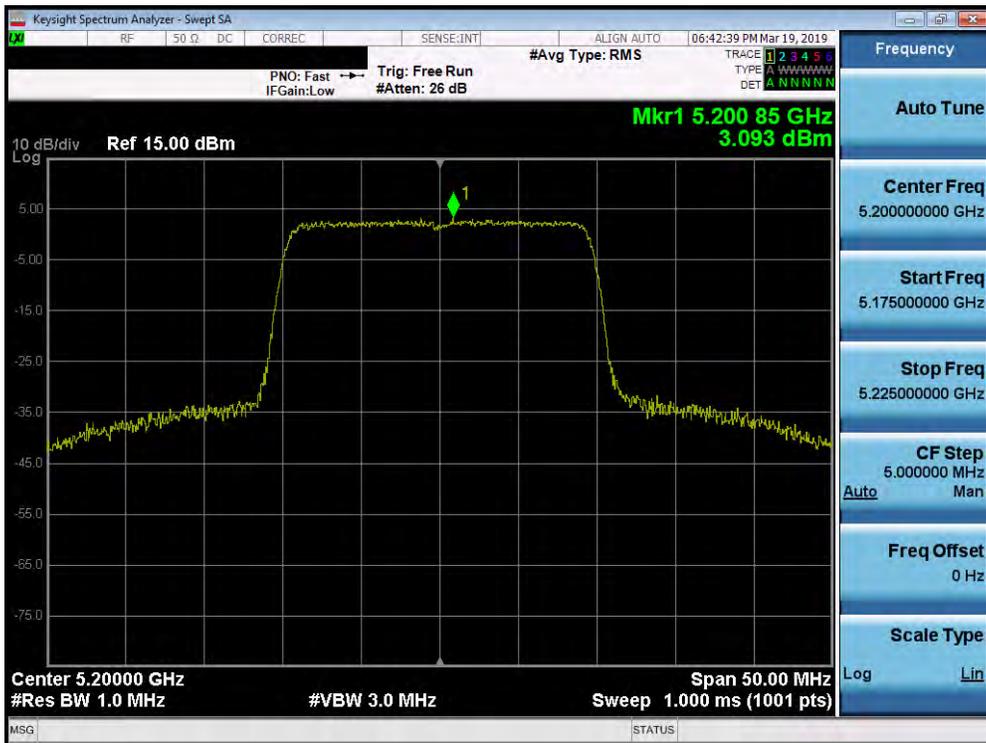
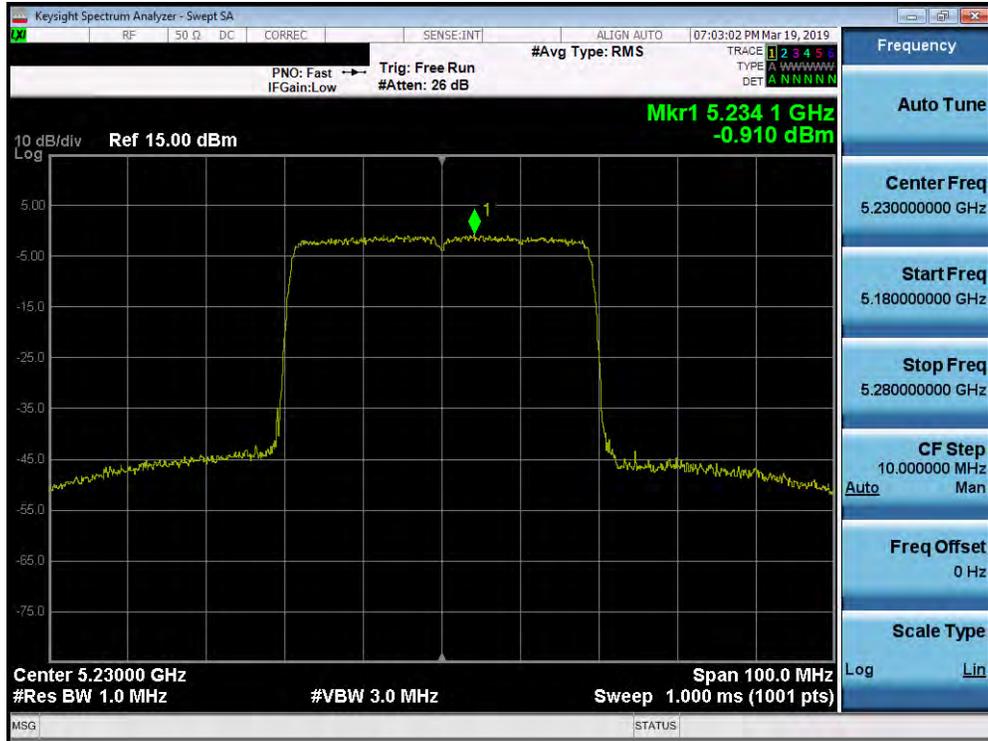


Plot 7-190. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)

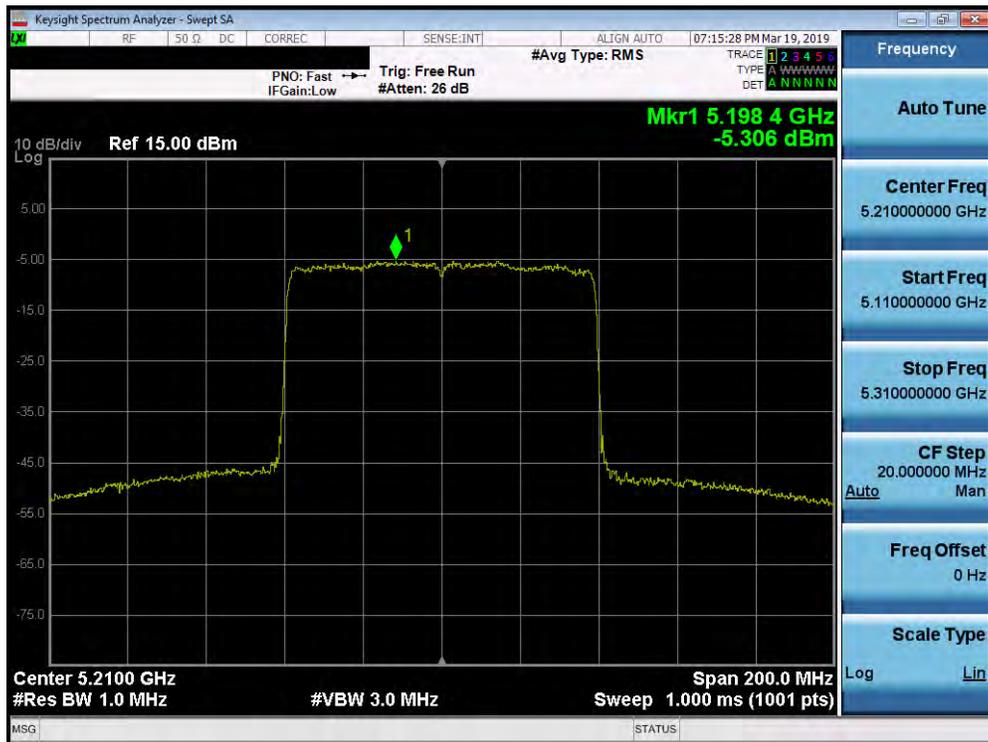


Plot 7-191. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 151 of 339

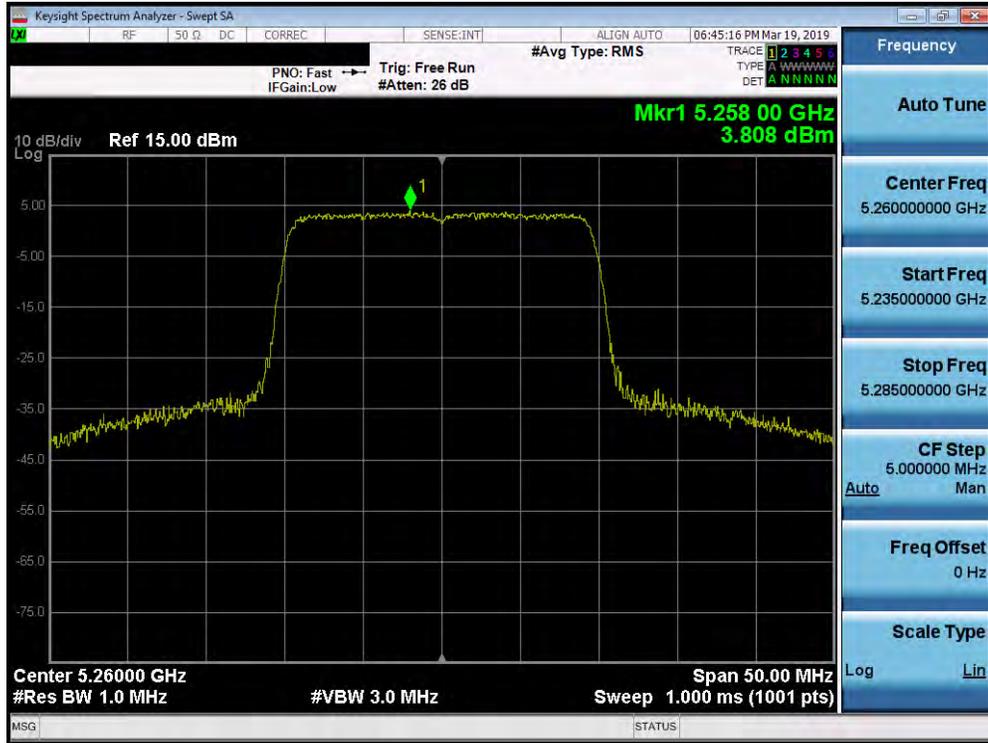


Plot 7-194. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

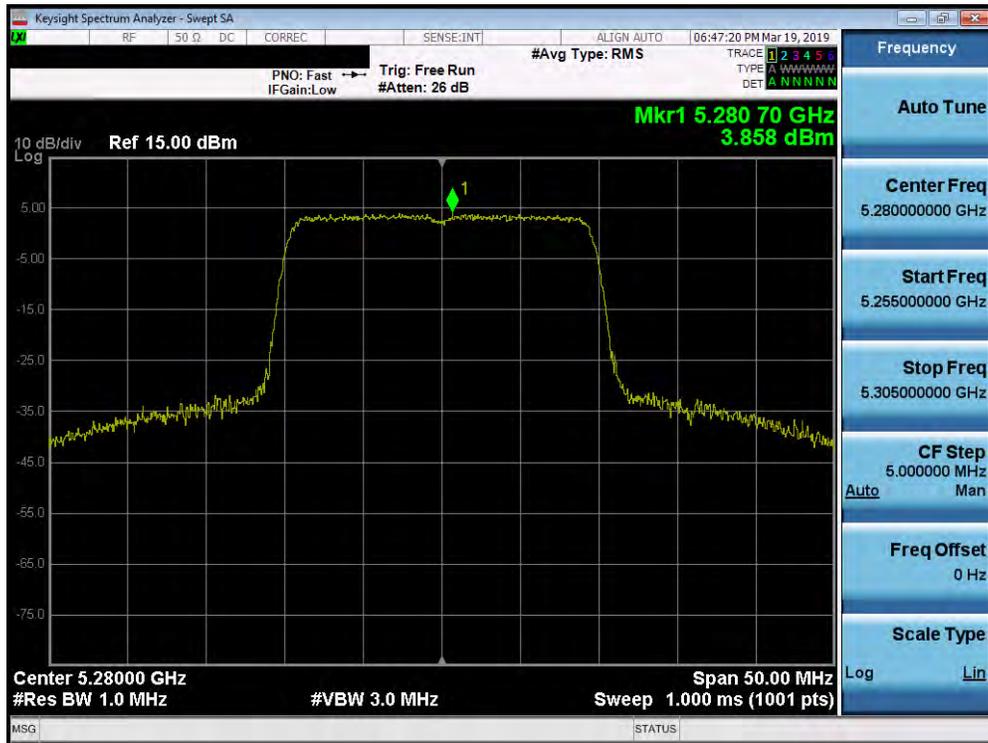


Plot 7-195. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 153 of 339

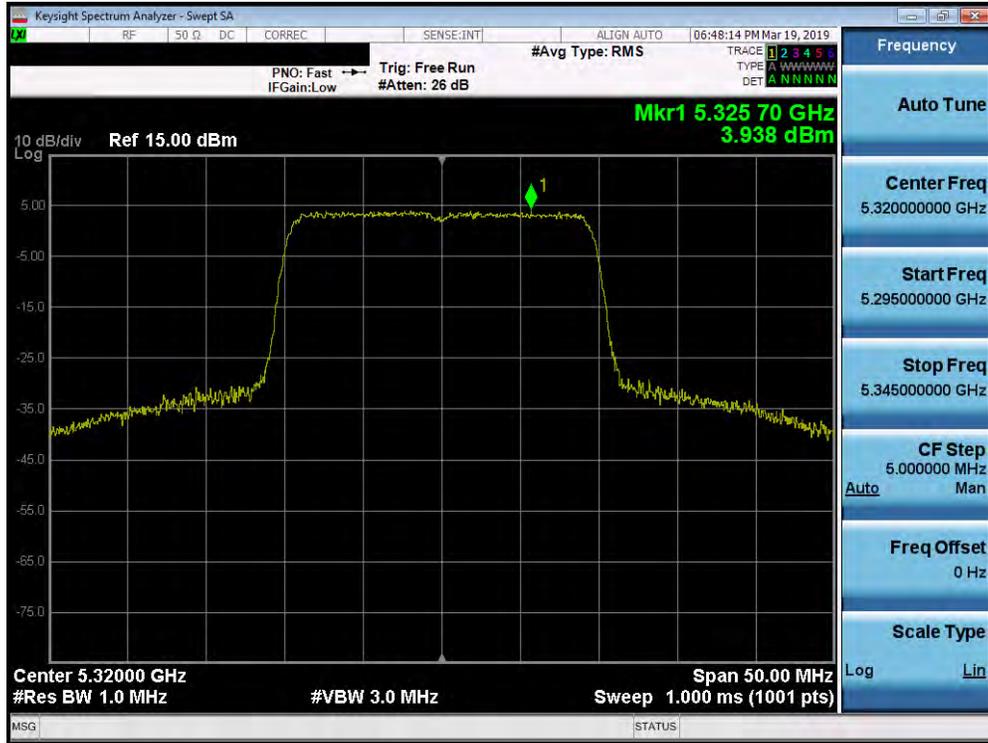


Plot 7-196. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)

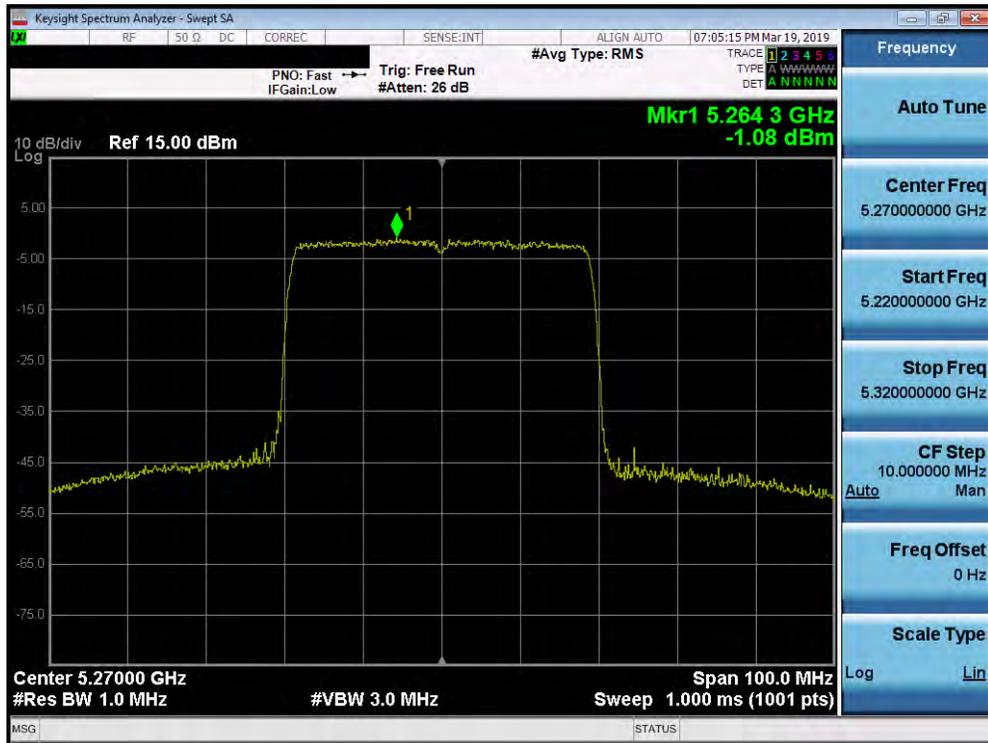


Plot 7-197. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 154 of 339

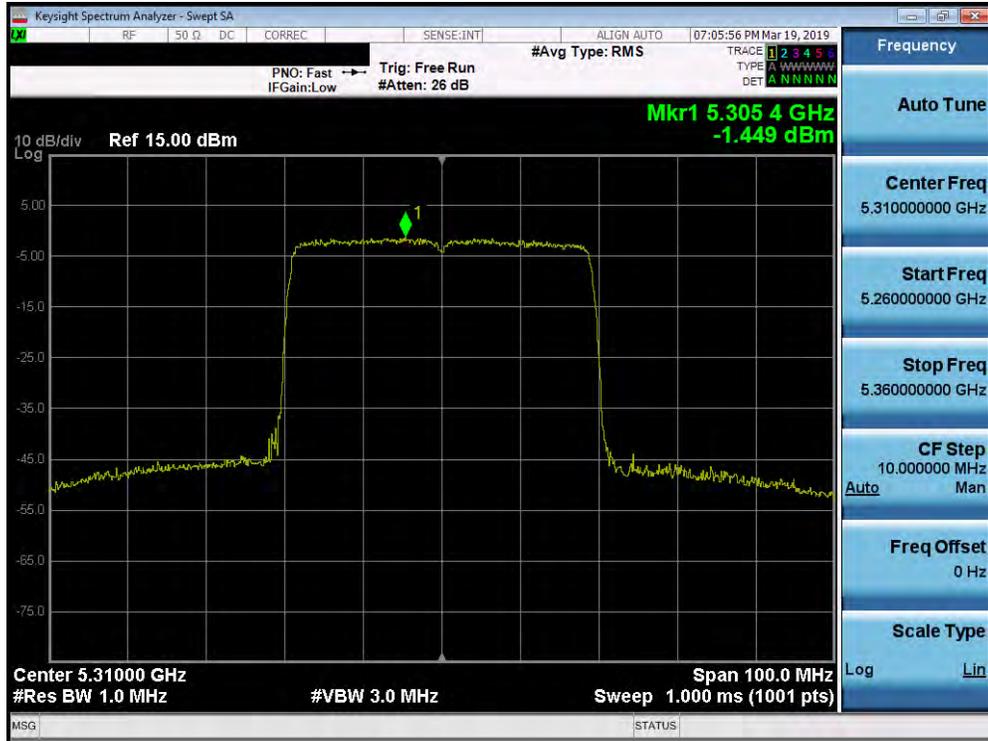


Plot 7-198. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

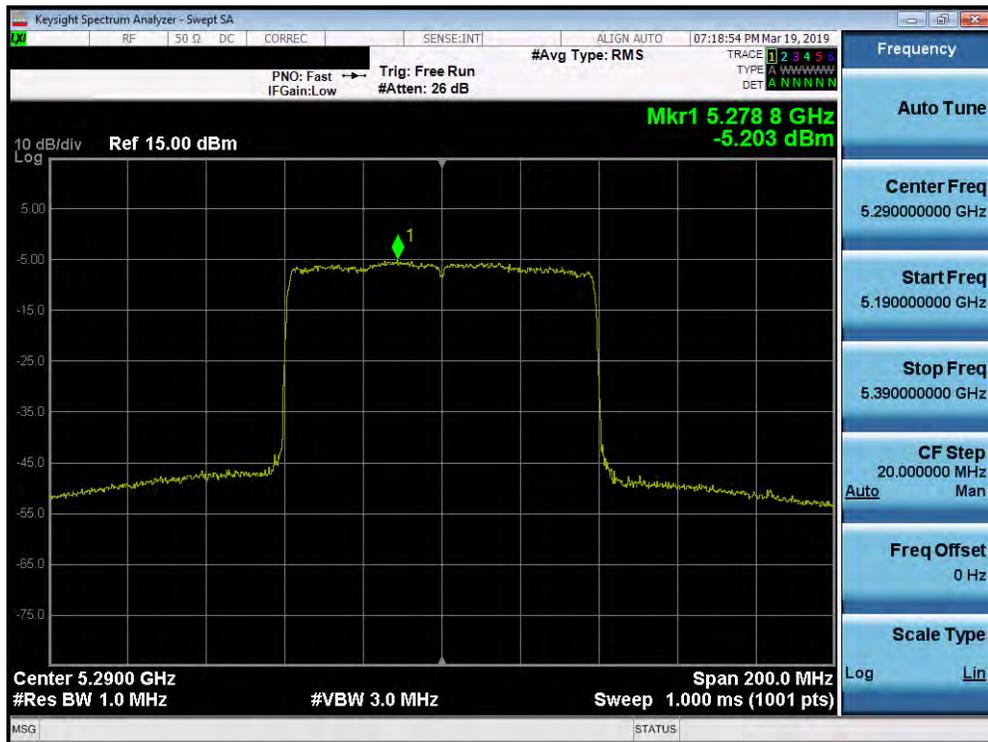


Plot 7-199. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 155 of 339

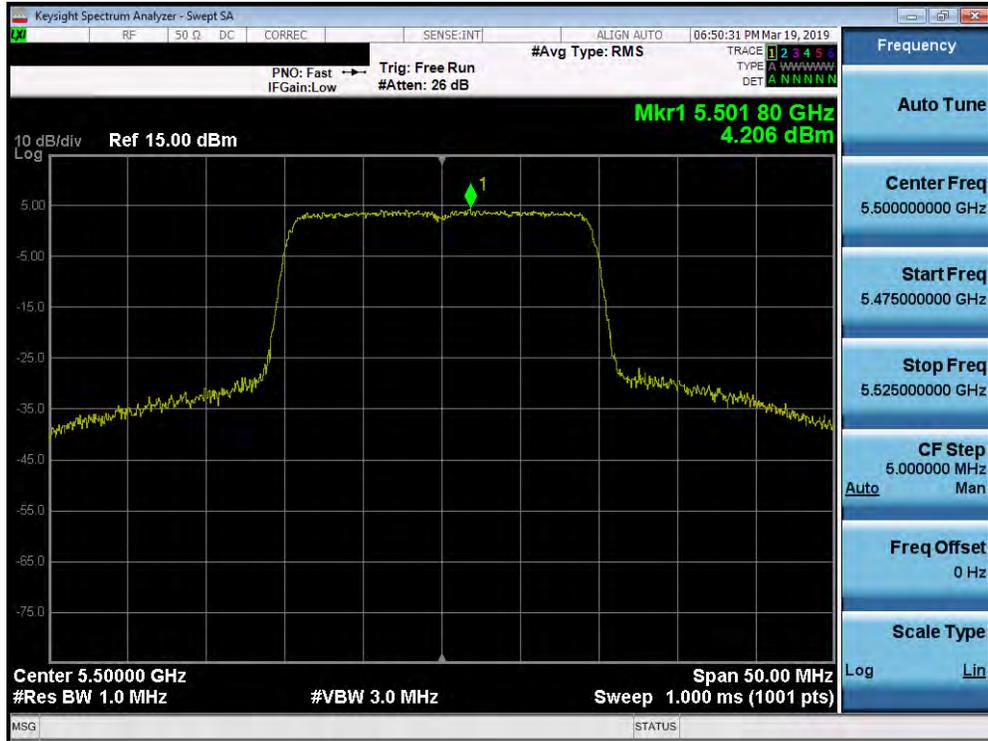


Plot 7-200. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

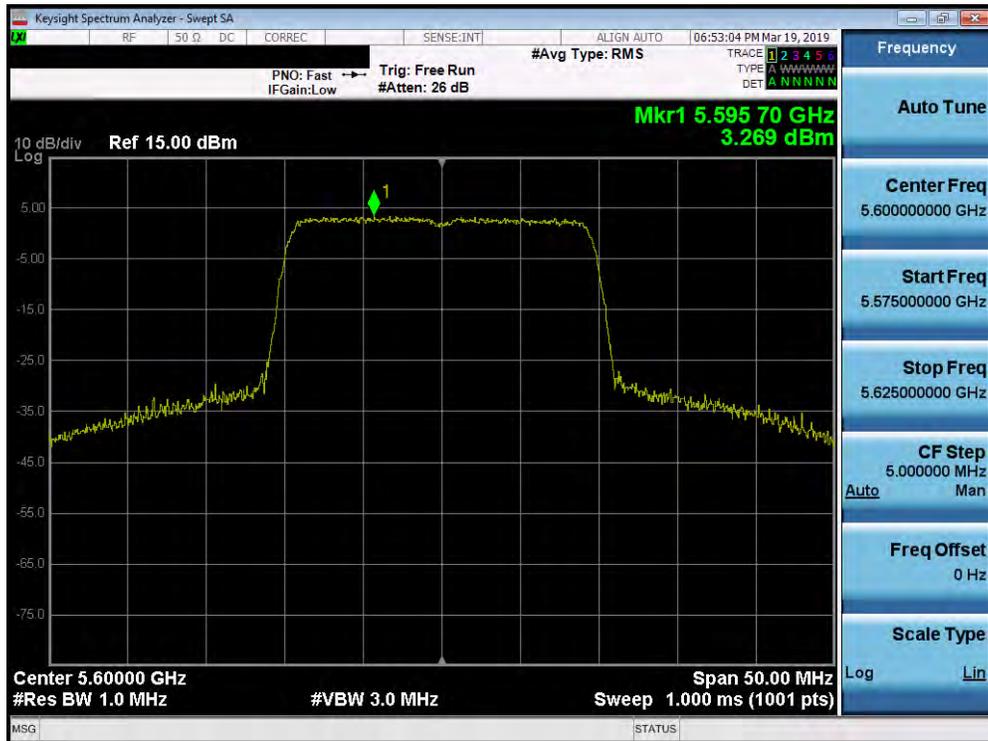


Plot 7-201. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 156 of 339

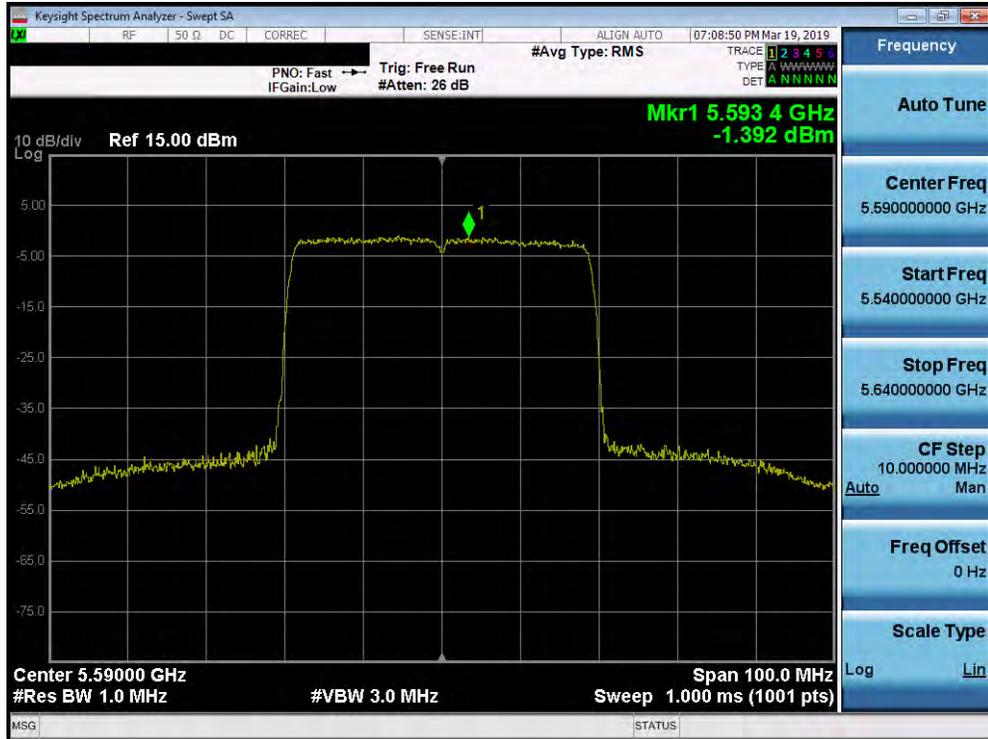


Plot 7-202. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)

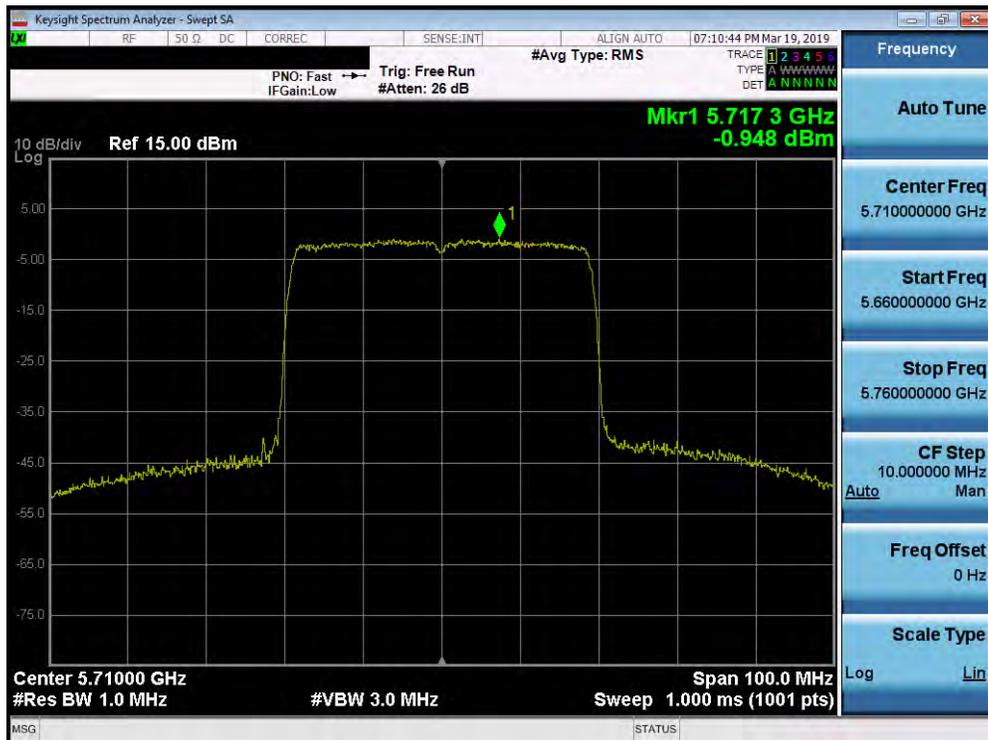


Plot 7-203. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 157 of 339

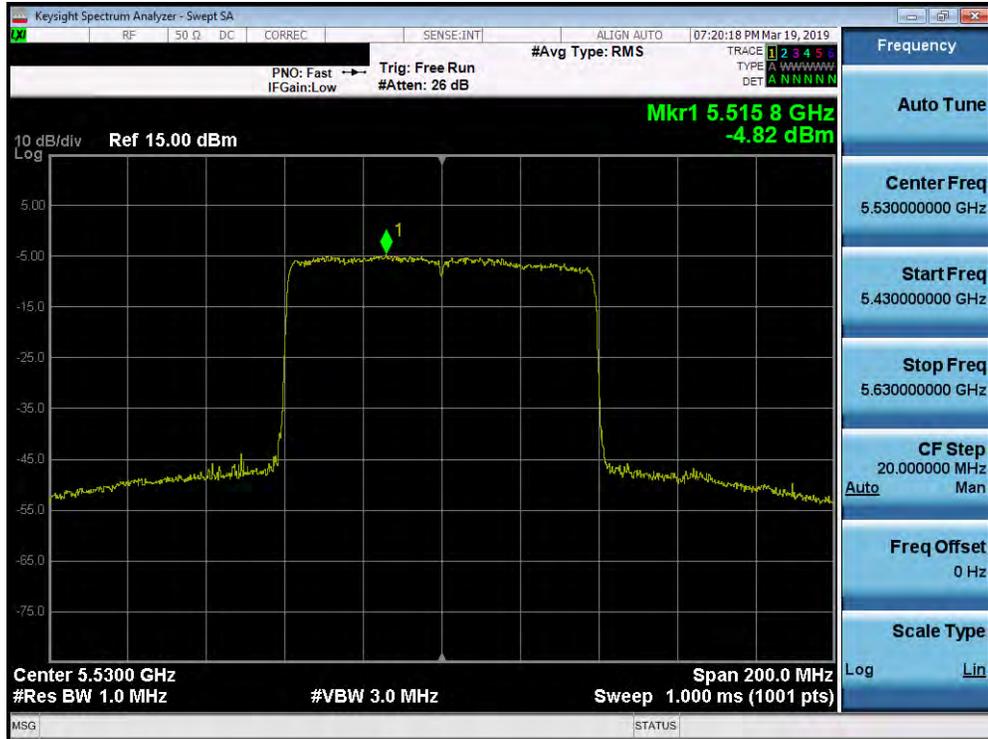


Plot 7-206. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

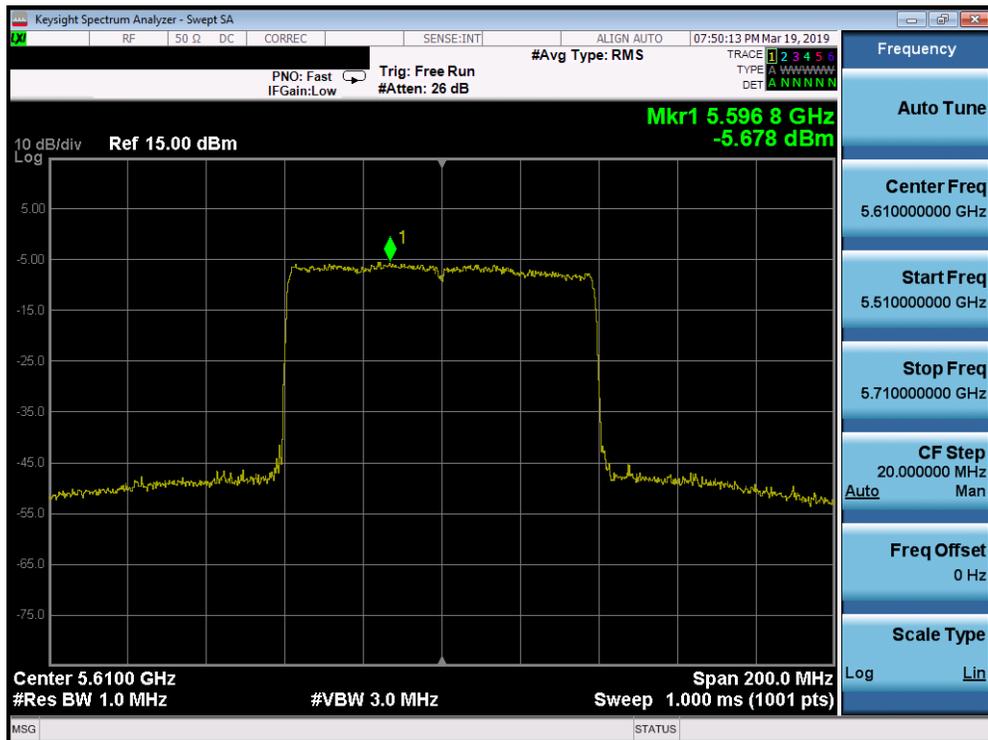


Plot 7-207. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 159 of 339

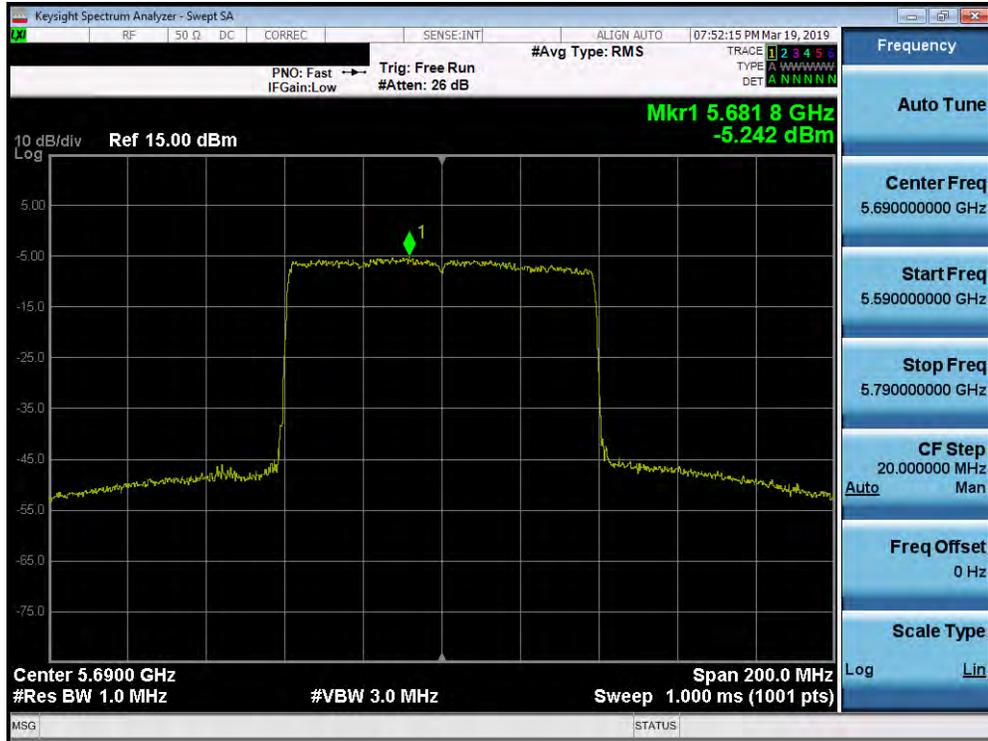


Plot 7-208. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-209. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 160 of 339



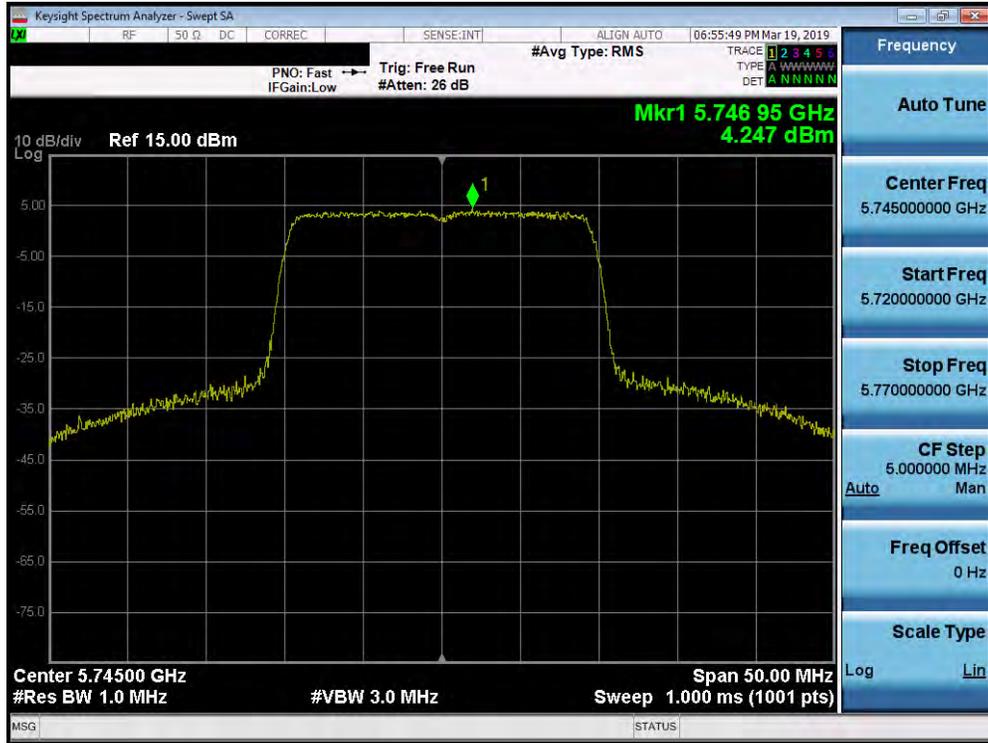
Plot 7-210. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 161 of 339

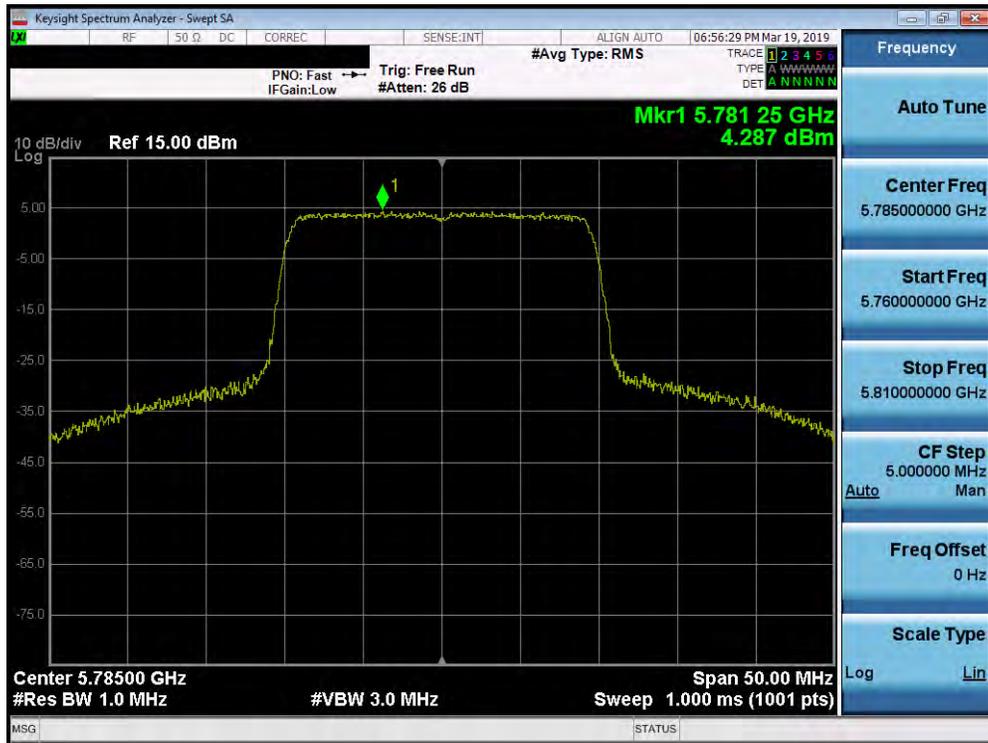
	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	4.25	30.00	-25.75
	5785	157	ax (20MHz)	242T	MCS0	4.29	30.00	-25.71
	5825	165	ax (20MHz)	242T	MCS0	3.92	30.00	-26.08
	5755	151	ax (40MHz)	484T	MCS0	-0.70	30.00	-30.70
	5795	159	ax (40MHz)	484T	MCS0	-0.77	30.00	-30.77
	5775	155	ax (80MHz)	996T	MCS0	-5.13	30.00	-35.13

Table 7-66. Band 3 Conducted Power Spectral Density Measurements SISO ANT2 (Full Tones)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 162 of 339	

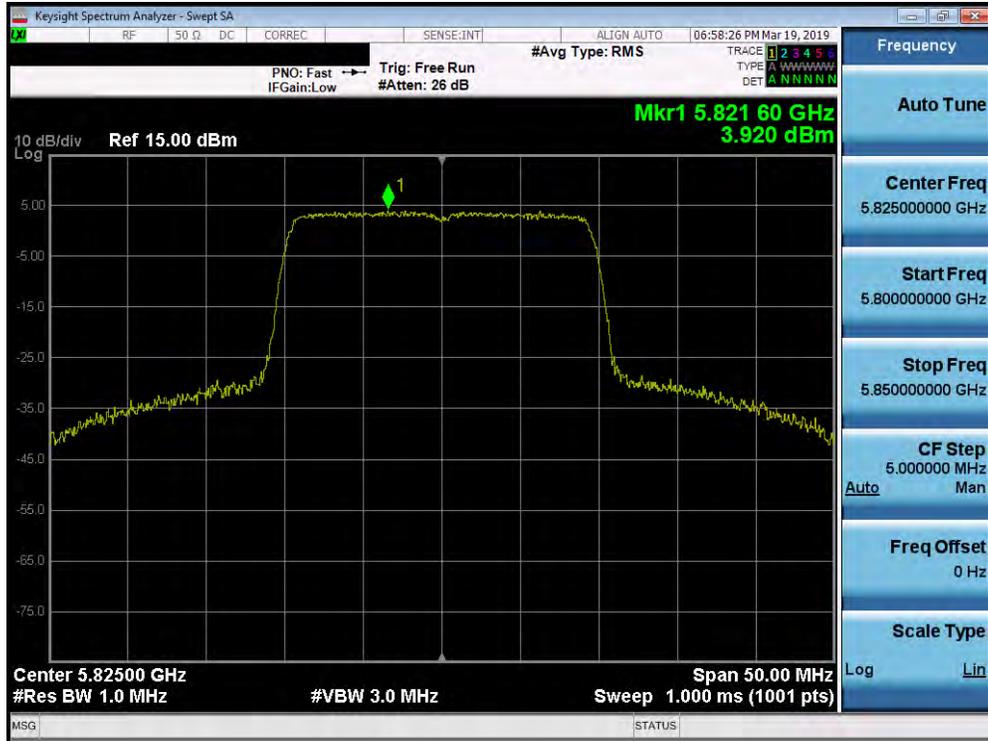


Plot 7-211. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)

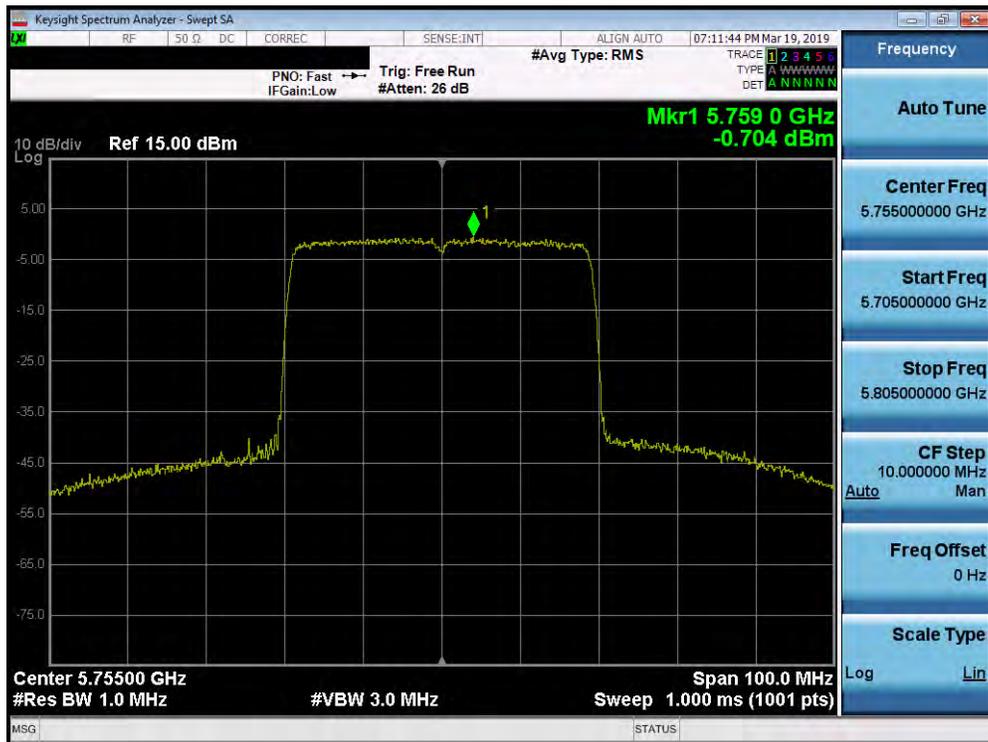


Plot 7-212. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 163 of 339

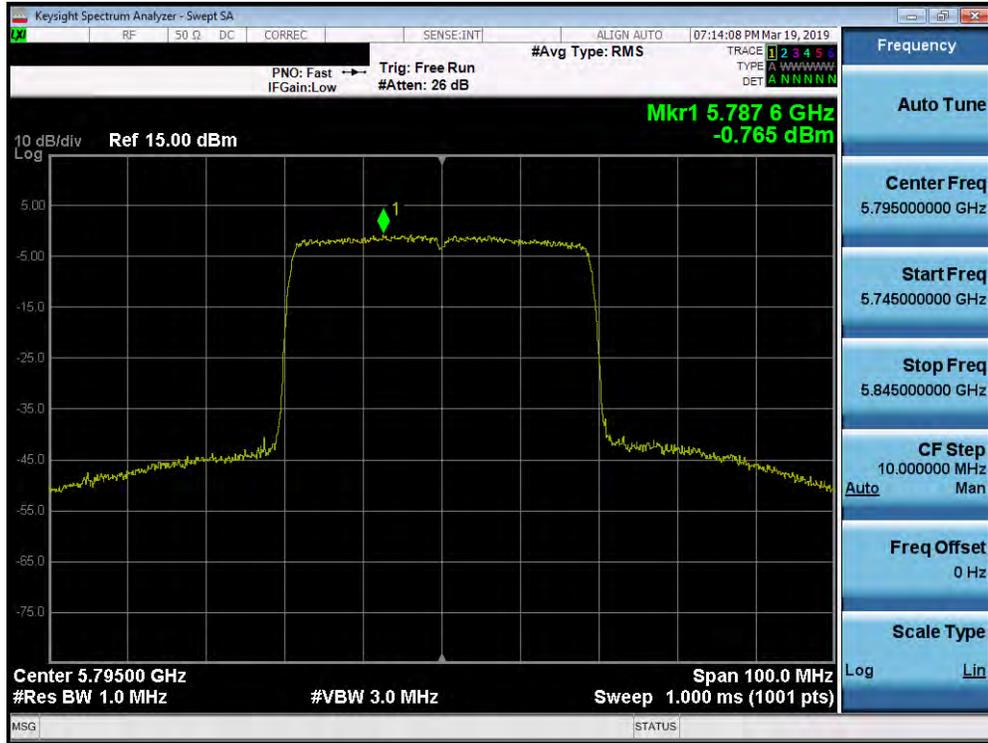


Plot 7-213. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)

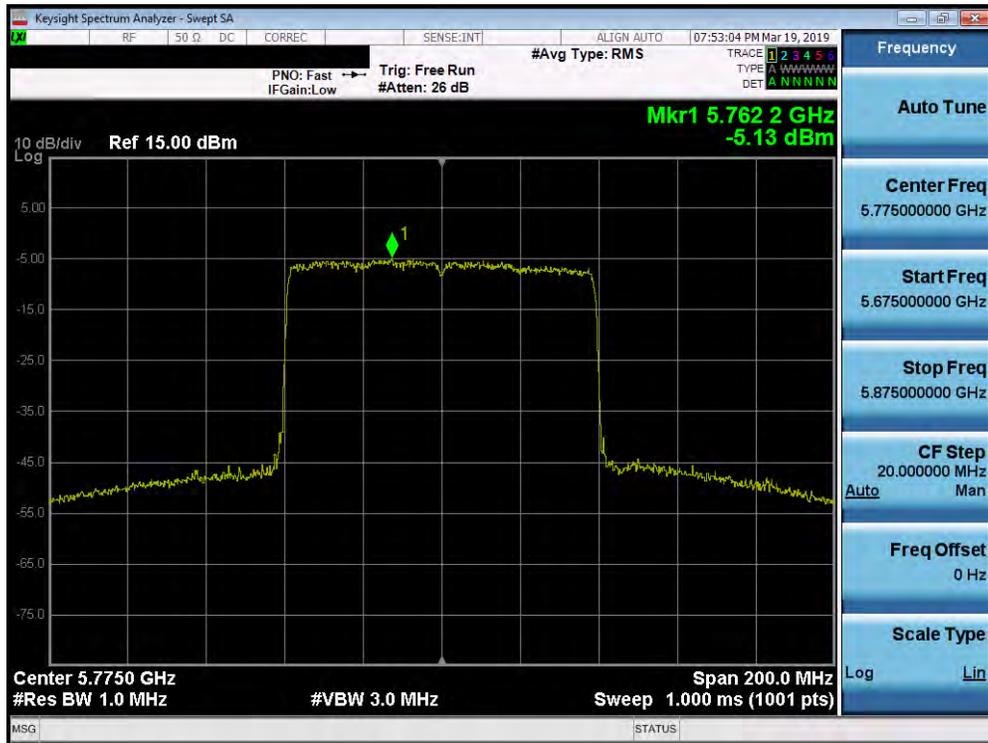


Plot 7-214. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 164 of 339



Plot 7-215. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



Plot 7-216. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 165 of 339

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	5.41	4.95	8.20	11.00	-2.80
	5200	40	ax (20MHz)	26T	MCS0	3.99	3.91	6.96	11.00	-4.04
	5240	48	ax (20MHz)	26T	MCS0	3.80	4.00	6.91	11.00	-4.09
	5190	38	ax (40MHz)	26T	MCS0	5.42	5.18	8.31	11.00	-2.69
	5230	46	ax (40MHz)	26T	MCS0	5.35	6.09	8.75	11.00	-2.25
	5210	42	ax (80MHz)	26T	MCS0	5.76	4.85	8.34	11.00	-2.66
Band 2A	5260	52	ax (20MHz)	26T	MCS0	5.28	5.20	8.25	11.00	-2.75
	5280	56	ax (20MHz)	26T	MCS0	5.28	5.07	8.19	11.00	-2.81
	5320	64	ax (20MHz)	26T	MCS0	5.36	4.71	8.06	11.00	-2.94
	5270	54	ax (40MHz)	26T	MCS0	5.69	5.42	8.57	11.00	-2.43
	5310	62	ax (40MHz)	26T	MCS0	5.42	5.54	8.49	11.00	-2.51
	5290	58	ax (80MHz)	26T	MCS0	3.62	3.66	6.65	11.00	-4.35
Band 2C	5500	100	ax (20MHz)	26T	MCS0	5.30	5.61	8.47	11.00	-2.53
	5600	120	ax (20MHz)	26T	MCS0	5.90	5.78	8.85	11.00	-2.15
	5720	144	ax (20MHz)	26T	MCS0	5.84	5.73	8.80	11.00	-2.20
	5510	102	ax (40MHz)	26T	MCS0	5.31	5.77	8.56	11.00	-2.44
	5590	118	ax (40MHz)	26T	MCS0	5.60	5.71	8.67	11.00	-2.33
	5710	142	ax (40MHz)	26T	MCS0	5.79	6.33	9.08	11.00	-1.92
	5530	106	ax (80MHz)	26T	MCS0	4.86	5.50	8.20	11.00	-2.80
	5610	122	ax (80MHz)	26T	MCS0	3.34	3.60	6.48	11.00	-4.52
5690	138	ax (80MHz)	26T	MCS0	1.77	2.33	5.07	11.00	-5.93	

Table 7-67. 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]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	ax (20MHz)	26T	MCS0	2.57	3.08	5.84	30.00	-24.16
	5785	157	ax (20MHz)	26T	MCS0	2.47	3.13	5.82	30.00	-24.18
	5825	165	ax (20MHz)	26T	MCS0	2.31	2.89	5.62	30.00	-24.38
	5755	151	ax (40MHz)	26T	MCS0	3.12	3.26	6.20	30.00	-23.80
	5795	159	ax (40MHz)	26T	MCS0	2.46	3.93	6.27	30.00	-23.73
	5775	155	ax (80MHz)	26T	MCS0	4.03	5.14	7.63	30.00	-22.37

Table 7-68. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (26 Tones)

FCC ID: A3LSMF900F			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 166 of 339	

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 -5.50 dBi for Antenna-1 and -6.05 dBi for Antenna-2.

$$\begin{aligned}
 \text{Directional gain} &= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}] \text{ dBi} \\
 &= 10 \log[(10^{-5.50/20} + 10^{-6.05/20} / 2] \text{ dBi} \\
 &= (-2.89) \text{ dBi}
 \end{aligned}$$

Sample MIMO Calculation:

Assuming the average conducted power spectral density was measured to be 5.41 dBm for Antenna-1 and 4.95 dBm for Antenna-2.

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

$$(5.41 \text{ dBm} + 4.95 \text{ dBm}) = (3.48 \text{ mW} + 3.13 \text{ mW}) = 6.61 \text{ mW} = 8.20 \text{ dBm}$$

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

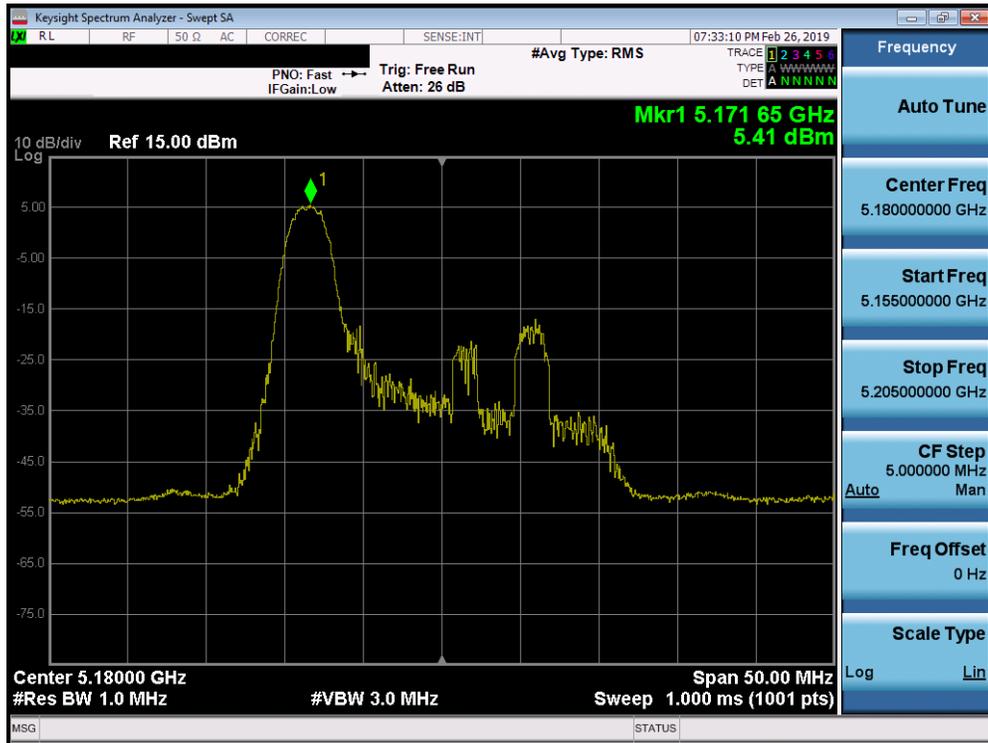
Assuming the average MIMO power density was calculated to be 8.20 dBm with directional gain of -2.89 dBi.

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

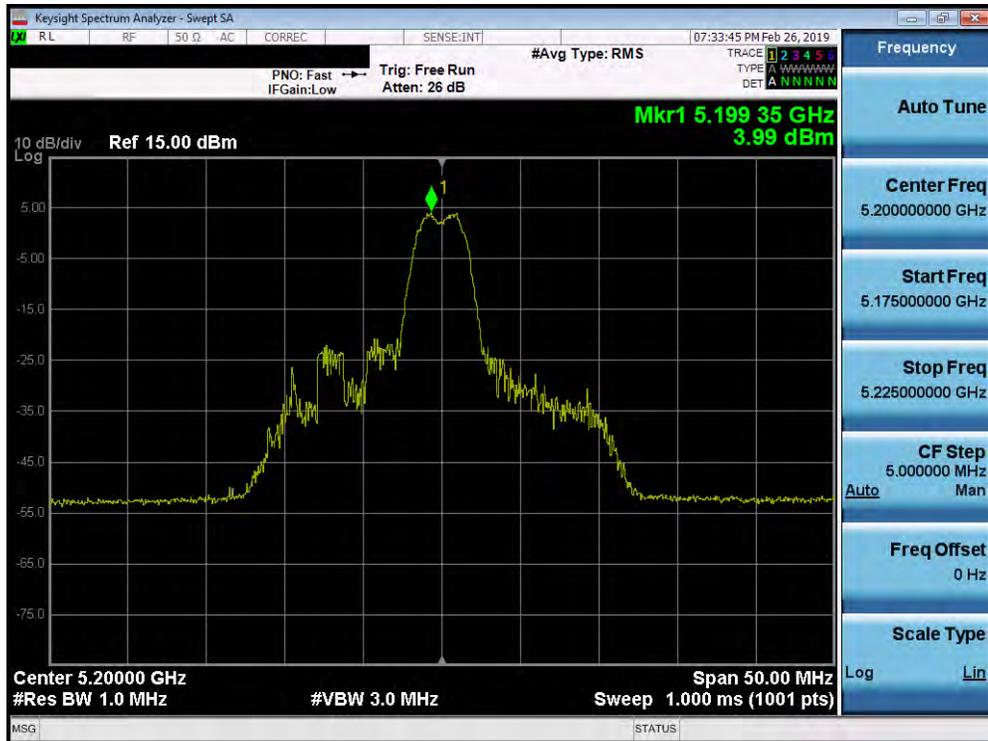
$$8.20 \text{ dBm} + (-2.89) \text{ dBi} = 5.31 \text{ dBm}$$

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset	Page 167 of 339	

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



Plot 7-217. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

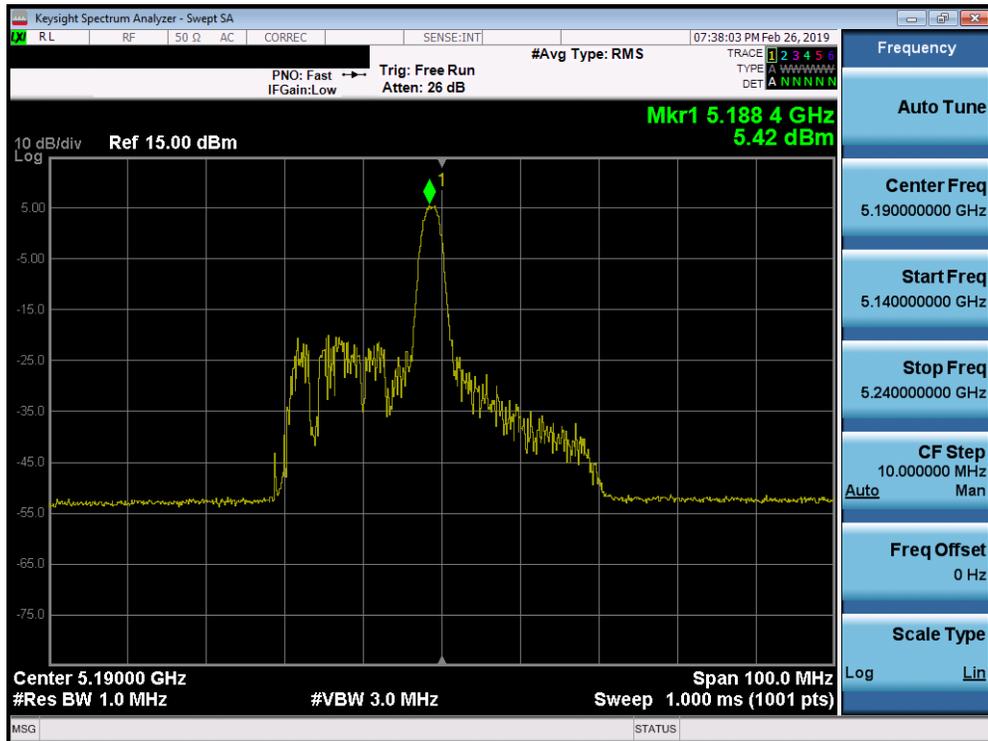


Plot 7-218. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 168 of 339

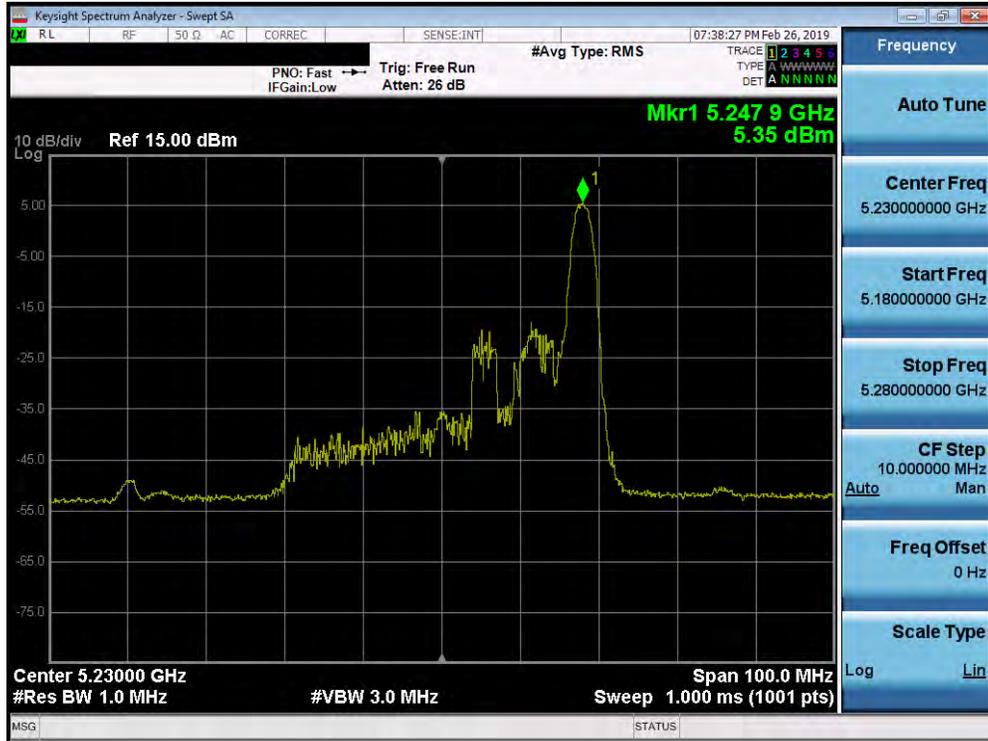


Plot 7-219. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

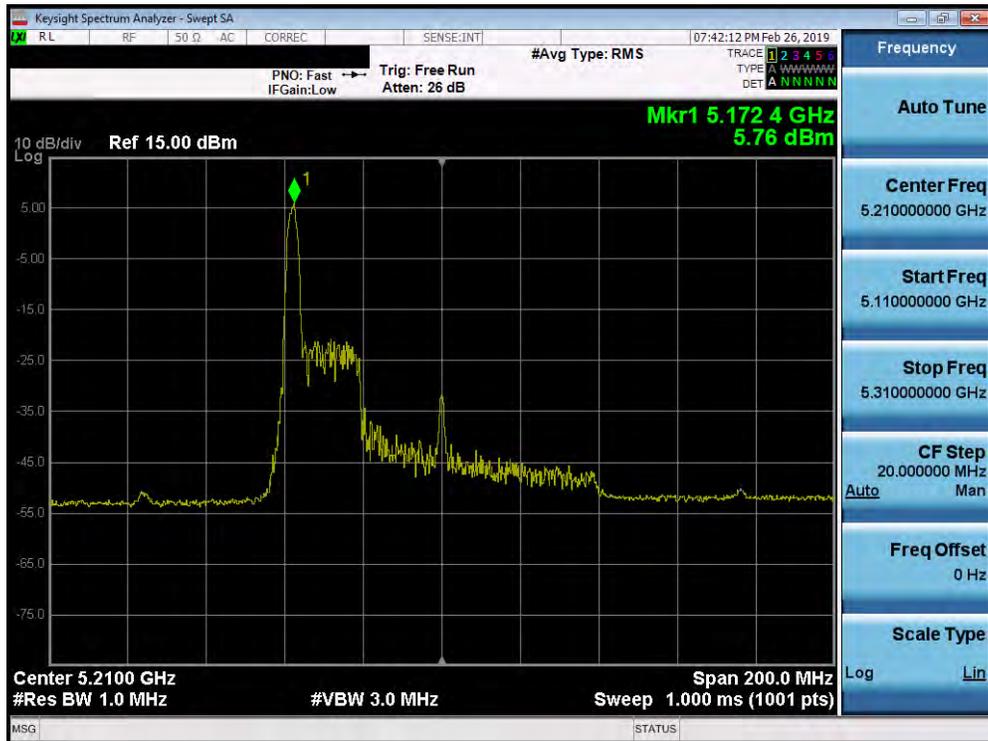


Plot 7-220. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 169 of 339

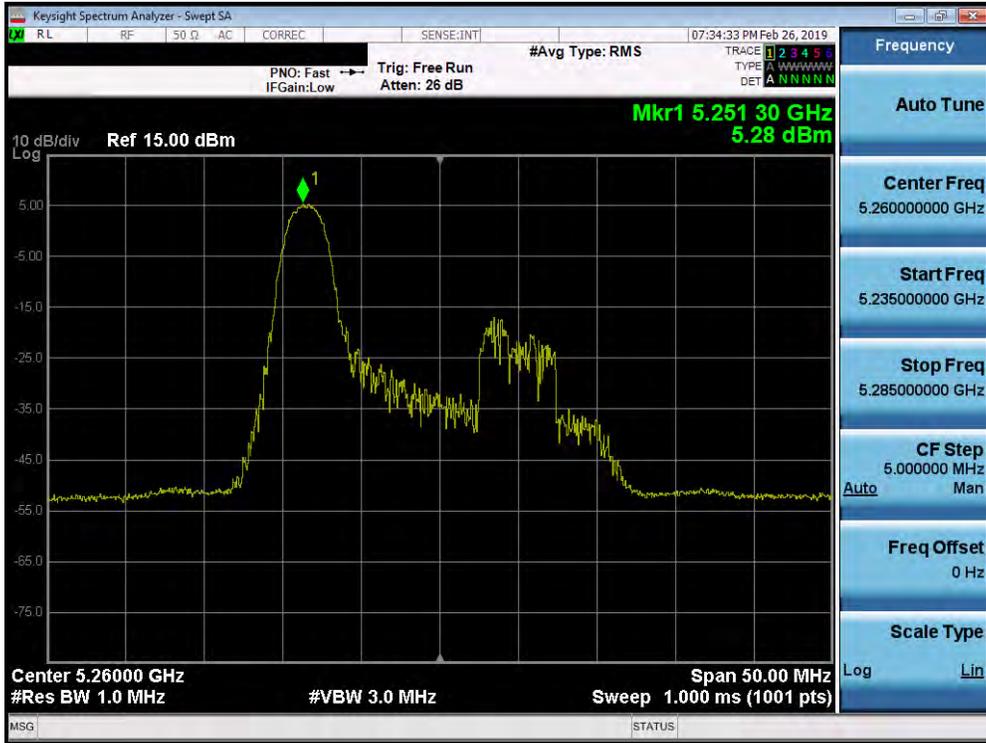


Plot 7-221. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)



Plot 7-222. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 170 of 339

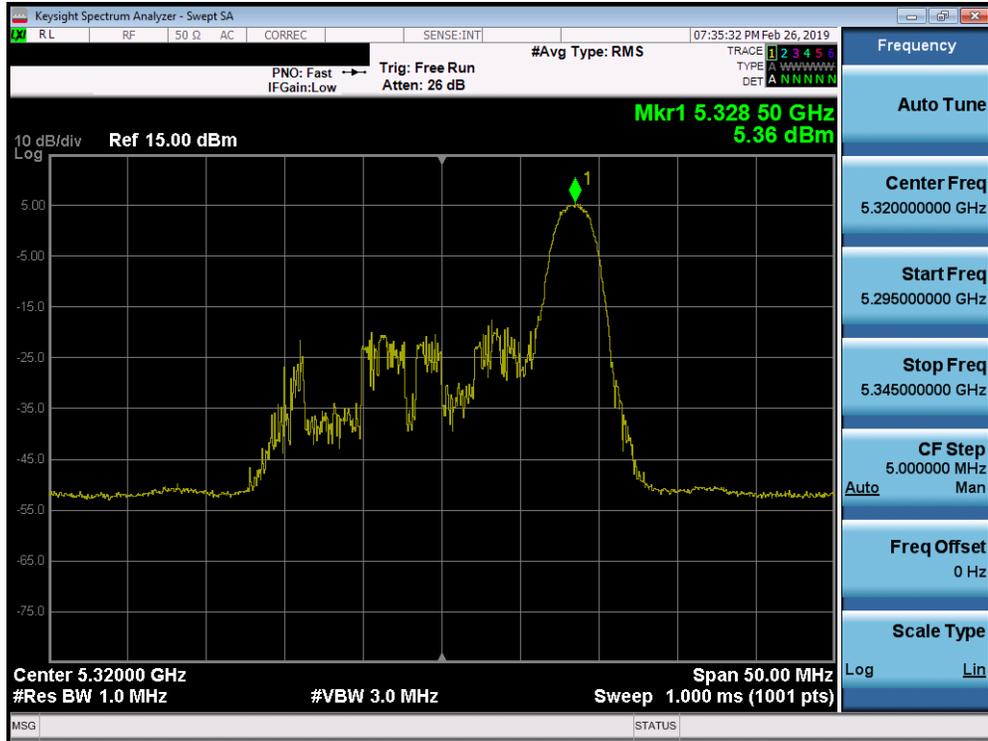


Plot 7-223. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

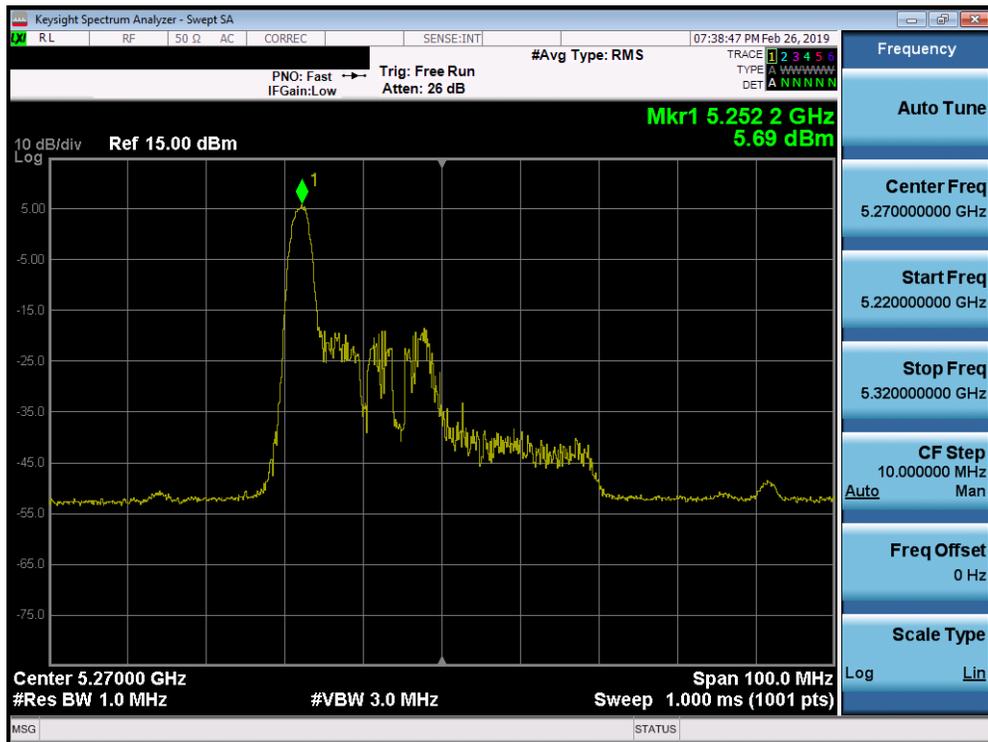


Plot 7-224. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 171 of 339

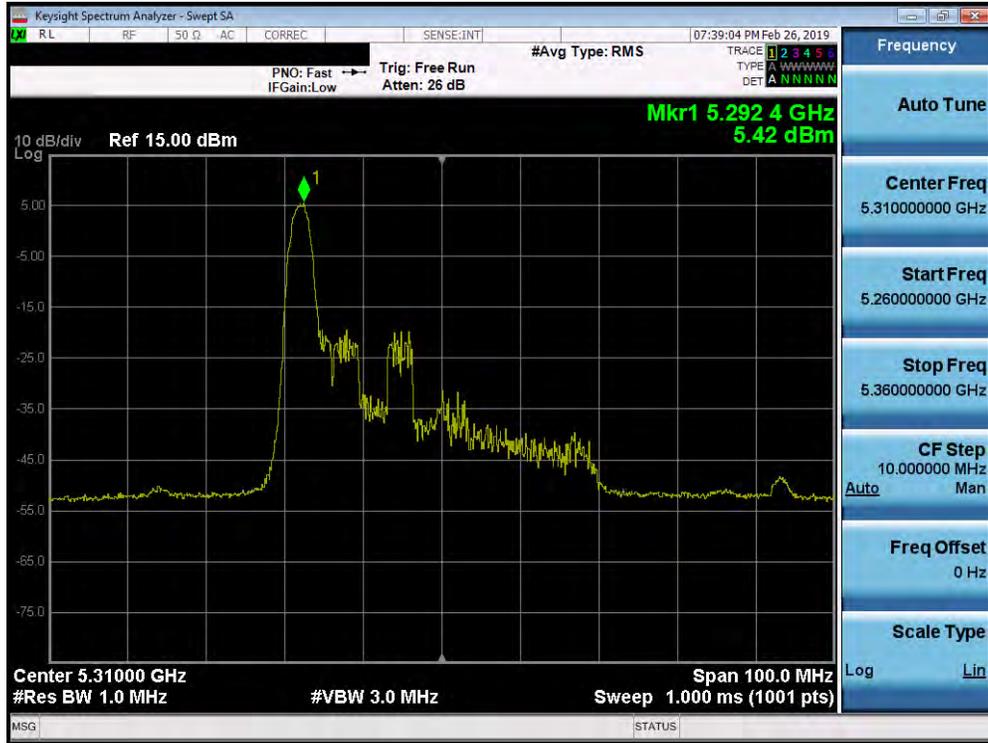


Plot 7-225. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)



Plot 7-226. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 172 of 339

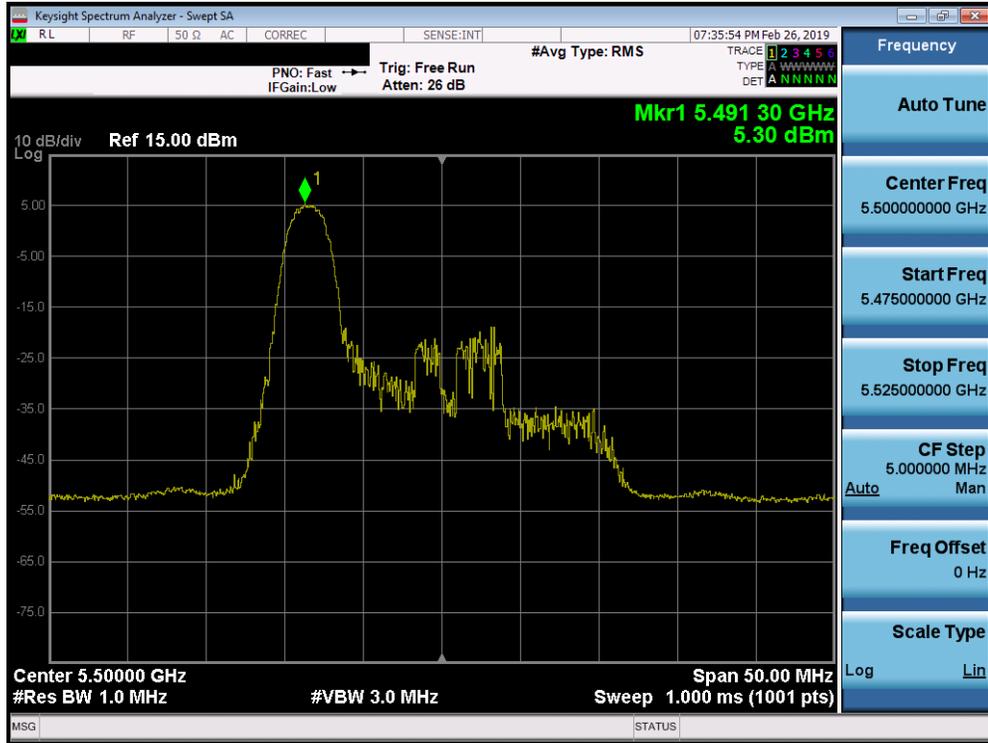


Plot 7-227. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

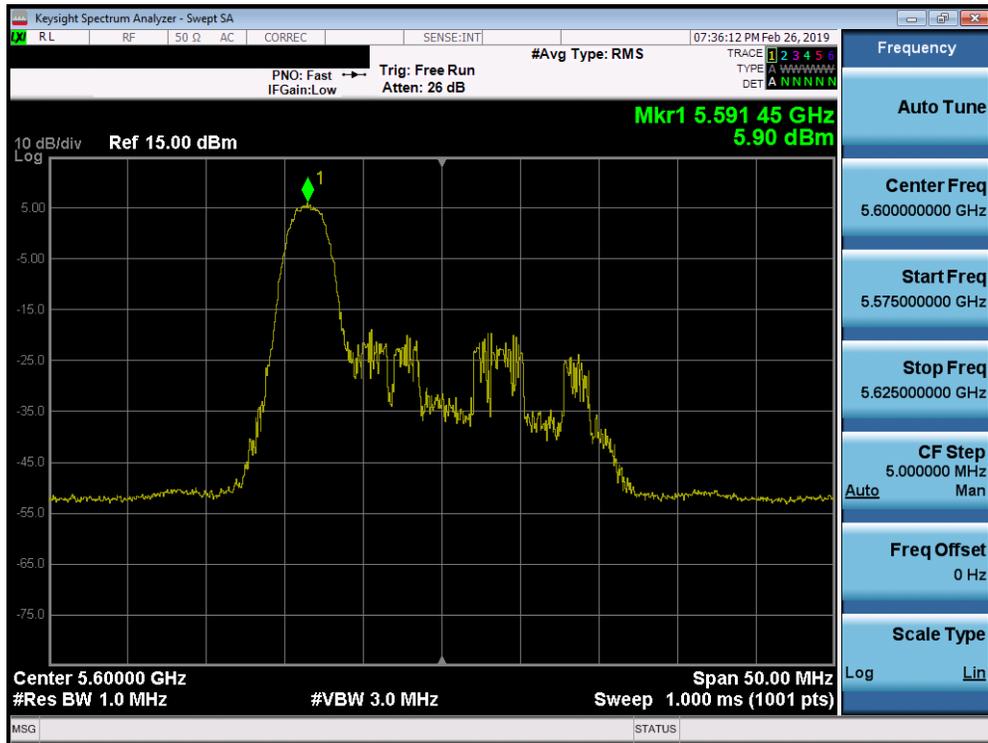


Plot 7-228. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 173 of 339

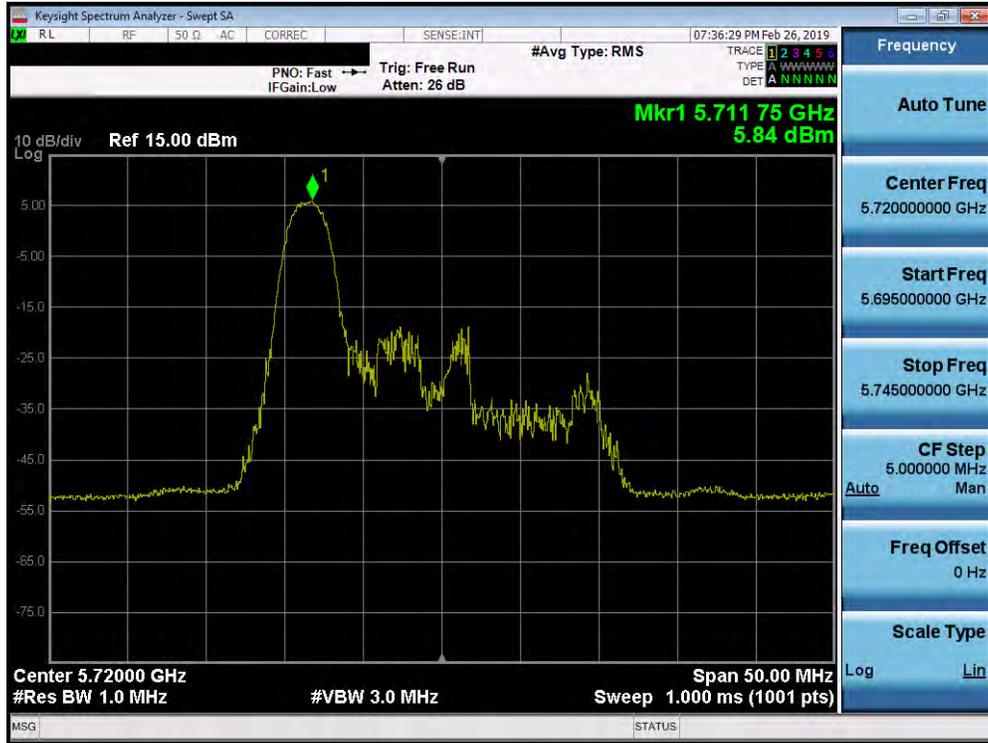


Plot 7-229. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

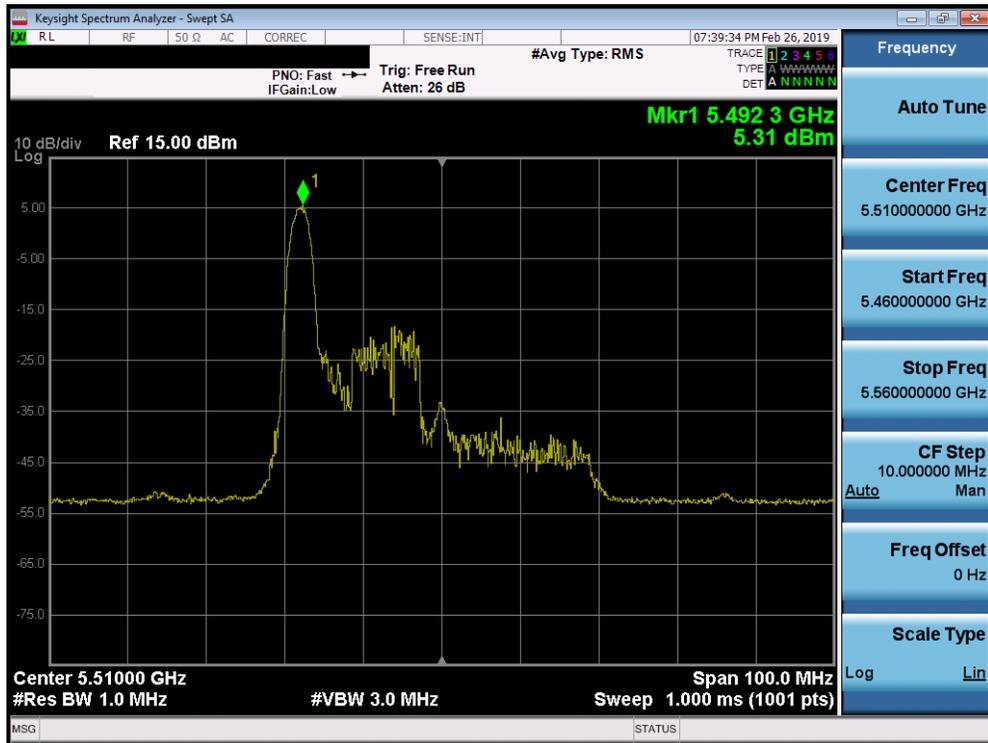


Plot 7-230. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 174 of 339

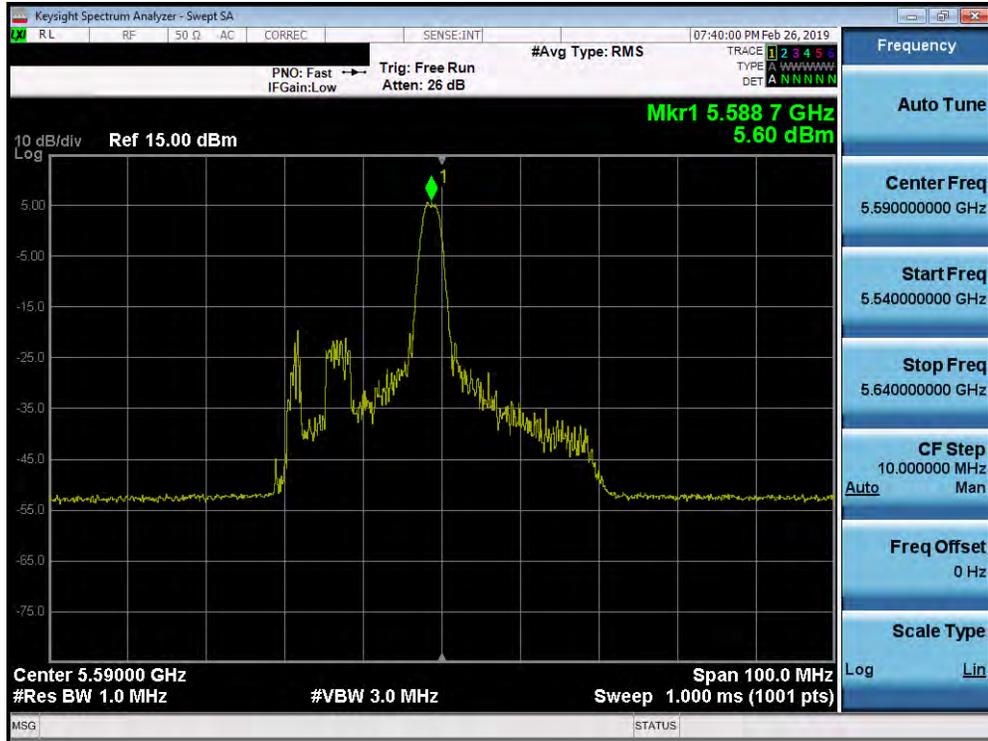


Plot 7-231. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

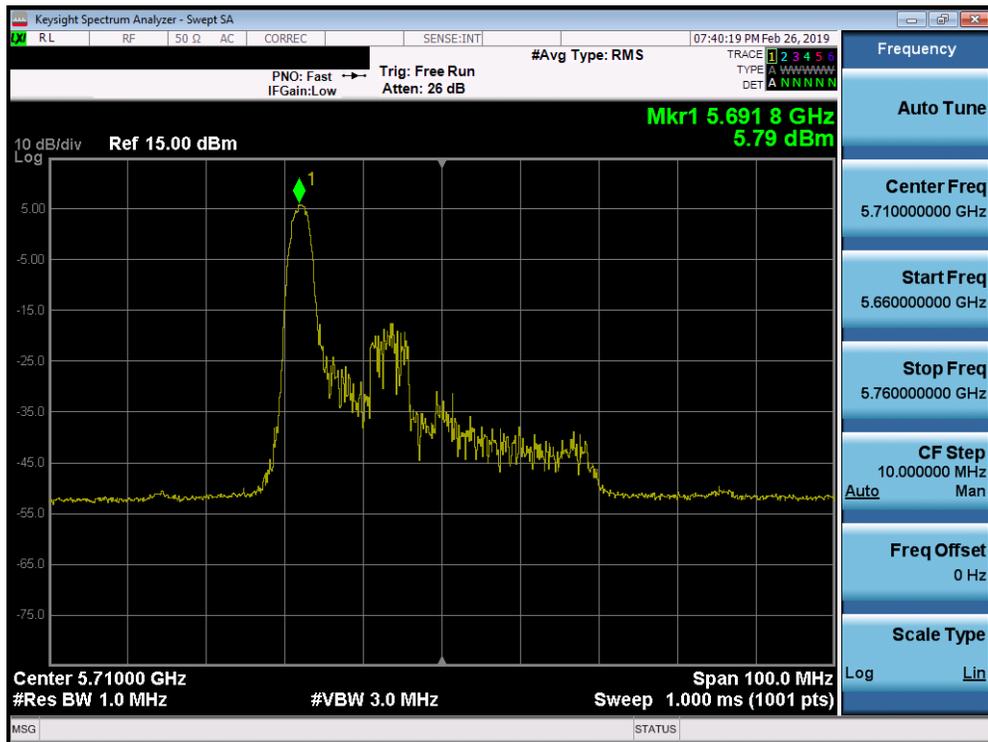


Plot 7-232. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 175 of 339

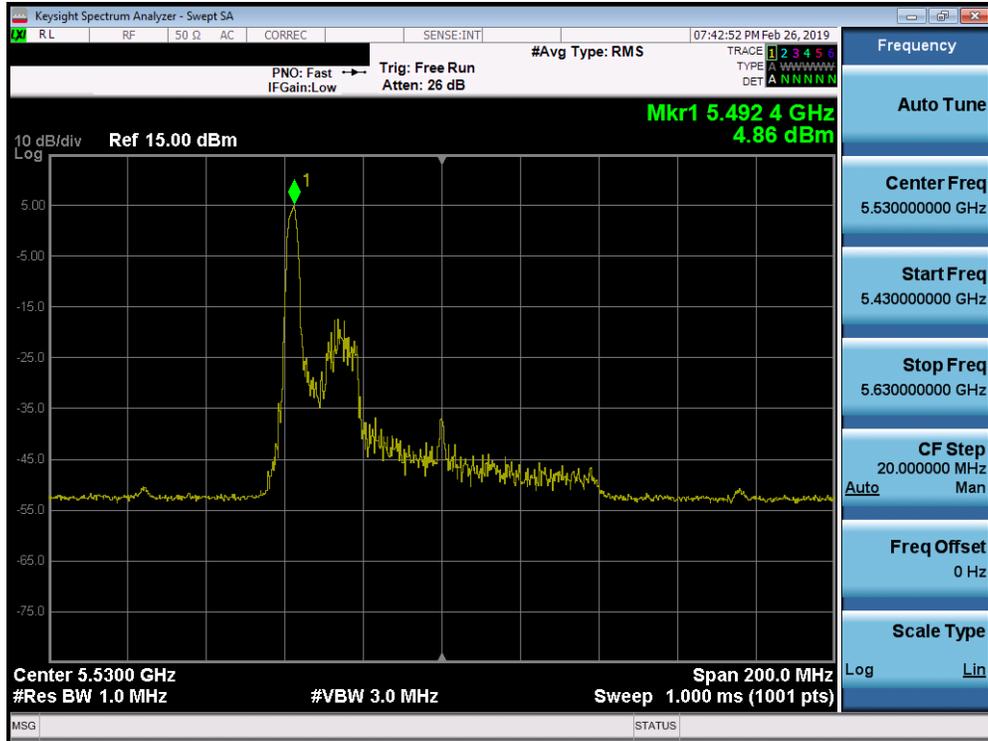


Plot 7-233. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

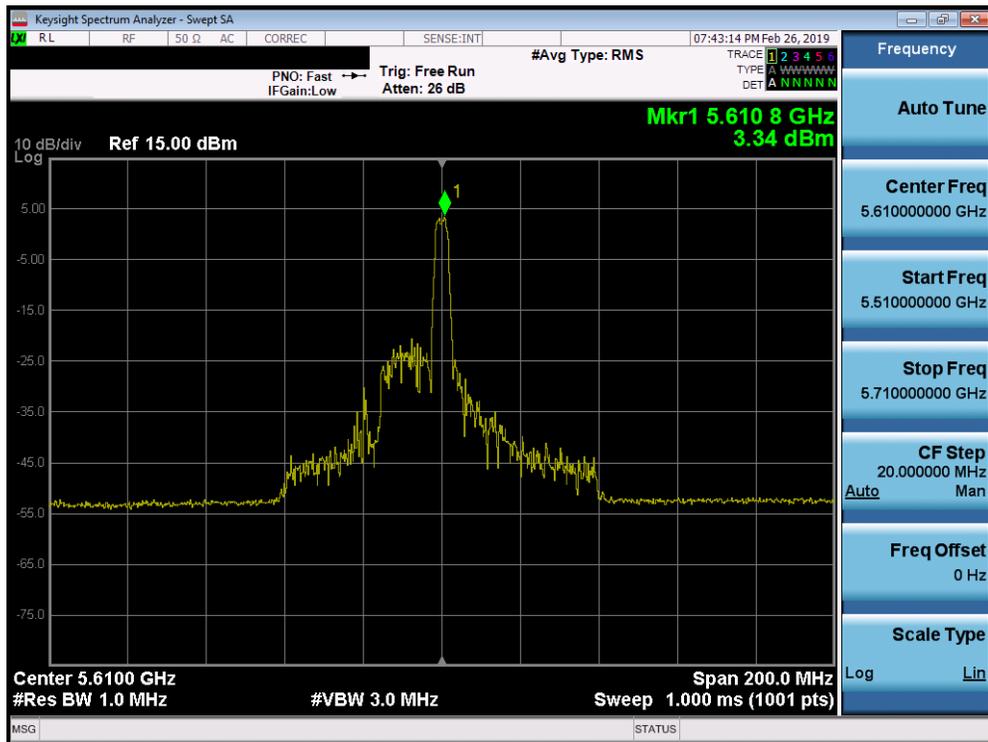


Plot 7-234. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 176 of 339

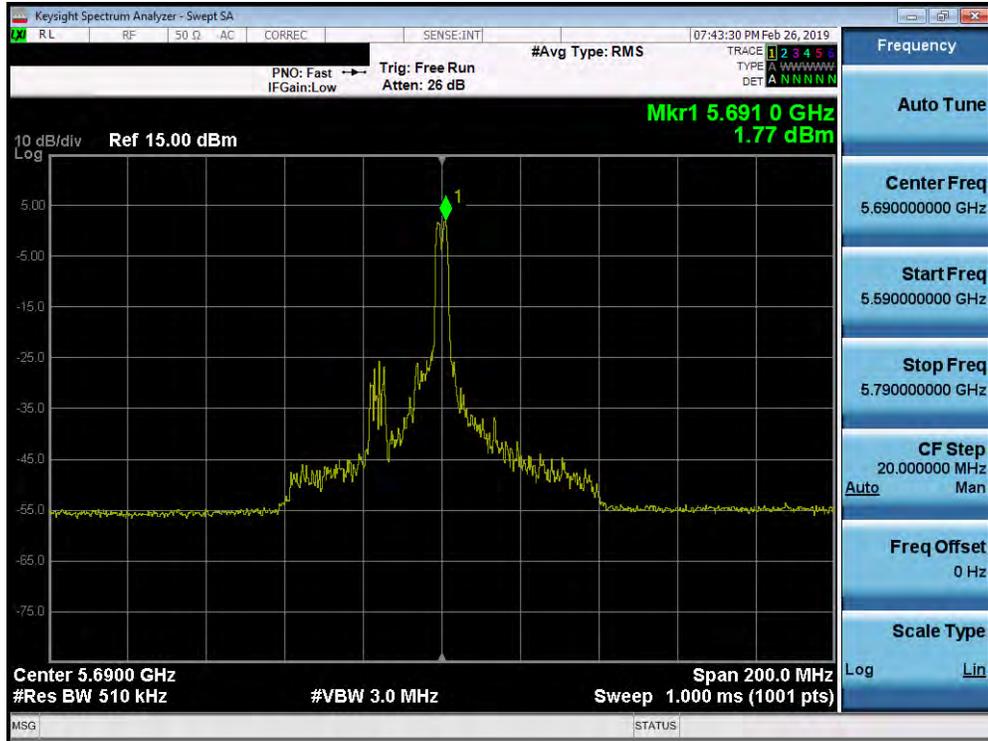


Plot 7-235. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-236. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 177 of 339



Plot 7-237. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

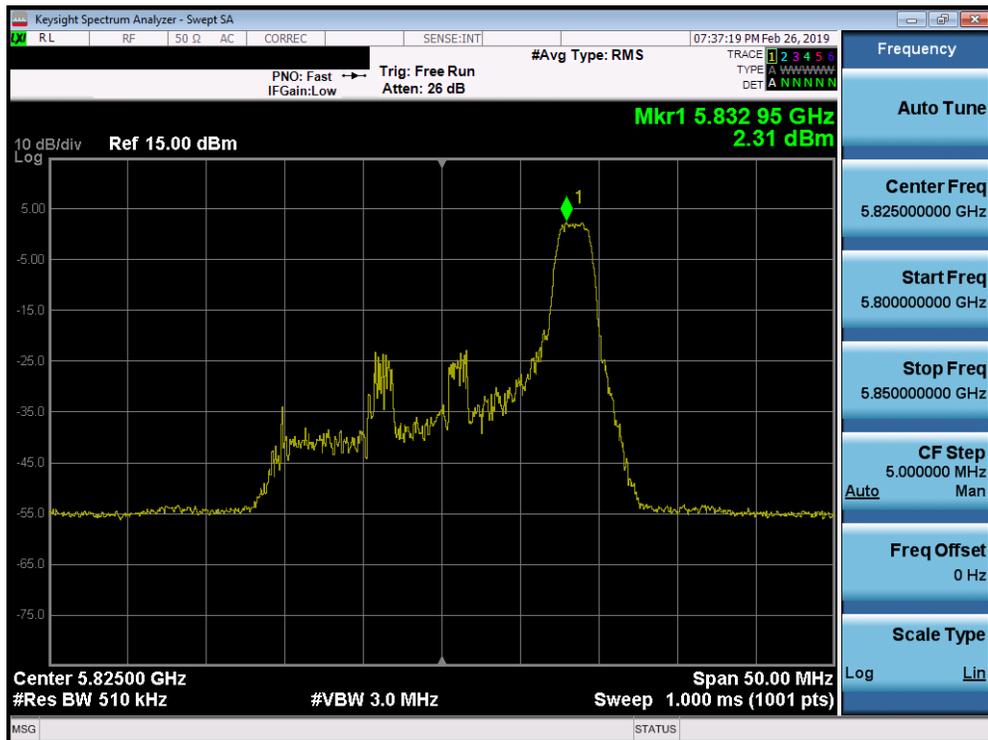


Plot 7-238. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 178 of 339

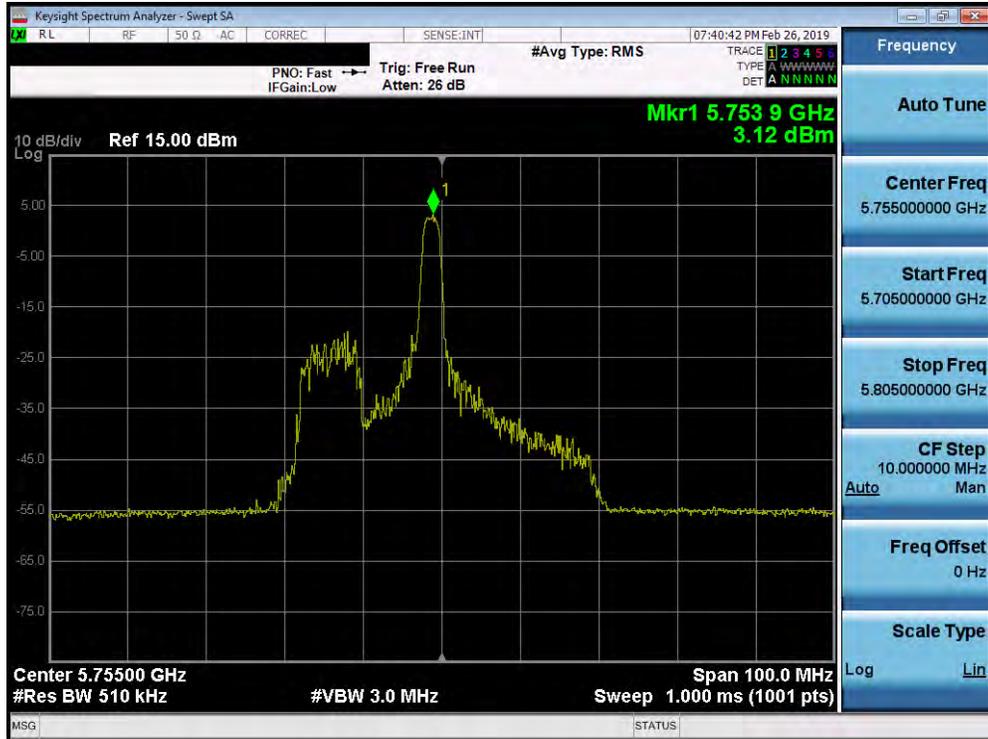


Plot 7-239. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

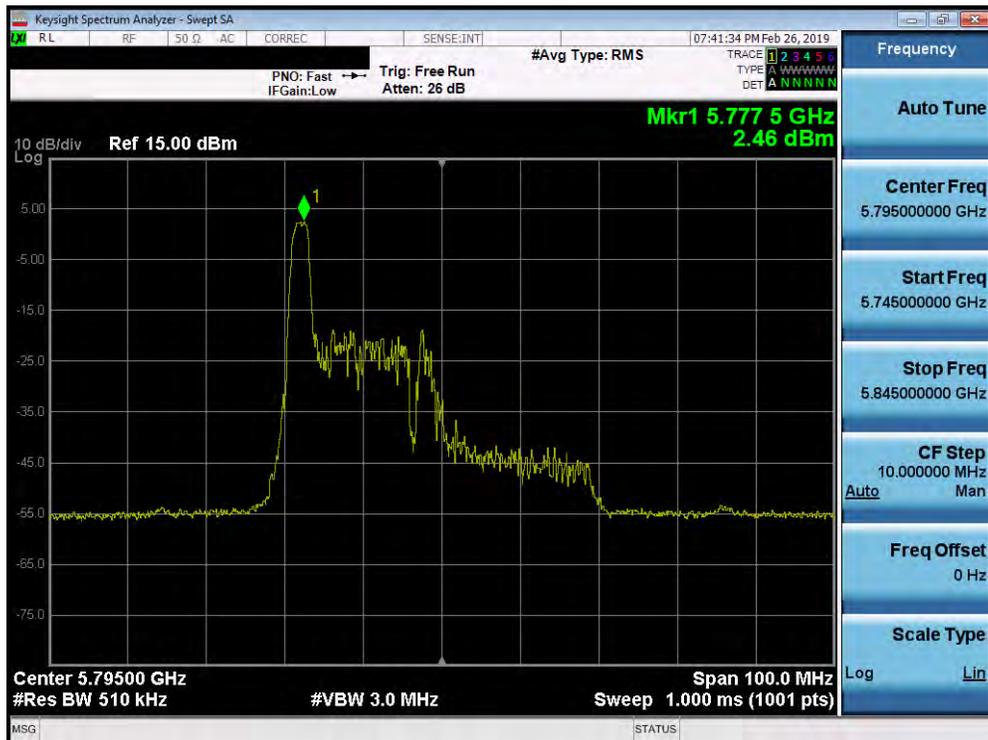


Plot 7-240. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 179 of 339



Plot 7-241. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)



Plot 7-242. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 180 of 339



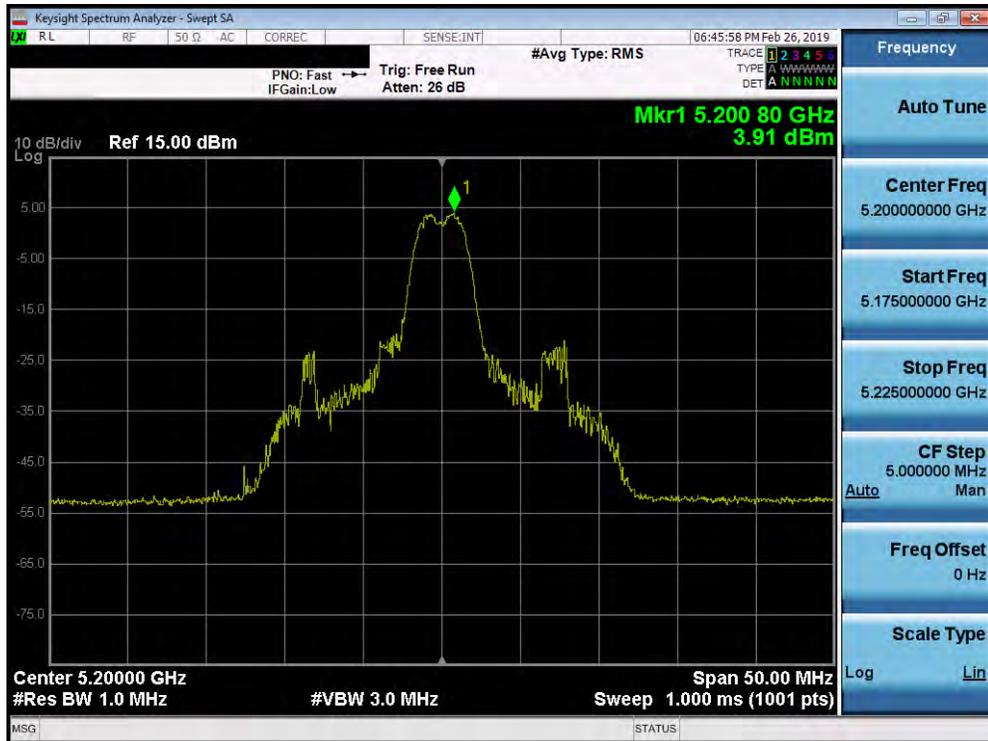
Plot 7-243. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMF900F	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 181 of 339

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



Plot 7-244. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

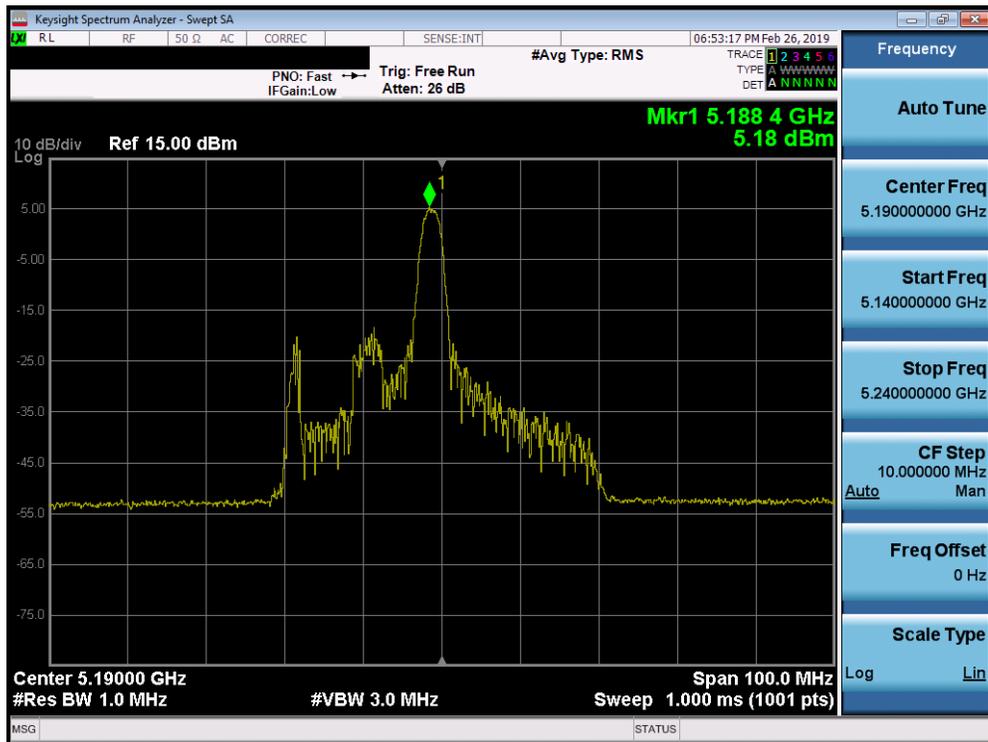


Plot 7-245. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 182 of 339

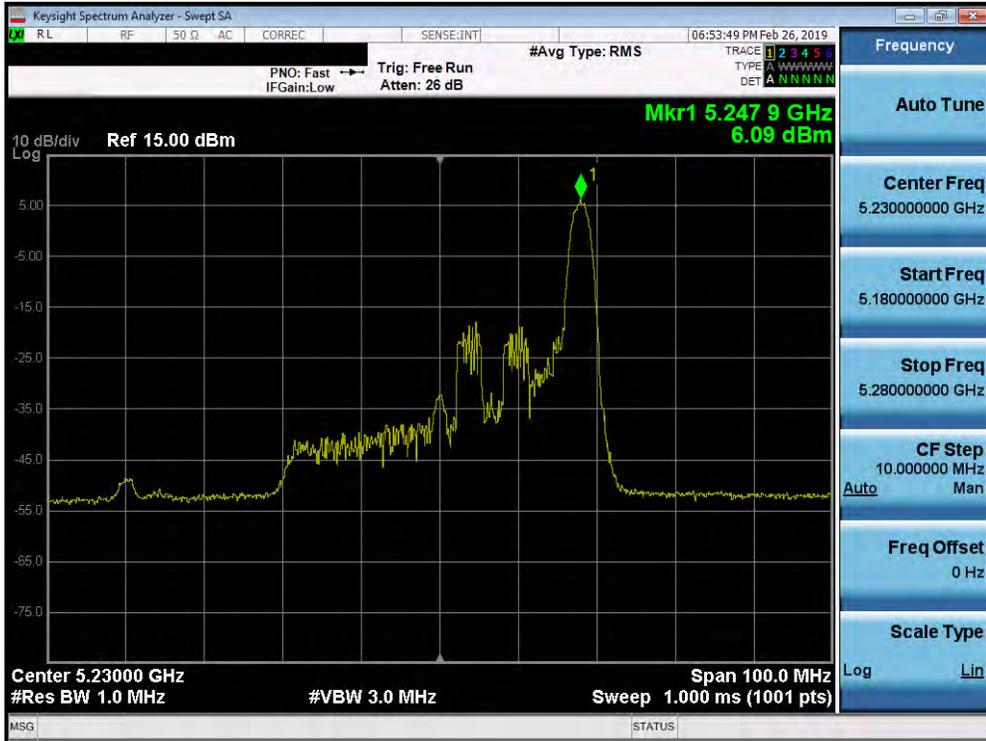


Plot 7-246. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

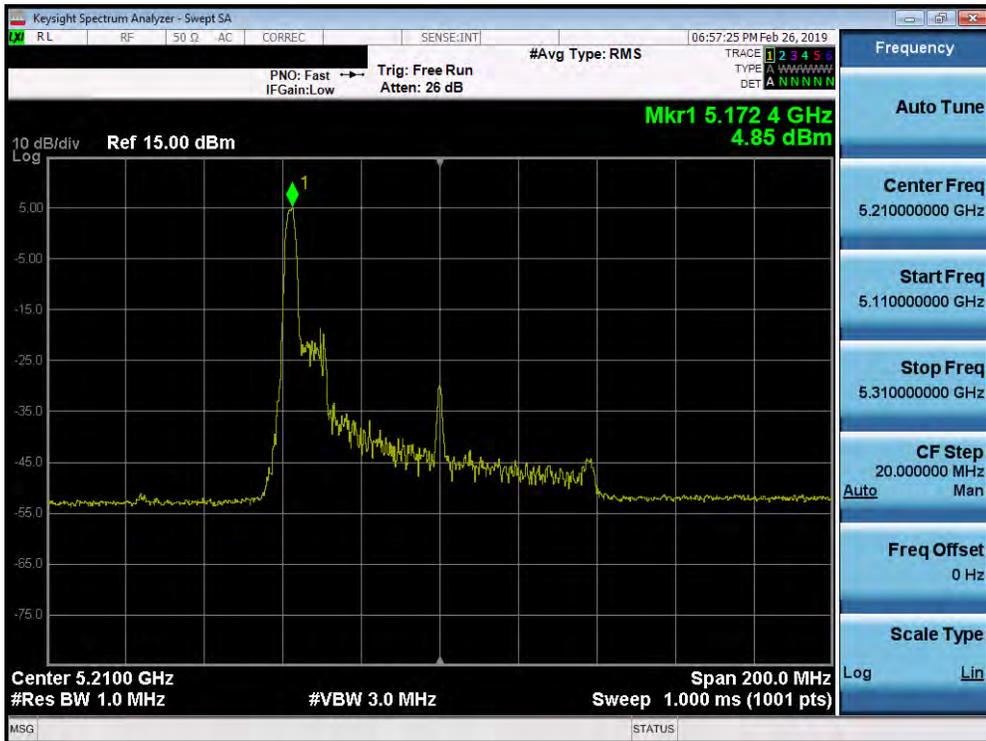


Plot 7-247. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 183 of 339

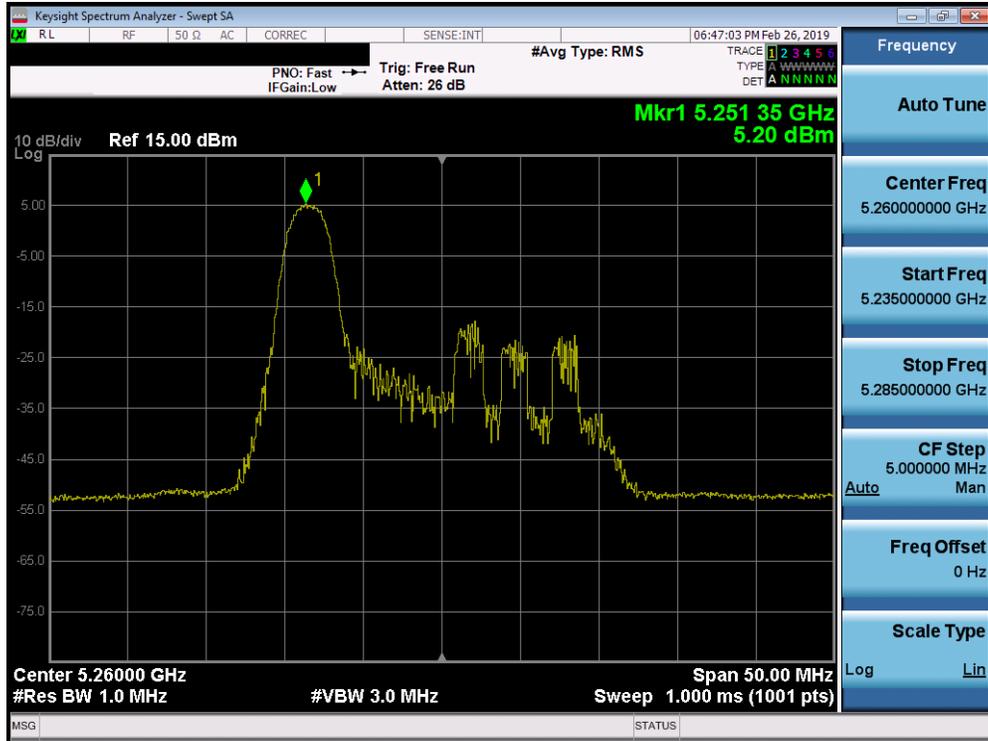


Plot 7-248. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

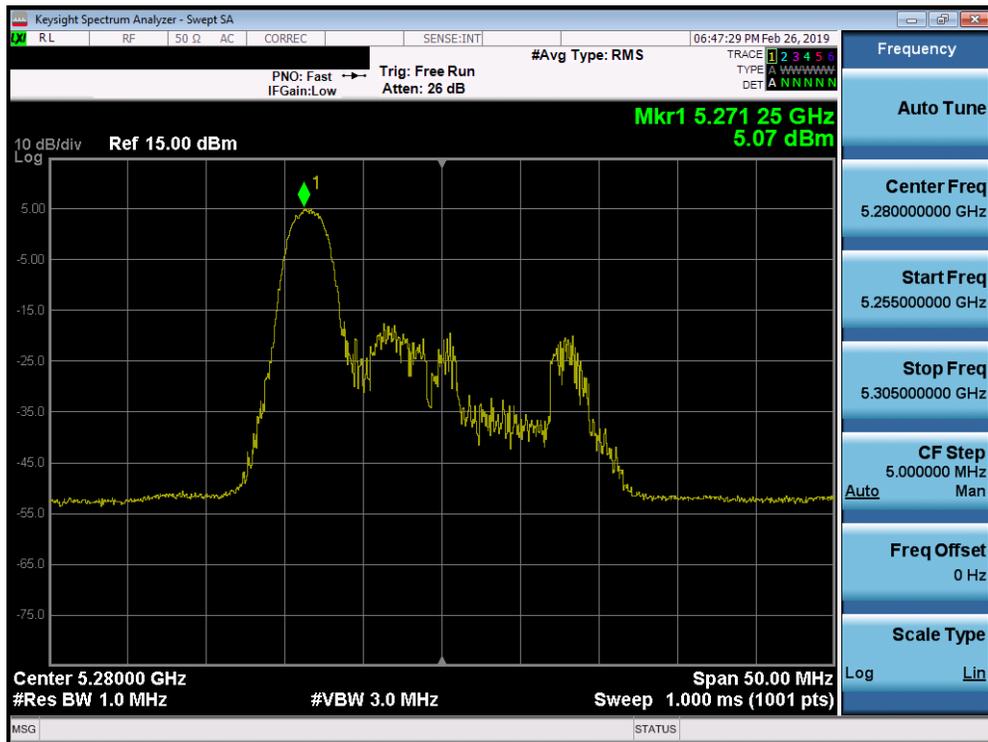


Plot 7-249. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 184 of 339

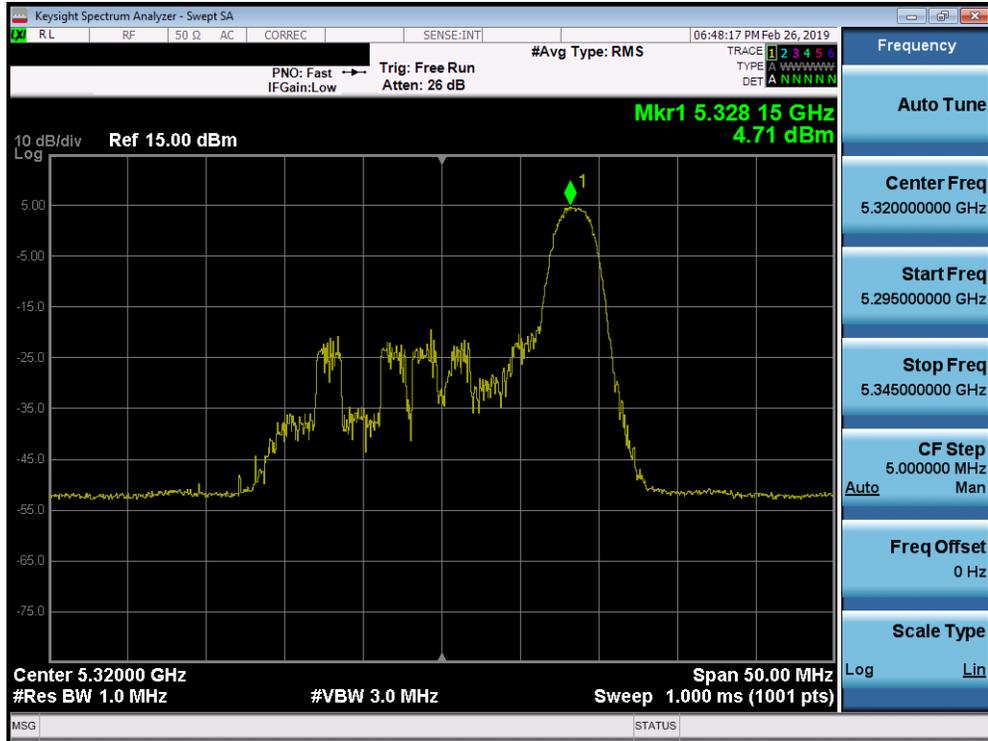


Plot 7-250. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

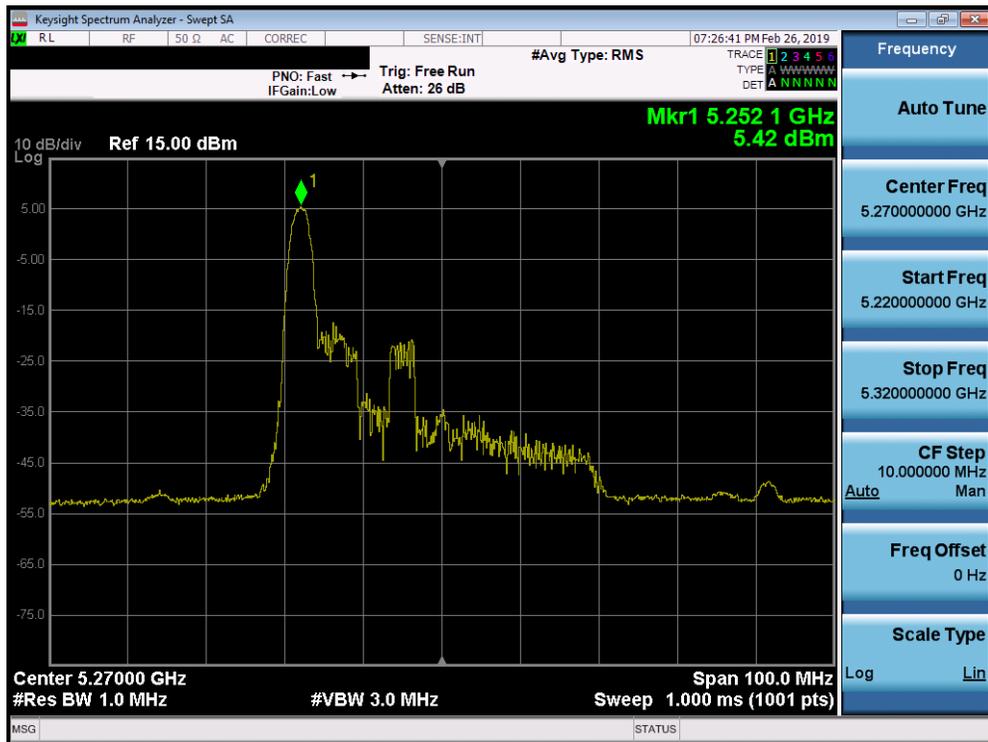


Plot 7-251. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 185 of 339

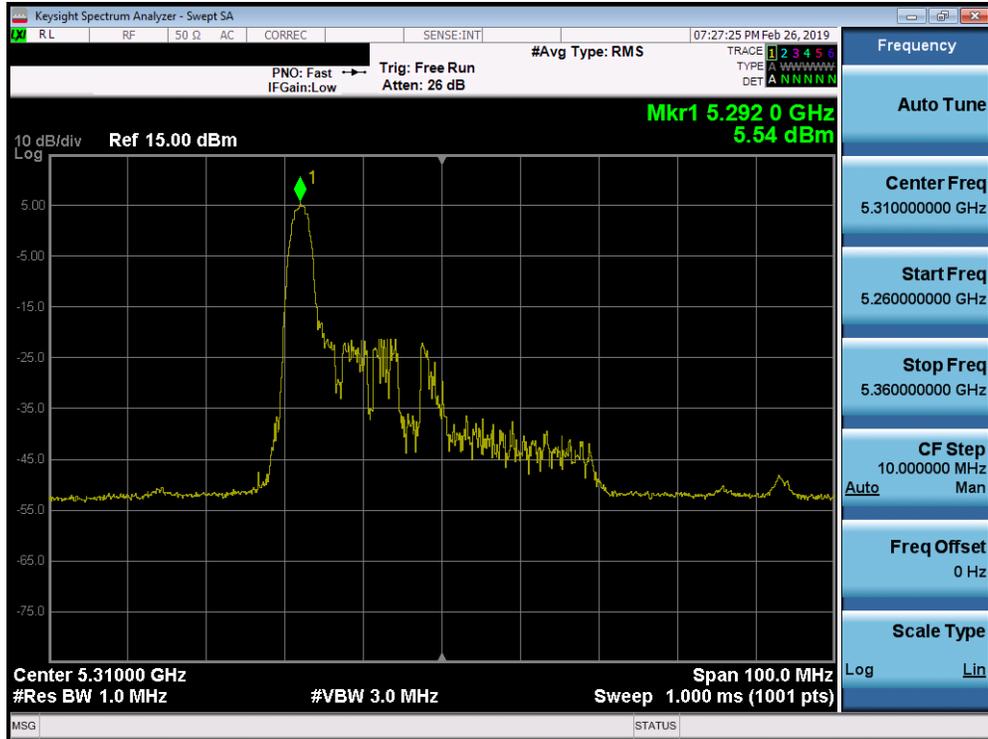


Plot 7-252. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

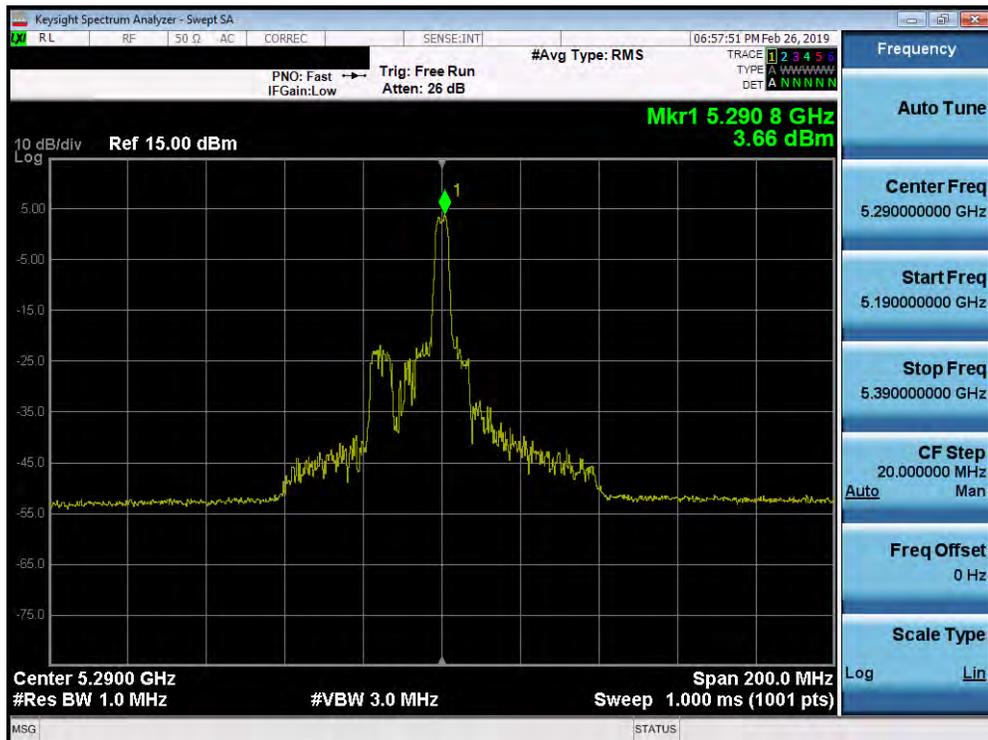


Plot 7-253. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 186 of 339

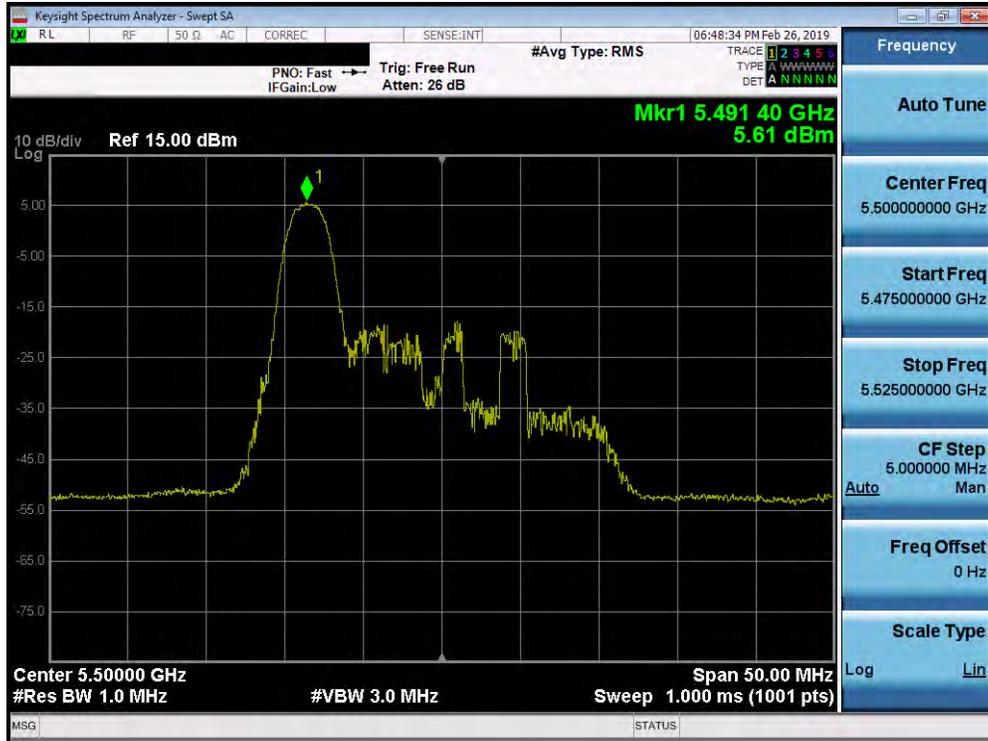


Plot 7-254. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

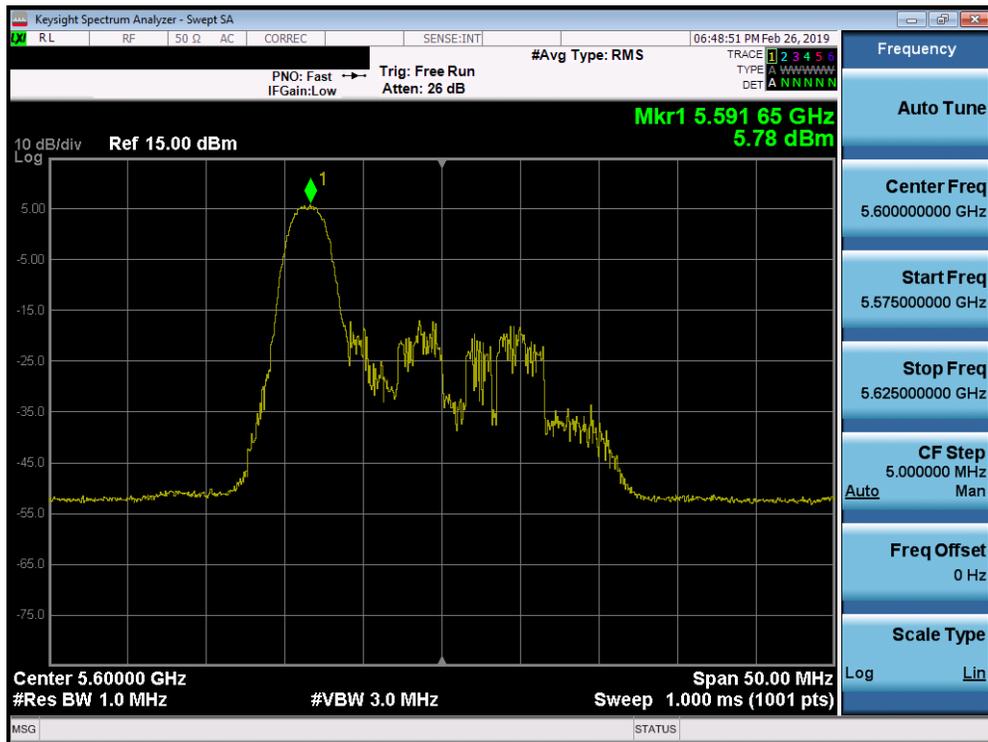


Plot 7-255. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 187 of 339

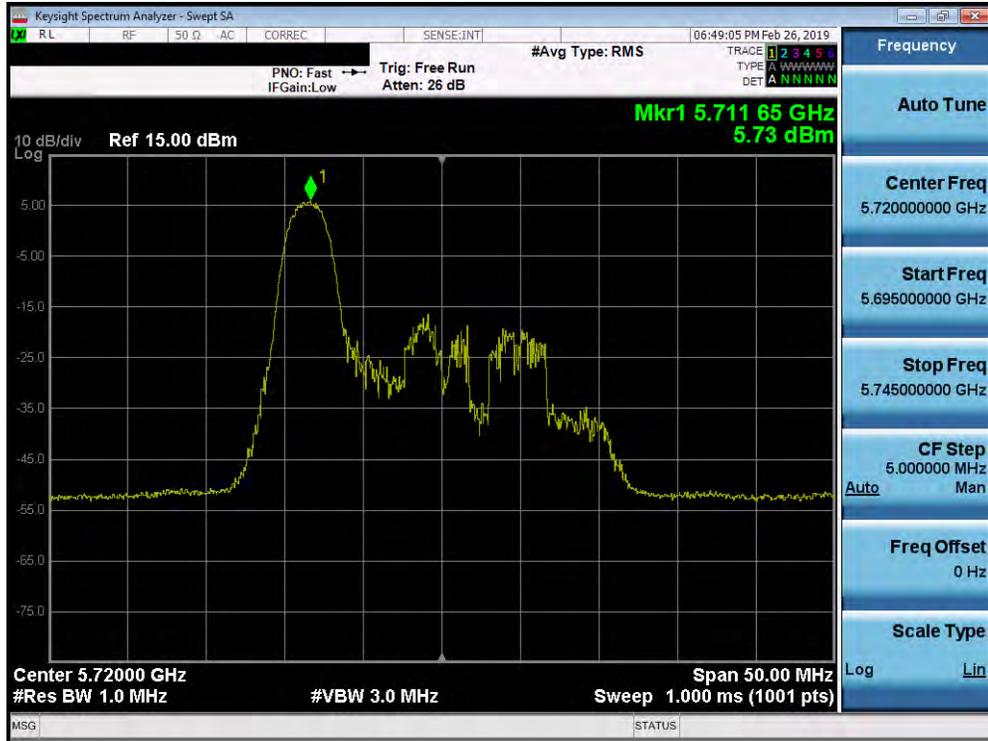


Plot 7-256. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

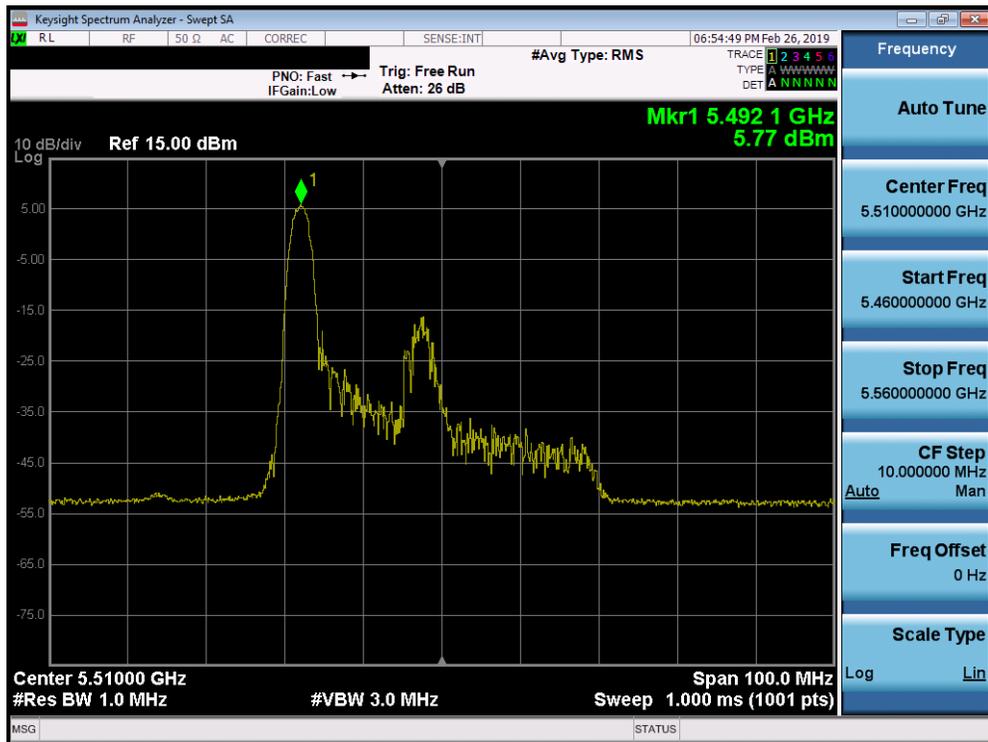


Plot 7-257. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 188 of 339

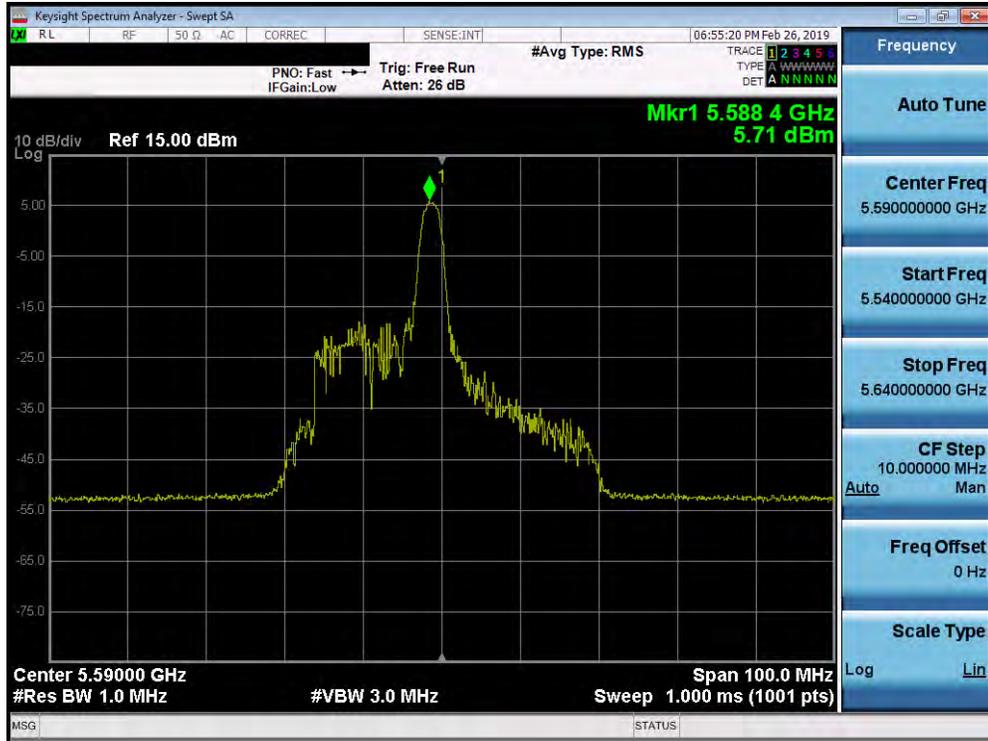


Plot 7-258. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

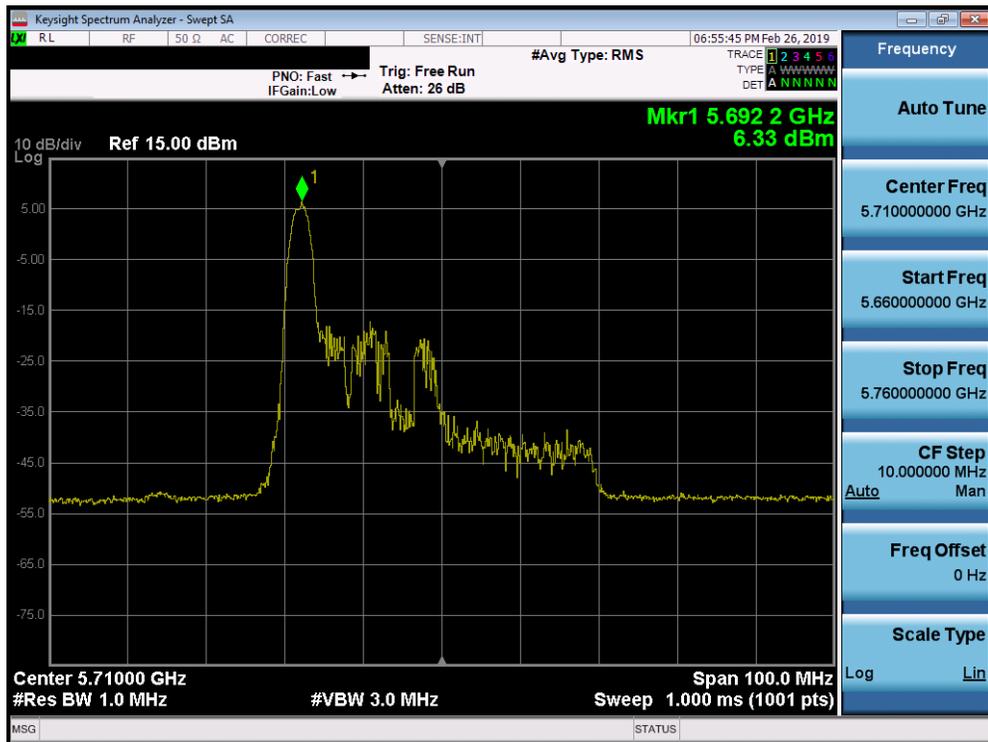


Plot 7-259. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 189 of 339

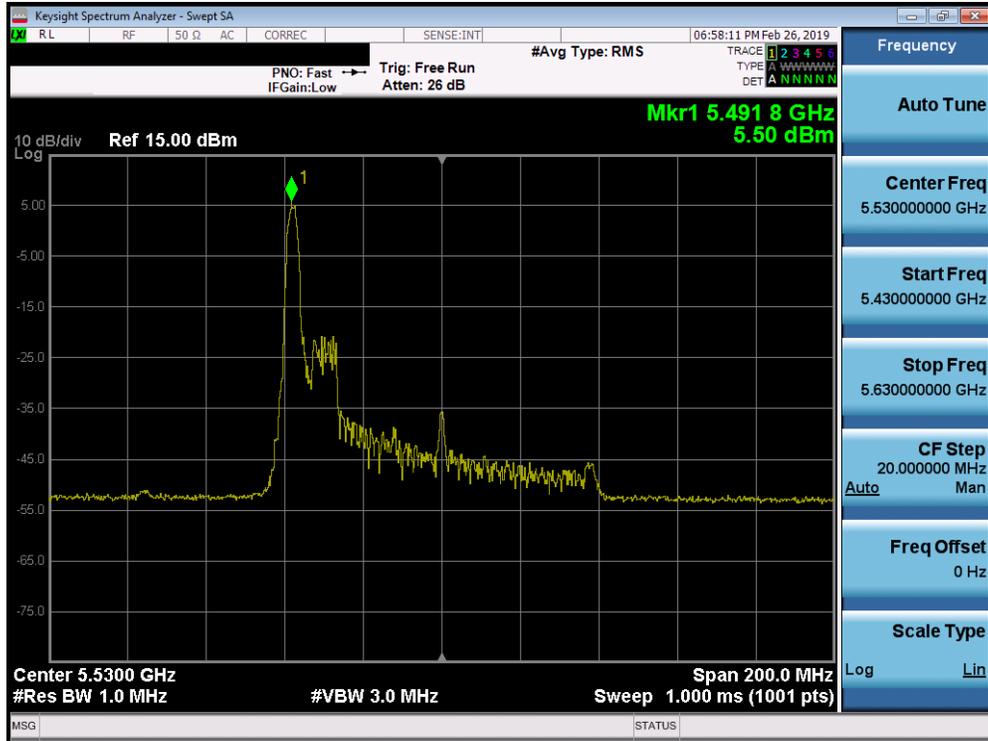


Plot 7-260. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

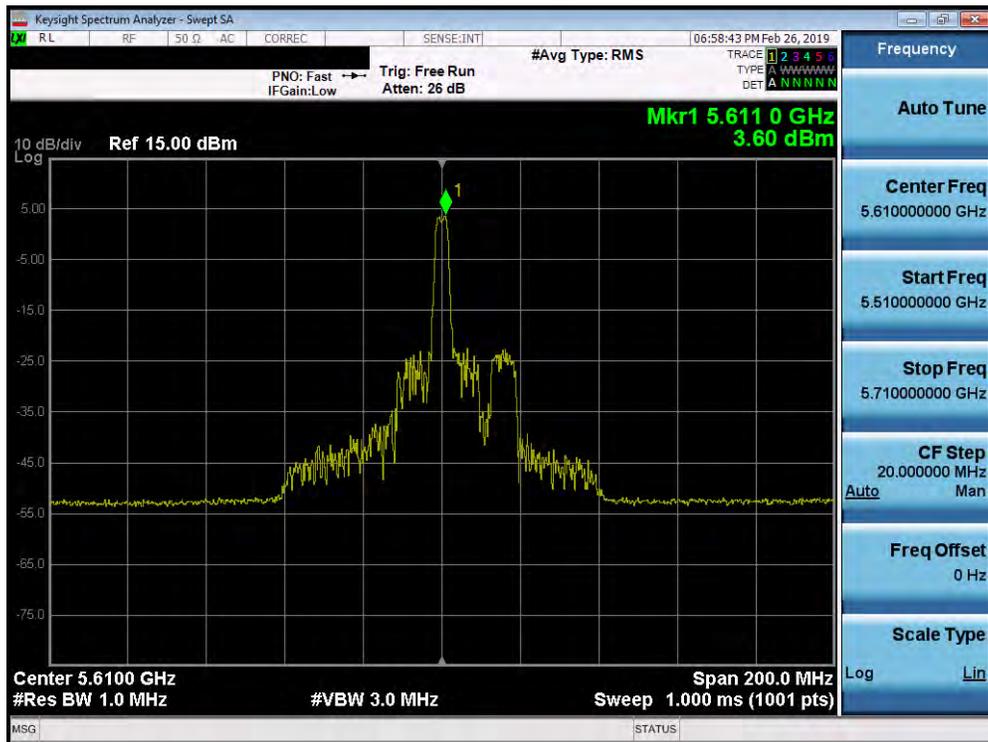


Plot 7-261. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 190 of 339



Plot 7-262. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)

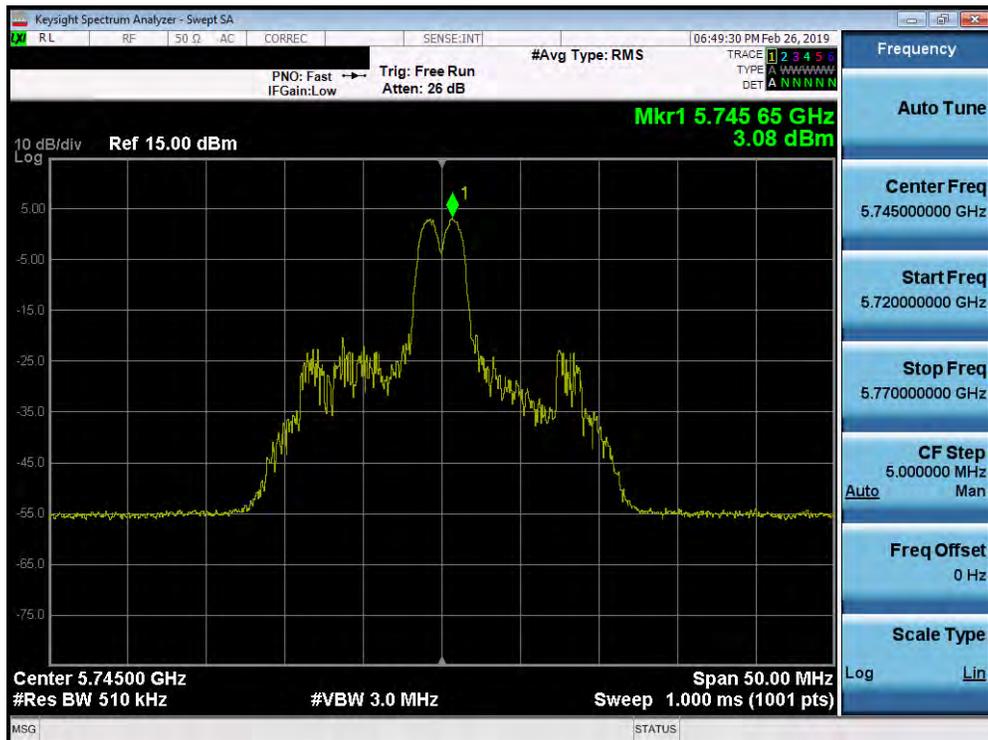


Plot 7-263. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 191 of 339

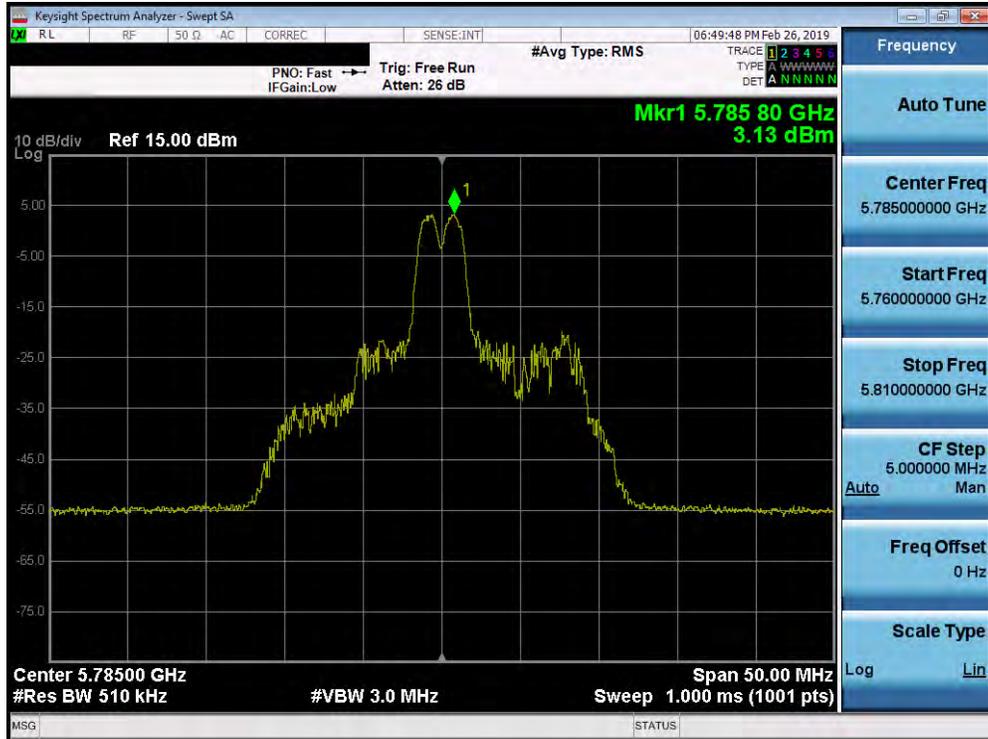


Plot 7-264. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

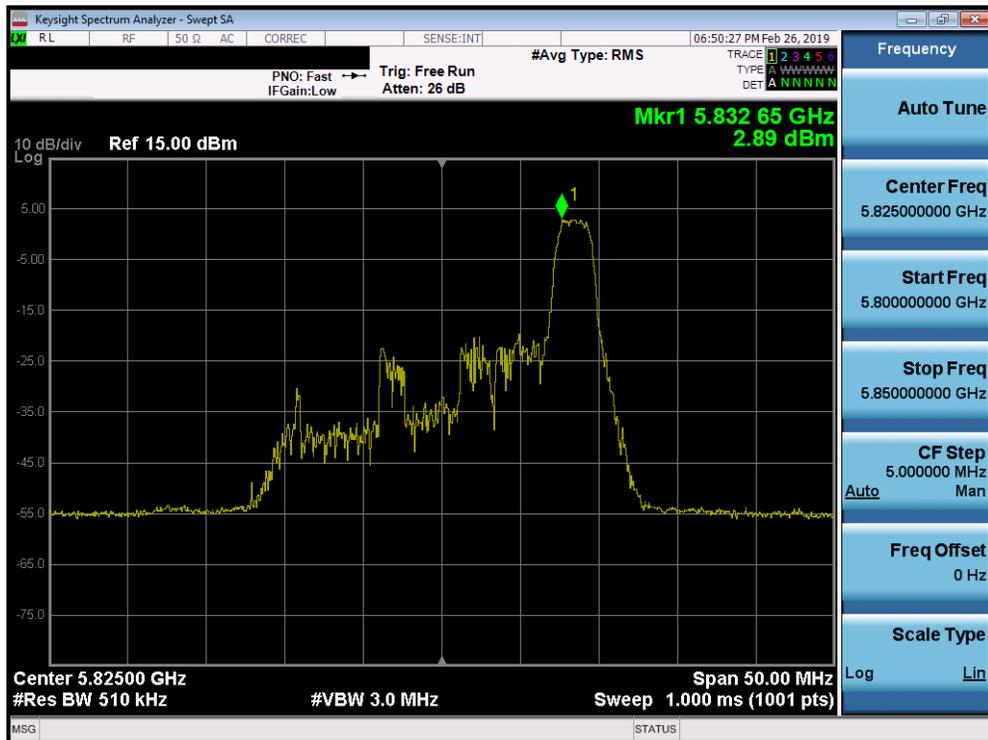


Plot 7-265. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 192 of 339

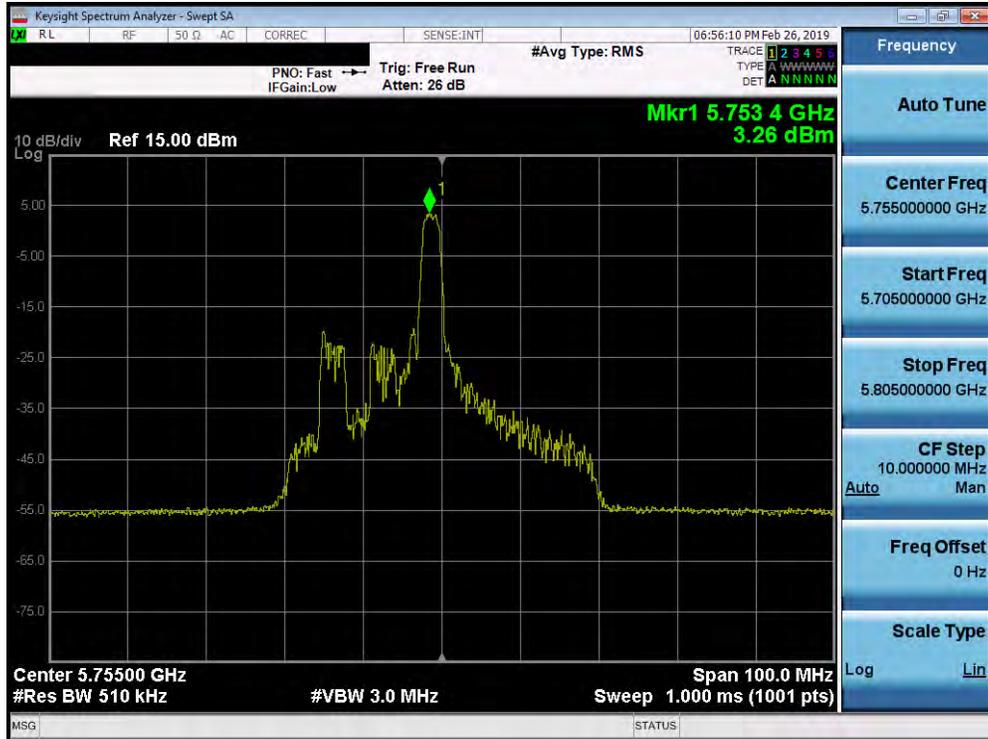


Plot 7-266. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

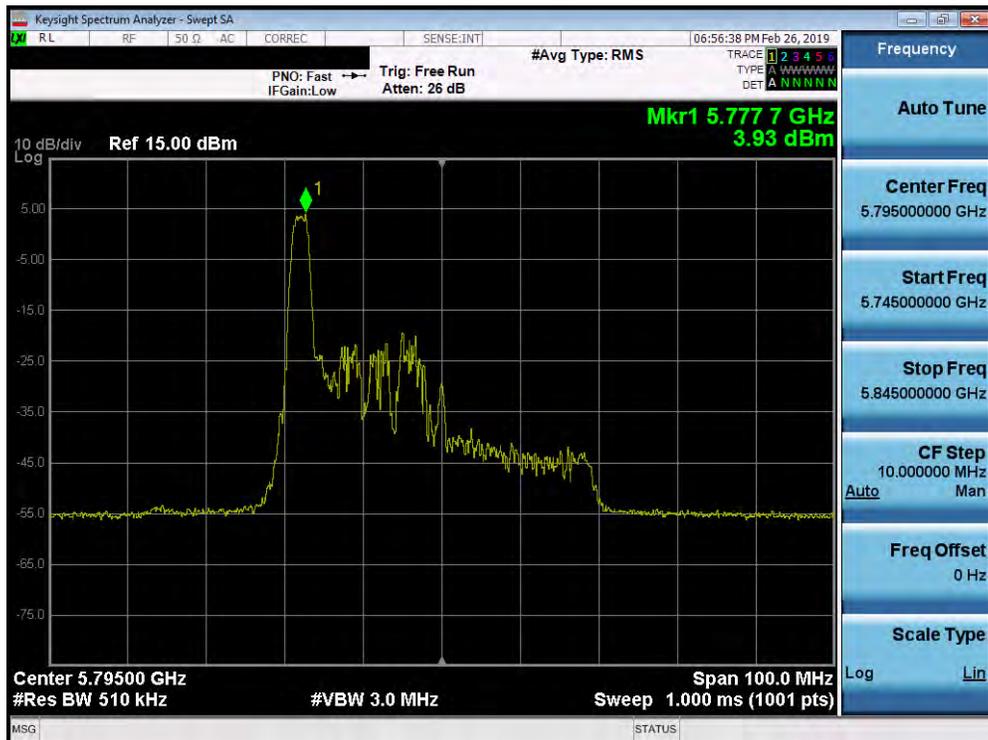


Plot 7-267. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 193 of 339

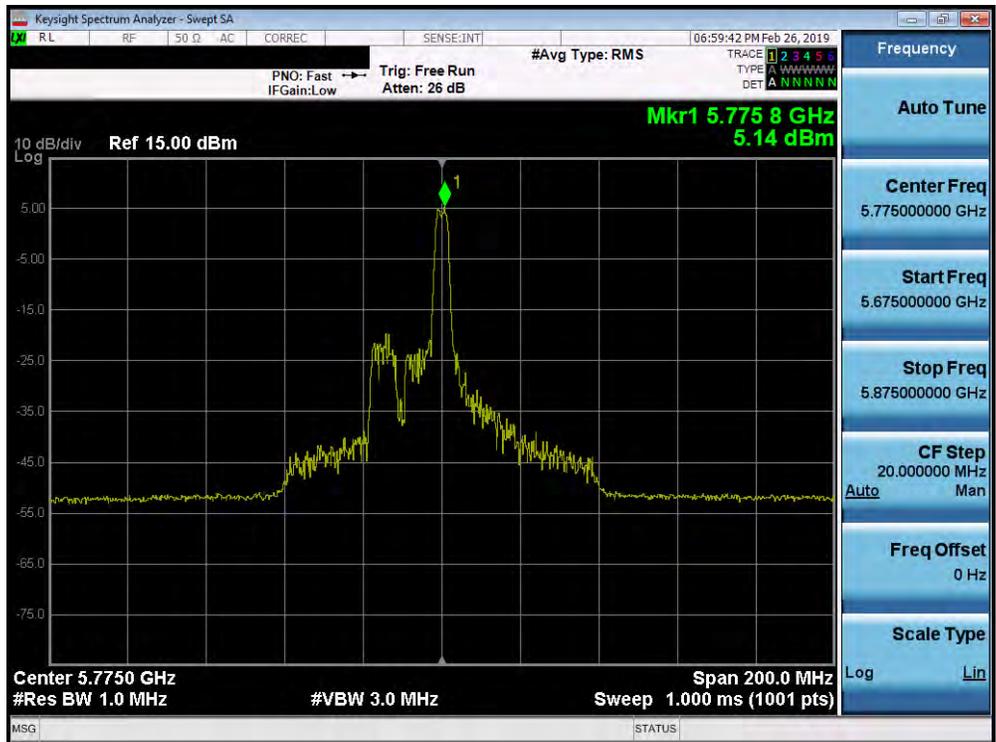


Plot 7-268. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)



Plot 7-269. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 194 of 339



Plot 7-270. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMF900F	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset	Page 195 of 339	

Summed MIMO Power Spectral Density Measurements (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 Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	0.20	1.29	3.79	11.00	-7.21
	5200	40	ax (20MHz)	242T	MCS0	0.40	1.46	3.97	11.00	-7.03
	5240	48	ax (20MHz)	242T	MCS0	0.60	0.95	3.78	11.00	-7.22
	5190	38	ax (40MHz)	484T	MCS0	-5.12	-3.42	-1.18	11.00	-12.18
	5230	46	ax (40MHz)	484T	MCS0	-4.70	-3.40	-0.99	11.00	-11.99
Band 2A	5210	42	ax (80MHz)	996T	MCS0	-7.41	-8.12	-4.74	11.00	-15.74
	5260	52	ax (20MHz)	242T	MCS0	1.52	-0.81	3.52	11.00	-7.48
	5280	56	ax (20MHz)	242T	MCS0	0.95	0.52	3.75	11.00	-7.25
	5320	64	ax (20MHz)	242T	MCS0	1.13	0.23	3.71	11.00	-7.29
	5270	54	ax (40MHz)	484T	MCS0	-3.17	-3.64	-0.39	11.00	-11.39
Band 2C	5310	62	ax (40MHz)	484T	MCS0	-3.55	-3.96	-0.74	11.00	-11.74
	5290	58	ax (80MHz)	996T	MCS0	-6.91	-8.12	-4.46	11.00	-15.46
	5500	100	ax (20MHz)	242T	MCS0	1.62	1.46	4.55	11.00	-6.45
	5600	120	ax (20MHz)	242T	MCS0	1.42	0.66	4.06	11.00	-6.94
	5720	144	ax (20MHz)	242T	MCS0	1.47	0.92	4.22	11.00	-6.78
	5510	102	ax (40MHz)	484T	MCS0	-4.17	-3.08	-0.58	11.00	-11.58
	5590	118	ax (40MHz)	484T	MCS0	-3.84	-3.72	-0.77	11.00	-11.77
	5710	142	ax (40MHz)	484T	MCS0	-3.49	-3.34	-0.40	11.00	-11.40
5530	106	ax (80MHz)	996T	MCS0	-6.94	-5.15	-2.94	11.00	-13.94	
5610	122	ax (80MHz)	996T	MCS0	-7.41	-5.71	-3.46	11.00	-14.46	
5690	138	ax (80MHz)	996T	MCS0	-7.29	-5.79	-3.46	11.00	-14.46	

Table 7-69. 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	0.20	1.29	3.79	-2.89	0.90	10.0	-9.10
	5200	40	ax (20MHz)	242T	MCS0	0.40	1.46	3.97	-2.89	1.09	10.0	-8.91
	5240	48	ax (20MHz)	242T	MCS0	0.60	0.95	3.78	-2.89	0.90	10.0	-9.10
	5190	38	ax (40MHz)	242T	MCS0	-5.12	-3.42	-1.18	-2.89	-4.06	10.0	-14.06
	5230	46	ax (40MHz)	242T	MCS0	-4.70	-3.40	-0.99	-2.89	-3.88	10.0	-13.88
	5210	42	ax (80MHz)	242T	MCS0	-7.41	-8.12	-4.74	-2.89	-7.62	10.0	-17.62

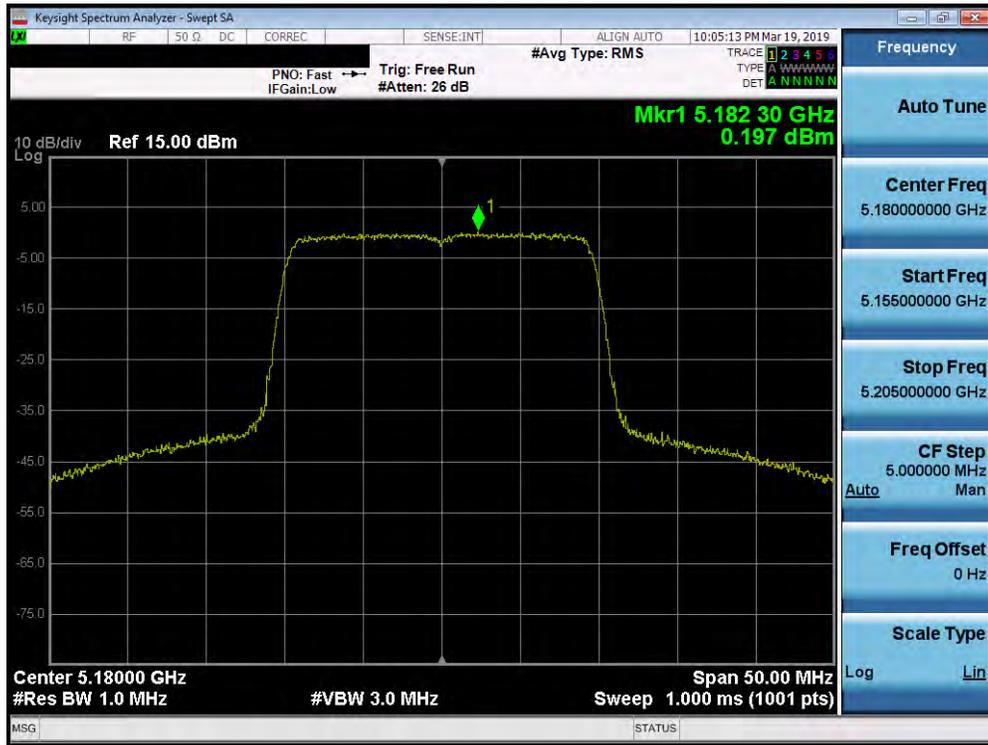
Table 7-70. Band 1 MIMO e.i.r.p. Conducted Power Spectral Density Measurements (ISED Full Tones)

	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	1.29	1.55	4.43	30.00	-25.57
	5785	157	ax (20MHz)	242T	MCS0	1.46	1.52	4.50	30.00	-25.50
	5825	165	ax (20MHz)	242T	MCS0	0.95	1.48	4.23	30.00	-25.77
	5755	151	ax (40MHz)	484T	MCS0	-3.42	-2.66	-0.01	30.00	-30.01
	5795	159	ax (40MHz)	484T	MCS0	-3.40	-2.58	0.04	30.00	-29.96
	5775	155	ax (80MHz)	996T	MCS0	-8.12	-6.61	-4.29	30.00	-34.29

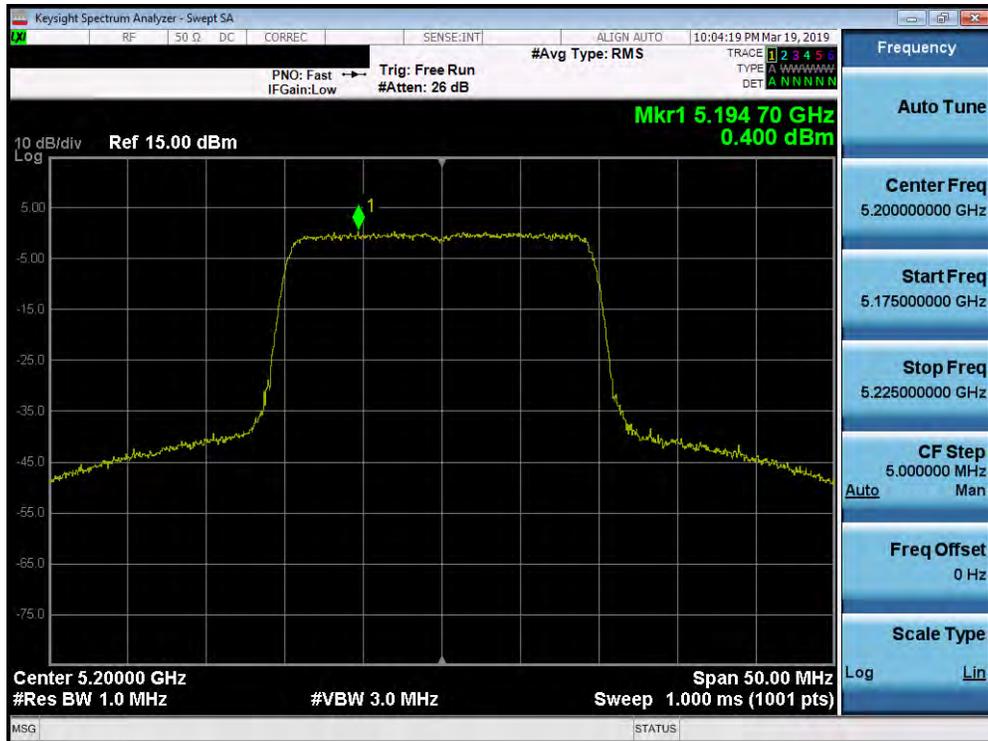
Table 7-71. Band 3 MIMO Conducted Power Spectral Density Measurements MIMO (Full Tones)

FCC ID: A3LSMF900F			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 196 of 339	

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

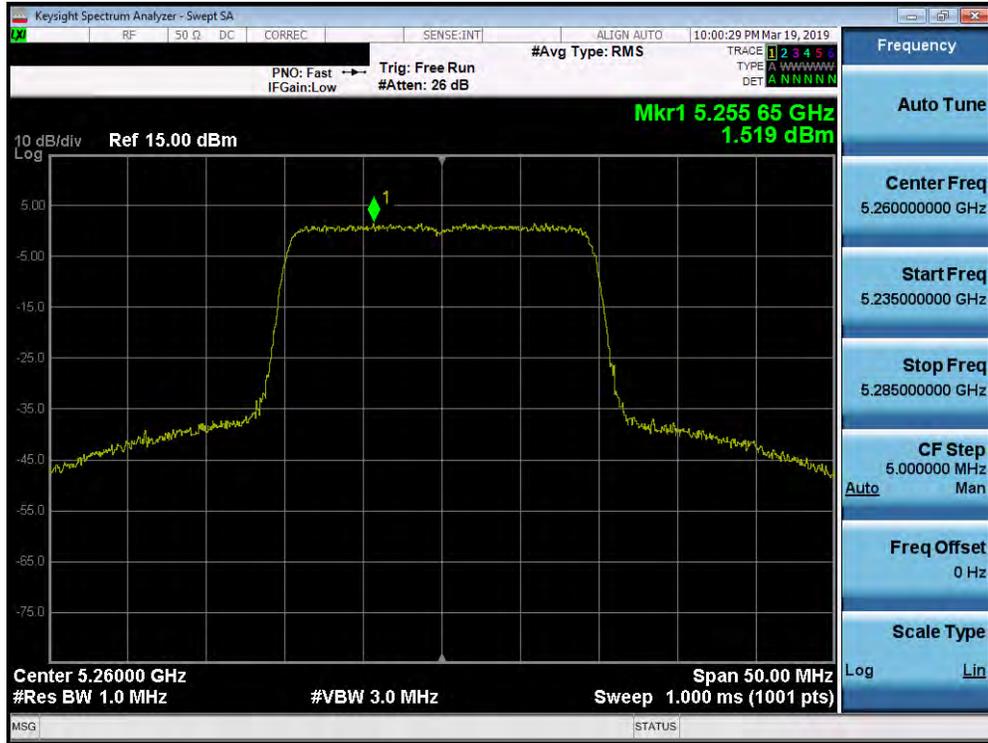


Plot 7-271. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)

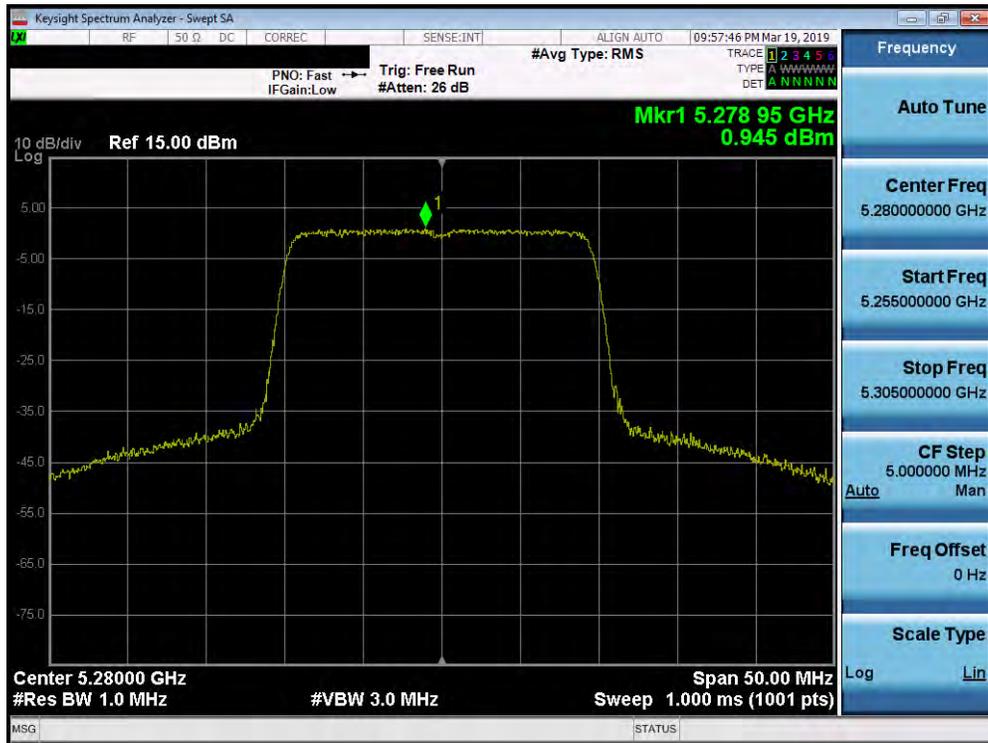


Plot 7-272. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 197 of 339

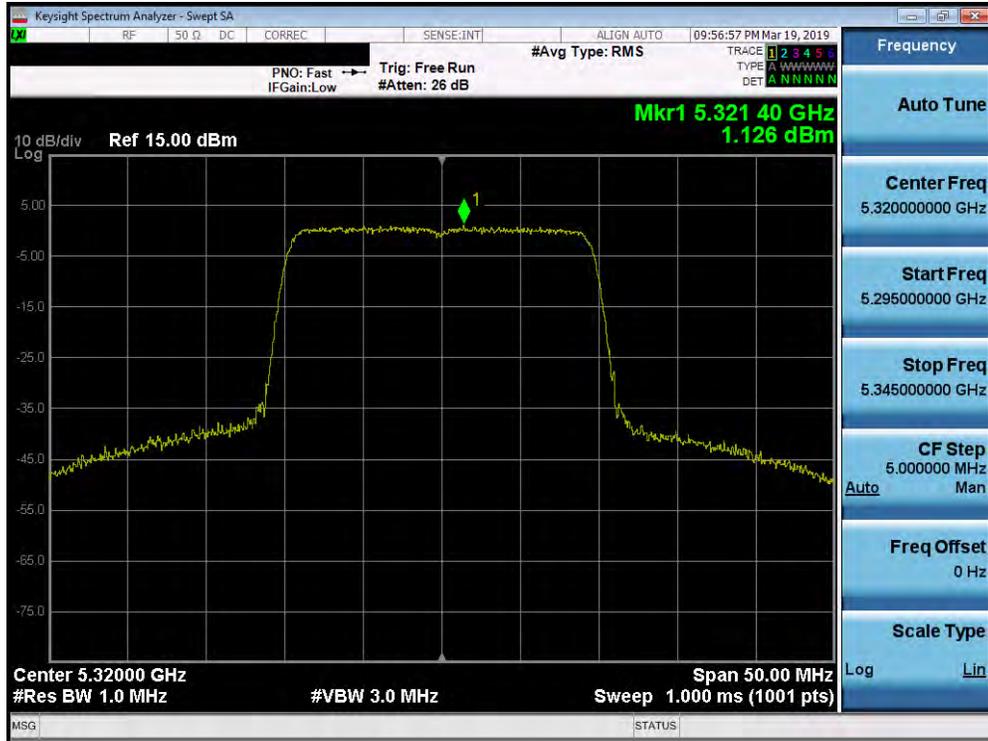


Plot 7-277. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)

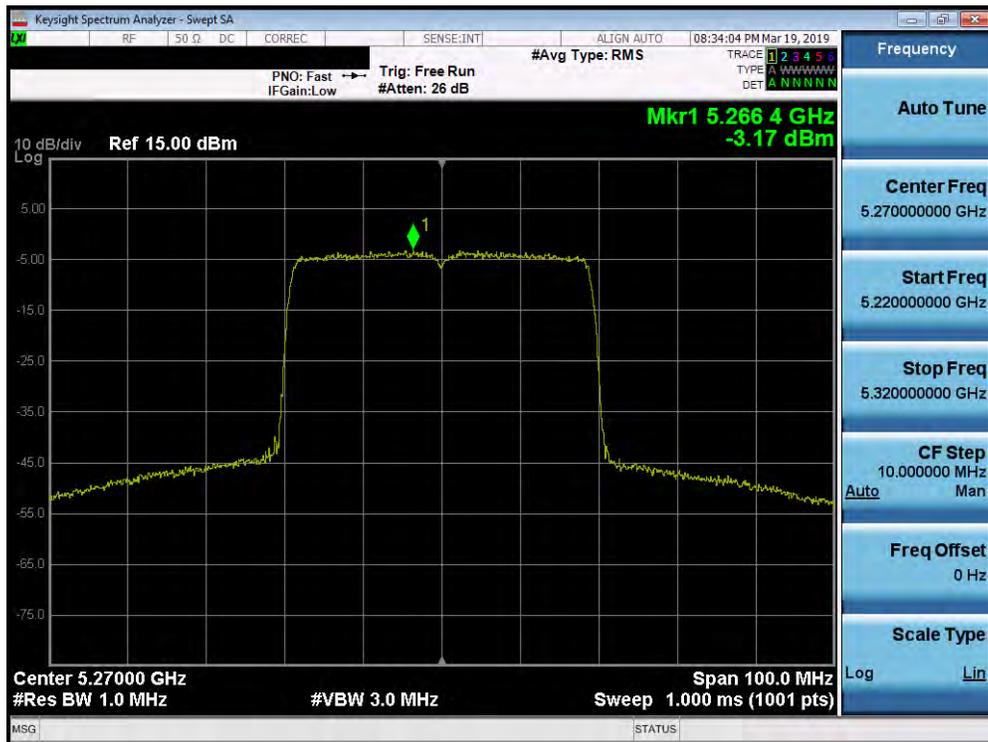


Plot 7-278. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 200 of 339

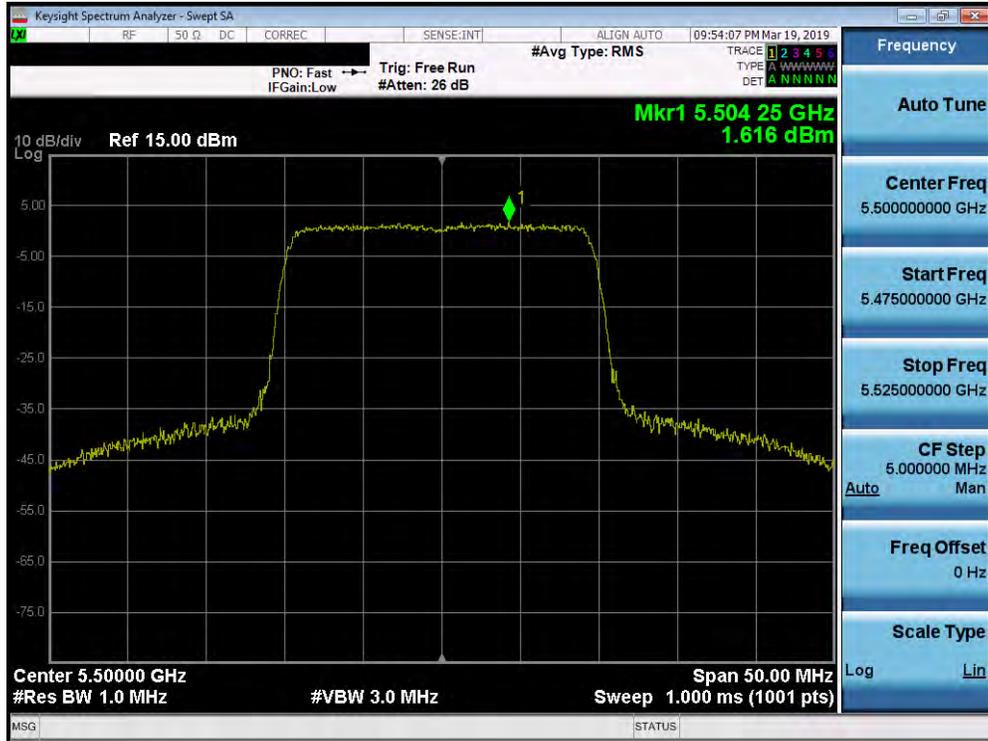


Plot 7-279. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

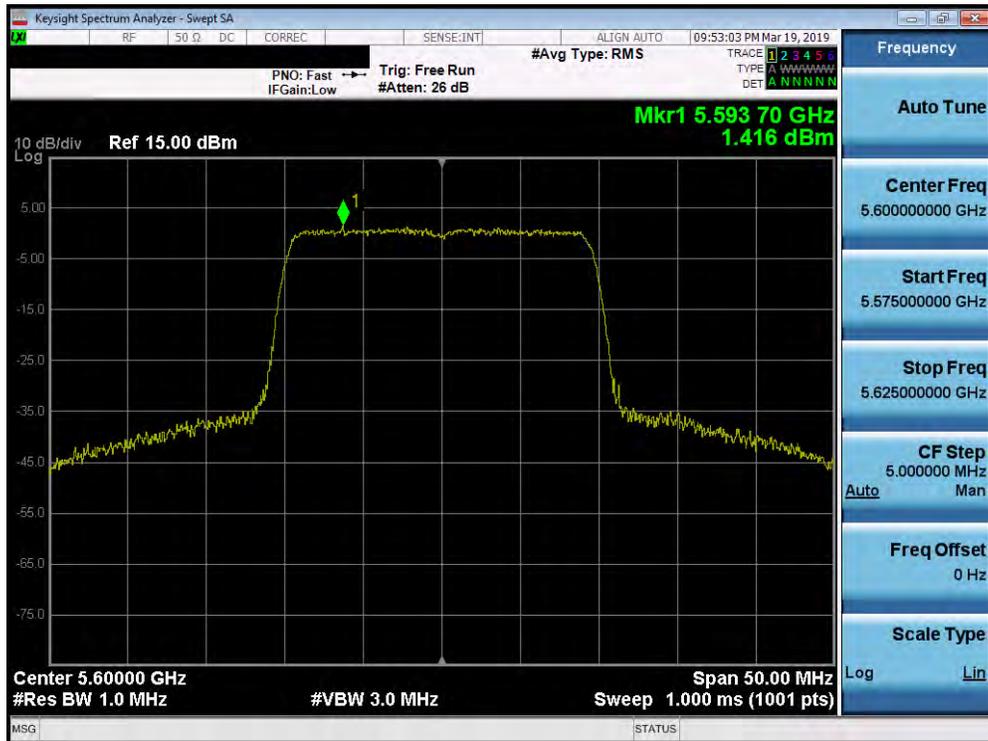


Plot 7-280. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 201 of 339

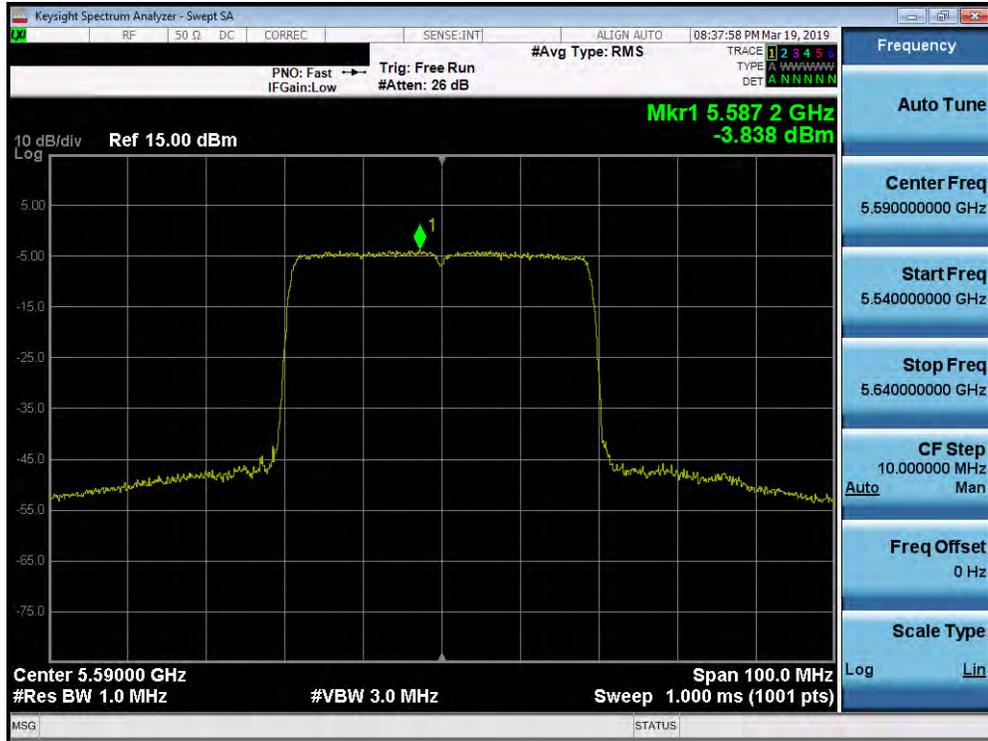


Plot 7-283. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)

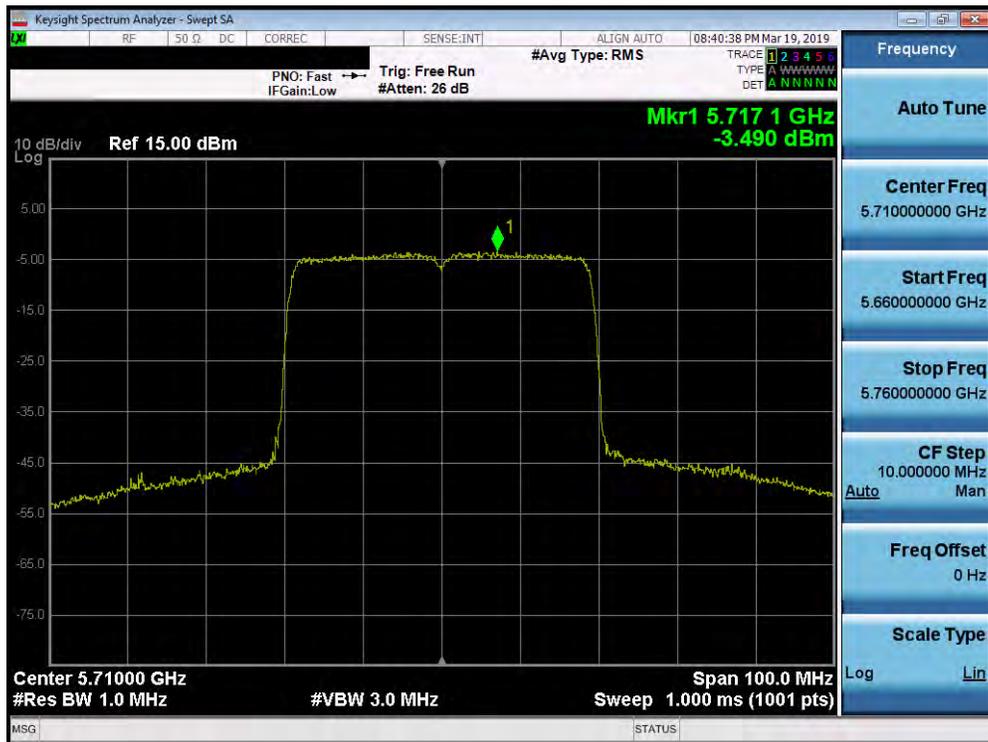


Plot 7-284. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 203 of 339

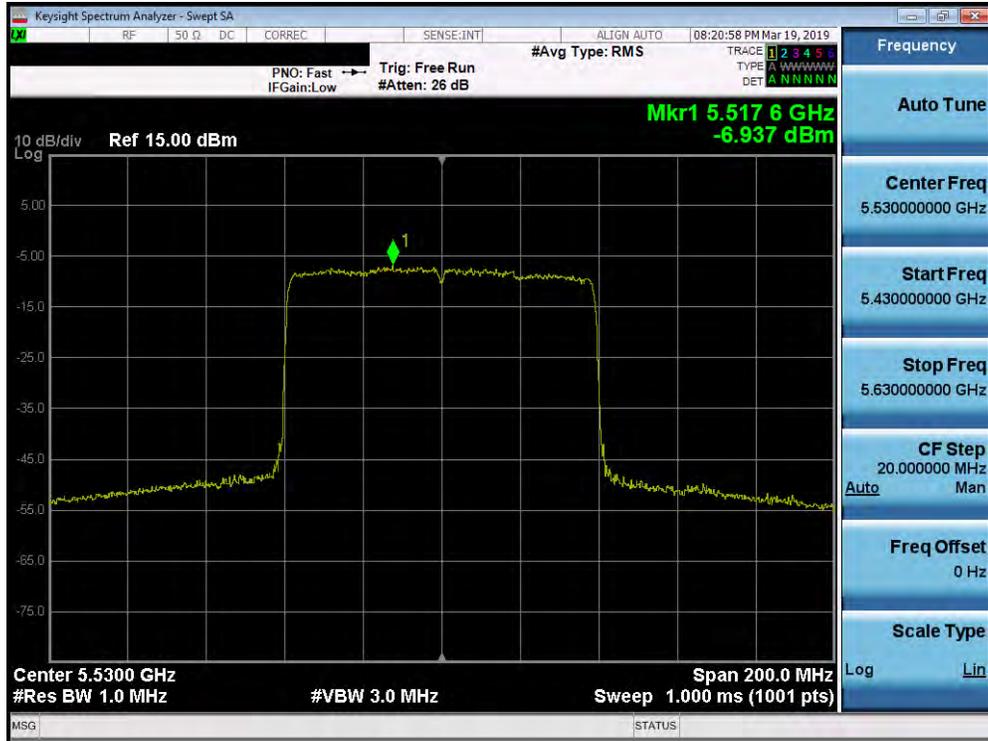


Plot 7-287. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

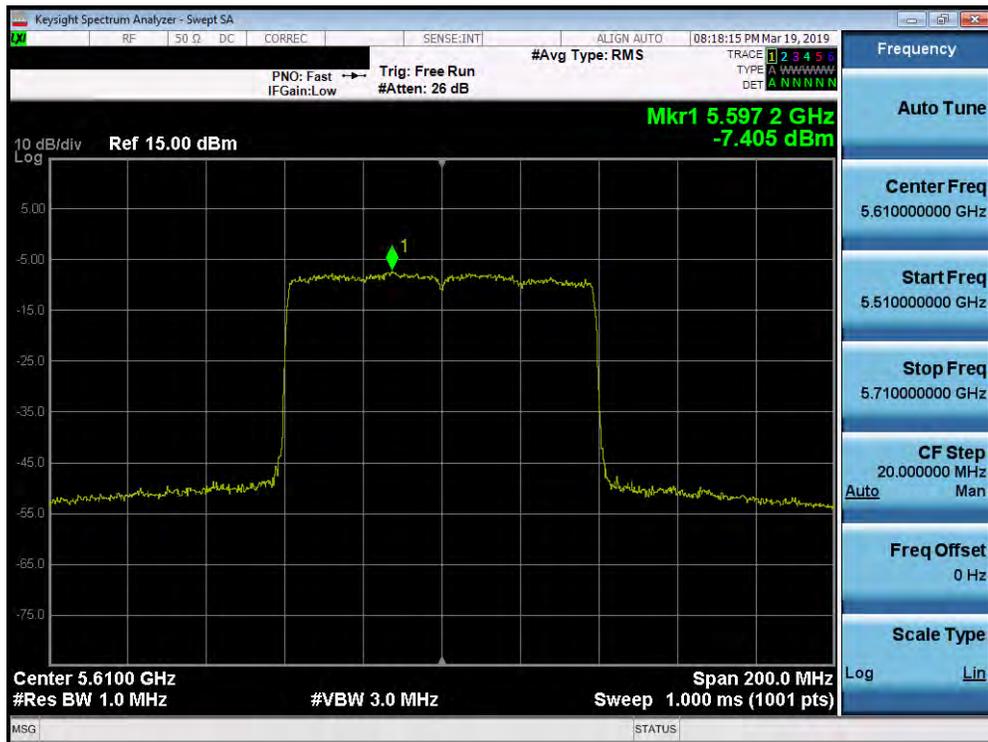


Plot 7-288. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 205 of 339

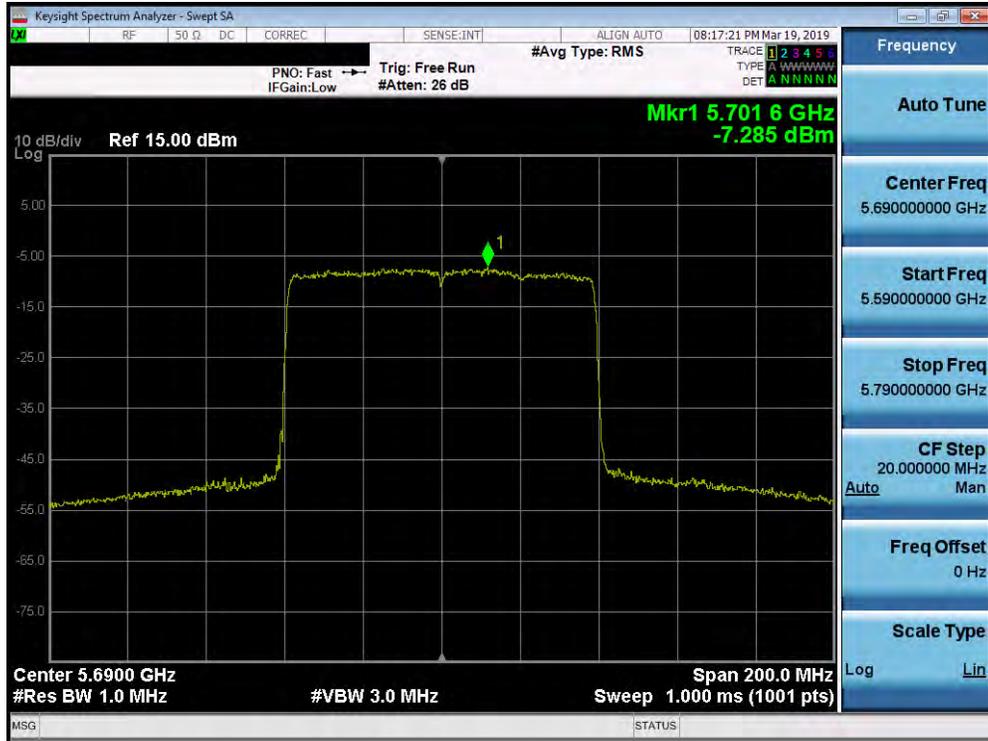


Plot 7-289. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)

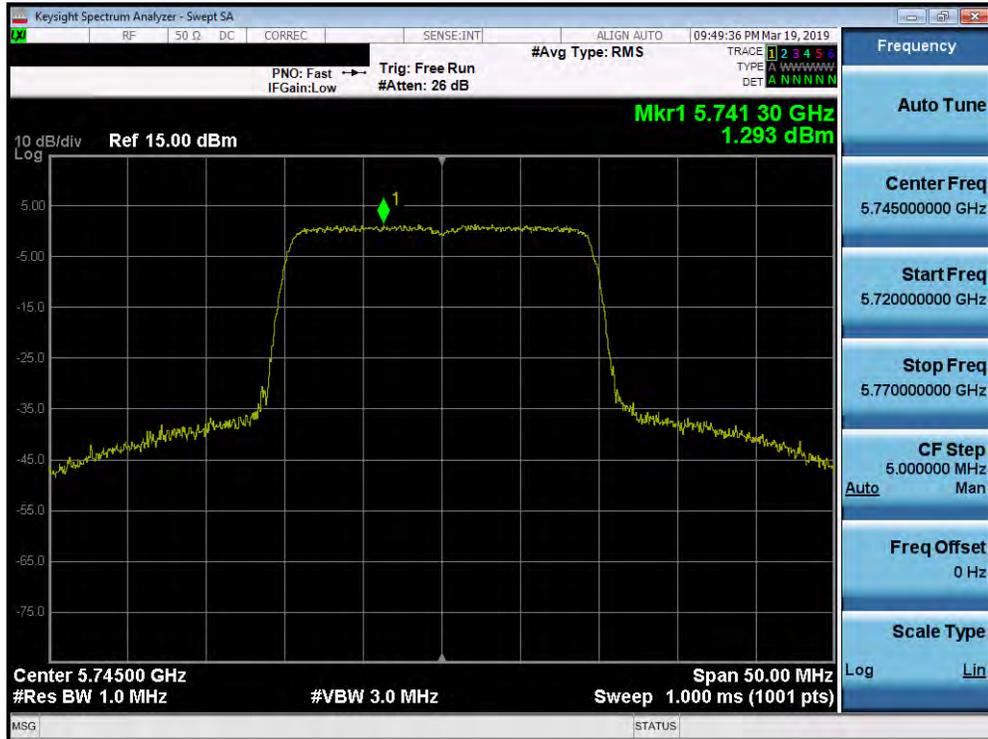


Plot 7-290. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMF900F	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 206 of 339



Plot 7-291. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)



Plot 7-292. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMF900F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901280020-07.A3L	Test Dates: 01/22/2019 - 03/28/2019	EUT Type: Portable Handset		Page 207 of 339