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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:

09/09/2021 - 11/10/2021 **Test Report Issue Date:** 12/02/2021 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M2109080099-4-R2.A3L

FCC ID: APPLICANT:

A3LSMS901U

Samsung Electronics Co., Ltd.

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

Certification SM-S901U SM-S901U1 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

Note: This revised Test Report (S/N: 1M2109080099-04-R2.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §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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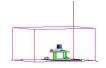


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MEASUREMENT REPORT FCC Part 27

				EF	RP	EI	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	20 MHz	QPSK	673.0 - 688.0	0.041	16.08	0.067	18.23	18M0G7D
	20 IVIHZ	16QAM	673.0 - 688.0	0.035	15.40	0.057	17.55	17M9W7D
	15 MHz	QPSK	670.5 - 690.5	0.040	15.99	0.065	18.14	13M5G7D
LTE Band 71	13 1011 12	16QAM	670.5 - 690.5	0.034	15.36	0.056	17.51	13M5W7D
	10 MHz	QPSK	668.0 - 693.0	0.041	16.08	0.067	18.23	9M01G7D
	10 MHZ	16QAM	668.0 - 693.0	0.037	15.69	0.061	17.84	9M02W7D
	5 MHz	QPSK	665.5 - 695.5	0.040	16.01	0.065	18.16	4M54G7D
		16QAM	665.5 - 695.5	0.036	15.50	0.058	17.65	4M54W7D
	10 MHz	QPSK	704.0 - 711.0	0.062	17.94	0.102	20.09	9M01G7D
		16QAM	704.0 - 711.0	0.050	17.02	0.083	19.17	9M02W7D
	5 MHz	QPSK	701.5 - 713.5	0.062	17.95	0.102	20.10	4M55G7D
LTE Band 12		16QAM	701.5 - 713.5	0.048	16.81	0.079	18.96	4M55W7D
LIE Dallu 12	3 MHz	QPSK	700.5 - 714.5	0.061	17.87	0.100	20.02	2M73G7D
	3 IVITIZ	16QAM	700.5 - 714.5	0.047	16.68	0.076	18.83	2M74W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.061	17.84	0.100	19.99	1M10G7D
	1.4 101112	16QAM	699.7 - 715.3	0.047	16.75	0.078	18.90	1M11W7D
	10 MHz	QPSK	782.0	0.103	20.13	0.169	22.28	8M97G7D
LTE Band 13		16QAM	782.0	0.085	19.29	0.139	21.44	8M99W7D
	5 MHz	QPSK	779.5 - 784.5	0.104	20.19	0.171	22.34	4M53G7D
		16QAM	779.5 - 784.5	0.085	19.28	0.139	21.43	4M54W7D

EUT Overview (LTE)

				EI	RP	Ell	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Emission Designator
		π/2 BPSK	673.0 - 688.0	0.059	17.70	0.097	19.85	18M0G7D
	20 MHz	QPSK	673.0 - 688.0	0.061	17.85	0.100	20.00	19M0G7D
		16QAM	673.0 - 688.0	0.048	16.82	0.079	18.97	18M9W7D
		π/2 BPSK	670.5 - 690.5	0.058	17.67	0.096	19.82	13M5G7D
	15 MHz	QPSK	670.5 - 690.5	0.058	17.63	0.095	19.78	14M0G7D
NR Band n71		16QAM	670.5 - 690.5	0.047	16.71	0.077	18.86	14M0W7D
NIX Danu II/ I	10 MHz	π/2 BPSK	668.0 - 693.0	0.058	17.65	0.096	19.80	9M01G7D
		QPSK	668.0 - 693.0	0.059	17.72	0.097	19.87	9M36G7D
		16QAM	668.0 - 693.0	0.047	16.74	0.077	18.89	9M32W7D
		π/2 BPSK	665.5 - 695.5	0.058	17.67	0.096	19.82	4M51G7D
	5 MHz	QPSK	665.5 - 695.5	0.059	17.71	0.097	19.86	4M52G7D
		16QAM	665.5 - 695.5	0.047	16.69	0.077	18.84	4M55W7D
		π/2 BPSK	706.5 - 708.5	0.051	17.09	0.084	19.24	13M5G7D
	15 MHz	QPSK	706.5 - 708.5	0.053	17.23	0.087	19.38	14M0G7D
		16QAM	706.5 - 708.5	0.046	16.62	0.075	18.77	14M0W7D
		π/2 BPSK	704.0 - 711.0	0.052	17.14	0.085	19.29	8M95G7D
NR Band n12	10 MHz	QPSK	704.0 - 711.0	0.052	17.18	0.086	19.33	9M34G7D
		16QAM	704.0 - 711.0	0.046	16.61	0.075	18.76	9M33W7D
		π/2 BPSK	701.5 - 713.5	0.053	17.28	0.088	19.43	4M51G7D
	5 MHz	QPSK	701.5 - 713.5	0.054	17.36	0.089	19.51	4M52G7D
		16QAM	701.5 - 713.5	0.047	16.72	0.077	18.87	4M54W7D

Overview Table (NR Bands <1GHz Bands)

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			EIRP		
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
WCDMA1700	Spread Spectrum	1712.4 - 1752.6	0.302	24.80	4M17F9W
WCDMA1700	Spread Spectrum	1712.4 - 1752.6		24.80	4M17F9W

EUT Overview (WCDMA)

				Ell	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	20 MHz	QPSK	1720.0 - 1770.0	0.299	24.76	18M1G7D
		16QAM	1720.0 - 1770.0	0.217	23.37	18M0W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.300	24.77	13M6G7D
		16QAM	1717.5 - 1772.5	0.231	23.63	13M6W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.318	25.02	9M03G7D
LTE Band 66/4		16QAM	1715.0 - 1775.0	0.222	23.47	9M06W7D
LIE Dallu 00/4	5 MHz	QPSK	1712.5 - 1777.5	0.313	24.95	4M55G7D
		16QAM	1712.5 - 1777.5	0.234	23.69	4M56W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.309	24.90	2M72G7D
		16QAM	1711.5 - 1778.5	0.234	23.70	2M73W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.310	24.92	1M11G7D
	1.4 IVI⊓Z	16QAM	1710.7 - 1779.3	0.236	23.72	1M11W7D

EUT Overview (LTE)

				EI	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
		π/2 BPSK	1730.0 - 1760.0	0.435	26.38	39M2G7D
	40 MHz	QPSK	1730.0 - 1760.0	0.428	26.31	38M9G7D
		16QAM	1730.0 - 1760.0	0.377	25.76	38M9W7D
		π/2 BPSK	1725.0 - 1765.0	0.421	26.24	29M0G7D
	30 MHz	QPSK	1725.0 - 1765.0	0.399	26.01	28M7G7D
		16QAM	1725.0 - 1765.0	0.350	25.44	28M7W7D
		π/2 BPSK	1720.0 - 1770.0	0.448	26.51	18M0G7D
	20 MHz	QPSK	1720.0 - 1770.0	0.439	26.42	19M0G7D
NR Band n66		16QAM	1720.0 - 1770.0	0.360	25.57	19M0W7D
ANT A		π/2 BPSK	1717.5 - 1772.5	0.452	26.55	13M5G7D
	15 MHz	QPSK	1717.5 - 1772.5	0.427	26.30	14M0G7D
		16QAM	1717.5 - 1772.5	0.367	25.65	14M0W7D
		π/2 BPSK	1715.0 - 1775.0	0.463	26.65	9M03G7D
	10 MHz	QPSK	1715.0 - 1775.0	0.441	26.45	9M36G7D
		16QAM	1715.0 - 1775.0	0.393	25.94	9M34W7D
		π/2 BPSK	1712.5 - 1777.5	0.447	26.50	4M52G7D
	5 MHz	QPSK	1712.5 - 1777.5	0.438	26.41	4M52G7D
		16QAM	1712.5 - 1777.5	0.358	25.54	4M54W7D

EUT Overview (NR Band n66 (Ant A))

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				EI	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
		π/2 BPSK	1730.0 - 1760.0	0.141	21.50	38M9G7D
	40 MHz	QPSK	1730.0 - 1760.0	0.141	21.49	38M8G7D
		16QAM	1730.0 - 1760.0	0.115	20.62	38M7W7D
		π/2 BPSK	1725.0 - 1765.0	0.144	21.59	28M8G7D
	30 MHz	QPSK	1725.0 - 1765.0	0.142	21.51	28M7G7D
		16QAM	1725.0 - 1765.0	0.114	20.56	28M7W7D
		π/2 BPSK	1720.0 - 1770.0	0.140	21.46	18M0G7D
	20 MHz	QPSK	1720.0 - 1770.0	0.128	21.06	19M0G7D
NR Band n66		16QAM	1720.0 - 1770.0	0.110	20.40	19M0W7D
ANT F		π/2 BPSK	1717.5 - 1772.5	0.144	21.57	13M5G7D
	15 MHz	QPSK	1717.5 - 1772.5	0.144	21.60	14M2G7D
		16QAM	1717.5 - 1772.5	0.118	20.72	14M2W7D
		π/2 BPSK	1715.0 - 1775.0	0.133	21.25	8M98G7D
	10 MHz	QPSK	1715.0 - 1775.0	0.132	21.21	9M35G7D
		16QAM	1715.0 - 1775.0	0.105	20.19	9M36W7D
		π/2 BPSK	1712.5 - 1777.5	0.148	21.71	4M51G7D
	5 MHz	QPSK	1712.5 - 1777.5	0.143	21.54	4M54G7D
		16QAM	1712.5 - 1777.5	0.131	21.16	4M52W7D

EUT Overview (NR Band n66 (Ant F))

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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: A3LSMS901U**. 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.: 0301M, 0528M, 0536M, 0277M, 0539M, 0291M, 0261M, 1018M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

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.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

2.5 Software and Firmware

The test was conducted with software/firmware version S901USQU0AUJ5installed on the EUT.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

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 wooden turntable 80cm above the ground plane and 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. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168 D01 v03r01.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then 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:

$$P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$$

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 $P_{g [dBm]}$ – cable loss [dB].

For fundamental radiated power measurements, the guidance of KDB 971168 D01 v03r01 is used to record the EUT power level that is subsequently matched via the aforementioned substitution method given in ANSI C63.26-2015.

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.

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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		Cal Due	Serial Number	
-	LTx1	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx1
-	LTx3	Licensed Transmitter Cable Set	2/26/2021	Annual	2/26/2022	LTx3
Agilent	N9020A	MXA Signal Analyzer	9/22/2020	Annual	12/22/2021	MY54500644
Agilent	N9038A	MXE EMI Receiver	8/11/2020	Annual	12/11/2021	MY51210133
Agilent	N9030A	3Hz-44GHz PXA Signal Analyzer	7/21/2021	Annual	7/21/2022	MY49430494
Anritsu	MT8821C	Radio Communication Analyzer		N/A	-	6201381794
Anritsu	MT8821C	Radio Communication Analyzer		N/A		6200901190
Com-Power	AL-130	Active Loop Antenna	10/29/2020	Biennial	10/29/2022	10160045
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020 Biennial 6/18/202		6/18/2022	9704-5182
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020 Biennial 3/12/2022		3/12/2022	128337
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A		11208010032	
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		112347
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		102060
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/3/2021	Annual	8/3/2022	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Rohde & Schwarz	FSW67	Signal and Spectrum Analyzer (2Hz-67GHz)	3/22/2021	Annual	3/22/2022	101366
Rohde & Schwarz	ETS-002	EMC Cable and Switch System 9/10/2021 Annual 9/10/2022		ETS-002		
Rohde & Schwarz	AP2-002	EMC Cable and Switch System	9/3/2021	Annual	9/3/2022	102134
Rohde & Schwarz	ETS-001	EMC Cable and Switch System	9/10/2021	Annual	9/10/2022	102133
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107

Table 5-1. Test Equipment

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

FCC ID: A3LSMS901U	PCTEST Previd to be part of the element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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6.0 SAMPLE CALCULATIONS

Emission Designator

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 – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average 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 analzyer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

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TEST RESULTS 7.0

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
	-

FCC ID: A3LSMS901U

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s):

WCDMA/LTE/NR/UL-CA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Transmitter Conducted Output Power*	2.1046	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
B	Conducted Band Edge / Spurious Emissions (LTE Band 13)	2.1051, 27.53(c)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Sections 7.4, 7.5
CONDUCTED	Conducted Band Edge / Spurious Emissions (LTE Band 12, 71; NR Band n12, n71)	2.1051, 27.53(g)	≥43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
00	Conducted Band Edge / Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n66)	2.1051, 27.53(h)	≥43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
	Peak-to-Average Ratio (WCDMA AWS; LTE Band 4, 66; NR Band n66)	27.50(d)(5)	≤ 13 dB	PASS	Section 7.0
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.
	Effective Radiated Power (LTE Band 13)	27.50(b)(10)	≤ 3 Watts max. ERP	PASS	Section 7.
	Effective Radiated Power (LTE Band 12, 71; NR Band n12, n71)	27.50(c)(10)	≤ 3 Watts max. ERP	PASS	Section 7.
RADIATED	Equivalent Isotropic Radiated Power (WCDMA AWS; LTE Band 4, 66; NR Band n66)	27.50(d)(10)	≤ 1 Watt max. EIRP	PASS	Section 7.
RADI	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(c), 27.53(f)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 12, 71; NR Band n12, n71)	2.1053, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.8
	Radiated Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n66)	2.1053, 27.53(h)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.

Table 7-1. Summary of Test Results (FCC)

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Notes:

- 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 shown in Section 7.0 were 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) 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 EMC Software Tool v1.0.

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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.

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 $\geq 2 \times \text{span} / \text{RBW}$
- 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

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Test Notes

- 1. Conducted power measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
- Conducted power measurements are also evaluated for simultaneous transmission of two NR FR1 carriers operating in different bands (interband NR FR1 ULCA). The powers were investigated while both bands are operating at their widest supported channel bandwidth.
- 3. All other conducted power measurements are contained in the RF exposure report for this filing.

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		346000	1730.0	1 / 161	24.16
문	π/2 BPSK	349000	1745.0	1 / 54	24.14
40 MHz		352000	1760.0	1 / 54	24.03
40	QPSK	346000	1730.0	1 / 161	24.24
	16-QAM	346000	1730.0	1 / 161	23.47
		345000	1725.0	1 / 80	24.02
원	π/2 BPSK	349000	1745.0	1 / 40	24.04
30 MHz		353000	1765.0	1 / 80	24.05
30	QPSK	345000	1725.0	1 / 80	23.93
	16-QAM	345000	1725.0	1 / 80	23.14
		344000	1720.0	1 / 53	24.29
문	π/2 BPSK	349000	1745.0	1 / 79	24.26
20 MHz		354000	1770.0	1 / 79	24.29
20	QPSK	344000	1720.0	1 / 53	24.35
	16-QAM	344000	1720.0	1 / 53	23.27
		343500	1717.5	1 / 20	24.33
Ŷ	π/2 BPSK	349000	1745.0	1 / 58	24.12
15 MHz		354500	1772.5	1 / 20	24.14
15	QPSK	343500	1717.5	1 / 20	24.23
	16-QAM	343500	1717.5	1 / 20	23.35
		343000	1715.0	1 / 13	24.43
위	π/2 BPSK	349000	1745.0	1 / 26	24.23
10 MHz		355000	1775.0	1 / 26	24.20
10	QPSK	343000	1715.0	1 / 13	24.37
	16-QAM	343000	1715.0	1 / 13	23.65
		342500	1712.5	1/6	24.28
우	π/2 BPSK	349000	1745.0	1 / 12	24.24
5 MHz		355500	1777.5	1 / 12	24.42
2	QPSK	342500	1712.5	1/6	24.34
	16-QAM	342500	1712.5	1 / 6	23.24

Table 7-2. Conducted Power Output Data (NR Band n66 – ANT A)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		346000	1730.0	1 / 108	24.09
Hz	π/2 BPSK	349000	1745.0	1 / 54	23.95
40 MHz		352000	1760.0	1 / 54	24.28
40	QPSK	346000	1730.0	1 / 108	24.08
	16-QAM	346000	1730.0	1 / 108	23.08
		345000	1725.0	1 / 119	24.18
ЧZ	π/2 BPSK	349000	1745.0	1 / 119	23.94
30 MHz		353000	1765.0	1 / 80	23.79
30	QPSK	345000	1725.0	1 / 119	24.09
	16-QAM	345000	1725.0	1 / 119	23.02
		344000	1720.0	1 / 79	24.04
ΗZ	π/2 BPSK	349000	1745.0	1 / 26	24.17
20 MHz		354000	1770.0	1 / 26	24.08
20	QPSK	354000	1770.0	1 / 26	24.06
	16-QAM	354000	1770.0	1 / 26	23.19
		343500	1717.5	1 / 20	24.16
ΗZ	π/2 BPSK	349000	1745.0	1 / 20	23.99
15 MHz		354500	1772.5	1 / 20	24.22
15	QPSK	343500	1717.5	1 / 20	24.18
	16-QAM	343500	1717.5	1 / 20	23.17
		343000	1715.0	1 / 38	23.83
F	π/2 BPSK	349000	1745.0	1 / 13	24.19
10 MHz		355000	1775.0	1 / 13	24.23
10	QPSK	355000	1775.0	1 / 13	24.21
	16-QAM	355000	1775.0	1 / 13	22.98
		342500	1712.5	1 / 12	24.30
Ŷ	π/2 BPSK	349000	1745.0	1 / 18	24.12
5 MHz		355500	1777.5	1 / 12	24.26
5	QPSK	355500	1777.5	1 / 12	24.54
	16-QAM	355500	1777.5	1 / 12	23.95

Table 7-3. Conducted Power Output Data (NR Band n66 – ANT F)

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		Р	CC					:	scc											
PCC Band	PCC Frequency (MHz)	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Frequency (MHz)	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset	PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)						
				π/2 BPSK	1/108					π/2 BPSK	1/136	20.72	21.49	24.13						
				QPSK	216/0					QPSK	270/0	20.66	21.18	23.94						
	1730		Low	QPSK	1/54		3750		Low	QPSK	1/68	20.81	21.12	23.98						
	1/30		LOW	QPSK	1/108		3750	ou l	LOW	QPSK	1/136	20.98	21.56	24.29						
				QPSK	1/161											QPSK	1/204	20.64	21.12	23.90
				16Q	1/108					16Q	1/136	20.77	21.33	24.07						
				π/2 BPSK	1/108					π/2 BPSK	1/136	20.69	21.30	24.02						
				QPSK	216/0					QPSK	270/0	20.50	20.88	23.70						
n66	1745	40	Mid	QPSK	1/54	n77	3840	100	Mid	QPSK	1/68	20.47	21.06	23.79						
1100	1/45	40	IVIIU	QPSK	1/108	1177	3840	100	Ivilu	QPSK	1/136	20.73	21.33	24.05						
				QPSK	1/161					QPSK	1/204	20.40	21.18	23.82						
				16Q	1/108					16Q	1/136	20.59	21.26	23.95						
				π/2 BPSK	1/108					π/2 BPSK	1/136	20.58	21.47	24.06						
				QPSK	216/0					QPSK	270/0	20.68	21.51	24.13						
	1760		High	QPSK	1/54	3930		High	QPSK	1/68	20.70	21.44	24.10							
	1/00		i ligit	QPSK	1/108		3330		111611	QPSK	1/136	20.73	21.58	24.19						
				QPSK	1/161					QPSK	1/204	20.40	21.50	24.00						
				16Q	1/108					16Q	1/136	20.53	21.15	23.86						

Table 7-4. Conducted Power Output Data (ULCA NR Bands n66-n77)

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7.3 Occupied Bandwidth

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

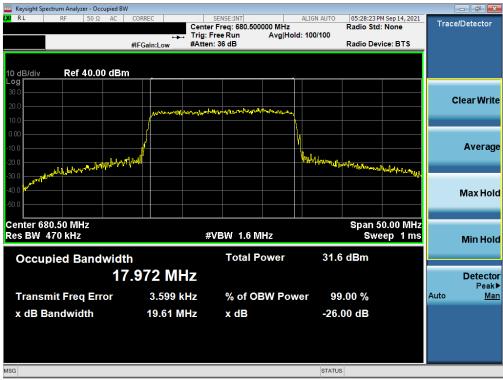
Test Notes

None.

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LTE Band 71



Plot 7-1. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB)



Plot 7-2. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB)

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🚾 Keysight Spectrum Analyzer - Occupied BV							×
XU RL RF 50Ω AC	Trig	SENSE:INT Iter Freq: 680.500000 MHz J: Free Run Avg Ho ten: 36 dB	ALIGN AUTO	05:37:39 PM S Radio Std: N Radio Devic	lone	Trace/Detecto	or
10 dB/div Ref 40.00 dBn							
20.0	hongmennether	weynyn wywr y Manyfyrau				Clear W	rit
-10.0 -20.0 -30.0	""M		han have	moloumorougly	- Andrea	Avera	ag
-40.0				Span 37.	50 MHz	Max H	ol
Res BW 360 kHz Occupied Bandwidt	th	#VBW 1.2 MHz Total Power	31.5		p 1 ms	Min H	ol
13	3.473 MHz					Detec Pe	_
Transmit Freq Error	30.622 kHz	% of OBW Pov	ver 99	0.00 %		Auto <u>I</u>	Ma
x dB Bandwidth	14.77 MHz	x dB	-26.	00 dB			
ISG			STATU	5			





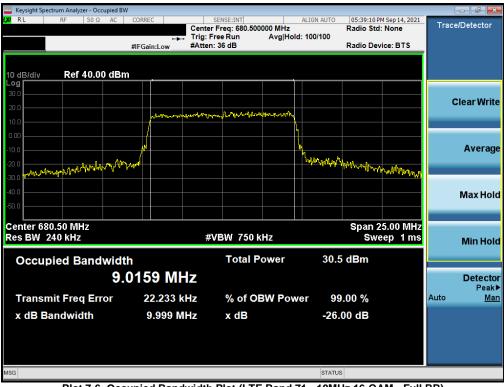
Plot 7-4. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB)

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www.www.com analyzer - Occupied	BW							
LXI RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 680.500		IGN AUTO	05:39:03 Pf Radio Std:	1 Sep 14, 2021	Trace	e/Detector
		Trig: Free Run	Avg Hold: 1					
	#IFGain:Low	#Atten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dB	sm							
Log 30.0								
							C	Clear Write
20.0	holoman	walk market	man					
10.0								
0.00								
-10.0			<u>لا</u>					Average
-20.0	,h.,h./1		<u>Ч</u>	Manana hara	hartal (and the Jay	a		
-30.0						· · · vare View 4/		
-40.0								Max Hold
-50.0								Max Hulu
Center 680.50 MHz						5.00 MHz		
Res BW 240 kHz		#VBW 750 k	Hz		Swe	ep 1 ms		Min Hold
Occurried Denducie	141-	Total P	owor	21 4	dBm			
Occupied Bandwid			OWGI	51.4	ubili			
9	.0103 MH	Ζ						Detector
Transmit Frag Error	19.968 kH	- % of O	3W Power		.00 %		Auto	Peak▶ Man
Transmit Freq Error			SW FOWEI				Auto	INIALI
x dB Bandwidth	10.01 MH	z xdB		-26.0	00 dB			
MSG				STATUS				

Plot 7-5. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB)

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Keysight Spectrum Analyzer - Occupied BW								
XIRL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 680.500			5:41:19 PM Se dio Std: No		Trace	e/Detector
	- -	Trig: Free Run	Avg Hold: 10	00/100				
i	#FGain:Low	#Atten: 36 dB		Ra	dio Device	BTS		
10 dB/div Ref 40.00 dBm								
Log 30.0								
							c	Clear Write
20.0	mmm	man	man					
10.0								
0.00	-/							
-10.0	\checkmark			• • • • • • • • • • • • • • • • • • •				Average
-20.0 war and human and	/		· · ·	horn for the second	mon m		_	
-30.0					φ υ -	Charles and		
-40.0								Max Hold
-50.0								Μάχποια
							_	
Center 680.500 MHz				S	pan 12.			
Res BW 120 kHz		VBW 1.2 MI	lz		Sweep	o 1 ms		Min Hold
		Total P		31.4 dE	2			
Occupied Bandwidth			ower	31.4 GE	5111			
4.5	357 MH	lz						Detector
	4 055 1						A	Peak►
Transmit Freq Error	-1.655 k	HZ % OF O	BW Power	99.00	%		Auto	Man
x dB Bandwidth	5.086 M	Hz x dB		-26.00	dB			
MSG				STATUS				

Plot 7-7. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB)

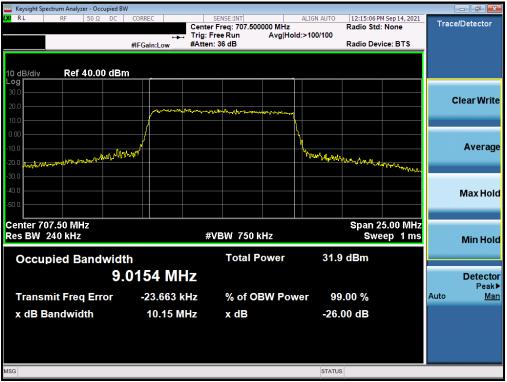
FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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LTE Band 12

🔤 Keysight Spectrum /													
lxi rl RF	50 Ω	DC (ORREC			NSE:INT req: 707.500	000 MHz	ALIC	GN AUTO	12:14:53 P Radio Std	M Sep 14, 2021	Trac	e/Detector
					Trig: Fre	e Run	Avg Hol	d: 10	00/100				
		#	IFGain:	:Low	#Atten: 3	36 dB				Radio Dev	ice: BTS		
10 dB/div Log	Ref 40.00) dBm											
30.0													
20.0						and were						(Clear Write
10.0			^	, 1, , , , , , , , , , , , , , , , , ,	anni garana	allen hand and the	And a star and a star and a						
0.00			_/_					\					
-10.0			J.					ì					Average
-20.0	- Almarkon ly	margh	w ²					٣	man mar	M. Alexandra			Ŭ
-30.0											maker while the		
-40.0													Max Hold
-50.0													max noid
Center 707.50											5.00 MHz		
Res BW 240	KHZ				#V	BW 750 k	HZ			SWG	ep 1 ms		Min Hold
Occupied	Band	width				Total P	ower		32.4	dBm			
Cocupied	Barrar				1								Detector
		9.0	120	B MF	12								Detector Peak▶
Transmit F	req Err	or	-20	.621 k	Hz	% of O	3W Pow	ver	99	.00 %		Auto	Man
x dB Band	width		10	0.05 M	Hz	x dB			-26.0	00 dB			
	math								201				
MSG									STATUS				
Mou													

Plot 7-9. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB)



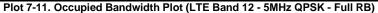
Plot 7-10. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB)

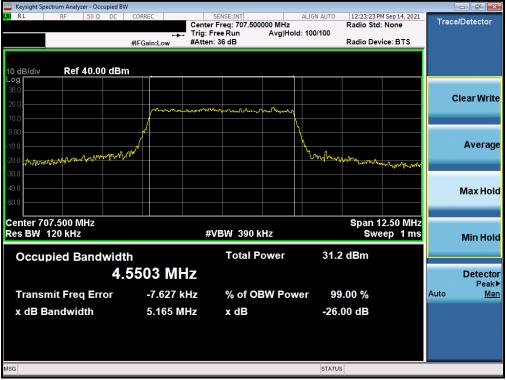
FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied B	N						
🗶 RL RF 50Ω DC	CORREC	SENSE:INT Freg: 707.500000 MHz	ALIGN AUTO	12:23:19 PM Radio Std:		Trace/D	etector
	Trig:	Free Run Avg Ho	ld: 100/100				
	#IFGain:Low #Atter	n: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBr	n						
Log 30.0							
						Cle	ar Write
20.0	mmmmm	mon man hand have	l.				
10.0			l,				
0.00	<u>لر</u>		1				_
-10.0	wind the second s		- Contraction of the second se				Average
-10.0 -20.0 mmmmmmmmmmmmmmmm			white a	Mar Mar Ar	Mar Margare		
-30.0							
-40.0						Ν	lax Hold
-50.0							
Center 707.500 MHz Res BW 120 kHz	-4	VBW 390 kHz			2.50 MHz ep 1 ms		
Res BW 120 KH2	#			Swee	ep mis	I	Ain Hold
Occupied Bandwidt	th	Total Power	32.4	l dBm			
	5479 MHz						Detector
4.	5475 WINZ						Detector Peak►
Transmit Freq Error	-7.586 kHz	% of OBW Pov	ver 99	0.00 %		Auto	Man
x dB Bandwidth	5.247 MHz	x dB	-26	00 dB			
	572-77 WIT12	X UD	-20.	oo ab			
MSG			STATU	5			





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

FCC ID: A3LSMS901U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager		
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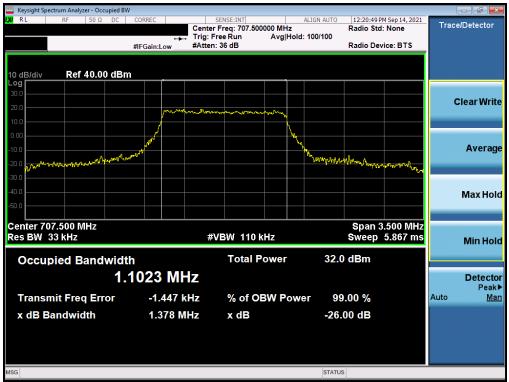
Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB)



Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB)

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Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB)



Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 - 1.4MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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LTE Band 13



Plot 7-17. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB)



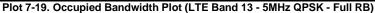
Plot 7-18. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U	Pout to be part of & element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Plot 7-20. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB)

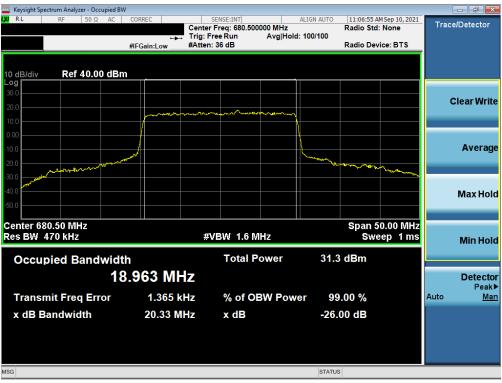
FCC ID: A3LSMS901U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 29 of 243	
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NR Band n71



Plot 7-21. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB)



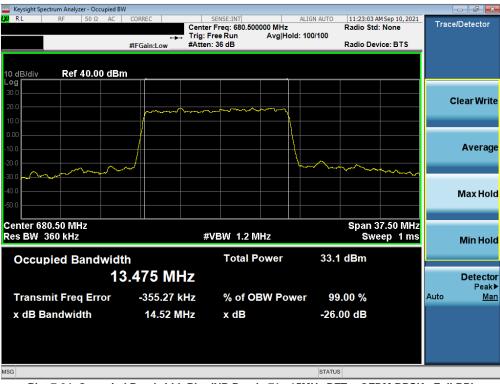
Plot 7-22. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-24. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyze										[- d -
CIRL RF	50 Ω AC	CORREC			ISE:INT eq: 680.500	000 MHz	ALIGN AUTO	11:23:39 A Radio Std	M Sep 10, 2021	Trace	e/Detector
				Trig: Free	Run		d: 100/100				
		#IFGair	n:Low	#Atten: 36	6 dB			Radio Dev	vice: BTS		
10 dB/div Ref	30.00 dB	m									
og											
20.0		~		الالالي المعالية	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	money					Clear Write
10.0											
0.00							}				
10.0							\downarrow —				
20.0	-	prove					har -	mm.			Averag
30.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								- 00	and when		
40.0											
50.0											
											Max Hol
60.0											
Center 680.50 MH	7							Span 3	7.50 MHz		
Res BW 360 kHz				#VB	W 1.2 M	IHz			ep 1 ms		Min Hol
Occupied Ba	andwid	lth			Total P	ower	31.1	dBm			
	1	4 02	1 MH	7							Detecto
		1.02		_							Peak
Transmit Freq	Error	-79	9.362 kH	z	% of O	BW Pow	/er 99	.00 %		Auto	<u>Ma</u>
x dB Bandwid	th	1	5.25 MH	7	x dB		-26	00 dB			
				_			20.				
SG							STATUS	5			

Plot 7-25. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM QPSK - Full RB)



Plot 7-26. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB)

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Keysight Spectrum Analyzer - Occupied	BW				
X/RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 680.5000		11:27:09 AM Sep 10, 2021 Radio Std: None	Trace/Detector
	↔ #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Device: BTS	
10 dB/div Ref 40.00 dE	sm				
30.0					Clear Write
20.0			www.		Clear write
10.0	/				
0.00			<u>_</u>		
10.0			\		Average
20.0			have		
30.0					
40.0					Max Hold
50.0					
Center 680.50 MHz				Onen 25 00 Milla	
Res BW 240 kHz		#VBW 750 ki	Ηz	Span 25.00 MHz Sweep 1 ms	Min Hold
					MITHOR
Occupied Bandwid		Total Po	ower 32.9	dBm	
9).0062 MH	Z			Detector
Transmit Freg Error	-182.01 kl	da % of OP	W Power 99	.00 %	Peak≯ Auto Man
					illian Illian
x dB Bandwidth	9.826 MI	lz xdB	-26.	00 dB	
ISG			STATUS	3	

Plot 7-27. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-28. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB)

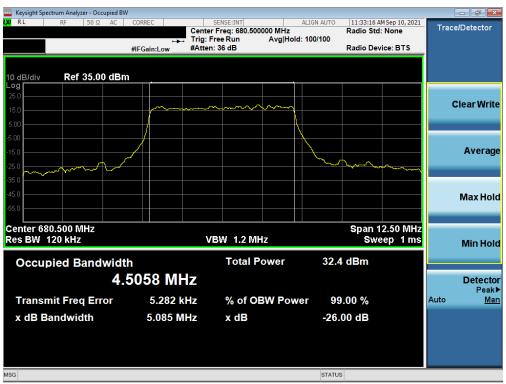
FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-29. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB)



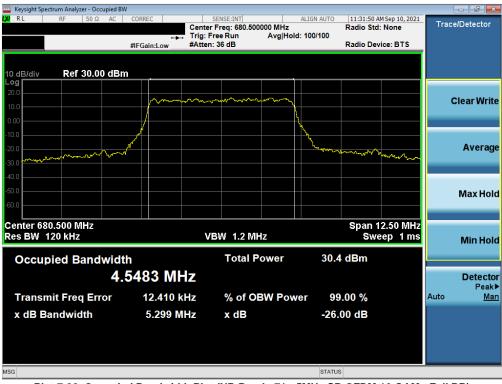
Plot 7-30. Occupied Bandwidth Plot (NR Band n71 - 5MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer -								_	- 6
RL RF 50	Ω AC	CORREC	SENSE:INT		ALIGN AUTO	11:32:39 AM Radio Std:	Sep 10, 2021	Trace/I	Detector
		₩FGain:Low			ld: 100/100	Radio Std: Radio Devi			
0 dB/div Ref 30	.00 dBn	n							
0.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					СІ	ear Writ
0.00									Averad
									Ανειαί
0.0									Max Ho
enter 680.500 MHz es BW 120 kHz	2		VBW 1.:	2 MHz			2.50 MHz ep 1 ms		Min Ho
Occupied Bar	ndwidt	h	Tot	al Power	30.7	dBm			
	4.	5173 MI	Ηz						Detect Peal
Transmit Freq E	rror	-3.344	kHz %o	f OBW Pov	ver 99	.00 %		Auto	M
x dB Bandwidth		5.281 N	lHz x dl	8	-26.	00 dB			
3					STATUS	3			

Plot 7-31. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM QPSK - Full RB)



Plot 7-32. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 16-QAM - Full RB)

FCC ID: A3LSMS901U	PCTEST. Preval to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n12

🔤 Keysight Spe	ctrum Analy	/zer - Occu	upied BW											- d ×
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC			NSE:INT rea: 707.50	0000 MH-	ALIG	GN AUTO	09:33:49 A Radio Std	M Sep 10, 2021	Trace	e/Detector
						Trig: Fre		Avg Ho	old: 10	0/100	Radio Stu	. None		
				#IFGain:	Low	#Atten: 3	6 dB				Radio Dev	rice: BTS		
10 dB/div	Ref	40.00) dBm											
Log														
30.0														lear Write
20.0					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	\sim	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
10.0														
0.00									$\left\{ - \right\}$					
-10.0									+					Average
-20.0				المر					han	* ~				
-30.0	\sim	~~~	<u></u>							* ~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
-40.0											~	Lay and the second		Max Hold
-50.0														Μάλ Πυία
Center 70												7.50 MHz		
Res BW	360 kHz	z				#VE	3W 1.2 N	/IHz			Swe	ep 1 ms		Min Hold
0				_			Total F	owor		32.6	dBm			
Occu		sano					TOLAT	OWEI		52.0	ubiii			
			13	.478) MH	Ζ								Detector
Tropor	nit Ero			20	6.49 kH	1-	% of O		WOR	00	.00 %		Auto	Peak▶ Man
Transr			or					BW FU	wer				Auto	IVICIII
x dB B	andwi	dth		14	.66 M⊦	z	x dB			-26.0)0 dB			
MSG										STATUS				

Plot 7-33. Occupied Bandwidth Plot (NR Band n12 - 15MHz DFT-s-OFDM PSK - Full RB)



Plot 7-34. Occupied Bandwidth Plot (NR Band n12 - 15MHz CP-OFDM QPSK - Full RB)

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Plot 7-35. Occupied Bandwidth Plot (NR Band n12 - 15MHz CP-OFDM 16-QAM - Full RB)



Plot 7-36. Occupied Bandwidth Plot (NR Band n12 - 10MHz DFT-s-OFDM BPSK - Full RB)

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Keysight Spectrum Analyzer - O									(
XIRL RF 50 9	2 AC COR	REC		SE:INT eq: 707.5000	00 MH7	ALIGN AUTO	10:06:21 A Radio Std	M Sep 10, 2021	Trace	e/Detector
			Trig: Free	Run		d: 100/100				
	#IF(Gain:Low	#Atten: 36	dB			Radio Dev	rice: BTS		
10 dB/div Ref 40.0	00 dBm									
Log 30.0										
									c	lear Write
20.0		mon	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- American						
10.0		/								
0.00		/				1				
-10.0	- 1					1				Average
-20.0	and the second second					2 Million Market	~~~~~			
-30.0								myram		
-40.0										Max Hold
-50.0										Maxmora
Center 707.50 MHz					-			5.00 MHz		
Res BW 240 kHz			#VB	#VBW 750 kHz		Sweep 1 ms			Min Hold	
Occupied Ban	dwidth			Total Po	wer	30.6	dBm			
Occupied Bail			-							
	9.33	59 M⊦	12							Detector Peak▶
Transmit Freq Er	ror ·	-13.173 k	Hz	% of OB	W Pow	er 99	.00 %		Auto	Man
x dB Bandwidth		10.36 M	LI-7	x dB		26	00 dB			
		10.30 W	ΠZ	хuв		-20.	oo ub			
ISG						STATUS	6			

Plot 7-37. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM QPSK - Full RB)



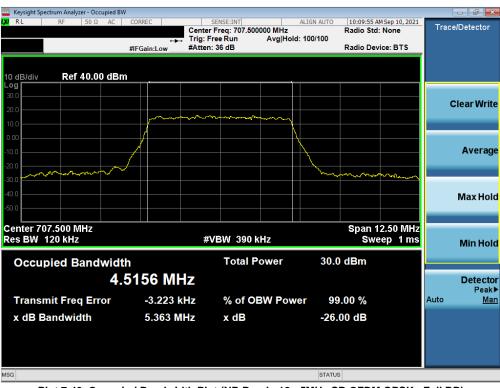
Plot 7-38. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyz		ipied BW										
XI RL RF	50 Ω	AC	CORREC			ISE:INT	0000 MHz	ALIGN AUT	0 10:09:26 /	M Sep 10, 2021	Trac	e/Detector
					Trig: Free	Run		ld: 100/100		. None		
			#IFGain:	Low	#Atten: 3	6 dB			Radio De	vice: BTS		
10 dB/div Ref	40.00	dBm										
Log												
30.0												Clear Write
20.0				~~~~	~~~~	~~~~~	~~~~					
10.0			+									
0.00			_/_					\backslash				
-10.0												Average
-20.0		1	/					\rightarrow				
-30.0	~~ `							<u>``</u>	V m	\sim		
-40.0												Max Hold
-50.0												Max Hold
-36.0												
Center 707.500 M									Span ′	2.50 MHz		
Res BW 120 kHz					#VE	SW 390	kHz		Sw	eep 1 ms		Min Hold
						Total	Power	24	2.0 dBm	0 dBm		
Occupied Ba	angv					TUtal I	Ower	57	2.0 0011			
		4.5	052	2 MH	Ζ							Detector
Transmit Fra			7	.926 kl	-	0/ -5 0			99.00 %		Auto	Peak▶ Man
Transmit Free	-	DI				% OI U					Auto	IVIAII
x dB Bandwid	ith		5.	168 MH	Z	x dB		-2	6.00 dB			
MSG								STA	TUS			
								017				

Plot 7-39. Occupied Bandwidth Plot (NR Band n12 - 5MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-40. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM QPSK - Full RB)

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🔤 Keysight Spectrum Analyzer - O										
LX/ RL RF 50 !	2 AC COF	REC	SENSE:II			LIGN AUTO	10:10:18 A Radio Std	MSep 10, 2021	Trac	e/Detector
			Trig: Free Ru	n Avg		100/100				
	#IF(Gain:Low	#Atten: 36 dB				Radio Dev	ice: BTS		
10 dB/div Ref 40.	00 dBm	_								
Log 30.0										
20.0									0	Clear Write
		mont	Man	mon	ŝ					
10.0										
0.00		/			7					_
-10.0	A				4	1				Average
-20.0	mont					June .	<u> </u>			
-30.0 monormation	<u> </u>					- 19V-1	www	MM KAR		
-40.0										Max Hold
-50.0										
Center 707.500 MHz Res BW 120 kHz			#\/B\M	390 kHz				2.50 MHz ep 1 ms		
Kes DW 120 KHZ			# ¥ D ¥ ¥	J90 KHZ			3000	ep i ilis		Min Hold
Occupied Ban	dwidth		Тс	tal Powe	r	29.4	dBm			
		54 MH	7							Detector
	4.55	J4 IVII	12							Peak
Transmit Freq E	ror	935	Hz %	of OBW F	owe	r 99	.00 %		Auto	Man
x dB Bandwidth		5.274 MI	Hz xo	B		-26	00 dB			
		0121 1 111				201	00 a 2			
MSG						STATUS				

Plot 7-41. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM 16-QAM - Full RB)

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WCDMA AWS

🚾 Keysight Spectrum Analyzer - Occupied B					
LXI RL RF 50Ω DC	CORREC	SENSE:INT enter Freg: 1.732600000 GHz		48 AM Sep 16, 2021 Std: None	Trace/Detector
	🛶 Tr	ig: Free Run Avg Hold:	: 100/100		
	#IFGain:Low #A	tten: 36 dB	Radio	Device: BTS	
10 dB/div Ref 40.00 dB	m				
Log 30.0					
20.0					Clear Write
10.0					
0.00					
-10.0					Average
-20.0					Anorago
-30.0			man man	~~~~~~	
-40.0					
					Max Hold
-50.0					
Center 1.732600 GHz			Spa	n 15.00 MHz	
Res BW 150 kHz		VBW 1.5 MHz	s	weep 1 ms	Min Hold
Occupied Dendwid	4b	Total Power	al Power 33.3 dBm		
Occupied Bandwid			55.5 dBm		
4	.1699 MHz				Detector Peak▶
Transmit Freq Error	-1.490 kHz	% of OBW Powe	er 99.00 %		Auto Man
x dB Bandwidth	4.790 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-42. Occupied Bandwidth Plot (WCDMA, Ch. 1413)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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LTE Band 66/4

Keysight Spectrum Analyzer - Occupied BW	/				
LXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 1.745000000 G	ALIGN AUTO	12:39:47 PM Sep 14, 2021 Radio Std: None	Trace/Detector
		Trig: Free Run Avg	Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dBn	า				
Log 30.0					
					Clear Write
20.0	ور من	annound man mount	~~~		
10.0					
0.00	- /		- <u>L</u>		
-10.0	-mff		WI - mut -		Average
-20.0 June Margaret Million - 44	PAID.		- Hand And Print	Windupplomental property	
-30.0					
-40.0					Max Hold
-50.0					
Center 1.74500 GHz Res BW 470 kHz		#VBW 1.6 MHz		Span 50.00 MHz Sweep 1 ms	
Res BW 470 KHz		#VBVV 1.0 IVIN2		Sweep This	Min Hold
Occupied Bandwidt	h	Total Power	r 31.4	4 dBm	
		-			Detector
		Z			Detector Peak►
Transmit Freq Error	-30.875 kl	Iz % of OBW P	ower 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	19.72 MH	lz xdB	-26	.00 dB	
	13.72 00		-20		
MSG			STATU	s	

Plot 7-43. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB)



Plot 7-44. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occup	pied BW						
LXI R L RF 50 Ω	DC CORREC	SENSE:INT Center Freg: 1.745000000 GH	ALIGN AUTO	12:44:27 Pl Radio Std:	4 Sep 14, 2021	Trace/D	etector
		Trig: Free Run Avg H	old: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00	dBm						
Log 30.0							
20.0						Cle	ar Write
	manager	have been and the second	~				
10.0							
0.00	/						_
-10.0	And		hunn				Average
-20.0 Mr. William for many for the local	A MARINE P		UNIO NYTLAUDO	- alighter that	Morrow langely		
-30.0							
-40.0						N	lax Hold
-50.0							
Center 1.74500 GHz Res BW 360 kHz		#VBW 1.2 MHz			7.50 MHz ep 1 ms		
Res DW JOURNZ				SWE	ep mis	ſ	Ain Hold
Occupied Bandw	vidth	Total Power	31.3	3 dBm			
	13.569 MH	-					Data ata
	13.308 MIR	Z					Detector Peak
Transmit Freq Erro	or -8.234 k	Hz % of OBW Po	wer 99	0.00 %		Auto	Ma
x dB Bandwidth	14.95 MI	Hz xdB	-26	00 dB			
	14.55 Mil		-20.				
MSG			STATU	5			





Plot 7-46. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-47. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB)



Plot 7-48. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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🥮 Keysight Spectrum Analyzer - Occupied B	W					
LXI RL RF 50 Ω DC		SENSE:INT Center Freq: 1.74500 Trig: Free Run	ALIGN AUTO 0000 GHz Avg Hold: 100/100	12:53:15 PM Sep Radio Std: Non		Trace/Detector
		#Atten: 36 dB		Radio Device: E	BTS	
10 dB/div Ref 40.00 dB	m					
30.0 20.0						Clear Write
10.0		when we want	Caroline and a second second			
-10.0	Ward			a. et 0		Average
-20.0 Anna Manna				v han hand	ww	
-40.0						Max Hold
Center 1.745000 GHz Res BW 120 kHz		VBW 1.2 MH	łz	Span 12.50 Sweep		Min Hold
Occupied Bandwid	th	Total P	ower 30.	8 dBm		
	.5502 MH					Detector Peak▶
Transmit Freq Error	-3.686 kH	z % of OE	3W Power 9	9.00 %	A	uto <u>Man</u>
x dB Bandwidth	5.166 MH	z xdB	-26	.00 dB		
MSG			STATL	JS		

Plot 7-49. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB)



Plot 7-50. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-51. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB)



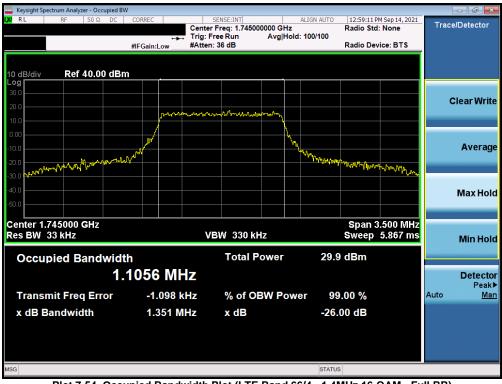
Plot 7-52. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-53. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB)



Plot 7-54. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB)

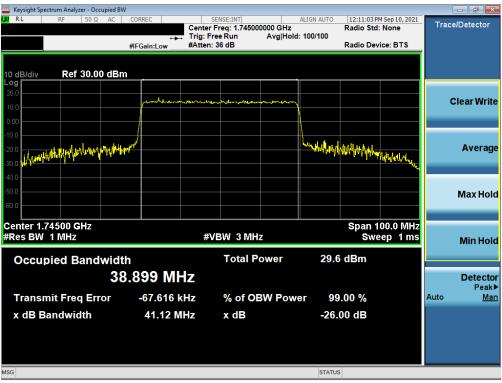
FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n66 – ANT A

		1 Sep 10, 2021	Trace/Detector
		None	
en: 36 dB	Radio Devi	ice: BTS	
			Clear Write
			Cical Write
\	<i>ل</i> م الله الله الله الله الله الله الله الل		Average
		my	-
			Max Hold
	Span 1	00.0 MHz	
#VBW_3 MHz			
			Min Hold
Total Power	31.4 dBm		
			Detector
			Detector Peak▶
% of OBW Power	99.00 %	,	Auto <u>Man</u>
and D	26.00 40		
X OB	-20.00 aB		
	STATUS		
	# Freq: 1.745000000 GHz Free Run Avg Hold: 1 m: 36 dB #VBW 3 MHz Total Power	r Freq: 1.74500000 GHz Free Run Avg Hold: 100/100 Radio Dev Radio Std: Radio Dev Radio Std: Radio Dev Radio Std: Radio Dev Radio Std: Radio Std: Radio Dev Span 1 Radio Std: Radio Std: Rad	Preq: 1.74500000 GHz Free Run Avg Hold: 100/100 Radio Device: BTS Radio Device: BTS Radio Device: BTS Radio Device: BTS Span 100.0 MHz Span 100.0 MHz Sweep 1 ms Total Power 31.4 dBm % of OBW Power 99.00 % x dB -26.00 dB

Plot 7-55. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB – ANT A)



Plot 7-56. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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www.www.www.com.com.com.com.com.com.com.com.com.com					
LX RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	12:11:39 PM Sep 10, 2021 Radio Std: None	Trace/Detector
	↔	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Device: BTS	
	#IFGain:Low	#Atten: 36 dB		Radio Device. B 13	ī
to JDUE. Dof 20.00 dB					
10 dB/div Ref 30.00 dE					
20.0					Clear Write
10.0	walk had been	q _₽ ₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	What have a faith and the second		Clear Write
0.00					
-10.0					
-20.0	A WANK		William B.		Average
-30.0 Antiquer Antiquer Internation	J ⁻			hill have not been and the	
-40.0					
-50.0					Max Hold
-60.0					
Center 1.74500 GHz				Span 100.0 MHz	
#Res BW 1 MHz		#VBW 3 MH	z	Sweep 1 ms	
					Will Hold
Occupied Bandwic	lth	Total P	ower 28.8	3 dBm	
3	8.909 MI	Hz			Detector
					Peak►
Transmit Freq Error	-29.508			0.00 %	Auto <u>Man</u>
x dB Bandwidth	41.16 N	1Hz xdB	-26.	00 dB	
MSG			STATU	5	

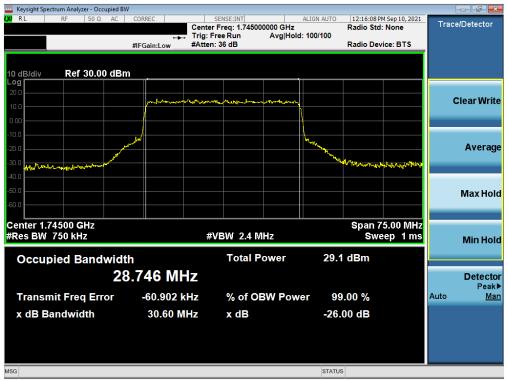
Plot 7-57. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT A)



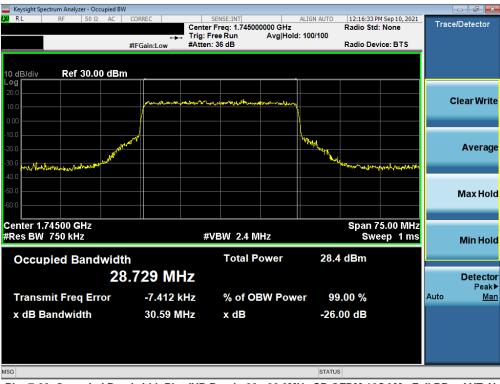
Plot 7-58. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB – ANT A)

FCC ID: A3LSMS901U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-59. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT A)



Plot 7-60. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB – ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied						
🗶 RL RF 50Ω AC	CORREC	SENSE:INT nter Freg: 1.74500	ALIGN	AUTO 12:19:22 P Radio Std	M Sep 10, 2021	Trace/Detector
	+++ Trig	g: Free Run ten: 36 dB	Avg Hold: 100/			
	#IFGain:Low #At	ten. 36 dB		Radio Dev	ICE. DTS	
to an table . Dof 25.00 df						
10 dB/div Ref 35.00 dE						
25.0						Clear Write
15.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Cical Write
5.00						
-5.00	40			data		_
-15.0				mayber and and a state	and a south from the south of the	Average
-25.0						
-35.0						
-45.0						Max Hold
-55.0						
Center 1.74500 GHz					0.00 MHz	
Res BW 470 kHz		#VBW 1.6 M	IHz	Swe	eep 1 ms	Min Hold
Occupied Bandwig	ith	Total P	ower	32.4 dBm		
	8.020 MHz					Detector
						Peak▶
Transmit Freq Error	-556.98 kHz	% of O	BW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	19.41 MHz	x dB		-26.00 dB		
ISG				STATUS		

Plot 7-61. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT's-OFDM BPSK - Full RB - ANT A)



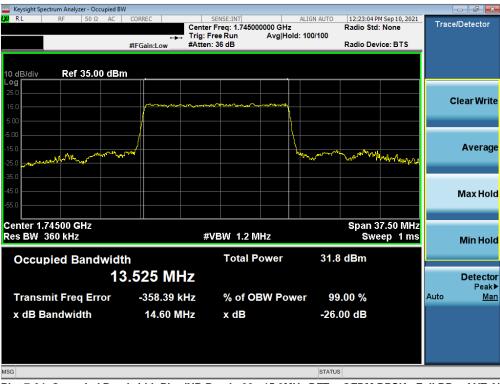
Plot 7-62. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB - ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Oc									(
<mark>Χ.</mark> RL RF 50Ω	AC COF	REC		SE:INT eq: 1.74500	0000 GHz	ALIGN AUTO	12:20:14 PM Radio Std:	4 Sep 10, 2021	Trace	/Detector
	#IF(Gain:Low	Talas Dasa	Run		i: 100/100	Radio Dev			
10 dB/div Ref 30.0	0 dBm					1				
20.0		prost on the state	หนะของคารมให	water and	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛				c	lear Write
0.00 -10.0 -20.0	where the work					MALWOLANNU	britan			Average
-30.0							the low and	ant Webnerarry		
-60.0										Max Hold
Center 1.74500 GHz Res BW 470 kHz			#VB	W 1.6 M	IHz			0.00 MHz ep 1 ms		Min Hold
Occupied Band	width			Total P	ower	29.6	i dBm			
	19.0	29 M⊦	IZ							Detector Peak▶
Transmit Freq Err	or	-2.103 k	Hz	% of O	3W Pow	er 99	.00 %		Auto	Man
x dB Bandwidth		20.37 M	Hz	x dB		-26.	00 dB			
ISG						STATUS	3			

Plot 7-63. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB – ANT A)



Plot 7-64. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyz											- 6 ×
XIRL RF	50 Ω	AC CO	RREC	Cer	SENSE:INT Iter Freg: 1.7450	00000 GHz	ALIGN AUTO	12:23:28 PI Radio Std	M Sep 10, 2021	Trac	e/Detector
				🛶 Trig	j: Free Run		d: 100/100	Raulo Stu	None		
		#IF	Gain:Low	#At	ten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref	30.00	dBm									
Log											
20.0			man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	martin and the	many					lear Write
10.0			1								
0.00			1				\				
-10.0		j									
-20.0	hor Maria	- And					Mar marter	Note and			Average
-30.0	w. Morth		L					and a second	-mut wreight		
-40.0											
-50.0											
											Max Hold
-60.0											_
Center 1.74500 G	Hz							Span 3	7.50 MHz		
Res BW 360 kHz					#VBW 1.21	VIHz			ep 1 ms		Min Hold
											Milline
Occupied Ba	andw	vidth			Total	Power	30.2	2 dBm			
		14.0	19	ИНт							Detector
											Peak▶
Transmit Freq	Erro	r	-100.2	0 kHz	% of C	BW Pow	/er 99	.00 %		Auto	Mar
x dB Bandwid	th		15.1) MHz	x dB		-26.	00 dB			
SG							STATUS	5			

Plot 7-65. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB – ANT A)



Plot 7-66. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB - ANT A)

FCC ID: A3LSMS901U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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www.www.www.www.www.www.www.www.www.ww								
LXIRL RF 50Ω AC	CORREC	SENSE:INT enter Freq: 1.7450		LIGN AUTO	12:25:07 Pt Radio Std:	4 Sep 10, 2021	Trace	/Detector
	i i i i i i i i i i i i i i i i i i i	rig: Free Run	Avg Hold: 1	100/100				
	#IFGain:Low #/	Atten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dB	m							
Log 30.0								
20.0							С	lear Write
10.0	m	······	m					
0.00	/							
	/							Average
-10.0								Average
-20.0	~had		1	-	hard all by the second	and the state of t		
-30.0								
-40.0								Max Hold
-50.0								
Center 1.74500 GHz					Span 2	5.00 MHz		
Res BW 240 kHz		#VBW 750	kHz			ep 1 ms		Min Hold
Occupied Bandwid		Total	Power	32.0	dBm			
9	.0307 MHz							Detector
Transmit From Error	-227.70 kHz	% of C	BW Power	_ 00	.00 %		Auto	Peak▶ Man
Transmit Freq Error			BWFOWer				Auto	IVIAII
x dB Bandwidth	10.03 MHz	x dB		-26.	00 dB			
MSG				STATUS				

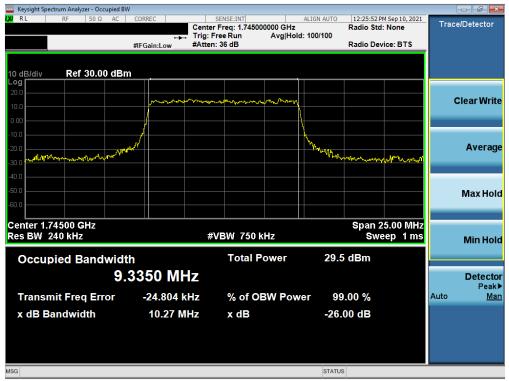
Plot 7-67. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT A)



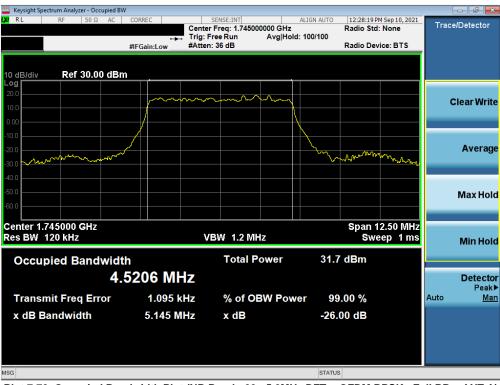
Plot 7-68. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB - ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-69. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT A)



Plot 7-70. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT A)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Keysight Spectrum Analyzer											
X/RL RF	50Ω A	AC COR	REC	Cente	SENSE:INT r Freg: 1.745	000000 GHz	ALIGN AUTO	12:28:50 PM Radio Std:	4 Sep 10, 2021	Trace	e/Detector
			÷	📕 Trig: F	Free Run		ld: 100/100				
		#IFC	Gain:Low	#Atter	n: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 3	0.00 c	dBm	_								
20.0											
10.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mann				C	Clear Write
0.00			/				N				
		/					L.				
10.0							\sim				Average
20.0	m.	~						www.			Average
-30.0											
40.0											
50.0											Max Hold
-60.0											
Center 1.745000 G	Hz							Span 1	2.50 MHz		
Res BW 120 kHz				v	BW 1.2 N	Hz			ep 1 ms		Min Hold
						_					Milling
Occupied Ba					Total	Power	29.6	dBm			
		4.52	14 M	Hz							Detector
T			7 055	1-11-	0/ - 5 6	DW D		00.0/		Auto	Peak►
Transmit Freq			-7.855	KHZ	% OT C	DBW Pov	ver 99	.00 %		Auto	Man
x dB Bandwidt	h		5.329	MHz	x dB		-26.	00 dB			
SG							STATUS	3			

Plot 7-71. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB – ANT A)



Plot 7-72. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT A)

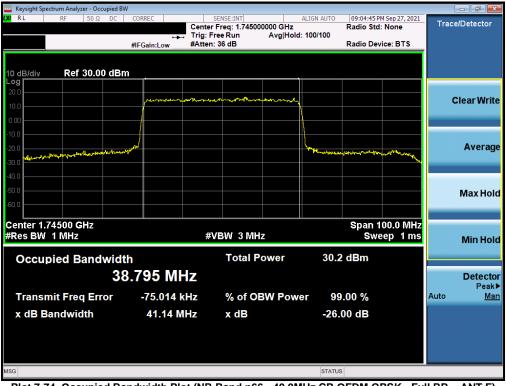
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NR Band n66 – ANT F



Plot 7-73. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT F)

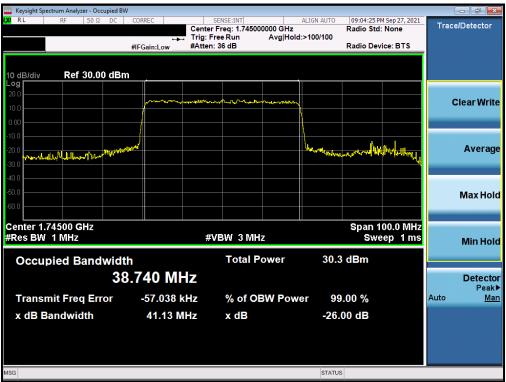


Plot 7-74. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB – ANT F)

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Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT F)



Plot 7-76. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT F)

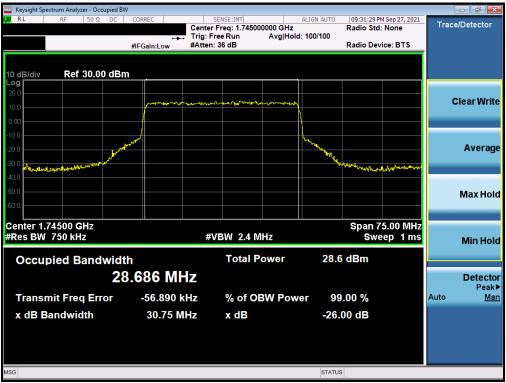
FCC ID: A3LSMS901U	PCTEST* Proud to be part of ® element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-77. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB - ANT F)



Plot 7-78. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT F)

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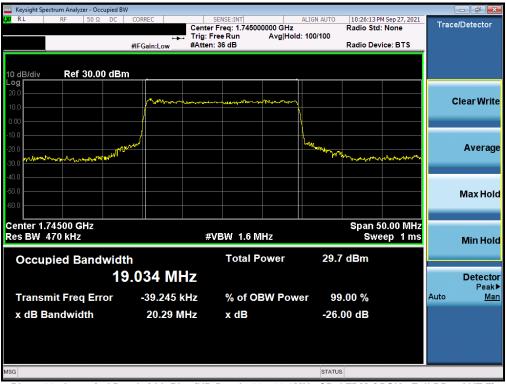
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🔤 Keysight Spectrum Analyzer - Occupied	BW				
<mark>LX/</mark> R L RF 50 Ω DC	CORREC	SENSE:INT sense: 1.74500000	ALIGN AUTO	10:25:43 PM Sep 27, 2021 Radio Std: None	Trace/Detector
	Trig	g: Free Run A	vg Hold: 100/100		
	#IFGain:Low #At	ten: 36 dB		Radio Device: BTS	
10 dB/div Ref 30.00 dE	3m				
Log 20.0					
	man	man Pomo w man	~~		Clear Write
10.0					
0.00					
-10.0					
-20.0					Average
-30.0 gran war and the stranger with	๗ๅ ๅๅ๗๚			warran warrant the	
-40.0					
-50.0					Max Hold
-60.0					maxinora
Center 1.74500 GHz				Span 50.00 MHz	
Res BW 470 kHz		#VBW 1.6 MHz		Sweep 1 ms	Min Hold
Occupied Bandwig	ith	Total Pow	ver 31.9	dBm	
	8.013 MHz				Detector Peak▶
Transmit Freq Error	-540.66 kHz	% of OBW	Power 99	.00 %	Auto <u>Man</u>
x dB Bandwidth	19.34 MHz	x dB	26	00 dB	
	19.34 MINZ	X UD	-20.		
MSG			STATU	6	

Plot 7-79. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM BPSK - Full RB - ANT F)



Plot 7-80. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB - ANT F)

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Plot 7-81. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB – ANT F)



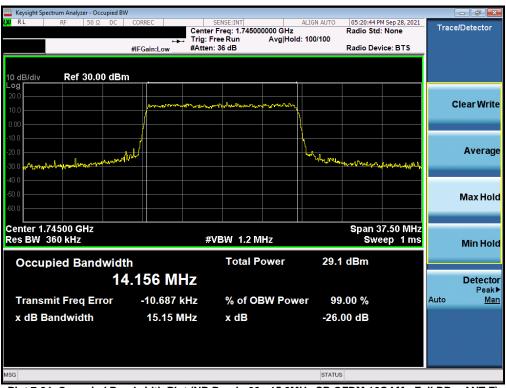
Plot 7-82. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT F)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupie						X
ΙΧΊ RL RF 50 Ω D	Cen	SENSE:INT ter Freq: 1.745000000 GHz : Free Run Avg Hc	ALIGN AUTO	05:21:12 PM Sep 28, 2021 Radio Std: None	Trace/Deteo	ctor
		en: 36 dB		Radio Device: BTS	_	
10 dB/div Ref 30.00 d	IBm		-,			
20.0						
10.0	Maryan	ᡝᢍ᠋ᡃᠿᡀᡎᢇᠾᢇᢛᡵᡰᡊᢦ᠇ᠬᢦᡇᢦᠬᡟᡁᢇᢉᢏᠵᢉᢩ	<u>۸</u>		Clear	Nrite
0.00						
-10.0						
-20.0	want -		Milderin . An a		Ave	erage
-30.0 sporthallower and and the state			2010/01/01	alan and a subserver and a subserv		
-40.0						
-50.0					Max	Hold
-60.0						_
Center 1.74500 GHz				Span 37.50 MHz		
Res BW 360 kHz		#VBW 1.2 MHz		Sweep 1 ms	Min	Hold
Occupied Bandwi	idth	Total Power	29.5	dBm		
	14.237 MHz				Det	ector
				~~ ^/		Peak ▶
Transmit Freq Error		% of OBW Pov		00 %	Auto	Mar
x dB Bandwidth	15.24 MHz	x dB	-26.0	0 dB		
ASG			STATUS			

Plot 7-83. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB - ANT F)



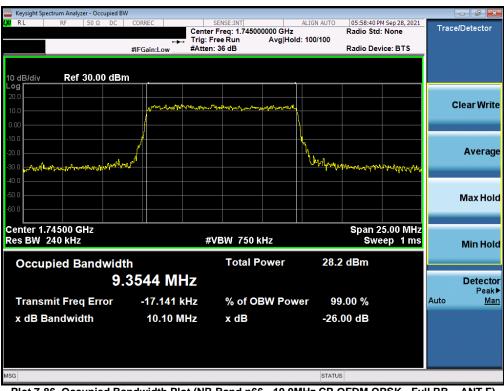
Plot 7-84. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB - ANT F)

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Plot 7-85. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT F)



Plot 7-86. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB – ANT F)

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Plot 7-87. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT F)



Plot 7-88. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT F)

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Plot 7-89. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB – ANT F)



Plot 7-90. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT F)

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7.4 Spurious and Harmonic Emissions at Antenna Terminal

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 10th 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.

The minimum permissible attenuation level of any spurious emission is $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 18GHz (separated into at least two plots per channel)
- 2. RBW ≥ 100kHz
- 3. VBW \geq 3 x RBW
- 4. Detector = RMS
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

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

- 1. Per Part 27 and RSS-139, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz and a resolution bandwidth of 1MHz for measurements above 1GHz.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

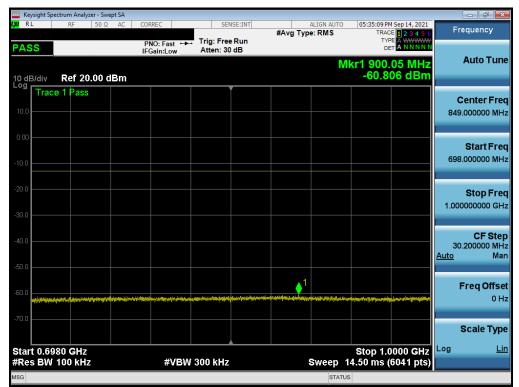
FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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LTE Band 71

ASS PNO: Fast Trig: Free Run IFGain:Low #Avg Type: RMS TRACE 22.345 of TYPE Frequency ASS PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 661.85 MHz -60.495 dBm Auto Tu Og EMdiv Ref 20.00 dBm Center F 346.000000 M Og Trace 1 Pass Start F 30.00000 M Out Start F Start F 30.00000 M Out Start F Start F Start F S					vept SA		sight Spectrum	
ASS IFGain:Low Atten: 30 dB Dert ANNNN IFGain:Low Atten: 30 dB Mkr1 661.85 MHz -60.495 dBm Auto Tu OdB/div Ref 20.00 dBm -60.495 dBm Center F 346.00000 M -60.495 dBm -60.495 dBm Start F 00 - - - - - 00 - - - - - - 00 - - - - - - - 00 - </td <td>Type: RMS TRACE 123456 Frequency</td> <td></td> <td></td> <td>CORREC</td> <td>2 AC</td> <td>F 50</td> <td>F</td> <td>lxi Rl</td>	Type: RMS TRACE 123456 Frequency			CORREC	2 AC	F 50	F	lxi Rl
Operation Contract 1 Pass Center F 000 Center F Center F <t< td=""><td>DET A NNNNN</td><td></td><td></td><td></td><td></td><td></td><td>S</td><td>PAS</td></t<>	DET A NNNNN						S	PAS
Image: Second	Mkr1 661.85 MHz Auto Tune -60.495 dBm				dBm	F 20 00	Idiu De	10 40
Center F 346.00000 M 300		Ť						
00 Start Fi 00 <td< td=""><td>Center Freq</td><td></td><td></td><td></td><td></td><td></td><td></td><td>40.0</td></td<>	Center Freq							40.0
0.0 Start F 0.0 Stort F	346.000000 MHz							10.0
0.0 30.00000 M 0.0 500 F 662.00000 M								0.00
Stop F 662.00000 M	Start Freq 30.000000 MHz							
								-10.0
	Stop Freq							-20.0
	662.000000 MHz							
								-30.0
	CF Step 63.200000 MHz							-40.0
								-50.0
	Freq Offset							-60.0
	0 Hz							
	Scale Type							-70.0
tart 30.0 MHz Stop 662.0 MHz ^{Log} Res BW 100 kHz #VBW 300 kHz Sweep 30.34 ms (12641 pts)		300 kHz	#\/R\\/					
		 300 KHZ	# V D VV			78112		MSG

Plot 7-91. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Low Channel)



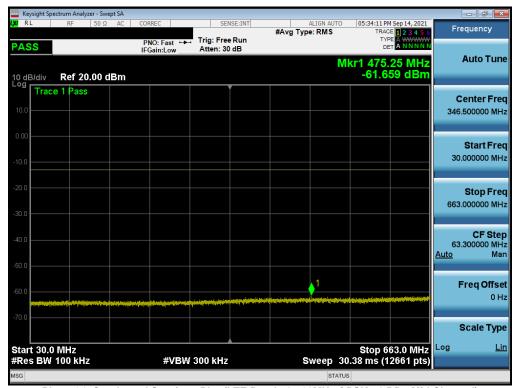
Plot 7-92. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Low Channel)

FCC ID: A3LSMS901U	Poud to be part of @ element	PART 27 MEASUREMENT REPORT	UNG	Approved by: Technical Manager	
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www. Keysight Spectrum Analyzer - Swept S	A				
LX/ RL RF 50Ω A	C CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	05:35:28 PM Sep 14, 2021 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Fast +++ IFGain:Low	Trig: Free Run Atten: 30 dB	"a)periode		
10 dB/div Ref 20.00 dBr	n		Mł	r1 7.227 0 GHz -43.291 dBm	Auto Tune
10.0 Trace 1 Pass					Center Freq 5.50000000 GHz
-10.0					Start Freq 1.000000000 GHz
-20.0					Stop Freq 10.000000000 GHz
-40.0			1 		CF Step 900.000000 MHz <u>Auto</u> Man
-60.0					Freq Offset 0 Hz
-70.0					Scale Type
Start 1.000 GHz #Res BW 1.0 MHz	#VBW 3	3.0 MHz	Sweep 15	Stop 10.000 GHz 6.60 ms (18001 pts)	Log <u>Lin</u>
MSG			STATUS	3	

Plot 7-93. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Low Channel)



Plot 7-94. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Mid Channel)

FCC ID: A3LSMS901U	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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🚾 Keysight Spe			ot SA										e X
X/RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Ava Tu	ALIGN AUTO		M Sep 14, 2021	Freque	ncy
PASS				PNO: I IFGain	ast ↔ Low	Trig: Fre Atten: 3			pe. runo	TY			_
10 dB/div Log	Ref 20	.00 di	Bm						М	kr1 884. -60.6	40 MHz 64 dBm	Aut	o Tune
10.0 Trace	e 1 Pass											Cent 849.000	er Frec DOO MH2
-10.00												Sta 698.0000	I rt Frec DOO MH2
-20.0												Sto 1.000000	o p Frec 000 GHz
-40.0												0 30.2000 <u>Auto</u>	F Step 000 MH: Mar
-60.0	nstate at your fea		****	har straig that an	hi ya angadi	<u>n hybrigan tha sta</u>	ntere filteranterenter		ung und state and an	terstal at a still point	dinan tining tang tang tang tang tang tang tang ta	Frec	I Offse 0 Ha
-70.0												Sca	іе Туре
Start 0.69 #Res BW					#VBW	300 kHz	2		Sweep 1	Stop 1. 4.50 ms (0000 GHz 6041 pts)	Log	Lin
MSG									STATUS	5			

Plot 7-95. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Mid Channel)



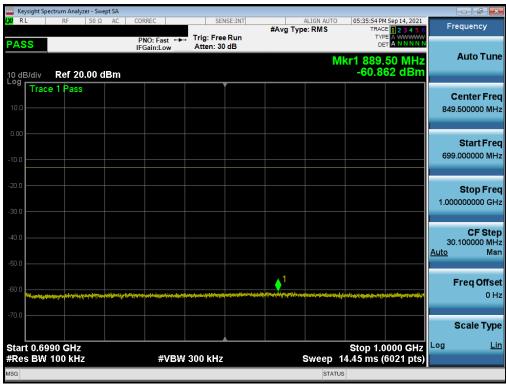
Plot 7-96. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - Mid Channel)

FCC ID: A3LSMS901U		PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analyze		t SA									_	
X RL	RF	50 Ω	AC	CORREC		SE	INSE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Sep 14, 2021	Fr	equency
PASS				PNO: F IFGain:l	ast ↔ .ow	Trig: Fre Atten: 3		" 8)P		TY D			
10 dB/div	Ref 20.	00 dE	3m						Μ	kr1 651 -61.5	.15 MHz 35 dBm		Auto Tune
Log Trac	e 1 Pass						Ĭ					c	enter Frec
10.0												346	.500000 MHz
0.00													Start Fred
-10.0												30	.000000 MHz
-20.0													Stop Free
-30.0												663	.000000 MHz
-40.0													CF Step .300000 MH
-50.0												<u>Auto</u>	Mar
-60.0												I	Freq Offse 0 Hi
-70.0						TIME I CONTRACTOR			Tolation and a subsection of		a sa Kabupina Jana Jali		0 11
												1	Scale Type
Start 30.0 #Res BW					#VBW	300 kHz		s	weep 30	Stop 6	63.0 MHz 2661 pts)	Log	Lir
MSG									STATUS				

Plot 7-97. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - High Channel)



Plot 7-98. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - High Channel)

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	ectrum Analyze												
LXI RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Typ	ALIGN AUTO		CE 1 2 3 4 5 6	Fre	equency
PASS				PNO: Fa	ast ↔ .ow	Trig: Free Atten: 30				T` [
10 dB/div Log	Ref 20.	00 di	Зm						N	1kr1 9.99 -42.8	3 5 GHz 36 dBm		Auto Tune
10.0	e 1 Pass												e nter Freq 0000000 GHz
-10.0												1.000	Start Freq 0000000 GHz
-20.0												10.000	Stop Freq 0000000 GHz
-40.0			pa ^{ana} na		~						1	900. <u>Auto</u>	CF Step 000000 MHz Man
-60.0												F	F req Offset 0 Hz
													Scale Type
Start 1.00 #Res BW				#	¢VB₩	3.0 MHz		s	weep '	Stop 1 15.60 ms (0.000 GHz 18001 pts)	Log	<u>Lin</u>
MSG									STAT				

Plot 7-99. Conducted Spurious Plot (LTE Band 71 - 20MHz QPSK - 1 RB - High Channel)

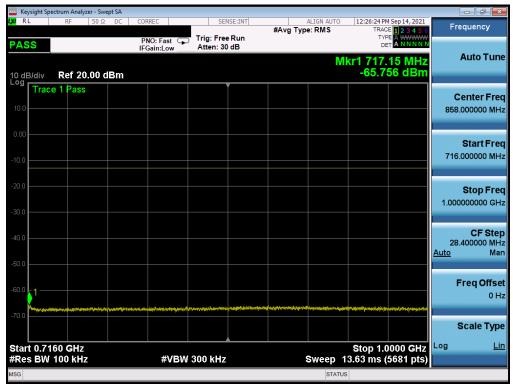
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LTE Band 12

	ectrum Analyzer - Sv		000050	L orwer red			
XV RL	RF 50 9	ΩDC	CORREC	Trig: Free Run	ALIGN AUTO #Avg Type: RMS	12:26:19 PM Sep 14, 2021 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
PASS	Ref 20.00	dBm	IFGain:Low	Atten: 30 dB	N	Ikr1 697.80 MHz -62.45 dBm	Auto Tune
10.0 Trac	e 1 Pass						Center Free 363.950000 MHz
-10.0							Start Free 30.000000 MH
-20.0							Stop Free 697.900000 MH
-40.0							CF Ste 66.790000 MH <u>Auto</u> Ma
-60.0					a a constant and the start of the	1	Freq Offse 0 H
-70.0	an an an an an an an an Anna an		ia an ann a' Ar a to Lonail Mill Abb cu				Scale Type
Start 30.0 #Res BW			#VBV	/ 300 kHz		Stop 697.9 MHz 2.06 ms (13361 pts)	Log <u>Lir</u>
MSG					STATU	JS	

Plot 7-100. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)



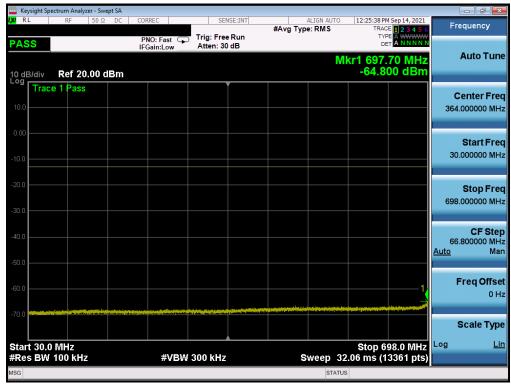
Plot 7-101. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)

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	ectrum Analyzer	- Swept SA									
XI RL	RF	50Ω DC	CORREC	SENS	E:INT	#Avg Typ	ALIGN AUTO e: RMS		M Sep 14, 2021	Fr	equency
PASS			PNO: Fast G	Trig: Free #Atten: 36				TY D			
10 dB/div	Ref 0.00) dBm					M	r1 9.81 -39.3	4 5 GHz 45 dBm		Auto Tune
Log	e 1 Pass			Ĭ							Center Fred
-10.0											0000000 GHz
-20.0											
-20.0											Start Fred
-30.0										1.00	0000000 GHz
-40.0									↓		
-40.0				$\sim\sim\sim$	\sim	~~~				10.00	Stop Free
-50.0										10.00	000000 GH2
~~~											CF Step
-60.0										900 Auto	.000000 MH: Mar
-70.0											in a
											Freq Offset
-80.0											0 H:
-90.0											
											Scale Type
Start 1.00				<b>A</b>				Stop 10	.000 GHZ	Log	Lir
#Res BW	1.0 MHz		#VBW	/ 3.0 MHz		S			8001 pts)		
MSG							STATU	S			

Plot 7-102. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)



Plot 7-103. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)

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Keysigi RL	nt Spectrum RI	Analyzer - Sv F 50 S	DC DC	CORREC	SEI	SE:INT		ALIGN AUTO		4 Sep 14, 2021	Frequency
PASS				PNO: Fast 📮 IFGain:Low	Trig: Free Atten: 30		#Avg Typ	e: RMS	TRAC TYF DE	E 1 2 3 4 5 6 E A WWWWW A N N N N N	Frequency
0 dB/d	liv Re	f 20.00	dBm					Μ	kr1 716. -64.	30 MHz 35 dBm	Auto Tu
10.0 —	race 1 F	Pass									Center Fr 858.000000 M
10.0											<b>Start Fr</b> 716.000000 M
20.0 — 30.0 —											<b>Stop Fr</b> 1.000000000 G
io.o											CF Ste 28.400000 M <u>Auto</u> M
0.0 1	ha wa ya ku wa wa ku ku ku ku	<del>an ing ny fi</del> fi	- and the state of	ور ادار می بود. و این از می بود. و این از می بود. و رو این از می بود.		en saardelije sjochtelije opgege	an a		d ngan upan kan senara ka		Freq Offs 0
70.0											Scale Ty
tart 0 Res E	).7160 C 3W 100	SHZ kHz		#VBW	/ 300 kHz			Sweep 1	Stop 1.0 3.63 ms (	0000 GHz 5681 pts)	Log <u>l</u>
SG								STATUS	5		

Plot 7-104. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)



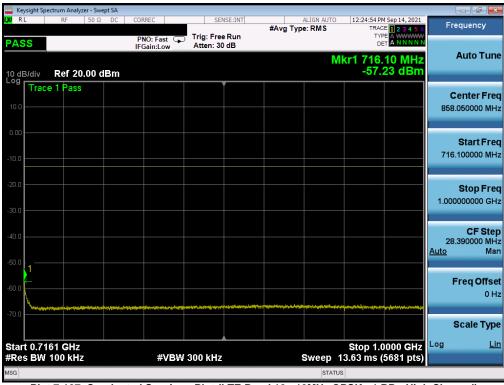
Plot 7-105. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)

FCC ID: A3LSMS901U	PCTEST Preud to be part of the element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	rum Analyzer - Sw									
LXU RL	RF 50 Ω	2 DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		M Sep 14, 2021	Frequency
PASS			PNO: Fast G	Trig: Free Atten: 30				TYI Di		
10 dB/div	Ref 20.00	dBm					Μ	kr1 697. -54.0	.55 MHz 29 dBm	Auto Tune
Log Trace	1 Pass				Ĭ					Center Free
10.0										364.000000 MH:
0.00										
-10.0										Start Free 30.000000 MH;
-10.0										
-20.0										Stop Free
-30.0										698.000000 MH:
-40.0										CF Step
-40.0										66.800000 MH Auto Mar
-50.0									<u> </u>	
-60.0										Freq Offse
	والمتحدث والمحاصر والمحاصر والمحاصر		والمتعادية والمتعادية والمراجع والمراجع				denge d for strigtler trig		فيدجلهم ومتها	U HA
-70.0	a a sur de calificación de la calif	and and any other states of the states of th	and the state of the							Scale Type
Start 30.0 M			-#\ (D) \	2000 kili-				Stop 6	98.0 MHz	Log <u>Lir</u>
#Res BW 1	UU KHZ		#VBV	/ 300 kHz		S			3361 pts)	
ISG							STATUS			h Channol)

Plot 7-106. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)



Plot 7-107. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)

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	ectrum Analyze											
LXI RL	RF	50 Ω D	C COR	REC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Sep 14, 2021	Frequ	ency
PASS			PN	IO:Fast 🖵 Gain:Low	Trig: Free #Atten: 3				TY	PE A WWWWWW ET A N N N N N		
	Def 0.0	0 dBm		in the second seco				М	kr1 9.96	3 0 GHz 94 dBm	Au	to Tune
10 dB/div	Ref 0.0	U aBm							-00.2			
-10.0	e 1 Pass											t <b>er Freq</b> 1000 GHz
-20.0												
-30.0												a <b>rt Freq</b> 1000 GHz
										1		
-40.0				~^~~~	~~~	$\sim$	~~~				<b>St</b> 10.000000	<b>op Freq</b> 1000 GHz
-50.0												CF Step
-60.0											900.000 <u>Auto</u>	000 MHz Man
-70.0												
-80.0											Free	q Offset 0 Hz
-90.0												
											Sca	le Type
Start 1.00 #Res BW				#VBW	3.0 MHz			weep_1	Stop 10 5.60 ms (1	.000 GHz 8001 pts)	Log	Lin
MSG								STATU				

Plot 7-108. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)

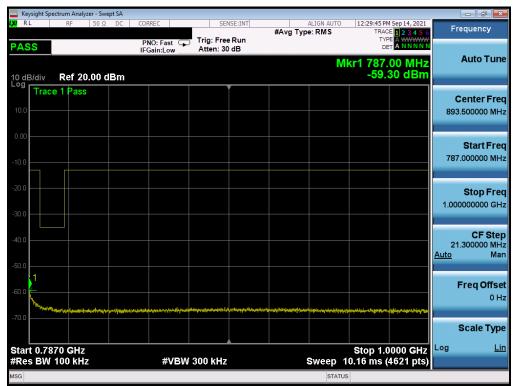
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# LTE Band 13

🔤 Keysight Spectrum Analyzer - Swept SA					
LX RL RF 50Ω DC	CORREC SEM	NSE:INT #Avg Typ		M Sep 14, 2021 CE 1 2 3 4 5 6	requency
PASS	PNO: Fast Free IFGain:Low Atten: 30	e Run	T) E		A
10 dB/div Ref 20.00 dBm			Mkr1 772 -65	.60 MHz .35 dBm	Auto Tune
Trace 1 Pass					Center Freq
10.0				40	3.500000 MHz
0.00					Start Freq
-10.0				3	0.000000 MHz
-20.0					Stop Freq
-30.0				77	7.000000 MHz
-40.0					CF Step
				7 <u>Auto</u>	4.700000 MHz Man
-50.0					Freq Offset
-60.0					0 Hz
-70.0 Helt dela se internet fil in the part of the second se	. A many my server a determine the back and a many day of a server produced by the server of the ser	in en			Scale Type
Start 30.0 MHz			Stop	77.0 MHz Log	Lin
#Res BW 100 kHz	#VBW 300 kHz	s	weep 35.86 ms (	14941 pts)	
MSG			STATUS		

Plot 7-109. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)



Plot 7-110. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

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🔤 Keysight Spectru											e X
L <mark>XI</mark> RL	RF 50	ΩDC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	4 Sep 14, 2021	Frequen	icy
PASS			PNO: Fast IFGain:Low	Trig: Free #Atten: 3		• 11		TYI			
			IFGalli.LOW	#rttern o			MI	cr1 1 56	4 0 GHz	Auto	Tune
10 dB/div	Ref 0.00	dBm						-48.	05 dBm		
Log Trace 1	Pass									Cente	r Fred
-10.0										5.50000000	
-20.0										Star	tFreq
-30.0										1.00000000	
-30.0											
-40.0										Stor	o Freq
∳1		-			$\sim$					10.0000000	
-50.0											
-60.0										CF	= Step
										900.00000 Auto	00 MHz Man
-70.0											
~ ~										Freq	Offset
-80.0											0 Hz
-90.0											
										Scale	е Туре
Start 1.000 (	GHz							Stop 10	.000 GHz	Log	Lin
#Res BW 1.			#VBV	/ 3.0 MHz		S	weep 15	i.60 ms (1	8001 pts)		
MSG							STATUS	6			

Plot 7-111. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

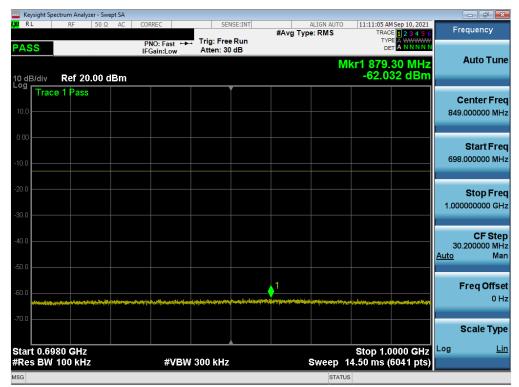
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## NR Band n71

Keysight Spe													
(RL	RF	50 Ω	AC	CORREC			SENSE:INT	#Avg Typ	ALIGN AUT	TI	2 AM Sep 10, 2021 RACE 1 2 3 4 5 6	F	requency
PASS				PNO: IFGair	Fast ↔ Low	Atten:				Mkr1 66	2.35 MHz		Auto Tune
0 dB/div	Ref 20	.00 dl	Bm							-58	219 dBm		
10.0 Trace	e 1 Pass						Ĭ						Center Fred 6.500000 MH:
0.00													
10.0												3	Start Fred 0.000000 MH:
.0.0													Oton Eno
30.0												66	Stop Free 3.000000 MH
10.0													CF Ste
50.0												6 <u>Auto</u>	3.300000 MH Mar
											1		Freq Offse
60.0 <b></b>	a statistic ta ta se da			da na se ana la									он:
70.0													
													Scale Type
tart 30.0 Res BW		, _		_	#\/R\A	300 kH	7		ween	Stop	663.0 MHz (12661 pts)	Log	Lir
SG DV	TOO KII2				#*D44	-900 KI	112			ATUS	(12001 pts)		

Plot 7-112. Conducted Spurious Plot (NR Band n71 -20.0MHz - 1 RB - Low Channel)



Plot 7-113. Conducted Spurious Plot (NR Band n71 - 20.0MHz - 1 RB - Low Channel)

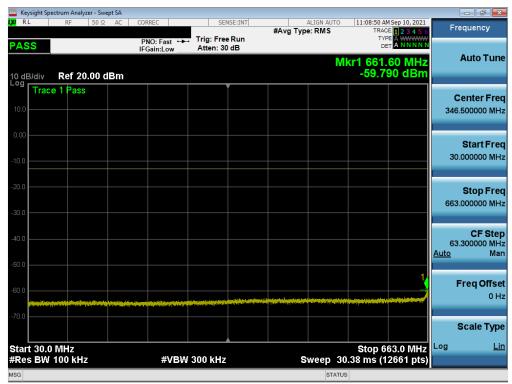
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	ectrum Analyzer - Swe									(	
LXI RL	RF 50 Ω	AC C	ORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		I Sep 10, 2021	Fre	quency
PASS			PNO: Fast ++ IFGain:Low	, Trig: Free #Atten: 36				TYP			
10 dB/div Log	Ref 0.00 dE	3m					M	kr1 6.008 -39.9	3 5 GHz 75 dBm		Auto Tune
-10.0	e 1 Pass										<b>enter Freq</b> 000000 GHz
-20.0					. 1						Start Freq 000000 GHz
-40.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~							10.000	<b>Stop Freq</b> 000000 GHz
-60.0										900. <u>Auto</u>	<b>CF Step</b> 000000 MHz Man
-80.0										F	r <b>eq Offset</b> 0 Hz
-90.0											Scale Type
Start 1.00 #Res BW			#VBM	/ 3.0 MHz		s	weep 1	Stop 10. 5.60 ms (1	000 9112	Log	Lin
MSG							STATU				

Plot 7-114. Conducted Spurious Plot (NR Band n71 - 20.0MHz - 1 RB - Low Channel)



Plot 7-115. Conducted Spurious Plot (NR Band n71 - 20.0MHz - 1 RB - Mid Channel)

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