

# PCTEST

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# MEASUREMENT REPORT

FCC Part 27

#### **Applicant Name:**

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

# Date of Testing:

09/15/2020 – 12/05/2020 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M2009140143-20-R1.A3L

### FCC ID:

### A3LSMG996U

### **APPLICANT:**

# Samsung Electronics Co., Ltd.

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

Certification SM-G996U SM-G996U1 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: 1M2009140143-20-R1.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



FCC ID: A3LSMG996U	PCTEST Poud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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# MEASUREMENT REPORT FCC Part 27



			EIRP		RP	EF	Emission	
Mode	de Bandwidth Modulati		IX Frequency	Max. Power	Max. Power	Max. Power	Max. Power	Emission
			Kange [winz]	[W]	[dBm]	[W]	[dBm]	Designator
-	10 MHz	QPSK	704.0 - 711.0	0.107	20.27	0.065	18.12	9M00G7D
		16QAM	704.0 - 711.0	0.094	19.75	0.058	17.60	9M03W7D
		64QAM	704.0 - 711.0	0.064	18.04	0.039	15.89	8M98W7D
		256QAM	704.0 - 711.0	0.035	15.41	0.021	13.26	8M99W7D
		QPSK	701.5 - 713.5	0.110	20.43	0.067	18.28	4M55G7D
		16QAM	701.5 - 713.5	0.107	20.31	0.066	18.16	4M51W7D
		64QAM	701.5 - 713.5	0.069	18.40	0.042	16.25	4M53W7D
LTE Bond 12		256QAM	701.5 - 713.5	0.037	15.65	0.022	13.50	4M52W7D
LIE Danu 12		QPSK	700.5 - 714.5	0.108	20.33	0.066	18.18	2M72G7D
	0 MU-	16QAM	700.5 - 714.5	0.095	19.76	0.058	17.61	2M70W7D
	3 MHZ	64QAM	700.5 - 714.5	0.065	18.10	0.039	15.95	2M71W7D
		256QAM	700.5 - 714.5	0.088	19.46	0.054	13.17	2M71W7D
		QPSK	699.7 - 715.3	0.105	20.23	0.064	18.08	1M10G7D
		16QAM	699.7 - 715.3	0.093	19.67	0.057	17.52	1M11W7D
1.4 MHZ	1.4 IVIHZ	64QAM	699.7 - 715.3	0.064	18.03	0.039	15.88	1M09W7D
		256QAM	699.7 - 715.3	0.033	15.24	0.020	13.09	1M10W7D
		QPSK	782.0	0.130	21.15	0.079	19.00	8M99G7D
	10 MHz	16QAM	782.0	0.119	20.76	0.073	18.61	8M96W7D
		64QAM	782.0	0.087	19.37	0.053	17.22	8M96W7D
		256QAM	782.0	0.041	16.16	0.025	14.01	8M98W7D
LIE Band 13	5 MHz	QPSK	779.5 - 784.5	0.135	21.31	0.082	19.16	4M55G7D
		16QAM	779.5 - 784.5	0.121	20.82	0.074	18.67	4M52W7D
		64QAM	779.5 - 784.5	0.093	19.66	0.056	17.51	4M51W7D
		256QAM	779.5 - 784.5	0.047	16.75	0.029	14.60	4M52W7D
		QPSK	673.0 - 688.0	0.060	17.75	0.036	15.60	18M0G7D
		16QAM	673.0 - 688.0	0.051	17.07	0.031	14.92	18M0W7D
	20 MHz	64QAM	673.0 - 688.0	0.034	15.28	0.021	13.13	17M9W7D
		256QAM	673.0 - 688.0	0.020	13.01	0.012	10.86	17M9W7D
		QPSK	670.5 - 690.5	0.061	17.83	0.037	15.68	13M5G7D
		16QAM	670.5 - 690.5	0.052	17.19	0.032	15.04	13M5W7D
	15 MHZ	64QAM	670.5 - 690.5	0.034	15.29	0.021	13.14	13M5W7D
		256QAM	670.5 - 690.5	0.020	13.06	0.012	10.91	13M5W7D
LIE Band /1		QPSK	668.0 - 693.0	0.059	17.74	0.036	15.59	9M03G7D
		16QAM	668.0 - 693.0	0.052	17.14	0.032	14.99	9M03W7D
	TUIVIHZ	64QAM	668.0 - 693.0	0.033	15.12	0.020	12.97	9M03W7D
		256QAM	668.0 - 693.0	0.020	12.91	0.012	10.76	9M03W7D
		QPSK	665.5 - 695.5	0.060	17.78	0.037	15.63	4M56G7D
		16QAM	665.5 - 695.5	0.051	17.04	0.031	14.89	4M56W7D
	5 MHZ	64QAM	665.5 - 695.5	0.035	15.39	0.021	13.24	4M56W7D
		256QAM	665.5 - 695.5	0.019	12.78	0.012	10.63	4M56W7D

**Overview Table (<1GHz Bands)** 

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		Tx Frequency EIRP		RP	EF	Emission		
Mode	Bandwidth	Modulation	Pango [MHz]	Max. Power	Max. Power	Max. Power	Max. Power	Designator
			Kange [IMITZ]	[W]	[dBm]	[W]	[dBm]	Designator
		π/2 BPSK	673.0 - 688.0	0.061	17.86	0.037	15.71	18M0G7D
		QPSK	673.0 - 688.0	0.059	17.71	0.036	15.56	19M1G7D
	20 MHz	16QAM	673.0 - 688.0	0.045	16.54	0.027	14.39	19M0W7D
		64QAM	673.0 - 688.0	0.028	14.40	0.017	12.25	19M0W7D
		256QAM	673.0 - 688.0	0.019	12.72	0.011	10.57	19M0W7D
		π/2 BPSK	670.5 - 690.5	0.061	17.89	0.037	15.74	13M5G7D
		QPSK	670.5 - 690.5	0.059	17.74	0.036	15.59	14M2G7D
	15 MHz	16QAM	670.5 - 690.5	0.046	16.67	0.028	14.52	14M2W7D
		64QAM	670.5 - 690.5	0.033	15.17	0.020	13.02	14M2W7D
NP Rond p71		256QAM	670.5 - 690.5	0.018	12.55	0.011	10.40	14M2W7D
INK Danu II/ I		π/2 BPSK	668.0 - 693.0	0.060	17.78	0.037	15.63	9M00G7D
		QPSK	668.0 - 693.0	0.059	17.70	0.036	15.55	9M34G7D
	10 MHz	16QAM	668.0 - 693.0	0.049	16.90	0.030	14.75	9M31W7D
		64QAM	668.0 - 693.0	0.030	14.80	0.018	12.65	9M37W7D
-		256QAM	668.0 - 693.0	0.018	12.55	0.011	10.40	9M34W7D
		π/2 BPSK	665.5 - 695.5	0.062	17.93	0.038	15.78	4M51G7D
	5 MHz	QPSK	665.5 - 695.5	0.059	17.69	0.036	15.54	4M49G7D
		16QAM	665.5 - 695.5	0.051	17.05	0.031	14.90	4M49W7D
		64QAM	665.5 - 695.5	0.033	15.20	0.020	13.05	4M51W7D
		256QAM	665.5 - 695.5	0.018	12.55	0.011	10.40	4M48W7D
		π/2 BPSK	706.5 - 708.5	0.108	20.32	0.066	18.17	13M5G7D
		QPSK	706.5 - 708.5	0.090	19.54	0.055	17.39	14M1G7D
	15 MHz	16QAM	706.5 - 708.5	0.069	18.39	0.042	16.24	14M1W7D
		64QAM	706.5 - 708.5	0.046	16.63	0.028	14.48	14M1W7D
		256QAM	706.5 - 708.5	0.029	14.66	0.018	12.51	14M1W7D
		π/2 BPSK	704.0 - 711.0	0.096	19.82	0.058	17.67	8M95G7D
		QPSK	704.0 - 711.0	0.088	19.43	0.053	17.28	9M32G7D
NR Band n12	10 MHz	16QAM	704.0 - 711.0	0.070	18.45	0.043	16.30	9M33W7D
		64QAM	704.0 - 711.0	0.037	15.63	0.022	13.48	9M33W7D
		256QAM	704.0 - 711.0	0.032	15.04	0.019	12.89	9M32W7D
		π/2 BPSK	701.5 - 713.5	0.091	19.60	0.056	17.45	4M47G7D
		QPSK	701.5 - 713.5	0.085	19.30	0.052	17.15	4M47G7D
	5 MHz	16QAM	701.5 - 713.5	0.065	18.16	0.040	16.01	4M48W7D
		64QAM	701.5 - 713.5	0.036	15.57	0.022	13.42	4M47W7D
		256QAM	701.5 - 713.5	0.028	14.54	0.017	12.39	4M48W7D

Overview Table (<1GHz Bands)

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				EI	Emission	
Mode	Bandwidth	Modulation	Range [MHz]	Max. Power [W]	Max. Power [dBm]	Designator
WCDMA1700	N/A	Spread Spectrum	1712.4 - 1752.6	0.291	24.64	4M15F9W
		QPSK	1720.0 - 1770.0	0.257	24.09	18M0G7D
	20 MH-	16QAM	1720.0 - 1770.0	0.210	23.22	18M0W7D
	20 1011 12	64QAM	1720.0 - 1770.0	0.162	22.09	18M0W7D
		256QAM	1720.0 - 1770.0	0.085	19.28	18M0W7D
		QPSK	1717.5 - 1772.5	0.258	24.12	13M5G7D
	15 MHz	16QAM	1717.5 - 1772.5	0.218	23.38	13M5W7D
	13 101112	64QAM	1717.5 - 1772.5	0.163	22.11	13M5W7D
		256QAM	1717.5 - 1772.5	0.112	20.48	13M4W7D
		QPSK	1715.0 - 1775.0	0.248	23.95	9M01G7D
	10 MHz	16QAM	1715.0 - 1775.0	0.220	23.42	9M00W7D
		64QAM	1715.0 - 1775.0	0.145	21.61	9M00W7D
ITE Band 66/4		256QAM	1715.0 - 1775.0	0.076	18.81	9M00W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.258	24.11	4M54G7D
		16QAM	1712.5 - 1777.5	0.219	23.40	4M54W7D
		64QAM	1712.5 - 1777.5	0.158	21.98	4M55W7D
		256QAM	1712.5 - 1777.5	0.088	19.42	4M53W7D
		QPSK	1711.5 - 1778.5	0.254	24.05	2M72G7D
	3 MHz	16QAM	1711.5 - 1778.5	0.226	23.53	2M71W7D
	5 1011 12	64QAM	1711.5 - 1778.5	0.149	21.74	2M71W7D
		256QAM	1711.5 - 1778.5	0.083	19.17	2M71W7D
		QPSK	1710.7 - 1779.3	0.254	24.04	1M10G7D
	1 4 MH <del>7</del>	16QAM	1710.7 - 1779.3	0.202	23.06	1M11W7D
	1.7 101112	64QAM	1710.7 - 1779.3	0.143	21.55	1M09W7D
		256QAM	1710.7 - 1779.3	0.078	18.91	1M10W7D

**Overview Table (>1GHz Bands)** 

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			T., F.,	EIRP		Emissian
Mode	Bandwidth	Modulation	IX Frequency	Max. Power	Max. Power	Emission
			Kange [winz]	[W]	[dBm]	Designator
		π/2 BPSK	1730.0 - 1760.0	0.336	25.26	38M7G7D
		QPSK	1730.0 - 1760.0	0.337	25.27	38M7G7D
	40 MHz	16QAM	1730.0 - 1760.0	0.257	24.09	38M6W7D
		64QAM	1730.0 - 1760.0	0.206	23.14	38M6W7D
		256QAM	1730.0 - 1760.0	0.127	21.04	38M6W7D
		π/2 BPSK	1725.0 - 1765.0	0.292	24.66	28M6G7D
		QPSK	1725.0 - 1765.0	0.340	25.31	28M6G7D
	30 MHz	16QAM	1725.0 - 1765.0	0.259	24.13	28M7W7D
		64QAM	1725.0 - 1765.0	0.184	22.64	28M7W7D
		256QAM	1725.0 - 1765.0	0.117	20.70	28M6W7D
		π/2 BPSK	1720.0 - 1770.0	0.260	24.16	17M9G7D
		QPSK	1720.0 - 1770.0	0.311	24.92	18M0G7D
	20 MHz	16QAM	1720.0 - 1770.0	0.230	23.62	18M0W7D
		64QAM	1720.0 - 1770.0	0.182	22.61	18M0W7D
NR Band n66		256QAM	1720.0 - 1770.0	0.109	20.38	17M9W7D
AntA		π/2 BPSK	1717.5 - 1772.5	0.277	24.42	13M5G7D
		QPSK	1717.5 - 1772.5	0.317	25.01	14M2G7D
	15 MHz	16QAM	1717.5 - 1772.5	0.237	23.75	14M2W7D
		64QAM	1717.5 - 1772.5	0.181	22.57	14M2W7D
		256QAM	1717.5 - 1772.5	0.115	20.60	14M2W7D
		π/2 BPSK	1715.0 - 1775.0	0.274	24.38	8M65G7D
		QPSK	1715.0 - 1775.0	0.313	24.96	8M64G7D
	10 MHz	16QAM	1715.0 - 1775.0	0.240	23.81	8M65W7D
		64QAM	1715.0 - 1775.0	0.191	22.81	8M63W7D
		256QAM	1715.0 - 1775.0	0.112	20.49	8M63W7D
		π/2 BPSK	1712.5 - 1777.5	0.280	24.47	4M51G7D
	5 MHz	QPSK	1712.5 - 1777.5	0.316	25.00	4M53G7D
		16QAM	1712.5 - 1777.5	0.241	23.82	4M50W7D
		64QAM	1712.5 - 1777.5	0.189	22.77	4M51W7D
		256QAM	1712.5 - 1777.5	0.117	20.68	4M50W7D
	40 MHz	π/2 BPSK	1720.0 - 1770.0	0.201	23.03	38M8G7D
		QPSK	1720.0 - 1770.0	0.158	21.99	38M7G7D
		16QAM	1720.0 - 1770.0	0.146	21.63	38M6W7D
		64QAM	1720.0 - 1770.0	0.104	20.19	38M7W7D
		256QAM	1720.0 - 1770.0	0.077	18.89	38M7W7D
		π/2 BPSK	1717.5 - 1772.5	0.270	24.31	28M6G7D
		QPSK	1717.5 - 1772.5	0.272	24.34	28M5G7D
	30 MHz	16QAM	1717.5 - 1772.5	0.211	23.25	28M6W7D
		64QAM	1717.5 - 1772.5	0.146	21.63	28M6W7D
		256QAM	1717.5 - 1772.5	0.094	19.72	28M7W7D
		π/2 BPSK	1715.0 - 1775.0	0.240	23.81	18M0G7D
		QPSK	1715.0 - 1775.0	0.248	23.95	19M0G7D
	20 MHz	16QAM	1715.0 - 1775.0	0.187	22.73	19M0W7D
		64QAM	1715.0 - 1775.0	0.145	21.60	19M0W7D
NR Band n66		256QAM	1715.0 - 1775.0	0.087	19.40	19M1W7D
Ant I		π/2 BPSK	1712.5 - 1777.5	0.255	24.07	13M5G7D
		QPSK	1/12.5 - 1///.5	0.253	24.03	14M2G7D
	15 MHz	16QAM	1/12.5 - 1///.5	0.193	22.86	14M2W7D
		64QAM	1/12.5 - 1///.5	0.143	21.56	14M3W7D
		256QAM	1/12.5 - 1///.5	0.091	19.61	14M2W7D
		TT/2 BPSK	1730.0 - 1730.0	0.253	24.03	8M96G7D
	40.1411	QPSK 400414	1730.0 - 1730.0	0.250	23.98	9IVI33G7D
	10 MHz	16QAM	1730.0 - 1730.0	0.196	22.92	91VI33VV7D
		64QAM	1730.0 - 1730.0	0.151	21.80	9M32W7D
		256QAM	1730.0 - 1730.0	0.089	19.51	91VI36VV7D
		II/2 BPSK	1745.0 - 1720.0	0.258	24.12	4IVI54G/D
	5 MI -	160444	1745.0 - 1720.0	0.253	24.03	41VI49G7D
		64OAM	1745.0 - 1720.0	0.190	22.93	4101510070
			1745.0 - 1720.0	0.150	10.70	4101510070
	1	ZOQAIVI	1743.0 - 1720.0	0.093	19.70	41VI32VV7D

### **Overview Table (>1GHz Bands)**

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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 Engineering Laboratory, Inc. 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: A3LSMG996U**. 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.: 0551M, 0564M, 0501M

### 2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EVDO Rev. 0/A (BC0, BC1, BC10), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1/FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, UWB, 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.

### 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 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/TIA-603-E-2016.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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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		
-	LTx2	Licensed Transmitter Cable Set	4/9/2020	Annual	4/9/2021	LTx2
-	LTx3	LIcensed Transmitter Cable Set	10/30/2019	Annual	10/30/2020	LTx3
-	LTx4	Licensed Transmitter Cable Set	7/9/2020	Annual	7/9/2021	LTx4
Agilent	N9020A	MXA Signal Analyzer	8/4/2020	Annual	8/4/2021	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	7/17/2020	Annual	7/17/2021	MY52350166
Agilent	E5515C	Wireless Communications Test Set		N/A		GB45360985
Anritsu	MT8820C	Radio Communication Analyzer		N/A		6201300731
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	2/22/2019 Biennial 2/22/2021		128338	
Mini Circuits	TVA-11-422	RF Power Amp	N/A		QA1317001	
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	CMU200	Base Station Simulator		N/A		836536/0005
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	SFUNIT-Rx	Shielded Filter Unit	2/10/2020	Annual	2/10/2021	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2/21/2020	Annual	2/21/2021	102133
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107

Table 5-1. Summary of Test Results

#### 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

#### **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 2<sup>nd</sup> 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 analyzer. 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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# 7.0 TEST RESULTS

### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMG996U
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE/NR/ULCA

Test Condition	Test Description	FCC Part Section(s)	RSS Section(s)	Test Limit	Test Result	Reference
D	Occupied Bandwidth	2.1049	RSS-139(2.3)	N/A	PASS	Section 7.2
UCTE	Conducted Band Edge / Spurious Emissions	2.1051, 27.53	RSS-139(6.6)	> 43 + 10log10(P[Watts]) at Band Edge and for all out-of- band emissions	PASS	Sections 7.3, 7.4
IGNO	Transmitter Conducted Output Power	2.1046	RSS-139(4.1)	N/A	PASS	See RF Exposure Report
0	Frequency Stability	2.1055, 27.54	RSS-139(6.4)	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 71)				PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n71)	ver / Equivalent ver / Equivalent ver / Equivalent ver / Equivalent	PASS	Section 7.6		
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 12/17)				PASS	Section 7.6
G	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 13)	27.50(c)(10)	RSS-130(4.4)	< 3 Watts max. ERP < 5 Watts max. EIRP	PASS	Section 7.6
DIATE	Equivalent Isotropic Radiated Power (WCDMA)				PASS	Section 7.6
RAI	Equivalent Isotropic Radiated Power (CDMA)	27 50(4)(4)	DSS 120(6.5)	< 1 Watto may FIDD	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (NR Band n66)	27.50(0)(4)	RSS-139(6.5)		PASS	Section 7.6
	Equivalent Isotropic Radiated Power (LTE Band 4/66)			PASS	Section 7.6	
	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(f)	RSS-139(6.6)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 - 1610 MHz	PASS	Section 7.7
	Radiated Spurious Emissions	2.1053, 27.53	RSS-139(6.6)	> 43 + 10 log10 (P[Watts]) for all out-of-band emissions	PASS	Section 7.7

Table 7-1. Summary of Test Results

#### 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

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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 2G/3G Automation Version 4.2.

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### 7.2 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  $\ge$  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 7-1. Test Instrument & Measurement Setup

#### Test Notes

None.

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### LTE Band 12



Plot 7-1. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BV	N				
<b>LXI</b> RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	12:19:57 AM Sep 16, 2020	Trace/Detector
	+	. Trig: Free Run	Avg Hold: 100/100	Radio Std. None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	_
10 dB/div Ref 40.00 dBn	n				
Log					
30.0					Clear Write
20.0		al ann a a an hard a			
10.0		an manufacture and a film of order	mar and the second s		
0.00	/		<u> </u>		
-10.0			M		Average
-20.0					
-30.0 m huga human march	กการ		"Ball (1. 1987)	4-wohn granger and	
40.0				" When	
-40.0					Max Hold
-50.0					
Center 707.50 MHz				Span 25.00 MHz	
#Res BW 240 kHz		#VBW 750 k	κHz	Sweep 1ms	Min Hold
Occupied Bandwidt	th	Total P	ower 29	.5 dBm	
8.	9761 M	Hz			Detector
					Peak▶
Transmit Freq Error	-6.024	kHz % of Ol	BW Power 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	9.748 N	lHz xdB	-26	5.00 dB	
MSG			STAT	US	

Plot 7-3. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 256-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW	/				- 6 <b>×</b>				
LXU RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	11:25:51 PM Sep 15, 202 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 dBm	<u>ا</u>								
30.0									
20.0					Clear Write				
10.0			and the second						
			\\						
10.0					Average				
20.0			1		, tronugo				
20.0 Marymman handler			4./U9***	Munun					
-30.0									
-40.0					Max Hold				
-50.0									
Center 707.500 MHz				Span 12.50 MH	z				
#Res BW 120 kHz		#VBW 390 k	(Hz	Sweep 1 m	s Min Hold				
	1_	Total P	ower 22.7	7 dBm					
Occupied Bandwidt	n 		ower 32.	abm					
4.	4.5490 MHz								
Transmit Fred Error	12 800 1			0.00 %	Peak▶ Auto Man				
	-12.000		BW FOWEI 33	.00 /6	Auto <u>Imari</u>				
x dB Bandwidth	5.011 N	lHz xdB	-26.	00 dB					
MSG			STATU	S					

Plot 7-5. Occupied Bandwidth Plot (LTE Band 12 - 5MHz QPSK - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB Configuration)

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🔤 Keysight Spectrum Analyzer - Occupied BW									
<b>LXI</b> RF 50 Ω DC	CORREC	SENSE:	INT 500000 MH	ALIG	GN AUTO	11:26:52 P	4 Sep 15, 2020	Trac	e/Detector
		. Trig: Free Ru	in Avg F	lold: 10	00/100	Ruulo Stu.	None		
	#IFGain:Low	#Atten: 36 dE	3			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm				_					
30.0									
20.0								(	Clear Write
10.0	mm	mmm	mann	~					
0.00	1			h					
0.00	<u> </u>								Average
-10.0									Average
-20.0	m			<u> </u>	manyalah	A Amo al			
-30.0				+-		a te ny sary	r un sout		
-40.0									Max Hold
-50.0				++					
Cepter 707 500 MHz	I					Snan 1	2 50 MHz		
#Res BW 120 kHz		#VBW	390 kHz			Swe	ep 1 ms		
									MITHOIU
Occupied Bandwidtl	า	Т	otal Power		29.8	dBm			
4.	5346 MI	-IZ							Detector
									Peak►
Transmit Freq Error	1.392	KHZ %	of OBW Po	ower	99.	.00 %		Auto	Man
x dB Bandwidth	4.973 N	IHz x	dB		-26.0	)0 dB			
MSG					STATUS				

Plot 7-7. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 256-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW							
KF 50 Ω DC C	ORREC	SENSE:INT	ALIGN AUT	0 11:14:07 P	M Sep 15, 2020	Trace	/Detector
	• <b>•</b> •	Trig: Free Run	Avg Hold:>100/100	)			
#I	FGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm							
30.0							
20.0	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)					c	lear Write
10.0							
0.00			<u>\</u>				
-10.0	$\downarrow$		\				Average
-20.0	/		Low	^~~~~~	$\sim$		
-30.0 pm							
-40.0							Max Hold
-50.0							Maxilola
Center 707.500 MHz		#\/B\\/_\000	LI-	Span 7	.500 MHz		
#Res BW 08 KHZ		#VBW 220 K	Π2	Swee	p 3.8 ms		Min Hold
Occupied Bandwidth		Total P	ower 32	2.8 dBm			
27	157 MH	7					Detector
2.1		12					Peak►
Transmit Freq Error	100	Hz % of OE	BW Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	3.013 M	Hz xdB	-2	6.00 dB			
MSG			STA	TUS			

Plot 7-9. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW							[	
LXU RF 50 Ω DC CORF	REC	SENSE:INT	000 MH-	ALIGN AUTO	11:15:03 P	M Sep 15, 2020	Trace	e/Detector
	Tri	ig: Free Run	Avg Hold	i: 100/100	Raulo Stu	None		
#IFG	ain:Low #A	tten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm								
30.0							c	lear Write
20.0	man		m					
10.0								
0.00	/							
-10.0				<u>4</u>				Average
-20.0				Jel wardene	ny trans	Cather Dat		
-30.0 1						or property of		
-40.0								
-50.0								Μάλ ΠΟΙϤ
Center 707.500 MHz					Span 7	.500 MHz		
#ResBW 68 kHz		#VBW 220 k	Hz		Swee	p 3.8 ms		Min Hold
Occupied Bandwidth		Total P	ower	20.7	dBm			
Occupied Bandwidth		TOtal	OWEI	23.1	ubiii			
2.70	67 MHz							Detector
Transmit Frag Error	4 722 kU-	% of O		00	00.0/		Auto	Peak ► Man
Transmit Freq Error	-1.733 KHZ	% 01 01	SVV FOW	ei aa	.00 %		Auto	INIGIT
x dB Bandwidth	3.004 MHz	x dB		-26.	00 dB			
MSG				STATUS	;			

Plot 7-11. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 64-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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M     RF     SO Q     DC     CORREC     SENSE:INT     Alian Auto     Iterst: Stop Sep 15: 2020     Trace/Detector       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Radio Std: None     Radio Std: None     Radio Device: BTS       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Radio Device: BTS     Clear Write       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Radio Device: BTS     Clear Write       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Radio Device: BTS     Clear Write       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Clear Write       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Clear Write       Image: Control of the sep 15: 2020       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020       Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 15: 2020     Image: Control of the sep 16: 2020 <th>🔤 Keysight Sp</th> <th>ectrum Analyzer - Oco</th> <th>cupied BW</th> <th></th>	🔤 Keysight Sp	ectrum Analyzer - Oco	cupied BW											
Clear Write     Clear Write       #IFGain:Low     #Atten: 36 dB       #IFGain:Low     #Atten: 36 dB       AvgjHold: 100/100     Radio Device: BTS       Radio Device: BTS     Radio Device: BTS       IO dB/div     Ref 40.00 dBm       Control     Image: Control Control       IO dB/div     Ref 40.00 dBm       IO dB/div     Image: Control Control       IO dB/div     Ref 40.00 dBm       IO dB/div     Image: Control Contreletee       Con	<mark>IXI</mark>	RF 50 Ω	DC (	CORREC		S	ENSE:INT	0000 MIL	4	ALIGN AUTO	10:55:10 P	M Sep 15, 2020	Trac	e/Detector
#IFGein:Low     #Atten: 36 dB     Radio Device: BTS       10 dB/div     Ref 40.00 dBm     Image: Clear Write       200     Image: Clear Write     Image: Clear Write       100     Image: Clear Write     Image: Clear Write <t< td=""><td></td><td></td><td></td><td></td><td>•<b>•</b></td><td>. Trig: Fr</td><td>ee Run</td><td>Avg</td><td>Hold:</td><td>100/100</td><td>Radio Stu</td><td>. None</td><td></td><td></td></t<>					• <b>•</b>	. Trig: Fr	ee Run	Avg	Hold:	100/100	Radio Stu	. None		
10 dB/div     Ref 40.00 dBm       20 0     20 0			ŧ	#FGain:L	ow	#Atten:	36 dB				Radio Dev	vice: BTS		
Image: Construction of the second														
Log     Image: Clear Write       200     Image: Clear Write <td< td=""><td>10 dB/div</td><td>Ref 40.0</td><td>0 dBm</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	10 dB/div	Ref 40.0	0 dBm											
200     Clear Write       200     Clear Write       100     Clear Write       100     Clear Write       200     Clear Write       100     Clear Write       200     Max Hold       200	Log													
200     4	30.0													Clear Write
100     Average       200     Bandwidth     Total Power       200     Average       200     Bandwidth     1.246 MHz       200     Average       200     Bandwidth     1.246 MHz       200     Average       200     Average       200     Average       200     Average       200     Bandwidth     Average       200     Average       200     Average       200     Average       200     Average       200     <	20.0				$\sim$	~~~~~~	$\sim$	m						
Average Average Average Max Hold Center 707.500 MHz #Res BW 33 kHz Transmit Freq Error x dB Bandwidth 1.246 MHz x dB ban	10.0													
Average Average Average Max Hold Max Hold Center 707.500 MHz #Res BW 33 kHz Transmit Freq Error x dB Bandwidth 1.246 MHz x dB Average Max Hold Detector Peakb Auto Max Max Max Max Max Max Max Max	0.00								<b>1</b>					
200     300     4	-10.0			-+					$\rightarrow$					Average
300     400	-20.0			-+					_\_	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
40.0     60.0     Max Hold       60.0     Max Hold       Center 707.500 MHz     #VBW 110 kHz     Span 3.500 MHz       #Res BW 33 kHz     #VBW 110 kHz     Span 3.500 MHz       Occupied Bandwidth     Total Power     32.3 dBm       1.0963 MHz     Total Power     99.00 %       x dB Bandwidth     1.246 MHz     x dB     -26.00 dB	-30.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	~^								m		
500     Image: Second state of the second s	-40.0													Maylald
Center 707.500 MHz     Span 3.500 MHz       #Res BW 33 kHz     #VBW 110 kHz     Span 3.500 MHz       Øccupied Bandwidth     Total Power     32.3 dBm       1.0963 MHz     Detector       Transmit Freq Error     -20.088 kHz     % of OBW Power     99.00 %       x dB Bandwidth     1.246 MHz     x dB     -26.00 dB	-50.0													Max Hold
Center 707.500 MHz #Res BW 33 kHz     Span 3.500 MHz #VBW 110 kHz     Span 3.500 MHz Sweep 3.067 ms     Min Hold       Occupied Bandwidth     Total Power     32.3 dBm     Detector       1.0963 MHz     Transmit Freq Error     -20.088 kHz     % of OBW Power     99.00 %       x dB Bandwidth     1.246 MHz     x dB     -26.00 dB     Detector	-30.0													
#Res BW 33 kHz   #VBW 110 kHz   Sweep 3.067 ms     Occupied Bandwidth   Total Power   32.3 dBm     1.0963 MHz   Transmit Freq Error   -2.088 kHz   % of OBW Power   99.00 %     x dB Bandwidth   1.246 MHz   x dB   -26.00 dB	Center 70	)7.500 MHz									Span 3	3.500 MHz		
Occupied Bandwidth   Total Power   32.3 dBm     1.0963 MHz   Image: Comparison of the system of	#Res BW	33 kHz				#V	BW 110	kHz			Sweep	3.067 ms		Min Hold
Coccupied Bandwidth   Total Power   S2.3 dBin     1.0963 MHz   Detector     Transmit Freq Error   -2.088 kHz   % of OBW Power   99.00 %     x dB Bandwidth   1.246 MHz   x dB   -26.00 dB	0	niad Dand	ماغاء				Total	Dowor		22.2	dPm			
1.0963 MHz     Detector       Transmit Freq Error     -20.088 kHz     % of OBW Power     99.00 %       x dB Bandwidth     1.246 MHz     x dB     -26.00 dB	Occu	plea Bana	wiath			-	TOLAT	Ower		52.5	UDIII			
Transmit Freq Error     -2.088 kHz     % of OBW Power     99.00 %     Auto     Man       x dB Bandwidth     1.246 MHz     x dB     -26.00 dB			1.0	963	MH	z								Detector
x dB Bandwidth 1.246 MHz x dB -26.00 dB	Traper	mit Erog Er		2	000-1		% of O		0.000	r 00	00 %		Auto	Peak ► Man
x dB Bandwidth 1.246 MHz x dB -26.00 dB	Transi	mit Freq En	0I	-2.	<b>U00</b>		% OI U		owe	1 99	.00 %		Auto	Intari
	x dB B	andwidth		1.2	246 M	Hz	x dB			-26.	00 dB			
MSG STATUS	MSG								_	STATUS	6			

Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ revenue:	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupie	d BW				
LXI RF 50 Ω D	C CORREC	SENSE:INT		10:56:13 PM Sep 15, 2020	Trace/Detector
	·	Trig: Free Run	Avg Hold: 100/100	Radio Stu. None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 d	Bm				
Log					
30.0					Clear Write
20.0		N			Cicarturite
10.0		1 Contraction of the states	when h		
0.00					
-10.0	ſ				Average
-20 D	/		\ \		Ŭ
-20.0			1 million	mmm	
-30.0 mm mmmmm				Mark Con	
-40.0					Max Hold
-50.0					
Contor 707 500 MHz				Enon 2 500 MU	
#Pes BM 33 kHz		#VRM 110 k	Hz	Sween 3.067 ms	
#RC3 BW 33 KH2		WADAA LLON	112	oweep 5.007 ma	Min Hold
Occupied Bandwi	dth	Total P	ower 29.	0 dBm	
Coccupied Ballatt		I-			
	1.0912 MF	1Z			Detector
Transmit Fred Error	846	Hz % of O	SW Power 9	9 00 %	Auto Man
x dB Bandwidth	1.239 M	Hz xdB	-26	.00 dB	
MSG			STATU	IS	

Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 256-QAM - Full RB Configuration)

### NR Band n12

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Keysight Spectrum Analyzer - Occupied B	W				
LXV RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF ALI	IGN AUTO 10:15:04 AM Radio Std:	Nov 06, 2020	Trace/Detector
	Trig:	Free Run Avg Hold: 10	00/100		
	#IFGain:Low #Atte	n: 36 dB	Radio Devi	ce: BTS	
10 dB/div Ref 30.00 dB	m				
20.0					
10.0	m	warman warman			Clear Write
0.00					
0.00					
-10.0					A
-20.0	200				Average
-30.0					
-40.0			\\	、	
-50.0			~	Ma www.www.	Max Hold
-60.0					
			<b>0</b>	7.5.8411-	
Center 707.5 MHZ #Pas BM 220 kHz	4	#V/BM/ 010 kHz	Span : Swe	an 1 me	
TRES DW ZZO KIIZ		FVDVV STORIIZ	3000	ep i liis	Min Hold
Occupied Bandwid	th	Total Power	33.3 dBm		
1	2 454 MUZ				Detector
	5.454 WINZ				Peak►
Transmit Freq Error	-351.47 kHz	% of OBW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	14 39 MHz	v dB	-26 00 dB		
	14.55 14112	X UB	-20.00 dB		
MSG			STATUS		

Plot 7-17. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-18. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupied BW						
LXI RE 50 Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 10:16:5	2 AM Nov 06, 2020	Tracel	Detector
	Trig	: Free Run Avg Hol	d: 100/100	ta: None		
	#IFGain:Low #Att	en: 36 dB	Radio D	evice: BTS		
10 dB/div Ref 30.00 dBm						
Log						
20.0	00				CI	ear Write
10.0		$\sqrt{1-1}$				
0.00						
-10.0						
-20.0	~~		man			Average
			m			····· <b>J</b> -
-30.0			1 X			
-40.0				Lora		
-50.0					1	Max Hold
-60.0						
#Bec BM 220 kHz		#\/R\M 010 kHz	spa	11 37.3 WINZ		
#Res DW 220 RHZ		#VDVV STORIZ		weep rms		Min Hold
Occupied Bandwidt	'n	Total Power	31.0 dBm			
	494 MIL					
14	.134 MHZ					Detector
Transmit Freq Error	13.241 kHz	% of OBW Pow	ver 99.00 %		Auto	Man
x dB Bandwidth	14.99 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-19. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 16QAM - Full RB)



Plot 7-20. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 64QAM - Full RB)

FCC ID: A3LSMG996U	PCTEST Poud to be part of @ relement	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 222
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🔤 Keysight Spectrum Analyzer - Occupied BW					_	
🗶 RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 10:17:54 A	M Nov 06, 2020	Trace	Detector
	Trig	: Free Run Avg Hold	d: 100/100	: None		
	#IFGain:Low #Att	en: 36 dB	Radio Dev	vice: BTS		
10 dB/div Ref 30.00 dBm						
Log						
20.0					~	oar Write
10.0	man	www.anderson.			C.	ear winte
0.00	/					
-10.0						
.20.0						Average
20.0 A A manufacture washed	m.h.		m. Miller -			
			- Conny			
-40.0			<u> </u>			
-50.0			\	Charlen Line		Max Hold
-60.0						
				07.5 5811-		
Center 707.5 MHZ		#\/D\M_040.kU-	Span	37.5 WHZ		
#Res BW 220 KHZ		#VOW 9TU KHZ	500	eep mis		Min Hold
Occupied Bandwidth	h	Total Power	27.5 dBm			
14	.128 MHZ					Detector
Transmit Freq Error	50.070 kHz	% of OBW Pow	ver 99.00 %		Auto	⊢eak ► <u>Man</u>
x dB Bandwidth	14.98 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-21. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 256QAM - Full RB)



Plot 7-22. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ revenues	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW	1				
LXXIRL RF 50Ω AC	CORREC Cente	SENSE:INT SOURCE OFF r Freq: 707.500000 MHz Free Run AvalHold	ALIGN AUTO 11 Rac d:>100/100	1:08:54 AM Nov 04, 2020 dio Std: None	Trace/Detector
	#IFGain:Low #Atter	n: 36 dB	Ra	dio Device: BTS	
10 dB/div Ref 30.00 dBm	۱				
20.0	purpurpurpurpurpurpurpurpurpurpurpurpurp	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
-10.0 -20.0			Longener		Average
-90.0				and forest	Max Hold
-60.0 Center 707.5 MHz				Span 25 MHz	
Res BW 240 kHz Occupied Bandwidt	# h	VBW 750 kHz Total Power	30.2 dE	Sweep 1 ms 3m	Min Hold
9.1	3186 MHz				Detector Peak▶
Transmit Freq Error	17.285 kHz	% of OBW Pow	ver 99.00	%	Auto <u>Man</u>
x dB Bandwidth	10.06 MHz	x dB	-26.00	dB	
MSG			STATUS		

Plot 7-23. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM QPSK - Full RB)



Plot 7-24. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 16QAM - Full RB)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W				
LX/ RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 11:0	9:30 AM Nov 04, 2020	Trace/Detector
	→→ Trig	: Free Run Avg Hol	d: 100/100	o stu. None	
	#IFGain:Low #Att	en: 36 dB	Radi	o Device: BTS	
10 dB/div Ref 30.00 dB	n				
20 0					
20.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	······································			Clear Write
10.0					
0.00					
-10.0	0.00		mar.		_
-20.0	J <sup>uqu</sup>		and the second s	men line	Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					maxinora
Center 707.5 MHz				Span 25 MHz	
Res BW 240 KHz		#VBW /SUKHZ		sweep 1 ms	Min Hold
Occupied Bandwid	th	Total Power	30.1 dBr	n	
	0007 MUL-				
9.	.3287 WIHZ				Detector
Transmit Freg Error	12.853 kHz	% of OBW Pow	ver 99.00 °	/•	Auto <u>Man</u>
y dB Bandwidth	40 44 MU-	x dD	26.00 d	•	
		хив	-20.00 a	-	
MSG			STATUS		

Plot 7-25. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 64QAM - Full RB)



Plot 7-26. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 256QAM - Full RB)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW								
XX RL RF 50Ω AC		SENSE:INT SOU Center Freq: 707.50 Trig: Free Run	OOOO MHz Avg Hold:	ALIGN AUTO	10:19:14 A Radio Std	M Nov 06, 2020	Trac	e/Detector
	#IFGain:Low	#Atten: 36 dB			Radio Dev	lice: BTS		
10 dB/div Ref 30.00 dBm	<u> </u>							
20.0								
10.0	$\sim$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm				(	Clear Write
0.00								
10.0								
20.0 m mm	$\sim$			my	march -			Average
20.0				~~ ~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mound		Average
-30.0								
-40.0								
-50.0								Max Hold
-60.0								
Center 707.5 MHz					Span	12.5 MHz		
#Res BW 75 kHz		#VBW 300	kHz		Sweep	2.133 ms		Min Hold
Occupied Bandwidt	h	Total I	Power	32.6	dBm			
4	4693 MH	7						Detector
		12-						Peak►
Transmit Freq Error	-8.020 k	Hz % of O	BW Powe	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	4.917 M	Hz xdB		-26.0	00 dB			
MSG				STATUS				

Plot 7-27. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-28. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM QPSK - Full RB)

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Keysight Spectrum Analyzer - Occupied B\	N					<b>X</b> -
LXI RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 10:20:31	AM Nov 06, 2020	Trace/I	Detector
	Trig: F	ree Run Avg Hold	: 100/100	a. None		
	#IFGain:Low #Atten	: 36 dB	Radio De	vice: BTS		
10 dB/div Ref 30.00 dBr	n					
Log						
20.0					CI	ar Write
10.0						
0.00						
-10.0	/	\ \ \ \ \ \ \ \ \ \				
-20.0						Average
20.0 am and and and	and the second sec		winds when when	mm		
-30.0						
-40.0						
-50.0					I	/lax Hold
-60.0						
Contox 202.5 Balls			<u> </u>	40.5 MILL-		
#Pes BW 75 kHz	#	VBM 300 kHz	Sween	12.5 ₩ΠZ 2 133 me		
#Res BW 75 RHz	<i></i>	VDVV JOO KIIZ	Gweep	2.133 1113		Min Hold
Occupied Bandwidt	th	Total Power	30.1 dBm			
Barran Barran Ma	4000 8411-					
4.	4809 MHZ					Detector
Transmit Freq Error	1.731 kHz	% of OBW Powe	er 99.00 %		Auto	Peak ₽ <u>Man</u>
x dB Bandwidth	4 925 MHz	x dB	-26 00 dB			
	-1025-11112	X UD	-20100-010			
MSG			STATUS			

Plot 7-29. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 16QAM - Full RB)



Plot 7-30. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 64QAM - Full RB)

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Keysight Spectrum Analyzer - Occu	upied BW							
LXI RL RF 50 Ω	AC CORREC	SENSE:INT	SOURCE OFF	ALIGN AUTO	10:21:04 A	M Nov 06, 2020	Trac	e/Detector
		🛶 Trig: Free Run	Avg Hold	l: 100/100				
	#IFGain:Low	#Atten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 30.00	) dBm							
20.0								
10.0			hanne				(	Clear Write
0.00								
10.0								
-10.0								Average
-20.0				how	<u>~</u> ^.			Average
-30.0	a horalderald				• ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Manund		
-40.0								
-50.0								Max Hold
-60.0								
Center 707.5 MHz					Span	12.5 MHz		
#Res BW 75 kHz		#VBW 3	00 kHz		Sweep	2.133 ms		Min Hold
								Wint Hora
Occupied Bandy	width	Tot	al Power	27.0	dBm			
	4.4819 N	1Hz						Detector
								Peak►
Transmit Freq Erro	or 3.20	5 kHz % o	f OBW Pow	er 99.	00 %		Auto	Man
x dB Bandwidth	4.858	MHz x di	3	-26.0	0 dB			
MSG				STATUS				

Plot 7-31. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 256QAM - Full RB)

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### LTE Band 13



Plot 7-32. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB Configuration)



Plot 7-33. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	POLITE ST *	PART 27 MEASUREMENT REPORT	NG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 22 of 222
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Keysight Spectrum Analyzer - Occupied B\	V					_	- 6 💌
<b>LXI</b> RF 50 Ω DC	CORREC	SENSE:INT		AUTO 10:25:47 PM	Sep 15, 2020	Tracel	Detector
		Trig: Free Run	Avg Hold: 100/	/100	None		
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBr	n						
Log							
30.0						С	ear Write
20.0		warne her her and	Manafall				
10.0	1						
0.00			<u>}</u>				
-10.0			h				Average
-20.0	marker M		man	Andra .			
-30.0					malaman		
-40.0							
50 0 monte marken walken for the							
-30.0							
Center 782.00 MHz				Span 2	5.00 MHz		
#Res BW 240 kHz		#VBW 7501	(Hz	Swe	ep 1 ms		Min Hold
		Total D		20 E dDm			
Occupied Bandwidt	n	Total F	ower	29.5 dBm			
8.	9592 MI	Hz					Detector
							Peak►
Transmit Freq Error	8.3681	kHz % of O	BW Power	99.00 %		Auto	Man
x dB Bandwidth	9.824 N	/Hz xdB		-26.00 dB			
MSC				CTATUS			
mod				STATUS			

Plot 7-34. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-35. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 22 of 222
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🔤 Keysight Spectrum Analyzer - Occupied BW	/				
<b>LXI</b> RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	09:50:53 PM Sep 15, 2020 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 dBm					
30.0					
20.0					Clear Write
10.0	man		mont		
0.00			<u> </u>		
-10.0			<u> </u>		Average
-20.0	~~~ <sup>_</sup>		Lon Lon	A	
-30.0				Man Month March	
-40.0					Max Hold
-50.0					Muxitoru
Center 782.000 MHz		#\/R\A( 300 k	HZ	Span 12.50 MHz Sween 1 ms	
TZO KIIZ		#VDVV 390P	112	Sweep This	Min Hold
Occupied Bandwidt	h	Total P	ower 30.8	3 dBm	
4	5465 MI	7			Detector
					Peak►
Transmit Freq Error	8.618 k	Hz % of O	BW Power 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	4.950 M	Hz x dB	-26.	00 dB	
MSG			STATU	S	

Plot 7-36. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB Configuration)



Plot 7-37. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ revenue:	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 24 of 222	
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🔤 Keysight Sp	ectrum Analyzer - Occu	upied BW									
L <mark>XI</mark>	RF 50 Ω	DC COR	REC	SE Center F	NSE:INT reg: 782.000	000 MHz	ALIGN AU	TO 09:54:38 P Radio Std	M Sep 15, 2020	Trac	e/Detector
			•	Trig: Fre	e Run	Avg Hol	d: 100/10	0			
		#IFG	ain:Low	#Atten: 3	6 dB			Radio Dev	/ice: BTS		
10 dB/div	Ref 40.00	dBm	_								
30.0											
20.0										(	Clear Write
10.0			mm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	honder	my					
0.00			1				N I				
40.0		/					Y				Average
-10.0		1					1				Average
-20.0	man market	Contract of the other						mangh	<u>ሁንሳለስ</u>		
-30.0									1 a popular		
-40.0											Max Hold
-50.0											
Center 7	82.000 MHz							Span 1	2.50 MHz		
#Res BW	120 kHz			#VE	3W 390 k	Hz		Swi	eep 1 ms		Min Hold
											Millinoid
Occu	pied Band	width			Total P	ower	3	0.7 dBm			
		4.50	57 MI	-Iz							Detector
											Peak▶
Trans	mit Freq Erro	or	-981	Hz	% of O	<b>BW Pow</b>	/er	99.00 %		Auto	Man
x dB E	Bandwidth		4.990 N	IHz	x dB		-	26.00 dB			
MSG							ST	TATUS			

Plot 7-38. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-39. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST* Proud to be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 25 of 222	
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### LTE Band 71



Plot 7-40. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB Configuration)



Plot 7-41. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 26 of 222	
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Keysight Spectrum Analyzer - Occupied BW						[	
L RF 50Ω AC C	ORREC	SENSE:INT	ALI	IGN AUTO 10:33:20	PM Sep 18, 2020	Trace	Detector
		enter Freq: 660.000 rig: Free Run	AvaiHold: 10	Radio St 00/100	a: None		
#	IFGain:Low #	Atten: 36 dB	, training in the second second	Radio De	evice: BTS		
10 dB/div Ref 40.00 dBm							
20.0						C	lear Write
20.0	meneralization	Mullimment mar	monum				
10.0							
0.00							
-10.0			<b>\</b>				Average
.20.0	<u></u>			defense at a			
20.0 Burthelm Person 1912 many ward				and a self the second a second	and the the second		
-30.0					A CONTRACT		
-40.0 June - 10.0							Max Hold
-50.0							
Center 680.50 MHz				Span	50.00 MHz		
#Res BW 470 kHz		#VBW 1.5 M	Hz	SW	reep 1 ms		Min Hold
		Tatal D		24.2 dBm			
Occupied Bandwidth		l otal P	ower	31.3 dBm			
17.	926 MHz	,					Detector
							Peak▶
Transmit Freq Error	-6.023 kHz	z % of OE	3W Power	99.00 %		Auto	<u>Man</u>
v dB Bandwidth	10 60 MHz	v dB		-26 00 dB			
	19.00 MHZ	A UB		-20.00 uB			
MSG				STATUS			

Plot 7-42. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 64-QAM - Full RB Configuration)



Plot 7-43. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 27 of 222	
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Delta   RF   50 Ω   AC   CORREC   SENSE:INT   ALIGN AUTO   10:04:17 PM Sep 18,2020     Center Freq:   680.500000 MHz   Radio Std:   None     Trig:   Free Run   AvgHold:   100/100     #IFGain:Low   #ItGain:Low   Center Freq:   680.500000 MHz   Radio Device: BTS     10 dB/div   Ref   30.00 dBm   Center Freq:   60   Center Freq:     200     Center Freq:   80.500000 MHz   Radio Device: BTS     10 dB/div   Ref   30.00 dBm    Average     200          10 dB/div   Ref         10 dB/div   Ref         200          10 0          10 0          20 0          20 0          20 0 <th< th=""></th<>
Center Freq: 680.500000 MHz Trig: Freq Run Avg Hold: 100/100 #FGain:Low #Atten: 36 dB Center Freq: 680.50000 MHz Radio Std: None Radio Device: BTS Clear Write Clear Write Clear Write Average Max Hold
Image: Presention of the state of the st
In common       In common <t< td=""></t<>
Independence     Ref 30.00 dBm     Independence     Independence <t< td=""></t<>
10 dB/div     Ref 30.00 dBm       Log
Log 200 100 100 100 100 100 100 100
200   Image: Clear Write     100   Image: Clear Write </td
100   Image: Clear write     000   Image: Clear write     100   Image: Clear write     100   Image: Clear write     200   Image: Clear write </td
000   000
Average
Average
20.0   Improve the constraint of the c
-30.0
40.0
50.0 Max Hold
-50.0 Max Hold
Center 680.50 MHz Span 37.50 MHz
#Res BW 360 kHz #VBW 1.1 MHz Sweep 1 ms Min Hold
Occupied Bandwidth Total Power 33.7 dBm
42 524 MUL
13.521 MHZ Detector
Hansinit Freq Error 4.691 KHz % of OBW Power 99.00 %
x dB Bandwidth 14.86 MHz x dB -26.00 dB
MSG STATUS

Plot 7-44. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB Configuration)



Plot 7-45. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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🔤 Keysi	ght Spectrum	Analyzer - Oc	cupied BW									
L <mark>XI</mark> L	RI	F 50 Ω	2 AC COF	RREC	SE	NSE:INT		ALIGN AUTO	10:05:03 P	M Sep 18, 2020	Trac	e/Detector
					Center Fi	req: 680.500	000 MHz	· 100/100	Radio Std	: None	1140	cibereeter
			#IF	Gain:Low	#Atten: 3	6 dB	Avginoid	. 100/100	Radio Dev	vice: BTS		
				Guineon								
10 dB/	div	Ref 30.0	00 dBm	_								
Log												
20.0				permente	Contraction of the second second		haven					Clear Write
10.0												
0.00				/			\					
-10.0				<u> </u>				<u>\</u>				
20.0			a strate					Ν.				Average
-20.0	Canter of the	And the states	A MARKA					The second s	MUN WALL	Mulmun		Average
-30.0												
-40.0												
-50.0												
00.0												Max Hold
-6U.U —												
Cente	ar 690 50	0 MHz							Snan 3	7 50 MHz		
#Dae	BM 360				#\/F	RIA( 1 1 N	1Hz		Sparro	en 1 me		
mixes	DW JO	O KHZ				544 1.114	11 12		OW	ср тшэ		Min Hold
0		d Bane	width			Total P	ower	33 7	dBm			
	cupie	a Danie						00.1				
			13.5	20 M	HZ							Detector
												Peak►
Tra	ansmit	Freq Er	ror	4.631	kHz	% of O	BW Pow	er 99	.00 %		Auto	Man
x d	B Band	width		14 86 1	/Hz	x dB		-26	00 dB			
	B Build			14.001		Adb		20.				
MSG								STATUS	3			

Plot 7-46. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 64-QAM - Full RB Configuration)



Plot 7-47. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 20 of 222	
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Keysight Spectrum Analyzer - Occupied B\	V					
L RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	09:54:08 PM	1 Sep 18, 2020	Trace/Detector
		Center Freq: 680.500	000 MHz	Radio Std:	None	The of Belevior
	#IEGain:Low	#Atten: 36 dB	Avginola.>100/100	Radio Devi	ice: BTS	
	in ouncon					
10 dB/div Ref 40.00 dBr	n <u>,                                    </u>					
Log						
30.0						Clear Write
20.0	man and a start and a start a st	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	ennem			
10.0						
0.00	/		1			
10.0	<i>Y</i>		1			Average
-10.0	1		h			Average
-20.0	mad		Contraction of the second seco	man for any	. Do Ad .	
-30.0					and high high and and	
-40.0						Marchiald
50.0						Max Hold
-5U.U						
Cepter 680 50 MHz				Span 24	5 00 MHz	
#Bec BM 240 kHz		#\/R\// 750 k	<b>U</b> 7	Spanz	on 1 me	
WRES DW 240 RHZ		#8048 750 K	.112	3446	ep mis	Min Hold
Occupied Rendwidt	h	Total P	ower 33	7 dBm		
Occupied Bandwidi		Total I		a Bill		
9.	0297 MH	Z				Detector
						Peak►
Transmit Freq Error	-294	z % of OE	3W Power 9	9.00 %		Auto <u>Man</u>
v dB Bandwidth	10.02 MI	z v dB	-26	00 dB		
	10.02 101		-20	.00 00		
MSC			TAT2	10		
mod			STAT	13		

Plot 7-48. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB Configuration)



Plot 7-49. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Postest *	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 222	
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Keysight Spectrum Analyzer - Occupied BW						
L RF 50Ω AC	CORREC	SENSE:INT	ALIGN	N AUTO 09:54:46 PM	Sep 18, 2020	Trace/Detector
		Senter Freq: 660.000 Trig: Free Run	AvalHold: 100/	/100	None	
	#IFGain:Low #	#Atten: 36 dB		Radio Devi	ce: BTS	
10 dB/div Ref 40.00 dBm						
55.5						Clear Write
20.0	man and a second	mar have been and the second	mound			
10.0	<u>/</u>		<u> </u>			
0.00	<u>/</u>		<u>\</u>			
-10.0	_/					Average
20.0	~		1			Ŭ
20.0 deland month on and and				March March March	manhan	
-30.0						
-40.0						Max Hold
-50.0						
Center 680.50 MHz				Span 2	5.00 MHz	
#Res BW 240 kHz		#VBW 750 k	Hz	Swe	ep 1 ms	Min Hold
Occupied Bandwidth	า	Total P	ower	33.7 dBm		
9 (	1336 MH-	7				Detector
5.0		4				Peak
Transmit Freq Error	-2.532 kH	z % of OE	<b>SW Power</b>	99.00 %		Auto <u>Man</u>
x dB Bandwidth	10.02 MH	z xdB		-26.00 dB		
MSG				STATUS		

Plot 7-50. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-51. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied I	BW				
LXI L RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO 09:38:37	M Sep 18, 2020	Trace/Detector
	Cer	nter Freq: 680.500000 MHz	Radio Sto	I: None	Hacenbettettor
	#IEGain:Low #At	ten: 36 dB	Radio De	vice: BTS	
	In Guin.cow				
10 dB/div Ref 35.00 dB	m				
Log					
25.0	4-1-1-0.04				Clear Write
15.0					Cicul Millio
5.00			\		
-5.00					
3.00					Average
-15.0					Average
-25.0 man flage when some we	ማፍታቸው 		Low but monthly	And my my hard	
-35.0					
45.0					
-43.0					Max Hold
-55.0					
Contor 690 500 MHz				12 50 MU-	
#Boc BM 120 kHz		#\/P\M_200 kHz	Span	12.30 WIHZ	
#Res BW 120 KH2		#APAA 3an KHS	5₩	eep mis	Min Hold
	141-	Total Power	22.6.dDm		
Occupied Bandwid	itn	Total Fower	55.0 UBIII		
4	.5569 MHz				Detector
					Peak►
Transmit Freq Error	-13.997 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	5 063 MH-	v dB	-26 00 dB		
	5.005 MHZ	хub	-20.00 UB		
MSG			STATUS		

Plot 7-52. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB Configuration)



Plot 7-53. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	V					
L RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	09:39:31 PM Se	p 18, 2020	Trace/Detector
		rig: Free Run	AvalHold:>100/100	Radio Std: No	one	
	#IFGain:Low #	Atten: 36 dB		Radio Device:	BTS	
10 dB/div Ref 35.00 dBr	n					
25.0						
45.0	mont	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm			Clear Write
15.0						
5.00	4					
-5.00						
-15.0						Average
250 and thank Manun mom	Jun J		Jonno		1	-
23.0				a construction of A	" With	
-35.0						
-45.0						Max Hold
-55.0						
Center 680.500 MHz				Span 12.5	0 MHz	
#Res BW 120 kHz		#VBW 390 ki	Hz	Sweep	1 ms	Min Hold
Occupied Bandwidt	h	Total Po	ower 33.6	dBm		
4	5575 MHz	,				Detector
	0010 11112					Peak►
Transmit Freq Error	-14.571 kH	z % of OB	W Power 99	.00 %	P	Auto <u>Man</u>
x dB Bandwidth	5.063 MH	z xdB	-26	00 dB		
	-0.000-1111		-20.			
MSG			STATUS			

Plot 7-54. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-55. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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# NR Band n71



Plot 7-56. Occupied Bandwidth Plot (n71 20MHz BPSK-DFT-s-OFDM - Full RB Configuration)



Plot 7-57. Occupied Bandwidth Plot (n71 20MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG996U		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 44 of 222
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Plot 7-58. Occupied Bandwidth Plot (n71 20MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-59. Occupied Bandwidth Plot (n71 20MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 222
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Keysight Spectrum Analyzer - Occupied B	W					
LXU RLT RF 50Ω DC	CORREC	SENSE:INT enter Freq: 680.50000	ALIGN AUTO	09:34:47 AM Sep 2 Radio Std: Non	23, 2020 e	Frace/Detector
	#IFGain:Low #/	rig: Free Run A Atten: 36 dB	vg Hold:>100/100	Radio Device: E	ата	
10 dB/div Ref 40.00 dB	m					
30.0						Cloar Write
20.0	m	mander and a starter				Clear write
10.0						
-10.0						Average
-20.0	hund		mon	man		5
-30.0						
-40.0						Max Hold
-50.0						
Center 680.50 MHz				Span 50.00	MHz	
Res BW 470 KHZ		#VBW 1.5 MHz		Sweep	1 ms	Min Hold
Occupied Bandwid	th	Total Pov	ver 31.5	dBm		
1	9.015 MHz					Detector
Transmit Freq Error	25.678 kHz	% of OBW	Power 99	.00 %	Au	Peak≯ to <u>Man</u>
x dB Bandwidth	20.20 MHz	x dB	-26.	00 dB		
MSG			STATUS	3		

Plot 7-60. Occupied Bandwidth Plot (n71 20MHz 256QAM-CP-OFDM- Full RB Configuration)



Plot 7-61. Occupied Bandwidth Plot (n71 15MHz BPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BV	V				- 6 🔀
<mark>μχα</mark> RLT   RF   50 Ω DC	CORREC	SENSE:INT Center Freq: 680.500000 Trig: Free Run A	ALIGN AUTO MHz vglHold: 100/100	09:41:17 AM Sep 23, Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	5
10 dB/div Ref 40.00 dBn	n				
20.0		·····	-han		Clear Write
10.0					Average
-20.0 -20.0 -30.0 -20.0				www.adaint.	
-40.0					Max Hold
Center 680.50 MHz Res BW 360 kHz		#VBW 1.1 MHz		Span 37.50 N Sweep 1	IHz ms Min Hold
Occupied Bandwidt	h	Total Pow	ver 35.2	dBm	
14	4.171 MH	Z			Detector Peak▶
Transmit Freq Error	-34.210 kH	z % of OBW	Power 99	.00 %	Auto <u>Man</u>
x dB Bandwidth	15.24 MH	lz x dB	-26.	00 dB	
MSG			STATUS		

Plot 7-62. Occupied Bandwidth Plot (n71 15MHz QPSK-CP-OFDM - Full RB Configuration)



Plot 7-63. Occupied Bandwidth Plot (n71 15MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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Plot 7-64. Occupied Bandwidth Plot (n71 15MHz 64QAM-CP-OFDM- Full RB Configuration)



Plot 7-65. Occupied Bandwidth Plot (n71 15MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ revenues	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 49 of 222
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Keysight Spectrum Analyzer - Occupied BW								- 6 💌
LXX RLT RF 50Ω DC CC	DRREC Ce	SENSE:INT enter Freq: 680.500 ig: Free Run	000 MHz AvalHold	ALIGN AUTO	09:43:39 A	M Sep 23, 2020 None	Trace	e/Detector
#1	Gain:Low #A	tten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm								
30.0								
20.0	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m				C	Clear Write
10.0	l l							
0.00			l \					
49.0	1							Average
-10.0								Average
20.0 Journa and the					how had	white he had		
-30.0								
-40.0								Max Hold
-50.0							_	
Center 680.50 MHz					Span 2	5.00 MHz		
Res BW 240 kHz		#VBW 750 k	Hz		Swe	ep 1 ms		Min Hold
		Tatal D		27.4	dDee			
Occupied Bandwidth		l otal P	ower	37.1	a-m			
8.99	967 MHz							Detector
Transmit Freq Error	-180.14 kHz	% of O	<b>BW Powe</b>	er 99	.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	9.749 MHz	x dB		-26.	00 dB			
MSG				STATUS				

Plot 7-66. Occupied Bandwidth Plot (n71 10MHz BPSK-DFT-s-OFDM - Full RB Configuration)



Plot 7-67. Occupied Bandwidth Plot (n71 10MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied E	W				- d <b>-</b>
XV RLT RF 50Ω DC	CORREC	SENSE:INT	ALIGN AUTO 09:55:32	AM Sep 23, 2020	Trace/Detector
	Trig: F	Free Run Avg Hold	d: 100/100	a. None	
	#IFGain:Low #Atter	n: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dB	m				
Log					
30.0					Clear Write
20.0		and a construction of the second second			
10.0					
0.00			<u>}</u>		
-10.0					Average
-20.0	work .		man and the second		
-30.0				and when the second	
40.0					
40.0					Max Hold
-50.0					
Center 680.50 MHz			Span :	25.00 MHz	
Res BW 240 kHz	#	VBW 750 kHz	Sw	eep 1 ms	Min Hold
Occupied Bandwid	th	lotal Power	34.8 dBm		
9	.3087 MHz				Detector
					Peak▶
Transmit Freq Error	-15.804 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	10.10 MHz	x dB	-26.00 dB		
NEC			STATIS		
Mog			STATUS		

Plot 7-68. Occupied Bandwidth Plot (n71 10MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-69. Occupied Bandwidth Plot (n71 10MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo E0 of 222	
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Keysight Spectrum Analyzer - Occupied BW	1				- d <b>-</b>
LXU RLT RF 50Ω DC	CORREC Cer	sense:INT nter Freq: 680.500000 MHz g: Free Run AvalHolo	ALIGN AUTO 09:55:51 Radio St I:>100/100	AM Sep 23, 2020	Trace/Detector
	#IFGain:Low #At	tten: 36 dB	Radio De	evice: BTS	
10 dB/div Ref 30.00 dBm	ı				
20.0					
10.0	- thoras -	have a second and a second and a second second			Clear Write
0.00					
-10.0					
-20.0 - an an and man have	wd		have the and	the and a	Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Cepter 690 50 MHz				25.00 MHz	
Res BW 240 kHz		#VBW 750 kHz	Sv	/eep 1 ms	Min Hold
		T- 4-1 D			Militiona
Occupied Bandwidt	h 	Total Power	30.6 dBm		
9.0	3362 MHz				Detector
Transmit Freq Error	-1.135 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	10.12 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-70. Occupied Bandwidth Plot (n71 10MHz 256QAM-CP-OFDM- Full RB Configuration)



Plot 7-71. Occupied Bandwidth Plot (n71 5MHz BPSK-DFT-s-OFDM- Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST *	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage E1 of 222	
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Keysight Spectrum Analyzer - Occupied BW					- d <b>-</b>
LXV RLT RF 50Ω DC C	ORREC	SENSE:INT	ALIGN AUTO 10:36:1	2 AM Sep 23, 2020	Trace/Detector
	→ Trig:	Free Run Avg Ho	old: 100/100	tu. None	
	IFGain:Low #Atte	n: 36 dB	Radio D	evice: BTS	
10 dB/div Ref 30.00 dBm					
Log					
20.0	man	www.			Clear Write
10.0					orear write
0.00					
-10.0			<u>}</u>		
-20.0	/			8	Average
300 ml marks			᠂ᡙ᠕᠙ᢦ᠆ᠬ᠒ᢔ᠋᠋᠆ᡣ	m	
40.0					
-40.0					
-50.0					Max Hold
-60.0					
Cepter 680 500 MHz			Snan	12 50 MHz	
Res BW 120 kHz	1	/BW 1.2 MHz	Span	veep 1 ms	Min Hald
				roop Thie	Min Hold
Occupied Bandwidth		Total Power	30.8 dBm		
4.4	020 MU-				Detector
4.4					Detector Peak
Transmit Freg Error	-16.035 kHz	% of OBW Pov	wer 99.00 %		Auto <u>Man</u>
	4.070 MIL		26.00 -10		
X dB Bandwidth	4.978 WHZ	хав	-20.00 dB		
MSG			STATUS		

Plot 7-72. Occupied Bandwidth Plot (n71 5MHz QPSK-CP-OFDM - Full RB Configuration)



Plot 7-73. Occupied Bandwidth Plot (n71 5MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour to be part or @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW	1				- d <b>-</b>
LXM RLT RF 50Ω DC		SENSE:INT enter Freq: 680.5000 ig: Free Run	ALIGN AUTO 000 MHz AvalHold: 100/100	10:36:30 AM Sep 23 Radio Std: None	Trace/Detector
	#IFGain:Low #A	tten: 36 dB		Radio Device: BT	s
10 dB/div Ref 30.00 dBn	1				
20.0 10.0		www.	m		Clear Write
0.00					
-20.0 -30.0 <u>Angene Angene Angene</u>			h	mmmm	Average
-40.0					Max Hold
-60.0				Spap 12 50 [	лн <del>.</del>
Res BW 120 kHz		VBW 1.2 MH	Z	Sweep 1	ms Min Hold
Occupied Bandwidt	h	Total Po	ower 29	.9 dBm	
4.	5100 MHz				Detector Peak▶
Transmit Freq Error	-8.622 kHz	% of OB	W Power 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	5.024 MHz	x dB	-20	5.00 dB	
MSG			STAT	US	

Plot 7-74. Occupied Bandwidth Plot (n71 5MHz 64QAM-CP-OFDM- Full RB Configuration)



Plot 7-75. Occupied Bandwidth Plot (n71 5MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST * Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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### LTE Band 66/4

Keysight Spectrum Analyzer - Occupied BW							
LX/ RL RF 50Ω AC (	CORREC	SENSE:INT nter Freg: 1.7450000	00 GHz	02:34:16 PM Radio Std:	Sep 16, 2020 None	Trace	Detector
	↔ Tri	g: Free Run	Avg Hold: 100/100				
#	#FGain:Low #A	tten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBm							
30.0							
20.0						c	lear Write
10.0	and the market warden		~~~~~			_	
0.00							
10.0	ţ l		l l l				Average
	1		within		l.h., 14		Archage
20.0 Welling was more W W	·			- Maria Unitada anter	and the states		
-30.0							
-40.0							Max Hold
-50.0							
Center 1.74500 GHz				Span 5	0.00 MHz		
Res BW 470 kHz		#VBW 1.5 MH	z	Swe	ep 1 ms		Min Hold
							minnena
Occupied Bandwidth		Total Pov	wer 33.	3 dBm			
17.	970 MHz						Detector
	0.500.111			0.00.0/		0	Peak►
Transmit Freq Error	-3.586 KHZ	% of OBV	v Power 9	9.00 %		Auto	<u>ivian</u>
x dB Bandwidth	19.56 MHz	x dB	-26	.00 dB			
MSG			STATU	IS			

Plot 7-76. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB Configuration)



Plot 7-77. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour to be part of element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyz	er - Occupied BW							
LXIRL RF	50 Ω AC COR	REC	SENSE:INT	ALIG	GN AUTO 02	35:17 PM Sep 16, 202	0 Trac	alDetector
		C	enter Freq: 1.74500	0000 GHz	Rad	io Std: None	That	
	#160	intow #	Atten: 36 dB	Avginoid. 10	Rad	lio Device: BTS		
,	#IFC	Jain.Low *				io Bettice: Biro	-	
10 dB/div Ref	40.00 dBm							
Log								
30.0								<b>O</b> I
20.0								Clear write
10.0		manner	water and the second	manner				
10.0		1		L L				
0.00								
-10.0		/						Average
-20.0	أساد المسيد المساحد			h,	marchlulan	1		
- malan manunder	when the and the second second					ACC - A CONTRACT IN A CONTRACT	0×	
-30.0								
-40.0								Max Hold
-50.0								
Center 1.74500 G	Hz				S	oan 50.00 MH	z	
Res BW 470 kHz			#VBW 1.5 №	Hz		Sweep 1 m	s	
								MITHOID
Occupied B	andwidth		Total P	ower	31.2 dB	m		
B b b b b b b b b b b b b b b b b b b b		~						
	18 <u>.0</u>	<u>29 MHz</u>	-					Detector
								Peak►
Transmit Free	Error -	44.068 kHz	z % of Ol	3W Power	99.00	%	Auto	Man
x dB Bandwid	lth	19.65 MHz	v dB		-26 00 c	IB		
		10.00 1111			-20.00 0			
100					OTATIO			
MSG					STATUS			

Plot 7-78. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 64-QAM - Full RB Configuration)



Plot 7-79. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pout to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW							- 6
X RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AL	UTO 03:00:35 PN	Sep 16, 2020	Trace	/Detector
		Trig: Free Run	AvaiHold: 100/10	Radio Std:	None		
	#FGain:Low	#Atten: 36 dB		Radio Devi	ice: BTS		
10 dB/div Ref 40.00 dBm							
30.0							
22.0						C	lear Write
20.0	m	and the second	an and and				
10.0			<u>├</u> ─── <u></u> <u></u> <u></u>				
0.00			<b>└───</b>				
-10.0	/						Average
			N	م مار م	March 1		Ŭ
-2000 up to all all and a full and all and a second	1. A.		And h	Lal Martill Monara MI	An Pollinghand		
-30.0							
-40.0							Max Hold
-50.0							
Center 1.74500 GHz				Span 3	7.50 MHz		
Res BW 360 kHz		#VBW_1.1 №	IHz	Swe	ep 1 ms		Min Hold
Occupied Bandwidth		Total P	ower 3	33.0 dBm			
13	525 ML	7					Detector
13.							Peak
Transmit Freq Error	8.578 k	Hz % of O	<b>3W Power</b>	99.00 %		Auto	Man
x dB Bandwidth	14.80 M	Hz xdB		-26.00 dB		_	
	1100 111						
MSG			S	TATUS			

Plot 7-80. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST <sup>®</sup> Proud to be part of <b>@</b> element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW								
<b>LXI</b> RL RF 50Ω AC (	CORREC	SENSE:INT	15000000 011-	ALIGN AUTO	03:02:00 P	M Sep 16, 2020	Trac	e/Detector
		Trig: Free Run	AvalHol	ld: 100/100	Radio Std	: None		
#	FGain:Low	#Atten: 36 dB			Radio Dev	vice: BTS		
10 dB/div Ref 40.00 dBm								
30.0								
20.0							(	Clear Write
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
10.0								
0.00				\				
-10.0	/							Average
	h./			he have	البيط والبرو العرب	han Dr		J
-20.0 Malther Wind Mander and Mander				· W. M. H. W.	AL OF LA BACK	an of the strength		
-30.0								
-40.0								Max Hold
-50.0								maxmona
Center 1.74500 GHz					Span 3	7.50 MHz		
Res BW 360 kHz		#VBW 1.	1 MHz		Swe	eep 1 ms		Min Hold
								Millinoid
Occupied Bandwidth		Tota	I Power	31.8	3 dBm			
12	520 ML	-						Detector
13.	220 MIL							Peak
Transmit Freq Error	-7.097 k	Hz % of	OBW Pov	ver 99	9.00 %		Auto	Man
x dB Bandwidth	14 83 M	Hz x dE		-26	00 dB			
	14.00 111			-20.				
MSG				STATU	s			

Plot 7-82. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 64-QAM - Full RB Configuration)



Plot 7-83. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW								
X RL RF 50Ω AC 0	CORREC	SENSE:INT	ALI	IGN AUTO	03:12:48 PI	4 Sep 16, 2020	Trac	e/Detector
		Center Freq: 1.74500 Trig: Free Run	AvalHold: 1	00/100	Radio Std:	None		
#	IFGain:Low	#Atten: 36 dB			Radio Dev	ice: BTS		
10 JD/JE Dof 10 00 dBm								
30.0								
20.0							0	Clear Write
20.0	and the second s	water the large and	monorm					
10.0								
0.00			<u> </u>					
-10.0			<b>\</b>					Average
20.0 40			h.	aha .	an hA	amaan		
2000 May the way of the set of the set of the set					<u>\</u> UI (,1 \A4 M			
-30,0								
-40.0								Max Hold
-50.0								
Center 1.74500 GHz					Span 2	5.00 MHz		
Res BW 240 kHz		#VBW 750 k	VBW 750 kHz			ep 1 ms		Min Hold
Occupied Bandwidth		l otal P	ower	33.0	dBm			
9.0	102 MH	7						Detector
0.0								Peak▶
Transmit Freq Error	6.657 kH	z % of O	3W Power	99	.00 %		Auto	<u>Man</u>
v dB Bandwidth	0 052 MH	z v dB		-26 (				
x dB Balldwidth	3.352 MI			-20.0				
MSG				STATUS				

Plot 7-84. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB Configuration)



Plot 7-85. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Posed to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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🔤 Key	sight Spectrum	n Analyzer - Oc	cupied BW											
LXI RI	. R	RF 50 Ω	AC CO	RREC		SEI	NSE:INT		ALIG	IN AUTO	03:14:41 PI	M Sep 16, 2020	Trac	a/Detector
						Center Fr	req: 1.74500	0000 GHz			Radio Std	None	TTac	erDelector
					. +	#Atton: 2	e Kun 6 dB	AvgiHol	a: 100	0/100	Padia Dav	ion: BTS		
			#1F	Gaina	LOW	#Atten. v	000				Radio Dev	ice. DT3		
10 dF	R/div	Ref 40.0	0 dBm											
Log														
30.0														
20.0														Clear Write
20.0				الدر	n <sub>e</sub> yyyyyyyyyy	and the second of the	ومسرمهم ومعاليهما	monen						
10.0														
0.00				1					ų					
-10.0				f					1					Average
-10.0									ł					/ troi ugo
-20.0	American	William	an harry and						100	بالاستقيل حقوم	~~hmmy/ll/l	mhreeloon		
-30.0														
40.0														
-40.0														Max Hold
-50.0														
Cen	ter 1.745	00 GHz									Span 2	5.00 MHz		
Res	BW 240	kHz				#VE	3W 750 k	Hz			Swe	ep 1 ms		Min Hold
0	ccupie	d Band	width				Total P	ower		30.5	dBm			
			0 00	04		1-								Detector
			0.99	σI		12								Detector
				40	620-		0/ of O			00	00.0/		Auto	Peak P
	ansmit	Freq Er	ror	10.	.039 K	HZ	% of Of	SVV POW	/er	99	.00 %		Auto	<u>ivian</u>
x	dB Band	dwidth		9.8	875 M	Hz	x dB			-26.0	)0 dB			
~					01011					2010				
100										OTAT				
MSG										STATUS				

Plot 7-86. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-87. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Posed to be part of @ revenues	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 50 of 222	
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Keysight Spectrum Analyzer - Occupied BV	V						
LX/RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	03:25:31 P	M Sep 16, 2020	Trace	
		Center Freq: 1.74500	0000 GHz	Radio Std	: None	Trace	Detector
	#IECaintlow	#Atten: 36 dB	Avg Hold:>100/100	Radio Dev	vice: BTS		
	#IFGall.LOW	written. oo ub		Rualo Ber			
10 dB/div Ref 35.00 dBn	î j						
Log							
25.0							No
15.0		mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	m l			, c	lear write
5.00						_	
5.00	/		N N				
-5.00							
-15.0				10 - A	- 6 0 0		Average
250 Mary Marshar and fill bay v	(M)		MMAG	¶በት እሱ ትርጉ እሳ	YYYYY WWW		
23.0							
-35.0							
-45.0							Max Hold
-55 0							
Center 1.745000 GHz				Span 1	2.50 MHz		
Res BW 120 kHz		#VBW 390 k	Hz	Swe	eep 1 ms		Min Hold
							WIIII HOIG
Occupied Bandwidt	h	Total P	ower 33	.6 dBm			
Occupied Ballawide		_					
4.	5432 MH	Ζ					Detector
							Peak►
Transmit Freq Error	5.534 k	Hz % of O	3W Power S	99.00 %		Auto	Man
x dB Bandwidth	5 022 M		2	6 00 dB			
	J.052 W		-2	0.00 UB			
MSG			STAT	TUS			

Plot 7-88. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB Configuration)



Plot 7-89. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied B	W				
LX/RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	03:26:53 PM Sep 16,	,2020 Trace/Detector
	Cente	er Freq: 1.745000000 Gl	Hz	Radio Std: None	Tacendetector
	#EGain:Low #Atte	n:36 dB	Hold.>100/100	Radio Device: BT	s
	#IT Galli.EGW #IT Galli.EGW				
10 dB/div Ref 35.00 dB	m				
Log					
25.0					ClearWrite
15.0		manna	<b>۲</b>		Clear Write
5.00					
3.00			Y		
-5.00					
-15.0				- 0/	Average
250 m ray mr M. M. M. M.	har		m many m	$\sqrt{\sqrt{1}}$	AA
25.0					
-35.0					
-45.0					Max Hold
-55.0					
Center 1.745000 GHz				Span 12.50	MHz
Res BW 120 kHz	#	#VBW 390 kHz		Sweep 1	Min Hold
					Win Hold
Occupied Bandwid	th	Total Power	31.6	dBm	
Occupied Baildwid	ui —				
4	.5464 MHz				Detector
					Peak►
Transmit Freq Error	3.051 kHz	% of OBW P	ower 99.	00 %	Auto <u>Man</u>
v dB Bondwidth	E 020 MU-	v dD	26.0		
X dB Bandwidth	5.039 WHZ	хав	-20.0	U ab	
MSG			STATUS		

Plot 7-90. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-91. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pout to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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🔤 Keysight Spectrum Analyzer - Occup	ied BW				
LXI RL RF 50Ω	AC CORREC	SENSE:INT	ALIGN AUTO 03:41:00	PM Sep 16, 2020	Trace/Detector
	Cen	iter Freq: 1.745000000 GHz	Radio Si Id: 100/100	td: None	Hacebeteetor
	#IFGain:Low #At	ten: 36 dB	Radio D	evice: BTS	
10 dB/div Ref 40.00	dBm				
20.0					
30.0					Clear Write
20.0	mmmm	monorman			erear mine
10.0	/				
0.00					
0.00			\ \		Average
-10.0			1		Average
-20.0				man	
-30.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	Alter Store A		and the second second		
40.0					
-40.0					Max Hold
-50.0					
0			0	7 500 8411-	
Center 1.745000 GHZ		40/DWL 000 LUI-	span	7.500 WHZ	
Res BW 08 KHZ			Swe	ep 3.8 ms	Min Hold
		Total Bawar	22.0 dBm		
Occupied Bandw	lath	Total Fower	32.0 ubm		
	2.7160 MHz				Detector
					Peak▶
Transmit Freq Erro	r -109 Hz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	3 026 MHz	x dB	-26 00 dB		
	5.020 11112		-20.00 uB		
MSG			STATUS		
			UNIOU		

Plot 7-92. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB Configuration)



Plot 7-93. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour to be part of eveneer	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW							
LXI RL RF 50Ω AC (	CORREC	SENSE:INT	ALIGN AUTO	03:41:19 P	M Sep 16, 2020	Trac	e/Detector
	Cent	Free Run Avai	⊓z Hold: 100/100	Radio Sta	None		
#	IFGain:Low #Atte	en: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm			_				
30.0							
55.5							Clear Write
20.0	Jannam	man marken	~~ <b>1</b>				
10.0							
0.00			<u> </u>				
-10.0	/		<u>}</u>				Average
20.0			۱. L				J
-20.0			John Marchan	martymorel	mannon		
-30.0 401							
-40.0							Max Hold
-50.0							
Center 1.745000 GHz				Span 7	.500 MHz		
Res BW 68 kHz		#VBW 220 kHz		Swee	p 3.8 ms		Min Hold
							Milline
Occupied Bandwidth		Total Power	30.4	dBm			
27	110 MU-						Detector
2.1							Delector Peak
Transmit Freq Error	-4.075 kHz	% of OBW P	ower 99	.00 %		Auto	Man
x dB Bandwidth	3 033 MHz	x dB	-26	00 dB			
	5.050 mm2	A GD	-20.				
MSG			STATU	3			

Plot 7-94. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 64-QAM - Full RB Configuration)



Plot 7-95. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG996U	Pour lo be part of @ riement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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