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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 - 06/02/2021 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M2104070032-14.A3L

FCC ID:

A3LSMF711U

Certification

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: Frequency Range: Modulation Type: FCC Classification: FCC Rule Part(s): Test Procedure(s):

SM-F711U SM-F711U1 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



			AN	Π1	MIMO		
UNII Band Bandwidth (MHz)		Bandwidth (MHz) Bower Bower		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	20	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	80	5290	19.364	12.87	39.719	15.99	
2C		5530 - 5690	38.548	15.86	72.444	18.60	
3		5775	39.355	15.95	71.779	18.56	

EUT Overview – N

			AN	Π1	MIMO		
UNII Band	Channel Bandwidth (MHz)	andwidth Ix Frequency Max. Max.		Max. Power (mW)	Max. Power (dBm)		
1		5180 - 5240	59.156	17.72	121.060	20.83	
2A	20	5260 - 5320	60.256	17.80	122.462	20.88	
2C		5500 - 5720	60.256	17.80	122.744	20.89	
3		5745 - 5825	62.373	17.95	123.880	20.93	
1	40	5190 - 5230	48.865	16.89	95.280	19.79	
2A		5270 - 5310	49.659	16.96	98.628	19.94	
2C	40	5510 - 5710	49.545	16.95	97.051	19.87	
3		5755 - 5795	46.774	16.70	93.972	19.73	
1		5210	17.660	12.47	35.156	15.46	
2A	80	5290	19.861	12.98	39.264	15.94	
2C		5530 - 5690	37.154	15.70	76.736	18.85	
3		5775	37.931	15.79	74.131	18.70	
		EUT Ove	erview – Q				

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: A3LSMF711U**. 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 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n71, n12, n5, n66, n2, n25, n30, n41, n77, n260, n261), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

Band 1 Band 2A			Band 2C			Band 3			
Ch.	Frequency (MHz)	С	h.	Frequency (MHz)	Ch.	Frequency (MHz)		Ch.	Frequency (MHz)
36	5180	5	2	5260	100	5500		149	5745
:	:			:	:	:			:
42	5210	5	6	5280	120	5600	Γ	157	5785
:	:			:	:	:	Γ	:	:
48	5240	6	4	5320	144	5720		165	5825

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

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

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

Band 1						
Ch.	Frequency (MHz)					
42	5210					

Band 2A
Frequency (MHz)

5290

Ch. 58

Ch.

106

:

138

Band 2C

Frequency (MHz)

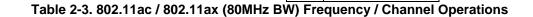
5530

2

5690

	-
Band	3

Ch.	Frequency (MHz)
155	5775



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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						
902 11 M	odo /Pand	Duty Cycle [%]				
802.11 1	802.11 Mode/Band		MIMO			
	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					
000 11 M	/lode/Band	Duty Cycle [%]			
602.11 N	loue/Ballu	ANT1	МІМО		
	а	98.9	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		

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		✓	×	×	×	✓	✓
5GHz	11n/ac/ax (20MHz)	✓	×	✓	✓	✓	✓
	11n/ac/ax (40MHz)	✓	×	✓	✓	✓	✓
	11ac/ax (80MHz)	✓	×	✓	✓	✓	✓

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	LIŚN	7/9/2020	Biennial	7/9/2022	114451
ETS-Lindgren	3115	Double Ridged Guide Horn 750MHz - 18GHz	3/12/2020	Biennial	3/12/2022	150693
Keysight Technologies	N9020A	MXA Signal Analyzer	8/14/2020	Annual	8/14/2021	U\$46470561
Keysight Technologies	N9038A	MXE EMI Receiver	8/11/2020	Annual	8/11/2021	MY51210133
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/17/2020	Annual	8/17/2021	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	9/22/2020	Annual	9/22/2021	MY54500644
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	2/25/2021	Annual	2/25/2022	NMLC-2
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	7/15/2020	Annual	7/15/2021	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/10/2020	Annual	8/10/2021	103200
Solar Electronics	8012-50-R-24-BNC	Line Impedance Stabilization Network	10/1/2019	Biennial	10/1/2021	310233
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511
Sunol Science	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

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

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	<u>A3LSMF711U</u>
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	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	Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])	CONDUCTED	PASS	Section 7.4
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	c Frequency See DES Test Report		PASS	See DFS Test Report
15.407(b.1), (2), (3), (4)	RSS-247 [6.2]	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])		PASS	Section 7.6
15.205, 15.407(b.1), (4), (5), (6)	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands Emissions in restricted bands mus		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

	Frequency	Channel	802 11 Mode	Data Rate [Mbps]	Measured 26dB Bandwidth
	[MHz]	No.		bata nato [mopo]	[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 1	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
Ва	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
Band 2C	5510	102	n (40MHz)	13.5/15 (MCS0)	39.26
and	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
Та	ble 7-2. (Conduct	ed Bandwi	dth Measuren	nents ANT1

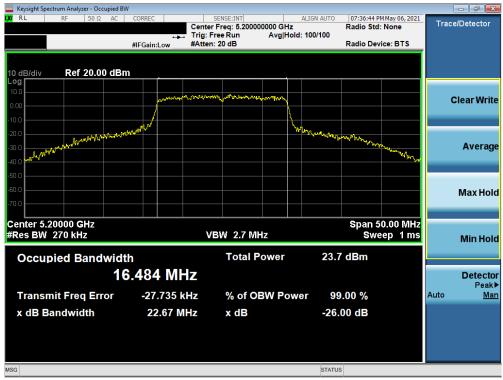
Table 7-2. Conducted Bandwidth Measurements ANT1

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied I	BW						
XIRL RF 50Ω AC	CORREC	SENSE:INT er Freg: 5.180000000 G	ALIGN AUTO	07:35:30 P Radio Std	M May 06, 2021	Trace	Detector
	🛶 Trig:	Free Run Avg	Hold: 100/100				
	#IFGain:Low #Atte	en: 20 dB		Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dB	m		- .				
10.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
0.00		a server of the server of the server street streets				С	lear Write
-10.0	/		<u>\</u>			_	
-20.0	www.hvi		Wwwwwwwww	way Mourtowhen			
-30.0				· · ···	wn here		Average
-40.0 mmmm							3
-50.0							
-60.0							
-70.0							Max Hold
-70.0							
Center 5.18000 GHz					0.00 MHz		
#Res BW 300 kHz		VBW 3 MHz		Swe	ep 1 ms		Min Hold
Occupied Bandwid	ith	Total Power	23.	9 dBm			
		rotarr offor	201				_
1	6.682 MHz						Detector Peak
Transmit Freq Error	-19.535 kHz	% of OBW P	ower 99	9.00 %		Auto	Mar
x dB Bandwidth	25.38 MHz	x dB	-26	.00 dB			
	23.30 MI12	A UD	-20	.00 ab			
			-				
ASG			STATU	s			





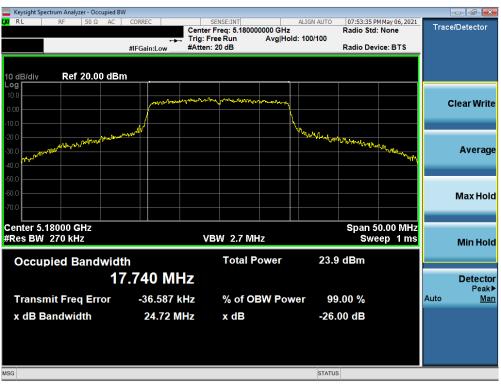
Plot 7-2. 26dB Bandwidth Plot ANT1 (802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-3. 26dB Bandwidth Plot ANT1 (802.11a (UNII Band 1) - Ch. 48)



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

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-5. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



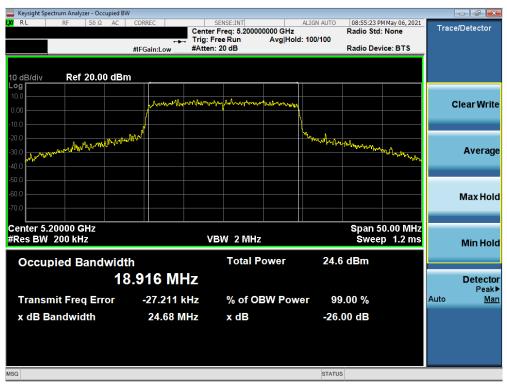
Plot 7-6. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied BW					
XURL RF 50ΩAC			ALIGN AUTO 0 GHz .vg Hold: 100/100	08:22:55 PM May 06, 20 Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	_
10 dB/div Ref 20.00 dBm					
10.0	malinan	~Tronger white the open	www		Clear Write
0.00					
-10.0 -20.0 -30.0	Jun		Wro harmy	Jak Ml Mary Mariana	
				" " Now of the	Average
40.0					
-60.0					Max Hold
-70.0					MaxTiole
Center 5.18000 GHz				Span 50.00 MH	
#Res BW 240 kHz		VBW 2.4 MHz		Sweep 1 m	
Occupied Bandwidt	h	Total Pow	ver 24.	7 dBm	
	.007 MH	Z			Detector
Transmit Freq Error	3.369 kH	lz % of OBW	Power 99	9.00 %	Peak∎ Auto <u>Mar</u>
x dB Bandwidth	23.66 MH	lz x dB	-26	.00 dB	
SG			STATU	s	
			21110		

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



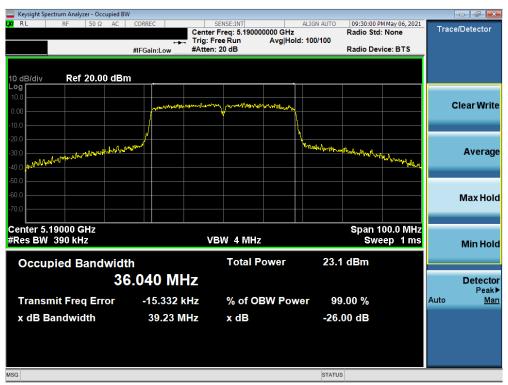
Plot 7-8. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	AMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied BV					
XU RL RF 50Ω AC		SENSE:INT Center Freq: 5.240000 Trig: Free Run	ALIGN AUTO 0000 GHz Avg Hold: 100/100	Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	-
10 dB/div Ref 20.00 dBn	1				
Log 10.0 0.00	prosonal	marmane provident	And		Clear Write
-10.0					
-20.0			hall the say	Meres Marshawwither	Average
-40.0					
-50.0					
-70.0					Max Hold
Center 5.24000 GHz				Span 50.00 MH	
#Res BW 240 kHz		VBW 2.4 MH	2	Sweep 1 m	S Min Hold
Occupied Bandwidt	h	Total Po	ower 24.	.8 dBm	
18	8.990 MH	Z			Detector Peak▶
Transmit Freq Error	-30.422 k	Hz % of OB	W Power 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	26.74 M	Hz x dB	-26	.00 dB	
SG			STAT	US	

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)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Oc											
<mark>X</mark> RL RF 50 Ω	AC CORF	EC		NSE:INT req: 5.23000	0000 GHz	ALIGN	AUTO	09:30:53 F	M May 06, 2021	Trac	e/Detector
	#IEC	⊶ ain:Low	Trig: Fre #Atten: 2		Avg Ho	ld: 100/1	100	Radio Dev	vice: BTS		
	#IFG		WAtten. 2	U UD				Rudio De	NCE. DTS		
10 dB/div Ref 20.0	0 dBm										
Log											
10.0		man	Muglan a strang	renemateur	and an apply about						Clear Write
0.00		1		ſ							
-10.0	j j					۱,					
-20.0	مر المراجع الم					They war	month				Average
-30.0	With the lot of the						P PAP SHAY	TO WHAT WANT	thomas and the		Average
-50.0											
-60.0											
-70.0											Max Hold
Center 5.23000 GHz #Res BW 390 kHz			\/D)	N/4 MHz					100.0 MHz eep 1 ms		
#RCS DVV J90 KHZ			VD1					SW	eep mis		Min Hold
Occupied Band	width			Total P	ower		22.9	dBm			
	36.00	67 MF	z								Detector
								00.0/			Peak▶
Transmit Freq Err		17.710 k		% of OE	SW Pov	ver		.00 %		Auto	Man
x dB Bandwidth		39.49 M	Hz	x dB			-26.	00 dB			
ISG							STATUS				

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)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BV					
X RL RF 50Ω AC		SENSE:INT ter Freq: 5.230000000 GHz : Free Run Avg Hol		6 PM May 06, 2021 Std: None	Trace/Detector
		en: 20 dB		evice: BTS	
10 dB/div Ref 20.00 dBn					
Log					
10.0	when white	maptonantermentario	1		Clear Write
10.00					
20.0					
30.0	^{אורי} טוריק		hours and the property of the second	Lash Martin Brance	Average
-40.0					
50.0					
-60.0					Max Hold
Center 5.23000 GHz #Res BW 390 kHz		VBW 4 MHz		100.0 MHz weep 1 ms	Min Hold
		Total Power	24.3 dBm	_	MITHOR
Occupied Bandwidt		Total Power	24.3 dBm		
37	7.745 MHz				Detector Peak
Transmit Freq Error	-32.300 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Mar</u>
x dB Bandwidth	40.02 MHz	x dB	-26.00 dB		
ISG			STATUS		
			014/03		

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)

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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: A3LSMF711U	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of E00
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 24 of 509
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Plot 7-17. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 56)



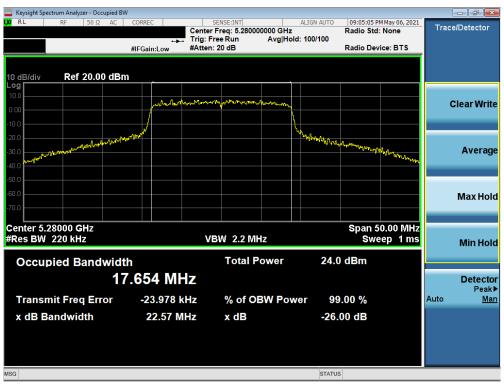
Plot 7-18. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	MSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 25 of 509
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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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 26 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset	Page 26 of 509
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Plot 7-21. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)

RL RF 50 Ω DC	CORREC	SENSE:INT er Freg: 5.260000000 GHz	ALIGN AUTO	11:21:29 PM Apr 15, 2021 Radio Std: None	Trace/Detector
NFE	Trig:		ld: 100/100	Radio Std: None	
dB/div Ref 20.00 dE					
		mynalimation	4		Clear Wri
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ny AR		- Marilan	Mr. winking	Avera
0					Max Ho
enter 5.26000 GHz des BW 220 kHz		/BW 2.2 MHz		Span 50.00 MHz Sweep 1 ms	Min Ho
Occupied Bandwic	8.983 MHz	Total Power	22.2	dBm	Detect
Transmit Freq Error	-15.701 kHz	% of OBW Pov	ver 99.	00 %	Auto <u>M</u>
x dB Bandwidth	20.62 MHz	x dB	-26.0	0 dB	
			STATUS		

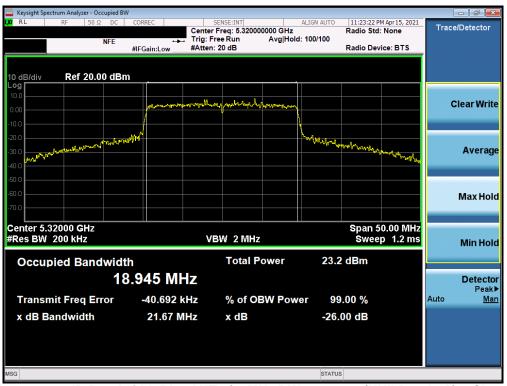
Plot 7-22. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 27 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 27 of 509	
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	ectrum Analyze	er - Occu	upied BV	V									
LXI RL	RF	50 Ω	DC	CORREC			NSE:INT reg: 5.2800	00000 GH-	ALIGN AUTO	11:22:18 P Radio Std	M Apr 15, 2021	Tra	ce/Detector
		N	IFF		+	Trig: Fre			d: 100/100	Radio Stu	. None		
				#IFGain	:Low	#Atten: 2	0 dB			Radio Dev	vice: BTS		
10 dB/div	Ref 2	20.00	dBn	n .									
Log 10.0													
					marchan	mannow		gal un marching					Clear Write
0.00													
-10.0				1					Ļ				
-20.0	wardynn	ماسحان	(hand	www					he when	Roally R.			
-30.0	www									Abalti M. ^{Ag}	marger of the or		Average
-40.0													
-50.0													
-60.0													Max Hold
-70.0													maxitora
Center 5.										Span 5	0.00 MHz		
#Res BW	200 KH2	Z				VB	W 2 MH	4		Swee	p 1.2 ms		Min Hold
Occu	pied Ba	and	widt	h			Total F	ower	23.4	dBm			
Occu		anter					- o tai -		201				
			18	8.98	J	ΠZ							Detector Peak▶
Trans	mit Freq	Erro	or	-36	.757	(Hz	% of O	BW Pow	er 99	.00 %		Auto	Man
	Bandwid	τn		2	1.73 N	IHZ	x dB		-20.	00 dB			
MSG									STATUS	3			

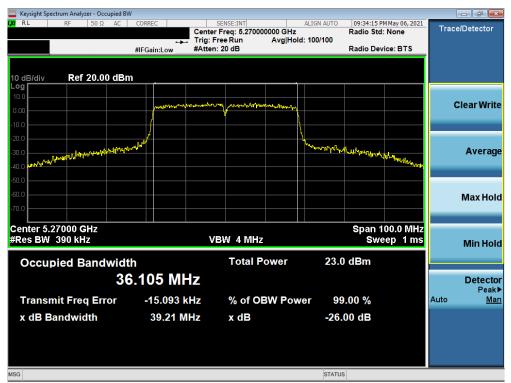
Plot 7-23. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2A) - Ch. 56)



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

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 28 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 28 of 509	
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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: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 29 of 509
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Keysight Spectrum Analyzer - Occupied BW					- 7 ×
<mark>O</mark> RL RF 50Ω AC	CORREC Cent	SENSE:INT er Freg: 5.270000000 GHz		4 PM May 06, 2021 Std: None	Trace/Detector
		Free Run Avg Ho en: 20 dB	old: 100/100	Device: BTS	
	#IFGain:Low #Atte	en: 20 dB	Radio L	Device: B15	
10 dB/div Ref 20.00 dBn					
10.0	in the all hotels of	mmmmulinenalleran			ClearWrite
0.00	and and her and	want have not an a start of the Torthough			Clear Write
-10.0			- <mark> </mark>		
-20.0	8 - 1		httead .		
-30.0	61Y UI		What was a stranger and the	who who who	Average
-40.0 444 444 44 44 44 44 44 44 44 44 44 44				and others	
-50.0					
-60.0					Max Hold
-70.0					
Center 5.27000 GHz			Spar	100.0 MHz	
#Res BW 390 kHz	,	VBW 4 MHz		weep 1 ms	Min Hold
					Millinoit
Occupied Bandwidt		Total Power	24.0 dBm		
37	.748 MHz				Detecto
Transmit Freq Error	28.720 kHz	% of OBW Po	wer 99.00 %		PeakI Auto Mar
x dB Bandwidth	40.10 MHz	x dB	-26.00 dB		
SG			STATUS		

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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 30 of 509	
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Plot 7-29. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2A) - Ch. 58)

Keysight Spectrum Analyzer - Occupied BW	CORREC	SENSE:INT	ALIGN AUTO	10:32:02 PM May 06, 2021	
	T	enter Freq: 5.290000 rig: Free Run Atten: 20 dB		Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm					
10.0 0.00	androna to the theory	whiteman	Mr. Aller Acres		Clear Writ
-10.0 -20.0 -30.0 -40.0 toythical/herror/to/toythical/herror/to/toythical/herror/to/toythical/herror/toythic	M			-poly-atrable wither lift roug	Averaç
60.0 					Max Ho
Center 5.2900 GHz #Res BW 820 kHz		VBW 8 MHz		Span 200.0 MHz Sweep 1 ms	Min Ho
Occupied Bandwidt	^h ′.286 MHz	Total Po	ower 22.	1 dBm	Detecto
Transmit Freq Error	3.384 kHz		W Power 99	9.00 %	Peak Auto <u>Ma</u>
x dB Bandwidth	82.06 MHz	x dB	-26	00 dB	
ISG			STATU	s	

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

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 21 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 31 of 509	
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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: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 22 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 32 of 509
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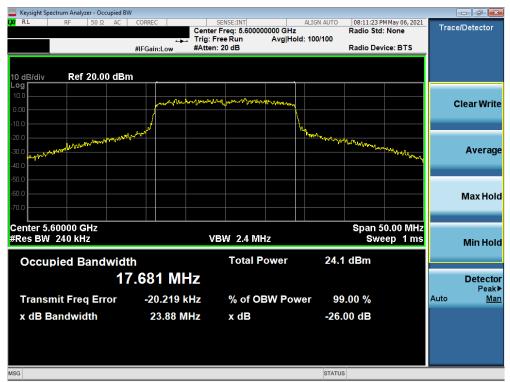
Plot 7-33. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2C) – Ch. 144)



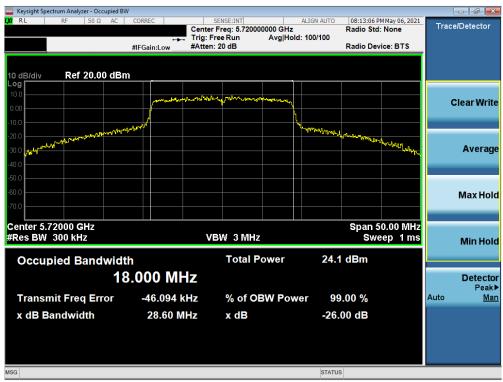
Plot 7-34. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 33 of 509	
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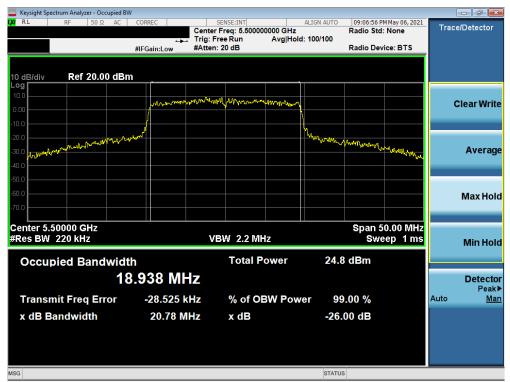
Plot 7-35. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)



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

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 500	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 34 of 509	
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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)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 35 of 509	
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		
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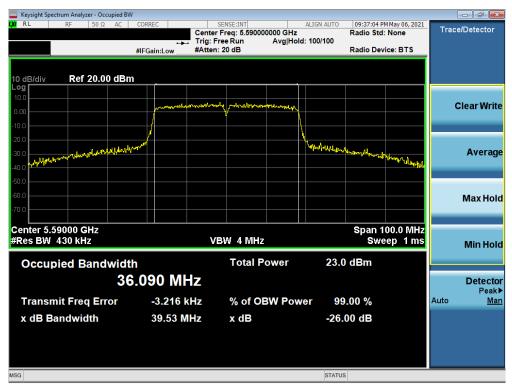
Plot 7-39. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 2C) - Ch. 144)



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

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	NG	roved by: nical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga	Dage 26 of 500	
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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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 27 of 500
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Plot 7-43. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 102)



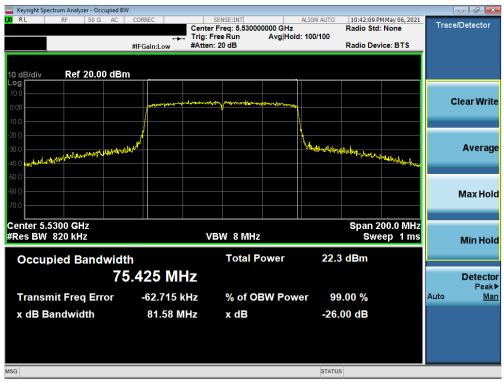
Plot 7-44. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 28 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset	Page 38 of 509
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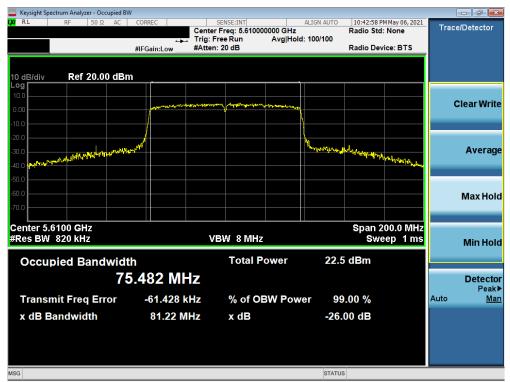
Plot 7-45. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 142)



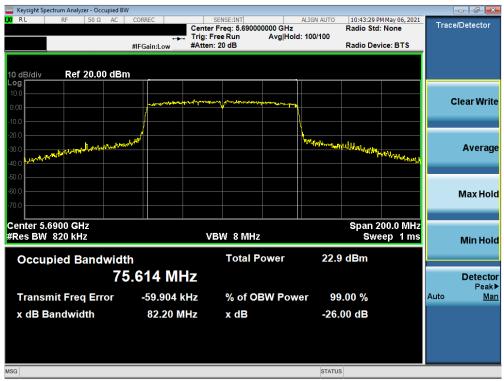
Plot 7-46. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMF711U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 500
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 39 of 509
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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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 500
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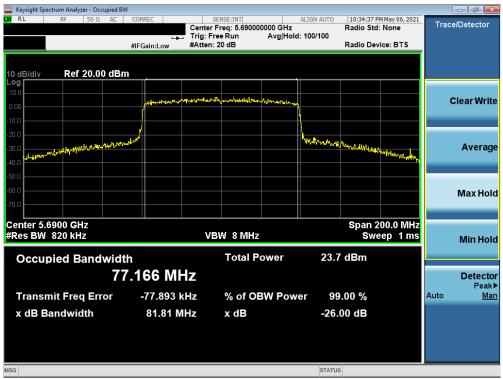
Plot 7-49. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 106)



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

FCC ID: A3LSMF711U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 41 of 500
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Plot 7-51. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 42 of 509
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Antenna-1 26 dB Bandwidth Measurements-Q

1	Frequency	Channel			Measured 26dB
	[MHz]	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	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	а	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
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	27.07
Band 2C	5510	102	n (40MHz)	13.5/15 (MCS0)	45.23
and	5590	118	n (40MHz)	13.5/15 (MCS0)	47.76
ä	5710	142	n (40MHz)	13.5/15 (MCS0)	43.72
	5510	102	ax (40MHz)	13.5/15 (MCS0)	42.38
	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	ax (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) dth Measuren	81.46

Table 7-3. Conducted Bandwidth Measurements ANT1

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 43 of 509
1M2104070032-14.A3L	04/12/2021-06/02/2021	Portable Handset		Page 43 01 509
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Keysight Spectrum Analyzer - Occupied B						_	
LXIRL RF 50Ω AC	CORREC	SENSE:INT	ALIGN A	UTO 06:14:38 PI Radio Std:	1 Jun 09, 2021 None	Trace/	Detector
		Trig: Free Run	Avg Hold: 100/1	00			
,	#IFGain:Low	#Atten: 20 dB		Radio Dev	ice: BTS		
10 dB/div Ref 20.00 dBr	n						
10.0							
0.00	mono	allow have he have a ha	man			CI	ear Write
-10.0							
-20.0	Martin		Jon Mary				
-20.0				way was a star	un low		Average
-40.0					""V VLAN		
-50.0							
-60.0							Max Hold
-70.0							
Contor 5 19990 Olla				On on f			
Center 5.18000 GHz #Res BW 220 kHz		VBW 2.2 MHz			0.00 MHz ep 1 ms		
					op i no		Min Hold
Occupied Bandwidt	th	Total Pov	wer	22.3 dBm			
10	6.472 MH	7					Detector
							Peak►
Transmit Freq Error	-30.598 k⊦	z % of OBV	V Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	21.65 MH	lz xdB		-26.00 dB			
MSG				STATUS			

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



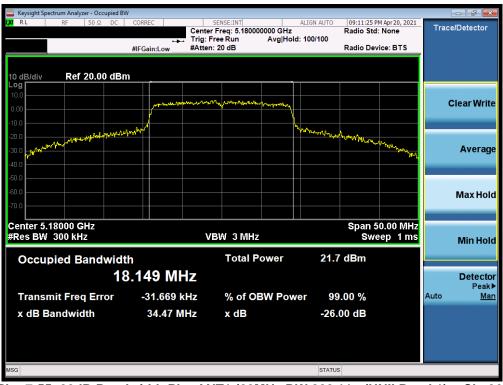
Plot 7-53. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	PCTEST [®] Proud to be part of [®] element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 44 of 500
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Plot 7-54. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 1) - Ch. 48)



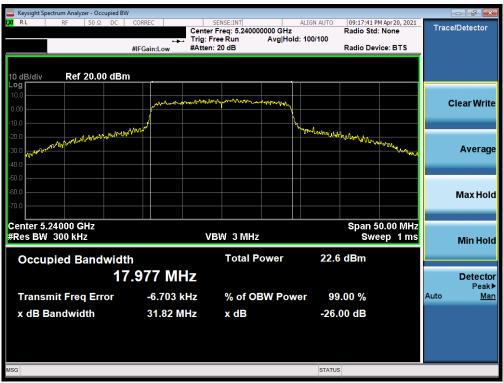
Plot 7-55. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 45 of 500
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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)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dage 46 of E00
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🔤 Keysight Spectrum Analyze	r - Occupied BW	1										- 6 - X
LXI RL RF	50 Ω DC	CORREC			SE:INT a: 5.18000	0000 GH		N AUTO	10:03:30 Radio Sto	PM Apr 20, 2021	Trac	e/Detector
				rig: Free			lold: 100	0/100	Radio Sto	I. None		
		#IFGain:Lo	ow #	Atten: 20	dB				Radio De	vice: BTS		
10 dB/div Ref 2	20.00 dBn	1										
Log												
10.0		6	Arm and let	1 mana	of sherry all	Arthana Ba						Clear Write
0.00		ALVEN					"\v_					Clear write
-10.0												
-20.0	montal	And the					1.10	ԽՈւստու	all and frager			
-20.0 -30.0									L. L. Mar	Mr. William		Average
-40.0												····.g-
-50.0												
-60.0												Max Hold
-70.0												
	<u> </u>											
Center 5.18000 GH #Res BW 300 kHz				\/D\/	3 MHz					50.00 MHz eep 1 ms		
#Res DW JUU KHZ				VDV	JIVINZ				SW	eep mis		Min Hold
Occupied Ba	ndwidt	h			Total P	ower		22.8	dBm			
					- otai -							
	18).161	MHz									Detector
Transmit Freq	Error	-24.6	654 kHz	Z	% of O	BW Po	wer	99	.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidt	th	33	52 MHz		x dB			-26	00 dB			
								201				
MSG								STATUS	5			

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



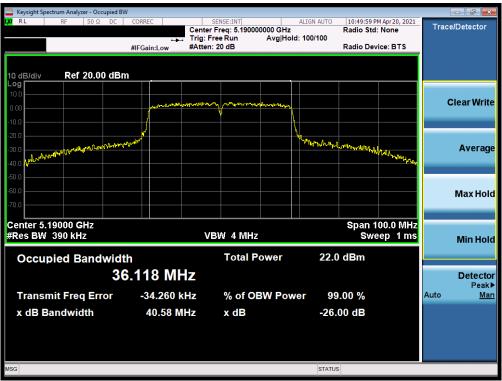
Plot 7-59. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 47 of 500
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μ RL RF 50 Ω DC CORREC SENSE:INT ALIGN AUTO 10:08:05 PM Apr20, 2 Center Freq: 5.240000000 GHz Radio Std: None	
Center Fred: 5.24000000 GHZ Radio Std: None	021 Trace/Detector
Trig: Free Run Avg Hold: 100/100	
#IFGain:Low #Atten: 20 dB Radio Device: BTS	
10 dB/div Ref 20.00 dBm	
10.0	
	Clear Write
-10.0	
100 200 300 Winning with and with a second	
-30.0 WWWWWW	🛶 Average
-40.0	
-50.0	
-60.0	Max Hold
-70.0	
Center 5.24000 GHz Span 50.00 M #Res BW 300 kHz VBW 3 MHz Sweep 1	
	Min Hold
Occupied Bandwidth Total Power 23.4 dBm	
19.178 MHz	Detector
	Peak►
Transmit Freq Error -35.312 kHz % of OBW Power 99.00 %	Auto <u>Man</u>
x dB Bandwidth 34.31 MHz x dB -26.00 dB	
MSG STATUS	

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



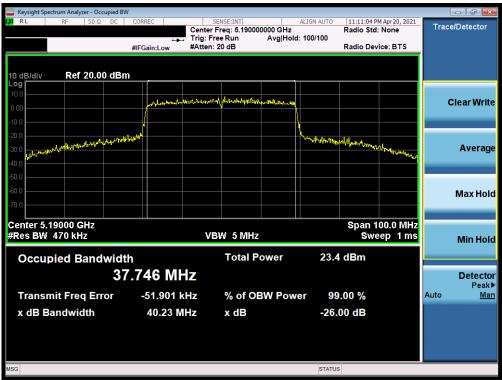
Plot 7-61. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 48 of 509
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Keysight Spectrum Analyzer - Occupied B					
()4 RL RF 50Ω DC		SENSE:INT Center Freq: 5.230000000 GHz Trig: Free Run Avg Ho #Atten: 20 dB	Rad Rad	51:50 PM Apr 20, 2021 io Std: None io Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBr Log 10.0 0.00	m	restand production and water			Clear Write
-10.0 -20.0 -30.0 -40.0			halany marked and	halleproduction	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.23000 GHz #Res BW 390 kHz Occupied Bandwid	th	VBW 4 MHz Total Power	Sr 22.5 dB	oan 100.0 MHz Sweep 1 ms m	Min Hold
	6.105 MH				Detector Peak
Transmit Freq Error x dB Bandwidth	-27.786 kH 40.80 MH		wer 99.00 -26.00 d		Auto <u>Man</u>
MSG			STATUS		

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



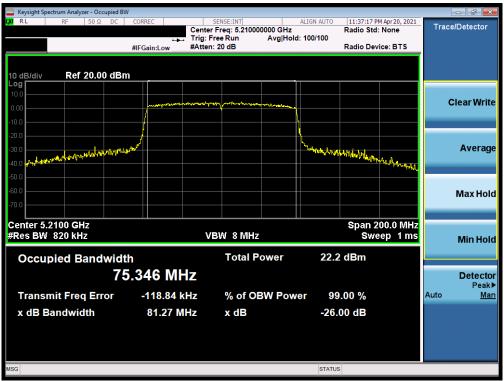
Plot 7-63. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 49 of 509
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W RL RF 50 gr DC CORREC SENSE:INT ALIGN AUTO I1:1:2:5 FM Apr.20, 2021 Trace/Detector Image: Context Freq: 5.23000000 GHz Trig: Freq: 5.23000000 GHz Radio Std: None Radio Std: None Radio Device: BTS Image: Context Freq: 5.2300000 GHz Image: Context Freq: 5.2300000 GHz Radio Device: BTS Clear Write Image: Context Freq: 5.230000 GHz Image: Context Freq: 5.230000 GHz Image: Context Freq: 5.23000 GHz Image: Context Freq: 5.2300 GHz Image:	
Trig: Free Run Avg Hold: 100/100 Radio Device: BTS 10 dB/div Ref 20.00 dBm Image: Argin and the second secon	
Image: Second dimension Clear Write 10 Image: Second dimension Image: Second dimension 100 Image: Second dimension Image: Second dimension Image: Second dimension 100 Image: Second dimension Image: Second dimension Image: Second dimension Image: Second dimension 100 Image: Second dimension Image: Second dimage: Second dimension Image: Second dimension	
Log Image: Clear Write 100 Image: Clear Write 200 Image: Clear Write 201 Image: Clear Write 202 Image: Clear Write <td< td=""><td>,</td></td<>	,
Log Image: Clear Write 100 Image: Clear Write 200 Image: Clear Write 201 Image: Clear Write 202 Image: Clear Write <td< td=""><td>10 dB/div Ref 20 00 dB</td></td<>	10 dB/div Ref 20 00 dB
Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Average Max Ho Coupled Bandwidth Total Power 23.9 dBm 37.759 MHz Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Clear Wri Max Ho Clear Wri Clear Wri Max Ho Clear Wri Clear Wri Max Ho Clear Wri Clear Wri Clear Wri Max Ho Clear Wri Clear Wri Max Ho Clear Wri Clear Wri	Log
000 100 <td></td>	
200 200 200 200 200 200 200 200	
400 4	
400 4	20.0
60.0 60.0	
60.0 70.0 Max Ho 70.0 Span 100.0 MHz Span 100.0 MHz Center 5.23000 GHz VBW 4 MHz Span 100.0 MHz #Res BW 390 kHz VBW 4 MHz Sweep 1 ms Occupied Bandwidth Total Power 23.9 dBm 37.759 MHz Detect	
Center 5.23000 GHz VBW 4 MHz Span 100.0 MHz #Res BW 390 kHz VBW 4 MHz Sweep 1 ms Occupied Bandwidth Total Power 23.9 dBm 37.759 MHz Detect	
Center 5.23000 GHz #Res BW 390 kHz VBW 4 MHz Sweep 1 ms Occupied Bandwidth Total Power 23.9 dBm 37.759 MHz Detect Peal	
#Res BW 390 kHz VBW 4 MHz Sweep 1 ms Min Ho Occupied Bandwidth Total Power 23.9 dBm 37.759 MHz Detect	
Occupied Bandwidth Total Power 23.9 dBm 37.759 MHz Detect Peal	
37.759 MHz Detect	#Res BW 390 kHz
37.759 MHz Detect	Occupied Bandwid
Peal	
Transmit Freg Error -39.452 kHz % of OBW Power 99.00 % Auto M	J
	Transmit Freq Error
x dB Bandwidth 44.60 MHz x dB -26.00 dB	x dB Bandwidth
NSG STATUS	

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



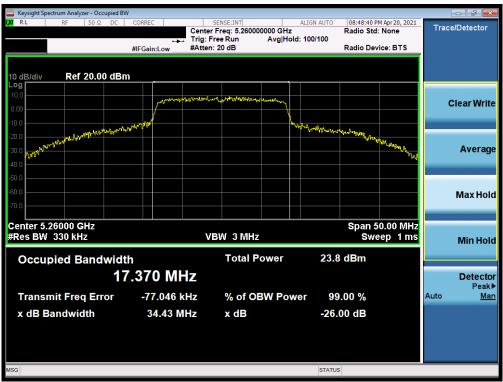
Plot 7-65. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dago 50 of 500
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Plot 7-66. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ax (UNII Band 1) - Ch. 42)



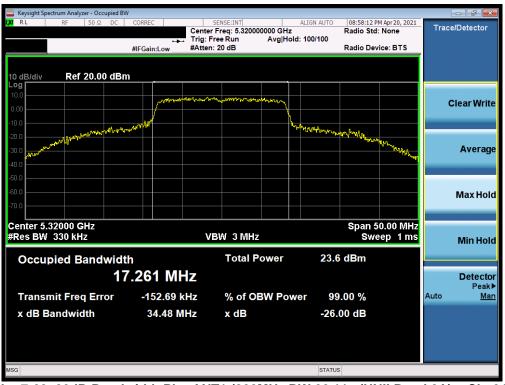
Plot 7-67. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11a (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 52 of 500
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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: A3LSMF711U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 500
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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: A3LSMF711U	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 54 of 500
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aan k	eysight Spe	ectrum A	nalyzer - C	Occupi	ied BW										
LXI	RL	RF	50	ΩI	DC	CORREC			NSE:INT reg: 5.28000	0000 GHz	ALIGN AUTO	10:13:49 P Radio Std	M Apr 20, 2021	Trac	e/Detector
								. Trig: Fre	e Run		d: 100/100				
						#IFGain:	Low	#Atten: 2	0 dB			Radio Dev	ice: BTS		
10 (Log	dB/div	R	lef 20.	00	dBm										
10.	-														
0.0	n					hal	www.	Mr. Www. Million L	And the second second	hanner an					Clear Write
-10.0															
-20.1			and when	باليولي.	أمريهم أبعانه	المريال					WWW WWW WWW	madellan			
-30.1	. ALADA	mah	Carlor of a									A MARKET	mininter		Average
-30.1															Average
-40.1															
-60.1															Max Hold
-70.1														_	_
Ce	nter 5.:	2800	0 GHz									Span 5	0.00 MHz		
#R	es BW	270	kHz					VBI	N 2.7 M	lz			ep 1 ms		Min Hold
	~								Tatal D		- 24.4	dBm			
	Occu	pled	Ban	dW					Total P	ower	24.4	aBm			
					19	.176	5 MH	z							Detector
	Fransr	nit E	rea E	rro		_2	.020 k		% of O	BW Pow	or 00	.00 %		Auto	Peak▶ Man
														Lato	11194.1
>	(dB B	and	width			31	.01 M	Hz	x dB		-26.	00 dB			
MSG											STATUS	5			

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

RL RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	10:15:10 PM Apr 20, 2021	Trace/Detector
	÷	Center Freq: 5.3200 Trig: Free Run #Atten: 20 dB	00000 GHz Avg Hold: 100/100	Radio Std: None	Theorem
	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS	
dB/div Ref 20.00 dBn 9 .0	1 	h. Irrailean mythinkalith	dumanitum		Clear Wri
0.0	whent			whyten al the work many	
					Averaç
.0					Max Ho
enter 5.32000 GHz				Span 50.00 MHz	
Res BW 360 kHz Occupied Bandwidt	h	VBW 4 MHz		Sweep 1 ms 9 dBm	Min Ho
	.383 M		211		Detect Peal
Transmit Freq Error	-45.760	kHz % of O	BW Power 9	9.00 %	Auto <u>M</u>
x dB Bandwidth	37.30	MHz xdB	-26	.00 dB	
			STATU		

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

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	ISUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EE of E00
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Plot 7-76. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)



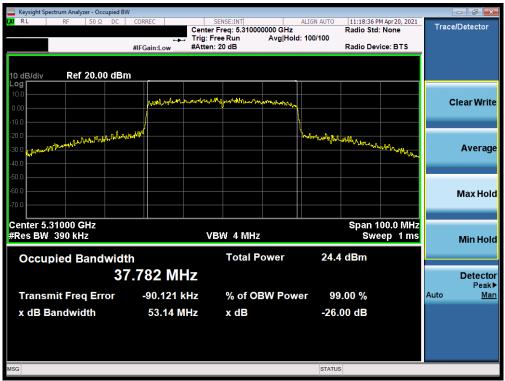
Plot 7-77. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo EG of EQQ
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Keysight Spectrum Analyzer - Occupied BW					
		SENSE:INT Center Freq: 5.270000000 GH Trig: Free Run Avg H #Atten: 20 dB	ALIGN AUTO	11:16:39 PM Apr20, 202: Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm Log 100 0.00	ant of the second with a most	with the start with an a farmer of all Marille	~		Clear Write
-10.0 -20.0 -30.0			Wingerlagenagen	alternationarial warkely rangely	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.27000 GHz #Res BW 470 kHz Occupied Bandwidth		VBW 5 MHz Total Power	24.6	Span 100.0 MH Sweep 1 ms	
	877 MH		ower 99	.00 %	Detecto Peakl Auto <u>Mar</u>
x dB Bandwidth	53.66 MH	lz x dB	-26.0	00 dB	
MSG			STATUS		_

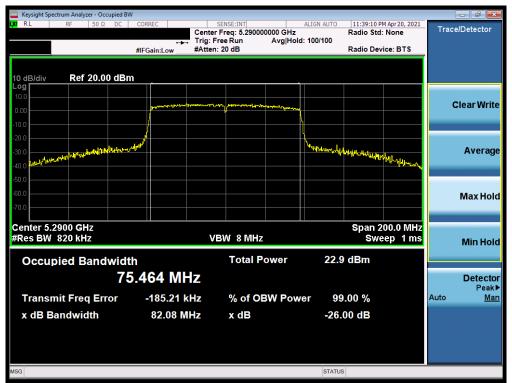
Plot 7-78. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 54)



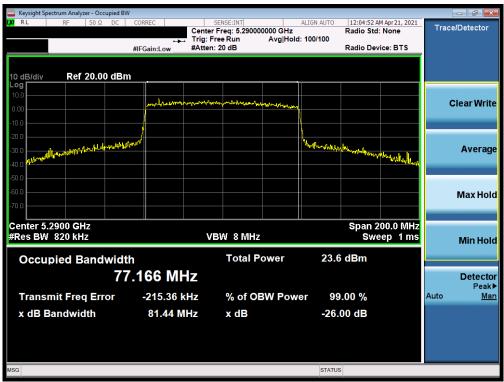
Plot 7-79. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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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: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
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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: A3LSMF711U	PCTEST [®] Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 500
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Plot 7-84. 26dB Bandwidth Plot ANT1 (820MHz BW 02.11a (UNII Band 2C) - Ch. 144)



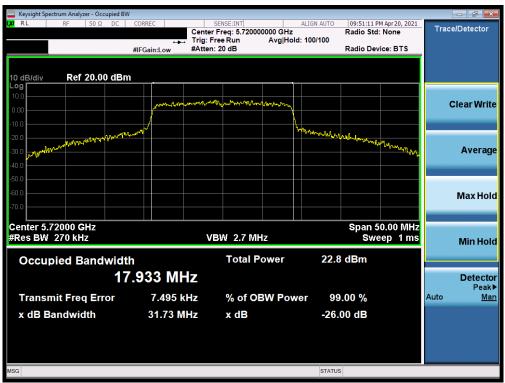
Plot 7-85. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 60 of 500
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Plot 7-86. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 120)



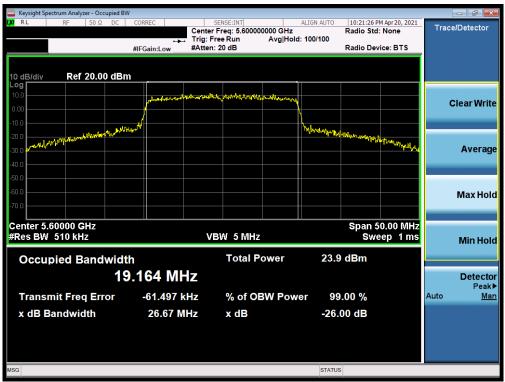
Plot 7-87. 26dB Bandwidth Plot ANT1 (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 61 of 500
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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: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 62 of 500
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Keysight Spectrum Analyzer - Occupied BW Χ/ RL RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	10:30:36 PM Apr 20, 2021	
	#IFGain:Low	Center Freq: 5.720000000 G		Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm					
-10.0		whome would who we are a second			Clear Write
20.0 .30.0 Millionin Marina and Marina 40.0				malalinen whendnigh	Averag
50.0					Max Hol
Center 5.72000 GHz Res BW 270 kHz		VBW 2.7 MHz		Span 50.00 MHz Sweep 1 ms	
	.170 MH			dBm	Detecto
Transmit Freq Error x dB Bandwidth	1.820 ki 27.07 Mi			000 % 00 dB	Auto <u>Ma</u>
G			STATUS		

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



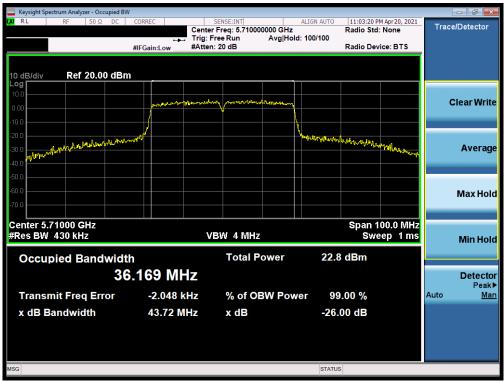
Plot 7-91. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 102)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B					
00 RL RF 50Ω DC	Trig	SENSE:INT ter Freq: 5.590000000 G g: Free Run Avg ten: 20 dB	ALIGN AUTO Hz Hold: 100/100	11:00:46 PM Apr 20, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dB	m	and the second second	u _{no}		Clear Write
20.0			have for the second sec	Mushing Warwillian	Average
-50.0 -60.0 -70.0					Max Hold
Center 5.59000 GHz #Res BW 390 kHz Occupied Bandwid	th	VBW 4 MHz Total Power	22.8	Span 100.0 MHz Sweep 1 ms dBm	Min Hole
	6.117 MHz -41.585 kHz	% of OBW P	ower 99	.00 %	Detecto Peakl Auto <u>Mar</u>
x dB Bandwidth	47.76 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

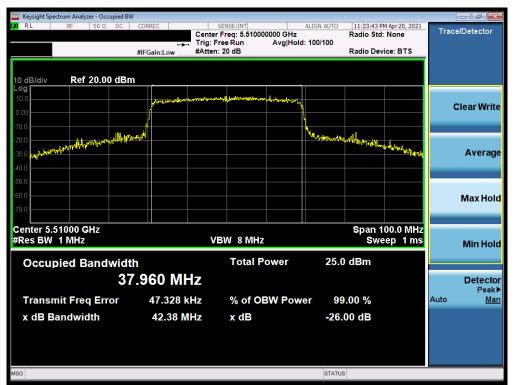
Plot 7-92. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11n (UNII Band 2C) - Ch. 118)



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

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-94. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 102)



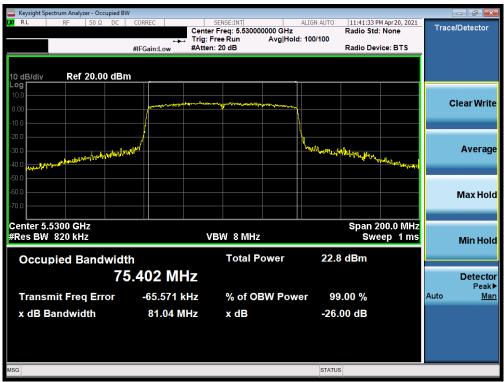
Plot 7-95. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dage CE of E00
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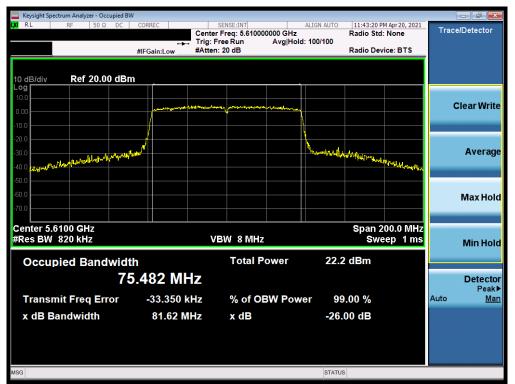
Plot 7-96. 26dB Bandwidth Plot ANT1 (40MHz BW 802.11ax (UNII Band 2C) - Ch. 142)



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

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dage CC of E00
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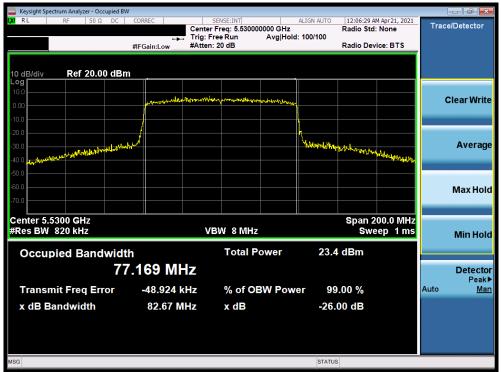
Plot 7-98. 26dB Bandwidth Plot ANT1 (80MHz BW 802.11ac (UNII Band 2C) - Ch. 122)



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

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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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: A3LSMF711U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW	1					X
χά RL RF 50Ω DC	CORREC ↔ #IFGain:Low	SENSE:INT Center Freq: 5.690000000 GH Trig: Free Run Avg H #Atten: 20 dB	ALIGN AUTO Iz Iold: 100/100	12:10:15 AM Apr21, 2021 Radio Std: None Radio Device: BTS	Trace/Detect	tor
10 dB/div Ref 20.00 dBn		ljasmans mondundunu	\$nng		Clear W	Vrite
20.0 30.0 40.0 wheelson and highly the strategy of the state of the st	p.nr		ไม่ ในกลร์ปนรับรายส	m-ton-Mary/Tryston/Indiated Maple	Ave	rag
50.0 60.0 70.0					Max	lol
Center 5.6900 GHz Res BW 820 kHz Occupied Bandwidt	b	VBW 8 MHz Total Power	23.3	Span 200.0 MHz Sweep 1 ms 3 dBm	Min H	lol
77	.270 MH	Z				ecto eak Ma
Transmit Freq Error x dB Bandwidth	63.785 ki 81.46 Mi			0.00 % 00 dB	Auto	Ma
SG			STATUS	3		

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

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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MIMO 26 dB Bandwidth Measurements-N

	_				Antenna-1 26dB		
	Frequency	Channel	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		
2A	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	20.49		
Band 2A	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	20.66		
Ba	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	a 6		18.29		
	5600	120	a 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		
2C	5510	102	n (40MHz)	13.5/15 (MCS0)	39.15		
Band	5590	118	n (40MHz)	13.5/15 (MCS0)	39.29		
ä	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		
Tak	Table 7-4 Conducted Bandwidth Measurements MIMO						

Table 7-4. Conducted Bandwidth Measurements MIMO

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 70 of 500
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Keysight Spectrum Analyzer - Occupied BW							
X RL RF 50Ω AC	ter Tr	SENSE:INT enter Freq: 5.180000000 GI ig: Free Run Avg l Atten: 20 dB	ALIGN AUTO Hz Hold: 100/100	Radio Std		Trace	Detector
10 dB/div Ref 20.00 dBm	1						
Log 10.0 0.00						с	lear Write
20.0	with the second se	and the part of the second	Windowsking of				Average
50.0				Marth And p	un and a property of the		Max Hold
Center 5.18000 GHz #Res BW 180 kHz		VBW 1.8 MHz			60.00 MHz 1.467 ms		Min Hol
Occupied Bandwidt	^h 3.398 MHz	Total Power	7.57	/ dBm			Detecto Peak
Transmit Freq Error x dB Bandwidth	1.545 kHz 18.31 MHz			9.00 % 00 dB		Auto	Peak <u>Ma</u>
ISG			STATU	S			

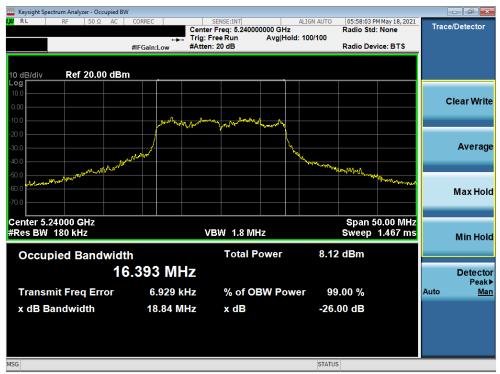
Plot 7-103. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 36)



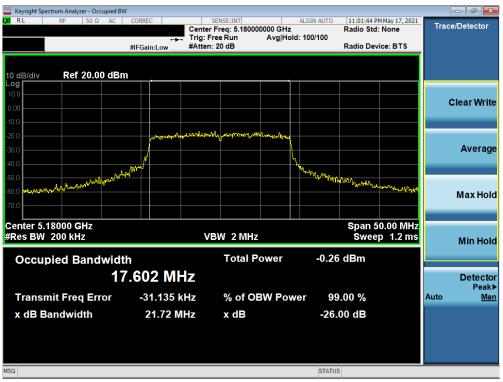
Plot 7-104. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:		Dana 74 at 500
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Plot 7-105. 26dB Bandwidth Plot MIMO (20MHz BW 802.11a (UNII Band 1) - Ch. 48)



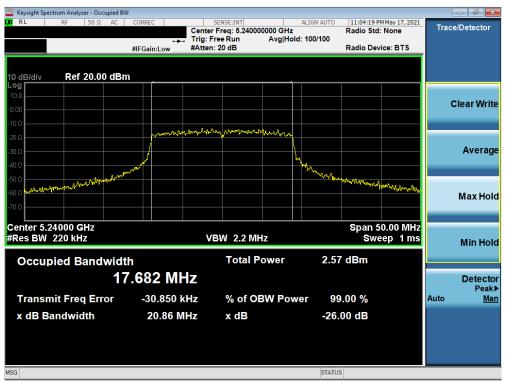
Plot 7-106. 26dB Bandwidth Plot MIMO (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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www.www.www.com.com.com.com.com.com.com.com.com.com					- F
LX RE 50 Ω AC	CORREC	SENSE:INT Center Freg: 5.200000	ALIGN AUTO	11:03:28 PM May 17, 2021 Radio Std: None	Trace/Detector
		Trig: Free Run #Atten: 20 dB	Avg Hold: 100/100	Radio Device: BTS	
	#IFGain:Low	#Atten: 20 dB		Radio Device. B13	
10 dB/div Ref 20.00 dBm Log					
10.0					Clear Write
0.00					
-10.0	• • • • • • • • •	mon man portil alongo	hurb at 1		
-20.0			1		_
-30.0	1		$-\lambda_{-}$		Average
-40.0 -50.0	Num ^{ta}		Uling holywy	-1 ₁₀	
-50.0 -60.0 Magnifeleren and and and and and and and and and an				Martin Martin Martin	
					Max Hold
-70.0					
Center 5.20000 GHz				Span 50.00 MHz	
#Res BW 220 kHz		VBW 2.2 MH:	2	Sweep 1 ms	Min Hold
Occupied Bandwidt	h	Total Po	wer 3.1	8 dBm	
	 .702 M⊦				Detector
17		IZ			Detector Peak▶
Transmit Freq Error	-30.337 k	Hz % of OB	W Power 9	9.00 %	Auto <u>Mar</u>
x dB Bandwidth	20.86 M	Hz xdB	-26	.00 dB	
MSG			STATU	JS	

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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B					
🗶 RL RF 50Ω AC	CORREC	SENSE:INT ter Freq: 5.180000000 GHz		45:30 PM May 17, 2021 io Std: None	Trace/Detector
	Trig:		d: 100/100	io Device: BTS	
	#IFGain:Low #Atte	en. 20 dB	Rau	lo Device. B13	
10 dB/div Ref 20.00 dBr	~				
10 dB/div Ref 20.00 dBr					
10.0					Clear Write
0.00					Cical Wild
-10.0	all the fraction for the second	grander per aller and			
-20.0					_
-30.0	<u>, N</u>		h. I.		Averag
-40.0			- whole whole	hollow when when the south	
-50.0				and whether the second	
-60.0					Max Hole
-70.0					
Center 5.18000 GHz				oan 50.00 MHz	
#Res BW 200 kHz		VBW 2 MHz	\$	Sweep 1.2 ms	Min Hole
Occupied Bandwidt	h	Total Power	5.38 dB	m	
	 3.987 MHz				Detecto
	5.307 WINZ				Detecto Peak
Transmit Freq Error	-72.822 kHz	% of OBW Pow	/er 99.00	%	Auto <u>Ma</u>
x dB Bandwidth	22.31 MHz	x dB	-26.00 d	B	
ASG			STATUS		

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



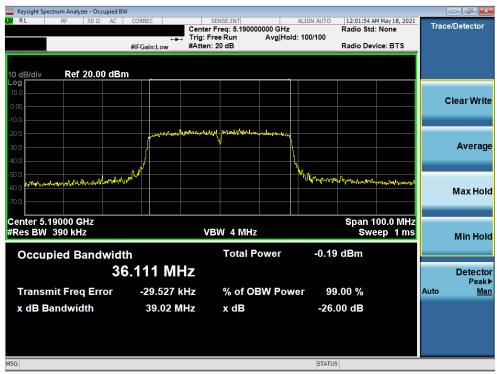
Plot 7-110. 26dB Bandwidth Plot MIMO (20MHz BW 802.11ax (UNII Band 1) - Ch. 40)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B					
<mark>X</mark> RL RF 50Ω AC	CORREC	SENSE:INT r Freq: 5.240000000 GHz	ALIGN AUTO 10:47:21 PM Radio Std:	May 17, 2021 None	Trace/Detector
	Trig:	Free Run Avg Hold: n: 20 dB	100/100 Radio Devi	DTC	
	#IFGain:Low #Atter	1: 20 dB	Radio Devi	ce: DTS	
10 dB/div Ref 20.00 dBr Log	n				
10.0					
0.00					Clear Write
-10.0	and the state	Murhand			
-20.0	and a second locally	white and the second			
-30.0					Averag
-40.0	h Jay		have a start of the start of th		
-40.0 -50.0			willestan M May May Market	"เพลงใจไฟไกล	
-60.0				in here	Max Hol
-70.0					maxinon
0 - m f = 0.4000, OU -			0		
Center 5.24000 GHz #Res BW 200 kHz	V	'BW 2 MHz		0.00 MHz 0 1.2 ms	
			Giros		Min Hole
Occupied Bandwid	th	Total Power	6.08 dBm		
18	8.908 MHz				Detecto
					Peak
Transmit Freq Error	-62.477 kHz	% of OBW Powe	er 99.00 %		Auto <u>Mar</u>
x dB Bandwidth	20.54 MHz	x dB	-26.00 dB		
ASG			STATUS		

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: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW							
LXI RE RF 50Ω AC	CORREC	SENSE:INT Center Freq: 5.23000	0000 GHz	Radio Std:	May 18, 2021 None	Trace/	Detector
	↔ #IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 100	0/100 Radio Devi	ice: BTS		
	an ounicow						
10 dB/div Ref 20.00 dBm							
Log							
0.00						CI	ear Write
-10.0						_	
-20.0	montione	mandant	Mark Street, etc.				
-30.0			<u> </u>				Average
-40.0	Mark .		- Nue	www.			
South the second state of	, ,			- And a show of the first stand	and work for the		
-70.0							Max Hold
Center 5.23000 GHz #Res BW 390 kHz		VBW 4 MHz			00.0 MHz ep 1 ms		
#Res DW 390 RH2				Swe	ep mis		Min Hold
Occupied Bandwidth	1 I	Total P	ower	4.87 dBm			
36	.071 MH	Z					Detector
Transmit Freq Error	-6.712 k	Hz % of OE	3W Power	99.00 %		Auto	Peak≱ Man
x dB Bandwidth	39.51 MI			-26.00 dB			_
	55.51 MI			-20.00 dB			
MSG				STATUS			

Plot 7-113. 26dB Bandwidth Plot MIMO (40MHz BW 802.11n (UNII Band 1) - Ch. 46)



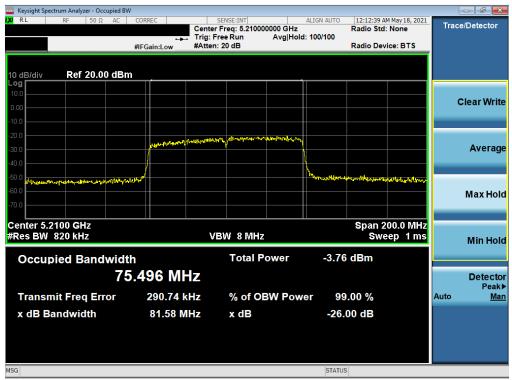
Plot 7-114. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax (UNII Band 1) - Ch. 38)

FCC ID: A3LSMF711U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					ø
XIRL RF 50Ω AC	CORREC	SENSE:INT	0 GHz	11:52:31 PM May 17, 2021 Radio Std: None	Trace/Detector
	T		vg Hold: 100/100	Radio Device: BTS	
	#IFGain:Low #	Atten: 20 dB		Radio Device: BTS	
10 dB/div Ref 20.00 dBn					
10.0					
0.00					Clear Writ
-10.0					
20.0		restand from the states	www		
-30.0					Averag
-40.0					
-50.0			10 Mar 10 And	malthornarthylation	
-60.0				mandathariantershalpharmangementy	Max Ho
-70.0					
Center 5.23000 GHz				Span 100.0 MHz	
#Res BW 390 kHz		VBW 4 MHz		Sweep 1 ms	Min Ho
Occupied Bandwidt		Total Pow	ver 3.04	dBm	
37	′.671 MHz	-			Detecto
Transmit Freq Error	29.224 kHz	% of OBW	Bower 00	.00 %	Peak Auto Ma
					Auto <u>ma</u>
x dB Bandwidth	39.86 MHz	x dB	-26.	00 dB	
SG			STATU	5	

Plot 7-115. 26dB Bandwidth Plot MIMO (40MHz BW 802.11ax (UNII Band 1) - Ch. 46)



Plot 7-116. 26dB Bandwidth Plot MIMO (80MHz BW 802.11ac (UNII Band 1) - Ch. 42)

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