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MEASUREMENT REPORT FCC PART 15.407 UNII

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.: 1M2104130035-12.A3L

FCC ID:

A3LSMF711B

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: EUT Type: Frequency Range: Modulation Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-F711B Portable Handset 5180 – 5825MHz OFDM 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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MEASUREMENT REPORT



			ANT1		MI	ON
UNII Band	Channel Bandwidth (MHz)	Tx Frequency (MHz)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1		5180 - 5240	62.951	17.99	121.339	20.84
2A	20	5260 - 5320	62.951	17.99	125.314	20.98
2C		5500 - 5720	62.951	17.99	125.603	20.99
3		5745 - 5825	62.951	17.99	122.180	20.87
1		5190 - 5230	47.098	16.73	99.770	19.99
2A	40	5270 - 5310	47.315	16.75	93.111	19.69
2C	40	5510 - 5710	49.545	16.95	96.605	19.85
3		5755 - 5795	49.888	16.98	95.280	19.79
1		5210	17.701	12.48	34.754	15.41
2A	00	5290	19.364	12.87	39.719	15.99
2C	80	5530 - 5690	38.548	15.86	72.444	18.60
3		5775	39.355	15.95	71.779	18.56

EUT Overview – N

č		ANT1		MIMO	
Channel Bandwidth (MHz)	Tx Frequency (MHz)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
	5180 - 5240	59.156	17.72	121.060	20.83
00	5260 - 5320	60.256	17.80	122.462	20.88
20	5500 - 5720	60.256	17.80	122.744	20.89
	5745 - 5825	62.373	17.95	123.880	20.93
	5190 - 5230	48.865	16.89	95.280	19.79
40	5270 - 5310	49.659	16.96	98.628	19.94
40	5510 - 5710	49.545	16.95	97.051	19.87
	5755 - 5795	46.774	16.70	93.972	19.73
	5210	17.660	12.47	35.156	15.46
80	5290	19.861	12.98	39.264	15.94
	5530 - 5690	37.154	15.70	76.736	18.85
	5775	37.931	15.79	74.131	18.70
	(MHz) 20 40	Bandwidth (MHz) Ix Frequency (MHz) 20 5180 - 5240 5260 - 5320 5260 5500 - 5720 5745 - 5825 5190 - 5230 5270 - 5310 40 5270 - 5310 5510 - 5710 5755 - 5795 5210 5290 80 5230 - 5690	Channel Bandwidth (MHz) Tx Frequency (MHz) Max. Power (mW) 5180 - 5240 59.156 5260 - 5320 60.256 5500 - 5720 60.256 5745 - 5825 62.373 6190 - 5230 48.865 5270 - 5310 49.659 5510 - 5710 49.545 5755 - 5795 46.774 5290 19.861 5530 - 5690 37.154	Channel Bandwidth (MHz) Tx Frequency (MHz) Max. Power (mW) Max. Power (dBm) 20 5180 - 5240 59.156 17.72 5260 - 5320 60.256 17.80 5500 - 5720 60.256 17.80 5745 - 5825 62.373 17.95 40 5270 - 5310 48.865 16.89 5510 - 5710 49.659 16.96 55755 - 5795 46.774 16.70 5220 5230 17.80 5530 - 5690 19.861 12.98	Channel Bandwidth (MHz) Tx Frequency (MHz) Max. Power (mHz) Max. Power (dBm) Max. Power (mW) 20 5180 - 5240 59.156 17.72 121.060 5260 - 5320 60.256 17.80 122.462 5500 - 5720 60.256 17.80 122.744 5745 - 5825 62.373 17.95 123.880 40 5190 - 5230 48.865 16.89 95.280 5510 - 5710 49.659 16.96 98.628 5510 - 5710 49.545 16.95 97.051 5755 - 5795 46.774 16.70 93.972 80 5290 19.861 12.98 39.264

EUT Overview – Q

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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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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMF711B**. 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, 0129M, 0189M, 0843M, 0174M, 0545M, 0863M, 0837M, 0677M, 0059S, 0585S, 1598S, 1600S

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n5, n66), 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)						
36	5180	52	5260	100	5500	149	5745
:	:	:	:	:	:	:	:
42	5210	56	5280	120	5600	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825

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

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

	Band 2A
-	Frequency (MHz)
	5270
	••
	5310

Ch 54 : 62 . . .

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

Ch.	Frequency (MHz)
151	5755
:	
159	5795

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

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

Table 2-3. 802.11ac / 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:

Maximum Achievable Duty Cycles					
802 11 M	odo/Band	Duty Cycle [%]			
802.11 IVI	802.11 Mode/Band		МІМО		
	а	98.9	99.0		
	n (HT20)	99.7	99.8		
	ac (HT20)	99.7	99.7		
	ax (HT20)	99.7	99.7		
5GHz	n (HT40)	99.7	99.7		
	ac (HT40)	99.7	99.7		
	ax (HT40)	99.7	99.7		
	ac (HT80)	99.7	99.7		
	ax (HT80)	99.7	99.7		

Table 2-4. Measured Duty Cycles - N

Maximum Achievable Duty Cycles					
802 11 M	lodo /Band	Duty Cycle [%]			
802.11 1	802.11 Mode/Band		MIMO		
	а		98.9		
	n (HT20)	99.7	99.7		
	ac (HT20)	99.7	99.7		
	ax (HT20)	99.7	99.7		
5GHz	n (HT40)	99.7	99.7		
	ac (HT40)	99.7	99.7		
	ax (HT40)	99.7	99.7		
	ac (HT80)	99.7	99.7		
	ax (HT80)	99.7	99.7		
Tah	lo 2-5 Mossur	ad Duty Cycle			

Table 2-5. Measured Duty Cycles - Q

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

WiFi Configurations		SISO		SDM		CDD	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
	11a	\checkmark	×	×	×	✓	✓
5GHz	11n/ac/ax (20MHz)	\checkmark	×	✓	✓	✓	✓
	11n/ac/ax (40MHz)	✓	×	✓	✓	✓	✓
	11ac/ax (80MHz)	✓	×	✓	✓	\checkmark	\checkmark

Table 2-6. Frequency / Channel Operations

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 \checkmark = Support ; ***** = NOT Support SISO = Single Input Single Output SDM = Spatial Diversity Multiplexing – MIMO function CDD = Cyclic Delay Diversity - 2Tx Function

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

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

Description	Bluetooth	2.4 GHz Emission	5 GHz Emission
Antenna	1	2	1, 2
Channel	0	11	100
Operating Frequency (MHz)	2402	2462	5500
Data Rate (Mbps)	1	1	6
Mode	GFSK	802.11b	802.11a

Table 2-7. Config-1 (ANT1 5GHz & ANT2 2.4GHz)

Configuration 2: ANT1 and ANT2 both transmitting in 2.4GHz and 5GHz modes simultaneously

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1, 2	1, 2
Channel	11	100
Operating Frequency (MHz)	2462	5500
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

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

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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 2-9. Antenna Peak Gain

2.4 Test Configuration

The EUT was tested per the guidance of KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, and 7.5 for antenna port conducted emissions test setups.

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) 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 will be manufactured using two different WIFI chipsets (N and Q) and each chipset supports two configurations: one is with screen open, and one is with screen closed. Both configurations for each chipset 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 F711USQU0AUEF 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 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by ETS Lindgren RF Enclosures. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, $50\Omega/50\mu$ H Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is an ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (100dB Minimum Insertion Loss, 14kHz – 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

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 RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.8. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted emissions testing.

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3.3 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.

3.4 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	F\$W67	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:	A3LSMF711B
FCC Classification:	Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	RSS Section(s)	Test Description Test Limit		Test Condition	Test Result	Reference
2.1049	RSS-Gen [6.6]	26dB Bandwidth	26dB Bandwidth N/A		PASS	Section 7.2
15.407(e)	RSS-Gen [6.6]	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	meet the limits detailed in $15.4(1)$ (a)		PASS	Section 7.4
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum Power Maximum power spectral density		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	Iency See DFS Test Report		PASS	See DFS Test Report
15.407(b.1), (2), (3), (4)	RSS-247 [6.2]	47 [6.2] Undesirable Emissions Undesirable Emissions Undesirable Emissions Undesirable Emissions Undesirable Emissions [6.2]			PASS	Section 7.6
15.205, 15.407(b.1), (4), (5), (6)	RSS-Gen [8.9]	General Field Strength Limite (Restricted Bands Emissions in restricted bands must		RADIATED	PASS	Section 7.6, 7.7
15.407	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 (RSS-Gen [8.8]) limits	LINE CONDUCTED	PASS	Section 7.8

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.

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7.2 26dB Bandwidth Measurement – 802.11a/n/ac/ax 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 \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold

Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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Antenna-1 26 dB Bandwidth Measurements-N

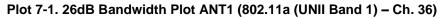
					Measured 26dB
	Frequency	Channel	802.11 Mode	Data Rate [Mbps]	Bandwidth
	[MHz]	No.			[MHz]
	5180	36	а	6	25.38
	5200	40	а	6	22.67
	5240	48	а	6	24.37
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	24.72
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	22.91
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	22.12
-	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	23.66
Band .	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	24.68
ä	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	26.74
	5190	38	n (40MHz)	13.5/15 (MCS0)	39.23
	5230	46	n (40MHz)	13.5/15 (MCS0)	39.49
	5190	38	ax (40MHz)	13.5/15 (MCS0)	39.82
	5230	46	ax (40MHz)	13.5/15 (MCS0)	40.02
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	81.02
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	81.25
	5260	52	а	6	29.14
	5280	56	а	6	22.04
	5320	64	а	6	21.82
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	25.08
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	22.57
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	22.39
2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	20.62
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	21.73
Ba	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	21.67
	5270	54	n (40MHz)	13.5/15 (MCS0)	39.21
	5310	62	n (40MHz)	13.5/15 (MCS0)	39.52
	5270	54	ax (40MHz)	13.5/15 (MCS0)	40.10
	5310	62	ax (40MHz)	13.5/15 (MCS0)	39.66
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	81.56
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	82.06
	5500	100	а	6	21.97
	5600	120	а	6	28.18
	5720	144	а	6	39.12
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	23.81
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	23.88
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	28.60
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	20.78
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	25.90
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	28.01
20	5510	102	n (40MHz)	13.5/15 (MCS0)	39.26
Band 2C	5590	118	n (40MHz)	13.5/15 (MCS0)	39.53
ä	5710	142	n (40MHz)	13.5/15 (MCS0)	41.20
	5510	102	ax (40MHz)	13.5/15 (MCS0)	40.08
	5590	118	ax (40MHz)	13.5/15 (MCS0)	39.79
	5710	142	ax (40MHz)	13.5/15 (MCS0)	41.10
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	81.58
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	81.22
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	82.20
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	82.05
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	81.49
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	81.81
Т	blo 7-2 (` onduct	od Randwi	dth Measuren	nonto ANITI

 Table 7-2. Conducted Bandwidth Measurements ANT1

FCC ID: A3LSMF711B	PCTEST [®] Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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D2 RL RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO 07:35:30 PM May 06,2021 Radio Statistical Center Freq: 5,180000000 GHz Radio Std: None Radio Device: BTS Radio Device: BTS 10 dB/div Ref 20.00 dBm
#IFGain:Low #Atten: 20 dB Radio Device: BTS 10 dB/div Ref 20.00 dBm Clear Write 000 <
In common In common 10 dB/div Ref 20.00 dBm 10 dB/div Ref 20.00 dBm 10 dB/div Image: Clear Write
Log 100 100 100 100 100 100 100 10
Log 100 100 100 100 100 100 100 10
Clear Write 000 000 000 000 000 000 000 000 000 0
000 000
20.0 Monode Management Monode Management Average 30.0 Monode Management Imagement Imagement 40.0 Monode Management Imagement Imagement 50.0 Imagement Imagement Imagement 60.0 Imagement Imagement Imagement 60.0 Imagement Imagement Imagement
30.0
-40.0 -40.0
60.0
60.0 Max Hold
Max Hole
-70.0
Center 5.18000 GHz Span 50.00 MHz
#Res BW 300 kHz VBW 3 MHz Sweep 1 ms Min Hole
Occupied Bandwidth Total Power 23.9 dBm
16.682 MHz Detecto
Transmit Freq Error -19.535 kHz % of OBW Power 99.00 % Auto Ma
x dB Bandwidth 25.38 MHz x dB -26.00 dB
MSG STATUS





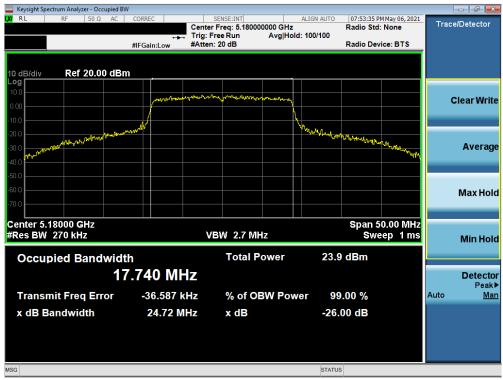
Plot 7-2. 26dB Bandwidth Plot ANT1 (802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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🚾 Keysight Spectrum Analyzer - Occupied BV							
LXU RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.2400		GN AUTO 07:37:56 P Radio Std	M May 06, 2021 : None	Trace/D	etector
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 10	0/100 Radio Dev	vice: BTS		
	#IFGall.LOW	mattern 20 ab		Hudio Ber			
10 dB/div Ref 20.00 dBr	n						
Log 10.0							
0.00	manana	Marthe and a second	mon			Cle	ar Write
-10.0			<u> </u>			_	_
-20.0	Smll		n Mar	Ana water way			
-30.0				- Www	man	1	Average
-40.0					and the	_	_
-50.0							
-60.0						M	lax Hold
-70.0						_	
Center 5.24000 GHz		'			0.00 MHz		
#Res BW 240 kHz		VBW 2.4 M	Hz	Swe	eep 1 ms	N	lin Hold
Occupied Bandwidt	h	Total F	ower	24.0 dBm			
	6.540 M⊦	7					Detector
							Peak▶
Transmit Freq Error	-26.950 k		BW Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	24.37 M	Hz xdB		-26.00 dB			
MSG				STATUS			
Mog				STATUS			





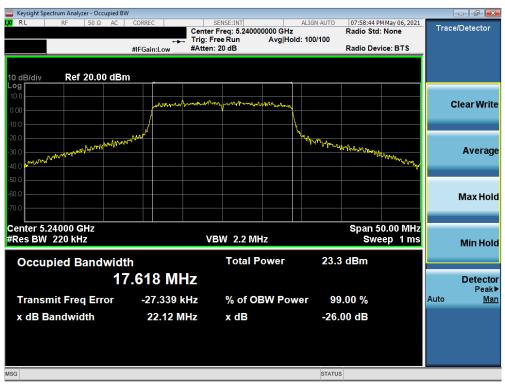
Plot 7-4. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

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Keysight Spectrum Analyzer - Occupied BV							d X
IXI RL RF 50Ω AC			ALIGN AUTO 00000 GHz Avg Hold: 100/100	Radio Std:		Trace/Dete	ector
	#IFGain:Low	#Atten: 20 dB		Radio Devi	ce: BTS		
10 dB/div Ref 20.00 dBr	n						
Log 10.0	and the second	moundary	sm hat my			Clear	Write
-10.0	/						_
-20.0 -30.0 -40.0 wathington wathington and a second	Aparteria		Y Thomas and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mun .	Av	erage
-40.0 ml/							_
-60.0						Ma	x Hold
Center 5.20000 GHz #Res BW 220 kHz		VBW 2.2 M	∣i		0.00 MHz ep 1 ms		1 Hold
Occupied Bandwidt	h	Total P		.4 dBm		IVIII	Ποία
	7.643 MF	lz				De	tector Peak▶
Transmit Freq Error	-35.789 k	Hz % of O	BW Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	22.91 M	lHz x dB	-2	6.00 dB			
MSG			STA	TUS			

Plot 7-5. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



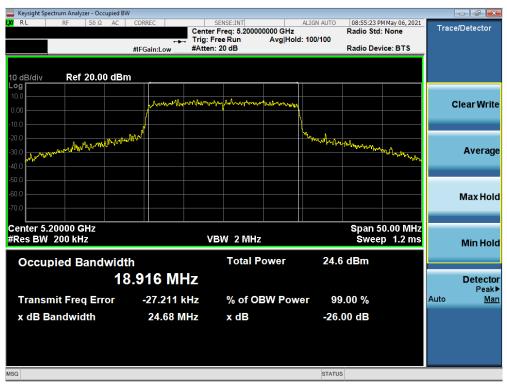
Plot 7-6. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

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Keysight Spectrum Analyzer - Occupied BV					
LXX RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.180000 Trig: Free Run #Atten: 20 dB	ALIGN AUTO 000 GHz Avg Hold: 100/100	08:22:55 PM May 06, 20 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBn		witten 20 dB			
0.00	malina	warma waana waa	mun han		Clear Write
-10.0 -20.0 -30.0				hardulit of the states	Average
-50.0					Max Hold
Center 5.18000 GHz #Res BW 240 kHz		VBW 2.4 MH		Span 50.00 MH Sweep 1 m	
Occupied Bandwidt	հ 9.007 MI	Total Po Z	ower 24.7	7 dBm	Detecto Peak
Transmit Freq Error x dB Bandwidth	3.369 k 23.66 M			0.00 % .00 dB	Auto <u>Mar</u>
MSG			STATU	s	

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



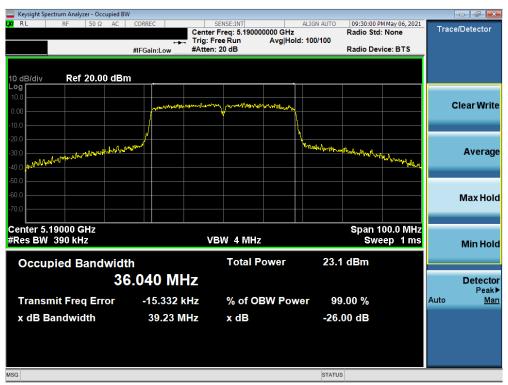
Plot 7-8. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B							
XV RL RF 50Ω AC	CORREC	SENSE:INT	00000 GHz	Radio Std	MMay 06, 2021 I: None	Trace/D	etector
	⊶⊷ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100	/100 Radio Dev	vice: BTS		
10 dB/div Ref 20.00 dBr	n						
10.0	Car Jan Al	ᡶ _᠕ ᡐᡴᢪᢇᡳᢢᢛ᠋᠅ᢣᢩᢂᢜᡘ᠋ᠬᢘᠮᢪᢪᡨᡎᠻᡪ	o Co.asau .			014	ear Write
0.00						CIE	ar write
-10.0			- Me	u A.			
-20.0				When when the Mary of	mungan		Average
-40.0					· • •		
-50.0							
-60.0						N	lax Hold
-70.0							
Center 5.24000 GHz					50.00 MHz		
#Res BW 240 kHz		VBW 2.4 M	Hz	Sw	eep 1 ms		Min Hold
Occupied Bandwidt	th	Total F	Power	24.8 dBm			
18	3.990 MF	z					Detector
Transmit Freq Error	-30.422 k	Hz % of O	BW Power	99.00 %		Auto	Peak▶ Man
x dB Bandwidth	26.74 M			-26.00 dB			
	20.14 1			-20.00 dB			
MSG				STATUS			

Plot 7-9. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)



Plot 7-10. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

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Keysight Spectrum Analyzer - Occupied BW	
X RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO 09:30:53 PM May 06, 2021 Center Freq: 5.230000000 GHz Radio Std: None	Trace/Detector
Trig: Free Run Avg Hold: 100/100 #FGain:Low #Atten: 20 dB Radio Device: BTS	
#IFGain:Low #Atten: 20 db Radio Device: D13	
10 dB/div Ref 20.00 dBm	
10.0	Clear Write
	Cical Mile
	Average
-60.0	Max Hold
-70.0	
Center 5.23000 GHz Span 100.0 MHz	
#Res BW 390 kHz VBW 4 MHz Sweep 1 ms	Min Hold
Occupied Bandwidth Total Power 22.9 dBm	
	-
36.067 MHz	Detector Peak►
Transmit Freq Error -17.710 kHz % of OBW Power 99.00 % Au	
x dB Bandwidth 39.49 MHz x dB -26.00 dB	
MSG	

Plot 7-11. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 46)



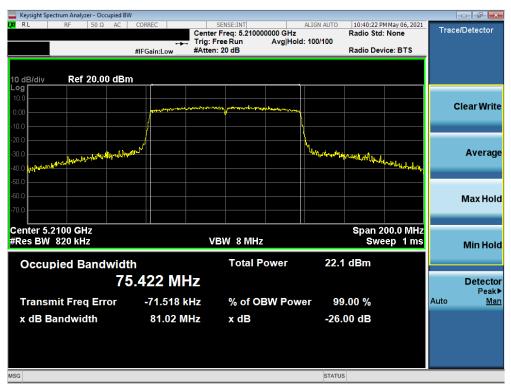
Plot 7-12. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

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Keysight Spectrum Analyzer - Occupied BV					
XI RE S0Ω AC	🛶 Trig:			5 PM May 06, 2021 td: None	Trace/Detector
	#IFGain:Low #Atte	n: 20 dB	Radio D	evice: BTS	
10 dB/div Ref 20.00 dBr	0				
0.00	wwwwwwwwwww	wytownahrownhim			Clear Write
10.0					
20.0	rafu ^{rta}		may work and made my last		_
30.0 40.0				MANANY MAILAN	Average
50.0					
60.0					Max Hold
70.0					
Center 5.23000 GHz				100.0 MHz	
#Res BW 390 kHz		/BW 4 MHz	Sv	veep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	24.3 dBm		
37	7.745 MHz				Detector
Transmit Freq Error	-32.300 kHz	% of OBW Pow	ver 99.00 %		Peak≢ Auto <u>Mar</u>
x dB Bandwidth	40.02 MHz	x dB	-26.00 dB		
SG			STATUS		
50			514105		

Plot 7-13. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



Plot 7-14. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV					- P ×
X/RL RF 50Ω AC		SENSE:INT r Freq: 5.210000000 GHz	Radio St	PM May 06, 2021 d: None	Trace/Detector
		FreeRun Avg Hol n:20 dB	ld: 100/100 Radio De	vice: BTS	
10 dB/div Ref 20.00 dBn	n				
Log 10.0					
0.00	monterment	will who muse madestron with free	4		Clear Write
-10.0					
20.0					
30.0	N		Non-Wahlelon Heart withour		Average
30.0 40.0 mallen half mall and mall and a straight the				March Martin	
50.0					
-60.0					Max Hold
70.0					
Center 5.2100 GHz			Span	200.0 MHz	
#Res BW 820 kHz	V	/BW 8 MHz		reep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	22.7 dBm		
[]	7.072 MHz				Detector Peak►
Transmit Freq Error	-121.08 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	81.25 MHz	x dB	-26.00 dB		
SG			STATUS		

Plot 7-15. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



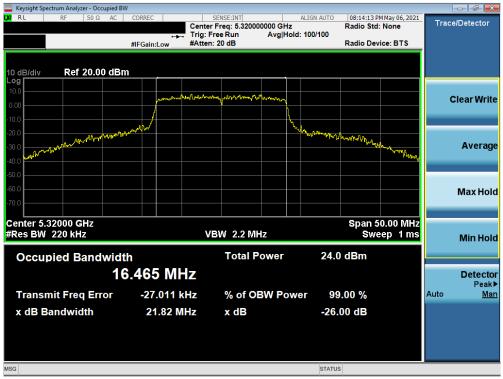
Plot 7-16. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW							
LX/RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.2800		IGN AUTO 07:43:26 F Radio Std	M May 06, 2021 : None	Trace/D	etector
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 10	00/100 Radio Dev	vice: BTS		
,	#IFGaIII:LOW	#Atten: 20 db		Rudio Ber	NCE. DTS		
10 dB/div Ref 20.00 dBm							
Log							
10.0	and the second	warden warden and	mm			Cle	ar Write
0.00						U.C.	
-10.0	Maria		h.				
-20.0 -30.0					Anne -		
-30.0					WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	,	Average
-40.0					<u> </u>		
-50.0							
-70.0						м	ax Hold
-70.0							
Center 5.28000 GHz					60.00 MHz		
#Res BW 270 kHz		VBW 2.7 M	Hz	Swe	eep 1 ms	N	lin Hold
Occupied Bandwidt	h	Total F	ower	24.0 dBm			
	 5.567 MH	-					etector
	0.007 WI	12				-	Peak ►
Transmit Freq Error	-35.029	Hz % of O	BW Power	99.00 %		Auto	Man
x dB Bandwidth	22.04 M	lHz xdB		-26.00 dB			
MSG				STATUS			

Plot 7-17. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 56)



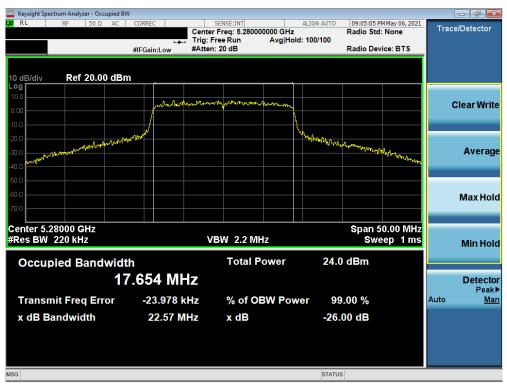
Plot 7-18. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV X RL RF 50 Ω AC	CORREC	SENSE:INT		ALIGN AUTO	09:05:38 P	M May 06, 2021		
	Ti taka Ti	enter Freq: 5.2600 rig: Free Run	00000 GHz Avg Hold	I: 100/100	Radio Std		Irace	/Detector
	#IFGain:Low #/	Atten: 20 dB			Radio Dev	vice: BTS		
10 dB/div Ref 20.00 dBn	n							
10.0		Accessed to a sheet strengthere						
0.00		an an an all and an br	- manya				С	lear Write
10.0	aut the full		<u> </u>	W .A.				
20.0				hay have marger hay	mar marine and	-m.		Average
40.0						while he		Average
50.0								
60.0								Max Hold
70.0								
Center 5.26000 GHz						0.00 MHz		
#Res BW 270 kHz		VBW 2.7 M	Hz		Swe	eep 1 ms		Min Hold
Occupied Bandwidt	h	Total F	Power	24.2	dBm			
17	7.750 MHz							Detector
Transmit Freq Error	-32.383 kHz	% of O	BW Pow	er 99	.00 %		Auto	Peak≢ <u>Mar</u>
x dB Bandwidth	25.08 MHz	x dB		-26.	00 dB			
							_	
								_
SG				STATUS	·			

Plot 7-19. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



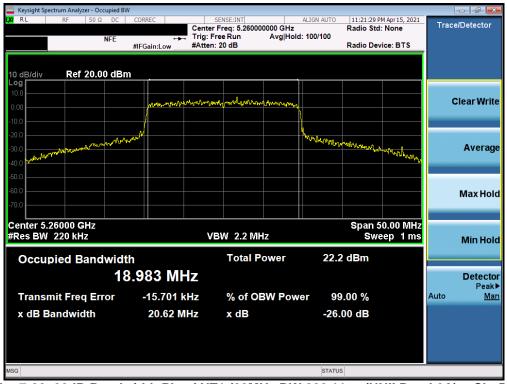
Plot 7-20. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B			417011			- đ	×
X RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.32000		Radio Std	M May 06, 2021 : None	Trace/Detect	tor
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100/1	00 Radio Dev	rice: BTS		
10 dB/div Ref 20.00 dBr	n						
Log 10.0							
0.00	monor	warman warde and	mm			ClearW	Vrite
10.0			<u> </u>				
20.0	mult		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Langer and all all all all all all all all all al			
30.0 What the work were				International Contraction of the second seco	Colomban .	Ave	rage
40.0					- m		
50.0							
60.0						Max	Hold
70.0							
Center 5.32000 GHz			-		0.00 MHz		
Res BW 240 kHz		VBW 2.4 MI	12	SWe	ep 1 ms	Min I	Hold
Occupied Bandwidt	th	Total P	ower	23.9 dBm			
17	7.665 MH	Z				Dete	ector
Transmit Freq Error	-36.027 kl	la % of O	BW Power	99.00 %		P	eak▶ Man
						Auto	man
x dB Bandwidth	22.39 MH	lz xdB		-26.00 dB			
SG				STATUS			_
							_

Plot 7-21. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)



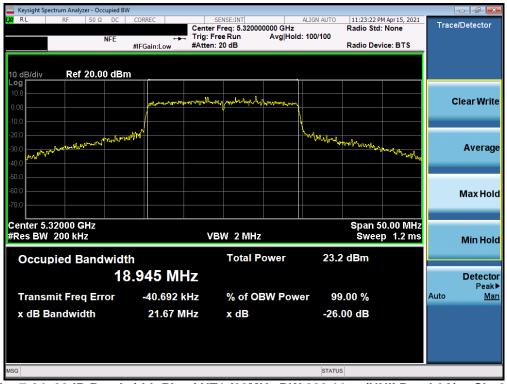
Plot 7-22. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV		CENCE INT		11-22-10 01	A15 2021		
RL RF 50Ω DC	CORREC	SENSE:INT Freg: 5.280000000 GHz	ALIGN AUTO	11:22:18 PM Radio Std:		Trace/Detec	tor
NEE	Trig: I	ree Run Avg Ho	ld: 100/100				
	#IFGain:Low #Atter	:: 20 dB		Radio Devi	e: BTS		
0 dB/div Ref 20.00 dBn	า						
og							
10.0						01	
.00	montheath	myrowhere and and	1			ClearV	vri
0.0			1				
0.0			La a	anal hough you			
a should be and a should be and	~~~~~~		. * Which the	mollough a		Ave	ra
0.0					Mary Mary	AVE	īa
0.0							
0.0							
i0.0						Max	Но
70.0						Mux	
enter 5.28000 GHz					.00 MHz		
Res BW 200 kHz	V	BW 2 MHz		Sweep	1.2 ms	Min	Но
		T- 4-1 D	00.4	- ID			
Occupied Bandwidt		Total Power	23.4	dBm			
18	3.980 MHz					Dete	ect
							'ea
Transmit Freq Error	-36.757 kHz	% of OBW Pov	ver 99	.00 %	4	Auto	M
x dB Bandwidth	21.73 MHz	x dB	-26	00 dB			
G			STATUS				

Plot 7-23. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



Plot 7-24. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV							
LX RL RF 50 Ω AC		SENSE:INT er Freq: 5.270000000 GHz		09:34:15 PM		Trace/D	etector
		Free Run Avg Ho n: 20 dB	old: 100/100	Radio Devic	e: BTS		
	#in Gam.Low						
10 dB/div Ref 20.00 dBr	n						
Log							
10.0	mannaman	my manhaman				Cle	ar Write
0.00		- Y	l				
-10.0							
-20.0	مليه الم		Www.www.www.	Luliman			Average
-30.0 -40.0				Whenther	- ward warden		weruge
-50.0							
-60.0							
-70.0						IV	lax Hold
Center 5.27000 GHz #Res BW 390 kHz	,	VBW 4 MHz		Span 10	0.0 MHz p 1 ms		
TRES DW JSO KIIZ				OWee	p ms	V	Ain Hold
Occupied Bandwidt	th	Total Power	23.0	dBm			
36	6.105 MHz					[Detector
				00.0/		Auto	Peak▶
Transmit Freq Error	-15.093 kHz	% of OBW Pov		.00 %		Auto	<u>Man</u>
x dB Bandwidth	39.21 MHz	x dB	-26.0)0 dB			
MSG			STATUS				

Plot 7-25. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)



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

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					- # ×
XIRL RF 50Ω AC		SENSE:INT Center Freq: 5.270000 Trig: Free Run	ALIGN AUTO 000 GHz Avg Hold: 100/100	09:45:44 PM May 06, 20 Radio Std: None	Trace/Detector
		fAtten: 20 dB		Radio Device: BTS	_
10 dB/div Ref 20.00 dBm	•				
10.0	1. 10-18	mannon	M to contra		Clear Write
0.00	1				
10.0					
20.0 30.0 40.0 Januarithalithatalanafallanafa	M		Walter	mulling	Average
40.0 your well and a second and a				a loandallanda a shifteen an	M
50.0					
60.0					Max Hold
70.0					
Center 5.27000 GHz				Span 100.0 Mi	1z
#Res BW 390 kHz		VBW 4 MHz		Sweep 1 m	ns Min Hold
Occupied Bandwidt	h	Total Po	wer 24.	0 dBm	
	.748 MHz	,			Detector
			W Power 99		Peak≯ Auto Man
Transmit Freq Error	28.720 kH			9.00 %	Auto <u>Man</u>
x dB Bandwidth	40.10 MH	z xdB	-26	.00 dB	
SG			STATU	IS	

Plot 7-27. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



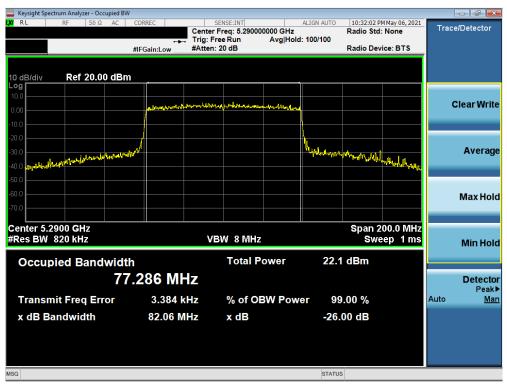
Plot 7-28. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMF711B	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV					
LXU RL RF 50Ω AC	CORREC	SENSE:INT er Freq: 5.290000000 GHz	ALIGN AUTO 10:41:11 Radio St	PM May 06, 2021 d: None	Trace/Detector
	Trig:		d: 100/100	evice: BTS	
	#IFGain:Low #Atte	en: 20 dB	Radio Di	evice: D15	
10 dB/div Ref 20.00 dBr	n				
10.0					Clear Write
0.00		and ferral and a second			Clear write
-10.0					
-20.0					
-30.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		halangertration of the standard		Average
-40.0 mpt-later and photoster and			. In constants	Marth Marthan	
-50.0					
-60.0					Max Hold
-70.0					
Center 5.2900 GHz			Snan	200.0 MHz	
#Res BW 820 kHz	۱	VBW 8 MHz		/eep 1 ms	Min Hold
					WIITTOK
Occupied Bandwidt		Total Power	21.5 dBm		
7:	5.467 MHz				Detector
Transmit Freq Error	-61.141 kHz	% of OBW Pow	ver 99.00 %		Peak Auto Mar
					<u></u>
x dB Bandwidth	81.56 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-29. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)



Plot 7-30. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B						- @ <mark>-</mark> ×
LX/RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.5000	ALIGN A	AUTO 07:47:17 P Radio Std	M May 06, 2021 None	Trace/Detector
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100/1	00 Radio Dev	ice: BTS	
	#IFGaIn:Low	#Atten: 20 db		Radio Dev	ICE. DT3	
10 dB/div Ref 20.00 dBr	2					
10.0	antras	Mr. Marina Mariana	hanna			Clear Write
0.00		V				orear mile
-10.0	- AND		han .			
-20.0	A A A A A A A A A A A A A A A A A A A		- YV-~~vII	Mar		•
Instant I					An rathylog	Average
-40.0						
-50.0						
-60.0						Max Hold
-70.0						
Center 5.50000 GHz					0.00 MHz	
#Res BW 220 kHz		VBW 2.2 M	Hz	Swe	ep 1 ms	Min Hold
Occupied Bandwidt	h	Total F	ower	23.8 dBm		
	 6.459 MH	-				Detecto
	5.453 WI	12				Peak
Transmit Freq Error	-22.067 k	Hz % of O	BW Power	99.00 %		Auto <u>Mar</u>
x dB Bandwidth	21.97 M	Hz x dB		-26.00 dB	Ì	
MSG				STATUS		

Plot 7-31. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) - Ch. 100)



Plot 7-32. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711B	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	ASUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	08:25:50 PM	Apr15, 2021	
		r Freq: 5.72000000 GHz		Radio Std:	None	Trace/Detector
NFE		FreeRun Avg Ho n:20 dB	old: 100/100	Radio Devid	e: BTS	
	#IFGall.Low #/ tite			Tudio Derit		
0 dB/div Ref 20.00 dBm						
10.0						
0.00	manufarana	- market and the start of the s				Clear Wri
	1 m all		b			
an all thread in the second			J. B.	working a share		
MP MUP P				10	Willington and	Avera
30.0 Mar					- ¹ 1000	Avera
10.0						
50.0						
60.0						Max Ho
70.0						
enter 5.72000 GHz Res BW 390 kHz		/BW 4 MHz			0.00 MHz ep 1 ms	
Kes DW J90 KHZ	U.S.			Swee	ep i ins	Min Ho
Occupied Bandwidt	h	Total Power	22.3	3 dBm		
						D
25	.290 MHz					Detect Peal
Transmit Freq Error	294.57 kHz	% of OBW Por	wer 99	0.00 %	Au	
x dB Bandwidth	39.12 MHz	x dB	26	00 dB		
	39.12 WITZ	хав	-20.	00 aB		
G			STATU			

Plot 7-33. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) - Ch. 144)



Plot 7-34. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B						
XIRL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUT	0 08:11:23 PM Radio Std:	May 06, 2021 None	Trace/Detector
	+ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100/100	Radio Devi	ce: BTS	
10 dB/div Ref 20.00 dBr	n					
10.0	man	moundant	At More may			Clear Writ
-10.0	1					
	ليهممها		M. Roward	Mr. Market and		
-20.0					Mupple man	Averag
-40.0						
-50.0						
-70.0						Max Hol
Center 5.60000 GHz				Spap 5	0.00 MHz	
#Res BW 240 kHz		VBW 2.4 MI	lz		ep 1 ms	Min Hol
Occupied Bandwid	th	Total P	ower 24	4.1 dBm		
	7.681 MI	17				Detecto
Transmit Freq Error	-20.219		BW Power	99.00 %		Peak Auto Ma
x dB Bandwidth	23.88 N			6.00 dB		nato <u>ma</u>
	23.00 W		-2	0.00-08		
ISG			STA	TUS		

Plot 7-35. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)



Plot 7-36. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMF711B	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV							d X
XIRL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.5000		Radio Std	M May 06, 2021 : None	Trace/De	tector
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100/10	00 Radio Dev	vice: BTS		
10 dB/div Ref 20.00 dBn	n <u>, </u>						
Log 10.0		Al					
0.00	Wirym marr	min Maril All man	- Warden Ward			Clea	ar Write
-10.0			───				
20.0	كسهم		- Washington	M. And Marson Co			
					MULAUL WALK	A	verage
-40.0							
-50.0							
-70.0						M	ax Hold
Center 5.50000 GHz #Res BW 220 kHz		VBW 2.2 M	Hz		i0.00 MHz ep 1 ms		in Held
						IVI	in Hold
Occupied Bandwidt		Total	ower	24.8 dBm			
18	3.938 MI	IZ				D	etector Peak►
Transmit Freq Error	-28.525 k	Hz % of O	BW Power	99.00 %		Auto	Man
x dB Bandwidth	20.78 M	Hz x dB		-26.00 dB			
SG			s	TATUS			

Plot 7-37. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 100)



Plot 7-38. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 120)

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Keysight Spectrum Analyzer - Occupied BV								
<mark>X/</mark> RL RF 50Ω AC		SENSE:INT	0000 GHz	ALIGN AUTO	Radio Std	M May 06, 2021 : None	Trace	/Detector
		rig: Free Run Atten: 20 dB	Avg Hold:	100/100	Radio Dev	ice: BTS		
	SH Gameon							
10 dB/div Ref 20.00 dBn	n							
Log								
0.00	Martinel	white white	mound				С	lear Write
-10.0								
-20.0	(hulling)			y www.	and way the former	h ban du		
30.0						** Wille What he		Average
-40.0								
-50.0								
-60.0								Max Hold
-70.0								
Center 5.72000 GHz			<u> </u>		Span 5	0.00 MHz		
#Res BW 300 kHz		VBW 3 MHz			Swe	eep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower	25.3	dBm			
	.098 MHz	,						Detector
								Peak▶
Transmit Freq Error	-21.933 kH	z % of Ol	BW Powe	er 99	.00 %		Auto	Man
x dB Bandwidth	28.01 MHz	z x dB		-26.	00 dB			
ISG				STATUS				

Plot 7-39. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 144)



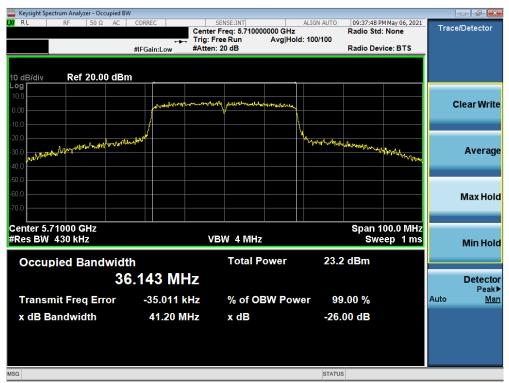
Plot 7-40. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 102)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates: 1M2104130035-12.A3L 04/12/2021 - 06/04/2021		EUT Type:		Dama 00 of 500
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Keysight Spectrum Analyzer - Occupied BW					
XI RE 50Ω AC		SENSE:INT Center Freq: 5.59000000 Frig: Free Run A	ALIGN AUTO 0 GHz vg Hold: 100/100	09:37:04 PM May 06, 2021 Radio Std: None	Trace/Detector
	#IFGain:Low #	Atten: 20 dB		Radio Device: BTS	
10 dB/div Ref 20.00 dBn					
		andrash Landrahan washe			Clear Write
-10.0 -20.0 -30.0 -40.0			- Copertrained	Annongelyn indry hww Magingel	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.59000 GHz #Res BW 430 kHz		VBW 4 MHz		Span 100.0 MHz Sweep 1 ms	Min Hole
Occupied Bandwidt	h	Total Pov	ver 23.0) dBm	
36	.090 MHz	2			Detecto Peak
Transmit Freq Error	-3.216 kH	z % of OBW	Power 99	9.00 %	Auto <u>Ma</u>
x dB Bandwidth	39.53 MH:	z x dB	-26	.00 dB	
ISG			STATU	S	

Plot 7-41. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)



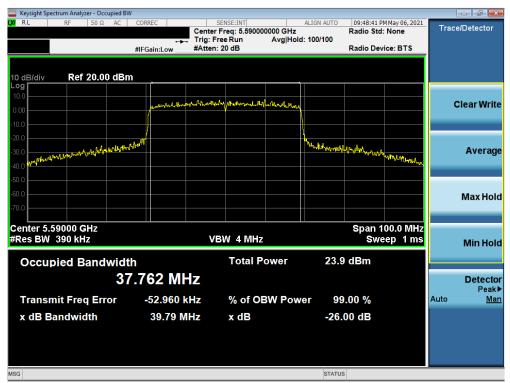
Plot 7-42. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dama 07 of 500
1M2104130035-12.A3L	04/12/2021 - 06/04/2021	ortable Handset		Page 37 of 508
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Keysight Spectrum Analyzer	- Occupied BW	CORREC	CEN	SE:INT		ALIGN AUTO	00:02:57.0	M Apr 15, 2021	_	
	50 32 DC	CORREC		eq: 5.5100000	00 GHz		Radio Std		Trac	e/Detector
	NFE		Trig: Free #Atten: 20		Avg Hold	: 100/100	Radio Dev			
		#IFGain:Low	#Atten: 20	ab			Radio Dev	lice: DTS		
0 dB/div Ref 2	0.00 dBm		_							
10.0										
		Juntant	Julasah frames	the second way	Mile and Mile and				(Clear Wri
10.0		f"] V		A SHOW OF A					
20.0		1								
	www.	w				what and the state	her thomas -			Avera
30.0 40.0								and mark hal		Arora
50.0										
60.0										Max Ho
70.0									_	
enter 5.51000 GH	z				L		Span 1	00.0 MHz		
Res BW 240 kHz			VBV	/ 2.4 MHz				1.667 ms		Min Ho
				Total Pov		22.2	dBm			
Occupied Ba				TOTAL POV	ver	22.2	авт			
	38	.165 M	Hz							Detect
Transmit Freq	Error	-233.35	kH7	% of OBV		ar 00	.00 %		Auto	Peal M
									/ ture	<u></u>
x dB Bandwidt	h	40.08	MHZ	x dB		-26.	00 dB			
SG						STATUS				

Plot 7-43. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)



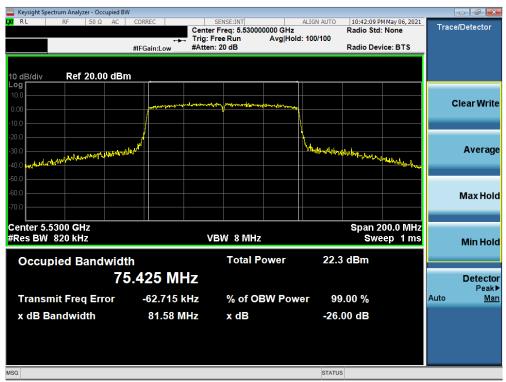
Plot 7-44. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N: Test Dates:		EUT Type:	Daga 20 of 500		
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Keysight Spectrum Analyzer - Occupied BV							d X
<mark>α</mark> RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.71000	ALIGN AUTO	09:49:17 P Radio Std	M May 06, 2021 : None	Trace/De	tector
	++→ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100/100	Radio Dev	ion: BTS		
	#IFGaIn:Low	#Atten: 20 db		Radio Dev	ice. D13		
10 dB/div Ref 20.00 dBn	0						
Log							
10.0	monoral	to be as welling restriction to be a set	Mehrelow how			Clea	r Write
0.00						0.00	
10.0							
20.0 30.0 Junipart and all and a start of the start of th			W Million March	montally	Muchael.	Δ.	verage
40.0						~	verage
50.0							
60.0							
70.0						Ma	ax Hold
Center 5.71000 GHz #Res BW 620 kHz		VBW 6 MHz			00.0 MHz ep 1 ms		
				300	ep mis	M	in Hold
Occupied Bandwidt	h	Total P	ower 24	.5 dBm			_
37	7.770 MH	Z				D	etector
						Auto	Peak▶
Transmit Freq Error	-24.523 kl			99.00 %		Auto	Mar
x dB Bandwidth	41.10 M	Hz x dB	-2	6.00 dB			
			Ĩ.				
SG			STA	TUS			

Plot 7-45. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)



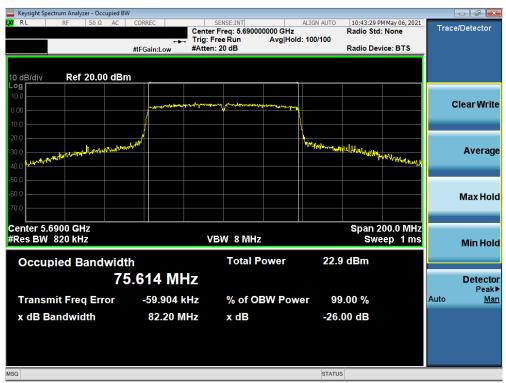
Plot 7-46. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMF711B	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N: Test Dates:		EUT Type:	Daga 20 of 500		
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Keysight Spectrum Analyzer - Occupied BV					- 0 ×
🗶 RL RF 50Ω AC		SENSE:INT r Freq: 5.610000000 GHz	R	10:42:58 PM May 06, 2021 adio Std: None	Trace/Detector
		Free Run Avg Ho n: 20 dB	old: 100/100 Ri	adio Device: BTS	
	si Guilleon				
10 dB/div Ref 20.00 dBn	n				
Log					
0.00	Mar Mar Mar Mar	and water and the second	n,		Clear Write
-10.0					
-20.0					
-30.0	www.		Mm Mary Holy	Ant Working to	Average
-30.0				Mater aprop of the local and the second	
-50.0					
-60.0					Max Hold
-70.0					
Center 5.6100 GHz				Span 200.0 MHz	
#Res BW 820 kHz	<u> </u>	/BW/8MHz		Sweep 1 ms	Min Hold
Occupied Bandwidt	b	Total Power	22.5 d	Bm	
					Detector
	0.402 IVINZ				Detector Peak
Transmit Freq Error	-61.428 kHz	% of OBW Pov	wer 99.0	0 %	Auto <u>Mar</u>
x dB Bandwidth	81.22 MHz	x dB	-26.00	dB	
SG			STATUS		

Plot 7-47. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)



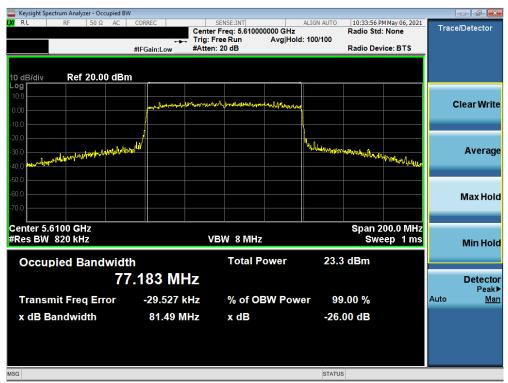
Plot 7-48. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF711B	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager		
Test Report S/N: Test Dates:		EUT Type:	Daga 40 of 500		
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Keysight Spectrum Analyzer - Occupie					
🗶 RE RF 50Ω AC		SENSE:INT enter Freg: 5.530000000 GH		5 PM May 06, 2021	Trace/Detector
	Ţ		lold: 100/100	Device: BTS	
	#IFGain:Low#	Atten: 20 dB	Radio L	Device: BTS	
	_				
10 dB/div Ref 20.00 d	Bm				
10.0					Clear Write
0.00	M. M. Mary Mary	helde fallen af the sound of the second states and the second stat	~~~		Clear write
-10.0					
-20.0					
-30.0	hester		Might huk get he was stringer for	Manuel Whater	Average
-40.0 MAN - 40.0				CANADO TO A	
-50.0					
-60.0					Max Hold
-70.0					
Center 5.5300 GHz			Spar	1 200.0 MHz	
#Res BW 820 kHz		VBW 8 MHz		weep 1ms	Min Hold
Occupied Banduri	dth	Total Power	22.9 dBm		
Occupied Bandwi			22.5 0011		
	77.127 MHz				Detector Peak►
Transmit Freq Error	-64.604 kHz	% of OBW Po	ower 99.00 %	,	Auto <u>Man</u>
x dB Bandwidth	82.05 MHz	x dB	-26.00 dB		
			20.00 42		
MSG			STATUS		

Plot 7-49. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)



Plot 7-50. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMF711B	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N: Test Dates:		EUT Type:		Dage 41 of 500	
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Keysight Spectrum Analyzer - Occupie					
Χ RL RF 50 Ω Α Ο		SENSE:INT ter Freq: 5.690000000 GHz	ALIGN AUTO 10:34:37 F Radio Std	M May 06, 2021 : None	Trace/Detector
		:FreeRun Avg Hol en:20 dB	d: 100/100 Radio Dev	vice: BTS	
	#I Gam.Low				
10 dB/div Ref 20.00 d	Bm				
Log					
10.0	and an all and the second of the second	and water many			Clear Write
0.00			1		
20.0	/				
30.0	Mushard		With Manaderia		Average
20.0 30.0 40.0				Munphen Window	Average
50.0					
60.0					Max Hold
-70.0					Max Hold
Center 5.6900 GHz #Res BW 820 kHz		VBW 8 MHz		200.0 MHz eep 1 ms	
					Min Hold
Occupied Bandwi	dth	Total Power	23.7 dBm		
	77.166 MHz				Detector
Transmit Frag Error	-77.893 kHz	% of OBW Pow	ver 99.00 %	,	Peak≯ ∖uto Man
Transmit Freq Error				,	
x dB Bandwidth	81.81 MHz	x dB	-26.00 dB		
			07.171.10		
SG			STATUS		

Plot 7-51. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Antenna-1 26 dB Bandwidth Measurements-Q

	Frequency	Channel			Measured 26dB
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Bandwidth-Q [MHz]
	5180	36	а	6	21.65
	5200	40	а	6	32.78
	5240	48	а	6	32.68
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	34.47
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	26.85
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	31.82
-	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	33.52
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	31.06
Ba	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	34.31
	5190	38	n (40MHz)	13.5/15 (MCS0)	40.58
	5230	46	n (40MHz)	13.5/15 (MCS0)	40.80
	5190	38	ax (40MHz)	13.5/15 (MCS0)	40.23
	5230	46	ax (40MHz)	13.5/15 (MCS0)	44.60
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	81.27
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	82.04
	5260	52	а	6	34.43
	5280	56	а	6	34.24
	5320	64	а	6	34.48
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	29.17
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	29.73
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	33.49
2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	32.28
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	31.01
Ba	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	37.30
	5270	54	n (40MHz)	13.5/15 (MCS0)	44.03
	5310	62	n (40MHz)	13.5/15 (MCS0)	52.35
	5270	54	ax (40MHz)	13.5/15 (MCS0)	53.66
	5310	62	ax (40MHz)	13.5/15 (MCS0)	53.14
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	82.08
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	81.44
	5500	100	а	6	26.77
	5600	120	а	6	31.33
	5720	144	a	6	34.80
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	30.47
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	25.77
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	31.73
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	29.30
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	26.67
U	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	27.07
d 20	5510 5590	102	n (40MHz)	13.5/15 (MCS0)	45.23
Band 2C	5590 5710	118 142	n (40MHz) n (40MHz)	13.5/15 (MCS0) 13.5/15 (MCS0)	47.76 43.72
ш	5710	142	ax (40MHz)	13.5/15 (MCS0)	43.72
	5590	118	ax (40MHz)	13.5/15 (MCS0)	47.63
	5710	142	ax (40MHz)	13.5/15 (MCS0)	42.47
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	81.04
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	81.62
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	82.38
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	82.67
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	82.01
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	81.46
-				dth Measuren	,,

 Table 7-3. Conducted Bandwidth Measurements ANT1

FCC ID: A3LSMF711B	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N: Test Dates:		EUT Type:		Dage 42 of E09	
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Keysight Spectrum Analyzer - Occupied BV					
LXIRL RF 50Ω AC	CORREC	SENSE:INT er Freg: 5.180000000 GHz		PM Jun 09, 2021 d: None	Trace/Detector
	Trig:		old: 100/100	vice: BTS	
	#IFGain:Low #Atte	en: 20 dB	Radio De	VICE: D13	
10 dB/div Ref 20.00 dBn	<u>n</u>				
10.0		and and the analysis of			Clear Write
0.00	mmon	and the second second			Clear write
-10.0					
-20.0	www.hllv		mallele and a construction of the second sec		
-30.0			A dra way way	mum may	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					
Center 5.18000 GHz			Span	50.00 MHz	
#Res BW 220 kHz		VBW 2.2 MHz		reep 1 ms	Min Hold
Occurried Developide		Total Power	22.3 dBm		
Occupied Bandwidt		I Oldi F Owei	22.3 UBIII		
16	5.472 MHz				Detector Peak▶
Transmit Freq Error	-30.598 kHz	% of OBW Po	wer 99.00 %	A	uto <u>Man</u>
x dB Bandwidth	21.65 MHz	x dB	-26.00 dB		
x db bandwidth	21.05 1112	A GD	-20.00 00		
MSG			STATUS		

Plot 7-52. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 1) - Ch. 36)



Plot 7-53. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	NG	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied B	W					×
LX RE 50Ω DC	Trig	SENSE:INT nter Freq: 5.240000000 G g: Free Run Avg tten: 20 dB	ALIGN AUTO Hz Hold: 100/100	08:46:49 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detecto	or
10 dB/div Ref 20.00 dB/ Log		ก็ไว่ทำค.จ. เปลี่ยมการโหนยงเป็นเอากัน				
0.00 -10.0 -20.0			hulal Marina Wijelman	Whatan	Clear Wr	rite
-30.0 April 197					Avera	age
-60.0					Max H	ol
Center 5.24000 GHz #Res BW 330 kHz Occupied Bandwid	th	VBW 3 MHz Total Powe	r 23.3	Span 50.00 MH: Sweep 1 ms 3 dBm		ol
	7.102 MHz				Detec	
Transmit Freq Error x dB Bandwidth	-23.610 kHz 32.68 MHz	% of OBW F x dB		0.00 % 00 dB		Ma
ISG			STATUS	3		

Plot 7-54. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 1) - Ch. 48)



Plot 7-55. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	ING	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied I	BW				
RL RF 50 Ω DC	🛶 Trig	SENSE:INT ter Freq: 5.200000000 GF : Free Run Avg F en: 20 dB	ALIGN AUTO Iz Iold: 100/100	09:15:55 PM Apr20, 20 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dB	m	WM WALLAND			Clear Write
-10.0 -20.0 -30.0 -40.0	where the second s		Man Man Man	any har for the former and the second s	Averag
-50.0					Max Hole
Center 5.20000 GHz #Res BW 300 kHz Occupied Bandwid		VBW 3 MHz Total Power	21.4	Span 50.00 M Sweep 1 n dBm	
	7.821 MHz -34.141 kHz	% of OBW Po	ower 99	.00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	26.85 MHz	x dB	-26.	00 dB	
ISG			STATUS	6	

Plot 7-56. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



Plot 7-57. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

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	pectrum Analyzer - O	ccupied BW										
L <mark>XI</mark> RL	RF 50 S	DC DC	CORREC			NSE:INT req: 5.18000	0000 GHz	ALIGN AUTO	10:03:30 F	M Apr 20, 2021	Trac	e/Detector
					Trig: Fre	e Run		d: 100/100				
			#IFGain:	:Low	#Atten: 2	20 dB			Radio Dev	/ice: BTS		
10 dB/div	Ref 20.0	00 dBm										
Log 10.0												
0.00			, and the second se	* Money with	Mat March	wormanipalite	moulin					Clear Write
-10.0			ſ									
	طبر میر م	- mar low	with					Manun	he este			
20.0	willowand								a Co a Chulan	Why have a		Average
										4×14		Average
-40.0												
-50.0												
-60.0												Max Hold
-70.0												
Center 5	.18000 GHz						<u> </u>		Span 5	50.00 MHz		
	V 300 kHz				VB	W 3 MHz				eep 1 ms		Min Hold
												Minthold
Οςςι	ipied Band	dwidth				Total P	ower	22.8	dBm			
		19	.161	1 MF	z							Detector
												Peak▶
Trans	smit Freq Er	ror	-24	.654 k	HZ	% of O	3W Pow	/er 99	.00 %		Auto	Man
x dB	Bandwidth		33	3.52 M	Hz	x dB		-26.	00 dB			
MSG								STATUS				

Plot 7-58. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)



Plot 7-59. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Bage 47 of 500
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Keysight Spectrum Analyzer - Occupied B\					& <u>*</u>
RL RF 50Ω DC	·	SENSE:INT Center Freq: 5.240000000 GH Trig: Free Run Avg I #Atten: 20 dB	ALIGN AUTO Iz Hold: 100/100	10:08:05 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBr		ren with a manufacture and a fing	Floring		Clear Write
-10.0 -20.0 -30.0 Mar Ministry Marine Marine	n/wrl		WWHILL MANY PARTY	mapulandhuha	Average
-40.0 -50.0 -60.0 -70.0					Max Hole
Center 5.24000 GHz #Res BW 300 kHz		VBW 3 MHz Total Power	23.4	Span 50.00 MHz Sweep 1 ms	Min Hol
Occupied Bandwidt 19 Transmit Freq Error	т 9.178 МН -35.312 кн	Z		00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	34.31 MH	z xdB	-26.0	0 dB	
ISG			STATUS		

Plot 7-60. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)



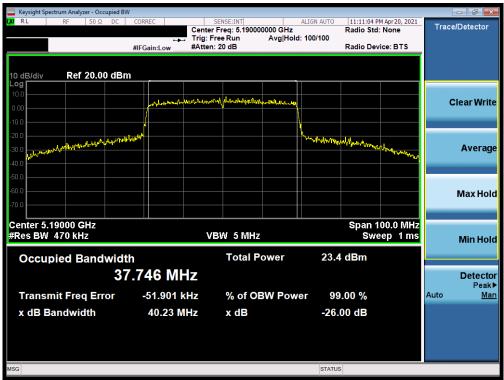
Plot 7-61. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 49 of 509
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🔤 Keysight Spectrum Analyzer - Occupied B					- 5 🔀
LXIRL RF 50Ω DC	🛶 Trig	sense:INT ter Freq: 5.230000000 GHz I: Free Run Avg Ho ten: 20 dB	R R	10:51:50 PM Apr 20, 2021 adio Std: None adio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dB	m				
-10.0	ANAANAANAANAANAANAANAANAANAANAANAA	man production of the second			Clear Write
-30.0			Hylanyd an an	hangelylprogram light franker	Average
-60.0					Max Hold
Center 5.23000 GHz #Res BW 390 kHz Occupied Bandwid		VBW 4 MHz Total Power	22.5 d	Span 100.0 MHz Sweep 1 ms IBm	Min Hold
	6.105 MHz				Detecto Peakl
Transmit Freq Error	-27.786 kHz	% of OBW Pov	wer 99.0	0 %	Auto <u>Ma</u>
x dB Bandwidth	40.80 MHz	x dB	-26.00	dB	
ISG			STATUS		

Plot 7-62. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 46)



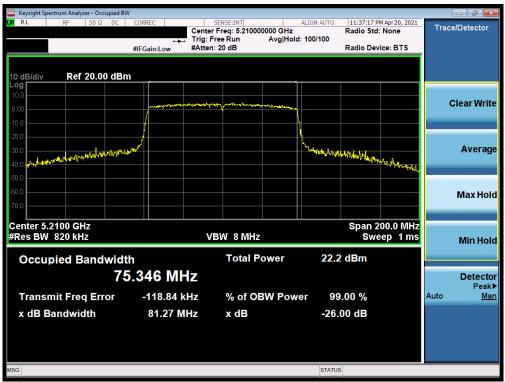
Plot 7-63. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711B	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dogo 40 of 500
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Keysight Spectrum Analyzer - Occupied BV					
μα RL RF 50Ω DC	Trig:	SENSE:INT er Freq: 5.230000000 GHz Free Run Avg Hold en: 20 dB	Radio Std		Trace/Detector
10 dB/div Ref 20.00 dBn Log 10.0 0.00		wraphaphaluan dawna			Clear Write
-10.0 -20.0 -30.0 -40.0	w		-	What programme the	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.23000 GHz #Res BW 390 kHz Occupied Bandwidt		VBW 4 MHz Total Power		00.0 MHz sep 1 ms	Min Hold
	7.759 MHz -39.452 kHz	% of OBW Pow	er 99.00 %		Detecto Peak Auto <u>Mar</u>
x dB Bandwidth	44.60 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-64. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



Plot 7-65. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dogo 50 of 508
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Keysight Spectrum Analyzer - Occupied BV					- đ <mark>e</mark>
(X) RL RF 50Ω DC	Tr	SENSE:INT enter Freq: 5.210000000 GF rig: Free Run Avg F Atten: 20 dB	lz R lold: 100/100	12:03:11 AM Apr21, 2021 adio Std: None adio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBn Log 10.0 0.00		en with the manager of the land	см _и		Clear Write
-10.0 -20.0 -30.0 -40.0 prosectional international interna	suud		har a first of the	Hollow Windows	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.2100 GHz #Res BW 820 kHz Occupied Bandwidt	h	VBW 8 MHz Total Power	22.9 d	Span 200.0 MHz Sweep 1 ms IBm	Min Hold
	7.231 MHz -21.316 kHz		ower 99.0	0 %	Detector Peak▶ Auto <u>Man</u>
x dB Bandwidth	82.04 MHz	x dB	-26.00	dB	
MSG			STATUS		

Plot 7-66. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



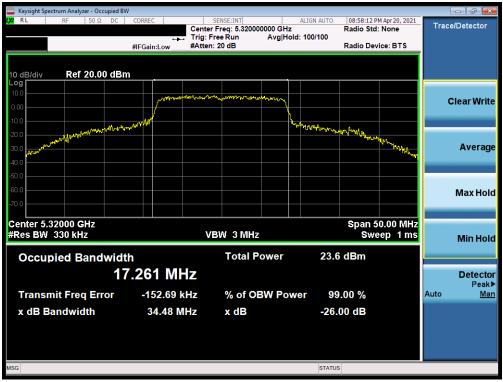
Plot 7-67. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711B	PCTEST [®] Proud to be part of [®] element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 51 of 500
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Plot 7-68. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 56)



Plot 7-69. 26dB Bandwidth Plot ANT1 (820MHz BW 02.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N: Test Dates:		EUT Type:	Dara 50 cf 500	
1M2104130035-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 52 of 508	
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Keysight Spectrum Analyzer - Occupied					- 6 -
RL RF 50Ω DC	#IFGain:Low	SENSE:INT Center Freq: 5.260000000 GH Trig: Free Run Avg H #Atten: 20 dB	lold: 100/100	09:33:22 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dl Log 100 0.00		an she and a second and a second a s			Clear Write
-30.0 3740			V/VM-Jon Jayland	all-yearspliced of starting	Average
-50.0					Max Hol
Center 5.26000 GHz #Res BW 300 kHz Occupied Bandwi	dth	VBW 3 MHz Total Power	23.2	Span 50.00 MHz Sweep 1 ms dBm	Min Hol
	17.971 MH		ower 99.	00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	29.17 MF		-26.0		
ISG			STATUS		

Plot 7-70. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



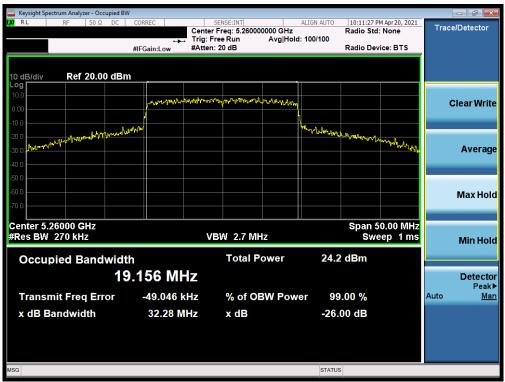
Plot 7-71. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 52 of 500
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Keysight Spectrum Analyzer - Occupied BV					
X RL RF 50Ω DC		SENSE:INT Center Freq: 5.320000000 GHz Irig: Free Run Avg Hol Atten: 20 dB	Ra d: 100/100	9:45:33 PM Apr 20, 2021 dio Std: None dio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBn Log 100 0.00		without management of any all have			Clear Write
-10.0 -20.0 -30.0 -40.0				Muralie Manaling	Average
-50.0					Max Hold
Center 5.32000 GHz #Res BW 360 kHz Occupied Bandwidt	h	VBW 4 MHz Total Power	23.9 dE	pan 50.00 MHz Sweep 1 ms Bm	Min Hol
	а. 3.485 МНz -76.135 кна		ver 99.00	%	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	33.49 MHz	z x dB	-26.00	dB	
SG			STATUS		

Plot 7-72. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)



Plot 7-73. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga E4 of E00
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Keysight Spectrum Analyzer - Occupied BW					
X RL RF 50Ω DC	Trig:	SENSE:INT Pr Freq: 5.280000000 GHz Free Run Avg Hol n: 20 dB	ld: 100/100	10:13:49 PM Apr20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm		UNI VIII VIII AMARIAN	~		Clear Write
-20.0 -20.0 http://www.acomercial.com/			Minhurlaum	Man Mininter	Average
-50.0					Max Hol
Center 5.28000 GHz #Res BW 270 kHz Occupied Bandwidth		/BW 2.7 MHz Total Power	24.4	Span 50.00 MHz Sweep 1 ms dBm	Min Hol
	.176 MHz -2.020 kHz	% of OBW Pov	ver 99 (00 %	Detecto Peak Auto Ma
x dB Bandwidth	-2.020 KHZ 31.01 MHz	x dB	-26.0		
SG			STATUS		

Plot 7-74. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



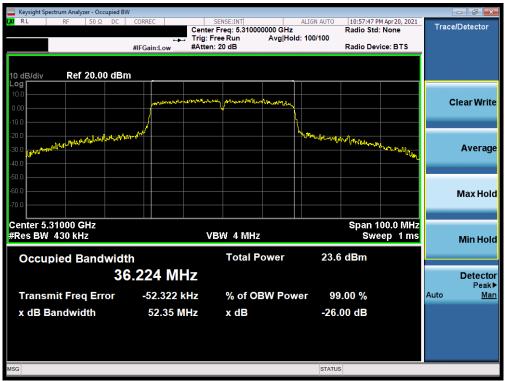
Plot 7-75. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Daga 55 of 500
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Keysight Spectrum Analyzer - Occupied B					
(X) RL RF 50Ω DC	+→→ Trig: #IFGain:Low #Atte	SENSE:INT er Freq: 5.27000000 GH: Free Run Avg He n: 20 dB	ALIGN AUTO z old: 100/100	10:54:30 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBi Log 10.0 -10.0	m 	da-il Jordinallanda purcul da il y			Clear Write
-20.0 -30.0 -40.0	4-WW78 ¹⁴			an when the most of the	Average
-60.0 -60.0 -70.0					Max Hold
Center 5.27000 GHz #Res BW 430 kHz Occupied Bandwid		VBW 4 MHz Total Power	23.5	Span 100.0 MHz Sweep 1 ms dBm	
	6.232 MHz -70.772 kHz	% of OBW Po	wer 99	.00 %	Detector Peak▶ Auto <u>Man</u>
x dB Bandwidth	44.03 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

Plot 7-76. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)



Plot 7-77. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					- đ X
(X) RL RF 50Ω DC	, , , , , , , , , , , , , , , , , , ,	SENSE:INT er Freq: 5.270000000 GHz Free Run Avg Ho en: 20 dB	ALIGN AUTO z bld: 100/100	11:16:39 PM Apr20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm Log 10.0 0.00		งุนงญาย์ในส่งงาวจะการจะประโร _{โตย} ป _{อะเ}	~		Clear Write
-20.0 -20.0 -30.0 -40.0	mar		Where we are a second s	nother and while the after	Average
-50.0 -60.0 -70.0					Max Hole
Center 5.27000 GHz #Res BW 470 kHz Occupied Bandwidt		VBW 5 MHz Total Power	24.6	Span 100.0 MHz Sweep 1 ms dBm	Min Hol
	.877 MHz	% of OBW Po	wer 99.	00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	53.66 MHz	x dB	-26.0	0 dB	
NSG			STATUS		

Plot 7-78. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



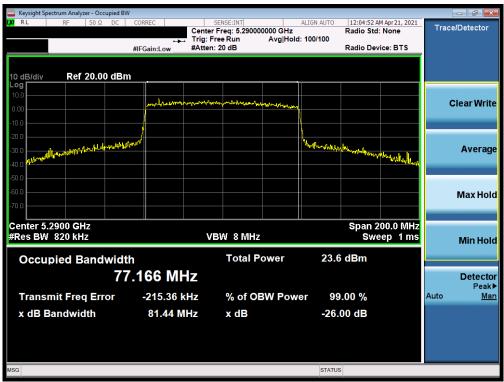
Plot 7-79. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied BW					- F
22 RL RF 50 Ω DC	#IFGain:Low #Atte	SENSEINT eer Freq: 5.290000000 GHz Free Run Avg Ho en: 20 dB	Ra Ra	1:39:10 PM Apr20, 2021 dio Std: None dio Device: BTS	Trace/Detector
	A A A A A A A A A A A A A A A A A A A	*****			Clear Writ
-20.0 -30.0 -40.0 mu/lum/ml/m/-aph/ml/ml/lub/	hand the second s		hannen finnen fi	arthally Mill Mill Marana	Averaç
-60.0					Max Ho
Center 5.2900 GHz #Res BW 820 kHz Occupied Bandwidtl		VBW 8 MHz Total Power	22.9 dl	ipan 200.0 MHz Sweep 1 ms Bm	Min Ho
	.464 MHz	% of OBW Po	wer 99.00) %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	82.08 MHz	x dB	-26.00		
NSG			STATUS		

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



Plot 7-81. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV					
(X) RL RF 50Ω DC	#IFGain:Low #Atte	SENSE:INT / / Per Freq: 5.500000000 GHz Free Run Avg Hold: en: 20 dB	Radio Std		Trace/Detector
10 dB/div Ref 20.00 dBr Log 100 .00		and and a share the state of the			Clear Write
-20.0 -30.0 -40.0			w.l.w.h.y	AMG MAN AND AND AND AND AND AND AND AND AND A	Average
-50.0					Max Hold
Center 5.50000 GHz #Res BW 300 kHz Occupied Bandwidt		VBW 3 MHz Total Power		0.00 MHz ep 1 ms	Min Hol
	20.896 kHz	% of OBW Powe	r 99.00 %	P	Detecto Peak
x dB Bandwidth	26.77 MHz	x dB	-26.00 dB		
NSG			STATUS		

Plot 7-82. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) - Ch. 100)



Plot 7-83. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dava 50 of 500
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Keysight Spectrum Analyzer - Occupied BW	1				- 6 2
UX RL RF 50Ω DC	🛶 Trig	SENSE:INT ter Freq: 5.720000000 GHz I: Free Run Avg Ho ten: 20 dB	ALIGN AUTO	09:03:52 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm Log		المعارضه المعالية والمعالية و			Clear Writ
-20.0	write		hateleant	when the	
-30.0 1/14/19/14/19/14/19/14/19/14/14/14/14/14/14/14/14/14/14/14/14/14/					Averag
-60.0 -70.0 Center 5.72000 GHz				Span 50.00 MHz	Max Hol
#Res BW 330 kHz Occupied Bandwidt	h	VBW 3 MHz Total Power	23.2	Sweep 1 ms	Min Hol
	.838 MHz				Detecto Peak
Transmit Freq Error	254.59 kHz	% of OBW Pov	wer 99	.00 %	Auto <u>Ma</u>
x dB Bandwidth	34.80 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

Plot 7-84. 26dB Bandwidth Plot ANT1 (820MHz BW 02.11a (UNII Band 2C) - Ch. 144)



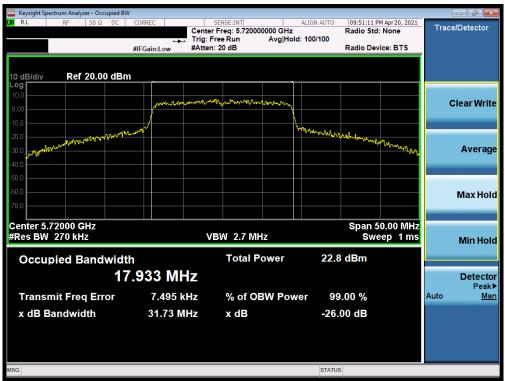
Plot 7-85. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied					_ 6 <mark>- X</mark>
(X RL RF 50Ω DC 10 dB/div Ref 20.00 dB	, → Trig: #IFGain:Low #Atte	SENSE:INT eer Freq: 5.60000000 GH Free Run Avg H en: 20 dB	ALIGN AUTO z old: 100/100	09:49:02 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
	manune Mansala	ulmy manual ulm has			Clear Write
-20.0 -30.0 -40.0	wp.r.v ^r		John and the second sec	WAATAANAA	Average
-50.0					Max Hole
Center 5.60000 GHz #Res BW 240 kHz Occupied Bandwid		VBW 2.4 MHz Total Power	22.4	Span 50.00 MHz Sweep 1 ms dBm	Min Hol
	7.731 MHz -33.352 kHz	% of OBW Po	wer 99	.00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	25.77 MHz	x dB		00 dB	
ISG			STATUS		

Plot 7-86. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)



Plot 7-87. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dana 04 at 500
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Keysight Spectrum Analyzer - Occupied B					
X RL RF 50Ω DC	, ⊶, T #IFGain:Low #	SENSE:INT Center Freq: 5.500000000 GF rig: Free Run Avg F Atten: 20 dB	ALIGN AUTO Hz Hold: 100/100	10:19:12 PM Apr20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBi		hallow for hillow for her for her particular for the second	Ì.		Clear Writ
-20.0	www.www.			March and and a start and a start and a start and a start a sta	Averag
50.0 60.0 70.0					Max Ho
Center 5.50000 GHz Res BW 270 kHz Occupied Bandwid	th	VBW 2.7 MHz Total Power	24.6	Span 50.00 MHz Sweep 1 ms dBm	Min Ho
	9.081 MHz -18.367 kHz		ower 99	.00 %	Detect Peal Auto <u>Ma</u>
x dB Bandwidth	29.30 MH	z xdB	-26.0	00 dB	
SG			STATUS		

Plot 7-88. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 100)



Plot 7-89. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					
Κ RL RF 50Ω DC		SENSE:INT Center Freq: 5.720000000 GHz Trig: Free Run Avg Ho #Atten: 20 dB	Radio S Id: 100/100	6 PM Apr 20, 2021 td: None evice: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm - og 10.0 0.00		mlongunnundymunn			Clear Writ
10.0 20.0 30.0 10000000000000000000000000000000000			he when the paralalised	and and and and a	Averag
50.0					Max Ho
Center 5.72000 GHz Res BW 270 kHz Occupied Bandwidt	h	VBW 2.7 MHz Total Power		50.00 MHz weep 1 ms	Min Ho
	 . 170 MH 1.820 kH		ver 99.00 %		Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	27.07 MH	Hz x dB	-26.00 dB		
G			STATUS		

Plot 7-90. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 144)



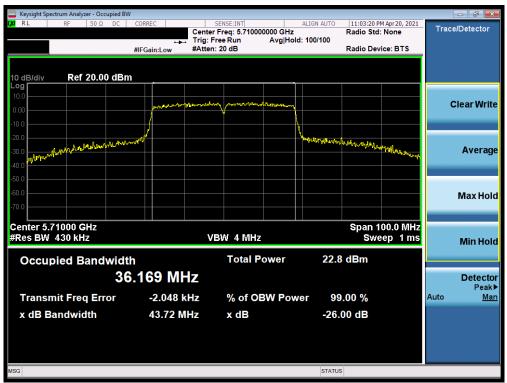
Plot 7-91. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 102)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 62 of 509
1M2104130035-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 63 of 508
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Keysight Spectrum Analyzer - Occupied B					- đ <mark>e</mark>
RL RF 50Ω DC	, Frig: #IFGain:Low #Atte	SENSE:INT eer Freq: 5.590000000 GH : Free Run Avg H en: 20 dB	ALIGN AUTO Iz Iold: 100/100	11:00:46 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBr Log 10.0 .000		~~~~~~ And a second framework			Clear Write
-30.0			Whenter Works Wyrdd	ndunden an frite With Marine Ballan	Averag
-50.0 -60.0 -70.0					Max Hole
Center 5.59000 GHz #Res BW 390 kHz Occupied Bandwidt		VBW 4 MHz Total Power	22.8	Span 100.0 MHz Sweep 1 ms dBm	Min Hol
	6.117 MHz -41.585 kHz	% of OBW Po	ower 99	.00 %	Detecto Peak Auto <u>Ma</u>
x dB Bandwidth	47.76 MHz	x dB		00 dB	
ISG			STATUS		

Plot 7-92. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)



Plot 7-93. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 64 of 509
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Keysight Spectrum Analyzer - Occupied BW					- F
4 RL RF 50 Ω DC	Trig: F	sense:INT r Freq: 5.510000000 GHz Free Run Avg Ho n: 20 dB	ALIGN AUTO	11:23:43 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
0 dB/div Ref 20.00 dBm 0 g 0.00		n de ffeldet et spillen son ele ele en segis est			Clear Wri
10.0 20.0 30.0 40.0	أ شريم 		Mannena	willingerend turner have a witter and	Averaç
0.0					Max Ho
enter 5.51000 GHz Res BW 1 MHz Occupied Bandwidtl		BW 8 MHz Total Power	25.0	Span 100.0 MHz Sweep 1 ms dBm	Min Ho
	.960 MHz 47.328 kHz	% of OBW Pov		.00 %	Detect Peal Auto <u>M</u> a
x dB Bandwidth	42.38 MHz	x dB	-26.0	00 dB	
G			STATUS		

Plot 7-94. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)



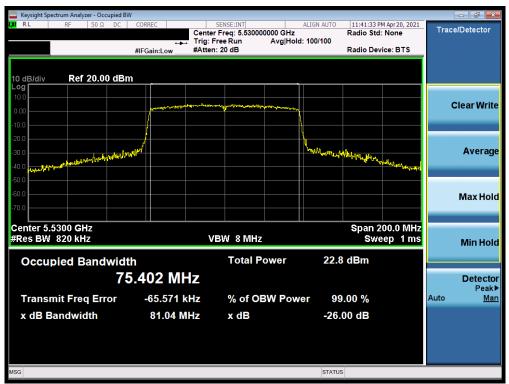
Plot 7-95. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage CE of E00
1M2104130035-12.A3L	04/12/2021 - 06/04/2021	Portable Handset	Page 65 of 508
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Keysight Spectrum Analyzer - Occupied B\	V				
LXIRL RF 50ΩDC		SENSE:INT ter Freq: 5.710000000 GHz j: Free Run Avg Hold	ALIGN AUTO 11:28:27 PM Radio Std: d: 100/100	1 Apr 20, 2021 None	Trace/Detector
	#IFGain:Low #Att	ten: 20 dB	Radio Devi	ce: BTS	
10 dB/div Ref 20.00 dBr	n				
Log 10.0 0.00	Jour Matrix and Martin	alla alle many allowed and			Clear Write
-10.0			how when the second sec		
-20.0 -30.0 1000			Contraction of the second seco	have a sold of the	Average
-50.0					Max Hold
-70.0					Max Hold
Center 5.71000 GHz #Res BW 470 kHz		VBW 5 MHz		00.0 MHz ep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	23.8 dBm		
37	7.787 MHz				Detector Peak▶
Transmit Freq Error	30.596 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	42.47 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-96. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)



Plot 7-97. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 66 of 500
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Keysight Spectrum Analyzer - Occupied BW					- đ 💌
20 RL RF 50 Ω DC	🛶 Trig	sense:INT ter Freq: 5.610000000 GHz : Free Run Avg Ho en: 20 dB	Radio S Id: 100/100	i PM Apr 20, 2021 id: None evice: BTS	ace/Detector
10 dB/div Ref 20.00 dBm	 	have provide the second	•		Clear Writ
10.0 20.0 30.0 40.0 Majoret ^Cu Manaju Majorita d u Antonio de Constante de Const			hamer and the second second	where the second s	Averag
50.0					Max Hol
Center 5.6100 GHz Res BW 820 kHz Occupied Bandwidtl		VBW 8 MHz		200.0 MHz /eep 1 ms	Min Ho
	-33.350 kHz	% of OBW Pov		Auto	Detecte Peak <u>Ma</u>
x dB Bandwidth	81.62 MHz	x dB	-26.00 dB		
6G			STATUS		

Plot 7-98. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)



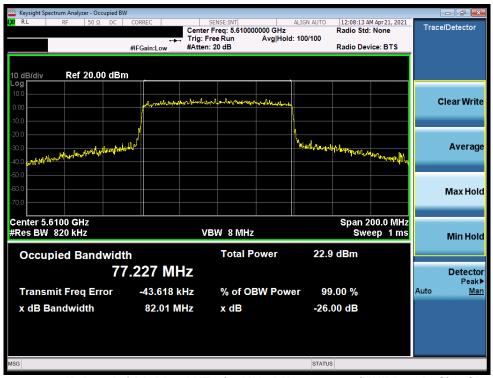
Plot 7-99. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	ISUNG	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dege 67 of 500		
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🔤 Keysight Spectrum Analyzer - Occ										
<mark>(X/ RL</mark> RF 50 Ω	DC COF	RREC		VSE:INT eq: 5.53000	0000 GH-	ALIGN AUTO	12:06:29 A Radio Std	M Apr 21, 2021	Trac	e/Detector
			, Trig: Free	Run	Avg Hold	1: 100/100				
	#IF(Gain:Low	#Atten: 2	0 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.0	0 dBm									
Log 10.0										
		manut	moundary	mundhan	withhat					lear Write
0.00		/								
-10.0										
-20.0						1.				
-30.0 -40.0 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000 40,000	peter phantington					"Nidorada Pray	who warde	.		Average
-40.0 to the way where the second second								arthing Webpeling		
-50.0										
-60.0										Max Hold
-70.0										
10.0										
Center 5.5300 GHz								00.0 MHz		
#Res BW 820 kHz			VBV	N 8 MHz			Swe	ep 1ms		Min Hold
				Total P	owor	22.4	dBm			
Occupied Band				TUtal F	Ower	20.4	UDIII			
	77.1	69 MI	ΗZ							Detector
Tranomit Frag Fr	or	-48.924		% of OE		or 00	.00 %		Auto	Peak▶ Man
Transmit Freq Err	. 10				ow Pow				Auto	Iviali
x dB Bandwidth		82.67 N	IHz	x dB		-26.	00 dB			
MSG						STATUS	6			
									_	

Plot 7-100. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 106)



Plot 7-101. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager		
Test Report S/N: Test Dates: 1M2104130035-12.A3L 04/12/2021 - 06/04/2021		EUT Type:		Dama 60 at 500		
		Portable Handset		Page 68 of 508		
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Keysight Spectrum Analyzer - Occupied BW K K R S0 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	12:10:15 AM Apr 21, 2021	
	С Т	enter Freq: 5.690000		Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm			<u></u>		
0.00	undermannadi	แบกระเนา _{ปี} เกษาคณะพัญญา <mark>ส</mark>			Clear Wri
-10.0 -20.0 -30.0 -40.0	N) Mannikatiran	++++++++++++++++++++++++++++++++++++++	Avera
-50.0 					Max Ho
Center 5.6900 GHz #Res BW 820 kHz		VBW 8 MHz	ľ	Span 200.0 MHz Sweep 1 ms	Min Ho
Occupied Bandwidth 77	270 MHz	Total Por	wer 23.3	dBm	Detect
Transmit Freq Error	63.785 kHz	% of OB	V Power 99	.00 %	Peal Auto <u>M</u> a
x dB Bandwidth	81.46 MHz	z xdB	-26.	00 dB	
SG			STATUS	3	

Plot 7-102. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dage 60 of 500
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MIMO 26 dB Bandwidth Measurements-N

					Antenna-1 26dB
	Frequency	Channel No.	802.11 Mode	Data Rate [Mbps]	Bandwidth - N
	[MHz]	NO.			[MHz]
	5180	36	а	6	18.31
	5200	40	а	6	19.31
	5240	48	а	6	18.84
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	21.72
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	20.86
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	20.86
-	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	22.31
Band 1	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	21.03
ä	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	20.54
	5190	38	n (40MHz)	13.5/15 (MCS0)	39.02
	5230	46	n (40MHz)	13.5/15 (MCS0)	39.51
	5190	38	ax (40MHz)	13.5/15 (MCS0)	40.06
	5230	46	ax (40MHz)	13.5/15 (MCS0)	39.86
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	81.58
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	80.77
	5260	52	а	6	18.82
	5280	56	а	6	19.00
	5320	64	а	6	18.41
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	20.21
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	19.25
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	20.29
۶A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	20.49
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	20.66
Bai	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	20.34
	5270	54	n (40MHz)	13.5/15 (MCS0)	39.38
	5310	62	n (40MHz)	13.5/15 (MCS0)	39.58
	5270	54	ax (40MHz)	13.5/15 (MCS0)	39.99
	5310	62	ax (40MHz)	13.5/15 (MCS0)	39.68
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	81.86
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	81.46
	5500	100	а	6	18.29
	5600	120	а	6	20.45
	5720	144	а	6	18.61
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	19.75
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	22.44
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	20.52
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	20.84
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	23.17
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	22.07
SC	5510	102	n (40MHz)	13.5/15 (MCS0)	39.15
7	5590	118	n (40MHz)	13.5/15 (MCS0)	39.29
Ban	5710	142	n (40MHz)	13.5/15 (MCS0)	40.06
	5510	102	ax (40MHz)	13.5/15 (MCS0)	39.42
	5590	118	ax (40MHz)	13.5/15 (MCS0)	40.01
	5710	142	ax (40MHz)	13.5/15 (MCS0)	39.87
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	81.84
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	81.82
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	81.94
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	81.47
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	81.99
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	81.88
				idth Moasuro	

Table 7-4. Conducted Bandwidth Measurements MIMO

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N: Test Dates:		EUT Type:	Dage 70 of E09	
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Keysight Spectrum Analyzer - Occupied BV					10 0001		
C RL RF 50Ω AC	CORREC ↔ #IFGain:Low	SENSE:INT Center Freq: 5.18000 Trig: Free Run #Atten: 20 dB	ALIGN / 00000 GHz Avg Hold: 100/1	Radio Std		Trace/I	Detector
10 dB/div Ref 20.00 dBr	n						
Log 10.0 .000						CI	ear Write
30.0		n for the second sec	den man				Averag
10 0					honghyng	,	Max Hol
Center 5.18000 GHz Res BW 180 kHz		VBW 1.8 MH		Sweep	0.00 MHz 1.467 ms		Min Hol
Occupied Bandwidt	^h 5.398 MH	Total P IZ	ower	7.57 dBm		_	Detecto Peak
Transmit Freq Error x dB Bandwidth	1.545 k 18.31 M		BW Power	99.00 % -26.00 dB		Auto	Peak <u>Ma</u>
SG				STATUS			

Plot 7-103. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 36)



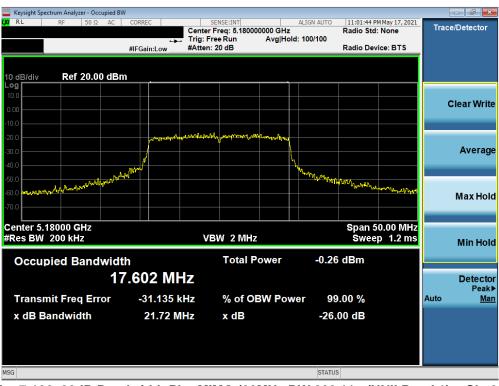
Plot 7-104. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager				
Test Report S/N:	Test Dates:	EUT Type:	Dama 74 of 500				
1M2104130035-12.A3L 04/12/2021 - 06/04/2021 Portable Handset			Page 71 of 508				
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Keysight Spectrum Analyzer - Occupied BW						P X
XIRL RF 50Ω AC		SENSE:INT	Radio St	PM May 18, 2021	Trace/Dete	ctor
		g:FreeRun Avg∣Holo tten:20 dB	d: 100/100 Radio De	evice: BTS		
10 dB/div Ref 20.00 dBm	<u> </u>					
10.0						
0.00					Clear	Write
-10.0	- And had had	how a grant and a grant and a				
-20.0						
-30.0	aholymor .	<u> </u>	vu,		Ave	erage
-40.0			www.whore whole			
-50.0 Malana Marin Marine Ville				Why was man		
-70.0					Max	Hold
			<u> </u>			
Center 5.24000 GHz #Res BW 180 kHz		VBW 1.8 MHz		50.00 MHz 1.467 ms		
					Min	Hold
Occupied Bandwidt		Total Power	8.12 dBm			
16	.393 MHz					tector
Transmit Freq Error	6.929 kHz	% of OBW Pow	er 99.00 %		Auto	Peak≢ <u>Mar</u>
x dB Bandwidth	18.84 MHz	x dB	-26.00 dB			
ISG			STATUS			

Plot 7-105. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 48)



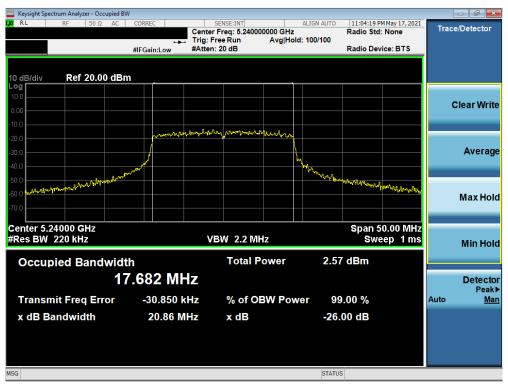
Plot 7-106. 26dB Bandwidth Plot MIMO (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 72 of 500
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Keysight Spectrum Analyzer - Occupied BV					
L <mark>XI</mark> RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.20000	ALIGN AUTO	11:03:28 PM May 17, 20 Radio Std: None	Trace/Detector
		Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	_
10 dB/div Ref 20.00 dBr	n				
10.0					
0.00					Clear Write
-10.0					
-20.0	- www.www	manarty	hurbonhow		
-30.0			<u> </u>		Average
-40.0	الممسير		and the second s		
-40.0 -50.0 -60.0				and the many of all the way	
-60.0 Mg///////					Max Hold
-70.0					
Center 5.20000 GHz				Span 50.00 Mi	17
#Res BW 220 kHz		VBW 2.2 MH	z	Sweep 1 n	
Occupied Bandwidt		Total P	ower 3.	18 dBm	
17	7.702 M⊦	Z			Detector
Tronomit Frog Free	-30.337 k		3W Power	99.00 %	Peak≱ Auto Man
Transmit Freq Error					Auto <u>Man</u>
x dB Bandwidth	20.86 M	Hz xdB	-20	6.00 dB	
MSG			STAT	rus	

Plot 7-107. 26dB Bandwidth Plot MIMO (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



Plot 7-108. 26dB Bandwidth Plot MIMO (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 72 of 509	
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Keysight Spectrum Analyzer - Occupied BV					
X/RL RF 50Ω AC	CORREC	SENSE:INT er Freq: 5.180000000 GHz	ALIGN AUTO 10:45:30 P Radio Std	M May 17, 2021 : None	Trace/Detector
		Free Run Avg Hold: n: 20 dB	100/100 Radio Dev	ice: BTS	
	#IFGain:Low #Atte	11. 20 UD	Radio Dev	ice. DT3	
10 dB/div Ref 20.00 dBn	•				
Log					
10.0					Clear Write
0.00					olcul Mild
-10.0	the war will glow my	muy many margaret war margaret			
-20.0					A
-30.0			hula		Average
40.0 50.0	10 ⁻²¹		had when her hard hard	Solu-	
-50.0 - Arthur Martin Martin				and the second second	
-70.0					Max Hold
Center 5.18000 GHz				0.00 MHz	
#Res BW 200 kHz		/BW 2 MHz	Swee	p 1.2 ms	Min Hold
Occupied Bandwidt	h	Total Power	5.38 dBm		
18	3.987 MHz				Detector
					Peak
Transmit Freq Error	-72.822 kHz	% of OBW Powe	er 99.00 %		Auto <u>Mar</u>
x dB Bandwidth	22.31 MHz	x dB	-26.00 dB		
ISG			STATUS		

Plot 7-109. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax (UNII Band 1) - Ch. 36)



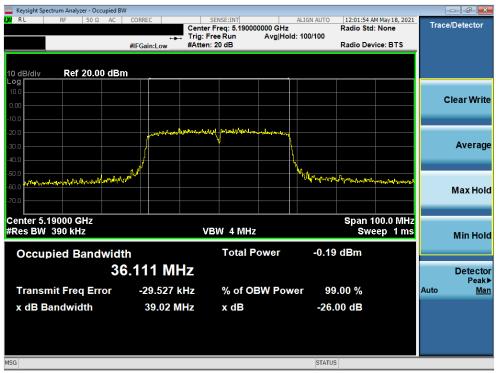
Plot 7-110. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711B	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 74 of 508	
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Keysight Spectrum Analyzer - Occupied BV					- 6 -
LX RL RF 50 Ω AC	CORREC Cent	SENSE:INT A	LIGN AUTO 10:47:21 PM Radio Std: I		Trace/Detector
		FreeRun Avg Hold: en:20 dB	100/100 Radio Devid	AL PTS	
	#IFGain:Low #Atte	en. 20 dB	Radio Devic	.e. DT3	
10 dB/div Ref 20.00 dBn					
10.0					
0.00					Clear Writ
-10.0	and manufacture of	why white the many hours			
-20.0					
-30.0					Averag
-40.0	_M ^(N/)		where where and where and		
-50.0			A Star and Arthough the	marghylyl and	
-60.0					Max Hol
-70.0					
Center 5.24000 GHz			Span 50	.00 MHz	
#Res BW 200 kHz		VBW 2 MHz		1.2 ms	Min Hol
		Total Power	6.08 dBm		
Occupied Bandwidt		Total Fower	0.00 dBm		
18	.908 MHz				Detecto
Transmit Freq Error	-62.477 kHz	% of OBW Powe	r 99.00 %		Auto <u>Ma</u>
x dB Bandwidth	20.54 MHz	x dB	-26.00 dB		
	20.34 10112		-20.00 UB		
ISG			STATUS		
130			514105		

Plot 7-111. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax (UNII Band 1) - Ch. 48)



Plot 7-112. 26dB Bandwidth Plot MIMO (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711B	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Daga 75 of 500
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