

**ELEMENT WASHINGTON DC LLC** 

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.element.com

# MEASUREMENT REPORT FCC PART 15.407 UNII OFDMA

#### **Applicant Name:**

Microsoft Corporation One Microsoft Way Redmond, WA 98052 United States Date of Testing: 3/14/2022-8/18/2022 Test Report Issue Date: 8/18/2022 Test Site/Location: Element, Columbia, MD, USA Test Report Serial No.: 1M2204040049-16-R2.C3K

# FCC ID:

#### C3K1997

# APPLICANT:

## 511331

## **Microsoft Corporation**

Application Type:
•• ••
Model:
EUT Type:
Frequency Range:
Modulation Type:
FCC Equipment Class:
FCC Rule Part(s):
Test Procedure(s):

Certification 1997 Portable Computing Device 5180 – 5825MHz OFDMA Unlicensed National Information Infrastructure TX (NII) Part 15 Subpart E (15.407) ANSI C63.10-2013, KDB 789033 D02 v02r01, KDB 648474 D03 v01r04, KDB 662911 D01 v02r01

Note: This revised Test Report (S/N: 1M2204040049-16-R2.C3K) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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.

RJ Ortanez Executive Vice President



FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	ites: EUT Type:	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 1 of 309
			V 9.0 02/01/2019



# TABLE OF CONTENTS

1.0	INTRO	DUCTION	١	4
	1.1	Scope		4
	1.2	Eleme	nt Test Location	4
	1.3	Test F	acility / Accreditations	4
2.0	PRODU	JCT INFC	RMATION	5
	2.1	Equipr	nent Description	5
	2.2	Device	Capabilities	5
	2.3	Antenr	a Description	10
	2.4	Test C	onfiguration	10
	2.5	Softwa	re and Firmware	10
	2.6	EMI S	uppression Device(s)/Modifications	10
3.0	DESCF		DF TESTS	11
	3.1	Evalua	tion Procedure	11
	3.2	Radiat	ed Emissions	11
	3.3	Enviro	nmental Conditions	11
4.0	ANTEN	INA REQ	UIREMENTS	12
5.0	MEASU	JREMEN	T UNCERTAINTY	13
6.0	TEST E	EQUIPME	NT CALIBRATION DATA	14
7.0	TEST F	RESULTS		15
	7.1	Summ	ary	15
	7.2	26dB E	Bandwidth Measurement – 802.11ax OFDMA	16
	7.3	6dB Ba	andwidth Measurement – 802.11ax OFDMA	69
	7.4	UNII O	utput Power Measurement – 802.11ax OFDMA	
	7.5	Maxim	um Power Spectral Density – 802.11ax OFDMA	114
	7.6	Radiat	ed Spurious Emission Measurements – Above 1GHz	224
		7.6.1	SISO Antenna-1 Radiated Spurious Emission Measurements	227
		7.6.2	SISO Antenna-2 Radiated Spurious Emission Measurements	245
		7.6.3	MIMO Radiated Spurious Emission Measurements	263
		7.6.4	SISO Antenna-1 Radiated Band Edge Measurements (20MHz BW)	281
		7.6.5	SISO Antenna-1 Radiated Band Edge Measurements (40MHz BW)	283
		7.6.6	SISO Antenna-1 Radiated Band Edge Measurements (80MHz BW)	285
		7.6.7	SISO Antenna-1 Radiated Band Edge Measurements (160MHz BW)	287
		7.6.8	SISO Antenna-2 Radiated Band Edge Measurements (20MHz BW)	289
		7.6.9	SISO Antenna-2 Radiated Band Edge Measurements (40MHz BW)	291
		7.6.10	SISO Antenna-2 Radiated Band Edge Measurements (80MHz BW)	293
		7.6.11	SISO Antenna-2 Radiated Band Edge Measurements (160MHz BW)	295
		7.6.12	MIMO Radiated Band Edge Measurements (20MHz BW)	297
		7.6.13	MIMO Radiated Band Edge Measurements (40MHz BW)	299
		7.6.14	MIMO Radiated Band Edge Measurements (80MHz BW)	301
		7.6.15	MIMO Radiated Band Edge Measurements (160MHz BW)	303
	7.7	Radiat	ed Spurious Emissions Measurements – Below 1GHz	305
8.0	CONCL	USION		309

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 2 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 2 of 309
			V/00000/04/0040



# **MEASUREMENT REPORT**

	Channel		AN	JT1	AN	JT2	MI	MO
UNII Band	Bandwidth (MHz)	Tx Frequency (MHz)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1		5180 - 5240	59.979	17.78	60.954	17.85	99.790	19.99
2A	20	5260 - 5320	105.196	20.22	107.152	20.30	106.173	20.26
2C	20	5500 - 5720	94.406	19.75	92.683	19.67	108.448	20.35
3		5745 - 5825	114.815	20.60	116.950	20.68	231.765	23.65
1		5190 - 5230	55.081	17.41	55.847	17.47	117.289	20.69
2A	40	5270 - 5310	111.173	20.46	109.901	20.41	190.206	22.79
2C	40	5510 - 5710	97.051	19.87	99.770	19.99	188.042	22.74
3		5755 - 5795	125.603	20.99	122.180	20.87	247.213	23.93
1		5210	57.148	17.57	59.704	17.76	96.837	19.86
2A	80	5290	104.232	20.18	106.905	20.29	182.280	22.61
2C	00	5530 - 5690	99.083	19.96	98.855	19.95	190.341	22.80
3		5775	124.451	20.95	118.850	20.75	229.903	23.62
1/2A	160	5250	110.662	20.44	110.662	20.44	137.404	21.38
2C	100	5570	99.541	19.98	96.161	19.83	181.970	22.60

**EUT Overview** 

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 3 of 309
			V 0 0 02/01/2010



# **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 Element Test Location**

These measurement tests were conducted at the Element Laboratory 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 Element lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 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.
- Element Washington DC LLC 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).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Fest Dates: EUT Type:	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 4 of 309
	•	·	V 9.0 02/01/2019

Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without written permission from Element. If you have any questions about this or have an inquiry about obtaining additional rights to this report or assembly of contents thereof, please contact ct.info@element.com.



# **PRODUCT INFORMATION**

#### 2.1 **Equipment Description**

The Equipment Under Test (EUT) is the Microsoft Corporation Portable Computing Device FCC ID: C3K1997. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

Test Device Serial No.: HY220, H3220, JW220, JC220, JD220

С

#### 2.2 **Device Capabilities**

This device contains the following capabilities:

850/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5,6GHz), 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
:	:	:	:	:	:	:	:
40	5200	56	5280	120	5600	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825
			00 44 (00 MILL-) E-				

Table 2-1. 802.11ax (20MHz) Freque ations

142

	Band 1
Ch.	Frequency (MHz)
38	5190
:	
46	5230

	Band 2A
Ch.	Frequency (MHz)
54	5270
:	:
62	5310

uency / Channel Opera				
	Band 2C			
Ch.	Frequency (MHz)			
102	5510			
:	:			
118	5590			

5710

	Band 3
Ch.	Frequency (MHz)
151	5755
:	
159	5795

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
						:	:		
					Ī	138	5690		

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

		Band 1/2A Band 2C			Band 2C	
	Ch.	Frequency (MHz)		Ch.	Frequency (MHz)	
	50	5250		114	5570	
ahle 2	-4 802	11ax (160MHz BW	) F	reque	ncy / Channel One	ratio

#### Table 2-4. 802.11ax (160MHz BW) Frequency / Channel Operations

FCC ID: C3K1997			Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo E of 200
1M2204040049-16-R2.C3K 3/14/2022-8/18/20		Portable Computing Device	Page 5 of 309
	-	·	V 9.0 02/01/2019



#### Notes:

5GHz NII operation is possible in 20MHz, and 40MHz, 80MHz, and 160MHz 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]	Tone	Duty Cycle
			26T	99.0
802.11ax NII RU			52T	99.0
	1		106T	99.1
		20	242T	99.3
802.11ax NII RU		20	26T	99.3
	2		52T	99.5
	2		106T	99.4
			242T	99.7
			26T	98.9
802.11ax	MIMO CDD	20	52T	98.0
NII RU		20	106T	97.9
			242T	98.4
			26T	99.2
002 11 av			52T	99.0
802.11ax NII RU	1		106T	99.1
INII KU			242T	99.0
		40	484T	97.5
	2	40	26T	99.0
902 11 <sub>2V</sub>			52T	99.0
802.11ax NII RU			106T	99.0
			242T	99.7
			484T	99.6
		40	26T	98.2
802.11ax			52T	98.1
NII RU	MIMO CDD		106T	98.0
MIRO			242T	98.2
			484T	98.5
			26T	99.1
			52T	99.1
802.11ax	1		106T	99.1
NII RU			242T	97.8
			484T	97.0
		80	996T	96.5
			26T	99.1
			52T	99.1
802.11ax	2		106T	99.0
NII RU			242T	98.9
			484T	99.6
			996T	99.5
			26T	98.1
			52T	98.1
802.11ax	MIMO CDD	80	106T	97.9
NII RU			242T	97.8
			484T	98.6
			996T	98.4

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)				
Test Report S/N:	Test Dates:	EUT Type:	Dage C of 200			
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 6 of 309			
	•	•	V 9.0 02/01/2019			



		Bandwidth	-	
Mode	Antenna	[MHz]	Tone	Duty Cycle
			26T	99.1
802.11ax			52T	99.1
			106T	99.0
NII RU	1		242T	98.3
			484T	95.9
		160	996T	97.2
		1st	26T	99.1
			52T	99.1
802.11ax			106T	99.0
NII RU	2		242T	99.0
Nin Ko			484T	99.0
			996T	99.6
			26T	98.1
802.11ax NII RU	MIMO CDD	160 1 1st 2	52T	98.1
			106T	97.9
			242T	97.9
			484T	98.2
			996T	99.2
			26T	99.1
			52T	99.1
802.11ax			106T	99.0
NII RU	1		242T	98.9
			484T	99.2
		160	996T	97.7
		2nd	26T	99.0
			52T	99.1
802.11ax			106T	99.1
NII RU	2		242T	99.0
			484T	99.2
			996T	99.4
			26T	98.4
			52T	98.3
802.11ax		160	106T	98.3
NII RU	MIMO CDD	2nd	242T	98.7
			484T	98.8
			996T	99.2

Image: system of the system

FCC ID: C3K1997		Approved by: Technical Manager	
Test Report S/N: Test Dates:		EUT Type:	Dago 7 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022 Portable Computing Device		Page 7 of 309
			V 0 0 02/01/2010



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

WiFi Configurations		SISO		SDM		MIMO	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
	11ax (20MHz)	✓	✓	√	✓	✓	✓
5GHz	11ax (40MHz)	✓	✓	√	✓	✓	✓
SGHZ	11ax (80MHz)	✓	✓	√	✓	✓	✓
	11ax (160MHz)	✓	✓	✓	✓	$\checkmark$	$\checkmark$

Table 2-7. Frequency / Channel Operations

 $\checkmark$  = 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), 5GHz, and 6GHz 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.

**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	120
Operating Frequency (MHz)	2462	5600
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-8. 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	11	120
Operating Frequency (MHz)	2462	5600
Data Rate (Mbps)	1	6
Mode	802.11b	80.211a

Table 2-9. Config-2 (ANT1 5GHz & ANT2 2.4GHz)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 8 of 200
1M2204040049-16-R2.C3K 3/14/2022-8/18/2022		Portable Computing Device	Page 8 of 309
	•		V 9.0 02/01/2019



### Configuration 3: ANT1 transmitting in 2.4GHz mode and ANT2 in 6GHz mode

Description	2.4 GHz Emission	6 GHz Emission
Antenna	1	2
Channel	11	2
Operating Frequency (MHz)	2462	5935
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-10. Config-3 (ANT1 2.4GHz & ANT2 6GHz)

Configuration 4: ANT1 transmitting in 6GHz mode and ANT2 in 2.4GHz mode

Description	2.4 GHz Emission	6 GHz Emission
Antenna	2	1
Channel	11	2
Operating Frequency (MHz)	2462	5935
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-11. Config-4 (ANT1 5GHz & ANT2 2.4GHz)

Configuration 5: 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	11	120
Operating Frequency (MHz)	2462	5600
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-12. Config-5 (ANT1 MIMO & ANT2 MIMO)

Configuration 6: ANT1 and ANT2 both transmitting in 2.4GHz and 6GHz modes simultaneously

Description	2.4 GHz Emission	6 GHz Emission
Antenna	1, 2	1, 2
Channel	11	2
Operating Frequency (MHz)	2462	5935
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-13. Config-6 (ANT1 MIMO & ANT2 MIMO)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dage 0 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 9 of 309
	-		V 9.0 02/01/2019



# 2.3 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)	Directional Gain (dBi)
5.20	0.6	2.3	4.50
5.30	0.5	2.9	4.79
5.50	3.3	2.9	6.11
5.80	3.6	2.4	6.03
	T-11-044 A-4	De la Cala	

Table 2-14. 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 software/firmware version 1.426.0 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.

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 10 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 10 of 309
	·	·	V 9.0 02/01/2019



# **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 v01r01.

# 3.3 Environmental Conditions

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

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dage 11 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 11 of 309
			V 0 0 02/01/2010



# 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.

	echnical Manager
Test Report S/N: Test Dates: EUT Type: Page 1	Page 12 of 309
1M2204040049-16-R2.C3K 3/14/2022-8/18/2022 Portable Computing Device	V 0.0.02/01/2010



# 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

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 at 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 13 of 309
		•	V 9.0 02/01/2019



# 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
-	WL25-1	Conducted Cable Set (25GHz)	12/19/2021	Annual	12/19/2022	WL25-1
-	WL25-2	Conducted Cable Set (25GHz)	12/19/2022	Annual	12/19/2022	WL25-2
-	WL40-1	Conducted Cable Set (40GHz)	12/19/2022	Annual	12/19/2022	WL40-1
-	ETS-001	EMC Cable and Switch System	12/9/2021	Annual	12/9/2022	ETS-001
-	ETS-002	EMC Cable and Switch System	3/10/2022	Annual	3/10/2023	ETS-002
-	AP1-002	EMC Cable and Switch System	3/9/2022	Annual	3/9/2023	AP1-002
-	AP2-001	EMC Cable and Switch System	1/4/2022	Annual	1/4/2023	AP2-001
-	AP2-002	EMC Cable and Switch System	3/11/2022	Annual	3/11/2023	AP2-002
Agilent	N9038A	MXE EMI Receiver	1/21/2022	Annual	1/21/2023	MY51210133
Agilent	N9020A	MXA Signal Analyzer	3/4/2022	Annual	3/4/2023	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	7/21/2021	Annual	7/21/2022	MY49430494
Emco	3116	Horn Antenna (18 - 40GHz)	7/20/2021	Biennial	7/20/2022	9203-2178
ETS-Lindgren	3117	Horn Antenna (1 - 18GHz)	4/20/2021	Biennial	4/20/2023	9203-2178
ETS-Lindgren	3816/2NM	Line Impedance Stabilization Network	7/9/2020	Biennial	7/9/2022	114451
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	2/14/2022	Annual	2/14/2023	MY54490576
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2022	Annual	3/15/2023	MY54500644
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	12/19/2021	Annual	12/19/2022	NMLC-2
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/3/2021	Annual	8/3/2022	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/25/2021	Annual	7/25/2022	100348
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/14/2022	Biennial	2/14/2024	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	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.

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dege 14 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 14 of 309
	•		V 9.0 02/01/2019



# 7.0 TEST RESULTS

## Summary

Company Name:	Microsoft Corporation
FCC ID:	<u>C3K1997</u>
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		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])	CONDUCTED	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])		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])	RADIATED	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) Per RSS-247 Section 6.2.3, transmission on channels which overlap the 5600-5650 MHz is prohibited. This device operates under these frequencies only under the control of a certified master device and does not support active scanning on these channels. This device does not transmit any beacons or initiate any transmissions in UNII Bands 2A or 2C.
- 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.
- 8) Only one RU index could be selected at a time, so no contiguous or non-contiguous RUs were considered for testing.

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 15 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 15 of 309	
	-		V 9.0 02/01/2019	



## 7.2 26dB Bandwidth Measurement – 802.11ax OFDMA

#### **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

- 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 <u>></u> 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.

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 16 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 16 of 309
			V 0 0 02/01/2010



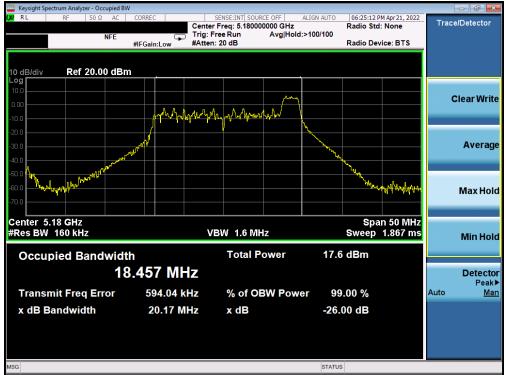
# SISO Antenna-1 26 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	26T	MCS0	20.17
	5200	40	ax (20MHz)	26T	MCS0	20.53
1 pc	5240	48	ax (20MHz)	26T	MCS0	20.56
Band 1	5190	38	ax (40MHz)	26T	MCS0	40.57
	5230	46	ax (40MHz)	26T	MCS0	40.74
	5210	42	ax (80MHz)	26T	MCS0	81.13
Band 1/2A	5250	50	ax (160MHz) L	26T	MCS0	163.60
Ba 1/1	5250	50	ax (160MHz) U	26T	MCS0	158.10
	5260	52	ax (20MHz)	26T	MCS0	20.67
∢	5280	56	ax (20MHz)	26T	MCS0	19.85
d 2	5320	64	ax (20MHz)	26T	MCS0	18.64
Band 2A	5270	54	ax (40MHz)	26T	MCS0	38.02
ш	5310	62	ax (40MHz)	26T	MCS0	40.40
	5290	58	ax (80MHz)	26T	MCS0	81.94
	5500	100	ax (20MHz)	26T	MCS0	18.61
	5600	120	ax (20MHz)	26T	MCS0	18.51
	5720	144	ax (20MHz)	26T	MCS0	18.65
	5510	102	ax (40MHz)	26T	MCS0	40.78
5C	5590	118	ax (40MHz)	26T	MCS0	37.73
Band 2C	5710	142	ax (40MHz)	26T	MCS0	40.46
Ba	5530	106	ax (80MHz)	26T	MCS0	77.43
	5610	122	ax (80MHz)	26T	MCS0	77.96
	5690	138	ax (80MHz)	26T	MCS0	82.36
	5570	114	ax (160MHz) L	26T	MCS0	157.70
	5570	114	ax (160MHz) U	26T	MCS0	163.80

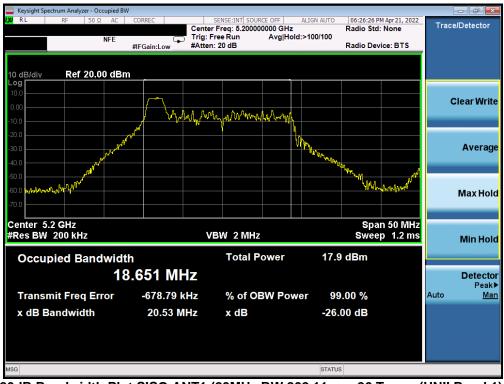
Table 7-2. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 17 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 17 of 309
			V 0 0 02/01/2010





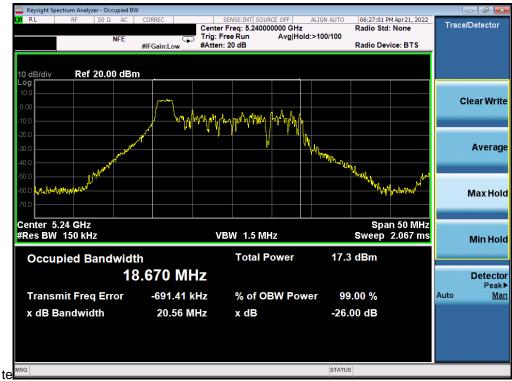
Plot 7-1. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



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

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 10 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 18 of 309
			V 9.0 02/01/2019





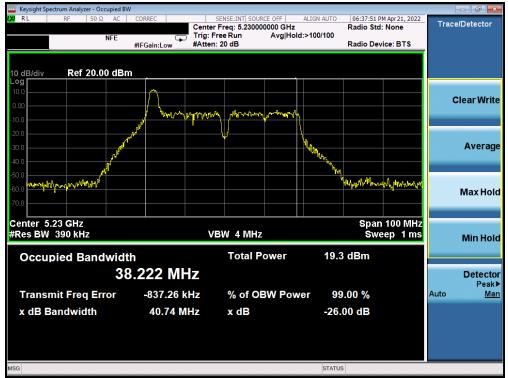
Plot 7-3. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



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

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 10 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 19 of 309
	•		V 9.0 02/01/2019





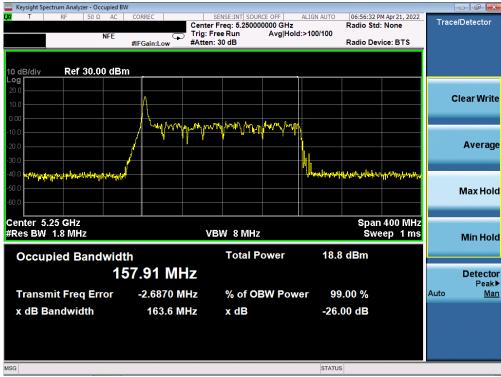
Plot 7-5. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



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

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 20 of 309
			V 9 0 02/01/2019





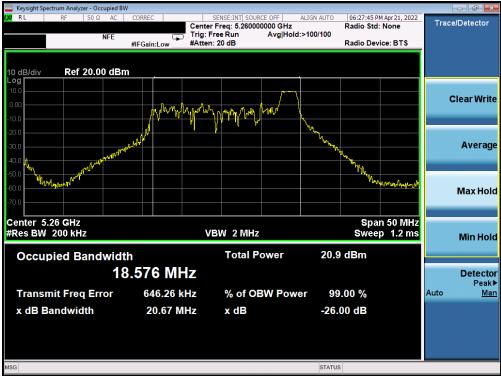
Plot 7-7. 26dB Bandwidth Plot SISO ANT1 (160MHz (L) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)



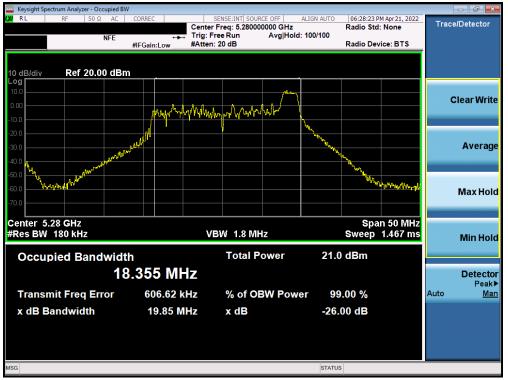
Plot 7-8. 26dB Bandwidth Plot SISO ANT1 (160MHz (U) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 21 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 21 of 309	
			V 9.0 02/01/2019	





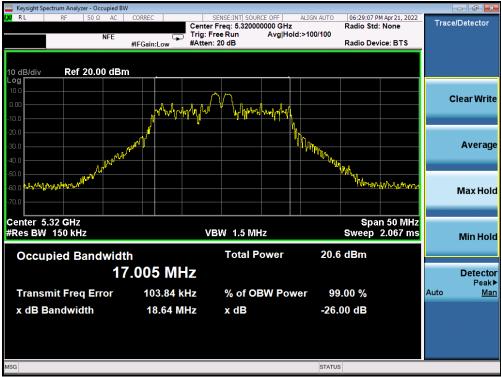
Plot 7-9. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



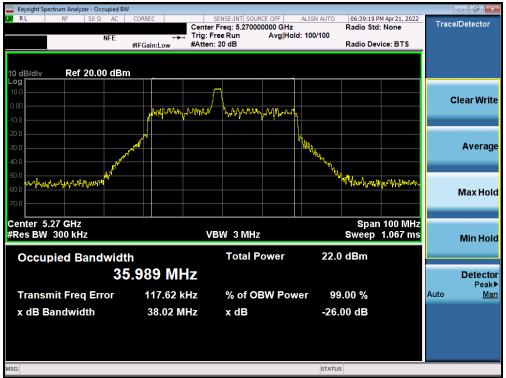
Plot 7-10. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 56)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 22 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 22 of 309
			V 9.0 02/01/2019





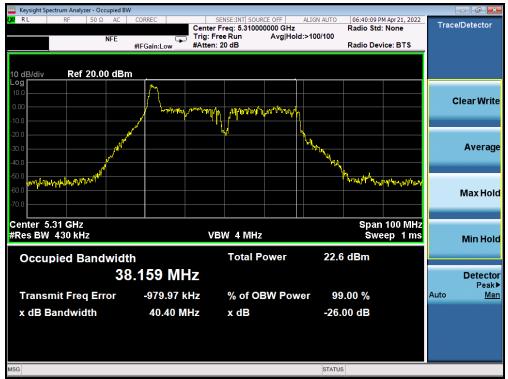
Plot 7-11. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



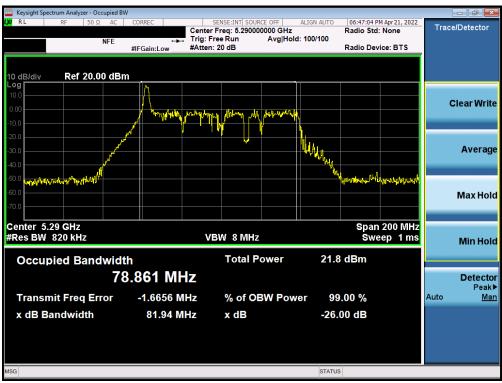
Plot 7-12. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 54)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 22 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 23 of 309
	•		V 9.0 02/01/2019





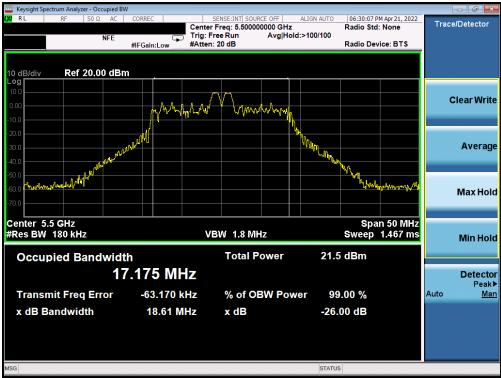
Plot 7-13. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 62)



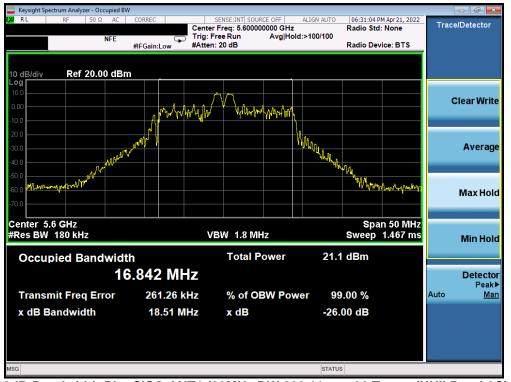
Plot 7-14. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 58)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 24 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 24 of 309
		-	V 9 0 02/01/2019





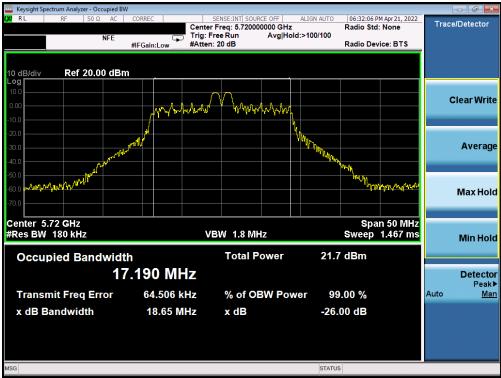
Plot 7-15. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



Plot 7-16. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 25 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 25 of 309
		-	V 9 0 02/01/2019





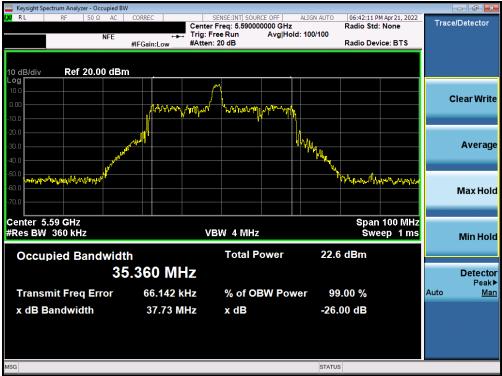
Plot 7-17. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 144)



Plot 7-18. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 102)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 26 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 26 of 309
		-	V 9 0 02/01/2019





Plot 7-19. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 118)



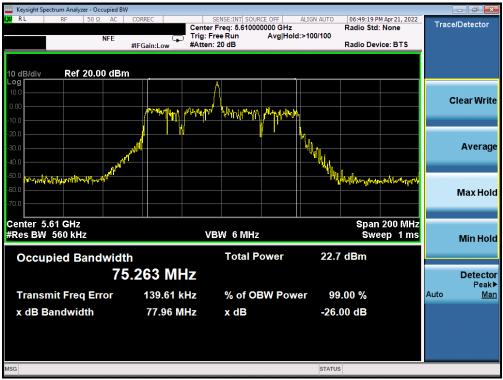
Plot 7-20. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 142)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 27 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 27 of 309
		-	V 9 0 02/01/2019





Plot 7-21. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 106)



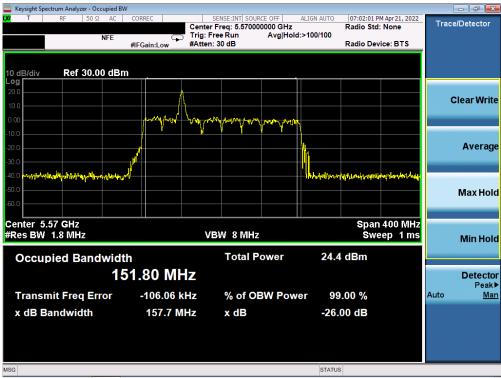
Plot 7-22. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 122)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 29 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 28 of 309
			V 9.0 02/01/2019





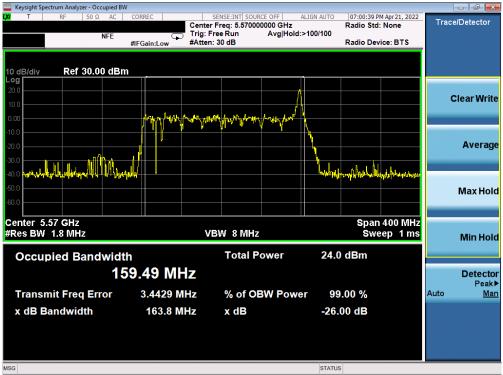
Plot 7-23. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 138)



Plot 7-24. 26dB Bandwidth Plot SISO ANT1 (160MHz (L) BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 114)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 29 of 309	
		-	V 9 0 02/01/2019	





Plot 7-25. 26dB Bandwidth Plot SISO ANT1 (160MHz (U) BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 114)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 20 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 30 of 309
L	·		V 9.0 02/01/2019



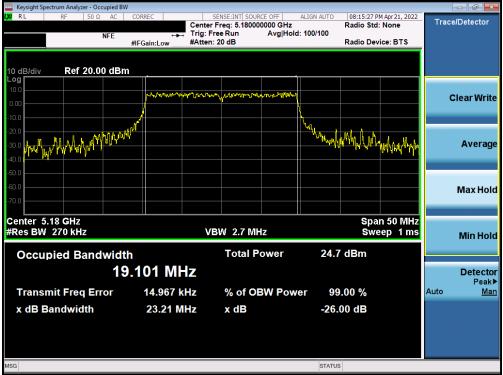
# SISO Antenna-1 26 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	242T	MCS0	23.21
	5200	40	ax (20MHz)	242T	MCS0	22.68
Band 1	5240	48	ax (20MHz)	242T	MCS0	22.55
Bar	5190	38	ax (40MHz)	484T	MCS0	43.52
	5230	46	ax (40MHz)	484T	MCS0	43.28
	5210	42	ax (80MHz)	996T	MCS0	87.19
	5260	52	ax (20MHz)	242T	MCS0	46.05
	5280	56	ax (20MHz)	242T	MCS0	39.90
Band 2A	5320	64	ax (20MHz)	242T	MCS0	35.39
Ban	5270	54	ax (40MHz)	484T	MCS0	71.42
	5310	62	ax (40MHz)	484T	MCS0	48.67
	5290	58	ax (80MHz)	996T	MCS0	88.96
	5500	100	ax (20MHz)	242T	MCS0	37.13
	5600	120	ax (20MHz)	242T	MCS0	43.97
	5720	144	ax (20MHz)	242T	MCS0	37.31
ပ္ရ	5510	102	ax (40MHz)	484T	MCS0	43.45
Band 2C	5590	118	ax (40MHz)	484T	MCS0	66.19
ä	5710	142	ax (40MHz)	484T	MCS0	48.91
	5530	106	ax (80MHz)	996T	MCS0	87.49
	5610	122	ax (80MHz)	996T	MCS0	124.90
	5690	138	ax (80MHz)	996T	MCS0	123.20

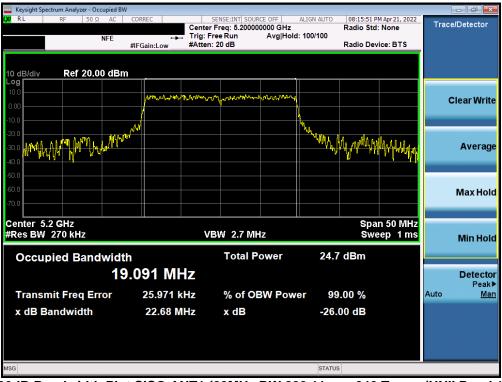
Table 7-3. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 21 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 31 of 309
			V 0 0 02/01/2010





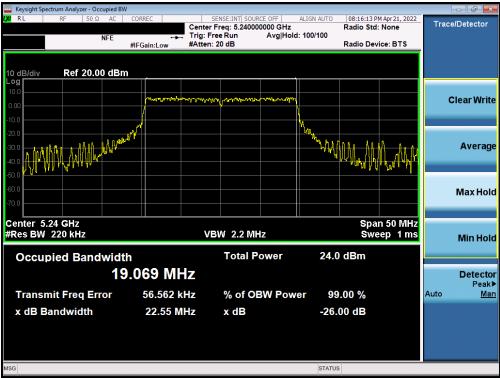
Plot 7-26. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 36)



Plot 7-27. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 40)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dega 22 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 32 of 309	
			V 9.0 02/01/2019	





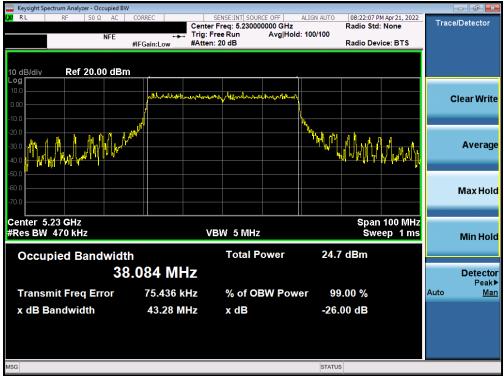
Plot 7-28. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 48)



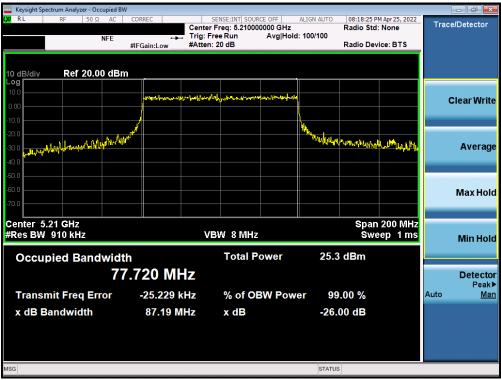
Plot 7-29. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 38)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 22 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 33 of 309
	•		V 9.0 02/01/2019





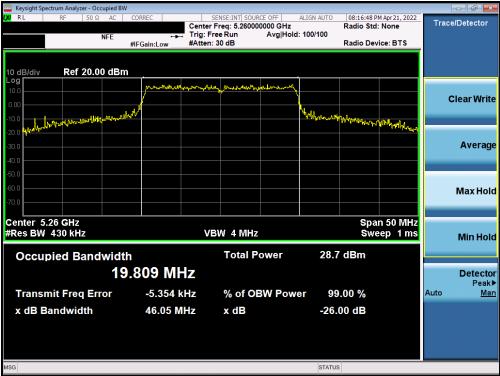
Plot 7-30. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 46)



Plot 7-31. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 1) - Ch. 42)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 24 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 34 of 309	
		-	V 9 0 02/01/2019	





Plot 7-32. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)



Plot 7-33. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 56)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 35 of 309	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device		
			V 9.0 02/01/2019	



🤐 Keysight Spectrum Analyzer - Occupied BW							
<b>LX/</b> RL RF 50 Ω AC CC		ENSE:INT SOURCE OFF	ALIGN AUTO	08:17:53 P	M Apr 21, 2022	Trac	e/Detector
NFE	🛶 Trig: Fre	ee Run Avg Hold	d: 100/100	Radio Dev			
#1	FGain:Low #Atten: :	20 88		Radio Dev	ICE: BIS		
10 dB/div Ref 20.00 dBm							
10.0	manneghanderthouses	y and a marked and a second she					
0.00	J		1			(	Clear Write
-10.0 -20.0 ครามาราชาติสาราชาติสาราชาติสาราชาติสาราชาติ			Manager	Mantin, ed	4		
-20.0 Arm Man Var Dwitter				harman	w <sup>m</sup> l/www.tl.mll.		
-30.0							Average
-40.0							
-50.0							
-60.0							Max Hold
-70.0							Μάλ Ποιά
Center 5.32 GHz #Res BW 390 kHz	VB	W 4 MHz			n 50 MHz		
#Res BW 390 KHZ	VD			SWE	ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	28.4	dBm			
	437 MHz						Detector
19							Peak
Transmit Freq Error	-2.145 kHz	% of OBW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	35.39 MHz	x dB	-26.	00 dB			
MSG			STATUS	3			

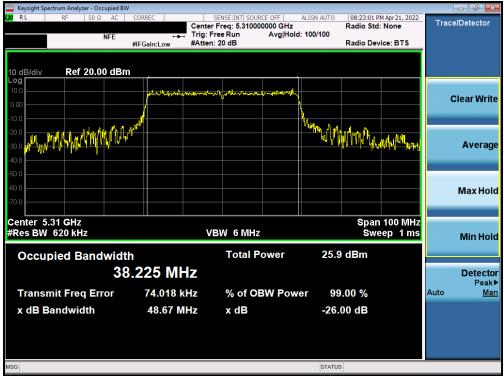
Plot 7-34. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 64)



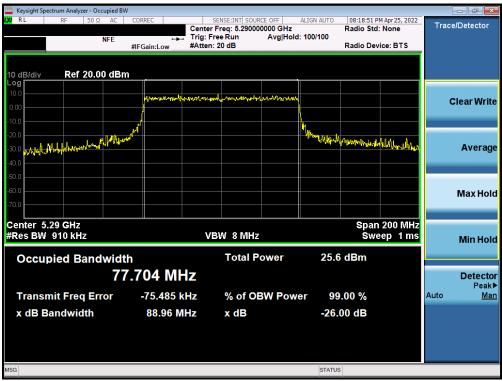
Plot 7-35. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 54)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 36 of 309	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device		
L	•		V 9.0 02/01/2019	





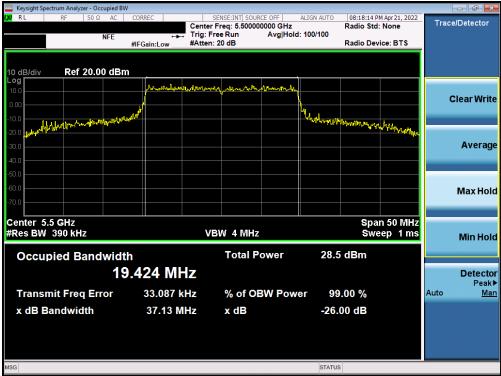
Plot 7-36. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 62)



Plot 7-37. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2A) - Ch. 58)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Daga 27 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 37 of 309
		-	V 9 0 02/01/2019





Plot 7-38. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 100)



Plot 7-39. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 120)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 28 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 38 of 309
<u></u>	-		V 9.0 02/01/2019





Plot 7-40. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 144)



Plot 7-41. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 102)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 39 of 309
<u></u>			V 9.0 02/01/2019



Keysight Spectrum Analyzer - Occupie	ed BW								
<b>LXI RL</b> RF 50 Ω A	C CORREC		NSE:INT SOUR		ALIGN AUTO	08:23:50 P Radio Std	M Apr 21, 2022	Trac	e/Detector
NFE		Trig: Fre			l: 100/100	Radio Sta	None		
NFE	#IFGain:Low	#Atten: 2				Radio Dev	rice: BTS		
10 dB/div Ref 20.00 d	Bm								
10.0	- when the second	and have a star	Ary New Years	withward					
0.00	<mark>/</mark>								Clear Write
-10.0	n na star				Vite wort	<b>,</b>			
-10.0 -20.0	New Contraction of Co				i versingen	whether	MMUMMUM		
-30.0							1 10 11 10		Average
									Average
-40.0									
-50.0									
-60.0									Max Hold
-70.0									maxinoita
Center 5.59 GHz							100 MHz		
#Res BW 750 kHz		VB	N 8 MHz			Swe	ep 1 ms		Min Hold
	-141-		Total P		27.0	dBm			
Occupied Bandwi			TOLAT	ower	21.9	uыш			
	38.563 N	IHz							Detector
	100 57					00.04			Peak►
Transmit Freq Error	129.57	kHz	% of OE	3W Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	66.19	MHz	x dB		-26.	00 dB			
MSG					STATUS				

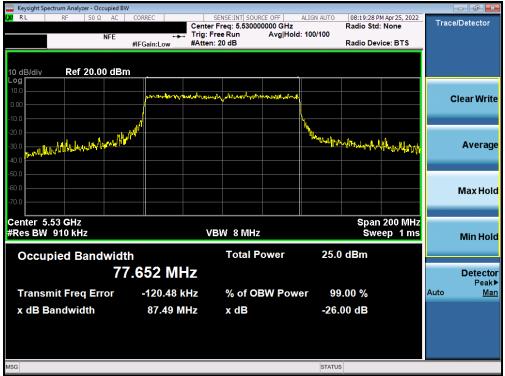
Plot 7-42. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 118)



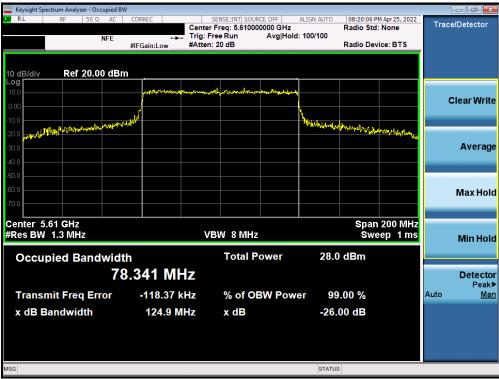
Plot 7-43. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 142)

FCC ID: C3K1997			Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 40 of 309
			V 9.0 02/01/2019





Plot 7-44. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 106)



Plot 7-45. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 122)

FCC ID: C3K1997			Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 41 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 41 of 309
			V 9.0 02/01/2019



Keysight Spectrum Analyzer - Occupied BW	/				
XX RL RF 50 Ω AC		SENSE:INT SOURCE OFF	ALIGN AUTO 08:20:37 F Radio Sto	PM Apr 25, 2022	Trace/Detector
NFE	🛶 Trig: F	ree Run Avg Holo	d: 100/100		
	#IFGain:Low #Atten	: 20 dB	Radio De	vice: BTS	
10 dB/div Ref 20.00 dBm Log	n				
10.0	14 Martin Sugar	the for the second and the second an			
0.00			\		Clear Write
-10.0	. N		<u>k</u>		
-20.0	MH.		"Muniper and mark mark the start	Walliman and	
-30.0				an and a far	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					wax noid
Center 5.69 GHz			Spar	n 200 MHz	
#Res BW 1 MHz	VI	BW 8 MHz	SW	eep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	27.3 dBm		
					Detector
10					Detector Peak►
Transmit Freq Error	-153.92 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	123.2 MHz	x dB	-26.00 dB		
MSG			STATUS		
			0		

Plot 7-46. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 42 of 309
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Fage 42 01 309
			V 0 0 02/01/2010



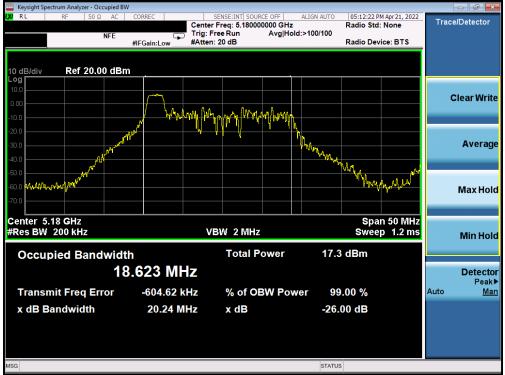
## SISO Antenna-2 26dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	26T	MCS0	20.24
	5200	40	ax (20MHz)	26T	MCS0	20.36
l 1	5240	48	ax (20MHz)	26T	MCS0	20.33
Band 1	5190	38	ax (40MHz)	26T	MCS0	40.56
_	5230	46	ax (40MHz)	26T	MCS0	40.50
	5210	42	ax (80MHz)	26T	MCS0	82.61
Band 1/2A	5210	42	ax (160MHz) L	26T	MCS0	166.90
Ba 1/:	5250	50	ax (160MHz) U	26T	MCS0	159.30
	5260	52	ax (20MHz)	26T	MCS0	20.05
4	5280	56	ax (20MHz)	26T	MCS0	39.85
d 2/	5320	64	ax (20MHz)	26T	MCS0	20.67
Band 2A	5270	54	ax (40MHz)	26T	MCS0	40.05
ш	5310	62	ax (40MHz)	26T	MCS0	40.48
	5290	58	ax (80MHz)	26T	MCS0	80.76
	5500	100	ax (20MHz)	26T	MCS0	18.07
	5600	120	ax (20MHz)	26T	MCS0	18.56
	5720	144	ax (20MHz)	26T	MCS0	20.29
	5510	102	ax (40MHz)	26T	MCS0	40.78
2C	5590	118	ax (40MHz)	26T	MCS0	40.48
Band 2C	5710	142	ax (40MHz)	26T	MCS0	40.53
Ba	5530	106	ax (80MHz)	26T	MCS0	82.86
	5610	122	ax (80MHz)	26T	MCS0	77.90
	5690	138	ax (80MHz)	26T	MCS0	80.83
	5570	114	ax (160MHz) L	26T	MCS0	166.90
	5570	114	ax (160MHz) U	26T	MCS0	159.30

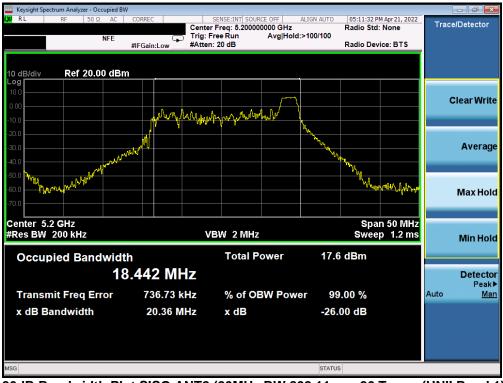
Table 7-4. Conducted Bandwidth Measurements SISO ANT2 (26 Tones)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 43 of 309
			V 9 0 02/01/2019





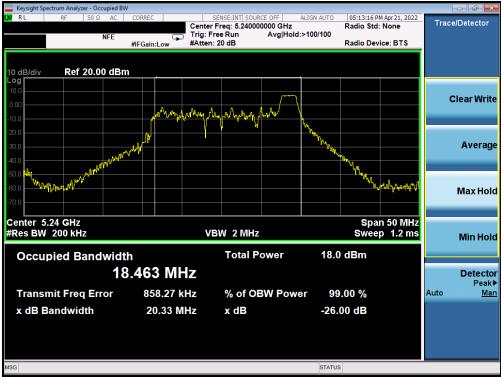
Plot 7-47. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



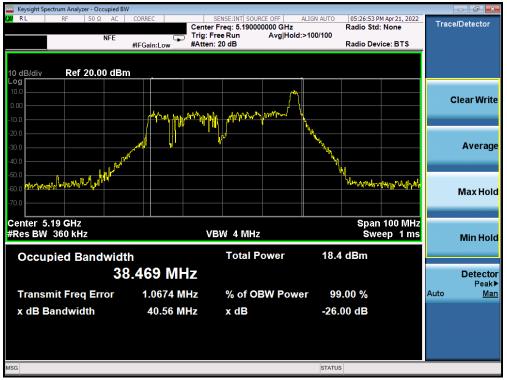
Plot 7-48. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 40)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 44 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 44 of 309
			V 9 0 02/01/2019





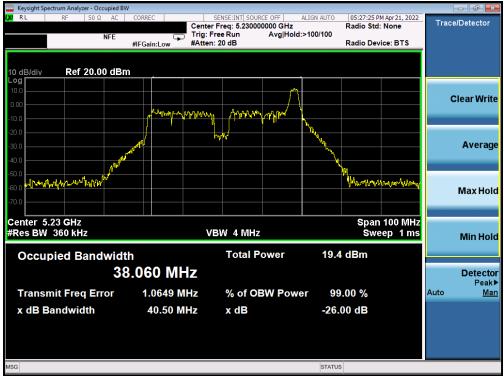
Plot 7-49. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



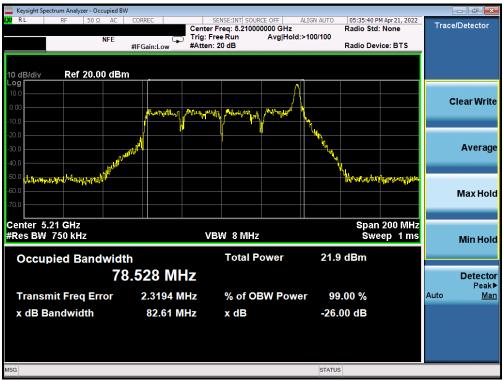
Plot 7-50. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 38)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 45 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 45 of 309
<u></u>			V 9.0 02/01/2019





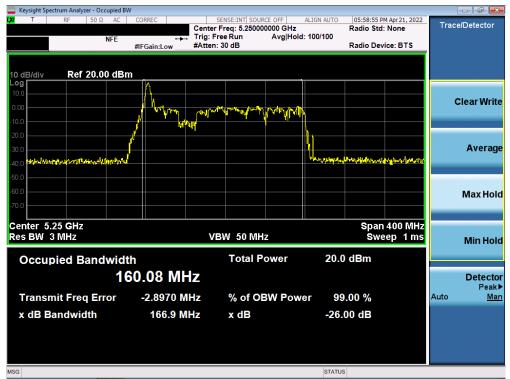
Plot 7-51. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



Plot 7-52. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 42)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 46 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 46 of 309
			V 9 0 02/01/2019





Plot 7-53. 26dB Bandwidth Plot SISO ANT2 (160MHz (L) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)



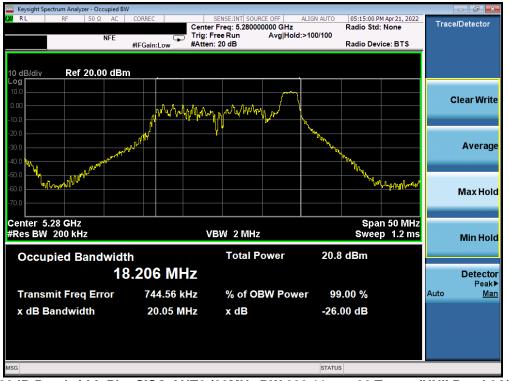
Plot 7-54. 26dB Bandwidth Plot SISO ANT2 (160MHz (L) BW 802.11ax – 26 Tones (UNII Band 1/2A) – Ch. 50)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Da an 17 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 47 of 309
			V 9.0 02/01/2019





Plot 7-55. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



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

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 49 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 48 of 309
	•		V 9.0 02/01/2019





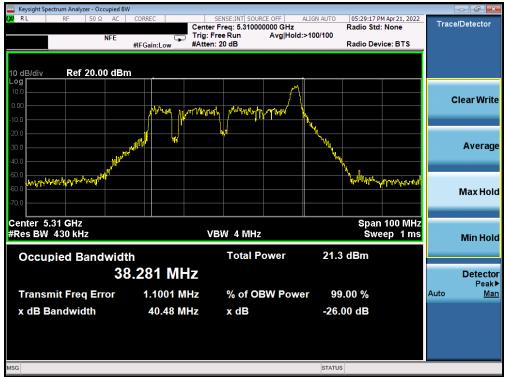
Plot 7-57. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



Plot 7-58. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 54)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 49 of 309
	•		V 9.0 02/01/2019





Plot 7-59. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 62)



Plot 7-60. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 58)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 50 of 309
		·	V 9 0 02/01/2019





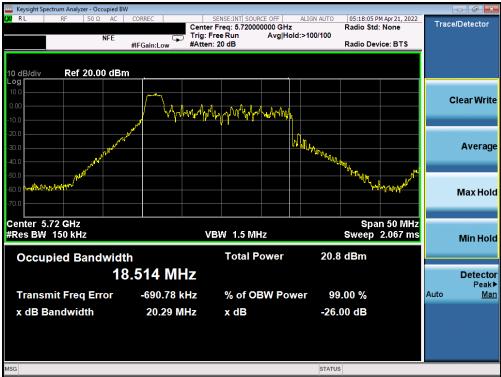
Plot 7-61. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



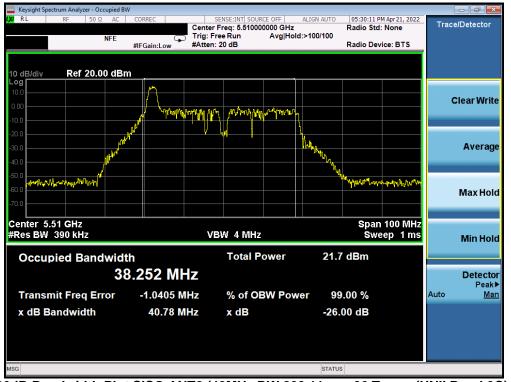
Plot 7-62. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 51 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 51 of 309
		-	V 9 0 02/01/2019





Plot 7-63. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 144)



Plot 7-64. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 102)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 50 at 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 52 of 309
	•		V 9.0 02/01/2019





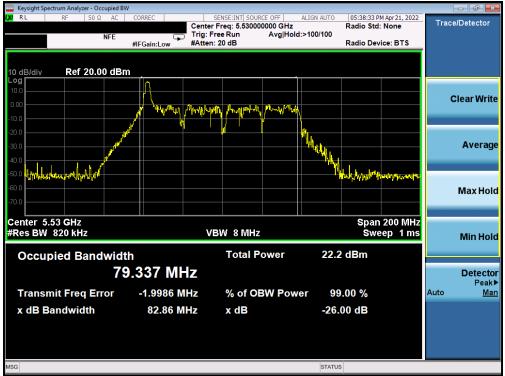
Plot 7-65. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 118)



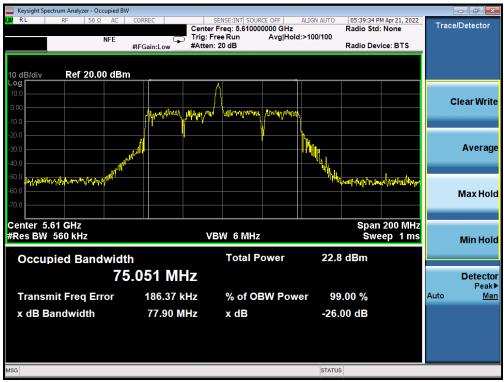
Plot 7-66. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 142)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 52 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 53 of 309
		-	V 9 0 02/01/2019





Plot 7-67. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 106)



Plot 7-68. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 122)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 54 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 54 of 309
			V 9 0 02/01/2019





Plot 7-69. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 138)



Plot 7-70. 26dB Bandwidth Plot SISO ANT2 (160MHz (L) BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 114)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage FE of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 55 of 309
	•		V 9.0 02/01/2019





Plot 7-71. 26dB Bandwidth Plot SISO ANT2 (160MHz (U) BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 114)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage FC of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 56 of 309
		·	V 9.0 02/01/2019



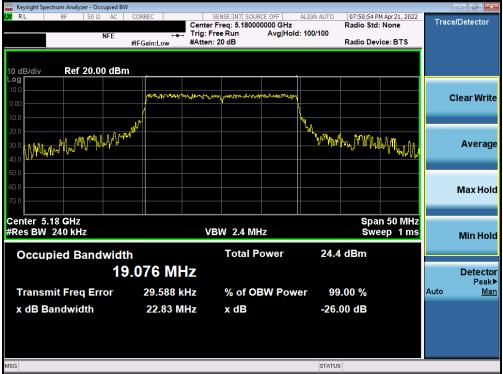
## SISO Antenna-2 26dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	242T	MCS0	22.83
	5200	40	ax (20MHz)	242T	MCS0	22.52
Band 1	5240	48	ax (20MHz)	242T	MCS0	22.96
Bar	5190	38	ax (40MHz)	484T	MCS0	42.97
	5230	46	ax (40MHz)	484T	MCS0	44.11
	5210	42	ax (80MHz)	996T	MCS0	86.08
	5260	52	ax (20MHz)	242T	MCS0	43.81
	5280	56	ax (20MHz)	242T	MCS0	41.02
Band 2A	5320	64	ax (20MHz)	242T	MCS0	41.34
Ban	5270	54	ax (40MHz)	484T	MCS0	84.83
	5310	62	ax (40MHz)	484T	MCS0	48.99
	5290	58	ax (80MHz)	996T	MCS0	88.18
	5500	100	ax (20MHz)	242T	MCS0	39.29
	5600	120	ax (20MHz)	242T	MCS0	44.73
	5720	144	ax (20MHz)	242T	MCS0	42.08
ပ္ရ	5510	102	ax (40MHz)	484T	MCS0	43.90
Band 2C	5590	118	ax (40MHz)	484T	MCS0	77.44
ä	5710	142	ax (40MHz)	484T	MCS0	64.65
	5530	106	ax (80MHz)	996T	MCS0	86.86
	5610	122	ax (80MHz)	996T	MCS0	115.30
	5690	138	ax (80MHz)	996T	MCS0	105.90

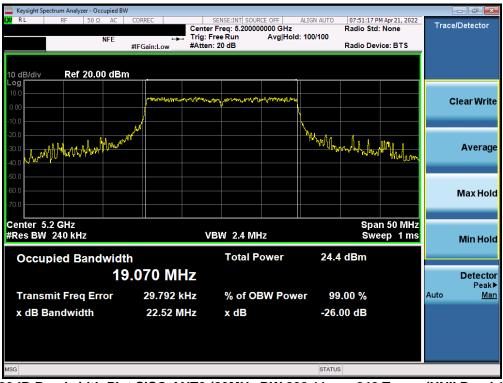
Table 7-5. Conducted Bandwidth Measurements SISO ANT2 (Full Tones)

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dago 57 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 57 of 309	
			V 0 0 02/01/2010	





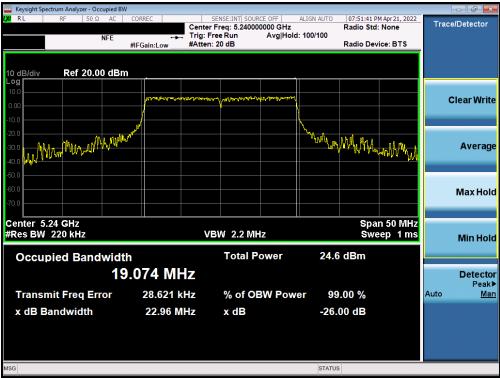
Plot 7-72. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 36)



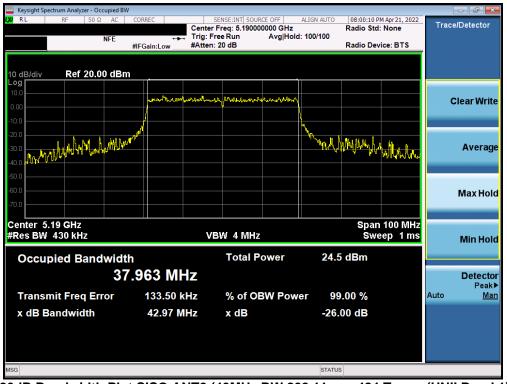
Plot 7-73. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 40)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Dage 59 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 58 of 309
			V 9.0 02/01/2019





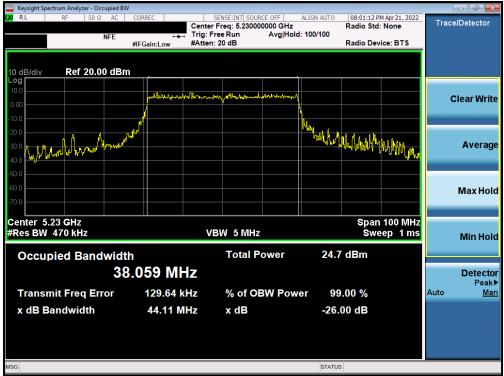
Plot 7-74. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 48)



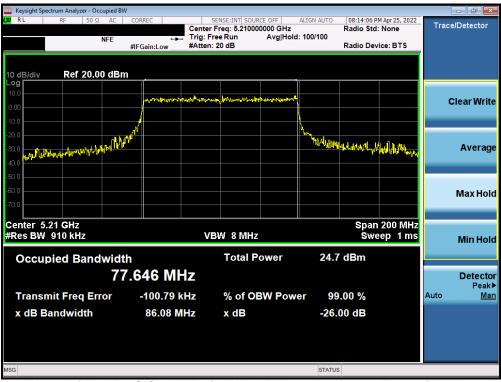
Plot 7-75. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 38)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage E0 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 59 of 309	
<u></u>	-		V 9.0 02/01/2019	





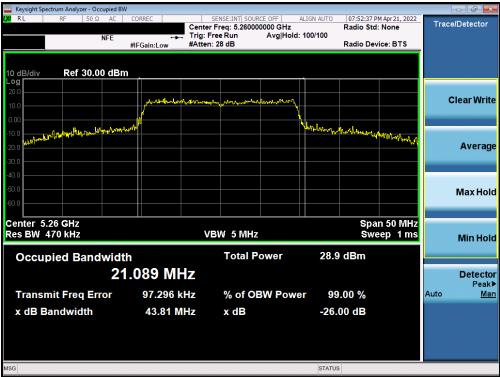
Plot 7-76. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 46)



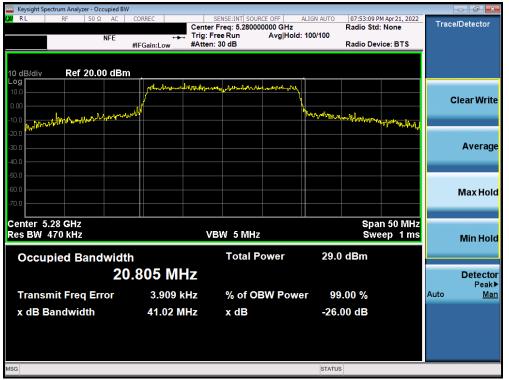
Plot 7-77. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 1) - Ch. 42)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage 60 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 60 of 309	
	•	-	V 9.0 02/01/2019	





Plot 7-78. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)



Plot 7-79. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 56)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage 61 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 61 of 309	
<u></u>			V 9.0 02/01/2019	



Keysight Spectrum Analyzer - Oc										
<b>LXI</b> RL RF 50 Ω	2 AC COR	REC		NSE:INT SOUR		ALIGN AUTO	07:55:56 P Radio Std	M Apr 21, 2022	Trac	e/Detector
	NFE			e Run	Avg Hold	: 100/100	Radio Dev	In DTC		
	#IF(	Gain:Low	#Atten: 2				Radio Dev	ICE: DIS		
10 dB/div Ref 20.0	0 dBm									
Log 10.0		1 m Marson	-		mahar Morth					
0.00										Clear Write
	a da a sura					4m los -	ь.П. I.			
-10.0 -20.0 4//14/mhale / 10//14/	Constant of All - 1					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	a manufacture of the second	hter way and		
-30.0										Average
-40.0										monugo
-50.0										
-60.0										
-70.0										Max Hold
-70.0										
Center 5.32 GHz								n 50 MHz		
#Res BW 390 kHz			VB	N/4MHz			SWG	ep 1 ms		Min Hold
Occupied Band	lwidth			Total P	ower	28.3	dBm			
		49 MI	47							Detector
	10.0									Peak▶
Transmit Freq Er	ror	73.910	kHz	% of OE	SW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth		41.34 N	٨Hz	x dB		-26.	00 dB			
MSG						STATUS	\$			

Plot 7-80. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 64)



Plot 7-81. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 54)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage 62 of 200	
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 62 of 309	
	•		V 9.0 02/01/2019	





Plot 7-82. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 62)



Plot 7-83. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 2A) - Ch. 58)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Daga 62 of 200
1M2204040049-16-R2.C3K	3/14/2022-8/18/2022	Portable Computing Device	Page 63 of 309
			V 9 0 02/01/2019