

Keysight Spectrum Analyzer - Occupied BW RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	10:49:54 AM Ja	n 20 2010	
14 5032 DC	Cente	r Freq: 5.775000000 GH	Z	Radio Std: No		race/Detector
NFE	· · · · · · · · · · · · · · · · · · ·	FreeRun Avg Ho n:20 dB	old:>100/100	Radio Device:	DTC	
	#IFGain:Low #Atter	1: 20 06		Radio Device:	BIS	
0 dB/div Ref 20.00 dBm			_			
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60.0						Max Hol
0.0						ινιάχ ποι
enter 5.7750 GHz				Span 200		
Res BW 100 kHz	#	VBW 300 kHz		Sweep 19	.13 ms	Min Hol
	-	Total Power	24.0) dBm		
Occupied Bandwidt		Total Fower	24.0	UBIII		
75	.816 MHz					Detecto
T					Aut	Peak o Ma
Transmit Freq Error	42.912 kHz	% of OBW Po	wer 99	.00 %	Aut	0 <u>IVIa</u>
x dB Bandwidth	75.72 MHz	x dB	-6.	00 dB		

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 802.11ax (UNII Band 3) - Ch. 155)

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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	16.38
	5785	157	а	6	16.39
	5825	165	а	6	16.39
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.65
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.61
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.35
<u>.</u>	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	19.07
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	19.09
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	19.04
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.11
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.14
	5755	151	ax (40MHz)	13.5/15 (MCS0)	37.66
	5795	159	ax (40MHz)	13.5/15 (MCS0)	37.62
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.98
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	76.80

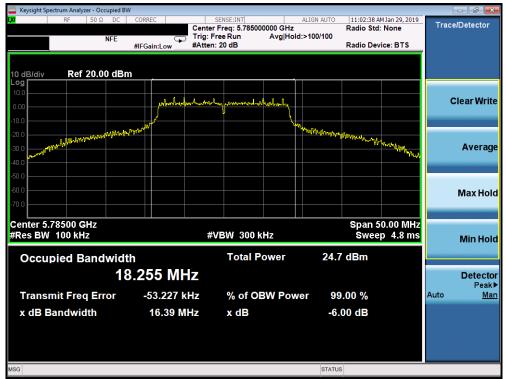
Table 7-5. Conducted Bandwidth Measurements SISO ANT2



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

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Plot 7-120. 6dB Bandwidth Plot SISO ANT2 (802.11a (UNII Band 3) - Ch. 165)

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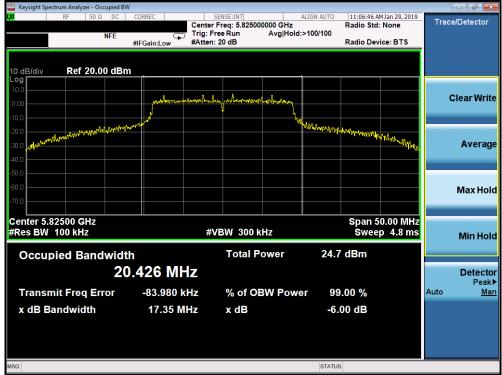
Plot 7-121. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



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)



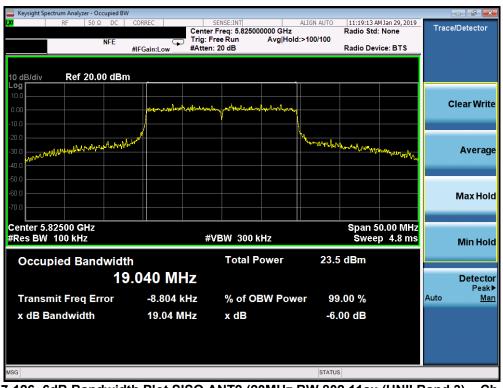
Plot 7-124. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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🔤 Keysight Spectrum Analyzer - Oc										
LXI RF 50 Ω	2 DC COR	REC		NSE:INT reg: 5.78500	0000 GH-	ALIGN AUTO	11:18:11 A Radio Std	M Jan 29, 2019	Trac	e/Detector
	NFE		Trig: Free	e Run		d:>100/100	Radio Stu	. None		
	#IFC	Gain:Low	#Atten: 2	0 dB			Radio Dev	rice: BTS		
10 dB/div Ref 20.0)0 dBm									
Log										
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-40.0										
-50.0										
-60.0										
-70.0										Max Hold
-70.0										
Center 5.78500 GHz							Span 5	0.00 MHz		
#Res BW 100 kHz			#VE	3W 300 k	Hz		Swee	p 4.8 ms		Min Hold
						00.7				
Occupied Band	dwidth			Total P	ower	23.7	dBm			
	19.0	61 MI	z							Detector
										Peak▶
Transmit Freq Er	ror	-7.719	(Hz	% of O	BW Pow	ver 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth		19.09 N	IHz	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 - Occu	upied BW				
LXI RF 50 Ω	DC CORREC	SENSE:INT Center Freg: 5.7550	ALIGN AUTO	11:11:24 AM Jan 29, 201 Radio Std: None	9 Trace/Detector
N	IFE G	Trig: Free Run	Avg Hold:>100/100		
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	
10 dB/div Ref 20.00	dBm				
Log 10.0					
		addressed a distance			Clear Write
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-10.0		<u> </u>			
-20.0	and all and		Malanta	nor have been more the	
-30.0				- managed and the state of the	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					Wax Holu
10.0					
Center 5.75500 GHz				Span 100.0 MH	
#Res BW 100 kHz		#VBW 300	kHz	Sweep 9.6 m	s Min Hold
Occupied Rendu	width	Total	Power 24	.6 dBm	
Occupied Bandy			24		
	36.483 M	HZ			Detector Peak►
Transmit Freq Erro	or -2.255	kHz % of C	BW Power	99.00 %	Auto <u>Man</u>
x dB Bandwidth	36.11	MHz xdB	-	6.00 dB	
MSG			STAT	rus	

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



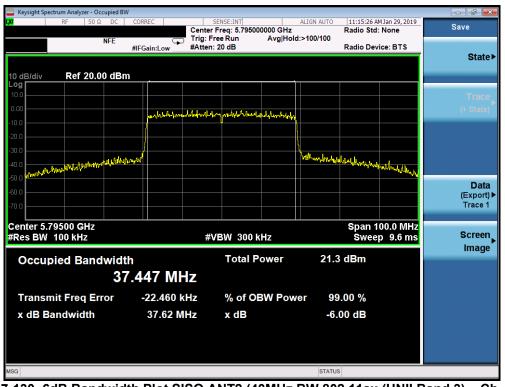
Plot 7-128. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W				- 5 💌
LX/ RF 50 Ω DC	CORREC	SENSE:INT er Freg: 5.755000000 GHz	ALIGN AUTO 11:14:42 A Radio Std	M Jan 29, 2019	Trace/Detector
NFE	Trig:	Free Run Avg Hol	d:>100/100	. None	
	#IFGain:Low #Atte	n: 20 dB	Radio Dev	rice: BTS	
10 dB/div Ref 20.00 dB	m				
Log					
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-10.0					
-20.0					_
-30.0	use all		moundanteresterest		Average
-40.0 -50.0	Morton .		10 million a march shirt of the	Workshow was	
-50.0				- Andrew Constrained	
-60.0					Max Hold
-70.0					
Center 5.75500 GHz		≇VBW 300 kHz		00.0 MHz	
#Res BW 100 kHz	#		Swee	p 9.6 ms	Min Hold
Occupied Bandwid	th	Total Power	21.9 dBm		
3	7.482 MHz				Detector Peak▶
Transmit Freq Error	-52.582 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	37.66 MHz	x dB	-6.00 dB		
	57.00 WITZ	X UD	-0.00 ub		
MSG			STATUS		

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



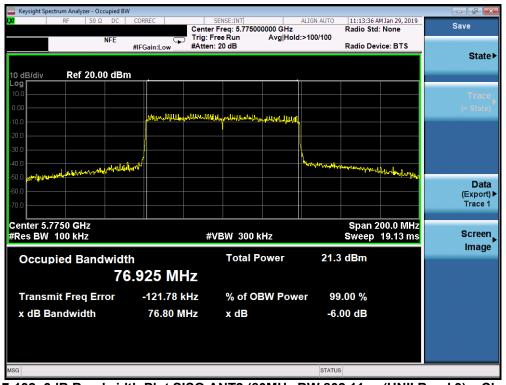
Plot 7-130. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

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Keysight Spectrum Analyzer - Occupied BV RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	11:12:35 AM Jan 29, 2019		
NF 30.32 DC		r Freg: 5.775000000 GHz		Radio Std: None	Trace/Det	ector
NFE	Trig: I	Free Run Avg Ho	old:>100/100			
	#IFGain:Low #Atter	n: 20 dB		Radio Device: BTS		
0 dB/div Ref 20.00 dBn	n					
.og						
10.0					Clear	- 14/-i+
).00	Darser shalled inducted the	UNE ANI KAR MILLAR STATION TO			Clear	wwrit
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and a stand and				the theory we have the work of the	~	renug
50.0						
60.0					Ma	x Hol
70.0					ina	
						_
enter 5.7750 GHz				Span 200.0 MHz		
Res BW 100 kHz	#	VBW 300 kHz		Sweep 19.13 ms	Mi	n Hol
		Total Power	24	dBm		
Occupied Bandwidt		Total Power	24.4	aBm		
75	5.857 MHz				De	etecto
						Peak
Transmit Freq Error	-74.238 kHz	% of OBW Po	wer 99	.00 %	Auto	Ma
x dB Bandwidth	75.98 MHz	x dB	-6.	00 dB		
G			STATUS	3		

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)

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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 (23.01dBm) or $10 + 10 \log_{10}B = 10 + 10 \log_{10}(21) = 23.22 \text{ dBm}$.

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(21.32) = 24.29dBm$. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W (30dBm) or 17 + 10 $\log_{10}B = 17 + 10 \log_{10}(21.32) = 30.29 dBm$.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(21.14) = 24.25dBm$. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W (30dBm) or 17 + 10 $\log_{10}B = 17 + 10 \log_{10}(21.14) = 30.25 dBm$.

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.



Figure 7-3. Test Instrument & Measurement Setup

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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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SISO Antenna-1 Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector		IEEE Transn		Conducted Power Limit	Conducted Power	
Ē				802.11a	802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]
÷.	5180	36	AVG	16.44	16.32	16.31	15.86	23.98	-7.54
i,	5200	40	AVG	17.63	17.54	17.99	15.93	23.98	-5.99
Bandwidth)	5220	44	AVG	17.66	17.52	17.93	15.76	23.98	-6.05
Ĕ	5240	48	AVG	17.54	17.51	17.92	15.81	23.98	-6.06
ñ	5260	52	AVG	17.63	17.63	17.98	15.66	23.98	-6.00
N	5280	56	AVG	17.68	17.59	17.99	15.62	23.98	-5.99
Î	5300	60	AVG	17.68	17.56	17.62	15.67	23.98	-6.30
(20MH;	5320	64	AVG	16.86	16.76	16.94	15.59	23.98	-7.04
50	5500	100	AVG	17.60	17.83	17.89	15.62	23.98	-6.09
	5600	120	AVG	17.90	17.80	17.84	15.58	23.98	-6.08
Hz	5620	124	AVG	17.84	17.70	17.72	15.59	23.98	-6.14
5G	5720	144	AVG	17.54	17.50	17.98	15.56	23.98	-6.00
LO LO	5745	149	AVG	17.56	17.94	17.56	15.96	30.00	-12.06
	5785	157	AVG	17.53	17.99	17.99	15.85	30.00	-12.01
	5825	165	AVG	17.68	17.73	17.71	15.55	30.00	-12.27

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

	Freq [MHz]		Channel Detector		Transmission	Conducted Power Limit	Conducted Power	
				802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]
P C	5190	38	AVG	13.96	13.98	13.64	23.98	-10.00
0MH idth	5230	46	AVG	16.94	16.93	13.59	23.98	-7.04
(40MH Iwidth)	5270	54	AVG	16.61	16.65	13.93	23.98	-7.33
<u>4</u> ¥	5310	62	AVG	14.31	14.39	13.78	23.98	-9.59
Hz	5510	102	AVG	15.16	15.27	13.83	23.98	-8.71
Ba Ba	5590	118	AVG	16.56	16.99	13.89	23.98	-6.99
50 E	5630	126	AVG	16.92	16.97	13.84	23.98	-7.01
	5710	142	AVG	16.76	16.73	13.58	23.98	-7.22
	5755	151	AVG	16.70	16.76	13.71	30.00	-13.24
	5795	159	AVG	16.58	16.52	13.58	30.00	-13.42

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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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	Freq [MHz]	Freq [MHz] Channel		IEEE Transm	nission Mode	Conducted Power Limit	Conducted Power
PH (802.11ac	802.11ax	[dBm]	Margin [dB]
5GHz (80MHz Bandwidth)	5210	42	AVG	12.98	12.99	23.98	-11.00
<u>8</u> <u>8</u>	5290	58	AVG	12.73	12.79	23.98	-11.25
5GHz Band	5530	106	AVG	13.55	12.51	23.98	-10.43
B .5G	5610	122	AVG	15.64	12.77	23.98	-8.34
	5690	138	AVG	15.51	12.94	23.98	-8.47
	5775	155	AVG	15.75	12.95	30.00	-14.25

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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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SISO Antenna-2 Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector		IEEE Transm		Conducted Power Limit	Conducted Power	
2				802.11a	802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]
÷	5180	36	AVG	16.15	16.11	16.06	15.81	23.98	-7.83
ž	5200	40	AVG	17.75	17.92	17.92	15.77	23.98	-6.06
Bandwidth)	5220	44	AVG	17.72	17.89	17.97	15.72	23.98	-6.01
Ĕ	5240	48	AVG	17.73	17.94	17.98	15.73	23.98	-6.00
a Ma	5260	52	AVG	17.54	17.72	17.75	15.55	23.98	-6.23
	5280	56	AVG	17.61	17.83	17.71	15.66	23.98	-6.15
Î	5300	60	AVG	17.61	17.81	17.90	15.68	23.98	-6.08
(20MHz	5320	64	AVG	16.64	16.71	16.53	15.65	23.98	-7.27
50	5500	100	AVG	17.73	17.88	17.87	15.79	23.98	-6.10
	5600	120	AVG	17.55	17.82	17.73	15.70	23.98	-6.16
Ηz	5620	124	AVG	17.50	17.82	17.67	15.62	23.98	-6.16
5G	5720	144	AVG	17.59	17.84	17.83	15.69	23.98	-6.14
L)	5745	149	AVG	17.86	17.62	17.65	15.98	30.00	-12.14
	5785	157	AVG	17.89	17.50	17.58	15.85	30.00	-12.11
	5825	165	AVG	17.59	17.73	17.68	15.60	30.00	-12.27

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

	Freq [MHz]		Detector	IEEE	Transmission	Conducted Power Limit	Conducted Power	
				802.11n	802.11ac	802.11ax	[dBm]	Margin [dB]
P (5190	38	AVG	13.99	13.87	13.80	23.98	-9.99
0MH; idth)	5230	46	AVG	16.92	16.96	13.90	23.98	-7.02
(40M Iwidtl	5270	54	AVG	16.64	16.77	13.57	23.98	-7.21
<u>4</u> ¥	5310	62	AVG	14.42	14.49	13.53	23.98	-9.49
Hz (and	5510	102	AVG	15.30	15.36	13.83	23.98	-8.62
Ba Ba	5590	118	AVG	16.67	16.79	13.57	23.98	-7.19
50	5630	126	AVG	16.73	16.82	13.55	23.98	-7.16
	5710	142	AVG	16.41	16.55	13.62	23.98	-7.43
	5755	151	AVG	16.94	16.89	13.73	30.00	-13.06
	5795	159	AVG	16.59	16.66	13.54	30.00	-13.34

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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	Freq [MHz]	Channel Detector		IEEE Transm	nission Mode	Conducted Power Limit	Conducted Power
(80MHz łwidth)				802.11ac	802.11ax	[dBm]	Margin [dB]
GHz (80MH Bandwidth)	5210	42	AVG	12.64	12.75	23.98	-11.34
<u>8</u> <u>8</u>	5290	58	AVG	12.66	12.88	23.98	-11.32
5GHz Band	5530	106	AVG	13.64	12.63	23.98	-10.34
B .5G	5610	122	AVG	15.54	12.74	23.98	-8.44
	5690	138	AVG	15.76	12.70	23.98	-8.22
	5775	155	AVG	15.98	12.91	30.00	-14.02

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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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MIMO Maximum Conducted Output Power Measurements

	Freq [MHz]	Channel	Detector	Conc	lucted Power [dBm]	Conducted Power Limit	Conducted Power
Ē	2			ANT1	ANT2	MIMO	[dBm]	Margin [dB]
÷.	5180	36	AVG	12.88	12.82	15.86	23.98	-8.12
i,	5200	40	AVG	17.63	17.75	20.70	23.98	-3.28
5	5220	44	AVG	17.66	17.72	20.70	23.98	-3.28
andwidth)	5240	48	AVG	17.54	17.73	20.65	23.98	-3.33
Ba	5260	52	AVG	17.63	17.54	20.60	23.98	-3.38
	5280	56	AVG	17.68	17.61	20.66	23.98	-3.32
Hz	5300	60	AVG	17.68	17.61	20.66	23.98	-3.32
(20M	5320	64	AVG	14.25	13.43	16.87	23.98	-7.11
50	5500	100	AVG	17.60	17.73	20.68	23.98	-3.30
	5600	120	AVG	17.90	17.55	20.74	23.98	-3.24
Hz	5620	124	AVG	17.84	17.50	20.68	23.98	-3.30
Ċ	5720	144	AVG	17.54	17.59	20.58	23.98	-3.40
ũ	5745	149	AVG	17.56	17.86	20.72	30.00	-9.28
	5785	157	AVG	17.53	17.89	20.72	30.00	-9.28
	5825	165	AVG	17.68	17.59	20.65	30.00	-9.35

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

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		Conducted Power Limit	Conducted Power	
2				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
Et .	5180	36	AVG	12.85	12.82	15.85	23.98	-8.13
, ic	5200	40	AVG	17.54	17.92	20.74	23.98	-3.24
5	5220	44	AVG	17.52	17.89	20.72	23.98	-3.26
andwidth	5240	48	AVG	17.51	17.94	20.74	23.98	-3.24
Ba	5260	52	AVG	17.63	17.72	20.69	23.98	-3.29
	5280	56	AVG	17.59	17.83	20.72	23.98	-3.26
Î	5300	60	AVG	17.56	17.81	20.70	23.98	-3.28
(20MHz	5320	64	AVG	13.73	13.09	16.43	23.98	-7.55
20	5500	100	AVG	17.83	17.88	20.87	23.98	-3.11
	5600	120	AVG	17.80	17.82	20.82	23.98	-3.16
Hz	5620	124	AVG	17.70	17.82	20.77	23.98	-3.21
Ċ	5720	144	AVG	17.50	17.84	20.68	23.98	-3.30
2	5745	149	AVG	17.94	17.62	20.79	30.00	-9.21
	5785	157	AVG	17.99	17.50	20.76	30.00	-9.24
	5825	165	AVG	17.73	17.73	20.74	30.00	-9.26

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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		Conducted Power Limit	Conducted Power	
2				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
÷.	5180	36	AVG	12.92	12.65	15.80	23.98	-8.18
i,	5200	40	AVG	17.99	17.92	20.97	23.98	-3.01
andwidth)	5220	44	AVG	17.93	17.97	20.96	23.98	-3.02
ŭ	5240	48	AVG	17.92	17.98	20.96	23.98	-3.02
Ba	5260	52	AVG	17.98	17.75	20.88	23.98	-3.10
N	5280	56	AVG	17.99	17.71	20.86	23.98	-3.12
	5300	60	AVG	17.62	17.90	20.77	23.98	-3.21
MO	5320	64	AVG	14.22	13.48	16.88	23.98	-7.10
(20	5500	100	AVG	17.89	17.87	20.89	23.98	-3.09
) г	5600	120	AVG	17.84	17.73	20.80	23.98	-3.18
Ï	5620	124	AVG	17.72	17.67	20.71	23.98	-3.27
Ċ	5720	144	AVG	17.98	17.83	20.92	23.98	-3.06
ŝ	5745	149	AVG	17.56	17.65	20.62	30.00	-9.38
	5785	157	AVG	17.99	17.58	20.80	30.00	-9.20
	5825	165	AVG	17.71	17.68	20.71	30.00	-9.29

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

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		Conducted Power Limit	Conducted Power	
Ē				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
۲ ۲	5180	36	AVG	12.71	12.69	15.71	23.98	-8.27
, i	5200	40	AVG	12.91	12.81	15.87	23.98	-8.11
5	5220	44	AVG	12.82	12.81	15.83	23.98	-8.15
Bandwidth)	5240	48	AVG	12.78	12.84	15.82	23.98	-8.16
a Ba	5260	52	AVG	13.09	12.49	15.81	23.98	-8.17
	5280	56	AVG	13.03	12.50	15.78	23.98	-8.20
Î	5300	60	AVG	13.16	12.55	15.88	23.98	-8.10
(20MHz	5320	64	AVG	13.19	12.54	15.89	23.98	-8.09
20	5500	100	AVG	12.82	12.27	15.56	23.98	-8.42
	5600	120	AVG	13.14	12.38	15.79	23.98	-8.19
Hz	5620	124	AVG	13.07	12.33	15.73	23.98	-8.25
5G	5720	144	AVG	12.91	12.14	15.55	23.98	-8.43
2 L	5745	149	AVG	12.97	12.70	15.85	30.00	-14.15
	5785	157	AVG	12.86	12.43	15.66	30.00	-14.34
	5825	165	AVG	12.59	12.27	15.44	30.00	-14.56

Table 7-15. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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	Freq [MHz]	eq [MHz] Channel		Conducted Power [dBm]			Conducted Power Limit	Conducted Power
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
₽ ⊂	5190	38	AVG	10.19	10.13	13.17	23.98	-10.81
0MH; idth)	5230	46	AVG	16.94	16.92	19.94	23.98	-4.04
(401 wid	5270	54	AVG	16.61	16.64	19.64	23.98	-4.34
(4) dw	5310	62	AVG	10.81	10.99	13.91	23.98	-10.07
	5510	102	AVG	12.53	11.96	15.26	23.98	-8.72
Ba Ba	5590	118	AVG	16.56	16.67	19.63	23.98	-4.35
50	5630	126	AVG	16.92	16.73	19.84	23.98	-4.14
	5710	142	AVG	16.76	16.41	19.60	23.98	-4.38
	5755	151	AVG	16.70	16.94	19.83	30.00	-10.17
	5795	159	AVG	16.58	16.59	19.60	30.00	-10.40

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

	Freq [MHz] Channel		Channel Detector		Conducted Power [dBm]			Conducted Power
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
₽ つ	5190	38	AVG	10.58	10.77	13.69	23.98	-10.29
(40MH; width)	5230	46	AVG	16.93	16.96	19.96	23.98	-4.02
<u>e</u>	5270	54	AVG	16.65	16.77	19.72	23.98	-4.26
<u>4</u> 2	5310	62	AVG	11.36	10.84	14.12	23.98	-9.86
hd	5510	102	AVG	12.43	11.74	15.11	23.98	-8.87
Ba Ba	5590	118	AVG	16.99	16.79	19.90	23.98	-4.08
50	5630	126	AVG	16.97	16.82	19.91	23.98	-4.07
	5710	142	AVG	16.73	16.55	19.65	23.98	-4.33
	5755	151	AVG	16.76	16.89	19.84	30.00	-10.16
	5795	159	AVG	16.52	16.66	19.60	30.00	-10.40

Table 7-17. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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	Freq [MHz] Channel		Iz] Channel Detector		Conducted Power [dBm]			Conducted Power
				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
P C	5190	38	AVG	10.40	10.77	13.60	23.98	-10.38
0MH; idth)	5230	46	AVG	10.45	10.83	13.65	23.98	-10.33
(40I Iwid	5270	54	AVG	10.74	10.33	13.55	23.98	-10.43
4) V	5310	62	AVG	10.66	10.34	13.51	23.98	-10.47
	5510	102	AVG	11.24	10.50	13.90	23.98	-10.08
Ва Ва	5590	118	AVG	10.79	10.20	13.51	23.98	-10.47
50 E	5630	126	AVG	10.94	10.19	13.59	23.98	-10.39
	5710	142	AVG	11.16	10.40	13.81	23.98	-10.17
	5755	151	AVG	10.33	10.11	13.23	30.00	-16.77
	5795	159	AVG	10.54	10.53	13.55	30.00	-16.45

Table 7-18. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Conducted Power [dBm]		dBm]	Conducted Power Limit	Conducted Power	
Hz (c	(80 MHz 5210 5290			ANT1	ANT2	MIMO	[dBm]	Margin [dB]
OM	5210	42	AVG	9.69	9.49	12.60	23.98	-11.38
(8) 1 vi	5290	58	AVG	9.63	8.63	12.17	23.98	-11.81
GHz (80MH Bandwidth)	5530	106	AVG	10.59	10.47	13.54	23.98	-10.44
5G Ba	5610	122	AVG	15.64	15.54	18.60	23.98	-5.38
	5690	138	AVG	15.51	15.76	18.65	23.98	-5.33
	5775	155	AVG	15.75	15.98	18.88	30.00	-11.12

Table 7-19. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

	Freq [MHz]	Channel	Detector	Conducted Power [dBm]		Conducted Power Limit	Conducted Power	
Ξ Έ	HZ (c			ANT1	ANT2	MIMO	[dBm]	Margin [dB]
OM	5210	42	AVG	9.76	9.87	12.83	23.98	-11.15
(8) 1 vi	5290	58	AVG	10.04	9.16	12.63	23.98	-11.35
5GHz (80MHz Bandwidth)	5530	106	AVG	9.97	9.78	12.89	23.98	-11.09
B 2G	5610	122	AVG	9.74	9.52	12.64	23.98	-11.34
	5690	138	AVG	9.45	9.23	12.35	23.98	-11.63
	5775	155	AVG	9.52	9.91	12.73	30.00	-17.27

Table 7-20. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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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.

Sample MIMO Calculation:

Assuming the average conducted power was measured to be 16.32 dBm for Antenna-1 and 16.11 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(16.32 dBm + 16.11 dBm) = (42.85 mW + 40.83 mW) = 83.68 mW = 19.23 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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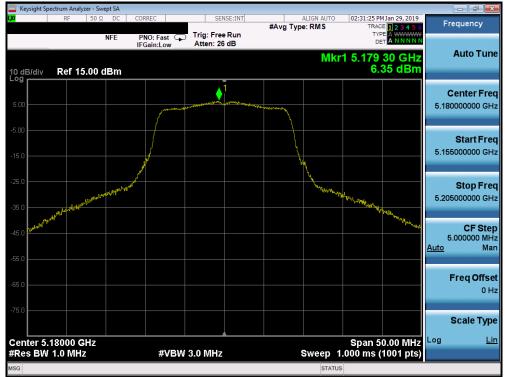
SISO Antenna-1 Power Spectral Density Measurements

	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	6.35	11.0	-4.65
	5200	40	а	6	5.30	11.0	-5.70
	5240	48	а	6	5.80	11.0	-5.20
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.40	11.0	-4.60
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	4.87	11.0	-6.13
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.48	11.0	-5.52
-	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	2.89	11.0	-8.11
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	3.11	11.0	-7.89
Ba	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	3.37	11.0	-7.63
	5190	38	n (40MHz)	13.5/15 (MCS0)	3.29	11.0	-7.71
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.57	11.0	-8.43
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-1.21	11.0	-12.21
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.86	11.0	-11.86
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-0.56	11.0	-11.56
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.63	11.0	-15.63
	5260	52	a	6	5.97	11.0	-5.03
	5280	56	а	6	5.91	11.0	-5.09
	5320	64	а	6	6.44	11.0	-4.56
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	5.56	11.0	-5.44
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.50	11.0	-5.50
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.01	11.0	-3.99
A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	3.48	11.0	-7.52
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	3.35	11.0	-7.65
Bar	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	3.57	11.0	-7.43
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.13	11.0	-8.87
	5310	62	n (40MHz)	13.5/15 (MCS0)	3.85	11.0	-7.15
	5270	54	ax (40MHz)	13.5/15 (MCS0)	-0.40	11.0	-11.40
	5310	62	ax (40MHz)	13.5/15 (MCS0)	-1.10	11.0	-12.10
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-0.51	11.0	-11.51
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	-4.98	11.0	-15.98
	5500	100	a	6	6.90	11.0	-4.10
	5600	120	а	6	5.59	11.0	-5.41
	5720	144	а	6	5.49	11.0	-5.51
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.68	11.0	-4.32
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	5.29	11.0	-5.71
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	5.27	11.0	-5.73
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	3.48	11.0	-7.52
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	2.89	11.0	-8.11
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	3.20	11.0	-7.80
N	5510	102	n (40MHz)	13.5/15 (MCS0)	3.51	11.0	-7.49
Band 2C	5590	118	n (40MHz)	13.5/15 (MCS0)	1.49	11.0	-9.51
Ba	5710	142	n (40MHz)	13.5/15 (MCS0)	2.19	11.0	-8.81
	5510	102	ax (40MHz)	13.5/15 (MCS0)	-0.64	11.0	-11.64
	5590	118	ax (40MHz)	13.5/15 (MCS0)	-1.04	11.0	-12.04
	5710	142	ax (40MHz)	13.5/15 (MCS0)	-1.17	11.0	-12.17
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-0.29	11.0	-11.29
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-2.18	11.0	-13.18
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.07	11.0	-13.07
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-4.92	11.0	-15.92
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-5.01	11.0	-16.01
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-4.65	11.0	-15.65
7 24				d Power Spec			

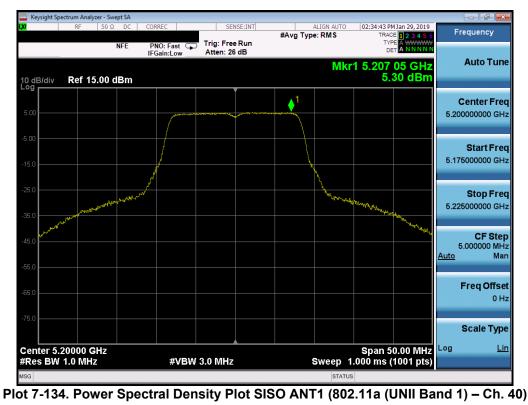
Table 7-21. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements SISO ANT1

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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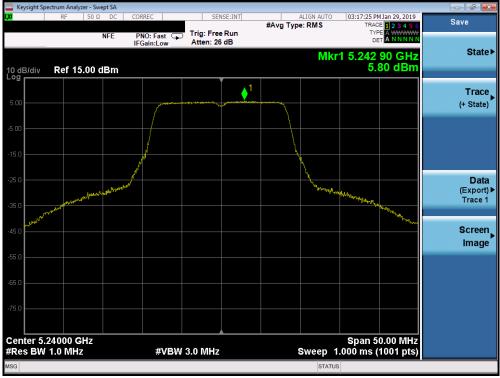


Plot 7-133. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 1) - Ch. 36)

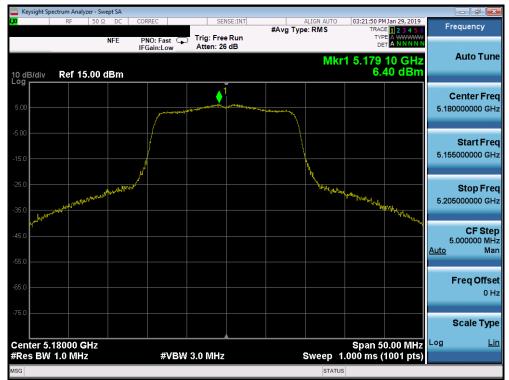


FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 100 of 259
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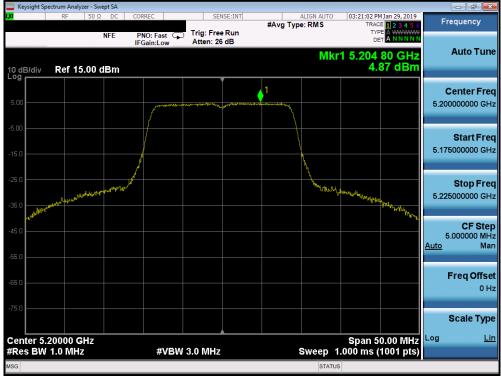
Plot 7-135. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 1) - Ch. 48)



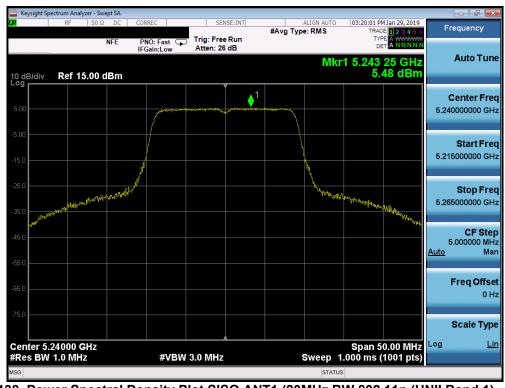
Plot 7-136. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 250	
1M1901100003-09.A3L	01/22/2019 - 03/25/2019	Portable Handset		Page 101 of 259	
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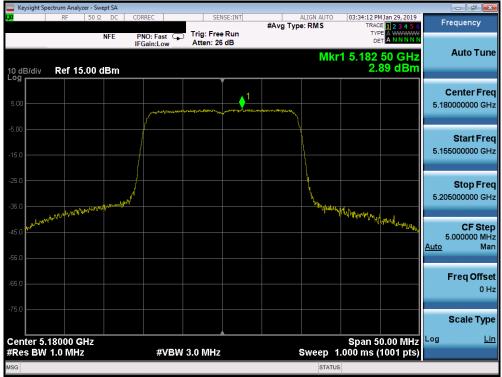
Plot 7-137. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



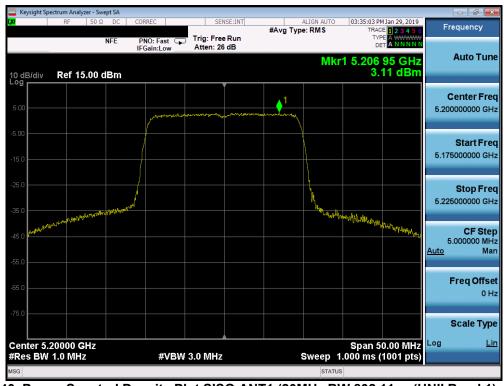
Plot 7-138. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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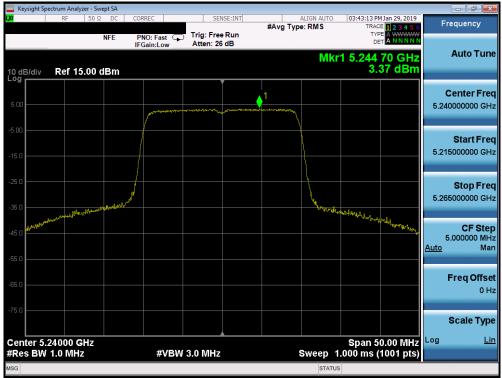
Plot 7-139. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)



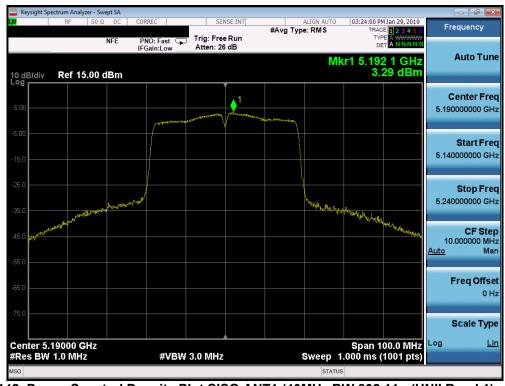
Plot 7-140. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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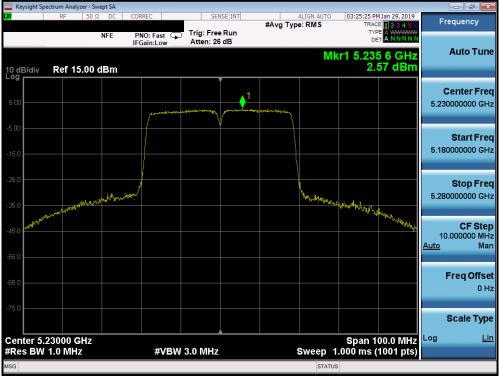
Plot 7-141. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)



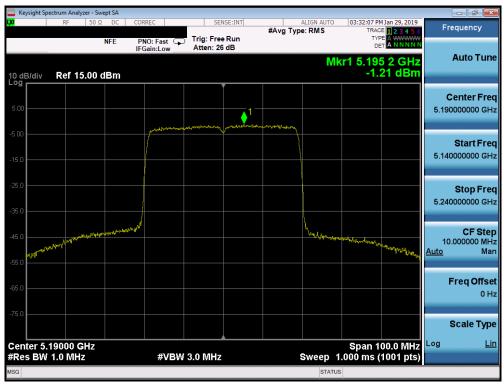
Plot 7-142. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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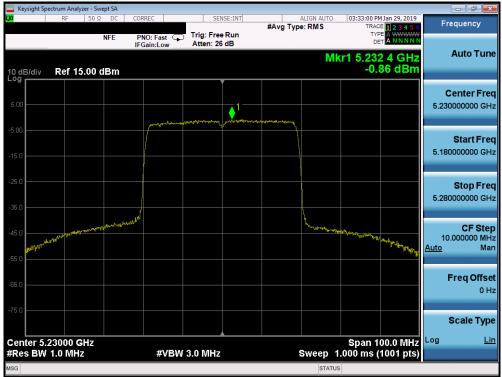
Plot 7-143. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



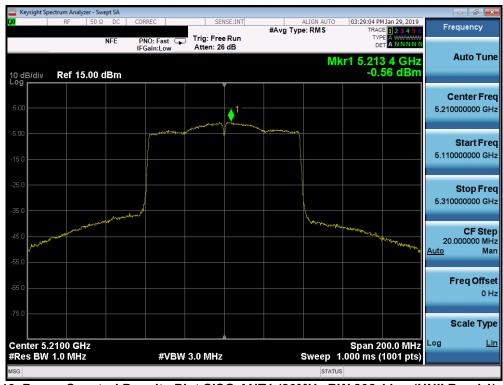
Plot 7-144. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 250
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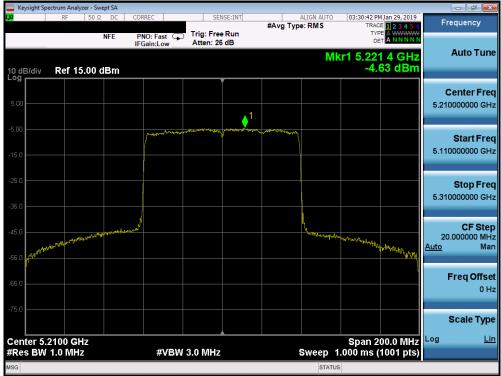
Plot 7-145. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



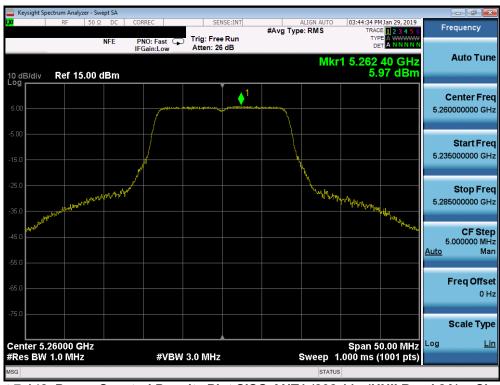
Plot 7-146. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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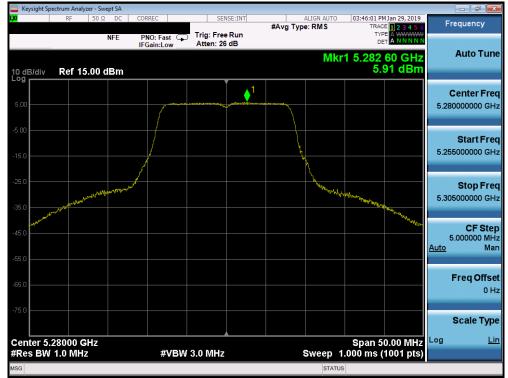
Plot 7-147. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



Plot 7-148. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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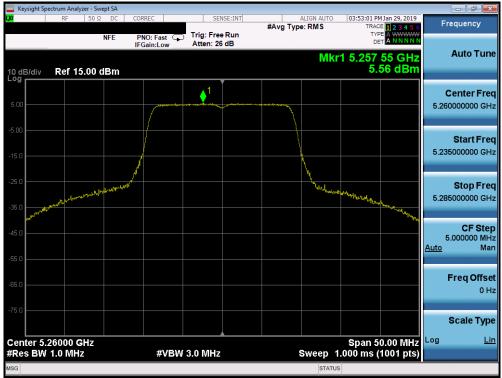
Plot 7-149. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 56)



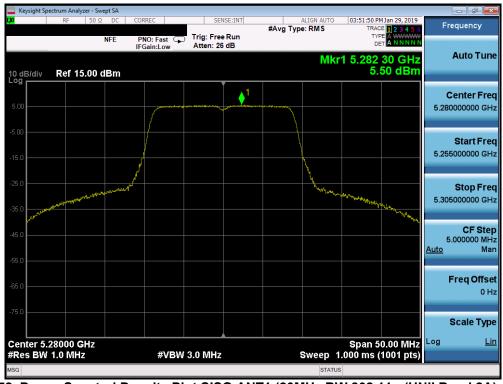
Plot 7-150. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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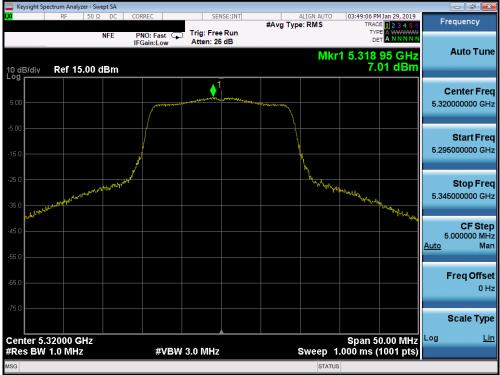
Plot 7-151. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



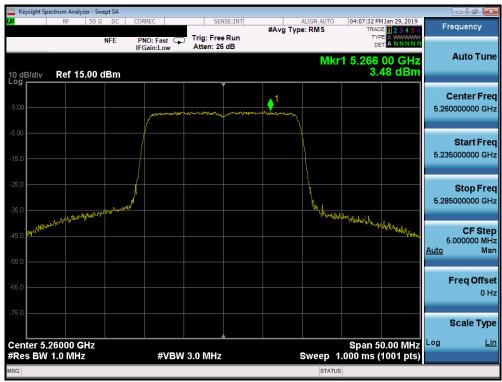
Plot 7-152. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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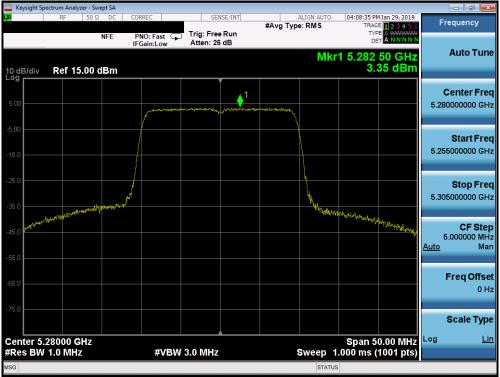
Plot 7-153. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)



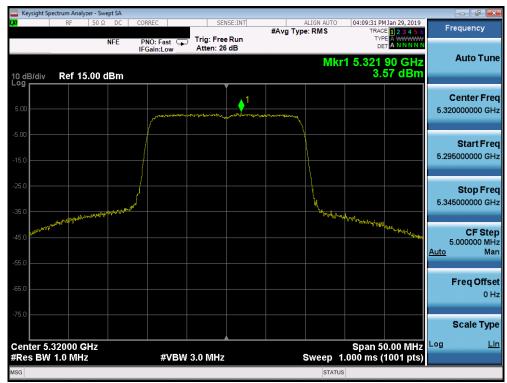
Plot 7-154. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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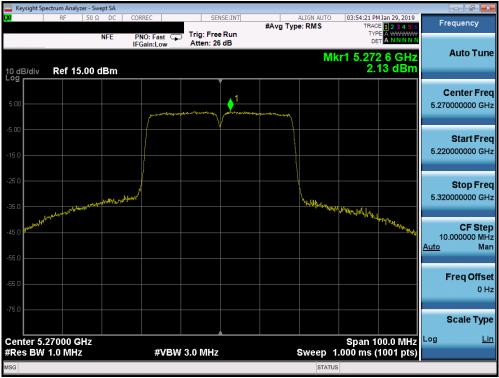
Plot 7-155. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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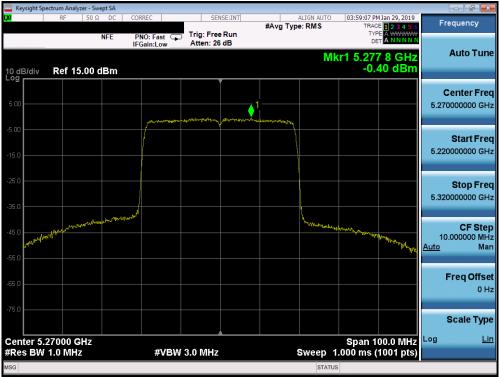
Plot 7-157. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)



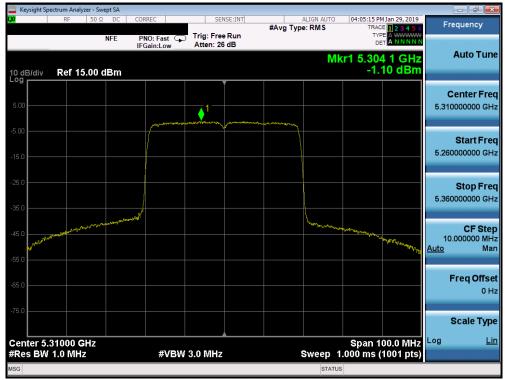
Plot 7-158. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-159. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



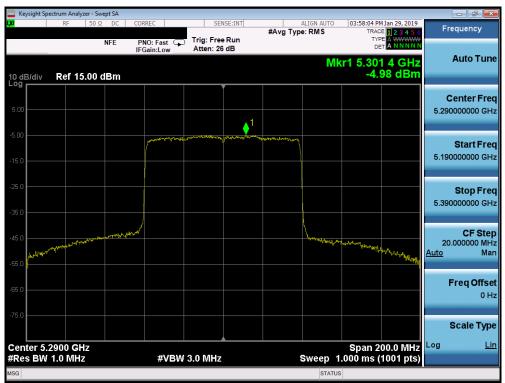
Plot 7-160. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-161. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)



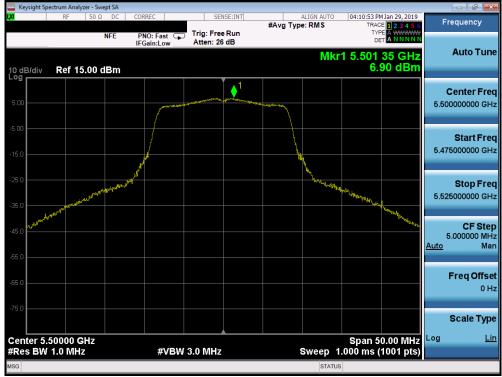
Plot 7-162. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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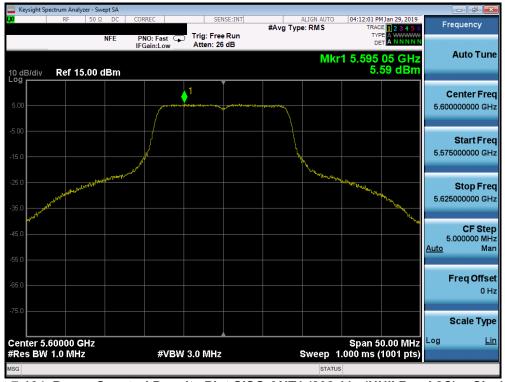
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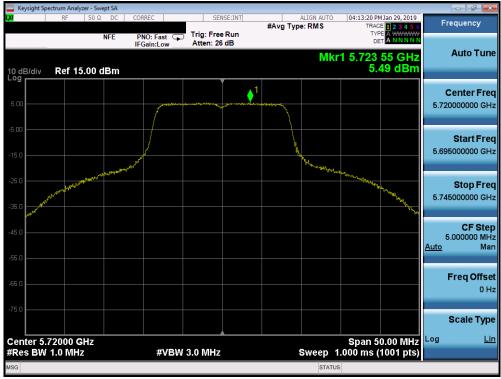
Plot 7-163. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) – Ch. 100)



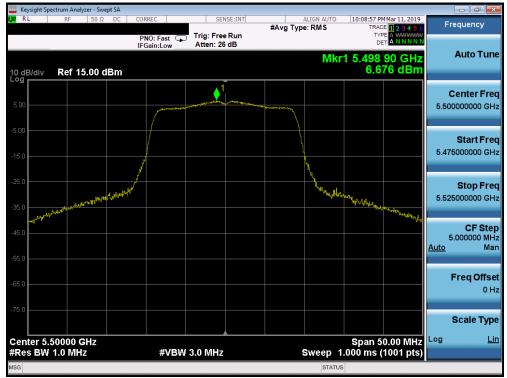
Plot 7-164. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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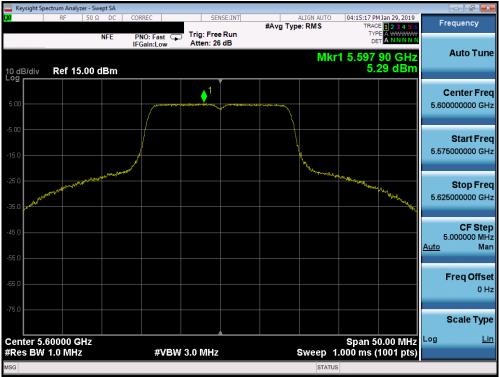
Plot 7-165. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 2C) - Ch. 144)



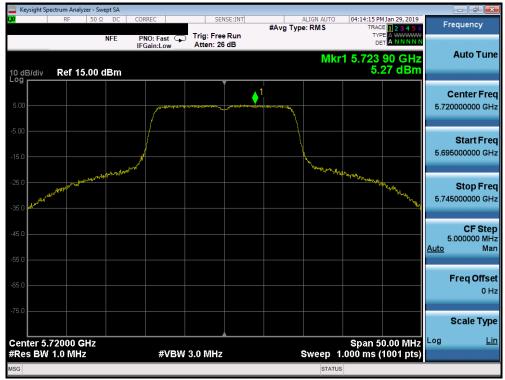
Plot 7-166. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 116 of 250		
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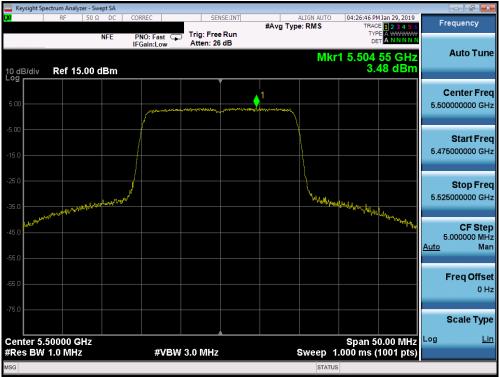
Plot 7-167. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)



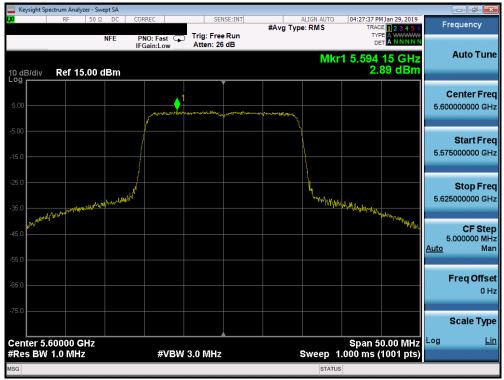
Plot 7-168. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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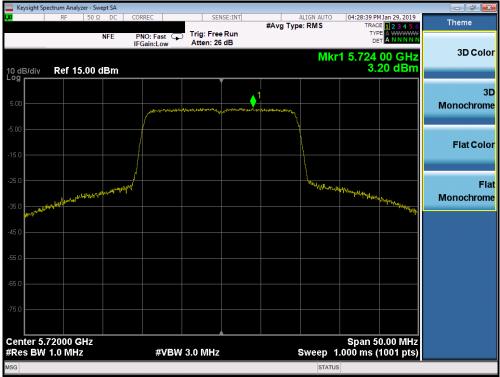
Plot 7-169. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 100)



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

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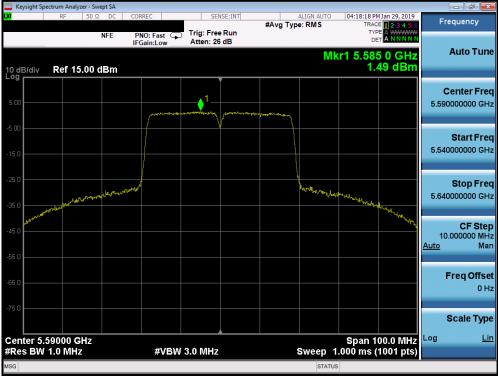
Plot 7-171. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 144)



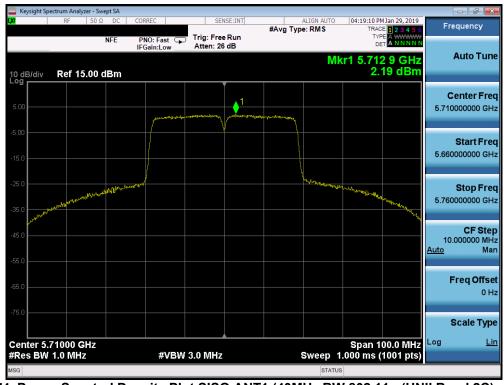
Plot 7-172. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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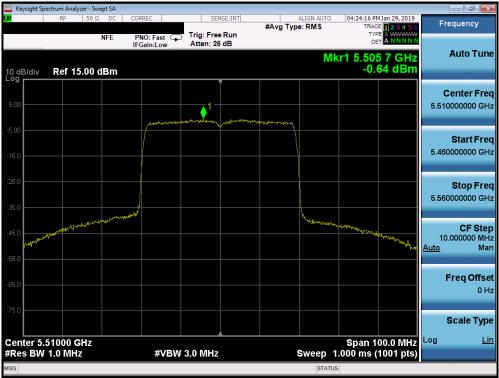
Plot 7-173. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)



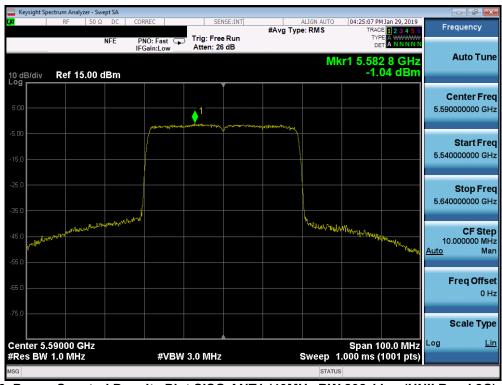
Plot 7-174. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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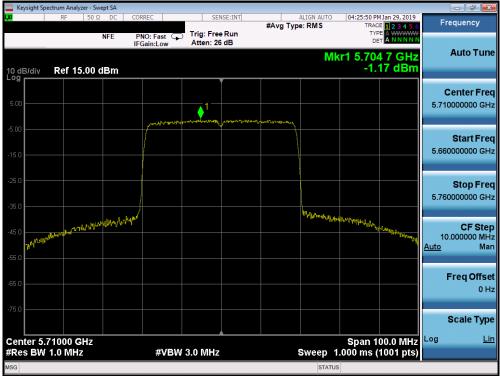
Plot 7-175. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)



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

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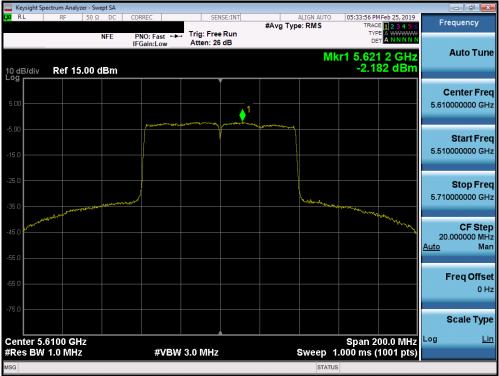
Plot 7-177. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)



Plot 7-178. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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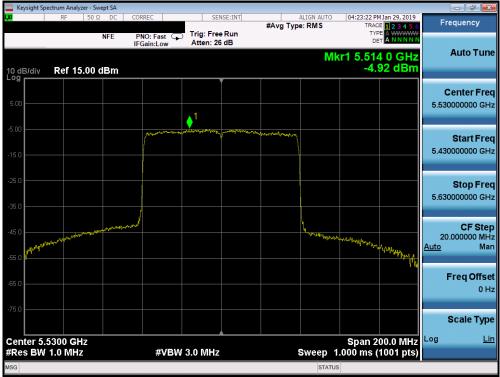
Plot 7-179. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)



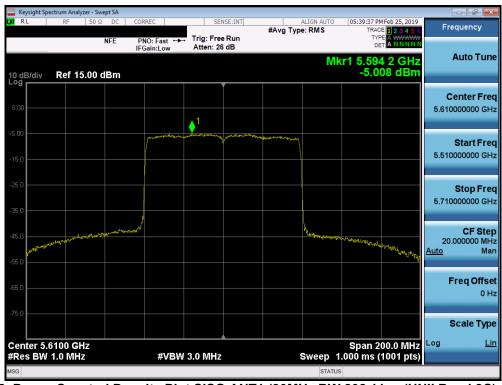
Plot 7-180. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 102 of 250
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Plot 7-181. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)



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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 124 of 250		
1M1901100003-09.A3L	100003-09.A3L 01/22/2019 - 03/25/2019 Portable Handset			Page 124 of 259		
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Keysight Sp	pectrum Analyz											
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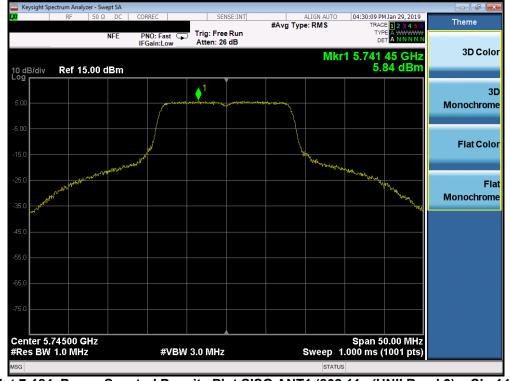
Plot 7-183. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 125 of 250	
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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	5.84	30.0	-24.16
	5785	157	а	6	6.14	30.0	-23.86
	5825	165	а	6	6.15	30.0	-23.85
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	6.01	30.0	-23.99
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	6.25	30.0	-23.75
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	5.73	30.0	-24.27
e	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	3.70	30.0	-26.30
Band	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	4.08	30.0	-25.92
ä	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	3.34	30.0	-26.66
	5755	151	n (40MHz)	13.5/15 (MCS0)	2.15	30.0	-27.85
	5795	159	n (40MHz)	13.5/15 (MCS0)	2.20	30.0	-27.80
	5755	151	ax (40MHz)	13.5/15 (MCS0)	-0.80	30.0	-30.80
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-0.71	30.0	-30.71
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-1.62	30.0	-31.62
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-4.60	30.0	-34.60

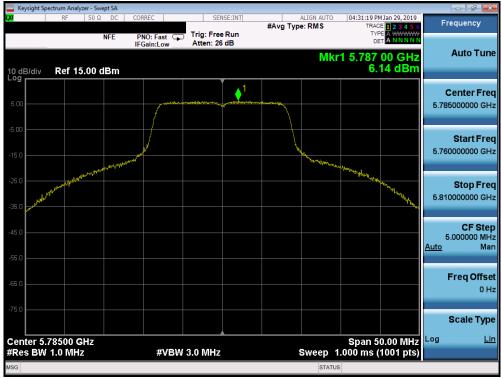
 Table 7-22. Band 3 Conducted Power Spectral Density Measurements SISO ANT1



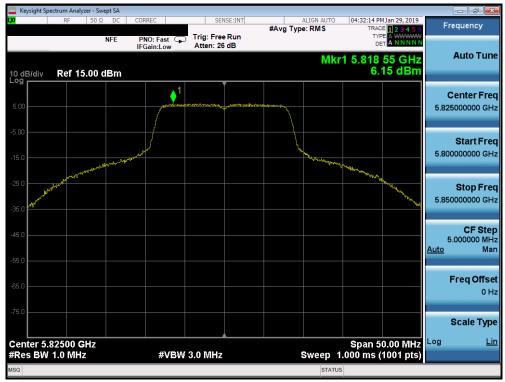
Plot 7-184. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 149)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 126 of 250
1M1901100003-09.A3L	01/22/2019 - 03/25/2019	1/22/2019 - 03/25/2019 Portable Handset		Page 126 of 259
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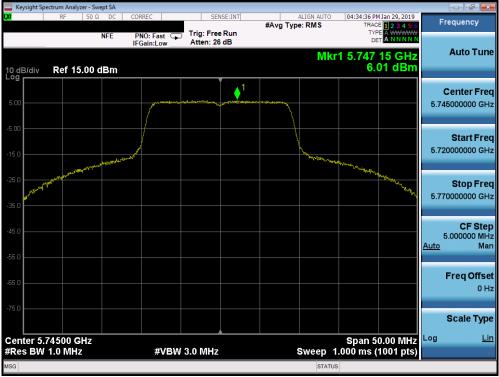
Plot 7-185. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) – Ch. 157)



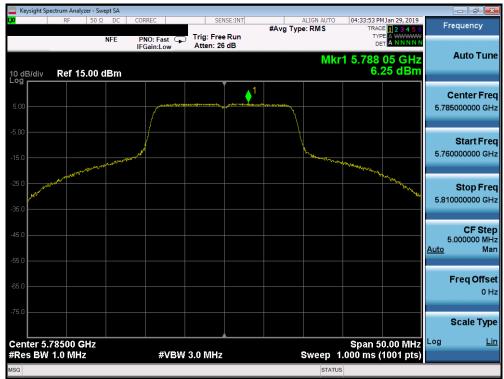
Plot 7-186. Power Spectral Density Plot SISO ANT1 (802.11a (UNII Band 3) - Ch. 165)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 107 of 050
1M1901100003-09.A3L	01/22/2019 - 03/25/2019 Portable Handset			Page 127 of 259
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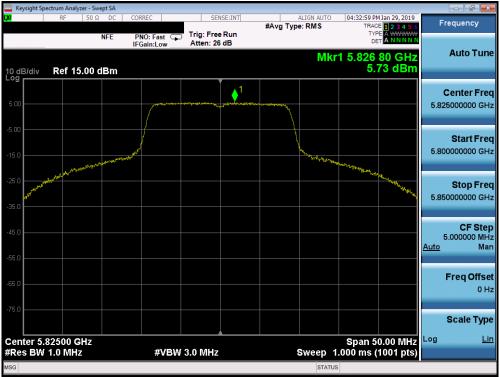
Plot 7-187. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 149)



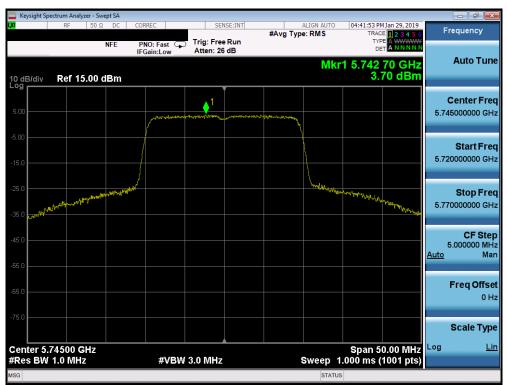
Plot 7-188. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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Plot 7-189. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11n (UNII Band 3) - Ch. 165)

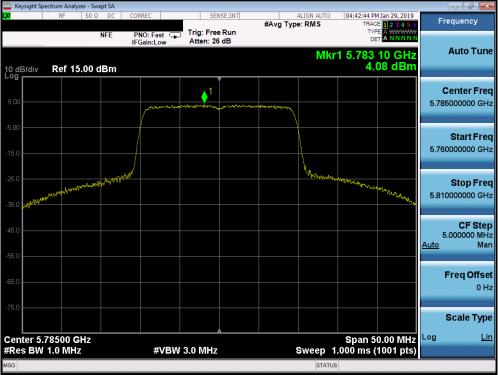


Plot 7-190. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 149)

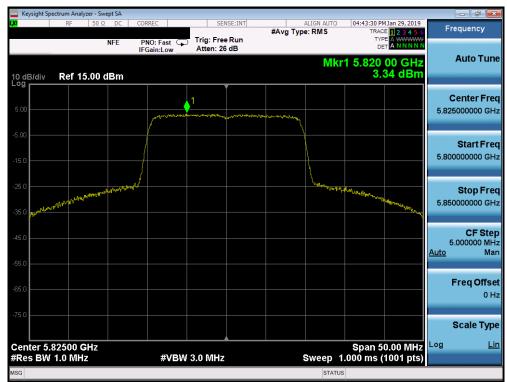
FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 129 of 259
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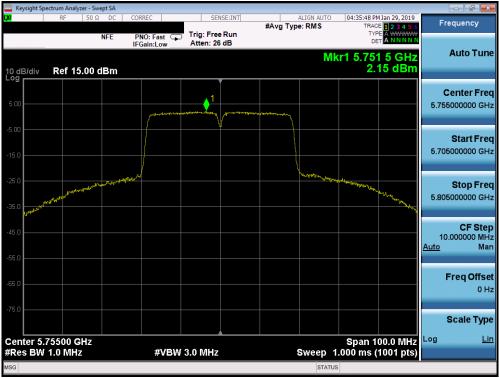
Plot 7-191. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax (UNII Band 3) - Ch. 157)



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

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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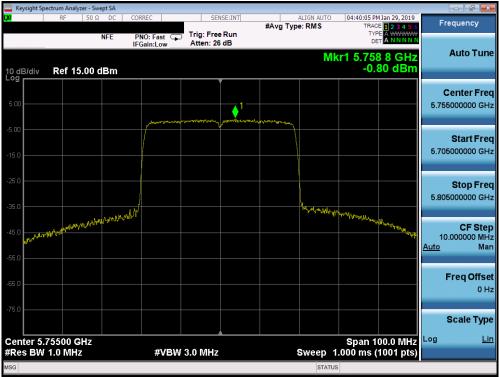
Plot 7-193. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 151)



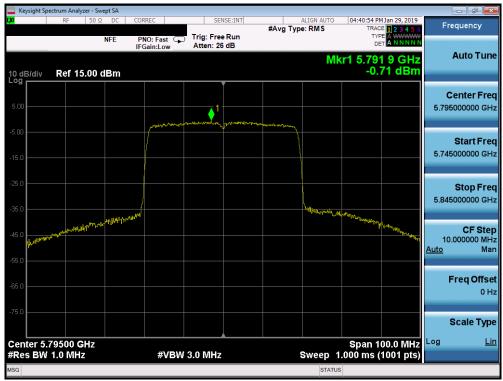
Plot 7-194. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11n (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Plot 7-195. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 151)



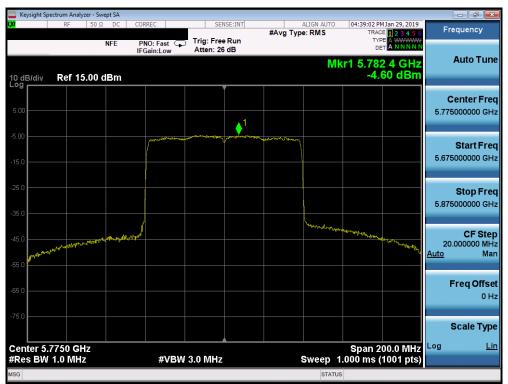
Plot 7-196. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax (UNII Band 3) - Ch. 159)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Sp	pectrum Analyzer									
L <mark>XI</mark>	RF	50 Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		4 Jan 29, 2019 E 1 2 3 4 5 6	Frequency
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-45.0										CF Step 20.000000 MHz
-55.0										<u>Auto</u> Man
-65.0										Freq Offset 0 Hz
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										Scale Type
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MSG							STATUS	3		

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: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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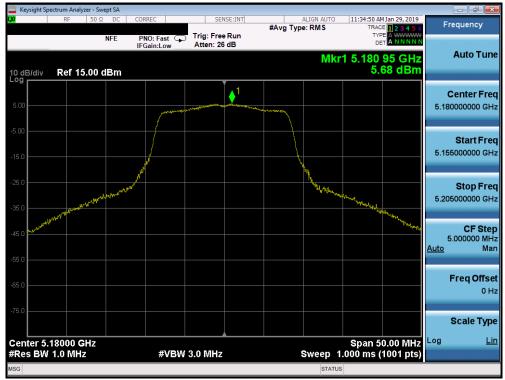
SISO Antenna-2 Power Spectral Density Measurements

	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	5.68	11.0	-5.32
	5200	40	а	6	4.74	11.0	-6.26
	5240	48	а	6	5.20	11.0	-5.80
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.82	11.0	-5.18
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	4.87	11.0	-6.13
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.77	11.0	-5.23
	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	2.37	11.0	-8.63
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	2.52	11.0	-8.48
ä	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	3.41	11.0	-7.59
	5190	38	n (40MHz)	13.5/15 (MCS0)	2.81	11.0	-8.19
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.46	11.0	-8.54
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-1.57	11.0	-12.57
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.76	11.0	-11.76
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-1.15	11.0	-12.15
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.79	11.0	-15.79
	5260	52	а	6	5.44	11.0	-5.56
	5280	56	а	6	5.61	11.0	-5.39
	5320	64	а	6	6.28	11.0	-4.72
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	5.65	11.0	-5.35
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.81	11.0	-5.19
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	6.88	11.0	-4.12
2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	3.49	11.0	-7.51
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	3.16	11.0	-7.84
Ba	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	3.29	11.0	-7.71
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.08	11.0	-8.92
	5310	62	n (40MHz)	13.5/15 (MCS0)	2.93	11.0	-8.07
	5270	54	ax (40MHz)	13.5/15 (MCS0)	-1.07	11.0	-12.07
	5310	62	ax (40MHz)	13.5/15 (MCS0)	-1.33	11.0	-12.33
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-0.57	11.0	-11.57
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	-4.64	11.0	-15.64
	5500	100	а	6	6.86	11.0	-4.14
	5600	120	а	6	5.04	11.0	-5.96
	5720	144	а	6	5.44	11.0	-5.56
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	7.25	11.0	-3.75
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	5.38	11.0	-5.62
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	5.13	11.0	-5.87
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	4.02	11.0	-6.98
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	3.06	11.0	-7.94
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	3.76	11.0	-7.24
Band 2C	5510	102	n (40MHz)	13.5/15 (MCS0)	4.07	11.0	-6.93
pu	5590	118	n (40MHz)	13.5/15 (MCS0)	2.11	11.0	-8.89
ñ	5710	142	n (40MHz)	13.5/15 (MCS0)	1.91	11.0	-9.09
	5510	102	ax (40MHz)	13.5/15 (MCS0)	-0.54	11.0	-11.54
	5590	118	ax (40MHz)	13.5/15 (MCS0)	-1.03	11.0	-12.03
	5710	142	ax (40MHz)	13.5/15 (MCS0)	-1.04	11.0	-12.04
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-0.26	11.0	-11.26
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-2.26	11.0	-13.26
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-1.58	11.0	-12.58
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-4.68	11.0	-15.68
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-5.07	11.0	-16.07
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-4.89	11.0	-15.89

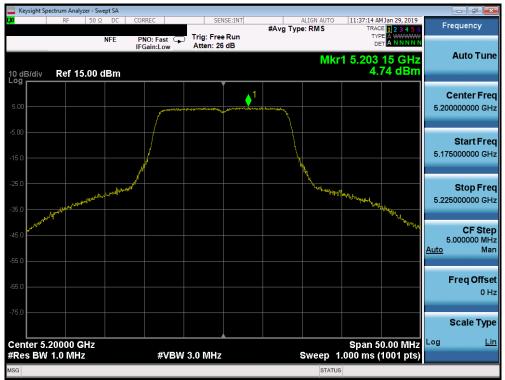
Table 7-23. Conducted Power Spectral Density Measurements SISO ANT2

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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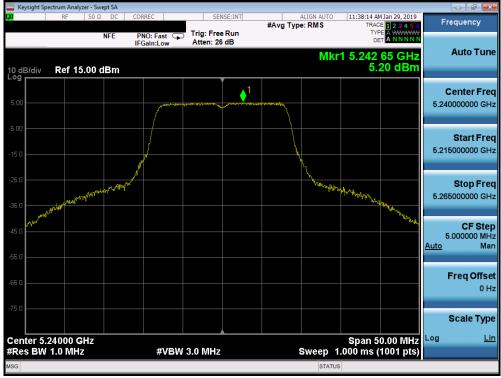




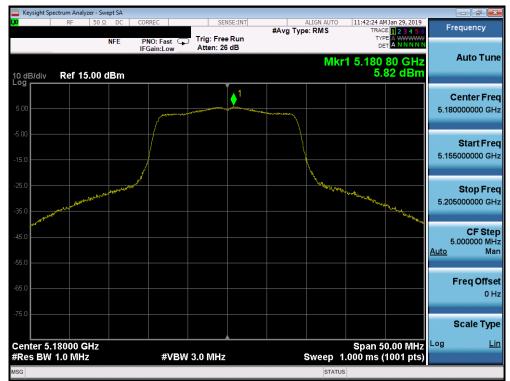
Plot 7-200. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 125 of 250
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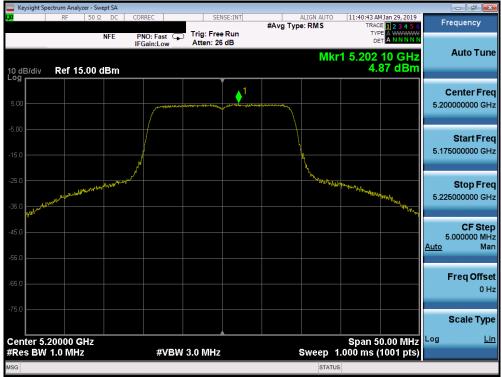
Plot 7-201. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 1) - Ch. 48)



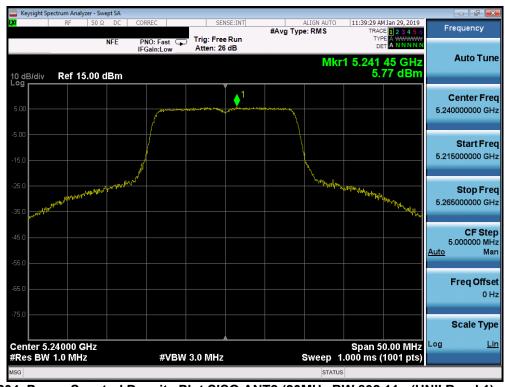
Plot 7-202. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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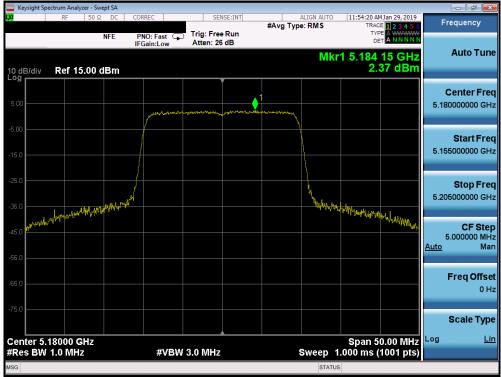
Plot 7-203. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



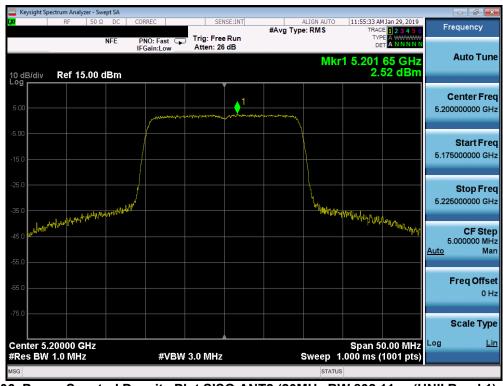
Plot 7-204. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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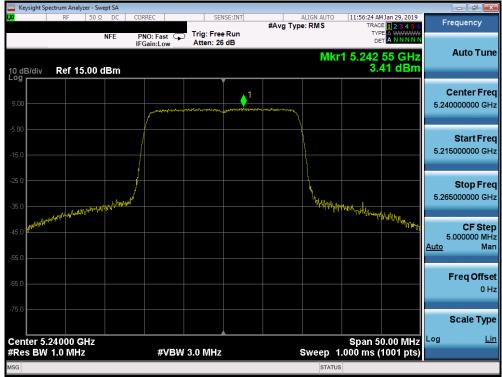
Plot 7-205. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)



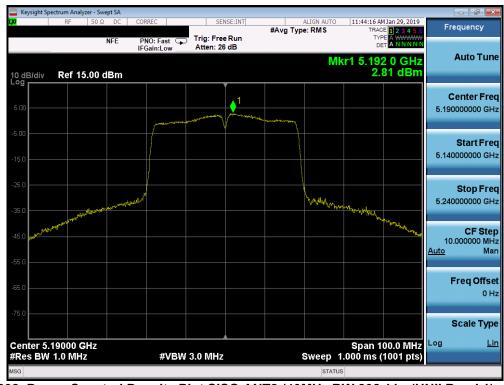
Plot 7-206. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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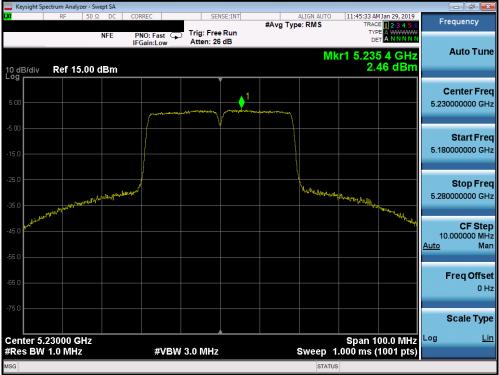
Plot 7-207. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)



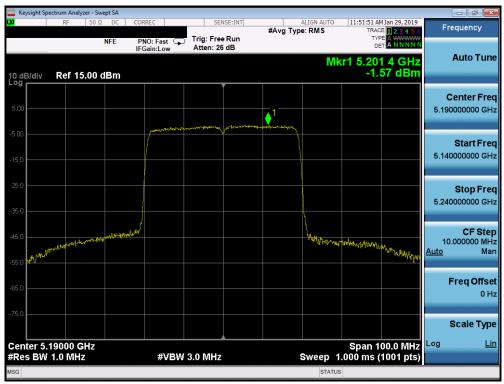
Plot 7-208. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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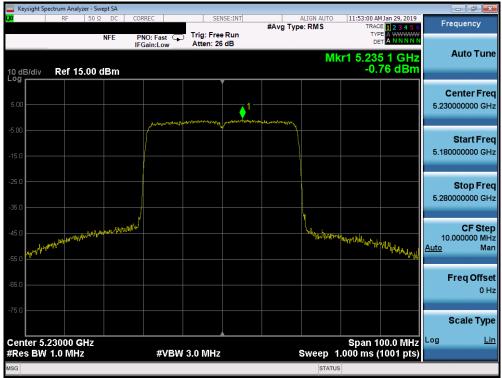
Plot 7-209. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



Plot 7-210. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

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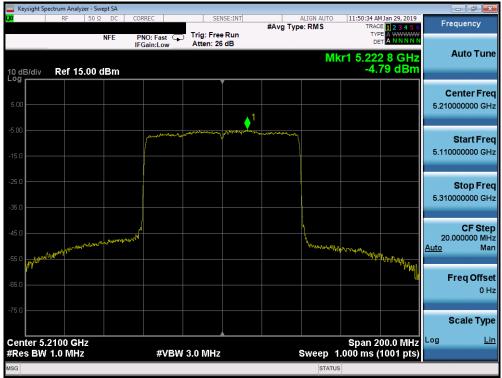
Plot 7-211. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



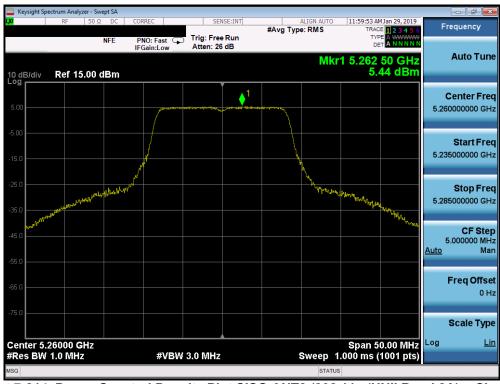
Plot 7-212. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

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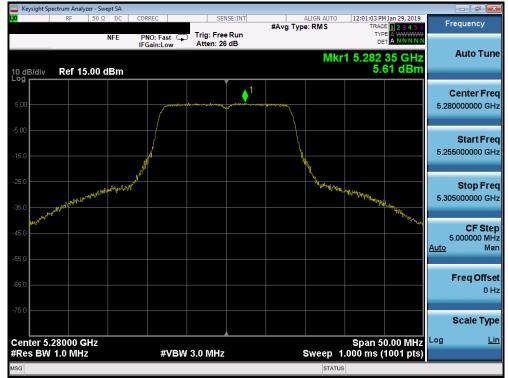
Plot 7-213. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



Plot 7-214. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2A) - Ch. 52)

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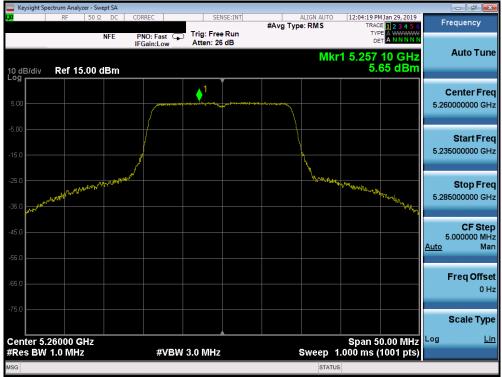
Plot 7-215. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2A) - Ch. 56)



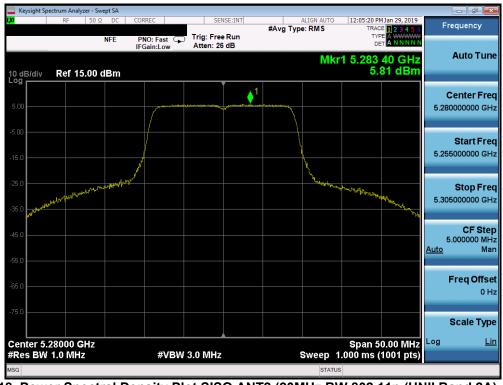
Plot 7-216. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2A) - Ch. 64)

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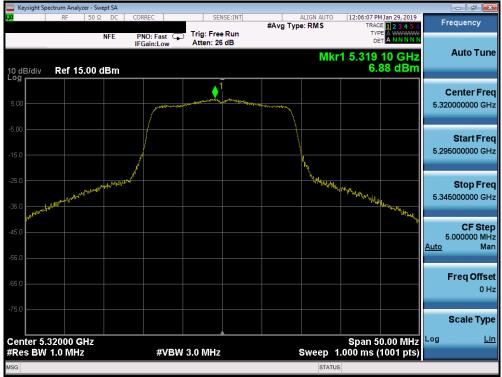
Plot 7-217. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



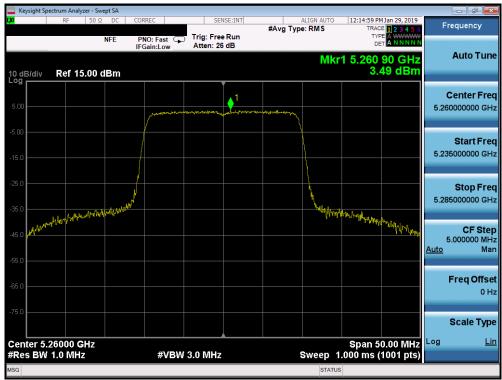
Plot 7-218. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

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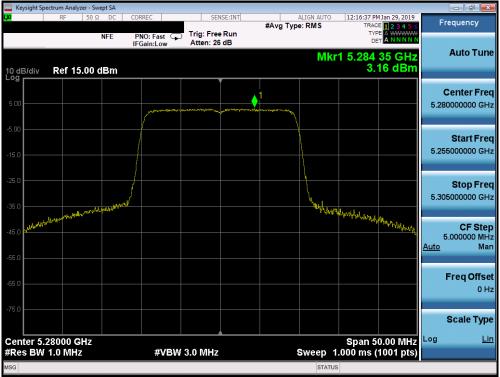
Plot 7-219. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)



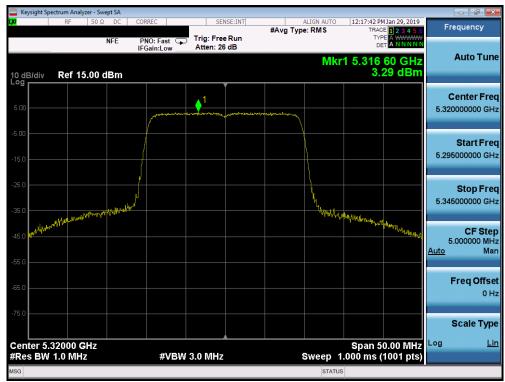
Plot 7-220. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)

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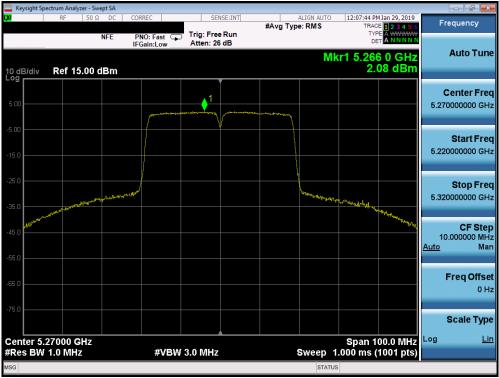
Plot 7-221. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



Plot 7-222. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 64)

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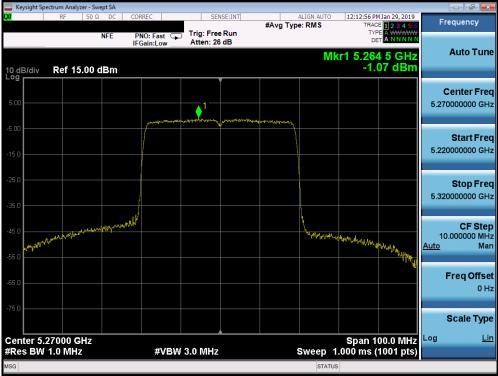
Plot 7-223. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)



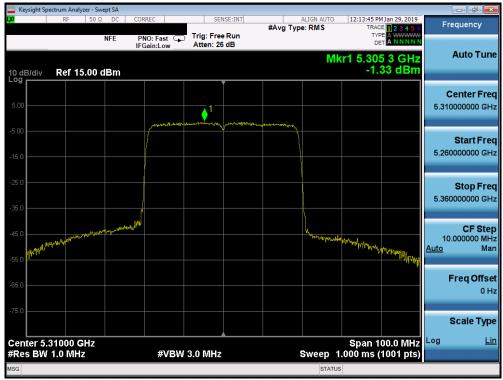
Plot 7-224. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)

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Plot 7-225. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



Plot 7-226. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

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Plot 7-227. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)



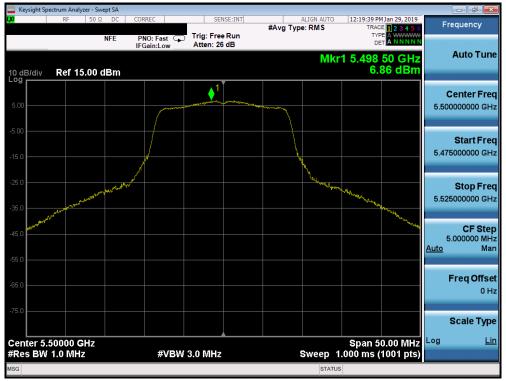
Plot 7-228. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2A) - Ch. 58)

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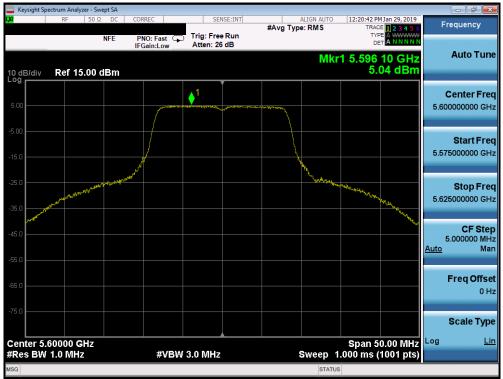
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Plot 7-229. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2C) - Ch. 100)

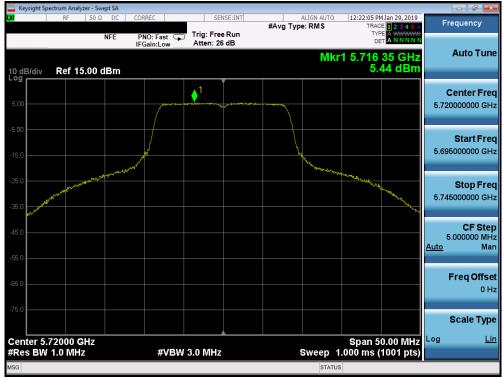


Plot 7-230. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2C) - Ch. 120)

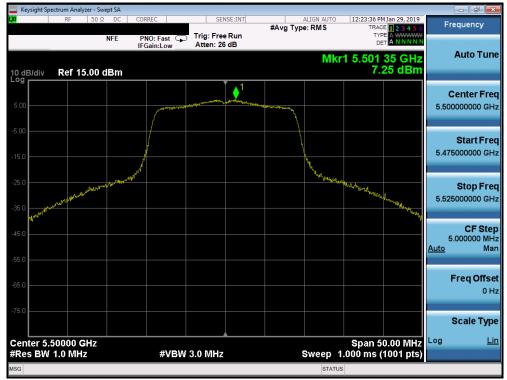
FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-231. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 2C) – Ch. 144)



Plot 7-232. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

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