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MEASUREMENT REPORT
FCC PART 15.407 UNII OFDMA

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
4/26 – 7/30/2020
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M2004230075-08.A3L

FCC ID:	**A3LSMT978U**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-T978U
EUT Type:	Portable Tablet
Frequency Range:	5180 – 5825MHz
Modulation Type:	OFDMA
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15 Subpart E (15.407)
Test Procedure(s):	ANSI C63.10-2013, KDB 789033 D02 v02r01, KDB 662911 D01 v02r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013 and KDB 789033 D02 v02r01. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez
President

ACCREDITED
CERT #2041.01

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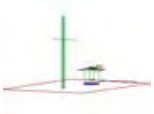

UNII Band	Channel Bandwidth (MHz)	Tx Frequency (MHz)	ANT1		ANT2		MIMO	
			Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1	20	5180 - 5240	12.560	10.99	12.560	10.99	24.750	13.94
2A		5260 - 5320	12.560	10.99	12.560	10.99	24.862	13.96
2C		5500 - 5720	12.560	10.99	12.560	10.99	24.750	13.94
3		5745 - 5825	12.560	10.99	12.560	10.99	24.948	13.97
1	40	5190 - 5230	12.560	10.99	12.560	10.99	25.034	13.99
2A		5270 - 5310	12.560	10.99	12.560	10.99	24.948	13.97
2C		5510 - 5710	12.560	10.99	12.560	10.99	24.891	13.96
3		5755 - 5795	12.560	10.99	12.560	10.99	24.778	13.94
1	80	5210	12.560	10.99	12.560	10.99	25.061	13.99
2A		5290	12.560	10.99	12.560	10.99	24.499	13.89
2C		5530 - 5690	12.560	10.99	12.560	10.99	24.948	13.97
3		5775	12.560	10.99	12.560	10.99	25.061	13.99

EUT Overview

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).

- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Tablet FCC ID: A3LSMT978U**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

Test Device Serial No.: *1755M, 1746M, 0731M, 0728M*

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n71, n5, n66, n25, n2, n41), 802.11b/g/n/ac/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE)

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500	149	5745
:	:	:	:	:	:	:	:
42	5210	56	5280	120	5600	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825

Table 2-1. 802.11ax (20MHz) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5190	54	5270	102	5510	151	5755
:	:	:	:	:	:	:	:
46	5230	62	5310	118	5590	159	5795
				:	:		
				142	5710		

Table 2-2. 802.11ax (40MHz BW) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775
				:	:		
				138	5690		

Table 2-3. 802.11ax (80MHz BW) Frequency / Channel Operations

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Notes:

1. 5GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013 and KDB 789033 D02 v02r01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Mode	Antenna	Bandwidth [MHz]	Channel	Tone	Duty Cycle
802.11ax NII RU	1	20	36	26T	97.7
				52T	96.1
				106T	98.6
				242T	95.8
802.11ax NII RU	2		36	26T	99.5
				52T	99.4
				106T	99.5
				242T	99.7
802.11ax NII RU	MIMO		36	26T	99.3
				52T	99.4
				106T	99.3
				242T	99.5
802.11ax NII RU	1	40	38	26T	97.3
				52T	97.0
				106T	96.4
				242T	94.9
				484T	99.2
802.11ax NII RU	2		38	26T	98.9
				52T	98.8
				106T	98.8
				242T	99.2
				484T	99.3
802.11ax NII RU	MIMO		38	26T	98.2
				52T	98.2
				106T	98.1
				242T	98.7
				484T	98.1
802.11ax NII RU	1	80	42	26T	95.6
				52T	98.8
				106T	98.5
				242T	99.2
				484T	99.2
				996T	99.3
802.11ax NII RU	2		42	26T	98.6
				52T	98.3
				106T	98.4
				242T	99.0
				484T	99.7
				996T	99.5
802.11ax NII RU	MIMO		42	26T	98.2
				52T	98.2
				106T	98.0
				242T	97.7
				484T	99.3
				996T	99.1

Table 2-4. Measured Duty Cycles

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2. The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SISO		SDM		MIMO	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
5GHz	11ax (20MHz)	✓	✓	✓	✓	✓	✓
	11ax (40MHz)	✓	✓	✓	✓	✓	✓
	11ax (80MHz)	✓	✓	✓	✓	✓	✓

Table 2-5. Supported MIMO Modes

✓= Support ; ✗ = NOT Support
SISO = Single Input Single Output
SDM = Spatial Diversity Multiplexing – MIMO function

3. This device supports simultaneous transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz (WLAN & BT) and 5GHz bands simultaneously on each antenna. The following tables show the worst case configurations determined during testing. The data for these configurations is contained in this test report. The BT + 5GHz case is not considered as worst case since the BT power is lower than the 2.4GHz WLAN power.

Configuration 1: ANT1 transmitting in 2.4GHz mode and ANT2 in 5GHz mode

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	11	64
Operating Frequency (MHz)	2462	5320
Data Rate (Mbps)	1M	MCS0
Mode	802.11b	802.11n

Table 2-6. Config-1 (ANT1 2.4GHz & ANT2 5GHz)

Configuration 2: ANT1 transmitting in 5GHz mode and ANT2 in 2.4GHz mode

Description	2.4 GHz Emission	5 GHz Emission
Antenna	2	1
Channel	64	10
Operating Frequency (MHz)	5320	2457
Data Rate (Mbps)	6M	1M
Mode	802.11a	802.11b

Table 2-7. Config-2 (ANT1 5GHz & ANT2 2.4GHz)

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Configuration 3: ANT1 and ANT2 both transmitting in 2.4GHz and 5GHz modes simultaneously

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1, 2	1, 2
Channel	2	56
Operating Frequency (MHz)	2417	5280
Data Rate (Mbps)	MCS8	MCS8
Mode	802.11n	802.11n

Table 2-8. Config-3 (ANT1 MIMO & ANT2 MIMO)

2.3 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna Gain (dBi)
5.20	-8.45
5.30	-6.15
5.50	-6.05
5.80	-7.70

Table 2-9. Antenna Peak Gain

2.4 Test Configuration

The EUT was tested per the guidance of KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing.

2.5 Software and Firmware

The test was conducted with firmware version T978USQE0ATFA installed on the EUT.

2.6 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 v02r01 were used in the measurement of the EUT**.**

Deviation from measurement procedure……..……..None

3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

3.3 Environmental Conditions

The temperature is controlled within range of 15ºC to 35ºC. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the EUT are **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.13
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	WL40-1	Conducted Cable Set (40GHz)	10/30/2019	Annual	10/30/2020	WL40-1
-	WL25-1	Conducted Cable Set (25GHz)	10/30/2019	Annual	10/30/2020	WL25-1
-	WL25-4	Conducted Cable Set (25GHz)	1/22/2020	Annual	1/22/2021	WL25-4
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Anritsu	ML2496A	Power Meter	11/6/2019	Annual	11/6/2020	1405003
Anritsu	MA2411B	Pulse Power Sensor	10/15/2019	Annual	10/15/2020	1339026
Anritsu	MA2411B	Pulse Power Sensor	8/27/2019	Annual	8/27/2020	1339027
Anritsu	ML2495A	Power Meter	12/17/2019	Annual	12/17/2020	941001
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Triennial	6/7/2021	9203-2178
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2/10/2020	Annual	2/10/2021	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2/21/2020	Annual	2/21/2021	102133
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100040
Rohde & Schwarz	TS-PR40	26.5-40 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100037
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/19/2018	Biennial	7/19/2020	A051107

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
FCC ID: A3LSMT978U
FCC Classification: Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
N/A	RSS-Gen [6.7]	26dB Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
15.407(e)	RSS-Gen [6.7]	6dB Bandwidth	>500kHz(5725-5850MHz)		PASS	Section 7.3
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Conducted Output Power	Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.4
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	See DFS Test Report		PASS	See DFS Test Report
15.407(b.1), (2), (3), (4)	RSS-247 [6.2]	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])	RADIATED	PASS	Section 7.6
15.205, 15.407(b.1), (4), (5), (6)	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9])		PASS	Section 7.6, 7.7

Table 7-1. Summary of Test Results

Notes:

1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "UNII Automation," Version 4.7.
5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 1.3.1.
6) 802.11ax OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
7) Only one RU index could be selected at a time so no contiguous or non-contiguous RU's were considered for testing.

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7.2 26dB Bandwidth Measurement – 802.11ax OFDMA

RSS-Gen [6.2]

Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal 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. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

The 26dB bandwidth is used to determine the conducted power limits.

Test Procedure Used

ANSI C63.10-2013 – Section 12.4
KDB 789033 D02 v02r01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW $\geq$ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold

Test Setup

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

Figure 7-1. Test Instrument & Measurement Setup

Test Notes

The 26dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

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SISO Antenna-1 26 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	ax (20MHz)	26T	MCS0	20.02
	5200	40	ax (20MHz)	26T	MCS0	19.89
	5240	48	ax (20MHz)	26T	MCS0	19.81
	5190	38	ax (40MHz)	26T	MCS0	40.09
	5230	46	ax (40MHz)	26T	MCS0	39.95
	5210	42	ax (80MHz)	26T	MCS0	78.44
Band 2A	5260	52	ax (20MHz)	26T	MCS0	18.60
	5280	56	ax (20MHz)	26T	MCS0	19.44
	5320	64	ax (20MHz)	26T	MCS0	20.10
	5270	54	ax (40MHz)	26T	MCS0	39.87
	5310	62	ax (40MHz)	26T	MCS0	39.80
	5290	58	ax (80MHz)	26T	MCS0	81.91
Band 2C	5500	100	ax (20MHz)	26T	MCS0	18.60
	5600	120	ax (20MHz)	26T	MCS0	18.39
	5720	144	ax (20MHz)	26T	MCS0	20.03
	5510	102	ax (40MHz)	26T	MCS0	39.80
	5590	118	ax (40MHz)	26T	MCS0	39.98
	5710	142	ax (40MHz)	26T	MCS0	38.08
	5530	106	ax (80MHz)	26T	MCS0	78.07
	5610	122	ax (80MHz)	26T	MCS0	81.21
	5690	138	ax (80MHz)	26T	MCS0	81.26

Table 7-2. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)

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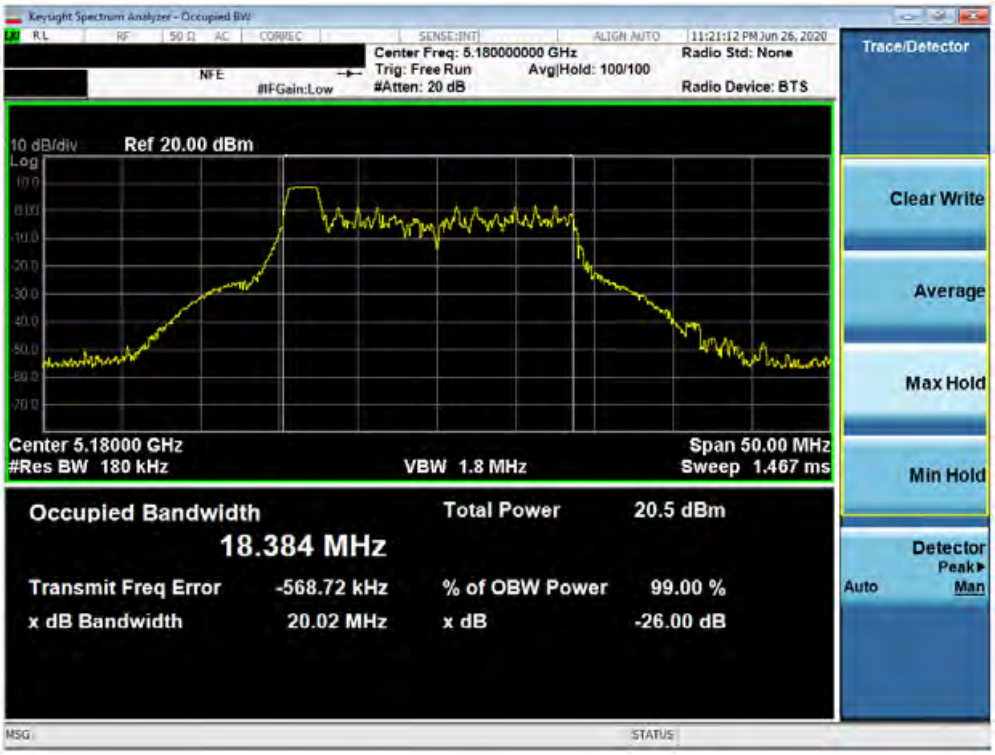
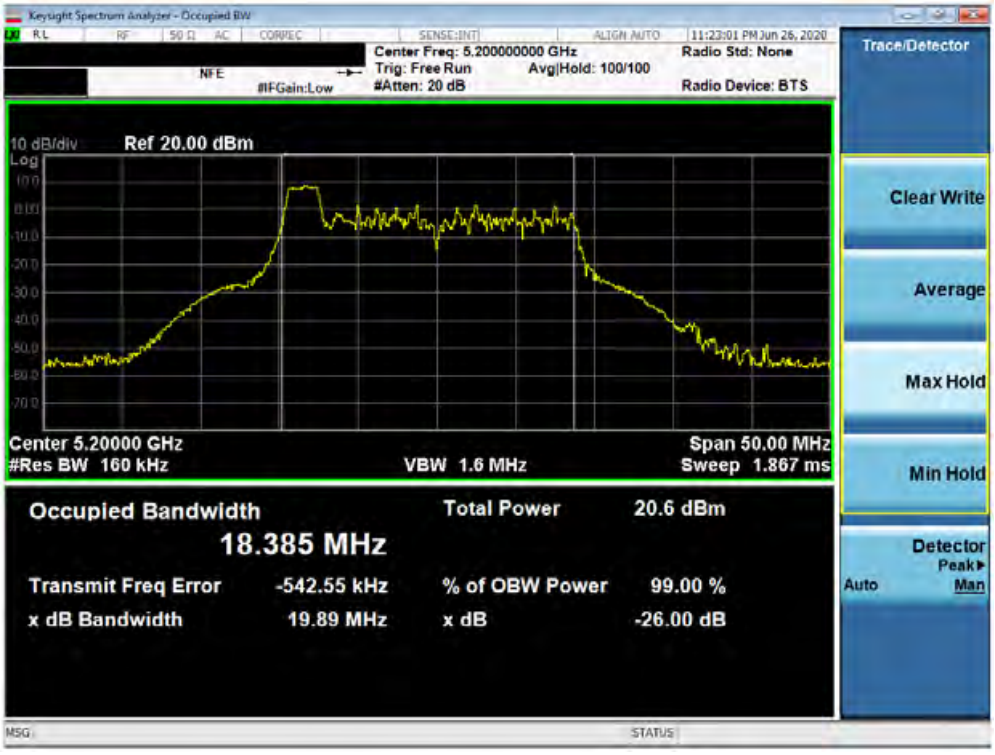


Plot 7-1. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)



Plot 7-2. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

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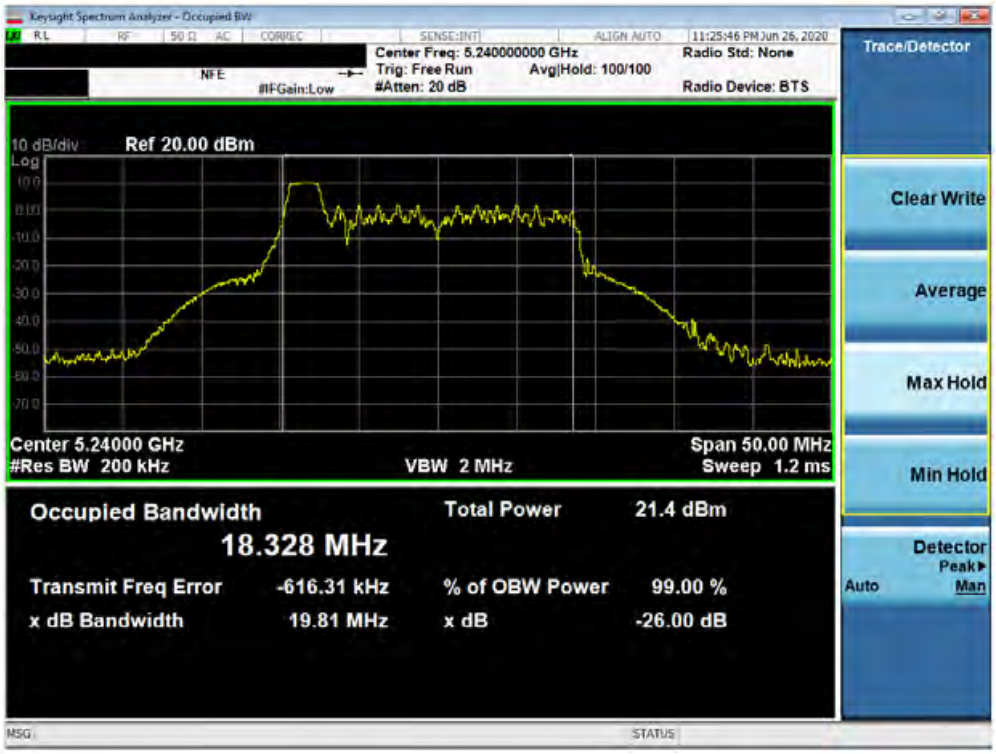
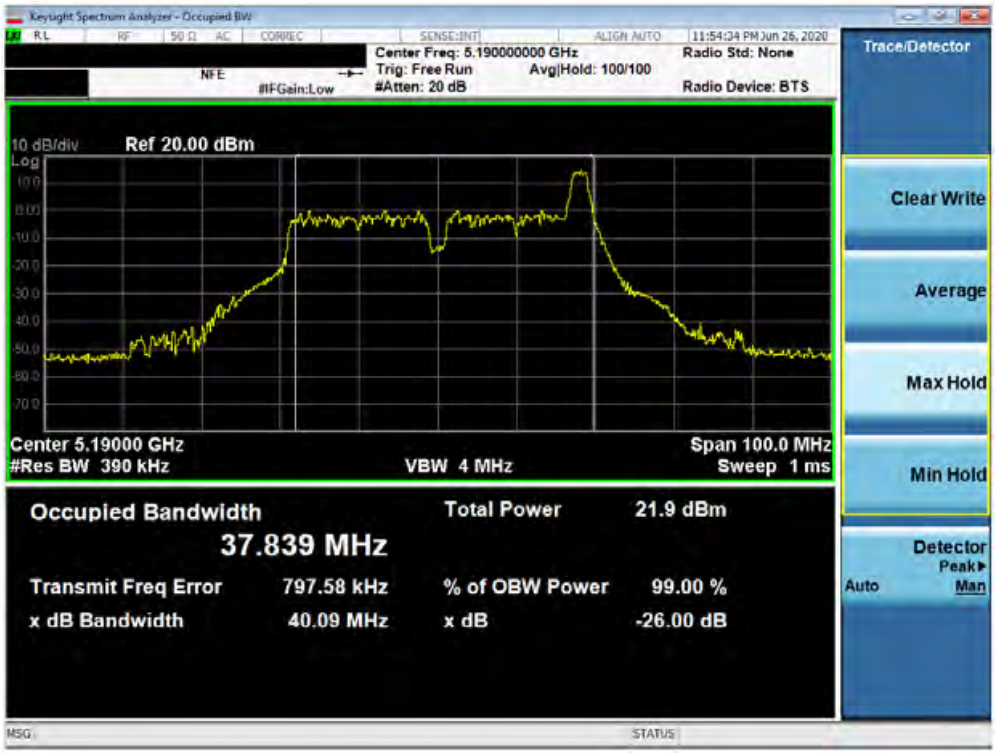


Plot 7-3. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)



Plot 7-4. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

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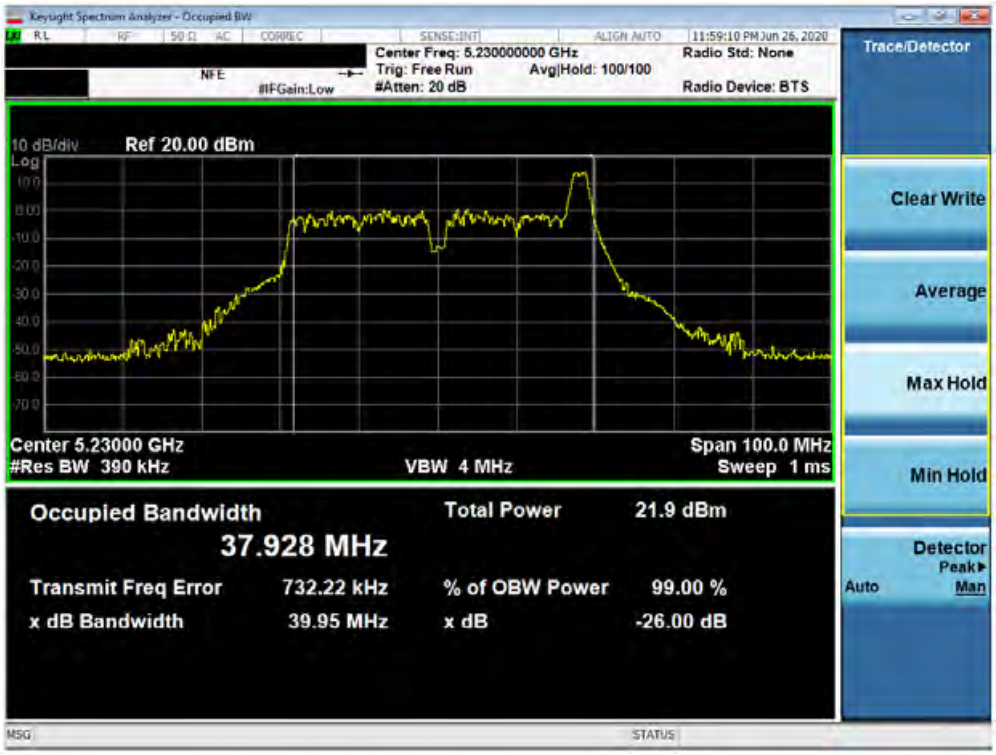
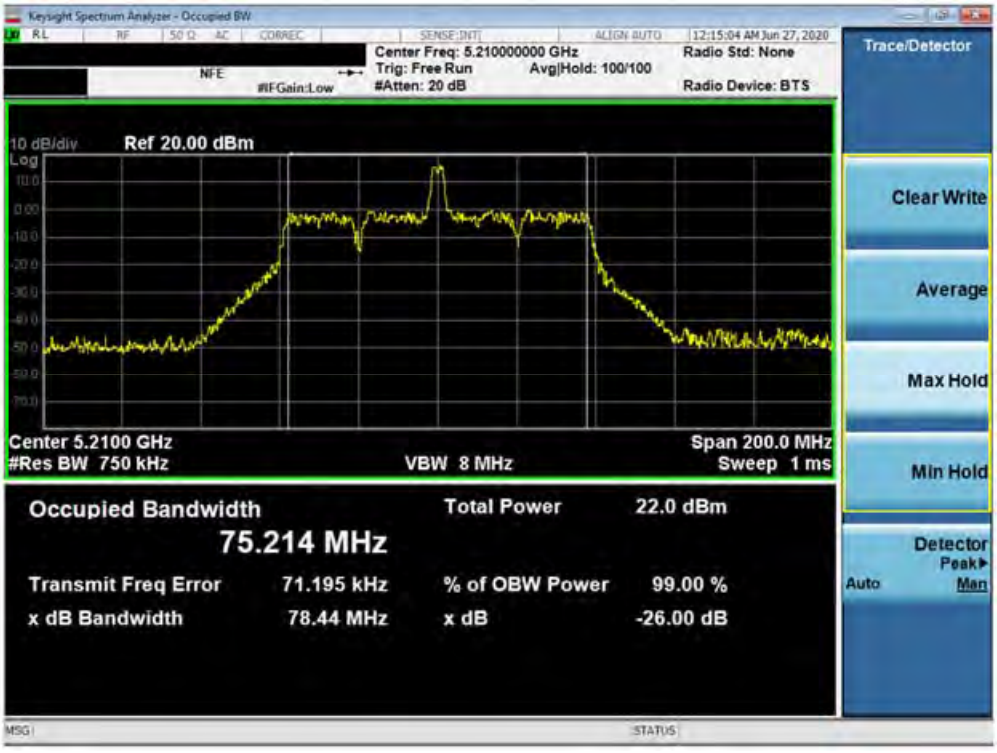


Plot 7-5. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)



Plot 7-6. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

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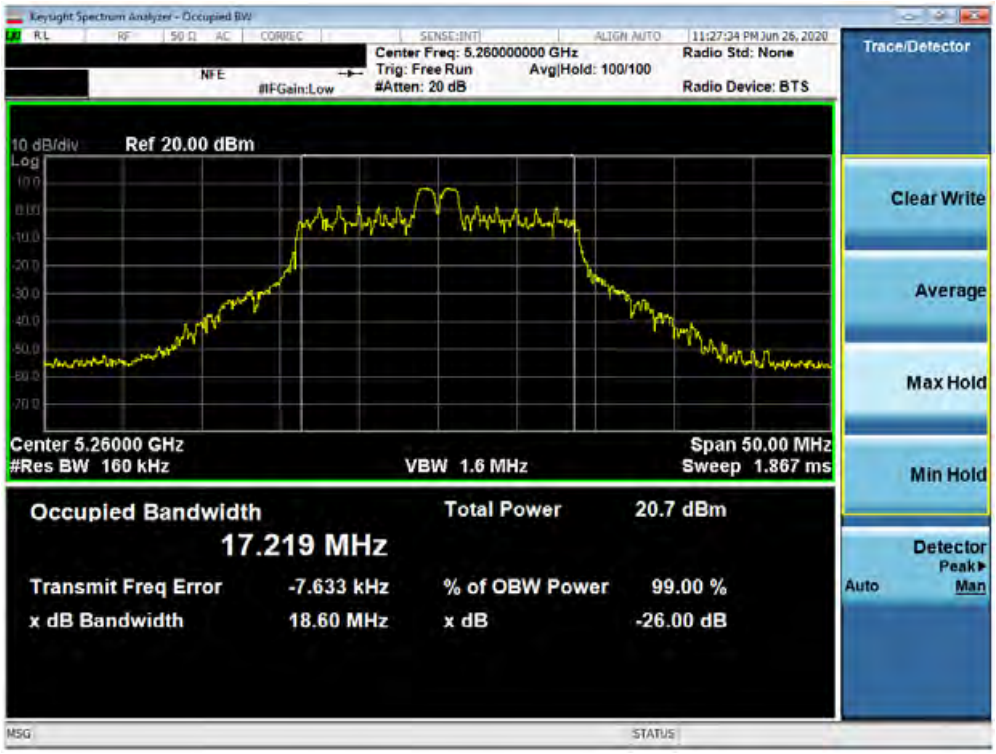
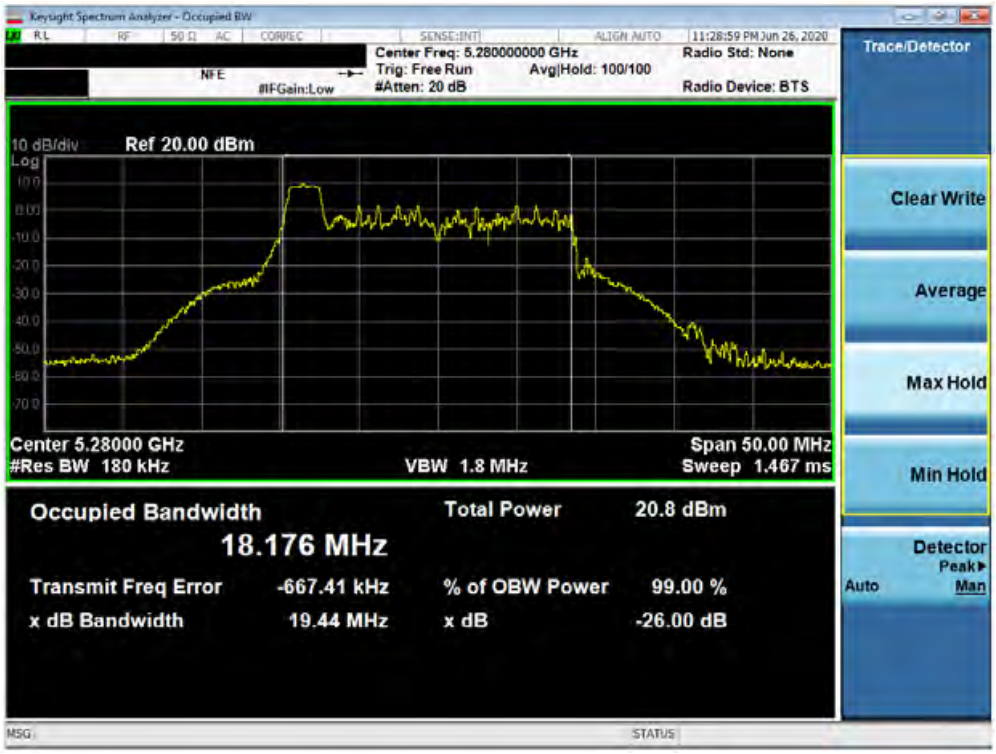


Plot 7-7. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)



Plot 7-8. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

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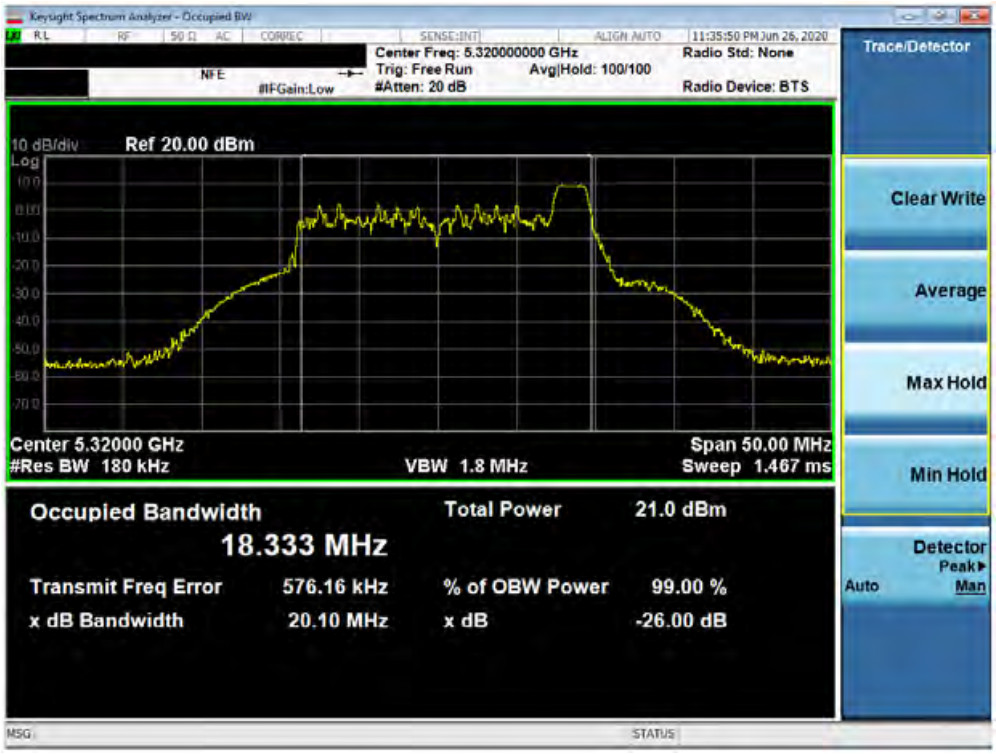
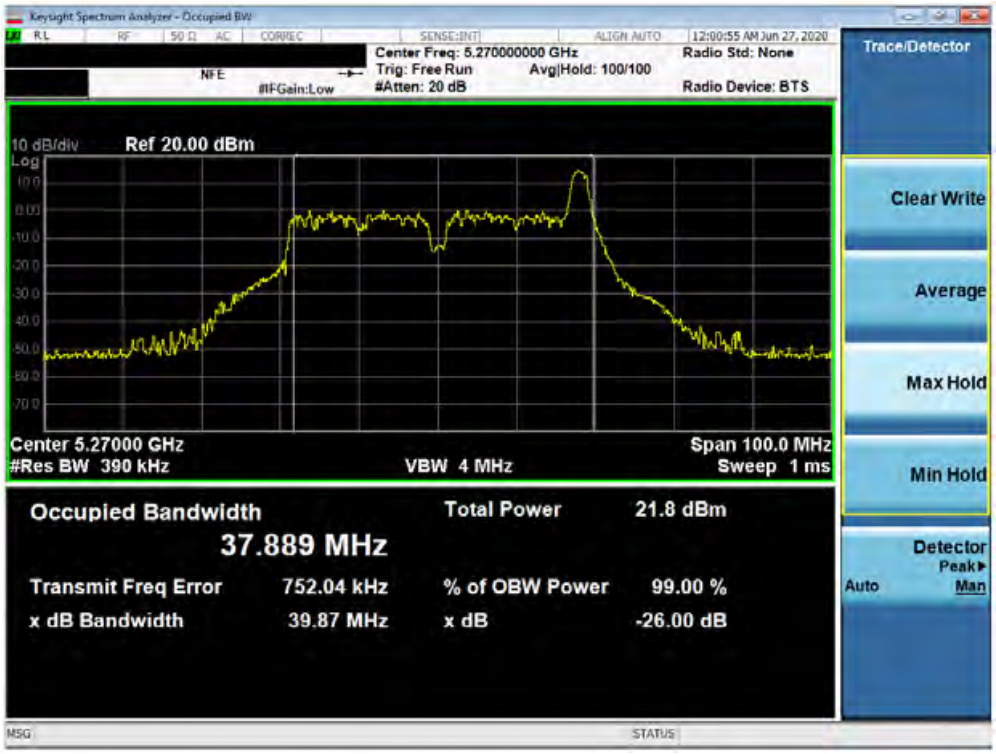


Plot 7-9. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)



Plot 7-10. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

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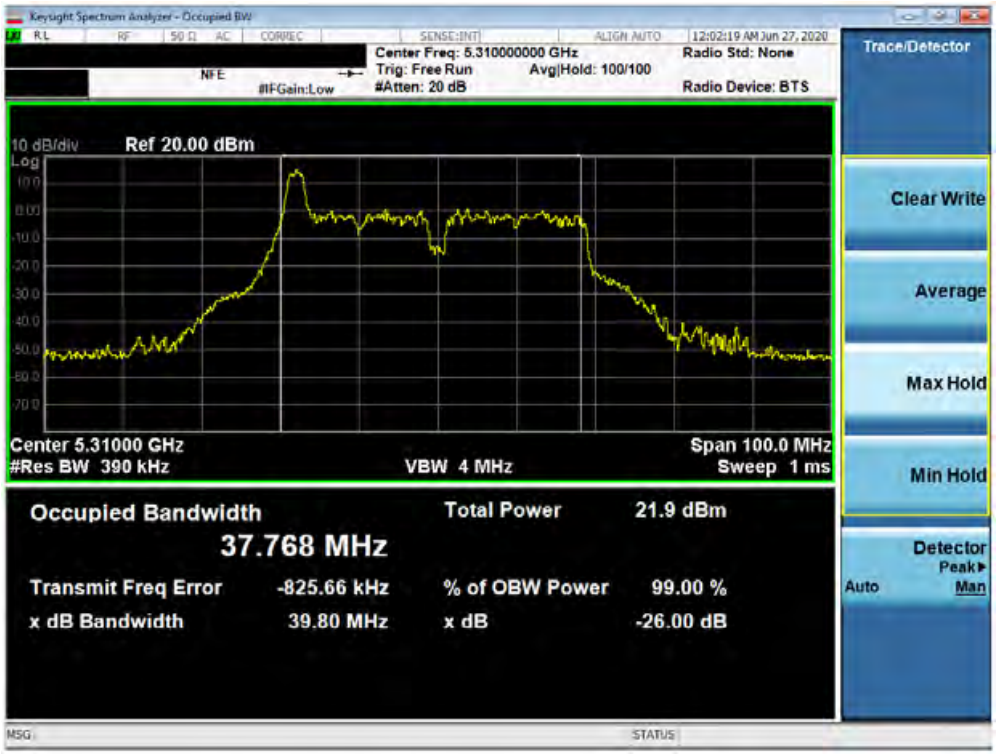
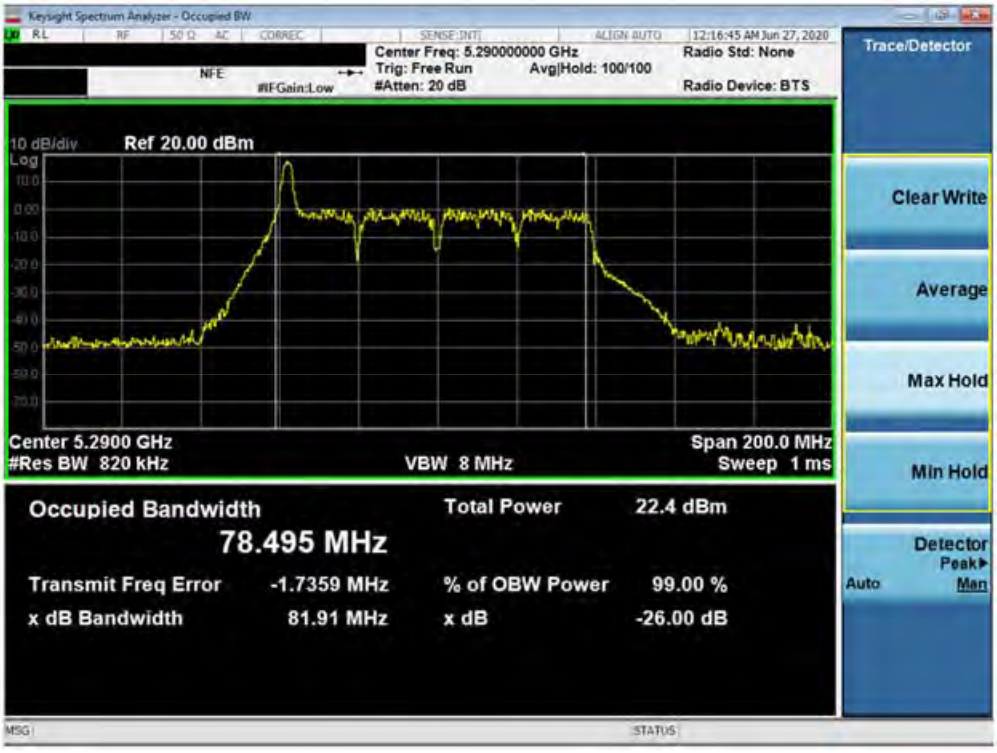


Plot 7-11. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)



Plot 7-12. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

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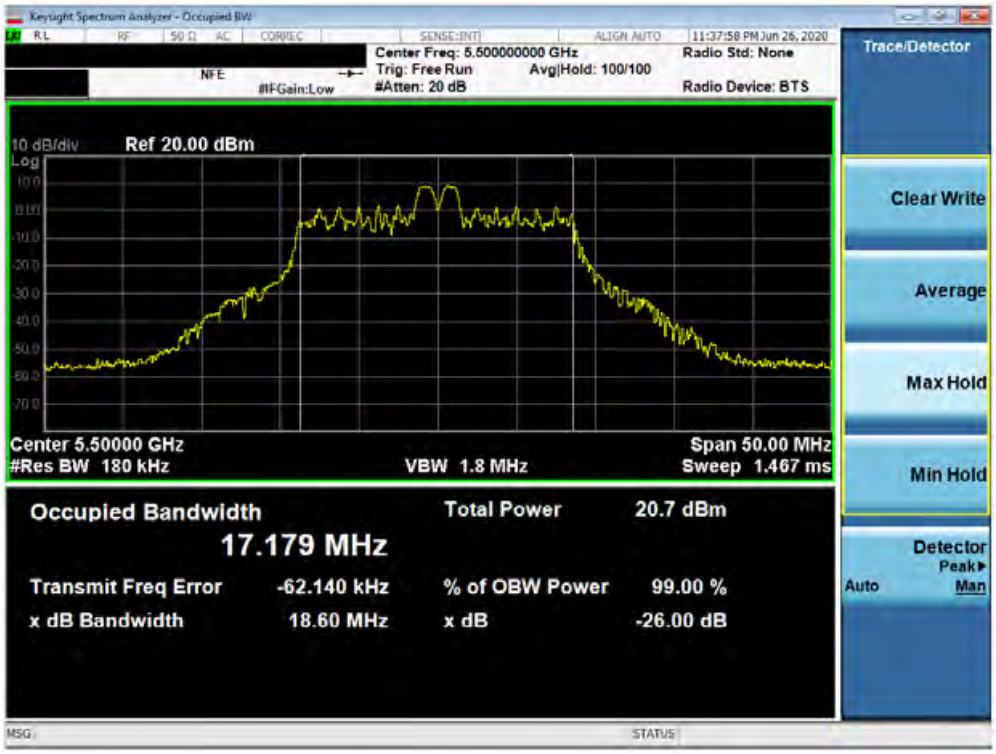
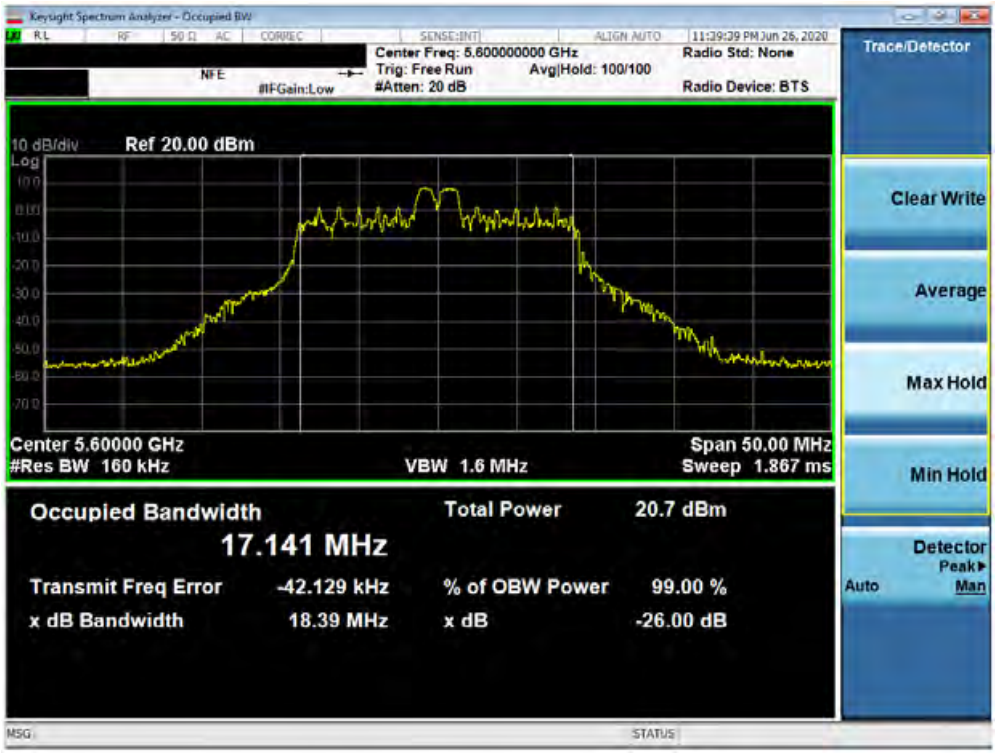


Plot 7-13. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)



Plot 7-14. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

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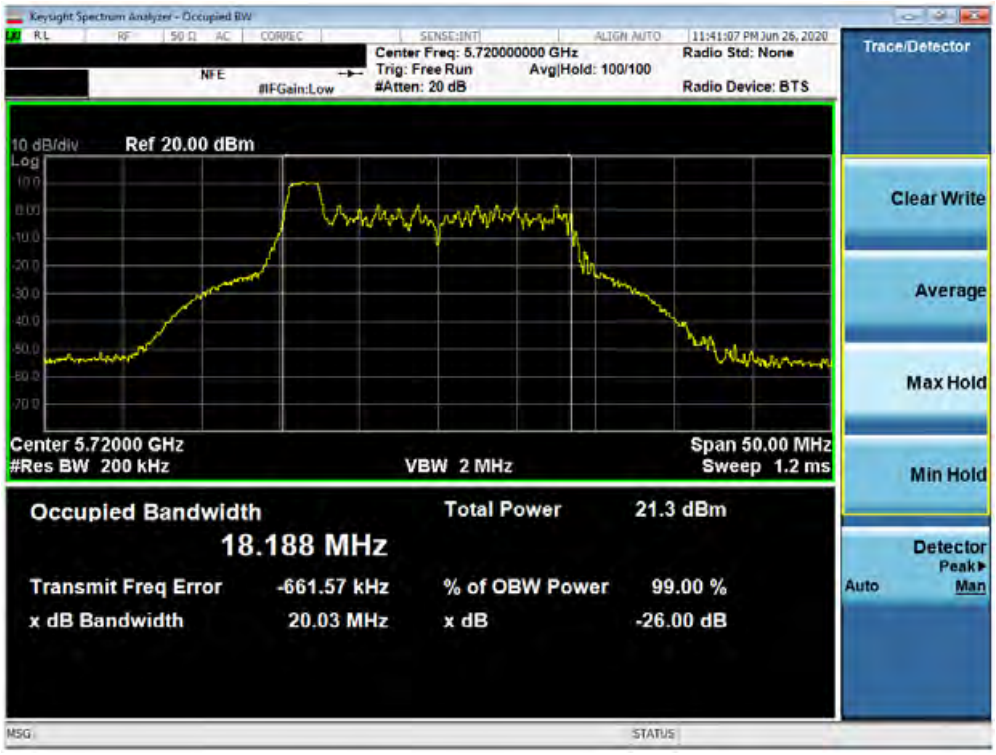
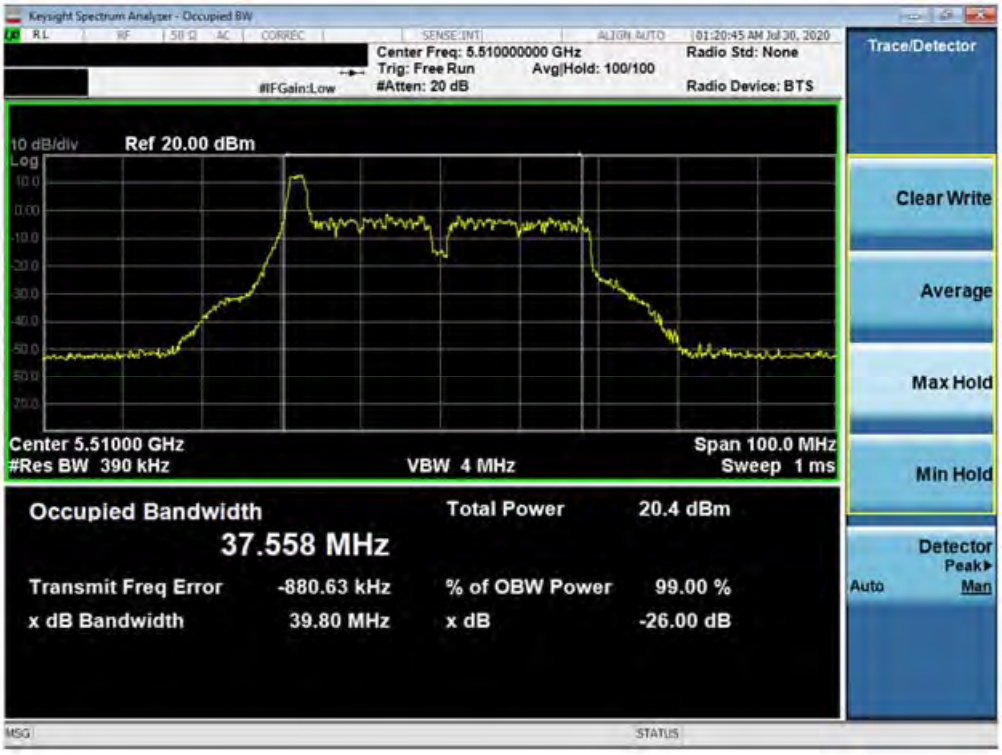


Plot 7-15. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)



Plot 7-16. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

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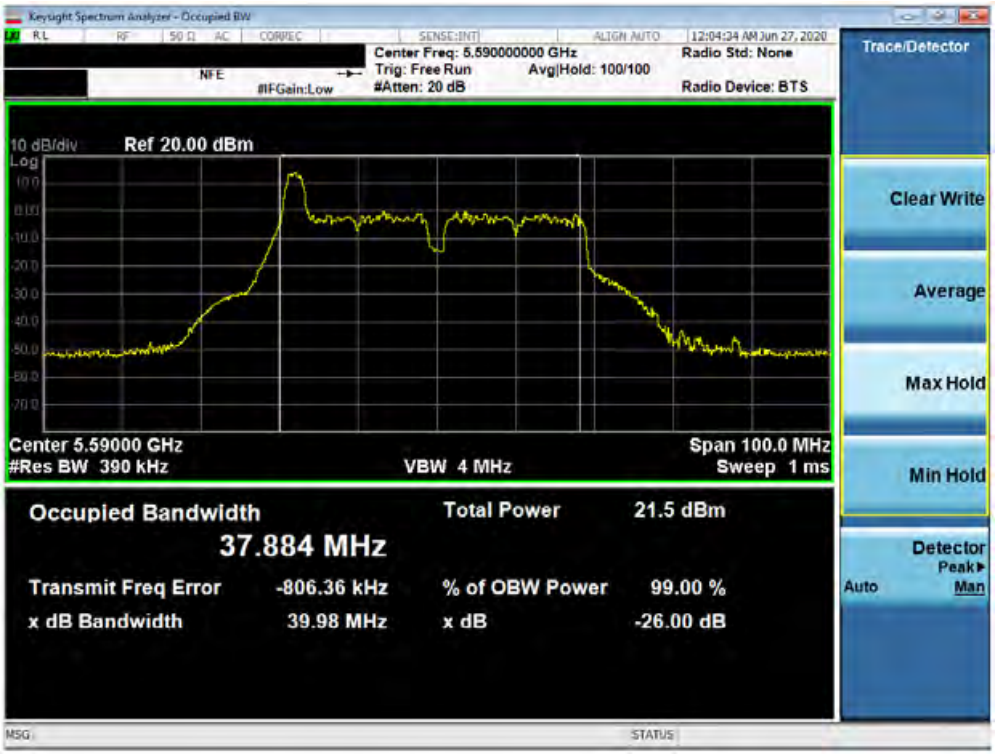
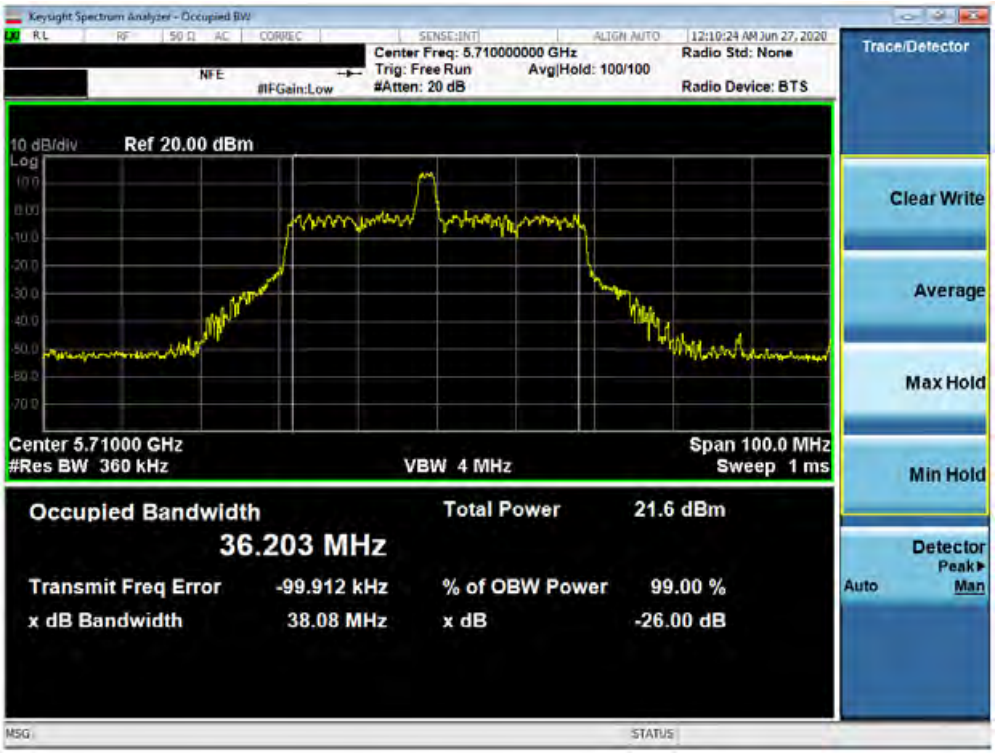


Plot 7-17. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



Plot 7-18. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

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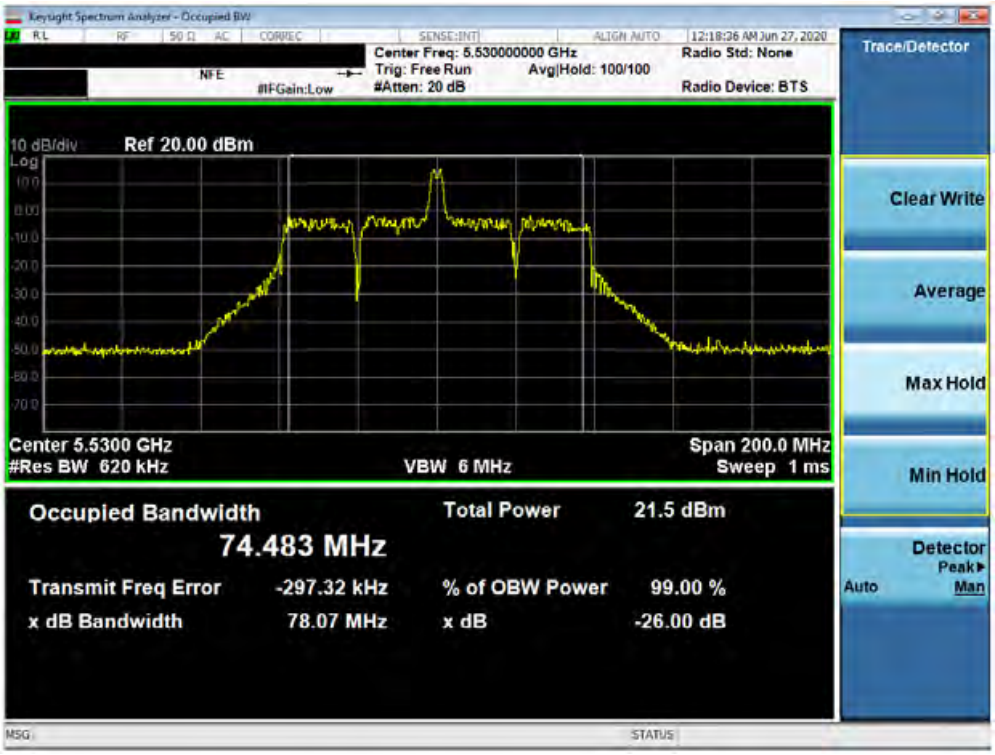
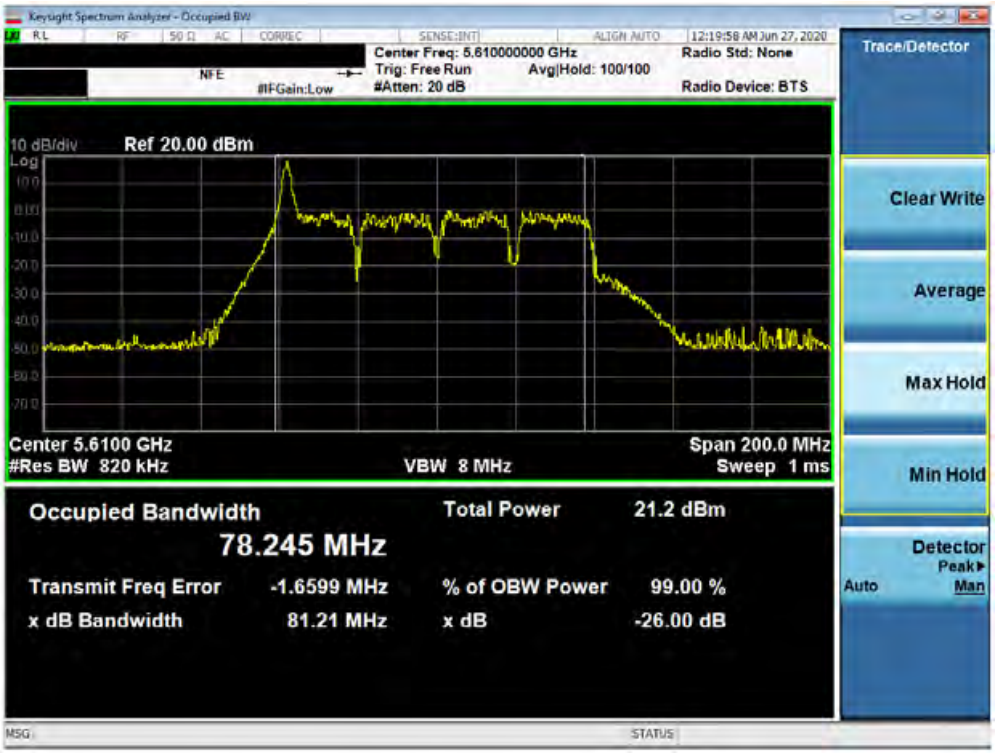


Plot 7-19. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-20. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

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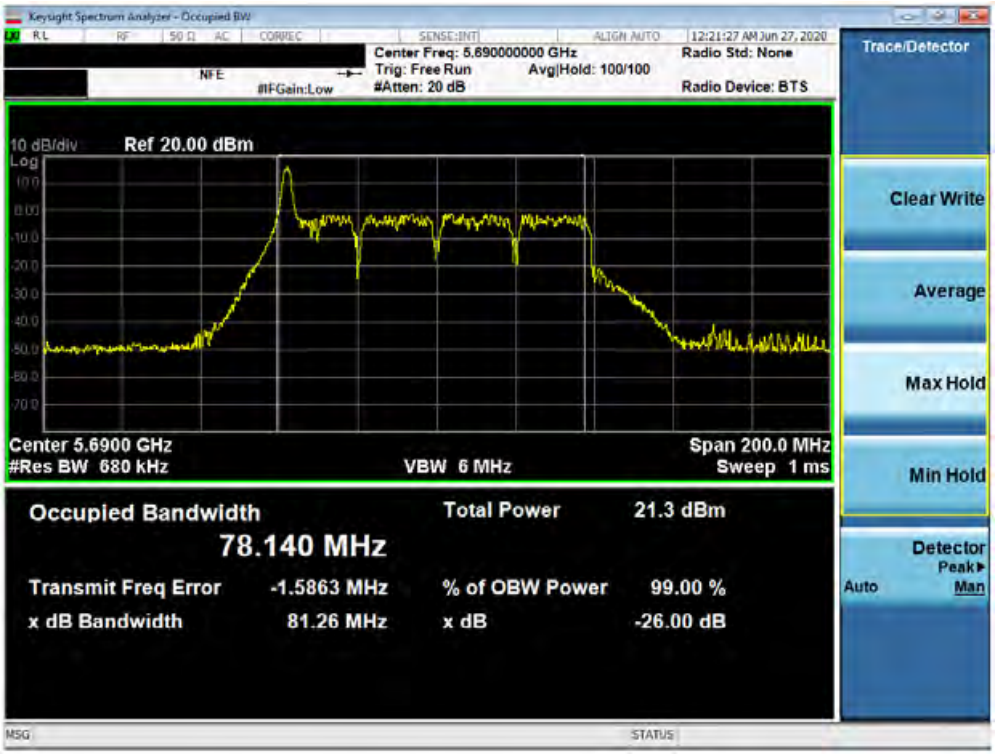

Plot 7-21. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

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SISO Antenna-1 26 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	ax (20MHz)	242T	MCS0	22.12
	5200	40	ax (20MHz)	242T	MCS0	20.29
	5240	48	ax (20MHz)	242T	MCS0	23.30
	5190	38	ax (40MHz)	484T	MCS0	41.86
	5230	46	ax (40MHz)	484T	MCS0	42.96
	5210	42	ax (80MHz)	996T	MCS0	87.15
Band 2A	5260	52	ax (20MHz)	242T	MCS0	23.18
	5280	56	ax (20MHz)	242T	MCS0	22.75
	5320	64	ax (20MHz)	242T	MCS0	24.07
	5270	54	ax (40MHz)	484T	MCS0	41.55
	5310	62	ax (40MHz)	484T	MCS0	42.37
	5290	58	ax (80MHz)	996T	MCS0	87.92
Band 2C	5500	100	ax (20MHz)	242T	MCS0	23.46
	5600	120	ax (20MHz)	242T	MCS0	23.51
	5720	144	ax (20MHz)	242T	MCS0	22.17
	5510	102	ax (40MHz)	484T	MCS0	42.12
	5590	118	ax (40MHz)	484T	MCS0	43.56
	5710	142	ax (40MHz)	484T	MCS0	41.63
	5530	106	ax (80MHz)	996T	MCS0	87.65
	5610	122	ax (80MHz)	996T	MCS0	89.33
	5690	138	ax (80MHz)	996T	MCS0	89.18

Table 7-3. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)

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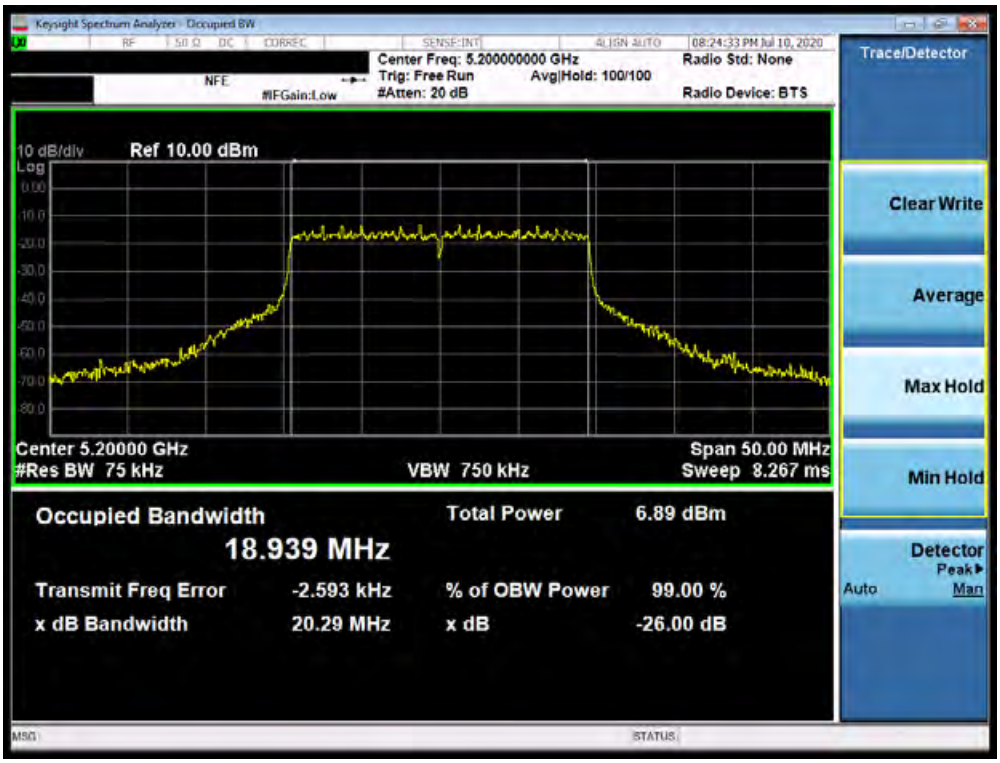
Plot 7-22. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)



Plot 7-23. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

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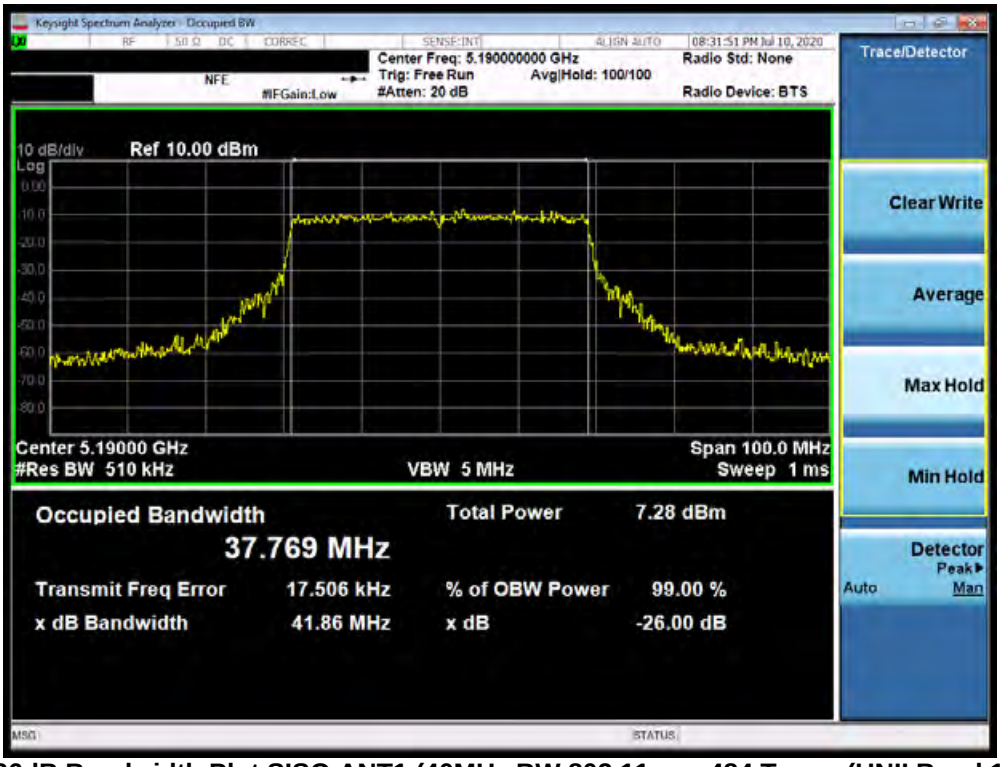
Plot 7-24. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 48)



Plot 7-25. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 38)

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Plot 7-26. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

Plot 7-27. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

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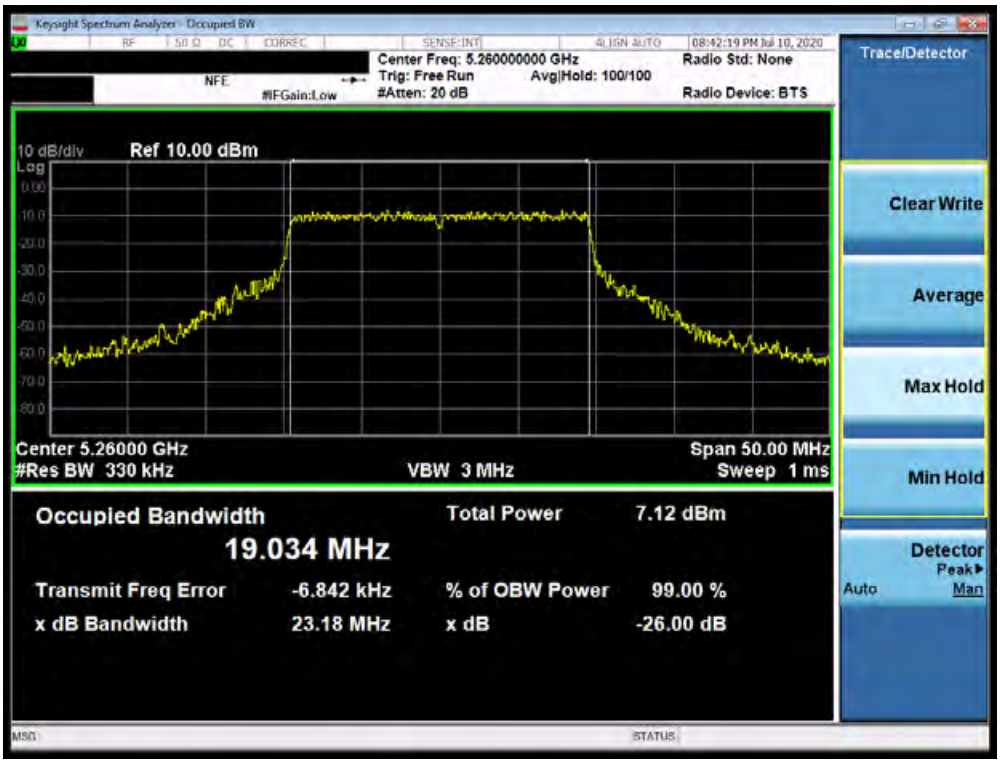
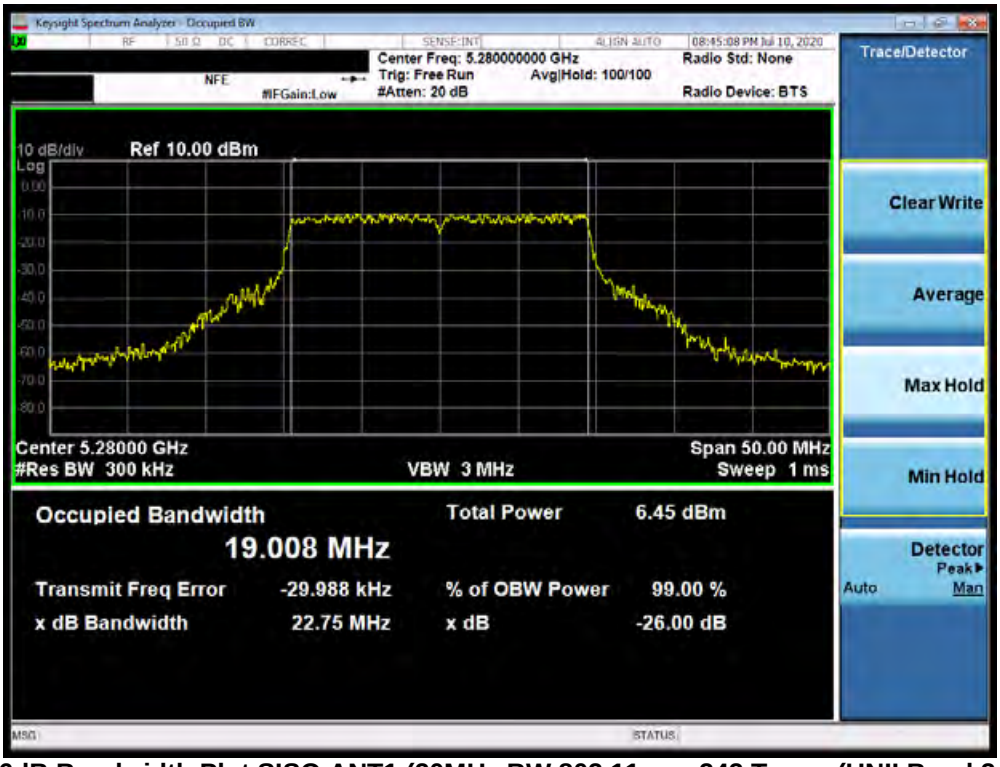


Plot 7-28. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)



Plot 7-29. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

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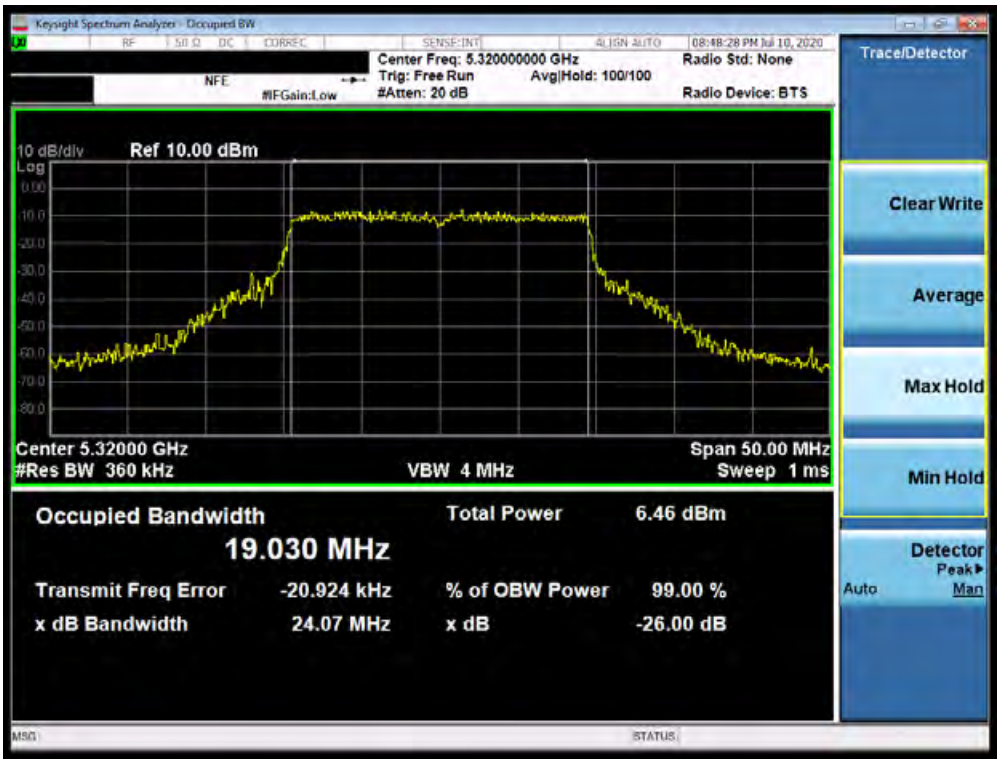

Plot 7-30. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

Plot 7-31. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

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Plot 7-32. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

Plot 7-33. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

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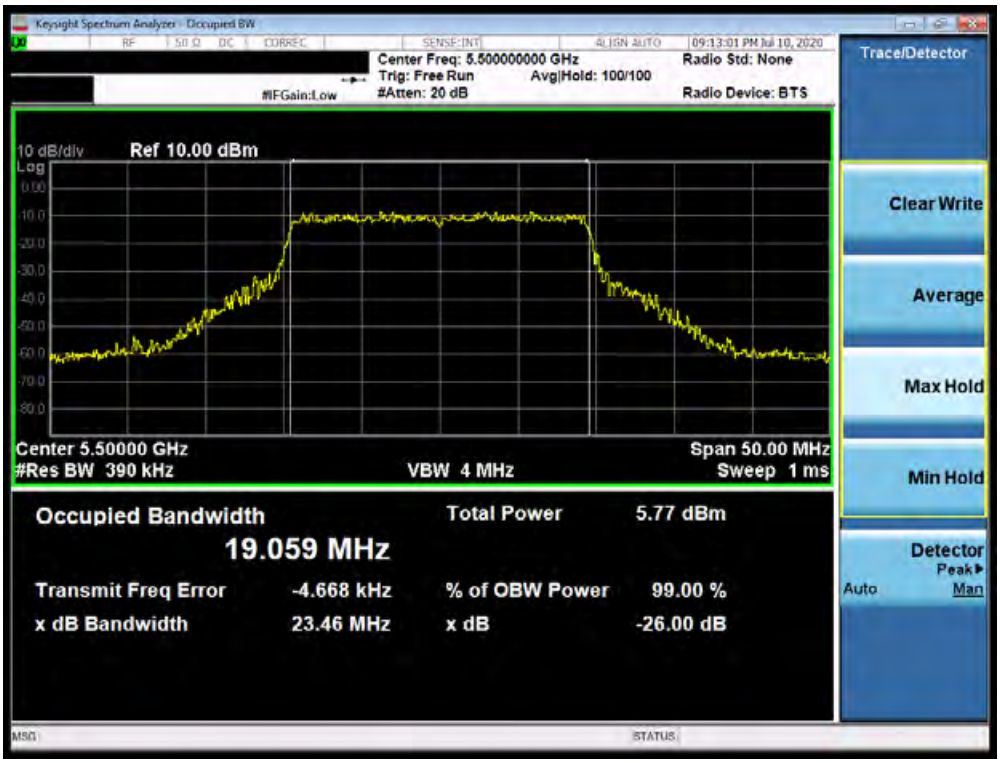
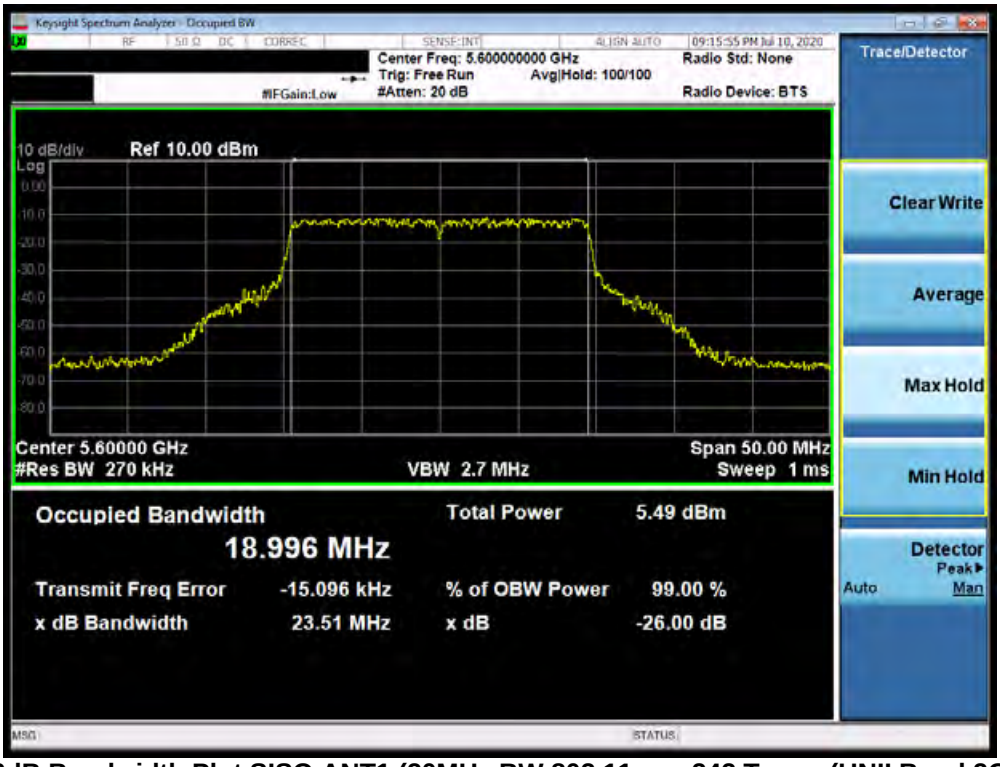


Plot 7-34. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)



Plot 7-35. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

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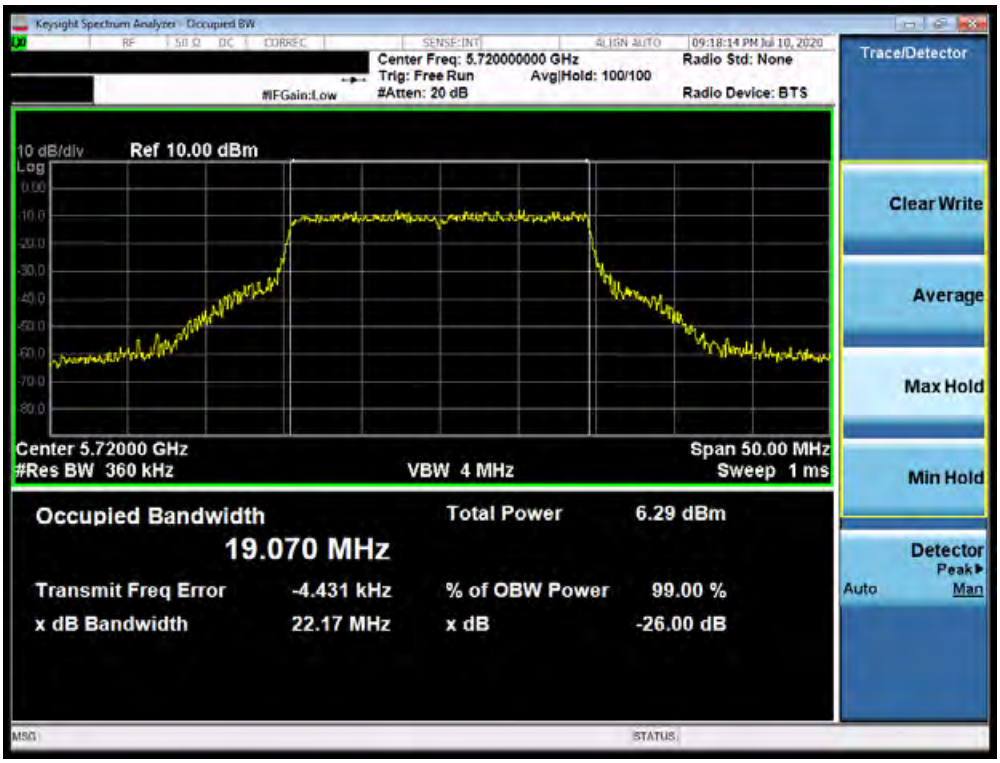

Plot 7-36. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)

Plot 7-37. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)

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Plot 7-38. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

Plot 7-39. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

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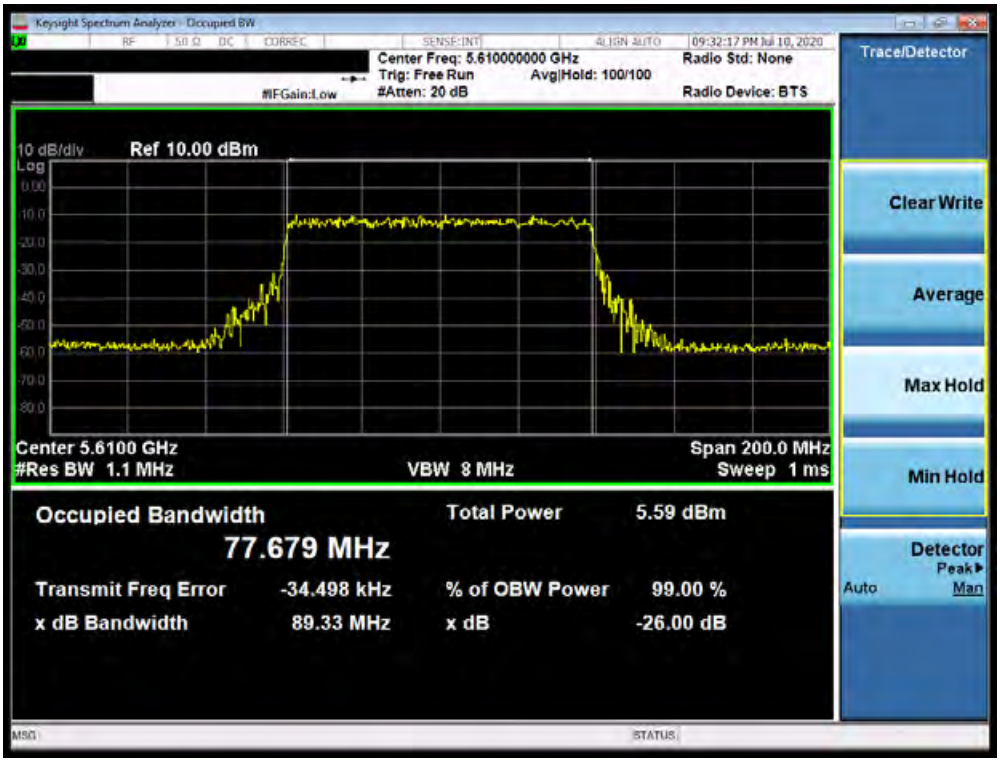
Plot 7-40. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-41. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

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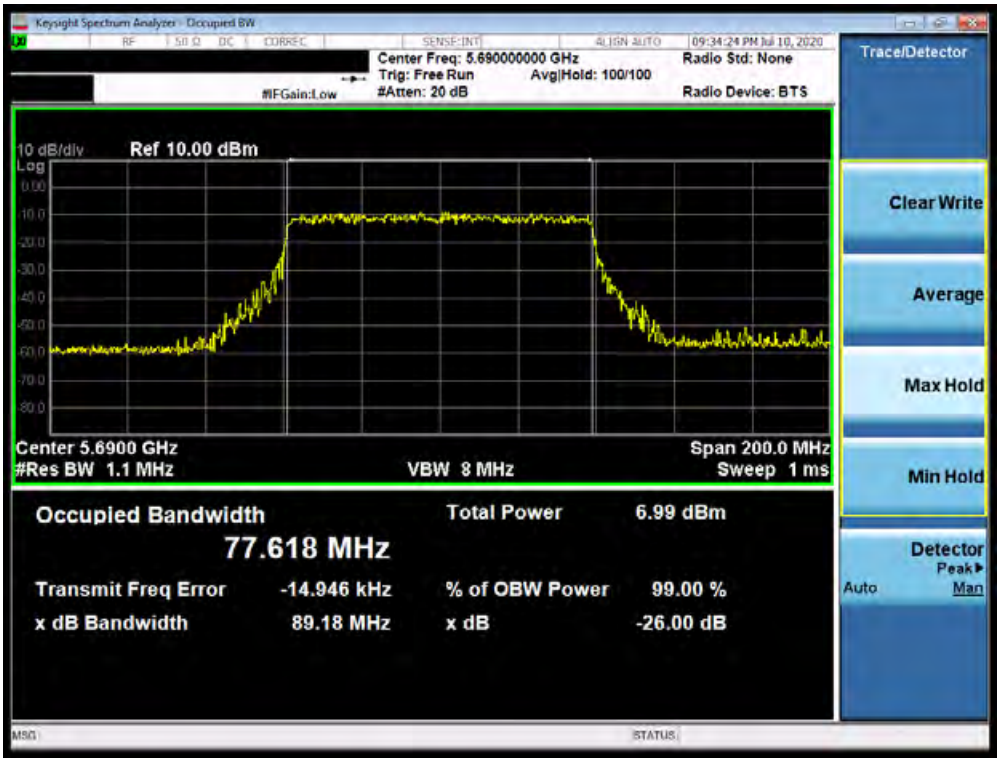

Plot 7-42. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

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SISO Antenna-2 26dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	ax (20MHz)	26T	MCS0	17.94
	5200	40	ax (20MHz)	26T	MCS0	18.34
	5240	48	ax (20MHz)	26T	MCS0	20.03
	5190	38	ax (40MHz)	26T	MCS0	39.89
	5230	46	ax (40MHz)	26T	MCS0	39.86
	5210	42	ax (80MHz)	26T	MCS0	80.73
Band 2A	5260	52	ax (20MHz)	26T	MCS0	19.98
	5280	56	ax (20MHz)	26T	MCS0	18.53
	5320	64	ax (20MHz)	26T	MCS0	18.29
	5270	54	ax (40MHz)	26T	MCS0	39.69
	5310	62	ax (40MHz)	26T	MCS0	37.97
	5290	58	ax (80MHz)	26T	MCS0	81.08
Band 2C	5500	100	ax (20MHz)	26T	MCS0	18.27
	5600	120	ax (20MHz)	26T	MCS0	18.48
	5720	144	ax (20MHz)	26T	MCS0	19.74
	5510	102	ax (40MHz)	26T	MCS0	38.05
	5590	118	ax (40MHz)	26T	MCS0	37.96
	5710	142	ax (40MHz)	26T	MCS0	39.57
	5530	106	ax (80MHz)	26T	MCS0	82.20
	5610	122	ax (80MHz)	26T	MCS0	78.49
	5690	138	ax (80MHz)	26T	MCS0	81.71

Table 7-4. Conducted Bandwidth Measurements SISO ANT2 (26 Tones)

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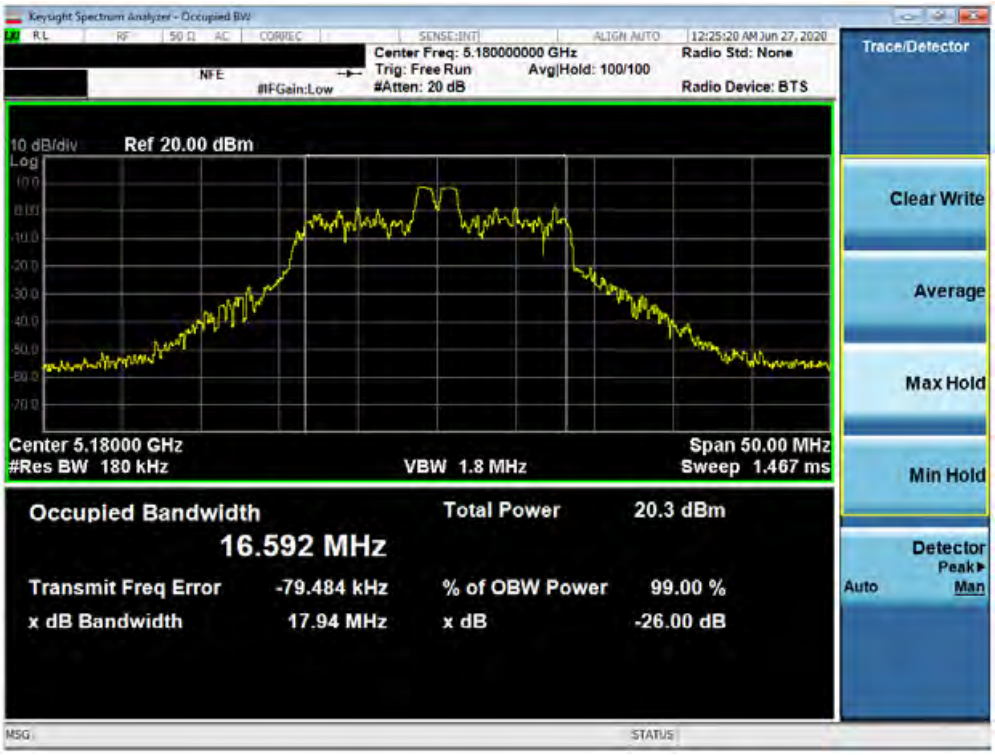
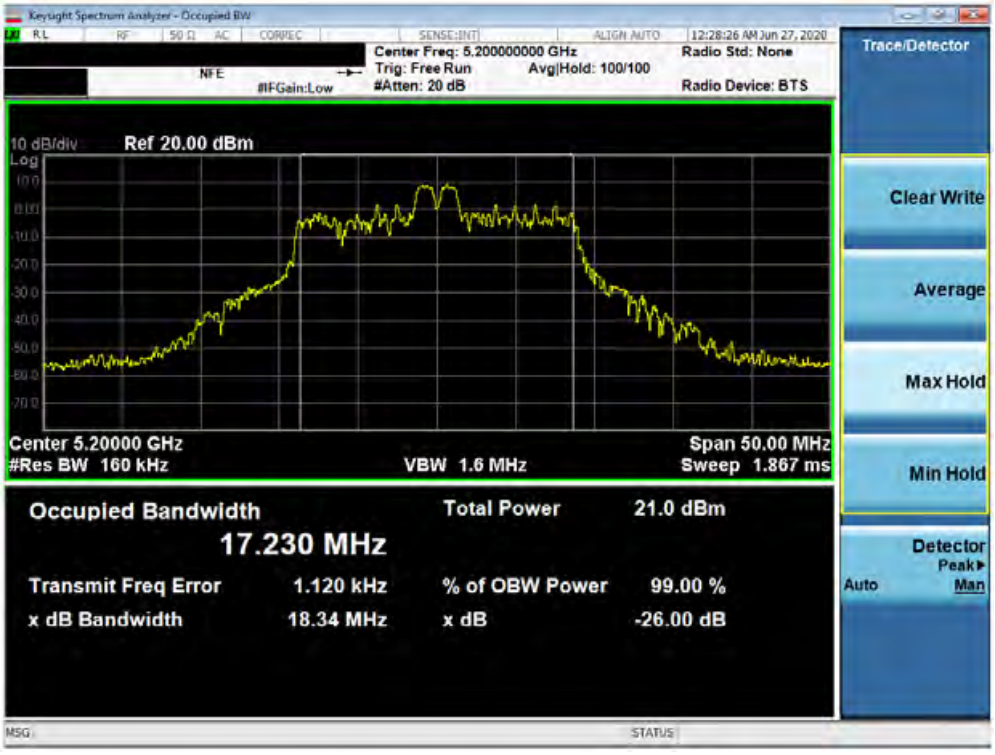


Plot 7-43. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)



Plot 7-44. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

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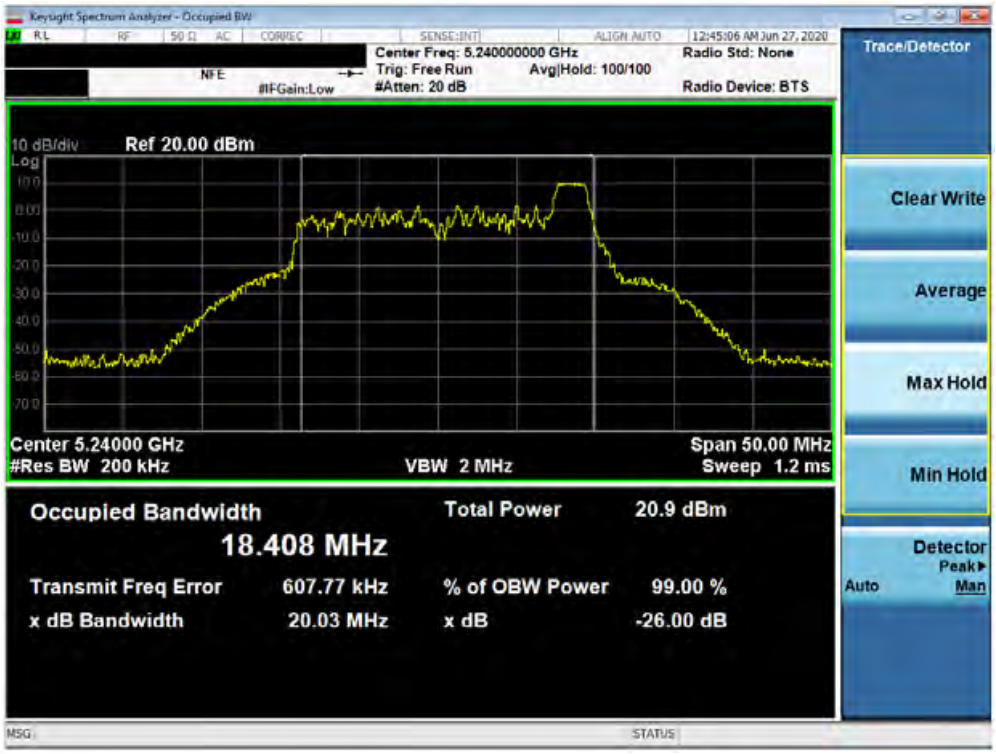
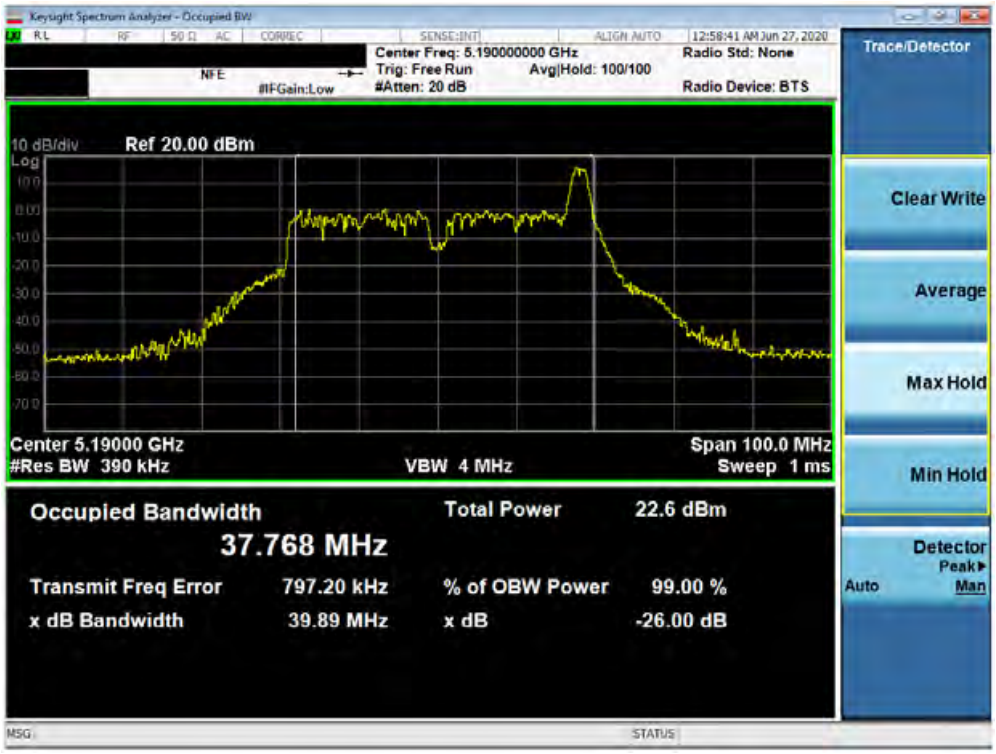


Plot 7-45. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)



Plot 7-46. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

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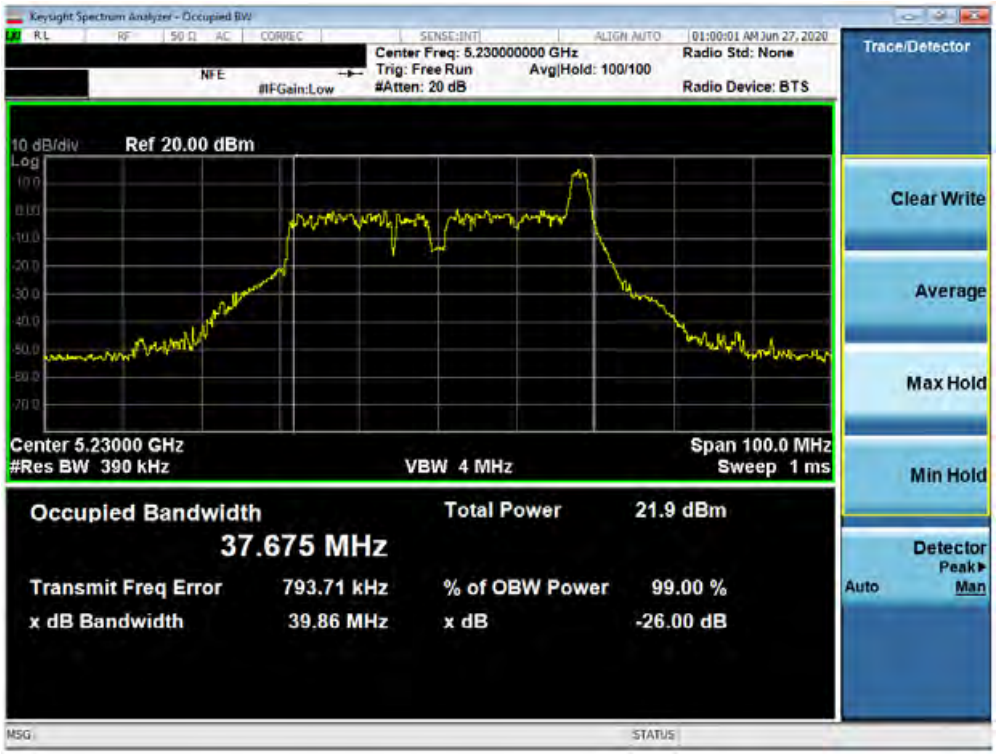
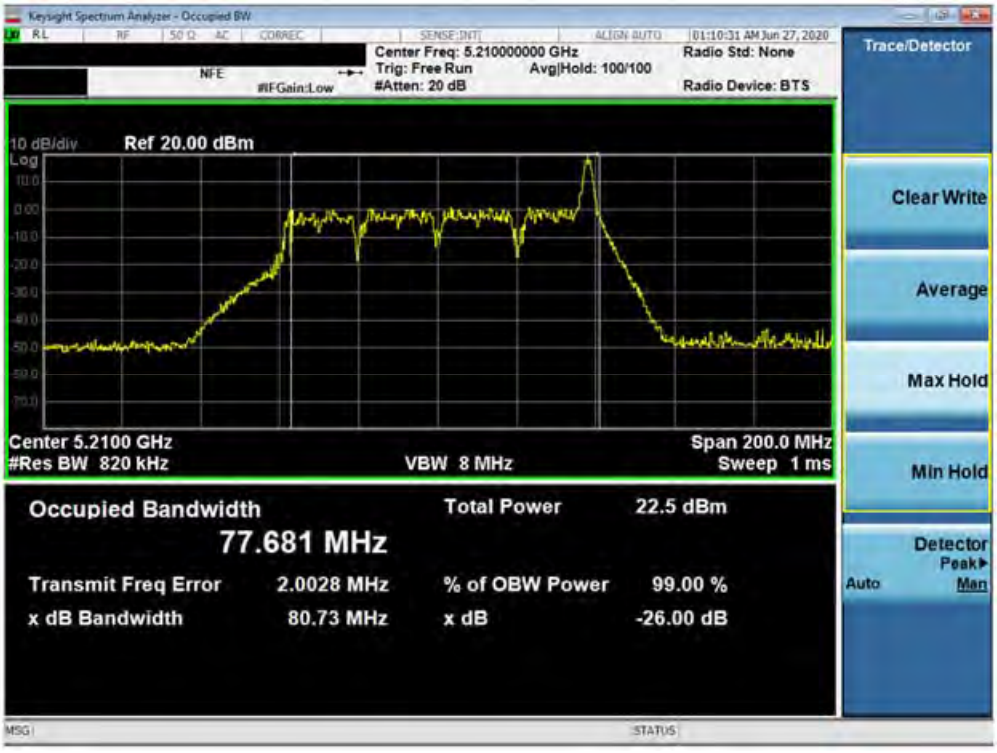


Plot 7-47. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)



Plot 7-48. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

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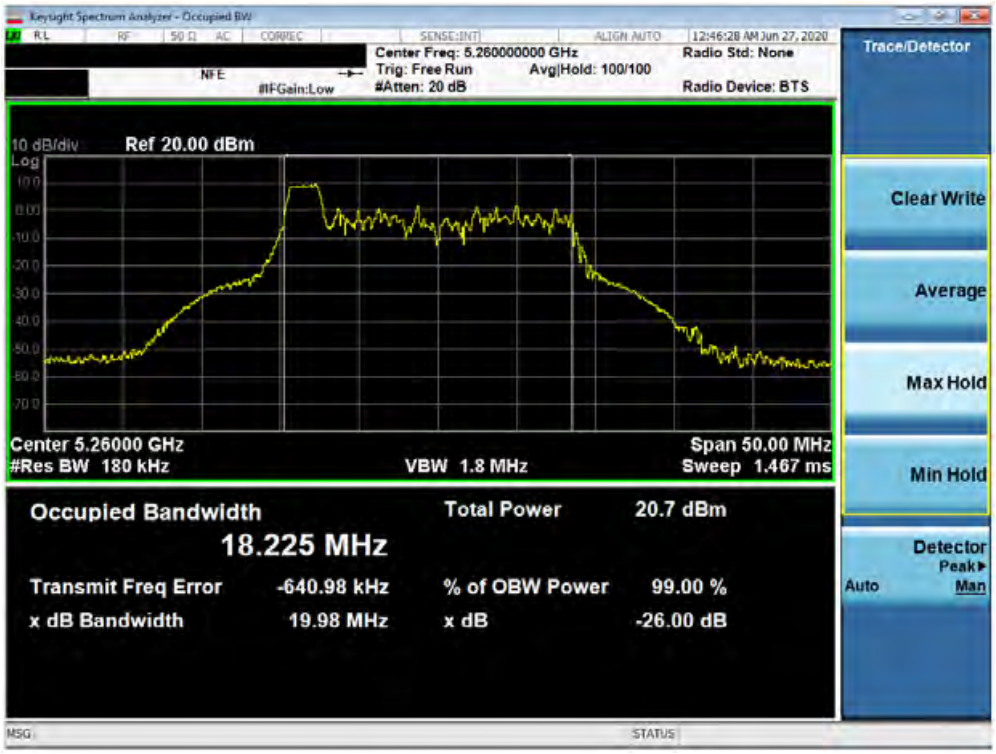
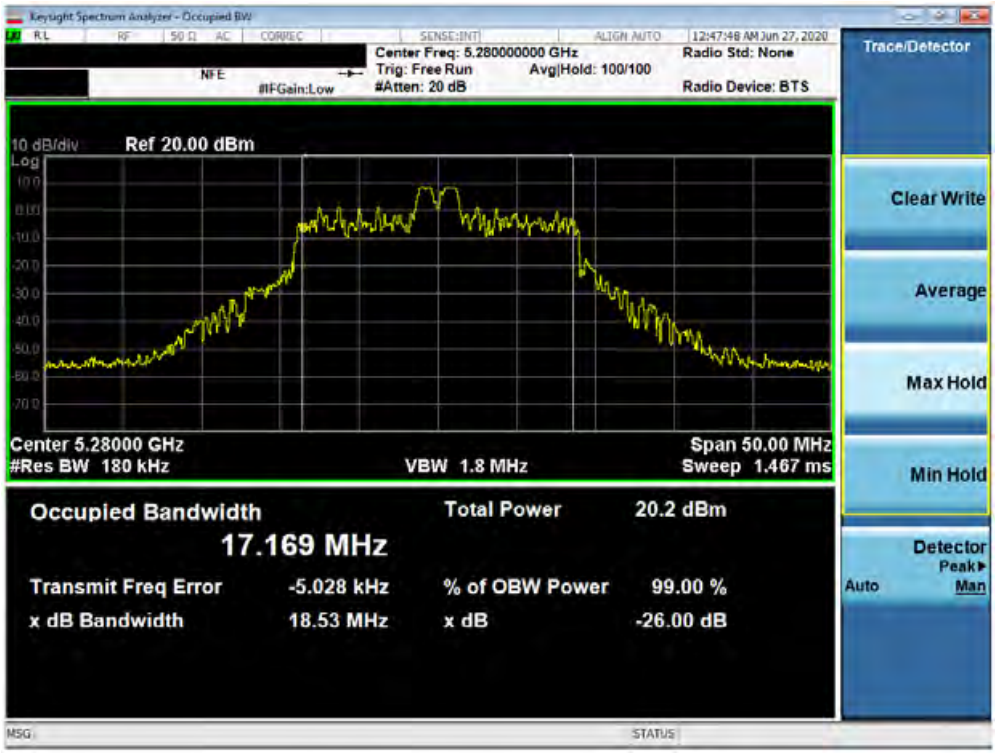


Plot 7-49. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)



Plot 7-50. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

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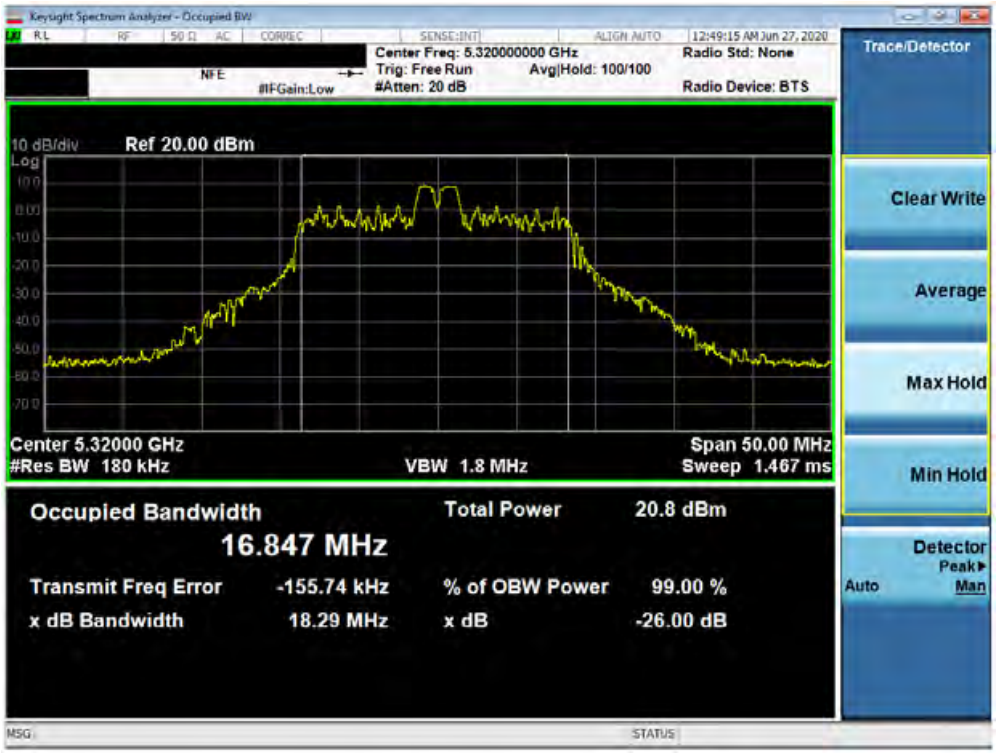
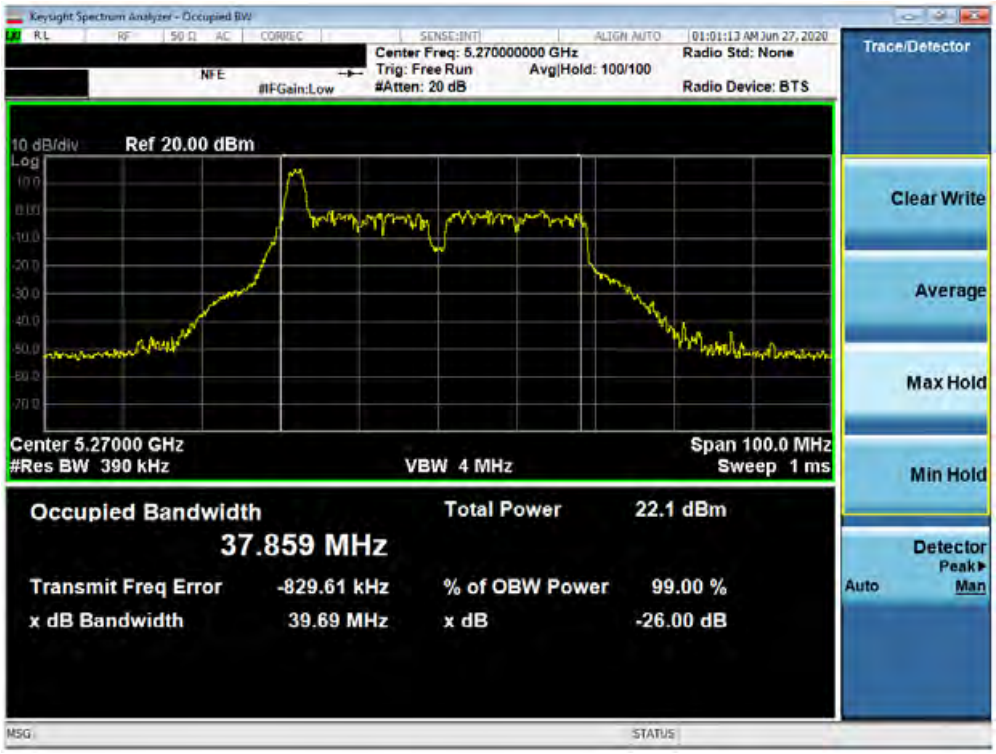


Plot 7-51. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)



Plot 7-52. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

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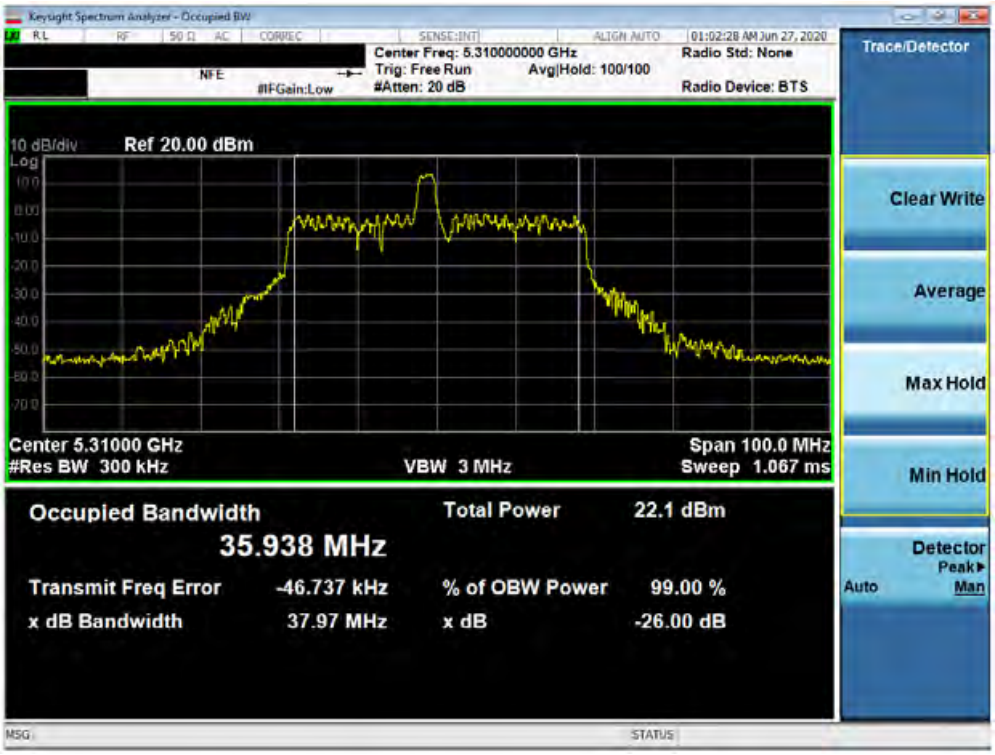

Plot 7-53. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

Plot 7-54. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

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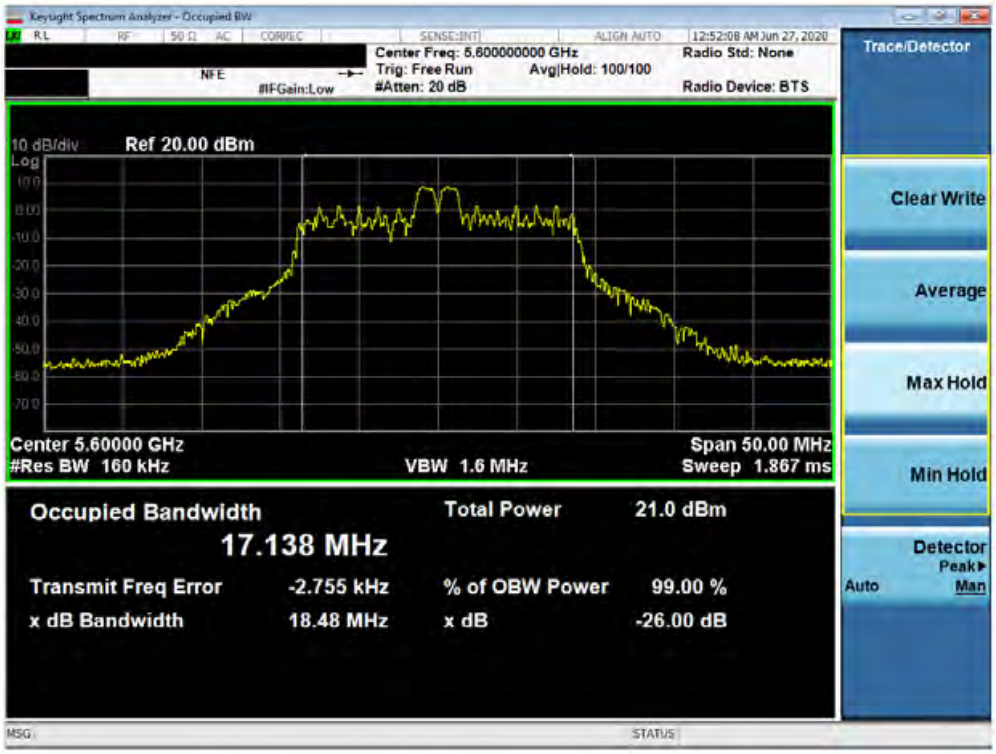
Plot 7-55. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)



Plot 7-56. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

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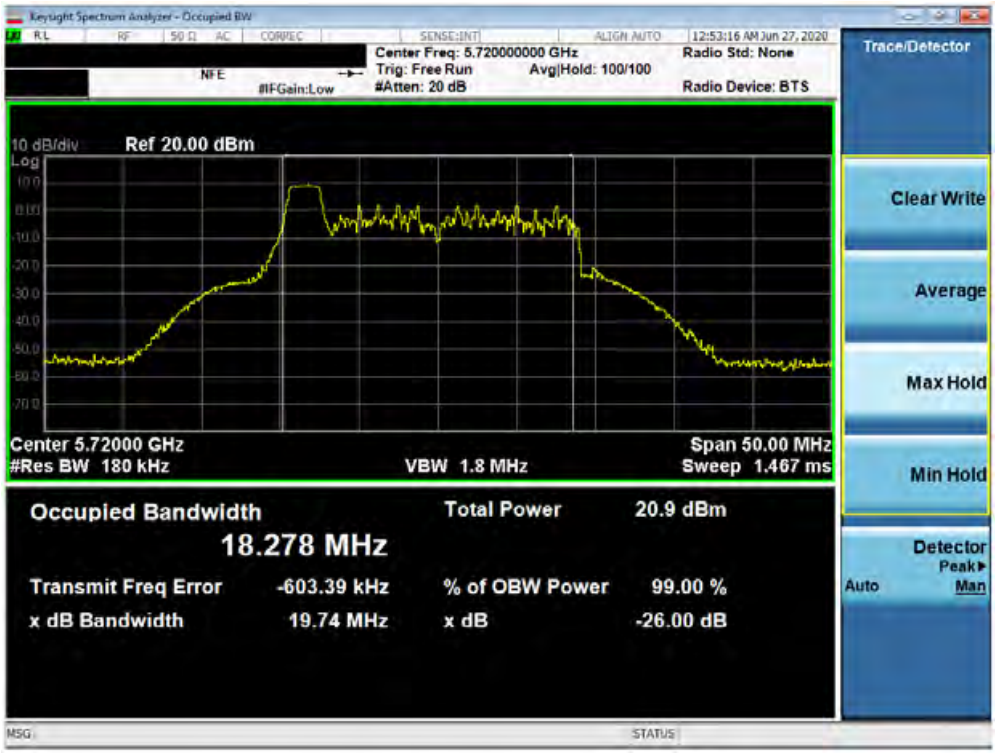
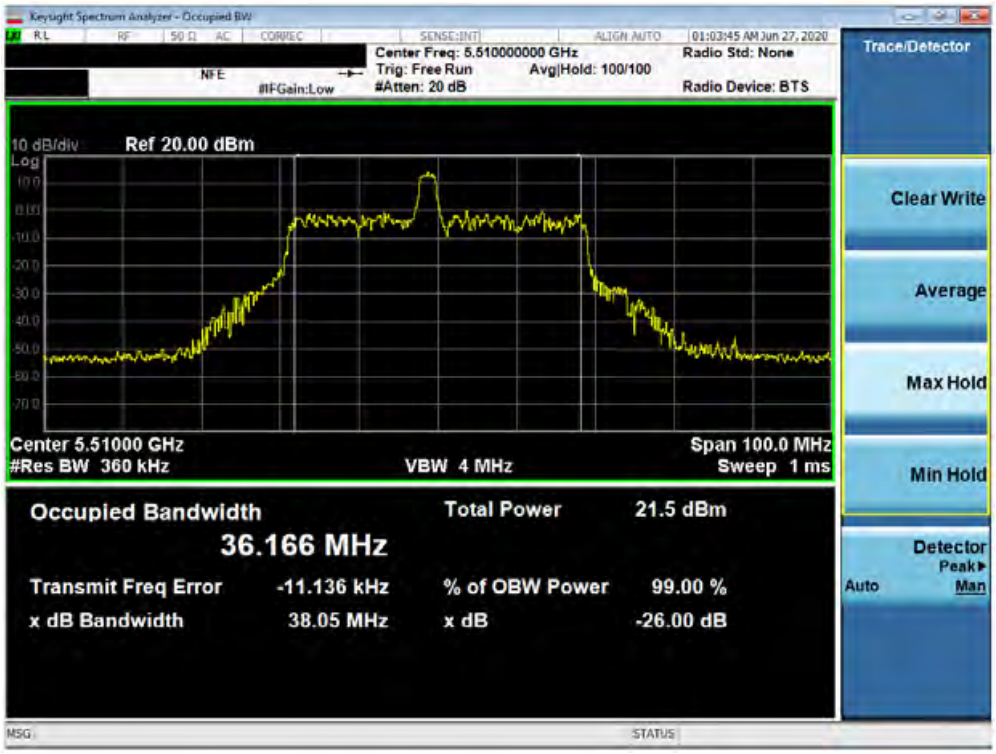


Plot 7-57. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)



Plot 7-58. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

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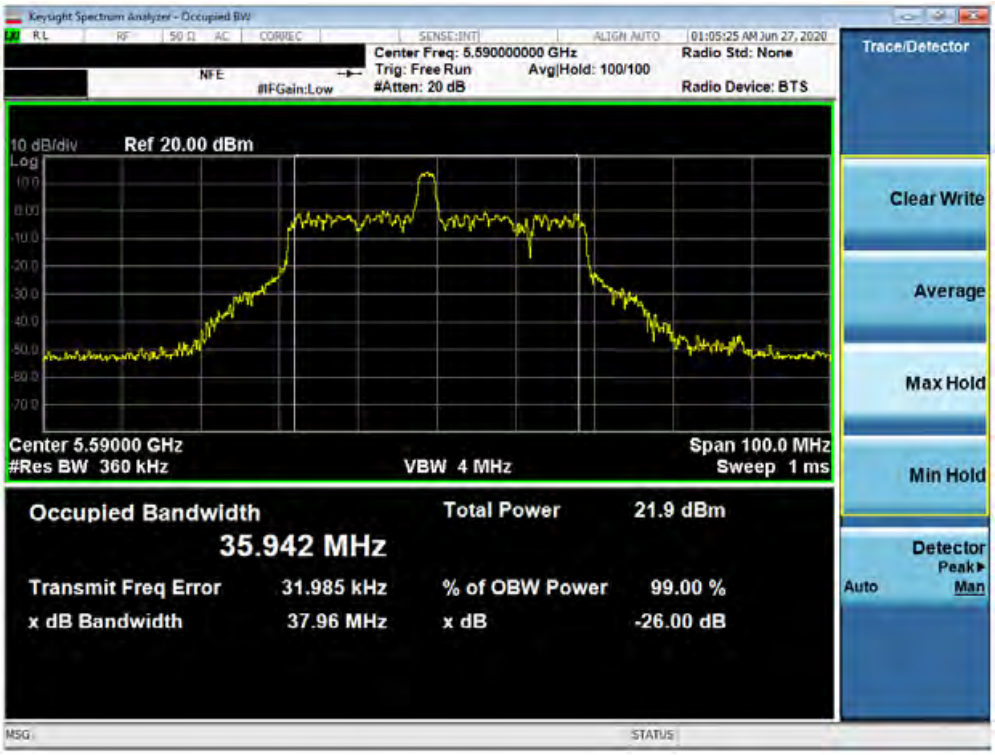
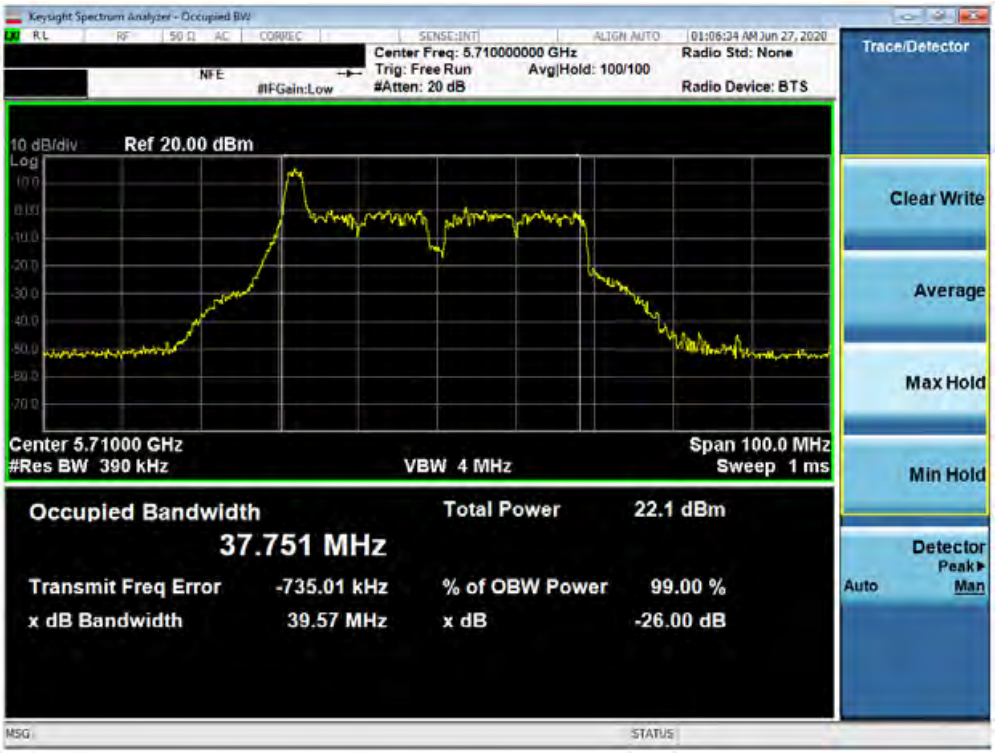


Plot 7-59. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



Plot 7-60. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

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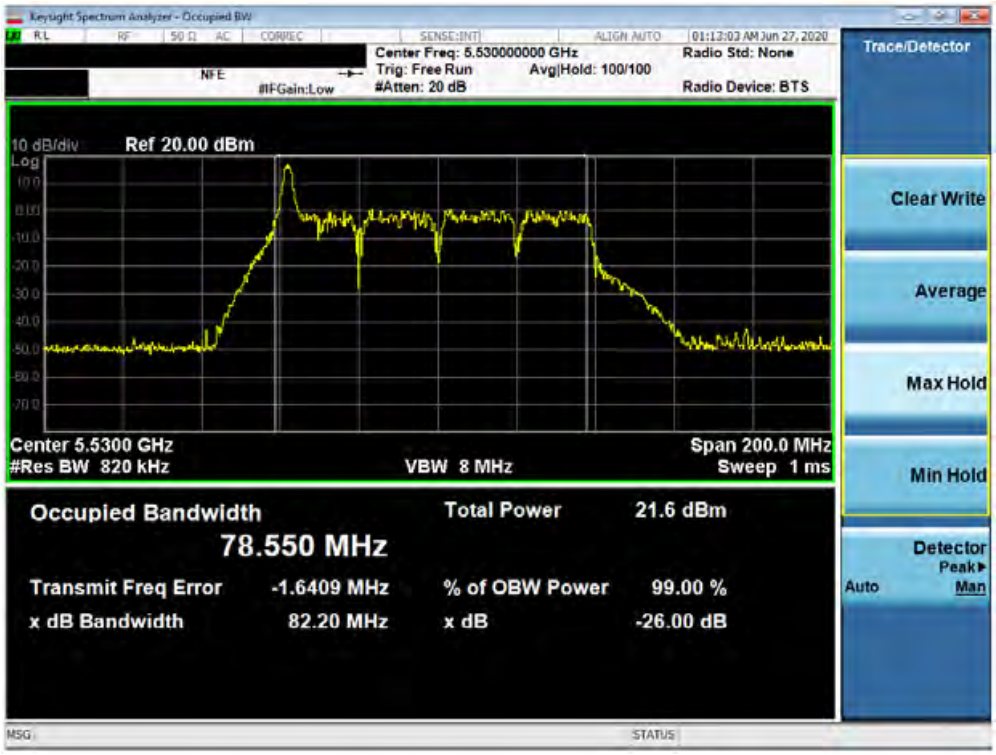
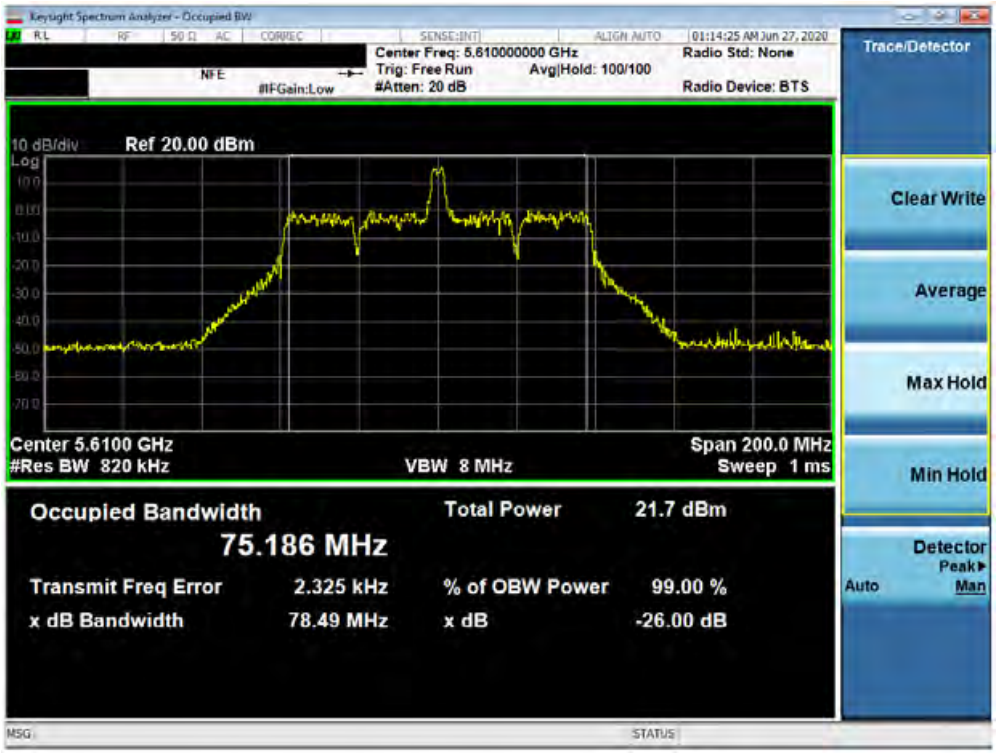


Plot 7-61. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-62. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

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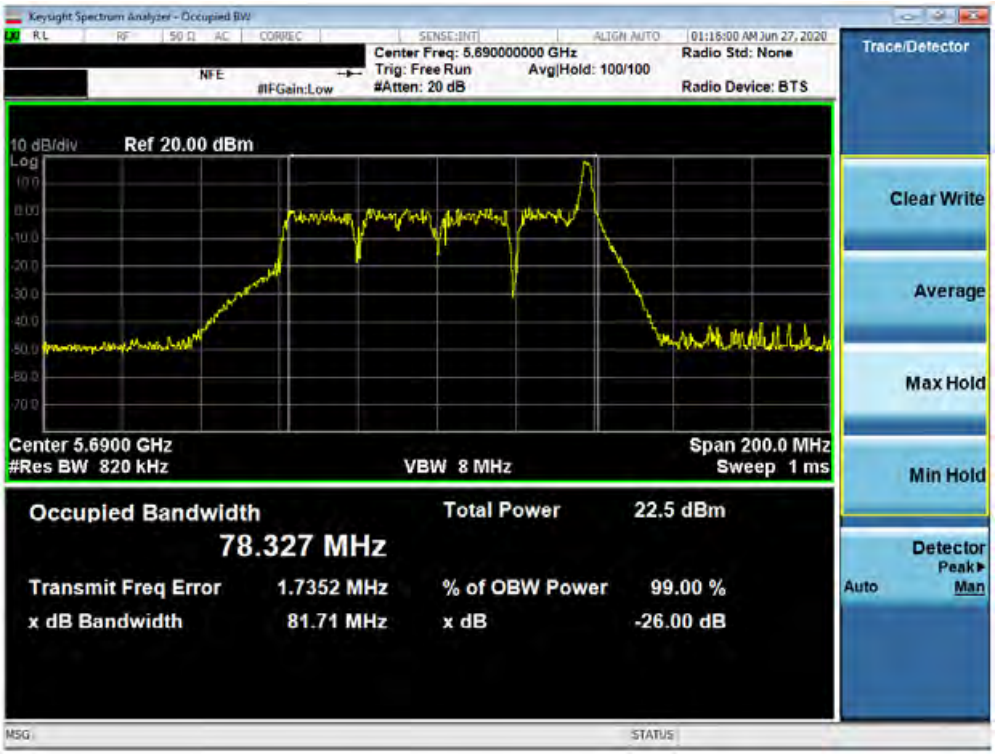

Plot 7-63. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

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SISO Antenna-2 26dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	ax (20MHz)	242T	MCS0	21.88
	5200	40	ax (20MHz)	242T	MCS0	22.37
	5240	48	ax (20MHz)	242T	MCS0	22.37
	5190	38	ax (40MHz)	484T	MCS0	42.51
	5230	46	ax (40MHz)	484T	MCS0	42.42
	5210	42	ax (80MHz)	996T	MCS0	86.54
Band 2A	5260	52	ax (20MHz)	242T	MCS0	21.82
	5280	56	ax (20MHz)	242T	MCS0	22.43
	5320	64	ax (20MHz)	242T	MCS0	22.60
	5270	54	ax (40MHz)	484T	MCS0	41.95
	5310	62	ax (40MHz)	484T	MCS0	43.09
	5290	58	ax (80MHz)	996T	MCS0	87.49
Band 2C	5500	100	ax (20MHz)	242T	MCS0	23.22
	5600	120	ax (20MHz)	242T	MCS0	21.77
	5720	144	ax (20MHz)	242T	MCS0	22.82
	5510	102	ax (40MHz)	484T	MCS0	43.07
	5590	118	ax (40MHz)	484T	MCS0	42.62
	5710	142	ax (40MHz)	484T	MCS0	43.61
	5530	106	ax (80MHz)	996T	MCS0	88.17
	5610	122	ax (80MHz)	996T	MCS0	91.05
	5690	138	ax (80MHz)	996T	MCS0	90.28

Table 7-5. Conducted Bandwidth Measurements SISO ANT2 (Full Tones)

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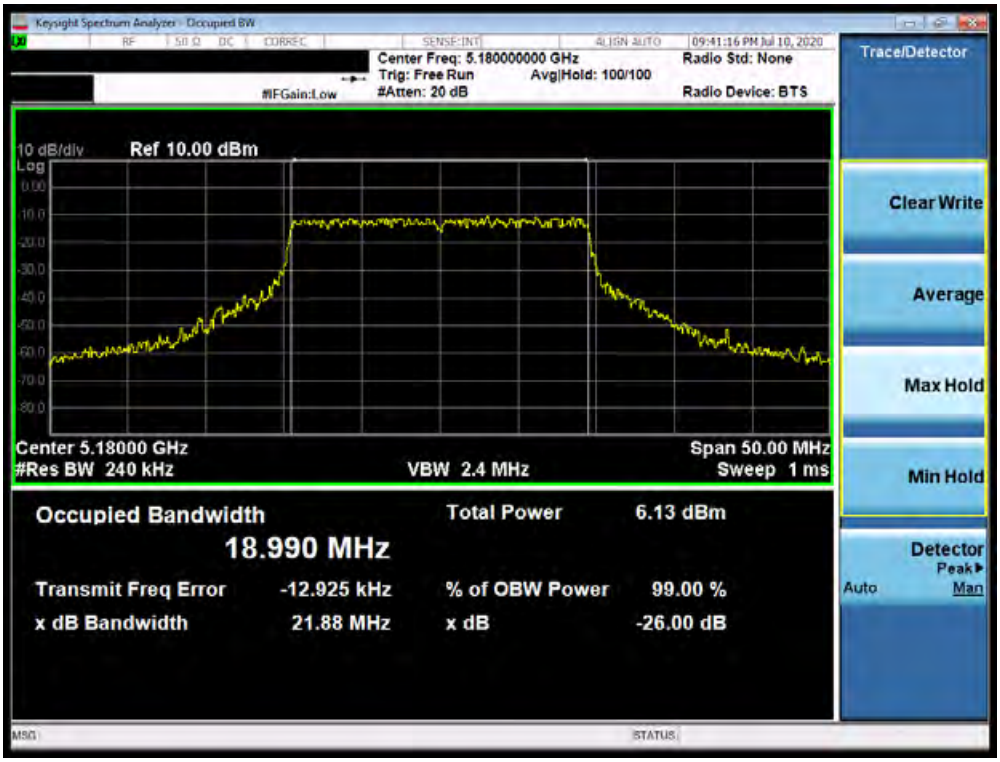

Plot 7-64. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)

Plot 7-65. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

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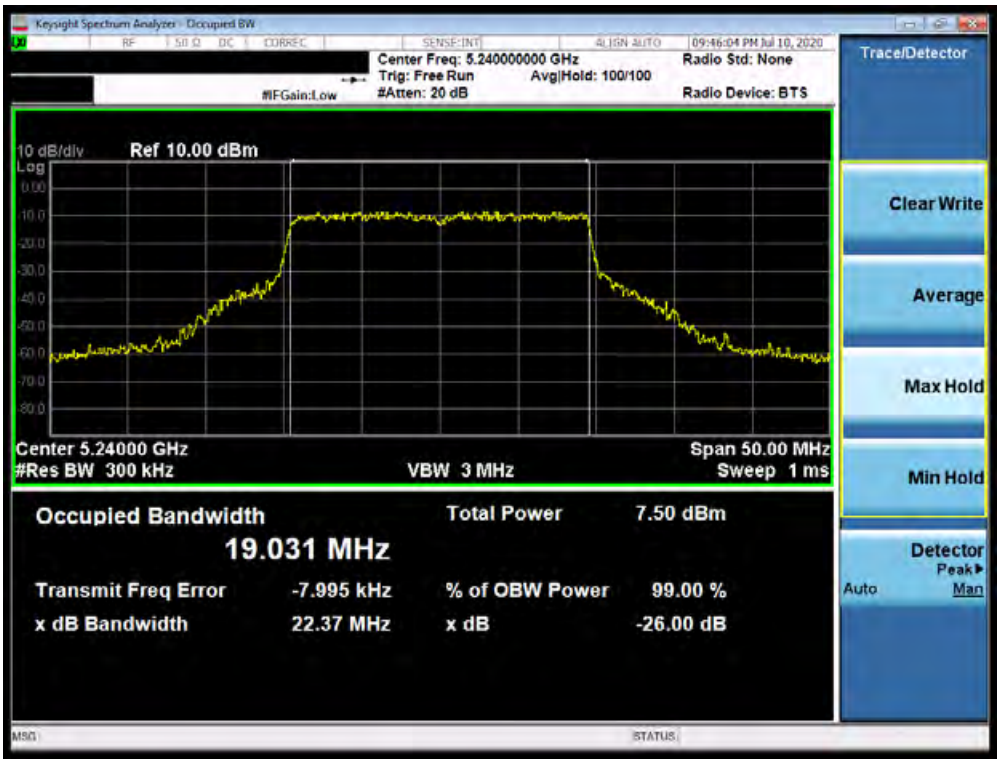
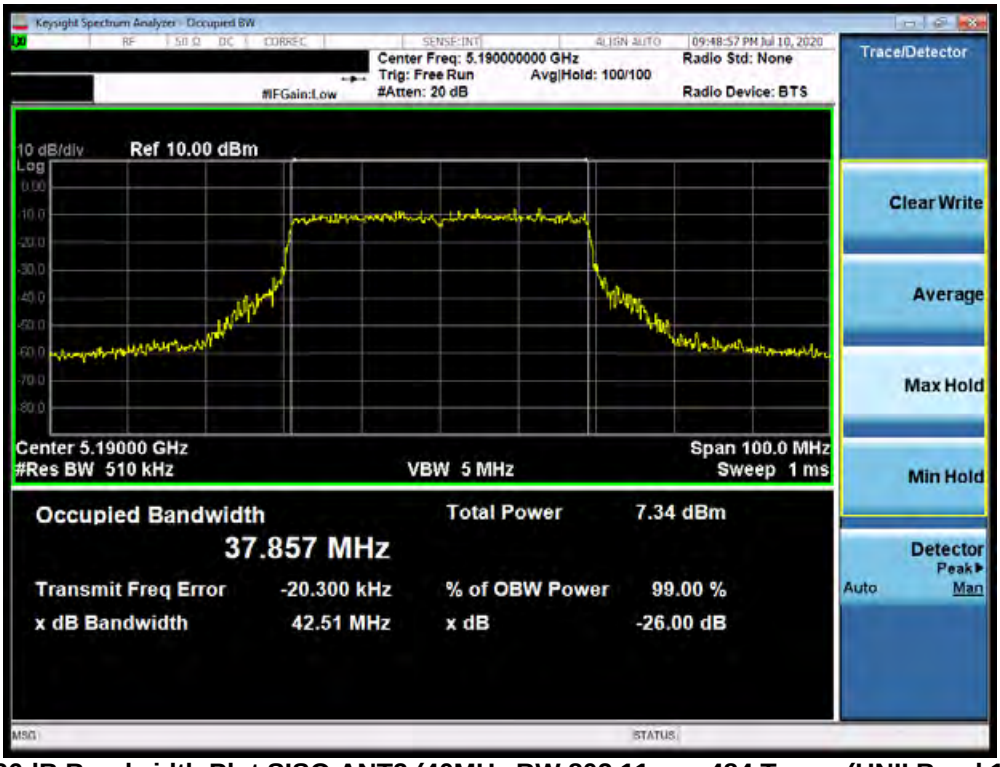


Plot 7-66. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 48)



Plot 7-67. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 38)

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Plot 7-68. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

Plot 7-69. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

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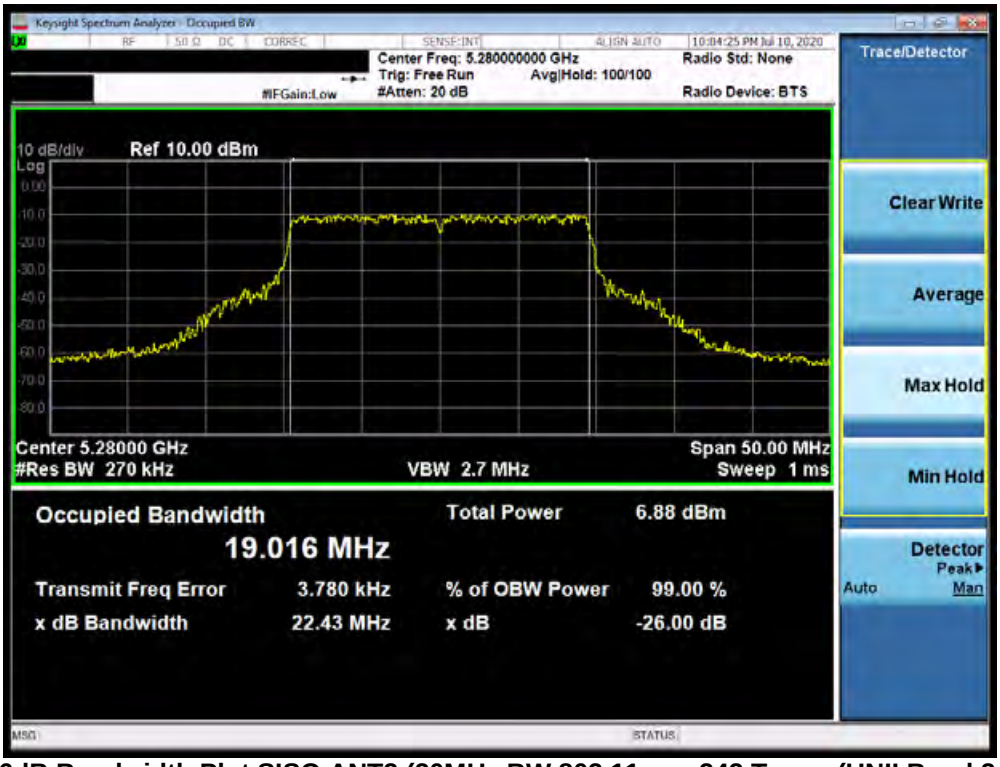
Plot 7-70. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)



Plot 7-71. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

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Plot 7-72. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

Plot 7-73. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

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Plot 7-74. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

Plot 7-75. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

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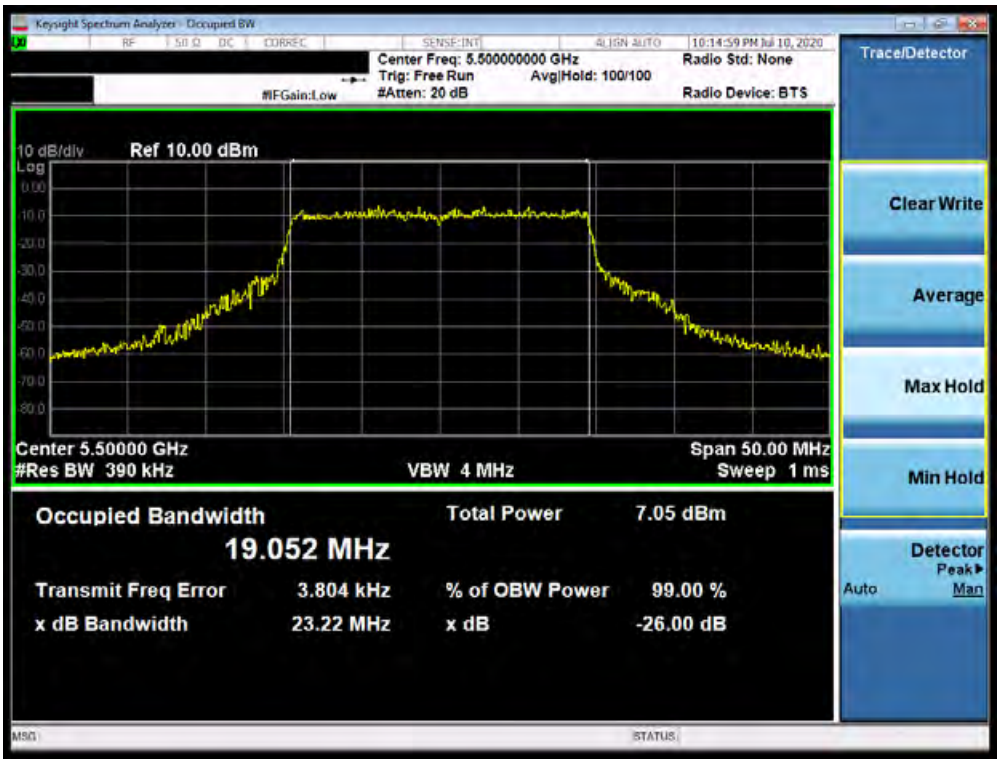
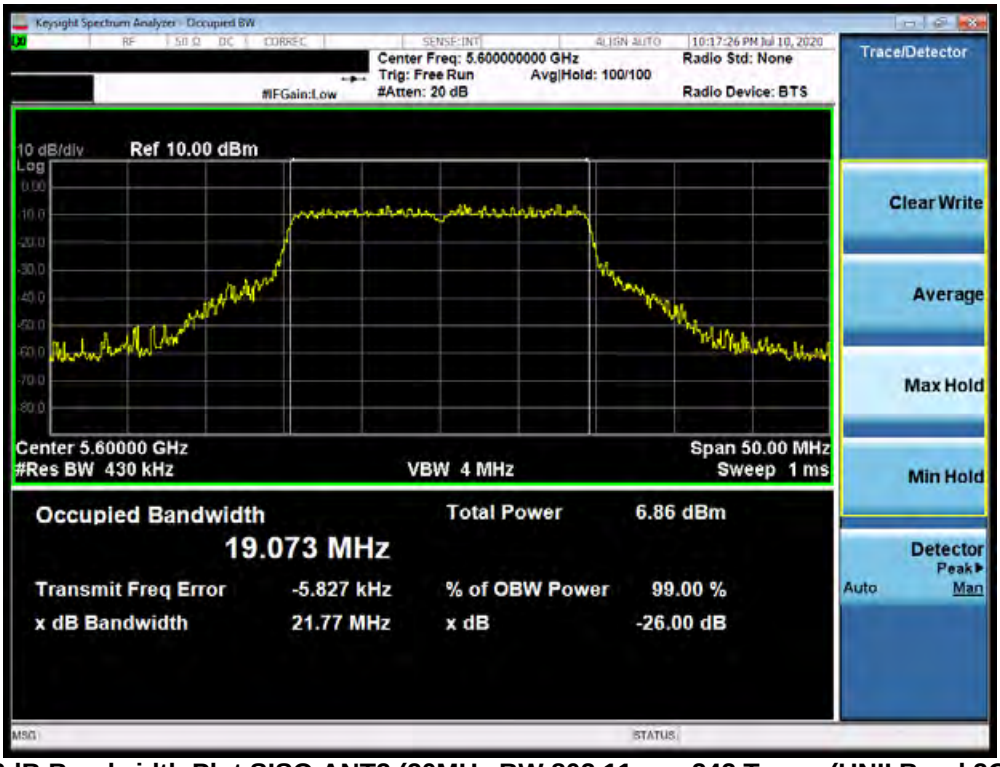


Plot 7-76. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)



Plot 7-77. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

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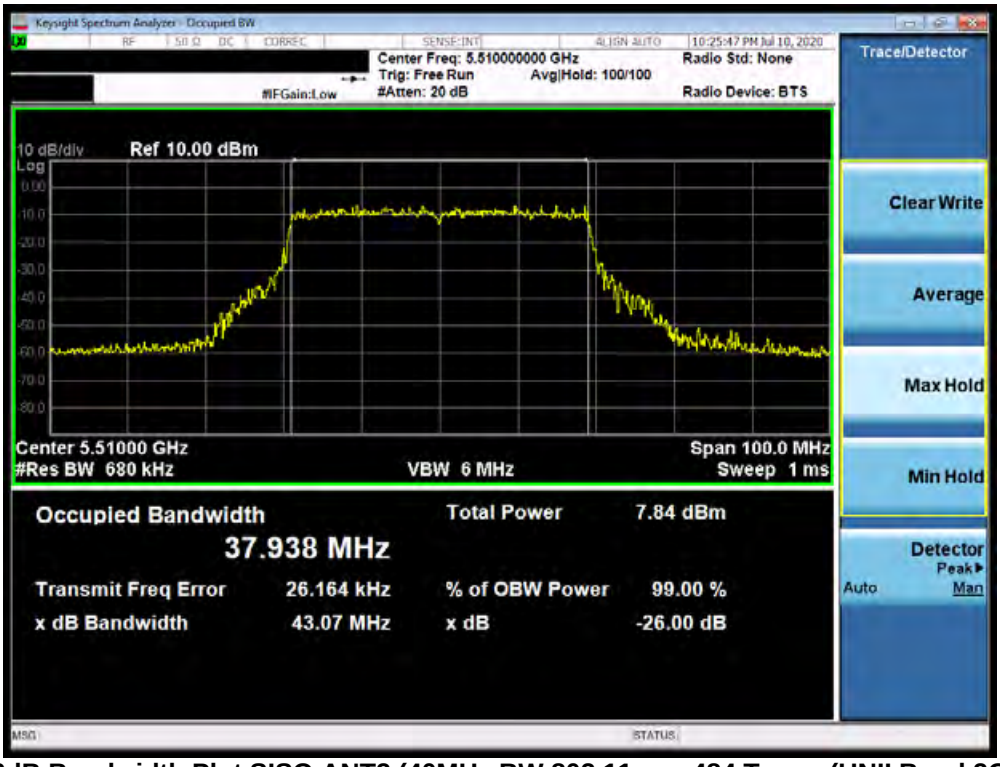
Plot 7-78. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)



Plot 7-79. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)

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Plot 7-80. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

Plot 7-81. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

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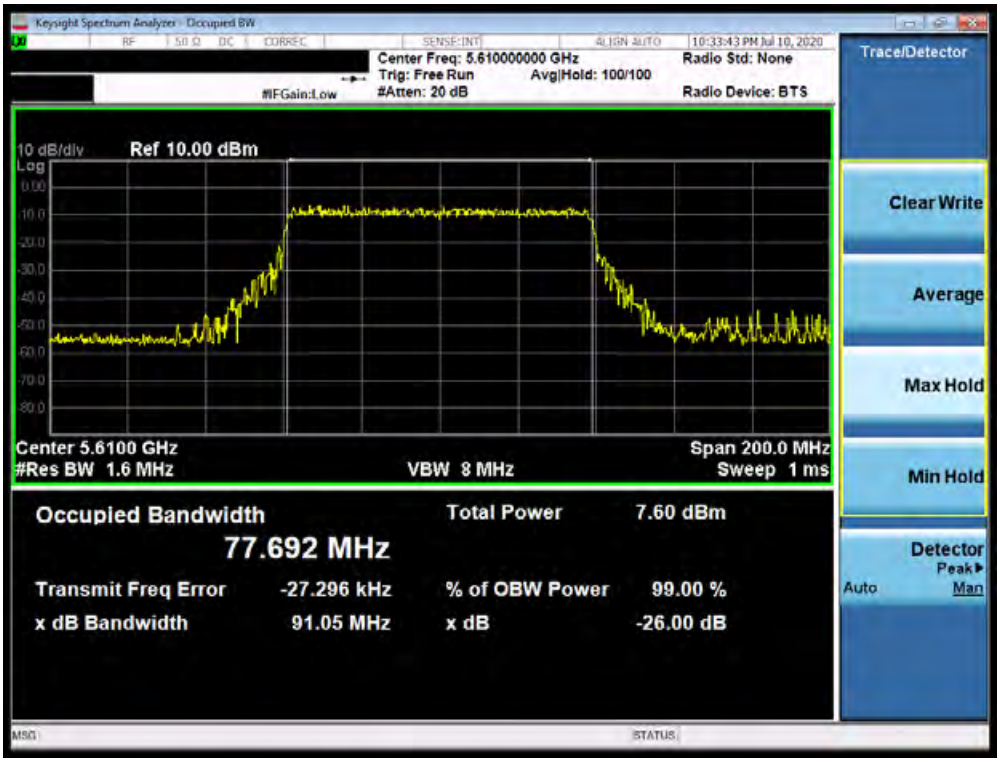
Plot 7-82. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-83. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

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Plot 7-84. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

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7.3 6dB Bandwidth Measurement – 802.11ax OFDMA

§15.407 (e); RSS-Gen [6.7]

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal 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. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz band, the 6dB bandwidth must be ≥ 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2
KDB 789033 D02 v02r01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

Test Setup

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

Figure 7-2. Test Instrument & Measurement Setup

Test Notes

The 6dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

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SISO Antenna-1 6 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	26T	MCS0	2.14
	5785	157	ax (20MHz)	26T	MCS0	2.14
	5825	165	ax (20MHz)	26T	MCS0	2.68
	5755	151	ax (40MHz)	26T	MCS0	2.16
	5795	159	ax (40MHz)	26T	MCS0	2.17
	5775	155	ax (80MHz)	26T	MCS0	2.26

Table 7-6. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)

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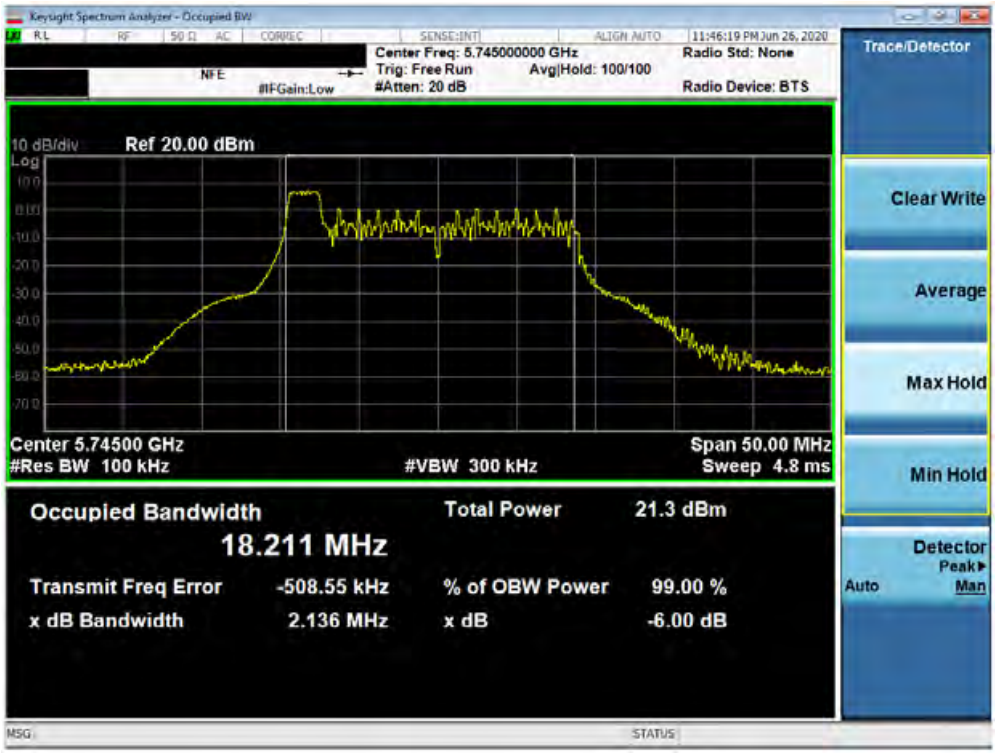
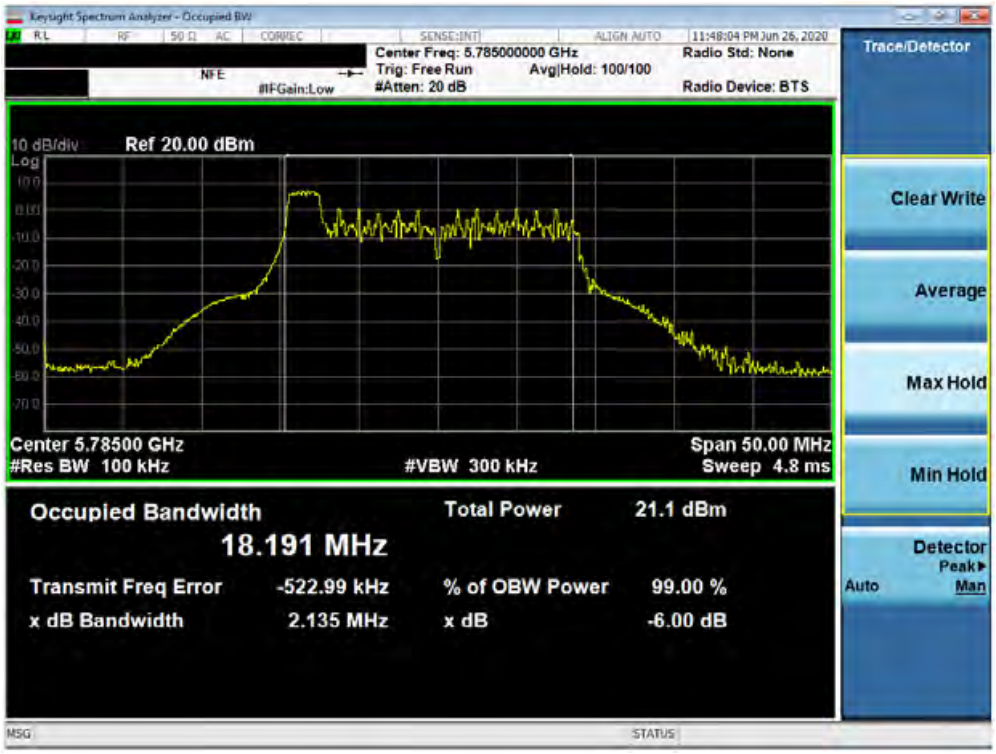


Plot 7-85. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



Plot 7-86. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

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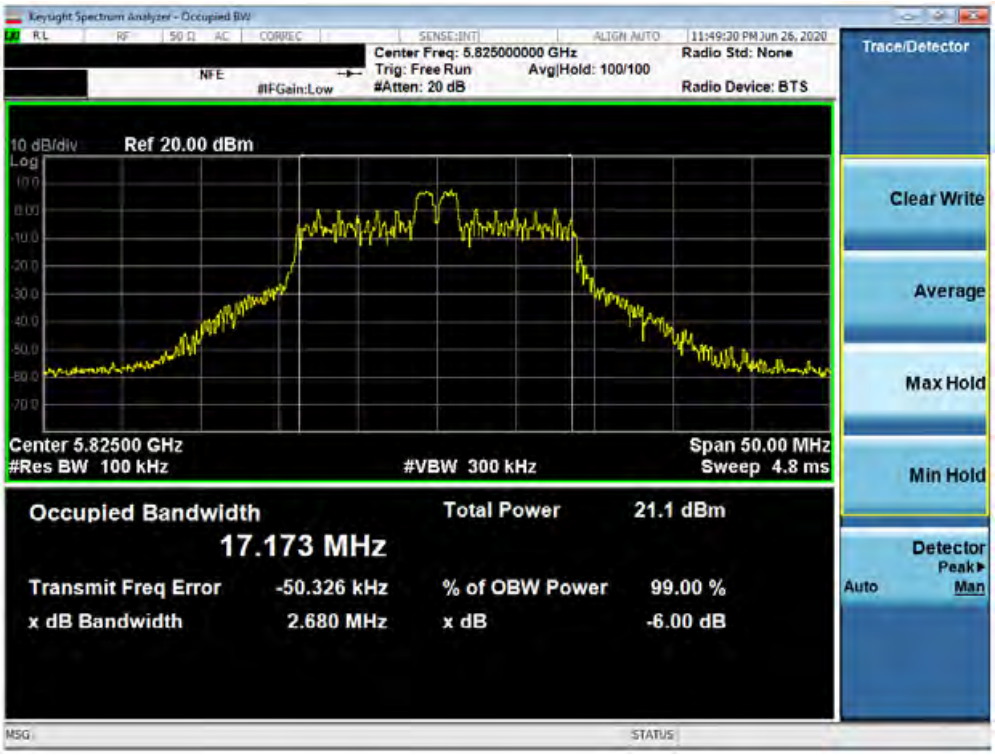
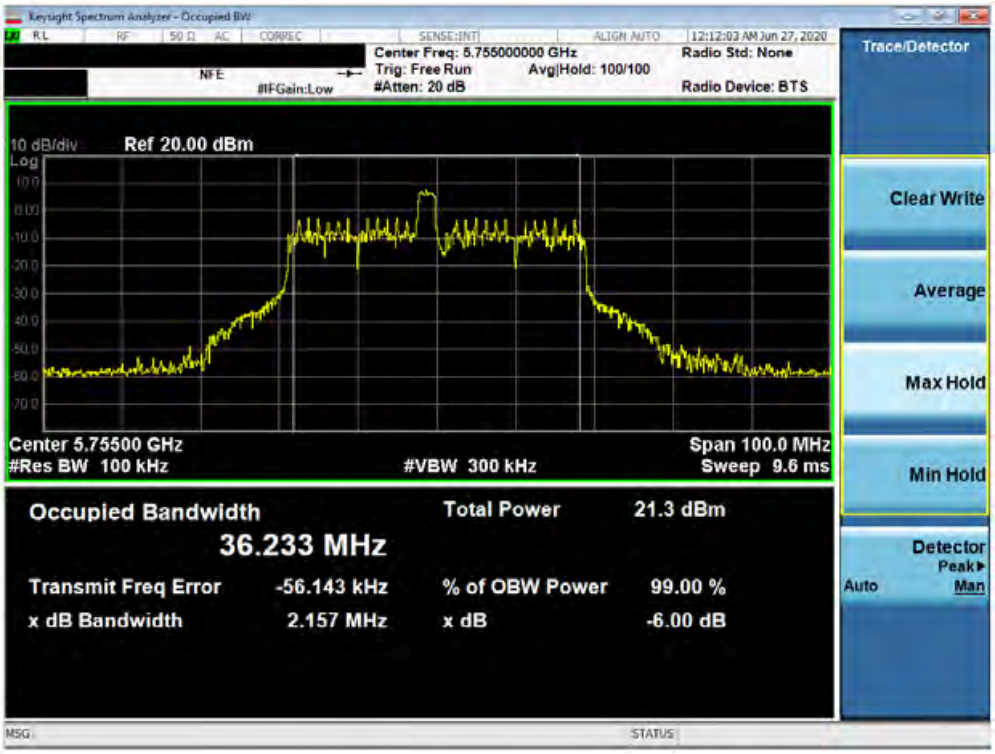


Plot 7-87. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)



Plot 7-88. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

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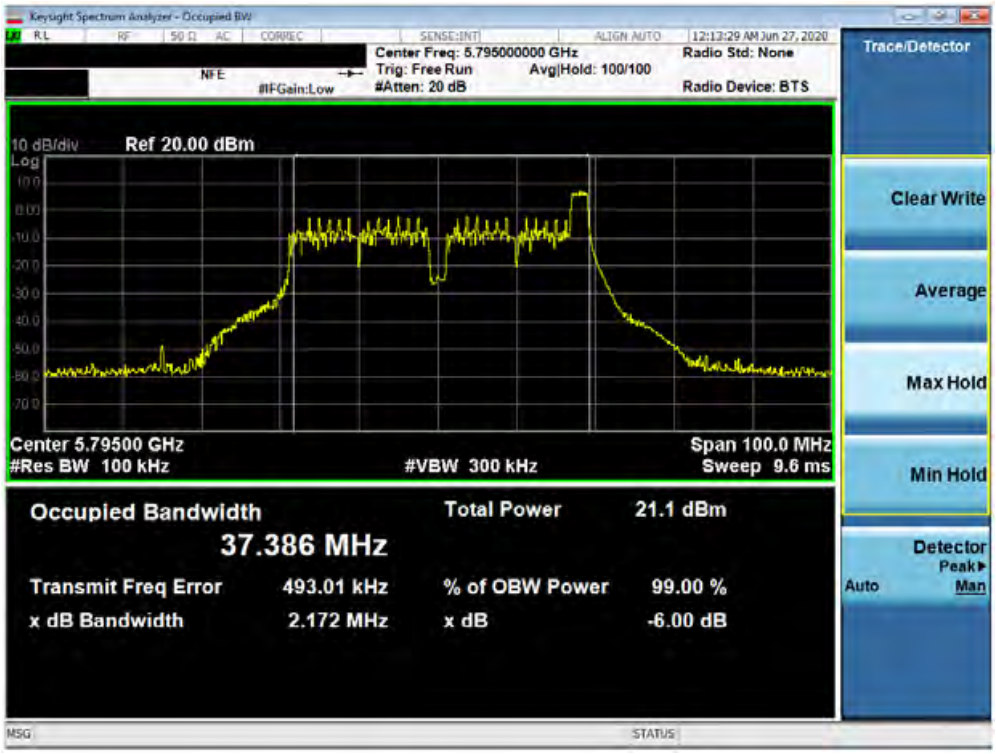

Plot 7-89. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

Plot 7-90. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

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SISO Antenna-1 6 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	242T	MCS0	18.95
	5785	157	ax (20MHz)	242T	MCS0	19.01
	5825	165	ax (20MHz)	242T	MCS0	18.96
	5755	151	ax (40MHz)	484T	MCS0	38.06
	5795	159	ax (40MHz)	484T	MCS0	38.11
	5775	155	ax (80MHz)	996T	MCS0	78.01

Table 7-7. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)

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Plot 7-91. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)

Plot 7-92. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

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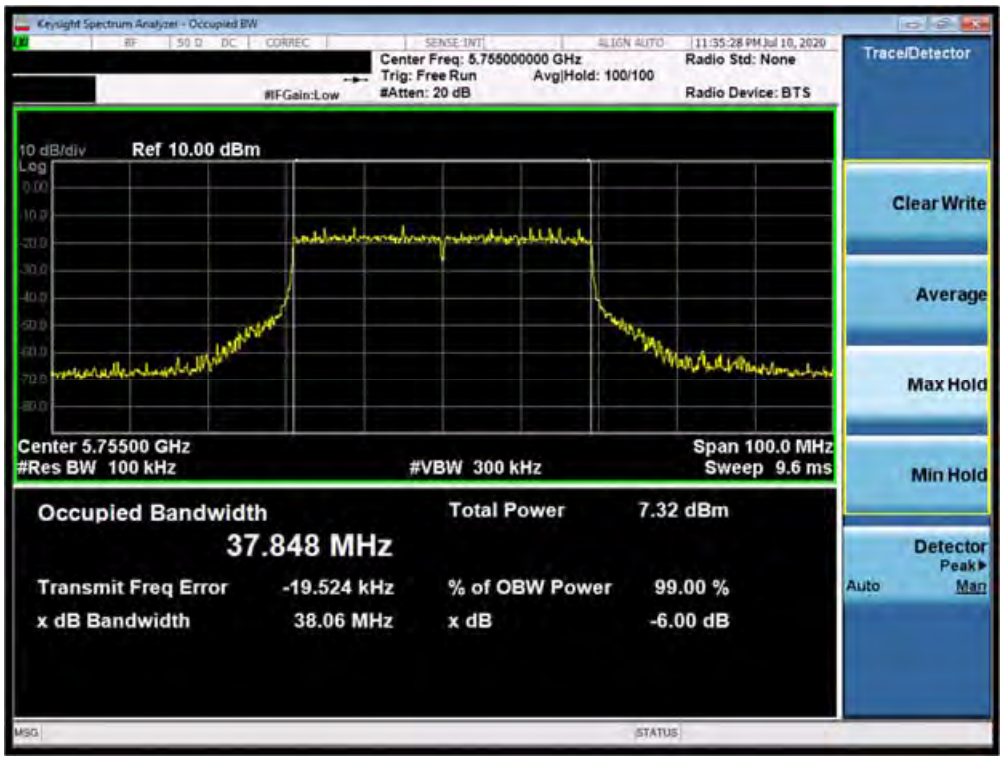
Plot 7-93. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)



Plot 7-94. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

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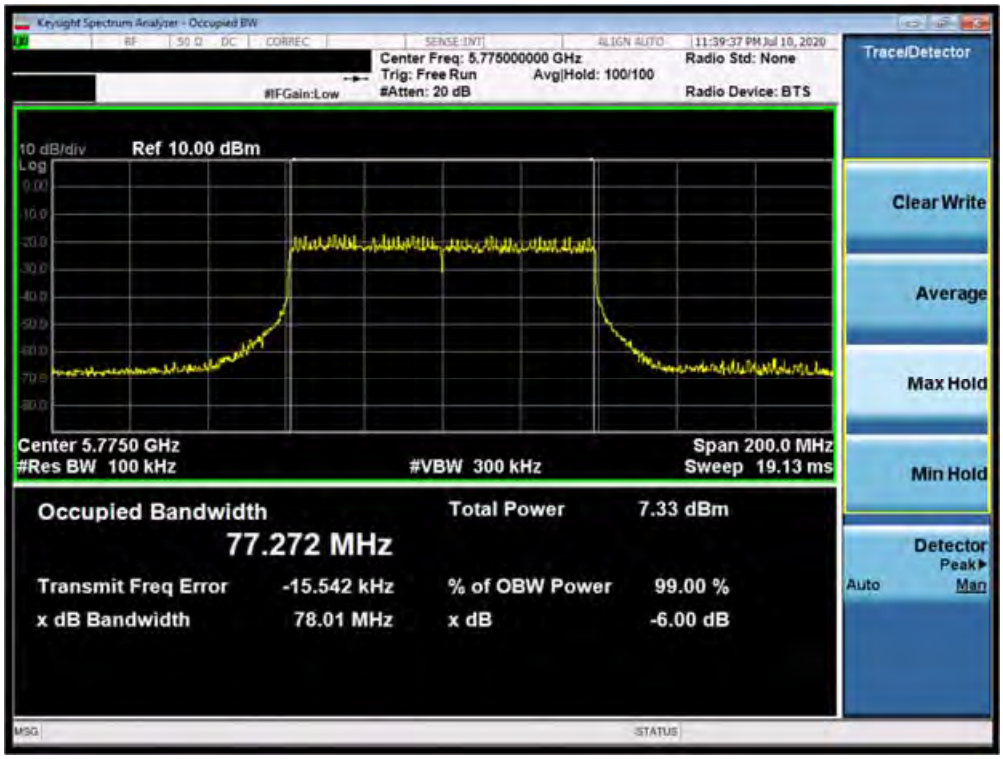
Plot 7-95. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



Plot 7-96. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

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SISO Antenna-2 6dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	26T	MCS0	12.05
	5785	157	ax (20MHz)	26T	MCS0	2.69
	5825	165	ax (20MHz)	26T	MCS0	2.11
	5755	151	ax (40MHz)	26T	MCS0	2.17
	5795	159	ax (40MHz)	26T	MCS0	2.16
	5775	155	ax (80MHz)	26T	MCS0	2.29

Table 7-8. Conducted Bandwidth Measurements SISO ANT2 (26 Tones)

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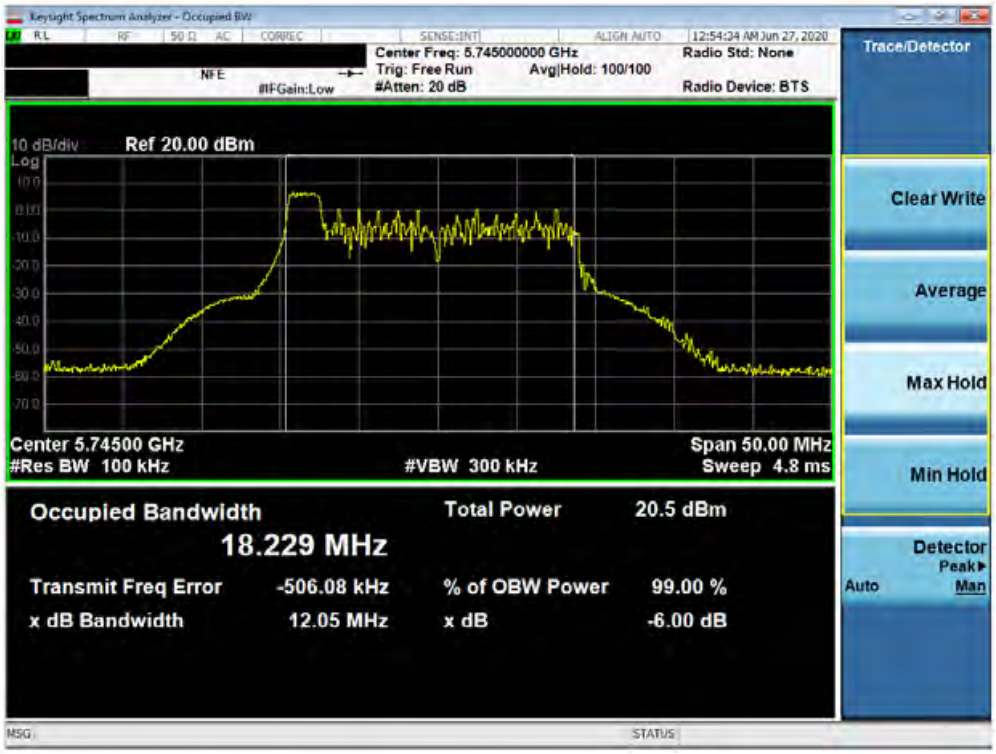
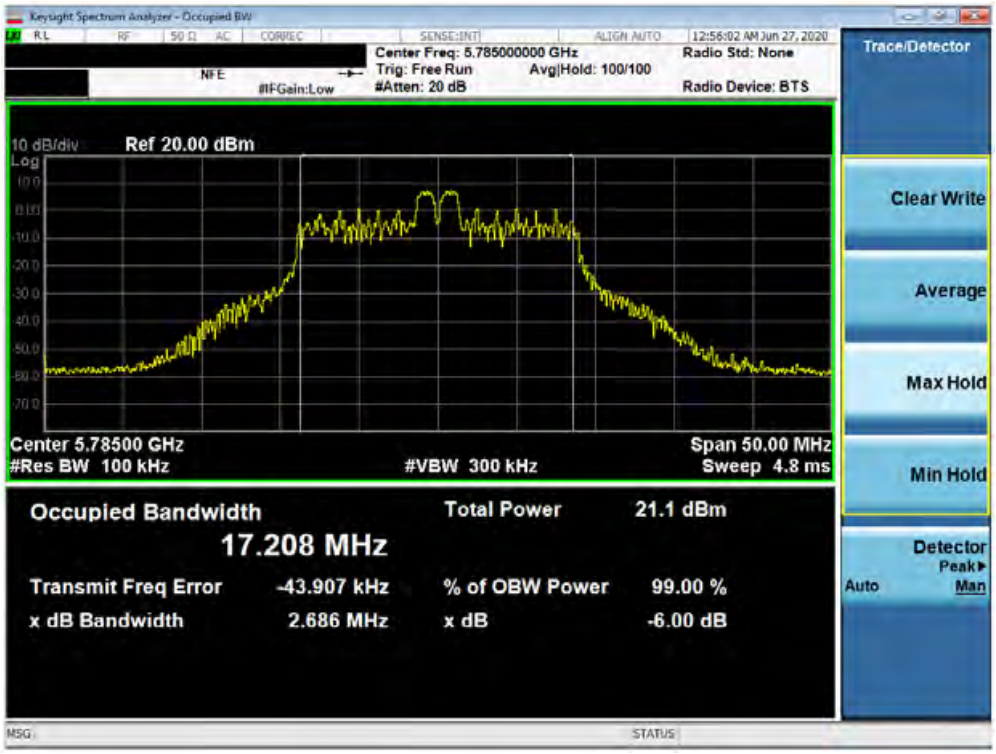


Plot 7-97. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



Plot 7-98. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

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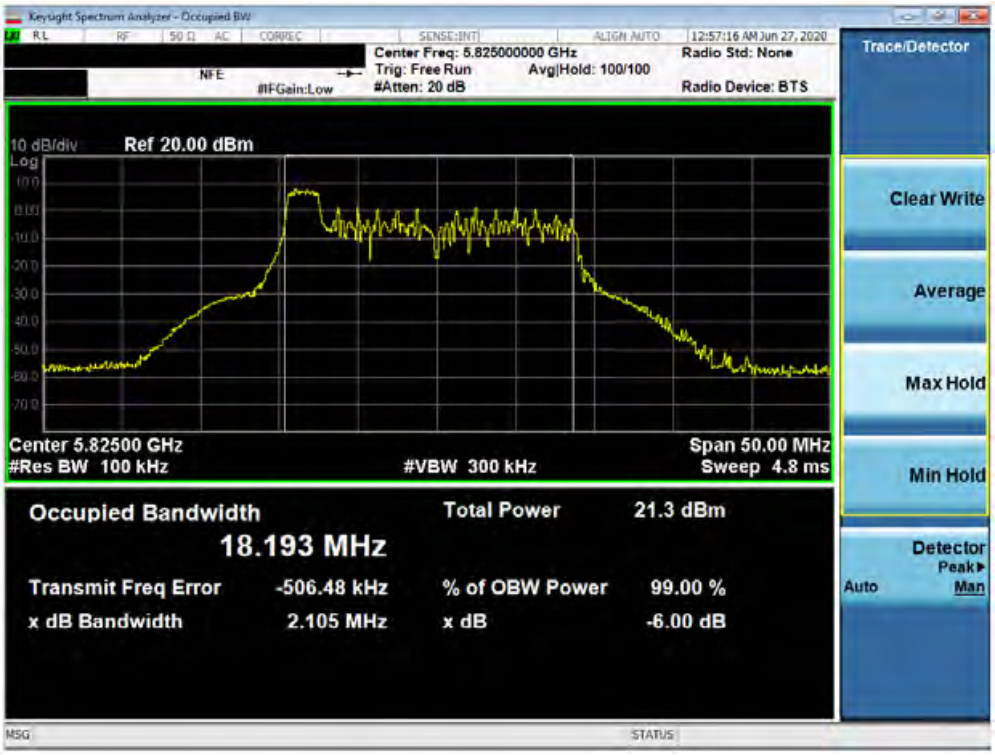
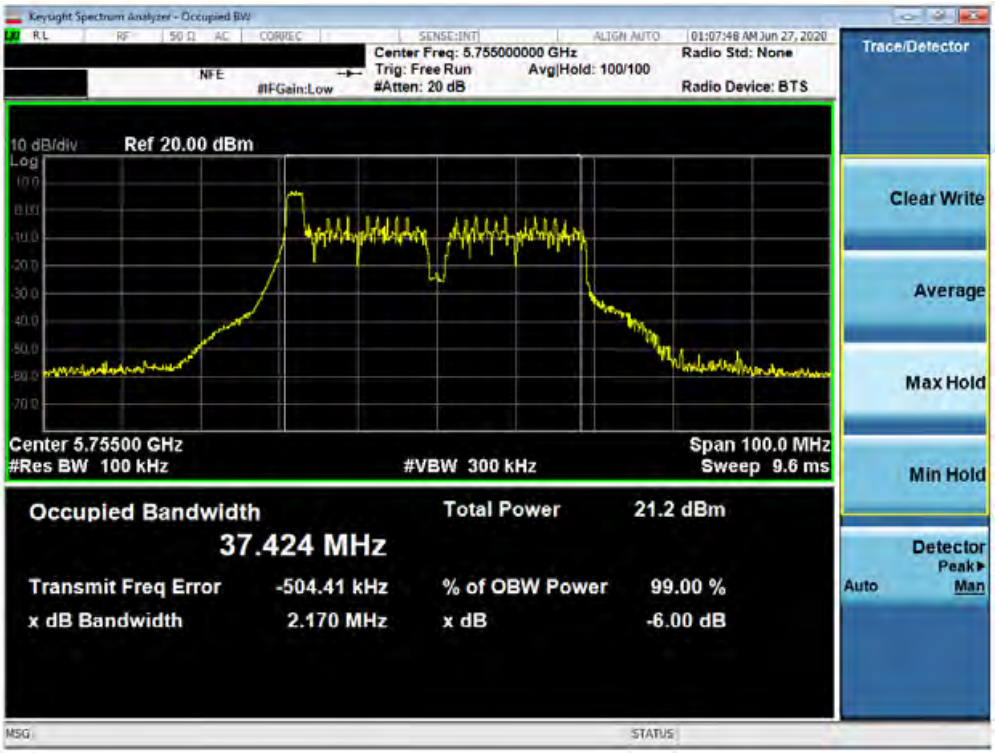


Plot 7-99. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)



Plot 7-100. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

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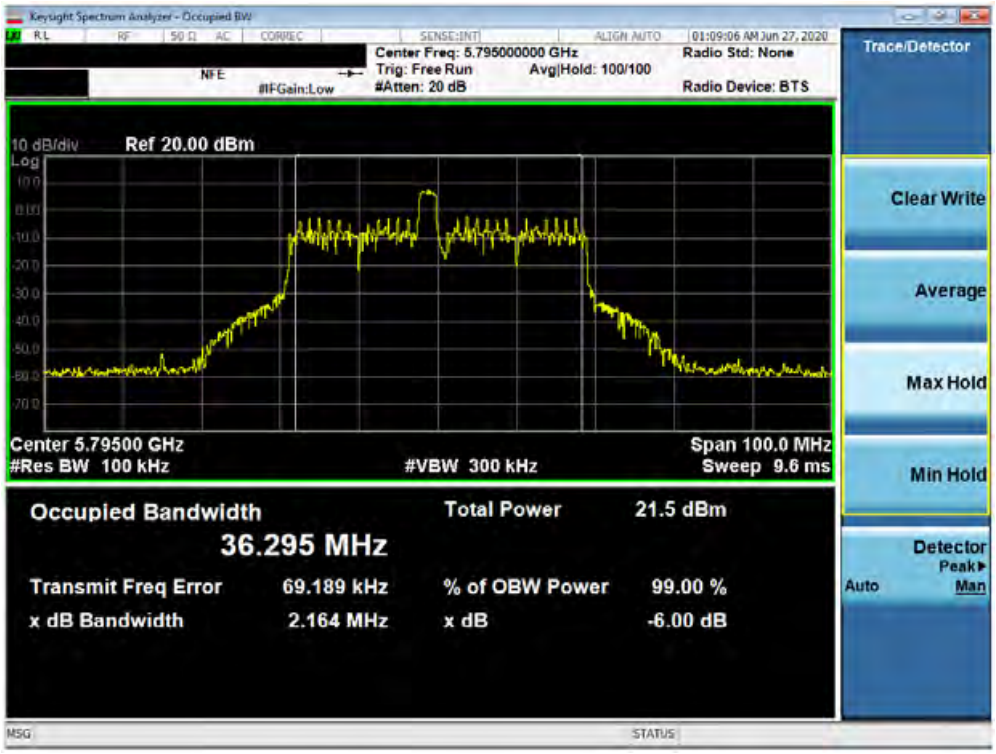
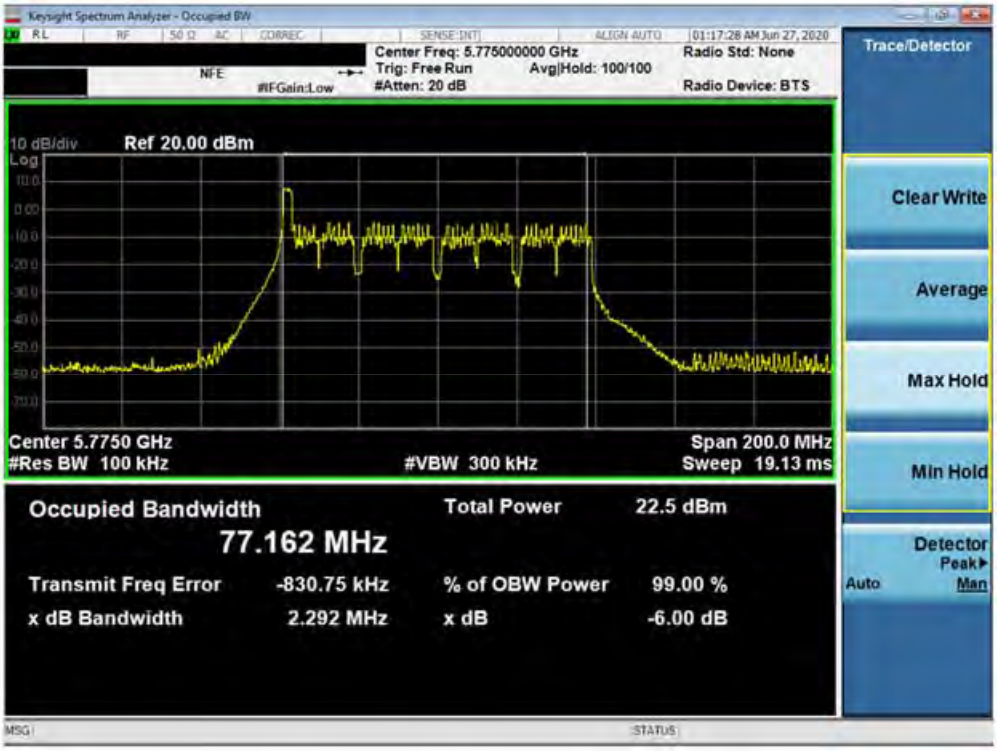


Plot 7-101. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



Plot 7-102. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

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SISO Antenna-2 6dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	ax (20MHz)	242T	MCS0	19.06
	5785	157	ax (20MHz)	242T	MCS0	19.04
	5825	165	ax (20MHz)	242T	MCS0	18.91
	5755	151	ax (40MHz)	484T	MCS0	38.07
	5795	159	ax (40MHz)	484T	MCS0	38.09
	5775	155	ax (80MHz)	996T	MCS0	77.70

Table 7-9. Conducted Bandwidth Measurements SISO ANT2 (Full Tones)

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Plot 7-103. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)

Plot 7-104. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

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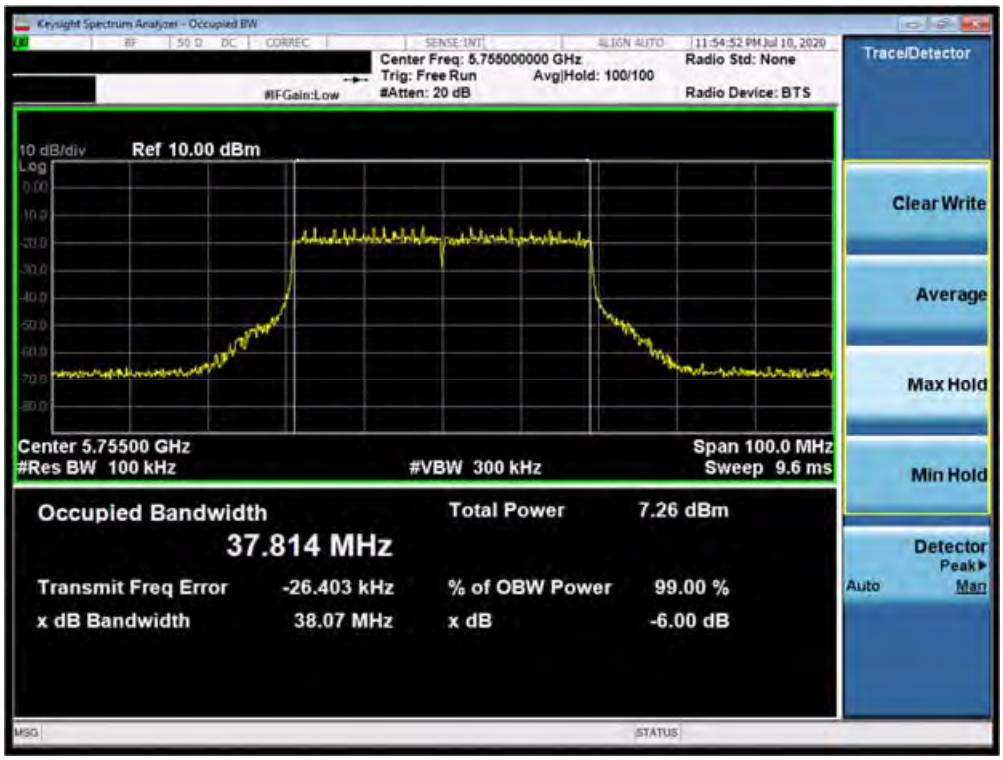
Plot 7-105. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)



Plot 7-106. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

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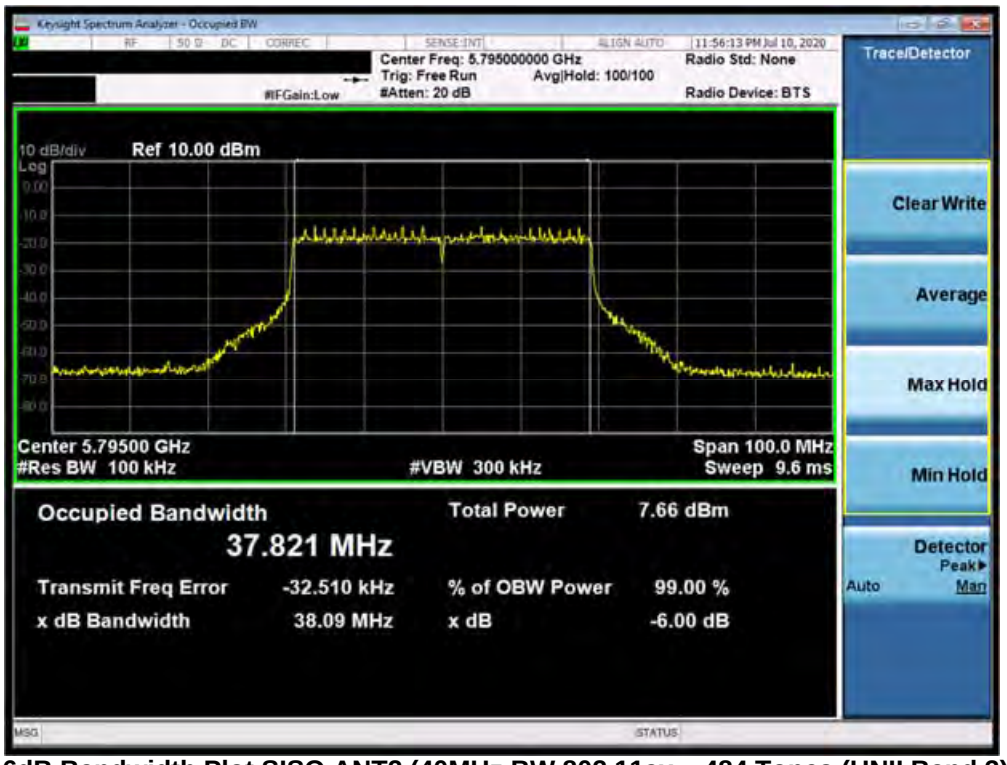
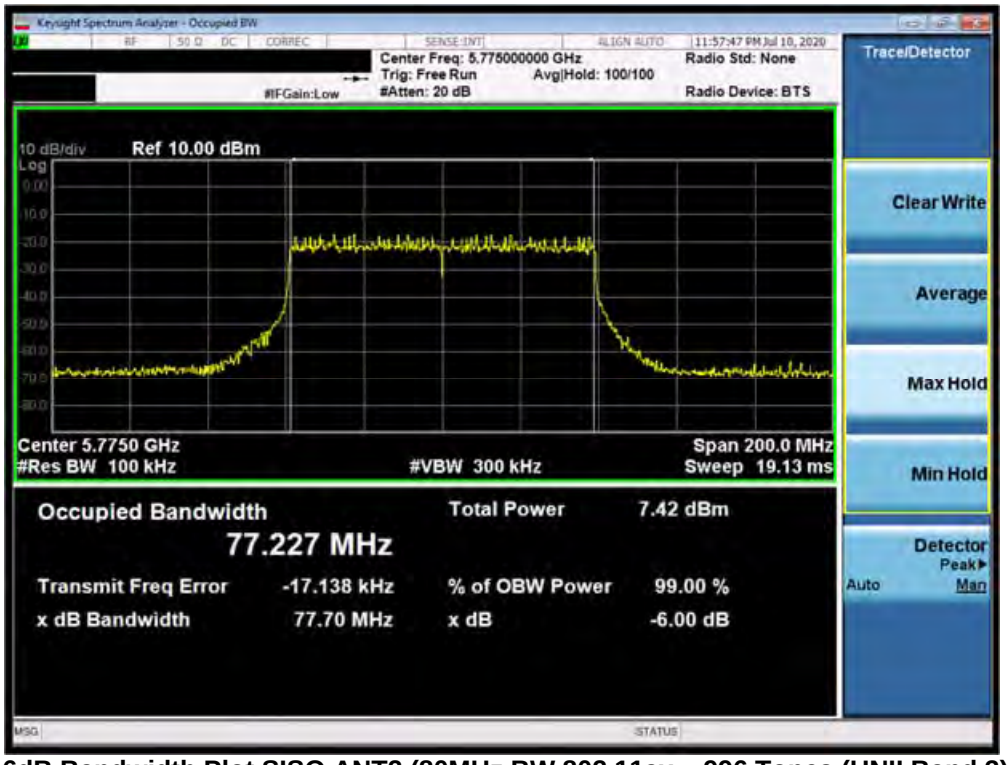


Plot 7-107. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



Plot 7-108. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

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7.4 UNII Output Power Measurement – 802.11ax OFDMA

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm). The maximum e.i.r.p. shall not exceed the lesser of 200 mW or 10 + 10 log10B, dBm.

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(19.55) = 23.91dBm. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(19.65) = 23.93dBm. The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.

In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm). The maximum e.i.r.p. is 36 dBm.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G
KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G
ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

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

Figure 7-3. Test Instrument & Measurement Setup

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SISO Antenna-1 Conducted Output Power Measurements (26 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	4	8		
	5180	36	AVG	26T	7.61	7.87	7.80	23.98	-16.11
	5200	40	AVG	26T	7.90	7.99	7.98	23.98	-15.99
	5240	48	AVG	26T	7.46	7.43	7.48	23.98	-16.50
	5260	52	AVG	26T	7.99	7.98	7.98	23.47	-15.48
	5280	56	AVG	26T	7.37	7.44	7.02	23.47	-16.03
	5320	64	AVG	26T	6.97	7.05	7.40	23.47	-16.07
	5500	100	AVG	26T	7.96	7.92	7.95	22.80	-14.84
	5600	120	AVG	26T	8.92	8.99	8.95	22.80	-13.81
	5720	144	AVG	26T	7.67	7.78	7.62	22.80	-15.02
	5745	149	AVG	26T	7.68	7.82	7.73	30.00	-22.18
	5785	157	AVG	26T	7.73	7.64	7.67	30.00	-22.27
	5825	165	AVG	26T	7.55	7.46	7.99	30.00	-22.01

Table 7-10. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	8	17		
	5190	38	AVG	26T	8.78	8.90	8.70	23.98	-15.08
	5230	46	AVG	26T	8.48	8.45	8.12	23.98	-15.50
	5270	54	AVG	26T	8.23	8.03	8.16	23.47	-15.24
	5310	62	AVG	26T	8.43	7.95	8.30	23.47	-15.04
	5510	102	AVG	26T	7.90	8.26	8.09	22.80	-14.54
	5590	118	AVG	26T	7.92	8.42	7.98	22.80	-14.38
	5710	142	AVG	26T	7.80	8.21	8.29	22.80	-14.51
	5755	151	AVG	26T	8.07	8.40	7.94	30.00	-21.60
	5795	159	AVG	26T	8.09	7.93	8.07	30.00	-21.91

Table 7-11. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	18	36		
	5210	42	AVG	26T	8.86	8.65	8.53	23.98	-15.12
	5290	58	AVG	26T	8.87	8.76	8.79	23.47	-14.60
	5530	106	AVG	26T	9.15	9.15	9.31	22.80	-13.49
	5610	122	AVG	26T	8.88	8.55	8.93	22.80	-13.87
	5690	138	AVG	26T	8.82	8.41	8.57	22.80	-13.98
	5775	155	AVG	26T	8.94	8.69	8.59	30.00	-21.06

Table 7-12. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

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SISO Antenna-1 Conducted Output Power Measurements (52 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	39	40		
	5180	36	AVG	52T	10.99	10.71	10.71	23.98	-12.99
	5200	40	AVG	52T	10.99	10.72	10.73	23.98	-12.99
	5240	48	AVG	52T	10.42	10.61	10.60	23.98	-13.37
	5260	52	AVG	52T	10.76	10.87	10.87	23.47	-12.60
	5280	56	AVG	52T	10.99	10.42	10.99	23.47	-12.48
	5320	64	AVG	52T	10.63	10.70	10.99	23.47	-12.48
	5500	100	AVG	52T	10.86	10.86	10.82	22.80	-11.94
	5600	120	AVG	52T	10.95	10.99	10.99	22.80	-11.81
	5720	144	AVG	52T	10.66	10.99	10.98	22.80	-11.81
	5745	149	AVG	52T	10.85	10.83	10.80	30.00	-19.15
	5785	157	AVG	52T	10.93	10.86	10.87	30.00	-19.07
	5825	165	AVG	52T	10.94	10.98	10.86	30.00	-19.02

Table 7-13. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	40	44		
	5190	38	AVG	52T	10.99	10.78	10.99	23.98	-12.99
	5230	46	AVG	52T	10.66	10.57	10.84	23.98	-13.14
	5270	54	AVG	52T	10.78	10.62	10.83	23.47	-12.64
	5310	62	AVG	52T	10.55	10.88	10.95	23.47	-12.52
	5510	102	AVG	52T	10.61	10.91	10.40	22.80	-11.89
	5590	118	AVG	52T	10.89	10.47	10.85	22.80	-11.91
	5710	142	AVG	52T	10.99	10.92	10.85	22.80	-11.81
	5755	151	AVG	52T	10.78	10.98	10.51	30.00	-19.02
	5795	159	AVG	52T	10.84	10.62	10.63	30.00	-19.16

Table 7-14. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	44	52		
	5210	42	AVG	52T	10.78	10.90	10.77	23.98	-13.08
	5290	58	AVG	52T	10.87	10.62	10.74	23.47	-12.60
	5530	106	AVG	52T	10.80	10.95	10.63	22.80	-11.85
	5610	122	AVG	52T	10.99	10.56	10.91	22.80	-11.81
	5690	138	AVG	52T	10.96	10.51	10.61	22.80	-11.84
	5775	155	AVG	52T	10.72	10.75	10.96	30.00	-19.04

Table 7-15. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

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SISO Antenna-1 Conducted Output Power Measurements (106 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	54		
	5180	36	AVG	106T	10.72	10.75	23.98	-13.23
	5200	40	AVG	106T	10.73	10.72	23.98	-13.25
	5240	48	AVG	106T	10.68	10.71	23.98	-13.27
	5260	52	AVG	106T	10.75	10.75	23.47	-12.72
	5280	56	AVG	106T	10.97	10.92	23.47	-12.50
	5320	64	AVG	106T	10.65	10.52	23.47	-12.82
	5500	100	AVG	106T	10.96	10.90	22.80	-11.84
	5600	120	AVG	106T	10.38	10.99	22.80	-11.81
	5720	144	AVG	106T	10.82	10.77	22.80	-11.98
	5745	149	AVG	106T	10.71	10.98	30.00	-19.02
	5785	157	AVG	106T	10.71	10.99	30.00	-19.01
	5825	165	AVG	106T	10.64	10.57	30.00	-19.36

Table 7-16. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	54	56		
	5190	38	AVG	106T	10.90	10.84	10.81	23.98	-13.08
	5230	46	AVG	106T	10.98	10.85	10.57	23.98	-13.00
	5270	54	AVG	106T	10.73	10.97	10.60	23.47	-12.50
	5310	62	AVG	106T	10.99	10.56	10.79	23.47	-12.48
	5510	102	AVG	106T	10.30	10.47	10.13	22.80	-12.33
	5590	118	AVG	106T	10.35	10.65	10.31	22.80	-12.15
	5710	142	AVG	106T	10.86	10.98	10.70	22.80	-11.82
	5755	151	AVG	106T	10.99	10.71	10.83	30.00	-19.01
	5795	159	AVG	106T	10.69	10.87	10.98	30.00	-19.02

Table 7-17. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	56	60		
	5210	42	AVG	106T	10.99	10.99	10.99	23.98	-12.99
	5290	58	AVG	106T	10.53	10.78	10.87	23.47	-12.60
	5530	106	AVG	106T	10.96	10.30	10.74	22.80	-11.84
	5610	122	AVG	106T	10.44	10.63	10.99	22.80	-11.81
	5690	138	AVG	106T	10.51	10.61	10.75	22.80	-12.05
	5775	155	AVG	106T	10.88	10.94	10.73	30.00	-19.06

Table 7-18. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

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SISO Antenna-1 Conducted Output Power Measurements (242 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61		
	5180	36	AVG	242T	10.81	23.98	-13.17
	5200	40	AVG	242T	10.84	23.98	-13.14
	5240	48	AVG	242T	10.71	23.98	-13.27
	5260	52	AVG	242T	10.93	23.47	-12.54
	5280	56	AVG	242T	10.33	23.47	-13.14
	5320	64	AVG	242T	10.72	23.47	-12.75
	5500	100	AVG	242T	10.99	22.80	-11.81
	5600	120	AVG	242T	10.48	22.80	-12.32
	5720	144	AVG	242T	10.89	22.80	-11.91
	5745	149	AVG	242T	10.79	30.00	-19.21
	5785	157	AVG	242T	10.81	30.00	-19.19
	5825	165	AVG	242T	10.74	30.00	-19.26

Table 7-19. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61	62		
	5190	38	AVG	242T	10.77	10.86	23.98	-13.12
	5230	46	AVG	242T	10.69	10.71	23.98	-13.27
	5270	54	AVG	242T	10.77	10.73	23.47	-12.70
	5310	62	AVG	242T	10.99	10.87	23.47	-12.48
	5510	102	AVG	242T	10.40	10.24	22.80	-12.40
	5590	118	AVG	242T	10.53	10.44	22.80	-12.27
	5710	142	AVG	242T	10.46	10.85	22.80	-11.95
	5755	151	AVG	242T	10.56	10.96	30.00	-19.04
	5795	159	AVG	242T	10.76	10.60	30.00	-19.24

Table 7-20. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61	62	64		
	5210	42	AVG	242T	10.67	10.99	10.58	23.98	-12.99
	5290	58	AVG	242T	10.62	10.76	10.99	23.47	-12.48
	5530	106	AVG	242T	10.37	10.39	10.83	22.80	-11.97
	5610	122	AVG	242T	10.61	10.65	10.37	22.80	-12.15
	5690	138	AVG	242T	10.64	10.67	10.86	22.80	-11.94
	5775	155	AVG	242T	10.98	10.97	10.96	30.00	-19.02

Table 7-21. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

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SISO Antenna-1 Conducted Output Power Measurements (484 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65		
	5190	38	AVG	484T	10.85	23.98	-13.13
	5230	46	AVG	484T	10.70	23.98	-13.28
	5270	54	AVG	484T	10.73	23.47	-12.74
	5310	62	AVG	484T	10.98	23.47	-12.49
	5510	102	AVG	484T	10.25	22.80	-12.55
	5590	118	AVG	484T	10.47	22.80	-12.33
	5710	142	AVG	484T	10.39	22.80	-12.41
	5755	151	AVG	484T	10.99	30.00	-19.01
	5795	159	AVG	484T	10.63	30.00	-19.37

Table 7-22. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65	66		
	5210	42	AVG	484T	10.85	10.68	23.98	-13.13
	5290	58	AVG	484T	10.71	10.60	23.47	-12.76
	5530	106	AVG	484T	10.41	10.99	22.80	-11.81
	5610	122	AVG	484T	10.64	10.56	22.80	-12.16
	5690	138	AVG	484T	10.73	10.42	22.80	-12.07
	5775	155	AVG	484T	10.99	10.99	30.00	-19.01

Table 7-23. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

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SISO Antenna-1 Conducted Output Power Measurements (996 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					67		
	5210	42	AVG	996T	10.84	23.98	-13.14
	5290	58	AVG	996T	10.53	23.47	-12.94
	5530	106	AVG	996T	10.98	22.80	-11.82
	5610	122	AVG	996T	10.45	22.80	-12.35
	5690	138	AVG	996T	10.99	22.80	-11.81
	5775	155	AVG	996T	10.68	30.00	-19.32

Table 7-24. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (26 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	4	8		
	5180	36	AVG	26T	7.97	7.98	7.68	23.98	-16.00
	5200	40	AVG	26T	7.66	7.75	7.74	23.98	-16.23
	5240	48	AVG	26T	7.47	7.13	7.49	23.98	-16.49
	5260	52	AVG	26T	7.55	7.56	7.59	23.47	-15.88
	5280	56	AVG	26T	7.45	7.25	7.49	23.47	-15.98
	5320	64	AVG	26T	6.82	7.01	6.95	23.47	-16.46
	5500	100	AVG	26T	7.54	7.66	7.67	22.80	-15.13
	5600	120	AVG	26T	8.80	8.98	8.65	22.80	-13.82
	5720	144	AVG	26T	7.74	7.94	7.92	22.80	-14.86
	5745	149	AVG	26T	7.87	7.90	7.86	30.00	-22.10
	5785	157	AVG	26T	7.64	7.72	7.58	30.00	-22.28
	5825	165	AVG	26T	7.55	7.62	7.54	30.00	-22.38

Table 7-25. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	8	17		
	5190	38	AVG	26T	8.78	8.53	8.95	23.98	-15.03
	5230	46	AVG	26T	8.22	8.30	8.47	23.98	-15.51
	5270	54	AVG	26T	8.01	7.90	8.18	23.47	-15.29
	5310	62	AVG	26T	8.46	8.25	7.87	23.47	-15.01
	5510	102	AVG	26T	8.05	8.11	7.90	22.80	-14.69
	5590	118	AVG	26T	8.37	8.45	8.28	22.80	-14.35
	5710	142	AVG	26T	8.01	8.45	8.17	22.80	-14.35
	5755	151	AVG	26T	8.26	8.03	8.26	30.00	-21.74
	5795	159	AVG	26T	8.03	8.39	7.90	30.00	-21.61

Table 7-26. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0	18	36		
	5210	42	AVG	26T	8.57	8.51	8.99	23.98	-14.99
	5290	58	AVG	26T	8.84	8.82	8.97	23.47	-14.50
	5530	106	AVG	26T	9.25	9.21	9.24	22.80	-13.55
	5610	122	AVG	26T	8.64	8.68	8.76	22.80	-14.04
	5690	138	AVG	26T	8.68	8.65	8.99	22.80	-13.81
	5775	155	AVG	26T	8.63	8.98	8.71	30.00	-21.02

Table 7-27. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (52 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	39	40		
	5180	36	AVG	52T	10.85	10.92	10.91	23.98	-13.06
	5200	40	AVG	52T	10.86	10.96	10.97	23.98	-13.01
	5240	48	AVG	52T	10.99	10.52	10.99	23.98	-12.99
	5260	52	AVG	52T	10.53	10.46	10.51	23.47	-12.94
	5280	56	AVG	52T	10.83	10.85	10.74	23.47	-12.62
	5320	64	AVG	52T	10.81	10.82	10.77	23.47	-12.65
	5500	100	AVG	52T	10.99	10.71	10.67	22.80	-11.81
	5600	120	AVG	52T	10.67	10.80	10.75	22.80	-12.00
	5720	144	AVG	52T	10.62	10.64	10.57	22.80	-12.16
	5745	149	AVG	52T	10.65	10.68	10.65	30.00	-19.32
	5785	157	AVG	52T	10.99	10.65	10.57	30.00	-19.01
	5825	165	AVG	52T	10.77	10.90	10.83	30.00	-19.10

Table 7-28. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	40	44		
	5190	38	AVG	52T	10.86	10.82	10.90	23.98	-13.08
	5230	46	AVG	52T	10.83	10.60	10.81	23.98	-13.15
	5270	54	AVG	52T	10.99	10.82	10.99	23.47	-12.48
	5310	62	AVG	52T	10.84	10.68	10.78	23.47	-12.63
	5510	102	AVG	52T	10.55	10.99	10.73	22.80	-11.81
	5590	118	AVG	52T	10.92	10.99	10.79	22.80	-11.81
	5710	142	AVG	52T	10.82	10.75	10.84	22.80	-11.96
	5755	151	AVG	52T	10.87	10.71	10.87	30.00	-19.13
	5795	159	AVG	52T	10.63	10.91	10.58	30.00	-19.09

Table 7-29. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37	44	52		
	5210	42	AVG	52T	10.71	10.99	10.71	23.98	-12.99
	5290	58	AVG	52T	10.73	10.92	10.99	23.47	-12.48
	5530	106	AVG	52T	10.31	10.75	10.60	22.80	-12.05
	5610	122	AVG	52T	10.30	10.99	10.82	22.80	-11.81
	5690	138	AVG	52T	10.60	10.97	10.66	22.80	-11.83
	5775	155	AVG	52T	10.50	10.71	10.30	30.00	-19.29

Table 7-30. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (106 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	54		
	5180	36	AVG	106T	10.99	10.99	23.98	-12.99
	5200	40	AVG	106T	10.68	10.61	23.98	-13.30
	5240	48	AVG	106T	10.61	10.64	23.98	-13.34
	5260	52	AVG	106T	10.69	10.62	23.47	-12.78
	5280	56	AVG	106T	10.92	10.89	23.47	-12.55
	5320	64	AVG	106T	10.60	10.80	23.47	-12.67
	5500	100	AVG	106T	10.72	10.75	22.80	-12.05
	5600	120	AVG	106T	10.84	10.75	22.80	-11.96
	5720	144	AVG	106T	10.81	10.81	22.80	-11.99
	5745	149	AVG	106T	10.83	10.79	30.00	-19.17
	5785	157	AVG	106T	10.74	10.71	30.00	-19.26
	5825	165	AVG	106T	10.94	10.89	30.00	-19.06

Table 7-31. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	54	56		
	5190	38	AVG	106T	10.65	10.93	10.68	23.98	-13.05
	5230	46	AVG	106T	10.97	10.74	10.99	23.98	-12.99
	5270	54	AVG	106T	10.73	10.95	10.71	23.47	-12.52
	5310	62	AVG	106T	10.62	10.84	10.99	23.47	-12.48
	5510	102	AVG	106T	10.80	10.56	10.93	22.80	-11.87
	5590	118	AVG	106T	10.96	10.85	10.99	22.80	-11.81
	5710	142	AVG	106T	10.64	10.87	10.99	22.80	-11.81
	5755	151	AVG	106T	10.59	10.79	10.49	30.00	-19.21
	5795	159	AVG	106T	10.85	10.99	10.78	30.00	-19.01

Table 7-32. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53	56	60		
	5210	42	AVG	106T	10.99	10.99	10.73	23.98	-12.99
	5290	58	AVG	106T	10.80	10.98	10.54	23.47	-12.49
	5530	106	AVG	106T	10.85	10.58	10.53	22.80	-11.95
	5610	122	AVG	106T	10.54	10.93	10.81	22.80	-11.87
	5690	138	AVG	106T	10.66	10.93	10.64	22.80	-11.87
	5775	155	AVG	106T	10.94	10.99	10.67	30.00	-19.01

Table 7-33. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61		
5GHz (20MHz Bandwidth)	5180	36	AVG	242T	10.52	23.98	-13.46
	5200	40	AVG	242T	10.77	23.98	-13.21
	5240	48	AVG	242T	10.74	23.98	-13.24
	5260	52	AVG	242T	10.85	23.47	-12.62
	5280	56	AVG	242T	10.43	23.47	-13.04
	5320	64	AVG	242T	10.99	23.47	-12.48
	5500	100	AVG	242T	10.84	22.80	-11.96
	5600	120	AVG	242T	10.93	22.80	-11.87
	5720	144	AVG	242T	10.93	22.80	-11.87
	5745	149	AVG	242T	10.90	30.00	-19.10
	5785	157	AVG	242T	10.79	30.00	-19.21
	5825	165	AVG	242T	10.70	30.00	-19.30

Table 7-34. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61	62		
5GHz (40MHz Bandwidth)	5190	38	AVG	242T	10.77	10.76	23.98	-13.21
	5230	46	AVG	242T	10.51	10.54	23.98	-13.44
	5270	54	AVG	242T	10.86	10.75	23.47	-12.61
	5310	62	AVG	242T	10.64	10.54	23.47	-12.83
	5510	102	AVG	242T	10.89	10.99	22.80	-11.81
	5590	118	AVG	242T	10.99	10.99	22.80	-11.81
	5710	142	AVG	242T	10.67	10.63	22.80	-12.13
	5755	151	AVG	242T	10.58	10.57	30.00	-19.42
	5795	159	AVG	242T	10.83	10.77	30.00	-19.17

Table 7-35. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61	62	64		
5GHz (80MHz Bandwidth)	5210	42	AVG	242T	10.99	10.99	10.85	23.98	-12.99
	5290	58	AVG	242T	10.93	10.99	10.66	23.47	-12.48
	5530	106	AVG	242T	10.94	10.62	10.62	22.80	-11.86
	5610	122	AVG	242T	10.64	10.87	10.82	22.80	-11.93
	5690	138	AVG	242T	10.72	10.84	10.71	22.80	-11.96
	5775	155	AVG	242T	10.58	10.74	10.79	30.00	-19.21

Table 7-36. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (484 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65		
	5190	38	AVG	484T	10.78	23.98	-13.20
	5230	46	AVG	484T	10.67	23.98	-13.31
	5270	54	AVG	484T	10.83	23.47	-12.64
	5310	62	AVG	484T	10.68	23.47	-12.79
	5510	102	AVG	484T	10.99	22.80	-11.81
	5590	118	AVG	484T	10.99	22.80	-11.81
	5710	142	AVG	484T	10.74	22.80	-12.06
	5755	151	AVG	484T	10.64	30.00	-19.36
	5795	159	AVG	484T	10.93	30.00	-19.07

Table 7-37. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65	66		
	5210	42	AVG	484T	10.99	10.98	23.98	-12.99
	5290	58	AVG	484T	10.94	10.77	23.47	-12.53
	5530	106	AVG	484T	10.99	10.66	22.80	-11.81
	5610	122	AVG	484T	10.75	10.81	22.80	-11.99
	5690	138	AVG	484T	10.76	10.78	22.80	-12.02
	5775	155	AVG	484T	10.99	10.97	30.00	-19.01

Table 7-38. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

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SISO Antenna-2 Conducted Output Power Measurements (996 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					67		
	5210	42	AVG	996T	10.87	23.98	-13.11
	5290	58	AVG	996T	10.72	23.47	-12.75
	5530	106	AVG	996T	10.94	22.80	-11.86
	5610	122	AVG	996T	10.73	22.80	-12.07
	5690	138	AVG	996T	10.70	22.80	-12.10
	5775	155	AVG	996T	10.84	30.00	-19.16

Table 7-39. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

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MIMO Maximum Conducted Output Power Measurements (26 Tones)

5GHz (20MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0			4			8				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
	5180	36	AVG	26T	8.06	7.41	10.76	7.71	7.74	10.74	7.82	7.51	10.68	23.98	-13.22
	5200	40	AVG	26T	8.21	7.26	10.77	8.26	7.67	10.99	8.21	7.72	10.98	23.98	-12.99
	5240	48	AVG	26T	7.77	7.05	10.44	7.59	6.83	10.24	7.61	6.78	10.23	23.98	-13.54
	5260	52	AVG	26T	8.66	7.12	10.97	7.86	7.16	10.53	8.04	7.17	10.64	23.47	-12.50
	5280	56	AVG	26T	7.89	6.63	10.32	7.90	7.00	10.48	8.05	6.82	10.49	23.47	-12.98
	5320	64	AVG	26T	7.63	6.66	10.18	7.58	7.33	10.47	7.62	6.55	10.13	23.47	-13.00
	5500	100	AVG	26T	7.88	7.14	10.54	7.78	8.01	10.91	7.84	7.46	10.66	22.80	-11.89
	5600	120	AVG	26T	9.05	8.44	11.77	8.51	9.07	11.81	8.90	9.04	11.98	22.80	-10.82
	5720	144	AVG	26T	7.96	7.22	10.62	8.17	7.78	10.99	7.10	7.69	10.42	22.80	-11.81
	5745	149	AVG	26T	7.95	7.11	10.56	7.82	7.29	10.57	7.93	7.22	10.60	30.00	-19.40
	5785	157	AVG	26T	7.54	7.89	10.73	7.51	8.17	10.86	7.45	8.14	10.82	30.00	-19.14
	5825	165	AVG	26T	7.47	7.74	10.62	7.32	8.15	10.77	7.22	8.04	10.66	30.00	-19.23

Table 7-40. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0			8			17				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
	5190	38	AVG	26T	8.91	7.76	11.38	9.39	8.41	11.94	9.08	7.97	11.57	23.98	-12.04
	5230	46	AVG	26T	9.02	7.67	11.41	8.51	7.54	11.06	8.83	8.05	11.47	23.98	-12.51
	5270	54	AVG	26T	8.78	7.57	11.23	9.09	7.69	11.46	8.97	7.82	11.44	23.47	-12.01
	5310	62	AVG	26T	8.30	8.08	11.20	8.84	7.85	11.38	8.71	8.18	11.46	23.47	-12.01
	5510	102	AVG	26T	8.75	8.19	11.49	7.12	7.86	10.52	8.68	7.95	11.34	22.80	-11.31
	5590	118	AVG	26T	8.12	8.48	11.31	8.11	8.41	11.27	8.07	8.65	11.38	22.80	-11.42
	5710	142	AVG	26T	8.00	8.66	11.35	7.67	8.46	11.09	7.62	8.54	11.11	22.80	-11.45
	5755	151	AVG	26T	8.30	8.44	11.38	8.10	8.49	11.31	7.98	8.61	11.32	30.00	-18.62
	5795	159	AVG	26T	7.79	8.45	11.14	7.48	8.67	11.13	7.67	8.82	11.29	30.00	-18.71

Table 7-41. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					0			18			36				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
	5210	42	AVG	26T	9.36	8.06	11.77	9.22	8.07	11.69	9.30	8.32	11.85	23.98	-12.13
	5290	58	AVG	26T	9.67	8.05	11.95	9.14	8.06	11.64	9.11	8.55	11.85	23.47	-11.52
	5530	106	AVG	26T	9.69	8.46	12.13	9.22	9.02	12.13	9.08	9.42	12.26	22.80	-10.54
	5610	122	AVG	26T	8.77	8.38	11.59	7.86	8.86	11.40	8.36	8.92	11.66	22.80	-11.14
	5690	138	AVG	26T	8.64	8.98	11.82	7.90	9.31	11.67	8.23	9.46	11.90	22.80	-10.90
	5775	155	AVG	26T	8.73	8.87	11.81	8.23	9.05	11.67	8.36	9.48	11.97	30.00	-18.03

Table 7-42. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

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MIMO Conducted Output Power Measurements (52 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37			39			40				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (20MHz Bandwidth)	5180	36	AVG	52T	10.99	10.85	13.93	10.71	10.92	13.83	10.71	10.91	13.82	23.98	-10.05
	5200	40	AVG	52T	10.99	10.86	13.94	10.72	10.96	13.85	10.73	10.97	13.86	23.98	-10.04
	5240	48	AVG	52T	10.42	10.99	13.72	10.61	10.52	13.58	10.60	10.99	13.81	23.98	-10.17
	5260	52	AVG	52T	10.76	10.53	13.66	10.87	10.46	13.68	10.87	10.51	13.70	23.47	-9.77
	5280	56	AVG	52T	10.99	10.83	13.92	10.42	10.85	13.65	10.99	10.74	13.88	23.47	-9.55
	5320	64	AVG	52T	10.63	10.81	13.73	10.70	10.82	13.77	10.99	10.77	13.89	23.47	-9.58
	5500	100	AVG	52T	10.86	10.99	13.94	10.86	10.71	13.80	10.82	10.67	13.76	22.80	-8.86
	5600	120	AVG	52T	10.95	10.67	13.82	10.99	10.80	13.91	10.99	10.75	13.88	22.80	-8.89
	5720	144	AVG	52T	10.66	10.62	13.65	10.99	10.64	13.83	10.98	10.57	13.79	22.80	-8.97
	5745	149	AVG	52T	10.85	10.65	13.76	10.83	10.68	13.77	10.80	10.65	13.74	30.00	-16.23
	5785	157	AVG	52T	10.93	10.99	13.97	10.86	10.65	13.77	10.87	10.57	13.73	30.00	-16.03
	5825	165	AVG	52T	10.94	10.77	13.87	10.98	10.90	13.95	10.86	10.83	13.86	30.00	-16.05

Table 7-43. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37			40			44				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (40MHz Bandwidth)	5190	38	AVG	52T	10.99	10.86	13.94	10.78	10.82	13.81	10.99	10.90	13.96	23.98	-10.02
	5230	46	AVG	52T	10.66	10.83	13.76	10.57	10.60	13.60	10.84	10.81	13.84	23.98	-10.14
	5270	54	AVG	52T	10.78	10.99	13.90	10.62	10.82	13.73	10.83	10.99	13.92	23.47	-9.55
	5310	62	AVG	52T	10.55	10.84	13.71	10.88	10.68	13.79	10.95	10.78	13.88	23.47	-9.59
	5510	102	AVG	52T	10.61	10.55	13.59	10.91	10.99	13.96	10.40	10.73	13.58	22.80	-8.84
	5590	118	AVG	52T	10.89	10.92	13.92	10.47	10.99	13.75	10.85	10.79	13.83	22.80	-8.88
	5710	142	AVG	52T	10.99	10.82	13.92	10.92	10.75	13.85	10.85	10.84	13.86	22.80	-8.88
	5755	151	AVG	52T	10.78	10.87	13.84	10.98	10.71	13.86	10.51	10.87	13.70	30.00	-16.14
	5795	159	AVG	52T	10.84	10.63	13.75	10.62	10.91	13.78	10.63	10.58	13.62	30.00	-16.22

Table 7-44. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					37			44			52				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (80MHz Bandwidth)	5210	42	AVG	52T	10.78	10.71	13.76	10.90	10.99	13.96	10.77	10.71	13.75	23.98	-10.02
	5290	58	AVG	52T	10.87	10.73	13.81	10.62	10.92	13.78	10.74	10.99	13.88	23.47	-9.59
	5530	106	AVG	52T	10.80	10.31	13.57	10.95	10.75	13.86	10.63	10.60	13.63	22.80	-8.94
	5610	122	AVG	52T	10.99	10.30	13.67	10.56	10.99	13.79	10.91	10.82	13.88	22.80	-8.92
	5690	138	AVG	52T	10.96	10.60	13.79	10.51	10.97	13.76	10.61	10.66	13.65	22.80	-9.01
	5775	155	AVG	52T	10.72	10.50	13.62	10.75	10.71	13.74	10.96	10.30	13.65	30.00	-16.26

Table 7-45. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

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MIMO Conducted Output Power Measurements (106 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index						Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53			54				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (20MHz Bandwidth)	5180	36	AVG	106T	10.72	10.99	13.87	10.75	10.99	13.88	23.98	-10.10
	5200	40	AVG	106T	10.73	10.68	13.72	10.72	10.61	13.68	23.98	-10.26
	5240	48	AVG	106T	10.68	10.61	13.66	10.71	10.64	13.69	23.98	-10.29
	5260	52	AVG	106T	10.75	10.69	13.73	10.75	10.62	13.70	23.47	-9.74
	5280	56	AVG	106T	10.97	10.92	13.96	10.92	10.89	13.92	23.47	-9.51
	5320	64	AVG	106T	10.65	10.60	13.64	10.52	10.80	13.67	23.47	-9.80
	5500	100	AVG	106T	10.96	10.72	13.85	10.90	10.75	13.84	22.80	-8.95
	5600	120	AVG	106T	10.38	10.84	13.63	10.99	10.75	13.88	22.80	-8.92
	5720	144	AVG	106T	10.82	10.81	13.83	10.77	10.81	13.80	22.80	-8.97
	5745	149	AVG	106T	10.71	10.83	13.78	10.98	10.79	13.90	30.00	-16.10
	5785	157	AVG	106T	10.71	10.74	13.74	10.99	10.71	13.86	30.00	-16.14
	5825	165	AVG	106T	10.64	10.94	13.80	10.57	10.89	13.74	30.00	-16.20

Table 7-46. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53			54			56				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (40MHz Bandwidth)	5190	38	AVG	106T	10.90	10.65	13.79	10.84	10.93	13.90	10.81	10.68	13.76	23.98	-10.08
	5230	46	AVG	106T	10.98	10.97	13.99	10.85	10.74	13.81	10.57	10.99	13.80	23.98	-9.99
	5270	54	AVG	106T	10.73	10.73	13.74	10.97	10.95	13.97	10.60	10.71	13.67	23.47	-9.50
	5310	62	AVG	106T	10.99	10.62	13.82	10.56	10.84	13.71	10.79	10.99	13.90	23.47	-9.57
	5510	102	AVG	106T	10.30	10.80	13.57	10.47	10.56	13.53	10.13	10.93	13.56	22.80	-9.23
	5590	118	AVG	106T	10.35	10.96	13.68	10.65	10.85	13.76	10.31	10.99	13.67	22.80	-9.04
	5710	142	AVG	106T	10.86	10.64	13.76	10.98	10.87	13.94	10.70	10.99	13.86	22.80	-8.86
	5755	151	AVG	106T	10.99	10.59	13.80	10.71	10.79	13.76	10.83	10.49	13.67	30.00	-16.20
	5795	159	AVG	106T	10.69	10.85	13.78	10.87	10.99	13.94	10.98	10.78	13.89	30.00	-16.06

Table 7-47. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					53			56			60				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (80MHz Bandwidth)	5210	42	AVG	106T	10.98	10.98	13.99	10.99	10.97	13.99	10.99	10.73	13.87	23.98	-9.99
	5290	58	AVG	106T	10.53	10.80	13.68	10.78	10.98	13.89	10.87	10.54	13.72	23.47	-9.58
	5530	106	AVG	106T	10.96	10.85	13.92	10.30	10.58	13.45	10.74	10.53	13.65	22.80	-8.88
	5610	122	AVG	106T	10.44	10.54	13.50	10.63	10.93	13.79	10.99	10.81	13.91	22.80	-8.89
	5690	138	AVG	106T	10.51	10.66	13.60	10.61	10.93	13.78	10.75	10.64	13.71	22.80	-9.02
	5775	155	AVG	106T	10.88	10.94	13.92	10.94	10.99	13.98	10.73	10.67	13.71	30.00	-16.02

Table 7-48. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

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MIMO Conducted Output Power Measurements (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61				
					ANT1	ANT2	MIMO		
5GHz (20MHz Bandwidth)	5180	36	AVG	242T	10.74	10.52	13.64	23.98	-10.34
	5200	40	AVG	242T	10.84	10.77	13.82	23.98	-10.16
	5240	48	AVG	242T	10.71	10.74	13.74	23.98	-10.24
	5260	52	AVG	242T	10.93	10.85	13.90	23.47	-9.57
	5280	56	AVG	242T	10.33	10.43	13.39	23.47	-10.08
	5320	64	AVG	242T	10.72	10.99	13.87	23.47	-9.60
	5500	100	AVG	242T	10.99	10.84	13.93	22.80	-8.87
	5600	120	AVG	242T	10.48	10.93	13.72	22.80	-9.08
	5720	144	AVG	242T	10.89	10.93	13.92	22.80	-8.88
	5745	149	AVG	242T	10.79	10.90	13.86	30.00	-16.14
	5785	157	AVG	242T	10.81	10.79	13.81	30.00	-16.19
	5825	165	AVG	242T	10.74	10.70	13.73	30.00	-16.27

Table 7-49. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index						Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61			62				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (40MHz Bandwidth)	5190	38	AVG	242T	10.77	10.77	13.78	10.86	10.76	13.82	23.98	-10.16
	5230	46	AVG	242T	10.69	10.51	13.61	10.71	10.54	13.64	23.98	-10.34
	5270	54	AVG	242T	10.77	10.86	13.83	10.73	10.75	13.75	23.47	-9.64
	5310	62	AVG	242T	10.99	10.64	13.83	10.87	10.54	13.72	23.47	-9.64
	5510	102	AVG	242T	10.40	10.89	13.66	10.24	10.99	13.64	22.80	-9.14
	5590	118	AVG	242T	10.53	10.99	13.78	10.44	10.99	13.73	22.80	-9.02
	5710	142	AVG	242T	10.46	10.67	13.58	10.85	10.63	13.75	22.80	-9.05
	5755	151	AVG	242T	10.56	10.58	13.58	10.96	10.57	13.78	30.00	-16.22
	5795	159	AVG	242T	10.76	10.83	13.81	10.60	10.77	13.70	30.00	-16.19

Table 7-50. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index									Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					61			62			64				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
5GHz (80MHz Bandwidth)	5210	42	AVG	242T	10.67	10.99	13.84	10.99	10.97	13.99	10.58	10.85	13.73	23.98	-9.99
	5290	58	AVG	242T	10.62	10.93	13.79	10.76	10.99	13.89	10.99	10.66	13.84	23.47	-9.58
	5530	106	AVG	242T	10.37	10.94	13.67	10.39	10.62	13.52	10.83	10.62	13.74	22.80	-9.06
	5610	122	AVG	242T	10.61	10.64	13.64	10.65	10.87	13.77	10.37	10.82	13.61	22.80	-9.03
	5690	138	AVG	242T	10.64	10.72	13.69	10.67	10.84	13.77	10.86	10.71	13.80	22.80	-9.00
	5775	155	AVG	242T	10.98	10.58	13.79	10.97	10.74	13.87	10.96	10.79	13.89	30.00	-16.11

Table 7-51. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

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MIMO Conducted Output Power Measurements (484 Tones)

5GHz (40MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65				
					ANT1	ANT2	MIMO		
	5190	38	AVG	484T	10.85	10.78	13.83	23.98	-10.15
	5230	46	AVG	484T	10.70	10.67	13.70	23.98	-10.28
	5270	54	AVG	484T	10.73	10.83	13.79	23.47	-9.68
	5310	62	AVG	484T	10.98	10.68	13.84	23.47	-9.63
	5510	102	AVG	484T	10.25	10.99	13.65	22.80	-9.15
	5590	118	AVG	484T	10.47	10.99	13.75	22.80	-9.05
	5710	142	AVG	484T	10.39	10.74	13.58	22.80	-9.22
	5755	151	AVG	484T	10.99	10.64	13.83	30.00	-16.17
	5795	159	AVG	484T	10.63	10.93	13.79	30.00	-16.21

Table 7-52. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

5GHz (80MHz Bandwidth)	Freq [MHz]	Channel	Detector	Tones	RU Index						Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					65			66				
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO		
	5210	42	AVG	484T	10.85	10.99	13.93	10.68	10.98	13.84	23.98	-10.05
	5290	58	AVG	484T	10.71	10.94	13.84	10.60	10.77	13.70	23.47	-9.63
	5530	106	AVG	484T	10.41	10.99	13.72	10.99	10.66	13.84	22.80	-8.96
	5610	122	AVG	484T	10.64	10.75	13.71	10.56	10.81	13.70	22.80	-9.09
	5690	138	AVG	484T	10.73	10.76	13.76	10.42	10.78	13.61	22.80	-9.04
	5775	155	AVG	484T	10.97	10.98	13.99	10.99	10.97	13.99	30.00	-16.01

Table 7-53. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

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MIMO Conducted Output Power Measurements (996 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit [dBm]	Conducted Power Margin [dB]
					67				
5GHz (80MHz Bandwidth)					ANT1	ANT2	MIMO		
	5210	42	AVG	996T	10.84	10.87	13.87	23.98	-10.11
	5290	58	AVG	996T	10.53	10.72	13.64	23.47	-9.83
	5530	106	AVG	996T	10.98	10.94	13.97	22.80	-8.83
	5610	122	AVG	996T	10.45	10.73	13.60	22.80	-9.20
	5690	138	AVG	996T	10.99	10.70	13.86	22.80	-8.94
	5775	155	AVG	996T	10.68	10.84	13.77	30.00	-16.23

Table 7-54. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

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Note:

Per ANSI C63.10-2013 and KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 16.97 dBm for Antenna-1 and 16.98 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(16.97 dBm + 16.98 dBm) = (49.77 mW + 49.89 mW) = 99.66 mW = 19.99 dBm

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7.5 Maximum Power Spectral Density – 802.11ax OFDMA

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, was used to measure the power spectral density.

In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.

In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2
KDB 789033 D02 v02r01 – Section F
ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points $\geq$ 2 x (span/RBW)
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

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

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

The power spectral density for each channel was measured with the RU index showing the highest conducted power

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

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	26T	MCS0	9.41	11.0	-1.59
	5200	40	ax (20MHz)	26T	MCS0	9.17	11.0	-1.83
	5240	48	ax (20MHz)	26T	MCS0	9.67	11.0	-1.33
	5190	38	ax (40MHz)	26T	MCS0	8.80	11.0	-2.20
	5230	46	ax (40MHz)	26T	MCS0	8.81	11.0	-2.19
	5210	42	ax (80MHz)	26T	MCS0	7.46	11.0	-3.54
Band 2A	5260	52	ax (20MHz)	26T	MCS0	8.43	11.0	-2.57
	5280	56	ax (20MHz)	26T	MCS0	9.39	11.0	-1.61
	5320	64	ax (20MHz)	26T	MCS0	9.54	11.0	-1.46
	5270	54	ax (40MHz)	26T	MCS0	8.58	11.0	-2.42
	5310	62	ax (40MHz)	26T	MCS0	8.96	11.0	-2.04
	5290	58	ax (80MHz)	26T	MCS0	7.46	11.0	-3.54
Band 2C	5500	100	ax (20MHz)	26T	MCS0	7.94	11.0	-3.06
	5600	120	ax (20MHz)	26T	MCS0	8.08	11.0	-2.92
	5720	144	ax (20MHz)	26T	MCS0	9.57	11.0	-1.43
	5510	102	ax (40MHz)	26T	MCS0	8.96	11.0	-2.04
	5590	118	ax (40MHz)	26T	MCS0	8.16	11.0	-2.84
	5710	142	ax (40MHz)	26T	MCS0	8.88	11.0	-2.12
	5530	106	ax (80MHz)	26T	MCS0	6.66	11.0	-4.34
	5610	122	ax (80MHz)	26T	MCS0	7.57	11.0	-3.43
	5690	138	ax (80MHz)	26T	MCS0	7.81	11.0	-3.19

Table 7-55. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements SISO ANT1 (26 Tones)

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Plot 7-109. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

Plot 7-110. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

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Plot 7-111. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

Plot 7-112. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

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Plot 7-113. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

Plot 7-114. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

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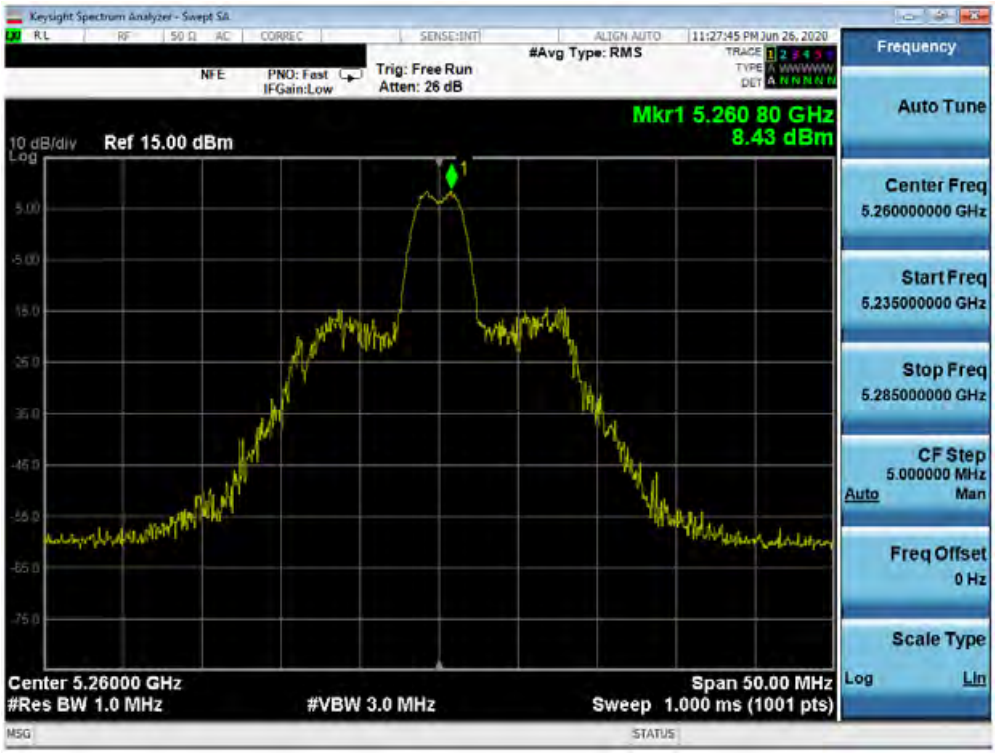

Plot 7-115. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

Plot 7-116. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

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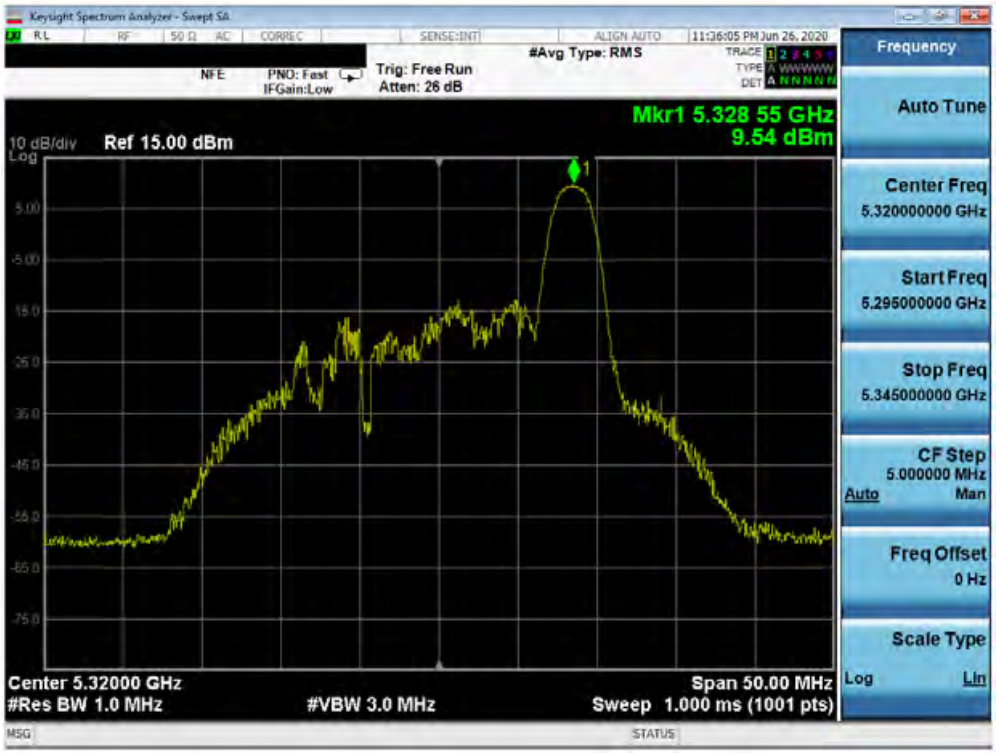

Plot 7-117. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

Plot 7-118. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

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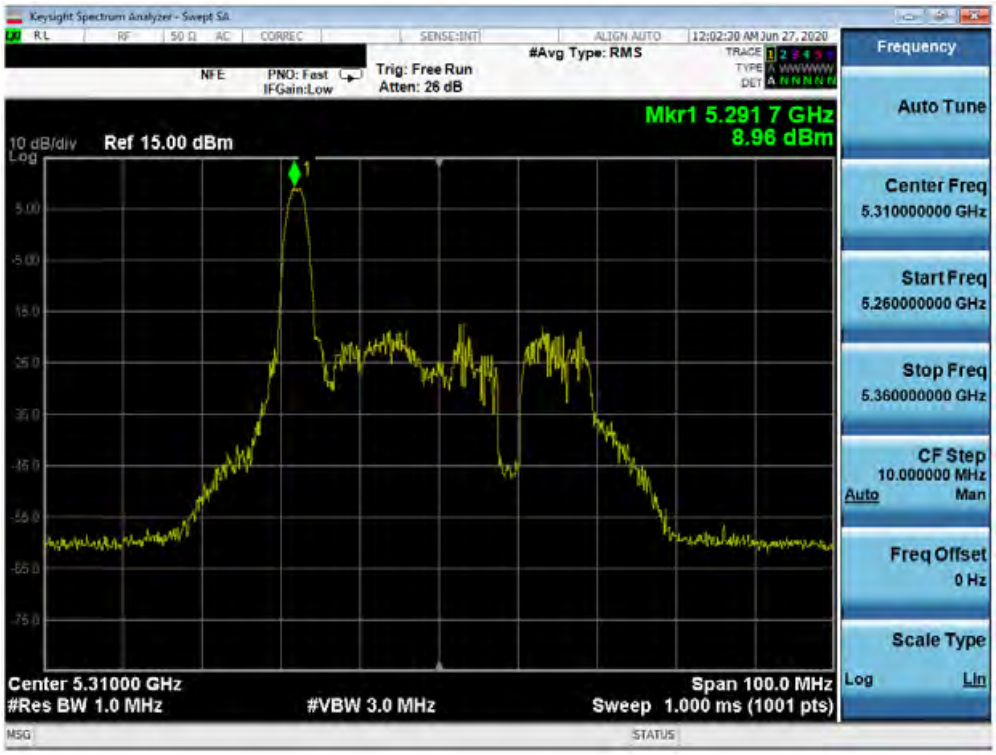

Plot 7-119. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

Plot 7-120. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

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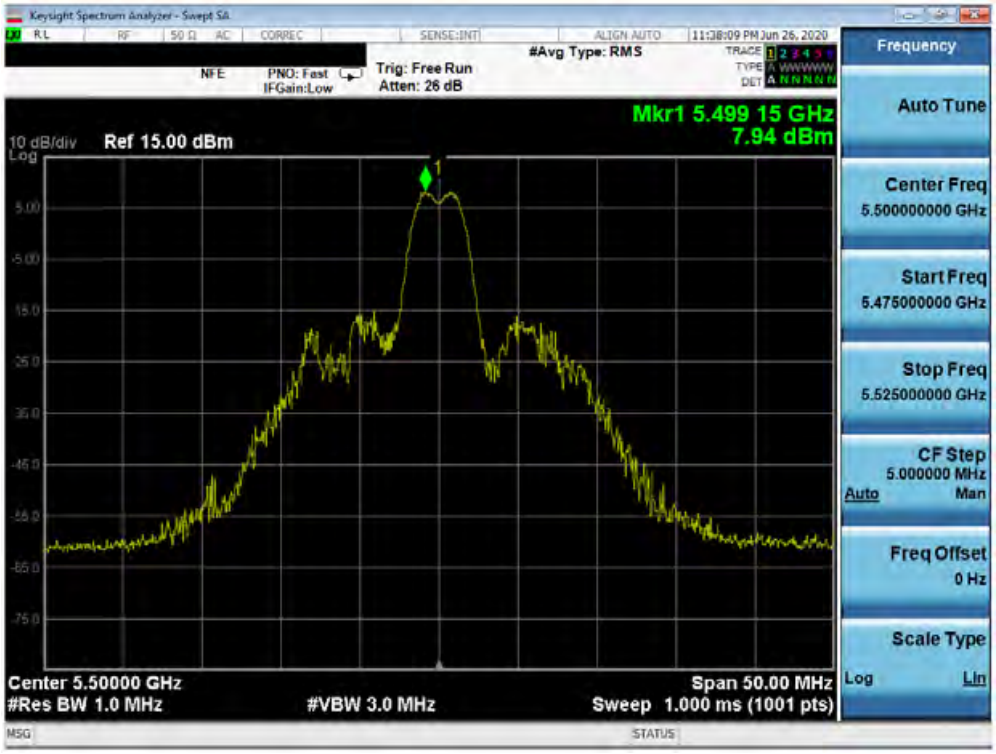
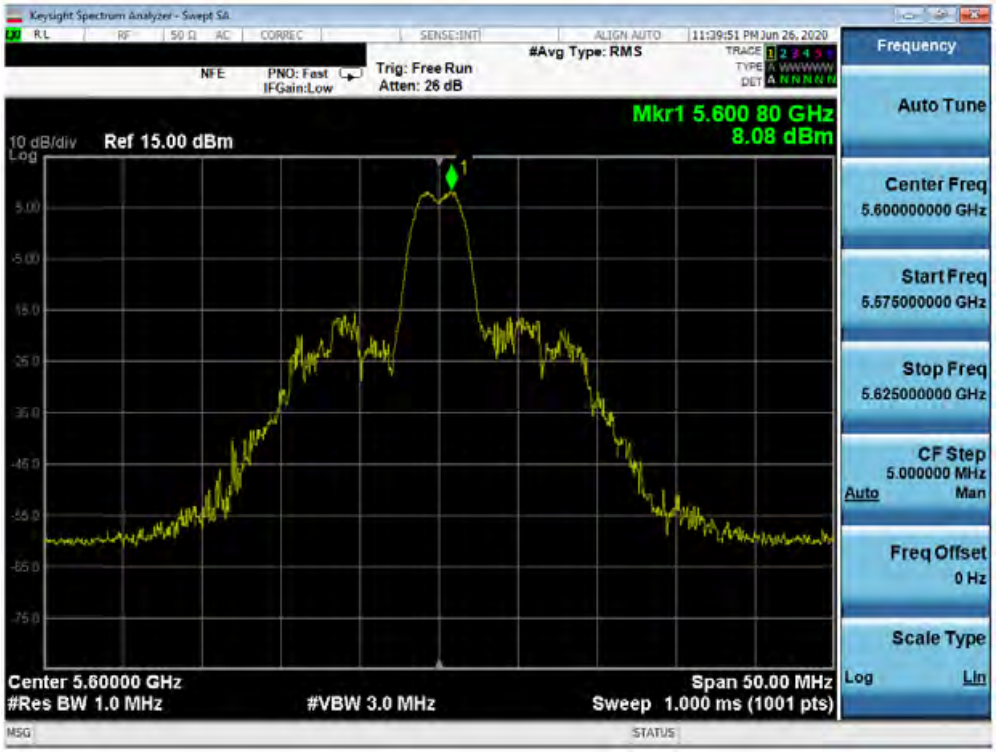


Plot 7-121. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)



Plot 7-122. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

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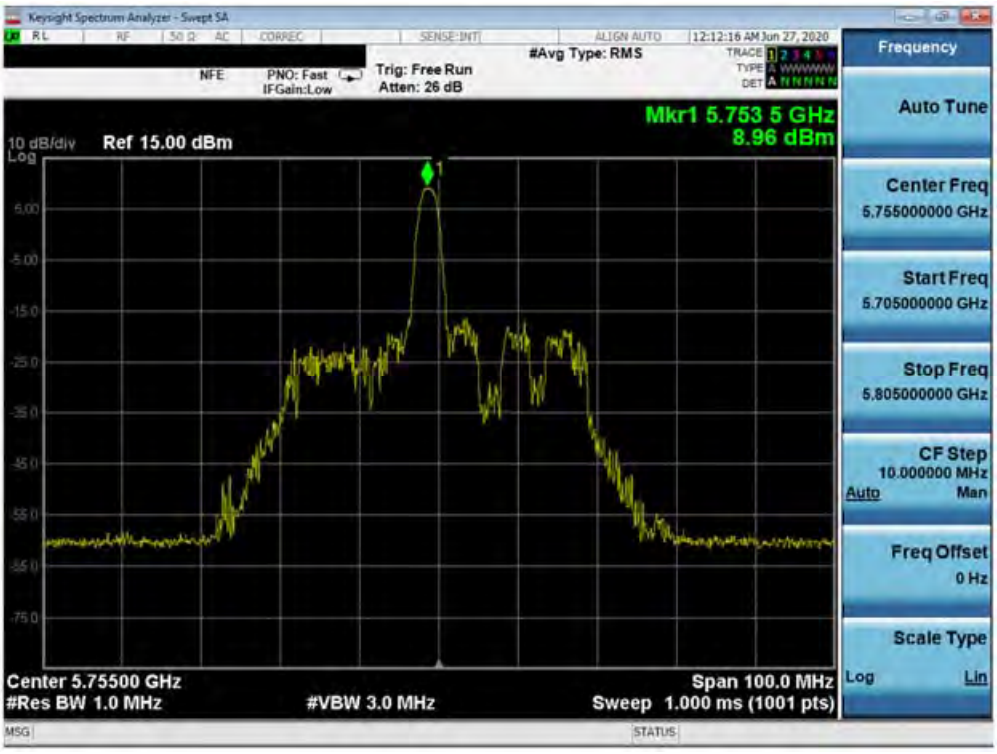
Plot 7-123. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)



Plot 7-124. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

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Plot 7-125. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)

Plot 7-126. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

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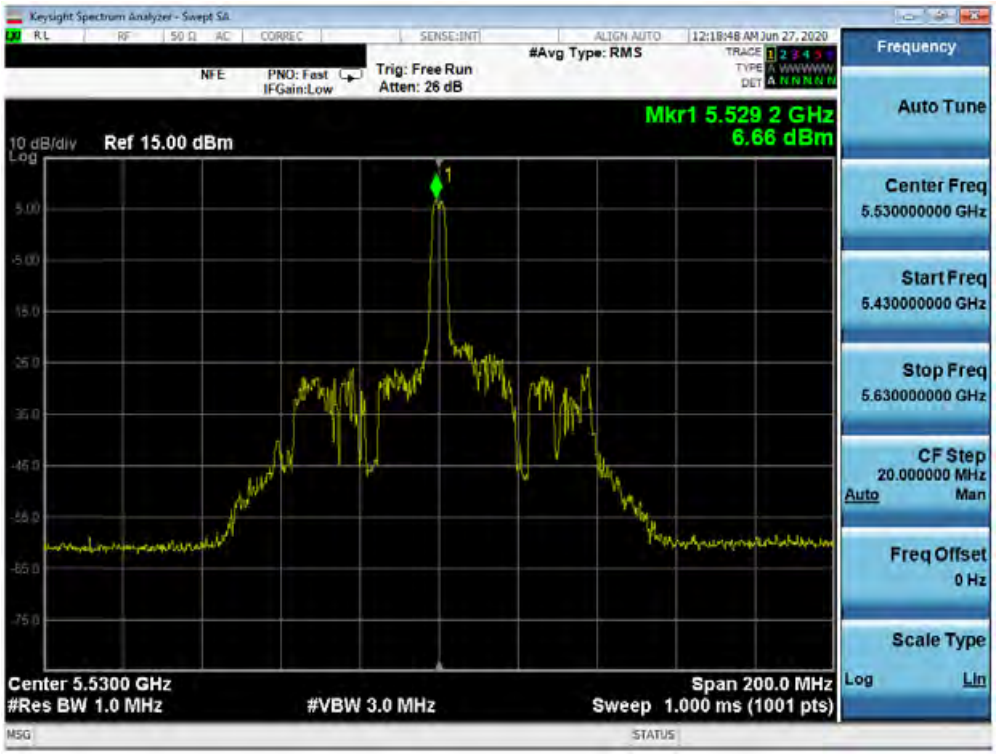
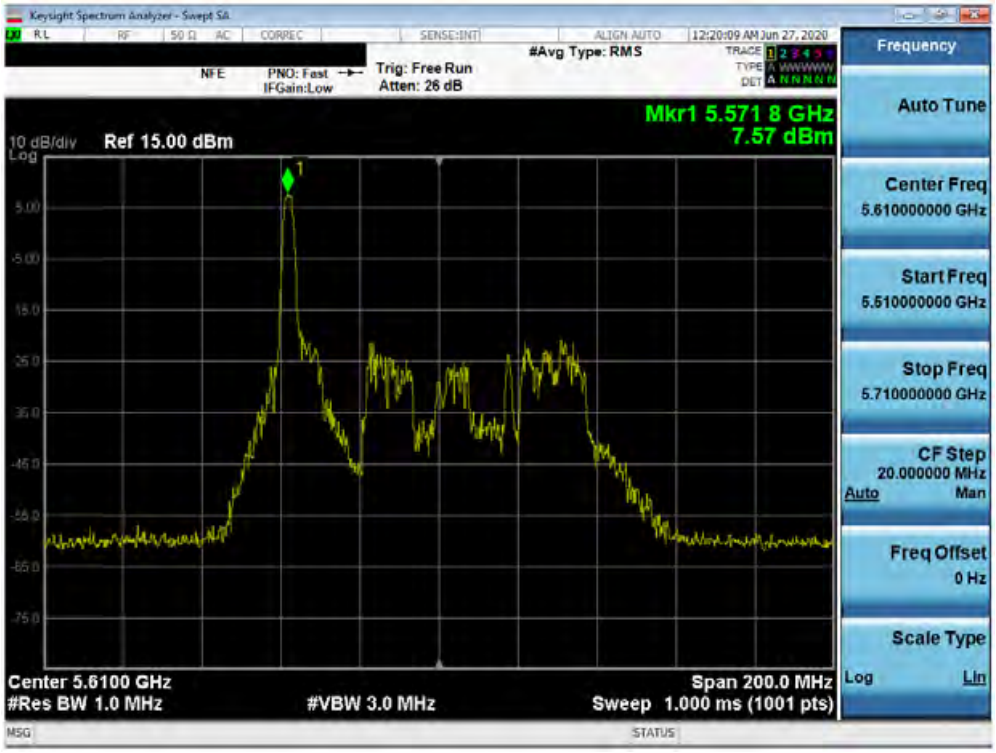


Plot 7-127. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-128. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

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Plot 7-129. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	26T	MCS0	9.75	30.00	-20.25
	5785	157	ax (20MHz)	26T	MCS0	9.73	30.00	-20.27
	5825	165	ax (20MHz)	26T	MCS0	8.66	30.00	-21.34
	5755	151	ax (40MHz)	26T	MCS0	8.96	30.00	-21.04
	5795	159	ax (40MHz)	26T	MCS0	8.83	30.00	-21.17
	5775	155	ax (80MHz)	26T	MCS0	8.95	30.00	-21.05

Table 7-56. Band 3 Conducted Power Spectral Density Measurements SISO ANT1 (26 Tones)

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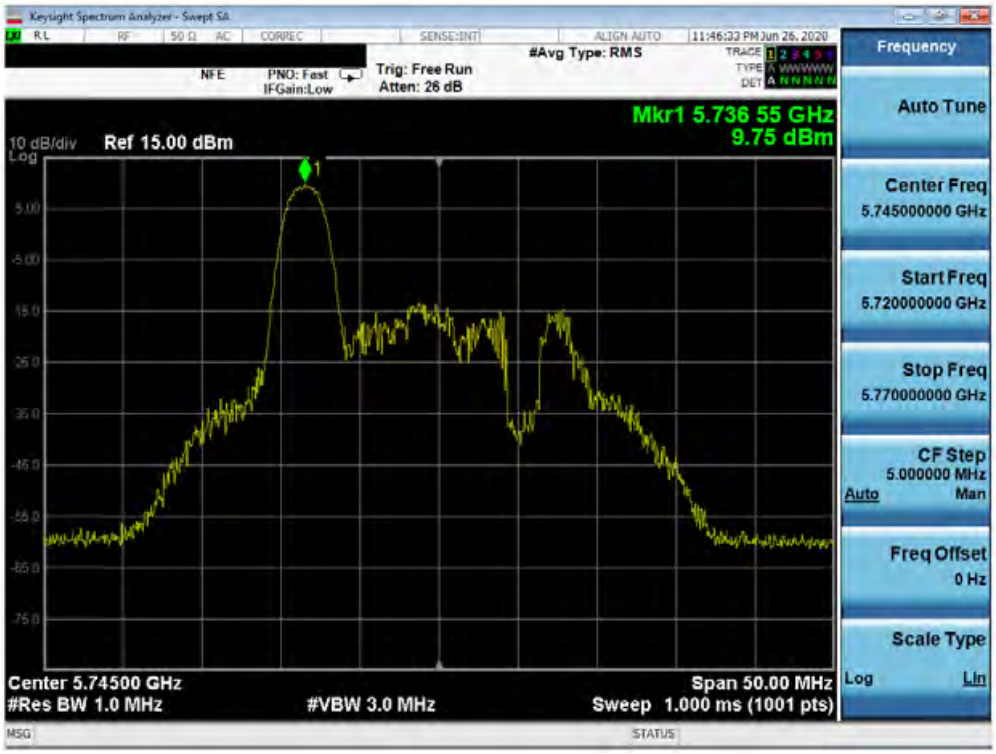
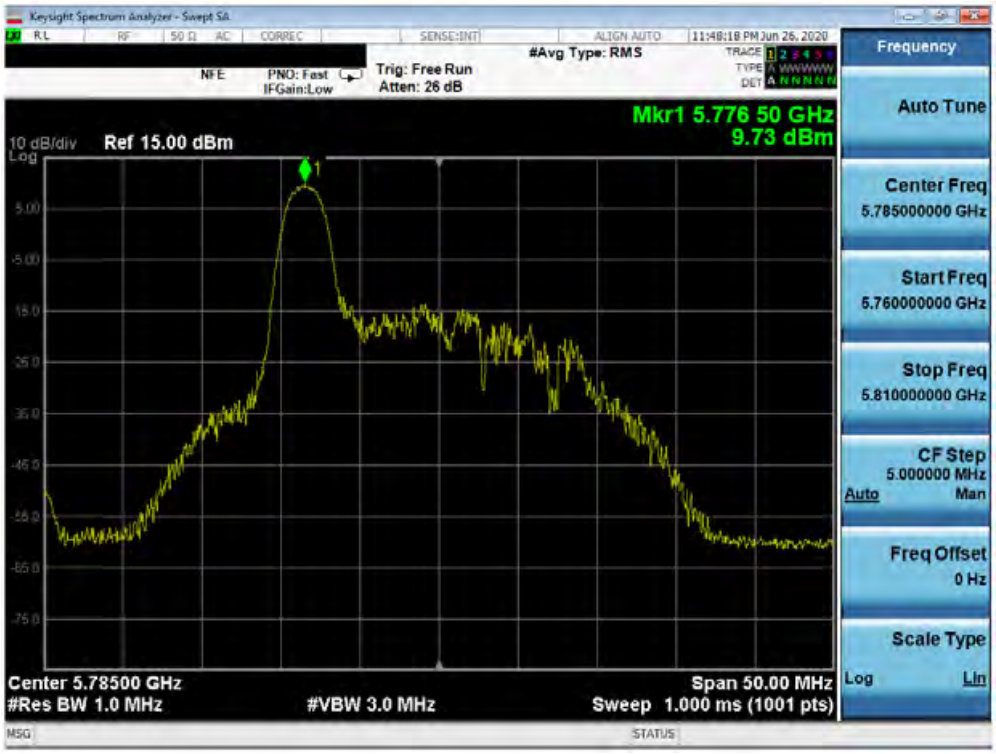


Plot 7-130. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



Plot 7-131. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

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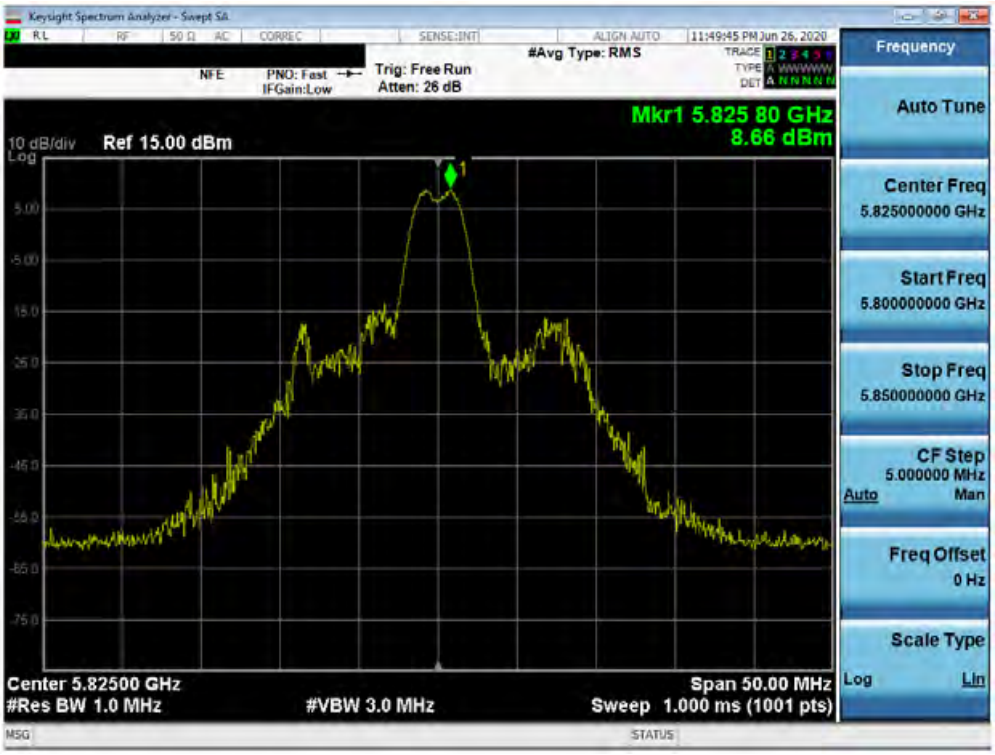
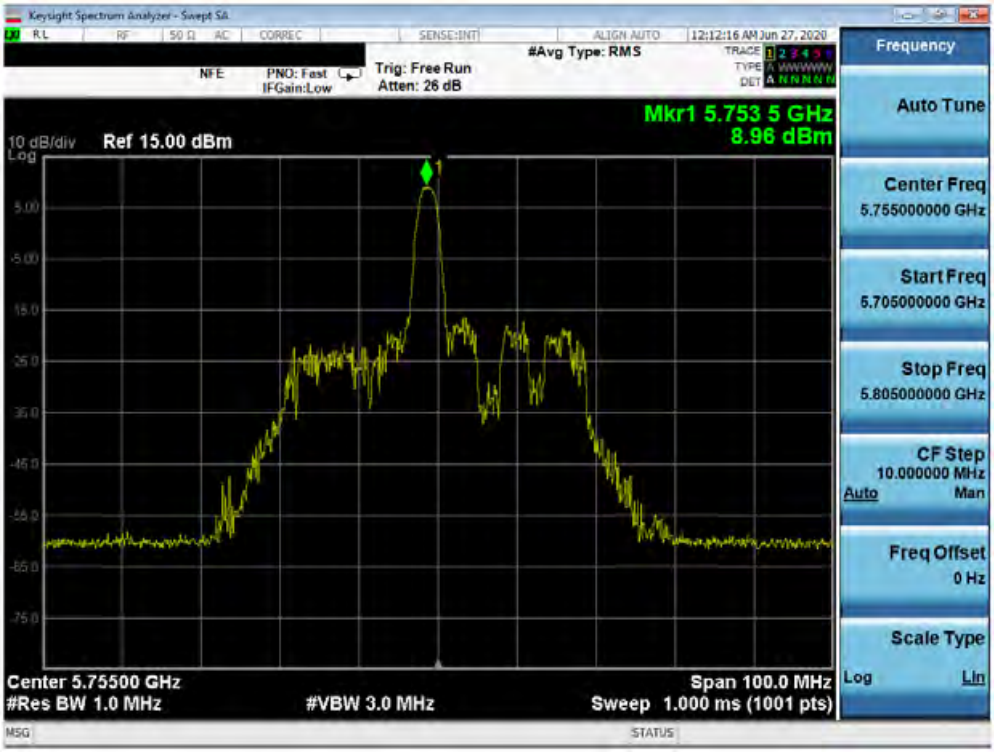


Plot 7-132. Power Spectral Density Plot SISO ANT1 (20 MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)



Plot 7-133. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

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Plot 7-134. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)

Plot 7-135. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

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

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	ax (20MHz)	242T	MCS0	-2.54	11.0	-13.54
	5200	40	ax (20MHz)	242T	MCS0	-1.60	11.0	-12.60
	5240	48	ax (20MHz)	242T	MCS0	-1.84	11.0	-12.84
	5190	38	ax (40MHz)	484T	MCS0	-3.26	11.0	-14.26
	5230	46	ax (40MHz)	484T	MCS0	-3.14	11.0	-14.14
	5210	42	ax (80MHz)	996T	MCS0	-6.84	11.0	-17.84
Band 2A	5260	52	ax (20MHz)	242T	MCS0	-1.85	11.0	-12.85
	5280	56	ax (20MHz)	242T	MCS0	-1.08	11.0	-12.08
	5320	64	ax (20MHz)	242T	MCS0	-1.67	11.0	-12.67
	5270	54	ax (40MHz)	484T	MCS0	-3.72	11.0	-14.72
	5310	62	ax (40MHz)	484T	MCS0	-4.13	11.0	-15.13
	5290	58	ax (80MHz)	996T	MCS0	-7.60	11.0	-18.60
Band 2C	5500	100	ax (20MHz)	242T	MCS0	-1.43	11.0	-12.43
	5600	120	ax (20MHz)	242T	MCS0	-1.72	11.0	-12.72
	5720	144	ax (20MHz)	242T	MCS0	-1.88	11.0	-12.88
	5510	102	ax (40MHz)	484T	MCS0	-2.25	11.0	-13.25
	5590	118	ax (40MHz)	484T	MCS0	-4.74	11.0	-15.74
	5710	142	ax (40MHz)	484T	MCS0	-3.09	11.0	-14.09
	5530	106	ax (80MHz)	996T	MCS0	-7.19	11.0	-18.19
	5610	122	ax (80MHz)	996T	MCS0	-8.07	11.0	-19.07
	5690	138	ax (80MHz)	996T	MCS0	-8.93	11.0	-19.93

Table 7-57. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements SISO ANT1 (Full Tones)

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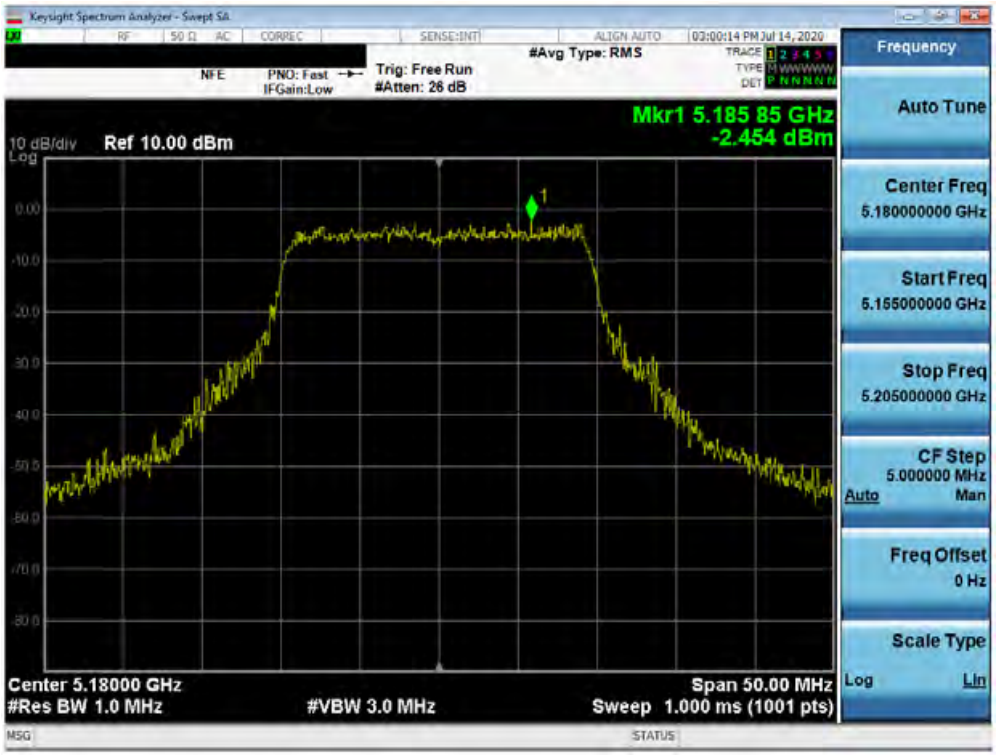

Plot 7-136. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 36)

Plot 7-137. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 40)

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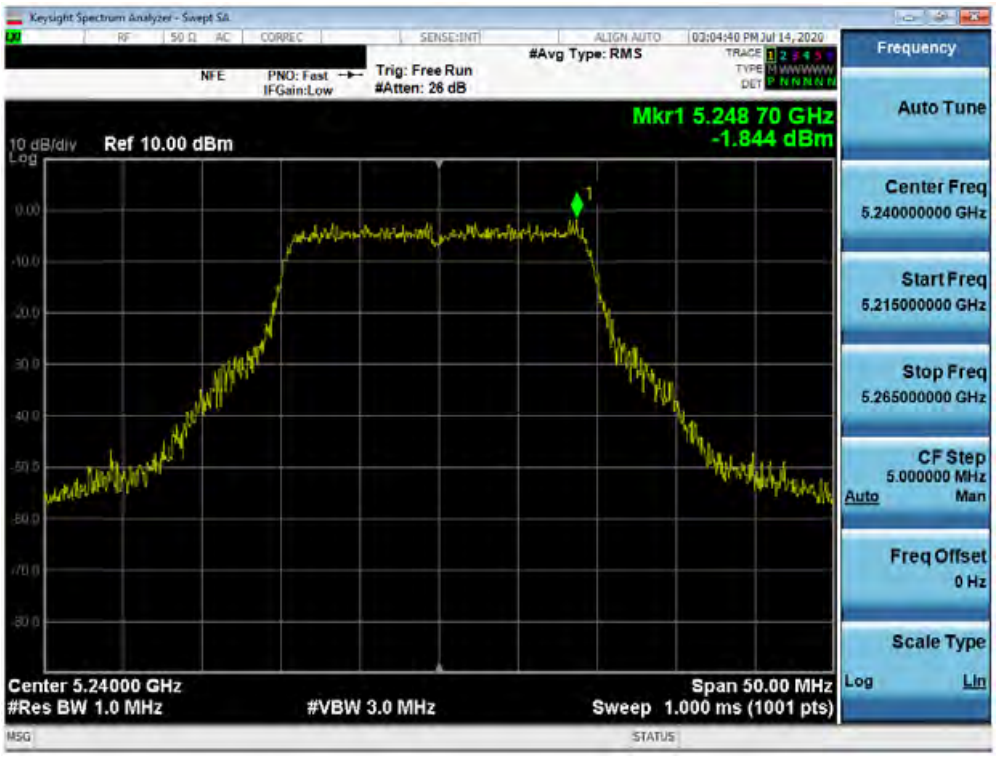
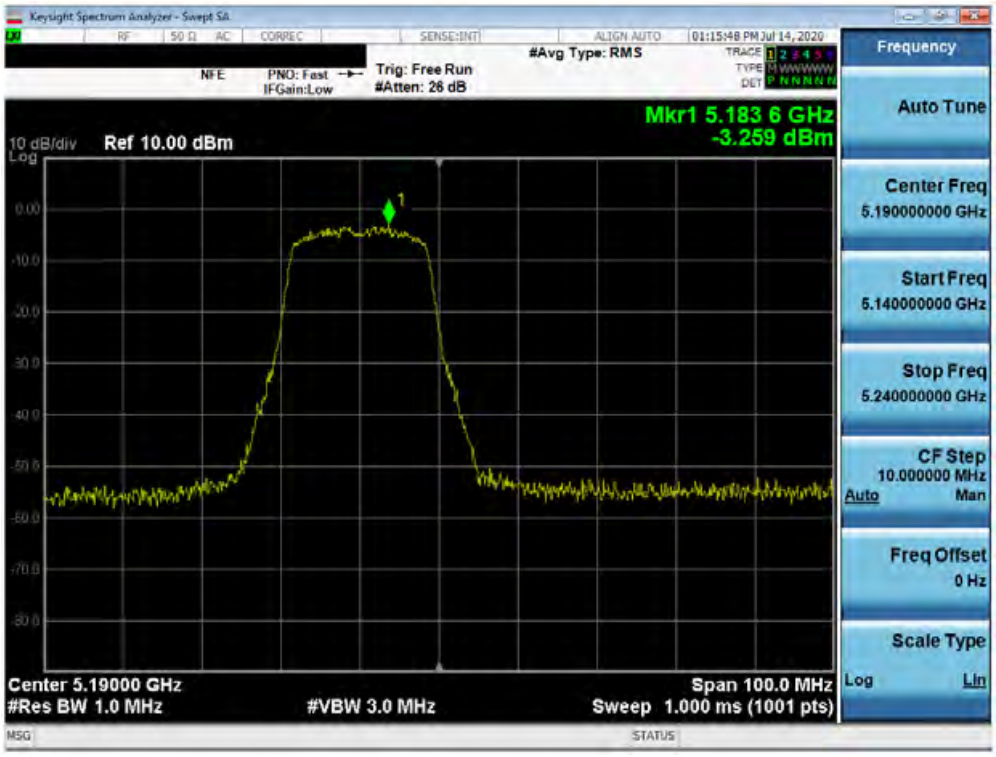


Plot 7-138. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 48)



Plot 7-139. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 38)

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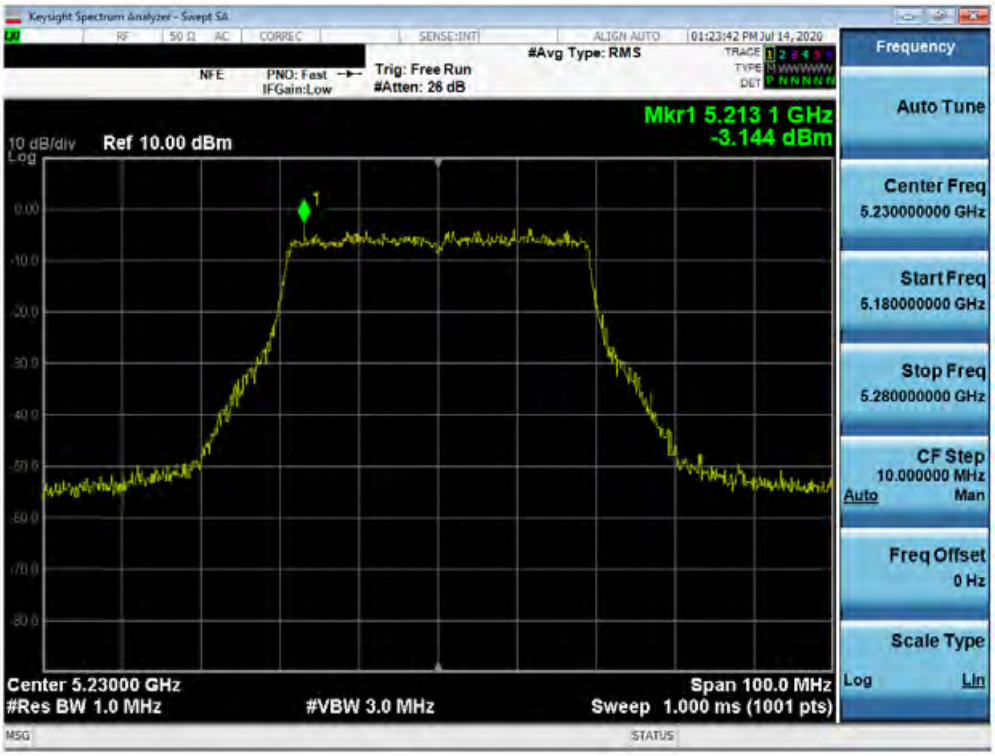
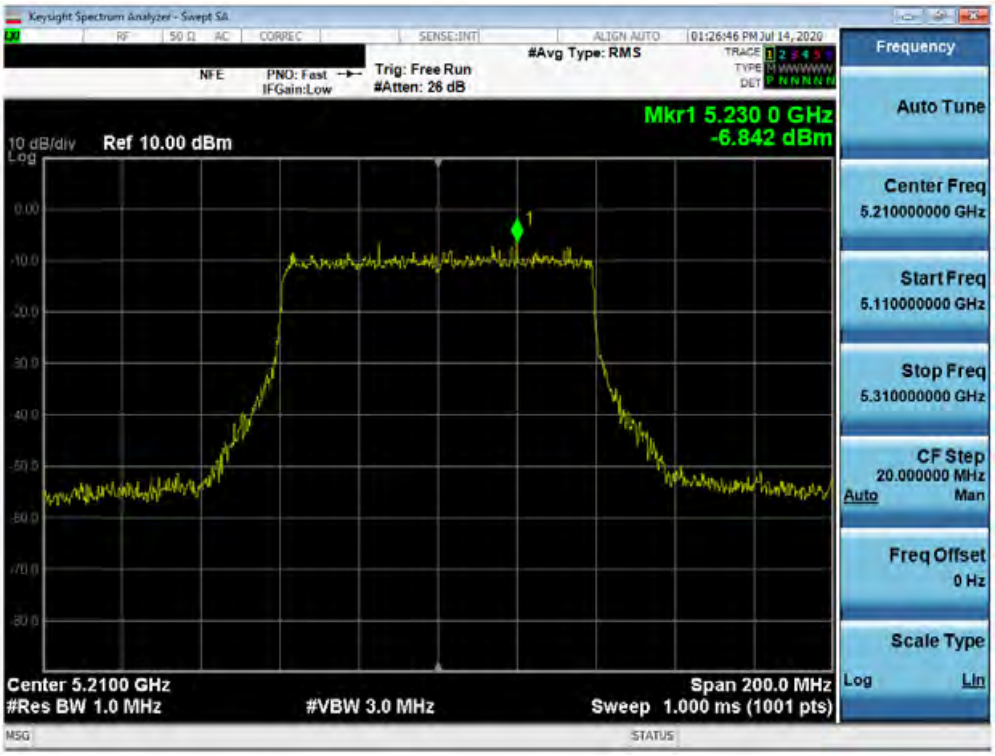


Plot 7-140. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 46)



Plot 7-141. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 1) – Ch. 42)

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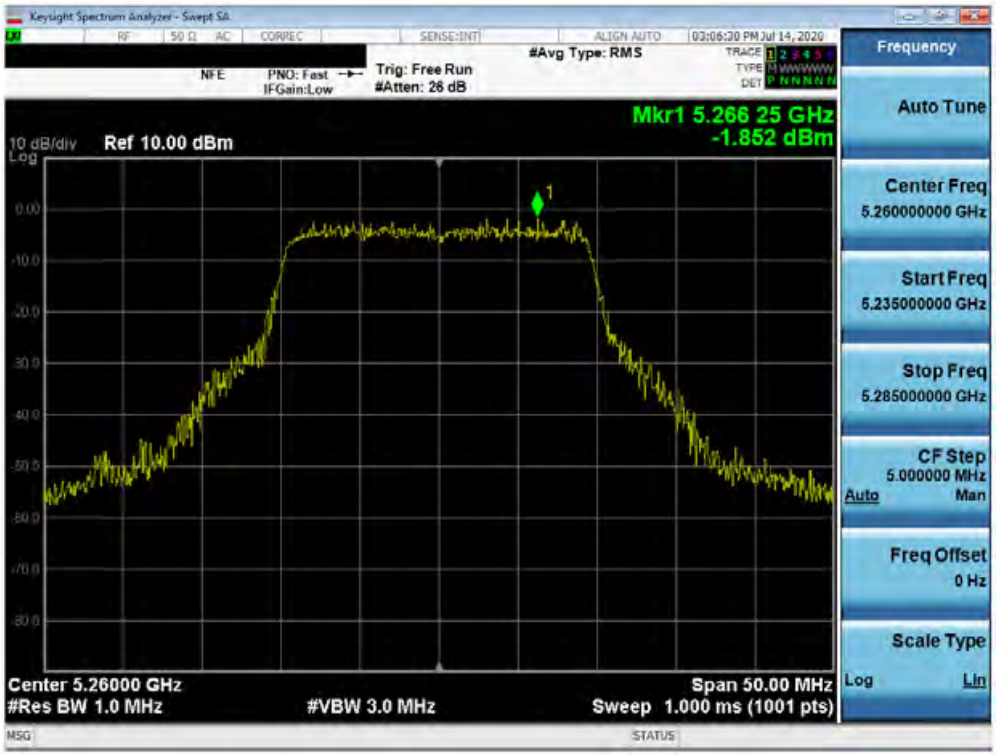
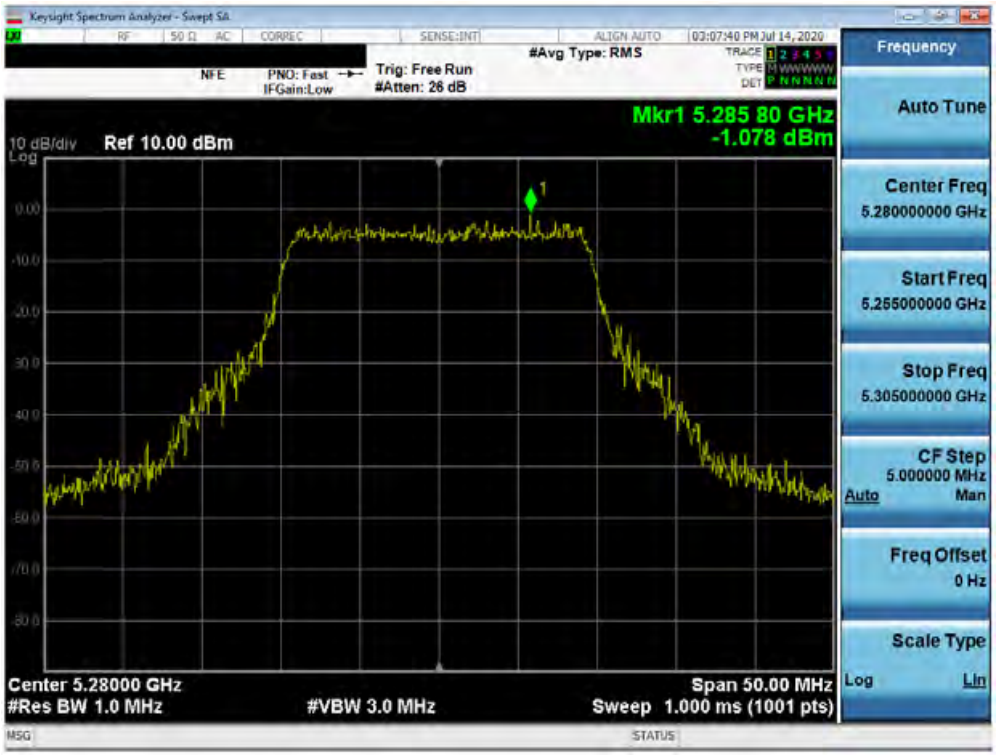


Plot 7-142. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)



Plot 7-143. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

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Plot 7-144. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

Plot 7-145. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

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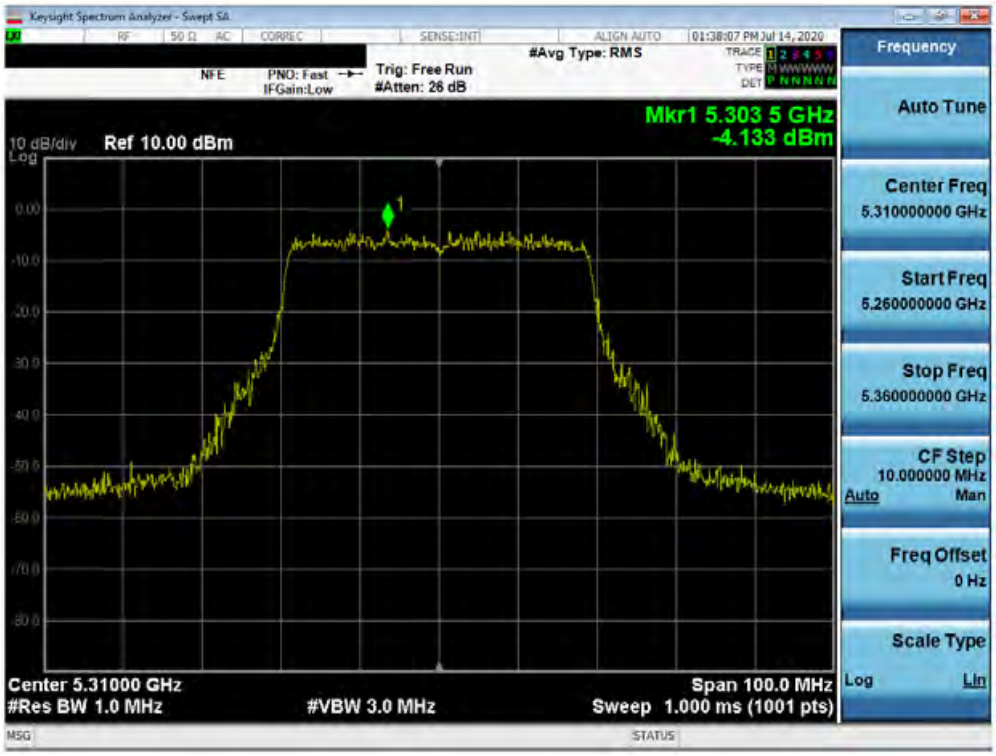
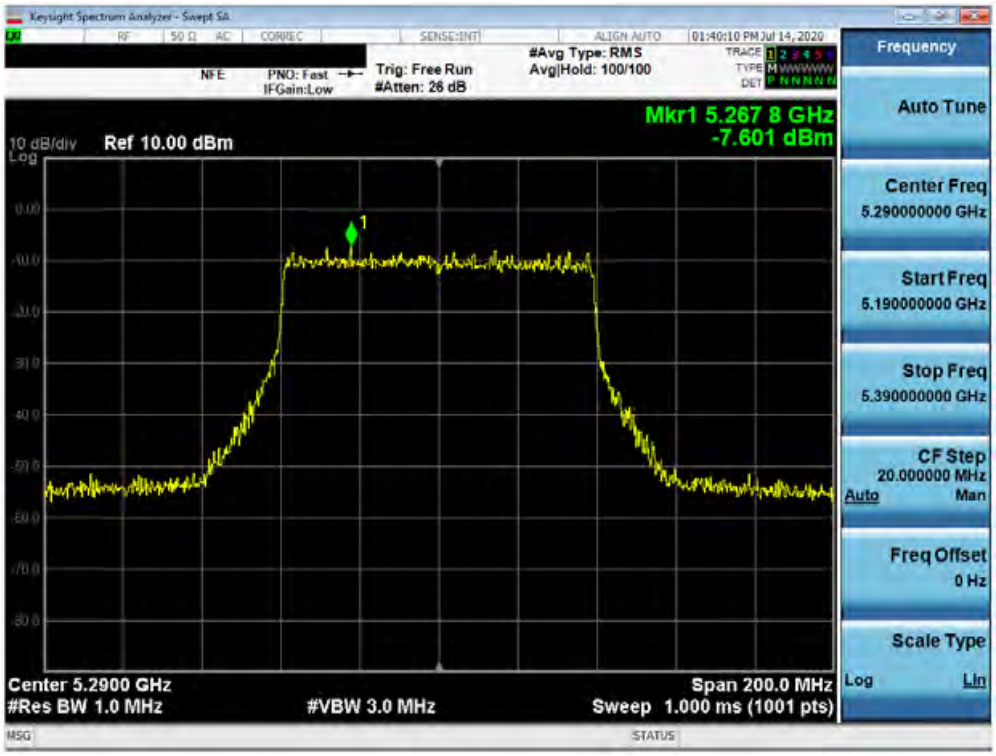


Plot 7-146. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)



Plot 7-147. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)

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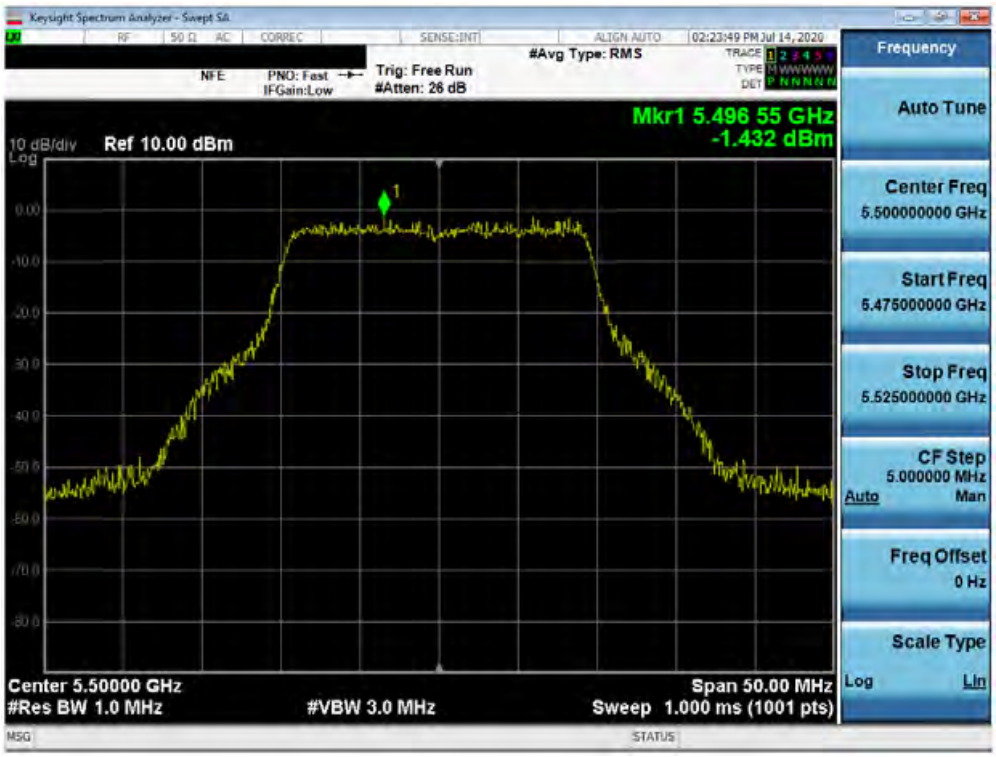
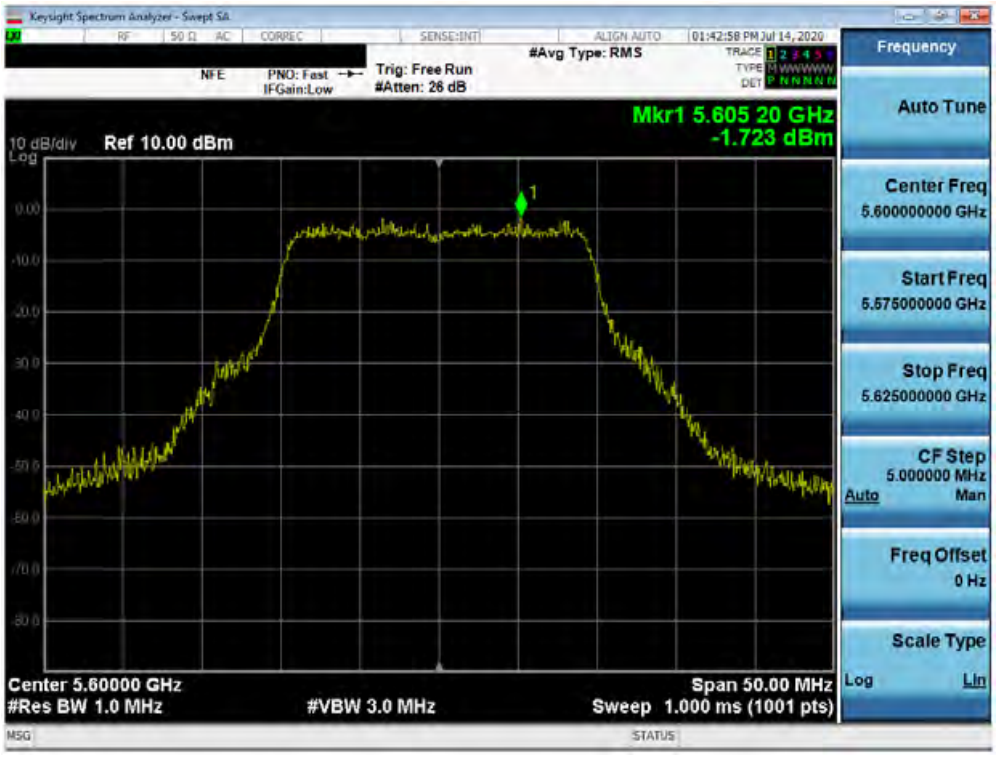


Plot 7-148. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)



Plot 7-149. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

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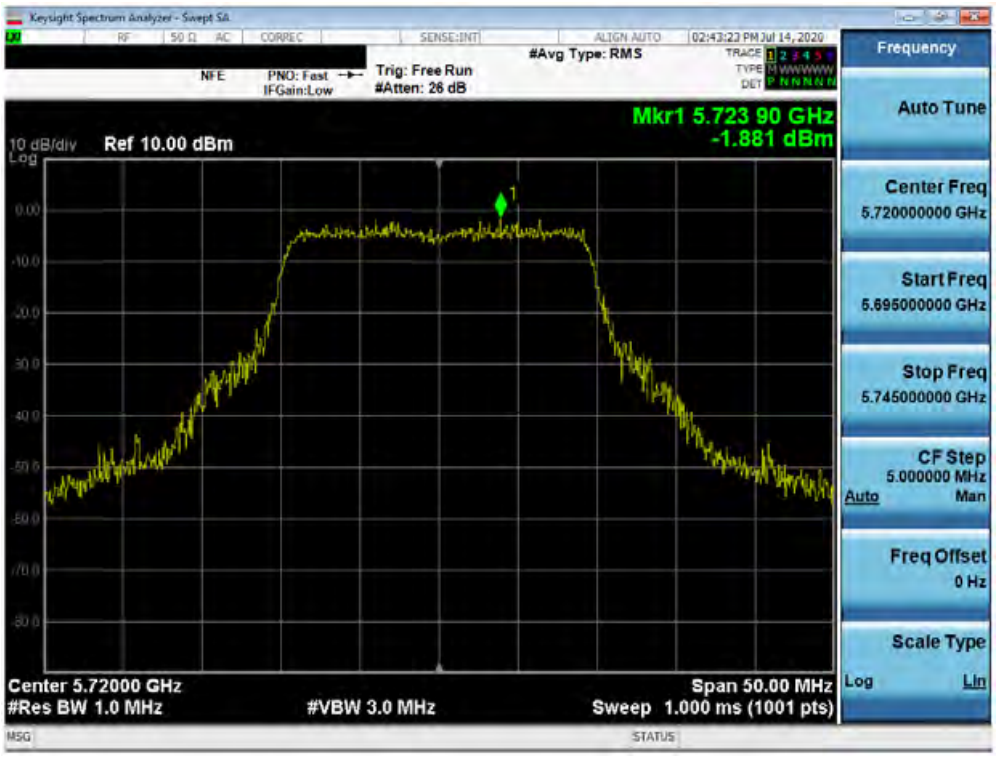
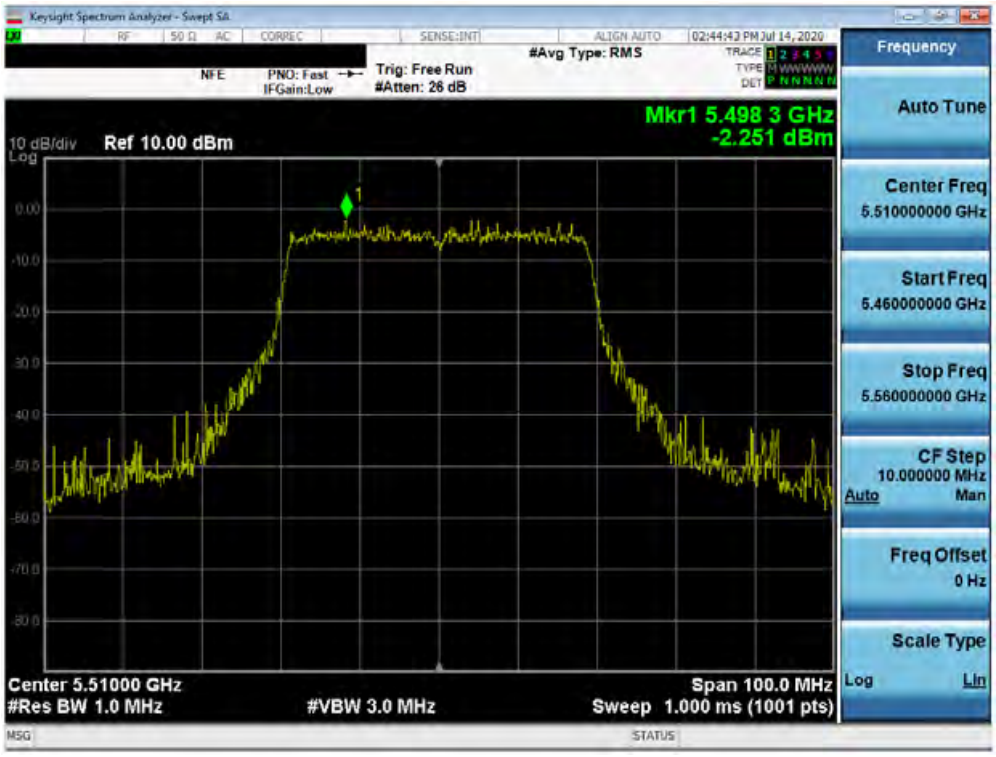


Plot 7-150. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)



Plot 7-151. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)

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Plot 7-152. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 118)

Plot 7-153. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

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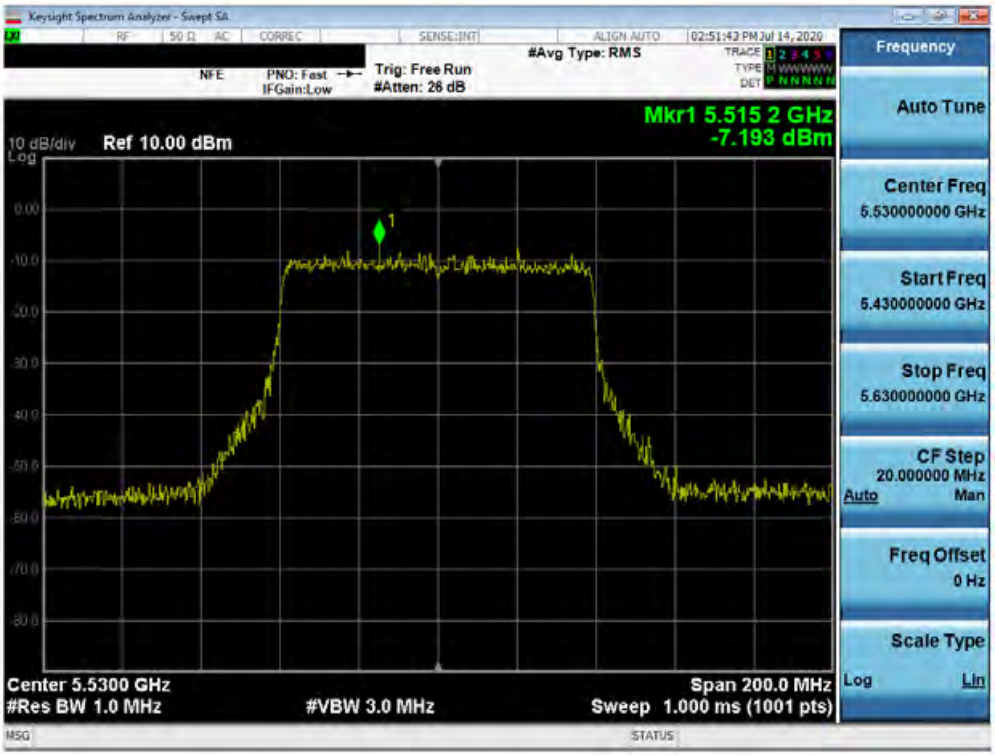
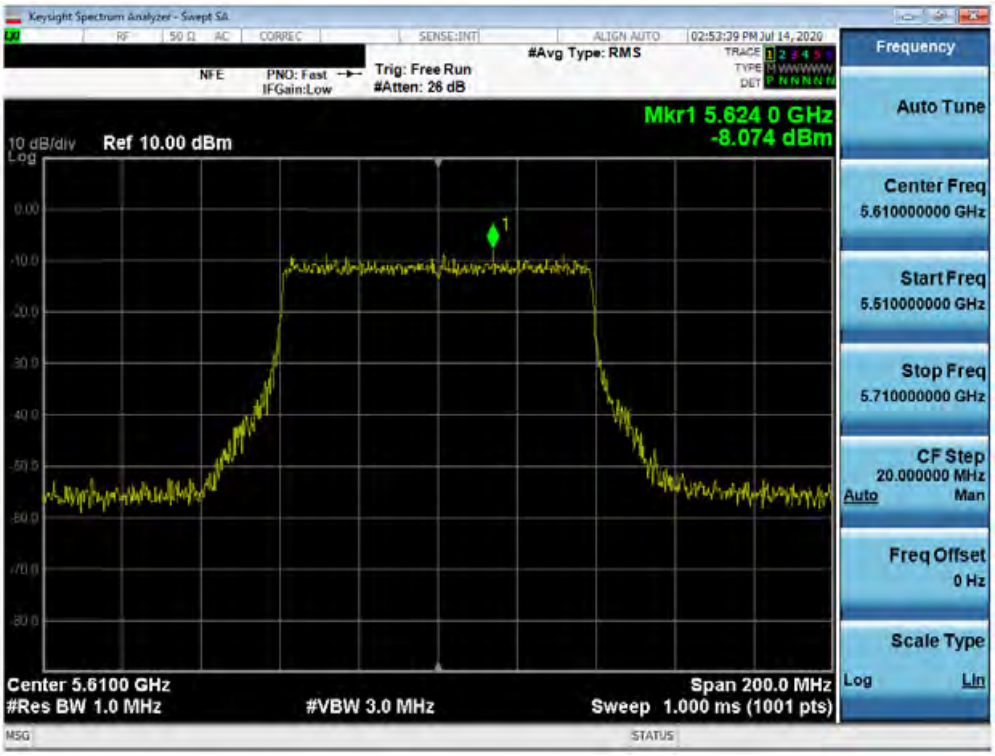


Plot 7-154. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)



Plot 7-155. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

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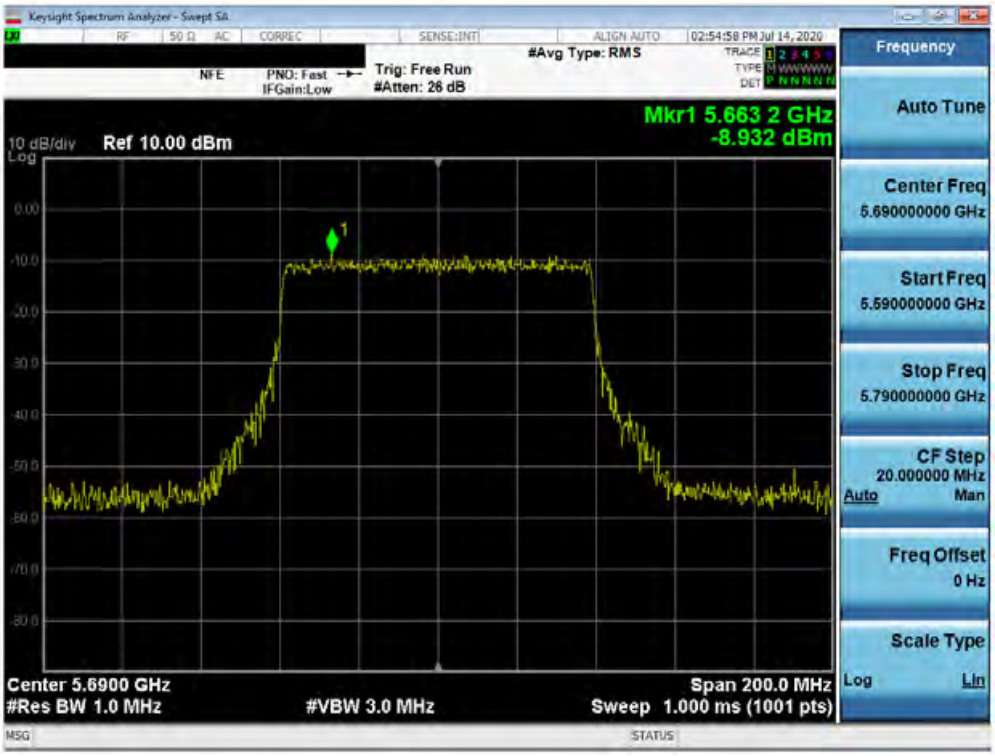

Plot 7-156. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
Band 3	5745	149	ax (20MHz)	242T	MCS0	-1.60	30.00	-31.60
	5785	157	ax (20MHz)	242T	MCS0	-1.33	30.00	-31.33
	5825	165	ax (20MHz)	242T	MCS0	-1.95	30.00	-31.95
	5755	151	ax (40MHz)	484T	MCS0	-3.70	30.00	-33.70
	5795	159	ax (40MHz)	484T	MCS0	-4.21	30.00	-34.21
	5775	155	ax (80MHz)	996T	MCS0	-8.01	30.00	-38.01

Table 7-58. Band 3 Conducted Power Spectral Density Measurements SISO ANT1 (Full Tones)

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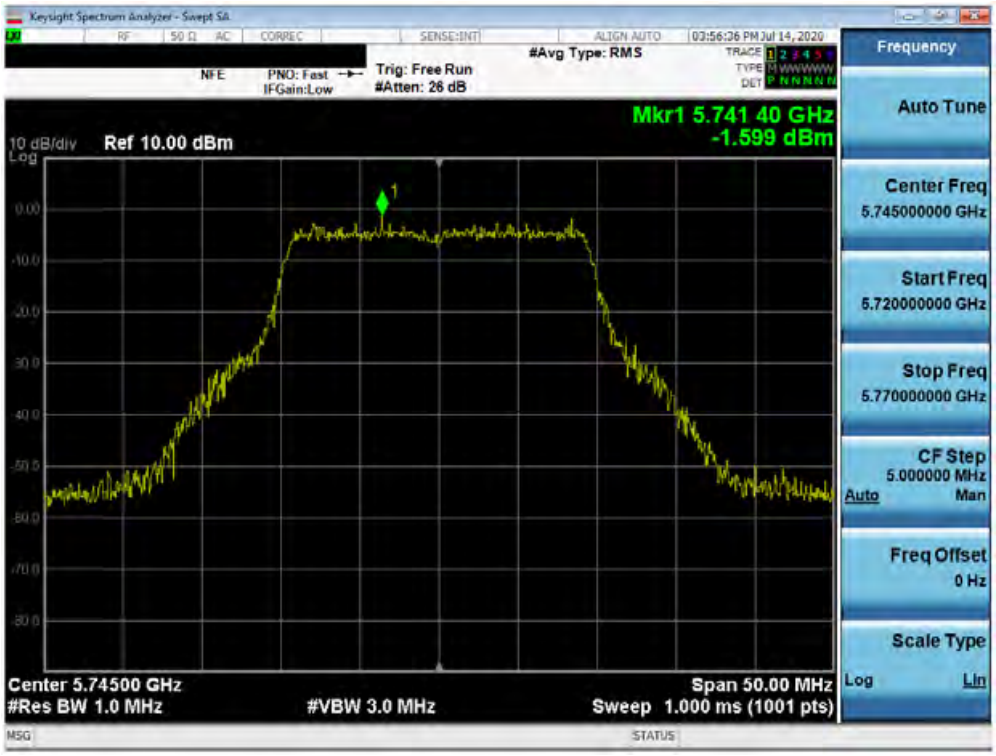

Plot 7-157. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)

Plot 7-158. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

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