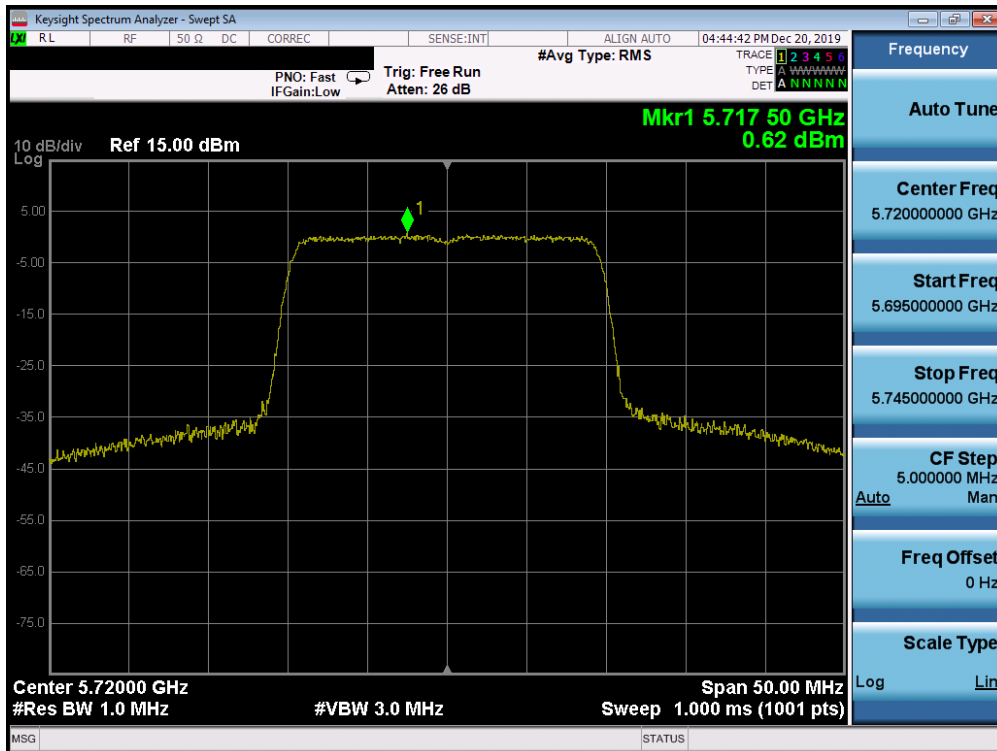
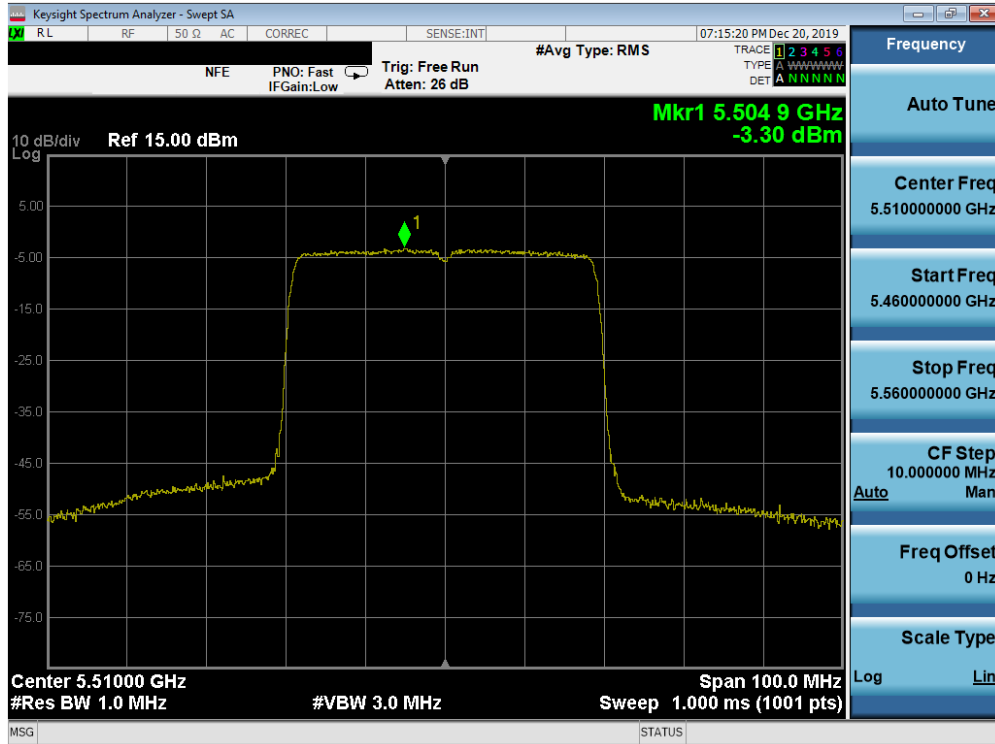


Plot 7-203. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

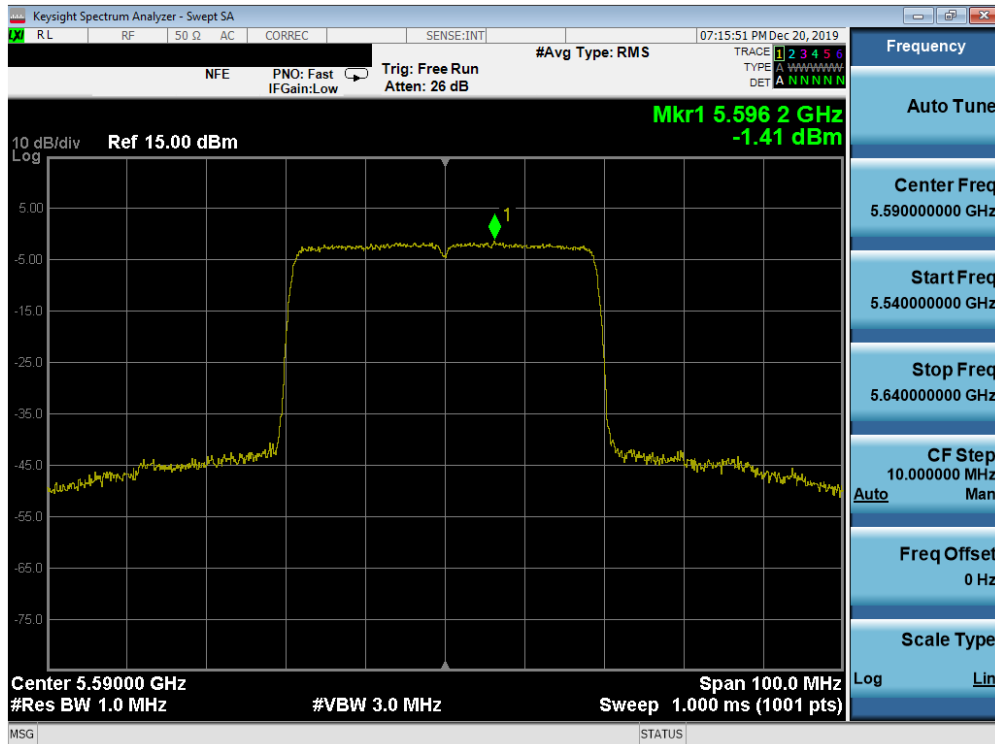


Plot 7-204. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)

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 158 of 271

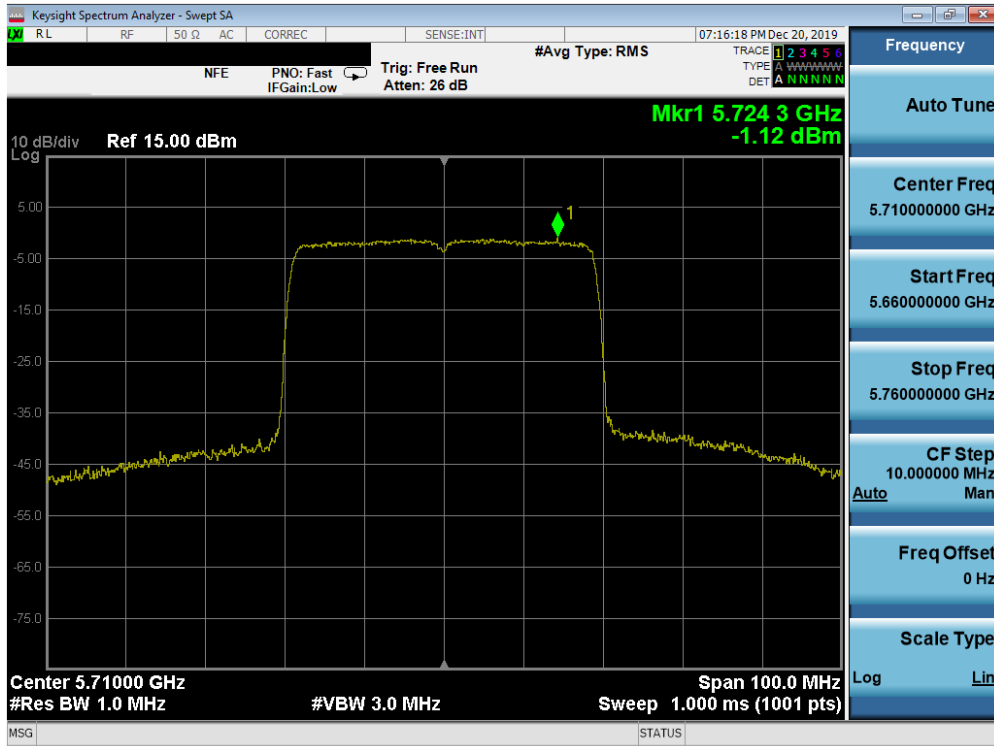


Plot 7-205. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)

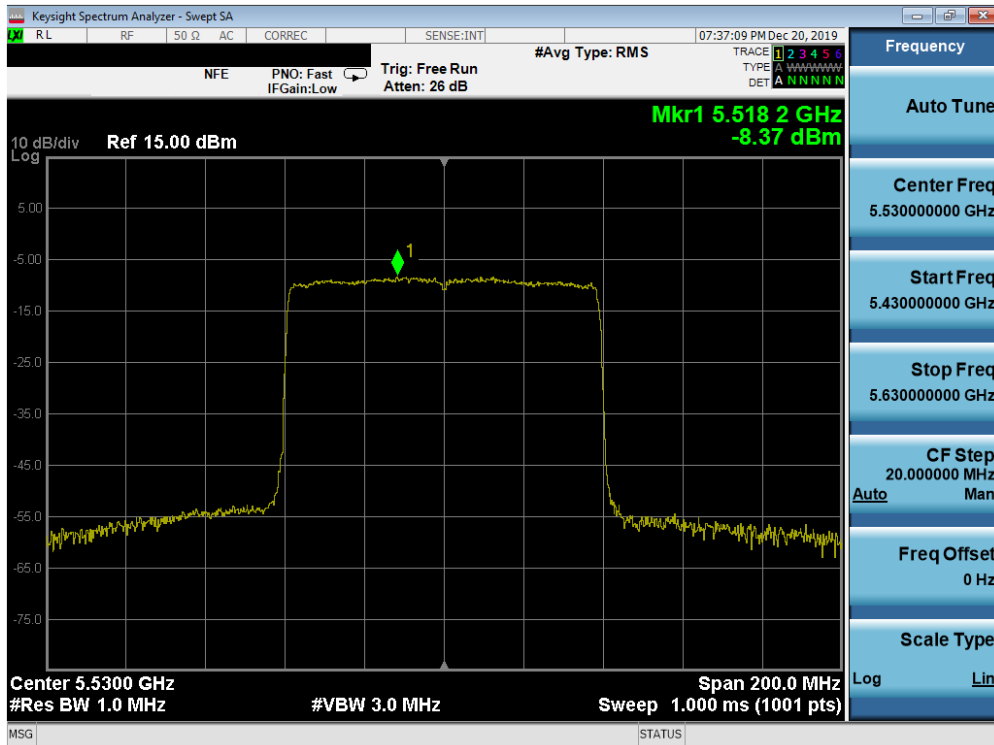


Plot 7-206. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 118)

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 159 of 271

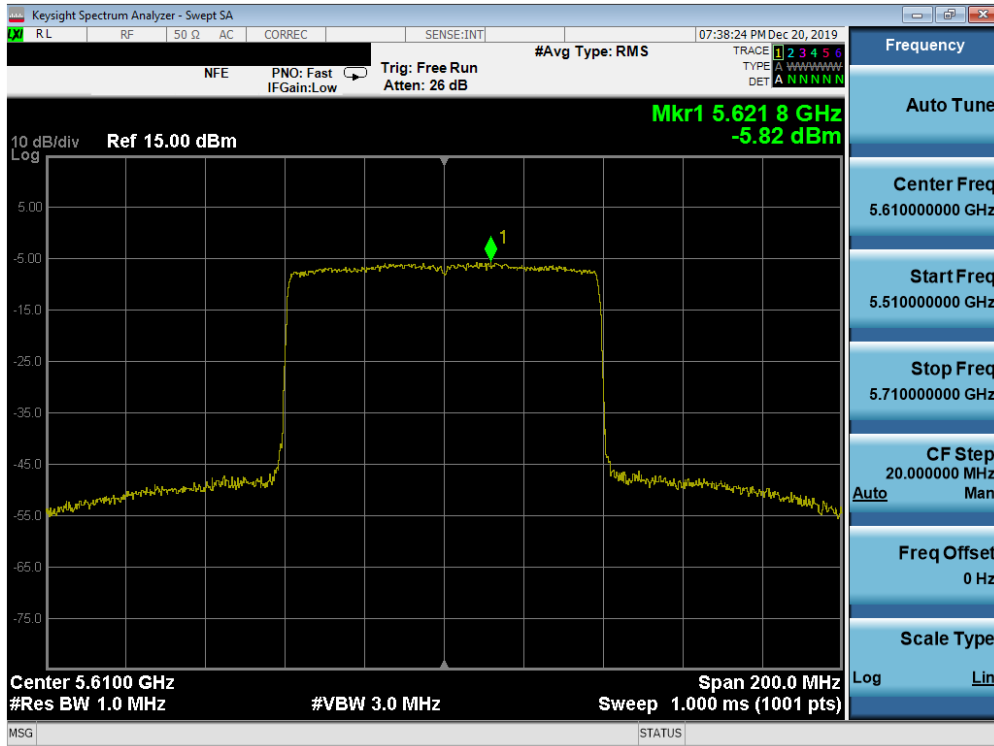


Plot 7-207. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

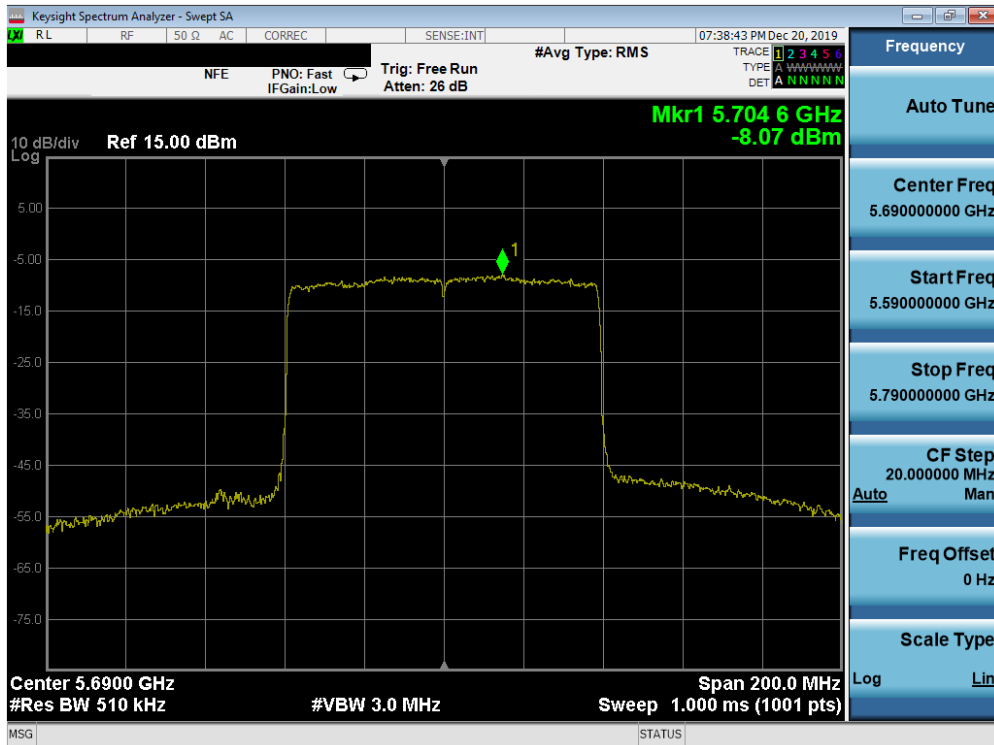


Plot 7-208. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)

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 160 of 271

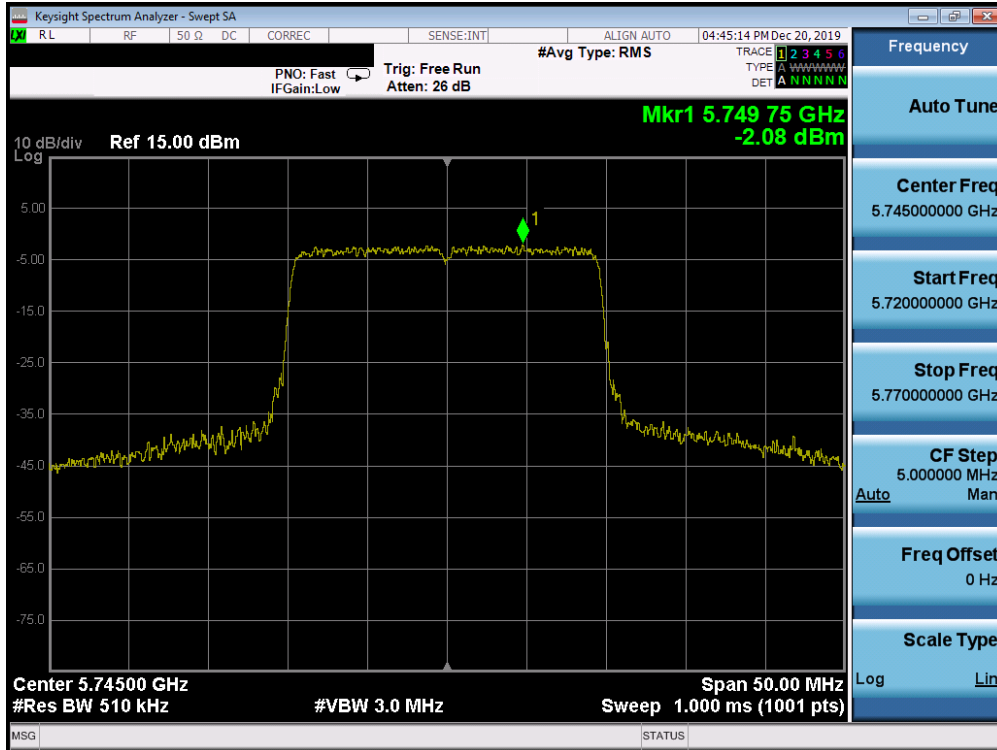


Plot 7-209. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

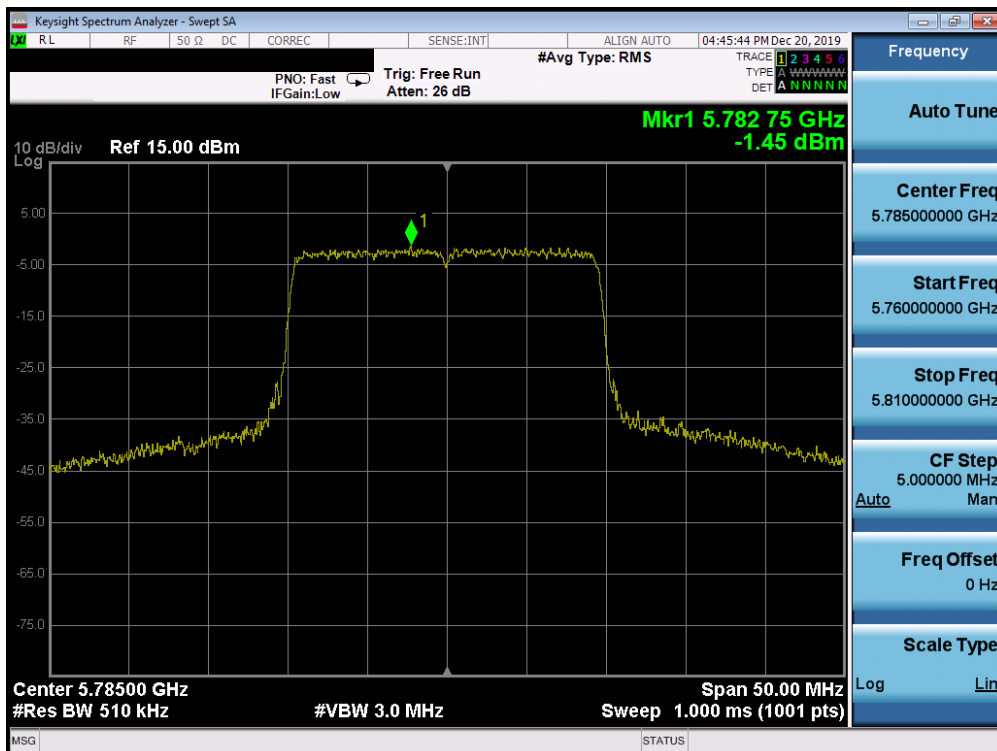


Plot 7-210. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

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 161 of 271

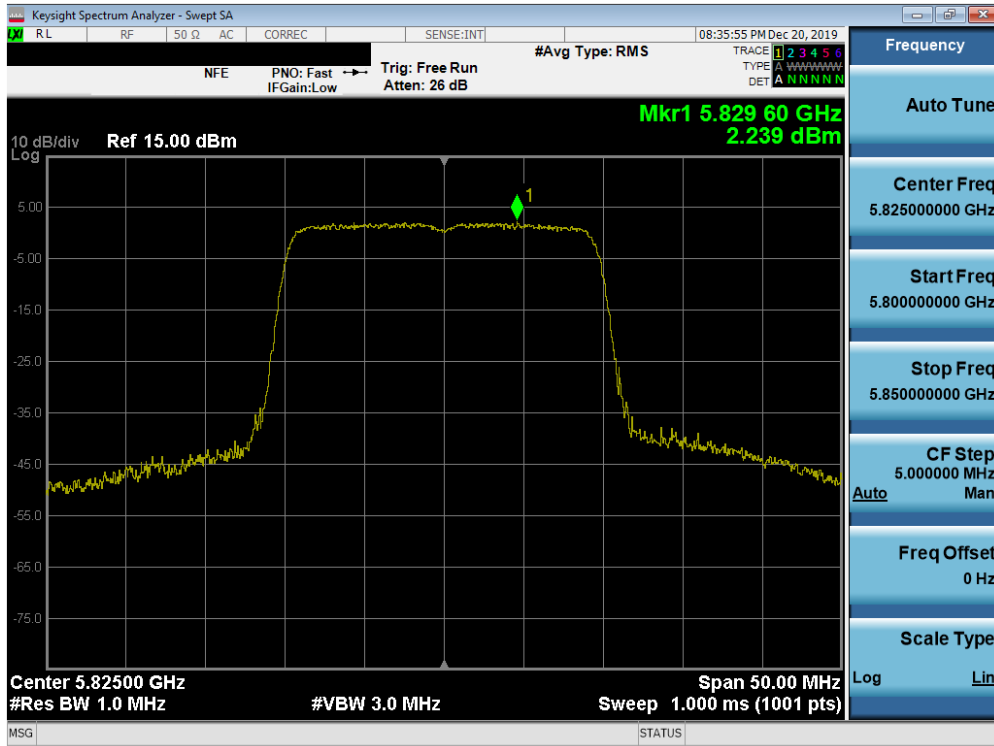


Plot 7-211. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)

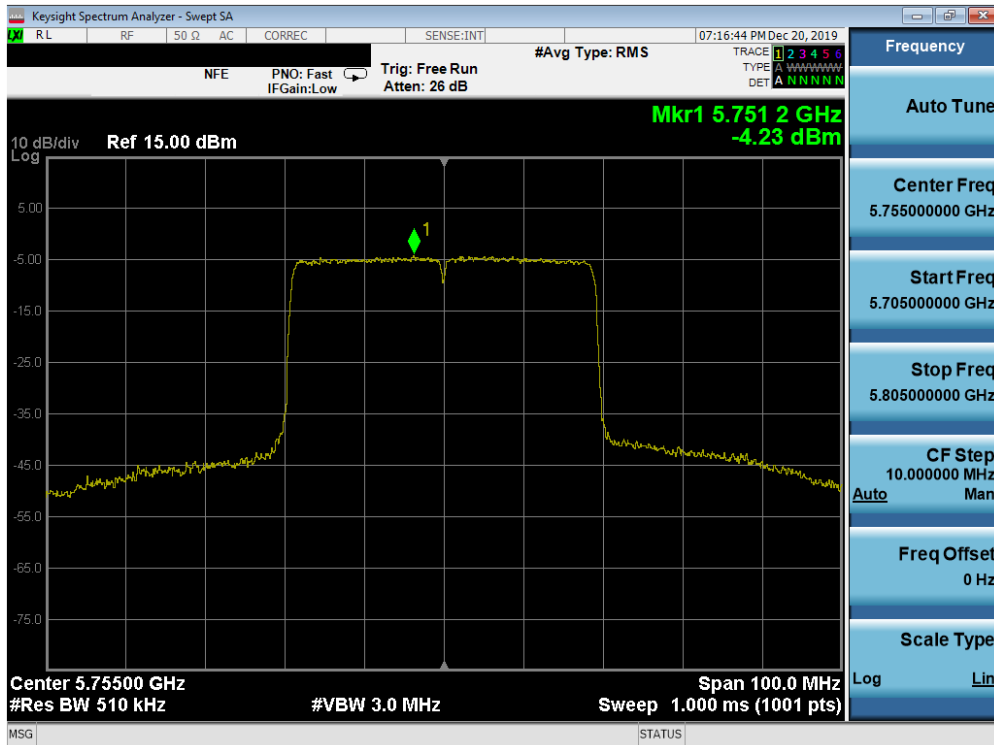


Plot 7-212. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

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 162 of 271

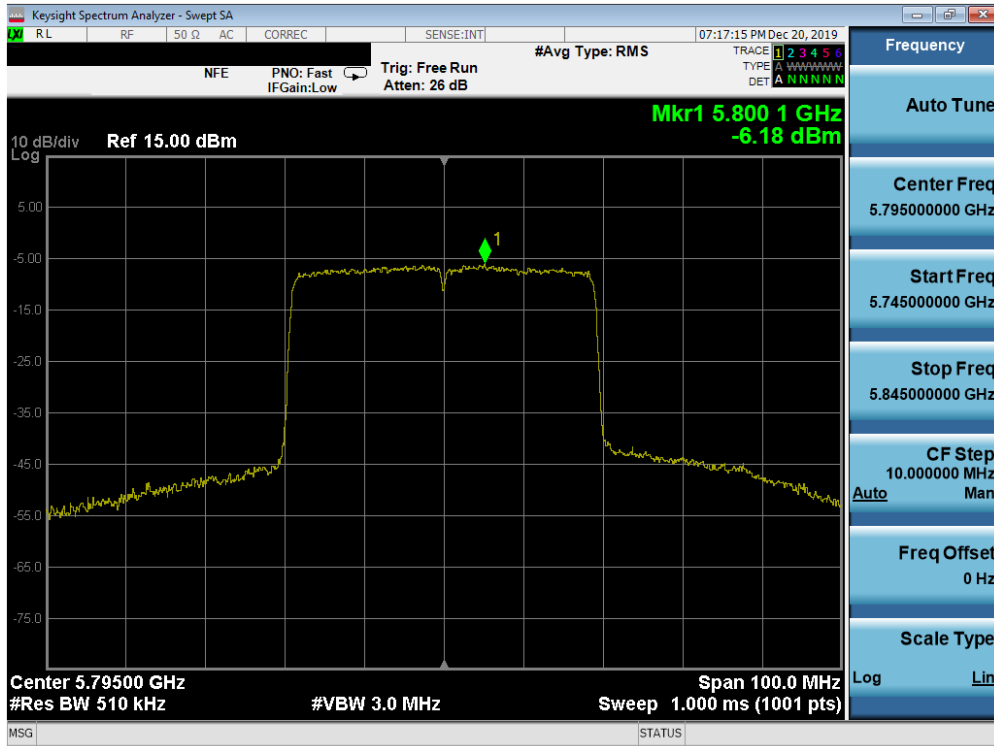


Plot 7-213. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 165)

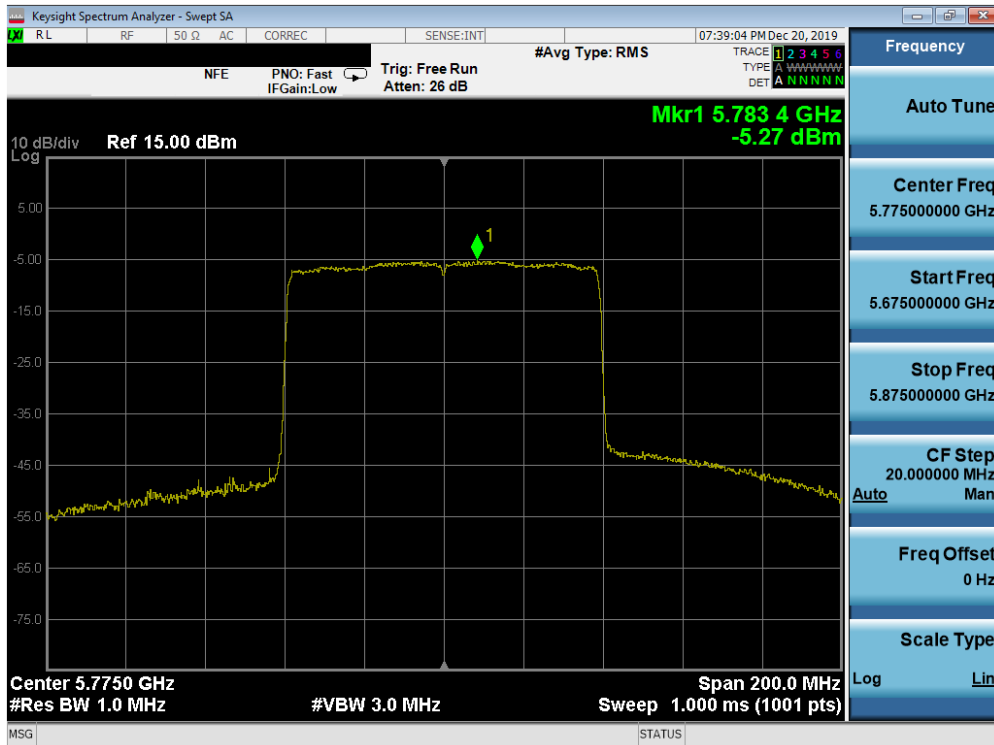


Plot 7-214. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 151)

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 163 of 271



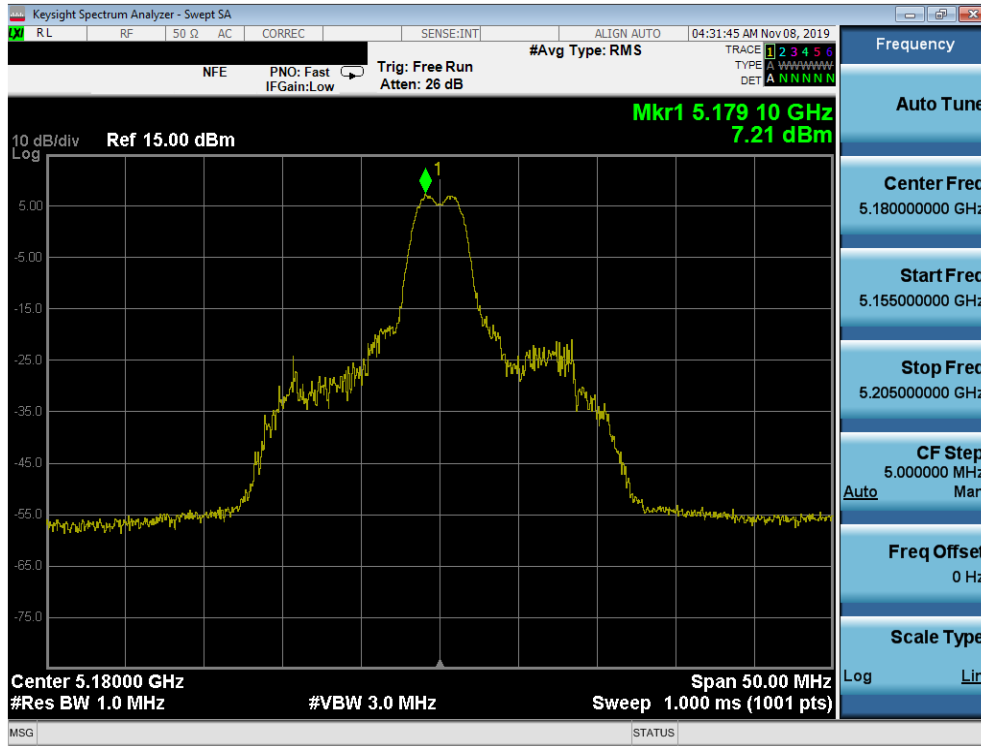
Plot 7-215. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 159)



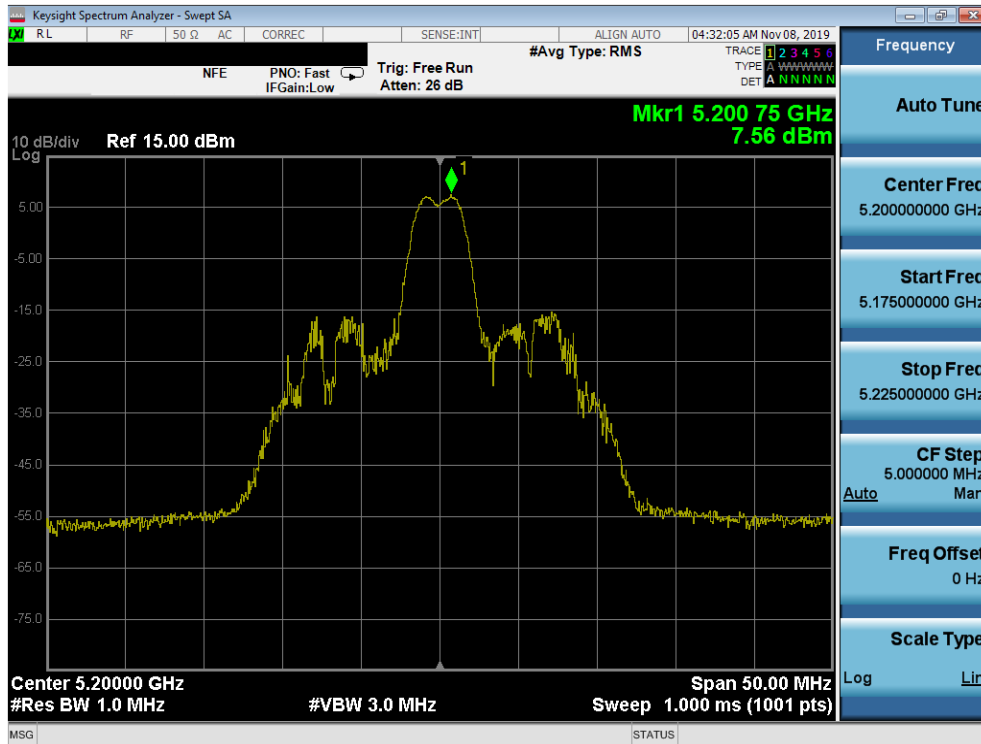
Plot 7-216. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 155)

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 164 of 271

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

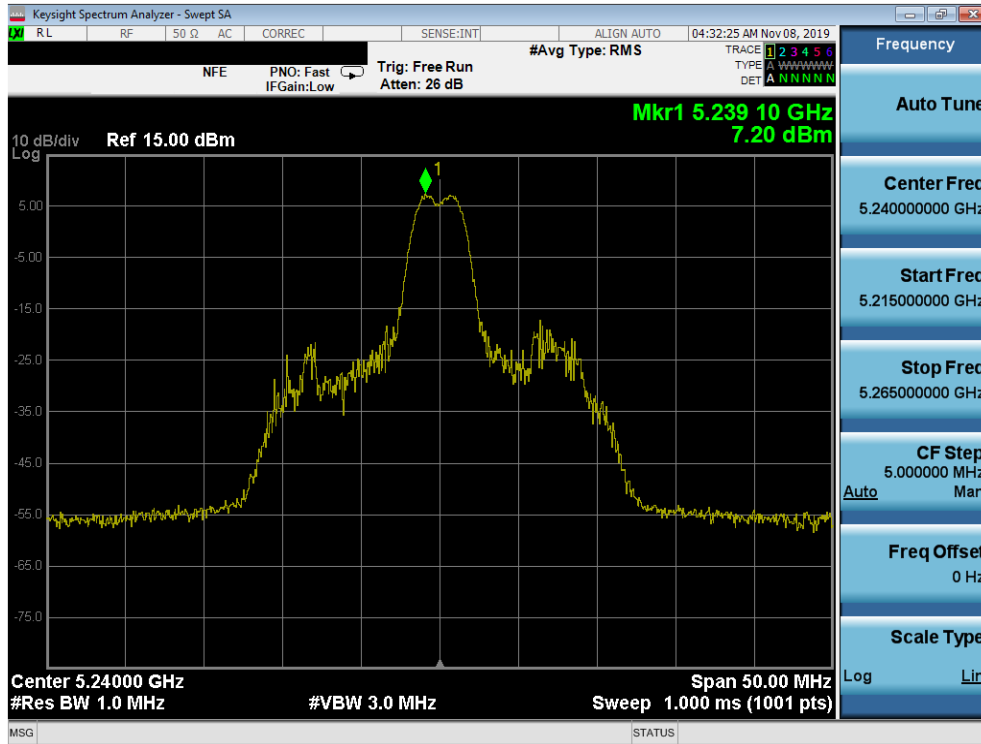


Plot 7-217. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

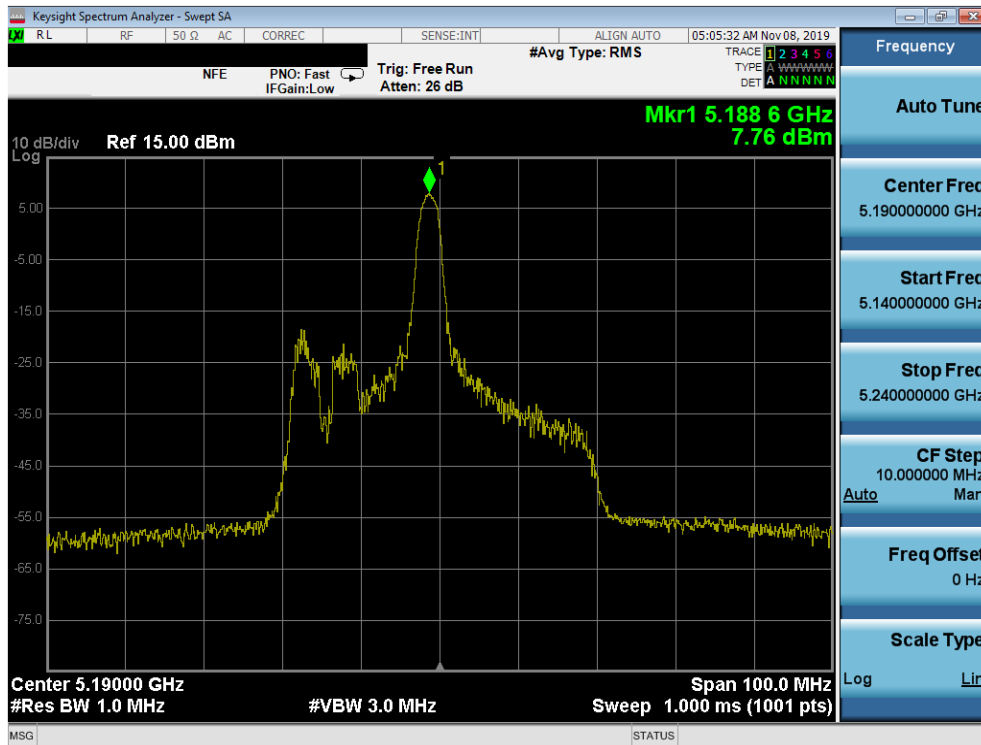


Plot 7-218. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

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 165 of 271

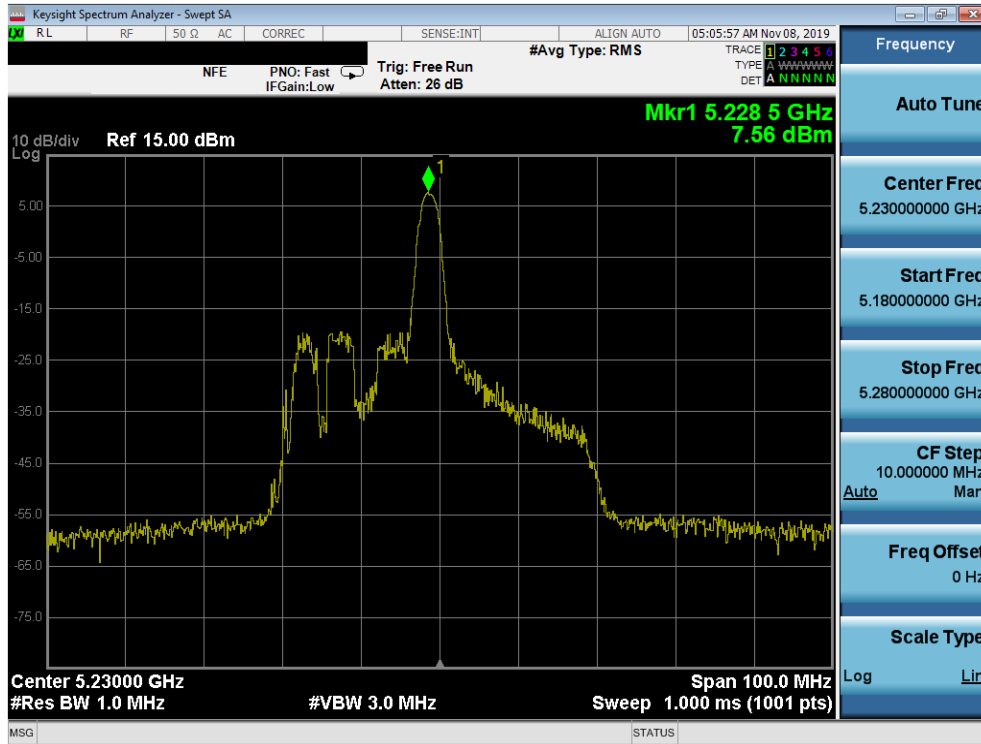


Plot 7-219. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

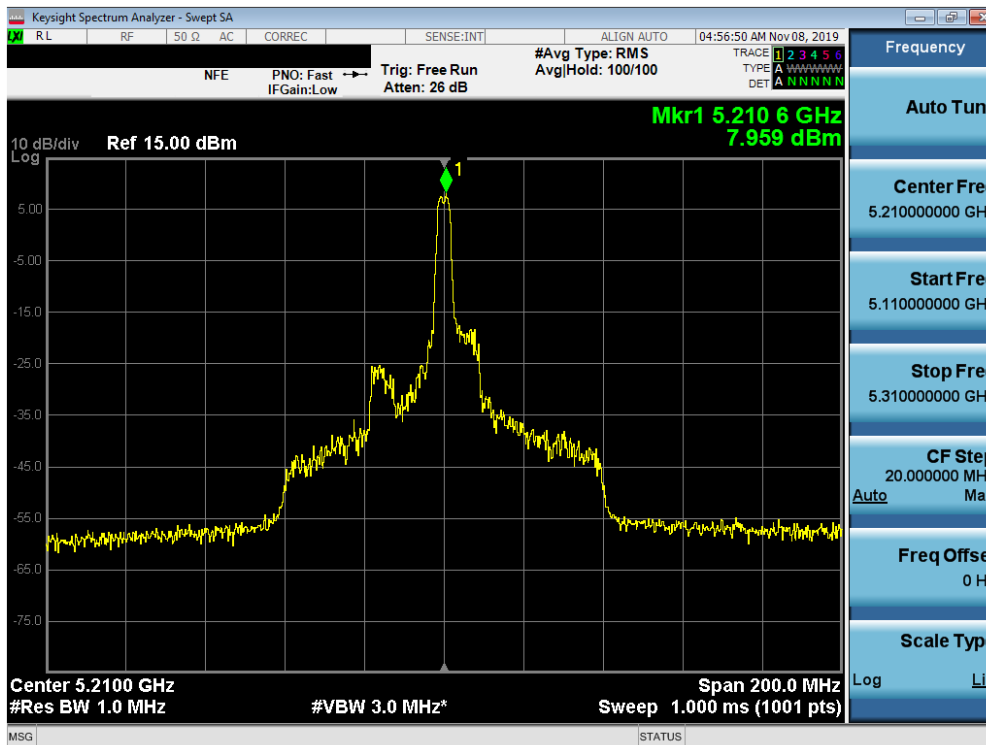


Plot 7-220. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

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 166 of 271

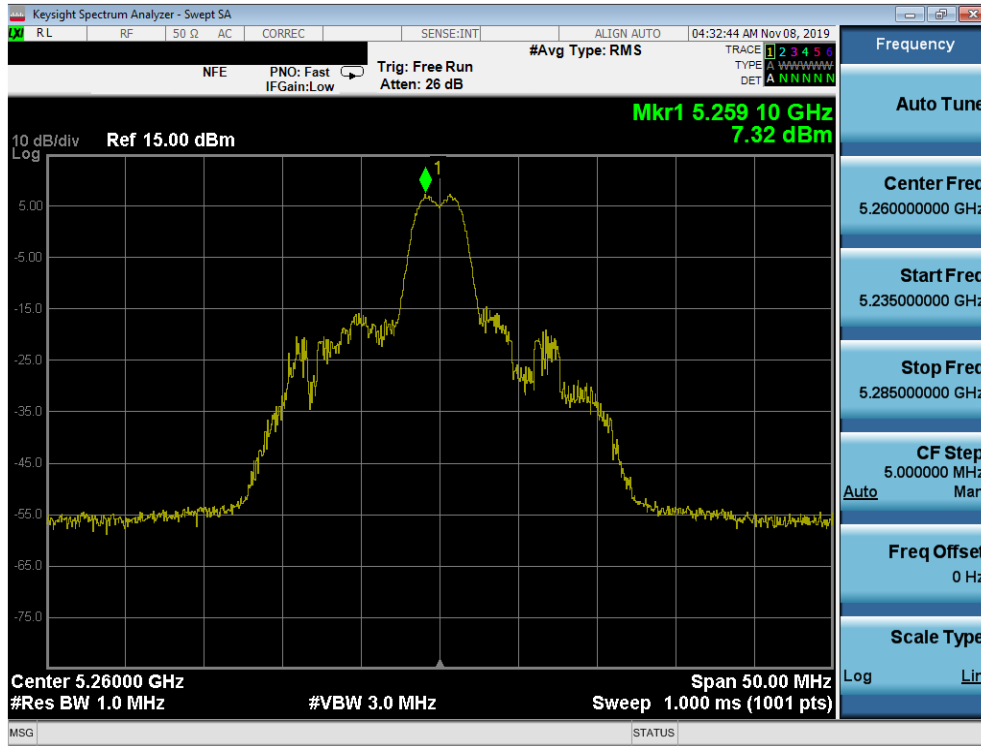


Plot 7-221. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

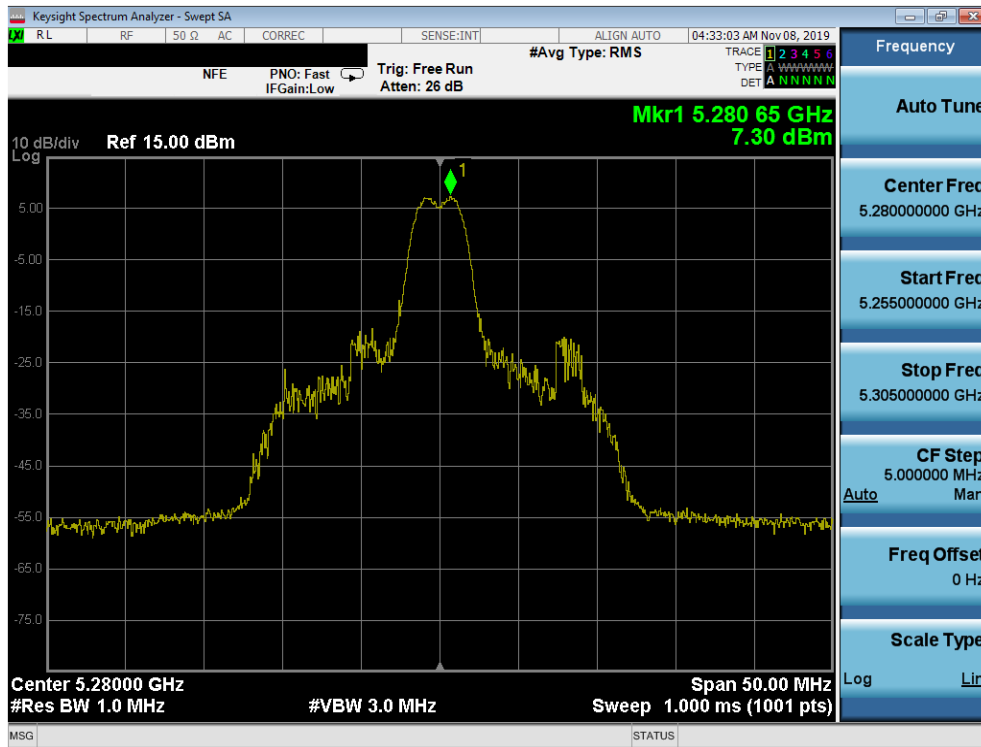


Plot 7-222. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

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 167 of 271

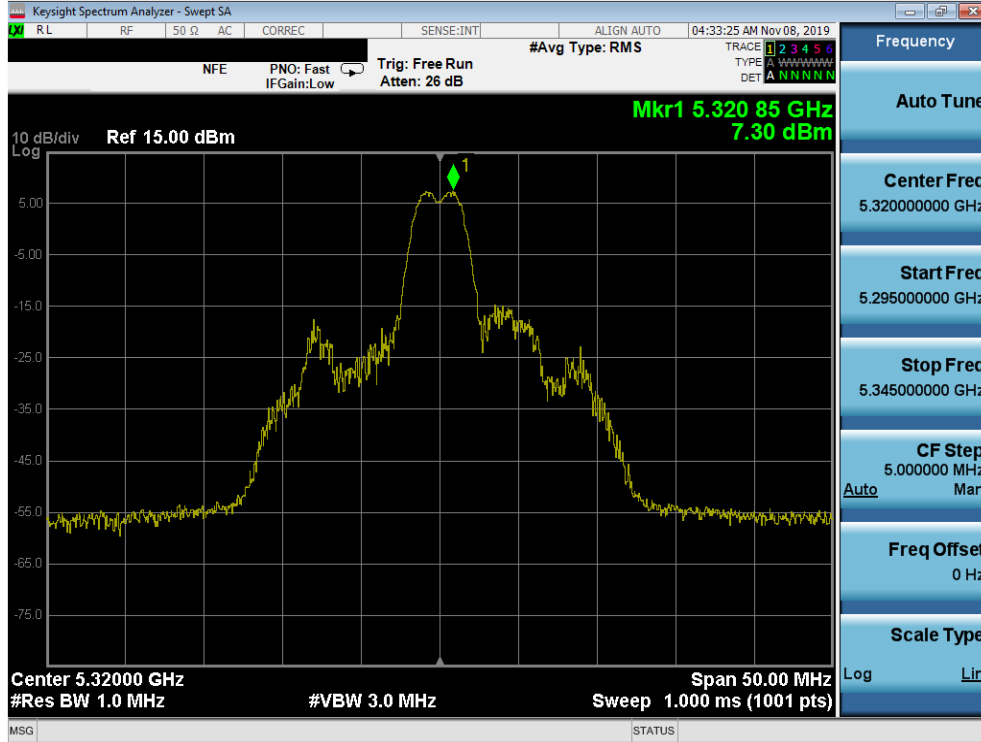


Plot 7-223. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

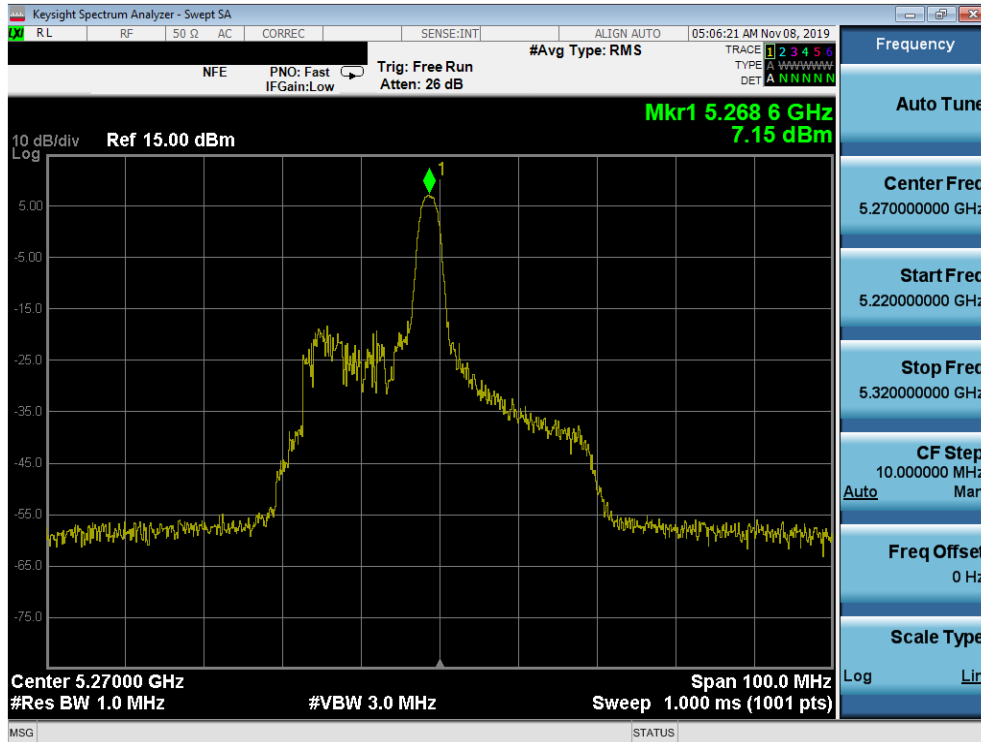


Plot 7-224. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

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 168 of 271

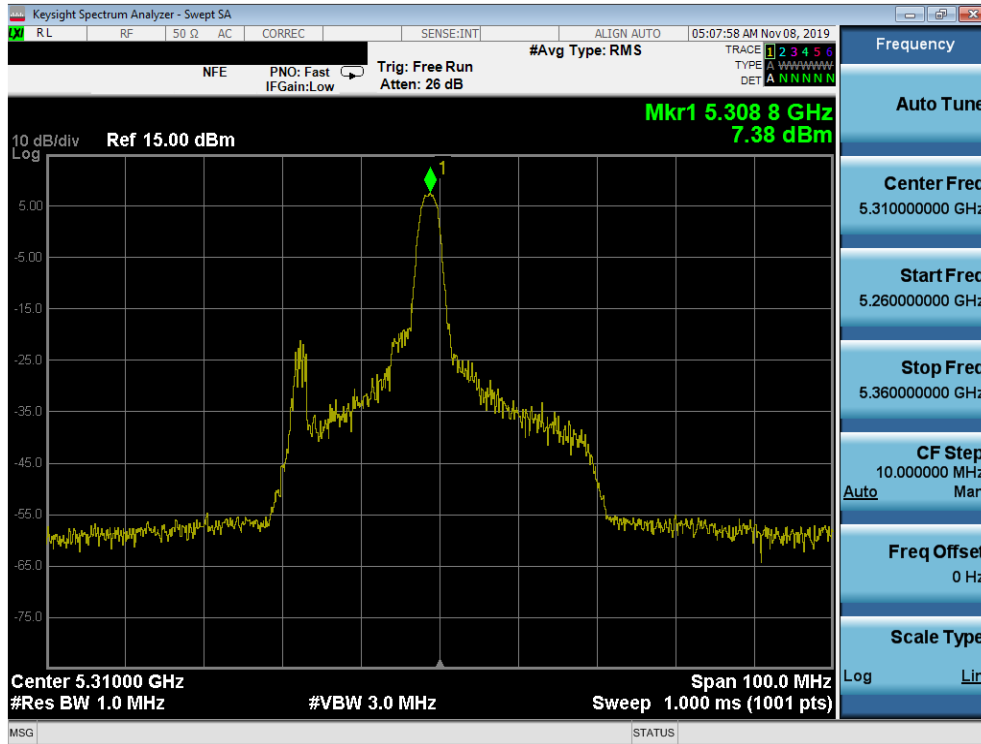


Plot 7-225. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

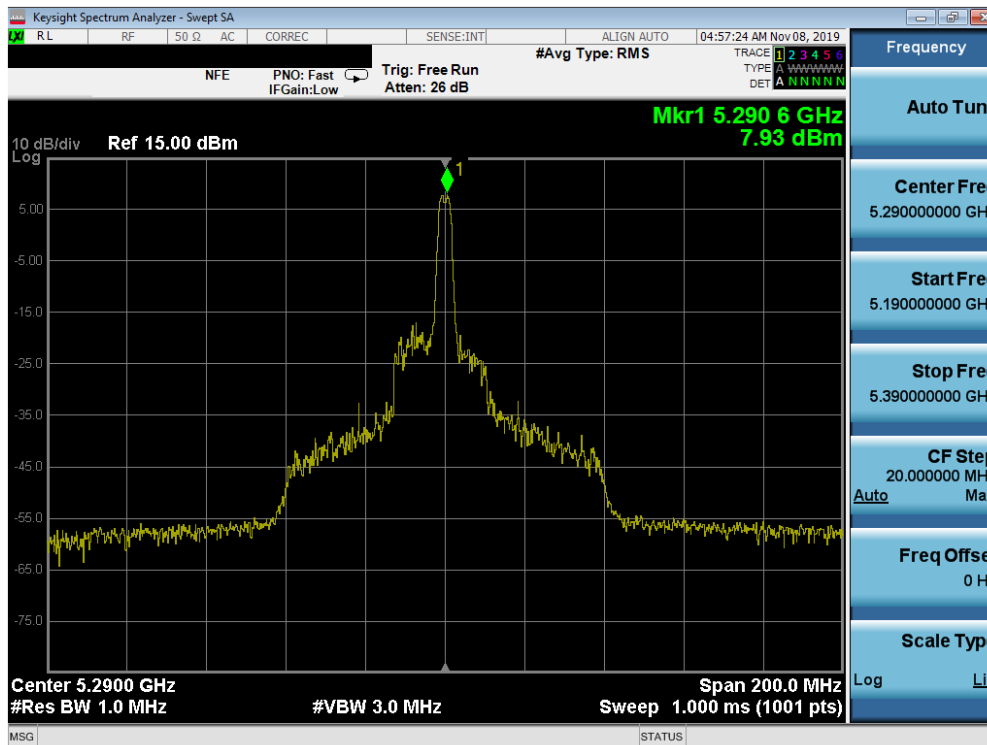


Plot 7-226. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

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 169 of 271

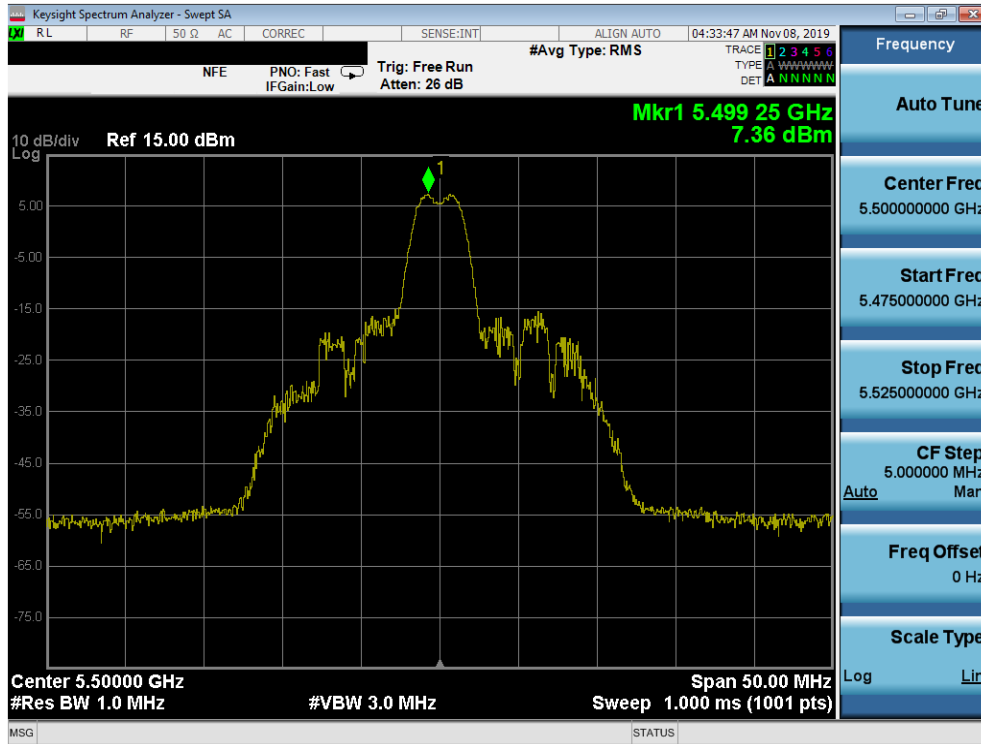


Plot 7-227. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

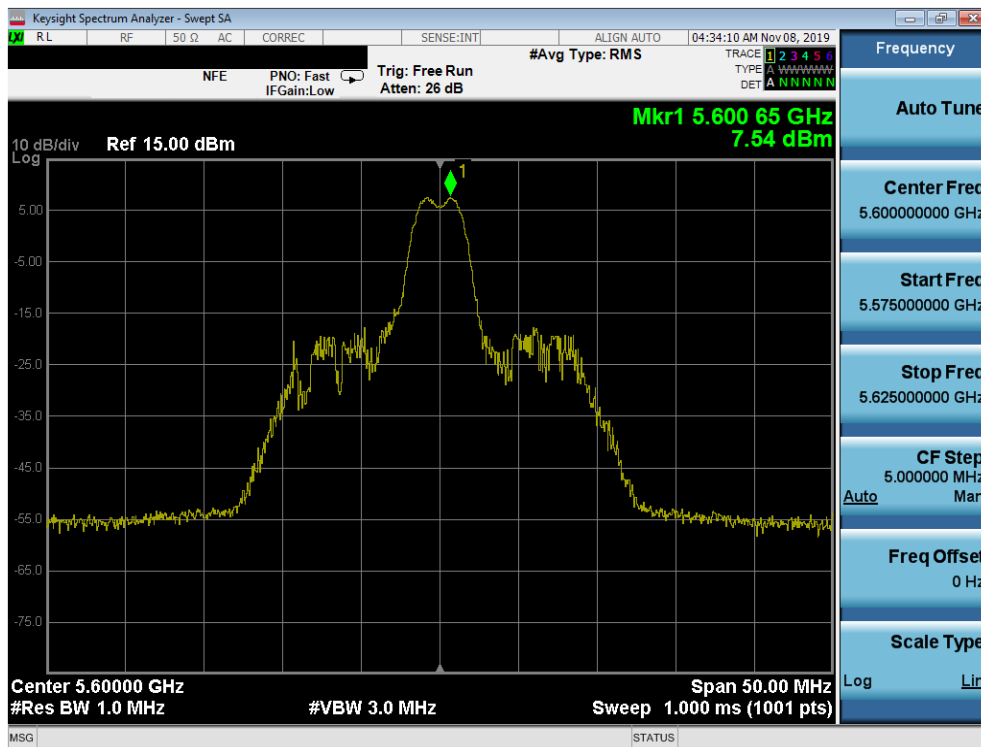


Plot 7-228. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

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 170 of 271

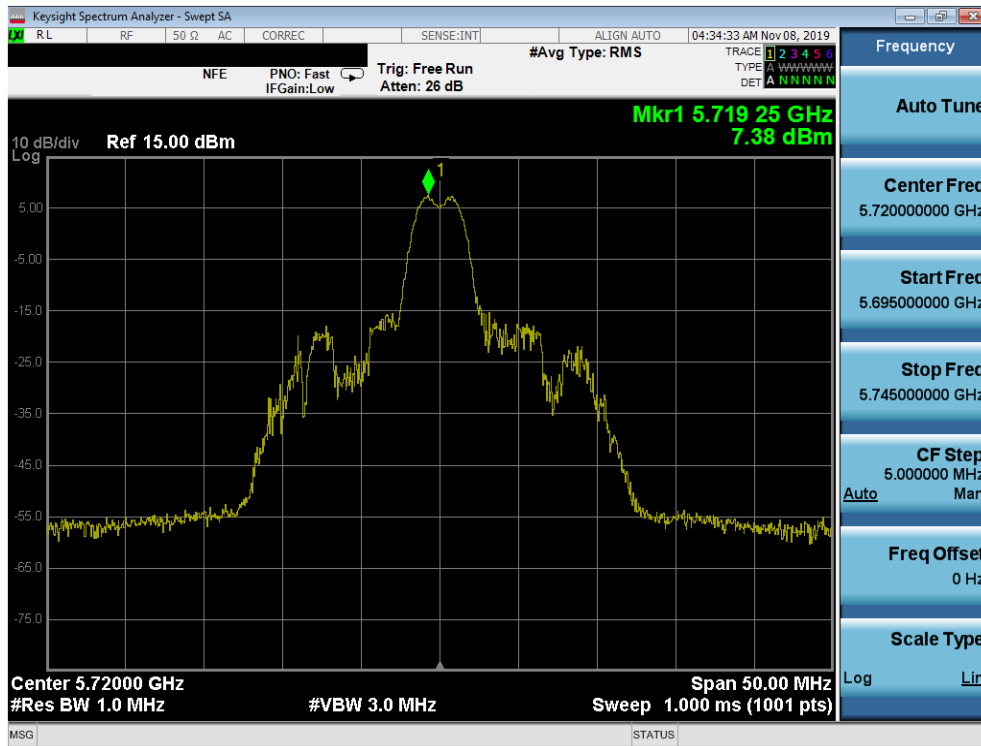


Plot 7-229. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

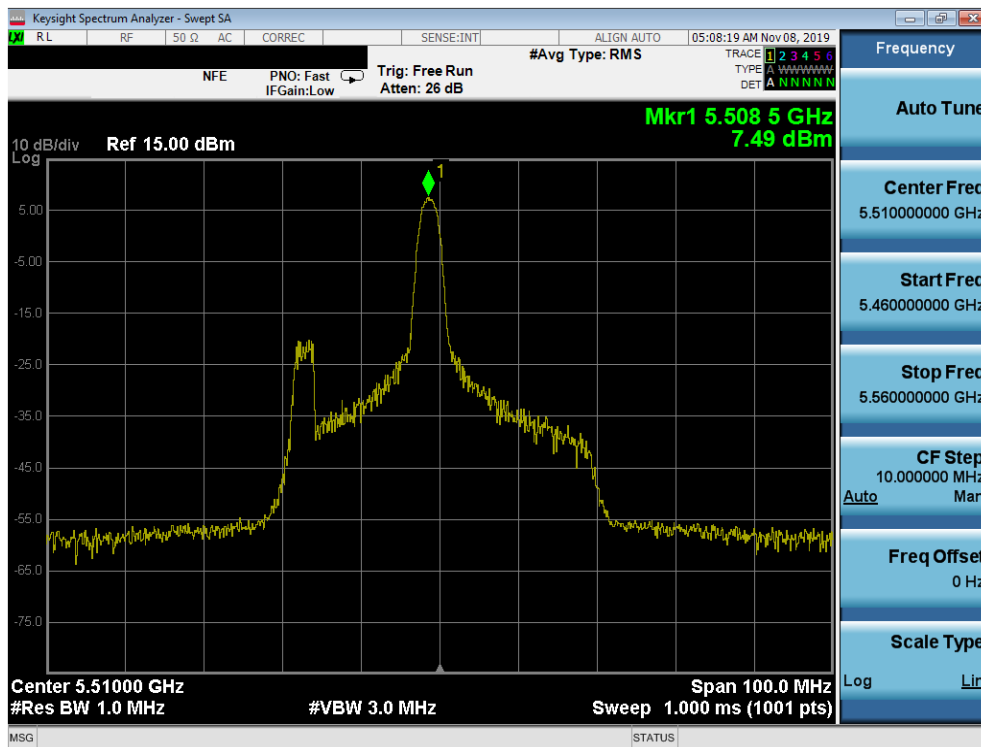


Plot 7-230. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	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 171 of 271

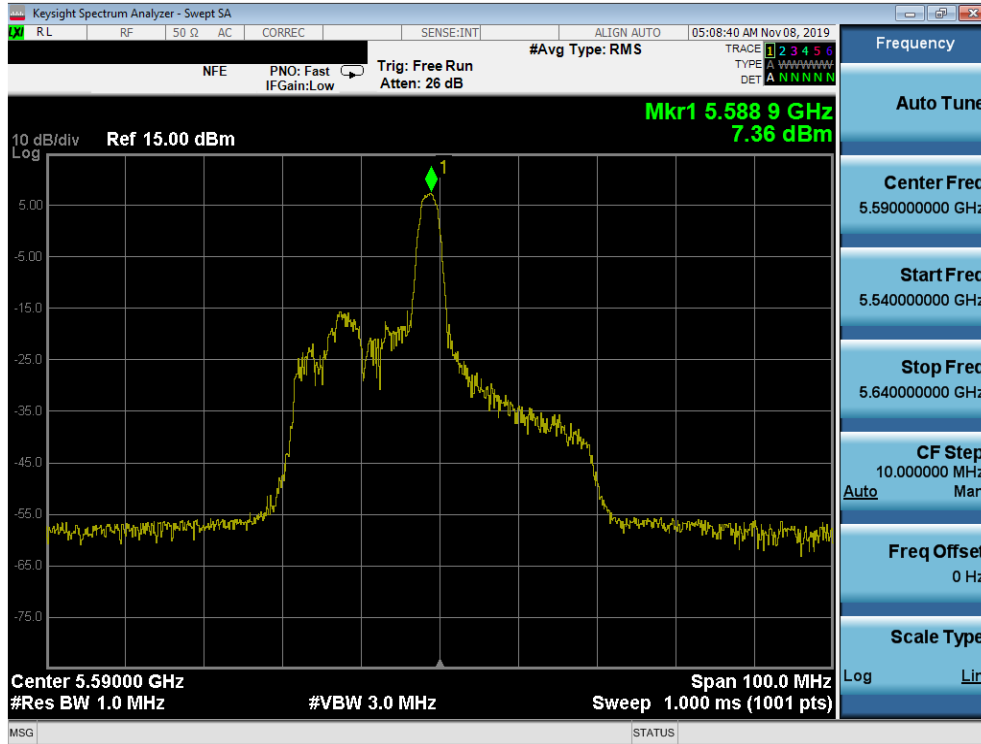


Plot 7-231. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

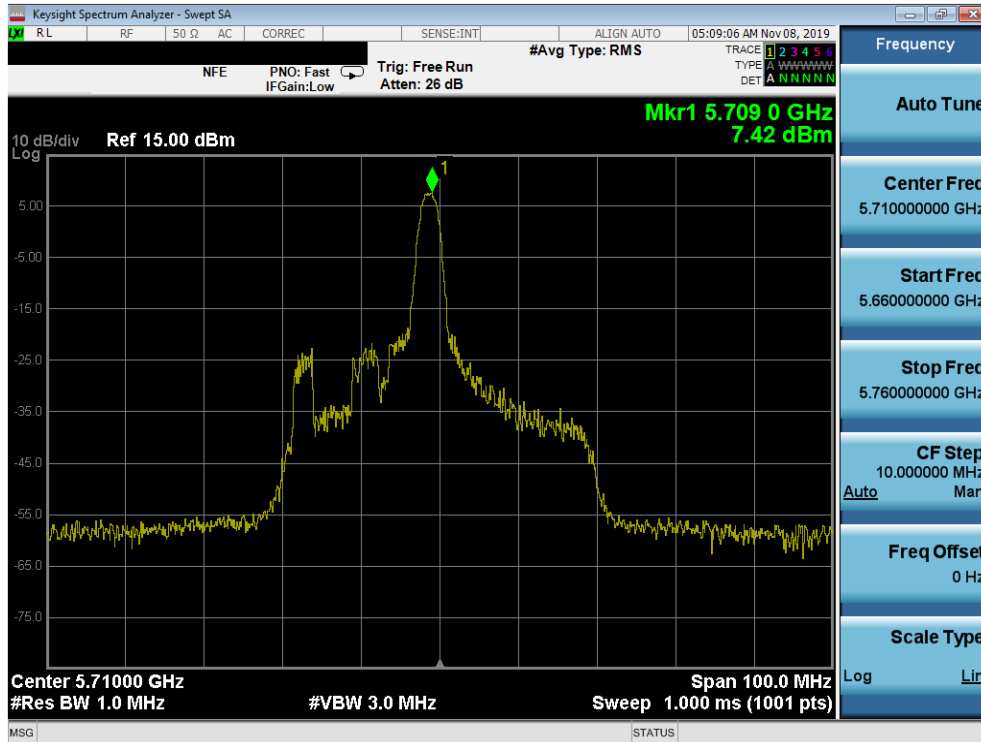


Plot 7-232. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

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 172 of 271

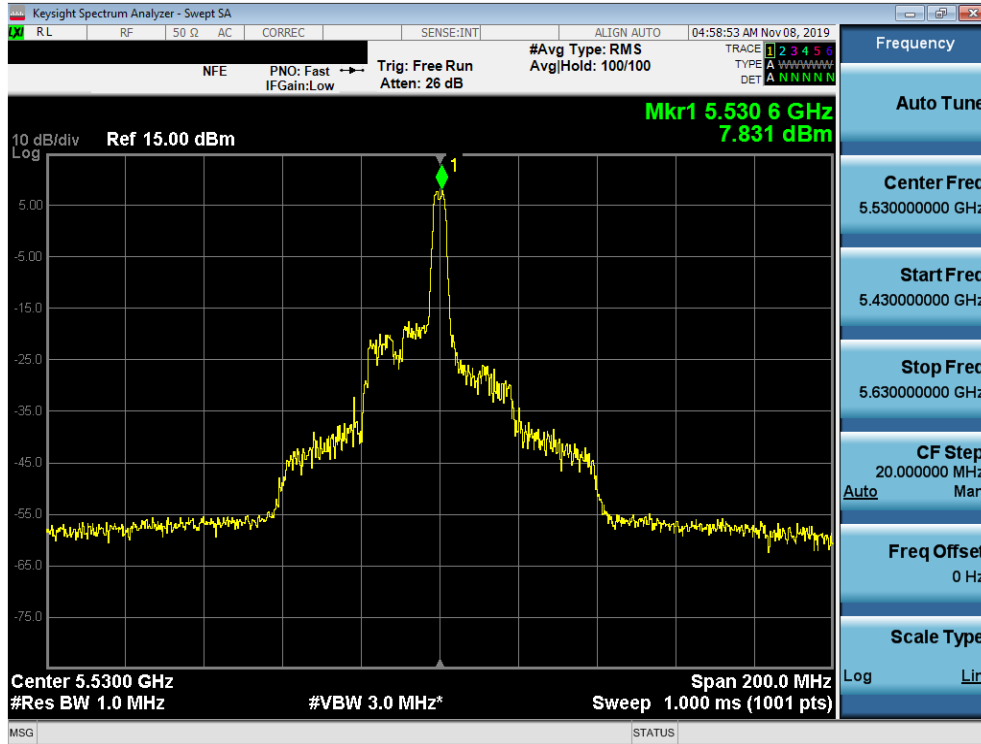


Plot 7-233. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

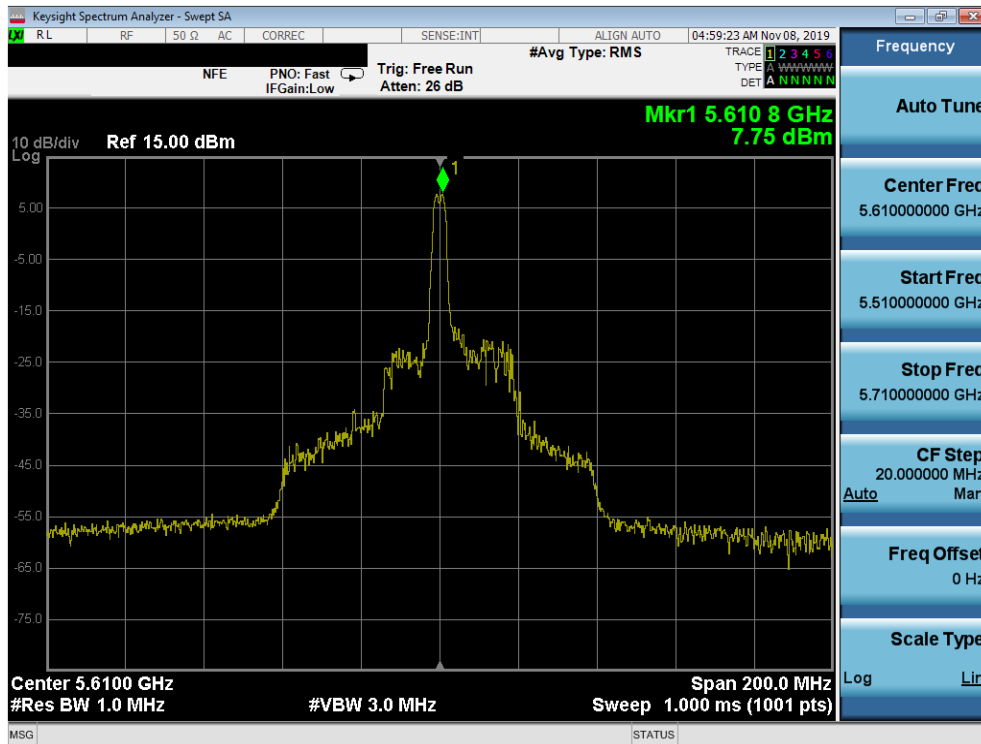


Plot 7-234. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

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 173 of 271

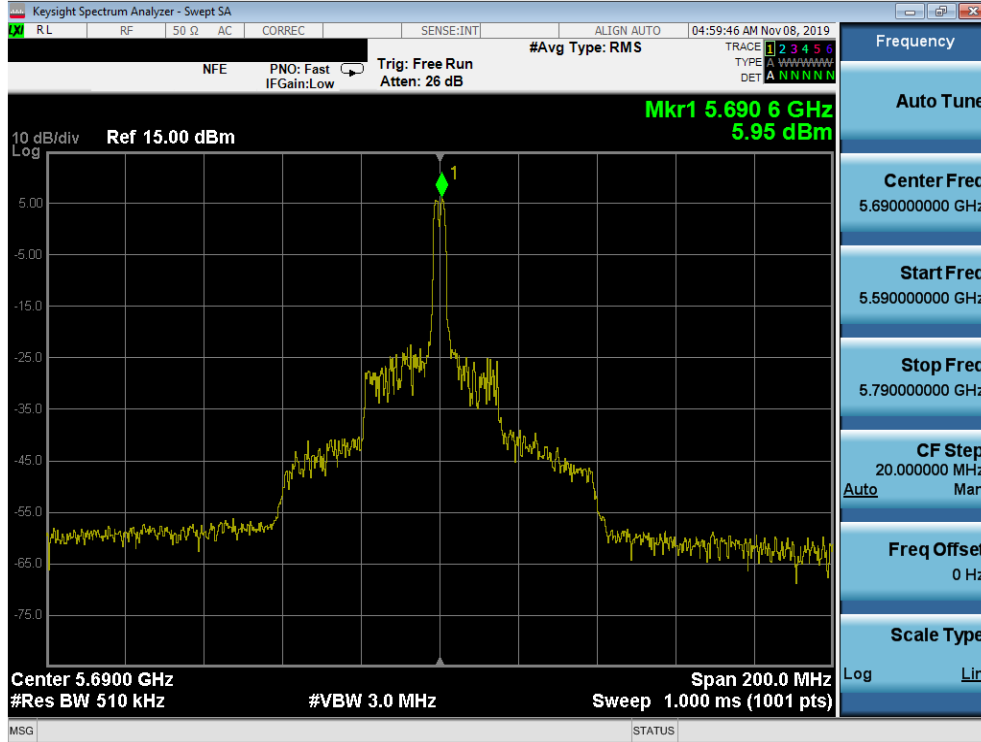


Plot 7-235. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)

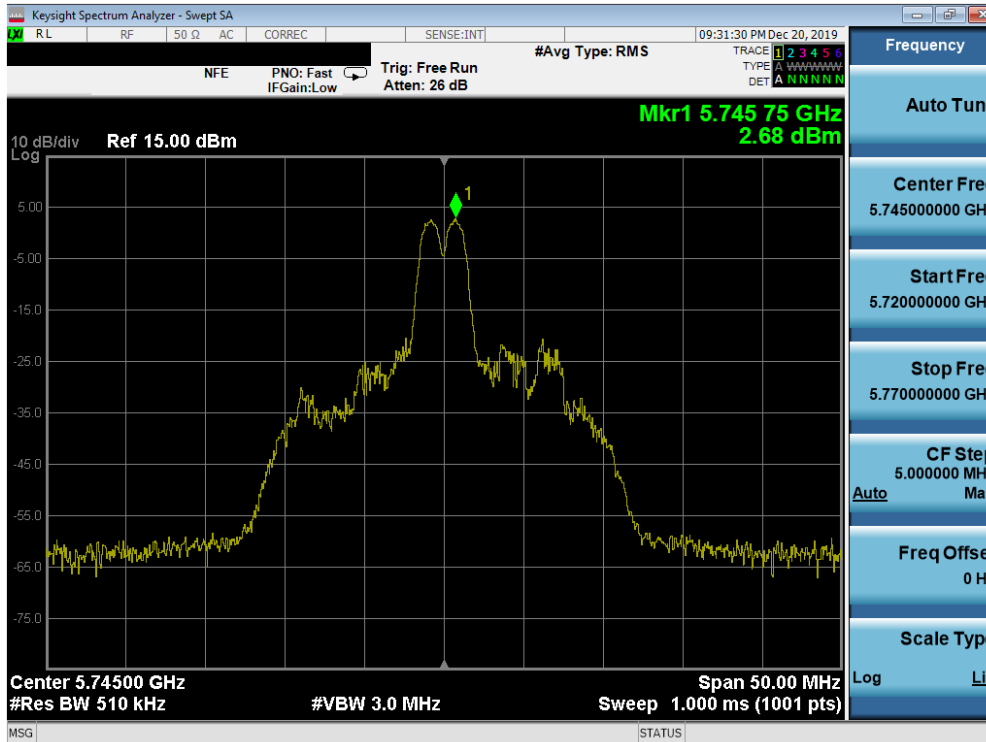


Plot 7-236. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

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 174 of 271

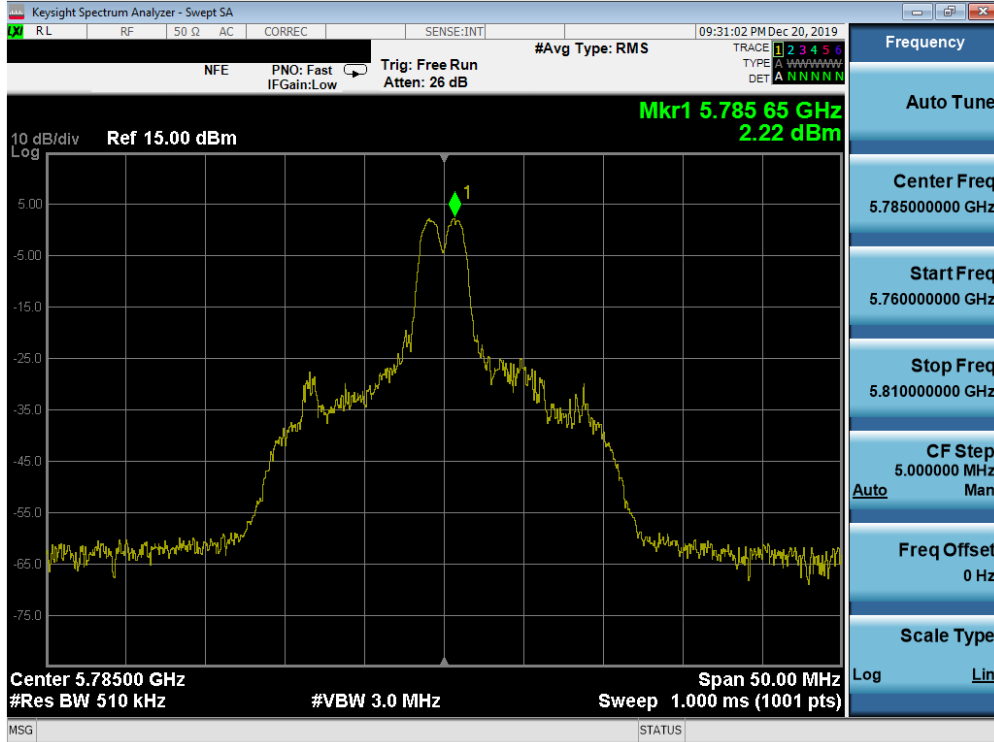


Plot 7-237. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

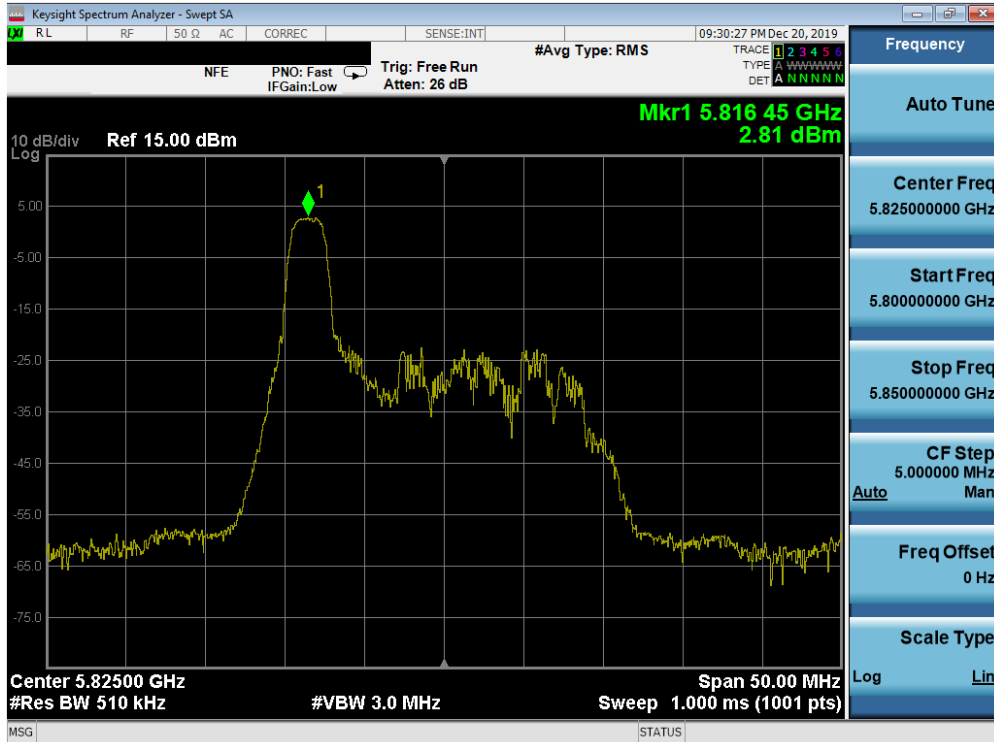


Plot 7-238. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

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 175 of 271

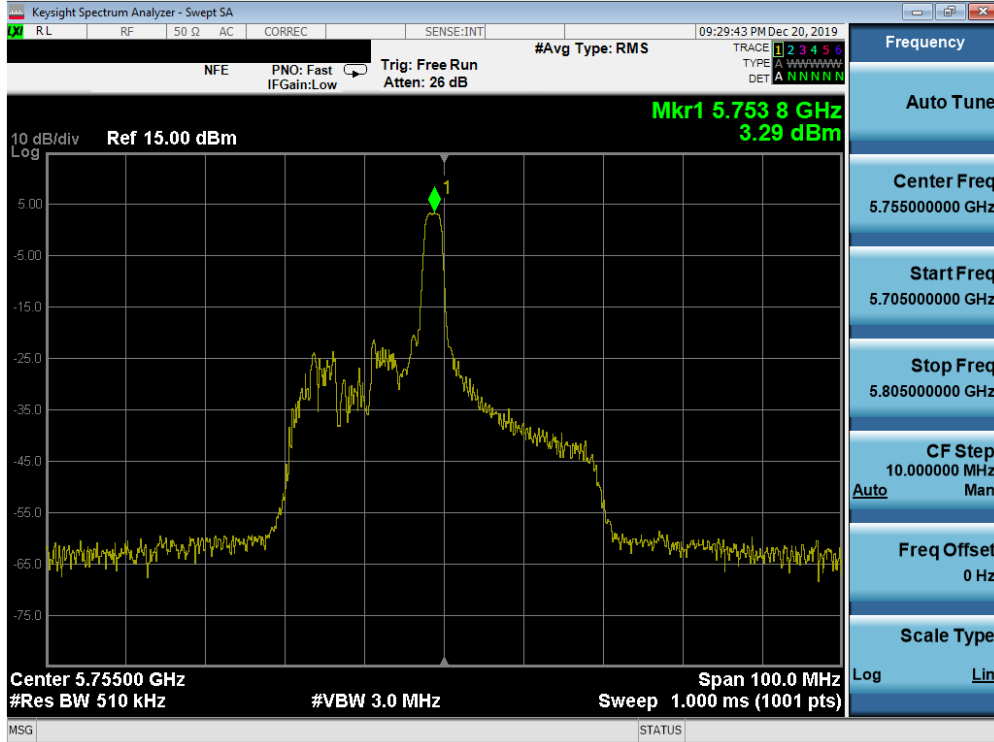


Plot 7-239. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

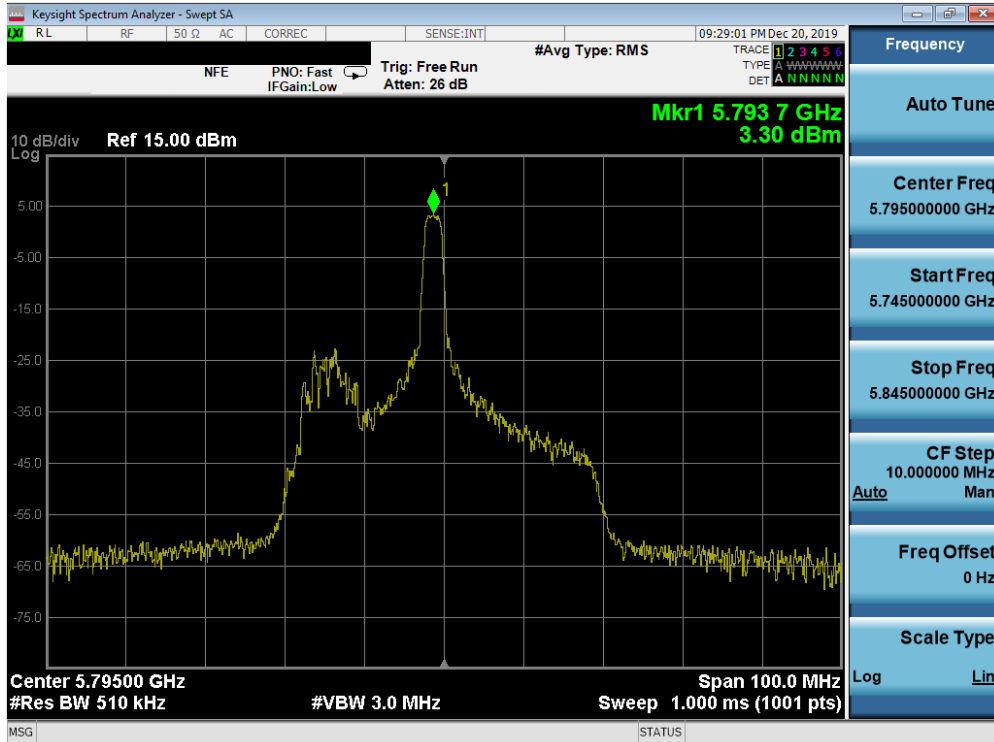


Plot 7-240. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

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 176 of 271

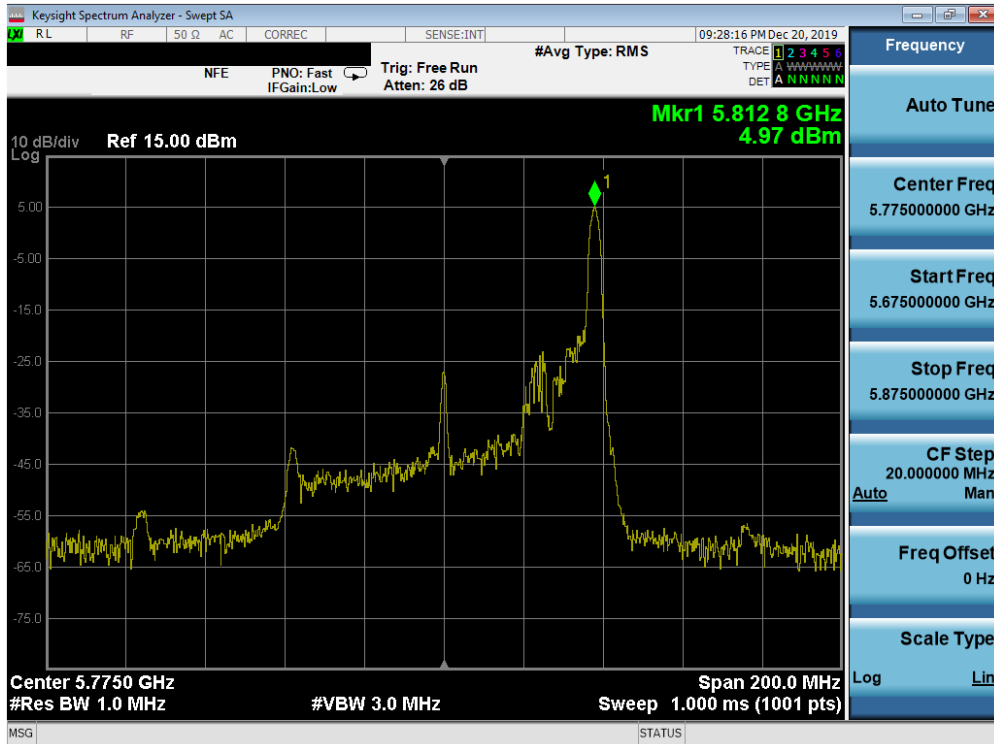


Plot 7-241. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

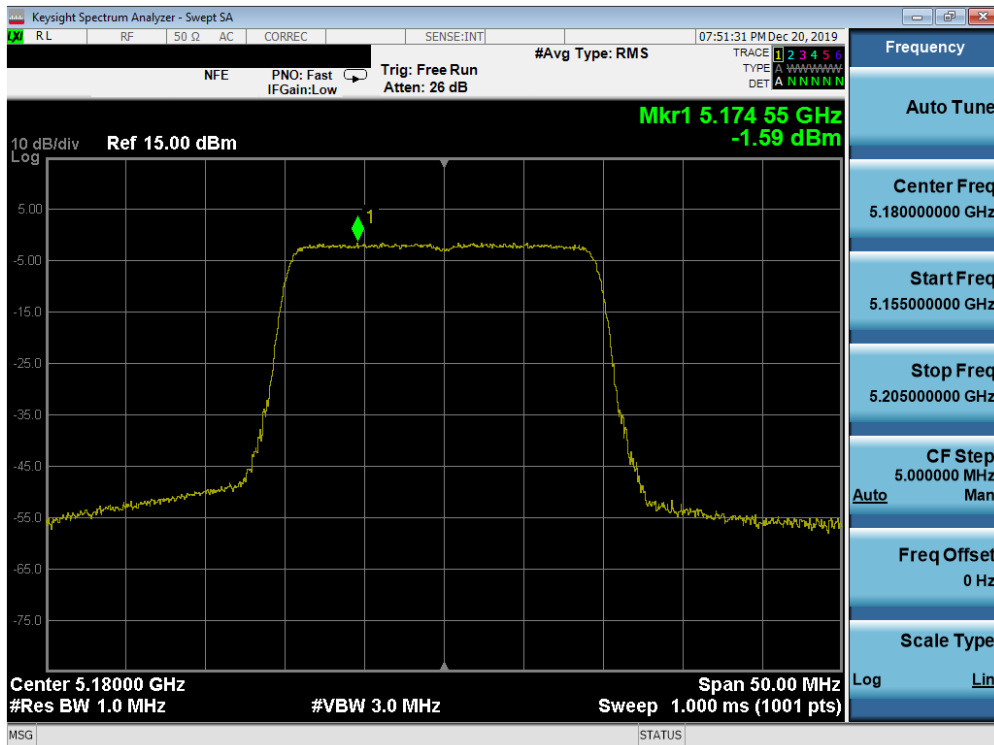


Plot 7-242. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

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 177 of 271

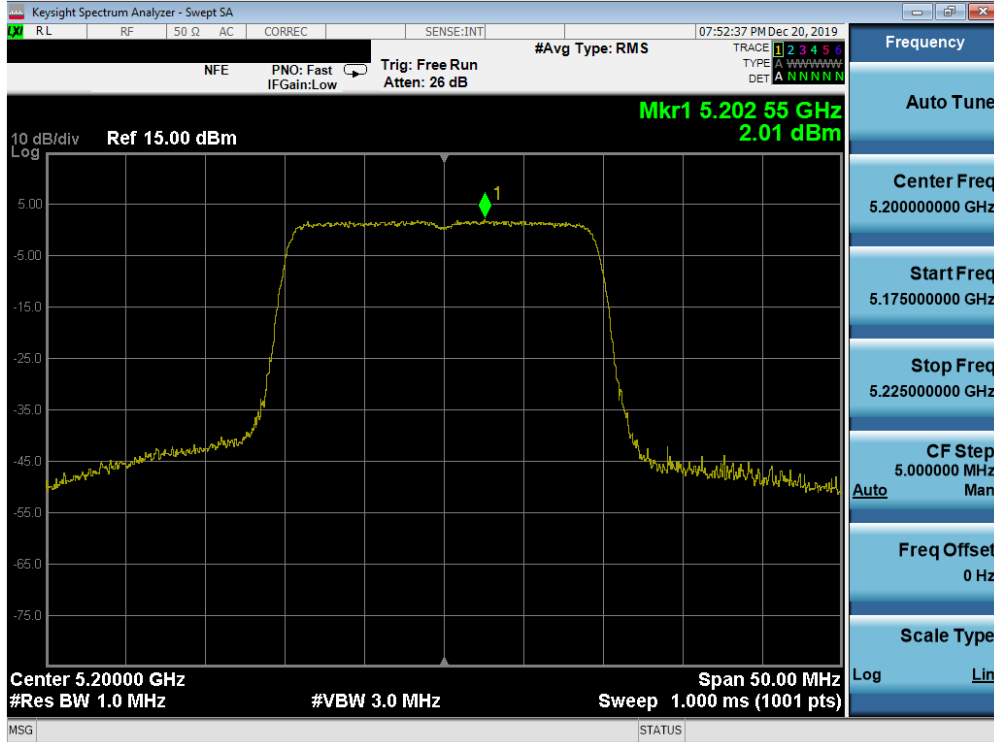


Plot 7-243. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

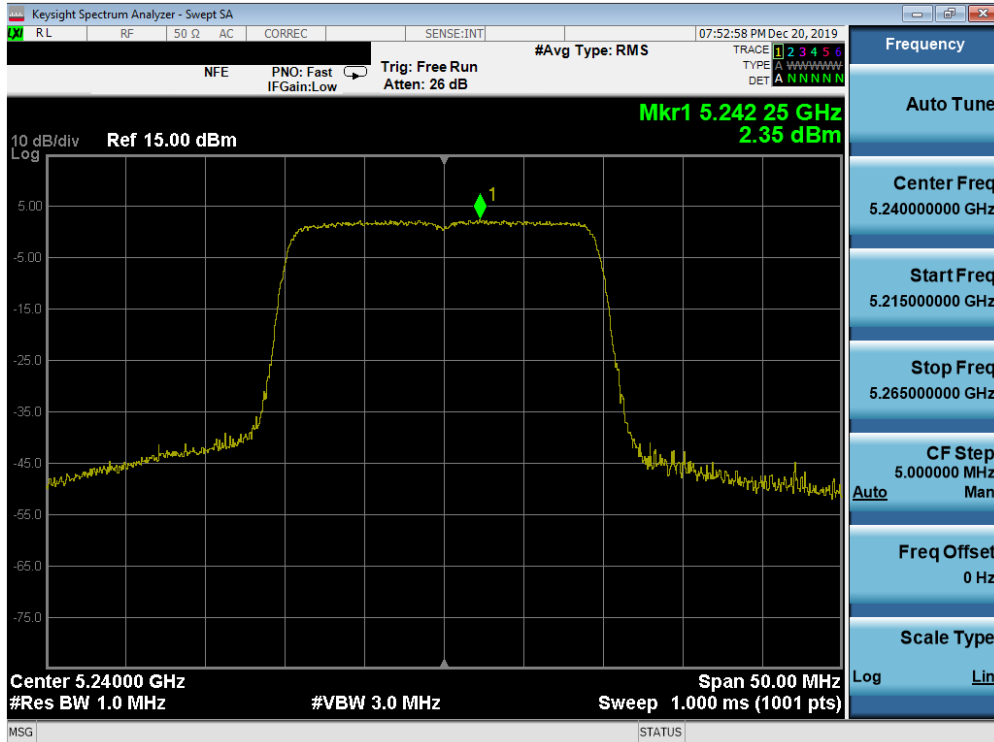


Plot 7-244. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 36)

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 178 of 271

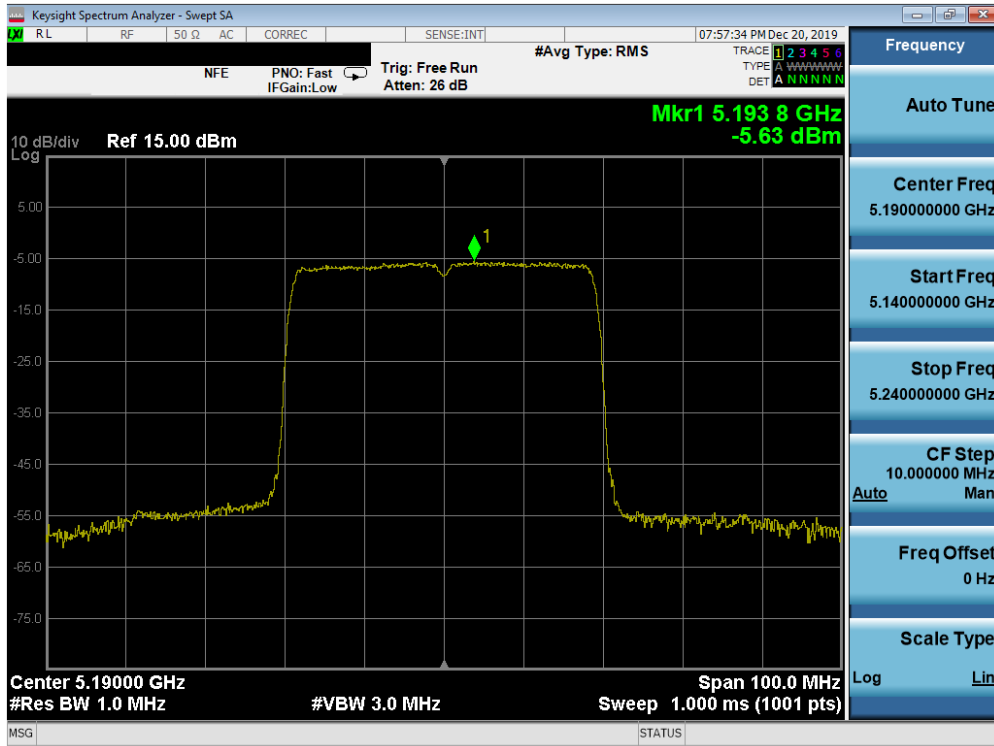


Plot 7-245. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 40)

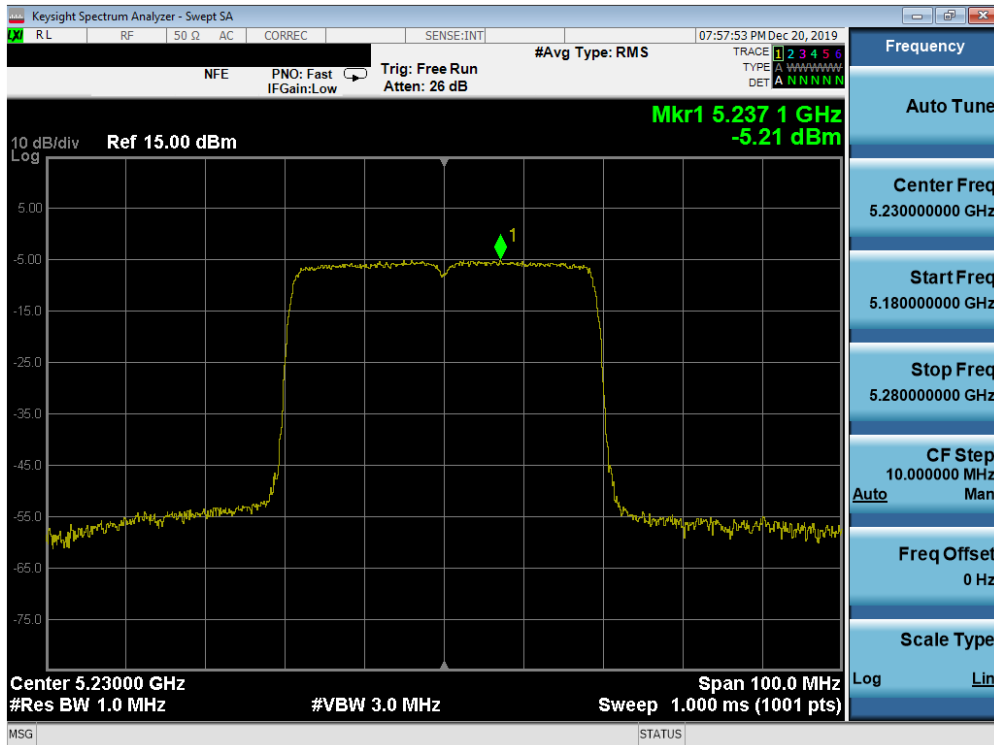


Plot 7-246. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 48)

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 179 of 271

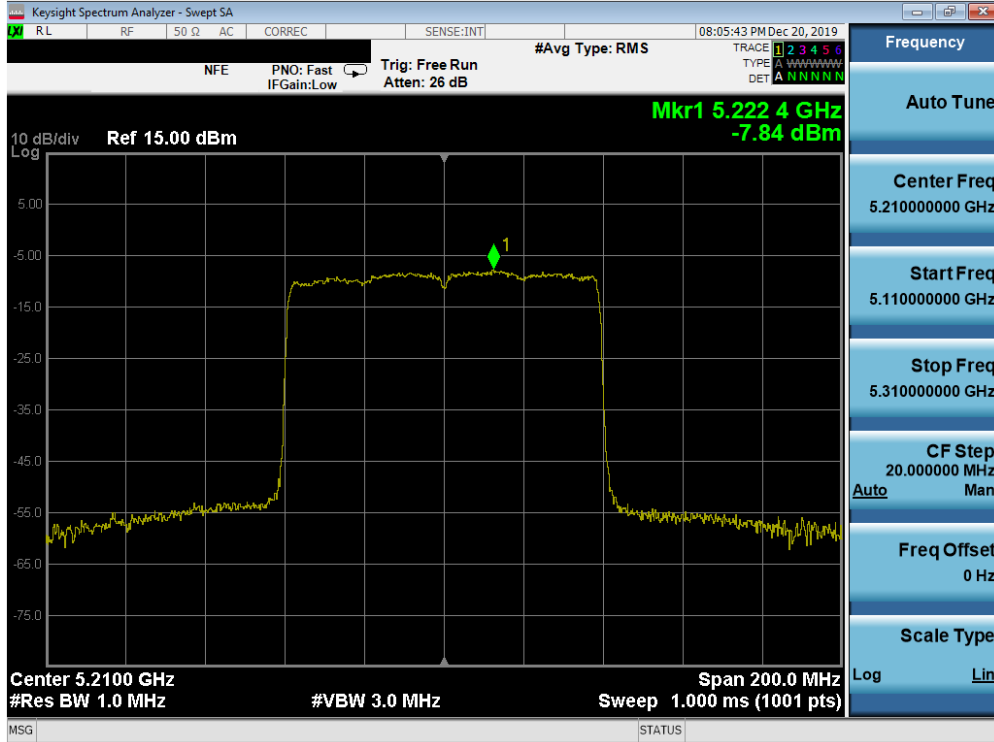


Plot 7-247. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 38)

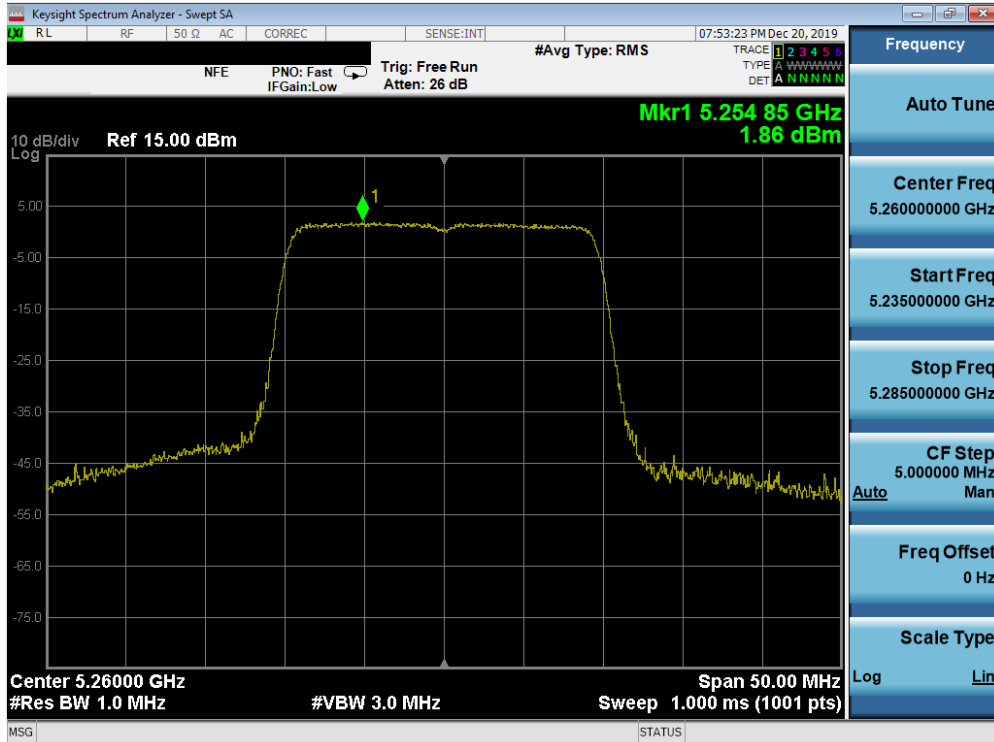


Plot 7-248. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 46)

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 180 of 271

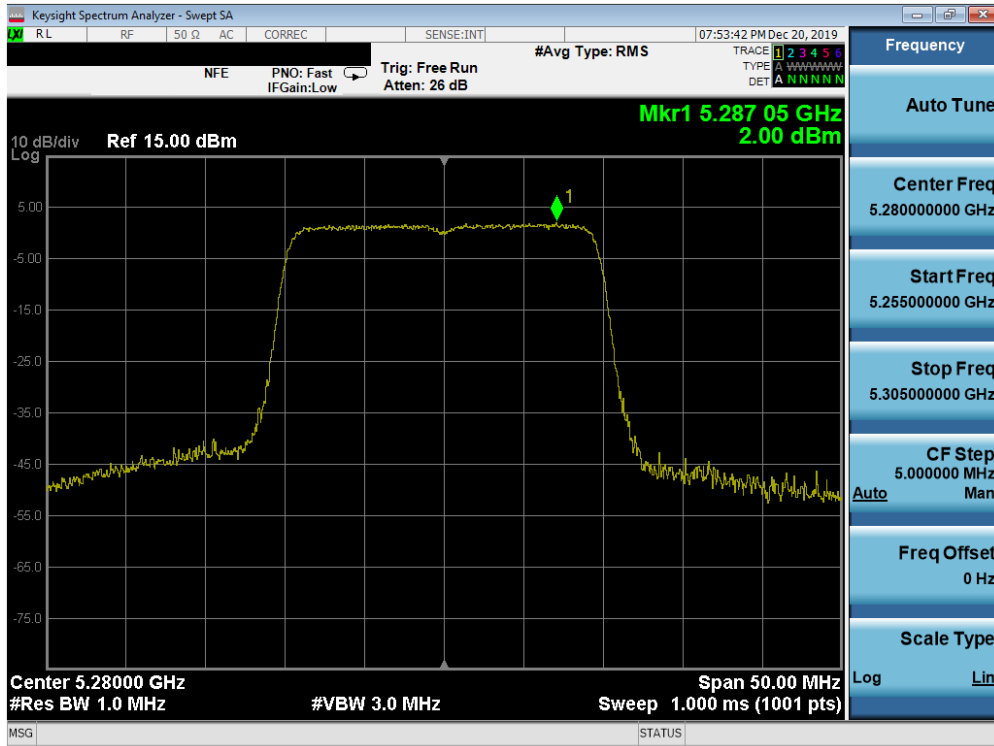


Plot 7-249. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 42)

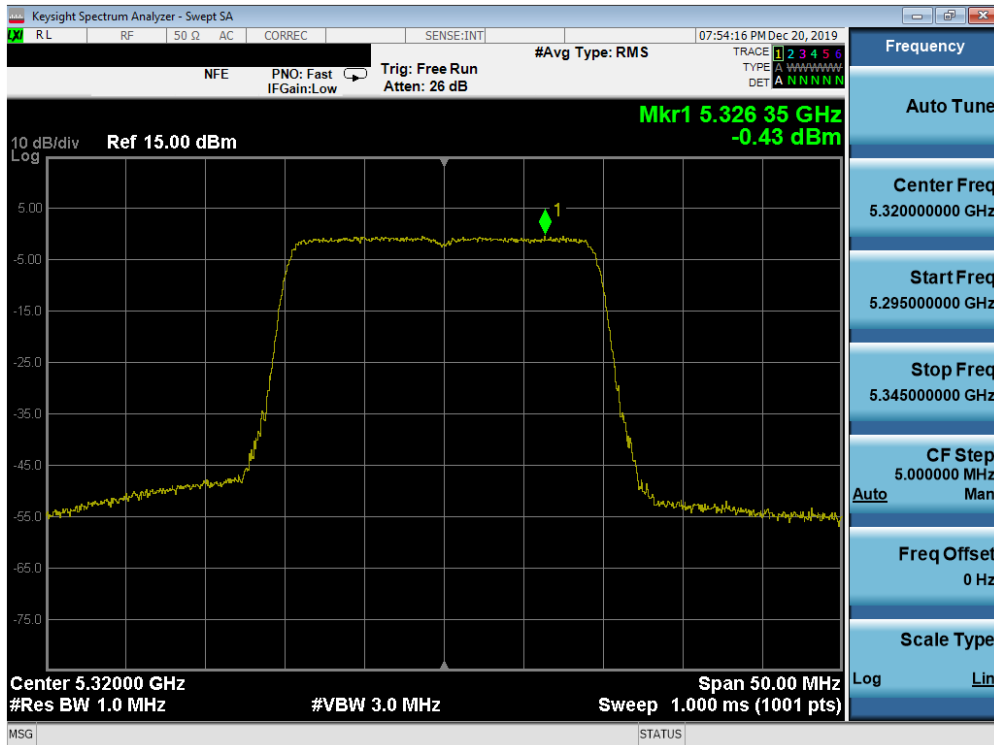


Plot 7-250. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)

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 181 of 271

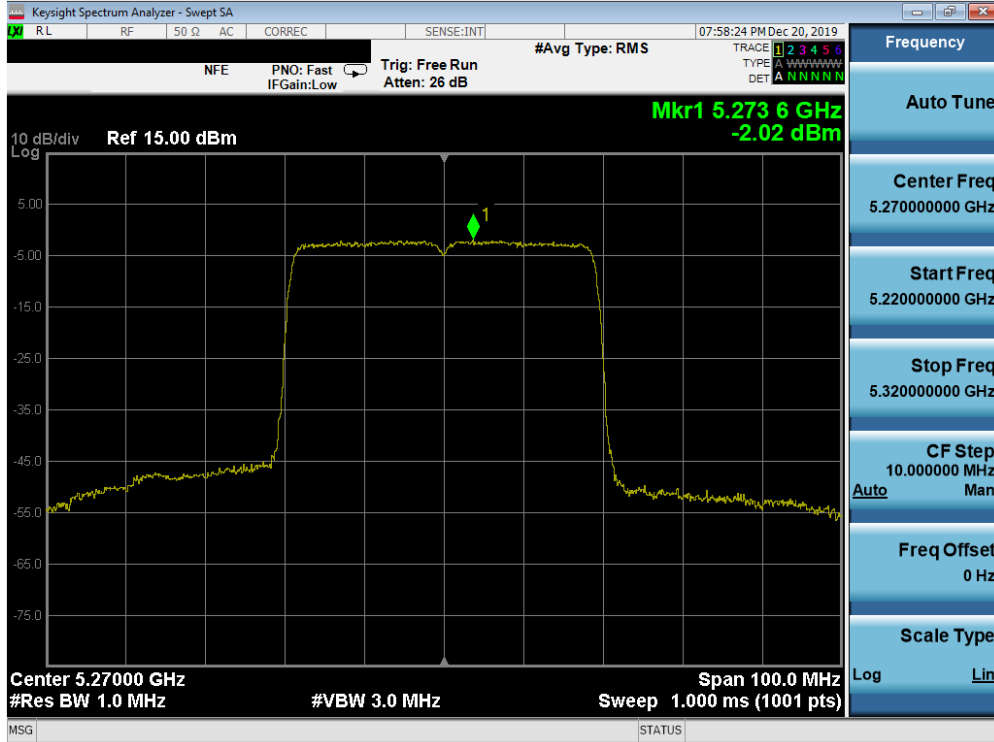


Plot 7-251. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

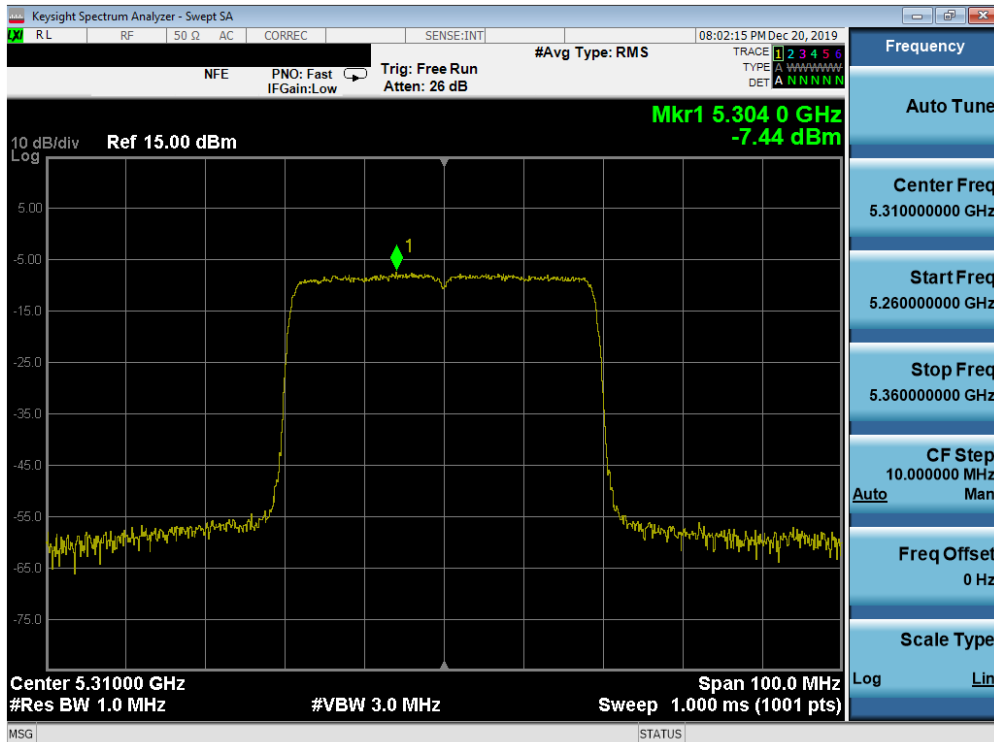


Plot 7-252. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

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 182 of 271

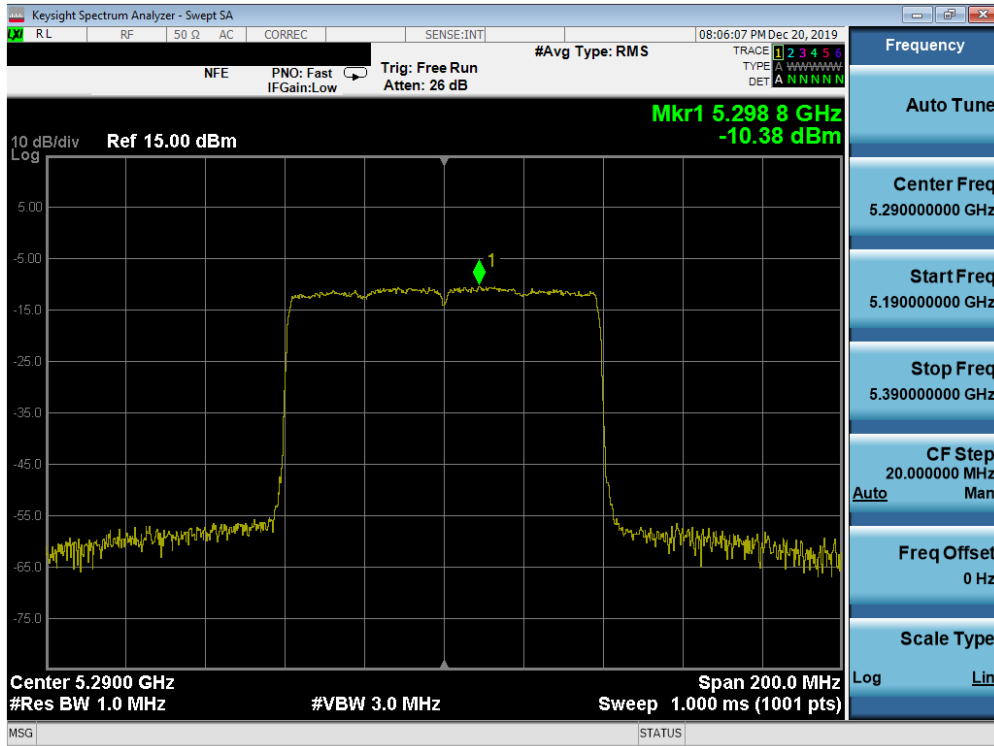


Plot 7-253. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

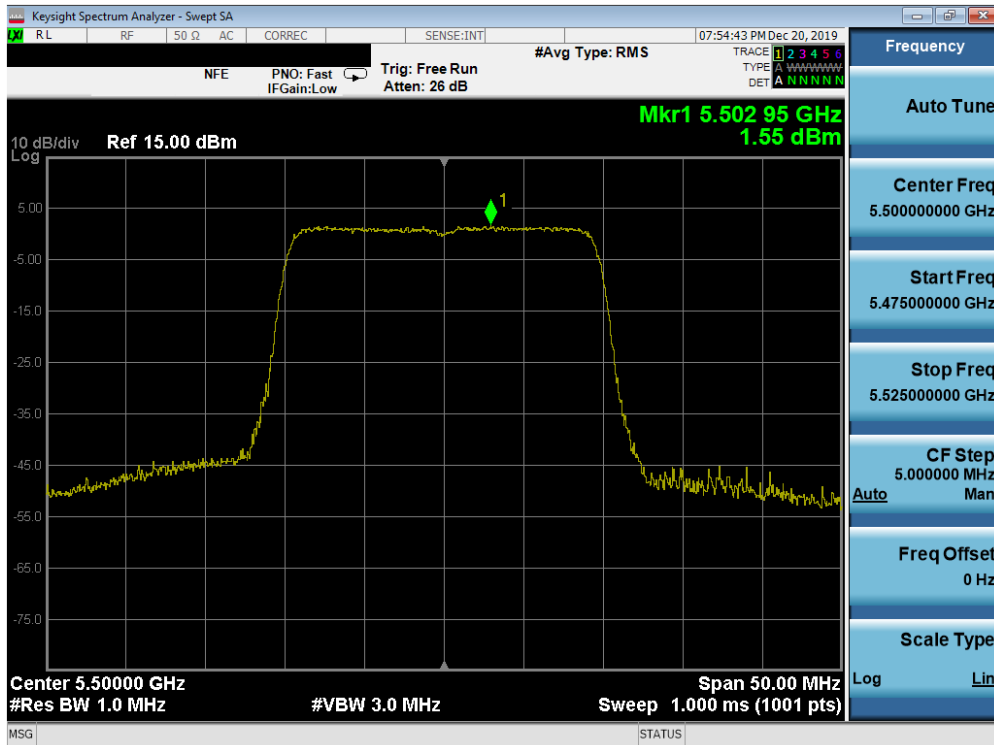


Plot 7-254. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)

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 183 of 271

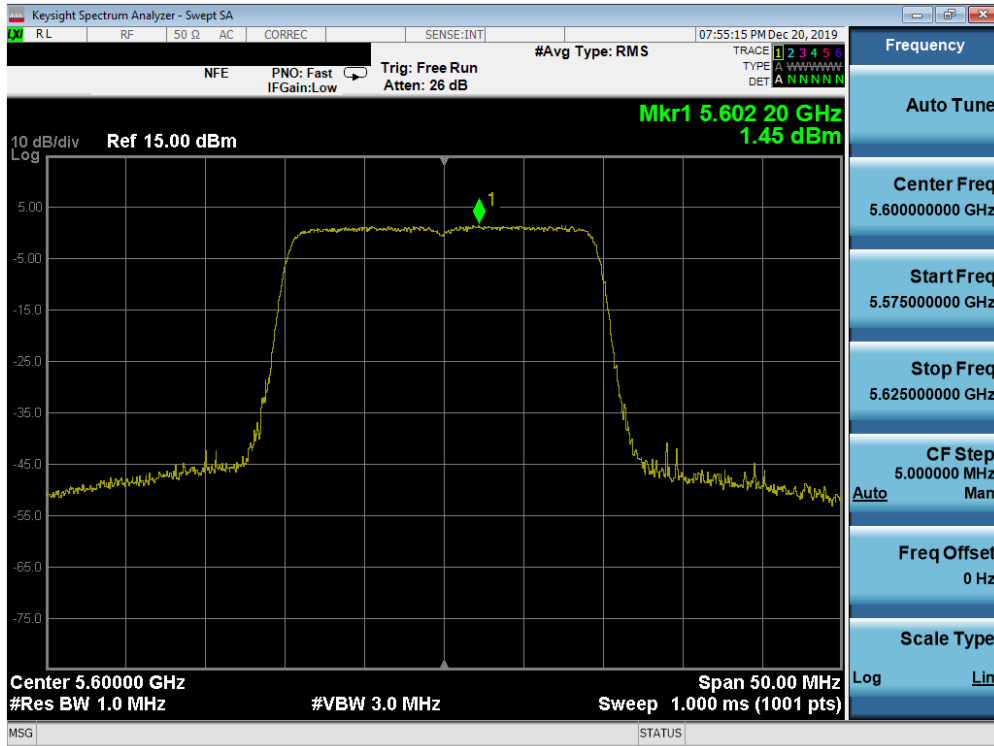


Plot 7-255. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)

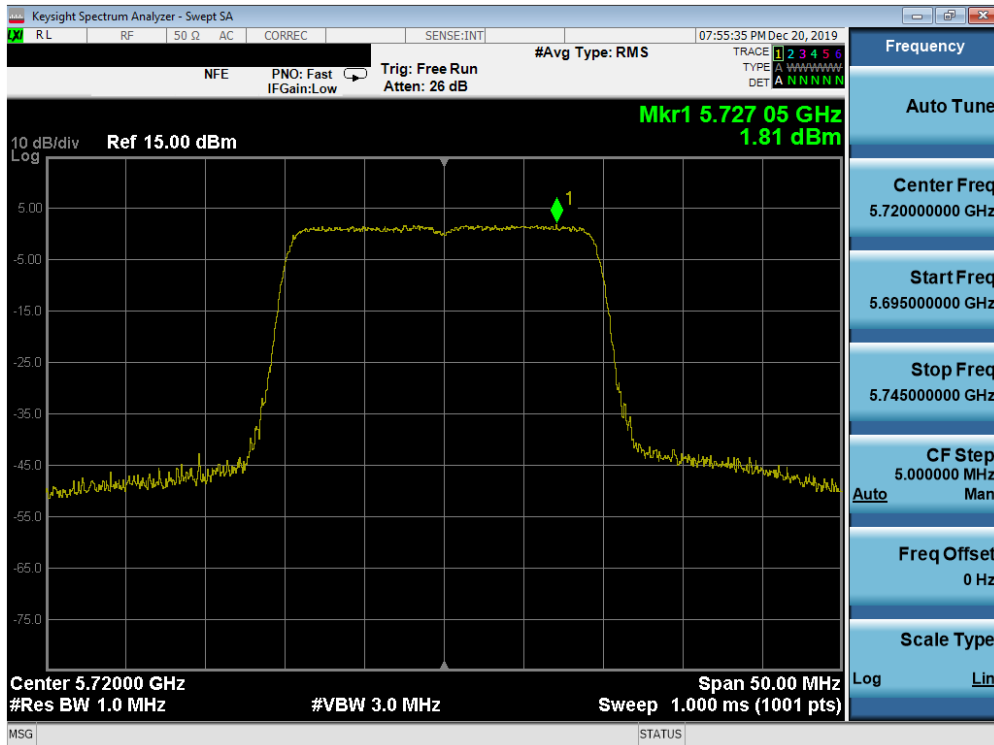


Plot 7-256. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)

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 184 of 271

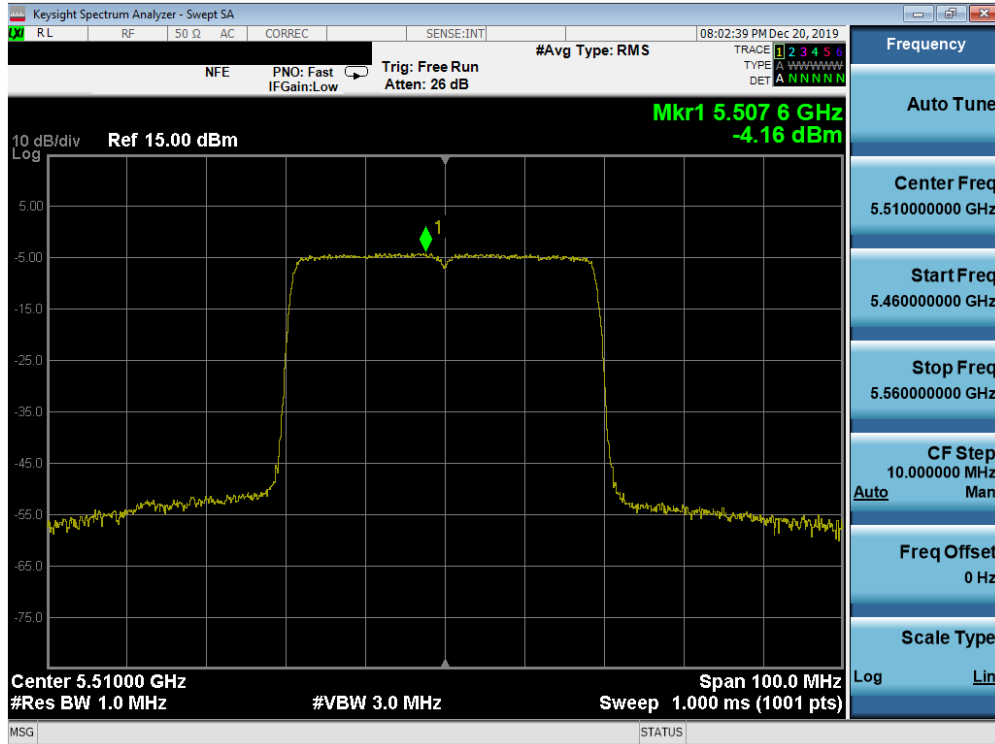


Plot 7-257. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

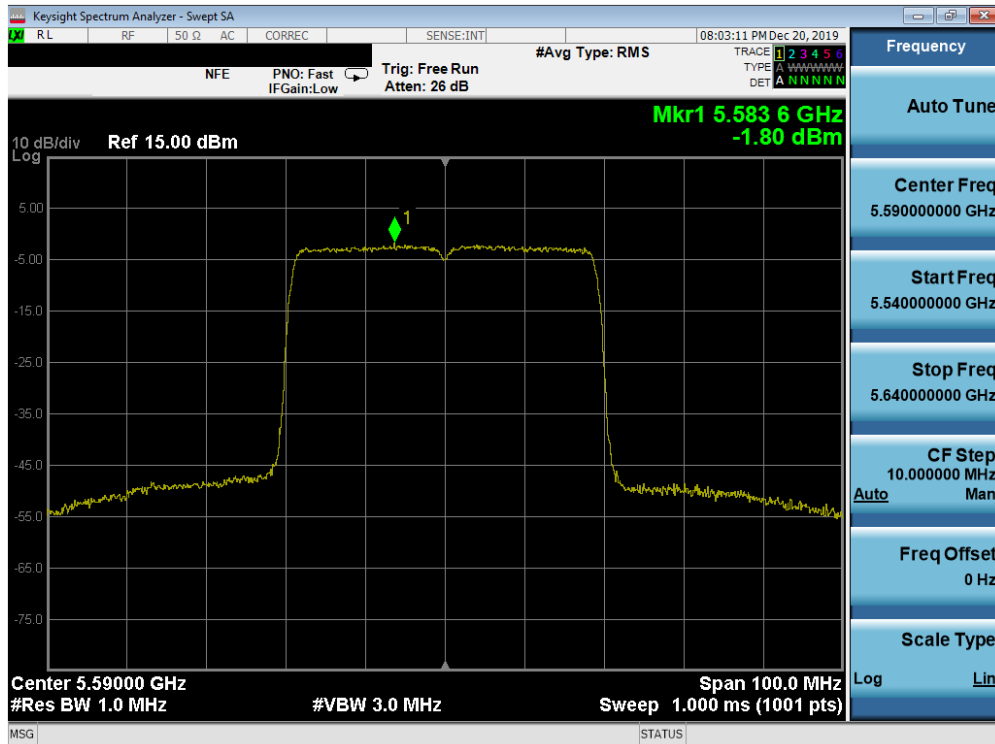


Plot 7-258. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)

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 185 of 271

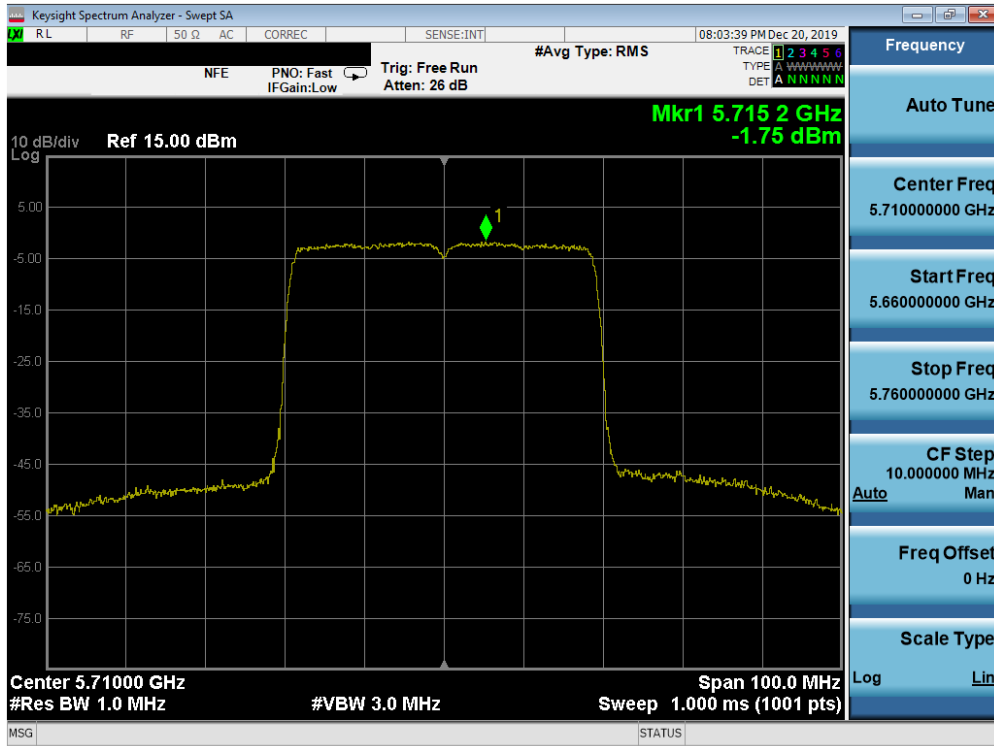


Plot 7-259. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)



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

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 186 of 271

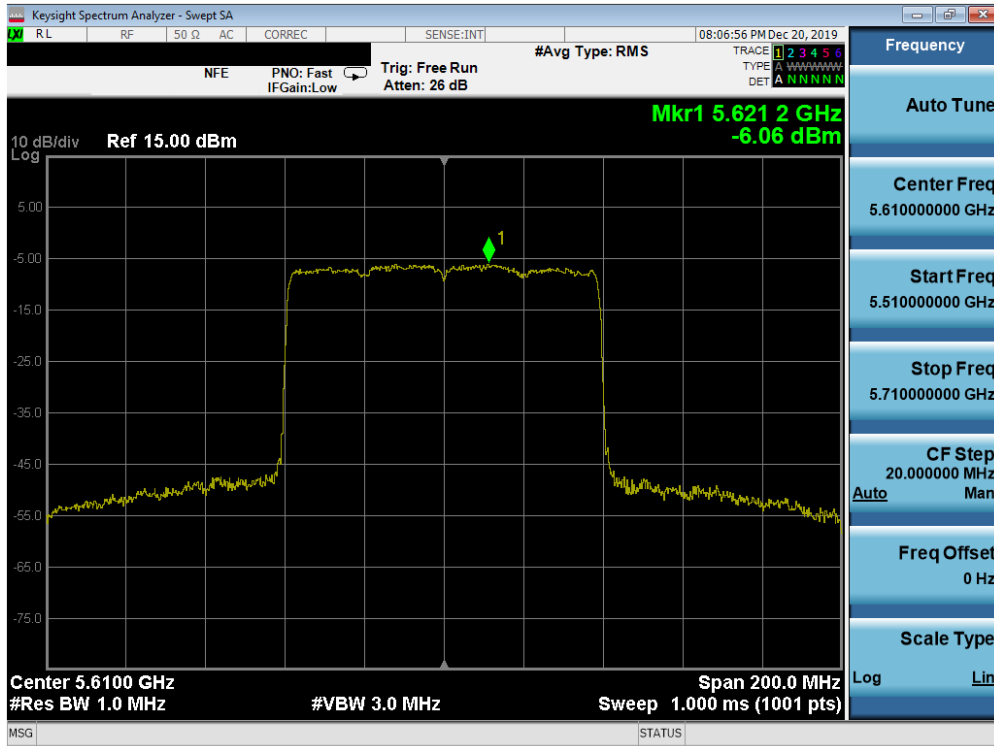


Plot 7-261. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

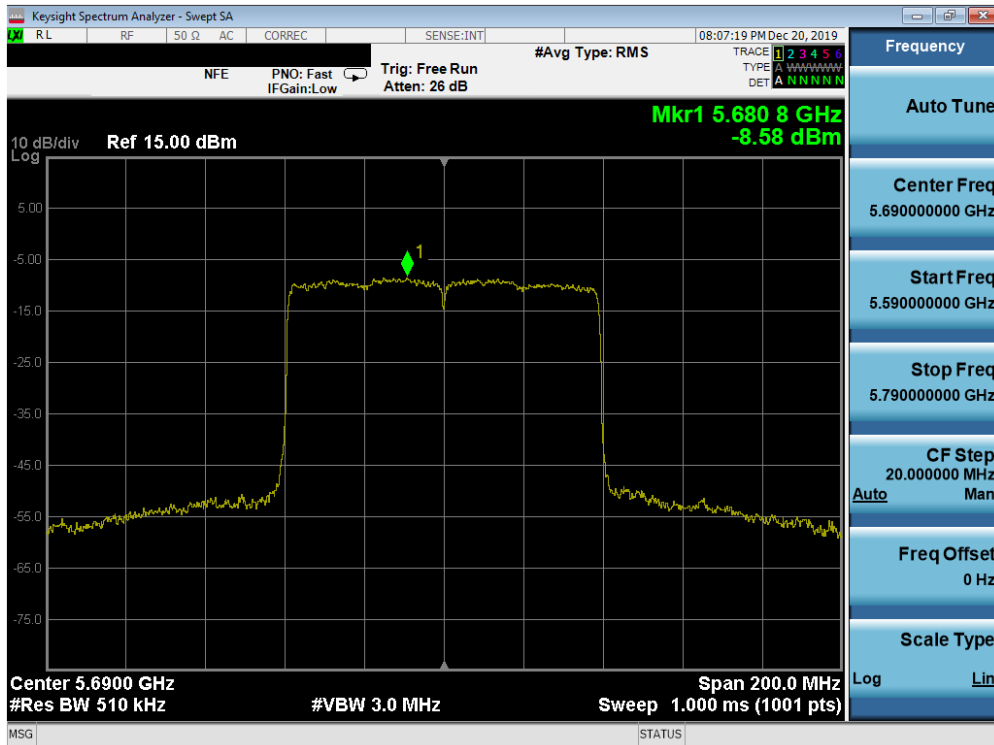


Plot 7-262. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)

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 187 of 271

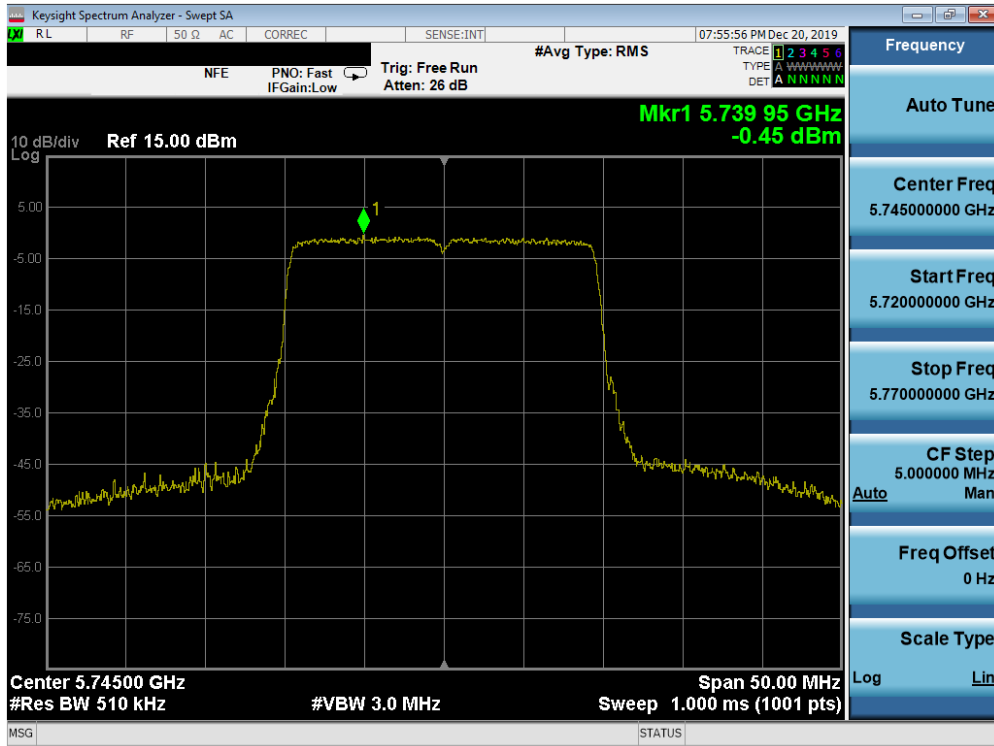


Plot 7-263. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

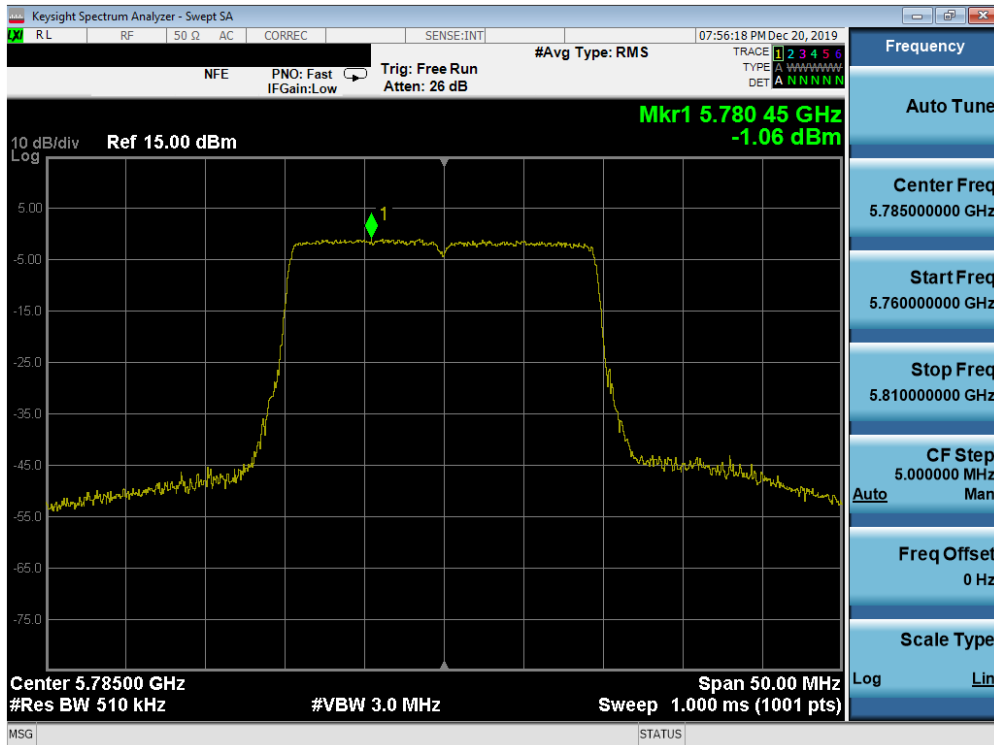


Plot 7-264. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

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 188 of 271

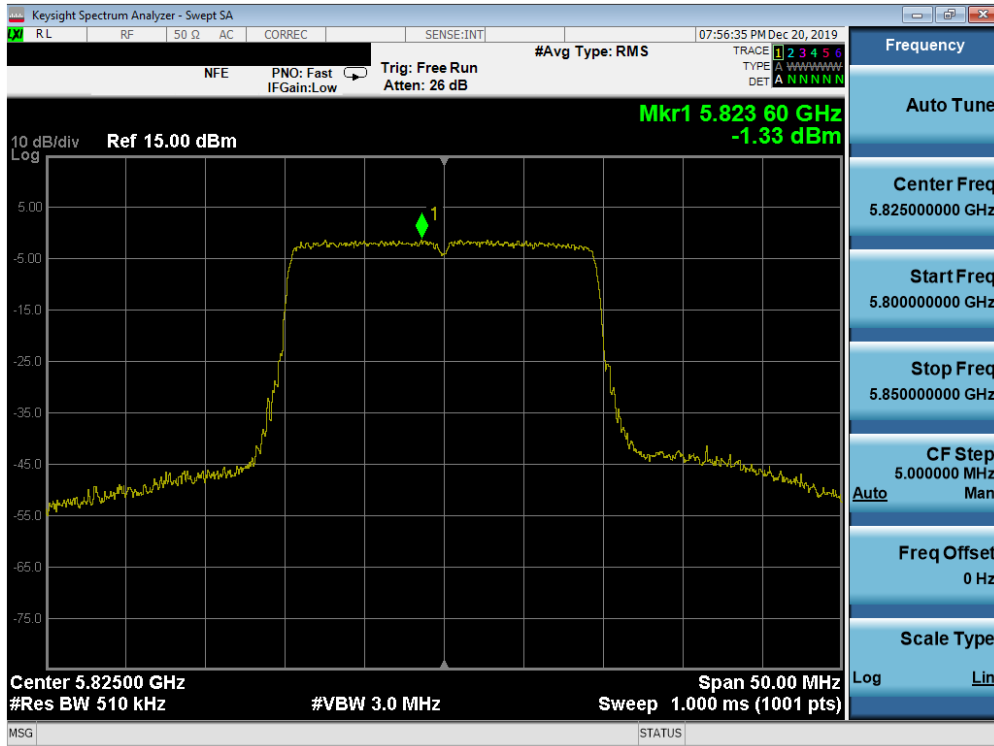


Plot 7-265. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)

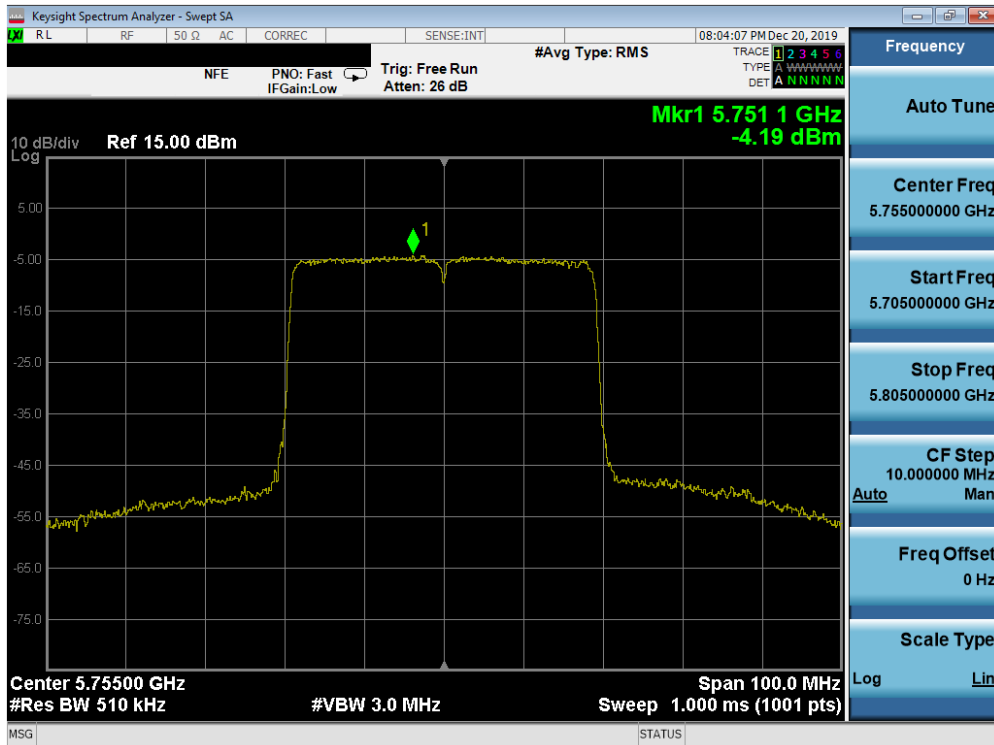


Plot 7-266. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

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 189 of 271

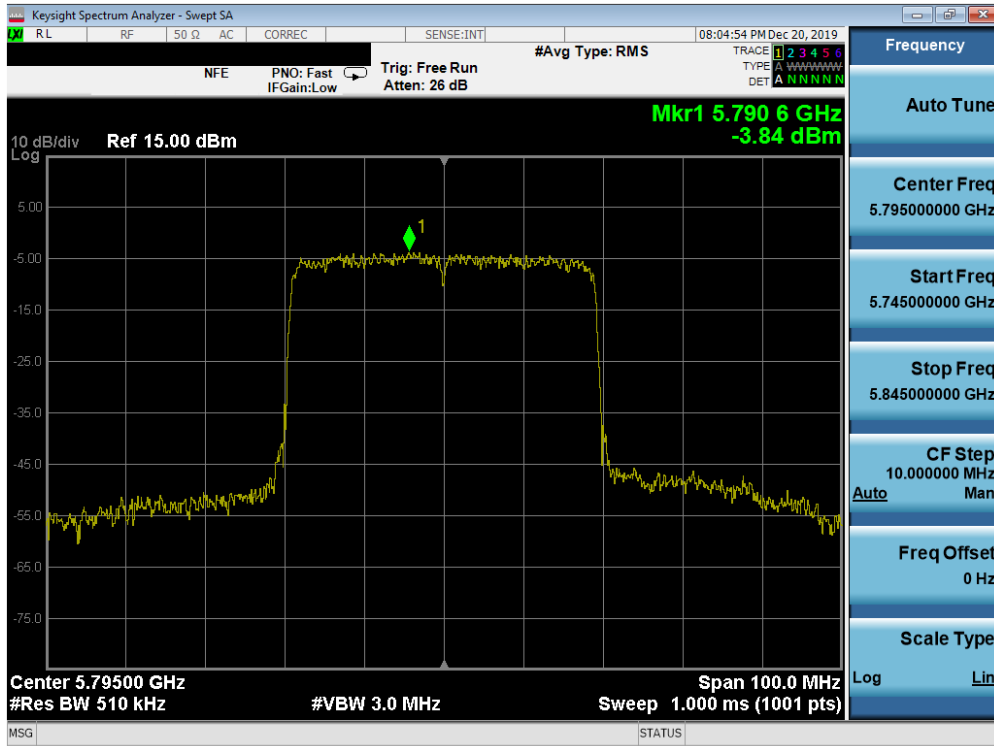


Plot 7-267. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 165)

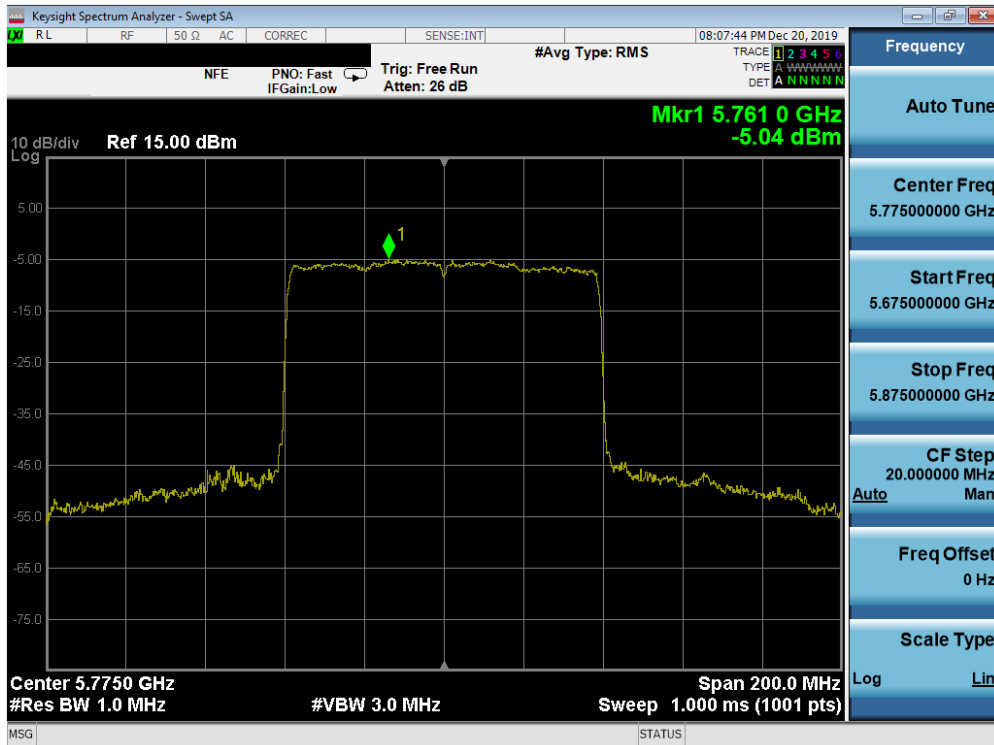


Plot 7-268. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 151)

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 190 of 271



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



Plot 7-270. Power Spectral Density Plot MIMO 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 191 of 271

7.5 Radiated Spurious Emission Measurements – Above 1GHz

§15.407(b) §15.205 §15.209; RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. All channels, modes (e.g. 26 Tones, 52 Tones, 106 Tones, 242 Tones, 484 Tones and 996 Tones), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-30 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-69. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5
KDB 789033 D02 v02r01 – Section G

Test Settings

Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span/RBW}$)
6. Averaging type = power (RMS)
7. Sweep time = auto couple
8. Trace was averaged over 100 sweeps

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Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Test Setup

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

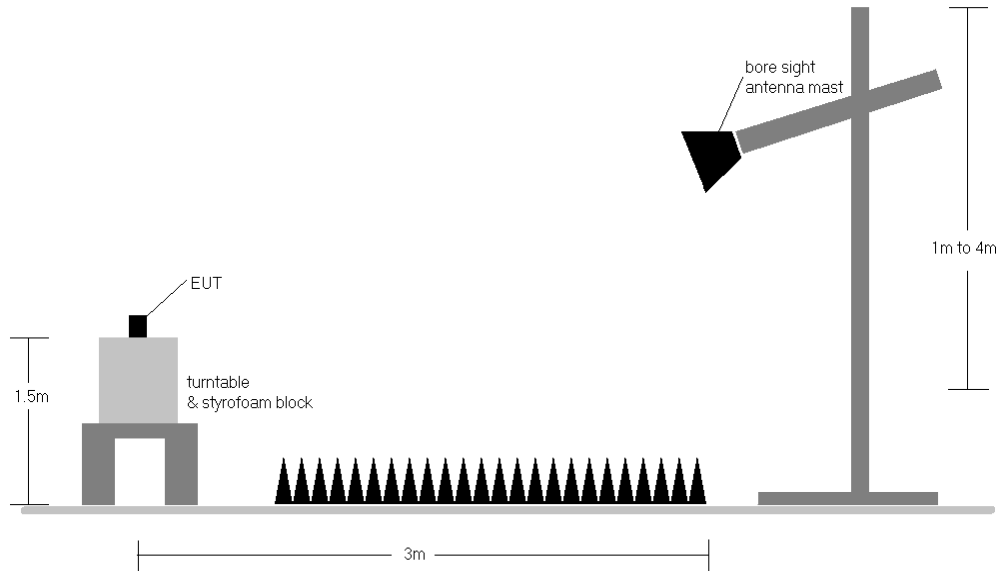


Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Notes

1. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-30.
2. All spurious emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-30. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
8. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
9. For radiated measurements, emissions were investigated for the fully-loaded RU configuration and for all of the partially-loaded RU configurations. Among all of the available partially-loaded RU configurations, only the configuration with the worst case emissions is reported.

Sample Calculations

Determining Spurious Emissions Levels

- Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dBμV/m] – Limit [dBμV/m]

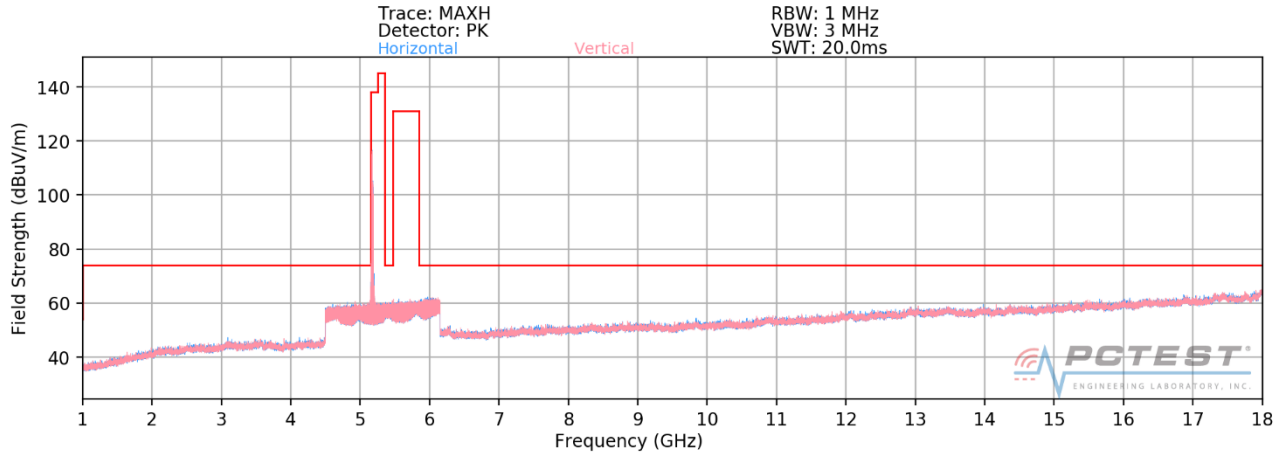
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section Radiated Spurious Emission Measurements – Above 1GHz was calculated using the formula:
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Pre-amplifier Gain

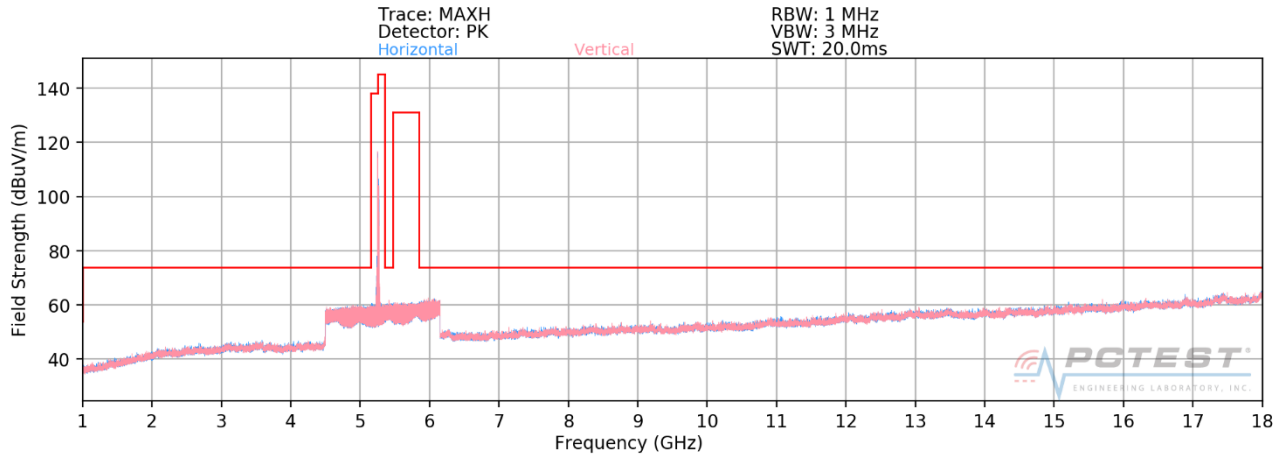
FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.6.1 SISO Antenna-1 Radiated Spurious Emission Measurements

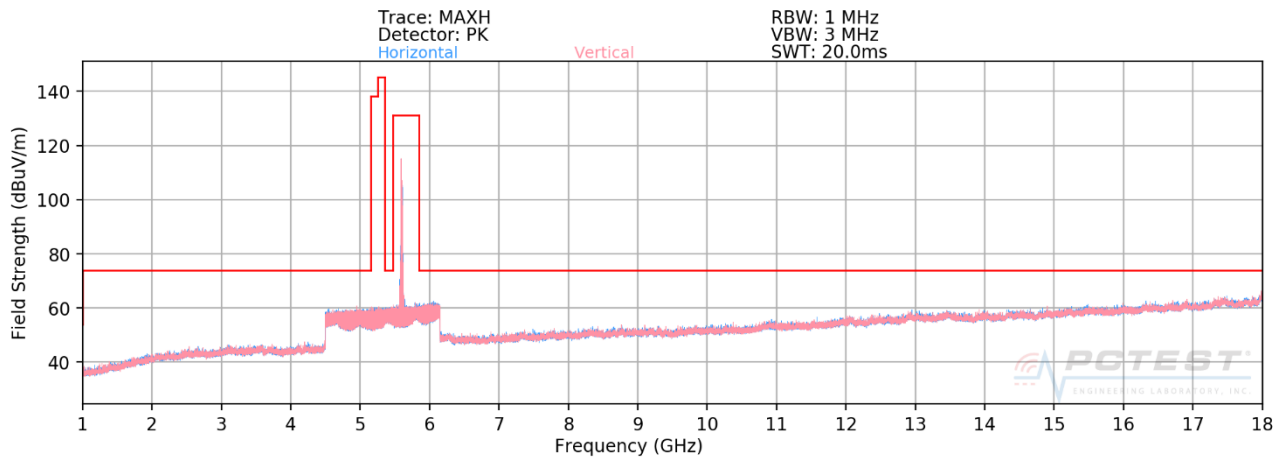
26 Tones



Plot 7-271. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U1 Ch. 40 – 26 Tones)

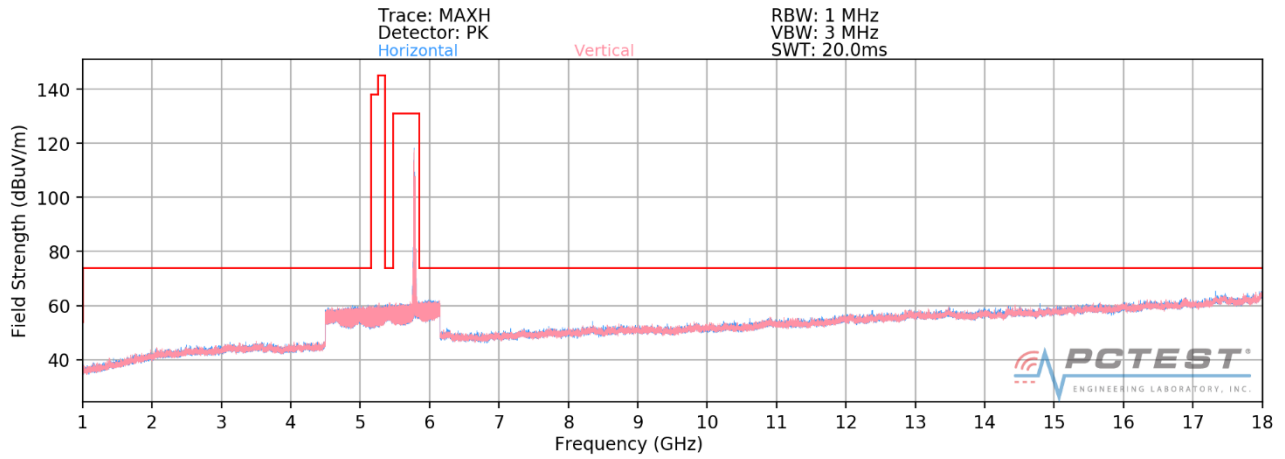


Plot 7-272. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2A Ch. 56 – 26 Tones)



Plot 7-273. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2C Ch. 120 – 26 Tones)

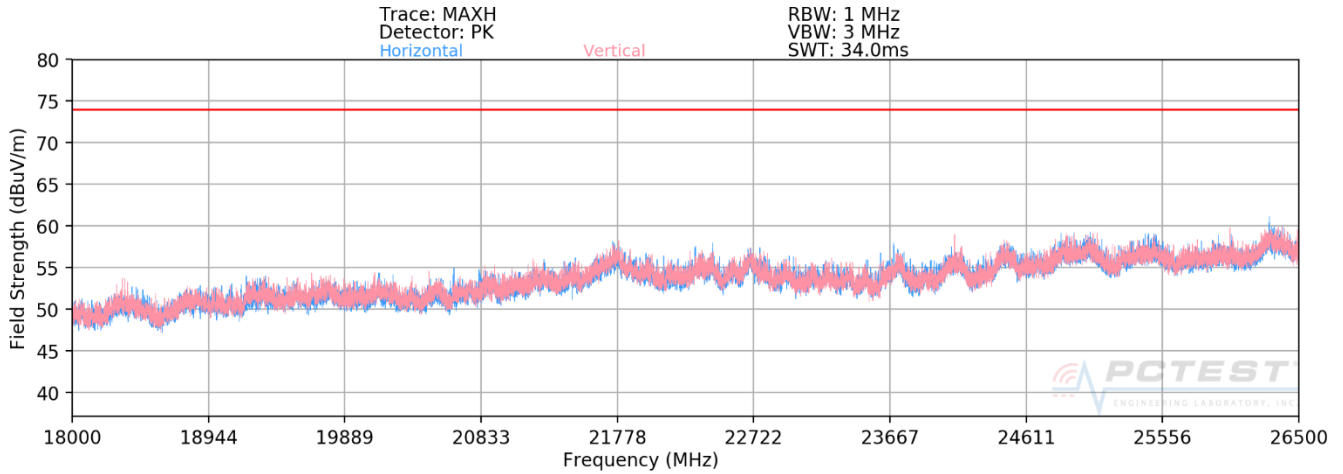
FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 195 of 271



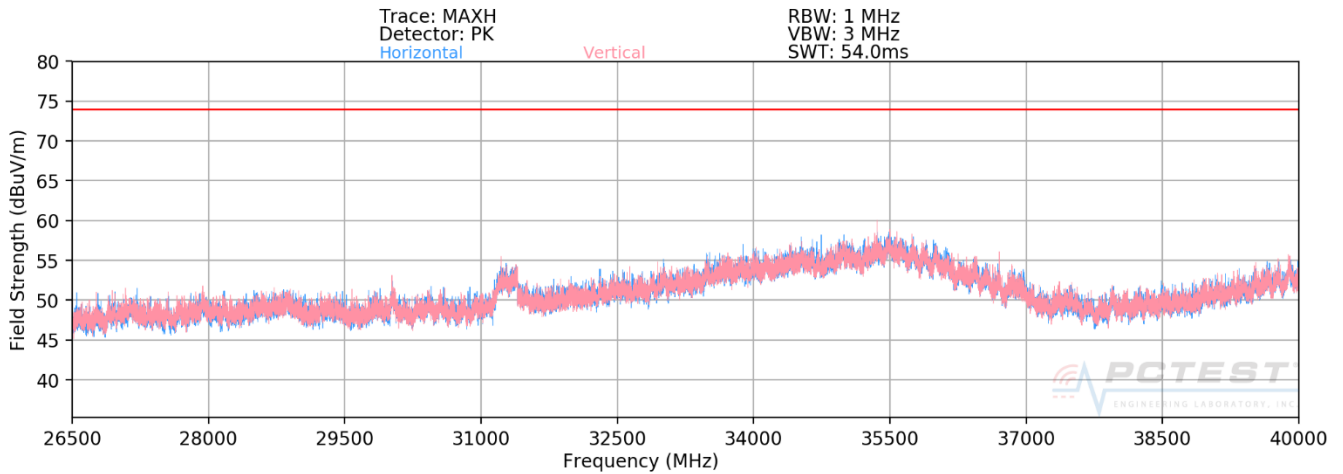
Plot 7-274. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U3 Ch. 157 – 26 Tones)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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SISO Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-275. Radiated Spurious Plot 18GHz - 26.5GHz SISO ANT1 (802.11ax – 26 Tones)



Plot 7-276. Radiated Spurious Plot 26.5GHz - 40GHz SISO ANT1 (802.11ax – 26 Tones)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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SISO Antenna-1 Radiated Spurious Emission Measurements (26 Tones)

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5180MHz
 Channel: 36

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10360.00	Peak	H	223	96	-70.02	11.41	0.00	48.39	68.20	-19.81
* 15540.00	Average	H	-	-	-81.26	13.23	0.00	38.97	53.98	-15.01
* 15540.00	Peak	H	-	-	-69.28	13.23	0.00	50.95	73.98	-23.03
* 20720.00	Average	H	-	-	-72.07	7.97	-9.54	33.36	53.98	-20.62
* 20720.00	Peak	H	-	-	-60.63	7.97	-9.54	44.80	73.98	-29.18
25900.00	Peak	H	-	-	-58.46	10.34	-9.54	49.34	68.20	-18.86

Table 7-70. Radiated Measurements SISO ANT1 (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5200MHz
 Channel: 40

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10400.00	Peak	H	241	106	-69.34	11.17	0.00	48.83	68.20	-19.37
* 15600.00	Average	H	-	-	-82.39	12.81	0.00	37.42	53.98	-16.56
* 15600.00	Peak	H	-	-	-70.28	12.81	0.00	49.53	73.98	-24.45
* 20800.00	Average	H	-	-	-72.19	8.33	-9.54	33.60	53.98	-20.38
* 20800.00	Peak	H	-	-	-60.75	8.33	-9.54	45.04	73.98	-28.94
26000.00	Peak	H	-	-	-58.58	10.61	-9.54	49.49	68.20	-18.71

Table 7-71. Radiated Measurements SISO ANT1 (26 Tones)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5240MHz
 Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	H	256	113	-70.25	11.37	0.00	48.12	68.20	-20.08
* 15720.00	Average	H	-	-	-80.46	15.18	0.00	41.72	53.98	-12.26
* 15720.00	Peak	H	-	-	-68.99	15.18	0.00	53.19	73.98	-20.79
* 20960.00	Average	H	-	-	-72.57	8.52	-9.54	33.41	53.98	-20.57
* 20960.00	Peak	H	-	-	-60.18	8.52	-9.54	45.80	73.98	-28.18
26200.00	Peak	H	-	-	-58.01	10.69	-9.54	50.14	68.20	-18.06

Table 7-72. Radiated Measurements SISO ANT1 (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5260MHz
 Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	H	246	123	-69.66	11.86	0.00	49.20	68.20	-19.00
* 15780.00	Average	H	-	-	-81.22	13.75	0.00	39.53	53.98	-14.45
* 15780.00	Peak	H	-	-	-69.46	13.75	0.00	51.29	73.98	-22.69
* 21040.00	Average	H	-	-	-71.91	8.82	-9.54	34.37	53.98	-19.61
* 21040.00	Peak	H	-	-	-60.23	8.82	-9.54	46.05	73.98	-27.93
26300.00	Peak	H	-	-	-57.31	11.42	-9.54	51.57	68.20	-16.63

Table 7-73. Radiated Measurements SISO ANT1 (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 199 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5280MHz
 Channel: 56

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	H	-	-	-70.23	12.47	0.00	49.24	68.20	-18.96
* 15840.00	Average	H	-	-	-79.66	15.16	0.00	42.50	53.98	-11.48
* 15840.00	Peak	H	-	-	-71.33	15.16	0.00	50.83	73.98	-23.15
* 21120.00	Average	H	-	-	-71.71	8.63	-9.54	34.38	53.98	-19.60
* 21120.00	Peak	H	-	-	-60.73	8.63	-9.54	45.36	73.98	-28.62
26400.00	Peak	H	-	-	-58.21	11.11	-9.54	50.36	68.20	-17.84

Table 7-74. Radiated Measurements SISO ANT1 (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5320MHz
 Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	110	55	-78.38	13.08	0.00	41.70	53.98	-12.28
* 10640.00	Peak	H	110	55	-68.36	13.08	0.00	51.72	73.98	-22.26
* 15960.00	Average	H	-	-	-82.33	13.43	0.00	38.10	53.98	-15.88
* 15960.00	Peak	H	-	-	-69.39	13.43	0.00	51.04	73.98	-22.94
* 21280.00	Average	H	-	-	-71.00	9.03	-9.54	35.49	53.98	-18.49
* 21280.00	Peak	H	-	-	-59.86	9.03	-9.54	46.63	73.98	-27.35
26600.00	Peak	H	-	-	-51.68	-4.38	-9.54	41.40	68.20	-26.80

Table 7-75. Radiated Measurements SISO ANT1 (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 200 of 271

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	H	369	177	-78.66	12.53	0.00	40.87	53.98	-13.11
* 11000.00	Peak	H	369	177	-69.26	12.53	0.00	50.27	73.98	-23.71
16500.00	Peak	H	-	-	-71.29	15.04	0.00	50.75	68.20	-17.45
22000.00	Peak	H	-	-	-59.48	9.58	-9.54	47.56	68.20	-20.64
27500.00	Peak	H	-	-	-50.74	-5.56	-9.54	41.16	68.20	-27.04

Table 7-76. Radiated Measurements SISO ANT1 (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5600MHz
 Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	H	274	155	-80.33	12.67	0.00	39.34	53.98	-14.64
* 11200.00	Peak	H	274	155	-69.33	12.67	0.00	50.34	73.98	-23.64
16800.00	Peak	H	-	-	-67.86	16.04	0.00	55.18	68.20	-13.02
* 22400.00	Average	H	-	-	-71.33	10.49	-9.54	36.62	53.98	-17.36
* 22400.00	Peak	H	-	-	-59.96	10.49	-9.54	47.99	73.98	-25.99
28000.00	Peak	H	-	-	-50.59	-4.84	-9.54	42.03	68.20	-26.17

Table 7-77. Radiated Measurements SISO ANT1 (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 201 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5720MHz
 Channel: 144

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	H	-	-	-81.22	12.70	0.00	38.48	53.98	-15.50
* 11440.00	Peak	H	-	-	-69.04	12.70	0.00	50.66	73.98	-23.32
17160.00	Peak	H	-	-	-69.99	17.71	0.00	54.72	68.20	-13.48
* 22880.00	Average	H	-	-	-72.40	9.96	-9.54	35.02	53.98	-18.96
* 22880.00	Peak	H	-	-	-60.81	9.96	-9.54	46.61	73.98	-27.37
28600.00	Peak	H	-	-	-50.46	-4.40	-9.54	42.60	68.20	-25.60

Table 7-78. Radiated Measurements SISO ANT1 (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5745MHz
 Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	-	-	-80.13	13.38	0.00	40.25	53.98	-13.73
* 11490.00	Peak	H	-	-	-68.33	13.38	0.00	52.05	73.98	-21.93
17235.00	Peak	H	-	-	-69.38	17.44	0.00	55.06	68.20	-13.14
* 22980.00	Average	H	-	-	-72.19	10.35	-9.54	35.62	53.98	-18.36
* 22980.00	Peak	H	-	-	-60.81	10.35	-9.54	47.00	73.98	-26.98
28725.00	Peak	H	-	-	-50.47	-4.88	-9.54	42.11	68.20	-26.09

Table 7-79. Radiated Measurements SISO ANT1 (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 202 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5785MHz
 Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	-	-	-79.33	12.70	0.00	40.37	53.98	-13.61
* 11570.00	Peak	H	-	-	-68.46	12.70	0.00	51.24	73.98	-22.74
17355.00	Peak	H	-	-	-69.62	19.46	0.00	56.84	68.20	-11.36
23140.00	Peak	H	-	-	-60.54	10.05	-9.54	46.97	68.20	-21.23
28925.00	Peak	H	-	-	-50.73	-5.11	-9.54	41.62	68.20	-26.58

Table 7-80. Radiated Measurements SISO ANT1 (26 Tones)

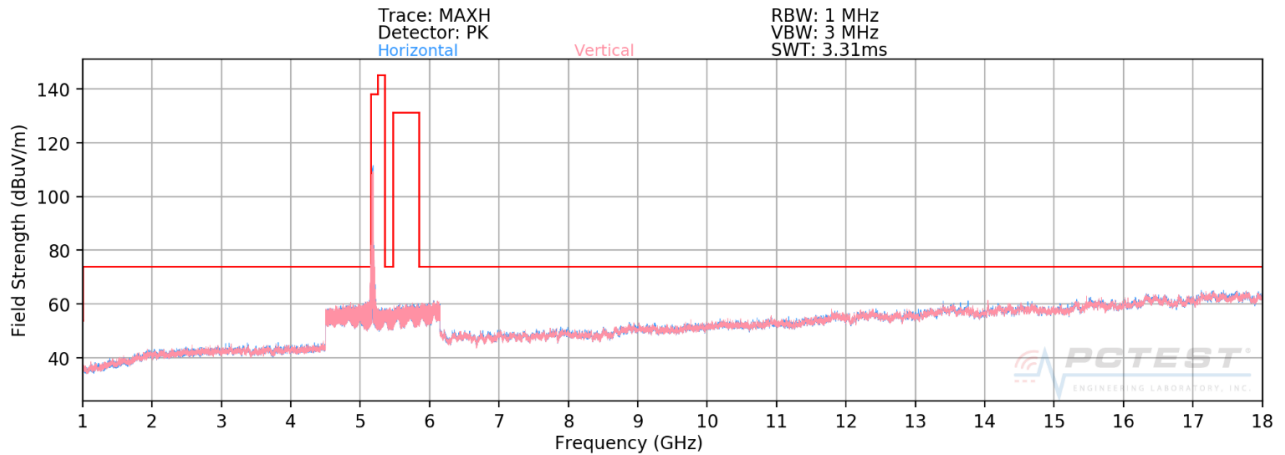
Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5825MHz
 Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	-	-	-81.22	13.24	0.00	39.02	53.98	-14.96
* 11650.00	Peak	H	-	-	-69.76	13.24	0.00	50.48	73.98	-23.50
17475.00	Peak	H	-	-	-68.33	20.06	0.00	58.73	68.20	-9.47
23300.00	Peak	H	-	-	-60.53	9.39	-9.54	46.32	68.20	-21.88
29125.00	Peak	H	-	-	-50.14	-6.06	-9.54	41.26	68.20	-26.94

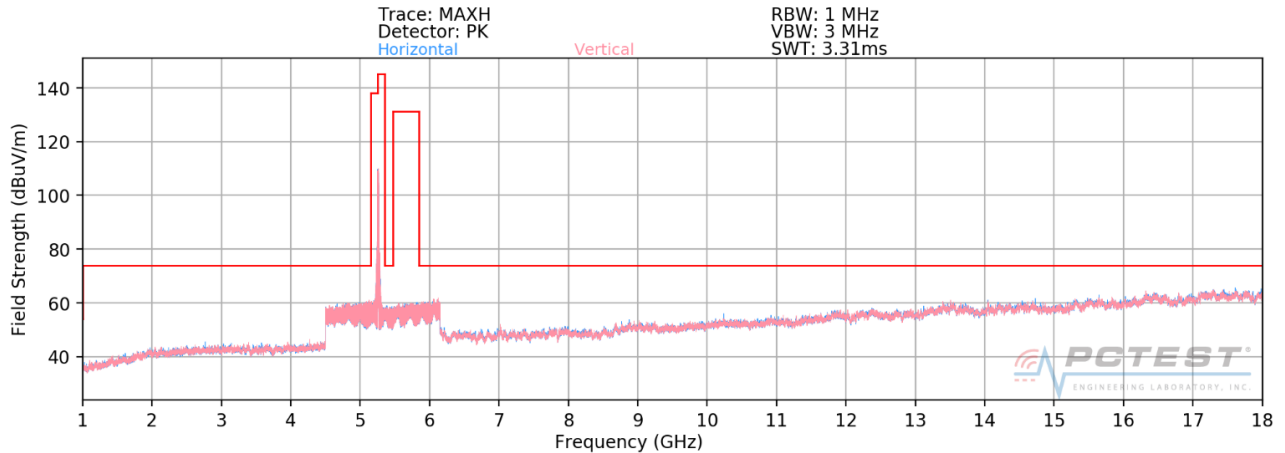
Table 7-81. Radiated Measurements SISO ANT1 (26 Tones)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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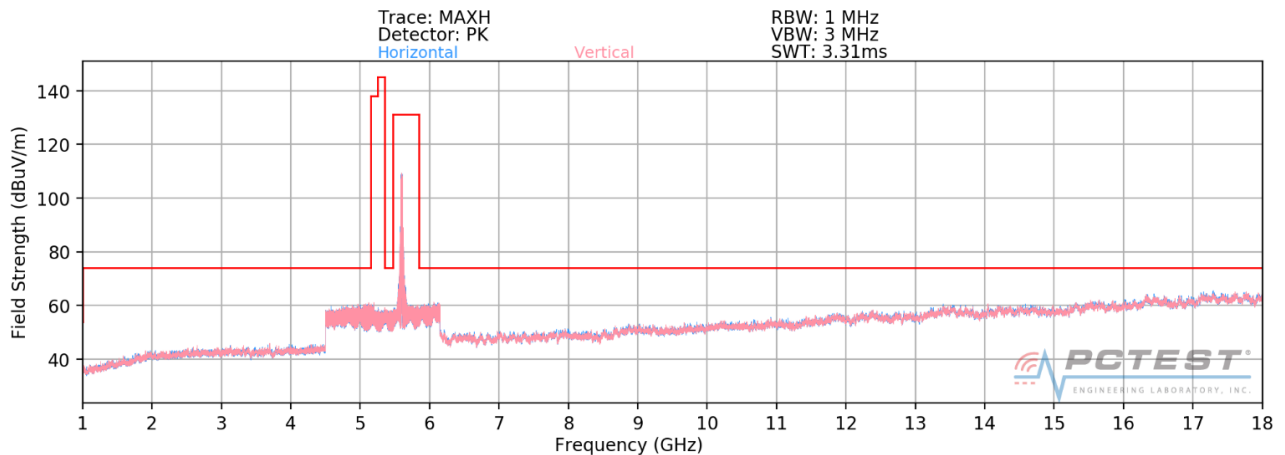
242 Tones



Plot 7-277. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U1 Ch. 40 – 242 Tones)

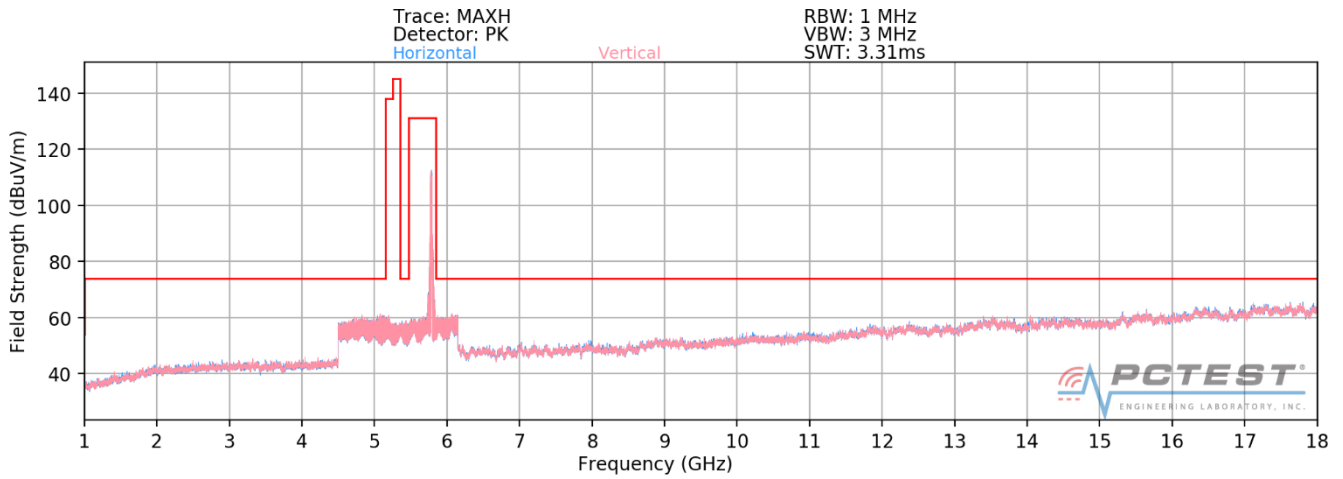


Plot 7-278. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2A Ch. 56 – 242 Tones)



Plot 7-279. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2C Ch. 120 – 242 Tones)

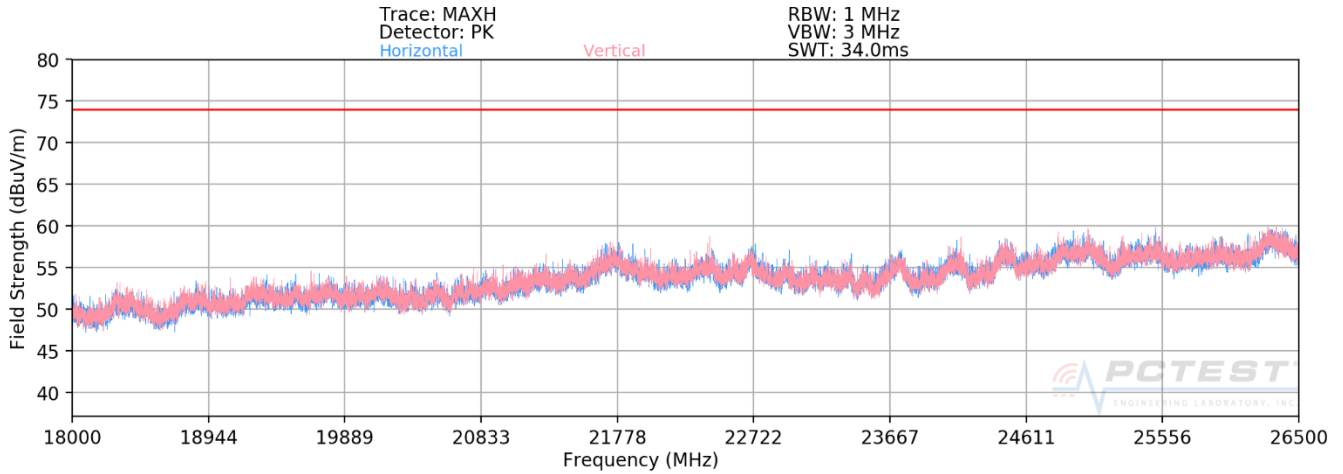
FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-06.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 204 of 271



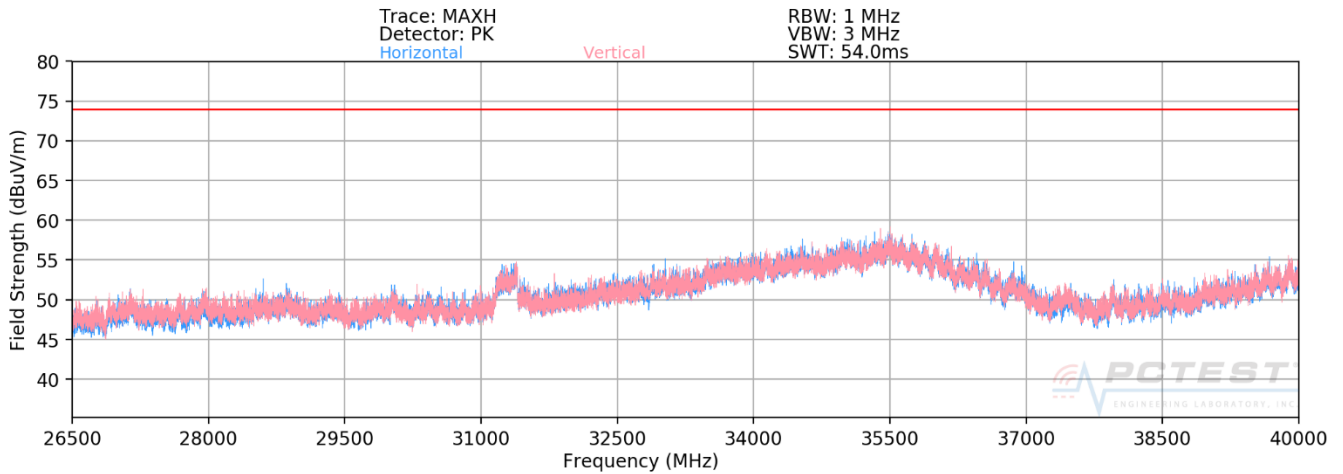
Plot 7-280. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U3 Ch. 157 – 242 Tones)

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 205 of 271

SISO Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-281. Radiated Spurious Plot 18GHz - 26.5GHz SISO ANT1 (802.11ax – 242 Tones)



Plot 7-282. Radiated Spurious Plot 26.5GHz - 40GHz SISO ANT1 (802.11ax – 242 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 206 of 271

SISO Antenna-1 Radiated Spurious Emission Measurements (242 Tones)

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5180MHz
 Channel: 36

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10360.00	Peak	H	266	44	-68.57	11.41	0.00	49.84	68.20	-18.36
* 15540.00	Average	H	-	-	-83.42	13.23	0.00	36.81	53.98	-17.17
* 15540.00	Peak	H	-	-	-70.76	13.23	0.00	49.47	73.98	-24.51
* 20720.00	Average	H	-	-	-72.07	7.97	-9.54	33.36	53.98	-20.62
* 20720.00	Peak	H	-	-	-60.31	7.97	-9.54	45.12	73.98	-28.86
25900.00	Peak	H	-	-	-58.63	10.34	-9.54	49.17	68.20	-19.03

Table 7-82. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5200MHz
 Channel: 40

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10400.00	Peak	H	282	47	-68.88	11.17	0.00	49.29	68.20	-18.91
* 15600.00	Average	H	-	-	-83.90	12.81	0.00	35.91	53.98	-18.07
* 15600.00	Peak	H	-	-	-70.78	12.81	0.00	49.03	73.98	-24.95
* 20800.00	Average	H	-	-	-72.24	8.33	-9.54	33.55	53.98	-20.43
* 20800.00	Peak	H	-	-	-61.06	8.33	-9.54	44.73	73.98	-29.25
26000.00	Peak	H	-	-	-58.36	10.61	-9.54	49.71	68.20	-18.49

Table 7-83. Radiated Measurements SISO ANT1 (242 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 207 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5240MHz
 Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	H	278	35	-68.63	11.37	0.00	49.74	68.20	-18.46
* 15720.00	Average	H	-	-	-83.46	15.18	0.00	38.72	53.98	-15.26
* 15720.00	Peak	H	-	-	-69.90	15.18	0.00	52.28	73.98	-21.70
* 20960.00	Average	H	-	-	-72.55	8.52	-9.54	33.43	53.98	-20.55
* 20960.00	Peak	H	-	-	-61.14	8.52	-9.54	44.84	73.98	-29.14
26200.00	Peak	H	-	-	-59.18	10.69	-9.54	48.97	68.20	-19.23

Table 7-84. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5260MHz
 Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	H	297	44	-68.89	11.86	0.00	49.97	68.20	-18.23
* 15780.00	Average	H	-	-	-84.04	13.75	0.00	36.71	53.98	-17.27
* 15780.00	Peak	H	-	-	-71.08	13.75	0.00	49.67	73.98	-24.31
* 21040.00	Average	H	-	-	-71.94	8.82	-9.54	34.34	53.98	-19.64
* 21040.00	Peak	H	-	-	-60.62	8.82	-9.54	45.66	73.98	-28.32
26300.00	Peak	H	-	-	-58.20	11.42	-9.54	50.68	68.20	-17.52

Table 7-85. Radiated Measurements SISO ANT1 (242 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 208 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5280MHz
 Channel: 56

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	H	303	55	-68.34	12.47	0.00	51.13	68.20	-17.07
* 15840.00	Average	H	-	-	-83.35	15.16	0.00	38.81	53.98	-15.17
* 15840.00	Peak	H	-	-	-70.71	15.16	0.00	51.45	73.98	-22.53
* 21120.00	Average	H	-	-	-71.70	8.63	-9.54	34.39	53.98	-19.59
* 21120.00	Peak	H	-	-	-60.15	8.63	-9.54	45.94	73.98	-28.04
26400.00	Peak	H	-	-	-57.84	11.11	-9.54	50.73	68.20	-17.47

Table 7-86. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5320MHz
 Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	279	35	-80.90	13.08	0.00	39.18	53.98	-14.80
* 10640.00	Peak	H	279	35	-68.06	13.08	0.00	52.02	73.98	-21.96
* 15960.00	Average	H	-	-	-84.17	13.43	0.00	36.26	53.98	-17.72
* 15960.00	Peak	H	-	-	-71.12	13.43	0.00	49.31	73.98	-24.67
* 21280.00	Average	H	-	-	-71.35	9.03	-9.54	35.14	53.98	-18.84
* 21280.00	Peak	H	-	-	-59.81	9.03	-9.54	46.68	73.98	-27.30
26600.00	Peak	H	-	-	-51.83	-4.38	-9.54	41.25	68.20	-26.95

Table 7-87. Radiated Measurements SISO ANT1 (242 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 209 of 271

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	H	253	54	-83.59	12.53	0.00	35.94	53.98	-18.04
* 11000.00	Peak	H	253	54	-70.73	12.53	0.00	48.80	73.98	-25.18
16500.00	Peak	H	-	-	-71.80	15.04	0.00	50.24	68.20	-17.96
22000.00	Peak	H	-	-	-59.49	9.58	-9.54	47.55	68.20	-20.65
27500.00	Peak	H	-	-	-50.08	-5.56	-9.54	41.82	68.20	-26.38

Table 7-88. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5600MHz
 Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	H	125	274	-83.64	12.67	0.00	36.03	53.98	-17.95
* 11200.00	Peak	H	125	274	-70.71	12.67	0.00	48.96	73.98	-25.02
16800.00	Peak	H	-	-	-71.64	16.04	0.00	51.40	68.20	-16.80
* 22400.00	Average	H	-	-	-71.52	10.49	-9.54	36.43	53.98	-17.55
* 22400.00	Peak	H	-	-	-60.26	10.49	-9.54	47.69	73.98	-26.29
28000.00	Peak	H	-	-	-50.72	-4.84	-9.54	41.90	68.20	-26.30

Table 7-89. Radiated Measurements SISO ANT1 (242 Tones)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5720MHz
 Channel: 144

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	H	148	95	-83.50	12.70	0.00	36.20	53.98	-17.78
* 11440.00	Peak	H	148	95	-70.84	12.70	0.00	48.86	73.98	-25.12
17160.00	Peak	H	-	-	-70.91	17.71	0.00	53.80	68.20	-14.40
* 22880.00	Average	H	-	-	-72.37	9.96	-9.54	35.05	53.98	-18.93
* 22880.00	Peak	H	-	-	-61.43	9.96	-9.54	45.99	73.98	-27.99
28600.00	Peak	H	-	-	-50.01	-4.40	-9.54	43.05	68.20	-25.15

Table 7-90. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5745MHz
 Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	152	78	-83.67	13.38	0.00	36.71	53.98	-17.27
* 11490.00	Peak	H	152	78	-71.18	13.38	0.00	49.20	73.98	-24.78
17235.00	Peak	H	-	-	-71.41	17.44	0.00	53.03	68.20	-15.17
* 22980.00	Average	H	-	-	-72.24	10.35	-9.54	35.57	53.98	-18.41
* 22980.00	Peak	H	-	-	-60.08	10.35	-9.54	47.73	73.98	-26.25
28725.00	Peak	H	-	-	-49.28	-4.88	-9.54	43.30	68.20	-24.90

Table 7-91. Radiated Measurements SISO ANT1 (242 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 211 of 271	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5785MHz
 Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	117	304	-83.24	12.70	0.00	36.46	53.98	-17.52
* 11570.00	Peak	H	117	304	-70.27	12.70	0.00	49.43	73.98	-24.55
17355.00	Peak	H	-	-	-71.77	19.46	0.00	54.69	68.20	-13.51
23140.00	Peak	H	-	-	-60.43	10.05	-9.54	47.08	68.20	-21.12
28925.00	Peak	H	-	-	-50.42	-5.11	-9.54	41.93	68.20	-26.27

Table 7-92. Radiated Measurements SISO ANT1 (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5825MHz
 Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	139	349	-83.59	13.24	0.00	36.65	53.98	-17.33
* 11650.00	Peak	H	139	349	-70.39	13.24	0.00	49.85	73.98	-24.13
17475.00	Peak	H	-	-	-71.19	20.06	0.00	55.87	68.20	-12.33
23300.00	Peak	H	-	-	-61.17	9.39	-9.54	45.68	68.20	-22.52
29125.00	Peak	H	-	-	-49.54	-6.06	-9.54	41.86	68.20	-26.34

Table 7-93. Radiated Measurements SISO ANT1 (242 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 212 of 271	