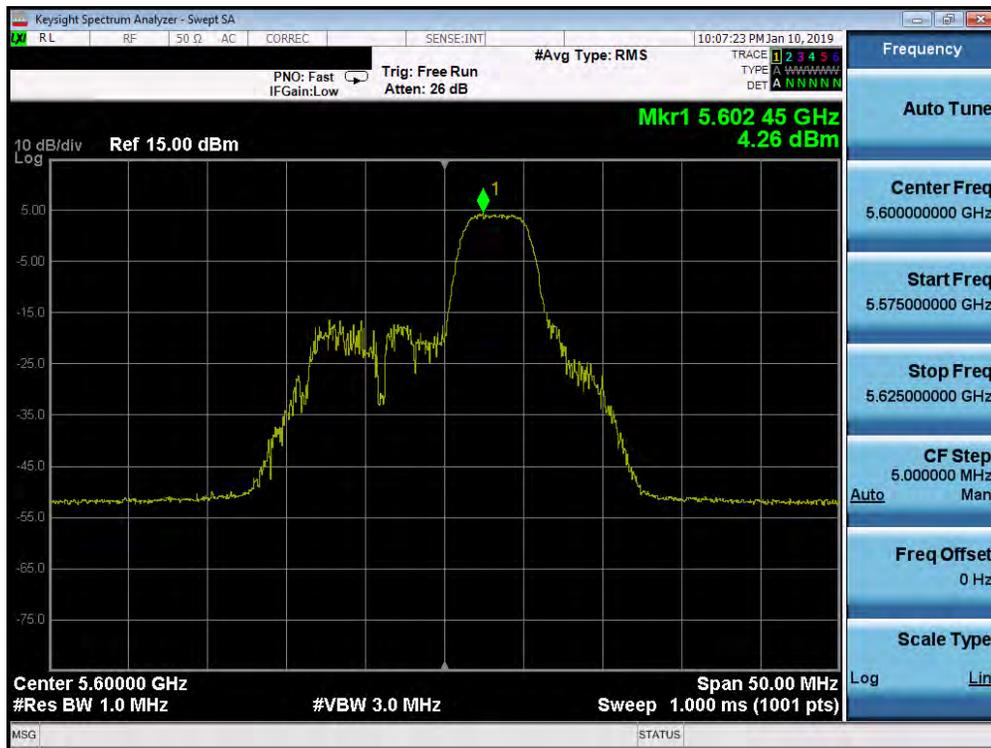
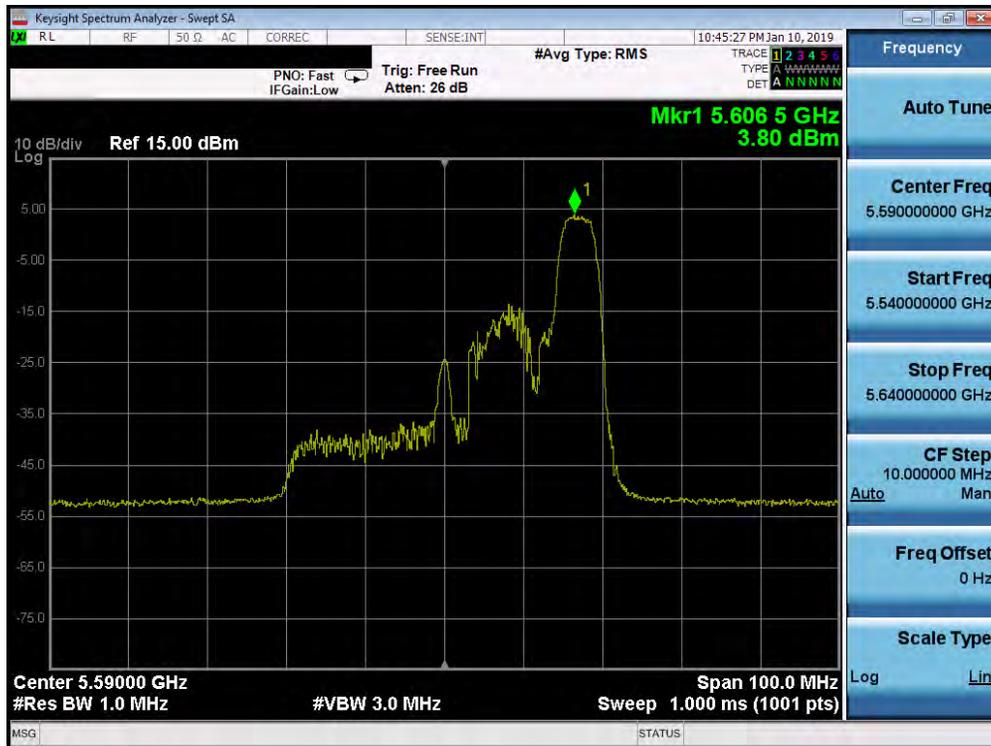


Plot 7-535. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 100)

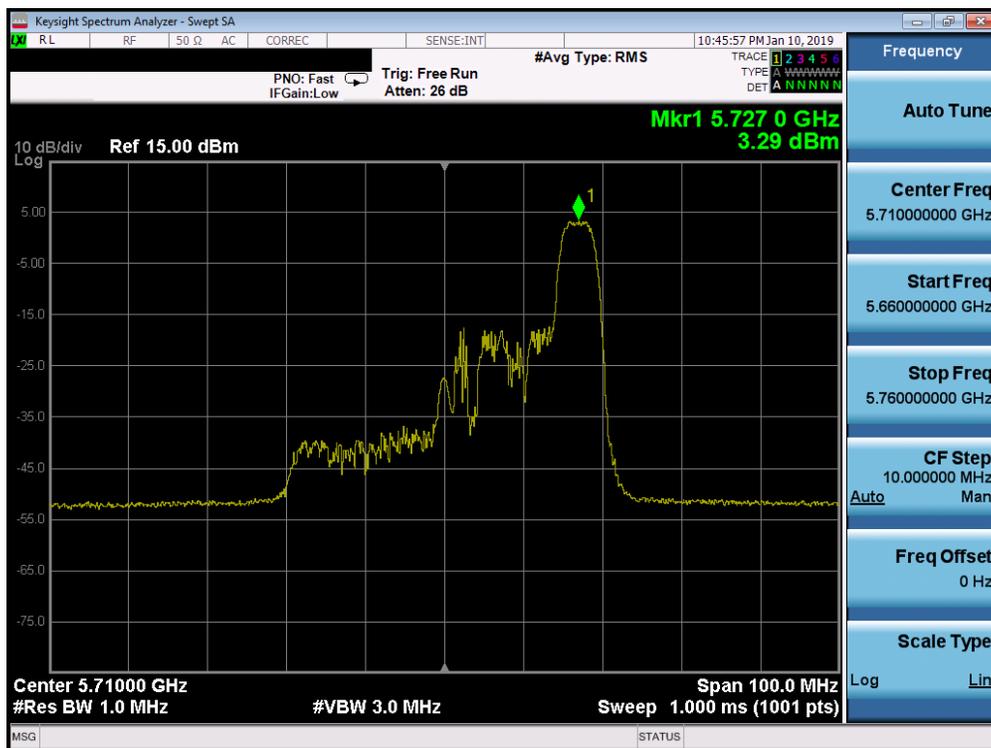


Plot 7-536. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 350 of 516

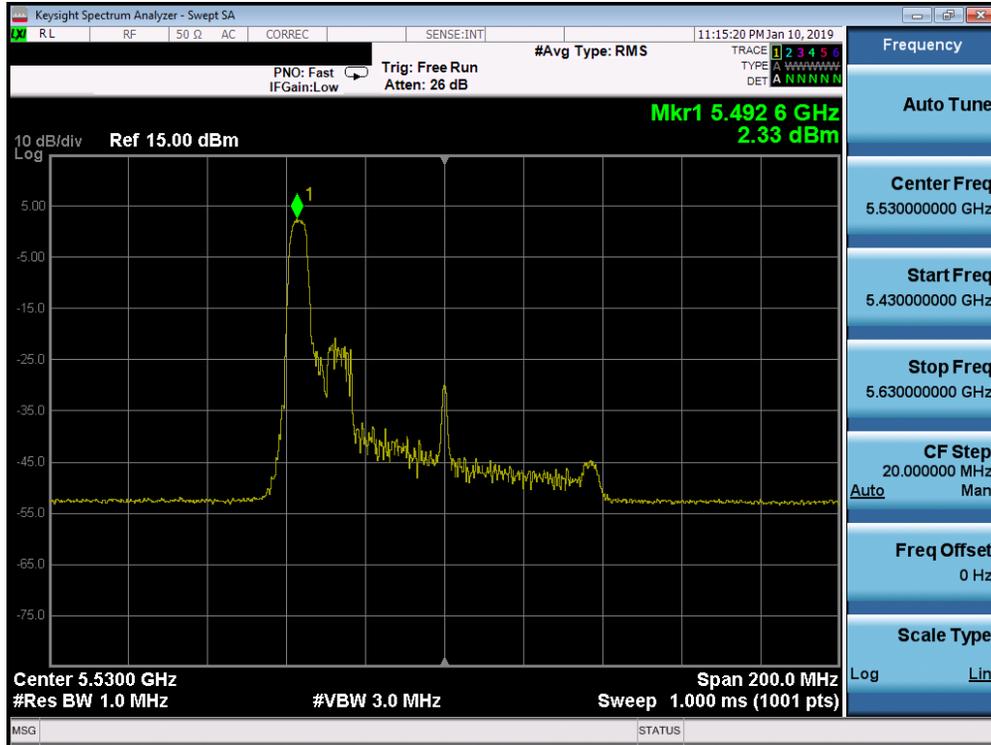


Plot 7-539. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 118)

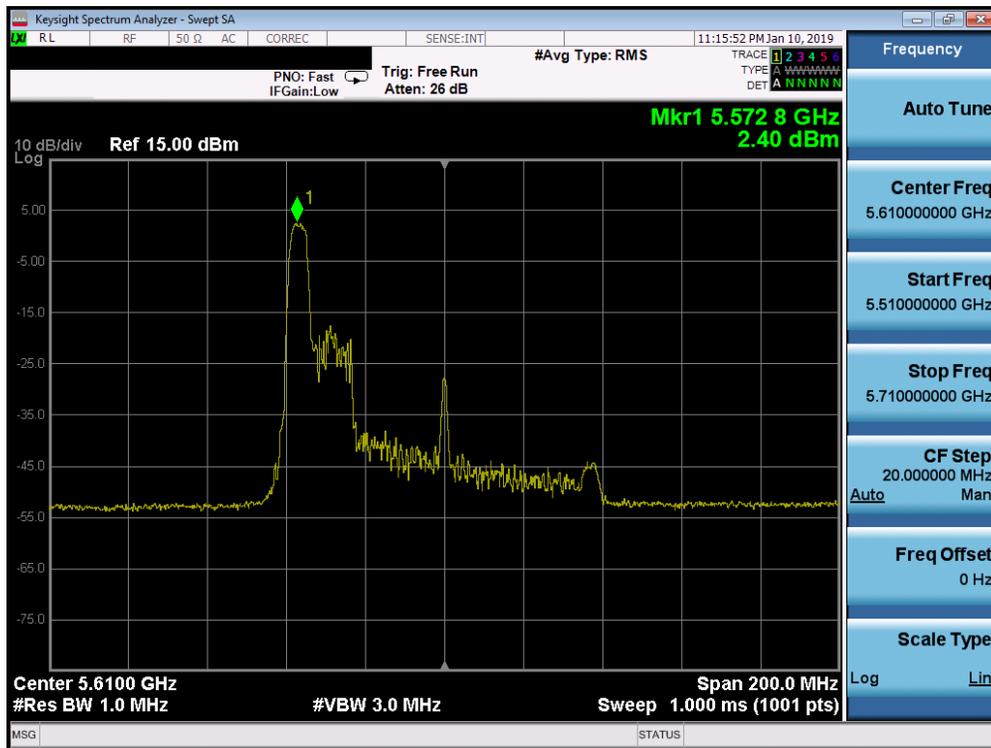


Plot 7-540. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 352 of 516

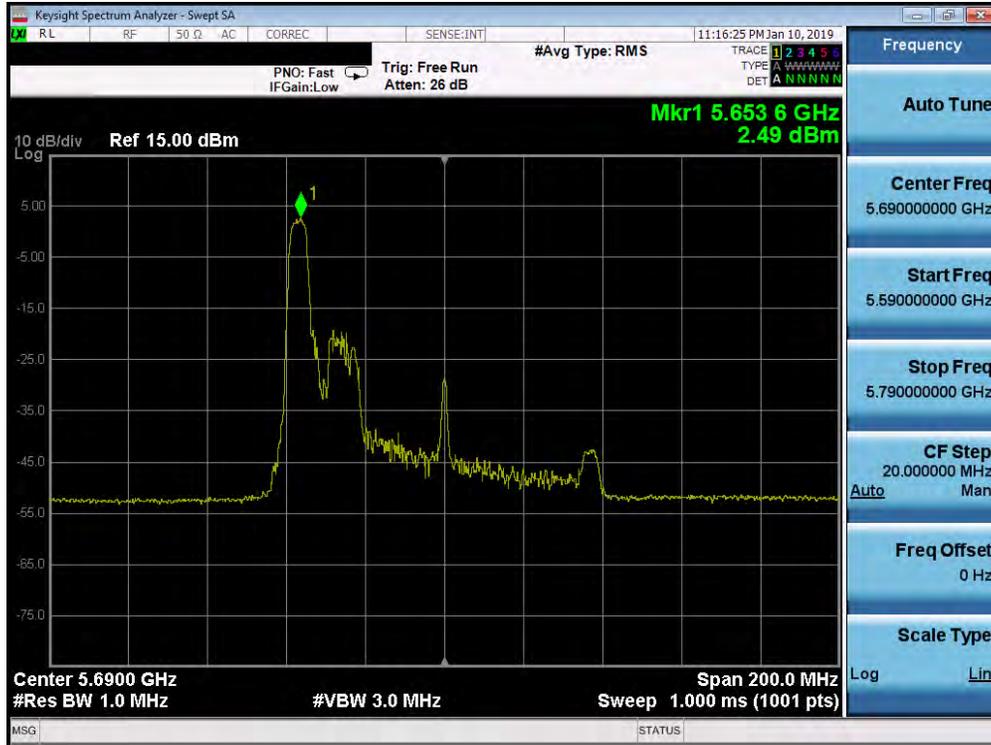


Plot 7-541. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 106)

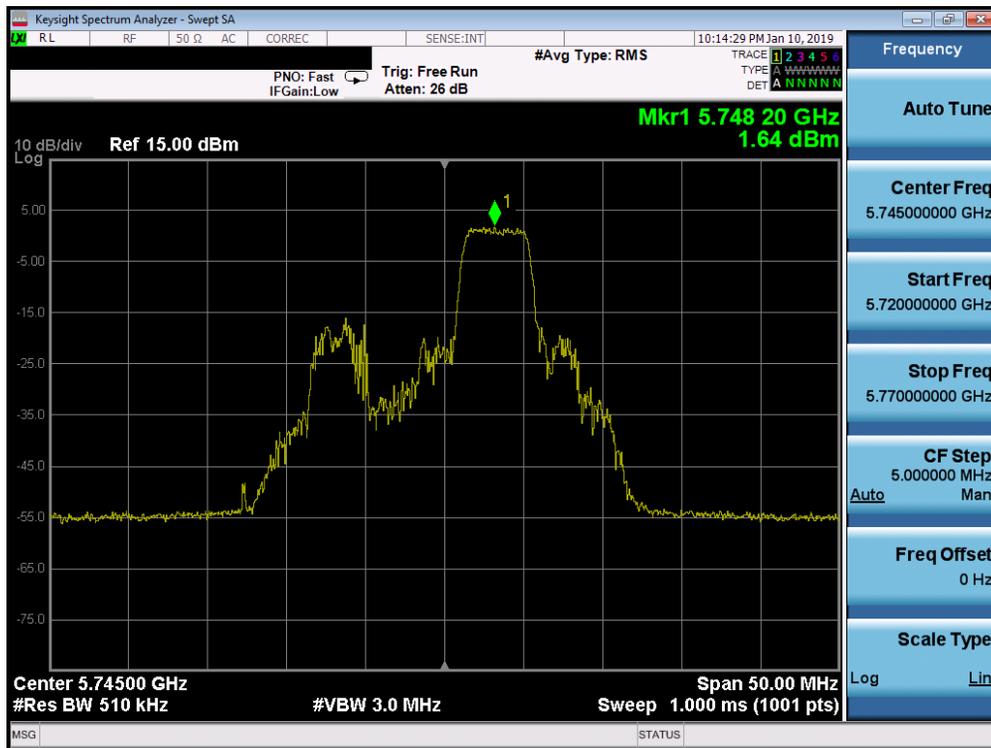


Plot 7-542. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 353 of 516

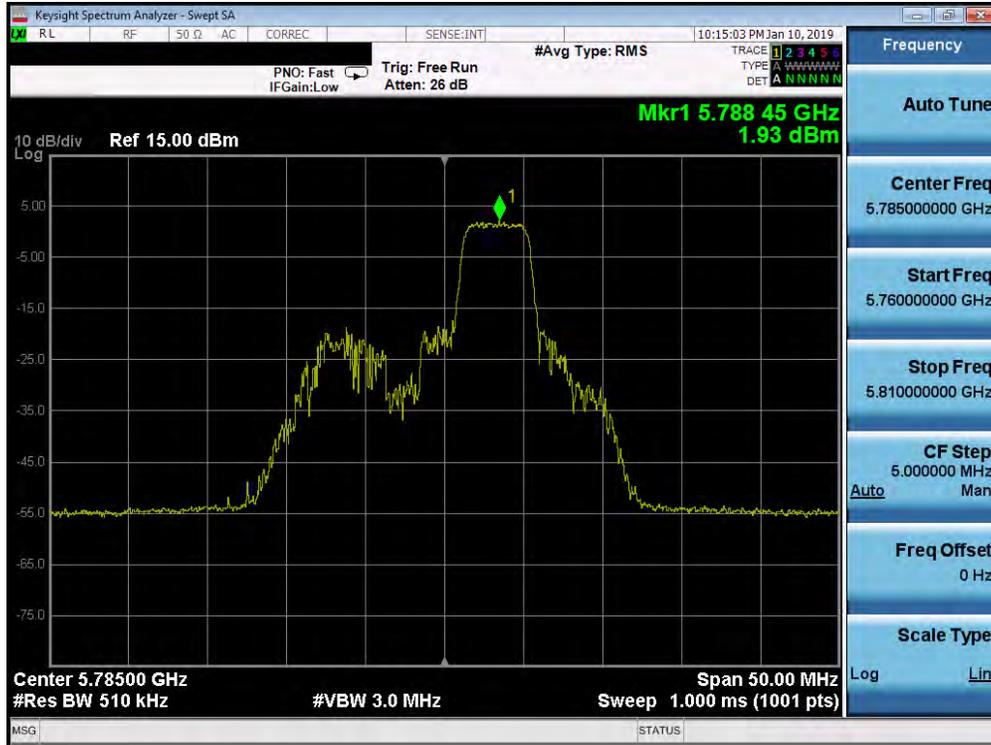


Plot 7-543. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 52 Tones (UNII Band 2C) – Ch. 138)

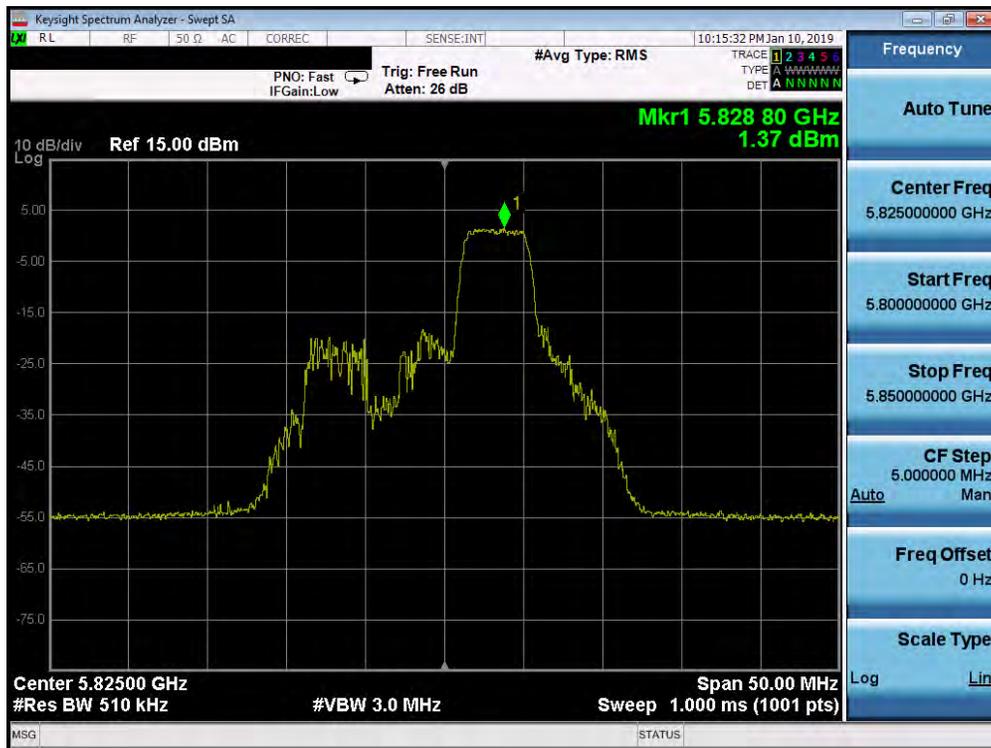


Plot 7-544. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 52 Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 354 of 516

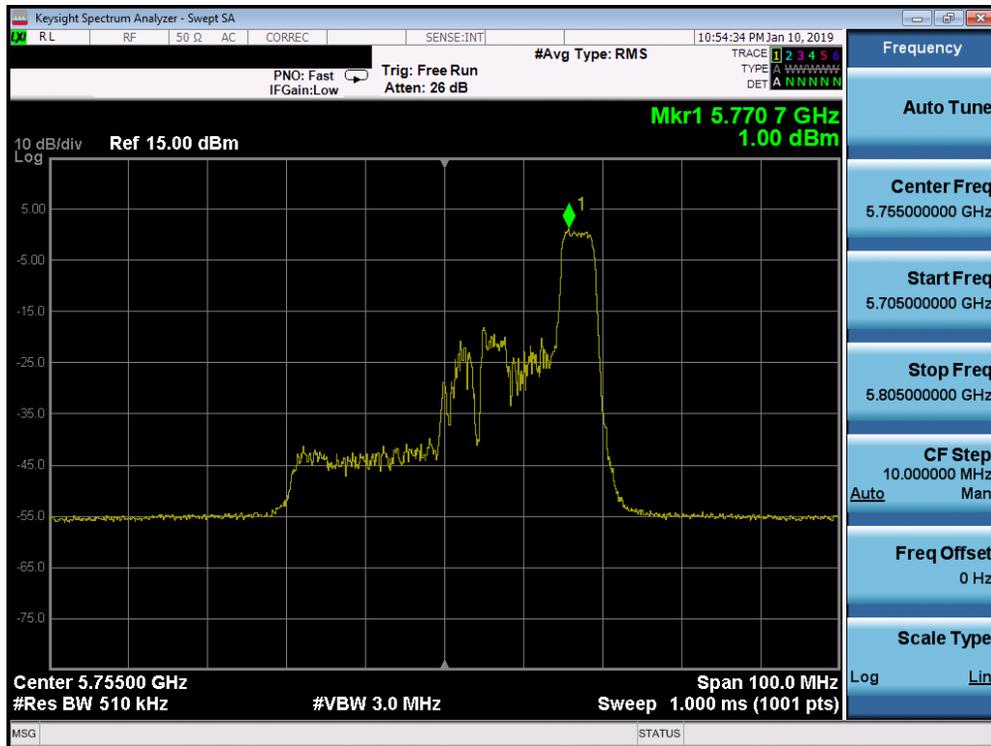


Plot 7-545. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 52 Tones (UNII Band 3) – Ch. 157)



Plot 7-546. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 52 Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 355 of 516

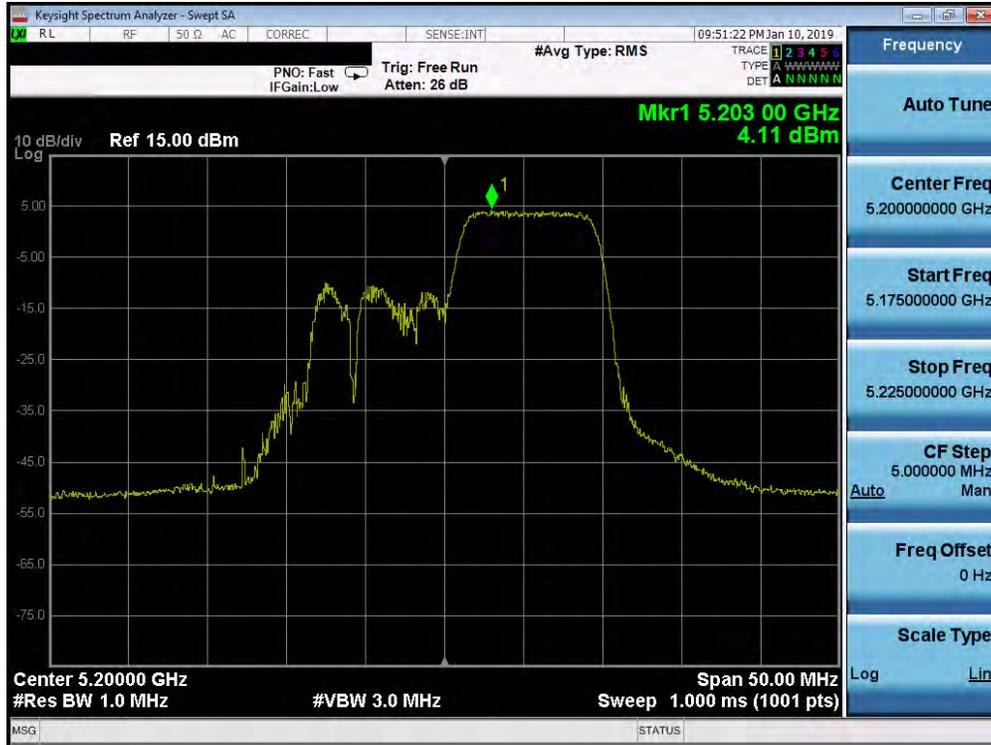


Plot 7-547. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 52 Tones (UNII Band 3) – Ch. 151)

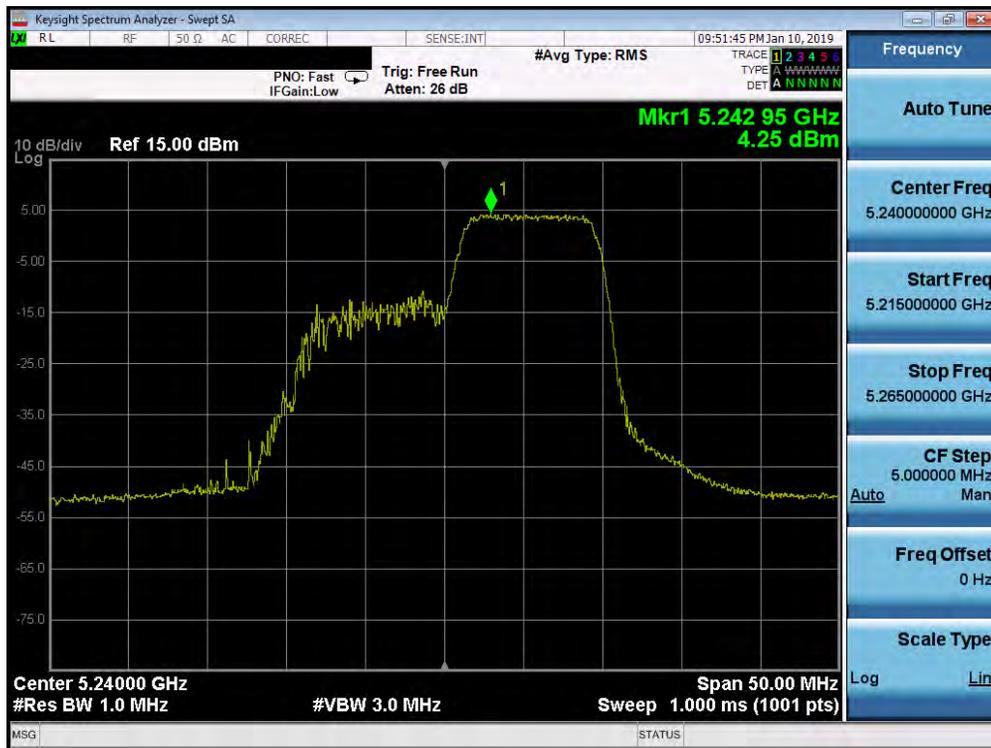


Plot 7-548. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 52 Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 356 of 516

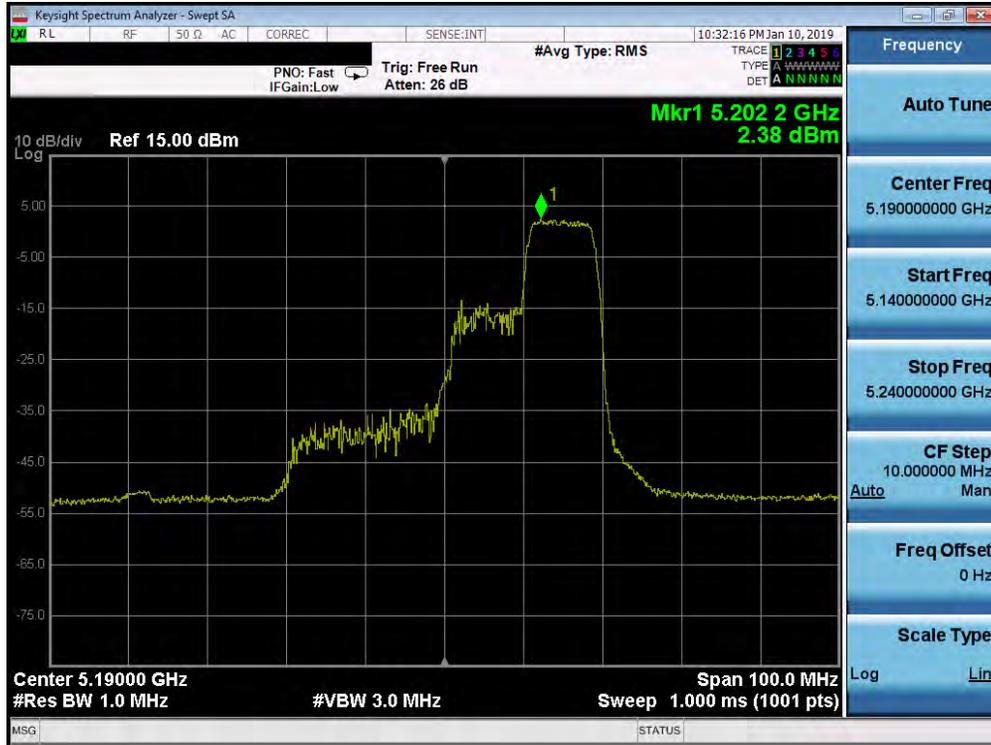


Plot 7-551. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 1) – Ch. 40)

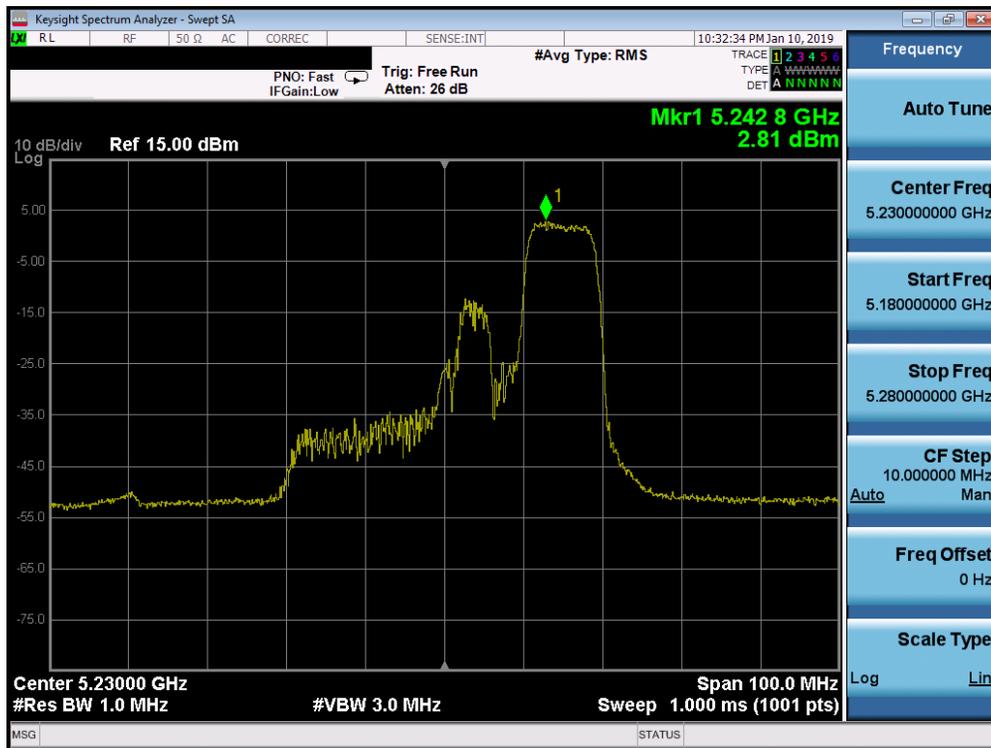


Plot 7-552. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 1) – Ch. 48)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 358 of 516

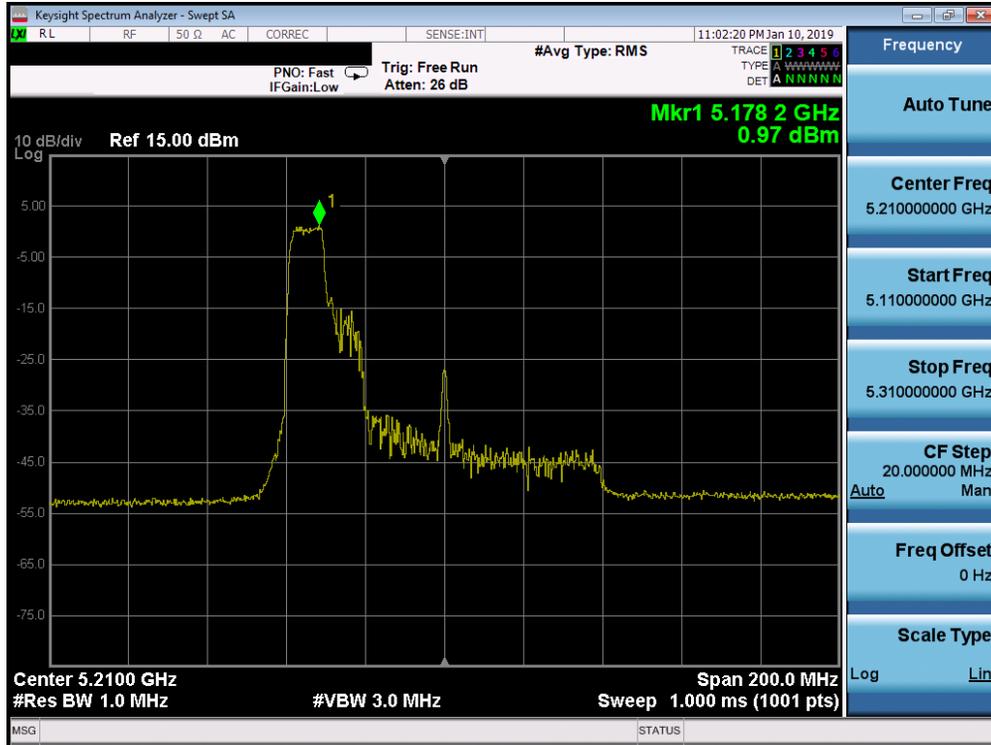


Plot 7-553. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 1) – Ch. 38)

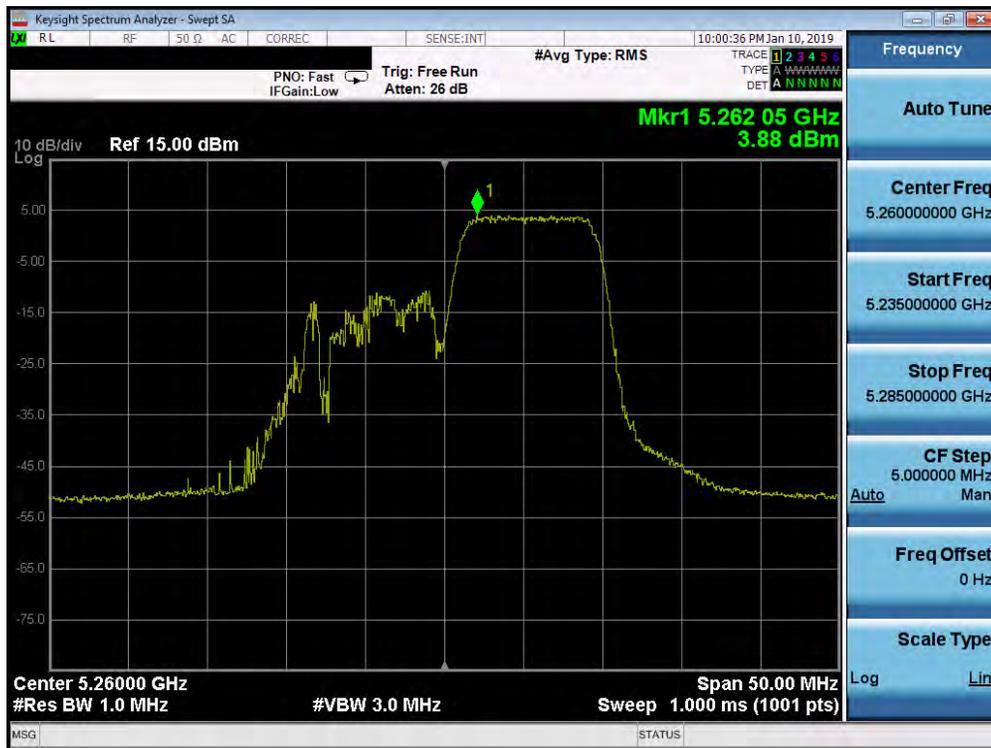


Plot 7-554. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 1) – Ch. 46)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 359 of 516

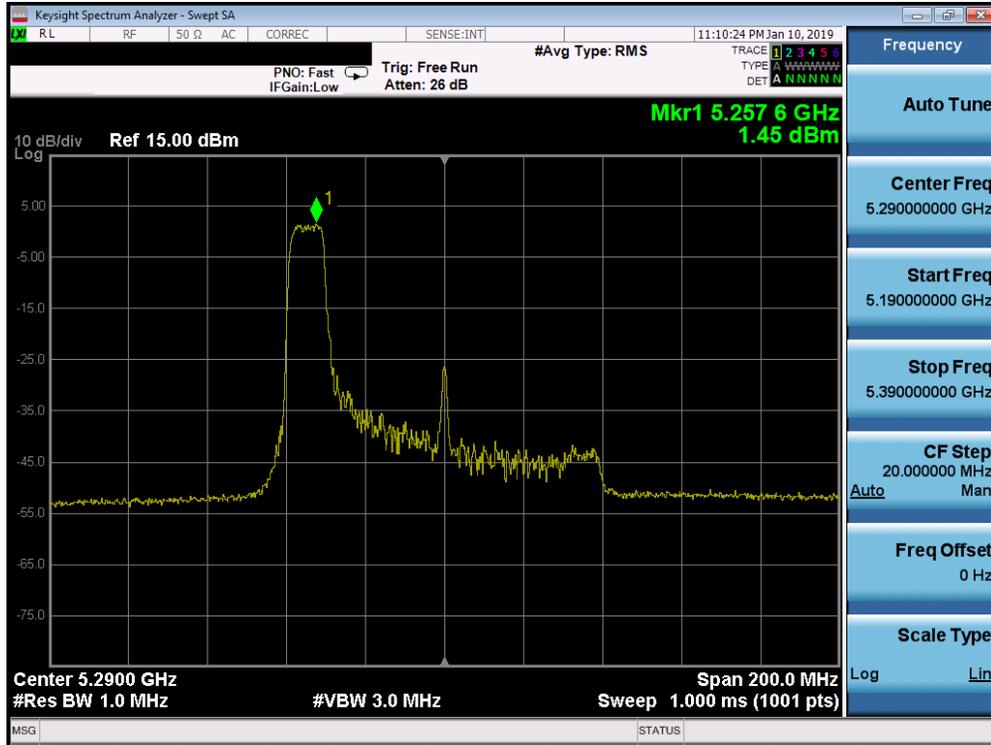


Plot 7-555. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 106 Tones (UNII Band 1) – Ch. 42)

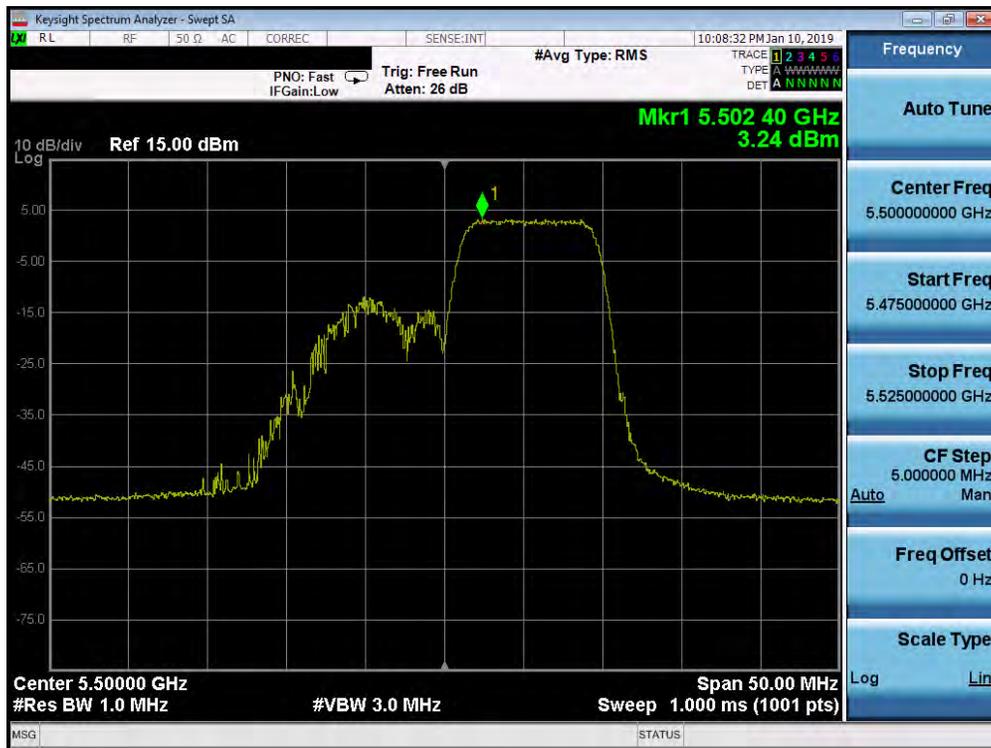


Plot 7-556. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 2A) – Ch. 52)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 360 of 516

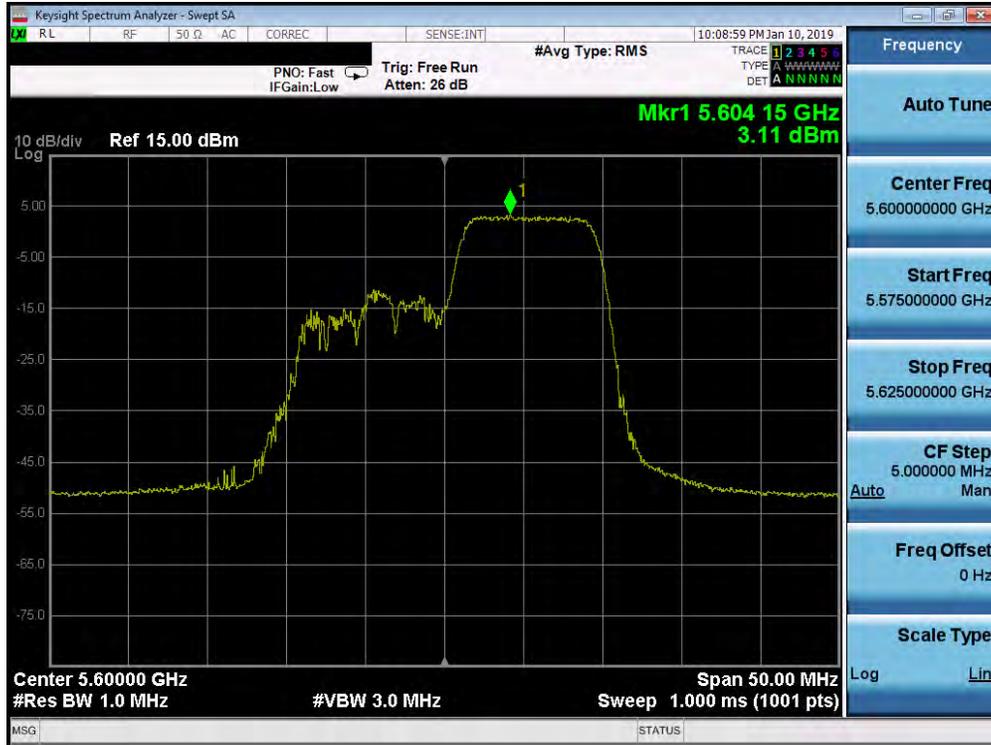


Plot 7-561. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 106 Tones (UNII Band 2A) – Ch. 58)

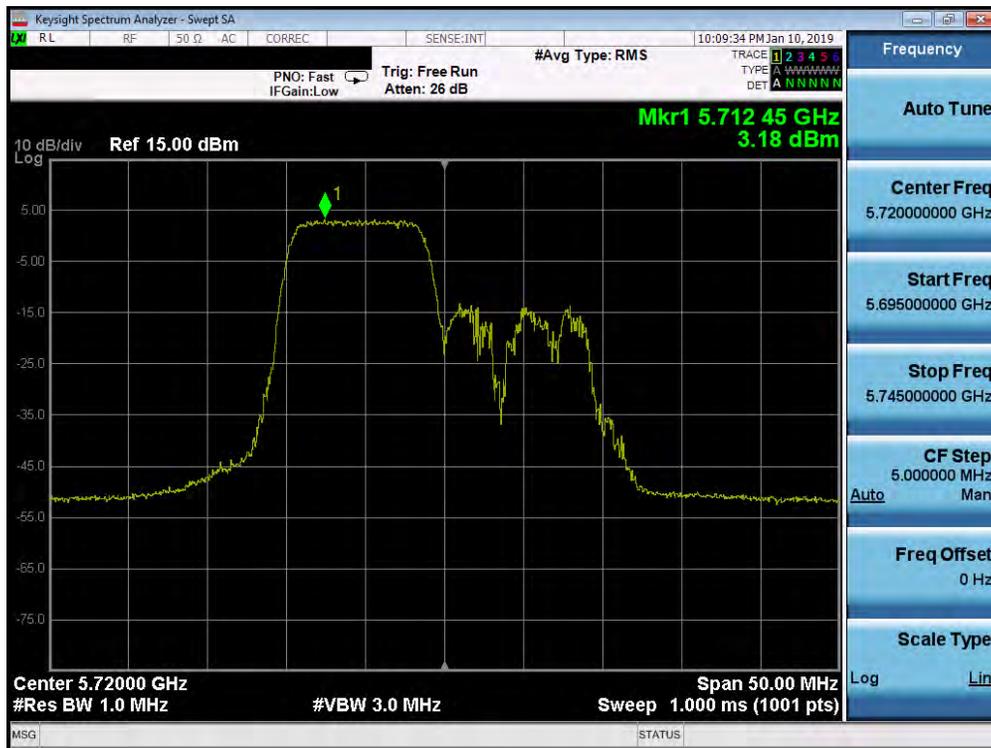


Plot 7-562. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 100)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 363 of 516

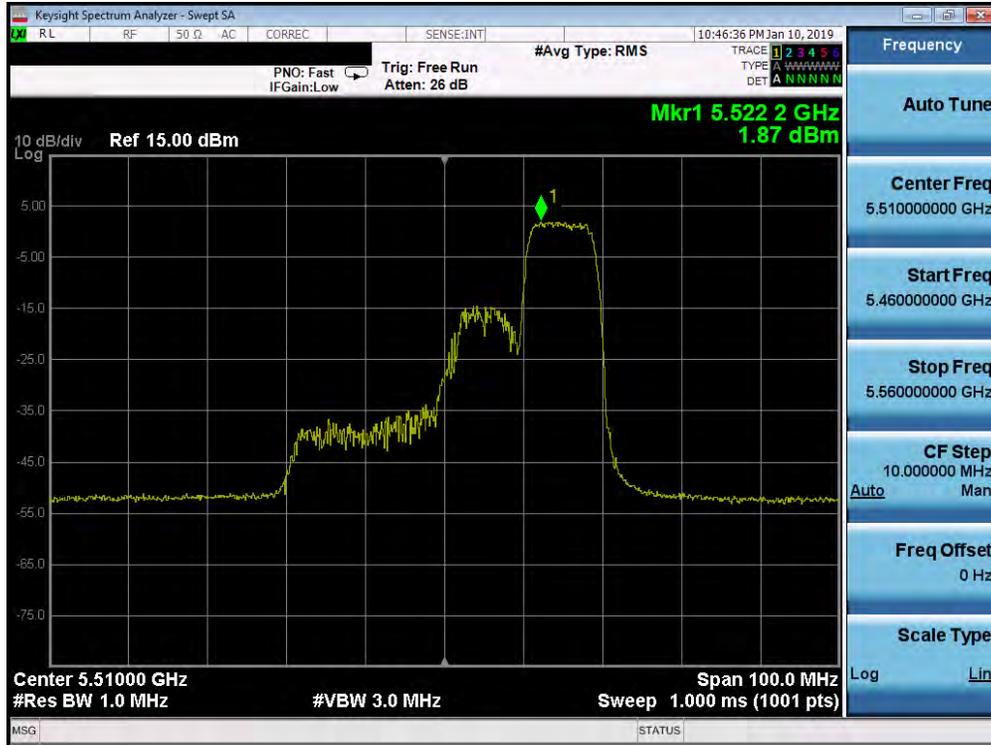


Plot 7-563. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 120)

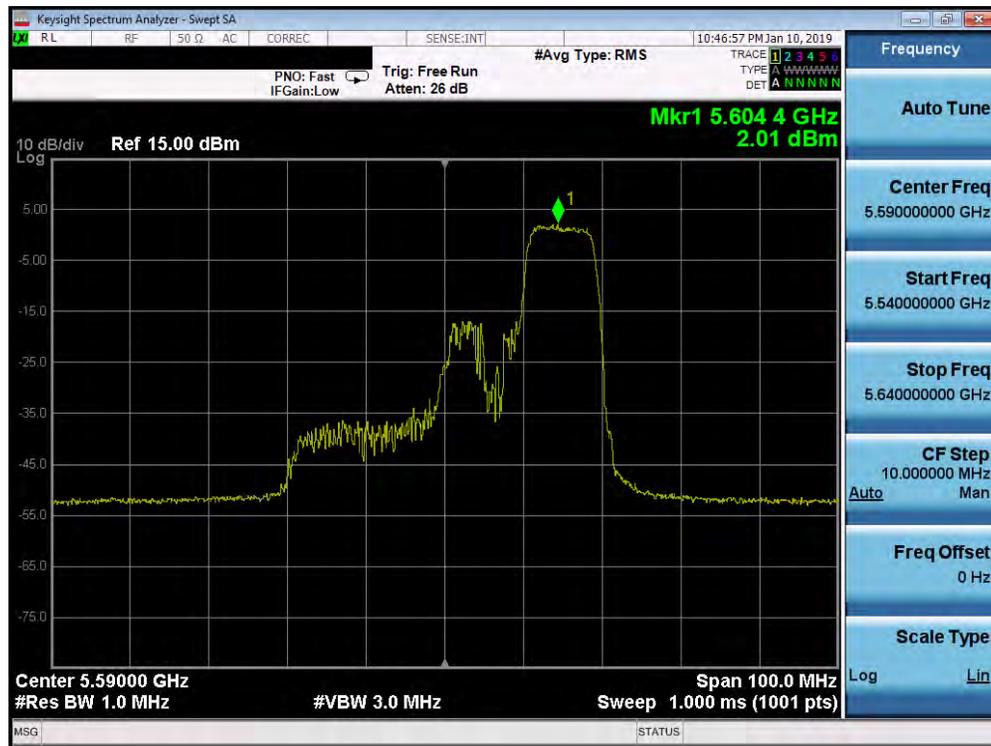


Plot 7-564. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 364 of 516

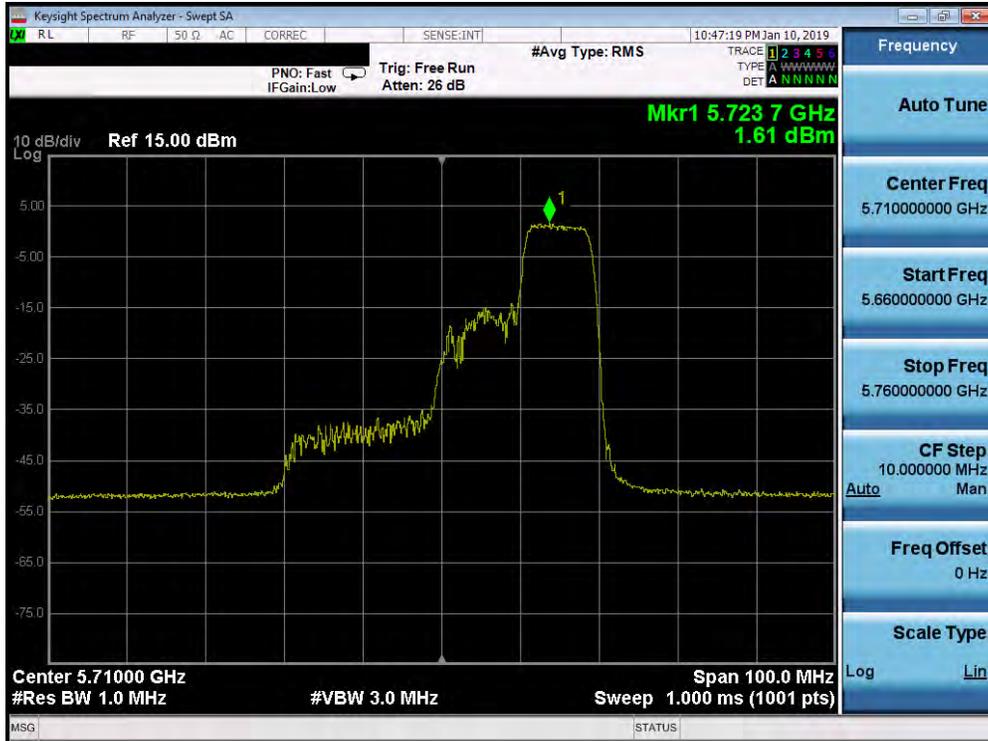


Plot 7-565. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 102)

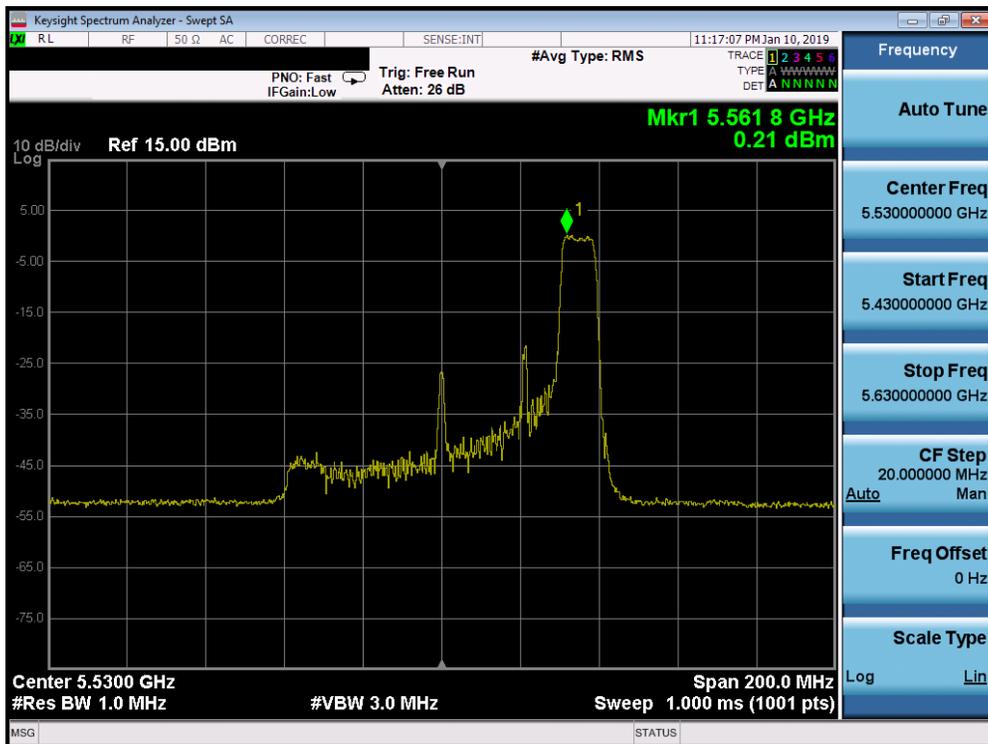


Plot 7-566. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 118)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 365 of 516

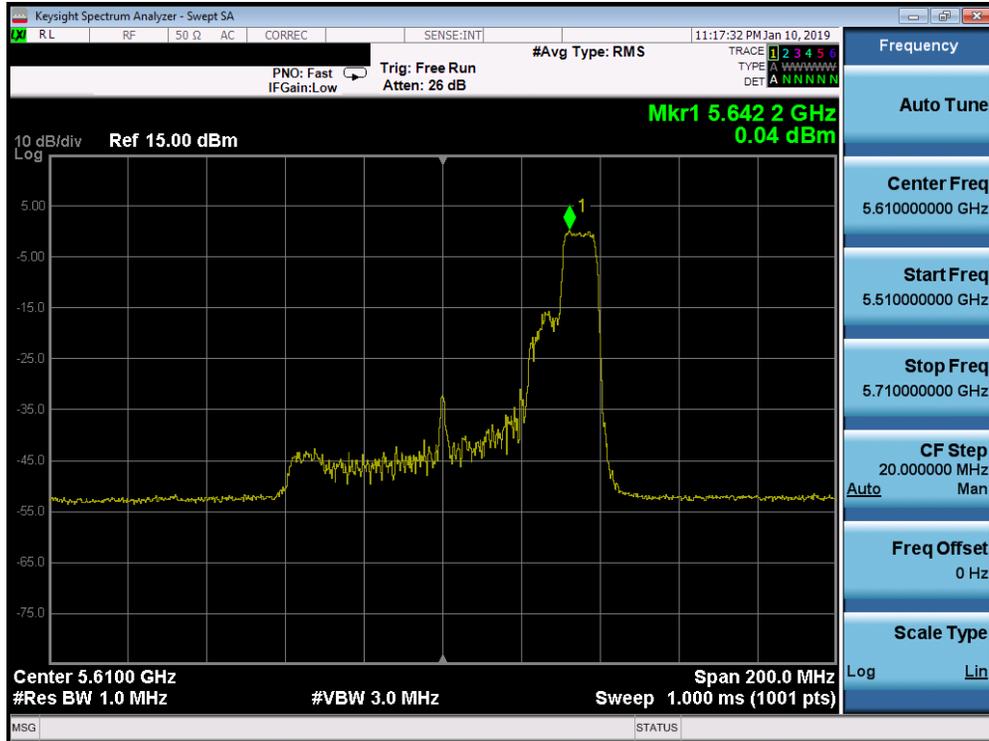


Plot 7-567. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 142)

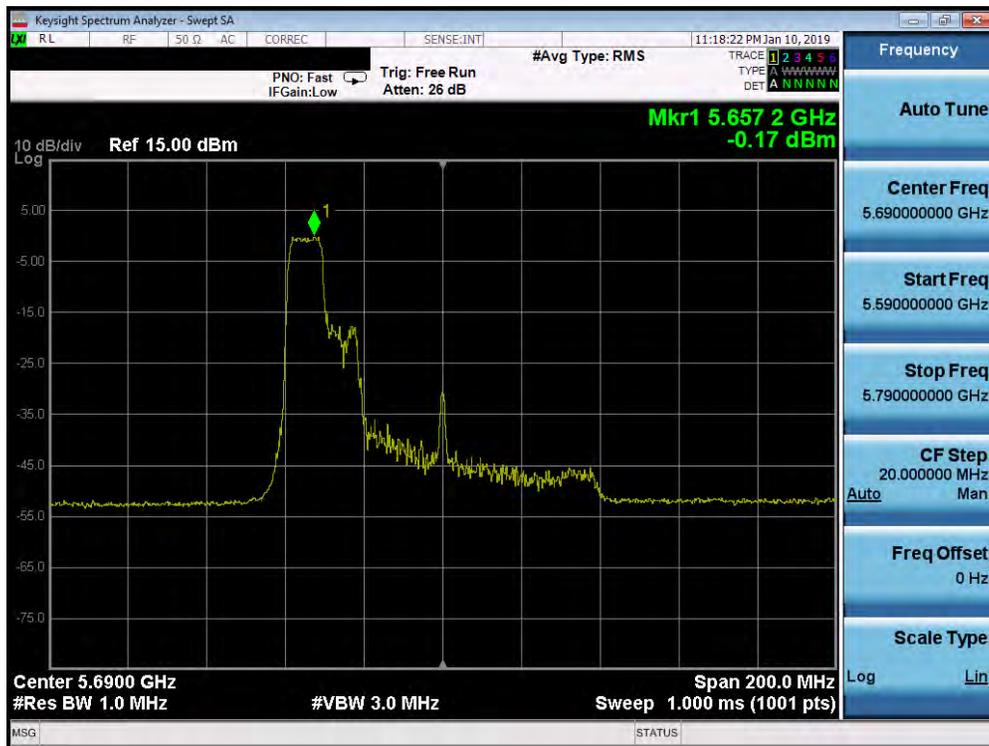


Plot 7-568. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 106)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 366 of 516



Plot 7-569. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 122)

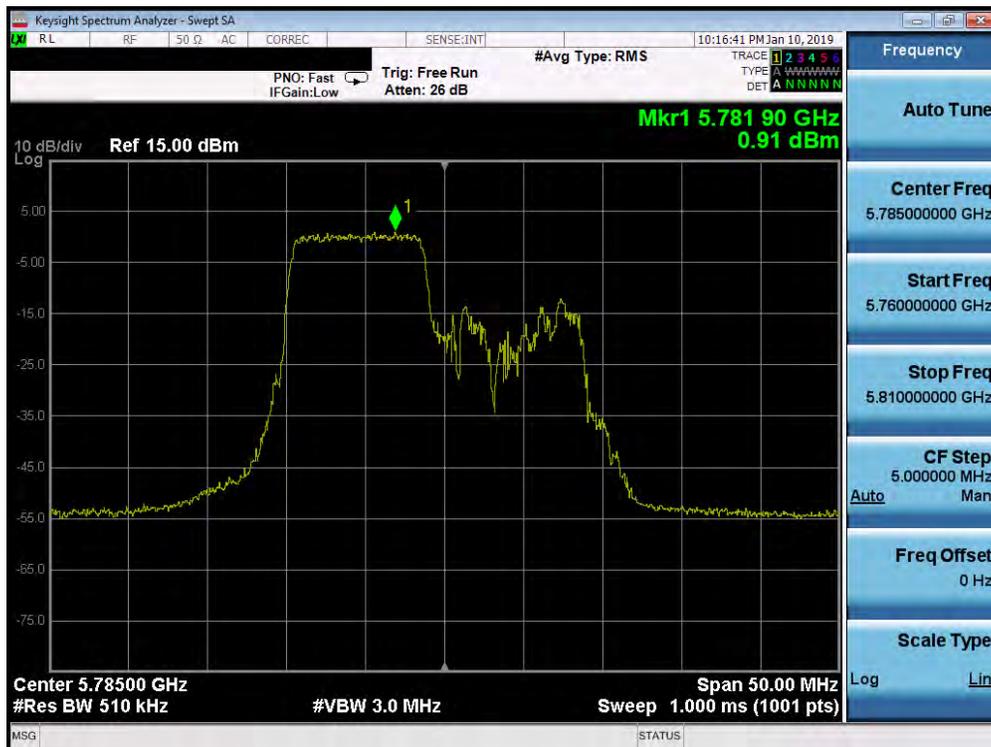


Plot 7-570. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 106 Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 367 of 516

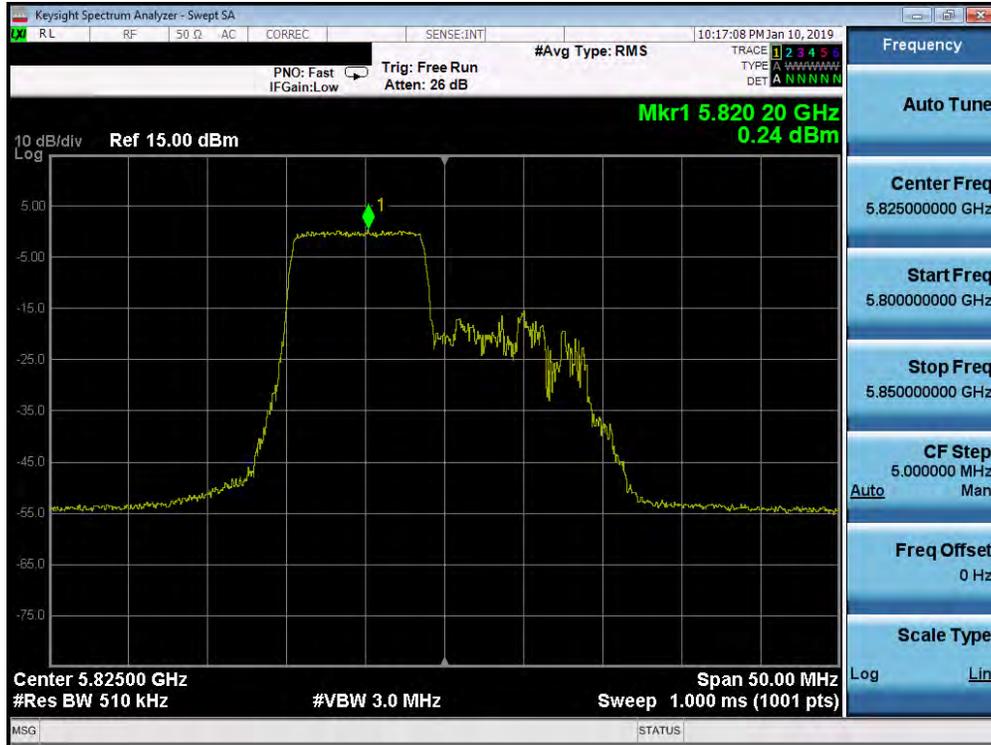


Plot 7-571. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 3) – Ch. 149)

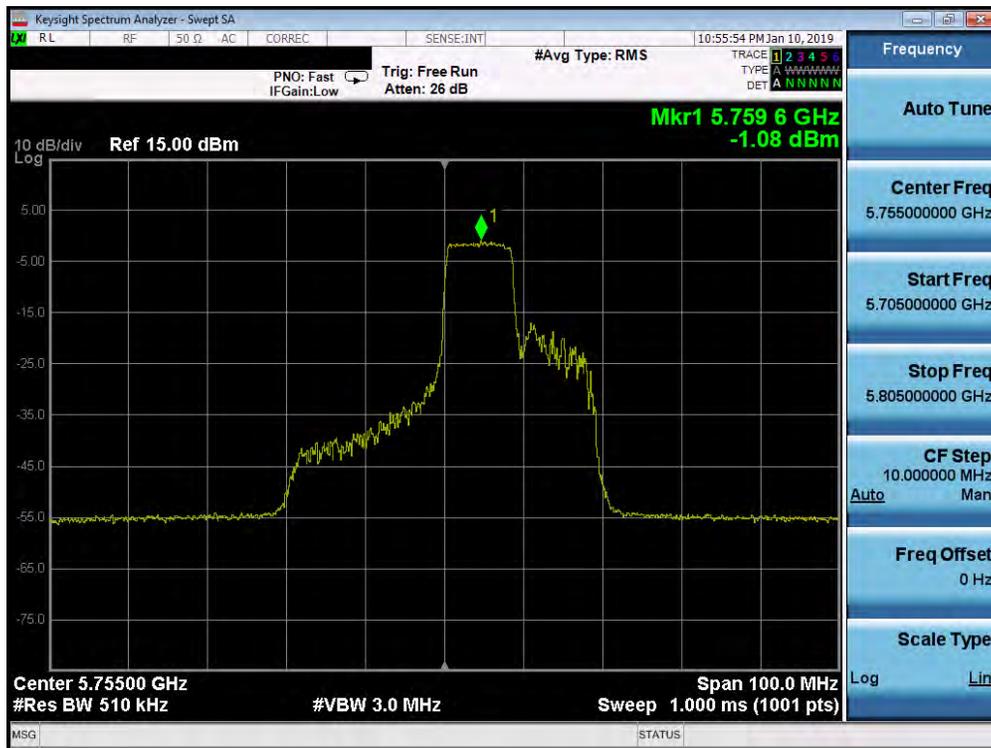


Plot 7-572. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 368 of 516

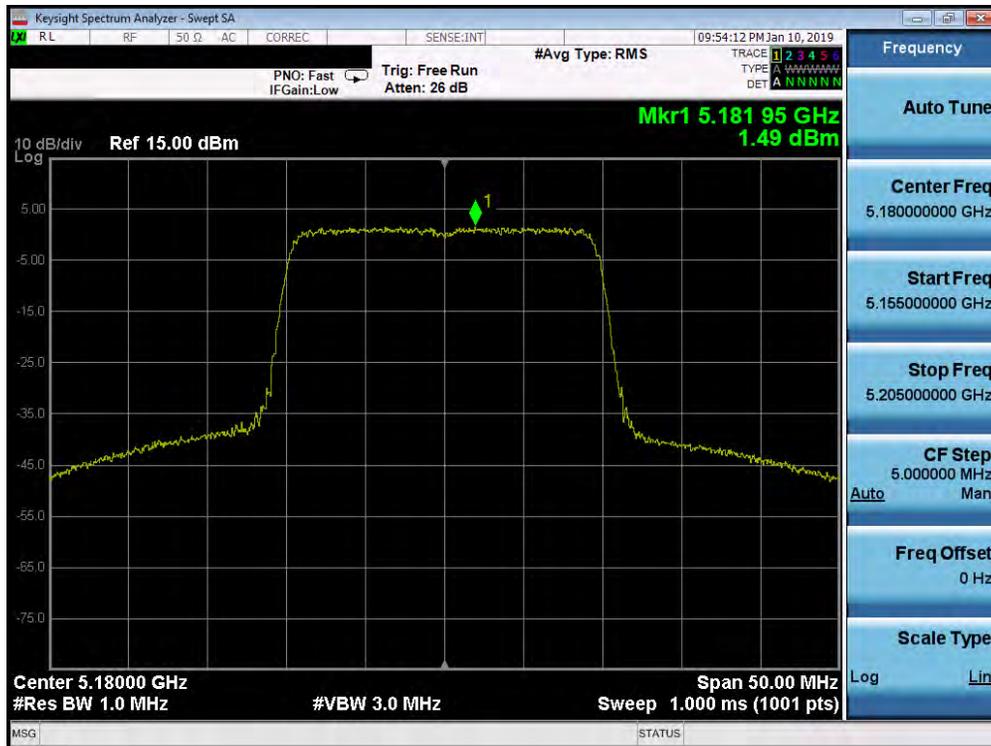


Plot 7-573. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 106 Tones (UNII Band 3) – Ch. 165)

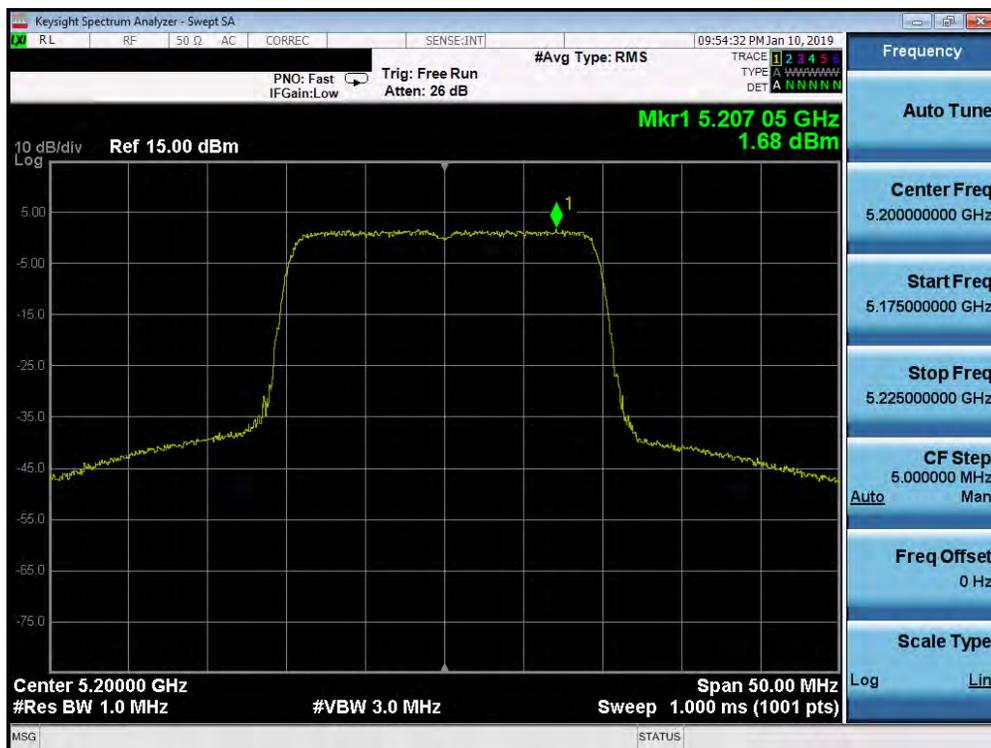


Plot 7-574. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 106 Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 369 of 516

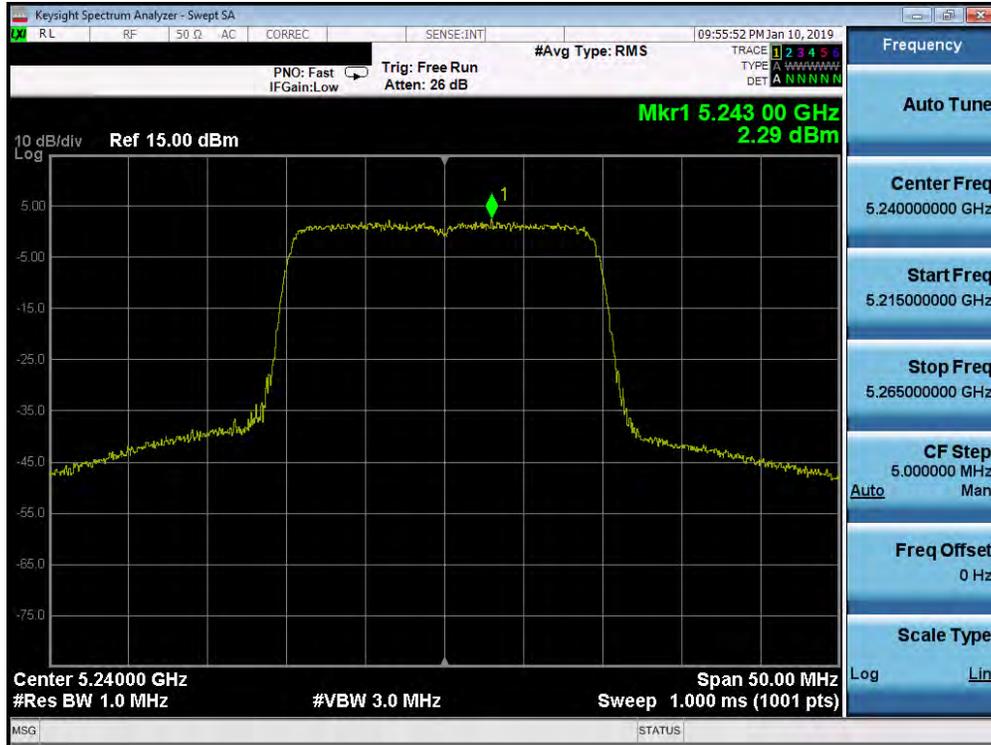


Plot 7-577. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)

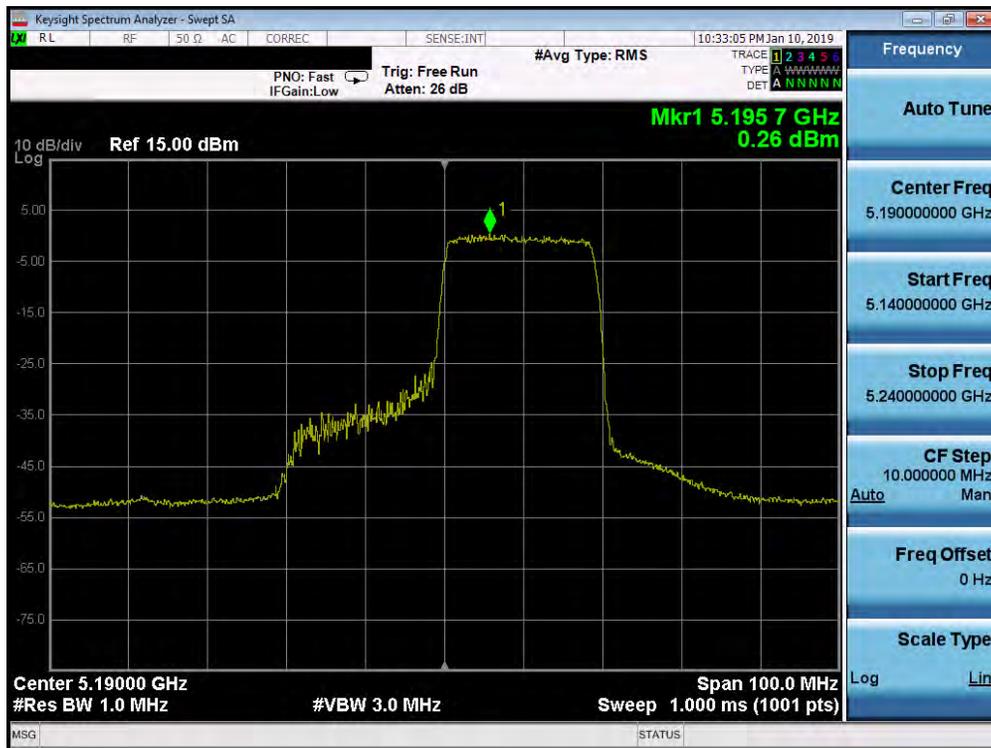


Plot 7-578. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 371 of 516

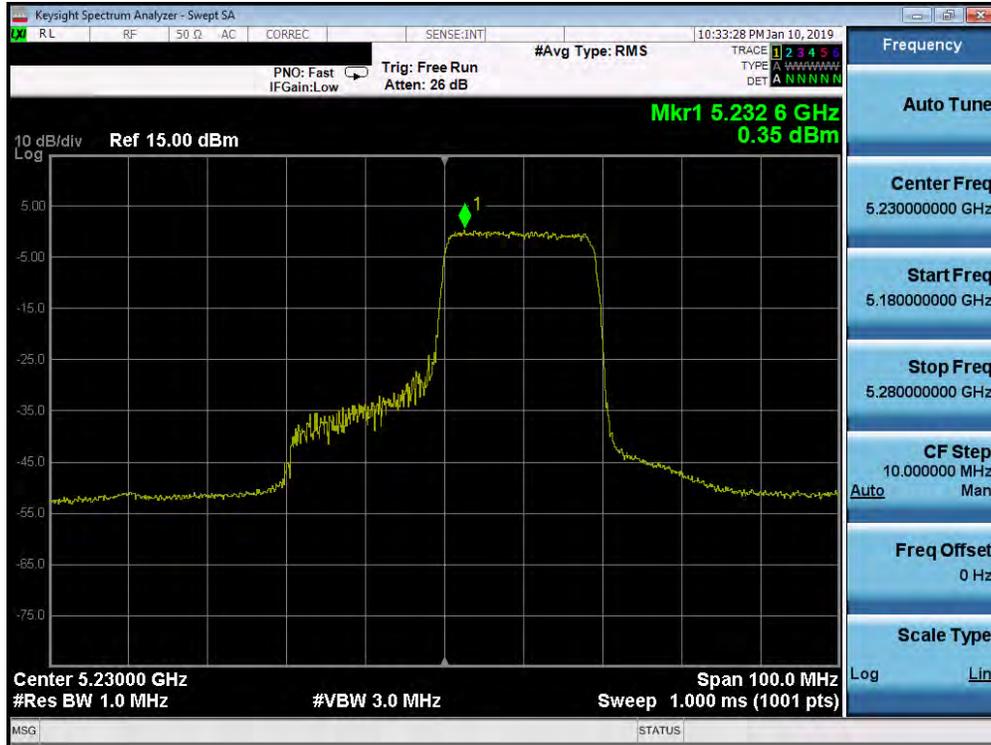


Plot 7-579. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 48)

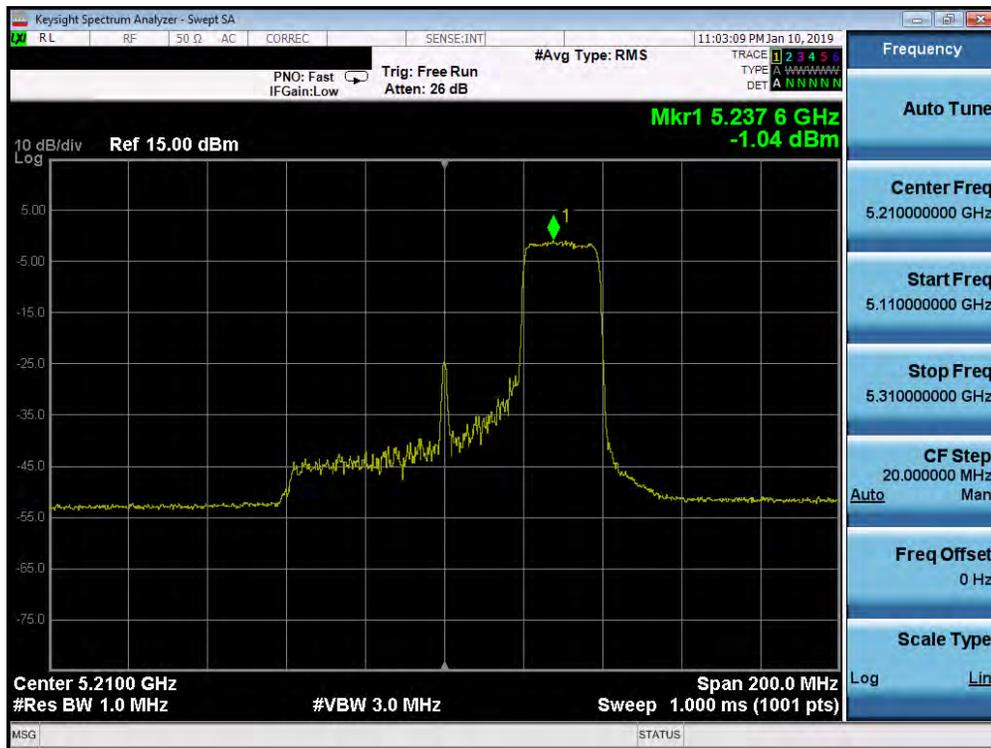


Plot 7-580. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 38)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 372 of 516

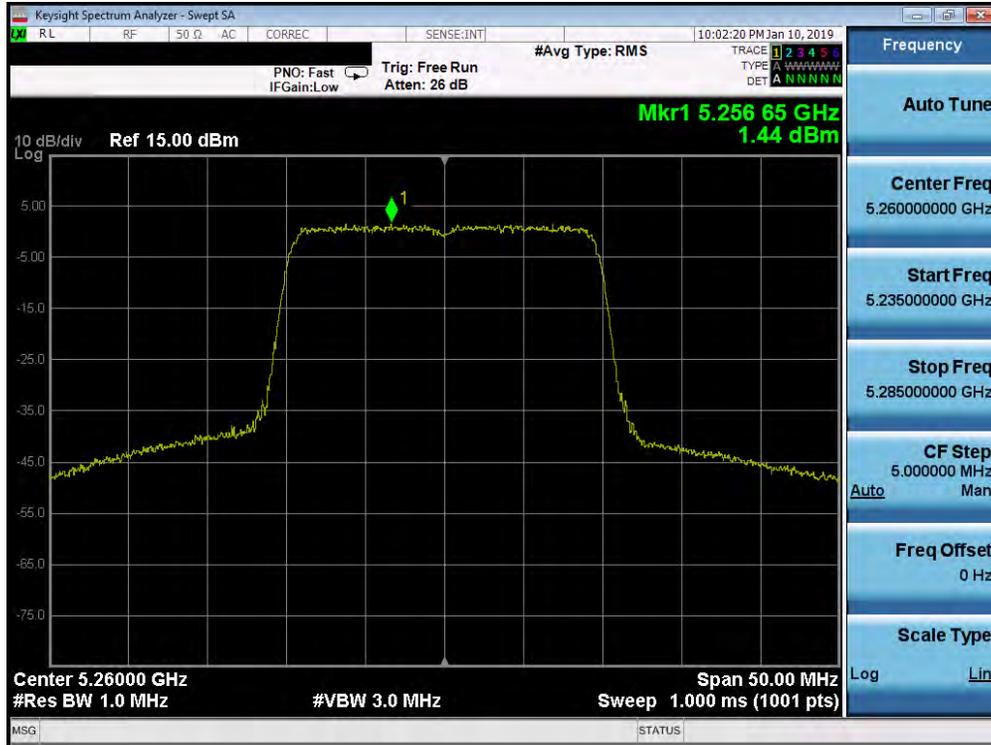


Plot 7-581. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 46)

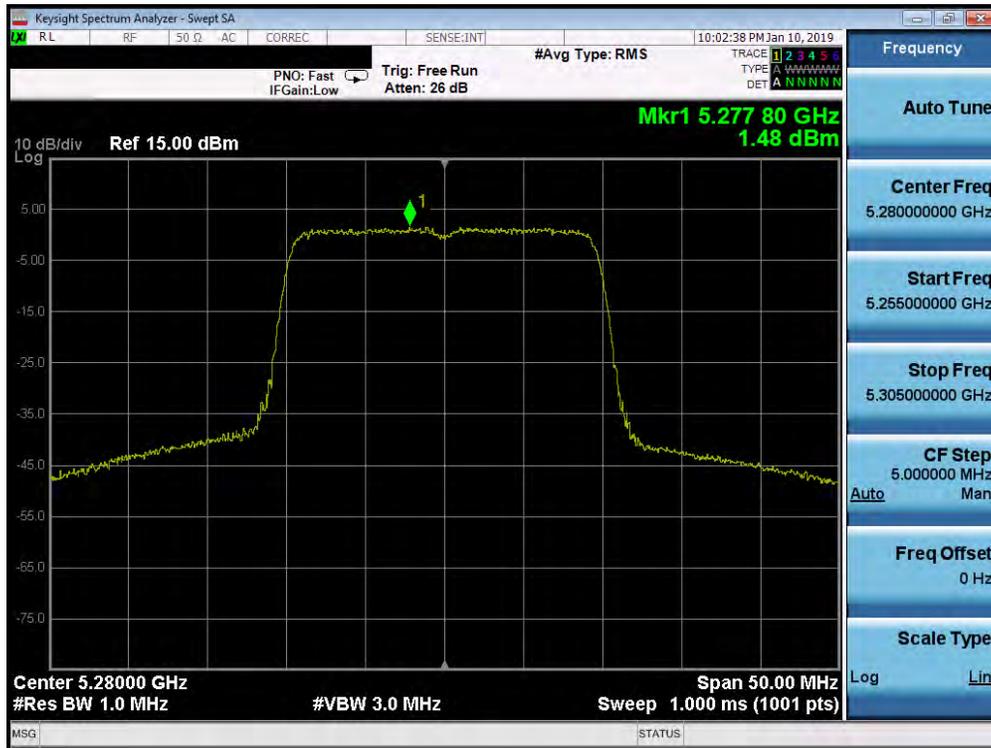


Plot 7-582. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 373 of 516

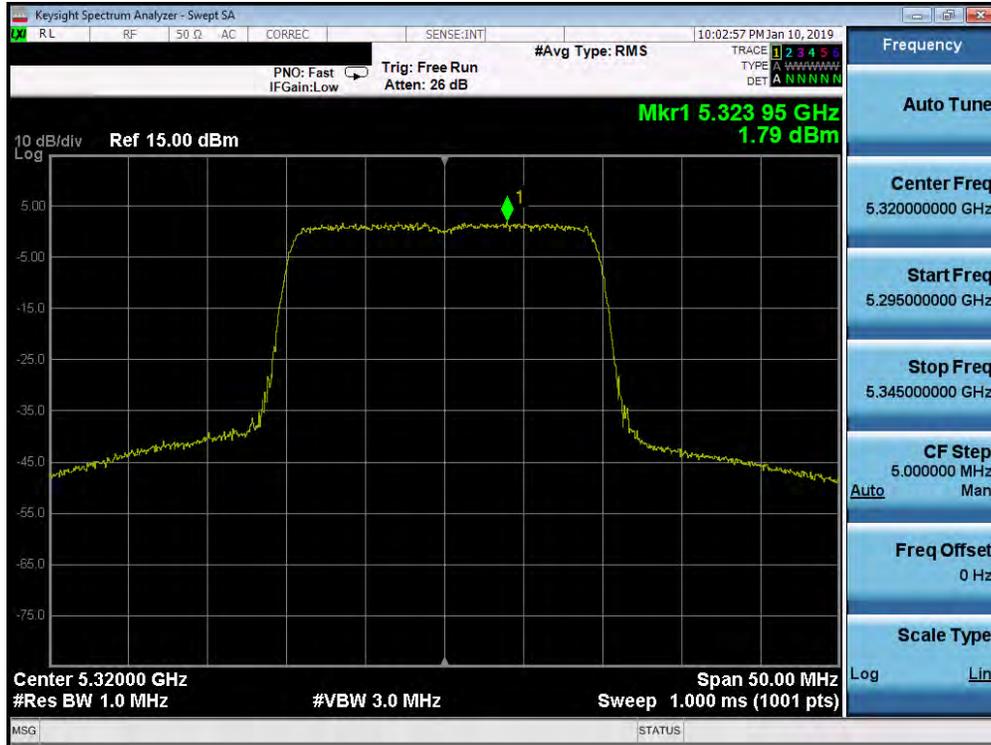


Plot 7-583. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)

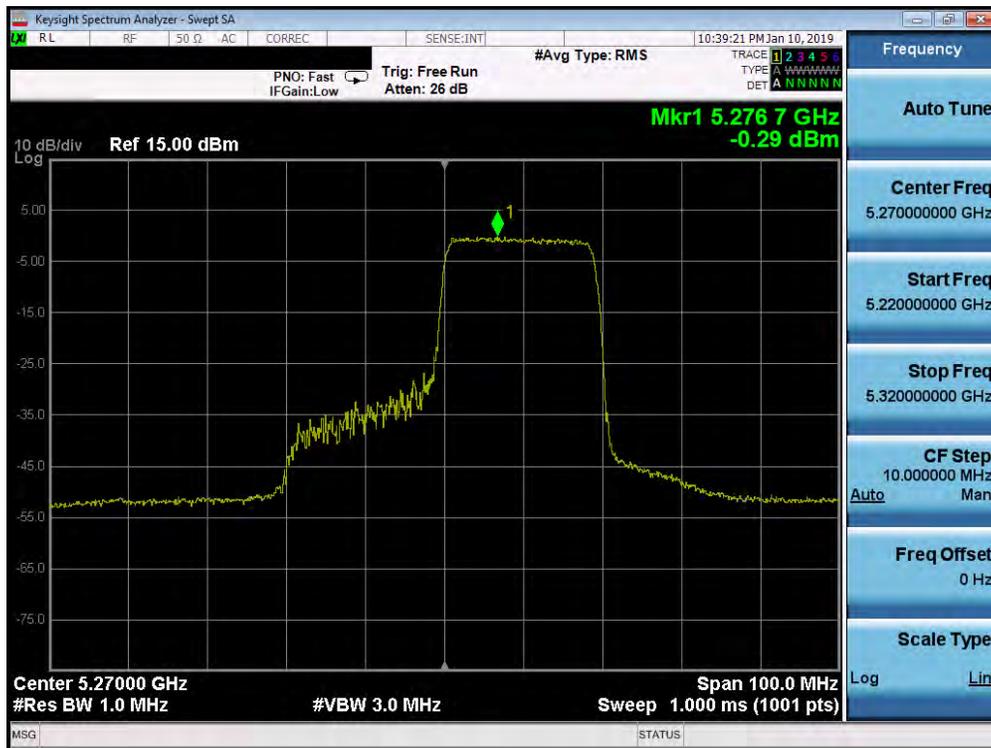


Plot 7-584. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 374 of 516

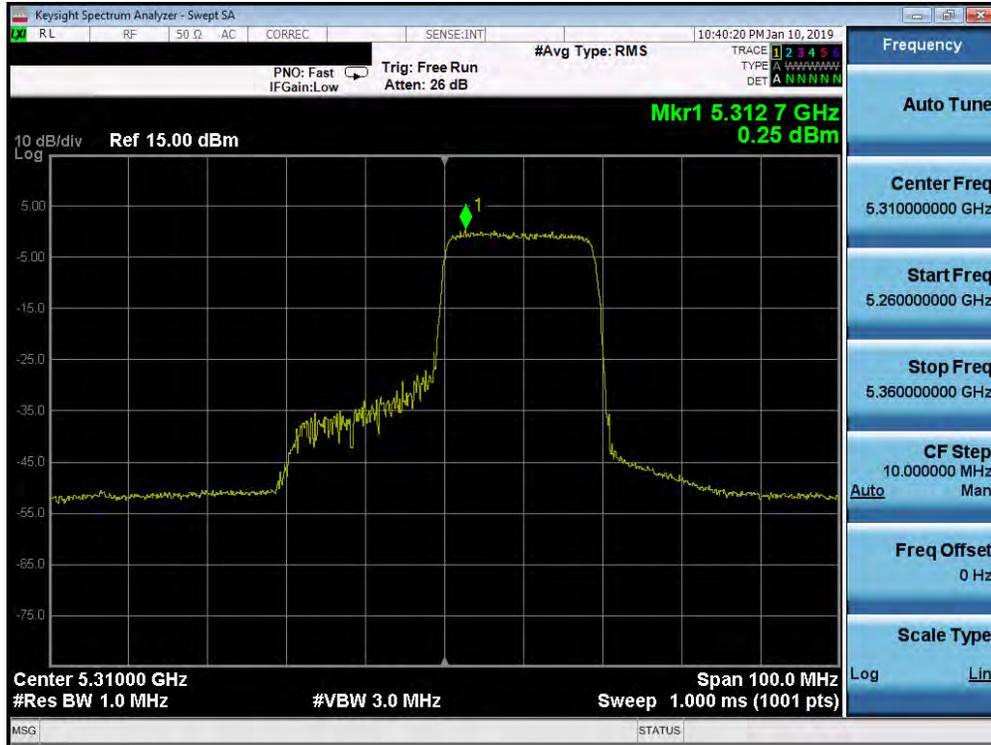


Plot 7-585. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

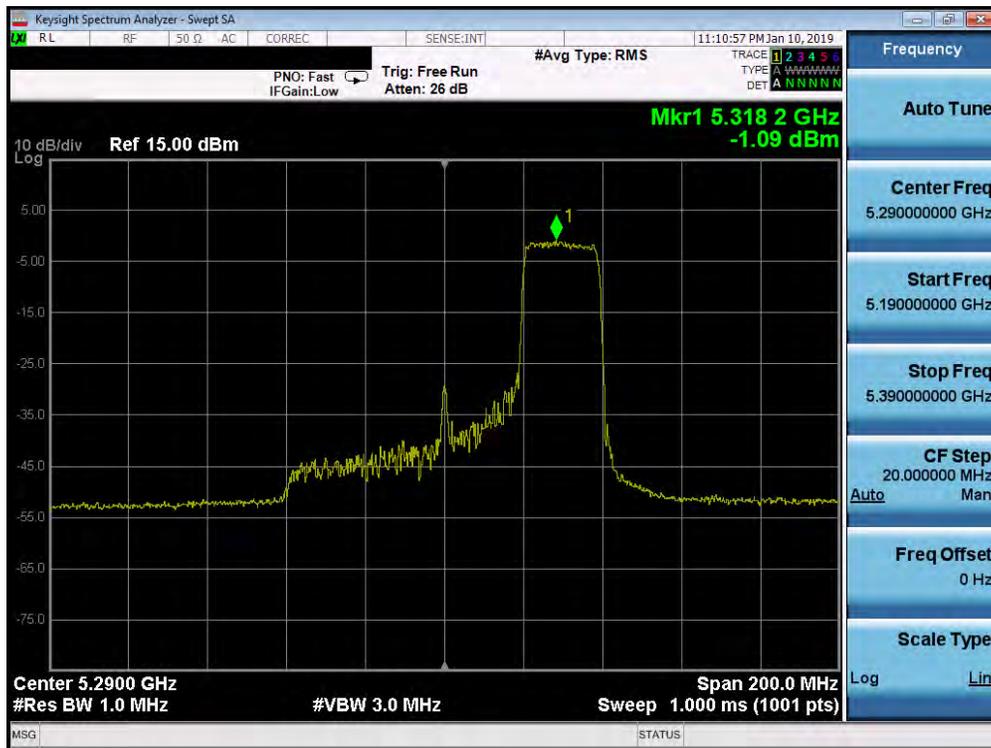


Plot 7-586. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 375 of 516

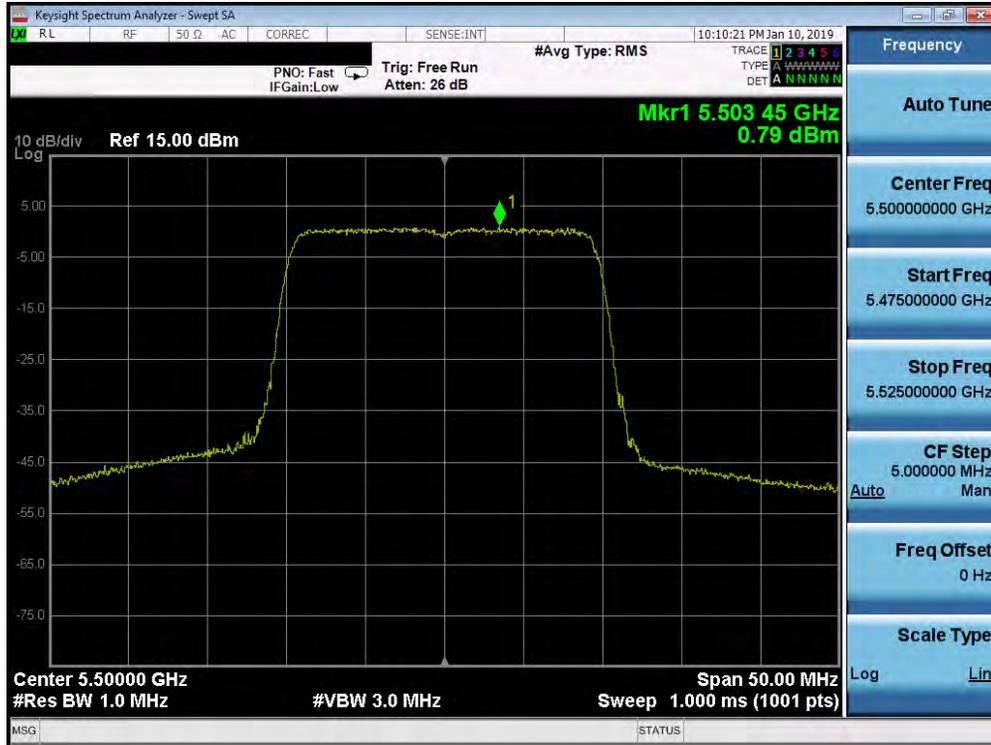


Plot 7-587. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 62)

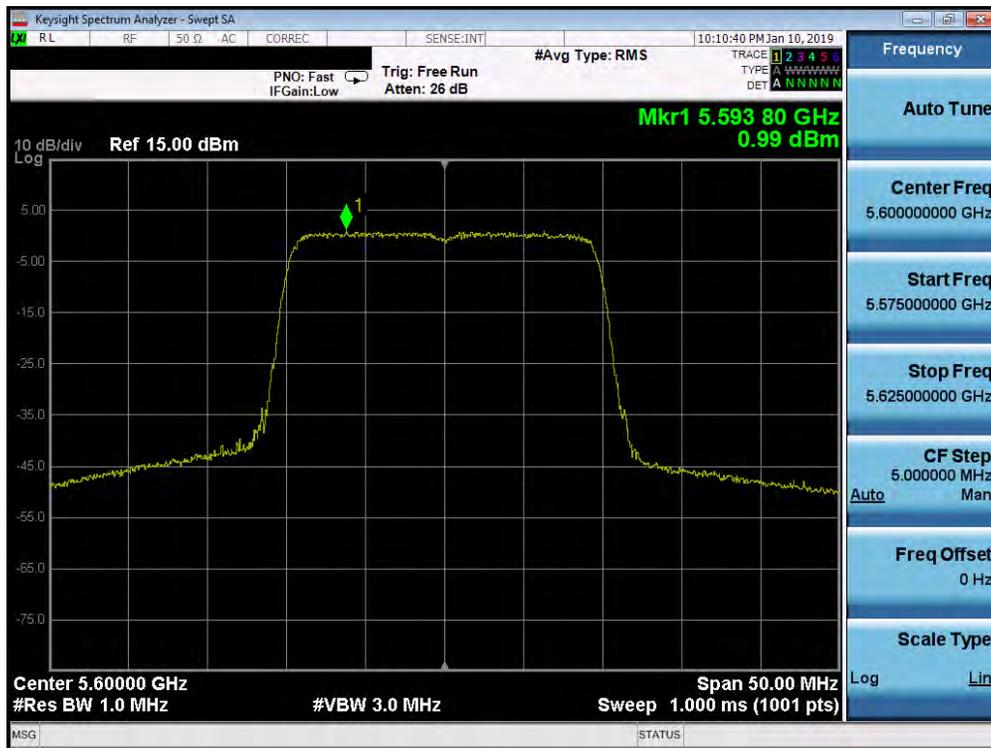


Plot 7-588. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 376 of 516

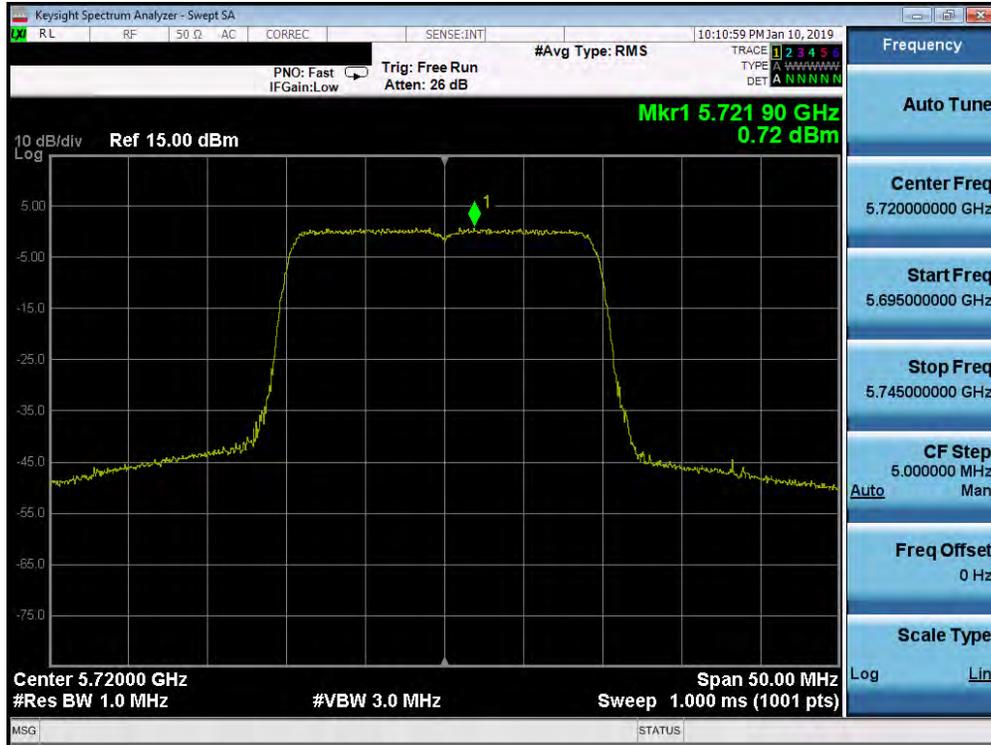


Plot 7-589. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)

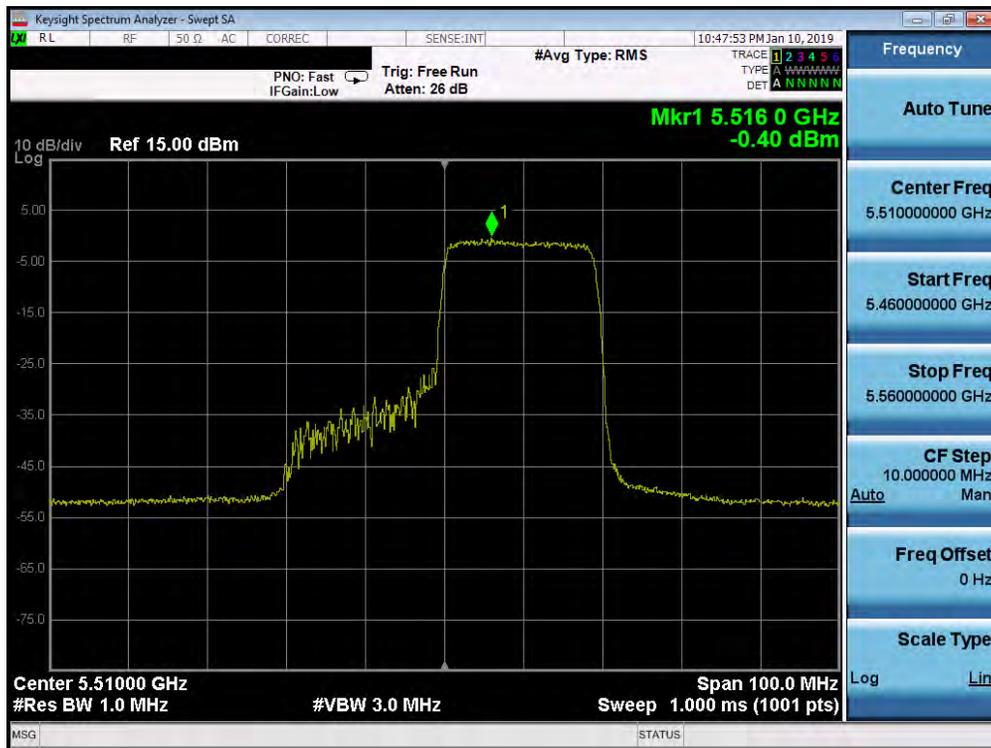


Plot 7-590. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 377 of 516

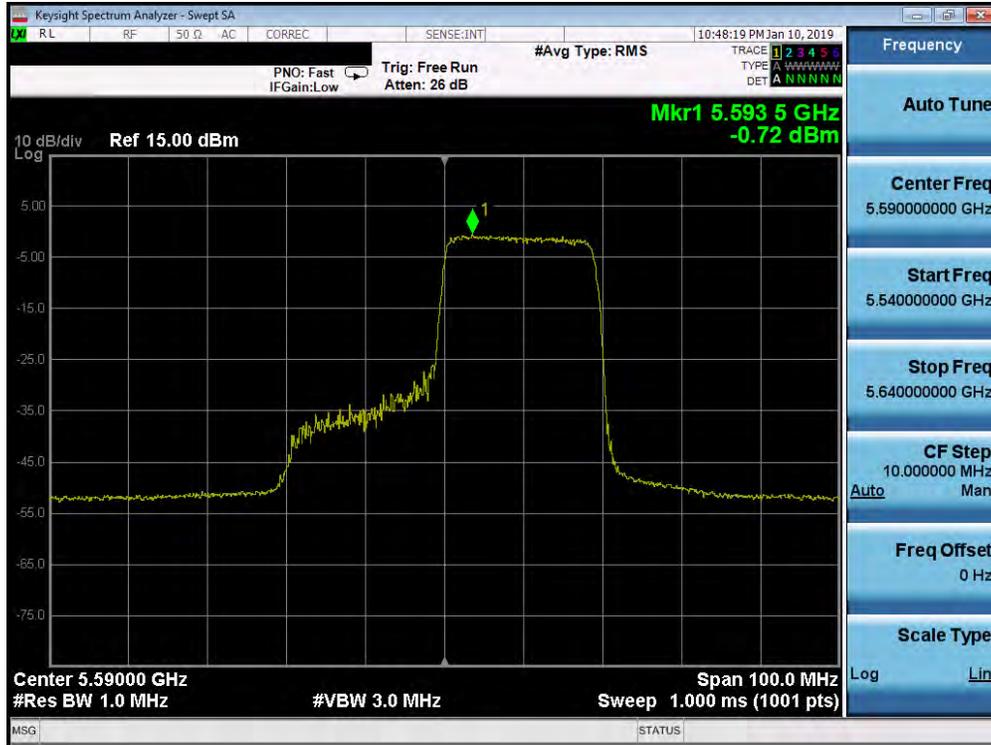


Plot 7-591. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)

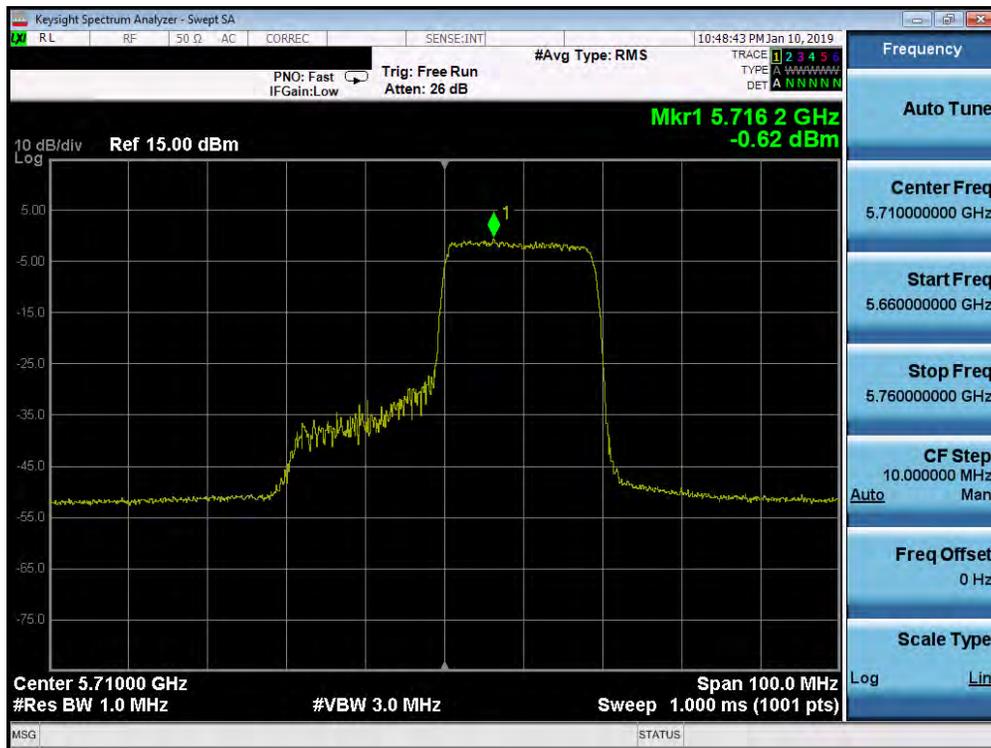


Plot 7-592. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 378 of 516

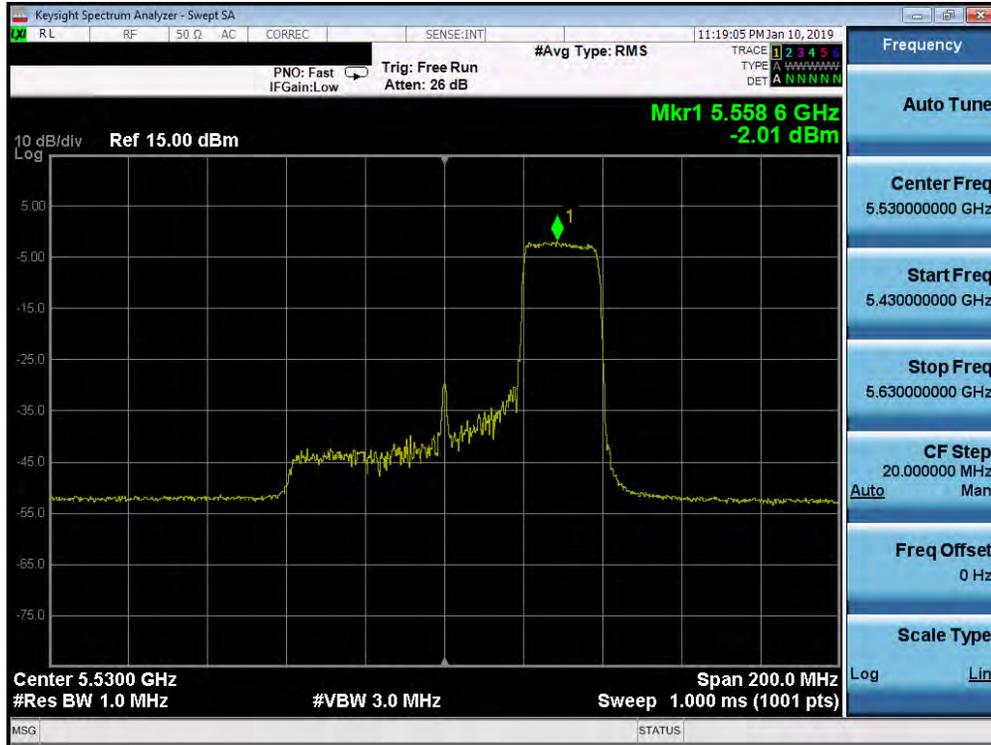


Plot 7-593. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 118)

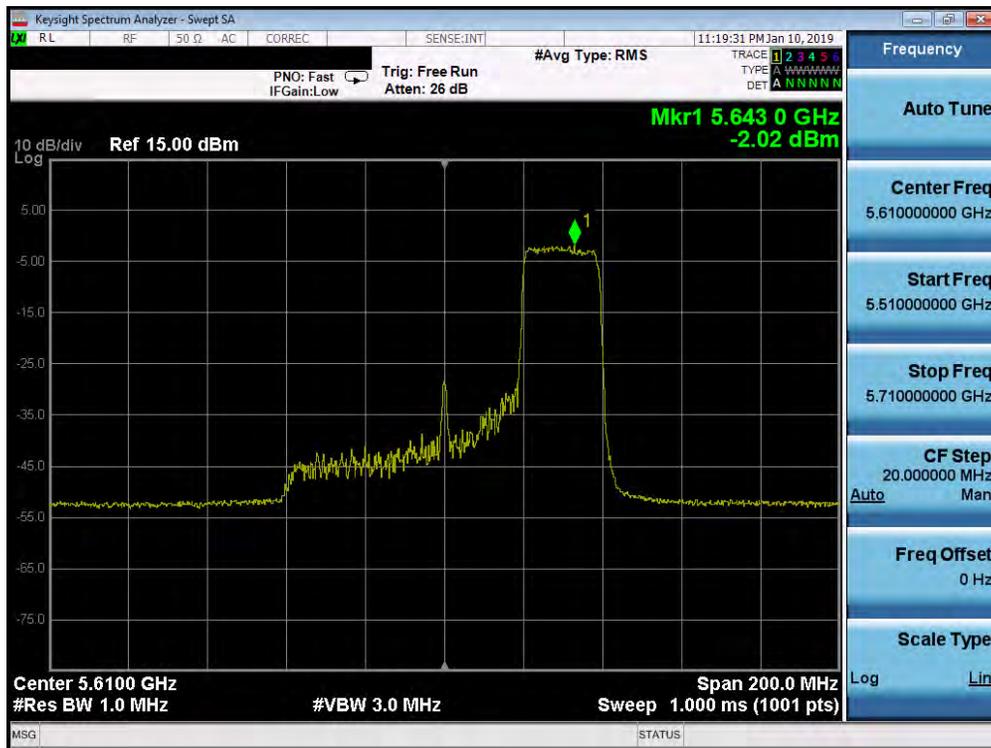


Plot 7-594. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 379 of 516

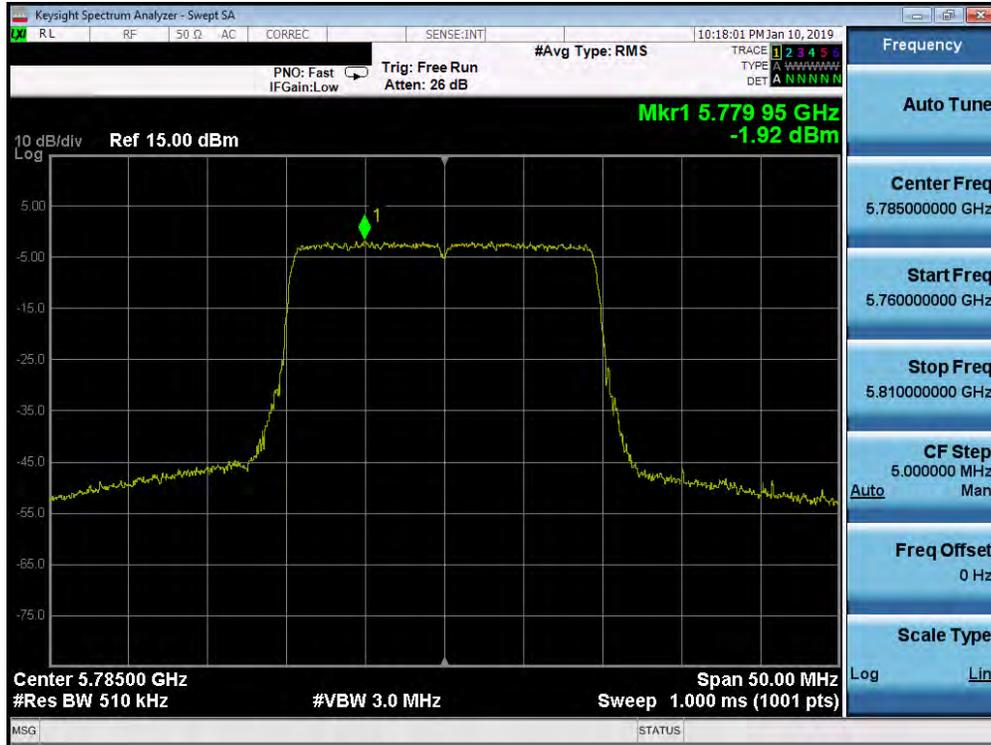


Plot 7-595. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 106)

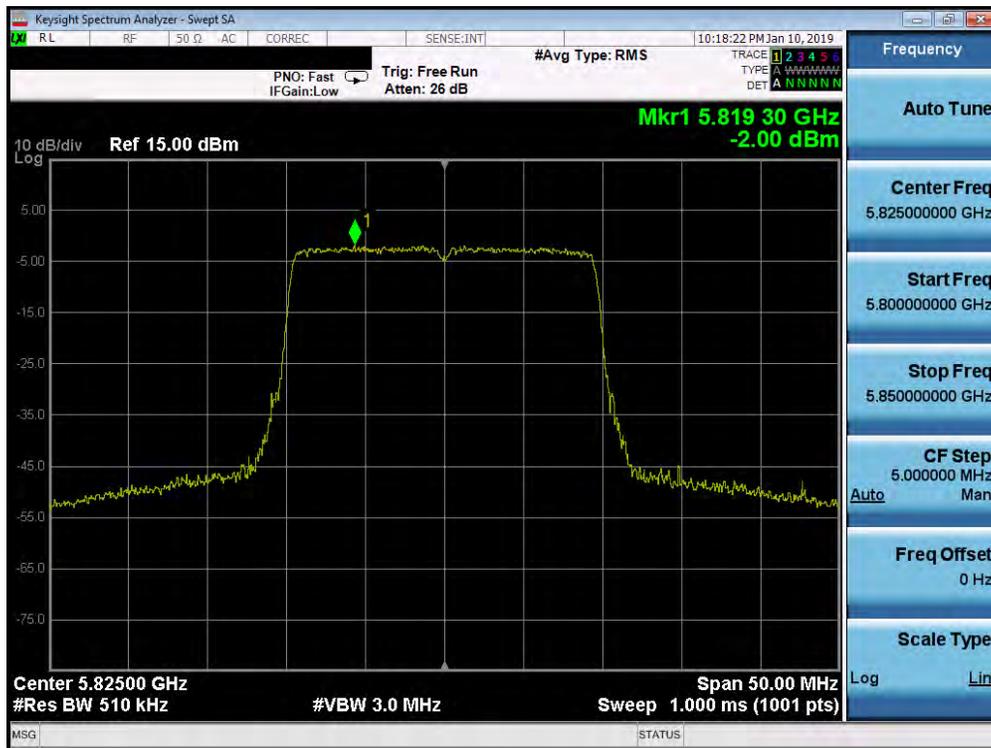


Plot 7-596. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 380 of 516

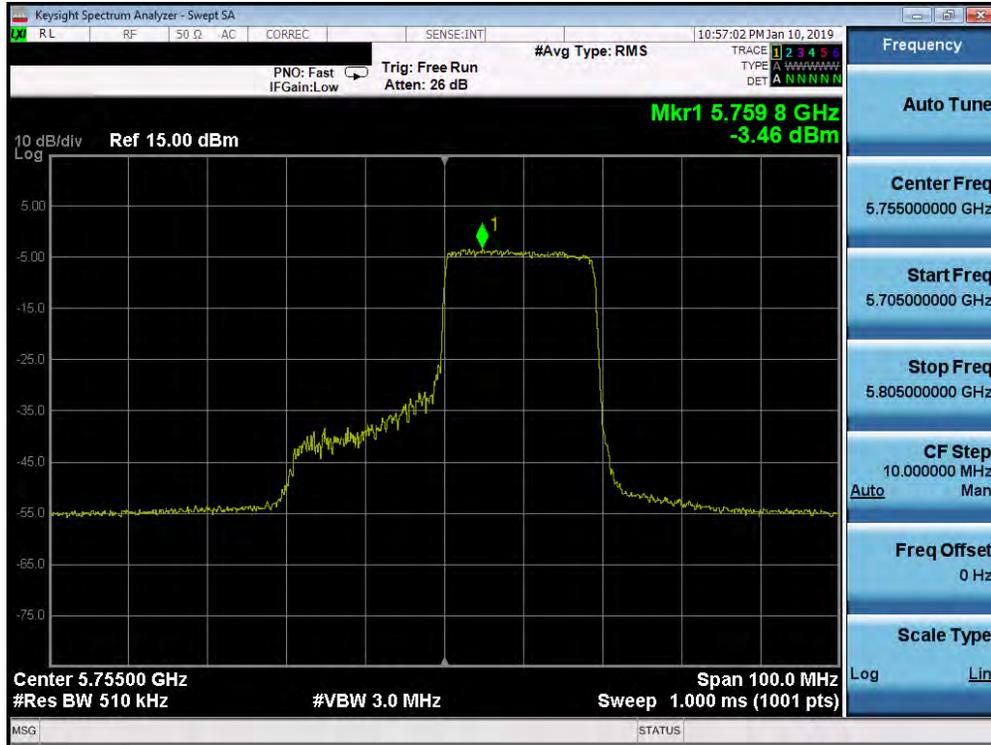


Plot 7-599. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

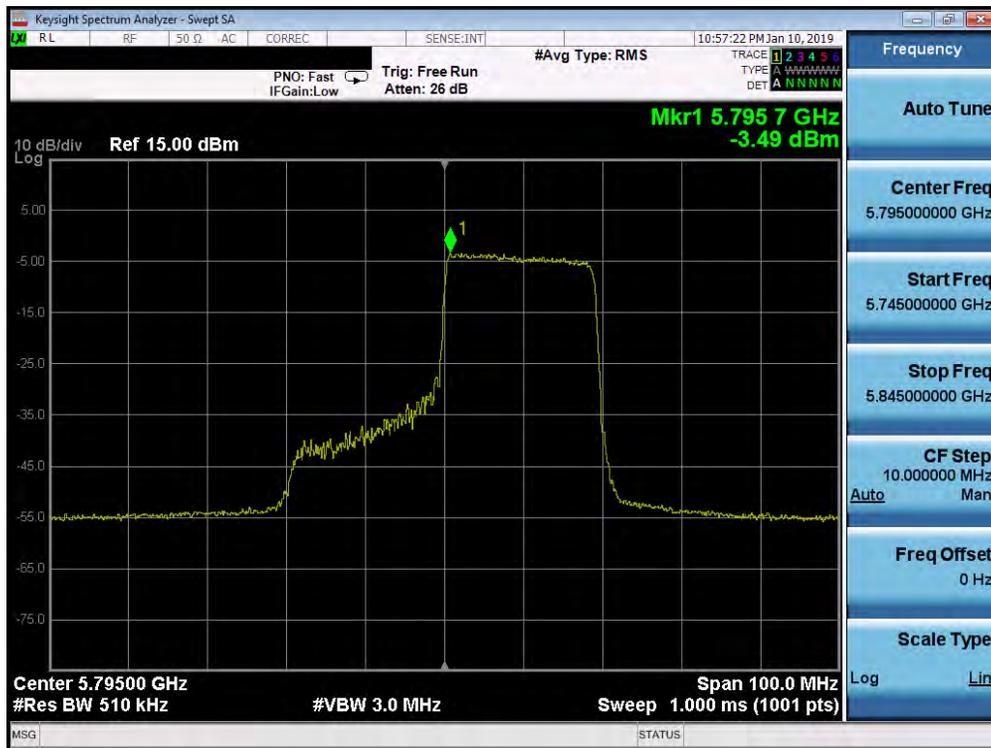


Plot 7-600. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 382 of 516

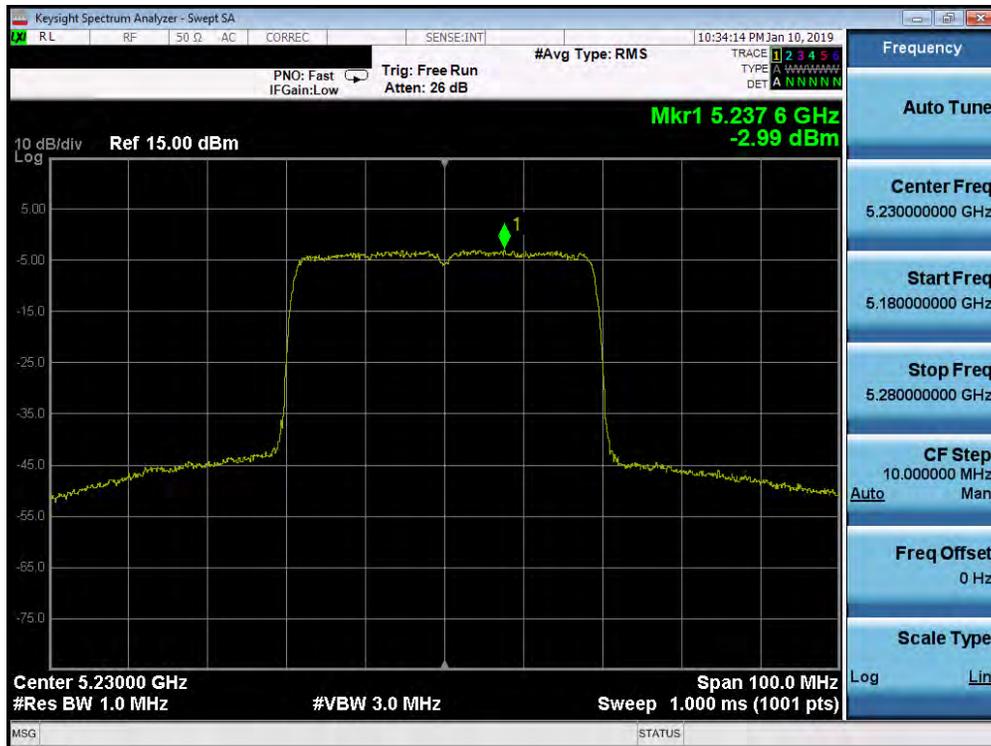


Plot 7-601. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 151)

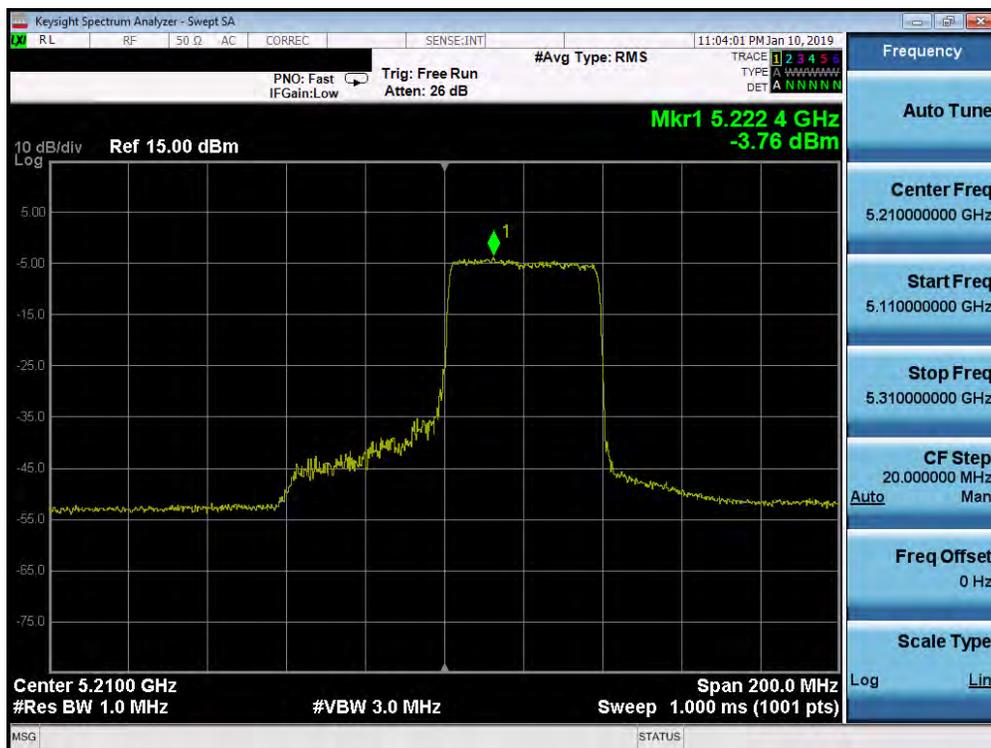


Plot 7-602. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 383 of 516

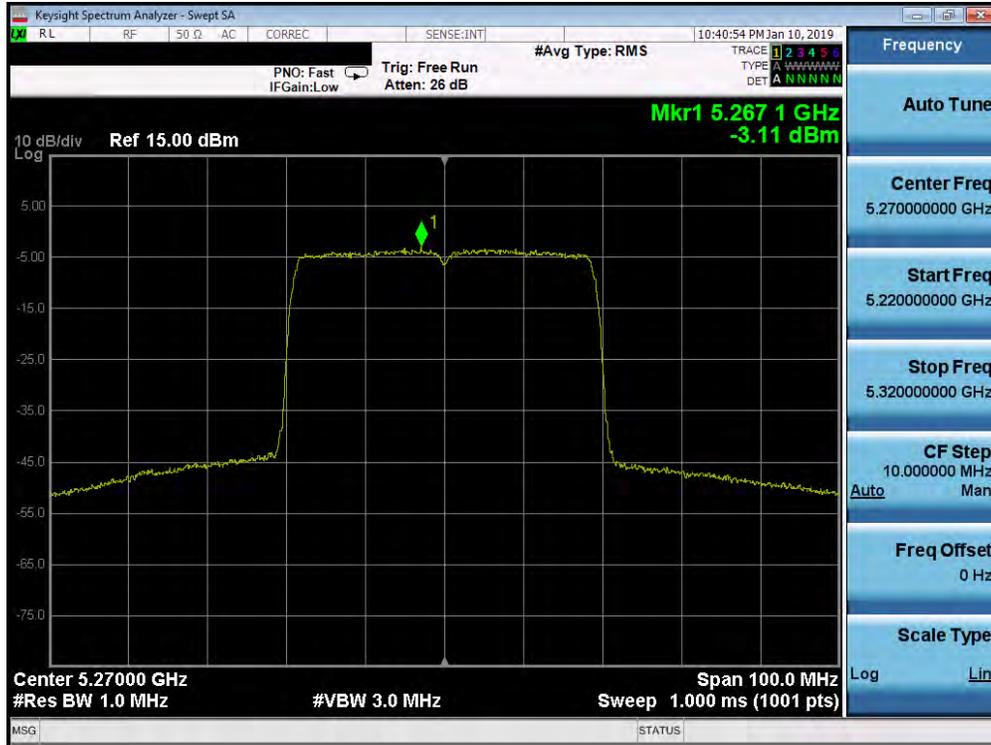


Plot 7-605. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

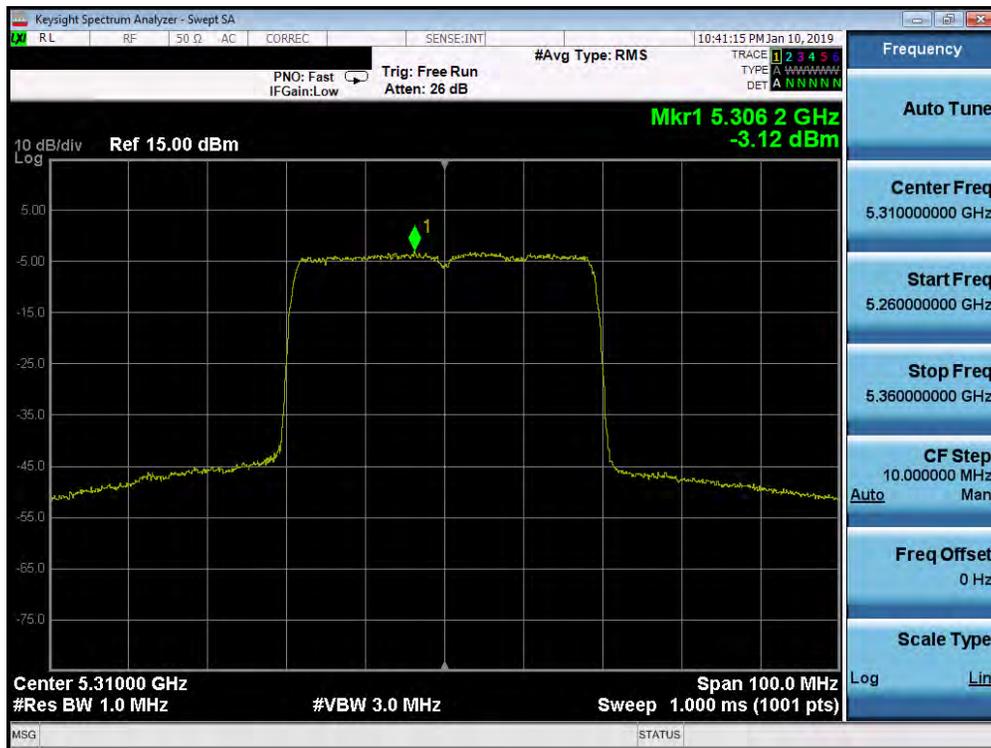


Plot 7-606. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 42)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 385 of 516

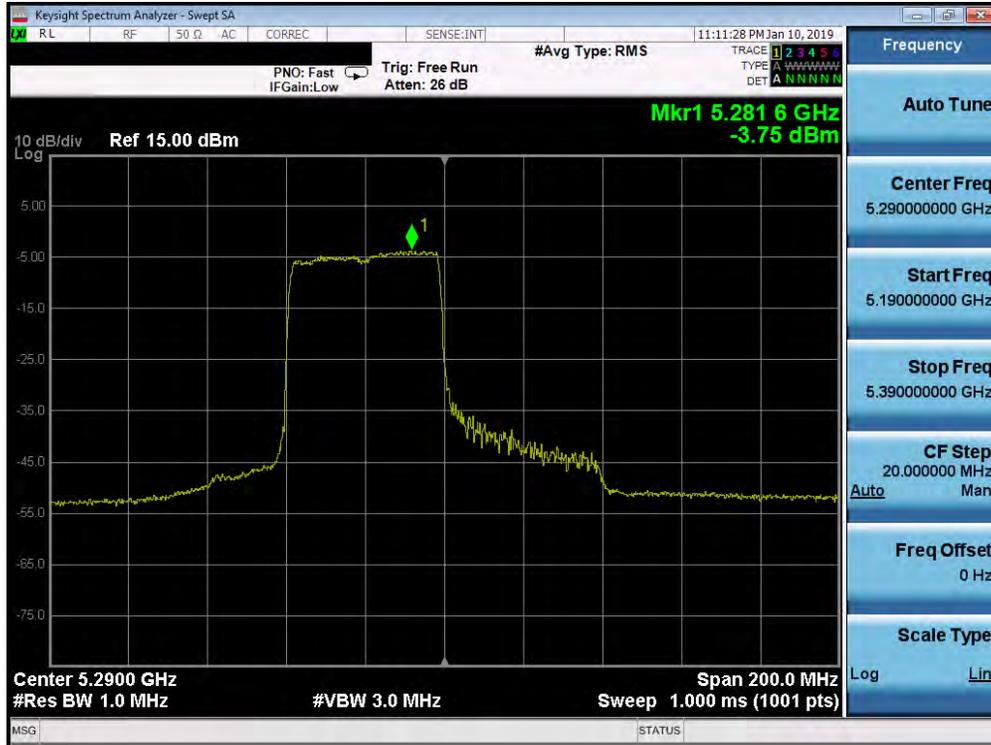


Plot 7-607. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

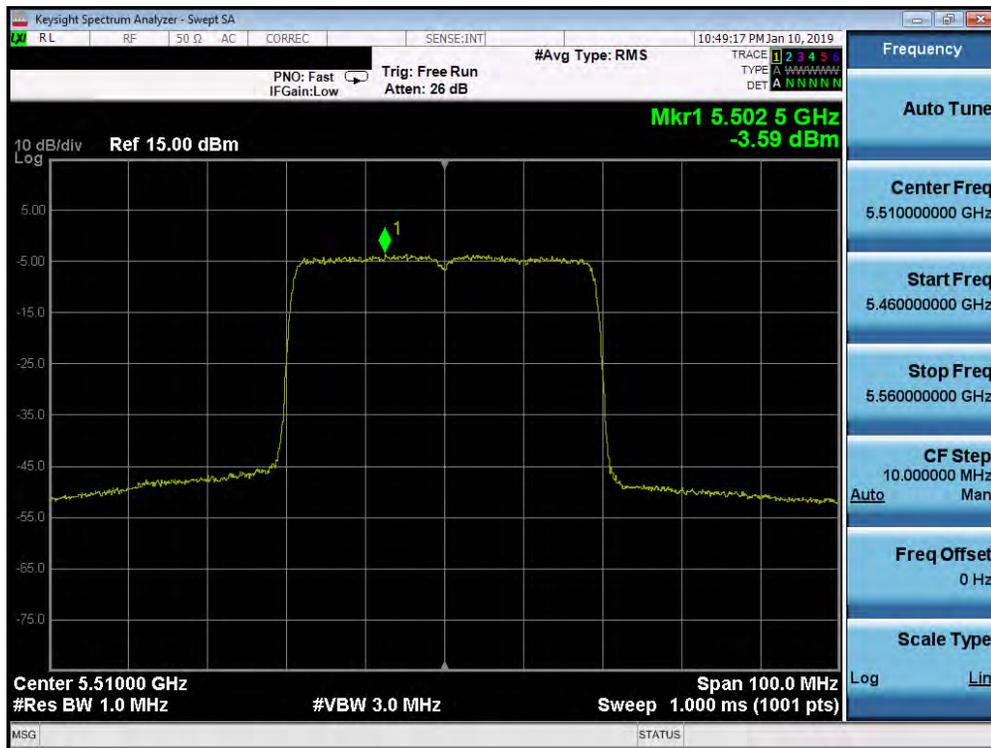


Plot 7-608. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 386 of 516

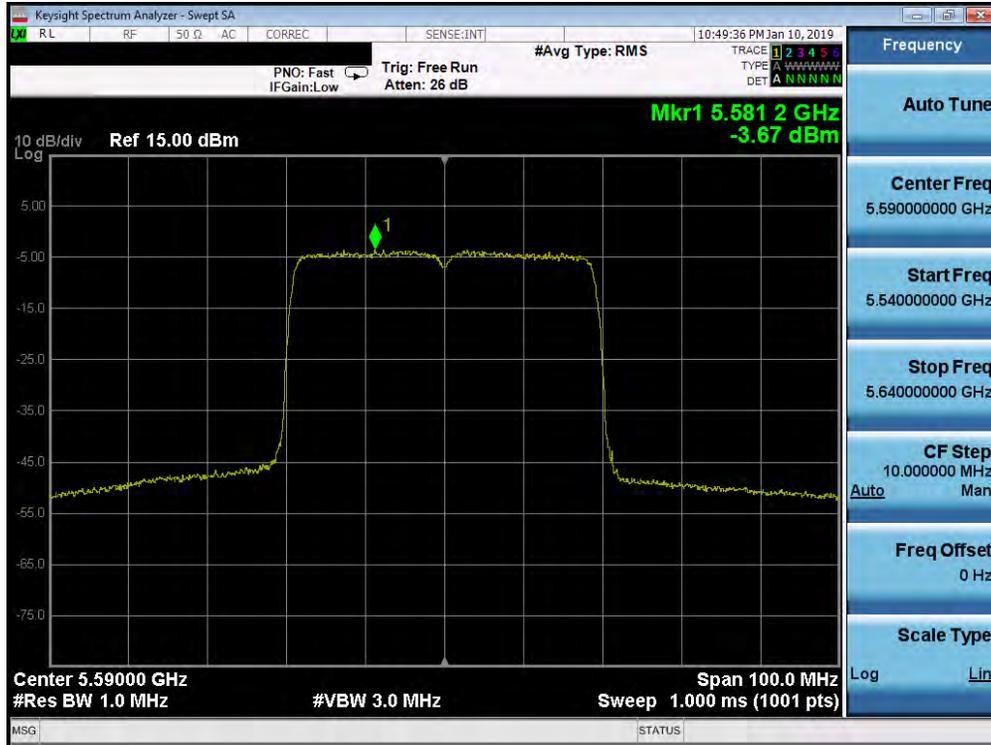


Plot 7-609. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 58)

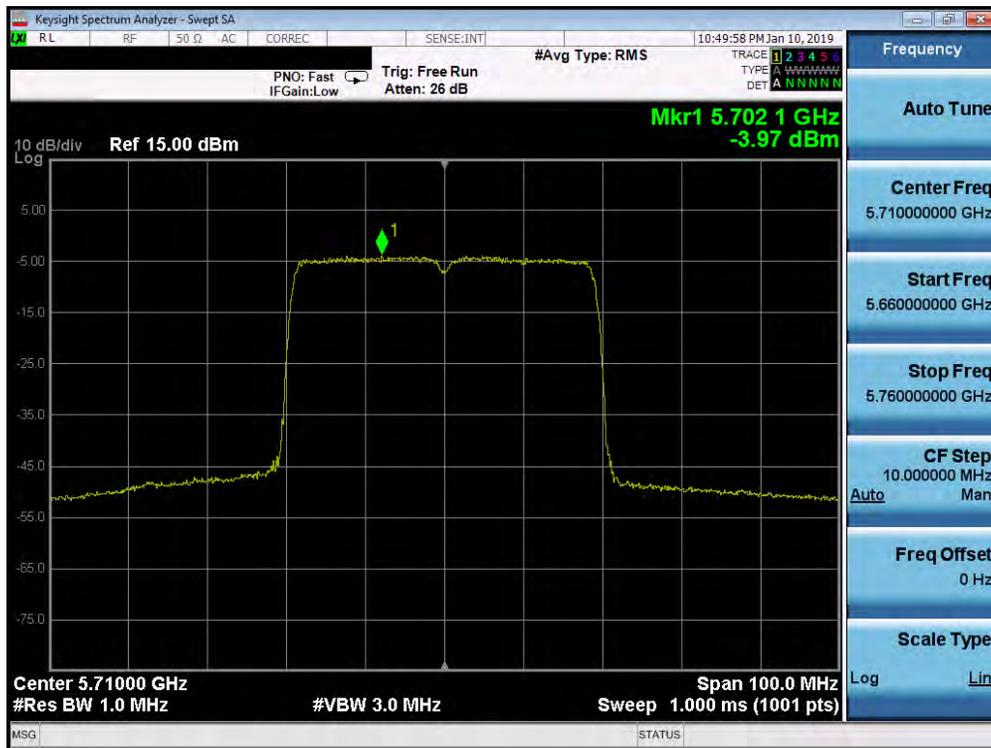


Plot 7-610. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 387 of 516

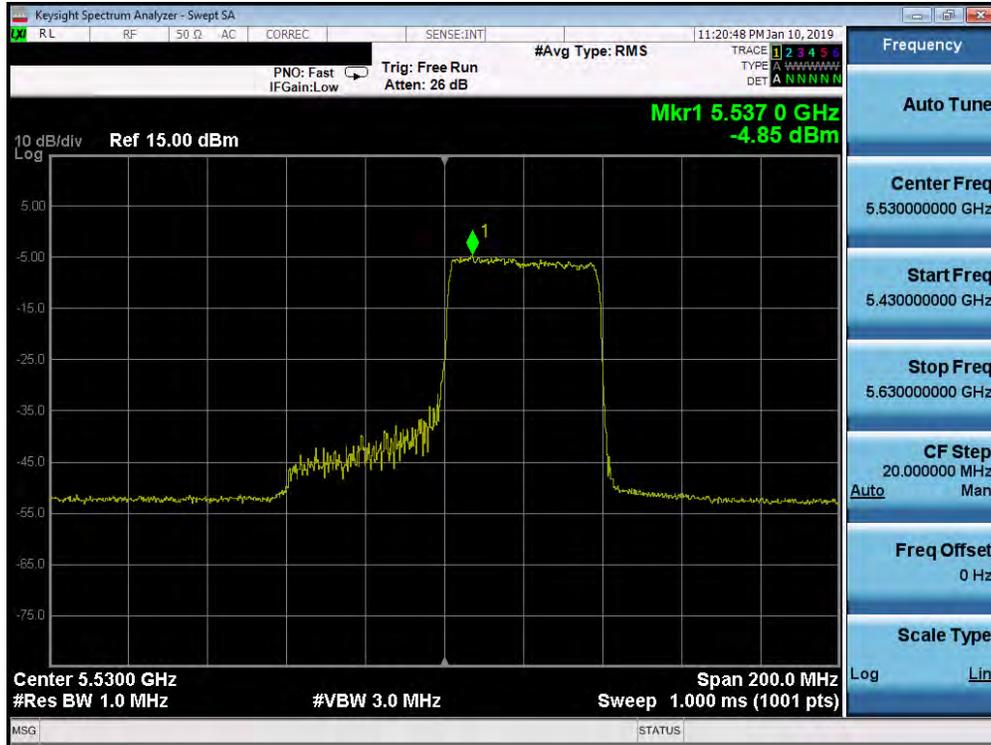


Plot 7-611. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

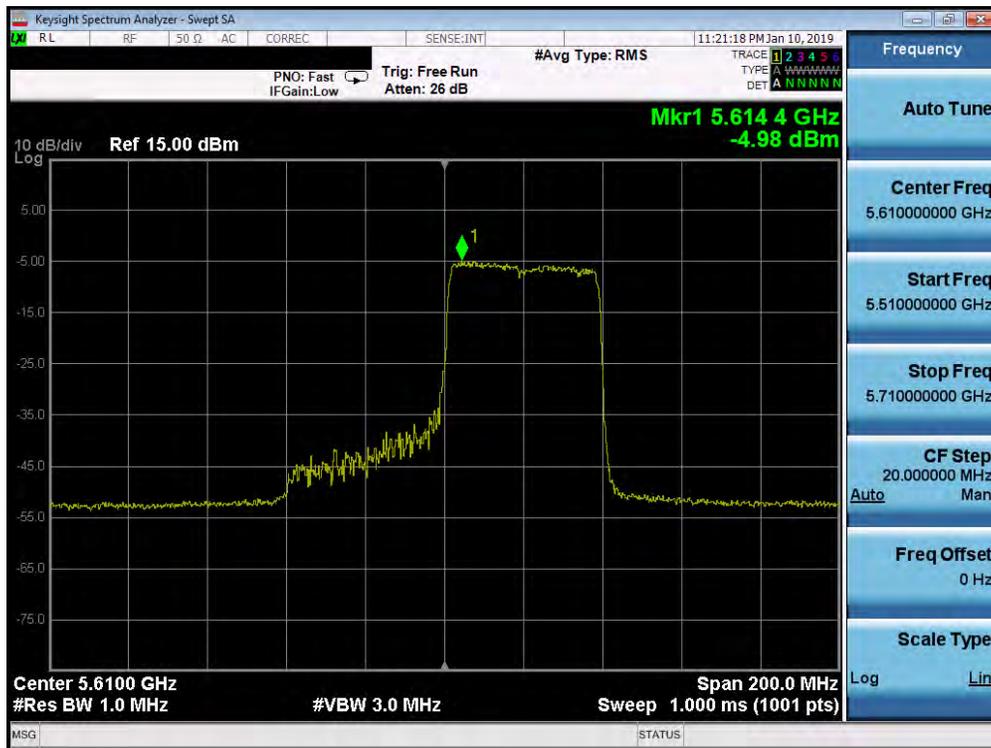


Plot 7-612. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 388 of 516

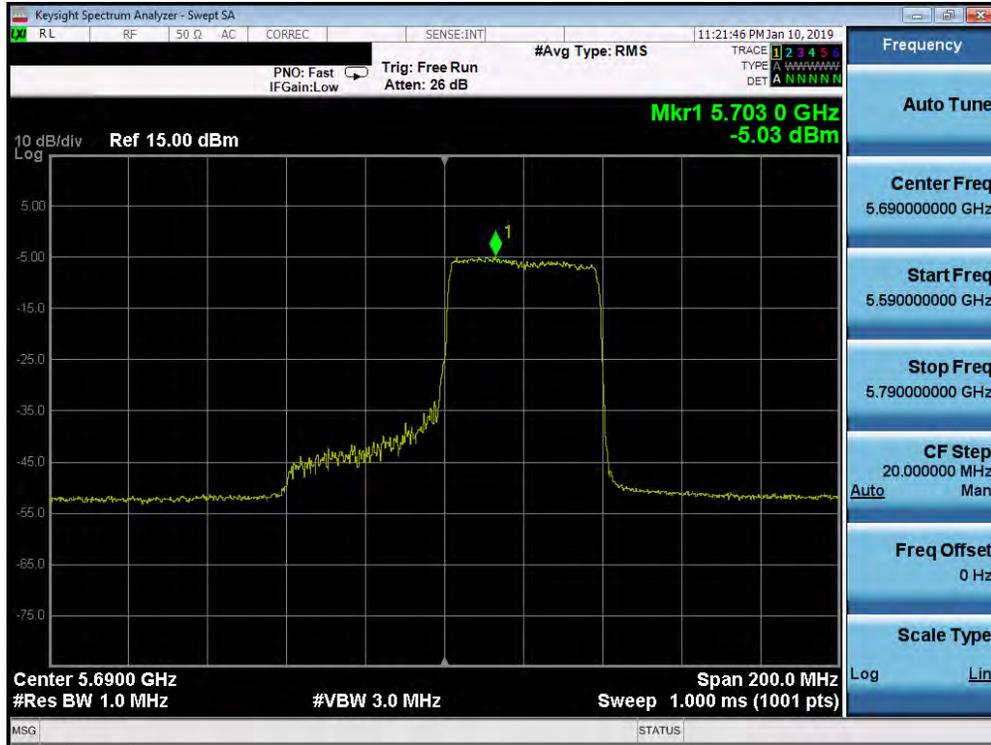


Plot 7-613. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 106)

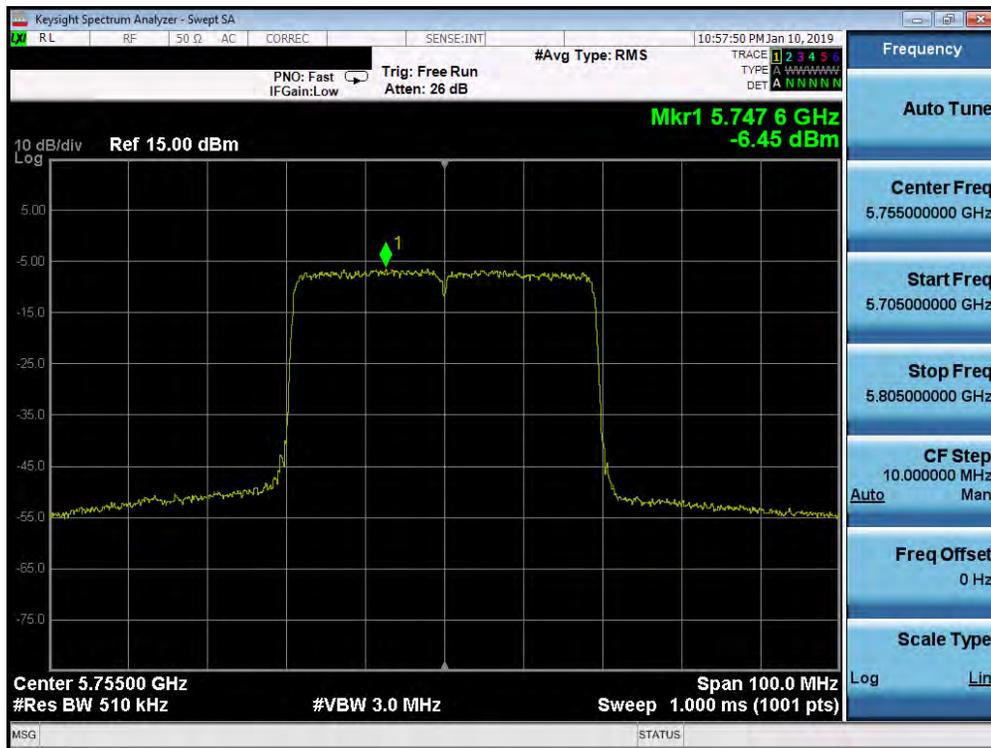


Plot 7-614. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 389 of 516

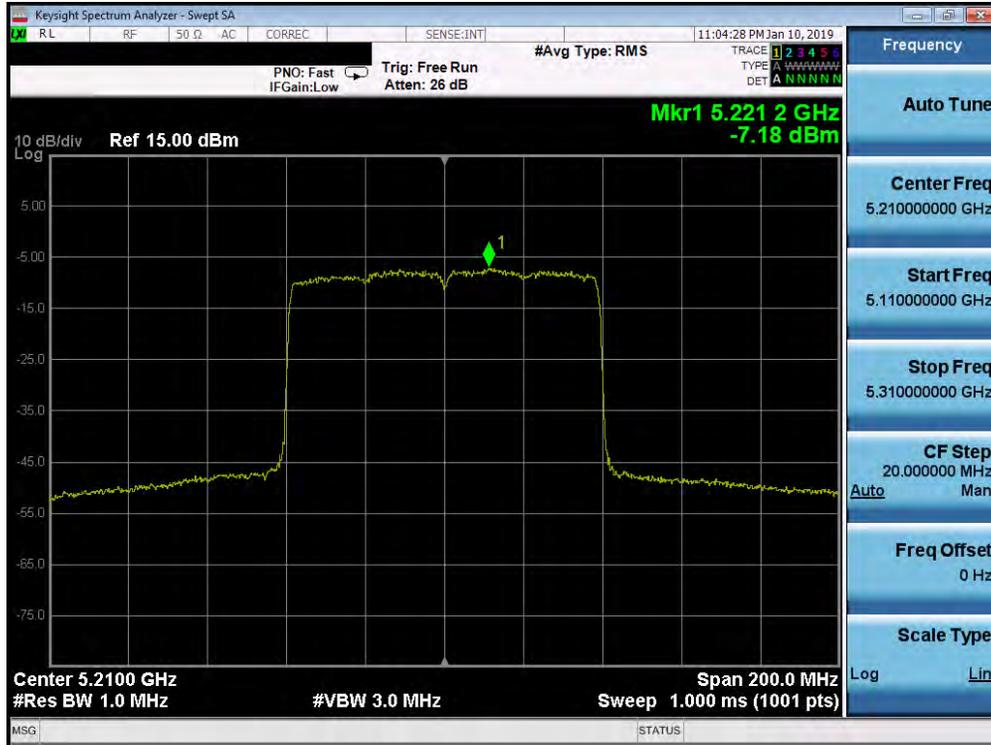


Plot 7-615. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 138)

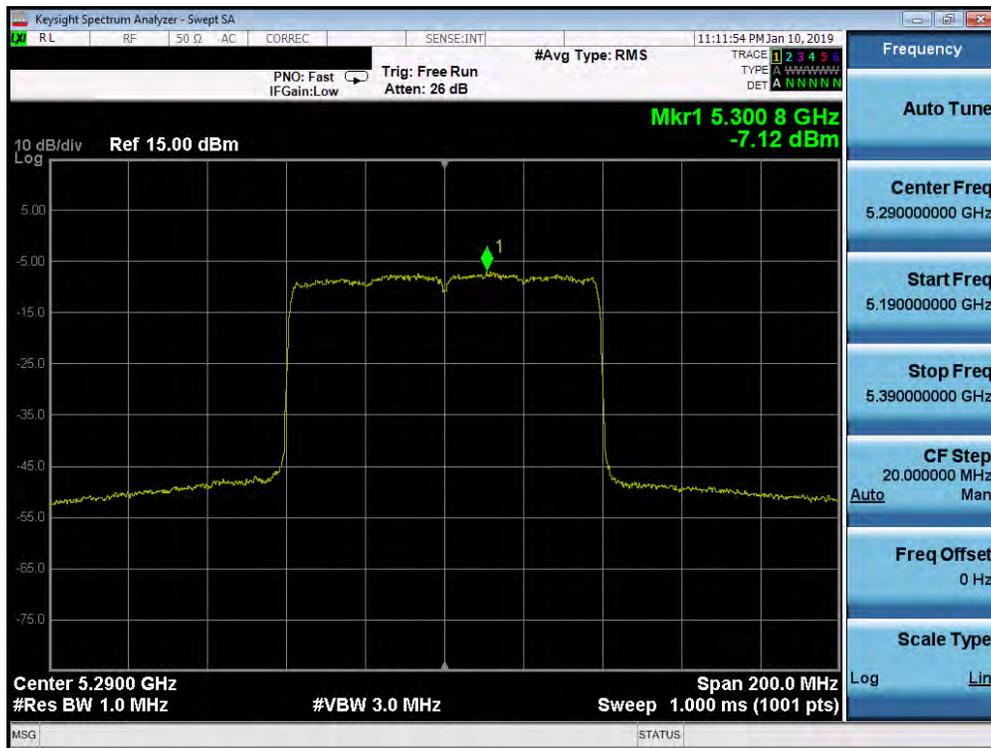


Plot 7-616. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 390 of 516

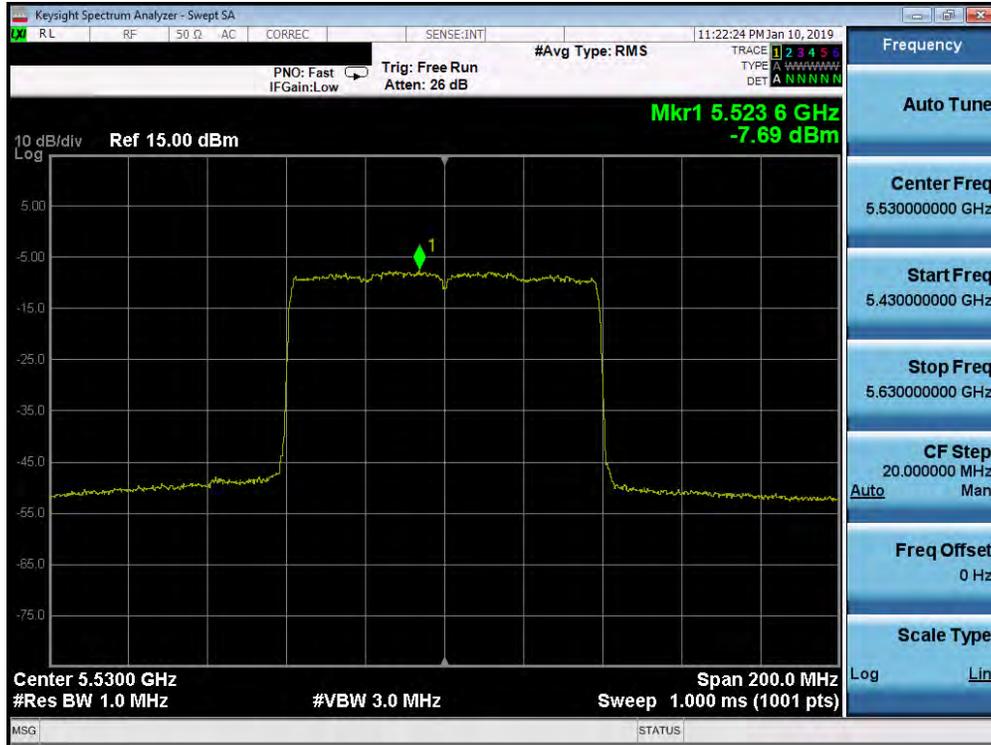


Plot 7-619. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

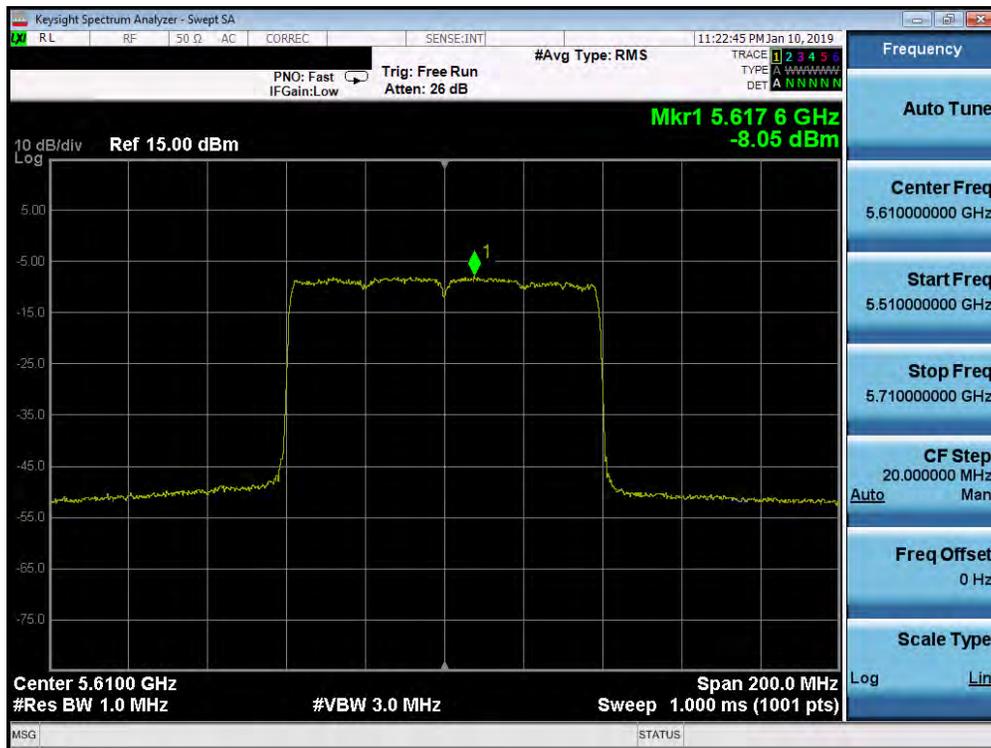


Plot 7-620. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 392 of 516

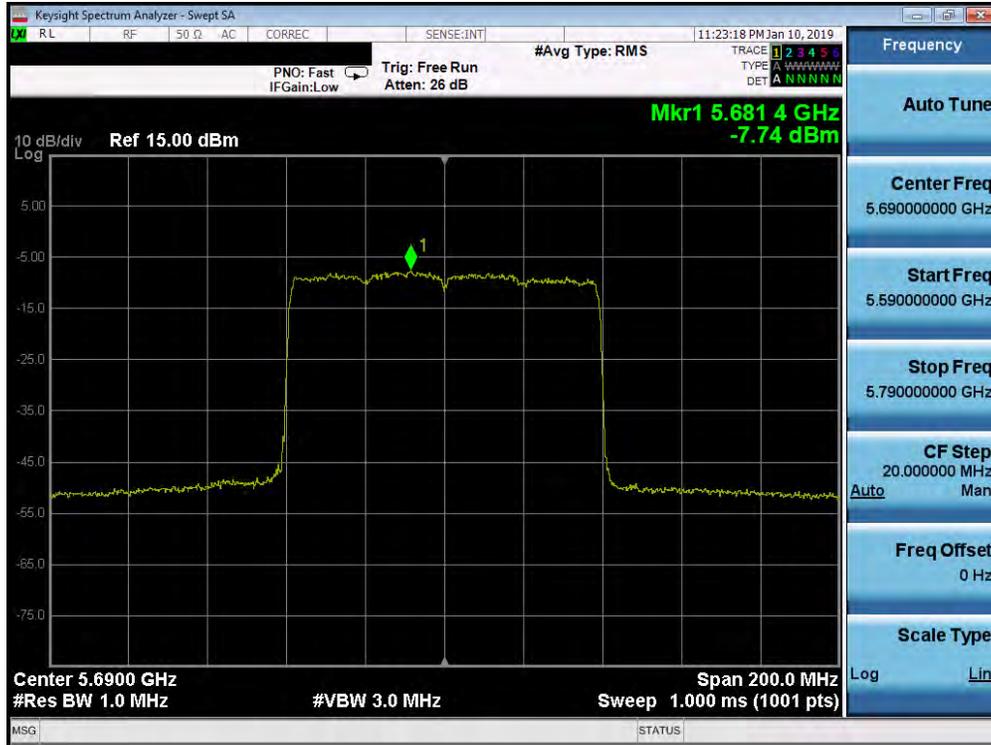


Plot 7-621. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)

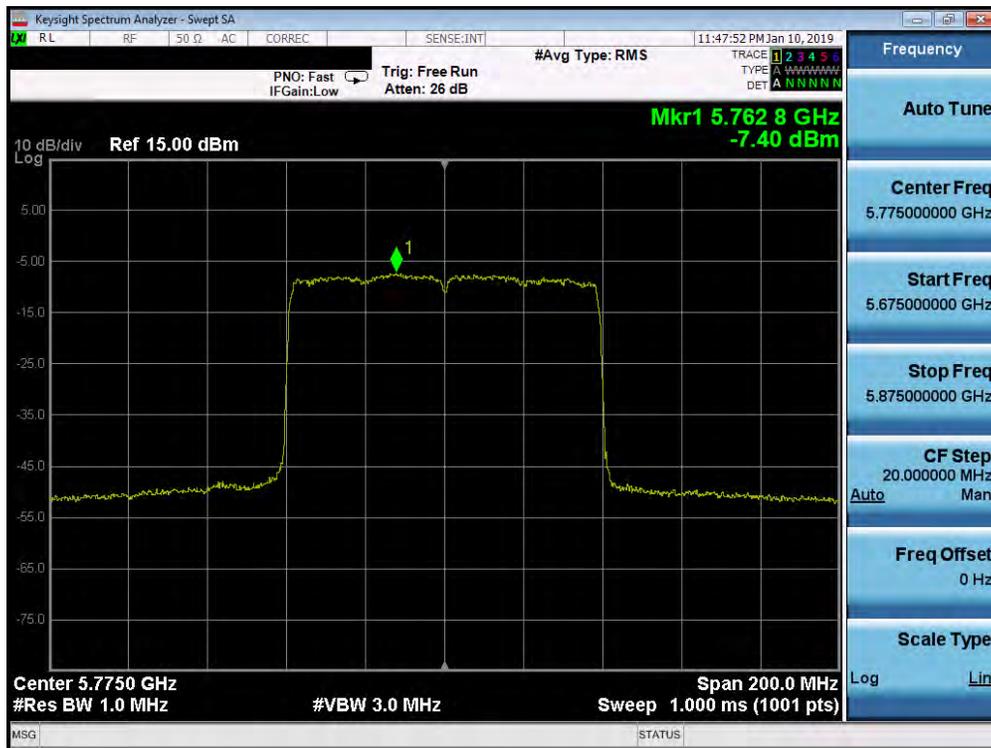


Plot 7-622. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG975U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 393 of 516



Plot 7-623. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)



Plot 7-624. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 394 of 516

Note:

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

Sample Directional Gain Calculation:

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

$$\begin{aligned}
 \text{Directional gain} &= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}] \text{ dBi} \\
 &= 10 \log[(10^{-8.61/20} + 10^{-7.68/20} / 2] \text{ dBi} \\
 &= (-5.12) \text{ dBi}
 \end{aligned}$$

Sample MIMO Calculation:

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

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

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

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

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

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

$$9.09 \text{ dBm} + (-5.12) \text{ dBi} = 3.97 \text{ dBm}$$

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 395 of 516

7.6 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 7-117. 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

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 396 of 516

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.

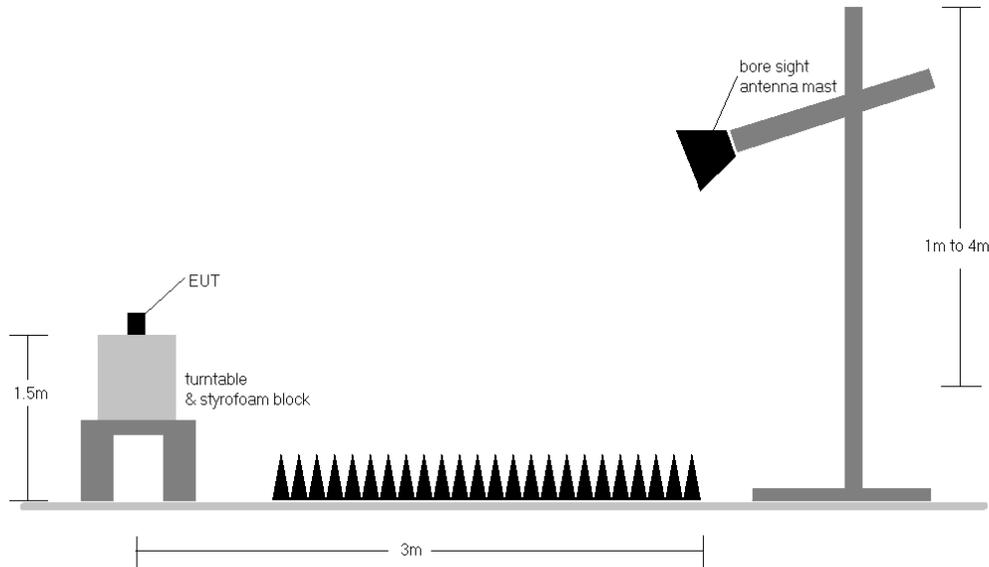


Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 397 of 516

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]

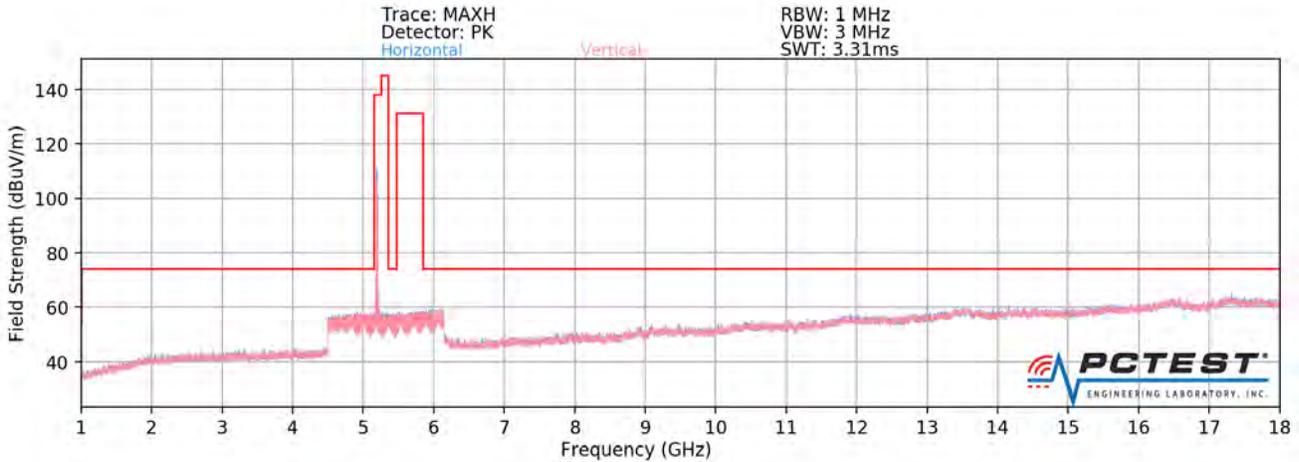
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 7.8 was calculated using the formula:

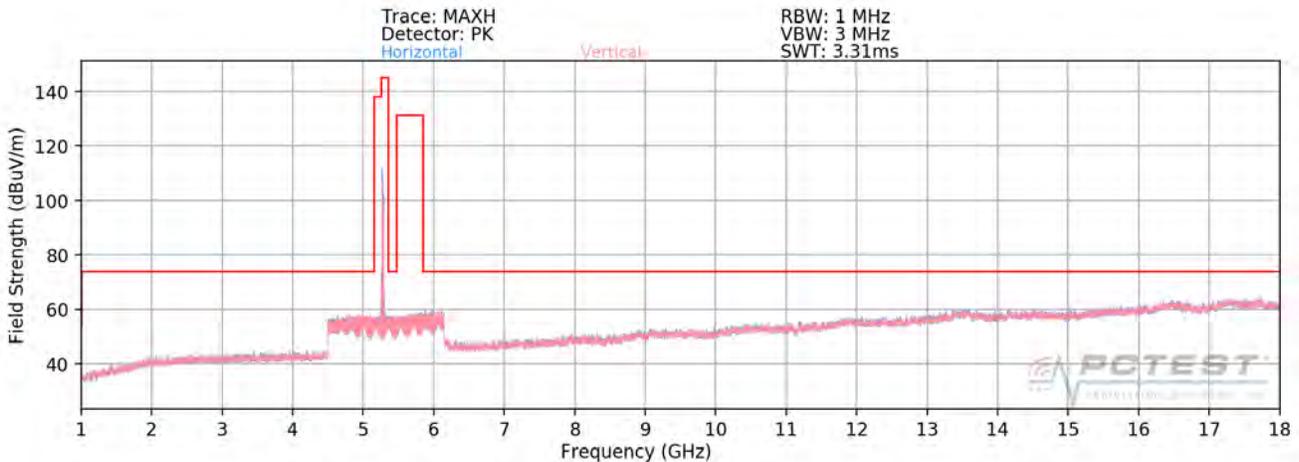
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

FCC ID: A3LSMG975U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset	Page 398 of 516

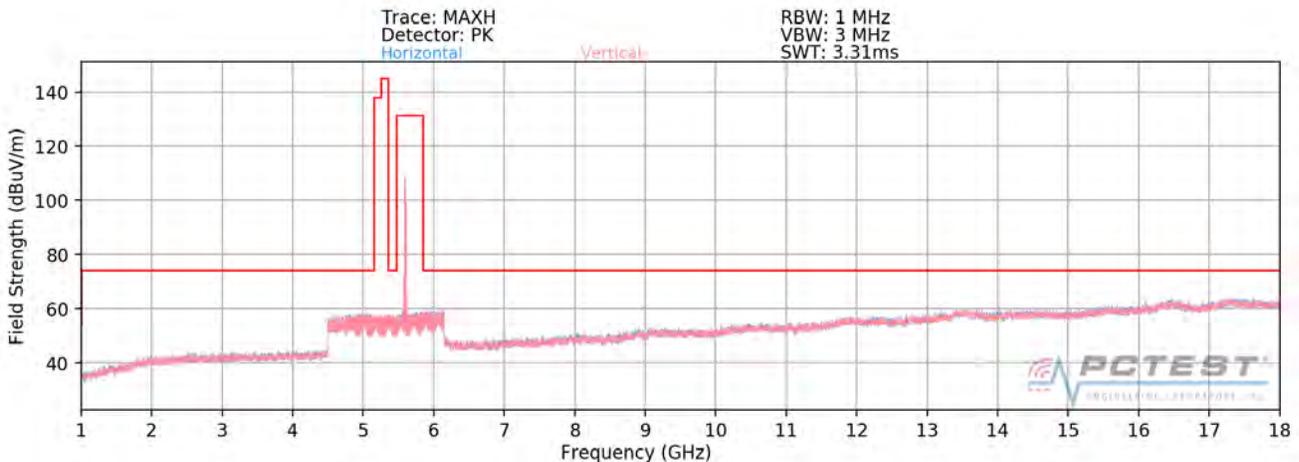
7.6.1 SISO Antenna-1 Radiated Spurious Emission Measurements 106 Tones



Plot 7-625. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U1 Ch. 40 – 106 Tones)

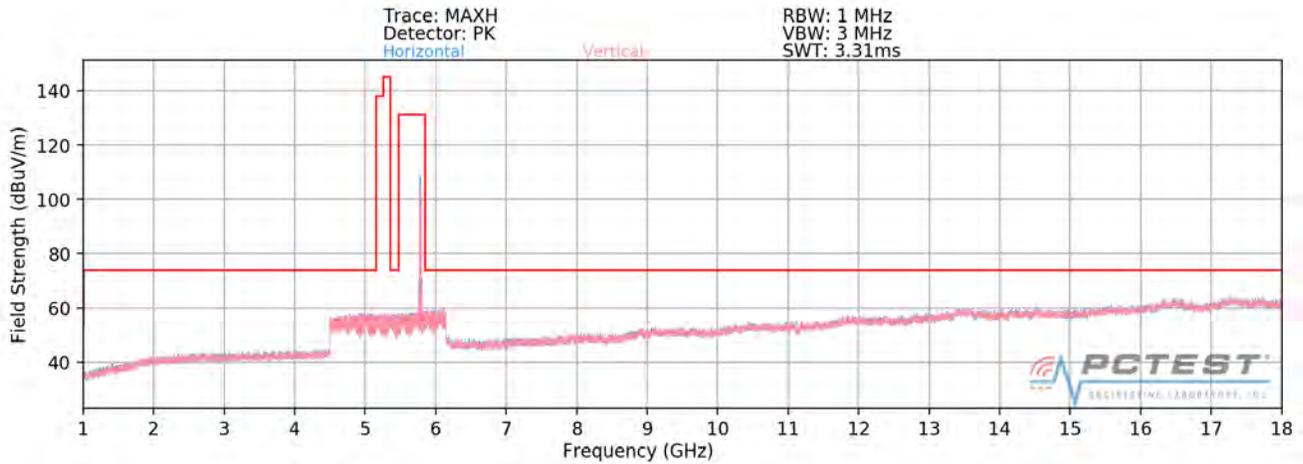


Plot 7-626. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2A Ch. 56 – 106 Tones)



Plot 7-627. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U2C Ch. 120 – 106 Tones)

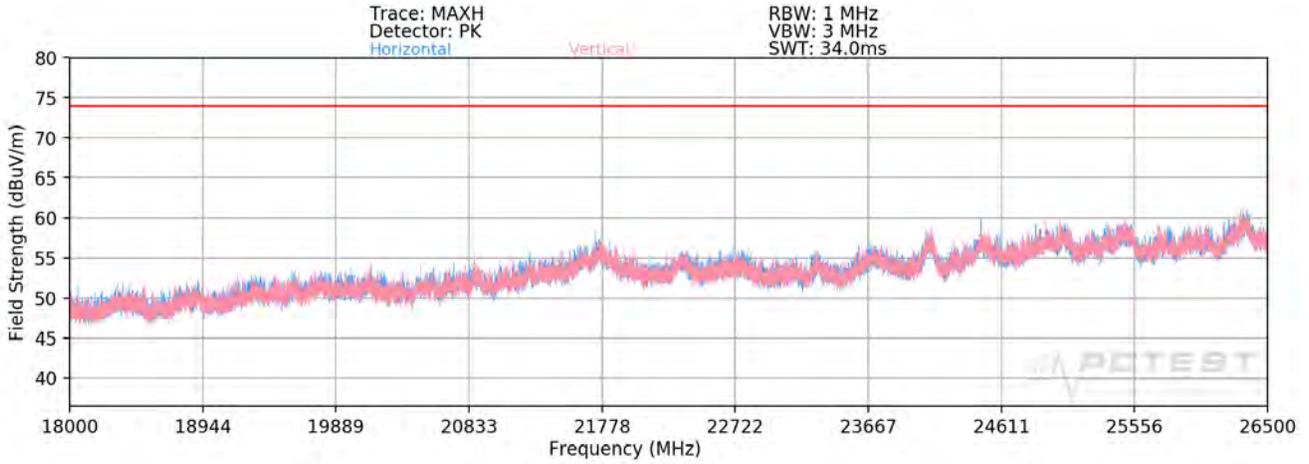
FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 399 of 516



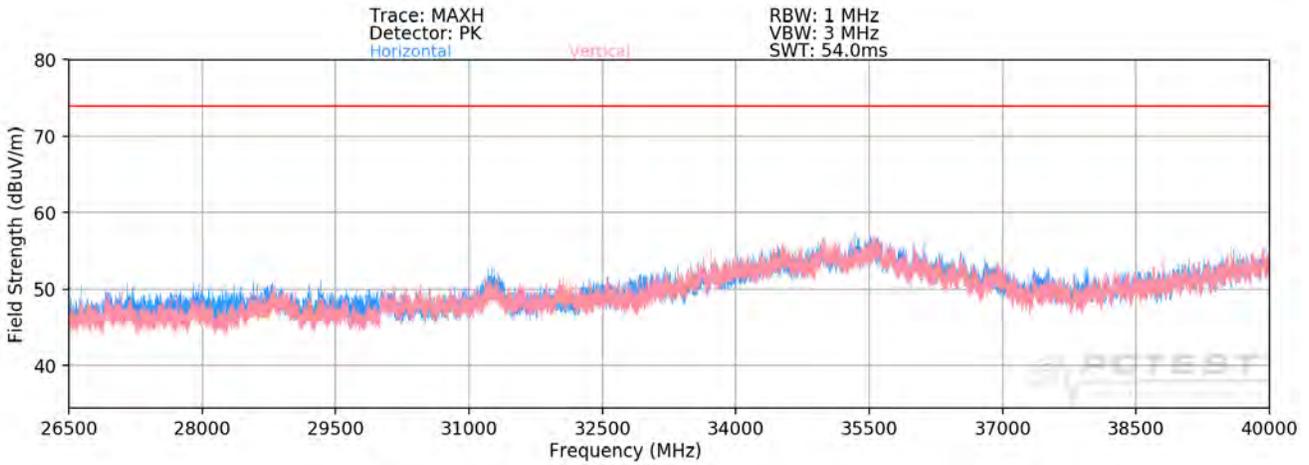
Plot 7-628. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11ax – U3 Ch. 157 – 106 Tones)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset	Page 400 of 516	

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



Plot 7-629. Radiated Spurious Plot 18GHz - 26.5GHz SISO ANT1 (802.11ax – 106 Tones)



Plot 7-630. Radiated Spurious Plot 26.5GHz - 40GHz SISO ANT1 (802.11ax – 106 Tones)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset	Page 401 of 516	

SISO Antenna-1 Radiated Spurious Emission Measurements (106 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: 53
 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	-	-	-71.51	18.75	0.00	54.24	68.20	-13.96
* 15540.00	Average	H	-	-	-85.10	28.13	0.00	50.03	53.98	-3.95
* 15540.00	Peak	H	-	-	-73.22	28.13	0.00	61.91	73.98	-12.07
* 20720.00	Average	H	-	-	-81.60	16.92	-9.54	32.78	53.98	-21.20
* 20720.00	Peak	H	-	-	-70.12	16.92	-9.54	44.26	73.98	-29.72
25900.00	Peak	H	-	-	-68.31	19.39	-9.54	48.54	68.20	-19.66

Table 7-118. Radiated Measurements SISO ANT1 (106 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 53
 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	-	-	-70.87	19.45	0.00	55.58	68.20	-12.62
* 15600.00	Average	H	-	-	-85.13	27.65	0.00	49.52	53.98	-4.46
* 15600.00	Peak	H	-	-	-74.26	27.65	0.00	60.39	73.98	-13.59
* 20800.00	Average	H	-	-	-81.42	17.39	-9.54	33.42	53.98	-20.55
* 20800.00	Peak	H	-	-	-70.22	17.39	-9.54	44.62	73.98	-29.35
26000.00	Peak	H	-	-	-68.48	19.98	-9.54	48.95	68.20	-19.25

Table 7-119. Radiated Measurements SISO ANT1 (106 Tones)

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset		Page 402 of 516

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 53
 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	-	-	-73.04	19.76	0.00	53.72	68.20	-14.48
* 15720.00	Average	H	-	-	-84.96	27.55	0.00	49.59	53.98	-4.39
* 15720.00	Peak	H	-	-	-73.72	27.55	0.00	60.83	73.98	-13.15
* 20960.00	Average	H	-	-	-80.91	17.29	-9.54	33.84	53.98	-20.14
* 20960.00	Peak	H	-	-	-69.87	17.29	-9.54	44.88	73.98	-29.10
26200.00	Peak	H	-	-	-68.14	19.80	-9.54	49.12	68.20	-19.08

Table 7-120. Radiated Measurements SISO ANT1 (106 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 53
 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	-	-	-74.39	19.76	0.00	52.37	68.20	-15.83
* 15720.00	Average	H	-	-	-85.35	27.55	0.00	49.20	53.98	-4.78
* 15720.00	Peak	H	-	-	-74.02	27.55	0.00	60.53	73.98	-13.45
* 20960.00	Average	H	-	-	-80.76	17.29	-9.54	33.99	53.98	-19.99
* 20960.00	Peak	H	-	-	-69.29	17.29	-9.54	45.46	73.98	-28.52
26200.00	Peak	H	-	-	-67.94	19.80	-9.54	49.32	68.20	-18.88

Table 7-121. Radiated Measurements SISO ANT1 (106 Tones)with WCP

FCC ID: A3LSMG975U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250197-06.A3L	Test Dates: 10/31/2018-1/09/2019	EUT Type: Portable Handset	Page 403 of 516	