

PCTEST

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MEASUREMENT REPORT GSM / GPRS / EDGE / CDMA / WCDMA

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 3/23 - 5/7/2020 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M2003200047-09.A3L

FCC ID:

A3LSMA716U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-A716U Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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

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

Randy Ortanez President



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			EF	RP	EIRP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator
GPRS850	22H	824.2 - 848.8	0.533	27.27	0.875	29.42	245KGXW
EDGE850	22H	824.2 - 848.8	0.165	22.18	0.271	24.33	243KG7W
CDMA850	22H	824.70 - 848.31	0.069	18.39	0.113	20.54	1M28F9W
WCDMA850	22H	826.4 - 846.6	0.053	17.22	0.087	19.37	4M17F9W
WCDMA1700	27	1712.4 - 1752.6			0.223	23.49	4M17F9W
GPRS1900	24E	1850.2 - 1909.8			0.899	29.54	243KGXW
EDGE1900	24E	1850.2 - 1909.8			0.521	27.17	243KG7W
CDMA1900	24E	1851.25 - 1908.75			0.312	24.94	1M30F9W
WCDMA1900	24E	1852.4 - 1907.6			0.254	24.05	4M16F9W

EUT Overview

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

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

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

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA716U**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

Test Device Serial No.: 05500, 53591, 12058, 19097, 43014, 11985

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA (BC0, BC1, BC10), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n71, n5, n66, n2, n41), 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC, ANT+

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

2.3 Test Configuration

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

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

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

Deviation from Measurement Procedure.....None

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3.2 Radiated Measurements

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

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

 $P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_{g [dBm]}$ – cable loss [dB].

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
-	LTx3	LIcensed Transmitter Cable Set	6/3/2019	Annual	6/3/2020	LTx3
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/14/2019	Biennial	2/14/2021	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp		N/A	-	QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034

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

GSM Emission Designator

Emission Designator = 250KGXW

GSM 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)

CDMA Emission Designator

Emission Designator = 1M25F9W

CDMA BW = 1.25 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M16F9W

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

Spurious Radiated Emission

Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMA716U
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM / GPRS / EDGE / CDMA / WCDMA</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	RSS-Gen (4.6.1) RSS-133(2.3) RSS-139(2.3)	Occupied Bandwidth	N/A		PASS	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Conducted Band Edge / Spurious Emissions	> 43 + 10 \log_{10} (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Sections 7.3, 7.4
24.232(d)	RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	RSS-132(5.4) RSS-133(4.1) RSS-139(4.1)	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-132(5.3) RSS-133(6.3) RSS-139(6.4)	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24, 27)		PASS	Section 7.8
22.913(a)(5)	RSS-132(5.4)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 7.6
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Radiated Spurious Emissions	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "2G/3G Automation," Version 4.2.

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7.2 Occupied Bandwidth

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

Test Settings

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

Test Setup

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



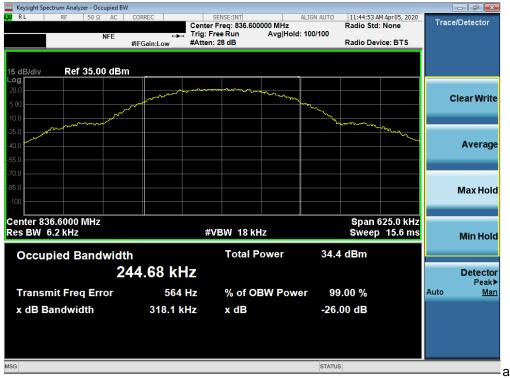
Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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



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

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Keysight Spectrum Analyzer - Occupied BW						_	
LXI RL RF 50Ω AC	CORREC Cente	SENSE:INT Freg: 1.880000000 GHz	ALIGN AUTO	12:04:24 P	M Apr 05, 2020	Trac	e/Detector
NFE	🛶 Trig:	Free Run Avg Hol	d: 100/100				
	#IFGain:Low #Atte	n: 26 dB		Radio Dev	ice: BTS		
15 dB/div Ref 25.00 dBm			-				
Log 10.0		men man					
-5.00	m		The second secon			(Clear Write
-20.0			My My	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
-35.0					mont		
-50.0							Average
							Average
-65.0							
-80.0							
-95.0							Max Hold
-110							
Center 1.8800000 GHz				Span f	625.0 kHz		
Res BW 6.2 kHz	#	VBW 18 kHz			15.6 ms		Min Hold
							Millinoid
Occupied Bandwidth		Total Power	33.3	dBm			
24	2.75 kHz						Detector
							Peak►
Transmit Freq Error	289 Hz	% of OBW Pow	ver 99	.00 %		Auto	Man
x dB Bandwidth	314.7 kHz	x dB	-26.	00 dB			
MSG			STATUS	3			

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



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

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www.www.com with the sectrum Analyzer - Occupied BW						
LX/RL RF 50Ω AC	CORREC	SENSE:INT		IGN AUTO 12:28:55 A Radio Std	AM Apr 07, 2020	Trace/Detector
		Trig: Free Run	Avg Hold: 10	00/100		
	#IFGain:Low	#Atten: 28 dB		Radio De	vice: BTS	
10 dB/div Ref 40.00 dBm	1					
Log						
30.0						Clear Write
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	s m			orear mile
10.0						
0.00						
-10.0						Average
-20.0						
-30.0 -30.0	man a		V.,	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-40.0 pm					mmun	
						Max Hold
-50.0						
Center 836.520 MHz				Span 4	1.500 MHz	
Res BW 43 kHz		#VBW 130	kHz		2.333 ms	Min Hold
						iniirriota
Occupied Bandwidt	h	Total	Power	31.4 dBm		
1.3	2839 MH	7				Detector
						Peak▶
Transmit Freq Error	2.308 kl	lz % of C	BW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	1.456 MI	lz xdB		-26.00 dB		
				1		
MSG				STATUS		

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



Plot 7-6. Occupied Bandwidth Plot (PCS CDMA Mode)

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



Plot 7-8. Occupied Bandwidth Plot (AWS WCDMA Mode)

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Keysight Spectrum Analyzer - Oo												
LX/ RL RF 50 Ω	2 AC	CORREC			NSE:INT reg: 1.8800	00000		ALIGN AUTO	12:40:16 P Radio Std	M Apr 05, 2020	Trac	e/Detector
	NFE		ъ. Т	rig: Free	e Run			:>100/100				
,	i	#IFGain:Low	v#	Atten: 2	6 dB				Radio Dev	vice: BTS		
10 dB/div Ref 35.0	00 dBm											
25.0												
15.0			m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	······	m						Clear Write
		/										
5.00		- /					1					
-5.00							1					_
-15.0	handread	مر المراجع الم						man have				Average
-25.0 which have have here	- Astrony we	~						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	manner	marm		
-35.0												
-45.0												Max Hold
-55.0												
Center 1.880000 GHz Res BW 150 kHz				#\/E	3W 470	6U7				5.00 MHz eep 1 ms		
Res BW TJU KHZ				#VE	999 470	KΠZ			SWG	eep rins		Min Hold
Occupied Band	dwidth				Total I	owe	r	32.6	6 dBm			
		580 I										Detector
	4.1	900 I										Detector Peak▶
Transmit Freq Er	ror	4.37	′6 kHz	Z	% of O	BWI	owe	er 99	9.00 %		Auto	Man
x dB Bandwidth		1 76	9 MHz		x dB			-26	.00 dB			
		4.70	3 WIT14	2	X UB			-20.				
MSG								STATU	s			

Plot 7-9. Occupied Bandwidth Plot (PCS WCDMA Mode)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SUNG	Approved by: Quality Manager
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7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz for Cell, 20GHz for AWS, 20GHz for PCS (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

Per 24.238(b), 27.53(h)(3), and RSS-133(6.5), RSS-139(6.5), compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1MHz, and 100 kHz or greater for Part 22 and RSS-132 measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

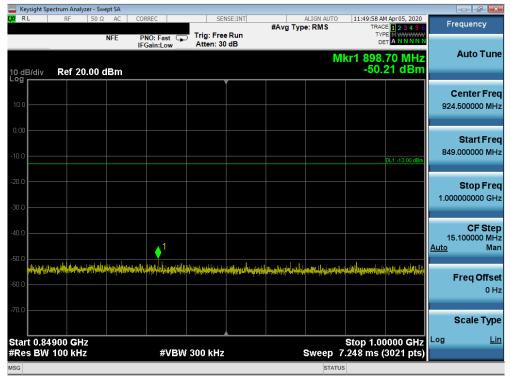
FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Cellular GPRS Mode

	ectrum Anal		SA									
<mark>0</mark> RL	RF	50 Ω /	E P	RREC			#Avg Typ	ALIGN AUT e: RMS	TRA	M Apr 05, 2020 CE 1 2 3 4 5 6 PE M WWWWW ET A N N N N N	Fr	equency
0 dB/div	Ref 2	0.00 dB		Gain:Low	Atten: 30				Mkr1 822			Auto Tune
- og 10.0												Center Free
0.00										DL1 -13.00 dBm	30	Start Fre
20.0										1	823	Stop Fre 0000000 MH
40.0											79 <u>Auto</u>	CF Ste .300000 MH Ma
60.0 <mark>44/544</mark>	artyskil honstei Administration	dh _{aille (math}	and population matter	logi despi	a na ang tang tang tang tang tang tang t	4167) (17441) (17 1744 - 1944) (1744)	er het het de services de la 19 de services de la transfèrie	ay by py P processing to a	ng thang ang ang ang ang ang ang ang ang ang	an dan di Kalipang kangal Kanadi Kalipang kangan Kanadi Kalipang kangan		Freq Offse 0 H
70.0									Oton 9		Log	Scale Type
fart 30.0 Res BW		z		#VBW	/ 300 kHz		S	weep	38.06 ms (1	23.0 191112	_	
ISG									TUS			

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



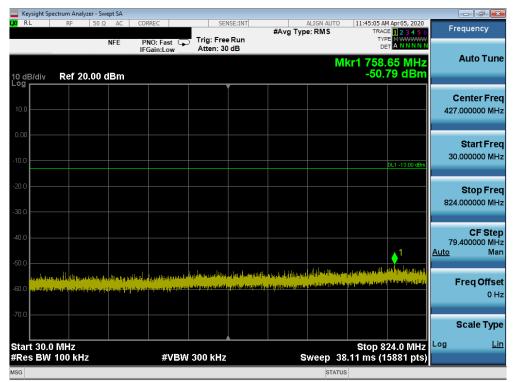
Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)

FCC ID: A3LSMA716U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Spectr	um Analyzer - S	Swept SA								
L <mark>X/</mark> RL	RF 50	Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUT		AM Apr 05, 2020 CE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast 🕞 IFGain:Low	Trig: Free #Atten: 2		#AV9 19P	e. KW3	TT I		
10 dB/div	Ref 10.00	dBm						Mkr1 1.64 -35	8 5 GHz .77 dBm	Auto Tuno
0.00										Center Free 5.500000000 GH
-10.0									DL1 -13.00 dBm	Start Free 1.000000000 GH
-30.0	1	السالطين بي	ar militar mar al r	والمعرفين والتقالين والمعافل	NP MIRT IN MIN	al all and a large for	a dha galla galladha	in a first and the second s	Iralaa Iradaraan	Stop Free 10.000000000 GH
-50.0		and and a state of the	n an ¹⁹⁴ 8 na pring _{na} anti-da gan an ¹⁹⁴ 8 na pring panagan na pring pan Internet an		, all to an all the second	- Nucley and seath		na hirologia Na hirologia Na hirologia	en e	CF Step 900.000000 MH <u>Auto</u> Mar
-70.0										Freq Offse 0 H
-80.0 Start 1.000								Stop 1	0.000 0112	Scale Type
#Res BW 1.	0 MHz		#VBW	/ 3.0 MHz		s	weep	15.60 ms (18001 pts)	
MSG							STA	ATUS		

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



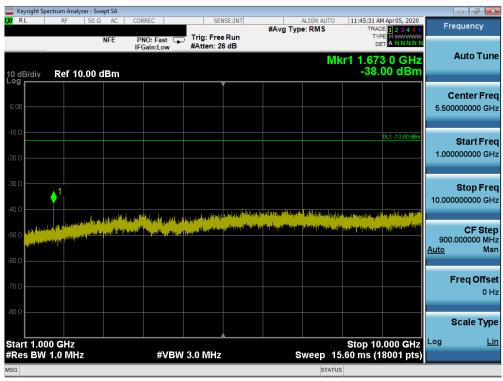
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analy									- -
LXVI RL RF	50 Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	1 Apr 05, 2020 E 1 2 3 4 5 6	Frequency
10 dB/div Ref 20	NFE 0.00 dBm	PNO: Fast IFGain:Low	Trig: Free Atten: 30			М	be kr1 858.	80 MHz 24 dBm	Auto Tune
10.0									Center Freq 924.500000 MHz
-10.0								DL1 -13.00 dBm	Start Freq 849.000000 MHz
-20.0									Stop Freq 1.000000000 GHz
-40.0									CF Step 15.100000 MHz <u>Auto</u> Man
-60.0	hinger an	halan analan ana	Annyin in anna anna an	rdan Miliania	appeletation in	ata dikeba yaka	n Milden an Antonio Mildon	and the plant of the plant	Freq Offset 0 Hz
-70.0 Start 0.84900 GH #Res BW 100 kH		#) (B)44	200 kU-			Swoon	Stop 1.00	0000 GHz	Scale Type
#Res BW 100 KH	2	#VBW	300 kHz			sweep i	7.248 ms (5021 pts)	

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



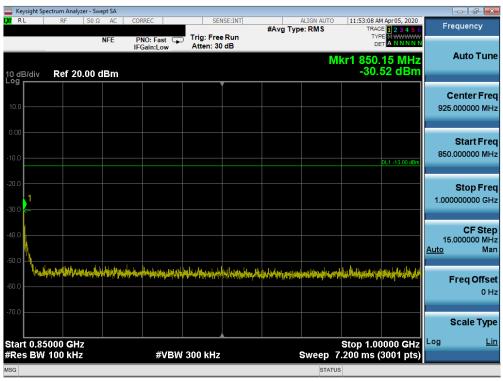
Plot 7-15. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	m Analyzer - Swept SA									
LXU RL	RF 50 Ω AC	CORREC	SENS	E:INT	Avg Type	LIGN AUTO	TRAC	M Apr 05, 2020	Fred	quency
	NFE	PNO: Fast IFGain:Low	Trig: Free Atten: 30 o			M	DE kr1 751 .		٨	uto Tune
10 dB/div R	tef 20.00 dBm						-51.	41 dBm		
10.0										e nter Freq 00000 MHz
-10.0								DL1 -13.00 dBm		Start Freq 00000 MHz
-20.0										Stop Freq 00000 MHz
-40.0								<u>↓</u> 1	79.4 <u>Auto</u>	CF Step 00000 MHz Man
-50.0 -60.0 <mark>Kinner, Birler Kinner, Birler</mark>	aladoshika senapilari (pilovativa) s Aladoshika senapilari (pilazaken) s	t <mark>y (</mark> yta meneristika) Atla ureitikani biratikani juta	ul foruna una c	an a	nyahisi di kangi sa	(perti) testi (na stala setter (setter) (set 1912 - Setter (setter) (set	adiminis (todyspin 1946 genericienty as	Fr	e q Offset 0 Hz
-70.0										cale Type
Start 30.0 M #Res BW 10		#VBW	300 kHz		Su	veep 3	8 Stop 8.11 ms (1	24.0 MHz 5881 pts)	Log	Lin
MSG						STATU				

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



Plot 7-17. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Sv										di X
LX RL RF 50 9	NFE P	RREC	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 05, 2020 E 1 2 3 4 5 6 PE M WWWWW T A N N N N N	Frequer	псу
10 dB/div Ref 10.00		Gain:Low	#Atten: 28	8 dB		MI	(r1 7.25	3 0 GHz 95 dBm	Auto	Tune
0.00									Cente 5.5000000	e r Freq 00 GHz
-20.0								DL1 -13.00 dBm	Star 1.0000000	t Freq 00 GHz
-30.0		^{te s} tenda na te _{na} na kana st	all and all a second and a second a se	and and a state of the state of	(¹ ngnaga) (1) ango gr	1	al allal franksian.	li <mark>na</mark> kanya sikiny	Sto 10.0000000	p Freq 00 GHz
-50.0	nda ko ^{duk} atipistu	Succession of the sub-	doorsy is posified and a second s		and a start		lete egyithetteline of public plant		C 900.0000 <u>Auto</u>	F Step 00 MHz Man
-70.0									Freq	Offset 0 Hz
-80.0 Start 1.000 GHz							Stop 10	.000 0112	Log	e Type <u>Lin</u>
#Res BW 1.0 MHz		#VBW	3.0 MHz		S	weep 15		8001 pts)		

Plot 7-18. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

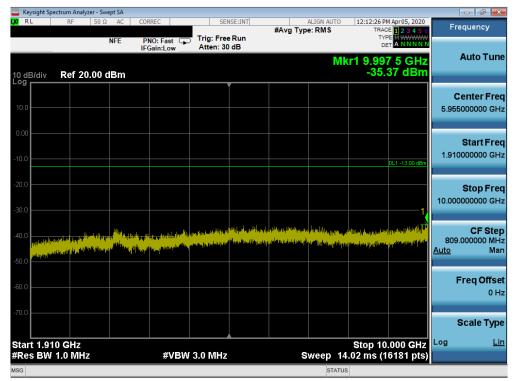
FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 108
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PCS GPRS Mode

Keysight Spe	ectrum Analy	/zer - Swept	: SA										- # =×
C RL	RF	50 Ω	AC	CORREC		SEI	SE:INT		ALIGN AUTO		PM Apr 05, 2020	Fred	quency
		N	E	PNO: Fa	st 🕟	Trig: Free		#Avg Ty	/pe: RMS	TRU	ACE 1 2 3 4 5 6 YPE M WWWW DET A N N N N N	1100	lacity
			-	IFGain:Lo	ow	Atten: 30	dB						
									Μ	kr1 1.44	46 5 GHz	A	uto Tun
0 dB/div	Ref 20	0.00 dE	ßm							-40	.01 dBm		
.~~												6.	enter Fre
10.0													
10.0												937.5	00000 MH
0.00													Start Fre
													00000 MI
10.0											DL1 -13.00 dBm	50.0	00000 141
20.0												9	Stop Fr
													00000 GI
30.0													
										1			
10.0)		1015	CF Ste
as dana	وروبان المرادي		on the last	And a standard	and the second second	İşişi e rlişiyeki	الانتجام التجول		and the second			181.5 Auto	M 00000 M M
0.0		COLUMN D	The second second									Auto	
~~													
50.0												Fr	eq Offs
0.0													0
70.0													cale Ty
												5	cale Ty
tart 0.03	00 GHz									Stop 1	.8450 GHz	Log	L
Res BW				#	VBW 3	.0 MHz			Sweep	2.420 ms	(3631 pts)		
SG									STATU		1		_
9									STAT				

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



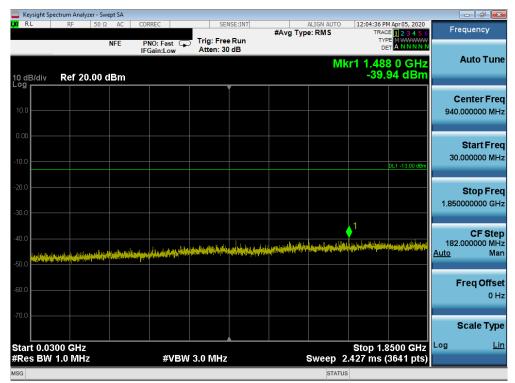
Plot 7-20. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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Log Ref 10 dB/div Ref 0.00	50.0 AC	CORREC PNO: Fast IFGain:Low) Trig: Free R Atten: 20 di	#Avg un	ALIGN AUTO Type: RMS	000 -37.04	2 3 4 5 6	Frequency Auto Tune Center Frec 2000000000 GH2 Start Frec 2000000000 GH2
Log 0.00 -10.0 -20.0 -30.0 -40.0 5.0 0 5.0 0		PNU: Fast			Mkr	000 -37.04	115.00 dBm	Center Free 000000000 GH: Start Free
-10.0 -20.0 -30.0						DL1 -	-13.00 dBm	000000000 GH Start Free
20.0						DL1 -		
-40.0								
-50.0 you have been a source of the second			And the state of the	Louistered Depth and Depth and Ph	The state of the s			Stop Fre 000000000 G⊦
60.0		end ingen generig ig de en de en en en genere en geleen van en		del de désigne de secretes poble			1.0 Auto	CF Ste 00000000 GF 0 Ma
80.0								Freq Offs 0 H
Start 10.000 GH						Stop 20.00	0 GHz ^{Log}	Scale Typ
#Res BW 1.0 MI		4437 D 107	3.0 MHz		Sweep 2:	5.33 ms (200	01 pts)	

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



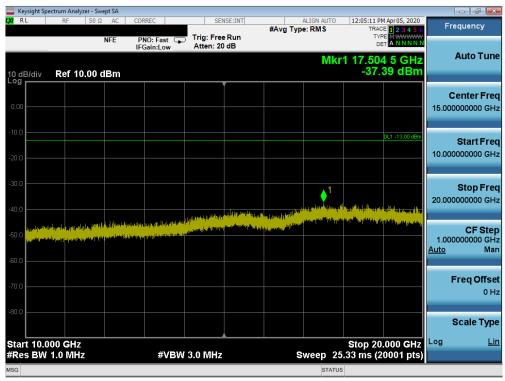
Plot 7-22. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ctrum Analyzer - Sv									-	×
LXVI RL	RF 50 \$	2 AC C	DRREC		ISE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 05, 2020 DE 1 2 3 4 5 6	Frequency	
10 dB/div	Ref 20.00	. II	PNO: Fast 🕞 Gain:Low	Trig: Free Atten: 30			М	bi kr1 6.57	8 0 GHz 34 dBm	Auto Tu	une
10.0										Center F 5.955000000 (
-10.0									DL1 -13.00 dBm	Start F 1.910000000	
-20.0					1					Stop F 10.000000000	
-40.0	nga pina magaaga ka di bila a		a tanan kina a tana a ta	a la policia de ll'Anne don de Anne de policie de la fon	tera di la tala par na mati da di La dia	and bird to get (by bird) and bird to get the bird of	na (Stan and Stan	n sister (source)	ryunan layad ya kanad manakata da na nada	CF S 809.000000 M <u>Auto</u>	
-60.0										Freq Off (f set 0 Hz
-70.0 Start 1.91	0 GHz							Stop <u>10</u>	.000 0112	Scale Ty	ype Lin
#Res BW	1.0 MHz		#VBW	3.0 MHz		s	weep 1	4.02 ms (1	6181 pts)		
MSG							STATU	JS			

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



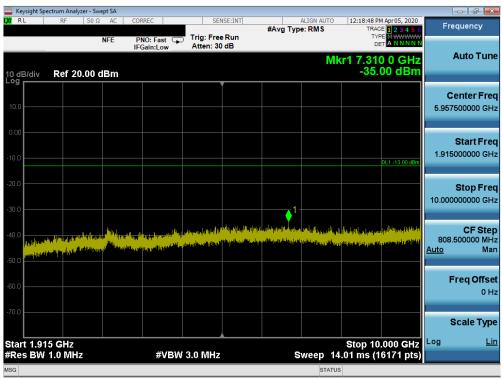
Plot 7-24. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyzer - S										
LXI RL	RF 50	Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 05, 2020 DE 1 2 3 4 5 6	Frequer	ісу
10 dB/div	Ref 20.00	NFE I dBm	PNO: Fast IFGain:Low	Trig: Free Atten: 30			M	bi kr1 1.62	9 0 GHz 39 dBm	Auto	Tune
10.0										Cente 940.0000	
-10.0									DL1 -13.00 dBm	Star 30.0000	t Freq 00 MHz
-20.0										Sto 1.8500000	p Freq 00 GHz
-40.0	ang da ing aka paning ang ang ang ang ang ang ang ang ang a	ulde o galeli ga		uldere i delle i delle i			e dag still in hel in h		an da ka	CI 182.0000 <u>Auto</u>	Step 00 MHz Man
-60.0										Freq	Offset 0 Hz
-70.0 Start 0.03								Stop 11	8500 GHz		e Type Lin
#Res BW			#VBW	3.0 MHz			Sweep 2	2.427 ms ((3641 pts)		
MSG							STATU	_			

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



Plot 7-26. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 109
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	pectrum Analyzer - S										d X
L <mark>XI</mark> RL	RF 50		DRREC		Run	#Avg Typ	ALIGN AUTO e: RMS	TRACI	Apr 05, 2020	Frequer	ıcy
10 dB/div Log	Ref 10.00		PNO: Fast Ģ FGain:Low	#Atten: 2			Mkr	1 17.481	5 GHz 8 dBm	Auto	Tune
0.00										Cente 15.0000000	e r Freq 00 GHz
-10.0							. 1		DL1 -13.00 dBm	Star 10.0000000	r t Freq 00 GHz
-30.0	LTEPATTER PLEASE AND THE AREA FOR AN	al he see and a second		The form the off the second	den fol a de la gastana y Naga kata ina jita kaya		th parent in the program	ingentunggi (geling Ingentunggi (geling	lynn blynnedd	Sto 20.0000000	p Freq 00 GHz
-50.0	toren arres high from party of them toren arres to party of a Alberta	in the second	, an an Lea (the line of a balance							CI 1.0000000 <u>Auto</u>	F Step 00 GHz Man
-70.0										Freq	Offset 0 Hz
Start 10.0								Stop 20.	000 GHz	Scale	e Type <u>Lin</u>
	/ 1.0 MHz		#VBW	3.0 MHz		s	weep 25	5.33 ms (2	0001 pts)		
MSG							STATUS	5			

Plot 7-27. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

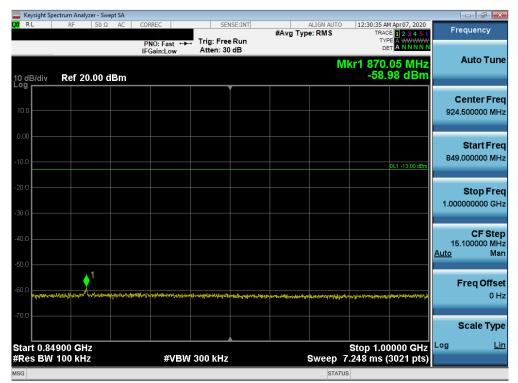
FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 100
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Cellular CDMA Mode

	ectrum Analyzer ·													
L <mark>XI</mark> RL	RF 5	0Ω AC	COR	REC		SEI	NSE:INT	#Avg Ty	ALIGN AU pe: RMS			4 Apr 07, 2020	F	requency
				IO: Fast Jain:Low		Trig: Free Atten: 30					T YF DE			
			IFG	ann.Low		Atten: 0	u D			Mkr	1 823	00 MHz		Auto Tune
10 dB/div	Ref 20.0	0 dBm	1									99 dBm		
														Center Freg
10.0														6.500000 MHz
0.00														Start Freq
-10.0													3	0.000000 MHz
-10.0												DL1 -13.00 dBm		
-20.0														Stop Freq
												1	82	3.000000 MHz
-30.0														
40.0														CF Step
-40.0													7 <u>Auto</u>	9.300000 MHz Man
-50.0													Auto	Wall
														Freq Offset
-60.0	i di sta series contra terra les subte	والمراجع والم	والمطارقة والمسارة	والأقرم معامله	والمراجع والمراجع	per des program	n Min Kalifa	na y Hiterataya ay		and the state	an a			0 Hz
Real of the	had person and a description of the	التروة الانتق	a la strange la falle.	ali di sela dal	No. BILLING	ving a tehlind	(the plan of the part of the		it is a second second					
-70.0														Scale Type
													Log	Lin
Start 30.0 #Res BW				#V	BW 3	300 kHz			Sween	38.0	Stop 8 6 ms (1	23.0 MHz 5861 pts)	LUg	
MSG										TATUS	s 1110 (1	ever pto)		

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



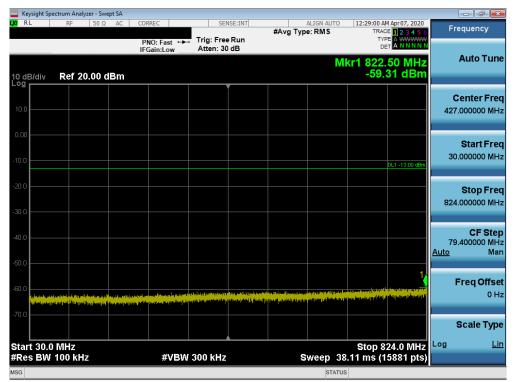
Plot 7-29. Conducted Spurious Plot (Cellular CDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 20 of 108
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	ectrum Analyzer	- Swept S	A									- 5 -
XI RL	RF	50Ω A	AC CI	ORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		AM Apr 07, 2020	Frequency
				PNO: Fa FGain:L	ist ↔ ow	Trig: Free #Atten: 3						
10 dB/div Log	Ref 10.0	0 dBr	m						N	/kr1 6.8 -4(78 5 GHz).27 dBm	Auto Tune
												Center Freq
0.00												5.50000000 GHz
-10.0											DL1 -13.00 dBm	Start Fred
-20.0												1.000000000 GHz
-30.0								▲1				Stop Fred 10.000000000 GHz
-40.0		الل والاله				al de la deste		an allowers and allowers	and Marshell and Ref. (Charles and			
-50.0	and a second					Marta, 21.						CF Step 900.000000 MH
-60.0												<u>Auto</u> Mar
												Freq Offset
-70.0												0 Hz
-80.0												Scale Type
										0 1		Log Lin
Start 1.00 #Res BW				#	VBW	3.0 MHz		s	weep	5top 15.60 ms	0.000 GHz (18001 pts)	
//SG									STA	TUS		

Plot 7-30. Conducted Spurious Plot (Cellular CDMA Mode - Low Channel)

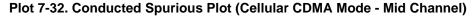


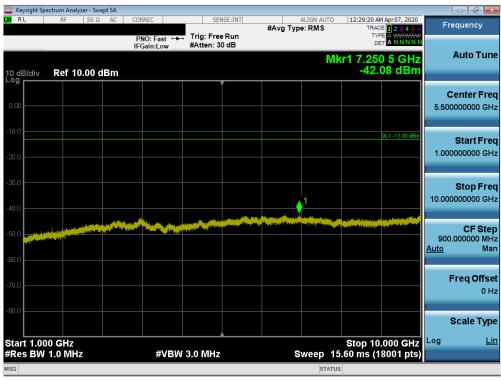
Plot 7-31. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 100
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	ctrum Analyzer - Swept SA								- .
RL	RF 50 Ω AC	CORREC	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 07, 2020 E 1 2 3 4 5 6 E A WWWWWW T A N N N N N	Frequency
10 dB/div	Ref 20.00 dBm	IFGain:Low	Atten: 30	dB		N	lkr1 881.		Auto Tune
10.0									Center Freq 924.500000 MHz
-10.0								DL1 -13.00 dBm	Start Freq 849.000000 MHz
-20.0									Stop Freq 1.000000000 GHz
-40.0	1								CF Step 15.100000 MHz <u>Auto</u> Man
-60.0	Martin astronomical astronomical	warantalantaataataataataataataataataataataataata	94- ⁿ -liftinerdyff	ng Allang Salahad	analystanistics. An Provide	เราร์สได้เร็จสามาร์เล	den verden an der ster ster ster ster ster ster ster st	n fan sein feiter fan sjon fan	Freq Offset 0 Hz
-70.0 Start 0.849 #Res BW 7		#\/B\A	/ 300 kHz			Sween	Stop 1.00 7.248 ms (0000 GHz	Scale Type
MSG			500 KHZ			SWEEP		502 i pis)	





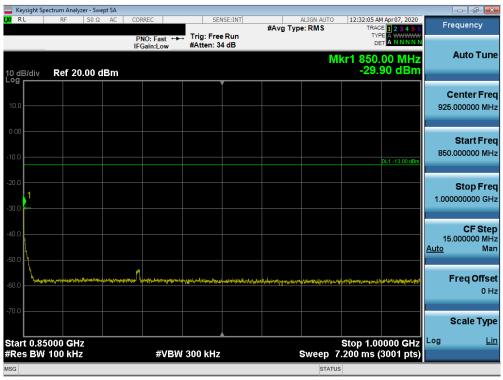
Plot 7-33. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 21 of 100
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	ectrum Analyzer - Swept S					
LXXI RL	RF 50 Ω A	AC CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	12:31:50 AM Apr 07, 2020 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast ↔ IFGain:Low	 Trig: Free Run Atten: 30 dB 		DET A NNNN	
				М	kr1 723.00 MHz	Auto Tune
10 dB/div Log	Ref 20.00 dB	m			-59.31 dBm	
			Ĭ			Center Freq
10.0						427.000000 MHz
0.00						
						Start Freq
-10.0					DL1 -13.00 dBm	30.000000 MHz
-20.0						
-20.0						Stop Freq 824.000000 MHz
-30.0						824.000000 WH2
						CF Step
-40.0						79.400000 MHz
-50.0						<u>Auto</u> Man
					≜ 1	Freq Offset
-60.0	una fan fan her her an an		Spectral Conference A second star	na a an bar tana di pang ing ping di pang di p Anna ang pang di		0 Hz
-70.0	and a second state of the product of the second	a harring a state of the second	alen metalletik kirk direk alembaren bisartet			
						Scale Type
Start 30.0	MHz				Stop 824.0 MHz	Log <u>Lin</u>
#Res BW		#VBW	300 kHz	Sweep 38	.11 ms (15881 pts)	
MSG				STATUS	3	

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



Plot 7-35. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 100
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	ctrum Analyzer - Swept SA								- •
L <mark>XI</mark> RL	RF 50 Ω A0	C CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO e: RMS	12:32:14 AM TRAC	1 Apr 07, 2020 E 1 2 3 4 5 6	Frequency
		PNO: Fast ↔ IFGain:Low	. Trig: Free #Atten: 34	Run dB			TYF		Auto Tune
10 dB/div Log	Ref 10.00 dBn	n			_		-38.	20 dBm	
0.00									Center Freq 5.500000000 GHz
-10.0								DL1 -13.00 dBm	Start Freq 1.000000000 GHz
-30.0					↓ ¹				Stop Freq 10.000000000 GHz
-40.0							ing a shirt of a second second		CF Step 900.000000 MHz Auto Man
-60.0									Freq Offset
-80.0									Scale Type
Start 1.00 #Res BW		#VBW	3.0 MHz		S	weep 15	Stop 10 i.60 ms (1	.000 GHz 8001 pts)	Log <u>Lin</u>
MSG						STATUS	3		

Plot 7-36. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)

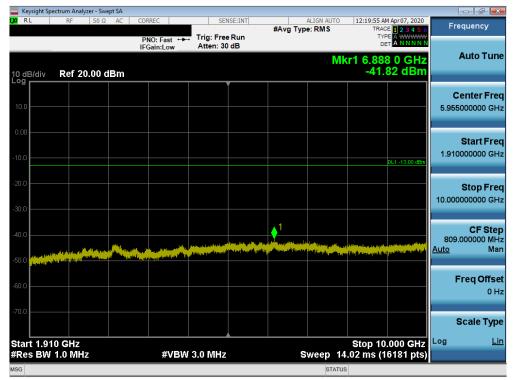
FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 108
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PCS CDMA Mode

Keysight Spe													
RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO	TRAC	Apr 07, 2020	Fr	equency
				PNO: F IFGain:	ast ↔ Low	Trig: Fre Atten: 3				TYP DE			
) dB/div	Ref 20).00 d	Bm						MI	(r1 1.845 -44.0	50GHz 66dBm		Auto Tun
0.0													Center Fre
0.0											DL1 -13.00 dBm	30	Start Fre
0.0												1.84	Stop Fr 5000000 G
0.0											1	181 <u>Auto</u>	CF St e 1.500000 M M
0.0	**************************************	مېلىلىندەم بىر ىيە		aanna aanna									Freq Offs 0
												Log	Scale Ty
tart 0.03 Res BW					#VBW	3.0 MHz			Sweep 2	Stop 1.8 (420 ms (LUg	
iG									STATU				

Plot 7-37. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)



Plot 7-38. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 100
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NIKET T7.485 0 GH2 10 dB/div Ref 10.00 dBm -43.62 dBm 0.00 -43.62 dBm 0.00 -43.62 dBm 0.00 -11 0.00 -11 0.00 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.0 -11 10.00000000 G -11 10.000000000 G -11 10.00000000 G -11 <t< th=""><th></th><th>ectrum Analyzer - Swept S</th><th></th><th></th><th></th><th></th><th>- đ ×</th></t<>		ectrum Analyzer - Swept S					- đ ×
IFGain:Low Atten: 20 dB Der Makunkke Mkr1 17.486 0 GHz -43.62 dBm -43.62 dBm 000 -43.62 dBm -43.62 dBm Center Fr 000 001 - 13008m 001 - 13008m Start Fr 000 001 - 13008m 001 - 13008m Start Fr 000 001 - 13008m 001 - 13008m Start Fr 000 001 - 13008m 001 - 13008m Start Fr 000 -000 -000 - 0000000 G -000 - 0000000 G -000 -000 - 0000000 G -00000000 G -00000000 G -000 -000 - 0000000 G -00000000 G -00000000 G -000 -00000000 G -00000000 G -0000000 G -000 -00000000 G -00000000 G -00000000 G -000 -00000000 G -00000000 G -00000000 G -000000000 G -00000000 G -00000000 G -00000000 G -000	LXU RL	RF 50 Ω				TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
0.00 Center Fr 100 0.11-1300 dBm 1000 0.11-1300 dBm 10000 0.11-1300 dBm	10 dB/div	Ref 10.00 dB	IFGain:Low _	Atten: 20 dB	Mkı	1 17.486 0 GHz	Auto Tune
200 Image: Control of the second	0.00						Center Freq 15.000000000 GHz
-40.0 -1 -20.00000000 G -50.0 -1 -20.00000000 G -60.0 -20.00000000 G -20.00000000 G -60.0 -20.00000000 G -20.00000000 G -60.0 -20.0000000 G -20.0000000 G -60.0 -20.0000000 G -20.0000000 G -70.0 -20.0000000 G -20.000 GHz -70.0 -20.000 GHz -20.000 GHz Stop 20.000 GHz -20.000 GHz						DL1 -13.00 dBm	Start Freq 10.000000000 GHz
					1		Stop Freq 20.000000000 GHz
-700 -800 Start 10.000 GHz Stop 20.000 GHz	the second second	a constraint free sites of a					CF Step 1.000000000 GHz <u>Auto</u> Man
Start 10.000 GHz Stop 20.000 GHz							Freq Offset 0 Hz
#Res BW 1.0 MHz		000 GHz				Stop 20.000 GHz	Scale Type
MSG STATUS		1.0 MHz	#VB	W 3.0 MHz		5.33 ms (20001 pts)	

Plot 7-39. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)



Plot 7-40. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 25 of 100
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	ectrum Analyzer - Sw									- <i>•</i>
LXI RL	RF 50 Ω	AC C	ORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Apr 07, 2020 DE 1 2 3 4 5 6	Frequency
			PNO: Fast ↔ FGain:Low	 Trig: Free Atten: 30 		•	M	TYI Di	4 5 GHz	Auto Tune
10 dB/div Log	Ref 20.00	dBm						-42.	19 dBm	
10.0										Center Fred 5.955000000 GH;
-10.0									DL1 -13.00 dBm	Start Fred 1.910000000 GH:
-20.0										Stop Fred 10.000000000 GH
-40.0	a provinsi a di provi di kili da ka sa	Anna		an distance of the state of the		a particular a second		n Barlondan tantan Malakira (sana sa	a na fallan da kana ya sa	CF Step 809.000000 MH <u>Auto</u> Mar
-50.0	and a second									Freq Offse 0 Hz
-70.0										Scale Type
Start 1.91 #Res BW			#VBW	/ 3.0 MHz		\$	weep 14	Stop 10 1.02 ms (1	.000 GHz 6181 pts)	Log <u>Lir</u>
MSG							STATU	s		

Plot 7-41. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)



Plot 7-42. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100
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Keysight Spectrum Anal						- ē 💌
LXI R L RF	50 Ω AC (CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	12:21:11 AM Apr 07, 2020 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 2	0.00 dBm	PNO: Fast +++ IFGain:Low	Trig: Free Run Atten: 30 dB	M	түре А DET A NNNNN kr1 1.790 5 GHz -48.36 dBm	Auto Tune
						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			n al An 2000 Maria at a se back to an			CF Step 182.000000 MHz <u>Auto</u> Man
-60.0	ing angles and the first of a point of the first of the f					Freq Offset 0 Hz
Start 0.0300 GHz #Res BW 1.0 MH		#\/D\M	3.0 MHz	<u> </u>	Stop 1.8500 GHz 2.427 ms (3641 pts)	Scale Type Log <u>Lin</u>
MSG	2	#VDVV	5.0 WH2	statu		

Plot 7-43. Conducted Spurious Plot (PCS CDMA Mode - High Channel)



Plot 7-44. Conducted Spurious Plot (PCS CDMA Mode - High Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 100
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	ectrum Analyzer - Swe								
X/RL	RF 50 Ω		ast →→ Trig	SENSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	Apr 07, 2020	Frequency
10 dB/div	Ref 10.00 d	IFGain:		en: 20 dB		Mkr	DE 1 17.501		Auto Tune
0.00									Center Freq 15.00000000 GHz
-10.0								DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0						1			Stop Freq 20.000000000 GHz
-50.0	n a benzen er en	a generation for a state of the property of the state of the state of		ang pang bang				an farmen an en ander An farmen an yn an ar far far	CF Step 1.00000000 GHz <u>Auto</u> Man
-70.0									Freq Offset 0 Hz
-80.0 Start 10.0							Stop 20.	000 0112	Scale Type
#Res BW	1.0 MHz		#VBW 3.0 N	ЛНz	S		.33 ms (2	0001 pts)	
MSG						STATUS			

Plot 7-45. Conducted Spurious Plot (PCS CDMA Mode - High Channel)

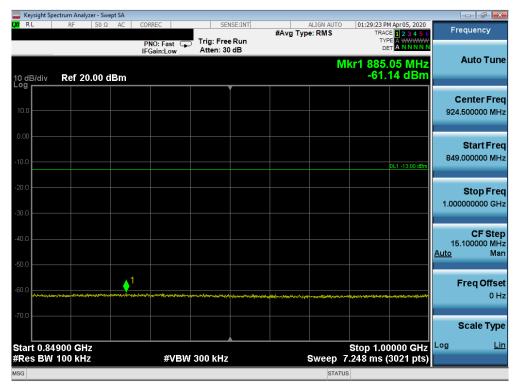
FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 100
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Cellular WCDMA Mode

	ectrum Analyz													_	- 6
RL	RF	50 Ω	AC	CORRECT PNO:	Fast G		g: Free		#Avg	ALIGN A		TRA	PM Apr 05, 2020 CE 1 2 3 4 5 (PE A WWWWW A N N N N	6	Frequency
) dB/div	Ref 20	.00 dE	3m	IFGair	:Low _	Att	en: 30	dB			Mk	r1 822	.80 MHz .95 dBm		Auto Tur
D.0															Center Fre 426.500000 MH
.00 													DL1 -13.00 dBn		Start Fre 30.000000 Mi
D.O													1		Stop Fr 823.000000 Mi
D.O														Aut	CF Ste 79.300000 M <u>:o</u> M
).0	A na ann airte bha baile ann an ann an ann an ann an ann an ann an a	a page to it spin at							neisi e devine engejise						Freq Offs 0
												0 4			Scale Ty
tart 30.0 Res BW	100 kHz				#VBV	V 300	kHz			Sweep	38.	- Stop a 06 ms (323.0 MHz 15861 pts	3	, <u> </u>
G											STATUS				

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

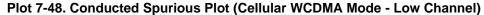


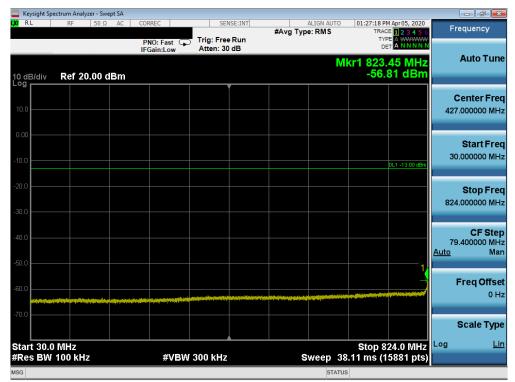
Plot 7-47. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100
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	ectrum Analyzo		t SA									
L <mark>XI</mark> RL	RF	50 Ω	AC (CORREC		SEI	NSE:INT	#Avg Typ	ALIGN AUT		40 PM Apr 05, 2020	Frequency
				PNO: Fa		Trig: Fre #Atten: 2	e Run 6 dB					
10 dB/div Log	Ref 10.	.00 dE	3m							Mkr1 7.: -4	239 0 GHz 7.21 dBm	Auto Tune
0.00												Center Freq 5.50000000 GHz
-10.0											DL1 -13.00 dBm	Otent Enge
-20.0												Start Freq 1.000000000 GHz
-30.0												Stop Freq
(0.0												10.00000000 GHz
-40.0									1			CF Step
-50.0			~~~~~		~				1			900.000000 MHz <u>Auto</u> Man
-70.0												Freq Offset 0 Hz
-80.0												Scale Type
Start 1.00 #Res BW				#	VBW	3.0 MHz		s	weep	Stop 15.60 ms	10.000 GHz (18001 pts)	Log <u>Lin</u>
MSG									_	ATUS		





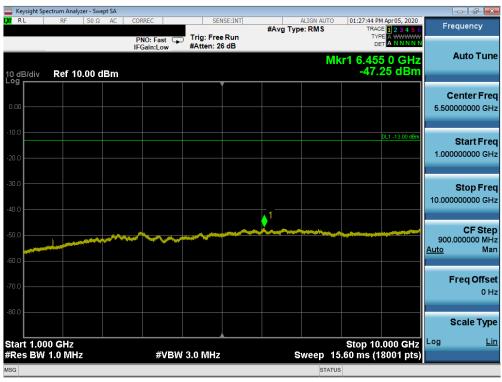
Plot 7-49. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dawa 40 af 400	
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🔤 Keysight Spectrum Analy						
LXVI RL RF			#Avg Typ		1:27:24 PM Apr 05, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div Ref 20		NO: Fast 😱 Irig: Free Gain:Low Atten: 30		Mkr1	849.55 MHz -57.57 dBm	Auto Tune
10.0						Center Freq 924.500000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 849.000000 MHz
-20.0						Stop Freq 1.000000000 GHz
-40.0						CF Step 15.100000 MHz <u>Auto</u> Man
-60.0	game, formality style operator folly style operator fol	gadadayayarafaa yaxaya ahada ahada daga daga daga daga daga d	teradol (1995) (Bally), atto, Parifi Sayanga anting ta		ngdgnaadd yddyd gant o Yrlynaf fernydd yn y	Freq Offset 0 Hz
-70.0 Start 0.84900 GH #Res BW 100 kH		#VBW 300 kHz		Steen 7.24	op 1.00000 GHz 8 ms (3021 pts)	Scale Type
#Res BW TOORH	2	#VBVV 500 KH2		sweep 7.24	o ins (5021 pts)	

Plot 7-50. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)



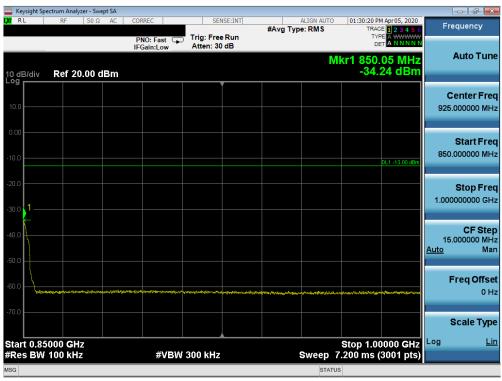
Plot 7-51. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 41 of 100
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	ctrum Analyzer - Swept SA					- • •
L <mark>XI</mark> RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:30:11 PM Apr 05, 2020 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB	м	kr1 823.75 MHz	Auto Tune
10 dB/div	Ref 20.00 dBm		•		-60.82 dBm	
10.0						Center Freq 427.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 824.000000 MHz
-30.0						CF Step 79.400000 MHz <u>Auto</u> Man
-50.0					1	Freq Offset 0 Hz
-70.0						Scale Type
Start 30.0 #Res BW		#VBW	300 kHz	Sweep 38	Stop 824.0 MHz 3.11 ms (15881 pts)	Log <u>Lin</u>
MSG				STATUS	3	

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



Plot 7-53. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 42 of 100
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	trum Analyzer - Swept S			 					
RL	RF 50 Ω A	PNO: Fast		#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 05, 2020 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Freq	uency
10 dB/div Log	Ref 10.00 dBr		written. I		Mk	(r1 6.86) -47.	6 5 GHz 22 dBm	A	uto Tune
0.00									n ter Freq 10000 GHz
-10.0							DL1 -13.00 dBm		tart Freq 10000 GHz
-30.0				1					top Freq 10000 GHz
-50.0		~~~~						900.00 <u>Auto</u>	CF Step 10000 MHz Man
-70.0								Fre	e q Offset 0 Hz
-80.0 Start 1.000 #Res BW 1		#\/B\/	/ 3.0 MHz		ween 15	Stop 10	.000 GHz 8001 pts)	Sc Log	ale Type <u>Lin</u>
WSG			- 000 Will 12		STATUS		ovor proj		

Plot 7-54. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 42 of 109
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AWS WCDMA Mode

	ectrum Analyzer										
K <mark>I</mark> RL	RF	50Ω AC	CORREC		E:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	4 Apr 05, 2020 E 1 2 3 4 5 6	Fre	quency
			PNO: Fast G	Trig: Free Atten: 30 d				DE			
I0 dB/div	Ref 20.0	00 dBm					Mł	r1 1.70 -35.	5 0 GHz 33 dBm		Auto Tun
				Ĭ						с	enter Fre
10.0										867.	500000 MH
0.00											
-10.0											Start Fre
10.0									DL1 -13.00 dBm		
20.0											Stop Fre
30.0									1,	1.705	000000 GH
									-		CF Ste
40.0										167. <u>Auto</u>	500000 MH Ma
50.0		a and here the design of the state of the				and the second		ang pangkarat kanang d			
.60.0										F	req Offse
											0 F
70.0										s	Scale Typ
start 0.03	00 GHz							Stop 1.7	7050 GHz	Log	<u>L</u>
Res BW			#VBV	/ 3.0 MHz			Sweep 2	.233 ms (3351 pts)		
SG							STATUS	5			

Plot 7-55. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



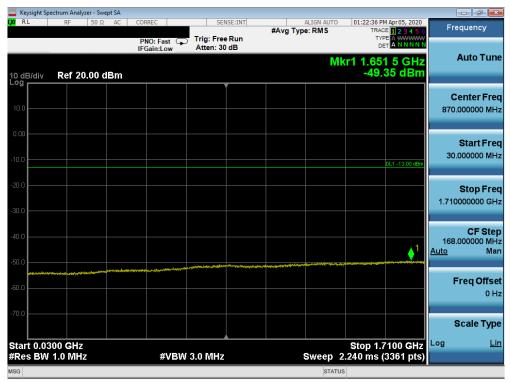
Plot 7-56. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 44 of 109
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	ctrum Analyzer -	Swept SA								×
LX/RL	RF 51	ΩΩ AC	CORREC	SENSE:I	NT #Avg Typ	ALIGN AUTO		M Apr 05, 2020	Frequency	
			PNO: Fast G	Trig: Free Ru Atten: 20 dB	n er.		TYF DE		Auto Ti	
10 dB/div Log	Ref 10.00	0 dBm				Mkı	1 18.57 -44.	6 0 GHz 87 dBm	Auto Tu	Ine
				Ĭ					Center Fi	rea
0.00									15.00000000 0	
-10.0								DL1 -13.00 dBm	Start Fi	rea
-20.0									10.00000000 0	
20.0										
-30.0									Stop Fr	rea
									20.00000000 0	
-40.0							† ♦ ¹ -			
-50.0				and the second second	and the second s	-	-		CF St	
									1.000000000 G Auto	GHz Man
-60.0										
									Freq Off	set
-70.0) Hz
-80.0										
-00.0									Scale Ty	уре
										Lin
Start 10.0 #Res BW			#VBV	/ 3.0 MHz		weep 2	Stop 20 5.33 ms (2	.000 GHz 0001 pts)	LUg	<u>= 11</u>
MSG						STATU		eee (pc3)		_

Plot 7-57. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



Plot 7-58. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 45 of 100
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	ectrum Analyzer - Swept						
L <mark>XI</mark> RL	RF 50 Ω			ALIGN #Avg Type: RN	IS TRA	M Apr 05, 2020 CE 1 2 3 4 5 6 PE A WWWW	Frequency
10 dB/div	Ref 20.00 dE	PNO: Fas IFGain:Lo Bm			Mkr1 6.92 -43.	ET <mark>A N N N N N</mark>	Auto Tune
10.0							Center Freq 5.877500000 GHz
-10.0						DL1 -13.00 dBm	Start Freq 1.755000000 GHz
-20.0							Stop Freq 10.000000000 GHz
-40.0		~~~~		 ↓ ¹	*		CF Step 824.500000 MHz <u>Auto</u> Man
-60.0							Freq Offset 0 Hz
-70.0 Start 1.75					Stop 10	.000 GHZ	Scale Type
#Res BW	1.0 MHz	#\	/BW 3.0 MHz	Swee	p 14.29 ms (1	6491 pts)	
MSG					STATUS		

Plot 7-59. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)



Plot 7-60. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 46 of 100
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	ectrum Analyzer - Swept SA					
L <mark>XI</mark> RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:26:04 PM Apr 05, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div Log	Ref 20.00 dBm		Atten: 30 dB	M	cr1 1.595 0 GHz -48.94 dBm	Auto Tune
10.0						Center Freq 870.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 1.710000000 GHz
-40.0			الي وي من القام المحاولية. الي وي من القام المحاولية المحاولية المحاولية المحاولية المحاولية المحاولية المحاولية المحاولية المحاولية المح	an Nato Manamat Maring State (1994)	1	CF Step 168.000000 MHz <u>Auto</u> Man
-60.0	njangin _{gan} gingka nanity ni wijanakan kilangin kadan					Freq Offset 0 Hz
Start 0.03		#VBW 3.	0 MHz	Sweep	Stop 1.7100 GHz 2.240 ms (3361 pts)	Scale Type
MSG				STATU		

Plot 7-61. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)



Plot 7-62. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 109
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	ctrum Analyzer - Swept					
X/RL	RF 50 Ω	AC CORREC PNO: Fast G	Trig: Free Run Atten: 20 dB	ALIGN AUTO #Avg Type: RMS	01:26:34 PM Apr 05, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N	Frequency
10 dB/div Log	Ref 10.00 dB		Atten: 20 dB	Mkr	1 17.489 0 GHz -44.84 dBm	Auto Tune
0.00						Center Freq 15.000000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0				1-		Stop Freq 20.000000000 GHz
-50.0		an a				CF Step 1.00000000 GHz <u>Auto</u> Mar
70.0						Freq Offse 0 H:
-80.0 Start 10.0					Stop 20.000 GHz	Scale Type
#Res BW	1.0 MHz	#VBW	3.0 MHz		.33 ms (20001 pts)	
ASG				STATUS	3	

Plot 7-63. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 49 of 100
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PCS WCDMA Mode

🔤 Keysight Spectrum Ana							- 6 - ×
LXIRL RF	50 Ω AC	CORREC	SENSE:IN	IT #Avg Typ	ALIGN AUTO	12:43:00 PM Apr 05, 2020 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 30 dB	1			
10 dB/div Ref 2	0.00 dBm				Mk	r1 1.845 0 GHz -30.71 dBm	Auto Tune
10.0							Center Freq 937.500000 MHz
-10.0						DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						1	Stop Freq 1.845000000 GHz
-40.0			بىرى ئىلى ئۇرۇسۇرى ھەر بىرى بىرى				CF Step 181.500000 MHz <u>Auto</u> Man
-60.0	9,1389449,49994449,4994444994444499						Freq Offset 0 Hz
-70.0							Scale Type
Start 0.0300 GH #Res BW 1.0 Mi		#VBW	3.0 MHz		Sween 2	Stop 1.8450 GHz 420 ms (3631 pts)	Log <u>Lin</u>
MSG			ore with2		STATUS		

Plot 7-64. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)



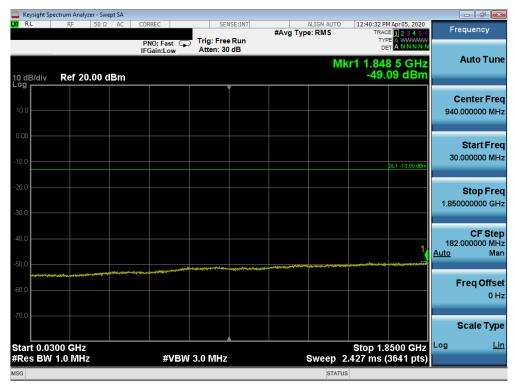
Plot 7-65. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 100
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🔤 Keysight Spectrum Analyzer - Swept SA			
LXI RE 50Ω AC	CORREC SENSE:INT	#Avg Type: RMS TRA	M Apr 05, 2020 CE 1 2 3 4 5 6 Frequency
to JELIU Dof 10.00 dBm	PNO: Fast 🌩 Trig: Free Run IFGain:Low Atten: 20 dB	۔ Mkr1 18.29	775 GHz Auto Tune
10 dB/div Ref 10.00 dBm			Center Freq 15.00000000 GHz
-10.0			DL1-13.00 dGm Start Freq 10.000000000 GHz
-30.0		_ 1	Stop Freq 20.000000000 GHz
-50.0			CF Step 1.000000000 GHz <u>Auto</u> Man
-70.0			Freq Offset 0 Hz
-80.0		Stop 20	Scale Type
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 25.33 ms (2	20001 pts)

Plot 7-66. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)



Plot 7-67. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 100
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Keysight Spectrum Analyzer - Swept SA						- .
X RL RF 50Ω AC		SENSE:INT	ALIGN #Avg Type: RM	IS TRAC TYP	Apr 05, 2020 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Frequency
10 dB/div Ref 20.00 dBm	IFGain:Low Atter	n: 30 dB		Mkr1 6.91		Auto Tune
10.0						Center Freq 5.955000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 1.910000000 GHz
-20.0						Stop Freq 10.000000000 GHz
-40.0	· · · · · · · · · · · · · · · · · · ·		1	**************************************	****	CF Step 809.000000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-70.0 Start 1.910 GHz				Stop 10		Scale Type
#Res BW 1.0 MHz	#VBW 3.0 M	Hz	Swee	p 14.02 ms (1	6181 pts)	

Plot 7-68. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)



Plot 7-69. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyze									x
LX RL RF		ORREC	SENSE:INT	#Avg Type	LIGN AUTO : RMS	TRAC	Apr 05, 2020 E 1 2 3 4 5 6 E A WWWW	Frequency	
10 dB/div Ref 20.			Atten: 30 dB		Mkı	DE	2 5 GHz 18 dBm	Auto Tu	ne
10.0								Center Fr 940.000000 M	
-10.0							DL1 -13,00 dBm	Start Fr 30.000000 M	
-20.0								Stop Fr 1.85000000 G	
-40.0						••••••••••••••••••••••••••••••••••••••	i provinski stala st	CF Ste 182.000000 M <u>Auto</u> M	
-60.0	ng gan an a	der den eine der hann der hann der hann der hann der hann d						Freq Offs 0	set Hz
-70.0 Start 0.0300 GHz #Res BW 1.0 MHz		#VBW 3.	0 MHz			Stop 1.8	500 GHz 3641 pts)	Scale Ty Log <u>L</u>	pe Lin
#Res BW 1.0 WHZ					status	727 IIIS (-	504 i prsj		

Plot 7-70. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)



Plot 7-71. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 52 of 100
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	ctrum Analyzer - Swept					
XV RL	RF 50 Ω	AC CORREC PNO: Fast G	Trig: Free Run Atten: 20 dB	#Avg Type: RMS	01:12:56 PM Apr 05, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div	Ref 10.00 dB			Mkr	1 17.501 5 GHz -44.76 dBm	Auto Tune
0.00						Center Freq 15.000000000 GHz
-10.0					DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0				1		Stop Freq 20.000000000 GHz
-50.0						CF Step 1.00000000 GHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
-80.0 Start 10.0					Stop 20.000 SH2	Scale Type
#Res BW	1.0 MHz	#VBW	3.0 MHz		i.33 ms (20001 pts)	
MSG				STATUS	3	

Plot 7-72. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element			Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 52 of 100
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7.4 Band Edge Emissions at Antenna Terminal

Test Overview

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

The minimum permissible attenuation level of any spurious emission is 43 + 10 log₁₀(P_[Watts]), where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

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

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

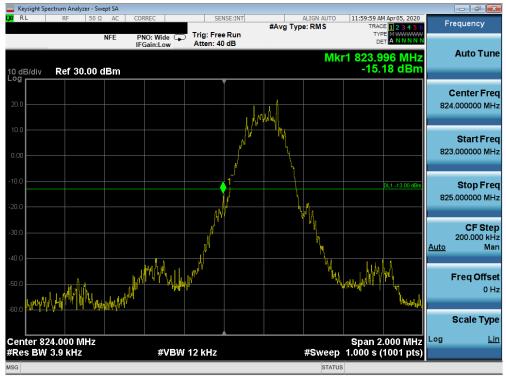
Test Notes

Per 22.917(b), 24.238(b), 27.53(h)(3), and RSS-132(5.5), RSS-133(6.5), RSS-139(6.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

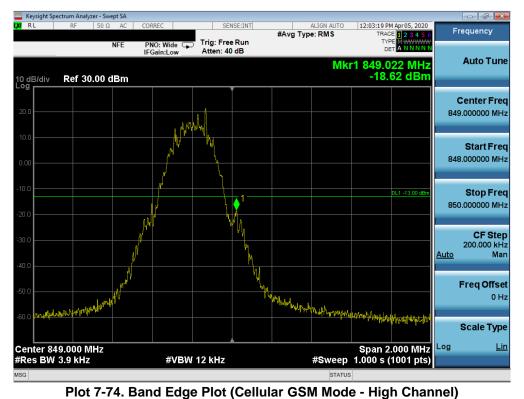
FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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Cellular GSM Mode



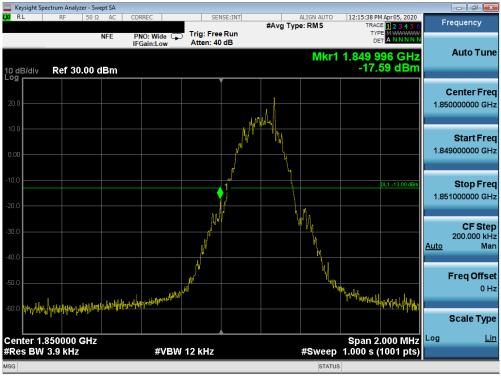
Plot 7-73. Band Edge Plot (Cellular GSM Mode - Low Channel)



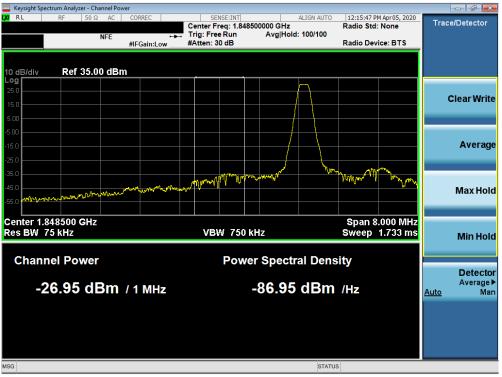
FCC ID: A3LSMA716U	Proud to be part of relement	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EE of 109
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PCS GSM Mode



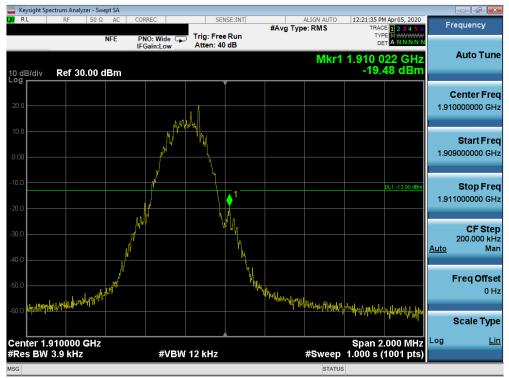
Plot 7-75. Band Edge Plot (PCS GSM Mode - Low Channel)



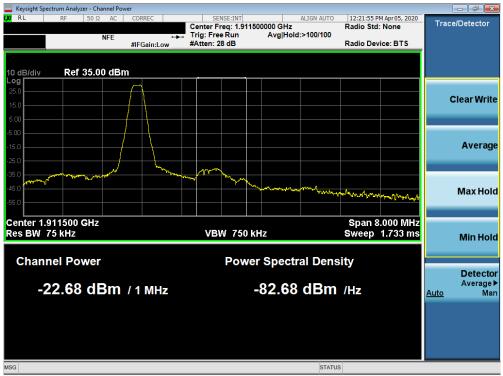
Plot 7-76. 4MHz Span Plot (PCS GSM Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EC of 109
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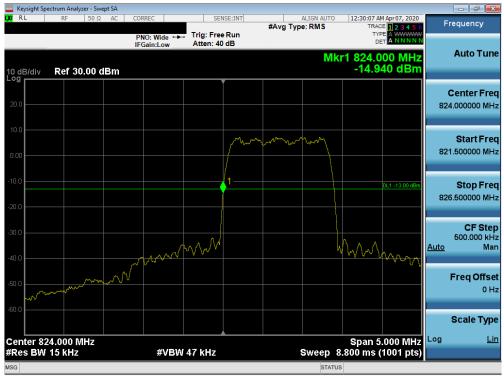


Plot 7-78. 4MHz Span Plot (PCS GSM Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Cellular CDMA Mode



Plot 7-79. Band Edge Plot (Cellular CDMA Mode - Low Channel)



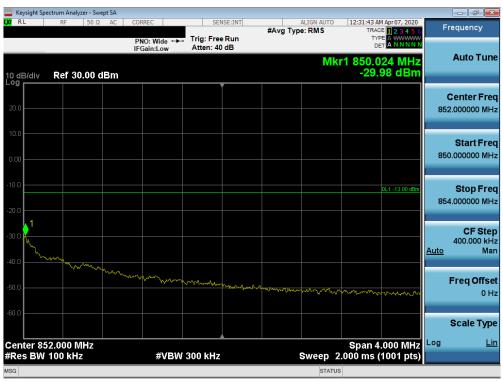
Plot 7-80. 4MHz Span Plot (Cellular CDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-81. Band Edge Plot (Cellular CDMA Mode - High Channel)



Plot 7-82. 4MHz Span Plot (Cellular CDMA Mode - High Channel)

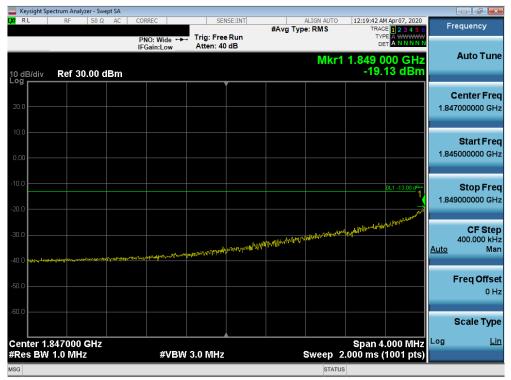
FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 50 of 100
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PCS CDMA Mode



Plot 7-83. Band Edge Plot (PCS CDMA Mode - Low Channel)



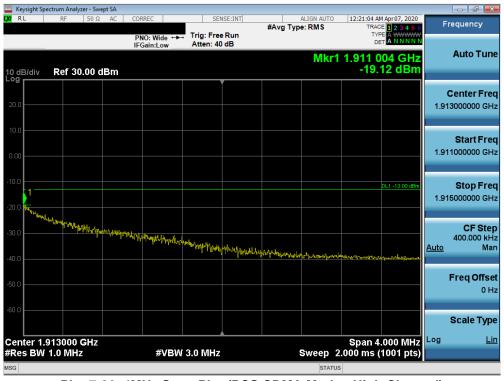
Plot 7-84. 4MHz Span Plot (PCS CDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 60 of 108
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Keysight Spectrum Analyzer - Swept SA					- d ×
LXURL RF 50Ω AC	CORREC S PNO: Wide → Trig: Fr		ALIGN AUTO	12:20:54 AM Apr 07, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div Ref 30.00 dBm	IFGain:Low Atten:		Mkr1 1	.910 110 GHz -28.17 dBm	Auto Tune
20.0					Center Freq 1.910000000 GHz
10.0 / My	norm				Start Freq 1.907500000 GHz
-10.0				DL1 -13.00 dBm	Stop Freq 1.912500000 GHz
-30.0		ma un ma			CF Step 500.000 kHz <u>Auto</u> Man
-50.0			Mor many	with how have by	Freq Offset 0 Hz
-60.0					Scale Type
Center 1.910000 GHz #Res BW 15 kHz	#VBW 47 kHz		Sweep 8.8	Span 5.000 MHz 00 ms (1001 pts)	
MSG			STATUS		

Plot 7-85. Band Edge Plot (PCS CDMA Mode - High Channel)

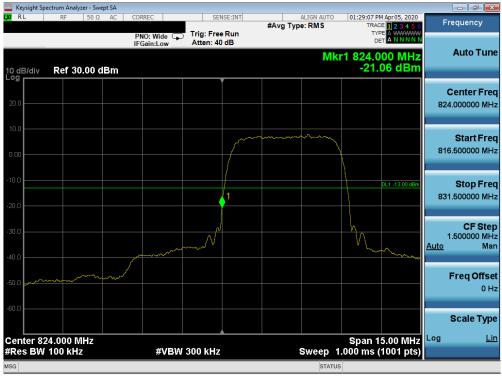


Plot 7-86. 4MHz Span Plot (PCS CDMA Mode - High Channel)

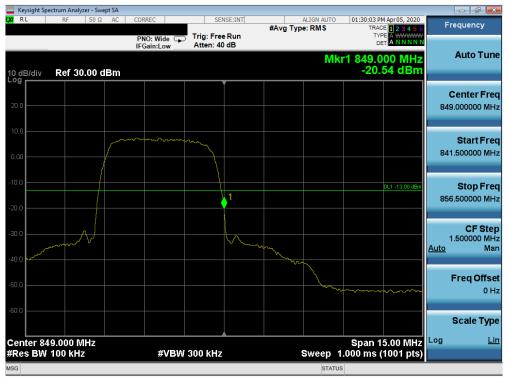
FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 61 of 100
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Cellular WCDMA Mode



Plot 7-87. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



Plot 7-88. Band Edge Plot (Cellular WCDMA Mode - High Channel)

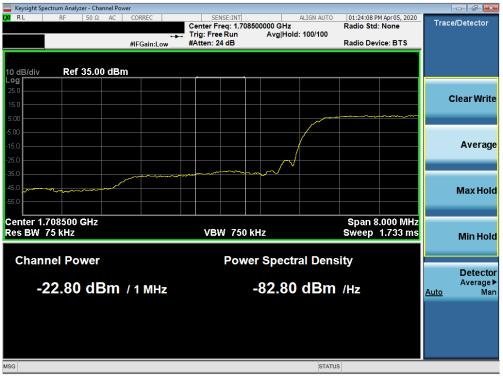
FCC ID: A3LSMA716U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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AWS WCDMA Mode



Plot 7-89. Band Edge Plot (AWS WCDMA Mode - Low Channel)



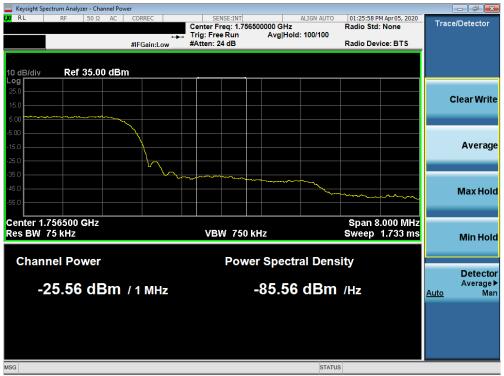
Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 100
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Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

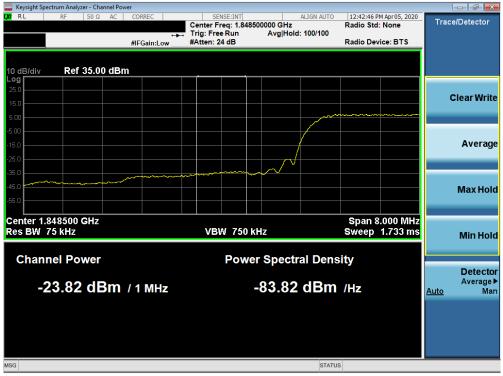
FCC ID: A3LSMA716U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 64 of 109
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PCS WCDMA Mode







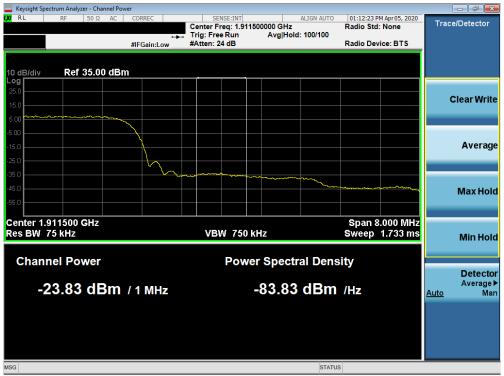
Plot 7-94. 4MHz Span Plot (PCS WCDMA Mode - Low Channel)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage CE of 100
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30.00 dBm	PNO: Wide C IFGain:Low			#Avg Type		TRA TY D 1.910 (MA Gross, 2020 CE 12 23 4 5 6 PE A	Frequency Auto T Center H 1.910000000 Start F 1.902500000
30.00 dBm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Mkr1	1.910 (-20.	000 GHz 30 dBm	Center F 1.91000000 Start F
								1.910000000 Start F
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
			1				DL1 -13.00 dBm	<b>Stop F</b> 1.917500000
~^			h	· · · · · · · · · · · · · · · · · · ·				CF 9 1.500000 <u>Auto</u>
							·····	Freq Of
0 GHz						Span 1	15.00 MHz	Scale T
Hz	#VB	W 300 kHz			Sweep 1	.000 ms	(1001 pts)	
	0 GHz Hz					Hz #VBW 300 kHz Sweep 1	0 GHz Hz #VBW 300 kHz Span 7 Sweep 1.000 ms	Hz #VBW 300 kHz Sweep 1.000 ms (1001 pts)





#### Plot 7-96. 4MHz Span Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# 7.5 Peak-Average Ratio

### **Test Overview**

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

### Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.7.1

### **Test Settings**

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

### Test Setup

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



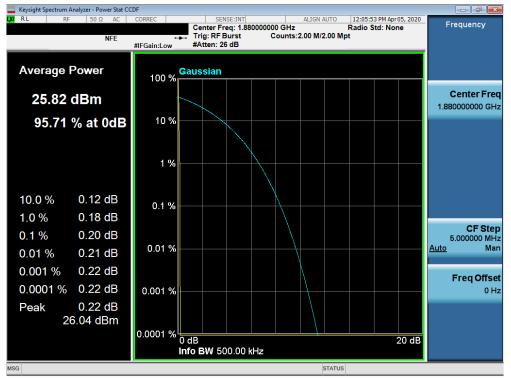
Figure 7-4. Test Instrument & Measurement Setup

#### **Test Notes**

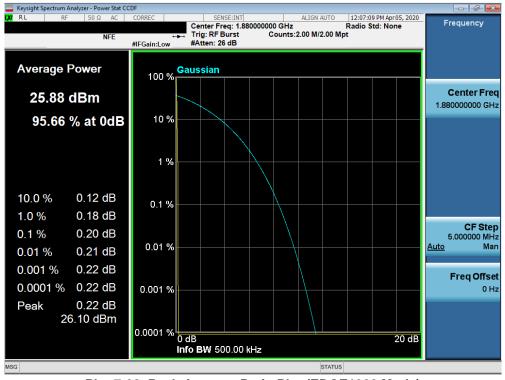
None

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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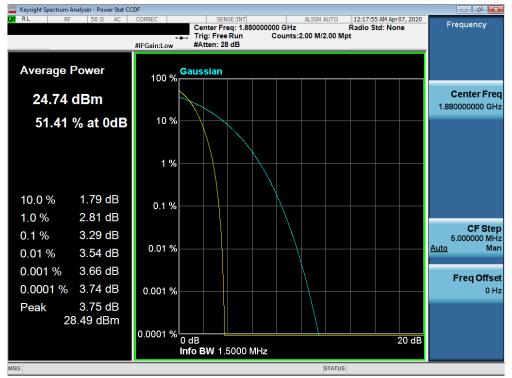




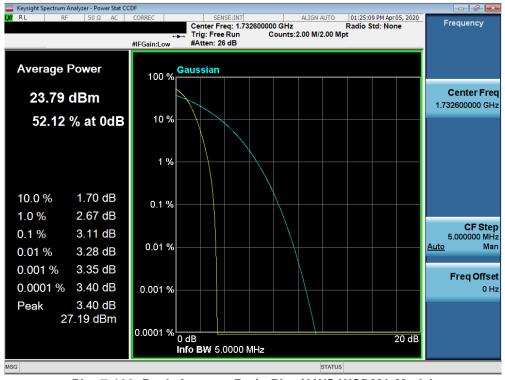
Plot 7-98. Peak-Average Ratio Plot (EDGE1900 Mode)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 69 of 109
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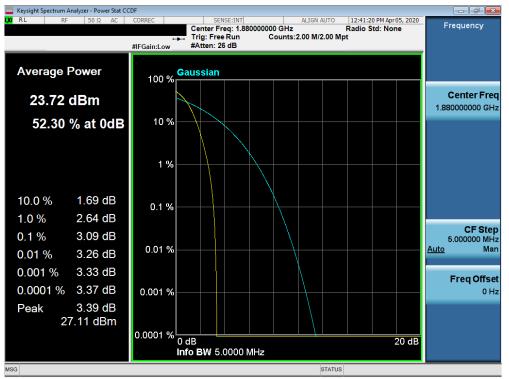




Plot 7-100. Peak-Average Ratio Plot (AWS WCDMA Mode)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-101. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 100
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# 7.6 Radiated Power (ERP/EIRP)

### Test Overview

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

### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.2.1

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

### Test Settings

- 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 > 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

FCC ID: A3LSMA716U	Proud to be part of @element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Test Setup

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

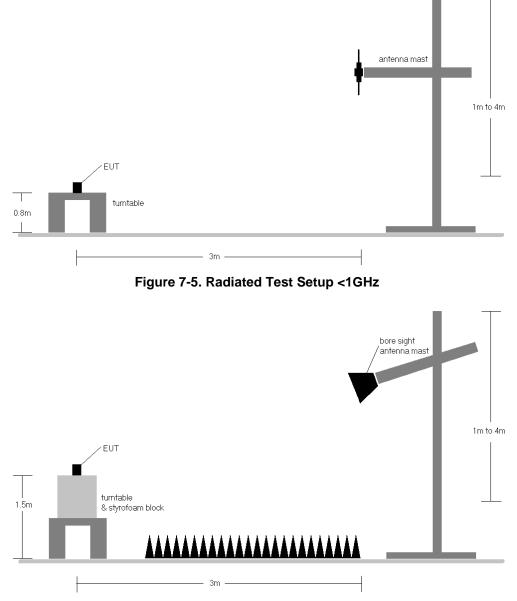


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element		SAMSUNG	Approved by: Quality Manager
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#### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1."
- 3) This device employs CDMA capabilities. This EUT was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) 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.

FCC ID: A3LSMA716U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	NG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 72 of 109
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	V	148	252	21.83	6.35	26.03	0.401	38.45	-12.42	28.18	0.658	40.61	-12.43
836.60	GPRS850	V	139	249	23.04	6.38	27.27	0.533	38.45	-11.18	29.42	0.875	40.61	-11.19
848.80	GPRS850	V	145	244	22.38	6.51	26.74	0.472	38.45	-11.72	28.89	0.774	40.61	-11.72
836.60	GPRS850	н	202	165	17.10	6.68	21.63	0.146	38.45	-16.82	23.78	0.239	40.61	-16.83
836.60	EDGE850	V	202	161	17.95	6.38	22.18	0.165	38.45	-16.27	24.33	0.271	40.61	-16.28

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

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
824.70	CDMA850	V	137	249	14.18	6.36	18.39	38.45	-20.07	20.54	40.61	-20.07
836.52	CDMA850	V	145	255	13.91	6.38	18.14	38.45	-20.31	20.29	40.61	-20.32
848.31	CDMA850	V	152	236	13.32	6.50	17.67	38.45	-20.78	19.82	40.61	-20.79
824.70	CDMA850	н	151	166	10.75	6.36	14.96	38.45	-23.50	17.11	40.61	-23.50

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

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	139	263	13.00	6.37	17.22	38.45	-21.23	19.37	40.61	-21.23
836.60	WCDMA850	V	133	276	11.76	6.38	15.99	38.45	-22.46	18.14	40.61	-22.47
846.60	WCDMA850	V	152	256	12.86	6.48	17.19	38.45	-21.26	19.34	40.61	-21.26
826.40	WCDMA850	н	101	301	12.12	6.77	16.74	38.45	-21.71	18.89	40.61	-21.72

 Table 7-4. ERP/EIRP (Cellular WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	V	143	4	12.91	9.37	22.28	30.00	-7.72
1732.60	WCDMA1700	V	106	334	13.38	9.22	22.60	30.00	-7.40
1752.60	WCDMA1700	V	140	327	14.38	9.11	23.49	30.00	-6.51
1752.60	WCDMA1700	Н	125	154	12.83	9.24	22.07	30.00	-7.93

Table 7-5. EIRP (AWS WCDMA)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	Н	168	5	18.72	9.51	28.23	0.665	33.01	-4.78
1880.00	GPRS1900	н	159	9	19.61	9.93	29.54	0.899	33.01	-3.47
1909.80	GPRS1900	н	153	10	18.60	10.28	28.88	0.773	33.01	-4.13
1880.00	GPRS1900	V	147	273	19.30	10.13	29.43	0.877	33.01	-3.58
1880.00	EDGE1900	Н	104	221	17.24	9.93	27.17	0.521	33.01	-5.84

#### Table 7-6. EIRP (PCS GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1851.25	CDMA1900	Н	112	9	14.62	9.52	24.14	33.01	-8.87
1880.00	CDMA1900	Н	100	10	14.50	9.93	24.43	33.01	-8.58
1908.75	CDMA1900	н	111	5	14.67	10.27	24.94	33.01	-8.07
1908.75	CDMA1900	V	149	337	14.10	10.33	24.43	33.01	-8.58

### Table 7-7. EIRP (PCS CDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	Н	126	7	13.94	9.54	23.48	33.01	-9.53
1880.00	WCDMA1900	Н	111	7	13.63	9.93	23.56	33.01	-9.45
1907.60	WCDMA1900	н	116	12	13.79	10.26	24.05	33.01	-8.96
1907.60	WCDMA1900	V	100	356	12.89	10.33	23.22	33.01	-9.79

Table 7-8. EIRP (PCS WCDMA)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	A M S U N G	Approved by: Quality Manager
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### 7.7 Radiated Spurious Emissions Measurements

#### **Test Overview**

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

#### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.8

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

#### Test Settings

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

FCC ID: A3LSMA716U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 76 of 100
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### Test Setup

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

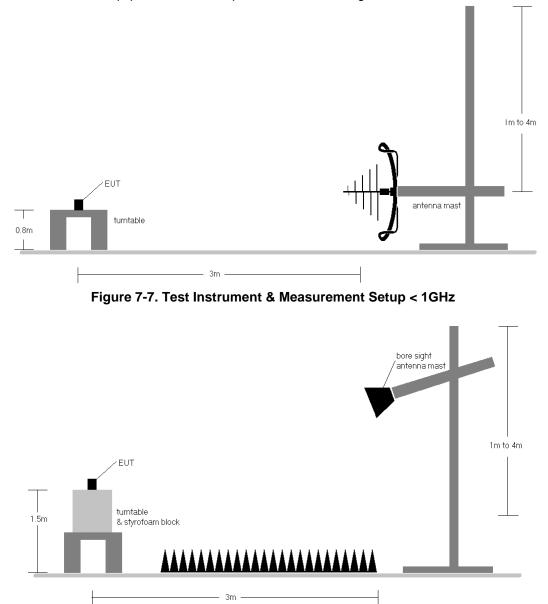


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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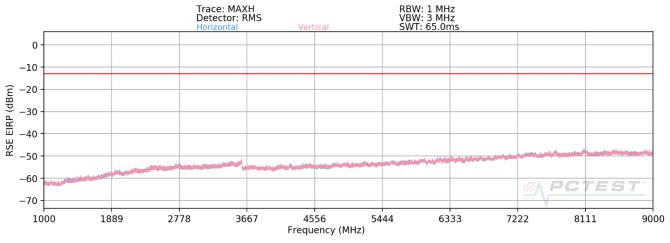
#### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1."
- 3) This device employs CDMA capabilities. This EUT was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) 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.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) 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.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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## **Cellular GPRS Mode**



Plot 7-102. Radiated Spurious Plot above 1GHz (Cellular GPRS Mode)

OPERATING FREQUENCY:	824	4.20	MHz
MODULATION SIGNAL:	GPRS (GMSK)	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1648.40	Н	164	179	-62.40	3.61	-58.80	-45.8
2472.60	Н	346	9	-53.79	4.21	-49.58	-36.6
3296.80	Н	-	-	-62.90	5.77	-57.13	-44.1
4121.00	Н	-	-	-67.25	7.59	-59.66	-46.7

Table 7-9. Radiated Spurious Data (Cellular GPRS Mode – Ch. 128)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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83	6.60	MHz
GPRS (GMSK)	_	
3	meters	
-13	dBm	
	GPRS (GMSK) 3	3 meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	Н	147	183	-61.51	3.62	-57.90	-44.9
2509.80	Н	396	169	-58.23	4.34	-53.90	-40.9
3346.40	Н	-	-	-61.55	5.92	-55.63	-42.6
4183.00	Н	-	-	-67.65	7.70	-59.95	-47.0

Table 7-10. Radiated Spurious Data (Cellular GPRS Mode – Ch. 190)

848 80

MHz

OPERATING FREQUENCY:

MODULATION SIGNA

LOCENOT.	01	0.00
ON SIGNAL:	GPRS (GMSK)	_
DISTANCE:	3	meters
LIMIT:	-13	dBm

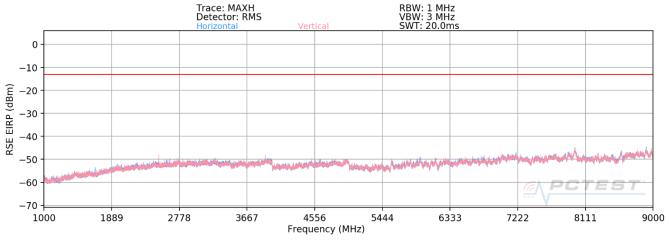
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1697.60	Н	188	174	-60.11	3.63	-56.48	-43.5
2546.40	Н	102	46	-57.15	4.56	-52.59	-39.6
3395.20	Н	-	-	-61.06	6.14	-54.93	-41.9
4244.00	Н	-	-	-67.20	7.80	-59.40	-46.4

Table 7-11. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: A3LSMA716U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 100
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## Cellular CDMA Mode



Plot 7-103. Radiated Spurious Plot above 1GHz (Cellular CDMA Mode)

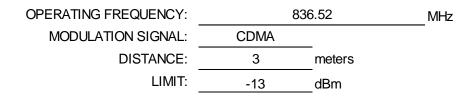
8	324.70	MHz
CDMA		
3	meters	
-13	dBm	
	CDMA 3	3 meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	Н	111	157	-66.50	3.08	-63.42	-50.4
2474.10	Н	387	6	-57.71	3.84	-53.87	-40.9
3298.80	Н	109	133	-66.96	6.00	-60.96	-48.0
4123.50	Н	-	-	-68.84	7.68	-61.16	-48.2
4948.20	Н	-	-	-68.89	8.72	-60.17	-47.2

Table 7-12. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 81 of 100
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.04	H	151	157	-63.57	3.10	-60.47	-47.5
2509.56	H	117	146	-61.36	4.02	-57.34	-44.3
3346.08	H	101	139	-66.01	6.03	-59.98	-47.0
4182.60	Н	-	-	-68.98	7.79	-61.19	-48.2
5019.12	Н	-	-	-69.01	8.78	-60.23	-47.2

Table 7-13. Radiated Spurious Data (Cellular CDMA Mode - Ch. 384)

OPERATING FREQUENCY:	84	MHz	
MODULATION SIGNAL:	CDMA		
DISTANCE:	3	meters	
LIMIT:	-13	_dBm	

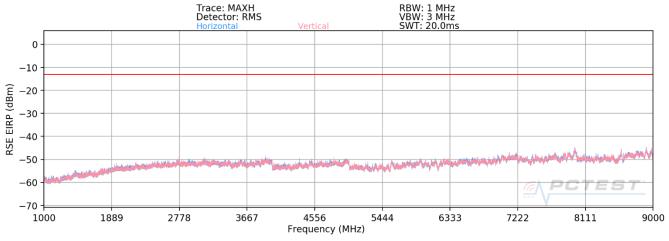
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.62	Н	107	161	-63.29	3.15	-60.14	-47.1
2544.93	Н	113	35	-60.60	4.14	-56.45	-43.5
3393.24	Н	123	43	-65.51	6.23	-59.28	-46.3
4241.55	Н	-	-	-69.83	7.96	-61.87	-48.9
5089.86	Н	-	-	-68.77	8.88	-59.89	-46.9

Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 92 of 109
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## Cellular WCDMA Mode



Plot 7-104. Radiated Spurious Plot above 1GHz (Cellular WCDMA Mode)

OPERATING FREQUENCY:	82	6.40	MHz
MODULATION SIGNAL:	WCDMA	_	
DISTANCE:	3	meters	
LIMIT:	-13	_dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1652.80	H	258	165	-68.48	3.09	-65.38	-52.4
2479.20	H	101	153	-65.69	3.91	-61.79	-48.8
3305.60	Н	-	-	-68.49	6.00	-62.49	-49.5
4132.00	Н	-	-	-69.09	7.72	-61.37	-48.4

Table 7-15. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)

FCC ID: A3LSMA716U	Proved to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 83 of 108
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83	6.60	MHz
WCDMA		
3	meters	
-13	dBm	
	WCDMA 3	3 meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	Н	145	161	-66.96	3.10	-63.86	-50.9
2509.80	Н	119	159	-65.18	4.02	-61.16	-48.2
3346.40	Н	-	-	-67.89	6.03	-61.86	-48.9
4183.00	Н	-	-	-69.04	7.79	-61.25	-48.2

Table 7-16. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)

OPERATING FREQUENCY:

MODULATION SIGNA

REQUENCY:	846.60			
ON SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	-13	dBm		

MHz

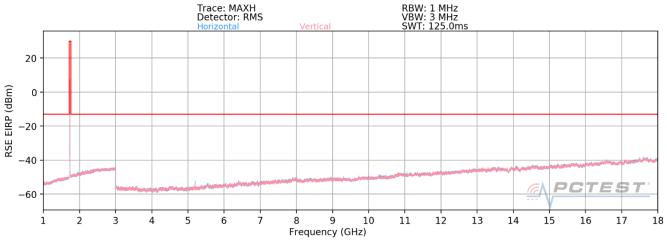
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.20	Н	107	163	-67.23	3.17	-64.06	-51.1
2539.80	Н	174	30	-64.80	4.13	-60.67	-47.7
3386.40	Н	-	-	-67.78	6.20	-61.58	-48.6
4233.00	Н	-	-	-70.01	7.93	-62.08	-49.1

Table 7-17. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 94 of 109
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## AWS WCDMA Mode



Plot 7-105. Radiated Spurious Plot above 1GHz (AWS WCDMA Mode)

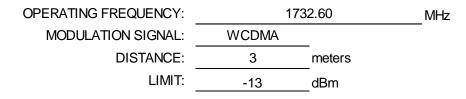
OPERATING FREQUENCY:	171	2.40	MHz
MODULATION SIGNAL:	WCDMA	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3424.80	Н	-	-	-68.19	6.27	-61.92	-48.9
5137.20	Н	321	67	-62.68	8.94	-53.74	-40.7
6849.60	Н	-	-	-69.52	9.44	-60.07	-47.1
8562.00	Н	-	-	-68.20	9.58	-58.62	-45.6

Table 7-18. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1312)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 95 of 109
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.20	Н	-	-	-69.39	6.35	-63.03	-50.0
5197.80	Н	277	71	-69.50	9.05	-60.45	-47.5
6930.40	Н	-	-	-70.44	9.38	-61.06	-48.1
8663.00	Н	-	-	-67.77	9.58	-58.19	-45.2

Table 7-19. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)

MHz

**OPERATING FREQUENCY:** 

MODULATION SIGNAL:

1752.60 WCDMA DISTANCE: 3 meters LIMIT: -13 dBm

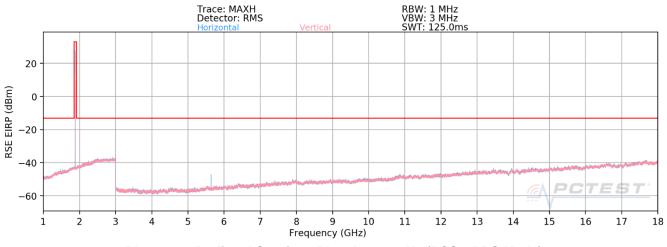
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3505.20	H	-	-	-68.41	6.50	-61.91	-48.9
5257.80	Н	113	169	-69.05	8.96	-60.09	-47.1
7010.40	Н	-	-	-68.32	9.14	-59.17	-46.2
8763.00	Н	-	-	-68.52	9.58	-58.94	-45.9

Table 7-20. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 96 of 100
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## PCS GPRS Mode



Plot 7-106. Radiated Spurious Plot above 1GHz (PCS GPRS Mode)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3700.40	Н	104	138	-63.70	6.56	-57.13	-44.1
5550.60	Н	115	30	-51.99	8.72	-43.27	-30.3
7400.80	Н	-	-	-60.54	8.41	-52.14	-39.1
9251.00	Н	-	-	-60.66	9.47	-51.19	-38.2

Table 7-21. Radiated Spurious Data (PCS GPRS Mode – Ch. 512)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 97 of 109
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OPERATING FREQUENCY:	188	80.00	MHz
MODULATION SIGNAL:	GPRS (GMSK)	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	115	225	-62.69	6.67	-56.02	-43.0
5640.00	Н	101	30	-51.34	8.81	-42.52	-29.5
7520.00	Н	-	-	-60.25	8.48	-51.76	-38.8
9400.00	Н	-	-	-59.90	9.32	-50.59	-37.6

Table 7-22. Radiated Spurious Data (PCS GPRS Mode - Ch. 661)

OPERATING FREQUENCY:

MODULATION SIGNA

REQUENCY:	190	9.80
ON SIGNAL:	GPRS (GMSK)	_
DISTANCE:	3	meters
LIMIT:	-13	dBm

MHz

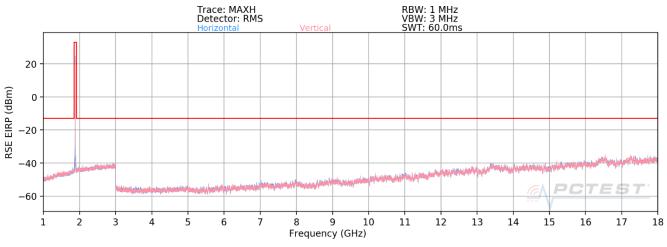
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3819.60	Н	121	233	-62.23	7.00	-55.24	-42.2
5729.40	Н	100	220	-54.38	8.77	-45.61	-32.6
7639.20	Н	-	-	-60.70	8.54	-52.16	-39.2
9549.00	Н	-	-	-60.26	9.43	-50.83	-37.8

Table 7-23. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: A3LSMA716U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 88 of 108
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## PCS CDMA Mode





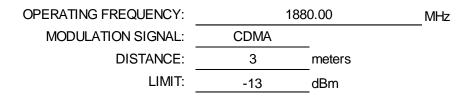
OPERATING FREQUENCY:	18	51.25	MHz
MODULATION SIGNAL:	CDMA		
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3702.50	Н	-	-	-68.64	6.89	-61.75	-48.7
5553.75	Н	-	-	-70.47	9.02	-61.45	-48.4
7405.00	Н	-	-	-69.38	9.22	-60.16	-47.2

Table 7-24. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)

FCC ID: A3LSMA716U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	106	135	-68.94	6.93	-62.01	-49.0
5640.00	Н	-	-	-70.89	9.15	-61.74	-48.7
7520.00	Н	-	-	-69.25	9.31	-59.94	-46.9

Table 7-25. Radiated Spurious Data (PCS CDMA Mode - Ch. 600)

190	8.75 M	Hz
CDMA	_	
3	meters	
-13	dBm	
	CDMA 3	CDMA 3 meters

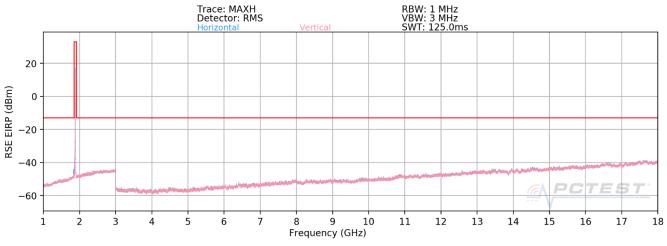
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	Н	104	226	-66.99	7.10	-59.89	-46.9
5726.25	Н	-	-	-70.14	9.03	-61.10	-48.1
7635.00	Н	-	-	-67.86	9.29	-58.58	-45.6

Table 7-26. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

	FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
	Test Report S/N:	Test Dates:	EUT Type:	Dege 00 of 100	
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## PCS WCDMA Mode



Plot 7-108. Radiated Spurious Plot above 1GHz (PCS WCDMA Mode)

OPERATING FREQUENCY:	185	52.40	MHz
MODULATION SIGNAL:	WCDMA	_	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3704.80	Н	-	-	-68.76	6.89	-61.87	-48.9
5557.20	Н	-	-	-70.09	9.03	-61.06	-48.1

Table 7-27. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)

OPERATING FREQUENCY:	188	30.00	MHz
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antenna Gain	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	-	-	-69.33	6.93	-62.40	-49.4
5640.00	Н	-	-	-70.75	9.15	-61.60	-48.6
	1	able 7-28.	Radiated S	purious Data (PCS	WCDMA Mode -	Ch. 9400)	

FCC ID: A3LSMA716U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
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OPERATING FREQUENCY:	190	07.60	MHz
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.20	Н	-	-	-69.12	7.09	-62.03	-49.0
5722.80	Н	-	-	-71.55	9.04	-62.52	-49.5

Table 7-29. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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#### **Test Overview and Limit**

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

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

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

#### Test Procedure Used

ANSI/TIA-603-E-2016

#### Test Settings

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

#### Test Setup

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

#### Test Notes

None

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 02 of 108
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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	190	
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	836,599,998	-2	-0.000002
100 %		- 20	836,599,945	-55	-0.0000066
100 %		- 10	836,600,259	259	0.0000310
100 %		0	836,599,980	-20	-0.0000024
100 %		+ 10	836,600,464	464	0.0000555
100 %		+ 20	836,600,065	65	0.0000078
100 %		+ 30	836,600,123	123	0.0000147
100 %		+ 40	836,599,724	-276	-0.0000330
100 %		+ 50	836,599,892	-108	-0.0000129
BATT. ENDPOINT	3.63	+ 20	836,600,167	167	0.0000200

Table 7-30. Frequency Stability Data (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 04 of 109
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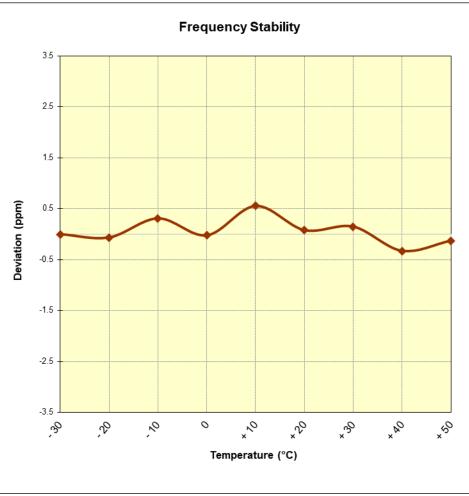


Figure 7-9. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage OF of 100
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OPERATING FREQUENCY:	836,520,000	Hz
CHANNEL:	384	_
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	836,519,978	-22	-0.0000026
100 %		- 20	836,519,722	-278	-0.0000332
100 %		- 10	836,520,102	102	0.0000122
100 %		0	836,520,100	100	0.0000120
100 %		+ 10	836,519,909	-91	-0.0000109
100 %		+ 20	836,519,751	-249	-0.0000298
100 %		+ 30	836,520,143	143	0.0000171
100 %		+ 40	836,520,263	263	0.0000314
100 %		+ 50	836,519,657	-343	-0.0000410
BATT. ENDPOINT	3.63	+ 20	836,520,350	350	0.0000418

Table 7-31. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 06 of 100
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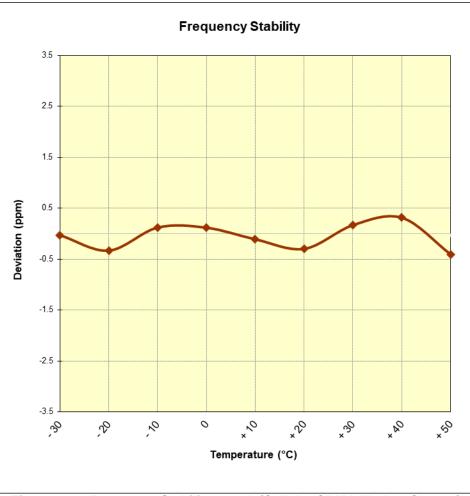


Figure 7-10. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 07 of 100
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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	4183	-
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	-

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	836,600,104	104	0.0000124
100 %		- 20	836,599,837	-163	-0.0000195
100 %		- 10	836,600,240	240	0.0000287
100 %		0	836,599,893	-107	-0.0000128
100 %		+ 10	836,599,845	-155	-0.0000185
100 %		+ 20	836,599,981	-19	-0.0000023
100 %		+ 30	836,600,007	7	0.000008
100 %		+ 40	836,599,960	-40	-0.0000048
100 %		+ 50	836,600,117	117	0.0000140
BATT. ENDPOINT	3.63	+ 20	836,600,147	147	0.0000176

Table 7-32. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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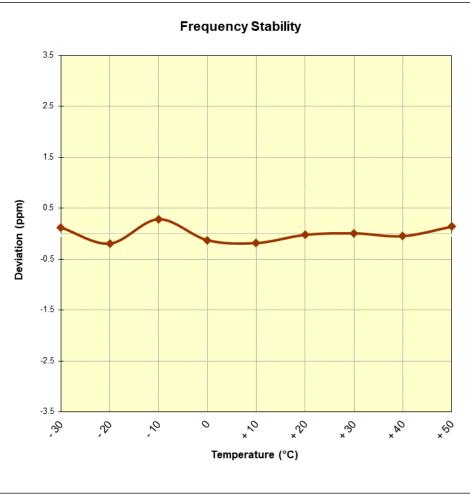


Figure 7-11. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	
REFERENCE VOLTAGE:	4.26	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	1,732,599,579	-421	-0.0000243
100 %		- 20	1,732,600,136	136	0.0000078
100 %		- 10	1,732,600,060	60	0.0000035
100 %		0	1,732,599,955	-45	-0.0000026
100 %		+ 10	1,732,600,194	194	0.0000112
100 %		+ 20	1,732,599,598	-402	-0.0000232
100 %		+ 30	1,732,599,915	-85	-0.0000049
100 %		+ 40	1,732,600,149	149	0.0000086
100 %		+ 50	1,732,599,906	-94	-0.0000054
BATT. ENDPOINT	3.63	+ 20	1,732,599,781	-219	-0.0000126

Table 7-33. Frequency Stability Data (AWS WCDMA Mode – Ch. 1413)

### Note:

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

FCC ID: A3LSMA716U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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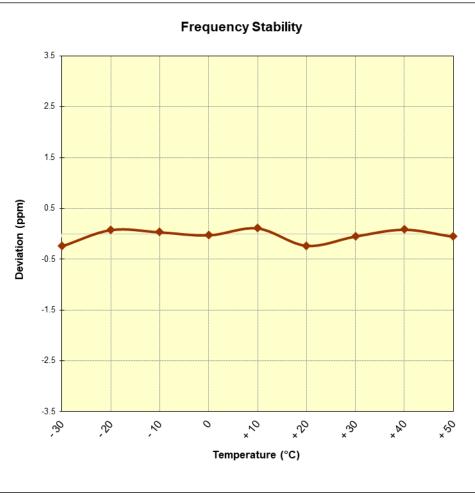


Figure 7-12. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	_
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	1,879,999,709	-291	-0.0000155
100 %		- 20	1,880,000,128	128	0.0000068
100 %		- 10	1,880,000,004	4	0.0000002
100 %		0	1,879,999,935	-65	-0.0000035
100 %		+ 10	1,880,000,062	62	0.0000033
100 %		+ 20	1,880,000,033	33	0.0000018
100 %		+ 30	1,879,999,917	-83	-0.0000044
100 %		+ 40	1,880,000,058	58	0.0000031
100 %		+ 50	1,880,000,031	31	0.0000016
BATT. ENDPOINT	3.63	+ 20	1,880,000,032	32	0.0000017

Table 7-34. Frequency Stability Data (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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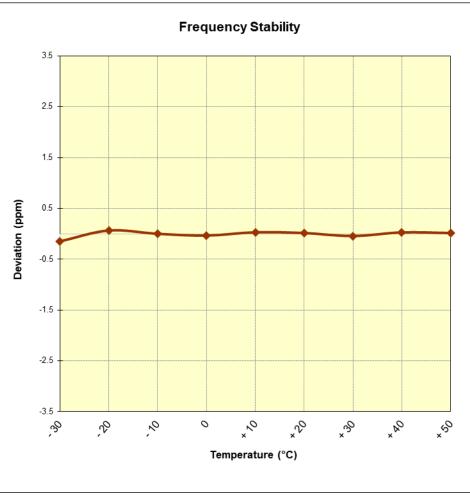


Figure 7-13. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMA716U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 109
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	600	_
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	1,879,999,841	-159	-0.0000085
100 %		- 20	1,880,000,036	36	0.0000019
100 %		- 10	1,880,000,149	149	0.0000079
100 %		0	1,879,999,638	-362	-0.0000193
100 %		+ 10	1,879,999,722	-278	-0.0000148
100 %		+ 20	1,879,999,824	-176	-0.0000094
100 %		+ 30	1,879,999,779	-221	-0.0000118
100 %		+ 40	1,879,999,688	-312	-0.0000166
100 %		+ 50	1,879,999,830	-170	-0.000090
BATT. ENDPOINT	3.63	+ 20	1,880,000,242	242	0.0000129

Table 7-35. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMA716U	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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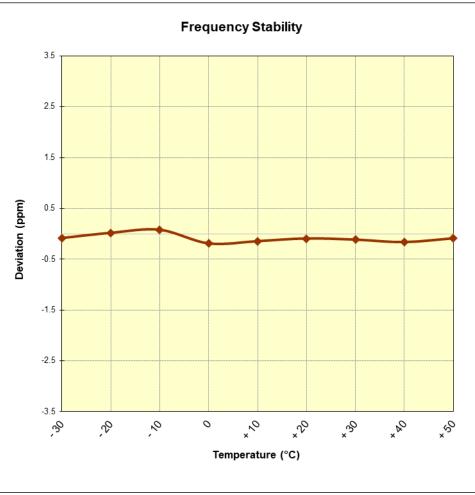


Figure 7-14. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMA716U	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	_
REFERENCE VOLTAGE:	4.26	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.26	- 30	1,880,000,141	141	0.0000075
100 %		- 20	1,879,999,724	-276	-0.0000147
100 %		- 10	1,879,999,893	-107	-0.0000057
100 %		0	1,879,999,973	-27	-0.0000014
100 %		+ 10	1,880,000,040	40	0.0000021
100 %		+ 20	1,879,999,682	-318	-0.0000169
100 %		+ 30	1,879,999,740	-260	-0.0000138
100 %		+ 40	1,880,000,268	268	0.0000143
100 %		+ 50	1,879,999,783	-217	-0.0000115
BATT. ENDPOINT	3.63	+ 20	1,880,000,055	55	0.0000029

Table 7-36. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMA716U	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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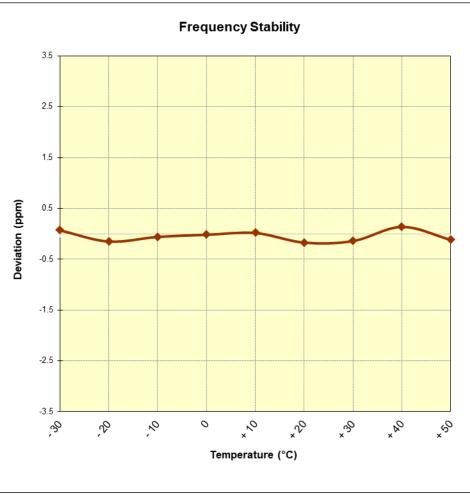


Figure 7-15. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMA716U	Proud to be part of @ element	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: A3LSMA716U** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

FCC ID: A3LSMA716U	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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