

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT

LTE

Applicant Name:

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

Date of Testing: 10/5-11/8/2017 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1710050266-03.A3L

FCC ID:

A3LSMA730F

Certification

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:
Model:
Additional Model(s):
EUT Type:
FCC Classification:
FCC Rule Part(s):
ISED Specification:

Test Procedure(s):

SM-A730F/DS SM-A730F Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 RSS-130 Issue 1, RSS-132- Issue 3, RSS-133 Issue 6, RSS-139 Issue 3, RSS-199 Issue 3 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03

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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			Ef	RP	EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
			(**)	(ubiii)	(**)	(dDIII)	0	
LTE Band 12	27	699.7 - 715.3	0.064	18.03	0.104	20.18	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.050	16.96	0.081	19.11	1M11W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.040	16.03	0.066	18.18	1M11W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.065	18.15	0.107	20.30	2M72G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.052	17.13	0.085	19.28	2M72W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.041	16.13	0.067	18.28	2M71W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.069	18.42	0.114	20.57	4M54G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.053	17.22	0.086	19.37	4M56W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.043	16.31	0.070	18.46	4M53W7D	64QAM
LTE Band 12/17	27	704 - 711	0.068	18.35	0.112	20.50	9M05G7D	QPSK
LTE Band 12/17	27	704 - 711	0.052	17.13	0.085	19.28	9M06W7D	16QAM
LTE Band 12/17	27	704 - 711	0.041	16.14	0.067	18.29	9M03W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.062	17.90	0.101	20.05	4M55G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.048	16.80	0.079	18.95	4M55W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.037	15.67	0.061	17.82	4M55W7D	64QAM
LTE Band 13	27	782	0.065	18.14	0.107	20.29	9M05G7D	QPSK
LTE Band 13	27	782	0.055	17.41	0.090	19.56	9M00W7D	16QAM
LTE Band 13	27	782	0.045	16.57	0.075	18.72	9M00W7D	64QAM
LTE Band 5/26	22H	824.7 - 848.3	0.069	18.41	0.114	20.56	1M10G7D	QPSK
LTE Band 5/26	22H	824.7 - 848.3	0.066	18.23	0.109	20.38	1M11W7D	16QAM
LTE Band 5/26	22H	824.7 - 848.3	0.053	17.26	0.087	19.41	1M10W7D	64QAM
LTE Band 5/26	22H	825.5 - 847.5	0.101	20.05	0.166	22.20	2M71G7D	QPSK
LTE Band 5/26	22H	825.5 - 847.5	0.077	18.89	0.127	21.04	2M72W7D	16QAM
LTE Band 5/26	22H	825.5 - 847.5	0.061	17.87	0.101	20.02	2M71W7D	64QAM
LTE Band 5/26	22H	826.5 - 846.5	0.098	19.93	0.161	22.08	4M54G7D	QPSK
LTE Band 5/26	22H	826.5 - 846.5	0.076	18.81	0.125	20.96	4M55W7D	16QAM
LTE Band 5/26	22H	826.5 - 846.5	0.061	17.82	0.099	19.97	4M51W7D	64QAM
LTE Band 5/26	22H	829 - 844	0.079	18.99	0.130	21.14	8M92G7D	QPSK
LTE Band 5/26	22H	829 - 844	0.060	17.76	0.098	19.91	8M93W7D	16QAM
LTE Band 5/26	22H	829 - 844	0.048	16.82	0.079	18.97	8M92W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.049	16.90	0.080	19.05	13M4G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.038	15.76	0.062	17.91	13M4W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.042	16.20	0.068	18.35	13M4W7D	64QAM

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			EI	RP		
Mode	FCC Rule	Tx Frequency (MHz)	Max. Power	Max. Power	Emission	Modulation
Mode	Part		(W)	(dBm)	Designator	Wouldton
			. ,	. ,		
LTE Band 4/66	27	1710.7 - 1779.3	0.370	25.68	1M10G7D	QPSK
LTE Band 4/66	27	1710.7 - 1779.3	0.281	24.49	1M11W7D	16QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.216	23.34	1M10W7D	64QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.379	25.78	2M73G7D	QPSK
LTE Band 4/66	27	1711.5 - 1778.5	0.290	24.62	2M71W7D	16QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.223	23.49	2M72W7D	64QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.362	25.59	4M57G7D	QPSK
LTE Band 4/66	27	1712.5 - 1777.5	0.264	24.22	4M53W7D	16QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.194	22.89	4M55W7D	64QAM
LTE Band 4/66	27	1715 - 1775	0.372	25.71	9M05G7D	QPSK
LTE Band 4/66	27	1715 - 1775	0.274	24.38	9M04W7D	16QAM
LTE Band 4/66	27	1715 - 1775	0.203	23.08	9M02W7D	64QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.347	25.40	13M5G7D	QPSK
LTE Band 4/66	27	1717.5 - 1772.5	0.267	24.27	13M5W7D	16QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.207	23.17	13M5W7D	64QAM
LTE Band 4/66	27	1720 - 1770	0.347	25.40	17M8G7D	QPSK
LTE Band 4/66	27	1720 - 1770	0.278	24.43	17M7W7D	16QAM
LTE Band 4/66	27	1720 - 1770	0.224	23.49	17M7W7D	64QAM
LTE Band 2	24E	1850.7 - 1909.3	0.193	22.85	1M11G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3	0.136	21.33	1M10W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3	0.108	20.35	1M10W7D	64QAM
LTE Band 2	24E	1851.5 - 1908.5	0.268	24.29	2M72G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5	0.206	23.14	2M72W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5	0.156	21.93	2M72W7D	64QAM
LTE Band 2	24E	1852.5 - 1907.5	0.283	24.52	4M58G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5	0.217	23.37	4M54W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5	0.162	22.09	4M52W7D	64QAM
LTE Band 2	24E	1855 - 1905	0.286	24.56	9M03G7D	QPSK
LTE Band 2	24E	1855 - 1905	0.208	23.17	9M04W7D	16QAM
LTE Band 2	24E	1855 - 1905	0.178	22.50	9M05W7D	64QAM
LTE Band 2	24E	1857.5 - 1902.5	0.216	23.35	13M6G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5	0.154	21.87	13M6W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5	0.132	21.07	13M5W7D	64QAM
LTE Band 2	24L 24E	1860 - 1900	0.194	21.22	18M0G7D	QPSK
LTE Band 2	24L 24E	1860 - 1900	0.154	21.88	18M0W7D	16QAM
LTE Band 2	24E	1860 - 1900	0.134	20.73	17M7W7D	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.143	20.73	4M56G7D	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.143	20.56	4M54W7D	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.091	19.61	4M53W7D	64QAM
LTE Band 41	27	2501 - 2685	0.113	20.54	8M99G7D	QPSK
LTE Band 41	27	2501 - 2685	0.091	19.59	9M02W7D	16QAM
LTE Band 41	27	2501 - 2685	0.074	18.66	8M99W7D	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.125	20.95	13M5G7D	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.123	20.95	13M6W7D	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.086	19.33	13M5W7D	64QAM
LTE Band 41	27	2506 - 2680	0.000	21.15	17M9G7D	QPSK
LTE Band 41		2506 - 2680		21.15		
LTE Band 41	27 27	2506 - 2680	0.121	18.88	18M0W7D 18M0W7D	16QAM 64QAM
	<u>∠1</u>	2000 - 2000 EUT Ove		10.00		U4Q/AIVI

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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 facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. 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 (22831) 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: A3LSMA730F**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 29501, 21518, 29857, 29446, 21518, 24503, 29626, 24503, 29626

2.2 Device Capabilities

This device contains the following capabilities:

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

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.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

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 v03) were used in the measurement of the EUT.

3.1 Block C Frequency Range

§27.5(b)(3)

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.

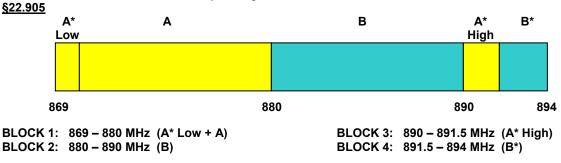
3.2 Block A Frequency Range

<u>§27.5(c)</u>

<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:

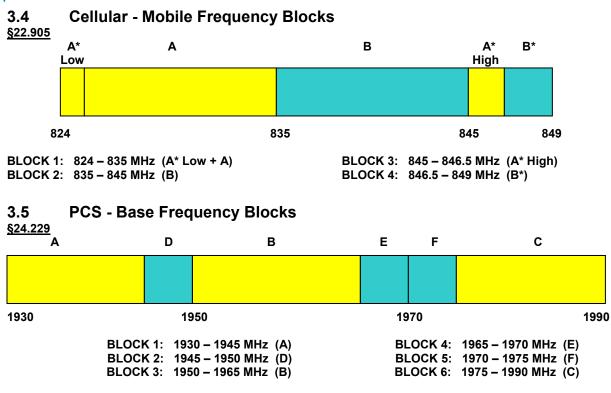
Block A: 698-704 MHz and 728-734 MHz; Block B: 704-710 MHz and 734-740 MHz; and Block C: 710-716 MHz and 740-746 MHz.

3.3 Cellular - Base Frequency Blocks

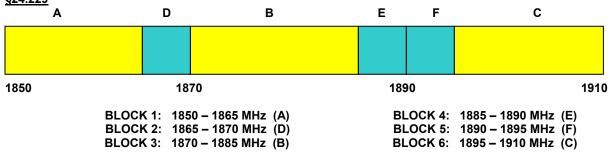


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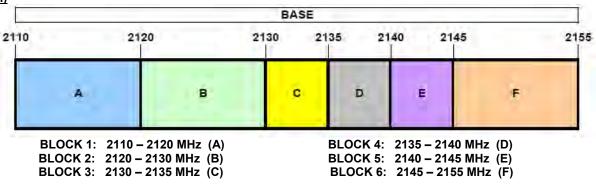








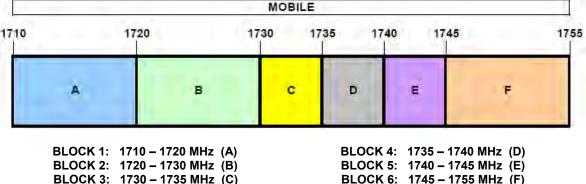
<u>§27.5(h)</u>



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3.8 §27.5(h)	AWS - M	Iobile Frequency Blocks			
			MO		
5	100	1000 C	1244		



3.9 Radiated Power and Radiated Spurious Emissions

§2.1053 §22.913(a)(2) §22.917(a) §24.232(c) §24.238(a) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4) §27.53(f) §27.53(g) §27.53(h) RSS-133(4.4) RSS-132(5.4) RSS-132(5.5) RSS-133(6.4) RSS-133(6.5) RSS-139(6.5) RSS-139(6.6) RSS-199(4.5)

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 v03.

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 $_{[dB]}$.

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 + 10log₁₀(Power [Watts]).

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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	5/3/2017 Annual !		5/3/2018	LTx2
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/21/2017	Annual	6/21/2018	RE1
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/27/2017	Annual	3/27/2018	MY52350166
Anritsu	MS2038C	20 GHz Network Analyzer	7/19/2017	Annual	7/19/2018	1214109
COM-Power	AL-130R	Active Loop Antenna	6/5/2017	Annual	6/5/2018	121085
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	6/21/2017	Annual	6/21/2018	441119
Com-Power	PAM-118A	Pre-Amplifier	6/21/2017	Annual	6/21/2018	551042
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
Espec	ESX-2CA	Environmental Chamber	4/11/2017 Annual 4		4/11/2018	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	12/1/2016 Biennial 2		125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	Antenna 4/26/2016 Biennial		4/26/2018	128337
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	12/5/2016 Biennial		12/5/2018	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A		QA1317001	
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	3/24/2017	Annual	3/24/2018	11210140001
Rohde & Schwarz	CMW500	Radio Communication Tester	10/13/2017	Annual	10/13/2018	102060
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	4/19/2017	Annual	4/19/2018	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102133
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102135
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	11/18/2015	Biennial	11/18/2017	91052522TX
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107

Table 5-1. Test Equipment

Note:

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

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMA730F
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>LTE</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	RSS-Gen(4.6.1) RSS-133(2.3) RSS-139(2.3)	Occupied Bandwidth	N/A		PASS	Section 7.2
2.1051 2.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h) 27.53(m)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6) RSS-199(4.5)	Out of Band Emissions	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Section 7.3, 7.4
24.232(d)	RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5) RSS-199(4.4)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	RSS-130(4.4) RSS-132(5.4) RSS-133(4.1) RSS-139(4.1) RSS-199(4.4)	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-130(4.3) RSS-132(5.3) RSS-133(6.3) RSS-139(6.4) RSS-199(4.3)	Frequency Stability	< 2.5 ppm and fundamental emissions stay within authorized frequency block		PASS	Section 7.8

Table 7-1. Summary of Conducted Test Results

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(2)	RSS-132(5.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 26/5)	< 7 Watts max. ERP < 11.5 Watts max. EIRP		PASS	Section 7.6
27.50(b)(10) 27.50(c)(10)	RSS-130(4.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12/17, 13)	< 3 Watts max. ERP < 5 Watts max. EIRP		PASS	Section 7.6
24.232(c) 27.50(h.2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power (Band 2, 41)	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP		PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6) RSS-199(4.4)	Undesirable Emissions (Band 12/17, 2, 4/66, 5/26)	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions	RADIATED	PASS	Section 7.7
27.53(f)	RSS-130(4.6)	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		PASS	Section 7.7
27.53(m)	RSS-199(4.5)	Undesirable Emissions (Band 41)	 > 43 + 10log₁₀ (P[Watts]) at channel edges > 55 + 10log₁₀ (P[Watts]) at 5.5MHz away and beyond channel edges 		PASS	Section 7.7

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 4.8.

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7.2 Occupied Bandwidth §2.1049 RSS-Gen (4.6.1) RSS-133(2.3) RSS-139(2.3)

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 v03 - 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.

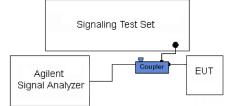


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

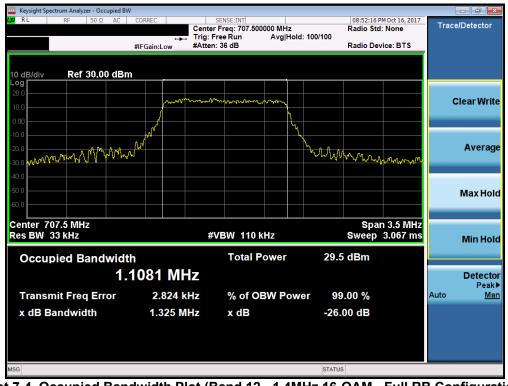
FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Band 12



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



Plot 7-4. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

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Plot 7-5. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

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Band 12



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



Plot 7-7. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-8. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

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



Plot 7-10. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-11. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)

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



Plot 7-13. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-14. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

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Band 13



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



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

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-17. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

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Band 13



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



Plot 7-19. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-20. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

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Plot 7-21. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BV RL RF 50 Ω DC	CORREC	SENSE:INT r Freq: 836.500000 MHz	09:15:19 Radio St	AM Oct 27, 2017 d: None	Trace/Detector
NFE		Free Run Avg Hold: n: 36 dB		vice: BTS	
10 dB/div Ref 30.00 dBn	1				
20.0	m	mmmmmmmmm			Clear Writ
).00					
0.0	^	\			
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		when men when you	manguy	Avera
				A have been to be a first of the	
0.0					Marilla
60.0					Max Ho
enter 836.5 MHz			Sna	n 3.5 MHz	
es BW 33 kHz	#	VBW 110 kHz		3.067 ms	Min Ho
Occupied Bandwidt	h	Total Power	29.4 dBm		
	1027 MHz				Detect
Transmit Freq Error	-143 Hz	% of OBW Powe	er 99.00 %		Peal Auto M
x dB Bandwidth	1.330 MHz	x dB	-26.00 dB		
	1.330 WIHZ	хuв	-20.00 UB		
SG			STATUS		

Plot 7-23. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 5/26



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



Plot 7-25. Occupied Bandwidth Plot (Band 5/26 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100
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A Keysight Spectrum Analyzer - Occupied BW R L RF 50 Ω DC NFE	CORREC Center	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Hc I: 36 dB	old: 100/100	08:59:10 A Radio Std: Radio Devi		Trace/D	etector
0 dB/div Ref 40.00 dBm • 9 0 20 0 20 0	1	\$~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Cle	ear Write
10.0 0.00 10.0 20.0			hemo	- Whenkhywey	mankanya		Averag
40.0						N	lax Hol
Center 836.5 MHz Res BW 68 kHz Occupied Bandwidt		VBW 220 kHz Total Power	30		7.5 MHz 3.8 ms	r	⁄lin Hol
2.7	7117 MHz	% of OBW Por				l Auto	Detecto Peak Ma
Transmit Freq Error x dB Bandwidth	4.069 kHz 3.070 MHz	% of OBW Por		9.00 % .00 dB		Auto	
G			STATL	JS			

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

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-27. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW           RL         RF         50 Ω         DC           NFE	Trig: I	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Hold:		lone	ace/Detector
	#IFGain:Low #Atter	n: 36 dB	Radio Devic	e: BTS	
0 dB/div Ref 30.00 dBm					
. <b>og</b> 20.0					
10.0	mon	- marken - M			Clear Wri
.00					
0.0	ph.		Why a		Avera
0.0			"The former of the second seco	mann	, , , , , , , , , , , , , , , , , , ,
0.0					
0.0					Max Ho
0.0					
enter 836.5 MHz es BW 120 kHz	#	VBW 390 kHz		2.5 MHz p 1 ms	
					Min Ho
Occupied Bandwidth		Total Power	29.8 dBm		
4.:	5088 MHz				Detect Pea
Transmit Freq Error	3.370 kHz	% of OBW Powe	r 99.00 %	Auto	• <u>M</u>
x dB Bandwidth	5.436 MHz	x dB	-26.00 dB		
· ·			STATUS		

Plot 7-29. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 100
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Plot 7-30. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-31. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 100
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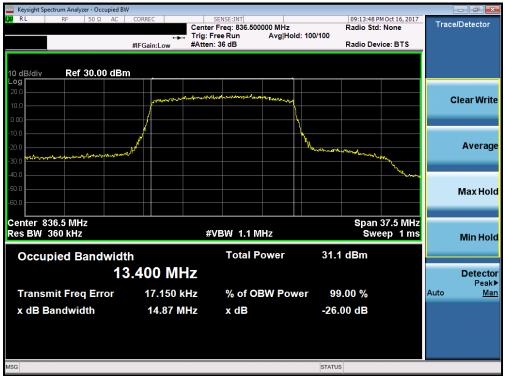
Keysight Spectrum Analyzer - Occupied BW				
XIRL RF 50Ω DC	Center Trig: F	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Hold: h: 36 dB	07:38:23 AM Oct 2 Radio Std: Non 100/100 Radio Device: E	e Trace/Detector
10 dB/div Ref 30.00 dBn	n			
10.0 0.00	<u>and and and and and and and and and and </u>	mp	· manana · · · · · · · · · · · · · · · · ·	Clear Writ
0.0				Averaç
00.0 00.0 00.0 00.0				Max Ho
enter 836.5 MHz es BW 120 kHz	#	VBW 390 kHz	Span 12.5 Sweep	
Occupied Bandwidt 8.	^h 9248 MHz	Total Power	30.0 dBm	Detect Peal
Transmit Freq Error x dB Bandwidth	-1.314 kHz 9.912 MHz	% of OBW Powe x dB	r 99.00 % -26.00 dB	Auto <u>M</u> i
G			STATUS	

Plot 7-32. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 35 of 199
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		
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### Band 26



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



Plot 7-34. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 36 of 199
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		
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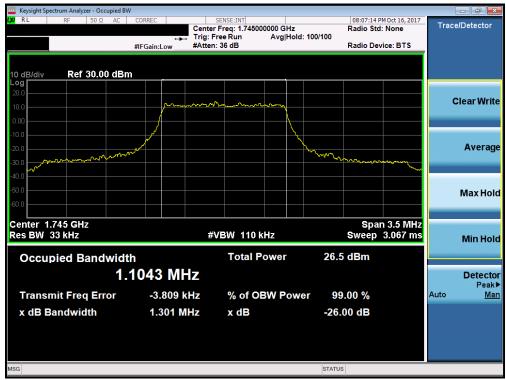




Plot 7-35. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 37 of 199
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Plot 7-36. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-37. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 38 of 199
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Plot 7-38. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100
1M1710050266-03.A3L	M1710050266-03.A3L 10/5-11/8/2017 Portable Handset		Page 39 of 199	
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Plot 7-39. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 40 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 40 of 199
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Plot 7-41. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 41 of 100
1M1710050266-03.A3L 10/5-11/8/2017 Portable Handset		Page 41 of 199		
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### Band 4/66



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



Plot 7-43. Occupied Bandwidth Plot (Band 4/66 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 42 of 199
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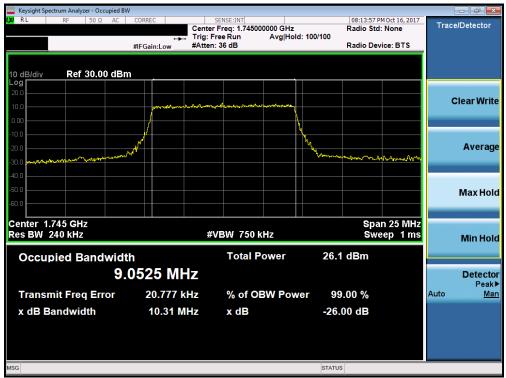




Plot 7-44. Occupied Bandwidth Plot (Band 4/66 - 5.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 100
1M1710050266-03.A3L 10/5-11/8/2017 Portable Handset			Page 43 of 199	
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Plot 7-45. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 14 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 44 of 199
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Plot 7-47. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 100
1M1710050266-03.A3L	M1710050266-03.A3L 10/5-11/8/2017 Portable Handset		Page 45 of 199	
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Plot 7-48. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-49. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 46 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 46 of 199
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Plot 7-50. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 47 of 199
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Keysight Spectrum Analyzer - Occupie	ed BW			
<b>LX/RL</b> RF 50Ω A		SENSE:INT enter Freg: 1.745000000 GHz	08:17:59 PM Oct 16, 2017 Radio Std: None	Trace/Detector
	TI	rig: Free Run Avg Hold: 1	100/100	
	#IFGain:Low ##	Atten: 36 dB	Radio Device: BTS	-
10 dB/div Ref 30.00 d	Bm			
20.0				
10.0		and man have been and the second		Clear Write
0.00				
-10.0		\		
-20.0		V		Average
-30.0 Marcanellar ale alaster and the	Rock-mark P		have a faile for the sale of for a fail and for a fail and for a fail and for a fail and for a fail	
-40.0				
-50.0				
-50.0				Max Hold
-50.0				
Center 1.745 GHz			Span 50 MH:	
Res BW 470 kHz		#VBW 1.5 MHz	Sweep 1 ms	Min Hold
Occupied Dandur	idth	Total Power	26.2 dBm	
Occupied Bandwi			20.2 0011	
	17.782 MHz			Detector Peak▶
Transmit Freq Error	83.670 kHz	% of OBW Power	r 99.00 %	Auto <u>Man</u>
x dB Bandwidth	19.68 MHz	x dB	-26.00 dB	
			20100 42	
MSG			STATUS	
			0.1.100	

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



Plot 7-52. Occupied Bandwidth Plot (Band 4/66 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 48 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 48 of 199
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Keysight Spectrum Analyzer - Occupied BW	V				
<b>ίχα R</b> L   RF   50 Ω AC	Trig:	SENSE:INT er Freq: 1.745000000 GHz Free Run Avg Ho en: 36 dB	Rad Id: 100/100	i18:08 PM Oct 16, 2017 lio Std: None lio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBn	n				
20.0		and the for a for the state of			Clear Write
-10.0					
-20.0 -30.0	li l		Mun Mana Mari	however the section of the section o	Average
-40.0					Max Hold
Center 1.745 GHz Res BW 470 kHz		#VBW 1.5 MHz		Span 50 MHz Sweep 1 ms	
Occupied Bandwidt	h	Total Power	23.8 dB		Min Hold
17 Transmit Freq Error	7.697 MHz 84.654 kHz	% of OBW Pov	wer 99.00	%	Detector Peak► Auto Man
x dB Bandwidth	19.66 MHz	x dB	-26.00 c		
MSG			STATUS		

Plot 7-53. Occupied Bandwidth Plot (Band 4/66 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 49 of 199
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Plot 7-54. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-55. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 50 of 199
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Plot 7-56. Occupied Bandwidth Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 51 of 100
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Plot 7-57. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-58. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-59. Occupied Bandwidth Plot (Band 2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-60. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-61. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 54 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 54 of 199
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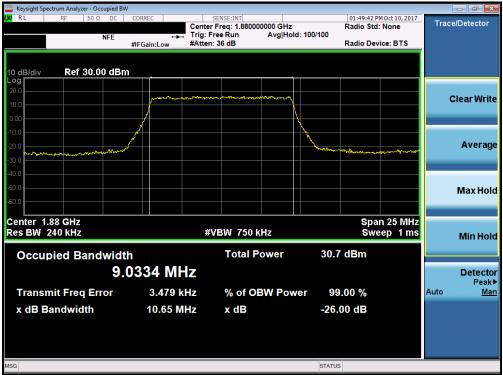




Plot 7-62. Occupied Bandwidth Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EE of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 55 of 199
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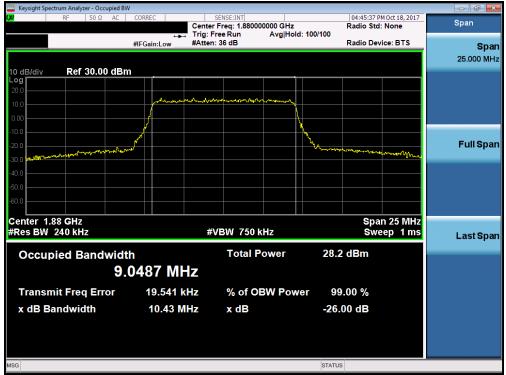
Plot 7-63. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-64. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 56 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 56 of 199
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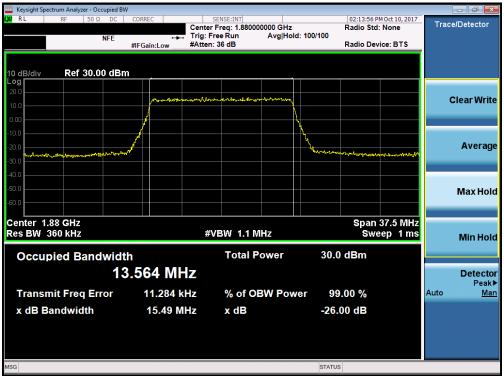




Plot 7-65. Occupied Bandwidth Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 57 of 100
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Plot 7-66. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-67. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 59 of 100
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Plot 7-68. Occupied Bandwidth Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 59 of 199
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Plot 7-69. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-70. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW	/						
<b>LXI</b> RF 50 Ω AC	CORREC	SENSE:INT Iter Freg: 1.8800000	00.011-	04:48:31 PM Radio Std:	10ct 18, 2017	Trace	Detector
			00 GHZ Avg Hold: 100/100		None		
		ten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 30.00 dBm	<b>h</b>						
Log							
20.0							
10.0		กลูงระหวัดเป็นของใหม่มีรูสสุขจะจากไห	workey			C	lear Write
0.00	/		<u>\</u>				
-10.0			l \				
	1		1				Average
-20.0	Marka.			hay www.arwy.lug	Mada and		Average
-30.0 - 1 ¹¹¹⁻¹ -1-1111-1					and the state of t		
-40.0							
-50.0							Max Hold
-60.0							maxmora
Center 1.88 GHz					ר 50 MHz		
#Res BW 470 kHz		#VBW 1.5 MH	Z	Swe	ep 1 ms		Min Hold
		T-4-LD-					
Occupied Bandwidt		Total Pov	wer 2	8.9 dBm			
17	7.741 MHz						Detector
							Peak►
Transmit Freq Error	61.814 kHz	% of OB	V Power	99.00 %		Auto	Man
x dB Bandwidth	19.71 MHz	x dB	-7	6.00 dB			
MSG			ST/	ATUS			

Plot 7-71. Occupied Bandwidth Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-72. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-73. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 62 of 100	
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Plot 7-74. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 62 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 63 of 199
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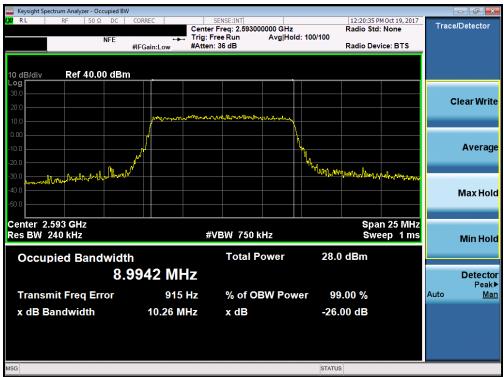
Plot 7-75. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-76. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 64 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 64 of 199
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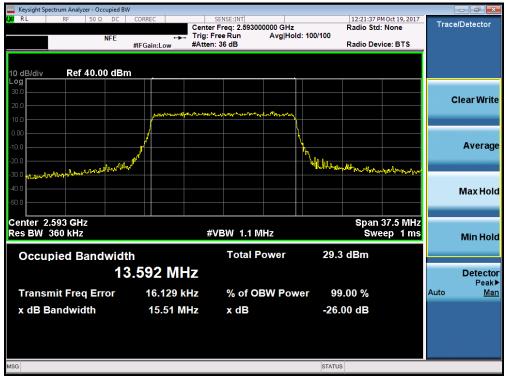
Plot 7-77. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 65 of 100
1M1710050266-03.A3L	10/5-11/8/2017	Portable Handset		Page 65 of 199
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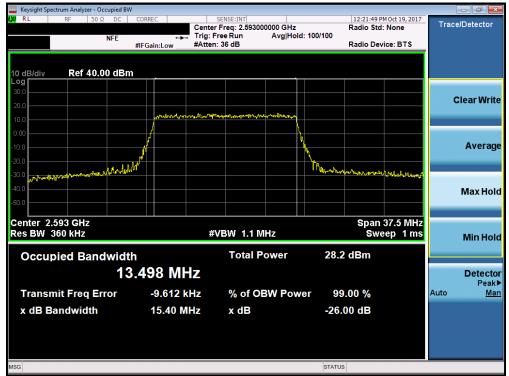
Plot 7-78. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-79. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 100	
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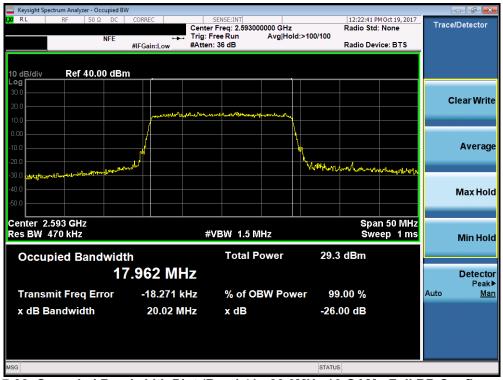
Plot 7-80. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-81. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-82. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B\	N						- • ×
LXIRL RF 50Ω DC	CORREC	SENSE:INT enter Freg: 2.593000000 G	H7	12:22:53 PM Radio Std:		Trace	/Detector
NFE	Tr	ig: Free Run Avg	Hold: 100/100				
	#IFGain:Low #A	Atten: 36 dB		Radio Devid	ce: BTS		
10 dB/div Ref 40.00 dBr	n						
Log 30.0							
20.0						С	lear Write
10.0	and water and any to	almonte the way may	ular.				
0.00	1						
-10.0	/		۲.				Average
-20.0			۱.				Average
	what 1		Wyplanews	กำางกำลุกรูประวัฒนุปู	with a start of		
W.W. W.					and, March (199		
-40.0							Max Hold
-50.0						_	
Center 2.593 GHz				Span	50 MHz		
Res BW 470 kHz		#VBW 1.5 MHz			ep 1 ms		Min Hold
		T-4-1 D-111					
Occupied Bandwidt		Total Power	21.0	8 dBm			
17	7.982 MHz						Detector
Transmit Frag Error	42 204 kH-	% of OBW P		9.00 %		Auto	Peak▶ Man
Transmit Freq Error	-13.284 kHz					Auto	IVIAII
x dB Bandwidth	19.61 MHz	x dB	-26.	.00 dB			
MSG			STATU	S			

Plot 7-83. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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#### 7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h) RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)

#### 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 $43 + \log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts.

#### **Test Procedure Used**

KDB 971168 D01 v03 - 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
- 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.

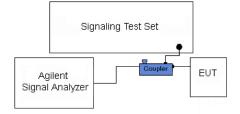


Figure 7-2. Test Instrument & Measurement Setup

#### Test Notes

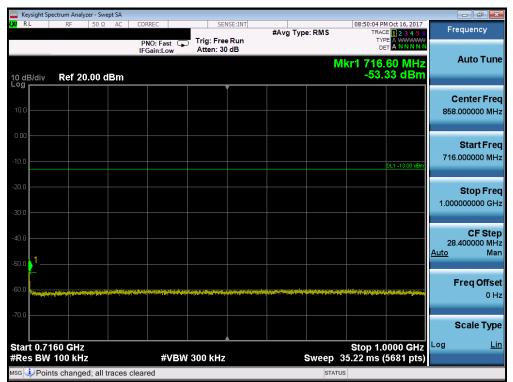
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the 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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RL		RF	alyzer - Swi 50 Ω		CORR	- C	6	ENSE:INT			08:40:	58 PM Oct 16, 2017	_	
KL	-	KF	0.07	AC	PNC	:Fast C in:Low		ee Run	#Avg Typ	e:RMS		TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Fr	equency
0 dB	3/div	Ref 2	20.00 c	iBm							Mkr1 69 -3	97.20 MHz 33.55 dBm		Auto Tur
<b>og</b> 10.0														Center Fre .950000 Mł
).00  0.0												DL1 -13.00 dBm	30	<b>Start Fr</b> .000000 M
20.0 30.0												1	697	<b>Stop Fr</b> .900000 M
:0.0 - :0.0 -													66 <u>Auto</u>	CF St 790000 M M
i0.0 <mark>,</mark>			ang langa di Tang tang di	a a la statut de la	a har dag bi sa	in the second		and a prime with the second	and provide the first one support	er angester an die die state gester Ny Trans Die se Andreas die Ny Trans Die se Andreas die	nan sing pangang panga Pangang pangang	Differg ⁱ more ¹ Perior of the effect of effective constraints	I	Freq Offs 0
70.0													: Log	Scale Tyj
	t 30.0 s BW	MHZ 100 ki	17			#VB	W 300 kH	7	s	ween	Sto 82.82 ms	p 697.9 MHz s (13359 pts)		
		100 1										(10000 pt3)		

Plot 7-84. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-85. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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		alyzer - Swe	pt SA								
(X) RL	RF	50 Ω	AC CO	ORREC		ISE:INT	#Avg Typ	e: RMS	TRA	M Oct 16, 2017 CE 1 2 3 4 5 6	Frequency
				PNO: Fast ( FGain:Low	Trig: Free Atten: 10				D	PE A WWWWW ET A NNNNN	
10 dB/div Log	Ref (	0.00 dE	۶m					Μ	kr1 2.09 -23.	8 0 GHz 58 dBm	Auto Tune
-10.0										DL1 -13.00 dBm	Center Freq 5.50000000 GHz
-20.0		1									<b>Start Freq</b> 1.000000000 GHz
-40.0											<b>Stop Freq</b> 10.000000000 GHz
-60.0										n da an dia filono a fanga d 19 San dia filono a fanga d	<b>CF Step</b> 900.000000 MHz <u>Auto</u> Man
-80.0											Freq Offset 0 Hz
-90.0											Scale Type
Start 1.00 #Res BW				#VB	W 3.0 MHz		s	weep 1	Stop 10 5.60 ms (1	.000 GHz 8001 pts)	Log <u>Lin</u>
мsg 🗼 Poir	nts chang	ged; all t	races clea	ired				STAT			

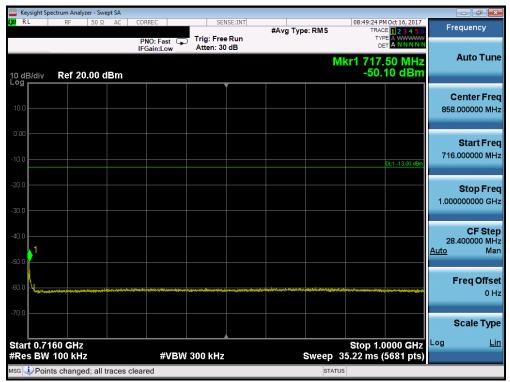
Plot 7-86. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	pectrum Analyz										- 6
X/ RL	RF	50 Ω /	ORREC PNO: Fast FGain:Low		SENSE:INT	#Avg Typ	e: RMS	TRAC	M Oct 16, 2017 CE <b>1 2 3 4 5 6</b> PE A WWWWW A N N N N N	Fre	quency
10 dB/div Log	Ref 20	.00 dB	Call.Low				Μ	kr1 696. -38.	.75 MHz 22 dBm		Auto Tun
10.0											<b>enter Fre</b> 000000 МН
-10.0									DL1 -13.00 dBm		<b>Start Fre</b> 000000 M⊦
30.0									1		<b>Stop Fre</b> 000000 M⊦
-40.0										66. <u>Auto</u>	CF Ste B00000 MH Ma
60.0										F	req Offs 0 H
-70.0											Scale Typ
Start 30. ≇Res B₩	.0 MHz V 100 kHz	:	#VI	BW 300	kHz		weep 8	Stop 6 2.83 ms (1	98.0 MHz 3361 pts)	Log	L
ISG							STATU				

Plot 7-87. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-88. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	pectrum Analyz											
I <mark>XI</mark> RL	RF	50 Ω	AC C	ORREC		SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M Oct 16, 2017 DE 1 2 3 4 5 6	Frequency
			1	PNO: Fas FGain:Lo	t 🖵 w	Trig: Free Atten: 10				TY D		
10 dB/div Log	Ref 0.0	00 dB	m						М	kr1 2.11 -23.	6 5 GHz 75 dBm	Auto Tune
-10.0											DL1 -13.00 dBm	Center Freq 5.500000000 GHz
-20.0	······································											<b>Start Freq</b> 1.000000000 GHz
-40.0												<b>Stop Freq</b> 10.000000000 GHz
-60.0		~										CF Step 900.000000 MHz <u>Auto</u> Man
-80.0												<b>Freq Offset</b> 0 Hz
-90.0												Scale Type
Start 1.0 #Res BW				#\	BW 3	3.0 MHz		s	weep 1	Stop 10 5.60 ms (1	.000 GHz 8001 pts)	Log <u>Lin</u>
MSG									STATL	JS		

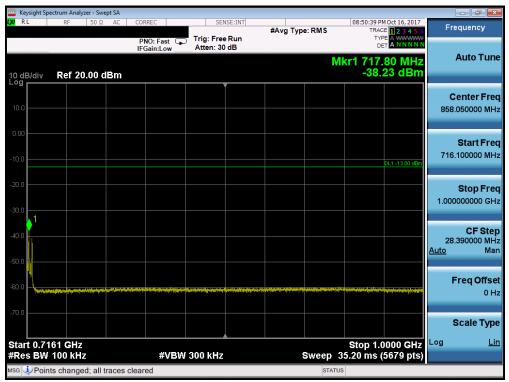
Plot 7-89. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	ysight Sp																		_		
<b>,X</b> / R	L	R	F	50 Ω	AC	PN		at 🖵		SEN Free en: 30		#/	Avg Typ	e: RMS		08:50:3		16, 2017 2 3 4 5 ( N N N N N	+	Frequ	ency
10 dE Log	B/div	Re	f 20	.00 d	Bm	10	am.20								Mk	r1 69 -5	4.15 6.83	MHz dBm		Au	to Tun
10.0																					<b>ter Fre</b> 0000 МН
																	DL1 -	13.00 dBm			artFre 0000 M⊢
20.0 30.0																				<b>St</b> 698.000	op Fre
40.0 50.0																			Au	66.800	CF Ste 0000 MH Ma
	an a tana a tana 1943 yang bersing	Proposition (				ala sa	alas, Mad	N ^{ilbula} r	a production (a	te et system	an barra ta		ana Det Anaralia Aging ya pikawa i	an da se ta biblio V terreta da se ta se		ti Man (alaman (alaman)				Fre	<b>q Offs</b> 0 H
																					ale Typ
	t 30.0 s BW						#	VBW	300	kHz			s	weep	82.	Stop 33 ms	698. (1336	0 MHz 51 pts)	Lo )	g	L
ISG														_	TATUS						

Plot 7-90. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-91. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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	ectrum Analyz	er - Swep	t SA									
L <mark>XI</mark> RL	RF	50 Ω	AC CC	ORREC		SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M Oct 16, 2017	Frequency
				PNO: Fast Gain:Lov		rig: Free Atten: 10		•		TY D		Auto Tur
10 dB/div Log	Ref 0.0	10 dBi	m						M	kr1 2.13 -23.	4 0 GHz 86 dBm	Auto Tune
-10.0											DL1 -13.00 dBm	Center Free 5.500000000 GH:
-20.0												Start Fred 1.000000000 GH:
-40.0												Stop Free 10.000000000 GH:
-60.0		~										CF Step 900.000000 MH: <u>Auto</u> Mar
-80.0												Freq Offse 0 H:
-90.0										Stop 40		Scale Type
Start 1.00 #Res BW				#\	/BW 3.	0 MHz		s	weep 1	5.60 ms (1	.000 GHz 8001 pts)	
мsg 🗼 Poin	its changed	d; all tra	aces clea	red					STATU	s		

Plot 7-92. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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🚾 Key 🗶 RL		ectrum Ar RF	alyzer - Swe 50 Ω		CORREC		SEN	SE:INT	#Avg Typ	e: RMS	09:0	TRACE	Oct 16, 2017		Frequency
10 dB	lidiv	Ref	20.00 c		PNO: Fast IFGain:Low		Frig: Free Atten: 30				Mkr1	DE 777.	00 MHz		Auto Tu
- <b>og</b> 10.0 -															<b>Center Fr</b> 03.500000 M
0.00													DL1 -13.00 dBm		<b>Start Fr</b> 30.000000 M
20.0 -30.0													1,	7	<b>Stop Fr</b> 77.000000 M
40.0 50.0 -														Auto	CF Sto 74.700000 M 2 M
50.0 70.0	eg tel general mod (f. gj.) 1. han ny jakes Bars, Ma	l hostolog til komme n fan sek skil ek fer		, ang	and a second	r y sy sy ge se si st La tanta a militad	nga ang pagtan sa	y name (frankrage af stiffer de Reges pro Disers y de Jak	t han a thirting to day the new paragette special processing t			inter a factor	n promine see negatives negatives see the first see		Freq Offs 0
Start	t 30.0 s BW	MHz 100 k	Hz		#V	BW 3	00 kHz		s	weep	St 92.63 n	op 77	77.0 MHz 4941 pts)	Log	Scale Ty
SG											ATUS		,		

Plot 7-93. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

Keysight Spectrum Analyzer - Swept S	5A				
α RL RF 50 Ω		SENSE:INT	#Avg Type: RMS	09:00:35 PM Oct 16, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 20.00 dB	m		N	lkr1 795.25 MHz -43.82 dBm	Auto Tun
10.0					Center Fre 893.500000 MH
10.0				DL1 -13.00 dBm	Start Fre 787.000000 MH
30.0					<b>Stop Fre</b> 1.000000000 G⊦
					CF Ste 21.30000 MH <u>Auto</u> Ma
	น _{ี่สุด} ออการการการที่สุดสารสุดที่สมัยสุดการที่สุดการที่สุดการการที่	ana ana ang sana ang	ningha mada pinaka si ka ta nangkarina kina sana na nga	and yet in the street with the second street and the second street and the second street and the second street	Freq Offso 0 ⊦
70.0 Start 0.7870 GHz				Stop 1.0000 GHz	Scale Typ
Res BW 100 kHz	#VBW 300 ki	Hz	Sweep	26.41 ms (4261 pts)	
G 😳 Points changed; all trad	ces cleared		STATU	IS	

Plot 7-94. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

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	ectrum Analy		pt SA										- 0
UX/ RL	RF	50 Ω	AC		ast 🖵	SE Trig: Fre Atten: 1		#Avg Typ	e: RMS	TR	PM Oct 16, 2017 ACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Fred	luency
10 dB/div	Ref 0.0	00 dB	m	IFGain:	LOW	Atten: 1	V dB		М	kr1 2.3	33 0 GHz 2.08 dBm	A	uto Tune
-10.0											DL1 -13.00 dBm		nter Fre 00000 GH
30.0		1											Start Fre 00000 GH
-40.0													<b>Stop Fre</b> 00000 GH
60.0 70.0			-			-						900.0 <u>Auto</u>	CF Ste 00000 MH Ma
80.0												Fr	reqOffso 0⊢
-90.0										Stop 1	0.000 0112	Log	cale Typ <u>Li</u>
	1.0 MHz		2005 0		#VBW	3.0 MHz			statu		(18001 pts)		

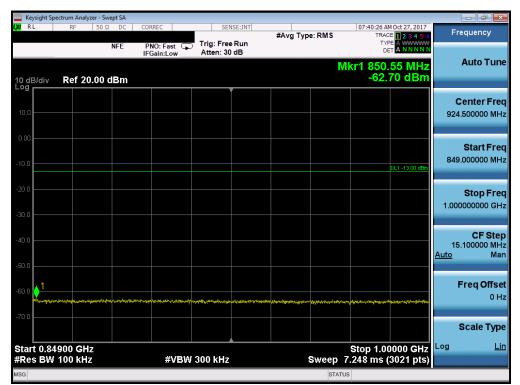
Plot 7-95. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

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	sight Spectr	um Analyzer			-					_	
RL		RF	50 Ω DC NFE	EC ∣ D:Fast ⊂⊾ ain:Low		#Avg Typ	e:RMS	TRA TY	M Oct 27, 2017 CE 1 2 3 4 5 6 PE A WWWWW ET A NNNNN	Fre	equency
0 dBi	/div	Ref 20.0	0 dBm					Mkr1 821 -23.8	.00 MHz 20 dBm		Auto Tur
10.0											enter Fre 500000 Mł
).00  0.0									DL1 -13.00 dBm	30.	Start Fre
20.0									1⁄ →	821.	<b>Stop Fr</b> 000000 М
io.o										79. <u>Auto</u>	CF Ste 100000 M M
i0.0 -				Lanca Land Digita Sanat Pacha Al Digita ganta Bash Sanat						F	req Offs 0
'0.0 F											Scale Ty
	30.0 N BW 10			#VBW	/ 300 kHz	8	weep	Stop 8 38.06 ms (*	21.0 19112	Log	Ĺ
SG								ATUS			

Plot 7-96. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-97. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	ectrum Analyzer - 3									
(XVI RL	RF 50	Ω DC	PNO: Fast			#Avg Typ	e: RMS	TRAC	MOct 27, 2017 E 1 2 3 4 5 6 E A WWWW T A N N N N N	Frequency
10 dB/div	Ref 0.00		IFGain:Low	Atten: 10			M	kr1 2.46		Auto Tune
-10.0									DL1 -13.00 dBm	Center Freq 5.500000000 GHz
-20.0		1								<b>Start Freq</b> 1.000000000 GHz
-40.0										<b>Stop Freq</b> 10.000000000 GHz
-60.0					~~~					CF Step 900.000000 MHz <u>Auto</u> Man
-80.0										<b>Freq Offset</b> 0 Hz
-90.0								Oton 40		Scale Type
Start 1.00 #Res BW			#VBW	3.0 MHz		s	weep 1	stop 10 5.60 ms (1	.000 GHz 8001 pts)	
MSG							STATU			

Plot 7-98. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

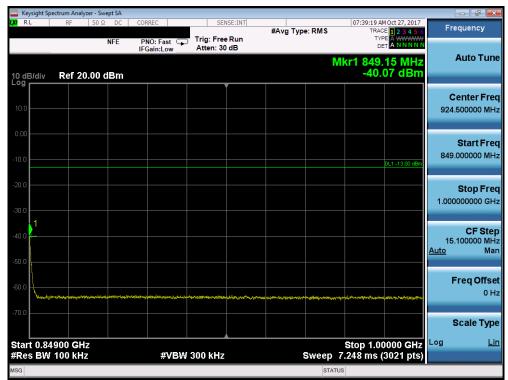
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# Band 5/26

	ight Spect													
L <mark>XI</mark> RL		RF	50 Ω	DC NFE	CORREC	Fast 🖵			#Avg Typ	e: RMS	TRAC	4 Oct 27, 2017 E 1 2 3 4 5 6 DE A WWWWW T A N N N N N	Fr	requency
10 dB/	div	Ref 2	0.00 c	:lBm	IFGain	Low	Atten: St	Jub		N	/kr1 823.			Auto Tune
10.0														Center Fred 7.000000 MHz
-10.0												DL1 -13.00 dBm	30	Start Fred 0.000000 MH
-20.0 - -30.0 -												1	824	Stop Free 1.000000 MH
-40.0 -													79 <u>Auto</u>	CF Stej 9.400000 MH Ma
-60.0	الدرانية مسرع الماري الدرانية ومسرع المراجع				raniyaliya kisima	ta pada pada pada ja			n sig oo katalalan kata min da					Freq Offse 0 H
-70.0														Scale Type
	30.0 N BW 1		z			#VBW	300 kHz		s	weep 3	8 Stop 1) Stop 11 Stop	24.0 MHz 5881 pts)	Log	Lir
MSG										STAT	US			

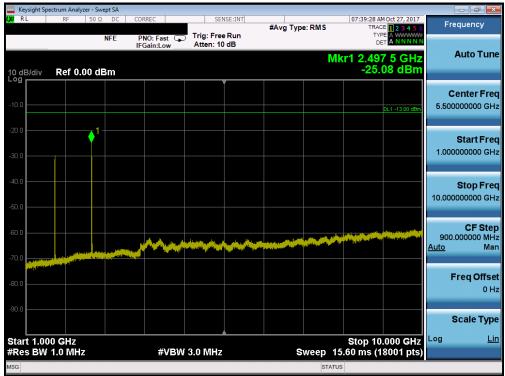
Plot 7-99. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



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

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

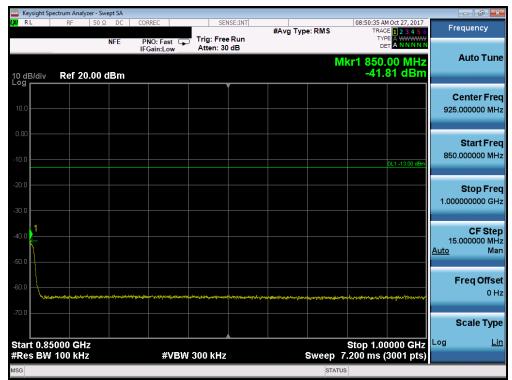
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# Band 5/26

Keysight Spectru	m Analyzer - Swept	t SA									
LXU RL	RF 50 Ω	FE	ORREC			#Avg Type	e: RMS	TRAC	M Oct 27, 2017 E 1 2 3 4 5 6 E A WWWW A N N N N N	Fre	quency
10 dB/div R	ef 20.00 dE		FGain:Low	Atten: 3	Jab		Μ	kr1 823.	65 MHz 45 dBm		Auto Tune
10.0											e <b>nter Freq</b> 000000 MHz
-10.0									DL1 -13.00 dBm		Start Fred 000000 MHz
-20.0											<b>Stop Fred</b> 000000 MH;
-40.0									1	79.4 <u>Auto</u>	CF Step 400000 MH Mar
-60.0										F	r <b>eq Offse</b> 0 Hi
Start 30.0 M									24.0 191112	S Log	cale Type <u>Lir</u>
#Res BW 10	0 kHz		#VB	W 300 kHz		S	weep 38		5881 pts)		

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



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

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-10.0	= 50 Ω DC NFE f 0.00 dBm	CORREC PNO: Fast			#Avg Typ		TRAC TYF DE	MOCt 27, 2017 E 1 2 3 4 5 6 A WWWW T A NNNNN 5 0 GHz 03 dBm	Frequency Auto Tun
-10.0	f 0.00 dBm	IFGain:Low	Atten: 10	dB		M	kr1 2.52	5 0 GHz	Auto Tun
-10.0									
								DL1 -13.00 dBm	Center Fre 5.500000000 GH
-30.0	<b>1</b>								<b>Start Fre</b> 1.000000000 GH
-40.0									Stop Fre 10.000000000 GH
-60.0		And And And And		<b>Under</b>				l (metro francisco) a sector francisco (sector	CF Stej 900.000000 MH <u>Auto</u> Ma
-80.0									Freq Offse 0 H
-90.0 Start 1.000 GH							Stop 10	000 0112	Scale Typ Log <u>Li</u>
#Res BW 1.0 M	VIFIZ	#VBW	3.0 MHz		S	weep 1	5.60 ms (1	8001 pts)	

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

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# Band 4/66

PNO: Fast         Trig: Free Run IFGain:Low         Trig: Free Run Atten: 30 dB         TRACE         2.3.4.5 m Trig: Freque         Freque           10 dB/div         Ref 20.00 dBm         -39.63 dBm         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0         -30.0 </th <th></th> <th>ectrum Analyzer - Swept SA</th> <th></th> <th></th> <th></th> <th></th> <th></th>		ectrum Analyzer - Swept SA					
Mkr1 1.708 0 GHz -39.63 dBm         Aut           0	XI RL	RF 50 Ω AC	PNO: Fast 😱	Trig: Free Run	#Avg Type: RMS	TYPE A WARWAW	Frequency
100       Image: Control in the second		Ref 20.00 dBm			М	kr1 1.708 0 GHz -39.63 dBm	Auto Tun
100       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       000       0							Center Free 869.000000 MH
3000						DL1 -13.00 dBm	Start Fre 30.000000 MH
4000							<b>Stop Fre</b> 1.708000000 GH
70.0						1 	CF Ste 167.800000 MH <u>Auto</u> Ma
Sca							Freq Offso 0 ⊦
	70.0						Scale Typ
Start 0.0300 GHz         Stop 1.7080 GHz           #Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 2.239 ms (3359 pts)			#VBW 3	.0 MHz	Sweep 1	Stop 1.7080 GHz 2.239 ms (3359 pts)	Log <u>Li</u>

Plot 7-105. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-106. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	ectrum Analyze										- 5
XI RL	RF	50 Ω AC	PNO	:Fast 🖵	Trig: Free		#Avg Typ	e: RMS	TRA	M Oct 16, 2017 DE <b>1 2 3 4 5</b> 6 PE A WWWWW ET A N N N N N	Frequency
10 dB/div	Ref 0.0	0 dBm	IFGai	n:Low	Atten: 10	dB		Mk		3 5 GHz 13 dBm	Auto Tune
-10.0										DL1 -13.00 dBm	<b>Center Freq</b> 15.00000000 GHz
-20.0											Start Fred 10.000000000 GHz
-40.0											<b>Stop Fred</b> 20.000000000 GHz
-60.0					a to for an annual to an				and the sum and the sum of the su	l a dar gereke bit at gereke stat so Statu ya ti sa biga ta ya gereke	<b>CF Step</b> 1.000000000 GHz <u>Auto</u> Mar
-80.0											Freq Offse 0 H:
-90.0	00 GHz								Stop 20		Scale Type
#Res BW					3.0 MHz		S		5.33 ms (2	20001 pts)	
ısg 칮 Poin	ts changed	l; all trace	es cleared					STATU	JS		

Plot 7-107. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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#### Band 4/66

Keysight Sp	ectrum Analyz			DEC		NCE-INT			00-02-17.0	NO+16 2017		đ 💌
A KL	RF	50 Ω A	PN	IO: Fast			#Avg Type	e:RMS	TRA	M Oct 16, 2017 CE 1 2 3 4 5 6 PE A WWWW ET A N N N N N	Frequei	ncy
10 dB/div	Ref 20	00 dBn		ain:Low	Atten: 3			Mk	ar1 1.53	4 0 GHz 35 dBm	Auto	o Tun
10.0											Cente 870.0000	
10.00										DL1 -13.00 dBm	Sta 30.0000	rt Fre
20.0 30.0											<b>Sto</b> 1.7100000	<b>p Fr</b> 100 GI
40.0	and the second			Addition of the second		1. Artistation in the		ana ang kang sa kang s		1	<b>C</b> 168.0000 <u>Auto</u>	F Ste 00 M M
60.0											Freq	Offs 0
70.0											Scal	
	300 GHz 1.0 MHz			#VB\	N 3.0 MHz		ę	Sweep 2	Stop 1. .240 ms	7100 GHz (3361 pts)	Log	L
ISG								STATUS	5			

Plot 7-108. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-109. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-110. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

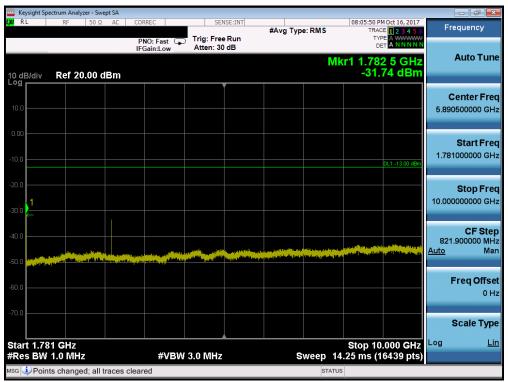
FCC ID: A3LSMA730F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# Band 4/66

	ectrum Analyzer - Swep								
0 RL	RF 50 Ω		ORREC PNO: Fast G FGain:Low	Trig: Free R Atten: 30 dE	#Avg	Type: RMS	08:05:44 PM Oct 1 TRACE 2 TYPE A W DET A N	3456	requency
0 dB/div	Ref 20.00 di	Bm				М	kr1 1.592 5 -49.12	GHz dBm	Auto Tun
10.0									Center Free 0.000000 MH
10.00							DL1 -1	3.00 dBm	Start Fre 0.000000 MH
20.0 30.0								1.7	<b>Stop Fre</b> 10000000 GH
40.0	and the second secon		at Applying to	a design dilation of the set	u Met 10 Jan an Jac Met Manager (and	Nate Annu Paraletan May 17 (MANA)	here a registion of enclosing frontiers that	1 1 <u>Auto</u>	CF Ste 8.000000 MH Ma
60.0									Freq Offse 0 ⊢
70.0									Scale Typ
Start 0.03 Res BW	00 GHz 1.0 MHz		#VBW	/ 3.0 MHz		Sweep :	Stop 1.7100 2.240 ms (336	GHz ^{Log} 1 pts)	Li
ISG						STATU	IS		

Plot 7-111. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-112. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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	ysight Spect		zer - Swej	pt SA										- <i>i</i> <del>x</del>
<b>l,XI</b> R	L	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Avg Typ	e: RMS		M Oct 16, 2017	Fre	equency
					PNO: F IFGain:	Fast 🖵	Trig: Free Atten: 10		• ,,		TY	PE A WWWWW ET A N N N N N		
					IFGalli.	LUW	Attent to	45		М	kr1 16 97	8 5 GHz		Auto Tune
	B/div	Ref 0.	00 dB	m							kr1 16.97 -56.	80 dBm		
Log							) )							
-10.0														enter Freq
												DL1 -13.00 dBm	10.000	000000 0112
													10.000	Start Freq
													10.000	000000 GH2
-40.0														
													20.000	Stop Freq
										1			20.000	000000 GHZ
										2				CF Step
		للبر باللبر	a here a lande	and the second	Manage and an owner of the		and the second second			and the second s	المريوية الأثاني والماد المرويين المريوية الأنتيكي المادة المحمولية	Consultation of a state	1.000	000000 GHz
-70.0	Lucinitatio	1	الألبارية.	الأطائلية أخاره	Nitra parti	A. CARLAND							<u>Auto</u>	Man
													F	req Offset
														0 Hz
														Scale Type
	t 10.00										Stop 20	.000 GHz	Log	<u>Lin</u>
	s BW 1	.0 MH:	z			#VBW	3.0 MHz		s	weep	25.33 ms (2	20001 pts)		
MSG										STA	TUS			

Plot 7-113. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Keysight Spectrum Ar						
XI RL RF	50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	01:54:05 PM Oct 10, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Ref	20.00 dBm	IFGain:Low	Atten: 30 dB	Μ	lkr1 1.848 0 GHz -35.71 dBm	Auto Tune
10.0						Center Fre 939.000000 MH
10.0					DL1 -13.00 dBm	Start Fre 30.000000 MH
30.0						<b>Stop Fre</b> 1.848000000 GH
40.0						CF Ste 181.800000 MH <u>Auto</u> Ma
50.0	Aleman and a second and a second and a second as a	aydayaan dagaa yaan yaan yaan dagaa dag	n geographic de Birren de englis de la segura	ant, ang sita (nagati ing sarapan dan ) ina ang pananan kan pa	9994-9993-99994 (A. 1994) A. 1994) A. 1994	Freq Offs 0 H
5tart 0.0300 Gł					Stop 1.8480 GHz	Scale Typ
Res BW 1.0 M		#VBW	3.0 MHz	Sweep	2.425 ms (3639 pts)	
SG				STAT	US	

Plot 7-114. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-115. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Nikt 16.307 0 GHz         Odd/div       Ref 0.00 dBm       -53.07 dBm         Output       Center Freq         100       Cuti-1300dB         200       Cuti-1300dB <th></th> <th>Spectrum Analy</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>		Spectrum Analy						
IPGallitum       Mikr1 18.957 0 GHz -53.07 dBm       Auto Tune         0 dB/div       Ref 0.00 dBm       Center Freq 15.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Center Freq 15.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Center Freq 15.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Center Freq 15.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Center Freq 15.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Center Freq 10.00000000 GHz       1         0 dB/div       Ref 0.00 dBm       Ref 0.00 dBm       Center Freq 10.00000000 GHz         0 dB/div       Ref 0.00 dBm       Ref 0.00 dBm       Ref 0.00 GHz         0 dB/div       Ref 0.00 GHz       Ref 0.00 GHz       Ref 0.00 GHz         0 dB/div       Ref 0.00 GHz       Stop 20.000 GHz       Log Lin	L <mark>XI</mark> RL	RF	50 Ω DC	CORREC		#Avg Type: RM	S TRACE 1 2 3 4 5 (	
Mikr1 18.957 0 GHz         Auto Tune           10 dE/div         Ref 0.00 dBm         -53.07 dBm         Center Free           -00         0         0         0         0         0         0         0         1300000 GHz         150000000 GHz         150000000 GHz         100000000 GHz         Start Free         10.00000000 GHz         Start Free         10.00000000 GHz         100000000 GHz         Start Free         10.00000000 GHz         GF Step         1.00000000 GHz         GF Step         1.00000000 GHz         GF Step         1.00000000 GHz         GE Start 10.000 GHz			NFE	PNO: Fast 🕞			DET A WWWW	
-09       -010       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011       011		Dof 0	00 dBm	II Guilleon			Mkr1 18.957 0 GHz -53 07 dBm	Auto Tune
10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0      10.0		/ Reru.	UU aBM		<b>V</b>			
200       1000000000000000000000000000000000000								Center Freq
Start 10.000 GHz Start Town of	-10.0						DL1 -13.00 dBm	15.00000000 GHz
30.0       Image: state in the	-20.0							
40.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0       50.0								Start Freq
500 500 600 600 600 600 600 600	-30.0							10.000000000 GHz
500 500 600 600 600 600 600 600								
500       CF Step         600       CF Step         700       CF Step         800       CF Step         900       CF Step         900       CF Step         910       CF Step         911       CF Step         912       Stop 20,000 GHz	-40.0							Stop Freq
2000       2000       1.00000000 GHz         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       Cog         Log       Lin	-50.0						¹	20.000000000 GHz
2000       2000       1.00000000 GHz         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       2000         2000       2000       Cog         Log       Lin						and the second sec		CE Stop
.70.0	-60.0							1.000000000 GHz
ee a constant and a c	-70.0							<u>Auto</u> Man
800 0 Hz Stop 20,000 GHz Log Lin	10.0							
90.0 Scale Type	-80.0							
Start 10.000 GHz Stop 20.000 GHz								0112
Start 10.000 GHz Stop 20.000 GHz	-90.0							Scale Type
Start 10.000 GHZ								
#Res BW 1.0 MHz				#VBM	3.0 MHz	Sweet	Stop 20.000 GHz p 17.33 ms (20001 pts	
	MSG			<i></i>	0.0 10112			

Plot 7-116. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Keysight Spectrum Analyzer - Swep				
	FE PNO: East Trig: Free		TYPE A WWWWW	Frequency
10 dB/div Ref 20.00 df	IFGain:Low Atten: 30	dB	Mkr1 1.838 5 GHz -50.22 dBm	Auto Tun
10.0				Center Fre 940.000000 MH
-10.0			DL1 -13.00 dBm	Start Fro 30.000000 Mi
30.0				<b>Stop Fro</b> 1.850000000 Gi
40.0			1	CF Sto 182.000000 M <u>Auto</u> M
60.0 70.0				Freq Offs 0
Start 0.0300 GHz			Stop 1.8500 GHz	Scale Typ Log <u>L</u>
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sw	reep 2.427 ms (3641 pts)	

Plot 7-117. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-118. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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		Analyzer - Sv									-0	
LXI RL	R	F 50 S	2 DC	CORREC	SE	NSE:INT	#Avg Typ	e: RMS		MOct 10, 2017	Frequ	ency
			NFE	PNO: Fast IFGain:Low	Trig: Free Atten: 10				TYI Di		Au	to Tune
10 dB/c	div <b>R</b> e	ef 0.00 d	Bm					MK	r1 18.94 -53.	6 5 GHZ 37 dBm	7.0	to rune
						Í					Cen	ter Freq
-10.0										DL1 -13.00 dBm	15.00000	0000 GHz
-20.0												
											St 10.000000	art Freq
-30.0											10.000000	JUUU GHZ
-40.0											Ct	op Freq
										1	20.000000	
-50.0												
-60.0			-	-								CF Step
											Auto	Man
-70.0												
-80.0											Fre	q Offset 0 Hz
												0112
-90.0											Sca	ale Type
Start	10.000 (	2H7							Stop 20	.000 GHz	Log	Lin
	BW 1.0			#VE	SW 3.0 MHz		s	weep 1	7.33 ms (2	0001 pts)		
MSG								STATU	IS			

Plot 7-119. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	Analyzer - Swept SA					
A KL F	1F 50 Ω DC		SENSE:INT	#Avg Type: RMS	01:59:46 PM Oct 10, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
	NFE	PNO: Fast 🖵 IFGain:Low	Atten: 30 dB		DETANNNN	Auto Tun
10 dB/div Re	ef 20.00 dBm	1		ľ	/kr1 1.780 5 GHz -50.36 dBm	
			Ĭ			Center Fre
10.0						940.000000 MH
0.00						Start Fre
-10.0					DL1 -13.00 dBm	30.000000 Mł
-20.0						
						Stop Fre 1.85000000 GI
-30.0						
-40.0						CF Ste 182.000000 MI
-50.0						<u>Auto</u> Ma
-60.0	<b></b>	ين من بروسيم يستوين الما الي الي الي الي الي الي الي الي الي ال	1444-0-120-1200 1444-0-120-1200 1444-0-120-1200			Freq Offs
						01
-70.0						Scale Typ
Start 0.0300 (	GHz				Stop 1.8500 GHz	Log <u>L</u>
≉Res BW 1.0		#VBW :	3.0 MHz	Sweep	2.427 ms (3641 pts)	
ISG				STA	TUS	

Plot 7-120. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-121. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Plot 7-122. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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	ectrum Analy:				 					- d" - D
U RL	RF Gate: LO	50 Ω D			#Avg Typ	e:RMS	TRAC	M Oct 12, 2017 CE 1 2 3 4 5 6 PE M WWWWW	Freque	ency
	Gate: LO	NFE	IFGain:Low				D	ET A N N N N N	Aut	o Tur
0 dB/div	Ref 20	.00 dBr	n			N	/kr1 2.46 -42.	4 0 GHz 99 dBm	Aut	oru
.09									Cent	er Fr
10.0									1.252500	000 G
0.00										
10.0									30.000	art Fr 000 M
10.0										
20.0								DL1 -25.00 dBm		op Fr
30.0									2.475000	000 G
								1.	c	F St
40.0					المراجعة والمحاد		نى بەر يەر يەر يەر يەر يەر يەر يەر يەر يەر ي	A LA SUPERING STORE	244.5000 <u>Auto</u>	M 000 N
		e je la li da ange				Stratt and seat				
50.0									Fred	
										0
70.0									Sca	le Ty
tart 0.0	30 GHz						Stop 2	2.475 GHz	Log	j
	1.0 MHz	z	#V	BW 3.0 MHz		Sweep	24.45 ms	(4891 pts)		
SG						STAT	TUS			

Plot 7-123. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-124. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	ectrum Analyz	er - Swept SA						
LXI RL	RF Gate: LO	50 Ω DC	CORREC	SENSE:	#Avg Typ		3:02 PM Oct 12, 2017 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET A N N N N N	Frequency
	Gate. EO	MIL	IFGain:Low	#Atten: 20 d	В			Auto Tune
10 dB/div Log	Ref 0.0	00 dBm				Mkr1 26	.106 0 GHz 37.66 dBm	Auto Tune
-10.0								Center Freq 21.00000000 GHz
-20.0								
20.0							DL1 -25.00 dBm	Start Freq
-30.0							↓1	15.000000000 GHz
-40.0		and the Alexandrian						<b>Stop Freq</b> 27.000000000 GHz
-50.0								
-60.0								<b>CF Step</b> 1.200000000 GHz <u>Auto</u> Man
-70.0								
-80.0								Freq Offset 0 Hz
-90.0								
								Scale Type
Start 15.0 #Res BW			#VBW	3.0 MHz	s	Sto weep 240.0 m	p 27.000 GHz is (24001 pts)	Log <u>Lin</u>
мsg 🧼 Poin	its changed	d; all traces	cleared			STATUS		

Plot 7-125. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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l d 🗾									ctrum Analyzer - S	
Gate Gat	0ct 12, 2017 1 2 3 4 5 6 MWWWW A N N N N N	TYPE	e:RMS	#Avg Ty		Trig: Free Atten: 30	RREC PNO: Fast 🖵 Gain:Low	NFE	RF 50 Gate: LO	XU RL
<u>On</u> 0	5 GHz <u>o</u> 2 dBm	(r1 2.490 -42.5	Mk					dBm	Ref 20.00	0 dB/div
Gate Vie On <u>O</u>	0									10.0
Gate View Setup										0.00
<b>Gate Dela</b> 2.080 n	<u>1 -25.00 dBm</u>	C								20.0
<b>Gate Leng</b> 2.8050 r	1. Linksteriker	ى _{الل} ار بى مەربىرى بەر بىرى بىرى بىرى بىرى بىرى بىرى		e de general de Antole	las teories (architi		an and a lot of a second	Lagence for depth life		
Gate Method										0.0
<b>Mo</b> 1 of		Stop 2.4	Sween -2			3.0 MHz	#VBW		0 GHz 1.0 MHz	tart 0.03
			STATUS							G

Plot 7-126. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-127. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	/sight Spectro	um Analy												
l <mark>XI</mark> RI		RF	50 Ω	DC	CORREC		SEN	ISE:INT	#Avg Ty	be:RMS	TR	PM Oct 12, 2017 ACE 1 2 3 4 5 6	Freq	uency
	G	ate: LO	N	IFE	PNO: Fa IFGain:Le	st 🖵 ow	Trig: Free #Atten: 6		• //		1			
10 dE Log i	3/div	Ref -4	.00 dE	\$m						Μ	kr1 26.1 -51	33 5 GHz .79 dBm	A	uto Tune
-14.0														<b>nter Freq</b> 00000 GHz
-24.0 -34.0												DL1-25.00-dBm		Start Freq 00000 GHz
-44.0 -54.0			suite. L	- Lunitaberg des			Reflete dente ste ste		A second s		Type Jacob (Type 1) (Type 1)			Stop Freq 00000 GHz
-64.0 -74.0													1.2000 <u>Auto</u>	<b>CF Step</b> 00000 GHz Man
-84.0													Fr	<b>eq Offset</b> 0 Hz
-94.0													Se	ale Type
	t 15.000 s BW 1.		2		#	VBW	3.0 MHz			Sweep	Stop 2 240.0 ms	7.000 GHz (24001 pts)	Log	<u>Lin</u>
MSG										ST/	ATUS			

Plot 7-128. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMA730F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyz									-0	
XI RL	RF Gate: LO	50 Ω DC	CORREC	Trig: Free		#Avg Typ	e: RMS	TRA	M Oct 12, 2017 CE 1 2 3 4 5 6 PE M WWWWW ET A N N N N N	Frequ	ency
10 dB/div		.00 dBm	IFGain:Low	Atten: 30	) dB		MI	kr1 2.48	3 0 GHz 74 dBm	Au	ito Tun
10.0										Cen 1.263000	t <b>er Fre</b> 0000 G⊦
-10.0											art Fre
20.0 30.0									DL1 -25.00 dBm	<b>St</b> 2.496000	<b>op Fre</b> 0000 Gi
40.0			a de la companya de l	and the definition of the first states in the	<u>a ang ang an</u> dar	n da a siste da a da d	an a	a in the base of the second	1 Anaritetii Alder	246.600 <u>Auto</u>	CF Ste DOOO MI M
60.0										Fre	<b>q Offs</b> 0
70.0	30 GHz							Stop 2	.496 GHz		ale Typ
Res BW			#VBV	V 3.0 MHz			Sweep 2	24.66 ms (	(4933 pts)		
SG							STATU	s			

Plot 7-129. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-130. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Keysight Spectrum Analyzer - Swept SA													
LXI RL		RF	50 Ω	DC CC	ORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	MOct 12, 2017	Fre	equency
10 dB		Gate: LO Ref 0.0	NF D0 dBn	IF	PNO: Fast 🕞	Trig: Free #Atten: 1			Mki	DE	≝ A NN NN N 2 5 GHz 90 dBm		Auto Tune
-10.0													e <b>nter Freq</b> 0000000 GHz
-20.0											DL1 -25.00 dBm	15.000	Start Freq
-40.0 -	i ka sana si ki sa		A MORE THE REAL PROPERTY OF		ed level at this between the second states	مر از این ا	an a	and the second	alatika atati antin aka		1	27.000	<b>Stop Freq</b> 0000000 GHz
-60.0												1.200 <u>Auto</u>	<b>CF Step</b> 0000000 GHz Man
-80.0												F	F <b>req Offset</b> 0 Hz
-90.0													Scale Type
	t 15.000 s BW 1.				#VBW	3.0 MHz		s	weep 24	Stop 27 10.0 ms (2	.000 GHz 4001 pts)	Log	Lin
MSG									STATU	s			

Plot 7-131. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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