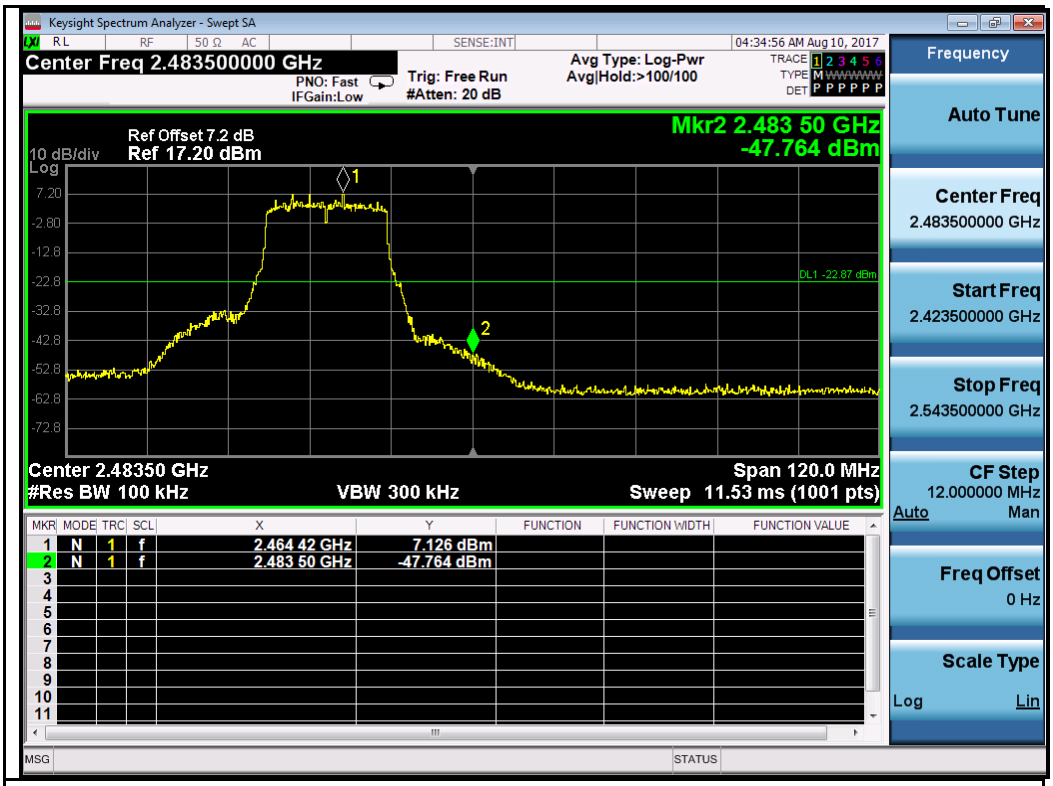
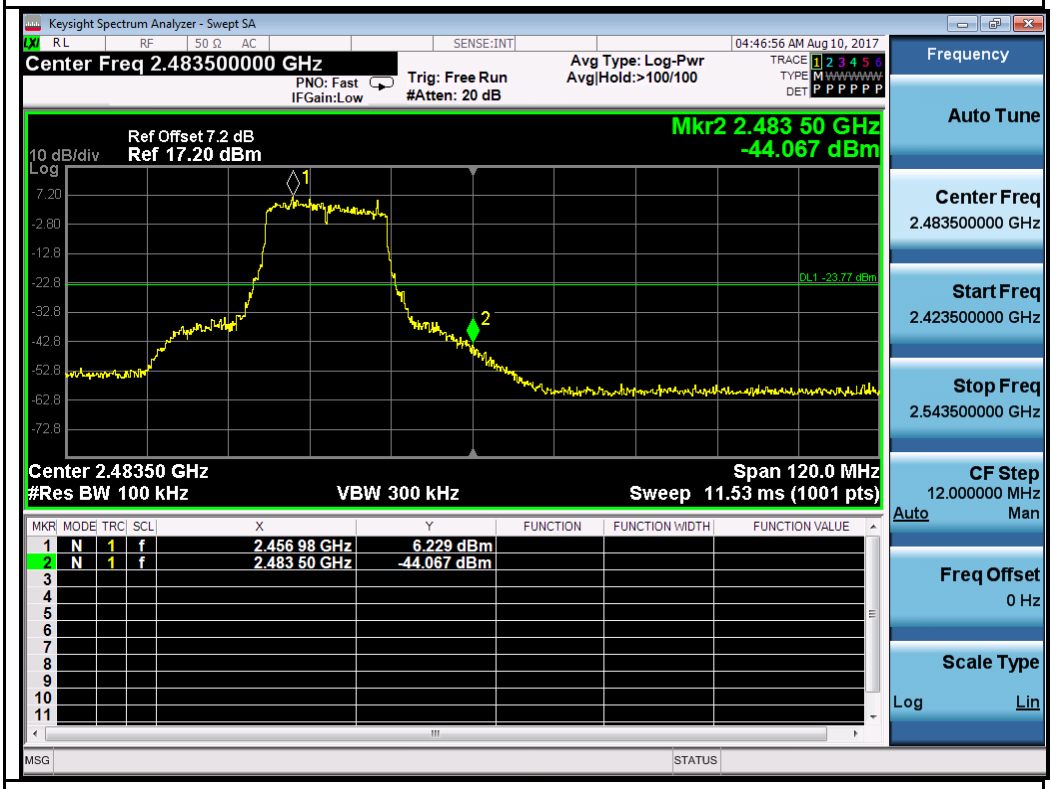
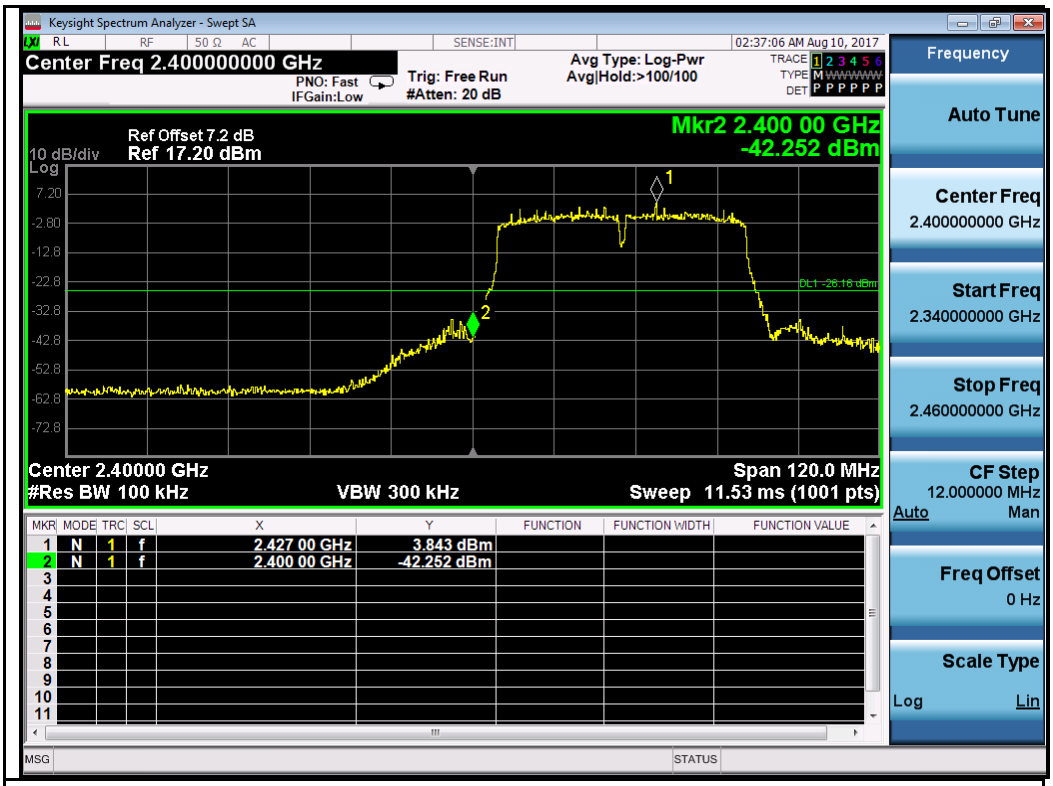


802.11n-HT20-2462MHz Chain 2



802.11n-HT20-2462MHz Chain 3



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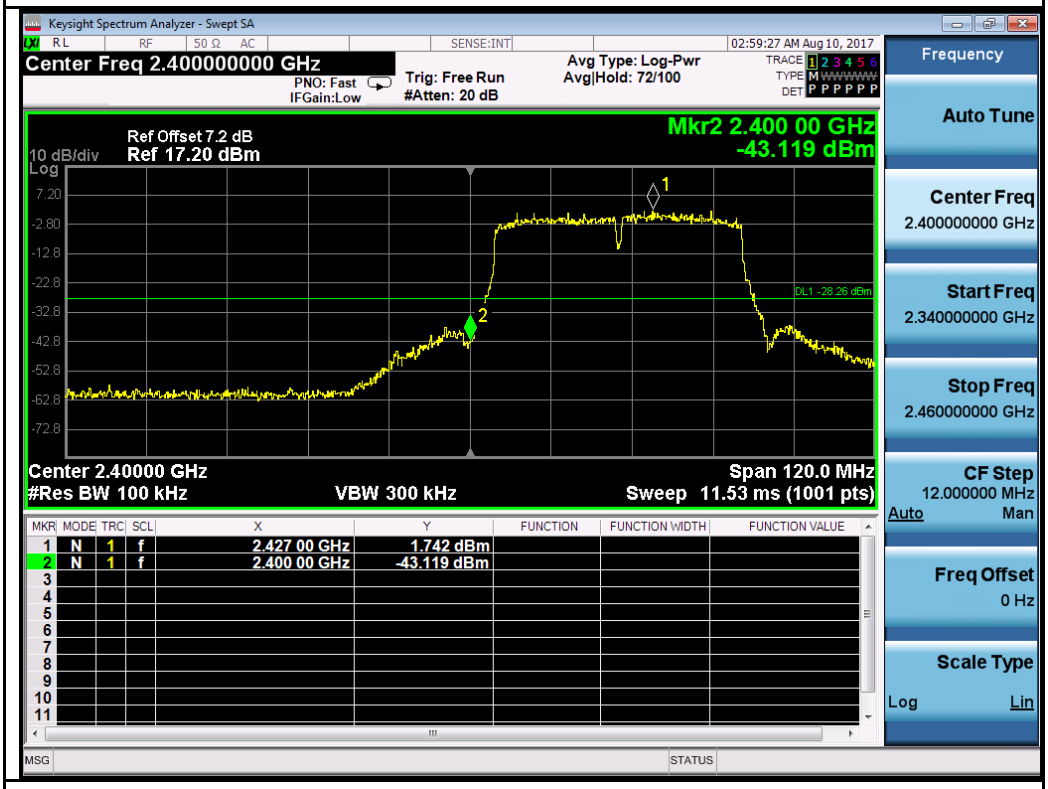

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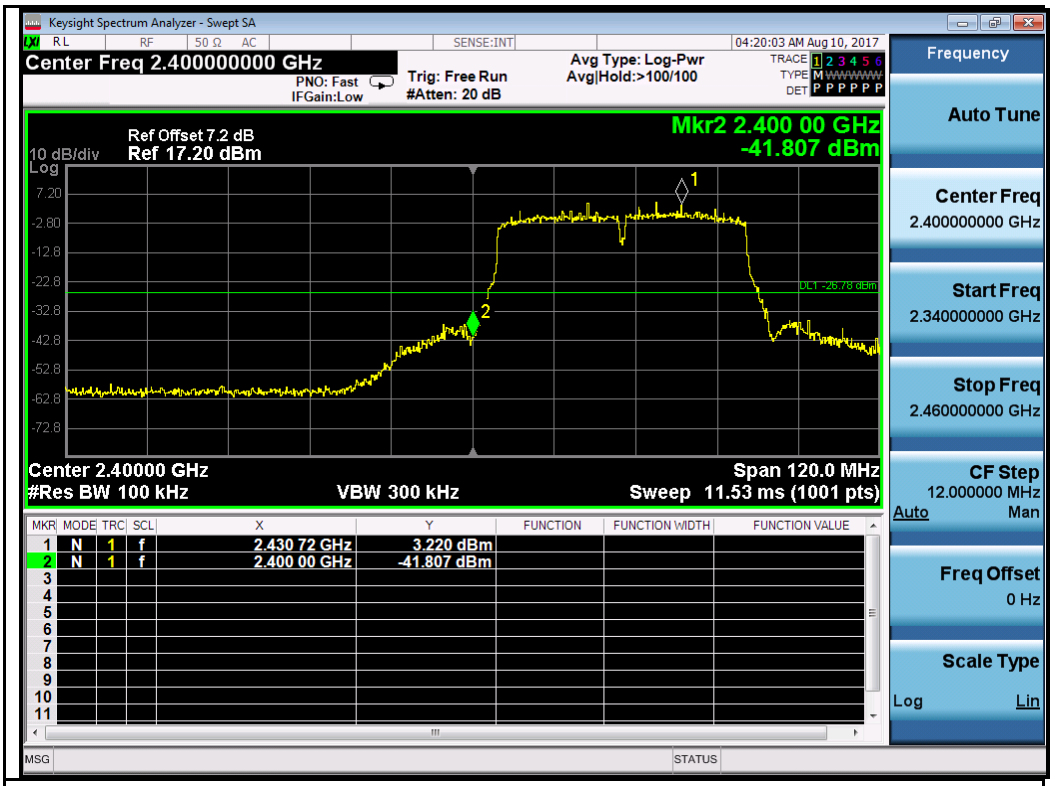

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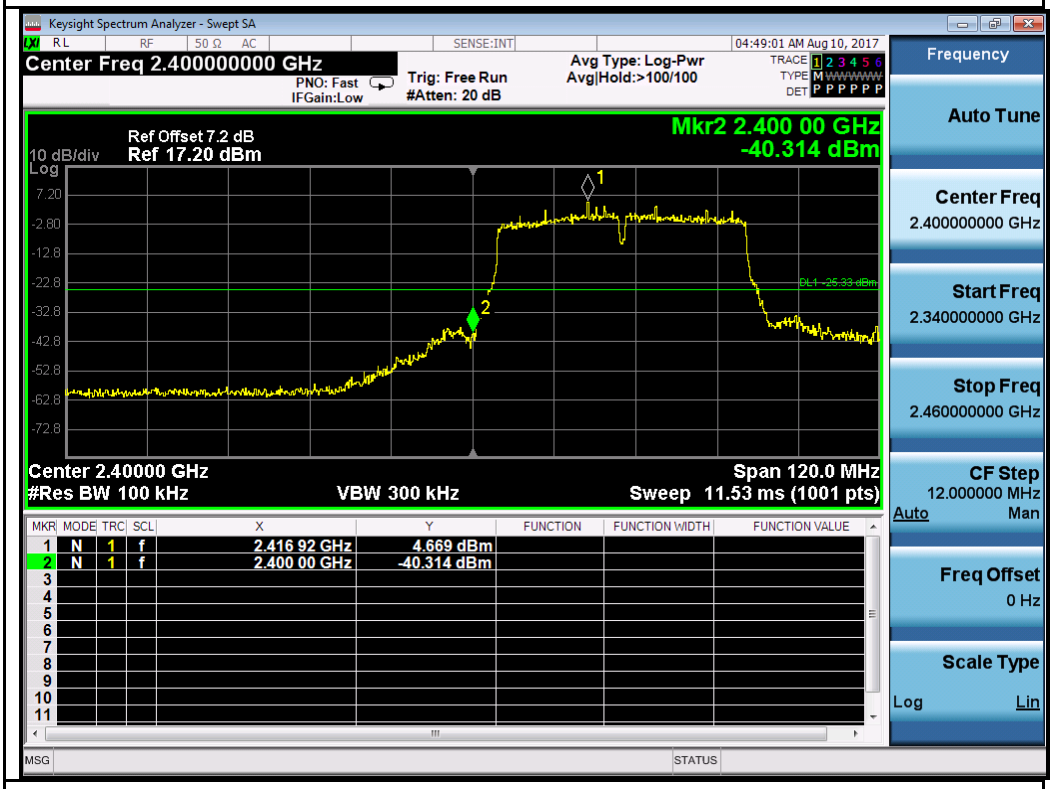

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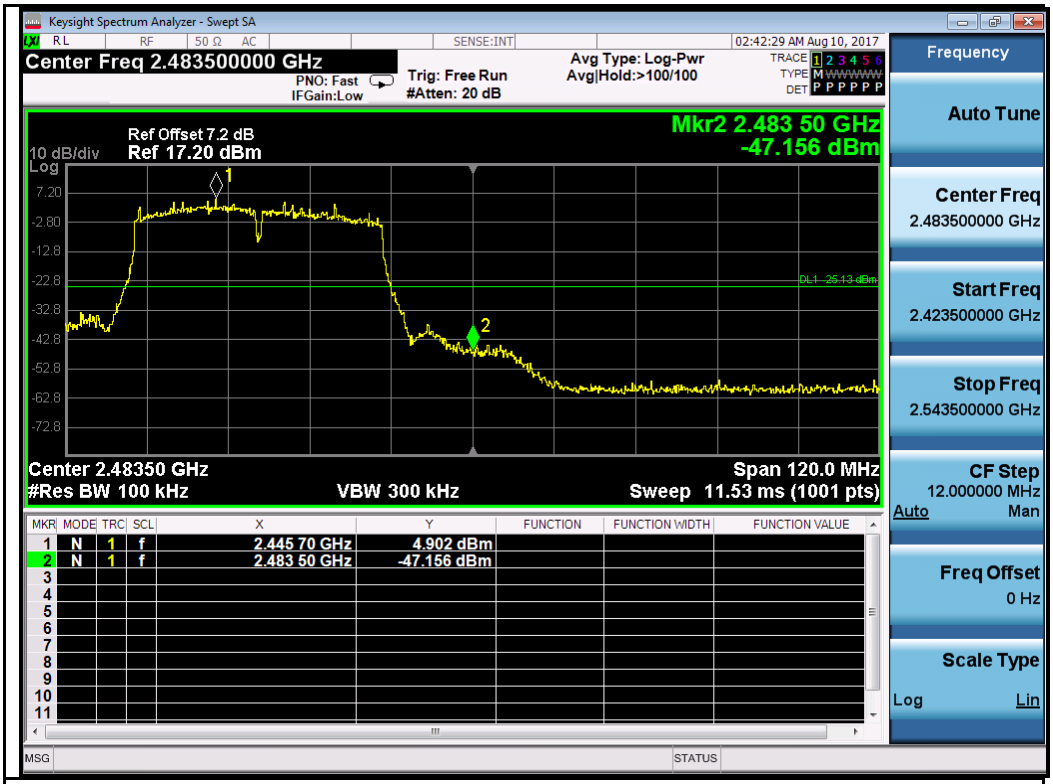
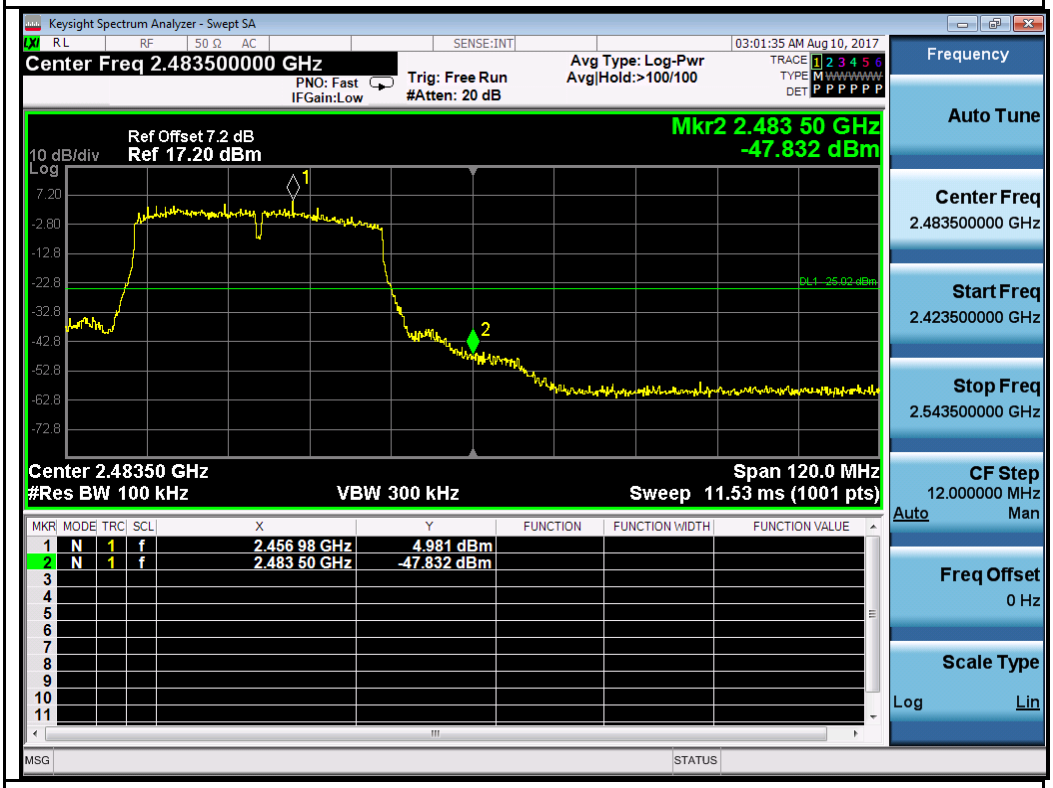
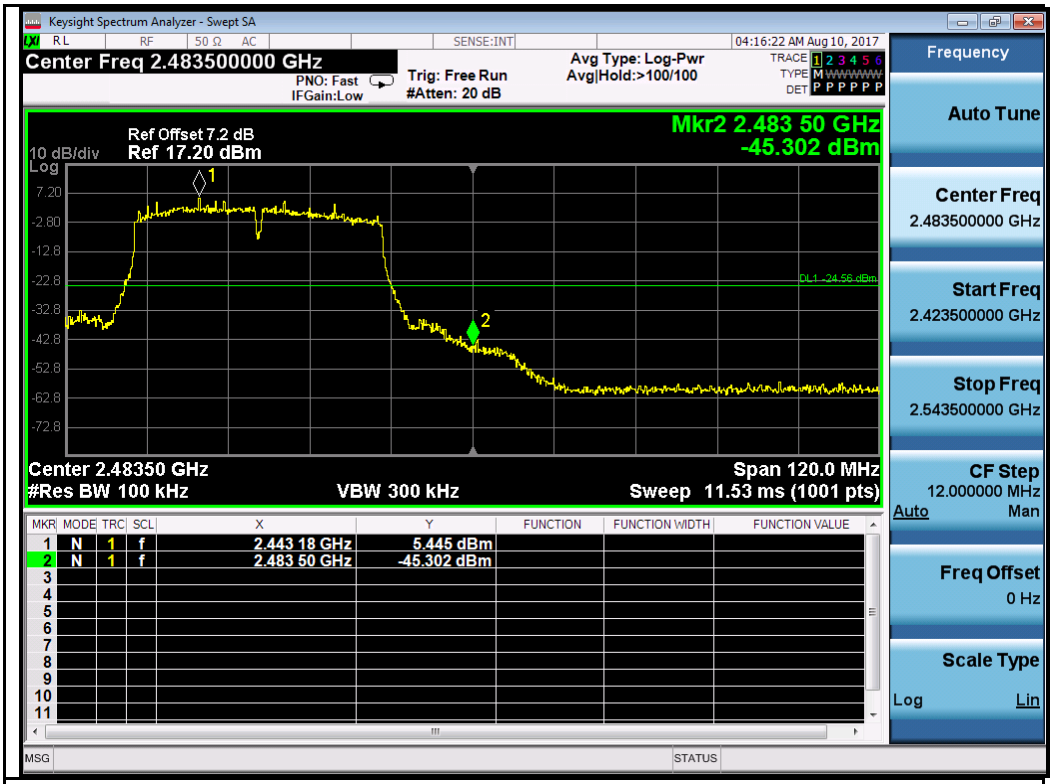


802.11n-HT40-2452MHz Chain 0



802.11n-HT40-2452MHz Chain 1

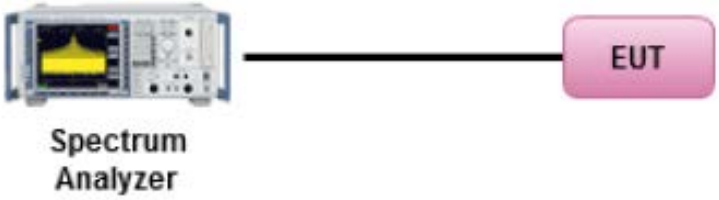


802.11n-HT40-2452MHz Chain 2

802.11n-HT40-2452MHz Chain 3

10.5 Peak Spectral Density

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247(e) RSS247 (5.2.2)	e)	DSSS: ≤8dBm/3KHz	☒
	f)	DSSS in hybrid sys with FH turned off: ≤8dBm/3KHz	☐
Test Setup			
Test Procedure	558074 D01 DTS Meas Guidance v04, 10.2 Method PKPSD (peak PSD) Peak spectral density measurement procedure - Set analyzer center frequency to DTS channel center frequency. - Set the span to 1.5 times the DTS bandwidth. - Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. - Set the VBW ≥ 3 x RBW. - Detector = Peak - Sweep time = auto couple. - Trace mode = Max Hold - Allow trace to fully stabilize. - Use the peak marker function to determine the maximum amplitude level within the RBW. - If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.		
Test Date	08/10/2017	Environmental condition	Temperature 22ºC Relative Humidity 46% Atmospheric Pressure 1020mbar
Remark	Per KDB 662911 D01 Multiple Transmitter Output v02r01, the direction gain for horizontal polarization and vertical polarization is calculated separately. For 2.4GHz band, peak antenna gain = 3 dBi, directional gain = 6 dBi Highest of total directional gain is 6 dBi. The power limit and PSD limit will be reduced by amount of 0 dB.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

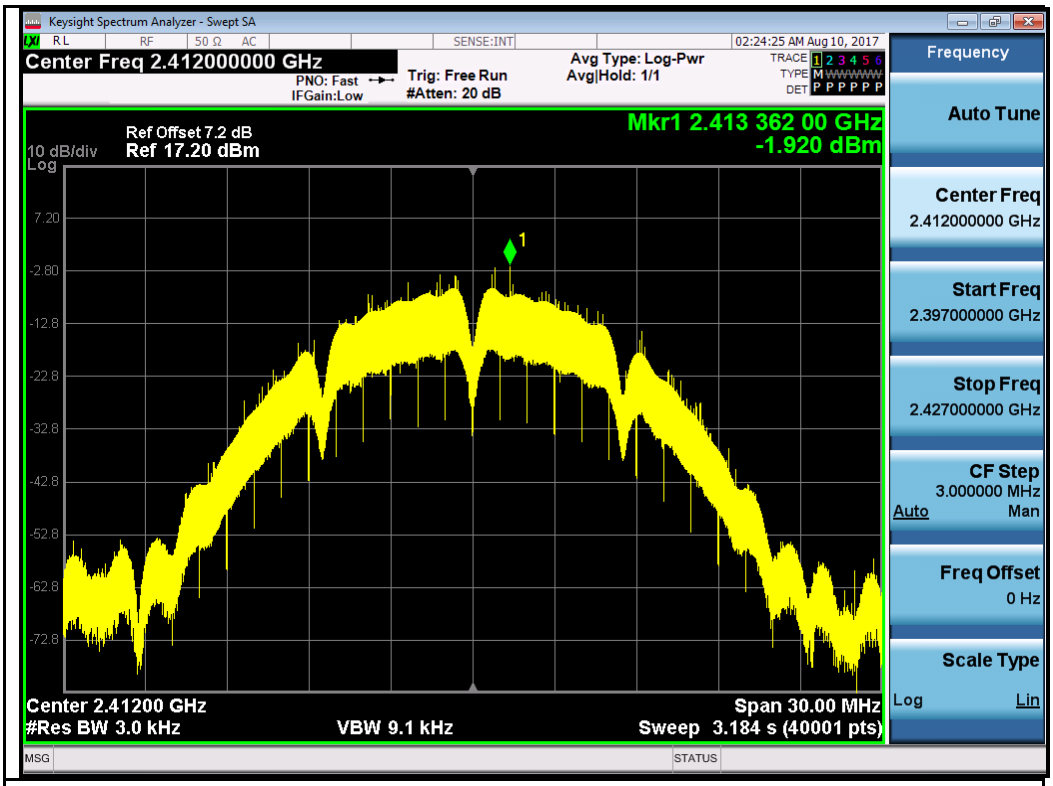
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at RF test site.

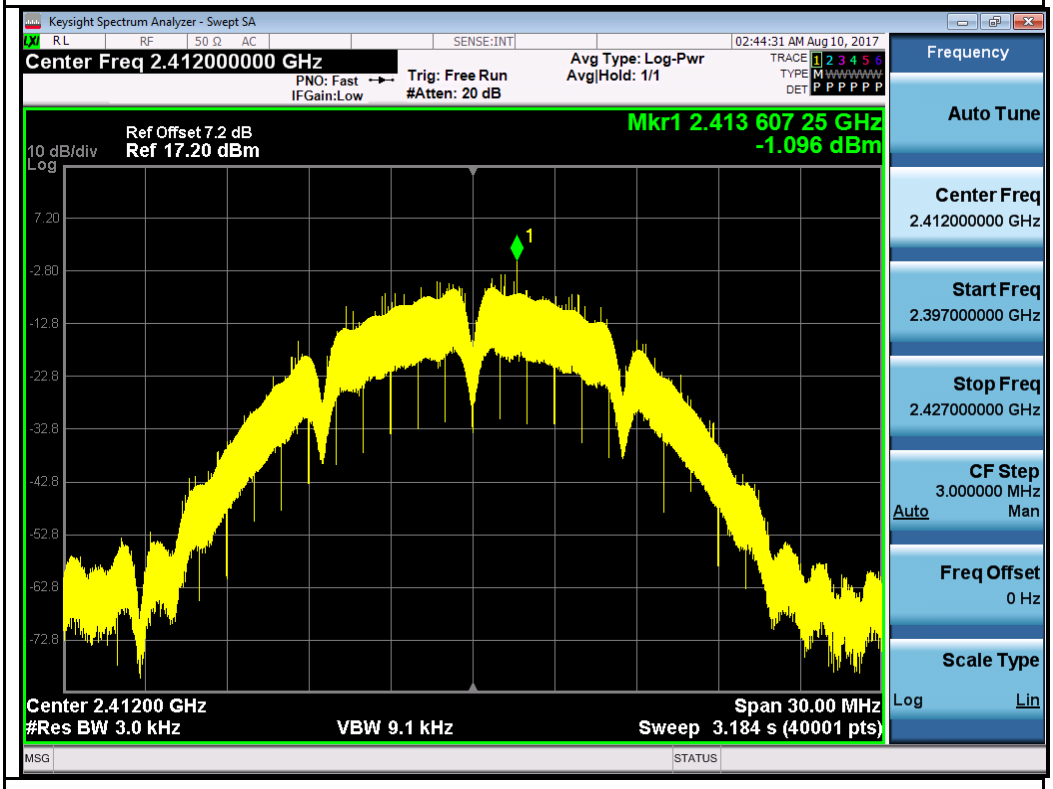
PSD measurement results

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/3KHz)					Limit (dBm/3KHz)	Result
				Chain0	Chain1	Chain2	Chain3	Combine		
PSD	802.11b	2412	Low	-1.92	-1.10	-2.27	-2.12	4.19	≤8	Pass
		2437	Mid	-0.13	-2.45	-3.78	-2.57	4.00	≤8	Pass
		2462	High	-2.17	-1.96	-0.95	-1.79	4.33	≤8	Pass
	802.11g	2412	Low	-6.98	-7.34	-7.02	-8.02	-1.30	≤8	Pass
		2437	Mid	-6.46	-6.11	-4.58	-6.00	0.30	≤8	Pass
		2462	High	-9.53	-9.58	-8.49	-8.97	-3.10	≤8	Pass
	802.11n-20M	2412	Low	-7.30	-7.26	-7.68	-6.87	-1.25	≤8	Pass
		2437	Mid	-6.88	-6.70	-6.47	-5.19	-0.23	≤8	Pass
		2462	High	-9.64	-9.87	-9.15	-8.35	-3.19	≤8	Pass
	802.11n-40M	2422	Low	-13.32	-12.47	-12.86	-12.59	-6.78	≤8	Pass
		2437	Mid	-10.16	-10.15	-10.45	-9.66	-4.07	≤8	Pass
		2452	High	-10.04	-11.19	-10.08	-10.34	-4.37	≤8	Pass

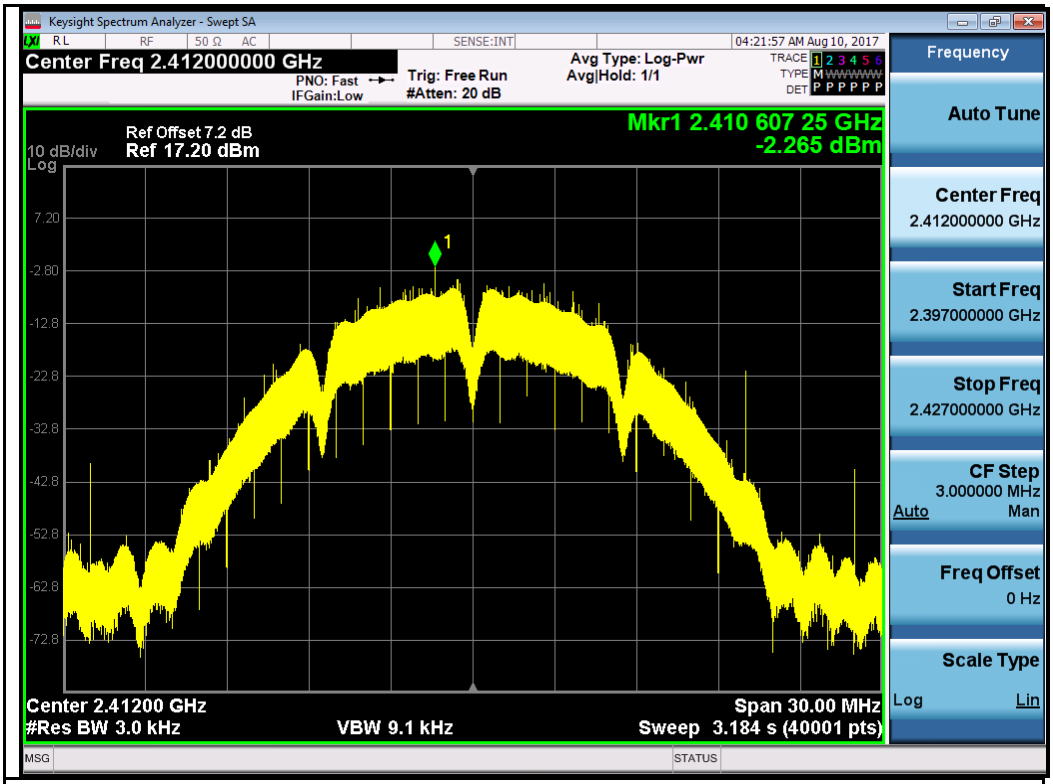
Test Plots:



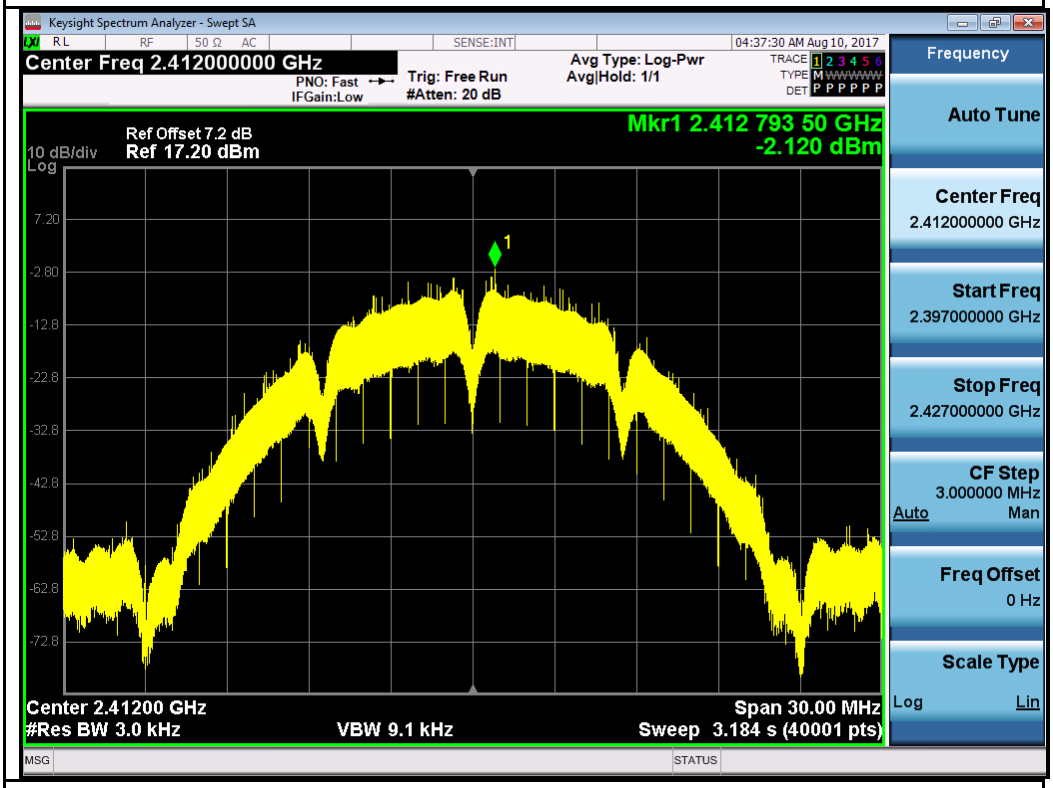
802.11b-2412MHz Chain 0



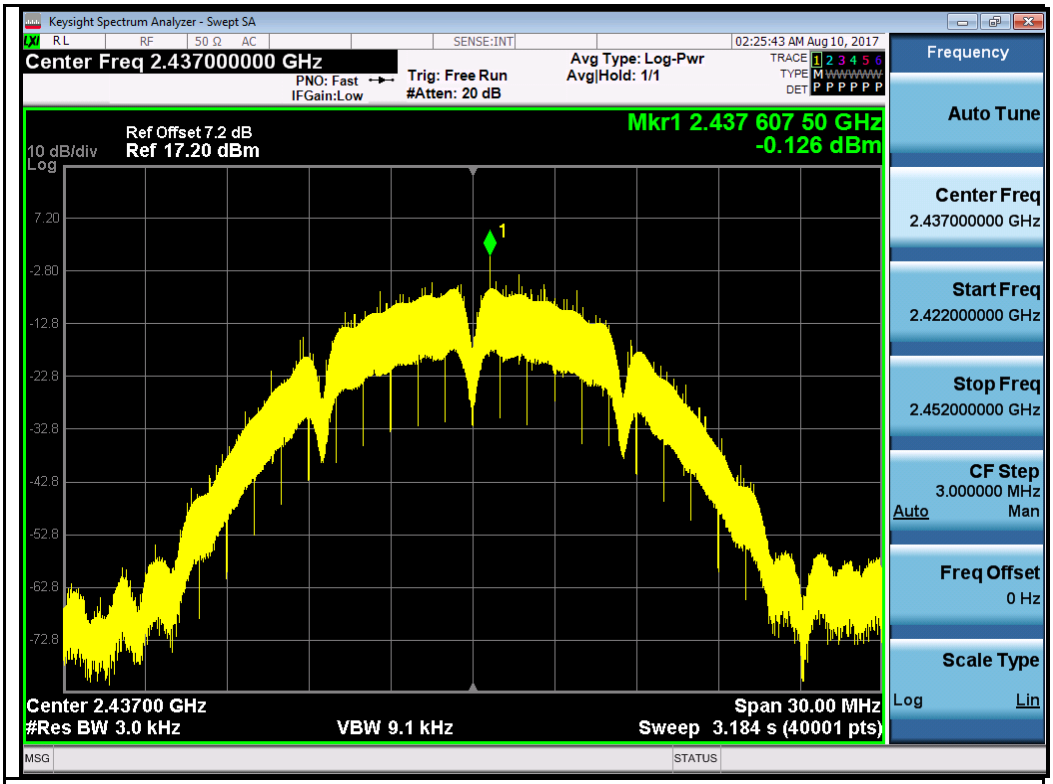
802.11b-2412MHz Chain 1



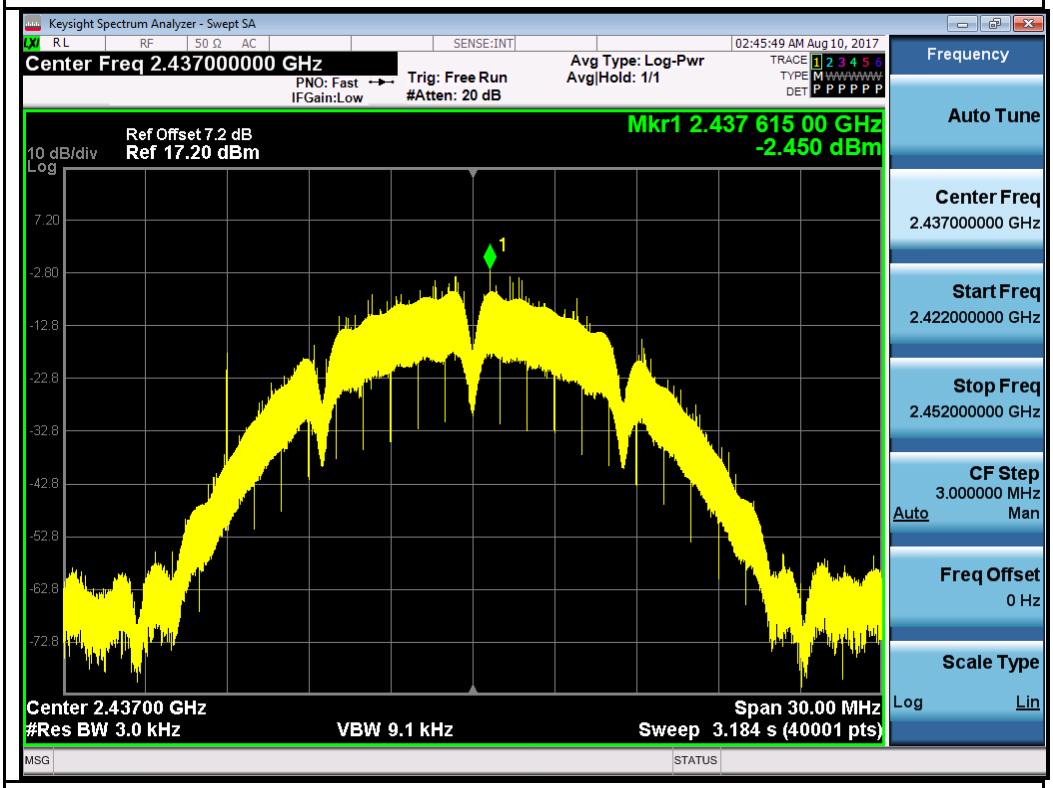
802.11b-2412MHz Chain 2



802.11b-2412MHz Chain 3



802.11b-2437MHz Chain 0



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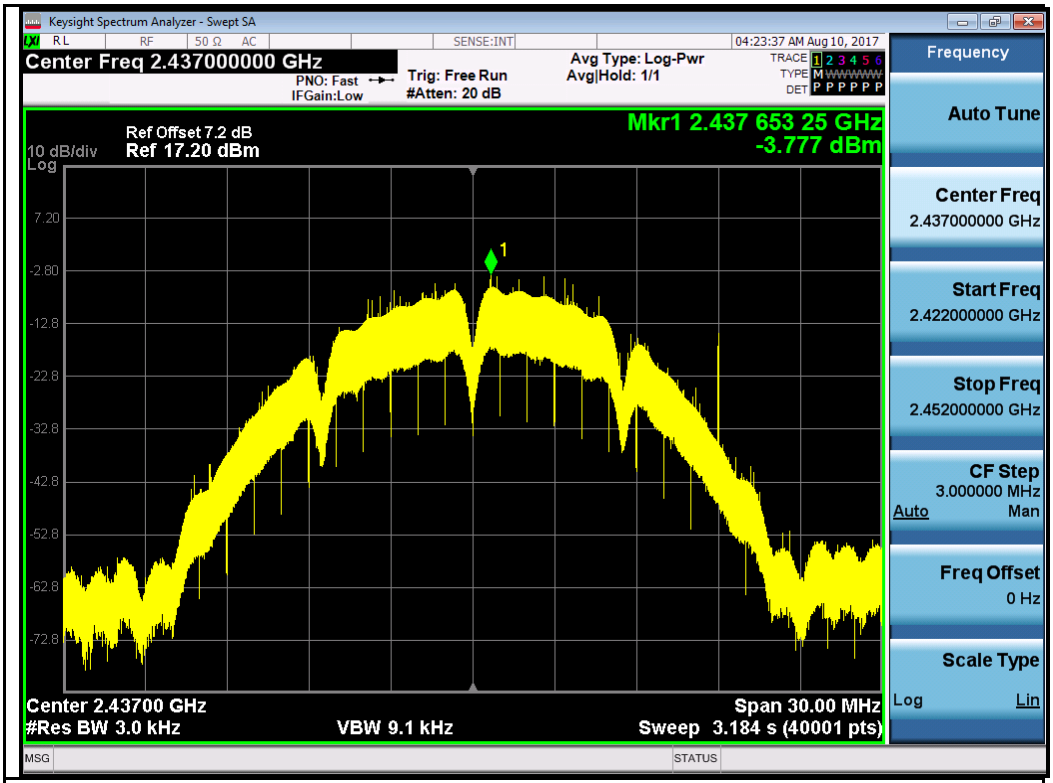

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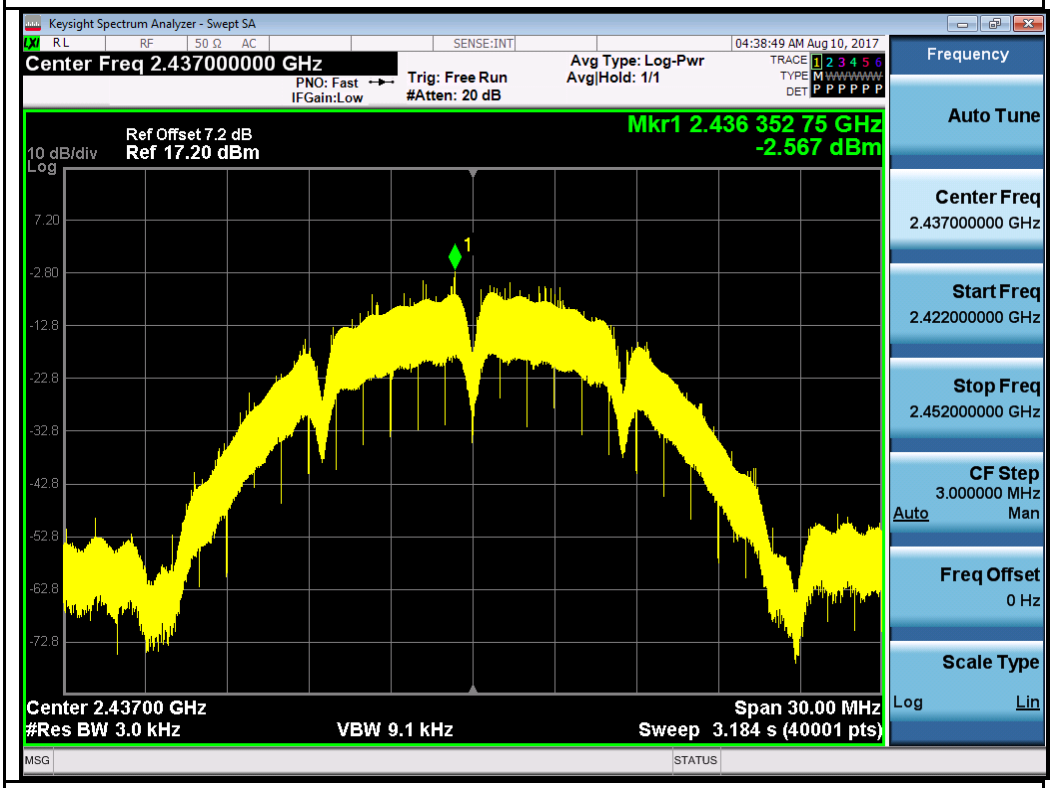

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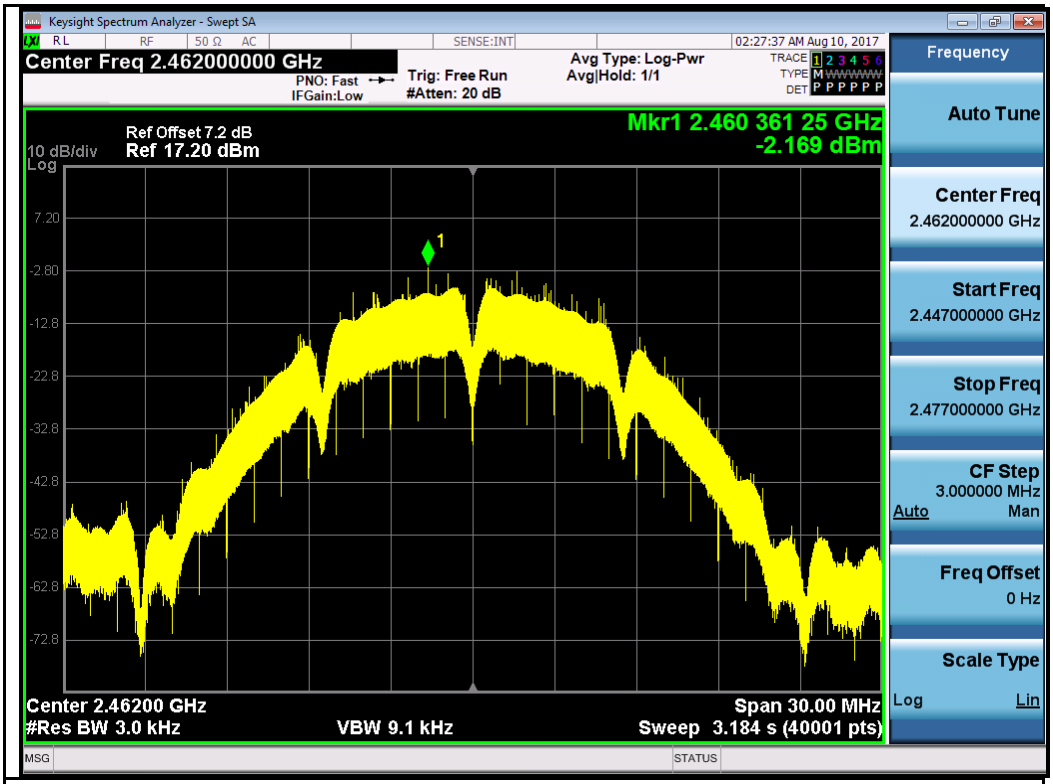
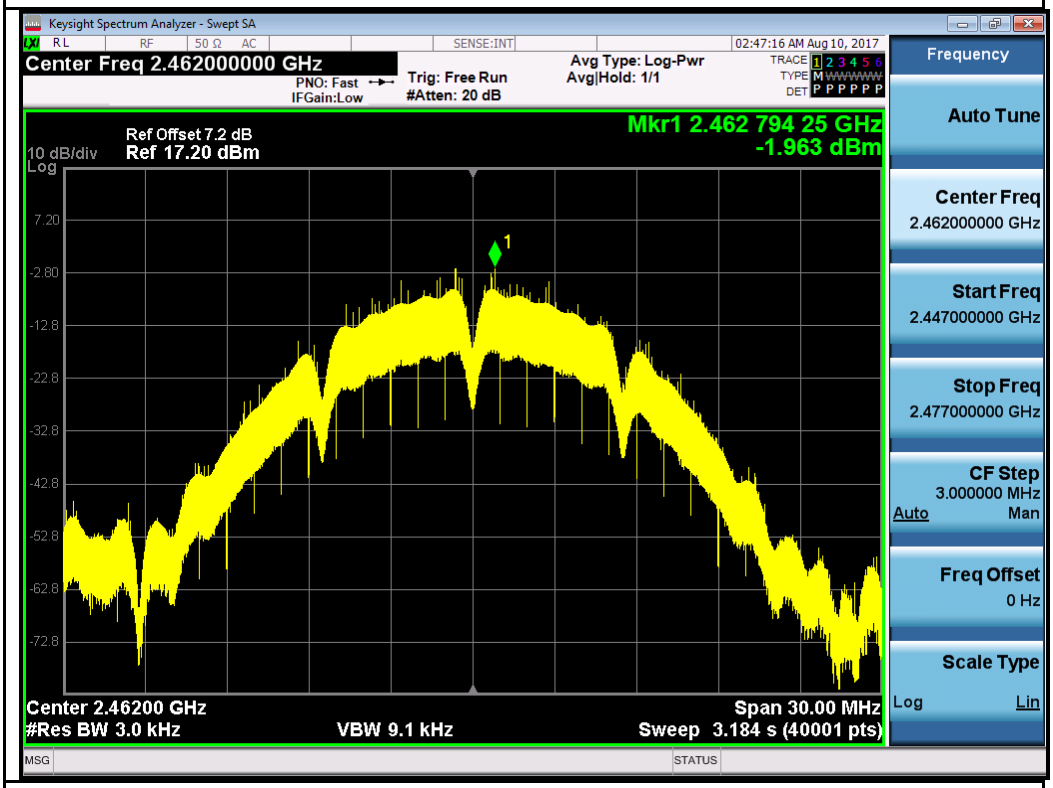


802.11b-2462MHz Chain 0



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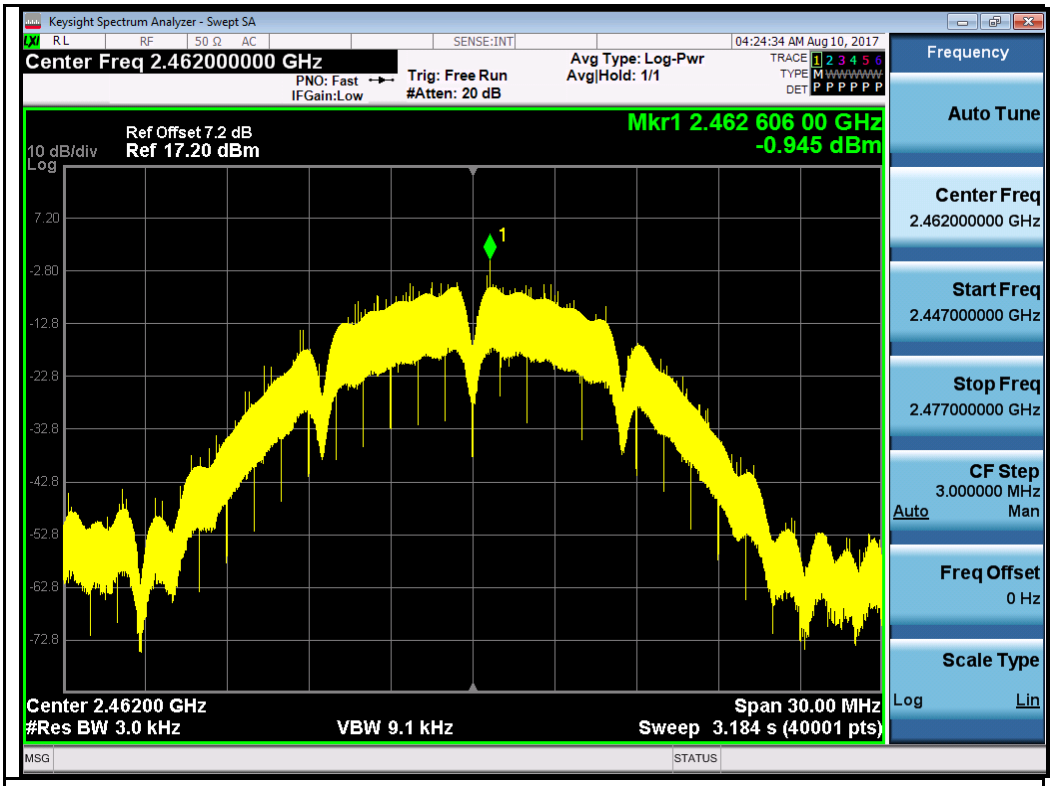

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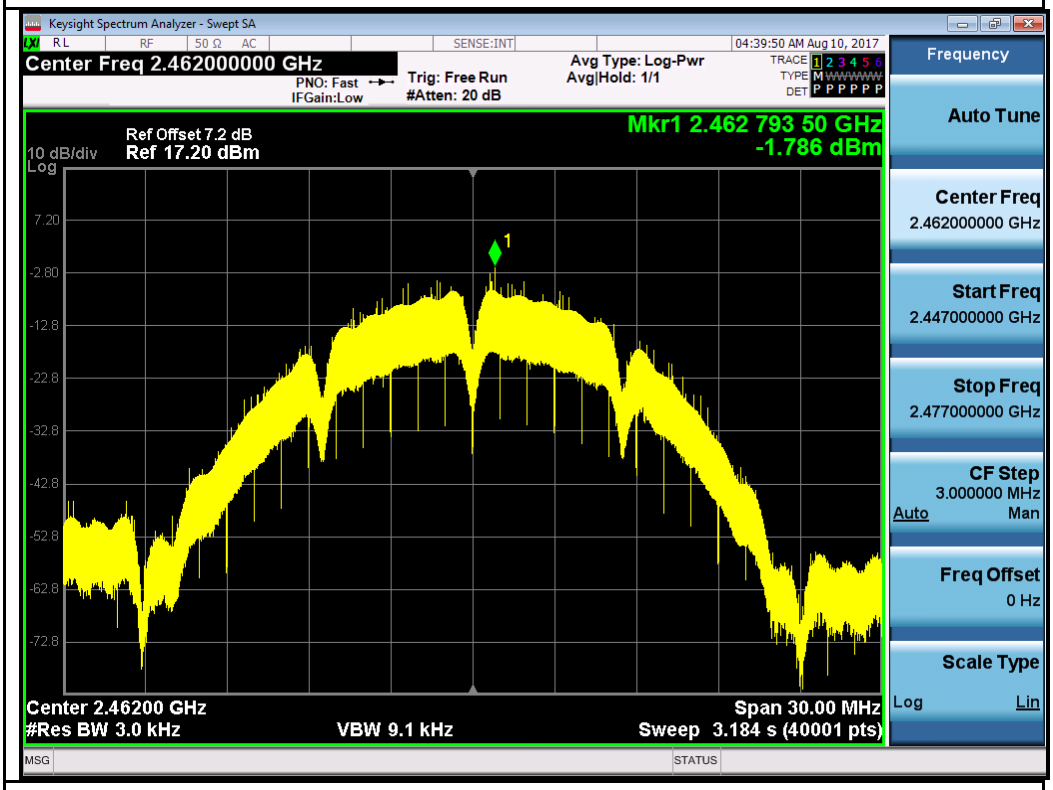

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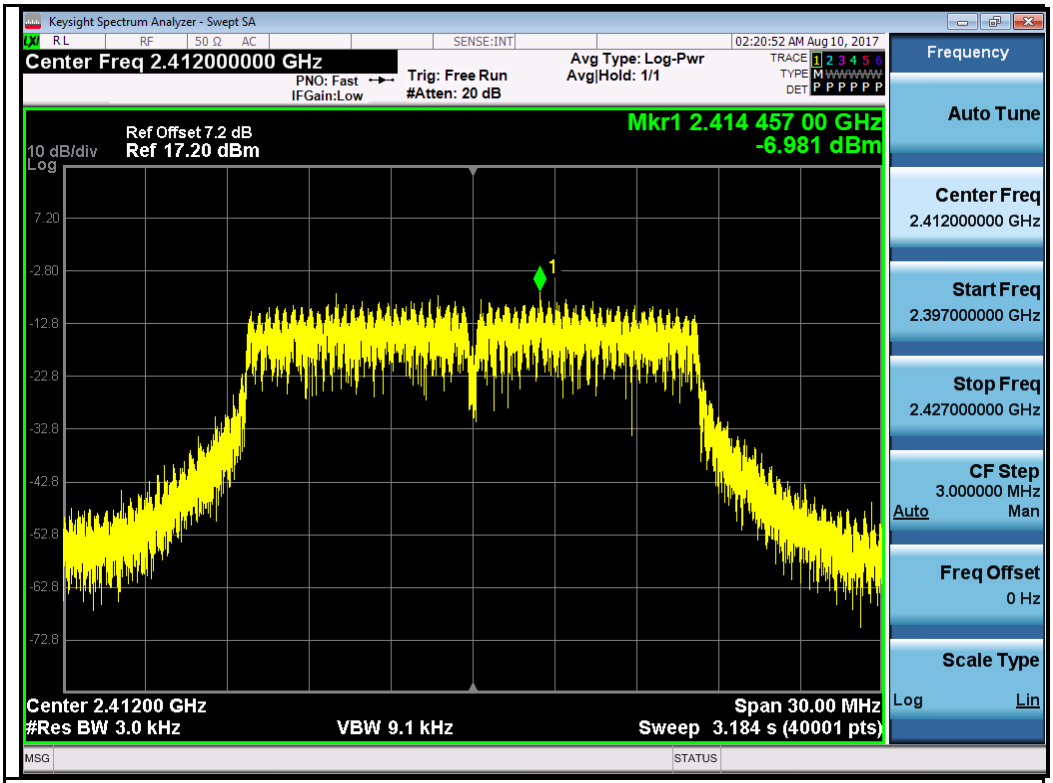

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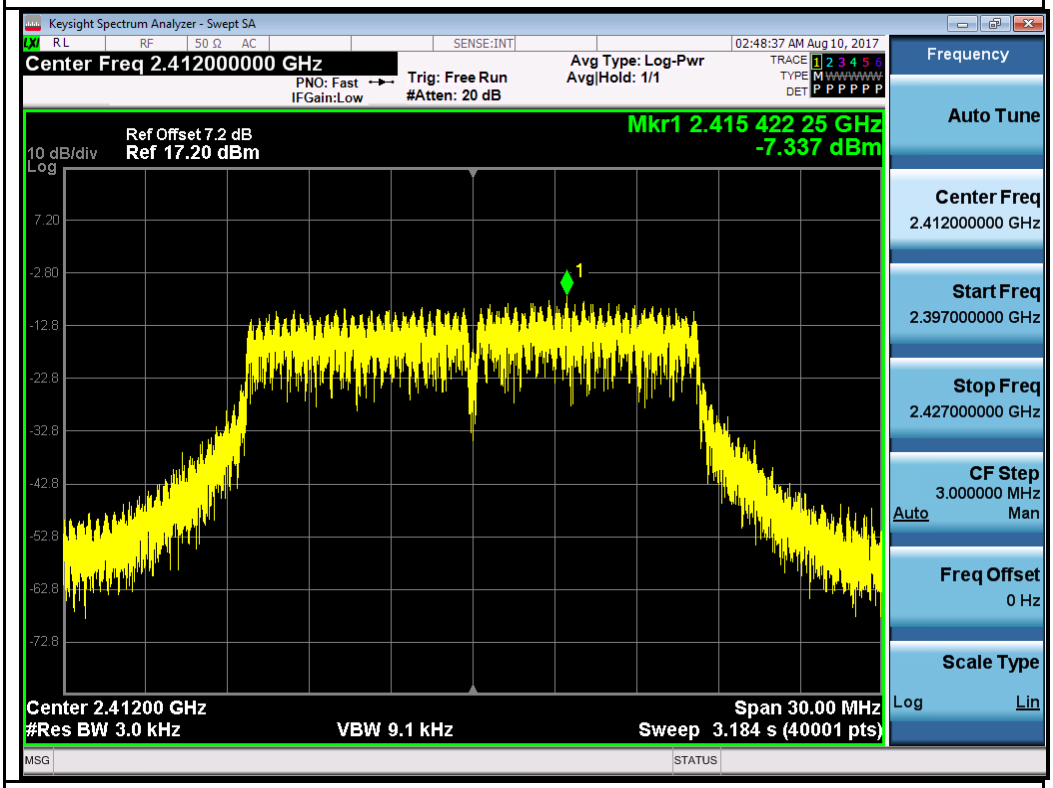

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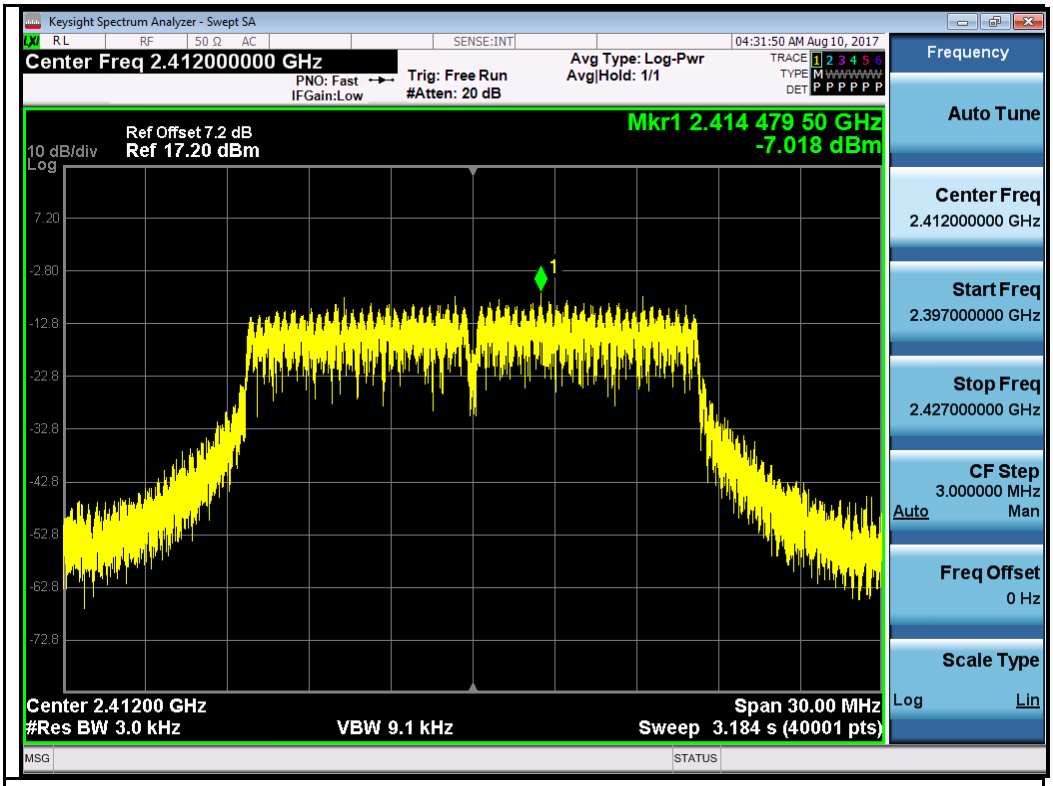

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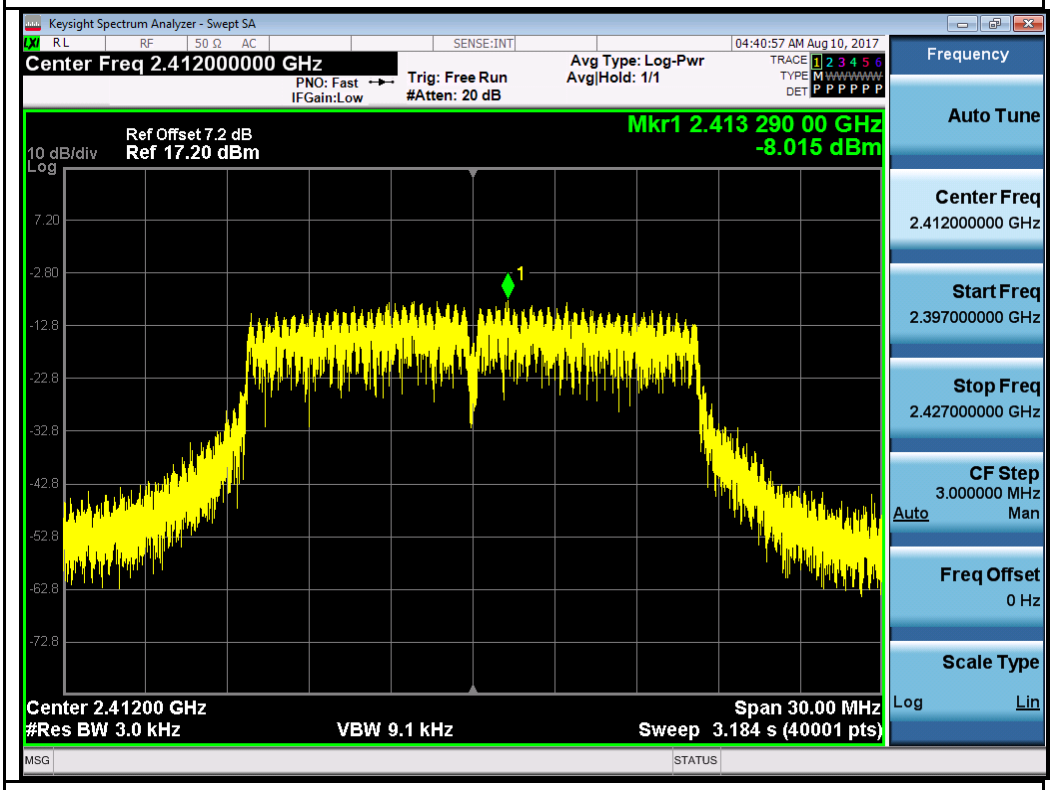

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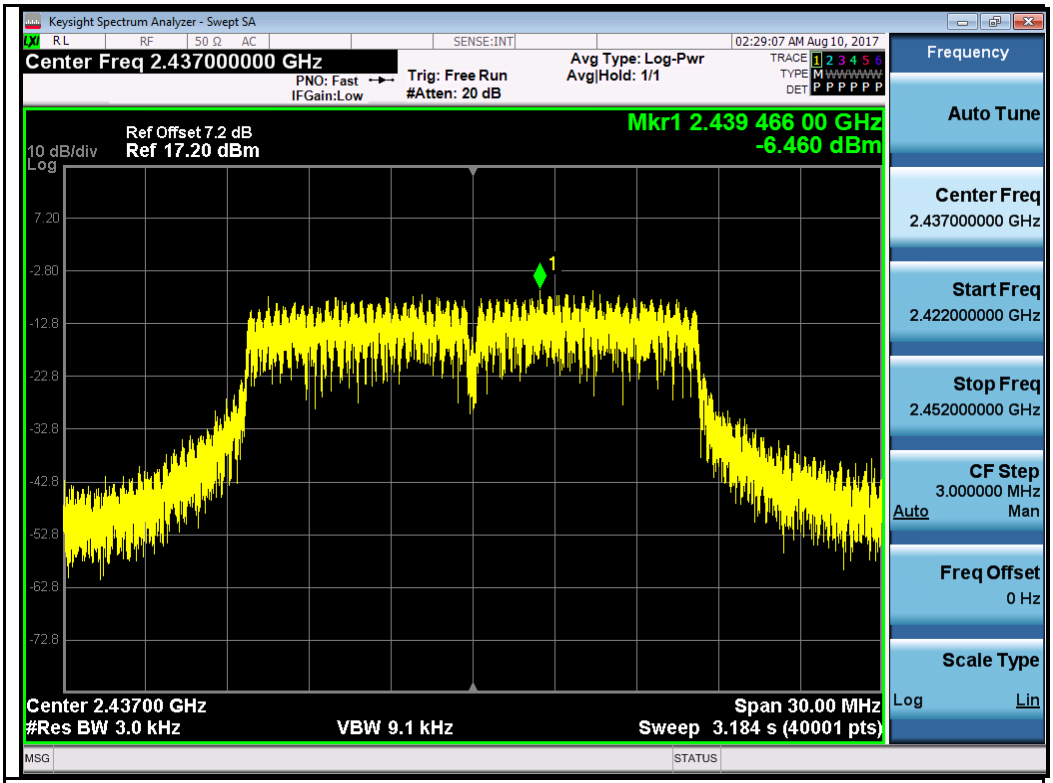

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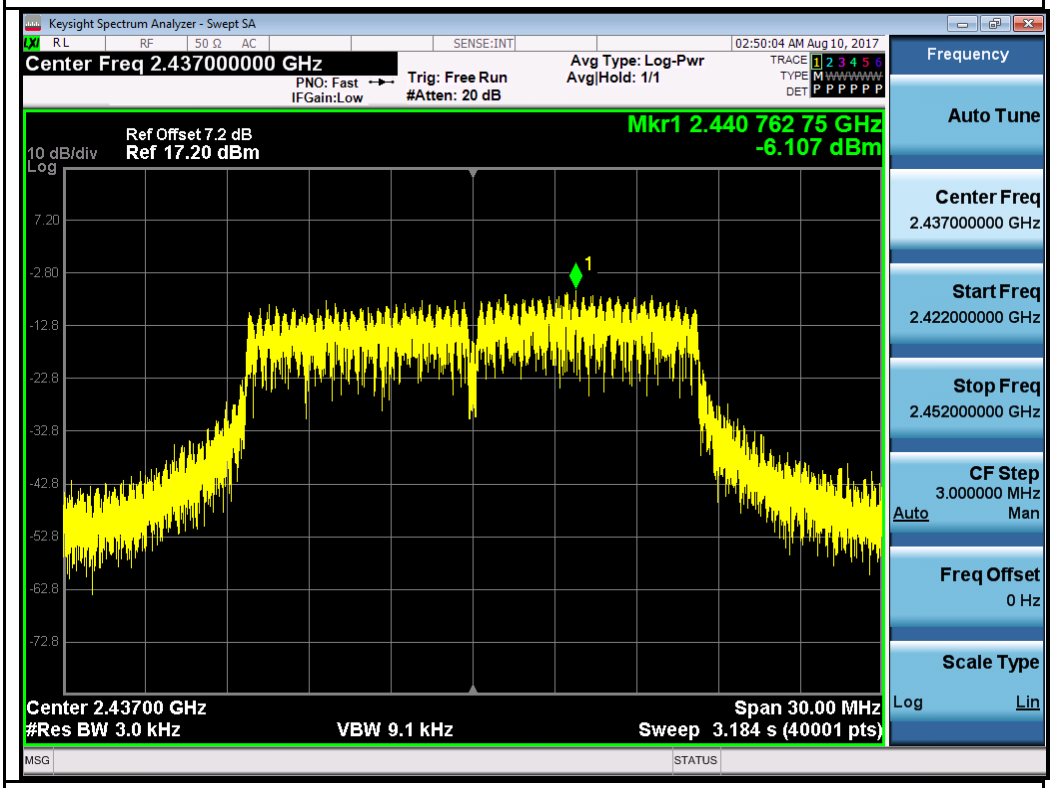
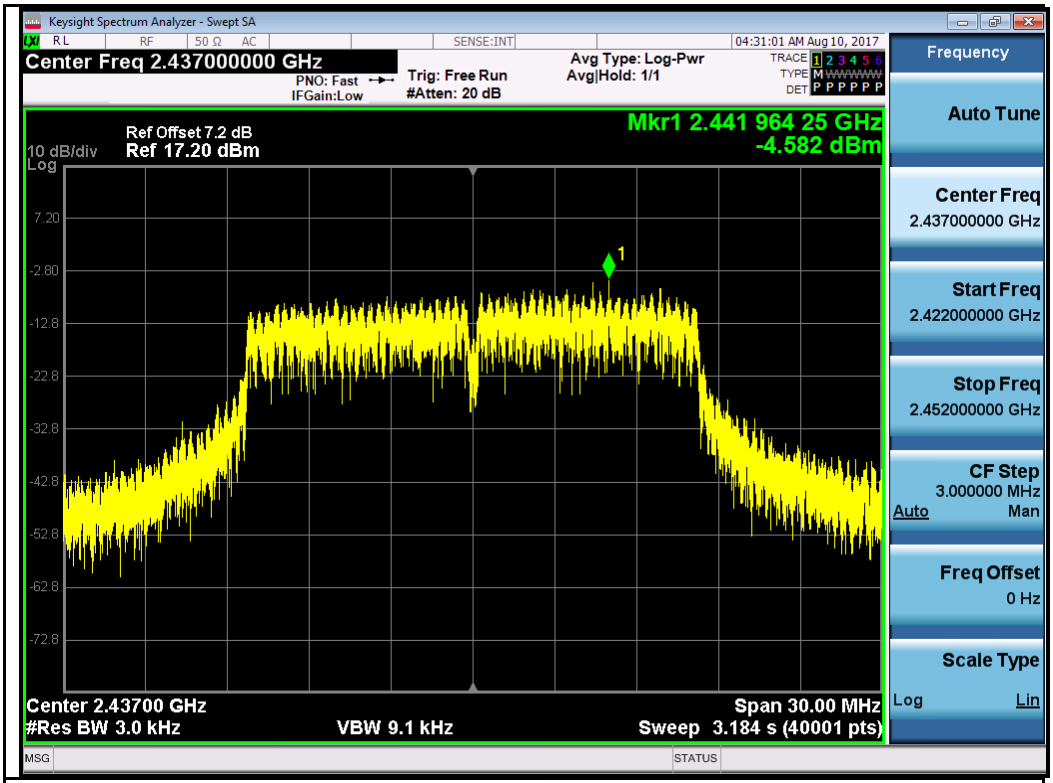


802.11g-2437MHz Chain 1



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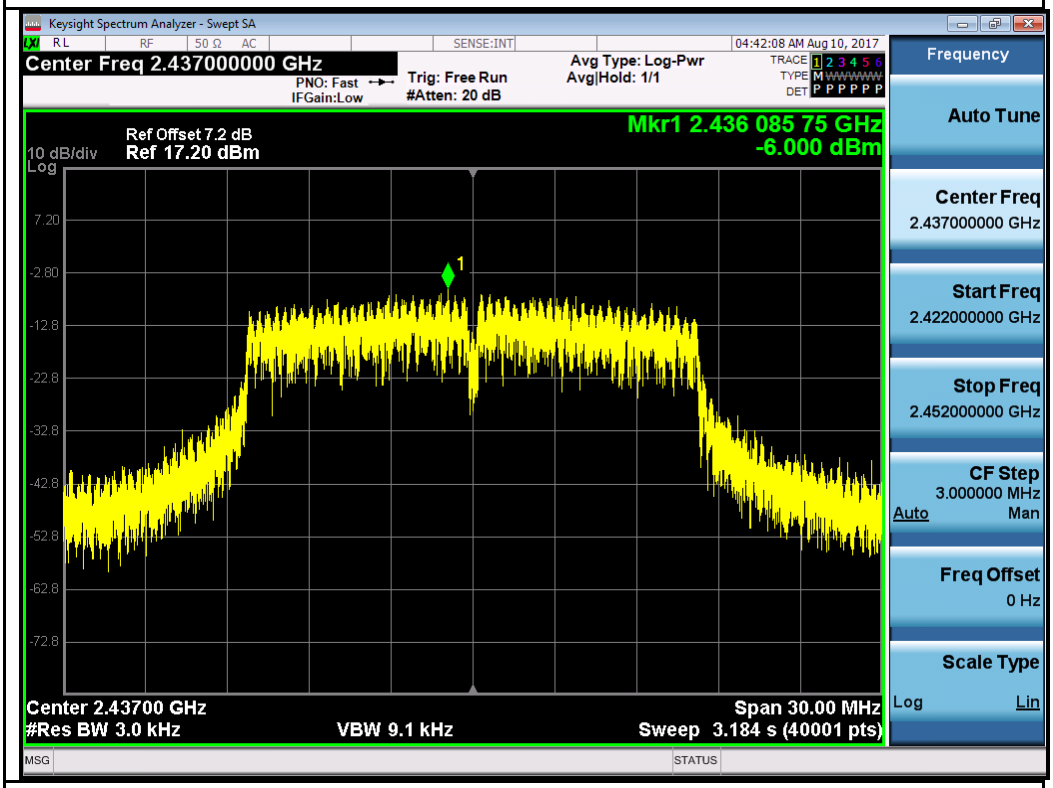

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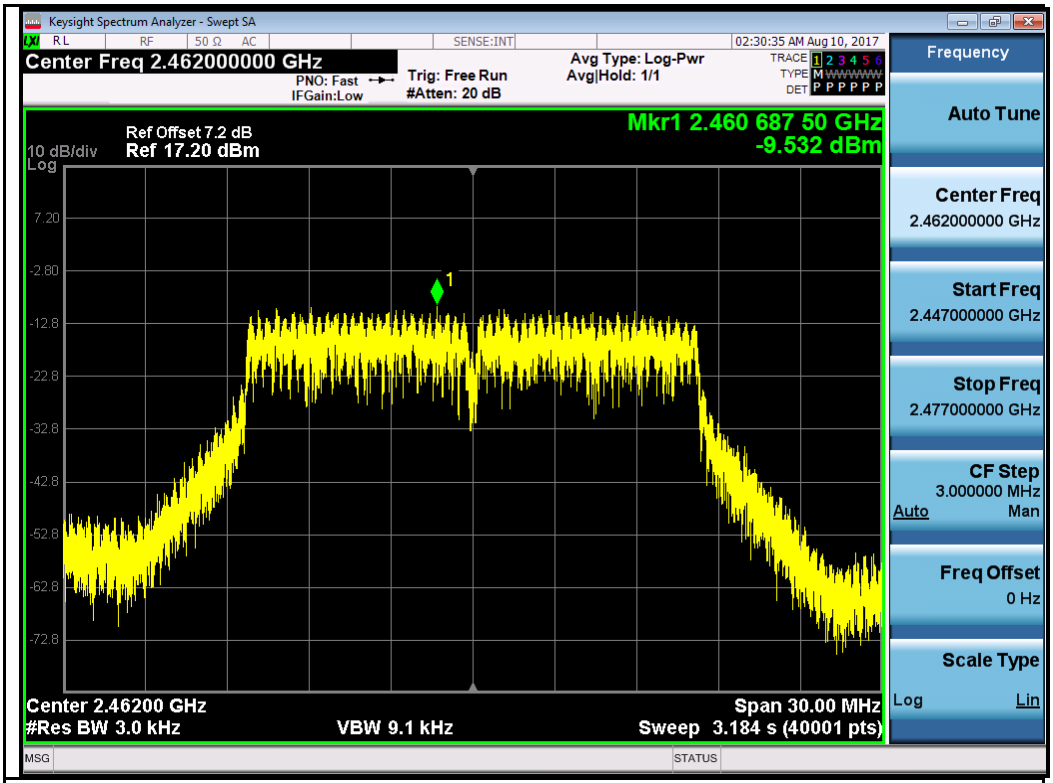

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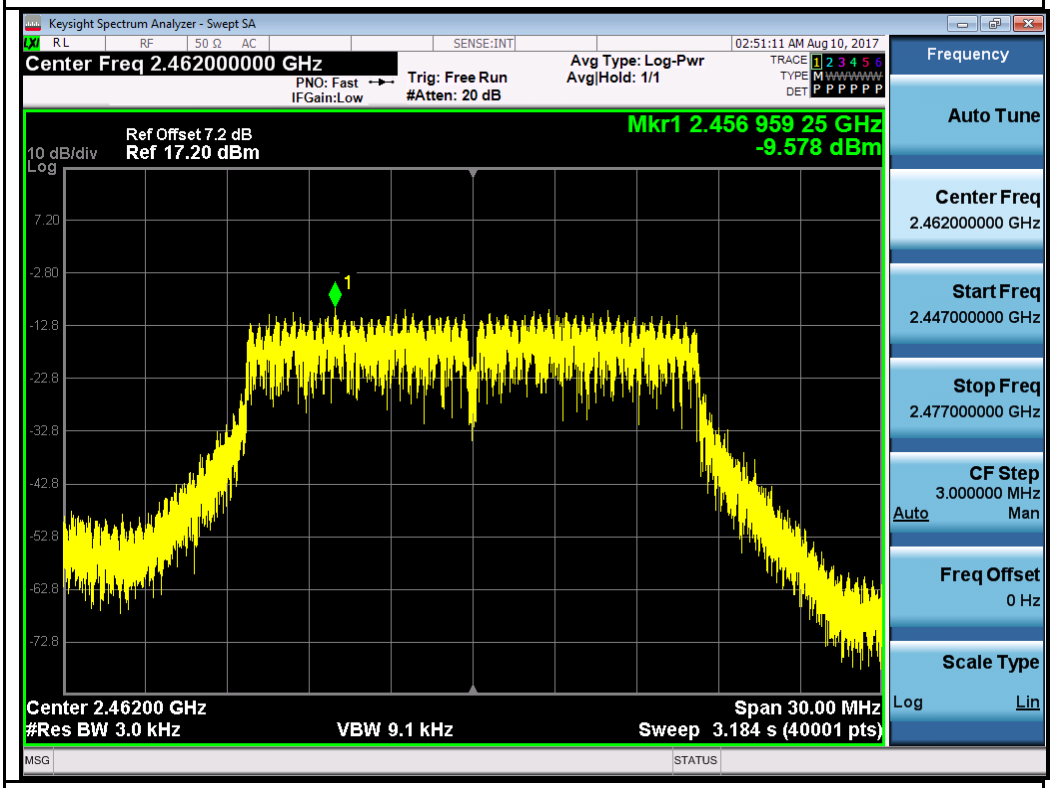

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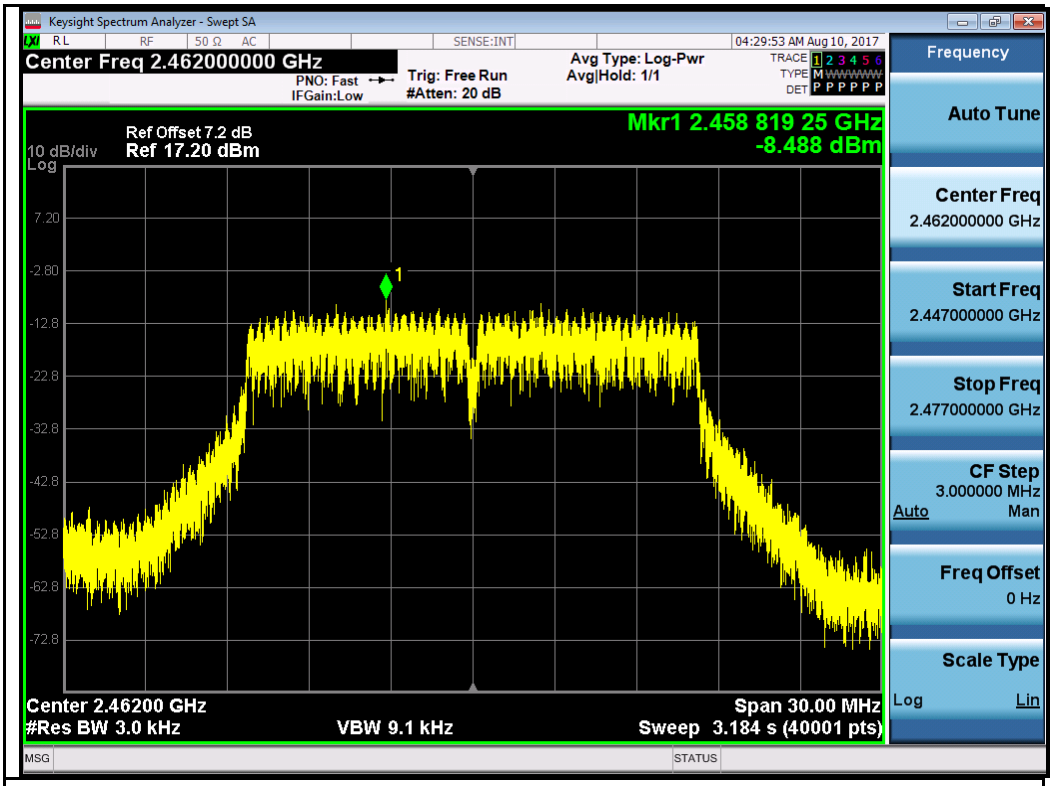
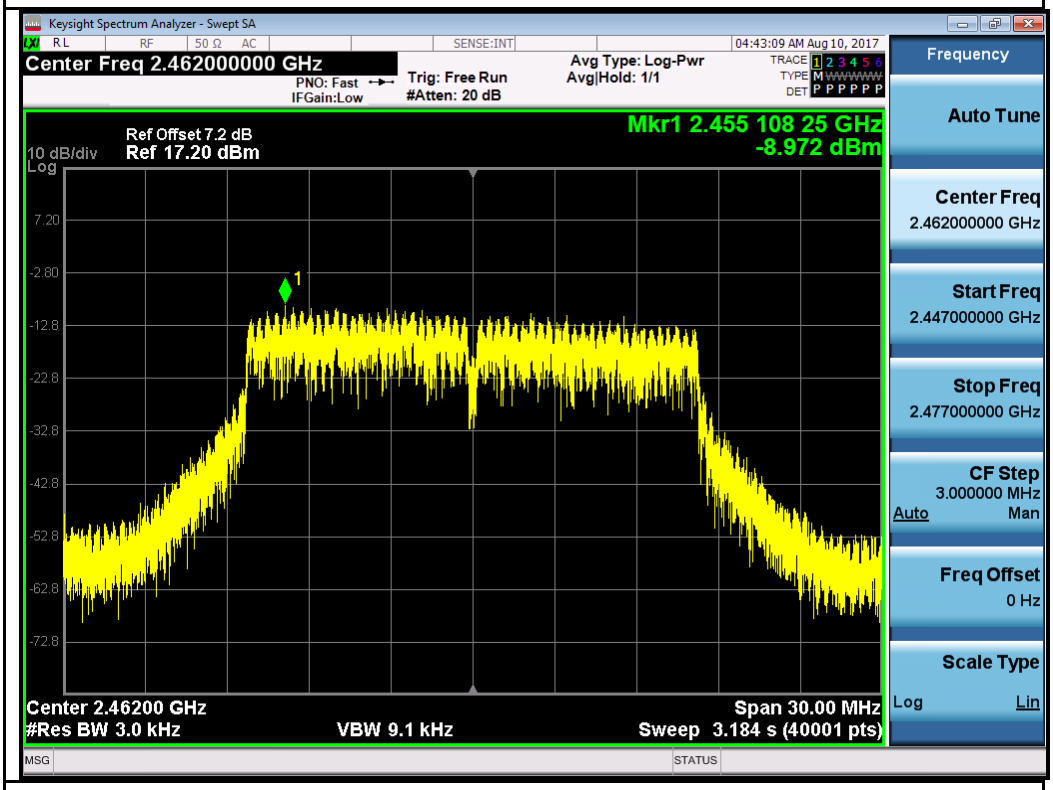
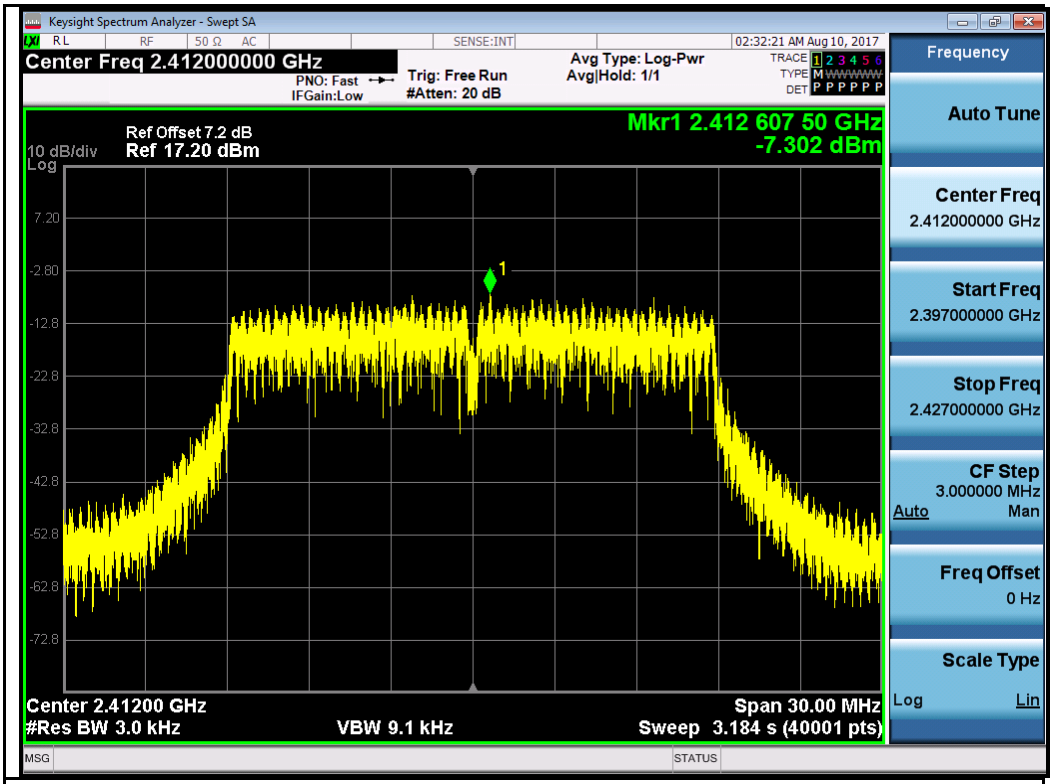


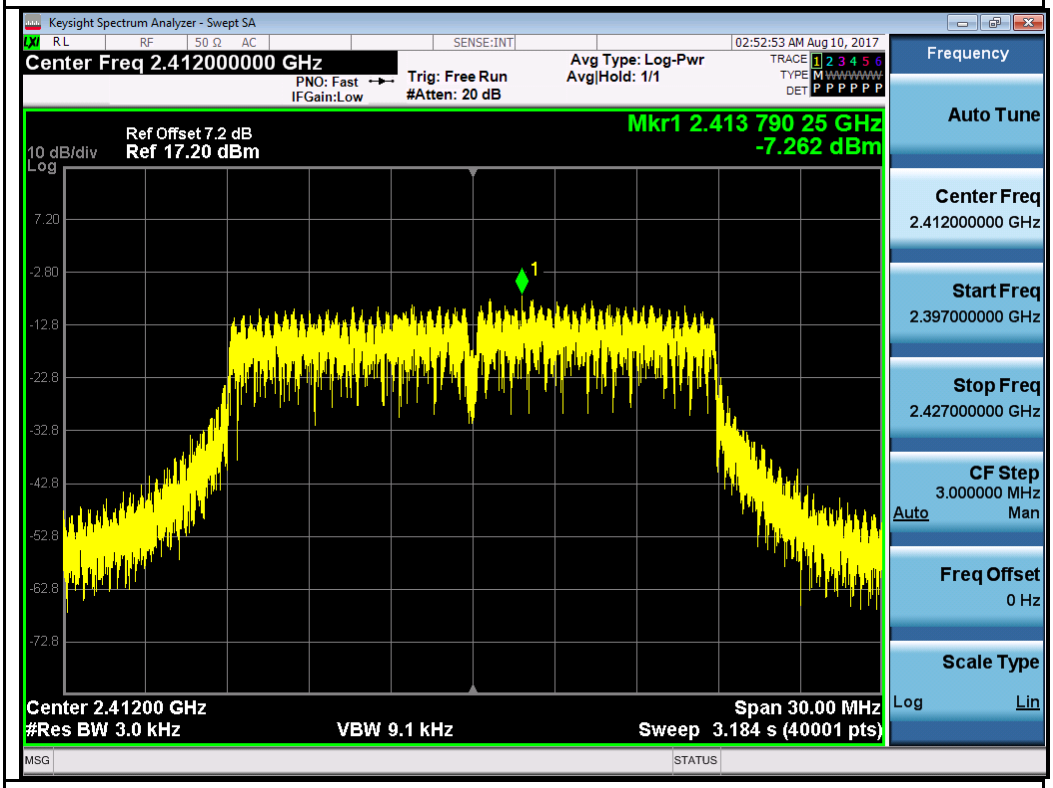
802.11g-2462MHz Chain 2



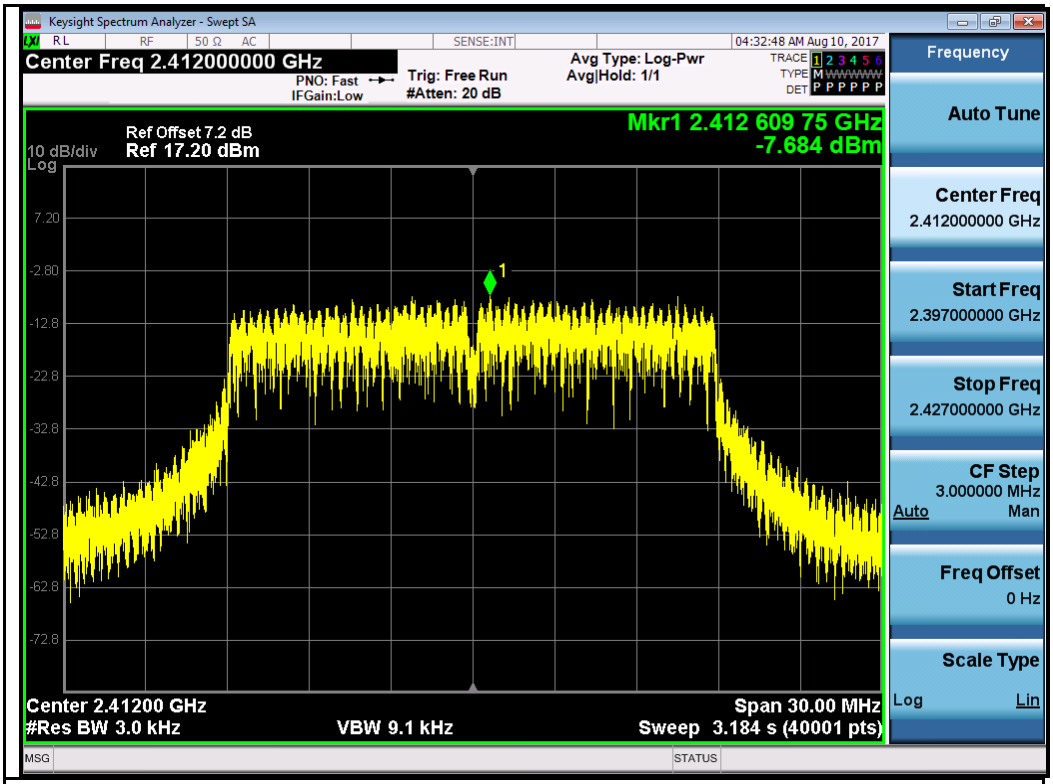
802.11g-2462MHz Chain 3



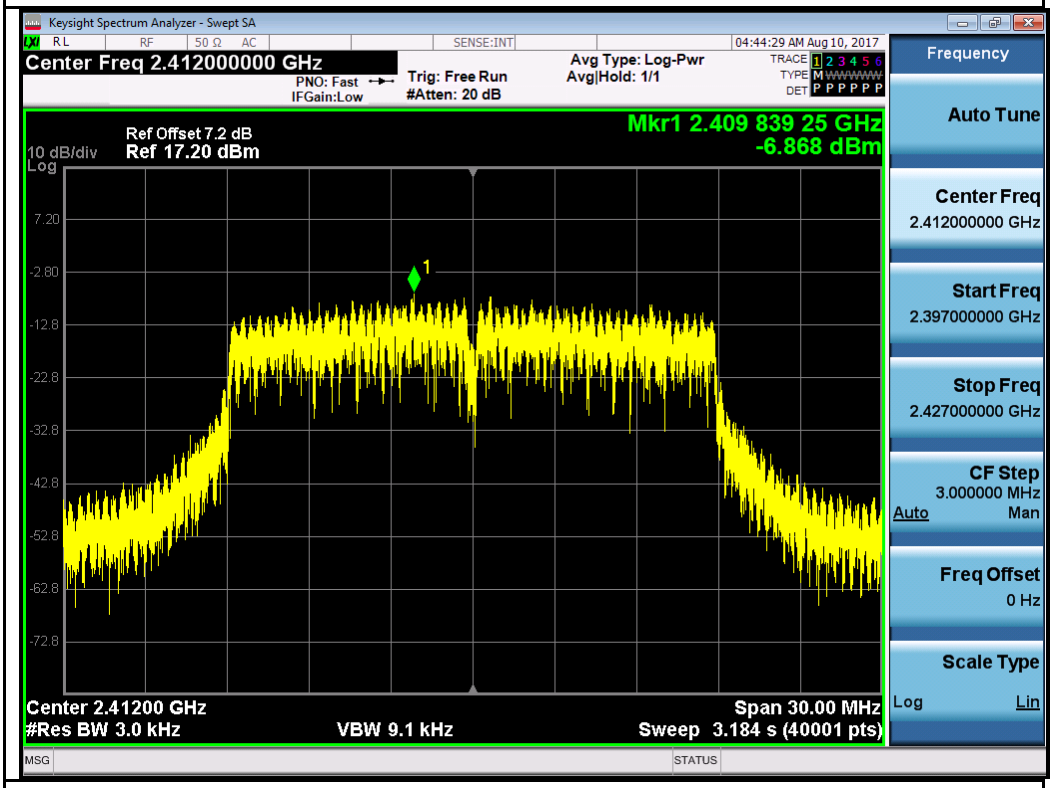
802.11n-HT20 2412MHz Chain 0



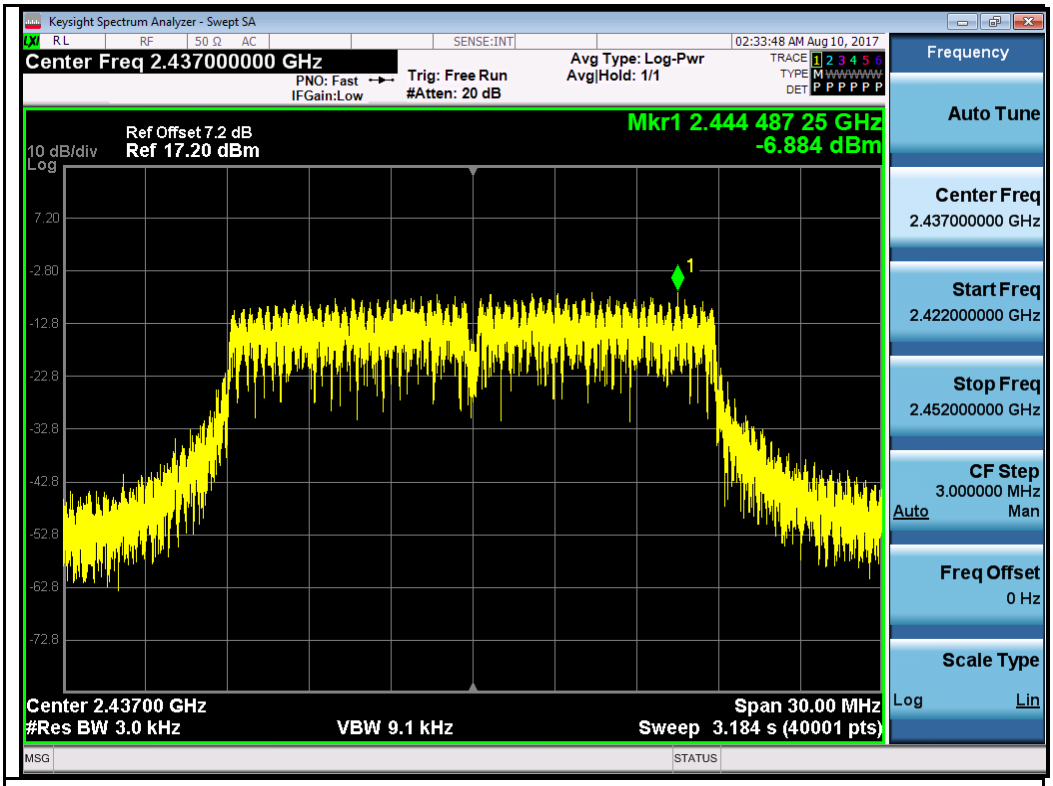
802.11n-HT20 2412MHz Chain 1



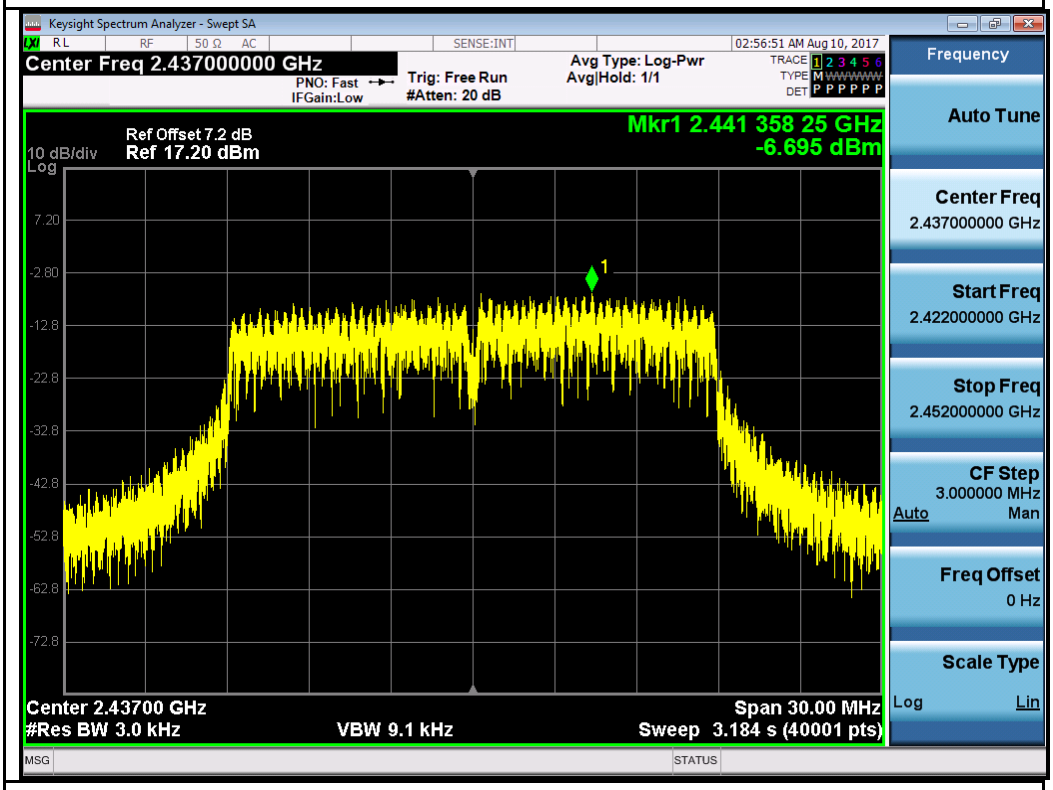
802.11n-HT20 2412MHz Chain 2



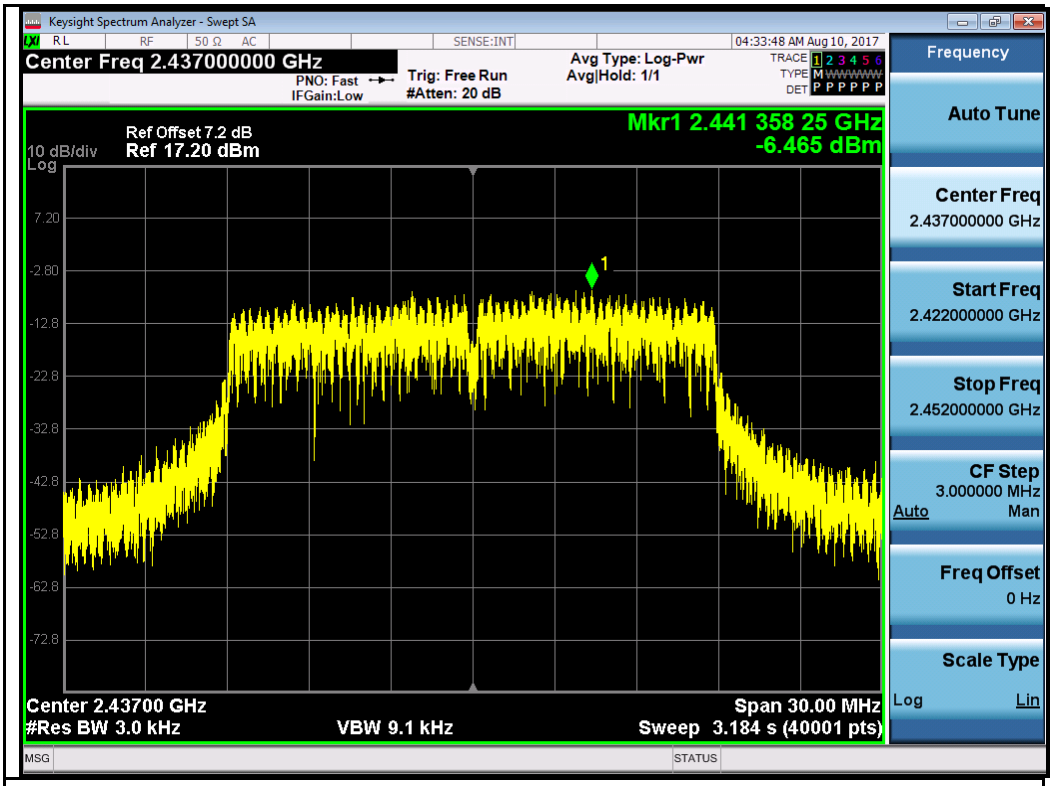
802.11n-HT20 2412MHz Chain 3



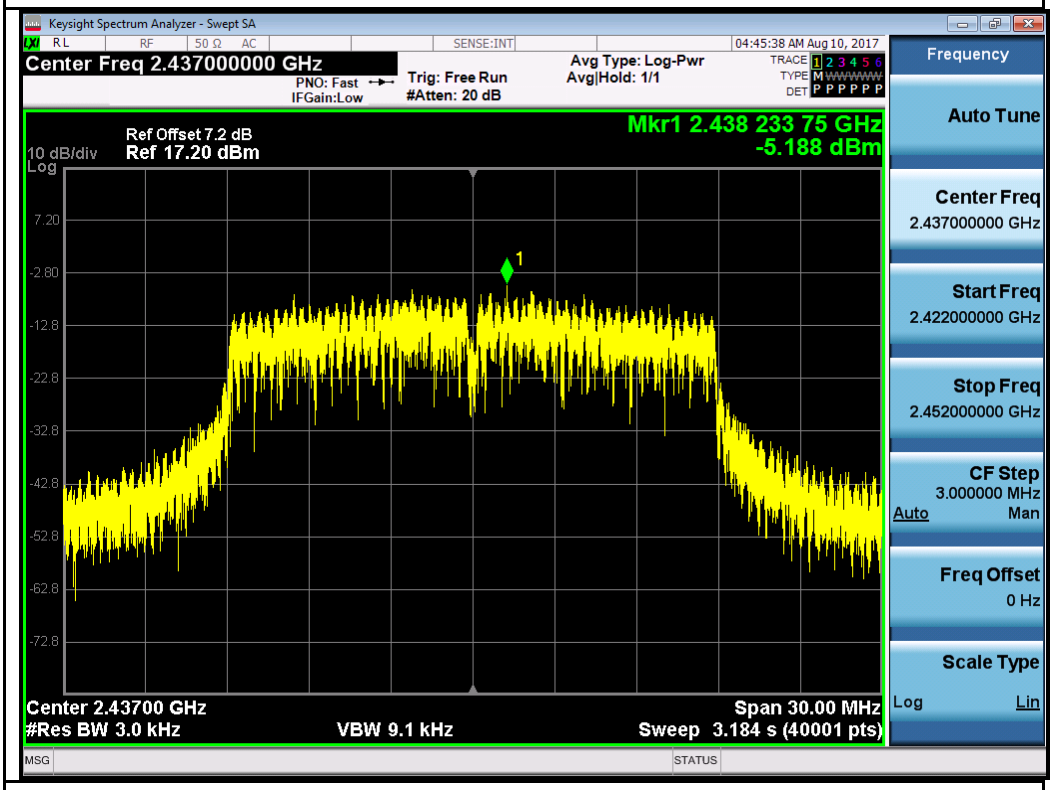
802.11n-HT20 2437MHz Chain 0



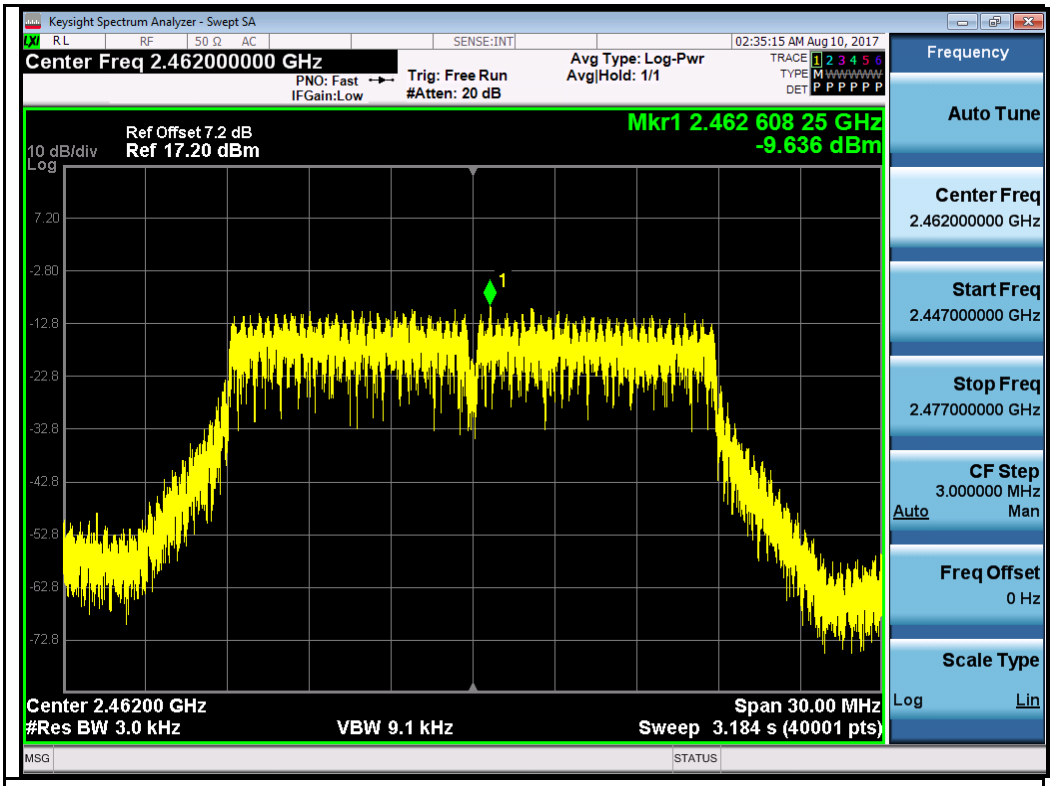
802.11n-HT20 2437MHz Chain 1



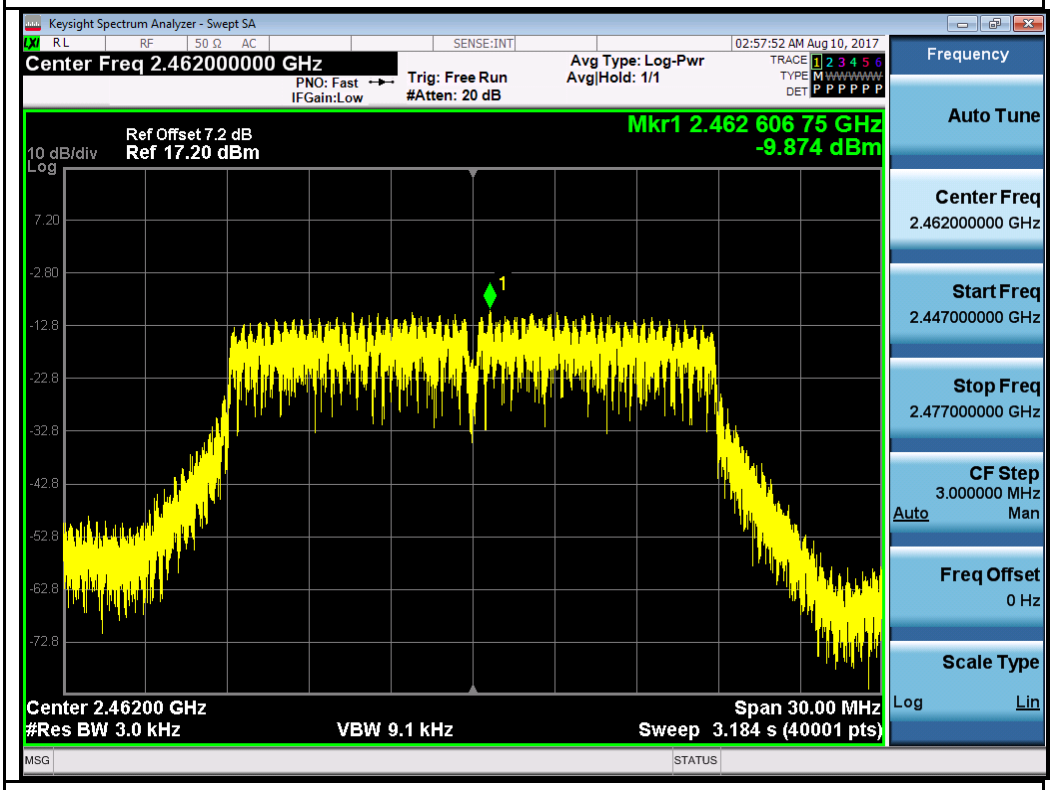
802.11n-HT20 2437MHz Chain 2



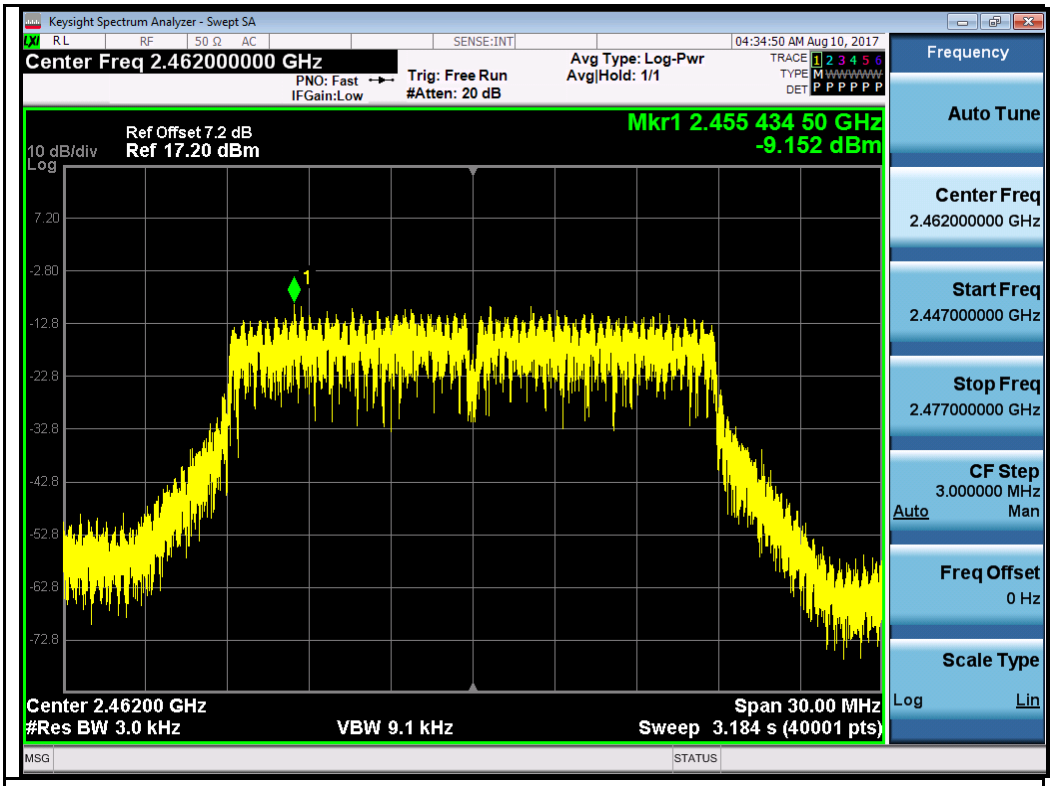
802.11n-HT20 2437MHz Chain 3



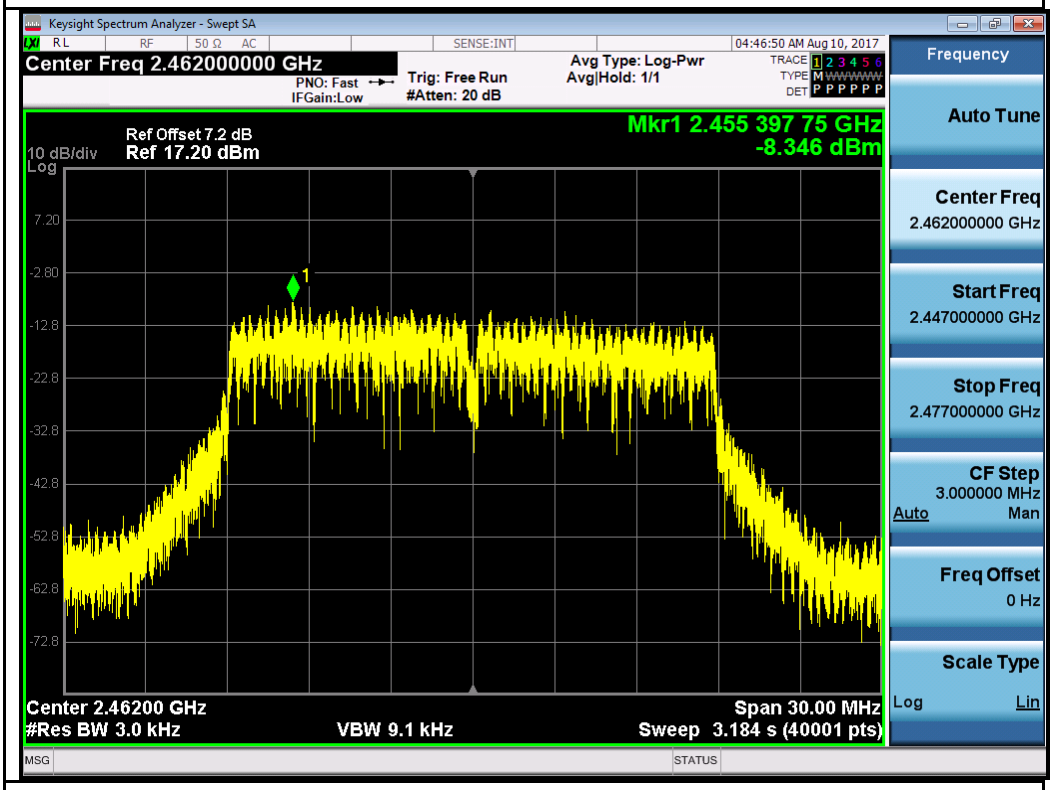
802.11n-HT20 2462MHz Chain 0



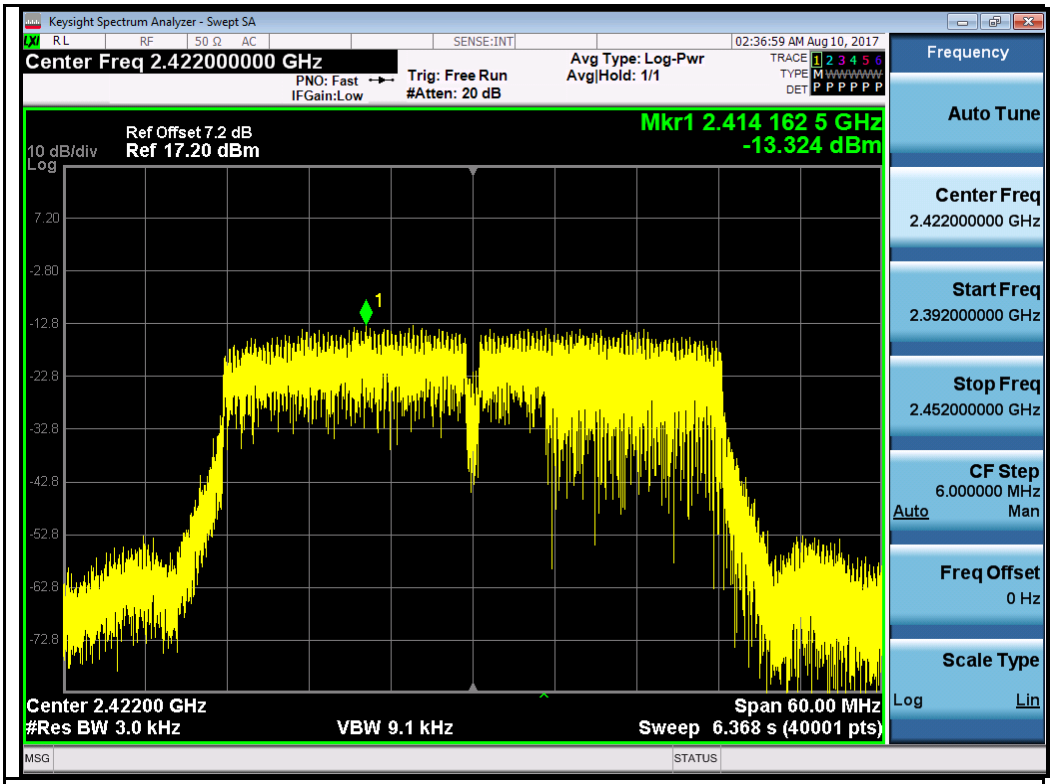
802.11n-HT20 2462MHz Chain 1



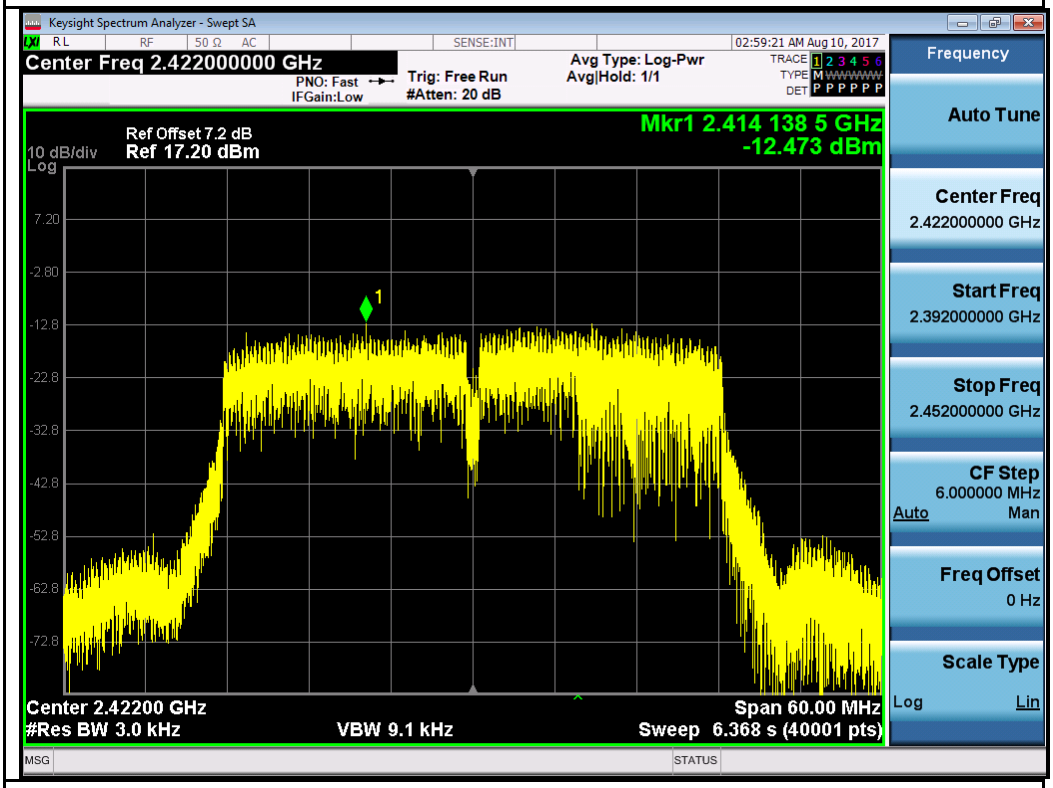
802.11n-HT20 2462MHz Chain 2



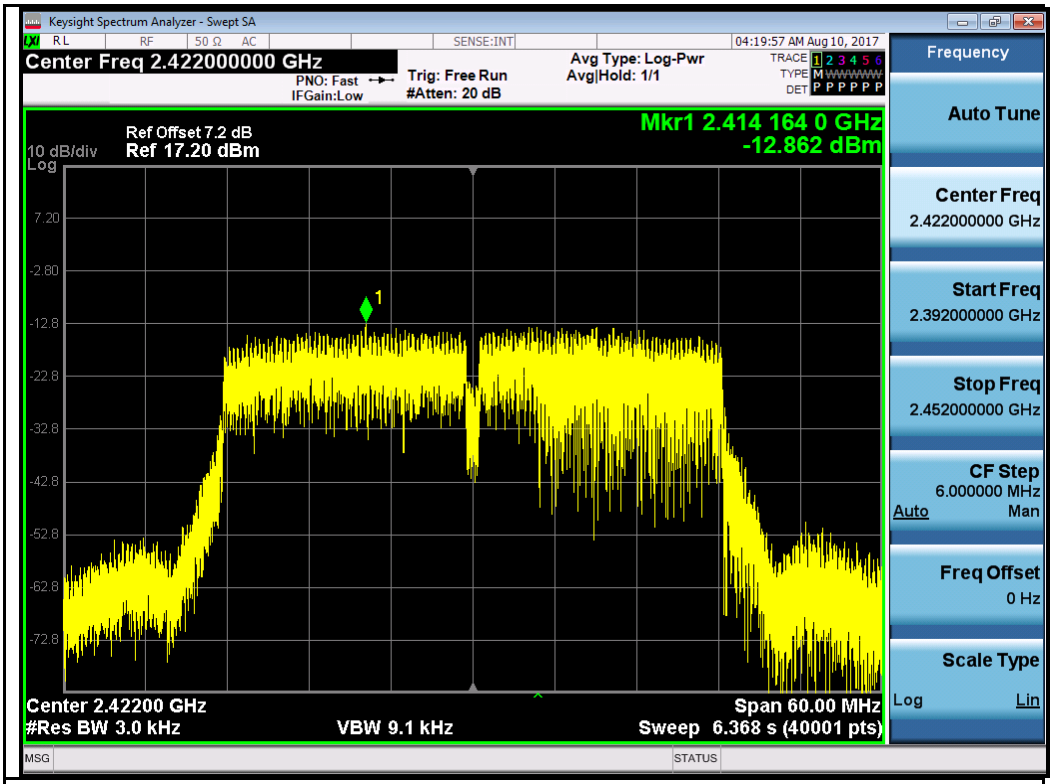
802.11n-HT20 2462MHz Chain 3



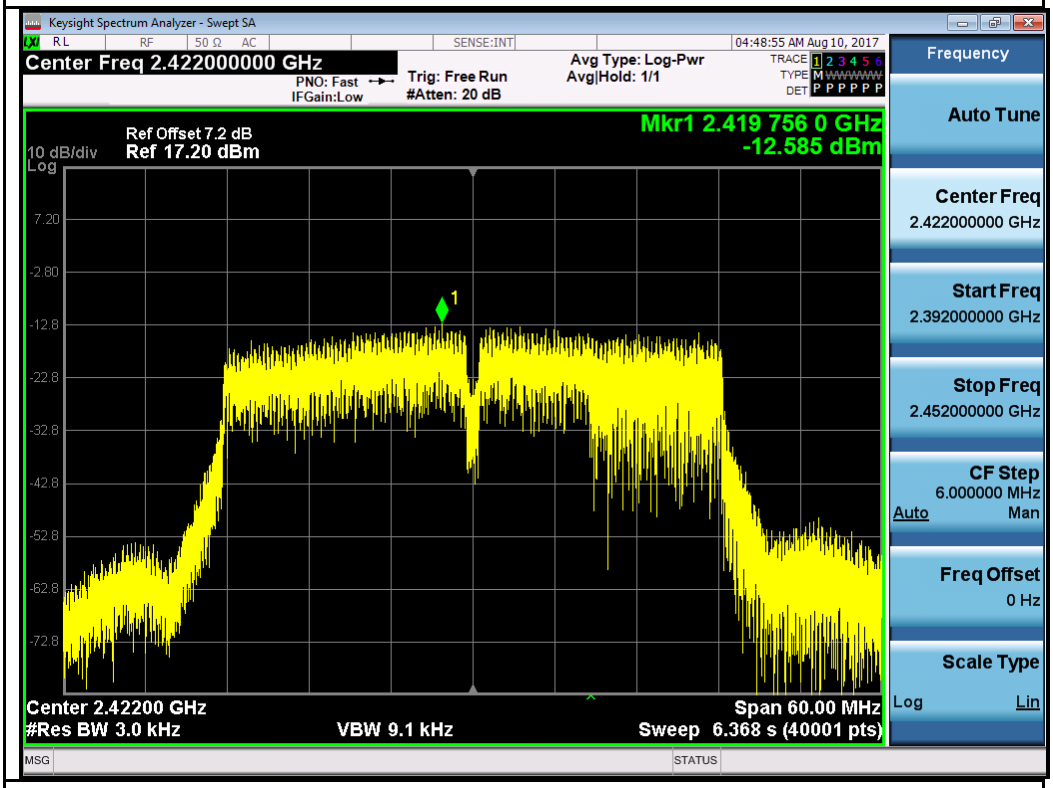
802.11n-HT40 2422MHz Chain 0



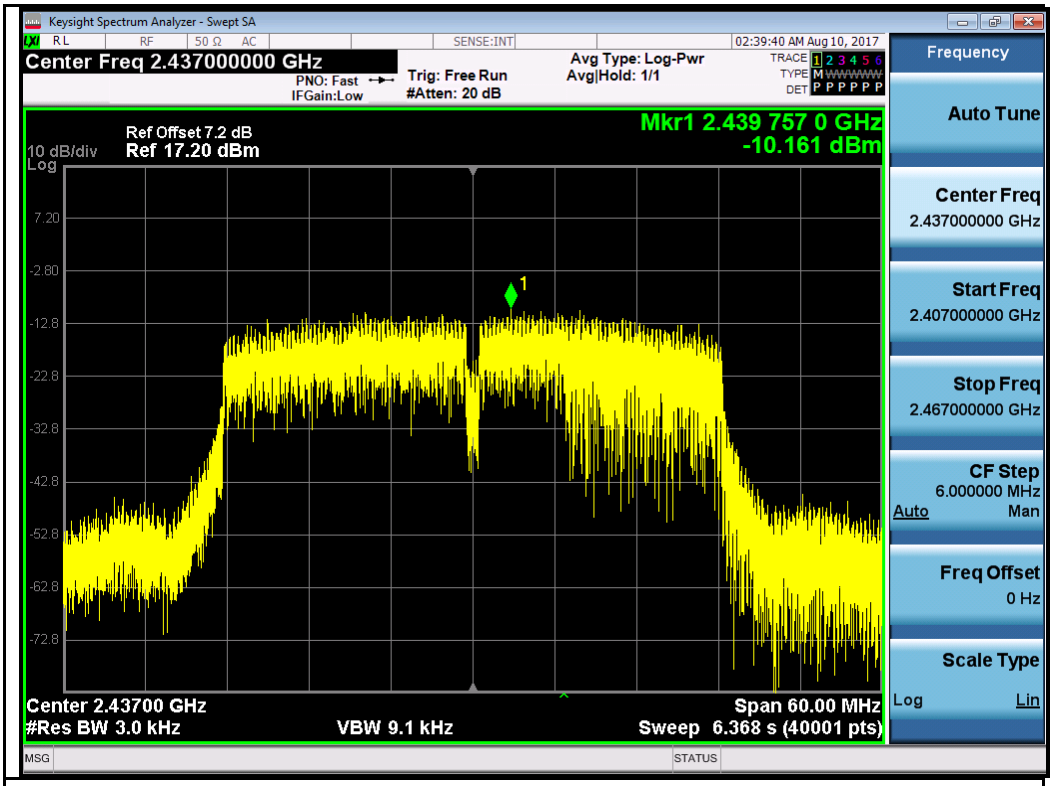
802.11n-HT40 2422MHz Chain 1



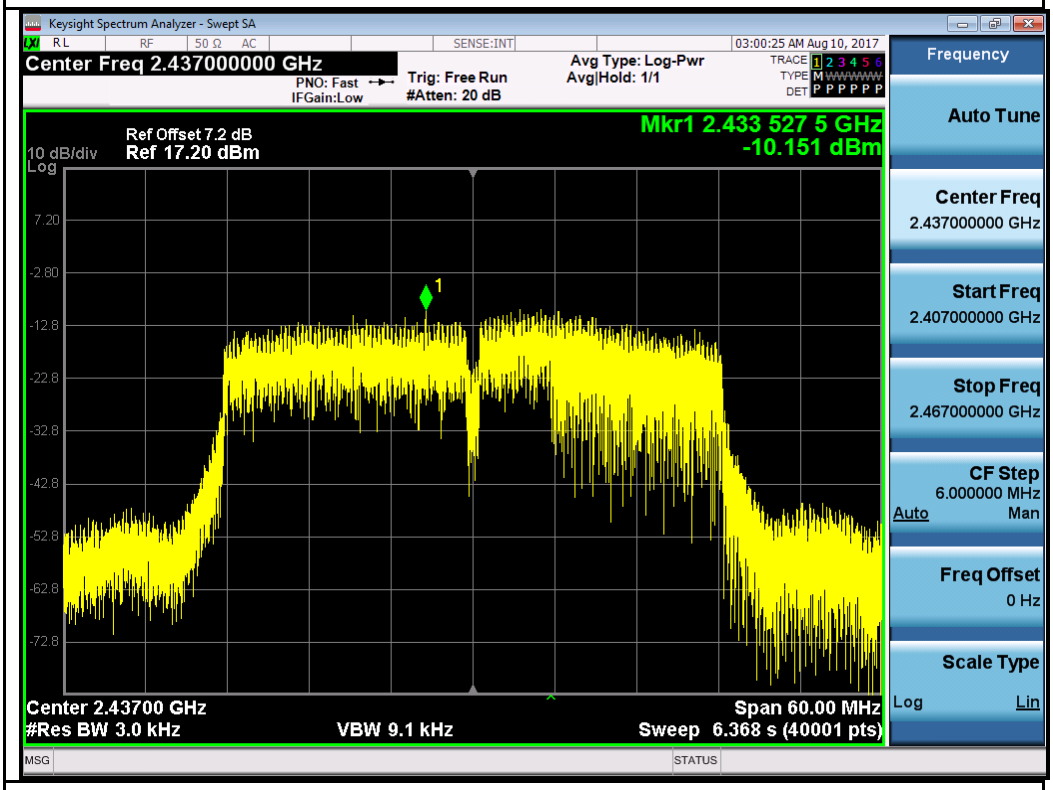
802.11n-HT40 2422MHz Chain 2



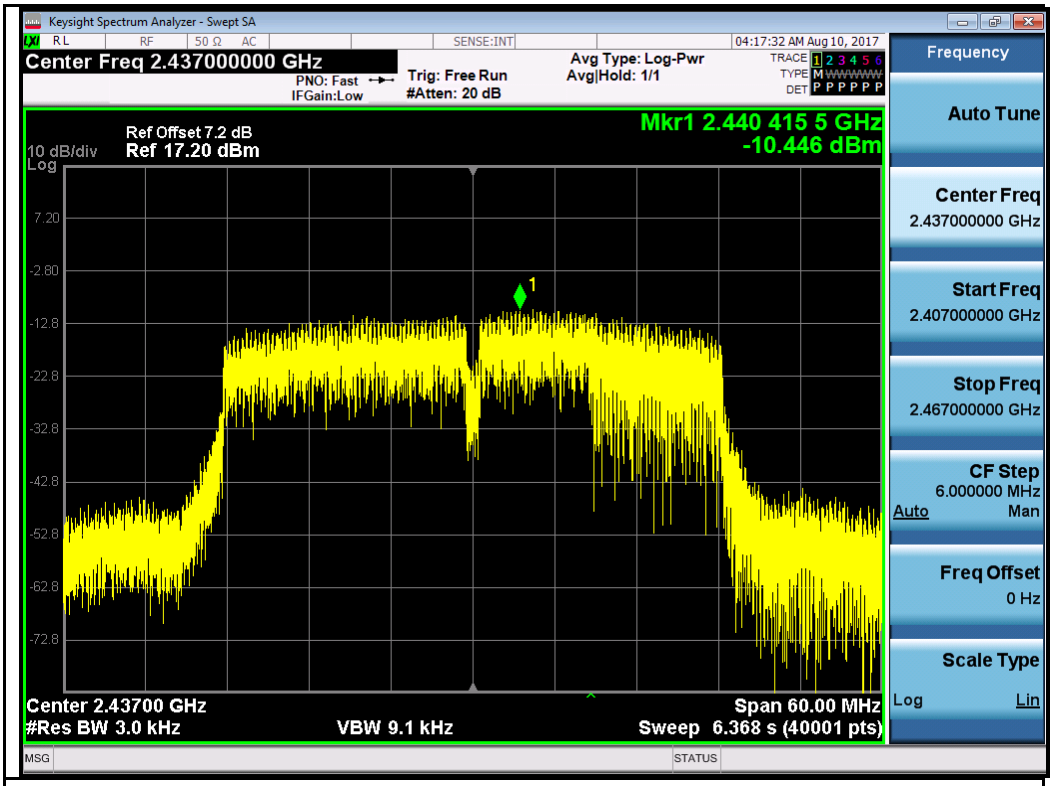
802.11n-HT40 2422MHz Chain 3



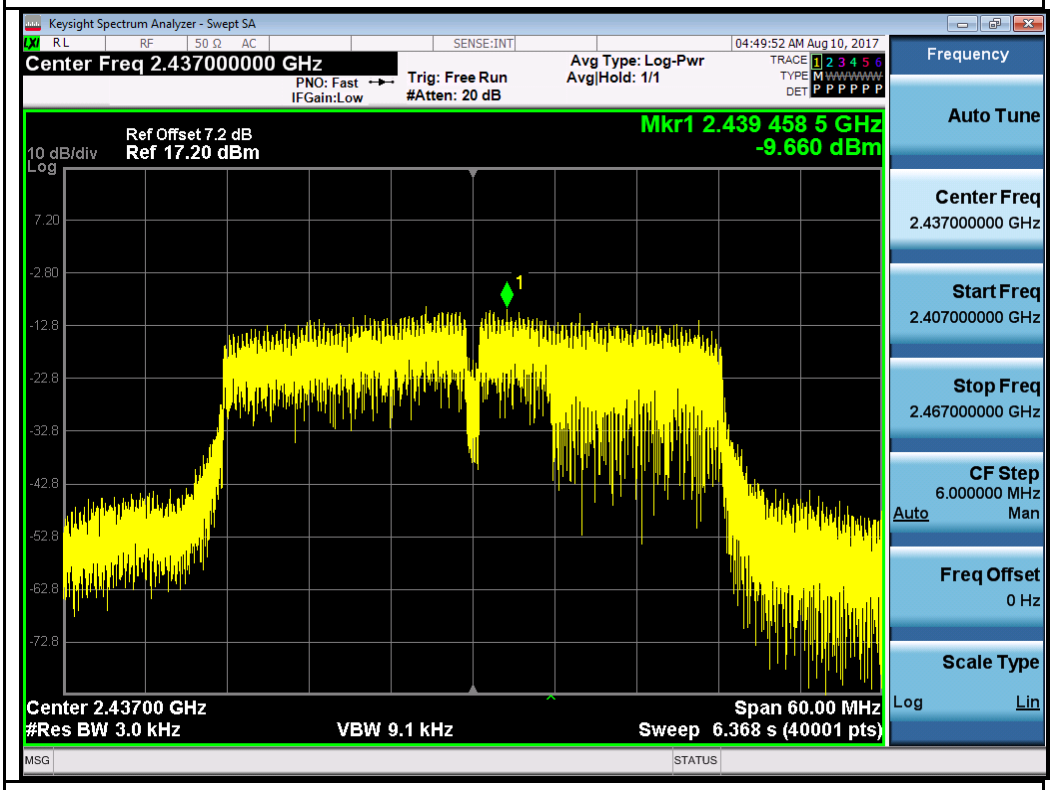
802.11n-HT40 2437MHz Chain 0



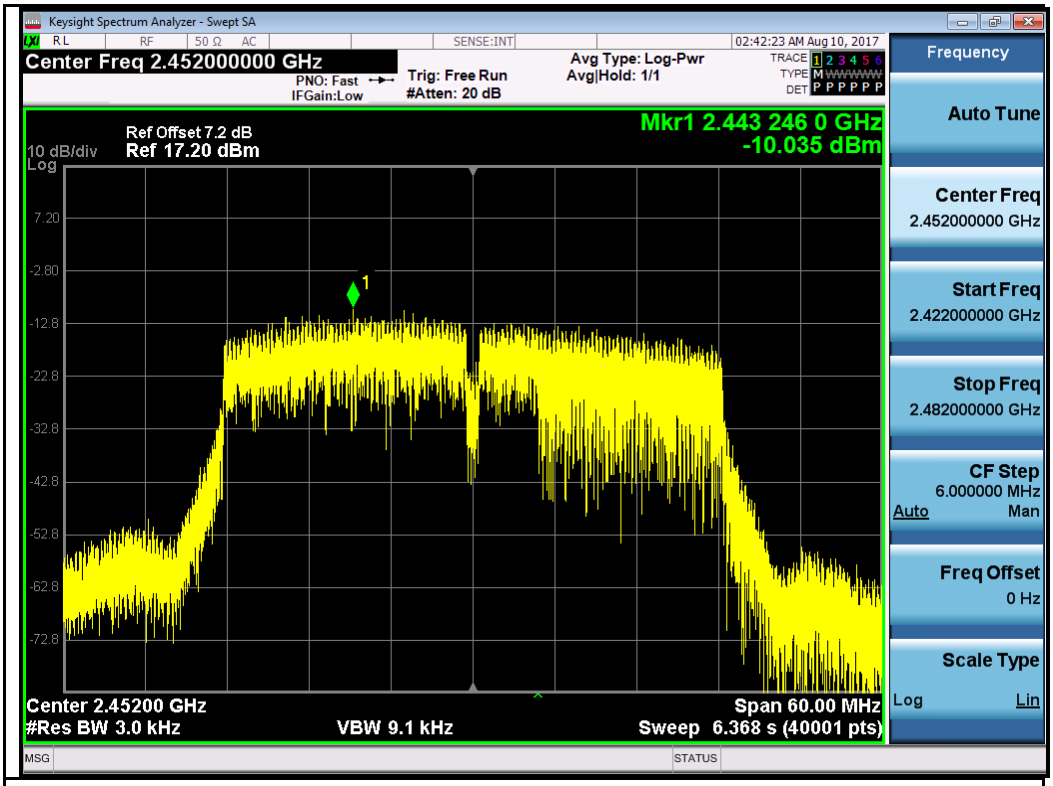
802.11n-HT40 2437MHz Chain 1



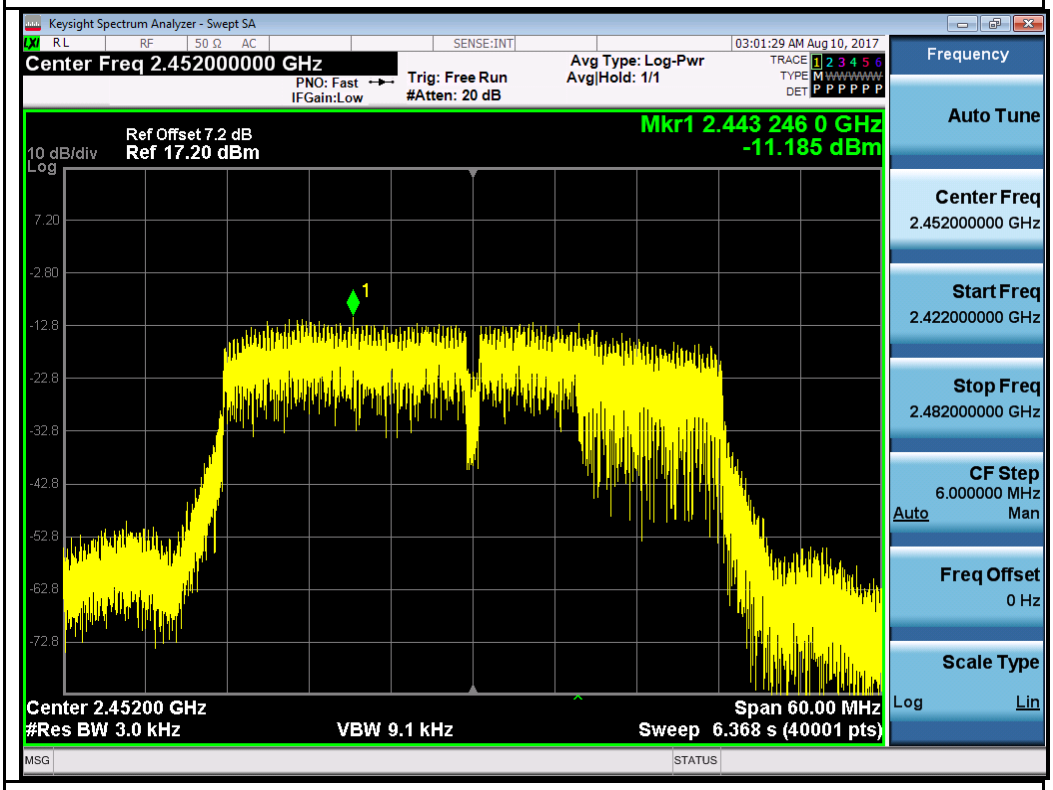
802.11n-HT40 2437MHz Chain 2



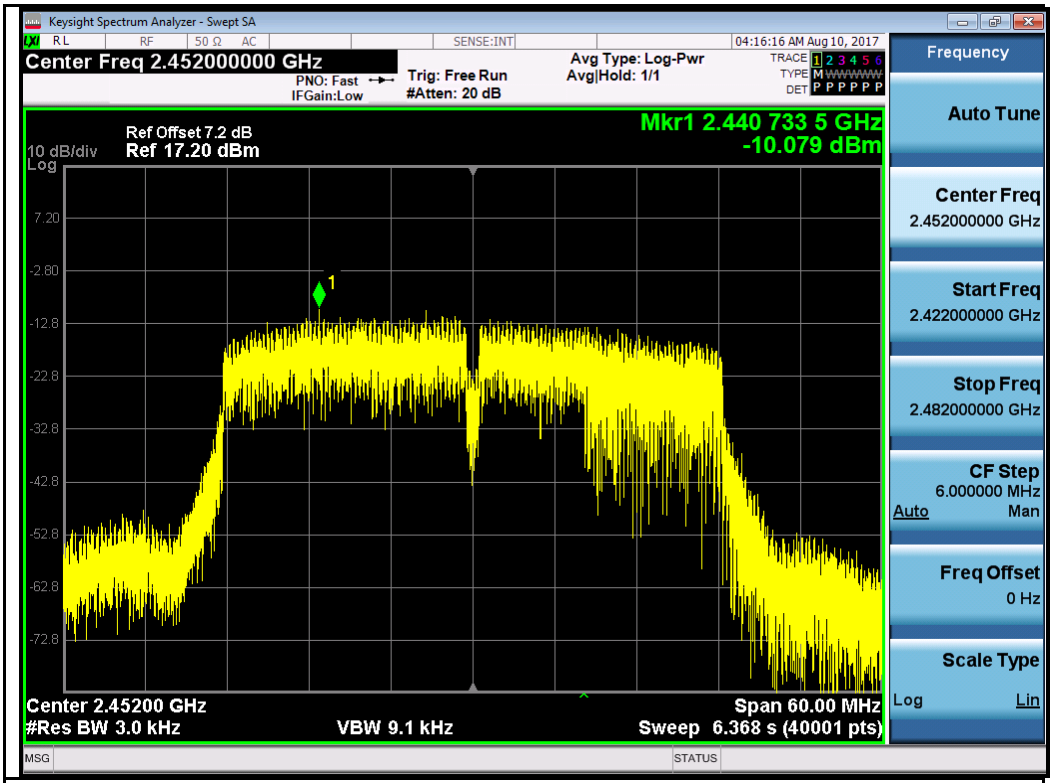
802.11n-HT40 2437MHz Chain 3



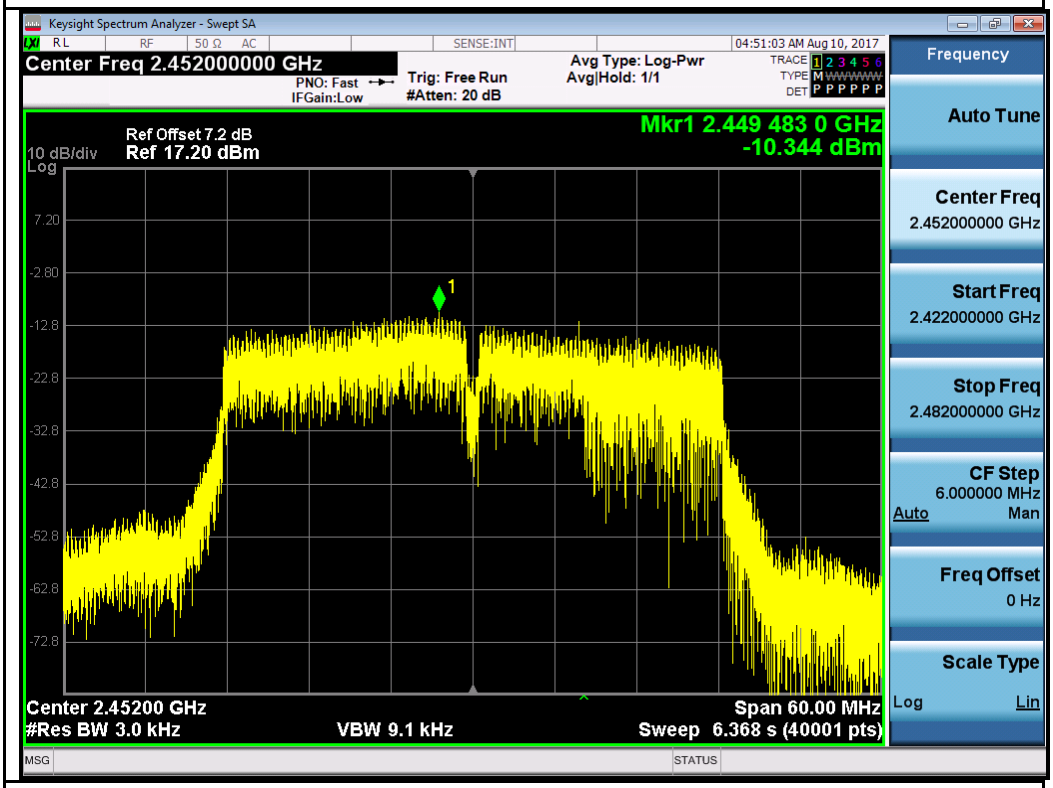
802.11n-HT40 2452MHz Chain 0



802.11n-HT40 2452MHz Chain 1



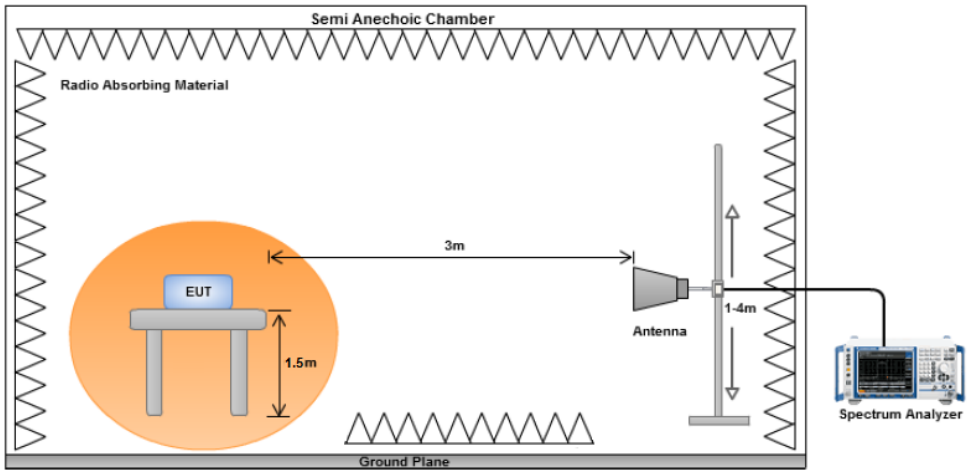
802.11n-HT40 2452MHz Chain 2



802.11n-HT40 2452MHz Chain 3

10.6 Radiated Spurious Emissions in restricted band

Requirement(s):

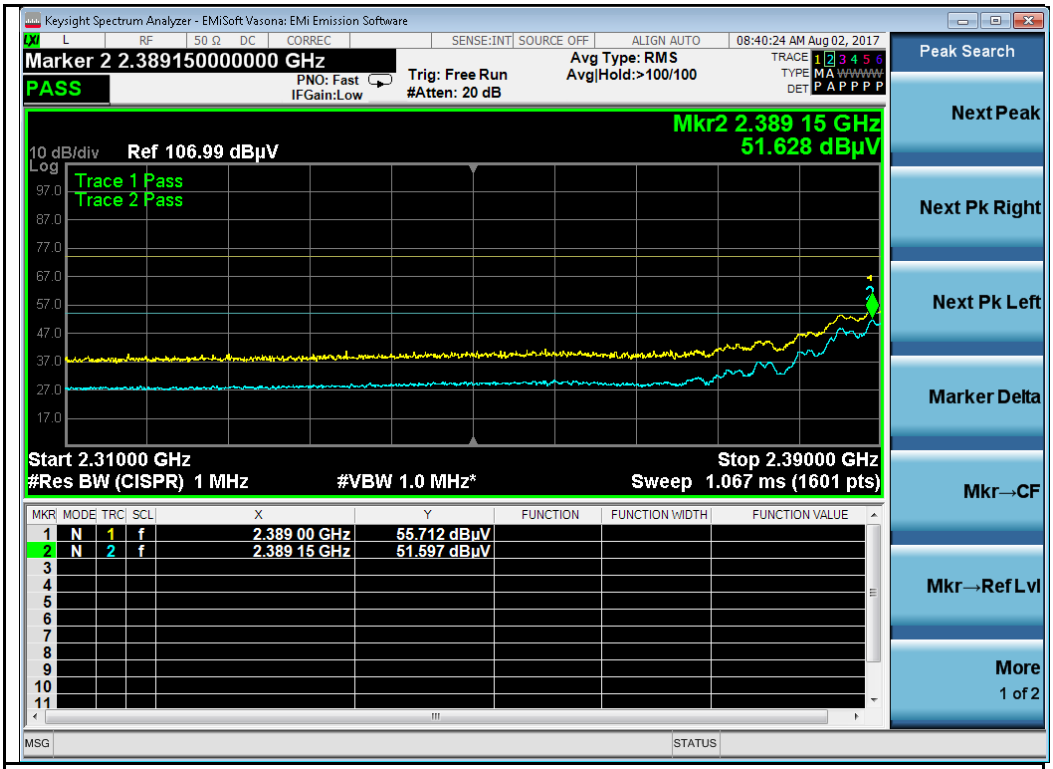
Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS247(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☐ 20 dB down ☒ 30 dB down	☒
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure		1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.	
Remark		The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. Radiated measurement was measured with antenna port terminated, there isn't outstanding emission found at the edge of restricted frequency, within x dB margin	
Result		☒ Pass ☐ Fail	

Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

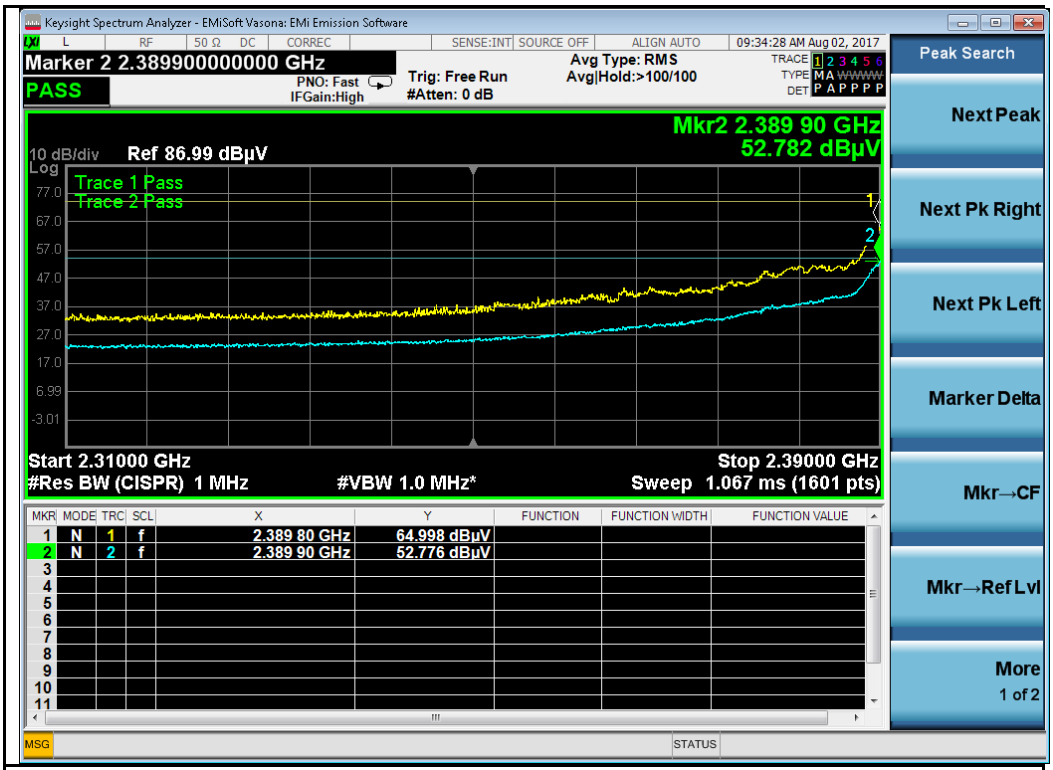
Test was done by Rachana Khanduri at 10m chamber.

Restricted Band Measurement Plots:



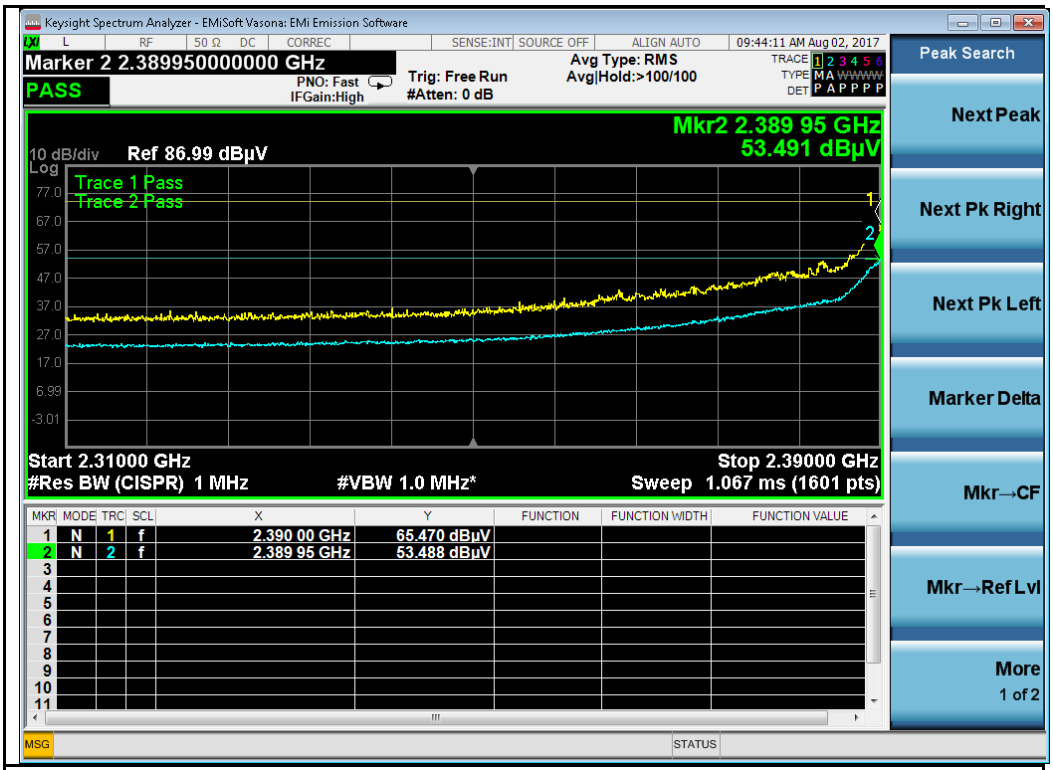
802.11b-2412MHz

802.11b-2462MHz

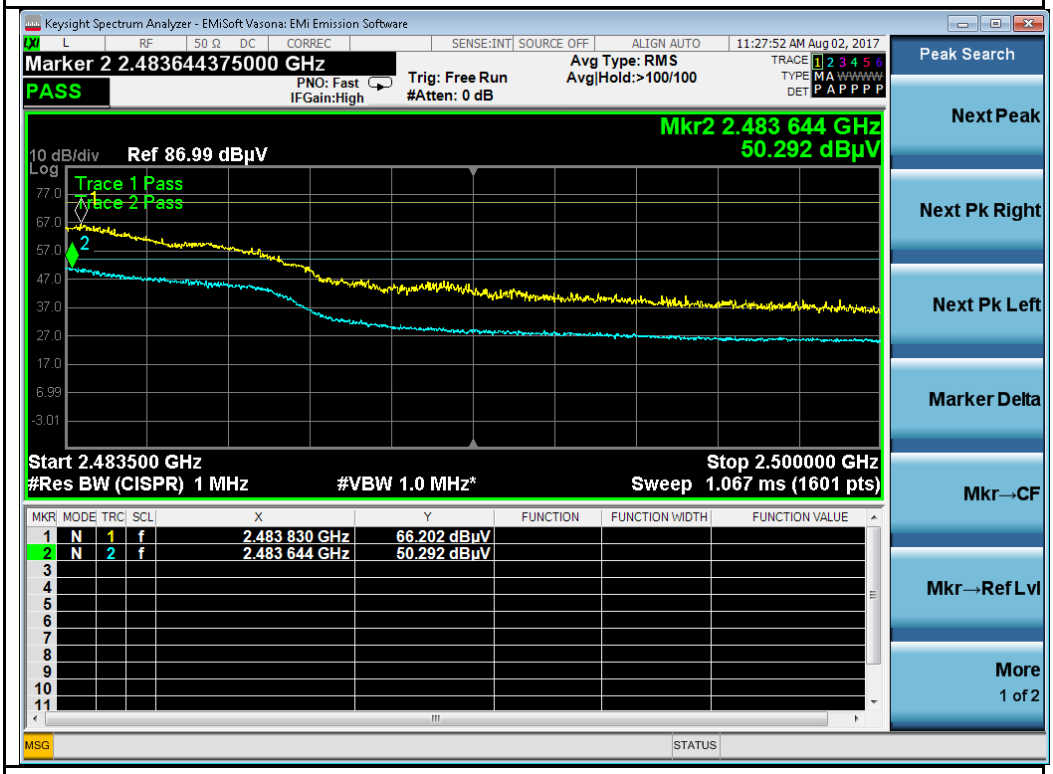


802.11g-2412MHz

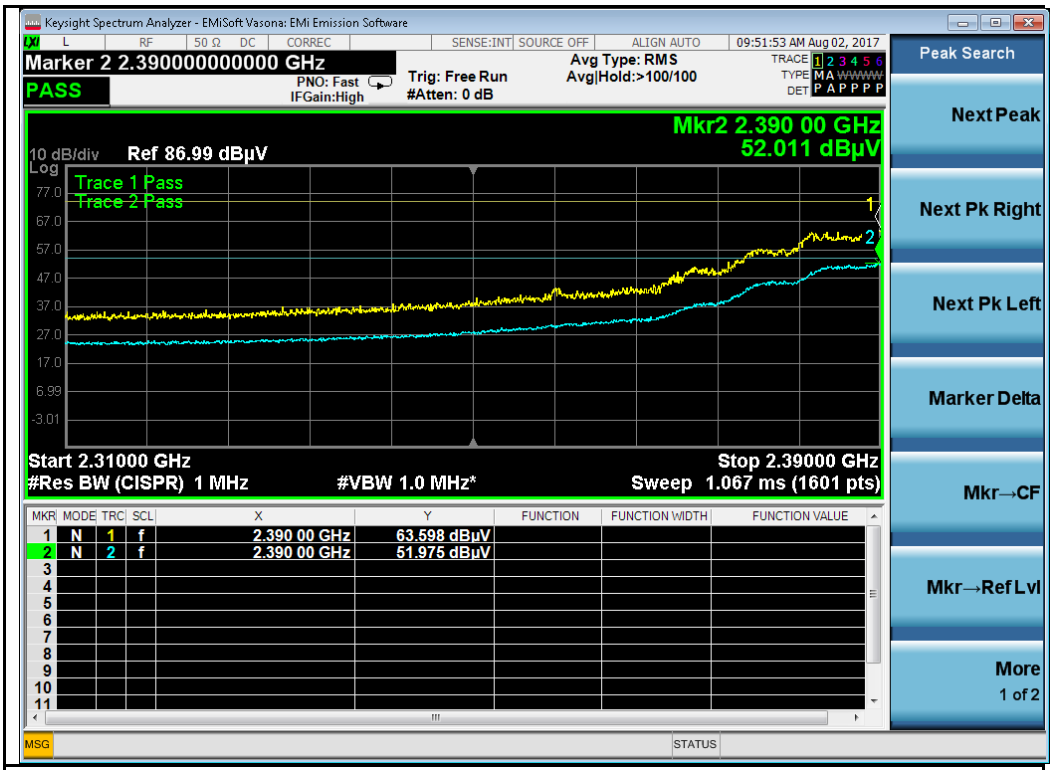
802.11g-2462MHz



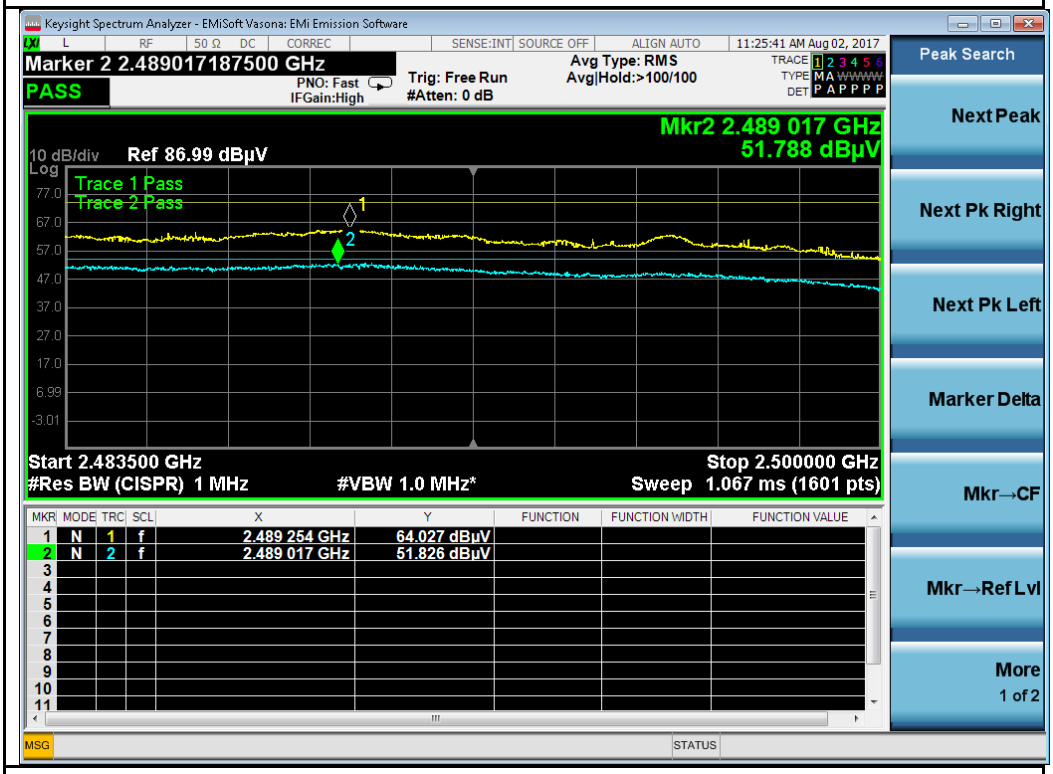
802.11n-HT20-2412MHz



802.11n-HT20-2462MHz



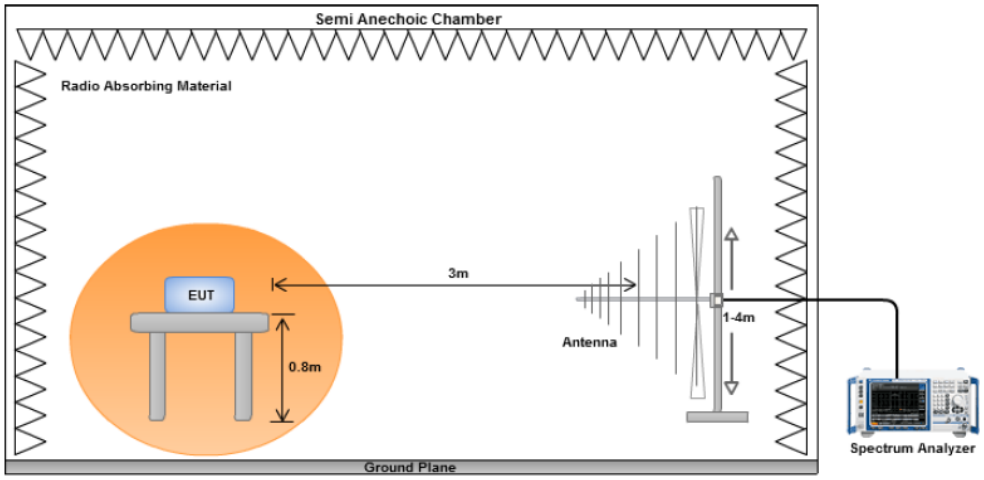
802.11n-HT40-2422MHz



802.11n-HT40-2452MHz

10.7 Radiated Spurious Emissions below 1GHz

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.247(d)
RSS247 (5.5)</td><td>a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 
</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. A Quasi-peak measurement was then made for that frequency point.
4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</td></tr>
<tr><td>Remark</td><td colspan="3">The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.</td></tr>
<tr><td>Result</td><td colspan="3">☒ Pass ☐ Fail</td></tr>
</table>

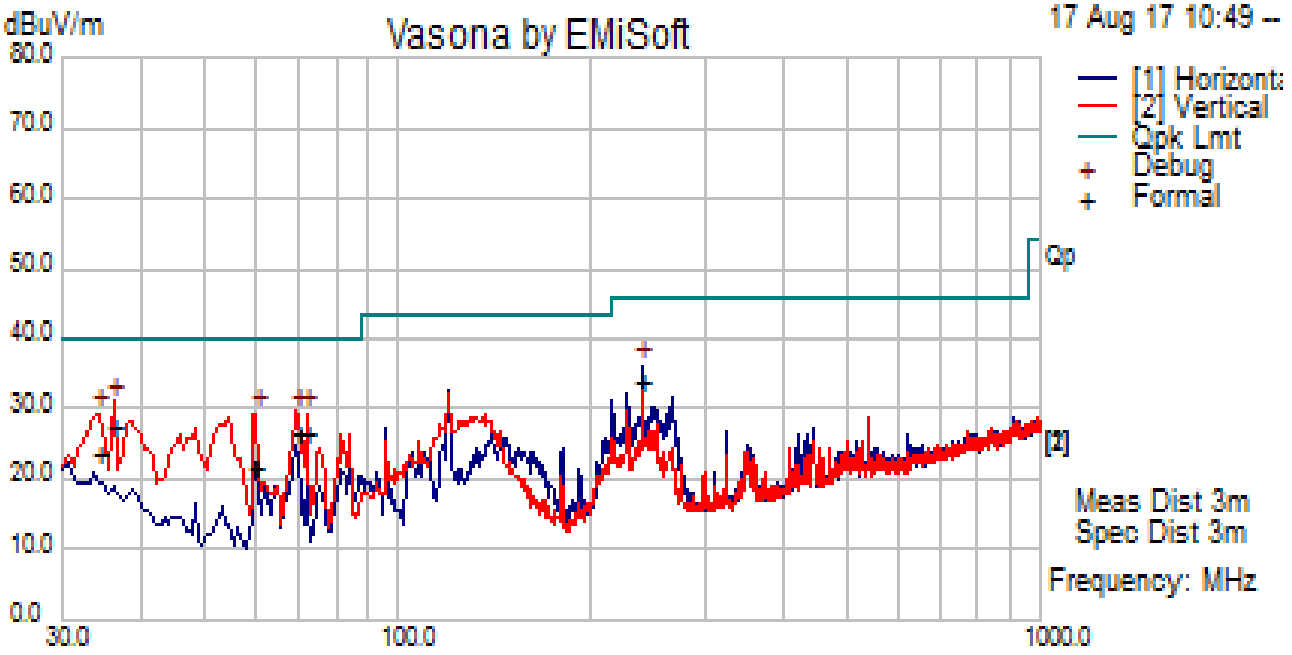
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at 10m chamber.

Radiated Emission Test Results (Below 1GHz)

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	23	Result	Pass
	Humidity (%)	46		
	Atmospheric (mbar):	1018		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	08/17/2017			
Remarks:	802.11n HT40, Middle Channel			



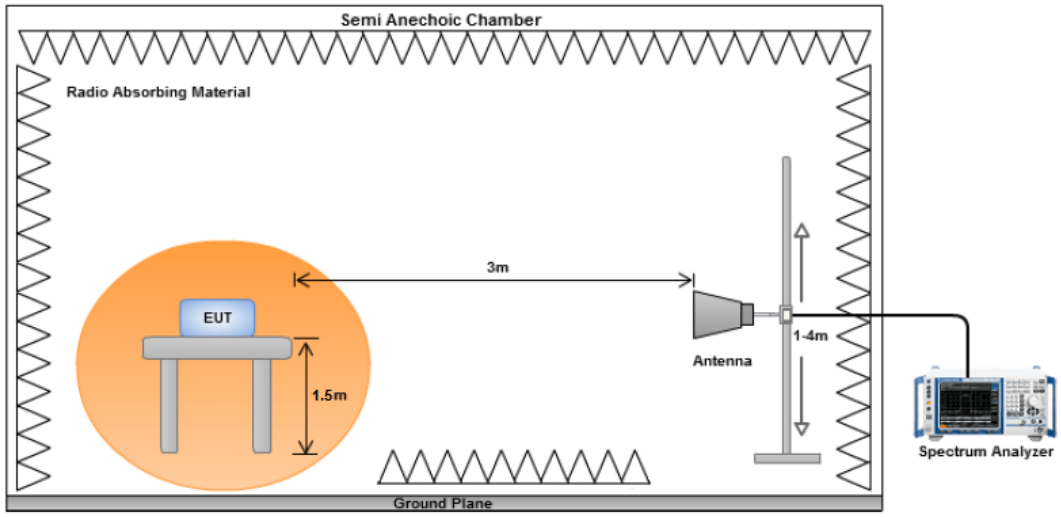
Quasi Max Measurements

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
36.00	34.80	11.39	-18.88	27.30	Quasi Max	V	105.00	147.00	40.00	-12.70	Pass
240.01	45.80	13.08	-24.87	34.01	Quasi Max	H	137.00	267.00	46.00	-11.99	Pass
69.57	42.96	11.70	-28.13	26.53	Quasi Max	V	100.00	176.00	40.00	-13.47	Pass
72.01	42.94	11.72	-27.94	26.71	Quasi Max	V	99.00	208.00	40.00	-13.29	Pass
60.07	38.08	11.66	-28.36	21.38	Quasi Max	V	156.00	28.00	40.00	-18.62	Pass
34.18	29.89	11.35	-17.49	23.76	Quasi Max	V	119.00	167.00	40.00	-16.25	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

10.8 Radiated Spurious Emissions between 1GHz – 25GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS210(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☐ 20 dB down ☒ 30 dB down	☒
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. There isn't outstanding emission found at the edge of restricted frequency.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test was done by Rachana Khanduri at 10m chamber.