

Keysight Spectrum Analyzer - Occupied BW						(
XX RL RF 50Ω AC	CORREC	SENSE:INT ter Freg: 5.530000000	GH7	06:19:03 P Radio Std	MDec 27, 2018	Trace	e/Detector
	🛶 Trig	: Free Run Av	g Hold: 100/100				
	#IFGain:Low #Att	en: 20 dB		Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm							
Log 10.0							
	and the second	were deally show and a sh				c	lear Write
0.00		and the second se	tor the second				
-10.0			<u>t</u>				
-20.0							
-30.0	A		Mr				Average
-40.0 www.www.unal.	,,		* "Lydjogh"Ma	Mayllenn	a physical parts		
-50.0							
-60.0							Max Hold
-70.0							Max Holu
Center 5.53 GHz					200 MHz		
#Res BW 820 kHz		VBW 8 MHz		Swe	ep 1 ms		Min Hold
		Total Powe	r 20.	7 dBm			
Occupied Bandwidth		TOtal FOW	20.	ubili			
77.	162 MHz						Detector
Transmit Frog Error	-63.934 kHz	% of OBW		9.00 %		Auto	Peak▶ Man
Transmit Freq Error						Auto	man
x dB Bandwidth	80.96 MHz	x dB	-26	00 dB			
MSG			STATU	S			

Plot 7-100. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)



Plot 7-101. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 69 of 242
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Keysight Spectrum Analyzer - Occupie	ed BW						
<mark>(X)</mark> RL RF 50Ω A	AC CORREC	SENSE:INT Center Freg: 5.69000	0000 GH-	06:20:20 PN Radio Std:	Dec 27, 2018	Trace	Detector
	- - -	Trig: Free Run	Avg Hold: 100/1	00			
	#IFGain:Low	#Atten: 20 dB		Radio Devi	ce: BTS		
10 dB/div Ref 20.00 d	IBm						
Log 10.0							
0.00	una manera de	A hardented und roman	العدور والمراجع			С	lear Write
-10.0							
-20.0							
-30.0	In prove all		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	nontenturportes			Average
-40.0 m/p/al-44-mental-10-10-10-10-10-10-10-10-10-10-10-10-10-					the work of the second		
-50.0							
-60.0							Max Hold
-70.0							
					000 0011		
Center 5.69 GHz #Res BW 820 kHz		VBW 8 MHz			200 MHz ep 1 ms		
TRES DW OZU KIIZ				JWC	ep mis		Min Hold
Occupied Bandwi	idth	Total P	ower	20.9 dBm			
	77.018 MH	1-7					Detector
		12					Detector Peak►
Transmit Freq Error	-45.510 k	Hz % of O	3W Power	99.00 %		Auto	Man
x dB Bandwidth	81.11 M	Hz x dB		-26.00 dB			
MSG				STATUS			

Plot 7-102. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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7.3 6dB Bandwidth Measurement – 802.11a/n/ac/ax §15.407 (e); RSS-Gen [6.2]

Test Overview and Limit

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

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

Test Procedure Used

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

Test Settings

- The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100 kHz
- 3. VBW \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.

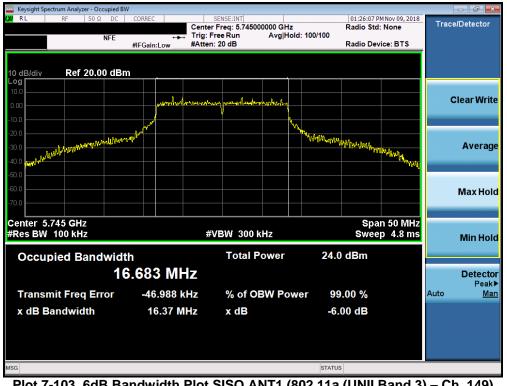
FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dago 70 of 242		
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SISO Antenna-1 6 dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	а	6	16.37
	5785	157	а	6	16.39
	5825	165	а	6	16.40
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.61
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.64
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.61
<u>~</u>	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	18.91
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	18.90
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	18.68
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.36
	5795	159	n (40MHz)	13.5/15 (MCS0)	35.97
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.76
	5775	155	ax (40MHz)	13.5/15 (MCS0)	37.65
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.91
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.99

Table 7-4. Conducted Bandwidth Measurements SISO ANT1



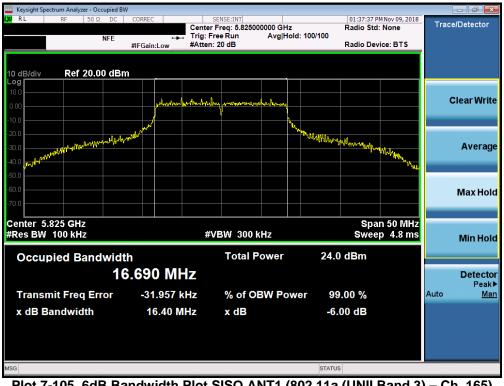
Plot 7-103. 6dl	B Bandwidth Plot S	ISO ANT1 (802.11a (UNII	Band 3) – Ch. 14	9)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-105. 6dB Bandwidth Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 165)

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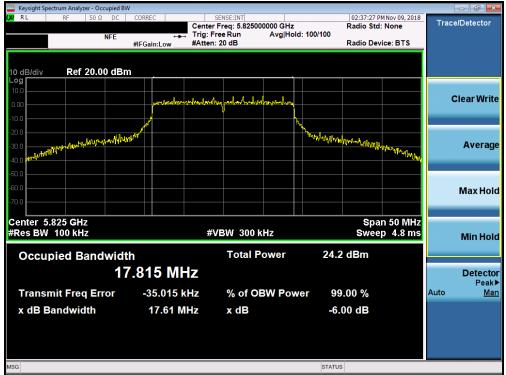
Plot 7-106. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



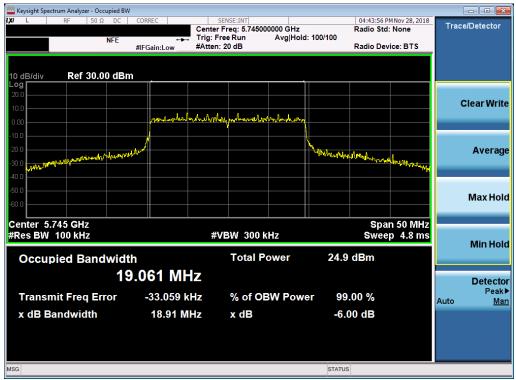
Plot 7-107. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-108. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



Plot 7-109. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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www.com analyzer - Oc	cupied BW									- • •
LXI L RF 50 S			Center F	NSE:INT req: 5.78500		d: 100/100	04:46:08 P Radio Std	M Nov 28, 2018 : None	Trac	e/Detector
	NFE #IFO	⊶ Gain:Low	#Atten: 2		Avginoid	a. 100/100	Radio Dev	rice: BTS		
10 dB/div Ref 30.0	00 dBm									
20.0										
10.0									(Clear Write
0.00		montherite	manghan	malender	wahang					
-10.0										
-20.0	Mannah					and the second	Warnowwh			Average
No The Works							A ST CONTRACTOR	And provident		
-40.0										
-50.0										Max Hold
-60.0										
Center 5.785 GHz								n 50 MHz		
#Res BW 100 kHz			#VE	3W 300 k	Hz		Swee	p 4.8 ms		Min Hold
Occupied Ban	dwidth			Total P	ower	24.9	dBm			Minitiona
Coccupied Bail		43 MI	J - ,							
	19.0	43 IVIT	12							Detector Peak▶
Transmit Freq Er	ror -	30.551 k	(Hz	% of OE	BW Pow	er 99.	.00 %		Auto	Peak ► <u>Man</u>
x dB Bandwidth		18.90 M	IHz	x dB		-6.0	00 dB			
							,			
MSG						STATUS				

Plot 7-110. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



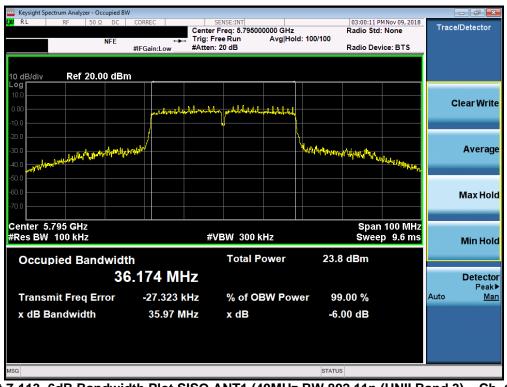
Plot 7-111. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 165)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🧱 Keysight Spectrum Analyzer - Oco								[
LXI RL RF 50 Ω	DC CORREC		NSE:INT reg: 5.7550000	00 GH7		02:58:40 P Radio Std	MNov 09, 2018	Trace	/Detector
	NFE	Trig: Fre	e Run	Avg Hold:	100/100				
	#IFGain:	Low #Atten: 2	20 dB			Radio Dev	/ice: BTS		
10 dB/div Ref 20.0	0 dBm								
Log 10.0									
								c	lear Write
0.00		ad the second second second	postalisticher	a nhandan					
-10.0			Y						
-20.0	<u> </u>			— \ <u>\</u>					
-30.0	Andurity Alter				MgDateses, leggt.	var have			Average
-40.0						· • • • • • •	the market when		
-50.0									
-60.0									Max Hold
-70.0									Μαχ Ποία
10.0									
Center 5.755 GHz							100 MHz		
#Res BW 100 kHz		#VE	3W 300 kH	z		Swee	p 9.6 ms		Min Hold
			Total Po	wor	22.0	dBm			
Occupied Band			I Utal FU	wei	20.0	ubili			
	36.223	3 MHz							Detector
Troponit From Fro		220 kU-	0/ of OP		00	00.0/		Auto	Peak▶ Man
Transmit Freq Err		.330 kHz	% of OB	W Powe		.00 %		Auto	Ivian
x dB Bandwidth	36	.36 MHz	x dB		-6.	00 dB			
MSG					STATUS				

Plot 7-112. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



Plot 7-113. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

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Keysight Spectrum Analyzer - Occupied E	BW			
LXI RE 50Ω AC	CORREC	SENSE:INT er Freg: 5.755000000 GHz	05:07:02 PM Dec 27, 2 Radio Std: None	Trace/Detector
	Trig:	Free Run Avg Hold: en: 20 dB		
	#IFGain:Low #Atte	en: 20 dB	Radio Device: B I S	_
10 dB/div Ref 20.00 dB				
10.0				Clean Write
0.00	الماتخاء المتحماد المقديما بالم	was unlandered while have be		Clear Write
-10.0				
-20.0				
-30.0				Average
-40.0	l mo		Wallyn twent the Magdin Long Top Wall Warden Karden	
-50.0 politication of the month of the production			and the second	iha.
-60.0				Max Hold
-70.0				
Center 5.755 GHz			Span 100 M	
#Res BW 100 kHz	#	#VBW 300 kHz	Sweep 9.6	
				- Will Hold
Occupied Bandwid	lth	Total Power	21.9 dBm	
3	7.552 MHz			Detector
	40.007 1.11-		- 00.00.0/	Peak▶ Auto Man
Transmit Freq Error	-48.227 kHz	% of OBW Powe		Auto <u>Man</u>
x dB Bandwidth	37.76 MHz	x dB	-6.00 dB	
MSG			STATUS	

Plot 7-114. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



Plot 7-115. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B\	N						
L <mark>X/</mark> RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 5.77500000	00 GHz	03:15:37 P Radio Std	M Nov 09, 2018	Trace	/Detector
NFE			Avg Hold: 100/100	Radio Dev			
	#IFGain:Low	#Atten: 20 db		Radio Dev	/ice: BTS		
10 dB/div Ref 20.00 dBr	n						
10.0						-	lear Write
0.00	Unit Mitter	MULIAN MUNIMUM	LML HILL			Ľ	lear write
-10.0							
-20.0							
-30.0	the could		Minore Law - b	4. 1 .			Average
-40.0 Automatication	halo de.		walk water	an every weater	Man William		
-50.0							
-60.0							Max Hold
-70.0							
Center 5.775 GHz				Span	200 MHz		
#Res BW 100 kHz		#VBW 300 kHz	2		19.13 ms		Min Hold
		T-4-1 D					
Occupied Bandwidt		Total Pov	ver 24.0	dBm			
7	5.575 MH	Z					Detector
Transmit Freq Error	-36.110 kł	Hz % of OBV	Power 99	.00 %		Auto	Peak▶ Man
x dB Bandwidth	75.91 MH			00 dB			
	75.91 WF		-0.1	00 UB			
100			074710				
MSG			STATUS				

Plot 7-116. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)



Plot 7-117. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11aax (UNII Band 3) - Ch. 155)

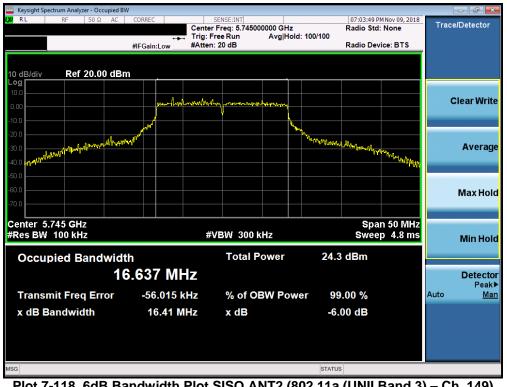
FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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SISO Antenna-2 6dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	а	6	16.41
	5785	157	а	6	16.40
	5825	165	а	6	16.43
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.61
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.61
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.60
<u>~</u>	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	18.94
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	18.68
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	19.09
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.36
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.35
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.95
	5775	155	ax (40MHz)	13.5/15 (MCS0)	37.62
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.78
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	77.32

Table 7-5. Conducted Bandwidth Measurements SISO ANT2



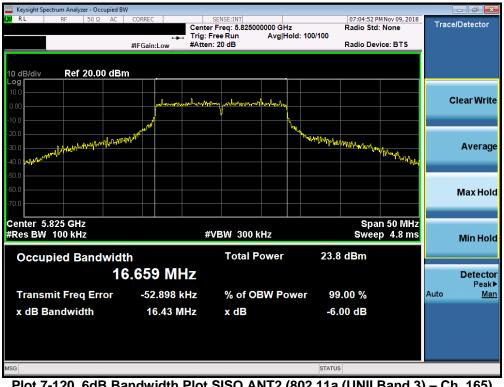
Plot 7-118. 6dB Bandwidth Plot SISO ANT2 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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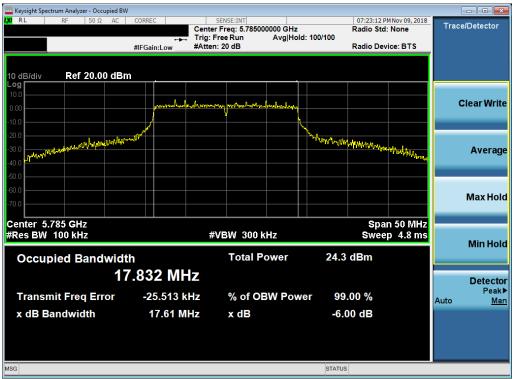
Plot 7-120. 6dB Bandwidth Plot SISO ANT2 (802.11a (UNII Band 3) - Ch. 165)

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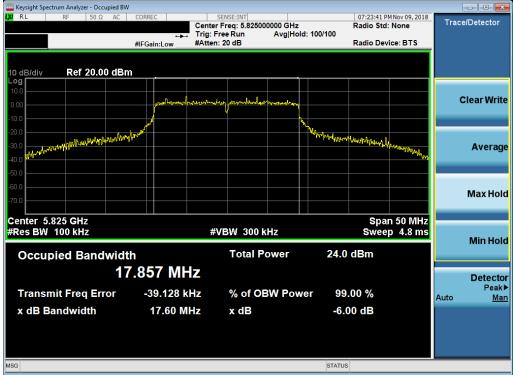
Plot 7-121. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



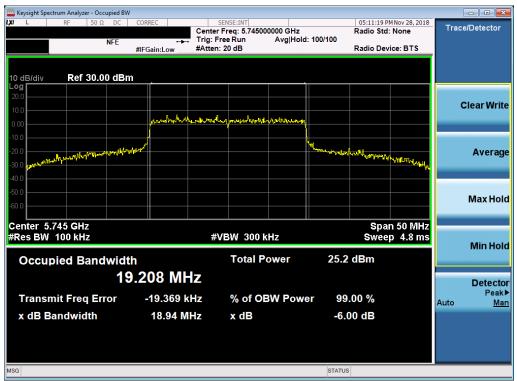
Plot 7-122. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

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Plot 7-123. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



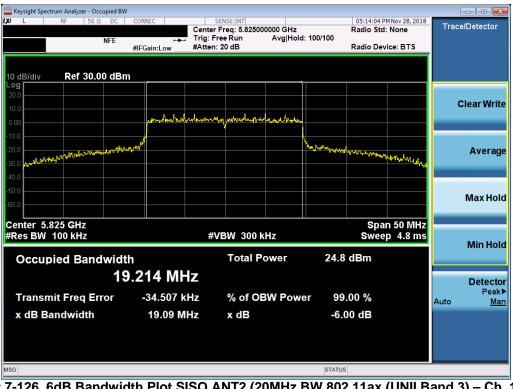
Plot 7-124. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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🧫 Keysight Spectrum Analyzer - Occu	upied BW			- • •
LX/I L RF 50 Ω	DC CORREC	SENSE:INT Center Freq: 5.785000000 GHz Trig: Free Run Avg Hol #Atten: 20 dB	05:13:09 PM Radio Std: M d: 100/100 Radio Devic	None Trace/Detector
	#IFGaIn:Low	#Atten: 20 db	Radio Devic	
10 dB/div Ref 30.00	0 dBm			
20.0				
10.0				Clear Write
0.00	montanted	mitral alfre mar mark to show here		
-10.0				
-20.0	wand belown		Tommand of a star by the did boy from an	Average
-40.0				
-60.0				Max Hold
Center 5.785 GHz #Res BW 100 kHz		#VBW 300 kHz		50 MHz 4.8 ms
			00000	Min Hold
Occupied Band	width	Total Power	25.2 dBm	
	19.193 MH	z		Detector
Transmit Freq Err	or -39.886 k	Hz % of OBW Pow	ver 99.00 %	Peak▶
				Auto <u>Mar</u>
x dB Bandwidth	18.68 M	Hz x dB	-6.00 dB	
MSG			STATUS	

Plot 7-125. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



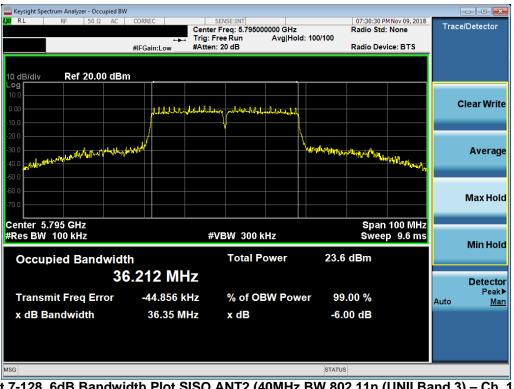
Plot 7-126. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 165)

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Keysight Spectrum Analyzer - Occupied B	W				
LXI RL RF 50 Ω AC	CORREC	SENSE:INT nter Freg: 5.755000000 GHz		M Nov 09, 2018	Trace/Detector
			old: 100/100	. None	
	#IFGain:Low #At	ten: 20 dB	Radio Dev	/ice: BTS	
10 dB/div Ref 20.00 dB	m				
Log 10.0					
0.00					Clear Write
-10.0	a Augusta Maria and a la	an papada ang ang ang ang ang ang ang ang ang an			
-20.0		v	λ I		
	1 Indered		Machine and		Average
-30.0	W		Aluston when the state of the second	In James	Average
-50.0				** - ***// U ₁	
-60.0					
-70.0					Max Hold
-70.0					
Center 5.755 GHz				100 MHz	
#Res BW 100 kHz		#VBW 300 kHz	Swee	p 9.6 ms	Min Hold
Occupied Bandwid	th	Total Power	24.0 dBm		WIITHOID
3	6.209 MHz				Detector
Transmit Freq Error	-43.727 kHz	% of OBW Pov	wer 99.00 %		Peak▶ Auto Man
x dB Bandwidth	36.36 MHz	x dB	-6.00 dB		Auto <u>Man</u>
	30.30 WHZ	Xub	-0.00 UB		
MSG			STATUS		
Mod			314105		

Plot 7-127. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



Plot 7-128. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

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Keysight Spectrum Analyzer - Occupied B	W			
LXIRL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 5.755000000 GHz	06:14:09 PM Dec 27, 2018 Radio Std: None	Trace/Detector
		Trig: Free Run Avg Hold	: 100/100	
	#IFGain:Low	#Atten: 20 dB	Radio Device: BTS	-
10 dB/div Ref 20.00 dBr	<u>n</u>			
10.0				
0.00	مرجله الرا	www.www.www.www.www.www.www.www.		Clear Write
-10.0	(mage marine	an analysis of the state of the		
-20.0	<mark>/</mark>			
-30.0				Average
-40.0	WW .		Loborder marine lander	
-50.0 ANN MANAGER				
-60.0				Max Hold
-70.0				
Center 5.755 GHz			Onen 400 Milli	
#Res BW 100 kHz		#VBW 300 kHz	Span 100 MH: Sweep 9.6 ms	
				Min Hold
Occupied Bandwid	th	Total Power	21.4 dBm	
3	7.616 MH	17		Detector
				Peak►
Transmit Freq Error	-57.489 k	Hz % of OBW Powe	er 99.00 %	Auto <u>Man</u>
x dB Bandwidth	37.95 M	lHz x dB	-6.00 dB	
MSG			STATUS	

Plot 7-129. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



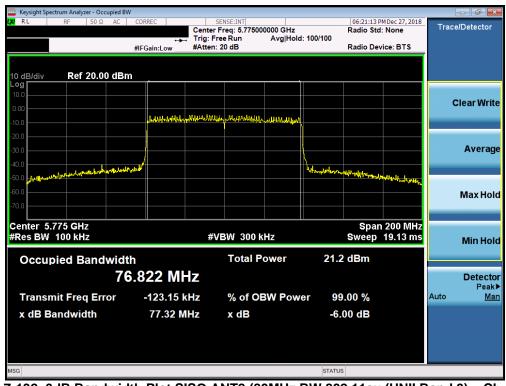
Plot 7-130. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

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www.commercenterscore and the second						
ΙΧΊ RL RF 50Ω AC C		SENSE:INT enter Freq: 5.775000 ig: Free Run	000 GHz Avg Hold: 100/100	07:39:14 P Radio Std	M Nov 09, 2018 : None	Trace/Detector
#		Atten: 20 dB	Avginola. 100/100	Radio Dev	ice: BTS	
10 dB/div Ref 20.00 dBm						
10.0						
0.00		1. Martin Martin	.adåkka _khnalj			Clear Write
-10.0						
-20.0						
-30.0	<u>M</u>		Upenthe whether the	nd, Andrews Toughod	abdonly to a	Average
-40.0					1	
-50.0						
-70.0						Max Hold
Center 5.775 GHz #Res BW 100 kHz		#VBW 300 kH	17		200 MHz 19.13 ms	
TOO KIIZ		#4D44 300 Ki	12	oweep	19.15 115	Min Hold
Occupied Bandwidth		Total Po	wer 25.3	dBm		
75.	706 MHz					Detector
			N D	00.0/		Detector Peak►
Transmit Freq Error	-121.72 kHz			00 %		Auto <u>Man</u>
x dB Bandwidth	75.78 MHz	x dB	-6.0	0 dB		
MSG			STATUS			

Plot 7-131. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)



Plot 7-132. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 3) - Ch. 155)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:			
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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) and 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(N/A) = 24.65dBm$. 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) and 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(N/A) = 24.30dBm$. 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.

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.





Test Notes

None

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SISO Antenna-1 Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector		IEEE Transm	ission Mode		Conducted Power Limit	Conducted Power	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
Ē				802.11a	802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]	[]	[]	,	
dth	5180	36	AVG	15.21	15.47	15.45	15.75	23.98	-8.23	-7.25	8.50	23.01	-14.51
ž	5200	40	AVG	17.59	17.84	17.83	15.79	23.98	-6.14	-7.55	10.29	23.01	-12.72
ð	5220	44	AVG	17.56	17.79	17.80	15.69	23.98	-6.18	-7.33	10.47	23.01	-12.54
_	5240	48	AVG	17.61	17.76	17.91	15.77	23.98	-6.07	-7.33	10.58	23.01	-12.43
Ba	5260	52	AVG	17.67	17.56	17.53	15.61	23.98	-6.31	-7.95	9.72	30.00	-20.28
N	5280	56	AVG	17.81	17.61	17.63	15.75	23.98	-6.17	-7.95	9.86	30.00	-20.14
T	5300	60	AVG	17.97	17.74	17.67	15.87	23.98	-6.01	-7.44	10.53	30.00	-19.47
Σ	5320	64	AVG	16.20	16.39	16.37	15.83	23.98	-7.59	-7.44	8.95	30.00	-21.05
20	5500	100	AVG	17.57	17.73	17.93	15.81	23.98	-6.05	-8.01	9.92	30.00	-20.08
	5600	120	AVG	17.65	17.94	17.89	15.96	23.98	-6.04	-8.01	9.93	-	
₽	5620	124	AVG	17.89	17.88	17.86	15.98	23.98	-6.09	-8.01	9.88	-	
5	5720	144	AVG	17.82	17.98	17.98	15.99	23.98	-6.00	-8.01	9.97	30.00	-20.03
2	5745	149	AVG	17.93	17.84	17.89	15.89	30.00	-12.07	-7.10	10.83	-	-
	5785	157	AVG	17.52	17.97	17.97	15.97	30.00	-12.03	-7.10	10.87	-	-
	5825	165	AVG	17.84	17.84	17.81	15.78	30.00	-12.16	-7.67	10.17	-	-

Table 7-6. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	IEEE Transmission Mode			Conducted Power Limit	Conducted Power	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]	[02.]	[]		
Ŧ c	5190	38	AVG	12.76	12.84	13.97	23.98	-10.01	-7.25	6.72	23.01	-16.29
Ξ÷	5230	46	AVG	16.73	16.87	13.57	23.98	-7.11	-7.33	9.54	23.01	-13.47
(40M width	5270	54	AVG	16.54	16.71	13.67	23.98	-7.27	-7.95	8.76	30.00	-21.24
<u>4</u> 7	5310	62	AVG	12.84	12.93	13.61	23.98	-10.37	-7.44	6.17	30.00	-23.83
hd Tz	5510	102	AVG	16.76	16.84	13.68	23.98	-7.14	-8.01	8.83	30.00	-21.17
	5590	118	AVG	16.63	16.56	13.63	23.98	-7.35	-8.01	8.62	-	-
B S	5630	126	AVG	16.97	16.87	13.81	23.98	-7.01	-8.01	8.96	-	-
	5710	142	AVG	16.89	16.90	13.91	23.98	-7.08	-8.01	8.89	30.00	-21.11
	5755	151	AVG	16.98	16.71	13.73	30.00	-13.02	-7.10	9.88	-	-
	5795	159	AVG	16.78	16.79	13.64	30.00	-13.21	-7.67	9.12	-	-

Table 7-7. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power

(80MHz Iwidth)	Freq [MHz]	Channel	Channel	Channel	Detector	IEEE Transmission Mode		Conducted Conducted Power Limit Power	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				802.11ac	802.11ax	[dBm]	Margin [dB]					
80 wic	5210	42	AVG	12.89	12.87	23.98	-11.09	-7.55	5.34	23.01	-17.67	
CHZ CHZ CHZ	5290	58	AVG	12.76	12.86	23.98	-11.12	-7.95	4.91	30.00	-25.09	
	5530	106	AVG	12.78	12.96	23.98	-11.02	-8.01	4.95	30.00	-25.05	
2	5690	138	AVG	15.71	12.76	23.98	-8.27	-8.01	7.70	30.00	-22.30	
	5775	155	AVG	15.52	12.91	30.00	-14.48	-7.10	8.42	-	-	

Table 7-8. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power

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SISO Antenna-2 Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector		IEEE Transm	ission Mode		Conducted Power Limit	Conducted Power	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
Ē				802.11a	802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]	[]	[]	,	
dth	5180	36	AVG	15.24	15.24	15.30	15.56	23.98	-8.42	-8.43	7.13	23.01	-15.88
Ň	5200	40	AVG	17.46	17.57	17.56	15.78	23.98	-6.41	-8.34	9.23	23.01	-13.78
<u>ح</u>	5220	44	AVG	17.63	17.70	17.68	15.95	23.98	-6.28	-7.99	9.71	23.01	-13.30
_	5240	48	AVG	17.70	17.76	17.70	15.51	23.98	-6.22	-7.99	9.77	23.01	-13.24
Ba	5260	52	AVG	17.64	17.68	17.77	15.62	23.98	-6.21	-7.32	10.45	30.00	-19.55
N	5280	56	AVG	17.91	17.64	17.64	15.60	23.98	-6.07	-7.32	10.59	30.00	-19.41
T	5300	60	AVG	17.90	17.60	17.61	15.90	23.98	-6.08	-7.64	10.26	30.00	-19.74
Σ	5320	64	AVG	16.10	16.41	16.58	15.81	23.98	-7.40	-7.64	8.94	30.00	-21.06
20	5500	100	AVG	17.56	17.61	17.68	15.98	23.98	-6.30	-7.27	10.41	30.00	-19.59
	5600	120	AVG	17.78	17.81	17.81	15.96	23.98	-6.17	-7.27	10.54	-	
P P	5620	124	AVG	17.67	17.78	17.72	15.99	23.98	-6.20	-7.27	10.51	-	
σ	5720	144	AVG	17.79	17.75	17.88	15.60	23.98	-6.10	-7.27	10.61	30.00	-19.39
2	5745	149	AVG	17.77	17.76	17.71	15.58	30.00	-12.23	-7.69	10.08	-	-
	5785	157	AVG	17.42	17.84	17.75	15.84	30.00	-12.16	-7.11	10.73	-	-
	5825	165	AVG	17.40	17.35	17.89	15.71	30.00	-12.11	-7.33	10.56	-	-

Table 7-9. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	IEEE	Transmission	Mode	Conducted Power Limit	Conducted Power	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]	[02.]	[]		
HZ (5190	38	AVG	12.73	12.73	13.60	23.98	-10.38	-8.34	5.26	23.01	-17.75
	5230	46	AVG	16.98	16.55	13.57	23.98	-7.00	-7.99	8.99	23.01	-14.02
(40M width	5270	54	AVG	16.93	16.71	13.63	23.98	-7.05	-7.32	9.61	30.00	-20.39
d (4	5310	62	AVG	12.64	12.94	13.58	23.98	-10.40	-7.32	6.26	30.00	-23.74
	5510	102	AVG	16.91	16.76	13.78	23.98	-7.07	-7.27	9.64	30.00	-20.36
	5590	118	AVG	16.89	16.73	13.73	23.98	-7.09	-7.27	9.62	-	-
B, 5G	5630	126	AVG	16.51	16.65	13.72	23.98	-7.33	-7.27	9.38	-	-
	5710	142	AVG	16.71	16.56	13.69	23.98	-7.27	-7.69	9.02	30.00	-20.98
	5755	151	AVG	16.61	16.91	13.62	30.00	-13.09	-7.11	9.80	-	-
	5795	159	AVG	16.51	16.98	13.59	30.00	-13.02	-7.33	9.65	-	-

Table 7-10. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power

Ţ	Freq [MHz]	Channel	Detector	IEEE Transm	ission Mode	Conducted Power Limit		Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
불불				802.11ac	802.11ax	[dBm]	Margin [dB]	[]	[]		
(80MH; Iwidth)	5210	42	AVG	12.93	12.86	23.98	-11.05	-8.34	4.59	23.01	-18.42
	5290	58	AVG	12.56	12.74	23.98	-11.24	-7.32	5.42	30.00	-24.58
GHz Banc	5530	106	AVG	12.82	12.90	23.98	-11.08	-7.27	5.63	30.00	-24.37
2	5690	138	AVG	15.76	12.56	23.98	-8.22	-7.27	8.49	30.00	-21.51
	5775	155	AVG	15.9	12.46	30.00	-14.10	-7.69	8.21	-	-

Table 7-11. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power

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MIMO/CDD Maximum Conducted Output Power Measurements

Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
			ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
5180	36	AVG	12.37	12.48	15.44	23.98	-8.54	-5.39	10.04	23.01	-12.97
5200	40	AVG	17.59	17.46	20.54	23.98	-3.44	-5.48	15.05	23.01	-7.96
5220	44	AVG	17.56	17.63	20.61	23.98	-3.37	-5.31	15.30	23.01	-7.71
5240	48	AVG	17.61	17.70	20.67	23.98	-3.31	-5.31	15.36	23.01	-7.65
5260	52	AVG	17.67	17.64	20.67	23.98	-3.31	-5.33	15.33	30.00	-14.67
5280	56	AVG	17.81	17.91	20.87	23.98	-3.11	-5.33	15.54	30.00	-14.46
5300	60	AVG	17.97	17.90	20.95	23.98	-3.03	-5.25	15.69	30.00	-14.31
5320	64	AVG	13.48	13.36	16.43	23.98	-7.55	-5.25	11.18	30.00	-18.82
5500	100	AVG	17.57	17.56	20.58	23.98	-3.40	-5.34	15.24	30.00	-14.76
5600	120	AVG	17.65	17.78	20.73	23.98	-3.25	-5.34	15.39	-	-
5620	124	AVG	17.89	17.67	20.79	23.98	-3.19	-5.34	15.45	-	-
5720	144	AVG	17.82	17.79	20.82	23.98	-3.16	-5.34	15.48	30.00	-14.52
5745	149	AVG	17.93	17.77	20.86	30.00	-9.14	-5.61	15.25	-	-
5785	157	AVG	17.52	17.42	20.48	30.00	-9.52	-5.42	15.06	-	-
5825	165	AVG	17.84	17.40	20.64	30.00	-9.36	-5.24	15.40	-	-

Table 7-12. CDD 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
<u> </u>				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
dth	5180	36	AVG	12.06	11.84	14.96	23.98	-9.02	-4.79	10.17	23.01	-12.84
<u> </u>	5200	40	AVG	17.84	17.57	20.72	23.98	-3.26	-4.92	15.80	23.01	-7.21
2	5220	44	AVG	17.79	17.70	20.76	23.98	-3.22	-4.64	16.12	23.01	-6.89
pu	5240	48	AVG	17.76	17.76	20.77	23.98	-3.21	-4.64	16.13	23.01	-6.88
Ba	5260	52	AVG	17.56	17.68	20.63	23.98	-3.35	-4.61	16.02	30.00	-13.98
N	5280	56	AVG	17.61	17.64	20.64	23.98	-3.34	-4.61	16.02	30.00	-13.98
	5300	60	AVG	17.74	17.60	20.68	23.98	-3.30	-4.53	16.15	30.00	-13.85
(20M	5320	64	AVG	13.11	12.58	15.86	23.98	-8.12	-4.53	11.33	30.00	-18.67
50	5500	100	AVG	17.73	17.61	20.68	23.98	-3.30	-4.61	16.07	30.00	-13.93
	5600	120	AVG	17.94	17.81	20.89	23.98	-3.09	-4.61	16.27	4	
HZ	5620	124	AVG	17.88	17.78	20.84	23.98	-3.14	-4.61	16.23	4	
Ū	5720	144	AVG	17.98	17.75	20.88	23.98	-3.10	-4.61	16.26	30.00	-13.74
2	5745	149	AVG	17.84	17.76	20.81	30.00	-9.19	-5.02	15.79	-	-
	5785	157	AVG	17.97	17.84	20.92	30.00	-9.08	-4.70	16.21	4	-
	5825	165	AVG	17.84	17.35	20.61	30.00	-9.39	-4.49	16.13	-	-

Table 7-13. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

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	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
Ē				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
idth)	5180	36	AVG	12.07	11.87	14.98	23.98	-9.00	-4.79	10.19	23.01	-12.82
-i	5200	40	AVG	17.83	17.56	20.71	23.98	-3.27	-4.92	15.79	23.01	-7.22
dwi	5220	44	AVG	17.80	17.68	20.75	23.98	-3.23	-4.64	16.11	23.01	-6.90
_	5240	48	AVG	17.91	17.70	20.82	23.98	-3.16	-4.64	16.18	23.01	-6.83
Ba	5260	52	AVG	17.53	17.77	20.66	23.98	-3.32	-4.61	16.05	30.00	-13.95
N	5280	56	AVG	17.63	17.64	20.65	23.98	-3.33	-4.61	16.03	30.00	-13.97
E E	5300	60	AVG	17.67	17.61	20.65	23.98	-3.33	-4.53	16.12	30.00	-13.88
20M	5320	64	AVG	13.09	12.57	15.85	23.98	-8.13	-4.53	11.32	30.00	-18.68
20	5500	100	AVG	17.93	17.68	20.82	23.98	-3.16	-4.61	16.20	30.00	-13.80
	5600	120	AVG	17.89	17.81	20.86	23.98	-3.12	-4.61	16.25	-	
H	5620	124	AVG	17.86	17.72	20.80	23.98	-3.18	-4.61	16.19	-	
Ū.	5720	144	AVG	17.98	17.88	20.94	23.98	-3.04	-4.61	16.33	30.00	-13.67
2	5745	149	AVG	17.89	17.71	20.81	30.00	-9.19	-5.02	15.79	-	
	5785	157	AVG	17.97	17.75	20.87	30.00	-9.13	-4.70	16.17	-	
	5825	165	AVG	17.81	17.89	20.86	30.00	-9.14	-4.49	16.37	-	-

Table 7-14. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Cond	ucted Power [[dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
Ŧ c	5190	38	AVG	9.90	9.96	12.94	23.98	-11.04	-4.75	8.19	23.01	-14.82
Ξ÷	5230	46	AVG	16.73	16.87	19.81	23.98	-4.17	-4.64	15.17	23.01	-7.84
<u> </u>	5270	54	AVG	16.54	16.71	19.64	23.98	-4.34	-4.61	15.02	30.00	-14.98
<u>4</u>	5310	62	AVG	9.94	9.62	12.79	23.98	-11.19	-4.37	8.42	30.00	-21.58
hd	5510	102	AVG	16.76	16.84	19.81	23.98	-4.17	-4.61	15.20	30.00	-14.80
ч с	5590	118	AVG	16.63	16.56	19.61	23.98	-4.37	-4.61	14.99	-	-
В С	5630	126	AVG	16.97	16.87	19.93	23.98	-4.05	-4.61	15.32	-	-
	5710	142	AVG	16.89	16.90	19.91	23.98	-4.07	-4.84	15.07	30.00	-14.93
	5755	151	AVG	16.98	16.71	19.86	30.00	-10.14	-4.09	15.76	-	-
	5795	159	AVG	16.78	16.79	19.80	30.00	-10.20	-4.49	15.31	-	-

Table 7-15. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Cond	ucted Power	[dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
₽ ⊂	5190	38	AVG	9.54	9.86	12.71	23.98	-11.27	-4.75	7.96	23.01	-15.05
ΞΞ	5230	46	AVG	16.87	16.55	19.72	23.98	-4.26	-4.64	15.09	23.01	-7.92
(40M width	5270	54	AVG	16.71	16.71	19.72	23.98	-4.26	-4.61	15.11	30.00	-14.89
<u>₹</u>	5310	62	AVG	9.96	9.57	12.78	23.98	-11.20	-4.37	8.41	30.00	-21.59
Hz and	5510	102	AVG	16.84	16.76	19.81	23.98	-4.17	-4.61	15.20	30.00	-14.80
는 다	5590	118	AVG	16.56	16.73	19.66	23.98	-4.32	-4.61	15.04	-	-
B S	5630	126	AVG	16.87	16.65	19.77	23.98	-4.21	-4.61	15.16	-	-
	5710	142	AVG	16.90	16.56	19.74	23.98	-4.24	-4.84	14.91	30.00	-15.09
	5755	151	AVG	16.71	16.91	19.82	30.00	-10.18	-4.09	15.73	-	-
	5795	159	AVG	16.79	16.98	19.90	30.00	-10.10	-4.49	15.41	-	-

Table 7-16. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

, Tz	Freq [MHz]	Channel	Detector	Cond	ucted Power [dBm]	Conducted Power Limit		Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
0MH; idth)				ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
(80) wic	5210	42	AVG	9.30	9.42	12.37	23.98	-11.61	-4.92	7.45	23.01	-15.56
hd hd	5290	58	AVG	9.46	9.42	12.45	23.98	-11.53	-4.61	7.84	30.00	-22.16
Bal GH	5530	106	AVG	9.39	9.84	12.63	23.98	-11.35	-4.61	8.02	30.00	-21.98
5	5690	138	AVG	15.71	15.76	18.75	23.98	-5.23	-4.61	14.13	30.00	-15.87
	5775	155	AVG	15.52	15.90	18.72	30.00	-11.28	-4.37	14.35	-	-

Table 7-17. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

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Note:

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

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where G_N is the gain of the nth antenna and NANT, 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 12.06 dBm for Antenna-1 and 12.06 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(12.06 dBm + 11.84 dBm) = (16.07 mW + 15.28 mW) = 32.14 mW = 14.96 dBm

Sample MIMO e.i.r.p. Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO conducted power was calculated to be 12.06 dBm with directional gain of N/A dBi.

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

14.96dBm + -4.79 dBi = 10.17 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.

Test Procedure Used

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

Test Settings

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

Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None

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SISO Antenna-1 Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
	5180	36	а	6	6.22	11.0	-4.78
	5200	40	а	6	6.41	11.0	-4.60
	5240	48	а	6	6.23	11.0	-4.77
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	4.93	11.0	-6.07
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	5.64	11.0	-5.36
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.84	11.0	-5.16
	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	2.55	11.0	-8.45
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	3.18	11.0	-7.82
Ba	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	3.35	11.0	-7.65
	5190	38	n (40MHz)	13.5/15 (MCS0)	2.45	11.0	-8.55
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.68	11.0	-8.32
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-0.95	11.0	-11.95
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.69	11.0	-11.69
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-1.81	11.0	-12.81
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.18	11.0	-15.18
	5260	52	a	6	6.13	11.0	-4.87
	5280	56	a	6	6.06	11.0	-4.94
	5320	64	a	6	6.25	11.0	-4.76
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.27	11.0	-4.73
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.94	11.0	-5.06
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	5.81	11.0	-5.19
∢	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	3.71	11.0	-7.29
d 2	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	3.91	11.0	-7.09
3and 2A	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	4.59	11.0	-6.41
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.31	11.0	-8.69
	5310	62	n (40MHz)	13.5/15 (MCS0)	2.89	11.0	-8.11
	5270	54	ax (40MHz)	13.5/15 (MCS0)	-0.68	11.0	-11.68
	5310	62	ax (40MHz)	13.5/15 (MCS0)	-0.08	11.0	-11.54
	5290	58		. ,	-0.34	11.0	-13.03
	5290	58	ac (80MHz) ax (80MHz)	29.3/32.5 (MCS0)	-2.03	11.0	-13.03
	5500	100	ax (outrinz) a	29.3/32.5 (MCS0) 6	5.74	11.0	-14.02
		100			-		
	5600	-	a	6	5.19	11.0	-5.81
	5720	144	a (000 41 1=)	6	5.87	11.0	-5.13
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	5.60	11.0	-5.40
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	5.48	11.0	-5.52
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	5.61	11.0	-5.39
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	4.88	11.0	-6.12
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	4.78	11.0	-6.22
~	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	4.49	11.0	-6.51
1 2C	5510	102	n (40MHz)	13.5/15 (MCS0)	2.05	11.0	-8.95
Band	5590	118	n (40MHz)	13.5/15 (MCS0)	1.39	11.0	-9.61
-	5710	142	n (40MHz)	13.5/15 (MCS0)	1.47	11.0	-9.53
	5510	102	ax (40MHz)	13.5/15 (MCS0)	-0.53	11.0	-11.53
	5590	118	ax (40MHz)	13.5/15 (MCS0)	-0.20	11.0	-11.20
	5710	142	ax (40MHz)	29.3/32.5 (MCS0)	-0.11	11.0	-11.11
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-2.41	11.0	-13.41
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-2.57	11.0	-13.57
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.77	11.0	-13.77
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-4.35	11.0	-15.35
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-4.29	11.0	-15.29
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-1.50	11.0	-12.50

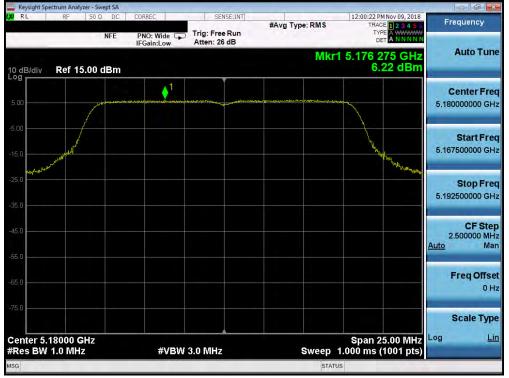
Table 7-18. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements SISO ANT1

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	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
	5180	36	а	6	6.22	-7.25	-1.03	10.0	-11.03
	5200	40	а	6	6.41	-7.55	-1.15	10.0	-11.15
	5240	48	а	6	6.23	-7.33	-1.10	10.0	-11.10
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	4.93	-7.25	-2.32	10.0	-12.32
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	5.64	-7.55	-1.91	10.0	-11.91
_	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.84	-7.33	-1.49	10.0	-11.49
d 1	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	3.18	-7.25	-4.07	10.0	-14.07
Band	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	3.35	-7.55	-4.20	10.0	-14.20
	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	2.45	-7.33	-4.88	10.0	-14.88
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.68	-7.25	-4.57	12.0	-16.57
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-0.95	-7.55	-8.50	13.0	-21.50
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.69	-7.33	-8.02	14.0	-22.02
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-1.81	-7.55	-9.36	15.0	-24.36
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.18	-7.55	-11.73	16.0	-27.73

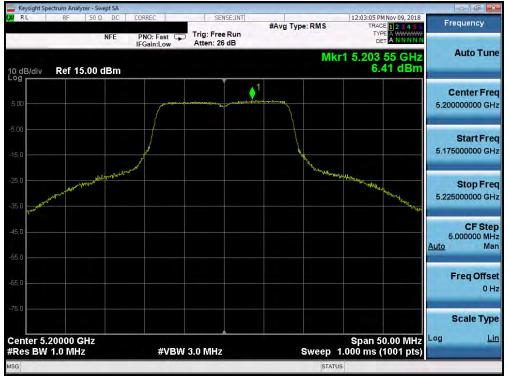
Table 7-19. Band 1 e.i.r.p. Conducted Power Spectral Density Measurements (ISED) SISO ANT1



Plot 7-133. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 1) - Ch. 36)

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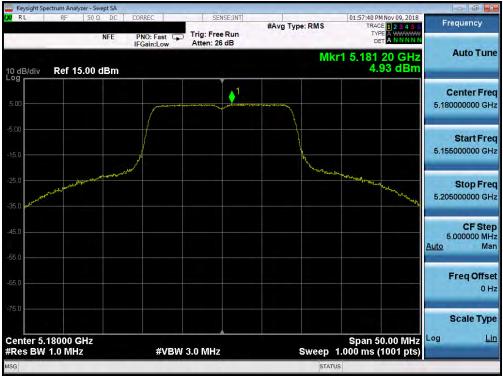
Plot 7-134. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 1) - Ch. 40)



Plot 7-135. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 1) - Ch. 48)

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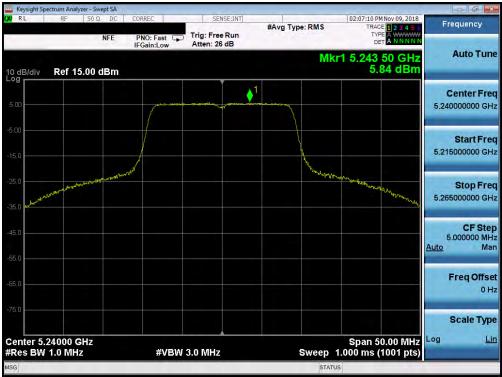
Plot 7-136. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)



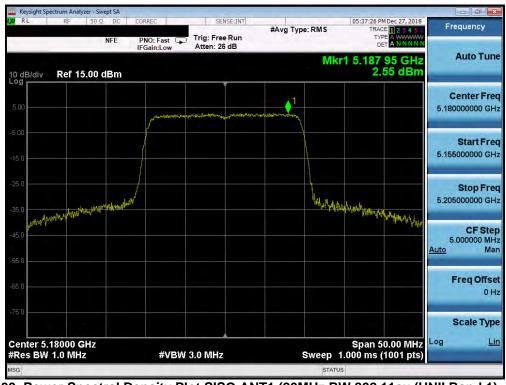
Plot 7-137. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)

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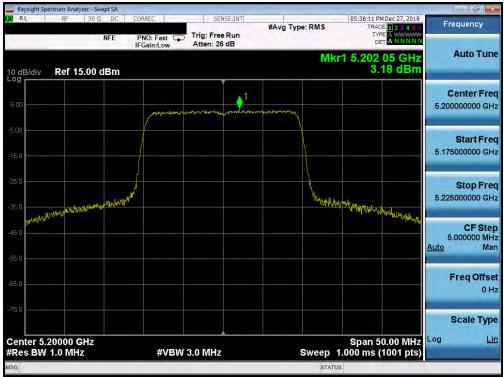
Plot 7-138. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)



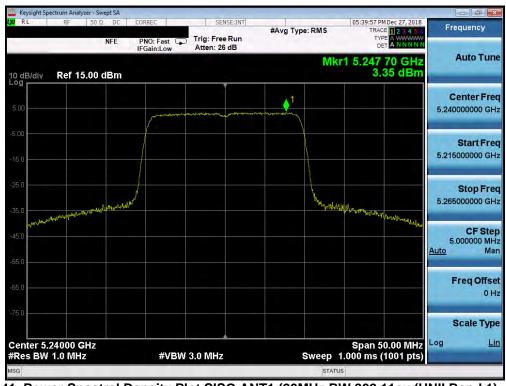
Plot 7-139. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 08 of 242
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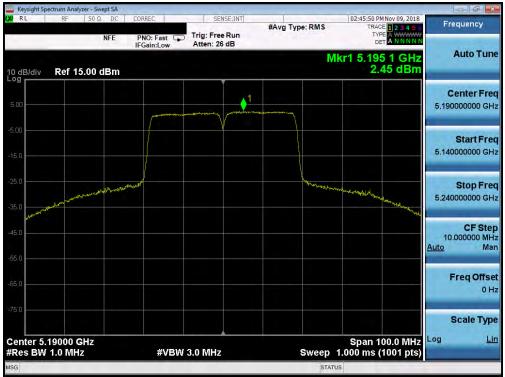
Plot 7-140. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)



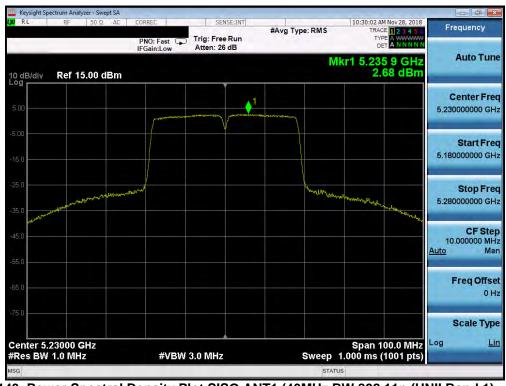
Plot 7-141. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 00 of 242
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Plot 7-142. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)



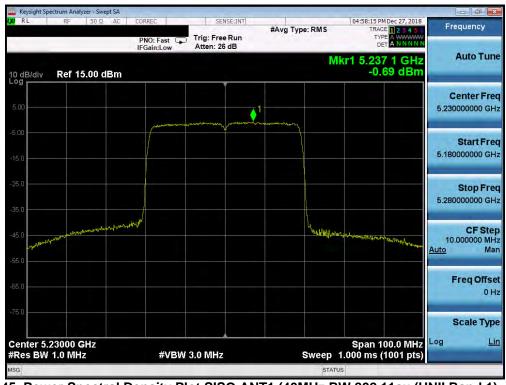
Plot 7-143. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 46)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 100 of 242
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Keysight Spectrum Analyzer - Swept SA			
	PNO: Fast FGain:Low Atten: 26 dB	04:57:30 PM Dec 27, #Avg Type: RMS TRACE 2 TYPE A MU DET A NU	4 5 6 WWW
IO dB/div Ref 15.00 dBm	Conneow Conneow	Mkr1 5.194 8 G -0.95 dl	Hz Auto Tuno Bm
5.00	1		Center Free 5.190000000 GH
15.0			Start Fre 5.140000000 GH
35.0			Stop Fre 5.240000000 GH
15.0 And the second sec		Margan Harmon Marine Marine	CF Ste 10.000000 MH Auto Ma
55.0			Freq Offs 0 H
75 0 Center 5.19000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Span 100.0 M Sweep 1.000 ms (1001	Scale Typ
ISG		STATUS	

Plot 7-144. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)



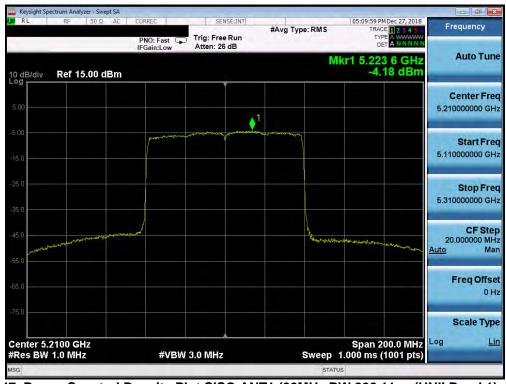
Plot 7-145. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 242	
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Keysight Spectrum Analyzer - Sv				Contraction of the	- 5
XU RL RF 503	NFE PNO: Fast	SENSE:INT	#Avg Type: RMS	03:04:22 PM Nov 09, 2018 TRACE 1 2 3 4 5 6 TYPE A WAWAAAA DET A N N N N N	Frequency
10 dB/div Ref 15.00	IFGain:Low	Atten. 20 db	M	r1 5.226 0 GHz -1.81 dBm	Auto Tune
5.00					Center Freq 5.210000000 GHz
15,0					Start Fred 5.110000000 GH2
25.0 35.0	and the second		manhouse	anon address to the	Stop Free 5.310000000 GH
-45.0				and a second second	CF Step 20.000000 MH; Auto Mar
65,0					Freq Offse 0 H:
75.0 Center 5.2100 GHz #Res BW 1.0 MHz	#\/BW	3.0 MHz	Sween 1	Span 200.0 MHz .000 ms (1001 pts)	Scale Type Log <u>Lir</u>
ASG			STATUS		

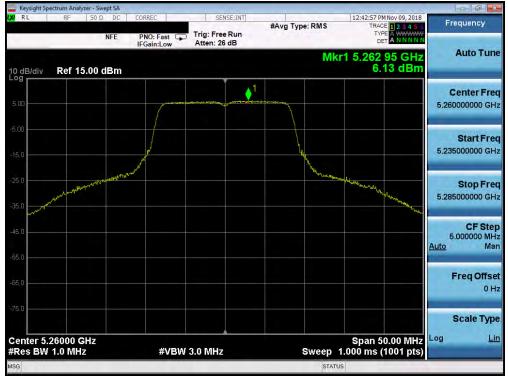
Plot 7-146. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)



Plot 7-147. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 242	
1M1811120202-06.A3L	10/31/2018-1/9/2019	Portable Handset		Page 102 of 243	
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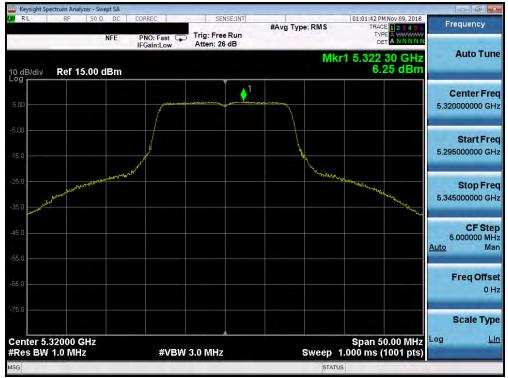
Plot 7-148. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 52)



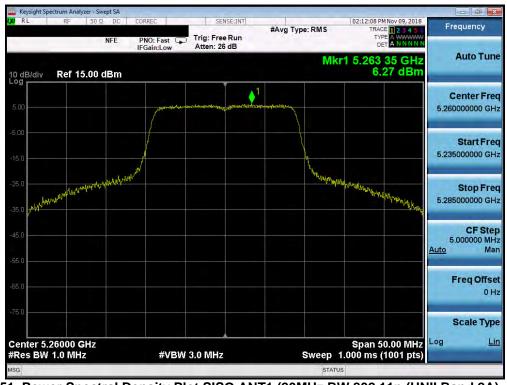
Plot 7-149. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 242	
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© 2019 PCTEST Engineering Labora	atory. Inc.			V 8.8 11/19/2018	





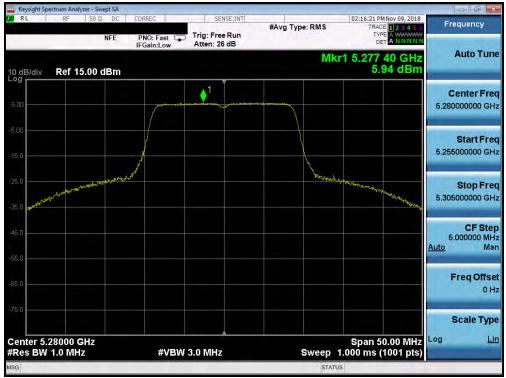
Plot 7-150. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 64)



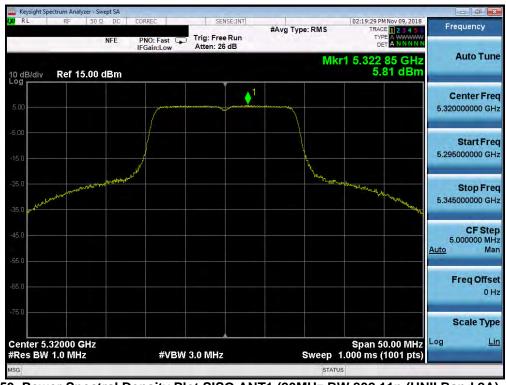
Plot 7-151. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 104 of 242
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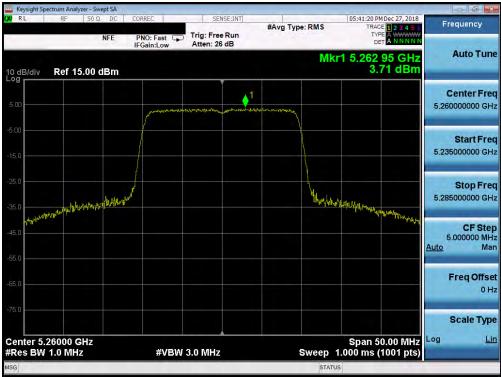
Plot 7-152. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)



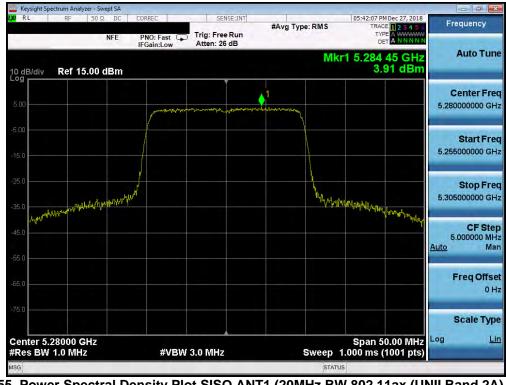
Plot 7-153. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 105 of 242
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Plot 7-154. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)



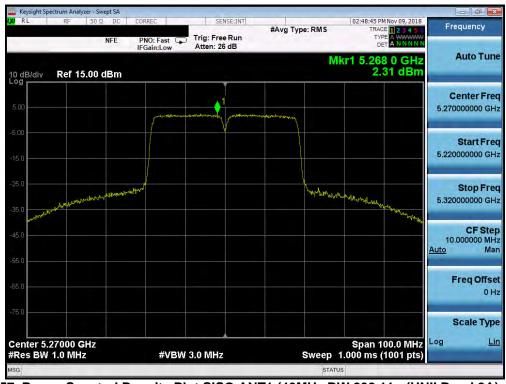
Plot 7-155. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 106 of 242
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Keysight Spectrum Analyzer - Swept SA				the second second second	
KA RL RF 50Ω DC NFE	PNO: Fast	SENSE INT	#Avg Type: RMS	05:42:51 PM Dec 27, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref 15.00 dBm	IFGain:Low	Atten: 26 dB	Mk	r1 5.323 40 GHz 4.59 dBm	Auto Tune
5.00	mangamen	marine and the	and the function of the second		Center Freq 5,320000000 GHz
-5.00					Start Freq 5.295000000 GHz
-25.0	wait		L. L. Walter	Valler right or rated when a	Stop Freq 5.345000000 GHz
-45.0				- Traffic	CF Step 5.000000 MHz <u>Auto</u> Man
-65,0					Freq Offset 0 Hz
-75.0 Center 5.32000 GHz					Scale Type Log <u>Lin</u>
#Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep	1.000 ms (1001 pts)	

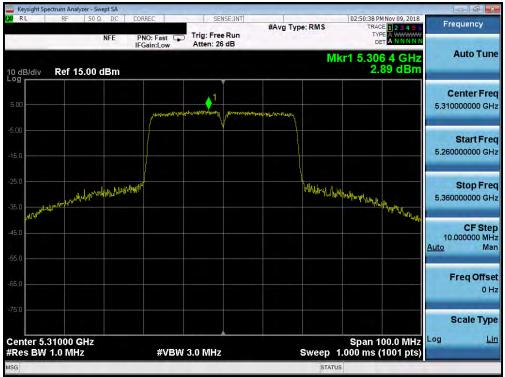
Plot 7-156. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 64)



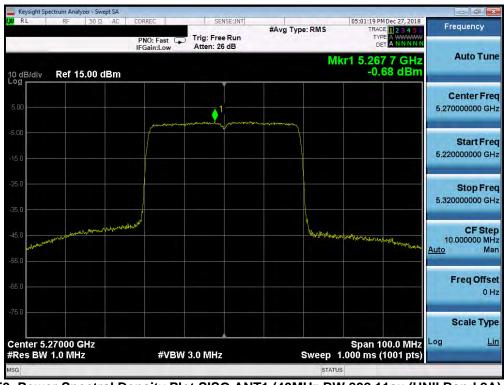
Plot 7-157. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 107 of 242
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Plot 7-158. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)



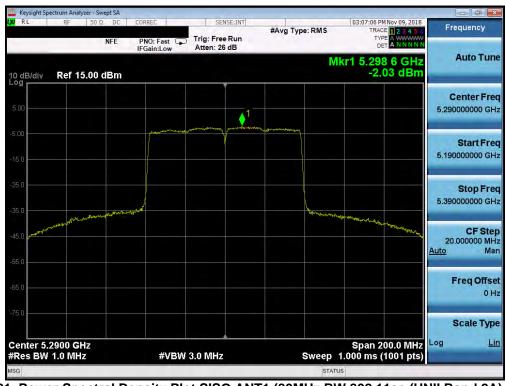
Plot 7-159. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 108 of 243
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Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC SENSE:INT		05:02:08 PM Dec 27, 2018	
	PNO: Fast 🕞 Trig: Free Run IFGain:Low Atten: 26 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
0 dB/div Ref 15.00 dBm	ii Gameon	M	kr1 5.315 1 GHz -0.54 dBm	Auto Tune
5.00		1		Center Fred 5.310000000 GH
5.00				Start Free 5.260000000 GH
35.0				Stop Fre 5,36000000 GH
15.0	une and a second se	manimus	Ungerstand with manager	CF Stej 10.000000 MH <u>Auto</u> Ma
36.0				Freq Offse 0 H
Center 5.31000 GHz				Scale Type Log <u>Li</u> i
Res BW 1.0 MHz	#VBW 3.0 MHz	sweep	1.000 ms (1001 pts)	

Plot 7-160. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)



Plot 7-161. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept					
ΧÚ RL RF 50 Ω	AC CORREC PNO: Fast	SENSE(INT Trig: Free Run Atten: 26 dB	#Avg Type: RMS	05:11:08 PM Dec 27, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Ref 15.00 dE		Julen 20 ub	М	kr1 5.301 4 GHz -3.62 dBm	Auto Tune
5.00					Center Fred 5,290000000 GH;
15.0	(market Married	ingeneration and an and a second s			Start Free 5.190000000 GH
:5.0					Stop Fre 5.390000000 GH
15.0	server which		homen	and and the second and the	CF Ste 20.000000 MH <u>Auto</u> Ma
55.0					Freq Offse 0 H
75.0 Center 5.2900 GHz Res BW 1.0 MHz	#VBW:	3.0 MHz	Sween	Span 200.0 MHz 1.000 ms (1001 pts)	Scale Typ Log <u>Li</u>
ISG			STATU		

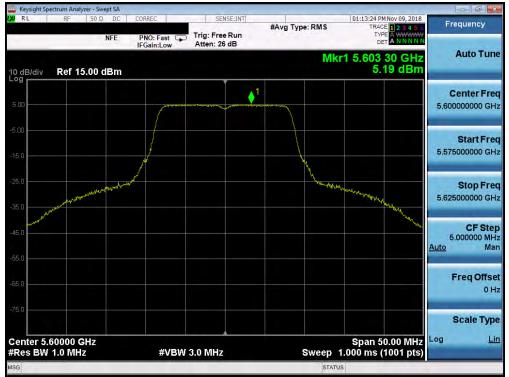
Plot 7-162. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2A) - Ch. 58)



Plot 7-163. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 110 of 212
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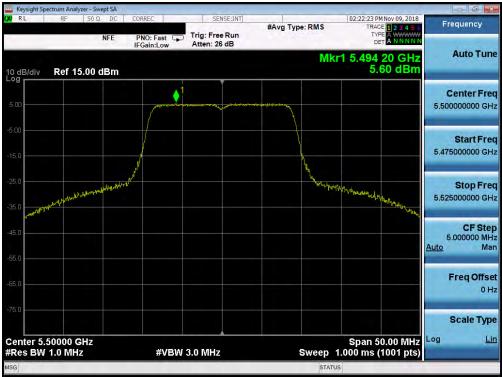
Plot 7-164. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) - Ch. 120)



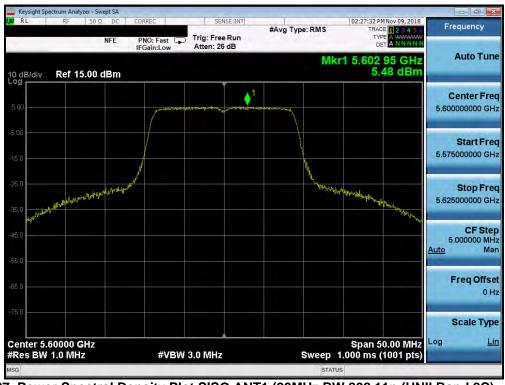
Plot 7-165. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 111 of 242
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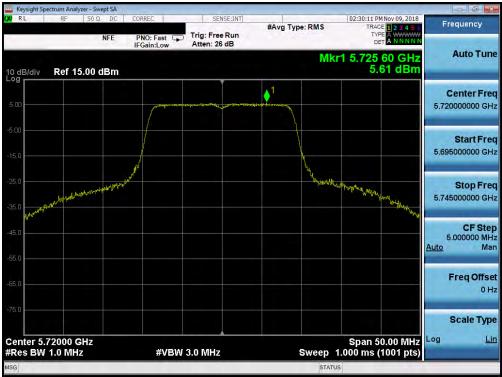
Plot 7-166. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)



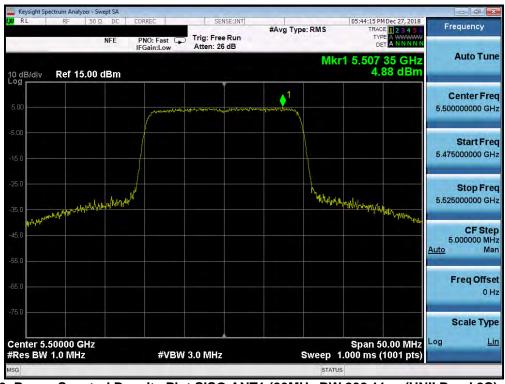
Plot 7-167. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 110 of 010
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Plot 7-168. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)



Plot 7-169. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 112 of 242
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Keysight Spectrum Analyzer - Swept SA					
RL RF 50Ω AC	CORREC PNO: Fast	SENSE INT	#Avg Type: RMS	05:26:04 PM Dec 27, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
dB/div Ref 15.00 dBm 4.78 dBm					Auto Tun
.00	for a relevant of the	man man and a second second	-		Center Fre 5,600000000 GH
15.0					Start Fre 5.575000000 GH
25.0 35.0 			howand	phillengenergengengengengengengenge	Stop Fre 5.625000000 GH
(5.0 (5.0 (5.0 (5.0 (5.0 (5.0 (5.0 (5.0					CF Ste 5.000000 MH Auto Ma
5.0					Freq Offs 0 H
250 250 250 250 250 250 250 250 250 250	#VBW :	3 0 MHz	Sweep	Span 50.00 MHz 1.000 ms (1001 pts)	Scale Typ Log <u>L</u>
SG	#VE97		STAT		

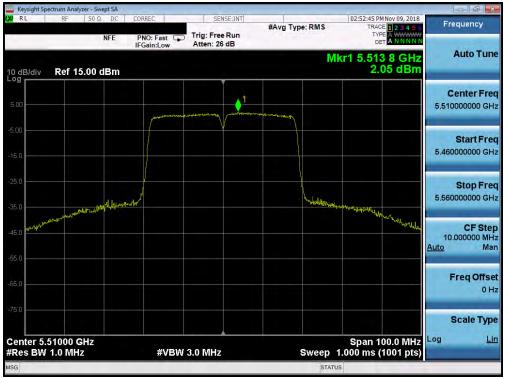
Plot 7-170. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 120)



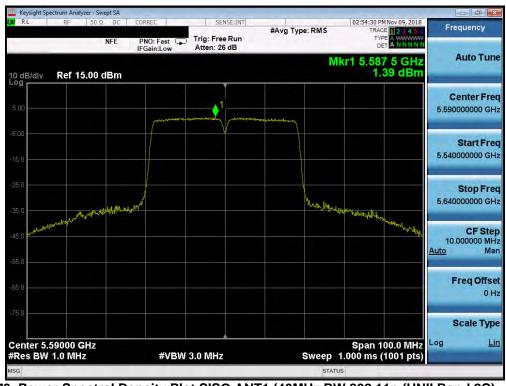
Plot 7-171. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 114 of 243
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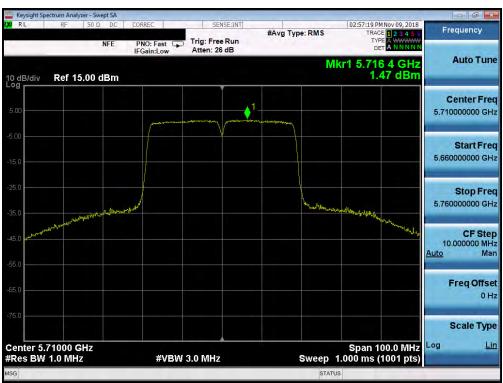
Plot 7-172. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 102)



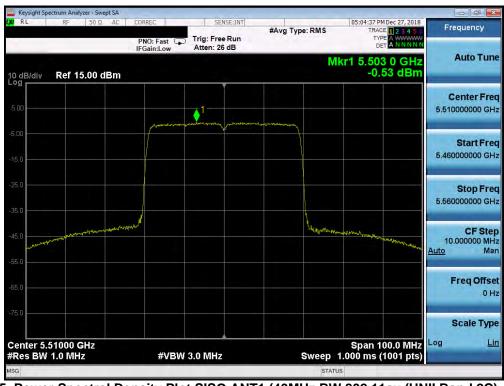
Plot 7-173. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-174. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)



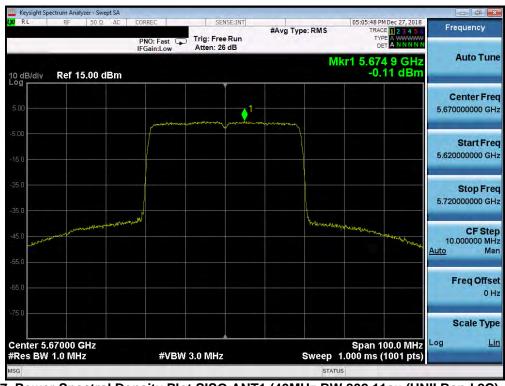
Plot 7-175. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 116 of 242
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Keysight Spectrum Analyzer - Swept SA			I		o đ 🗙
RL RF 50 Q AC	PNO: Fast	SENSE(INT Trig: Free Run Atten: 26 dB	#Avg Type: RMS	05:05:11 PM Dec 27, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
0 dB/div Ref 15.00 dBm	I Galilleow		М	kr1 5.543 9 GHz -0.20 dBm	Auto Tune
5.00	jummun	1-	nerre man		Center Fred 5.550000000 GH
5.00					Start Free 5.500000000 GH:
15.0					Stop Free 5.600000000 GH
15.0	¹		worknow	and and a second and	CF Step 10.000000 MH <u>Auto</u> Mar
55.0					Freq Offse 0 H
2500 CHz Center 5.55000 CHz Res BW 1.0 MHz	#VBW 3	.0 MHz	Sweep	Span 100.0 MHz 1.000 ms (1001 pts)	Scale Type Log <u>Lir</u>
SG			STAT		

Plot 7-176. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)



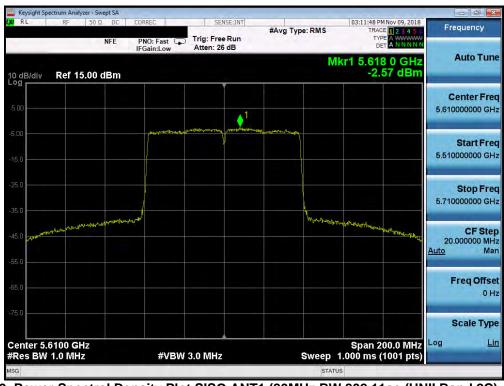
Plot 7-177. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-178. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)



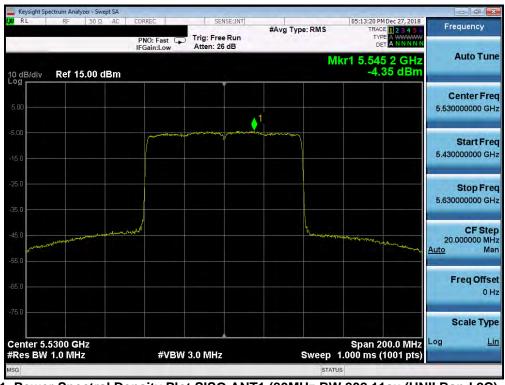
Plot 7-179. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 119 of 242
1M1811120202-06.A3L	10/31/2018-1/9/2019	Portable Handset		Page 118 of 243
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Keysight Spectrum Analyzer - Swe		-		Trate The second second	- 5 -
XU RL RF 50 Ω	AC CORREC	SENSE:INT	#Avg Type: RMS	06:25:02 PM Jan 09, 2019 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div Ref 15.00 d	IFGain:Low	Atten: 26 dB	Mk	r1 5.696 0 GHz -2.765 dBm	Auto Tune
5.00					Center Freq 5.69000000 GHz
-5.00		and the found to be a second to be a			Start Freq 5.590000000 GHz
25.0	an gan an a should		Murandred out	worker with muser where the	Stop Fred 5.790000000 GHz
45.0				- Sharkaryaran	CF Step 20.000000 MH: Auto Mar
65,0					Freq Offset 0 Hz
-75.0 Center 5.6900 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 1	Span 200.0 MHz 000 ms (1001 pts)	Scale Type Log <u>Lir</u>
MSG			STATUS		

Plot 7-180. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)



Plot 7-181. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 119 of 243
1M1811120202-06.A3L	10/31/2018-1/9/2019	Portable Handset	Handset	
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Keysight Spectrum Analyzer - Swept S		CENCE THE			- ē ×
RL RF 50 Ω A	C CORREC PNO: Fast C	SENSE(INT Trig: Free Run Atten: 26 dB	#Avg Type: RMS	05:14:02 PM Dec 27, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
0 dB/div Ref 15.00 dBr		Julen 20 ub	М	kr1 5.622 8 GHz -4.29 dBm	Auto Tune
5.00					Center Free 5,610000000 GH
15.0	(server de la composition de		Carlos And Andrew		Start Fre 5.510000000 GH
95.0					Stop Fre 5.710000000 GH
5.0	and the second sec		him	a should all all any wanter the	CF Ste 20.000000 MH Auto Ma
5.0					Freq Offs 0 H
5:0 Center 5.6100 GHz Res BW 1.0 MHz	#VBW :	3.0 MHz	Sweep	Span 200.0 MHz 1.000 ms (1001 pts)	Scale Typ
SG	_		STATU		

Plot 7-182. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 122)



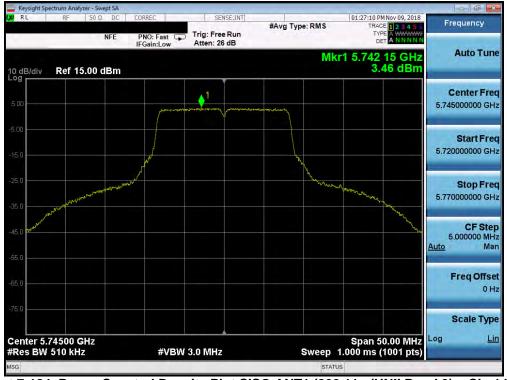
Plot 7-183. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 120 of 242	
1M1811120202-06.A3L	10/31/2018-1/9/2019	Portable Handset		Page 120 of 243	
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	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
	5745	149	а	6	3.46	30.0	-26.54
	5785	157	а	6	3.67	30.0	-26.33
	5825	165	а	6	3.56	30.0	-26.44
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	3.24	30.0	-26.76
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	3.68	30.0	-26.32
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	3.28	30.0	-26.72
3	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	0.59	30.0	-29.41
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	1.05	30.0	-28.95
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	1.95	30.0	-28.05
	5755	151	n (40MHz)	13.5/15 (MCS0)	-0.46	30.0	-30.46
	5795	159	n (40MHz)	13.5/15 (MCS0)	-0.38	30.0	-30.38
	5755	151	ax (40MHz)	13.5/15 (MCS0)	-2.96	30.0	-32.96
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-3.19	30.0	-33.19
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-1.72	30.0	-31.72
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-3.35	30.0	-33.35

Table 7-20. Band 3 Conducted Power Spectral Density Measurements SISO ANT1



Plot 7-184. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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RL RF	50 Ω DC	CORREC	SENSE:INT		01:34:46 PM Nov 09, 2018	
	NFE	PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 26 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 0 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 15.0	00 dBm			Mk	r1 5.787 45 GHz 3.67 dBm	Auto Tune
5,00		- Annon and a second	1			Center Free 5.785000000 GH
15,0		- Jan		ww		Start Free 5.760000000 GH
25.0 35.0	mann	and the second s			marine way way	Stop Free 5.810000000 GH
45.0						CF Ste 5.000000 MH <u>Auto</u> Ma
35.0						Freq Offse 0 H
75.0 Center 5.78500 GH	z				Span 50.00 MHz	Scale Type
Res BW 510 kHz		#VBW	3.0 MHz	Sweep	1.000 ms (1001 pts)	1
G				STATU	JS	

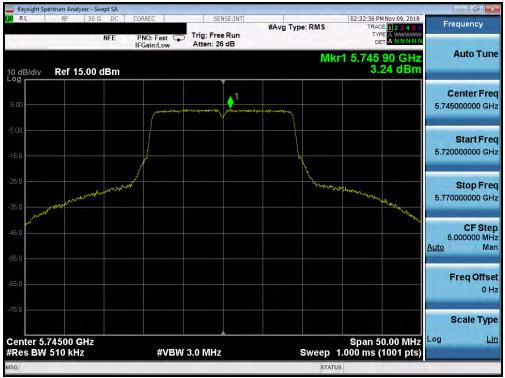
Plot 7-185. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 157)



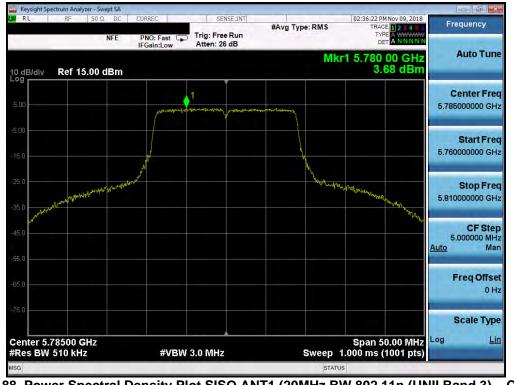
Plot 7-186. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 165)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 040
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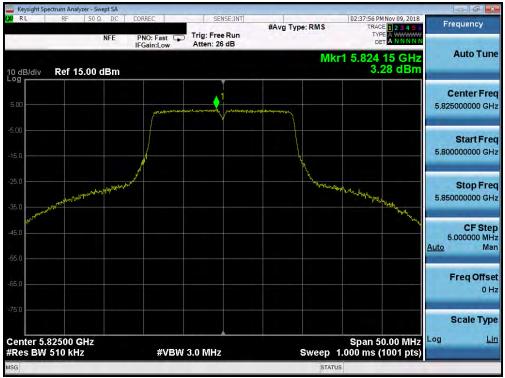
Plot 7-187. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



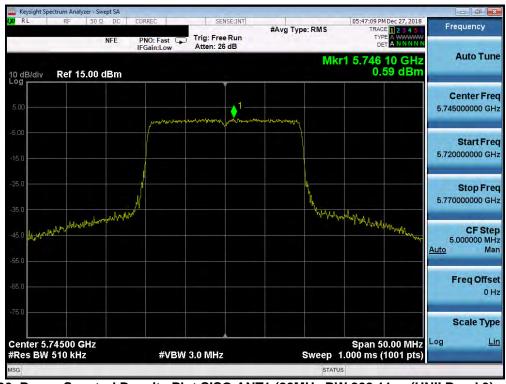
Plot 7-188. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 102 of 040
1M1811120202-06.A3L	10/31/2018-1/9/2019	10/31/2018-1/9/2019 Portable Handset		Page 123 of 243
© 2019 PCTEST Engineering Lab	V 8.8 11/19/2018			





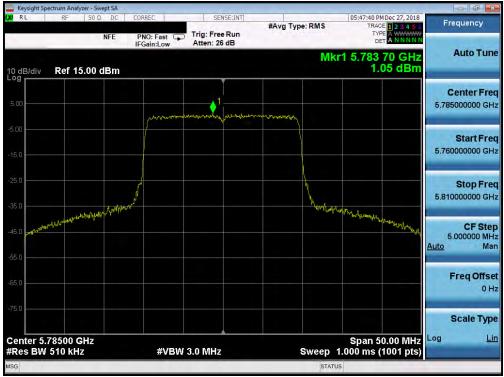
Plot 7-189. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)



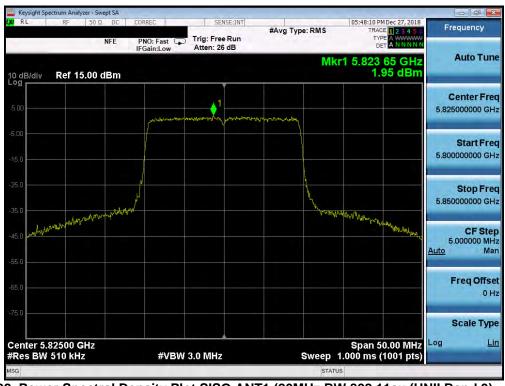
Plot 7-190. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-191. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



Plot 7-192. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 165)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-193. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



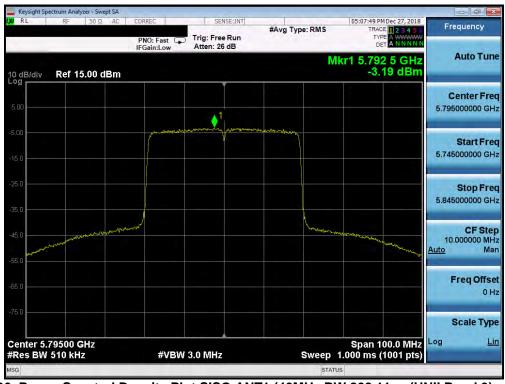
Plot 7-194. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 100 of 040
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Keysight Spectrum Analyzer - Swept SA		1	
α RL RF 50Ω AC	CORREC SENSE:INT PNO: Fast Trig: Free Run IFGain:Low Atten: 26 dB	05:07:13 PM Dec 27, 2018 #Avg Type: RMS TRACE 2 3 4 5 TYPE A DET A NNNN	Frequency
0 dB/div Ref 15.00 dBm		Mkr1 5.759 8 GHz -2.96 dBm	Auto Tun
5.00	 ↓ ↓ ↓		Center Fre 5.755000000 GH
5.00			Start Fre 5.705000000 G⊢
35.0			Stop Fre 5.805000000 GH
15.0		har well a be for some and a series of the s	CF Ste 10.000000 MH <u>Auto</u> Ma
5.0			Freq Offs 0 H
250 Center 5.75500 GHz Res BW 510 kHz	#VBW 3.0 MHz	Span 100.0 MHz Sweep 1.000 ms (1001 pts	Scale Typ Log <u>L</u>
SG		STATUS	

Plot 7-195. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



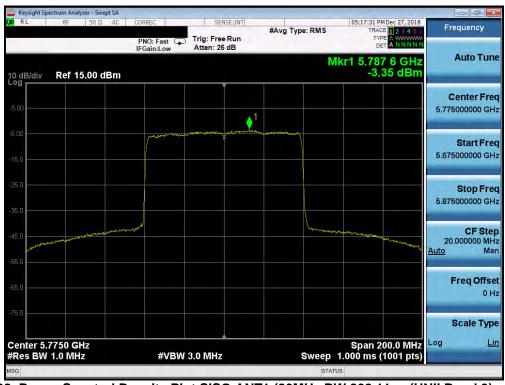
Plot 7-196. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Plot 7-197. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)



Plot 7-198. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 3) - Ch. 155)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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SISO Antenna-2 Power Spectral Density Measurements

	_				Measured	Max Power	
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]		Density [dBm/MHz]	Margin [dB]
	5180	36	а	6	6.40	11.0	-4.60
	5200	40	а	6	6.61	11.0	-4.39
	5240	48	а	6	6.75	11.0	-4.25
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.60	11.0	-4.40
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.73	11.0	-4.27
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.94	11.0	-4.06
Ξ	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	4.35	11.0	-6.65
Band	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	4.40	11.0	-6.60
ä	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	4.31	11.0	-6.69
	5190	38	n (40MHz)	13.5/15 (MCS0)	2.87	11.0	-8.13
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.86	11.0	-8.14
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-0.51	11.0	-11.51
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.29	11.0	-11.29
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	0.00	11.0	-11.00
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.43	11.0	-15.43
	5260	52	а	6	6.52	11.0	-4.48
	5280	56	а	6	6.49	11.0	-4.51
	5320	64	а	6	6.65	11.0	-4.36
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.49	11.0	-4.51
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.50	11.0	-4.50
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.13	11.0	-3.87
Band 2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	3.94	11.0	-7.06
	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	4.07	11.0	-6.93
	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	4.41	11.0	-6.59
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.54	11.0	-8.46
	5310	62	n (40MHz)	13.5/15 (MCS0)	2.44	11.0	-8.56
	5270	54	ax (40MHz)	13.5/15 (MCS0)	-0.48	11.0	-11.48
	5310	62	ax (40MHz)	13.5/15 (MCS0)	-0.63	11.0	-11.63
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-0.35	11.0	-11.35
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	-5.11	11.0	-16.11
	5500	100	а	6	6.64	11.0	-4.36
	5600	120	а	6	7.00	11.0	-4.00
	5720	144	а	6	7.14	11.0	-3.86
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.91	11.0	-4.09
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	7.08	11.0	-3.92
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.90	11.0	-4.10
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	3.88	11.0	-7.12
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	4.16	11.0	-6.84
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	3.80	11.0	-7.20
2C	5510	102	n (40MHz)	13.5/15 (MCS0)	2.78	11.0	-8.22
Band 2C	5590	118	n (40MHz)	13.5/15 (MCS0)	2.90	11.0	-8.10
Ba	5710	142	n (40MHz)	13.5/15 (MCS0)	2.63	11.0	-8.37
	5510	102	ax (40MHz)	13.5/15 (MCS0)	-0.85	11.0	-11.85
	5590	118	ax (40MHz)	13.5/15 (MCS0)	-0.97	11.0	-11.97
	5710	142	ax (40MHz)	29.3/32.5 (MCS0)	-0.71	11.0	-11.71
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	0.04	11.0	-10.96
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	0.12	11.0	-10.88
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-4.35	11.0	-15.35
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-4.75	11.0	-15.75
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-4.86	11.0	-15.86
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-6.07	11.0	-17.07
	- 7 04 0		a al Davisan	Spectral Den	· · · · · · · · · · · · · · · · · · ·		

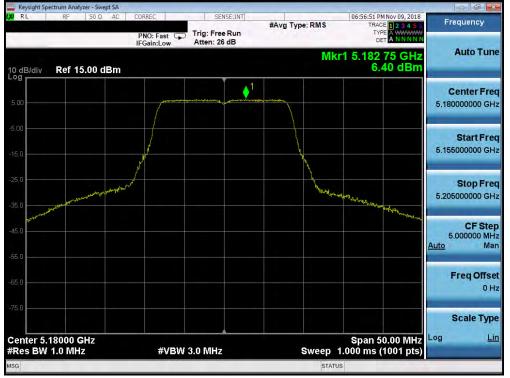
Table 7-21. Conducted Power Spectral Density Measurements SISO ANT2

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type: Portable Handset		Daga 120 of 242
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	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
	5180	36	а	6	6.40	-8.43	-2.03	10.0	-12.03
	5200	40	а	6	6.61	-8.34	-1.73	10.0	-11.73
	5240	48	а	6	6.75	-7.99	-1.24	10.0	-11.24
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.60	-8.43	-1.83	10.0	-11.83
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.73	-8.34	-1.61	10.0	-11.61
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.94	-7.99	-1.05	10.0	-11.05
1 1	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	4.35	-8.43	-4.08	10.0	-14.08
Band	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	4.40	-8.34	-3.94	10.0	-13.94
_	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	4.31	-7.99	-3.68	10.0	-13.68
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.86	-5.99	-3.13	12.0	-15.13
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-0.51	-4.99	-5.50	13.0	-18.50
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.29	-3.99	-4.28	14.0	-18.28
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	0.00	-2.99	-2.99	15.0	-17.99
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.43	-1.99	-6.42	16.0	-22.42

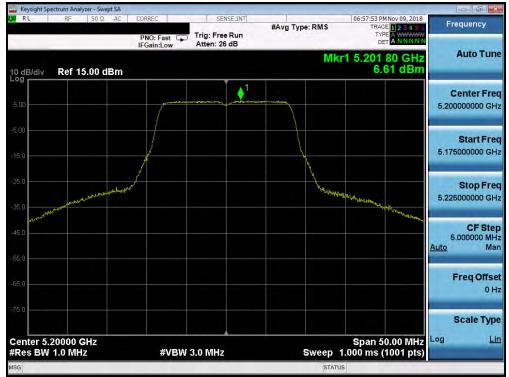
Table 7-22. Band 1 e.i.r.p. Conducted Power Spectral Density Measurements (ISED) SISO ANT2



Plot 7-199. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 1) - Ch. 36)

FCC ID: A3LSMG9750		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-200. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 1) - Ch. 40)



Plot 7-201. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 1) - Ch. 48)

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