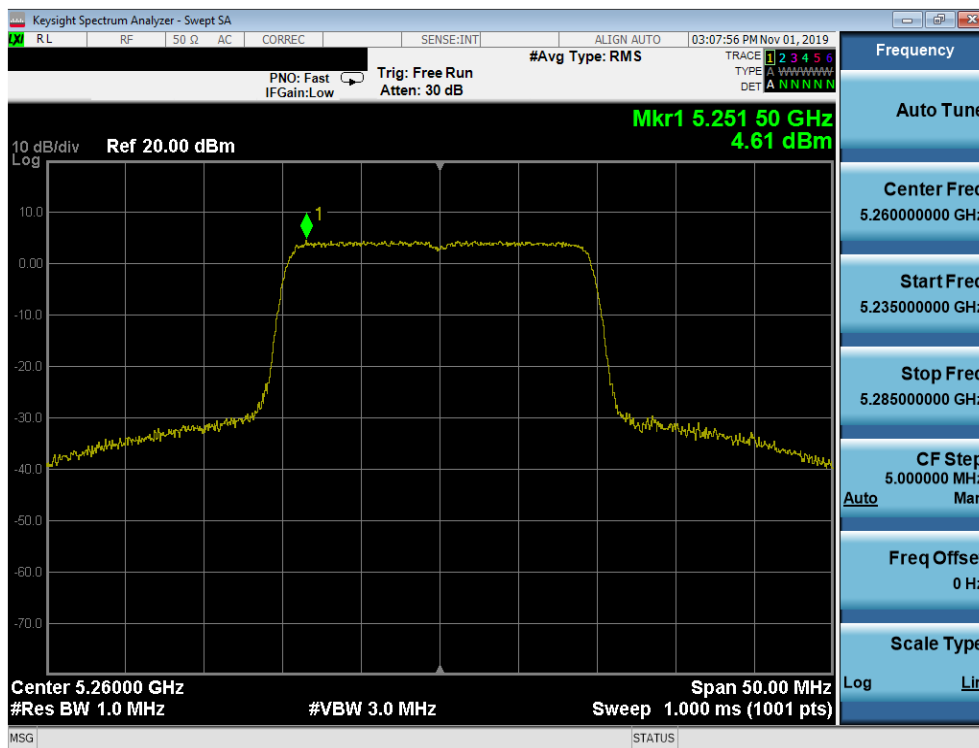
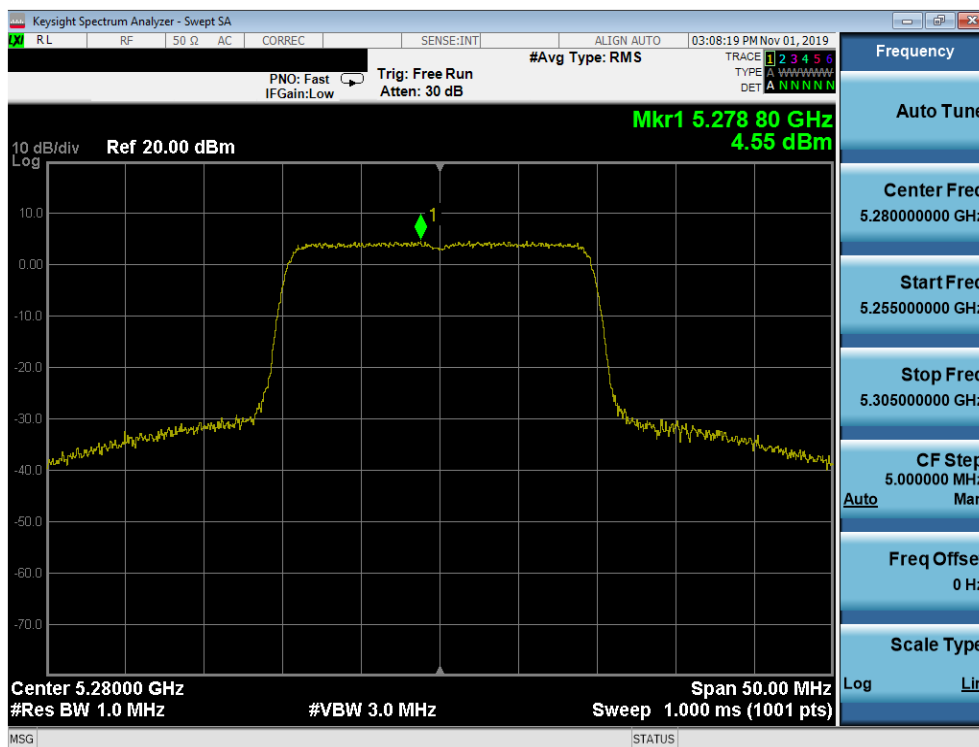


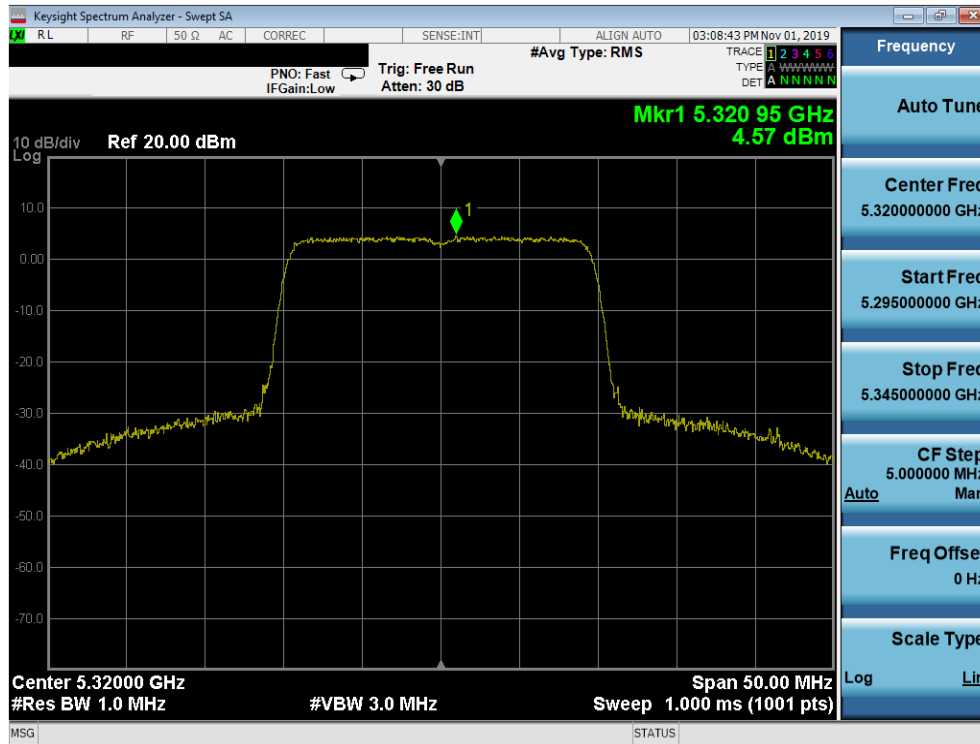


Plot 7-88. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)

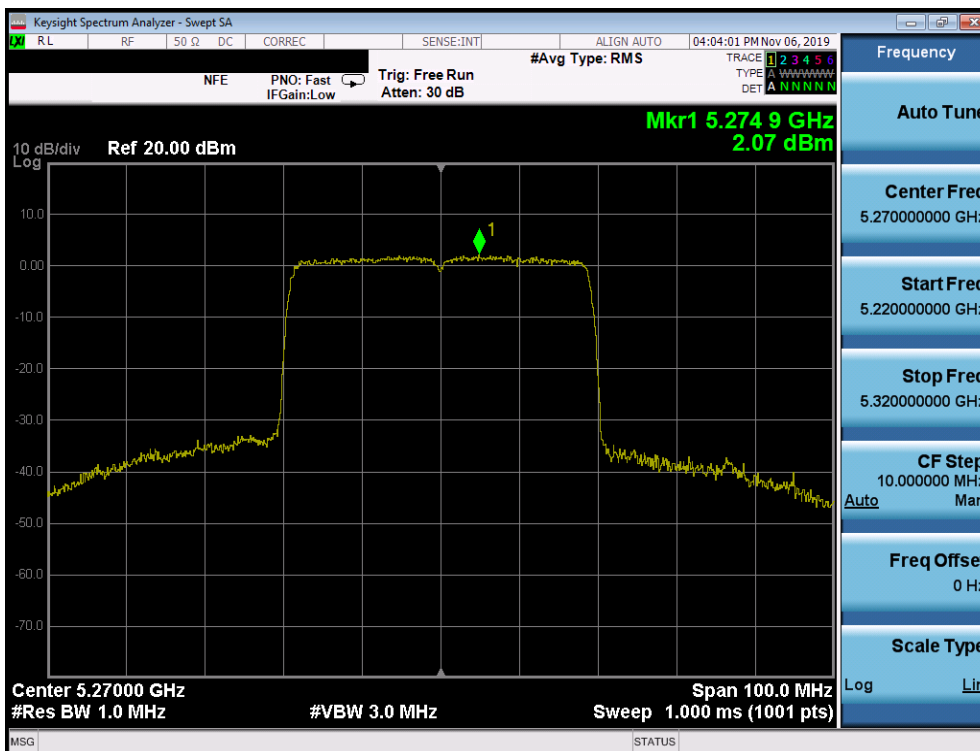


Plot 7-89. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 91 of 271

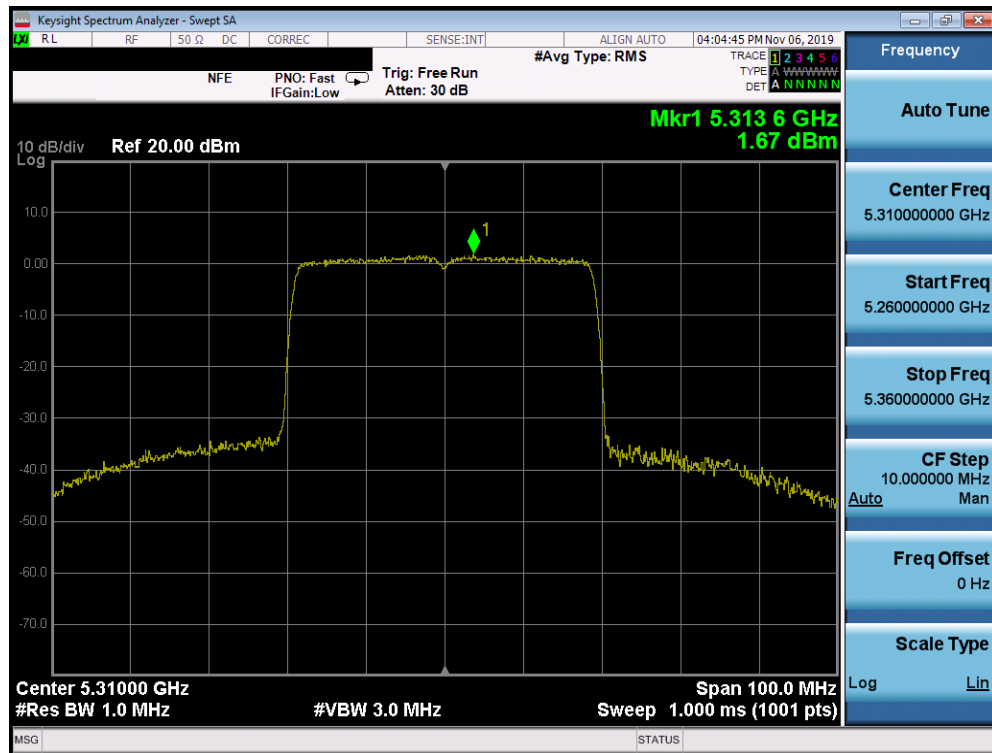


Plot 7-90. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

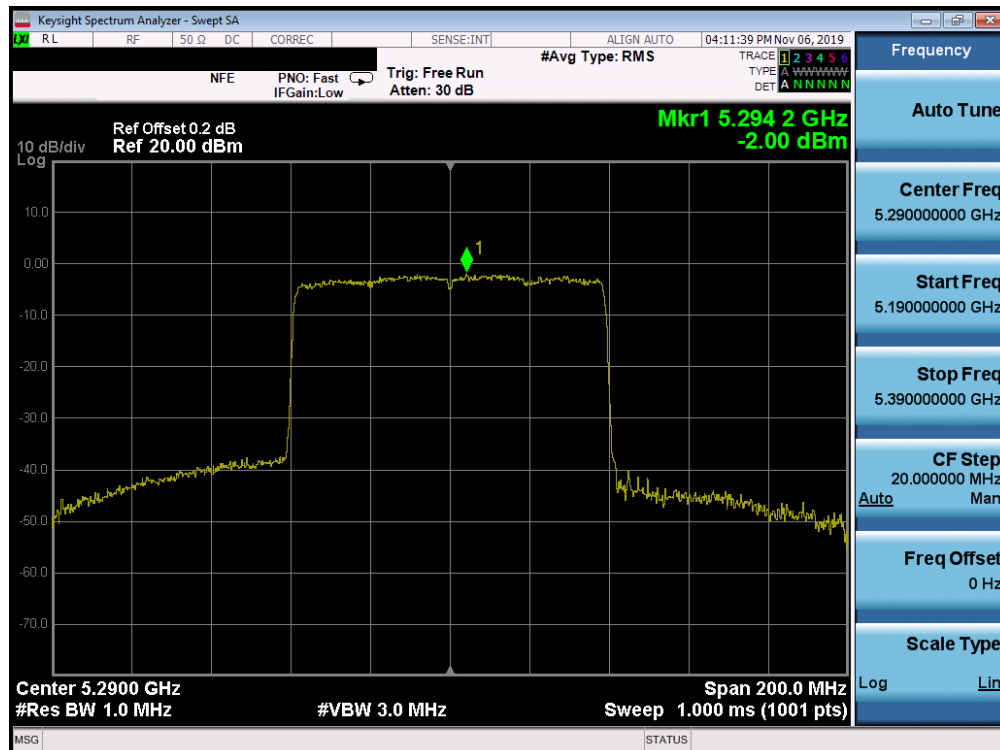


Plot 7-91. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 92 of 271

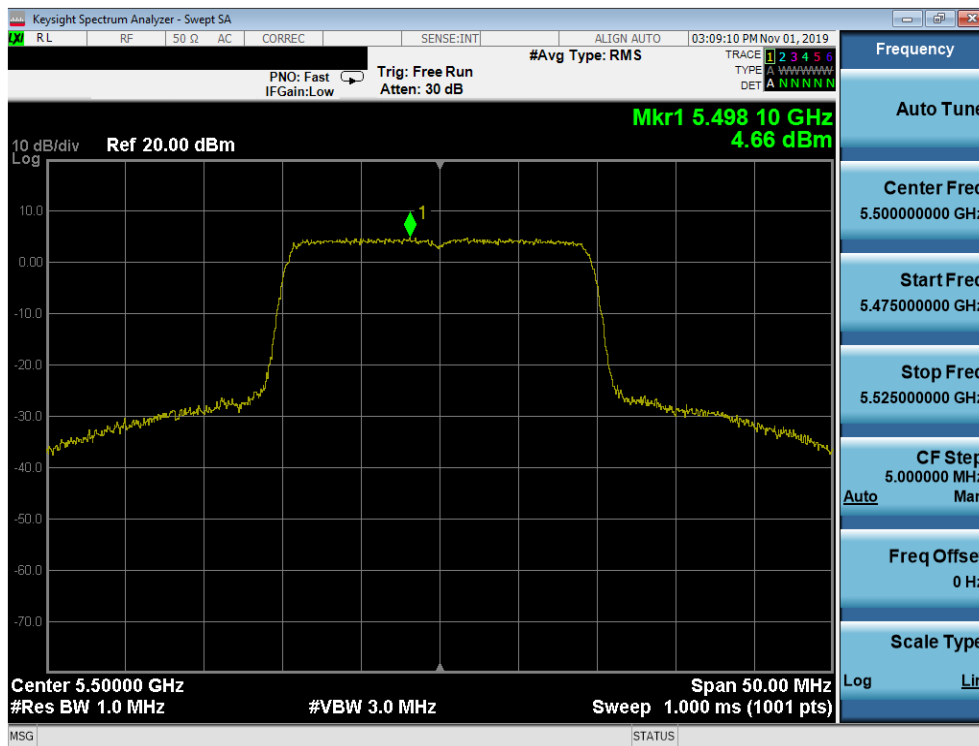


Plot 7-92. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)

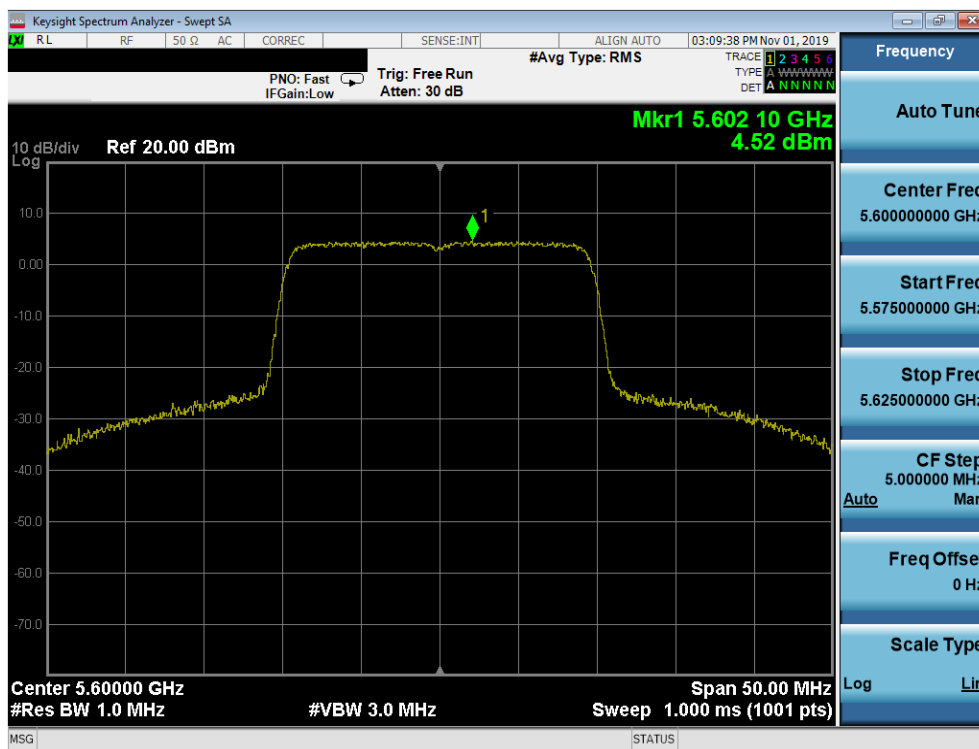


Plot 7-93. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 93 of 271

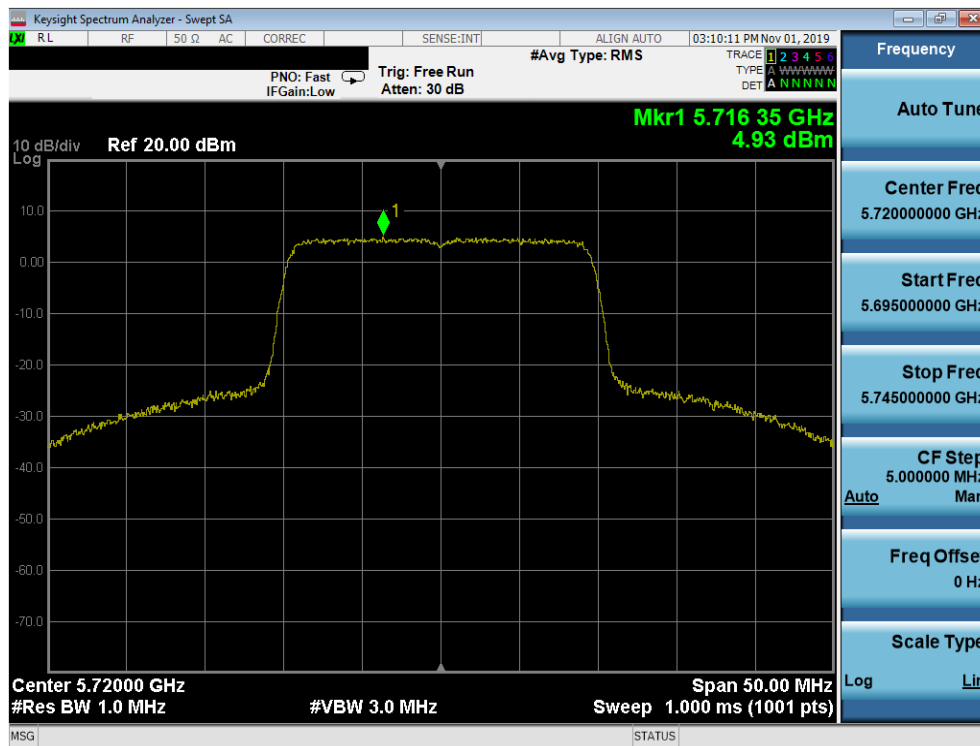


Plot 7-94. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)

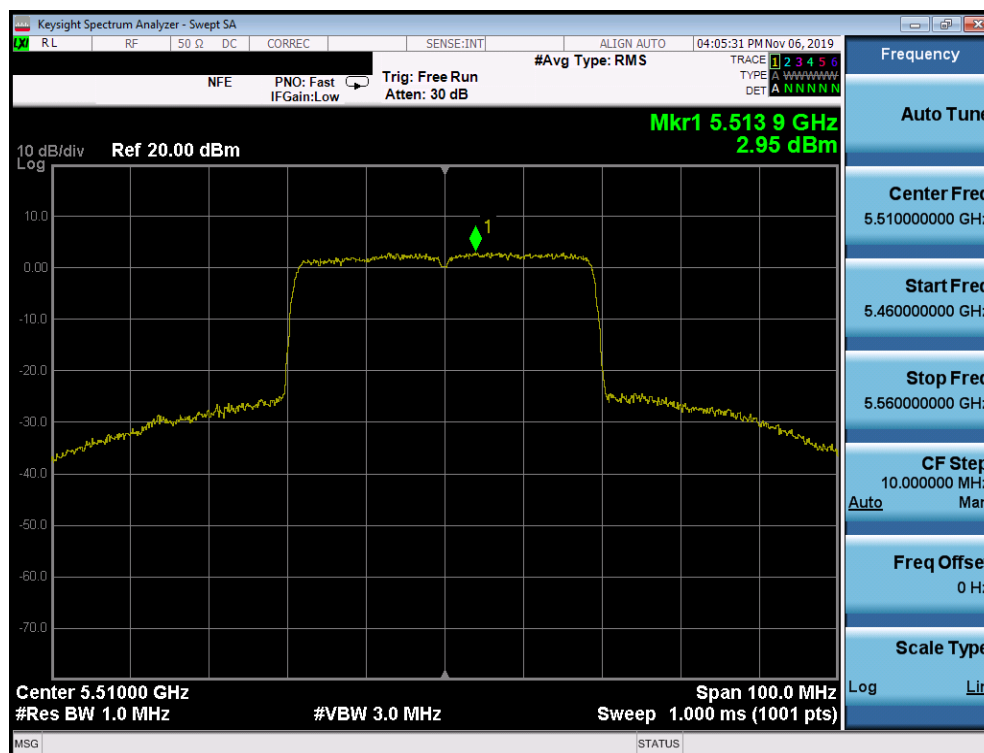


Plot 7-95. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 94 of 271

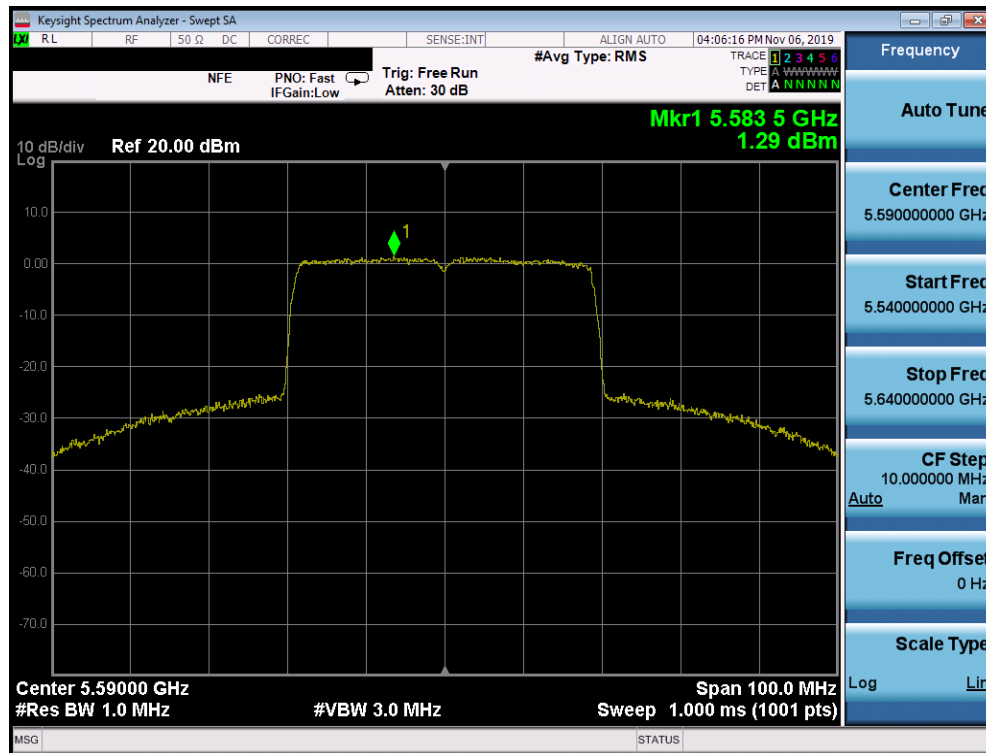


Plot 7-96. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)

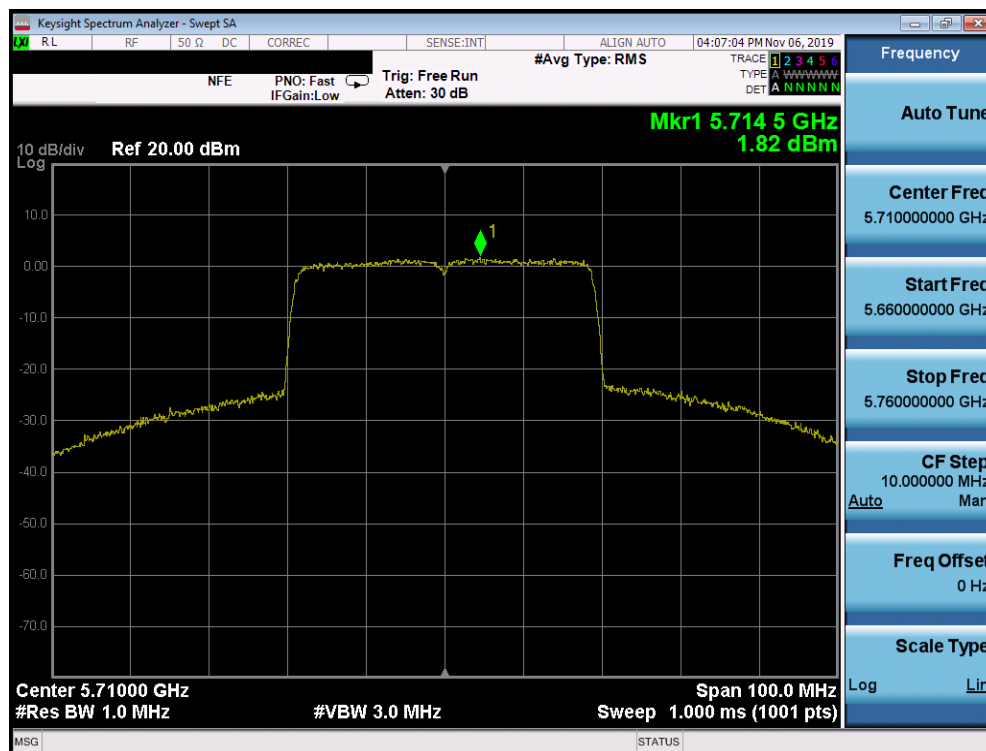


Plot 7-97. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 95 of 271

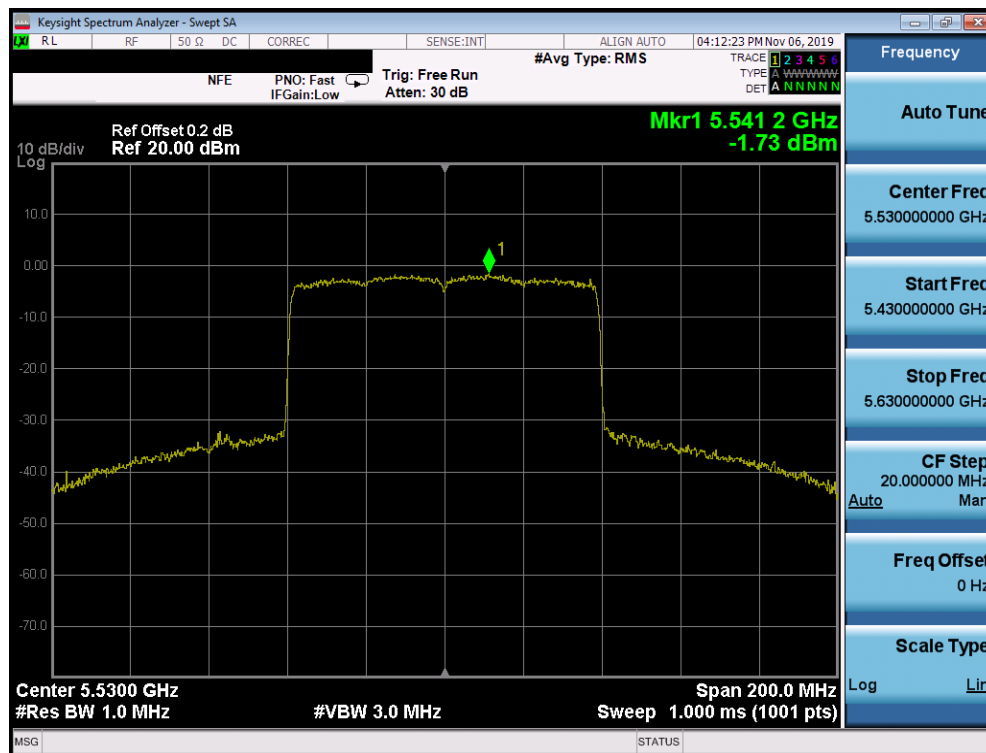


Plot 7-98. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 118)

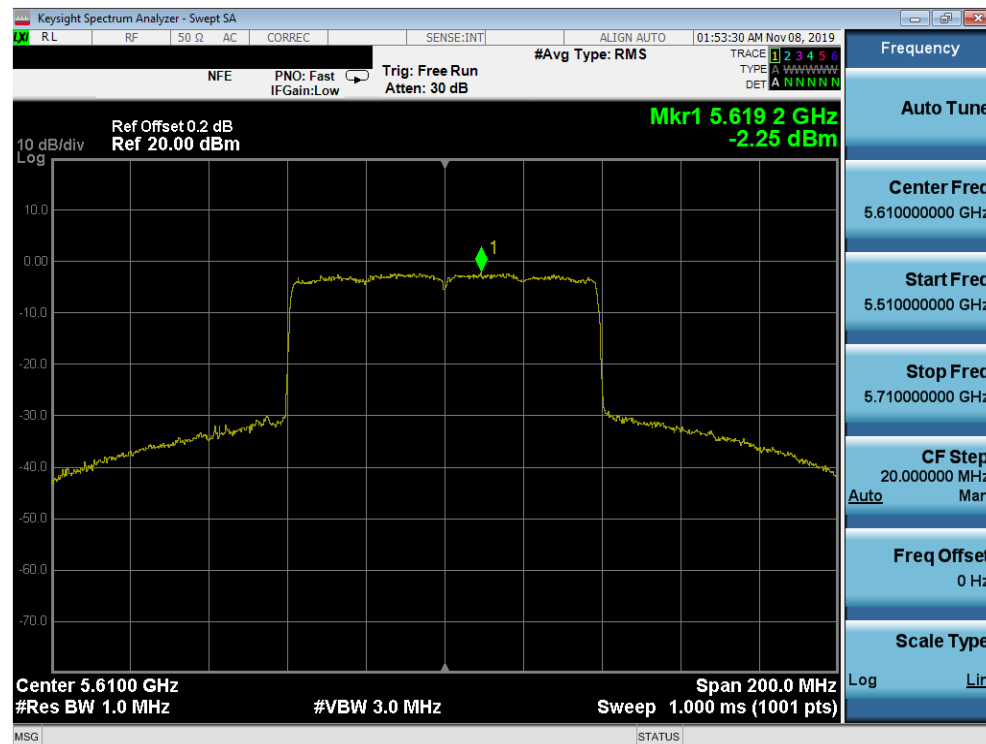


Plot 7-99. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 96 of 271

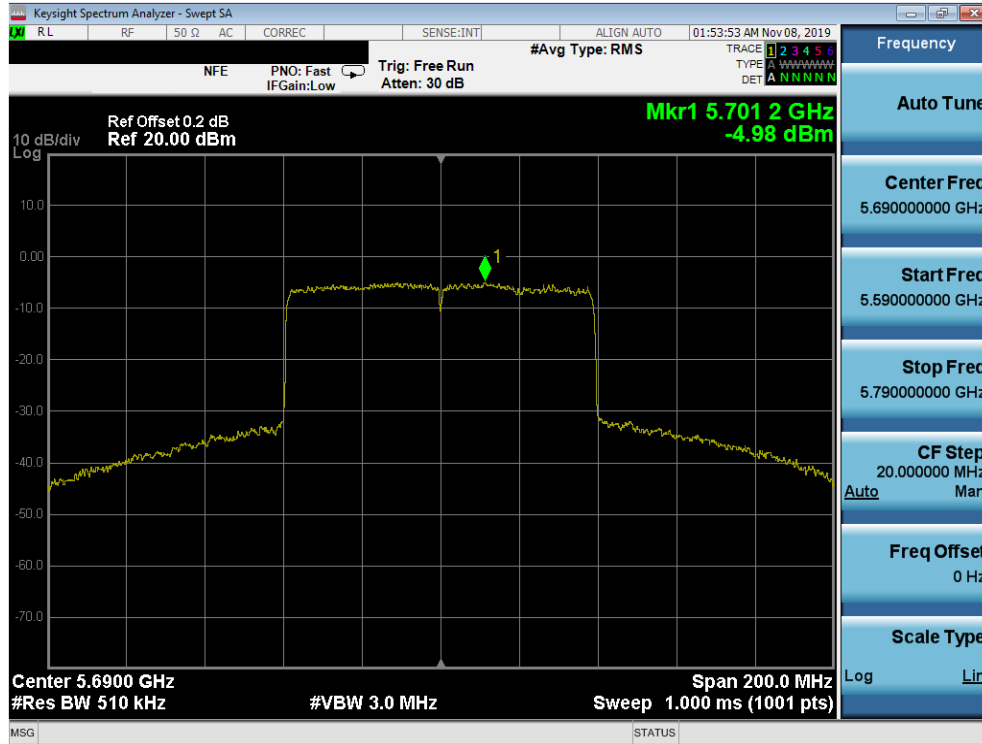


Plot 7-100. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)



Plot 7-101. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 97 of 271



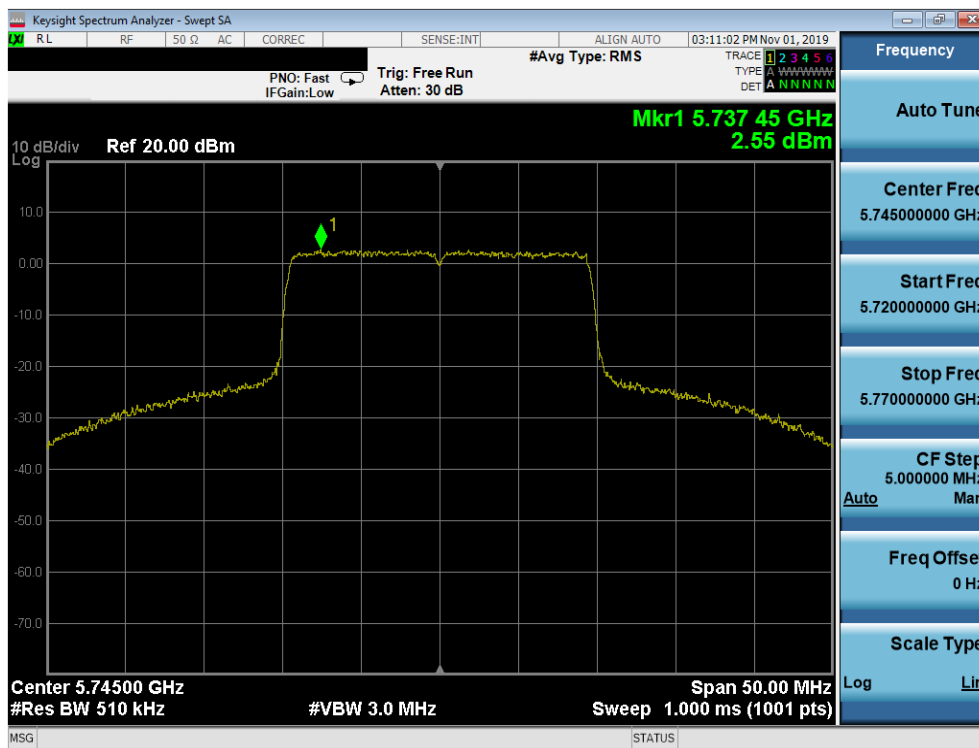
Plot 7-102. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 98 of 271

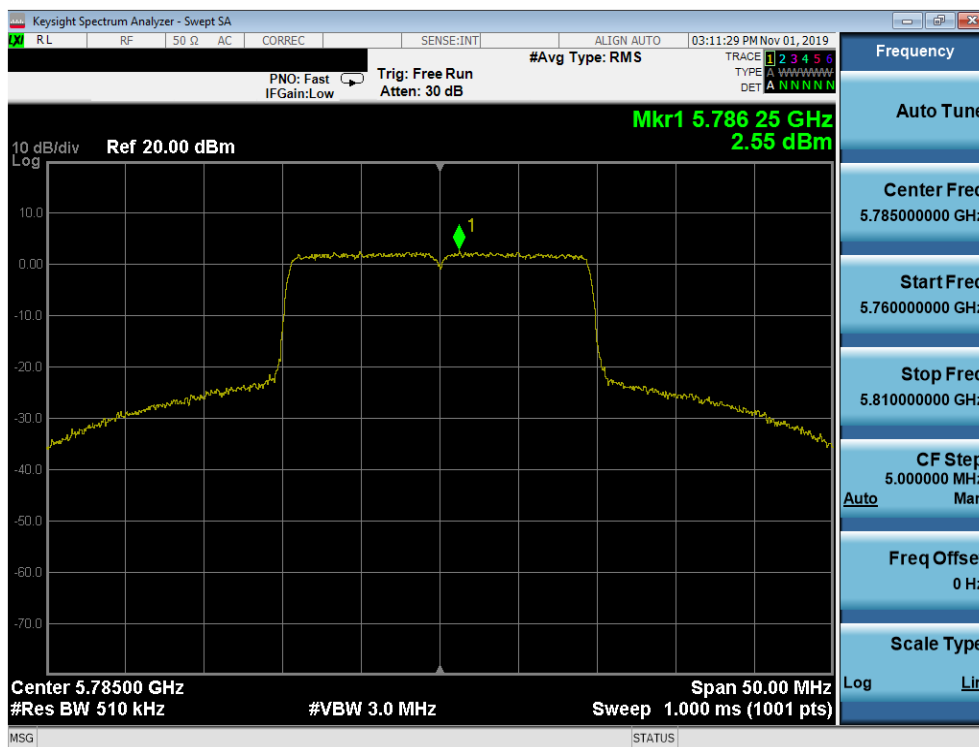
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	2.55	30.00	-27.45
	5785	157	ax (20MHz)	242T	MCS0	2.55	30.00	-27.45
	5825	165	ax (20MHz)	242T	MCS0	2.79	30.00	-27.21
	5755	151	ax (40MHz)	484T	MCS0	-0.59	30.00	-30.59
	5795	159	ax (40MHz)	484T	MCS0	0.34	30.00	-29.66
	5775	155	ax (80MHz)	996T	MCS0	-2.24	30.00	-32.24

Table 7-56. Band 3 Conducted Power Spectral Density Measurements SISO ANT1 (Full Tones)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 99 of 271

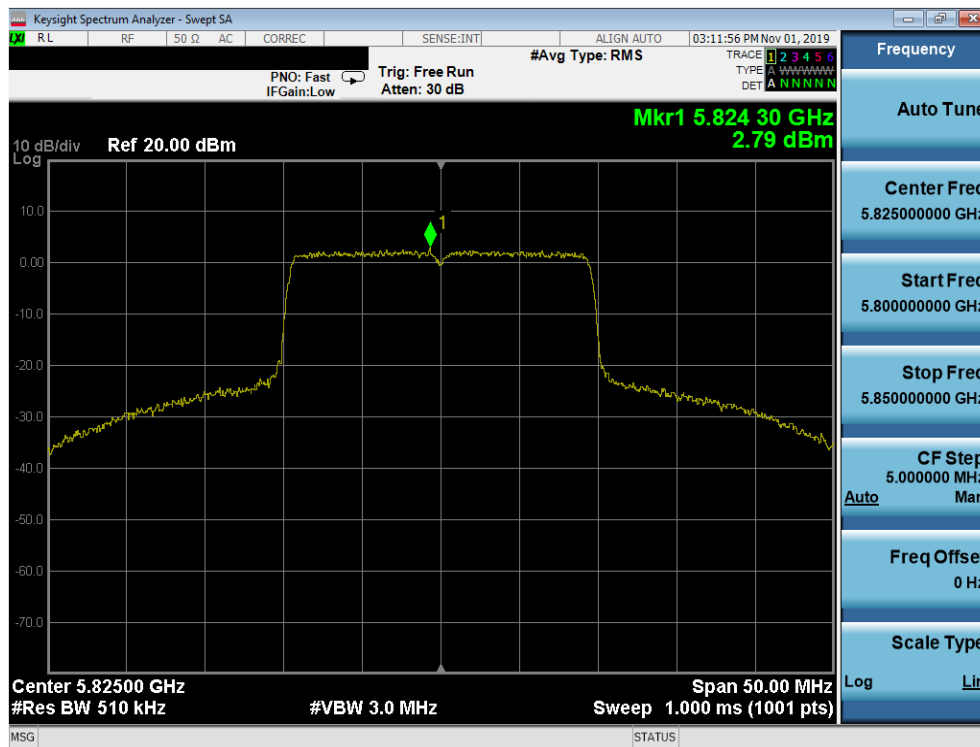


Plot 7-103. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)

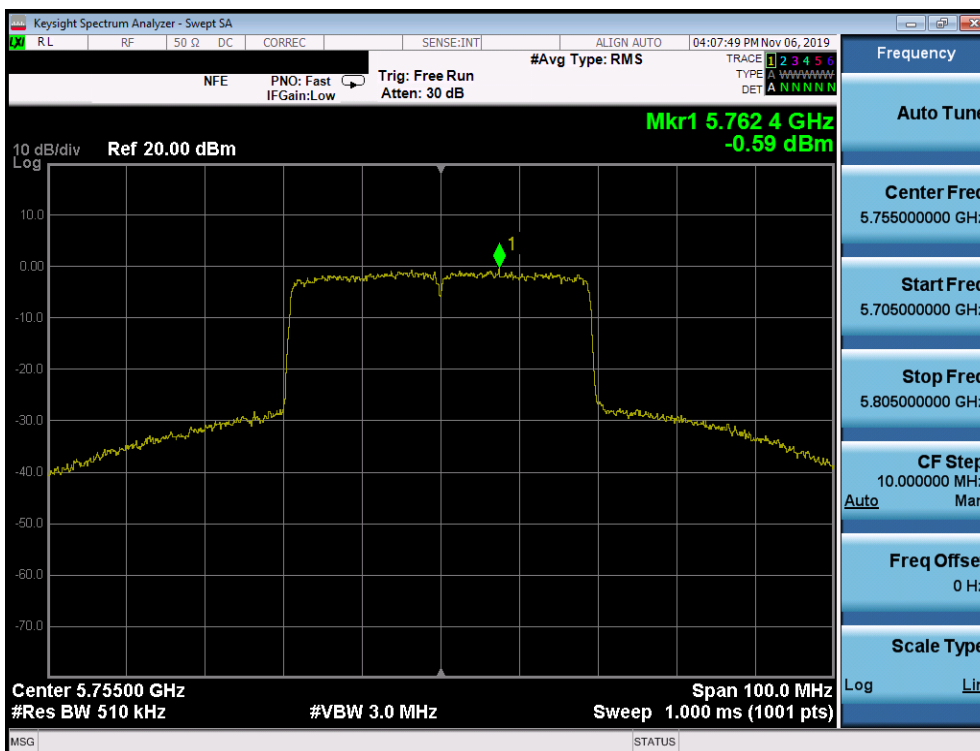


Plot 7-104. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 100 of 271

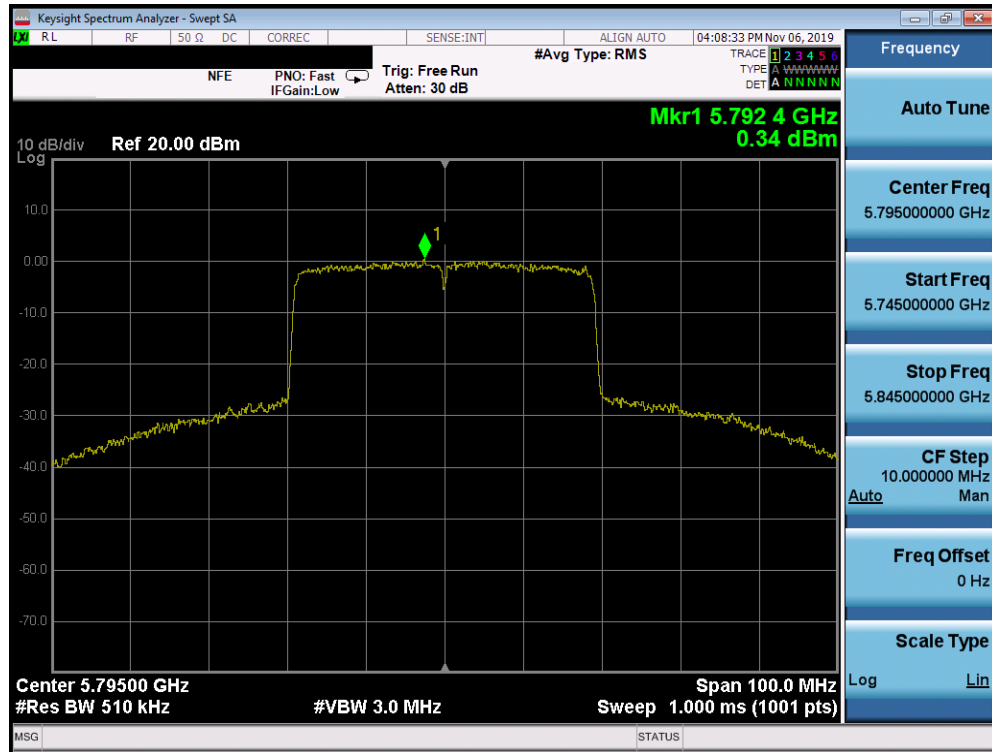


Plot 7-105. Power Spectral Density Plot SISO ANT1 (20 MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 165)

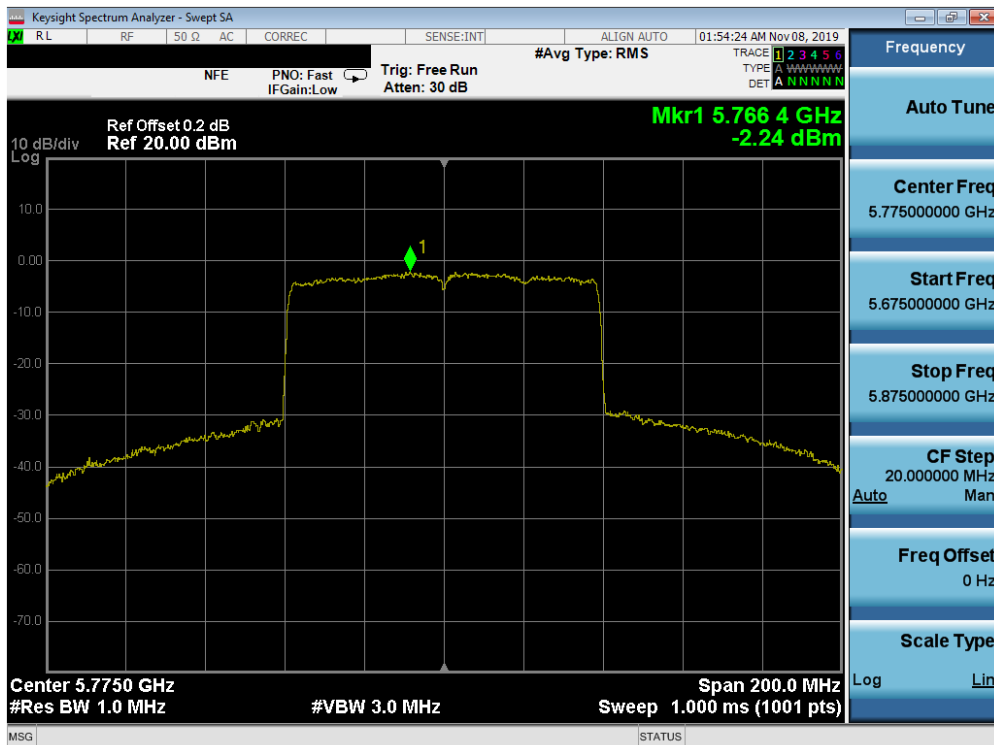


Plot 7-106. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 101 of 271



Plot 7-107. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 159)



Plot 7-108. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 102 of 271

SISO Antenna-2 Power Spectral Density Measurements (26 Tones)

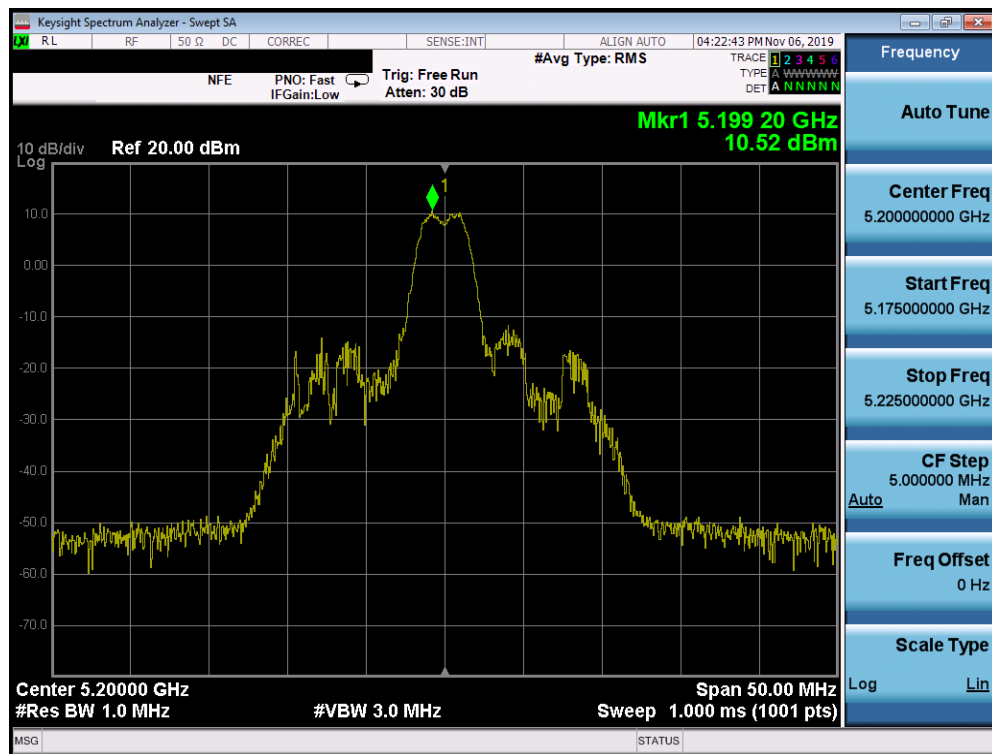
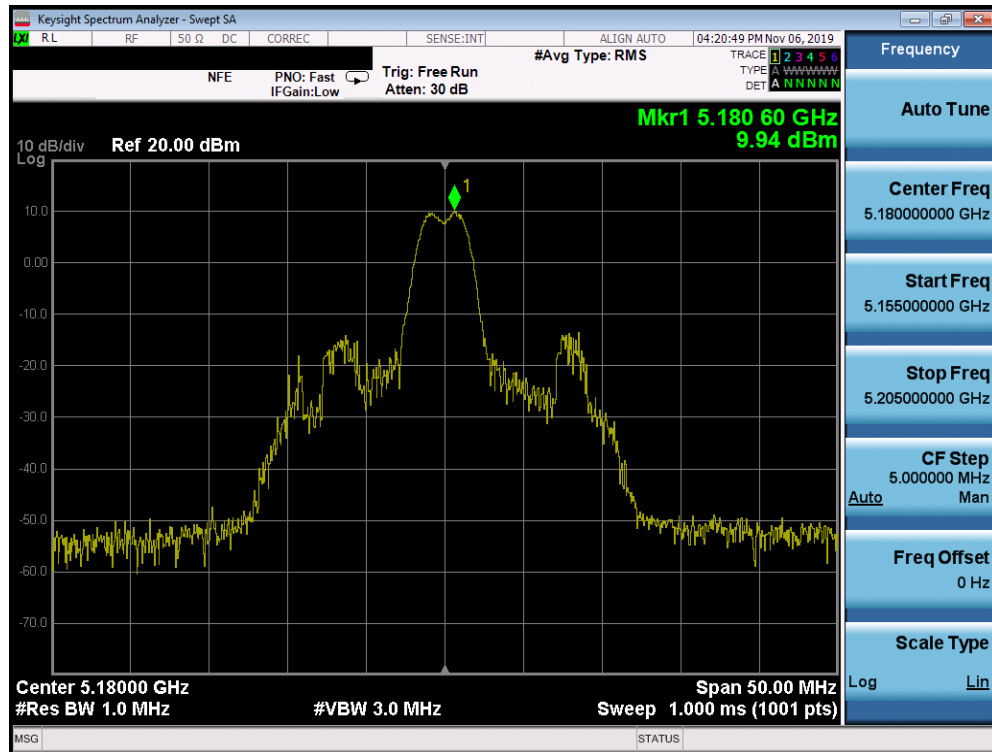
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	26T	MCS0	9.94	11.0	-1.06
	5200	40	ax (20MHz)	26T	MCS0	10.52	11.0	-0.48
	5240	48	ax (20MHz)	26T	MCS0	10.60	11.0	-0.40
	5190	38	ax (40MHz)	26T	MCS0	10.53	11.0	-0.47
	5230	46	ax (40MHz)	26T	MCS0	10.31	11.0	-0.69
	5210	42	ax (80MHz)	26T	MCS0	10.65	11.0	-0.35
Band 2A	5260	52	ax (20MHz)	26T	MCS0	10.71	11.0	-0.29
	5280	56	ax (20MHz)	26T	MCS0	10.95	11.0	-0.05
	5320	64	ax (20MHz)	26T	MCS0	10.95	11.0	-0.05
	5270	54	ax (40MHz)	26T	MCS0	10.09	11.0	-0.91
	5310	62	ax (40MHz)	26T	MCS0	10.59	11.0	-0.41
	5290	58	ax (80MHz)	26T	MCS0	10.65	11.0	-0.35
Band 2C	5500	100	ax (20MHz)	26T	MCS0	10.95	11.0	-0.05
	5600	120	ax (20MHz)	26T	MCS0	10.71	11.0	-0.29
	5720	144	ax (20MHz)	26T	MCS0	10.76	11.0	-0.24
	5510	102	ax (40MHz)	26T	MCS0	10.24	11.0	-0.76
	5590	118	ax (40MHz)	26T	MCS0	10.48	11.0	-0.52
	5710	142	ax (40MHz)	26T	MCS0	10.51	11.0	-0.49
	5530	106	ax (80MHz)	26T	MCS0	10.91	11.0	-0.09
	5610	122	ax (80MHz)	26T	MCS0	10.84	11.0	-0.16
	5690	138	ax (80MHz)	26T	MCS0	8.91	11.0	-2.09

Table 7-57. Conducted Power Spectral Density Measurements SISO ANT2 (26 Tones)

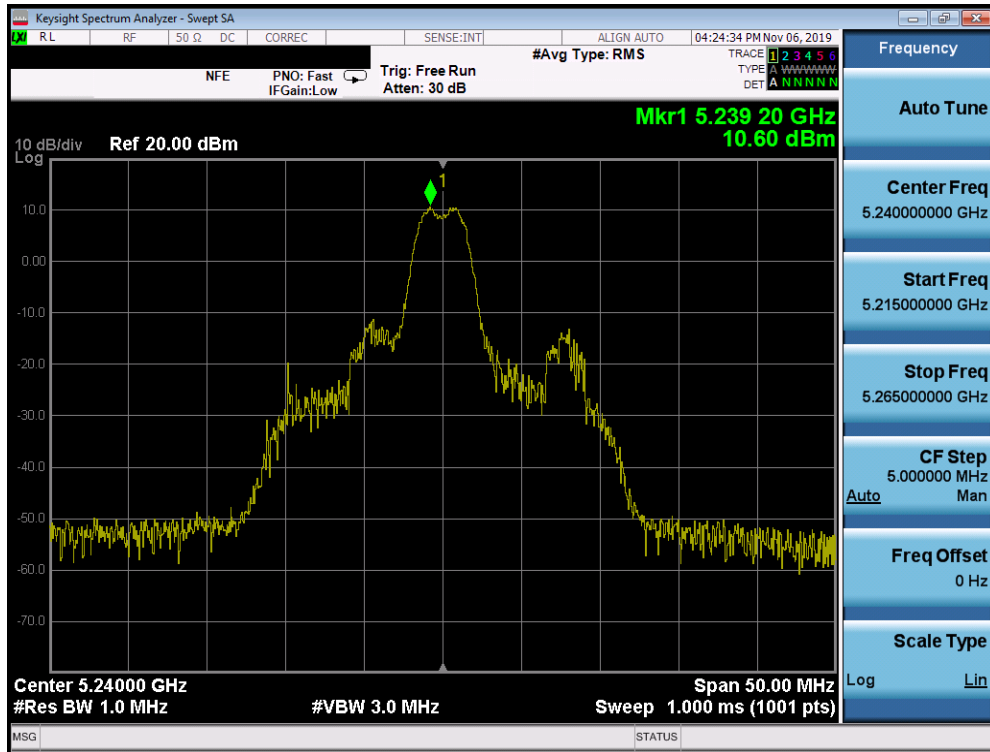
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	26T	MCS0	9.94	-6.70	3.24	10.0	-6.76
	5200	40	ax (20MHz)	26T	MCS0	10.53	-6.70	3.83	10.0	-6.18
	5240	48	ax (20MHz)	26T	MCS0	10.60	-6.50	4.10	10.0	-5.90
	5190	38	ax (40MHz)	26T	MCS0	10.53	-6.70	3.83	10.0	-6.17
	5230	46	ax (40MHz)	26T	MCS0	10.31	-6.50	3.81	10.0	-6.19
	5210	42	ax (80MHz)	26T	MCS0	10.65	-6.70	3.95	10.0	-6.05

Table 7-58. Band 1 e.i.r.p. Conducted Power Spectral Density Measurements (ISED 26 Tones)

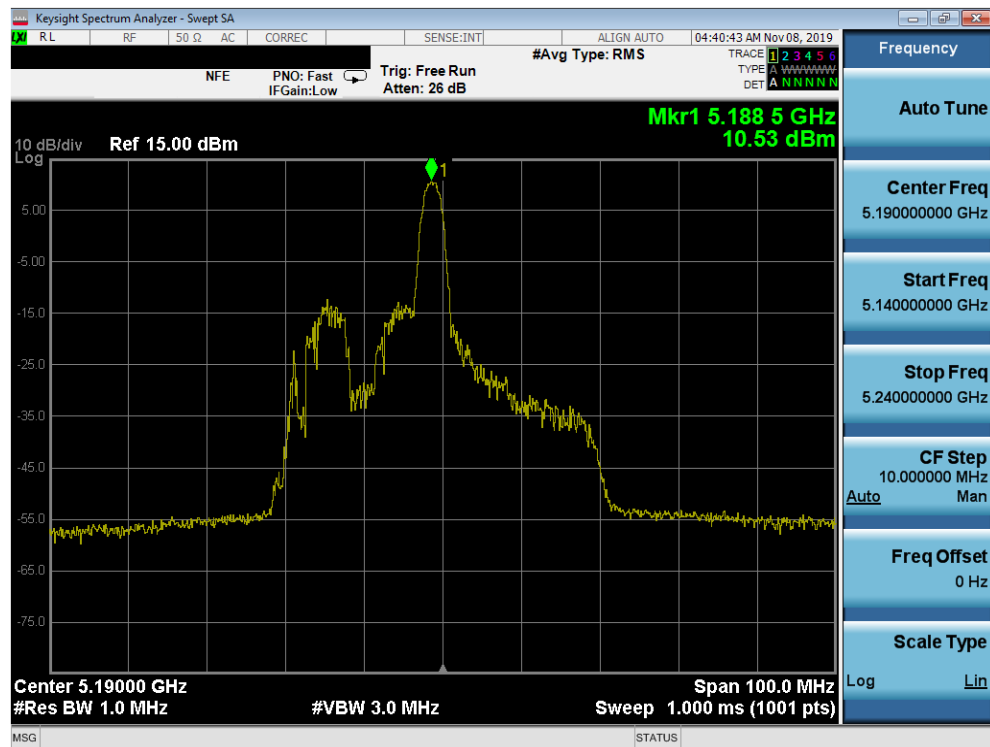
FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 103 of 271



FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 104 of 271

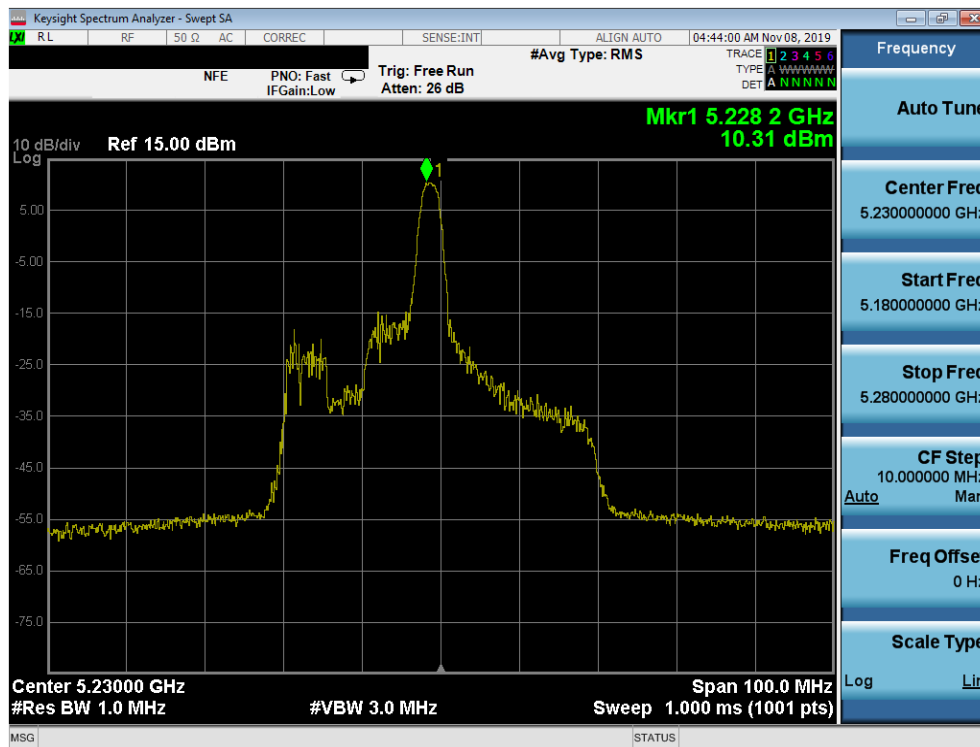


Plot 7-111. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

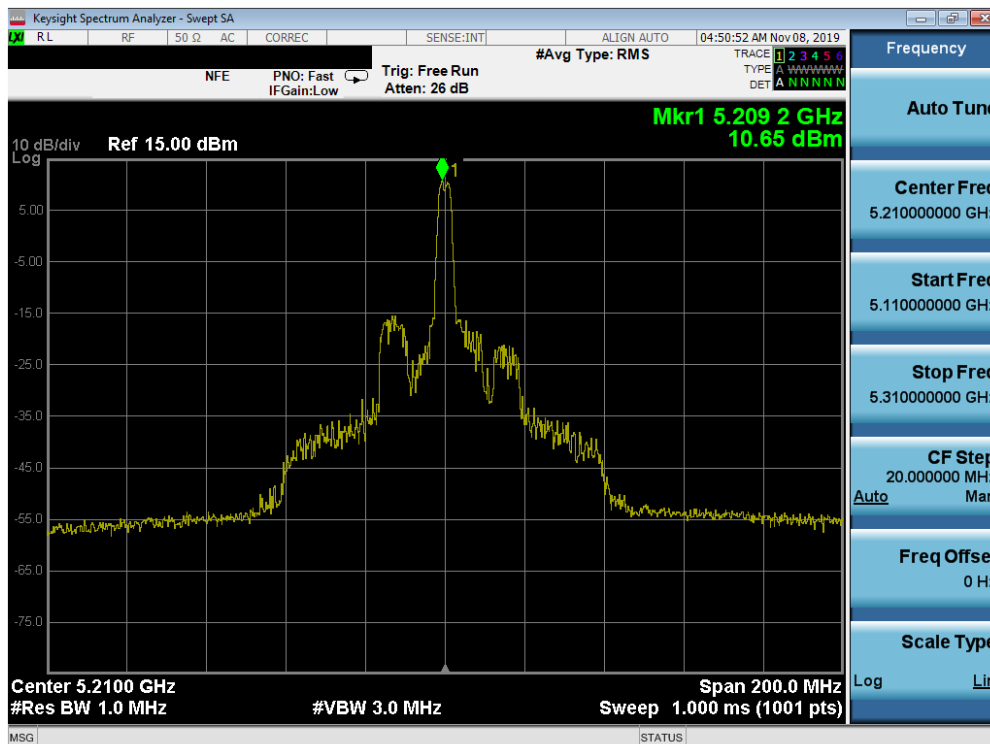


Plot 7-112. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 105 of 271

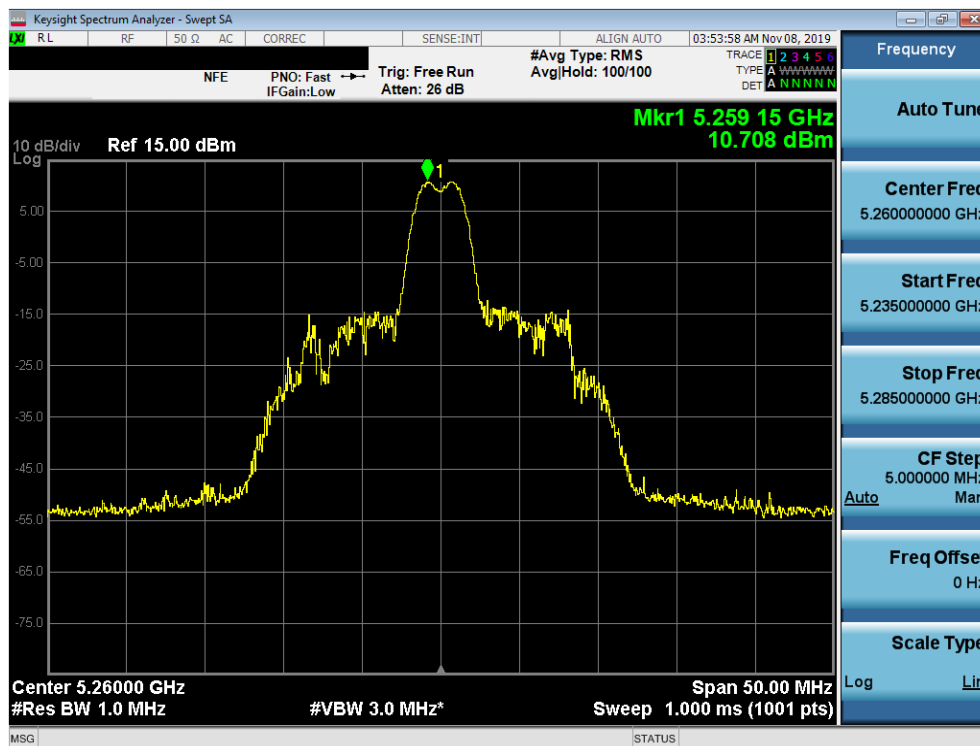


Plot 7-113. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

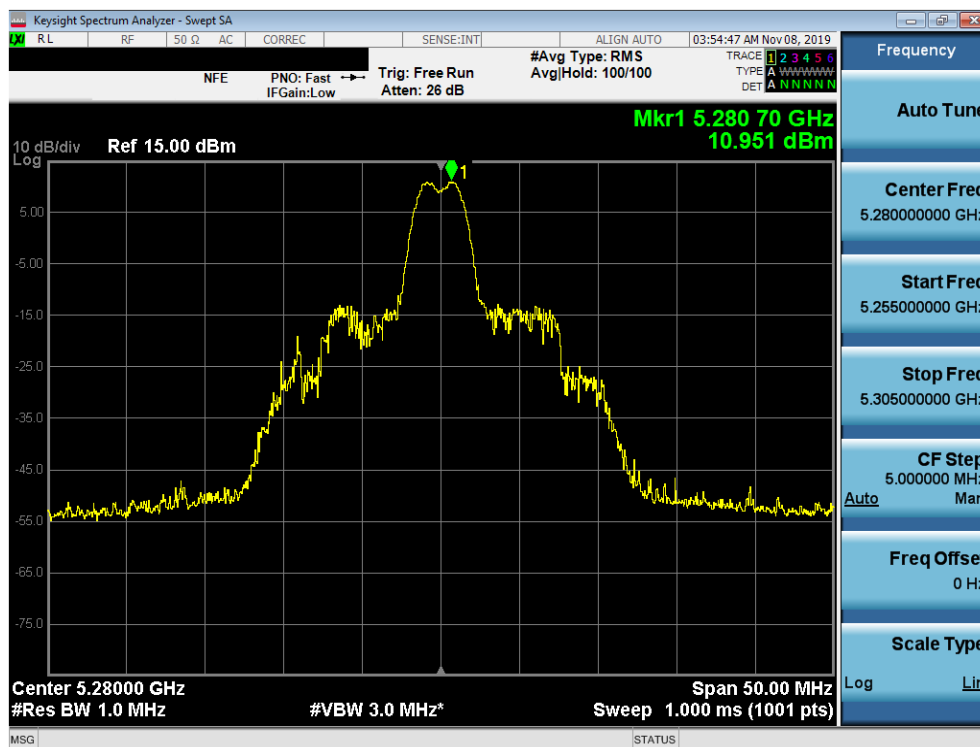


Plot 7-114. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 106 of 271

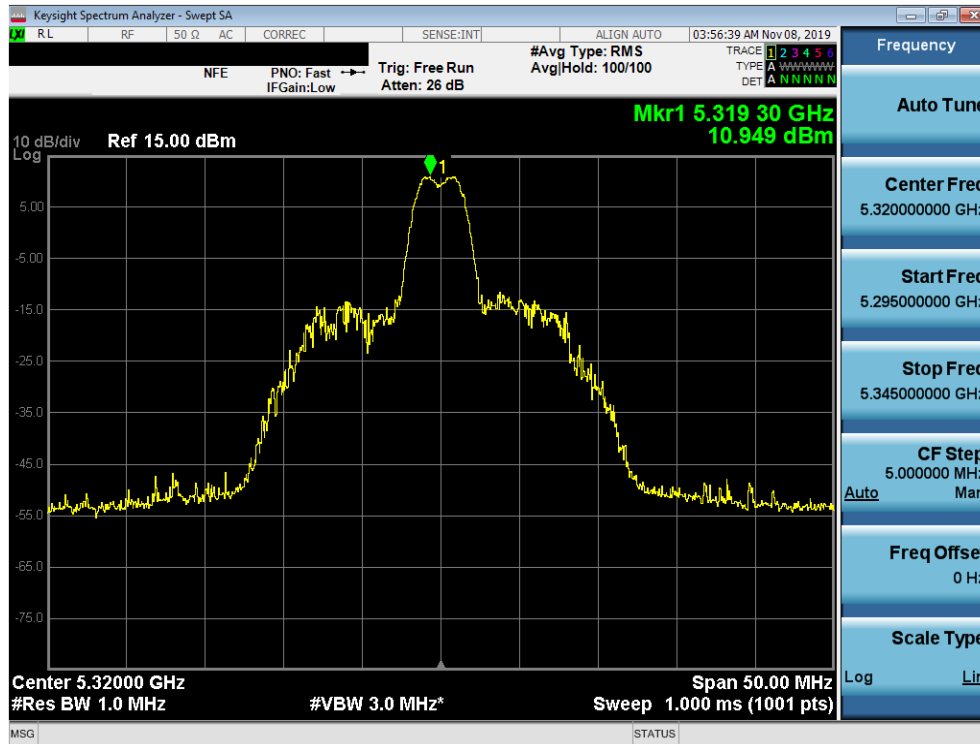


Plot 7-115. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

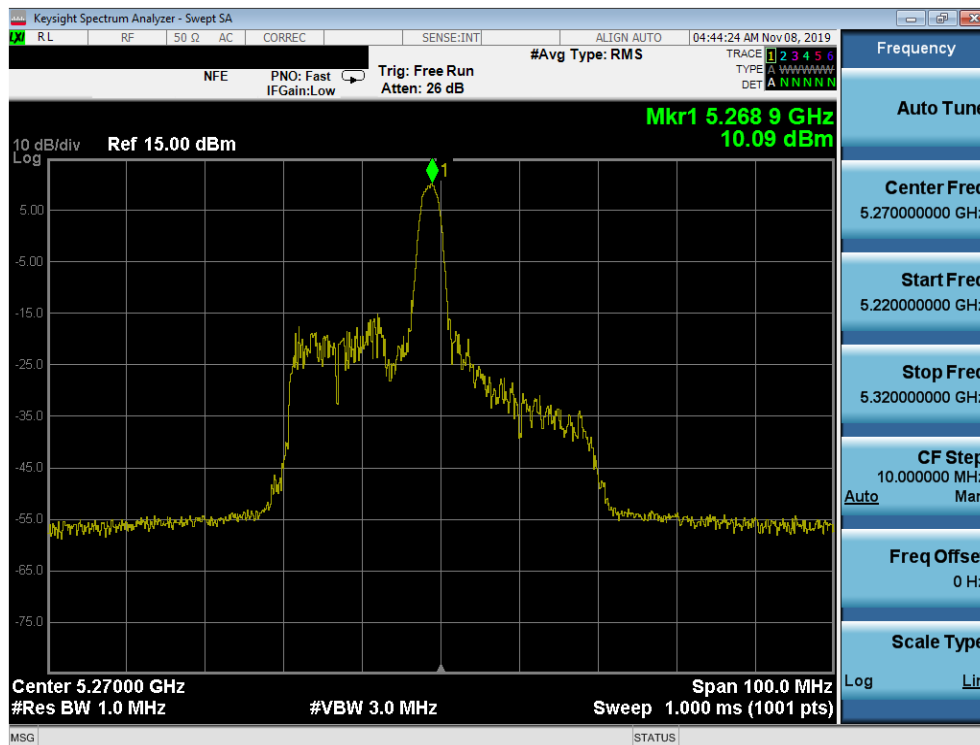


Plot 7-116. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 107 of 271

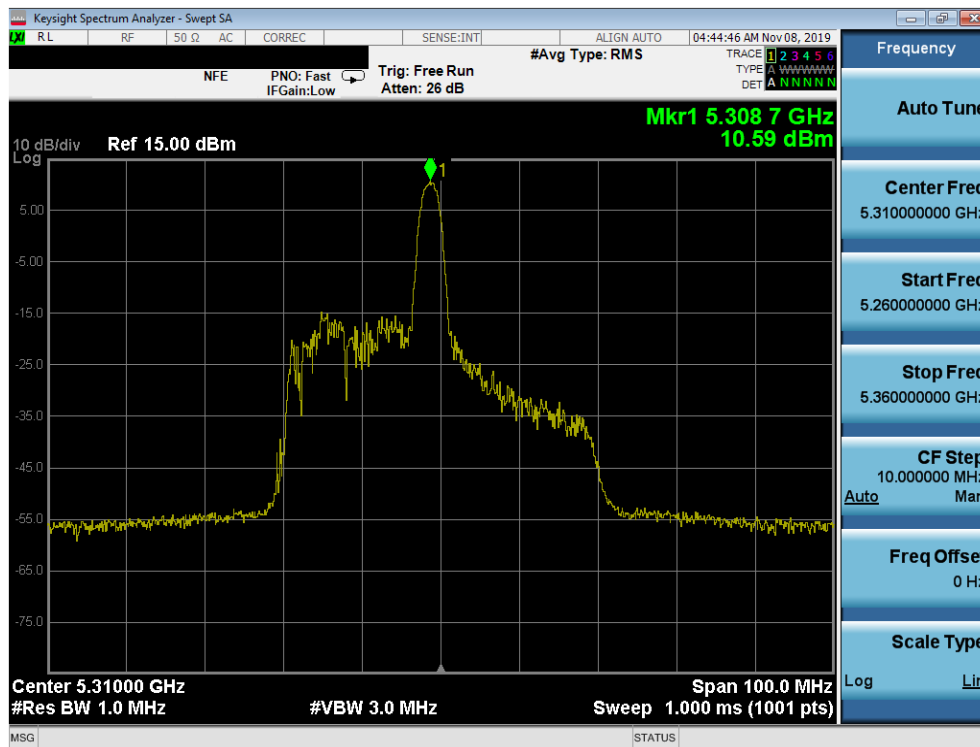


Plot 7-117. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

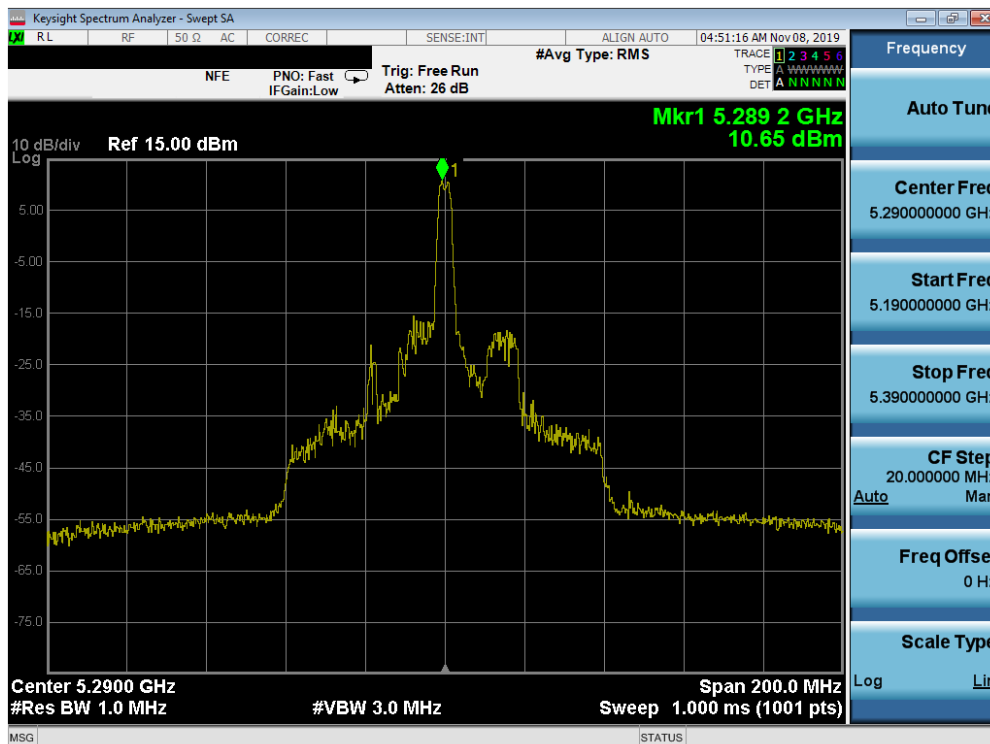


Plot 7-118. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 108 of 271

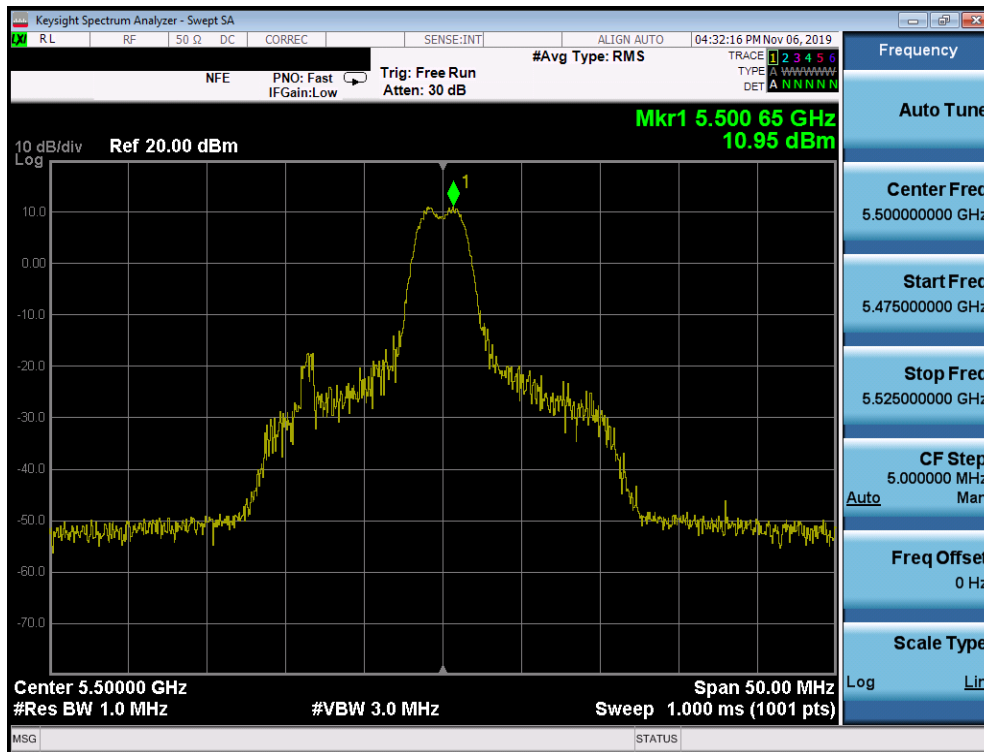


Plot 7-119. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

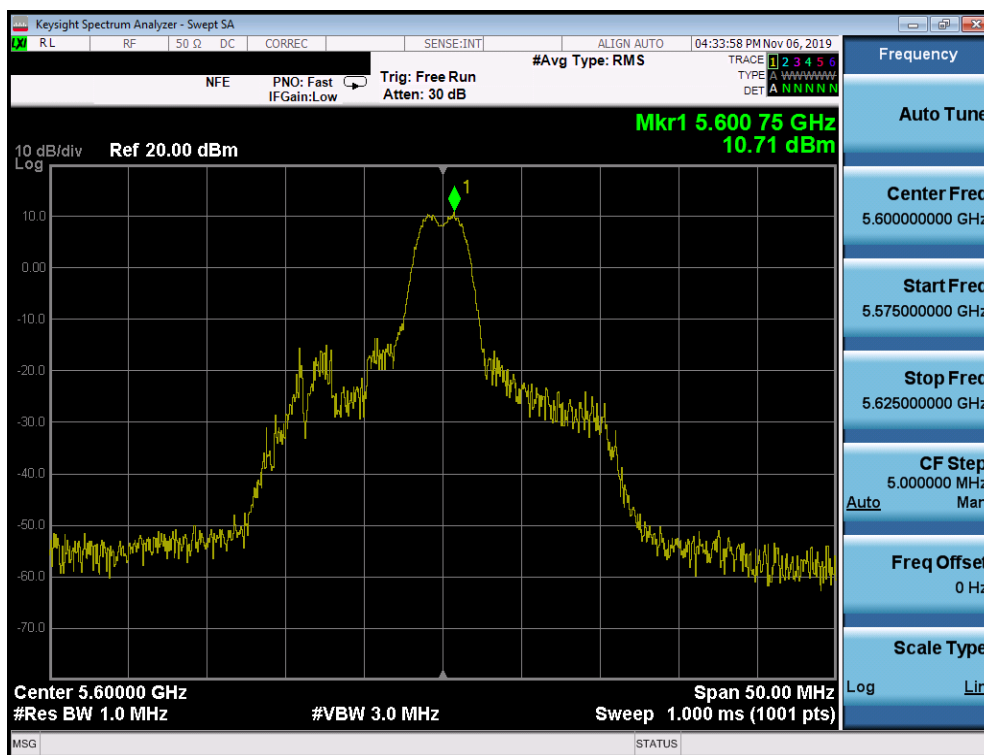


Plot 7-120. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 109 of 271

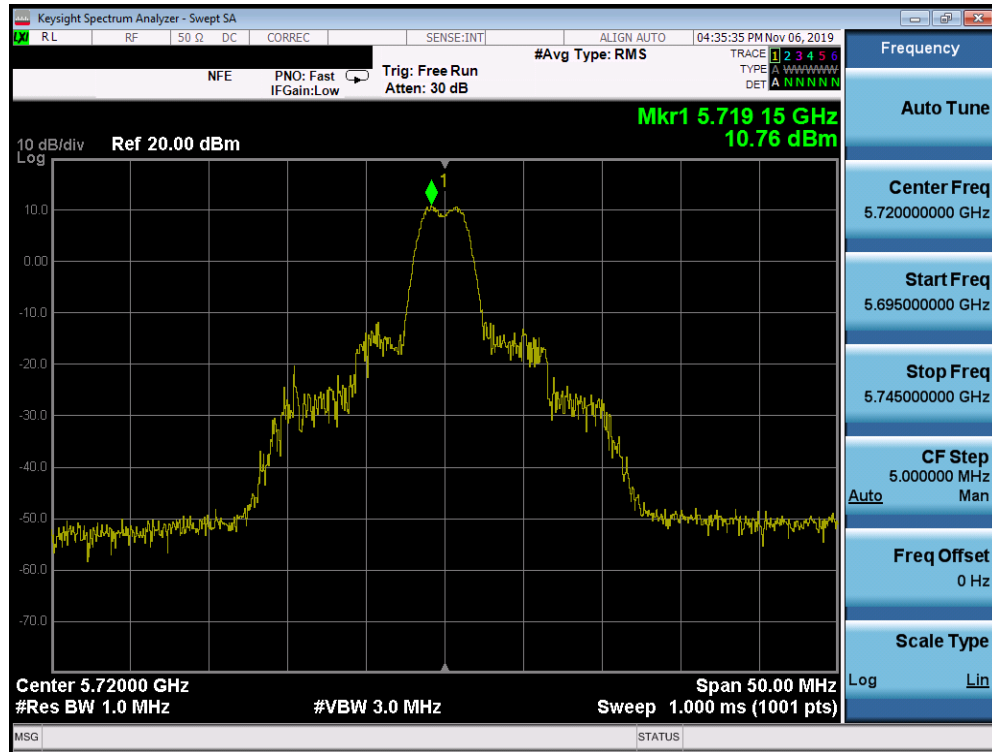


Plot 7-121. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

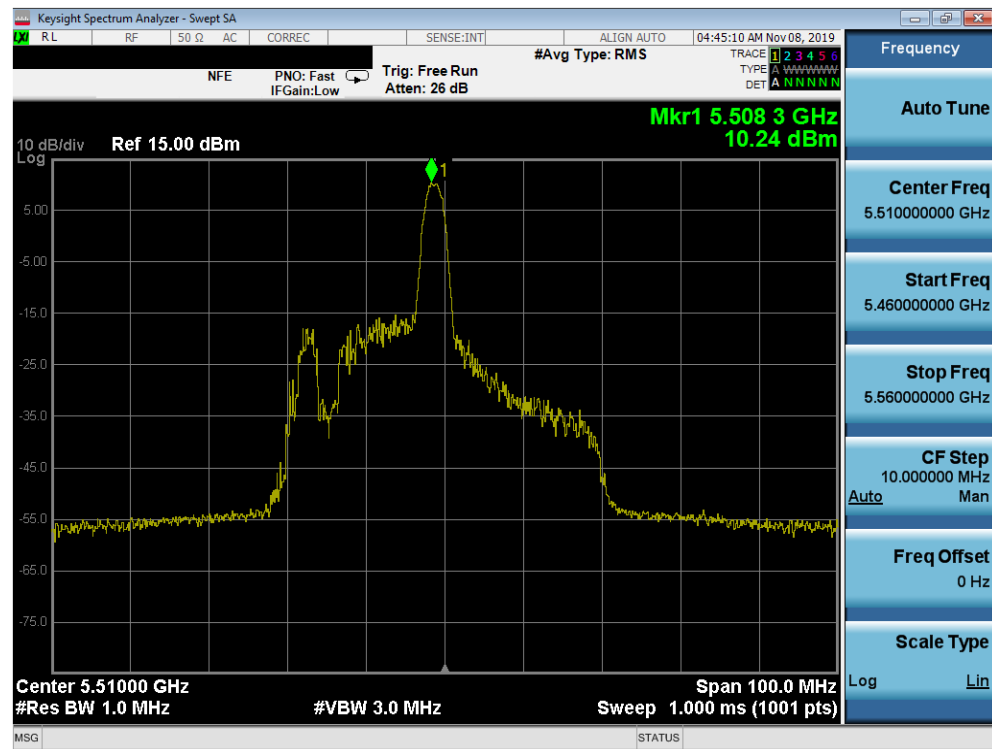


Plot 7-122. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 110 of 271

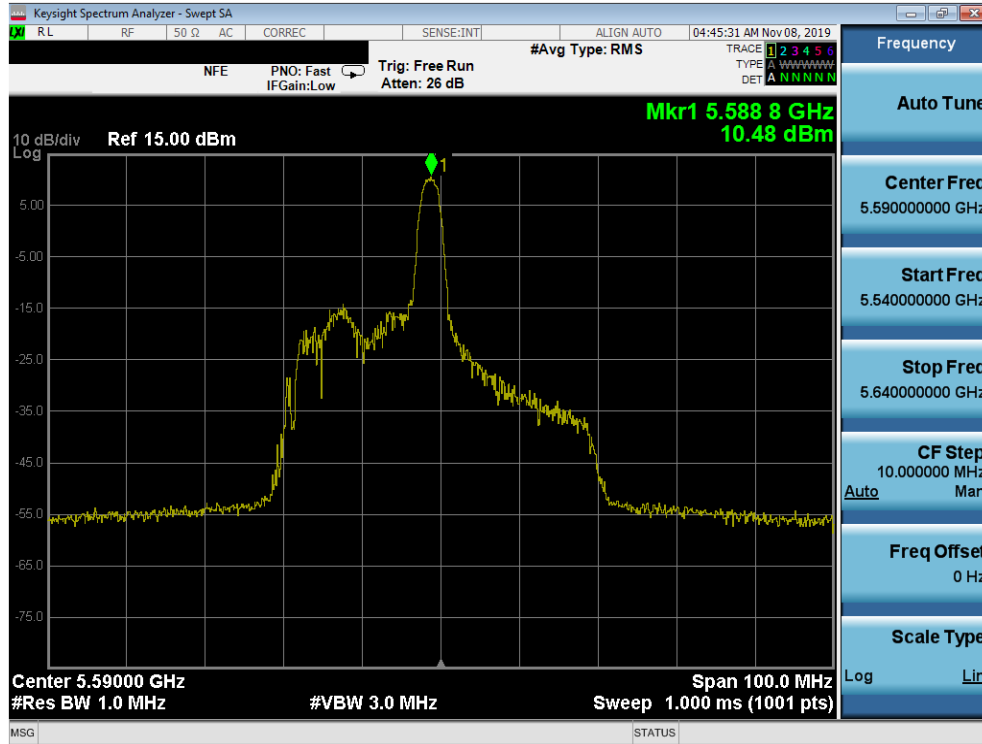


Plot 7-123. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

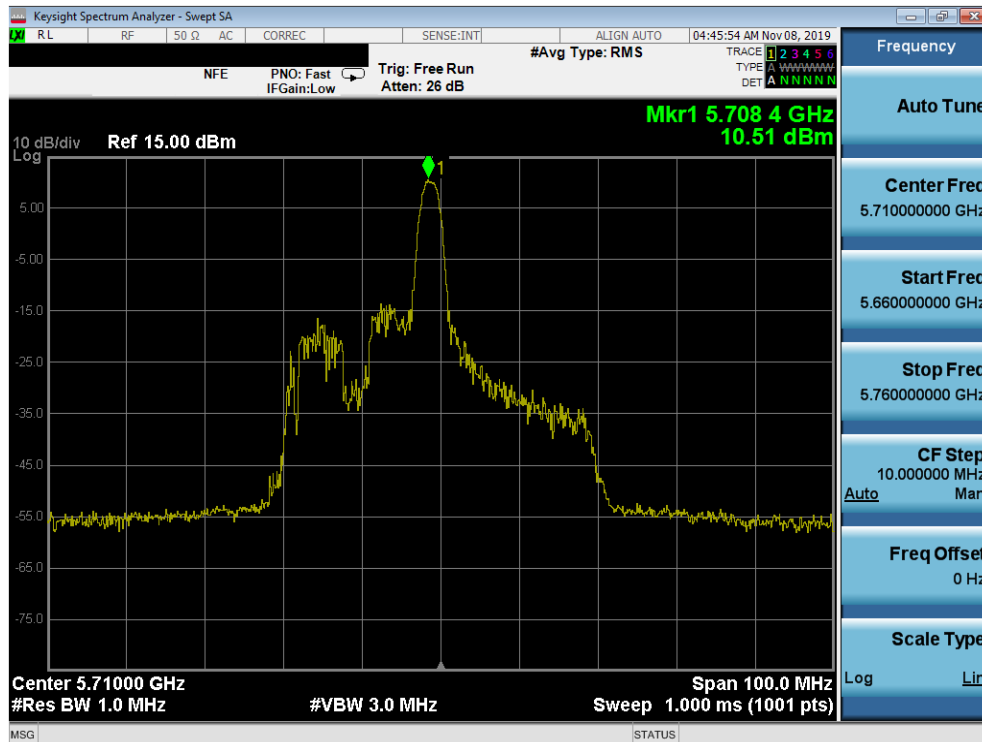


Plot 7-124. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 111 of 271

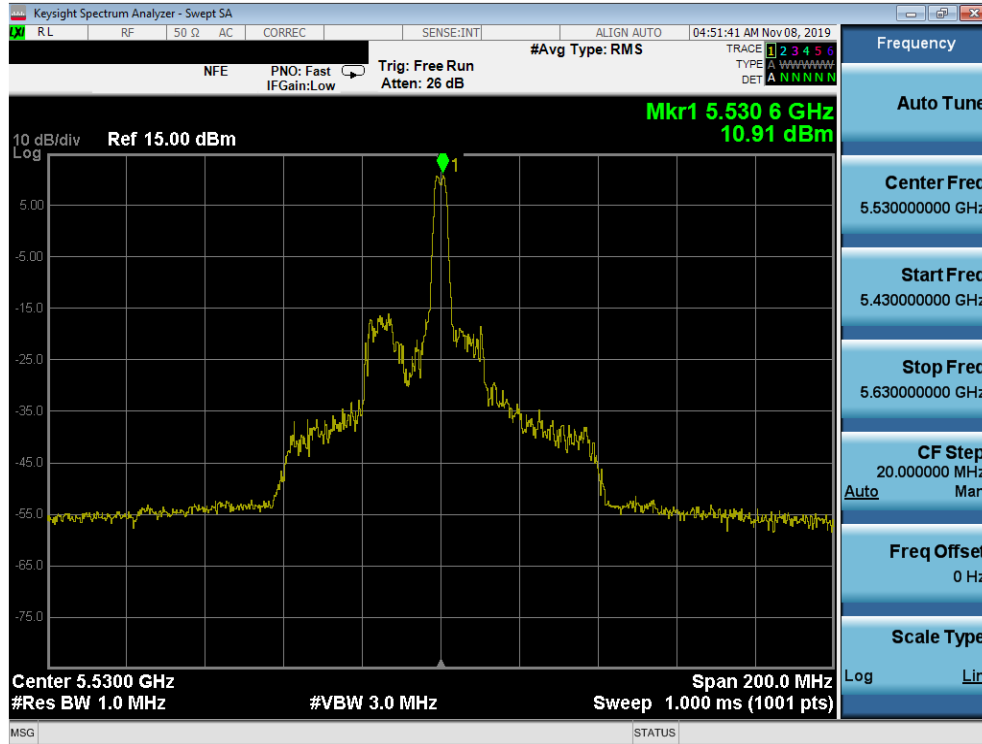


Plot 7-125. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

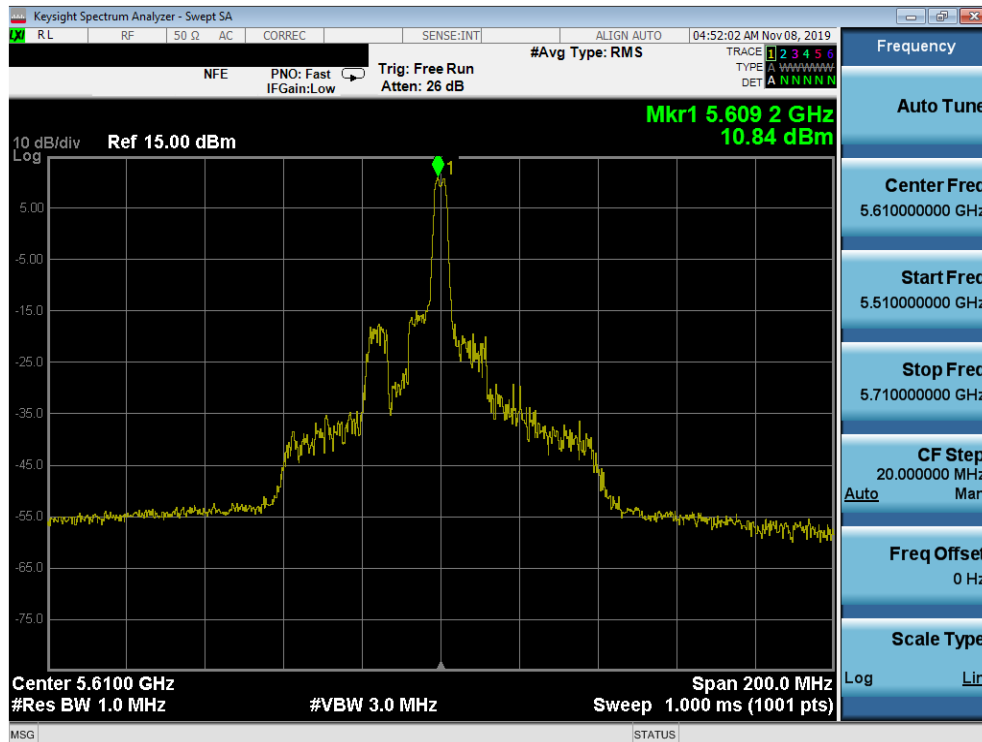


Plot 7-126. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 112 of 271

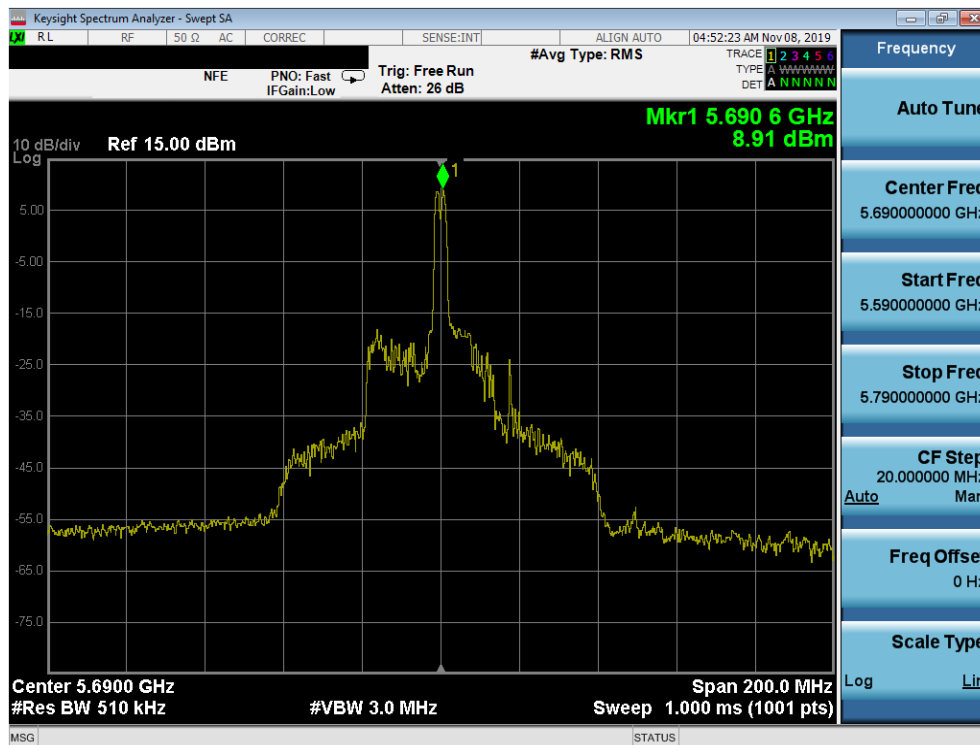


Plot 7-127. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-128. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 113 of 271



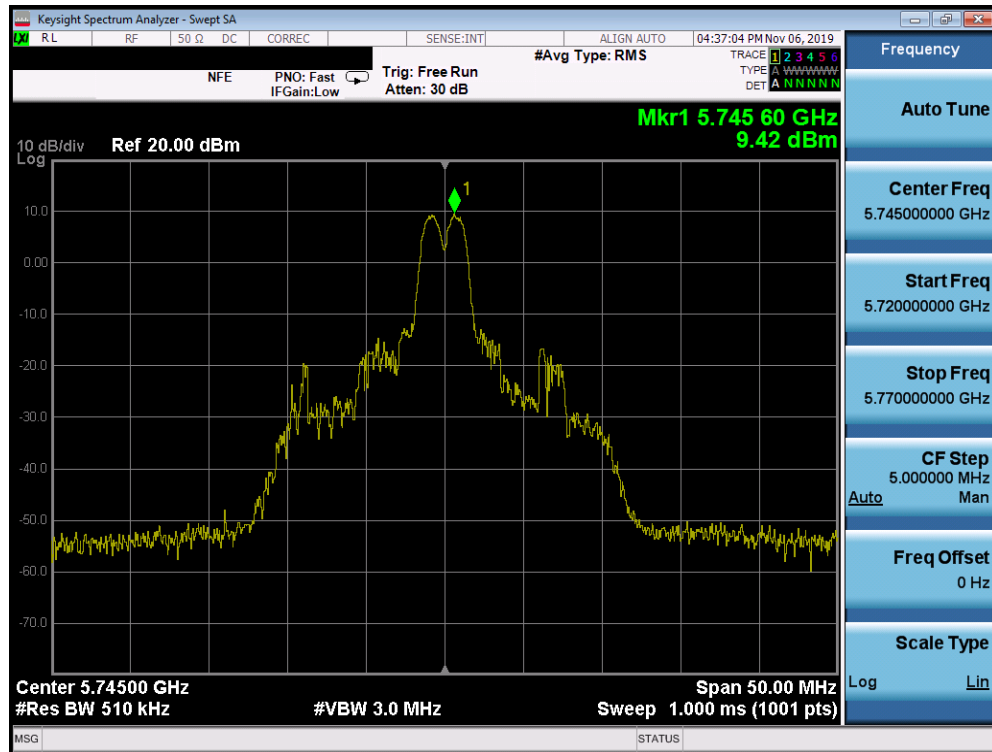
Plot 7-129. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 114 of 271

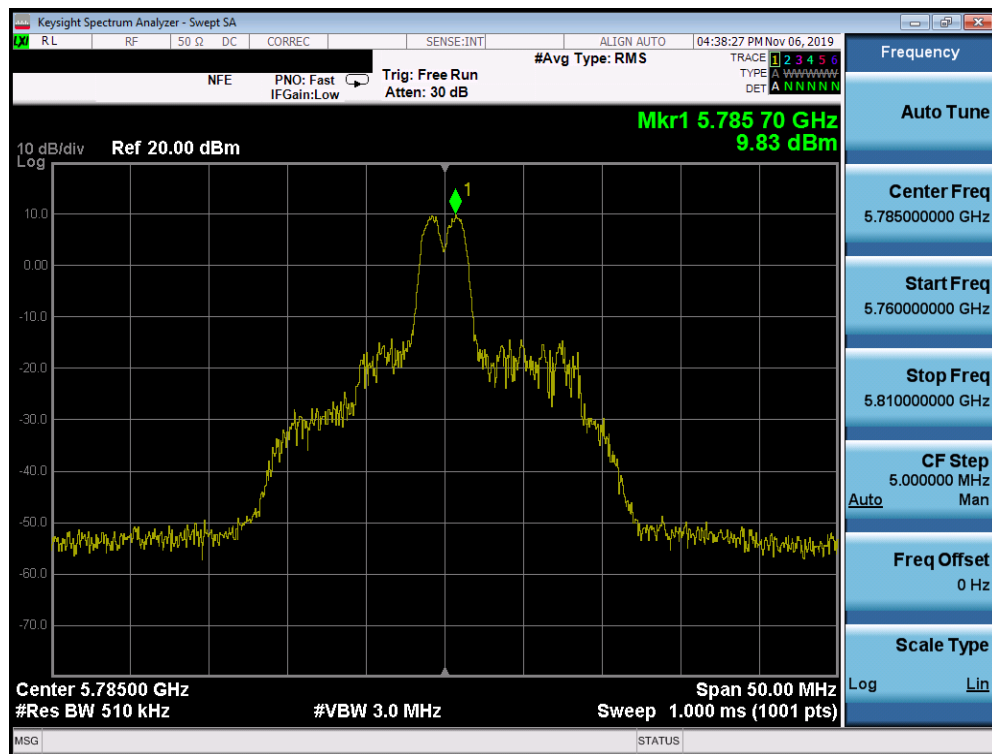
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	26T	MCS0	9.42	30.00	-20.58
	5785	157	ax (20MHz)	26T	MCS0	9.83	30.00	-20.17
	5825	165	ax (20MHz)	26T	MCS0	9.12	30.00	-20.88
	5755	151	ax (40MHz)	26T	MCS0	11.01	30.00	-18.99
	5795	159	ax (40MHz)	26T	MCS0	10.98	30.00	-19.02
	5775	155	ax (80MHz)	26T	MCS0	10.94	30.00	-19.06

Table 7-59. Band 3 Conducted Power Spectral Density Measurements SISO ANT2 (26 Tones)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 115 of 271

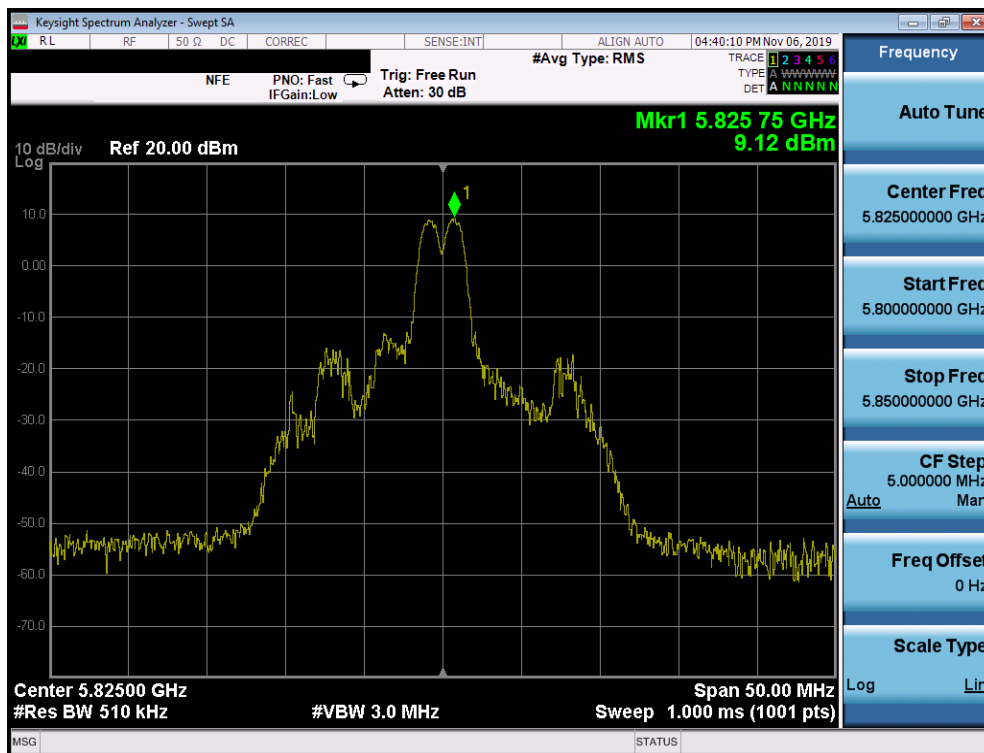


Plot 7-130. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

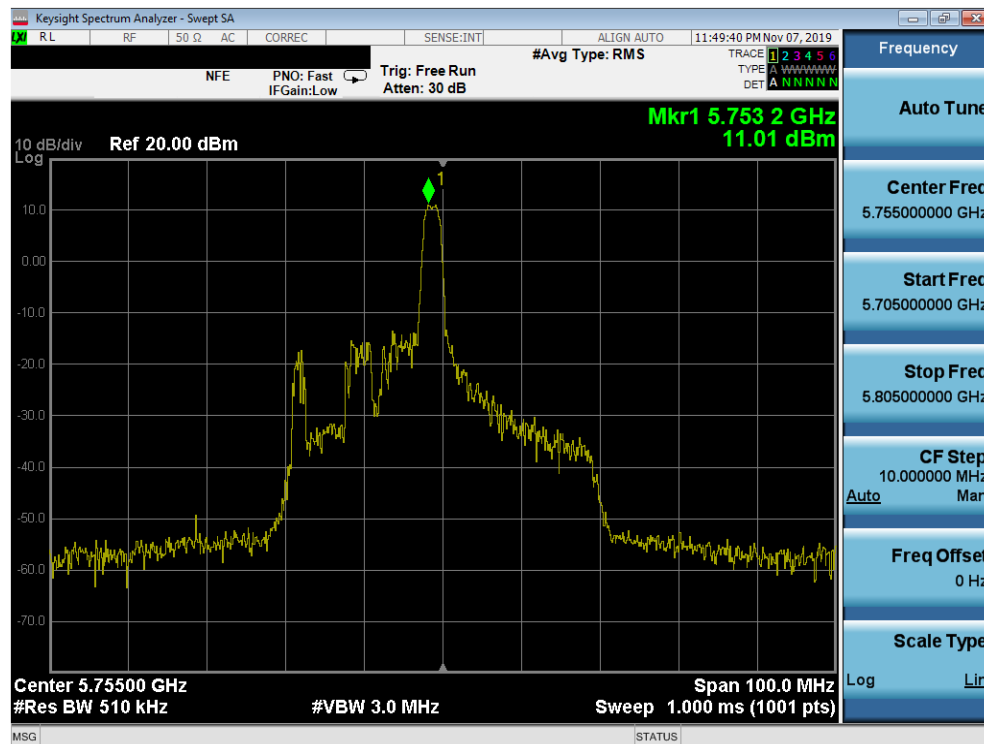


Plot 7-131. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 116 of 271

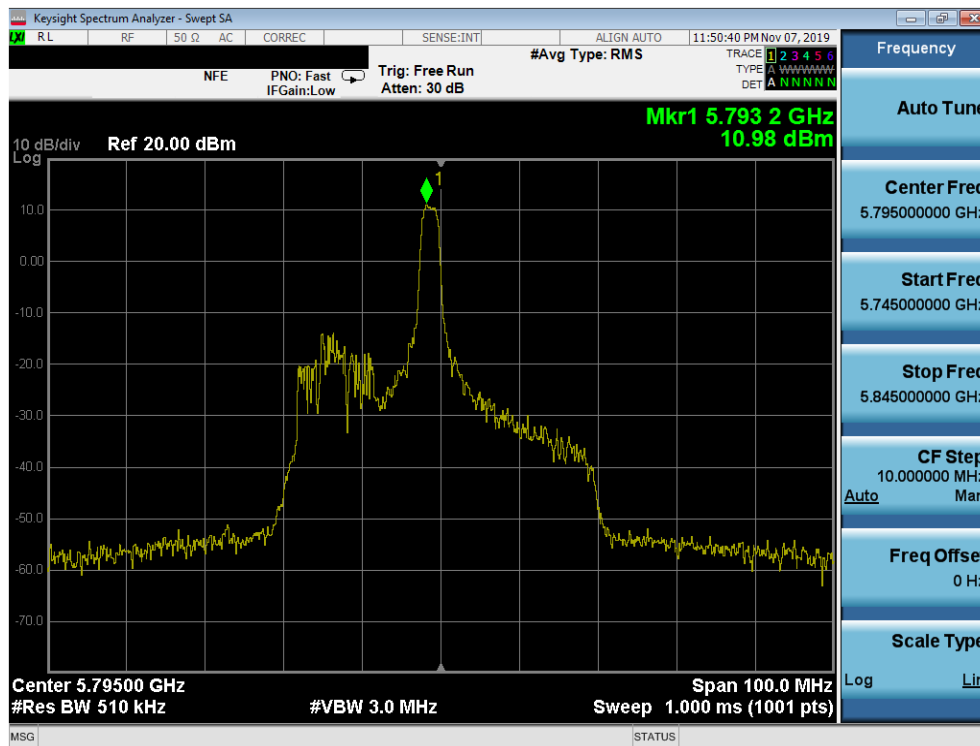


Plot 7-132. Power Spectral Density Plot SISO ANT2 (20 MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

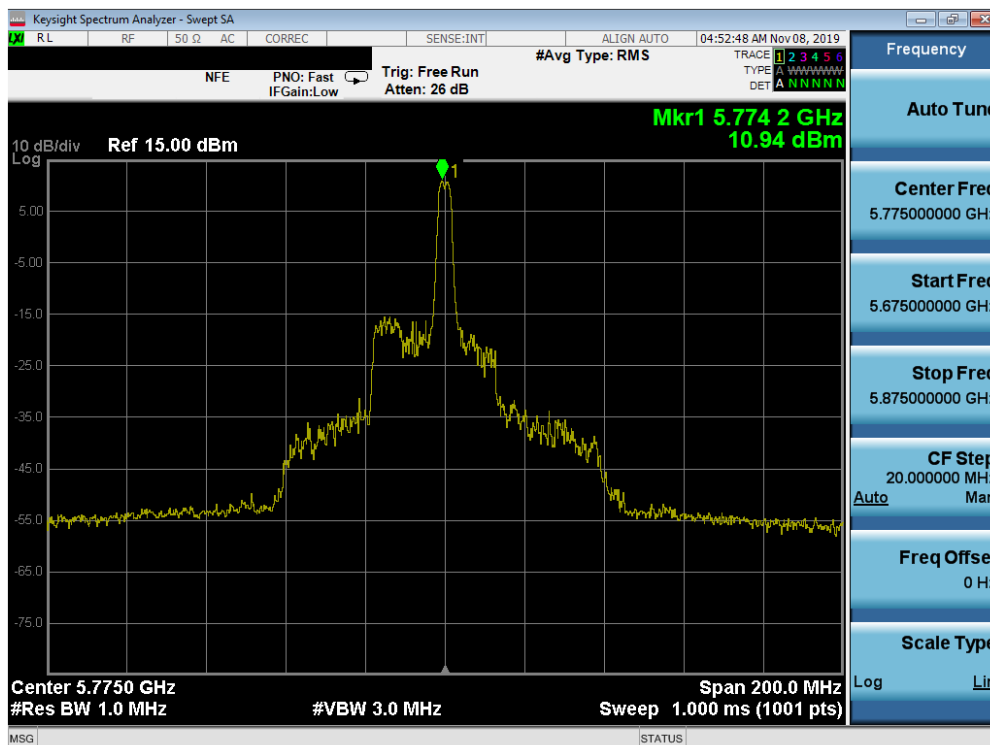


Plot 7-133. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 117 of 271



Plot 7-134. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



Plot 7-135. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 118 of 271

SISO Antenna-2 Power Spectral Density Measurements (Full Tones)

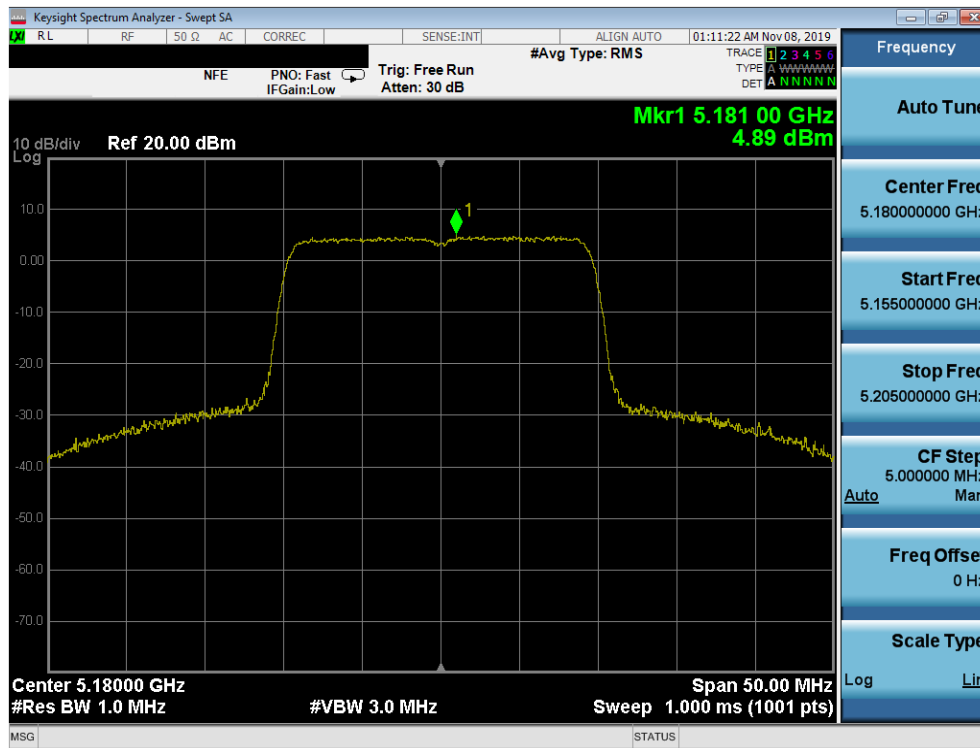
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	4.89	11.0	-6.11
	5200	40	ax (20MHz)	242T	MCS0	4.79	11.0	-6.21
	5240	48	ax (20MHz)	242T	MCS0	4.76	11.0	-6.24
	5190	38	ax (40MHz)	484T	MCS0	1.75	11.0	-9.25
	5230	46	ax (40MHz)	484T	MCS0	1.79	11.0	-9.21
	5210	42	ax (80MHz)	996T	MCS0	-2.34	11.0	-13.34
Band 2A	5260	52	ax (20MHz)	242T	MCS0	4.63	11.0	-6.37
	5280	56	ax (20MHz)	242T	MCS0	4.53	11.0	-6.47
	5320	64	ax (20MHz)	242T	MCS0	4.71	11.0	-6.29
	5270	54	ax (40MHz)	484T	MCS0	1.60	11.0	-9.40
	5310	62	ax (40MHz)	484T	MCS0	1.80	11.0	-9.20
	5290	58	ax (80MHz)	996T	MCS0	-2.35	11.0	-13.35
Band 2C	5500	100	ax (20MHz)	242T	MCS0	4.55	11.0	-6.45
	5600	120	ax (20MHz)	242T	MCS0	4.67	11.0	-6.33
	5720	144	ax (20MHz)	242T	MCS0	4.87	11.0	-6.13
	5510	102	ax (40MHz)	484T	MCS0	1.76	11.0	-9.25
	5590	118	ax (40MHz)	484T	MCS0	1.76	11.0	-9.24
	5710	142	ax (40MHz)	484T	MCS0	1.87	11.0	-9.13
	5530	106	ax (80MHz)	996T	MCS0	-1.43	11.0	-12.43
	5610	122	ax (80MHz)	996T	MCS0	-1.34	11.0	-12.34
	5690	138	ax (80MHz)	996T	MCS0	-4.00	11.0	-15.00

Table 7-60. Conducted Power Spectral Density Measurements SISO ANT2 (Full Tones)

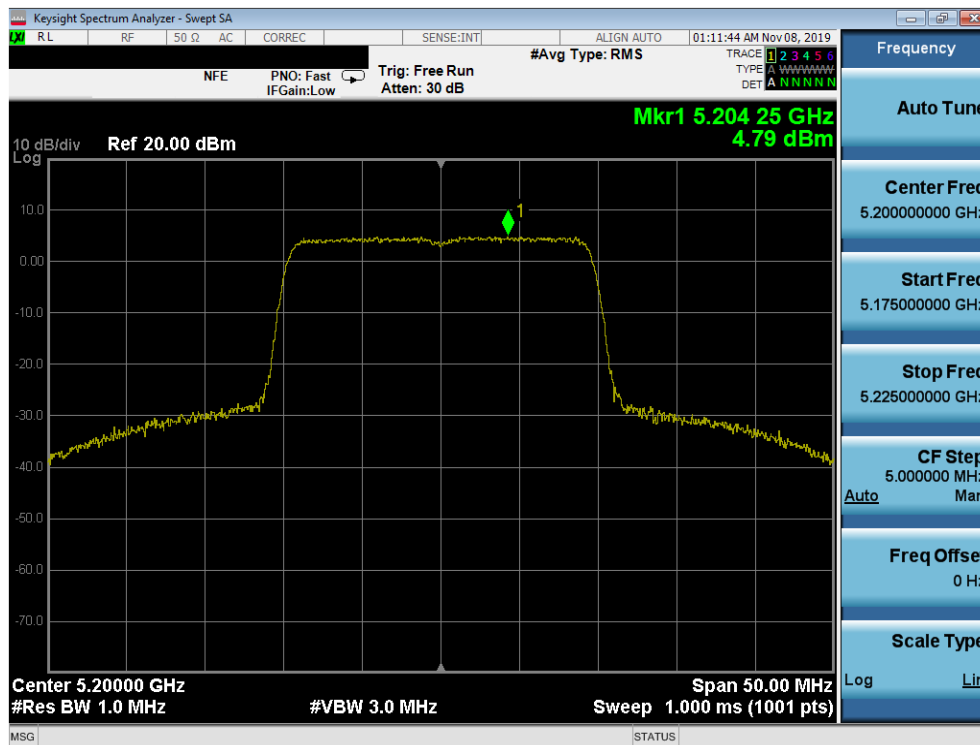
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	4.89	-6.70	-1.81	10.0	-11.81
	5200	40	ax (20MHz)	242T	MCS0	4.79	-6.70	-1.91	10.0	-11.91
	5240	48	ax (20MHz)	242T	MCS0	4.76	-6.50	-1.74	10.0	-11.74
	5190	38	ax (40MHz)	484T	MCS0	1.75	-6.70	-4.95	10.0	-14.95
	5230	46	ax (40MHz)	484T	MCS0	1.79	-6.70	-4.91	10.0	-14.91
	5210	42	ax (80MHz)	996T	MCS0	-2.33	-6.70	-9.03	10.0	-19.03

Table 7-61. Band 1 e.i.r.p. Conducted Power Spectral Density Measurements (ISED Full Tones)

FCC ID: A3LSMG981U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset			Page 119 of 271

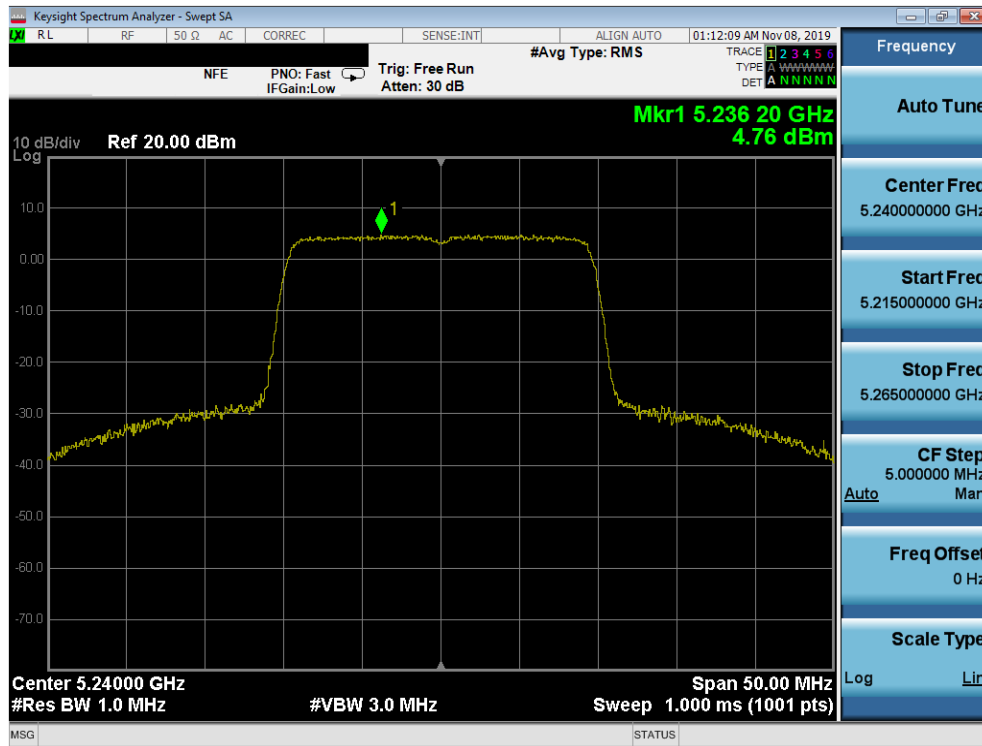


Plot 7-136. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 36)

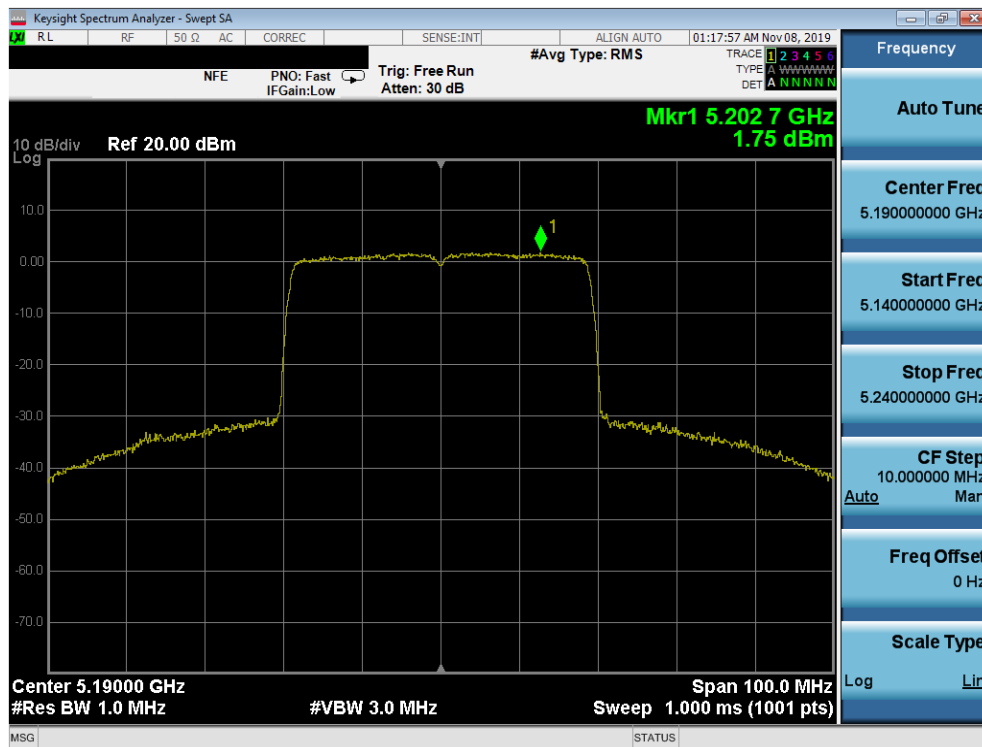


Plot 7-137. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 120 of 271

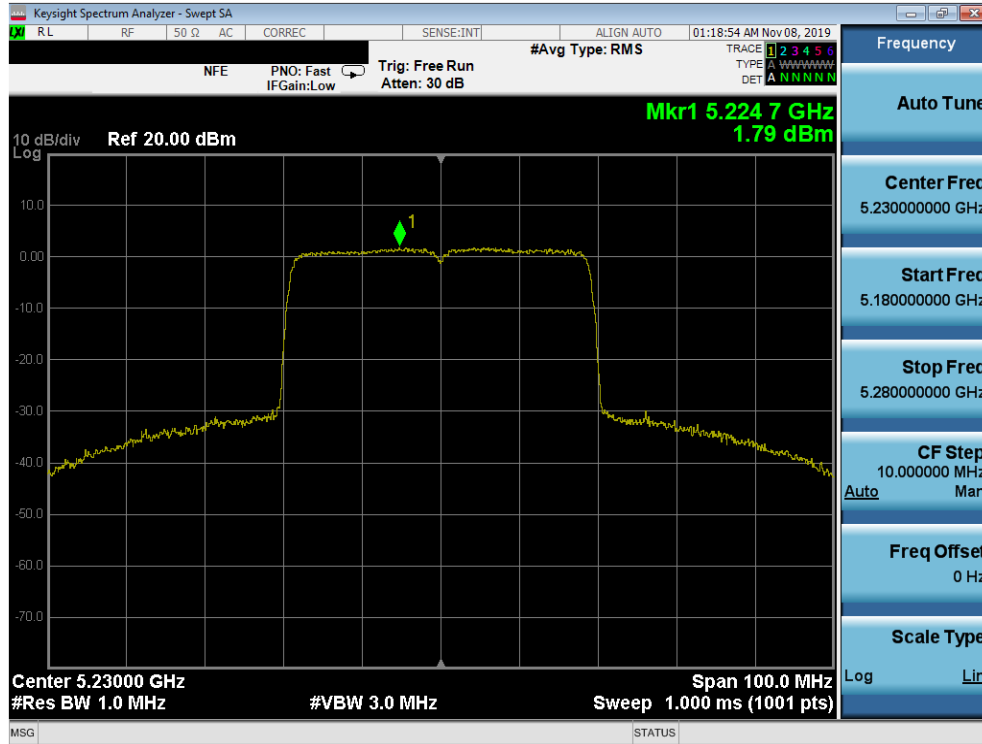


Plot 7-138. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 48)

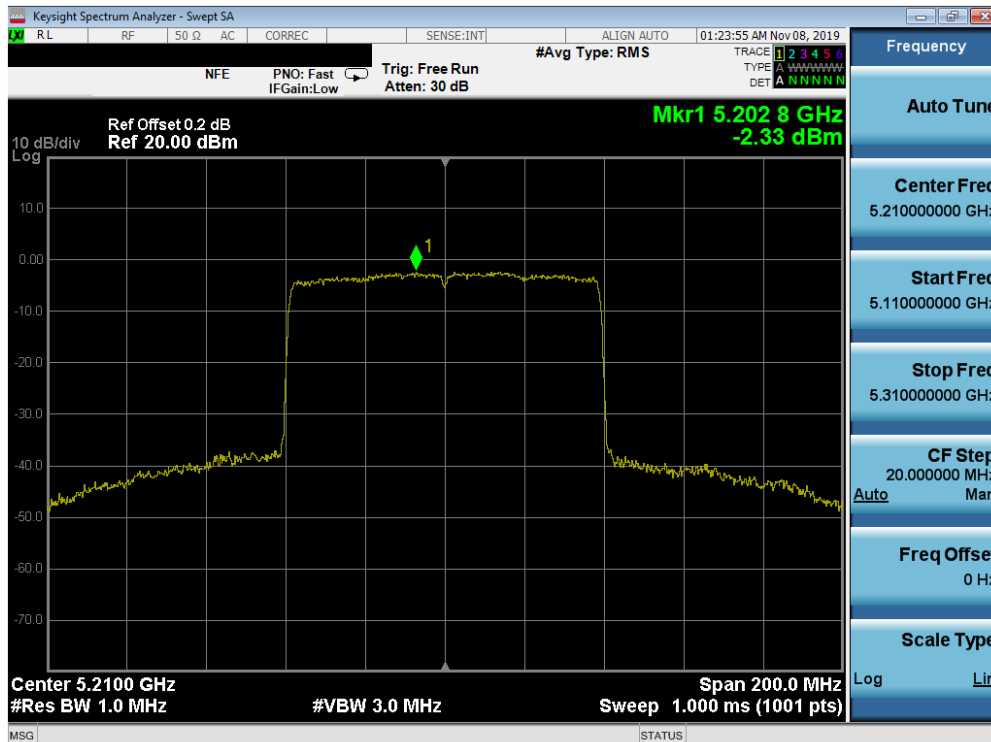


Plot 7-139. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 121 of 271

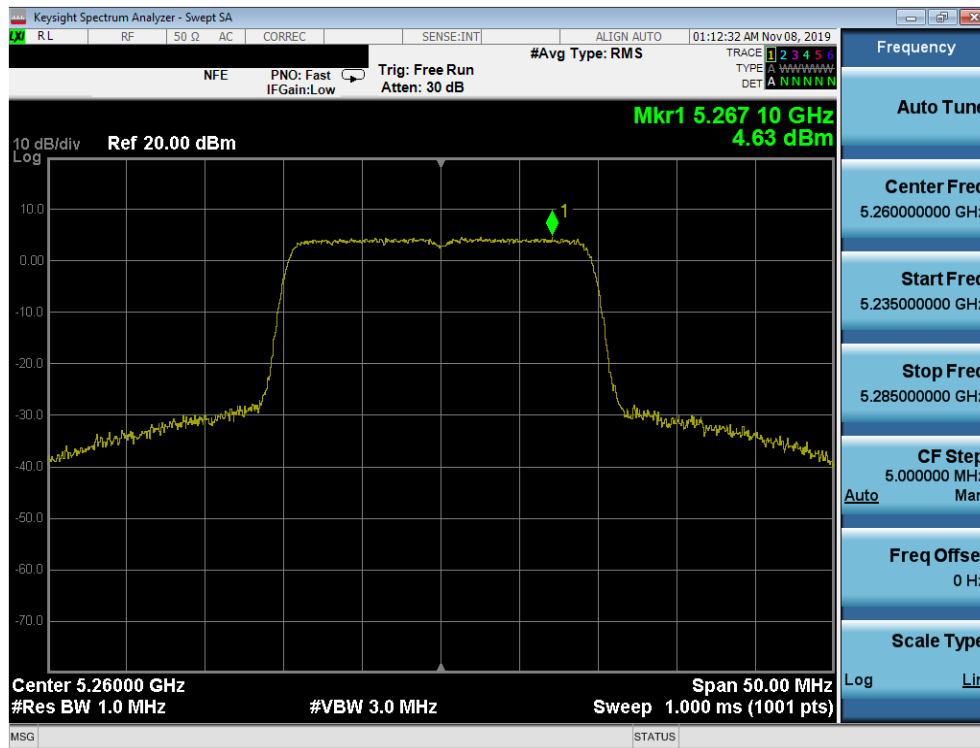


Plot 7-140. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 46)

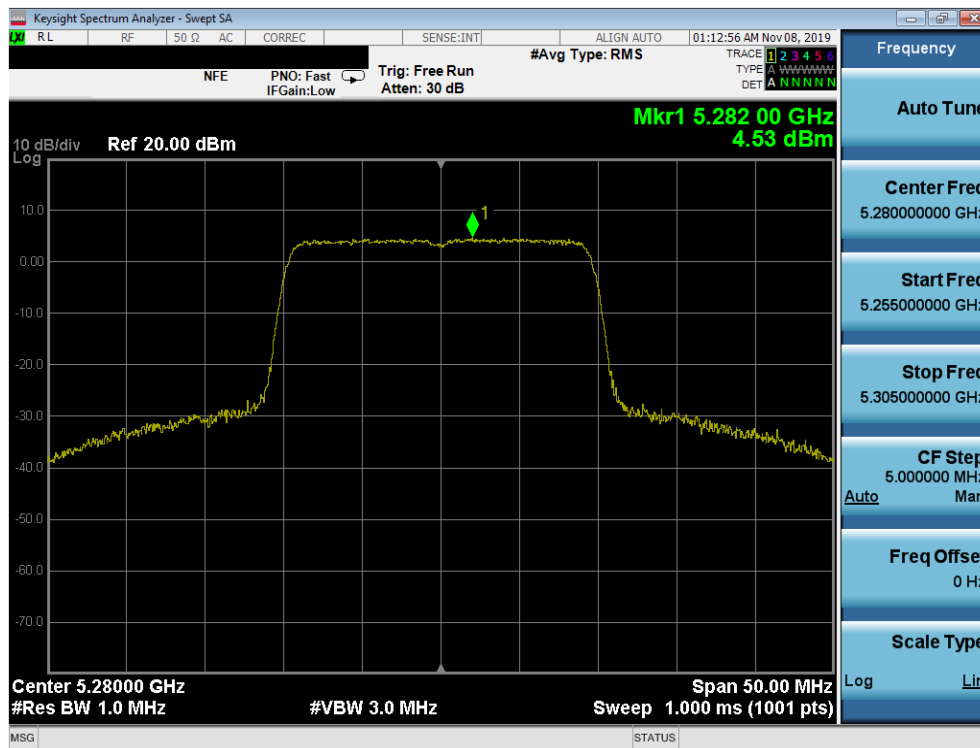


Plot 7-141. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 122 of 271

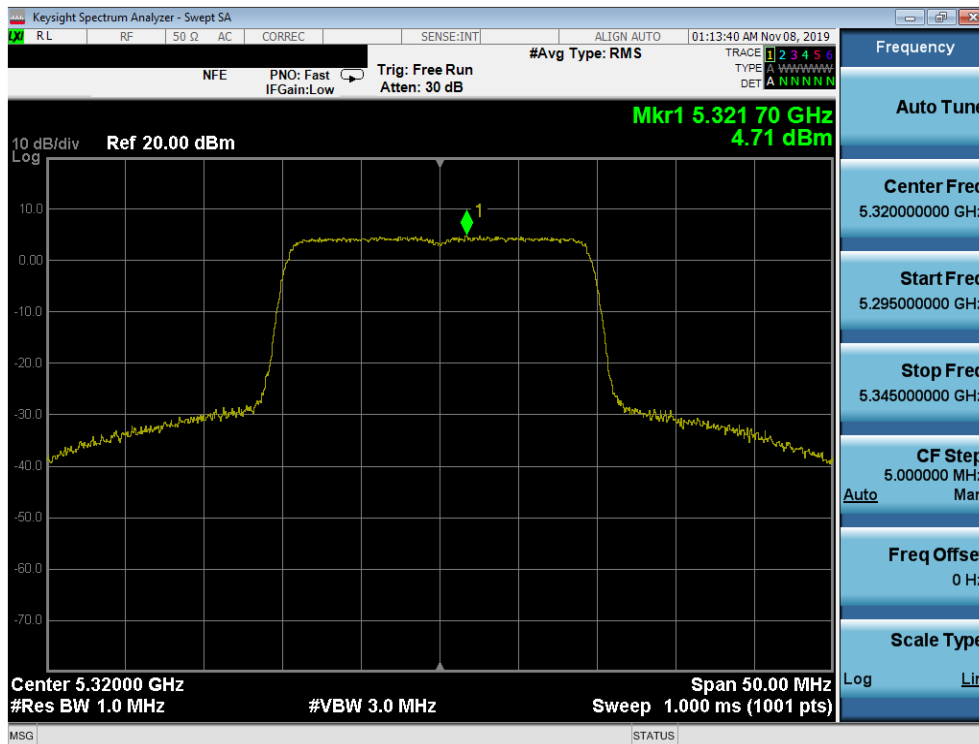


Plot 7-142. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)

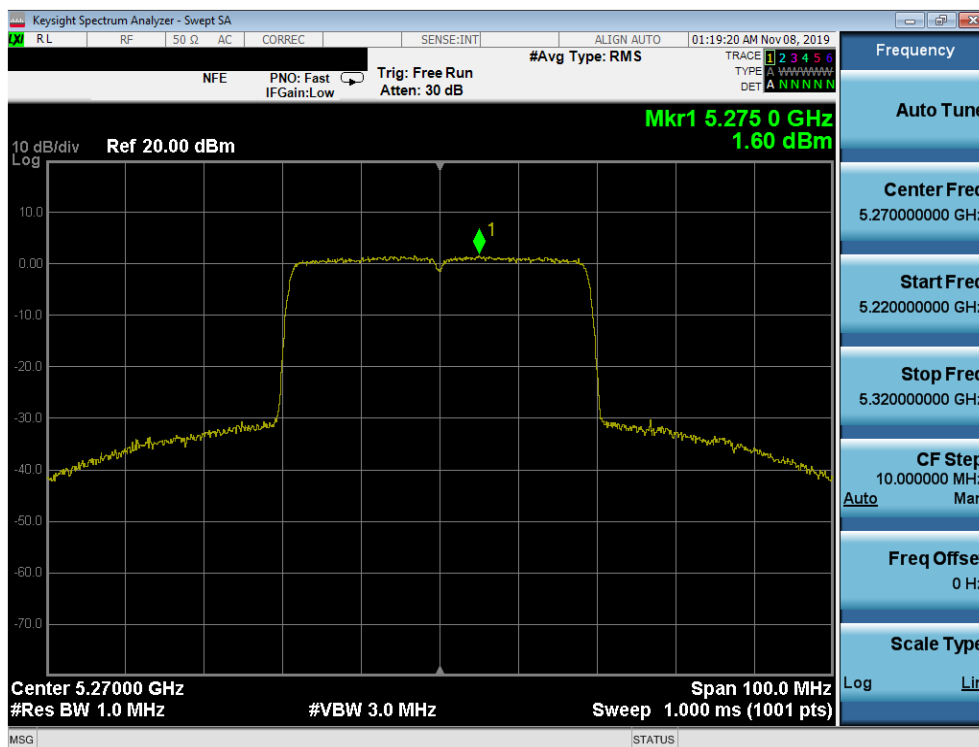


Plot 7-143. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 123 of 271

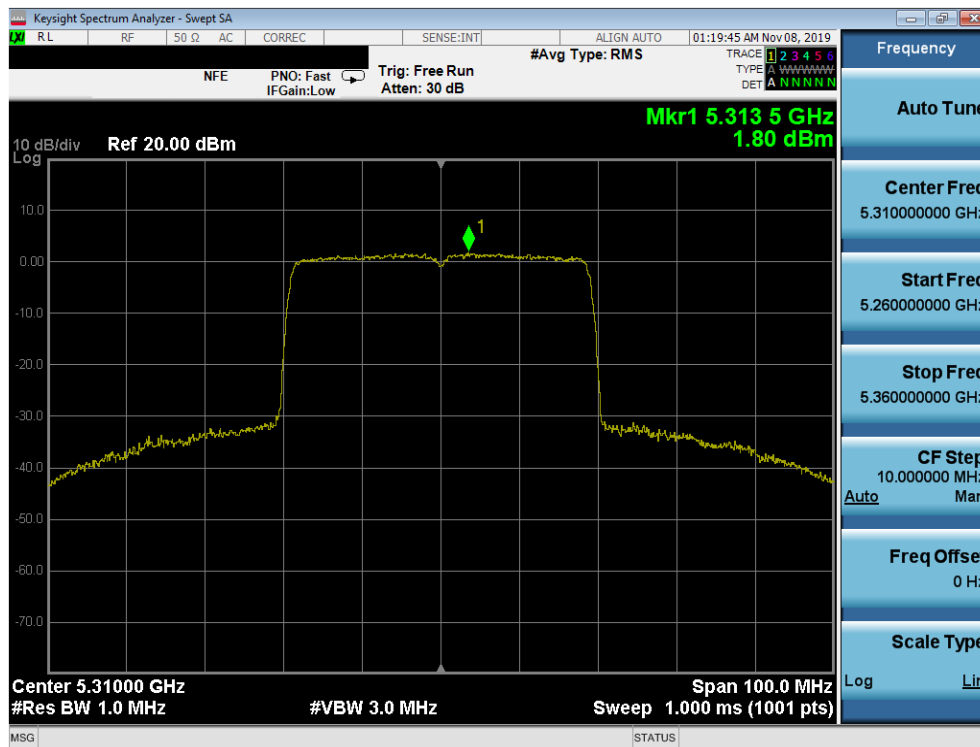


Plot 7-144. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

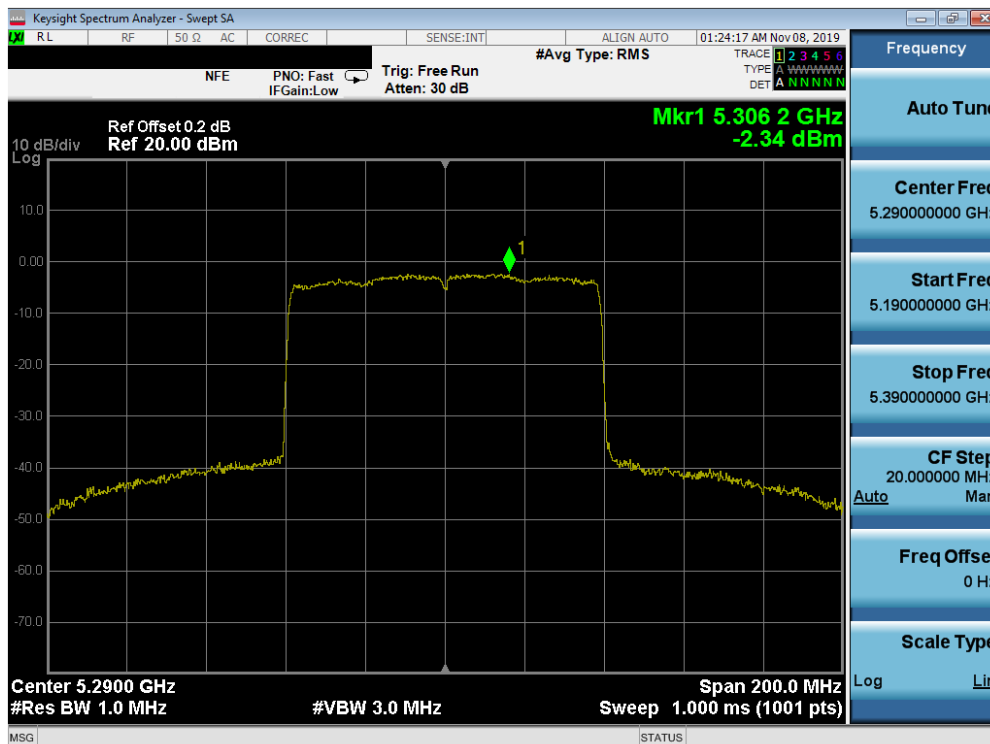


Plot 7-145. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 124 of 271

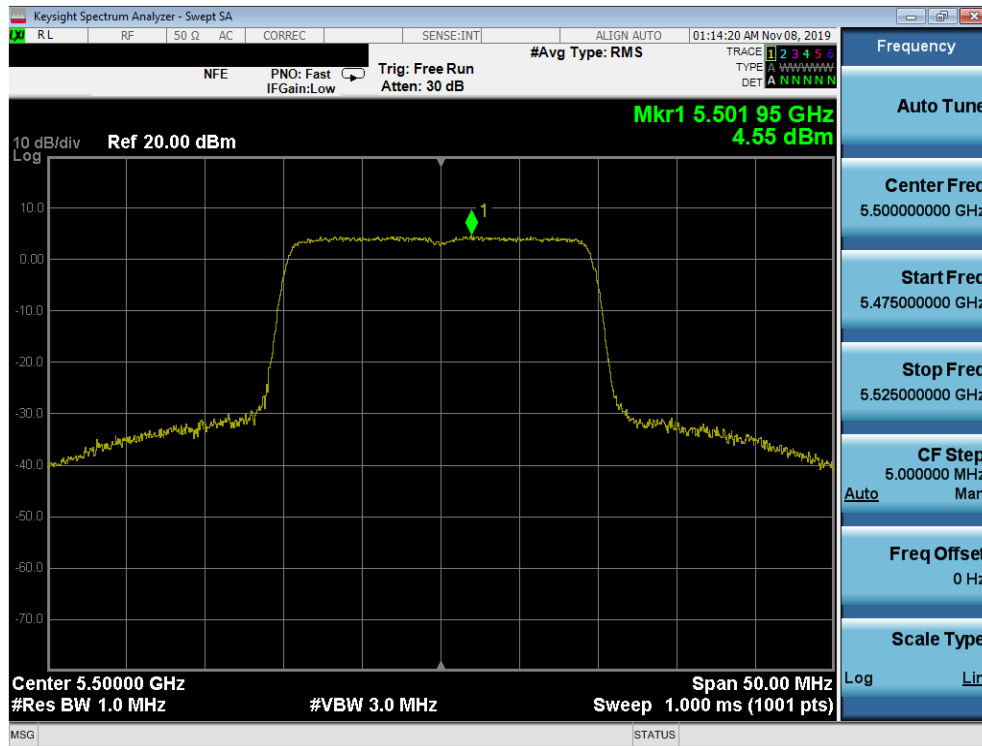


Plot 7-146. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)

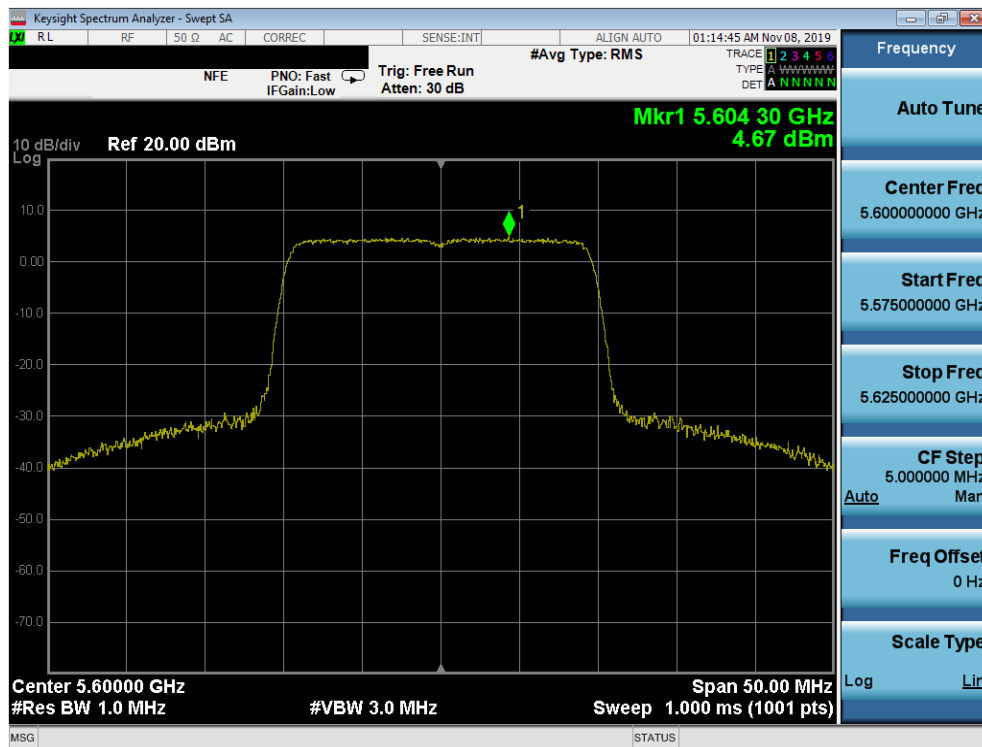


Plot 7-147. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 125 of 271

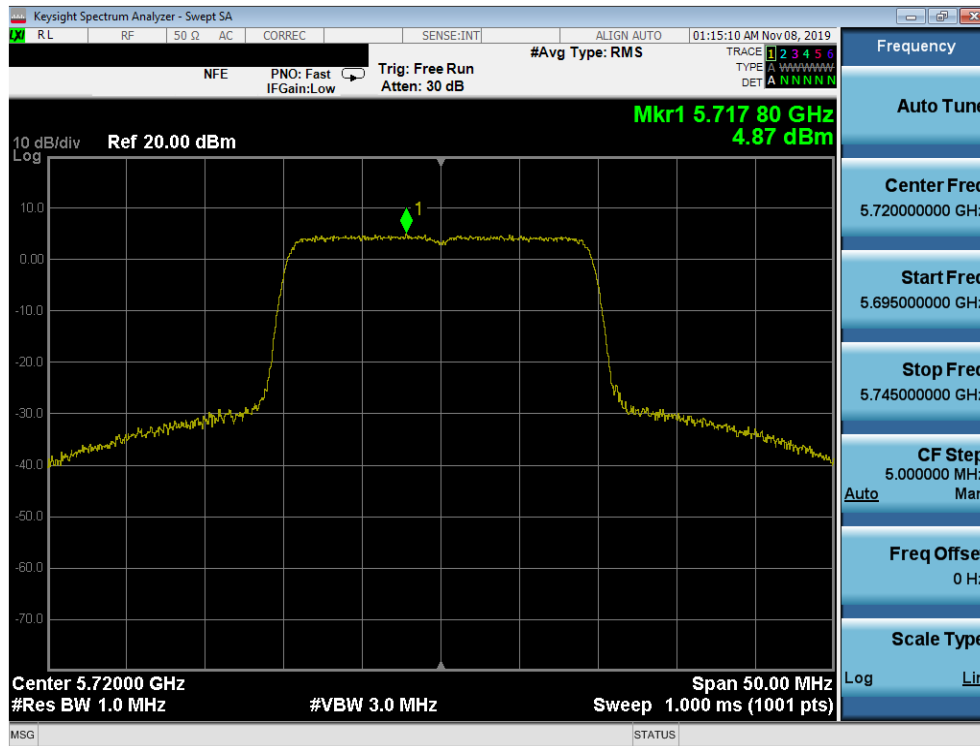


Plot 7-148. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)

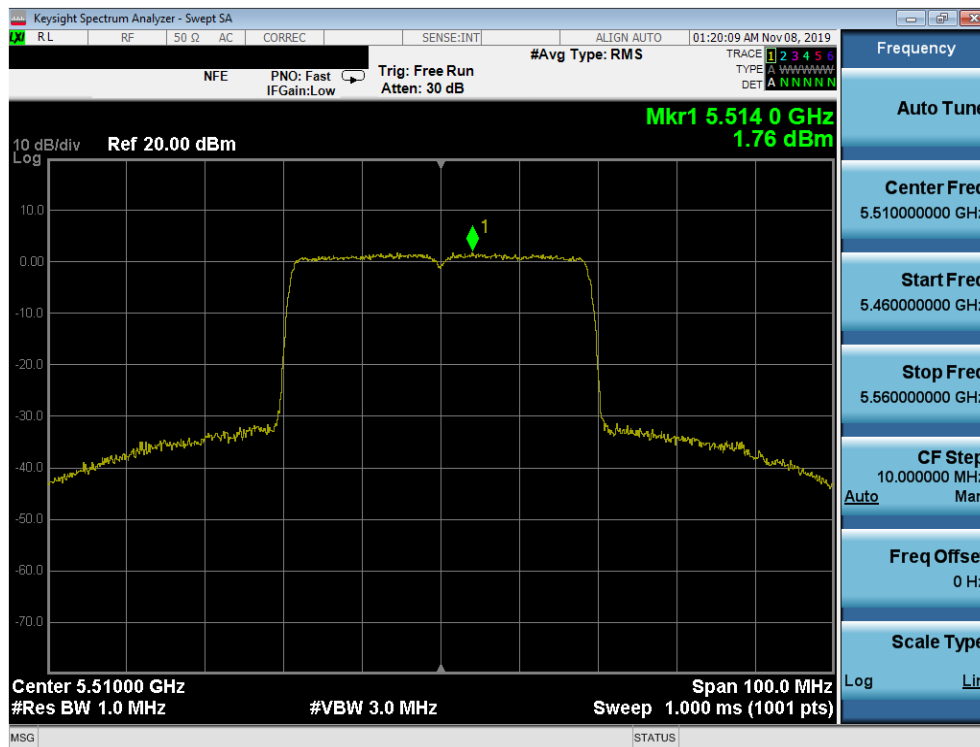


Plot 7-149. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 126 of 271

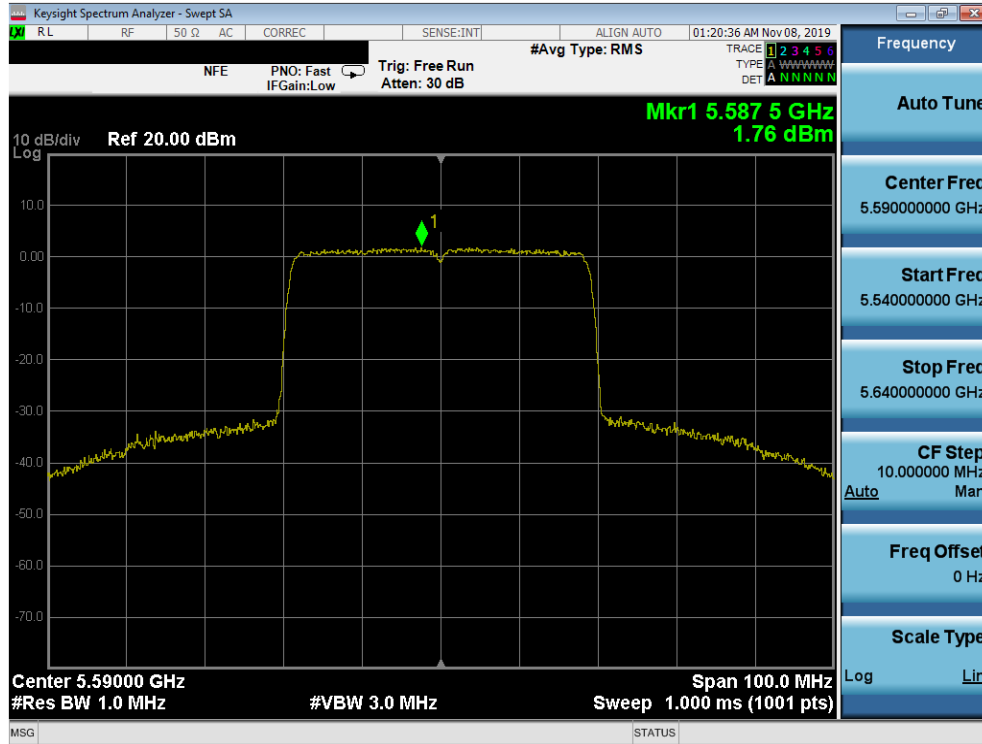


Plot 7-150. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)

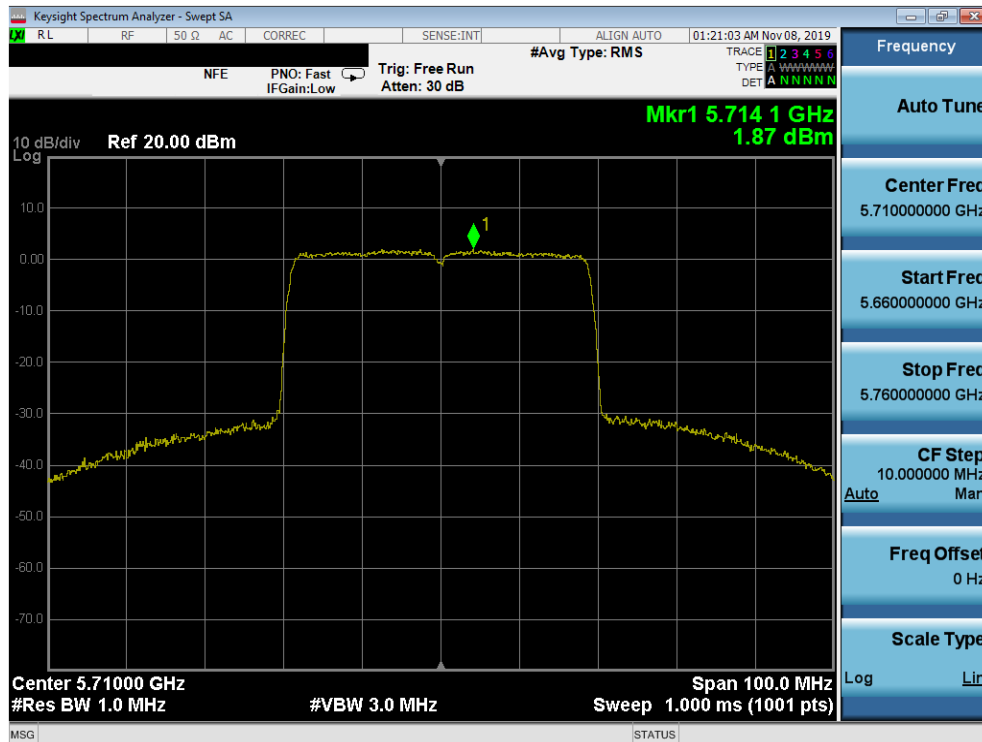


Plot 7-151. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 127 of 271

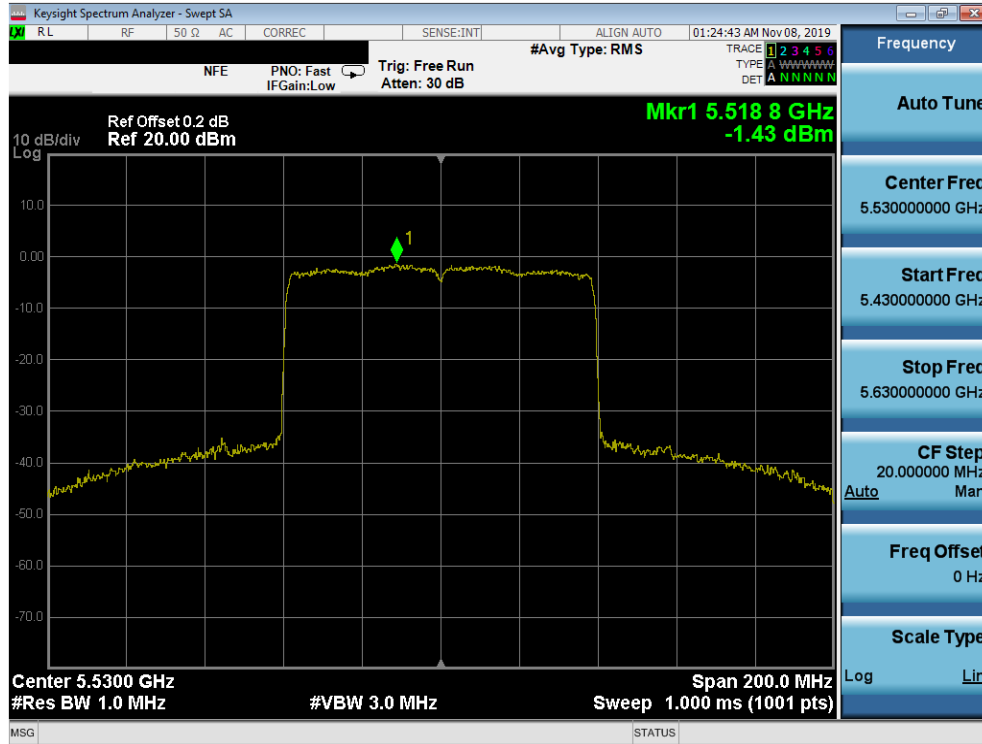


Plot 7-152. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 118)

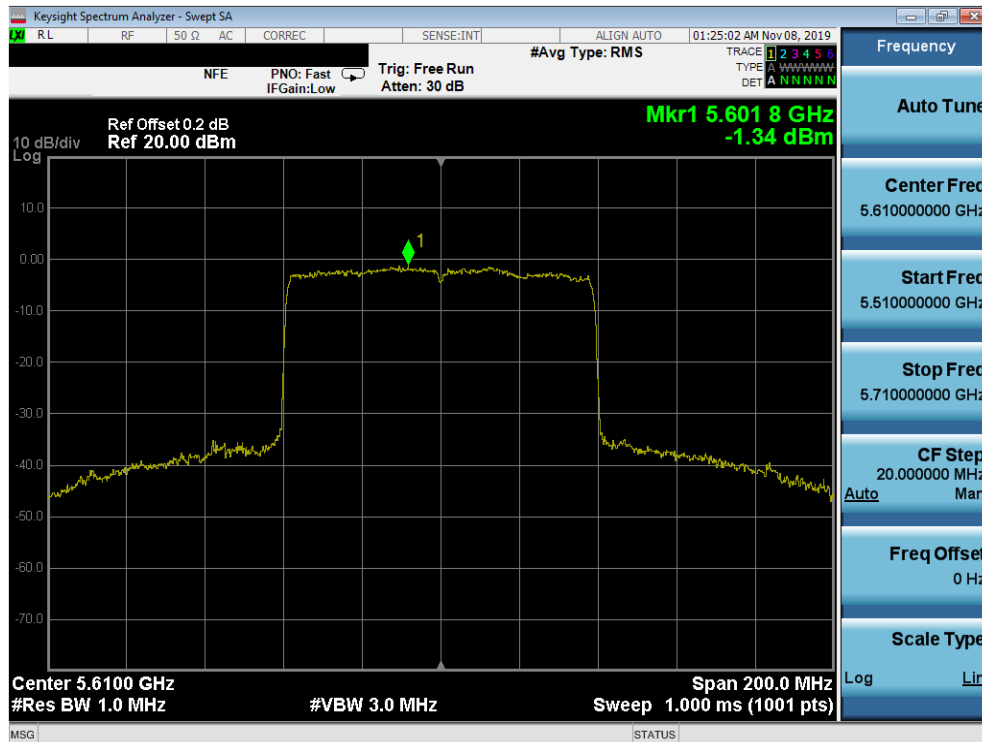


Plot 7-153. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 128 of 271

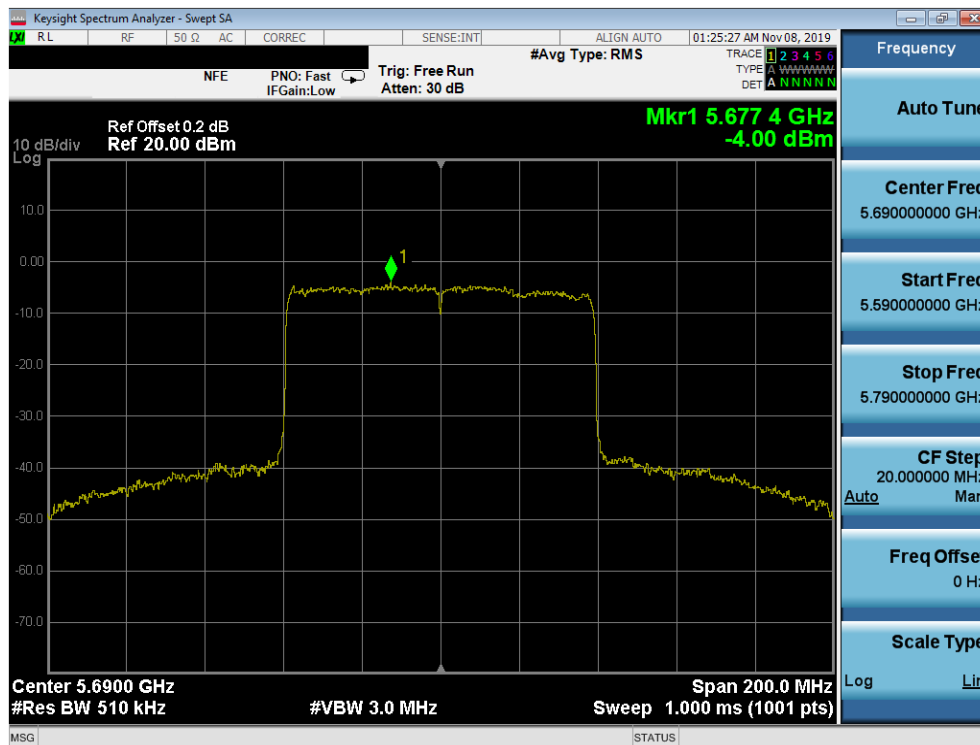


Plot 7-154. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)



Plot 7-155. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 129 of 271



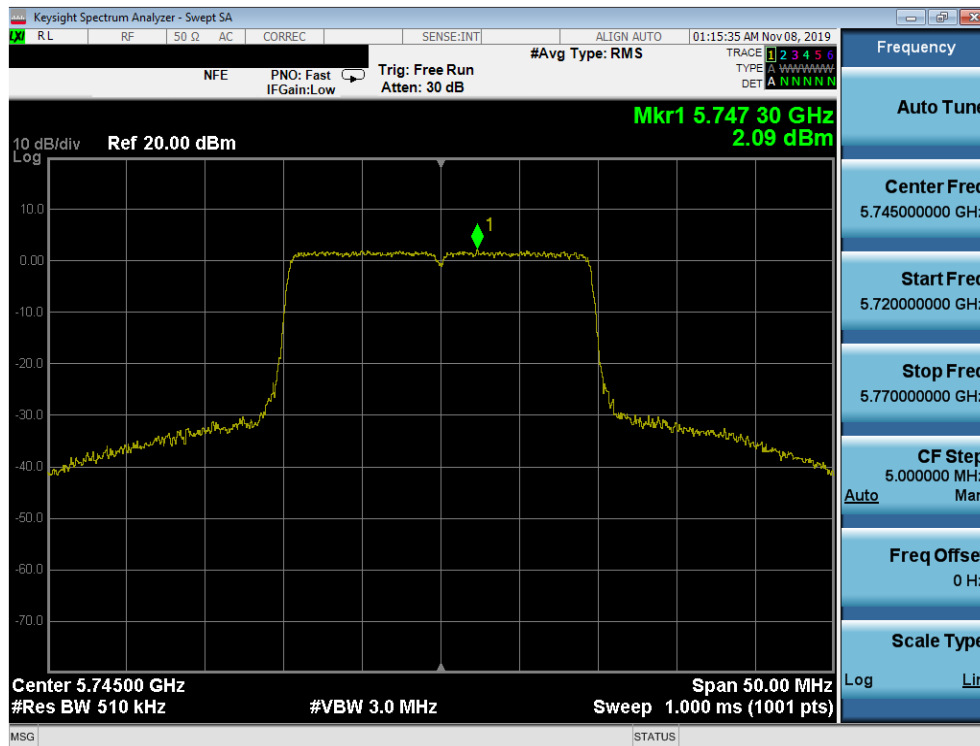
Plot 7-156. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 130 of 271

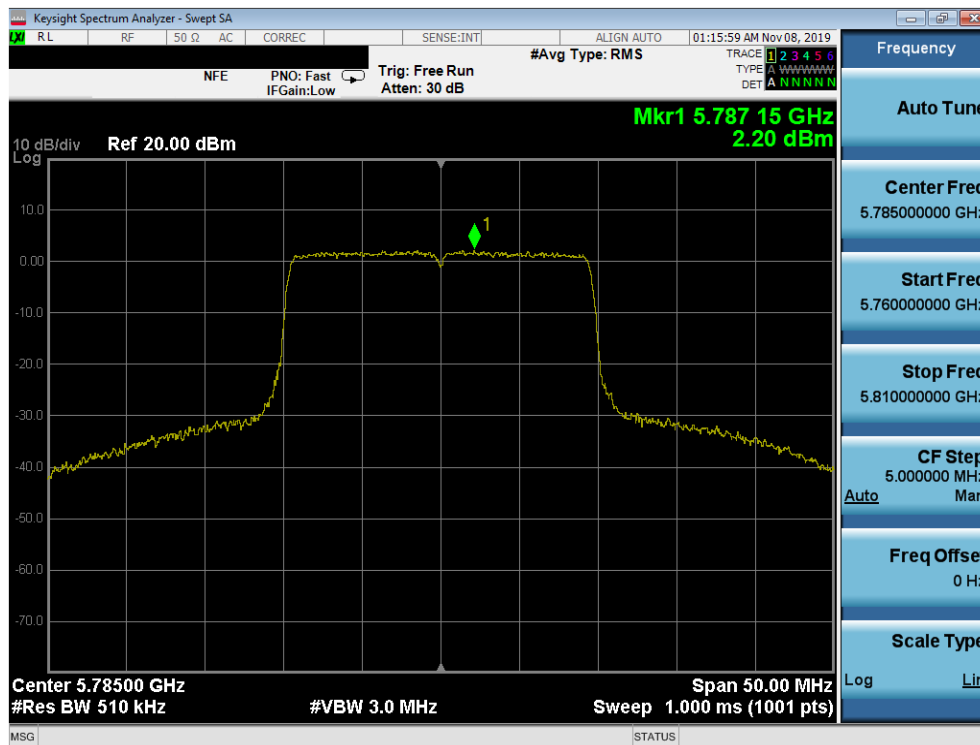
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	2.09	30.00	-27.91
	5785	157	ax (20MHz)	242T	MCS0	2.20	30.00	-27.80
	5825	165	ax (20MHz)	242T	MCS0	2.09	30.00	-27.92
	5755	151	ax (40MHz)	484T	MCS0	-0.86	30.00	-30.86
	5795	159	ax (40MHz)	484T	MCS0	-0.88	30.00	-30.88
	5775	155	ax (80MHz)	996T	MCS0	-2.83	30.00	-32.83

Table 7-62. Band 3 Conducted Power Spectral Density Measurements SISO ANT2 (Full Tones)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 131 of 271

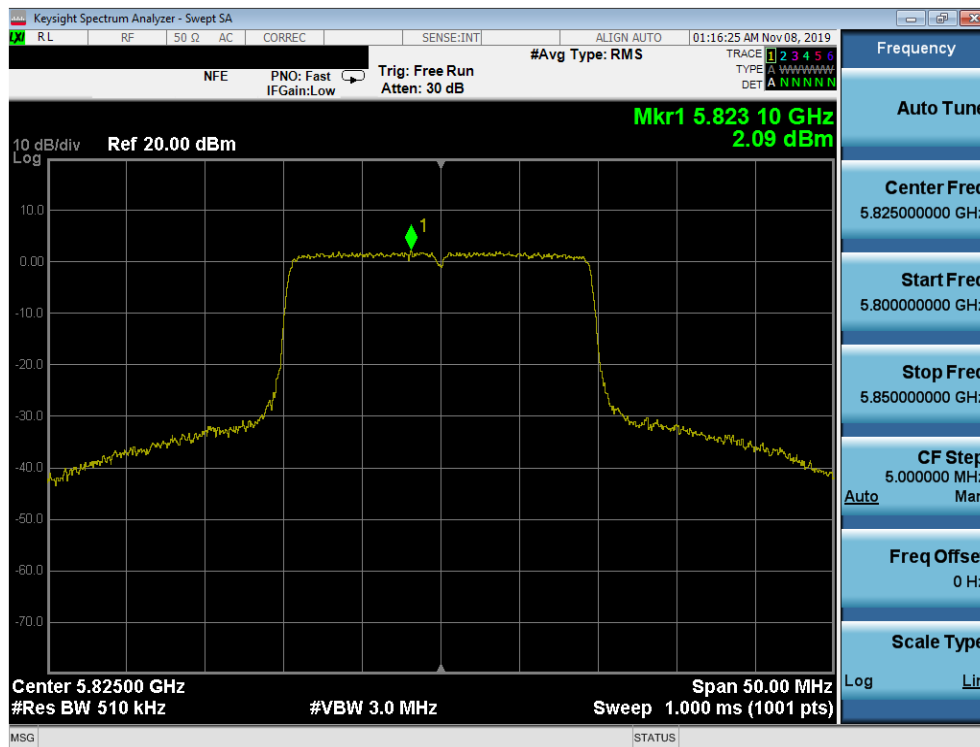


Plot 7-157. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)



Plot 7-158. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 132 of 271

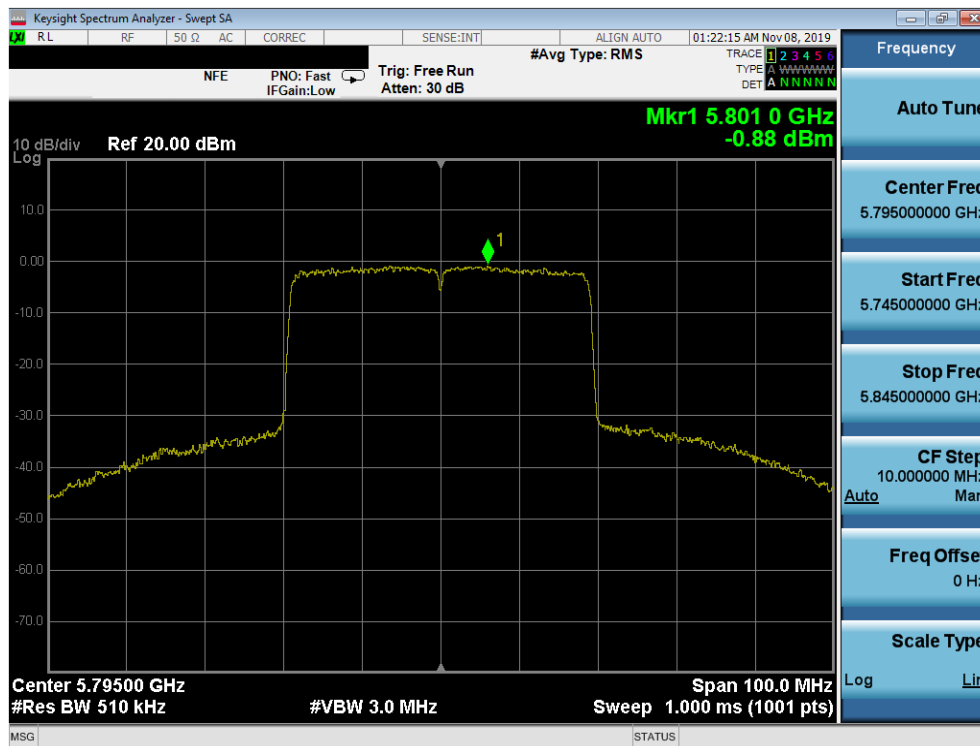


Plot 7-159. Power Spectral Density Plot SISO ANT2 (20 MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 165)

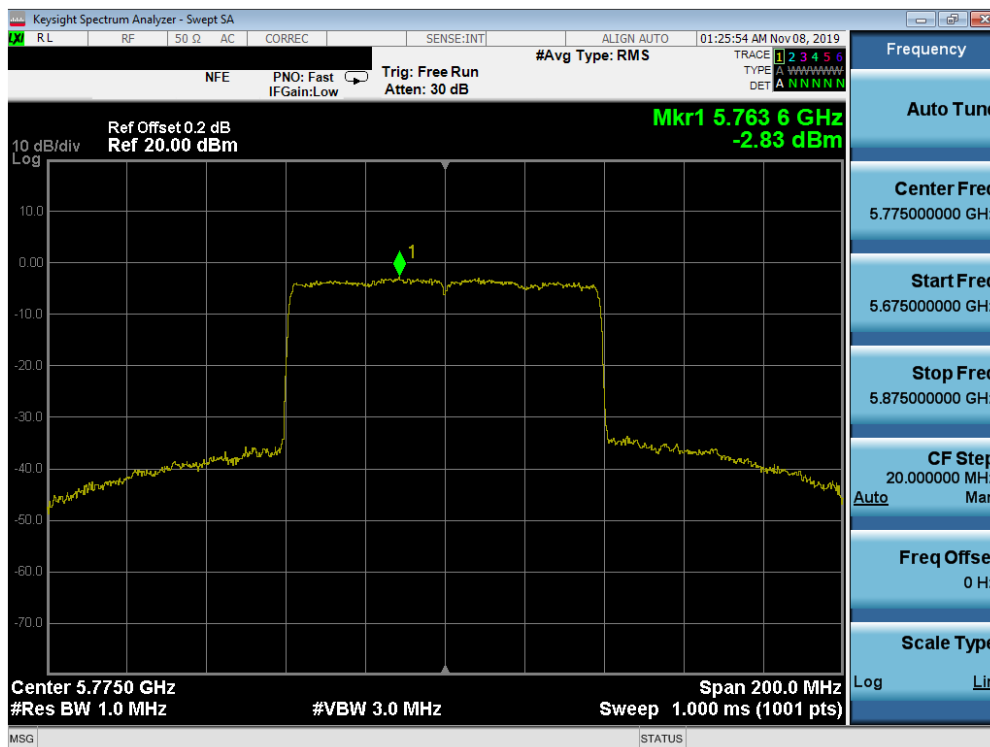


Plot 7-160. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 133 of 271



Plot 7-161. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 159)



Plot 7-162. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 134 of 271

Summed MIMO Power Spectral Density Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	26T	MCS0	7.33	7.21	10.28	11.00	-0.72
	5200	40	ax (20MHz)	26T	MCS0	7.21	7.56	10.40	11.00	-0.60
	5240	48	ax (20MHz)	26T	MCS0	7.11	7.20	10.17	11.00	-0.83
	5190	38	ax (40MHz)	26T	MCS0	7.57	7.76	10.68	11.00	-0.32
	5230	46	ax (40MHz)	26T	MCS0	7.49	7.56	10.54	11.00	-0.46
	5210	42	ax (80MHz)	26T	MCS0	7.80	7.96	10.89	11.00	-0.11
Band 2A	5260	52	ax (20MHz)	26T	MCS0	7.19	7.32	10.26	11.00	-0.74
	5280	56	ax (20MHz)	26T	MCS0	6.92	7.30	10.12	11.00	-0.88
	5320	64	ax (20MHz)	26T	MCS0	7.28	7.30	10.30	11.00	-0.70
	5270	54	ax (40MHz)	26T	MCS0	7.27	7.15	10.22	11.00	-0.78
	5310	62	ax (40MHz)	26T	MCS0	7.36	7.38	10.38	11.00	-0.62
	5290	58	ax (80MHz)	26T	MCS0	7.49	7.93	10.72	11.00	-0.28
Band 2C	5500	100	ax (20MHz)	26T	MCS0	7.50	7.36	10.44	11.00	-0.56
	5600	120	ax (20MHz)	26T	MCS0	7.27	7.54	10.42	11.00	-0.58
	5720	144	ax (20MHz)	26T	MCS0	7.45	7.38	10.43	11.00	-0.57
	5510	102	ax (40MHz)	26T	MCS0	7.74	7.49	10.63	11.00	-0.37
	5590	118	ax (40MHz)	26T	MCS0	7.68	7.36	10.53	11.00	-0.47
	5710	142	ax (40MHz)	26T	MCS0	7.77	7.42	10.61	11.00	-0.39
	5530	106	ax (80MHz)	26T	MCS0	7.98	7.83	10.91	11.00	-0.09
	5610	122	ax (80MHz)	26T	MCS0	7.92	7.75	10.85	11.00	-0.15
	5690	138	ax (80MHz)	26T	MCS0	6.01	5.95	8.99	11.00	-2.01

Table 7-63. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	26T	MCS0	7.53	9.94	11.91	-3.69	8.22	10.0	-1.78
	5200	40	ax (20MHz)	26T	MCS0	10.05	10.53	13.31	-3.69	9.62	10.0	-0.38
	5240	48	ax (20MHz)	26T	MCS0	10.47	10.60	13.54	-3.69	9.86	10.0	-0.14
	5190	38	ax (40MHz)	26T	MCS0	10.62	10.53	13.59	-3.69	9.90	10.0	-0.10
	5230	46	ax (40MHz)	26T	MCS0	10.69	10.31	13.51	-3.69	9.82	10.0	-0.18
	5210	42	ax (80MHz)	26T	MCS0	10.55	10.65	13.61	-3.69	9.92	10.0	-0.08

Table 7-64. Band 1 MIMO e.i.r.p. Conducted Power Spectral Density Measurements (ISED 26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	26T	MCS0	1.65	2.68	5.21	30.00	-24.79
	5785	157	ax (20MHz)	26T	MCS0	2.07	2.22	5.16	30.00	-24.84
	5825	165	ax (20MHz)	26T	MCS0	2.61	2.81	5.72	30.00	-24.28
	5755	151	ax (40MHz)	26T	MCS0	3.45	3.29	6.38	30.00	-23.62
	5795	159	ax (40MHz)	26T	MCS0	3.42	3.30	6.37	30.00	-23.63
	5775	155	ax (80MHz)	26T	MCS0	3.08	4.97	7.14	30.00	-22.86

Table 7-65. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 135 of 271

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	-1.78	-1.59	1.33	11.00	-9.67
	5200	40	ax (20MHz)	242T	MCS0	-0.18	2.01	4.06	11.00	-6.94
	5240	48	ax (20MHz)	242T	MCS0	0.26	2.35	4.44	11.00	-6.56
	5190	38	ax (40MHz)	484T	MCS0	-7.47	-5.63	-3.44	11.00	-14.44
	5230	46	ax (40MHz)	484T	MCS0	-1.96	-5.21	-0.28	11.00	-11.28
	5210	42	ax (80MHz)	996T	MCS0	-8.14	-7.84	-4.98	11.00	-15.98
Band 2A	5260	52	ax (20MHz)	242T	MCS0	0.66	1.86	4.31	11.00	-6.69
	5280	56	ax (20MHz)	242T	MCS0	0.49	2.00	4.32	11.00	-6.68
	5320	64	ax (20MHz)	242T	MCS0	0.89	-0.43	3.29	11.00	-7.71
	5270	54	ax (40MHz)	484T	MCS0	-1.88	-2.02	1.06	11.00	-9.94
	5310	62	ax (40MHz)	484T	MCS0	-8.53	-7.44	-4.94	11.00	-15.94
	5290	58	ax (80MHz)	996T	MCS0	-9.27	-10.38	-6.78	11.00	-17.78
Band 2C	5500	100	ax (20MHz)	242T	MCS0	0.45	1.55	4.05	11.00	-6.95
	5600	120	ax (20MHz)	242T	MCS0	1.17	1.45	4.32	11.00	-6.68
	5720	144	ax (20MHz)	242T	MCS0	0.62	1.81	4.27	11.00	-6.73
	5510	102	ax (40MHz)	484T	MCS0	-3.30	-4.16	-0.70	11.00	-11.70
	5590	118	ax (40MHz)	484T	MCS0	-1.41	-1.80	1.41	11.00	-9.59
	5710	142	ax (40MHz)	484T	MCS0	-1.12	-1.75	1.59	11.00	-9.41
	5530	106	ax (80MHz)	996T	MCS0	-8.37	-8.57	-5.46	11.00	-16.46
	5610	122	ax (80MHz)	996T	MCS0	-5.82	-6.06	-2.93	11.00	-13.93
	5690	138	ax (80MHz)	996T	MCS0	-8.07	-8.58	-5.31	11.00	-16.31

Table 7-66. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Antenna Gain [dBi]	e.i.r.p. Power Density [dBm/MHz]	ISED Max e.i.r.p. Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	-1.78	-1.59	1.33	-3.59	-2.26	10.0	-12.26
	5200	40	ax (20MHz)	242T	MCS0	-0.18	2.01	4.06	-3.59	0.47	10.0	-9.53
	5240	48	ax (20MHz)	242T	MCS0	0.26	2.35	4.44	-3.59	0.85	10.0	-9.15
	5190	38	ax (40MHz)	484T	MCS0	-7.47	-5.63	-3.44	-3.59	-7.03	10.0	-17.03
	5230	46	ax (40MHz)	484T	MCS0	-1.96	-5.21	-0.28	-3.59	-3.87	10.0	-13.87
	5210	42	ax (80MHz)	996T	MCS0	-8.14	-7.84	-4.98	-3.59	-8.57	10.0	-18.57

Table 7-67. Band 1 MIMO e.i.r.p. Conducted Power Spectral Density Measurements (ISED Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	-2.08	-0.45	1.82	30.00	-28.18
	5785	157	ax (20MHz)	242T	MCS0	-1.45	-1.06	1.76	30.00	-28.24
	5825	165	ax (20MHz)	242T	MCS0	2.24	-1.33	3.82	30.00	-26.18
	5755	151	ax (40MHz)	484T	MCS0	-4.23	-4.19	-1.20	30.00	-31.20
	5795	159	ax (40MHz)	484T	MCS0	-6.18	-3.84	-1.84	30.00	-31.84
	5775	155	ax (80MHz)	996T	MCS0	-5.27	-5.04	-2.14	30.00	-32.14

Table 7-68. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

FCC ID: A3LSMG981U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 136 of 271		

Note:

Per ANSI C63.10-2013 Section 14.3.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna 1 and Antenna 2 were first measured separately with reduced Antenna 1 and Antenna 2 powers per manufacture's tune-up document. The measured values were then summed in linear power units then converted back to dBm.

Sample Directional Gain Calculation:

Assuming the antenna gain is -8.61 dBi for Antenna-1 and -7.68 dBi for Antenna-2.

$$\begin{aligned}\text{Directional gain} &= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}] \text{ dBi} \\ &= 10 \log[(10^{-8.61/20} + 10^{-7.68/20} / 2] \text{ dBi} \\ &= (-3.59) \text{ dBi}\end{aligned}$$

Sample MIMO Calculation:

Assuming the average conducted power spectral density was measured to be 5.88 dBm for Antenna-1 and 6.27 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(5.88 \text{ dBm} + 6.27 \text{ dBm}) = (3.87 \text{ mW} + 4.24 \text{ mW}) = 8.11 \text{ mW} = 9.09 \text{ dBm}$$

Sample e.i.r.p Power Spectral Density Calculation:

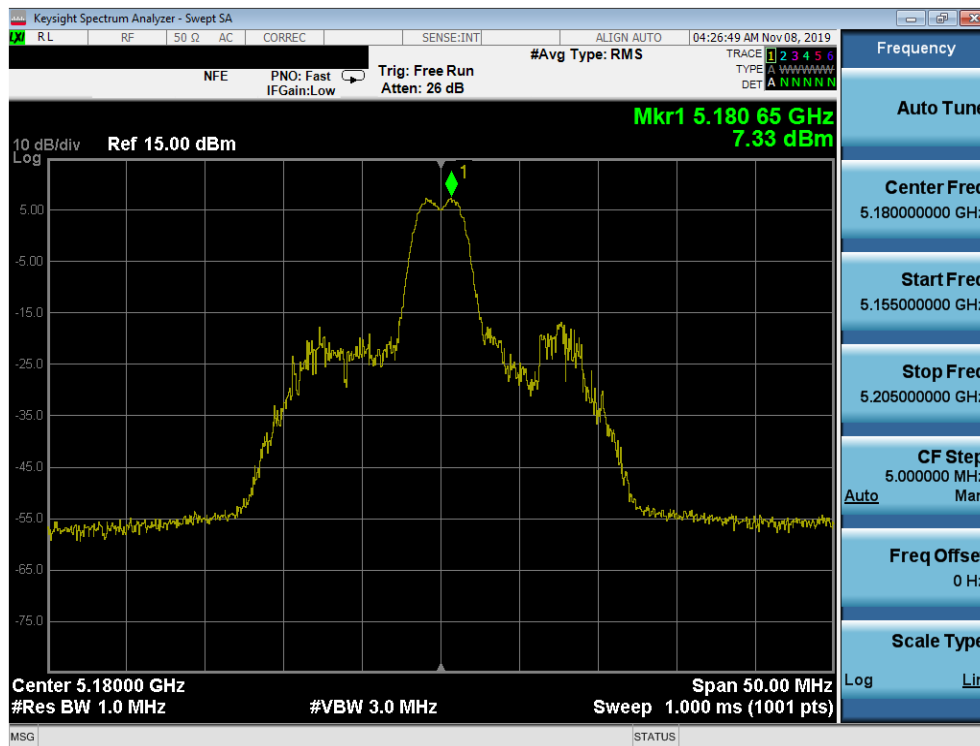
Assuming the average MIMO power density was calculated to be 9.09 dBm with directional gain of -5.12 dBi.

$$\text{e.i.r.p. Power Spectral Density(dBm)} = \text{Power Spectral Density (dBm)} + \text{directional gain (dBi)}$$

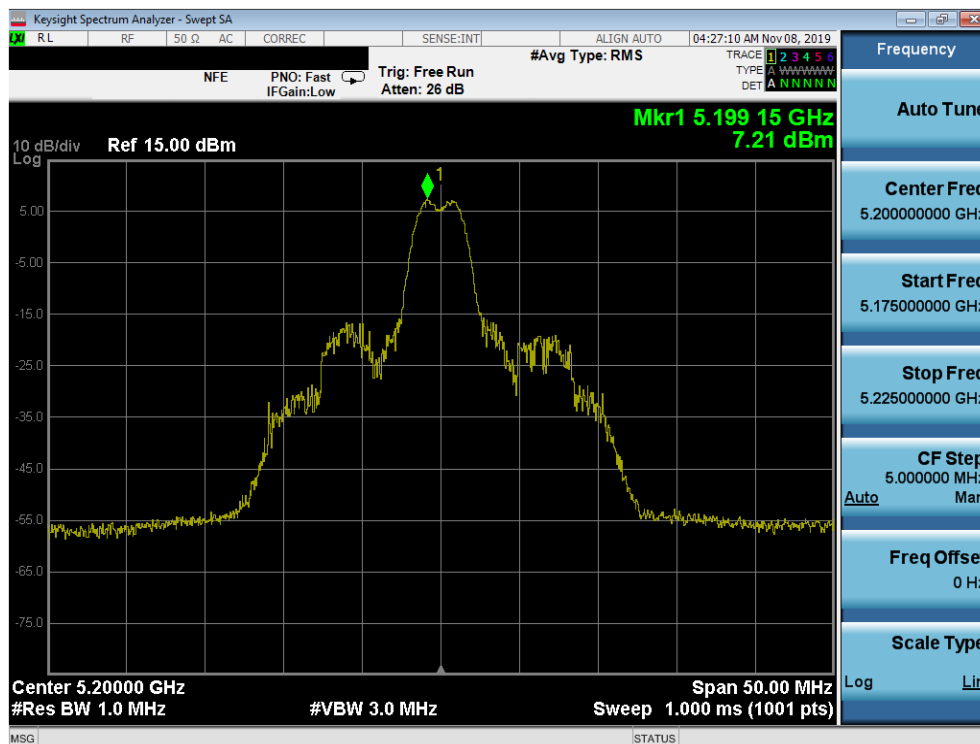
$$9.09 \text{ dBm} + (-3.59) \text{ dBi} = 5.50 \text{ dBm}$$

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 137 of 271

MIMO Antenna-1 Power Spectral Density Measurements (26 Tones)

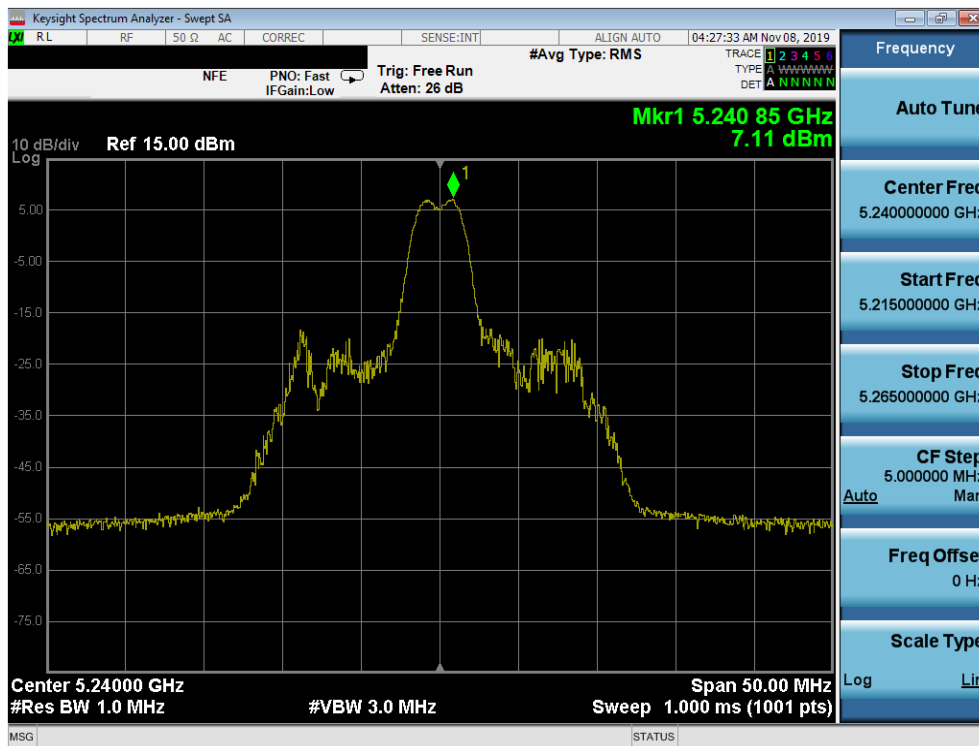


Plot 7-163. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

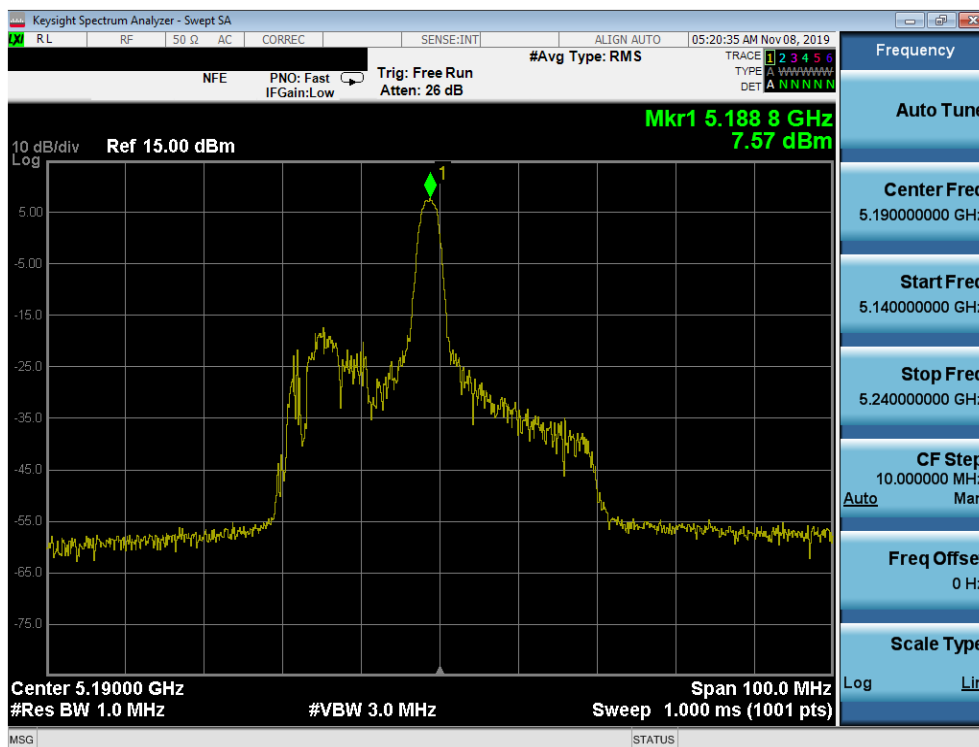


Plot 7-164. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 138 of 271

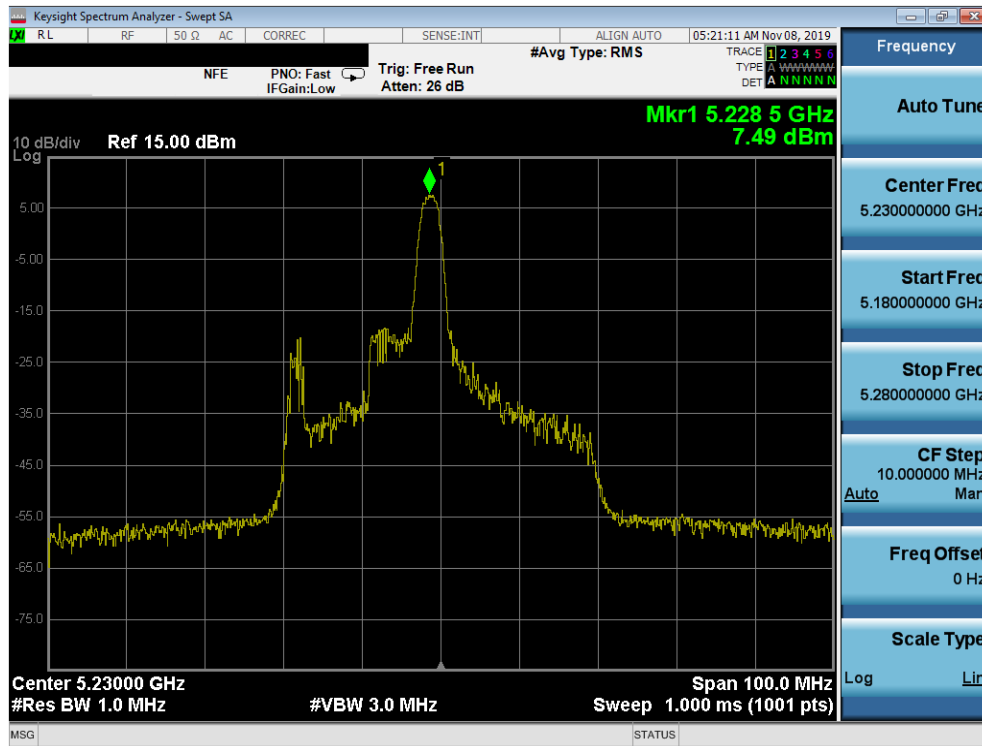


Plot 7-165. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

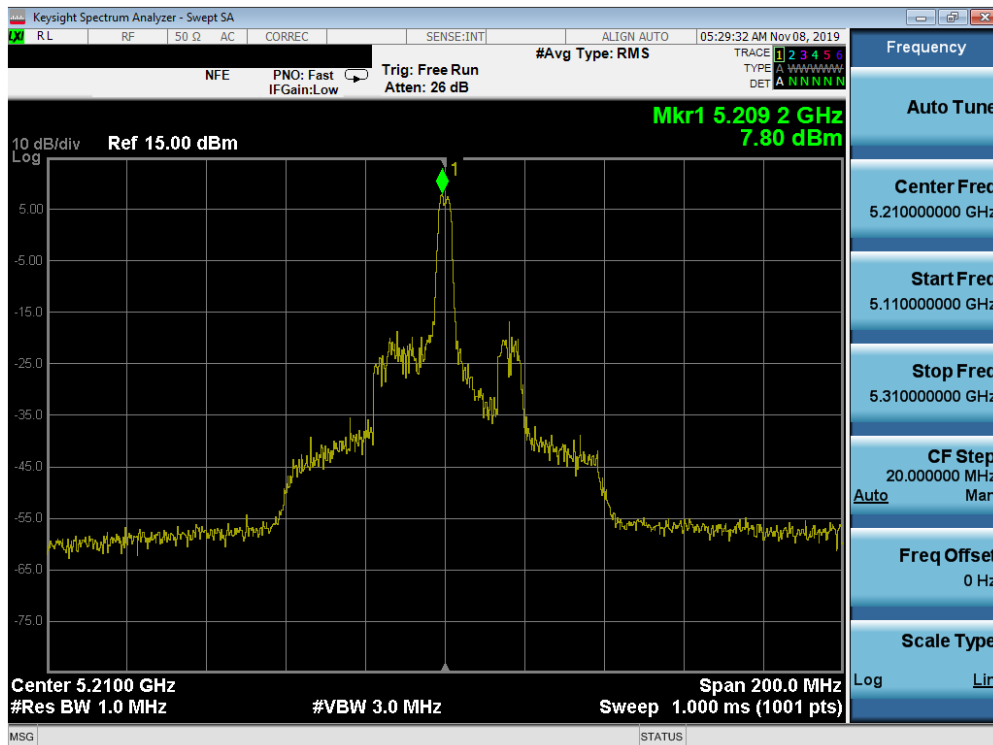


Plot 7-166. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 139 of 271

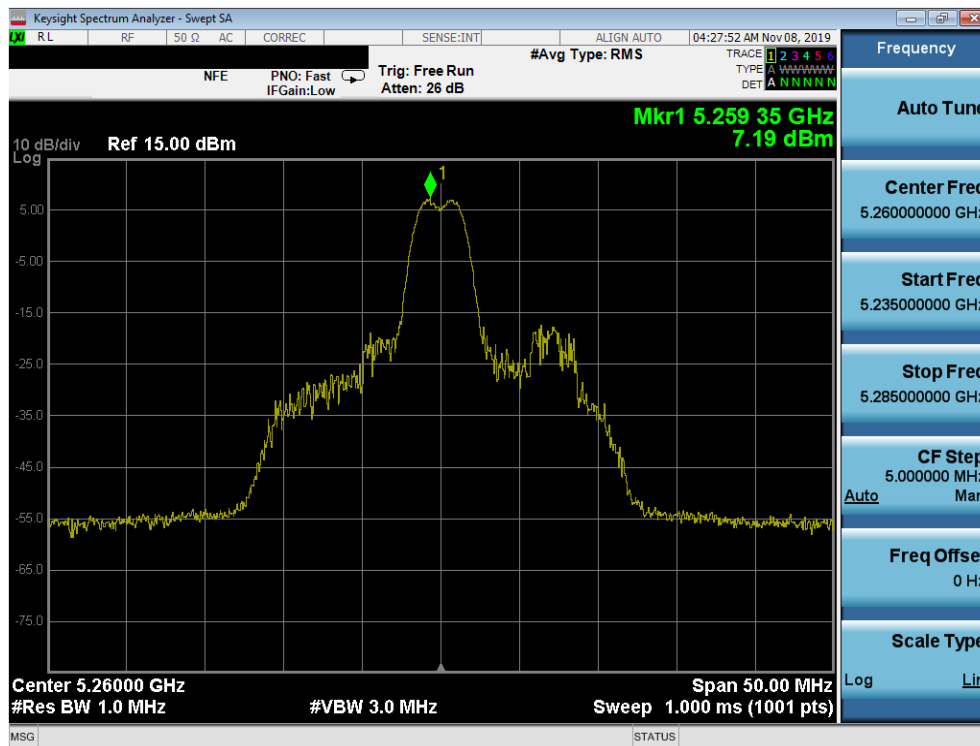


Plot 7-167. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

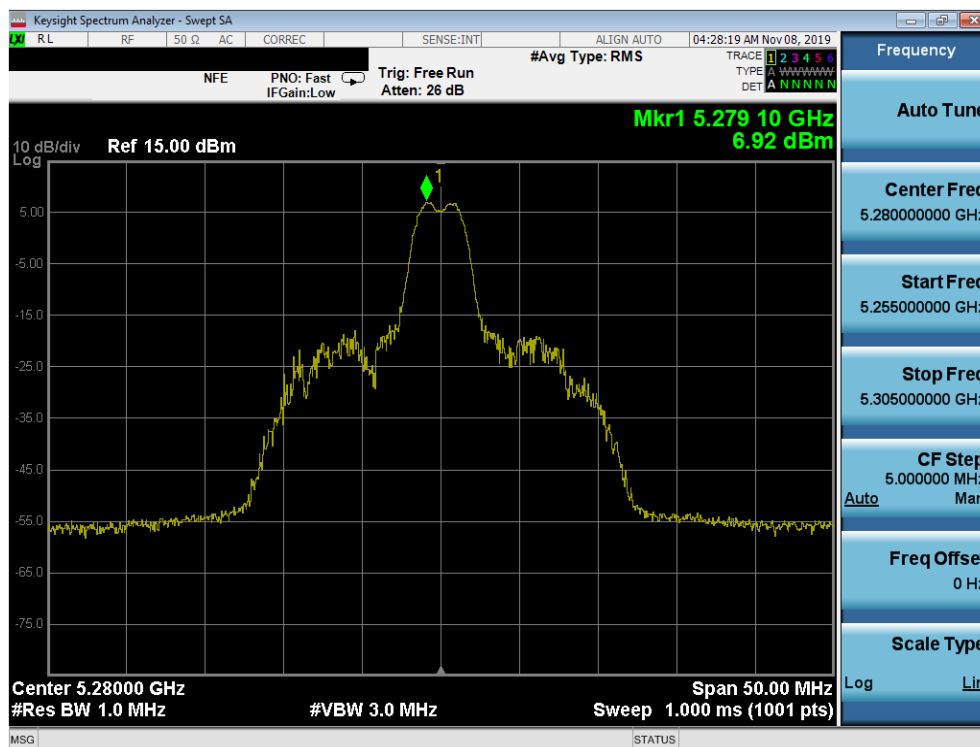


Plot 7-168. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 140 of 271

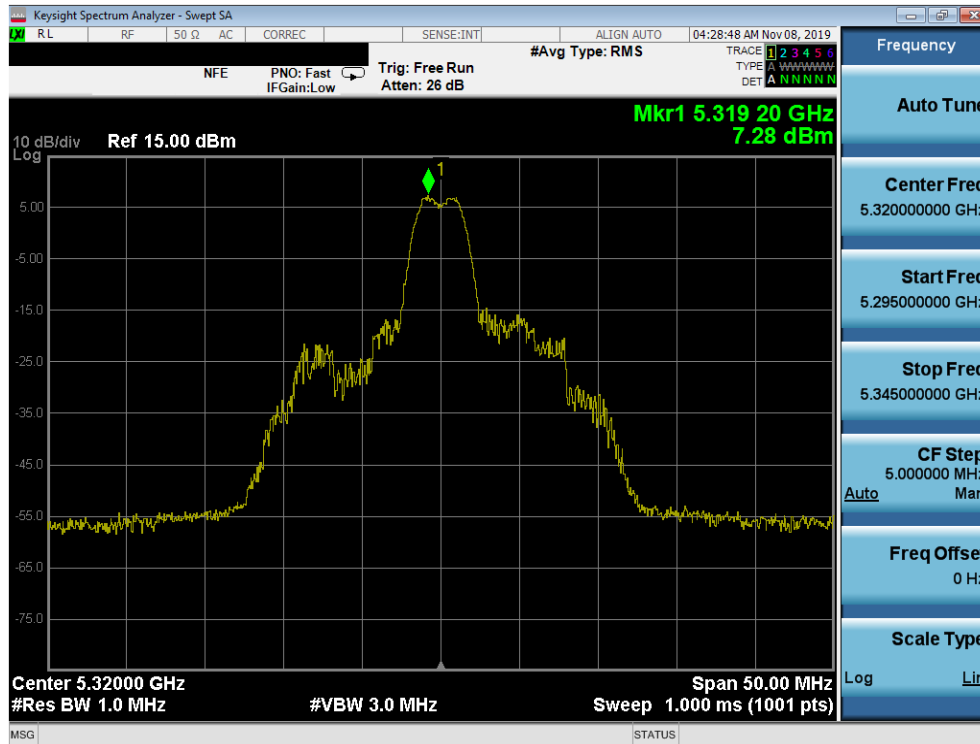


Plot 7-169. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

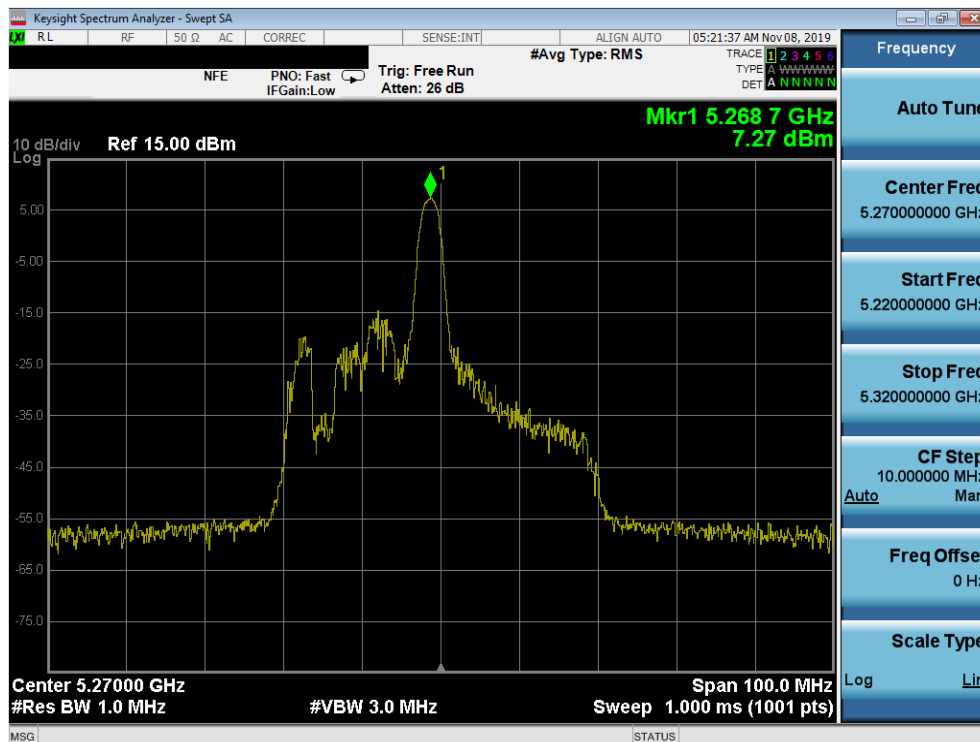


Plot 7-170. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 141 of 271

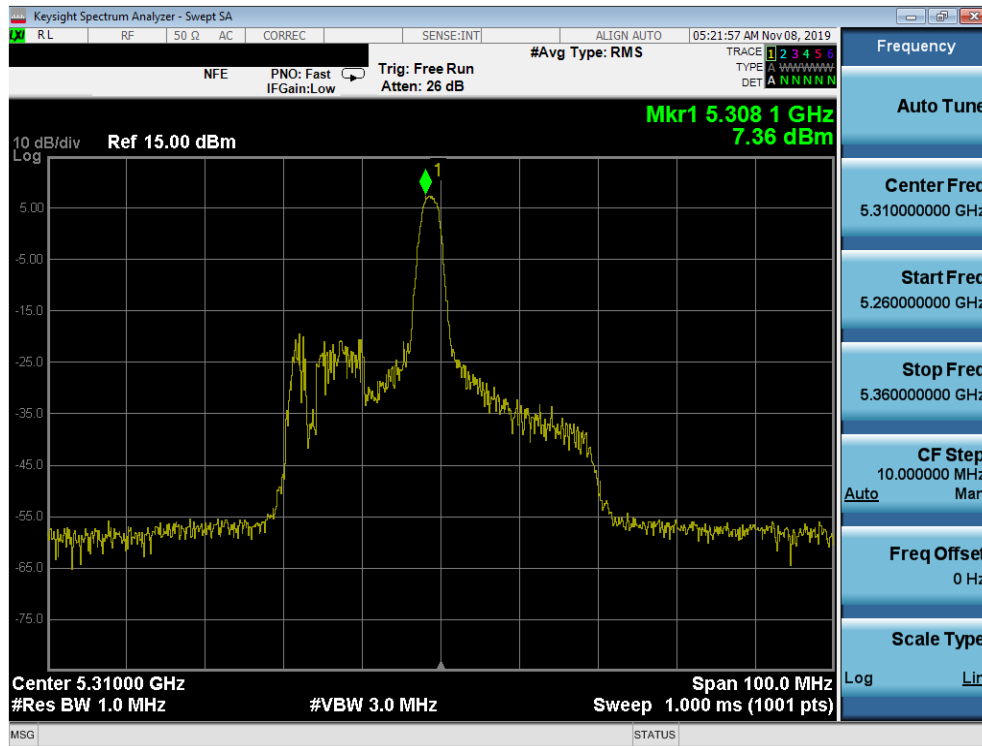


Plot 7-171. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

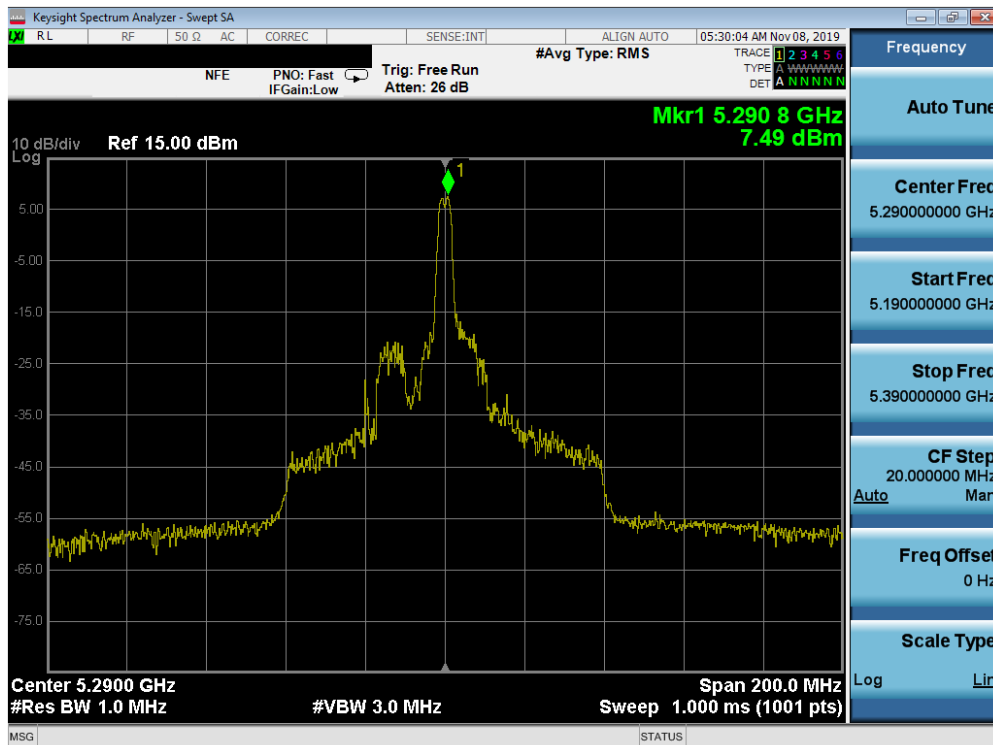


Plot 7-172. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 142 of 271

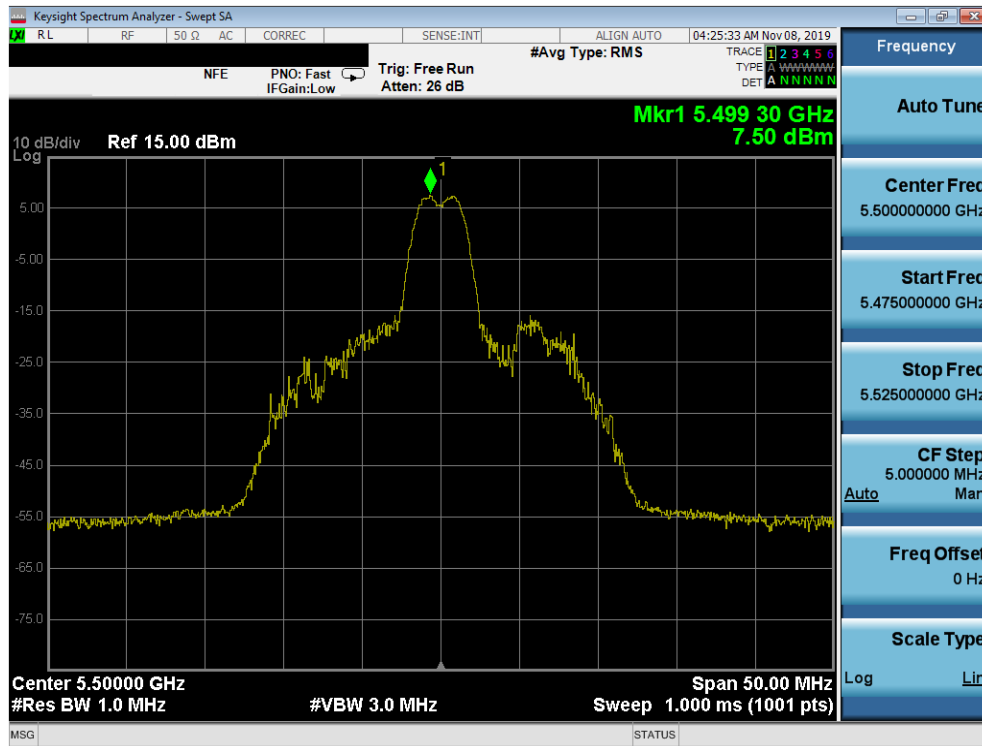


Plot 7-173. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

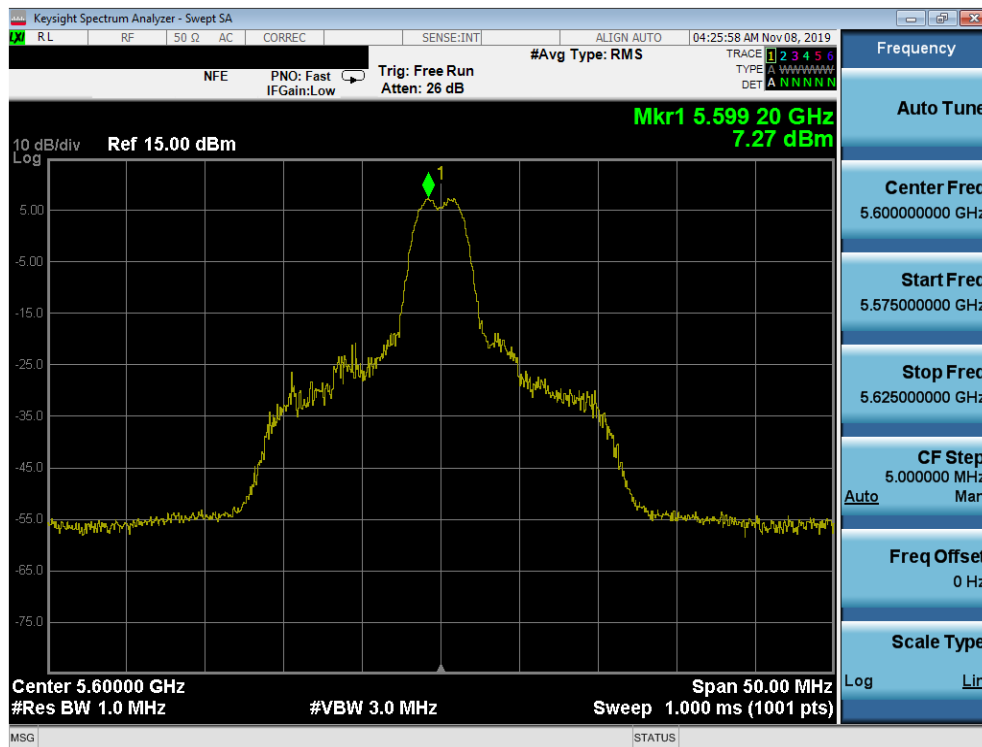


Plot 7-174. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 143 of 271

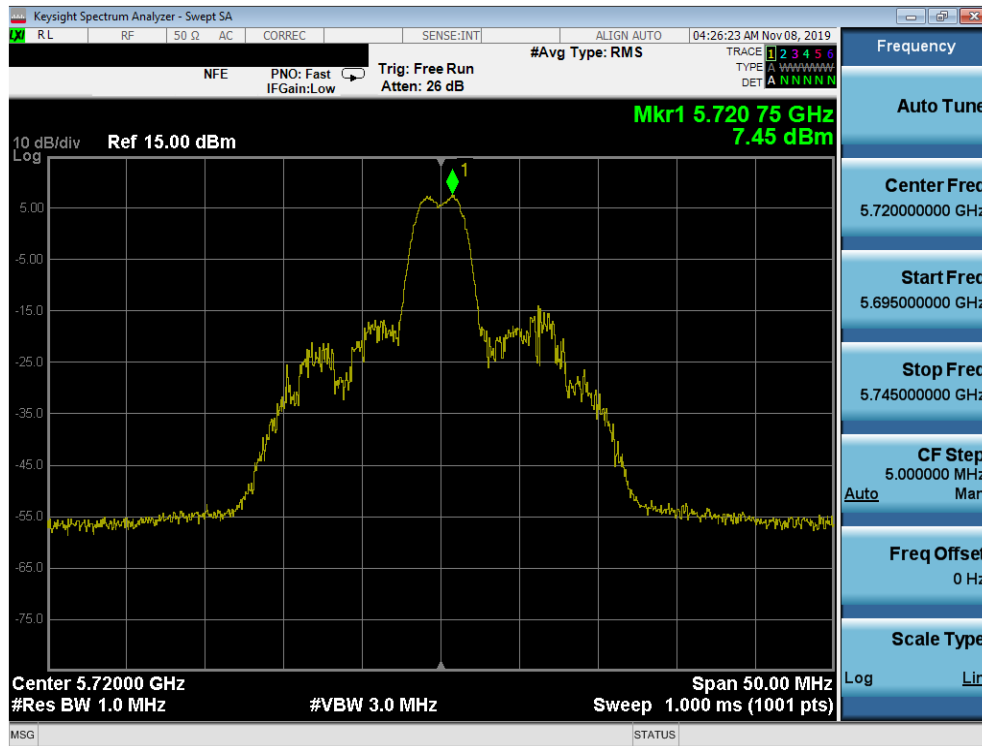


Plot 7-175. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

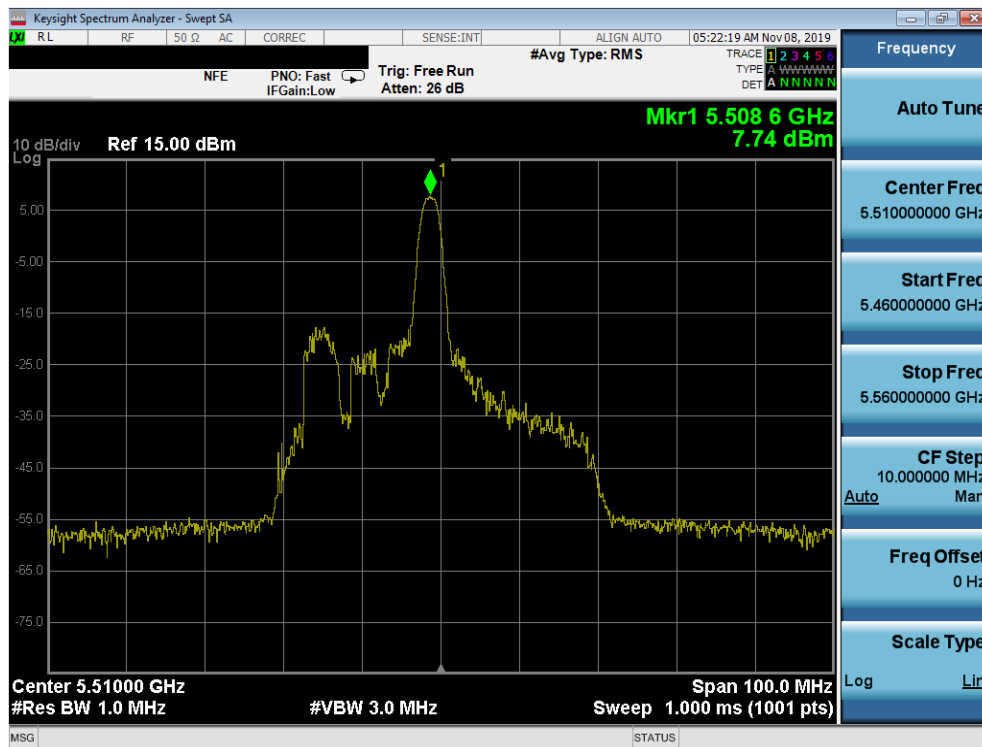


Plot 7-176. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 144 of 271

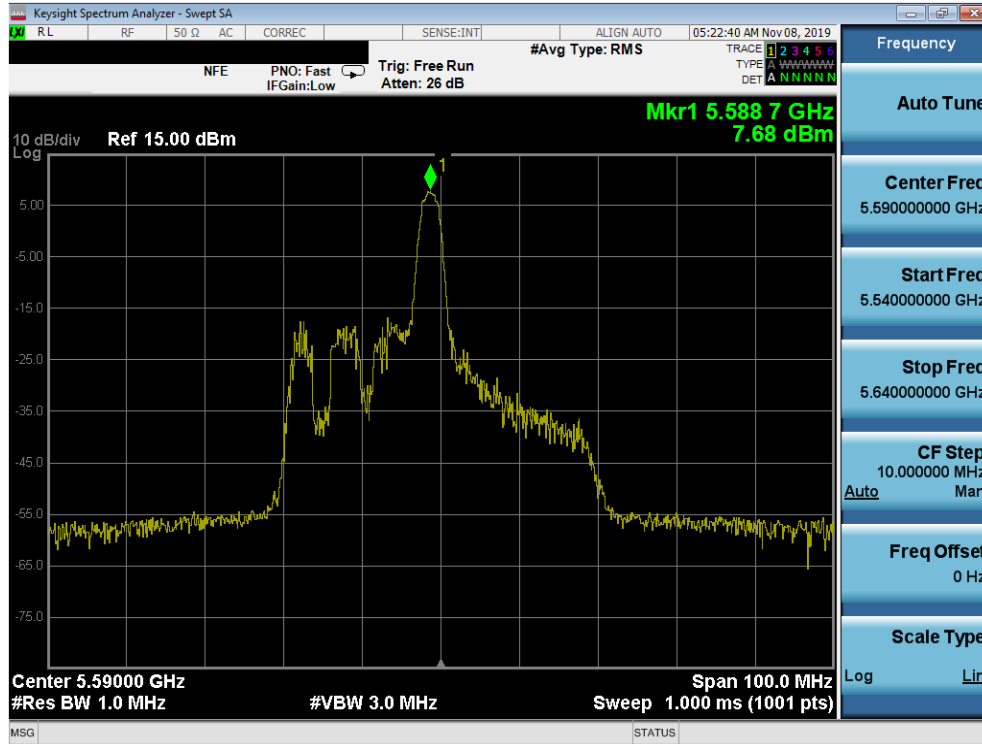


Plot 7-177. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

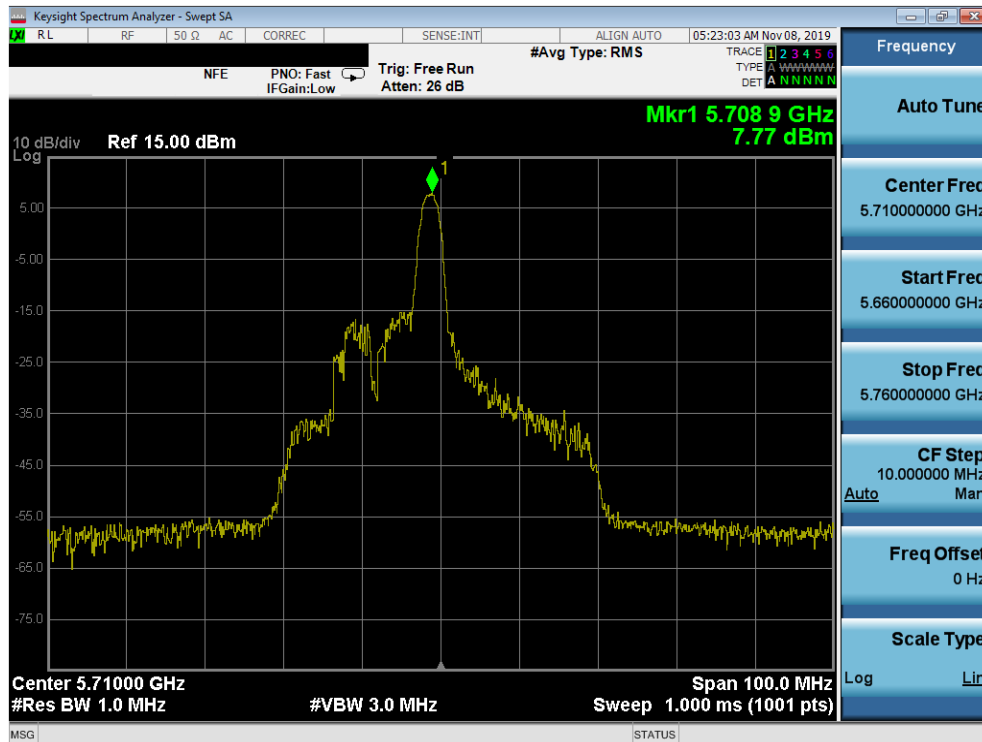


Plot 7-178. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 145 of 271

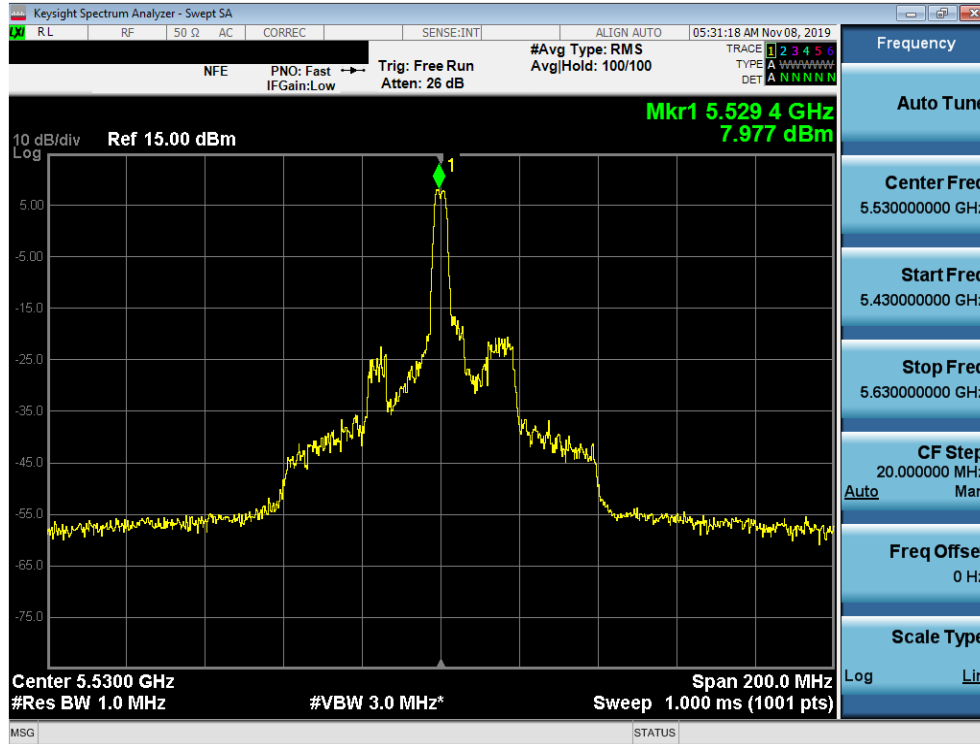


Plot 7-179. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

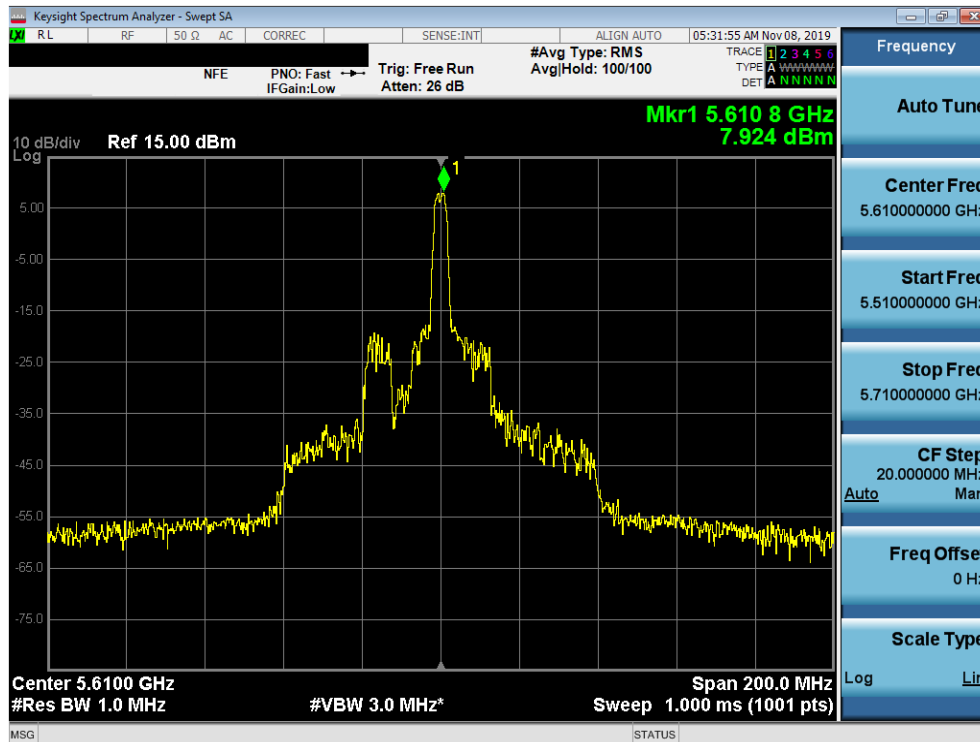


Plot 7-180. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 146 of 271

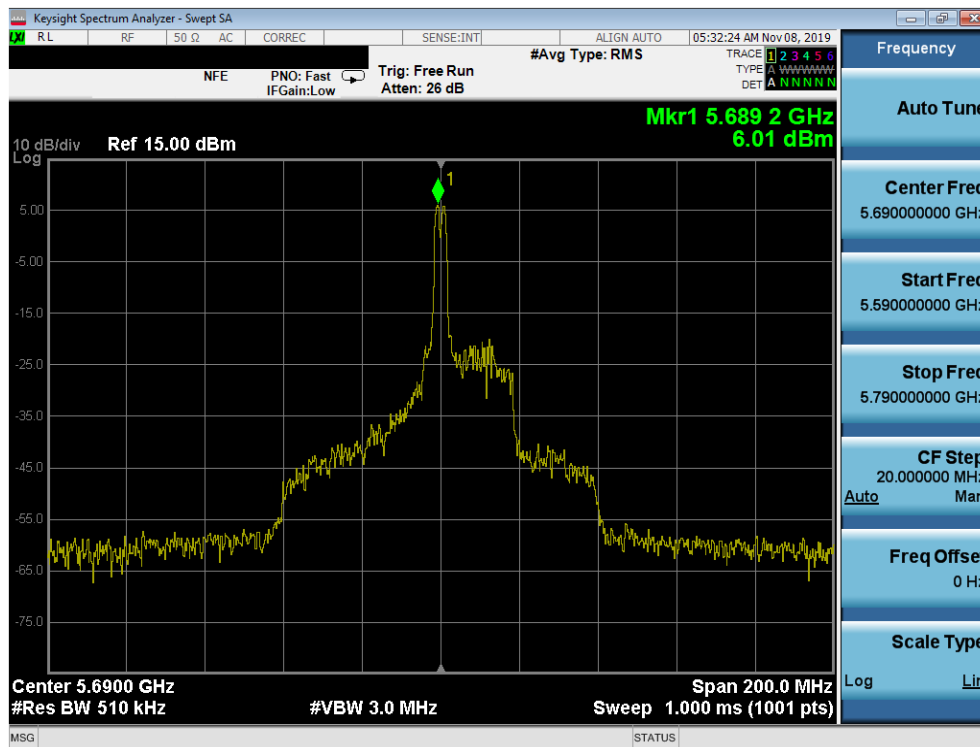


Plot 7-181. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)

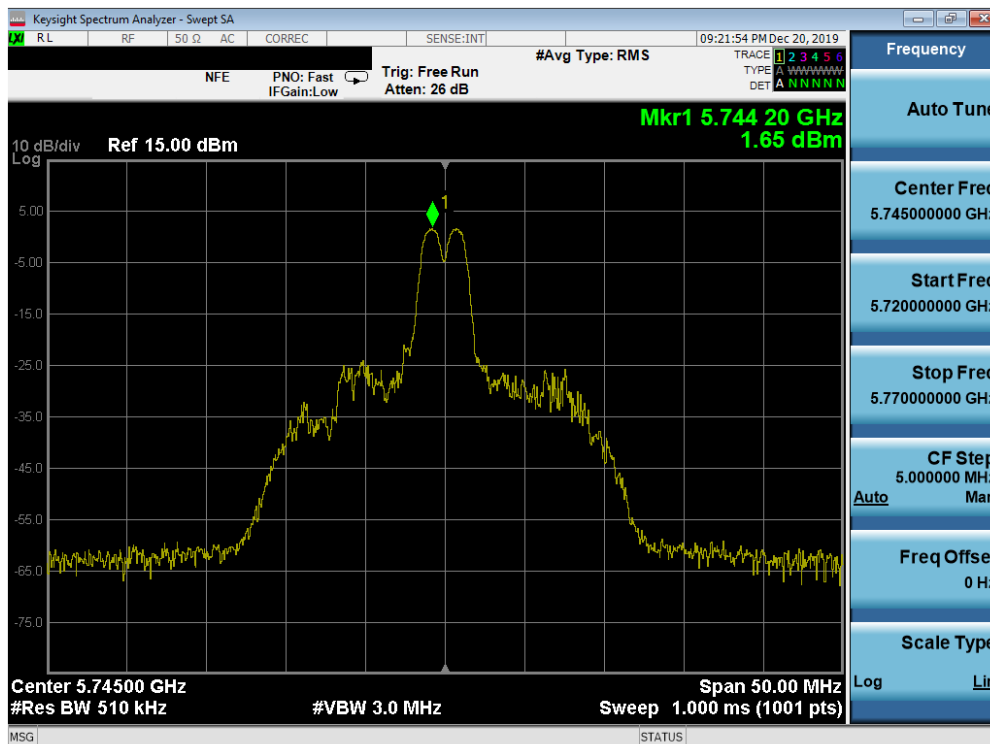


Plot 7-182. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 147 of 271

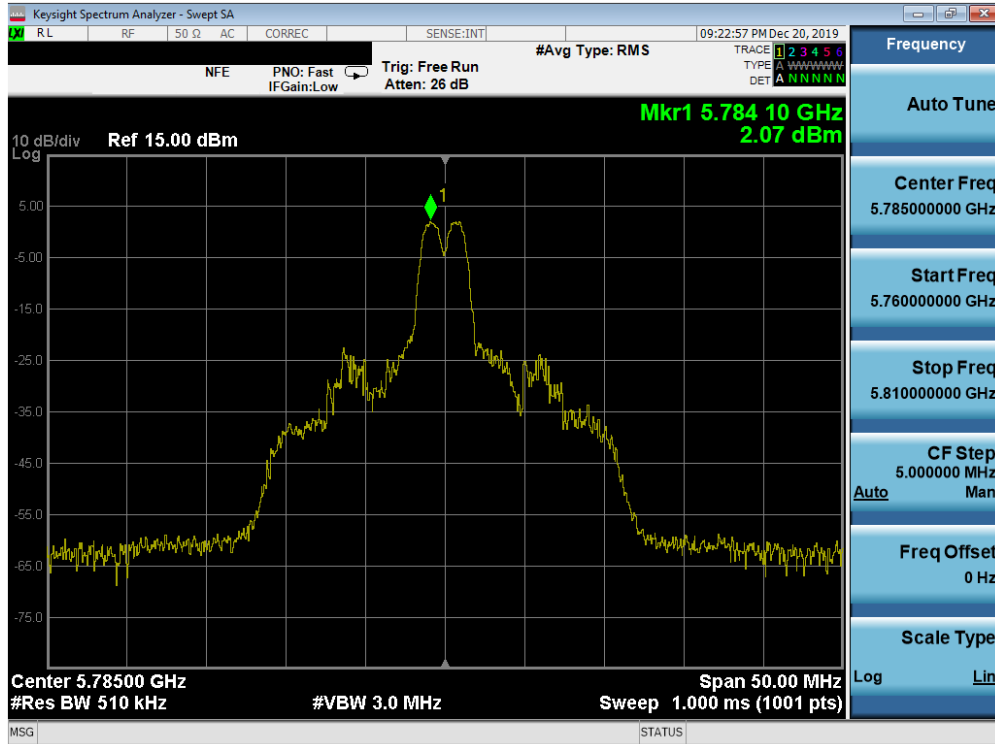


Plot 7-183. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

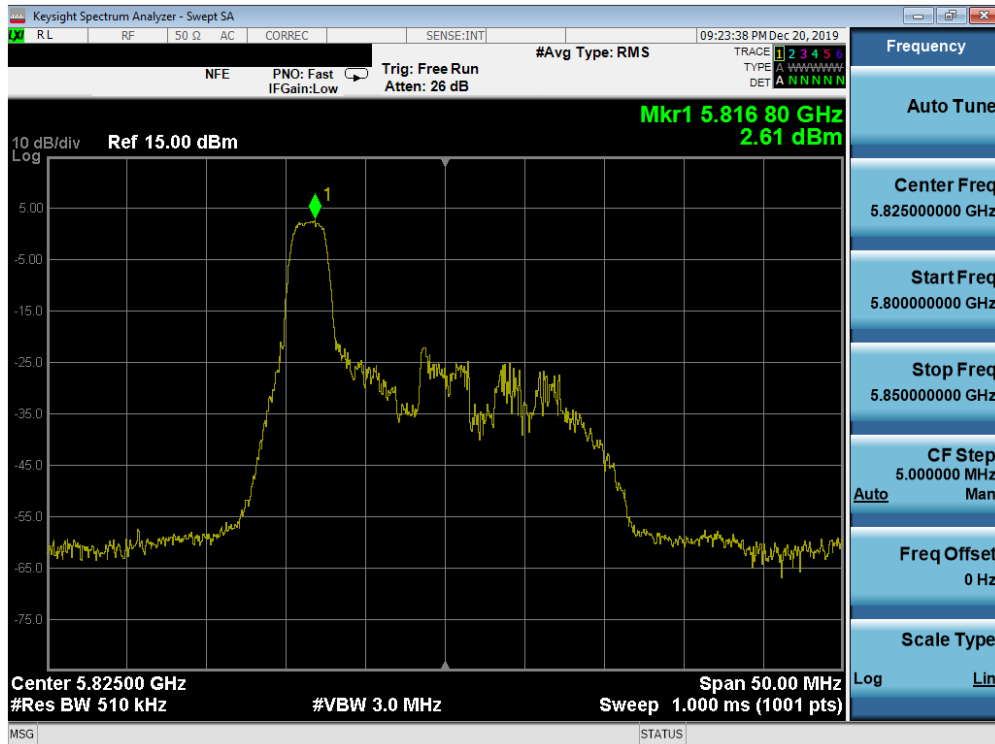


Plot 7-184. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 148 of 271

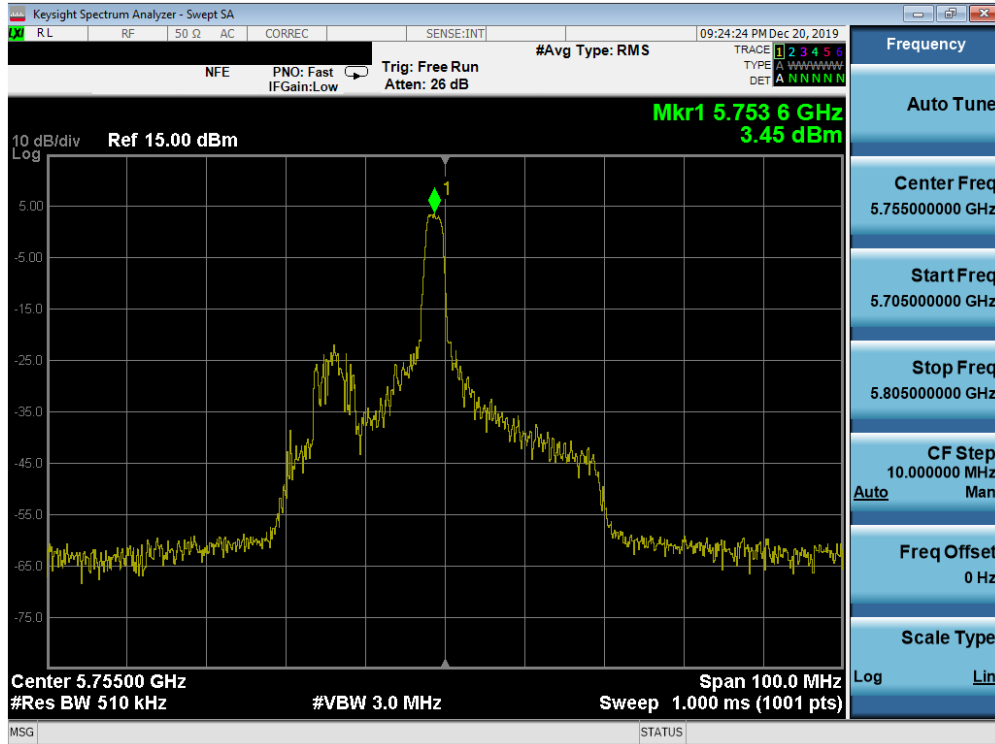


Plot 7-185. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

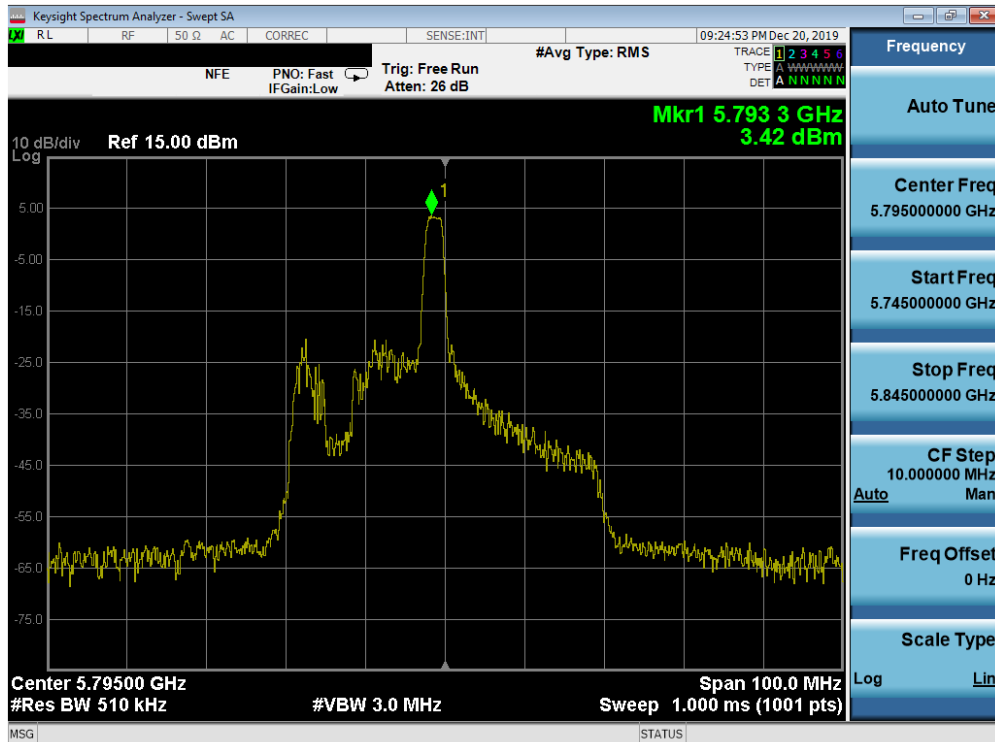


Plot 7-186. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 149 of 271

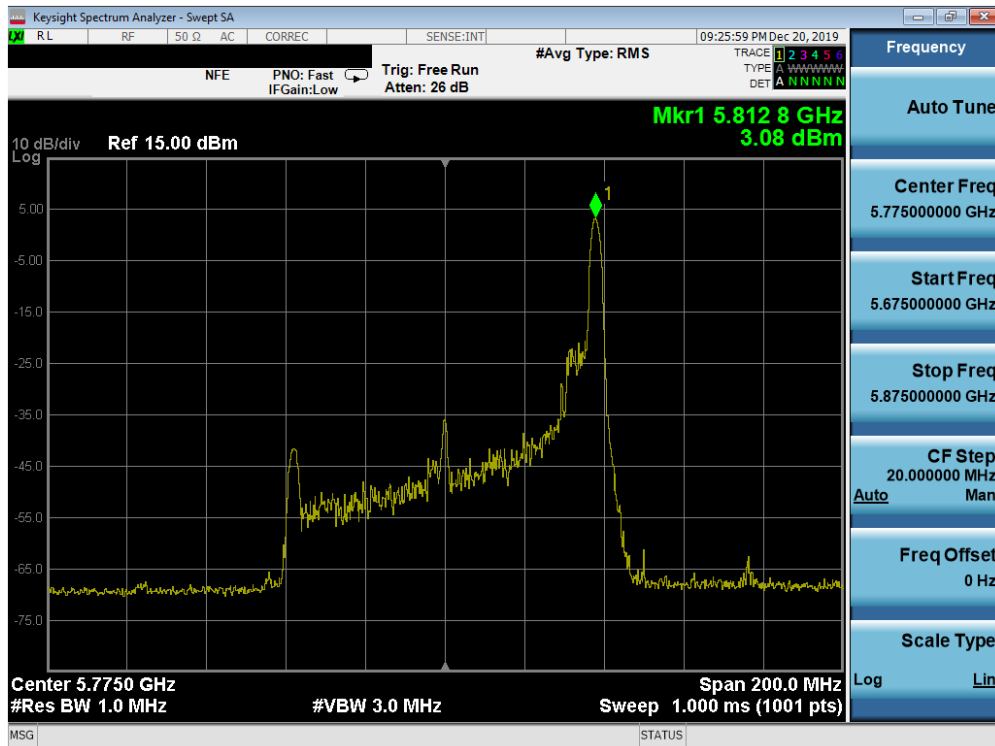


Plot 7-187. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

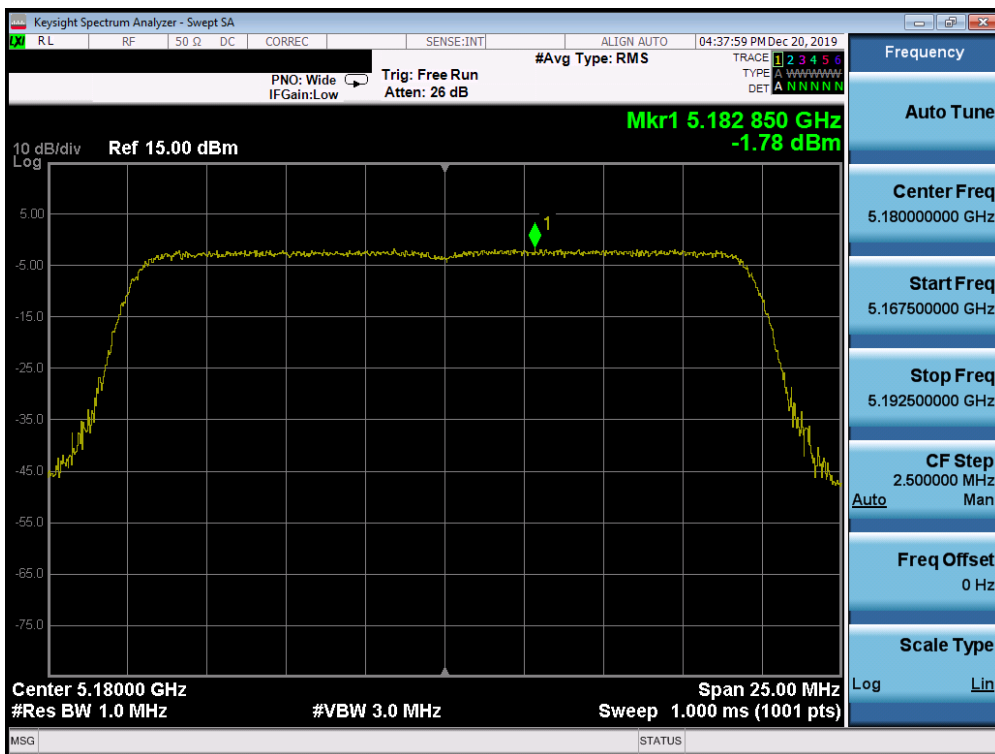


Plot 7-188. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 150 of 271

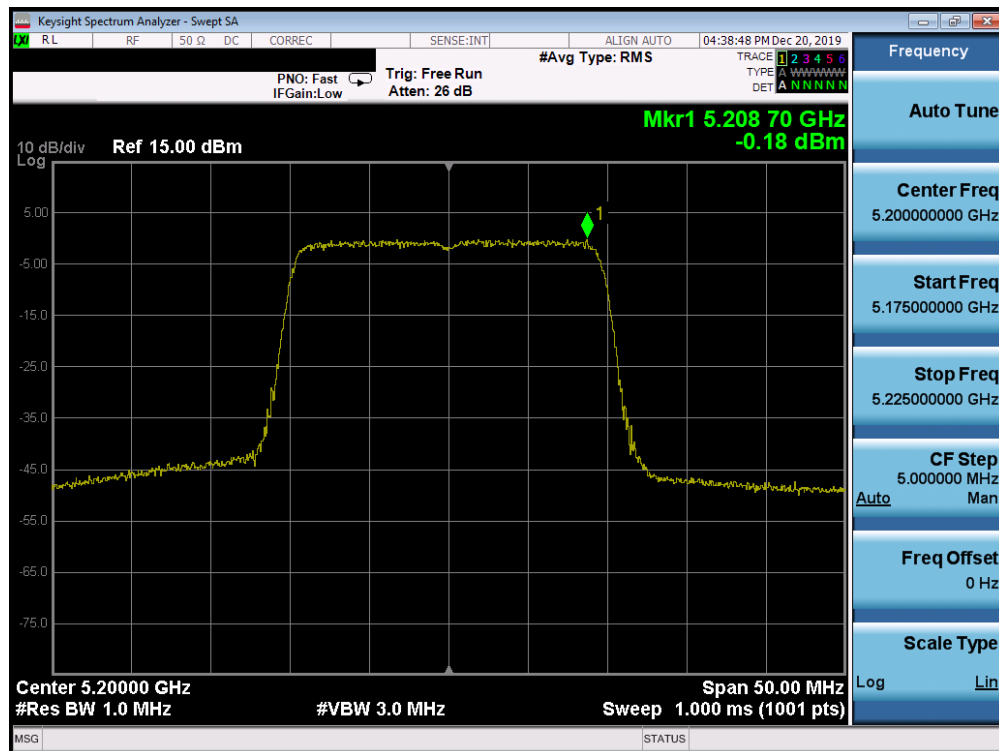


Plot 7-189. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

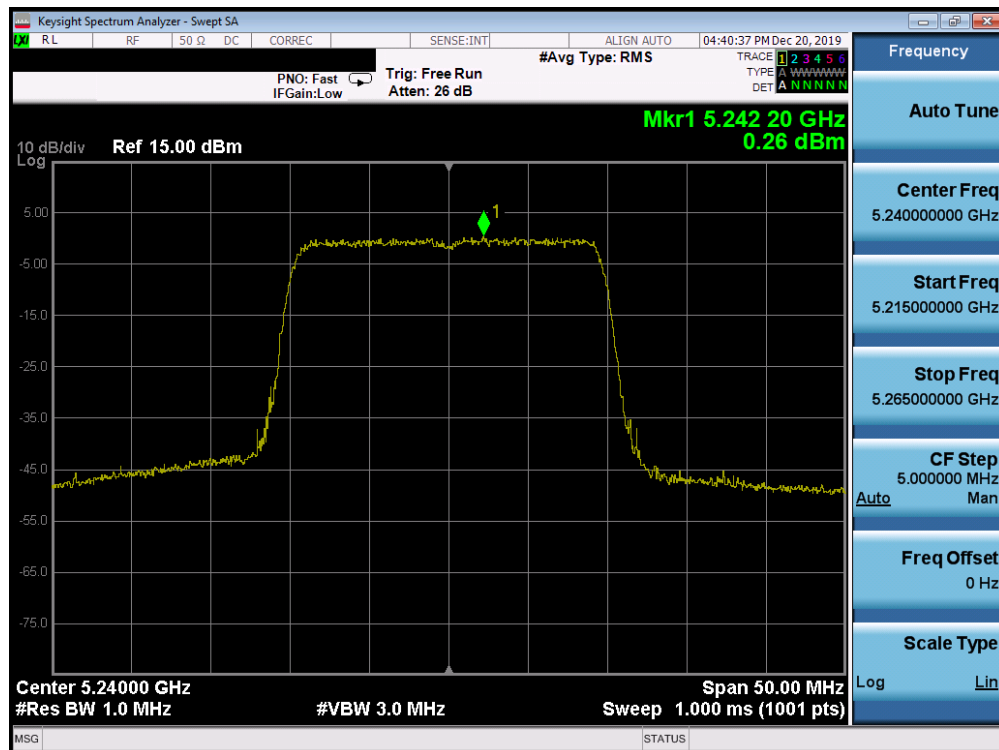


Plot 7-190. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 36)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 151 of 271

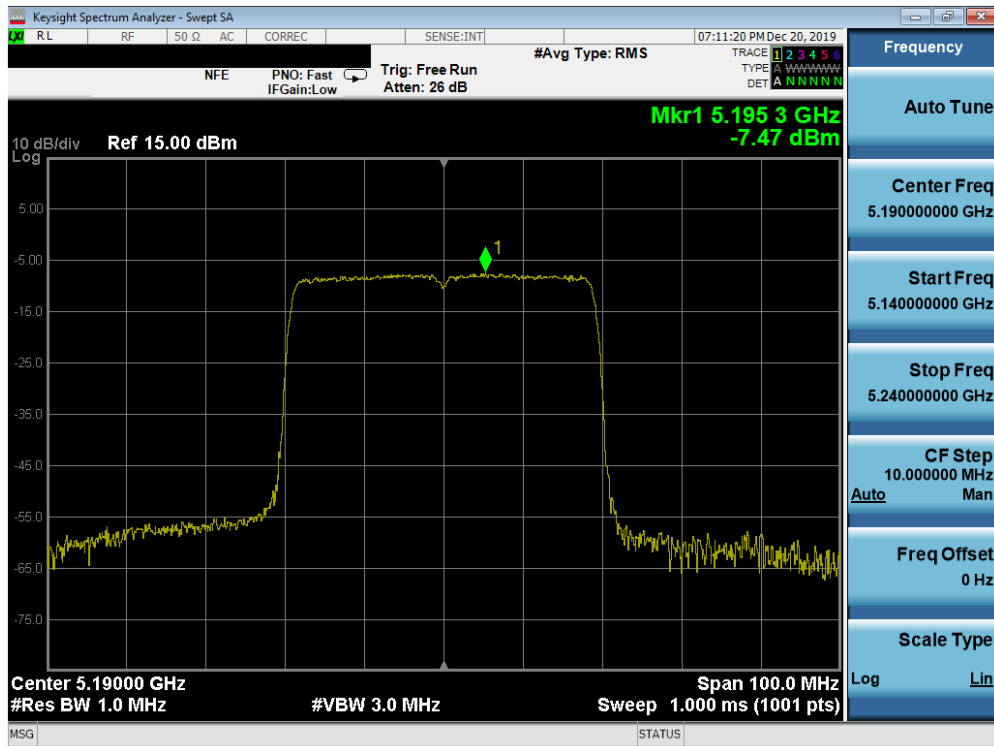


Plot 7-191. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 40)

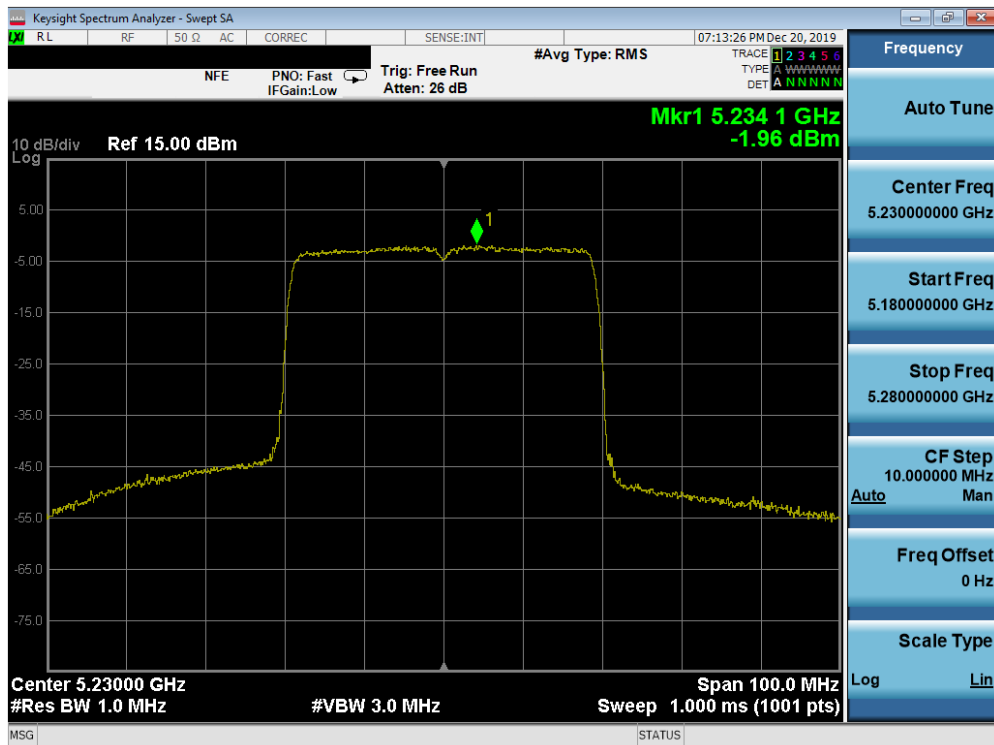


Plot 7-192. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 48)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 152 of 271

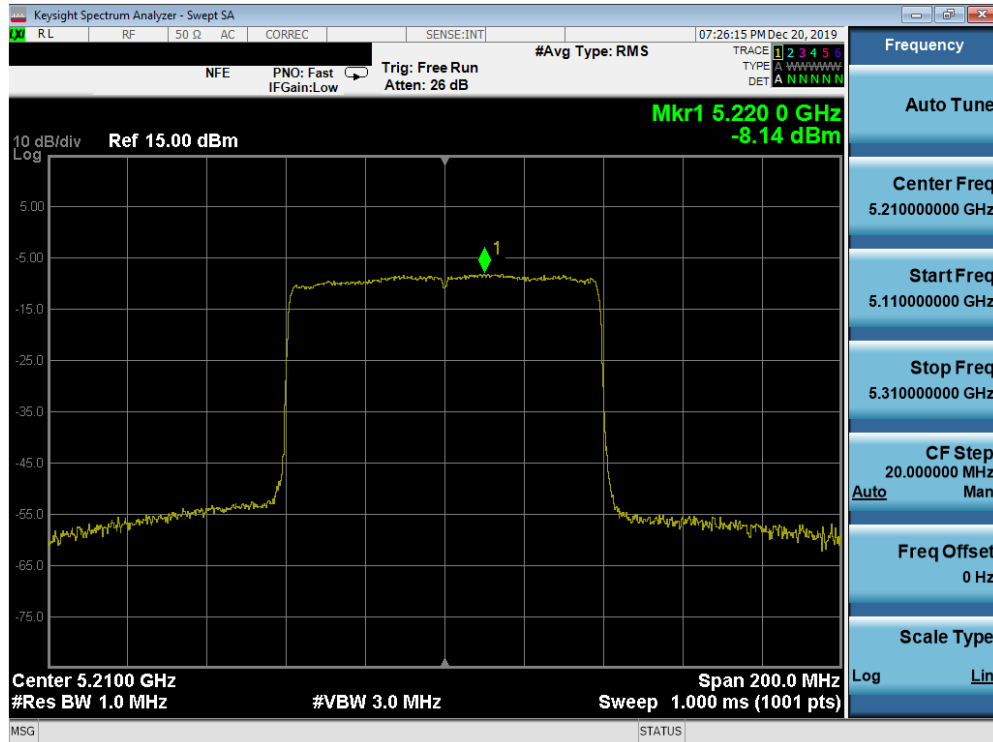


Plot 7-193. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 38)

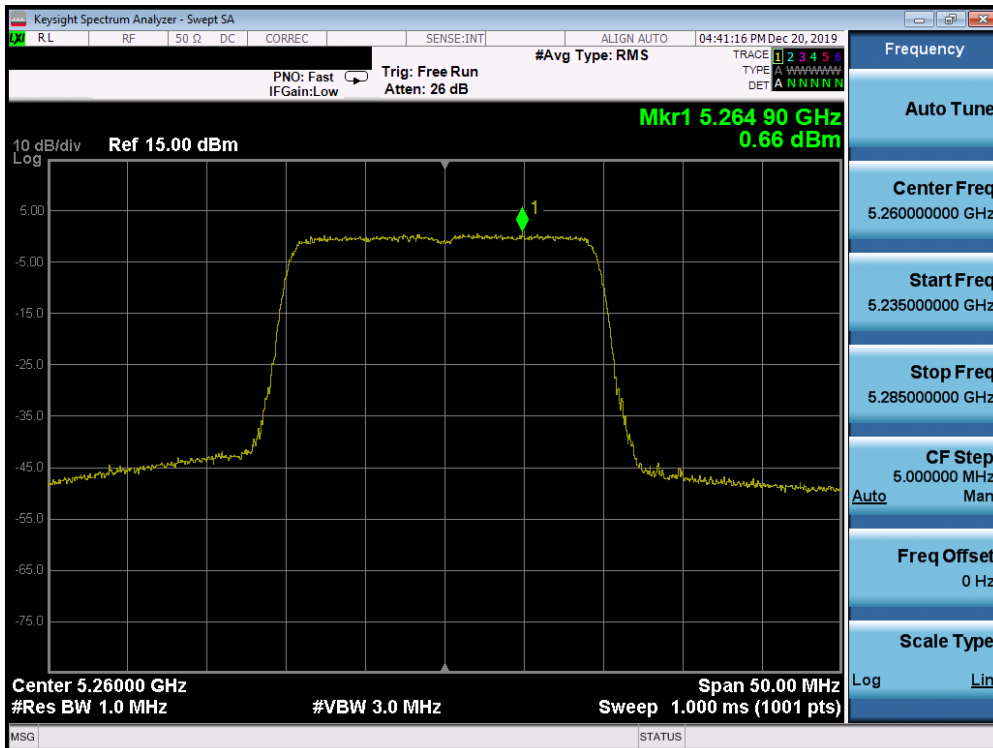


Plot 7-194. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 46)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 153 of 271

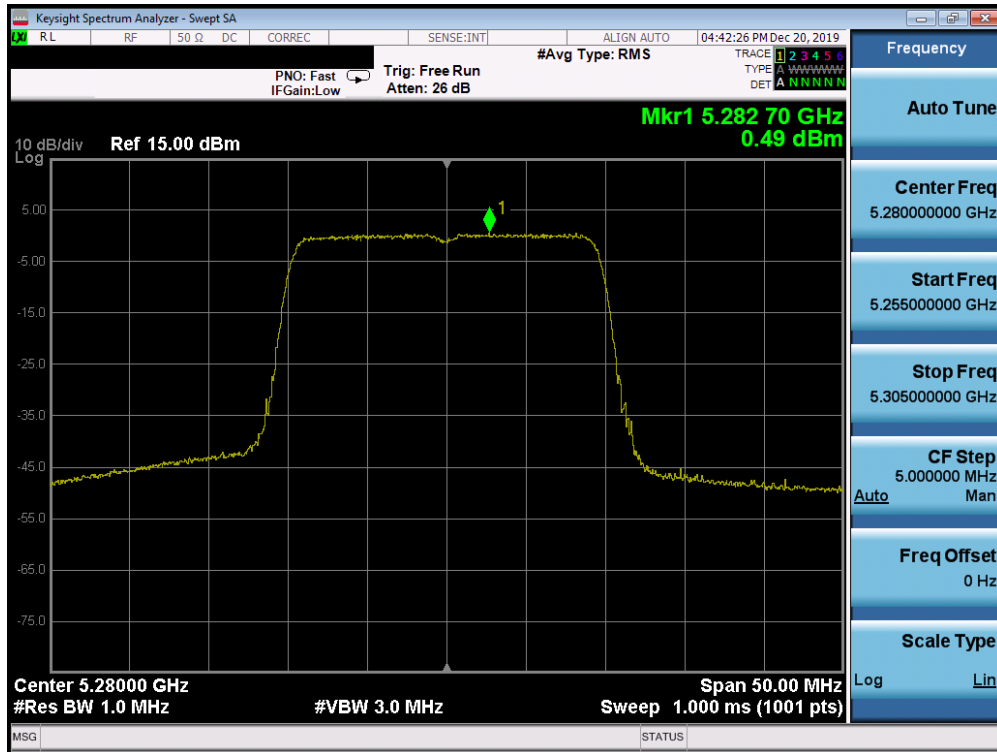


Plot 7-195. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 42)

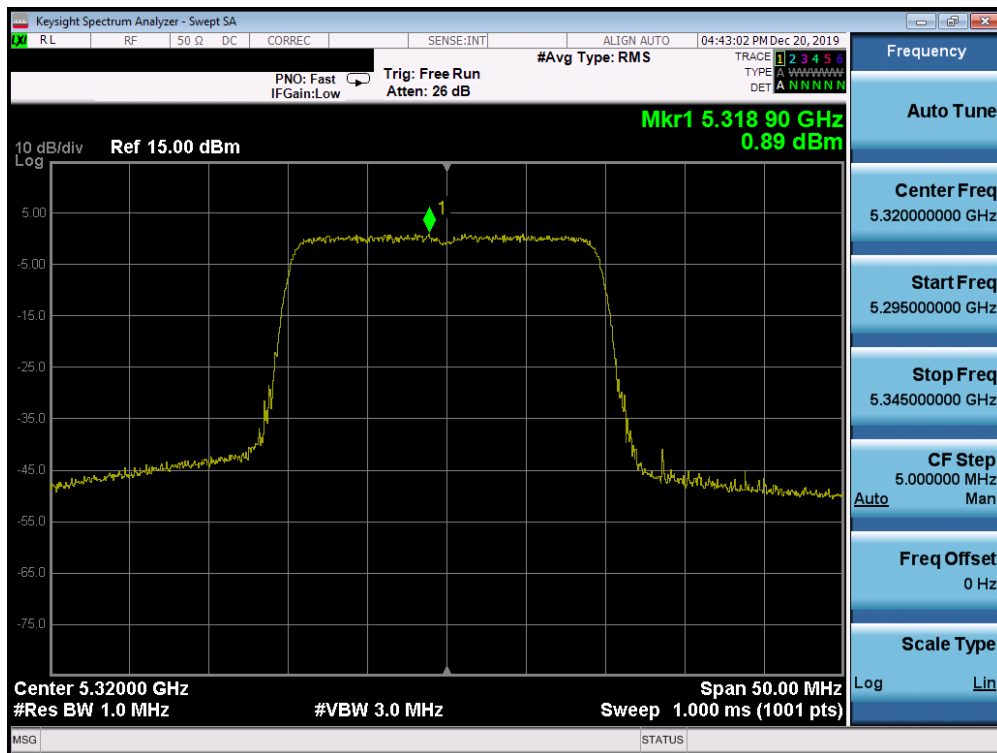


Plot 7-196. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 154 of 271

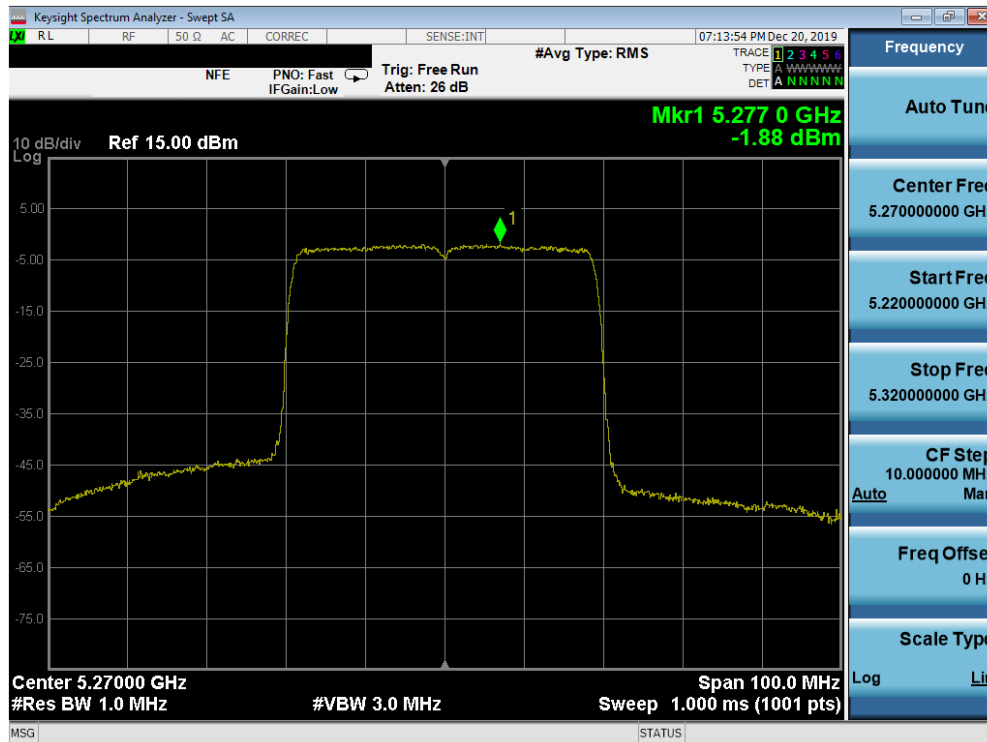


Plot 7-197. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

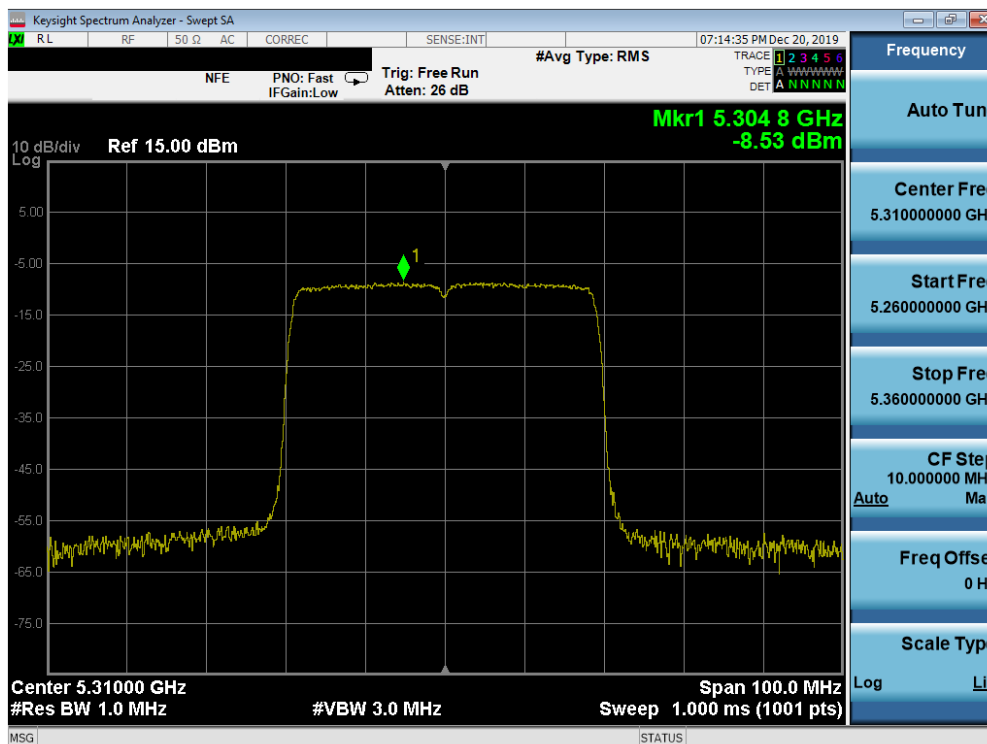


Plot 7-198. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

FCC ID: A3LSMG981U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 155 of 271

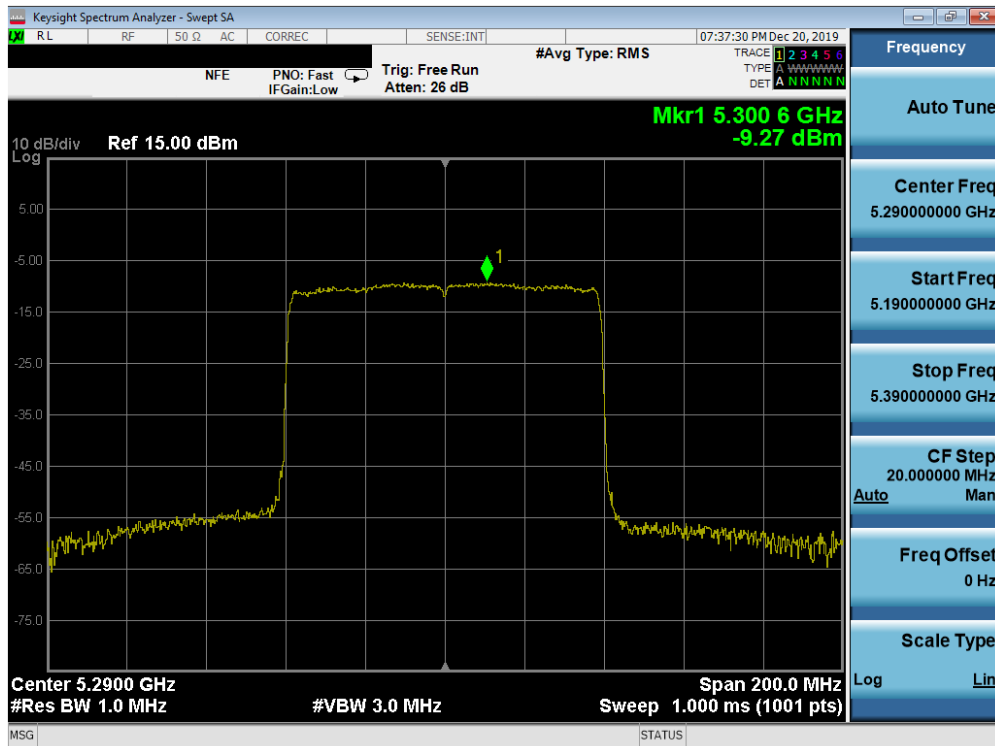


Plot 7-199. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

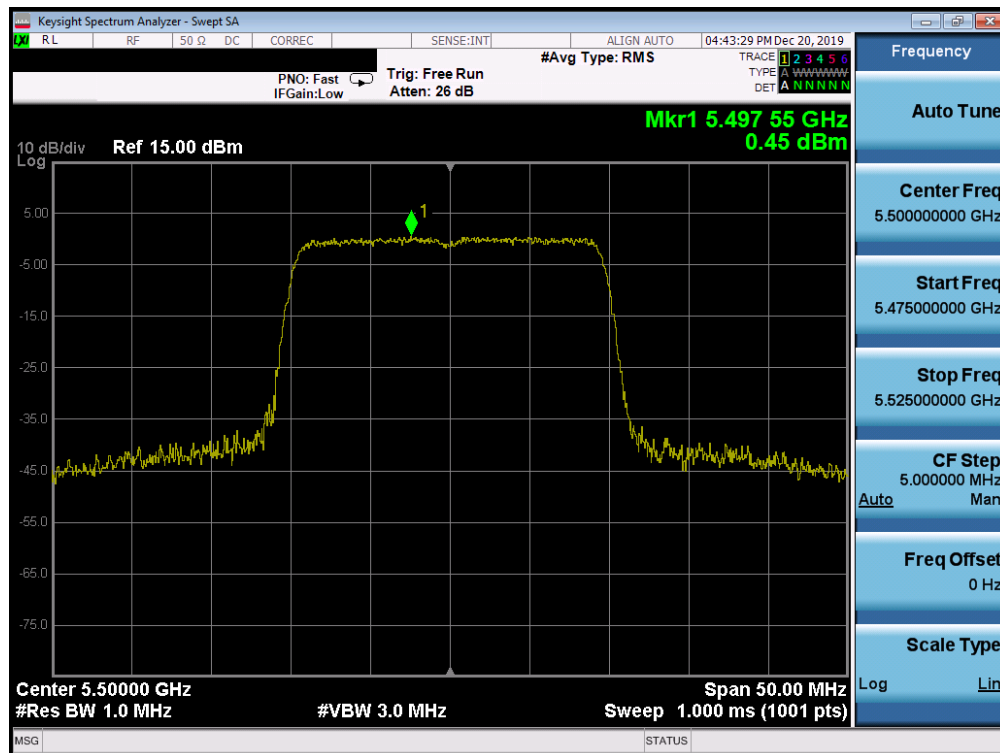


Plot 7-200. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 156 of 271



Plot 7-201. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)



Plot 7-202. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 157 of 271