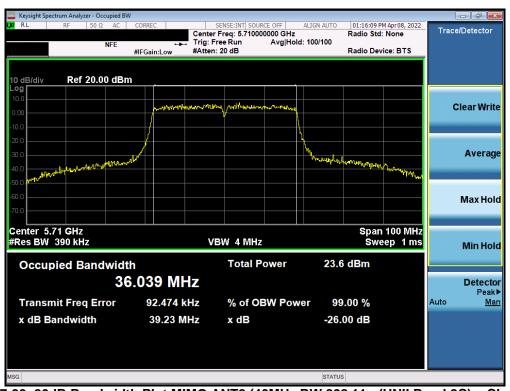




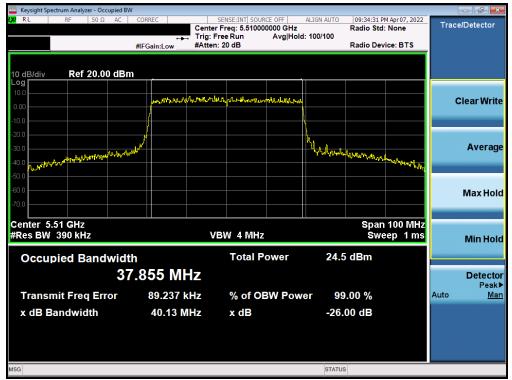
Plot 7-98. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)



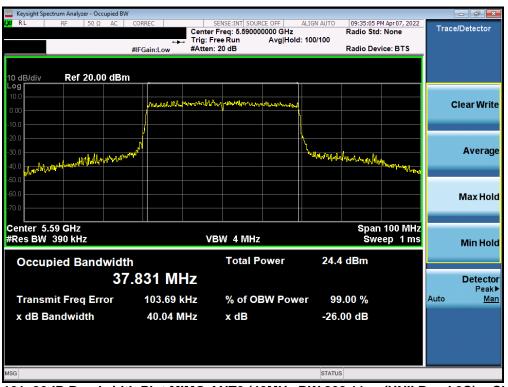
Plot 7-99. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Da a 67 at 654
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Plot 7-100. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)



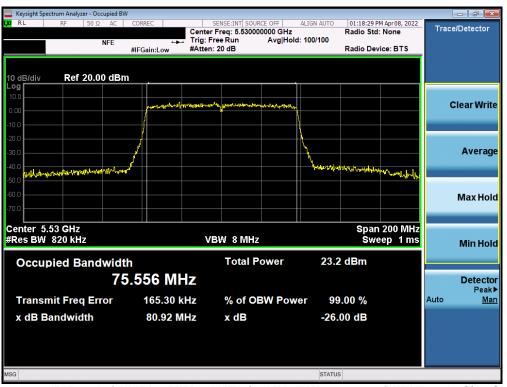
Plot 7-101. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 69 of 254
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			V1.0



Keysight Spectrum Analyzer - Occupied E	3W				- đ -
LX/ RL RF 50Ω AC		SENSE:INT SOURCE OFF ter Freq: 5.710000000 GHz : Free Run Avg Hole	Radio Sto	PM Apr 07, 2022 d: None	Trace/Detector
		en: 20 dB	d: 100/100 Radio De	vice: BTS	
10 dB/div Ref 20.00 dB	m				
10.0					
0.00	phate with the man	many when we have a second			Clear Write
-10.0					
-20.0	/				
-30.0			Martine 1 .		Average
-30.0 -40.0	,		and the second and the second of	and makeding	
-50.0					
-60.0					Max Hold
-70.0					maxinora
Conton 5 71 Olla			<u> </u>	- 400 MU	
Center 5.71 GHz #Res BW 390 kHz		VBW 4 MHz		n 100 MHz eep 1 ms	Min Llold
					Min Hold
Occupied Bandwid	th	Total Power	24.7 dBm		
3	7.697 MHz				Detector
			00.00.00		Peak▶ Auto Man
Transmit Freq Error	79.094 kHz	% of OBW Pow			Auto <u>Man</u>
x dB Bandwidth	40.18 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-102. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)



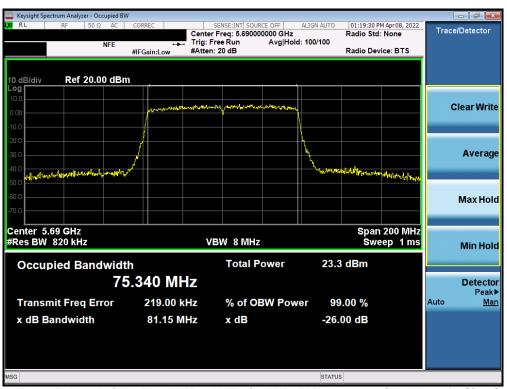
Plot 7-103. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 60 of 254
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			V1.0



Keysight Spectrum Analyzer - Occupied	H BW				
IXIRL RF 50Ω AC	Cent	SENSE:INT SOURCE OFF er Freq: 5.610000000 GHz Free Run Avg Ho en: 20 dB	Radio St ld: 100/100	PM Apr 08, 2022 d: None evice: BTS	Trace/Detector
10 dB/div Ref 20.00 dl	Bm				
0.00	freegodower-toppthatter	defen former og her og	· · · · · · · · · · · · · · · · · · ·		Clear Write
-10.0 -20.0 -30.0					Average
-40.0 -50.0 totallabor allow the advantage			Howkelson and the second	when a wind and	
-60.0					Max Hold
Center 5.61 GHz #Res BW 820 kHz	,	VBW 8 MHz		n 200 MHz /eep 1 ms	Min Hold
Occupied Bandwi		Total Power	23.3 dBm		
	75.343 MHz				Detector Peak▶
Transmit Freq Error x dB Bandwidth	172.64 kHz	% of OBW Pov			Auto <u>Man</u>
X dB Bandwidth	81.26 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-104. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)



Plot 7-105. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 70 of 254
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		· · · · · · · · · · · · · · · · · · ·	V1.0



Keysight Spectrum Analyzer - Occupied BW								
LXI RL RF 50Ω AC	CORREC	SENSE:INT SOUR Center Freq: 5.53000		ALIGN AUTO	09:38:00 PI	M Apr 07, 2022	Trac	e/Detector
	· • • •		Avg Hold:	100/100	Raulo Stu.	None		
	#IFGain:Low	#Atten: 20 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm								
Log								
	memphanen	war har for the stand war	perminante				(lear Write
0.00								
-10.0								
-20.0				\				_
	y				ىلى ھەر لىر	halandana u M		Average
-40.0 Provident Provident Contractions	<u>,</u>			WHAT BEAMY	phyllog Marale Ma	http://	_	
-50.0								
-60.0								Max Hold
-70.0								
Center 5.53 GHz #Res BW 820 kHz		VBW 8 MHz				200 MHz ep 1 ms		
#Res BW 820 KH2					SWC	ep mis		Min Hold
Occupied Bandwidth	1	Total P	ower	23.7	dBm		_	
	.355 MH	-						Detector
	.335 MIH	Z						Detector Peak▶
Transmit Freq Error	186.49 ki	Hz % of O	3W Powe	r 99	.00 %		Auto	Man
x dB Bandwidth	81.30 MI	−lz xdB		-26.	00 dB			
				07.0710				
MSG				STATUS				

Plot 7-106. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)



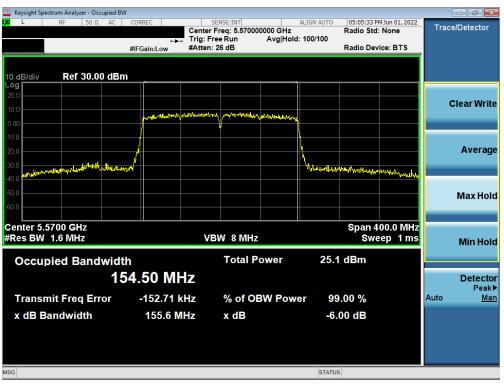
Plot 7-107. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 71 of 254
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Keysight Spectrum Analyzer - Occupied BW									- 6 x
🗶 RL RF 50Ω AC CC	RREC		vse:INT SOUR		ALIGN AUTO	09:38:52 P	M Apr 07, 2022	Trac	e/Detector
		Trig: Free	Run	Avg Hold	l: 100/100	Raulo Stu.	None		
#IF	Gain:Low	#Atten: 2	0 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm									
Log									
10.0	Landerlook	mound	humanit	and these where a					Clear Write
0.00									
-10.0									
-20.0					- <u>-</u>				
-30.0					N				Average
-40.0 www.halphalphan.					mount	Manapatriker	L		
-50.0							℠ ℸ୷ ୶ୄ୳ୢୄ୲୳୷୷୶ _୶ ୄ୲ <mark>ୄ</mark> ୄ୲		
-60.0									Max Hold
-70.0									wax noiu
Center 5.69 GHz							200 MHz		
#Res BW 820 kHz		٧B١	V 8 MHz			Swe	ep 1 ms		Min Hold
			Total P	ower	22.4	dBm			
Occupied Bandwidth		_	TUtal F	OWEI	23.4	ubili			
77.2	257 MF	Z							Detector
Transmit Freg Error	209.20 k	U -	% of OE		or 00	.00 %		Auto	Peak▶ Man
· · · ·								Auto	Interi
x dB Bandwidth	81.15 M	Hz	x dB		-26.	00 dB			
MSG					STATUS				

Plot 7-108. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)



Plot 7-109. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ac (UNII Band 2C) - Ch. 114)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 af 054
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Keysight Spectrum Analyzer - Occupied BW					
LXI T RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF		PM Apr 07, 2022	Trace/Detector
		ter Freq: 5.570000000 GHz : Free Run Avg Hold	Radio Sto I: 100/100	: None	11400120100101
		en: 26 dB	Radio De	vice: BTS	
10 dB/div Ref 30.00 dBm			·		
20.0					
					Clear Write
10.0	mounderstines	all the more as a second way and a second			
0.00	— <mark> </mark> —————				
-10.0					
-20.0			 		Average
and the provide the state of the property of the	<u>ا سر</u>		Unlaw on the Alberton	how have	g .
-30.0					
-40.0					
-50.0					Max Hold
-60.0					maxmora
Center 5.57 GHz			Spar	ר 400 MHz	
Res BW 3 MHz		VBW 50 MHz		eep 1 ms	Min Hold
					WIITTIOIG
Occupied Bandwidth		Total Power	25.0 dBm		
	6.37 MHz				Detector
15					Detector Peak▶
Transmit Freq Error	452.56 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	166.2 MHz	x dB	-26.00 dB		
X dB Bandwidth		хuв	-20.00 dB		
MSG			STATUS		
MSG			STATUS		

Plot 7-110. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (UNII Band 2C) – Ch. 114)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 72 of 254
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			V/1 0

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7.3 6dB Bandwidth Measurement – 802.11a/n/ac/ax §15.407 (e)

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz band, the 6dB bandwidth must be \geq 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2 KDB 789033 D02 v02r01 – Section C

Test Settings

- The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100 kHz
- 3. VBW <u>></u> 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 74 of 254
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MIMO Antenna-1 6 dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	а	6	16.37
	5785	157	а	6	16.33
	5825	165	а	6	16.40
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.26
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.02
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.56
e S	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	18.75
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	18.49
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	18.99
	5755	151	n (40MHz)	13.5/15 (MCS0)	35.44
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.36
	5755	151	ax (40MHz)	13.5/15 (MCS0)	38.14
	5795	159	ax (40MHz)	13.5/15 (MCS0)	37.41
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.56
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.92

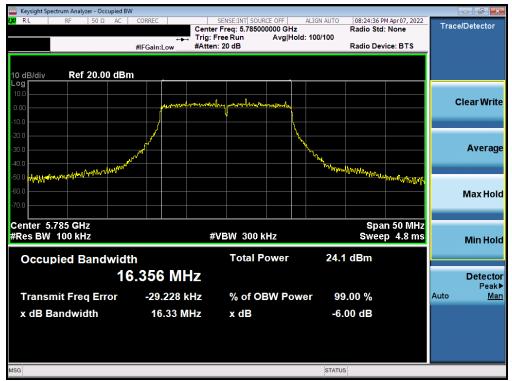
Table 7-4. Conducted Bandwidth Measurements MIMO ANT1



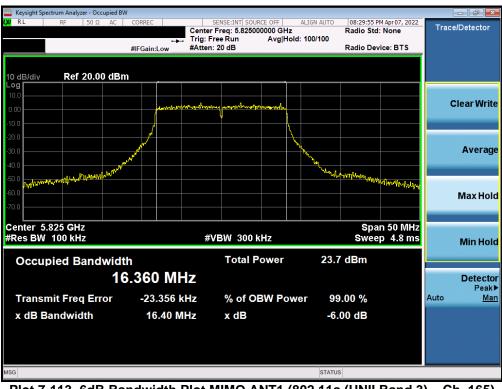
Plot 7-111. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Daga 75 of 254
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Plot 7-112. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 3) - Ch. 157)



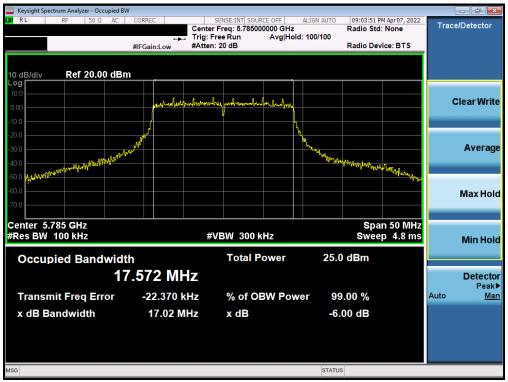
Plot 7-113. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 3) - Ch. 165)

FCC ID: A3LSMF936B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 76 of 254
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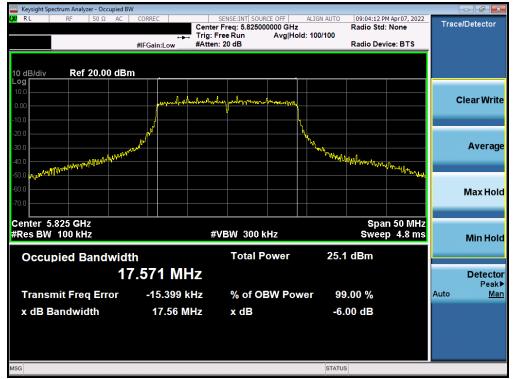
Plot 7-114. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



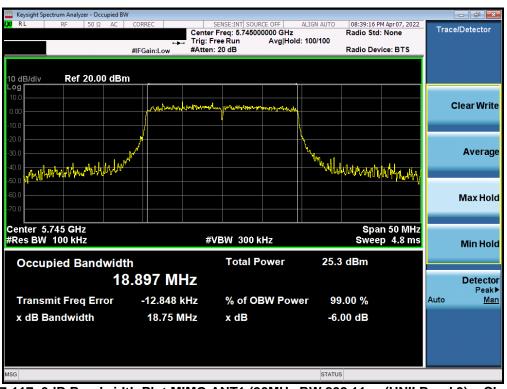
Plot 7-115. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Daga 77 of 254	
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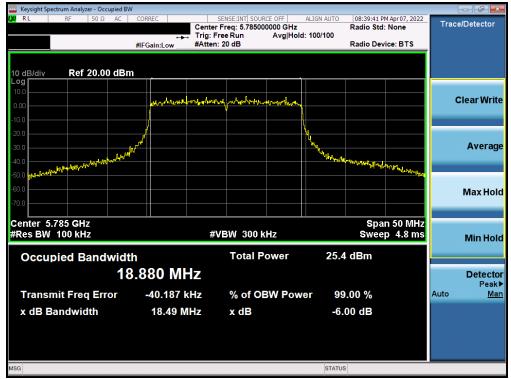
Plot 7-116. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



Plot 7-117. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
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Plot 7-118. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



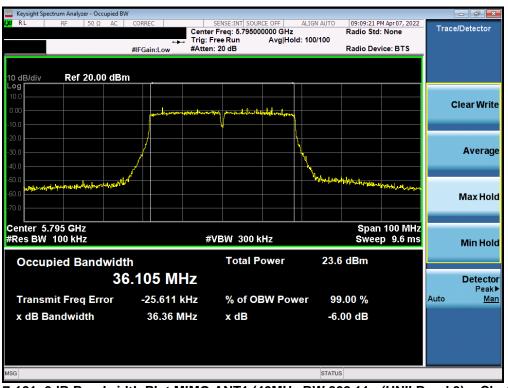
Plot 7-119. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 165)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
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			V1.0	





Plot 7-120. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



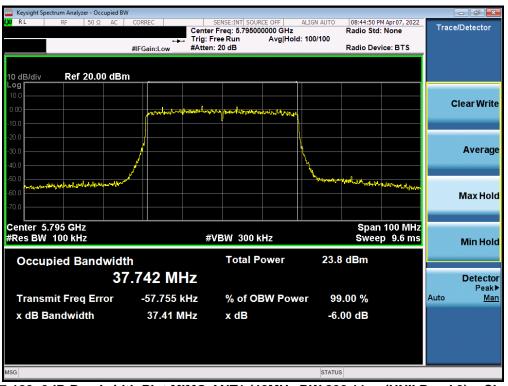
Plot 7-121. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 054	
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	•	•	V1.0	



Keysight Spectrum Analyzer - Occupied BW								- 6 💌
LXI RL RF 50Ω AC C		SENSE:INT S Center Freq: 5.75 Trig: Free Run	5000000 GHz	ALIGN AUTO	08:44:24 PI Radio Std:	M Apr 07, 2022 None	Trace	e/Detector
#	IFGain:Low	#Atten: 20 dB	Avginor	u. 100/100	Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm								
Log 10.0								
0.00		Andrew warden and	manahlatha				C	Clear Write
-10.0	Hereiter auf an area		. d'a standard fa fallanara bi	1				
-20.0				ļ				
-30.0	1			Į				Average
-40.0	<i>/</i>							monugo
				and and				
-50.0 -60.0					ALCONTROL OF AN AND A CONTROL OF AN AND AND AND AND AND AND AND AND AND	reption for the		
								Max Hold
-70.0								_
Center 5.755 GHz						100 MHz		
#Res BW 100 kHz		#VBW 30	0 kHz		Swee	p 9.6 ms		Min Hold
Occupied Bandwidth		Tota	Power	24.4	dBm			
	709 MH							D. t. t.
37.		Z						Detector Peak▶
Transmit Freq Error	-16.310 kł	Hz % of	OBW Pow	ver 99	.00 %		Auto	Man
x dB Bandwidth	38.14 MH	Hz x dB		-6.	00 dB			
MSG				STATUS				

Plot 7-122. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



Plot 7-123. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage 01 of 254	
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			V1.0	



🔤 Keysight Spectrum Analyzer - Occupied BW							- 6 - X -
KM RL RF 50Ω AC	CORREC	SENSE:INT SOUR		09:12:21 Pf Radio Std:	1 Apr 07, 2022	Tracel	Detector
	trie Trie	g: Free Run	Avg Hold: 100/100	Radio Stu.	None		
,	#IFGain:Low #At	ten: 20 dB		Radio Dev	ce: BTS		
10 dB/div Ref 20.00 dBm							
Log							
10.0						С	ear Write
0.00	اللال مالله لسير المليا	Milling or the Milling	.uun.u.u				our mile
-10.0							
-20.0							
-30.0							Average
-40.0	1		N				
-50.0	<i>w</i>		\				
-50.0 Appropriation of the second states of the second			Thyle Arells	manenteriter	marger Warmaliter		
00.0							Max Hold
-70.0							_
Center 5.775 GHz				Span	200 MHz		
#Res BW 100 kHz		#VBW 300 k	Hz		19.13 ms		Min Hold
							Minitiona
Occupied Bandwidt	h	Total Po	ower 23.	9 dBm			
75	.380 MHz						Detector
							Peak▶
Transmit Freq Error	-13.638 kHz	% of OE	3W Power 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	75.56 MHz	x dB	-6	.00 dB			
MSG			STATI	JS			

Plot 7-124. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)



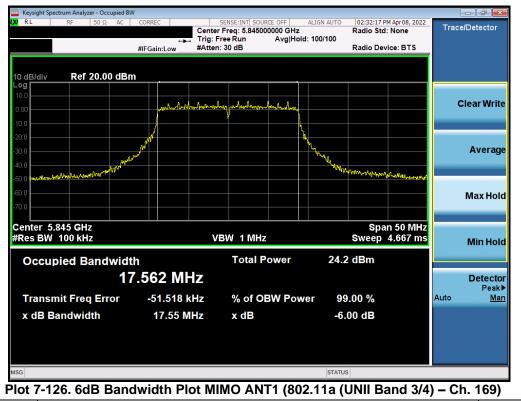
Plot 7-125. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3) - Ch. 155)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:		
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	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	a 6		17.55
Band 4	5865	173	а	6	16.86
Dallu 4	5885	177	а	6	17.62
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	17.52
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	17.54
Dallu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	16.94
Band 3/4	5845	169	ax (20MHz) 6.5/7.2 (MCS0)		19.00
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	18.72
Danu 4	Band 4 5885		ax (20MHz)	6.5/7.2 (MCS0)	17.19
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	36.37
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	35.87
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	37.82
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	37.73
	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	75.41
Band 3/4	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	78.12
Danu 5/4	5815	163	ac (160MHz)	58.5/65 (MCS0)	155.90
	5815	163	ax (160MHz)	58.5/65 (MCS0)	157.80

Table 7-5. Conducted Bandwidth Measurements Band 4 MIMO ANT1



FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 02 of 254	
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Plot 7-127. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 4) - Ch. 173)



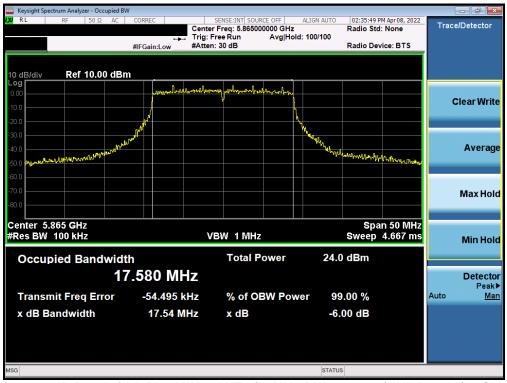
Plot 7-128. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 4) - Ch. 177)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 04 of 254
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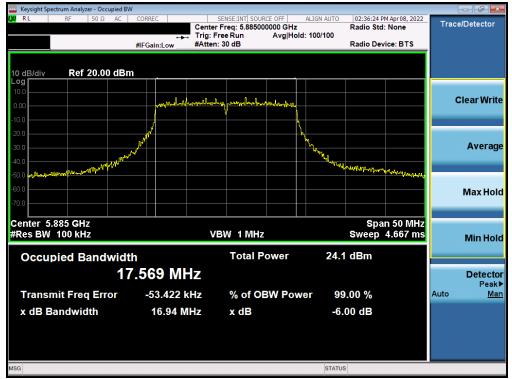
Plot 7-129. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3/4) - Ch. 169)



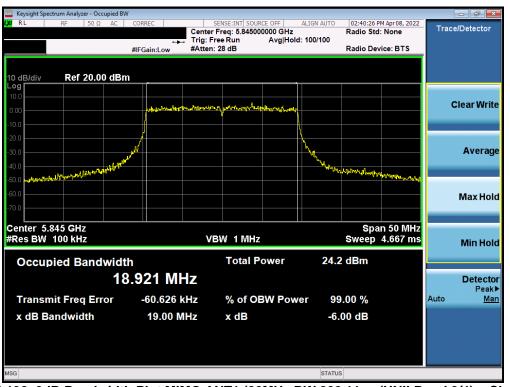
Plot 7-130. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 4) - Ch. 173)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 95 of 254	
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			V1.0	





Plot 7-131. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 4) - Ch. 177)



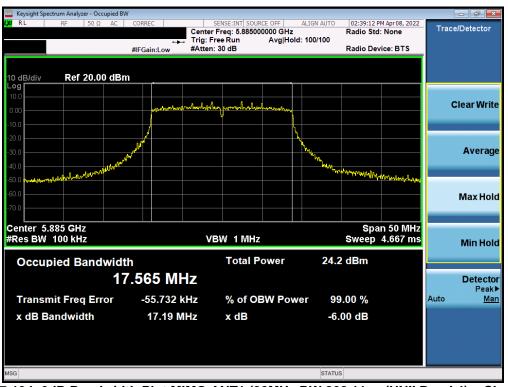
Plot 7-132. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3/4) - Ch. 169)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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			V1.0	



Keysight Spectrum Analyzer - Occupied BV	V				- 6	×
(χ) RL RF 50Ω AC	🛶 Trig: I	SENSE:INT SOURCE OFF r Freq: 5.865000000 GHz Free Run Avg Hol n: 30 dB	Radio Sto Id: 100/100	PM Apr 08, 2022 d: None vice: BTS	Trace/Detecto	r
10 dB/div Ref 20.00 dBn	n _		1			
10.0	anner marshard and a start a	Langerel. where an ing began in an			Clear Wr	rite
-20.0 -20.0 -30.0 -40.0 -50.0 par-ol-montal march 196	week		hannal and and	whill here and been	Avera	age
-50.0					MaxHo	old
Center 5.865 GHz #Res BW 100 kHz		/BW 1 MHz Total Power		an 50 MHz 4.667 ms	Min Ho	old
18	Occupied Bandwidth Total Power 25.1 dBm 18.852 MHz				Detec Pea	ak▶
Transmit Freq Error x dB Bandwidth	-50.504 kHz 18.72 MHz	% of OBW Pov x dB	ver 99.00 % -6.00 dB		Auto <u>N</u>	<u>Man</u>
MSG			STATUS			

Plot 7-133. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 4) - Ch. 173)



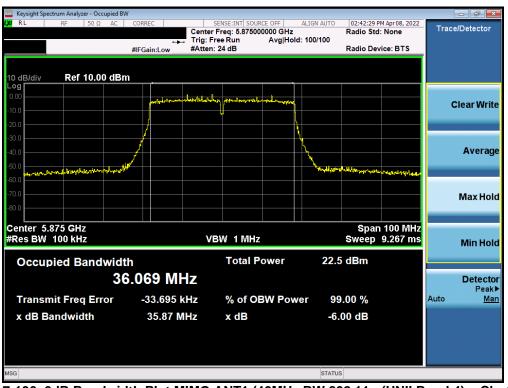
Plot 7-134. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 4) - Ch. 177)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 97 of 254	
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			V1.0	



Keysight Spectrum Analyzer - Occupied B\	N					
<mark>ιχα</mark> RL RF 50 Ω AC		SENSE:INT SOURCE Center Freq: 5.8350000 Frig: Free Run		02:41:48 PM Ap Radio Std: No		Trace/Detector
		Atten: 26 dB		Radio Device:	BTS	
10 dB/div Ref 20.00 dBr	n					
0.00		interneting permenance at the	Antradionale			Clear Write
-10.0						
-30.0						Average
-50.0				uAh derthergebytesinelle ger	wł.≓ŀs≱⊷ _{Peste}	Max Hold
Center 5.835 GHz #Res BW 100 kHz		VBW 1 MHz		Span 10 Sweep 9.2		Min Hold
Occupied Bandwidt	th 6.059 MHz	Total Po	wer 23.2	dBm		Detector
Transmit Freq Error	-46.121 kH		W Power 99	.00 %	/	Peak► Auto <u>Man</u>
x dB Bandwidth	36.37 MH	z xdB	-6.	00 dB		
MSG			STATUS			

Plot 7-135. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 3/4) - Ch. 167)



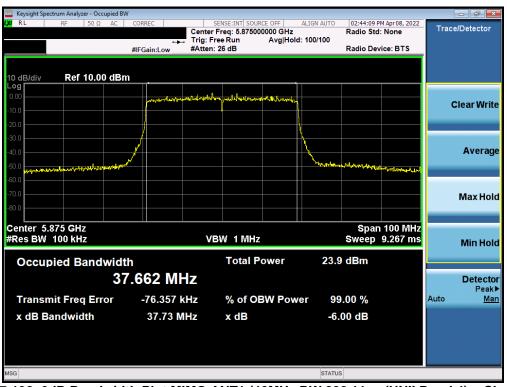
Plot 7-136. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 4) - Ch. 175)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		
1M2204110052-11.A3L	04/11 - 06/18/2022	Portable Handset	Page 88 of 254	
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Keysight Spectrum Analyzer - Occupied B\						
LXI RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF		0 PM Apr 08, 2022	Trace/Det	ector
	Trig:	: Free Run Avg Hold	d:>100/100			
	#IFGain:Low #Atte	en: 26 dB	Radio I	Device: BTS		
10 dB/div Ref 10.00 dBr	n					
Log 0.00	suth the anos of the	tother strath homewood date to				
-10.0					Clear	r Write
-20.0						
-30.0	/					
-40.0			N.		Δ.	/erage
	And the second se		hummen best		~	cruge
-50.0				the state of the s		
-70.0					Ma	x Hold
-80.0					_	_
Center 5.835 GHz			Sp	an 100 MHz		
#Res BW 100 kHz		VBW 1 MHz		p 9.267 ms	Mi	n Hold
		T-4-1 D	04.4.10-			
Occupied Bandwidt		Total Power	24.4 dBm			
37	7.657 MHz				De	etector
Transmit Freq Error	-68.680 kHz	% of OBW Pow	ver 99.00 %		Auto	Peak▶ Man
					Auto	Inan
x dB Bandwidth	37.82 MHz	x dB	-6.00 dB			
MSG			STATUS			

Plot 7-137. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 3/4) - Ch. 167)



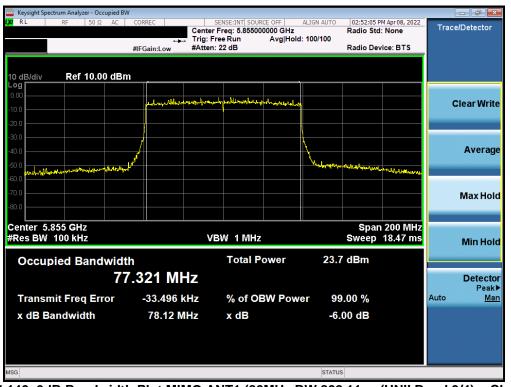
Plot 7-138. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 4) - Ch. 175)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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			V1.0	



🤤 Keysight Spectrum Analyzer - Occupied					
<mark>l,X/</mark> RL RF 50Ω AC		SENSE:INT SOURCE OFF		:16 PM Apr 08, 2022 Std: None	Trace/Detector
	T	rig: Free Run Avg Ho	old: 100/100		
	#IFGain:Low #	Atten: 24 dB	Radio	Device: BTS	
10 dB/div Ref 10.00 dl	Bm		-		
Log					
-10.0	Joddhull like when	لللبه الأللم بداذل الاسلاما فالمحمسل تعسال	LI,		Clear Write
-20.0					
-30.0					
-40.0			\ <u>\</u>		Average
			×.		Average
-50.0 Welawayaran and a second and the second and t			Materia and and a strategy of the state of t	montelenmoney	
-60.0					
-70.0					Max Hold
-80.0					
Center 5.855 GHz			S	pan 200 MHz	
#Res BW 100 kHz		VBW 1 MHz		ep 18.47 ms	Min Hold
		T-4-1 D	00.7.10		
Occupied Bandwi		Total Power	23.7 dBn	1	
	75.392 MHz	4			Detector
Transmit Freq Error	-39.515 kH	z % of OBW Po	wer 99.00 %	,	Peak▶ Auto Man
x dB Bandwidth	75.41 MH	z xdB	-6.00 dE	3	
MSG			STATUS		

Plot 7-139. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3/4) - Ch. 171)



Plot 7-140. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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Plot 7-141. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 3/4) - Ch. 163)



Plot 7-142. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMF936B			Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 01 of 254	
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MIMO Antenna-2 6dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	а	6	16.34
	5785	157	а	6	16.35
	5825	165	а	6	16.37
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.59
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.30
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.60
e S	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	17.57
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	18.85
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	18.87
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.37
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.35
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.86
	5795	159	ax (40MHz)	13.5/15 (MCS0)	38.00
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.61
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.27

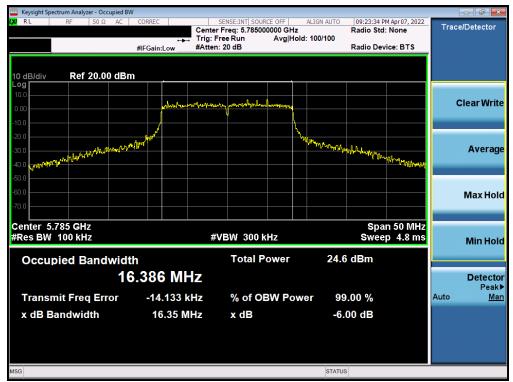
Table 7-6. Conducted Bandwidth Measurements MIMO ANT2



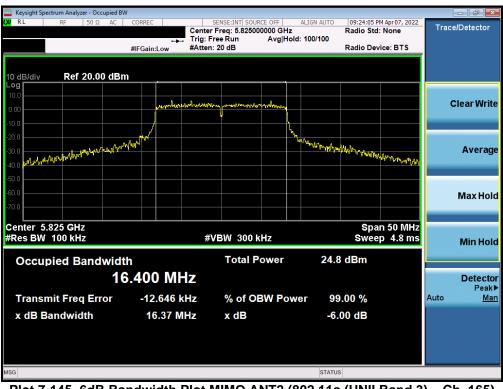
Plot 7-143. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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Plot 7-144. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) - Ch. 157)



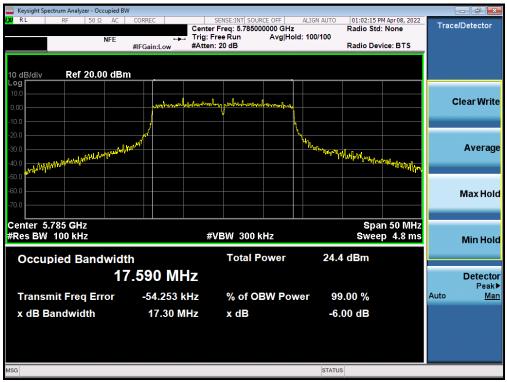
Plot 7-145. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) - Ch. 165)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Daga 02 of 254
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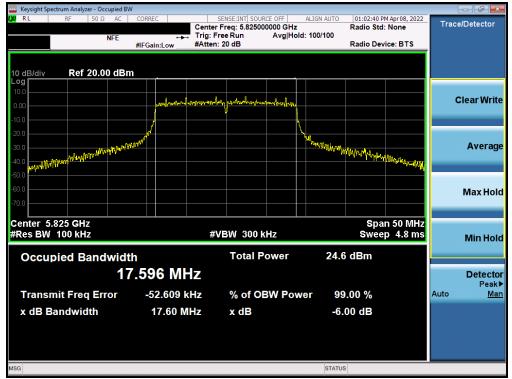
Plot 7-146. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



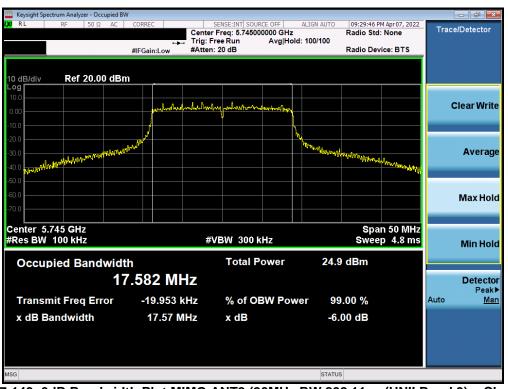
Plot 7-147. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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Plot 7-148. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



Plot 7-149. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMF936B			Approved by: Technical Manager	
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🧱 Keysight Spectrum Analyzer - Occupied BV	V						
(X) RL RF 50Ω AC	Trig: F	SENSE:INT SOURCE OFF r Freq: 5.785000000 GHz Free Run Avg Ho h: 20 dB	Radio St Id: 100/100	PM Apr 07, 2022 d: None	Trace/Detector		
	0 dB/div Ref 20.00 dBm						
10.0 0.00	manufil/manufightransis	haypohreetomaanstaaanse	 ^		Clear Write		
-100 -20.0 -30.0 -40.0	hold		Mr. Mr. mohalt append	mather	Average		
-50.0 -60.0 -70.0					Max Hold		
Center 5.785 GHz #Res BW 100 kHz		VBW 300 kHz	Swe	an 50 MHz ep 4.8 ms	Min Hold		
	Occupied Bandwidth Total Power 24.9 dBm 18.955 MHz						
Transmit Freq Error x dB Bandwidth	-19.001 kHz 18.85 MHz	% of OBW Pov x dB	ver 99.00 % -6.00 dB		Auto <u>Man</u>		
MSG			STATUS				

Plot 7-150. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



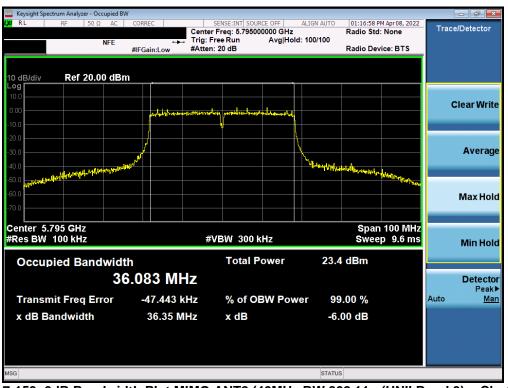
Plot 7-151. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 165)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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Keysight Spectrum Analyzer - Occupied E	BW					-	- • •
IX RL RF 50Ω AC	Trig: F	SENSE:INT SOURCE OFF r Freq: 5.755000000 GH Free Run Avg H n: 20 dB	ALIGN AUTO z old: 100/100	01:16:36 Pl Radio Std: Radio Dev		Trace	Detector
10 dB/div Ref 20.00 dB	m						
0.00	Jassiana	rvey provertestudiety an undergraphy	•			с	lear Write
-10.0	and and a second s		L.	holimitest			Average
-40.0 -50.0 <mark>padar N^arent Apartik bilakin vitatina -60.0 -70.0</mark>				kynĨ¥nψιιrt _{krtty} ty	กษา		Max Hold
Center 5.755 GHz #Res BW 100 kHz		VBW 300 kHz		Swee	100 MHz p 9.6 ms		Min Hold
Occupied Bandwid	^{ith} 6.087 MHz	Total Power	23.5	dBm			Detector Peak▶
Transmit Freq Error x dB Bandwidth	-41.418 kHz 36.37 MHz	% of OBW Po x dB		.00 % 00 dB		Auto	Man
MSG			STATUS				

Plot 7-152. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



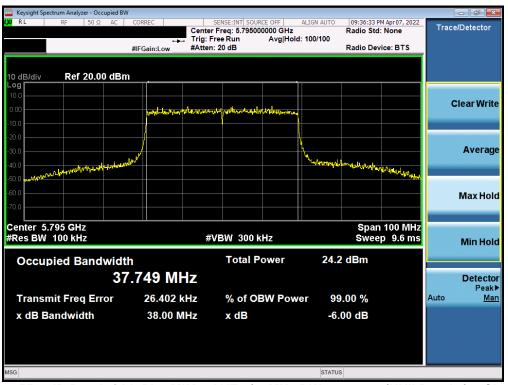
Plot 7-153. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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Keysight Spectrum Analyzer - Occupied BW					-		
	RL RF 50 Ω AC CORREC SENSE:INT SOURCE OFF ALIGN AUTO 09:36:07 PM Apr07, 2022 Center Freq: 5.755000000 GHz Radio Stdi None Trig: Free Run Avg Hold: 100/100 #FGain:Low #Atten: 20 dB Radio Device: BTS						
10 dB/div Ref 20.00 dBm							
10.0					Cl	ear Write	
-20 0 -30 0 -40 0 -50 0 when the interval of the interval	nd		Muntul Manutine	the hours of the second		Average	
-50.0					,	Max Hold	
Center 5.755 GHz #Res BW 100 kHz		VBW 300 kHz	Swe	n 100 MHz ep 9.6 ms	I	Min Hold	
	Occupied Bandwidth Total Power 24.3 dBm 37.708 MHz					Detector Peak▶	
Transmit Freq Error x dB Bandwidth	-9.483 kHz 37.86 MHz	% of OBW Pow x dB	rer 99.00 % -6.00 dB		Auto	Man	
MSG			STATUS				

Plot 7-154. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



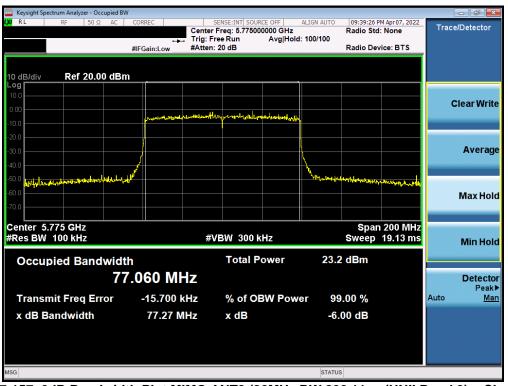
Plot 7-155. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 05 4	
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🔤 Keysight Sp	oectrum Analyzer - Occ	cupied BW									
LX/ RL	RF 50 Ω	AC CO	RREC		SENSE:INT		ALIGN AUTO		M May 03, 2022	Tree	e/Detector
					er Freq: 5.7750			Radio Std	: None	Irac	elDetector
		NFE			Free Run	Avg Hold	d: 100/100				
		#IF	Gain:Low	#Atte	n: 20 dB			Radio Dev	ice: BTS		
10 dB/div	Ref 20.0	0 dBm									
Log											_
10.0											
0.00				· · ·							Clear Write
			Juluu alaha a	المهالللاب	وللدلس وكالملكان بالمليك	ԱԱՆԱԱՆ					
-10.0					- (
-20.0			<mark> </mark>								
-30.0			1								Average
-30.0			/				ì				Average
-40.0		¢					<u>}_</u>				
-50.0		1					1 \ <u>_</u>				
Bel Mitter	gipter and the part of the	males of low					Sal and	-lilighter district	monused		
-60.0 -60.0									1 1 100		Max Hold
-70.0											maxmora
-70.0											
Contor 5	.7750 GHz							Enon S	200.0 MHz		
#Res BW	/ 100 kHz			7	#VBW 300 I	(HZ		sweep	19.13 ms		Min Hold
Occu	pied Band	width			Total F	ower	23.0) dBm			
		/ 5.3	98 M	ΗZ							Detector
											Peak▶
Trans	mit Freq Err	or	-16.669	kHz	% of O	BW Pow	er 99	.00 %		Auto	<u>Man</u>
			75.04				•				
X dB E	Bandwidth		75.61 N	ИHZ	x dB		-6.	00 dB			
100							07/7				
MSG							STATUS				

Plot 7-156. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)



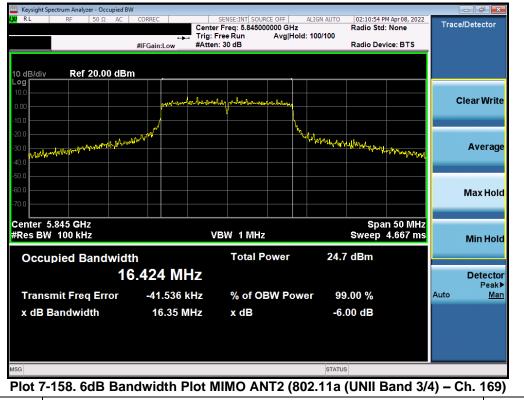
Plot 7-157. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 3) - Ch. 155)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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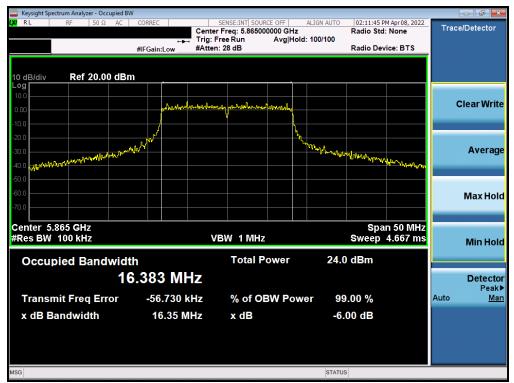
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	а	6	16.35
Band 4	5865	173	а	6	16.35
Dallu 4	5885	177	а	6	16.33
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	17.22
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	17.23
Dallu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	17.17
Band 3/4	5845	169	ax (20MHz)	6.5/7.2 (MCS0)	18.97
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	19.02
	5885	177	ax (20MHz)	6.5/7.2 (MCS0)	17.56
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	35.97
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	36.35
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	37.97
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	38.03
Band 3/4	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	75.33
	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	77.63
	5815	163	ac (160MHz)	58.5/65 (MCS0)	155.90
	5815	163	ax (160MHz)	58.5/65 (MCS0)	157.60

Table 7-7. Conducted Bandwidth Measurements Band 4 MIMO ANT2

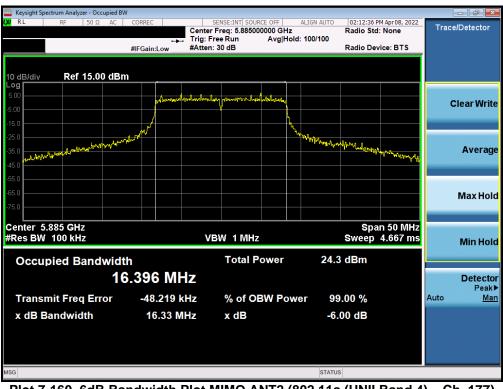


FCC ID: A3LSMF936B		Approved by: Technical Manager		
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Plot 7-159. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 4) - Ch. 173)



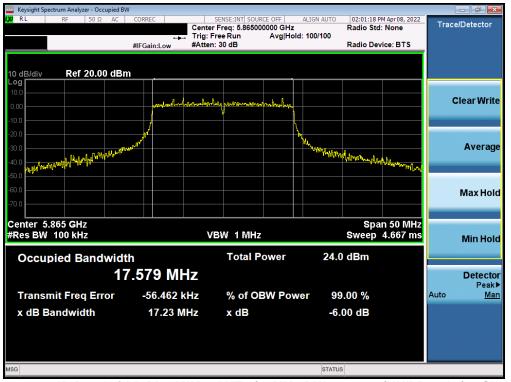
Plot 7-160. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 4) - Ch. 177)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-161. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3/4) - Ch. 169)



Plot 7-162. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 4) - Ch. 173)

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Keysight Spectrum Analyzer - Occupied B ¹	N				
ΙΧΙ RF 50 Ω AC		SENSE:INT SOURCE OFF er Freq: 5.885000000 GH Free Run Avg H		1:53 PM Apr 08, 2022 5 Std: None	Trace/Detector
	#IFGain:Low #Atte	n: 30 dB	Radi	Device: BTS	
10 dB/div Ref 20.00 dBr	m				
0.00	 	alay walneed and and and and and and and and and an			Clear Write
-10.0 -20.0	Werner		L.	nn -	Average
-20.0 -30.0 -40.0 -50.0				montality	, norago
-60.0					Max Hold
Center 5.885 GHz #Res BW 100 kHz		/BW 1 MHz	Swe	Span 50 MHz ep 4.667 ms	Min Hold
Occupied Bandwid	th	Total Power	25.0 dBr	n	
	7.605 MHz				Detector Peak▶
Transmit Freq Error	-49.585 kHz	% of OBW Po	wer 99.00 %	6	Auto <u>Man</u>
x dB Bandwidth	17.17 MHz	x dB	-6.00 d	В	
MSG			STATUS		

Plot 7-163. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 4) - Ch. 177)



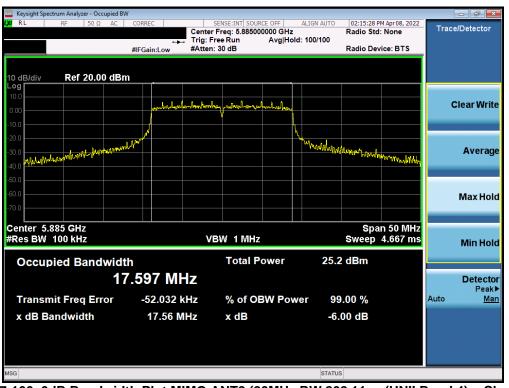
Plot 7-164. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3/4) - Ch. 169)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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🧱 Keysight Spectrum Analyzer - Occupied BV	V				
(X) RL RF 50Ω AC	Trig:	SENSE:INT SOURCE OFF er Freq: 5.865000000 GHz Free Run Avg Hol en: 28 dB	ALIGN AUTO 02:14:42 0 Radio Sto d: 100/100 Radio De		Trace/Detector
10 dB/div Ref 20.00 dBn	n				
10.0	and and and a second	y - M - A Barn - A Barne - A Ba			Clear Write
-100 -20.0 -30.0 -40.0	West		h how how have have have a	how was and	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.865 GHz #Res BW 100 kHz Occupied Bandwidt		VBW 1 MHz Total Power		n 50 MHz 4.667 ms	Min Hold
18	3.935 MHz				Detector Peak▶
Transmit Freq Error x dB Bandwidth	-69.123 kHz 19.02 MHz	% of OBW Pow x dB	ver 99.00 % -6.00 dB		Auto <u>Man</u>
MSG			STATUS		

Plot 7-165. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 4) - Ch. 173)



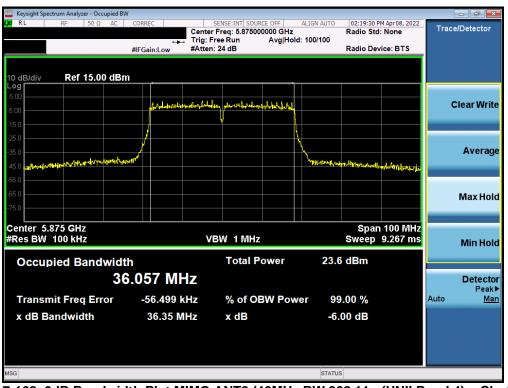
Plot 7-166. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 4) - Ch. 177)

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Keysight Spectrum Analyzer - Occupied BW							
LXX RL RF 50Ω AC CO	- Trig	SENSE:INT SOURC SENSE:INT SOURC SENSE: SENSE: SENSE: SENSE: SENSE: SENSE: SENSE: SENSE: SOURCE SENSE: SOURCE SENSE: INT SOURCE SENSE: SENSE: SOURCE SENSE: SOURCE		Radio Std		Trace	Detector
#IF	Gain:Low #At	ten: 24 dB		Radio Dev	rice: BTS		
10 dB/div Ref 10.00 dBm							
-10.0	Jahra alamanal	hear har paper share was	www.al.d.s.			с	lear Write
-20.0	/						
-40.0 -50.0 2000				ndmitterflithing	ht and farmer and we		Average
-60.0							
-70.0							Max Hold
Center 5.835 GHz #Res BW 100 kHz		VBW 1 MHz			100 MHz 9.267 ms		Min Hold
Occupied Bandwidth		Total Po	ower 23	.6 dBm			
36.0	42 MHz						Detector Peak▶
Transmit Freq Error	-50.384 kHz	% of OB	W Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	35.97 MHz	x dB	-	6.00 dB			
MSG			STA	rus			

Plot 7-167. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3/4) - Ch. 167)



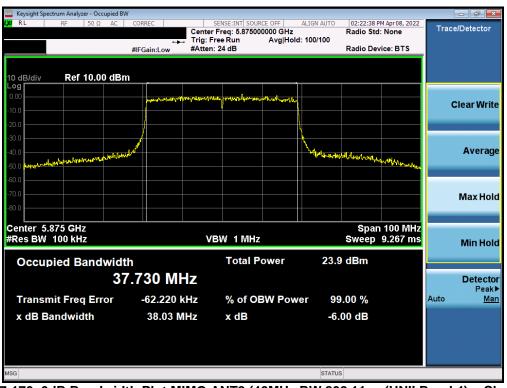
Plot 7-168. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 4) - Ch. 175)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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🧱 Keysight Spectrum Analyzer - Occupied I	BW				- 5
LXI RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 02:21:50 Radio Sto	PM Apr 08, 2022	Trace/Detector
	🛶 Trig: I	Free Run Avg Hold	: 100/100		
	#IFGain:Low #Atter	n: 26 dB	Radio De	vice: BTS	
10 dB/div Ref 10.00 dB	m				
0.00	Janda Martin State (State Orthogo	may solling bourser and a			
-10.0	Abhavallana II	and a set of the set of a dark dark of the			Clear Writ
-20.0					
-30.0					
			And the second		Averag
-50.0 man mark at a more than the	1900		- and all activity of the start of the start of the	nother black	Averug
-60.0					
-70.0					Max Hol
-80.0					
Center 5.835 GHz			Spar	n 100 MHz	
#Res BW 100 kHz	V	/BW 1 MHz		9.267 ms	Min Hol
		Total Power	23.9 dBm		
Occupied Bandwid		Total Power	23.9 dBm		
3	7.732 MHz				Detecto
Transmit Freq Error	-60.226 kHz	% of OBW Powe	er 99.00 %		Peak Auto Ma
					nato <u>ma</u>
x dB Bandwidth	37.97 MHz	x dB	-6.00 dB		
MSG			STATUS		

Plot 7-169. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3/4) - Ch. 167)



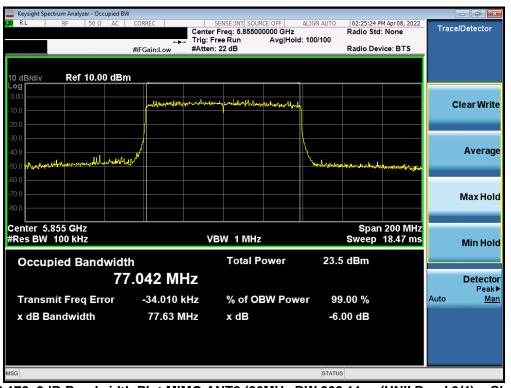
Plot 7-170. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 4) - Ch. 175)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B\	V				
LXX RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 02:23:41 Radio Sto	PM Apr 08, 2022	Trace/Detector
	Trig: I	Free Run Avg Hold:		a. None	
	#IFGain:Low #Atter	n: 22 dB	Radio De	vice: BTS	
10 dB/div Ref 5.00 dBm					
Log -5.00	and the states	ماريد والإيران والمارية والمارية			
		and an			Clear Write
-15.0					
-25.0					
-35.0			<u>\</u>		
-45.0	ad the second		" Suburrely on any way	and a standard sector of the	Average
-55.0				a ta da contra da	
-65.0					
-75.0					Max Hold
-85.0					
Center 5.855 GHz				n 200 MHz	
#Res BW 100 kHz	V	BW 1 MHz	Sweep	18.47 ms	Min Hold
Occurried Denducid		Total Power	23.6 dBm		
Occupied Bandwidt		Total Fower	23.0 UBIII		
7	5.265 MHz				Detector
Transmit Freq Error	-107.72 kHz	% of OBW Powe	er 99.00 %		Peak▶ Auto Man
x dB Bandwidth	75.33 MHz	x dB	-6.00 dB		
MSG			STATUS		

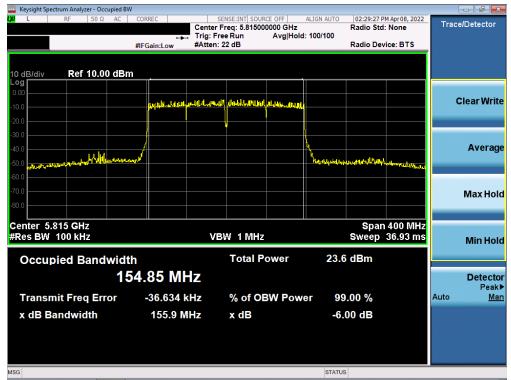
Plot 7-171. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 3/4) - Ch. 171)



Plot 7-172. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-173. 6dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ac (UNII Band 3/4) - Ch. 163)



Plot 7-174. 6dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (UNII Band 3/4) - Ch. 163)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.4 UNII Output Power Measurement – 802.11a/n/ac/ax §15.407(a.1.iv) §15.407(a.2) §15.407(a.3)

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm). The maximum e.i.r.p. shall not exceed the lesser of 200 mW or 10 + 10 log10B, dBm.

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(18.81) = 23.74dBm$. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(18.74) = 23.73dBm$. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm). The maximum e.i.r.p. is 36 dBm.

In the 5.850 – 5.895 GHz band, the maximum permissible e.i.r.p is 30dBm.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

Test Notes

Per RSS-247 Section 6.2.3, transmission on channels which overlap the 5600-5650 MHz is prohibited. This device operates under these frequencies only under the control of a certified master device and does not support active scanning on these channels. This device does not transmit any beacons or initiate any transmissions in UNII Bands 2A or 2C.

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	Freq [MHz]	Channel	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapuil	Chine [GDin]	margin [ab]
	5180	36	AVG	17.93	17.71	20.83	23.98	-3.15	-0.96	19.87	23.01	-3.14
	5200	40	AVG	17.87	17.46	20.68	23.98	-3.30	-0.96	19.72	23.01	-3.29
<u> </u>	5220	44	AVG	17.52	17.64	20.59	23.98	-3.39	-0.96	19.63	23.01	-3.38
d	5240	48	AVG	17.89	17.61	20.76	23.98	-3.22	-0.96	19.80	23.01	-3.21
andwidth)	5260	52	AVG	17.55	17.49	20.53	23.98	-3.45	-0.91	19.62	30.00	-10.38
ק	5280	56	AVG	17.49	17.47	20.49	23.98	-3.49	-0.91	19.58	30.00	-10.42
	5300	60	AVG	17.86	17.62	20.75	23.98	-3.23	-0.91	19.84	30.00	-10.16
m	5320	64	AVG	17.81	17.73	20.78	23.98	-3.20	-0.91	19.87	30.00	-10.13
μz	5500	100	AVG	17.99	17.64	20.83	23.98	-3.15	-1.91	18.92	30.00	-11.08
÷	5600	120	AVG	17.92	17.65	20.80	23.98	-3.18	-1.91	18.89	-	-
(20M	5620	124	AVG	17.83	17.74	20.80	23.98	-3.18	-1.91	18.89	-	-
5	5720	144	AVG	17.82	17.84	20.84	23.98	-3.14	-1.91	18.93	30.00	-11.07
Ł	5745	149	AVG	17.72	17.79	20.77	30.00	-9.23	-0.75	20.02	-	-
픘	5765	153	AVG	17.74	17.87	20.82	30.00	-9.18	-0.75	20.07	-	-
5G	5785	157	AVG	17.86	17.80	20.84	30.00	-9.16	-0.75	20.09	-	-
	5805	161	AVG	17.85	17.73	20.80	30.00	-9.20	-0.75	20.05	-	-
	5825	165	AVG	17.62	17.83	20.74	30.00	-9.26	-0.75	19.99	-	-
	5845	169	AVG	17.54	17.61	20.59			-0.75	19.84	30.00	-10.16
	5865	173	AVG	17.82	17.64	20.74			-0.75	19.99	30.00	-10.01
	5885	177	AVG	17.77	17.47	20.63			-0.75	19.88	30.00	-10.12

MIMO Maximum Conducted Output Power Measurements

Table 7-8. MIMO 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
	5180	36	AVG	17.63	17.56	20.61	23.98	-3.37	-0.96	19.65	23.01	-3.36
_	5200	40	AVG	17.58	17.92	20.76	23.98	-3.22	-0.96	19.80	23.01	-3.21
Ē	5220	44	AVG	17.81	17.59	20.71	23.98	-3.27	-0.96	19.75	23.01	-3.26
idi	5240	48	AVG	17.71	17.67	20.70	23.98	-3.28	-0.96	19.74	23.01	-3.27
ž	5260	52	AVG	17.90	17.42	20.68	23.98	-3.30	-0.91	19.77	30.00	-10.23
andwidth	5280	56	AVG	17.84	17.44	20.65	23.98	-3.33	-0.91	19.74	30.00	-10.26
	5300	60	AVG	17.71	17.68	20.71	23.98	-3.27	-0.91	19.80	30.00	-10.20
B	5320	64	AVG	17.67	17.70	20.70	23.98	-3.28	-0.91	19.79	30.00	-10.21
(20MHz	5500	100	AVG	17.85	17.99	20.93	23.98	-3.05	-1.91	19.02	30.00	-10.98
1 S	5600	120	AVG	17.79	17.55	20.68	23.98	-3.30	-1.91	18.77	-	-
0	5620	124	AVG	17.69	17.54	20.63	23.98	-3.35	-1.91	18.72	-	-
	5720	144	AVG	17.68	17.76	20.73	23.98	-3.25	-1.91	18.82	30.00	-11.18
ΗZ	5745	149	AVG	17.58	17.71	20.66	30.00	-9.34	-0.75	19.91	-	-
<u>–</u>	5765	153	AVG	17.82	17.81	20.83	30.00	-9.17	-0.75	20.08	-	-
5 G	5785	157	AVG	17.74	17.74	20.75	30.00	-9.25	-0.75	20.00	-	-
	5805	161	AVG	17.69	17.55	20.63	30.00	-9.37	-0.75	19.88	-	-
	5825	165	AVG	17.95	17.78	20.88	30.00	-9.12	-0.75	20.13	-	-
	5845	169	AVG	17.88	17.49	20.70			-0.75	19.95	30.00	-10.05
	5865	173	AVG	17.65	17.60	20.64			-0.75	19.89	30.00	-10.11
	5885	177	AVG	17.43	17.38	20.42			-0.75	19.67	30.00	-10.33

Table 7-9. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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	Freq [MHz]	Channel	Detector	Conc	Conducted Power [dBm]			ted Conducted imit Power Margin [dB]	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapud	Ennie [GB/1]	margin [ab]
	5180	36	AVG	17.63	17.64	20.65	23.98	-3.33	-0.96	19.69	23.01	-3.32
	5200	40	AVG	17.59	17.51	20.56	23.98	-3.42	-0.96	19.60	23.01	-3.41
Ē	5220	44	AVG	17.87	17.65	20.77	23.98	-3.21	-0.96	19.81	23.01	-3.20
<u>i</u>	5240	48	AVG	17.72	17.67	20.71	23.98	-3.27	-0.96	19.75	23.01	-3.26
Š	5260	52	AVG	17.91	17.45	20.70	23.98	-3.28	-0.91	19.79	30.00	-10.21
andwidth	5280	56	AVG	17.86	17.46	20.67	23.98	-3.31	-0.91	19.76	30.00	-10.24
a	5300	60	AVG	17.71	17.52	20.63	23.98	-3.35	-0.91	19.72	30.00	-10.28
ß	5320	64	AVG	17.68	17.61	20.66	23.98	-3.32	-0.91	19.75	30.00	-10.25
(20MHz	5500	100	AVG	17.86	17.75	20.82	23.98	-3.16	-1.91	18.91	30.00	-11.09
⋚	5600	120	AVG	17.80	17.66	20.74	23.98	-3.24	-1.91	18.83	-	-
ō	5620	124	AVG	17.70	17.55	20.64	23.98	-3.34	-1.91	18.73	-	-
5	5720	144	AVG	17.70	17.76	20.74	23.98	-3.24	-1.91	18.83	30.00	-11.17
Hz	5745	149	AVG	17.59	17.74	20.68	30.00	-9.32	-0.75	19.93	-	-
<u>+</u>	5765	153	AVG	17.84	17.67	20.77	30.00	-9.23	-0.75	20.02	-	-
5G	5785	157	AVG	17.75	17.65	20.71	30.00	-9.29	-0.75	19.96	-	-
	5805	161	AVG	17.71	17.50	20.62	30.00	-9.38	-0.75	19.87	-	-
	5825	165	AVG	17.97	17.61	20.80	30.00	-9.20	-0.75	20.05	-	-
	5845	169	AVG	17.88	17.44	20.68			-0.75	19.93	30.00	-10.07
	5865	173	AVG	17.68	17.56	20.63			-0.75	19.88	30.00	-10.12
	5885	177	AVG	17.44	17.24	20.35			-0.75	19.60	30.00	-10.40

Table 7-10. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
	5180	36	AVG	16.99	16.78	19.90	23.98	-4.08	-0.96	18.94	23.01	-4.07
_	5200	40	AVG	16.89	16.93	19.92	23.98	-4.06	-0.96	18.96	23.01	-4.05
Ē	5220	44	AVG	16.78	16.68	19.74	23.98	-4.24	-0.96	18.78	23.01	-4.23
<u>d</u>	5240	48	AVG	16.68	16.77	19.74	23.98	-4.24	-0.96	18.78	23.01	-4.23
ž	5260	52	AVG	16.89	16.94	19.93	23.98	-4.05	-0.91	19.02	30.00	-10.98
andwidth	5280	56	AVG	16.97	16.96	19.98	23.98	-4.00	-0.91	19.07	30.00	-10.93
a	5300	60	AVG	16.96	16.79	19.89	23.98	-4.09	-0.91	18.98	30.00	-11.02
ß	5320	64	AVG	16.89	16.81	19.86	23.98	-4.12	-0.91	18.95	30.00	-11.05
ΗZ	5500	100	AVG	16.89	16.58	19.75	23.98	-4.23	-1.91	17.84	30.00	-12.16
5	5600	120	AVG	16.99	16.43	19.73	23.98	-4.25	-1.91	17.82	-	-
20M	5620	124	AVG	16.88	16.97	19.94	23.98	-4.04	-1.91	18.03	-	-
5	5720	144	AVG	16.80	16.78	19.80	23.98	-4.18	-1.91	17.89	30.00	-12.11
N	5745	149	AVG	16.63	16.84	19.75	30.00	-10.25	-0.75	19.00	-	-
5GHz	5765	153	AVG	16.75	16.56	19.67	30.00	-10.33	-0.75	18.92	-	-
20	5785	157	AVG	16.92	16.84	19.89	30.00	-10.11	-0.75	19.14	-	-
	5805	161	AVG	16.83	16.83	19.84	30.00	-10.16	-0.75	19.09	-	-
	5825	165	AVG	16.69	16.61	19.66	30.00	-10.34	-0.75	18.91	-	-
	5845	169	AVG	17.65	17.65	20.66			-0.75	19.91	30.00	-10.09
	5865	173	AVG	17.52	17.82	20.68			-0.75	19.93	30.00	-10.07
	5885	177	AVG	17.74	17.61	20.69			-0.75	19.94	30.00	-10.06

Table 7-11. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

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th)	Freq [MHz]	Freq [MHz] Channel Detector		Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
idtl				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]			
dwi	5190	38	AVG	14.70	14.72	17.72	23.98	-6.26	-0.96	16.76	23.01	-6.25
pr	5230	46	AVG	16.64	16.82	19.74	23.98	-4.24	-0.96	18.78	23.01	-4.23
an	5270	54	AVG	16.65	16.90	19.79	23.98	-4.19	-0.91	18.88	30.00	-11.12
В	5310	62	AVG	16.45	16.88	19.68	23.98	-4.30	-0.91	18.77	30.00	-11.23
Ηz	5510	102	AVG	16.63	16.65	19.65	23.98	-4.33	-1.91	17.74	30.00	-12.26
÷.	5590	118	AVG	16.67	16.71	19.70	23.98	-4.28	-1.91	17.79	-	-
(40M	5630	126	AVG	16.44	16.68	19.57	23.98	-4.41	-1.91	17.66	-	
(4	5710	142	AVG	16.59	16.57	19.59	23.98	-4.39	-1.91	17.68	30.00	-12.32
N	5755	151	AVG	16.77	16.81	19.80	30.00	-10.20	-0.75	19.05	-	-
GH	5795	159	AVG	16.68	16.40	19.55	30.00	-10.45	-0.75	18.80	-	-
50	5835	167	AVG	16.78	16.79	19.80			-0.75	19.05	30.00	-10.95
	5875	175	AVG	16.70	16.81	19.77			-0.75	19.02	30.00	-10.98

Table 7-12. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

(H	Freq [MHz]	Freq [MHz] Channel Detect		Conducted Power [dBm]			Conducted Power Limit		Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
- E				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
Ξ	5190	38	AVG	14.67	14.91	17.80	23.98	-6.18	-0.96	16.84	23.01	-6.17
ndwidth	5230	46	AVG	16.56	16.82	19.70	23.98	-4.28	-0.96	18.74	23.01	-4.27
n	5270	54	AVG	16.61	16.93	19.78	23.98	-4.20	-0.91	18.87	30.00	-11.13
Ш	5310	62	AVG	16.44	16.73	19.60	23.98	-4.38	-0.91	18.69	30.00	-11.31
Ŧ	5510	102	AVG	16.60	16.50	19.56	23.98	-4.42	-1.91	17.65	30.00	-12.35
5	5590	118	AVG	16.58	16.54	19.57	23.98	-4.41	-1.91	17.66	-	-
(40M	5630	126	AVG	16.39	16.49	19.45	23.98	-4.53	-1.91	17.54	-	-
4	5710	142	AVG	16.47	16.42	19.46	23.98	-4.52	-1.91	17.55	30.00	-12.45
N	5755	151	AVG	16.69	16.52	19.62	30.00	-10.38	-0.75	18.87	-	-
Т.	5795	159	AVG	16.59	16.28	19.45	30.00	-10.55	-0.75	18.70	-	-
56	5835	167	AVG	16.69	16.57	19.64			-0.75	18.89	30.00	-11.11
	5875	175	AVG	16.62	16.54	19.59			-0.75	18.84	30.00	-11.16

Table 7-13. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

(Li	Freq [MHz] Channe	Channel	nannel Detector				Conducted Power Limit		Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
Ð				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
dwidth	5190	38	AVG	14.54	14.63	17.60	23.98	-6.38	-0.96	16.64	23.01	-6.37
þ	5230	46	AVG	16.61	16.65	19.64	23.98	-4.34	-0.96	18.68	23.01	-4.33
an	5270	54	AVG	16.65	16.86	19.77	23.98	-4.21	-0.91	18.86	30.00	-11.14
Ш	5310	62	AVG	16.47	16.71	19.60	23.98	-4.38	-0.91	18.69	30.00	-11.31
N.	5510	102	AVG	16.63	16.61	19.63	23.98	-4.35	-1.91	17.72	30.00	-12.28
Ŧ	5590	118	AVG	16.62	16.71	19.68	23.98	-4.30	-1.91	17.77	-	-
(40M	5630	126	AVG	16.43	16.72	19.59	23.98	-4.39	-1.91	17.68	-	-
4	5710	142	AVG	16.49	16.52	19.52	23.98	-4.46	-1.91	17.61	30.00	-12.39
N	5755	151	AVG	16.73	16.69	19.72	30.00	-10.28	-0.75	18.97	-	-
ж	5795	159	AVG	16.63	16.42	19.54	30.00	-10.46	-0.75	18.79	-	-
5G	5835	167	AVG	16.73	16.75	19.75			-0.75	19.00	30.00	-11.00
	5875	175	AVG	16.64	16.70	19.68			-0.75	18.93	30.00	-11.07

Table 7-14. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

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andwidth)	Freq [MHz]	Freq [MHz] Channel		Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
d ₹				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
an	5210	42	AVG	14.31	14.39	17.36	23.98	-6.62	-0.96	16.40	23.01	-6.61
СÓ N	5290	58	AVG	15.53	15.52	18.54	23.98	-5.44	-0.91	17.63	30.00	-12.37
THZ	5530	106	AVG	15.51	15.32	18.43	23.98	-5.55	-1.91	16.52	30.00	-13.48
(80M	5610	122	AVG	15.37	15.41	18.40	23.98	-5.58	-1.91	16.49	-	-
	5690	138	AVG	15.28	15.48	18.39	23.98	-5.59	-1.91	16.48	30.00	-13.52
GHz	5775	155	AVG	15.46	15.91	18.70	30.00	-11.30	-0.75	17.95	-	-
20	5855	171	AVG	15.50	15.64	18.58			-0.75	17.83	30.00	-12.17

Table 7-15. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Bandwidth)	Freq [MHz]	Freq [MHz] Channel Dete		Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
i <u>š</u>				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapud	Ennie [GBin]	margin [ab]
an	5210	42	AVG	14.36	14.38	17.38	23.98	-6.60	-0.96	16.42	23.01	-6.59
	5290	58	AVG	15.77	15.59	18.69	23.98	-5.29	-0.91	17.78	30.00	-12.22
(80MHz	5530	106	AVG	15.75	15.77	18.77	23.98	-5.21	-1.91	16.86	30.00	-13.14
No.	5610	122	AVG	15.62	15.85	18.75	23.98	-5.23	-1.91	16.84	-	
	5690	138	AVG	15.53	15.94	18.75	23.98	-5.23	-1.91	16.84	30.00	-13.16
5GHz	5775	155	AVG	15.75	15.82	18.80	30.00	-11.20	-0.75	18.05	-	-
50	5855	171	AVG	15.53	15.94	18.75			-0.75	18.00	30.00	-12.00

Table 7-16. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

0MHz dth)	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
<u> 9 5</u>				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]			• • • •
r) z	5250	50	AVG	15.59	15.62	18.62	23.98	-5.36	-0.96	17.66	23.01	-5.35
GHB	5570	114	AVG	15.99	15.49	18.76	30.00	-11.24	-1.91	16.85	-	-
50	5815	163	AVG	15.51	15.37	18.45			-0.75	17.70	23.01	-5.31

Table 7-17. MIMO 160MHz BW 802.11ac (UNII) Maximum Conducted Output Power

JMHz dth)	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Conducted Power Limit Power		Directional Ant. Gain [dBm]		Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
l60 vid				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]		22.04	
z (1 ndv	5250	50	AVG	15.44	15.70	18.58	23.98	-5.40	-0.96	17.62	23.01	-5.39
GH; Bai	5570	114	AVG	15.85	15.56	18.72	30.00	-11.28	-1.91	16.81	-	-
50	5815	163	AVG	15.45	15.53	18.50			-0.75	17.75	30.00	-12.25

Table 7-18. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

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Note:

Per ANSI C63.10-2013 and KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where G_N is the gain of the nth antenna and N_{ANT} , the total number of antennas used.

Directional gain = $10 \log[(10^{G_{1/20}} + 10^{G_{2/20}} + ... + 10^{G_{N/20}})^2 / N_{ANT}] dBi$

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 17.63 dBm for Antenna 1 and 17.56 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(17.63 dBm + 17.56 dBm) = (57.94 mW + 57.02 mW) = 114.96 mW = 20.61 dBm

Sample e.i.r.p. Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO conducted power was calculated to be 20.61 dBm with directional gain of -0.96 dBi.

e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

20.96 dBm + -0.96 dBi = 19.65 dBm

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7.5 Maximum Power Spectral Density – 802.11a/n/ac/ax §15.407(a.1.iv) §15.407(a.2) §15.407(a.3);

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, was used to measure the power spectral density.

In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.

In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2 KDB 789033 D02 v02r01 – Section F ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

Test Settings

- 1. Analyzer was set to the center frequency of the UNII channel under investigation
- 2. Span was set to encompass the entire emission bandwidth of the signal
- 3. RBW = 1MHz
- 4. VBW = 3MHz
- 5. Number of sweep points $\geq 2 \times (\text{span/RBW})$
- 6. Sweep time = auto
- 7. Detector = power averaging (RMS)
- 8. Trigger was set to free run for all modes
- 9. Trace was averaged over 100 sweeps
- 10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None

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Summed MIMO Power Spectral Density Measurements

				Antenna-1	Antenna-2	Summed MIMO	Max Power		
	Frequency	Channel	802.11 Mode	Data Rate [Mbps]			Power Density	Density	Margin
	[MHz]	No.			[dBm]	[dBm]	[dBm]	[dBm/MHz]	[dB]
	5180	36	а	6	6.28	7.04	9.69	11.0	-1.31
	5200	40	а	6	6.05	6.85	9.48	11.0	-1.52
	5240	48	а	6	6.28	7.63	10.02	11.0	-0.98
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.71	7.50	10.13	11.0	-0.87
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.81	7.39	10.12	11.0	-0.88
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	7.27	7.50	10.40	11.0	-0.60
-	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	6.61	6.51	9.57	11.0	-1.43
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	6.53	6.66	9.61	11.0	-1.39
ä	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	6.73	7.34	10.06	11.0	-0.94
	5190	38	n (40MHz)	13.5/15 (MCS0)	2.69	2.44	5.58	11.0	-5.42
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.67	2.73	5.71	11.0	-5.29
	5190	38	ax (40MHz)	13.5/15 (MCS0)	3.87	2.20	6.13	11.0	-4.87
	5230	46	ax (40MHz)	13.5/15 (MCS0)	2.48	2.90	5.71	11.0	-5.29
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-1.52	-1.56	1.47	11.0	-9.53
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-1.17	-1.29	1.78	11.0	-9.22
<mark>₽</mark> ₹	5250	50	ac (160MHz)	58.5/65 (MCS0)	-4.33	-6.32	-2.20	11.0	-13.20
Band 1/2A	5250	50	ax (160MHz)	58.5/65 (MCS0)	-7.39	-6.43	-3.88	11.0	-14.88
	5260	52	a	6	6.07	7.53	9.87	11.0	-1.13
	5280	56	а	6	6.10	7.59	9.92	11.0	-1.08
	5320	64	a	6	6.40	7.90	10.23	11.0	-0.77
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	7.02	7.23	10.14	11.0	-0.86
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.89	6.63	9.77	11.0	-1.23
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.12	7.07	10.11	11.0	-0.89
∢	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	6.47	7.28	9.90	11.0	-1.10
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	6.59	7.12	9.87	11.0	-1.13
Ban	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	7.14	7.57	10.37	11.0	-0.63
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.81	2.56	5.70	11.0	-5.30
	5310	62	n (40MHz)	13.5/15 (MCS0)	2.69	2.38	5.55	11.0	-5.45
	5270	54	ax (40MHz)	, ,	2.65	2.36	5.76	11.0	-5.43
	5270	62	ax (40MHz)	13.5/15 (MCS0) 13.5/15 (MCS0)	2.65	2.65	5.48	11.0	-5.52
	5290	58	()	. ,	-1.73	-1.69	1.30	11.0	-5.52
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-1.32	-1.79	1.30	11.0	
			ax (80MHz)	29.3/32.5 (MCS0)					-9.54
	5500	100	а	6	6.49	7.33	9.94	11.0	-1.06
	5600	120	а	6	6.04	7.02	9.57	11.0	-1.43
	5720	144	a	6	6.26	7.37	9.86	11.0	-1.14
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	7.38	7.13	10.27	11.0	-0.73
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	6.73	6.88	9.82	11.0	-1.18
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	7.24	7.15	10.21	11.0	-0.79
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	6.94	7.17	10.07	11.0	-0.93
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	6.44	6.70	9.58	11.0	-1.42
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	7.00	7.11	10.07	11.0	-0.93
	5510	102	n (40MHz)	13.5/15 (MCS0)	2.83	2.39	5.63	11.0	-5.37
SC	5590	118	n (40MHz)	13.5/15 (MCS0)	2.64	2.18	5.43	11.0	-5.57
Band	5710	142	n (40MHz)	13.5/15 (MCS0)	2.72	2.62	5.68	11.0	-5.32
ä	5510	102	ax (40MHz)	13.5/15 (MCS0)	2.58	2.50	5.55	11.0	-5.45
	5590	118	ax (40MHz)	13.5/15 (MCS0)	2.50	2.45	5.49	11.0	-5.51
	5710	142	ax (40MHz)	13.5/15 (MCS0)	2.65	2.60	5.64	11.0	-5.36
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-1.87	-2.38	0.89	11.0	-10.11
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-1.80	-1.89	1.16	11.0	-9.84
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.06	-2.05	0.96	11.0	-10.04
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-1.27	-1.98	1.40	11.0	-9.60
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-1.23	-1.82	1.50	11.0	-9.50
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-1.70	-2.17	1.08	11.0	-9.92
	5570	114	ac (160MHz)	29.3/32.5 (MCS0)	-3.92	-6.51	-2.02	11.0	-13.02
	5570	114	ax (160MHz)	29.3/32.5 (MCS0)	-5.42	-6.86	-3.07	11.0	-14.07
	5570	114	ax (160MHz)	29.3/32.5 (MCS0)	-5.42	-6.86	-3.07	11.0	-*

Table 7-19. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

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_	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
	5745	149	а	6	3.49	4.57	7.07	30.0	-22.93
	5785	157	а	6	3.67	4.40	7.06	30.0	-22.94
	5825	165	а	6	3.46	4.92	7.26	30.0	-22.74
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	4.24	4.02	7.14	30.0	-22.86
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	4.40	3.89	7.16	30.0	-22.84
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	4.39	3.96	7.19	30.0	-22.81
e	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	3.99	3.87	6.94	30.0	-23.06
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	4.16	3.90	7.04	30.0	-22.96
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	4.31	4.00	7.17	30.0	-22.83
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.24	-0.29	2.99	30.0	-27.01
	5795	159	n (40MHz)	13.5/15 (MCS0)	-0.27	-0.48	2.64	30.0	-27.36
	5755	151	ax (40MHz)	13.5/15 (MCS0)	0.08	-0.16	2.97	30.0	-27.03
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-0.81	-0.08	2.58	30.0	-27.42
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-4.07	-4.25	-1.15	30.0	-31.15
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-3.99	-4.34	-1.15	30.0	-31.15

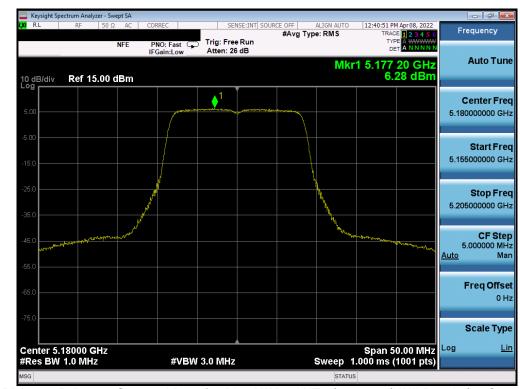
Table 7-20. Band 3 MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-1 Power Density [dBm/MHz]	Antenna-2 Power Density [dBm/MHz]	MIMO Summed Power Density [dBm/MHz]	Directional Antenna Gain [dBi]	EIRP Power Density [dBm/MHz]	Max EIRP Power Density [dBm/MHz]	Margin [dB]
Band 3/4	5845	169	а	6	5.99	7.05	9.56	-0.75	8.81	14.00	-5.19
Band 4	5865	173	а	6	6.27	6.39	9.34	-0.75	8.59	14.00	-5.41
Dallu 4	5885	177	а	6	5.59	6.59	9.13	-0.75	8.38	14.00	-5.62
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	6.32	5.89	9.12	-0.75	8.37	14.00	-5.63
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	6.30	5.33	8.85	-0.75	8.10	14.00	-5.90
Dallu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	6.00	5.69	8.86	-0.75	8.11	14.00	-5.89
Band 3/4	5845	169	ax (20MHz)	6.5/7.2 (MCS0)	5.97	6.08	9.04	-0.75	8.29	14.00	-5.71
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	6.17	5.91	9.05	-0.75	8.30	14.00	-5.70
banu 4	5885	177	ax (20MHz)	6.5/7.2 (MCS0)	6.02	6.73	9.40	-0.75	8.65	14.00	-5.35
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	2.20	2.38	5.30	-0.75	4.55	14.00	-9.45
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	1.51	2.21	4.88	-0.75	4.13	14.00	-9.87
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	2.09	2.49	5.30	-0.75	4.55	14.00	-9.45
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	2.24	1.85	5.06	-0.75	4.31	14.00	-9.69
	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	-1.70	-1.69	1.32	-0.75	0.57	14.00	-13.43
Dand 2/4	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	-1.52	-2.08	1.22	-0.75	0.47	14.00	-13.53
Band 3/4	5815	163	ac (160MHz)	58.5/65 (MCS0)	0.36	-0.90	2.79	-0.75	2.04	14.00	-11.96
	5815	163	ax (160MHz)	58.5/65 (MCS0)	-0.07	-0.43	2.76	-0.75	2.01	14.00	-11.99

Table 7-21. Band 4 MIMO e.i.r.p Spectral Density Measurements

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MIMO Antenna-1 Power Spectral Density Measurements

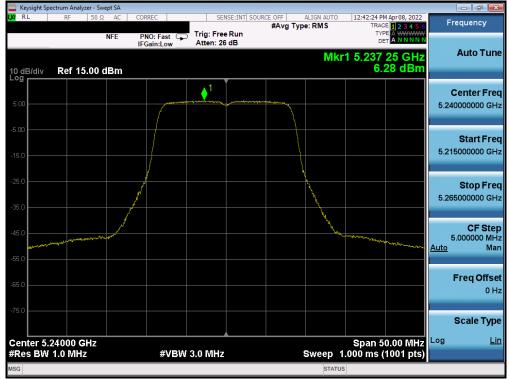




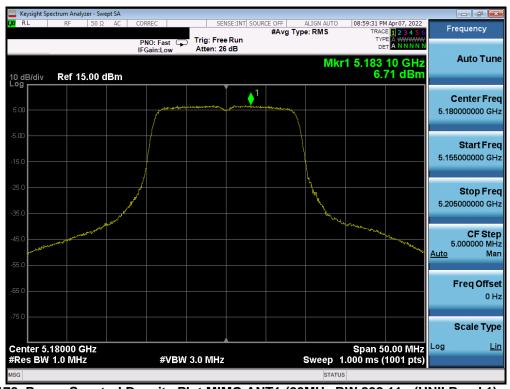
Plot 7-176. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 440 at 054		
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Plot 7-177. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) - Ch. 48)



Plot 7-178. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Desc. 440 - 6054		
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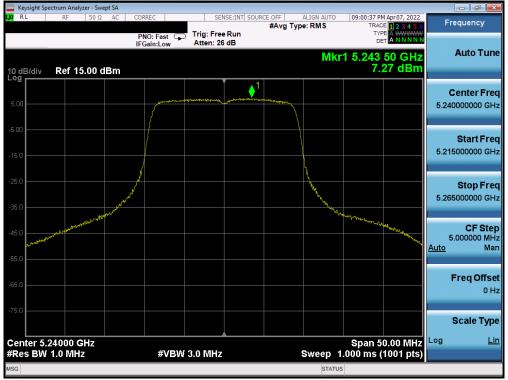


	ctrum Analyzer - Swept	: SA					
L <mark>XI</mark> RL	RF 50 Ω	AC CORREC	SENSE:INT	SOURCE OFF ALIGN #Avg Type: RM		Apr 07, 2022	Frequency
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 26 dB		TYP		Auto Tune
10 dB/div Log	Ref 15.00 dE	ßm			6.8	31 dBm	
			♦ ¹				Center Freq
-5.00			an a				5.200000000 GHz
0.00		1					Start Freq
-15.0							5.175000000 GHz
-25.0		and the second s		- hu	×.		Stop Freq 5.22500000 GHz
-35.0	a subgeneratives with the rest	nor de la companya de			Jan Martin Martin Carles	al-age	CF Step
-55.0						A	5.000000 MHz <u>uto</u> Man
-65.0							Freq Offset 0 Hz
-75.0							Scale Type
Center 5.2 #Res BW	20000 GHz 1.0 MHz	#VBW	3.0 MHz	Swe	Span 50 eep 1.000 ms (*	0.00 MHz 400 000 000 000 000 000 000 000 000 00	og <u>Lin</u>
MSG					STATUS		

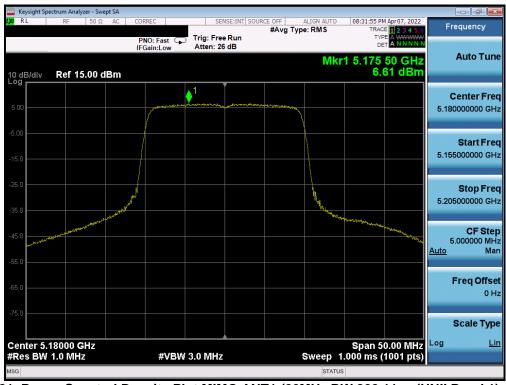
Plot 7-179. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)	
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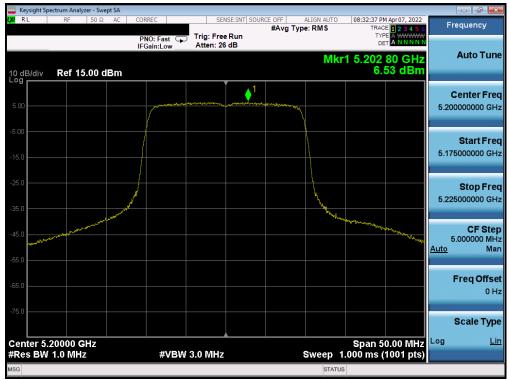
Plot 7-180. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)



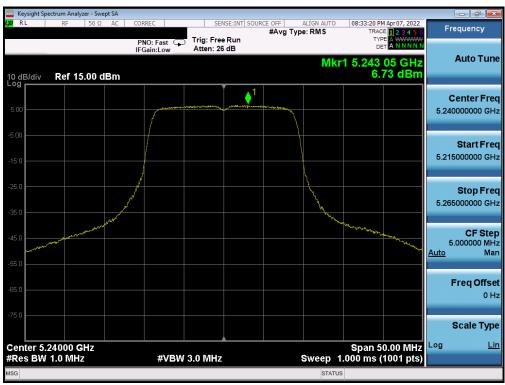
Plot 7-181. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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Plot 7-182. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)



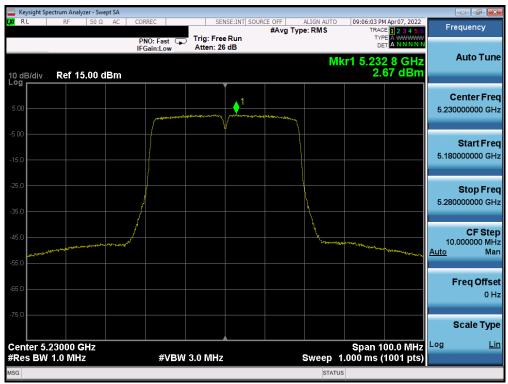
Plot 7-183. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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	Spectrum Analyzer - Sw										
X/RL	RF 50 Ω		REC	Trig: Free	Run	Avg Type	ALIGN AUTO e: RMS	TRAC	Apr 07, 2022	Freq	uency
10 dB/div Log	Ref 15.00	IFG	Gain:Low	Atten: 26	dB		Mk	r1 5.18	6 7 GHz 69 dBm	A	uto Tun
5.00			formania	1	poor and the second	Laure					nter Fre 00000 GH
5.00											tart Fre 00000 G⊦
25.0		/									Stop Fre
45.0	and a stand and a stand of the	al la marca a la característica de					horner	a and a second	Maranananan	10.00 <u>Auto</u>	CF Ste 00000 Mi Ma
65.0										Fr	e q Offs 0 I
75.0	5.19000 GHz							Span 1	00.0 MHz		ale Typ: L
Res B	W 1.0 MHz		#VBW	3.0 MHz				.000 ms (1001 pts)		
SG							STATUS	·			

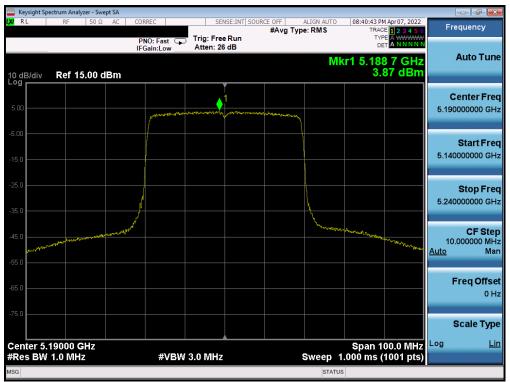
Plot 7-184. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)



Plot 7-185. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 46)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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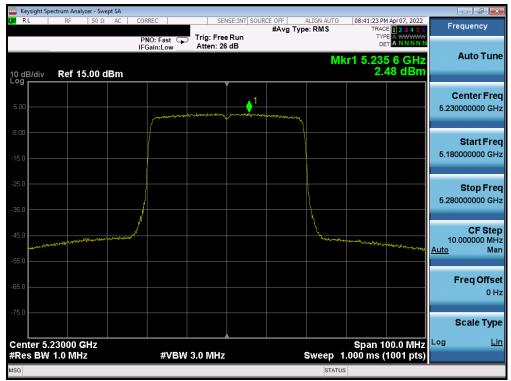


Plot 7-186. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

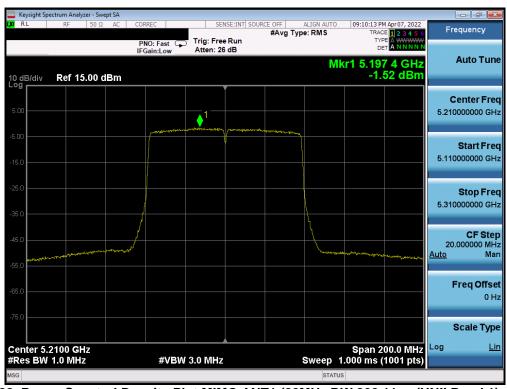
FCC ID: A3LSMF936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage 104 of 054	
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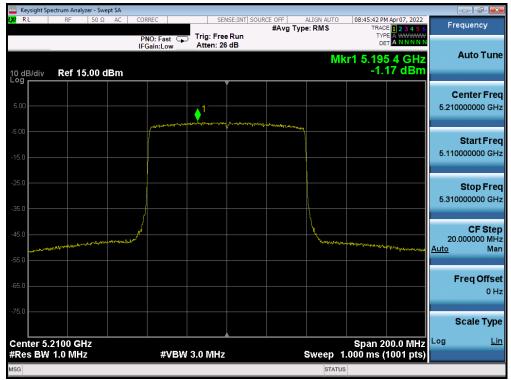
Plot 7-187. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



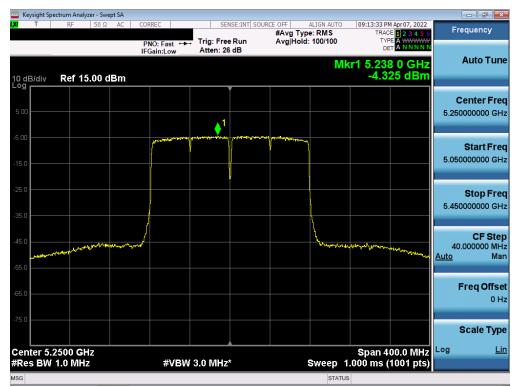
Plot 7-188. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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Plot 7-189. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



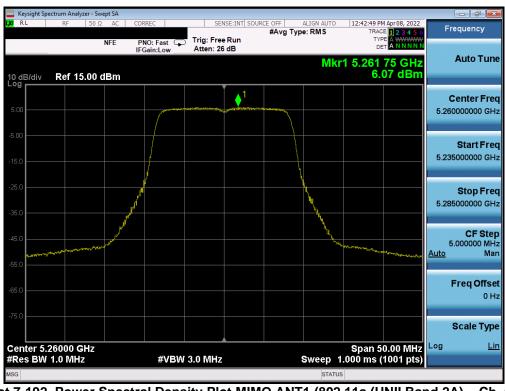
Plot 7-190. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 1) - Ch. 50)

FCC ID: A3LSMF936B			Approved by: Technical Manager	
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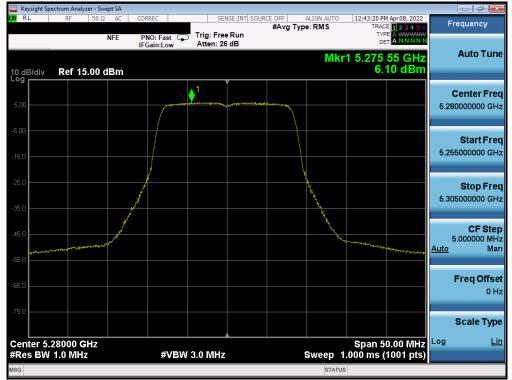
Plot 7-191. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (UNII Band 1) - Ch. 50)



Plot 7-192. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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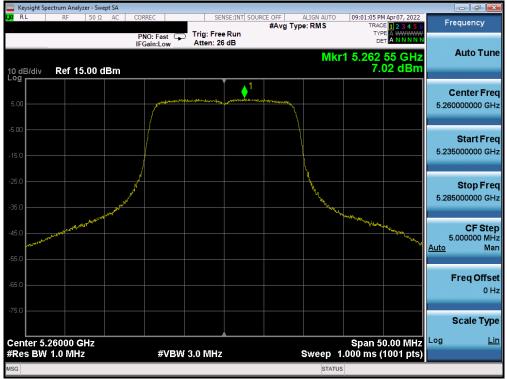
Plot 7-193. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 56)



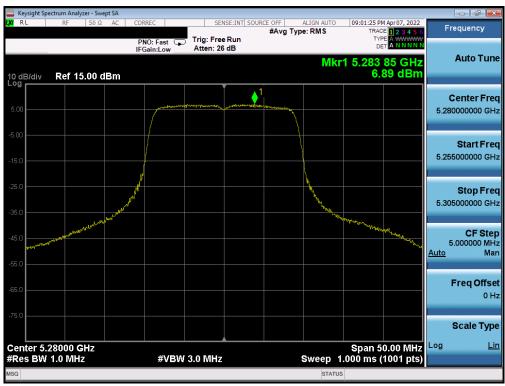
Plot 7-194. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
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Plot 7-195. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



Plot 7-196. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF936B			Approved by: Technical Manager	
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