

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT GSM/GPRS/EDGE/WCDMA

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 6/25 - 7/25/2018 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1808210161.A3L

FCC ID:

A3LSMA600T

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-A600T Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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.

ndy Ortanez President



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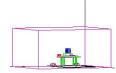


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			EF	RP	EI	RP	
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator
GPRS850	22H	824.2 - 848.8	0.480	26.81	0.787	28.96	241KGXW
EDGE850	22H	824.2 - 848.8	0.112	20.48	0.183	22.63	242KG7W
WCDMA850	22H	826.4 - 846.6	0.075	18.74	0.123	20.89	4M14F9W
WCDMA1700	27	1712.4 - 1752.6			0.299	24.75	4M15F9W
GPRS1900	24E	1850.2 - 1909.8			0.744	28.72	237KGXW
EDGE1900	24E	1850.2 - 1909.8			0.269	24.30	254KG7W
WCDMA1900	24E	1852.4 - 1907.6			0.289	24.60	4M16F9W

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 measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA600T**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

Test Device Serial No.: 30957, 29579, 30700, 30684

2.2 Device Capabilities

This device contains the following capabilities:

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.4 EMI Suppression Device(s)/Modifications

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

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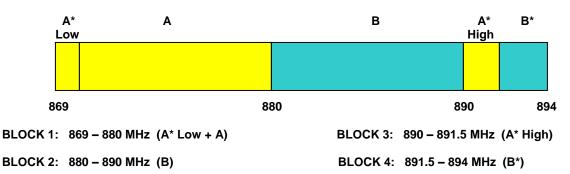
3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

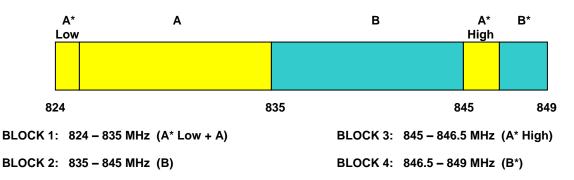
The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

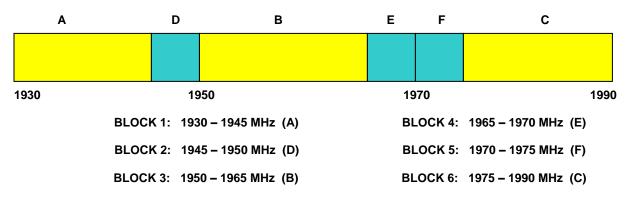
3.2 Cellular - Base Frequency Blocks



3.3 Cellular - Mobile Frequency Blocks



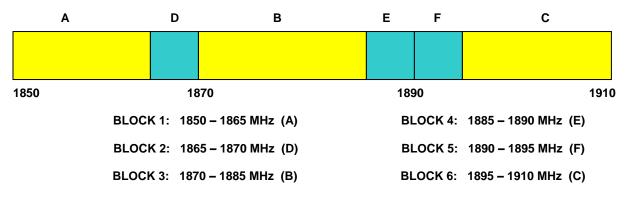
3.4 PCS - Base Frequency Blocks



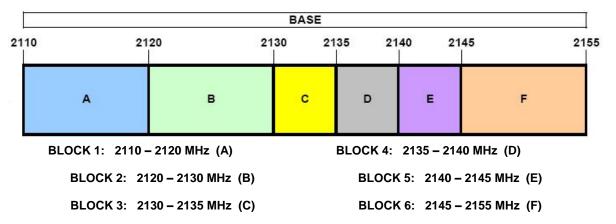
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3.5 PCS - Mobile Frequency Blocks



3.6 AWS - Base Frequency Blocks



3.7 AWS - Mobile Frequency Blocks

			MOBILE				
710	17	20 1'	730 17 	35 17	40 17	45	1755
	A	В	с	D	E	F	
	BLOCK 1: 17	10 – 1720 MHz (A)		BLOCK	4: 1735 –	1740 MHz (D)	
	BLOCK 2: 17	20 – 1730 MHz (B)		BLOCK	5: 1740 –	1745 MHz (E)	
	BLOCK 3: 17	30 – 1735 MHz (C)		BLOCK	6: 1745 –	1755 MHz (F)	

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3.8 Radiated Measurements

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.

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].

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-E-2016.

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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
-	LTx3	Licensed Transmitter Cable Set	1/23/2018 Annual 7/23/		7/23/2018	LTx3
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Agilent	N9038A	MXE EMI Receiver	6/11/2018	Annual	6/11/2019	MY51210133
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/28/2018	Annual	3/28/2019	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	3/28/2018	Biennial	3/28/2020	128337
Mini Circuits	TVA-11-422	RF Power Amp	N/A		QA1317001	
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11210140001
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	CMU200	Base Station Simulator		N/A		107826
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	7/24/2018	100040
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/31/2017	Annual	7/31/2018	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/11/2017	Annual	8/11/2018	103200
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/2/2018	Annual	7/2/2019	102131
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	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

GPRS Emission Designator

Emission Designator = 250KGXW

GPRS BW = 250 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 250KG7W

EDGE BW = 250 kHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M16F9W

WCDMA BW = 4.16 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

Spurious Radiated Emission

Example: Spurious emission at 3700.40 MHz

The receive 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 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMA600T
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM / GPRS / EDGE / WCDMA</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 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Conducted Band Edge / Spurious Emissions	> 43 + log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Sections 7.3, 7.4
24.232(d)	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-132(5.4) RSS-133(4.1) RSS-139(4.1)	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-132(5.3) RSS-133(6.3) RSS-139(6.4)	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24, 27)		PASS	Section 7.8
22.913(a)(5)	RSS-132(5.4)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 7.6
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Radiated Spurious Emissions	> 43 + log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots 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 "2G/3G Automation," Version 3.9.

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7.2 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
 - 1-5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

<u>Test Note</u>s

None.

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Plot 7-1. Occupied Bandwidth Plot (Cellular GPRS Mode)



Plot 7-2. Occupied Bandwidth Plot (EDGE850 Mode)

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XIRL RF 50Ω AC	CORREC Center	SENSE:INT r Freg: 1.880000000 GHz	01:05:16 Radio Ste	PMJul 10, 2018	Frequency
	Trig: F		I: 100/100	New DTC	
	#FGain:Low #Atten	1: 28 dB	Radio De	vice: BTS	
15 dB/div Ref 35.00 dBm					
20.0		mm			Center Free
5.00	- A Martin		man and a second se		1.880000000 GH
-10.0					
-25.0			· · · ·	- marine	
-40.0					
-55.0					
-70.0					
-85.0					
-100					
				n 605 kUn	
Center 1.88 GHz Res BW 6.2 kHz	#	VBW 18 kHz	Spa Swee	n 625 kHz p 15.6 ms	CF Ste
					62.500 kH Auto Ma
Occupied Bandwidth		Total Power	36.3 dBm		
23	6.83 kHz				Freq Offse
					0 H
Transmit Freq Error	1.270 kHz	% of OBW Pow			
x dB Bandwidth	300.4 kHz	x dB	-26.00 dB		
ISG			STATUS		

Plot 7-3. Occupied Bandwidth Plot (PCS GPRS Mode)



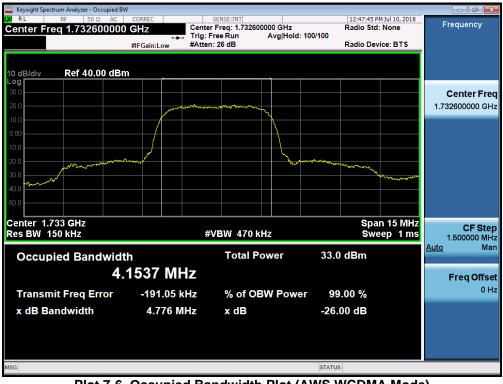
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode)

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Plot 7-5. Occupied Bandwidth Plot (Cellular WCDMA Mode)



Plot 7-6. Occupied Bandwidth Plot (AWS WCDMA Mode)

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	um Analyzer - Occupied B	W					- F	x
Center Fre	RF 50 Ω AC q 1.880000000	CORREC	SENSE:INT Center Freg: 1.8800	00000 GHz	12:39:48 P Radio Std	MJul 10, 2018 : None	Frequency	,
Contor Tro	q 1.000000000		Trig: Free Run #Atten: 26 dB	Avg Hold: 1	00/100 Radio Dev	rice: BTS		
		#IFGain:Low	Atten: 20 ab		Kadio Dev	ice. DT3		
10 dB/div	Ref 35.00 dB	m						
Log 25.0							Center F	rea
15.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				1.880000000	•
5.00				$+ \lambda +$				
-5.00				++				
-15.0				L L				
	monor	AN A			and the second s	males and		
-45.0	V					- 1000		
-55.0								
Center 1.88	B GHz				Spa	n 15 MHz	05.0	14.0.00
Res BW 15	0 kHz		#VBW 4701	kHz		eep 1 ms	CF S 1.500000	
Occupi	ed Bandwid	th	Total F	ower	32.5 dBm		<u>Auto</u>	Man
Coodpi			7				-	
							Freq Of	fset 0 Hz
Transmi	t Freq Error	7.793 kH	z % of O	BW Power	99.00 %			
x dB Bar	ndwidth	4.773 MH	z xdB		-26.00 dB			
MSG					STATUS			
								_

Plot 7-7. Occupied Bandwidth Plot (PCS WCDMA Mode)

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7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at 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 v03r01 - Section 6.0

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz for Cell, 20GHz for AWS, 20GHz for PCS (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

Per 24.238(b), 27.53(h)(3), and RSS-133(6.5), RSS-139(6.5), compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1MHz, and 100 kHz or greater for Part 22 and RSS-132 measurements below 1GHz. 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.

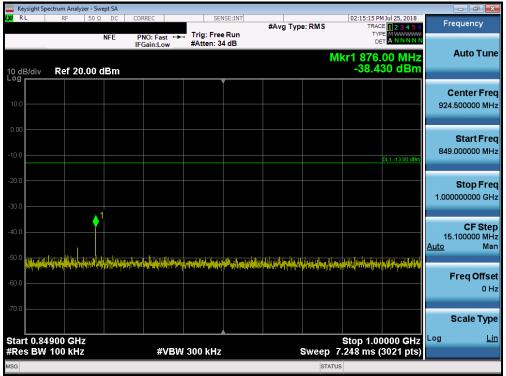
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Cellular GPRS Mode

	ectrum Analyz	er - Swept SA									
L <mark>X/</mark> RL	RF	50 Ω DC	CORREC PNO: Fast	Trig: Free		#Avg Type	e: RMS	TRAC TYP	MJUI 25, 2018 DE 1 2 3 4 5 6 PE M WWWWW	Frequ	iency
10 dB/div	Ref 20	.00 dBm	IFGain:Low	Atten: 30) dB		N	/kr1 823.		Αι	ito Tune
10.0											n ter Fre d 0000 MH
-10.0									DL1 -13.00 dBm		t art Fre 0000 MH
-20.0											top Fre 0000 МН
-40.0									1∕ 		CF Ste 0000 MH Ma
the cloud	all forget hotestern navada a saada	til Ensure all and the second	<mark>nya yana bilan kana kana kana kana kana kana kana k</mark>	ny styp trootlog katalah telana Na keropapatan palamikan m	an bang Plantang P Sala Jihan Jihan at	arlana lapinan ya Prostani 1944 manakatan katale a	Verse par la Trapilio Re, da de défenses	a (fry dynawing) a dynawi (fry dynawi) gwlynau frw i aw a bradiae	an a	Fre	e q Offse 0 H
-70.0) MHz							Stop 8	23.0 MHz	Sc Log	ale Typ
	100 kHz		#VI	BW 300 kHz		S	weep 3	8.06 ms (1	5861 pts)		
ISG							STATI	US			

Plot 7-8. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)



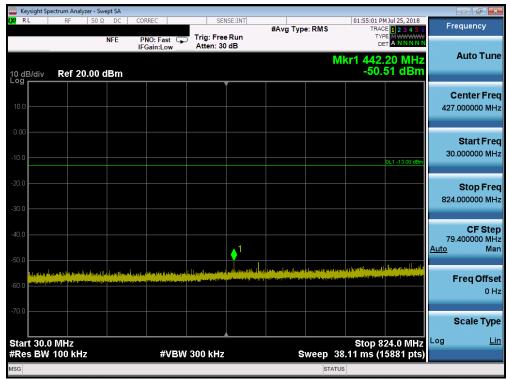
Plot 7-9. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	ING	Approved by: Quality Manager
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	pectrum Analyzer - S									_	- • •
LXI RL	RF 50	Ω DC (CORREC	SEN	SE:INT	#Avg Typ	e: RMS	02:15:36 PM TRACE	Jul 25, 2018	Free	quency
	_	NFE	PNO: Fast ↔ IFGain:Low	Trig: Free #Atten: 32				TYPE DET	ANNNN		
10 dB/div Log	Ref 10.00	dBm					MI	kr1 9.750 -30.9	0 GHz 1 dBm	A	luto Tune
0.00											enter Fred
-10.0									0L1 -13.00 dBm		Start Fred
-30.0		(harren firste finnel).		unpersonales administration	ارون الأخرى الرون الأخرى الخري	g se la diga tinte a secondo na segui se un ante a secondo	l <mark>a la fai la standar an la st Tanàna ang ang ang ang ang ang ang ang ang a</mark>), y Millar y series and her y A 19 Millar y Species Millard	1 Handersperius Handersperius		Stop Fred 000000 GH;
-50.0		ι, , , , , , , , , , , , , , , , , , ,	m.							900.0 <u>Auto</u>	CF Step 00000 MH Mar
-70.0										Fi	r eq Offse 0 H
-00:0											cale Type
Start 1.0 #Res BW	00 GHz / 1.0 MHz		#VBW	3.0 MHz		s	weep 1	.Stop 10 5.60 ms (18		Log	Lir
MSG							STATU	S			

Plot 7-10. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)



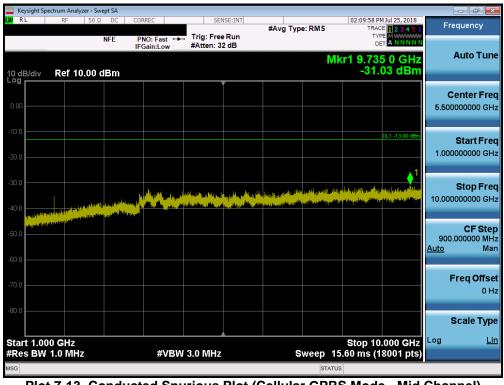
Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analyzer									
XI RL	RF 5	50Ω DC	CORREC		NSE:INT	#Avg Type	RMS	TRAC	4 Jul 25, 2018 E 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast IFGain:Low	#Atten: 3				DE		
10 dB/div	Ref 20.0	0 dBm					N	/lkr1 876. -38.	00 MHz 58 dBm	Auto Tui
					Ĭ					Center Fr
10.0										924.500000 M
0.00										
40.0										Start Fr 849.000000 M
10.0									DL1 -13.00 dBm	
20.0										Stop Fre
30.0										1.000000000 G
		♦ ¹								CF Ste
40.0										15.100000 M Auto M
50.0	u bistema	ار الله ال	halan a dha a d	ال رايان	The same sector		d and a second	has konstants		
60.0		N. ANNA MARK								Freq Offs
										0
70.0										Scale Ty
								Stop 1.00		
	4900 GHz / 100 kHz		#VE	W 300 kHz		ę	Sweep	Stop 1.00 7.248 ms (000 GHZ	
SG							STAT	US		

Plot 7-12. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)



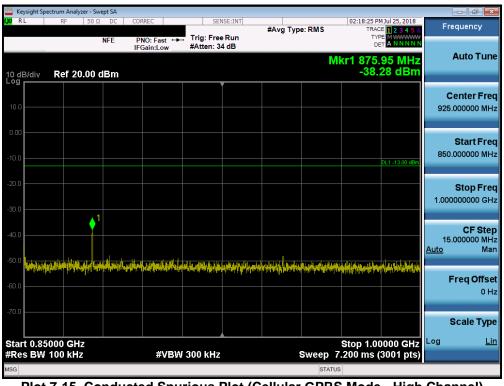
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

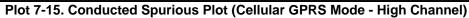
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 21 of 92
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	ectrum Analyze										
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC	SE	NSE:INT	#Avg Type	RMS		M Jul 25, 2018 DE 1 2 3 4 5 6	Free	quency
		NFE	PNO: Fast +	📕 Trig: Fre				TY			
			IFGain:Low	Atten: 30) dB		_			4	Auto Tune
							N	Ikr1 742	.15 MHZ 25 dBm		ato rano
10 dB/div Log	Ref 20.0	00 dBm		_				-52.	25 UBIII		
										Ce	enter Freq
10.0											00000 MHz
0.00											Otout From
											Start Freq
-10.0									DL1 -13.00 dBm	30.0	
-20.0											Stop Freq
-30.0										824.0	00000 MHz
-30.0											
-40.0											CF Step
										79.4 Auto	00000 MHz Man
-50.0									1	<u>Mato</u>	man
and the	العاديات ويتعادلها والروان	Lataliana da ana ana	- balabric control	فقائده أعدرهم والمراقد ليالم		alabara waterbild	ana ang ang ang ang ang ang ang ang ang	an property deally.	weighted to the first		
	under anderer die		and the second	رهلين أمحما وريين ولعرج	and the second second second	siala fita lan alama	ala pita ang paging	فخط فللروطانيس وبن	and the state of the spinor	F	r eq Offset 0 Hz
											0 112
-70.0										-	
										S	cale Type
Start 30.0	MHz							Stop 8	24.0 MHz	Log	Lin
#Res BW			#VB	W 300 kHz		S	weep 3	8.11 ms (1	5881 pts)		
MSG							STAT				

Plot 7-14. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)





FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analyzer									
L <mark>XI</mark> RL	RF 5	0Ω DC	CORREC	SEN	ISE:INT	#Avg Type	e: RMS		M Jul 25, 2018 E 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast ++ IFGain:Low	Trig: Free #Atten: 34				TYF DE		Auto Tune
10 dB/div Log	Ref 10.0	0 dBm					MI	(r1 8.19) -28.	3 5 GHz 81 dBm	
0.00					/					Center Freq 5.50000000 GHz
-10.0									DL1 -13.00 dBm	Start Freq
-20.0								1		1.000000000 GHz
-30.0	and the second second	and the spectrum sector		and to a description of the second		a ataba ya Manaza Mata	ling of the second s	anning Diffiguration an Anning Diffiguration an	, Wite Magnet and a state of the state of th	Stop Freq 10.000000000 GHz
414	The Relation	at off-device - 1								CF Step 900.000000 MHz <u>Auto</u> Man
-60.0										Freq Offset
-80.0										Scale Type
Start 1.0 #Res BW	00 GHz / 1.0 MHz		#VBW	3.0 MHz		S	weep 15	Stop 10 i.60 ms (1	.000 GHz 8001 pts)	Log <u>Lin</u>
MSG							STATUS	3		

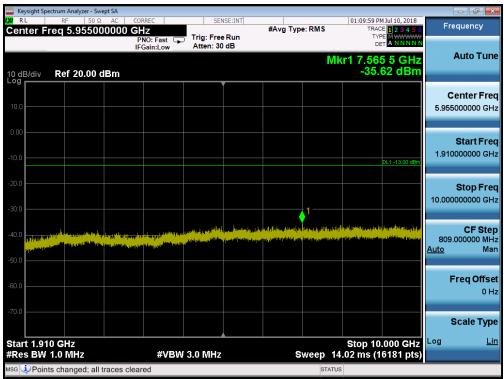
Plot 7-16. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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usg 🤳 Points c	hanged: all t	races clear	ed				STATUS				
Start 0.0300 #Res BW 1.0			#VBW	3.0 MHz			Sweep 2.	Stop 1.8 420 ms (400 0112	LUg	
								0 4 4 0		Log	Lir
-70.0										Scale	
											0 H
-60.0										Freq	
-50.0											ina
-40.0			a llei ei na desident	in the second	i i i i i i i i i i i i i i i i i i i	and a line of the second s				181.50000 Auto	
							ter an an an an an an an	i		CF	- Ster
-30.0										1.84500000	00 GH
-20.0											p Free
-10.0									DL1 -13.00 dBm		
40.0										Star 30.00000	tFre DO MH
0.00											
10.0										937.50000	00 MH
										Cente	r Free
10 dB/div R	tef 20.00 c	IBm							26 dBm		
		IFO	Gain:Low	Atten: 30	dB		Mk		³ 5 GHz	Auto	Tun
Center Free	q 937.500	000 MHz	NO: Fast 🗔	Trig: Free		#Avg Typ	e:RMS	TYP	E 1 2 3 4 5 6 E M WWWW	Frequen	су
	RF 50 Ω	AC COF	REC	SEN	SE:INT			01:09:45 PN	1 Jul 10, 2018		

Plot 7-17. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)



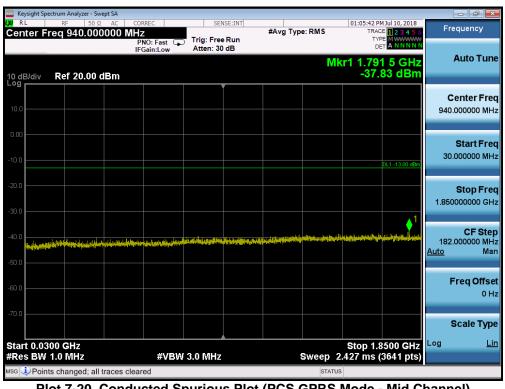
Plot 7-18. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:				
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	ectrum Analyzer - Swept SA	A					
Center Fi	RF 50 Ω AC req 15.000000	000 GHz PNO: Fast	SENSE:	#Avg Typ In	e: RMS	01:10:06 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET A N N N N N	Frequency
10 dB/div	Ref 10.00 dBn	IFGain:Low _	Atten: 20 dE		Mkr1	16.886 0 GHz -40.18 dBm	Auto Tune
0.00							Center Freq 15.00000000 GHz
-10.0						DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0			Lucian an e din	n dan kennen an um den heide st	1 1	angesteloppersonal Mediatesters(Pr	Stop Fred 20.000000000 GHz
-50.0 (1-000)(1) -60.0	ten dan dan jajan mangan kanal Mangan dan panan kanan kanan Mangan dan panan kanan	ff an sea an fig a fig still a constants provide the second constants of the still		in the part of the second s		n an	CF Step 1.000000000 GH: <u>Auto</u> Mar
-70.0							Freq Offse 0 Ha
-80.0 Start 10.0 #Res BW		#VB	W 3.0 MHz		weep 25.	Stop 20.000 GHz 33 ms (20001 pts)	Scale Type
	ts changed; all trace				STATUS		

Plot 7-19. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)



Plot 7-20. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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	ectrum Analyzer - Swep	ot SA									
Center F	RF 50 Ω req 5.955000	AC COF 0000 GH		Trig: Free		#Avg Typ	e: RMS	TRAC	M Jul 10, 2018 DE 1 2 3 4 5 6 PE M WWWWWW ET A N N N N N	Frequer	ncy
10 dB/div	Ref 20.00 dl	IFC	ain:Low	Atten: 30	dB		MI	kr1 8.64	6 5 GHz 74 dBm	Auto	Tune
10.0										Cente 5.9550000	•
-10.0									DL1 -13.00 dBm	Star 1.9100000	t Freq 00 GHz
-20.0								1		Sto 10.0000000	p Freq 00 GHz
-40.0	and the state of t	ingene i Stelan production an de Militains aufordation	erining og skilling og b	n et med heg general hilfe. Renal her en en state her	gerika belana belaga. Pagana ^{ba} na belaga	er fatforns om het bekann av paparaver fri hav en de	nyang kenghi kendin di Kepangkang kendin di	la leget a ^{den} legit fan Der general die ^{den} legit fan Der	n gestanderen fan en fan de gestaar Gesenderen se steren gestaar	CI 809.0000 <u>Auto</u>	Step 00 MHz Man
-60.0										Freq	Offset 0 Hz
-70.0	0.642							Stop 40	.000 GHz	Scale	e Type Lin
#Res BW	1.0 MHz			3.0 MHz		s	weep 14	4.02 ms (1	6181 pts)	_	
мsg 🧼 Poin	ts changed; all tr	aces clear	ed				STATU	s			

Plot 7-21. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)



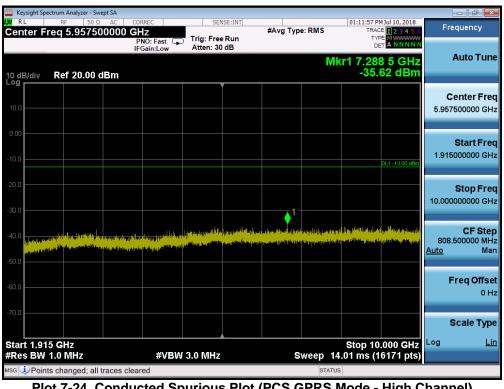
Plot 7-22. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 940.000000	PNO: Fast 🖵	SENSE:INT	#Avg Type: RMS	01:11:47 PM Jul 10, TRACE 1 2 : TYPE MWA DET A N	Frequency
10 dB/div Log	Ref 20.00 dBm	IFGain:Low	Atten: 30 dB		/kr1 1.566 5 (-37.66 d	GHz Auto Tune
10.0						Center Freq 940.000000 MHz
-10.0					DL1 -13	Start Freq 30.000000 MHz
-20.0						Stop Freq 1.850000000 GHz
-40.0	a fa fa ta fa sa	i nime pangang	Lolies and a strength of the second		ku di ku da kan da k	CF Step 182.00000 MHz Auto Man
-60.0						Freq Offset 0 Hz
-70.0 Start 0.03	00 GHz				Stop 1.8500	GHz Log <u>Lin</u>
#Res BW	1.0 MHz		3.0 MHz		2.427 ms (3641	pts)
MSG 🕹 Poin	ts changed; all trace	s cleared		STA	TUS	

Plot 7-23. Conducted Spurious Plot (PCS GPRS Mode - High Channel)



Plot 7-24. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 07 of 02			
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	ectrum Analyzer - Swept						
Center F	RF 50 Ω req 15.00000	AC CORREC 0000 GHz PNO: Fast IFGain:Low		#Avg Typ Run	e: RMS	01:12:18 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE MWWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 10.00 dB		Atten: 200		Mkr	16.900 0 GHz -39.61 dBm	Auto Tune
0.00							Center Freq 15.00000000 GHz
-10.0						DL1 -13.00 dBm	Start Freq 10.00000000 GHz
-30.0				The program in the program of the large particular to the program of the program		and the state of t	Stop Freq 20.000000000 GHz
-50.0		y per grant tang tudi tugi per grant tang tudi per grant tang tudi per grant tang tudi per grant tang tertemak An antang per salawar per grant tang tertemakan tertemakan tertemakan tertemakan tertemakan tertemakan tertemaka					CF Step 1.00000000 GHz <u>Auto</u> Mar
-70.0							Freq Offset 0 Hz
-80.0 Start 10.0						Stop 20.000 GHz	Scale Type
#Res BW	1.0 MHz ts changed; all tra		BW 3.0 MHz		status	33 ms (20001 pts)	

Plot 7-25. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Cellular WCDMA Mode

	ctrum Analyzer - Swept SA					
Center Fr	RF 50 Ω AC eq 426.500000	CORREC MHZ PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:54:37 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Log	Ref 20.00 dBm			N	lkr1 823.00 MHz -35.36 dBm	Auto Tune
10.0						Center Freq 426.500000 MHz
-10.0					DL1 -13.00 dBm	Start Free 30.000000 MHz
-20.0					1,	Stop Fred 823.000000 MH;
-40.0						CF Step 79.300000 MH: <u>Auto</u> Mar
-60.0 		a finansia ya mana a fi na kata a fi	a an	tenth in our wet had second or her register any other second or and in the Unit Mathematical and any sign in the physical angles in the second of the Unit Mathematical and the second of the second		Freq Offse 0 Hi
-70.0 Start 30.0 #Res BW 1		#\/BIA	300 kHz	Sween 9	Stop 823.0 MHz 8.33 ms (15861 pts)	Scale Type
	s changed; all traces			STATU		

Plot 7-26. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

Keysight Spectrum Analyzer - Swept SA					
α RL RF 50 Ω AC Center Freq 924.500000		SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:54:47 PMJul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 20.00 dBm			N	/kr1 928.45 MHz -60.04 dBm	Auto Tun
10.0					Center Fre 924.500000 MH
0.00				DL1 -13.00 dBm	Start Free 849.000000 MH
30.0					Stop Free 1.000000000 GH
40.0					CF Ste 15.100000 MH <u>Auto</u> Ma
	an a		na fin han tana ang mga na ang mg	na ny matana araka yang manang arawa ng Basay at yang ang	Freq Offse 0 H
					Scale Typ
Start 0.84900 GHz Res BW 100 kHz sg i Points changed; all trace		300 kHz	Sweep	Stop 1.00000 GHz 18.72 ms (3021 pts)	

Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 82	
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	ectrum Analyzer - Swept SA					
Center Fi	RF 50 Ω AC req 5.50000000	PNO: Fast 🖵	SENSE:INT	#Avg Type: RMS	12:54:55 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Log	Ref 10.00 dBm	IFGain:Low	Atten: 20 dB	MI	(r1 1.654 5 GHz -45.83 dBm	Auto Tune
0.00						Center Freq 5.500000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 1.000000000 GHz
-30.0	_1					Stop Freq 10.000000000 GHz
-50.0						CF Step 900.000000 MHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
Start 1.00	0 GH7				Stop 10.000 GHz	Scale Type
#Res BW	1.0 MHz		3.0 MHz		5.60 ms (18001 pts)	
MSG 😲 Point	ts changed; all traces	s cleared		STATU	5	

Plot 7-28. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

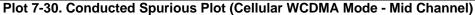


Plot 7-29. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

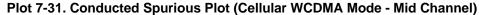
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 92
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α RL RF 50 Ω AC Center Freq 924.500000 Ν		SENSE:INT		10-E1-E0 DM 3		
	PNO: Fast _ Irig:	Free Run 1: 30 dB	#Avg Type: RI	NS TRACE	ul 10, 2018 1 2 3 4 5 6 A WWWWW A N N N N N	Frequency
0 dB/div Ref 20.00 dBm	IFGain:Low Atter	1: 30 08		Mkr1 849.1		Auto Tune
10.0						Center Freq 924.500000 MHz
10.0				D	L1 -13.00 dBm	Start Freq 849.000000 MHz
30.0						Stop Freq 1.000000000 GHz
40.0					A	CF Step 15.100000 MHz <u>uto</u> Man
1 60.0 ⁶ - 1 70.0	มามาราช <mark>ุร</mark> สาร _า งการสารที่ มูรัณฑ์ปราช _า ราชาว	ىرىنى بىرىنى بىرىنى بىرىنى بىرىنى	JEB grown hat no raw grap by a sort pr	คระสาขารถูกไรการ <mark>มีสารสาขารถูกสุดสุดรูสุด</mark> สาร _ก าง	ar frankrigt galanten	Freq Offset 0 Hz
Start 0.84900 GHz				Stop 1.000	000 GHz La	Scale Type
Res BW 100 kHz	#VBW 300 k	Hz	Swe	eep 18.72 ms (3	021 pts)	







FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 92	
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	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 427.000000	MHZ PNO: Fast	Trig: Free Run	#Avg Type: RMS	12:55:28 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 20.00 dBm	IFGain:Low	Atten: 30 dB		Mkr1 765.90 MHz -58.39 dBm	Auto Tune
10.0						Center Freq 427.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 824.000000 MHz
-40.0						CF Step 79.400000 MHz <u>Auto</u> Man
-60.0				ed y en general kantile och kantile en kantile för det som en som en Som en som en		Freq Offset 0 Hz
Start 30.0 #Res BW		#VBW	/ 300 kHz	Sweep	Stop 824.0 MHz 98.46 ms (15881 pts)	Scale Type Log <u>Lin</u>
мsg 🗼 Poin	ts changed; all traces	cleared			ATUS	

Plot 7-32. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)



Plot 7-33. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 5.50000000	PNO: Fast 🔾	SENSE:INT	#Avg Type: RMS	12:55:44 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 10.00 dBm	IFGain:Low	Atten: 20 dB	M	kr1 1.692 0 GHz -44.49 dBm	Auto Tune
0.00						Center Freq 5.500000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 1.000000000 GHz
-30.0	1					Stop Freq 10.000000000 GHz
-50.0				A. J. Supervised and a second seco		CF Step 900.000000 MHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
Start 1.00 #Res BW		#VBW	3.0 MHz	Sweep 1	Stop 10.000 GHz 5.60 ms (18001 pts)	Scale Type Log <u>Lin</u>
	ts changed; all traces			STATU		

Plot 7-34. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

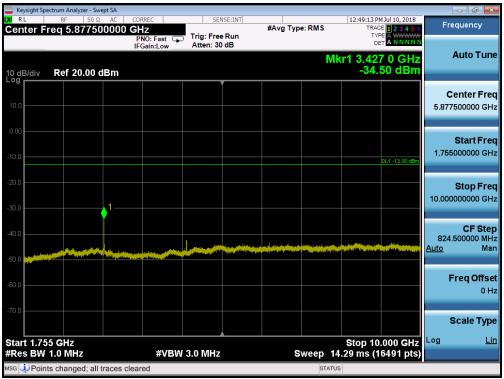
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 22 of 82
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AWS WCDMA Mode

	ectrum Analyzer - Swept SA					e d 🔀
Center F	RF 50 Ω AC req 867.500000	CORREC MHZ PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:49:05 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div	Ref 20.00 dBm	in Galineon		М	kr1 1.705 0 GHz -36.37 dBm	Auto Tun
10.0						Center Free 867.500000 MH
10.0					DL1 -13.00 dBm	Start Fre 30.000000 MH
20.0 30.0 					1,	Stop Fre 1.705000000 GH
i0.0				and the state of t	ng farlenstale of second reporter and a second	CF Ste 167.50000 M⊢ <u>Auto</u> Ma
60.0						Freq Offso 0 ⊦
70.0						Scale Typ
itart 0.03 Res BW		#VBW	3.0 MHz	Sweep	Stop 1.7050 GHz 2.233 ms (3351 pts)	Log <u>Li</u>
sg 🗼 Poin	ts changed; all traces	cleared		STATU	JS	

Plot 7-35. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



Plot 7-36. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ctrum Analyzer - Swept SA					
	RF 50 Ω AC req 15.0000000	CORREC 00 GHz PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	#Avg Type: RMS	12:49:20 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div	Ref 10.00 dBm	IFGain:Low	Attell. 20 ub	Mk	r1 16.995 5 GHz -46.44 dBm	Auto Tune
0.00						Center Freq 15.000000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0				1		Stop Fred 20.000000000 GHz
-50.0						CF Step 1.000000000 GHz <u>Auto</u> Mar
-70.0						Freq Offse 0 Hz
-80.0						Scale Type
Start 10.0 #Res BW		#VBW	3.0 MHz	Sweep 2	Stop 20.000 GHz 5.33 ms (20001 pts)	Log <u>Lin</u>
usg 🔱 Point	s changed; all traces	s cleared		STATU	IS	

Plot 7-37. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



Plot 7-38. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spe	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 5.877500000	CORREC GHZ PNO: Fast	SENSE:INT	#Avg Type: RMS	12:48:04 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 20.00 dBm	IFGain:Low	Atten: 30 dB	N	Akr1 3.463 5 GHz -35.75 dBm	Auto Tune
10.0						Center Freq 5.877500000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 1.755000000 GHz
-20.0	1-					Stop Freq 10.000000000 GHz
-40.0						CF Step 824.500000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-70.0 Start 1.75	5 GHz				Stop 10.000 GHz	Scale Type
#Res BW		#VBW	3.0 MHz	Sweep	14.29 ms (16491 pts)	
мsg 🔱 Poin	ts changed; all traces	cleared		STAT	TUS	

Plot 7-39. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)



Plot 7-40. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 26 of 92
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	ectrum Analyzer - Swept SA					
Center Fi	RF 50 Ω AC req 870.000000	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:50:19 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 20.00 dBm	IFGain:Low	Atten: 30 db	М	kr1 1.688 0 GHz -48.07 dBm	Auto Tune
10.0						Center Freq 870.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 1.710000000 GHz
-40.0	and the second	unterskange og state for for det state og state for state og state for state og state og state og state og state	and the state of the	and and a standard a		CF Step 168.000000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
						Scale Type
Start 0.03 #Res BW		#VBW	3.0 MHz	Sweep 2	Stop 1.7100 GHz 2.240 ms (3361 pts)	Log <u>Lin</u>
мsg 🗼 Point	ts changed; all traces	cleared		STATU	IS	

Plot 7-41. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)



Plot 7-42. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Nikt 1 10:390 0 GHz -46.76 dBm Center Freq 15.00000000 GHz 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.01 - 13.00 dbm 0.01 - 13.00 dbm 0.00 0.00000000 GHz 0.00000000 GHz 0.00 0.00000000 GHz 0.00000000 GHz 0.00 0.00000000 GHz 0.00000000 GHz 0.000 0.00000000 GHz 0.00000000 GHz 0.000 0.00000000 GHz 0.00000000 GHz 0.000 0.0000000 GHz 0.0000000 GHz 0.000 0.0000000 GHz 0.0000000 GHz 0.00000000 GHz 0.000000 GHz 0.0000000 GHz 0.00000000 GHz 0.0000000 GHz 0.0000000 GHz	🔤 Keysight Sp	ectrum Analyzer - Swept SA					
Mkr1 16.996 0 GHz Auto Tune 0 dB/div Ref 10.00 dBm -46.76 dBm 0 00 -46.76 dBm Center Freq 0 00 -20 -21.1300#m Start Freq 0 00 -21.1300#m -21.1300#m Start Freq 0 00 -21.1300#m -21.1300#m Start Freq 0 00 -21.1300#m -21.1300#m -21.1300#m			0 GHz PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
0.00 Center Freq 15.00000000 GHz 0.00 0.01 - 1300 dem 0.00 0.000 00000 GHz 0.00 0.000 00000 GHz 0.00 0.000 00000 GHz 0.00 0.000 000000 GHz 0.00 0.000 00000 GHz 0.000 000 GHz 0.000 0000 GHz FRes BW 1.0 MHz #VBW 3.0 MHz Sweep 25.33 ms (20001 pts)	10 dB/div	Ref 10.00 dBm	IFGain:Low	Atten: 20 db	Μ	kr1 16.996 0 GHz -46.76 dBm	Auto Tune
200 Start Freq 10.00000000 GHz 300 Start Freq 10.00000000 GHz 40.0 Start Freq 10.00000000 GHz 50.0 Start Freq 10.00000000 GHz 60.0 Start Freq 10.00000000 GHz 70.0 Start Freq 10.00000000 GHz 80.0 Start T0.000 GHz Start 10.000 GHz #VBW 3.0 MHz Storp 25.33 ms (20001 pts)	0.00						Center Freq 15.000000000 GHz
40.0 40.0	-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
2000 20000 2000	-30.0				1		Stop Freq 20.000000000 GHz
700 700 1	-50.0						1.000000000 GHz
Start 10.000 GHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 25.33 ms (20001 pts)	-70.0						
	Start 10.0					Stop 20.000 GHz	
				3.0 MHz			

Plot 7-43. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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PCS WCDMA Mode

Keysight Spectrum Analyzer - Swept SA					
XI RL RF 50 Ω AC Center Freq 937.500000		SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:43:03 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBm			М	kr1 1.845 0 GHz -44.48 dBm	Auto Tune
10.0					Center Fred 937.500000 MHz
10.0				DL1 -13.00 dBm	Start Free 30.000000 MH;
30.0					Stop Fred 1.845000000 GH:
40.0					CF Stej 181.500000 MH <u>Auto</u> Ma
60.0					Freq Offse 0 H
-70.0					Scale Type
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW :	3.0 MHz	Sweep 2	Stop 1.8450 GHz 2.420 ms (3631 pts)	Log <u>Lir</u>
usg 🗼 Points changed; all trace	s cleared		STATU	IS	

Plot 7-44. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)



Plot 7-45. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

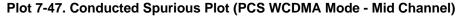
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 92
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Keysight Spectrum	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 15.0000000	CORREC 00 GHz PNO: Fast	SENSE:INT	#Avg Type: RMS	12:43:19 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div	Ref 10.00 dBm	IFGain:Low	Atten: 20 dB	Mk	ст1 16.955 0 GHz -46.67 dBm	Auto Tune
0.00						Center Freq 15.000000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0				1		Stop Freq 20.000000000 GHz
-50.0						CF Step 1.000000000 GHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
-80.0 Start 10.0 #Res BW		#\/B\/	3.0 MHz	Sween	Stop 20.000 GHz 5.33 ms (20001 pts)	Scale Type
	ts changed; all traces		0.0-191112	SWGG		

Plot 7-46. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)





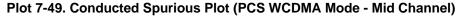
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 92
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🔤 Keysight Spe	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 5.955000000	CORREC CORREC OGHZ PNO: Fast	SENSE:INT	#Avg Type: RMS	12:40:10 PMJul 10, 2018 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	IFGain:Low	Atten: 30 dB		Mkr1 8.642 0 GHz -43.51 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	and the property of the proper				1	CF Step 809.000000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-70.0 Start 1.91	0 GH7				Stop 10.000 GHz	Scale Type
#Res BW		#VBW	3.0 MHz	Sweep	14.02 ms (16181 pts)	
мsg 🗼 Poin	ts changed; all traces	cleared		STA	ATUS	

Plot 7-48. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)





FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 44 at 02
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Nikk T 1./75 3 GHZ Center Freq 10 dB/div Ref 20.00 dBm -48.06 dBm 10 dB/div Ref 20.00 dBm -48.06 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm -61.00 dBm -61.00 dBm 10 dB/div Ref 20.00 dBm -61.00 dBm </th <th></th> <th>ectrum Analyzer - Swept SA</th> <th></th> <th></th> <th></th> <th></th> <th></th>		ectrum Analyzer - Swept SA					
Invalid with or do Mkr1 1.773 5 GHz -48.06 dBm Auto Tune 00 dB/div Ref 20.00 dBm Center Freq 940.000000 MHz Start Freq 30.00000 MHz 00 00 00 00 00 00 00 00 00 00 00 00 00 00			MHz PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
10.0 Center Freq 0.00 Start Freq 0.00 0.1-1300.0±m 0.00 <th>10 dB/div</th> <th>Ref 20.00 dBm</th> <th>IFGain:Low</th> <th>Atten: 30 dB</th> <th>М</th> <th>kr1 1.773 5 GHz</th> <th>Auto Tune</th>	10 dB/div	Ref 20.00 dBm	IFGain:Low	Atten: 30 dB	М	kr1 1.773 5 GHz	Auto Tune
100 DLI -13 00 deb Start Freq 200 DLI -13 00 deb Stop Freq 30.000000 MHz Stop Freq 30.000000 GHz Stop Freq 400 Stop Freq 500 Stop Freq 600 Stop Freq 700 Stop Freq 8 Stop Freq 9 Stop Freq 9 Stop Freq <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>Center Freq 940.000000 MHz</td></t<>							Center Freq 940.000000 MHz
300 400 400 400 400 400 400 400	-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
AUU0 AUU0 AUU0 AUU0 AUU0 AUU0 AUU0 AUU0 Man Freq Offset 0 Hz 700 AUU0 AUU0 Man Freq Offset 0 Hz Scale Type Log Lin #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 2.427 ms (3641 pts)	-20.0						Stop Freq 1.85000000 GHz
600 600 600 0 Hz 70.0 500 100 100 100 Start 0.0300 GHz #VBW 3.0 MHz Sweep 2.427 ms (3641 pts) 100	-40.0		den bestelen en soneren de arte de se	narke The Andrew Standing and the Standing and t	and a star of the second s	1	182.000000 MHz
Start 0.0300 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 2.427 ms (3641 pts)	-60.0						Freq Offset 0 Hz
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 2.427 ms (3641 pts)		800 GHz				Stop 1.8500 GHz	Log <u>Lin</u>
				3.0 MHz		2.427 ms (3641 pts)	

Plot 7-50. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)



Plot 7-51. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 of 00
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Keysight Specific Control	ectrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 15.00000000	CORREC 0 GHz PNO: Fast IEGain:Low	SENSE:INT	#Avg Type: RMS	12:45:40 PM Jul 10, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div	Ref 10.00 dBm	IFGain:Low	Atten: 20 dB	Mk	r1 17.033 5 GHz -47.00 dBm	Auto Tune
0.00						Center Freq 15.000000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0						Stop Freq 20.000000000 GHz
-50.0						CF Step 1.000000000 GHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
-80.0 Start 10.0					3100 Z0.000 GHZ	Scale Type
#Res BW	1.0 MHz ts changed; all traces		3.0 MHz	Sweep 2	5.33 ms (20001 pts) ^{US}	

Plot 7-52. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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7.4 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW \geq 1% of the emission bandwidth
- 4. VBW \geq 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

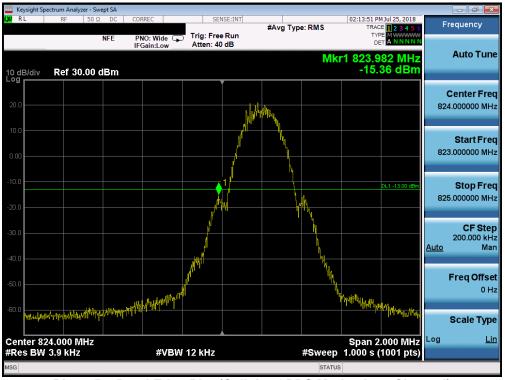
Test Notes

Per 22.917(b), 24.238(b), 27.53(h)(3), and RSS-132(5.5), RSS-133(6.5), RSS-139(6.5), 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 to demonstrate compliance with the out-of-band emissions limit. 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.

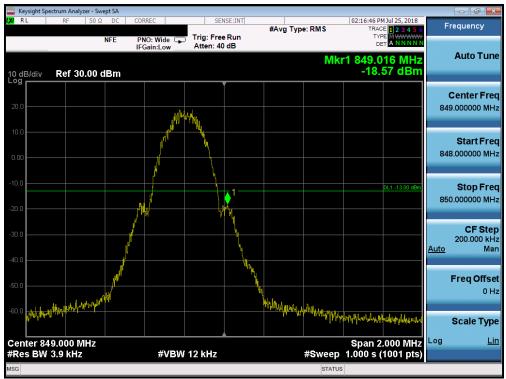
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 44 of 92
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Cellular GPRS Mode



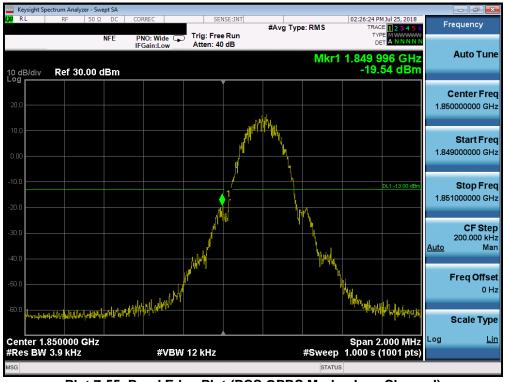
Plot 7-53. Band Edge Plot (Cellular GPRS Mode - Low Channel)



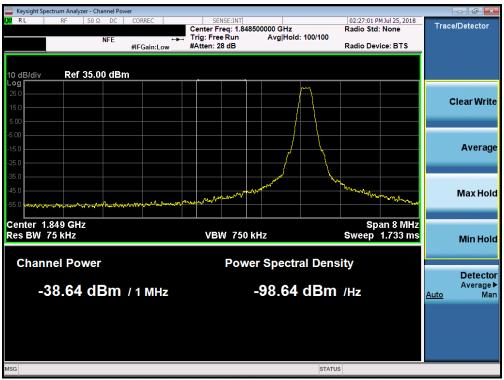
Plot 7-54. Band Edge Plot (Cellular GPRS Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 45 of 92
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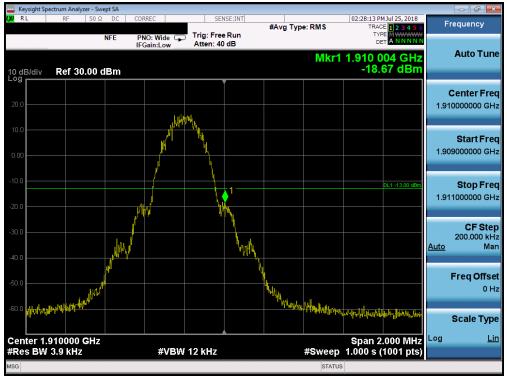
Plot 7-55. Band Edge Plot (PCS GPRS Mode - Low Channel)



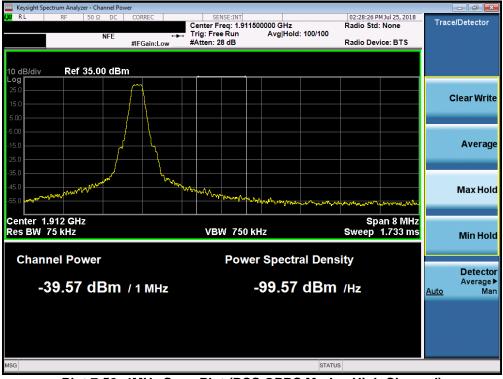
Plot 7-56. 4MHz Span Plot (PCS GPRS Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 46 of 83
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Plot 7-57. Band Edge Plot (PCS GPRS Mode - High Channel)



Plot 7-58. 4MHz Span Plot (PCS GPRS Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 92
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Cellular WCDMA Mode



Plot 7-59. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



Plot 7-60. Band Edge Plot (Cellular WCDMA Mode - High Channel)

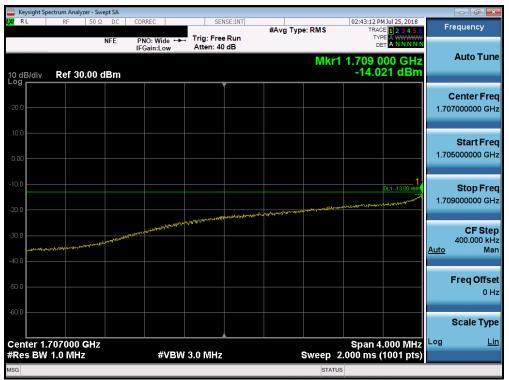
FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M1808210161.A3L	6/25 – 7/25/2018	Portable Handset	Page 48 of 83
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AWS WCDMA Mode



Plot 7-61. Band Edge Plot (AWS WCDMA Mode - Low Channel)



Plot 7-62. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 40 of 82
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	ectrum Analyzer -	Swept SA						
X/RL	RF 50	Ω DC NFE	CORREC PNO: Wide ↔	Trig: Free Run	#Avg Typ	e: RMS	02:39:19 PM Jul 25, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div	Ref 30.00) dBm	IFGain:Low	Atten: 40 dB		Mkr1	1.755 000 GHz -20.692 dBm	
20.0								Center Fre 1.755000000 GH
0.00		\int	~	m l				Start Fre 1.747500000 G⊦
20.0				1			DL1 -13.00 dBm	Stop Fre 1.762500000 G⊦
30.0								CF Ste 1.50000 MH Auto Ma
50.0							many	Freq Offs 0 H
60.0	755000 81							Scale Typ
	755000 GH 100 kHz	Z	#VBW	/ 300 kHz		Sweep 1	Span 15.00 MHz 1.000 ms (1001 pts)	
ISG						STATU	S	

Plot 7-63. Band Edge Plot (AWS WCDMA Mode - High Channel)



Plot 7-64. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum An alyzer - Channel I 12:42:45 PM Jul 10, 2018 RI Frequency Center Freq 1.849976135 GHz Center Freq: 1.849976135 GHz Trig: Free Run Avg|Ho Radio Std: None Avg|Hold:>100/100 #IFGain:Low #Atten: 24 dB Radio Device: BTS l0 dB/div Ref 25.00 dBm Log **Center Freq** 1.849976135 GHz hr Center 1.85 GHz #Res BW 24 kHz Span 15 MHz Sweep 31.07 ms **CF** Step VBW 240 kHz 1.500000 MHz Auto Man **Power Spectral Density Channel Power Freq Offset** -76.07 dBm /Hz -29.28 dBm / 47.73 kHz 0 Hz STATUS ISG

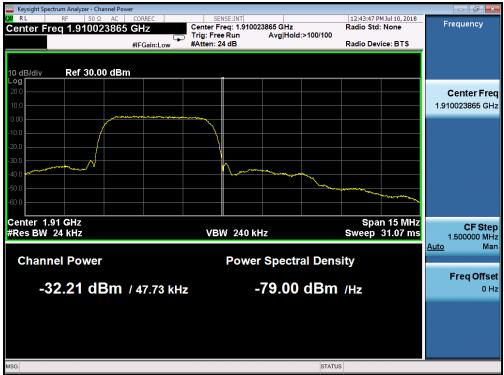
Plot 7-65. Band Edge Plot (PCS WCDMA Mode - Low Channel)



Plot 7-66. 4MHz Span Plot (PCS WCDMA Mode - Low Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 51 of 92
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Plot 7-67. Band Edge Plot (PCS WCDMA Mode - High Channel)



Plot 7-68. 4MHz Span Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG.	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga E2 of 82
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7.5 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.7.1

Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW > Emission bandwidth of signal
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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



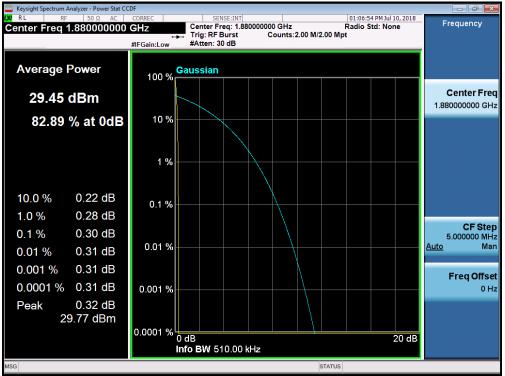
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

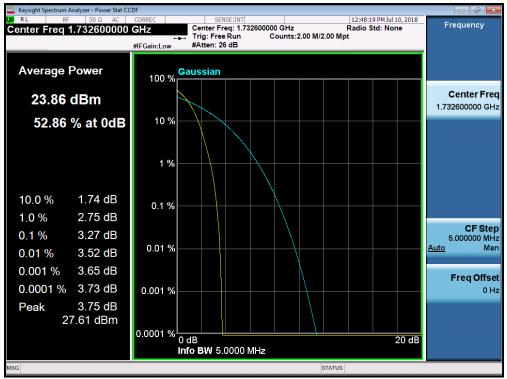
None

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 92
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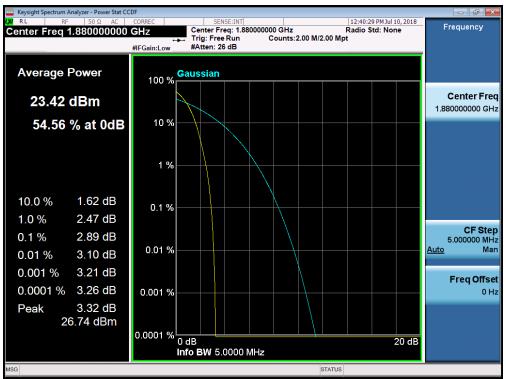




Plot 7-70. Peak-Average Ratio Plot (AWS WCDMA Mode)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 54 of 92
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Plot 7-71. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo EE of 92
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7.6 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 2.2.17

Test Settings

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW \geq 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points \geq 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Test Setup

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

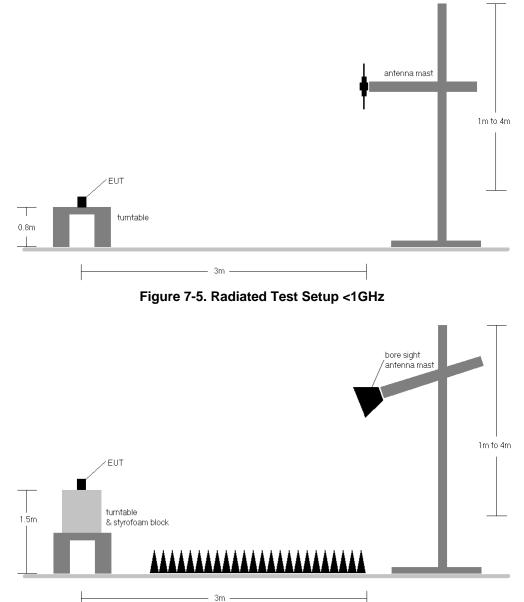


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) This unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	Н	150	277	27.25	1.50	26.59	38.45	-11.86	28.74	40.61	-11.86
836.60	GPRS850	н	150	283	27.46	1.50	26.81	38.45	-11.64	28.96	40.61	-11.65
848.80	GPRS850	Н	150	77	27.11	1.50	26.46	38.45	-11.99	28.61	40.61	-11.99
836.60	GPRS850	V	150	2	18.69	1.50	18.04	38.45	-20.41	20.19	40.61	-20.42
836.60	EDGE850	Н	150	283	21.13	1.50	20.48	38.45	-17.97	22.63	40.61	-17.97

Table 7-2. ERP/EIRP (Cellular GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	н	150	283	18.48	1.50	17.83	38.45	-20.62	19.98	40.61	-20.63
836.60	WCDMA850	н	150	72	19.39	1.50	18.74	38.45	-19.71	20.89	40.61	-19.72
846.60	WCDMA850	н	150	77	18.99	1.50	18.34	38.45	-20.11	20.49	40.61	-20.12
836.60	WCDMA850	V	150	107	16.90	1.50	16.25	38.45	-22.20	18.40	40.61	-22.21

Table 7-3. ERP/EIRP (Cellular WCDMA)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 50 of 92
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	Н	150	294	18.95	5.55	24.50	0.282	30.00	-5.50
1732.60	WCDMA1700	Н	150	300	19.27	5.41	24.68	0.294	30.00	-5.32
1752.60	WCDMA1700	Н	150	301	19.48	5.27	24.75	0.299	30.00	-5.25
1752.60	WCDMA1700	V	150	1	17.11	5.27	22.38	0.173	30.00	-7.62

Table 7-4. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	Н	150	148	23.90	4.82	28.72	0.744	33.01	-4.29
1880.00	GPRS1900	Н	150	143	23.64	4.74	28.38	0.688	33.01	-4.63
1909.80	GPRS1900	Н	150	137	23.76	4.68	28.44	0.698	33.01	-4.57
1850.20	GPRS1900	V	150	235	21.51	4.82	26.33	0.429	33.01	-6.68
1850.20	EDGE1900	Н	150	148	19.48	4.82	24.30	0.269	33.01	-8.71

Table 7-5. EIRP (PCS GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	н	150	277	19.79	4.81	24.60	33.01	-8.41
1880.00	WCDMA1900	н	150	287	18.77	4.74	23.51	33.01	-9.50
1907.60	WCDMA1900	н	150	303	18.39	4.68	23.07	33.01	-9.94
1852.40	WCDMA1900	V	150	6	14.77	4.81	19.58	33.01	-13.43

Table 7-6. EIRP (PCS WCDMA)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 92
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7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 - Section 5.8

ANSI/TIA-603-E-2016 - Section 2.2.12

Test Settings

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW \geq 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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EUT turntable &.styrofoam block

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

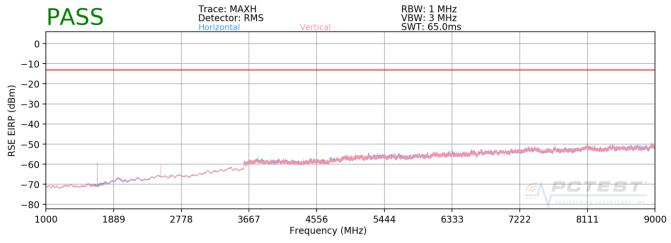
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

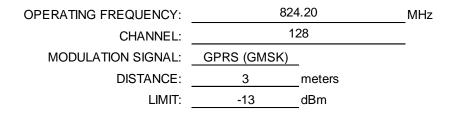
- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) This unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 5) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 6) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 7) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 61 of 83
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Plot 7-72. Radiated Spurious Plot above 1GHz (Cellular GPRS)

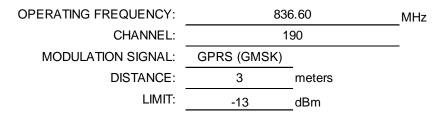


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1648.40	Н	311	358	-70.55	8.94	-61.61	-48.6
2472.60	Н	113	34	-68.20	9.64	-58.56	-45.6
3296.80	Н	-	-	-70.36	9.57	-60.78	-47.8

Table 7-7. Radiated Spurious Data (Cellular GPRS Mode – Ch. 128)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:					
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	Н	172	185	-66.00	8.95	-57.05	-44.0
2509.80	Н	112	218	-66.91	9.75	-57.16	-44.2
3346.40	Н	-	-	-69.34	9.60	-59.74	-46.7

Table 7-8. Radiated Spurious Data (Cellular GPRS Mode – Ch. 190)

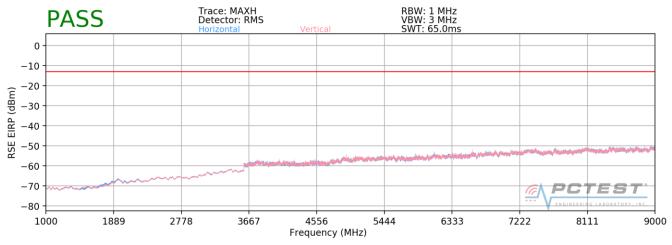
OPERATING FREQUENCY:	84	8.80	MHz
CHANNEL:	2	251	_
MODULATION SIGNAL:	GPRS (GMSK)	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequenc	y [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1697.	.60	Н	224	18	-63.26	8.95	-54.31	-41.3
2546	.40	Н	134	11	-68.05	9.75	-58.30	-45.3
3395.	.20	Н	-	-	-70.58	9.60	-60.97	-48.0

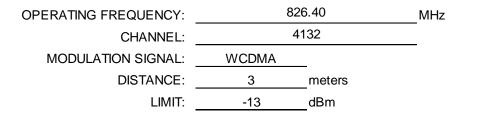
Table 7-9. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 92
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Plot 7-73. Radiated Spurious Plot above 1GHz (Cellular WCDMA)

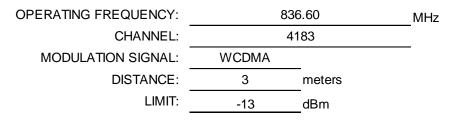


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1652.80	Н	-	-	-80.68	8.95	-71.73	-58.7
2479.20	Н	-	-	-79.04	9.67	-69.37	-56.4

Table 7-10. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 64 of 82
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	Н	-	-	-80.22	8.95	-71.27	-58.3
2509.80	Н	-	-	-78.21	9.75	-68.46	-55.5

Table 7-11. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)

 OPERATING FREQUENCY:
 846.60
 MHz

 CHANNEL:
 4233

 MODULATION SIGNAL:
 WCDMA

 DISTANCE:
 3
 meters

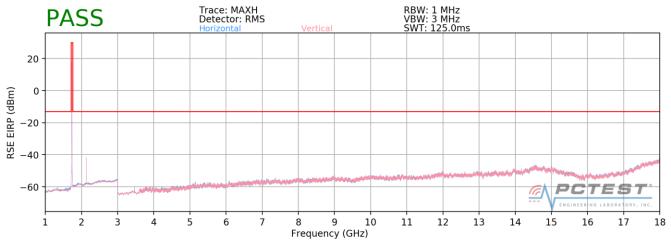
 LIMIT:
 -13
 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.20	Н	-	-	-80.69	8.95	-71.73	-58.7
2539.80	Н	-	-	-78.29	9.74	-68.54	-55.5

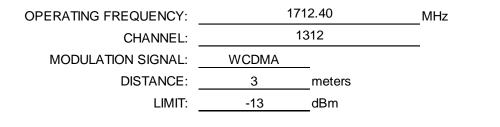
Table 7-12. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-74. Radiated Spurious Plot above 1GHz (AWS WCDMA)

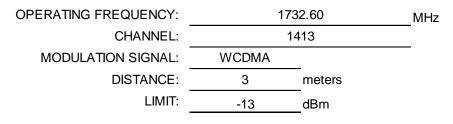


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3424.80	Н	119	47	-61.15	9.83	-51.32	-38.3
5137.20	Н	-	-	-74.11	10.69	-63.42	-50.4

Table 7-13. Radiated Spurious Data (AWS WCDMA Mode - Ch. 1312)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.20	Н	113	46	-69.27	9.88	-59.40	-46.4
5197.80	Н	-	-	-74.22	10.76	-63.46	-50.5

Table 7-14. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)

1752.60

1513

MHz

OPERATING FREQUENCY:

CHANNEL:

MODULATION SIGNAL:

DISTANCE: 3 meters

LIMIT: -13 dBm

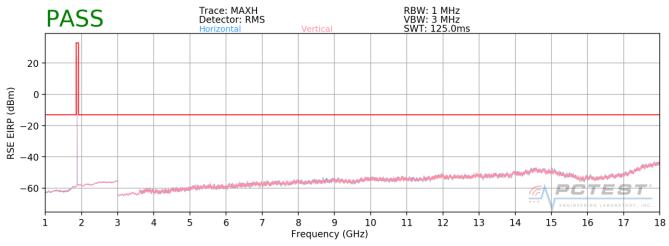
WCDMA

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3505.20	Н	117	46	-61.67	9.92	-51.75	-38.7
5257.80	Н	-	-	-72.59	10.72	-61.87	-48.9

Table 7-15. Radiated Spurious Data (AWS WCDMA Mode - Ch. 1513)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-75. Radiated Spurious Plot above 1GHz (PCS GPRS)

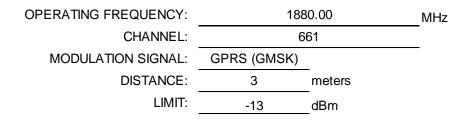
OPERATING FREQUENCY:	185	0.20	MHz
CHANNEL:	5	12	_
MODULATION SIGNAL:	GPRS (GMSK)	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3700.40	Н	131	43	-68.64	9.58	-59.06	-46.1
5550.60	Н	113	53	-59.28	10.94	-48.34	-35.3
7400.80	Н	-	-	-68.69	10.96	-57.73	-44.7

 Table 7-16. Radiated Spurious Data (PCS GPRS Mode – Ch. 512)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	136	44	-66.40	9.37	-57.04	-44.0
5640.00	Н	125	26	-57.91	11.17	-46.74	-33.7
7520.00	Н	-	-	-68.76	11.11	-57.65	-44.7

Table 7-17. Radiated Spurious Data (PCS GPRS Mode – Ch. 661)

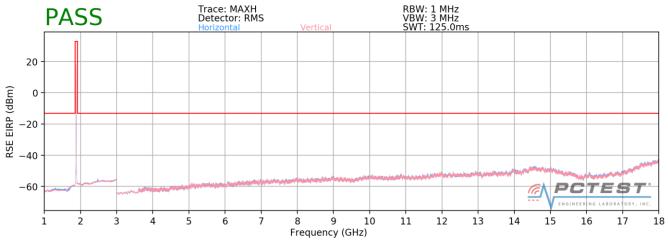
19	09.80	MHz
8	310	
GPRS (GMSK)		_
3	meters	
-13	_dBm	
	GPRS (GMSK) 3	3 meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3819.60	Н	349	25	-69.03	9.30	-59.73	-46.7
5729.40	Н	112	344	-67.95	11.39	-56.56	-43.6
7639.20	Н	-	-	-69.22	11.33	-57.88	-44.9

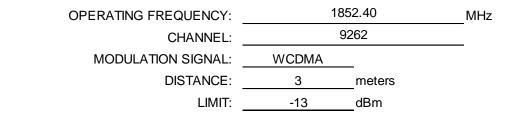
 Table 7-18. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 69 of 83
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Plot 7-76. Radiated Spurious Plot above 1GHz (PCS WCDMA)

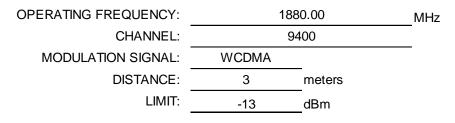


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3704.80	н	380	36	-72.76	9.57	-63.19	-50.2
5557.20	Н	-	-	-74.36	10.95	-63.41	-50.4

Table 7-19. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	395	47	-72.51	9.37	-63.15	-50.1
5640.00	Н	-	-	-73.96	11.17	-62.79	-49.8

Table 7-20. Radiated Spurious Data (PCS WCDMA Mode - Ch. 9400)

OPERATING FREQUENCY:	190	07.60	MHz
CHANNEL:	9538		_
MODULATION SIGNAL:	WCDMA		-
DISTANCE:	3	meters	
LIMIT:	-13	_dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.20	Н	366	67	-74.05	9.30	-64.75	-51.7
5722.80	Н	-	-	-73.77	11.37	-62.40	-49.4

Table 7-21. Radiated Spurious Data (PCS WCDMA Mode - Ch. 9538)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, RSS-132, and RSS-133, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, and RSS-139, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	190	_
REFERENCE VOLTAGE:	4.29	VDC
DEVIATION LIMIT :	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	836,599,842	-158	-0.0000188
100 %		- 30	836,599,865	-135	-0.0000162
100 %		- 20	836,599,984	-16	-0.0000019
100 %		- 10	836,599,910	-90	-0.0000108
100 %		0	836,599,827	-173	-0.0000207
100 %		+ 10	836,599,917	-83	-0.0000100
100 %		+ 20	836,599,933	-67	-0.000080
100 %		+ 30	836,599,821	-179	-0.0000214
100 %		+ 40	836,599,946	-54	-0.0000065
100 %		+ 50	836,599,900	-100	-0.0000119
BATT. ENDPOINT	3.57	+ 20	836,599,921	-79	-0.0000094

Table 7-22. Frequency Stability Data (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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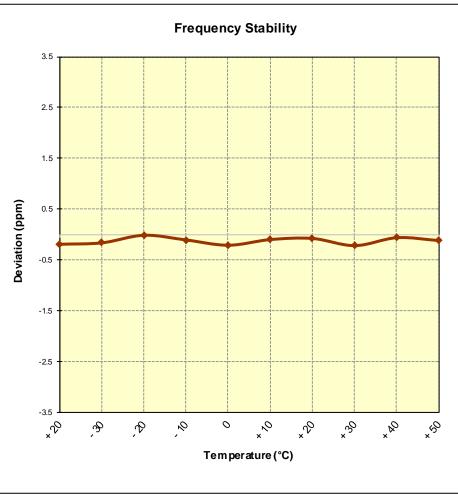


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 74 at 02
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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	4183	_
REFERENCE VOLTAGE:	4.29	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	836,599,876	-124	-0.0000149
100 %		- 30	836,599,901	-99	-0.0000118
100 %		- 20	836,599,815	-185	-0.0000221
100 %		- 10	836,599,999	-1	-0.0000001
100 %		0	836,599,909	-91	-0.0000109
100 %		+ 10	836,599,967	-33	-0.0000039
100 %		+ 20	836,599,995	-5	-0.0000006
100 %		+ 30	836,599,875	-125	-0.0000150
100 %		+ 40	836,599,935	-65	-0.0000077
100 %		+ 50	836,599,983	-17	-0.0000020
BATT. ENDPOINT	3.57	+ 20	836,599,916	-84	-0.0000100

Table 7-23. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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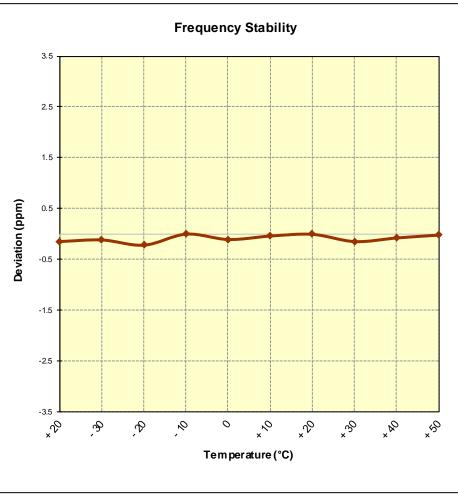


Figure 7-9. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	
REFERENCE VOLTAGE:	4.29	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	1,732,599,892	-108	-0.0000062
100 %		- 30	1,732,599,885	-115	-0.0000067
100 %		- 20	1,732,599,834	-166	-0.0000096
100 %		- 10	1,732,599,968	-32	-0.0000019
100 %		0	1,732,599,805	-195	-0.0000112
100 %		+ 10	1,732,599,895	-105	-0.0000061
100 %		+ 20	1,732,599,832	-168	-0.0000097
100 %		+ 30	1,732,599,856	-144	-0.000083
100 %		+ 40	1,732,599,937	-63	-0.0000036
100 %		+ 50	1,732,599,861	-139	-0.000080
BATT. ENDPOINT	3.57	+ 20	1,732,599,807	-193	-0.0000111

Table 7-24. Frequency Stability Data (AWS WCDMA Mode - Ch. 1413)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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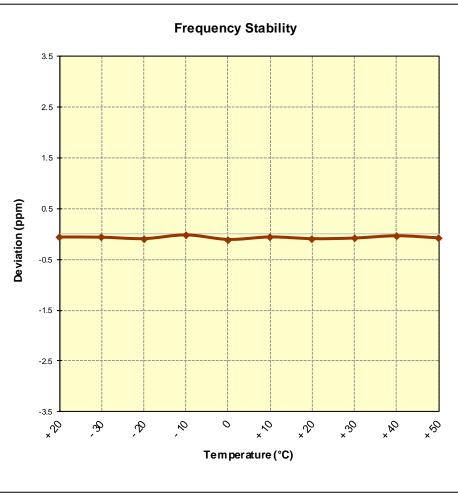


Figure 7-10. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	
REFERENCE VOLTAGE:	4.29	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	1,879,999,939	-61	-0.0000032
100 %		- 30	1,879,999,848	-152	-0.0000081
100 %		- 20	1,879,999,955	-45	-0.0000024
100 %		- 10	1,879,999,955	-45	-0.0000024
100 %		0	1,879,999,892	-108	-0.0000057
100 %		+ 10	1,879,999,892	-108	-0.0000058
100 %		+ 20	1,879,999,913	-87	-0.0000046
100 %		+ 30	1,879,999,946	-54	-0.0000029
100 %		+ 40	1,879,999,991	-9	-0.0000005
100 %		+ 50	1,879,999,982	-18	-0.0000010
BATT. ENDPOINT	3.57	+ 20	1,879,999,804	-196	-0.0000104

Table 7-25. Frequency Stability Data (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 92
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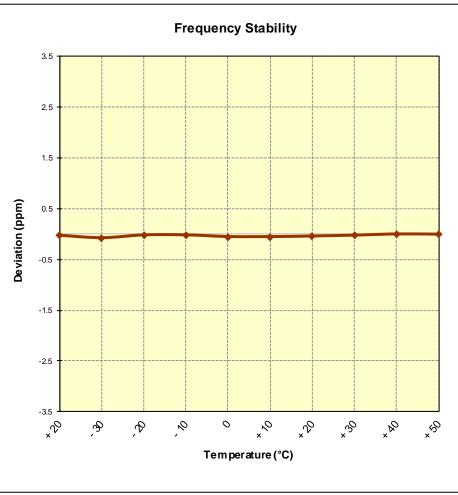


Figure 7-11. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	-
REFERENCE VOLTAGE:	4.29	VDC
DEVIATION LIMIT :	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	1,879,999,954	-46	-0.0000024
100 %		- 30	1,879,999,940	-60	-0.0000032
100 %		- 20	1,879,999,833	-167	-0.000089
100 %		- 10	1,879,999,927	-73	-0.0000039
100 %		0	1,879,999,858	-142	-0.0000076
100 %		+ 10	1,879,999,957	-43	-0.0000023
100 %		+ 20	1,879,999,996	-4	-0.0000002
100 %		+ 30	1,879,999,822	-178	-0.0000095
100 %		+ 40	1,879,999,999	-1	-0.0000001
100 %		+ 50	1,879,999,958	-42	-0.0000022
BATT. ENDPOINT	3.57	+ 20	1,879,999,925	-75	-0.0000040

Table 7-26. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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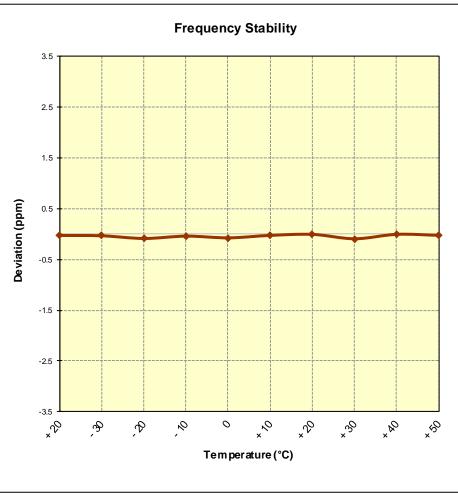


Figure 7-12. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA600T** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

FCC ID: A3LSMA600T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 92 of 92	
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