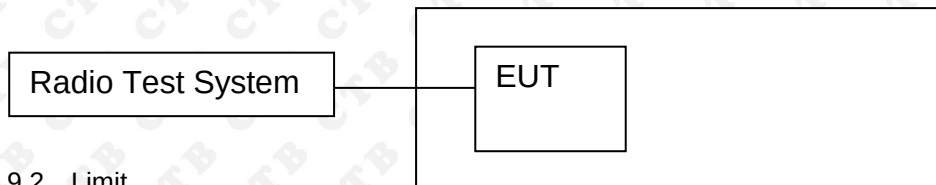


9. COUDUCTED OUTPUT POWER

9.1 Block Diagram Of Test Setup



9.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

9.3 Test procedure

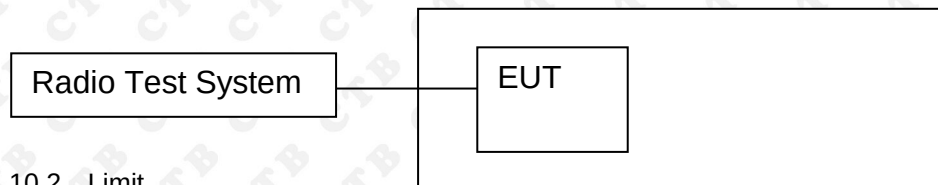
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak. Channel power function is used
3. Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

9.4 Test Result

Mode	Channel.	Maximum Output Power [dBm] ant 1	Maximum Output Power [dBm] ant 2	Total Power Conducted Output Power(PK)	Limit[dBm]
802.11b	LCH	14.332	14.765	/	30
	MCH	14.164	14.515	/	30
	HCH	14.66	14.593	/	30
802.11g	LCH	13.408	13.594	/	30
	MCH	13.227	13.41	/	30
	HCH	13.113	13.754	/	30
802.11n(HT20)	LCH	13.889	13.551	16.734	30
	MCH	13.643	13.822	16.744	30
	HCH	13.58	13.212	16.410	30
802.11n(HT40)	LCH	12.666	12.626	15.656	30
	MCH	12.848	12.544	15.709	30
	HCH	12.804	12.436	15.634	30

10. 6DB OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

10.3 Test procedure

1. Rem1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

10.4 Test Result

ANT1:

Test Mode	Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Result
802.11b	LCH	10.685	500	PASS
	MCH	10.237	500	PASS
	HCH	9.911	500	PASS
802.11g	LCH	16.352	500	PASS
	MCH	16.347	500	PASS
	HCH	16.332	500	PASS
802.11n(HT20)	LCH	17.565	500	PASS
	MCH	17.288	500	PASS
	HCH	17.079	500	PASS
802.11n(HT40)	LCH	35.172	500	PASS
	MCH	35.399	500	PASS
	HCH	35.568	500	PASS

ANT2:

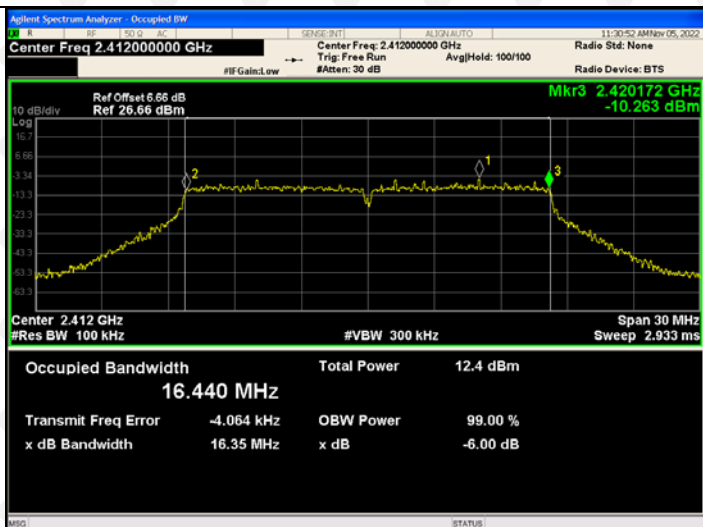
Test Mode	Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Result
802.11b	LCH	10.7	500	PASS
	MCH	10.613	500	PASS
	HCH	10.656	500	PASS
802.11g	LCH	16.345	500	PASS
	MCH	16.323	500	PASS
	HCH	16.359	500	PASS
802.11n(HT20)	LCH	17.277	500	PASS
	MCH	17.027	500	PASS
	HCH	17.208	500	PASS
802.11n(HT40)	LCH	35.447	500	PASS
	MCH	35.344	500	PASS
	HCH	35.204	500	PASS

ANT1:

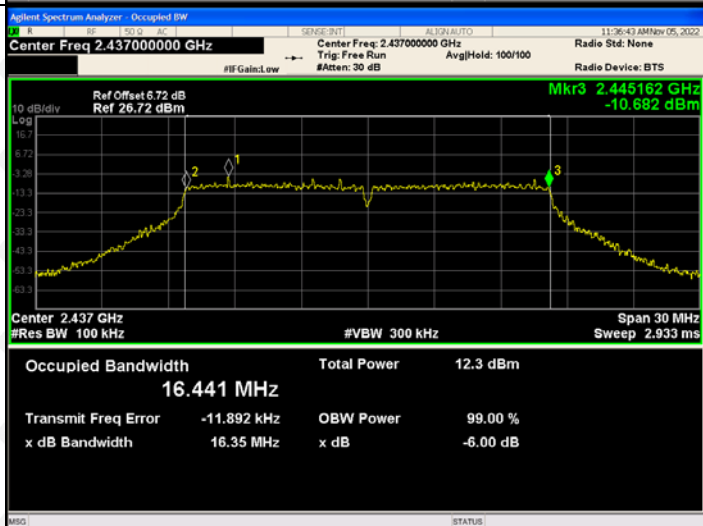
Test Graph:



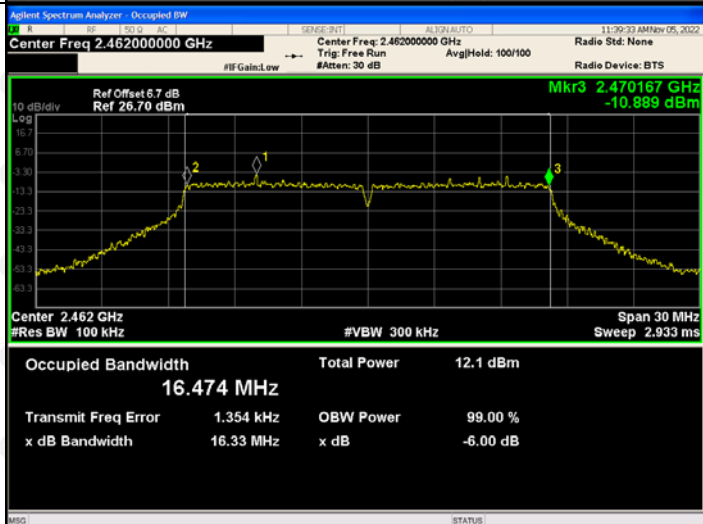
802.11g/LCH

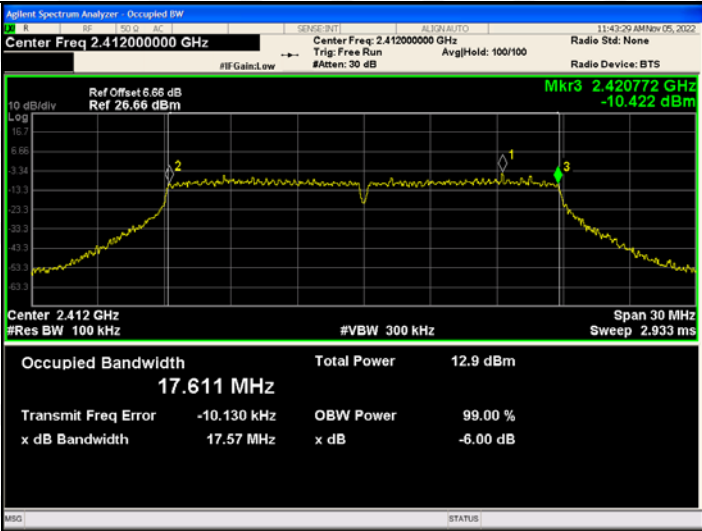
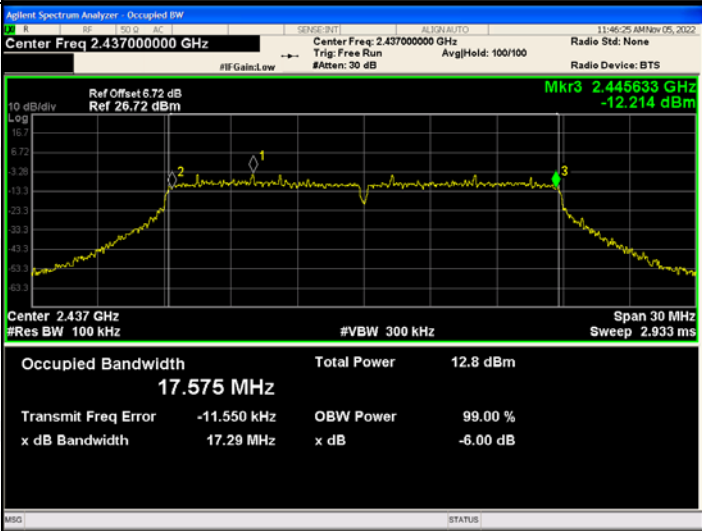
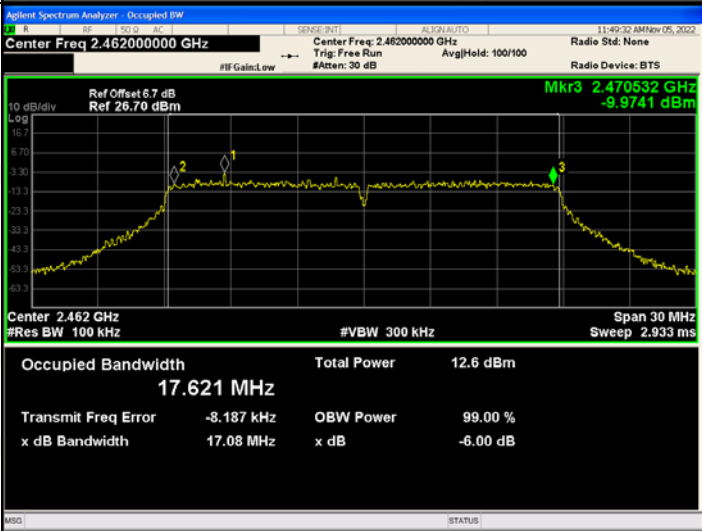


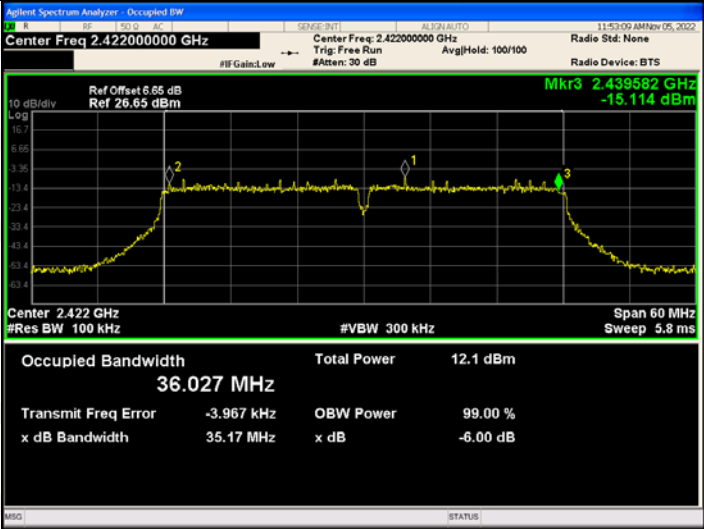
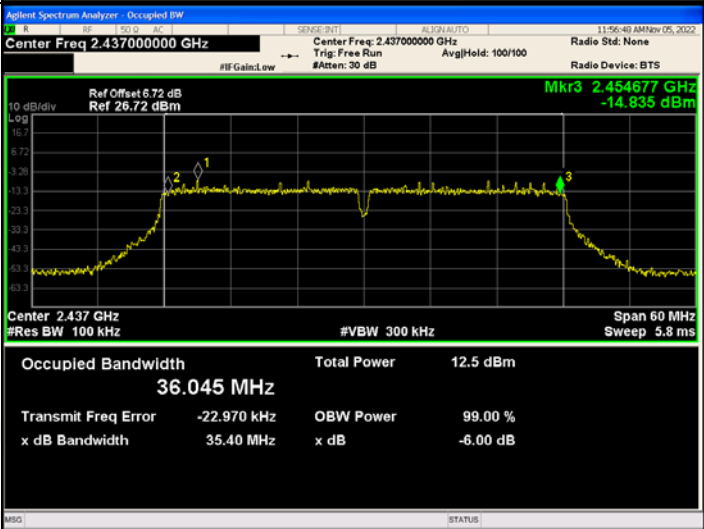
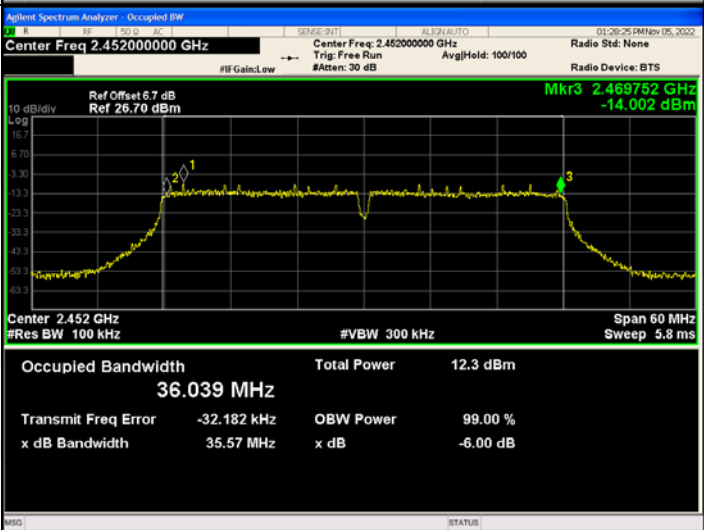
802.11g/MCH



802.11g/HCH



802.11n(HT20)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 6.55 dB Ref 26.66 dBm Occupied Bandwidth 17.611 MHz Total Power 12.9 dBm Transmit Freq Error -10.130 kHz x dB Bandwidth 17.57 MHz OBW Power 99.00 % x dB -6.00 dB
802.11n(HT20)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 6.72 dB Ref 26.72 dBm Occupied Bandwidth 17.575 MHz Total Power 12.8 dBm Transmit Freq Error -11.550 kHz x dB Bandwidth 17.29 MHz OBW Power 99.00 % x dB -6.00 dB
802.11n(HT20)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 6.7 dB Ref 26.70 dBm Occupied Bandwidth 17.621 MHz Total Power 12.6 dBm Transmit Freq Error -8.187 kHz x dB Bandwidth 17.08 MHz OBW Power 99.00 % x dB -6.00 dB

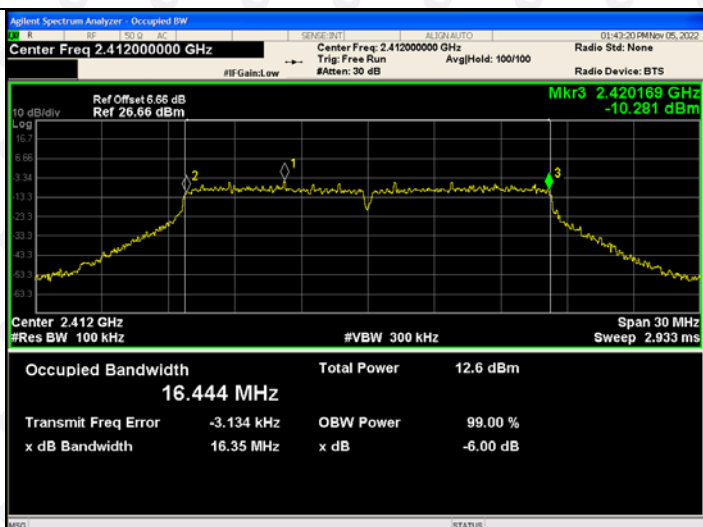
802.11n(HT40)/LC H	
802.11n(HT40)/MC H	
802.11n(HT40)/HC H	

ANT2:

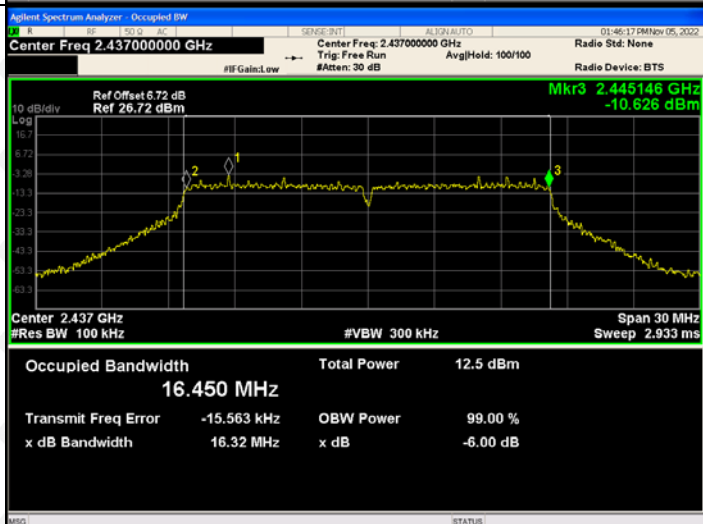
Test Graph:



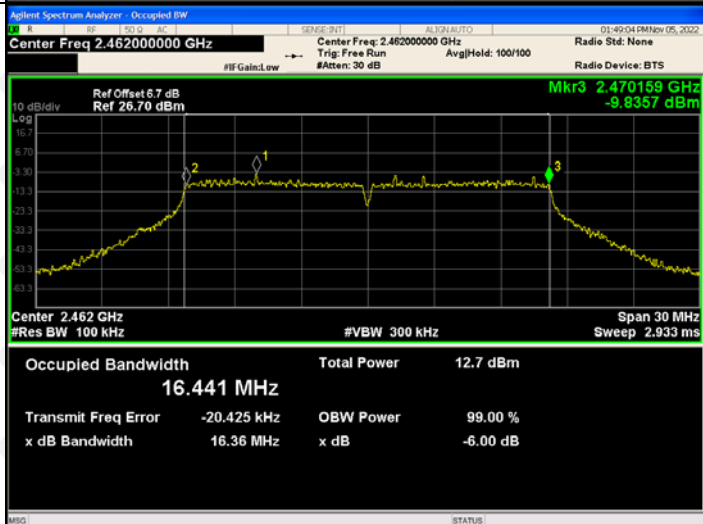
802.11g/LCH

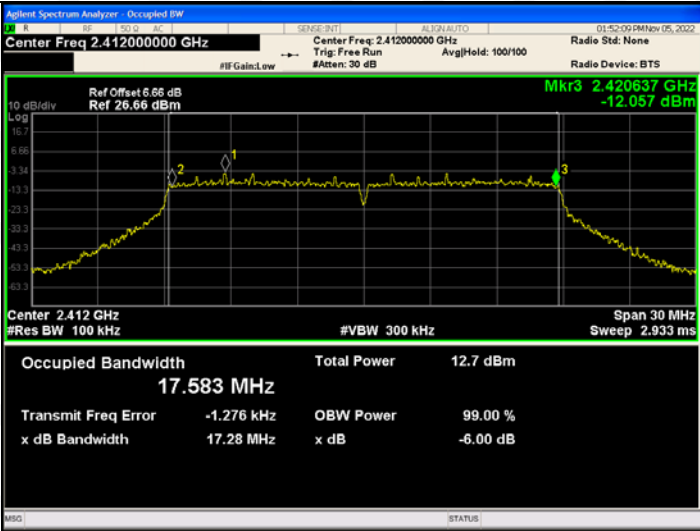
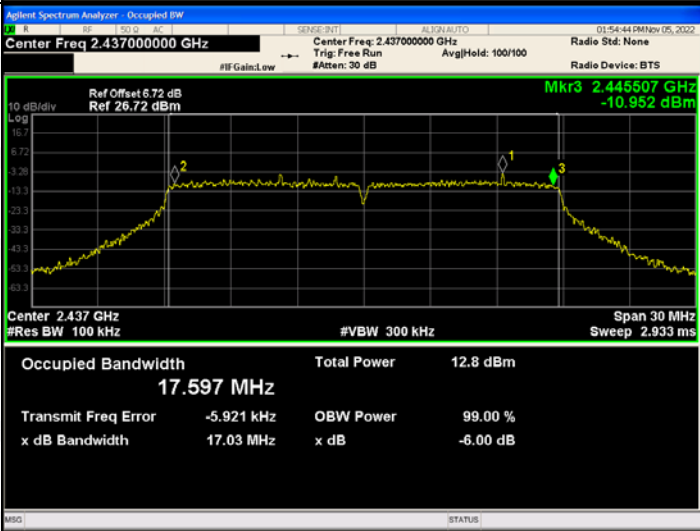
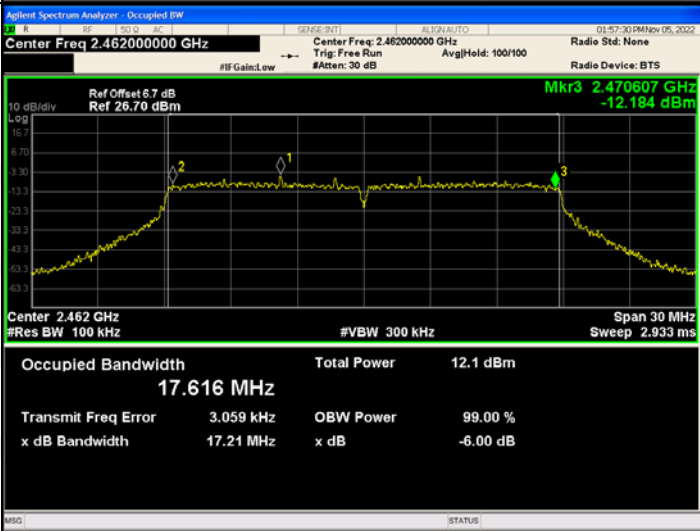


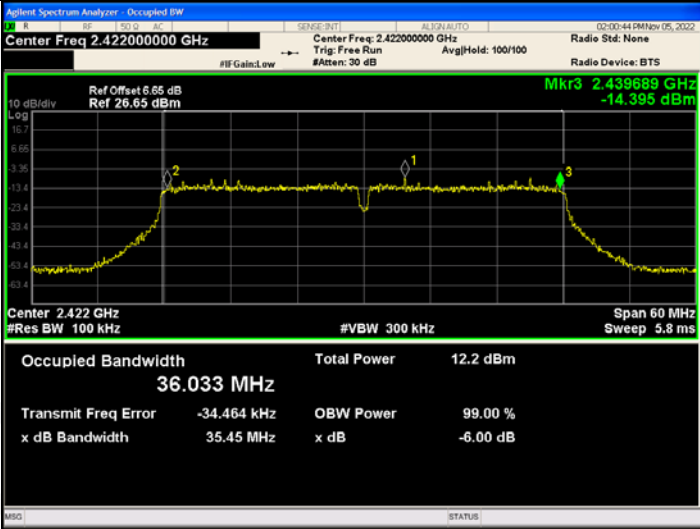
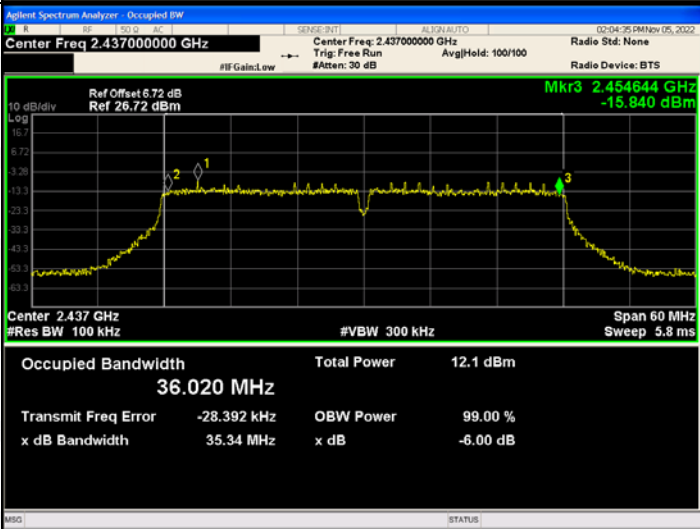
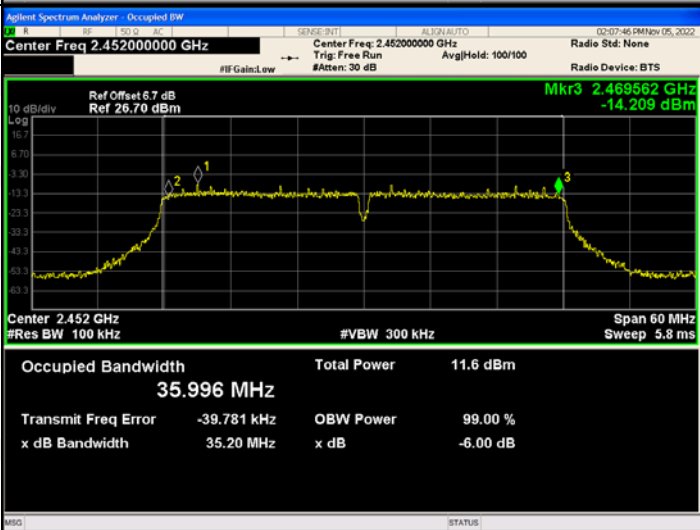
802.11g/MCH



802.11g/HCH

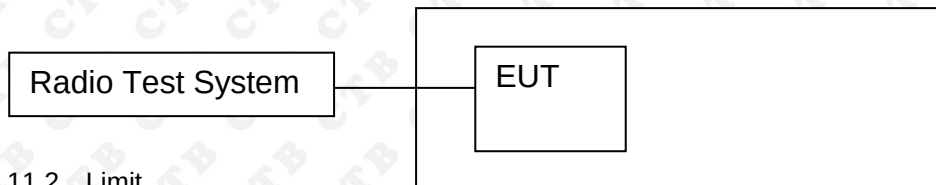


802.11n(HT20)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 6.66 dB Ref 26.66 dBm Occupied Bandwidth 17.583 MHz Total Power 12.7 dBm Transmit Freq Error -1.276 kHz OBW Power 99.00 % x dB Bandwidth 17.28 MHz x dB -6.00 dB
802.11n(HT20)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 6.72 dB Ref 26.72 dBm Occupied Bandwidth 17.597 MHz Total Power 12.8 dBm Transmit Freq Error -5.921 kHz OBW Power 99.00 % x dB Bandwidth 17.03 MHz x dB -6.00 dB
802.11n(HT20)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 6.7 dB Ref 26.70 dBm Occupied Bandwidth 17.616 MHz Total Power 12.1 dBm Transmit Freq Error 3.059 kHz OBW Power 99.00 % x dB Bandwidth 17.21 MHz x dB -6.00 dB

802.11n(HT40)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.42200000 GHz Ref Offset 6.65 dB Ref 26.65 dBm Occupied Bandwidth 36.033 MHz Total Power 12.2 dBm Transmit Freq Error -34.464 kHz OBW Power 99.00 % x dB Bandwidth 35.45 MHz x dB -6.00 dB
802.11n(HT40)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Ref Offset 6.72 dB Ref 26.72 dBm Occupied Bandwidth 36.020 MHz Total Power 12.1 dBm Transmit Freq Error -28.392 kHz OBW Power 99.00 % x dB Bandwidth 35.34 MHz x dB -6.00 dB
802.11n(HT40)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.45200000 GHz Ref Offset 6.7 dB Ref 26.70 dBm Occupied Bandwidth 35.996 MHz Total Power 11.6 dBm Transmit Freq Error -39.781 kHz OBW Power 99.00 % x dB Bandwidth 35.20 MHz x dB -6.00 dB

11. POWER SPECTRAL DENSITY

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

11.3 Test procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = Peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

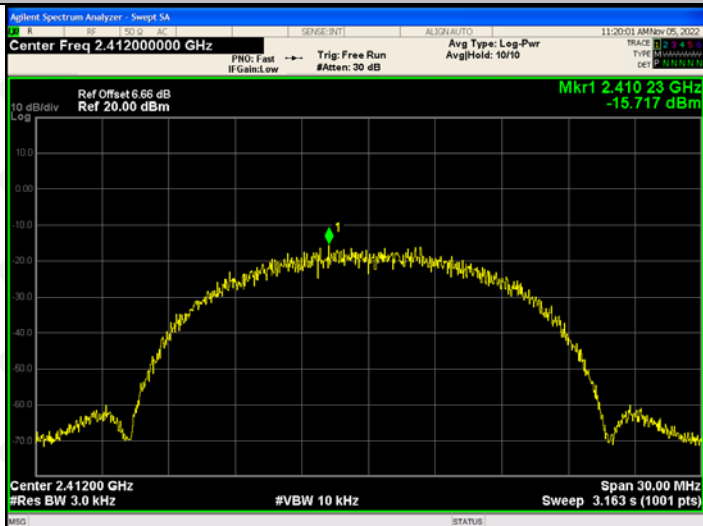
11.4 Test Result

Mode	Channel.	Power Spectral Density [dBm /3KHz] ANT 1	Power Spectral Density [dBm /3KHz] ANT 2	Power Spectral Density [dBm /3KHz] Total	Limit(dBm)
802.11b	LCH	-15.717	-14.976	/	6.32
	MCH	-15.554	-15.093	/	6.32
	HCH	-14.931	-14.792	/	6.32
802.11g	LCH	-17.899	-18.154	/	6.32
	MCH	-18.523	-18.178	/	6.32
	HCH	-18.984	-18.231	/	6.32
802.11n(H T20)	LCH	-18.063	-19.672	-15.783	6.32
	MCH	-19.145	-19.001	-16.062	6.32
	HCH	-17.88	-18.587	-15.209	6.32
802.11n(H T40)	LCH	-23.058	-22.9	-19.968	6.32
	MCH	-22.5	-21.325	-18.863	6.32
	HCH	-21.949	-23.077	-19.466	6.32

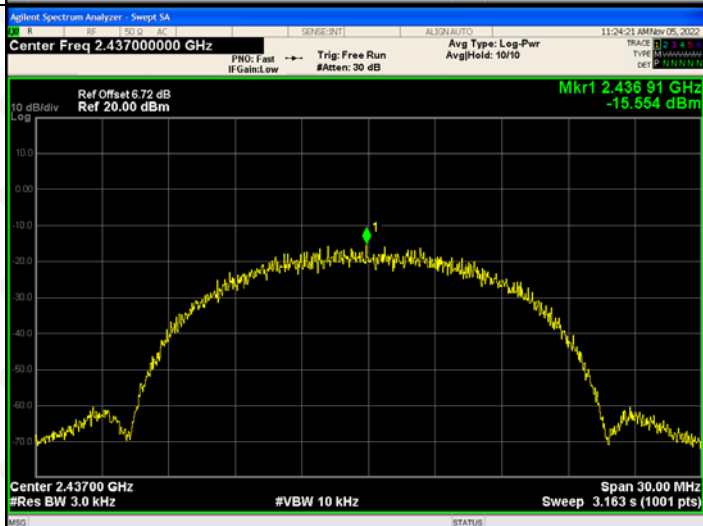
ANT1: Test Graph

Graphs

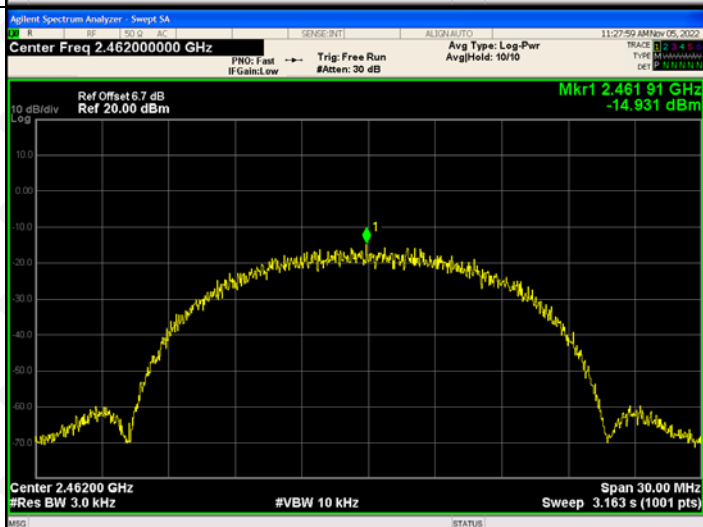
802.11b /LCH

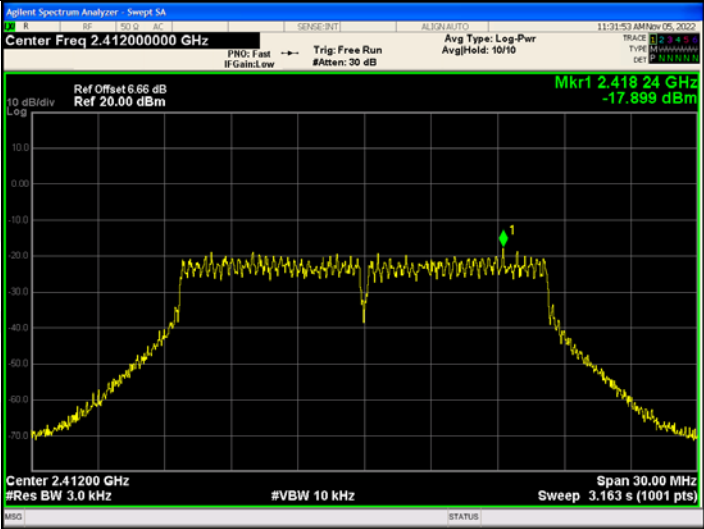
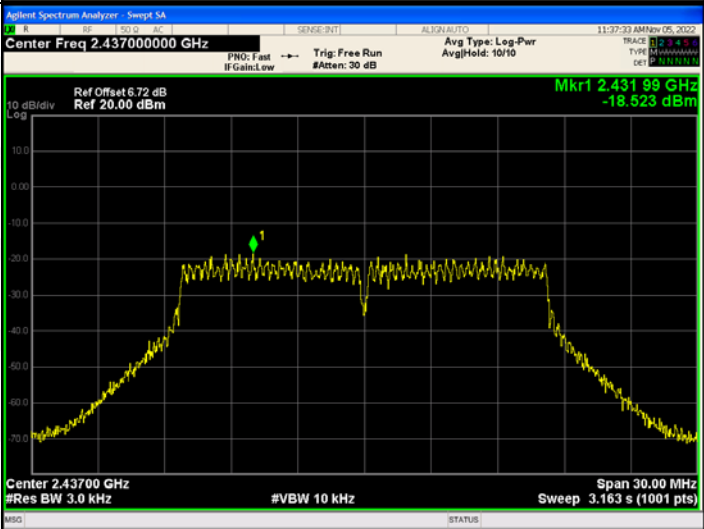
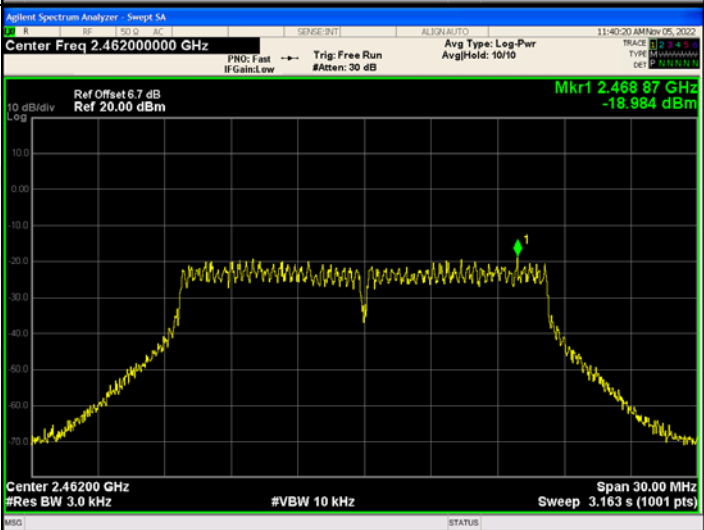


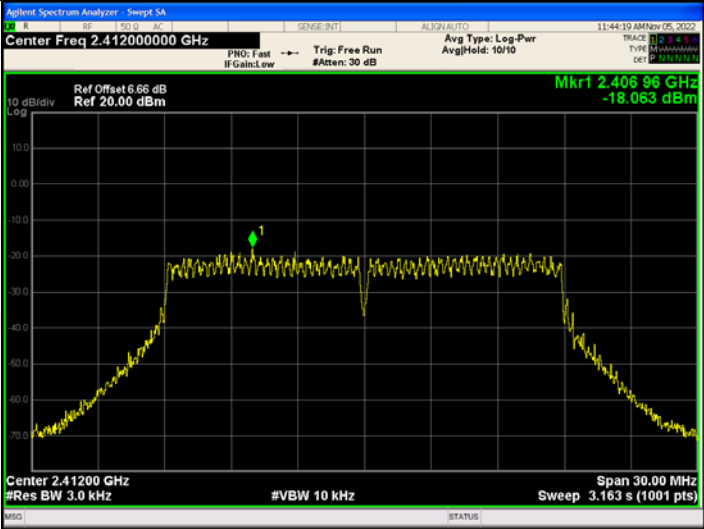
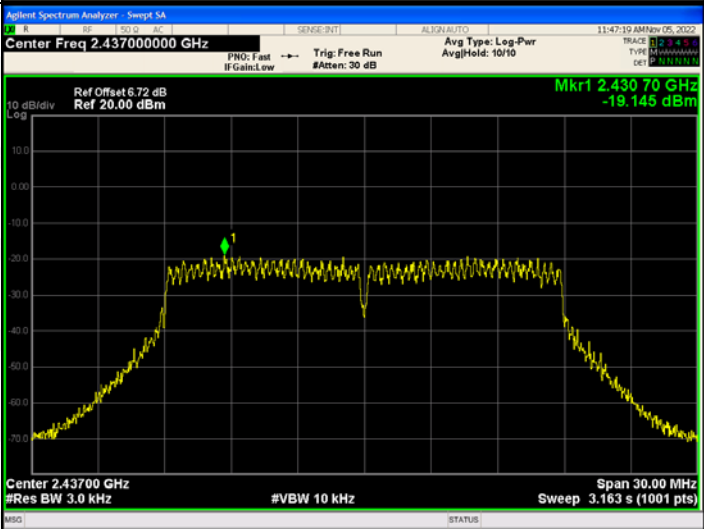
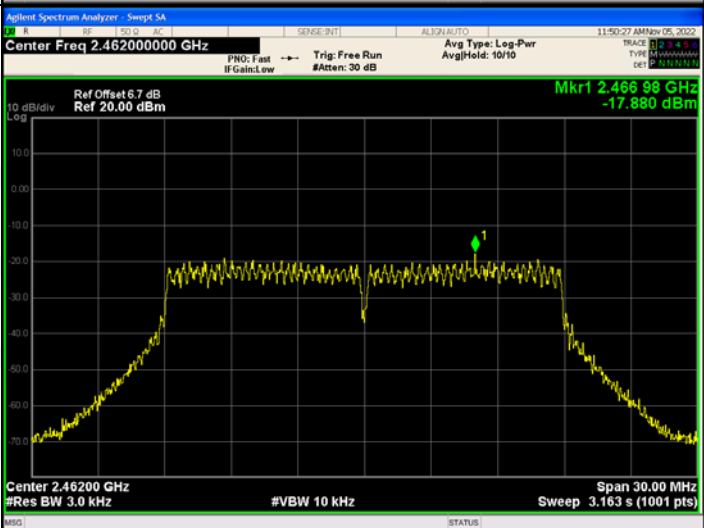
802.11b /MCH

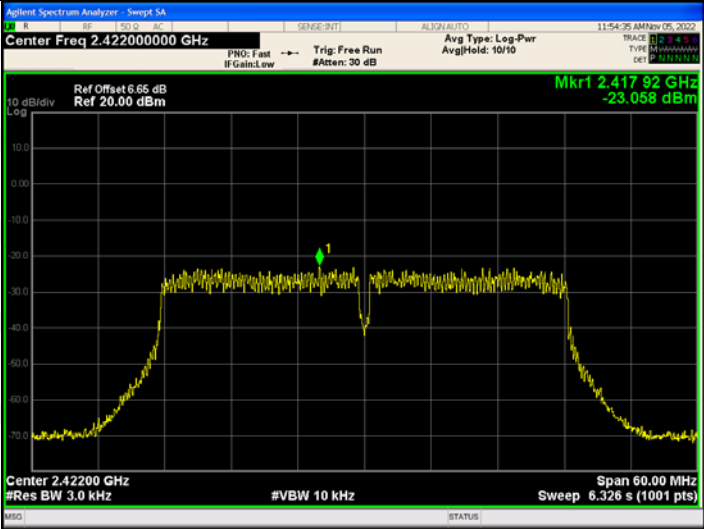
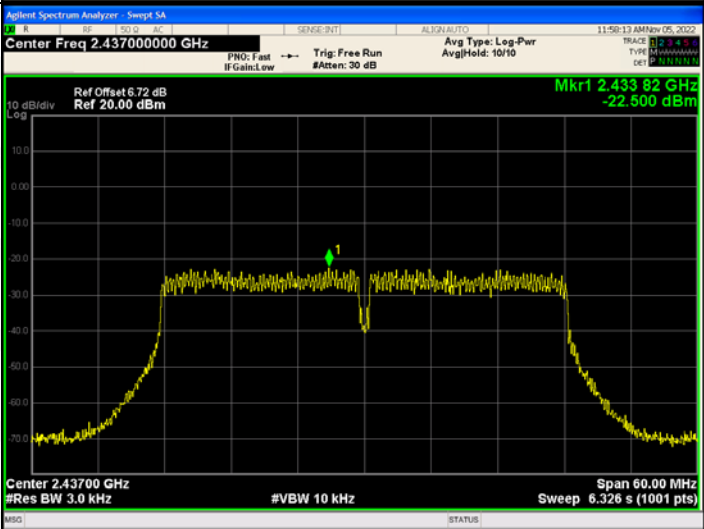
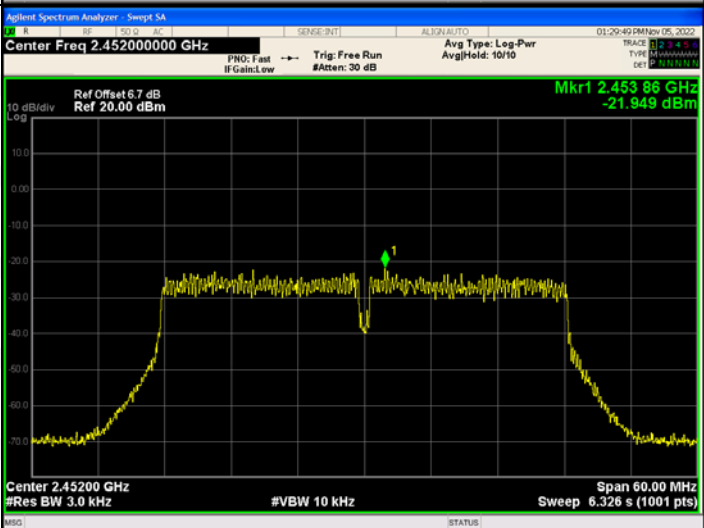


802.11b/HCH



802.11g/LCH	
802.11g/MCH	
802.11g/HCH	

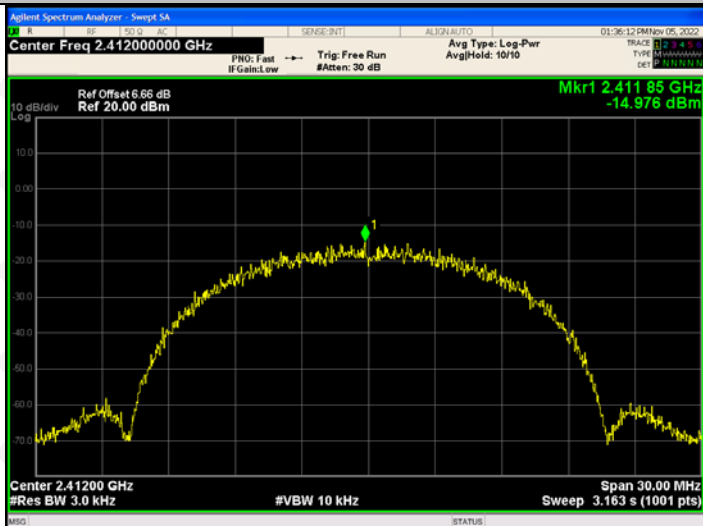
802.11n(HT20)/LC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.41200000 GHz Ref Offset 6.86 dB Ref 20.00 dBm Mkr1 2.406 96 GHz -18.063 dBm Center 2.41200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11n(HT20)/MC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 6.72 dB Ref 20.00 dBm Mkr1 2.430 70 GHz -19.145 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11n(HT20)/HC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.46200000 GHz Ref Offset 6.7 dB Ref 20.00 dBm Mkr1 2.466 98 GHz -17.880 dBm Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)

802.11n(HT40)/LC H	
802.11n(HT40)/MC H	
802.11n(HT40)/HC H	

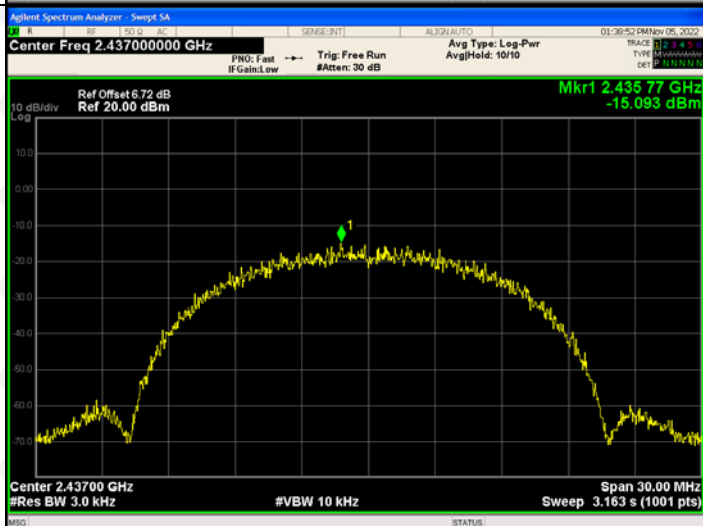
ANT 2: Test Graph

Graphs

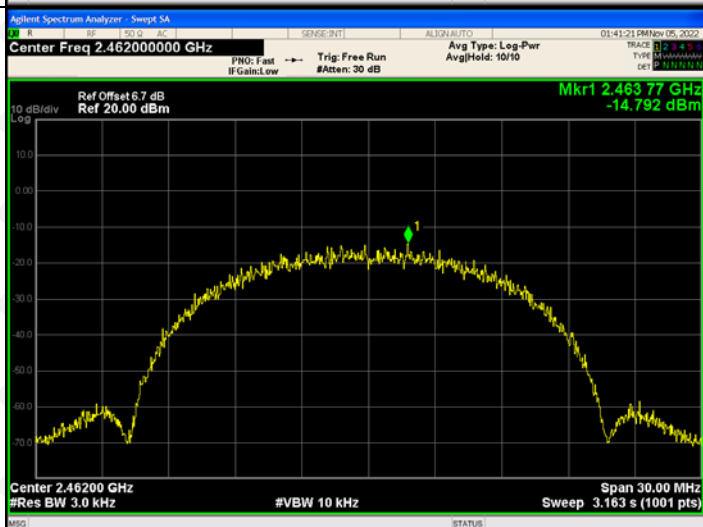
802.11b /LCH

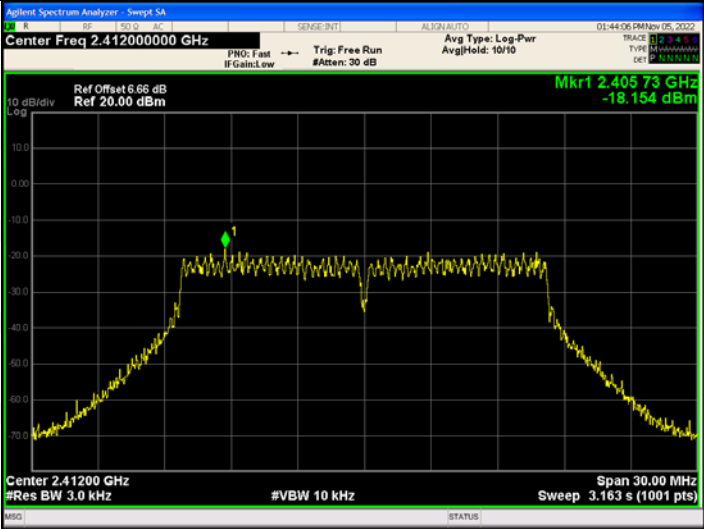
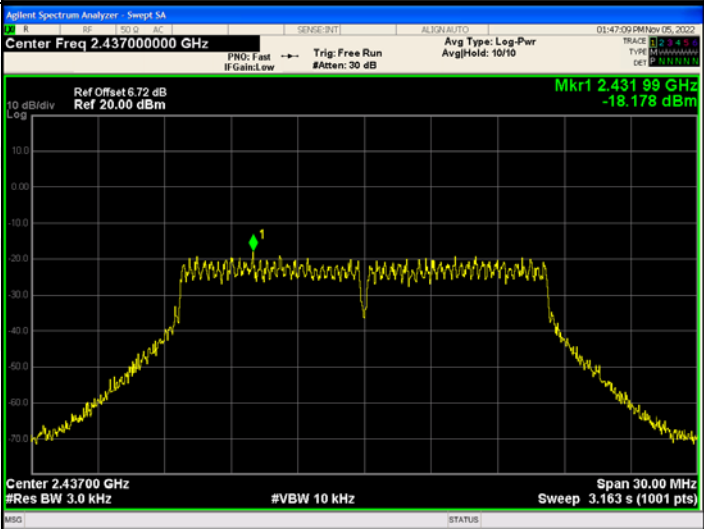
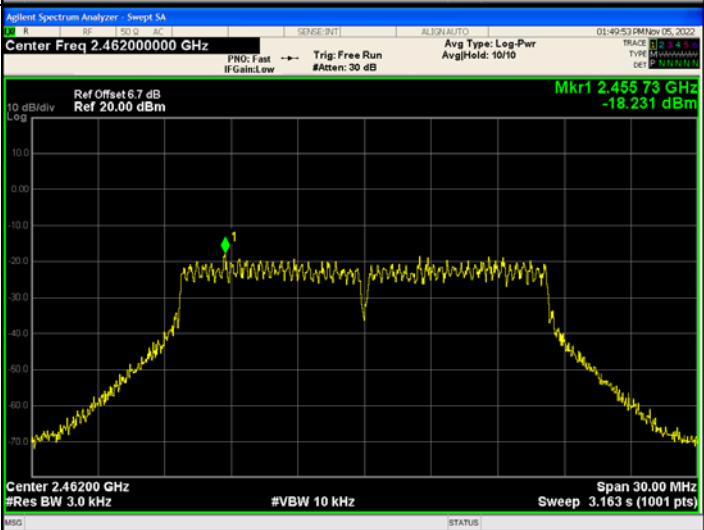


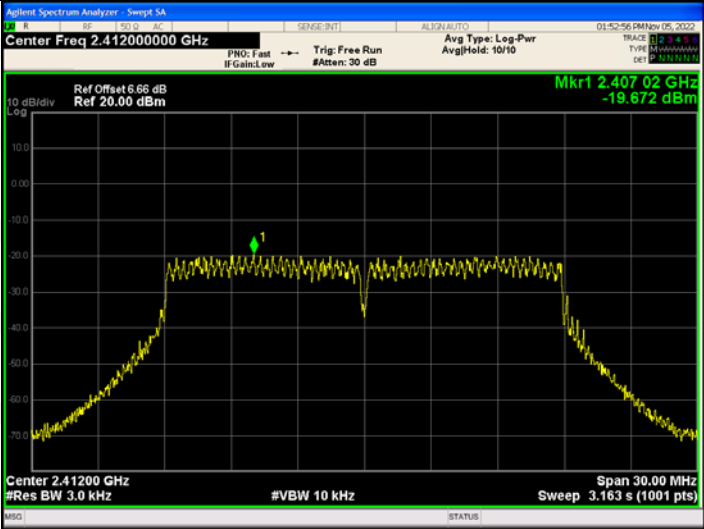
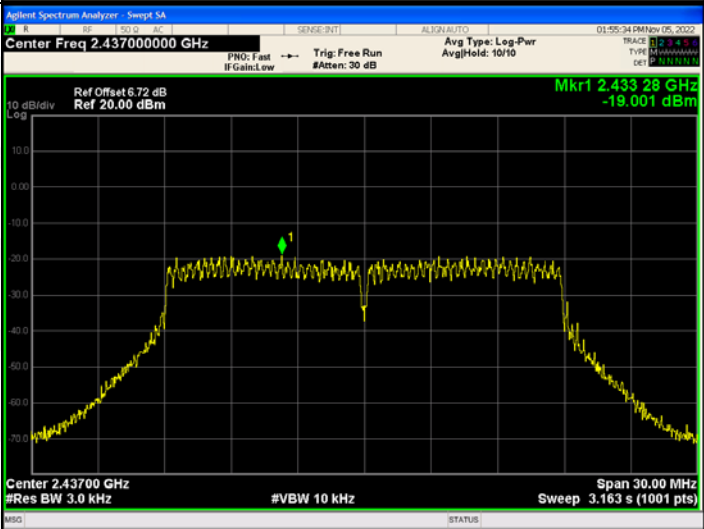
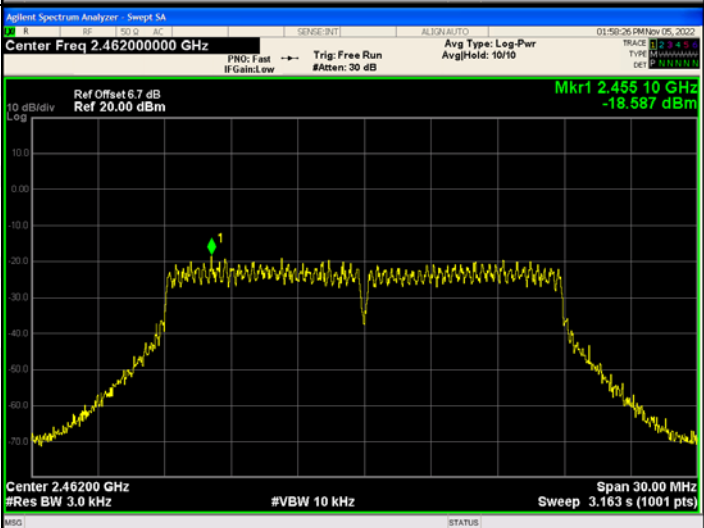
802.11b /MCH

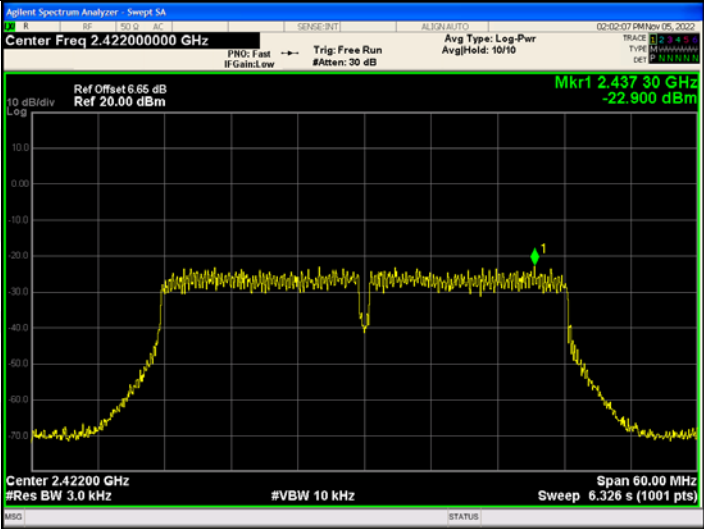
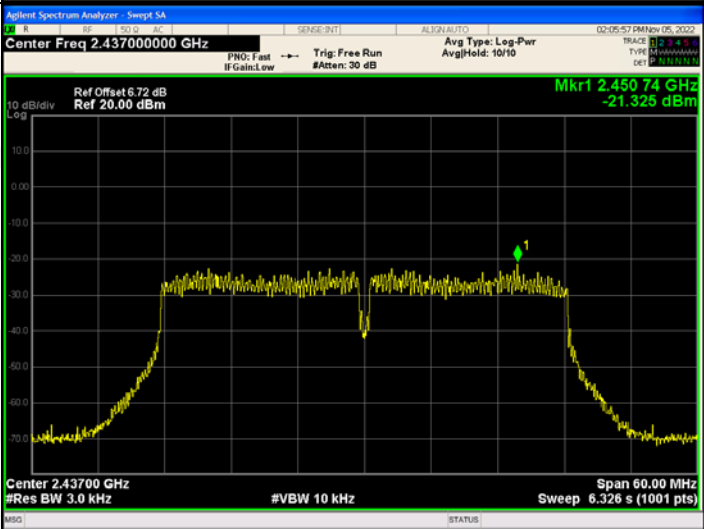
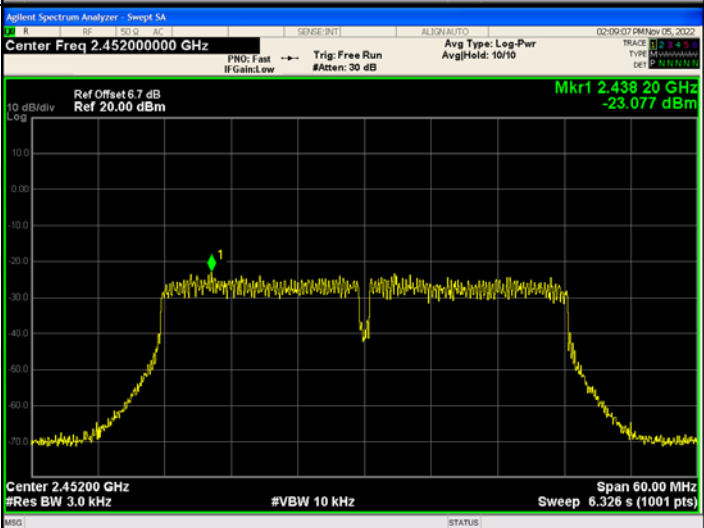


802.11b/HCH



802.11g/LCH	
802.11g/MCH	
802.11g/HCH	

802.11n(HT20)/LC H	
802.11n(HT20)/MC H	
802.11n(HT20)/HC H	

802.11n(HT40)/LC H	
802.11n(HT40)/MC H	
802.11n(HT40)/HC H	

12. ANTENNA REQUIREMENT

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is PIFA antenna and no consideration of replacement. The best case gain of the antenna is 4.67dBi.

13. EUT PHOTOGRAPHS

External Photos

EUT Photo 1



EUT Photo 2



14. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1G



Above 1G



Conducted Emission



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