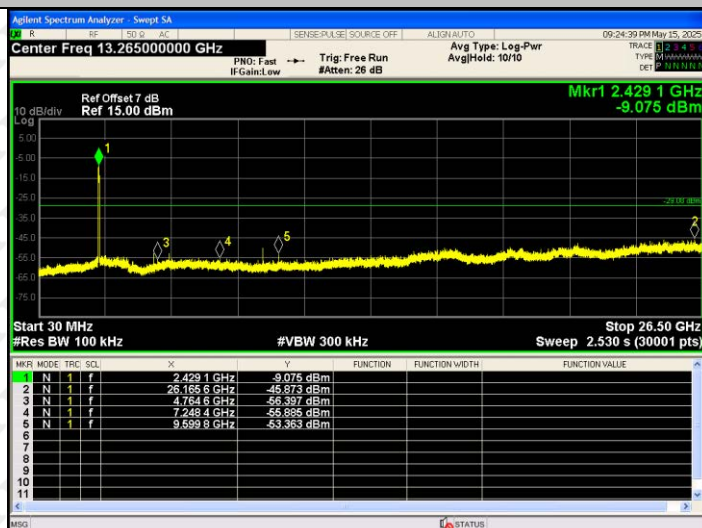
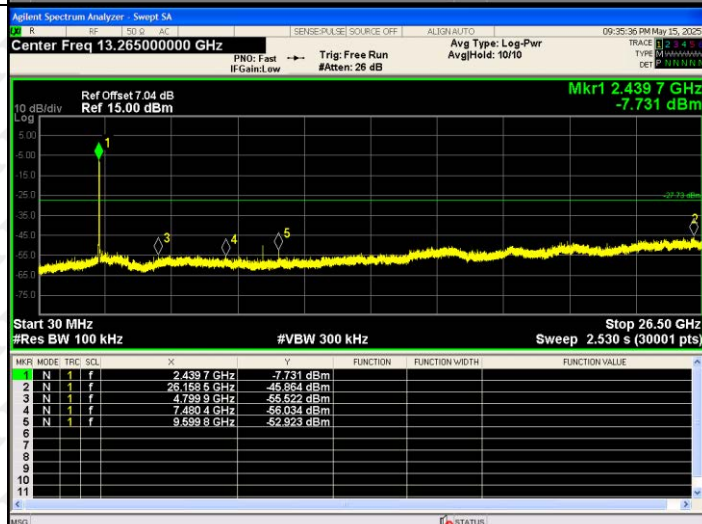


RF Conducted Spurious Emissions Graphs

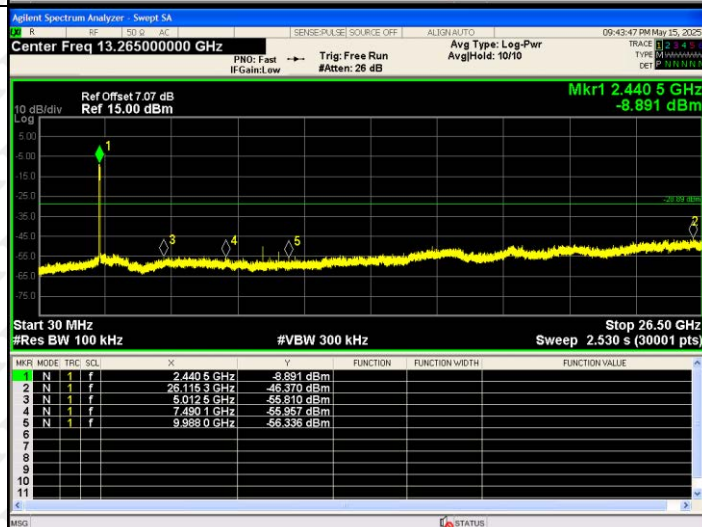
802.11ax(HT40)/LCH



802.11 ax(HT40)/MCH

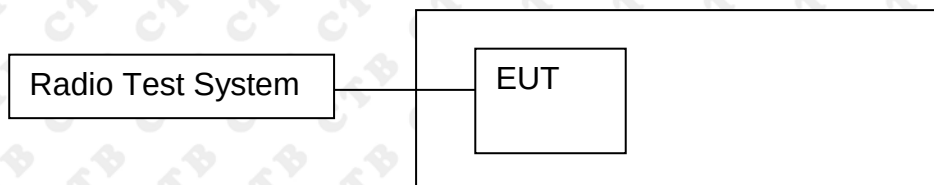


802.11 ax(HT40)/HCH



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

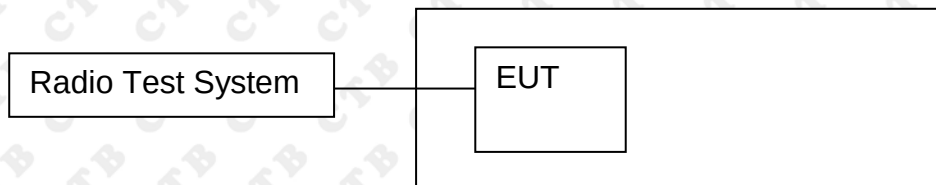
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak. Channel power function is used
3. Keep the EUT in transmitting at lowest, middle and highest channel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

9.4 Test Result

Mode	Channel.	Maximum Peak Power [dBm] ant 1	Maximum Peak Power [dBm] ant 2	Total Power Peak Output Power(dBm)	Limit[dBm]
802.11b	LCH	14.923	15.638	/	30
	MCH	14.942	15.777	/	30
	HCH	14.37	15.296	/	30
802.11g	LCH	14.673	15.763	/	30
	MCH	14.968	16.027	/	30
	HCH	14.396	15.374	/	30
802.11n(HT20)	LCH	14.247	15.319	17.826	30
	MCH	14.479	15.514	18.038	30
	HCH	13.905	14.992	17.493	30
802.11n(HT40)	LCH	14.509	15.694	18.152	30
	MCH	14.585	15.821	18.257	30
	HCH	14.446	15.673	18.113	30
802.11ax(HT20)	LCH	14.148	15.244	17.741	30
	MCH	14.426	15.534	18.026	30
	HCH	13.78	14.963	17.422	30
802.11ax(HT40)	LCH	14.407	15.653	18.085	30
	MCH	14.571	15.792	18.235	30
	HCH	14.441	15.628	18.085	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	10.127	500	PASS
	MCH	10.135	500	PASS
	HCH	10.115	500	PASS
802.11g	LCH	16.53	500	PASS
	MCH	16.524	500	PASS
	HCH	16.546	500	PASS
802.11n(HT20)	LCH	17.749	500	PASS
	MCH	17.776	500	PASS
	HCH	17.74	500	PASS
802.11n(HT40)	LCH	36.467	500	PASS
	MCH	36.456	500	PASS
	HCH	36.472	500	PASS
802.11ax(HT20)	LCH	17.78	500	PASS
	MCH	17.773	500	PASS
	HCH	17.752	500	PASS
802.11ax(HT40)	LCH	36.491	500	PASS
	MCH	36.472	500	PASS
	HCH	36.485	500	PASS

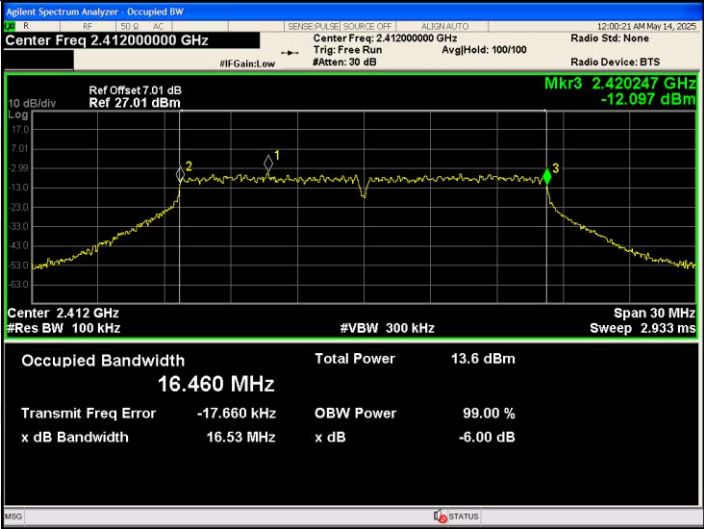
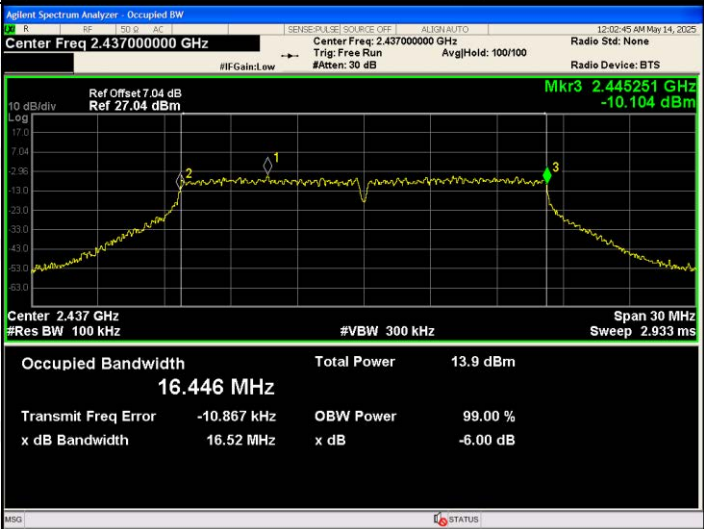
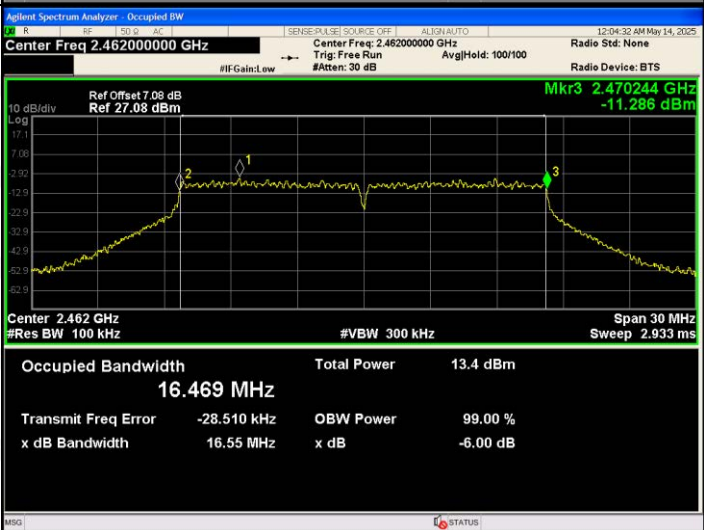
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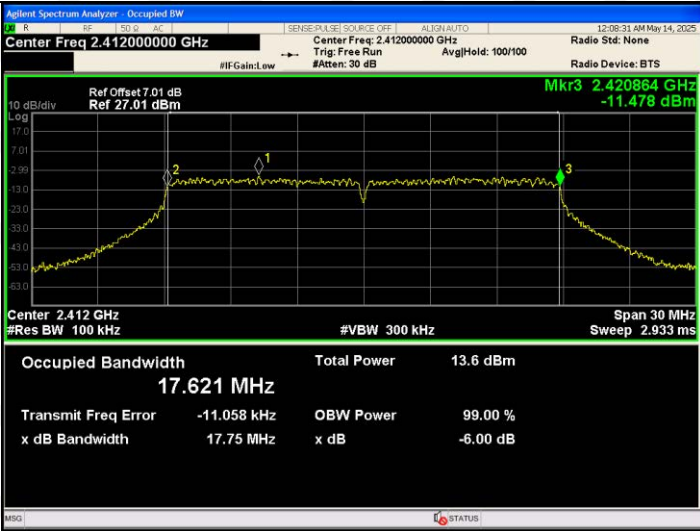
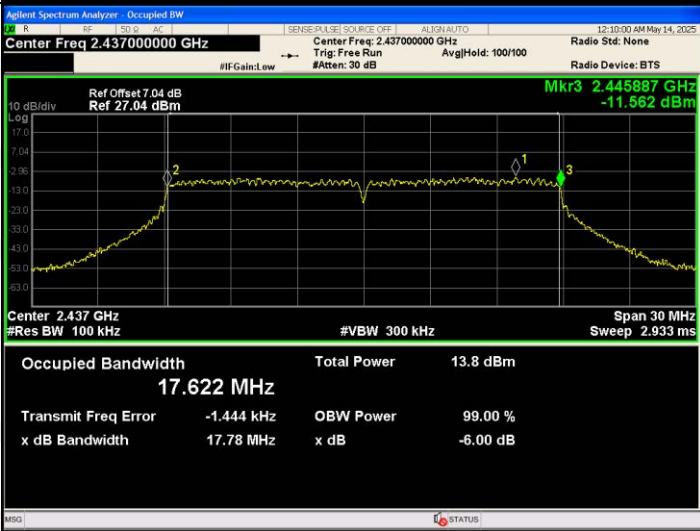
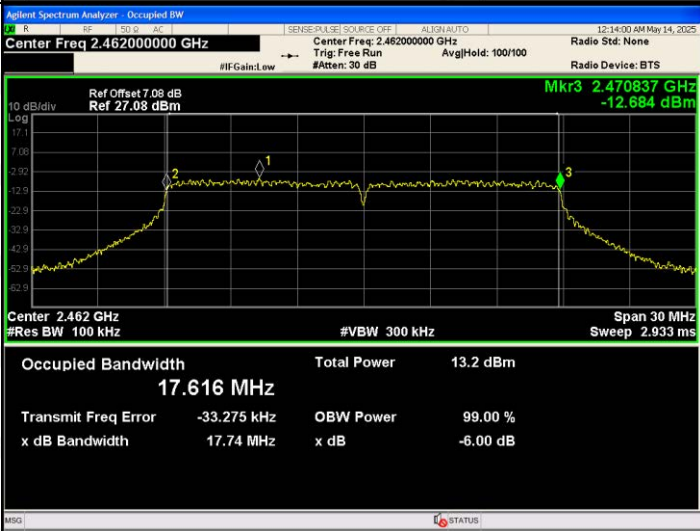
Test Mode	Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Result
802.11b	LCH	10.13	500	PASS
	MCH	10.13	500	PASS
	HCH	10.133	500	PASS
802.11g	LCH	16.505	500	PASS
	MCH	16.539	500	PASS
	HCH	16.522	500	PASS
802.11n(HT20)	LCH	17.787	500	PASS
	MCH	17.743	500	PASS
	HCH	17.752	500	PASS
802.11n(HT40)	LCH	36.456	500	PASS
	MCH	36.479	500	PASS
	HCH	36.462	500	PASS
802.11ax(HT20)	LCH	17.801	500	PASS
	MCH	17.793	500	PASS
	HCH	17.803	500	PASS
802.11ax(HT40)	LCH	36.474	500	PASS
	MCH	36.458	500	PASS
	HCH	36.483	500	PASS

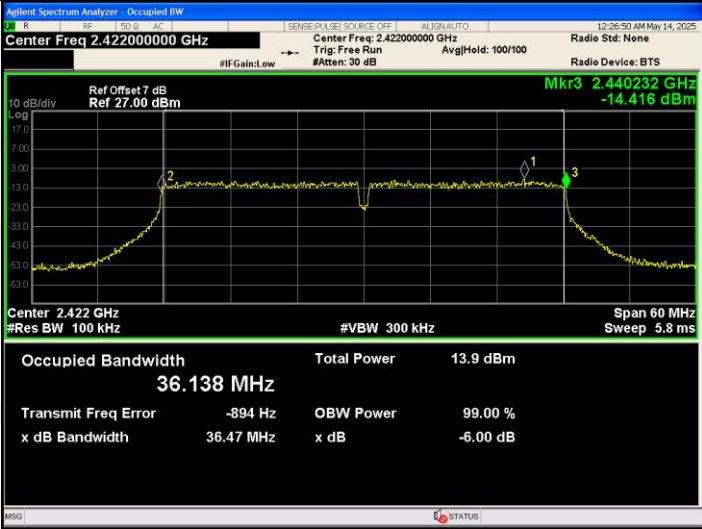
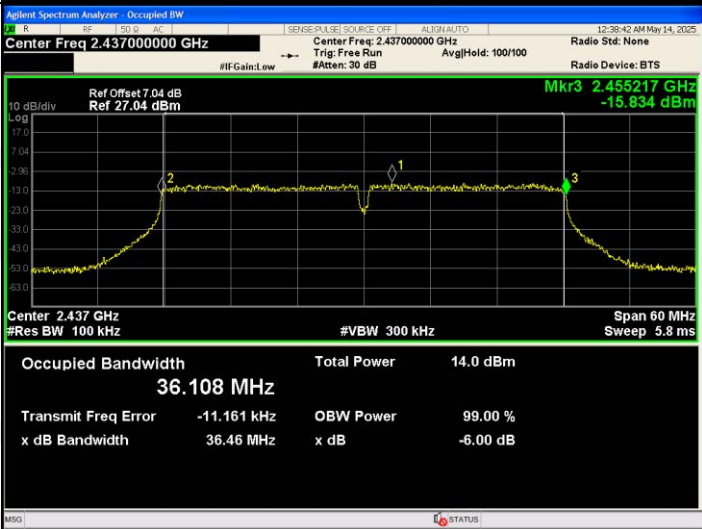
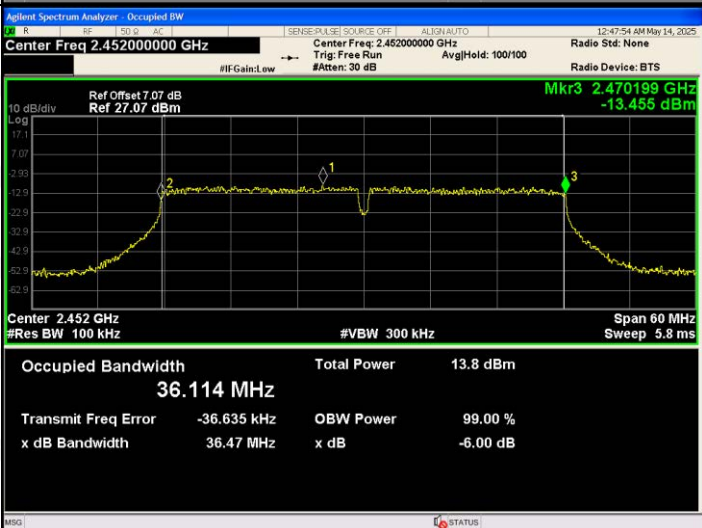
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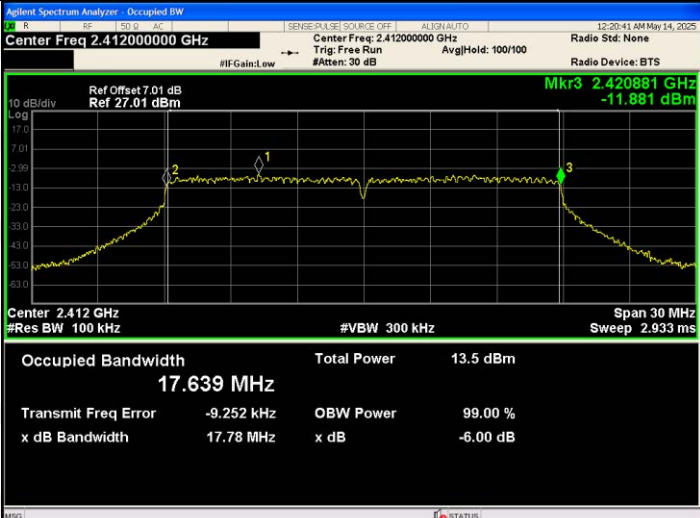
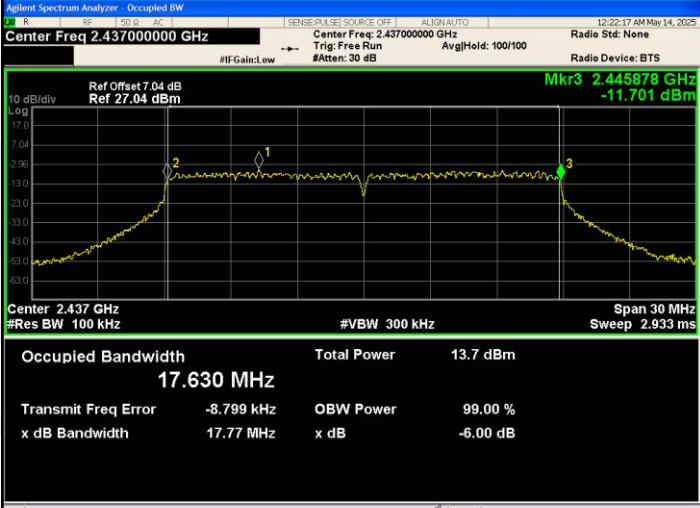
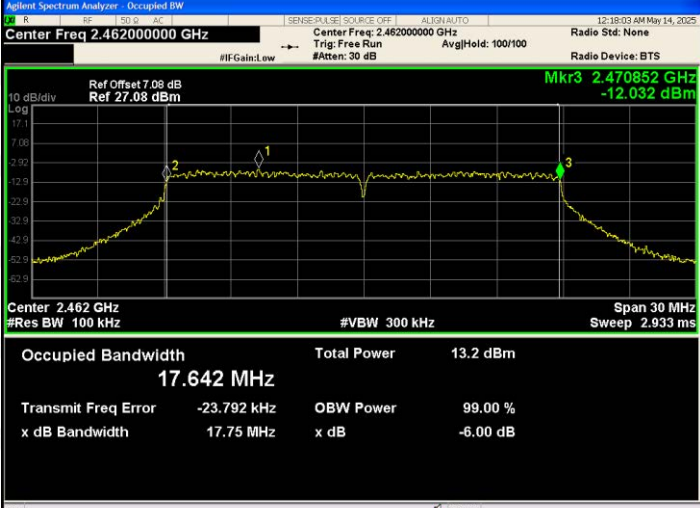
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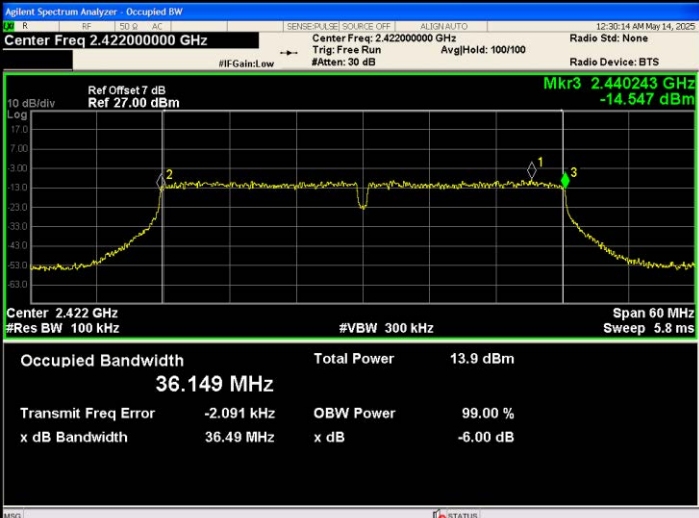
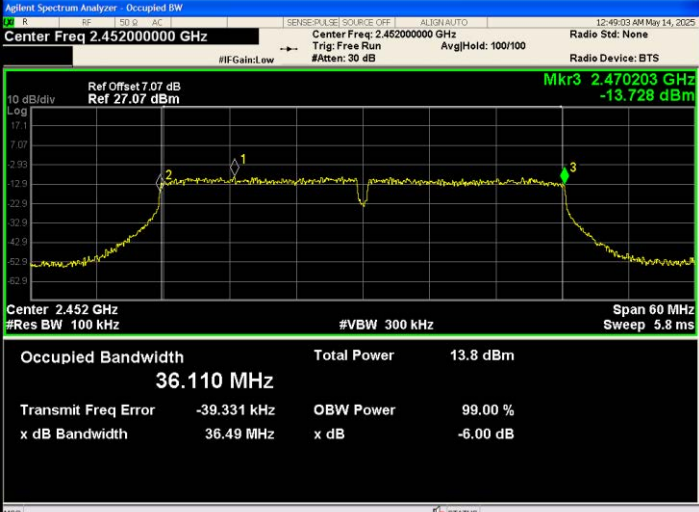


802.11g/LCH	
802.11g/MCH	
802.11g/HCH	

802.11n(HT20)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.41200000 GHz Ref Offset 7.01 dB Ref 27.01 dBm Occupied Bandwidth 17.621 MHz Total Power 13.6 dBm Transmit Freq Error -11.058 kHz x dB Bandwidth 17.75 MHz OBW Power 99.00 % x dB -6.00 dB
802.11n(HT20)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 27.04 dBm Occupied Bandwidth 17.622 MHz Total Power 13.8 dBm Transmit Freq Error -1.444 kHz x dB Bandwidth 17.78 MHz OBW Power 99.00 % x dB -6.00 dB
802.11n(HT20)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.46200000 GHz Ref Offset 7.08 dB Ref 27.08 dBm Occupied Bandwidth 17.616 MHz Total Power 13.2 dBm Transmit Freq Error -33.275 kHz x dB Bandwidth 17.74 MHz OBW Power 99.00 % x dB -6.00 dB

802.11n(HT40)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.422000000 GHz Ref Offset: 7 dB Ref: 27.00 dBm Occupied Bandwidth: 36.138 MHz Total Power: 13.9 dBm Transmit Freq Error: -894 Hz x dB Bandwidth: 36.47 MHz OBW Power: 99.00 % x dB: -6.00 dB
802.11n(HT40)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.437000000 GHz Ref Offset: 7.04 dB Ref: 27.04 dBm Occupied Bandwidth: 36.108 MHz Total Power: 14.0 dBm Transmit Freq Error: -11.161 kHz x dB Bandwidth: 36.46 MHz OBW Power: 99.00 % x dB: -6.00 dB
802.11n(HT40)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.452000000 GHz Ref Offset: 7.07 dB Ref: 27.07 dBm Occupied Bandwidth: 36.114 MHz Total Power: 13.8 dBm Transmit Freq Error: -36.635 kHz x dB Bandwidth: 36.47 MHz OBW Power: 99.00 % x dB: -6.00 dB

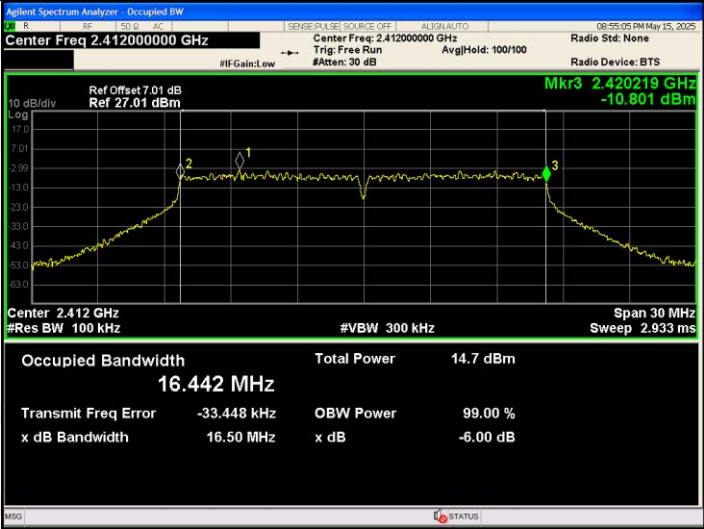
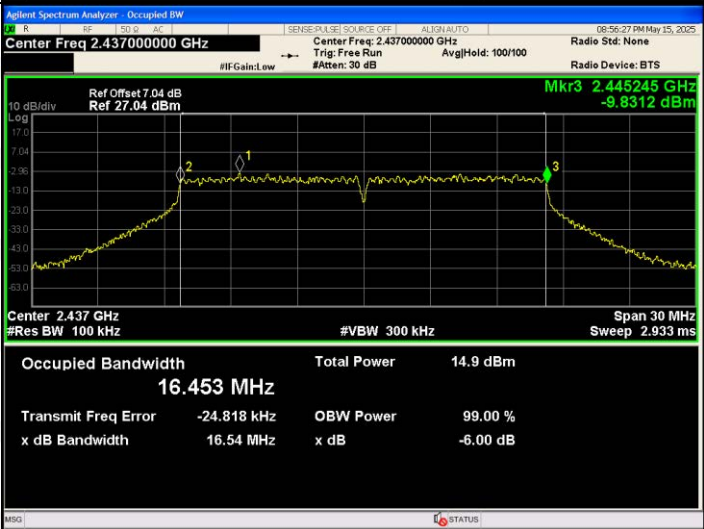
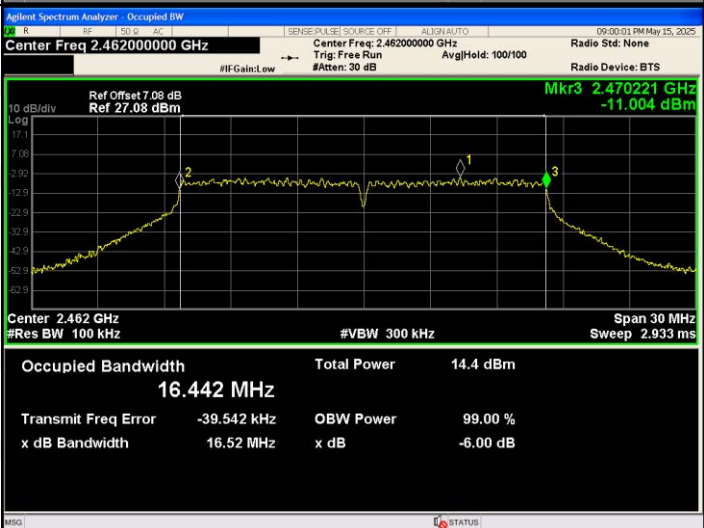
802.11ax(HT20)/LC H		
802.11ax(HT20)/M CH		
802.11ax(HT20)/H CH		

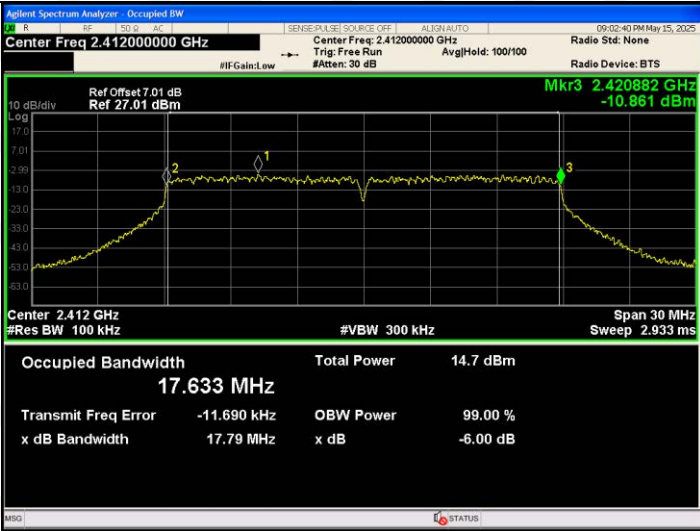
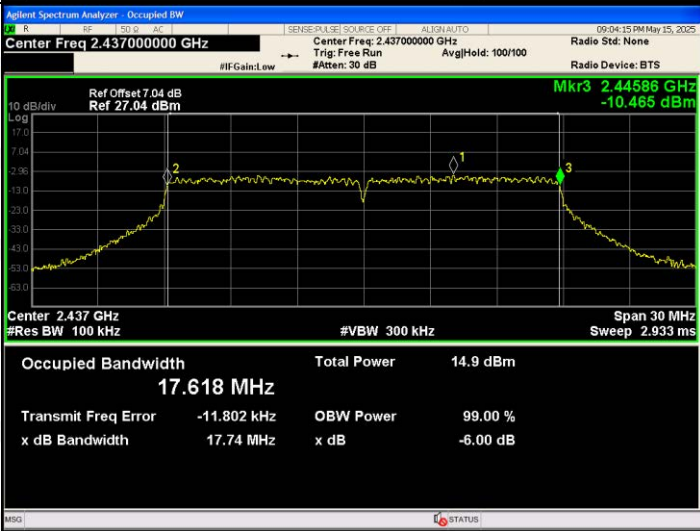
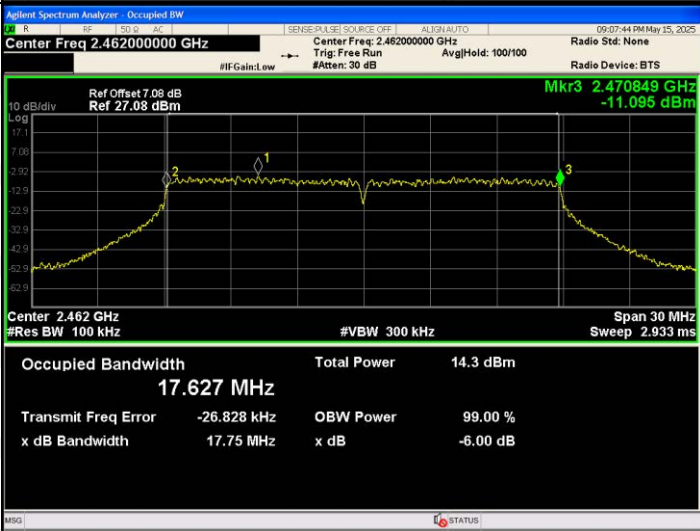
802.11ax(HT40)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 27.00 dBm Occupied Bandwidth 36.149 MHz Total Power 13.9 dBm Transmit Freq Error -2.091 kHz OBW Power 99.00 % x dB Bandwidth 36.49 MHz x dB -6.00 dB
802.11ax(HT40)/M CH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 27.04 dBm Occupied Bandwidth 36.130 MHz Total Power 13.9 dBm Transmit Freq Error -20.299 kHz OBW Power 99.00 % x dB Bandwidth 36.47 MHz x dB -6.00 dB
802.11ax(HT40)/H CH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 27.07 dBm Occupied Bandwidth 36.110 MHz Total Power 13.8 dBm Transmit Freq Error -39.331 kHz OBW Power 99.00 % x dB Bandwidth 36.49 MHz x dB -6.00 dB

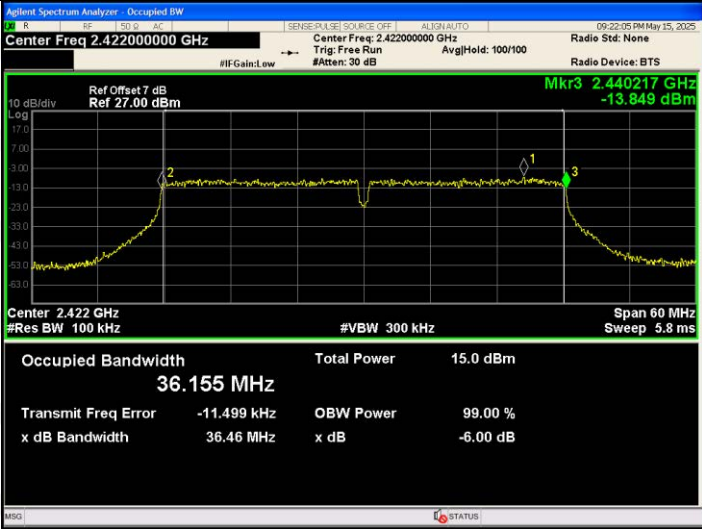
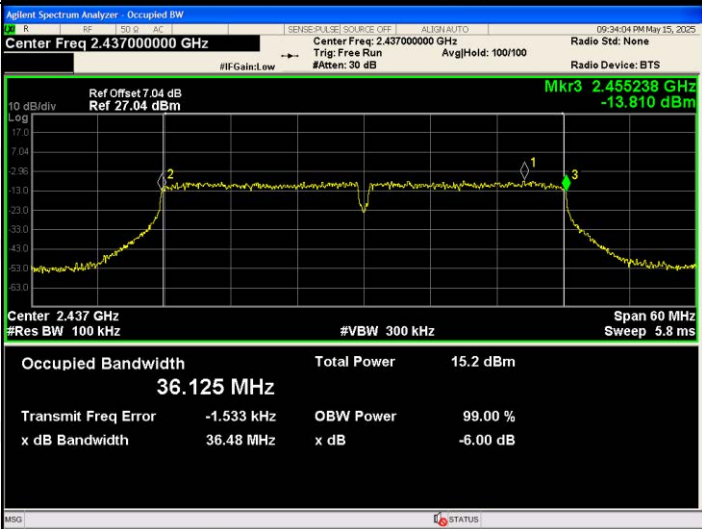
ANT2:

Test Graph:

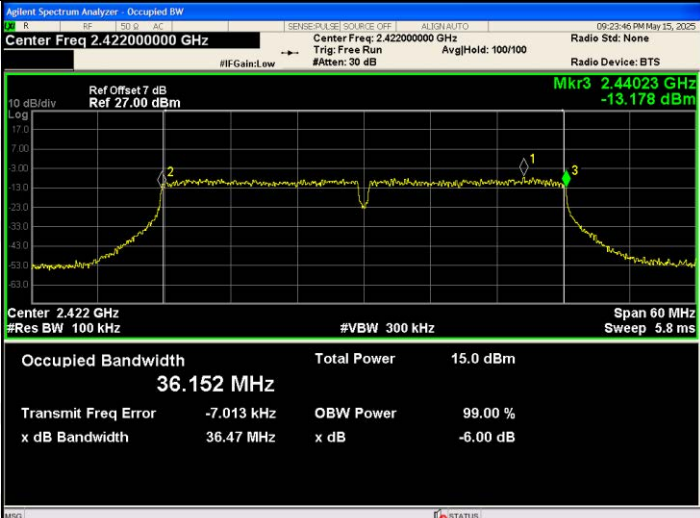
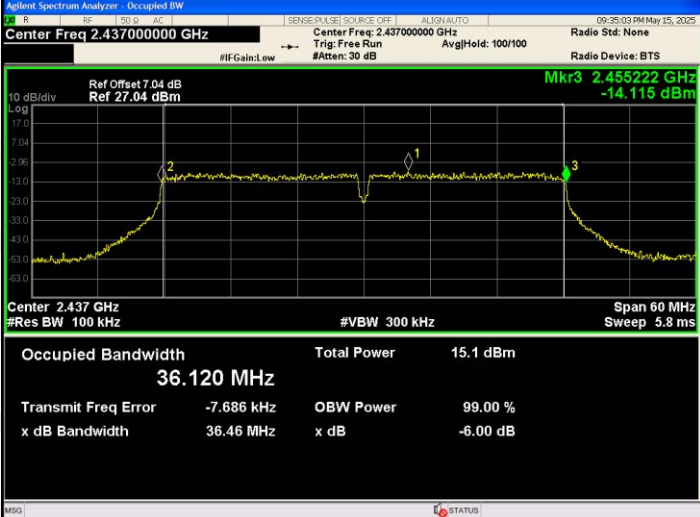


802.11g/LCH	
802.11g/MCH	
802.11g/HCH	

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

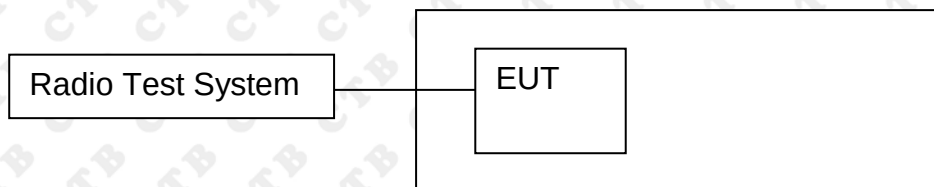
802.11n(HT40)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 27.00 dBm Mkr3 2.440217 GHz -13.849 dBm Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 36.155 MHz Total Power 15.0 dBm Transmit Freq Error -11.499 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB
802.11n(HT40)/MC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 27.04 dBm Mkr3 2.455238 GHz -13.810 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 36.125 MHz Total Power 15.2 dBm Transmit Freq Error -1.533 kHz OBW Power 99.00 % x dB Bandwidth 36.48 MHz x dB -6.00 dB
802.11n(HT40)/HC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 27.07 dBm Mkr3 2.470177 GHz -12.958 dBm Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 36.062 MHz Total Power 15.0 dBm Transmit Freq Error -54.193 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB

802.11ax(HT20)/LC H	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.412000000 GHz Ref Offset: 7.01 dB Ref: 27.01 dBm Occupied Bandwidth: 17.625 MHz Total Power: 14.7 dBm Transmit Freq Error: -16.348 kHz x dB Bandwidth: 17.80 MHz OBW Power: 99.00 % x dB: -6.00 dB
802.11ax(HT20)/M CH	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.437000000 GHz Ref Offset: 7.04 dB Ref: 27.04 dBm Occupied Bandwidth: 17.632 MHz Total Power: 14.8 dBm Transmit Freq Error: -7.940 kHz x dB Bandwidth: 17.79 MHz OBW Power: 99.00 % x dB: -6.00 dB
802.11ax(HT20)/H CH	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.462000000 GHz Ref Offset: 7.08 dB Ref: 27.08 dBm Occupied Bandwidth: 17.642 MHz Total Power: 14.3 dBm Transmit Freq Error: -25.205 kHz x dB Bandwidth: 17.80 MHz OBW Power: 99.00 % x dB: -6.00 dB

802.11ax(HT40)/LC H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 27.00 dBm Occupied Bandwidth 36.152 MHz Total Power 15.0 dBm Transmit Freq Error -7.013 kHz OBW Power 99.00 % x dB Bandwidth 36.47 MHz x dB -6.00 dB
802.11ax(HT40)/M CH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 27.04 dBm Occupied Bandwidth 36.120 MHz Total Power 15.1 dBm Transmit Freq Error -7.686 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB
802.11ax(HT40)/H CH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 27.07 dBm Occupied Bandwidth 36.105 MHz Total Power 15.0 dBm Transmit Freq Error -39.701 kHz OBW Power 99.00 % x dB Bandwidth 36.48 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	-18.186	-17.522	/	8
	MCH	-18.24	-17.472	/	8
	HCH	-18.801	-18.093	/	8
802.11g	LCH	-19.325	-18.177	/	8
	MCH	-18.763	-18.019	/	8
	HCH	-19.789	-17.99	/	8
802.11n(H T20)	LCH	-19.807	-18.893	-16.316	8
	MCH	-19.227	-18.056	-15.592	8
	HCH	-20.179	-18.953	-16.513	8
802.11n(H T40)	LCH	-20.547	-20.148	-17.333	8
	MCH	-21.233	-20.412	-17.793	8
	HCH	-21.372	-19.735	-17.467	8
802.11ax(HT20)	LCH	-19.966	-18.807	-16.338	8
	MCH	-19.454	-18.393	-15.881	8
	HCH	-20.189	-19.019	-16.554	8
802.11ax(HT40)	LCH	-21.411	-20.154	-17.727	8
	MCH	-21.471	-20.378	-17.880	8
	HCH	-21.393	-19.751	-17.485	8

ANT1:
Test Graph

Graphs

802.11b /LCH



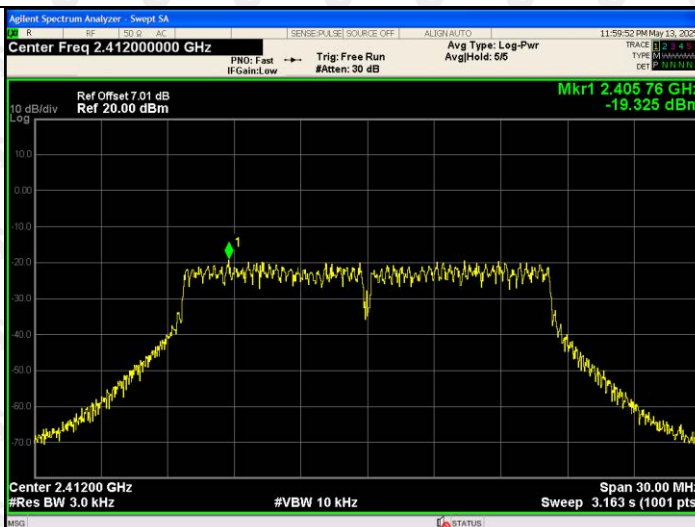
802.11b /MCH



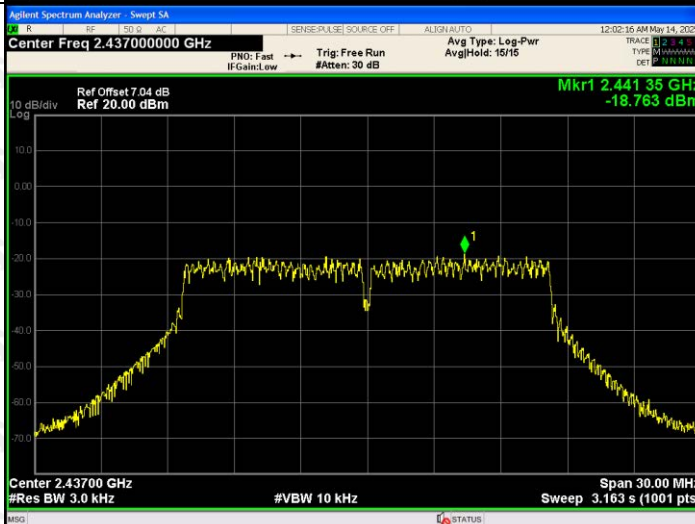
802.11b/HCH



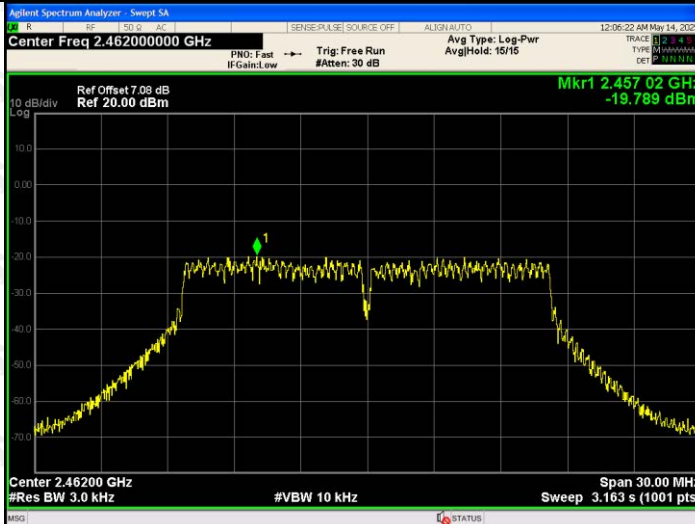
802.11g/LCH

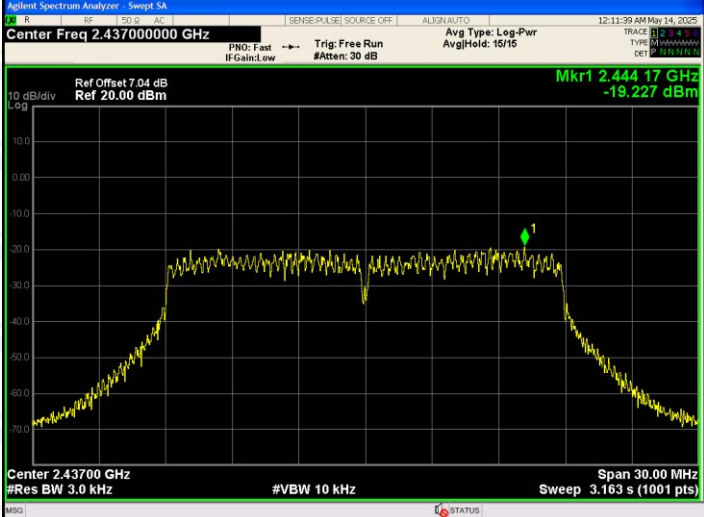
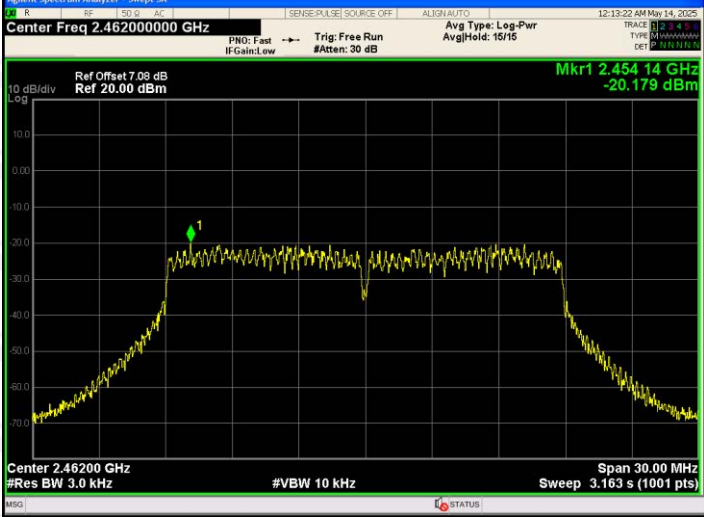


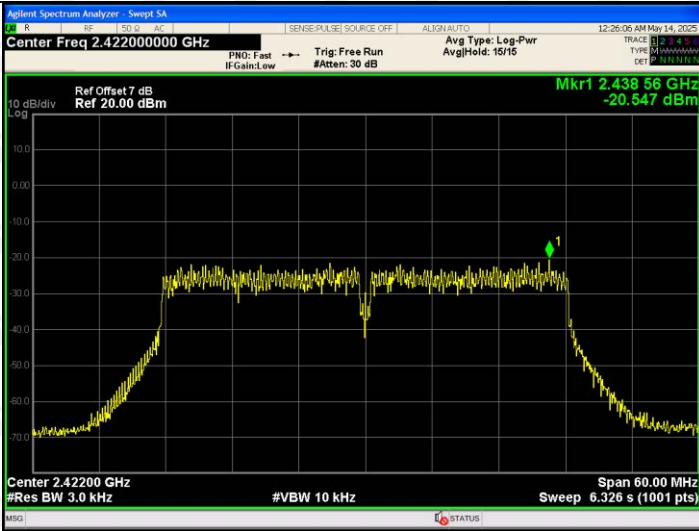
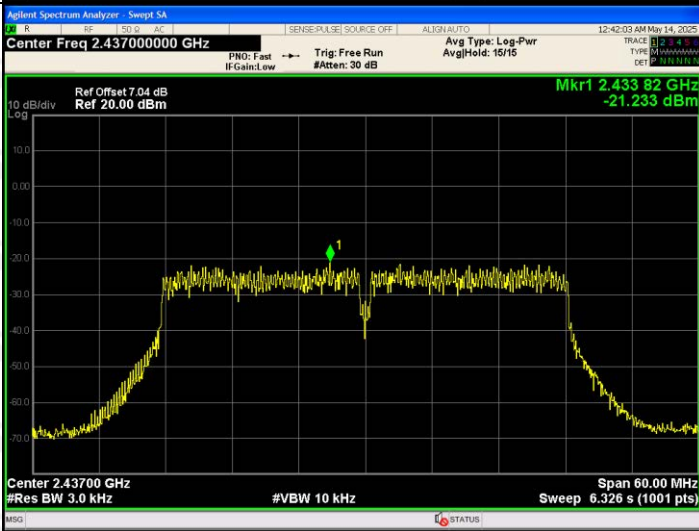
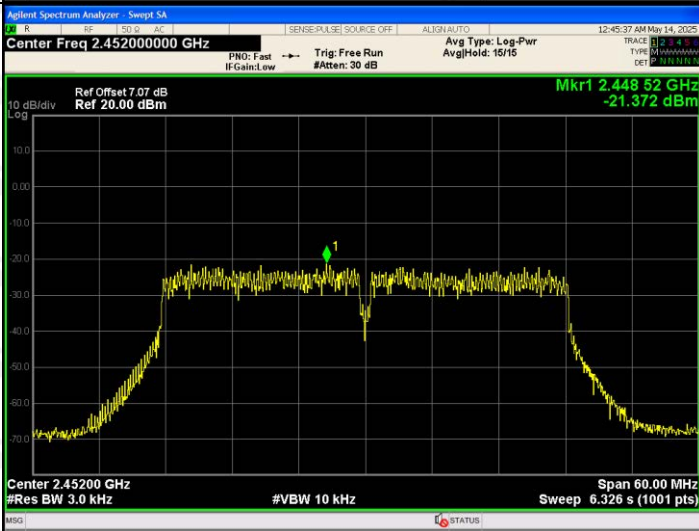
802.11g/MCH

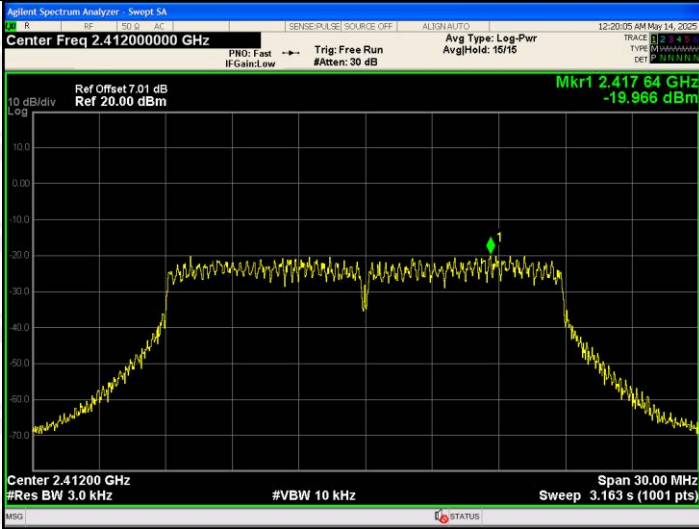
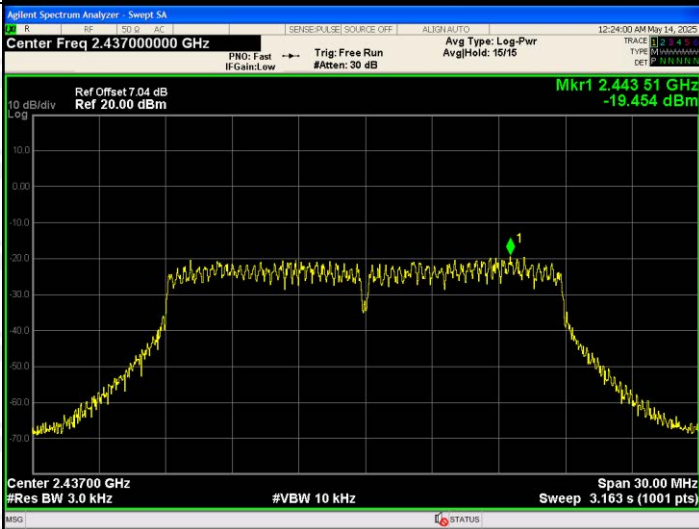
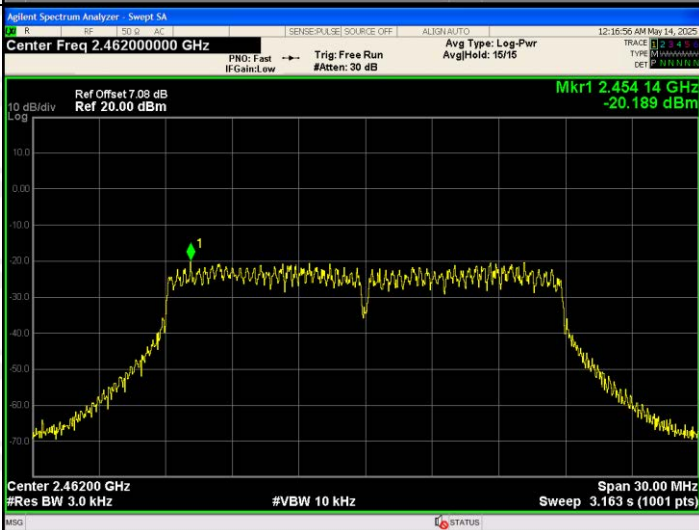


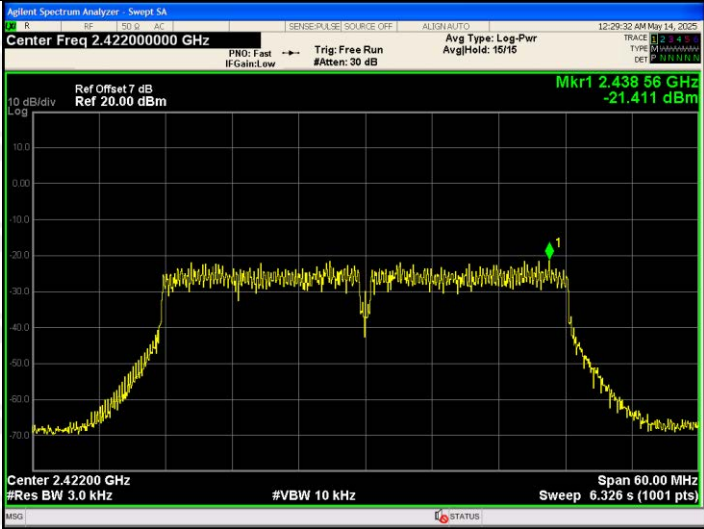
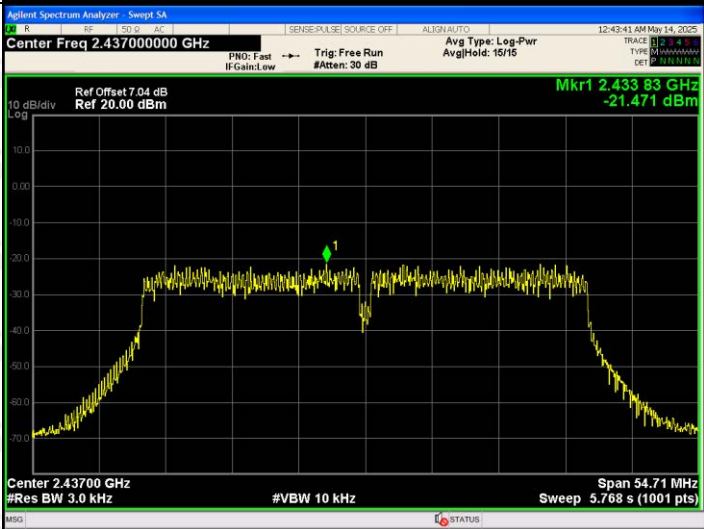
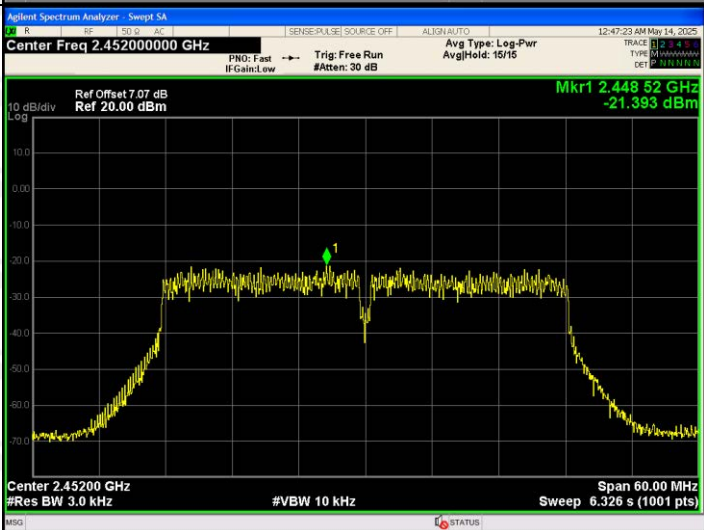
802.11g/HCH



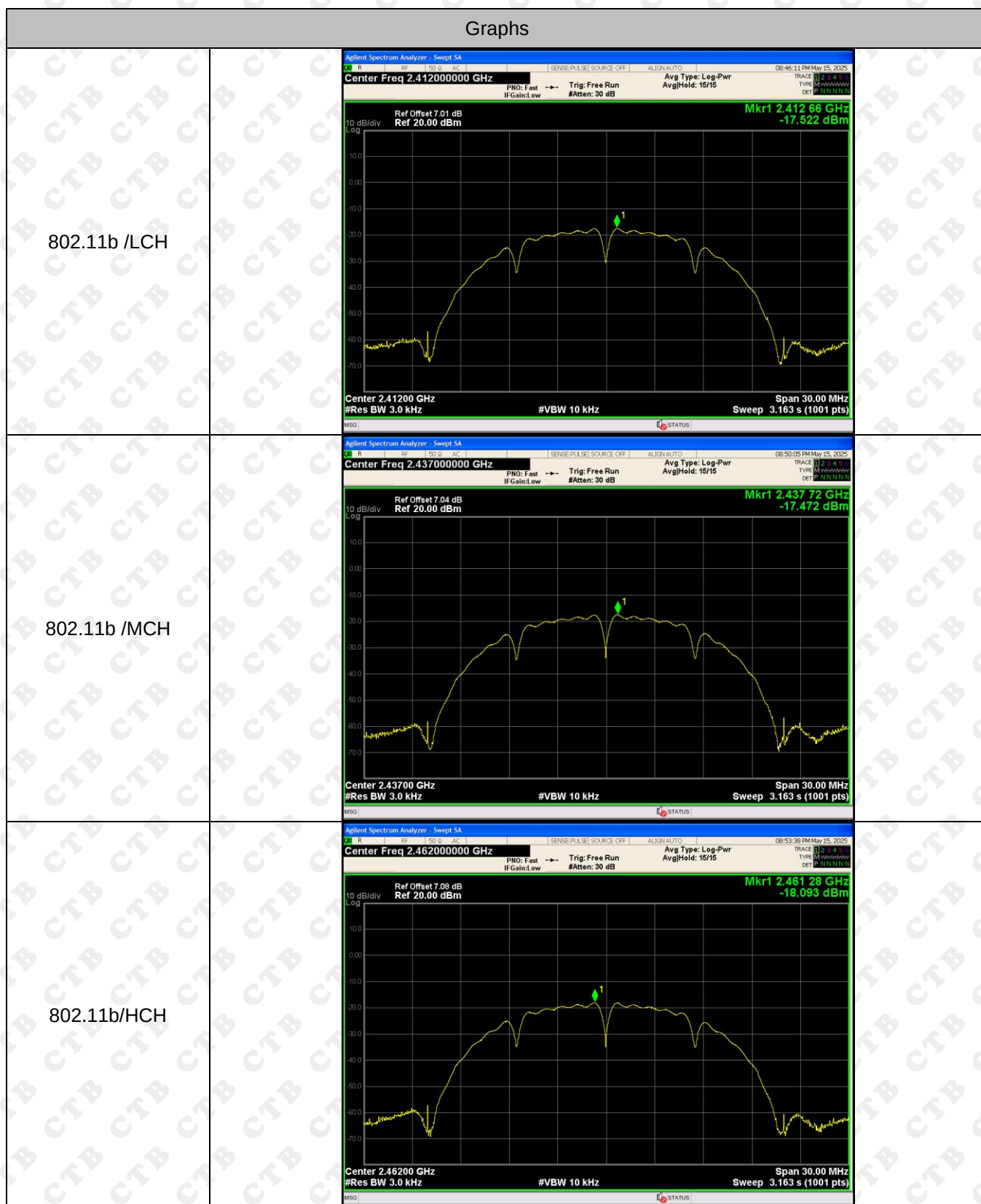
802.11n(HT20)/LCH	
802.11n(HT20)/MCH	
802.11n(HT20)/HCH	

802.11n(HT40)/LCH	
802.11n(HT40)/MCH	
802.11n(HT40)/HCH	

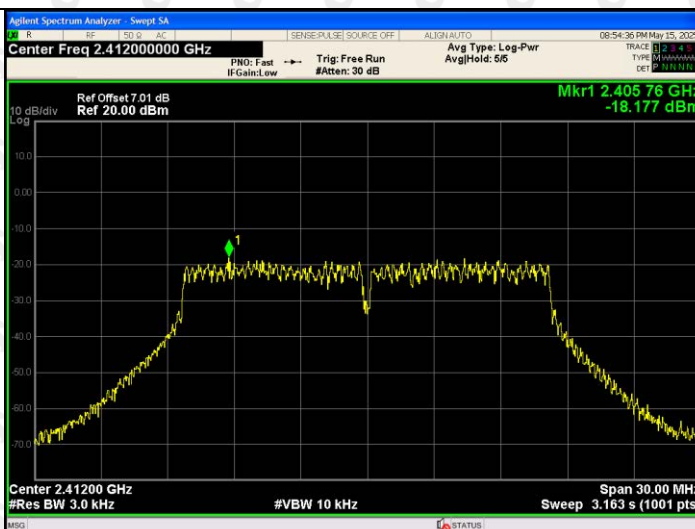
802.11ax(HT20)/LC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.41200000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.41764 GHz -19.966 dBm Center 2.41200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11ax(HT20)/MC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.44351 GHz -19.454 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11ax(HT20)/HC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.46200000 GHz Ref Offset 7.08 dB Ref 20.00 dBm Mkr1 2.45414 GHz -20.189 dBm Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)

802.11ax(HT40)/LC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 20.00 dBm Mkr1 2.438 56 GHz -21.411 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11ax(HT40)/MC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.433 83 GHz -21.471 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 54.71 MHz Sweep 5.768 s (1001 pts)
802.11ax(HT40)/HC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 20.00 dBm Mkr1 2.448 52 GHz -21.393 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)

ANT 2:
Test Graph



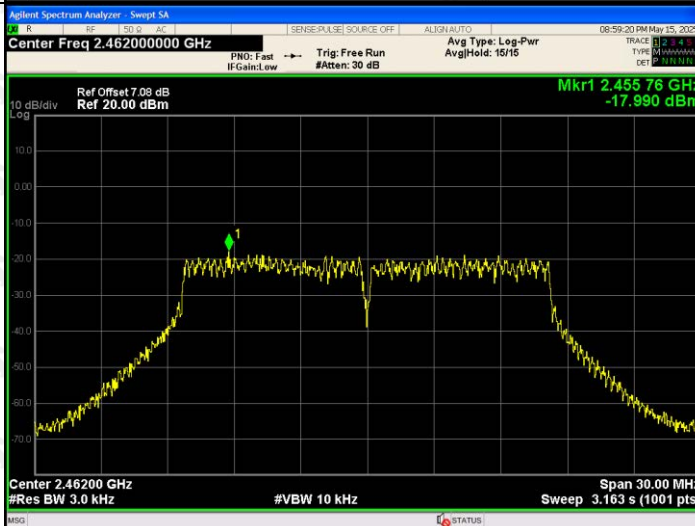
802.11g/LCH

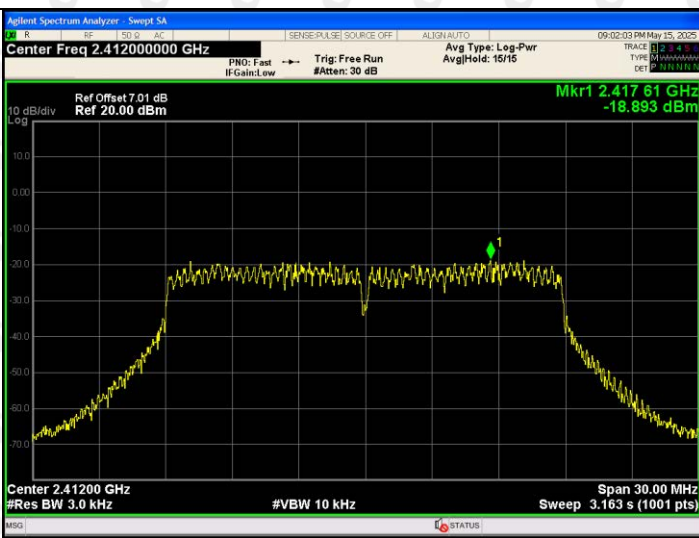
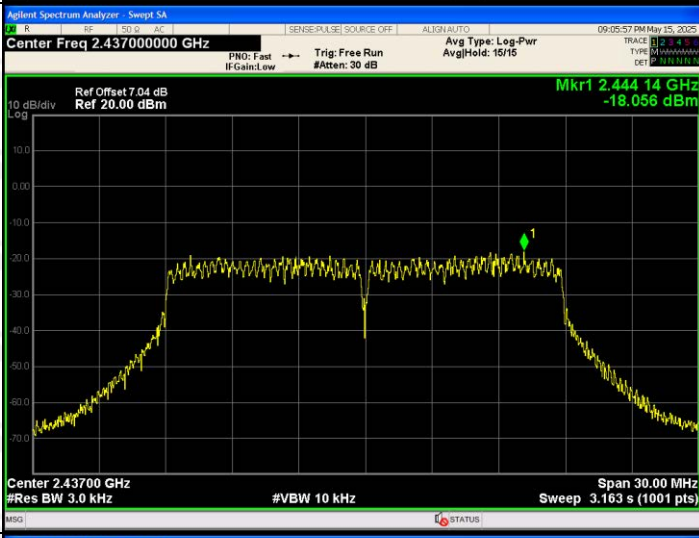
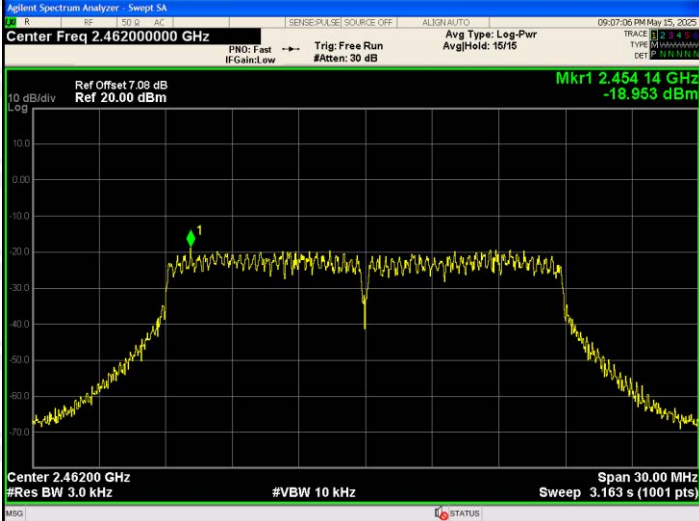


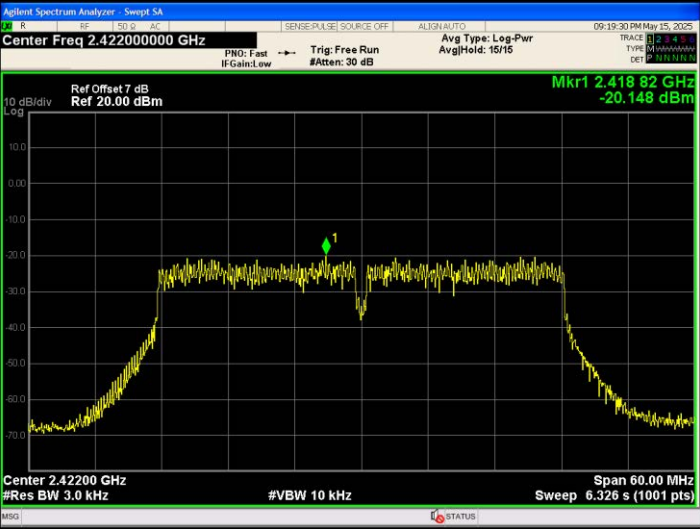
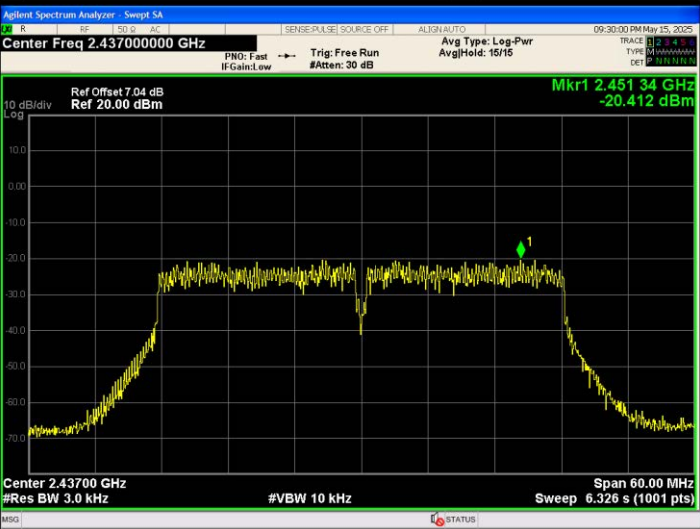
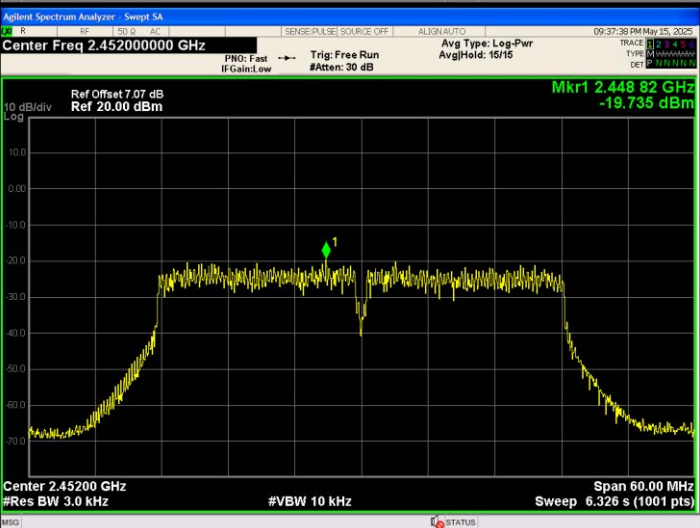
802.11g/MCH

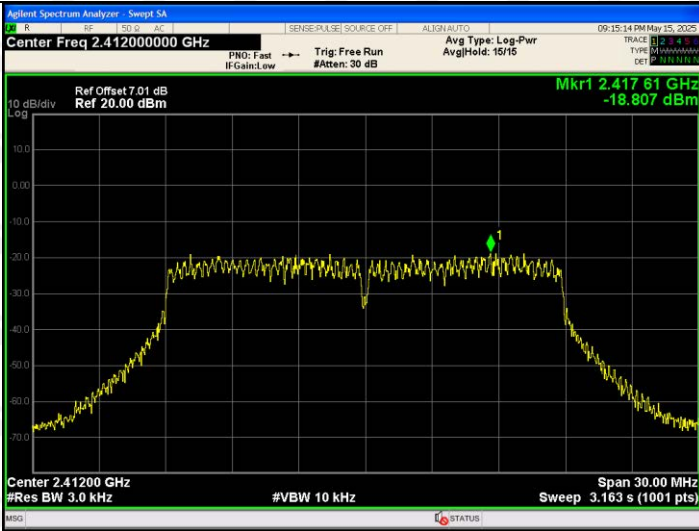
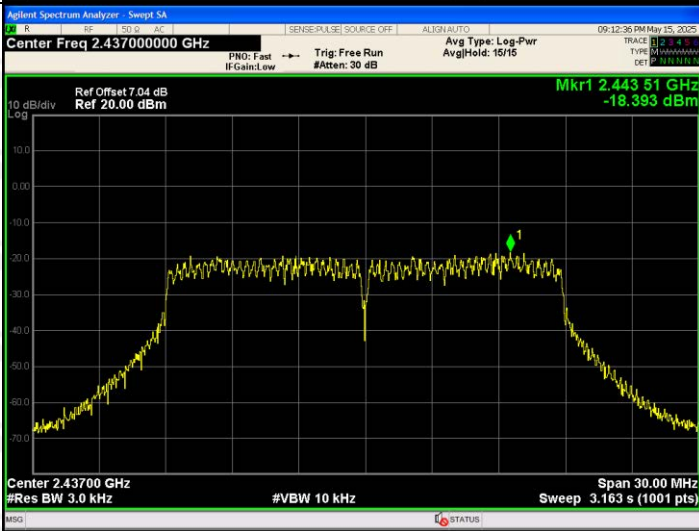
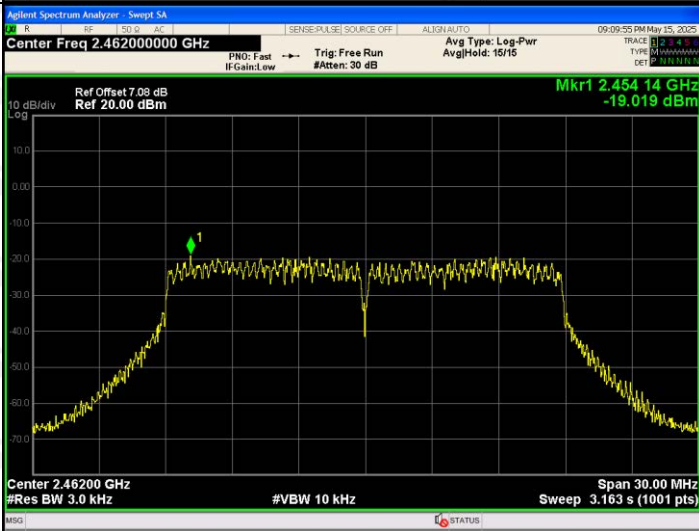


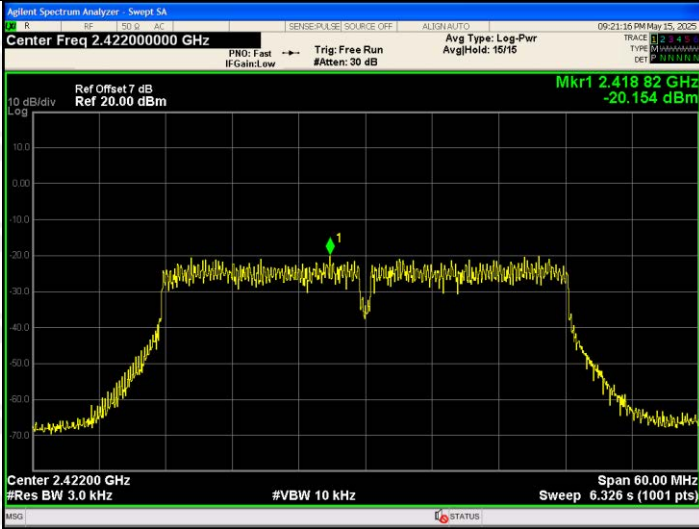
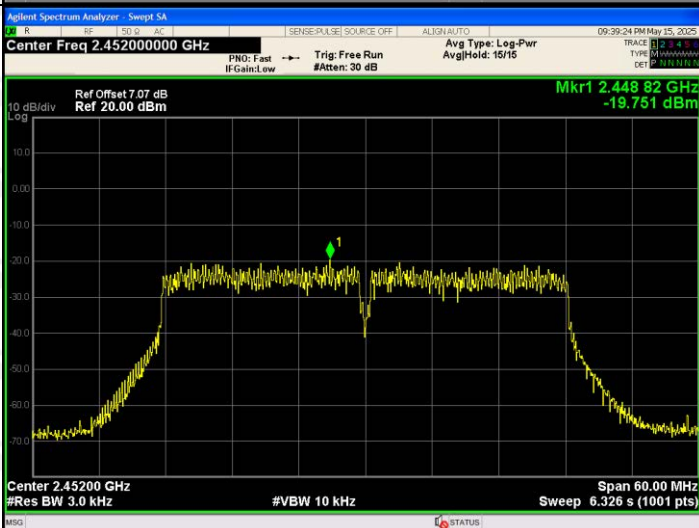
802.11g/HCH



802.11n(HT20)/LCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.41200000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.417 61 GHz -18.893 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)/MCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.444 14 GHz -18.056 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)/HCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.46200000 GHz Ref Offset 7.09 dB Ref 20.00 dBm Mkr1 2.454 14 GHz -18.953 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)/LCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 20.00 dBm Mkr1 2.41882 GHz -20.148 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11n(HT40)/MCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.45134 GHz -20.412 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11n(HT40)/HCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 20.00 dBm Mkr1 2.44882 GHz -19.735 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)

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

802.11ax(HT40)/LC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 20.00 dBm Mkr1 2.41882 GHz -20.154 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11ax(HT40)/MC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.45134 GHz -20.378 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11ax(HT40)/HC H	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.45200000 GHz Ref Offset 7.07 dB Ref 20.00 dBm Mkr1 2.44882 GHz -19.751 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)

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 External antenna and no consideration of replacement. The best case gain of the antenna is Ant1: 2.2dBi, Ant2: 2.2dBi

13. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1G



Above 1G



Conducted Emission



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