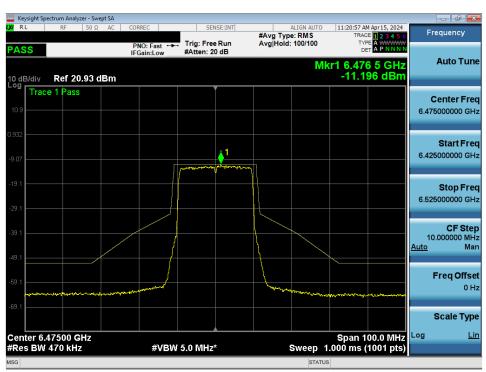


🚾 Keysight Spectrum Analyzer - Swept SA 【 RL RF 50 Ω AC - 6 . 10:56:40 AM Apr 15, 2024 TRACE 1 2 3 4 5 ALIGN AUT #Avg Type: RMS Avg|Hold: 100/100 Frequency Trig: Free Run #Atten: 20 dB TYP PNO: Fast +++ IFGain:Low DET A P ASS Auto Tune Mkr1 6.480 5 GHz -11.206 dBm 0 dB/div Ref 20.93 dBm Frace 1 Pass Center Freq 6.475000000 GHz Start Freq 1 6.425000000 GHz Stop Freq 6.525000000 GHz CF Step 10.000000 MHz Man Auto Freq Offset 0 Hz Scale Type Span 100.0 MHz Log Sweep 1.000 ms (1001 pts) Center 6.47500 GHz #Res BW 470 kHz Lin #VBW 5.0 MHz*

MIMO Antenna-1 In-Band Emission Measurements - (UNII Band 6)

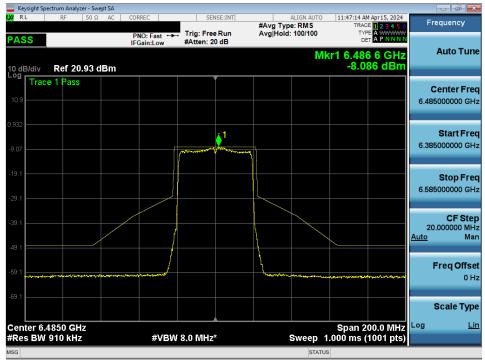


Plot 7-118. In-Band Emission MIMO ANT1 (20MHz 802.11a (UNII Band 6) - Ch. 105) - LPI

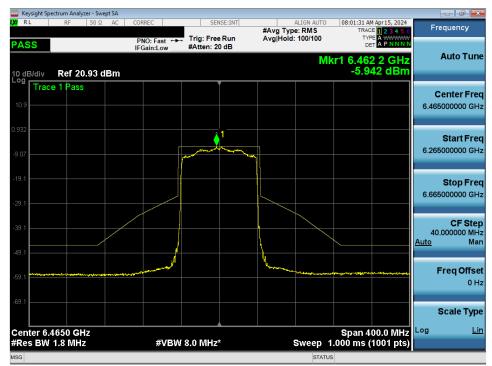
Plot 7-119. In-Band Emission MIMO ANT1 (20MHz 802.11ax/be (UNII Band 6) - Ch. 105) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dega 05 of 150	
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Plot 7-120. In-Band Emission MIMO ANT1 (40MHz 802.11ax/be (UNII Band 6) - Ch. 107) - LPI



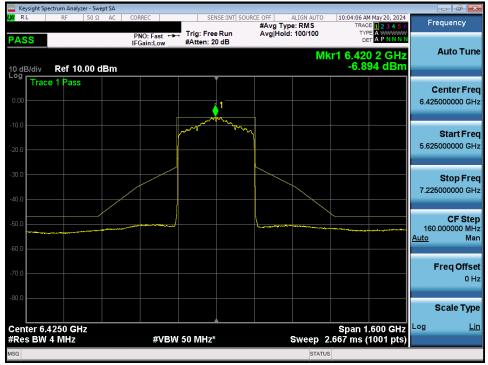
Plot 7-121. In-Band Emission MIMO ANT1 (80MHz 802.11ax/be (UNII Band 6) - Ch. 103) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 00 of 150	
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© 2024 ELEMENT	-	·	V 9.0 02/01/2019	



Keysight Spectrum Analyzer - Swept SA				- 6 -
IXIRL RF 50Ω AC	CORREC SENSE:	ALIGN AUTO #Avg Type: RMS	08:36:13 AM Apr 15, 2024 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Fast +++ Trig: Free Ru IFGain:Low #Atten: 20 dE	ın Avg Hold: 100/100 3	TYPE A WWWW DET A P N N N N	Auto Tune
10 dB/div Ref 20.93 dBm		М	kr1 6.509 0 GHz -7.562 dBm	Auto Tulle
Trace 1 Pass				Center Freq
10.9				6.505000000 GHz
0.932	â 1			Start Freq
-9.07		~~		6.105000000 GHz
-19.1				Stop Freq
-29.1				6.905000000 GHz
				CF Step
-39.1				80.000000 MHz <u>Auto</u> Man
-49.1				
-59.1				Freq Offset 0 Hz
-69.1				0112
				Scale Type
Center 6.5050 GHz #Res BW 3.0 MHz	#VBW 50 MHz*	Sween	Span 800.0 MHz 1.333 ms (1001 pts)	Log <u>Lin</u>
#Res DW 3.0 MINZ	#VBW JO WINZ	Sweep		

Plot 7-122. In-Band Emission MIMO ANT1 (160MHz 802.11ax/be (UNII Band 6) - Ch. 111) - LPI



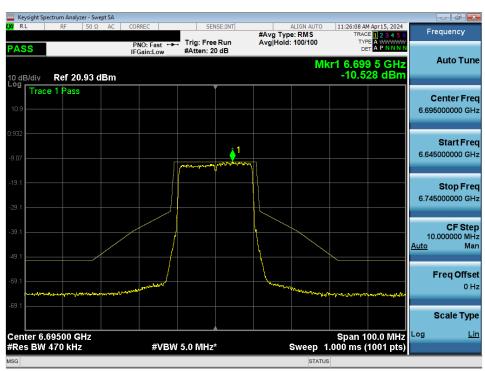
Plot 7-123. In-Band Emission MIMO ANT1 (320MHz 802.11ax/be (UNII Band 5/6/7) - Ch. 95) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 07 of 159	
1M2403190019-09-R1.A3L	03/14/2024 - 05/21/2024	Portable Computing Device	Page 97 of 158	
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Keysight Spectrum Analyzer - Swept SA RL RF S0 Ω AC - 6 . 11:02:13 AM Apr 15, 2024 TRACE 1 2 3 4 5 ALIGN AUT #Avg Type: RMS Avg|Hold: 100/100 Frequency Trig: Free Run #Atten: 20 dB TYP PNO: Fast +++ IFGain:Low ASS DET Auto Tune Mkr1 6.701 6 GHz -10.459 dBm 0 dB/div Ref 20.93 dBm Trace 1 Pass Center Freq 6.695000000 GHz Start Freq <u>î</u> 1 6.645000000 GHz Stop Freq 6.745000000 GHz CF Step 10.000000 MHz Man Auto Freq Offset 0 Hz Scale Type Span 100.0 MHz Log Sweep 1.000 ms (1001 pts) Center 6.69500 GHz #Res BW 470 kHz Lin #VBW 5.0 MHz*

MIMO Antenna-1 In-Band Emission Measurements - (UNII Band 7)

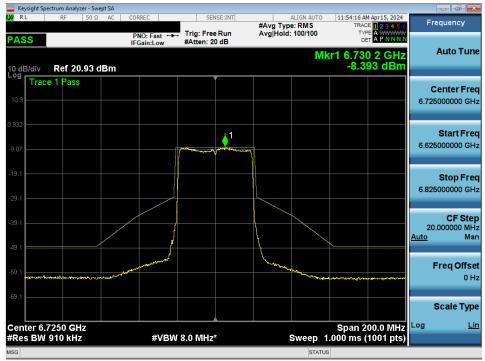


Plot 7-124. In-Band Emission MIMO ANT1 (20MHz 802.11a (UNII Band 7) – Ch. 149) - LPI

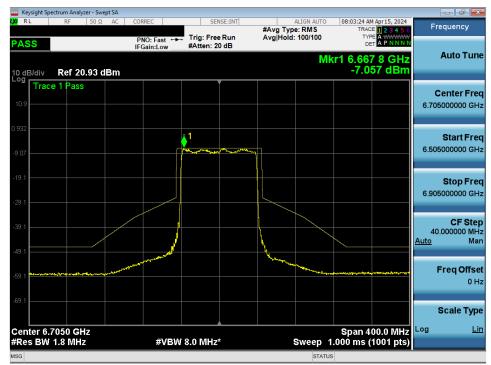
Plot 7-125. In-Band Emission MIMO ANT1 (20MHz 802.11ax/be (UNII Band 7) - Ch. 149) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dega 00 of 150	
1M2403190019-09-R1.A3L	03/14/2024 - 05/21/2024	Portable Computing Device	Page 98 of 158	
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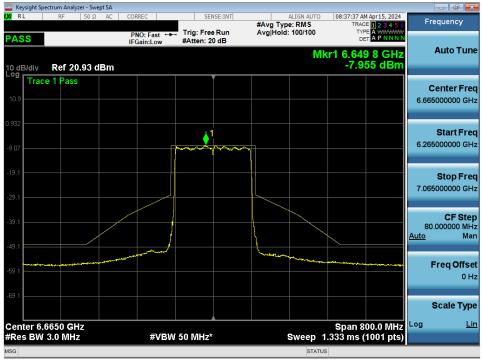
Plot 7-126. In-Band Emission MIMO ANT1 (40MHz 802.11ax/be (UNII Band 7) - Ch. 155) - LPI



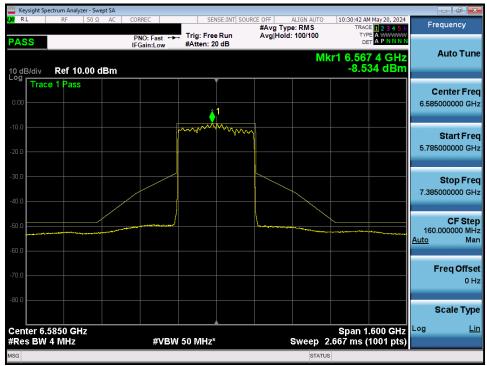
Plot 7-127. In-Band Emission MIMO ANT1 (80MHz 802.11ax/be (UNII Band 7) - Ch. 151) - LPI & SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dega 00 of 150	
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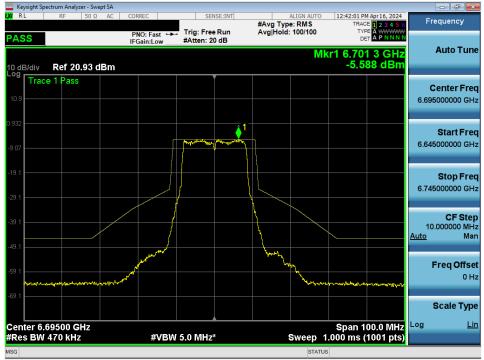
Plot 7-128. In-Band Emission MIMO ANT1 (160MHz 802.11ax/be (UNII Band 7) - Ch. 143) - LPI & SP



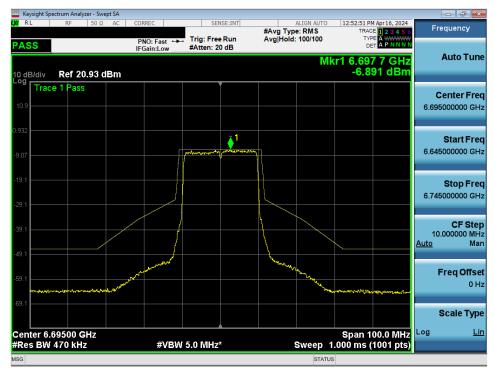
Plot 7-129. In-Band Emission MIMO ANT1 (320MHz 802.11ax/be (UNII Band 6/7) - Ch. 127) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 100 of 159	
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© 2024 ELEMENT			V 9.0 02/01/2019	





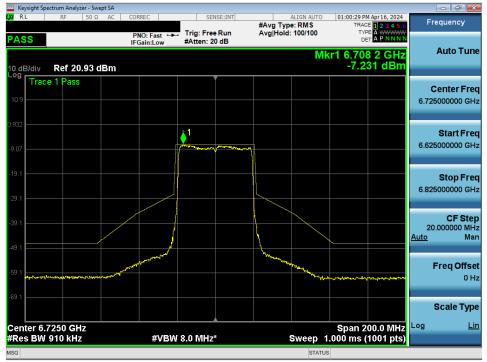
Plot 7-130. In-Band Emission MIMO ANT1 (20MHz 802.11a (UNII Band 7) - Ch. 149) - SP



Plot 7-131. In-Band Emission MIMO ANT1 (20MHz 802.11ax/be (UNII Band 7) - Ch. 149) - SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 101 of 159	
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Plot 7-132. In-Band Emission MIMO ANT1 (40MHz 802.11ax/be (UNII Band 7) - Ch. 155) - SP

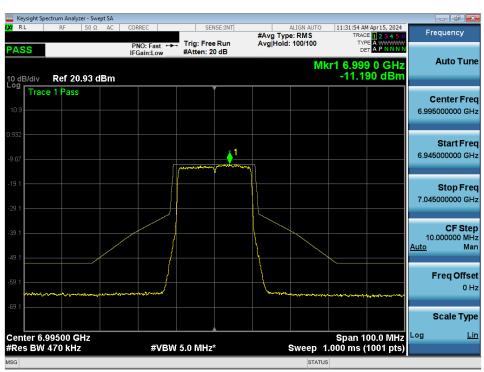
FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 100 of 150	
1M2403190019-09-R1.A3L	03/14/2024 - 05/21/2024	Portable Computing Device	Page 102 of 158	
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Keysight Spectrum Analyzer - Swept SA RL RF S0 Ω AC - 6 . 11:06:25 AM Apr 15, 2024 TRACE 1 2 3 4 5 ALIGN AUT #Avg Type: RMS Avg|Hold: 100/100 Frequency Trig: Free Run #Atten: 20 dB TYP PNO: Fast +++ IFGain:Low ASS DET Auto Tune Mkr1 6.991 9 GHz -11.221 dBm 0 dB/div Ref 20.93 dBm Trace 1 Pass Center Freq 6.995000000 GHz Start Freq 1 6.945000000 GHz Stop Freq 7.045000000 GHz CF Step 10.000000 MHz Man Auto Freq Offset 0 Hz Scale Type Span 100.0 MHz Log Sweep 1.000 ms (1001 pts) Center 6.99500 GHz #Res BW 470 kHz Lin #VBW 5.0 MHz*

MIMO Antenna-1 In-Band Emission Measurements - (UNII Band 8)

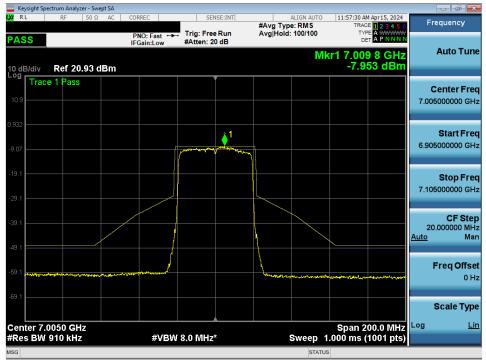


Plot 7-133. In-Band Emission MIMO ANT1 (20MHz 802.11a (UNII Band 8) - Ch. 209) - LPI

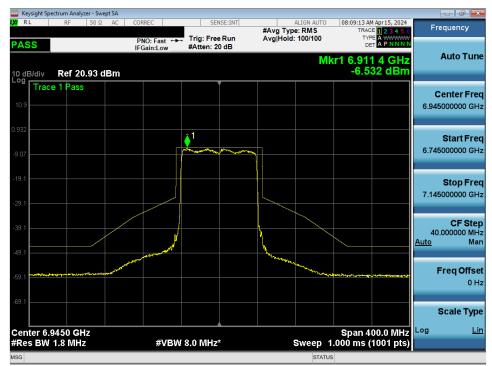
Plot 7-134. In-Band Emission MIMO ANT1 (20MHz 802.11ax/be (UNII Band 8) - Ch. 209) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 102 of 159	
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Plot 7-135. In-Band Emission MIMO ANT1 (40MHz 802.11ax/be (UNII Band 8) - Ch. 211) - LPI



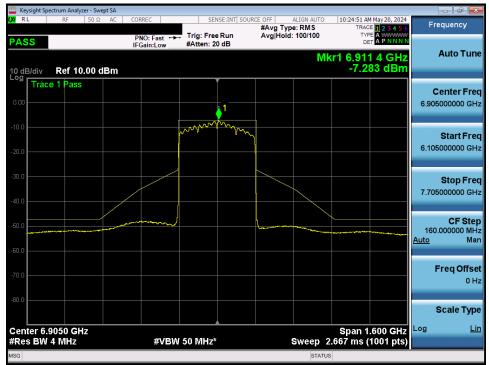
Plot 7-136. In-Band Emission MIMO ANT1 (80MHz 802.11ax/be (UNII Band 8) - Ch. 199) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 104 of 159	
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www.www.com analyzer - Swept SA							- 6 💌
LX/ R L RF 50 Ω AC	CORREC	SENSE:INT	#Avg Type	ALIGN AUTO	08:40:22 AM Apr 1 TRACE 12		Frequency
PASS		ree Run : 20 dB	Avg Hold:	100/100	TYPE A H DET A P	NNNN	Auto Turo
10 dB/div Ref 20.93 dBm				Mk	r1 6.912 2 -8.019 (GHz dBm	Auto Tune
10.9						6	Center Freq .985000000 GHz
-9.07	<u>1</u>	h				6	Start Freq .585000000 GHz
-19.1						7	Stop Freq .385000000 GHz
-39.1						Aut	CF Step 80.000000 MHz <u>o</u> Man
-59.1			human	*****			Freq Offset 0 Hz
-69.1					2 -1		Scale Type
Center 6.9850 GHz #Res BW 3.0 MHz	#VBW 50 MH	z*	5	Sweep 1.	Span 800.0 333 ms (100	1 pts)	
MSG				STATUS			

Plot 7-137. In-Band Emission MIMO ANT1 (160MHz 802.11ax/be (UNII Band 8) - Ch. 207) - LPI



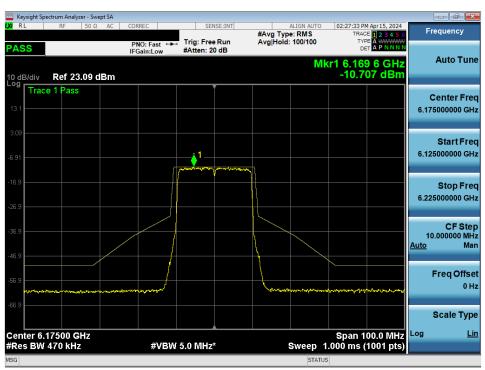
Plot 7-138. In-Band Emission MIMO ANT1 (320MHz 802.11ax/be (UNII Band 7/8) - Ch. 191) - LPI

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 105 of 159
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Keysight Spectrum Analyzer - Swept SA KE RF 50 Ω AC - 6 × ALIGN AUTO #Avg Type: RMS Avg|Hold: 100/100 02:03:13 PM Apr 15, 2024 TRACE 1 2 3 4 5 (SENSE:INT Frequency Trig: Free Run #Atten: 20 dB TYPE PNO: Fast IFGain:Low PASS DE Auto Tune Mkr1 6.182 4 GHz -10.456 dBm 0 dB/div Ref 23.09 dBm Trace 1 Pass Center Fred 6.175000000 GHz Start Freq 6.125000000 GHz Stop Freq 6.225000000 GHz CF Step 10.000000 MHz Man Auto **Freq Offset** 0 Hz Scale Type Center 6.17500 GHz #Res BW 470 kHz Span 100.0 MHz Sweep 1.000 ms (1001 pts) <u>Lin</u> #VBW 5.0 MHz*

MIMO Antenna-2 In-Band Emission Measurements - (UNII Band 5)

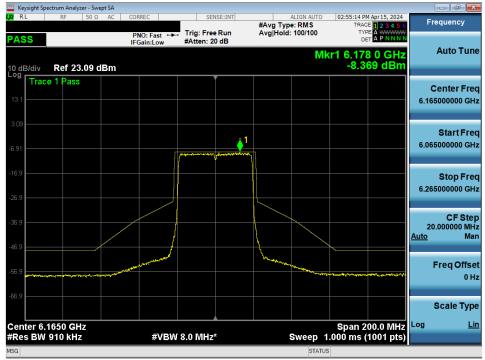


Plot 7-139. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 5) - Ch. 45) - LPI

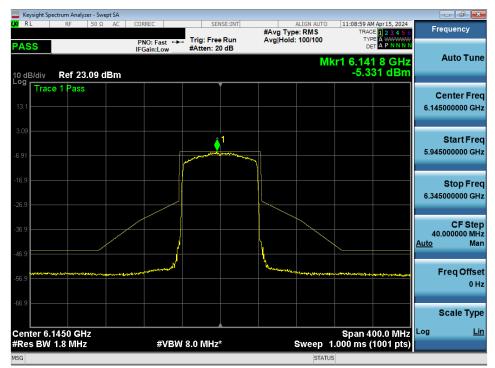
Plot 7-140. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 5) - Ch. 45) - LPI

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 100 of 150
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Plot 7-141. In-Band Emission MIMO ANT2 (40MHz 802.11ax/be (UNII Band 5) - Ch. 43) - LPI



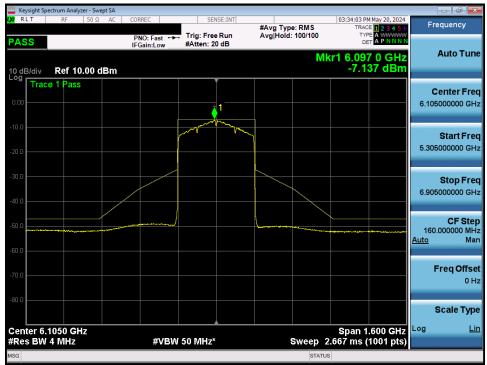
Plot 7-142. In-Band Emission MIMO ANT2 (80MHz 802.11ax/be (UNII Band 5) - Ch. 39) - LPI & SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 107 of 159
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	ctrum Analyzer - Swe										d X
LXI RL	RF 50 Ω	AC C	ORREC	SE	NSE:INT	#Avg Ty	ALIGN AUTO		M Apr 15, 2024	Frequ	iency
PASS			PNO: Fast ↔ FGain:Low	Atten: 2		Avg Hol	d: 100/100	TYI Di		Δι	ito Tune
10 dB/div Log	Ref 23.09 d	IBm					MI	(r1 6.18 -6.7	0 2 GHz 93 dBm	Au	ito rune
Trace	e 1 Pass				Í					Cen	iter Freq
13.1										6.18500	0000 GHz
3.09											
-6.91					1						tart Freq 0000 GHz
-6.91				-		7					
-16.9										St	top Freq
-26.9										6.58500	0000 GHz
											CF Step
-36.9							\square				0000 MHz Man
-46.9								<u> </u>			Marr
-56.9		e4-14-14-14-14-14-14-14-14-14-14-14-14-14				harmon		-		Fre	qOffset
											0 Hz
-66.9										Sci	ale Type
O antan C (0			Lin
Center 6.1 #Res BW			#VBV	V 50 MHz*			Sweep 1	span 8 .333 m <u>s (</u>	00.0 MHz (1001 pts)	209	<u></u>
MSG							STATUS	5			

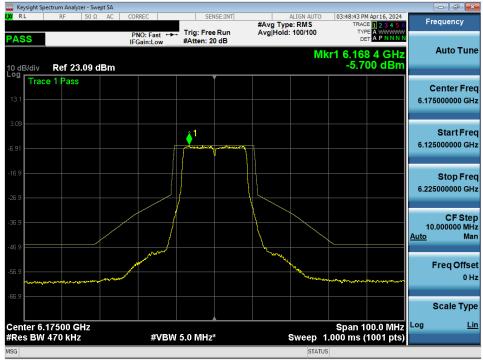
Plot 7-143. In-Band Emission MIMO ANT2 (160MHz 802.11ax/be (UNII Band 5) - Ch. 47) - LPI & SP



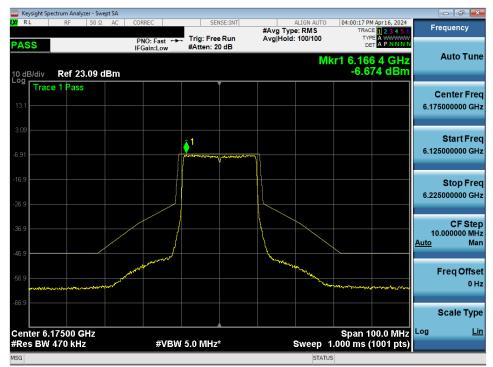
Plot 7-144. In-Band Emission MIMO ANT2 (320MHz 802.11be (UNII Band 5) - Ch.31) - LPI & SP

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 100 of 150
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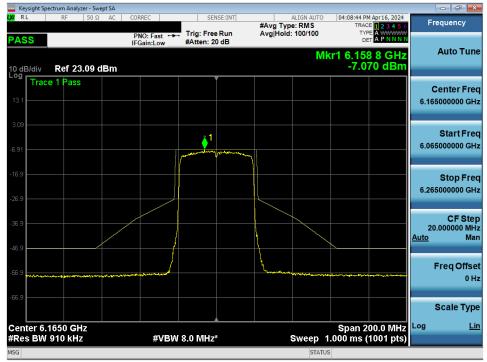
Plot 7-145. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 5) - Ch. 45) - SP



Plot 7-146. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 5) - Ch. 45) - SP

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 109 of 158
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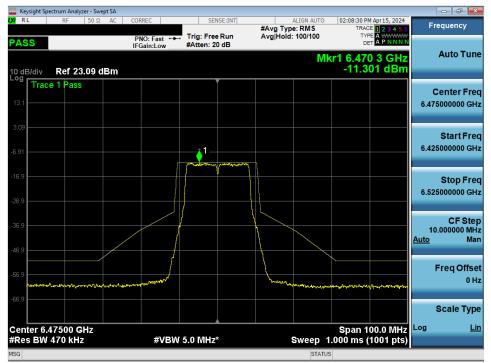


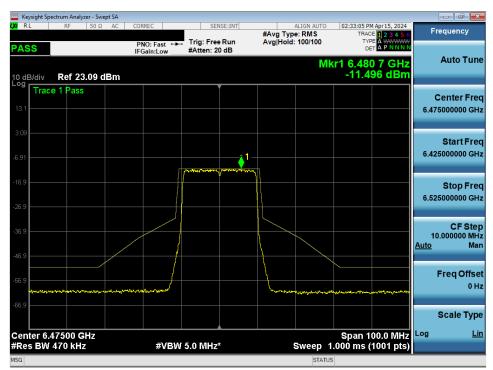
Plot 7-147. In-Band Emission MIMO ANT2 (40MHz 802.11ax/be (UNII Band 5) - Ch. 43) - SP

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 110 of 158
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MIMO Antenna-2 In-Band Emission Measurements - (UNII Band 6)



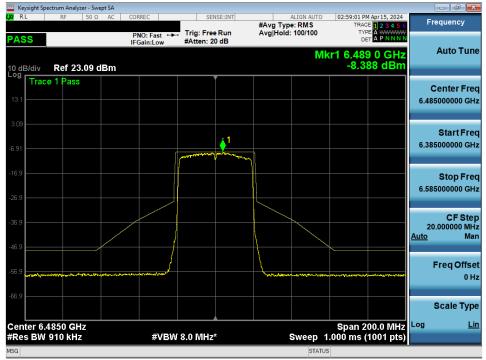


Plot 7-148. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 6) - Ch. 105) - LPI

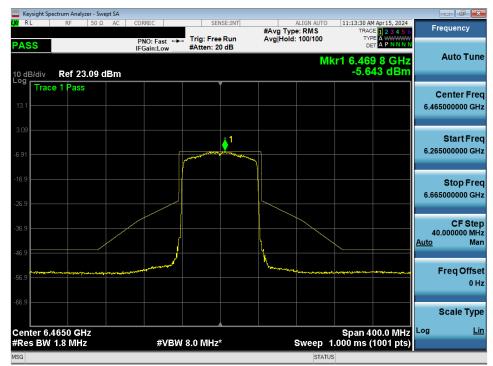
Plot 7-149. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 6) - Ch. 105) - LPI

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 111 of 159
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Plot 7-150. In-Band Emission MIMO ANT2 (40MHz 802.11ax/be (UNII Band 6) - Ch. 107) - LPI



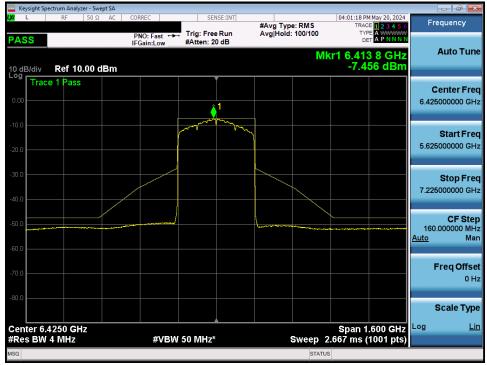
Plot 7-151. In-Band Emission MIMO ANT2 (80MHz 802.11ax/be (UNII Band 6) - Ch. 103) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 110 of 159
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www.www.com analyzer - Swept SA					
LX/ RL RF 50Ω AC	CORREC	SENSE:INT #Ava	ALIGN AUTO Type: RMS	11:48:10 AM Apr 15, 2024 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Fast Trig: F IFGain:Low #Atten:	ree Run Avg l	Hold: 100/100	TYPE A WWWWW DET A P NNNN r1 6.489 0 GHz	Auto Tune
10 dB/div Ref 23.09 dBm				-7.364 dBm	
13.1					Center Freq 6.505000000 GHz
.6.91		1			Start Freq 6.105000000 GHz
-16.9					Stop Freq 6.905000000 GHz
-36.9					CF Step 80.000000 MHz <u>Auto</u> Man
16.9			Magny nakas gravnos ata ser		Freq Offset 0 Hz
-66.9					Scale Type
Center 6.5050 GHz #Res BW 3.0 MHz	#VBW 50 MH	Z*	Sweep 1	Span 800.0 MHz .333 ms (1001 pts)	Log <u>Lin</u>
MSG			STATUS		

Plot 7-152. In-Band Emission MIMO ANT2 (160MHz 802.11ax/be (UNII Band 6) - Ch. 111) - LPI



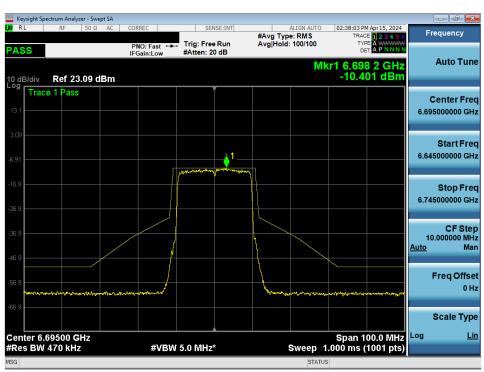
Plot 7-153. In-Band Emission MIMO ANT2 (320MHz 802.11ax/be (UNII Band 5/6/7) - Ch. 95) - LPI

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 112 of 159
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Keysight Spectrum Analyzer - Swept SA K RL RF 50 Ω AC - 6 × ALIGN AUTO #Avg Type: RMS Avg|Hold: 100/100 02:13:46 PM Apr 15, 2024 TRACE 1 2 3 4 5 (SENSE:INT Frequency Trig: Free Run #Atten: 20 dB TYP PNO: Fast IFGain:Low PASS DE Auto Tune 6.697 0 GHz -10.585 dBm Mkr1 0 dB/div Ref 23.09 dBm Trace 1 Pass Center Fred 6.695000000 GHz Start Freq 6.645000000 GHz 1 Stop Freq 6.745000000 GHz CF Step 10.000000 MHz Man Auto **Freq Offset** 0 Hz Scale Type Center 6.69500 GHz #Res BW 470 kHz Span 100.0 MHz Sweep 1.000 ms (1001 pts) <u>Lin</u> #VBW 5.0 MHz*

MIMO Antenna-2 In-Band Emission Measurements - (UNII Band 7)

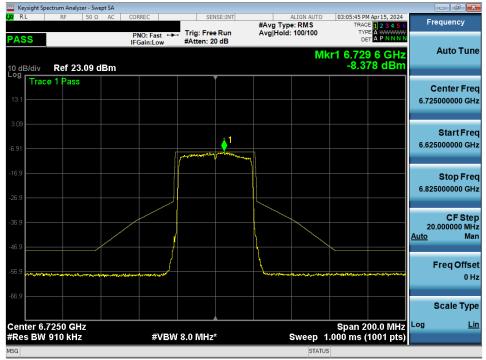


Plot 7-154. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 7) - Ch. 149) - LPI

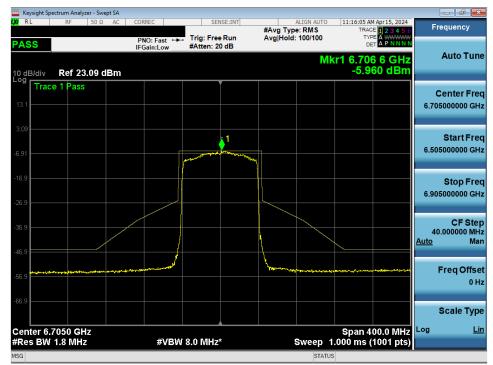
Plot 7-155. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 7) - Ch. 149) - LPI

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 114 of 150
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Plot 7-156. In-Band Emission MIMO ANT2 (40MHz 802.11ax/be (UNII Band 7) - Ch. 155) - LPI



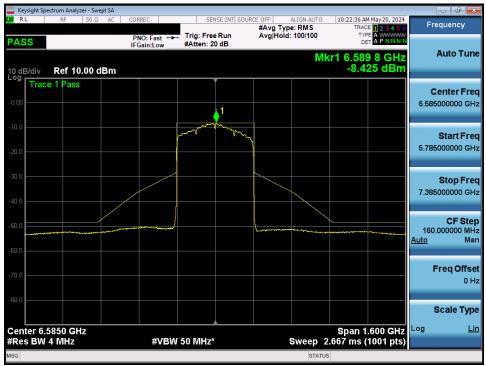
Plot 7-157. In-Band Emission MIMO ANT2 (80MHz 802.11ax/be (UNII Band 7) - Ch. 151) - LPI & SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 115 of 150		
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🔤 Keysight Spectrum A	nalyzer - Swept SA					- 6 -
LXI R L RF	50 Ω AC	CORREC	SENSE:INT	ALIGN AU #Avg Type: RMS	TO 11:49:34 AM Apr 15, 2024 TRACE 1 2 3 4 5 6	Frequency
PASS		PNO: Fast ↔ IFGain:Low	. Trig: Free Run #Atten: 20 dB	Avg Hold: 100/10	Mkr1 6.669 8 GHz	Auto Tune
10 dB/div Ref	23.09 dBm				-7.437 dBm	
Log Trace 1 Pa	ass					Center Freq 6.665000000 GHz
3.09			1	~		Start Freq 6.265000000 GHz
-16.9						Stop Freq 7.06500000 GHz
-36.9						CF Step 80.000000 MHz <u>Auto</u> Man
-46.9						Freq Offset 0 Hz
-66.9						Scale Type
Center 6.6650 #Res BW 3.0 N		#VBW	50 MHz*	Sweet	Span 800.0 MHz 5 1.333 ms (1001 pts)	Log <u>Lin</u>
MSG					ATUS	

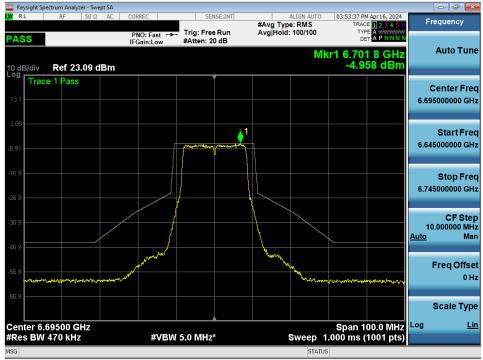
Plot 7-158. In-Band Emission MIMO ANT2 (160MHz 802.11ax/be (UNII Band 7) - Ch. 143) - LPI & SP



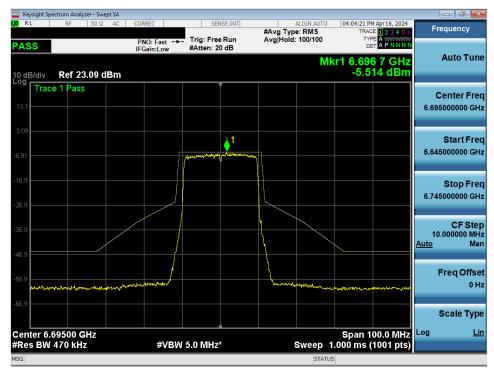
Plot 7-159. In-Band Emission MIMO ANT2 (320MHz 802.11ax/be (UNII Band 6/7) - Ch. 127) - LPI

FCC ID: A3LNP940XMA		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 116 of 159
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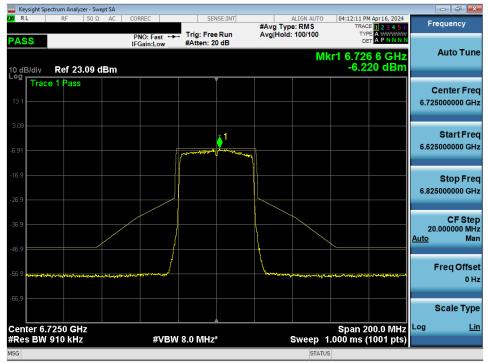
Plot 7-160. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 7) - Ch. 149) - SP



Plot 7-161. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 7) - Ch. 149) - SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 117 of 150		
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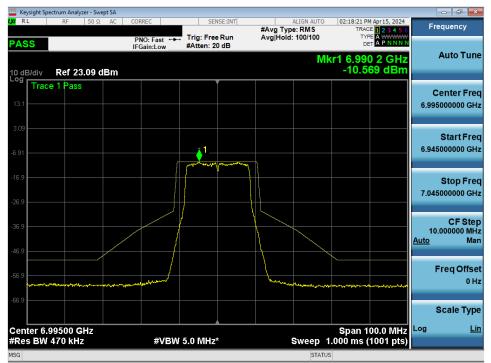
Plot 7-162. In-Band Emission MIMO ANT2 (40MHz 802.11ax/be (UNII Band 7) - Ch. 155) - SP

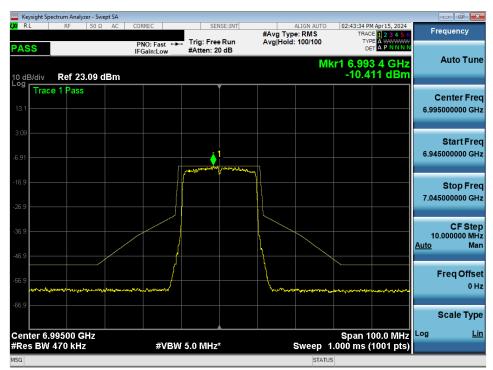
FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 110 of 150		
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MIMO Antenna-2 In-Band Emission Measurements - (UNII Band 8)



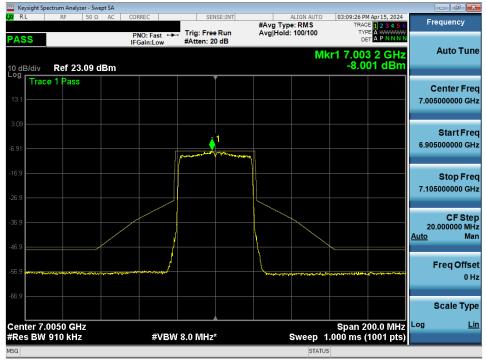


Plot 7-163. In-Band Emission MIMO ANT2 (20MHz 802.11a (UNII Band 8) - Ch. 209) - LPI

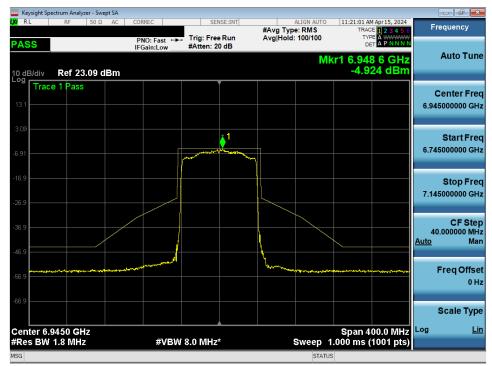
Plot 7-164. In-Band Emission MIMO ANT2 (20MHz 802.11ax/be (UNII Band 8) - Ch. 209) - LPI

FCC ID: A3LNP940XMA		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 110 of 150
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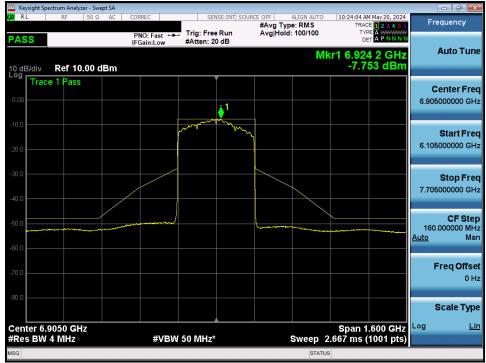
Plot 7-166. In-Band Emission MIMO ANT2 (80MHz 802.11ax/be (UNII Band 8) - Ch. 199) - LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Page 120 of 158		
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						- 0 -
LX/RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type	LIGN AUTO	12:00:45 PM Apr 15, 20 TRACE 1 2 3 4	
PASS	PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold:	100/100		Auto Tune
10 dB/div Ref 23.09 dBm					-7.089 dB	m
13.1						Center Freq 6.985000000 GHz
6.91	ſ	1 				Start Freq 6.585000000 GHz
-16.9						Stop Freq 7.385000000 GHz
-36.9						CF Step 80.000000 MHz <u>Auto</u> Man
-66.9	monument			····		Freq Offset 0 Hz
-66.9						Scale Type
Center 6.9850 GHz #Res BW 3.0 MHz	#VBW \$	50 MHz*	s	Sweep 1.	Span 800.0 Mi 333 ms (1001 pt	Hz ^{Log <u>Lin</u> :S)}
MSG				STATUS		

Plot 7-167. In-Band Emission MIMO ANT2 (160MHz 802.11ax/be (UNII Band 8) - Ch. 207) - LPI



Plot 7-168. In-Band Emission MIMO ANT2 (320MHz 802.11ax/be (UNII Band 7/8) - Ch. 191) - LPI

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7.6 Contention Based Protocol

Test Overview and Limit

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band (herein referred to as unlicensed devices) are required to use technologies that include a contention-based protocol to avoid co-channel interference with incumbent devices sharing the band. To ensure incumbent co-channel operations are detected in a technology-agnostic manner, unlicensed devices are required to detect co-channel radio frequency energy (energy detect) and avoid simultaneous transmission.

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel if detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain.

To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel.

Test Procedure Used

KDB 987594 D02 v02r01

Test Settings

- 1. Configure the EUT to transmit with a constant duty cycle.
- 2. Set the operating parameters of the EUT including power level, operating frequency, modulation, and bandwidth.
- 3. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
- 4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
- 5. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
- Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in Figure 2.
- 7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
- 8. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
- (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
- 10. Refer to Table 1 of KDB 987594 D02 v02r01 to determine the number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal, and repeat the process.

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

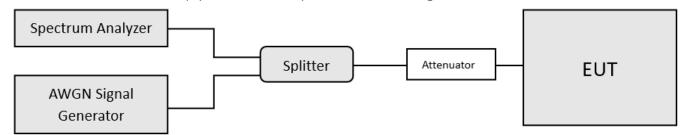


Figure 7-5. Contention-based protocol test setup conducted method.

Test Notes

- Per guidance from KDB 987594 D02 v02r01, contention-based protocol was tested using an AWGN signal with a bandwidth of 10MHz (see Plot 7-169). The amplitude of the signal was increased until detected by the EUT, signaled by the ceasing of transmission (see Plot 7-170), M1 indicates the point at which the AWGN signal is introduced. D1 indicates where the AWGN signal is terminated, at least 10 seconds following M1.
- 2. 15 trials were run to assure that at least 90% of certainty was met.
- 3. Per Guidance from KDB 987594 D04 v01, contention-based protocol was tested with receiver with the lowest antenna gain.
- 4. All CBP Timing Plots shown are for the ceased condition. Some spikes that may be shown are from adjacent portions of the spectrum that are still transmitting.
- 5. In the presence of an AWGN signal, the EUT was shown to either completely move out of the channel or to reduce its bandwidth for the purpose of incumbent avoidance. Representative channel move plots are included for one sub-band to show how the channel reduces when the AWGN is injected at the lower edge, the center, and the upper edge of a channel.
- 6. This device only punctures to optimize network performance and never to avoid licensed incumbents.
- 7. For the channel move demonstration in Section 7.6.3, only plots from UNII-5 band are included. Additionally, the AWGN signal is not visible because the AWGN level is well below the noise floor.

Detection Level = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB)

Equation 7-1. Detection Level Calculation

FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
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Band	Channel	Channel Freq [MHz]	Channel BW [MHz]	Incumbent Freq [MHz]	Injected (AWGN) [dBm]	Antenna Gain [dBi]	Path Loss (dB)	Adjusted Power Level [dBm]	Detection Limit [dBm]	Margin [dB]
	53	6215	20	6215	-77.30	-1.58	1.31	-74.41	-62.0	-12.41
UNII				6110	-71.95	-1.58	1.31	-69.06	-62.0	-7.06
Band 5	31	6265	320	6265	-73.80	-1.58	1.31	-70.91	-62.0	-8.91
				6420	-69.86	-1.58	1.31	-66.97	-62.0	-4.97
	101	6455	20	6455	-78.24	-1.75	1.31	-75.18	-62.0	-13.18
UNII				6270	-73.70	-1.75	1.31	-70.64	-62.0	-8.64
Band 6	95	6425	320	6425	-78.25	-1.75	1.31	-75.19	-62.0	-13.19
				6580	-72.90	-1.75	1.31	-69.84	-62.0	-7.84
	149	6695	20	6695	-74.83	-1.33	1.31	-72.19	-62.0	-10.19
UNII				6590	-74.64	-1.33	1.31	-72.00	-62.0	-10.00
Band 7	159	6745	320	6745	-76.60	-1.33	1.31	-73.96	-62.0	-11.96
				6900	-72.95	-1.33	1.31	-70.31	-62.0	-8.31
	197	6935	20	6935	-77.75	-3.96	1.31	-72.48	-62.0	-10.48
UNII				6750	-73.70	-3.96	1.31	-68.43	-62.0	-6.43
Band 8	191	6905	320	6905	-75.28	-3.96	1.31	-70.01	-62.0	-8.01
				7060	-71.94	-3.96	1.31	-66.67	-62.0	-4.67

Table 7-39. Contention Based Protocol – Incumbent Detection Results

						EUT	Transmission S	tatus		
		Channel From		Incumbont	Antenna Gain	Adjuste	d AWGN Powe	r (dBm)	Detection	
Band	Channel	Channel Freq [MHz]	Channel BW [MHz]	Incumbent Freq [MHz]	[dBi]	Normal	Minimal	Ceased	Detection Limit [dBm]	Margin [dB]
	53	6215	20	6215	-1.58	-75.93	-74.89	-74.41	-62.0	-12.41
UNII				6110	-1.58	-69.96	-69.58	-69.06	-62.0	-7.06
Band 5	31	6265	320	6265	-1.58	-71.71	-71.39	-70.91	-62.0	-8.91
				6340	-1.58	-67.84	-67.42	-66.97	-62.0	-4.97
	101	6455	20	6455	-1.75	-75.63	-75.55	-75.18	-62.0	-13.18
UNII				6350	-1.75	-71.55	-71.20	-70.64	-62.0	-8.64
Band 6	95	6425	320	6425	-1.75	-75.58	-75.49	-75.19	-62.0	-13.19
				6500	-1.75	-70.03	-70.01	-69.84	-62.0	-7.84
	149	6695	20	6695	-1.33	-73.99	-73.70	-72.19	-62.0	-10.19
UNII				6670	-1.33	-72.90	-72.50	-72.00	-62.0	-10.00
Band 7	159	6745	320	6745	-1.33	-74.65	-74.40	-73.96	-62.0	-11.96
				6820	-1.33	-71.14	-70.69	-70.31	-62.0	-8.31
	197	6935	20	6935	-3.96	-73.19	-73.03	-72.48	-62.0	-10.48
UNII				6830	-3.96	-69.10	-68.86	-68.43	-62.0	-6.43
Band 8	191	6905	320	6905	-3.96	-71.00	-70.34	-70.01	-62.0	-8.01
				6980	-3.96	-67.56	-67.15	-66.67	-62.0	-4.67

Table 7-40. Contention Based Protocol – Detection Results – All Tx Cases

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dege 104 of 159
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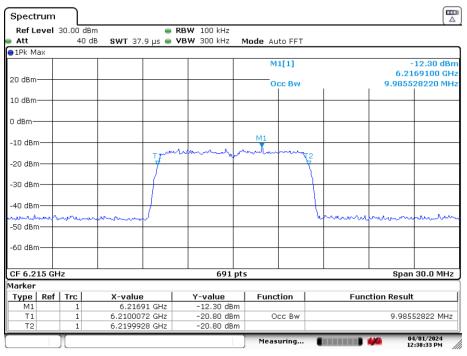
Band	Channel	Channel Freq [MHz]	Channel BW [MHz]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Detection Rate (%)
	53	6215	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
UNII				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Band 5	31	6265	320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
	101	6455	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
UNII				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Band 6	95	6425	320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
	149	6695	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
UNII				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Band 7	159	6745	320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
	197	6935	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
UNII				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Band 8	191	6905	320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100

Table 7-41. Contention Based Protocol – Incumbent Detection Trial Results

FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
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7.6.1 AWGN Plots



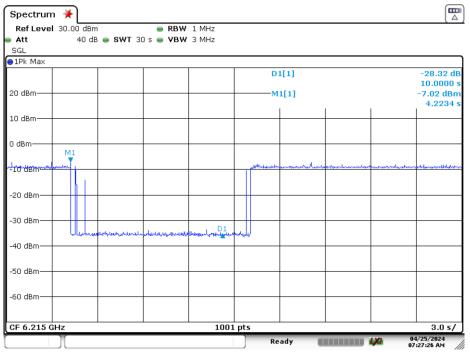
Date: 1.APR.2024 12:38:32

Plot 7-169. AWGN Signal (Demonstration)

FCC ID: A3LNP940XMA		MEASUREMENT REPORT				
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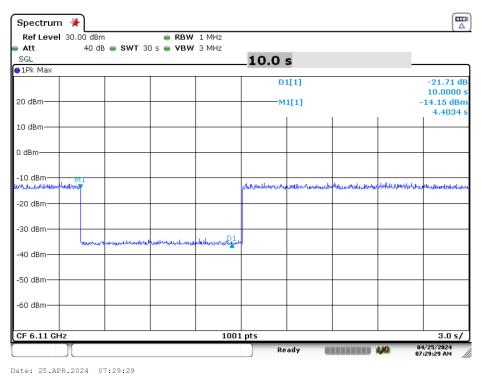


7.6.2 CBP Timing Plots



Date: 25.APR.2024 07:27:26





Plot 7-171. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) - Ch. 31 Low)

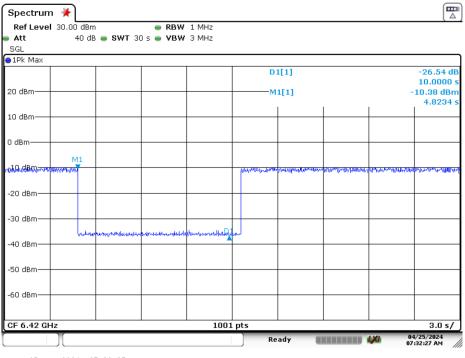
FCC ID: A3LNP940XMA		MEASUREMENT REPORT				
Test Report S/N:	Test Dates:	EUT Type:	Page 127 of 158			
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Spectrum 🔆			
Ref Level 30.00 dBm	👄 RBW 1 MHz		
	🖲 SWT 30 s 👄 VBW 3 MHz		
SGL 1Pk Max			
JIPK Max		D1[1]	-30.58 dE
		DI[I]	10.0000 9
20 dBm		M1[1]	-4.46 dBn
			4.3134
10 dBm			
0 dBm M1			
Berthall-flow-paratallow		. When a show	Montheway have been a strated and the second of the second states of the
-10 dBm			
-20 dBm			
-30 dBm			
and yranhes	1)	D1	
-40 dBm			
-50 dBm			
-60 dBm			
-60 dBm			
-60 dBm		001 pts	3.0 s/

Date: 25.APR.2024 07:30:52





Date: 25.APR.2024 07:32:27

Plot 7-173. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) - Ch. 31 High)

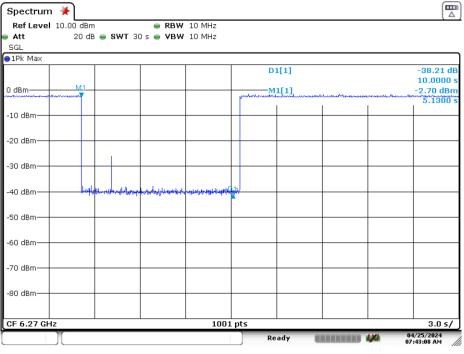
FCC ID: A3LNP940XMA		MEASUREMENT REPORT			
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Spectrum Ref Level 10.00 dBm	■ RBW 10 M	1Hz		(🛆
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-60 dBm				
-70 dBm				
-80 dBm				
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		Ready		04/25/2024 07:41:21 AM

Date: 25.APR.2024 07:41:20





Date: 25.APR.2024 07:43:08

Plot 7-175. Contention Based Protocol Timing Plot (320MHz (UNII Band 6) - Ch. 95 Low)

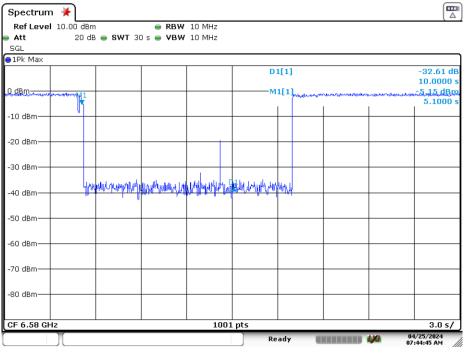
FCC ID: A3LNP940XMA		MEASUREMENT REPORT				
Test Report S/N:	Test Dates:	est Dates: EUT Type:				
1M2403190019-09-R1.A3L	03/14/2024 - 05/21/2024	024 – 05/21/2024 Portable Computing Device				
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-70 dBm								
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Date: 25.APR.2024 07:43:56



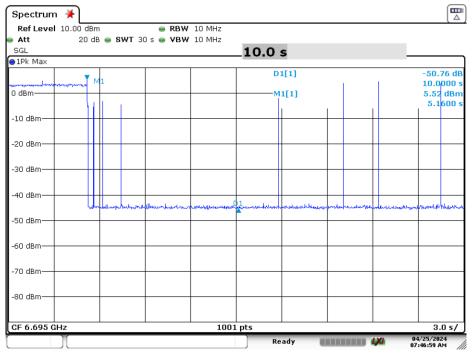


Date: 25.APR.2024 07:44:45

Plot 7-177. Contention Based Protocol Timing Plot (320MHz (UNII Band 6) - Ch. 95 High)

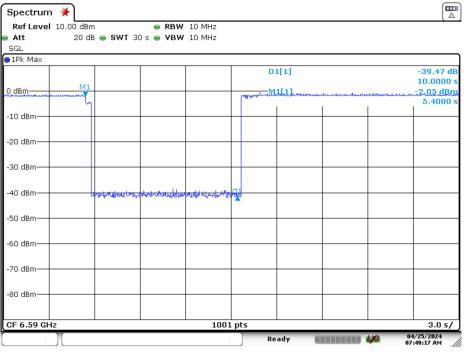
FCC ID: A3LNP940XMA		MEASUREMENT REPORT				
Test Report S/N:	Test Dates:	EUT Type:	Page 130 of 158			
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Date: 25.APR.2024 07:46:59





Date: 25.APR.2024 07:49:16

Plot 7-179. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) - Ch. 159 Low)

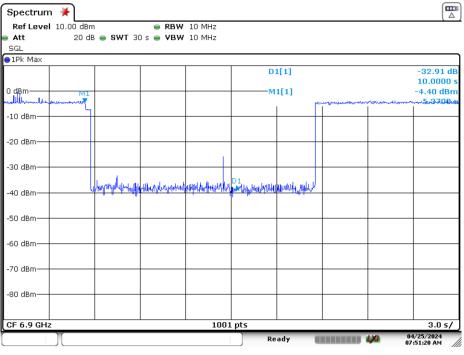
FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 121 of 159	
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-60 asm									
-70 dBm									
-80 dBm									
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)(10	pt-	Ready			04/25/2024

Date: 25.APR.2024 07:50:13





Date: 25.APR.2024 07:51:19

Plot 7-181. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) - Ch. 159 High)

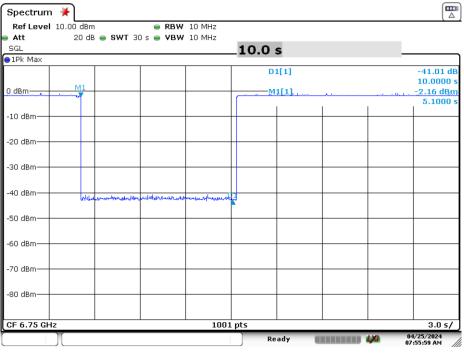
FCC ID: A3LNP940XMA		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dega 122 of 159	
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Ref Level : Att			WT 30 ≤	e RB'											
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				1										5.2	500 :
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-60 dBm												+			
-70 dBm												1			
-80 dBm												1			
CF 6.935 GH	z					100	1 pts							3.	0 s/

Date: 25.APR.2024 07:53:49



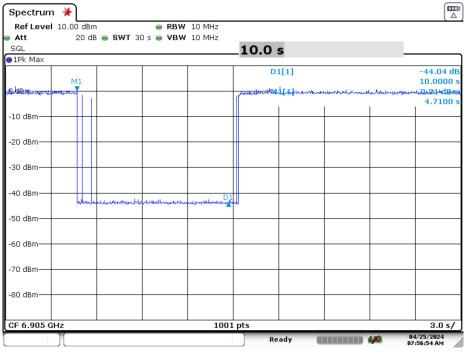


Date: 25.APR.2024 07:55:59

Plot 7-183. Contention Based Protocol Timing Plot (320MHz (UNII Band 8) - Ch. 191 Low)

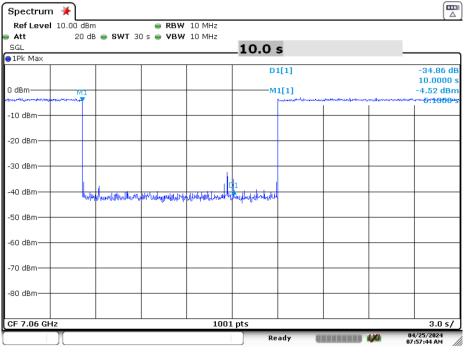
FCC ID: A3LNP940XMA		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 122 of 159
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Date: 25.APR.2024 07:56:54





Date: 25.APR.2024 07:57:44

Plot 7-185. Contention Based Protocol Timing Plot (320MHz (UNII Band 8) - Ch. 191 High)

FCC ID: A3LNP940XMA		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 124 of 159
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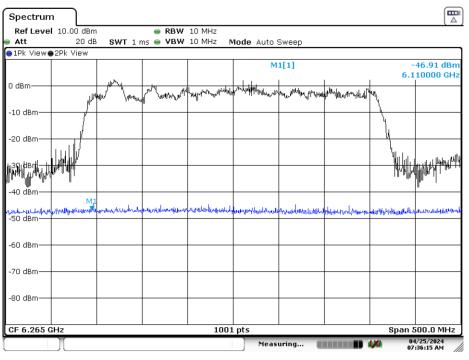
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7.6.3 Channel Move Plots

This section demonstrates the effect of injecting the AWGN signal at various locations throughout the 320MHz signal. The black trace shows the full 320MHz signal prior to AWGN injection while the blue trace shows the spectrum following AWGN injection. The following items were observed as demonstrated in the three plots shown below:

- When a 10 MHz AWGN signal centered at 6110 MHz (lower edge of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6265 MHz (middle of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6420 MHz (upper edge of channel) is injected, the channel reduces its bandwidth to operate only on the lower 160MHz portion of the channel.

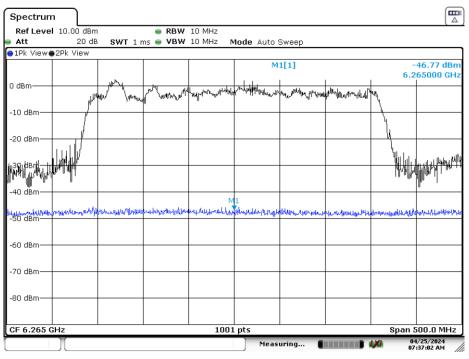


Date: 25.APR.2024 07:36:15

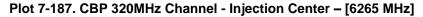
Plot 7-186. CBP 320MHz Channel - Injection Lower Edge – [6110 MHz]

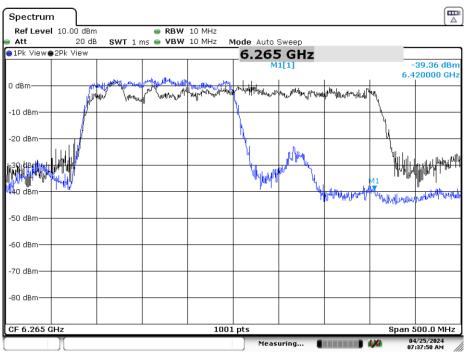
FCC ID: A3LNP940XMA		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 125 of 150
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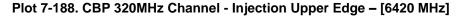


Date: 25.APR.2024 07:37:01





Date: 25.APR.2024 07:37:50



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7.7 Radiated Emission Measurements

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11ax (20/40/80/160MHz), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

For transmitters operating in the 5.925-7.125 GHz band: All emissions outside of the 5.925-7.125 GHz band shall not exceed an EIRP of -27dBm/MHz (68.2dBuV/m at a 3m distance). Emissions found in a restricted band are subject to the limits of 15.209 as shown in the table below.

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400\F (kHz)	300
0.490 – 1.705 MHz	24000\F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-42. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5

Test Settings – Above 1GHz

Average Field Strength Measurements (Method AD - Average Detection)

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = power average (RMS)
- 5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span}$)
- 6. Sweep time = auto
- 7. Trace (RMS) averaging was performed over at least 100 traces.

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Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize.

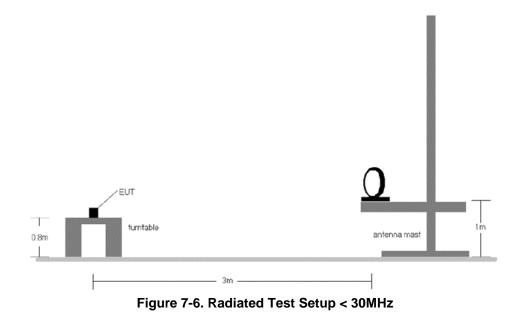
Test Settings - Below 1GHz

Quasi-Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
- 2. RBW = 120kHz (for emissions from 30MHz 1GHz)
- 3. Detector = quasi-peak
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



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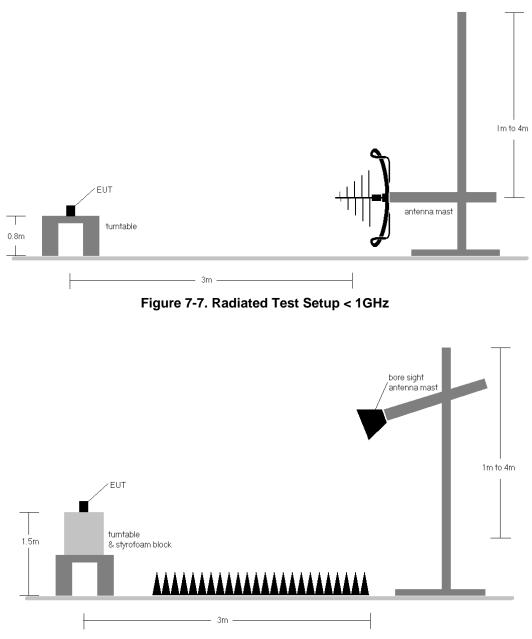


Figure 7-8. Radiated Test Setup > 1GHz

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Test Notes

- All spurious emissions lying in restricted bands specified in §15.205 are below the limits specified in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All spurious emissions that do not lie in a restricted band are subject to a peak limit not to exceed 20dB of the average limit [68.2dBµV/m]. If a peak measurement passes the average limit, it was determined no further investigation is necessary.
- 3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
- 4. This unit was tested with its standard battery.
- 5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported, however emissions whose levels were not within 20dB of the respective limits were not reported.
- 6. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
- 7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 8. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
- 9. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

Sample Calculations

Determining Spurious Emissions Levels

- ο Field Strength Level [dBµV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level $[dB\mu V/m]$ Limit $[dB\mu V/m]$

Radiated Band Edge Measurement Offset

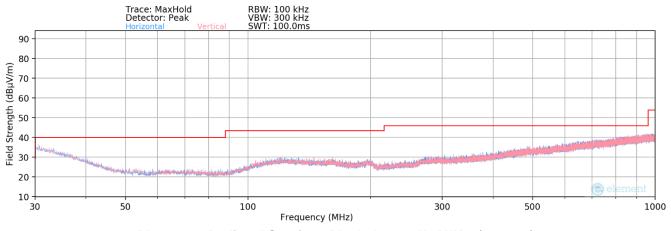
The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:

Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) - Preamplifier Gain

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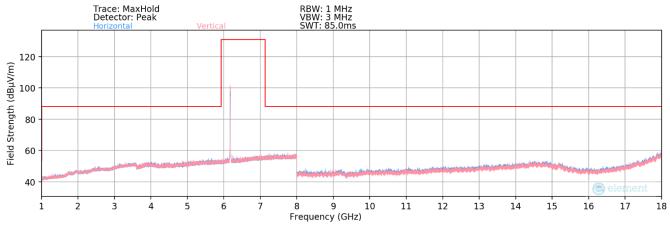
7.7.1 MIMO Radiated Spurious Emission Measurements



Plot 7-189. Radiated Spurious Plot below 1GHz MIMO (802.11a)

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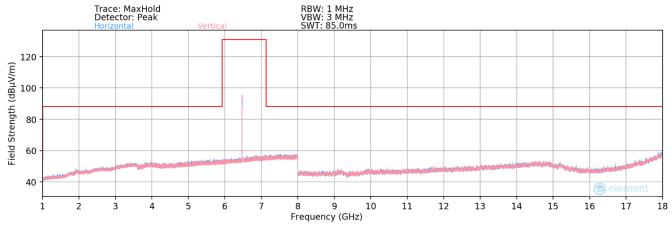
Plot 7-190. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 5 Ch. 45 – LPI&SP)

Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level (dBm)	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
					*	11870.00	Average	н	-	-	-77.74	9.05	0.00	38.31	53.98	-15.67
					*	11870.00	Peak	н	-	-	-65.52	9.05	0.00	50.53	73.98	-23.45
					*	17805.00	Average	н	-	-	-76.82	15.50	0.00	45.68	53.98	-8.30
			2	5935	*	17805.00	Peak	н	-	-	-65.07	15.50	0.00	57.43	73.98	-16.55
					*	23740.00	Average	н	-	-	-65.77	3.58	-9.54	35.27	53.98	-18.71
					*	23740.00	Peak	н	-	-	-56.20	3.58	-9.54	44.84	73.98	-29.14
						29675.00	Peak	Н	-	-	-56.20	5.33	-9.54	46.59	68.20	-21.61
					*	12350.00	Average	н	-	-	-77.82	9.39	0.00	38.57	53.98	-15.41
802.11a	мімо	5			*	12350.00	Peak	н	-	-	-65.53	9.39	0.00	50.86	73.98	-23.12
002.11d	WIIWO	5	45	6175	*	18525.00	Average	н	-	-	-64.84	1.16	-9.54	33.78	53.98	-20.20
			45	0175	*	18525.00	Peak	н	-	-	-56.10	1.16	-9.54	42.53	73.98	-31.45
						24700.00	Peak	н	-	-	-57.14	3.72	-9.54	44.03	68.20	-24.17
						30875.00	Peak	н	-	-	-57.45	6.32	-9.54	46.33	68.20	-21.87
						12830.00	Peak	н	-	-	-66.09	9.93	0.00	50.84	68.20	-17.36
					*	19245.00	Average	н	-	-	-64.67	1.84	-9.54	34.63	53.98	-19.35
			93	6415	*	19245.00	Peak	н	-	-	-55.91	1.84	-9.54	43.39	73.98	-30.59
						25660.00	Peak	н	-	-	-55.71	3.90	-9.54	45.65	68.20	-22.55
						32075.00	Peak	н	-	-	-57.40	6.64	-9.54	46.71	68.20	-21.49

Table 7-43. Radiated Measurements MIMO – LPI&SP

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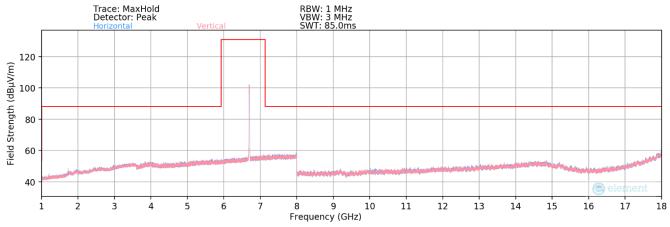
Plot 7-191. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 6 Ch. 105 – LPI)

Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin (dB)
						12870.00	Peak	н	-	-	-66.32	10.09	0.00	50.77	68.20	-17.43
					*	19305.00	Average	н	-	-	-60.04	1.64	-9.54	39.06	53.98	-14.92
			97	6435	*	19305.00	Peak	н	-	-	-56.21	1.64	-9.54	42.90	73.98	-31.08
						25740.00	Peak	н	-	-	-56.47	3.84	-9.54	44.84	68.20	-23.36
						32175.00	Peak	Н	-	-	-58.28	6.80	-9.54	45.98	68.20	-22.22
						12950.00	Peak	Н	-	-	-65.78	10.25	0.00	51.47	68.20	-16.73
					*	19425.00	Average	н	-	-	-64.11	1.80	-9.54	35.15	53.98	-18.83
802.11a	MIMO	6	105	6475	*	19425.00	Peak	н	-	-	-56.14	1.80	-9.54	43.13	73.98	-30.85
						25900.00	Peak	н	-	-	-56.75	4.24	-9.54	44.95	68.20	-23.25
						32375.00	Peak	н	-	-	-57.48	6.46	-9.54	46.44	68.20	-21.76
						13030.00	Peak	н	-	-	-65.42	10.42	0.00	52.00	68.20	-16.20
					*	19545.00	Average	н	-	-	-64.66	1.84	-9.54	34.64	53.98	-19.34
			113	6515	*	19545.00	Peak	н	-	-	-55.57	1.84	-9.54	43.73	73.98	-30.25
						26060.00	Peak	н	-	-	-56.06	4.18	-9.54	45.59	68.20	-22.61
						32575.00	Peak	Н	-	-	-57.48	6.18	-9.54	46.16	68.20	-22.04

Table 7-44. Radiated Measurements MIMO – LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dogo 142 of 159			
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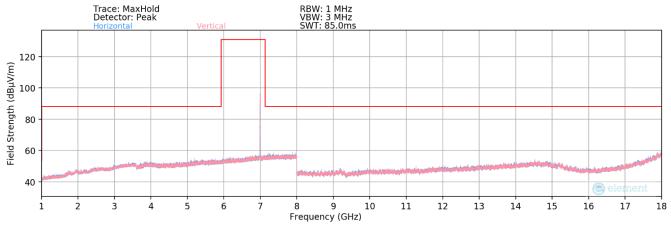
Plot 7-192. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 7 Ch. 149 – LPI&SP)

Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level (dBm)	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
					13070.00	Peak	н	-	-	-65.64	10.39	0.00	51.75	68.20	-16.45
				*	19605.00	Average	н	-	-	-65.28	2.38	-9.54	34.56	53.98	-19.42
		117	6535	*	19605.00	Peak	н	-	-	-55.84	2.38	-9.54	44.00	73.98	-29.98
					26140.00	Peak	н	-	-	-56.72	4.03	-9.54	44.77	68.20	-23.43
					32675.00	Peak	н	-	-	-58.02	6.46	-9.54	45.89	68.20	-22.31
				*	13390.00	Average	н	-	-	-78.01	10.80	0.00	39.79	53.98	-14.19
				*	13390.00	Peak	н	-	-	-66.11	10.80	0.00	51.69	73.98	-22.29
MIMO	7	140	6605	*	20085.00	Peak	н	-	-	-64.72	-0.48	-9.54	32.27	53.98	-21.71
WIIWIO	,	149	0095	*	20085.00	Average	н	-	-	-55.77	2.58	-9.54	44.27	73.98	-29.71
					26780.00	Peak	н	-	-	-57.25	2.58	-9.54	42.79	68.20	-25.41
					33475.00	Peak	н	-	-	-57.67	4.33	-9.54	44.11	68.20	-24.09
					13750.00	Peak	н	-	-	-65.37	11.44	0.00	53.07	68.20	-15.13
				*	20625.00	Average	н	-	-	-65.94	3.01	-9.54	34.52	53.98	-19.46
		185	6875	*	20625.00	Peak	н	-	-	-55.55	3.01	-9.54	44.92	73.98	-29.06
					27500.00	Peak	н	-	-	-55.20	3.97	-9.54	46.24	68.20	-21.96
					34375.00	Peak	н	-	-	-57.40	7.33	-9.54	47.39	68.20	-20.81
	MIMO		MIMO 7 149	Antenna UNII Band Channel Channel Image: Image	Antenna Iniliana Channel prece- treprec	Antenne Iniliane Channel Frequency Inference Restricted Frequency Inference Frequency Inference Number Name Restricted Frequency Name Number Name Inference Inference Num Name	Antenne UNII Band Channel Channel Freq. (MH2) Restricted (MH2) Frequency (MH2) Detector N No 1307.00 Peak N 19605.00 19605.00 Peak 117 6535 14 19605.00 Peak 110 26140.00 Peak 10 2000 Peak 110 26140.00 10000 Peak 10000 Peak 110 10000 10000 10000 Peak 110 10000 10000 Peak 110 10000 10000 Peak 110 10000 100000 Peak 110 10000 Peak 10000 Peak 110 10000 Peak 10000 Peak 11000 100000 100000 Peak 110000 100000 100000 Peak 110000 100000 100000 Peak 1100000 100000 100000 Peak <	AntennaUNII BandChannelChannelRestrictedFrequency (MH2)DetectorAnt.Pol. (MH7)Frequency1307000Peako141960500Average141960500Peako141960500Peako1426140.00Peako1426140.00Peako1426140.00Peako1432675.00Peako14133000Average14133000Peako14208500Peako1426140.00Peako14133000Peako14133000Peako141347500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako1413500Peako141413500Peako141514134	AntennaNameNameNameNameNameNameNameFrequencyMathMathMathMathMathNameNameNameNameMathMathMathNameNameNameNameNameMathMathNameNameNameNameNameMathMathNameNameNameNameNameMathMathNameNameNameNameNameMathName	AntennaChannelChannelRestrictedFrequency [IMH2DetectorAnt. Pol. [H/M]Antenna Height[ondAzimutho Azimutho (legree)NoSectorSe	AntennaUNII BanoChannelChannelRestrictedFrequency (IMH2)DetectorAnt. Pol. (HV)Antenna height (m)Iurnel Azimuth degreeAnalyzer Level demiName PerequenciesName (IMH2)Name (IMH2)Name (IMH2)Ant. Pol. (IMH2)Antenna Height (IM)Name Azimuth degreeName Level demi Level demiName (IMH2)Name<	AntennaUNII BanoChannel Req req, req, Req (MHz)Prequency (MHz)DetectorAnt. Pol. (HV)Antenna height CmIumite Azimuth degreeAndyzer Level dbmAFCL (IgBm)Name req, (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm)Name (IgBm) <td< td=""><td>Antena Null BanChannel Freq. Freq. Preq. Preq. Preq. Preq. Preq. MHZDetectorAntena HHYDAntena Resimet MegnerImage Animut MegnerAnd Level IdbsAnd Level IdbsAnd Lev</td><td>Antena Null BanChannel Freq. Freq. Preq. MethyRestrice MHHyPrequency MHHyAntena HeighlemLurning Azimuty Legel [def]Antena MethyLurning Legel [def]Antena MethyAntena<br <="" td=""/><td>Antena Antena NulleanChanne Pree Pree Pree Pree Pree LeveldanPrec Pree LeveldanPrec LeveldanPrec LeveldanDistance LeveldanDistance<br leveldan<="" th="">Distance<br leveldan<="" th="">Number Number Number Number Number Number Number Number Number Nu</br></br></br></br></br></br></br></br></br></br></br></br></br></td></td></td<>	Antena Null BanChannel Freq. Freq. Preq. Preq. Preq. Preq. Preq. MHZDetectorAntena HHYDAntena Resimet MegnerImage Animut MegnerAnd Level IdbsAnd Level IdbsAnd Lev	Antena Null BanChannel Freq. Freq. Preq. MethyRestrice MHHyPrequency MHHyAntena HeighlemLurning Azimuty Legel [def]Antena MethyLurning Legel [def]Antena MethyAntena <td>Antena Antena NulleanChanne Pree Pree Pree Pree Pree LeveldanPrec Pree LeveldanPrec LeveldanPrec LeveldanDistance LeveldanDistance<br leveldan<="" th="">Distance<br leveldan<="" th="">Number Number Number Number Number Number Number Number Number Nu</br></br></br></br></br></br></br></br></br></br></br></br></br></td>	Antena Antena

Table 7-45. Radiated Measurements MIMO – LPI&SP

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 144 of 158
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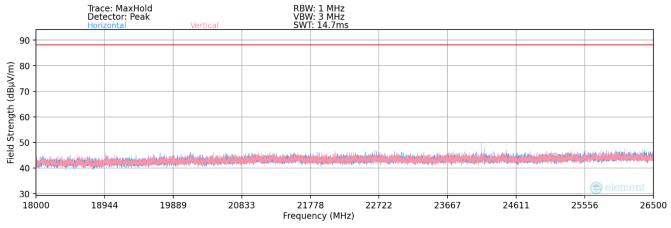
Plot 7-193. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – U Band 8 Ch. 209 – LPI)

Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
						13790.00	Peak	Н	-	-	-66.00	11.16	0.00	52.16	68.20	-16.04
					*	20685.00	Average	Н	-	-	-64.83	3.01	-9.54	35.65	53.98	-18.33
			189	6895	*	20685.00	Peak	Н	-	-	-56.09	3.01	-9.54	44.39	73.98	-29.59
						27580.00	Peak	н	-	-	-57.30	4.40	-9.54	44.56	68.20	-23.64
						34475.00	Peak	Н	-	-	-56.83	7.31	-9.54	47.94	68.20	-20.26
						13990.00	Peak	Н	-	-	-65.46	11.29	0.00	52.83	68.20	-15.37
					*	20985.00	Average	н	-	-	-64.77	3.27	-9.54	35.96	53.98	-18.02
802.11a	MIMO	8	209	6995	*	20985.00	Peak	н	-	-	-55.74	3.27	-9.54	44.99	73.98	-28.99
						27980.00	Peak	н	-	-	-56.85	4.40	-9.54	45.01	68.20	-23.19
						34975.00	Peak	н	-	-	-56.58	7.79	-9.54	48.67	68.20	-19.53
						14230.00	Peak	н	-	-	-66.19	11.94	0.00	52.75	68.20	-15.45
					*	21345.00	Average	н	-	-	-64.57	3.57	-9.54	36.47	53.98	-17.51
			233	7115	*	21345.00	Peak	н	-	-	-56.77	3.57	-9.54	44.26	73.98	-29.72
						28460.00	Peak	н	-	-	-56.94	5.01	-9.54	45.53	68.20	-22.67
						35575.00	Peak	н	-	-	-56.93	7.78	-9.54	48.31	68.20	-19.89

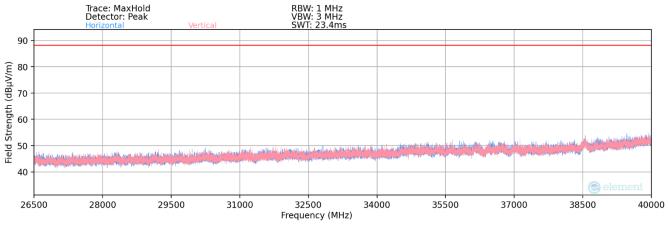
Table 7-46. Radiated Measurements MIMO – LPI

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:				
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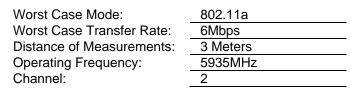


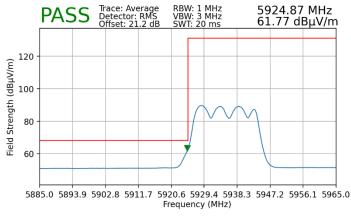
Plot 7-195. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a)

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	Approved by: Technical Manager
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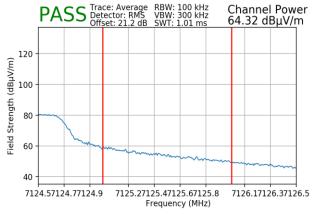
7.7.2 MIMO Radiated Band Edge Measurements (20MHz BW)



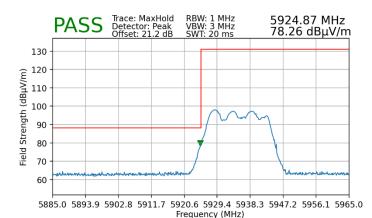


Plot 7-196. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

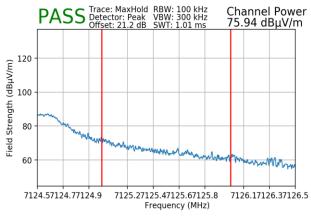
Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MSC0
Distance of Measurements:	3 Meters
Operating Frequency:	7115MHz
Channel:	233







Plot 7-197. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

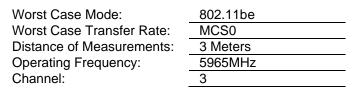


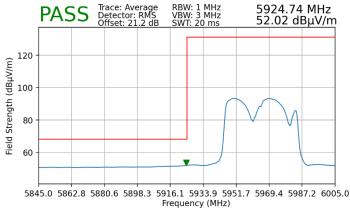
Plot 7-199. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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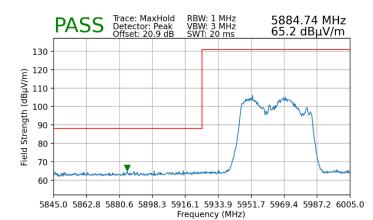


7.7.3 MIMO Radiated Band Edge Measurements (40MHz BW)



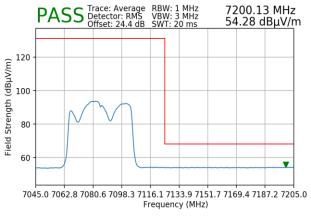


Plot 7-200. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

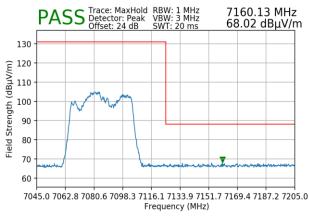


Plot 7-201. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	7085MHz
Channel:	227





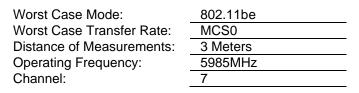


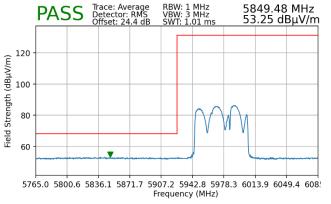
Plot 7-203. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)

FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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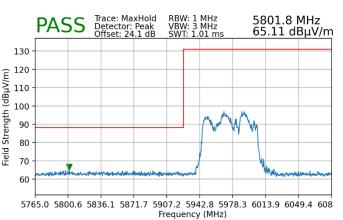


7.7.4 MIMO Radiated Band Edge Measurements (80MHz BW)



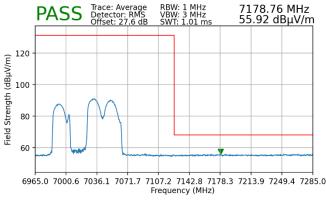


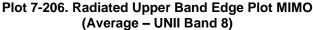
Plot 7-204. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

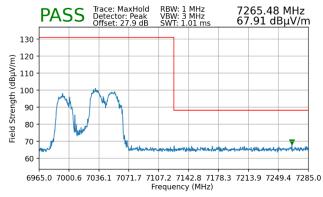




Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	7025MHz
Channel:	215







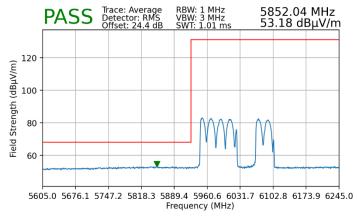


FCC ID: A3LNP940XMA	MEASUREMENT REPORT		Approved by: Technical Manager
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7.7.5 MIMO Radiated Band Edge Measurements (160MHz BW)

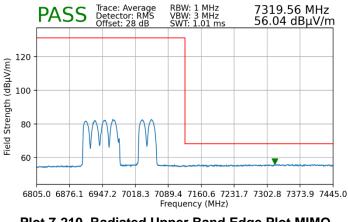
802.11be
MCS0
3 Meters
6025MHz
15

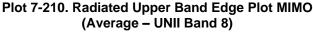


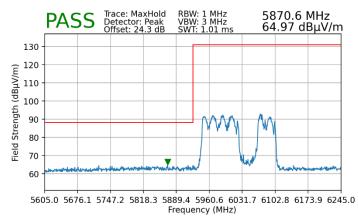
Plot 7-208. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements Operating Frequency: Channel:

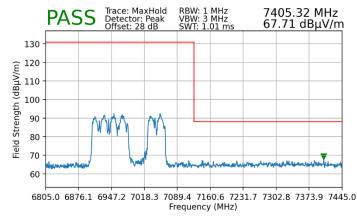
	802.11be
ate:	MCS0
nts:	3 Meters
	6985MHz
	207







Plot 7-209. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)



Plot 7-211. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)

FCC ID: A3LNP940XMA		MEASUREMENT REPORT	
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