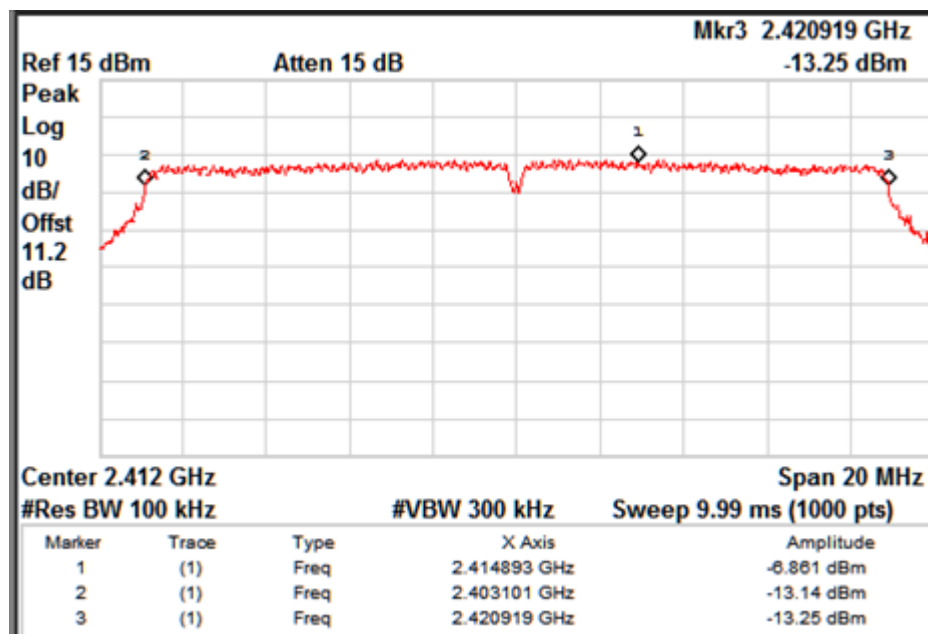
www.tuv.com



Data Rate: 54 Mbps

99% Occupied Bandwidth: Channel 2462MHz

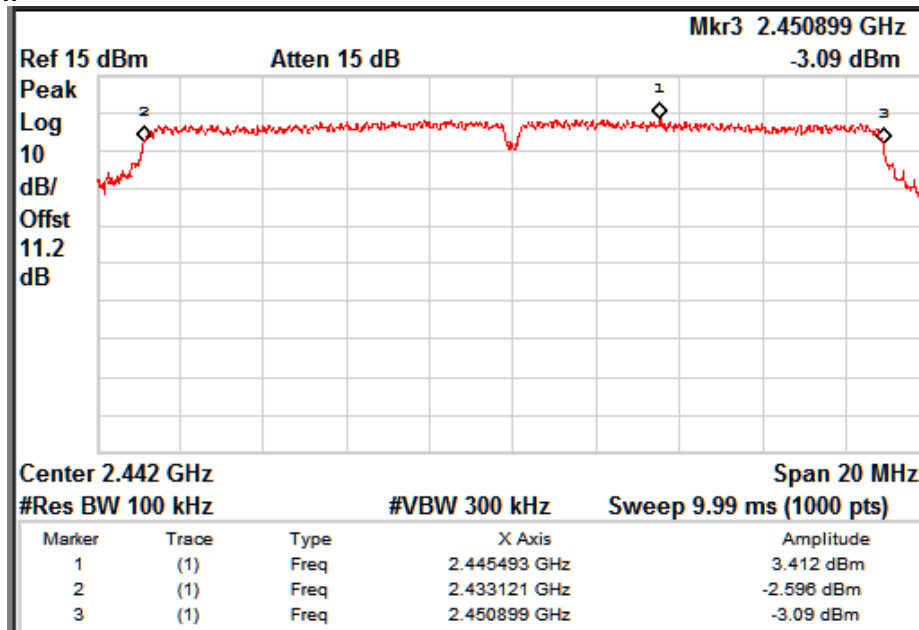
802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
n	6.5	2412.00	2403.101	2420.919	17.818	17.622
		2442.00	2433.121	2450.899	17.778	17.852
		2462.00	2453.101	2470.899	17.798	17.624
	39	2412.00	2403.121	2420.879	17.758	17.613
		2442.00	2433.121	2450.899	17.778	17.727
		2462.00	2453.121	2470.899	17.778	17.617
	65	2412.00	2403.101	2420.899	17.798	17.624
		2442.00	2433.121	2450.899	17.778	17.706
		2462.00	2453.121	2470.879	17.758	17.629



Data Rate: 6.5 Mbps

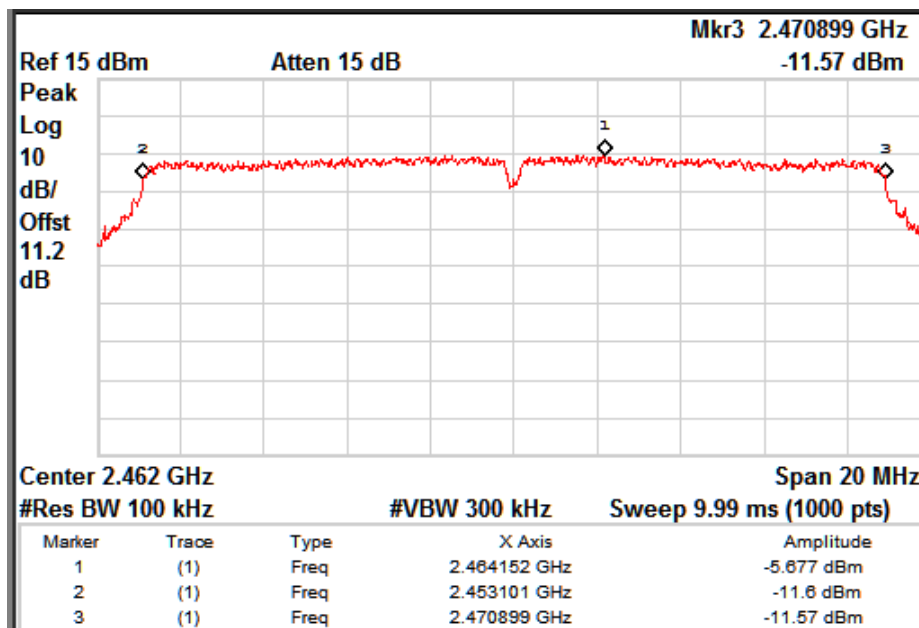
Channel: 2412 MHz

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Data Rate: 6.5 Mbps

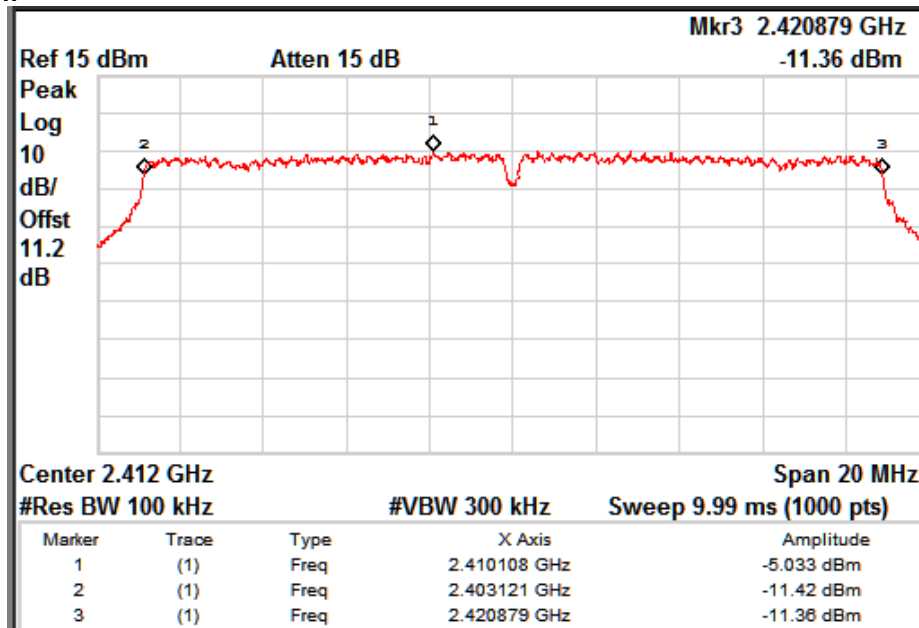
Channel: 2442 MHz



Data Rate: 6.5 Mbps

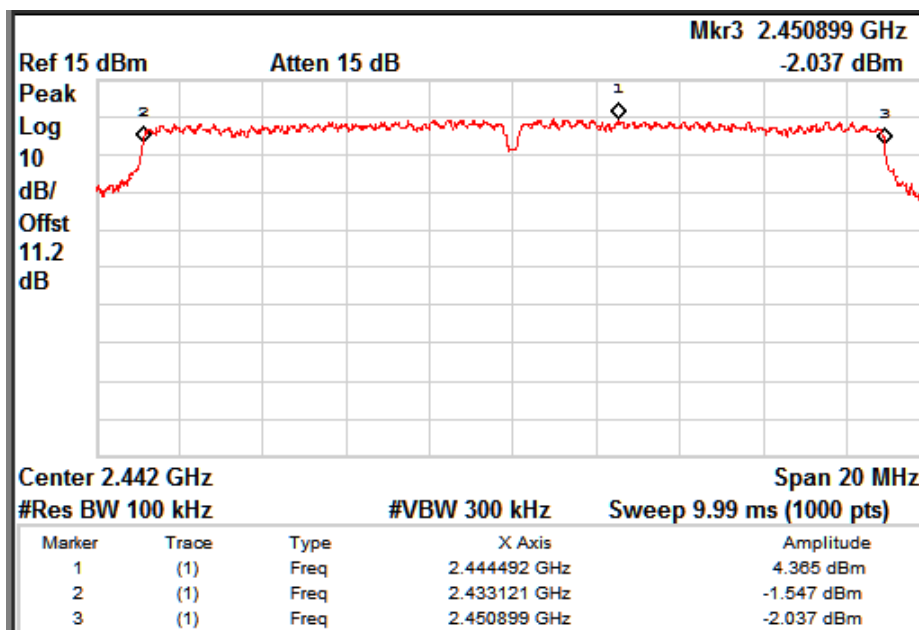
Channel: 2462 MHz

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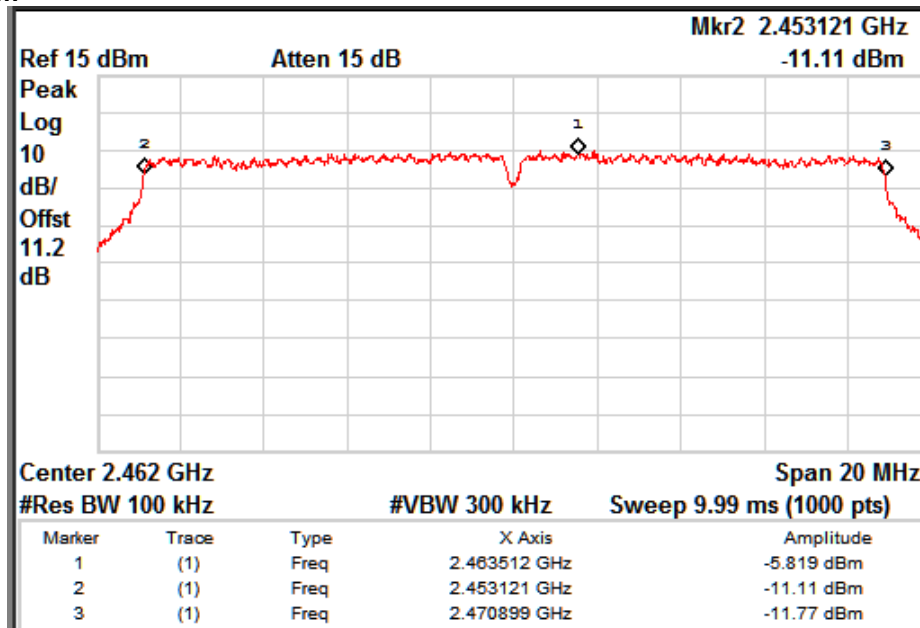
Data Rate: 39 Mbps

Channel: 2412 MHz



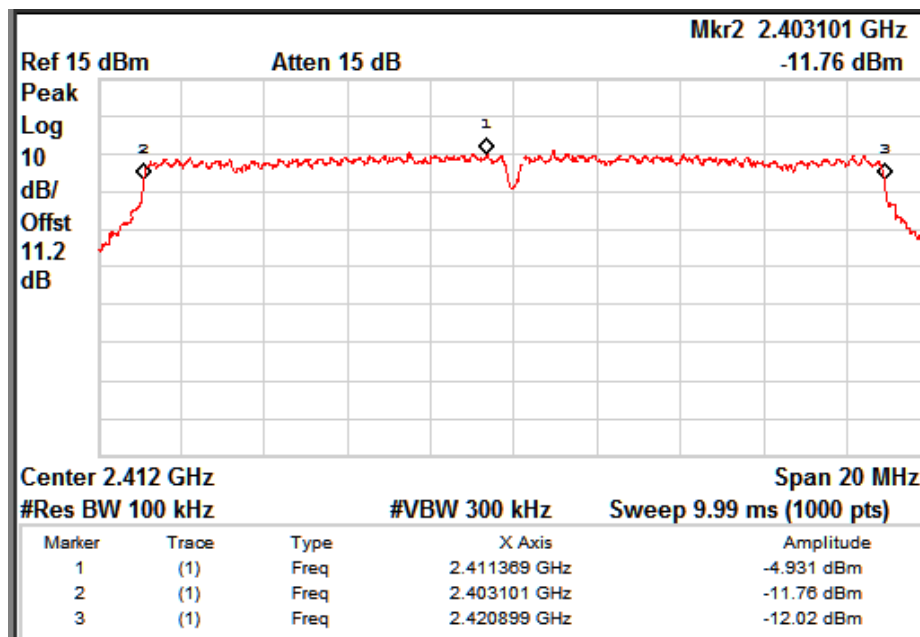
Data Rate: 39 Mbps

Channel: 2442 MHz



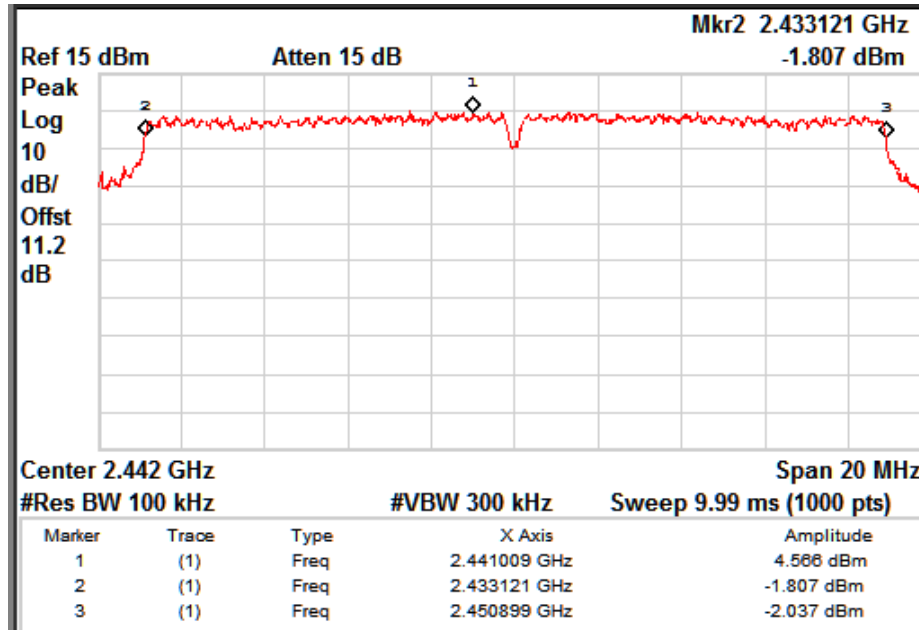
Data Rate: 39 Mbps

Channel: 2462 MHz



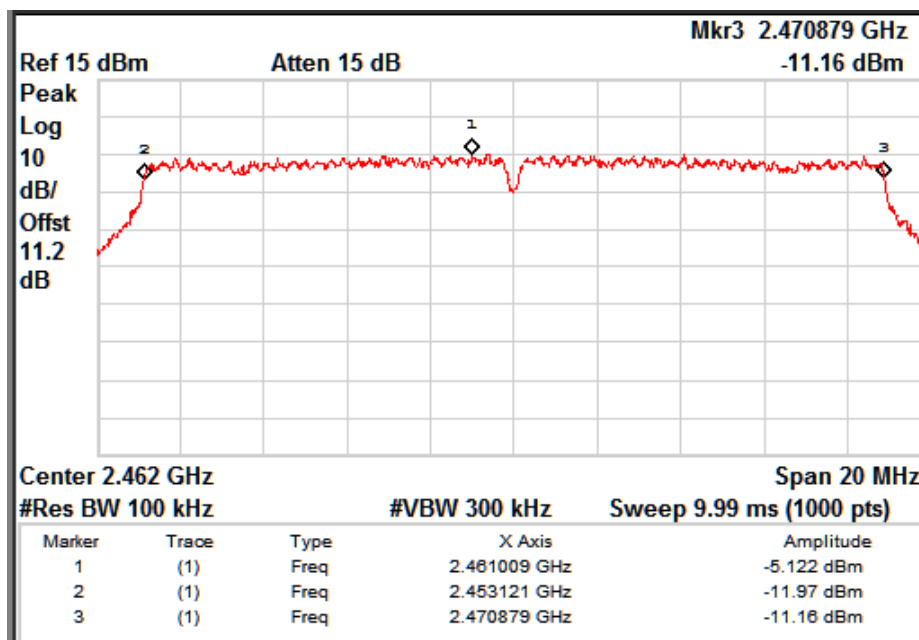
Data Rate: 65 Mbps

Channel: 2412 MHz



Data Rate: 65 Mbps

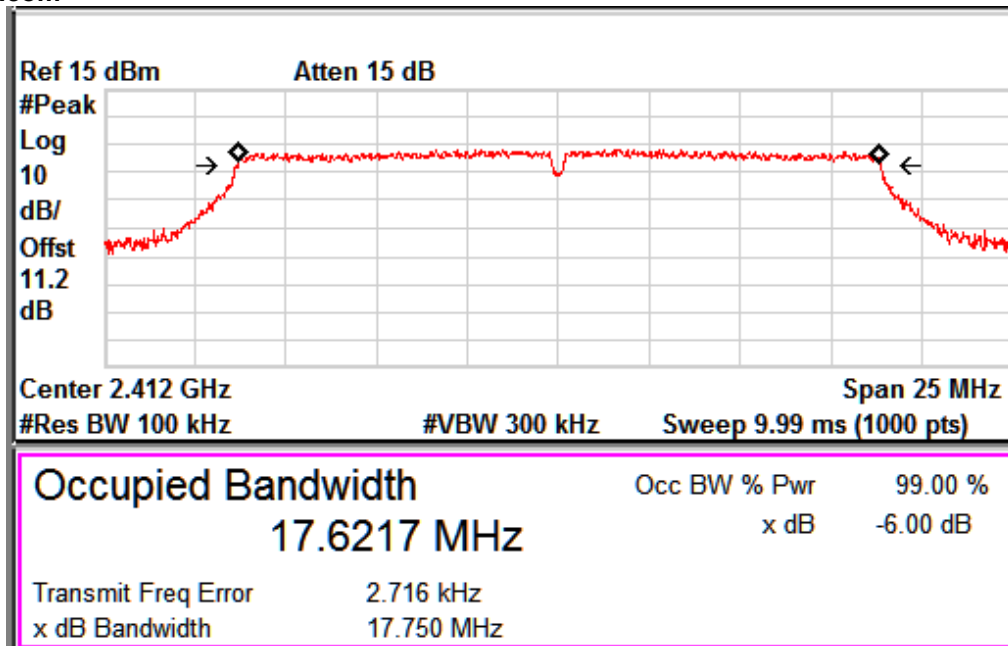
Channel: 2442MHz



Data Rate: 65 Mbps

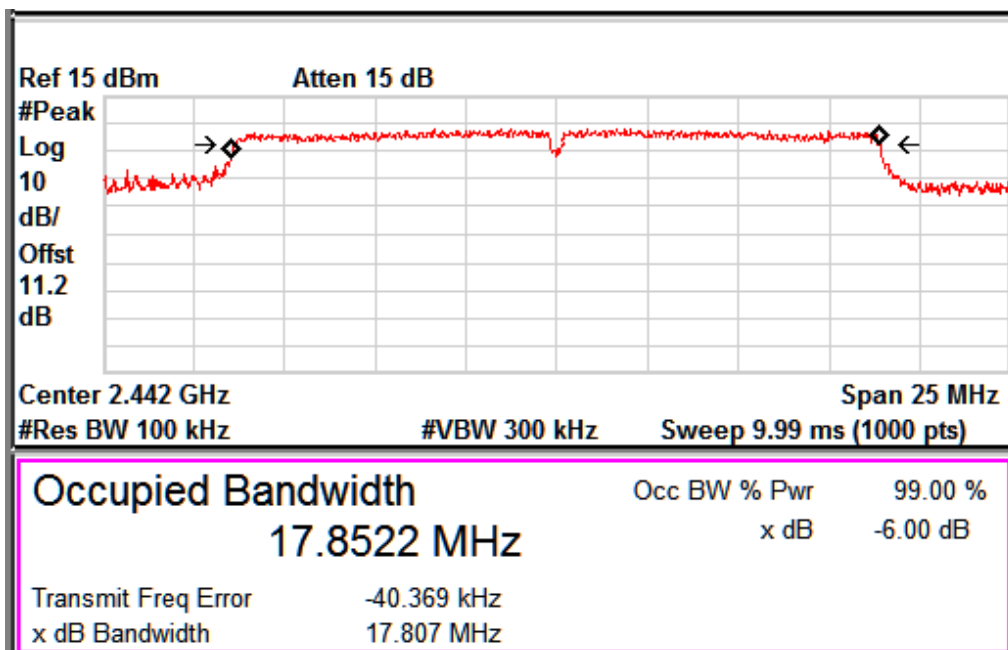
Channel: 2462 MHz

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Data Rate: 6.5 Mbps

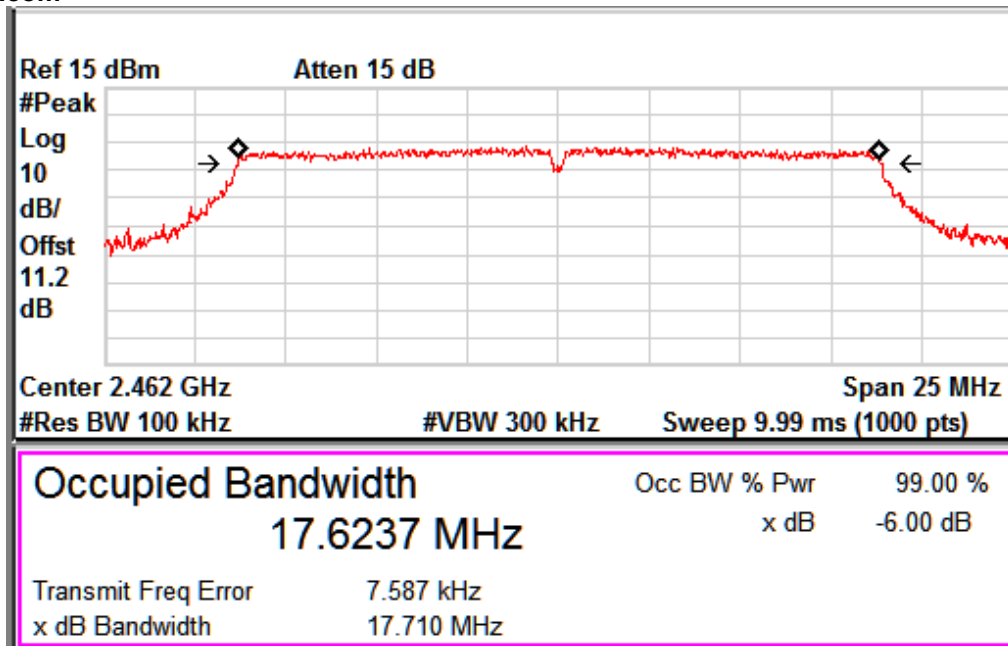
99% Occupied Bandwidth: Channel 2412MHz



Data Rate: 6.5 Mbps

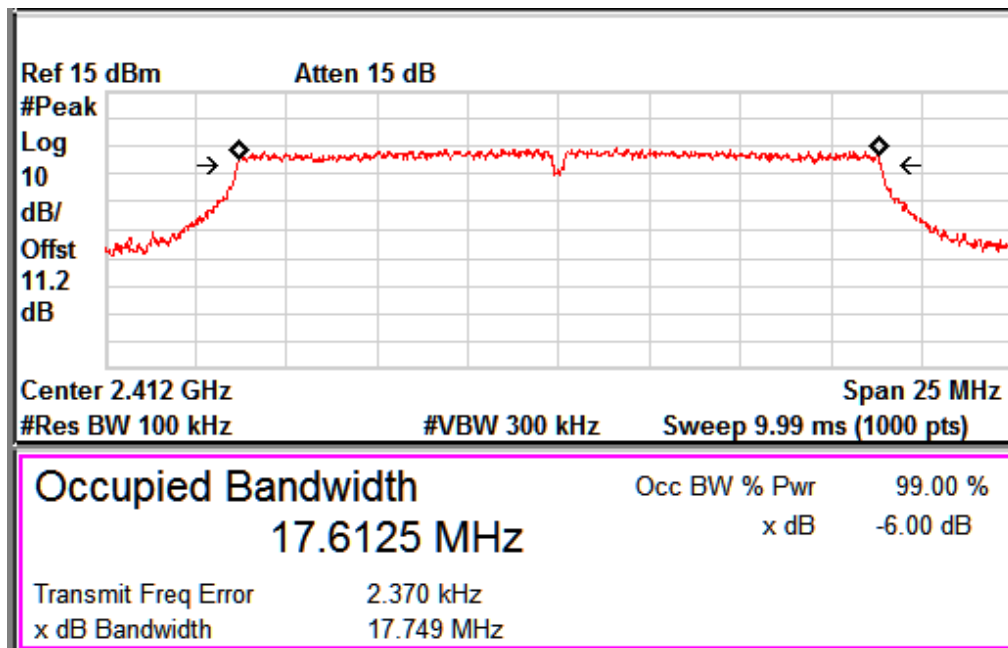
99% Occupied Bandwidth: Channel 2442MHz

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Data Rate: 6.5 Mbps

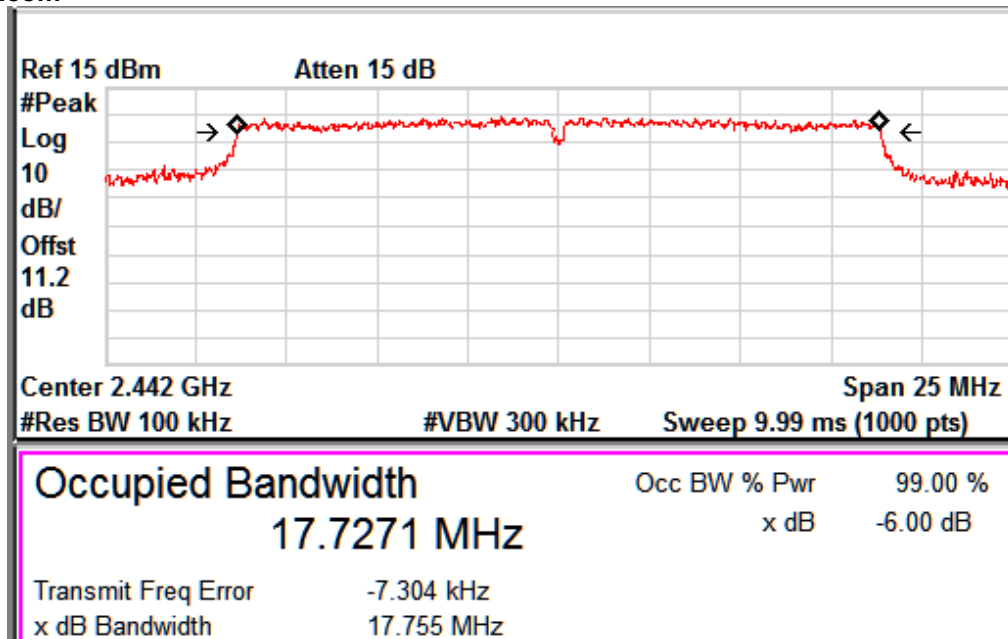
99% Occupied Bandwidth: Channel 2462MHz



Data Rate: 39 Mbps

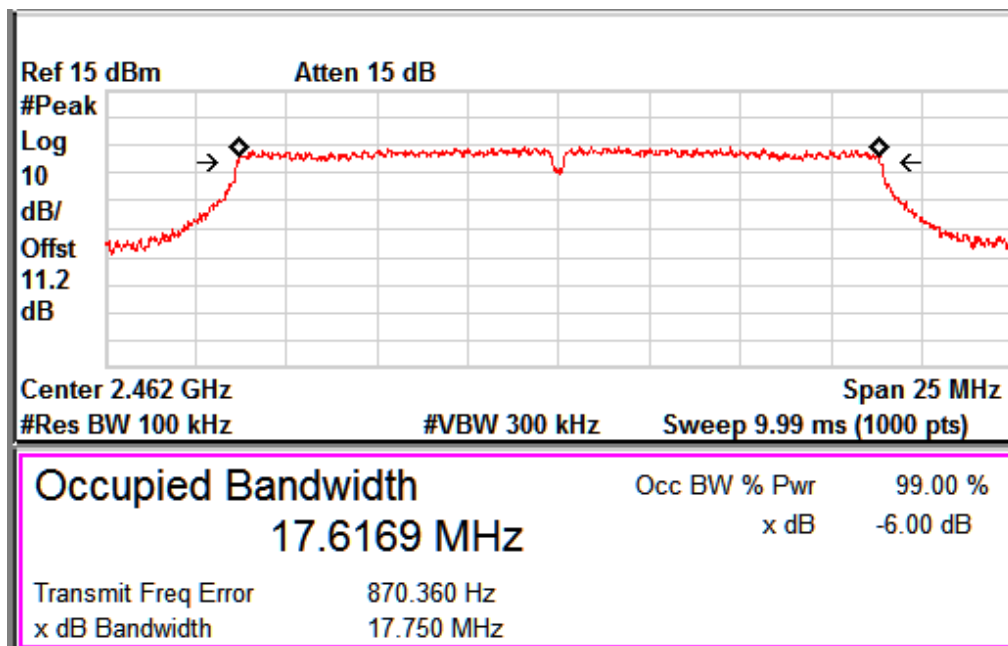
99% Occupied Bandwidth: Channel 2412MHz

www.tuv.com



Data Rate: 39 Mbps

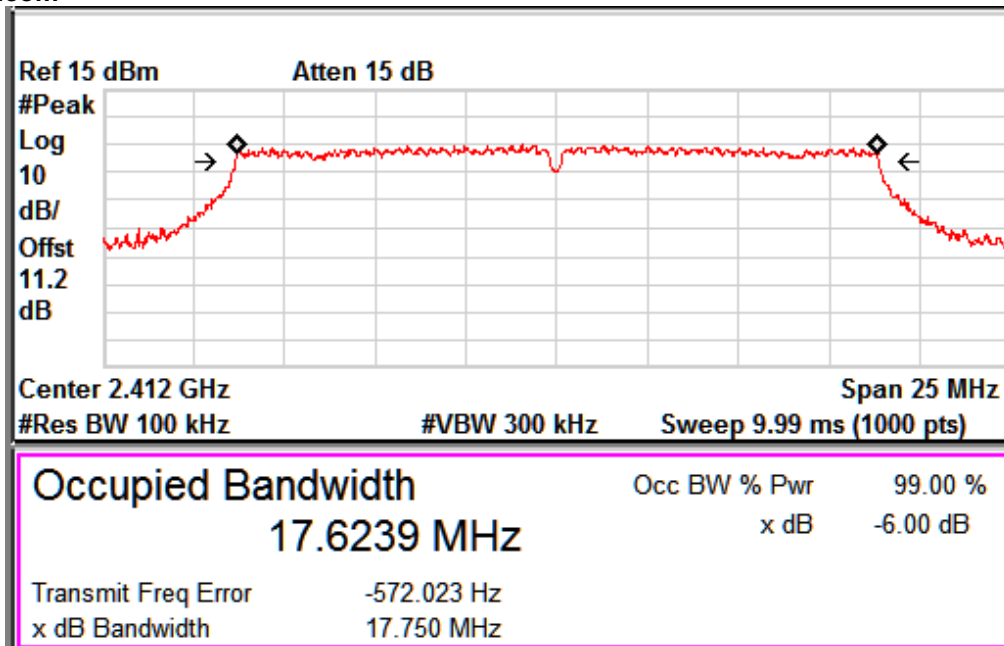
99% Occupied Bandwidth: Channel 2442MHz



Data Rate: 39 Mbps

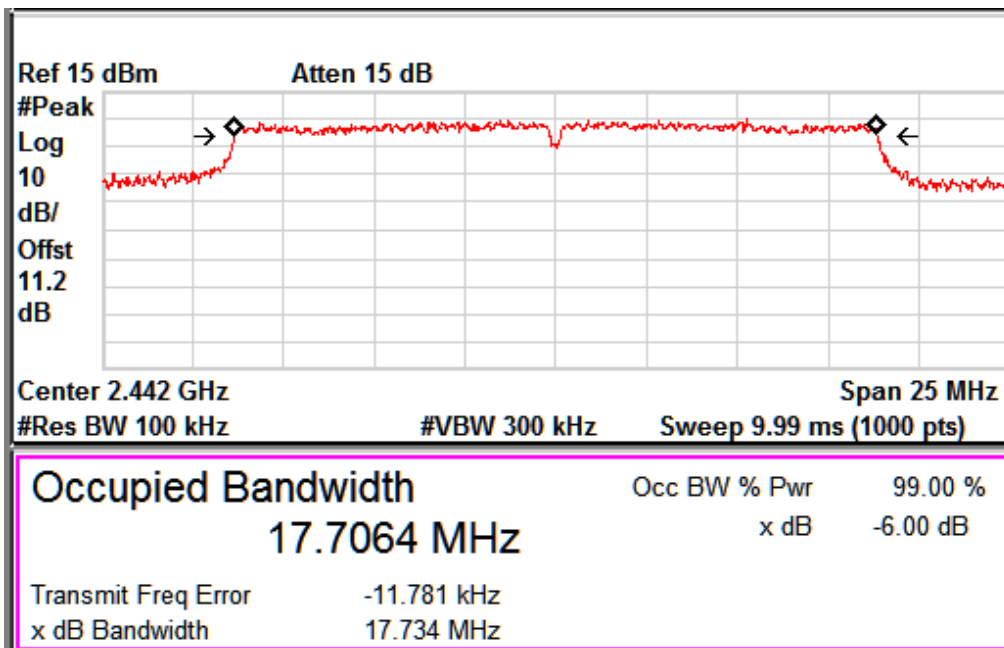
99% Occupied Bandwidth: Channel 2462MHz

www.tuv.com



Data Rate: 65 Mbps

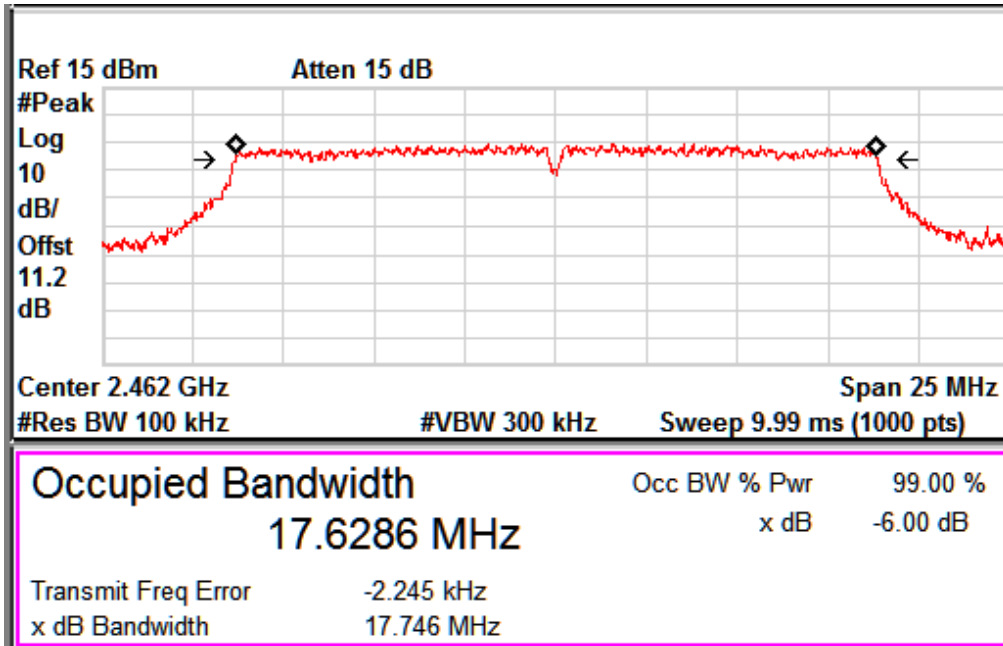
99% Occupied Bandwidth: Channel 2412MHz



Data Rate: 65 Mbps

99% Occupied Bandwidth: Channel 2442MHz

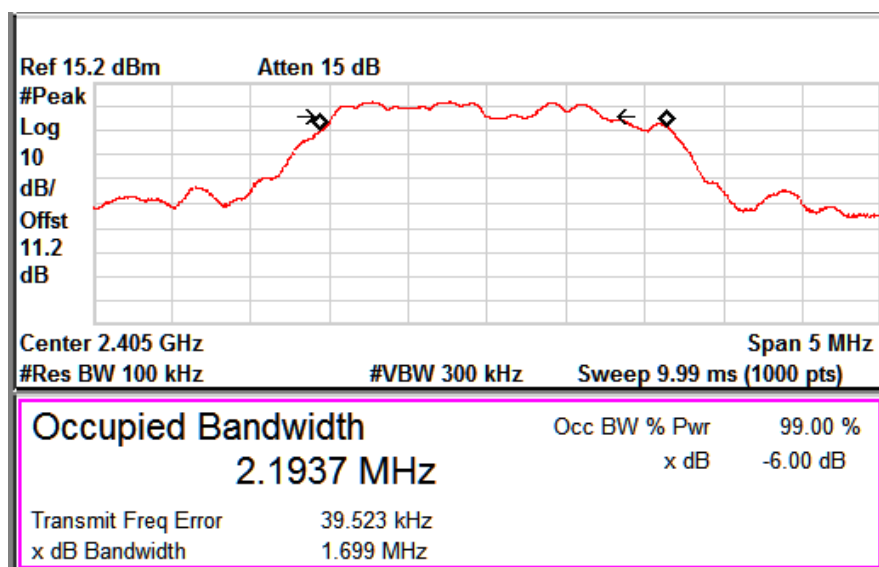
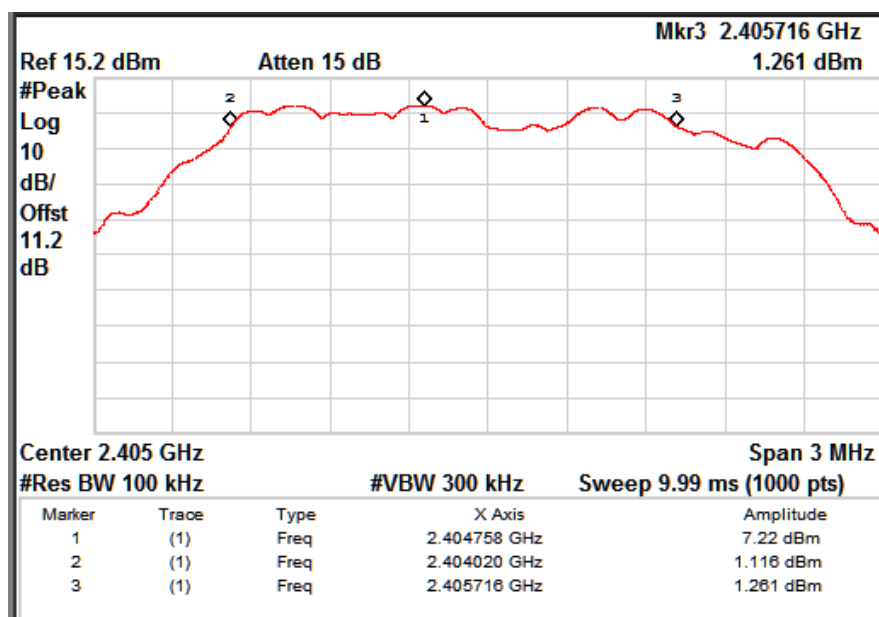
www.tuv.com

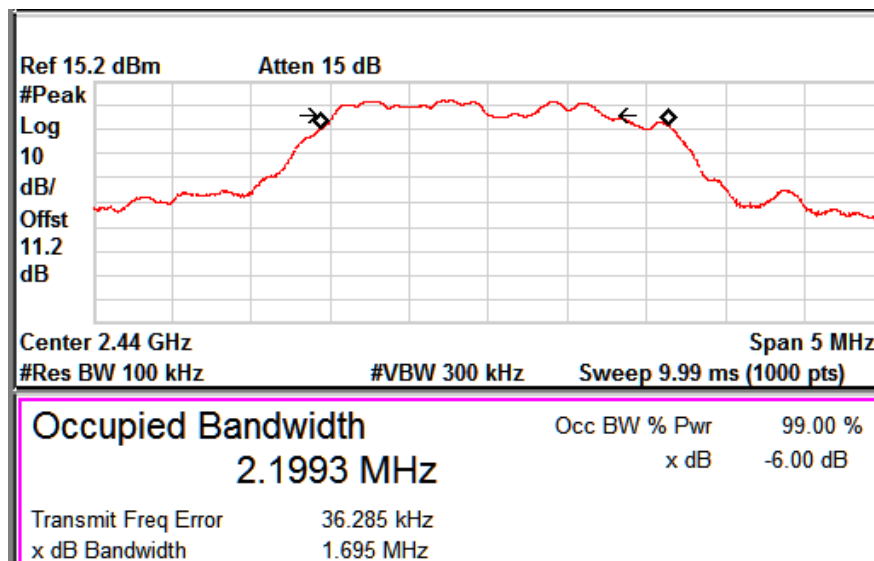
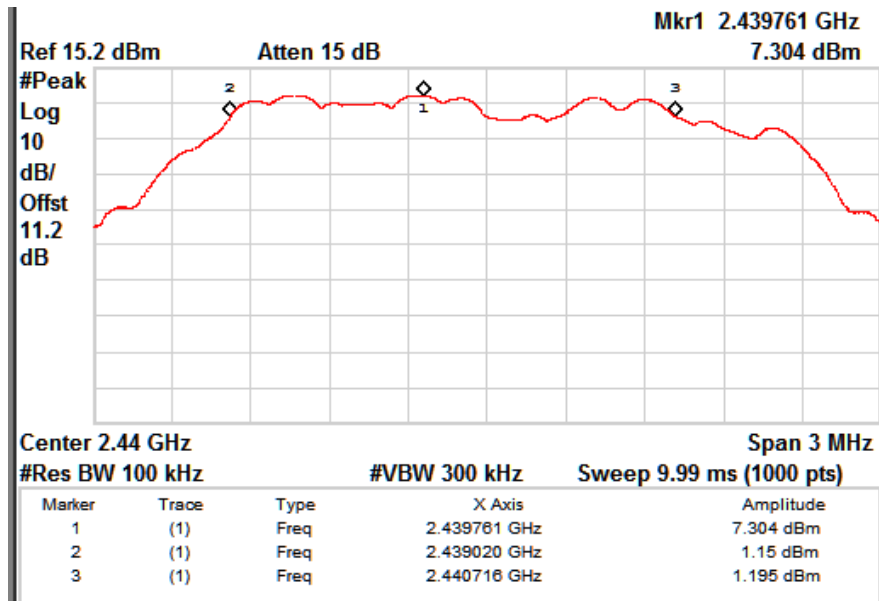


Data Rate: 65 Mbps

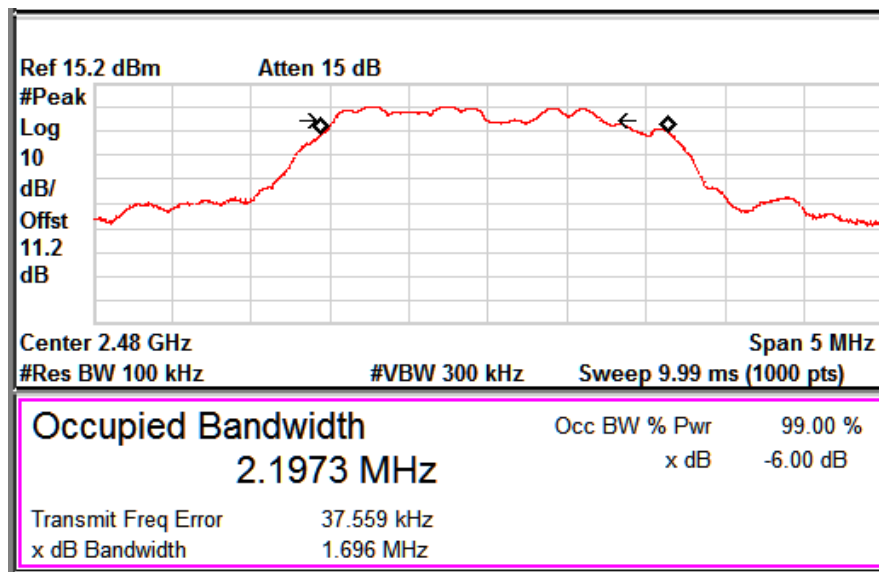
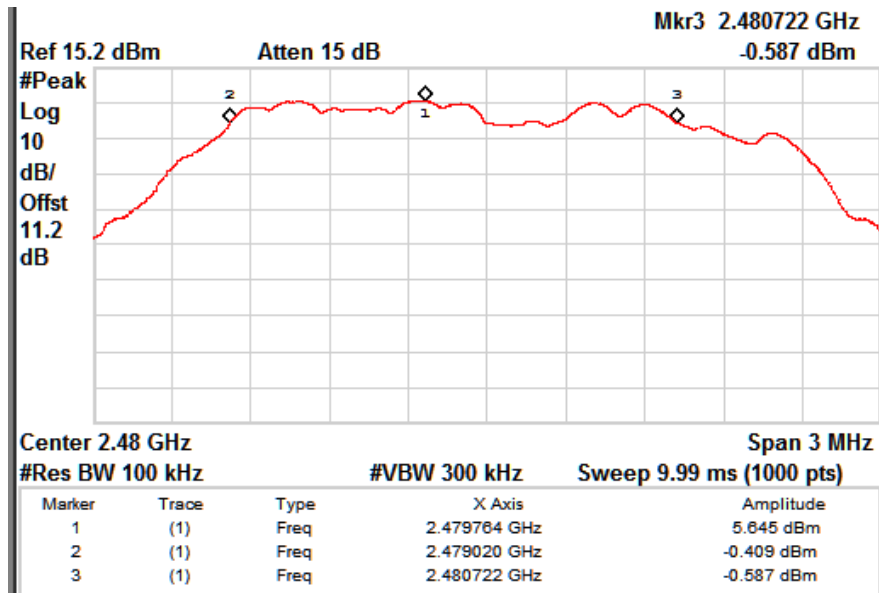
99% Occupied Bandwidth: Channel 2462MHz

Channel Frequency (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2405.00	2404.020	2405.716	1.696	2.194
2440.00	2439.020	2440.716	1.696	2.199
2480.00	2479.020	2480.722	1.702	2.197


Channel Frequency: 2405 MHz



Channel Frequency: 2440 MHz

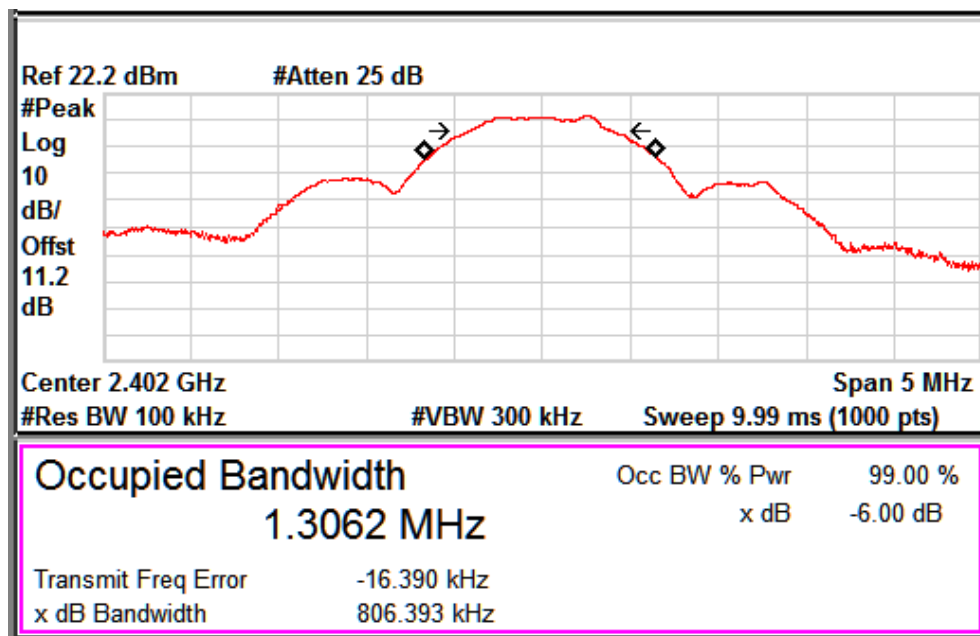


Channel Frequency: 2480 MHz

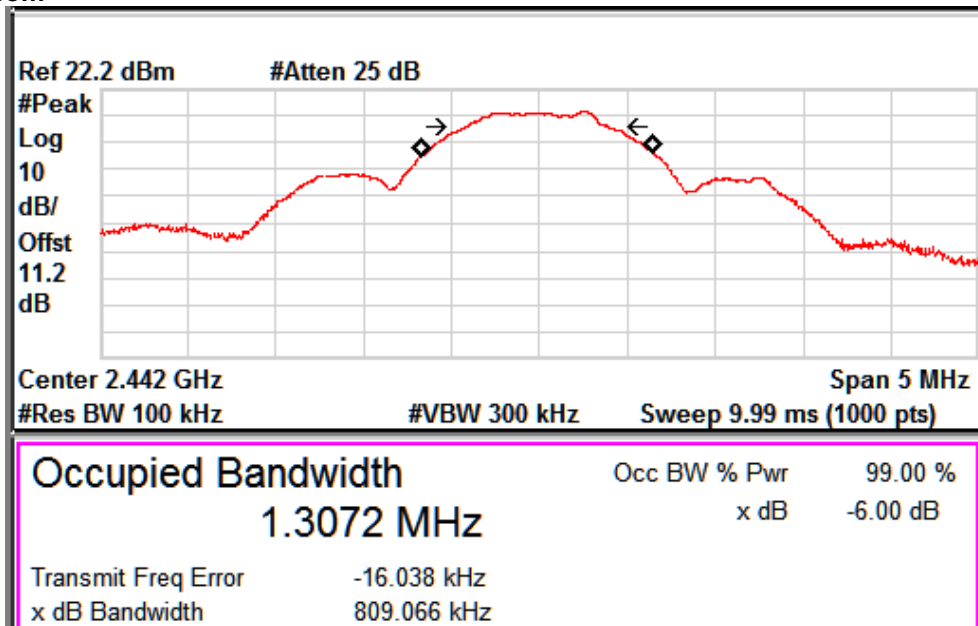
www.tuv.com

Test Result: Bluetooth LE

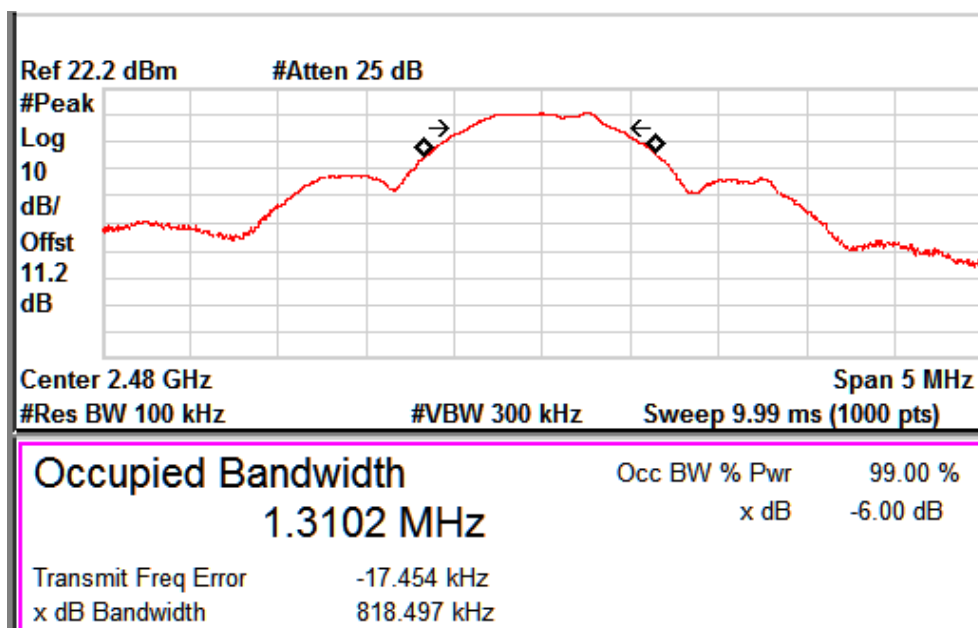
Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
2402.00	0.806	1.306
2442.00	0.809	1.307
2480.00	0.818	1.310



Channel Frequency: 2402 MHz



Channel Frequency: 2442 MHz



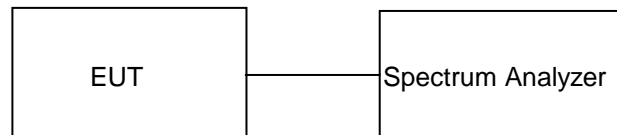
Channel Frequency: 2480 MHz

Band-edge Compliance
Section 15.247(d)
Result
Pass

Test Specification
Detector Function
Requirement

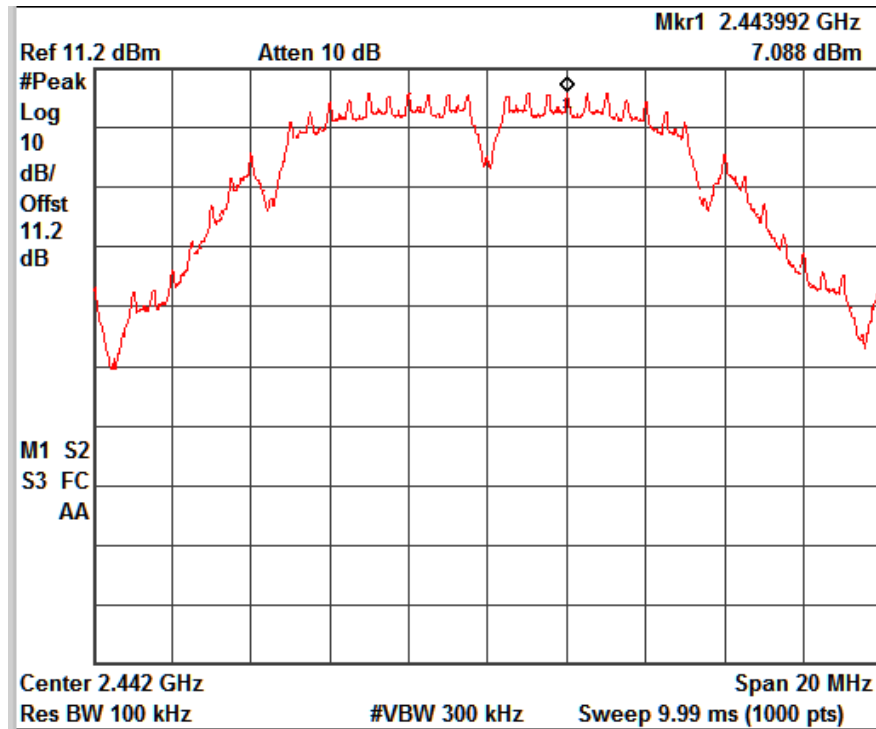
FCC Part 15 Section 15.247(d)
Peak

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.

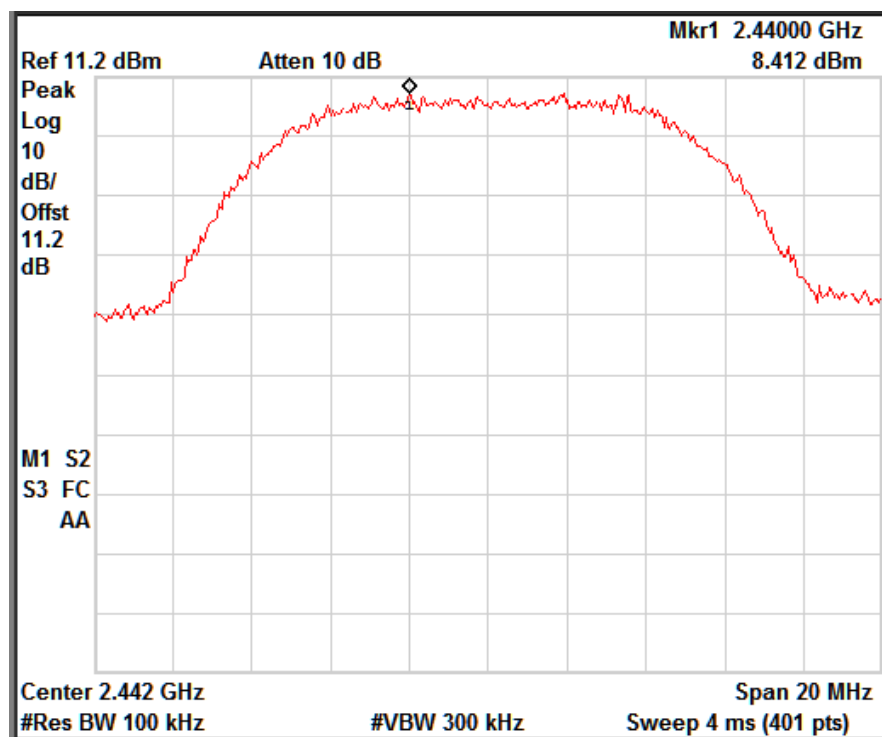
Test Method:

Test Result: Wi-Fi

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
b	1	2412	2400	-37.87	7.09	-44.96	-30.00
		2462	2483.5	-53.33	7.09	-60.42	-30.00
	11	2412	2400	-39.67	8.41	-48.08	-30.00
		2462	2483.5	-49.76	8.41	-58.17	-30.00

Note: The channel no. 7 (2442 MHz) found to contain the maximum PSD level and is used to establish the reference level.

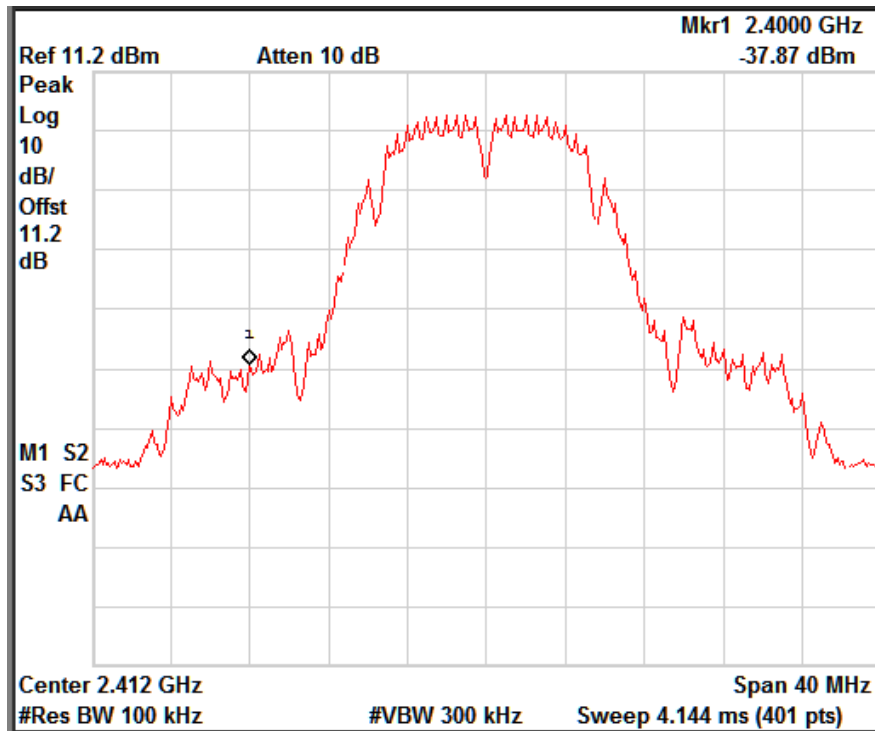


Reference Level Plot: 1Mbps



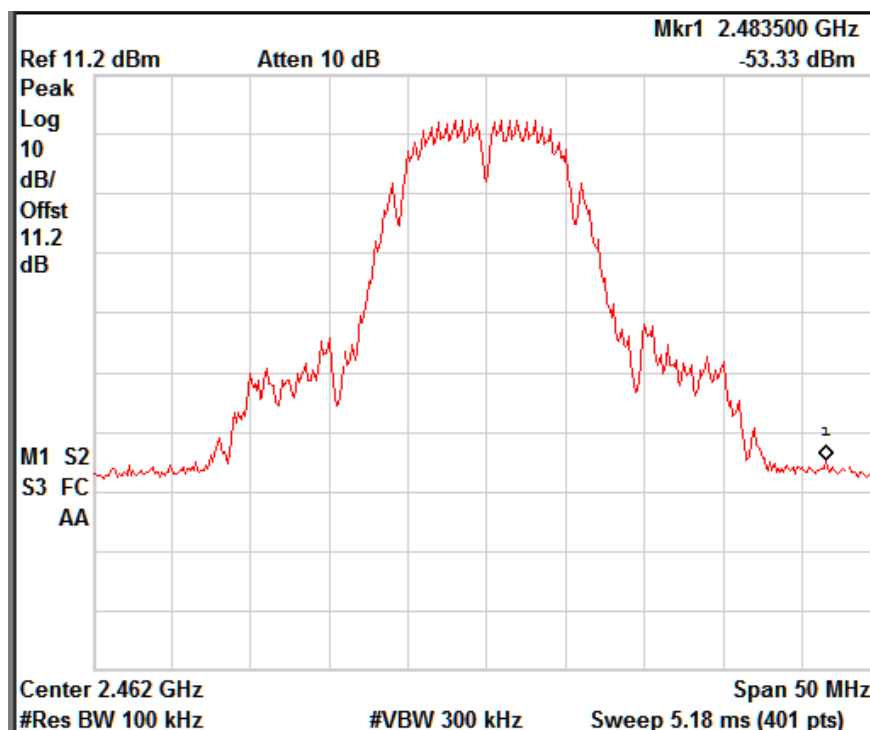
Reference Level Plot: 11Mbps

www.tuv.com



Data Rate: 1 Mbps

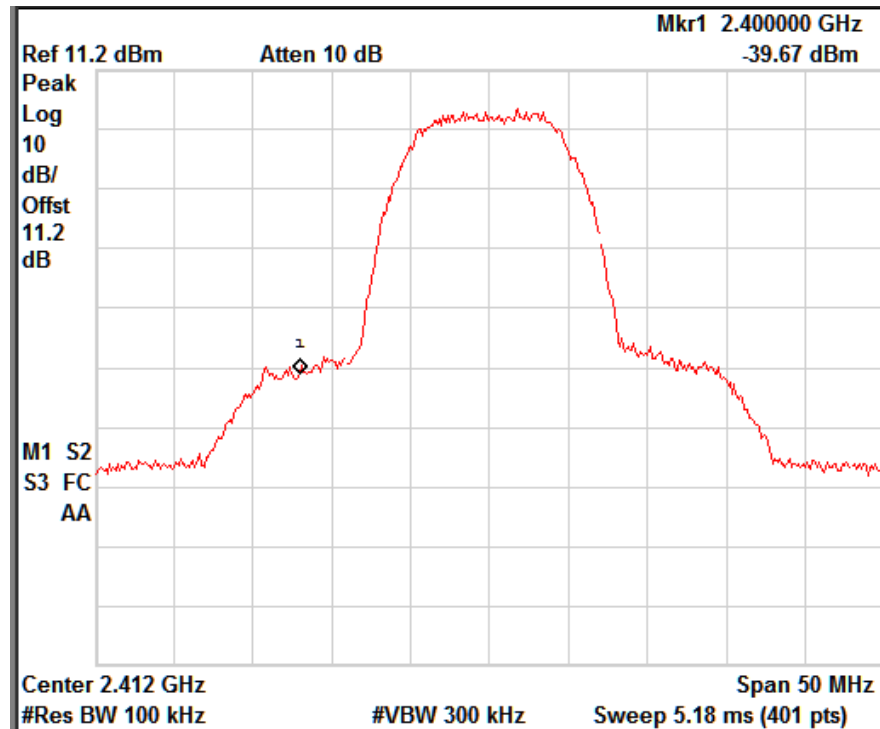
Channel frequency: 2412 MHz



Data Rate: 1 Mbps

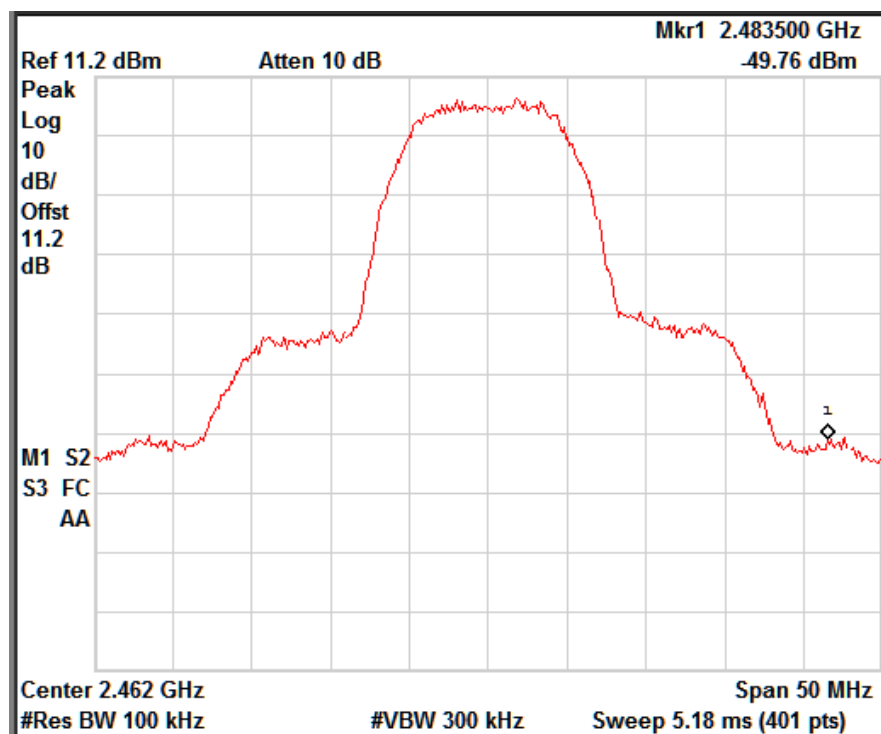
Channel frequency: 2462 MHz

www.tuv.com



Data Rate: 11 Mbps

Channel frequency: 2412 MHz

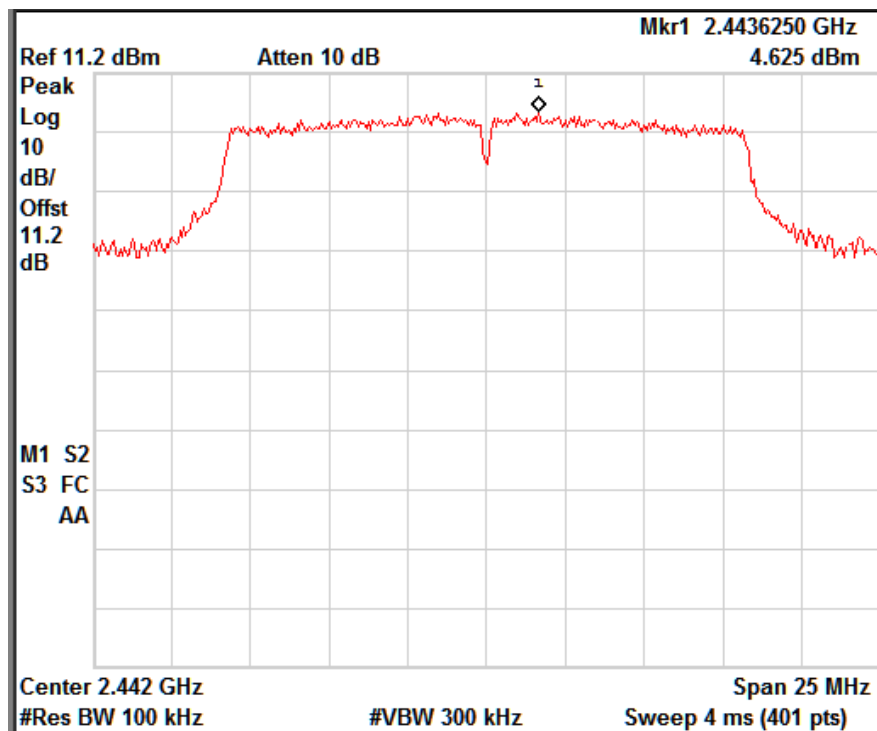


Data Rate: 11 Mbps

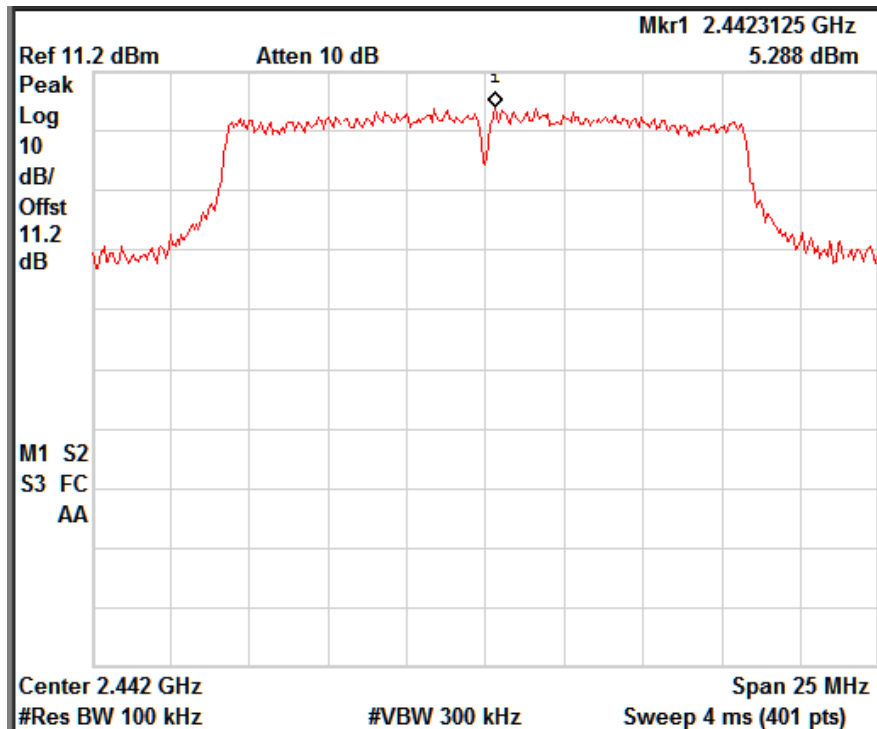
Channel frequency: 2462 MHz

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
g	6	2412	2400	-39.49	4.63	-44.12	-30.00
		2462	2483.5	-45.10	4.63	-49.73	-30.00
	24	2412	2400	-39.54	5.29	-44.83	-30.00
		2462	2483.5	-47.54	5.29	-52.83	-30.00
	54	2412	2400	-39.84	5.25	-45.09	-30.00
		2462	2483.5	-44.96	5.25	-50.21	-30.00

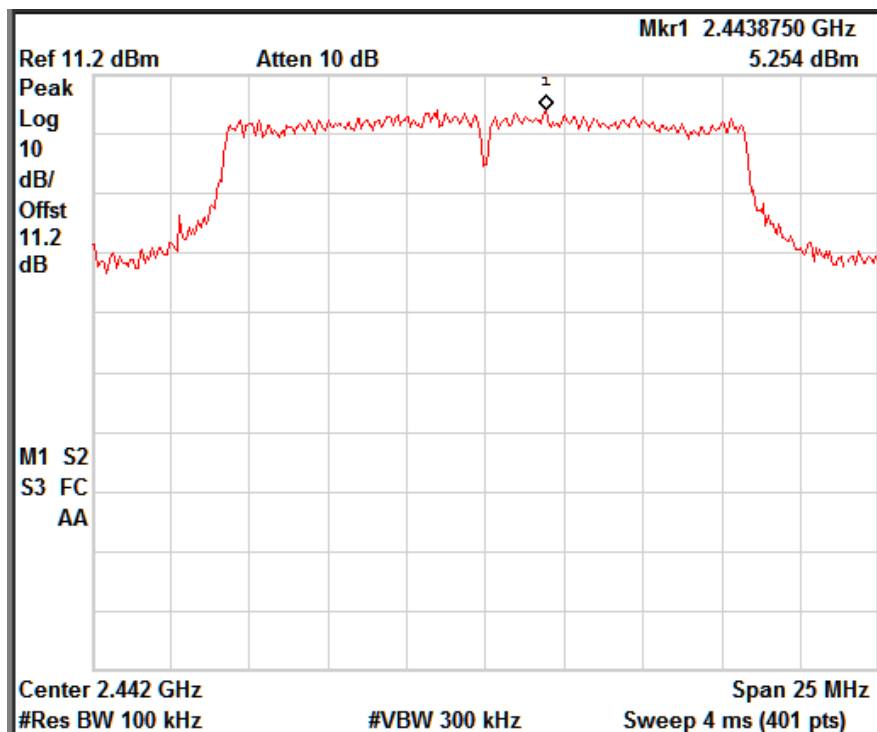
Note: The channel no. 7 (2442 MHz) found to contain the maximum PSD level and is used to establish the reference level.



Reference Level Plot: 6 Mbps

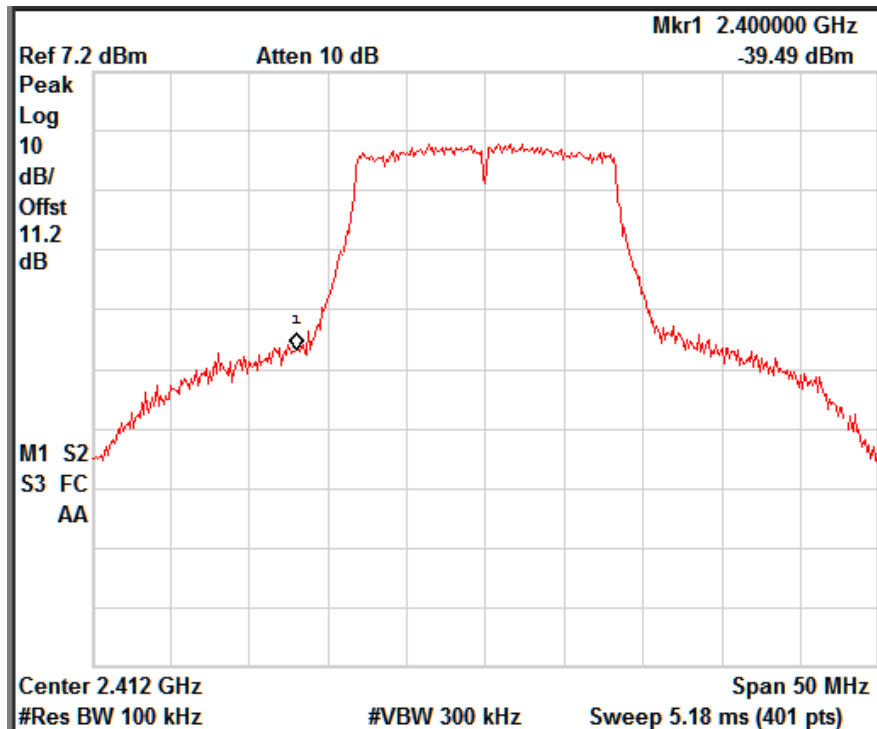


Reference Level Plot: 24 Mbps

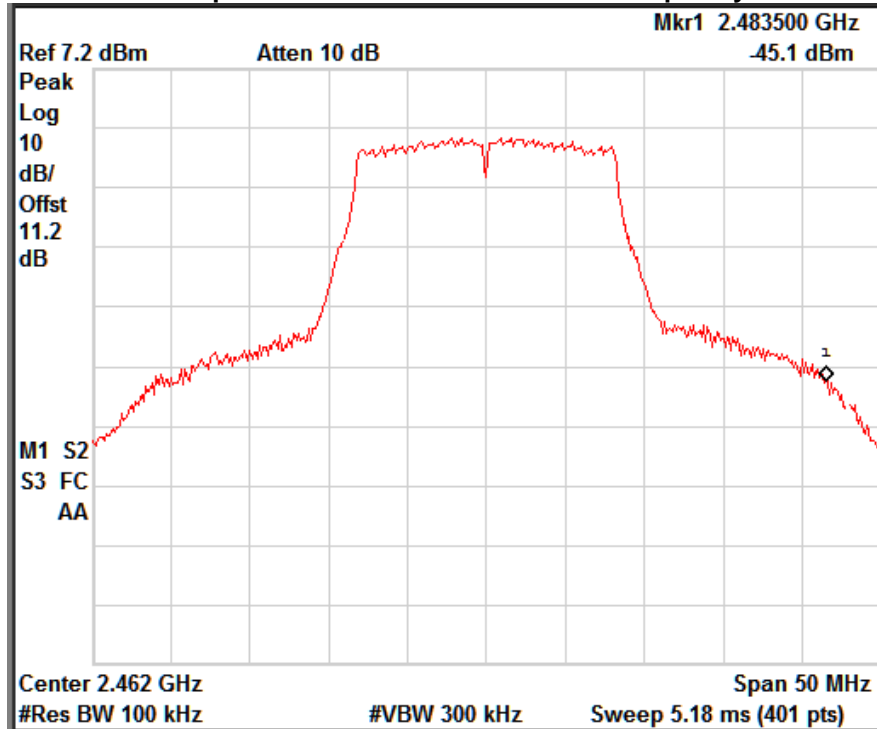


Reference Level Plot: 54 Mbps

www.tuv.com



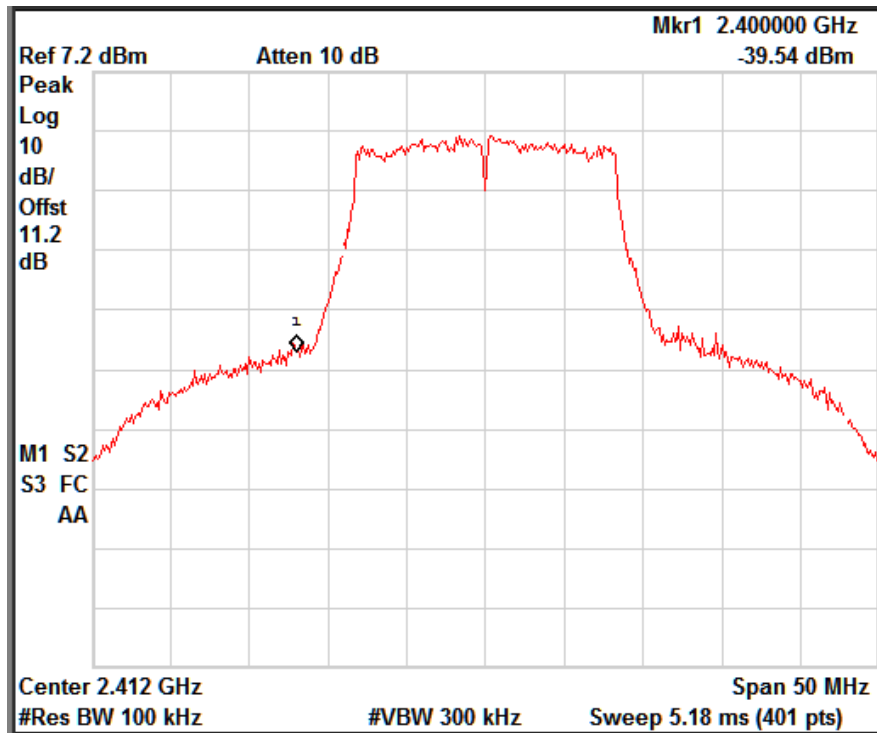
Data Rate: 6 Mbps Channel frequency: 2412 MHz



Data Rate: 6 Mbps

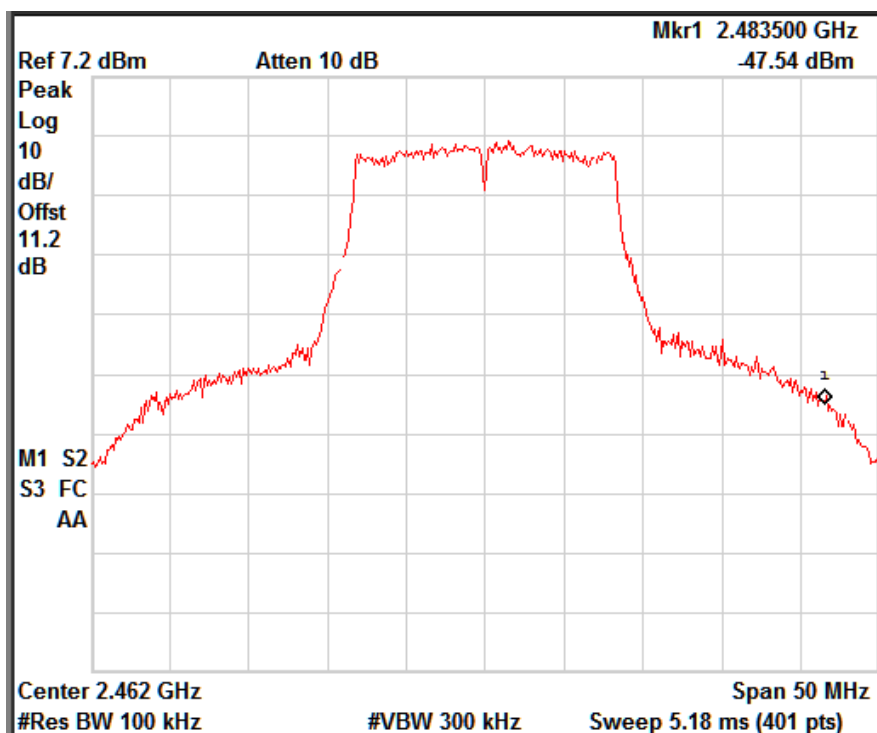
Channel frequency: 2462 MHz

www.tuv.com



Data Rate: 24 Mbps

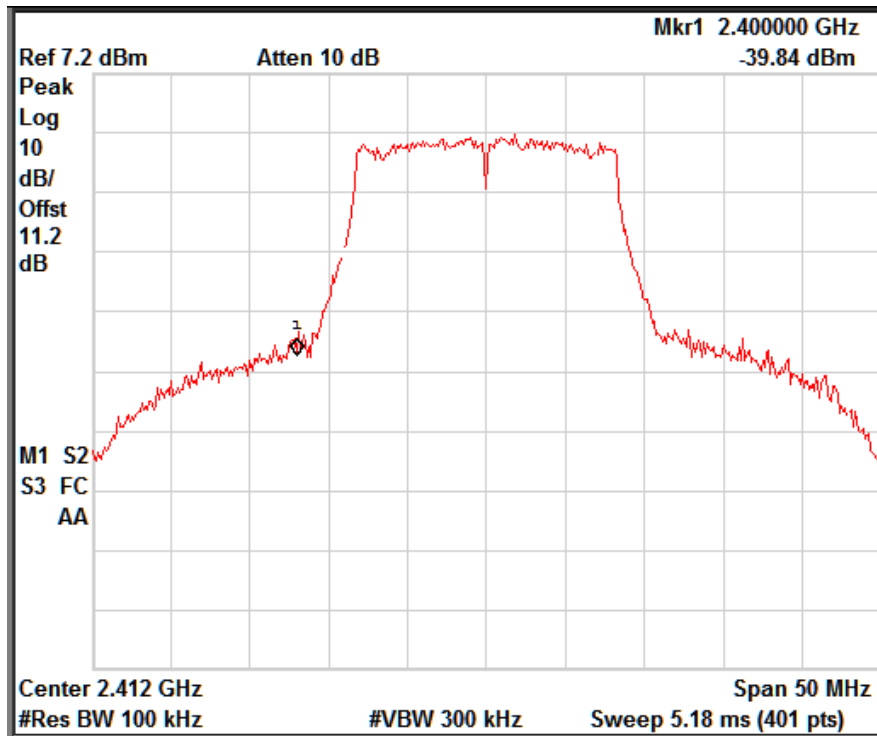
Channel frequency: 2412 MHz



Data Rate: 24 Mbps

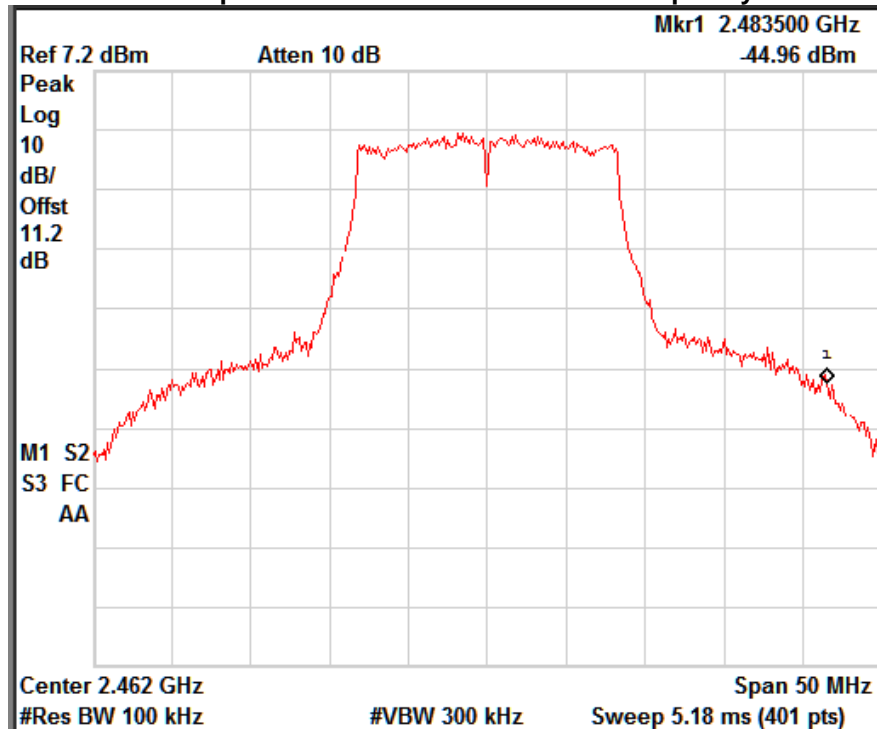
Channel frequency: 2462 MHz

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Data Rate: 54 Mbps

Channel frequency: 2412 MHz

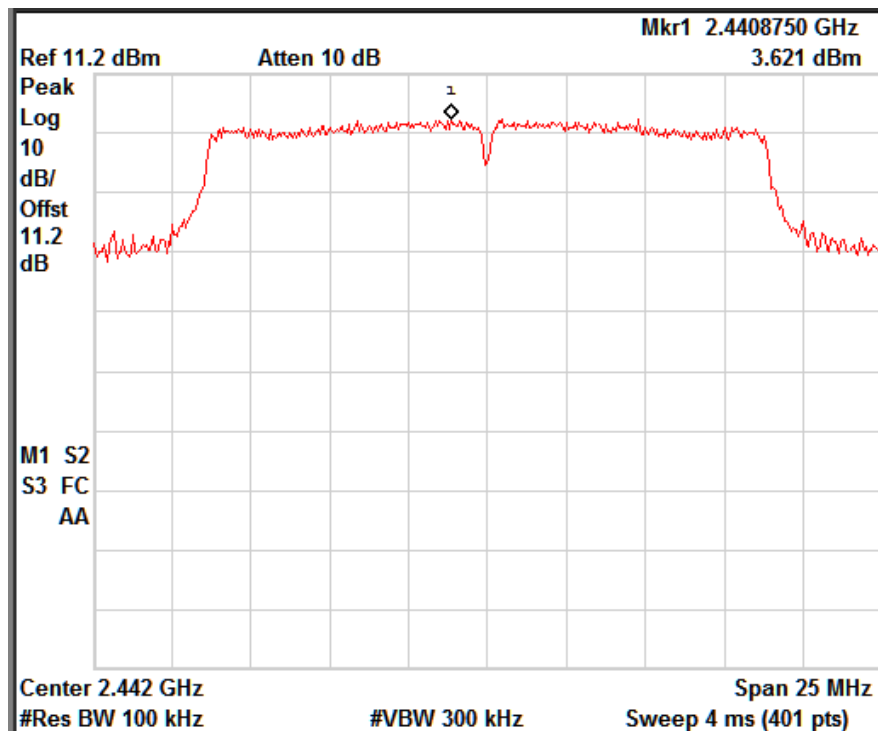


Data Rate: 54 Mbps

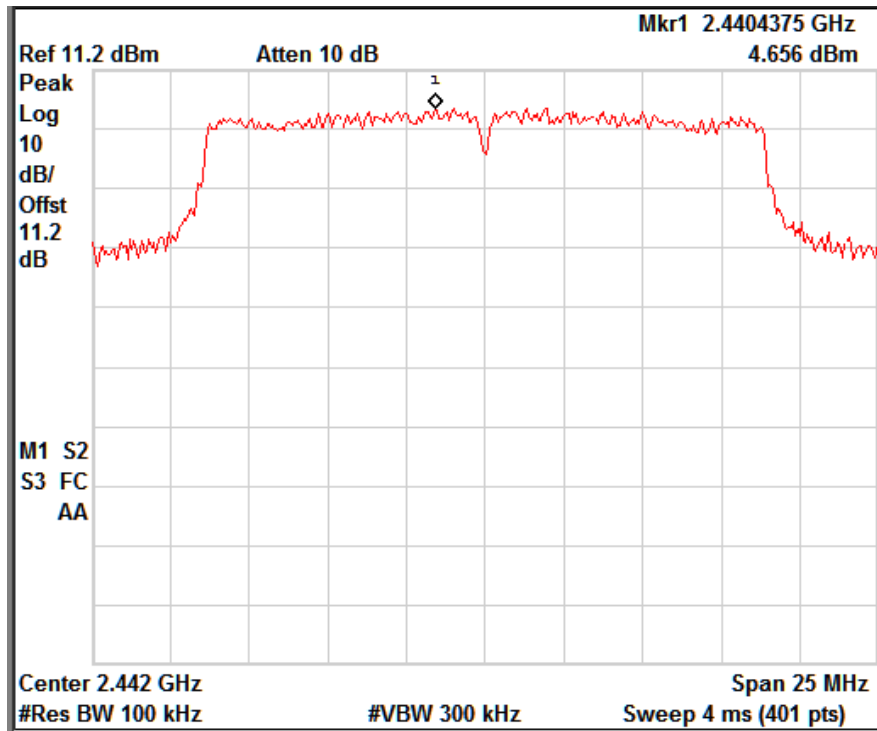
Channel frequency: 2462 MHz

802.11 Protocol	Data Rate (Mbps)	Channel Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
			Frequency (MHz)	Value A (dBm)			
n	MCS0 (6.5)	2412	2400	-40.12	3.62	-43.74	-30.00
		2462	2483.5	-44.08	3.62	-47.70	-30.00
	MCS4 (39)	2412	2400	-39.98	4.66	-44.64	-30.00
		2462	2483.5	-46.18	4.66	-50.84	-30.00
	MCS7 (65)	2412	2400	-40.06	5.56	-45.62	-30.00
		2462	2483.5	-45.16	5.56	-50.72	-30.00

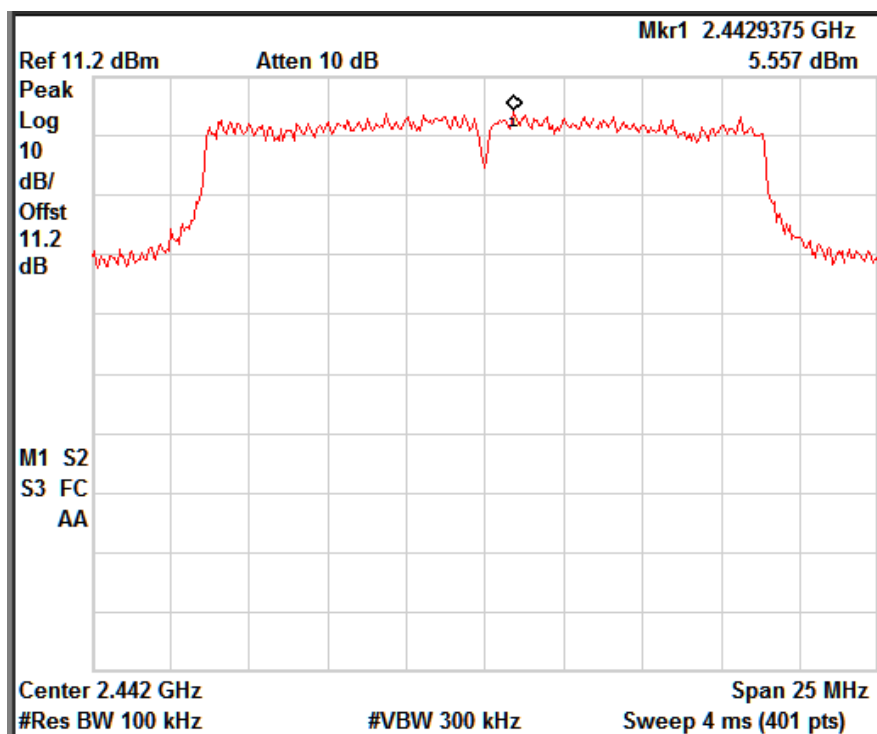
Note: The channel no. 7 (2442 MHz) found to contain the maximum PSD level and is used to establish the reference level.



Reference Level Plot: 6.5 Mbps

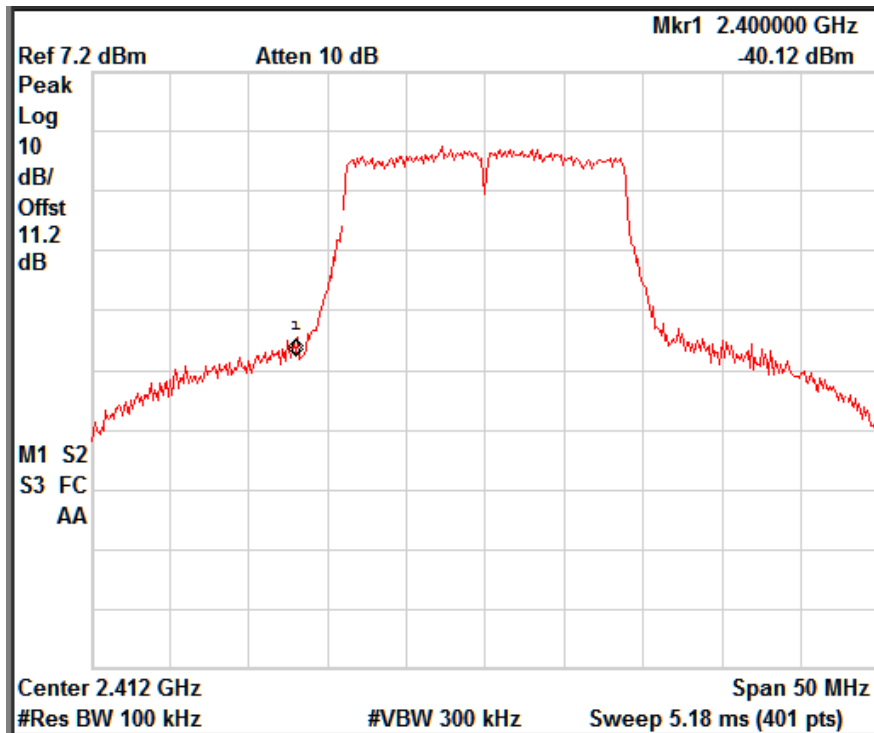


Reference Level Plot: 39 Mbps



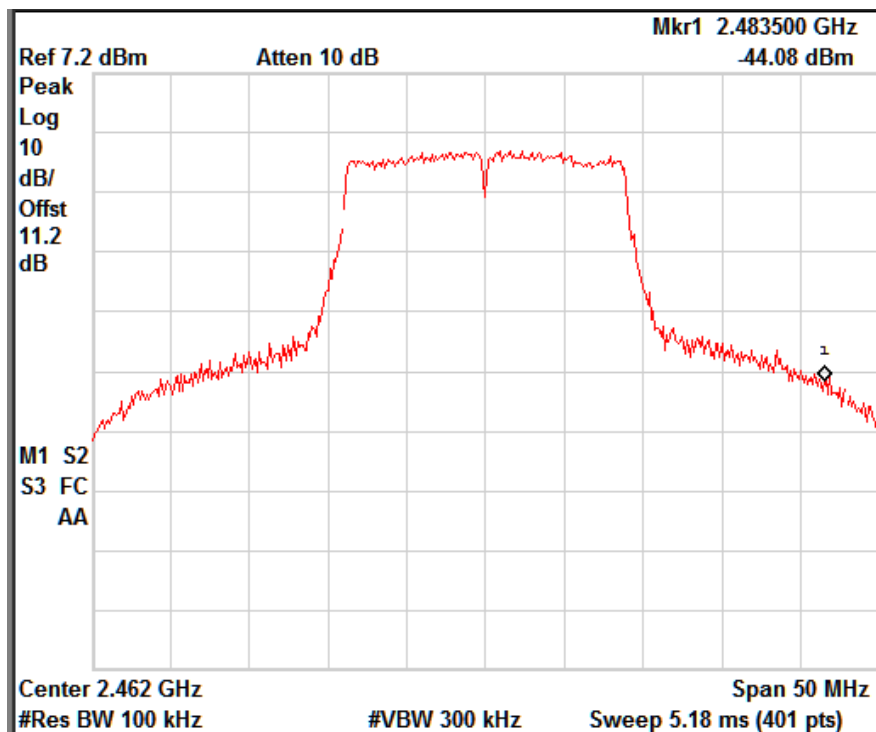
Reference Level Plot: 65 Mbps

www.tuv.com



Data Rate: 6.5 Mbps

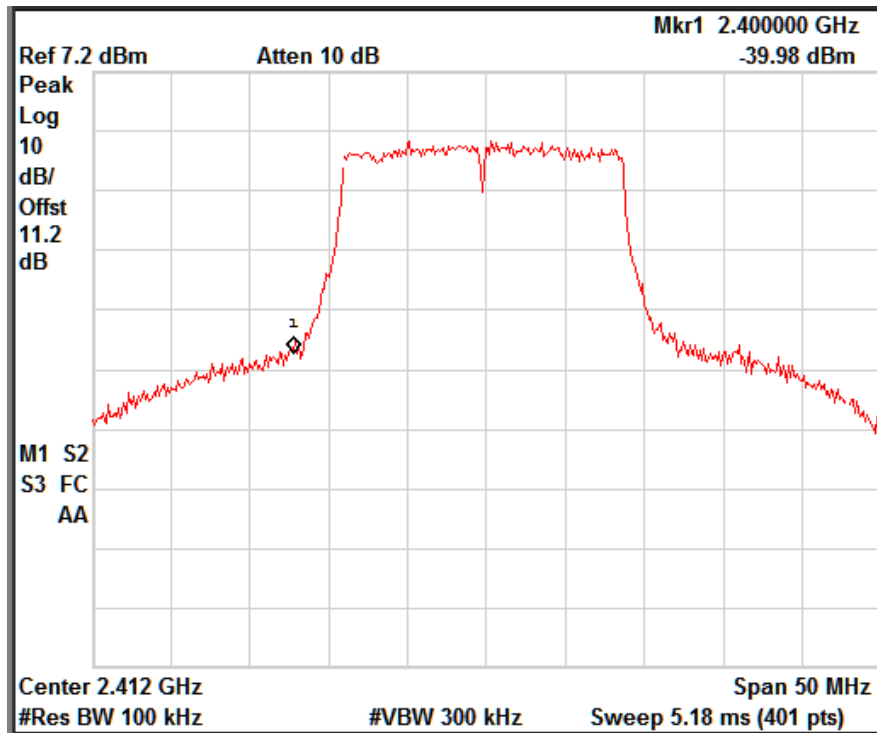
Channel frequency: 2412 MHz



Data Rate: 6.5 Mbps

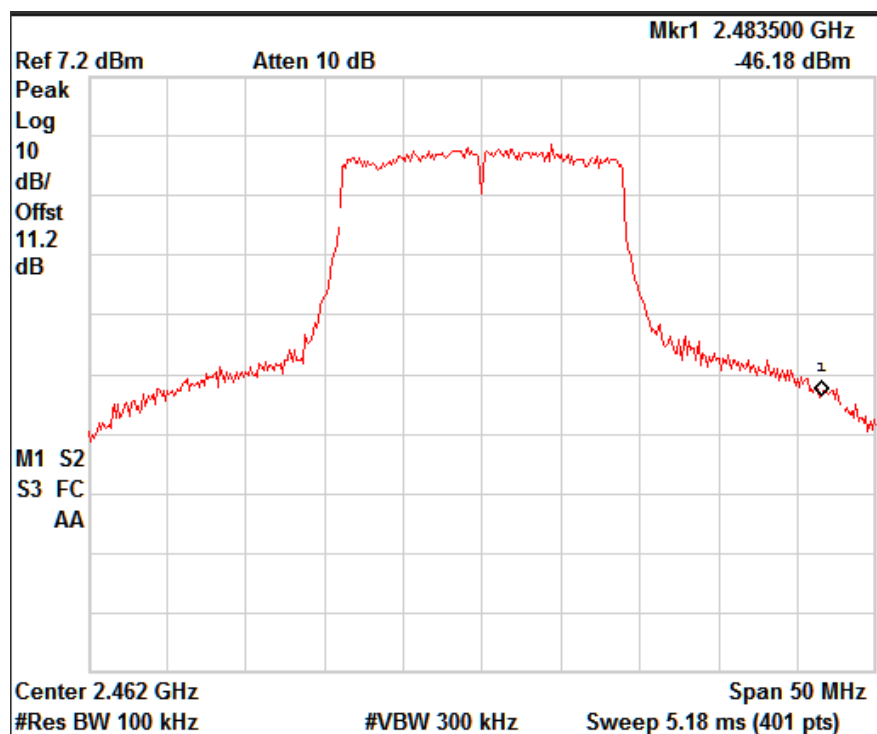
Channel frequency: 2462 MHz

www.tuv.com



Data Rate: 39 Mbps

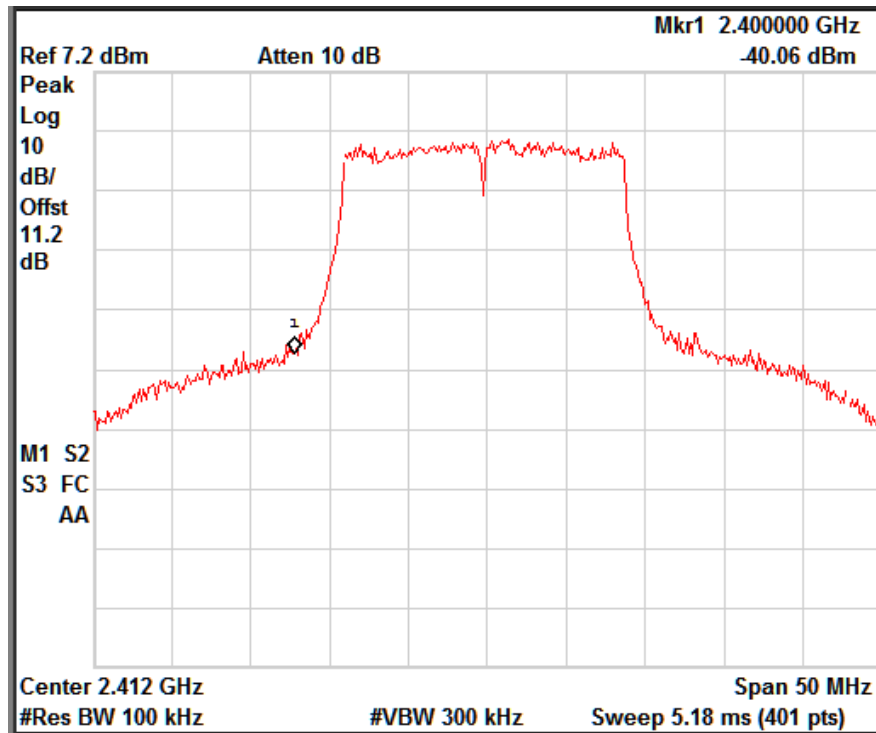
Channel frequency: 2412 MHz



Data Rate: 39 Mbps

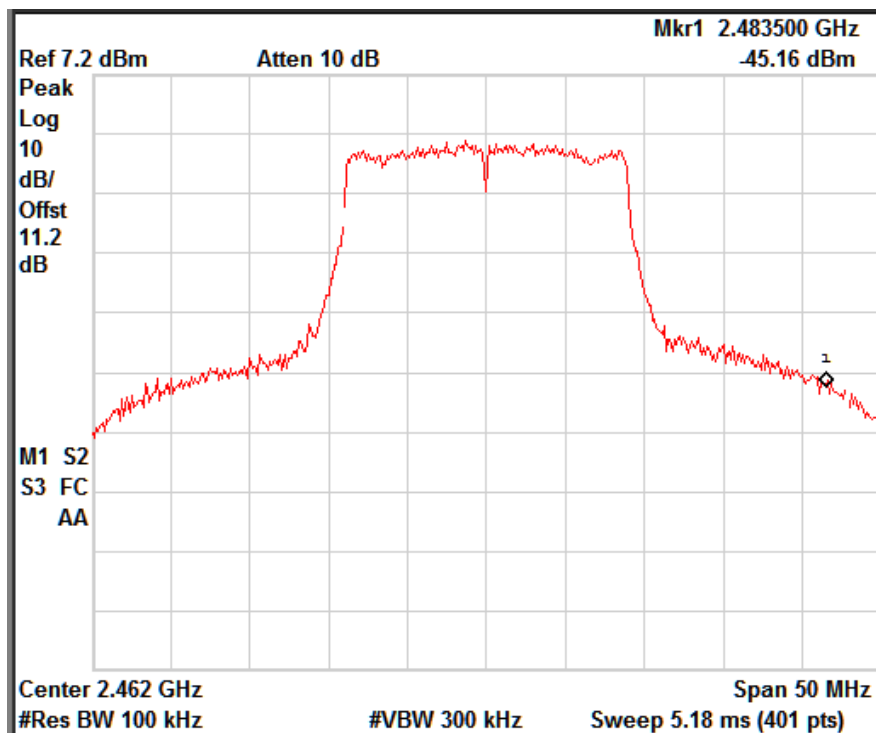
Channel frequency: 2462 MHz

www.tuv.com



Data Rate: 65 Mbps

Channel frequency: 2412 MHz



Data Rate: 65 Mbps

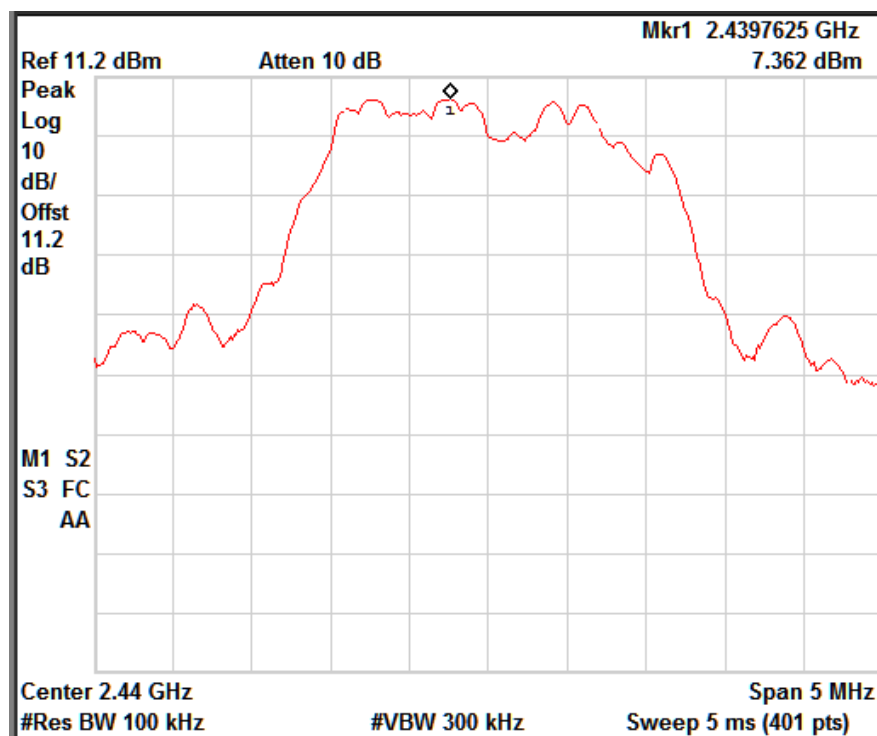
Channel frequency: 2462 MHz

www.tuv.com

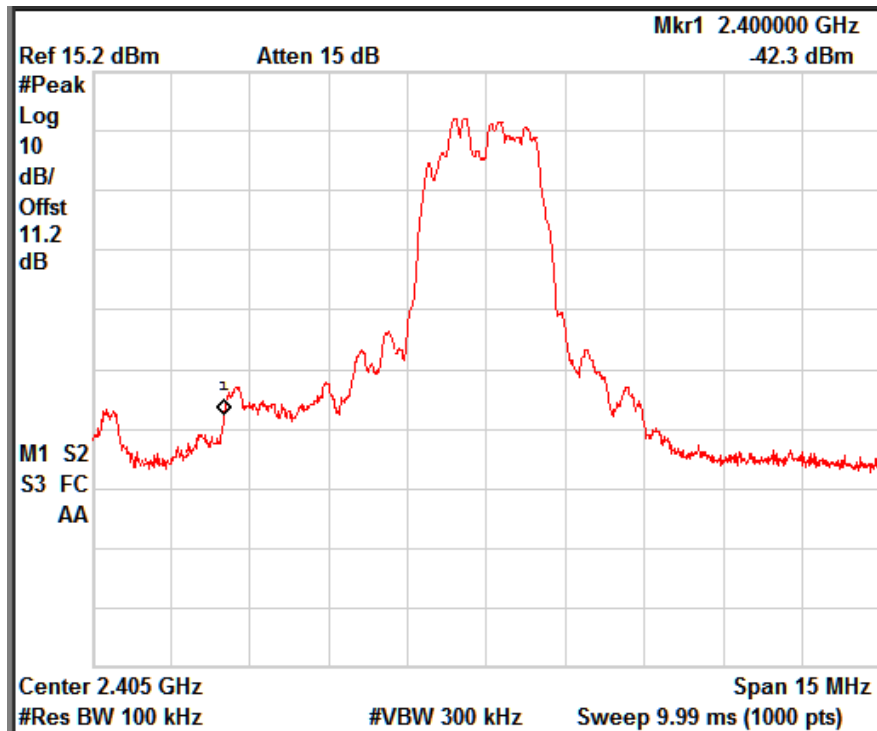
Test Result: ZigBee

Channel Frequency (MHz)	Value at Band Edge		Reference PSD Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
	Frequency (MHz)	Value A (dBm)			
2405	2400.00	-42.30	7.36	-49.66	-30.00
2480	2483.50	-47.86	7.36	-55.22	-30.00

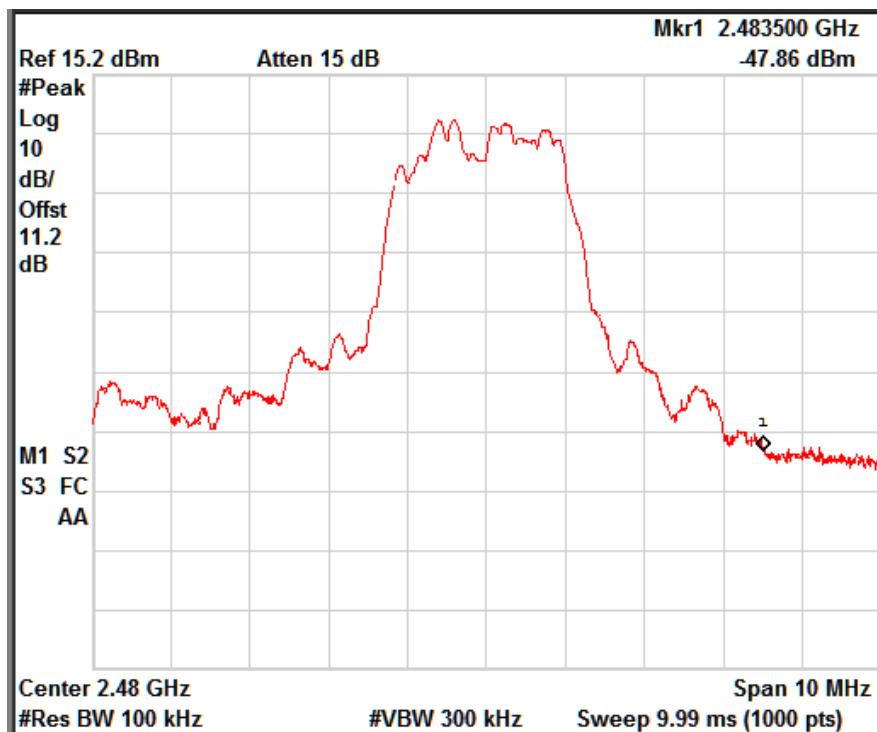
Note: The channel no.18 (2440 MHz) found to contain the maximum PSD level and is used to establish the reference level.



Reference Level Plot



Channel Frequency 2405 MHz

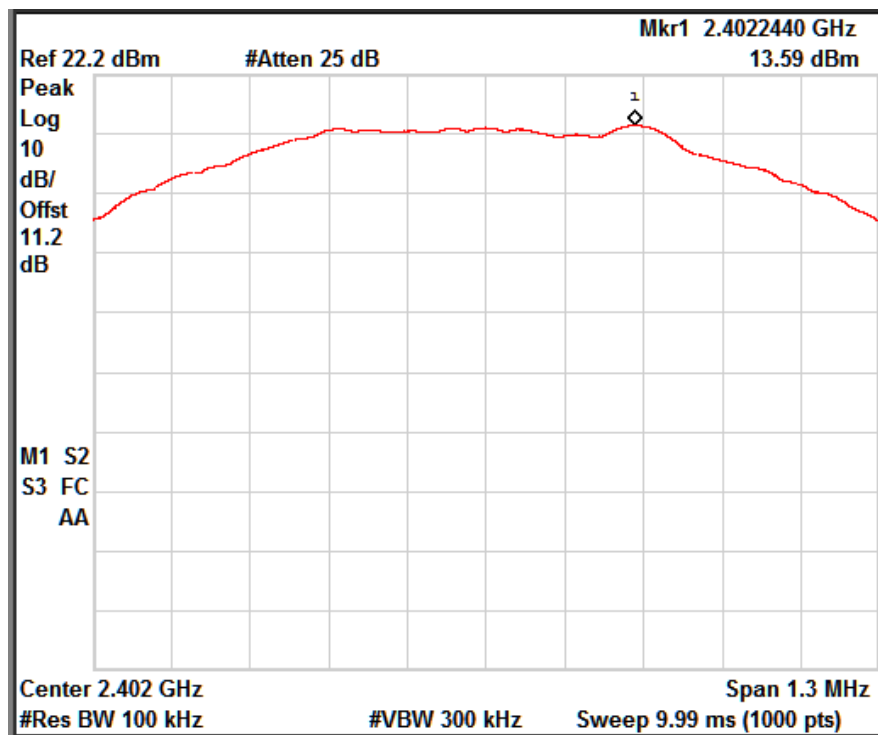


Channel Frequency 2480 MHz

www.tuv.com

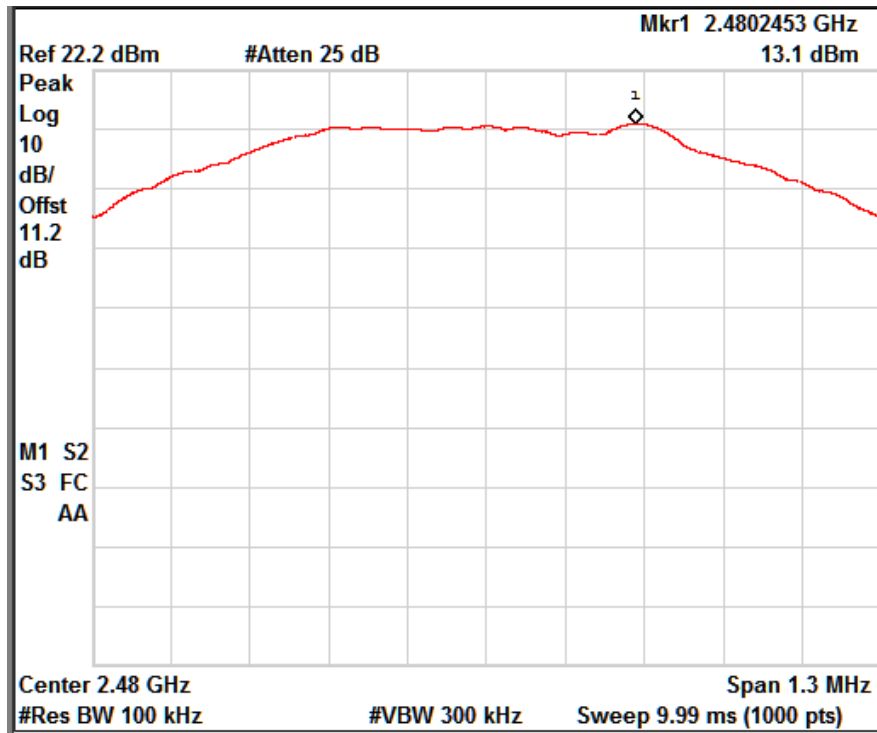
Test Result: Bluetooth LE

Channel Frequency (MHz)	Value at Band Edge		Reference PSD Value B (dBm)	Band Edge Value A-B (dBc)	Limit (dBc)
	Frequency (MHz)	Value A (dBm)			
2405	2399.72	-26.99	13.59	-40.58	-30.00
2480	2483.50	-44.51	13.10	-57.61	-30.00



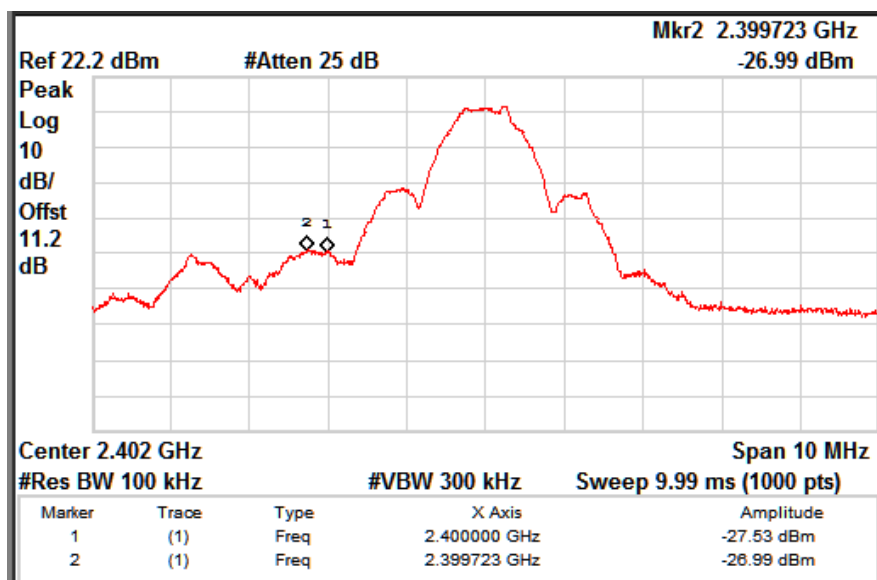
Reference Level Plot

Channel Frequency: 2402MHz



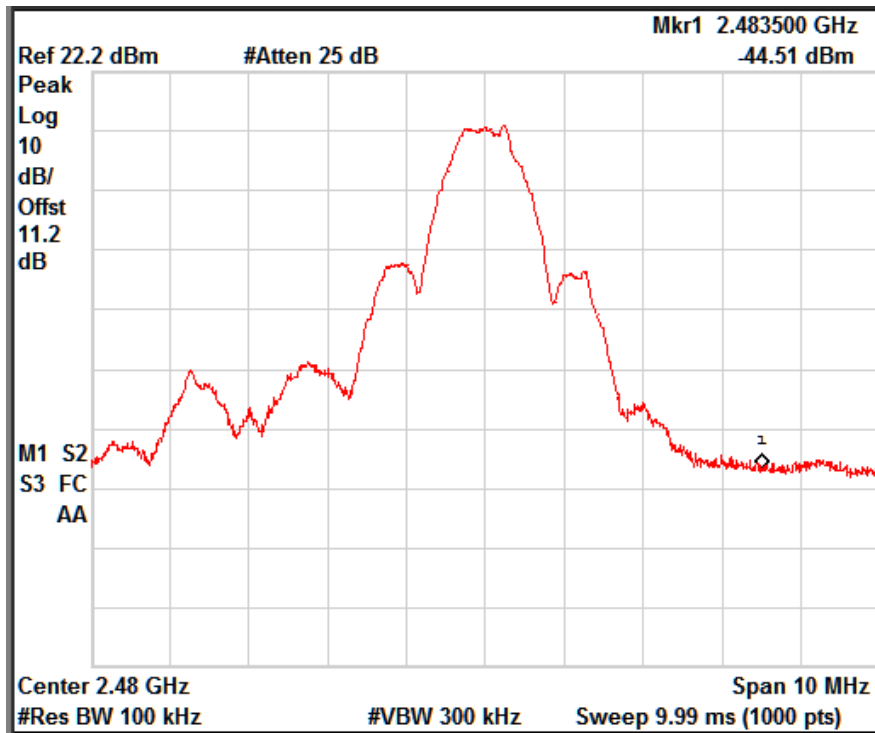
Reference Level Plot

Channel Frequency: 2480MHz



Channel Frequency 2402 MHz

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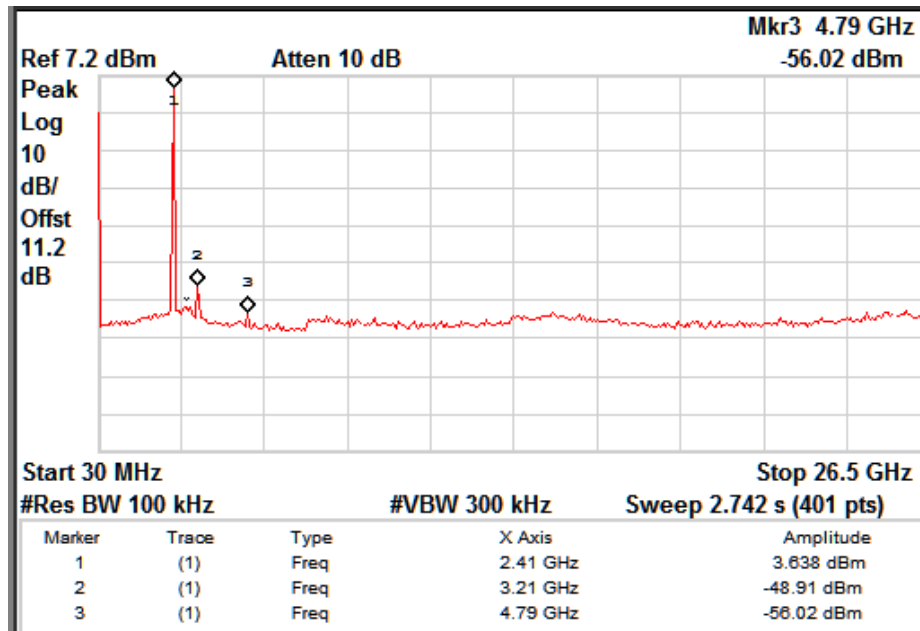


Channel Frequency 2480 MHz

www.tuv.com

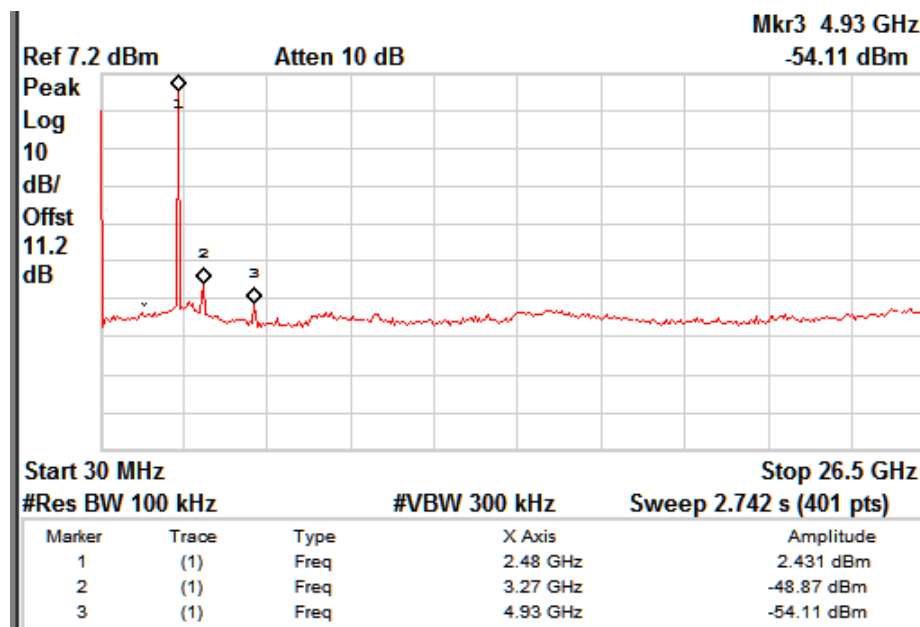
Conducted Spurious Emission

WiFi



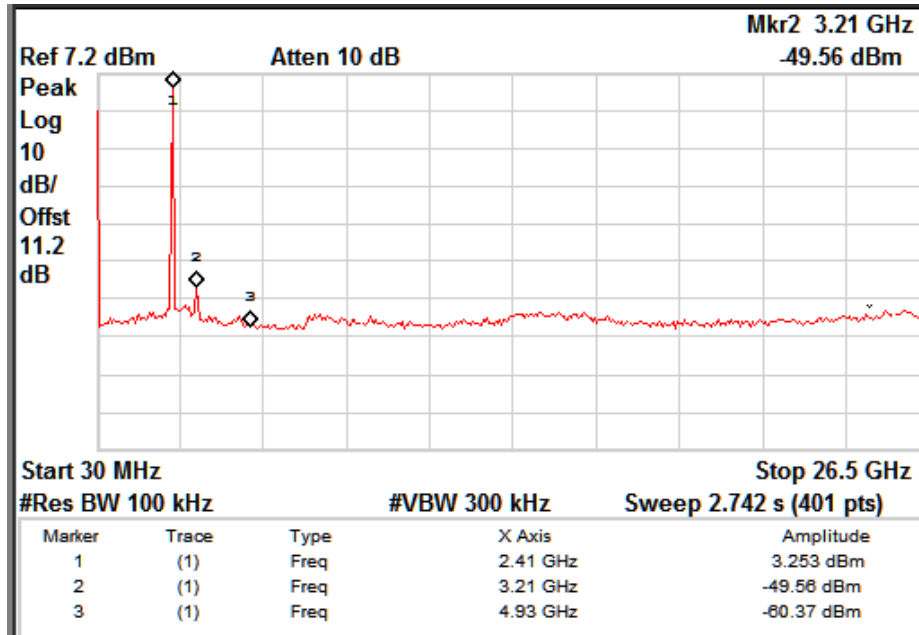
Data Rate: 1Mbps

Channel frequency: 2412 MHz



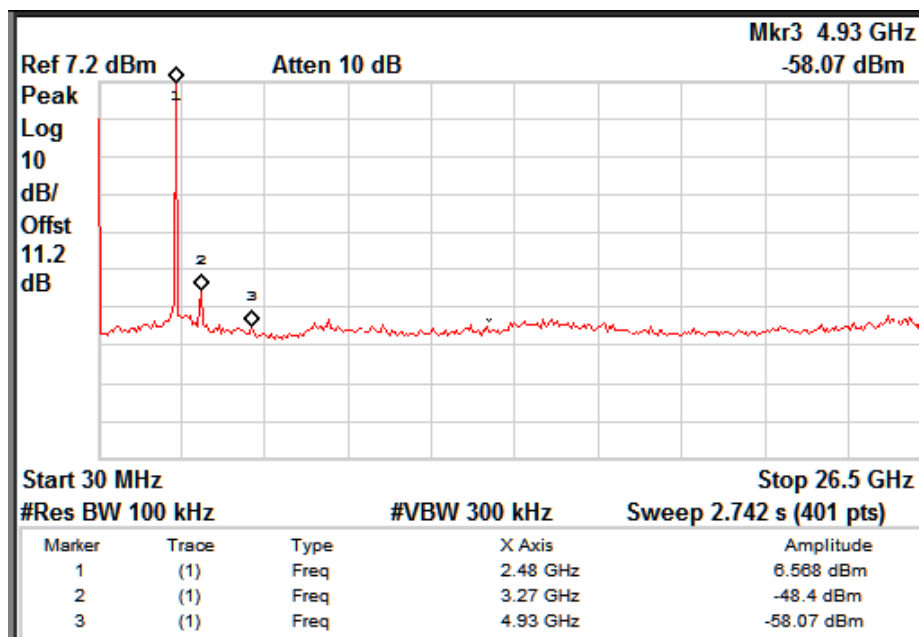
Data Rate: 1Mbps

Channel frequency: 2462 MHz



Data Rate: 11Mbps

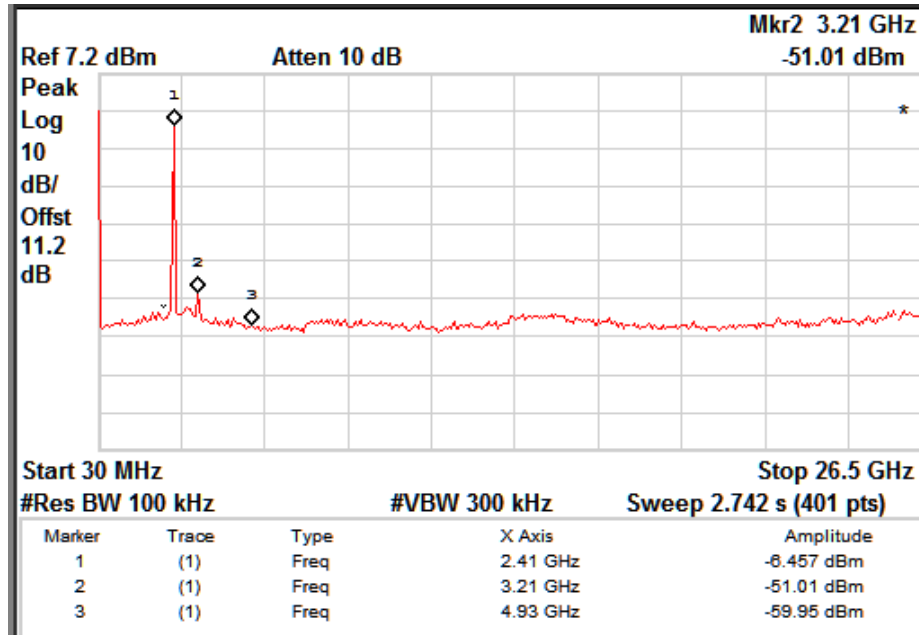
Channel frequency: 2412 MHz



Data Rate: 11Mbps

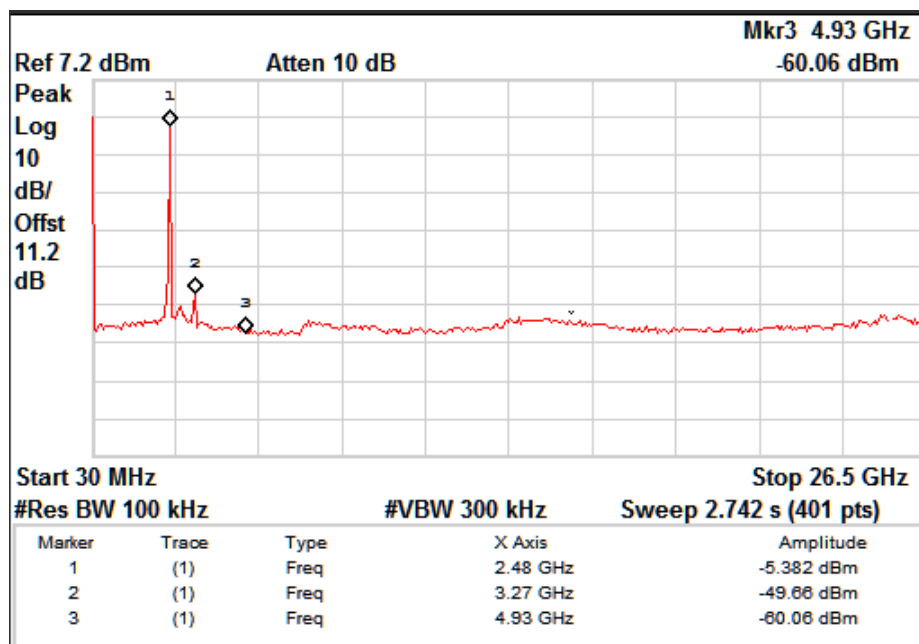
Channel frequency: 2462 MHz

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Data Rate: 6Mbps

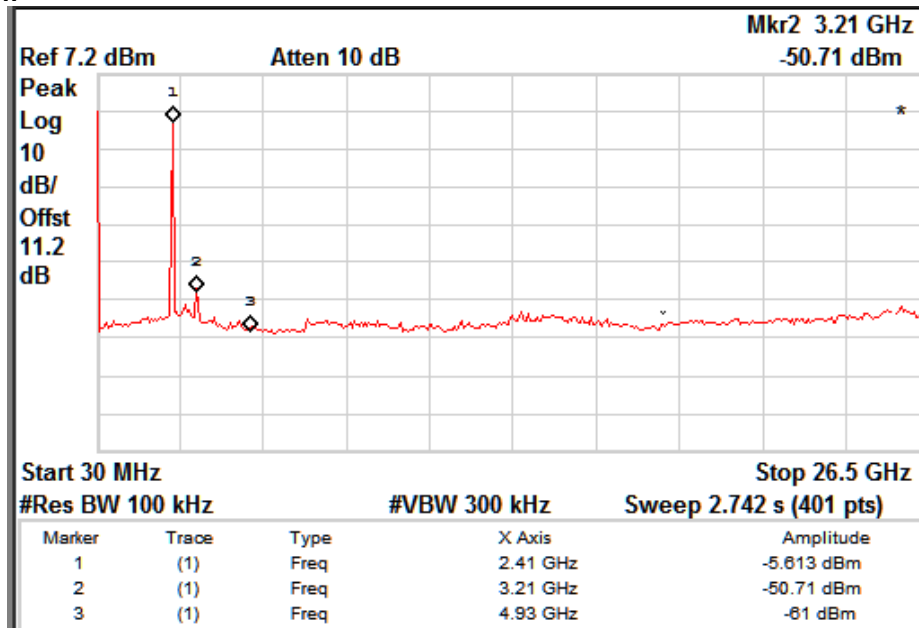
Channel frequency: 2412 MHz



Data Rate: 6Mbps

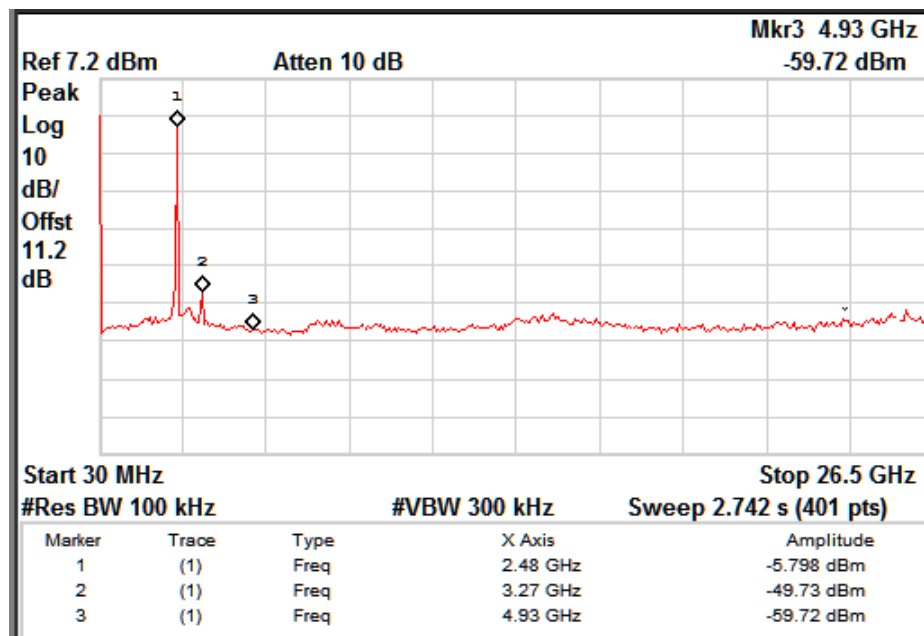
Channel frequency: 2462 MHz

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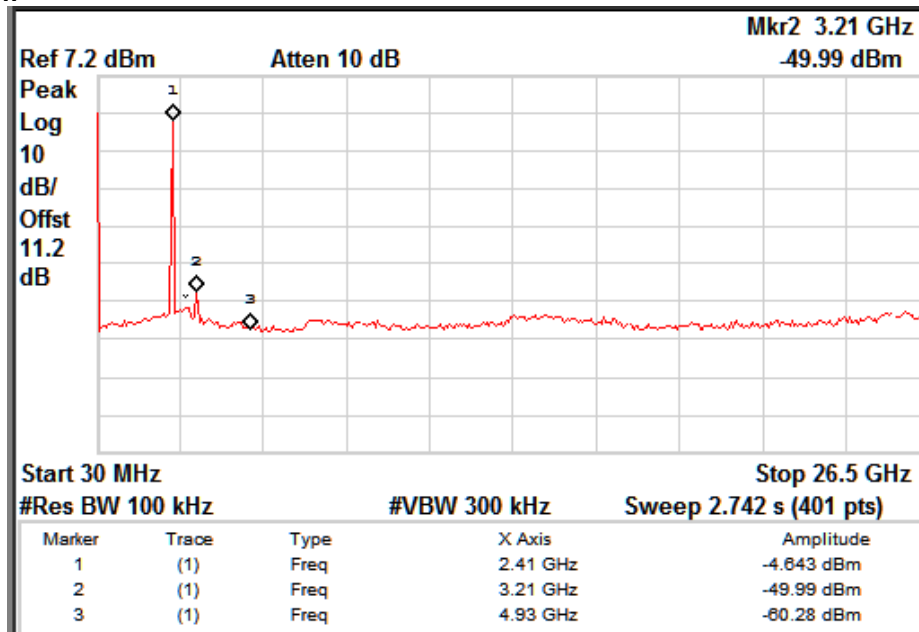
Data Rate: 24Mbps

Channel frequency: 2412 MHz



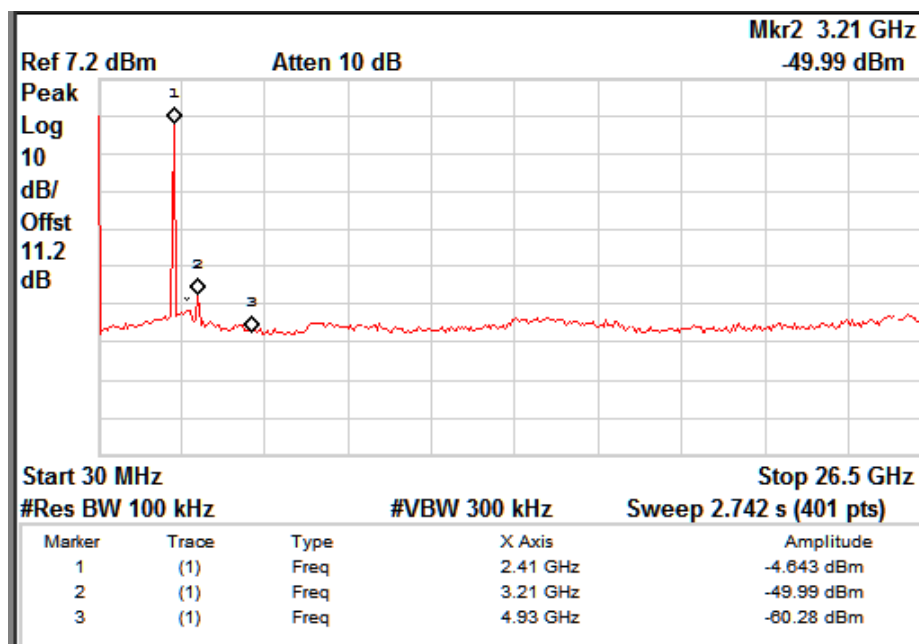
Data Rate: 24Mbps

Channel frequency: 2462 MHz



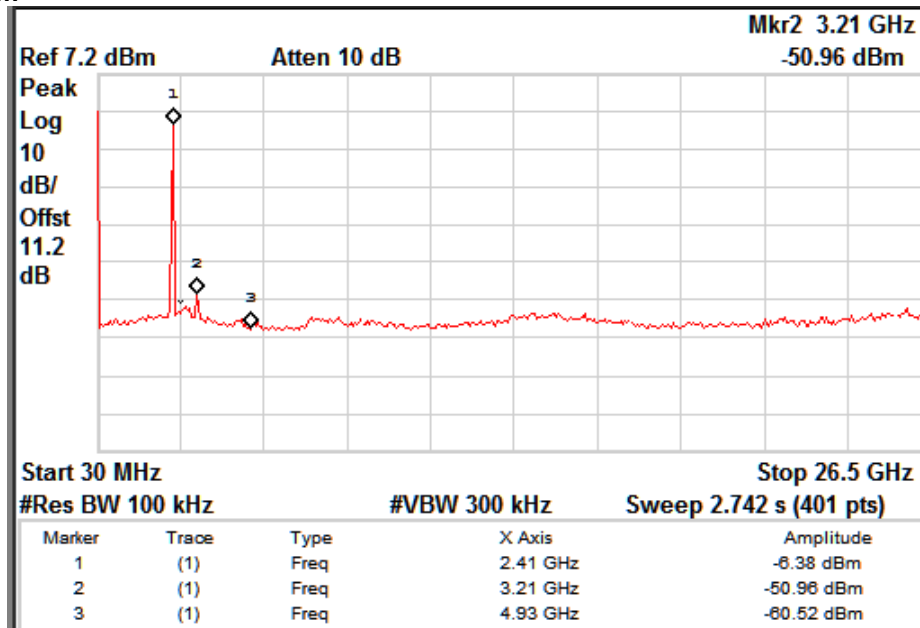
Data Rate: 54Mbps

Channel frequency: 2412 MHz



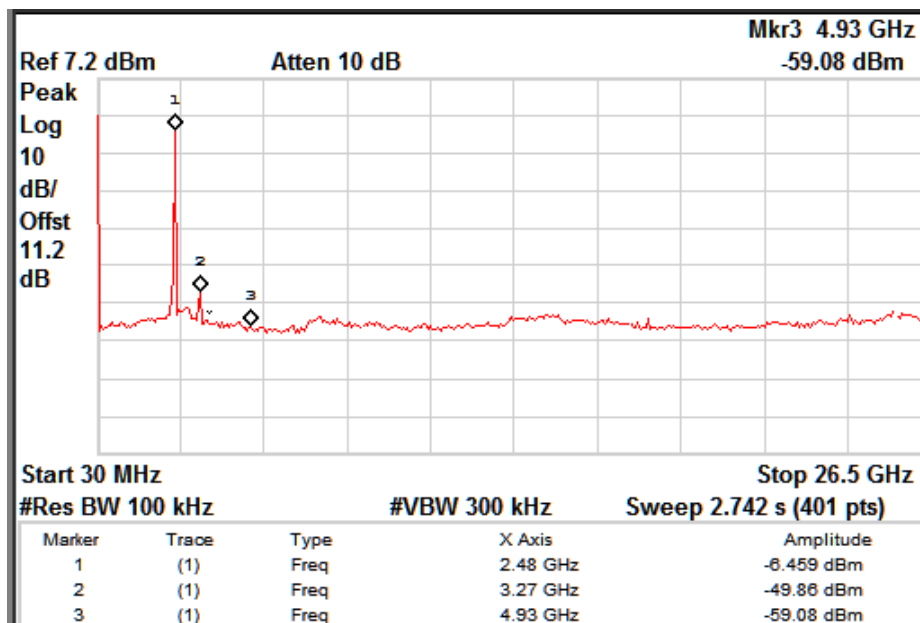
Data Rate: 54Mbps

Channel frequency: 2462 MHz



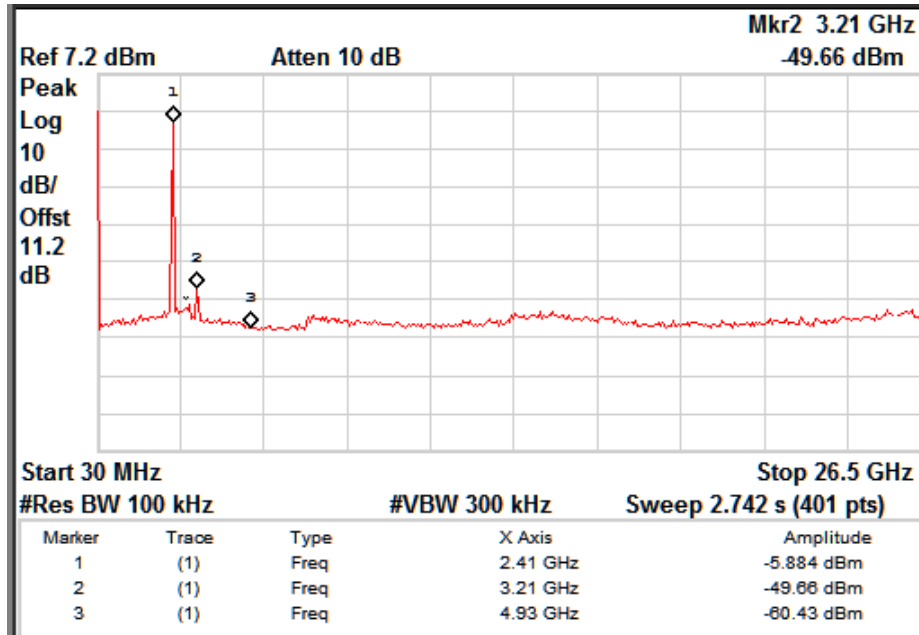
Data Rate: 6.5 Mbps

Channel frequency: 2412 MHz



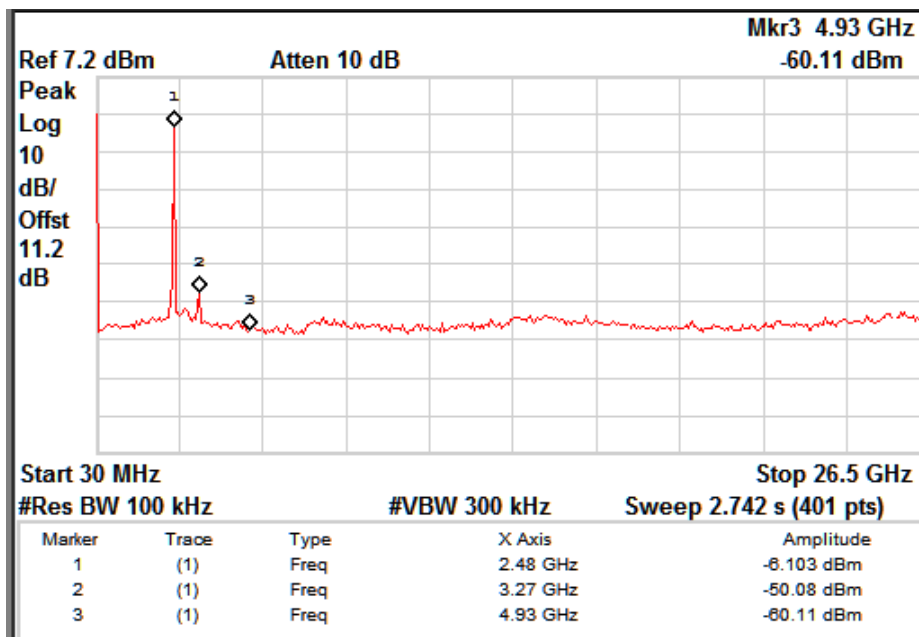
Data Rate: 6.5 Mbps

Channel frequency: 2462 MHz



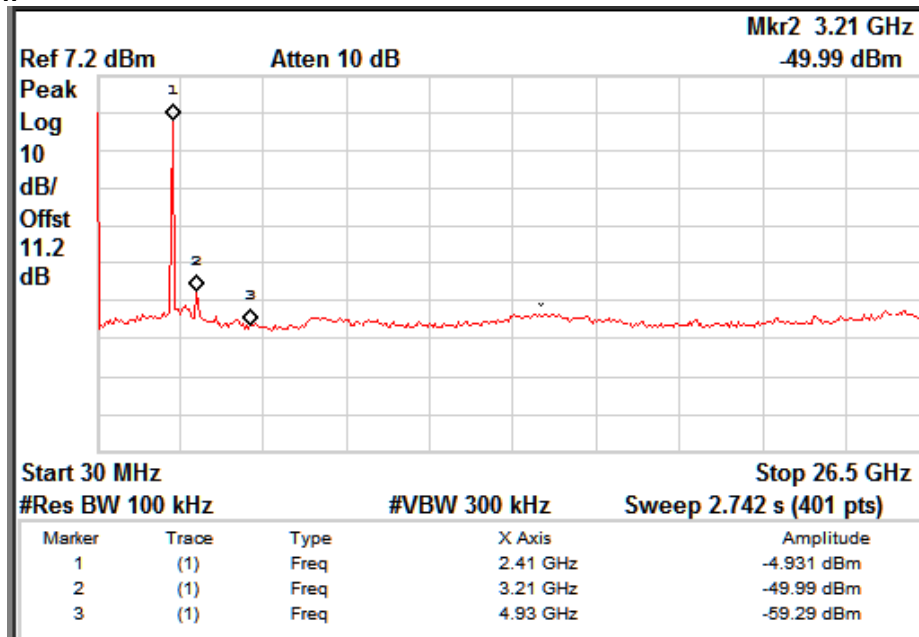
Data Rate: 39 Mbps

Channel frequency: 2412 MHz



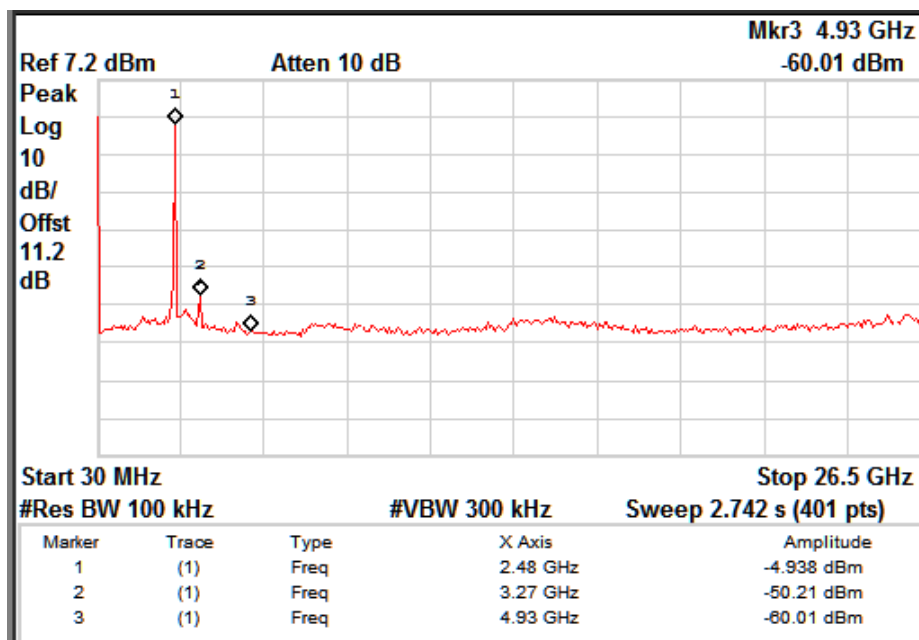
Data Rate: 39 Mbps

Channel frequency: 2462 MHz



Data Rate: 65 Mbps

Channel frequency: 2412 MHz

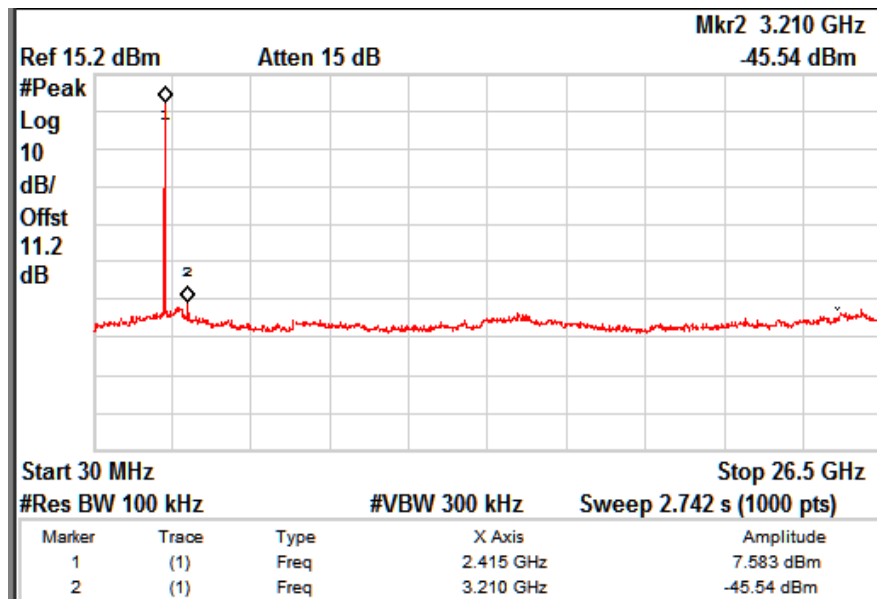


Data Rate: 65 Mbps

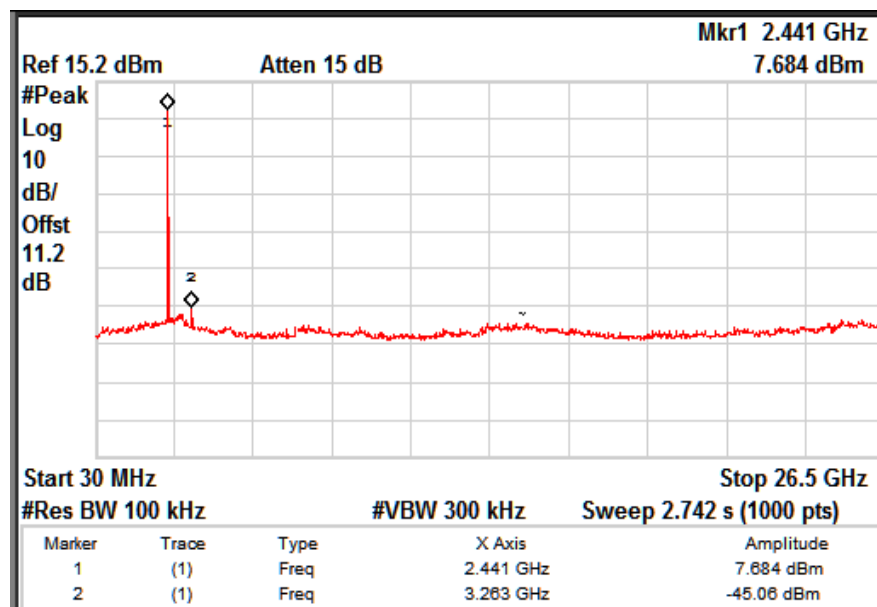
Channel frequency: 2462 MHz

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ZigBee

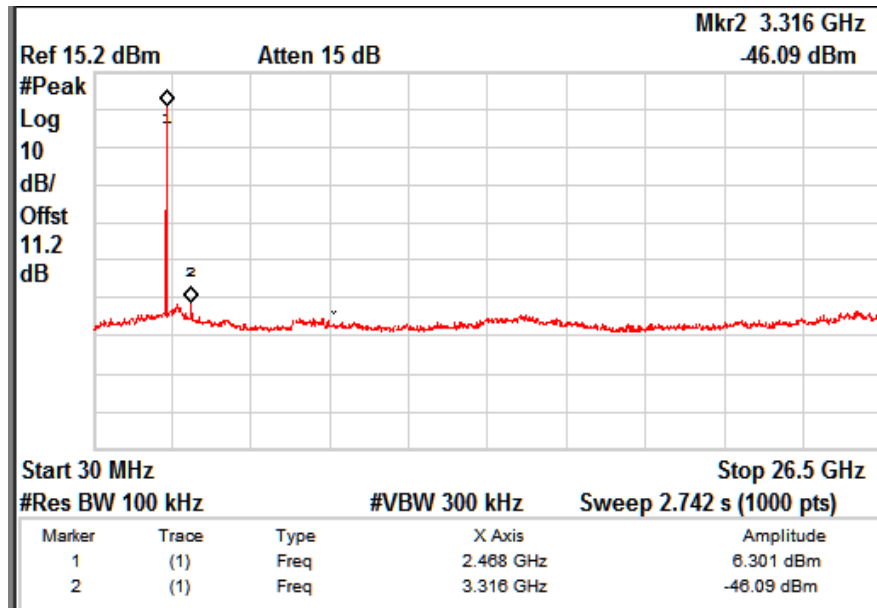


Channel Frequency 2405 MHz



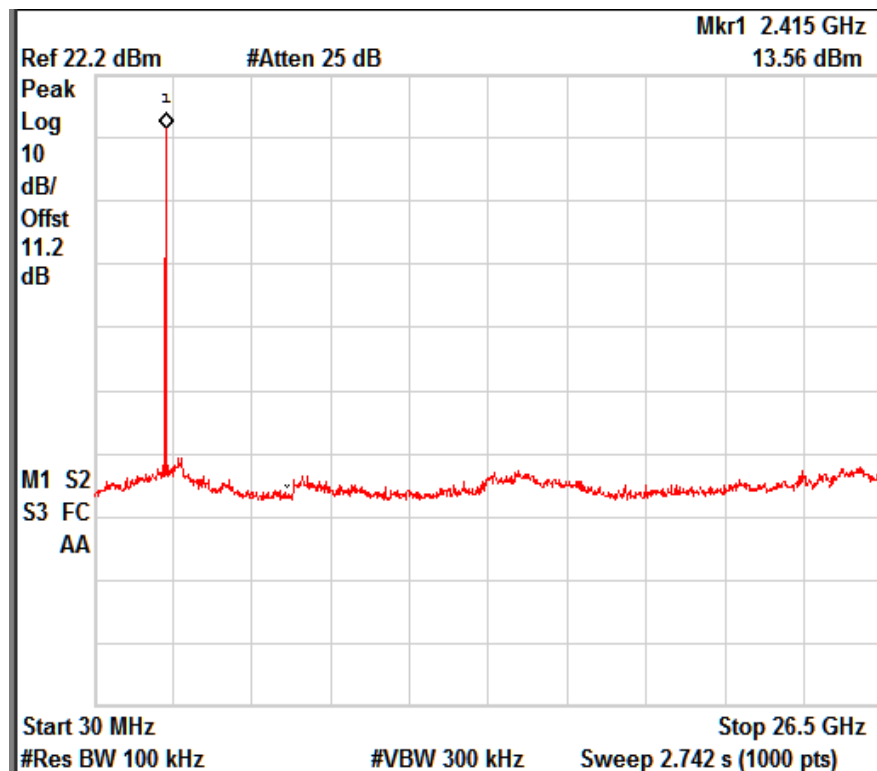
Channel Frequency 2440 MHz

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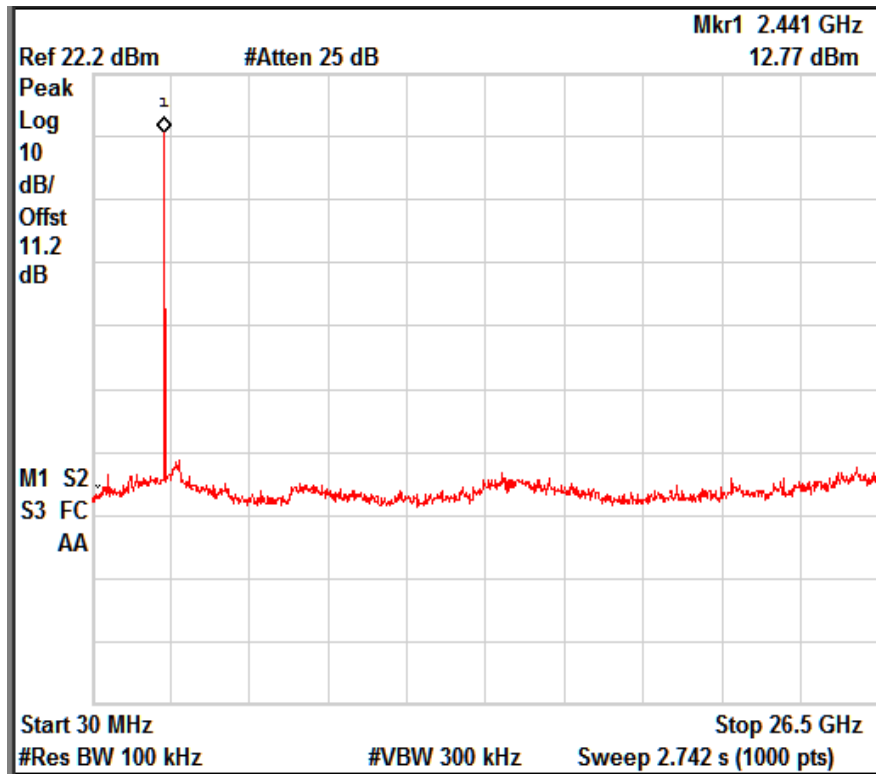


Channel Frequency 2480 MHz

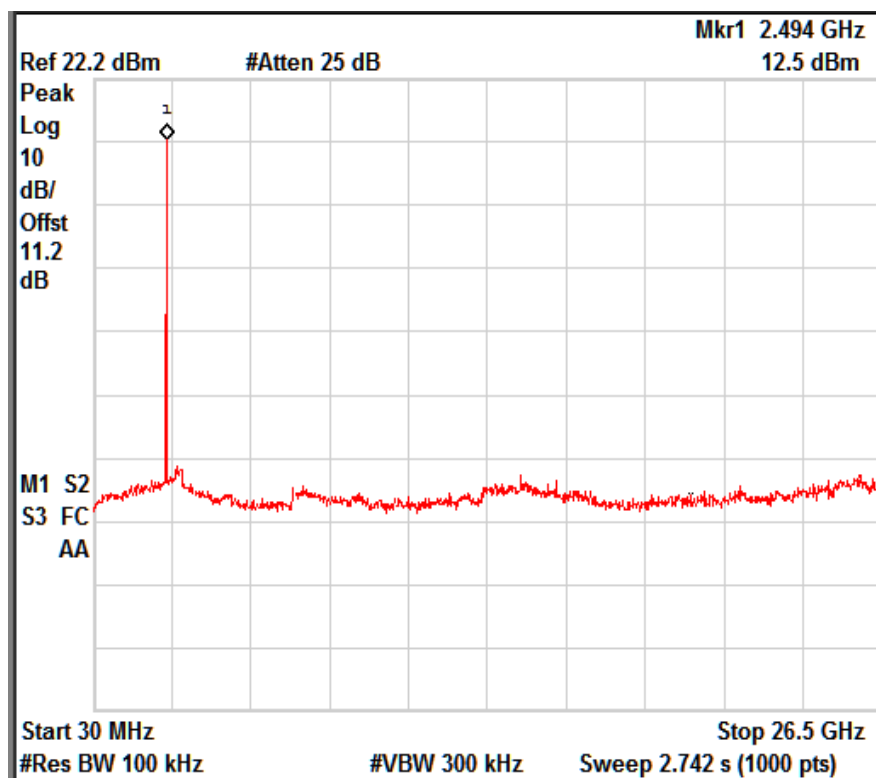
Bluetooth LE



Channel Frequency 2402 MHz



Channel Frequency 2442 MHz



Channel Frequency 2480 MHz

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**Spurious Radiated Emissions and
Restricted Bands of Operation**

Section 15.209 and 15.205

Result

Pass

Test Specification	FCC Part 15 Section 15.209 & 15.205
Test Method	ANSI C63.4-2009
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 below table

Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/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 49.5dBμV/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 results:

For frequency Range 9kHz - 1 GHz

No emissions found in this frequency range.

For frequency above 1GHz

Test results for worst case data rate are listed below.

WiFi:

B Mode: 1Mbps					
Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	47.21	74.00	-26.79
		2390 (Av)	40.08	54.00	-13.92
		2412 (Pk)	96.68	-	*
		2412 (Av)	93.89	-	*
		4824 (Pk)	53.29	74.00	-20.71
		4824 (Av)	47.88	54.00	-6.12
		7236 (Pk)	56.54	74.00	-17.46
		7236 (Av)	43.92	54.00	-10.08
	H	2390 (Pk)	53.66	74.00	-20.34
		2390 (Av)	47.54	54.00	-6.46
		2412 (Pk)	103.81	-	*
		2412 (Av)	100.95	-	*
		4824 (Pk)	57.33	74.00	-16.67
		4824 (Av)	53.01	54.00	-0.99
		7236 (Pk)	57.91	74.00	-16.09
		7236 (Av)	47.05	54.00	-6.95
Mid	V	2437 (Pk)	96.44	-	*
		2437 (Av)	93.12	-	*
		4874 (Pk)	53.50	74.00	-20.50
		4874 (Av)	48.26	54.00	-5.74
		7311 (Pk)	57.38	74.00	-16.62
		7311 (Av)	44.61	54.00	-9.39
	H	2437 (Pk)	103.21	-	*
		2437 (Av)	100.87	-	*
		4874 (Pk)	57.03	74.00	-16.97
		4874 (Av)	53.60	54.00	-0.40
		7311 (Pk)	57.51	74.00	-16.49
		7311 (Av)	47.49	54.00	-6.51
High	V	2462 (Pk)	95.67	-	*

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		2462 (Av)	92.97	-	*
		2483.5 (Pk)	46.89	74.00	-27.11
		2483.5 (Av)	39.37	54.00	-14.63
		4924 (Pk)	53.29	74.00	-20.71
		4924 (Av)	47.92	54.00	-6.08
		7386 (Pk)	57.29	74.00	-16.71
		7386 (Av)	44.81	54.00	-9.19
	H	2462 (Pk)	103.83	-	*
		2462 (Av)	100.75	-	*
		2483.5 (Pk)	53.98	74.00	-20.02
		2483.5 (Av)	48.10	54.00	-5.90
		4924 (Pk)	57.21	74.00	-16.79
		4924 (Av)	53.28	54.00	-0.72
		7386 (Pk)	56.98	74.00	-17.02
		7386 (Av)	47.22	54.00	-6.78

B Mode: 11Mbps					
Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	48.50	74.00	-25.50
		2390 (Av)	36.40	54.00	-17.60
		2412 (Pk)	100.90	-	*
		2412 (Av)	93.09	-	*
		4824 (Pk)	51.47	74.00	-22.53
		4824 (Av)	38.64	54.00	-15.36
		7236 (Pk)	57.85	74.00	-16.15
		7236 (Av)	44.72	54.00	-9.28
	H	2390 (Pk)	55.08	74.00	-18.92
		2390 (Av)	44.03	54.00	-9.97
		2412 (Pk)	106.83	-	*
		2412 (Av)	99.69	-	*
		4824 (Pk)	56.73	74.00	-17.27
		4824 (Av)	43.55	54.00	-10.45
		7236 (Pk)	58.20	74.00	-15.80
		7236 (Av)	47.58	54.00	-6.42
Mid	V	2437 (Pk)	102.12	-	*
		2437 (Av)	96.29	-	*
		4874 (Pk)	55.07	74.00	-18.93
		4874 (Av)	41.16	54.00	-12.84
		7311 (Pk)	58.29	74.00	-15.71
		7311 (Av)	46.45	54.00	-7.55
	H	2437 (Pk)	107.89	-	*

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High		2437 (Av)	102.21	-	*
		4874 (Pk)	60.69	74.00	-13.31
		4874 (Av)	47.83	54.00	-6.17
		7311 (Pk)	60.62	74.00	-13.38
		7311 (Av)	50.55	54.00	-3.45
	V	2462 (Pk)	102.47	-	*
		2462 (Av)	94.67	-	*
		2483.5 (Pk)	52.88	74.00	-21.12
		2483.5 (Av)	41.43	54.00	-12.57
		4924 (Pk)	54.37	74.00	-19.63
		4924 (Av)	40.76	54.00	-13.24
		7386 (Pk)	57.67	74.00	-16.33
		7386 (Av)	45.34	54.00	-8.66
	H	2462 (Pk)	106.62	-	*
		2462 (Av)	100.28	-	*
		2483.5 (Pk)	62.76	74.00	-11.24
		2483.5 (Av)	51.47	54.00	-2.53
		4924 (Pk)	59.56	74.00	-14.44
		4924 (Av)	46.55	54.00	-7.45
		7386 (Pk)	59.89	74.00	-14.11
		7386 (Av)	49.57	54.00	-4.43

G Mode: 6Mbps					
Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	60.76	74.00	-13.24
		2390 (Av)	42.74	54.00	-11.26
		2412 (Pk)	95.48	-	*
		2412 (Av)	86.58	-	*
		4824 (Pk)	50.15	74.00	-23.85
		4824 (Av)	36.21	54.00	-17.79
		7236 (Pk)	55.21	74.00	-18.79
		7236 (Av)	42.98	54.00	-11.02
	H	2390 (Pk)	70.12	74.00	-3.88
		2390 (Av)	51.14	54.00	-2.86
		2412 (Pk)	104.40	-	*
		2412 (Av)	96.38	-	*
		4824 (Pk)	59.68	74.00	-14.32
		4824 (Av)	45.22	54.00	-8.78
		7236 (Pk)	60.21	74.00	-13.79
		7236 (Av)	46.89	54.00	-7.11
Mid	V	2437 (Pk)	100.25	-	*

High			2437 (Av)	91.89	-	*
			4874 (Pk)	50.93	74.00	-23.07
			4874 (Av)	37.98	54.00	-16.02
			7311 (Pk)	57.28	74.00	-16.72
			7311 (Av)	44.98	54.00	-9.02
		H	2437 (Pk)	108.52	-	*
			2437 (Av)	99.78	-	*
			4874 (Pk)	61.22	74.00	-12.78
			4874 (Av)	46.89	54.00	-7.11
			7311 (Pk)	61.78	74.00	-12.22
			7311 (Av)	48.84	54.00	-5.16
	V		2462 (Pk)	95.24	-	*
			2462 (Av)	85.59	-	*
			2483.5 (Pk)	62.37	74.00	-11.63
			2483.5 (Av)	44.10	54.00	-9.90
			4924 (Pk)	48.38	74.00	-25.62
			4924 (Av)	36.58	54.00	-17.42
			7386 (Pk)	56.88	74.00	-17.12
			7386 (Av)	42.69	54.00	-11.31
		H	2462 (Pk)	104.23	-	*
			2462 (Av)	95.46	-	*
			2483.5 (Pk)	71.17	74.00	-2.83
			2483.5 (Av)	53.17	54.00	-0.83
			4924 (Pk)	58.59	74.00	-15.41
			4924 (Av)	44.58	54.00	-9.42
			7386 (Pk)	59.89	74.00	-14.11
			7386 (Av)	46.58	54.00	-7.42

N Mode: MCS0					
Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	62.50	74.00	-11.50
		2390 (Av)	43.26	54.00	-10.74
		2412 (Pk)	94.20	-	*
		2412 (Av)	85.56	-	*
		4824 (Pk)	50.10	74.00	-23.90
		4824 (Av)	37.89	54.00	-16.11
	H	2390 (Pk)	70.91	74.00	-3.09
		2390 (Av)	51.09	54.00	-2.91
		2412 (Pk)	103.63	-	*
		2412 (Av)	95.11	-	*
		4824 (Pk)	55.69	74.00	-18.31

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		4824 (Av)	44.58	54.00	-9.42
Mid	V	2437 (Pk)	100.26	-	*
		2437 (Av)	91.56	-	*
		4874 (Pk)	53.42	74.00	-20.58
		4874 (Av)	41.03	54.00	-12.97
	H	2437 (Pk)	108.49	-	*
		2437 (Av)	99.51	-	*
		4874 (Pk)	60.68	74.00	-13.32
		4874 (Av)	47.68	54.00	-6.32
High	V	2462 (Pk)	92.44	-	*
		2462 (Av)	83.22	-	*
		2483.5 (Pk)	61.37	74.00	-12.63
		2483.5 (Av)	42.84	54.00	-11.16
		4924 (Pk)	50.29	74.00	-23.71
		4924 (Av)	37.89	54.00	-16.11
	H	2462 (Pk)	102.71	-	*
		2462 (Av)	93.75	-	*
		2483.5 (Pk)	70.95	74.00	-3.05
		2483.5 (Av)	52.96	54.00	-1.04
		4924 (Pk)	57.45	74.00	-16.55
		4924 (Av)	44.69	54.00	-9.31

ZigBee:

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	52.34	74	-21.66
		2390 (Av)	31.06	54	-22.94
		2405 (Pk)	104.41	*	-
		2405 (Av)	99.61	*	-
		4810 (Pk)	55.09	74	-18.91
		4810 (Av)	47.98	54	-6.02
		7215 (Pk)	58.45	74	-15.55
		7215 (Av)	47.44	54	-6.56
	H	2390 (Pk)	52.51	74	-21.49
		2390 (Av)	40.72	54	-13.28
		2405 (Pk)	107.6	*	-
		2405 (Av)	103.85	*	-
		4810 (Pk)	58.74	74	-15.26
		4810 (Av)	53.34	54	-0.66
		7215 (Pk)	57.82	74	-16.18
		7215 (Av)	46.37	54	-7.63

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Mid	V	4880 (Pk)	54.39	74	-19.61
		4880 (Av)	46.78	54	-7.22
		7320 (Pk)	58.49	74	-15.51
		7320 (Av)	46.7	54	-7.3
	H	4880 (Pk)	58.22	74	-15.78
		4880 (Av)	51.39	54	-2.61
		7320 (Pk)	61.78	74	-12.22
		7320 (Av)	51.86	54	-2.14
High	V	2480 (Pk)	103.67	*	-
		2480 (Av)	98.95	*	-
		2483.5 (Pk)	55.1	74	-18.9
		2483.5 (Av)	41.45	54	-12.55
		4960 (Pk)	54.99	74	-19.01
		4960 (Av)	47.81	54	-6.19
		7440 (Pk)	59.54	74	-14.46
		7440 (Av)	49.08	54	-4.92
	H	2480 (Pk)	107.53	*	-
		2480 (Av)	103.63	*	-
		2483.5 (Pk)	61.92	74	-12.08
		2483.5 (Av)	50.17	54	-3.83
		4960 (Pk)	58.87	74	-15.13
		4960 (Av)	52.15	54	-1.85
		7440 (Pk)	60.02	74	-13.98
		7440 (Av)	49.59	54	-4.41

Bluetooth LE:

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390 (Pk)	42.98	74	-31.02
		2390 (Av)	29.38	54	-24.62
		2402 (Pk)	102.03	*	-
		2402 (Av)	93.81	*	-
		4804 (Pk)	52.00	74	-22.00
		4804 (Av)	39.52	54	-14.48
	H	2390 (Pk)	48.37	74	-25.63
		2390 (Av)	33.15	54	-20.85
		2402 (Pk)	107.47	*	-
		2402 (Av)	99.97	*	-
		4804 (Pk)	54.04	74	-19.96
		4804 (Av)	42.24	54	-11.76

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Mid	V	4884 (Pk)	50.54	74	-23.46
		4884 (Av)	36.37	54	-17.63
	H	4884 (Pk)	50.41	74	-23.59
		4884 (Av)	36.35	54	-17.65
High	V	2480 (Pk)	101.47	*	-
		2480 (Av)	93.29	*	-
		2483.5 (Pk)	49.34	74	-24.66
		2483.5 (Av)	33.37	54	-20.63
		4960 (Pk)	51.49	74	-22.51
		4960 (Av)	38.53	54	-15.47
		7440 (Pk)	57.75	74	-16.25
		7440 (Av)	45.28	54	-8.72
	H	2480 (Pk)	107.51	*	-
		2480 (Av)	100.06	*	-
		2483.5 (Pk)	50.4	74	-23.6
		2483.5 (Av)	35.31	54	-18.69
		4960 (Pk)	54.98	74	-19.02
		4960 (Av)	43.03	54	-10.97
		7440 (Pk)	60.64	74	-13.36
		7440 (Av)	48.28	54	-5.72

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Conducted Emission Test on A.C. Power Line

Section 15.207

Result

Pass

Test Specification : FCC Part 15 Section 15.207
Test Method : ANSI C63.4-2009
Testing Location : Screened room
Measurement Bandwidth : 9kHz
Frequency Range : 150kHz – 30MHz
Supply Voltage : 120VAC,60Hz

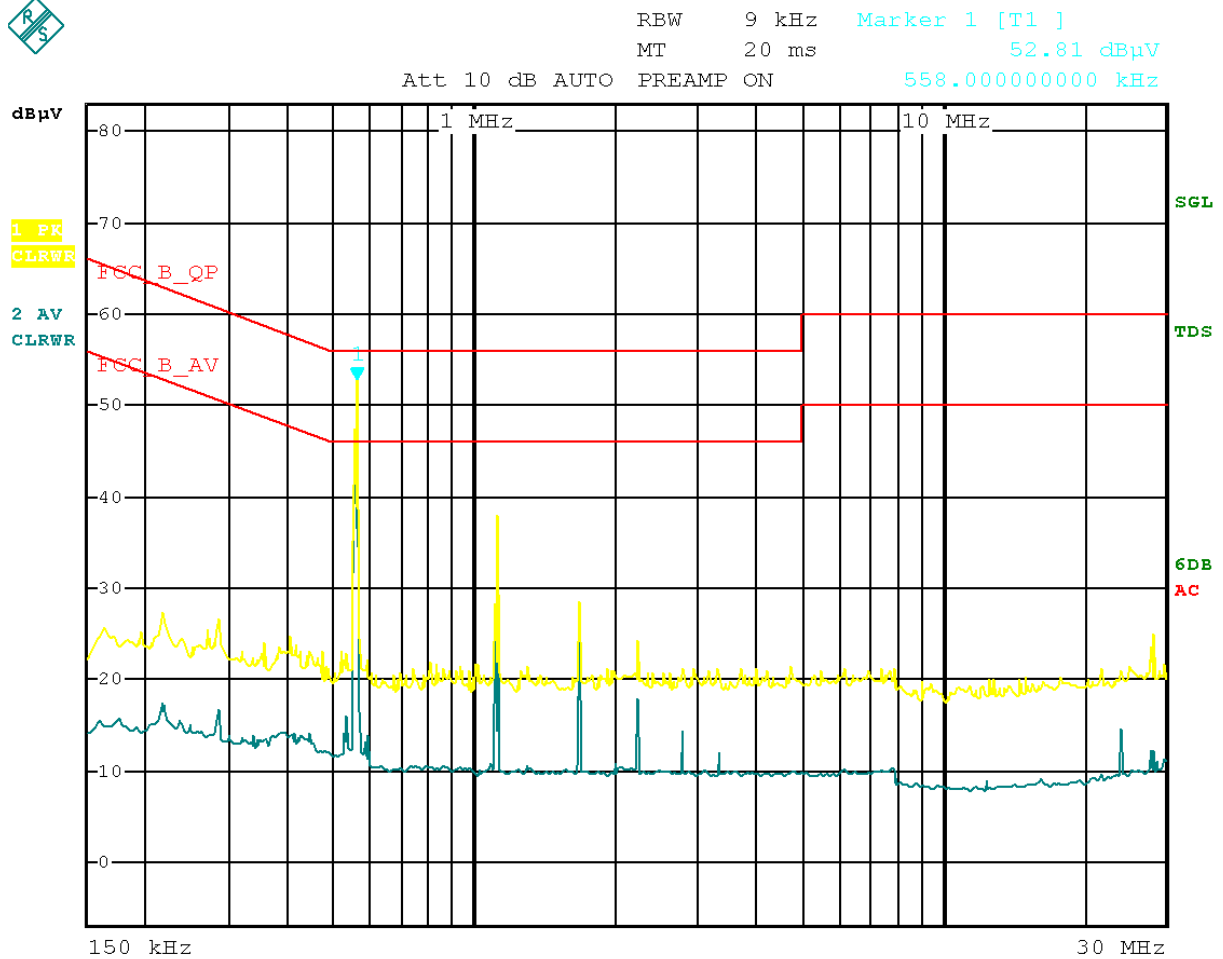
Limit of section 15.207

Frequency of emission (MHz)	QP Limit (dB μ V)	AV Limit (dB μ 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

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Test Result:



Line Graph

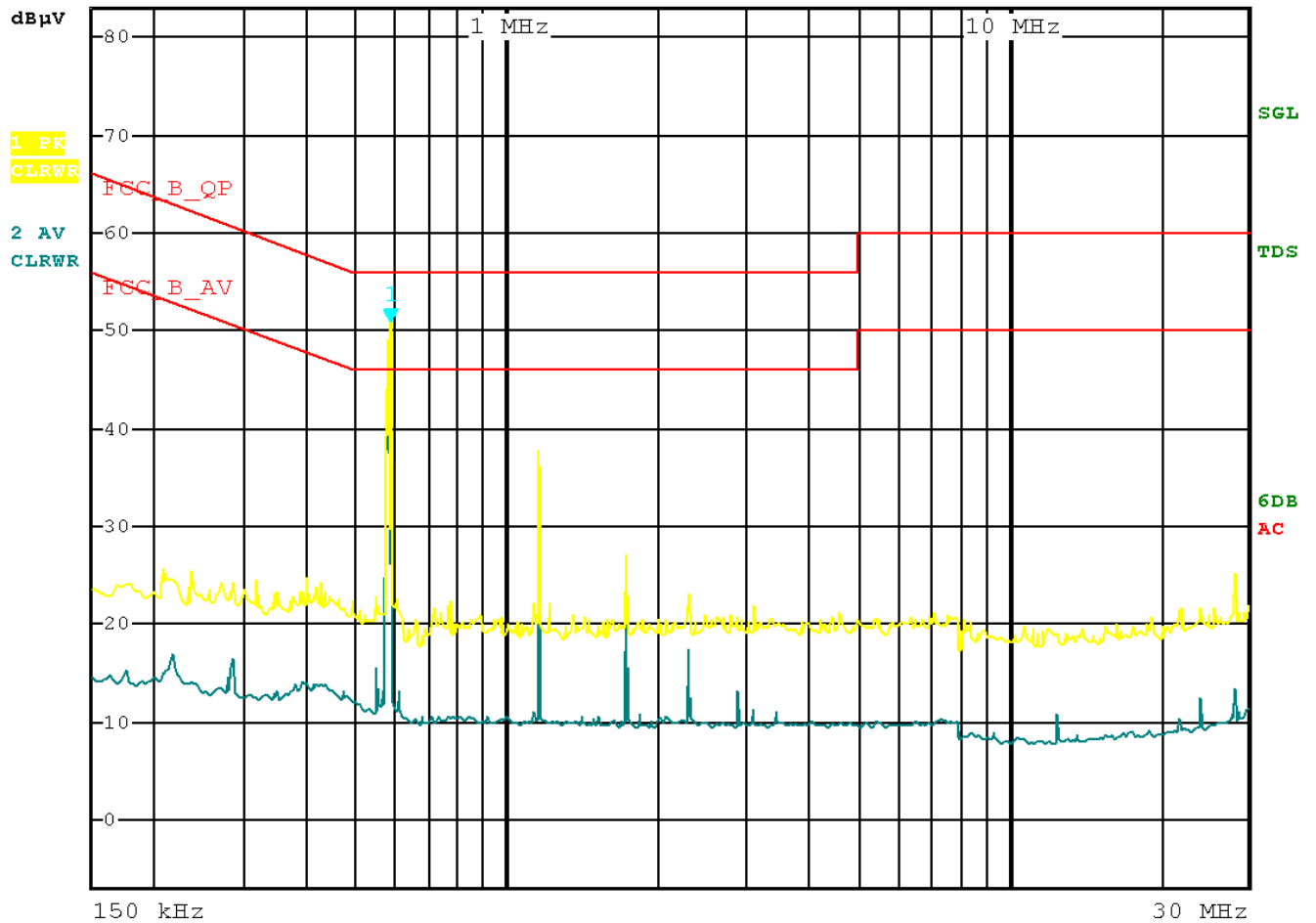
EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC_B_QP		
Trace2:	FCC_B_AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	558 kHz	31.15 L1	-14.84
1 Quasi Peak	558 kHz	31.08 L1	-24.91
2 Average	1.118 MHz	9.66 L1	-36.33
2 Average	1.674 MHz	9.56 L1	-36.43
1 Quasi Peak	1.118 MHz	14.63 L1	-41.37
1 Quasi Peak	1.674 MHz	14.57 L1	-41.42

Line: Table

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RBW 9 kHz Marker 1 [T1]
 MT 20 ms 50.88 dBμV
 Att 10 dB AUTO PREAMP ON 582.000000000 kHz



Neutral: Graph

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EDIT PEAK LIST (Final Measurement Results)				
Trace1:	FCC_B_QP			
Trace2:	FCC_B_AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2 Average	582 kHz	11.15	N	-34.84
2 Average	1.158 MHz	9.77	N	-36.22
2 Average	1.738 MHz	9.41	N	-36.58
1 Quasi Peak	582 kHz	16.28	N	-39.72
1 Quasi Peak	1.158 MHz	14.69	N	-41.30
1 Quasi Peak	1.738 MHz	14.61	N	-41.39

Neutral: Line

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Power level Settings used during testing:

		Channels		
Mode	Data Rate (Mbps)	Low	Mid	High
802.11 b	1	14	19	14
	11	14	19	17
802.11 g	6	10	19	10
	24	10	19	10
	54	10	19	10
802.11 n	MCS0	9	19	9
	MCS4	9	19	9
	MCS7	9	19	9
Bluetooth	1	15	15	15
	2	15	15	15
	3	15	15	15
	LE	15	15	15
Zigbee	250kbps	14	14	12