

Keysight Spectrum Analyzer - Occupied BW					
	Trig: F		Radio Std d: 100/100		Trace/Detector
	#FGain:Low #Atter	n: 20 dB	Radio Dev	rice: BTS	
10 dB/div Ref 25.00 dBm					
15.0	part to market with	Hon visit and and an an and Marin			Clear Write
-5.00					
-15.0 -25.0 -35.0 amilitation of the state o	w		have have been and the first	u work way	Average
-45.0					
-65.0					Max Hold
Center 5.71 GHz #Res BW 430 kHz	 V	BW 4 MHz		100 MHz ep 1 ms	Min Hold
Occupied Bandwidth		Total Power	26.4 dBm		
37.	663 MHz				Detector Peak▶
Transmit Freq Error	149.63 kHz	% of OBW Pow	/er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	39.75 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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied BV	V				×
IXIRL RF 50Ω AC	T Later	SENSE:INT Senter Freq: 5.610000000 GHz Tig: Free Run Avg Hold Atten: 20 dB	11:52:56 PM 0 Radio Std: No 1: 100/100 Radio Device	one Trace/Detec	ctor
10 dB/div Ref 25.00 dBr	n				
15.00		hopen and all and a second a second a second a		ClearV	Nrite
-5.00				Ave	erage
-25.0 -35.0				HATING,	J
-65.0				Max	Hold
Center 5.61 GHz #Res BW 820 kHz		VBW 8 MHz		- 1 m -	Hold
Occupied Bandwidt 7१	^h 5.805 MHz	Total Power	26.0 dBm		ector
Transmit Freq Error	-116.87 kHz	z % of OBW Pow	er 99.00 %	Auto	°eak► <u>Man</u>
x dB Bandwidth	81.31 MHz	z x dB	-26.00 dB		
MSG			STATUS		

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



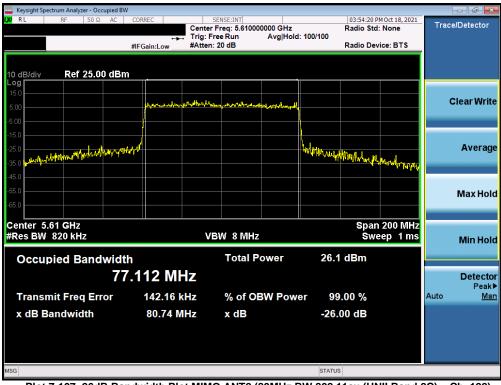
Plot 7-105. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW								
		SENSE:INT Center Freq: 5.5 Trig: Free Run #Atten: 20 dB	i30000000 GHz Avg Hold	d: 100/100	03:53:34 Pl Radio Std: Radio Dev		Trac	e/Detector
	IFGain:Low	#Atten: 20 ab			Radio Dev	ICE: BIS		
10 dB/div Ref 25.00 dBm								
15.0 5.00	mutralmont	eheren dy the ser	www.www.wigher					Clear Write
-5.00								
-15.0								
-25.0	-N			Lindopenturity	MAN AND AND	hand the second s		Average
-45.0								
-55.0								Max Hold
-65.0							_	
Center 5.53 GHz #Res BW 820 kHz		VBW 81	/IH7			200 MHz ep 1 ms		
						op The		Min Hold
Occupied Bandwidth			al Power	26.2	dBm			
	963 MH							Detector Peak▶
Transmit Freq Error	239.77 kH	z %o	f OBW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	81.01 M⊦	z x de	3	-26.0	00 dB			
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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 74 af 057
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Keysight Spectrum Analyzer - Occupied E	BW				
LXX RL RF 50Ω AC	un an		03:55:24 PM Radio Std: M d: 100/100	None	Trace/Detector
	#IFGain:Low #A	tten: 20 dB	Radio Devic	e: BTS	
10 dB/div Ref 25.00 dB	m				
15.0 5.00		ward million and the strengthe	A.		Clear Write
-5.00					
-25.0 -35.0 4.1	Ъ., """ "		house hours and hours	al Applitution	Average
-45.0 -55.0 -65.0					Max Hold
Center 5.69 GHz #Res BW 820 kHz		VBW 8 MHz		200 MHz p 1 ms	Min Hold
Occupied Bandwid		Total Power	24.4 dBm		
	7.304 MHz 227.78 kHz	% of OBW Pow	ver 99.00 %		Detector Peak▶ Auto <u>Man</u>
Transmit Freq Error					Auto <u>Mari</u>
x dB Bandwidth	81.24 MHz	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)

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Keysight Spectrum Analyzer - Occupied BW					
			Radio Std		Trace/Detector
	Sameon				
10 dB/div Ref 20.00 dBm	1				
10.0	المحمد والمحمد	d a dibut			Clear Write
0.00	┥┤┙╢╴┠╍┍╍╍┥┶╹┦╣ _{┛┿} ┷╛┙┷╛╘┍╡┡╱╡╉╿	an ser of a start of the start			
-10.0					
-20.0					Average
-30.0			handle Marker Marker M		Average
40.0			- the first	how the work of the	
-50.0					
-60.0					Max Hold
-70.0					
Center 5.57 GHz				400 MHz	
#Res BW 470 kHz	VBI	N 5 MHz	Sweep	1.733 ms	Min Hold
Occupied Bandwidth		Total Power	25.4 dBm		
156.	15 MHz				Detector Peak▶
Transmit Freq Error	99.793 kHz	% of OBW Powe	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	161.0 MHz	x dB	-26.00 dB		
MSG			STATUS		

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

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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7.3 6dB Bandwidth Measurement – 802.11a/n/ac/ax

<u>§15.407 (e); RSS-Gen [6.2]</u>

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 and 5.850 – 5.895 bands, 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 \geq 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.

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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	16.41
	5785	157	а	6	16.42
	5825	165	а	6	16.39
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.63
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.66
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.61
ო	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	19.07
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	19.03
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	19.02
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.39
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.11
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.72
	5795	159	ax (40MHz)	13.5/15 (MCS0)	37.68
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	76.01
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.28

Table 7-4. Conducted Bandwidth Measurements MIMO ANT1



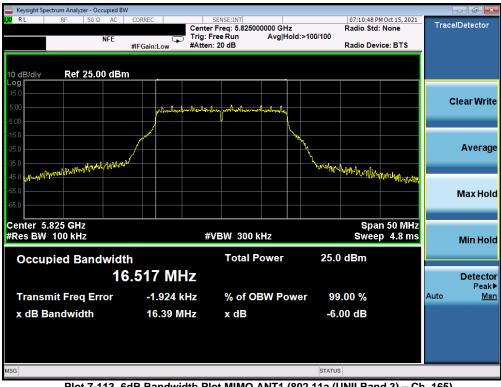
Plot 7-111. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMS908E	Proved to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occ										_	
LX/ RL RF 50 Ω	AC COF	RREC		ISE:INT eq: 5.78500	0000 GH	z		07:07:18 P	40ct 15, 2021	Trac	e/Detector
	NFE	÷+-		Run			100/100				
	#IF(Gain:Low	#Atten: 20) dB				Radio Dev	ice: BTS		
10 dB/div Ref 25.0	0 dBm										
15.0											
5.00			production of the		4.4.4						Clear Write
-5.00		A DAVID CARD	1000 300 (042 44)		LUNAPAPU,						
-15.0						لر					
-25.0	م م	<u>~</u>					4				Average
	× 1						<u>\</u>				J
-35.0 -45.0 Muunin landa Martin M	yer where						"why yr	helilianphal	1		
-55.0									"Y" WHELEN WALE		
-65.0											Max Hold
-05.0											
Center 5.785 GHz									n 50 MHz		
#Res BW 100 kHz			#VB	W 300 k	Hz			Swee	p 4.8 ms		Min Hold
Occupied Band	width			Total P	ower		2/ 1	dBm			
				i otur i i			2-1-1	abiii			
	16.5	50 MH	IZ								Detector Peak►
Transmit Freq Err	or	8.893 k	Hz	% of OE	3W Po	we	r 99	.00 %		Auto	Man
x dB Bandwidth		16.42 M	IHz	x dB			-6.	00 dB			
MSG							STATUS	;			

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)

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Keysight Spectrum Analyzer - Occ										
LX/ RL RF 50 Ω	AC COP	RREC	Center Fr	vse:INT eq: 5.74500 Run		d: 100/100	12:26:03 A Radio Std	M Oct 16, 2021 : None	Trac	e/Detector
		Gain:Low	#Atten: 2	0 dB	•.		Radio Dev	ice: BTS		
10 dB/div Ref 25.00	0 dBm									
15.0										Clear Write
-5.00		muhnahn	mound	partra-tradia	however					
-15.0	^ ^	port			h.	h.				
-25.0	J.					1				Average
-35.0 -45.0 -45.0 -45.0	AL JANN					Mr M	un half and the state	Manhan la a		
-55.0								,		Max Hold
-65.0										
Center 5.745 GHz #Res BW 100 kHz			#VE	SW 300 k	Hz			n 50 MHz p 4.8 ms		Min Hold
Occupied Band	width			Total P	ower	24.3	3 dBm			
	17.7	16 MI	Ηz							Detector Peak▶
Transmit Freq Err	or	7.192	(Hz	% of O	3W Pow	ver 99	9.00 %		Auto	<u>Man</u>
x dB Bandwidth		17.63 N	lHz	x dB		-6.	00 dB			
MSG						STATU	S			

Plot 7-114. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



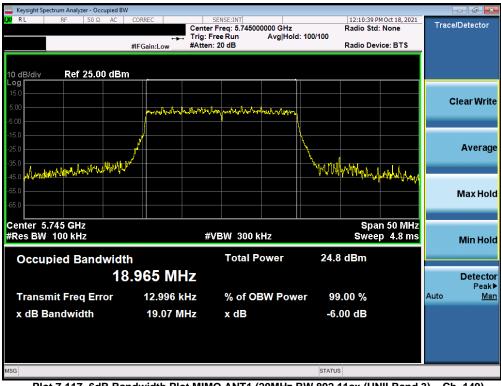
Plot 7-115. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occi	upied BW										
LX1 RF 50 Ω	AC CORRE		Center Fr	SE:INT eq: 5.82500 Run	0000 GHz Avg Hol	d: 100/10	0	12:29:56 A	10ct 16, 2021 None	Trac	e/Detector
		in:Low	#Atten: 20				-	Radio Dev	ice: BTS		
10 dB/div Ref 25.00) dBm										
15.0 5.00		man/Monthunde	whenther	mhumatan	lasolarrows,						Clear Write
-5.00 -15.0 -25.0	لى مىر		 			K, M,					Average
-35.0 -45.0 www.lola.colour.or	Malphankor					 ₩	49M.)	Vnr-Vhpphy	WHA.WA.Ja.		, rrorage
-55.0											Max Hold
Center 5.825 GHz #Res BW 100 kHz			#VB	W 300 k	Hz				n 50 MHz p 4.8 ms		Min Hold
Occupied Band	width			Total P	ower	2	24.7	dBm			
	17.70	02 MH	z								Detector Peak▶
Transmit Freq Erre	or ·	7.827 k	Hz	% of OE	3W Pow	/er	99 .	.00 %		Auto	<u>Man</u>
x dB Bandwidth		17.61 M	Hz	x dB			-6.0	00 dB			
MSG						S	TATUS				

Plot 7-116. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



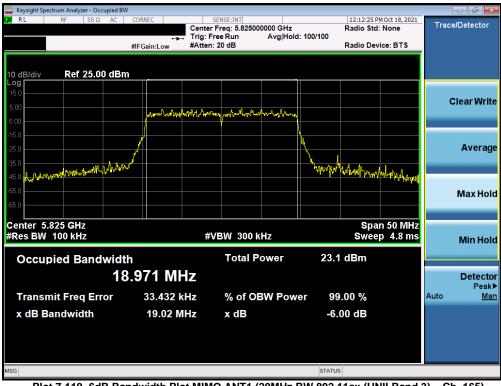
Plot 7-117. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3) – Ch. 149)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied						- 0
L <mark>X/</mark> R L RF 50 Ω AC		SENSE:INT er Freg: 5.785000000 GHz	12:11:33 P Radio Std	MOct 18, 2021	Trace	/Detector
	🛶 Trig:	FreeRun Avg Hold	1: 100/100 Radio Dev	In BTS		
	#IFGain:Low #Atte	n: 20 dB	Raulo Dev	ICE: DTS		
10 dB/div Ref 25.00 df	Bm					
Log						
5.00					с	lear Write
-5.00	of most for the many second	an part throw has been and the for				
-5.00						
-25.0			1			Average
	~ <i>/</i> /		Mandallan av 1			Average
-35.0 -45.0 Munruhuluhuluhuruhulum	4 ⁴⁷		When the to a start of the star	Wywhite		
-55.0						
-65.0						Max Hold
Center 5.785 GHz				n 50 MHz		
#Res BW 100 kHz		#VBW 300 kHz	Swee	p 4.8 ms		Min Hold
Occupied Bandwig	dth	Total Power	24.9 dBm			
	18.959 MHz					Detector
						Peak▶
Transmit Freq Error	21.379 kHz	% of OBW Pow	er 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	19.03 MHz	x dB	-6.00 dB			
MSG			STATUS			

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)

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LXI RL RF 50Ω AC	CORREC	SENSE:INT	0000 GHz	12:46:09 AM Oct 16, 2021 Radio Std: None	Trace/Detector
NFE		Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	
10 dB/div Ref 25.00 dB	۶m				
15.0					
					Clear Write
5.00	الهلمالملير	بالهاماناناليس بسهامانا المامار	a. July lo L Lyl		
-5.00					
-15.0					
-25.0	/		<u> </u>		Average
-35.0	1 mart			1.	
-45.0	and the second		YOWW	Martin Martin Martin Martin	
-55.0					Max Hold
-65.0					Muxitolu
Center 5.755 GHz				Span 100 MHz	
#Res BW 100 kHz		#VBW_300 k	Hz	Sweep 9.6 ms	Min Hold
Occupied Bandwid	ith	Total Po	ower 24.8	dBm	
			24.0	dBill	
3	6.171 MH	Z			Detector
Transmit Freq Error	-10.062 kł	lz % of OE	3W Power 99	.00 %	Peak▶ Auto <u>Man</u>
x dB Bandwidth	36.39 MH	z xdB	-6 (00 dB	
	50.55 Mil		-0.0		
MSG			STATUS		

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)

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Keysight Spectrum Analyzer - Occupied B	W					
IX RL RF 50Ω AC	🛶 Trig: I	SENSE:INT r Freq: 5.755000000 GHz Free Run Avg Hold	Radio Std 1: 100/100		Trace/Detector	
	#IFGain:Low #Atten: 20 dB Radio Device: BTS					
10 dB/div Ref 25.00 dB	m					
15.0						
5.00	المراحة والمراجع المراجع المراجع المراجع	In mhilden of the Anton			Clear Write	
-5.00						
-15.0					Average	
-35.0			<u>\</u>		5	
-45.0 Luden Martin Martin Marine			Welsher Mary Harden Ton	duller.		
-55.0				and a floor floor	Max Hold	
-65.0					Muxilolu	
Center 5.755 GHz			Span	100 MHz		
#Res BW 100 kHz	#	VBW 300 kHz		p 9.6 ms	Min Hold	
Occupied Bandwid	th	Total Power	24.9 dBm			
3	7.523 MHz				Detector Peak▶	
Transmit Freq Error	16.218 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>	
x dB Bandwidth	37.72 MHz	x dB	-6.00 dB			
MSG			STATUS			
mod			011103			

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)

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Keysight Spectrum Analyzer - Occupied BW	/				
LX RL RF 50Ω AC	Center Trig: F	SENSE:INT Freq: 5.775000000 GHz Free Run Avg Hold	Radio Std 1: 100/100		Trace/Detector
	#IFGain:Low #Atten	: 20 dB	Radio Dev	vice: BTS	
10 dB/div Ref 25.00 dBn	1				
15.00					Clear Write
-5.00	MANDE RAMIN MARKED MAN	ute, alor Wipe evenue to p			
-25.0					Average
-45.0 <u>10.01000000000000000000000000000000000</u>	M./		Mulmunt with million	annadalan.	Max Hold
Center 5.775 GHz #Res BW 100 kHz	#\	VBW 300 kHz		200 MHz 19.13 ms	Min Hold
Occupied Bandwidt	h	Total Power	25.4 dBm		
75	5.511 MHz				Detector Peak▶
Transmit Freq Error	-66.443 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	76.01 MHz	x dB	-6.00 dB		
MSG			STATUS		

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



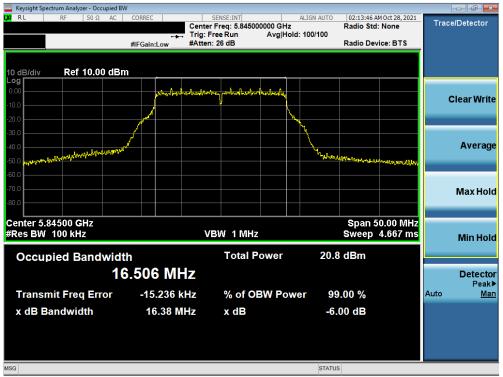
Plot 7-125. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

FCC ID: A3LSMS908E	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 92 of 257
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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	16.38
Band 4	5865	173	а	6	16.40
Dallu 4	5885	177	а	6	16.39
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	17.64
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	17.66
Dallu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	17.63
Band 3/4	5845	169	ax (20MHz)	6.5/7.2 (MCS0)	19.06
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	18.94
Dallu 4	5885	177	ax (20MHz)	6.5/7.2 (MCS0)	19.05
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	36.42
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	37.67
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	37.46
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	37.67
	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	76.13
Band 3/4	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	77.66
ballu 5/4	5815	163	ac (160MHz)	58.5/65 (MCS0)	156.10
	5815	163	ax (160MHz)	58.5/65 (MCS0)	157.70

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



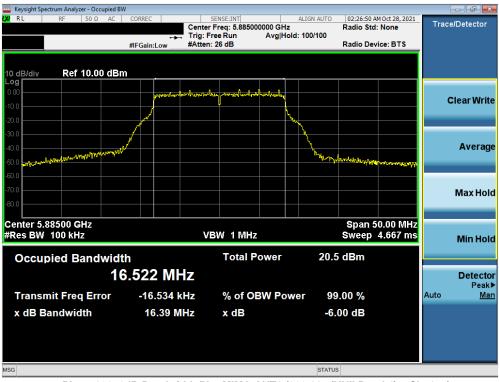
Plot 7-126. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 3/4) – Ch. 169)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 92 of 257
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🔤 Keysight Spectrum Analyzer - Occup	ied BW				
LXI RL RF 50 Ω	AC CORREC	SENSE:INT Center Freg: 5.86500	ALIGN AUTO	02:20:48 AM Oct 28, 20 Radio Std: None	Trace/Detector
			Avg Hold: 100/100	Radio Sta. None	
	#IFGain:Low	#Atten: 26 dB		Radio Device: BTS	
10 dB/div Ref 20.00	dBm				
Log					
0.00					Clear Write
	police Agenti	andrafell and a second s	handropella		
-10.0					
-20.0	م می م م				
-30.0					Average
-40.0	mastrad				
-40.0 -50.0 portally on sign of the formation of the second second second second second second second second second s			Varolyor	Mmuhandplater	hau
-60.0					Max Hold
-70.0					Wax Hold
-10.0					
Center 5.86500 GHz			· · ·	Span 50.00 M	Hz
#Res BW 100 kHz		VBW 1 MHz		Sweep 4.667	ns Min Hold
Occupied Bandw	vidth	Total P	ower 20.	/ dBm	
	16.522 MF	z			Detector Peak▶
Transmit Freq Erro	r -13.473 k	Hz % of O	BW Power 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	16.40 M	Hz xdB	-6.	00 dB	
MSG			STATU	S	

Plot 7-127. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 4) - Ch. 173)



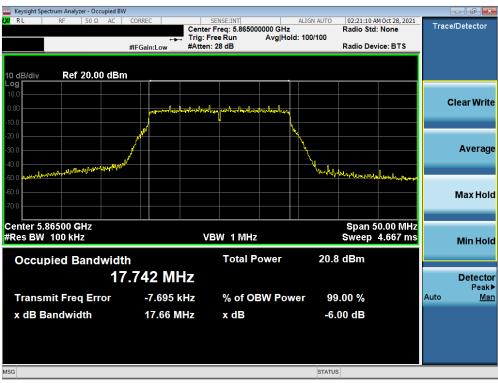
Plot 7-128. 6dB Bandwidth Plot MIMO ANT1 (802.11a (UNII Band 4) - Ch. 177)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dawa 04 at 057
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Plot 7-129. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 3/4) - Ch. 169)



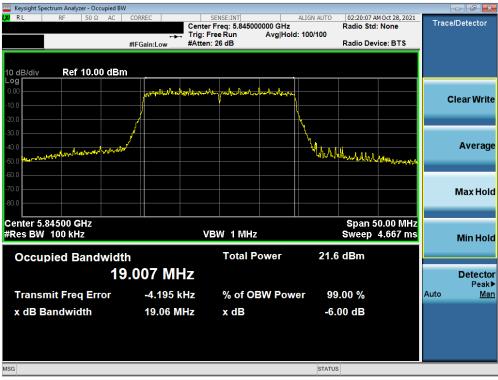
Plot 7-130. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 4) - Ch. 173)

FCC ID: A3LSMS908E	Pctest * Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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www.www.com.com.com.com.com.com.com.com.com.com	BW				- ē 💌
🗶 RL RF 50 Ω AC	CORREC	SENSE:INT		02:28:58 AM Oct 28, 2021	Trace/Detector
		iter Freq: 5.885000000 GH j: Free Run Avg H	1z Ri lold: 100/100	adio Std: None	The of Bottoolor
		ten: 26 dB		adio Device: BTS	
10 dB/div Ref 20.00 dE	sm		- <u> </u>		
10.0					
0.00		- when and water and and			Clear Write
	and party for the start of the start	-W. Bla held we wind with a little for			
-10.0	1		N.		
-20.0					
-30.0					Average
-40.0			↓ <u>}</u>		
-40.0			"muntum	WWWWWWWWW	
				and the second second	
-60.0					Max Hold
-70.0					
Center 5.88500 GHz #Res BW 100 kHz				Span 50.00 MHz weep 4.667 ms	
#Res BW 100 KHZ		VBW 1 MHz	>	weep 4.007 ms	Min Hold
Occupied Bandwid	ith	Total Power	21.0 d	Rm	
		Total Tower	21.0 u	om	
1	7.713 MHz				Detector
					Peak►
Transmit Freq Error	-10.349 kHz	% of OBW Po	ower 99.00	0 %	Auto <u>Man</u>
x dB Bandwidth	17.63 MHz	x dB	-6.00	dB	
			0100		
MSG			STATUS		

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



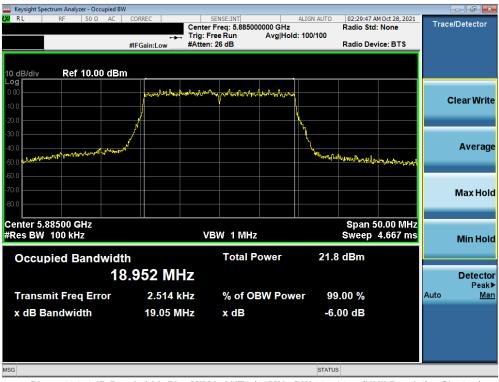
Plot 7-132. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 3/4) - Ch. 169)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 96 of 257
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Keysight Spectrum Analyzer - Occupied BW					
	Center	SENSE:INT Freq: 5.865000000 GHz ree Run Avg Hold : 26 dB	Radio Sto I: 100/100	AM Oct 28, 2021 d: None vice: BTS	Trace/Detector
10 dB/div Ref 10.00 dBm					
-10.0	yana tuluwa turikana turikana kutuka kati	- point make weather			Clear Write
-20.0 -30.0 -40.0 -50.0			hon all have all when a shift	Withorstown	Average
-60.0					Max Hold
Center 5.86500 GHz #Res BW 100 kHz	VI	BW 1 MHz		50.00 MHz 4.667 ms	Min Hold
Occupied Bandwidth 18.	957 MHz	Total Power	21.4 dBm		Detector Peak▶
Transmit Freq Error x dB Bandwidth	-864 Hz 18.94 MHz	% of OBW Pow x dB	er 99.00 % -6.00 dB		Auto <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: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dava 07 - 6 05 7		
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www.www.com.com/www.com/www.com/www.com/wwww.com/www.cow/www.c					- ē ×
LXI RL RF 50Ω AC	CORREC	SENSE:INT er Freg: 5.835000000 GH		AM Oct 28, 2021	Trace/Detector
			12 Radio Sto Iold: 100/100	a: None	
		en: 24 dB		vice: BTS	
10 dB/div Ref 10.00 dBm				_	
0.00					
-10.0	La fayer of a fayer of	K/ way and the selected states is a second state of the second states in	* <u>`</u>		Clear Write
	1	V			
-20.0			_N		
-30.0					
-40.0	₩		Moderna L		Average
-50.0 Anthenal Charles			hand a start and a start and a start and a start a sta	Month and phones a	
-60.0					
-70.0					Max Hold
-80.0					
			0		
Center 5.83500 GHz #Res BW 100 kHz		VBW 1 MHz	Span	100.0 MHz 9.267 ms	
#Res BW TOURH2			Sweep	9.207 1115	Min Hold
Occupied Bandwidth		Total Power	22.2 dBm		
36	.180 MHz				Detector
					Peak►
Transmit Freq Error	-9.244 kHz	% of OBW Po	ower 99.00 %		Auto <u>Man</u>
x dB Bandwidth	36.42 MHz	x dB	-6.00 dB		
MSG			STATUS		

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



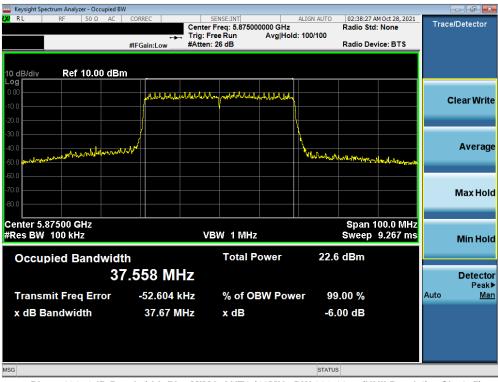
Plot 7-136. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 4) - Ch. 175)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 99 of 257
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Keysight Spectrum Analyzer - Occupied BW					
LX RL RF 50Ω AC CORP		eq: 5.835000000 GHz		35:29 AM Oct 28, 2021 io Std: None	Trace/Detector
#FC	→→ Trig: Free ain:Low #Atten: 2			io Device: BTS	
#FG	ain:Low #Atten: 2	+ uD	Rau	IO DEVICE. BTS	
10 dB/div Ref 10.00 dBm					
0.00	1. J. Jan Jack Marken	ne that have been a state of the			
-10.0					Clear Write
-20.0					
-30.0			1		
-40.0			<u>}</u>		Average
-40.0			monthemappliss	Nhyput have been the	
-60.0					
-70.0					Max Hold
-80.0					Maxilola
Center 5.83500 GHz #Res BW 100 kHz	VB	V 1 MHz		an 100.0 MHz	
#Res BW TOO KHZ	V DV		5₩	eep 9.267 ms	Min Hold
Occupied Bandwidth		Total Power	22.5 dB	m	
	3 2 MH z				Detector
57.40					Peak►
Transmit Freq Error 🛛 式	38.675 kHz	% of OBW Powe	er 99.00	%	Auto <u>Man</u>
x dB Bandwidth	37.46 MHz	x dB	-6.00 d	в	
MSG			STATUS		

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



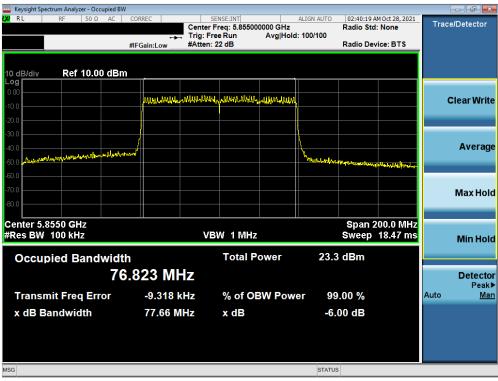
Plot 7-138. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 4) - Ch. 175)

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:			
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Keysight Spectrum Analyzer - Occupied BW									
LXX RL RF 50Ω AC COR	REC		ISE:INT eq: 5.85500	0000 GH-	ALIGN AUTO	02:39:57 A	M Oct 28, 2021	Trac	e/Detector
					l: 100/100	Raulo Stu	. None		
#IFG	ain:Low	#Atten: 20				Radio Dev	ice: BTS		
10 dB/div Ref 10.00 dBm									
Log									
0.00	NUMBER OF	MUL MILL	MINANUM.						Clear Write
-10.0									
-20.0									
-30.0									
-40.0					<u>\</u> .				Average
-50.0 Martin Marrie Martin Marine Marine Marine					Variation Lange	have been been and	the state of the state		
-60.0							the later of the		
-70.0									
-80.0									Max Hold
-60.0									
Center 5.8550 GHz						Span 2	00.0 MHz		
#Res BW 100 kHz		VBV	V 1 MHz			Sweep	18.47 ms		Min Hold
			Tatal D		00.0				
Occupied Bandwidth			Total P	ower	22.0	dBm			
75.4	86 MH	Z							Detector
Transmit Frag Frag	22.224-14		% of OF			00.0/		Auto	Peak▶ Man
Transmit Freq Error -	33.231 kl		% of OE	SW POW	er 99	.00 %		Auto	ivian
x dB Bandwidth	76.13 MI	Hz	x dB		-6.0)0 dB			
MSG					STATUS				

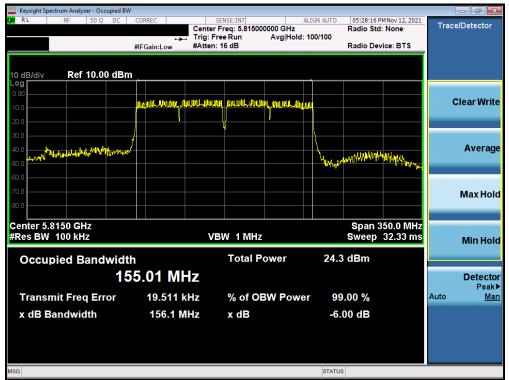
Plot 7-139. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 3/4) - Ch. 171)



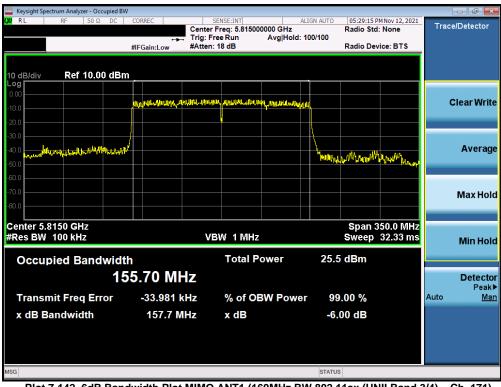
Plot 7-140. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 00 of 257	
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Plot 7-141. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 3/4) - Ch. 171)



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

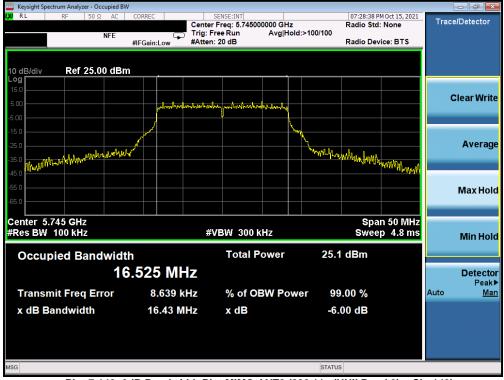
FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 04 at 057	
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MIMO Antenna-2 6dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	а	6	16.43
	5785	157	а	6	16.42
	5825	165	а	6	16.44
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.67
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.68
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.68
e	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	17.66
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	17.69
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	17.65
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.45
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.35
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.74
	5795	159	ax (40MHz)	13.5/15 (MCS0)	37.61
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	76.26
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.70

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: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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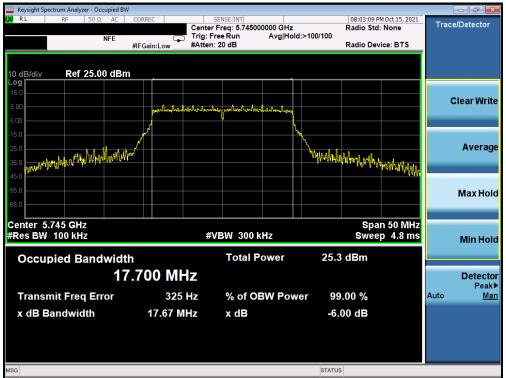
Plot 7-144. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) - Ch. 157)



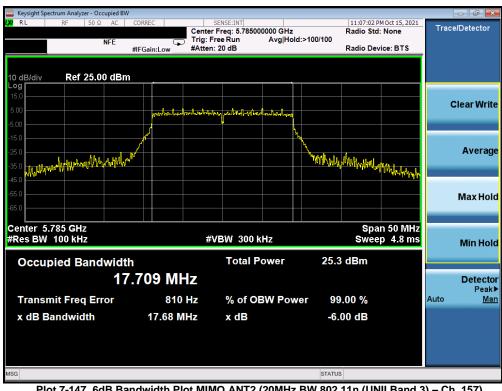
Plot 7-145. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 165)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 02 af 057
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Plot 7-146. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



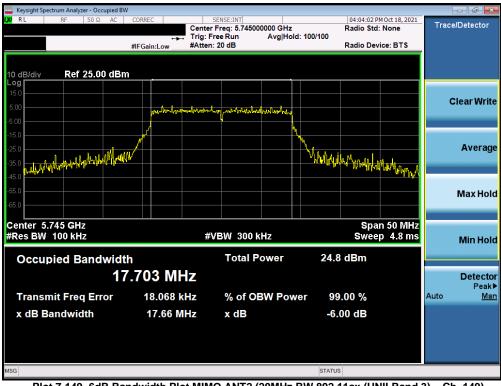
Plot 7-147. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 04 of 257
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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: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dara 05 af 057	
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Keysight Spectrum Analyzer - Occup	pied BW						- 0 ×
ιχα RL RF 50 Ω	AC CORREC	SENSE:INT Center Freq: 5.785000 Trig: Free Run #Atten: 20 dB	0000 GHz Avg Hold: 100/100	04:04:50 PM Radio Std: Radio Devi		Trace	/Detector
	#IFGall.LOW	mattern. 20 dB		radio Deri			
10 dB/div Ref 25.00	dBm						
15.0							
5.00	www.dww	there was a second	wardong			C	lear Write
-5.00			<u> </u>				
-15.0			- Mu				Average
-25.0	Miller and the		WWW N	11mgallyman	. h		Average
-35.0 WWWWWWWWWWWW					Marmaka		
-55.0							Max Hold
-65.0							
Center 5.785 GHz				Spar	ז 50 MHz		
#Res BW 100 kHz		#VBW 300 ki	Hz		o 4.8 ms		Min Hold
Occupied Bandw	vidth	Total Po	ower 24.9	dBm			
	17.722 MH	7					Detector
							Peak▶
Transmit Freq Erro				9.00 %		Auto	<u>Man</u>
x dB Bandwidth	17.69 MI	lz xdB	-6.	00 dB			
MSG			STATU	S			

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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:			
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Keysight Spectrum Analyzer - Occupied BW	1				
UXIRL RF 50Ω AC	Trig:	SENSE:INT er Freq: 5.755000000 GHz Free Run Avg Ho n: 20 dB			Trace/Detector
,	#IFGain:Low #Atter	n: 20 ab	Radio Dev	Ace. DT3	
10 dB/div Ref 25.00 dBn	ı				
Log 15.0					
5.00		rha, makeluhalahalahalahalahalah			Clear Write
-5.00					
-15.0	1		N		Average
-25.0 -35.0	har		Www.huterselfer-huber-afriction		Average
-45.0			. The marked MM	Mader and a start of the start	
-55.0					Max Hold
-65.0					
Center 5.755 GHz			Spar	100 MHz	
#Res BW 100 kHz	#	VBW 300 kHz	Swee	p 9.6 ms	Min Hold
Occupied Bandwidt	h	Total Power	25.9 dBm		
	5.180 MHz				Detector
		0/ - CODW/ D	00.00.0/		Peak≯ Auto Man
Transmit Freq Error	-22.786 kHz	% of OBW Pov			Auto <u>Man</u>
x dB Bandwidth	36.45 MHz	x dB	-6.00 dB		
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: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B\	V						
LXI RL RF 50 Ω AC		SENSE:INT er Freq: 5.755000000 GHz Free Run Avg Hold	Radio Std	M Oct 18, 2021 : None	Trace/Detector		
	#FGain:Low #Atten: 20 dB Radio Device: BTS						
10 dB/div Ref 25.00 dBr	n						
5.00	البارين معرارين	vales, probatichaticher (hoperic) (hole for the			Clear Write		
-5.00	Mortha Address America	and the second second for the second field in some					
-15.0 -25.0 -35.0	heddftr"		March March and March		Average		
-35.0 www.www.				whill the wards			
-55.0					Max Hold		
Center 5.755 GHz #Res BW 100 kHz	\$	≇VBW 300 kHz		100 MHz p 9.6 ms	Min Hold		
Occupied Bandwidt	h	Total Power	25.8 dBm				
	7.558 MHz				Detector Peak▶		
Transmit Freq Error	1.204 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>		
x dB Bandwidth	37.74 MHz	x dB	-6.00 dB				
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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 af 057	
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Keysight Spectrum Analyzer - Oc										
LX/ R L RF 50 Ω	AC COF	REC	Center Fr	vse:INT req: 5.77500 e Run	0000 GHz Avg Hold	I: 100/100	11:56:57 P Radio Std	M Oct 15, 2021 : None	Trac	e/Detector
		Gain:Low	#Atten: 20	0 dB	•.		Radio Dev	rice: BTS		
10 dB/div Ref 25.0	0 dBm									
15.0										
5.00		<u> </u>								Clear Write
-5.00		MANA MALL	Mullin	MUMANIA						
-15.0										
-25.0		/								Average
-35.0	كم من من من من المدين					Annuk I. Aut				
-35.0 -45.0 when the hast and the second						Annerveriliti		anaman		
-55.0										Max Hold
-65.0										
Center 5.775 GHz							Span	200 MHz		
#Res BW 100 kHz			#VB	W 300 k	Hz		Sweep	19.13 ms		Min Hold
Occupied Band	lwidth			Total P	ower	26.1	dBm			
	75.4	66 MI	Ηz							Detector Peak▶
Transmit Freq Er	ror	-49.608 I	kHz	% of O	3W Pow	er 99	.00 %		Auto	Man
x dB Bandwidth		76.26 N	lHz	x dB		-6.	00 dB			
MSG						STATUS				

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



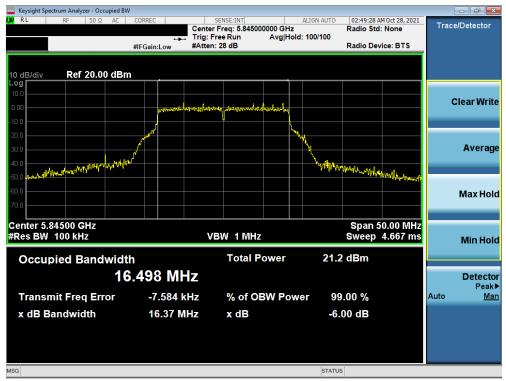
Plot 7-157. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-2 6dB Bandwidth [MHz]
Band 3/4	5845	169	а	6	16.37
Band 4	5865	173	а	6	16.41
Dallu 4	5885	177	а	6	16.38
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	17.62
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	17.65
Dallu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	17.65
Band 3/4	5845	169	ax (20MHz)	6.5/7.2 (MCS0)	18.98
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	18.89
Dallu 4	5885	177	ax (20MHz)	6.5/7.2 (MCS0)	18.96
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	36.42
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	36.39
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	37.37
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	37.42
	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	76.03
Pand 2/4	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	77.52
Band 3/4	5815	163	ac (160MHz)	58.5/65 (MCS0)	155.90
	5815	163	ax (160MHz)	58.5/65 (MCS0)	156.90

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



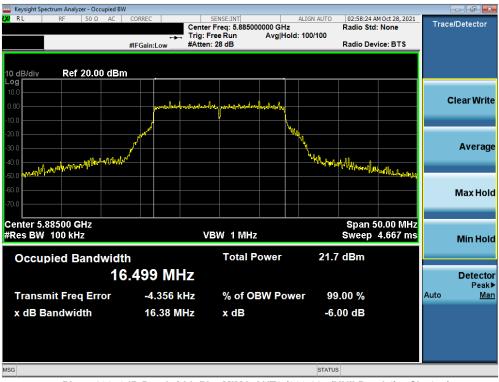
Plot 7-158. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 3/4) - Ch. 169)

FCC ID: A3LSMS908E	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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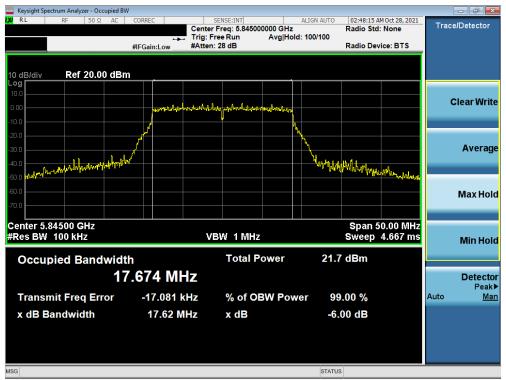
Plot 7-159. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 4) - Ch. 173)



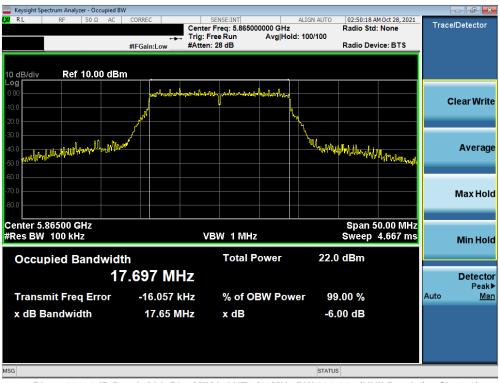
Plot 7-160. 6dB Bandwidth Plot MIMO ANT2 (802.11a (UNII Band 4) - Ch. 177)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 af 057	
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Plot 7-161. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3/4) - Ch. 169)



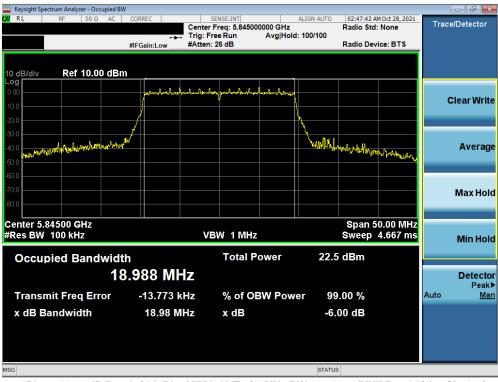
Plot 7-162. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 4) - Ch. 173)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Plot 7-163. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 4) - Ch. 177)



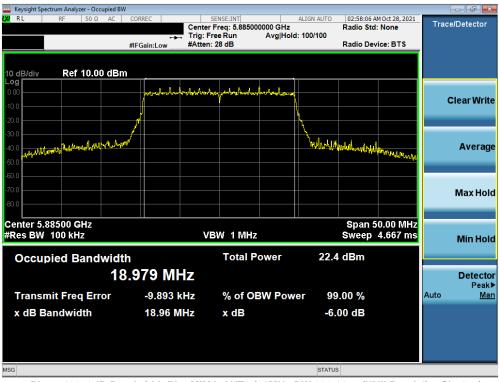
Plot 7-164. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3/4) - Ch. 169)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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www.www.com/www.cow/www.com/www.cow/ww					- ē ×
XX RL RF 50Ω AC		SENSE:INT er Freq: 5.865000000 GHz	Radio Ste	AM Oct 28, 2021 d: None	Trace/Detector
		Free Run Avg Hol n: 28 dB	d: 100/100 Radio De	vice: BTS	
10 dB/div Ref 10.00 dBm	<u> </u>				
Log 0.00	- Josepher Josepher Low March	In ash had a bol and an	n		
-10.0					Clear Write
-20.0			<u>\</u>		
-30.0	<i>y</i>				
-40.0 allenon the pakas time of the Mart			" An Der Warn with	Mr. Mary	Average
-50.0					
-60.0					
-70.0					Max Hold
Center 5.86500 GHz #Res BW 100 kHz	1	/BW 1 MHz		50.00 MHz 4.667 ms	
NICO DI TOORILE			· · · ·	4.001 1113	Min Hold
Occupied Bandwidth		Total Power	22.3 dBm		
18.960 MHz					Detector
Transmit Freq Error	-23.628 kHz	% of OBW Pow	ver 99.00 %		Peak▶ Auto <u>Man</u>
x dB Bandwidth	18.89 MHz	x dB	-6.00 dB		
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)

FCC ID: A3LSMS908E	PCTEST ° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Desig 404 cf 057
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www.www.com analyzer - Occupied BW					
LX RL RF 50Ω AC	CORREC	SENSE:INT		49 AM Oct 28, 2021	Trace/Detector
		ter Freq: 5.835000000 GH : Free Run Avg H	lold: 100/100	Std: None	
		en: 24 dB		Device: BTS	
10 dB/div Ref 10.00 dBm					
0.00	العامالية المراجلية المالية	والتأجيم وسغراءالياليا والمراجعة والمراجا		_	
-10.0					Clear Write
-20.0					
-30.0					
	ww		wormhy the when the	.5.0	Average
Salar Marin - a Marin			- IN A PARAMAN	Politikary wy het you	Average
-50.0					
-60.0				_	
-70.0				_	Max Hold
-80.0					Muxitoru
Center 5.83500 GHz				n 100.0 MHz	
#Res BW 100 kHz		VBW 1 MHz	Swee	p 9.267 ms	Min Hold
			00.4.15		
Occupied Bandwidth		Total Power	23.4 dBm		
36	.183 MHz				Detector
					Peak▶
Transmit Freq Error	-18.570 kHz	% of OBW Po	ower 99.00 %		Auto <u>Man</u>
x dB Bandwidth	36.42 MHz	x dB	-6.00 dB		
MSG			STATUS		

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)

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www.www.com with the sector of							
LXI RE RF 50 Ω AC COR		NSE:INT req: 5.835000000 GHz	ALIGN AUTO	02:55:18 A	M Oct 28, 2021	Trac	e/Detector
	Trig: Free		d: 100/100	Radio Sto	: None		
#IFC	Gain:Low #Atten: 2			Radio Dev	ice: BTS		
10 dB/div Ref 10.00 dBm							
Log 0.00							
	how and a second a	verbele let al a state of a later					Clear Write
-10.0							
-20.0			{				
-30.0	/		1.				
-40.0			many	ar lanntith			Average
-50.0				a solution by	Wildy Well-hyers		
-60.0							
-70.0							
							Max Hold
-80.0							
Center 5.83500 GHz				Snan 1	00.0 MHz		
#Res BW 100 kHz	VB	N 1 MHz			9.267 ms		Min Halal
							Min Hold
Occupied Bandwidth		Total Power	23.0	dBm			
							Detector
37.4	87 MHz						Detector Peak▶
Transmit Freq Error	-42.660 kHz	% of OBW Pow	er 99	.00 %		Auto	Man
x dB Bandwidth	37.37 MHz	x dB	-6.0	00 dB			
MSG			STATUS				

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



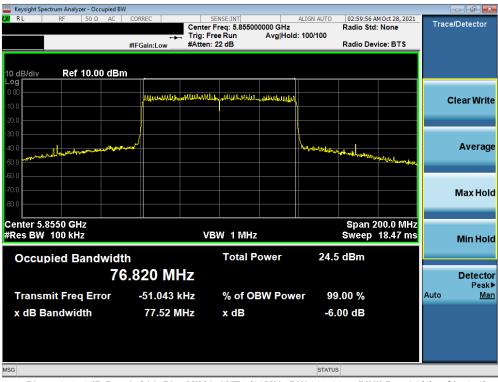
Plot 7-170. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 4) - Ch. 175)

FCC ID: A3LSMS908E	PCTEST ° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW							
🗶 RL RF 50Ω AC COR		INSE:INT reg: 5.855000000 GHz	ALIGN AUTO	02:59:16 A Radio Std	M Oct 28, 2021	Trac	e/Detector
	Trig: Fre		d: 100/100	Radio Sta	None		
#IF@	Gain:Low #Atten: 2			Radio Dev	ice: BTS		
10 dB/div Ref 10.00 dBm							
Log							
0.00	MINH MALL MANALIS	MINA MUMANIA					Clear Write
-10.0						· `	siear winte
-20.0	/						
-30.0			\				
-40.0			And south to				Average
-40.0			a stand of the	Mymmeter	hales.		
					a state of the local dates		
-60.0							
-70.0							Max Hold
-80.0							
Center 5.8550 GHz #Res BW 100 kHz		W 1 MHz			00.0 MHz		
#Res BW TOUREZ	A D.			sweep	18.47 ms		Min Hold
Occupied Bandwidth		Total Power	24.1	dBm			
		rotari ottor	2				
/5.5	22 MHz						Detector
Transmit Freq Error -	60.116 kHz	% of OBW Pow	ver 99.	00 %		Auto	Peak▶ <u>Man</u>
	76.00 MUL						
x dB Bandwidth	76.03 MHz	x dB	-0.0	0 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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					- 5
KL RF 50Ω DC	CORREC	SENSE:INT 4	ALIGN AUTO 06:22:47 P Radio Std	M Nov 12, 2021	Trace/Detector
	Trig:	Free Run Avg Hold:	100/100		
	#IFGain:Low #Atte	n: 18 dB	Radio Dev	vice: BTS	
10 dB/div Ref 10.00 dBm					
Log 0.00					
	an an an ann an an an an an an an an an	נותות, המתנה איני באמיר איניים אי	ndut		Clear Write
-10.0					
-20.0					
-30.0					
-40.0 and the property of the			Wything Mith Mith		Average
-50.0				N MAR	
-60.0					
-70.0					Max Hold
-80.0					ind i i o i a
Center 5.8150 GHz		(B)4/ 4 5411-		50.0 MHz	
#Res BW 100 kHz		/BW 1 MHz	Sweep	32.33 ms	Min Hold
Occupied Bandwidt	h	Total Power	24.9 dBm		
15	5.00 MHz				Detector Peak▶
Transmit Freq Error	-15.895 kHz	% of OBW Powe	r 99.00 %		Auto <u>Man</u>
x dB Bandwidth	155.9 MHz	x dB	-6.00 dB		
MSG			STATUS		
MSG			STATUS		

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)

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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); RSS-247 [6.2]

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 + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(N/A) = N/AdBm$. 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 + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(N/A) = N/AdBm$. 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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MIMO Maximum Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		Detector Power Limit	Power Limit	Conducted Power
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
۲.	5180	36	AVG	14.48	15.23	17.88	23.98	-6.10
, i	5200	40	AVG	14.47	14.90	17.70	23.98	-6.28
	5220	44	AVG	14.47	15.07	17.79	23.98	-6.19
Bandwidth)	5240	48	AVG	14.52	14.97	17.76	23.98	-6.22
a Ba	5260	52	AVG	15.55	14.31	17.99	23.98	-5.99
z	5280	56	AVG	14.98	15.11	18.05	23.98	-5.93
T	5300	60	AVG	14.96	14.84	17.91	23.98	-6.07
(20MI	5320	64	AVG	14.84	14.86	17.86	23.98	-6.12
20	5500	100	AVG	14.65	14.84	17.76	23.98	-6.22
	5600	120	AVG	14.71	14.64	17.69	23.98	-6.29
Hz	5620	124	AVG	14.87	14.54	17.72	23.98	-6.26
5G	5720	144	AVG	14.91	15.17	18.06	23.98	-5.92
Ω.	5745	149	AVG	15.41	15.55	18.49	30.00	-11.51
	5785	157	AVG	14.68	14.91	17.81	30.00	-12.19
	5825	165	AVG	15.68	14.80	18.27	30.00	-11.73

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

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		or Power Lir		Conducted Power Limit	Conducted Power
~				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	
È	5180	36	AVG	14.35	15.09	17.75	23.98	-6.23	
i i i i i i i i i i i i i i i i i i i	5200	40	AVG	14.34	14.94	17.66	23.98	-6.32	
	5220	44	AVG	14.49	15.11	17.82	23.98	-6.16	
andwidth	5240	48	AVG	14.52	15.08	17.82	23.98	-6.16	
Ba	5260	52	AVG	14.47	14.75	17.62	23.98	-6.36	
	5280	56	AVG	14.91	14.83	17.88	23.98	-6.10	
Hz	5300	60	AVG	14.95	14.91	17.94	23.98	-6.04	
(20M	5320	64	AVG	15.02	14.92	17.98	23.98	-6.00	
20	5500	100	AVG	15.43	15.52	18.49	23.98	-5.49	
	5600	120	AVG	14.87	14.84	17.86	23.98	-6.12	
HZ	5620	124	AVG	14.94	14.59	17.78	23.98	-6.20	
Ċ	5720	144	AVG	15.23	15.13	18.19	23.98	-5.79	
Ω.	5745	149	AVG	15.38	15.54	18.47	30.00	-11.53	
	5785	157	AVG	14.65	14.73	17.70	30.00	-12.30	
	5825	165	AVG	14.69	15.12	17.92	30.00	-12.08	

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

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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	Freq [MHz]	Channel	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power
2				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
H	5180	36	AVG	15.11	15.82	18.49	23.98	-5.49
i,	5200	40	AVG	15.29	15.67	18.49	23.98	-5.49
	5220	44	AVG	15.39	15.57	18.49	23.98	-5.49
andwidth)	5240	48	AVG	14.56	14.95	17.77	23.98	-6.21
Ba	5260	52	AVG	14.83	14.92	17.89	23.98	-6.09
	5280	56	AVG	14.58	14.99	17.80	23.98	-6.18
Î	5300	60	AVG	14.81	14.72	17.78	23.98	-6.20
(20MHz	5320	64	AVG	14.79	14.74	17.78	23.98	-6.20
50	5500	100	AVG	15.41	15.46	18.45	23.98	-5.53
	5600	120	AVG	15.53	15.27	18.41	23.98	-5.57
Hz	5620	124	AVG	15.41	15.26	18.35	23.98	-5.63
5G	5720	144	AVG	14.63	15.00	17.83	23.98	-6.15
LO LO	5745	149	AVG	14.98	15.33	18.17	30.00	-11.83
	5785	157	AVG	15.36	15.56	18.47	30.00	-11.53
	5825	165	AVG	15.33	15.62	18.49	30.00	-11.51

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	
~				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	
<u>ج</u>	5180	36	AVG	14.41	15.25	17.86	23.98	-6.12	
, ic	5200	40	AVG	14.22	15.05	17.67	23.98	-6.31	
	5220	44	AVG	14.41	15.07	17.76	23.98	-6.22	
Bandwidth)	5240	48	AVG	14.57	15.12	17.86	23.98	-6.12	
a Ba	5260	52	AVG	14.76	15.18	17.99	23.98	-5.99	
	5280	56	AVG	14.68	14.87	17.79	23.98	-6.19	
Î	5300	60	AVG	14.88	14.77	17.84	23.98	-6.14	
(20MHz	5320	64	AVG	14.85	14.93	17.90	23.98	-6.08	
20	5500	100	AVG	14.73	14.58	17.67	23.98	-6.31	
	5600	120	AVG	14.48	14.67	17.59	23.98	-6.39	
Hz	5620	124	AVG	14.83	14.78	17.82	23.98	-6.16	
Ċ	5720	144	AVG	15.12	15.40	18.27	23.98	-5.71	
5	5745	149	AVG	14.68	14.85	17.78	30.00	-12.22	
	5785	157	AVG	15.33	15.60	18.48	30.00	-11.52	
	5825	165	AVG	14.65	14.81	17.74	30.00	-12.26	

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

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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	Freq [MHz]	Channel	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power	
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	
₽ ⊂	5190	38	AVG	15.18	15.60	18.41	23.98	-5.57	
MH dth)	5190 38 5230 46 5270 54	46	AVG	15.33	15.61	18.48	23.98	-5.50	
lo pi		54	AVG	15.03	15.20	18.13	23.98	-5.85	
(4) dwj	5310	62	AVG	15.56	15.35	18.47	23.98	-5.51	
	5510	102	AVG	15.32	15.05	18.20	23.98	-5.78	
Ва Ва	5590	118	AVG	15.21	15.12	18.18	23.98	-5.80	
50	5630	126	AVG	15.58	15.28	18.44	23.98	-5.54	
	5710	142	AVG	14.91	14.82	17.87	23.98	-6.11	
	5755	151	AVG	15.06	15.14	18.11	30.00	-11.89	
	5795	159	AVG	15.19	15.28	18.25	30.00	-11.75	

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

	Freq [MHz]	Channel	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N (5190	38	AVG	14.90	15.45	18.19	23.98	-5.79
(40MH; width)	5230	46	AVG	15.15	15.39	18.28	23.98	-5.70
id bi	5270	54	AVG	14.95	15.08	18.03	23.98	-5.95
łz (4 ndw	5310	62	AVG	15.22	15.30	18.27	23.98	-5.71
P Z	5510	102	AVG	14.88	14.63	17.77	23.98	-6.21
GF Ba	5590	118	AVG	15.14	14.75	17.96	23.98	-6.02
50 E	5630	126	AVG	15.37	14.89	18.14	23.98	-5.84
	5710	142	AVG	15.41	15.52	18.48	23.98	-5.50
	5755	151	AVG	14.78	14.98	17.89	30.00	-12.11
	5795	159	AVG	15.01	15.19	18.11	30.00	-11.89

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

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	Freq [MHz]	Channel	Detector	Cond	ucted Power [Conducted Power Limit	Conducted Power		
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	
P C	5190	38	AVG	15.16	15.64	18.41	23.98	-5.57	
0MH; idth)	5230	46	AVG	15.40	15.57	18.49	23.98	-5.49	
id id	5270	54	AVG	15.18	15.33	18.27	23.98	-5.71	
(4) dwj	5310	62	AVG	15.51	15.38	18.46	23.98	-5.52	
	5510	102	AVG	15.31	15.30	18.32	23.98	-5.66	
G Ва	5590	118	AVG	15.38	15.31	18.35	23.98	-5.63	
50	5630	126	AVG	15.58	15.29	18.45	23.98	-5.53	
	5710	142	AVG	14.86	15.16	18.02	23.98	-5.96	
	5755	151	AVG	14.92	15.15	18.05	30.00	-11.95	
-	5795	159	AVG	15.18	15.27	18.24	30.00	-11.76	

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

N	Freq [MHz]	Channel Detector		Cond	lucted Power [Conducted Power Limit	Conducted Power		
Hz (c				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	
Hz (80MH ndwidth)	5210	42	AVG	14.34	14.49	17.43	23.98	-6.55	
(8) 1 vi	5290	58	AVG	15.46	15.44	18.46	23.98	-5.52	
	5530	106	AVG	14.71	14.85	17.79	23.98	-6.19	
5GH Ba	5610 122		AVG	14.92	14.57	17.76	23.98	-6.22	
	5690	138	AVG	15.24	15.21	18.24	23.98	-5.74	
	5775	155	AVG	14.67	14.93	17.81	30.00	-12.19	

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

	Freq [MHz]	Channel	Detector	Cond	lucted Power [Conducted Power Limit	Conducted Power	
Hz (c				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
GHz (80MH; Bandwidth)	5210	42	AVG	14.87	14.96	17.93	23.98	-6.05
8) 1 vi	5290	58	AVG	14.97	14.93	17.96	23.98	-6.02
Hz and	5530	106	AVG	14.93	15.04	17.99	23.98	-5.99
5GI Ba	5610	122	AVG	15.12	14.76	17.95	23.98	-6.03
	5690	138	AVG	15.47	15.45	18.47	23.98	-5.51
	5775	155	AVG	14.89	15.30	18.11	30.00	-11.89

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

z IHz dth)	Freq [MHz]	Channel	nel Detector	Conc	ducted Power [Conducted Power Limit	Conducted Power	
5GHz 60MH ndwid				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
5 (16 anc	5250	50	AVG	14.13	13.79	16.97	23.98	-7.01
ä	5570	114	AVG	15.30 15.53		18.43	30.00	-11.57
	Т	able 7-17. MIMO	160MHz BW 8	02.1ac (UNII) N	aximum Condu	ucted Output F	ower	•
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z IHz dth)	Freq [MHz]	Channel	Detector	Cond	lucted Power [Conducted Power Limit	Conducted Power	
N O H				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
5 (16 anc	5250	50	AVG	14.52	14.13	17.34	23.98	-6.64
ä	5570	114	AVG	14.84	14.87	17.86	30.00	-12.14

Table 7-18. MIMO 160MHz BW 802.1ax (UNII) Maximum Conducted Output Power

z 4)	Freq [MHz] BW [MHz] Cl		Channel	Channel Detector		Conducted Power			Directional Gain	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
_ I =					Ant1	Ant2	Mimo	Guill	[ubiii]	Ennie [GBm]	margin [ab]	
	5845		169	AVG	14.53	15.14	17.86	-3.27	14.59	30.00	-15.41	
~~ <u>-</u>	5865	20	173	AVG	14.58	15.28	17.95	-3.27	14.68	30.00	-15.32	
	5885		177	AVG	14.60	15.23	17.94	-3.27	14.67	30.00	-15.33	

Table 7-19. MIMO 802.11a (UNII 4) Maximum Conducted Output Power and e.i.r.p.

	Freq [MHz]	BW [MHz]	BW [MHz]	Channel	Detector	Co	onducted Pow	er	Directional Gain	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
4					Ant1	Ant2	Mimo	Guill	[]		margin [ab]	
I I -	5845		169	AVG	14.59	15.08	17.85	-3.27	14.58	30.00	-15.42	
UN N	5865	20	173	AVG	14.52	15.18	17.87	-3.27	14.60	30.00	-15.40	
<u>د</u>	5885		177	AVG	14.61	15.25	17.95	-3.27	14.68	30.00	-15.32	
	5835	40	167	AVG	15.16	15.49	18.34	-3.27	15.07	30.00	-14.93	
	5875		175	AVG	15.13	15.77	18.47	-3.27	15.20	30.00	-14.80	

Table 7-20. MIMO 802.11n (UNII 4) Maximum Conducted Output Power and e.i.r.p.

	Freq [MHz]	BW [MHz]	BW [MHz] Channel	Channel Deter	Detector	Detector Conducted Power			Directional Gain	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Ant1	Ant2	Mimo		[abiii]	Emite [dBin]	margin [ab]	
N (4	5845		169	AVG	14.41	15.13	17.80	-3.27	14.53	30.00	-15.47	
HZ H	5865	20	173	AVG	14.57	15.09	17.84	-3.27	14.57	30.00	-15.43	
DN 2G	5885		177	AVG	14.50	15.19	17.87	-3.27	14.60	30.00	-15.40	
C S	5835	40	167	AVG	15.23	15.50	18.38	-3.27	15.11	30.00	-14.89	
	5875	40	175	AVG	15.05	15.80	18.45	-3.27	15.18	30.00	-14.82	
	5855	80	171	AVG	14.64	15.14	17.91	-3.27	14.64	30.00	-15.36	
	5815	160	163	AVG	15.48	15.20	18.35	-3.27	15.08	36.00	-20.92	

Table 7-21. MIMO 802.11ac (UNII 4) Maximum Conducted Output Power and e.i.r.p.

	Freq [MHz] BW [MHz]	BW [MHz]	BW [MHz] Channel	hannel Detector	C	Conducted Power			Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Ant1	Ant2	Mimo	Gain	[abiii]	Chine [abin]	margin [ab]
<u>ъ</u> (4	5845	20	169	AVG	14.58	15.13	17.87	-3.27	14.60	30.00	-15.40
I I I I	5865		173	AVG	14.74	15.55	18.17	-3.27	14.90	30.00	-15.10
	5885		177	AVG	14.70	15.37	18.06	-3.27	14.79	30.00	-15.21
<u>د</u>	5835	40	167	AVG	15.08	15.58	18.35	-3.27	15.08	30.00	-14.92
	5875	40	175	AVG	14.38	14.91	17.66	-3.27	14.39	30.00	-15.61
	5855	5855 80	171	AVG	14.94	15.49	18.23	-3.27	14.96	30.00	-15.04
	5815	160	163	AVG	14.73	14.68	18.85	-3.27	15.58	36.00	-20.42

Table 7-22. MIMO 802.11ax (UNII 4) Maximum Conducted Output Power and e.i.r.p.

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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 14.35 dBm for Antenna-1 and 15.09 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(14.35 dBm + 15.09 dBm) = (27.20 mW + 32.31 mW) = 59.51 mW = 17.75 dBm

Sample e.i.r.p. Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO conducted power was calculated to be 17.75 dBm with directional gain of -3.72 dBi.

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

17.75 dBm + (-3.72) dBi = 14.03 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); RSS-247 [6.2]

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.

In the 5.850 – 5.855, the maximum power spectral density must not exceed 14dBm/MHz e.i.r.p.

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

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Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
	5180	36	а	6	6.69	6.44	9.58	11.0	-1.42
	5200	40	а	6	6.70	6.65	9.69	11.0	-1.31
	5240	48	а	6	7.03	6.69	9.88	11.0	-1.12
1	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.47	5.93	9.22	11.0	-1.78
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.72	6.37	9.56	11.0	-1.44
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.96	6.29	9.65	11.0	-1.35
÷	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	6.48	6.39	9.45	11.0	-1.55
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	7.04	6.48	9.78	11.0	-1.22
Ba	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	6.83	6.47	9.66	11.0	-1.34
	5190	38	n (40MHz)	13.5/15 (MCS0)	3.47	3.37	6.43	11.0	-4.57
	5230	46	n (40MHz)	13.5/15 (MCS0)	3.94	3.50	6.74	11.0	-4.26
	5190	38	ax (40MHz)	13.5/15 (MCS0)	3.71	3.74	6.74	11.0	-4.26
	5230	46	ax (40MHz)	13.5/15 (MCS0)	3.99	3.71	6.87	11.0	-4.13
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	1.28	0.73	4.02	11.0	-6.98
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	1.43	1.10	4.28	11.0	-6.72
<mark>⊵ <</mark>	5250	50	ac (160MHz)	58.5/65 (MCS0)	-1.57	-2.72	0.90	11.0	-10.10
Band 1/2A	5250	50	ax (160MHz)	58.5/65 (MCS0)	-1.21	-2.40	1.24	11.0	-9.76
_	5260	52	a	6	7.06	6.75	9.92	11.0	-1.08
	5280	56	a	6	6.67	6.71	9.70	11.0	-1.30
	5320	64	a	6	7.07	6.43	9.77	11.0	-1.23
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.62	6.11	9.38	11.0	-1.62
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.47	6.10	9.30	11.0	-1.70
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.11	6.06	9.63	11.0	-1.37
Band 2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	6.78	6.54	9.67	11.0	-1.33
	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	6.82	6.48	9.66	11.0	-1.34
Ban	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	7.02	6.27	9.67	11.0	-1.33
	5270	54	n (40MHz)	13.5/15 (MCS0)	3.48	3.38	6.44	11.0	-4.56
	5310	62	n (40MHz)	13.5/15 (MCS0)	3.93	3.47	6.72	11.0	-4.28
	5270	54	ax (40MHz)	13.5/15 (MCS0)	4.06	3.63	6.86	11.0	-4.14
	5310	62	ax (40MHz)	13.5/15 (MCS0)	4.00	3.94	7.20	11.0	-4.14
	5290	58	ac (80MHz)	, ,	1.55	1.23	4.40	11.0	-6.60
	5290	58	ac (80MHz)	29.3/32.5 (MCS0) 29.3/32.5 (MCS0)	1.55	1.23	4.40	11.0	-6.40
	5500	100	ax (ouivii iz)	6	5.29	5.98	4.00	11.0	-2.34
	5600 5720	120 144	a	6	6.03 6.72	6.03 6.95	9.04 9.85	11.0 11.0	-1.96
	5500	144	a (2014)	6.5/7.2 (MCS0)	5.09	5.90	9.65	11.0	-1.15 -2.48
			n (20MHz)	. ,					
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	5.74	6.28	9.03	11.0	-1.97
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.43	6.62	9.54	11.0	-1.46
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	5.44	6.11	8.80	11.0	-2.20
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	6.03	6.27	9.16	11.0	-1.84
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	6.40	6.99	9.72	11.0	-1.28
~	5510	102	n (40MHz)	13.5/15 (MCS0)	2.07	2.63	5.37	11.0	-5.63
120	5590	118	n (40MHz)	13.5/15 (MCS0)	2.80	2.83	5.82	11.0	-5.18
Band 2C	5710	142	n (40MHz)	13.5/15 (MCS0)	3.15	3.66	6.42	11.0	-4.58
ä	5510	102	ax (40MHz)	13.5/15 (MCS0)	2.62	3.15	5.90	11.0	-5.10
	5590	118	ax (40MHz)	13.5/15 (MCS0)	2.80	3.30	6.07	11.0	-4.93
	5710	142	ax (40MHz)	13.5/15 (MCS0)	3.56	3.92	6.75	11.0	-4.25
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-0.86	0.09	2.65	11.0	-8.35
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	0.07	0.07	3.08	11.0	-7.92
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.31	-2.02	0.85	11.0	-10.15
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-0.33	0.25	2.98	11.0	-8.02
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	0.27	0.07	3.18	11.0	-7.82
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-2.09	-2.03	0.95	11.0	-10.05
	5570	114	ac (160MHz)	58.5/65 (MCS0)	-3.55	-2.54	-0.01	11.0	-11.01
	5570	114	ax (160MHz)	58.5/65 (MCS0)	-3.10	-2.44	0.26	11.0	-10.74

Table 7-23. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 117 of 257
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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	3.39	3.22	6.32	30.0	-23.68
	5785	157	а	6	3.44	3.64	6.55	30.0	-23.45
	5825	165	а	6	3.60	3.45	6.54	30.0	-23.46
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	3.12	3.09	6.12	30.0	-23.88
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	3.31	3.12	6.23	30.0	-23.77
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	3.33	3.36	6.36	30.0	-23.64
3	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	3.01	3.26	6.15	30.0	-23.85
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	3.34	3.47	6.42	30.0	-23.58
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	3.38	3.39	6.39	30.0	-23.61
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.31	-0.01	3.16	30.0	-26.84
	5795	159	n (40MHz)	13.5/15 (MCS0)	0.34	0.33	3.35	30.0	-26.65
	5755	151	ax (40MHz)	13.5/15 (MCS0)	0.15	0.72	3.45	30.0	-26.55
	5795	159	ax (40MHz)	13.5/15 (MCS0)	0.33	0.48	3.42	30.0	-26.58
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-0.31	0.14	2.93	30.0	-27.07
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-0.03	0.40	3.20	30.0	-26.80

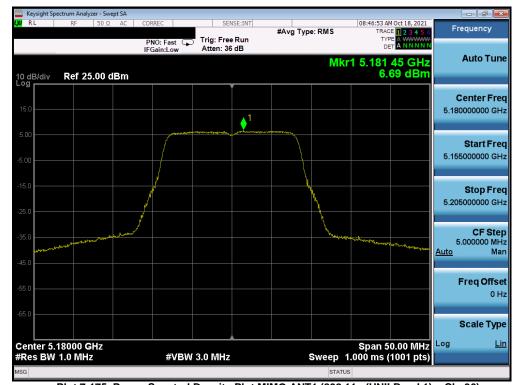
Table 7-24. Band 3 MIMO Conducted Power Spectral Density Measurements

	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	2.93	3.34	6.15	-3.27	2.88	14.00	-11.12
Band 4	5865	173	а	6	2.84	3.88	6.40	-3.27	3.13	14.00	-10.87
Danu 4	5885	177	а	6	3.05	4.01	6.57	-3.27	3.30	14.00	-10.70
Band 3/4	5845	169	n (20MHz)	6.5/7.2 (MCS0)	2.67	3.26	5.99	-3.27	2.72	14.00	-11.28
Band 4	5865	173	n (20MHz)	6.5/7.2 (MCS0)	2.54	3.80	6.22	-3.27	2.95	14.00	-11.05
Danu 4	5885	177	n (20MHz)	6.5/7.2 (MCS0)	2.57	3.80	6.24	-3.27	2.97	14.00	-11.03
Band 3/4	5845	169	ax (20MHz)	6.5/7.2 (MCS0)	2.49	3.56	6.07	-3.27	2.79	14.00	-11.21
Band 4	5865	173	ax (20MHz)	6.5/7.2 (MCS0)	2.43	3.58	6.05	-3.27	2.78	14.00	-11.22
Danu 4	5885	177	ax (20MHz)	6.5/7.2 (MCS0)	2.65	3.80	6.27	-3.27	3.00	14.00	-11.00
Band 3/4	5835	167	n (40MHz)	13.5/15 (MCS0)	0.31	1.05	3.71	-3.27	0.44	14.00	-13.56
Band 4	5875	175	n (40MHz)	13.5/15 (MCS0)	0.20	1.43	3.87	-3.27	0.60	14.00	-13.40
Band 3/4	5835	167	ax (40MHz)	13.5/15 (MCS0)	0.14	0.93	3.56	-3.27	0.29	14.00	-13.71
Band 4	5875	175	ax (40MHz)	13.5/15 (MCS0)	0.24	1.42	3.88	-3.27	0.61	14.00	-13.39
	5855	171	ac (80MHz)	29.3/32.5 (MCS0)	-3.48	-2.16	0.24	-3.27	-3.03	14.00	-17.03
Band 3/4	5855	171	ax (80MHz)	29.3/32.5 (MCS0)	-1.67	-0.96	1.71	-3.27	-1.56	14.00	-15.56
Dari0 3/4	5815	163	ac (160MHz)	58.5/65 (MCS0)	-5.05	-4.33	-1.66	-3.27	-4.93	14.00	-18.93
	5815	163	ax (160MHz)	58.5/65 (MCS0)	-5.24	-4.05	-1.60	-3.27	-4.87	14.00	-18.87

Table 7-25. Band 4 MIMO e.i.r.p Spectral Density Measurements

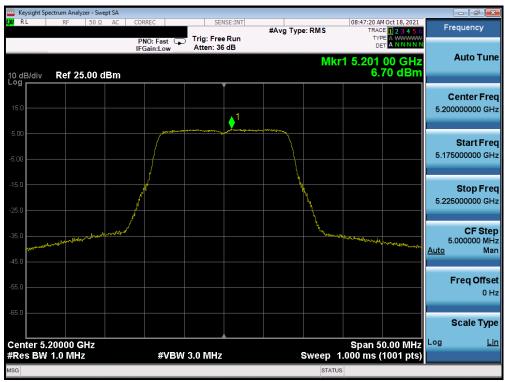
FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 110 of 257
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MIMO Antenna-1 Power Spectral Density Measurements

Plot 7-175. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) - Ch. 36)



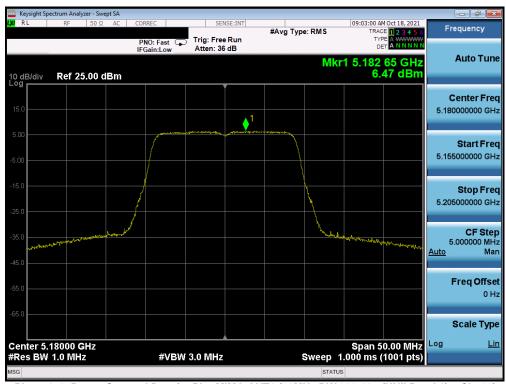
Plot 7-176. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:		Dega 140 of 257
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	ectrum Analyzer - Sw									
L <mark>XI</mark> RL	RF 50 Ω	AC CO	RREC		ISE:INT	#Avg Typ	e: RMS	08:47:41 AM 0 TRACE	123456	Frequency
		P IF	NO: Fast 🕞 Gain:Low	Trig: Free Atten: 36	Run dB			TYPE DET	A WWWWW A N N N N N	Auto Tun
10 dB/div Log	Ref 25.00 (dBm					Mkr	1 5.235 9 7.0	95 GHz 3 dBm	Auto Tuni
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-5.00										Start Free 5.215000000 GH
-15.0		1	A ^U				A A			Stop Free 5.265000000 GH
-25.0		- And and a second					h h h h h h h h h h h h h h h h h h h			CF Ster
-35.0	and a star and a star and a star a							and a second	Avana Contractor	5.000000 MH <u>Auto</u> Mar
-55.0										Freq Offse
-65.0										0 H:
-05.0										Scale Type
Center 5.: #Res BW	24000 GHz 1.0 MHz		#VBW	/ 3.0 MHz			Sweep 1	Span 50 .000 ms (1		Log <u>Lir</u>
MSG							STATUS	5		

Plot 7-177. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 1) - Ch. 48)



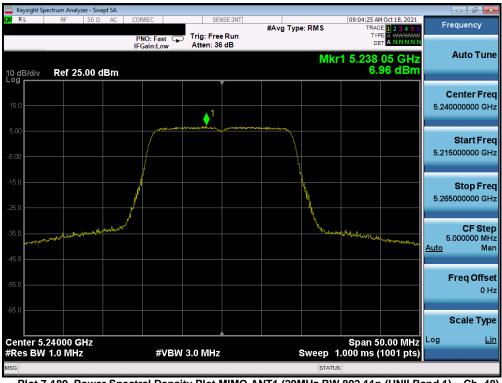
Plot 7-178. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMS908E	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	NG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 257
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	ectrum Analyzer - Sw										
LXI RL	RF 50 Ω	AC	CORREC	SEN	SE:INT	#Avg Typ	e: RMS		M Oct 18, 2021 DE 1 2 3 4 5 6	Fr	equency
10 dB/div	Ref 25.00 c	d D ma	PNO: Fast IFGain:Low	Trig: Free Atten: 36				1 5.203	40 GHz 72 dBm		Auto Tune
	Kei 23.00 C				 ∳ ¹						Center Freq 0000000 GHz
-5.00				All and a second se	an a					5.17	Start Freq 5000000 GHz
-15.0			/							5.22	Stop Freq 5000000 GHz
-35.0	and all all and a second	and the second s					howen and the second se	in aligned and the second	Maril Makedy Roca	5 <u>Auto</u>	CF Step .000000 MHz Man
-55.0											F req Offset 0 Hz
-65.0											Scale Type
Center 5. #Res BW	20000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep 1	Span 5 .000 ms (0.00 MHz (1001 pts)	Log	Lin
MSG							STATUS	3			

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



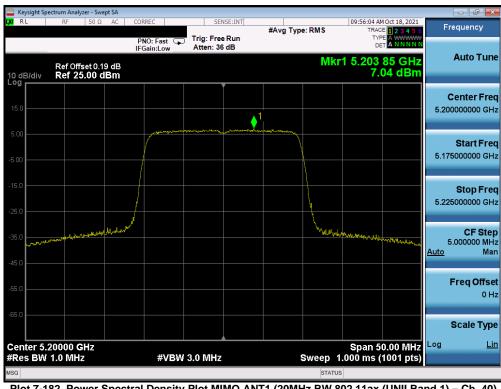
Plot 7-180. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 121 of 257
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	ectrum Analyzer - Sw									-	
LXU RL	RF 50 Ω	AC CO	ORREC	SEI	ISE:INT	#Avg Typ	e: RMS		E 1 2 3 4 5 6	Freq	uency
10 dB/div	Ref Offset 0.1 Ref 25.00 (ו ו9 dB	PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 36				DE 1 5.184	10 GHz 48 dBm	A	uto Tune
15.0					•	1					n ter Freq 00000 GHz
-5.00				<u> :</u>							t art Freq 00000 GHz
-15.0			/								top Freq 00000 GHz
-35.0	yerne and the second of the second of the	and the second of the second o					human	all also to the law from	Linestration	5.00 <u>Auto</u>	CF Step 00000 MHz Man
-55.0										Fr	e q Offset 0 Hz
-65.0	18000 GHz							Snan 5	0.00 MHz	Sc Log	ale Type
#Res BW			#VBW	3.0 MHz			Sweep 1	.000 ms (0.00 MH2 1001 pts)		
MSG							STATUS				

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



Plot 7-182. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 400 at 057
1M2109220110-09.A3L	9/14/2021 - 11/12/2021	Portable Handset		Page 122 of 257
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	ectrum Analyzer - Sw									
LXU RL	RF 50 Ω	AC	CORREC	SEI	ISE:INT	#Avg Typ	e: RMS		1 Oct 18, 2021 E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0. Ref 25.00		PNO: Fast G	Trig: Free Atten: 36				TYF DE 1 5.239	15 GHz 33 dBm	Auto Tune
15.0				▲ ●						Center Freq 5.240000000 GHz
-5.00					, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1					Start Frec 5.215000000 GHz
-15.0										Stop Fred 5.265000000 GH2
-35.0	my constant of the stand of the	لمريد ميرون ميرون المريد ميرون ميرون مريد ميرون مي					. Magnutes	hersen and	the many many	CF Step 5.000000 MH <u>Auto</u> Mar
-55.0										Freq Offse 0 H
-65.0	24000 GHz							Snan 5	0.00 MHz	Scale Type
#Res BW			#VBW	/ 3.0 MHz			Sweep 1	.000 ms (1001 pts)	
MSG							STATUS	6		

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



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

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 102 of 257
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	ectrum Analyzer - Sw								
LX/RL	RF 50 Ω	AC C	ORREC	SENSE		g Type: RMS		Oct 18, 2021	Frequency
10 dB/div	Ref Offset 0.′ Ref 25.00 (19 dB	PNO: Fast 🕞 FGain:Low	Trig: Free R Atten: 36 df		N	TYP DE 1kr1 5.238	A WWWWW A N N N N N	Auto Tune
15.0					1				Center Freq 5.230000000 GHz
-5.00									Start Freq 5.180000000 GHz
-15.0									Stop Freq 5.280000000 GHz
-35.0	hand and the second will be second from	and the object of the logical sectors of the sector of the	<i>ب</i> ل				Hyverblashershere	heline (leternethergert	CF Step 10.000000 MHz <u>Auto</u> Man
-55.0									Freq Offset 0 Hz
-65.0									Scale Type
Center 5. #Res BW	23000 GHz 1.0 MHz		#VBW	3.0 MHz		Sweep	Span 10 1.000 ms (*	00.0 MHz 1001 pts)	Log <u>Lin</u>
MSG						STAT	rus		

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

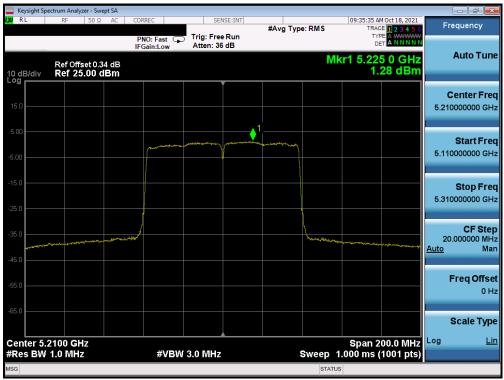


FCC ID: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	UNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 124 of 257
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	ectrum Analyzer - Sw										d X
LXI RL	RF 50 Ω	AC O	DRREC		SE:INT	#Avg Typ	e: RMS	TRAC	HOct 18, 2021	Freque	ncy
10 dB/div	Ref Offset 0.3 Ref 25.00 (1 35 dB	PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 36			Mk	r1 5.23	5 7 GHz 99 dBm	Auto	o Tune
Log					1					Cento 5.2300000	e r Freq 000 GHz
-5.00										Sta 5.1800000	rt Freq 000 GHz
-15.0										Sto 5.2800000	p Freq 000 GHz
-35.0	and and the second of the second s	and a start of the	/				harry we	new say half see you	ne-mlage-man	C 10.0000 <u>Auto</u>	F Step 00 MHz Man
-55.0										Freq	Offsel 0 Hz
	23000 GHz							Span 1	00.0 191112	Scal	e Type <u>Lin</u>
#Res BW	1.0 MHz		#VBW	3.0 MHz					1001 pts)		
MSG							STATUS				

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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 057
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	ectrum Analyzer -									- 5 -
XU RL	RF 5	0Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		1 Oct 18, 2021 E 1 2 3 4 5 6	Frequency
	Ref Offset	0.30 48	PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 36				TYF DE		Auto Tune
10 dB/div Log	Ref 25.0							1.4	43 dBm	
15.0										Center Freq 5.210000000 GHz
5.00				and a second	1					Start Fred 5.110000000 GHz
-15.0										Stop Fred 5.310000000 GH2
-35.0	Marine and a second	en som ander ander	No. of the second se				Lehnerston	all and all and a second second	Marthan Garger Party and gar	CF Step 20.000000 MH <u>Auto</u> Mar
-45.0										Freq Offse 0 Ha
-65.0										Scale Type
Center 5.2 #Res BW			#VBW	3.0 MHz			Sweep 1	Span 2 .000 ms (00.0 MHz 1001 pts)	Log <u>Lin</u>
MSG							STATUS			

Plot 7-189. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



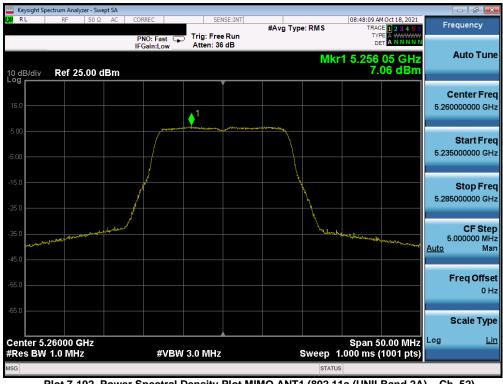
Plot 7-190. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ac (UNII Band 1/2A) - Ch. 50)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 057	
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🔤 Keysight Spe	ectrum Analyzer - Sw									
L <mark>XI</mark> L	RF 50 Ω	AC C	ORREC	SEI	NSE:INT	#Avg Typ	e: RMS		1 Oct 18, 2021 E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0.3 Ref 25.00 c	39 dB	PNO: Fast ↔ FGain:Low	. Trig: Free Atten: 36		Avg Hold	: 100/100	TYP DE		Auto Tune
15.0										Center Free 5.250000000 GH:
-5.00				And and a start of the start of	1	Ymmen	1			Start Free 5.050000000 GH:
-15.0										Stop Free 5.450000000 GH:
-35.0	and the second construction of the second constr		,				harrison	the start of the s	monortenstre	CF Step 40.000000 MH: <u>Auto</u> Mar
-55.0										Freq Offse 0 H:
-65.0										Scale Type
Center 5.2 #Res BW			#VBW	/ 3.0 MHz	*		Sweep 1	Span 4) 000 ms.	00.0 MHz 1001 pts)	
MSG							STATUS	3		

Plot 7-191. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (UNII Band 1/2A) - Ch. 50)



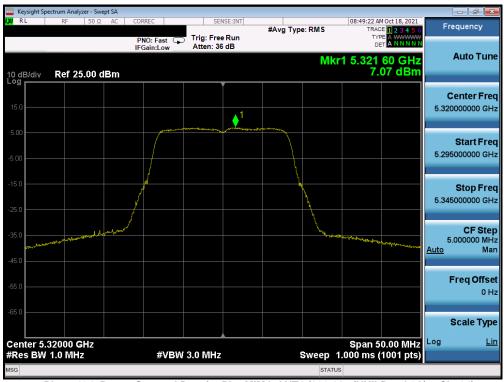
Plot 7-192. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	/pe:			
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	ectrum Analyzer - Sw									
LXU RL	RF 50 Ω	AC CC	ORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	1 Oct 18, 2021 E 1 2 3 4 5 6	Frequency
10 dB/div	Ref 25.00	II	PNO: Fast 🖵 Gain:Low	Trig: Free Atten: 36			Mki	□ 1 5.284	95 GHz 7 dBm	Auto Tun
15.0						▲ ¹				Center Fre 5.280000000 G⊦
-5.00				Line of the same and	,					Start Fre 5.255000000 G⊢
-15.0						4	h h			Stop Fre 5.305000000 G⊦
-35.0	and the second						de de la companya de	- John Constrainty	anger of the state	CF Ste 5.000000 M⊢ <u>Auto</u> Ma
-55.0										Freq Offse 0 ⊦
-65.0 Center 5.	28000 GHz							Span 5	0.00 MHz	Scale Typ
#Res BW			#VBW	3.0 MHz			Sweep	1.000 ms (1001 pts)	
MSG							STATU	s		

Plot 7-193. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 56)



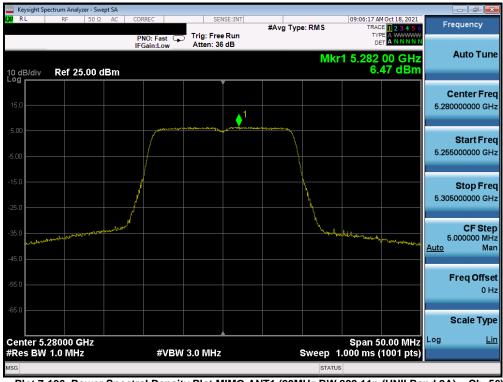
Plot 7-194. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 129 of 257
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	ectrum Analyze										
L <mark>XI</mark> RL	RF	50 Ω AC	CORR	EC	SEI	ISE:INT	#Avg Typ	e: RMS		M Oct 18, 2021	Frequency
	Def 05	0.45.	IFGa):Fast ⊆ in:Low	Trig: Free Atten: 36				1 5.263	40 GHz 62 dBm	Auto Tune
10 dB/div	Ref 25.	OU dBm							0.		
15.0						 1					Center Free 5.260000000 GH:
5.00					handrafferson an Barran ann an Ann						Start Free 5.235000000 GH:
-5.00											5.235000000 GH.
-15.0			1					A A			Stop Fred 5.285000000 GH:
-25.0	mithered states and	مىر مەرمىرىيى	and a) have	man when a hard		CF Step 5.000000 MH;
-45.0	ne ferrer a series a									And the state of t	<u>Auto</u> Mar
-55.0											Freq Offse 0 Hi
-65.0											Scale Type
Center 5. #Res BW		lz		#VBW	3.0 MHz			Sweep_1	Span 5 .000 ms (0.00 MHz 1001 pts)	Log <u>Lir</u>
MSG								STATUS			

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: A3LSMS908E	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 120 of 257
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	m Analyzer - Swept S					
(X/RL	RF 50Ω A	C CORREC	SENSE:INT	#Avg Type: RMS	09:06:35 AM Oct 18, 2021 TRACE 1 2 3 4 5 6	Frequency
10 dB/div R	ef 25.00 dBr	PNO: Fast 🗣 IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE A WWWW DET A NNNNN r1 5.322 05 GHz 7.11 dBm	Auto Tune
15.0			1			Center Freq 5.320000000 GHz
-5.00						Start Freq 5.295000000 GHz
-15.0						Stop Freq 5.345000000 GHz
-35.0	and a state of the second	un and a second		hr have	- Harden and we was a more than	CF Step 5.000000 MHz <u>Auto</u> Man
-55.0						Freq Offset 0 Hz
-65.0						Scale Type
Center 5.320 #Res BW 1.0		#VBW	3.0 MHz	Sweep	Span 50.00 MHz 1.000 ms (1001 pts)	
MSG				STATU	JS	

Plot 7-197. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)

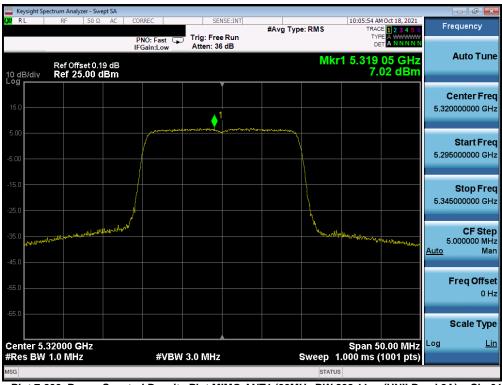


FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 120 of 257
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	ectrum Analyzer - Sv									
X/RL	RF 50 9	Ω AC (CORREC		NSE:INT	#Avg Typ	e: RMS	TRAC	M Oct 18, 2021	Frequency
			PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 36				TYF DE		
10 dB/div Log	Ref Offset 0. Ref 25.00						Mkr	1 5.281 6.	85 GHz 82 dBm	Auto Tune
15.0					↓1					Center Fred 5.280000000 GHz
-5.00				le proprie de la construcción de la	and a second					Start Free 5.255000000 GH:
-15.0		,								Stop Free 5.305000000 GH
-35.0	farmer and and the farmer	Nerve States and B					M. Marrie	White the strap	warmenisterphy	CF Step 5.000000 MH <u>Auto</u> Ma
55.0										Freq Offse 0 H
-65.0										Scale Type
Center 5.3 #Res BW	28000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep_1	Span 5	0.00 MHz 1001 pts)	Log <u>Lir</u>
ISG			# U EN	010 10112			STATUS		roor ptoj	

Plot 7-199. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



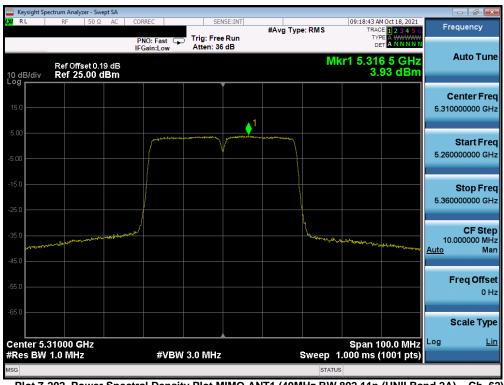
Plot 7-200. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 121 of 257	
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	ectrum Analyzer - Swe									
LX/RL	RF 50 Ω	AC (CORREC	SEI	ISE:INT	#Avg Typ	e: RMS		HOct 18, 2021	Frequency
10 dB/div	Ref Offset 0.1 Ref 25.00 c	9 dB	PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 36			MI	TYF DE Kr1 5.26		Auto Tun
15.0				<u>1</u>						Center Fre 5.270000000 GH
-5.00				mandraman		the standard and the stan				Start Fre 5.220000000 GH
-15.0										Stop Fre 5.320000000 GH
-35.0	yornad water again the series	and and a start of the start of	<i></i>					uth-managewined		CF Stej 10.000000 MH <u>Auto</u> Ma
-55.0										Freq Offse 0 H
-65.0										Scale Type
Center 5. #Res BW	27000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep 1	5 Span 1.000 ms (00.0 MHz 1001 pts)	
MSG							STATU	s		

Plot 7-201. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)



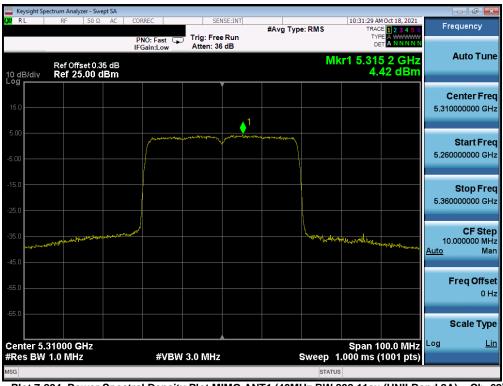
Plot 7-202. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 132 of 257
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	ectrum Analyzer - S									
LXI RL	RF 50	Ω ΑC (CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		HOCt 18, 2021	Frequency
			PNO: Fast IFGain:Low	Trig: Free Atten: 36				TYF DE		Auto Tune
10 dB/div Log	Ref Offset 0 Ref 25.00						Mk	r1 5.274 4.0	46 GHz 06 dBm	Auto Tune
15.0										Center Freq 5.270000000 GHz
5.00			- Mar Martin	man	1	and a second and a second and a second and a second a se				Start Freq 5.220000000 GHz
-5.00										Stop Freq
-25.0										5.320000000 GHz
-35.0	Nersel de la constant de la	neen hunni					hourse and	and the second	milmanne	CF Step 10.000000 MHz <u>Auto</u> Mar
-55.0										Freq Offse 0 Hz
-65.0										Scale Type
Center 5.2 #Res BW	27000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep 1	Span 1 .000 ms (00.0 MHz 1001 pts)	Log <u>Lin</u>
MSG							STATUS			

Plot 7-203. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



Plot 7-204. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 122 of 257	
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	ectrum Analyzer - Sw										x
LXI RL	RF 50 G	2 AC	CORREC	SEI	NSE:INT	#Avg Typ	e DMS		HOct 18, 2021	Frequency	
10 dB/div	Ref Offset 0. Ref 25.00		PNO: Fast G	Trig: Free Atten: 36		*****¥		TYF DE		Auto Tui	ne
15.0										Center Fre 5.290000000 Gi	
-5.00				and the second sec		a markating and a second				Start Fre 5.190000000 GI	
-15.0										Stop Fro 5.390000000 GI	
-35.0	M _a ghanan pergebagan pengebagan pengebag	المريدين مريد المريد المريد المريد المريد					Land and a second second	Norman Baseline Anno 1	Nine Mary Mary	CF Ste 20.000000 Mi <u>Auto</u> Mi	
-55.0										Freq Offs 01	set Hz
-65.0										Scale Typ	
Center 5. #Res BW	2900 GHz 1.0 MHz		#VBV	V 3.0 MHz			Sweep	Span 2 1.000 ms (00.0 MHz 1001 pts)	Log <u>L</u>	Lin
MSG							STATU	-			

Plot 7-205. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)

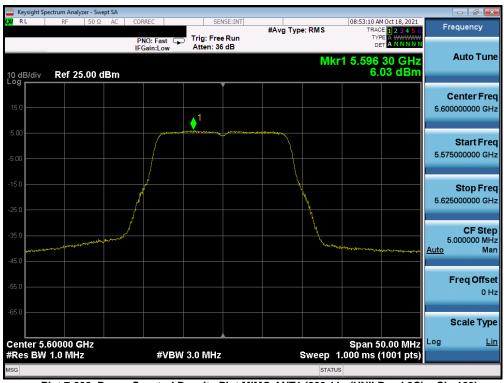


FCC ID: A3LSMS908E	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 124 of 257	
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	ectrum Analyzer - S									
LXI RL	RF 50	Ω AC	CORREC	SEI	ISE:INT	#Avg Typ	e: RMS		Oct 18, 2021	Frequency
			PNO: Fast G	Trig: Free Atten: 36				TYP DE		
10 dB/div Log	Ref 25.00	dBm					Mkı	1 5.496 5.2	00 GHz 29 dBm	Auto Tur
15.0				▲ 1						Center Fre 5.500000000 GH
-5.00				enter en characterita						Start Fre 5.475000000 GH
-15.0			A starting the start of the sta				A.			Stop Fre 5.525000000 GH
-35.0	and the second		¢.				and the second	homeway	wanter for the left of the	CF Ste 5.000000 Mł <u>Auto</u> Ma
-55.0										Freq Offs 0 F
-65.0										Scale Typ
Center 5. #Res BW	50000 GHz 1.0 MHz		#VBV	V 3.0 MHz			Sweep	Span 50 1.000 ms (*	2.00 IVII 12	Log <u>L</u>
MSG							STATU	s		

Plot 7-207. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) - Ch. 100)



Plot 7-208. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 125 of 257	
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	ectrum Analyzer - Swept S					
I <mark>XI</mark> RL	RF 50 Ω A	AC CORREC	SENSE:INT	#Avg Type: RMS	08:54:56 AM Oct 18, 2021 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE A WWWW DET A NNNNN r1 5.721 70 GHz 6.72 dBm	Auto Tune
10 dB/div	Ref 25.00 dBi	m	ľ			O
15.0			1			Center Freq 5.720000000 GHz
-5.00			anstrumententen providentum			Start Freq 5.695000000 GHz
-15.0						Stop Freq 5.745000000 GHz
-25.0						CF Step
-45.0	hore when the have a fear the	~			herheren	5.000000 MHz <u>Auto</u> Man
-55.0						Freq Offset 0 Hz
-65.0						Scale Type
Center 5.7 #Res BW	72000 GHz 1.0 MHz	#VBW	3.0 MHz	Sweep	Span 50.00 MHz 1.000 ms (1001 pts)	Log <u>Lin</u>
MSG				STATU	JS	

Plot 7-209. Power Spectral Density Plot MIMO ANT1 (802.11a (UNII Band 2C) - Ch. 144)



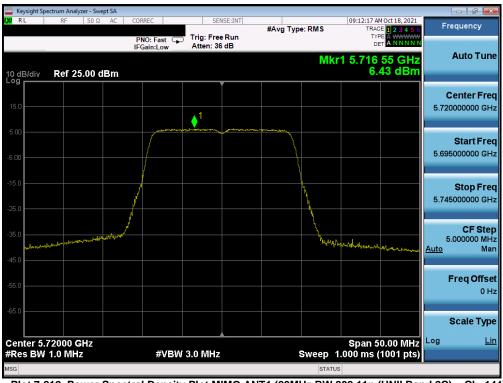
Plot 7-210. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMS908E	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 120 of 257	
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Keysight Spectrum Analyzer - Swe					
LX/ RL RF 50 Ω	AC CORREC	SENSE:INT	#Avg Type: RMS	09:11:12 AM Oct 18, 2021 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 25.00 d	IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE A WWWW DET A NNNNN 1 5.595 10 GHz 5.74 dBm	Auto Tune
15.0	1				Center Freq 5.60000000 GHz
-5.00					Start Freq 5.575000000 GHz
-15.0	Jeff				Stop Freq 5.625000000 GHz
-35.0			have been a second	h-guthister where may make	CF Step 5.000000 MHz <u>Auto</u> Man
-55.0					Freq Offset 0 Hz
-65.0					Scale Type
Center 5.60000 GHz #Res BW 1.0 MHz	#VBW 3	.0 MHz	Sweep 1	Span 50.00 MHz .000 ms (1001 pts)	Log <u>Lin</u>
MSG			STATUS		

Plot 7-211. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)



Plot 7-212. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMS908E	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	UNG	Approved by: Technical Manager
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