

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: 11/02/2017-11/29/2017 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1711020282-03.A3L

FCC ID:

A3LSMJ250M

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-J250M SM-J250M/DS Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, 27 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.

Randy Ortanez President



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MEASUREMENT REPORT FCC Part



			E	RP	EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Pow er (W)	Max. Power (dBm)	Max. Power (W)	Max. Pow er (dBm)	Emission Designator	Modulation
LTE Band 12	27	699.7 - 715.3	0.046	16.64	0.076	18.79	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.032	15.06	0.053	17.21	1M11W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.048	16.80	0.078	18.95	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.034	15.33	0.056	17.48	2M72W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.048	16.81	0.079	18.96	4M53G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.037	15.67	0.061	17.82	4M52W7D	16QAM
LTE Band 12/17	27	704 - 711	0.045	16.56	0.074	18.71	8M99G7D	QPSK
LTE Band 12/17	27	704 - 711	0.034	15.30	0.056	17.45	9M05W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.079	18.96	0.129	21.11	4M53G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.059	17.72	0.097	19.87	4M52W7D	16QAM
LTE Band 13	27	782	0.079	19.00	0.130	21.15	8M97G7D	QPSK
LTE Band 13	27	782	0.064	18.07	0.105	20.22	8M99W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.088	19.43	0.144	21.58	1M10G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.054	17.31	0.088	19.46	1M09W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.092	19.62	0.150	21.77	2M71G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.062	17.94	0.102	20.09	2M71W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.091	19.57	0.149	21.72	4M55G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.047	16.71	0.077	18.86	4M53W7D	16QAM
LTE Band 5	22H	829 - 844	0.087	19.41	0.143	21.56	9M00G7D	QPSK
LTE Band 5	22H	829 - 844	0.050	16.99	0.082	19.14	9M00W7D	16QAM
LTE Band 4/66	27	1710.7 - 1779.3			0.247	23.94	1M08G7D	QPSK
LTE Band 4/66	27	1710.7 - 1779.3			0.204	23.10	1M08W7D	16QAM
LTE Band 4/66	27	1711.5 - 1778.5			0.249	23.97	2M71G7D	QPSK
LTE Band 4/66	27	1711.5 - 1778.5			0.192	22.83	2M70W7D	16QAM
LTE Band 4/66	27	1712.5 - 1777.5			0.243	23.85	4M54G7D	QPSK
LTE Band 4/66	27	1712.5 - 1777.5			0.209	23.20	4M52W7D	16QAM
LTE Band 4/66	27	1715 - 1775			0.257	24.10	9M01G7D	QPSK
LTE Band 4/66	27	1715 - 1775			0.200	23.01	8M98W7D	16QAM
LTE Band 4/66	27	1717.5 - 1772.5			0.267	24.27	13M5G7D	QPSK
LTE Band 4/66	27	1717.5 - 1772.5			0.221	23.44	13M5W7D	16QAM
LTE Band 4/66	27	1720 - 1770			0.254	24.04	18M0G7D	QPSK
LTE Band 4/66	27	1720 - 1770			0.195	22.91	18M0W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3			0.352	25.47	1M10G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3			0.217	23.37	1M10W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5			0.339	25.30	2M70G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5			0.277	24.42	2M70W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5			0.330	25.18	4M51G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5			0.256	24.08	4M51W7D	16QAM
LTE Band 2	24E	1855 - 1905			0.355	25.50	9M03G7D	QPSK
LTE Band 2	24E	1855 - 1905			0.279	24.45	8M99W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5			0.361	25.58	13M5G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5			0.273	24.37	13M5W7D	16QAM
LTE Band 2	24E	1860 - 1900			0.349	25.43	17M9G7D	QPSK
LTE Band 2	24E	1860 - 1900			0.295	24.70	17M9W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5			0.312	24.94	4M50G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5			0.200	23.00	4M52W7D	16QAM
LTE Band 7	27	2505 - 2565			0.328	25.16	9M01G7D	QPSK
LTE Band 7	27	2505 - 2565			0.231	23.63	8M96W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5			0.314	24.97	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5			0.236	23.74	13M5W7D	16QAM
LTE Band 7	27	2510 - 2560			0.339	25.30	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560			0.203	23.08	18M0W7D	16QAM

EUT Overview

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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: A3LSMJ250M**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 06010, 05954

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE)

LTE Band 12/17 (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 12/17.

LTE Band 66/4 (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 66/4.

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.

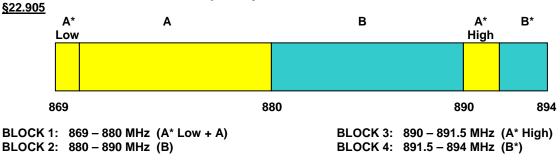
3.2 Block A Frequency Range

<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:

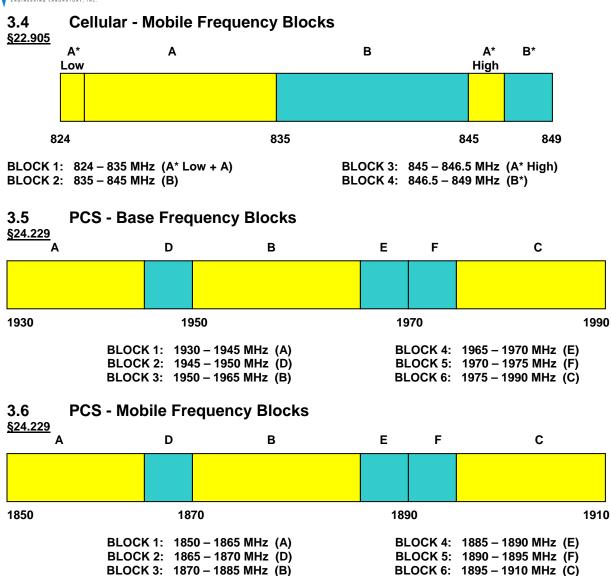
Block A: 698-704 MHz and 728-734 MHz; Block B: 704-710 MHz and 734-740 MHz; and Block C: 710-716 MHz and 740-746 MHz.

3.3 Cellular - Base Frequency Blocks



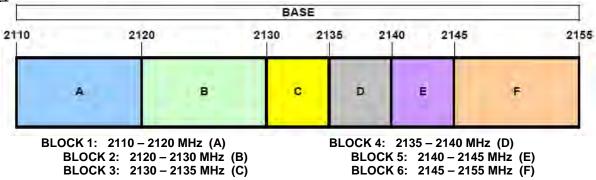
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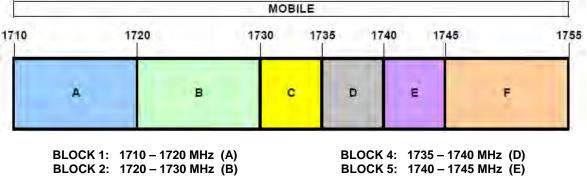
<u>§27.5(h)</u>



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3.8 AWS - Mobile Frequency Blocks



BLOCK 6: 1745 – 1755 MHz (F)

3.9 BRS/EBS Frequency Block

BLOCK 3: 1730 - 1735 MHz (C)

<u>§27.5</u>



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3.10 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) §27.53(m) RSS-130(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(4.4) 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]). For Band 7, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of 55 + 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	4/11/2018	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn 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

Notes:

- 1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

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

QAM Modulation

Emission Designator = 8M45W7D

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

Spurious Radiated Emission – LTE Band

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

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMJ250M
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE

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)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	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
27.53(m)	RSS-199(4.5)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m) (RSS-199 [6.4])		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)	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 (Part 22) and fundamental emissions stay within authorized frequency block (Part 27)		PASS	Section 7.8

Table 7-1. Summary of Radiated Test Results

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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 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, 7)	< 2 Watts max. EIRP		PASS	Section 7.6.
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP	RADIATED	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)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7
27.53(f)	N/A	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	Undesirable emissions must meet the limits detailed in 27.53(m) (RSS-199 [6.4])		PASS	Section 7.7

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.

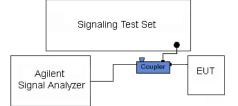


Figure 7-1. Test Instrument & Measurement Setup

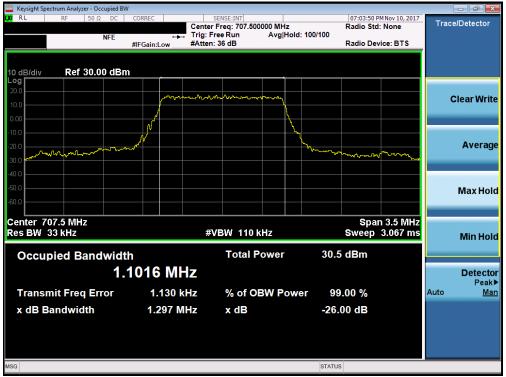
Test Notes

None.

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



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

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Keysight Spectrum Analyzer - Occupied B							
IXI RL RF 50Ω DC		SENSE:INT nter Freq: 707.500000 MI		Radio Std	MNov 10, 2017 None	Trace/D	etector
NFE		g:FreeRun Avg tten:36 dB	Hold: 100/100	Radio Dev	ice: BTS		
	an ouncou						
10 dB/div Ref 30.00 dBr	n						
20.0							
10.0	monton	patron Research	~~~			Cle	ear Write
0.00	/		<u>\</u>				
-10.0							
-20.0	www						Average
-30.0			p. Capering M	Walnum	Moundard		
-40.0							
-50.0						N	lax Hold
-60.0							
Center 707.5 MHz				Spar	n 7.5 MHz		
Res BW 68 kHz		#VBW 220 kHz		Swee	p 3.8 ms	ı	Min Hold
Occupied Bandwid	th	Total Powe	30.0	6 dBm			
	 7042 MHz						Detecto
							Peak
Transmit Freq Error	5.742 kHz	% of OBW F	ower 99	9.00 %		Auto	Mai
x dB Bandwidth	2.993 MHz	x dB	-26	.00 dB			
			-				
ISG			STATU	s			

Plot 7-3. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					
RL RF 50Ω DC	Center	SENSE:INT Freq: 707.500000 MHz ree Run Avg Hol : 36 dB	Radio : d: 100/100	37 PM Nov 10, 2017 Std: None Device: BTS	Trace/Detector
0 dB/div Ref 30.00 dBm					
10.0	Manna and a second	were and the second			Clear Wri
			- Contraction of the second se	una and an	Averaç
0.0					Max Ho
enter 707.5 MHz es BW 120 kHz	#\	VBW 390 kHz		an 12.5 MHz weep 1 ms	Min Ho
	Occupied Bandwidth Total Power 30.5 dBm 4.5335 MHz				Detect Pea
Transmit Freq Error	187 Hz	% of OBW Pow	ver 99.00 %		Auto <u>M</u>
x dB Bandwidth	5.088 MHz	x dB	-26.00 dB		
G			STATUS		

Plot 7-5. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied B	W				
RL RF 50Ω DC	Trig: F	SENSE:INT r Freq: 707.500000 MHz Free Run Avg Hold: n: 36 dB	07:11:57 PM Radio Std: N 100/100 Radio Devic	None	Frace/Detector
0 dB/div Ref 30.00 dB og		and the second and the second s			Clear Writ
0.00 0.00 0.00 0.00 0.00 0.00	m. vA		hope for the second second	inter a second sec	Averaç
40.0 50.0 50.0					Max Ho
enter 707.5 MHz tes BW 240 kHz	#	VBW 750 kHz		25 MHz ep 1 ms	Min Ho
Occupied Bandwid 8	th .9866 MHz	Total Power	29.7 dBm		Detect
Transmit Freq Error	-5.801 kHz	% of OBW Powe	r 99.00 %	Au	
x dB Bandwidth	9.939 MHz	x dB	-26.00 dB		
G			STATUS		

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



Plot 7-8. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					
X RL RF 50 Ω DC	Trig:	sense:INT ter Freq: 782.000000 MHz : Free Run Avg Holo en: 36 dB	10:47:12 P Radio Std I: 100/100 Radio Dev		Trace/Detector
10 dB/div Ref 30.00 dBm					
0.00					Clear Write
-10.0 -20.0 -30.0			hard and a start a sta	www.herwerhy_ny	Average
40.0 50.0 60.0					Max Hol
Center 782 MHz Res BW 120 kHz		#VBW 390 kHz	Swe	12.5 MHz ep 1 ms	Min Hol
	Occupied Bandwidth Total Power 31.0 dBm 4.5342 MHz				
Transmit Freq Error x dB Bandwidth	200 Hz 5.030 MHz	% of OBW Pow x dB	er 99.00 % -26.00 dB		Peak Auto <u>Ma</u>
SG			STATUS		

Plot 7-9. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-11. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



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

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Plot 7-13. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

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x dB Bandwidth	2.981 MHz	x dB	-26.0				
۲. ۲ Transmit Freq Error	4.068 kHz	% of OBW Pov	ver 99.	00 %	A	Auto	Detecto Peak <u>Ma</u>
Occupied Bandwidt	ո 7097 MHz	Total Power	28.6	dBm			Detect
Res BW 68 kHz	#	VBW 220 kHz			2.5 MH2 5 3.8 ms	I	Min Ho
Center 836.5 MHz				Snan	7.5 MHz		
50.0						Ν	/lax Ho
0.0 Mutania					hander and the second sec		
20.0	Nd		h www.	1. Mar			Avera
0.0							
0.0	all and a second and a second se	K	h			Cle	ear Wri
0 dB/div Ref 30.00 dBm 9g							
NFE	Trig: F		ld: 100/100	Radio Devi			
RL RF 50Ω DC	CORREC	SENSE:INT r Freg: 836.500000 MHz		Radio Std:	Nov 10, 2017	Trace/D)etector

Plot 7-15. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



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

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Keysight Spectrum Analyzer - Occupied BW						- 6	×
XURL RF 50ΩDC NFE	Center Trig: F	SENSE:INT Freq: 836.500000 MHz Free Run Avg Ho : 36 dB	ld: 100/100	06:47:26 PM Radio Std: I Radio Devic	None	Trace/Detec	tor
10 dB/div Ref 30.00 dBm							
20.0	- mar mar	Martinewarthan				ClearV	Vrite
10.0 20.0 30.0			- was way	n-on the	posses Manath	Ave	rag
40.0 -50.0 -60.0						Max	Hol
Center 836.5 MHz Res BW 120 kHz	#	VBW 390 kHz			2.5 MHz ep 1 ms	Min	Hol
	Occupied Bandwidth Total Power 28.0 dBm 4.5480 MHz					Dete	ecto
Transmit Freq Error x dB Bandwidth	8.467 kHz 4.963 MHz	% of OBW Pov x dB	ver 99. -26.0	00 % 0 dB		Auto	Ma
SG			STATUS				

Plot 7-17. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					- 6
XIRL RF 50Ω DC NFE	Center Trig: F	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Ho 1: 36 dB	Radi Id: 100/100	2:08 PM Nov 10, 2017 o Std: None o Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0	alound anthre	mannamation	\		Clear Write
10.0 20.0 30.0 prolonally marked by			Marchan Marin	and the Marine and an	Averag
40.0 50.0 60.0					Max Hol
Center 836.5 MHz Res BW 240 kHz	#	VBW 750 kHz		Span 25 MHz Sweep 1 ms	Min Hol
Occupied Bandwidtl 9.() 025 MHz	Total Power	29.1 dBr	n	Detecto
Transmit Freq Error x dB Bandwidth	616 Hz 9.978 MHz	% of OBW Pov x dB	ver 99.00 9 -26.00 d		Реак Auto <u>Ma</u>
SG			STATUS		

Plot 7-19. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

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Plot 7-21. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					
XIRL RF 50Ω DC	Center	SENSE:INT Freq: 1.745000000 GHz Free Run Avg Hold : 36 dB	10:05:07 F Radio Sto d: 100/100 Radio De		Trace/Detector
10 dB/div Ref 30.00 dBm	The second se	phat mar an			Clear Writ
			L		Averag
30.0 When a feature of the second se					Max Hol
Center 1.745 GHz Res BW 68 kHz	#	VBW 220 kHz		n 7.5 MHz ep 3.8 ms	Min Ho
Occupied Bandwidth 2.7	108 MHz	Total Power	28.2 dBm		Detecto
Transmit Freq Error	-3.487 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Ma</u>
x dB Bandwidth	2.998 MHz	x dB	-26.00 dB		
SG			STATUS		

Plot 7-23. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied B	W					×
LXIRL RF 50Ω DC	CORREC	SENSE:INT r Freg: 1.745000000 GHz	10:07:21 F Radio Std	MNov 13, 2017	Trace/Detect	tor
	Trig: I	Free Run Avg Hold	: 100/100			
	#IFGain:Low #Atter	n: 36 dB	Radio Dev	/ice: B15		
10 dB/div Ref 30.00 dBr	m					
20.0						
10.0	mmmmm	han many			ClearW	rite
0.00						
-10.0	<u>N</u>					
-20.0			for all and a for the second		Aver	rage
-30.0 mm	www.		" a Marsharman			
-40.0						
-50.0					MaxH	hot
-60.0					Maxi	1014
Center 1.745 GHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz eep 1 ms		
KES DW 120 KHZ	#		500	eep Tills	Min H	lold
Occupied Bandwid	th	Total Power	27.9 dBm			
	.5376 MHz				Dete	ctor
						eak▶
Transmit Freq Error	824 Hz	% of OBW Powe	er 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	4.944 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-25. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					
X RL RF 50 Ω DC	🛶 Trig: I	SENSE:INT r Freq: 1.745000000 GHz Free Run Avg Hold: ^ n: 36 dB	Radio Std:		Trace/Detector
10 dB/div Ref 30.00 dBm		worth margin a factor			ClearWrite
10.0 0.00 10.0 20.0 30.0			Horn on head have been a		Averag
40.0				^{ите} та-уулв _{арт} а	Max Hol
Center 1.745 GHz Res BW 240 kHz	#	VBW 750 kHz		ep 1 ms	Min Ho
Occupied Bandwidth 9.0) 069 MHz	Total Power	27.7 dBm		Detecto
Transmit Freq Error	9.206 kHz	% of OBW Power		A	luto <u>Ma</u>
x dB Bandwidth	9.864 MHz	x dB	-26.00 dB		
SG			STATUS		

Plot 7-27. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					- 6
X RL RF 50 Ω DC	Center	SENSE:INT Freq: 1.745000000 GHz ree Run Avg Hold: : 36 dB	Radio Std:		Trace/Detector
10 dB/div Ref 30.00 dBm					
10.0	and the second s	monte and a second a second a second a second			Clear Writ
20.0 			wyn mer frank fran wersen fa	www	Averag
50.0					Max Ho
Center 1.745 GHz Res BW 360 kHz	#\	VBW 1.1 MHz	Swe	37.5 MHz ep 1 ms	Min Ho
Occupied Bandwidth	.509 MHz	Total Power	27.9 dBm		Detecto
Transmit Freq Error	1.787 kHz	% of OBW Powe	r 99.00 %	A	uto <u>Ma</u>
x dB Bandwidth	14.77 MHz	x dB	-26.00 dB		
6G			STATUS		

Plot 7-29. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B					
RL RF 50Ω DC	Trig:	sense:INT er Freq: 1.745000000 GHz Free Run Avg Hold: en: 36 dB	Radio Std:		Trace/Detector
10 dB/div Ref 30.00 dB	m				
20.0		man and a state of the second			Clear Writ
0.00 10.0 20.0			and the man and the second	المعادية المعالية الم	Averaç
					Max Ho
enter 1.745 GHz es BW 470 kHz		#VBW 1.5 MHz		n 50 MHz ep 1 ms	Min Ho
Occupied Bandwid	th 7.994 MHz	Total Power	29.5 dBm		Detect
Transmit Freq Error	-13.205 kHz	% of OBW Powe	er 99.00 %	A	uto <u>M</u>
x dB Bandwidth	19.36 MHz	x dB	-26.00 dB		
G			STATUS		

Plot 7-31. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



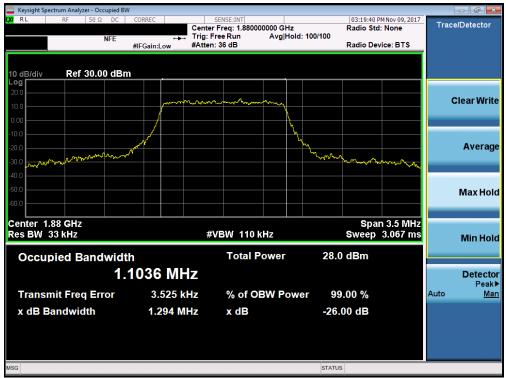
Plot 7-32. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-33. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW K RL RF 50 Ω DC	CORREC	SENSE:INT			M Nov 09, 2017	Trace/Det	
NFE	Trig: F	r Freq: 1.880000000 GH: Free Run Avg H 1: 36 dB	z old: 100/100	Radio Std: Radio Dev		Hacober	
10 dB/div Ref 30.00 dBm				1			
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Clear	r Write
0.00							
20.0	nd		m	-	All way and the second	A	verag
40.0							
50.0						Ма	x Hol
Center 1.88 GHz Res BW 68 kHz	#	VBW 220 kHz			n 7.5 MHz p 3.8 ms	Mi	n Hol
Occupied Bandwidth		Total Power	29.4	4 dBm			
2.7	7016 MHz					De	Peak
Transmit Freq Error	-1.897 kHz	% of OBW Po	wer 99	9.00 %		Auto	Ma
x dB Bandwidth	2.987 MHz	x dB	-26.	00 dB			
SG			STATU	s			

Plot 7-35. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
K RL RF 50 Ω DC	Center Trig: F	SENSE:INT r Freq: 1.880000000 GHz Free Run Avg Hc h: 36 dB	old:>100/100	03:13:45 PM Nov 09, Radio Std: None Radio Device: BT	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0		noton has man have a			Clear Writ
20.0 30.0 30.0 30.0	~		h	and the group	Averag
50.0					Max Hol
enter 1.88 GHz tes BW 120 kHz	#	VBW 390 kHz		Span 12.5 M Sweep 1	MHz ms Min Hol
Occupied Bandwidth	າ 5127 MHz	Total Power	29.3	dBm	Detecto
Transmit Freq Error x dB Bandwidth	-4.886 kHz 5.049 MHz	% of OBW Por x dB	wer 99. -26.0	00 % 0 dB	Peak Auto <u>Ma</u>
G			STATUS		

Plot 7-37. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					- ē -
RL RF 50 Ω DC	Center Trig: F	SENSE:INT] Freq: 1.880000000 GHz Free Run Avg Hold: 1: 36 dB	Radio Std	. None	Trace/Detector
0 dB/div Ref 30.00 dBm					Clear Writ
	~		la contraction of the second s	www.	Averag
40.0					Max Hol
enter 1.88 GHz tes BW 240 kHz	#	VBW 750 kHz	Spa Swe	n 25 MHz eep 1 ms	Min Hol
Occupied Bandwidth 9.0) 245 MHz	Total Power	30.3 dBm		Detecto
Transmit Freq Error x dB Bandwidth	-3.491 kHz 9.970 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB	Au	
G			STATUS		

Plot 7-39. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



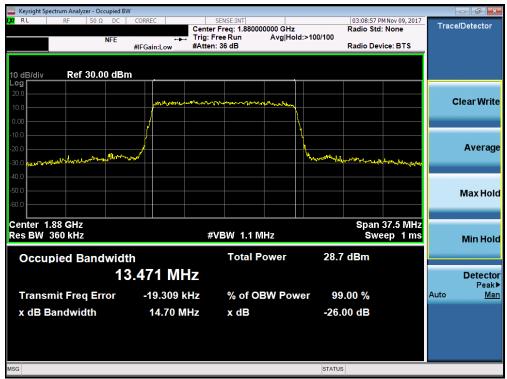
Plot 7-40. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW				1	- 6
KL RF 50 Ω DC NFE	Center Trig: F	SENSE:INT r Freq: 1.880000000 GH Free Run Avg H h: 36 dB	lold:>100/100	03:08:48 PM Nov 09, 2017 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0		-mary margarily and shares	~		Clear Write
-10.0 -20.0 -30.0			huma	- Montal Maria Magazada	Averag
40.0 50.0 60.0					Max Hol
Center 1.88 GHz Res BW 360 kHz	#	VBW 1.1 MHz		Span 37.5 MHz Sweep 1 ms	Min Hol
Occupied Bandwidth 13	505 MHz	Total Power	30.0	dBm	Detecto Peak
Transmit Freq Error x dB Bandwidth	6.003 kHz 14.76 MHz	% of OBW Po x dB	ower 99.(-26.0	00 % 0 dB	Peak Auto <u>Ma</u>
SG			STATUS		

Plot 7-41. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-42. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BV					
KI RE 50Ω DC	Trig:		Radio St :>100/100		Trace/Detector
	#IFGain:Low #Atte	n: 36 dB	Radio De	evice: BTS	
10 dB/div Ref 30.00 dBr	n				
20.0		pomi-entrophytheterson of the Port of the			ClearWrite
10.0					
0.00		\ \ \ \ \ \ _			
-10.0			1		Average
30.0 mar almon all and a start	hum		Hugelup and marge	mannanan	Average
-40.0					
-50.0					Max Hold
-60.0				——	
Center 1.88 GHz			Sp	an 50 MHz	
Res BW 470 kHz	#	¢VBW 1.5 MHz	Sw	veep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	29.5 dBm		
	.902 MHz				Detecto
Transmit Freq Error	-2.232 kHz	% of OBW Pow	er 99.00 %		Peak∎ Auto Mar
x dB Bandwidth	-2.232 KHz 19.43 MHz	x dB	-26.00 dB	Í	
	19.43 MHZ	хuв	-20.00 dB		
ISG			STATUS		

Plot 7-43. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW R R RF 50 Ω DC NFE	Trig: F		ld: 100/100	03:21:53 PM	None	Trace/Dete	_
	#IFGain:Low #Atten	1: 36 dB		Radio Devic	e: BTS		
10 dB/div Ref 30.00 dBm							
20.0							
10.0	mmmmm	www.				Clear	Write
0.00	/		\				
-10.0			<u>\</u>				
-20.0			Lawrence -	www.www.		Av	erage
-20.0 -30.0 -30.0 -30.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mmil		
-40.0							
-50.0						May	x Hold
-60.0						mu	TION
					0.5.111		
Center 2.535 GHz Res BW 120 kHz	#	VBW 390 kHz			2.5 MHz ep 1 ms		
	"			UNCO	р т ш э	Mir	n Hole
Occupied Bandwidt	า	Total Power	28.7	′ dBm			
4.	5011 MHz					De	tecto
							Peak
Transmit Freq Error	3.212 kHz	% of OBW Pov	ver 99	.00 %	1	Auto	Mar
x dB Bandwidth	5.050 MHz	x dB	-26.	00 dB			
ISG			STATUS	3			

Plot 7-45. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW	CORREC	SENSE:INT	03:26:	03 PM Nov 09, 2017	
NFE	Center	Freq: 2.535000000 GHz	Radio d: 100/100	Std: None Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
	marter aller and	and a start and the most of the start and th			Clear Writ
0.00					
20.0 30.0 pro-14-00/10/10/10/10/10/10/10/10/10/10/10/10/1			Conservation and the second	WW. Thursday Base	Averag
0.0					Max Hol
enter 2.535 GHz es BW 240 kHz	#	VBW 750 kHz		pan 25 MHz weep 1 ms	Min Ho
Occupied Bandwidth) 052 MHz	Total Power	28.6 dBm		Detect
Transmit Freq Error	-1.325 kHz	% of OBW Pow	ver 99.00 %		Peak Auto <u>Ma</u>
x dB Bandwidth	9.875 MHz	x dB	-26.00 dB		
G			STATUS		

Plot 7-47. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-48. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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			102.0	0.07.044	
X RL RF 50Ω DC	Center Trig: F	SENSE:INT Freq: 2.535000000 GHz Free Run Avg Hol I: 36 dB	Radi d: 100/100	9:37 PM Nov 09, 2017 5 Std: None 5 Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0		พระประการใหญ่ เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อมาย เมื่อ เมื่อ เมื่อ เมื่อ เป็น เมื่อ เป็น เมื่อ เป็น เป็น เป็น เป็น เป็น เป็น เป็น เป็น			Clear Write
0.00 10.0 20.0 30.0	www		Marine Commence	mark while way	Averag
40.0					Max Hol
Center 2.535 GHz Res BW 360 kHz	#	VBW 1.1 MHz		oan 37.5 MHz Sweep 1 ms	Min Hol
Occupied Bandwidt	h .512 MHz	Total Power	28.8 dBr	n .	Detecto
Transmit Freq Error	32.092 kHz	% of OBW Pov	ver 99.00 %	6	Peak Auto <u>Ma</u>
x dB Bandwidth	14.72 MHz	x dB	-26.00 dl	В	
SG			STATUS		

Plot 7-49. Occupied Bandwidth Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



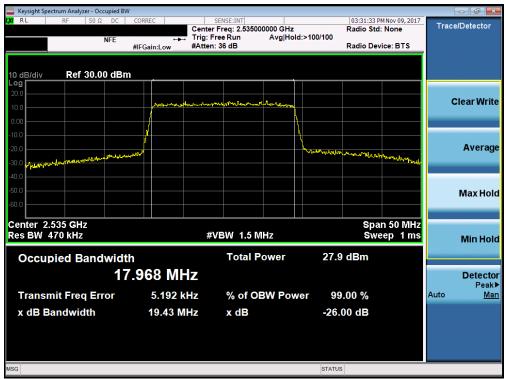
Plot 7-50. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW					
X RL RF 50Ω DC NFE	Trig: F	SENSE:INT r Freq: 2.535000000 GHz Free Run Avg Hc n: 36 dB	Radi Radi	31:22 PM Nov 09, 2017 io Std: None io Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0	algenetation manyment	man Hiron			Clear Write
20.0 30.0 40.0	puer l		munnersteren	www.www.uwww.w	Averag
					Max Hol
enter 2.535 GHz es BW 470 kHz	#	VBW 1.5 MHz		Span 50 MHz Sweep 1 ms	Min Ho
Occupied Bandwidt	h .951 MHz	Total Power	28.8 dB	m	Detecto
Transmit Freq Error	12.238 kHz	% of OBW Po	wer 99.00	%	Auto <u>Ma</u>
x dB Bandwidth	19.48 MHz	x dB	-26.00 d	В	
G			STATUS		

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



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

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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) §27.53(m) RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6) RSS-199(4.5)

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.

For Band 7, the minimum permissible attenuation level of any spurious emission is 55 + log₁₀(P_[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 for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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

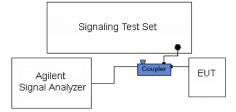


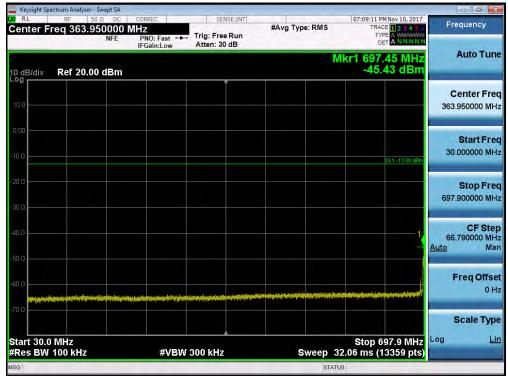
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

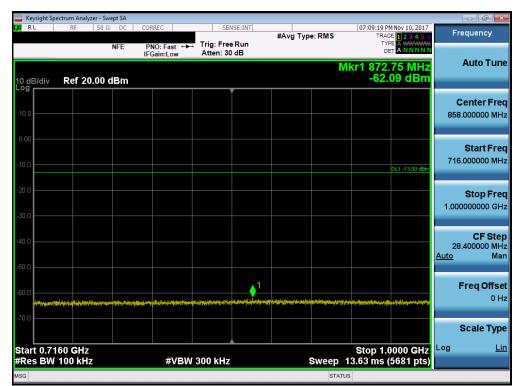
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the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

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Plot 7-53. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-54. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Plot 7-55. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-56. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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L RF 50 Ω CCRREC SENSE:INT 07:08:20 PM Nov 10, 2017 NFE PNO: Fast ++- Trig: Free Run IFGain:Low Trig: Free Run Atten: 30 dB Trig: Free Run Der ANNNT Auto Tu S/div Ref 20.00 dBm Center Free Run Start Free Run Start Free Run Trig: Free Run Start Free Run Start Free Run
NFE PN0: Fast +++ Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Auto Tu 3/div Ref 20.00 dBm Center Fr 62.21 dBm Center Fr 3/div Image: Start Free Run Atten: Start Free Run Att
Center Fr 858.00000 M Start Fr 716.00000 M
858.00000 M Start Fr 716.00000 M
716.00000 M
Stop Fr 1.000000000 G
CF Stu 28.400000 M Auto
Scale Ty
t 0.7160 GHz Stop 1.0000 GHz s BW 100 kHz #VBW 300 kHz Sweep 13.63 ms (5681 pts)

Plot 7-57. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-58. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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	ectrum Analyzer - S										
L <mark>XI</mark> RL	RF 50	Ω DC	CORREC	SEI	ISE:INT	#Avg Typ	e: RMS	TRAC	Nov 10, 2017	Fr	equency
		NFE	PNO: Fast ↔ IFGain:Low	Trig: Free Atten: 30				TYF DE			
10 dB/div Log	Ref 20.00	dBm					M	kr1 693. -62.	75 MHz 62 dBm		Auto Tune
10.0											enter Freq .000000 MHz
-10.0									DL1 -13.00 dBm	30	Start Freq .000000 MHz
-20.0										698	Stop Freq .000000 MHz
-40.0										66 <u>Auto</u>	CF Step .800000 MHz Man
-60.0	A la la cale a state de la trainin	tildes - Witten (1924) of a		a tanan ar ta da da da fan fan fan s			and the sector of some of the		1. 	i	F req Offset 0 Hz
-70.0											Scale Type
Start 30.0 #Res BW			#VBV	V 300 kHz		s	weep 32	6 Stop 2.06 ms (1	50.0 IVII 12	Log	Lin
MSG							STATUS	-			

Plot 7-59. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-60. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-61. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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RL RL	ectrum Analy RF	yzer - Swep 50 Ω		CORREC			NSE:INT			10	E4-27 DI	Nov 13, 2017	-	
KL.	NF	20.32	DC		ast ↔►		e Run	#Avg Typ	e:RMS	10.	TRAC TYP	E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Fred	quency
0 dB/div	Ref 2	0.00 dl	Bm	il Gain	2011					Mkr1	777. -25.	00 MHz 97 dBm	4	luto Tun
.og 10.0														enter Fre 00000 M⊦
10.00												DL1 -13.00 dBm		Start Fre 00000 M⊦
20.0 30.0												1 		Stop Fre
\$0.0 50.0													74.7 <u>Auto</u>	CF Ste 00000 MH Ma
60.0 mundadi	pineter all and a		an an an an an an	n ha ha shekara a shekara sheka Shekara shekara	a Mil Francisco (Mil) a Mil Francisco (Mil) a			ana da kana ana ang kana ang kana da kana ang Kana da kana da kana ang kana da kana ang kana da kana da kana da Kana da kana d				ang sa	Fi	r eq Offs 0 H
70.0														cale Typ
tart 30.0 Res BW		z			#VBW	300 kHz		s	weep	S 35.86	top 7 ms (1	77.0 MHz 4941 pts)	Log	L
G									ST/	ATUS				

Plot 7-62. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

Frequency	10:54:38 PM Nov 13, 2017		SENSE:INT	DC CORREC	RF 50 Ω DC	RL
	TRACE 1 2 3 4 5 6 TYPE A WAWWW DET A N N N N N	#Avg Type: RMS	Trig: Free Run #Atten: 36 dB	PNO: Fast ↔→ IFGain:Low		
Auto Tur	lkr1 795.05 MHz -53.50 dBm	M		dBm	Ref 20.00 dBm	0 dB/div
Center Fre 893.500000 MF						10.0
Start Fre 787.000000 M⊦	DL1 -13 00 dBm					0.00
Stop Fre 1.000000000 GF						80,0
CF Ste 21.300000 MH <u>Auto</u> Ma						
Freq Offs 0 H	queditarye (norma yen respiration of the denter flades yes	Pader-bits-batteristine/tanacesca.twice/tgad	ny makaman ing katalan pang katang pang pang pang pang pang pang pang p	๛มตระรับปรูปขับไม่ไปสมที่สารสุขางสารที่มาให้เสียงรูปการระดังหร่างการที่	herrigen karnen herren her	50,0 - 10,0
Scale Typ	Stop 1.0000 GHz 10.22 ms (4261 pts)	Swaan	300 kHz	#\/BIM	370 GHz 100 kHz	tart 0.78

Plot 7-63. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analyz											
X/ RL	RF	50Ω D	DRREC PNO: Fas		Trig: Fre		#Avg Typ	e:RMS	TF	7 PM Nov 13, 2017 RACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Fr	equency
10 dB/div	Ref 0.0	0 dBm	Gain:Lo	w	#Atten: 3	6 dB		Ν	/kr1 9.9	70 0 GHz 2.37 dBm		Auto Tune
-10.0										DL1 -13.00 dBm		Center Freq
-20.0										1	1.00	Start Fred
-40.0			<u>^</u>								10.00	Stop Fred 0000000 GH2
60.0											900 <u>Auto</u>	CF Stej .000000 MH Ma
80.0												F req Offse 0 H
-90.0											Log	Scale Type
Start 1.0 #Res BV	00 GHz V 1.0 MHz		#	VBW :	3.0 MHz		9	weep	Stop / 15.60 ms	10.000 GHz (18001 pts)	Log	
ASG								STA	TUS			

Plot 7-64. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Nikit i 622.00 Miriz Odd B/div Ref 20.00 dBm -45.84 dBm Out Center I 100 Conter I Conter I 100 Conter I Conter I 100			zer - Swept SA								_	- 0
Income and the output of th	<mark>u</mark> RL	RF			Trig: Fre	e Run	#Avg Type	RMS	TRAC	CE 1 2 3 4 5 6	Fre	quency
100 Image: Center 1 100		Ref 20).00 dBm	IFGain:Low	#Atten: 4	0 dB		Μ	kr1 823	00 MHz		Auto Tun
100 0000 000												e nter Fre 500000 МН
Stop i Stop Stop Stop Stop Stop Stop Stop Stop										DL1 -13.00 dBm		Start Fre
Treq Ol Treq Ol Tre												Stop Fre
An and the set of the barry of the set of										1 1		CF Ste 300000 MH Ma
tart 30.0 MHz Stop 823.0 MHz	IC. CALLER		t Antonio anton	er se dan stan and Andreas Constant and Standard Strandsburg Response Standard Stan Response Standard Stand			Los de vite all de colta de contra de la contr O de la contra de la O de la contra de la	in elemente agant		a populari na populari China (populari populari China (populari populari populari	F	req Offs 0 H
Res BW 100 kHz #VBW 300 kHz Sweep 38.06 ms (15861 pts)) MHz							Stop 8	23.0 MHz		cale Typ
SG STATUS	Res BW		z	#VB	W 300 kHz		Sv		1.06 ms (1	5861 pts)		

Plot 7-65. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-66. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-67. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-68. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Si		a marine and		And the second second second second	
X RL RF 50	NFE PNO: Fast	SENSE:INT Trig: Free Run #Atten: 40 dB	#Avg Type: RMS	06:52:53 PM Nov 10, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref 20.00			М	kr1 849.35 MHz -43.19 dBm	Auto Tune
10,0					Center Freq 924.500000 MHz
0,00 -10,0				0L1 -13.00 dBm	Start Fred 849.000000 MH;
-20,0					Stop Free 1.000000000 GH
-40.0 1					CF Stej 15.100000 MH <u>Auto</u> Ma
-60,0	***************************************	างของเปรียงของรู้ใน อย่างๆ _เ ปรีโลกให้ประมาณการกรุง	4879544544544544444 <mark>6</mark> 454546464645474	hangithashaaqitida	Freq Offse 0 H
-70.0 Start 0.84900 GHz #Res BW 100 kHz	#VBW	300 kHz	Sween 7	Stop 1.00000 GHz 2.248 ms (3021 pts)	Scale Type Log <u>Lir</u>
MSG			STATU		

Plot 7-69. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



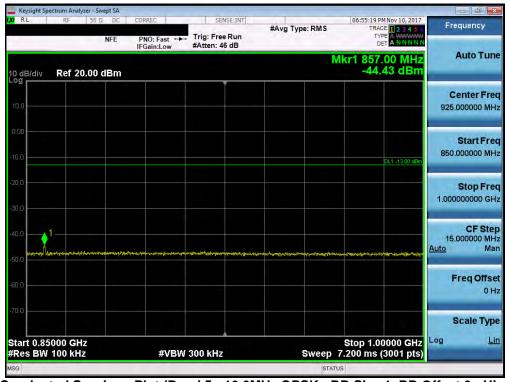
Plot 7-70. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyzei										
LX/ RL	RF	50Ω DC	CORREC		SE:INT	#Avg Typ	e: RMS	TRAC	INov 10, 2017	Fr	equency
		NFE	PNO: Fast ↔ IFGain:Low	Trig: Free Atten: 30				DE			Auto Tune
10 dB/div Log	Ref 20.0	00 dBm						Mkr1 822. -56.	45 MHz 58 dBm		Auto Tune
209										C	enter Freq
10.0										427	.000000 MHz
0.00											Start Freq
-10.0									DL1 -13.00 dBm	30	.000000 MHz
-20.0											
-20.0										824	Stop Freq .000000 MHz
-30.0											
-40.0										79	CF Step .400000 MHz
-50.0									1	<u>Auto</u>	Man
-60.0										I	Freq Offset
-00.0	land a state of the second	den en angen parte en	مدر و المتعامر من المعالي و المتعاري . معروف المتعامر من المتعاري مع المتعارية .		ر بر می میروند. ۱۹ آفادی امروند با ۱۹ و	n de anteres plette belen ti Le raci finante conteni ple			in the second states of the		0 Hz
-70.0											Scale Type
Start 30.0) MHz							Stop 8	24.0 MHz	Log	Lin
#Res BW			#VBW	300 kHz		s	weep	38.11 ms (1	5881 pts)		
MSG							STA	TUS			

Plot 7-71. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-72. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-73. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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PNO: Fast ++ Trig: Free Run Atten: 30 dB Mkr1 1.697 5 GHz 36.43 dBm 0 dB/div Ref 20.00 dBm 36.43 dBm Center Free Sep.00000 MH 00 0 0.1.300 em 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em Start Free 30.00000 MH 00 0.1.300 em 0.1.300 em 0.1.300 em 00 0.1.300 em 0.1.300 em 0.1.300 em 000 0.1.300 em 0.1.300 em 0.1.300 em 000 0.1.			Sweep	1	
PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 1.697 5 GHz -36.43 dBm Auto Tune 0 dB/div Ref 20.00 dBm -36.43 dBm Center Free 369.000000 MH Start Free 30.00000 MH Start Free 30.00000 MH Start Free 11.70800000 GH Start Free 11.70800000 GH Start Free 30.00000 MH Mathe Mathe<	Start 0.0300 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sween	0000 117 000 0112	Log <u>Li</u>
PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 1.697 5 GHz -36.43 dBm Auto Tun 0 dB/div Ref 20.00 dBm -36.43 dBm -36.43 dBm 0 0 -36.43 dBm -36.43 dBm -36.43 dBm 20 0 -36.43 dBm -36.43 dBm -36.43 dBm 20 0 -36.43 dBm -36.43 dBm -36.43 dBm					Scale Typ
PNO: Fast	70.0				
PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 1.6997 5 GHz -36.43 dBm Auto Tun 0 dB/div Ref 20.00 dBm -36.43 dBm -36.43 dBm -36.93 dBm<	60,0				
PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 1.697 5 GHz -36.43 dBm Auto Tun 0 dB/div Ref 20.00 dBm -36.43 dBm Center Free 10 0 0	50,0	an na hani ka da ka		۲۰ بور المان المار المراجع المارية المراجع المارية المراجع المراجع المراجع المراجع المراجع المراجع المراجع الم	<u>Auto</u> Wa
PNO: Fast Trig: Free Run Atten: 30 dB Mkr1 1.697 5 GHz -36.43 dBm Auto Tur 0 dB/div Ref 20.00 dBm -36.43 dBm -36.43 dBm -36.93 dBm </td <td>40.0</td> <td></td> <td></td> <td></td> <td>167.800000 MH</td>	40.0				167.800000 MH
PNO: Fast Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Trig: Free Run Der Atten: 30 dB Auto Tun 0 dB/div Ref 20.00 dBm -36.43 dBm -36.43 dBm -36.93 dBm	30,0			1	
PNO: Fast + Trig: Free Run IFGain:Low Trig: Free Run Atten: 30 dB 0 dB/div Ref 20.00 dBm 	20,0				
PNO: Fast Trig: Free Run IFGain:Low Trig: Free Run Atten: 30 dB 0 dB/div Ref 20.00 dBm 9 10.0 0.00 0 dB/div Ref 20.00 dBm 9 10.0	10,0			DL1 -13.00 dBm	50.000000 Mir
PNO: Fast Trig: Free Run IFGein:Low Trig: Free Run Atten: 30 dB 0 dB/div Ref 20.00 dBm 					
PNO: Fast Trig: Free Run IFGain:Low Trig: Free Run Atten: 30 dB 0 dB/div Ref 20.00 dBm O dB/div Ref 20.00 dBm Center Free					005.000000 Mil
PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB DETA INNNN OdB/div Ref 20.00 dBm	10.0				
PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB DET ANNINN	IO dB/div Ref 20.00 dBm		MI	r1 1.697 5 GHz -36.43 dBm	Auto Tun
mitig Type: tello			a conferences	DET ANNNNN	Auto Tur
RL RF 50 Ω DC CORREC SENSE:INT 10:16:38 PM Nov 13, 2017	C RL RF 50Ω DC		#Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency

Plot 7-74. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-75. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Plot 7-76. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-77. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-78. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-79. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	10:18:11 PM Nov 13, 2017		SENSE:INT	er - Swept SA 50 Ω DC CORREC	Keysight Spectrum Analyzer RL RF 5
Frequency	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	#Avg Type: RMS		PNO: Fast ↔	
Auto Tun	kr1 1.647 5 GHz -50.15 dBm	N			dB/div Ref 20.0
Center Fre 870.000000 MH					.0
Start Fre 30.000000 M⊦	DL1 -13.00 dBm				0 0
Stop Fre 1.710000000 GF					0
CF Ste 168.000000 Mi <u>Auto</u> Mi	↓ 1				0
Freq Offs 01		2,244,00 	ىرىن ئەرىپۇرى بىلىرىنى بىلۇرىغى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرىنى بىلىرى	nayahayan yana yana kala Alkana ka ya k	0
Scale Typ Log <u>L</u>	Stop 1.7100 GHz 2.240 ms (3361 pts)	Sweep	/ 3.0 MHz	#VBV	art 0.0300 GHz es BW 1.0 MHz
		STAT			1

Plot 7-80. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-81. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-82. Conducted Spurious Plot (Band 66/4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω DC	CORREC SENSE:INT		03:01:22 PM Nov 09, 2017	
NFE	PNO: Fast 🕞 Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref 20.00 dBm		Mk	r1 1.849 0 GHz -24.40 dBm	z Auto Tune
10.0				
10.0			DL1 -13.00 dBm	
20.0			1	
40.0				181.900000 MH
50.0	nishtifanunsimun ningan kalendari kalendari dari matematika kalendari kalendari kalendari kalendari kalendari m	na ini katang katalakata katang katalakatan katang katalapatan katang katalapatan katang katalapatan katang kat	graf fundy - sealer die Antonie and Antonie and Ba	
70.0				Scale Typ
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 2	Stop 1.8490 GHz .425 ms (3639 pts)	
ISG		STATUS	1	

Plot 7-83. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



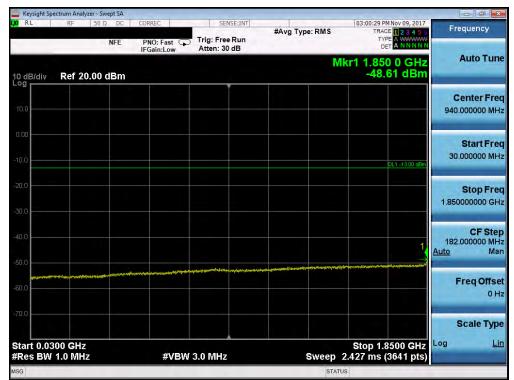
Plot 7-84. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-85. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



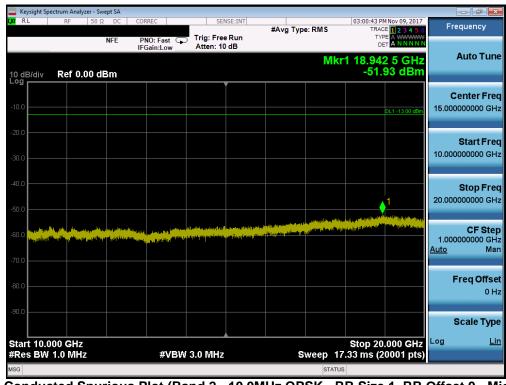
Plot 7-86. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Keysight Spectrum Analyzer - S						- 6 ×
LXU RL RF 50	NFE P	RREC NO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	03:00:34 PM Nov 09, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N	Frequency
10 dB/div Ref 20.00		Guineow			Mkr1 9.756 0 GHz -37.81 dBm	Auto Tune
10,0						Center Freq 5.955000000 GHz
-10,0					DL1 -13.00 dBm	Start Freq 1.910000000 GHz
-20,0						Stop Freq 10.000000000 GHz
-40.0	× **					CF Step 809.000000 MHz <u>Auto</u> Mar
-50.0						Freq Offset 0 Hz
-70.0 Start 1.910 GHz					Stop 10.000 GHz	Scale Type
#Res BW 1.0 MHz		#VBW	3.0 MHz		14.02 ms (16181 pts)	

Plot 7-87. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-88. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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					rum Analyzer - Swept SA	
Frequency	03:06:18 PM Nov 09, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNN	#Avg Type: RMS	SENSE:INT Trig: Free Run Atten: 30 dB	CORREC PNO: Fast	RF 50 Ω DC	0 RL
Auto Tuno	kr1 1.728 0 GHz -50.19 dBm	М			Ref 20.00 dBm	0 dB/div
Center Free 940.000000 MH						10.0
Start Fre 30.000000 MH	DL1 =13.00 dBm					10,00
Stop Fre 1.850000000 GH						30.0
CF Ste 182.000000 MH Auto Ma	1					40.0
Freq Offse 0 H			ayad nay alka dawa dawa dawa dawa dawa dawa dawa da	949714497994974974974974974974974974974974974	nen na postan militar na najska in na na sveten Maserien I	60.0
Scale Typ Log <u>Li</u>	Stop 1.8500 GHz 2.427 ms (3641 pts)	Sween	3.0 MHz	#VBW		5tart 0.03
		STATU				SG

Plot 7-89. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-90. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Keysight Spectrum Analyzer					
IXVIRL RF 5	NFE PNO: Fast (IFGain:Low	Trig: Free Run Atten: 10 dB	#Avg Type: RMS	03:06:51 PM Nov 09, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
10 dB/div Ref 0.00			Mkr	1 18.942 5 GHz -52.60 dBm	Auto Tune
-10.0				DL1 -13.00 dBm	Center Fred 15,000000000 GHz
-20.0					Start Free 10.000000000 GH
-40,0				1	Stop Free 20.000000000 GH;
60.0 		n a ser an			CF Stej 1.000000000 GH <u>Auto</u> Ma
80,0					Freq Offse 0 H
Start 10.000 GHz					Scale Type
#Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 17	.33 ms (20001 pts)	

Plot 7-91. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ250M		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	03:24:02 PM Nov 09, 2017		SENSE:INT	CORREC	50 Ω DC	RL RF
Frequency Auto Tune	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	#Avg Type: RMS	Trig: Free Run Atten: 30 dB	PNO: Fast	NFE	KL KF
	r1 2.465 5 GHz -47.82 dBm	MI		I Gam.Low	20.00 dBm	dB/div Ref
Center Fre 1.252500000 GH						0.0
Start Fre 30.000000 MH						0.0
Stop Fre 2.47500000 GH	DL1 -25.00 àBm					0.0
CF Ste 244.500000 MH Auto Ma	1					0.0
Freq Offs 0 F		programment and an ender the first design of the second second second second second second second second second	te de la constant de la constant angle de la constant de la constant de la constant de la constant de la const	and a second	an for the second s	0.0 0.0
Scale Typ .og L	0100 2.410 0112					tart 0.030 GH
	.260 ms (4891 pts)	Sweep :	3.0 MHz	#VBW	HZ	Res BW 1.0 N

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



Plot 7-93. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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	- Keysight Spectrum Analyzer - Swept SA							
LXI RL	RF	50 Ω DC	CORREC	SENS		Type: RMS	03:24:20 PM Nov 09, 2017 TRACE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast 🔾	Trig: Free F	Run			
	-		IFGain:Low	Atten: 10 c	10	ML		Auto Tune
40 -107-10-	Ref 0.0	0 dBm				IVIK	r1 26.104 5 GHz -49.73 dBm	
10 dB/div	Rei U.U	U UBIII					40.10 abiii	
								Center Freq
-10.0								21.00000000 GHz
-20.0							DL1 -25.00 dBm	Start Freq
-30.0								15.00000000 GHz
-30.0								
-40.0								
							A 1	Stop Freq 27.00000000 GHz
-50.0								27.00000000 GHz
	a an an artist	New According to				and the second sec		
-60.0	المانا المعلولية في يعرب بدور	and a state of the		real to advance of	and the second	· 10.4		CF Step 1.20000000 GHz
								<u>Auto</u> Man
-70.0								
								Freq Offset
-80.0								0 Hz
-90.0								
-50.0								Scale Type
Start 15.			#1 (51)	V 3.0 MHz		Curoon - 2	Stop 27.000 GHz	Log <u>Lin</u>
	1.0 MHz		#VBV	V 5.0 WINZ			0.80 ms (24001 pts)	
MSG						STAT	15	

Plot 7-94. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



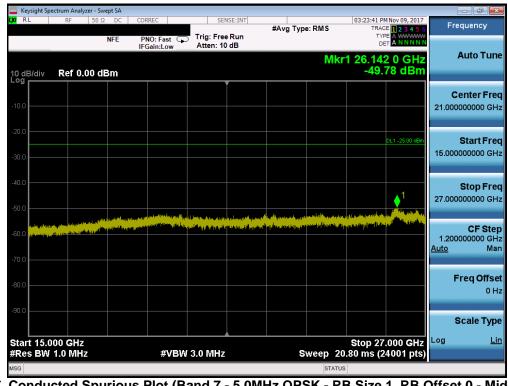
Plot 7-95. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Keysight Spectrum Analyzer - Swept SA		-		CONTRACTOR AND	
XIRL RF 50Ω DC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	03:23:33 PM Nov 09, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Ref 20.00 dBm			Mk	1 14.950 0 GHz -37.60 dBm	Auto Tune
10.0					Center Free 8.785000000 GH
10.0					Start Fre 2.570000000 GH
30.0				0L1 -25.00 dBm	Stop Fre 15.000000000 GH
		~~~~~~			CF Ste 1.243000000 GH <u>Auto</u> Ma
50.0					Freq Offse 0 H
70.0 Start 2.570 GHz Res BW 1.0 MHz	#VBW:	3.0 MHz	Sween 2	Stop 15.000 GHz 1.55 ms (24861 pts)	Scale Typ Log <u>Li</u>
ISG			STATU		

Plot 7-96. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



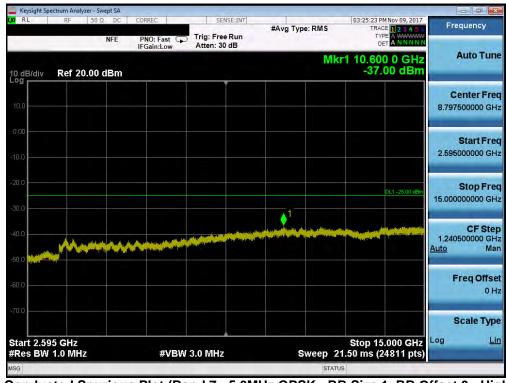
Plot 7-97. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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					ectrum Analyzer - Swept SA	
Frequency	03:25:13 PM Nov 09, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	#Avg Type: RMS	SENSE(INT Trig: Free Run Atten: 30 dB	PNO: Fast	RF 50 Ω DC	XI RL
Auto Tune	kr1 2.472 5 GHz -47.75 dBm	М		II Galil.Low	Ref 20.00 dBm	10 dB/div
Center Freq 1.265000000 GHz						10.0
Start Freq 30.000000 MHz						-10.0
<b>Stop Freq</b> 2.500000000 GHz	DL1 -25.00 dBm	I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				-20,0
CF Step 247.000000 MHz Auto Man		ويوالي والمراجع				-40.0
Freq Offset 0 Hz				ne na stani na stani Na stani na s	<u></u>	-60,0
Scale Type Log <u>Lin</u>	Stop 2.500 GHz 3.293 ms (4941 pts)	Sweep :	3.0 MHz	#VBW		Start 0.03
		STATU				MSG

Plot 7-98. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-99. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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		ectrum Analy	/zer - Swep	ot SA									×
l <b>XI</b> F	RL	RF	50 Ω	DC C	ORREC	SE	NSE:INT	#Avg Typ	e: RMS		MNov 09, 2017	Frequency	
			N		PNO: Fast G	Trig: Fre				TYP			
					FGain:Low	Atten: 10	a B		Mir			Auto Tu	une
40 -	lB/div	Ref 0.	00 48	<b>m</b> 0					IVIKI	-49	7 0 GHz 72 dBm		
Log		Rei U.	UU UB				<b>v</b>						
												Center F	req
-10.0												21.000000000	GHz
-20.0											DL1 -25.00 dBm	Start F	rea
-30.0												15.000000000	
-30.0	'												
-40.0	,											01 E	
											<b>1</b>	Stop F	
-50.0	) <b> </b>											27.000000000000	σπz
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-60.0	) and the state of	A LANGE AND A DESCRIPTION	anolasi di t	and the same			A. Allan Asso.					CF S	
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-70.0	·												
												Freq Off	set
-80.0	'											C	0 Hz
-90.0													
-30.0												Scale Ty	уре
		000 GHz 1.0 MH			#\/D)	V 3.0 MHz		-	woon 2	Stop 27	.000 GHz 4001 pts)	Log	Lin
	-5-044	I.U IVIH	2		#VDV	v 5.0 Winz		3		-	400 r pls)		
MSG									STATU	5			

Plot 7-100. Conducted Spurious Plot (Band 7 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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