

PCTEST ENGINEERING LABORATORY, INC.

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## MEASUREMENT REPORT

FCC Part 22, 24, & 27

#### Applicant Name:

LG Electronics MobileComm U.S.A 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States

#### Date of Testing: 3/2/2017-3/22/2017 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 1M1703010080-02.ZNF

## FCC ID:

#### ZNFM255

**APPLICANT:** 

## LG ELECTRONICS MOBILECOMM U.S.A

Application Type:	Certification
Model:	LG-M255
Additional Model(s):	LGM255, M255
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§2 §22(H) §24(E) §27(L)
Test Procedure(s):	ANSI/TIA-603-D-2010, KDB 971168 D01 v02r02
Test Device Serial No.:	identical prototype [S/N: 06872, 06864]

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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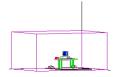


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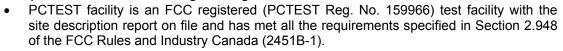


## §2.1033 General Information

APPLICANT:	LG Electronics MobileComm U.	.S.A			
APPLICANT ADDRESS:	1000 Sylvan Avenue				
	Englewood Cliffs, NJ 07632, Ur	nited States			
TEST SITE:	PCTEST ENGINEERING LABO	DRATORY, INC.			
TEST SITE ADDRESS:	7185 Oakland Mills Road, Colu	mbia, MD 21046 USA			
FCC RULE PART(S):	§2 §22(H) §24(E) §27(L)				
BASE MODEL:	LG-M255				
FCC ID:	ZNFM255				
FCC CLASSIFICATION:	PCS Licensed Transmitter Held	d to Ear (PCE)			
MODE:	GSM/ GPRS / EDGE / WCDMA	A			
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)				
Test Device Serial No.:	06872, 06864	Production 🛛 Pre-Production	Engineering		
DATE(S) OF TEST:	3/2/2017-3/22/2017				
TEST REPORT S/N:	1M1703010080-02.ZNF				

#### **Test Facility / Accreditations**

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



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

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## MEASUREMENT REPORT FCC Part 22, 24, & 27



			ERP/	EIRP	
	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator
GPRS850	22H	824.2 - 848.8	1.247	30.96	240KGXW
EDGE850	22H	824.2 - 848.8	0.245	23.89	246KG7W
WCDMA850	22H	826.4 - 846.6	0.214	23.30	4M15F9W
WCDMA1700	27	1712.4 - 1752.6	0.209	23.21	4M16F9W
GPRS1900	24E	1850.2 - 1909.8	1.405	31.48	245KGXW
EDGE1900	24E	1850.2 - 1909.8	0.323	25.09	245KG7W
WCDMA1900	24E	1852.4 - 1907.6	0.223	23.49	4M14F9W

**EUT Overview** 

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#### INTRODUCTION . 0

#### 1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

#### **Testing Facility** 1.2

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

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

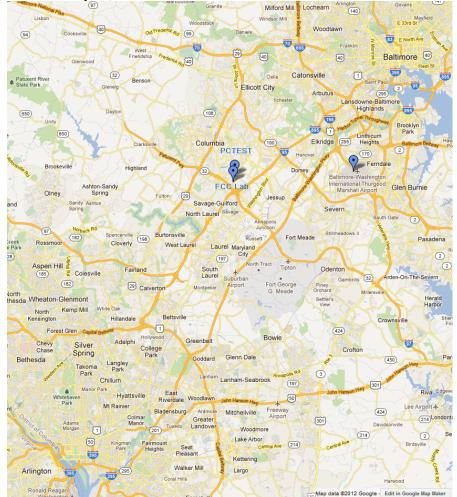


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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01/09/2016



## 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFM255**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

### 2.2 Device Capabilities

This device contains the following capabilities:

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

#### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-D-2010 and KDB 971168 D01 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

## 2.4 EMI Suppression Device(s)/Modifications

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

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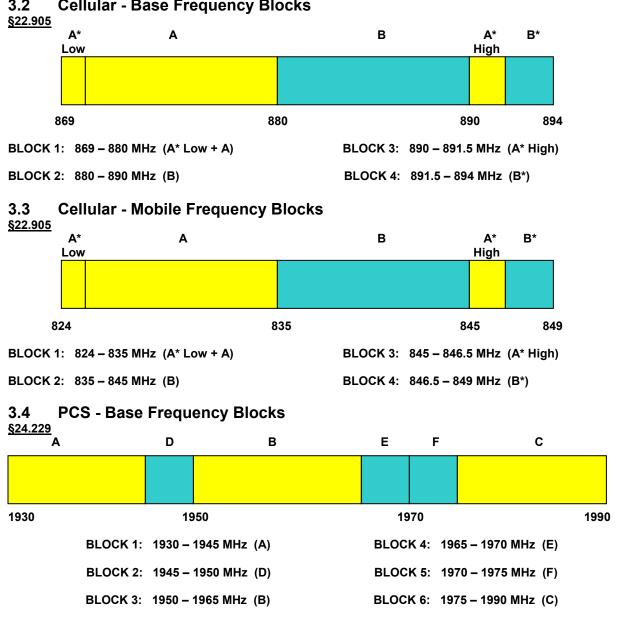


#### **DESCRIPTION OF TESTS** 3.0

#### **Evaluation Procedure** 3.1

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



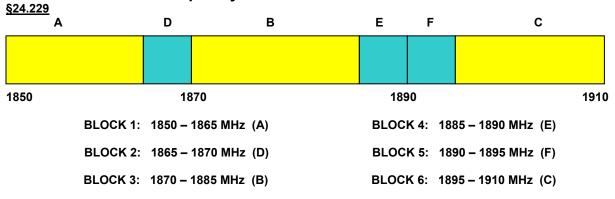


#### **Cellular - Base Frequency Blocks** 3.2

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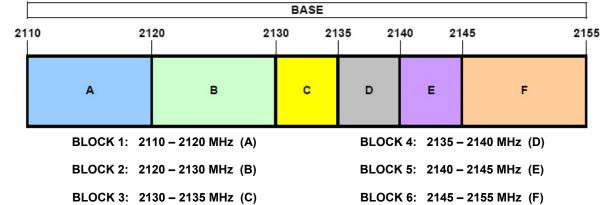


## 3.5 PCS - Mobile Frequency Blocks



#### 3.6 AWS - Base Frequency Blocks

<u>§27.5(h)</u>



## 3.7 AWS - Mobile Frequency Blocks

<u>§27.5(h)</u>

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

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#### 3.8 Radiated Measurements

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

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

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

Per the guidance of ANSI/TIA-603-D-2010, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

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

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## 4.0 MEASUREMENT UNCERTAINTY

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

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

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2006.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx3	Licensed Transmitter Cable Set	7/12/2016	Annual	7/12/2017	N/A
Agilent	N9030A	PXA Signal Analyzer (44GHz)	4/1/2016	Annual	4/1/2017	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	2/26/2016	Biennial	2/26/2018	441128
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
Espec	ESX-2CA	Environmental Chamber	4/4/2016	Annual	4/4/2017	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/26/2016	Biennial	4/26/2018	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	8/28/2016	Biennial	8/28/2018	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128338
K & L	11SH10-3075/U18000	High Pass Filter	7/11/2016	Annual	7/11/2017	11SH10-3075/U18000-2
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/6/2016	Annual	7/6/2017	13SH10-1000/U1000-1
Mini-Circuits	PWR-SENS-4RMS	USB Power Sensor	4/4/2016	Annual	4/4/2017	11210140001
Mini-Circuits	SSG-4000HP	USB Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	TVA-11-422	RF Power Amp	N/A			QA1303002
PCTEST	-	EMC Switch System	7/11/2016	Annual	7/11/2017	NM1
PCTEST	-	EMC Switch System	7/6/2016	Annual	7/6/2017	NM2
Rohde & Schwarz	CMU200	Base Station Simulator	6/2/2016	Annual	6/2/2017	109892
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/15/2016	Annual	7/15/2017	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	7/11/2016	Annual	7/11/2017	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	4/7/2016	Annual	4/7/2017	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	3/30/2016	Biennial	3/30/2018	9105-2403
Schwarzbeck	VULB-9161SE	Trilog Super Broadband Test Antenna	11/13/2015	Biennial	11/13/2017	9161-4075
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107
Schwarzbeck	UHA 9105	Dipole Antenna	8/26/2016	Biennial	8/26/2017	2696

#### Table 5-1. Test Equipment

#### Notes:

1. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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#### SAMPLE CALCULATIONS 6.0

## **GPRS Emission Designator**

#### Emission Designator = 250KGXW

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

#### **EDGE Emission Designator**

#### Emission Designator = 250KG7W

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

#### WCDMA Emission Designator

#### Emission Designator = 4M16F9W

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

#### Spurious Radiated Emission

#### Example: Spurious emission at 3700.40 MHz

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

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## 7.0 TEST RESULTS

## 7.1 Summary

Company Name:	LG Electronics MobileComm U.S.A
FCC ID:	ZNFM255
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM/ GPRS / EDGE / WCDMA</u>

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

#### Table 7-1. Summary of Test Results

#### Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "2G/3G Automation," Version 3.7.

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# 7.2 Occupied Bandwidth §2.1049

#### Test Overview

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

#### Test Procedure Used

KDB 971168 D01 v02r02 - Section 4.2

#### Test Settings

- 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.

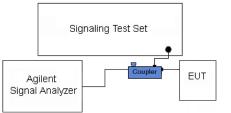


Figure 7-1. Test Instrument & Measurement Setup

#### Test Notes

None.

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			01/09/2016



Keysight Spectrum Analyzer - Occupied B RL RF 50 Ω AC	W CORREC	SENSE:INT	ALIG	N AUTO 08:42:51	PM Mar 16, 2017	
	• <b>•</b> •	Center Freq: 836.600 Trig: Free Run #Atten: 34 dB		Radio St /100		Trace/Detector
15 dB/div Ref 40.00 dB	ņ					
25.0	montul	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mar Mar	m .		Clear Write
20.0 20.0 35.0					when	Averag
50.0						Arenug
96.0						Max Hol
enter 836.6 MHz es BW 4.7 kHz		#VBW 15 kH	lz		an 500 kHz p 21.6 ms	Min Hol
Occupied Bandwid		Total P	ower	38.0 dBm		
	40.01 kH					Detecto Peak
Transmit Freq Error	123 F		3W Power	99.00 %		Auto <u>Ma</u>
x dB Bandwidth	307.9 kH	lz x dB		-26.00 dB		
G				STATUS		

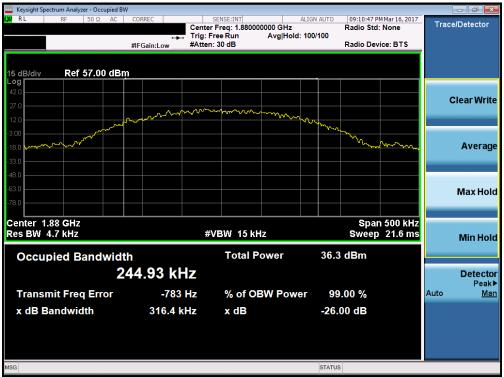
Plot 7-1. Occupied Bandwidth Plot (Cellular GPRS Mode – Ch. 190)



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

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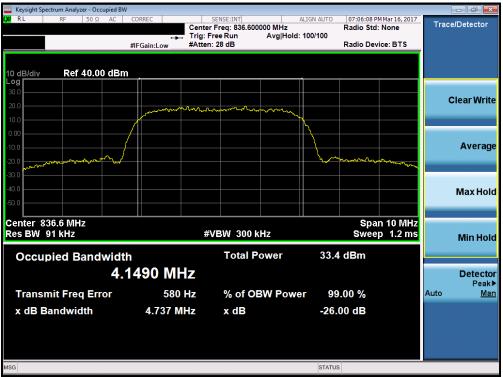


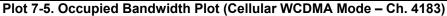


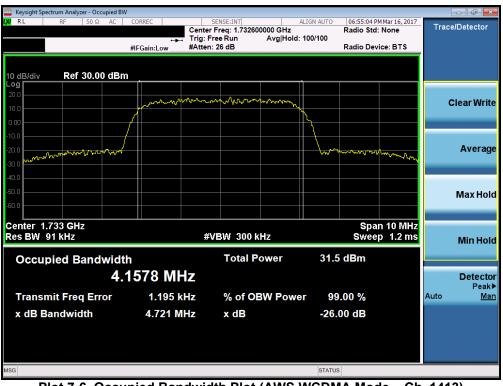
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-6. Occupied Bandwidth Plot (AWS WCDMA Mode - Ch. 1413)

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Plot 7-7. Occupied Bandwidth Plot (PCS WCDMA Mode - Ch. 9400)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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#### 7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

#### Test Overview

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

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

#### Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

#### Test Settings

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

#### Test Setup

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

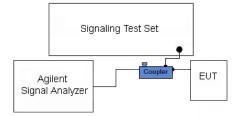


Figure 7-2. Test Instrument & Measurement Setup

#### Test Notes

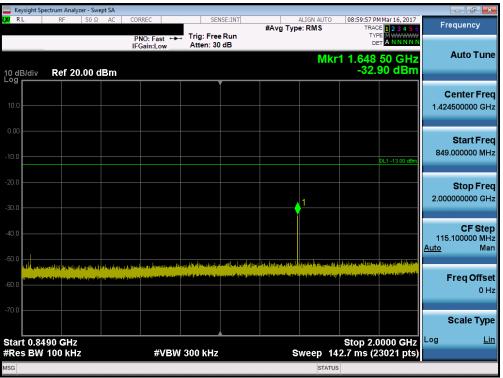
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth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

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	ctrum Analyzer - S										×
0 RL	RF 50	Ω AC	CORREC PNO: Fast ↔ IFGain:Low			#Avg Typ	ALIGN AUTO e: RMS	TRAC	Mar 16, 2017 E 1 2 3 4 5 6 E M WWWWW T A N N N N N	Frequency	У
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10.00									DL1 -13.00 dBm	Start I 30.000000	
30.0										<b>Stop I</b> 823.000000	
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tart 30.0 Res BW			#VB\	N 300 kHz		s	weep 98	Stop 8 .33 ms (1	23.0 MHz 5861 pts)	Log	Li

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



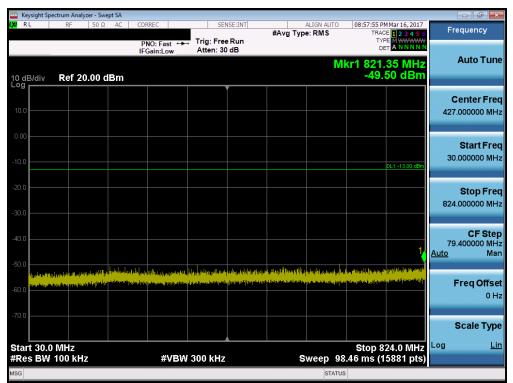
Plot 7-9. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 128)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	pectrum Analyzer - S										
X/RL	RF 50	Ω AC	CORREC		E:INT	#Avg Typ	ALIGN AUTO E: RMS	TRAC	Mar 16, 2017 E 1 2 3 4 5 6	Frequ	ency
	_		PNO: Fast ++ IFGain:Low	Trig: Free #Atten: 30							
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-10.0									DL1 -13.00 dBm	St: 2.000000	<b>art Fred</b> 0000 GH:
-30.0	n a se an	الماريدين (10) <sub>19</sub> 41 1941 - معربين من المال 1941 - معربين من المالي	n filme a ligner i fin i state for	un en al se sen de la company de la comp	and Maria and Maria	Japaneser Maderso Japaneser Maderso	ing the provident of the second s	a late bet the late of the late of the	1 1) method and toolo 1) method and tool and too	St 10.000000	op Fred 0000 GH2
50.0 <b></b>											CF Stej 0000 MH Mai
70.0										Fre	<b>q Offse</b> 0 H
80.0											ale Type
Start 2.0 #Res BW	00 GHz / 1.0 MHz		#VBW	3.0 MHz		s	weep 13	Stop 10 3.87 ms <u>(</u> 1	.000 GHz 6001 pts)	Log	Lir
ISG							STATU				





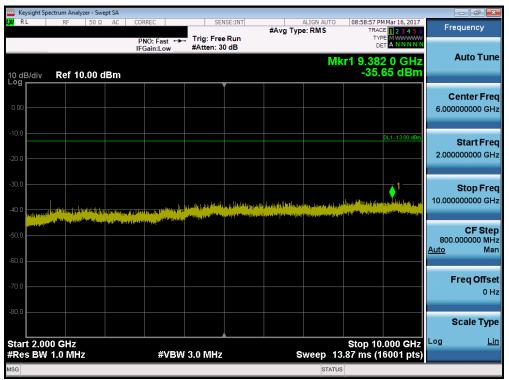
Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer - S	Swept SA									
X/RL	RF 50	Ω AC	CORREC		SE:INT	#Avg Type	ALIGN AUTO E: RMS	TRAC	4 Mar 16, 2017 E <b>1 2 3 4 5 6</b>	Freque	ency
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0.00										Sta	art Frec
-10.0									DL1 -13.00 dBm	849.000	
-30.0							<b>♦</b> <sup>1</sup>			2.000000	o <b>p Frec</b> 000 GH:
-40.0										( 115.100 <u>Auto</u>	CF Step 000 MH Mar
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Start 0.84	190 GHz							Stop 2.0	000 GHz	Sca Log	le Type <u>Lir</u>
≉Res BW	100 kHz		#VBW	/ 300 kHz		S		2.7 ms (2			
ISG							STATUS	5			





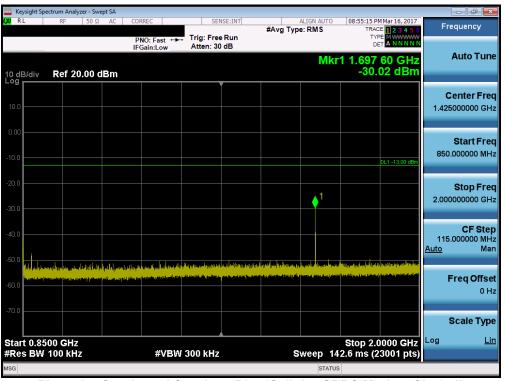
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode - Ch. 190)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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- Keysight S	pectrum Analyze	er - Swep	it SA										
X/RL	RF	50 Ω	AC CO	ORREC		SEI	NSE:INT		ALIGN AUTO		M Mar 16, 2017	Fr	equency
	_			PNO: Fas FGain:Lo		Trig: Free Atten: 30		#Avg Typ	e: RMS	TYP	E 1 2 3 4 5 6 E M WWWW A N N N N N		
10 dB/div Log	Ref 20.	00 di	Зm						M	kr1 808. -49.:	70 MHz 25 dBm		Auto Tune
10.0													Center Freq 7.000000 MHz
-10.0											DL1 -13.00 dBm	30	Start Freq 0.000000 MHz
-20.0												824	Stop Freq 1.000000 MHz
-40.0											4	79 <u>Auto</u>	CF Step 9.400000 MHz Mar
	analah yang sebagai ng		ineral and a second	TRI BANAN MARINA Marina Principala	nganyai da Nabura ta	al propologiadas not positivo anno	langs film i finger og fil der ser film og meller i	( ) sen production ariteration ( sing)	, Mistriany (n. 1944) (d. 1946) - Antonio Antonio (d. 1947)	n di plana ng pang pang bandi Aguna kang pang bandi sina kang pang bandi sina kang pang bang pang bang pang bang pang bang pang bang pang ba Aguna kang pang bang b	(fill) (fill) (fill) (fill) (fill) (fill) Tradition (fill) (fill) (fill) (fill)		Freq Offse
-70.0													Scale Type
Start 30. #Res BW	0 MHz / 100 kHz			#	VBW :	300 kHz		s	weep <u>98</u>		24.0 MHz 5881 pts)	Log	<u>Lir</u>
ISG									STATUS	3			





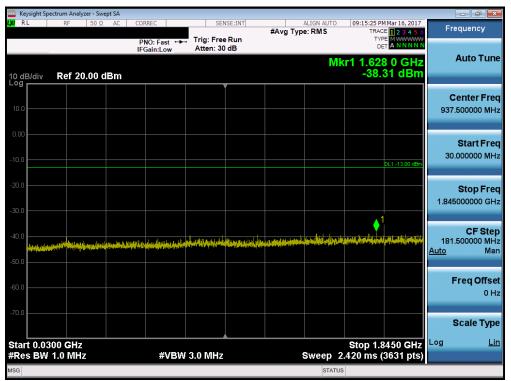


FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	pectrum Analyze											-   #   🛃
RL	RF	50 Ω AC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M Mar 16, 2017 CE 1 2 3 4 5 6	Fred	quency
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D.O											Fr	r <b>eq Offs</b> 0 I
0.0												cale Typ
	00 GHz / 1.0 MHz			#VBW :	3.0 MHz		s	weep 1	Stop 10 3.87 ms (	0.000 GHz 16001 pts)	Log	L
G								STAT	IS			





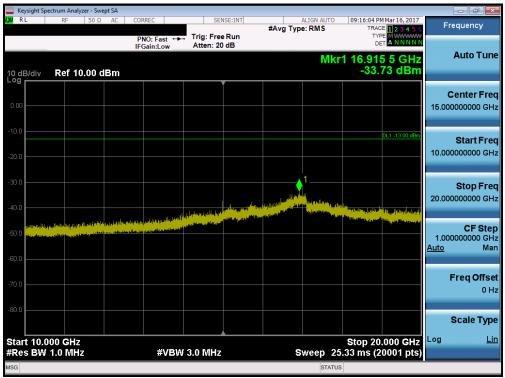
Plot 7-17. Conducted Spurious Plot (PCS GPRS Mode - Ch. 512)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer	- Swept	SA									
XI RL	RF	50 Ω	AC CO	RREC	SE	NSE:INT		ALIGN AUTO		Mar 16, 2017	Frequ	Jency
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10.0												n <b>ter Freq</b> 10000 GHz
-10.0										DL1 -13.00 dBm		tart Freq
-20.0									1_			<b>top Freq</b> 10000 GHz
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-50.0											Fre	e <b>q Offset</b> 0 Hz
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Start 1.9′ #Res BW	10 GHz 1.0 MHz			#VB	W 3.0 MHz		s	weep 14	Stop 10 4.02 ms (1	.000 0112	Log	<u>Lin</u>
//SG								STATU	s			





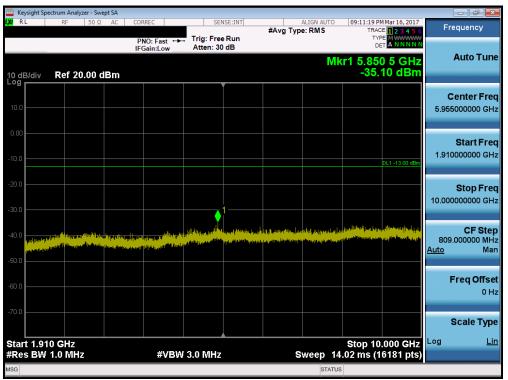
Plot 7-19. Conducted Spurious Plot (PCS GPRS Mode - Ch. 512)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Sp	ectrum Analyzer	- Swept SA								
X/RL	RF 5	0Ω AC	CORREC		ISE:INT	#Avg Typ	ALIGN AUTO	TRAC	M Mar 16, 2017	Frequency
			PNO: Fast ++ IFGain:Low	. Trig: Free Atten: 30						Auto Tun
10 dB/div Log	Ref 20.0	0 dBm					MI	kr1 1.33 -39.	4 0 GHz 27 dBm	
				Ì						Center Fre
10.0										940.000000 MH
0.00										Start Fre
-10.0									DL1 -13.00 dBm	30.000000 MH
-20.0										Stop Fre
-30.0										1.850000000 GH
-40.0							<b>♦</b> <sup>1</sup>			CF Ste
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-50.0										Freq Offse
-60.0										0+
-70.0										Scale Typ
Start 0.03	00 GH7							Stop 1 2	3500 GHz	
#Res BW			#VBW	3.0 MHz			Sweep 2	2.427 ms (	3641 pts)	
ISG							STATU	s		



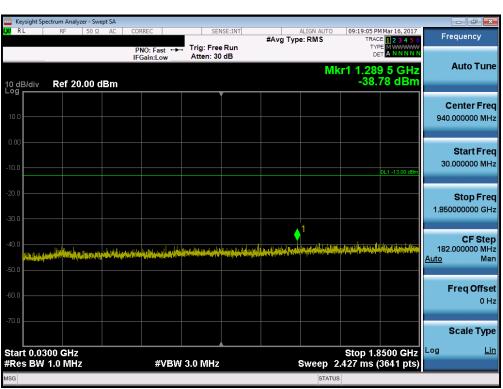


Plot 7-21. Conducted Spurious Plot (PCS GPRS Mode - Ch. 661)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyze										_	
U RL	RF	50 Ω AC	CORREC	Fast ↔►→	SEN	Run	#Avg Typ	ALIGN AUTO e: RMS	TR/	PM Mar 16, 2017 ACE 1 2 3 4 5 6 YPE M WWWWWW DET A N N N N N	Frequ	uency
0 dB/div	Ref 10.	00 dBm	IFGain		Atten: 20	dB		M	(r1 16.77	2 0 GHz .70 dBm	A	uto Tun
).00											Cer 15.00000	nter Fre 10000 GH
20.0										DL1 -13.00 dBm	<b>S</b> 10.00000	<b>tart Fre</b> 10000 GH
40.0				and set for a state	Toray on Pringer (T	a i te i a jega se i i a da				an a trapper to proceed at	<b>S</b> 20.00000	<b>top Fre</b> 10000 GH
i0.0 <mark>. N. H. H.</mark>		and the provention	and whether the sector for						198			<b>CF Ste</b> 0000 G⊦ Ma
'0.0											Fre	eqOffse 0⊦
30.0												ale Typ
	000 GHz 1.0 MHz			#VBW 3	.0 MHz		S	weep 2	Stop 2 25.33 ms (	0.000 GHz 20001 pts)	Log	Li
G								STAT	US			



Plot 7-22. Conducted Spurious Plot (PCS GPRS Mode - Ch. 661)



FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyze	r - Swept	SA										
X/RL	RF	50 Ω	AC CO	ORREC		SE	NSE:INT		ALIGN AUTO		4 Mar 16, 2017	Free	quency
				PNO: Fa FGain:L	ist ↔→ ow	Trig: Fre Atten: 3		#Avg Typ		TYP	E 1 2 3 4 5 6 E M WWWW T A N N N N N		
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10.0							<b>.</b>						enter Fre 600000 GH
10.0											DL1 -13,00 dBm		<b>Start Fre</b> 1000000 GH
30.0											1_		<b>Stop Fre</b> 100000 GH
40.0 50.0	and the second s		ange kennengen. Alse seine	ज न्यं धे कात्त् १९ विक्रिय		ndina dia 1944 Addina dia 497		poper og skylder for det for skylder og s	altalog av gegladder ge Gelder a san an a	a la de la de la caracteria de la deservación de la deservación de la deservación de la deservación de la dese Constante de la deservación de la deserv	National Action of the second second	808.5 <u>Auto</u>	CF Ste 00000 MH Ma
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70.0												S	cale Typ
tart 1.91 Res BW	15 GHz 1.0 MHz			#	VBW	3.0 MHz		S	Sweep 14	Stop 10 .01 ms (1	.000 GHz 6171 pts)	Log	Li
SG									STATUS	3			



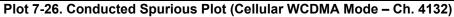


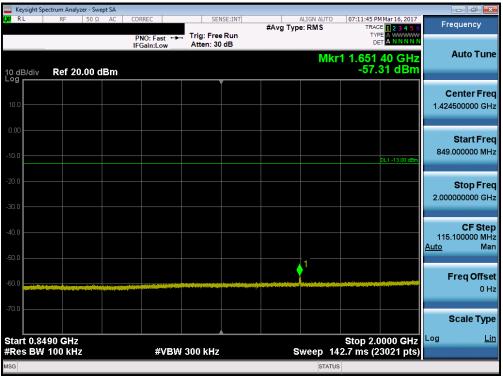
Plot 7-25. Conducted Spurious Plot (PCS GPRS Mode - Ch. 810)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager							
Test Report S/N:	Test Dates:	EUT Type:	Dogo 29 of 91							
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🔤 Keysight Sp	ectrum Analy.	zer - Swept	t SA										
X/RL	RF	50 Ω	AC	CORREC		SE	NSE:INT		ALIGN AUTO		M Mar 16, 2017	Er	equency
				PNO: Fa IFGain:L	ist ↔→ ow	Trig: Fre Atten: 30		#Avg Ty	pe: RMS	TY	CE 1 2 3 4 5 6 PE A WWWW ET A NNNNN		
10 dB/div Log	Ref 20	.00 dE	3m						M	kr1 822 -31.	.00 MHz 56 dBm		Auto Tune
10.0													Center Freq 5.000000 MHz
-10.0											DL1 -13.00 dBm	30	Start Freq 0.000000 MHz
-20.0											1	822	Stop Freq 2.000000 MHz
-40.0												79 <u>Auto</u>	CF Step 0.200000 MHz Man
-60.0					ter som på första av e		I Payment Mail and All Care Market				and the second	1	Freq Offset 0 Hz
-70.0													Scale Type
Start 30.0 #Res BW		2		#	VBW :	300 kHz			Sweep 98		22.0 191112		Lin
//SG									STATUS	5			





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 81
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🔤 Keysight Sp	ectrum Ana	lyzer - Sw	ept SA										
LXI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#A T	ALIGN AUTO		M Mar 16, 2017	Ere	equency
				PNO: Fa IFGain:L	ast ↔ .ow	Trig: Fre Atten: 20		#Avg Typ	DE: RIVIS	TY D	CE 1 2 3 4 5 6 PE A WWWWW A NNNNN		
10 dB/div Log	Ref 1	0.00 c	dBm						MI	(r1 2.48 -49.	2 0 GHz 70 dBm		Auto Tune
0.00													<b>enter Freq</b> 0000000 GHz
-10.0											DL1 -13.00 dBm	2.000	Start Freq
-30.0												10.000	Stop Freq
-50.0	1	~~~~~										800 <u>Auto</u>	<b>CF Step</b> .000000 MHz Man
-70.0												F	F <b>req Offset</b> 0 Hz
-80.0													Scale Type
Start 2.00 #Res BW		Iz		#	VBW :	3.0 MHz			Sweep 13	Stop 10 3.87 ms (1	.000 GHz 6001 pts)	Log	Lin
MSG									STATU	s			

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

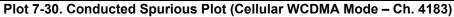


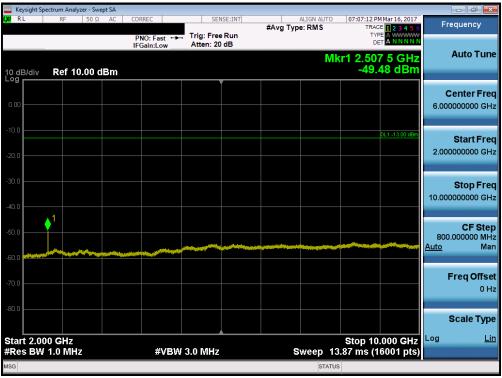
Plot 7-29. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 20 of 91
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	ectrum Analy												
XI RL	RF	50 Ω	AC	CORREC		S	ENSE:INT	#Ava T	ALIGN AUTO		MMar 16, 2017 CE <b>1 2 3 4 5 6</b>	Freq	uency
				PNO: Fa IFGain:L	ast ↔→ ow	Trig: Fr Atten: 3		#rivg i	ype. Kino	TY			
10 dB/div Log	Ref 20	.00 dl	Bm						М	kr1 849 -55	.20 MHz 73 dBm	A	uto Tune
10.0													n <b>ter Freq</b> 00000 GHz
-10.0											DL1 -13.00 dBm		tart Freq
-20.0													top Fred
40.0 50.0 <b>- 1</b> —												115.10 <u>Auto</u>	CF Step 00000 MH: Mar
-60.0												Fr	e <b>q Offse</b> t 0 Hz
-70.0												Sc	ale Type
Start 0.84 #Res BW		2		#	VBW	300 kH	z		Sweep 14	Stop 2. 2.7 ms (2	0000 0112	Log	Lir
ASG									STATUS	S			





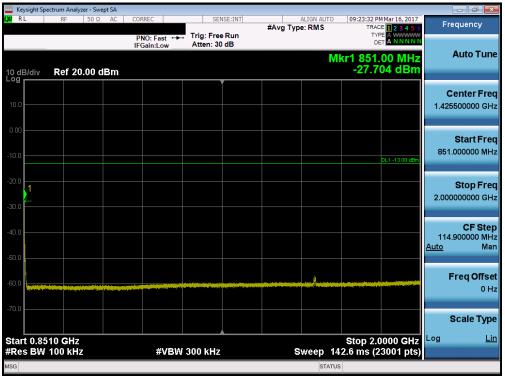
Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	_G	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 21 of 91
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- 6							pt SA	Analyzer - Swe		
Frequency	09:22:14 PM Mar 16, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW	ALIGN AUTO	SENSE:INT	SEI	ast ↔	CORREC	AC	50 Ω	- P	ol RL
	TYPE A WWWWW DET A NNNNN			Atten: 30		PNO: Fa				
Auto Tun	(r1 807.20 MHz -58.94 dBm	MI					Bm	f 20.00 d	3/div Re	10 dE _0g r
Center Fre										
427.000000 MH										10.0
Start Fre										0.00
30.000000 MH										10.0
	DL1 -13.00 dBm									
Stop Fre										20.0
824.000000 MH										30.0
CF Ste										40.0
79.400000 MH <u>Auto</u> Ma										
	1									50.0
Freq Offse		1					-	the local design of the second second		60.0
										70.0
Scale Typ										
Log <u>Li</u>	0100 024.0 19112								t 30.0 MH	
	46 ms (15881 pts)	Sweep 98	12	300 kHz	FABM :	#		KHZ	s BW 100	IRC+

Plot 7-32. Conducted Spurious Plot (Cellula	ar WCDMA Mode – Ch. 4233)
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Plot 7-33. Conducted Spurious Plot (Cellular WCDMA Mode - Ch. 4233)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 91
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🔤 Keysight Sp	ectrum Anal	yzer - Swe	ept SA										
LXI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO		M Mar 16, 2017	Ere	equency
				PNO: Fa IFGain:L	ast ↔ .ow	Trig: Fre Atten: 20		#Avg Typ	DE: RIVIS	TY E	CE 1 2 3 4 5 6 PE A WWWW ET A NNNNN		
10 dB/div Log	Ref 1	0.00 d	lBm						M	(r1 2.53 -48	7 0 GHz 29 dBm		Auto Tune
0.00													<b>enter Freq</b> 0000000 GHz
-10.0											DL1 -13.00 dBm	2.000	Start Freq
-30.0												10.000	Stop Freq
-50.0		<u> </u>										800 <u>Auto</u>	<b>CF Step</b> .000000 MHz Man
-70.0												F	F <b>req Offset</b> 0 Hz
-80.0													Scale Type
Start 2.00 #Res BW		z		#	¢vвw∶	3.0 MHz		ş	Sweep 13	Stop 10 3.87 ms (*	).000 GHz 16001 pts)	Log	Lin
MSG									STATUS	5			

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

Keysight Spectru											
RL	RF 50 \$	2 AC	CORREC		9	SENSE:INT	#A T	ALIGN AUTO	06:57:45 PM Ma		Frequency
			PNO: Fa IFGain:Lo		Trig: Fr Atten:	ree Run 30 dB	#Avg I			23456 WWWWW NNNNN	
0 dB/div R	tef 20.00	dBm						Mk	ar1 1.705 0 -36.11	GHz dBm	Auto Tun
						ľ					Center Fre
10.0											867.500000 MH
0.00											Start Fre
10.0									DL1	-13.00 dBm	30.000000 MH
20.0											Stop Fre
30.0											1.705000000 GH
											CF Ste
0.0										A	167.500000 MH <u>uto</u> Ma
0.0	and a stand of the s	, <b></b>	4					and the second	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
i0.0											Freq Offse 0 H
'0.0											
											Scale Typ
tart 0.0300 Res BW 1.0			#	VBW :	3.0 MH	z		Sweep 2	Stop 1.705 .233 ms (33	0 GHz 51 pts)	og <u>Li</u>
G								STATUS			

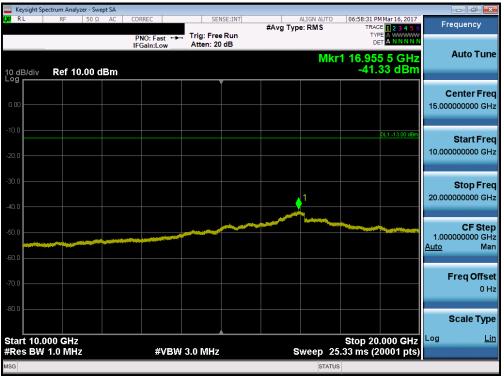
Plot 7-35. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1312)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer - S	wept SA									- 6 ×
X/RL	RF 50	Ω AC	CORREC		NSE:INT	A #Avg Type	LIGN AUTO : RMS	06:58:08 PM TRACE	123456	Fre	quency
			PNO: Fast IFGain:Low	Atten: 30				TYP! DE	AWWWW		
10 dB/div	Ref 20.00	dBm					Mk	r1 3.427 -42.9	0 GHz 2 dBm		Auto Tune
10.0											<b>enter Freq</b> 500000 GHz
-10.0									DL1 -13.00 dBm		<b>Start Freq</b> 000000 GHz
-20.0										10.000	Stop Freq 000000 GHz
-40.0		1								824. <u>Auto</u>	<b>CF Step</b> 500000 MHz Man
-60.0										F	r <b>eq Offset</b> 0 Hz
-70.0										S	Scale Type
Start 1.75 #Res BW			#VE	3W 3.0 MHz		Sv	veep 14	Stop 10. .29 ms (10	000 012	Log	Lin
//SG							STATUS	5			





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyz	er - Swept	SA										
XI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT		ALIGN AUTO		M Mar 16, 2017	Ere	equency
				PNO: Fa	ast ↔→ .ow	Trig: Fre Atten: 30		#Avg Ty		TY D	CE 1 2 3 4 5 6 PE A WWWW ET A NNNNN		
10 dB/div Log	Ref 20.	.00 dE	3m						M	kr1 1.60 -48.2	4 0 GHz 01 dBm		Auto Tune
10.0							• •						enter Fred 000000 MHz
-10.0											DL1 -13.00 dBm	30.	Start Fred
-20.0												1.710	<b>Stop Fred</b> 000000 GH:
40.0									nter and the state of the state	and in grant and they be	1	168. <u>Auto</u>	<b>CF Stej</b> 000000 MH Mai
60.0												F	F <b>req Offse</b> 0 H
70.0													Scale Type
Start 0.03 #Res BW				#	¢νΒ₩	3.0 MHz			Sweep :	Stop 1. 2.240 ms	7100 GHz (3361 pts)	Log	Lir
ISG									STATU	JS			





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dage 25 of 91			
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	ectrum Analyze											[	- 6 론
RL	RF	50 Ω /	AC C	ORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO		MMar 16, 2017 CE <b>1 2 3 4 5 6</b>	Fre	quency
				PNO: Fa IFGain:L	ist ↔→ ow	Trig: Fre Atten: 2			pe. runo	TY D			
dB/div	Ref 10.	00 dB	m						Mkr	1 16.92 -41.	9 5 GHz 39 dBm		Auto Tun
° <sup>g</sup>							Ĭ					с	enter Fre
.00												15.000	000000 GH
0.0											DL1 -13.00 dBm		Start Fre
D.O													000000 GH
0.0													Stop Fre
0.0									1			20.000	000000 GH
D.O						and the second second		-					CF Ste
0.0		******										1.000 <u>Auto</u>	000000 GI M
												F	req Offs
).0													01
												5	Scale Typ
	00 GHz 1.0 MHz			#	VBM	3.0 MHz			Sween 25	Stop 20	0.000 GHz 20001 pts)	Log	L
G DVV	1.0 10112			"					STATUS				



Plot 7-40. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1413)

Plot 7-41. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1513)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
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🔤 Keysight Spe	ectrum Analyz	er - Swep	ot SA										_ 6 ×
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC		SEI	SE:INT		ALIGN AUTO		M Mar 16, 2017	En	equency
				PNO: Fa	ast ↔ .ow	Trig: Free Atten: 30		#Avg T	ype: RMS	TY C	CE 1 2 3 4 5 6 PE A WWWW DET A NNNNN		
10 dB/div Log	Ref 20	.00 dl	Вm						M	kr1 1.76 -32	0 0 GHz 85 dBm		Auto Tune
10.0													<b>Center Freq</b> 0000000 GHz
-10.0											DL1 -13.00 dBm	1.760	Start Freq
-20.0												10.000	Stop Freq
-40.0												824 <u>Auto</u>	<b>CF Step</b> .000000 MHz Man
-60.0												i	F <b>req Offset</b> 0 Hz
-70.0													Scale Type
Start 1.76 #Res BW				#	≠vBW :	3.0 MHz			Sweep 1	Stop 10 4.28 ms (*	).000 GHz 16481 pts)	Log	Lin
MSG									STATU	JS			





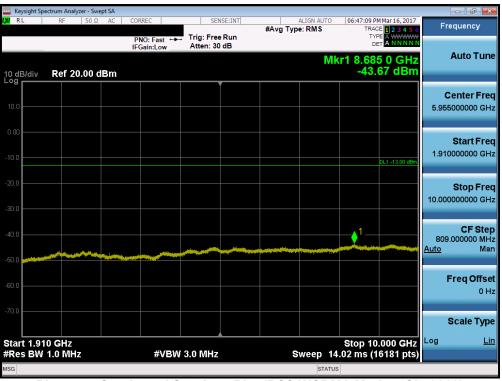
Plot 7-43. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1513)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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🔤 Keysight Spe	ctrum Analy	zer - Swep	ot SA										
LXI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT		ALIGN AUTO		PM Mar 16, 2017	En	equency
				PNO: Fa IFGain:L		Trig: Fre Atten: 3	e Run ) dB	#Avg Ty		I	ACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN		
10 dB/div Log	Ref 20	.00 dE	Bm						M	kr1 1.8 -32.	45 0 GHz 268 dBm		Auto Tune
10.0													<b>enter Freq</b> .500000 MHz
-10.0											DL1 -13.00 dBm	30	Start Freq .000000 MHz
-20.0											1	1.845	Stop Freq 5000000 GHz
-40.0					and a starting of					werd for days you want of the ford	un generative and an and a	181 <u>Auto</u>	<b>CF Step</b> .500000 MHz Man
-60.0												i	Freq Offset 0 Hz
-70.0													Scale Type
Start 0.03 #Res BW		2		#	VBW	3.0 MHz			Sweep	Stop 1 2.420 ms	.8450 GHz (3631 pts)	Log	Lin
MSG									STATU	JS			

Plot 7-44. Conducted Spurious Plot (PCS WCDMA Mode - Ch. 9262)

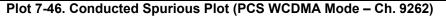


Plot 7-45. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	G	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 91			
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	ctrum Analyze	er - Swej	pt SA										
X/RL	RF	50 Ω	AC	CORREC		SEI	NSE:INT	#Avg Typ	ALIGN AUTO	06:47:27 P	M Mar 16, 2017 E 1 2 3 4 5 6	Fr	equency
				PNO: Fa IFGain:L		Trig: Fre Atten: 20				TYI Di			
10 dB/div Log	Ref 10.	.00 d	Bm						Mkr	1 16.95 -41.	9 0 GHz 48 dBm		Auto Tune
0.00													<b>Center Freq</b> 0000000 GHz
-10.0											DL1 -13.00 dBm	10.00	Start Freq
-30.0									1			20.00	Stop Freq
-50.0											<u> </u>	1.000 <u>Auto</u>	CF Step 0000000 GHz Man
-70.0												<b>'</b>	F <b>req Offset</b> 0 Hz
-80.0													Scale Type
Start 10.0 #Res BW				#	VBW	3.0 MHz		s	weep 25	Stop 20 .33 ms (2	.000 GHz 20001 pts)	Log	Lin
MSG									STATUS				





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
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	ectrum Analyze												- • •
XI RL	RF	50Ω A		ORREC		Tria: F	SENSE:INT	#Avg Typ	ALIGN AUTO	TRA	PM Mar 16, 2017 CE 1 2 3 4 5 6 PE 4 4 4 4 5 6	Fred	uency
				PNO: Fa FGain:L	st ↔ ow		30 dB			C			
10 dB/div Log	Ref 20.	00 dBr	n						Mł	(r1 8.66 -43	1 0 GHz 76 dBm	A	uto Tune
													nter Frec
10.0												5.9550	00000 GH:
0.00													Start Free
-10.0											DL1 -13.00 dBm	1.9100	00000 GHz
-20.0												5	Stop Free
-30.0												10.0000	00000 GH:
-40.0										1			CF Step
50.0				and the second								809.0	00000 MH Mai
												Fr	eq Offse
60.0													0 H
70.0												S	cale Type
Start 1.91	0 GHz									Stop 10		Log	Lir
≉Res BW				#	VBW	3.0 MI	lz	S	weep 14	.02 ms (	16181 pts)		
ISG									STATUS	3			





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyz	er - Swep	ot SA										- @ <b>X</b>
XI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT		ALIGN AUTO		M Mar 16, 2017	Ere	quency
				PNO: Fa	ast ↔ .ow	Trig: Fre Atten: 30		#Avg T	ype: RMS	TY	CE 1 2 3 4 5 6 PE A WWWW T A N N N N N		
10 dB/div Log	Ref 20	.00 d	Bm						M	kr1 1.64 -48.	9 5 GHz 35 dBm		Auto Tune
10.0													<b>enter Freq</b> 000000 MHz
-10.0											DL1 -13.00 dBm		<b>Start Freq</b> 000000 MHz
-20.0													<b>Stop Freq</b> 000000 GHz
-40.0						ala <sup>nt</sup> ann an t-t-t-t-t-t-t-t-t-t-t-t-t-t-t-t-t-t-t-		هم شماره جيم ريوني مير	and a start of a start		1 1	182.0 <u>Auto</u>	CF Step 000000 MHz Man
-60.0												F	<b>req Offset</b> 0 Hz
-70.0													cale Type
Start 0.03 #Res BW				#	≠vbw:	3.0 MHz			Sweep :	Stop 1.8 2.427 ms (	5500 GHZ	Log	Lin
ASG									STATU	JS			





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ctrum Analyz											-	- 6
RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	TRA	M Mar 16, 2017 CE 1 2 3 4 5 6	Frequency	
				PNO: Fa	ow	Atten: 2							
0 dB/div	Ref 10	.00 dl	Bm						Mkr	1 16.96 -41.	8 0 GHz 47 dBm	,	Auto Tun
												C	enter Fre
3.00												15.000	000000 GH
0.0											DL1 -13.00 dBm		Start Fre
20.0													000000 GH
30.0													Stop Fre
40.0									<u>•</u> 1			20.0000	000000 GH
50.0						والأحرب ومالي	-					4.0000	CF Ste
i0.0												<u>Auto</u>	Ma
70.0												F	req Offse
30.0													0 H
												S	cale Typ
tart 10.0 Res BW					VBW :	3.0 MHz			Sweep 25	Stop 20 .33 ms (2	).000 GHz 20001 pts)	Log	Li
G									STATUS				

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
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#### 7.4 Band Edge Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

#### Test Overview

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

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

#### Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

#### Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW <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.

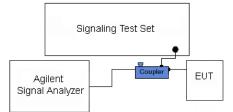


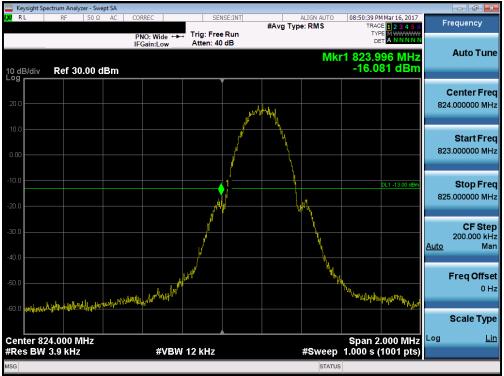
Figure 7-3. Test Instrument & Measurement Setup

#### **Test Notes**

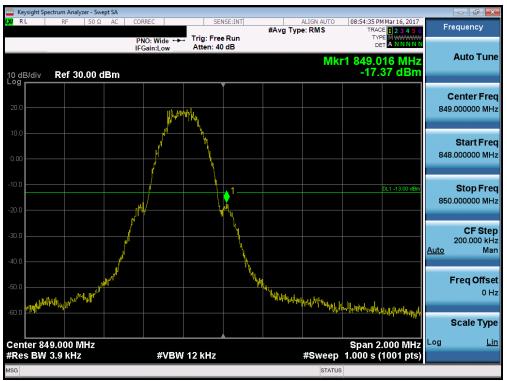
Per 22.917(b), 24.238(b), 27.53(h)(3), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions 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: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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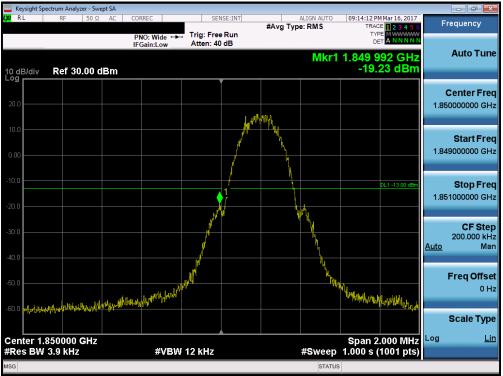
Plot 7-53. Band Edge Plot (Cellular GPRS Mode – Ch. 128)

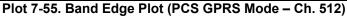


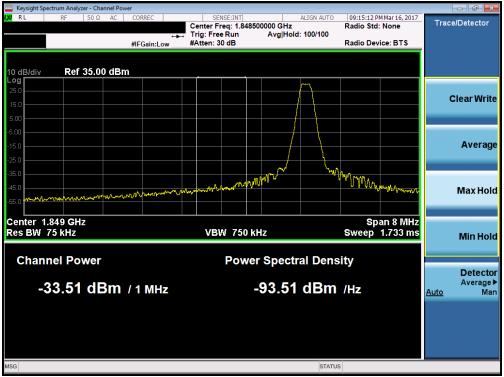
Plot 7-54. Band Edge Plot (Cellular GPRS Mode - Ch. 251)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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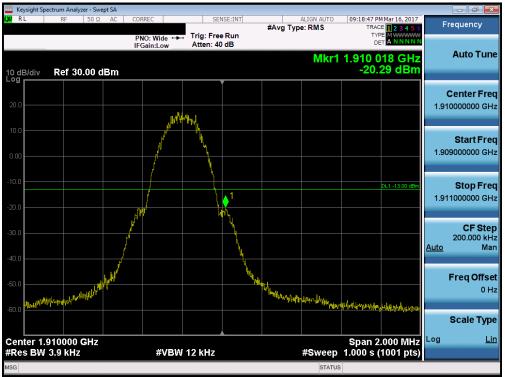


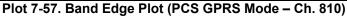


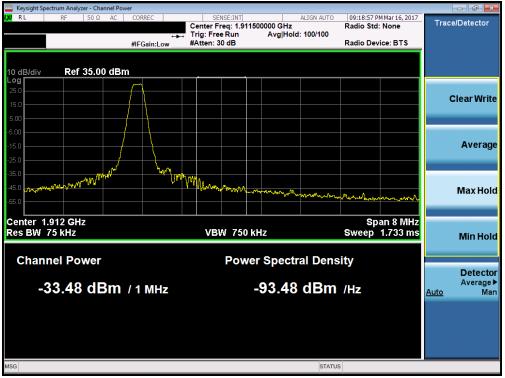
Plot 7-56. 4MHz Span Plot (PCS GPRS Mode - Ch. 512)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-58. 4MHz Span Plot (PCS GPRS Mode - Ch. 810)

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🔤 Keysight Sp	ectrum Analyze	r - Swept S	A										
X RL	RF	50 Ω A	AC CO	RREC		SEI	SE:INT	#Avg Typ	ALIGN AUTO		4 Mar 16, 2017	F	requency
	_			NO: Fa Gain:Lo	st ↔ ow	Trig: Free Atten: 40		#Avg iyp	DE: RIVIS	TYF	E 1 2 3 4 5 6 E A WWWW T A N N N N N		
10 dB/div Log	Ref 30.0	00 dBi	m						Mk	r1 824.0 -17.4	00 MHz 71 dBm		Auto Tune
20.0													Center Freq 4.000000 MHz
0.00								www.www.	my	1		81	Start Freq 6.500000 MHz
-10.0						(	1				DL1 -13.00 dBm	83	Stop Freq 1.500000 MHz
-30.0				m	an Anna	, mar de la companya de				Mur	Jamp May	<u>Auto</u>	CF Step 1.500000 MHz Man
-50.0 🗸	when when	Mungal	Martin										Freq Offsel 0 Hz
-60.0													Scale Type
Center 82 #Res BW	24.000 MH 100 kHz	Iz		#	VBW	300 kHz			Sweep 1	Span 1 I.867 ms (		Log	Lin
//SG									STATU	S			

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



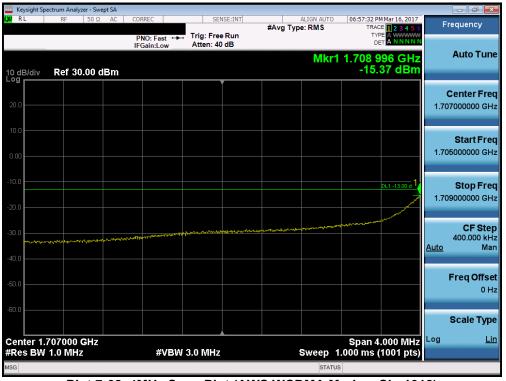
Plot 7-60. Band Edge Plot (Cellular WCDMA Mode - Ch. 4233)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-61. Band Edge Plot (AWS WCDMA Mode - Ch. 1312)

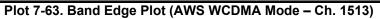


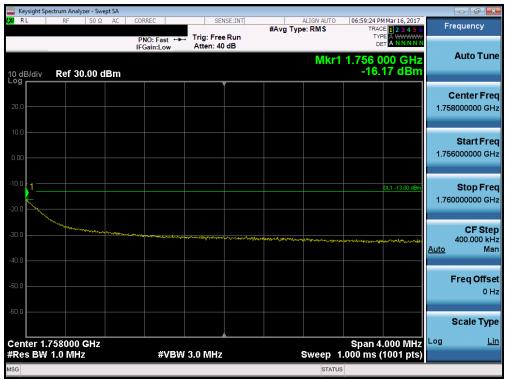
Plot 7-62. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer - S										- 6
RL	RF 50	Ω AC	CORREC		SENSE:INT	#Avg T	ALIGN AUTO ype: RMS	TR	PM Mar 16, 2017 ACE 1 2 3 4 5 6		quency
			PNO: Fa IFGain:Lo	SL · · ·	g: Free Run ten: 40 dB			т			
0 dB/div	Ref 30.00	dBm					Mkr	1 1.755 -19.	000 GHz 042 dBm		Auto Tun
20.0											enter Free 000000 GH
0.00		/ m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							Start Fre 500000 GH
20.0					1				DL1 -13.00 dBm	1.762	<b>Stop Fre</b> 500000 GH
30.0	h				h	~~~				1. <u>Auto</u>	CF Ste 500000 MH Ma
50.0						had had	- Martine Martine		mooren	F	F <b>req Offs</b> e 0 H
60.0											Scale Typ
	755000 GHz 100 kHz	2	#	VBW 300	kHz		Sweep	Span 1.867 <u>ms</u>	15.00 MHz (1001 pts)	Log	Li
SG							STATU		,		





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer	- Swept SA									- 6 ×
X/RL	RF	50 Ω AC	CORREC		Run	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Mar 16, 2017 CE 1 2 3 4 5 6 DE A WWWWW T A N N N N N	Fre	equency
10 dB/div	Ref 30.0	00 dBm	IFGain:Low	Atten: 40			Mkr1	1.850 0	000 GHz 74 dBm		Auto Tun
20.0											<b>enter Fre</b> 000000 GH
0.00					(	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second sec			1.842	<b>Start Fre</b> 500000 GH
20.0					1				DL1 -13.00 dBm	1.857	<b>Stop Fre</b> 500000 GH
10.0 10.0		marmore	m					h.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1. <u>Auto</u>	<b>CF Ste</b> 500000 M⊢ Ma
50.0 <b></b>										F	F <b>req Offse</b> 0 H
	050000	-						Cnon-4	5 00 MIL		Scale Typ Li
	850000 G 100 kHz	ΠZ	#VBV	/ 300 kHz			Sweep 1	span 1 .867 ms (	5.00 MHz (1001 pts)	209	
SG							STATUS	5			

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



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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	pectrum Analyzer - Sw											
RL	RF 50 Ω	2 AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	TR	PM Mar 16, 2017 ACE 1 2 3 4 5 6		requency
	-		PNO: Fa	ow	Atten: 4							A
0 dB/div .og	Ref 30.00	dBm						Mkr	1 1.910 -20.	000 GHz 560 dBm		Auto Tun
						Ĭ						Center Fre
20.0											1.91	0000000 GH
10.0		m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Manna an	www							Start Fre
D.00											1.90	2500000 GH
10.0										DL1 -13.00 dBm		Stop Fre
20.0						1					1.91	7500000 GH
	Ń					λ						CF Ste
0.0	www.w					hvr	mm	····			<u>Auto</u>	1.500000 MH Ma
10.0									ever when the second se	man		
50.0												Freq Offs 0 H
io.o												
												Scale Typ
	.910000 GHz / 100 kHz		#	VBW 3	300 kHz			Sweep	Span 1.867 ms	15.00 MHz (1001 pts)	Log	Ľ
G								STATI				





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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	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 v02r02 - 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.

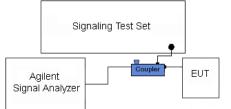


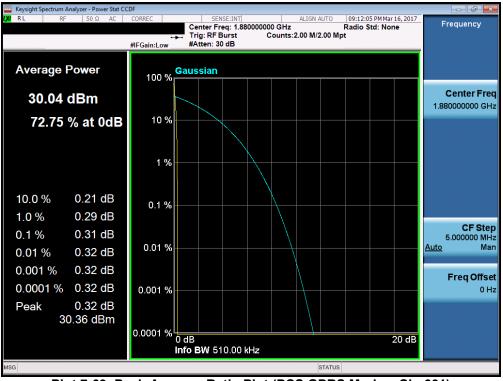
Figure 7-4. Test Instrument & Measurement Setup

#### Test Notes

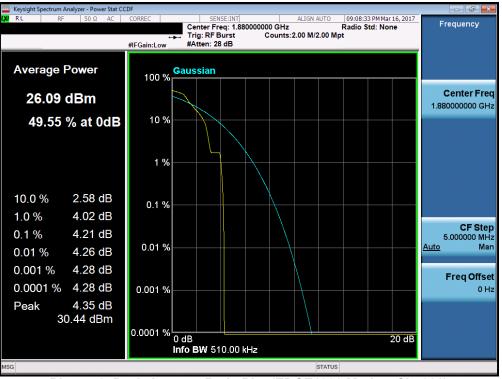
None

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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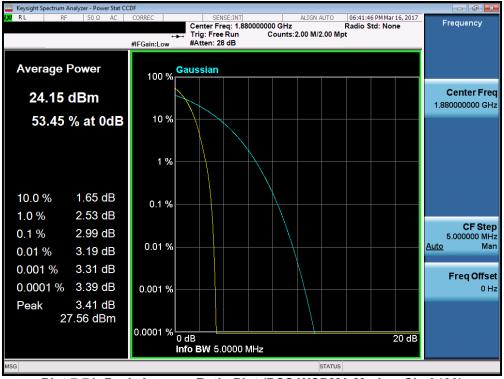




Plot 7-70. Peak-Average Ratio Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-71. Peak-Average Ratio Plot (PCS WCDMA Mode - Ch. 9400)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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#### 7.6 Radiated Power (ERP/EIRP) §22.913(a)(2) 24.232(c) 27.50(d.4)

#### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### Test Procedures Used

KDB 971168 D01 v02r02 - Section 5.2.1

ANSI/TIA-603-D-2010 - Section 2.2.17

#### Test Settings

- 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  $\ge$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq$  2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

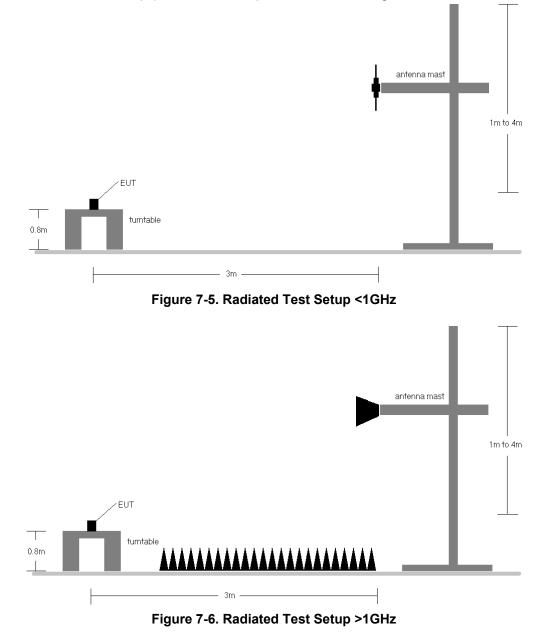
FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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#### Test Setup

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



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- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) 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 unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.20	GPRS850	Н	150	274	29.71	-0.65	29.06	0.805	38.45	-9.39
836.60	GPRS850	н	150	267	30.64	-0.65	29.99	0.998	38.45	-8.46
848.80	GPRS850	н	150	237	31.61	-0.65	30.96	1.247	38.45	-7.49
848.80	GPRS850	V	150	35	30.09	-0.65	29.44	0.879	38.45	-9.01
848.80	EDGE850	н	150	237	24.54	-0.65	23.89	0.245	38.45	-14.56

#### Table 7-2. ERP (Cellular GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	150	66	22.08	-0.65	21.43	0.139	38.45	-17.02
836.60	WCDMA850	Н	150	69	23.19	-0.65	22.54	0.179	38.45	-15.91
846.60	WCDMA850	н	150	58	23.95	-0.65	23.30	0.214	38.45	-15.15
846.60	WCDMA850	V	150	37	20.94	-0.65	20.29	0.107	38.45	-18.16

#### Table 7-3. ERP (Cellular WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	н	150	15	17.37	5.55	22.92	0.196	30.00	-7.08
1732.60	WCDMA1700	н	150	28	17.80	5.41	23.21	0.209	30.00	-6.79
1752.60	WCDMA1700	н	150	19	17.77	5.27	23.04	0.201	30.00	-6.96
1732.60	WCDMA1700	V	150	34	14.74	5.41	20.15	0.103	30.00	-9.85

#### Table 7-4. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	V	150	324	26.69	4.79	31.48	1.405	33.01	-1.53
1880.00	GPRS1900	V	150	347	26.29	4.84	31.13	1.299	33.01	-1.88
1909.80	GPRS1900	V	150	317	26.31	4.86	31.17	1.309	33.01	-1.84
1850.20	GPRS1900	н	150	67	24.73	4.82	29.55	0.902	33.01	-3.46
1850.20	EDGE1900	V	150	324	20.30	4.79	25.09	0.323	33.01	-7.92

#### Table 7-5. EIRP (PCS GPRS)

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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]
1852.40	WCDMA1900	н	150	170	18.39	4.81	23.20	0.209	33.01	-9.81
1880.00	WCDMA1900	Н	150	155	18.75	4.74	23.49	0.223	33.01	-9.52
1907.60	WCDMA1900	Н	150	164	18.36	4.68	23.04	0.201	33.01	-9.97
1880.00	WCDMA1900	V	150	134	16.26	4.84	21.10	0.129	33.01	-11.91

Table 7-6. EIRP (PCS WCDMA)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
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### 7.7 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) 24.238(a) 27.53(h)

#### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

KDB 971168 D01 v02r02 - Section 5.8

ANSI/TIA-603-D-2010 - Section 2.2.12

#### **Test Settings**

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

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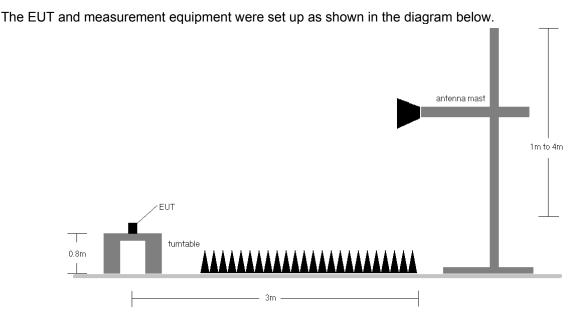


Figure 7-7. Test Instrument & Measurement Setup

#### Test Notes

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

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OPERATING FREQUENCY:	824	MHz		
CHANNEL:	1:			
MEASURED OUTPUT POWER:	29.06	dBm =	0.805	W
MODULATION SIGNAL:	GPRS (GMSK)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log <sub>10</sub> (W) =	42.06	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1648.40	Н	167	315	-65.34	6.30	-59.04	88.1
2472.60	Н	110	269	-58.73	6.85	-51.88	80.9
3296.80	Н	-	-	-65.56	7.12	-58.44	87.5
4121.00	Н	-	-	-65.04	7.67	-57.37	86.4

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

OPERATING FREQUENCY:	836	MHz	
CHANNEL:	1		
MEASURED OUTPUT POWER:	29.99	dBm =	0.998 W
MODULATION SIGNAL:	GPRS (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	42.99	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.20	Н	167	349	-66.44	6.21	-60.24	90.2
2509.80	Н	167	153	-53.64	6.86	-46.78	76.8
3346.40	Н	-	-	-65.85	7.26	-58.59	88.6

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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OPERATING FREQUENCY:	848	MHz	
CHANNEL:	2!	•	
MEASURED OUTPUT POWER:	30.96	dBm =	1.247 W
MODULATION SIGNAL:	GPRS (GMSK)	•	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	43.96	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1697.60	Н	186	349	-51.52	6.12	-45.40	76.4
2546.40	Н	100	238	-51.18	6.97	-44.21	75.2
3395.20	Н	-	-	-65.93	7.41	-58.52	89.5

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

OPERATING FREQUENCY:	826	MHz	
CHANNEL:	41		
MEASURED OUTPUT POWER:	21.43	dBm =	0.139 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	34.43	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1652.80	V	-	-	-73.86	6.27	-67.59	89.0
2479.20	V	-	-	-71.72	6.88	-64.83	86.3

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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OPERATING FREQUENCY:	836	6.60	MHz	
CHANNEL:	41	83	-	
MEASURED OUTPUT POWER:	22.54	dBm =	0.179 W	'
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log <sub>10</sub> (W) =	35.54	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.20	V	-	-	-74.80	6.21	-68.59	91.1
2509.80	V	-	-	-70.70	6.90	-63.80	86.3

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

OPERATING FREQUENCY:	846	6.60	MHz
CHANNEL:	42	33	-
MEASURED OUTPUT POWER:	23.30	dBm =	0.214 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	36.30	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.20	V	-	-	-73.43	6.15	-67.27	90.6
2539.80	V	-	-	-70.44	7.00	-63.44	86.7

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
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OPERATING FREQUENCY:	171	MHz	
CHANNEL:	13		
MEASURED OUTPUT POWER:	22.92	dBm =	0.196 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	35.92	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3424.80	Н	100	137	-58.70	9.65	-49.05	72.0
5137.20	Н	-	-	-66.40	10.91	-55.49	78.4

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

OPERATING FREQUENCY:	173	2.60	MHz
CHANNEL:	14	13	
MEASURED OUTPUT POWER:	23.21	dBm =	0.209 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	36.21	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.20	Н	100	135	-60.68	9.77	-50.90	74.1
5197.80	Н	-	-	-66.33	10.81	-55.52	78.7

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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OPERATING FREQUENCY:	175	MHz	
CHANNEL:	15	•	
MEASURED OUTPUT POWER:	23.04	dBm =	0.201 W
MODULATION SIGNAL:	WCDMA	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) :	36.04	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3505.20	Н	158	117	-61.46	9.89	-51.58	74.6
5257.80	Н	-	-	-66.13	10.92	-55.21	78.2

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

OPERATING FREQUENCY:	185	MHz	
CHANNEL:	5 <sup>-</sup>	12	
MEASURED OUTPUT POWER:	31.48	dBm =	1.405 W
MODULATION SIGNAL:	GPRS (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	44.48	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3700.40	Н	103	348	-60.08	10.03	-50.05	81.5
5550.60	Н	104	8	-61.75	11.18	-50.57	82.0
7400.80	Н	100	240	-56.58	10.85	-45.73	77.2
9251.00	Н	-	-	-57.00	12.37	-44.63	76.1

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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OPERATING FREQUENCY:	188	0.00	MHz
CHANNEL:	60		
MEASURED OUTPUT POWER:	31.13	dBm =	1.299 W
MODULATION SIGNAL:	GPRS (GMSK)	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) :	44.13	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	Н	106	345	-61.23	9.79	-51.44	82.6
5640.00	Н	110	154	-62.07	11.35	-50.72	81.9
7520.00	Н	-	-	-57.37	11.22	-46.15	77.3
9400.00	Н	100	173	-55.14	12.30	-42.84	74.0
11280.00	Н	-	-	-53.88	13.26	-40.62	71.8

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

OPERATING FREQUENCY:	190	MHz	
CHANNEL:	8	-	
MEASURED OUTPUT POWER:	31.17	dBm =	- 1.309 W
MODULATION SIGNAL:	GPRS (GMSK)	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	44.17	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3819.60	Н	147	323	-63.07	9.56	-53.51	84.7
5729.40	Н	100	212	-61.08	11.43	-49.64	80.8
7639.20	Н	149	64	-56.46	11.50	-44.96	76.1
9549.00	Н	-	-	-56.41	12.39	-44.03	75.2

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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OPERATING FREQUENCY:	185	2.40	MHz
CHANNEL:	92		
MEASURED OUTPUT POWER:	23.20	dBm =	0.209 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	36.20	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3704.80	Н	162	123	-61.27	10.01	-51.25	74.5
5557.20	Н	-	-	-66.58	11.20	-55.38	78.6

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

OPERATING FREQUENCY:	1880	0.00	MHz
CHANNEL:	94	00	-
MEASURED OUTPUT POWER:	23.49	dBm =	0.223 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	36.49	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	Н	158	117	-56.80	9.79	-47.01	70.5
5640.00	Н	-	-	-66.32	11.35	-54.97	78.5

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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OPERATING FREQUENCY:	190	7.60	MHz	
CHANNEL:	95			
MEASURED OUTPUT POWER:	23.04	dBm =	0.201	W
MODULATION SIGNAL:	WCDMA			_
DISTANCE:	3	meters		
LIMIT:	43 + 10 log <sub>10</sub> (W) =	36.04	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3815.20	Н	154	120	-52.58	9.57	-43.00	66.0
5722.80	Н	-	-	-66.29	11.43	-54.85	77.9

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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#### 7.8 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

#### Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. The frequency stability of the transmitter is measured by:

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

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

#### **Test Procedure Used**

ANSI/TIA-603-D-2010

#### Test Settings

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

#### Test Setup

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

#### Test Notes

None

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### Frequency Stability / Temperature Variation §2.1055 §22.355

**OPERATING FREQUENCY:** 836,600,000 Hz

CHANNEL:

VDC

190

**REFERENCE VOLTAGE:** 3.85

> ± 0.00025 % or 2.5 ppm DEVIATION LIMIT:

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,599,957	-43	-0.0000051
100 %		- 30	836,599,822	-178	-0.0000213
100 %		- 20	836,599,616	-384	-0.0000459
100 %		- 10	836,599,750	-250	-0.0000299
100 %		0	836,599,933	-67	-0.000080
100 %		+ 10	836,599,945	-55	-0.0000066
100 %		+ 20	836,599,799	-201	-0.0000240
100 %		+ 30	836,600,431	431	0.0000515
100 %		+ 40	836,599,984	-16	-0.0000019
100 %		+ 50	836,600,223	223	0.0000267
BATT. ENDPOINT	3.45	+ 20	836,599,873	-127	-0.0000152

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

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# Frequency Stability / Temperature Variation §2.1055 §22.355

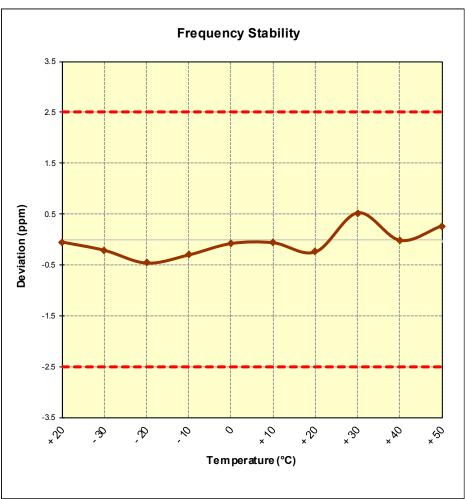


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

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#### Frequency Stability / Temperature Variation §2.1055 §22.355

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

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,600,122	122	0.0000146
100 %		- 30	836,599,876	-124	-0.0000148
100 %		- 20	836,599,733	-267	-0.0000319
100 %		- 10	836,600,273	273	0.0000326
100 %		0	836,600,210	210	0.0000251
100 %		+ 10	836,599,903	-97	-0.0000116
100 %		+ 20	836,599,865	-135	-0.0000161
100 %		+ 30	836,599,829	-171	-0.0000204
100 %		+ 40	836,599,974	-26	-0.0000031
100 %		+ 50	836,600,021	21	0.0000025
BATT. ENDPOINT	3.45	+ 20	836,599,766	-234	-0.0000280

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

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# Frequency Stability / Temperature Variation §2.1055 §22.355

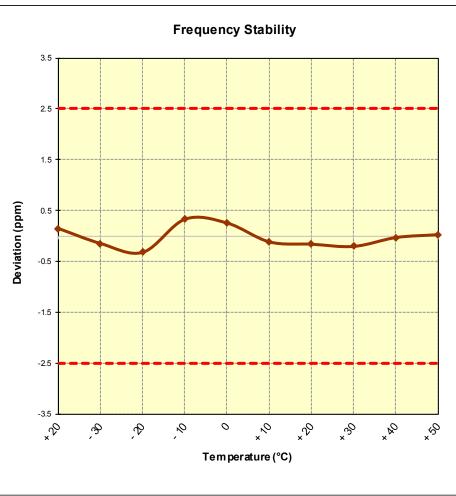


Figure 7-9. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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# Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,599,902	-98	-0.0000057
100 %		- 30	1,732,600,119	119	0.0000069
100 %		- 20	1,732,599,975	-25	-0.0000014
100 %		- 10	1,732,600,113	113	0.0000065
100 %		0	1,732,599,950	-50	-0.0000029
100 %		+ 10	1,732,600,144	144	0.000083
100 %		+ 20	1,732,599,977	-23	-0.0000013
100 %		+ 30	1,732,599,981	-19	-0.0000011
100 %		+ 40	1,732,600,077	77	0.0000044
100 %		+ 50	1,732,599,780	-220	-0.0000127
BATT. ENDPOINT	3.45	+ 20	1,732,599,862	-138	-0.0000080

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

#### Note:

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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# Frequency Stability / Temperature Variation §2.1055 §27.54

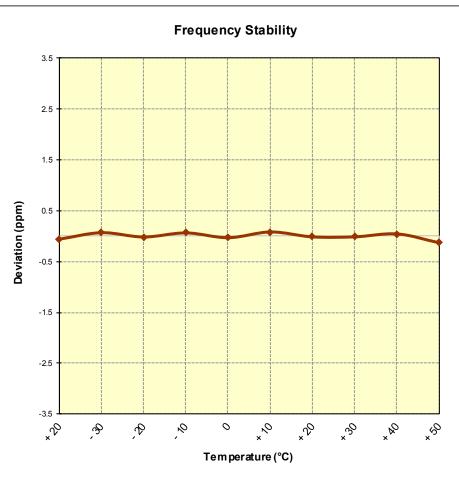


Figure 7-10. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

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## Frequency Stability / Temperature Variation §2.1055 §24.235

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	-
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,879,999,980	-20	-0.0000011
100 %		- 30	1,880,000,078	78	0.0000041
100 %		- 20	1,880,000,435	435	0.0000231
100 %		- 10	1,879,999,897	-103	-0.0000055
100 %		0	1,879,999,985	-15	-0.000008
100 %		+ 10	1,879,999,981	-19	-0.0000010
100 %		+ 20	1,879,999,851	-149	-0.0000079
100 %		+ 30	1,880,000,308	308	0.0000164
100 %		+ 40	1,879,999,857	-143	-0.0000076
100 %		+ 50	1,879,999,868	-132	-0.0000070
BATT. ENDPOINT	3.45	+ 20	1,880,000,099	99	0.0000053

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

#### Note:

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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### Frequency Stability / Temperature Variation §2.1055 §24.235

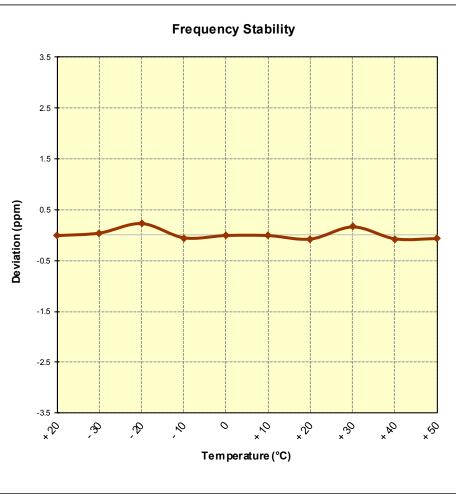


Figure 7-11. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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# Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,879,999,828	-172	-0.0000091
100 %		- 30	1,880,000,371	371	0.0000197
100 %		- 20	1,879,999,996	-4	-0.0000002
100 %		- 10	1,879,999,652	-348	-0.0000185
100 %		0	1,880,000,439	439	0.0000234
100 %		+ 10	1,880,000,107	107	0.0000057
100 %		+ 20	1,880,000,262	262	0.0000139
100 %		+ 30	1,879,999,758	-242	-0.0000129
100 %		+ 40	1,879,999,823	-177	-0.0000094
100 %		+ 50	1,880,000,078	78	0.0000041
BATT. ENDPOINT	3.45	+ 20	1,880,000,111	111	0.0000059

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

#### Note:

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

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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# Frequency Stability / Temperature Variation §2.1055 §24.235

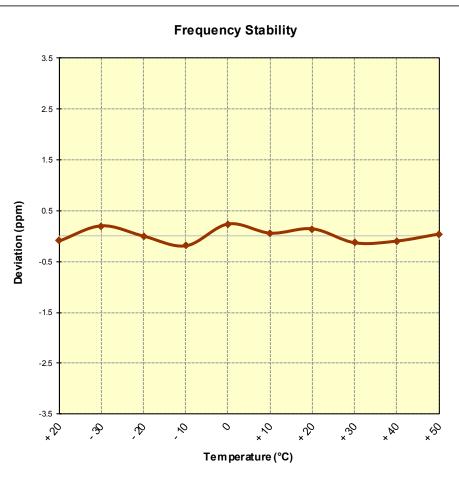


Figure 7-12. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	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 LG Portable Handset FCC ID: ZNFM255 complies with all the requirements of Parts 22, 24, & 27 of the FCC rules.

FCC ID: ZNFM255		FCC Pt. 22, 24, & 27 GSM/ GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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