

PCTEST

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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: 04/12/2021 – 06/04/2021 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M2107290086-12.A3L

FCC ID:

A3LSMF711U1

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: Frequency Range: Modulation Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-F711U SM-F711U1 Portable Handset 5180 – 5825MHz OFDMA Unlicensed National Information Infrastructure (UNII) Part 15 Subpart E (15.407) ANSI C63.10-2013, KDB 789033 D02 v02r01, KDB 648474 D03 v01r04, 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



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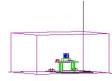


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UNII Band E	Channel Bandwidth (MHz)	Tx Frequency (MHz)	Max. Power	Max. Power		
			(mW)	(dBm)	Max. Power (mW)	Max. Power (dBm)
1		5180 - 5240	29.717	14.73	60.407	17.81
2A	20	5260 - 5320	29.512	14.70	59.271	17.73
2C	20	5500 - 5720	30.479	14.84	60.399	17.81
3		5745 - 5825	30.832	14.89	59.130	17.72
1		5190 - 5230	30.903	14.90	61.473	17.89
2A	40	5270 - 5310	31.405	14.97	61.952	17.92
2C	40	5510 - 5710	29.107	14.64	61.243	17.87
3		5755 - 5795	28.840	14.60	59.040	17.71
1		5210	31.477	14.98	62.380	17.95
2A	80	5290	30.974	14.91	62.029	17.93
2C		5530 - 5690	31.405	14.97	62.165	17.94
3	-	5775	31.261	14.95	61.889	17.92

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 17025-2017 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.
- 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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PRODUCT INFORMATION 2.0

2.1 **Equipment Description**

The Equipment Under Test (EUT) is the Samsung Portable Handset FCC ID: A3LSMF711U1. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

Test Device Serial No.: 0148M, 0135M, 0189M, 0837M, 0843M, 0174M, 0863M, 0677M, 0209M, 0059S, 0585S, 1600S

2.2 **Device Capabilities**

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n71, n12, n5, n66, n2, n25, n30, n41, n77, n260, n261), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

	Band 1		Band 2A			Band 2C	_		Band 3
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	С	h.	Frequency (MHz)		Ch.	Frequency (MHz)
36	5180	52	5260	10	00	5500	Γ	149	5745
:	:	:	:		:	:		:	:
42	5210	56	5280	1:	20	5600		157	5785
:	:	:	:		:	:		:	:
48	5240	64	5320	14	44	5720		165	5825
	Τ.	040	00 44 aux (00 MUL-) E			/ Channel Oneret		-	

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

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

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

	Band 2C
Ch.	Frequency (MHz)
102	5510
•	:
118	5590
:	
142	5710

D	2	n	Ч	2
D	а	n	u	

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
						:			
					138	5690			

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

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Notes:

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	Channel	Tone	Duty Cycle
			26T	99.7
802.11ax	1	36	52T	99.7
NII RU	1	50	106T	99.7
			242T	99.7
			26T	99.7
802.11ax	MIMO CDD	36	52T	99.7
NII RU		50	106T	99.7
			242T	99.7
			26T	99.7
802.11ax			52T	99.7
NII RU	1	38	106T	99.7
			242T	99.7
			484T	99.7
	MIMO CDD		26T	99.7
802.11ax		38	52T	99.7
NII RU			106T	99.7
			242T	99.7
			484T	99.7
			26T	99.7
			52T	99.7
802.11ax	1	42	106T	99.6
NII RU	T	42	242T	99.7
			484T	99.7
			996T	99.7
			26T	99.6
			52T	99.7
802.11ax	MIMO CDD	42	106T	99.5
NII RU		42	242T	99.7
			484T	99.7
			996T	99.6

Table 2-4. Measured Duty Cycles

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

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

Table 2-5. Frequency / Channel Operations

 \checkmark = Support ; \varkappa = NOT Support

SDM = Spatial Diversity Multiplexing – MIMO function

2.3 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)
5.20	-6.6	-6.1
5.30	-8.1	-6.3
5.50	-9.8	-7.3
5.80	-7.7	-8.0

Table 2-6. 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.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

This device supports two configurations: one is with screen open, and one is with screen closed. Both configurations are tested, and the worst case radiated emissions data is shown in this report.

2.5 Software and Firmware

The test was conducted with firmware version 711USQU0AUEF 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 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).

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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
-	WL25-1	Conducted Cable Set (25GHz)	2/23/2021	Annual	2/23/2022	WL25-1
-	WL40-1	WLAN Cable Set (40GHz)	2/23/2021	Annual	2/23/2022	WL40-1
-	WL25-2	WLAN Cable Set (25GHz)	2/23/2021	Annual	2/23/2022	WL25-2
-	WL25-3	Conducted Cable Set (25GHz)	3/12/2021	Annual	3/12/2022	WL25-3
-	WL40-2	WLAN Cable Set (40GHz)	3/12/2021	Annual	3/12/2022	WL40-2
Anritsu	ML2495A	Power Meter	3/4/2021	Annual	3/4/2022	1328004
Anritsu	MA2411B	Pulse Power Sensor	10/19/2020	Annual	10/19/2021	1339026
Anritsu	M\$46322A	Vector Network Analyzer	11/6/2020	Annual	11/6/2021	1521001
Anritsu	36585K-2F	Precision Autocal 2-Port	10/24/2020	Annual	10/24/2021	1628014
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	8/7/2018	Triennial	8/7/2021	9203-2178
Espec	ESX-2CA	Environmental Chamber	8/27/2020	Biennial	8/27/2022	17620
ETS-Lindgren	3816/2NM	LISN	7/9/2020	Biennial	7/9/2022	114451
ETS-Lindgren	3115	Double Ridged Guide Horn 750MHz - 18GHz	3/12/2020	Biennial	3/12/2022	150693
Keysight Technologies	N9020A	MXA Signal Analyzer	8/14/2020	Annual	8/14/2021	U\$46470561
Keysight Technologies	N9038A	MXE EMI Receiver	8/11/2020	Annual	8/11/2021	MY51210133
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/17/2020	Annual	8/17/2021	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	9/22/2020	Annual	9/22/2021	MY54500644
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	2/25/2021	Annual	2/25/2022	NMLC-2
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	7/15/2020	Annual	7/15/2021	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/10/2020	Annual	8/10/2021	103200
Solar Electronics	8012-50-R-24-BNC	Line Impedance Stabilization Network	10/1/2019	Biennial	10/1/2021	310233
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511
Sunol Science	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.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMF711U1
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.
- 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.
- 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

- 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.

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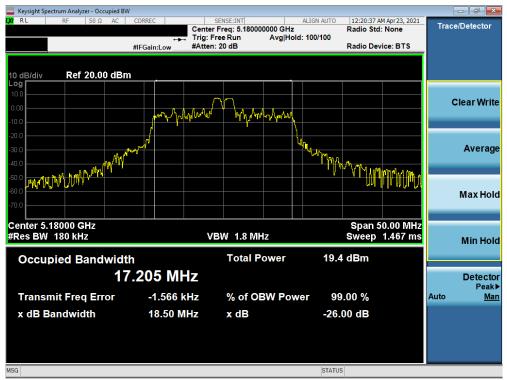
SISO Antenna-1 26 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	26T	MCS0	18.50
_	5200	40	ax (20MHz)	26T	MCS0	18.65
p L	5240	48	ax (20MHz)	26T	MCS0	18.22
Band 1	5190	38	ax (40MHz)	26T	MCS0	37.94
	5230	46	ax (40MHz)	26T	MCS0	39.86
	5210	42	ax (80MHz)	26T	MCS0	78.10
	5260	52	ax (20MHz)	26T	MCS0	19.92
∢	5280	56	ax (20MHz)	26T	MCS0	19.78
d 2A	5320	64	ax (20MHz)	26T	MCS0	19.90
Band	5270	54	ax (40MHz)	26T	MCS0	37.94
ш	5310	62	ax (40MHz)	26T	MCS0	37.87
	5290	58	ax (80MHz)	26T	MCS0	78.04
	5500	100	ax (20MHz)	26T	MCS0	18.06
	5600	120	ax (20MHz)	26T	MCS0	18.20
	5720	144	ax (20MHz)	26T	MCS0	19.45
5C	5510	102	ax (40MHz)	26T	MCS0	39.46
Band	5590	118	ax (40MHz)	26T	MCS0	39.70
Ba	5710	142	ax (40MHz)	26T	MCS0	38.06
	5530	106	ax (80MHz)	26T	MCS0	81.47
	5610	122	ax (80MHz)	26T	MCS0	80.67
	5690	138	ax (80MHz)	26T	MCS0	77.25

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-1. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



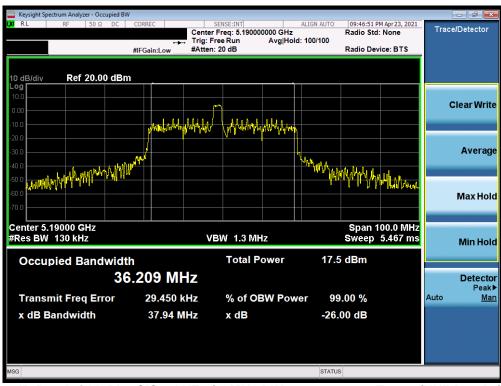
Plot 7-2. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 45 at 040
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Plot 7-3. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



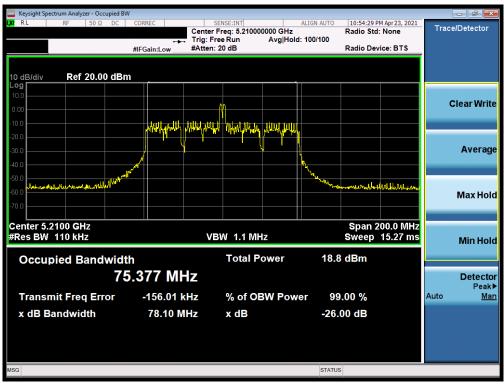
Plot 7-4. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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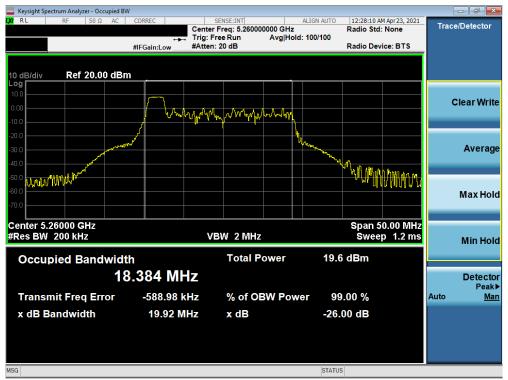
Plot 7-5. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



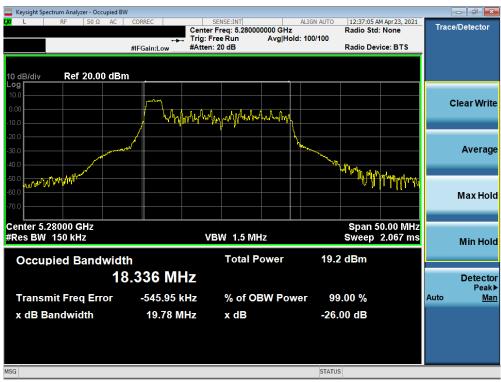
Plot 7-6. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 47 - 6040	
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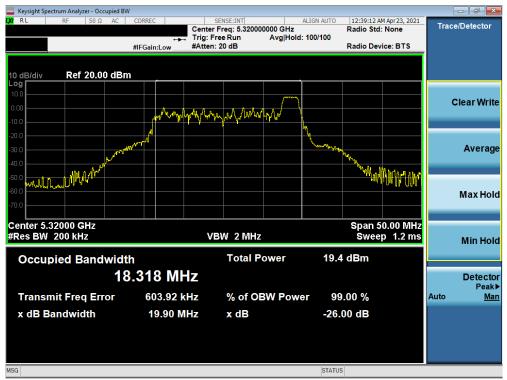
Plot 7-7. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



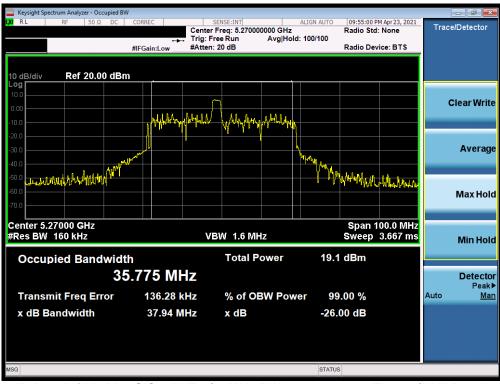
Plot 7-8. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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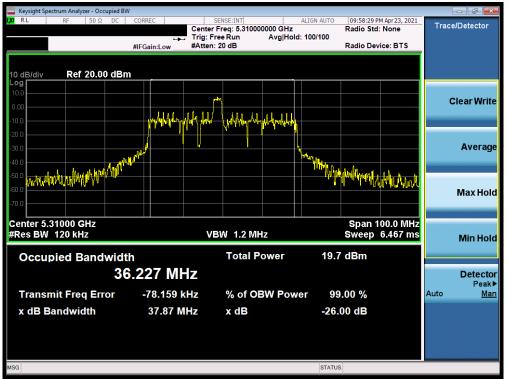
Plot 7-9. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



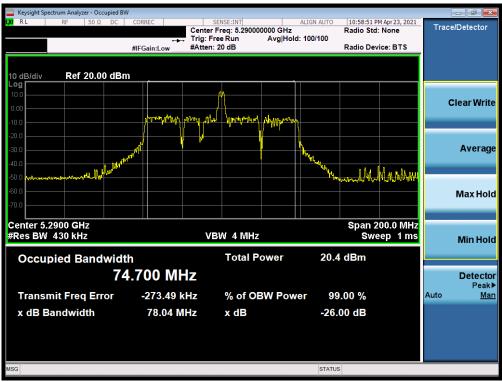
Plot 7-10. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 54)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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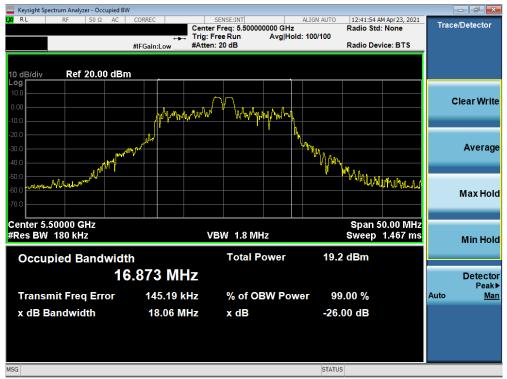
Plot 7-11. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)



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

FCC ID: A3LSMF711U1	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
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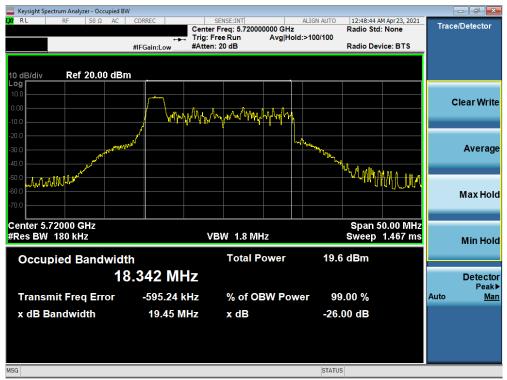
Plot 7-13. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



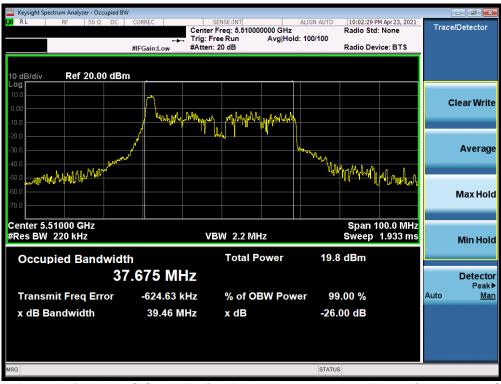
Plot 7-14. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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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)

FCC ID: A3LSMF711U1	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
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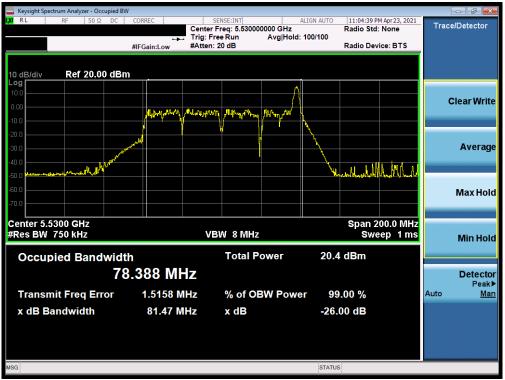
Plot 7-17. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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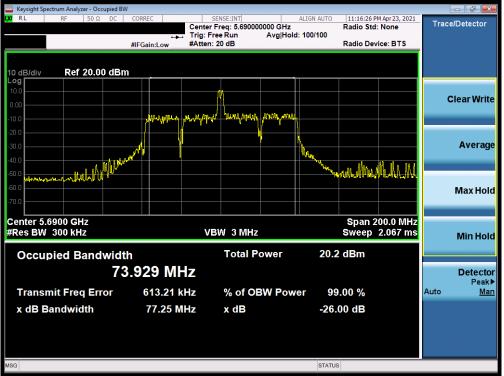
Plot 7-19. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dega 24 of 246		
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Plot 7-21. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMF711U1	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	242T	MCS0	33.08
	5200	40	ax (20MHz)	242T	MCS0	29.47
p L	5240	48	ax (20MHz)	242T	MCS0	28.56
Band 1	5190	38	ax (40MHz)	484T	MCS0	41.35
	5230	46	ax (40MHz)	484T	MCS0	44.53
	5210	42	ax (80MHz)	996T	MCS0	86.07
	5260	52	ax (20MHz)	242T	MCS0	24.44
∢	5280	56	ax (20MHz)	242T	MCS0	25.63
d 2	5320	64	ax (20MHz)	242T	MCS0	22.77
Band 2A	5270	54	ax (40MHz)	484T	MCS0	48.37
ш	5310	62	ax (40MHz)	484T	MCS0	48.17
	5290	58	ax (80MHz)	996T	MCS0	89.46
	5500	100	ax (20MHz)	242T	MCS0	24.28
	5600	120	ax (20MHz)	242T	MCS0	21.66
	5720	144	ax (20MHz)	242T	MCS0	25.46
5C	5510	102	ax (40MHz)	484T	MCS0	42.36
Band 2C	5590	118	ax (40MHz)	484T	MCS0	43.89
Ba	5710	142	ax (40MHz)	484T	MCS0	43.94
	5530	106	ax (80MHz)	996T	MCS0	84.41
	5610	122	ax (80MHz)	996T	MCS0	89.33
	5690	138	ax (80MHz)	996T	MCS0	98.75

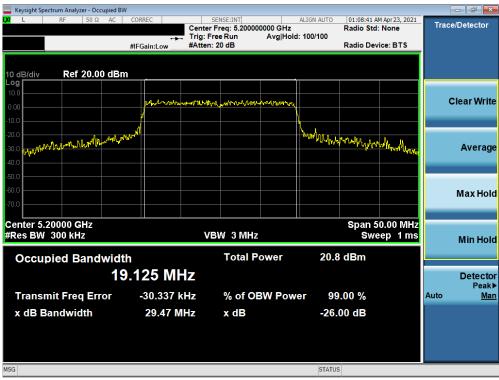
Table 7-3. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied BW									- 6 ×
X/RL RF 50Ω AC	CORREC		ISE:INT		ALIGN AUTO		M Apr 23, 2021	Trac	e/Detector
			eq: 5.18000		d: 100/100	Radio Std	: None	mac	
	#IFGain:Low	#Atten: 20		Avginoid	. 100/100	Radio Dev	rice: BTS		
10 dB/div Ref 20.00 dBm									
10.0									
	month	whith a production	^p ananalonanalon	www.wh					Clear Write
0.00					1				
-10.0					\				
-20.0 -30.0 m/m/ml/whin m/mm/h	~~~				White the second	han yunya			
-30.0 mlph he win which a second					1. 4. 44	ዀ፝፞፞ኯኯኯኯኯ	Will Wink tomore		Average
-40.0									Ŭ
-50.0									
-60.0									Max Hold
-70.0									
Center 5.18000 GHz							0.00 MHz		
#Res BW 300 kHz		VBV	V 3 MHz			Swe	eep 1 ms		Min Hold
									minitiona
Occupied Bandwidth	ו		Total P	ower	21.7	dBm			
19	.114 MH	7							Detector
19		12							Delector Peak▶
Transmit Freq Error	-37.233 k	Hz	% of OE	SW Pow	er <u>99</u>	.00 %		Auto	Man
-									
x dB Bandwidth	33.08 M	HZ	x dB		-26.	00 dB			
MSG					STATUS				

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



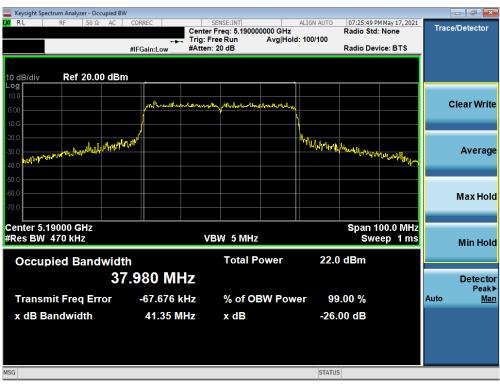
Plot 7-23. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
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🔤 Keysight Spectrum Analyzer - Occupied BW					
LXIRL RF 50Ω AC CON		SENSE:INT r Freq: 5.240000000 GHz Free Run Avg Hol	ALIGN AUTO 01:07:08 Radio St d: 100/100	AM Apr 23, 2021 d: None	Trace/Detector
#IF		n: 20 dB		evice: BTS	
10 dB/div Ref 20.00 dBm					
Log 10.0					
0.00	John - Martin Contraction	and and an and and and the second	^		Clear Write
-10.0	/				
			he de al a		
-20.0 -30.0 with how to Wind Ale with Wind			Ward Ward	more	Average
-40.0				The Theory	Average
-50.0					
-60.0					Max Hold
-70.0					
Center 5.24000 GHz			Span	50.00 MHz	
#Res BW 270 kHz	V	/BW 2.7 MHz		/eep 1 ms	Min Hold
					Minifiora
Occupied Bandwidth		Total Power	22.1 dBm		
19.0	60 MHz				Detector Peak▶
Transmit Freq Error	-5.176 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	28.56 MHz	x dB	-26.00 dB		
MSG			STATUS		

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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Keysight Spectrum Analyzer - Occupied BW							
🗶 RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO		M May 17, 2021	Trac	e/Detector
		Center Freq: 5.23000 Trig: Free Run	Avg Hold: 100/100	Radio Std	: None		0.20100101
		#Atten: 20 dB	Aughtera. Teerree	Radio Dev	rice: BTS		
10 dB/div Ref 20.00 dBm							
10.0							
0.00	entromenter	underman personality	homethere				Clear Write
		ľ	l N				
-10.0							
-20.0	N			1			
-20.0 -30.0 -40.0 makes the house the with the fight of the state				~4\M _{ber} lown			Average
-40.0 Mala Mar 10 - 40.0					When the little		
-50.0							
-60.0							Max Hold
-70.0							
Center 5.23000 GHz				Enon 1	00.0 MHz		
#Res BW 430 kHz		VBW 4 MHz			ep 1 ms		
TRes Buy 430 RHZ				OWG	sep rins		Min Hold
Occupied Bandwidth		Total P	ower 22	0 dBm			
37.	.976 MH	Ζ					Detector
Transmit Frag Free	67 474 kl	- % <u></u>		0 00 %		Auto	Peak▶ Man
Transmit Freq Error	-67.471 kH	12 % of O	BW Power 9	9.00 %		Auto	iwan
x dB Bandwidth	44.53 MH	z xdB	-26	.00 dB			
MSG			STATU	JS			

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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Keysight Spectrum Analyzer - Occupied BW					
LX/ RL RF 50Ω DC C		SENSE:INT Freg: 5.260000000 GHz		09:03:34 PM Apr 23, 2021 adio Std: None	Trace/Detector
			ld: 100/100	adio Stu. None	
	IFGain:Low #Atten:	20 dB	R	adio Device: BTS	
10 dB/div Ref 20.00 dBm					
Log 10.0					
0.00	Mary marker and	M why and the share want	~		Clear Write
-10.0			l.		
-20.0 -30.0 -40.0 MM Mark Mark Mark Mark	1		In the second		
-30.0 - Marthan Anal Andrew UMU			~~~~	Maring Manager and Marine and Marin	Average
-40.0				" ""	
-50.0					
-60.0					
-70.0					Max Hold
-70.0					
Center 5.26000 GHz				Span 50.00 MHz	
#Res BW 220 kHz	V	3W 2.2 MHz		Sweep 1 ms	Min Hold
					minitiona
Occupied Bandwidth		Total Power	21.2 d	Bm	
19	019 MHz				Detector
10.					Peak►
Transmit Freq Error	-34.310 kHz	% of OBW Pov	ver 99.0	0 %	Auto <u>Man</u>
x dB Bandwidth	24.44 MHz	x dB	-26.00	dB	
	24.44 10112	A UD	-20.00	u D	
MSG			STATUS		

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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🔤 Keysight Spectrum											- đ ×
L <mark>XI</mark> RL F	RF 50 Ω	DC COR	REC		NSE:INT reg: 5.32000	0000 GHz	ALIGN AUTO	09:01:44 P Radio Std	M Apr 23, 2021	Trac	e/Detector
			·→	Trig: Free	e Run		d: 100/100				
		#IFG	ain:Low	#Atten: 2	0 dB			Radio Dev	rice: BTS		
10 dB/div	Ref 20.0	0 dBm									
Log 10.0											
0.00			Mary Presenter	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	www.hwh						Clear Write
-10.0			1	'	1		l				
		01					5				
-20.0 -30.0 -40.0		Internation in the					White the	qalwqaqqy	٥.		Average
-30.0 abrow might	W	- p. p.						Y U WAY YA	White March		Average
-50.0											
-60.0											Max Hold
-70.0											
Center 5.320								Snan 5	0.00 MHz		
#Res BW 22				VB/	N 2.2 MH	Iz			ep 1 ms		Min Hold
Occupie	d Band	width			Total P	ower	21.0	dBm			
		19.0	46 MI	17							Detector
		10.0									Peak▶
Transmit	Freq Err	ror -	36.276	(Hz	% of O	3W Pow	/er 99	.00 %		Auto	<u>Man</u>
x dB Band	dwidth		22.77 N	IHz	x dB		-26.	00 dB			
MSG							STATUS				
MSG							STATUS				

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager					
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 -4 04 0					
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www.www.com analyzer - Occupied BW							- 6 ×
LXX RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	07:32:43 P Radio Std	M May 17, 2021	Trac	e/Detector
		Frig: Free Run	Avg Hold: 100/100	Radio Sta	None		
		Atten: 20 dB	. .	Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm							
Log							
10.0	the way when	munated munualant					Clear Write
0.00	A all a second s	and second second second	"hereforentilligent			, c	slear write
-10.0			N				
-20.0			W				
-20.0	é.,		A THAT A	h follow why any	Sec. 4 . 11		Average
-SU. UNIN MARINE					W WWW WWW		Average
-40.0							
-50.0							
-60.0							Max Hold
-70.0							
Center 5.31000 GHz					00.0 MHz		
#Res BW 470 kHz		VBW 5 MHz		Swe	ep 1 ms		Min Hold
Occurried Developidat		Total Po	owor 22	2 dBm			
Occupied Bandwidth			JWEI 23.	z udili			
38	.004 MHz						Detector
							Peak▶
Transmit Freq Error	-93.092 kH	z % of OE	3W Power 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	48.17 MH	z xdB	-26	.00 dB			
			1				
MSG			STATU	JS			

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager					
Test Report S/N:	Test Dates:	EUT Type:						
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🔤 Keysight Spectrum Analyzer - Occup	pied BW								- 8 💌
LX/ RL RF 50Ω	DC CORREC		NSE:INT reg: 5.50000	0000 GHz	ALIGN AUTO	09:15:34 P Radio Std	M Apr 23, 2021 : None	Trac	e/Detector
		Trig: Free #Atten: 2	e Run		d: 100/100	Radio Dev	In DTC		
	#IFGain:Low	#Atten: 2				Radio Dev	ice: D I S		
10 IDUI D-6 00 00	dDate								
10 dB/div Ref 20.00									
10.0									Clear Write
0.00	The share	PLAKANTA	and the state of the	maria					Jear write
-10.0									
-20.0	A. Aller				Mylowhy				
-20.0 -30.0 -40.0 NypM/ Whathy Japan App	~~~~~				1- Ur (har and the second second	mont		Average
-40.0							- II. Alahiya		
-50.0									
-60.0									Max Hold
-70.0									
Center 5.50000 GHz						Snan 5	0.00 MHz		
#Res BW 220 kHz		VB\	N 2.2 MH	Iz			ep 1 ms		Min Hold
Occupied Bandw	vidth		Total P	ower	21.1	l dBm			
	19.016 N	Hz							Detector
			0/ - 5 - 5					0	Peak►
Transmit Freq Erro			% of OE	SW Pow	er 95	9.00 %		Auto	Man
x dB Bandwidth	24.28	MHz	x dB		-26.	00 dB			
MSG					STATU	s			

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager					
Test Report S/N:	Test Dates:	EUT Type:	Dage 22 of 210					
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 33 of 216					
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Keysight Spectrum Analyzer -										- # *
LXI RL RF 50	0Ω DC COF	RREC		NSE:INT eq: 5.72000	0000 GHz	ALIGN AUTO	09:19:06 P Radio Std	M Apr 23, 2021	Trac	e/Detector
		••	. Trig: Free	Run		d: 100/100				
	#IF	Gain:Low	#Atten: 2	0 dB			Radio Dev	ice: BTS		
	.00 dBm									
Log 10.0										
		mulun	Mar make	manhonde	milleriten					Clear Write
0.00		1) ,				
-10.0	· · · · ·					Maria				
-20.0 -30.0 Jun 10 -30.0	when when the					n willewy	11h-Rowhytous	Mathing .		
-30.0 plate a serie s								and and a straight		Average
-40.0										
-50.0										
-60.0										Max Hold
-70.0										
10.0										
Center 5.72000 GHz	z						Span 5	0.00 MHz		
#Res BW 510 kHz			VBV	N 5 MHz			Swe	eep 1 ms		Min Hold
	1.1.14			Total P		22.4	dBm			
Occupied Ban				l otal P	ower	22.1	aBm			
	19.3	03 MI	-z							Detector
	_									Peak►
Transmit Freq E	rror	14.689	(HZ	% of OI	BW Pow	'er 99	.00 %		Auto	Man
x dB Bandwidth	1	25.46 N	IHz	x dB		-26.	00 dB			
MSG						STATUS				
mou						STATUS				

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 46 04 0	
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 34 of 216	
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Keysight Spectrum Analyzer - Occupied BV	V				
🗶 L RF 50Ω AC	🛶 Trig:		Radio Std d: 100/100		Trace/Detector
	#IFGain:Low #Atte	en: 20 dB	Radio Dev	vice: BTS	
10 dB/div Ref 20.00 dBn	n				
Log					
10.0					Clear Write
0.00	diantetrante Warmary	grant have a second of the second s			Clear write
-10.0					
-20.0	d dia dia dia dia dia dia dia dia dia di		hin and a second		
	M ^{AY}		and the hashes and and prove		Average
A WHIN WHICH			10.	a why why have	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					
Center 5.59000 GHz				100.0 MHz	
#Res BW 620 kHz		VBW 6 MHz	SW	eep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	20.9 dBm		
			E0.0 dBm		
37	7.990 MHz				Detector Peak▶
Transmit Freq Error	18.191 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	43.89 MHz	x dB	-26.00 dB		
MSG			STATUS		

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 35 of 216	
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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)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dawa 00 at 040	
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 36 of 216	
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Keysight Spectrum Analyzer - Occupied BW								_ đ 🗙
LX RL RF 50Ω DC (CORREC	SENSE:INT ter Freg: 5.69000		ALIGN AUTO	11:42:15 P Radio Std	M Apr 23, 2021	Trac	e/Detector
		: Free Run	Avg Hold	: 100/100	Radio Stu	. None		
	#FGain:Low #Att	en: 20 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm								
Log								
10.0	mound	and the person and the store	mpertrander					Clear Write
0.00								
-10.0	1			<u> </u>				
-20.0	<i>4</i>			Www Wint w	Wyper William Japa			
-20.0 -30.0 Table segural - White water water water					beitelik (ifte)	Way willing		Average
-40.0								
-50.0								
-60.0								
								Max Hold
-70.0								
Center 5.6900 GHz					Span 2	00.0 MHz		
#Res BW 1.1 MHz		VBW 8 MHz				ep 1ms		Min Hold
								minnera
Occupied Bandwidth		Total P	ower	23.3	dBm			
77.	767 MHz							Detector
								Peak▶
Transmit Freq Error	52.556 kHz	% of O	BW Powe	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	98.75 MHz	x dB		-26.0	00 dB			
MSG				STATUS				

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 216
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MIMO 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	18.01
	5200	40	ax (20MHz)	26T	MCS0	18.06
Band 1	5240	48	ax (20MHz)	26T	MCS0	18.38
Bar	5190	38	ax (40MHz)	26T	MCS0	38.13
_	5230	46	ax (40MHz)	26T	MCS0	37.89
	5210	42	ax (80MHz)	26T	MCS0	78.59
	5260	52	ax (20MHz)	26T	MCS0	18.31
∢	5280	56	ax (20MHz)	26T	MCS0	18.29
d 2A	5320	64	ax (20MHz)	26T	MCS0	19.43
Band	5270	54	ax (40MHz)	26T	MCS0	38.04
ш	5310	62	ax (40MHz)	26T	MCS0	38.10
	5290	58	ax (80MHz)	26T	MCS0	78.41
	5500	100	ax (20MHz)	26T	MCS0	18.16
	5600	120	ax (20MHz)	26T	MCS0	18.41
	5720	144	ax (20MHz)	26T	MCS0	19.72
5C	5510	102	ax (40MHz)	26T	MCS0	39.65
Band	5590	118	ax (40MHz)	26T	MCS0	38.21
Ba	5710	142	ax (40MHz)	26T	MCS0	39.90
	5530	106	ax (80MHz)	26T	MCS0	81.99
	5610	122	ax (80MHz)	26T	MCS0	81.80
	5690	138	ax (80MHz)	26T	MCS0	78.50

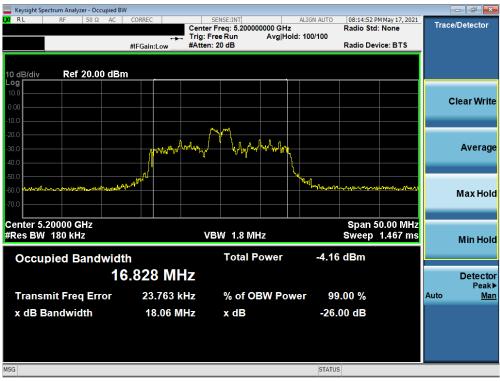
Table 7-4. Conducted Bandwidth Measurements MIMO (26 Tones)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 210	
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Plot 7-43. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



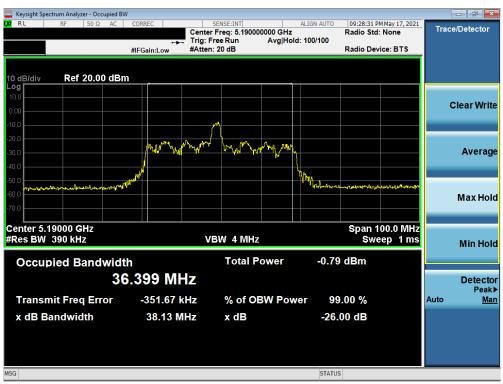
Plot 7-44. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 216	
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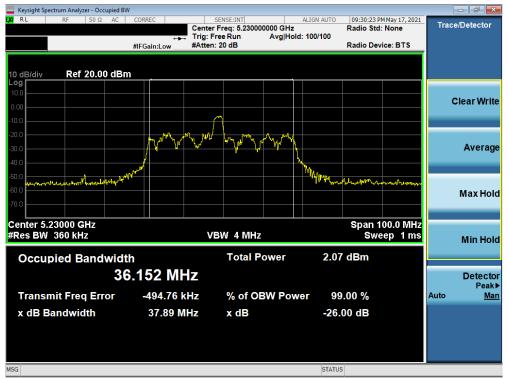
Plot 7-45. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 216
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Plot 7-47. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 44 at 040
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 41 of 216
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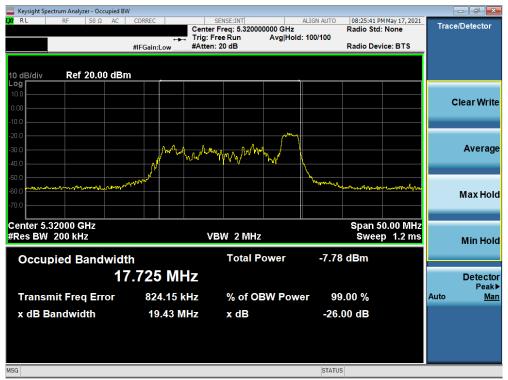
Plot 7-49. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



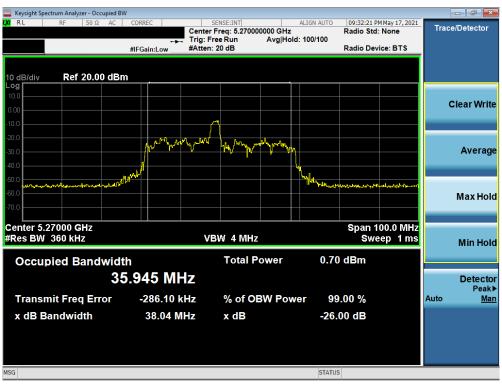
Plot 7-50. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF711U1	PCTEST [®] Proud to be part of ® element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 at 040	
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Plot 7-51. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 42 of 246	
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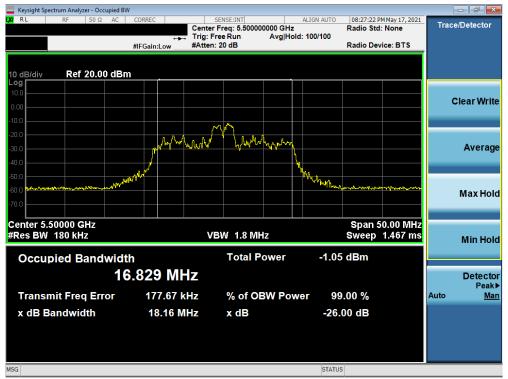
Plot 7-53. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 62)



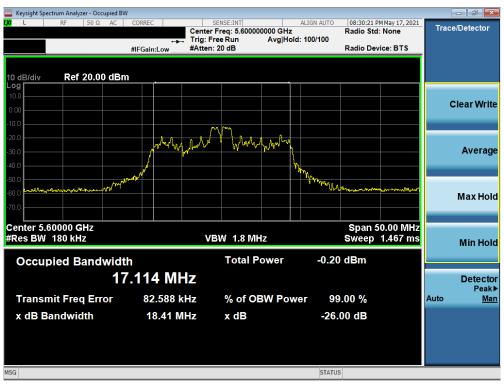
Plot 7-54. 26dB Bandwidth Plot MIMO (80MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dega 44 of 246	
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 44 of 216	
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Plot 7-55. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



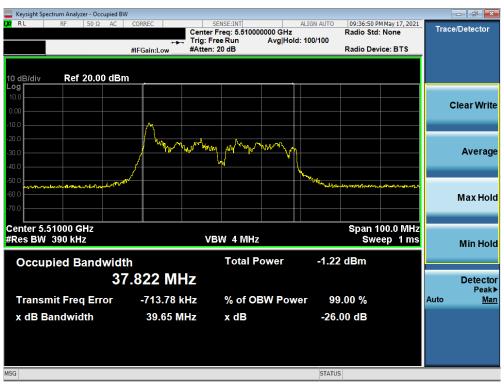
Plot 7-56. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dego 45 of 240	
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Plot 7-57. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 144)



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

FCC ID: A3LSMF711U1	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 46 of 216	
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2 RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO 109:38:55 PM May 17, 2021 Radio Std: None Trig: Free Run AVg Hold: 100/100 Radio Device: BTS Radio Device: BTS Clear Write 10 dB/div Ref 20.00 dBm Align Auto Clear Write Clear Write Clear Write 10 dB/div Ref 20.00 dBm Align Auto A
Trig: Free Run Avg Hold: 100/100 #Atten: 20 dB Radio Device: BTS 10 dB/div Ref 20.00 dBm Log 10 d 10 d
In Common Interview Interview <t< td=""></t<>
Log 100 100 100 100 100 100 100 10
Log 100 100 100 100 100 100 100 10
100 Image: Clear Write 000 Image: Clear Write 100 Image: Clear Write </td
0.00 Image: Clear Write 10.0 Image: Clear Write 20.0 Image: Clear Write 30.0 Image: Clear Write 40.0 Image: Clear Write 50.0 Image: Clear Write 50.0 Image: Clear Write
10.0
20.0 30.0 40.0 50.0
30.0 40.0 50.0
40.0 50.0 Augustu and and a state of the s
50.0 The stand was a stand of the stand of t
Muss Resonant Care And Care an
70.0
Center 5.59000 GHz Span 100.0 MHz
#Res BW 360 kHz VBW 4 MHz Sweep 1 ms Min Hole
Occupied Bandwidth Total Power -1.82 dBm
36.201 MHz Detecto
Transmit Freq Error 196.65 kHz % of OBW Power 99.00 %
x dB Bandwidth 38.21 MHz x dB -26.00 dB
MSG STATUS

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



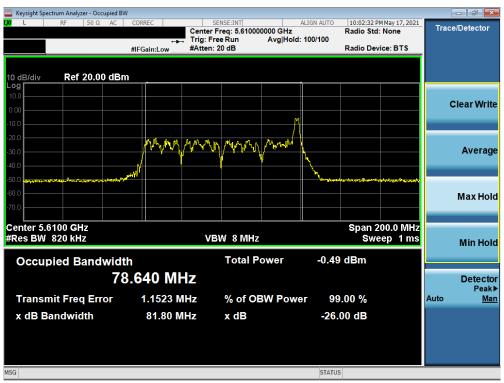
Plot 7-60. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dage 47 of 246			
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Plot 7-61. 26dB Bandwidth Plot MIMO (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 106)



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Page 48 of 216			
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LXIRL RF	50 Ω	AC	CORREC			NSE:INT	00000 GHz	ALIGN AUTO	10:04:51 Radio Sto	PM May 17, 2021	Trac	e/Detector
				÷-	Trig: Fre	e Run		ld: 100/100				
			IFGain:	Low	#Atten: 2	20 dB			Radio De	vice: BTS		
	f 20.00) dBm										
10.0												
											C	Clear Write
0.00												
-10.0					j	*						
-20.0				هد المرب	de auto	hayonon	Million	4				_
-30.0			-f 🇤	Mada, And	and the deside	· · · · · ·	1					Average
-40.0								h.				
-50.0	يبالعصوبال فامي	www.www.www.	₩					Mathematic	Minestllum	-		
-60.0												Max Hold
-70.0												
Center 5.6900 G #Res BW 750 k					VB	W 8 MH	-			200.0 MHz eep 1 ms		
#Res DW 750K	ΠZ				VD		2		SW	eep mis		Min Hold
Occupied I	Bandy	width				Total I	Power	-2.19	dBm			
) MF	I							
		75.	005		12							Detector Peak▶
Transmit Fre	eg Err	or	18	0.82 k	Hz	% of O	BW Pov	ver 99	9.00 %		Auto	Man
x dB Bandw	idth		79	3.50 M	U -7	x dB		-26	00 dB			
	iuun		10	5.50 IVI	ΠZ	X UD		-20.	UU UB			
ISG								STATU	S			

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	ISUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 49 of 216
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MIMO 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	24.58
	5200	40	ax (20MHz)	242T	MCS0	26.47
Band 1	5240	48	ax (20MHz)	242T	MCS0	30.31
Bar	5190	38	ax (40MHz)	484T	MCS0	66.72
_	5230	46	ax (40MHz)	484T	MCS0	68.13
	5210	42	ax (80MHz)	996T	MCS0	115.90
	5260	52	ax (20MHz)	242T	MCS0	26.25
∢	5280	56	ax (20MHz)	242T	MCS0	23.01
d 2A	5320	64	ax (20MHz)	242T	MCS0	21.42
Band	5270	54	ax (40MHz)	484T	MCS0	63.24
ш	5310	62	ax (40MHz)	484T	MCS0	54.61
	5290	58	ax (80MHz)	996T	MCS0	104.10
	5500	100	ax (20MHz)	242T	MCS0	22.58
	5600	120	ax (20MHz)	242T	MCS0	22.74
	5720	144	ax (20MHz)	242T	MCS0	21.72
SC	5510	102	ax (40MHz)	484T	MCS0	46.30
Band	5590	118	ax (40MHz)	484T	MCS0	69.51
Ba	5710	142	ax (40MHz)	484T	MCS0	62.26
	5530	106	ax (80MHz)	996T	MCS0	91.83
	5610	122	ax (80MHz)	996T	MCS0	101.30
	5690	138	ax (80MHz)	996T	MCS0	100.90

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga EQ of 246	
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🔤 Keysight Spectrum Analyzer - Occupied BW							
LX/ RL RF 50Ω AC	CORREC	SENSE:INT r Freg: 5.180000000 GHz	ALIGN AUTO 09:14:04 Radio Sto	PM May 17, 2021	Trace/Detector		
			d: 100/100	a. None			
	#IFGain:Low #Atter	n: 20 dB	Radio De	vice: BTS			
10 dB/div Ref 20.00 dB	m						
Log 10.0							
					Clear Write		
0.00							
-10.0	Jon Mar Swall and March and Same	m. moled Brown when him					
-20.0	A AND AN AND AND AND AND						
-30.0			1		Average		
-40.0	1. J. J. M.						
-50.0 Harrow Prostation - 1000	·			When May Charles			
-60.0					Max Hold		
-70.0					Maxilola		
Center 5.18000 GHz				50.00 MHz			
#Res BW 270 kHz	v	/BW 2.7 MHz	Sw	eep 1 ms	Min Hold		
Occupied Bandwid	lth	Total Power	1.99 dBm				
1	9.089 MHz				Detector Peak▶		
Transmit Freq Error	-44.900 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>		
x dB Bandwidth	24.58 MHz	x dB	-26.00 dB				
MSG			STATUS				

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



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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Dage 51 of 210					
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🔤 Keysight Spectrum Analyzer - Occupied BW 💦 🔂 🔂							
KAL RF 50Ω AC	CORREC	SENSE:INT		L6:05 PM May 17, 2021	Trace/Detector		
		er Freq: 5.240000000 GHz Free Run Avg Ho	Radi Id: 100/100	o Sta: None			
		n: 20 dB		o Device: BTS			
10 dB/div Ref 20.00 dBm	1						
Log 10.0							
					Clear Write		
0.00							
-10.0	Janesa Warding alaparticus	may and many and					
			N .		Average		
-30.0			Mar .		Average		
-40.0				way and the second second			
-50.0				and the fact of the			
-60.0					Max Hold		
-70.0							
Center 5.24000 GHz #Res BW 270 kHz	1	/BW 2.7 MHz	sp	an 50.00 MHz Sweep 1 ms			
#Res BW ZIO RHZ				Sweep This	Min Hold		
Occupied Bandwidt	h	Total Power	3.79 dB	m			
19	.054 MHz				Detector		
					Peak►		
Transmit Freq Error	-42.330 kHz	% of OBW Pov	ver 99.00	%	Auto <u>Man</u>		
x dB Bandwidth	30.31 MHz	x dB	-26.00 d	В			
MSG			STATUS				

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



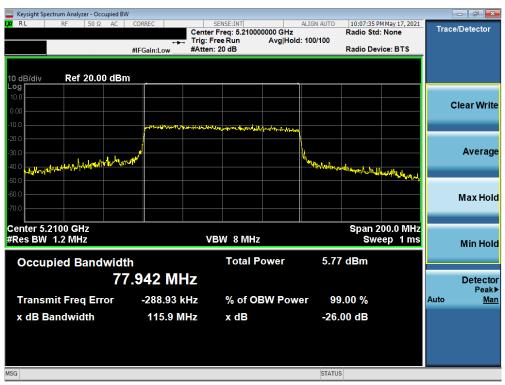
Plot 7-67. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Page 52 of 216			
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🔤 Keysight Spectrum Analyzer - Occupied BW							
LXX RL RF 50Ω AC	CORREC	SENSE:INT er Freg: 5.230000000 GHz		PM May 17, 2021	Trace/Detector		
			Id: 100/100	u. None			
	#IFGain:Low #Atte	en: 20 dB		vice: BTS			
10 dB/div Ref 20.00 dBm			-				
Log							
0.00					Clear Write		
-10.0							
-20.0	mbrokentrahan	here had a ward and here had					
-30.0					Average		
-40.0	M		Million Nr.				
-50.0	<u>k</u> .		Muph march approximate	net of the state of the state			
-60.0				A to be a set of	Max Hold		
-70.0					Maxilolu		
Center 5.23000 GHz				100.0 MHz			
#Res BW 620 kHz		VBW 6 MHz	Sw	reep 1ms	Min Hold		
Occupied Bandwidth		Total Power	-3.81 dBm				
38	.165 MHz				Detector Peak►		
Transmit Freq Error	-28.568 kHz	% of OBW Pov	wer 99.00 %		Auto <u>Man</u>		
x dB Bandwidth	68.13 MHz	x dB	-26.00 dB				
MSG			STATUS				

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



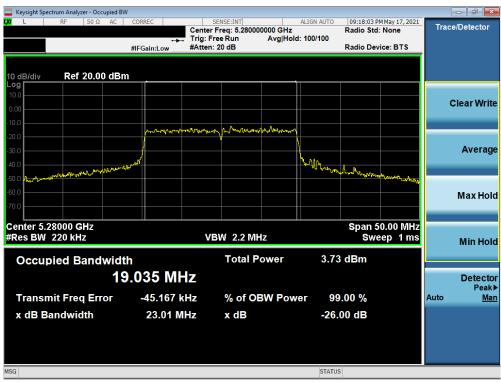
Plot 7-69. 26dB Bandwidth Plot MIMO (80MHz BW 802.11ax - 996 Tones (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF711U1	Proved to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 50 at 040
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 53 of 216
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www.www.com analyzer - Occupied BW	1				
LXU RL RF 50Ω AC	CORREC	SENSE:INT		9:17:09 PM May 17, 2021	Trace/Detector
		nter Freq: 5.260000000 GH: g: Free Run Avg H	z Ra old: 100/100	dio Std: None	indecide etereter
		ten: 20 dB		dio Device: BTS	
10 dB/div Ref 20.00 dBm Log	l				
10.0					
0.00					Clear Write
-10.0	mmmhm	Marine market and haven	~		
-20.0					
-30.0			_		Average
-40.0	will ^{wil}		Withmanne		
-40.0			i some her	m hulp have a son	
-60.0					Max Hold
-70.0					
				50 00 BALL	
Center 5.26000 GHz			5	pan 50.00 MHz	
#Res BW 300 kHz		VBW 3 MHz		Sweep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	3.53 di	Rm	
Occupied Bandwidt		TOTALLOWEL	5.55 ui		
19).121 MHz				Detector
					Peak▶
Transmit Freq Error	-37.822 kHz	% of OBW Po	wer 99.00	%	Auto <u>Man</u>
x dB Bandwidth	26.25 MHz	x dB	-26.00	dB	
	LOILO IIIIL		20100		
MSG			STATUS		

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



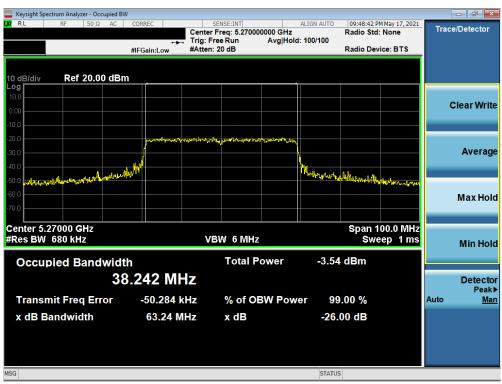
Plot 7-71. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Daga E4 of 240			
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🔤 Keysight Spectrum Analyzer - Occupied	H BW				
🗶 RL RF 50Ω AC		SENSE:INT		PM May 17, 2021	Trace/Detector
		enter Freq: 5.320000000 GHz rig: Free Run Avg Ho	id: 100/100	a: None	
		Atten: 20 dB		vice: BTS	
10 dB/div Ref 20.00 dl	Bm				
Log					
					Clear Write
0.00					
-10.0	manun	-auguna marian - white the started			
-20.0		and the second	×		
-30.0			1.		Average
-40.0	4 -1 10-17		Manua I.		
-40.0	MUD		mormorrylala	and the grand with the way	
-60.0					Max Hold
-70.0					
Center 5.32000 GHz				50.00 MHz	
#Res BW 240 kHz		VBW 2.4 MHz	Sw	reep 1ms	Min Hold
Occurried Dendui	-141-	Total Power	2.39 dBm		
Occupied Bandwi			2.59 ubiii		
	19.023 MHz				Detector
Transmit Freg Error	-42.648 kHz	% of OBW Pov	wer 99.00 %		Peak▶ Auto Man
					Mato <u>iman</u>
x dB Bandwidth	21.42 MHz	x dB	-26.00 dB		
MSG			STATUS		

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



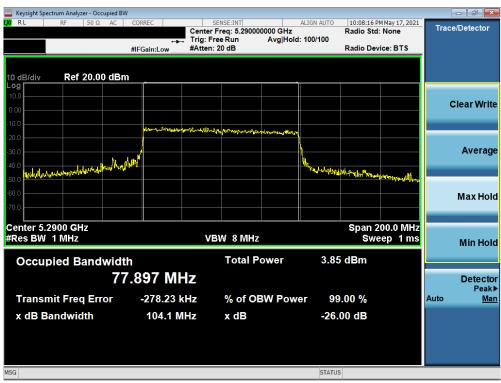
Plot 7-73. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 54)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 55 at 040			
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 55 of 216			
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www.www.com analyzer - Occupied BW					
LX// RL RF 50Ω AC CO	ORREC	SENSE:INT ter Freq: 5.310000000 GHz		PM May 17, 2021	Trace/Detector
			d: 100/100	a: None	
#1	FGain:Low #Att	en: 20 dB		evice: BTS	
10 dB/div Ref 20.00 dBm	_				
Log 10.0					
					Clear Write
0.00					
-10.0					
-20.0	proper these war	aland here and a second s	n		
-30.0			- <mark>}</mark>		Average
-40.0	n/				
-50.0 andream warmen warmen warmen			"Mungh Munderloy	an marine	
-60.0					Max Hold
-70.0					WaxTiolu
Center 5.31000 GHz				100.0 MHz	
#Res BW/620 kHz		VBW 6 MHz	Sv	veep 1 ms	Min Hold
Occupied Bandwidth		Total Power	-3.30 dBm		
	148 MHz				Detector
38.					Detector Peak▶
Transmit Freq Error	-31.392 kHz	% of OBW Pov	wer 99.00 %		Auto <u>Man</u>
x dB Bandwidth	54.61 MHz	x dB	-26.00 dB		
MSG			STATUS		

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



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	D 50 (010			
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 56 of 216			
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Keysight Spectrum Analyzer - Occupied BW						_	- 🗗 💌
LXX RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	09:20:47 PM Mar Radio Std: No		Trace	Detector
			Avg Hold: 100/100	Radio Sta: No	ne		
	#IFGain:Low#	Atten: 20 dB	•.	Radio Device:	BTS		
10 dB/div Ref 20.00 dBm							
Log							
10.0						c	ear Write
0.00							
-10.0							
-20.0	and the second	mmmmmh	~~~~~				
-30.0			N				Average
-40.0							
-40.0 -50.0 -60.0			- Uhhadan	unghan hant hall and			
-60.0				and the proof profilement	ray low		
-70.0							Max Hold
-70.0						_	_
Center 5.50000 GHz				Span 50.0	0 MHz		
#Res BW 220 kHz		VBW 2.2 MHz		Sweep			Min Hold
		T-4-1 D-					
Occupied Bandwidth		Total Pov	wer 1.03	5 dBm			
19.	014 MHz						Detector
						• •	Peak▶
Transmit Freq Error	-30.522 kHz	z % of OBV	V Power 99	0.00 %		Auto	<u>Man</u>
x dB Bandwidth	22.58 MHz	z xdB	-26.	00 dB			
MSG			STATUS				

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



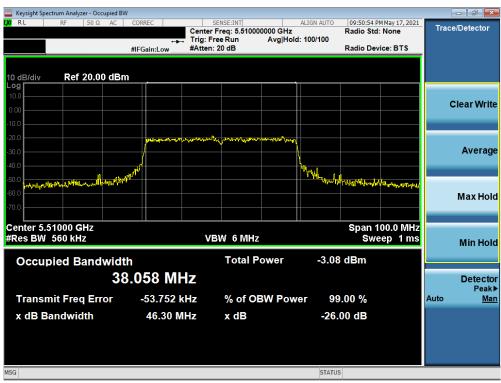
Plot 7-77. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dega 57 of 016			
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🔤 Keysight Spectrum Analyzer - Occu	upied BW						- 6 ×
LXI RL RF 50Ω	AC CORREC	SENSE:INT Center Freq: 5.72000	ALIGN AUTO	09:23:17 PM Ma		Trace	/Detector
			Avg Hold: 100/100	Radio Std: No	one		
	#IFGain:Low	#Atten: 20 dB		Radio Device	BTS		
10 dB/div Ref 20.00	dBm						
Log							
10.0						<u>م</u>	lear Write
0.00						Č	
-10.0							
-20.0	Approximente	han ward and the second	h h h h e h a h a h a h a h a h a h a h				
-30.0							Average
-40.0	, <u> </u>		l l				
	man will a man		Muhulta.	All March March			
-50.0				application to	when		
-60.0							Max Hold
-70.0							
Center 5.72000 GHz				On on 50 /			
#Res BW 240 kHz		VBW 2.4 MH	17	Span 50.0	00 10112 0 1 ms		
WINCS DW 240 KHZ			12	owee	5 1 1115		Min Hold
Occupied Bandy	width	Total P	ower -0.79	dBm			
		1-					
	19.048 MI	Z					Detector Peak▶
Transmit Freq Erro	or -47.529	kHz % of OE	3W Power 99	.00 %		Auto	Peak≱ <u>Man</u>
x dB Bandwidth	21.72 N	lHz x dB	26	00 dB			
	21.72 W		-20.0	00 UB			
MSG			STATUS				

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



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

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dege 50 of 240			
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www.www.com analyzer - Occupied BW							- 6 -
	🛻 Tri	SENSE:INT nter Freq: 5.590000000 G g: Free Run Avg tten: 20 dB	ALIGN AUTO Hz Hold: 100/100	Radio Std		Trac	e/Detector
	#IFGain:Low #A1	tten: 20 dB		Radio Dev	ICE: BIS		
10 dB/div Ref 20.00 dBm			_				
							Clear Write
-10.0	<u> </u>	مراكام مراكا المراجع					
-20.0		and Change and Milling and and a second s					Average
-40.0			May May North	hullentyh	Mart Marta		
-60.0							Max Hold
Center 5.59000 GHz				Span 1	00.0 MHz		
#Res BW 620 kHz		VBW 6 MHz			ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	-0.96	dBm			
	215 MHz						Detector Peak▶
Transmit Freq Error	-21.087 kHz	% of OBW P	ower 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	69.51 MHz	x dB	-26.0	00 dB			
MSG			STATUS				

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



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

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 216			
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🔤 Keysight Spectrum Analyzer - Occupied BW							- 6 ×
XIRL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUT	2 10:09:13 P Radio Std	M May 17, 2021	Trac	e/Detector
		Frig: Free Run	Avg Hold: 100/100	Radio Stu	None		
	#IFGain:Low #	#Atten: 20 dB		Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBm							
Log							
10.0							Clear Write
0.00							
-10.0							
-20.0	at the set of the set	h-wheneyeddineyddineyddineg	-ser-des-des-des-labor				
-30.0							Average
-40.0	//		k _a				
-40.0	eee		Withulante	www.	American		
-60.0							
-70.0							Max Hold
-70.0						_	
Center 5.5300 GHz				Span 2	00.0 MHz		
#Res BW 1 MHz		VBW 8 MHz			eep 1 ms		Min Hold
							minnora
Occupied Bandwidt	า	Total P	ower 1.	50 dBm			
77	.735 MHz	2					Detector
							Peak▶
Transmit Freq Error	-182.14 kH	z % of O	3W Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	91.83 MH	z xdB	-2	6.00 dB			
MSG			STA	rus			

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



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dogo 60 of 216			
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Keysight Spectrum Analy												
X/RL RF	50 Ω	AC	CORREC			NSE:INT	000000 GHz	ALIGN AUTO	10:10:56 P	M May 17, 2021	Trac	e/Detector
		1	#FGain:I	⊷ Low	Trig: Fre #Atten: 2	e Run		1: 100/100	Radio Dev			
)												
10 dB/div Ref	20.00) dBm				1						
10.0												
0.00											C	Clear Write
-10.0												
-20.0			- phas	e-charlester	when have	Jana Barrelland	the Marsherson	1				
-30.0			_									Average
-40.0	الحما	harden	ρł					Warner at a	d de a			
	<u></u> ምሳት ምሳ	, albiotha						1.4. 8.44	when the state	the order stropping		
-60.0												Max Hold
-70.0												
Center 5.6900 GI	Hz								Span 2	00.0 MHz		
#Res BW 910 kH	IZ				VB	N 8 MH	z		Swe	ep 1ms		Min Hold
Occupied B	and	width				Total	Power	0 71	dBm			
Occupied E	anu				-	Total		0111				
		11.	5/5	MH	Z							Detector Peak▶
Transmit Fre	q Erro	or	-45.	071 kl	Hz	% of C	DBW Pow	er 99	.00 %		Auto	Man
x dB Bandwi	dth		10	0.9 MI	Hz	x dB		-26.	00 dB			
ISG								STATUS				

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

FCC ID: A3LSMF711U1	PCTEST [®] Proud to be part of ® element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset		Page 61 of 216
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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 \geq 500 kHz.

Test Procedure Used

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

Test Settings

- 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 \geq 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.

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Deve 00 of 010			
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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	26T	MCS0	2.69
~	5785	157	ax (20MHz)	26T	MCS0	2.14
d 3	5825	165	ax (20MHz)	26T	MCS0	2.67
Band	5755	151	ax (40MHz)	26T	MCS0	2.20
	5795	159	ax (40MHz)	26T	MCS0	2.15
	5775	155	ax (80MHz)	26T	MCS0	2.86

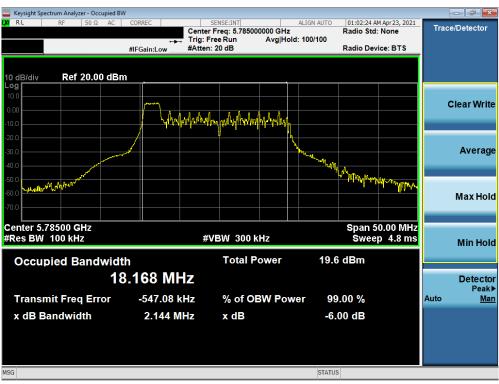
Table 7-6. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 63 of 216
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Plot 7-85. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 149)



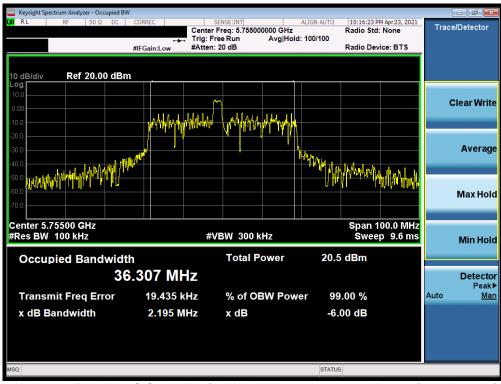
Plot 7-86. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 at 040			
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Plot 7-87. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 165)



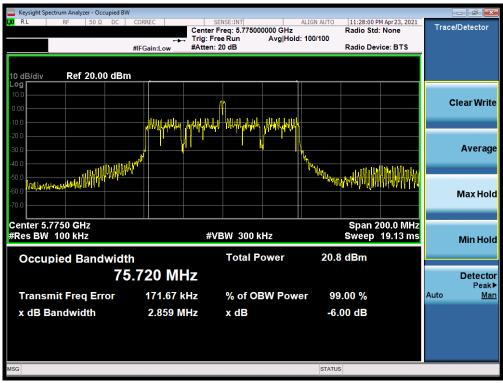
Plot 7-88. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMF711U1	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dage CE of 210			
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 65 of 216			
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Keysight Spectrum Analyzer - Occupied BV	N					a x
LX/ RL RF 50Ω DC	CORREC	SENSE:INT er Freg: 5.795000000 GHz	ALIGN AUTO	10:25:59 PM Apr 23, 2021 Radio Std: None	Trace/D	etector
	Trig:	Free Run Avg Ho	ld: 100/100			
	#IFGain:Low #Atte	n: 20 dB		Radio Device: BTS	-	
10 dB/div Ref 20.00 dBn	n					
Log 10.0						
		m	-		Cle	ar Write
0.00	1 1 1 11 1	1 1. 1.1.1.1.1				
-10.0		alat har war har a har har har har har har har har				
-20.0			\mathbb{N}			
-30.0	1.		+		4	Average
-40.0	₿~ ^{/™}		- Multin	and H. L. N		
-50.0 - 1 - dilamonte del 1 11/11 - 41/11 - 11/1			107	MARY MALINHALLANT		
-50.0				<u> </u>	м	ax Hold
-70.0					141	
Center 5.79500 GHz				Span 100.0 MHz		
#Res BW 100 kHz	#	#VBW 300 kHz		Sweep 9.6 ms	N	lin Hold
Occurried Denduridt		Total Power	10.9	dBm		
Occupied Bandwidt		Total Fower	19.0	UBIII		
37	7.399 MHz				C	Detector
Transmit From Freez	522 44 kH=	% of OBW Pov		00.9/	Auto	Peak▶ Man
Transmit Freq Error	533.44 kHz		ver 99	.00 %	Auto	IVIAII
x dB Bandwidth	2.152 MHz	x dB	-6.	00 dB		
MSG			STATUS			
			UNATOC			

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage CC of 210		
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 66 of 216		
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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	242T	MCS0	18.96
~	5785	157	ax (20MHz)	242T	MCS0	19.12
1d 3	5825	165	ax (20MHz)	242T	MCS0	19.06
Band	5755	151	ax (40MHz)	484T	MCS0	38.17
	5795	159	ax (40MHz)	484T	MCS0	38.19
	5775	155	ax (80MHz)	996T	MCS0	78.13

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

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

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 67 of 216
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Keysight Spectrum Analyzer - Occupied BW								
LX/ RL RF 50Ω DC C	ORREC	SENSE:INT Center Freg: 5.74500		LIGN AUTO	09:32:02 PM Radio Std:	4 Apr 23, 2021	Trace	e/Detector
	- - - - -		Avg Hold:		Radio Stu.	None		
	IFGain:Low	#Atten: 20 dB			Radio Devi	ice: BTS		
10 dB/div Ref 20.00 dBm								
Log 10.0								
0.00		malan hallo					C	Clear Write
	and the state of t	every and a second and a second second	Man Madana and An					
-10.0								
-20.0	n (<u> </u> भ	ht while the	uldan			
-30.0					A A Have A	Mapple and		Average
-40.0							_	
-50.0								
-60.0								Max Hold
-70.0								Maxinoid
Center 5.74500 GHz						0.00 MHz		
#Res BW 100 kHz		#VBW 3001	κHz		Swee	o 4.8 ms		Min Hold
Occupied Rendwidth		Total P	ower	22.2	dBm			
Occupied Bandwidth			OWGI	22.2	abiii			
19.	060 MH	IZ						Detector
Transmit Freq Error	-29.190 k		BW Powe	- 00	00 %		Auto	Peak▶ Man
-			DW FOWe				Auto	Man
x dB Bandwidth	18.96 M	Hz x dB		-6.0	0 dB			
MSG				STATUS				

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)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Page 68 of 216		
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Keysight Spectrum Analyzer - Occup					- đ -
ΙΧ΄ R L RF 50 Ω	DC CORREC	SENSE:INT Center Freq: 5.82500 Trig: Free Run #Atten: 20 dB	ALIGN AUTO 00000 GHz Avg Hold: 100/100	09:36:29 PM Apr 23, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00	dBm				
10.0	ן אראריאיין אינאיקטיניער איין אינאינאען איין איין אינאיען איין איין איין איין איין איין איין	tophart generalistic	haven betrag		Clear Write
-10.0 -20.0 -30.0 -40.0	- Approved		Umentraylu	<	Average
-50.0					Max Hold
Center 5.82500 GHz #Res BW 100 kHz		#VBW 300 F		Span 50.00 MHz Sweep 4.8 ms 8 dBm	
Occupied Bandw	19.151 MI		ower 21.		Detector Peak▶
Transmit Freq Erro x dB Bandwidth	r -27.818 19.06 N			9.00 % .00 dB	Auto <u>Man</u>
MSG			STATU	s	

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



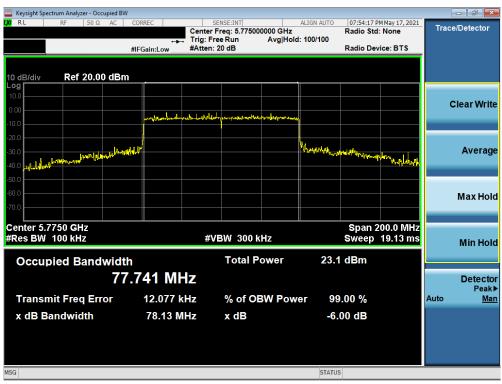
Plot 7-94. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dara (0. st 040		
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 69 of 216		
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www.www.com analyzer - Occupied BW					- ē 💌
LXX RL RF 50Ω AC C	ORREC	SENSE:INT		:46:36 PM May 17, 2021	Trace/Detector
	Trig: F	Free Run Avg Hold	d: 100/100	alo sta. None	
#I	FGain:Low #Atter	n: 20 dB	Rad	dio Device: BTS	
10 dB/div Ref 20.00 dBm					
Log 10.0					
					Clear Write
0.00	melener	mon monor have been adversely			
-10.0					
-20.0	J		hold on a mail of the story	fu h	
-20.0				WWWW.	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					maxiloid
Center 5.79500 GHz				pan 100.0 MHz	
#Res BW 100 kHz	#	VBW 300 kHz		Sweep 9.6 ms	Min Hold
Occupied Bandwidth		Total Power	23.3 dE	3m	
38.	106 MHz				Detector Peak▶
Transmit Freq Error	-7.283 kHz	% of OBW Pow	er 99.00	%	Auto <u>Man</u>
x dB Bandwidth	38.19 MHz	x dB	-6.00 (B	
	00.10 11112		0.00 (
MSG			STATUS		

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)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 at 040		
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MIMO 6dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	26T	MCS0	15.09
~	5785	157	ax (20MHz)	26T	MCS0	8.34
1d 3	5825	165	ax (20MHz)	26T	MCS0	2.06
Band	5755	151	ax (40MHz)	26T	MCS0	2.12
	5795	159	ax (40MHz)	26T	MCS0	2.13
	5775	155	ax (80MHz)	26T	MCS0	2.83

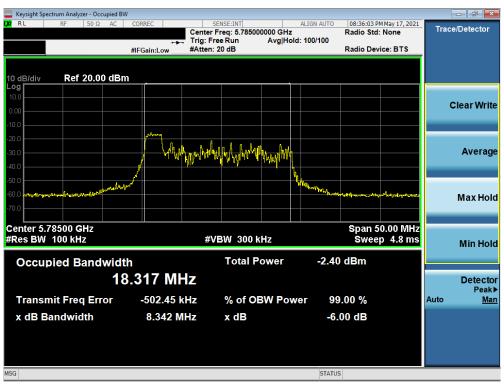
Table 7-8. Conducted Bandwidth Measurements MIMO (26 Tones)

FCC ID: A3LSMF711U1	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 71 of 016
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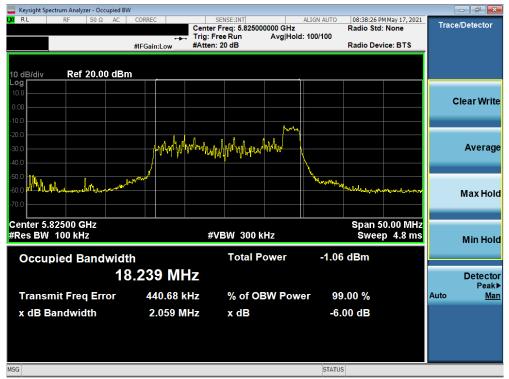
Plot 7-97. 6dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 149)



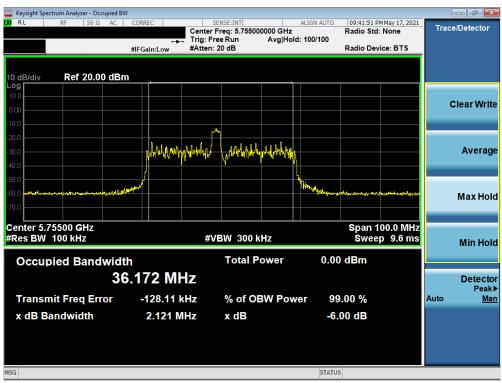
Plot 7-98. 6dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 040		
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 72 of 216		
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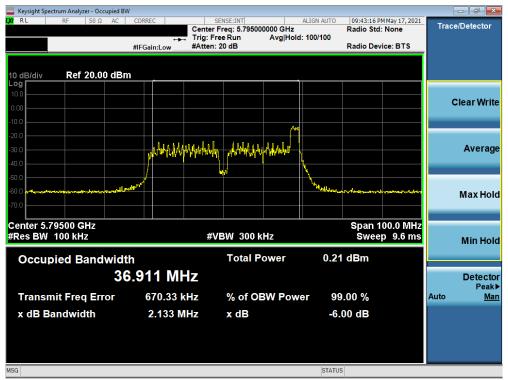
Plot 7-99. 6dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 165)



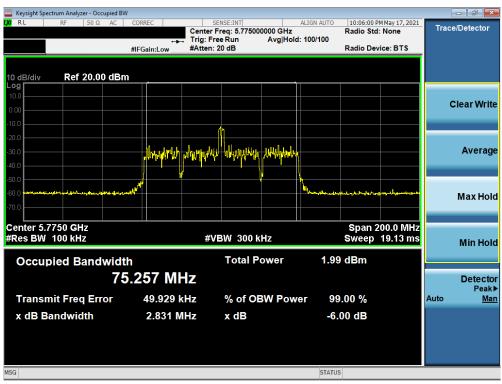
Plot 7-100. 6dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 72 of 246
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Plot 7-101. 6dB Bandwidth Plot MIMO (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 159)



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

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Daga 74 of 246			
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MIMO 6dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	242T	MCS0	18.73
~	5785	157	ax (20MHz)	242T	MCS0	18.88
d 3	5825	165	ax (20MHz)	242T	MCS0	18.80
Band	5755	151	ax (40MHz)	484T	MCS0	37.90
	5795	159	ax (40MHz)	484T	MCS0	37.94
	5775	155	ax (80MHz)	996T	MCS0	74.71

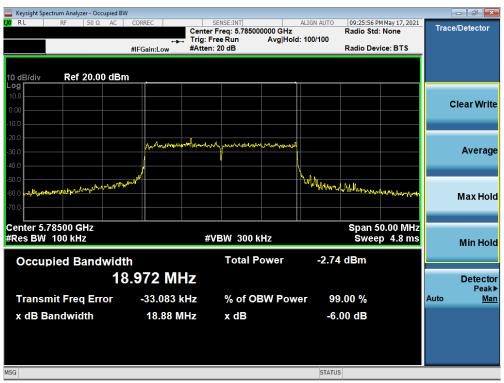
Table 7-9. Conducted Bandwidth Measurements MIMO (Full Tones)

FCC ID: A3LSMF711U1	PCTEST* Froud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 75 of 246
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🤤 Keysight Spectrum Analyzer - Occupie	ed BW				- • •
L <mark>X/</mark> RL RF 50Ω A		SENSE:INT	ALIGN AUTO 09:24:25 PN Radio Std:	1 May 17, 2021	Trace/Detector
		Frig: Free Run Avg Hold		None	
	#IFGain:Low	#Atten: 20 dB	Radio Devi	ce: BTS	
10 dB/div Ref 20.00 d	IBm				
Log 10.0					
					Clear Write
0.00					
-10.0					
-20.0	مهالماليدين ريراور ا	the war war when the man of			
-30.0					Average
-40.0	/				
-50.0	. หมางให ^{้เสร}		1. How work way way		
-50.0	· · · · ·		· And March Children	Induran	Max Hold
-70.0					Max Holu
Center 5.74500 GHz				0.00 MHz	
#Res BW 100 kHz		#VBW 300 kHz	Sweep	o 4.8 ms	Min Hold
Occupied Bandwi	idth	Total Power	-1.63 dBm		
	18.978 MHz				Data t
					Detector Peak▶
Transmit Freq Error	-34.511 kH	z % of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	18.73 MH	z xdB	-6.00 dB		
MSG			STATUS		

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



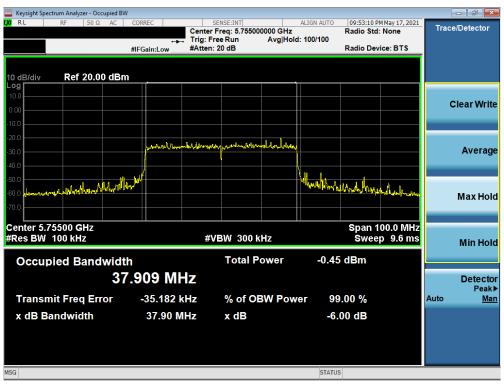
Plot 7-104. 6dB Bandwidth Plot MIMO (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMF711U1	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dega 76 at 216			
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Keysight Spectrum Analyzer - Occupied B ¹	W				
💢 RL RF 50Ω AC	CORREC	SENSE:INT Freg: 5.825000000 GHz	ALIGN AUTO 09:26:35 PI Radio Std:	M May 17, 2021	Trace/Detector
		FreeRun Avg Hold		None	
	#IFGain:Low #Atter	n: 20 dB	Radio Dev	ice: BTS	
10 dB/div Ref 20.00 dBr	n				
Log					
10.0					Clear Write
0.00					0.041 0.000
-10.0					
-20.0	1. A. A. A.	and an and a second and a second			
-30.0	wohanthertenton	- and a second state of the second state of th			Average
-40.0					
-50.0					
-50.0	war.		Stall Mythera M. Aphilum Ligner	march	May Lald
-70.0					Max Hold
10.0					
Center 5.82500 GHz				0.00 MHz	
#Res BW 100 kHz	#	VBW 300 kHz	Swee	p 4.8 ms	Min Hold
Occurried Developid	41 .	Total Power	-2.94 dBm		
Occupied Bandwid		TOtal Fower	-2.94 ubiii		
18	8.984 MHz				Detector
Transmit Freq Error	-39.962 kHz	% of OBW Powe	er 99.00 %		Peak▶ Auto <u>Man</u>
x dB Bandwidth	18.80 MHz	x dB	-6.00 dB		
		хub	-0.00 UB		
MSG			STATUS		

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



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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dega 77 of 016			
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Keysight Spectrum Analyzer - Occupied E	3W				
LXI RL RF 50Ω AC	CORREC	SENSE:INT er Freg: 5.795000000 GHz	ALIGN AUTO 09:53:53 P Radio Std	M May 17, 2021	Trace/Detector
			d: 100/100	None	
	#IFGain:Low #Atte	n: 20 dB	Radio Dev	ice: BTS	
10 dB/div Ref 20.00 dB	m				
Log					
0.00					Clear Write
-10.0					
-20.0	mulubulanterate	any out alman the areas			
-30.0					Average
-40.0					
-50.0			Manufacture and a		
-60.0 married and the start of the start			Marthard Millinghald hand	brownham	Max Hold
-70.0					maxmona
Center 5.79500 GHz				00.0 MHz	
#Res BW 100 kHz		#VBW 300 kHz	Swee	p 9.6 ms	Min Hold
Occupied Bandwid	th	Total Power	-0.13 dBm		
2	7.932 MHz				Detector
J					Detector Peak►
Transmit Freq Error	-32.563 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	37.94 MHz	x dB	-6.00 dB		
MSG			STATUS		
MOG			STATUS		

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



Plot 7-108. 6dB Bandwidth Plot MIMO (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 + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(17.93) = 23.54dBm$. 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 + $10\log_{10}(26dB BW) = 11 dBm + 10\log_{10}(17.98) = 23.55 dBm$. 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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	Freq [MHz]	Channel	Detector	Tones	RU Index			Conducted Power Limit	Conducted Power
					0	4	8	[dBm]	Margin [dB]
N	5180	36	AVG	26T	10.43	10.48	10.41	23.98	-13.50
Ľ í	5200	40	AVG	26T	10.21	10.26	10.09	23.98	-13.72
S I	5240	48	AVG	26T	10.37	10.39	10.23	23.98	-13.59
Ŭ.	5260	52	AVG	26T	10.35	10.34	10.15	23.47	-13.12
<u>S</u>	5280	56	AVG	26T	10.42	10.45	10.27	23.47	-13.02
	5320	64	AVG	26T	10.23	10.24	10.49	23.47	-12.98
J T	5500	100	AVG	26T	10.26	10.38	10.34	22.80	-12.42
C m	5600	120	AVG	26T	10.07	10.12	10.08	22.80	-12.68
5	5720	144	AVG	26T	10.48	10.11	10.08	22.80	-12.32
	5745	149	AVG	26T	10.41	10.48	10.47	30.00	-19.52
	5785	157	AVG	26T	10.48	10.13	10.09	30.00	-19.52
	5825	165	AVG	26T	10.32	10.44	10.35	30.00	-19.56

SISO ANT 1 Maximum Conducted Output Power Measurements (26 Tones)

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

N	Freq [MHz]	Channel	Detector	Tones		RU Index	Conducted Power Limit	Conducted Power	
T C					0	8	17	[dBm]	Margin [dB]
It M	5190	38	AVG	26T	10.11	10.16	10.02	23.98	-13.82
ie o	5230	46	AVG	26T	10.42	10.25	10.07	23.98	-13.56
(4)	5270	54	AVG	26T	10.13	10.49	10.42	23.47	-12.98
	5310	62	AVG	26T	10.13	10.48	10.46	23.47	-12.99
	5510	102	AVG	26T	10.10	9.89	10.01	22.80	-12.70
G Ba	5590	118	AVG	26T	10.24	10.06	10.17	22.80	-12.56
5G B	5710	142	AVG	26T	10.02	10.28	10.02	22.80	-12.52
	5755	151	AVG	26T	10.41	10.46	10.07	30.00	-19.54
	5795	159	AVG	26T	10.13	10.23	10.44	30.00	-19.56

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

Hz (r	Freq [MHz] Channel		Channel Detector			RU Index	Conducted Power Limit	Conducted Power	
H (ب					0	18	36	[dBm]	Margin [dB]
(80MI width	5210	42	AVG	26T	10.26	10.39	10.27	23.98	-13.59
	5290	58	AVG	26T	10.35	10.47	10.23	23.47	-13.00
5GHz Band	5530	106	AVG	26T	10.27	10.14	10.46	22.80	-12.34
Ba Ba	5610	122	AVG	26T	10.42	10.36	10.25	22.80	-12.38
5	5690	138	AVG	26T	9.91	10.44	10.43	22.80	-12.36
	5775	155	AVG	26T	9.97	10.23	10.02	30.00	-19.77

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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SISO ANT 1 Conducted Output Power Measurements (52 Tones)

	Freq [MHz]	Channel	Detector	Tones	RU Index		Conducted Power Limit	Conducted Power	
					37	39	40	[dBm]	Margin [dB]
N	5180	36	AVG	52T	10.93	10.97	10.91	23.98	-13.01
E E	5200	40	AVG	52T	10.92	10.86	10.79	23.98	-13.06
E E	5240	48	AVG	52T	10.86	10.91	10.76	23.98	-13.07
či S	5260	52	AVG	52T	10.88	10.89	10.77	23.47	-12.58
<u>S</u> <u>S</u>	5280	56	AVG	52T	10.92	10.91	10.78	23.47	-12.55
N 2	5320	64	AVG	52T	10.67	10.66	10.98	23.47	-12.49
a T	5500	100	AVG	52T	10.41	10.48	10.39	22.80	-12.32
C B B	5600	120	AVG	52T	10.72	10.79	10.65	22.80	-12.01
5	5720	144	AVG	52T	10.62	10.81	10.79	22.80	-11.99
	5745	149	AVG	52T	10.91	10.63	10.58	30.00	-19.09
	5785	157	AVG	52T	10.97	10.76	10.71	30.00	-19.03
	5825	165	AVG	52T	10.94	10.98	10.96	30.00	-19.02

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

N	Freq [MHz]	Channel	Detector	Tones		RU Index	Conducted Power Limit	Conducted Power	
					37	40	44	[dBm]	Margin [dB]
t Z	5190	38	AVG	52T	10.73	10.54	10.55	23.98	-13.25
0M idt	5230	46	AVG	52T	10.47	10.76	10.68	23.98	-13.22
4	5270	54	AVG	52T	10.67	10.99	10.50	23.47	-12.48
	5310	62	AVG	52T	10.72	10.48	10.57	23.47	-12.75
P C	5510	102	AVG	52T	10.25	10.67	10.23	22.80	-12.13
За За	5590	118	AVG	52T	10.34	10.81	10.48	22.80	-11.99
5G B	5710	142	AVG	52T	10.75	10.79	10.52	22.80	-12.01
	5755	151	AVG	52T	10.59	10.76	10.41	30.00	-19.24
	5795	159	AVG	52T	10.72	10.80	10.53	30.00	-19.20

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

N	Freq [MHz]	Freq [MHz] Channel		ctor Tones		RU Index	Conducted Power Limit	Conducted Power	
H (L					37	44	52	[dBm]	Margin [dB]
(80MHz width)	5210	42	AVG	52T	10.75	10.89	10.81	23.98	-13.09
	5290	58	AVG	52T	10.87	10.81	10.74	23.47	-12.60
5GHz Band	5530	106	AVG	52T	10.57	10.88	10.73	22.80	-11.92
Ba	5610	122	AVG	52T	10.93	10.88	10.76	22.80	-11.87
5	5690	138	AVG	52T	10.64	10.62	10.69	22.80	-12.11
	5775	155	AVG	52T	10.36	10.97	10.77	30.00	-19.03

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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	Freq [MHz]	Channel	nel Detector Tones		RU I	ndex	Conducted Power Limit	Conducted Power
					53	54	[dBm]	Margin [dB]
N	5180	36	AVG	106T	14.32	14.27	23.98	-9.66
E E	5200	40	AVG	106T	14.15	14.05	23.98	-9.83
	5240	48	AVG	106T	14.11	14.03	23.98	-9.87
	5260	52	AVG	106T	14.15	14.04	23.47	-9.32
<u><</u> 3	5280	56	AVG	106T	14.15	14.08	23.47	-9.32
N C	5320	64	AVG	106T	14.05	14.02	23.47	-9.42
a H	5500	100	AVG	106T	14.27	14.27	22.80	-8.53
C M	5600	120	AVG	106T	14.19	14.10	22.80	-8.61
5	5720	144	AVG	106T	14.01	14.06	22.80	-8.74
	5745	149	AVG	106T	14.25	14.29	30.00	-15.71
	5785	157	AVG	106T	14.22	14.27	30.00	-15.73
	5825	165	AVG	106T	14.43	14.45	30.00	-15.55

SISO ANT 1 Conducted Output Power Measurements (106 Tones)

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

N	Freq [MHz] Channel Detector		nel Detector Tones			RU Index	Conducted Power Limit	Conducted Power	
T C	•				53	54	56	[dBm]	Margin [dB]
t j	5190	38	AVG	106T	14.18	14.47	14.07	23.98	-9.51
(40M widtl	5230	46	AVG	106T	14.17	14.25	13.96	23.98	-9.73
4 \$	5270	54	AVG	106T	14.19	14.28	13.94	23.47	-9.19
	5310	62	AVG	106T	14.44	14.10	14.29	23.47	-9.03
₽ ŭ	5510	102	AVG	106T	14.43	14.04	14.33	22.80	-8.37
Ва Ва	5590	118	AVG	106T	14.12	14.42	14.16	22.80	-8.38
5 B B	5710	142	AVG	106T	14.09	14.46	14.20	22.80	-8.34
~	5755	151	AVG	106T	14.04	14.32	14.11	30.00	-15.68
	5795	159	AVG	106T	14.08	14.34	14.06	30.00	-15.66

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

N	Freq [MHz] Channel		Channel Detector	or Tones		RU Index	Conducted Power Limit	Conducted Power	
(80MHz lwidth)					53	56	60	[dBm]	Margin [dB]
30M vidtl	5210	42	AVG	106T	14.37	14.42	14.26	23.98	-9.56
	5290	58	AVG	106T	14.28	14.33	14.23	23.47	-9.14
5GHz Band	5530	106	AVG	106T	14.20	14.45	14.32	22.80	-8.35
Ba	5610	122	AVG	106T	14.22	14.49	14.48	22.80	-8.31
LC)	5690	138	AVG	106T	13.89	14.37	14.38	22.80	-8.42
	5775	155	AVG	106T	13.86	14.32	14.17	30.00	-15.68

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit	Conducted Power
					61	[dBm]	Margin [dB]
N	5180	36	AVG	242T	14.73	23.98	-9.25
E E	5200	40	AVG	242T	14.62	23.98	-9.36
0MH (idth)	5240	48	AVG	242T	14.64	23.98	-9.34
<u> </u>	5260	52	AVG	242T	14.55	23.47	-8.92
<u>₹</u> (2	5280	56	AVG	242T	14.70	23.47	-8.77
	5320	64	AVG	242T	14.65	23.47	-8.82
H	5500	100	AVG	242T	14.57	22.80	-8.23
C M	5600	120	AVG	242T	14.84	22.80	-7.96
5	5720	144	AVG	242T	14.81	22.80	-7.99
	5745	149	AVG	242T	14.44	30.00	-15.56
	5785	157	AVG	242T	14.89	30.00	-15.11
	5825	165	AVG	242T	14.69	30.00	-15.31

SISO ANT 1 Conducted Output Power Measurements (242 Tones)

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

N	Freq [MHz]	Channel	Detector	Tones	RU I	ndex	Conducted Power Limit	Conducted Power
					61	62	[dBm]	Margin [dB]
MI dth	5190	38	AVG	242T	13.25	13.07	23.98	-10.73
	5230	46	AVG	242T	14.90	14.76	23.98	-9.08
(40 wic	5270	54	AVG	242T	14.97	14.80	23.47	-8.50
	5310	62	AVG	242T	12.63	12.97	23.47	-10.50
	5510	102	AVG	242T	12.94	12.85	22.80	-9.86
GH Bal	5590	118	AVG	242T	14.50	14.59	22.80	-8.21
5G B	5710	142	AVG	242T	14.58	14.81	22.80	-7.99
	5755	151	AVG	242T	14.46	14.62	30.00	-15.38
	5795	159	AVG	242T	14.60	14.56	30.00	-15.40

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

Я	Freq [MHz]	Channel	Detector	Detector Tones RU Index					Conducted Power
۲ (E					61	61 62 64		[dBm]	Margin [dB]
(80MHz width)	5210	42	AVG	242T	12.81	12.82	12.42	23.98	-11.16
<u>8</u> <u>8</u>	5290	58	AVG	242T	11.16	11.04	10.93	23.47	-12.31
Hz	5530	106	AVG	242T	11.06	11.23	11.20	22.80	-11.57
5Gł Ba	5610	122	AVG	242T	14.80	14.96	14.99	22.80	-7.81
5	5690	138	AVG	242T	14.96	14.32	14.48	22.80	-7.84
	5775	155	AVG	242T	14.82	14.95	14.99	30.00	-15.01

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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N	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit	Conducted Power
					65	[dBm]	Margin [dB]
IT AI	5190	38	AVG	484T	13.47	23.98	-10.51
on Di	5230	46	AVG	484T	14.85	23.98	-9.13
(4 V	5270	54	AVG	484T	14.86	23.47	-8.61
	5310	62	AVG	484T	12.77	23.47	-10.70
Hz	5510	102	AVG	484T	12.98	22.80	-9.82
	5590	118	AVG	484T	14.49	22.80	-8.31
5G B	5710	142	AVG	484T	14.64	22.80	-8.16
	5755	151	AVG	484T	14.53	30.00	-15.47
	5795	159	AVG	484T	14.54	30.00	-15.46

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

Z	Freq [MHz]	Channel	Detector	Tones	RU I	ndex	Conducted Power Limit	Conducted Power
0MH idth)					65	66	[dBm]	Margin [dB]
0MI idth	5210	42	AVG	484T	12.79	12.55	23.98	-11.19
<u>8</u>	5290	58	AVG	484T	11.16	11.07	23.47	-12.31
GHz Band	5530	106	AVG	484T	11.32	11.49	22.80	-11.31
GF Ba	5610	122	AVG	484T	14.89	14.98	22.80	-7.82
5	5690	138	AVG	484T	14.28	14.49	22.80	-8.31
	5775	155	AVG	484T	14.82	14.99	30.00	-15.01

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Я	Freq [MHz]	Channel	Detector	Tones	RU Index	Conducted Power Limit	Conducted Power
₹ (j					67	[dBm]	Margin [dB]
(80MHz width)	5210	42	AVG	996T	12.84	23.98	-11.14
	5290	58	AVG	996T	11.30	23.47	-12.17
GHz Banc	5530	106	AVG	996T	11.47	22.80	-11.33
GH Ba	5610	122	AVG	996T	14.72	22.80	-8.08
5	5690	138	AVG	996T	14.96	22.80	-7.84
	5775	155	AVG	996T	14.74	30.00	-15.26

SISO ANT 1 Conducted Output Power Measurements (996 Tones)

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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MIMO Maximum Conducted Output Power Measurements (26 Tones)

									RU Index					Conducted	Conducted
	Freq [MHz]	Channel	Detector	Tones		0			4		8			Power Limit	Power
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N	5180	36	AVG	26T	10.43	10.17	13.31	10.48	10.29	13.40	10.41	10.13	13.28	23.98	-10.58
<u> </u>	5200	40	AVG	26T	10.21	10.33	13.28	10.26	10.46	13.37	10.09	10.33	13.22	23.98	-10.61
ξĘ	5240	48	AVG	26T	10.37	10.29	13.34	10.39	10.43	13.42	10.23	10.33	13.29	23.98	-10.56
O	5260	52	AVG	26T	10.35	10.39	13.38	10.34	10.48	13.42	10.15	10.37	13.27	23.47	-10.05
<u><</u> 0	5280	56	AVG	26T	10.42	9.79	13.13	10.45	10.20	13.34	10.27	10.01	13.15	23.47	-10.13
N 2	5320	64	AVG	26T	10.23	9.96	13.11	10.24	10.14	13.20	10.49	10.45	13.48	23.47	-9.99
E E	5500	100	AVG	26T	10.26	10.25	13.27	10.38	10.38	13.39	10.34	10.25	13.31	22.80	-9.41
G B	5600	120	AVG	26T	10.07	10.01	13.05	10.12	10.18	13.16	10.08	9.91	13.01	22.80	-9.64
S _	5720	144	AVG	26T	10.48	10.36	13.43	10.11	10.44	13.29	10.08	10.27	13.19	22.80	-9.37
	5745	149	AVG	26T	10.41	10.27	13.35	10.48	10.30	13.40	10.47	10.18	13.34	30.00	-16.60
	5785	157	AVG	26T	10.48	10.38	13.44	10.13	10.46	13.31	10.09	10.30	13.21	30.00	-16.56
	5825	165	AVG	26T	10.32	10.10	13.22	10.44	10.07	13.27	10.35	10.37	13.37	30.00	-16.63

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

									RU Index					Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		0			8			17		Power Limit	Power
T C					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
÷ ÷	5190	38	AVG	26T	10.11	10.13	13.13	10.16	10.30	13.24	10.02	10.11	13.08	23.98	-10.74
<u>e</u> 9	5230	46	AVG	26T	10.42	9.95	13.20	10.25	10.34	13.31	10.07	9.69	12.89	23.98	-10.67
4 5	5270	54	AVG	26T	10.13	10.28	13.22	10.49	10.25	13.38	10.42	10.25	13.35	23.47	-10.09
<u> </u>	5310	62	AVG	26T	10.13	10.29	13.22	10.48	10.25	13.38	10.46	10.13	13.31	23.47	-10.09
₽ <u>c</u>	5510	102	AVG	26T	10.10	10.19	13.16	9.89	10.18	13.05	10.01	10.13	13.08	22.80	-9.64
it is	5590	118	AVG	26T	10.24	9.88	13.07	10.06	10.32	13.20	10.17	9.81	13.00	22.80	-9.60
ы	5710	142	AVG	26T	10.02	10.17	13.11	10.28	10.48	13.39	10.02	9.85	12.95	22.80	-9.41
~	5755	151	AVG	26T	10.41	10.17	13.30	10.46	10.47	13.48	10.07	9.94	13.02	30.00	-16.52
	5795	159	AVG	26T	10.13	10.42	13.29	10.23	10.35	13.30	10.44	10.19	13.33	30.00	-16.67

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

						RU Index									
N	Freq [MHz]	Channel	Detector	Tones		0			18			36		Power Limit	Power
E E					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
i de la	5210	42	AVG	26T	10.26	10.27	13.28	10.39	10.49	13.45	10.27	9.98	13.14	23.98	-10.53
<u>8</u>	5290	58	AVG	26T	10.35	10.16	13.27	10.47	10.30	13.40	10.23	10.29	13.27	23.47	-10.07
₽°	5530	106	AVG	26T	10.27	10.40	13.35	10.14	10.10	13.13	10.46	10.11	13.30	22.80	-9.45
Ba	5610	122	AVG	26T	10.42	10.10	13.27	10.36	10.31	13.35	10.25	10.43	13.35	22.80	-9.45
- 2	5690	138	AVG	26T	9.91	10.44	13.19	10.44	10.48	13.47	10.43	10.31	13.38	22.80	-9.33
	5775	155	AVG	26T	9.97	10.44	13.22	10.23	10.43	13.34	10.02	10.14	13.09	30.00	-16.66

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 010
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset		Page 86 of 216
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MIMO Conducted Output Power Measurements (52 Tones)

					RU Index C									Conducted	Conducted
	Freq [MHz]	Channel	Detector	Tones		37			39			40		Power Limit	Power
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N	5180	36	AVG	52T	10.93	10.77	13.86	10.97	10.80	13.90	10.91	10.60	13.77	23.98	-10.08
ΞΞ	5200	40	AVG	52T	10.92	10.96	13.95	10.86	10.87	13.88	10.79	10.85	13.83	23.98	-10.03
S S	5240	48	AVG	52T	10.86	10.83	13.86	10.91	10.96	13.95	10.76	10.80	13.79	23.98	-10.03
O .=	5260	52	AVG	52T	10.88	10.92	13.91	10.89	10.90	13.91	10.77	10.84	13.82	23.47	-9.56
<u>×</u>	5280	56	AVG	52T	10.92	10.60	13.77	10.91	10.57	13.75	10.78	10.50	13.65	23.47	-9.70
	5320	64	AVG	52T	10.67	10.51	13.60	10.66	10.49	13.59	10.98	10.46	13.74	23.47	-9.73
ыT	5500	100	AVG	52T	10.41	10.86	13.65	10.48	10.82	13.66	10.39	10.75	13.58	22.80	-9.14
0 m	5600	120	AVG	52T	10.72	10.97	13.86	10.79	10.99	13.90	10.65	10.88	13.78	22.80	-8.90
5	5720	144	AVG	52T	10.62	10.49	13.57	10.81	10.43	13.63	10.79	10.27	13.55	22.80	-9.17
	5745	149	AVG	52T	10.91	10.89	13.91	10.63	10.84	13.75	10.58	10.77	13.69	30.00	-16.09
	5785	157	AVG	52T	10.97	10.47	13.74	10.76	10.38	13.58	10.71	10.24	13.49	30.00	-16.26
	5825	165	AVG	52T	10.94	10.48	13.73	10.98	10.43	13.72	10.96	10.31	13.66	30.00	-16.27

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

									RU Index					Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		37			40			44		Power Limit	Power
τ̈́					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
₹ +	5190	38	AVG	52T	10.73	10.79	13.77	10.54	10.70	13.63	10.55	10.69	13.63	23.98	-10.21
ē P	5230	46	AVG	52T	10.47	10.72	13.61	10.76	10.98	13.88	10.68	10.53	13.62	23.98	-10.10
4 5	5270	54	AVG	52T	10.67	10.95	13.82	10.99	10.67	13.84	10.50	10.71	13.62	23.47	-9.63
Ύ	5310	62	AVG	52T	10.72	10.87	13.81	10.48	10.67	13.59	10.57	10.74	13.67	23.47	-9.66
ΡČ	5510	102	AVG	52T	10.25	10.68	13.48	10.67	10.96	13.83	10.23	10.61	13.43	22.80	-8.97
it is	5590	118	AVG	52T	10.34	10.68	13.52	10.81	10.90	13.87	10.48	10.55	13.53	22.80	-8.93
ю В В	5710	142	AVG	52T	10.75	10.27	13.53	10.79	10.46	13.64	10.52	10.01	13.28	22.80	-9.16
~,	5755	151	AVG	52T	10.59	10.89	13.75	10.76	10.54	13.66	10.41	10.58	13.51	30.00	-16.25
	5795	159	AVG	52T	10.72	10.60	13.67	10.80	10.79	13.81	10.53	10.89	13.72	30.00	-16.19

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

				RU Index									Conducted	Conducted
Freq [MHz]	Channel	Detector	Tones		37			44			52		Power Limit	Power
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
5210	42	AVG	52T	10.75	10.84	13.81	10.89	10.97	13.94	10.81	10.83	13.83	23.98	-10.04
5290	58	AVG	52T	10.87	10.68	13.79	10.81	10.80	13.82	10.74	10.74	13.75	23.47	-9.65
5530	106	AVG	52T	10.57	10.72	13.66	10.88	10.90	13.90	10.73	10.51	13.63	22.80	-8.90
5610	122	AVG	52T	10.93	10.94	13.95	10.88	10.74	13.82	10.76	10.55	13.67	22.80	-8.85
5690	138	AVG	52T	10.64	10.92	13.79	10.62	10.97	13.81	10.69	10.67	13.69	22.80	-8.99
5775	155	AVG	52T	10.36	10.92	13.66	10.97	10.82	13.91	10.77	10.53	13.66	30.00	-16.09
	5210 5290 5530 5610 5690	5210 42 5290 58 5530 106 5610 122 5690 138	5210 42 AVG 5290 58 AVG 5530 106 AVG 5610 122 AVG 5690 138 AVG	5210 42 AVG 52T 5290 58 AVG 52T 5530 106 AVG 52T 5610 122 AVG 52T 5690 138 AVG 52T	AVG S2T 10.75 5210 42 AVG 52T 10.75 5290 58 AVG 52T 10.87 5530 106 AVG 52T 10.57 5610 122 AVG 52T 10.93 5690 138 AVG 52T 10.64	ANT1 ANT2 5210 42 AVG 52T 10.75 10.84 5290 58 AVG 52T 10.87 10.68 5530 106 AVG 52T 10.57 10.72 5610 122 AVG 52T 10.93 10.94 5690 138 AVG 52T 10.64 10.92	ANT1 ANT2 MIMO 5210 42 AVG 52T 10.75 10.84 13.81 5290 58 AVG 52T 10.87 10.68 13.79 5530 106 AVG 52T 10.57 10.72 13.66 5610 122 AVG 52T 10.93 10.94 13.95 5690 138 AVG 52T 10.64 10.92 13.79	ANTI ANT2 MIMO ANT1 5210 42 AVG 52T 10.75 10.84 13.81 10.89 5290 58 AVG 52T 10.87 10.68 13.79 10.81 5530 106 AVG 52T 10.57 10.72 13.66 10.88 5610 122 AVG 52T 10.93 10.94 13.95 10.88 5690 138 AVG 52T 10.64 10.92 13.79 10.62	Freq [MHz] Channel Detector Tones 37 44 5210 42 AVG 52T 10.75 10.84 13.81 10.89 10.97 5200 58 AVG 52T 10.87 10.68 13.79 10.81 10.80 5530 106 AVG 52T 10.57 10.72 13.66 10.88 10.90 5610 122 AVG 52T 10.93 10.94 13.95 10.88 10.74 5690 138 AVG 52T 10.64 10.92 13.79 10.62 10.97	Freq [MHz] Channel Detector Tones 37 44 ANT1 ANT2 MIMO ANT1 ANT2 MIMO 5210 42 AVG 52T 10.75 10.84 13.81 10.89 10.97 13.94 5200 58 AVG 52T 10.87 10.68 13.79 10.81 10.80 13.82 55500 106 AVG 52T 10.57 10.72 13.66 10.88 10.90 13.90 5610 122 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 5690 138 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81	Freq [MHz] Channel Detector Tones 37 44 MIMO ANT2 MIMO ANT2 MIMO ANT1 5210 42 AVG 52T 10.75 10.84 13.81 10.89 10.97 13.94 10.81 5500 586 AVG 52T 10.67 10.68 13.79 10.81 10.80 13.82 10.74 5610 122 AVG 52T 10.93 10.94 13.95 10.88 10.74 13.82 10.76 5690 138 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 10.69	Freq [MHz] Detector Tones 37 44 44 52 5210 42 AVG 52T 10.75 10.84 13.81 10.89 10.97 13.94 10.81 10.83 5290 58 AVG 52T 10.75 10.84 13.81 10.89 10.97 13.94 10.81 10.83 5530 106 AVG 52T 10.87 10.68 13.79 10.81 10.80 13.82 10.74 10.74 5610 122 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 10.69 10.67 10.55 5690 138 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 10.69 10.67	Freq [MHz] Detector Tores 37 44 52 52 5210 42 AVG 52T 10.75 10.84 13.81 10.89 10.97 13.94 10.81 10.83 13.83 5290 58 AVG 52T 10.87 10.68 13.79 10.81 10.80 13.82 10.74 10.73 13.83 5550 106 AVG 52T 10.57 10.72 13.66 10.88 10.90 13.80 10.73 10.51 13.63 5610 122 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 10.69 10.69 10.65 13.67 5690 138 AVG 52T 10.64 10.92 13.79 10.62 10.97 13.81 10.69 10.67 13.69	Freq [MHz] Detector Tones 37 44 52 Power Limit P

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

FCC ID: A3LSMF711U1	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 07 of 016
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset		Page 87 of 216
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MIMO Conducted Output Power Measurements (106 Tones)

							RU I	ndex			Conducted	Conducted
	Freq [MHz]	Channel	Detector	Tones		53			54		Power Limit	Power
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N	5180	36	AVG	106T	14.32	14.13	17.24	14.27	14.10	17.20	23.98	-6.74
Ξſ	5200	40	AVG	106T	14.15	14.22	17.20	14.05	14.16	17.12	23.98	-6.78
Σt	5240	48	AVG	106T	14.11	14.16	17.15	14.03	14.08	17.07	23.98	-6.83
S. S	5260	52	AVG	106T	14.15	14.16	17.17	14.04	14.19	17.13	23.47	-6.30
<u></u> <u></u> <u></u> <u></u>	5280	56	AVG	106T	14.15	13.94	17.06	14.08	13.85	16.98	23.47	-6.41
	5320	64	AVG	106T	14.05	13.93	17.00	14.02	13.81	16.93	23.47	-6.47
a T	5500	100	AVG	106T	14.27	13.97	17.13	14.27	13.89	17.09	22.80	-5.67
C m	5600	120	AVG	106T	14.19	14.38	17.30	14.10	14.31	17.22	22.80	-5.50
5	5720	144	AVG	106T	14.14	14.23	17.20	14.06	14.11	17.10	22.80	-5.60
	5745	149	AVG	106T	14.14	14.05	17.11	14.29	13.94	17.13	30.00	-12.87
	5785	157	AVG	106T	14.22	14.45	17.35	14.27	14.28	17.29	30.00	-12.65
	5825	165	AVG	106T	14.43	14.33	17.39	14.45	14.26	17.37	30.00	-12.61

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

									RU Index					Conducted	Conducted
	Freq [MHz]	Channel	Detector	Tones		53			54			56		Power Limit	Power
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
5 5	5190	38	AVG	106T	14.18	14.00	17.10	14.47	14.26	17.38	14.07	13.94	17.02	23.98	-6.60
פופ	5230	46	AVG	106T	14.17	13.93	17.06	14.25	14.15	17.21	13.96	14.19	17.09	23.98	-6.77
<u>₹ ₹</u>	5270	54	AVG	106T	14.19	14.35	17.28	14.28	13.98	17.14	13.94	14.22	17.09	23.47	-6.19
- 6	5310	62	AVG	106T	14.44	13.98	17.23	14.10	14.14	17.13	14.29	14.29	17.30	23.47	-6.17
	5510	102	AVG	106T	14.43	14.13	17.29	14.04	14.34	17.20	14.33	14.39	17.37	22.80	-5.43
a a	5590	118	AVG	106T	14.12	14.21	17.18	14.42	14.49	17.47	14.16	14.11	17.15	22.80	-5.33
ם צ	5710	142	AVG	106T	14.09	13.73	16.92	14.46	13.94	17.22	14.20	14.25	17.24	22.80	-5.56
	5755	151	AVG	106T	14.04	14.29	17.18	14.32	14.47	17.41	14.11	13.97	17.05	30.00	-12.59
	5795	159	AVG	106T	14.08	14.15	17.13	14.34	14.23	17.30	14.06	14.39	17.24	30.00	-12.70

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

									RU Index					Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		53			56			60		Power Limit	Power
프로					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
30M	5210	42	AVG	106T	14.37	14.19	17.29	14.42	14.30	17.37	14.26	14.35	17.32	23.98	-6.61
8) 1 (8)	5290	58	AVG	106T	14.28	14.13	17.22	14.33	14.25	17.30	14.23	14.25	17.25	23.47	-6.17
HZ HZ	5530	106	AVG	106T	14.20	14.19	17.21	14.45	14.24	17.36	14.32	14.28	17.31	22.80	-5.44
B SG	5610	122	AVG	106T	14.22	14.02	17.13	14.49	14.12	17.32	14.48	14.02	17.27	22.80	-5.48
40	5690	138	AVG	106T	13.89	14.17	17.04	14.37	14.15	17.27	14.38	13.93	17.17	22.80	-5.53
	5775	155	AVG	106T	13.86	14.44	17.17	14.32	14.35	17.35	14.17	14.29	17.24	30.00	-12.65

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

FCC ID: A3LSMF711U1	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 89 of 216
1M2107290086-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 88 of 216
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MIMO Conducted Output Power Measurements (242 Tones)

						RU Index		Conducted	Conducted
	Freq [MHz]	Channel	Detector	Tones		61		Power Limit	Power
					ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N	5180	36	AVG	242T	14.73	14.87	17.81	23.98	-6.17
E E	5200	40	AVG	242T	14.62	14.80	17.72	23.98	-6.26
d <u>t</u>	5240	48	AVG	242T	14.64	14.88	17.77	23.98	-6.21
	5260	52	AVG	242T	14.55	14.88	17.73	23.47	-5.74
<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	5280	56	AVG	242T	14.70	14.62	17.67	23.47	-5.80
N C	5320	64	AVG	242T	14.65	14.44	17.56	23.47	-5.91
a T	5500	100	AVG	242T	14.57	14.51	17.55	22.80	-5.25
C m	5600	120	AVG	242T	14.84	14.73	17.80	22.80	-5.00
5	5720	144	AVG	242T	14.81	14.79	17.81	22.80	-4.99
	5745	149	AVG	242T	14.44	14.96	17.72	30.00	-12.28
	5785	157	AVG	242T	14.46	14.64	17.56	30.00	-12.44
	5825	165	AVG	242T	14.69	14.51	17.61	30.00	-12.39

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

							RU li	ndex			Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		61			62		Power Limit	Power
lΫ 🤶					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
≓ ⇒	5190	38	AVG	242T	13.25	13.04	16.16	13.07	13.33	16.21	23.98	-7.77
S P	5230	46	AVG	242T	14.90	14.44	17.69	14.76	14.99	17.89	23.98	-6.09
<u>4</u>	5270	54	AVG	242T	14.97	14.46	17.73	14.80	14.88	17.85	23.47	-5.62
$\overline{\mathbf{D}}$	5310	62	AVG	242T	12.63	12.72	15.69	12.97	12.63	15.81	23.47	-7.66
Ρč	5510	102	AVG	242T	12.94	12.95	15.96	12.85	12.82	15.85	22.80	-6.84
ц В В	5590	118	AVG	242T	14.50	14.67	17.60	14.59	14.59	17.60	22.80	-5.20
С С Ш	5710	142	AVG	242T	14.58	14.63	17.62	14.81	14.91	17.87	22.80	-4.93
	5755	151	AVG	242T	14.46	14.72	17.60	14.62	14.44	17.54	30.00	-12.40
	5795	159	AVG	242T	14.60	14.80	17.71	14.56	14.51	17.55	30.00	-12.29

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

									RU Index					Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		61			62			64		Power Limit	Power
E €					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
e E	5210	42	AVG	242T	12.81	12.41	15.62	12.82	12.83	15.84	12.42	12.79	15.62	23.98	-8.14
<u>8</u> (8	5290	58	AVG	242T	11.16	11.41	14.30	11.04	11.44	14.25	10.93	11.32	14.14	23.47	-9.17
우입	5530	106	AVG	242T	11.06	10.85	13.97	11.23	11.05	14.15	11.20	10.96	14.09	22.80	-8.65
Ba	5610	122	AVG	242T	14.80	14.53	17.68	14.96	14.60	17.79	14.99	14.72	17.87	22.80	-4.93
- 22 -	5690	138	AVG	242T	14.96	14.73	17.86	14.32	14.66	17.50	14.48	14.69	17.60	22.80	-4.94
	5775	155	AVG	242T	14.82	14.52	17.68	14.95	14.40	17.69	14.99	14.51	17.77	30.00	-12.23

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

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MIMO Conducted Output Power Measurements (484 Tones)

					RU Index			Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		65		Power Limit	Power
	•				ANT1	ANT2	MIMO	[dBm]	Margin [dB]
N N	5190	38	AVG	484T	13.47	13.47	16.48	23.98	-7.50
<u>S</u>	5230	46	AVG	484T	14.85	14.65	17.76	23.98	-6.22
<u>4</u>	5270	54	AVG	484T	14.86	14.96	17.92	23.47	-5.55
5	5310	62	AVG	484T	12.77	12.73	15.76	23.47	-7.71
P C	5510	102	AVG	484T	12.98	12.97	15.99	22.80	-6.81
ы В В	5590	118	AVG	484T	14.49	14.47	17.49	22.80	-5.31
D C D	5710	142	AVG	484T	14.64	14.72	17.69	22.80	-5.11
	5755	151	AVG	484T	14.53	14.64	17.60	30.00	-12.40
	5795	159	AVG	484T	14.54	14.69	17.63	30.00	-12.37
	Table 7-3		AOMU- D	W/ /I INIII)	Maximum C	onducted Or	Itout Dowor	(191 Topos)	

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

						RU Index					Conducted	Conducted
N	Freq [MHz]	Channel	Detector	Tones		65			66		Power Limit	Power
F F					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	[dBm]	Margin [dB]
o p	5210	42	AVG	484T	12.79	12.61	15.71	12.55	12.79	15.68	23.98	-8.27
<u>8</u>	5290	58	AVG	484T	11.16	11.38	14.28	11.07	11.41	14.25	23.47	-9.19
nc tz	5530	106	AVG	484T	11.32	11.46	14.40	11.49	11.49	14.50	22.80	-8.30
Ba G	5610	122	AVG	484T	14.89	14.57	17.74	14.98	14.85	17.93	22.80	-4.87
5	5690	138	AVG	484T	14.28	14.67	17.49	14.49	14.85	17.68	22.80	-5.12
	5775	155	AVG	484T	14.82	14.99	17.92	14.99	14.55	17.79	30.00	-12.08

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

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MIMO Conducted Output Power Measurements (996 Tones)

					RU Index		Conducted	Conducted	
N	Freq [MHz]	Channel	Detector	Tones		67		Power Limit	Power
(80MH: width)					ANT1	ANT2	MIMO	[dBm]	Margin [dB]
o ti	5210	42	AVG	996T	12.84	12.62	15.74	23.98	-8.24
	5290	58	AVG	996T	11.30	11.48	14.40	23.47	-9.07
Hz and	5530	106	AVG	996T	11.47	11.11	14.30	22.80	-8.50
5Gł Ba	5610	122	AVG	996T	14.72	14.73	17.74	22.80	-5.06
5	5690	138	AVG	996T	14.96	14.89	17.94	22.80	-4.86
	5775	155	AVG	996T	14.74	14.63	17.70	30.00	-12.30

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

Note:

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 15.11 dBm for Antenna-1 and 15.15 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(15.11 dBm + 15.15 dBm) = (32.43 mW + 32.73 mW) = 65.17 mW = 18.14 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 $\geq 2 \times (\text{span/RBW})$
- 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 ANT 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]
	5180	36	ax (20MHz)	26T	MCS0	6.79	11.0	-4.21
_	5200	40	ax (20MHz)	26T	MCS0	6.75	11.0	-4.25
d 1	5240	48	ax (20MHz)	26T	MCS0	7.04	11.0	-3.96
Band	5190	38	ax (40MHz)	26T	MCS0	6.90	11.0	-4.10
	5230	46	ax (40MHz)	26T	MCS0	7.84	11.0	-3.16
	5210	42	ax (80MHz)	26T	MCS0	5.02	11.0	-5.98
	5260	52	ax (20MHz)	26T	MCS0	7.89	11.0	-3.11
∢	5280	56	ax (20MHz)	26T	MCS0	7.84	11.0	-3.16
Band 2A	5320	64	ax (20MHz)	26T	MCS0	7.87	11.0	-3.13
an	5270	54	ax (40MHz)	26T	MCS0	7.65	11.0	-3.35
ш	5310	62	ax (40MHz)	26T	MCS0	7.33	11.0	-3.67
	5290	58	ax (80MHz)	26T	MCS0	6.28	11.0	-4.72
	5500	100	ax (20MHz)	26T	MCS0	6.89	11.0	-4.11
	5600	120	ax (20MHz)	26T	MCS0	6.45	11.0	-4.55
	5720	144	ax (20MHz)	26T	MCS0	8.37	11.0	-2.63
SC	5510	102	ax (40MHz)	26T	MCS0	7.34	11.0	-3.66
Band 2C	5590	118	ax (40MHz)	26T	MCS0	7.65	11.0	-3.35
Ba	5710	142	ax (40MHz)	26T	MCS0	8.06	11.0	-2.94
	5530	106	ax (80MHz)	26T	MCS0	7.21	11.0	-3.79
	5610	122	ax (80MHz)	26T	MCS0	7.47	11.0	-3.53
	5690	138	ax (80MHz)	26T	MCS0	6.97	11.0	-4.03

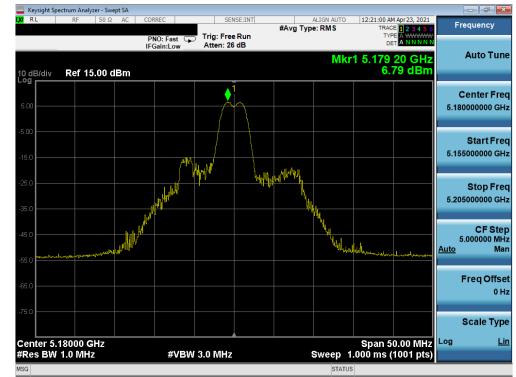
Table 7-40. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density	Margin [dB]
	5745	149	ax (20MHz)	26T	MCS0	5.12	30.00	-24.88
e	5785	157	ax (20MHz)	26T	MCS0	5.11	30.00	-24.89
	5825	165	ax (20MHz)	26T	MCS0	4.78	30.00	-25.22
Band	5755	151	ax (40MHz)	26T	MCS0	5.94	30.00	-24.06
	5795	159	ax (40MHz)	26T	MCS0	5.65	30.00	-24.35
	5775	155	ax (80MHz)	26T	MCS0	5.45	30.00	-24.55

Table 7-41. Band 3 Conducted Power Spectral Density Measurements (26 Tones)

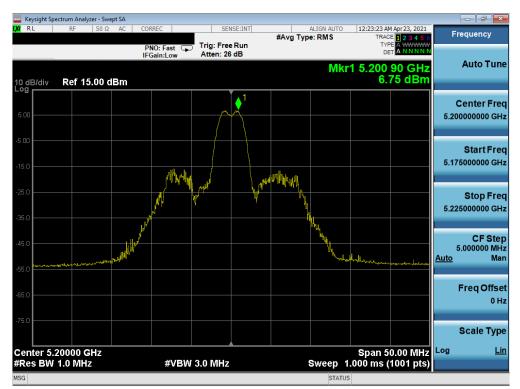
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SISO ANT 1 Power Spectral Density Measurements (26 Tones)

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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