

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT FCC Part 22, 24, & 27

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 4/19/2017-5/3/2017 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 1M1704170148-02.A3L

FCC ID:

A3LSMJ330F

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD.

Application Type:	Certification
Model:	SM-J330F/DS
Additional Model(s):	SM-J330F
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§2 §22(H) §24(E) §27(L)
Test Procedure(s):	ANSI/TIA-603-D-2010, KDB 971168 D01 v02r02
Test Device Serial No.:	identical prototype [S/N: 03396, 03370, 13860, 13890]

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

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

Randy Ortanez President



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APPLICANT:	Samsung Electronics Co., Ltd.			
APPLICANT ADDRESS:	129, Samsung-ro,			
	Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea			
TEST SITE:	PCTEST ENGINEERING LABORATORY, INC.			
TEST SITE ADDRESS:	7185 Oakland Mills Road, Columbia, MD 21046 USA			
FCC RULE PART(S):	§2 §22(H) §24(E) §27(L)			
BASE MODEL:	SM-J330F/DS			
FCC ID:	A3LSMJ330F			
FCC CLASSIFICATION:	PCS Licensed Transmitter Held to Ear (PCE)			
MODE:	GSM / GPRS / EDGE / WCDMA			
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)			
Test Device Serial No.:	03396, 03370, 13860, 13890 Production Pre-Production Engineering			
DATE(S) OF TEST:	4/19/2017-5/3/2017			
TEST REPORT S/N:	1M1704170148-02.A3L			

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

• PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).



- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

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			ERP/	'EIRP	
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator
GPRS850	22H	824.2 - 848.8	1.468	31.67	244KGXW
EDGE850	22H	824.2 - 848.8	0.449	26.53	242KG7W
WCDMA850	22H	826.4 - 846.6	0.142	21.53	4M13F9W
WCDMA1700	27	1712.4 - 1752.6	0.328	25.16	4M13F9W
GPRS1900	24E	1850.2 - 1909.8	1.226	30.88	244KGXW
EDGE1900	24E	1850.2 - 1909.8	0.328	25.15	249KG7W
WCDMA1900	24E	1852.4 - 1907.6	0.193	22.84	4M14F9W

EUT Overview

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) 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 Industry Canada Certification and Engineering Bureau.

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'I (BWI) airport, the city of Baltimore and the Washington, DC area. (*See Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2014 on January 22, 2015.

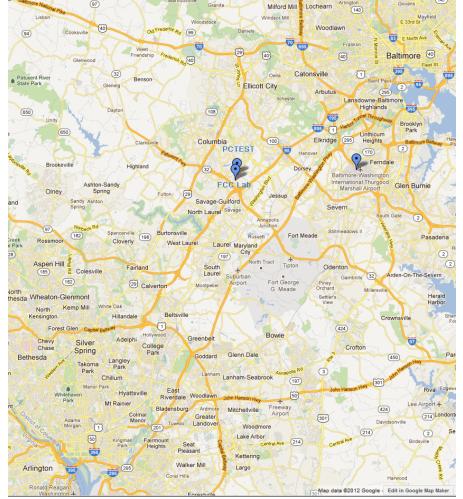


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMJ330F**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

2.2 Device Capabilities

This device contains the following capabilities:

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-D-2010 and KDB 971168 D01 v02r02. 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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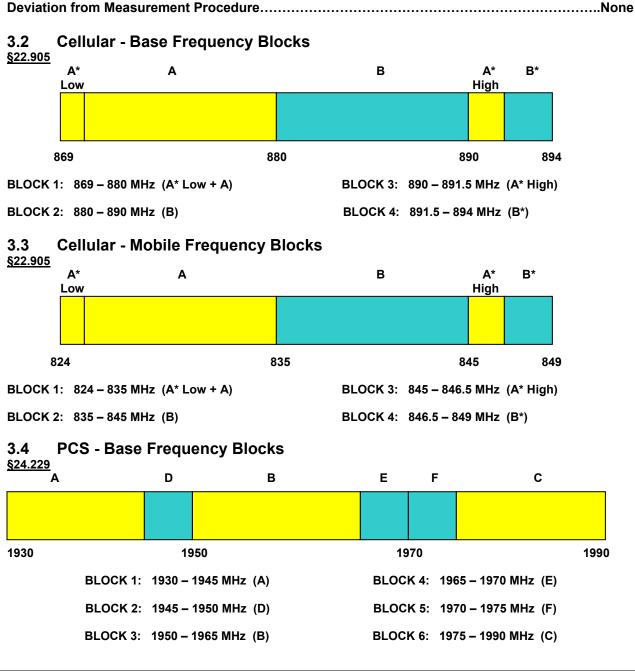
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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

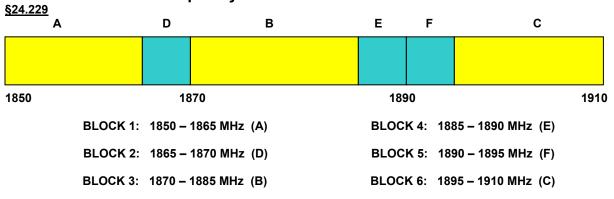
The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-D-2010) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v02r02) were used in the measurement of the EUT.



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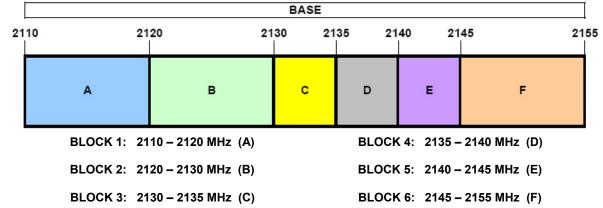


3.5 PCS - Mobile Frequency Blocks



3.6 AWS - Base Frequency Blocks

<u>§27.5(h)</u>



3.7 AWS - Mobile Frequency Blocks

§27.5(h)

17	10	1720) 17	30 17	35 17	40 17	45	1755
	Å	A	В	с	D	E	F	
	BLC	DCK 1: 1710	– 1720 MHz (A)		BLOCK	4: 1735 –	1740 MHz (D)	
	BLC	ОСК 2: 1720	– 1730 MHz (B)		BLOCK	5: 1740 –	1745 MHz (E)	
	BLC	DCK 3: 1730	– 1735 MHz (C)		BLOCK	6: 1745 –	1755 MHz (F)	

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3.8 **Radiated Measurements**

§2.1053 §22.913(a.2) §22.917(a) §24.232(c) §24.238(a) §27.50(d)(10) §27.53(h)

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. A 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

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-D-2010, 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:

Pd [dBm] = Pg [dBm] - cable loss [dB] + antenna gain [dBd/dBi]

Where, Pd is the dipole equivalent power, Pg 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 Pg [dBm] – cable loss [dB].

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/ITA-603-D-2010.

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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 C63.5-2006.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx3	LIcensed Transmitter Cable Set	7/12/2016	Annual	7/12/2017	N/A
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/27/2017	Annual	3/27/2018	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	2/26/2016	Biennial	2/26/2018	441128
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
Espec	ESX-2CA	Environmental Chamber	4/11/2017	Annual	4/11/2018	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/26/2016	Biennial	4/26/2018	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	8/28/2016	Biennial	8/28/2018	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128338
K & L	11SH10-3075/U18000	High Pass Filter	7/11/2016	Annual	7/11/2017	11SH10-3075/U18000-2
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/6/2016	Annual	7/6/2017	13SH10-1000/U1000-1
Mini-Circuits	PWR-SENS-4RMS	USB Power Sensor	3/27/2017	Annual	3/24/2018	11210140001
Mini-Circuits	SSG-4000HP	USB Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
PCTEST	-	EMC Switch System	7/11/2016	Annual	7/11/2017	NM1
PCTEST	-	EMC Switch System	7/6/2016	Annual	7/6/2017	NM2
Rohde & Schwarz	CMU200	Base Station Simulator	6/2/2016	Annual	6/2/2017	109892
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/15/2016	Annual	7/15/2017	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	7/11/2016	Annual	7/11/2017	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	6/7/2016	Annual	6/7/2017	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	3/30/2016	Biennial	3/30/2018	9105-2403
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107
Schwarzbeck	UHA 9105	Dipole Antenna	8/26/2016	Biennial	8/26/2017	2696

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.
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FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM / GPRS / EDGE / WCDMA</u>

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(h)	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)	Peak-Average Ratio	< 13 dB		PASS	Section 7.5
2.1046	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24, 27)		PASS	Section 7.8
22.913(a.2)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 7.6
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d.4)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(h)	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.
- 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 3.7.

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7.2 Occupied Bandwidth §2.1049

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 v02r02 - Section 4.2

Test Settings

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

1-5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

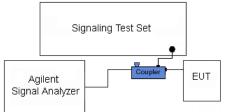


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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Plot 7-1. Occupied Bandwidth Plot (Cellular GPRS Mode - Ch. 190)



Plot 7-2. Occupied Bandwidth Plot (EDGE850 Mode – Ch. 190)

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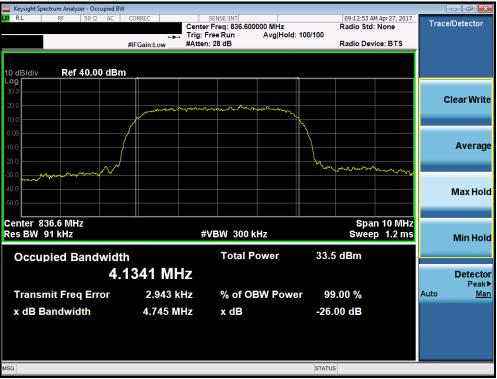


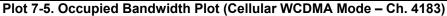
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode - Ch. 661)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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Plot 7-6. Occupied Bandwidth Plot (AWS WCDMA Mode - Ch. 1413)

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Test Report S/N:	Test Dates:	EUT Type:		Dega 17 of 90		
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Plot 7-7. Occupied Bandwidth Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

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 v02r02 - 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.

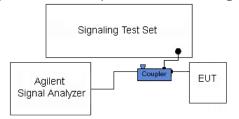


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

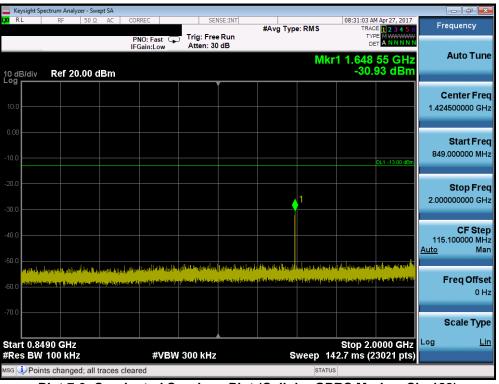
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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	ectrum Analyzer -									- d	×
X/RL	RF 5	Ω AC	CORREC	SEI	NSE:INT	#Avg Type:	RMS	TRACI	Apr 27, 2017	Frequency	y
			PNO: Fast IFGain:Low	, Trig: Free Atten: 30				TYP DE	M WWWW ANNNN		
	D -6 00 0	0I D					Μ	lkr1 822.	90 MHz 74 dBm	Auto T	une
0 dB/div . ^{og} r	Ref 20.0	Jabm			•				4 abiii		
										Center F	Fred
10.0										426.500000	MH:
0.00											
0.00										Start F	Fred
-10.0									0L1 -13.00 dBm	30.000000	MH:
									21 413.38 dbm		
-20.0										Stop F	Free
-30.0										823.000000	MH:
30.0											
40.0										CF S 79.300000	
									L L		Mar
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1.4.4.4.	a ha a tan kana kana da a da a	proved platests and a	And Middle in the second of	فقرأ وأنفأ وخلاف ومعقا	فتوفقا المدري وشائد	consequences is a sector when	(in a disclar	al production families	in the spectra terms	Freq Of	ffse
-60.0											0 H
70.0											
										Scale T	Гуре
Start 30.0	MHz							Ston 82	23.0 MHz	Log	Lii
	100 kHz		#V	BW 300 kHz		Sw	eep 9	8.33 ms (1:	5861 pts)		
SG							STATU	JS			

Plot 7-8. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 128)



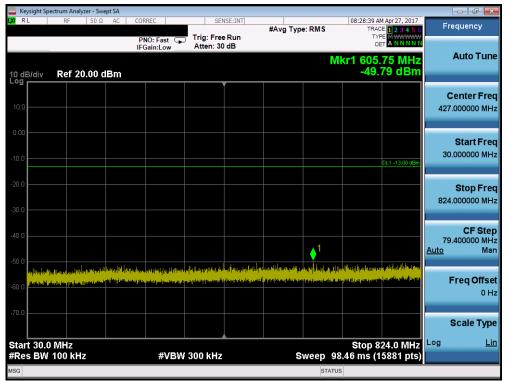
Plot 7-9. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 128)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	oectrum Analyzer -									
XI RL	RF 5	0Ω AC	CORREC PNO: Fast	Trig: Free		#Avg Type	e: RMS	TRAC	M Apr 27, 2017 E 1 2 3 4 5 6 PE M WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	Frequency
10 dB/div	Ref 10.0	0 dBm	IFGain:Low	Atten: 20) dB		М	kr1 2.47		Auto Tun
0.00										Center Fre 6.000000000 GH
20.0	1								DL1 -13.00 dBm	Start Fre 2.000000000 GH
40.0										Stop Fre 10.000000000 GH
50.0 <mark>- 1974 - 1.</mark> 60.0	a <mark>ddhad</mark> argadaad Adhad argadaad	T Galler and the g	a taga tina ang ang ang ang ang ang ang ang ang a		nan ing ter ter senata sena Senata senata	<mark>y finansi ta Artan (</mark> na Antan Antan Antan Antan Antan Antan Anta	Hanggaarneide General antil (Br. 2	nn g ann an Antoine Deachana an An Ann an Antoine Deachana an An	an kantan pilana japa Ya ka ^{nta} kantan parta	CF Ste 800.000000 MH <u>Auto</u> Ma
70.0										Freq Offs 0 F
Start 2.00	00 GHz 1.0 MHz		#\/E	W 3.0 MHz			ween 1	Stop 10 3.87 ms (1		Scale Typ
	nts changed;	all traces		5.0 WINZ			STATU		ooor pis)	





Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 190)

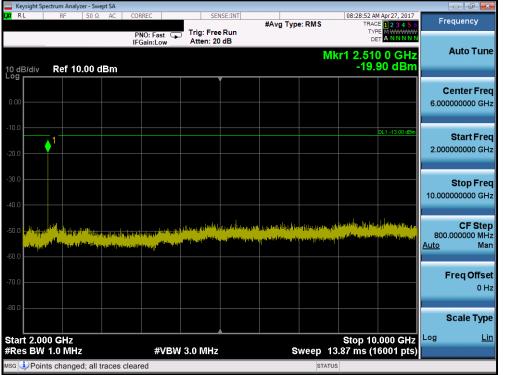
FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
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	ectrum Analyzer									
X/RL	RF	50 Ω AC	CORREC	SEI	NSE:INT	#Avg Type	: RMS	TRAC	Apr 27, 2017	Frequency
			PNO: Fast (IFGain:Low	Trig: Free Atten: 30				TYP DE	EMWWWWW TANNNNN	
			IFGall.LOW	71101110			Mk	r1 1.673	20 GHz	Auto Tur
10 dB/div	Ref 20.0)0 dBm							51 dBm	
- ^{og}					Ĭ					O
10.0										Center Fre 1.424500000 GH
										1.424300000 GP
0.00										
										Start Fre 849.000000 MH
-10.0									DL1 -13.00 dBm	849.000000 MIP
-20.0										
20.0							1			Stop Fre 2.000000000 GH
-30.0							•			2.000000000
										CF Ste
-40.0										115.100000 MH
-50.0										<u>Auto</u> Ma
Records			alignet and the second second							
-60.0 <mark>Johnsteine</mark>	alitikaa muu dutus Liina	بغيار بعدادا الأدف	unit and print product for the particular	والمالاست أويتا أتأمهم والملعن	ana anita a	na paglakalan paki na kita A	tah pada papangan Ang pangangangangangangangangangangangan pangangangan pangangangan pangangan pangangangan pang Ang panganganganganganganganganganganganganga	مراذلا الفحة أفطن الأزه		Freq Offs 0 H
-70.0										Scale Typ
Start 0.84			40 (B	W 200 KH-				Stop 2.0	OVO GIIZ	Log <u>L</u>
#Res BW		all traces		W 300 kHz		5	stat	42.7 ms (2	SUZT PIS)	
-	ts changed;		nducted							

Plot 7-12. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 19	0)



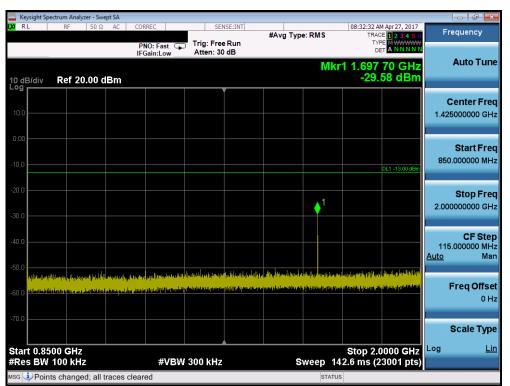
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 20			
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	oectrum Analyzer - 3									
(XI) RL	RF 50	Ω AC	CORREC			#Avg Typ	e: RMS	08:32:25 AM TRACE	1 2 3 4 5 6	Frequency
10 dB/div	Ref 20.00) dBm	PNO: Fast IFGain:Low	Atten: 30			М	kr1 556.4	0 MHz 8 dBm	Auto Tune
10.0										Center Freq 427.000000 MHz
-10.0								0	L1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0										Stop Freq 824.000000 MHz
-40.0			under Antoineour Aprile			↓ ↓ 1	l.a.k. ita	a na an an kata ak	lan, muliki dar	CF Step 79.400000 MHz <u>Auto</u> Man
-60.0	land basy di Legendan si di Ngga pang ang ang ang ang ang ang ang ang ang	na katala di katalan na ka	an dan dapat kanan kanan kanan 1 kanan patri dat Kasar yang ang ang	a fa far fille sing fill a fara fille A particular fille a fara fille	n a suit a s	n nin historia (han nin historia) - nin historia (han nin historia) (han h	u gan daya da yagan sa sa ku Yan da ku ga tara yan sa sa ku	a La Huana a La	de Alfrentikken.	Freq Offset 0 Hz
								Otem 00	4.0.5411-	Scale Type
Start 30.0 #Res BW			#VBW	/ 300 kHz		s	weep 9	Stop 82 3.46 ms (15	TIV ITII IZ	
MSG							STATU	s		



Plot 7-14. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 251)

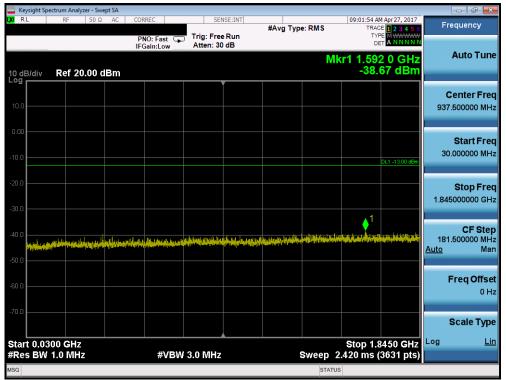
Plot 7-15. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 251)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)					
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 20			
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	ectrum Analy	zer - Swep	t SA										X
LXI RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Avg Typ	e: RMS		M Apr 27, 2017	Frequency	/
				PNO: Fas IFGain:Lo		Trig: Free Atten: 20				TY D			
10 dB/div Log	Ref 10).00 dE	3m						M	kr1 2.54 -18.	6 5 GHz 18 dBm	Auto T	une
0.00												Center F 6.000000000	
-10.0	1										DL1 -13.00 dBm	Start F	From
-20.0												2.000000000	
-30.0												Stop F	- rea
(0.0												10.00000000	
-40.0	n (¹⁴⁰ 1) mining (¹⁴⁰ 1)			and distance of the		çinî naştar ^{je} nînî Nahazar	laan se fing faat in aan de kenderse gebreere	val ^{ta} lda janan dina jalan Najada palana dina jana di		n <mark>a ta kata kata kata ka</mark>	ti (landisan la tinggan) Interneti Standa (tinggan)	CF S 800.000000 Auto	
-60.0			an a	""""""""""""""""""""""""""""""""""""""								Auto	WEIT
-70.0												Freq Of	
													0 Hz
-80.0												Scale T	уре
Start 2.00										Stop 10	.000 GHz	Log	Lin
#Res BW					/BW	3.0 MHz		\$			6001 pts)		
мsg 🎝 Poin	ts change	ed; all tra	aces cle	eared					STATU	S			

Plot 7-16. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 251
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Plot 7-17. Conducted Spurious Plot (PCS GPRS Mode – Ch. 512)

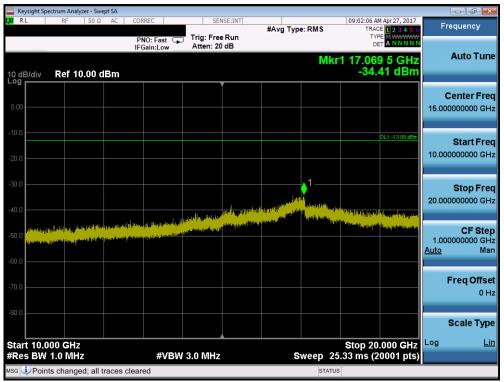
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyzer	- Swept SA									7 ×
X/RL	RF	50 Ω AC	CORREC		NSE:INT	#Avg Typ	e: RMS	TRAC	M Apr 27, 2017	Frequenc	су
10 dB/div	Ref 20.0	00 dBm	PNO: Fast G	Trig: Free Atten: 30			М	kr1 9.398	E 0 GHz 56 dBm	Auto	Tune
10.0										Center 5.95500000	
-10.0									DL1 -13.00 dBm	Start 1.91000000	
-20.0									1	Stop 10.00000000	
-40.0 Jjetrovel -50.0	pp fo ^{to to} the second s	lining and and	naperal and by privilations		gurnan betar 1944 (Shiringa)	n, alarigi ar için terme Here (Antonio Mahamata	Prosence for play Richards and Pro	a ganghan ta Palanga pan ang agaman di katang papat	a _{al} parte parte parte parte La contra de la constante	CF 809.00000 <u>Auto</u>	O MH: Mar
-60.0										Freq C	Offse 0 H
-70.0										Scale	Туре
Start 1.91 #Res BW			#VBV	V 3.0 MHz		s	weep 1	Stop 10 4.02 ms (1	.000 GHz 6181 pts)	Log	Lin
usg 🗼 Poin	ts changed;	all traces of	leared				STATU	IS			

Plot 7-18. Conducted Spurious Plot (PCS GPRS Mode – Ch. 512)



Plot 7-19. Conducted Spurious Plot (PCS GPRS Mode – Ch. 512)

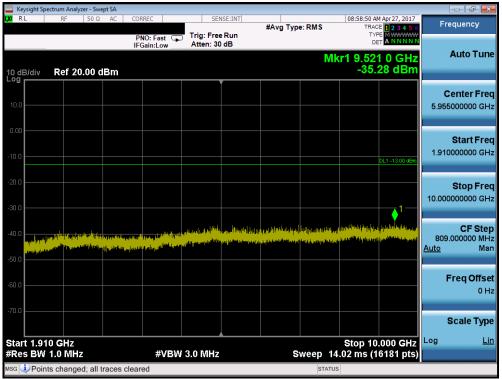
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
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	ectrum Analyze									
XI RL	RF	50Ω AC	CORREC PNO: Fast		e Run	#Avg Type	e:RMS	TRAC	M Apr 27, 2017 E 1 2 3 4 5 6 E M WWWWW A N N N N N	Frequency
10 dB/div Log	Ref 20.0	00 dBm	IFGain:Low	Atten: 30) dB		M	kr1 1.77 [.]		Auto Tuno
10.0										Center Free 940.000000 MH
10.0									DL1 -13.00 dBm	Start Fre 30.000000 MH
-20.0										Stop Fre 1.850000000 GH
40.0	ala di desta di Angela da di di seconda di se	مازن عبارة وارزار	nd him on the first state of	and a state of the	danah kanglan katar di			ingen der son der falle fi	yatun iyon birin ti	CF Ste 182.000000 MH <u>Auto</u> Ma
60.0										FreqOffse 0 ⊢
-70.0										Scale Typ
Start 0.03 #Res BW	300 GHz 1.0 MHz		#VB	W 3.0 MHz			Sweep 2	Stop 1.8 2.427 ms (5000 GHZ	Log <u>Li</u>
ISG							STATU	s		





Plot 7-21. Conducted Spurious Plot (PCS GPRS Mode – Ch. 661)

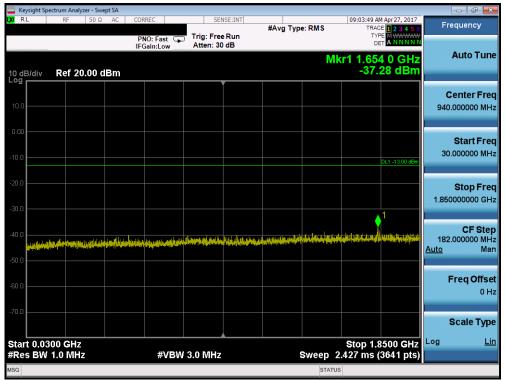
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analyzer - S									- 7 - ×
X/RL	RF 50	Ω AC	CORREC	SEN	SE:INT	#Avg Typ	e: RMS		M Apr 27, 2017	Frequency
			PNO: Fast G	Trig: Free Atten: 20				TYF DE		Auto Tune
10 dB/div	Ref 10.00	dBm					Mkr	1 16.70 -34.	7 5 GHz 40 dBm	Auto Tuni
										Center Free
0.00										15.00000000 GH:
-10.0									DL1 -13.00 dBm	Otent Free
-20.0										Start Free 10.000000000 GH:
20.0										
-30.0						→ ¹				Stop Free
-40.0				n ha sa kata kult	The second states of the se	and the second s	na filili i _{n bi}	and the second statements	andar	20.000000000 GH
-50.0	a kunala _{Man} tarka sark	alloarebullyb		^{n son} theory and the second	مانا أأهيم إسانه		A STREET, 14	film and the second	A Robel Market	CF Step
resolution of the	tig dalahik kecadahistan	lik. II. se skolet fa he Negel								1.000000000 GH Auto Mar
-60.0										
-70.0										Freq Offse
-80.0										UT.
-00.0										Scale Type
Start 10.	000 GHz 1.0 MHz		#\/B\/	/ 3.0 MHz		q	ween 25	Stop 20	.000 GHz 0001 pts)	Log <u>Lir</u>
	nts changed; a	ll traces c		10.0 1911 12			STATUS		ooo i pisj	

Plot 7-22. Conducted Spurious	s Plot (PCS GPRS Mode – Ch. 661)
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Plot 7-23. Conducted Spurious Plot (PCS GPRS Mode - Ch. 810)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyze	r - Swept SA								- 6	- X
X/RL	RF	50 Ω AC	CORREC		NSE:INT	#Avg Typ	e: RMS	TRAC	M Apr 27, 2017 DE 1 2 3 4 5 6	Frequenc	зy
			PNO: Fast G	Trig: Free Atten: 30						Auto 7	T
10 dB/div	Ref 20.	00 dBm					M	kr1 9.03 -35.	1 0 GHz 58 dBm	Auto	Tune
										Center	Freq
10.0										5.957500000	0 GHz
0.00										Start	From
-10.0									DL1 -13.00 dBm	1.915000000	
									DET - 13.00 GBM		
-20.0										Stop 10.00000000	
-30.0								•	1		
-40.0	-	a	and the second	Contraction of the second second	la _{ten} presidentes Anten anten de la competition de la comp	n ang ang ang ang ang ang ang ang ang an	a tang pang pang pang pang pang pang pang p	en openski stali se s	a <mark>n partiliopen (100)</mark> An <mark>han ditional (100)</mark>	CF 808.500000	Step MHz
-50.0	and data and	a land a sharehouse the	Angle Alter part for the ball		φ. 1,	and mark and t	Totale 1.1			<u>Auto</u>	Man
-60.0										Freq O	offset
-00:0											0 Hz
-70.0										Scale	Туре
Start 1.91	5 GHz							Stop 10	.000 GHz	Log	Lin
#Res BW			#VB\	N 3.0 MHz		s	weep 14	4.01 ms (1	6171 pts)		
usg 🔱 Point	ts changed	; all traces	cleared				STATU	IS			

Plot 7-24. Conducted Spurious Plot (PCS GPRS Mode – Ch. 810)



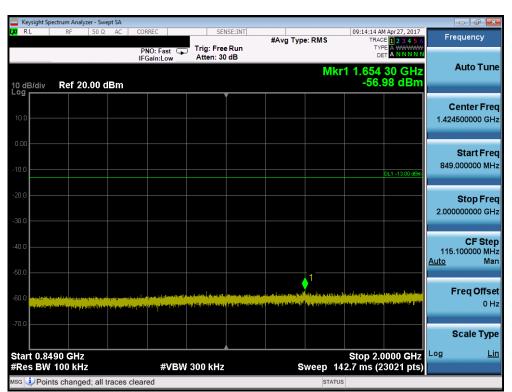
Plot 7-25. Conducted Spurious Plot (PCS GPRS Mode - Ch. 810)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 28 of 80
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	ectrum Analy												- a ×
LXU RL	RF	50 Ω 4		ORREC	st 🖵	Trig: F	sense:INT	#Avg Typ	e: RMS	TRAC	M Apr 27, 2017 DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Fr	equency
10 dB/div	Ref 20).00 dBi		FGain:L	DW	Atten:	30 dB		N	lkr1 822			Auto Tune
10.0													Center Freq 5500000 MHz
-10.0											DL1 -13.00 dBm	30	Start Freq 0.000000 MHz
-20.0											1	823	Stop Freq 000000 MHz
-40.0												79 <u>Auto</u>	CF Step 300000 MHz Mar
-60.0	ang		er de la companya	ala kuluku d	ng at sy finder i	an Antol na ann fa Cealtaí feigne Flangile	وار این این در این و این و این این این و این این و این	tiles and suspensible care his Dependencing staticities		n esta angli kanina na angla kanina kang ka ka			F req Offse 0 Hz
													Scale Type
Start 30.0 #Res BW		z		#	VBW	300 kH	z	s	weep 9	8.33 ms (1	23.0 MHz 5861 pts)	Log	Lin
MSG									STAT				



Plot 7-26. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

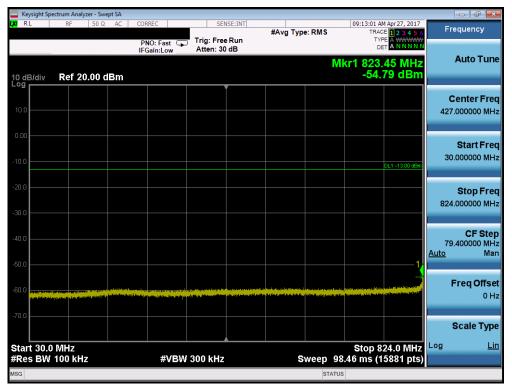
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Anal		SA								- 5 -
L <mark>XI</mark> RL	RF	50 Ω	AC CO	ORREC	SEN	ISE:INT	#Avg Typ	e RMS		Apr 27, 2017	Frequency
				NO: Fast 🔾	Trig: Free Atten: 20				TYF		
				Gain:Low	Atten: 20	ab					Auto Tun
10 dB/div	Ref 1	0.00 dB	m					IVI	kr1 2.470 -50.5	90 dBm	
											Center Fre
0.00											6.000000000 GH
											0.00000000000
-10.0										DL1 -13.00 dBm	
											Start Fre
-20.0											2.000000000 GH
-30.0											Stop Fre
-40.0											10.00000000 GH
-40.0	. 1										
-50.0	¢'										CF Ste 800.000000 MH
		18 Mar	N	ورور اللاللية.	and the second states	Sector Street opposition of					Auto Ma
-60.0	A CONTRACTOR OF STREET	State at	1. State 1.	and the second		A STATE OF THE OWNER	de later anno a				
											Freq Offse
-70.0											он
-80.0											
00.0											Scale Typ
											Log <u>Li</u>
Start 2.00 #Res BW		7		#VBA	(3.0 MHz		8	ween 1	Stop 10 3.87 ms (1	.000 GHz 6001 nts)	
мsg 🕕 Poin					0.0 10112			STATU		ooo i pisj	
		-									<u>)</u>))

Plot 7-28. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)



Plot 7-29. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

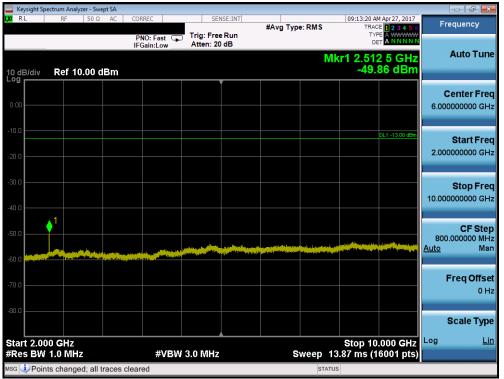
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyz	er - Swept S	SA									
L <mark>XI</mark> RL	RF	50Ω A		CORREC			SENSE:INT	#Avg Typ	e: RMS	TRA	AM Apr 27, 2017 ACE 1 2 3 4 5 6	Frequency
				PNO: Fa IFGain:L		Atten:					DET A WWWWW	
10 dB/div Log	Ref 20.	.00 dBi	m						Mk	r1 1.672 -57	2 10 GHz .17 dBm	Auto Tune
10.0												Center Freq 1.424500000 GHz
-10.0											DL1 -13.00 dBm	Start Freq 849.000000 MHz
-20.0												Stop Freq 2.000000000 GHz
-40.0												CF Step 115.100000 MHz <u>Auto</u> Man
-60.0						an a	a an		↓ 1 ₩/ <mark>∱</mark>			Freq Offset 0 Hz
-70.0												Scale Type
Start 0.84 #Res BW				#	VBW	300 kH	lz	s	weep 1	Stop 2 42.7 ms (.0000 GHz 23021 pts)	Log <u>Lin</u>
мsg 🗼 Poin	ts changed	d; all trad	ces cle	ared					STATU	US		

Plot 7-30. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)



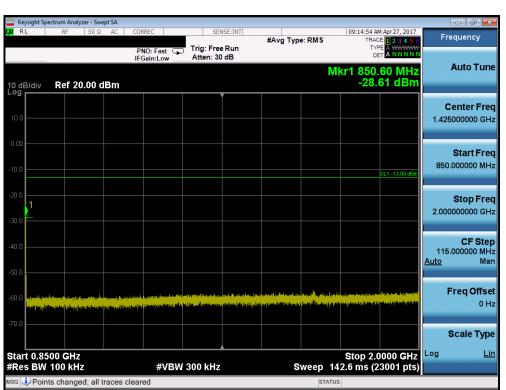
Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyz										×
LXI RL	RF	50 Ω AC	PNO: Fa		sense:II	#Avg	g Type: RMS	TRAC	Apr 27, 2017 E 1 2 3 4 5 6 E A HOMMAN T A N N N N N	Frequency	
10 dB/div Log	Ref 20	.00 dBm	IFGain:L	.ow A	tten: 30 dB			Mkr1 819.		Auto Tu	une
10.0										Center F 427.000000 M	
-10.0									DL1 -13.00 dBm	Start F 30.000000 M	
-20.0										Stop F 824.000000 M	
-40.0										CF Si 79.400000 M <u>Auto</u>	tep MHz Man
-60.0			and the second		a a das La pública de comunidad A tradecia da comunidad de Cabina y comunidad	te and statistic prices in the set grand lagrange of the set of	elet alle de la Ciellit patrones la Referencia	Below Bertzelfenskerenskelig Moter Anne Berty Franklin		Freq Off C	f set 0 Hz
										Scale Ty	
Start 30.0 #Res BW			;	≠VBW 30	0 kHz		Sweep	8 Stop 98.46 ms (1	21.0 191112	Log	Lin
MSG							STA				



Plot 7-32. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)

Plot 7-33. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analy:		SA										d x
X RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Typ	e RMS		M Apr 27, 2017 CE 1 2 3 4 5 6	Frequer	ncy
				PNO: Fas		Trig: Fre			0.10110	TY			
				IFGain:Lo	w	Atten: 20) dB					Auto	Tune
	B -6.40								M	Kr1 2.53	6 5 GHz 06 dBm	71410	, rano
10 dB/div Log	Ref 10	1.UU dB	sm						1	-50.			
												Cente	r Freq
0.00												6.0000000	00 GHz
-10.0											DL1 -13.00 dBm	Otor	tFreq
												2.0000000	
-20.0												2.0000000	00 0112
-30.0													
-30.0													p Freq
-40.0												10.0000000	00 GHz
40.0	.1												
-50.0	•												F Step
		4.0				المراجع والمحاد	Department of the second	Photo and the state of the stat	-			800.0000 Auto	00 MHZ Man
-60.0			data a		and the second second	and the part of the local data	and the second s	and a shirt is in the second	a faith land, an e about she				
												Fred	Offset
-70.0												Treq	0 Hz
-80.0												Book	е Туре
													rype
Start 2.00										Stop 10).000 GHz 16001 pts)	Log	Lin
#Res BW	1.0 MHz	Z		#\	BW :	3.0 MHz		S	weep 1	3.87 ms (*	6001 pts)		
мsg 🗼 Poin	its change	d; all tra	ces cle	eared					STATU	JS			

Plot 7-34. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)



Plot 7-35. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ctrum Analyzer	- Swept SA						- # ×
X/RL	RF 5	0Ω AC	CORREC PNO: Fast	SENS	#A1	/g Type: RMS	09:24:58 AM Apr 27, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 20.0	0 dBm	IFGain:Low	Atten: 30 c		М	det <mark>А N N N N N N N N N N N N N N N N N N </mark>	Auto Tune
10.0				Ì				Center Freq 5.877500000 GHz
-10.0							DL1 -13.00 dBm	Start Freq 1.755000000 GHz
-20.0								Stop Fred 10.000000000 GHz
-40.0						gand delta tat parte mentilogana paparegenera gang delta da post forman pana paga partegenera	el providente la construit de l La construit de la construit de	CF Step 824.500000 MH: <u>Auto</u> Mar
-60.0								Freq Offsel 0 Hz
-70.0								Scale Type
Start 1.75 #Res BW			#VB	W 3.0 MHz		Sweep 1	Stop 10.000 GHz 4.29 ms (16491 pts)	Log <u>Lin</u>
MSG 🗼 Point	s changed;	all traces	cleared			STATU		

Plot 7-36. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1312)



Plot 7-37. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Daga 24 of 90			
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	ectrum Analyzer	- Swept SA								
(XI RL	RF	50 Ω AC	CORREC			#Avg Type	RMS	TRAC	Apr 27, 2017	Frequency
			PNO: Fast IFGain:Low				M	kr1 1.673		Auto Tune
10 dB/div Log	Ref 20.0	0 dBm						-48.2	23 dBm	
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									\$ 1	CF Step 168.000000 MHz <u>Auto</u> Man
-50.0			- the second and second sec							Freq Offset 0 Hz
-70.0										Scale Type
Start 0.03 #Res BW			#V	BW 3.0 MH;	×	s	weep 2	Stop 1.7 2.240 ms (00 012	Log <u>Lin</u>
MSG							STATU	IS		



Plot 7-38. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1413)

Plot 7-39. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1413)

G 🗼 Points changed; all traces cleared

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
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	sight Spec			pt SA										
lxi Rl		RF	50 Ω	AC	CORREC		SEI	NSE:INT	#Avg Typ	e RMS		M Apr 27, 2017	Fre	quency
						Fast 😱	Trig: Fre				TY			
					IFGain	:Low	Atten: 20) dB						Auto Tune
				_						MK	1 17.02	1 0 GHz 94 dBm		rato rano
10 dE Log r	3/div	Ref 1	0.00 d	вm					1	1	-40.	94 UDIII		
													С	enter Freq
0.00													15.000	000000 GHz
-10.0												DL1 -13.00 dBm		Start Freq
														000000 GHz
-20.0													10.000	000000 0112
-30.0														
-30.0														Stop Freq
-40.0										♦ 1			20.000	000000 GHz
40.0									A CARLEN STREET	and a state of the	.			
-50.0							(here a linear linear second	ر معالم معالم من معالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم من مع المعالم من مع المعالم من معالماً المعالم من معالم المعالم من معالم المعالم المعالم المعالم المعالم من معالم المعالم من معالم المعالم مع	and a street of	Indiana and a state				CF Step
	any kaominina mpika	مرورون مومرد. الدرست والمتحكم		ngang nanaki Ngang nanaki	Report forth	and the start of							1.000 Auto	000000 GHz Man
-60.0														
													-	req Offset
-70.0														0 Hz
-80.0														Scale Type
														scale Type
	Start 10.000 GHz Stop 20.000 GHz								Log	Lin				
#Res	#Res BW 1.0 MHz													
MSG 🭳	sq Depints changed; all traces cleared													
	Dist 7.40 Conducted Sourieus Dist (AWS WCDMA Mede Ch. 4442)													

Plot 7-40. Conducted Spurious Plot (AWS WCDMA Me	ode – Ch. 1413)
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Plot 7-41. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1513)

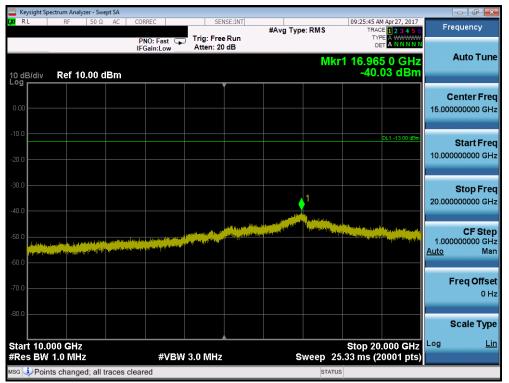
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 26 of 90
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	ectrum Analyzer							- # ×
LXI RL	RF	50Ω AC	CORREC	SENSE:I	IT #Avg Tvi	e: RMS	09:25:40 AM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
			PNO: Fast 🕞	Trig: Free Ru Atten: 30 dB				
10 dB/div Log	Ref 20.0	0 dBm				M	r1 1.760 0 GHz -32.13 dBm	Auto Tune
10.0								Center Freq 5.880000000 GHz
-10.0							DL1 -13.00 dBm	Start Freq 1.760000000 GHz
-20.0								Stop Freq 10.000000000 GHz
-40.0					a de la tradição de la companya de	adalarda dag yana keyadarata dag Malakana yang keyada da daga	an bitch bitch and a the set of the bitch and a set of the bitch and	CF Step 824.000000 MHz <u>Auto</u> Mar
-60.0								Freq Offset 0 Hz
-70.0								Scale Type
Start 1.76 #Res BW			#VBW	/ 3.0 MHz		Sweep 14	Stop 10.000 GHz I.28 ms (16481 pts)	Log <u>Lin</u>
мsg 🗼 Poin	ts changed;	all traces	cleared			STATU		

Plot 7-42. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1513)



Plot 7-43. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1513)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyz	er - Swept S	A									d X
LXU RL	RF	50Ω A	PN	NO: Fast (#Avg Type	e: RMS	TRA	M Apr 27, 2017 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Frequer	псу
10 dB/div Log	Ref 20	.00 dBr		Gain:Low	Atten:	50 dB		Μ	kr1 1.84	5 0 GHz 75 dBm	Auto	o Tune
10.0											Cente 937.5000	e r Freq 00 MHz
-10.0										DL1 -13.00 dBm	Star 30.0000	r t Freq 00 MHz
-20.0											Sto 1.8450000	p Freq 00 GHz
-40.0	and the second		una fantar a tartegia	dagan jang teknyangan		here paratale de la	an the state of the		and and a star of a st	1, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	C 181.5000 <u>Auto</u>	F Step 00 MHz Man
-60.0											Freq	Offset 0 Hz
40.0												е Туре
Start 0.03 #Res BW				#VB	W 3.0 MH	z		Sweep	Stop 1. 2.420 ms	8450 GHz (3631 pts)	Log	Lin
MSG								STATU	IS			







FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyze		SA									x
L <mark>XI</mark> RL	RF	50 Ω /	AC CO	RREC	SEN	ISE:INT	#Avg Typ	e: RMS		M Apr 27, 2017	Frequency	
				NO: Fast 🖵	Trig: Free Atten: 20				TY			
			IF	Gain:Low	Atten: 20	ab		Mice			Auto Tu	Ine
10 dB/div	Ref 10.	00 dB	m					WIKI	-40.	8 5 GHz 85 dBm		
)						Contor Fr	
0.00											Center Fi 15.00000000 G	
0.00											13.000000000	2
-10.0										DL1 -13.00 dBm		
										0L1 -13.00 0Bm	Start Fr	
-20.0											10.00000000	SHz
-30.0											Stop Fr	req
								1			20.00000000 0	SHz
-40.0							مرد استار	a section of				
-50.0					في منافع المقاد و	and the second		Super-		- Happer P. Hardware and	CF St	
and the state of the second	and the second se		an a	المحمولية المرجوعة والإلمانية (المعادر مطالباتي القارات وحم	الاستعاليس يتنظر ويتعار					Nuestin Unite Main	1.000000000 G Auto M	GH2 Mar
-60.0	alphatik to takele										Auto	nan
-70.0											Freq Off	
											0) Hz
-80.0												
											Scale Ty	/ре
Start 10.0	000 GHz				,				Stop 20	.000 GHz	Log	Lin
#Res BW				#VBW	3.0 MHz		S	weep 25	.33 ms (2	0001 pts)		
MSG 🔱 Poin	its changed	l; all trad	ces clear	ed				STATUS	5			
		~ ~				BL	(200				0000	_

Plot 7-46. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)



Plot 7-47. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyze											
X/RL	RF	50Ω A		RREC		SE Trig: Fre	e Run	#Avg Typ	e:RMS	TRA	M Apr 27, 2017 CE 1 2 3 4 5 6 PE A WWWWW A N N N N N	Frequency
10 dB/div	Ref 20.0	00 dBr	IF	Gain:Low		Atten: 30) dB		М	kr1 8.71	7 0 GHz .34 dBm	Auto Tun
- og 10.0												Center Fre 5.955000000 GH
10.0											DL1 -13.00 dBm	Start Fre 1.910000000 GH
30.0												Stop Fre 10.000000000 GH
40.0 50.0 www.black		a filia da posta da pos			STATISTICS.			neg fallen foren sel fallen er en se		1 Alimitetterilitetterilitetterilitetterilitetterilitetterilitetterilitetterilitetterilitetterilitetterilitetteri	de agent de la tradecipa de la compañía de la comp	CF Ste 809.000000 MH <u>Auto</u> Ma
60.0												Freq Offse 0 H
70.0												Scale Typ
Start 1.91 ≇Res BW				#V	BW 3	3.0 MHz		9	weep 1	Stop 10 4.02 ms (*).000 GHz 16181 pts)	Log <u>Li</u>
ısg 🧼 Poin	ts changed	; all trac	es clear	ed					STATU	JS		

Plot 7-48. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)



Plot 7-49. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 40 of 90
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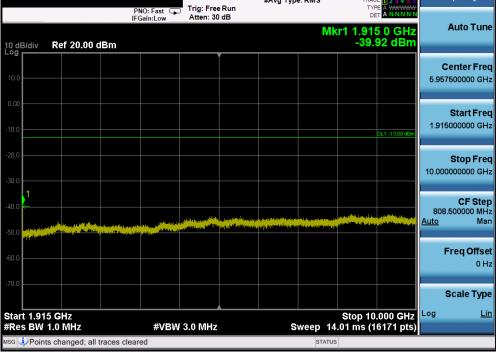
V 6.3 03/24/2017



	ectrum Analyzer -									
I <mark>XI</mark> RL	RF 5	0Ω AC	CORREC PNO: Fast	Trig: Fre		#Avg Type	:RMS	TRAC	Apr 27, 2017 1 2 3 4 5 6 E A WWWWWW T A N N N N N	Frequency
10 dB/div Log	Ref 20.0	0 dBm	IFGain:Low	Atten: 3) dB		Μ	kr1 1.814 -48.′		Auto Tune
10.0										Center Freq 940.000000 MHz
-10.0									DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0										Stop Freq 1.850000000 GHz
-40.0			un ¹¹ 44 ⁴⁷ - Jan Marine Marine Marine	a a sure of the			an stale particular of	Lingerson from to the effective states		CF Step 182.000000 MHz <u>Auto</u> Mar
-60.0										Freq Offset 0 Hz
Start 0.03								Stop 1 9	500 CH2	Scale Type
#Res BW			#V	BW 3.0 MHz		\$		2.427 ms (000 GHZ	
MSG							STATU	JS		



Plot 7-50. Conducted Spurious Plot (PCS WCDMA Mode - Ch. 9538)



Plot 7-51. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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🔤 Keysight Spec	trum Analyz		SA										
LXI RL	RF	50 Ω	AC (CORREC		SE	NSE:INT	#Avg Typ	e BMS		M Apr 27, 2017	Freq	uency
				PNO: Fa		Trig: Fre		100 B 1 3 P		TY			
				IFGain:L	ow	Atten: 20) dB				,	۵	uto Tune
									MK	r1 16.97	50 GHz		
10 dB/div Log	Ref 10	.00 dB	Im					_		-40.	57 dBm		
							Ĭ					Ce	nter Freg
0.00													00000 GHz
												10.00000	
-10.0											DL1 -13.00 dBm		
											0L1 -13.00 0BM		tart Freq
-20.0												10.0000	00000 GHz
-30.0												9	top Freq
									1				00000 GHz
-40.0								. الان					
							الأفريس بمعدد		and the second second	and the state of the state			
-50.0		and the Nation	ماد مى دام ا. د. د.	and a literation	14 miles - 14	and the second second		a ida di ili	1.00	And the state of the local division of the l	and the second s	1 0000	CF Step
ىلىغا ئىچىدە ئىرىمىيە ئىرىنى بىرولدۇ ئەر مىلان	alaini kana jiri	100 100 100	en altron mar	and a second state	الفقع المأوه	1						Auto	Man
-60.0													
												En	eq Offset
-70.0													0 Hz
													5.1L
-80.0													
												Sc	ale Type
Start 10.00	0 GHz									Ston 20	.000 GHz	Log	Lin
#Res BW 1		4		#	VBW	3.0 MHz		s	weep 2	5.33 ms (2	20001 pts)		
мsg 🕕 Points	change	d; all tra	ces cle	ared					STATU				
4													

Plot 7-52. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Band Edge Emissions at Antenna Terminal 7.4 §2.1051 §22.917(a) §24.238(a) §27.53(h)

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 v02r02 - 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
- Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW > 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.

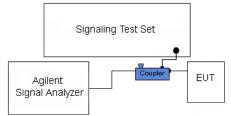


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

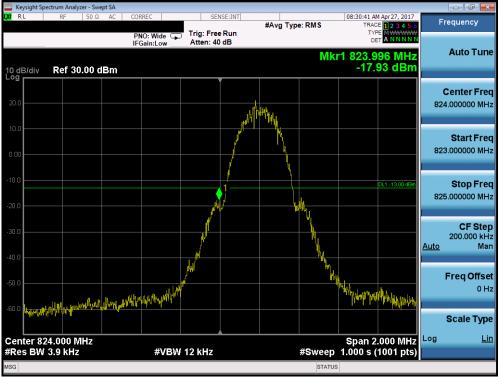
Per 22.917(b), 24.238(b), 27.53(h)(3), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions 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: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	UNG	roved by: ity Manager
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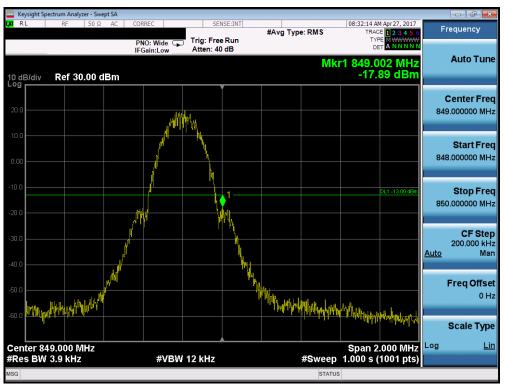
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Plot 7-53. Band Edge Plot (Cellular GPRS Mode - Ch. 128)

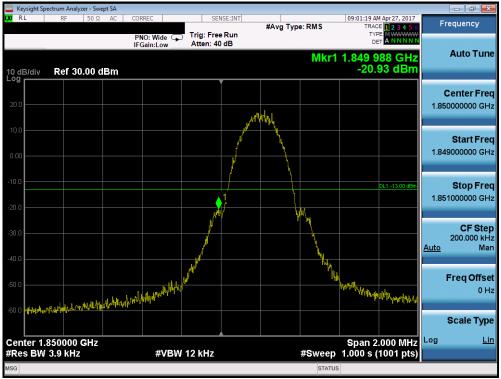


Plot 7-54. Band Edge Plot (Cellular GPRS Mode - Ch. 251)

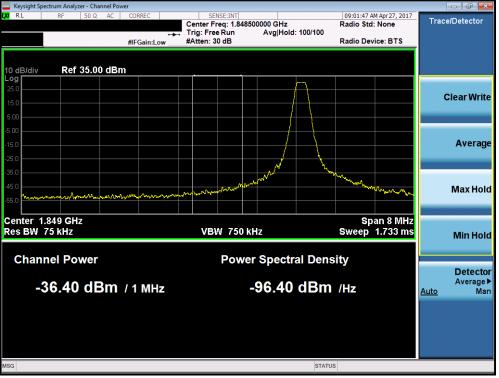
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 44 of 90
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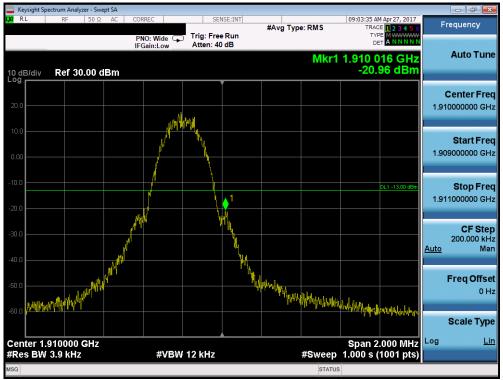


Plot 7-56. 4MHz Span Plot (PCS GPRS Mode – Ch. 512)

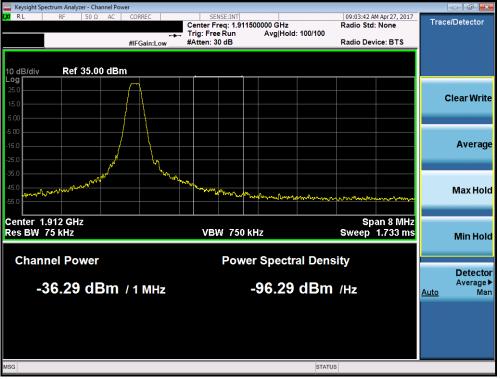
FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-58. 4MHz Span Plot (PCS GPRS Mode – Ch. 810)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 46 of 90
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Keysight Spe	ectrum Analyz	er - Swep	t SA										
LXU RL	RF	50 Ω	AC	CORREC PNO: Fa	ast 😱	Trig: Fre		#Avg Ty	be:RMS	TR	AM Apr 27, 2017 ACE 1 2 3 4 5 6 YPE A WWWWWW DET A N N N N N	F	requency
10 dB/div	Ref 30.	.00 dB	3m	IFGain:L	.ow	Atten: 4	0 dB		M	(r1 824.	000 MHz .71 dBm		Auto Tune
20.0							<u> </u>						Center Freq 1.000000 MHz
0.00								an after menor and a	marmon .			81	Start Freq 5.500000 MHz
-10.0							1				DL1 -13.00 dBm	83	Stop Freq 1.500000 MHz
-30.0											m	Auto	CF Step 1.500000 MHz Man
-50.0		~~~	whown										Freq Offset 0 Hz
-60.0 Center 82	24 000 M	H7								Snan	15.00 MHz	Log	Scale Type Lin
#Res BW				#	¢VBW	300 kH;	2		Sweep	1.867 ms	(1001 pts)		

Plot 7-59. Band Edge Plot (Cellular WCDMA Mode - Ch. 4132)



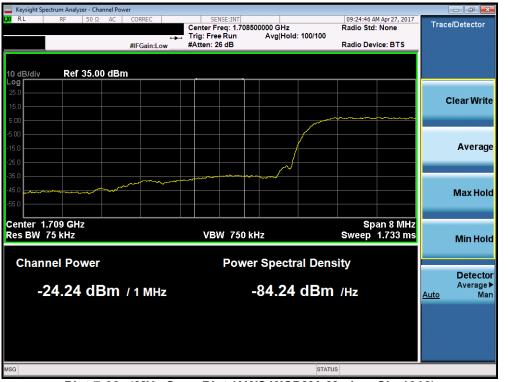
FCC ID: A3LSMJ330F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 47 of 80	
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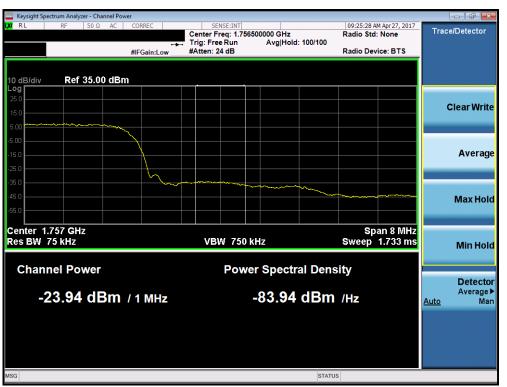
Plot 7-62. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer ·												
X	RF 5	ίοΩ (AC C	ORREC			SENSE:INT	#Avg Ty	pe:RMS	TRAC	M May 03, 2017	F	requency
				PNO: Fa FGain:L	st ↔	Trig: F Atten:	ree Run 40 dB		d: 100/100	TY	PE A WWWWW ET A NNNNN		
				FGain:L	0w	Atten	40 00		Mkr1	1 755 (000 GHz		Auto Tune
10 dB/div	Ref 30.0	0 dB	m							-18.9	43 dBm		
							Ĭ						Center Freq
20.0													5000000 GHz
10.0													
		1	and a start		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mund						17/	Start Freq 17500000 GHz
0.00		1										1.74	17300000 GH2
-10.0													
10.0							1				DL1 -13.00 dBm	4 70	Stop Freq 2500000 GHz
-20.0		\downarrow					Y					1.70	2500000 GH2
													CF Step
-30.0													1.500000 MHz
-40.0	~~~~ V						V	man a				<u>Auto</u>	Man
-40.0													
-50.0											· · · · · · · · · · · · · · · · · · ·		Freq Offset
													0 Hz
-60.0													O T
													Scale Type
	755000 GH	lz								Span 1	5.00 MHz	Log	<u>Lin</u>
#Res BW	100 kHz			#	VBW	300 kH	Z*		Sweep	1.867 ms	(1001 pts)		
ISG									STATU	IS			



Plot 7-63. Band Edge Plot (AWS WCDMA Mode – Ch. 1513)

Plot 7-64. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1513)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	A S U N G	Approved by: Quality Manager
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CORREC SET	e Run 0 dB	#Avg Type: R	Mkr1 1.8	17:27 AM Apr27, 202 TRACE 2 3 4 TYPE 4 WWW DET 4 NNN 50 0000 GH -21.99 dB	5 6 WW NN Z Auto T
IFGain:Low Atten: 40		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mkr1 1.8	50 000 GI	Auto T Center F 1.85000000 Start F
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			1.850000000 Start F
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	undand by		
			\		
	∮ ¹			DL1 -13.00 c	48m Stop F 1.857500000
				~~~~	CF S 1.500000 <u>Auto</u>
					FreqOf
					Scale T
			Sp	oan 15.00 M	Hz Log
		#VDW 200 kHz		Sr	Span 15.00 M #VBW 300 kHz Sweep 1.867 ms (1001 p

Plot 7-65. Band Edge Plot (PCS WCDMA Mode - Ch. 9262)



Plot 7-66. 4MHz Span Plot (PCS WCDMA Mode - Ch. 9262)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 50 of 90	
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RL         RF         SO Q. AC         CORREC         SENSE.INT         Image: Constant of the constant of	🦲 Keysight Spe	ctrum Analyze	er - Swep	ot SA										
PRO: Fast IFGain:Low       Trig: Free Run Atten: 40 dB       Mkr1 1.910 000 GHz         0 dB/div       Ref 30.00 dBm       -21.34 dBm         10 dB/div       Ref 30.00 dBm       -21.34 dBm         0 dB/div       -21.34 dBm       -21.34 dBm         10 dB/div       -21.34 dBm       -21.34 dBm         -20 dB/div       -21.34 dBm       -31.300 dBm         -20 dB/div       -11       -21.34	L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Tvp	e: RMS			Fr	equency
Inclusion       Mkr1 1.910 000 GHz       Auto Tune         10 gB/div       Ref 30.00 dBm											т			
10 dB/div       Ref 30.00 dBm       -21.34 dBm         200					IFGain:Lo	DW	Atten: 4	U dB		Mice				Auto Tune
200 200 200 200 200 200 200 200	10 dB/div	Ref 30.	00 d	Bm						IVIKI	-21	.34 dBm		
200 1.91000000 GHz 1.9100000 GHz #VBW 300 kHz 1.9100000 GHz #VBW 300 kHz 1.9100000 GHz 1.9100000 GHz 1.910000 GHz 1.9100000 GHz 1.910000 GHz 1.910000 GHz 1.910000 GHz 1.9100000 GHz 1.910000 GHz 1.9100								Ĭ						
100 100 100 100 100 100 100 100	20.0													
Start Freq 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	20.0												1.91	0000000 GHZ
0.00 100 -00 -00 -00 -00 -00 -00 -	10.0													
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			1015		#	VBW	300 kHz			Sweep	1.867 ms	(1001 pts)		
STATUS	MSG													





### Plot 7-68. 4MHz Span Plot (PCS WCDMA Mode - Ch. 9538)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 51 of 90	
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V 6.3 03/24/2017



#### 7.5 Peak-Average Ratio §24.232(d)

#### **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 v02r02 - Section 5.7.1

#### Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 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.

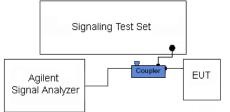


Figure 7-4. Test Instrument & Measurement Setup

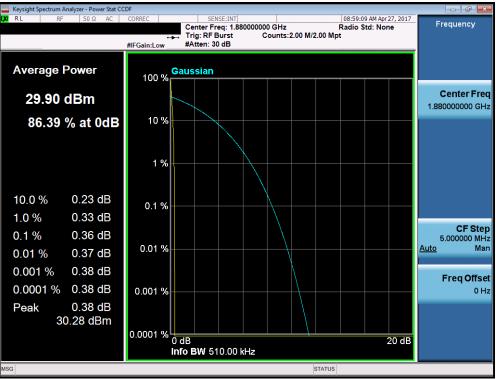
#### **Test Notes**

None

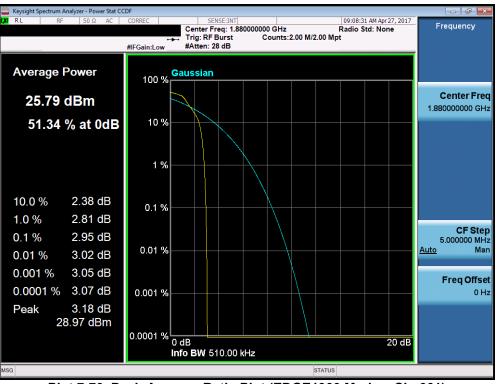
FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 90
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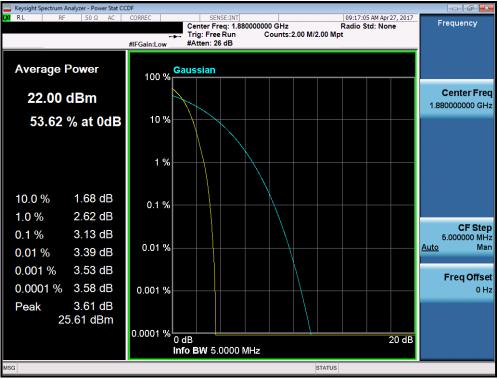






FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 52 of 90
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Plot 7-71. Peak-Average Ratio Plot (PCS WCDMA Mode - Ch. 9400)

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Test Report S/N:	Test Dates:	EUT Type:		Daga 54 of 90	
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#### 7.6 Radiated Power (ERP/EIRP) §22.913(a)(2) 24.232(c) 27.50(d.4)

#### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 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 v02r02 - Section 5.2.1

ANSI/TIA-603-D-2010 - 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  $\geq 2 \times \text{span} / \text{RBW}$
- 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

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Test Report S/N:	Test Dates:	EUT Type:		Daga EE of 90	
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### Test Setup

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

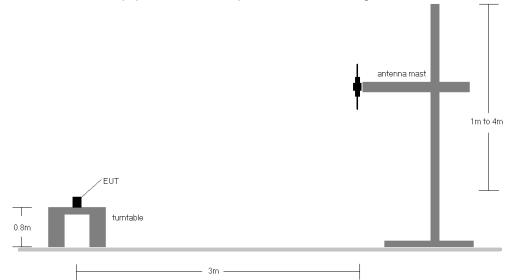


Figure 7-5. Radiated Test Setup <1GHz

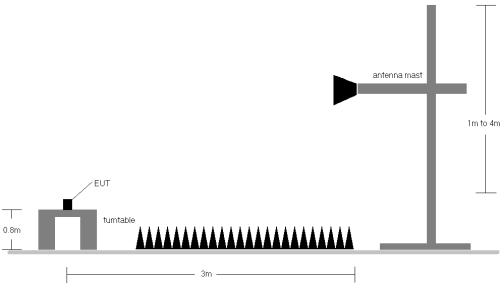


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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- 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 1	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.20	GPRS850	Н	165	209	26.18	5.49	31.67	1.468	38.45	-6.78
836.60	GPRS850	Н	165	202	26.25	5.13	31.38	1.376	38.45	-7.07
848.80	GPRS850	Н	177	166	25.81	4.68	30.49	1.120	38.45	-7.96
824.20	GPRS850	V	139	234	25.01	5.36	30.37	1.089	38.45	-8.08
824.20	EDGE850	Н	165	209	21.04	5.49	26.53	0.449	38.45	-11.92

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

Frequency [MHz]	Mode	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	150	25	22.18	-0.65	21.53	0.142	38.45	-16.92
836.60	WCDMA850	V	150	34	22.07	-0.65	21.42	0.139	38.45	-17.03
846.60	WCDMA850	V	150	24	22.15	-0.65	21.50	0.141	38.45	-16.95
826.40	WCDMA850	Н	150	39	20.14	-0.65	19.49	0.089	38.45	-18.96

Table 7-3. ERP (Cellular WCDMA)

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V 1	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	123	18.14	5.55	23.69	0.234	30.00	-6.31
1732.60	WCDMA1700	Н	150	102	19.75	5.41	25.16	0.328	30.00	-4.84
1752.60	WCDMA1700	Н	150	121	18.91	5.27	24.18	0.262	30.00	-5.82
1732.60	WCDMA1700	V	150	136	17.87	5.41	23.28	0.213	30.00	-6.72

Table 7-4. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V 1	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	100	72	12.63	9.12	21.75	0.150	33.01	-11.26
1880.00	GPRS1900	Н	101	86	21.46	9.10	30.56	1.138	33.01	-2.45
1909.80	GPRS1900	Н	100	82	21.72	9.16	30.88	1.226	33.01	-2.13
1909.80	GPRS1900	V	100	364	20.70	8.98	29.68	0.929	33.01	-3.33
1909.80	EDGE1900	Н	100	82	15.99	9.16	25.15	0.328	33.01	-7.86

Table 7-5. EIRP (PCS GPRS/EGPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	V	150	34	17.74	4.79	22.53	0.179	33.01	-10.48
1880.00	WCDMA1900	V	150	26	18.00	4.84	22.84	0.193	33.01	-10.17
1907.60	WCDMA1900	V	150	29	17.66	4.87	22.53	0.179	33.01	-10.48
1880.00	WCDMA1900	н	150	325	17.81	4.74	22.55	0.180	33.01	-10.46

Table 7-6. EIRP (PCS WCDMA)

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#### 7.7 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) 24.238(a) 27.53(h)

#### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 v02r02 - Section 5.8

ANSI/TIA-603-D-2010 - 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

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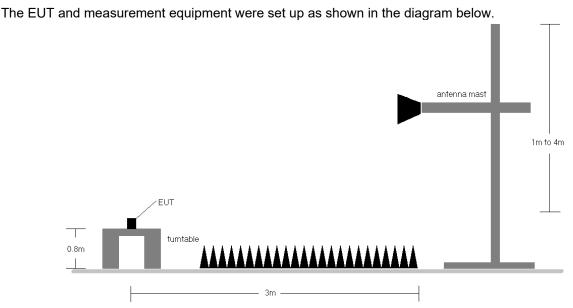


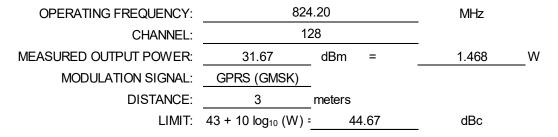
Figure 7-7. Test Instrument & Measurement Setup

#### 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.

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Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1648.40	Н	125	207	-48.45	6.30	-42.15	73.8
2472.60	Н	108	232	-54.42	6.85	-47.57	79.2
3296.80	Н	-	-	-62.89	7.12	-55.77	87.4

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

OPERATING FREQUENCY:	836	6.60	MHz	
CHANNEL:	19			
MEASURED OUTPUT POWER:	31.38	dBm =	1.376 V	/
MODULATION SIGNAL:	GPRS (GMSK)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	44.38	dBc	

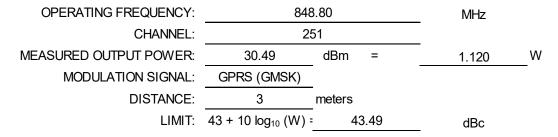
Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.20	Н	114	238	-46.62	6.21	-40.42	71.8
2509.80	Н	110	323	-59.21	6.86	-52.35	83.7
3346.40	Н	-	-	-63.15	7.26	-55.89	87.3

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1697.60	Н	106	227	-43.46	6.12	-37.34	67.8
2546.40	Н	189	188	-51.44	6.97	-44.47	75.0
3395.20	Н	111	1	-61.99	7.41	-54.58	85.1
4244.00	Н	-	-	-65.73	8.39	-57.34	87.8

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

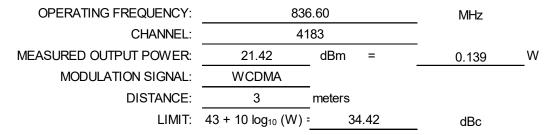
OPERATING FREQUENCY:	826	MHz	
CHANNEL:	41		
MEASURED OUTPUT POWER:	21.53	dBm =	0.142 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	34.53	dBc

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1652.80	V	-	-	-74.42	6.27	-68.15	89.7
2479.20	V	-	-	-70.99	6.88	-64.10	85.6

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA 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]	Antonna (Jain	Spurious Emission Level [dBm]	[dBc]
1673.20	V	110	313	-73.73	6.21	-67.52	88.9
2509.80	V	-	-	-71.57	6.90	-64.67	86.1

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

OPERATING FREQUENCY:	846	6.60	MHz	
CHANNEL:	42			
MEASURED OUTPUT POWER:	21.50	dBm =	0.141	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	34.50	dBc	

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antenna Gain	Spurious Emission Level [dBm]	[dBc]
1693.20	V	110	309	-72.70	6.15	-66.54	88.0
2539.80	V	-	-	-71.72	7.00	-64.72	86.2

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	2.40	MHz		
CHANNEL:	13			
MEASURED OUTPUT POWER:	23.69	dBm =	0.234	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	36.69	dBc	

Frequency [MHz]	Ant. Pol. [H/V ]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antonna (Lain	Spurious Emission Level [dBm]	[dBc]
3424.80	Н	110	232	-64.76	9.65	-55.11	78.8
5137.20	Н	-	-	-67.22	10.91	-56.31	80.0

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

OPERATING FREQUENCY:	1733	2.60	MHz	
CHANNEL:	14			
MEASURED OUTPUT POWER:	25.16	dBm =	0.328	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	38.16	dBc	

Frequency [MHz]	Ant. Pol. [H/V ]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antenna Gain	Spurious Emission Level [dBm]	[dBc]
3465.20	Н	110	234	-64.43	9.77	-54.65	79.8
5197.80	Н	-	-	-67.24	10.81	-56.43	81.6

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	175	2.60	MHz	
CHANNEL:	15			
MEASURED OUTPUT POWER:	24.18	dBm =	0.262	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	37.18	dBc	

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]	[dBc]
3505.20	Н	110	312	-60.82	9.89	-50.94	75.1
5257.80	Н	-	-	-66.70	10.92	-55.78	80.0

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

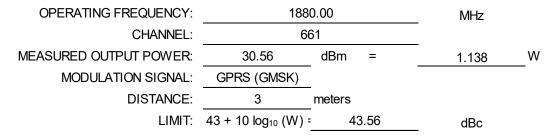
OPERATING FREQUENCY:	1850.20	MHz
CHANNEL:	512	
MEASURED OUTPUT POWER:	21.75 dBm =	0.150 W
MODULATION SIGNAL:	GPRS (GMSK)	
DISTANCE:	3meters	
LIMIT:	43 + 10 log ₁₀ (W) = 34.75	dBc
	$+3 + 10 \log_{10}(00)^{-3}$	

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3700.40	Н	110	36	-59.99	10.03	-49.96	71.7
5550.60	Н	110	26	-65.04	11.18	-53.86	75.6

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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Frequenc [MHz]	Ant cy Pol [H/\ ]	Antenna Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antonna Gain	Spurious Emission Level [dBm]	[dBc]
3760.00	) Н	101	36	-59.42	9.79	-49.63	80.2
5640.00	) Н	101	38	-62.70	11.35	-51.35	81.9
7520.00	) Н	-	-	-58.60	11.22	-47.38	77.9

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

OPERATING FREQUENCY:	190	9.80	MHz
CHANNEL:	8		
MEASURED OUTPUT POWER:	30.88	dBm =	1.226 W
MODULATION SIGNAL:	GPRS (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	43.88	dBc

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3819.60	Н	100	53	-57.85	9.56	-48.29	79.2
5729.40	Н	114	327	-58.82	11.43	-47.38	78.3
7639.20	Н	-	-	-58.16	11.50	-46.66	77.5

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
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OPERATING FREQUENCY:	185	MHz		
CHANNEL:	92			
MEASURED OUTPUT POWER:	22.53	dBm =	0.179	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	35.53	dBc	

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]	[dBc]
3704.80	V	110	317	-69.06	10.07	-58.99	81.5
5557.20	V	-	-	-66.58	11.21	-55.36	77.9

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

OPERATING FREQUENCY:	188	0.00	MHz	
CHANNEL:	94	00		
MEASURED OUTPUT POWER:	22.84	dBm =	0.193 W	
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	35.84	dBc	

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antenna Gain	Spurious Emission Level [dBm]	[dBc]
3760.00	V	110	291	-69.06	9.80	-59.26	82.1
5640.00	V	-	-	-67.33	11.37	-55.96	78.8

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
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OPERATING FREQUENCY:	190	7.60	MHz
CHANNEL:	95		
MEASURED OUTPUT POWER:	22.53	dBm =	0.179 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	35.53	dBc

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]	[dBc]
3815.20	V	110	297	-67.64	9.56	-58.07	80.6
5722.80	V	-	-	-66.55	11.45	-55.10	77.6

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

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### 7.8 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

#### Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### Test Procedure Used

#### ANSI/TIA-603-D-2010

#### 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

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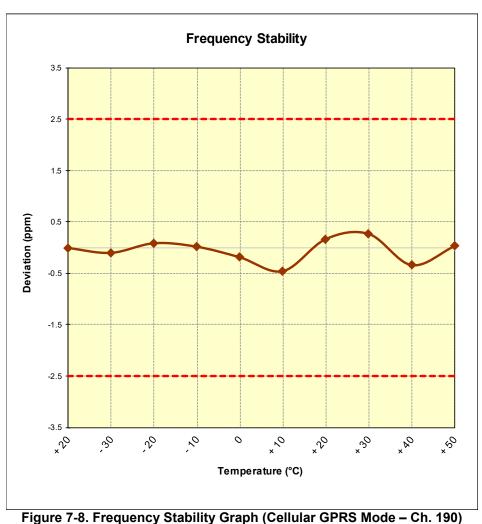
OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	190	
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,599,991	-9	-0.0000011
100 %		- 30	836,599,912	-88	-0.0000105
100 %		- 20	836,600,067	67	0.0000080
100 %		- 10	836,600,011	11	0.0000013
100 %		0	836,599,840	-160	-0.0000191
100 %		+ 10	836,599,618	-382	-0.0000457
100 %		+ 20	836,600,135	135	0.0000161
100 %		+ 30	836,600,217	217	0.0000259
100 %		+ 40	836,599,714	-286	-0.0000342
100 %		+ 50	836,600,022	22	0.0000026
BATT. ENDPOINT	3.45	+ 20	836,599,806	-194	-0.0000232

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

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Hz	836,600,000	OPERATING FREQUENCY:	
	4183	CHANNEL:	
VDC	3.85	REFERENCE VOLTAGE:	

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,600,195	195	0.0000233
100 %		- 30	836,600,129	129	0.0000154
100 %		- 20	836,599,970	-30	-0.0000036
100 %		- 10	836,599,938	-62	-0.0000074
100 %		0	836,599,901	-99	-0.0000118
100 %		+ 10	836,600,155	155	0.0000185
100 %		+ 20	836,600,131	131	0.0000157
100 %		+ 30	836,600,103	103	0.0000123
100 %		+ 40	836,600,419	419	0.0000501
100 %		+ 50	836,599,997	-3	-0.0000004
BATT. ENDPOINT	3.45	+ 20	836,600,150	150	0.0000179

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

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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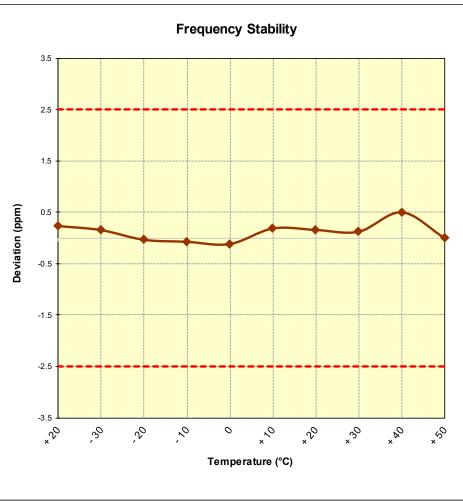


Figure 7-9. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,600,258	258	0.0000149
100 %		- 30	1,732,599,995	-5	-0.0000003
100 %		- 20	1,732,600,273	273	0.0000158
100 %		- 10	1,732,600,204	204	0.0000118
100 %		0	1,732,600,138	138	0.0000080
100 %		+ 10	1,732,600,096	96	0.0000055
100 %		+ 20	1,732,599,513	-487	-0.0000281
100 %		+ 30	1,732,600,100	100	0.0000058
100 %		+ 40	1,732,599,789	-211	-0.0000122
100 %		+ 50	1,732,599,985	-15	-0.0000009
BATT. ENDPOINT	3.45	+ 20	1,732,599,572	-428	-0.0000247

 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 inband 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.

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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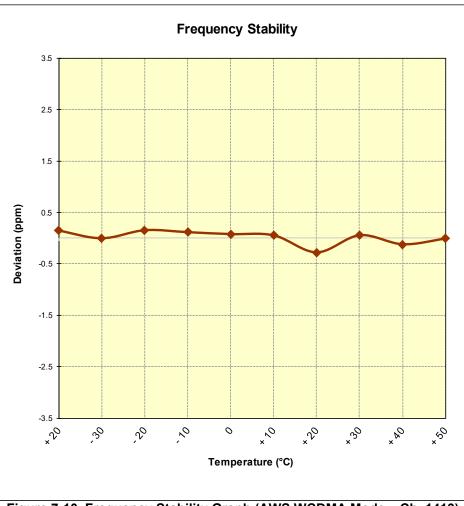


Figure 7-10. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Hz	1,880,000,000	OPERATING FREQUENCY:	
	661	CHANNEL:	
VDC	3.85	REFERENCE VOLTAGE:	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,880,000,130	130	0.0000069
100 %		- 30	1,879,999,757	-243	-0.0000129
100 %		- 20	1,879,999,694	-306	-0.0000163
100 %		- 10	1,879,999,795	-205	-0.0000109
100 %		0	1,879,999,730	-270	-0.0000144
100 %		+ 10	1,879,999,609	-391	-0.0000208
100 %		+ 20	1,879,999,717	-283	-0.0000151
100 %		+ 30	1,879,999,925	-75	-0.0000040
100 %		+ 40	1,880,000,259	259	0.0000138
100 %		+ 50	1,879,999,797	-203	-0.0000108
BATT. ENDPOINT	3.45	+ 20	1,879,999,884	-116	-0.0000062

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

#### 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 inband 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.

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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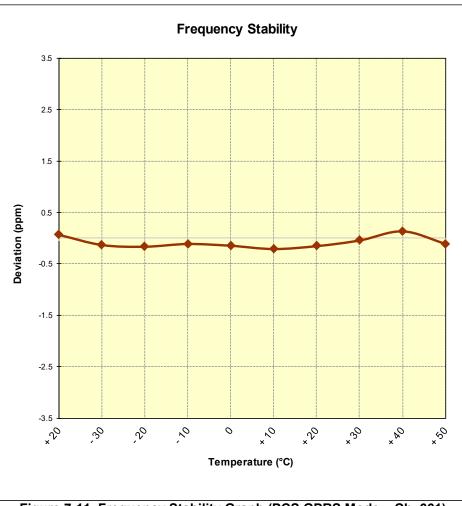


Figure 7-11. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,880,000,217	217	0.0000115
100 %		- 30	1,879,999,577	-423	-0.0000225
100 %		- 20	1,879,999,839	-161	-0.0000086
100 %		- 10	1,880,000,078	78	0.0000041
100 %		0	1,880,000,350	350	0.0000186
100 %		+ 10	1,880,000,083	83	0.0000044
100 %		+ 20	1,880,000,249	249	0.0000132
100 %		+ 30	1,880,000,083	83	0.0000044
100 %		+ 40	1,880,000,049	49	0.0000026
100 %		+ 50	1,879,999,776	-224	-0.0000119
BATT. ENDPOINT	3.45	+ 20	1,879,999,850	-150	-0.0000080

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

#### 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 inband 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.

FCC ID: A3LSMJ330F	PCTEST	FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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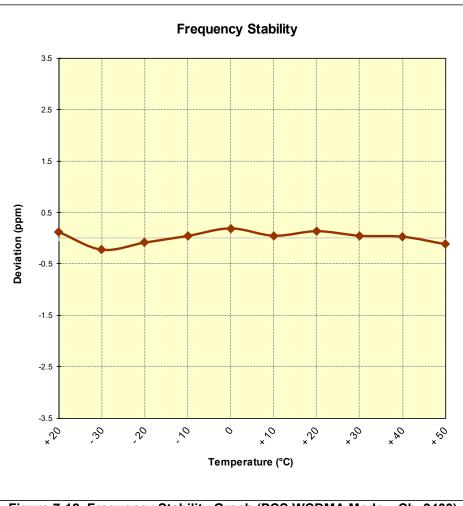


Figure 7-12. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ330F		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA 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: A3LSMJ330F** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules.

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