

## PCTEST

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## PART 27 MEASUREMENT REPORT

#### **Applicant Name:**

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

### Date of Testing: 04/12/2021 – 06/11/2021 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.:

1M2104070032-05.A3L

## FCC ID:

## Applicant Name:

## A3LSMF711U

### Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part: Test Procedure(s): Certification SM-F711U SM-F711U1 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04

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 §2.947. 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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## **PART 27 MEASUREMENT REPORT**



				El	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	10 MHz	QPSK	2310.0	0.194	22.88	9M04G7D
LTE Band 30	10 10112	16QAM	2310.0	0.157	21.96	8M97W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.192	22.83	4M51G7D
		16QAM	2307.5 - 2312.5	0.150	21.75	4M50W7D
LTE Band 7	20 MHz	QPSK	2510.0 - 2560.0	0.259	24.13	18M0G7D
		16QAM	2510.0 - 2560.0	0.238	23.76	18M0W7D
	15 MHz	QPSK 16QAM	2507.5 - 2562.5 2507.5 - 2562.5	0.259	24.13 23.89	13M5G7D 13M5W7D
		QPSK	2507.3 - 2562.3	0.243	23.83	9M04G7D
	10 MHz	16QAM	2505.0 - 2565.0	0.235	23.71	9M01W7D
		QPSK	2502.5 - 2567.5	0.268	24.27	4M51G7D
	5 MHz	16QAM	2502.5 - 2567.5	0.238	23.77	4M52W7D
	00 1411-	QPSK	2506.0 - 2680.0	0.604	27.81	18M0G7D
	20 MHz	16QAM	2506.0 - 2680.0	0.531	27.25	17M9W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.593	27.73	13M5G7D
LTE Band 41(PC2)	13 10112	16QAM	2503.5 - 2682.5	0.529	27.23	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.599	27.77	9M00G7D
	10 10112	16QAM	2501.0 - 2685.0	0.540	27.32	9M00W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.603	27.80	4M52G7D
		16QAM	2498.5 - 2687.5	0.542	27.34	4M51W7D
LTE Band 41(PC3)/38	20 MHz	QPSK	2506.0 - 2680.0	0.350	25.44	18M0G7D
		16QAM QPSK	2506.0 - 2680.0 2503.5 - 2682.5	0.330	25.18 25.41	17M9W7D 13M5G7D
	15 MHz	16QAM	2503.5 - 2682.5	0.348	25.41	13M5G7D
		QPSK	2501.0 - 2685.0	0.324	25.44	9M04G7D
	10 MHz	16QAM	2501.0 - 2685.0	0.335	25.25	9M00W7D
		QPSK	2498.5 - 2687.5	0.352	25.46	4M52G7D
	5 MHz	16QAM	2498.5 - 2687.5	0.331	25.20	4M51W7D
		π/2 BPSK	2310.0	0.198	22.96	8M99G7D
	10 MHz	QPSK	2310.0	0.193	22.85	9M35G7D
NR Band n30		16QAM	2310.0	0.169	22.27	9M34W7D
NIX Balla 1150		π/2 BPSK	2307.5 - 2312.5	0.196	22.92	4M52G7D
	5 MHz	QPSK	2307.5 - 2312.5	0.189	22.76	4M52G7D
		16QAM	2307.5 - 2312.5	0.164	22.14	4M55W7D
	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.381	25.81	96M8G7D
		QPSK	2546.0 - 2640.0	0.364	25.61	98M0G7D
		16QAM	2546.0 - 2640.0	0.250	23.98	98M1W7D
	90 MHz	π/2 BPSK QPSK	2541.0 - 2645.0 2541.0 - 2645.0	0.345	25.38 24.61	87M4G7D
	90 MHZ	16QAM	2541.0 - 2645.0	0.289	22.92	87M8G7D 87M9W7D
		π/2 BPSK	2536.0 - 2650.0	0.196	25.26	77M6G7D
	80 MHz	QPSK	2536.0 - 2650.0	0.318	25.03	77M8G7D
	00 11112	16QAM	2536.0 - 2650.0	0.214	23.31	77M9W7D
		π/2 BPSK	2526.0 - 2660.0	0.381	25.81	58M3G7D
	60 MHz	QPSK	2526.0 - 2660.0	0.364	25.61	58M2G7D
NR Band n41		16QAM	2526.0 - 2660.0	0.250	23.98	58M3W7D
PC2		π/2 BPSK	2521.0 - 2665.0	0.375	25.74	46M2G7D
	50 MHz	QPSK	2521.0 - 2665.0	0.321	25.06	47M7G7D
		16QAM	2521.0 - 2665.0	0.232	23.65	47M7W7D
		π/2 BPSK	2516.0 - 2670.0	0.282	24.50	35M8G7D
	40 MHz	QPSK	2516.0 - 2670.0	0.268	24.28	37M9G7D
		16QAM	2516.0 - 2670.0	0.172	22.35	38M0W7D
	20 141-	π/2 BPSK	2511.0 - 2675.0	0.304	24.83	27M0G7D
	30 MHz	QPSK	2511.0 - 2675.0	0.277	24.42	28M0G7D
		16QAM	2511.0 - 2675.0	0.177	22.47	28M0W7D
	20 MHz	π/2 BPSK QPSK	2506.0 - 2680.0 2506.0 - 2680.0	0.372	25.71 25.14	22M9G7D 23M2G7D
		16QAM	2506.0 - 2680.0	0.328	23.14	23M2G7D 23M3W7D

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				EI	EIRP	
Mode	Bandwidth	Modulation Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator	
		π/2 BPSK	2546.0 - 2640.0	0.205	23.11	97M1G7D
	100 MHz	QPSK	2546.0 - 2640.0	0.200	23.01	97M8G7D
		16QAM	2546.0 - 2640.0	0.155	21.90	97M8W7D
		π/2 BPSK	2541.0 - 2645.0	0.189	22.76	87M2G7D
	90 MHz	QPSK	2541.0 - 2645.0	0.201	23.02	88M0G7D
		16QAM	2541.0 - 2645.0	0.127	21.05	88M1W7D
		π/2 BPSK	2536.0 - 2650.0	0.190	22.78	77M3G7D
	80 MHz	QPSK	2536.0 - 2650.0	0.216	23.34	77M6G7D
		16QAM	2536.0 - 2650.0	0.133	21.23	77M9W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.205	23.11	58M3G7D
		QPSK	2526.0 - 2660.0	0.200	23.01	58M3G7D
NR Band n41		16QAM	2526.0 - 2660.0	0.155	21.90	58M1W7D
PC3	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.198	22.98	46M0G7D
		QPSK	2521.0 - 2665.0	0.207	23.15	47M6G7D
		16QAM	2521.0 - 2665.0	0.144	21.58	48M0W7D
		π/2 BPSK	2516.0 - 2670.0	0.149	21.74	35M8G7D
	40 MHz	QPSK	2516.0 - 2670.0	0.147	21.68	37M9G7D
		16QAM	2516.0 - 2670.0	0.106	20.27	37M9W7D
		π/2 BPSK	2511.0 - 2675.0	0.162	22.09	26M9G7D
	30 MHz	QPSK	2511.0 - 2675.0	0.152	21.82	26M9G7D
		16QAM	2511.0 - 2675.0	0.109	20.39	26M9W7D
		π/2 BPSK	2506.0 - 2680.0	0.197	22.95	17M9G7D
	20 MHz	QPSK	2506.0 - 2680.0	0.179	22.54	18M3G7D
		16QAM	2506.0 - 2680.0	0.130	21.13	18M3W7D

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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 Engineering Lab 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 licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: 0859M, 0123M, 0846M, 0834M, 0129M, 0130M, 1964M, 0151M, 0811M, 0880M

### 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

## 2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

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

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

## 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and 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 "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

## 3.2 Radiated Power and Radiated Spurious 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. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI/TIA-603-E-2016. A halfwave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

P<sub>d [dBm]</sub> = P<sub>g [dBm]</sub> - cable loss [dB] + antenna gain [dBd/dBi];

where  $P_d$  is the dipole equivalent power,  $P_g$  is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to  $P_{g \text{ [dBm]}}$  – cable loss [dB].

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

$$\begin{split} E_{[dB\mu V/m]} &= Measured \ amplitude \ level_{[dBm]} + 107 + Cable \ Loss_{[dB]} + Antenna \ Factor_{[dB/m]} \\ And \\ EIRP_{[dBm]} &= E_{[dB\mu V/m]} + 20logD - 104.8; \ where \ D \ is the measurement \ distance \ in \ meters. \end{split}$$

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 414788 D01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-E-2016.

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## 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. 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
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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## 5.0 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
-	AP2	EMC Cable and Switch System	9/9/2020	Annual	9/9/2021	AP2
-	AP1	EMC Cable and Switch System	9/10/2020	Annual	9/10/2021	AP1
-	LTx2	Licensed Transmitter Cable Set	9/16/2020	Annual	9/16/2021	LTx2
-	LTx5	LIcensed Transmitter Cable Set	9/16/2020	Annual	9/16/2021	LTx5
Agilent	E5515C	Wireless Communications Test Set		N/A		GB45360985
Agilent	E5515C	Wireless Communications Test Set		N/A		GB46310798
Anritsu	MT8820C	Radio Communication Analyzer		N/A		6201300731
Anritsu	MT8821C	Radio Communication Analyzer		N/A		6201381794
Anritsu	MT8821C	Radio Communication Analyzer		N/A		6200901190
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
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020	Biennial	3/12/2022	128337
Keysight Technologies	N9020A	MXA Signal Analyzer	9/22/2020	Annual	9/22/2021	MY54500644
Keysight Technologies	N9020A	MXA Signal Analyzer	8/14/2020	Annual	8/14/2021	US46470561
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	N9030B	PXA Signal Analyzer, Multi-touch	9/17/2020	Annual	9/17/2021	MY57141001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		100976
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		112347
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	7/15/2020	Annual	7/15/2021	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/9/2020	Annual	9/9/2021	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/10/2020	Annual	8/10/2021	103200
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307

#### Table 5-1. Test Equipment

#### Notes:

- 1. 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.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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## 6.0 SAMPLE CALCULATIONS

## **QPSK Modulation**

#### Emission Designator = 8M62G7D

LTE BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

## **QAM Modulation**

#### Emission Designator = 8M45W7D

LTE BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

## **Spurious Radiated Emission**

#### Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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#### TEST RESULTS 7.0

#### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMF711U
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE/NR/ULCA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Conducted Power	2.1046	N⁄A	PASS	Sections 7.2, 7.6
	Occupied Bandwidth	2.1049	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 30)	2.1051, 27.53(a)	Undesirable emissions must meet the	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (NR Band n30)	2.1051, 27.53(a)	limits detailed in 27.53(a)	PASS	Sections 7.4, 7.5
CONDUCTED	Conducted Band Edge / Spurious Emissions (LTE Band 7)			PASS	Sections 7.4, 7.5
ONDI	Conducted Band Edge / Spurious Emissions (LTE Band 41)	2.1051, 27.53(m)	Undesirable emissions must meet the	PASS	Sections 7.4, 7.5, 7.6
Ö	Conducted Band Edge / Spurious Emissions (NR Band n41)	2.1051, 27.53(m)	limits detailed in 27.53(m)	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (LTE Band 38)			PASS	Sections 7.4, 7.5
	Transmitter Conducted Output Power	2.1046	N/A	PASS	See RF Exposure Report
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.9
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 30)		< 0.25 Watts max. EIRP	PASS	Section 7.7
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n30)	27.50(a)(3)	< 0.25 Walls max. Elke	PASS	Section 7.7
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 7)			PASS	Section 7.7
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 41)			PASS	Section 7.7
E	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n41)	27.50(h)(2)	< 2 Watts max. EIRP	PASS	Section 7.7
RADIATED	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 38)			PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 30)			PASS	Section 7.8
	Radiated Spurious Emissions (NR Band n30)	2.1053, 27.53(a)	> 70 + 10log10(P[Watts])	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 7)			PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 41)		Undesirable emissions must meet the	PASS	Section 7.8
	Radiated Spurious Emissions (NR Band n41)	2.1053, 27.53(m)	limits detailed in 27.53(m)	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 38)			PASS	Section 7.8

#### Table 7-1. Summary of Test Results

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- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT 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, attenuators, and couplers.
- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST EMC Software Tool Beta 8.

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# 7.2 Conducted Power Output Data §2.1046

#### Test Overview

The EUT is set up to transmit at maximum power for LTE. All power levels are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

A-MPR is implemented in this device per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

#### Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

#### **Test Settings**

- 1. Span =  $2 \times OBW$  to  $3 \times OBW$
- 2. RBW = 1% to 5% of the OBW
- 3. Number of measurement points in sweep  $\geq$  2 x span / RBW
- 4. Sweep = auto-couple (less than transmission burst duration)
- 5. Detector = RMS (power)
- 6. Trigger was set to enable power measurements only on full power bursts
- 7. Trace was allowed to stabilize
- 8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

#### Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

FCC ID: A3LSMF711U	PCTEST Prod to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
	π/2 BPSK	509202	2546.0	1 / 136	27.59
N		509202	2546.0	1 / 136	27.12
Ë	QPSK	518598	2593.0	1 / 68	26.79
100 MHz		528000	2640.0	1 / 136	27.26
10	16-QAM	528000	2640.0	1 / 136	26.55
	64-QAM	528000	2640.0	1 / 136	24.87
	256-QAM	528000	2640.0	1 / 136	23.19
	π/2 BPSK	508200	2541.0	1 / 122	27.76
N	0001/	508200	2541.0	1 / 122	27.48
90 MHz	QPSK	518592	2593.0	1 / 61	26.14
<b>∠</b> 0	40.0014	529002	2645.0	1 / 122	26.26
6	16-QAM	508200	2541.0	1 / 122	27.01
	64-QAM	508200	2541.0	1 / 122	25.59
	256-QAM	508200	2541.0	1 / 122	23.69
	π/2 BPSK	507204	2536.0	1 / 108	27.73
N	ODOK	507204	2536.0	1 / 108	27.74
H	QPSK	518598	2593.0	1 / 54	25.81
80 MHz	16-QAM	529998 507204	2650.0 2536.0	1 / 108 1 / 108	26.68
	64-QAM	507204	2536.0	1 / 108	26.97 25.52
	256-QAM	507204	2536.0	1 / 108	23.76
	π/2 BPSK	505200	2526.0	1 / 81	27.75
		505200	2526.0	1 / 81	27.12
N	QPSK	518598	2593.0	1 / 40	26.79
ΗW		531996	2660.0	1 / 40	27.26
60 MHz	16-QAM	531996	2660.0	1 / 81	26.55
Ű	64-QAM	531996	2660.0	1 / 81	24.87
	256-QAM	505200	2526.0	1 / 81	23.82
	π/2 BPSK	504204	2521.0	1 / 66	27.77
		504204	2521.0	1 / 66	27.61
우	QPSK	518598	2593.0	1/33	26.86
50 MHz		532998	2665.0	1 / 66	26.71
50	16-QAM	504204	2521.0	1 / 66	26.89
	64-QAM	504204	2521.0	1 / 66	25.39
	256-QAM	504204	2521.0	1 / 66	23.99
	π/2 BPSK	534000	2670.0	1 / 53	26.43
		503202	2516.0	1 / 53	25.86
붓	QPSK	518598	2593.0	1 / 26	24.87
Σ		534000	2670.0	1 / 53	25.93
40	16-QAM	534000	2670.0	1 / 53	24.92
	64-QAM	534000	2670.0	1 / 53	23.61
	256-QAM	534000	2670.0	1 / 53	22.63
	π/2 BPSK	502203	2511.0	1 / 39	27.24
		502203	2511.0	1 / 39	26.05
보	QPSK	518598	2593.0	1 / 19	25.16
MHz		534999	2675.0	1 / 39	26.07
30	16-QAM	534999	2675.0	1 / 39	25.04
	64-QAM	534999	2675.0	1 / 39	23.79
	256-QAM	534999	2675.0	1 / 39	22.76
	π/2 BPSK	535998	2680.0	1 / 25	27.64
		501204	2506.0	1 / 25	26.12
MHz	QPSK	518598	2593.0	1 / 13	25.39
Σ		535998	2680.0	1 / 25	26.79
20	16-QAM	535998	2680.0	1 / 25	25.78
	64-QAM	535998	2680.0	1 / 25	24.24
	256-QAM	535998	2680.0	1 / 25	23.17

Table 7-2. Conducted Power Output Data (n41 PC2)

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#### **Test Overview**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

#### Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

#### **Test Settings**

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW  $\geq$  3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
  - 1-5% of the 99% occupied bandwidth observed in Step 7

#### Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

#### Test Notes

None.

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Keysight Spectrum Analyzer - Occupied BV					
LX RL RF 50Ω DC		SENSE:INT Center Freq: 2.310000000 G rig: Free Run Avg Atten: 36 dB	ALIGN AUTO Hz Hold: 100/100	11:42:30 AM Apr13, 20 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dBr	n				
30.0 20.0 10.0		man and a second second	~~		Clear Write
0.00 -10.0 -20.0 my.Jan. J. J. Jan. J. Jan. Jan. Jan. Jan.			holonory	Www.whouthyt-flow.my	Average
-30.0					Max Hold
Center 2.31000 GHz Res BW 240 kHz		#VBW 750 kHz		Span 25.00 MI Sweep 1 n	
Occupied Bandwidt 9.	<sup>th</sup> 0449 MHz	Total Power	32.0	dBm	Detector Peak▶
Transmit Freq Error x dB Bandwidth	11.584 kHz 9.858 MHz			0.00 % 00 dB	Auto <u>Man</u>
MSG			STATUS	\$	

Plot 7-1. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB)



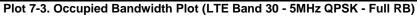
Plot 7-2. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB)

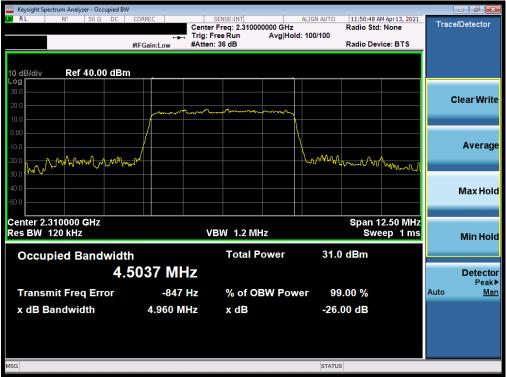
FCC ID: A3LSMF711U	PCTEST* Proved to be part of @ interment	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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🔤 Keysight Sp	ectrum Analyzer	- Occupied	d BW									
LXI RL	RF 5	0Ω DC	CORRI	EC		NSE:INT rea: 2.31000	0000 CH-	ALIGN AUTO	11:50:17 A Radio Std	M Apr 13, 2021	Trac	e/Detector
				÷+	. Trig: Fre	e Run		d: 100/100	Radio Stu	None		
			#IFGa	in:Low	#Atten: 3	36 dB			Radio Dev	rice: BTS		
10 dB/div	Ref 4	).00 dE	Bm									
Log 30.0												
20.0											(	Clear Write
				~~~~			may					
10.0			]									
0.00			/					1				_
-10.0								1.				Average
-20.0 pmf	Marilan	mmle	-b.N					$\gamma_{mallow}$	Monny	vhormond.		
-30.0												
-40.0												Max Hold
-50.0												maxitora
	.310000 G	ΗZ					-			2.50 MHz		
Res BW	120 KHZ				VB	W 1.2 M	1Z		SWe	eep 1 ms		Min Hold
Occu	pied Ba	ndwi	dth			Total P	ower	31.9	) dBm			
0000												
		4	4.512	22 M	<b>1</b> Z							Detector Peak▶
Trans	mit Freq	Error		134	Hz	% of O	3W Pow	er 99	.00 %		Auto	Man
	Bandwidtl			5.025 N		x dB		26	00 dB			
	Sanuwiuu			J.UZJ W	INZ	X UD		-20.	00 UB			
MSG								STATU	S			





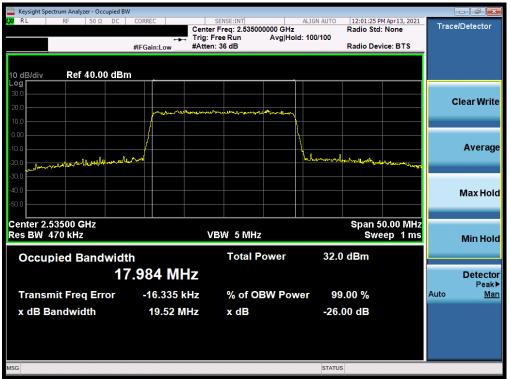
Plot 7-4. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	POTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW					
<b>ΙΧ΄ R L</b> RF 50 Ω DC		SENSE:INT Center Freq: 2.53500000 Trig: Free Run	ALIGN AUTO 00 GHz Avg Hold: 100/100	12:01:10 PM Apr 13, 2021 Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dBn	)				
Log 30.0					
20.0	m	the man the second	-march		Clear Write
10.0					
-10.0					Average
-20.0 marthe come and total	lm-/		hunder Mr.	have a strange to the state	3
-30.0					
-40.0					Max Hold
Center 2.53500 GHz				Span 50.00 MHz	
Res BW 470 kHz		VBW 5 MHz		Sweep 1 ms	Min Hold
Occupied Bandwidt	h	Total Pov	ver 33.0	dBm	
17	.981 MH	Z			Detector
Transmit Freq Error	4.604 kH	z % of OBW	V Power 99	.00 %	Peak▶ Auto <u>Man</u>
x dB Bandwidth	19.67 MH	z x dB	-26.	00 dB	
MSG			STATUS	3	

Plot 7-5. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB)

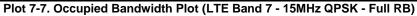


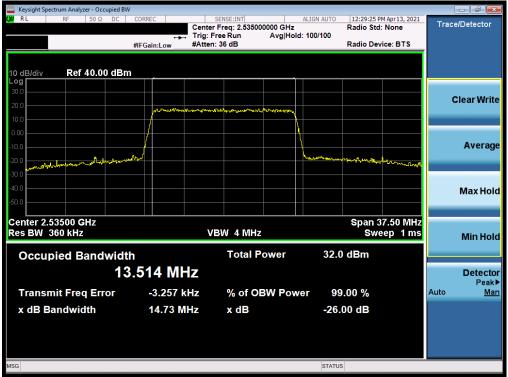
Plot 7-6. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Pour lo be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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	Spectrum Analyze	er - Occu	upied BW											
LXI RL	RF	50 Ω	DC	CORREC			NSE:INT reg: 2.53500	00000 GHz		IGN AUTO	12:28:56 PI Radio Std:	M Apr 13, 2021	Tra	ce/Detector
						. Trig: Free	e Run	Avg Hold		00/100				
				#IFGain	1:Low	#Atten: 3	6 dB				Radio Dev	ice: BTS		
10 dB/div	Ref	40.00	0 dBm											
Log 30.0				<b>A</b> 17					ł					
									Ì					Clear Write
20.0					- Andrean Andrean	- Andrewson and the second	manne	manning	ł					
10.0														
0.00														
-10.0									A					Average
-20.0	harmoldelm		- 1.00							mende	Mala An	Adexin		
-30.0														
-40.0														Max Hold
-50.0														muxmon
	2.53500 GI											37.50 MHz		
Res BW	360 kHz					VBv	W 4 MHz				Swe	eep 1 ms		Min Hold
Occu	upied Ba	andy	width				Total P	ower		33.0	) dBm			
Occe	ipied be	amen												
			13	.54	9 MH	Z								Detector Peak▶
Trans	smit Freq	Erro	or	19	9.188 ki	Hz	% of O	BW Pow	ver	99	.00 %		Auto	Peak► <u>Man</u>
x dB	Bandwid	th		1	4.80 M	Hz	x dB			-26.0	00 dB			
MSG										STATUS				





Plot 7-8. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	Post lo la part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupi	ied BW				
L <mark>X/</mark> RL RF 50Ω [	DC CORREC	SENSE:INT Center Freq: 2.5350000	ALIGN AUTO	12:31:19 PM Apr 13, 2021 Radio Std: None	Trace/Detector
			Avg Hold: 100/100	Radio Std: None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 d	dBm				
Log 30.0					
20.0					Clear Write
		- Marine Ma	mon		
10.0					
0.00			1		
-10.0			mahalun		Average
-20.0 wohnthe the work of	where the second s		ward har with	man Amallonan Aphron	
-30.0					
-40.0					Max Hold
-50.0					
-30.0					
Center 2.53500 GHz				Span 25.00 MHz	
Res BW 240 kHz		VBW 2.4 MHz		Sweep 1 ms	Min Hold
		Total Po		dBm	
Occupied Bandw			wei 33.0	dBm	
	9.0358 MH	Ζ			Detector
	0.470.44			00 0 <b>/</b>	Peak►
Transmit Freq Error	r -2.172 kH	z % of OB	W Power 99	.00 %	Auto <u>Man</u>
x dB Bandwidth	9.907 MF	lz xdB	-26.	00 dB	
MSG			STATUS		
mod			STATUS		

Plot 7-9. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB)



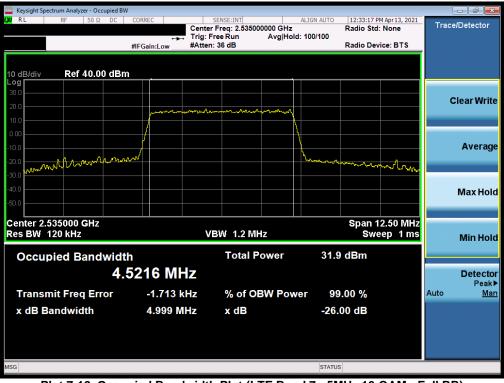
Plot 7-10. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	POCTEST Proced to be post of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW						[	
LXX RL RF 50Ω DC CC	RREC	SENSE:INT Center Freg: 2.53500			0 PM Apr 13, 2021 td: None	Trace	/Detector
	- <b></b> -	Trig: Free Run	Avg Hold: 100	0/100			
#1	Gain:Low	#Atten: 36 dB		Radio D	evice: BTS		
10 dB/div Ref 40.00 dBm							
Log 30.0							
20.0						c	lear Write
10.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mannen				
	1						
0.00			l l				Average
-10.0			l m	man a . As			Average
-20.0 mm how how have the					manh		
-30.0							
-40.0							Max Hold
-50.0							
Center 2.535000 GHz				Snar	12.50 MHz		
Res BW 120 kHz		VBW 1.2 MH	z		weep 1 ms		Min Hold
Occupied Bandwidth		Total P	ower	32.8 dBm			
4 50	)87 MH	7					Detector
							Peak▶
Transmit Freq Error	-1.159 kl	lz % of OE	3W Power	99.00 %		Auto	Man
x dB Bandwidth	5.032 MH	Hz x dB		-26.00 dB			
MSG				STATUS			

Plot 7-11. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB)



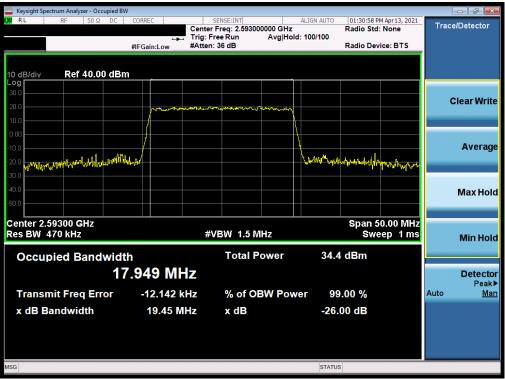
Plot 7-12. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	Post lo ke part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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alyzer - Occupied E 01:29:07 PM Apr 13, 2021 ALIGN AUTO Trace/Detector Center Freq: 2.593000000 GHz Radio Std: None Avg|Hold: 100/100 Trig: Free Run #Atten: 36 dB #IFGain:Low Radio Device: BTS Ref 40.00 dBm l0 dB/div Log **Clear Write** Average horar frances have have polatel Max Hold Center 2.59300 GHz Res BW 470 kHz Span 50.00 MHz #VBW 1.5 MHz Sweep 1 ms **Min Hold** Total Power 35.4 dBm **Occupied Bandwidth** 17.971 MHz Detector Peak) **Transmit Freq Error** 10.561 kHz % of OBW Power 99.00 % Auto Man x dB Bandwidth 19.60 MHz x dB -26.00 dB STATUS

Plot 7-13. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB)



Plot 7-14. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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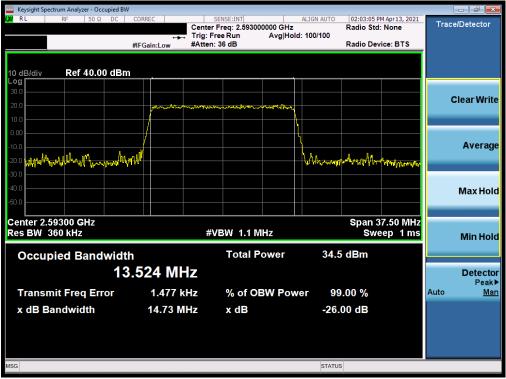
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W solve transmission of the second of the se assembly of contents thereof, please contact INFO@PCTEST.COM.



	pectrum Analyze	er - Occu												
L <mark>XI</mark> RL	RF	50 Ω	DC	CORREC			NSE:INT reg: 2.5930	00000 GHz	A	LIGN AUTO	02:02:51 P	M Apr 13, 2021	Tra	ce/Detector
	1				- <b></b> -	Trig: Fre	e Run	Avg Hol	ld:	100/100				
				#IFGair	n:Low	#Atten: 3	36 dB				Radio Dev	ice: BTS		
10 dB/div	Ref 4	10.00	) dBm											
Log 30.0														
20.0														Clear Write
				1										
10.0				1					l					
0.00				1					X					
-10.0		Åt a	10.	X						And Area				Average
-20.0 <b>- 1444 - 1</b> 4	Colograph of the first	n U Nn		1						what have a	<sub>┙</sub> ╣ <sub>╈┲</sub> ╱╋┥ <sup>╇</sup> ╊╔╇╣┉┚	here and the second		
-30.0														
-40.0														Max Hold
-50.0														
	50000 01	-									<b>A</b>	7.50 8411-		
Center 2. Res BW	2.59300 GH	ΠZ				#\/	BW 1.1 N	747				7.50 MHz ep 1 ms		
Res Dw	500 KH2					<i>#</i> VI	998 I.I.K	/11/2			000	ep mis		Min Hold
Occu	ipied Ba	and	width				Total F	ower		35.5	dBm			
					4 M⊦	17								Detector
			13	J		12								Peak ►
Trans	mit Freq	Erro	or	12	2.321 k	Hz	% of O	BW Pow	ve	r 99	.00 %		Auto	Man
y dB B	Bandwidt	th		1	4.76 M	Hz	x dB			-26 (	00 dB			
	Sunawia				4.10 10	112				-201				
MSG										STATUS				

Plot 7-15. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB)



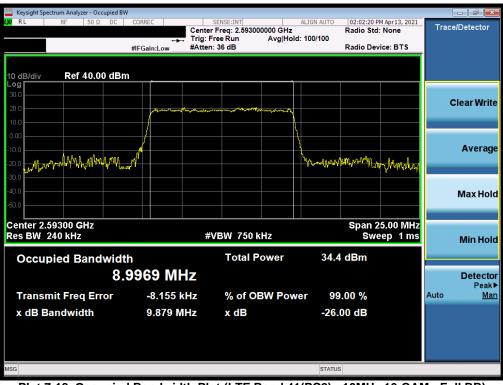
Plot 7-16. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Proced to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occup	pied BW				
L <mark>X/</mark> RL RF 50 Ω	DC CORREC	SENSE:INT Center Freg: 2.593000	ALIGN AUTO	02:01:58 PM Apr 13, 2021 Radio Std: None	Trace/Detector
			Avg Hold: 100/100	Radio Std: None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00	dBm				
Log 30.0					
20.0					Clear Write
		و و ب م م م م م م م م م م م م م م م م م			
10.0					
0.00	f				
-10.0					Average
-20.0 Amil Manual May	willow W W			ᠬᢩᢂ᠕᠕ᡁ᠕ᡁᠰᡀ᠘ᡁᠰᡁᡄᠬᡟᡃᢐᢑᡕ	
-30.0					
-40.0					Max Hold
-50.0					maxitora
Center 2.59300 GHz				Span 25.00 MHz	
Res BW 240 kHz		#VBW 750 kH	IZ	Sweep 1 ms	Min Hold
Occupied Bandw	vidth	Total Po	wer 35.4	dBm	
	8.9987 MH	IZ			Detector
Transmit Freq Erro	r 3.131 k	Hz % of OB	W Power 99	.00 %	Peak▶ Auto <u>Man</u>
x dB Bandwidth	9.828 M	Hz xdB	-26.	00 dB	
	01020		_0.		
MSG			STATUS		

Plot 7-17. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB)



Plot 7-18. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 160	
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Keysight Spectrum Analyzer - Occupied	BW				
LXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freg: 2.593000	ALIGN AUTO	01:59:39 PM Apr 13, 2021 Radio Std: None	Trace/Detector
		Talas France Dava	Avg Hold: 100/100	Radio Stu. None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dB	3m				
Log 30.0					
20.0					Clear Write
10.0					
0.00					
-10.0			×		Average
-20.0 managan wan	τ. η.		- WMVI	Mrw/www.www	
-30.0					
-40.0					Max Hold
-50.0					Muxitola
Center 2.593000 GHz				Span 12.50 MHz	
Res BW 120 kHz		#VBW 390 k	Hz	Sweep 1 ms	Min Hold
Occupied Bandwic	ith	Total P	ower 35	3 dBm	
4	.5223 MH	IZ			Detector
Transmit Freq Error	-7.349 k	Hz % of OE	W Power 99	9.00 %	Peak▶ Auto <u>Man</u>
x dB Bandwidth	5.023 M	Hz xdB	-26.	.00 dB	
	01020				
100					
MSG			STATU	s	

Plot 7-19. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB)



Plot 7-20. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	POCTEST Provide la bar part of @ vietness	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 25 of 160	
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Keysight Spectrum Analyzer - Occupied BW           Μ         RF         50 Ω         DC	CORREC	SENSE:INT	ALIGN AUTO	02:09:30 PM Apr 13, 2021	Trace/Detecto	
	Trig:	r Freq: 2.593000000 GHz Free Run Avg∣Hol n: 36 dB	ld: 100/100	Radio Std: None Radio Device: BTS	Tacebelecto	
10 dB/div Ref 40.00 dBm						
20.0		-			Clear Wr	rite
10.0 0.00 -10.0					Avera	ag
-20.0 -20.0 -30.0			Low Angle demo	Marmad Marmanall	MaxH	
-50.0					MaxH	010
Center 2.59300 GHz Res BW 470 kHz	#	VBW 1.5 MHz		Span 50.00 MHz Sweep 1 ms	Min He	olo
Occupied Bandwidth 17	.965 MHz	Total Power	33.2	dBm	Detec Pea	
Transmit Freq Error	8.092 kHz	% of OBW Pov		00 %	Auto <u>N</u>	Mar
x dB Bandwidth	19.58 MHz	x dB	-26.0	0 dB		
MSG			STATUS			

Plot 7-21. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB)



Plot 7-22. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB)

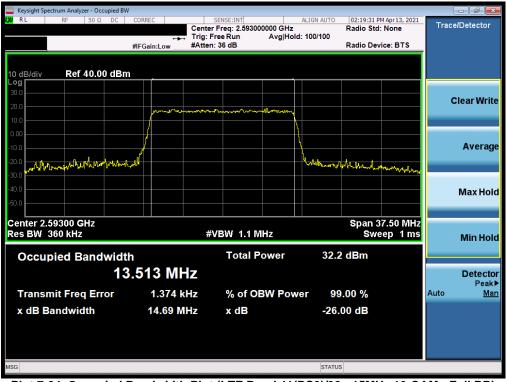
FCC ID: A3LSMF711U	POTEST* Proved to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 26 of 169	
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<u> </u>	Spectrum Analyzer		ed BW									
LXI RL	RF	50ΩD	COF	RREC		INSE:INT reg: 2.59300	0000 GH-	ALIGN AUT	0 02:19:10 P Radio Std	M Apr 13, 2021	Trac	e/Detector
					, Trig: Fre	e Run		d: 100/100				
	<b>_</b>		#IFC	Gain:Low	#Atten: 3	36 dB			Radio Dev	rice: BTS		
10 dB/div	Ref 4	0.00 d	IBm									
Log 30.0												
20.0											(	Clear Write
				mon	and a second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m					
10.0				7				{				
0.00				/				Y				Average
-10.0								<b>.</b>				Average
1 Pag	an Anna halfarann stra	Mensell	Newswa					1/N/Y	and the second	whenty		
-30.0												
-40.0												Max Hold
-50.0												
Center 2	2.59300 GH								Snan 3	7.50 MHz		
	360 kHz	12			#V	BW 1.1 N	Hz			ep 1 ms		Min Hold
												IMIN HOIG
Οςςι	upied Ba	ndw	idth			Total P	ower	33	3.2 dBm			
			13 5	48 M	H7							Detector
												Peak▶
Trans	smit Freq	Error		23.075	kHz	% of Ol	3W Pow	/er	99.00 %		Auto	<u>Man</u>
x dB	Bandwidt	h		14.81	٨Hz	x dB		-2	6.00 dB			
MSG								STA	TUS			
MSG								STA	TUS			

Plot 7-23. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB)



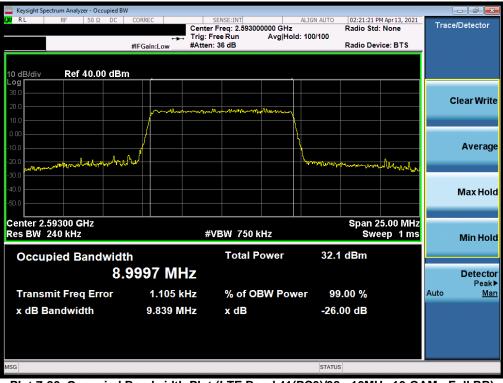
Plot 7-24. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST <sup>®</sup> Proud to be part of <b>@ element</b>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 27 of 160	
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🔤 Keysight Spectrum Analyzer - Occup	pied BW				
<mark>LXI</mark> RL RF 50 Ω	DC CORREC	SENSE:INT Center Freg: 2.593000	ALIGN AUTO	02:21:03 PM Apr 13, 2 Radio Std: None	2021 Trace/Detector
			Avg Hold: 100/100	Radio Std: None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	6
10 dB/div Ref 40.00	dBm				
Log 30.0					
					Clear Write
20.0		Marine Marine Marine and	warm		
10.0	/				
0.00	/				
-10.0	/				Average
-20.0 Handly with March March	physiperopert		Whetheret	WAY MM AND	
-30.0					····
-40.0					
					Max Hold
-50.0					
Center 2.59300 GHz				Span 25.00 N	1Hz
Res BW 240 kHz		#VBW 750 k	Hz	Sweep 1	ms Min Hold
Occupied Bandw	vidth	Total Po	ower 33.0	dBm	
	9.0358 MH	17			Detector
					Peak▶
Transmit Freq Erro	or 16.932 k	Hz % of OE	3W Power 99	.00 %	Auto <u>Man</u>
x dB Bandwidth	9.928 M	Hz x dB	-26.	00 dB	
MSG			STATUS	3	

Plot 7-25. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB)



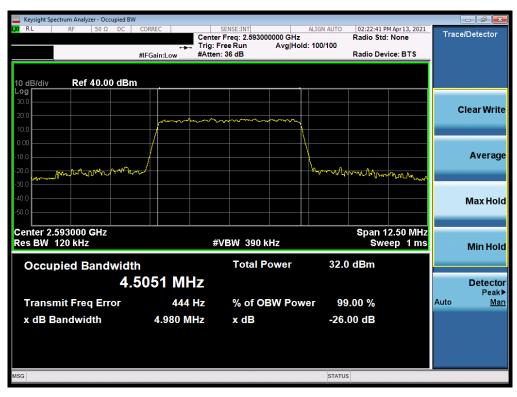
Plot 7-26. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied B	W				
💢 RL RF 50Ω DC	CORREC	SENSE:INT Center Freg: 2.59300	ALIGN AUTO	02:22:12 PM Apr 13, 2021 Radio Std: None	Trace/Detector
		Talas France Dama	Avg Hold: 100/100	Radio Std. None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	_
10 dB/div Ref 40.00 dB	m				
Log 30.0					
					Clear Write
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m		
10.0					
0.00			<u> </u>		
-10.0					Average
-20.0 - Arty more	property		- Vand	man phone	
-30.0					
-40.0					Max Hold
-50.0					Wiax Holu
Center 2.593000 GHz				Span 12.50 MHz	
Res BW 120 kHz		#VBW 390 k	Hz	Sweep 1 ms	Min Hold
Occupied Rendwid	<b>th</b>	Total P	ower 33.0	) dBm	
Occupied Bandwid			Ower 55.0	, abiii	
4	.5157 M⊦	Z			Detector
Transmit Freq Error	-1.783 k	⊎- % of O	BW Power 99	.00 %	Peak▶ Auto Man
x dB Bandwidth	5.010 M	Hz x dB	-26.	00 dB	
MSG			STATUS	5	

Plot 7-27. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB)



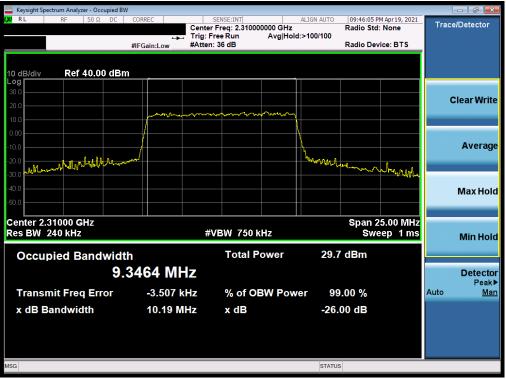
Plot 7-28. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100	
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Keysight Spectrum Analyzer - Occupied BW  K RL RF 50 Ω DC	Trig:	SENSE:INT rr Freq: 2.310000000 GH Free Run Avg H n: 36 dB	ALIGN AUTO Iz Iold: 100/100	09:34:39 PM Apr 19, Radio Std: None Radio Device: BT	Trace/Detector
10 dB/div Ref 40.00 dBm Log 30.0 20.0					Clear Write
10.0 0.00 -10.0 -20.0			- Marine Marine	Latelling and market	Average
-30.0 -40.0 -50.0					Max Hold
Center 2.31000 GHz Res BW 240 kHz Occupied Bandwidth		VBW 750 kHz Total Power	31.7	Span 25.00 I Sweep 1 dBm	MHz ms Min Hold
	9871 MHz -184.80 kHz 9.731 MHz	% of OBW Po x dB		.00 % 00 dB	Detector Peak► Auto <u>Man</u>

Plot 7-29. Occupied Bandwidth Plot (NR Band n30 - 10MHz π/2 BPSK - Full RB)



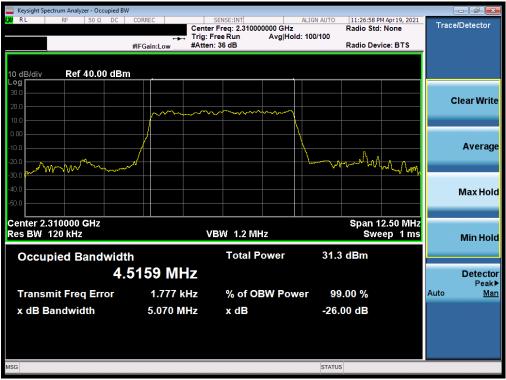
Plot 7-30. Occupied Bandwidth Plot (NR Band n30 - 10MHz QPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST Prood to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	EUT Type:	
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Plot 7-31. Occupied Bandwidth Plot (NR Band n30 - 10MHz 16-QAM - Full RB)



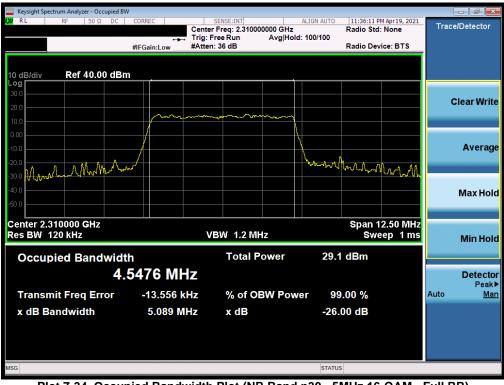
Plot 7-32. Occupied Bandwidth Plot (NR Band n30 - 5MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST Pour le la part d @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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🔤 Keysight Spe	trum Analyzer - Occup	pied BW								
LXI RL	RF 50 Ω	DC CORREC	Cont	SENSE:INT er Freg: 2.31000		ALIGN AUTO	11:28:23 P	M Apr 19, 2021	Trace	/Detector
			Trig:	Free Run	Avg Hold:	100/100				
		#IFGain:L	_ow_#Atte	en: 36 dB			Radio Dev	ice: BTS		
10 dB/div	Ref 40.00	dBm								
Log 30.0										
20.0									c	lear Write
		~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		·····					
10.0					l l					
0.00		/			ì					
-10.0						<b>)</b>				Average
-20.0	0	mm				man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
-30.0	when the market was the first the second sec							and markers		
-40.0										Max Hold
-50.0										
Contan 0 C	10000 011-						0			
Res BW 1	10000 GHz			VBW 1.2 M	17			2.50 MHz ep 1 ms		
ICS DW	20 8112			VB11 1.2 101	12		0.00	сртпа		Min Hold
Occup	oied Bandw	vidth		Total P	ower	28.9	dBm			
		4.5175	MHz							Detector
		4.0170								Peak
Transn	nit Freq Erro	r 3.	749 kHz	% of O	BW Powe	er 99	.00 %		Auto	<u>Man</u>
y dB B	andwidth	5.0	)67 MHz	x dB		-26	00 dB			
		010		A GE		201				
MSG						STATUS				

Plot 7-33. Occupied Bandwidth Plot (NR Band n30 - 5MHz QPSK - Full RB)



Plot 7-34. Occupied Bandwidth Plot (NR Band n30 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	POCTEST Proced to be post of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analy											(	
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC			SENSE:INT		ALIGN AUTO		M May 05, 2021	Trace	e/Detector
	_						r Freq: 2.5930 Free Run		d: 100/100	Radio Sto	: None		
				#IFGain:			: 36 dB	Avgino	. 100/100	Radio De	vice: BTS		
				an oun	2011								
10 dB/div	Ref	40.00	l dBm										
Log													
30.0													lear Write
20.0					-	w.m.		Amm	<u></u>				
10.0									<u>N</u>				
				1					N .				
0.00									1				_
-10.0			~ ~ ^	~/ -									Average
-20.0	man	~~~~	~~~						hung	www.motoredu			
-30.0	<i></i>									Almer Henry	and the second and a		
-40.0													Max Hold
-50.0													
Center 2.	5930 GI	Ηz								Span 2	250.0 MHz		
Res BW	2.4 MHz					#	VBW 8 MH	z			eep 1 ms		Min Hold
													Minnora
Occu	pied B	and	widt	h			Total F	ower	34.7	′ dBm			
						-							_
			96	.783	5 MIF	1Z							Detector
		_											Peak▶
Trans	mit Fre	q Erro	or	-37	8.03 k	HZ	% of O	BW Pov	ver 99	.00 %		Auto	Man
x dB F	Bandwid	dth		10	2.4 M	Hz	x dB		-26	00 dB			
									20.				
MSG									I STATU				
Mag									STATU:				

Plot 7-35. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB)



Plot 7-36. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB)

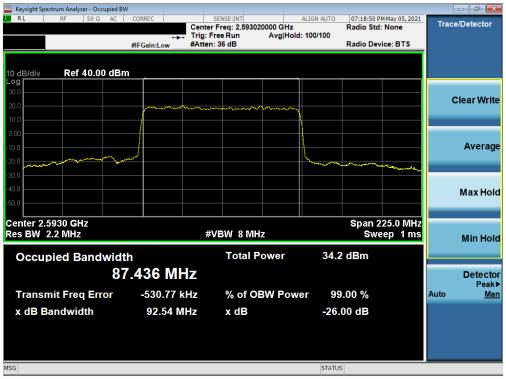
FCC ID: A3LSMF711U	PCTEST Prood to be port of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	EUT Type:	
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Keysight Spectrum Analyzer - Occupied B					
IX RL RF 50Ω AC	Trig: I	SENSE:INT r Freq: 2.593000000 GHz Free Run Avg Hol n: 36 dB	d:>100/100	11:37:43 AM May 0 Radio Std: None Radio Device: B	Trace/Detector
10 dB/div Ref 40.00 dB	m		- <b>•</b> 11		
20.0	m				ClearWrite
0.00					
-10.0 -20.0				Martin de la Martin de Carlo d	Average میںانا
-40.0					Max Hold
Center 2.5930 GHz Res BW 2.4 MHz	\	VBW 8 MHz		Span 250.0 Sweep	
Occupied Bandwid		Total Power	33.0	dBm	
98 Transmit Freg Error	8.071 MHz -178.71 kHz	% of OBW Pov	ver 99.	00 %	Detector Peak≯ Auto <u>Mar</u>
x dB Bandwidth	103.7 MHz	x dB	-26.0	0 dB	
MSG			<b>I</b> ostatus		

Plot 7-37. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB)



Plot 7-38. Occupied Bandwidth Plot (NR Band n41 - 90MHz  $\pi/2$  BPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST <sup>*</sup> Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied B\	V				
IX RL RF 50Ω AC	the Tri	sense:INT sense:	Ra 100/100	7:19:27 PM May 05, 2021 Idio Std: None Idio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dBr	n				
30.0 20.0 10.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second			Clear Write
0.00 -10.0 -20.0				White water and the	Average
-30.0					Max Hold
Center 2.5930 GHz Res BW 2.2 MHz		#VBW 8 MHz		Span 225.0 MHz Sweep 1 ms	Min Hold
Occupied Bandwidt	n 7.827 MHz	Total Power	32.2 di	зm	Detector Peak▶
Transmit Freq Error x dB Bandwidth	-84.422 kHz 93.16 MHz		er 99.00 -26.00		Auto <u>Mar</u>
ASG			STATUS		

Plot 7-39. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB)



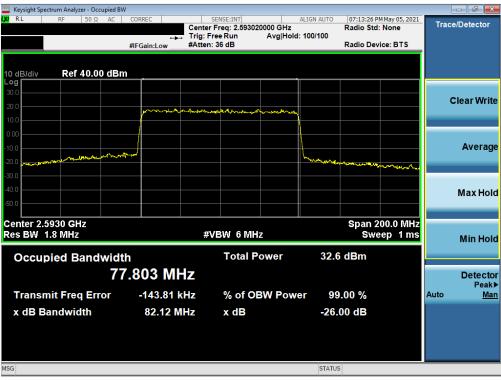
Plot 7-40. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	Pot les part d'éviennent	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occupied BW	1				
<b>(X)</b> RL RF 50Ω AC	Trig	SENSE:INT A ter Freq: 2.593020000 GHz p: Free Run Avg Hold: ten: 36 dB	Radio 100/100	09 PM May 05, 2021 Std: None Device: BTS	Trace/Detector
10 dB/div <b>Ref 40.00 dBn</b> Log	n				
30.0 20.0 10.0	m				Clear Write
0.00 -10.0 -20.0			Lus and the second seco	and the star of the star	Average
-30.0					Max Hold
Center 2.5930 GHz Res BW 1.8 MHz		#VBW 6 MHz	S	1 200.0 MHz weep 1 ms	Min Hold
Occupied Bandwidth Total Power 35.0 dBm 77.602 MHz					Detector Peak▶
Transmit Freq Error x dB Bandwidth	-272.86 kHz 81.75 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		

Plot 7-41. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB)



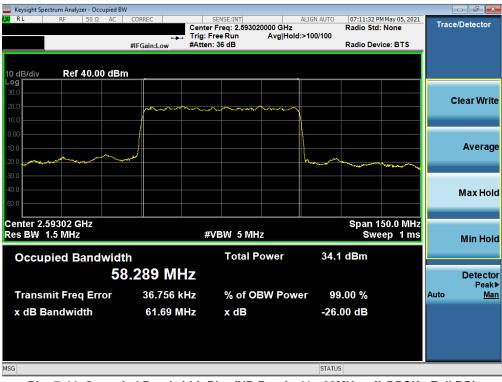
Plot 7-42. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST. Prod to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied B							d 💌
XIRL RF 50Ω AC	🛶 Trig: F	SENSE:INT r Freq: 2.593020000 GHz Free Run Avg Hol a: 36 dB	ALIGN AUTO	07:13:40 PM Radio Std: Radio Devid		Trace/De	tector
10 dB/div Ref 40.00 dB	m						
- <b>og</b> 30.0 						Clea	r Writ
0.00							
10.0			hourse			A	verag
30.0					and a state of the		
50.0						Ma	ix Hol
Center 2.5930 GHz Res BW 1.8 MHz	#	VBW 6 MHz			00.0 MHz ep 1 ms	Mi	in Hol
Occupied Bandwid		Total Power	32.6	i dBm			
7	7.897 MHz					D	etect Peak
Transmit Freq Error	-72.187 kHz	% of OBW Pow	ver 99	.00 %		Auto	Ma
x dB Bandwidth	82.36 MHz	x dB	-26.	00 dB			
G			STATU	S			

Plot 7-43. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB)



Plot 7-44. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST. Proad to be part of @element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrun	n Analyzer - Occ	upied BW									
🗶 RL F	RF 50 Ω	AC	CORREC		SENSE:INT		ALIGN AUTO	07:11:48 P Radio Std	M May 05, 2021	Trace	Detector
					rig: Free Run		d:>100/100	Radio Sta	: None		
			#IFGain:L		Atten: 36 dB	0.		Radio Dev	rice: BTS		
10 dB/div	Ref 40.00	0 dBm									
Log	1101 40.01										
30.0										-	
20.0										С	lear Write
10.0			( and the second s	and the second		Marghan Ing	X.			_	
0.00							N				
											•
-10.0			لمسل				tt_				Average
-20.0	and the second second						""Why Laboring of	warmen and	walk wary	_	
-30.0											
-40.0											Max Hold
-50.0											
											_
Center 2.593	02 GHz					_		Span 1	50.0 MHz		
Res BW 1.5	MHz				#VBW 5 MI	IZ			eep 1 ms		Min Hold
											minitione
Occupie	d Band	widt	h		Total	Power	32.3	dBm			
		58	.182	MH	,						Detector
		00	-102								Peak
Transmit	Freq Err	or	-121	.70 kH	z % of C	BW Pow	ver 99	.00 %		Auto	Mar
x dB Ban			61	77 MH	z xdB		26	00 dB			
	awiaan		01.				-20.	00 UD			
ISG							STATU				

Plot 7-45. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB)



Plot 7-46. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Pood to be part of internet	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B	V				- F	×
X RL RF 50Ω AC	Trig: F	SENSE:INT Freq: 2.593020000 GHz Free Run Avg Hold : 36 dB	Ra :>100/100	7:10:08 PM May 05, 2021 idio Std: None idio Device: BTS	Trace/Detect	or
10 dB/div Ref 40.00 dBr	n					
30.0 20.0 10.0		••••••			Clear W	/rite
0.00 -10.0 -20.0			Manager and the second	www.afreedites.	Aver	age
30.0 40.0 50.0					Max H	lol
Center 2.59302 GHz Res BW 1.2 MHz	#	VBW 4 MHz	S	span 125.0 MHz Sweep 1 ms	Min H	lolo
Occupied Bandwidt	<sup>th</sup> 6.163 MHz	Total Power	34.3 dl	Зm	Dete	ctor
Transmit Freq Error	-905.35 kHz	% of OBW Powe	er 99.00	)%	Pe	eak∎ <u>Mar</u>
x dB Bandwidth	48.96 MHz	x dB	-26.00	dB		
ISG			STATUS			

Plot 7-47. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB)



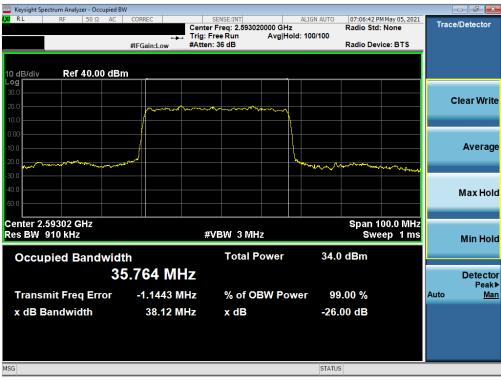
Plot 7-48. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB)

FCC ID: A3LSMF711U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied BW							a X
XIRL RF 50Ω AC	trig	SENSE:INT nter Freq: 2.593020000 GHz g: Free Run Avg Ho tten: 36 dB	ALIGN AUTO	07:09:42 PM M Radio Std: No Radio Device	one	Trace/Dete	ector
10 dB/div Ref 40.00 dBm							
30.0 20.0 10.0	person and a second	why when when the second	\			Clear	Write
0.00 -10.0 -20.0			1	menna	- The state	Av	erage
-40.0						Ma	x Hold
Center 2.59302 GHz Res BW 1.2 MHz		#VBW 4 MHz			0.0 MHz 0 1 ms	Mir	n Hold
Occupied Bandwidt 47	n .747 MHz	Total Power	32.9	) dBm		De	tector Peak▶
Transmit Freq Error x dB Bandwidth	-99.889 kHz 50.63 MHz	% of OBW Pov x dB		0.00 % 00 dB	,	Auto	Man
ISG			STATUS	5			

Plot 7-49. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB)



Plot 7-50. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST Pool to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied B\	V				
KA RF 50Ω AC	Trig: F	SENSE:INT A r Freq: 2.593020000 GHz Free Run Avg Hold: 1: 36 dB	Radio Sto		Trace/Detector
10 dB/div Ref 40.00 dBr	n				
30.0 20.0 10.0	jutranum	-			Clear Wri
0.00 -10.0 -20.0	~		Villy and Marked and States and and States a	water of the state	Avera
-30.0					Max Ho
Center 2.59302 GHz Res BW 910 kHz		VBW 3 MHz	Sw	100.0 MHz eep 1 ms	Min Ho
Occupied Bandwidt	<sup>h</sup> 7.940 MHz	Total Power	31.9 dBm		Detect
Transmit Freq Error x dB Bandwidth	-76.126 kHz 40.44 MHz	% of OBW Powe	r 99.00 % -26.00 dB		Auto <u>M</u>
1SG			STATUS		

Plot 7-51. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB)



Plot 7-52. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	Post la ba part d'évidement	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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www.www.www.www.www.www.www.www.www.ww	V					×
IXI RL RF 50Ω AC	Trig:	SENSE:INT er Freq: 2.593020000 GHz Free Run Avg Hol en: 36 dB	ALIGN AUTO d:>100/100	07:05:28 PM May 05, 2021 Radio Std: None Radio Device: BTS	Trace/Detecto	or
10 dB/div Ref 40.00 dBn	n					
30.0 20.0 10.0					Clear W	rite
-10.0 -20.0					Avera	age
-30.0					Max H	old
Center 2.59302 GHz Res BW 680 kHz		#VBW 2.4 MHz		Span 75.00 MHz Sweep 1 ms	Min H	old
Occupied Bandwidt		Total Power	34.1	dBm		
27	7.000 MHz				Detec	ctor ak▶
Transmit Freq Error	-551.12 kHz	% of OBW Pov	ver 99	.00 %		Man
x dB Bandwidth	28.85 MHz	x dB	-26.	00 dB		
MSG			STATUS	6		

Plot 7-53. Occupied Bandwidth Plot (NR Band n41 - 30MHz π/2 BPSK - Full RB)



Plot 7-54. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied	BW				
KL RF 50Ω AC	Trig:	sense:Int r Freq: 2.593020000 GH2 Free Run Avg Ho n: 36 dB	ALIGN AUTO	07:06:01 PM May 05, 2021 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dB	3m				
30.0 20.0 10.0	for the second s	-many market all and a second	~		Clear Write
0 00 10.0 20.0 30.0	mmat		Mall Month	Hartherman weeklowing	Averag
-40.0					Max Hole
Center 2.59302 GHz Res BW 680 kHz	#	VBW 2.4 MHz		Span 75.00 MHz Sweep 1 ms	Min Hole
Occupied Bandwid		Total Power	31.7	′ dBm	
	7.958 MHz -56.314 kHz	% of OBW Po		.00 %	Detecto Peak Auto Mar
Transmit Freq Error x dB Bandwidth	-56.314 KHZ 29.99 MHz	% of OBW Po		00 % 00 dB	Auto <u>Mar</u>
ISG			STATU	5	

Plot 7-55. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB)



Plot 7-56. Occupied Bandwidth Plot (NR Band n41 - 20MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	Post la be pet ci @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied I	BW				- 5 💌
XIRL RF 50Ω AC	⊷ Trig		ALIGN AUTO GHz g Hold: 100/100	07:04:19 PM May 05, 2021 Radio Std: None	Trace/Detector
	#IFGain:Low #Att	en: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dB	m				
30.0					Clear Write
20.0	mmm		mann		
0.00					
-10.0	ward			Munan	Average
-30.0				and the state of t	
-40.0					Max Hold
Center 2.59302 GHz				Span 50.00 MHz	
Res BW 470 kHz		#VBW 1.5 MHz		Sweep 1 ms	Min Hold
Occupied Bandwid	lth	Total Powe	ər 31.3	3 dBm	
2	3.214 MHz				Detector Peak
Transmit Freq Error	2.4372 MHz	% of OBW	Power 99	9.00 %	Auto <u>Mar</u>
x dB Bandwidth	26.25 MHz	x dB	-26.	00 dB	
ì					
1SG			STATU	S	

Plot 7-57. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB)



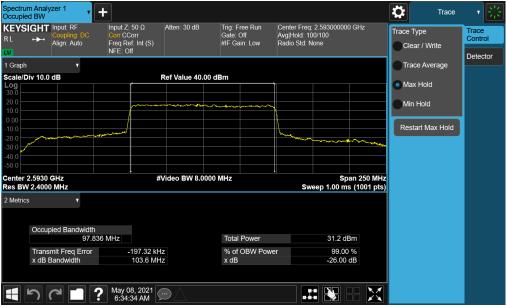
Plot 7-58. Occupied Bandwidth Plot (NR Band n41 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	Post to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Occupied BW       KEYSIGHT       Input: RI       Coupling       Align: Au	: DC Corr	Ref: Int (S)	Atten: 30 dB	Trig: Free I Gate: Off #IF Gain: L	ļ.	Center Fred Avg Hold: 1 Radio Std:		0 GHz	Trace Type Clear / Write	Trace Control Detecto
Scale/Div 10.0 dB	•		Ref Value 40.0	0 dBm					Trace Averag	
Log           30.0           20.0           10.0					~~~				<ul> <li>Max Hold</li> <li>Min Hold</li> </ul>	
0.00 -10.0 -20.0 -30.0 -40.0		/				~~~~			Restart Max H	Hold
-50.0 Center 2.5930 GHz Res BW 2.4000 MHz		#	Video BW 8.00	00 MHz		Sv		an 250 MHz s (1001 pts)		
2 Metrics	۲									
Occupied Ban	dwidth 97.118 MHz			Total Pov	ver		32.9 d	Bm		
Transmit Freq x dB Bandwidt	Error	-618.83 kH 102.6 MH		% of OB x dB	N Power		99.00 -26.00			
<b>ع</b> ام (	<b>?</b> May 6:3	08, 2021								

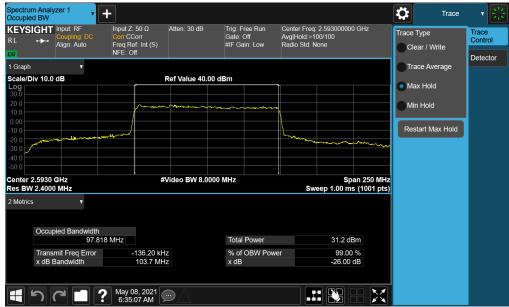
Plot 7-59. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB)



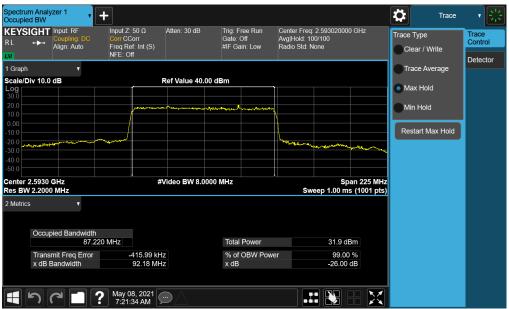
Plot 7-60. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB)

FCC ID: A3LSMF711U	Pood to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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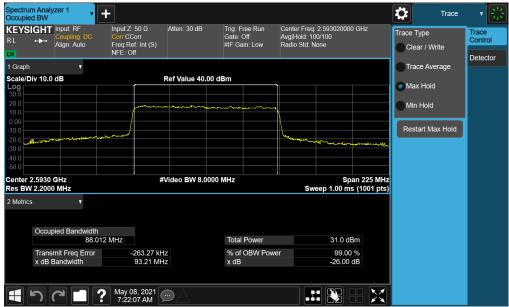
Plot 7-61. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB)



Plot 7-62. Occupied Bandwidth Plot (NR Band n41 - 90MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST Prod to be past of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-63. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB)

Spectrum Analyzer 1	-			Trace	- ※
KEYSIGHT Input: RF R L → Coupling: DC Align: Auto	Input Z: 50 Ω Atten: 30 dB Corr CCorr Freq Ref: Int (S) NFE: Off	Gate: Off	Center Freq: 2.593020000 GHz Avg Hold: 100/100 Radio Std: None	Trace Type Clear / Write	Trace Control
1 Graph 🔹				Trace Average	
Scale/Div 10.0 dB	Ref Value 4	0.00 dBm		Max Hold	
30.0 20.0 10.0	pelled and a second and a secon			Min Hold	
0.00 -10.0 -20.0	and the second s			Restart Max Hold	
-30.0 -40.0 -50.0					
Center 2.5930 GHz Res BW 2.2000 MHz	#Video BW 8	.0000 MHz	Span 225 MHz Sweep 1.00 ms (1001 pts)		
2 Metrics V					
Occupied Bandwidth 88.097	MHz	Total Power	31.1 dBm		
Transmit Freq Error x dB Bandwidth	-188.95 kHz 93.24 MHz	% of OBW Power x dB	99.00 % -26.00 dB		
	May 08, 2021 7:22:31 AM				

Plot 7-64. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST Proced to be part of @ demonst	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	+					Trace	_ 12
EYSIGHT Input: RF L +++ Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 26 dB	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2. Avg Hold: 100/ Radio Std: Non		Trace Type Clear / Write	Trace Control Detector
Graph 🔹						Trace Average	Delector
cale/Div 10.0 dB		Ref Value 40.00	dBm			Max Hold	
og 0.0 0.0 0.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Min Hold	
0.00						Restart Max Hold	
0.0							
0.0							
enter 2.5930 GHz es BW 1.8000 MHz	#	Video BW 6.000	00 MHz	Swee	Span 200 Mi p 1.00 ms (1001 pt		
Metrics v							
Occupied Bandwidth 77.2	62 MHz		Total Power		33.0 dBm		
Transmit Freq Error	-406.36 kH		% of OBW Powe	er	99.00 %		
x dB Bandwidth	81.68 MH	Z	x dB		-26.00 dB		

Plot 7-65. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB)

		Finput Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 26 dB	Gate:	ree Run Off ain: Low	Center Freq Avg Hold: 10 Radio Std: N	00/100	00 GHz	Trace Type Clear / V	Trace /rite	Trace Control
1 Graph Scale/Div 10.0 d	v iB		Ref Value 40.0	00 dBm					Trace Av		Delector
20.0 10.0				ale and the second	manadin	N.			Max Hole		
0.00 -10.0 -20.0	-	~~~				L		m	Restart N	ax Hold	
-30.0 -40.0 -50.0 Center 2.5930 G				000 8411-							
Res BW 1.8000		#	Video BW 6.0	UUU MHZ		Sw		oan 200 MHz ns (1001 pts)			
Occupie	ed Bandwidth 77.57	1 MHz		Total	Power		31.0 c	IBm			
	hit Freq Error andwidth	-186.31 kH 82.25 MH		% of x dB	OBW Powe	er	99.0 -26.00				
<b>ב א</b>		May 08, 2021 7:45:27 AM				l l					

Plot 7-66. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB)

FCC ID: A3LSMF711U	PCTEST. Prod to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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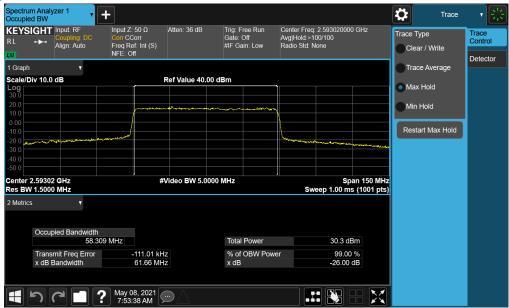
Plot 7-67. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB)

Spectrum Analy Occupied BW KEYSIGHT RL +++		HINDUT Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 36 dB	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq Avg Hold: 10 Radio Std: N		Trace Type Clear / W	Trace Trace /rite Detector
1 Graph Scale/Div 10.0	T		Ref Value 40.00	d Date			Trace Ave	
			Rei Value 40.00	dem			Max Hold	9
20.0					-		Min Hold	
0.00							Restart Ma	ax Hold
-30.0								
50.0 Center 2.59302 Res BW 1.500			Video BW 5.000	0 MHz	Sw	Span 15 /eep 1.00 ms (100		
2 Metrics	v							
Occu	pied Bandwidth	9 MHz		Total Power		32.4 dBm		
Trans	mit Freq Error	-159.79 kH		% of OBW Pow	/er	99.00 %		
x dB l	Bandwidth	61.80 MH	Iz	x dB		-26.00 dB		
<b>1</b> 5		May 08, 2021 7:54:01 AM					X	

Plot 7-68. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB)

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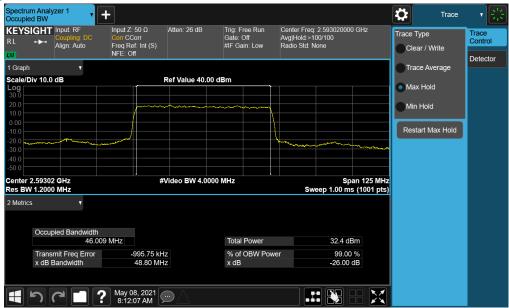
Plot 7-69. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB)

EYSIGHT Input: RF L ++ Align: Auto	Input Ζ: 50 Ω Atten: 36 dE Corr Freq Ref: Int (S) NFE: Off	Gate: Off Av	enter Freq: 2.593020000 GHz gjHold ≥100/100 ddio Std: None	Trace Type Clear / Write	Trace Control
Graph v				Trace Average	Deteotor
cale/Div 10.0 dB	Ref Value 4	0.00 dBm		Max Hold	
0.0		-		Min Hold	
00			Manuar	Restart Max Hold	
0.0					
nter 2.59302 GHz s BW 1.5000 MHz	#Video BW 5	.0000 MHz	Span 150 MH Sweep 1.00 ms (1001 pts		
Metrics V					
Occupied Bandwidth	36 MHz	Total Power	30.4 dBm		
Transmit Freg Error	-201.40 kHz	% of OBW Power	99.00 %		
x dB Bandwidth	61.66 MHz	x dB	-26.00 dB		
	May 08, 2021				

Plot 7-70. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB)

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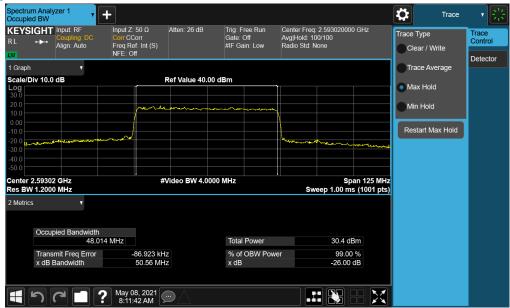
Plot 7-71. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB)

		Hoput Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 26 dB	Gate:	ree Run Off ain: Low	Center Freq Avg Hold: 10 Radio Std: N	0/100	0 GHz	Trace Type Clear / W	Trace /rite	Trace Control
1 Graph Scale/Div 10.0	v dB		Ref Value 40.0	0 dBm					Trace Av		Delector
Log 30.0 20.0 10.0			~~~~	≁~ <del>≈</del> essandhessd					Min Hold		
0.00	****					\	umman	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Restart M	ax Hold	
-30.0 -40.0 -50.0						,					
Center 2.59302 Res BW 1.2000		#	Video BW 4.00	000 MHz		Sw		oan 125 MHz is (1001 pts)			
2 Metrics Occupi	▼ ied Bandwidth 47.620	) MHz		Total	Power		30.5 d	Bm			
	nit Freq Error andwidth	-149.62 kH 50.64 MH		% of x dB	OBW Pow	er	99.00 -26.00				
<b>エッ</b> (	?	May 08, 2021 8:11:22 AM									

Plot 7-72. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB)

FCC ID: A3LSMF711U	Pool lo la part et @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-73. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB)

Spectrum Analy Occupied BW	Input: RF	<b>+</b> Input Ζ: 50 Ω	Atten: 36 dB	Trig: Free Run		er Freq: 2.593		z	Trace Type	Ггасе	Trace
RL ↔→• LVI	Coupling: DC Align: Auto	Corr CCorr Freq Ref: Int (S) NFE: Off		Gate: Off #IF Gain: Low		lold:>100/100 Std: None			Clear / Write	•	Control Detector
1 Graph	•								Trace Avera		
Scale/Div 10.0	dB		Ref Value 40.00	dBm					Max Hold		
<b>Log</b> 30.0									Wiax Hold		
20.0			·						Min Hold		
0.00 -10.0 -20.0									Restart Max	Hold	
-30.0	~~~~~				-	-	-	Summer of the			
-40.0 -50.0											
Center 2.59302		. #	Video BW 3.000	0 MHz			Span 1				
Res BW 910.00	) kHz					Sweep 1	.00 ms (10	01 pts)			
2 Metrics Occup	▼ Died Bandwidth										
	35.78	8 MHz		Total Power		:	31.2 dBm				
	mit Freq Error	-1.1375 MH		% of OBW Pc	wer		99.00 %				
x dB E	Bandwidth	38.09 MH	Z	x dB		-	-26.00 dB				
<b>1</b> 5		May 08, 2021 8:16:57 AM	$\mathbb{D}$					X			

Plot 7-74. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB)

FCC ID: A3LSMF711U	Pose la la part de <b>e</b> lement	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Spectrum Analyzer 1	+			Trace	- T 🛃
KEYSIGHT Input: RF R L ↔ Coupling: DC Align: Auto	Input Z: 50 Ω Atten: 36 dE Corr CCorr Freq Ref: Int (S) NFE: Off	Gate: Off	Center Freq: 2.593020000 GHz Avg Hold:>100/100 Radio Std: None	Trace Type Clear / Write	Trace Control Detector
1 Graph v				Trace Average	
Scale/Div 10.0 dB	Ref Value 4	0.00 dBm		Max Hold	
<b>_00</b> 30.0 20.0 10.0		when the former of the state of		Min Hold	
0.00				Restart Max Hold	
20.0 minute and the second sec	transmiller		an and a second second and a second second		
40.0					
enter 2.59302 GHz	#Video BW 3	.0000 MHz	Span 100 MH		
tes BW 910.00 kHz			Sweep 1.00 ms (1001 pts		
Metrics V					
Occupied Bandwidth 37.930	) MHz	Total Power	29.2 dBm		
Transmit Freq Error	-67.624 kHz	% of OBW Power			
x dB Bandwidth	40.29 MHz	x dB	-26.00 dB		
1 ° ? ?	May 08, 2021				

Plot 7-75. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB)

Spectrum Analyzer 1 Occupied BW	• +					<b>Ç</b> Trace	、祭
RL +++ Align: A	g: DC Corr CCc	orr : Int (S)	B Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2.5930200 Avg Hold: 100/100 Radio Std: None	00 GHz	Trace Type Clear / Write	Trace Control
1 Graph	•					Trace Average	Deteolor
Scale/Div 10.0 dB		Ref Value 4	10.00 dBm			Max Hold	
20.0		phagenese and the second second				Min Hold	
-10.0						Restart Max Hold	
-20.0 -30.0 -40.0				burn white some har	······································		
-50.0 Center 2.59302 GHz		#Video BW 3			pan 100 MHz		
Res BW 910.00 kHz		#VIGEO BW 3	5.0000 MHZ	Sweep 1.00 n			
2 Metrics	•						
Occupied Bar	ndwidth 37.917 MHz		Total Power	29.8 0	dBm		
Transmit Free x dB Bandwid		10.80 kHz 10.45 MHz	% of OBW Pow x dB	ver 99.0 -26.00			
<b>1</b>	May 08 8:17:4	5 AM					

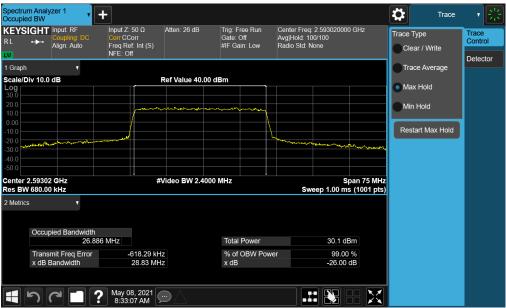
Plot 7-76. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB)

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Spectrum Analyzer 1 Occupied BW KEYSIGHT Input: RF R L + Goupling: DC Align: Auto	Hinput Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Off	26 dB Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2.593020000 GHz Avg Hold: 100/100 Radio Std: None	Trace Type Clear / Write	Trace Control
1 Graph Y Scale/Div 10.0 dB Log 20 0 10 0	Ref Val	iue 40.00 dBm		<ul> <li>Trace Average</li> <li>Max Hold</li> <li>Min Hold</li> </ul>	Detector
0.00 -100 -200 -30.0 -50.0				Restart Max Hold	
Center 2.59302 GHz Res BW 680.00 kHz 2 Metrics v	#Video E	3W 2.4000 MHz	Span 75 MHz Sweep 1.00 ms (1001 pts)		
Occupied Bandwidth 26.92 Transmit Freq Error x dB Bandwidth	27 MHz -655.78 kHz 28.83 MHz	Total Power % of OBW Pow x dB	31.9 dBm er 99.00 % -26.00 dB		
4 h C []	May 08, 2021	1			

Plot 7-77. Occupied Bandwidth Plot (NR Band n41 - 30MHz π/2 BPSK - Full RB)



Plot 7-78. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB)

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Plot 7-79. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB)

L + Align: Auto	Input Z: 50 Ω Atten: 36 c Corr CCorr Freq Ref: Int (S) NFE: Off	Gate: Off Avg	iter Freq: 2.593020000 GHz  Hold: 100/100 lio Std: None	Trace Type Clear / Write	Trace Control
Graph v				Trace Average	Deteotor
cale/Div 10.0 dB og	Ref Value	40.00 dBm		<ul> <li>Max Hold</li> </ul>	
0.0				Min Hold	
.00				Restart Max Hold	
0.0					
0.0 enter 2.59302 GHz es BW 470.00 kHz	#Video BW	1.5000 MHz	Span 50 MH Sweep 1.00 ms (1001 pts		
Metrics v					
Occupied Bandwidth	3 MHz	Total Power	31.6 dBm		
Transmit Freq Error	-225.39 kHz	% of OBW Power	99.00 %		
x dB Bandwidth	19.41 MHz	x dB	-26.00 dB		

Plot 7-80. Occupied Bandwidth Plot (NR Band n41 - 20MHz  $\pi/2$  BPSK - Full RB)

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Plot 7-81. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB)

	<u> </u>			Atten: 36 dB	Gate	Free Run : Off Gain: Low	Avg	ter Freq: Hold: 10 io Std: N		00 GHz	Trace Type Clear / Wi	Trace rite	Trace Control
1 Graph	•										Trace Ave	erage	Delector
Scale/Div 10.0	dB		R	tef Value 40.	00 dBm						Max Hold		
30.0 20.0 10.0			Manada			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					Min Hold		
0.00							have	مرال مرال رب			Restart Ma	ax Hold	
-30.0									The Contraction	han han ha			
-50.0 Center 2.59302	GHz		#V	ideo BW 1.5	000 MHz					Span 50 MHz			
Res BW 470.00								Sw		ns (1001 pts)			
2 Metrics Occup	▼ ied Bandwidth												
		38 MHz			Tot	al Power			29.7 c	iBm			
	nit Freq Error andwidth		.656 kHz 2.02 MHz		% c x d	of OBW Pov B	ver		99.0 -26.00				
<b>1</b> 50		May 08, 8:38:08	2021 AM										

Plot 7-82. Occupied Bandwidth Plot (NR Band n41 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMF711U	PCTEST. Proced to be part of @ demonstra	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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#### Spurious and Harmonic Emissions at Antenna Terminal 7.4

## **Test Overview**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

## For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is 70 + 10 log10(P[Watts]).

For Band 7 and 41, the minimum permissible attenuation level of any spurious emission is 55 + 1010g10(P[Watts]).

# **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

## **Test Settings**

- Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots) per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

## **Test Setup**

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



Figure 7-3. Test Instrument & Measurement Setup

## **Test Notes**

- Per Part 27, RSS-195 and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation 1. employing a resolution bandwidth of 1MHz for measurements above 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to 2. determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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LTE Band 30

Keysigh	nt Spectrum Analy RF	zer - Swept 50 Ω		ORREC	CE	NSE:INT		ALIGN AUTO	11:43:27 /	4 Apr 13, 2021	
	N	20.35		PNO: Fast ↔			#Avg Typ		TRAC	E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Frequency
PASS				FGain:Low	Atten: 3						8
10 dB/di	iv Ref 20	).00 dB	m					M	(r1 2.28) -52.3	7 5 GHz 01 dBm	Auto Tu
	race 1 Pass	;				Ĭ					Contor F
10.0											Center Fi 1.159000000 0
											1.1050000000
0.00											
											Start Fi 30.000000 M
-10.0											30.000000
20.0											
-20.0											Stop Fi
-30.0											2.288000000 0
-40.0										DL1 -40.00 dBm	CF St 225.800000 M
										1	<u>Auto</u> N
-50.0											
-60.0			ور ور از اور ور اور ور و		مان مان المحمد في الماني عليه المحمد الم		محمدوا والمحمولية والمحمول و والمحمول والمحمول و				Freq Off
-00.0											0
-70.0											
											Scale Ty
Start 0	.030 GHz								Stop 2	.288 GHz	Log
	SW 1.0 MH	z		#VB\	V 3.0 MHz			Sweep 3	.011 ms (	4517 pts)	
ISG STATUS											

Plot 7-83. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-84. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

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	ctrum Analyzer - Sw							
LXI RL	RF 50 Ω	2 DC	CORREC	SENSE:I	NT #Avg Ty	ALIGN AUTO	11:45:49 AM Apr 13, 202 TRACE 1 2 3 4 5	6 Frequency
PASS			PNO: Fast ↔→ IFGain:Low	Trig: Free Ru Atten: 10 dB			DET A NNN	×
						Mkr	1 26.570 0 GH -57.196 dBr	z Auto Tune
10 dB/div Log	Ref 0.00 d	Bm					-57.196 dBn	n
Trace	e 1 Pass			Ĭ				Center Freq
-10.0								21.00000000 GHz
-20.0								
-20.0								Start Freq
-30.0								15.00000000 GHz
(0.0							DL1 -40.00 dB	n
-40.0								Stop Freq 27.00000000 GHz
-50.0								27.00000000 GHz
							<u>\</u>	CF Step
-60.0				and the second designed to second			and a set of	1.20000000 GHz
-70.0								<u>Auto</u> Man
								Freq Offset
-80.0								0 Hz
-90.0								
								Scale Type
Start 15.0	00 GHz						Stop 27.000 GH	Log <u>Lin</u>
#Res BW			#VBW	3.0 MHz		Sweep 20	.80 ms (24001 pts	5)
MSG						STATUS		

Plot 7-85. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

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LTE Band 7

	ectrum Analy:											- 6 💌
L <mark>XI</mark> RL	RF	<u>50 Ω</u>	DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO	TRAC	M Apr 13, 2021	Fr	equency
PASS				PNO: Fast ↔ IFGain:Low	Atten: 30		• ,		TYI Di			
10 dB/div	Ref 20	.00 di	Bm					Μ	kr1 2.46 -51.5	0 5 GHz 17 dBm		Auto Tun
Log Trac	e 1 Pass					Í					c	Center Fre
10.0												2500000 GH
0.00												Start Fre
-10.0											30	.000000 MH
-20.0										DL1 -25.00 dBm		Stop Fre
-30.0										DET -25.00 dBM	2.47	5000000 GH
-40.0												CF Ste
-50.0										1	244 <u>Auto</u>	.500000 MI Mi
-30.0					مەمبەلىرىيەر بىرىيەر بىرىيەر بىر		**					Freq Offs
-60.0	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	and the second sec										0 H
-70.0												Scale Typ
Start 0.03	0 GHz								Stop 2	.475 GHz	Log	L
#Res BW		2		#VBV	/ 3.0 MHz			Sweep	3.260 ms (	(4891 pts)		
MSG								STATI	US			

Plot 7-86. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



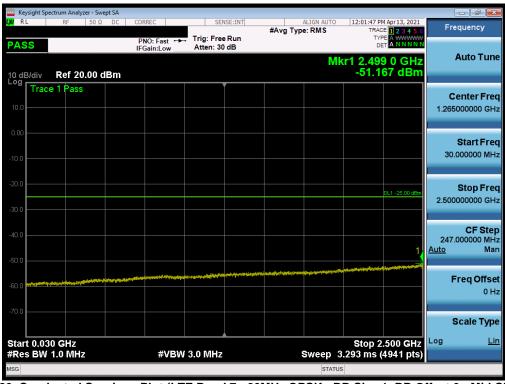
Plot 7-87. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Keysight Spectrum Analyzer - Swept SA													
LXI RL	RF	50 Ω [	DC 0	CORREC		SE	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRA	M Apr 13, 2021	Fr	equency
PASS				PNO: Fa	ast ⊶⊷ ow	Trig: Fre Atten: 1				TY D			
				in ounite					Mk	r1 26.58	0 5 GHz		Auto Tune
10 dB/div	Ref 0.0	)0 dBm	1							-57.0	77 dBm		
Log Trace	e 1 Pass						Ĭ						Center Freq
-10.0													0000000 GHz
-20.0											DL1 -25.00 dBm		Start Freq
-30.0												15.000	0000000 GHz
-40.0													Stop Freq
50.0												27.000	0000000 GHz
-50.0											1		
-60.0								and the second second				1 200	CF Step
						للتريف وراح المتكري						Auto	Man
-70.0													
-80.0												1	Freq Offset
													0 Hz
-90.0													
													Scale Type
Start 15.0										Stop 27	.000 GHz	Log	<u>Lin</u>
#Res BW	1.0 MHz			#	<b>VBW</b>	3.0 MHz		S			24001 pts)		
MSG									STATI	US			

Plot 7-88. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-89. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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