

PCTEST ENGINEERING LABORATORY, INC.

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ACCREDITED

TESTING CERT#2041.0

MEASUREMENT REPORT

LTE

Applicant Name:

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

Date of Testing: 10/25/2019 - 01/14/2020 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M1911140188-05.A3L

FCC ID:

A3LSMF700F

APPLICANT:

Samsung Electronics Co., Ltd.

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

Certification SM-F700F SM-F700F/DS, SCV47 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



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		A DEFINITION FRENCH THE TAR	(CERTIFICATION)		Quality Manager
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MEASUREMENT REPORT FCC Part 22, 24, & 27



				ERP		RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 12	27	699.7 - 715.3	0.042	16.21	0.069	18.36	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.033	15.16	0.054	17.31	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.025	14.05	0.042	16.20	1M09W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.044	16.44	0.072	18.59	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.034	15.35	0.056	17.50	2M70W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.027	14.38	0.045	16.53	2M71W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.044	16.41	0.072	18.56	4M52G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.036	15.59	0.059	17.74	4M52W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.028	14.52	0.046	16.67	4M52W7D	64QAM
LTE Band 12/17	27	704 - 711	0.046	16.59	0.075	18.74	9M05G7D	QPSK
LTE Band 12/17	27	704 - 711	0.039	15.89	0.064	18.04	8M99W7D	16QAM
LTE Band 12/17	27	704 - 711	0.029	14.65	0.048	16.80	9M02W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.035	15.45	0.058	17.60	4M50G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.028	14.51	0.046	16.66	4M52W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.021	13.29	0.035	15.44	4M52W7D	64QAM
LTE Band 13	27	782	0.036	15.61	0.060	17.76	9M04G7D	QPSK
LTE Band 13	27	782	0.028	14.41	0.045	16.56	8M97W7D	16QAM
LTE Band 13	27	782	0.021	13.13	0.034	15.28	8M91W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.045	16.52	0.074	18.67	1M09G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.034	15.32	0.056	17.47	1M10W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.029	14.56	0.047	16.71	1M10W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.046	16.63	0.076	18.78	2M70G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.037	15.71	0.061	17.86	2M70W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.031	14.92	0.051	17.07	2M70W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.047	16.68	0.076	18.83	4M52G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.039	15.89	0.064	18.04	4M51W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.032	15.02	0.052	17.17	4M52W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.048	16.80	0.079	18.95	9M04G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.041	16.13	0.067	18.28	9M02W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.033	15.22	0.055	17.37	9M02W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.047	16.75	0.078	18.90	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.040	16.05	0.066	18.20	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.033	15.19	0.054	17.34	13M4W7D	64QAM

EUT Overview (<1 GHz)

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			EIRP			
Mada	FCC Rule				Emission	Madulation
Mode	Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Designator	Modulation
			(00)	(UBIII)	Ŭ	
LTE Band 66/4	27	1710.7 - 1779.3	0.209	23.21	1M10G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.175	22.44	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.129	21.11	1M10W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.206	23.14	2M70G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.170	22.31	2M70W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.132	21.20	2M70W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.209	23.20	4M51G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.157	21.97	4M53W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.125	20.98	4M53W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.209	23.21	9M04G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.166	22.20	9M00W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.133	21.24	9M02W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.211	23.24	13M6G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.167	22.24	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.137	21.38	13M5W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.215	23.32	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.171	22.33	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.129	21.11	18M0W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.188	22.75	1M10G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.142	21.52	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.108	20.32	1M10W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.187	22.73	2M70G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.140	21.46	2M70W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.105	20.23	2M70W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.180	22.56	4M52G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.138	21.40	4M52W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.101	20.06	4M54W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.188	22.75	9M02G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.141	21.50	8M99W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.104	20.19	9M01W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.202	23.06	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.146	21.64	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.122	20.86	13M5W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.218	23.39	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.174	22.40	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.137	21.38	18M0W7D	64QAM

EUT Overview (Mid Bands)

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			EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 30	27	2307.5 - 2312.5	0.166	22.19	4M52G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.133	21.23	4M49W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.095	19.78	4M53W7D	64QAM
LTE Band 30	27	2310	0.167	22.24	9M05G7D	QPSK
LTE Band 30	27	2310	0.138	21.41	8M99W7D	16QAM
LTE Band 30	27	2310	0.098	19.92	9M01W7D	64QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.180	22.55	4M52G7D	QPSK
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.146	21.63	4M52W7D	16QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.117	20.68	4M52W7D	64QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.183	22.63	9M01G7D	QPSK
LTE Band 41 (PC3)	27	2501 - 2685	0.148	21.69	9M01W7D	16QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.120	20.81	9M00W7D	64QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.195	22.91	13M5G7D	QPSK
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.157	21.97	13M5W7D	16QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.122	20.85	13M5W7D	64QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.209	23.21	18M0G7D	QPSK
LTE Band 41 (PC3)	27	2506 - 2680	0.163	22.13	18M0W7D	16QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.135	21.30	18M0W7D	64QAM

EUT Overview (High 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 17025-2005 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: A3LSMF700F**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 4715J, 4718J, 4713J, 4712J, 4711J, 0505M, 1549M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC, ANT+, Wireless Power Transfer

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

LTE Band 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz). Therefore, test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

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.

The EUT is capable of operating in folded closed and unfolded open configurations. The worst-case configuration for radiated emissions was determined from open and closed configurations in X, Y, and Z orientations for horizontal and vertical antenna polarizations. The worst case radiated emissions data is shown in this report.

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 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 Measurement 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 Block C Frequency Range

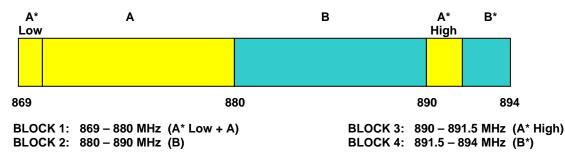
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.3 Block A Frequency Range

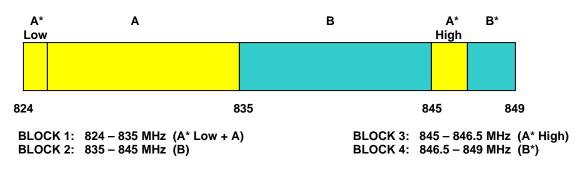
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz; Block B: 704-710 MHz and 734-740 MHz; and Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



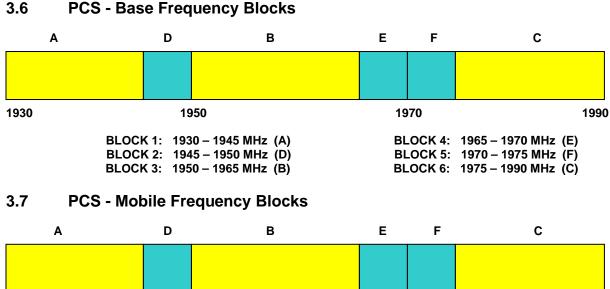
3.5 Cellular - Mobile Frequency Blocks



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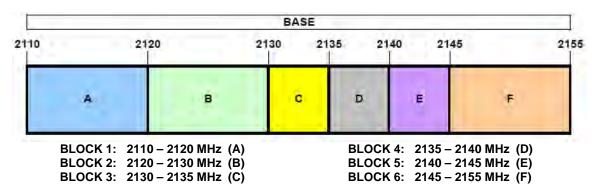


BLOCK 1:	1850 – 1865 MHz (A)
	1865 – 1870 MHz (D)
	1870 – 1885 MHz (B)

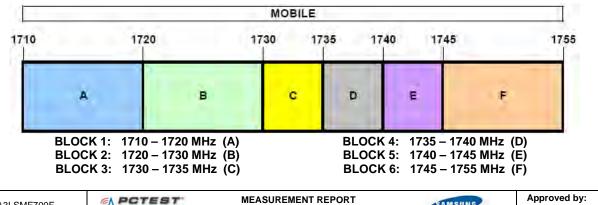
1870



AWS - Base Frequency Blocks 3.8



3.9 **AWS - Mobile Frequency Blocks**



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3.10 WCS – Mobile/Base Frequency Blocks

The following frequencies are available for WCS in the 2305-2320 MHz and 2345-2360 MHz bands:

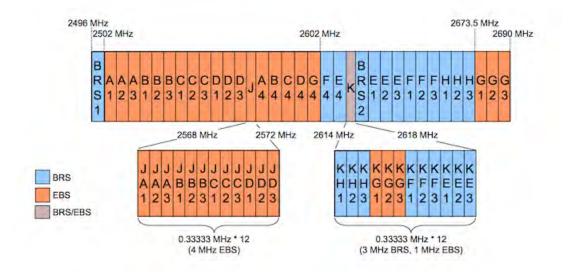
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

BLOCK 2: 2310-2315 and 2355-236 MHz (B)

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.11 BRS/EBS Frequency Block



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3.12 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. 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 guidelines of KDB 412172 D01 v01r01, radiated power levels are measured using the following formula:

ERP or EIRP =
$$P_T + G_T - L_C$$

Where P_T is the transmitter output power, expressed in dBm, G_T is the gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP), and L_c signal attenuation in the connecting cable between the transmitter and antenna in dB.

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:

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].

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10 log₁₀(Power [Watts]). For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of 55 + 10 log₁₀(Power [Watts]). For Band 30 and 48, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of 70 + 10 log₁₀(Power [Watts]).

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	10/30/2019	Annual	10/30/2020	LTx2
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/2/2019	Annual	5/2/2020	MY49430494
Anritsu	MT8821C	Radio Communication Analyzer	3/6/2019	Annual	3/6/2020	6201381794
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Triennial	6/7/2021	9203-2178
Espec	ESX-2CA	Environmental Chamber	6/13/2019	Annual	6/13/2020	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	10/31/2019	Annual	1/31/2020	251425001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	10/31/2019	Annual	1/31/2020	100040
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	10/16/2019	Annual	10/16/2020	101716
Rohde & Schwarz	SMB100A03	SMB100A Signal Generator	5/30/2018	Biennial	5/30/2020	180862
Rohde & Schwarz	HL562E	Ultralog Antenna	3/29/2018	Biennial	3/29/2020	101012
Rohde & Schwarz	HFH2-Z2E	Loop	9/5/2019	Annual	9/5/2020	100854
Rohde & Schwarz	IN600	Bias Unit	9/5/2019	Annual	9/5/2020	100859
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/9/2019	Annual	7/9/2020	102138
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	8/17/2018	Biennial	8/17/2020	101072
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	4/30/2018	Biennial	4/30/2020	9105-2404
Seekonk	NC-100	Torque Wrench	5/9/2018	Biennial	5/9/2020	22217
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

1. 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 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 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:	A3LSMF700F
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>LTE</u>

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A			Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10 log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions			Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4
24.232(d) 27.50(d)(5)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
27.53(m)	Uplink Carrier Aggregation	>43 + 10log(P[Watts]) at Band Edge and for all out-of-band emissions			Section 7.8
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.10

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5/26)	< 7 Watts max. ERP			Section 7.6
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12/17, 13)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 41)	< 2 Watts max. EIRP			Section 7.6
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP			Section 7.6
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 13, 26/5, 66/4, 25/2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions	RADIATED	PASS	Section 7.8
27.53(f)	Undesirable Emissions (Band 13)	 < -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz 			Section 7.8
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])			Section 7.8
27.53(m)	Undesirable Emissions (Band 41)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.8
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.8

Table 7-2. Summary of Radiated 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 (Sections 7.2, 7.3, 7.4, 7.5) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) 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 "LTE Automation," Version 5.3.

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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 \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 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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Table 7-3. Occupied Band Width Results (<1 GHz)





Plot 7-1. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

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Plot 7-3. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)



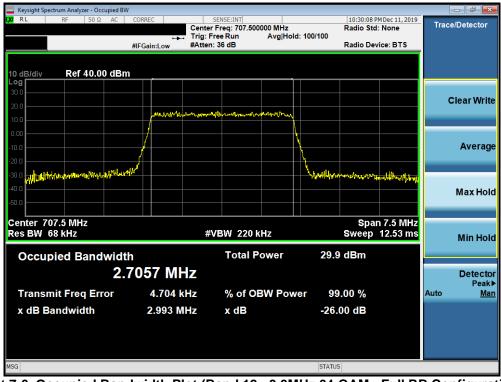
Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Plot 7-5. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



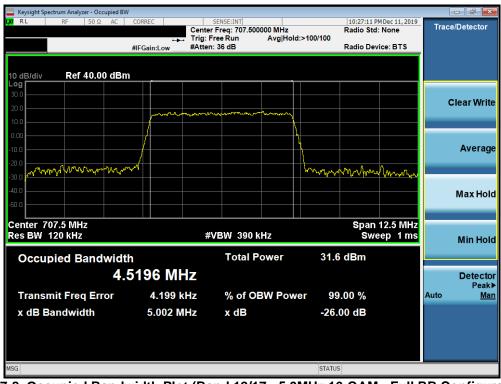
Plot 7-6. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW	
XI RF 50 Ω AC CORREC SENSE:INT 10:27:02 PM Dec 11, 2019 Center Freq: 707.500000 MHz Radio Std: None Training	ace/Detector
Trig: Free Run Avg Hold:>100/100	
#FGain:Low #Atten: 36 dB Radio Device: BTS	
10 dB/div Ref 40.00 dBm	
30.0	Clear Write
20.0	Clear write
-10.0	Average
20.0 Man Marine Ma	
-30.0	
-40.0	Max Hold
-60.0	
Center 707.5 MHz Span 12.5 MHz	
Res BW 120 kHz #VBW 390 kHz Sweep 1 ms	Min Hold
Occupied Bandwidth Total Power 32.8 dBm	Militiona
4.5155 MHz	Detector
Transmit Freq Error 2.827 kHz % of OBW Power 99.00 % Auto	Peak▶ <u>Man</u>
x dB Bandwidth 4.996 MHz x dB -26.00 dB	
MSG STATUS	

Plot 7-7. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

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	V				
LX/ RL RF 50 Ω AC	CORREC	SENSE:INT r Freg: 707.500000 MHz	10:27:18 P Radio Std	MDec 11, 2019	Trace/Detector
	🛶 Trig: F		l:>100/100 Radio Dev		
	#IFGain:Low #Atter	1: 36 dB	Radio Dev	ice: DTS	
10 dB/div Ref 40.00 dBn	n				
30.0					
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
10.0		where the second second second second			
0.00					
-10.0					Average
-20.0					
-30.0 marine Mr. Marine Marine	M ¹ M		Jun war war war war	Arran and	
-40.0					Max Hold
-50.0					
Center 707.5 MHz			Snan	12.5 MHz	
Res BW 120 kHz	#	VBW 390 kHz		ep 1 ms	Min Hold
				<u> </u>	
Occupied Bandwidt	h	Total Power	30.5 dBm		
4.	5210 MHz				Detector
Transmit Francis	2.259 kHz	% of OBW Pow	er 99.00 %		Peak▶ Auto Man
Transmit Freq Error					Auto <u>Ivian</u>
x dB Bandwidth	5.016 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-9. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BV							
LX/RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 707.5000	00 MHz	10:20:53 PM Radio Std:	Dec 11, 2019 None	Trace	/Detector
		Trig: Free Run	Avg Hold: 100	0/100			
	#IFGain:Low #	#Atten: 36 dB		Radio Devi	Ce: BIS		
10 dB/div Ref 40.00 dBn	n						
30.0							
20.0						с	lear Write
10.0	marine	m-pageoperation-t-	- Martin				
0.00	/						
-10.0							Average
-20.0	A A A A A A A A A A A A A A A A A A A		\				J
-20.0 พุทร์ฟพงุกุพรที่มนใจ~ค.สางมาไกรบางาร์ -30.0	· · ·		M	i manghalluma hal	havenue		
-40.0							
-50.0							Max Hold
-38.8						-	
Center 707.5 MHz					n 25 MHz		
Res BW 240 kHz		#VBW 750 ki	Hz	Swe	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total Po	ower	31.8 dBm			
				ono abin			
8.	9911 MHz	Z					Detector Peak▶
Transmit Freq Error	2.526 kH	z % of OE	W Power	99.00 %		Auto	Man
x dB Bandwidth	9.832 MH	z xdB		-26.00 dB			
	9.032 MIN	2 X UB		-20.00 UB			
MSG				STATUS			

Plot 7-11. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

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Plot 7-13. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-15. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-16. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW						
LX/RL RF 50Ω AC		ENSE:INT Freg: 782.000000 MHz		:20 PM Dec 11, 2019 Std: None	Trace/	Detector
	🛶 Trig: Fre	ee Run Avg Hol	d: 100/100 Radio	Device: BTS		
	#IFGain:Low #Atten:	36 GB	Radio	Device. B13		
10 dB/div Ref 34.00 dBm						
24.0				_		
14.0	mundunnent	and the second s		_		ear Write
4.00						
-6.00			┨────			
-16.0	unne l		monument	M A		Average
-26.0				where the way where the start of the second st		
-36.0				_		_
-46.0 Manual marker have				_		Max Hold
-56.0				_		
Center 782 MHz				span 25 MHz		
Res BW 240 kHz	#V	BW 750 kHz		Sweep 1 ms		Min Hold
						Will Hold
Occupied Bandwidt		Total Power	31.3 dBm			
8.9	9686 MHz					Detector
Transmit Freg Error	23.557 kHz	% of OBW Pow	ver 99.00 %	,	Auto	Peak▶ Man
					Auto	mari
x dB Bandwidth	9.830 MHz	x dB	-26.00 dE	5		
MSG			STATUS			

Plot 7-17. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

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Plot 7-19. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 07 of 005		
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Plot 7-21. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNE	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 225	
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Plot 7-23. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 225
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Keysight Spectrum Analyzer - Occupied B						- d <u>×</u>
LX/RL RF 50Ω AC		SENSE:INT r Freg: 836.500000 MHz	11:12:44 Radio St	PM Dec 11, 2019 d: None	Trace	/Detector
	Trig: F		d: 100/100			
	#IFGain:Low #Atten	1: 36 dB	Radio De	evice: BTS		
10 dB/div Ref 40.00 dBr	n					
30.0						
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			C	lear Write
10.0					_	
0.00	/					
-10.0			<u>}</u>			Average
-20.0	hand here has a second se		Marymore	NR A		
-30.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· W WWW		
-40.0						Max Hold
-50.0						
Center 836.5 MHz Res BW 120 kHz	-44	VBW 390 kHz		n 12.5 MHz reep 1 ms		
Res BW 120 KHZ	#		54	reep This		Min Hold
Occupied Bandwid	th	Total Power	32.4 dBm			
	5208 MHz					Detector
						Peak
Transmit Freq Error	280 Hz	% of OBW Pow	ver 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.020 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-25. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 225
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Keysight Spectrum Analyzer - Occupied B						- • •
LX/RL RF 50Ω AC	CORREC	SENSE:INT r Freg: 836.500000 MHz		3:02 PM Dec 11, 2019 5 Std: None	Trace	Detector
		FreeRun Avg∣Ho n:36 dB	ld: 100/100 Radio	Device: BTS		
	#il Galil.cow					
10 dB/div Ref 40.00 dB	n					
Log					_	
30.0					с	lear Write
20.0	mmmmm	mh.mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm				
0.00						
-10.0	<u></u>		~~~~			Average
20.0						ritorage
-30.0 Anno marine	And I		human	march		
-40.0						Max Hold
-50.0						
Center 836.5 MHz Res BW 120 kHz	#	VBW 390 kHz		oan 12.5 MHz Sweep 1 ms		
	"					Min Hold
Occupied Bandwid	th	Total Power	30.2 dBn	n		
4.	5165 MHz					Detector
Transmit Freq Error	6.049 kHz	% of OBW Pov	ver 99.00 %	4	Auto	Peak▶ Man
					Auto	Intern
x dB Bandwidth	5.010 MHz	x dB	-26.00 di	3		
NSC			CTATUC			_
MSG			STATUS			

Plot 7-27. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 225
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Keysight Spectrum Analyzer - Occupied							- 0 ×
LXXIRL RF 50Ω AC		SENSE:INT Center Freq: 836.500		Radio S	1 PM Dec 11, 2019 td: None	Trace	e/Detector
		Trig: Free Run #Atten: 36 dB	Avg Hold:>10		evice: BTS		
10 dB/div Ref 30.00 dB	sm						
20.0							
10.0	por Ner Manufacture	ware and the second second	Munning			C	Clear Write
0.00							
-10.0							
-20.0				would work the second	MA		Average
-40.0							
-50.0							Max Hold
Center 836.5 MHz Res BW 240 kHz		#VBW 750 k	Hz		oan 25 MHz weep 1 ms		
					weep mis		Min Hold
Occupied Bandwid		Total P	ower	31.1 dBm			
9	.0157 MH	Z					Detector
Transmit Freq Error	8.528 kH	z % of O	3W Power	99.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	9.799 MH	lz x dB		-26.00 dB			
MSG				STATUS			

Plot 7-29. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 225	
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Keysight Spectrum Analyzer - Occupied BW						
LXX RL RF 50Ω AC		SENSE:INT Freq: 836.500000 MHz	11:02:35 Radio Sto	PM Dec 11, 2019 d: None	Trace/I	Detector
		ree Run Avg Hold : 36 dB		vice: BTS		
	WI Gam. Low					
10 dB/div Ref 40.00 dBm	1					
Log						
30.0					CI	ear Write
20.0	workhamman	water and the second second				
0.00						
-10.0	/					Average
	~~~		monorado and man when			riterage
-20.0 200-200-200-200-200-200-200-200-200-20				all works and a		
-40.0				the second se		Max Hold
-50.0						
				07.6 8411		_
Center 836.5 MHz Res BW 360 kHz	#	VBW 1.1 MHz		37.5 MHz eep 1 ms		
						Min Hold
Occupied Bandwidt	h	Total Power	32.4 dBm			
13	.458 MHz					Detector
Transmit Freg Error	15.186 kHz	% of OBW Powe	er 99.00 %		Auto	Peak▶ Man
· · ·					Auto	Intern
x dB Bandwidth	14.66 MHz	x dB	-26.00 dB			
MSG			STATUS			
			514105			

Plot 7-31. Occupied Bandwidth Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 225
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Keysight Spectrum Analyzer - Occupied BW R RL RF 50 Ω AC	CORREC	SENSE:INT ter Freq: 836.500000 MHz I: Free Run Avg Hold	Radio S	57 PM Dec 11, 2019 Std: None	Trace/Detector
		ten: 36 dB		Device: BTS	
10 dB/div Ref 40.00 dBn					
og					
30.0					Clear Writ
20.0	مهرور المراسي المراجع ا	~~~~			
10.0					
10.0	/				Averag
	اليب		most wildown as the		Averag
20.0 and ballant and marked and and and and and and and and and an				when her the man and the	
40.0					Max Ho
50.0					
Center 836.5 MHz					
Res BW 360 kHz		#VBW 1.1 MHz		m 37.5 MHz weep 1 ms	Min Ho
O	I.	Total Power	30.5 dBm		
Occupied Bandwidt		Total Fower	30.5 UBIII		
13	8.447 MHz				Detecte
Transmit Freq Error	21.330 kHz	% of OBW Pow	er 99.00 %	A	uto <u>Ma</u>
x dB Bandwidth	14.72 MHz	x dB	-26.00 dB		
sg			STATUS		

Plot 7-33. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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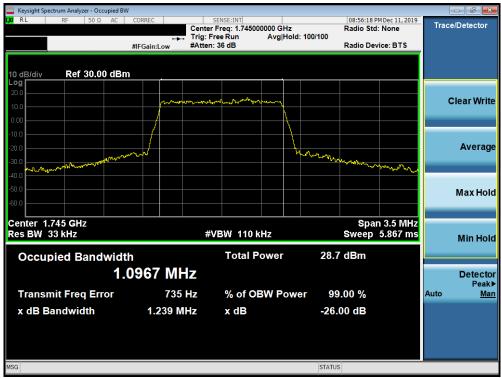
Plot 7-34. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-35. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 25 of 225
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Plot 7-36. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



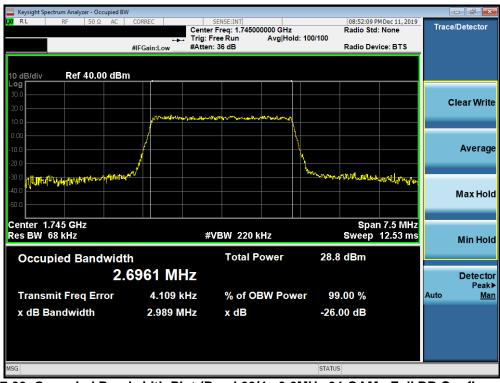
Plot 7-37. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 26 of 225
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Plot 7-38. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-39. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 37 of 325		
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Keysight Spectrum Analyzer - Occupied BW						
LX/RL RF 50Ω AC	CORREC	SENSE:INT r Freg: 1.745000000 GHz	08:45:46 PM Radio Std:	Dec 11, 2019	Trace/I	Detector
	Trig: I	Free Run Avg Hold: 10	00/100			
	#IFGain:Low #Atter	n: 36 dB	Radio Devi	Ce: BIS		
10 dB/div Ref 40.00 dBm						
30.0						
20.0		Land Marine Contraction and Co			CI	ear Write
10.0						
0.00						
-10.0						Average
-20.0	mod	\	man manuality	maria		
-30.0						
-40.0						Max Hold
-50.0						nux nonu
Center 1.745 GHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz ep 1 ms		
Nes Day 120 KHZ	"	VDVV 350 KHZ	OWC	ep mis		Min Hold
Occupied Bandwidt	h	Total Power	32.2 dBm			
A 1	5112 MHz					Detector
						Peak▶
Transmit Freq Error	1.176 kHz	% of OBW Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	4.980 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-40. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-41. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 225
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Keysight Spectrum Analyzer - Occupied BV	V					d X
IXI RL RF 50Ω AC		SENSE:INT r Freq: 1.745000000 GHz Free Run Avg Holo	08:46:03 F Radio Std d:>100/100	M Dec 11, 2019 : None	Trace/D	etector
		1: 36 dB	Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBn	n					
30.0						
20.0					Cle	ar Write
10.0		have been all the				
0.00			\			
-10.0					4	Average
-20.0	alua -		hmm MMM	0		
				1 May Mar		
-40.0					N	lax Hold
-50.0						
Center 1.745 GHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz eep 1 ms		
NCS BW 120 KHZ	u u	4B44 330 KHZ		cep mis	N	/in Hold
Occupied Bandwidt	h	Total Power	29.6 dBm			
4.	5273 MHz				I	Detector
Transmit Freq Error	-2.524 kHz	% of OBW Pow	ver 99.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	5.021 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-42. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



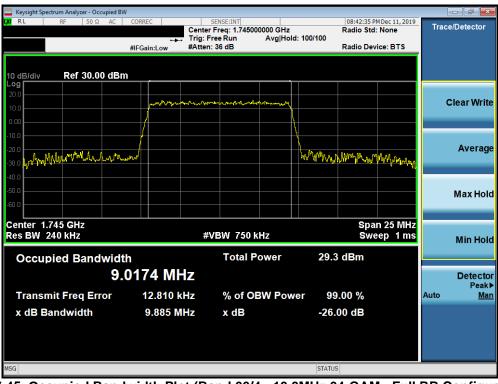
Plot 7-43. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 225
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Keysight Spectrum Analyzer - Occupied BV	V						- 6 ×
KX RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.74500 Trig: Free Run	0000 GHz Avg Hold: 100/100	08:42:25 PM Radio Std:	Dec 11, 2019 None	Trace	/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Devid	e: BTS		
10 dB/div Ref 30.00 dBr	n						
20.0	phonena	-	man			с	lear Write
-10.0						-	
-20.0 -30.0	wall		Wilyou Charry	and the second of the	marthere		Average
-40.0							Max Hold
-60.0 Center 1.745 GHz				Snan	25 MHz	_	
Res BW 240 kHz		#VBW 750 k		Swee	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower 31.	.0 dBm			
	0005 MH						Detector Peak▶
Transmit Freq Error	4.202 ki	Iz % of OE	3W Power 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	9.865 MI	Hz xdB	-26	5.00 dB			
MSG			STAT	US			

Plot 7-44. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



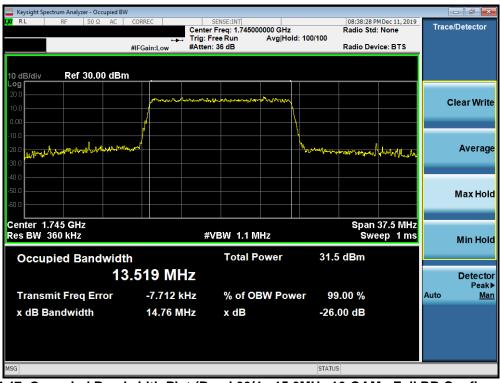
Plot 7-45. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW						d X
LXI RE 50 Ω AC		SENSE:INT Freg: 1.745000000 GHz		7 PM Dec 11, 2019 td: None	Trace/E	Detector
		Free Run Avg∣Ho ∷36 dB	ld: 100/100 Radio D	evice: BTS		
	#IFGalli:Low #Atten			evice. B15		
10 dB/div Ref 30.00 dBm						
Log						
20.0	page and an a	havenstranting			Cle	ear Write
10.0						
0.00			<b>1</b>			
-10.0	June		The series days and			Average
-20.0 Jumbuther the property when			Manhah Manahata	theman		Average
-30.0						
-50.0						
-60.0					N	lax Hold
Center 1.745 GHz	223			n 37.5 MHz		
Res BW 360 kHz	#	VBW 1.1 MHz	51	veep 1ms	1	Min Hold
Occupied Bandwidt	h	Total Power	32.1 dBm			
13	.563 MHz					Detector
						Peak►
Transmit Freq Error	29.915 kHz	% of OBW Pov	wer 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	14.66 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



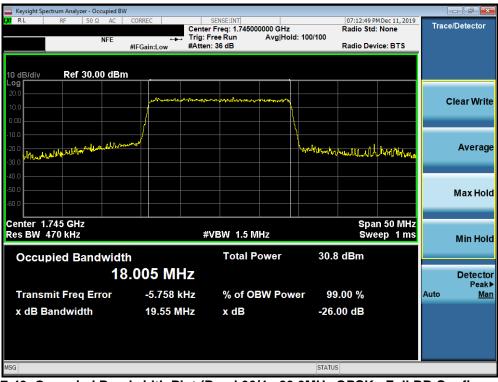
Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 44 of 225
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Keysight Spectrum Analyzer - Occupied BW	/						- 6 ×
LXX RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 1.74500	0000 GHz	08:38:37 PM Radio Std: 1		Trace	/Detector
	- <b></b>	Trig: Free Run	Avg Hold:>100/100	D			
	#IFGain:Low	#Atten: 36 dB		Radio Devid	e: BTS		
10 dB/div Ref 30.00 dBm Log	n						
20.0							
10.0	mon	weekerstalling and so when the source	who was the set			с	lear Write
0.00			\				
-10.0			<u> </u>				
-20.0							Average
-20.0 -30.0 pm////////////////////////////////////	Numv		an and have all	malund	Margan		J
-40.0							
-50.0							
-60.0							Max Hold
-55.5						-	
Center 1.745 GHz					7.5 MHz		
Res BW 360 kHz		#VBW 1.1 M	Hz	Swee	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower 29	.5 dBm			
			20				
13	3.506 MH	Ζ					Detector Peak▶
Transmit Freq Error	-941 I	Hz % of OE	3W Power 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	14.80 MI	Hz xdB	-26	6.00 dB			
	14.00 Mil		-20	5.00 UB			
				110			
MSG			STAT	05			

Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-49. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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Keysight Spectrum Analyzer - Occupied	d BW					- d' <b>X</b>
KX RL RF 50Ω AC		SENSE:INT Center Freq: 1.74500 Trig: Free Run #Atten: 36 dB	0000 GHz Avg Hold: 100/100	07:13:06 PM Dec 11, 20 Radio Std: None Radio Device: BTS	Trace	/Detector
	#IFGain:Low	Atten: 36 dB		Radio Device: B15	-	
10 dB/div Ref 30.00 dl	Bm					
20.0						
10.0	whatewa	-hand and a stand and a	manny		С	lear Write
0.00	/		<u> </u>			
-10.0			<u>\</u>			
-20.0	handware		hardhowner	Mr. malahandara warde		Average
-20.0 -30.0 mm the month of the second				······································	**	-
-40.0						
-50.0						Max Hold
-60.0						Maxinola
Center 1.745 GHz Res BW 470 kHz		#VBW 1.5 M	Hz	Span 50 MH Sweep 1 m		
NC3 DW TO KILZ		#4D14 1.5 14	112	омсер ти		Min Hold
Occupied Bandwi	dth	Total P	ower 30.	7 dBm		
	18.010 MH	2				Detector
						Peak▶
Transmit Freq Error	2.149 kH	z % of OE	3W Power 9	9.00 %	Auto	<u>Man</u>
x dB Bandwidth	19.57 MH	z xdB	-26	.00 dB		
MSG			STATU	JS		

Plot 7-50. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-51. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Plot 7-52. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-53. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F	PCTEST HEMPLANE LAURA IPA. JAL	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 44 of 225		
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Plot 7-54. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-55. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 225		
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Plot 7-56. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



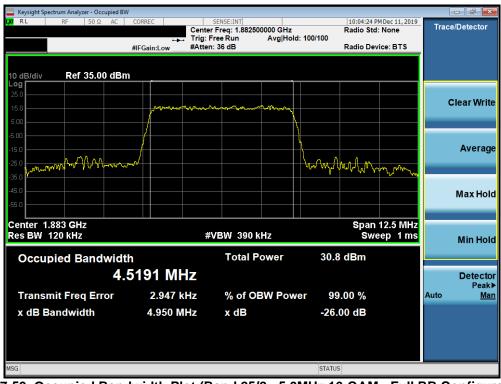
Plot 7-57. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 46 of 225
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Keysight Spectrum Analyzer - Occupied BW	1					- # <b>X</b>
LX/RL RF 50Ω AC		SENSE:INT r Freq: 1.882500000 GHz Free Run Avg Hole	10:04:16 Radio St d: 100/100	PM Dec 11, 2019 d: None	Trace	/Detector
		n: 36 dB		vice: BTS		
,,						
10 dB/div Ref 35.00 dBm	ı					
25.0						
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			c	lear Write
15.0						
5.00						
-5.00						
-15.0 -25.0 march Alun Var Marlon	Bo N		how when have			Average
	24D.		4 1 V V V V V V V V V V V V V V V V V V	on show the		
-35.0						
-45.0						Max Hold
-55.0						
Center 1.883 GHz			Snar	12.5 MHz		
Res BW 120 kHz	#	VBW 390 kHz		eep 1 ms		Min Hold
			00 0 IB			minitiona
Occupied Bandwidt		Total Power	32.0 dBm			
4.	5173 MHz					Detector
Tuo no na it Fuo n Fuo n	1.062 kHz	% of OBW Pow	ver 99.00 %		Auto	Peak►
Transmit Freq Error					Auto	<u>Man</u>
x dB Bandwidth	4.990 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-58. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



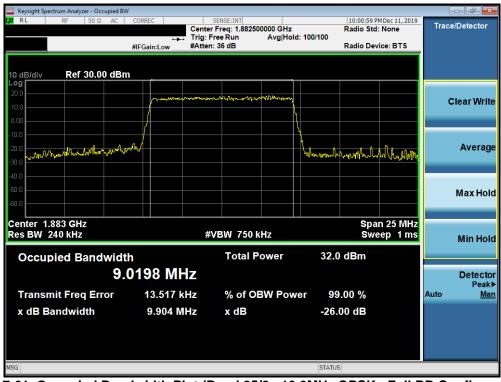
Plot 7-59. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 225
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Keysight Spectrum Analyzer - Occupied B	W						- d ×
LXV RL RF 50Ω AC		SENSE:INT Center Freq: 1.88250		Radio Std:	Dec 11, 2019 None	Trace	/Detector
		Trig: Free Run #Atten: 36 dB	Avg Hold: 100/10	Radio Devi	ice: BTS		
10 dB/div Ref 35.00 dB	m						
25.0							
15.0	~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~			c	lear Write
5.00						_	
-5.00			<u> </u>				
-15.0							Average
-15.0 -25.0	Murd			ᡧᡢᢇᡅᠬᢑ᠕᠕ᠰᡃᠬ	Mode a	_	_
-35.0				1. P.N.P.Y P.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-45.0							Max Hold
-55.0							
Center 1.883 GHz				Span	12.5 MHz		
Res BW 120 kHz		#VBW 390 k	Hz	Swe	ep 1 ms		Min Hold
Occupied Bandwid	th	Total P	ower 2	29.9 dBm			
4	.5421 11172	4					Detector Peak▶
Transmit Freq Error	-7.714 kH	z % of OE	3W Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.011 MH	z xdB	-	26.00 dB			
MSG			S	TATUS			

Plot 7-60. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



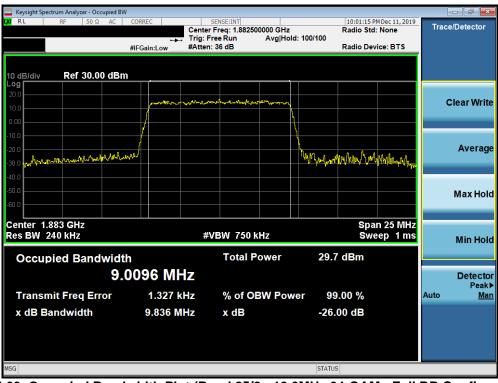
Plot 7-61. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 49 of 225
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Keysight Spectrum Analyzer - Occupied BW	1						
LXI RE 50Ω AC	CORREC	SENSE:INT Center Freg: 1.88250	0000 GHz	10:01:07 PI Radio Std:	4 Dec 11, 2019 None	Trace	e/Detector
	÷+-	Trig: Free Run	Avg Hold: 100/100				
,,	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 30.00 dBm Log							
20.0							
10.0	promo	martanet have a source and	materia			c	lear Write
0.00	/		<u>\</u>			_	
-10.0			── `				
-20.0				All and			Average
-20.0 -30.0 Markan Marka Marka Marka Marka - 30.0	A-M4		<u> </u>	My My provide	happine for the		
-40.0							
-50.0							Max Hold
-60.0							Maxilola
Center 1.883 GHz Res BW 240 kHz		#VBW 750 k	U 7	Spa	n 25 MHz ep 1 ms		
KES DW 240 KHZ		#VDVV /JUK	Π2	SWe	ep mis		Min Hold
Occupied Bandwidt	h	Total P	ower 30).9 dBm			
	9931 MI	7					Detector
							Peak►
Transmit Freq Error	16.432 k	Hz % of OE	3W Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	9.853 M	lHz x dB	-2	6.00 dB			
MSG			STA	TUS			

Plot 7-62. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-63. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 225	
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Keysight Spectrum Analyzer - Occupied BV	V						- # X
🗶 RL RF 50Ω AC		SENSE:INT enter Freq: 1.882500		Radio Std:	1Dec 11, 2019 None	Trace	/Detector
		rig: Free Run Atten: 36 dB	Avg Hold: 100/10	0 Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBn	n						
Log 30.0							
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				c	lear Write
10.0	purper and a second					_	
0.00	/		<u>\</u>				
-10.0							Average
-20.0 may Way branch when the man	~~~^^		hurther	low aland all for the second	haldhallon	_	
-30.0							
-40.0							Max Hold
Center 1.883 GHz Res BW 360 kHz		#VBW 1.1 MI	1-		37.5 MHz		
Res BW JOU KHZ		#VBW 1.1 WI	12	SWe	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total Po	ower 3	2.4 dBm			
13	3.515 MHz						Detector
Transmit Freq Error	34.018 kHz	% of OB	W Power	99.00 %		Auto	Peak▶ Man
x dB Bandwidth	14.77 MHz			26.00 dB		Auto	man
X dB Bandwidth	14.// MHZ	хав	-	20.00 aB			
MSG			ST	ATUS			

Plot 7-64. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



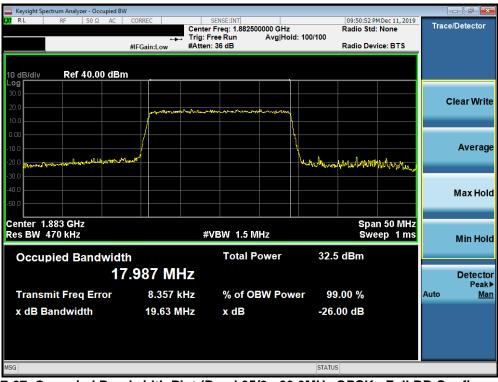
Plot 7-65. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 50 of 225	
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Keysight Spectrum Analyzer - Occupied E	W					
KX RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.882500 Trig: Free Run	0000 GHz Avg Hold: 100/100	09:57:03 PM Dec 11, 2019 Radio Std: None	Trace/E	etector
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	,	
10 dB/div Ref 40.00 dB	m					
30.0						
20.0					Cle	ear Write
10.0	provent and a second	Marked and Alexander	www.			
0.00	/		<u></u>			
-10.0						Average
-20.0	und with the second sec					_
			- Y Mylinianydd	alogical and an of the second and the		
-40.0					Ν	lax Hold
-50.0						
Center 1.883 GHz				Span 37.5 MHz		
Res BW 360 kHz		#VBW 1.1 M	Hz	Sweep 1 ms	1	Vin Hold
Occupied Bandwid	th	Total P	ower 30.0) dBm		
	3.492 M⊦	7				Detector
						Peak►
Transmit Freq Error	5.809 k	Hz % of OE	SW Power 99	.00 %	Auto	<u>Man</u>
x dB Bandwidth	14.75 M	Hz x dB	-26.	00 dB		
MSG			STATUS	5		

Plot 7-66. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



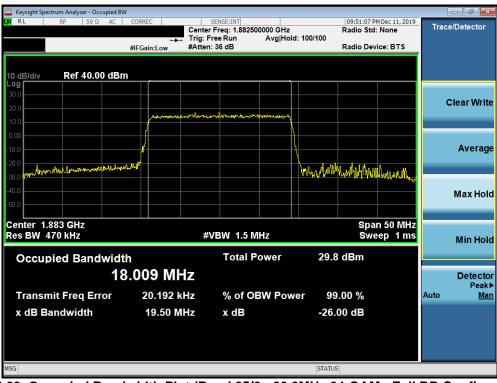
Plot 7-67. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 51 of 005
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Keysight Spectrum Analyzer - Occupied	d BW					- • •
ΙΧ΄ R L RF 50 Ω AC			000 GHz Avg Hold:>100/100	09:51:01 PMDec 1 Radio Std: None	Trace	e/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Device: B	TS	
10 dB/div Ref 40.00 dl	Bm					
Log 30.0						
20.0						Clear Write
10.0	porent	haven any have been the				
0.00			<mark>\</mark>			
-10.0						Average
-20.0 drate and the total the the				marina	ud D. n	_
-30.0			0.444.4.	and a share of the second	n, rinski	
-40.0						Max Hold
-50.0						
Center 1.883 GHz				Span 50		
Res BW 470 kHz		#VBW 1.5 MH	lz	Sweep	1 ms	Min Hold
Occupied Bandwi	dth	Total Po	ower 30	.9 dBm		
	17.981 M⊦	7				Detector
						Peak▶
Transmit Freq Error	15.534 k	Hz % of OB	W Power 9	9.00 %	Auto	<u>Man</u>
x dB Bandwidth	19.52 M	Hz x dB	-26	5.00 dB		
			1			
MSG			STAT	US		

Plot 7-68. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-69. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 225	
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Keysight Spectrum Analyzer -						_	
RL RF 50	NFE	🛶 Trig	sense:INT ter Freq: 2.310000000 GHz : Free Run Avg Ho en: 36 dB	ALIGN AUTO	12:17:28 PM Dec 07, 201 Radio Std: None Radio Device: BTS	9 Trace	e/Detector
og	.00 dBm						
0.0						c	Clear Wri
.00 0.0 0.0	- Margan			L	man handling	n.	Avera
0.0 0.0 0.0							Max Ho
enter 2.310000 GH es BW 120 kHz	Z		#VBW 390 kHz		Span 12.50 MH Sweep 1 m		Min Ho
Occupied Ban		200 MHz	Total Power	33.1	l dBm		Detect
Transmit Freq E	rror	3.240 kHz	% of OBW Po	wer 99	0.00 %	Auto	M
x dB Bandwidth		5.044 MHz	x dB	-26.	00 dB		
				STATU			

Plot 7-70. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-71. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga E2 of 225		
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🔤 Keysight Spectrum Analyzer - Oco	cupied BW				
LX/ RL RF 50 Ω	AC CORREC	SENSE:INT Center Freg: 2.3100	ALIGN AUTO	12:17:57 PM Dec 07, 2 Radio Std: None	Trace/Detector
	NFE +	, Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.0	0 dBm				
Log 30.0					
20.0					Clear Write
10.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm l		
0.00	/				
-10.0			l l		Average
20.0	1				Ŭ
-30.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mmm		mm/m	Mar Mary Mar	
-40.0					Max Hold
-50.0					
Center 2.310000 GHz				Span 12.50 M	Hz
Res BW 120 kHz		#VBW 390	kHz	Sweep 1	ms Min Hold
		Total F	20.	.7 dBm	
Occupied Band			-Ower 50		
	4.5265 M	HZ			Detector
Transmit Freq Err	ror -5.992	kHz % of O	BW Power 9	9.00 %	Peak► Auto <u>Man</u>
x dB Bandwidth	4.979 N	/Hz xdB	-26	5.00 dB	
			20		
MSG			STAT	115	
mod			STAT	03	

Plot 7-72. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-73. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 54 of 225	
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Keysight Spectrum Analyzer - Occupied BW				1			
KI RF 50Ω AC	CORREC Center	SENSE:INT r Freq: 2.310000000 GHz	ALIGN AUTO	12:14:29 P	M Dec 07, 2019 None	Trace/D	etector
NFE		FreeRun Avg∣Ho n:36 dB	ld: 100/100	Radio Dev	ice: BTS		
	#IFGain:Low #Atten	1. 30 0.0		Radio Dev	ice. DT3		
10 dB/div Ref 40.00 dBm							
30.0						Cle	ear Write
20.0	manun	Mar Martin Marillow Marillow					
10.0							
0.00			1				
-10.0			\. \.				Average
-20.0			M. San Crant	والمكر إحريمهم والمراكي	WAMANU		
-30.0							
						N	lax Hold
-50.0							_
Center 2.31000 GHz					5.00 MHz		
Res BW 240 kHz	#	VBW 750 kHz		Swe	ep 1ms	, I	Min Hold
Occupied Bandwidt	h	Total Power	32.1	l dBm			
	9908 MHz						Detecto
0.0						, i	Peak
Transmit Freq Error	-2.710 kHz	% of OBW Pov	ver 99	0.00 %		Auto	Mar
x dB Bandwidth	9.881 MHz	x dB	-26.	00 dB			
ISG			STATU	S			

Plot 7-74. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-75. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage FE of 225	
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Plot 7-76. Occupied Bandwidth Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)



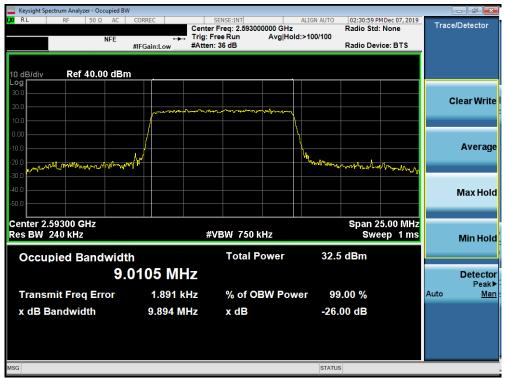
Plot 7-77. Occupied Bandwidth Plot (Band 41 PC3 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EC at 225
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Plot 7-78. Occupied Bandwidth Plot (Band 41 PC3 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-79. Occupied Bandwidth Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 57 of 005		
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🔤 Keysight Spectrum Analyzer - Occu	pied BW						
LXU RL RF 50 Ω	AC CORREC	SENSE:INT Center Freq: 2.5930		Radio Std:	1Dec 07, 2019 None	Trace	Detector
N	FE ← #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Dev	ice: BTS		
10 dB/div Ref 40.00	dBm						
Log 30.0							
20.0						С	lear Write
10.0	phone.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mushing				
0.00	/						
-10.0			V				Average
-20.0			Nh.				
-30.0 Marmulumonadal	whatter			whompman	Walker		
-40.0							Max Hold
-50.0							
Center 2.59300 GHz Res BW 240 kHz		#VBW 7501			5.00 MHz ep 1 ms		
Res DW 240 KHZ		#VDVV / 301	A112	GWC	ep mis		Min Hold
Occupied Bandy	vidth	Total F	Power 30).7 dBm			I
	9.0074 M	Hz					Detector
							Peak►
Transmit Freq Erro	or 8.587	kHz % of O	BW Power	99.00 %		Auto	<u>Man</u> :
x dB Bandwidth	9.859	MHz x dB	-2	6.00 dB			
MSG			STA	TUS			

Plot 7-80. Occupied Bandwidth Plot (Band 41 PC3 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (Band 41 PC3 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 50 of 225		
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Keysight Spectrum Analyzer - Occupied B	N				- ē 🔀
XX RL RF 50Ω AC	Trig: F	SENSE:INT r Freq: 2.593000000 GHz Free Run Avg Hol h: 36 dB	Rac d: 100/100	:27:24 PM Dec 07, 2019 lio Std: None lio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dB	n				
30.0	متادو التهدير أحميهم المراجع المراجع المراجع	J. Jan mound of a start of the			Clear Write
0.00					
-10.0 -20.0				MANDA Mallens	Average
-40.0					Max Hold
-50.0 Center 2.59300 GHz			Si	oan 37.50 MHz	
Res BW 360 kHz		VBW 1.1 MHz		Sweep 1 ms	Min Hold
Occupied Bandwid	th 3.536 MHz	Total Power	32.4 dB	m	Detector
Transmit Freq Error	27.151 kHz	% of OBW Pow	ver 99.00	%	Peak▶ Auto <u>Man</u>
x dB Bandwidth	14.76 MHz	x dB	-26.00 c	IB	
MSG			STATUS		

Plot 7-82. Occupied Bandwidth Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-83. Occupied Bandwidth Plot (Band 41 PC3 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 225			
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Keysight Spectrum Analyzer - Occupied BW					
RL RF 50 Ω AC	CORREC	SENSE:INT r Freq: 2.59300000	ALIGN AUTO	02:27:45 PM Dec 07, 2019 Radio Std: None	Trace/Detector
NFE	NFF Trig: Free Run Avg Hold: 100/100				
	#IFGain:Low #Atter	n: 36 dB		Radio Device: BTS	
dB/div Ref 40.00 dBm					
pg					
0.0					Clear Wri
D.0	dimension and the second	un and an and an and an and an	Annual Inc.		
0.0					
00					
0.0					Avera
0.0	M				
D. O aller abore the little for the market	m ⁴		h. MM had and	When the matter the	
0.0					
					Max Ho
enter 2.59300 GHz				Span 37.50 MHz	
es BW 360 kHz	#	VBW 1.1 MHz		Sweep 1 ms	Min Ho
		Total Pow) dBm	
Occupied Bandwidth		Total Pow	lei 30.0	a a a m	
13	.486 MHz				Detect
Turner it Free Frees	7 040 111-	0/ -f ODW	Dever 00		Pea Auto M
Transmit Freq Error	7.918 kHz	% of OBW	Power 99	0.00 %	Auto <u>M</u>
x dB Bandwidth	14.80 MHz	x dB	-26.	00 dB	
3			STATUS		

Plot 7-84. Occupied Bandwidth Plot (Band 41 PC3 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-85. Occupied Bandwidth Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 60 of 225			
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Keysight Spectrum Analyzer - Occupied B						
XIRL RF 50Ω AC	CORREC	SENSE:INT nter Freg: 2.59300		N AUTO 02:19:49 F Radio Std	M Dec 07, 2019	Trace/Detector
NFE	Trig	g: Free Run tten: 36 dB	Avg Hold: 100			
10 dB/div Ref 40.00 dBr	n					
20.0		stated of the strategy of				Clear Writ
10.0		And Balling Contraction Conditionation				
10.0						Averaç
20.0 30.0 Www. Marked Marked Market Mark	hwllt		<u>\</u>	withmenter	mananyun	_
0.0						Max Ho
enter 2.59300 GHz					50.00 MHz	
tes BW 470 kHz		#VBW 1.5 N			eep 1 ms	Min Ho
Occupied Bandwid	th	Total P	ower	31.5 dBm		
	7.971 MHz					Detecte Peak
Transmit Freq Error	-12.010 kHz	% of O	BW Power	99.00 %	1	Auto <u>Ma</u>
x dB Bandwidth	19.55 MHz	x dB		-26.00 dB		
G				STATUS		

Plot 7-86. Occupied Bandwidth Plot (Band 41 PC3 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-87. Occupied Bandwidth Plot (Band 41 PC3 - 20.0MHz 64-QAM - Full RB Configuration)

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7.3 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 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.

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

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

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + 10 log₁₀(P_[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 at least 10 * the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

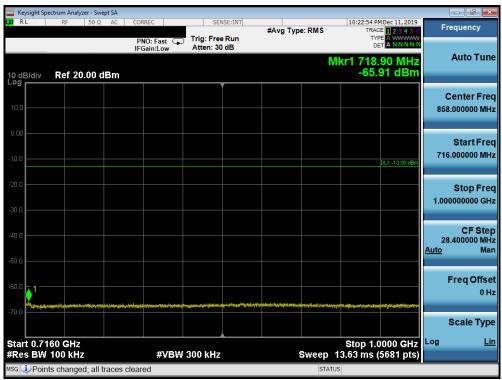
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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	um Analyzer - Swe									
XVI RL	RF 50 Ω		ORREC PNO: Fast C FGain:Low		#Avg Typ	e: RMS	TRAC	E 1 2 3 4 5 6 A WWWWW A NNNN	Fre	equency
10 dB/div	Ref 20.00 d		FGam.Low	, then of		M	kr1 697. -54.	65 MHz 34 dBm		Auto Tune
10.0										enter Fre 950000 MH
-10.0								DL1 -13.00 dBm	30	Start Fre 000000 MH
-20.0									697	Stop Fre 900000 MH
-40.0								1	66 <u>Auto</u>	CF Ste 790000 MH Ma
-60.0						de arcanata de constructores de la constru			F	Freq Offse 0 H
-70.0		ined deal 1 of . • day 3 a	and a long of the long back back	al an ann an Anna an A						Scale Typ
Start 30.0 N #Res BW 10			#VB	W 300 kHz	s	weep 32	Stop 69 .06 ms (1	97.9 MHz 3359 pts)	Log	Li
MSG						STATUS				

Plot 7-88. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-89. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	ectrum Analyzer - S	wept SA						
LXI RL	RF 50	Ω AC	CORREC		VSE:INT	#Avg Type: RMS	10:23:05 PM Dec 11, 2019 TRACE 1 2 3 4 5 6	Frequency
			PNO: Fast IFGain:Low	Trig: Free #Atten: 3				Auto Tuno
10 dB/div Log	Ref 0.00 c	lBm					Wkr1 1.399 0 GHz -46.57 dBm	Auto Tune
								Center Freq
-10.0							DL1 -13.00 dBm	5.500000000 GHz
-20.0								Start Freq
-30.0								1.000000000 GHz
-40.0	• — —							Stop Freq
-50.0					هر مخالف مرد د	والمتلاية متروار والمتحال والمريس والمريس والم	والمتعادية ومعاربه والمستعدية والمستعدية والمعاربة	10.000000000 GHz
-50.0					and been staff in the		handle you maile an initial and a faith in the second second second second second second second second second s	CF Step
-60.0								900.000000 MHz Auto Mar
-70.0								
-80.0								Freq Offset 0 Hz
-90.0								
								Scale Type
Start 1.00 #Res BW			#VE	3W 3.0 MHz		Sween	Stop 10.000 GHz 15.60 ms (18001 pts)	Log <u>Lin</u>
MSG							ATUS	

Plot 7-90. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-91. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyzer - S		000050					40.04.55.5	ND	
XV RL	RF 50	Ω AC	CORREC PNO: Fast			#Avg Typ	e: RMS	TRAC	M Dec 11, 2019 DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Frequency
I0 dB/div	Ref 20.00	dBm	In Gam. Low				N	lkr1 716 -65.	.00 MHz 59 dBm	Auto Tun
10.0										Center Fre 858.000000 MH
0.00									DL1 -13.00 dBm	Start Fre 716.000000 M⊦
20.0										Stop Fre 1.000000000 GH
40.0 										CF Ste 28.400000 MI <u>Auto</u> Mi
i0.0 <u>1</u> —		the distance of the distance of the		a an an Ard a Jacquera (arba)	المراجع والمراجع المراجع	Strengt Reference, Part Superior and state A	a Meriden all and a second all a second	المعادية وسنديك ورسيا بالارفوقي	a lå, som stavistissand söm is	Freq Offs 0 I
70.0										Scale Typ
Start 0.71 Res BW	100 kHz			/ 300 kHz				13.63 ms (0000 GHz (5681 pts)	Log <u>L</u>
sg 🥠 Poin	ts changed; a	Il traces c	leared				STATU	JS		

Plot 7-92. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



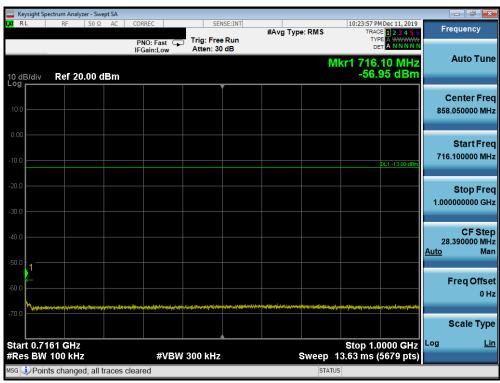
Plot 7-93. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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W RL RF 50 Ω AC CORREC PNO: F IFGain:1 10 dB/div Ref 20.00 dBm 0 00	sense:INT ast ow Atten: 30 dB	10:23:51 PMDe: 11,2019 #Avg Type: RMS TRACE 12:34:5 6 TYPE A WHINN DET A NHINN Mkr1 697.60 MHz -52.40 dBm	Frequency Auto Tune
10 dB/div Ref 20.00 dBm 10.0 .10.0 .10.0 .20.0	.ow Atten: 30 dB	Mkr1 697.60 MHz	Auto Tune
-10.0			
-10.0			Center Freq 364.000000 MHz
		DL1 -13.00 dBn	Start Freq 30.000000 MHz
			Stop Freq 698.000000 MHz
-40.0			CF Step 66.800000 MHz <u>ito</u> Man
-60.0	n na na sana	ada junta su na terren a terren parta da cada españo a parta a parta por a de se de secondario de secondario d	Freq Offset 0 Hz
Start 30.0 MHz		Stop 698.0 MHz	Scale Type
#Res BW 100 kHz =		Sweep 32.06 ms (13361 pts)	

Plot 7-94. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-95. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyzer -							- 5 -
LXI RL	RF 50	Ω AC	CORREC PNO: Fast	SENSE	#Avg Ty un		10:24:13 PM Dec 11, 2019 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div	Ref -3.00	dBm	IFGain:Low _	#Atten: 30 d	В	Mkr	1 1.413 0 GHz -41.58 dBm	Auto Tune
-13.0							DL1 -13.00 dBm	Center Freq 5.500000000 GHz
-23.0	1							Start Fred 1.000000000 GHz
-43.0				and the second				Stop Fred 10.000000000 GHz
-63.0								СF Step 900.000000 МН: <u>Auto</u> Маг
-83.0								Freq Offse 0 Hi
-93.0							Stop 10.000 GHz	Scale Type
#Res BW			#VB	W 3.0 MHz		Sweep 15.6	0 ms (18001 pts)	
MSG						STATUS		

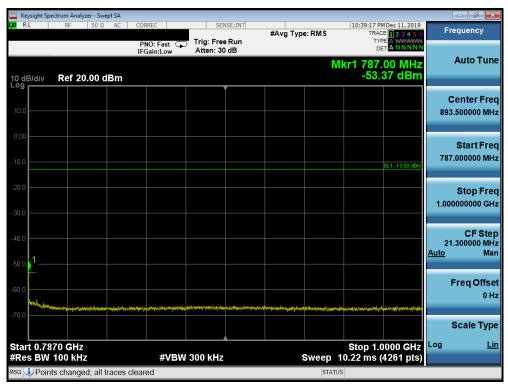
Plot 7-96. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Keysight Spectrum Analyzer - Swept SA XI RL RF 50 Ω AC	CORREC SENSE:INT PNO: Fast Control Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS	10:39:12 PM Dec 11, 2019 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref 20.00 dBm	IFGain:Low Atten: 30 dB	Mk	r1 777.00 MHz -33.92 dBm	Auto Tun
10.0				Center Fre 403.500000 MH
0.00			DL1 -13.00 dBm	Start Fre 30.000000 MH
30.0			1	Stop Fre 777.000000 MF
40.0				CF Ste 74.700000 MI <u>Auto</u> Ma
50.0	n 11 s ann a fa ann a' cur a lain as an da tha Shaibheide	Source and the second	- Street in a local build	Freq Offs 01
	array and a set of the	i te ya yan sani yi yindin tashiri hiti yilaya ku yanni ya tashiri na Udani d		Scale Typ
Start 30.0 MHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 35.	Stop 777.0 MHz 86 ms (14941 pts)	Log <u>L</u>

Plot 7-97. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-98. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyze	er - Swept S	A									
LXI RL	RF	50Ω A	C COF	RREC		NSE:INT	#Avg Typ	e: RMS	TRA	M Dec 11, 2019 CE 1 2 3 4 5 6	Free	uency
			PI IFC	NO: Fast Gain:Low	Trig: Fre #Atten: 3				TY			
	B -6.0.0	0 .ID						Mk	r1 1.55	5 0 GHz 98 dBm	A	uto Tune
10 dB/div	Ref 0.0	U aBm				Y						
												nter Freq
-10.0										DL1 -13.00 dBm	5.5000	00000 GHz
-20.0												
												Start Freq 00000 GHz
-30.0												
-40.0	1										9	Stop Freq
`	Y I					an descus	مقدر والأردين والمراجع	a a difficiencia da como como con a das	ha dan sama sa			00000 GHz
-50.0				-		of the section of the	in the state of the second second	historia a sile	an all financian and			
-60.0											900.0	CF Step
-70.0											<u>Auto</u>	Man
-70.0											-	
-80.0											Fr	eq Offset 0 Hz
-90.0												
-90.0											S	cale Type
Start 1.00	0 GH7								Stop 10	0.000 GHz	Log	Lin
#Res BW				#VE	3.0 MHz		s	weep 15	.60 ms (1	(8001 pts)	_	
MSG								STATUS				

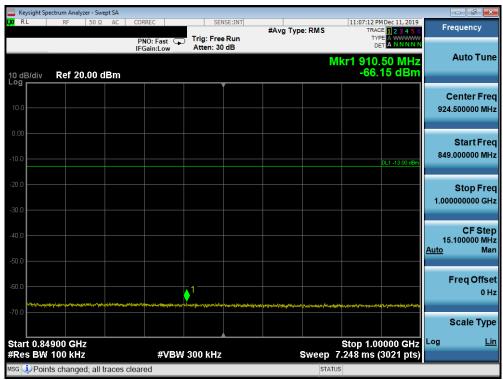
Plot 7-99. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept SA K RL RF 50 Ω AC	CORREC SENSE:INT	11:07:06 PM Dec 11, 2019	
	PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS TRACE 123456 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBm		Mkr1 823.00 MHz -51.88 dBm	Auto Tun
10.0			Center Fre 426.500000 MH
10.0		DL1 -13 00 dBm	Start Fre 30.000000 MH
30.0			Stop Fre 823.000000 Mi
40.0		1,	CF Ste 79.300000 Mi <u>Auto</u> Ma
60.0			Freq Offs 0 I
70.0 ben halle slig til han han her han her han her her her her her her her her her her			Scale Typ
Start 30.0 MHz Res BW 100 kHz	#VBW 300 kHz	Stop 823.0 MHz Sweep 38.06 ms (15861 pts)	Log <u>L</u>
ISG		STATUS	

Plot 7-100. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-101. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMF700F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	/sight Spec	trum	Analyzer -	Swep	t SA										
l,XI RI	L	RF	5	0Ω	AC	CORRE	0		SENSE:INT	#Avg Typ	e: RMS	TR	PM Dec 11, 2019 ACE 1 2 3 4 5 6	F	requency
						PNO: IFGai	Fast 🖵 n:Low	Trig: F #Atten	ree Run : 30 dB			T			
10 dE Log i	3/div	Rei	F 8.00	dB	m						N	/kr1 1.64 -44	19 0 GHz .00 dBm		Auto Tune
209									Ĭ					(Center Freq
-2.00														5.50	0000000 GHz
-12.0													DL1 -13.00 dBm		
-22.0														1.00	Start Freq 0000000 GHz
-32.0															Stop Freq
-42.0	(1												10.00	0000000 GHz
-52.0					a Statutes			-				and the second secon			CF Step
02.0							and a set of							900 <u>Auto</u>	0.000000 MHz Man
-62.0															
-72.0															Freq Offset 0 Hz
-82.0															
															Scale Type
	t 1.000											Stop 1	0.000 GHz	Log	Lin
#Res	s BW 1	.01	VIHZ				#VBW	3.0 MI	Z	5	Sweep		18001 pts)		
MSG											STAT	105			

Plot 7-102. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



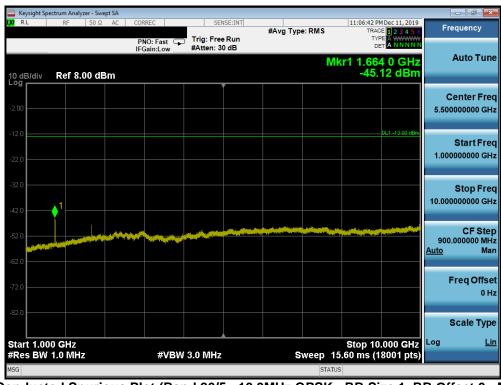
Plot 7-103. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	ectrum Analyze	r - Swept SA							
L <mark>XU</mark> RL	RF	50 Ω AC	CORREC PNO: Fas	t 👝 Trig: I	SENSE:INT	#Avg Type: RMS	TRAC	E 1 2 3 4 5 6 A WWWW A NNNN	Frequency
10 dB/div Log	Ref 20.	00 dBm	IFGain:Lo		n: 30 dB		Mkr1 851.		Auto Tune
10.0									Center Freq 924.500000 MHz
-10.0								DL1 -13.00 dBm	Start Freq 849.000000 MHz
-20.0									Stop Freq 1.000000000 GHz
-40.0									CF Step 15.100000 MHz <u>Auto</u> Man
-60.0		and the stand of the stand		anter des generation des ser d	ชีนว่ออีก	un franzischen franzer franzer franzer	0.6444.0449.0750.0750.0750.0750.0750.0750.0750.075	ad Jange by Velagged or all	Freq Offset 0 Hz
-70.0									Scale Type
Start 0.84 #Res BW			#`	VBW 300 k	Hz	Sweep	Stop 1.00 7.248 ms (Log <u>Lin</u>
MSG						ST	ATUS		

Plot 7-104. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



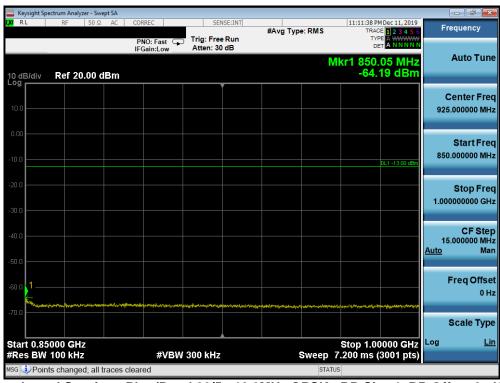
Plot 7-105. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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22 RL RF 50 Ω AC	CORREC S PNO: Fast Trig: Fr IFGain:Low Atten:		#Avg Type		TRACE	Dec 11, 2019 1 2 3 4 5 6 A WWWW A N N N N N 25 MLI	Frequency Auto T	y
Log	IFGain:Low Atten:	30 dB		Mk			Auto T	
					-64.5	58 dBm		rune
							Center F 427.000000	
-10.0						DL1 -13.00 dBm	Start F 30.000000	
-20.0							Stop F 824.000000	
-40.0							CF S 79.400000 <u>Auto</u>	
-60.0		generative to a second to a				1	Freq Of	ffse 0H;
Start 30.0 MHz					Stop 82	24.0 MHz	Scale T Log	Type <u>Lir</u>
#Res BW 100 kHz	#VBW 300 kH	z	St	weep 38.	11 ms (1:	5881 pts)		

Plot 7-106. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-107. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMF700F	INCOMPLATE AL CALERA IPAS AN	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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😐 Keysig	ht Spectrum	Analyzer - S	Swept SA											
l <mark>xi</mark> RL	R	F 50	Ω AC	COI	RREC		SEN	ISE:INT	#Avg Typ	e: RMS	11:	TRACE	Dec 11, 2019	Frequency
				PI IF(NO: Fast Gain:Lov		Trig: Free #Atten: 3					DET	A WWWWW A N N N N N	Auto Tur
10 dB/d Log	liv Re	ef 8.00 (dBm								Mkr1 ′	1.679 -44.1	0 GHz 4 dBm	Auto Tu
														Center Fre
-2.00														5.50000000 G
-12.0)L1 -13.00 dBm	
-22.0														Start Fre 1.00000000 Gł
-22.0														
-32.0														Stop Fre
-42.0	\													10.00000000 G
-52.0				Market State	·									CF Ste
-02.0				فنع يتكفيه										900.000000 Mi Auto Ma
-62.0														
-72.0														Freq Offs 0 I
-82.0														
-02.0														Scale Typ
	.000 G										Ste	op 10.	000 GHz	Log <u>L</u>
	3W 1.0	MHz			#V	/BW	3.0 MHz		s			ms (18	8001 pts)	
ISG										ST	ATUS			

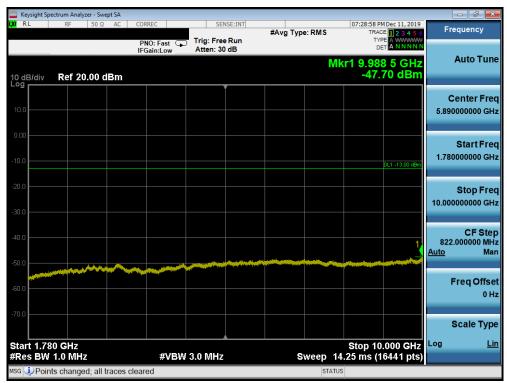
Plot 7-108. Conducted Spurious Plot (Band 26/5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Keysight Spectrum Analyzer - Swept S				
χί RL RF 50Ω Α	C CORREC SENSE:INT PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS	07:28:49 PM Dec 11, 2019 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBr	in dumeow	М	kr1 1.709 0 GHz -33.12 dBm	Auto Tun
10.0				Center Fre 869.500000 MH
-10.0			DL1 -13.00 dBm	Start Fre 30.000000 MH
-20.0			<u>1</u>	Stop Fre 1.709000000 GH
-40.0				CF Ste 167.900000 MH <u>Auto</u> Ma
60.0	gaugenersterster berechtigt die behöhnte die einer seinen genoem ferster begreitigt.	29107979797979797979797979797979797979797		Freq Offso 0 H
-70.0			04477 4 7000 0145	Scale Typ
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 2	Stop 1.7090 GHz 2.239 ms (3359 pts)	
ISG		STATU	IS	

Plot 7-109. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-110. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMF700F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum	Analyzer - Swep	ot SA									- ×
(X/RL R	F 50 Ω	AC CO	RREC	SEN	ISE:INT	#Avg Typ	e RMS		M Dec 11, 2019 DE 1 2 3 4 5 6	Frequ	iency
			NO: Fast 🕞 Gain:Low	Trig: Free Atten: 10		#//g//jP	c. Railo	TY			
	ef 0.00 dB	m					Mkı	1 18.26 ⁻¹ -58.	8 5 GHz 46 dBm	Au	ito Tune
-10.0									DL1 -13.00 dBm		iter Freq 0000 GHz
-20.0											art Freq 0000 GHz
-40.0											top Freq 0000 GHz
-60.0											CF Step 0000 GHz Man
-80.0										Fre	q Offset 0 Hz
-90.0											ale Type
Start 10.000 (#Res BW 1.0			#VBW	/ 3.0 MHz		s	weep 2	Stop 20 5.33 ms (2	.000 GHz 20001 pts)	Log	<u>Lin</u>
мsg 🧼 Points ch	anged; all tr	aces clear	red				STATU	S			

Plot 7-111. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-112. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	ectrum Analyzer -									
LXU RL	RF 50	Ω AC	CORREC	Trig: Fre		#Avg Typ	e: RMS	TRAC	M Dec 11, 2019 DE 1 2 3 4 5 6 PE A WWWWWW ET A N N N N N	Frequency
10 dB/div	Ref 20.00) dBm	IFGain:Low	Atten: 30) dB		MI	(r1 9.75	9 5 GHz 55 dBm	Auto Tune
10.0										Center Freq 5.890000000 GHz
-10.0									DL1 -13.00 dBm	Start Freq 1.780000000 GHz
-20.0										Stop Freq 10.000000000 GHz
-40.0					, the significant states and	de Louis befand de Martin en 17 de		, a dilingun (ander samme (a dal	↓ 1	CF Step 822.000000 MHz <u>Auto</u> Man
-60.0										Freq Offset 0 Hz
-70.0 Start 1.78	0 GHz							Stop <u>10</u>	.000 GHz	Scale Type Log <u>Lin</u>
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 14.25 ms (16441 pts) Msg Points changed, all traces cleared status										

Plot 7-113. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-114. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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