

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: 2/3-3/30/2016 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1602020283.ZNF

FCC ID:

ZNFK428

APPLICANT:

LG ELECTRONICS MOBILECOMM U.S.A

Application Type: Model(s): EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Test Device Serial No.: Certification LGK428, LG-K428, K428, LG-MS428, LGMS428, MS428 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) §2 §22(H) §24(E) §27(L) ANSI/TIA-603-C-2004, KDB 971168 v02r02 *identical prototype* [S/N: 08440]

		ER ER		EIRP
Mode	Tx Frequency (MHz)	Emission Designator	Max. Power (W)	Max. Power (dBm)
GPRS850	824.2 - 848.8	246KGXW	1.245	30.95
EDGE850	824.2 - 848.8	227KG7W	0.259	24.13
GPRS1900	1850.2 - 1909.8	247KGXW	1.097	30.40
EDGE1900	1850.2 - 1909.8	246KG7W	0.358	25.54
WCDMA850	826.4 - 846.6	4M16F9W	0.078	18.91
WCDMA1700	1712.4 - 1752.6	4M16F9W	0.142	21.51
WCDMA1900	1852.4 - 1907.6	4M16F9W	0.245	23.89

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.

andy Ortanez President



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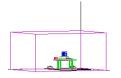


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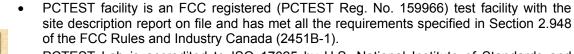


§2.1033 General Information

APPLICANT:	LG Electronics MobileComm U.S.A			
APPLICANT ADDRESS:	1000 Sylvan Avenue			
	Englewood Cliffs, NJ 07632,	United States		
TEST SITE:	PCTEST ENGINEERING LA	BORATORY, IN	C.	
TEST SITE ADDRESS:	7185 Oakland Mills Road, Co	olumbia, MD 210	46 USA	
FCC RULE PART(S):	§2 §22(H) §24(E) §27(L)			
BASE MODEL:	LGK428			
FCC ID:	ZNFK428			
FCC CLASSIFICATION:	PCS Licensed Transmitter He	eld to Ear (PCE)		
MODE:	GSM / GPRS / EDGE / WCD	MA		
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)			
Test Device Serial No.:	08440	Production	Pre-Production	Engineering
DATE(S) OF TEST:	2/3-3/30/2016			
TEST REPORT S/N:	0Y1602020283.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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1.0 INTRODUCTION

1.1 Scope

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

1.2 Testing Facility

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

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

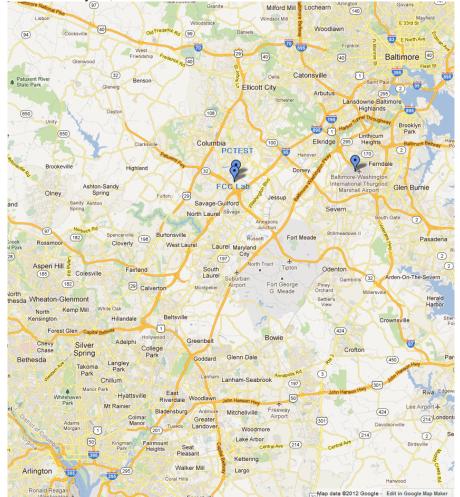


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFK428**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

2.2 Device Capabilities

This device contains the following capabilities:

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

2.3 Test Configuration

The LG Portable Handset FCC ID: ZNFK428 was tested per the guidance of ANSI/TIA-603-C-2004 and KDB 971168 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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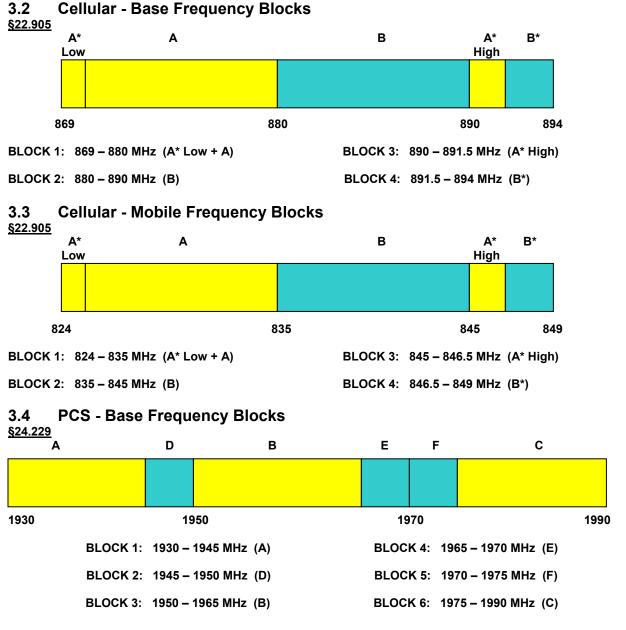


DESCRIPTION OF TESTS 3.0

3.1 Evaluation Procedure

The measurement procedures described in the "Land Mobile FM or PM - Communications Equipment -Measurements and Performance Standards" (ANSI/TIA-603-C-2004) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 v02r02) were used in the measurement of the LG Portable Handset FCC ID: ZNFK428.



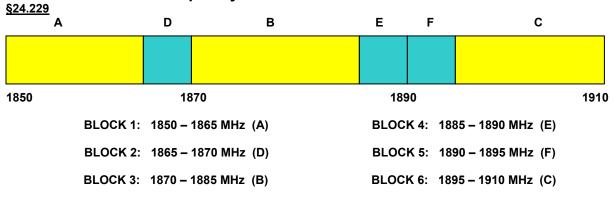


3.2 **Cellular - Base Frequency Blocks**

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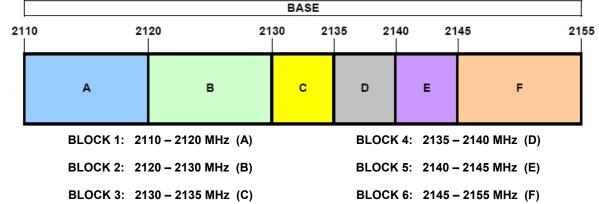


3.5 PCS - Mobile Frequency Blocks



3.6 AWS - Base Frequency Blocks





3.7 AWS - Mobile Frequency Blocks

<u>§27.5(h)</u>

[MOBILE							
17	10	1	720 1	730 17	735 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 Clause 5, Figure 5.7 of ANSI C63.4-2009. For measurements above 1GHz 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 below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It 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 78cm high PVC support structure is placed on top of the turntable. A $\frac{3}{4}$ " (~1.9cm) sheet of high density polyethylene 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-C-2004, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

Where, 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 levels are investigated with the receive antenna vertically polarized while radiated spurious emissions levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-C-2004.

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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_{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).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx3	Licensed Transmitter Cable Set	6/12/2015	Annual	6/12/2016	LTx3
-	RE3	Radiated Emissions Cable Set	4/29/2015	Annual	4/29/2016	RE3
Agilent	8447D	Broadband Amplifier	6/12/2015	Annual	6/12/2016	2443A01900
Agilent	N9020A	MXA Signal Analyzer	11/5/2015	Annual	11/5/2016	US46470561
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	7/30/2015	Biennial	7/30/2017	121034
Espec	ESX-2CA	Environmental Chamber	3/17/2015	Annual	3/17/2016	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/8/2014	Biennial	4/8/2016	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	6/17/2014	Biennial	6/17/2016	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/22/2014	Biennial	10/22/2016	128338
K & L	11SH10-3075/U18000	High Pass Filter	7/18/2015	Annual	7/18/2016	11SH10-3075/U18000-2
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/18/2015	Annual	7/18/2016	13SH10-1000/U1000-2
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/11/2015	Annual	3/11/2016	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
Rohde & Schwarz	CMU200	Base Station Simulator		N/A		107826
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/17/2015	Annual	7/17/2016	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/28/2014	Biennial	3/28/2016	A051107

Table 5-1. Test Equipment

Notes:

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

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6.0 SAMPLE CALCULATIONS

GPRS Emission Designator

Emission Designator = 250KGXW

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

EDGE Emission Designator

Emission Designator = 250KG7W

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

WCDMA Emission Designator

Emission Designator = 4M16F9W

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

Spurious Radiated Emission

Example: Spurious emission at 3700.40 MHz

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

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7.0 TEST RESULTS

7.1 Summary

Company Name:	LG Electronics MobileComm U.S.A
FCC ID:	<u>ZNFK428</u>
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		
TRANSMITTER MODE (TX)							
2.1049	Occupied Bandwidth N/A				Section 7.2		
2.1051 22.917(a) 24.238(a) 27.53(h)	Conducted Band Edge / Spurious Emissions	> 43 + log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Sections 7.3, 7.4		
24.232(d)	Peak-Average Ratio < 13 dB 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			PASS	Section 7.6		
2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Spurious > 43 + log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7			

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

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "2G/3G Automation," Version 3.2.

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Occupied Bandwidth 7.2 §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 v02r02 - Section 4.2

Test Settings

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

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

Test Setup

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

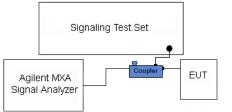


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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



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

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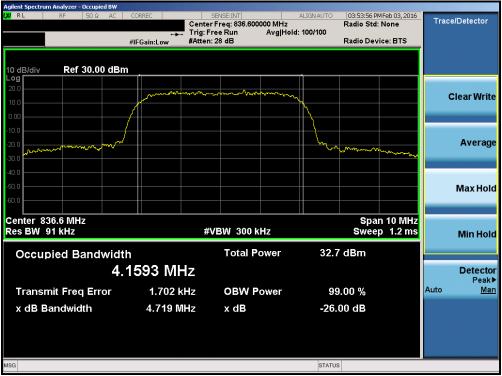


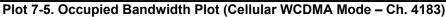


Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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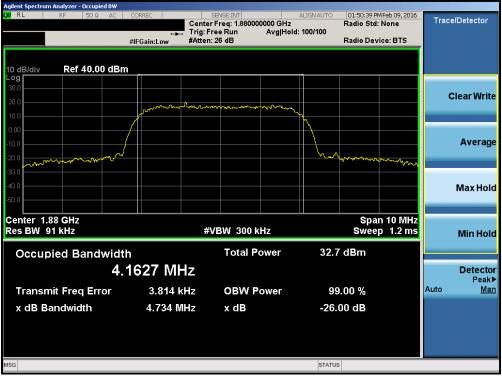




Plot 7-6. Occupied Bandwidth Plot (AWS WCDMA Mode – Ch. 1412)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	G	Reviewed by: Quality Manager
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Plot 7-7. Occupied Bandwidth Plot (PCS WCDMA Mode - Ch. 9400)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

Test Overview

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

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

Test Procedure Used

KDB 971168 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.

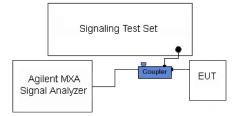


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

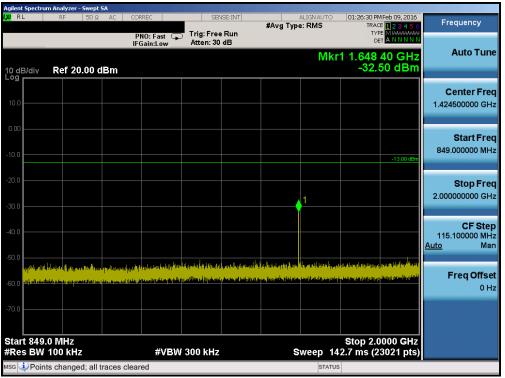
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth 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.

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent LXI R		n Analyzer - Swej RF 50		ORREC	05	SE:INT		ALIGNAUTO	01/26/22 0	M5-6 00 2016	
		KF DU	Ω AC O	JRREL			#Av	g Type: RMS	TRA	MFeb 09, 2016 CE <mark>1 2 3 4 5</mark> 6	Frequency
				PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 30				TY D		
			-					M	kr1 822.	65 MHz	Auto Tune
10 dE	3/div	Ref 20.00	dBm						-44.	93 dBm	
Log											O and an Emer
10.0											Center Freq 426.500000 MHz
10.0											428.500000 MHZ
0.00											
											Start Freq
-10.0	<u> </u>									-13.00 dBm	30.000000 MHz
-20.0											Stop Freq
											823.000000 MHz
-30.0											
-40.0										1	CF Step
											79.300000 MHz Auto Man
-50.0											
								hiteritetipetergiteepete			Freq Offset
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-70.0											
	t 30.0								Stop 8	23.0 MHz	
#Res	sBW	100 kHz		#VBW	/ 300 kHz			Sweep 9	8.33 ms (1	5861 pts)	
MSG								STATU	s		





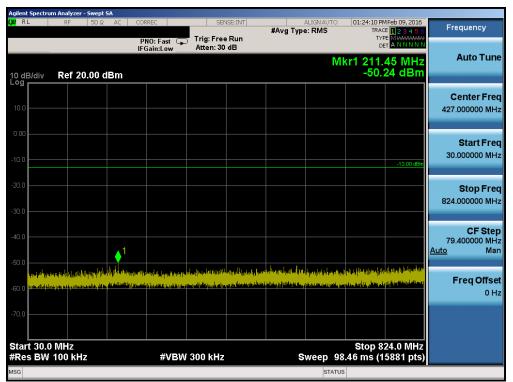
Plot 7-9. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 128)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectru	im Analyzer - Sw RF 50		CORREC	051	05.71.77			04.05.07.01	4Feb 09, 2016	
W RL	RF 5I	DΩ AC	PNO: Fast	T () F (#Avg Typ	ALIGN AUTO e: RMS	TRAC	E 123456	Frequency
10 dB/div Log	Ref 10.0	0 dBm	IFGain:Low	Atten: 20			MI	(r1 2.47)	2 5 GHz 22 dBm	Auto Tune
										Center Freq 6.000000000 GHz
-10.0	1								-13.00 dBm	Start Freq 2.000000000 GHz
-30.0										Stop Freq 10.000000000 GHz
-50.0	la fille lipiper mar	^{an d} an dan dan dan dari kana sala sa	a gala ay sa ng ang si sa na ng ang na na na ng ang sa na na na na na na na	and a second	ng panaha pag	er gange teldinger gebe	t haran ya kata na	a lawan ^d eri ta'ng 'i Sing) s Yang meningka kalalah Yang meningka kalalah	gydallyfargaan gedining gaaa	CF Step 800.000000 MHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0 Start 2.00 #Res BW			#\/B\/	/ 3.0 MHz			ween 13		.000 GHz 6001 pts)	
	its changed; a	all traces of		75.0-WHZ			STATUS		ooo r pisj	

Plot 7-10. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 128)



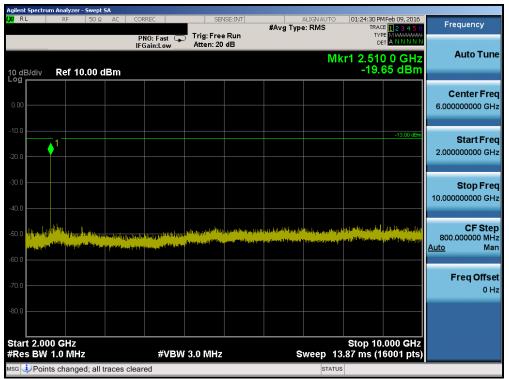
Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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μα RL RF 50 Ω	AC CORREC PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO #Avg Type: RMS	01:24:17 PM Feb 09, 2016 TRACE 1 2 3 4 5 6 TYPE M WARAWAN	Frequency
				TVDE MININ	
10 dB/div Ref 20.00 dE	m		Mkr	1 1.673 35 GHz -30.74 dBm	Auto Tune
10.0					Center Freq 1.424500000 GHz
-10.0				-13.00 dBm	Start Freq 849.000000 MHz
-20.0			∳ ¹		Stop Freq 2.000000000 GHz
-40.0					CF Step 115.100000 MHz <u>Auto</u> Man
-60.0 4 <u>19 19 19 19 19 19 19 19 19 19 19 19 19 1</u>					Freq Offset 0 Hz
-70.0 Start 849.0 MHz				Stop 2.0000 GHz	
#Res BW 100 kHz	#VBW	300 kHz	Sweep 14	2.7 ms (23021 pts)	
мsg 🗼 Points changed; all tra	ces cleared		STATUS	3	





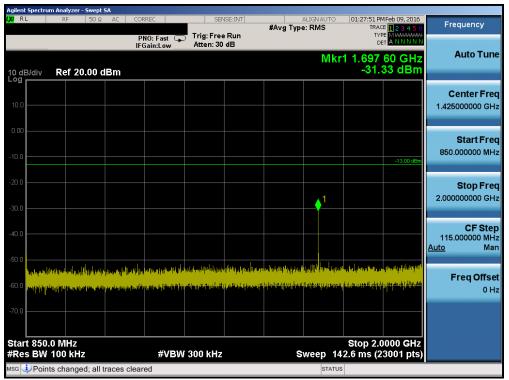
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode – Ch. 190)

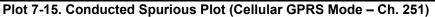
FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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		n Analyzer - Swej										
l <mark>,XI</mark> RI	L	RF 50	Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MFeb 09, 2016	Frequency	
				PNO: Fast 🕞	Trig: Fre				TYI			
	_			IFGain:Low	Atten: 30	dB					Auto Tu	une
								M	kr1 793.	80 MHz	Autori	une
10 dE Log	3/div	Ref 20.00	dBm						-50.	82 dBm		
3											Center F	roa
10.0											427.000000 M	
											427.0000001	1112
0.00												
											Start F	req
-10.0											30.000000	MHz
										-13.00 dBm		
-20.0											Stop E	roa
											Stop F 824.000000 M	
-30.0											824.0000001	VIE 2
-40.0											CF S	
										. 1	79.400000 M Auto	MHZ Man
-50.0										♦'		
	a Blord Salar	and the first property	the production of the	and and an end an end of the second	nan Palana	on the second second second	an University in the second	ahhaa taala U				
-60.0	in periodial	aan ka maalaadaa	مدعا وأشعفا أنعار	والمستعلقين والمتعار والمستنا	a ha kina di kana di kana di	والمعتدية والمقتم	and Allipselfored land	a thile and a set	والمحملة والمأتلة وسعنان	(headeline and a second	Freq Off	
											L L) Hz
-70.0												
	t 30.0			40 (P) (A)	000 1-11-				Stop 8	24.0 MHz		
	SBW	100 kHz		#VBW	300 kHz					5881 pts)		
MSG								STATUS	5			





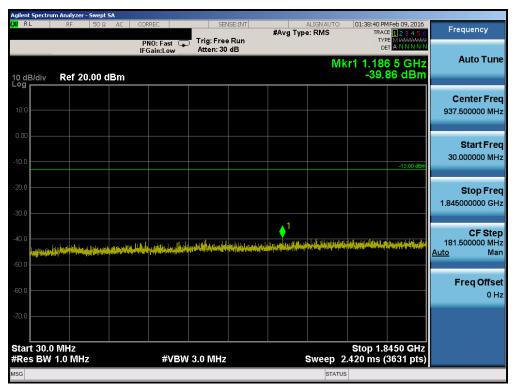


FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	rum Analyzer - Swe	pt SA									
LXI RL	RF 50	Ω AC CC	DRREC	SEN	ISE:INT	#Avg Typ			4Feb 09, 2016 E 1 2 3 4 5 6	Frequency	v
			PNO: Fast 🖵 Gain:Low	Trig: Free Atten: 20		#Avg iyp	e. KINS	TYP	E MWWWWW A N N N N N		
10 dB/div Log	Ref 10.00	dBm					Mk	r1 9.408 -45.9	3 5 GHz 95 dBm	Auto T	Tune
0.00										Center 6.000000000	
-10.0									-13.00 dBm	Start F 2.000000000	
-30.0										Stop I 10.000000000	
-50.0 4019	en fra distanti a daga da distanti a daga distanti a	and the second state	al a start and a start of the sta	and the state of t	ر از میروند که از از ایروند. رویه با رک که الکار ایروند با د	t _{song} kyrastra bergalaar na janta sa Danma ya kh	The gas a lower breeze	and the state of the second	allah katang sara	CF \$ 800.000000 Auto	
-60.0	dillete	and the state of the	lan hau _{n b} u ha ^{bé} rootai kari								Man
-70.0										Freq O	ff set 0 Hz
-80.0											
Start 2.0 #Res BV	00 GHz V 1.0 MHz		#VBW	3.0 MHz		s	weep 13	Stop 10. .87 ms (1	.000 GHz 6001 pts)		
мsg 🗼 Poi	ints changed; a	Il traces clea	ired				STATUS	\$			

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



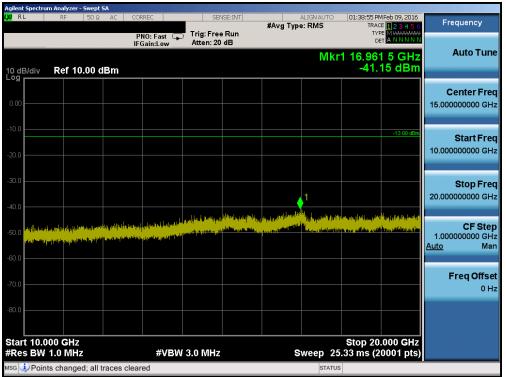
Plot 7-17. Conducted Spurious Plot (PCS GPRS Mode – Ch. 512)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	n Analyzer - Swept SA					
LXI RL	RF 50Ω /	AC CORREC	SENSE:INT	#Avg Type: RMS	01:38:48 PM Feb 09, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE MWWWWW DET A N N N N N	
10 dB/div Log	Ref 20.00 dB	m		Mk	r1 8.631 0 GHz -35.99 dBm	Auto Tune
10.0						Center Freq 5.955000000 GHz
-10.0					-13.00 dBm	Start Freq 1.910000000 GHz
-20.0						Stop Freq 10.000000000 GHz
-40.0	passing to be a second of the second	na n	n se di terapang saga kalen sa di tang di Kalendar yang Manana ang kalendar yang sana kalendar yang sana kalendar yang sa	i blen tipling for far storet blend per per per for 1943 i An en ser per per per per per per per per per p	en fil ^{fal} tstangerenn _{in d} er Melski begent pippen in Anderen in der Stander in der Stander	CF Step 809.000000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-70.0 Start 1.91					Stop 10.000 GHz	
#Res BW			3.0 MHz		.02 ms (16181 pts)	
MSG 💛 Point	s changed; all trac	ces cleared		STATUS		





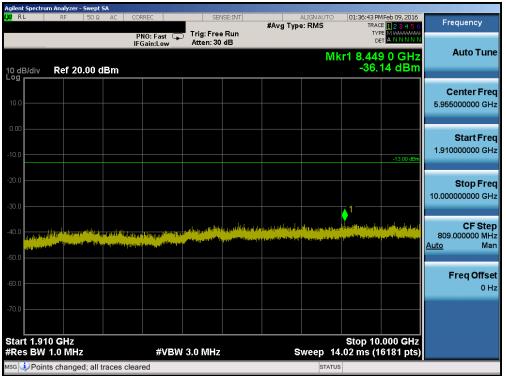
Plot 7-19. Conducted Spurious Plot (PCS GPRS Mode – Ch. 512)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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igilent Spectru	n Analyzer - Swe RF 50		CORREC	SENSE	SINT	Δ		01:36:29 PM	4Feb 09, 2016	
			PNO: Fast 🕞 IFGain:Low		#/ tun	Avg Type		TRAC	E 123456 M WWWWWW T A N N N N N	Frequency
10 dB/div	Ref 20.00	dBm	II Gam.Low				Mk	r1 1.73 -39.	1 0 GHz 50 dBm	Auto Tune
10.0										Center Freq 940.000000 MHz
-10.0									-13.00 dBm	Start Freq 30.000000 MHz
-20.0										Stop Freq 1.85000000 GHz
-40.0 	i talifati taliha shi daradi		hing in a state of the second seco	aktering at he with	han dan kilikada sekan ta dala	el en la politique de la companya d		l te til en lige kellige tretet poster som en lige for for	1 employed at the spin of the second	CF Step 182.000000 MHz <u>Auto</u> Man
-60.0										Freq Offset 0 Hz
-70.0	MHz							Stop 1.8	500 GHz	
#Res BW			#VBW	/ 3.0 MHz		s	Sweep 2	.427 ms (
ISG							STATUS			





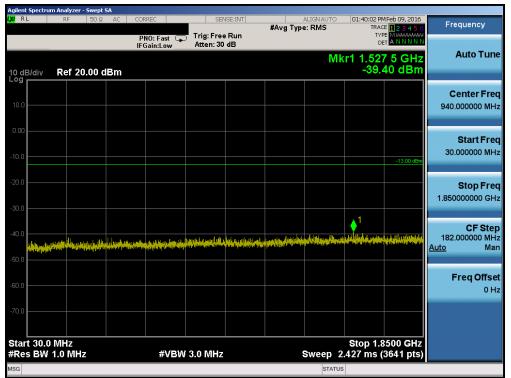
Plot 7-21. Conducted Spurious Plot (PCS GPRS Mode - Ch. 661)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept S									
LXU RL	RF 50 Ω	AC CC	DRREC	SEM	NSE:INT	#Avg Typ	ALIGNAUTO		MFeb 09, 2016 E 1 2 3 4 5 6	Frequency
		I IF	PNO: Fast 🕞 Gain:Low	Trig: Free Atten: 20				TYI DI		Auto Tune
10 dB/div	Ref 10.00 d	Bm					Mkr	1 16.91 -39.	0 5 GHz 70 dBm	Auto Tune
0.00										Center Freq 15.00000000 GHz
-10.0									-13.00 dBm	Start Freq 10.000000000 GHz
-30.0							1			Stop Freq 20.000000000 GHz
-50.0 	section of sector s	lang <mark>i (1910) yang seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seb Seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan seberahkan s</mark>	ty davy ben ben ben helder Hy provinsie (protosowenie)	n general forst ange between general general general general general and general general general general genera In general de la general de In general de la general de	, philling and dis	hiteren hiteren in der seinen der können der Können der können der kö		in an in hit for the parameter Mary process and in process of		CF Step 1.00000000 GHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0 Start 10.0								Stop 20	.000 GHz	
#Res BW				/ 3.0 MHz		8			0001 pts)	
MSG POIN	ts changed; all t	races clea	irea				STATUS	•		





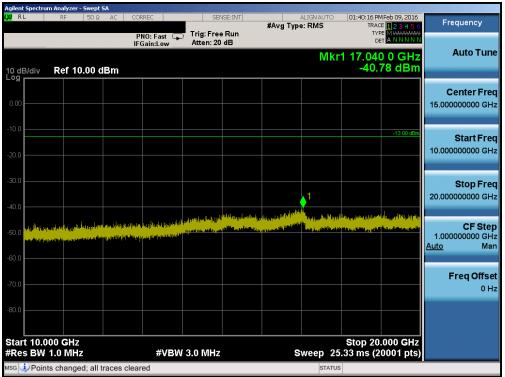
Plot 7-23. Conducted Spurious Plot (PCS GPRS Mode – Ch. 810)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept										
IXI RL	RF 50 Ω	AC COF	RREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		4Feb 09, 2016	Frequ	ency
			NO: Fast 🖵 Gain:Low	Trig: Free Atten: 30		#Avg iyp	e. Rivis	TYF			
10 dB/div Log	Ref 20.00 d	IBm					Mł	(r1 9.26 -36.	1 0 GHz 82 dBm	Au	to Tune
10.0											t er Freq 1000 GHz
-10.0									-13.00 dBm		art Freq 1000 GHz
-20.0										St 10.000000	op Freq 1000 GHz
-40.0	1974) a strang dalam da sak da		talation a section	and the second second	an an the state of	and distantiation		n filog soor af die geryengerfi en wat die gerieden ster oor die	1 Hadoverhavsen scientificans et	808.500	CF Step
-50.0	na la superiore de la constante de la constant La constante de la constante de	i Taalataina poorato	deterror di Maria		Ultranea, chatra		ولياد احر المطعياتين	no fra a da ante	(w) I i i condres	<u>Auto</u>	Man
-60.0										Fre	q Offset 0 Hz
-70.0											
Start 1.91 #Res BW			#VBW	3.0 MHz			weep 14	Stop 10 .01 ms (1	.000 GHz 6171 pts)		
мsg 🕕 Point	ts changed; all t	traces clear	ed				STATUS				
4											





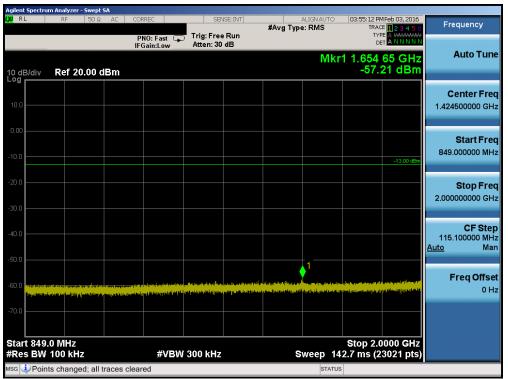
Plot 7-25. Conducted Spurious Plot (PCS GPRS Mode – Ch. 810)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	ctrum Analy												
LXI RL	RF	50 Ω	AC	CORREC	SE	NSE:INT	WA.,	ALIGN g Type: RM			4Feb 03, 2016 E 1 2 3 4 5 6		Frequency
				PNO: Fast C IFGain:Low	Trig: Fre		****	g type. Kn	15	TY			
10 dB/di Log r	v Ref	20.00 d	Bm				_		Mł	(r1 822. -30.	40 MHz 54 dBm		Auto Tune
10.0												43	Center Freq 26.500000 MHz
-10.0											-13.00 dBm	3	Start Freq 30.000000 MHz
-20.0											1	82	Stop Freq 23.000000 MHz
-40.0												Auto	CF Step 79.300000 MHz Man
-60.0	ngelst strongen ty Utgelster	ana ana amin'ny fisiana Ny INSEE dia mampina ma	alayar da biya Nimiti da atau	lanan latingenenden Nglag planpssondertets	na tanan ara-pata badi manya taka taka taka ta		alla set da legio esta longencia d	Deter Billio Deservations Anna Angli Angle Sangli Store	alastinalasi Ngang Palasia	ang	l ang kathanal kung ta gana katag ing Angers (h		Freq Offset 0 Hz
-70.0										Ston	22.0 8/14=		
	0.0 MHz W 100 I			#VB	W 300 kHz	2		Swee	ep 98		23.0 MHz 5861 pts)		
MSG									STATUS				

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



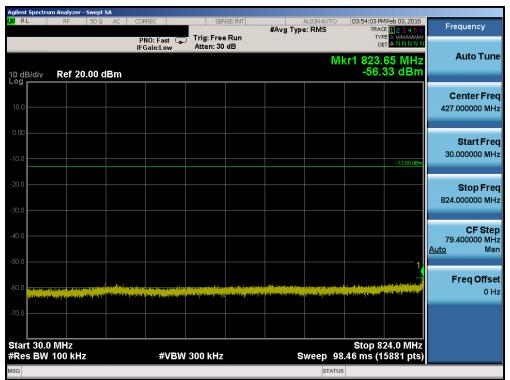
Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept S			1		1				
LXI RL	RF 50 Ω	AC COR	REC	SEN	JSE:INT	#Avg Typ	ALIGNAUTO		MFeb 03, 2016	Frequency
		PN IFG	IO: Fast 🖵 ain:Low	Trig: Free Atten: 20				TYI		
10 dB/div	Ref 10.00 dl	Bm					Mk	r1 2.48 -50.	0 0 GHz 99 dBm	Auto Tune
0.00										Center Freq 6.00000000 GHz
-10.0									-13.00 dBm	Start Freq 2.000000000 GHz
-30.0										Stop Freq 10.000000000 GHz
-50.0		a ya khang takan yana aya takan gu	tela in a trainciana in trainciana di Santa dagan		e general being somet pickeys i yan generalish (földer still ganis	a da a constituente da parte da constituente da constituente da constituente da constituente da constituente d	i fali insegu je na je na se do je bisto Na konstrukcija se do je bisto fan konstrukcija se do je bisto konstrukcija se do je bisto konstrukcija se do je	pites Diffe Colorage State	a gan billing til första han som	CF Step 800.000000 MHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0 Start 2.00								Stop 10	.000 GHz	
#Res BW				3.0 MHz		s			6001 pts)	
MSG 🕹 Poin	ts changed; all tr	aces cleare	ea				STATUS			

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



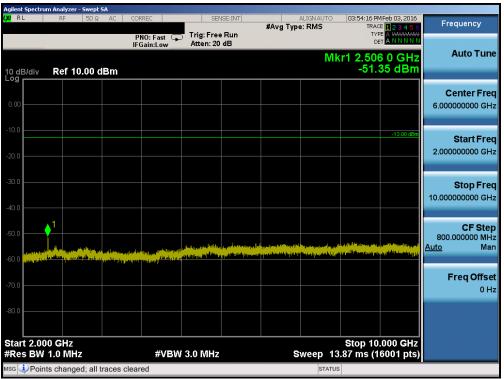
Plot 7-29. Conducted Spurious Plot (Cellular WCDMA Mode - Ch. 4183)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spect											
L <mark>XI</mark> RL	RF	50 Ω	AC (ORREC	SE	INSE:INT	WALLA TS	ALIGN AUTO		MFeb 03, 2016 E 1 2 3 4 5 6	Frequency
				PNO: Fast 🔾 IFGain:Low	Trig: Fre		#Avg iy	pe. KM5	TY		
10 dB/div	Ref	20.00 c	IBm					Mkr	1 1.674 -56.	30 GHz 25 dBm	Auto Tune
10.0											Center Fred 1.424500000 GH:
-10.0										-13.00 dBm	Start Fred 849.000000 MH:
-20.0											Stop Fred 2.000000000 GH:
-40.0											CF Step 115.100000 MH: <u>Auto</u> Mar
-60.0	alla da fisicada por	al-solated district	an a	and the second	lengilgenolumut settedjelgene		alar ng mga n Ng mga ng mga	1 Miles Institutes of the cylip feetpoperations	na y jana kasa pina kasa Tana kasa kasa pina kasa	e bereggelegen die Frankrike Alberga keelingestheatheige	Freq Offse 0 H:
-70.0											
Start 84 #Res BV				#VBV	V 300 kHz	2		Sweep 14	Stop 2.0 2.7 ms (2	0000 GHz 3021 pts)	
мsg 🗼 Ро	ints cha	nged; all t	traces cle	ared				STATUS			

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

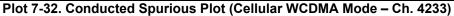


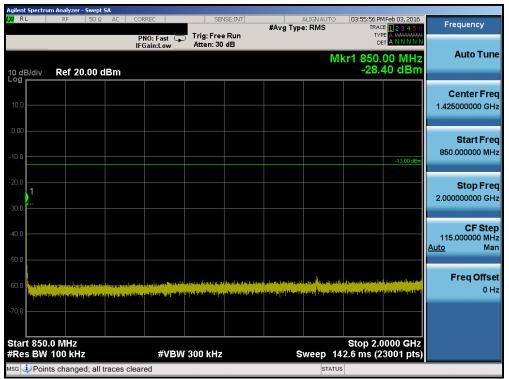
Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectru <mark>XI</mark> R L	i <mark>m Analyzer - Swept</mark> RF 50 Ω		CORREC	SEI	NSE:INT		ALIGN AUTO		4Feb 03, 2016	
			PNO: Fast G	Trig: Fre Atten: 30	e Run I dB	#Avg T _}	/pe: RMS	TYP	E 1 2 3 4 5 6 E A WARMAN A NNNNN	Frequency
10 dB/div	Ref 20.00	dBm					M	kr1 725. -58.3	25 MHz 37 dBm	Auto Tune
10.0										Center Freq 427.000000 MHz
-10.0									-13.00 dBm	Start Freq 30.000000 MHz
-20.0										Stop Freq 824.000000 MHz
-40.0										CF Step 79.400000 MHz <u>Auto</u> Mar
-60.0	an ang ing marina tayang karana ang inaka ang ing ang ang ang ang ang ang ang ang ang a		er for eine ster Gerregen eine gerichte preis Alle au feisig des Antonionen die starten eine		المعرفين المعرفين والمعرفين والمعرفين والمعرفين والمعرفين والمعرفين والمعرفين والمعرفين والمعرفين والمعرفين و والمعرفين والمعرفين و	ter e tra fra terminista e Agente populación de las f	ing the descent protocol and the day		a je podreta Primar podreta i se se Prez avrijeva te stratje da je de de	Freq Offset 0 Hz
-70.0										
Start 30.0 #Res BW) MHz 100 kHz		#VBW	/ 300 kHz			Sweep 98	Stop 8 .46 ms (1	24.0 MHz 5881 pts)	
MSG							STATUS			





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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
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	n Analyzer - Swept Sf									
LXU RL	RF 50 Ω	AC CORR	EC	SEN	ISE:INT	#Avg Typ	ALIGNAUTO		MFeb 03, 2016	Frequency
		PN(IFGa): Fast 😱 iin:Low	Trig: Free Atten: 20				TYI		
10 dB/div	Ref 10.00 dE	Зm					Mk	r1 2.53 -49.	7 5 GHz 39 dBm	Auto Tune
0.00										Center Freq 6.000000000 GHz
-10.0									-13.00 dBm	Start Freq 2.000000000 GHz
-30.0										Stop Freq 10.000000000 GHz
-50.0		ر از مقروب و بروی دی از مارید. این و محمد و بروی محمد و از محمد و محمد و بروی	and the state of the	and the second	and the second second	la popularitaria de la constan Popularitaria de la constante de la constante de la constante de la constante de	e de la companya de En la companya de la c		a ya takata ka sa	CF Step 800.000000 MHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0 Start 2.00	0 GHz							Stop <u>10</u>	.000 GHz	
#Res BW				3.0 MHz		s		-	6001 pts)	
MSG 🔱 Point	ts changed; all tra	aces cleare	d				STATUS			

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



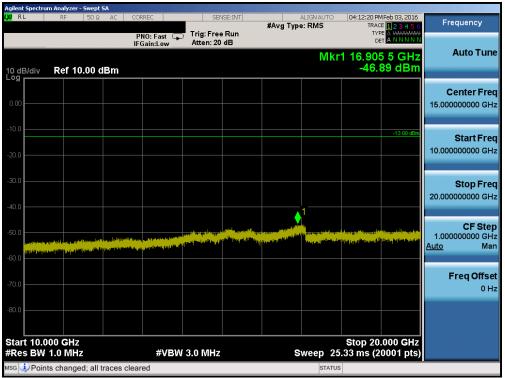
Plot 7-35. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrur <mark>(XI</mark> RL	n Analyzer - Swept S			051	or 11 m			04.40.45.0		
KL	RF 50 Ω	AC (CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRA	MFeb 03, 2016 CE <mark>1 2 3 4 5 6</mark>	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 30				TY D	PE A WWWWWW ET A N N N N N	
							Mk	r1 8 67	0.0 GHz	Auto Tune
10 dB/div	Ref 20.00 d	Bm						-44.	0 0 GHz 64 dBm	
										Center Freq
10.0										5.877500000 GHz
0.00										Start Freq
-10.0										1.755000000 GHz
-10.0									-13.00 dBm	
-20.0										Oton From
										Stop Freq 10.00000000 GHz
-30.0										10.00000000 GH2
-40.0								1-		CF Step 824.50000 MHz
					-	and the second second	-			<u>Auto</u> Man
-50.0		President and the other designs								
										Freq Offset
-60.0										0 Hz
-70.0										
Start 1.75								Stop 10	.000 GHz	
#Res BW	1.0 MHz		#VBV	/ 3.0 MHz		s	weep 14	.29 ms (1	6491 pts)	
мsg 🔱 Point	s changed; all ti	races cle	ared				STATUS	6		





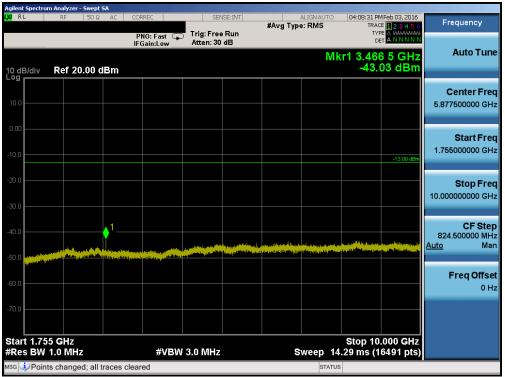
Plot 7-37. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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LXU RL	RF 50 Ω AC	CORREC	SENSE:INT				
				#0 T.	ALIGN AUTO	04:08:24 PM Feb 03, 2016 TRACE 1 2 3 4 5	Frequency
		PNO: Fast 📮 IFGain:Low	Trig: Free Run Atten: 30 dB	#Avg 1		DET A NNNN	
10 dB/div	Ref 20.00 dBm				Mk	r1 1.605 5 GHz -48.43 dBm	Auto Tune
10.0							Center Freq 870.000000 MHz
-10.0						-13.00 dBr	Start Freq 30.000000 MHz
-20.0							Stop Freq 1.710000000 GHz
-40.0							CF Step 168.000000 MHz <u>Auto</u> Man
-60.0	**************************************	elergensente en electro en terrer	and and a second se				Freq Offset 0 Hz
-70.0						04	
Start 30.0 M #Res BW 1.0		#VBW	3.0 MHz		Sweep 2	Stop 1.7100 GHz .240 ms (3361 pts	
MSG					STATUS	;	





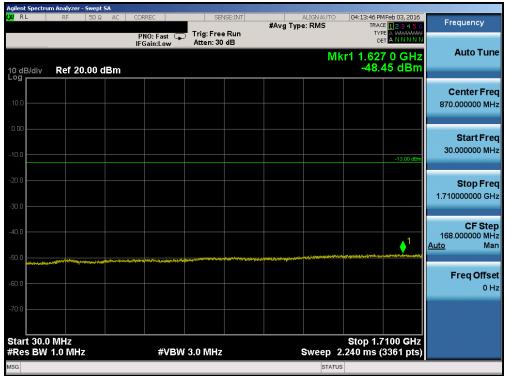
Plot 7-39. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1412)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept SA			T		
LXU RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	04:08:38 PM Feb 03, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 20 dB		TYPE A WWWWW DET A N N N N N 1 16.972 5 GHz	Auto Tune
10 dB/div ^{Log}	Ref 10.00 dBm				-47.13 dBm	
0.00						Center Freq
						13.00000000 GHZ
-10.0					-13.00 dBm	Start Freq
-20.0						10.00000000 GHz
-30.0						Stop Freq
-40.0						20.000000000 GHz
						CF Step
-50.0		المحمودية المحمودية المحموم المحمول المحمودية المحمودية المحمودية المحمودية المحمومين المحمودية المحمومين المح المحمولية في المحمولية	and the south south		and the second sec	1.000000000 GHz <u>Auto</u> Man
-60.0						
-70.0						Freq Offset 0 Hz
-80.0						
Start 10.0 #Res BW		#VBM	3.0 MHz	Sweep 25	Stop 20.000 GHz .33 ms (20001 pts)	
	ts changed; all traces		0.0 10112	Sweep 25		
			·			





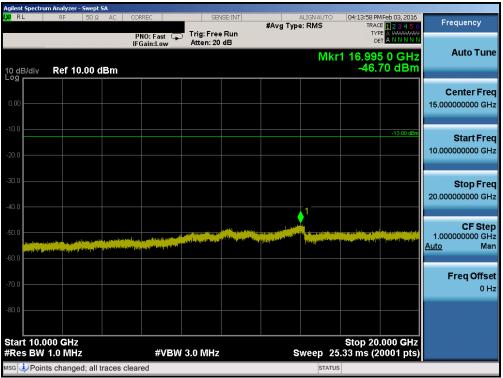
Plot 7-41. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1862)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrur										
LXI RL	RF	50Ω AC	CORREC	SEN	ISE:INT	#Ava	ALIGNAUTO Type: RMS		4Feb 03, 2016 E 1 2 3 4 5 6	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 30				TYI		
10 dB/div Log	Ref 20.0	00 dBm					Mk	r1 1.76 -33.	0 0 GHz 14 dBm	Auto Tune
10.0										Center Freq 5.88000000 GHz
-10.0									-13.00 dBm	Start Freq 1.76000000 GHz
-20.0										Stop Freq 10.000000000 GHz
-40.0	and the second	Million II Jacob and	Lesser (Lesser) a la singer (Lesser)		the properties and the second s	nes a la la Andrica la national de la completa	a de la composition d A de la composition de	an an a tha bha an a tha an	a second the templated product a second the templated product and the templated	CF Step 824.000000 MHz <u>Auto</u> Man
-50.0										Freq Offset 0 Hz
-70.0								Stop 10	.000 GHz	
#Res BW				/ 3.0 MHz			Sweep 14		6481 pts)	
usg 횢 Point	s changed;	all traces of	leared				STATUS			





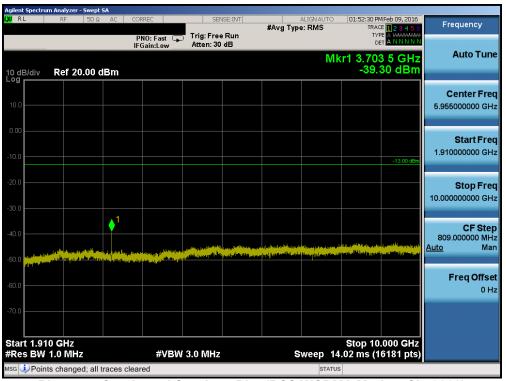
Plot 7-43. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1862)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrum Analyzer - Swept SA					
LXX RL RF 50Ω AC		#Avg Type		21 PM Feb 09, 2016 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast Trig: Free IFGain:Low Atten: 30			DET A WWWWWWW	
			Mkr1 1.	845 0 GHz	Auto Tune
10 dB/div Ref 20.00 dBm			-3	845 0 GHz 30.71 dBm	
					Center Freq
10.0					937.500000 MHz
0.00					Start Freq
-10.0					30.000000 MHz
-10.0				-13.00 dBm	
-20.0					Stop Freq
				1,	1.845000000 GHz
-30.0					
-40.0					CF Step
*+0.0					181.500000 MHz Auto Man
-50.0	والماس كالايان الماسي ويتعالم مستقولته وارتقادوه والمراحل ويتقو المراحل والمراحل والماس				
					Freq Offset
-60.0					0 Hz
-70.0					
-10.0					
Start 30.0 MHz			Eton	1 9450 CH2	
#Res BW 1.0 MHz	#VBW 3.0 MHz		Sweep 2.420 m	1.8450 GHz is (3631 pts)	
MSG			STATUS		

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



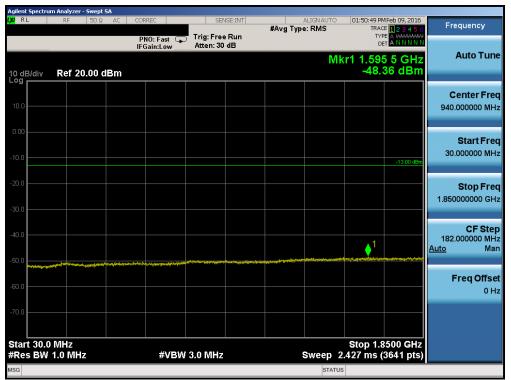
Plot 7-45. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	n Analyzer - Swept					1		-		
LXIRL	RF 50 Ω	AC C	ORREC	SEI	NSE:INT	#Avg Typ	ALIGNAUTO		MFeb 09, 2016 CE 123456	Frequency
		I	PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 20				TY D		Auto Tune
10 dB/div ^{Log}	Ref 10.00 d	iBm						-47.	7 0 GHz 08 dBm	
0.00										Center Freq 15.00000000 GHz
-10.0										
-10.0									-13.00 dBm	Start Freq 10.000000000 GHz
-20.0										10.00000000 GH2
-30.0										Stop Freq
-40.0							1			20.000000000 GHz
-50.0				Manda Sanata (paralata	Jacobia ang Sanahara Mar	The oppose of the second		ويربه والمحمور وماد	a la companya da serie da ser	CF Step 1.00000000 GHz
-60.0				المدوية أنتظر والمطاوليني			hitapinattiiiiana			<u>Auto</u> Man
70.0										Freq Offset
-70.0										0 Hz
-80.0										
Start 10.0 #Res BW			#VBW	/ 3.0 MHz		s	weep 25	Stop 20 .33 ms (2	.000 GHz 20001 pts)	
мsg 🗼 Poin	ts changed; all t	traces clea	ared				STATUS			





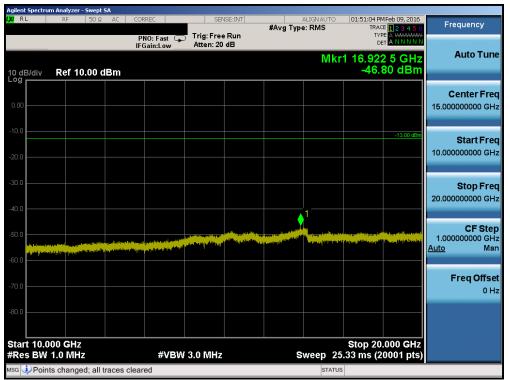
Plot 7-47. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Aglient Spectrum X/ RL	n Analyzer - Swep RF 50 (CORREC	SEN	SE:INT		ALIGNAUTO	01:50:56 PM	4Feb 09, 2016	
	14 303	i AC	PNO: Fast	Trig: Free	Run	#Avg Ty		TRAC		Frequency
10 dB/div	Ref 20.00		IFGain:Low	Atten: 30	dB		Mk	r1 3.75	B 5 GHz 26 dBm	Auto Tune
10.0										Center Frec 5.955000000 GHz
10.0									-13.00 dBm	Start Fred 1.910000000 GH;
30.0										Stop Fred 10.000000000 GH;
40.0 50.0 441101	مرافعة ويعين و ^{ير} اقي . ويقطعه وروم ينافعة وي					and the second	in the international production of the second se	ورون و المراجع المراجع . وي الم يرتبع في المراجع . وي الم يرتبع في المراجع .	an a	CF Step 809.000000 MH: <u>Auto</u> Mar
60.0										Freq Offse 0 H
-70.0								Stop 10	.000 GHz	
#Res BW			#VBW	/ 3.0 MHz			Sweep 14	.02 ms (1	6181 pts)	
sg 🤙 Points	s changed; all	traces cle	eared				STATUS			

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



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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swep								
LXI RL	RF 50 Ω	2 AC	CORREC	SENSE:I		ALIGN AU		MFeb 09, 2016 CE <mark>1 2 3 4 5 6</mark>	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Ru Atten: 30 dB			TY		
10 dB/div Log	Ref 20.00	dBm					Mkr1 1.59 -50.	9 0 GHz 01 dBm	Auto Tune
10.0									Center Freq 940.000000 MHz
-10.0								-13.00 dBm	Start Freq 30.000000 MHz
-20.0									Stop Freq 1.85000000 GHz
-40.0							↓ ¹		CF Step 182.000000 MHz <u>Auto</u> Man
-60.0			ni dela esta de la contra del poster antificio del la contra del poster del poster del poster del poster del p	an an Adrian State (a de se internet de secondor	and find the second second				Freq Offset 0 Hz
-70.0 Start 30.0							Stop 1.	8500 GHz	
#Res BW	1.0 MHz		#VBW	3.0 MHz			0 2.427 ms	(3641 pts)	
woo						51	Allos		





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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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	n Analyzer - Swept :									
L <mark>XI</mark> RL	RF 50 Ω	AC CO	RREC	SEN	ISE:INT	#0 T.	ALIGNAUTO		4Feb 09, 2016 E <mark>1 2 3 4 5 6</mark>	Frequency
			'NO: Fast 🕞 Gain:Low	Trig: Free Atten: 20		#Avg iy	pe: KWS	TYF	E A WAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	
10 dB/div Log	Ref 10.00 d	IBm					Mkr	1 17.02: -51.:	2 0 GHz 21 dBm	Auto Tune
0.00										Center Freq 15.00000000 GHz
-10.0									-13.00 dBm	Start Freq 10.000000000 GHz
-30.0										Stop Freq 20.000000000 GHz
-50.0							1		l dag _{pang} anaké sék ség na Balili. Na na gyan karih (na ng karih k	CF Step 1.000000000 GHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0 Start 10.0								Stop 20	.000 GHz	
#Res BW				/ 3.0 MHz			Sweep 25	.33 ms (2	0001 pts)	
MSG 🕹 Point	s changed; all t	traces clea	rea				STATUS			

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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7.4 Band Edge Emissions at Antenna Terminal §22.1051 §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 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 \geq 1% of the emission bandwidth
- 4. VBW <u>></u> 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

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

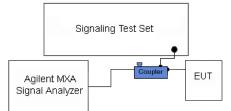


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

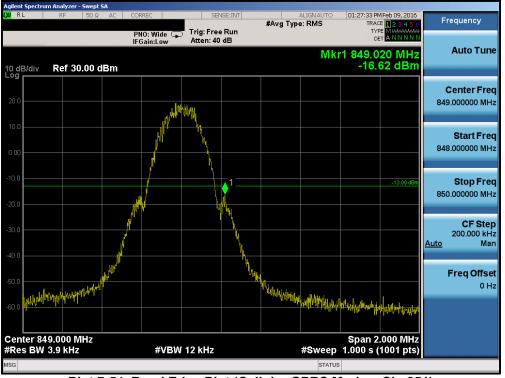
Per 22.917(b), 24.238(b), 27.53(h)(3), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions 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: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	G Reviewed by: Quality Manager
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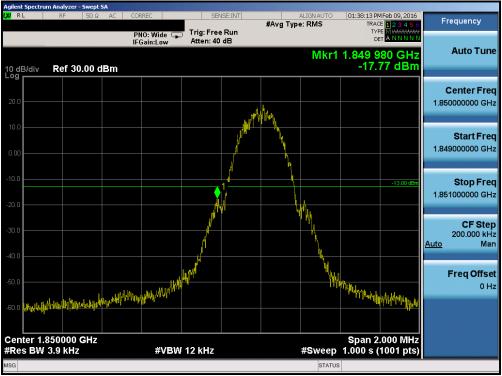
Plot 7-53. Band Edge Plot (Cellular GPRS Mode - Ch. 128)

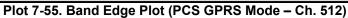


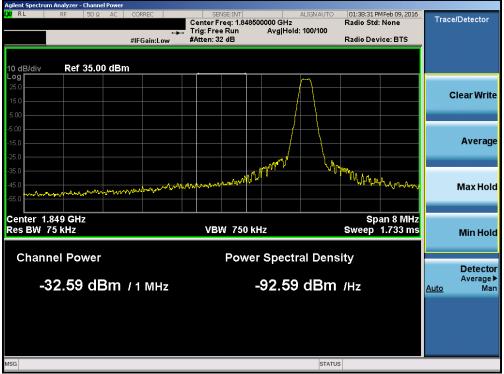
Plot 7-54. Band Edge Plot (Cellular GPRS Mode – Ch. 251)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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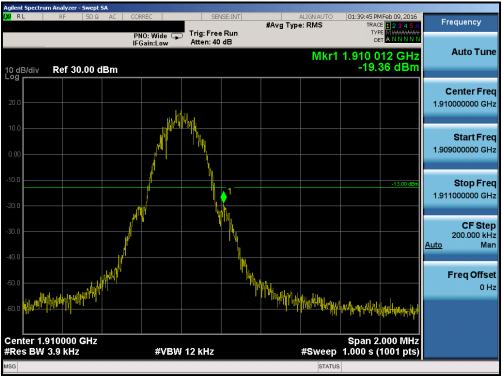


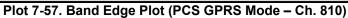


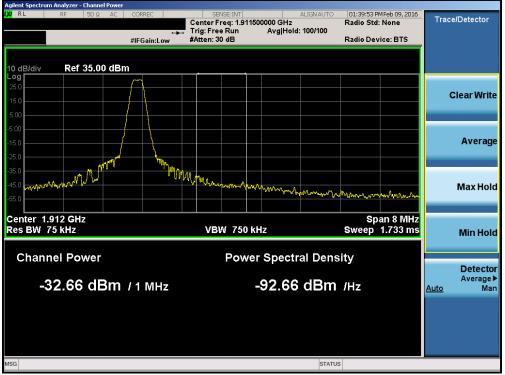
Plot 7-56. 4MHz Span Plot (PCS GPRS Mode - Ch. 512)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-58. 4MHz Span Plot (PCS GPRS Mode – Ch. 810)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	n Analyzer - Swept SA										
LXI RL	RF 50 Ω	AC CORRE	EC	SEN	JSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	1Feb 03, 2016	Frequency	
		PNC IFGa): Fast 🖵 in:Low	Trig: Free Atten: 40				TYP DE	00 MHz B1 dBm	Auto Tu	ine
10 dB/div Log	Ref 30.00 dE	Зm						-18.9	31 dBm		
20.0										Center Fr 824.000000 M	- 1
0.00					for the second s					Start Fr 816.500000 M	1
-10.0					1				-13.00 dBm	Stop Fr 831.500000 M	1
-30.0		^	www.www.	\sim					and the second s	CF St 1.500000 M <u>Auto</u> M	
-40.0	mmmm	~								Freq Offs 0	set Hz
-60.0											
Center 82 #Res BW	4.000 MHz 100 kHz		#VBW	300 kHz			Sweep 1	Span 1: .867 ms (5.00 MHz 1001 pts)		
MSG							STATUS				





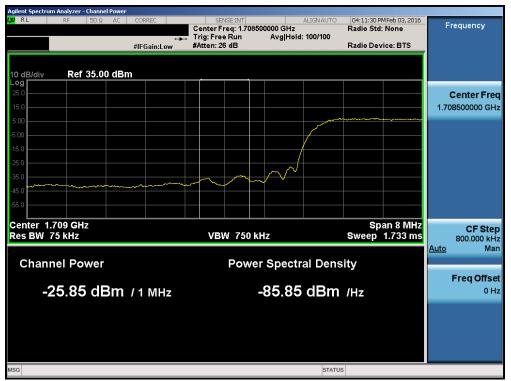
Plot 7-60. Band Edge Plot (Cellular WCDMA Mode - Ch. 4233)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-61. Band Edge Plot (AWS WCDMA Mode – Ch. 1312)



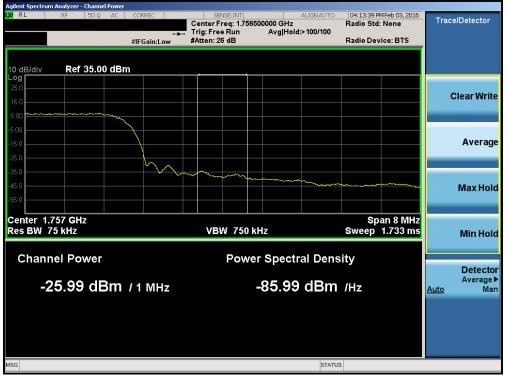
Plot 7-62. 4MHz Span Plot (AWS WCDMA Mode – Ch. 1312)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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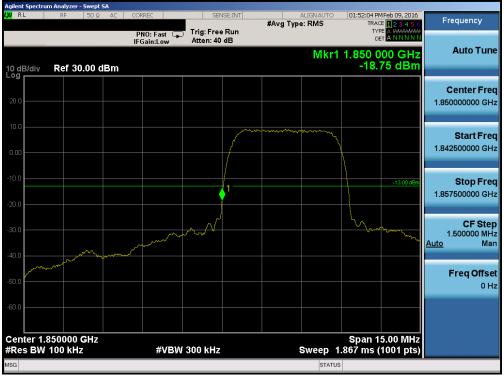


Plot 7-64. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1862)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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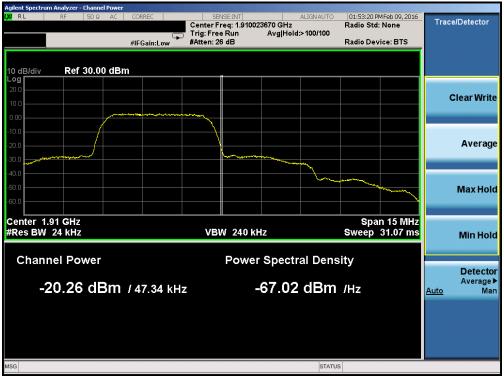
Plot 7-65. Band Edge Plot (PCS WCDMA Mode – Ch. 9262)



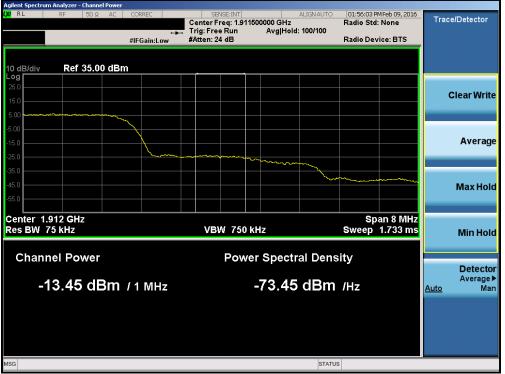
Plot 7-66. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9262)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-68. 4MHz Span Plot (PCS WCDMA Mode - Ch. 9538)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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 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.

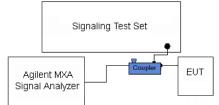


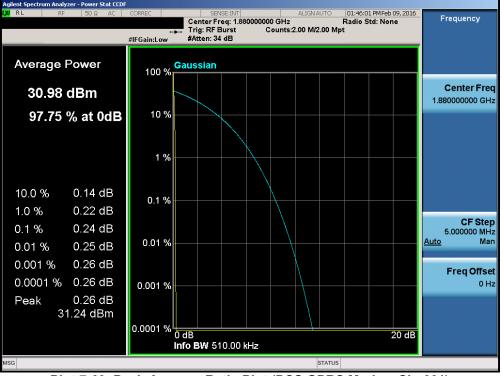
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

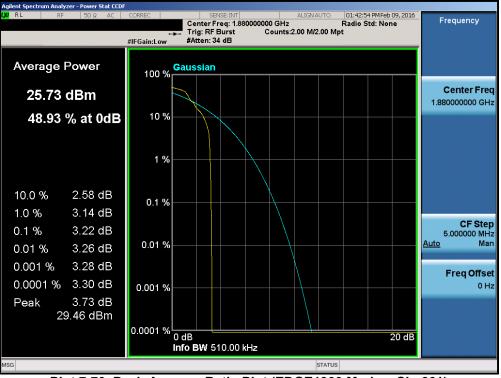
None

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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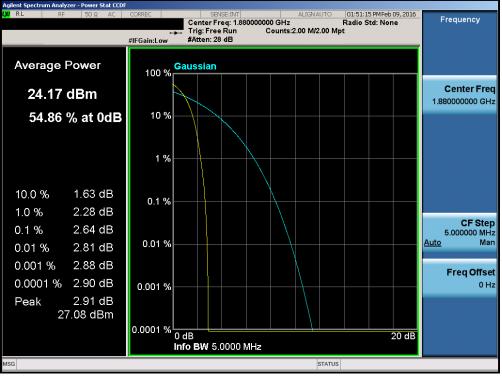




Plot 7-70. Peak-Average Ratio Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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Plot 7-71. Peak-Average Ratio Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed 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-C-2004 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 v02r02 - Section 5.2.1

ANSI/TIA-603-C-2004 - Section 2.2.17

Test Settings

- Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW \geq 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points \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: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Test Setup

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

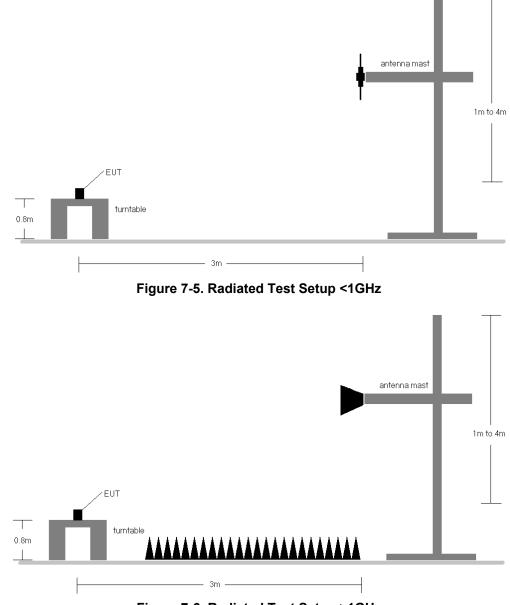


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) This unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

Frequency [MHz]	Mode	Ant. Pol. [H/V]	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	350	200	24.76	4.94	29.70	0.934	38.45	-8.75
836.60	GPRS850	Н	357	203	23.47	5.00	28.47	0.703	38.45	-9.98
848.80	GPRS850	Н	357	203	25.90	5.05	30.95	1.245	38.45	-7.50
848.80	EDGE850	Н	357	203	19.08	5.05	24.13	0.259	38.45	-14.32

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	V	130	180	13.10	4.95	18.05	0.064	38.45	-20.40
836.60	WCDMA850	V	134	195	13.91	5.00	18.91	0.078	38.45	-19.54
846.60	WCDMA850	V	134	195	13.28	5.04	18.32	0.068	38.45	-20.13

Table 7-3. ERP (Cellular WCDMA)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	Н	100	117	10.95	9.66	20.61	0.115	30.00	-9.39
1732.60	WCDMA1700	Н	400	294	11.98	9.53	21.51	0.142	30.00	-8.49
1752.60	WCDMA1700	Н	400	290	11.51	9.40	20.91	0.123	30.00	-9.09

Table 7-4. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	Н	112	192	19.32	9.35	28.67	0.736	33.01	-4.34
1880.00	GPRS1900	Н	101	52	21.13	9.27	30.40	1.097	33.01	-2.61
1909.80	GPRS1900	Н	121	133	20.89	9.25	30.14	1.033	33.01	-2.87
1880.00	EDGE1900	Н	101	52	16.27	9.27	25.54	0.358	33.01	-7.47

Table 7-5. EIRP (PCS GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	Н	100	140	13.45	9.22	22.67	0.185	33.01	-10.34
1880.00	WCDMA1900	Н	100	148	14.62	9.27	23.89	0.245	33.01	-9.12
1907.60	WCDMA1900	Н	100	144	13.79	9.35	23.14	0.206	33.01	-9.87

Table 7-6. EIRP (PCS WCDMA)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Radiated Spurious Emissions Measurements 7.7 §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-C-2004 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 v02r02 - Section 5.8

ANSI/TIA-603-C-2004 - 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 = Peak
- 6. Trace mode = max hold
- 7. The trace was allowed to stabilize

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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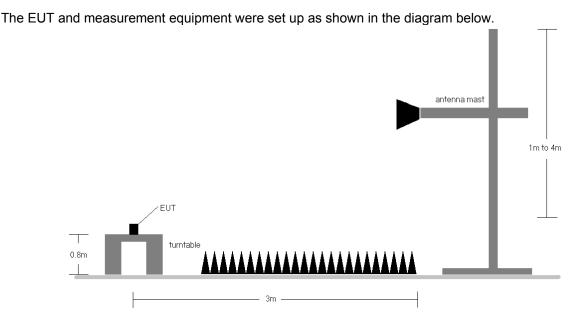


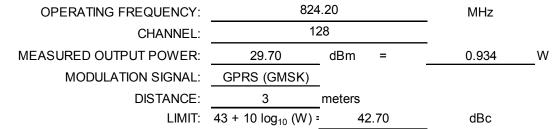
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

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

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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1648.40	Н	110	146	-51.46	3.62	-47.84	77.5
2472.60	Н	218	145	-51.38	3.57	-47.81	77.5
3296.80	Н	207	130	-54.54	5.66	-48.88	78.6
4121.00	Н	209	198	-48.26	6.90	-41.35	71.1
4945.20	Н	203	42	-52.70	7.87	-44.82	74.5

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

OPERATING FREQUENCY:	836	836.60			
CHANNEL:	19	-			
MEASURED OUTPUT POWER:	28.47	dBm =	0.703	W	
MODULATION SIGNAL:	GPRS (GMSK)			_	
DISTANCE:	3	meters			
LIMIT:	43 + 10 log ₁₀ (W) =	41.47	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	116	138	-54.72	3.53	-51.20	79.7
2509.80	Н	204	148	-52.08	3.57	-48.51	77.0
3346.40	Н	207	133	-53.51	5.79	-47.72	76.2
4183.00	Н	208	195	-47.35	7.05	-40.30	68.8
5019.60	Н	204	36	-52.93	8.01	-44.93	73.4

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	848	3.80	MHz
CHANNEL:	2	51	
MEASURED OUTPUT POWER:	30.95	dBm =	- 1.245 W
MODULATION SIGNAL:	GPRS (GMSK)	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	43.95	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	110	139	-55.07	3.44	-51.63	82.6
2546.40	Н	211	141	-48.96	3.65	-45.31	76.3
3395.20	Н	200	135	-50.45	5.91	-44.54	75.5
4244.00	Н	208	189	-53.38	7.14	-46.24	77.2
5092.80	Н	208	43	-50.96	8.06	-42.90	73.8

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

OPERATING FREQUENCY:	826	MHz	
CHANNEL:	41	32	
MEASURED OUTPUT POWER:	18.05	dBm =	0.064 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	31.05	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]
1652.80	V	-	-	-60.72	3.58	-57.15	75.2
2479.20	V	-	-	-56.68	3.53	-53.15	71.2

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🔁 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	836	6.60	MHz
CHANNEL:	41	-	
MEASURED OUTPUT POWER:	18.91	dBm =	- 0.078 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	31.91	dBc

	juency /Hz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
16	73.20	V	-	-	-59.25	3.49	-55.75	74.7
25	09.80	V	-	-	-56.01	3.53	-52.47	71.4

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

OPERATING FREQUENCY:	846	60	MHz
CHANNEL:	42	33	•
MEASURED OUTPUT POWER:	18.32	dBm =	0.068 W
MODULATION SIGNAL:	WCDMA	•	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	31.32	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]
1693.20	V	-	-	-60.20	3.42	-56.78	75.1
2539.80	V	-	-	-56.43	3.60	-52.83	71.2

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	171	MHz		
CHANNEL:	13			
MEASURED OUTPUT POWER:	20.61	dBm =	0.115	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	33.61	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]
3424.80	Н	171	57	-56.54	8.15	-48.39	69.0
5137.20	Н	174	235	-46.01	10.26	-35.75	56.4
6849.60	Н	122	219	-51.34	11.39	-39.95	60.6

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

OPERATING FREQUENCY:	173	2.60	MHz
CHANNEL:	14	-	
MEASURED OUTPUT POWER:	21.51	dBm =	0.142 W
MODULATION SIGNAL:	WCDMA	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	34.51	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	167	56	-56.25	8.29	-47.97	68.6
5197.80	Н	159	229	-46.03	10.35	-35.68	56.3
6930.40	Н	159	245	-50.12	11.49	-38.64	59.2

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

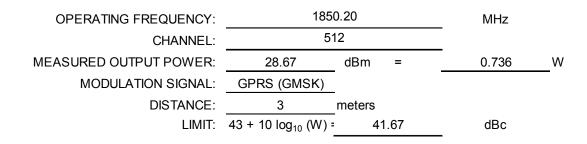
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OPERATING FREQUENCY:	175	MHz	
CHANNEL:	15		
MEASURED OUTPUT POWER:	20.91	dBm =	0.123 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	33.91	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3505.20	Н	224	27	-55.05	8.40	-46.64	67.3
5257.80	Н	206	165	-49.81	10.36	-39.45	60.1
7010.40	Н	125	221	-45.18	11.56	-33.62	54.2

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



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	210	149	-48.54	8.40	-40.14	68.8
5550.60	Н	139	86	-42.28	10.55	-31.73	60.4
7400.80	Н	133	114	-50.68	12.05	-38.63	67.3
9251.00	Н	126	293	-53.94	13.22	-40.72	69.4

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	188	MHz		
CHANNEL:	66	-		
MEASURED OUTPUT POWER:	30.40	dBm =	1.097	W
MODULATION SIGNAL:	GPRS (GMSK)	•		
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	43.40	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	208	147	-51.33	8.38	-42.94	71.6
5640.00	Н	129	97	-41.48	10.70	-30.78	59.4
7520.00	Н	135	109	-50.68	12.10	-38.57	67.2
9400.00	Н	135	298	-52.89	13.19	-39.70	68.4

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

OPERATING FREQUENCY:	190	9.80	MHz
CHANNEL:	8	•	
MEASURED OUTPUT POWER:	30.14	dBm =	1.033 W
MODULATION SIGNAL:	GPRS (GMSK)	-	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) :	43.14	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	204	157	-49.20	8.41	-40.80	69.5
5729.40	Н	134	89	-42.70	10.76	-31.94	60.6
7639.20	Н	128	119	-51.85	12.22	-39.63	68.3
9549.00	Н	128	297	-51.57	13.18	-38.39	67.1
11458.80	Н	119	28	-49.79	13.33	-36.45	65.1

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	185	MHz		
CHANNEL:	92			
MEASURED OUTPUT POWER:	22.67	dBm =	0.185 W	
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	35.67	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3704.80	Н	122	195	-53.42	8.40	-45.03	67.7
5557.20	Н	130	305	-42.78	10.57	-32.21	54.9
7409.60	Н	171	141	-49.25	12.06	-37.20	59.9

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

OPERATING FREQUENCY:	188	0.00	MHz	
CHANNEL:	94	-		
MEASURED OUTPUT POWER:	23.89	dBm =	0.245	W
MODULATION SIGNAL:	WCDMA	-		_
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	36.89	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	117	200	-51.09	8.38	-42.70	65.4
5640.00	Н	121	299	-42.82	10.70	-32.12	54.8
7520.00	Н	173	141	-48.18	12.10	-36.07	58.7

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	190	7.60	MHz
CHANNEL:	95		
MEASURED OUTPUT POWER:	23.14	dBm =	0.206 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) :	36.14	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3815.20	Н	118	194	-48.99	8.40	-40.60	63.3
5722.80	Н	119	294	-42.45	10.76	-31.69	54.4
7630.40	Н	180	138	-49.60	12.21	-37.39	60.1

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation 7.8 §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-C-2004. The frequency stability of the transmitter is measured by:

- **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an a.) 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 ±0.00025% (±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-C-2004

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

OPERATING FREQUENCY: 836,600,000 Hz CHANNEL: 190

REFERENCE VOLTAGE: 3.80

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,599,940	-60	-0.0000072
100 %		- 30	836,599,874	-126	-0.0000151
100 %		- 20	836,599,920	-80	-0.0000096
100 %		- 10	836,600,123	123	0.0000147
100 %		0	836,599,977	-23	-0.0000027
100 %		+ 10	836,600,084	84	0.0000100
100 %		+ 20	836,599,859	-141	-0.0000169
100 %		+ 30	836,600,073	73	0.000087
100 %		+ 40	836,599,964	-36	-0.0000043
100 %		+ 50	836,600,119	119	0.0000142
BATT. ENDPOINT	3.40	+ 20	836,599,878	-122	-0.0000146

VDC

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

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Frequency Stability / Temperature Variation §2.1055 §22.355

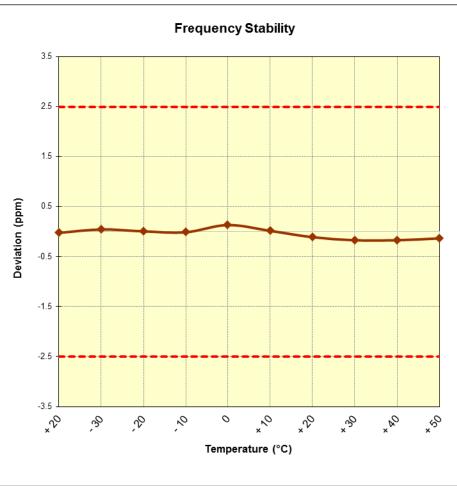


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

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Frequency Stability / Temperature Variation §2.1055 §22.355

OPERATING FREQUENCY: 836,600,000 Ηz CHANNEL: 4183 REFERENCE VOLTAGE: VDC 3.80

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,599,980	-20	-0.0000024
100 %		- 30	836,599,864	-136	-0.0000163
100 %		- 20	836,599,863	-137	-0.0000164
100 %		- 10	836,599,924	-76	-0.0000091
100 %		0	836,599,890	-110	-0.0000131
100 %		+ 10	836,600,071	71	0.0000085
100 %		+ 20	836,600,132	132	0.0000158
100 %		+ 30	836,599,994	-6	-0.0000007
100 %		+ 40	836,600,038	38	0.0000045
100 %		+ 50	836,600,096	96	0.0000115
BATT. ENDPOINT	3.40	+ 20	836,599,853	-147	-0.0000176

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

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation

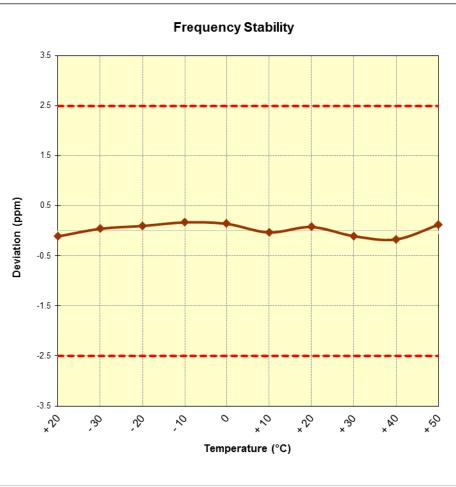


Figure 7-9. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,600,125	125	0.0000072
100 %		- 30	1,732,599,860	-140	-0.0000081
100 %		- 20	1,732,600,072	72	0.0000042
100 %		- 10	1,732,599,969	-31	-0.0000018
100 %		0	1,732,599,880	-120	-0.0000069
100 %		+ 10	1,732,600,069	69	0.0000040
100 %		+ 20	1,732,600,043	43	0.0000025
100 %		+ 30	1,732,599,864	-136	-0.0000078
100 %		+ 40	1,732,600,023	23	0.0000013
100 %		+ 50	1,732,599,942	-58	-0.0000033
BATT. ENDPOINT	3.40	+ 20	1,732,600,100	100	0.0000058

Table 7-24. Frequency Stability Data (AWS WCDMA Mode – Ch. 1412)

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: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation §2.1055 §27.54

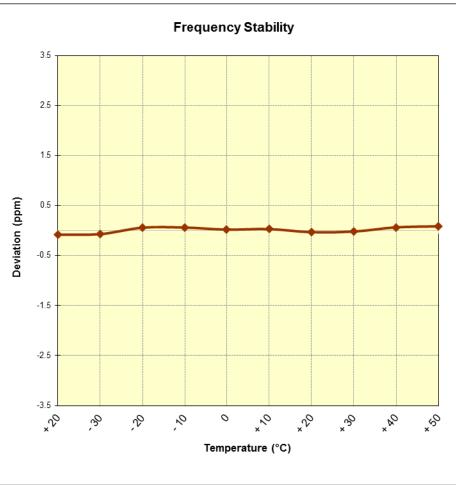


Figure 7-10. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1412)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation §2.1055 §24.235

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,880,000,008	8	0.0000004
100 %		- 30	1,879,999,967	-33	-0.0000018
100 %		- 20	1,879,999,861	-139	-0.0000074
100 %		- 10	1,879,999,998	-2	-0.0000001
100 %		0	1,879,999,991	-9	-0.0000005
100 %		+ 10	1,880,000,074	74	0.0000039
100 %		+ 20	1,879,999,991	-9	-0.0000005
100 %		+ 30	1,879,999,895	-105	-0.0000056
100 %		+ 40	1,879,999,887	-113	-0.0000060
100 %		+ 50	1,880,000,065	65	0.0000035
BATT. ENDPOINT	3.40	+ 20	1,879,999,981	-19	-0.0000010

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: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation §2.1055 §24.235

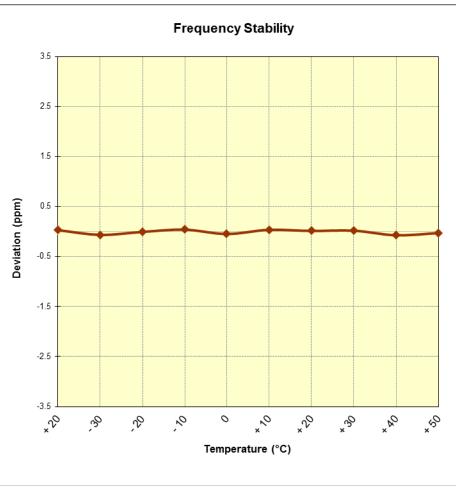


Figure 7-11. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,879,999,873	-127	-0.0000068
100 %		- 30	1,879,999,920	-80	-0.0000043
100 %		- 20	1,880,000,055	55	0.0000029
100 %		- 10	1,879,999,898	-102	-0.0000054
100 %		0	1,880,000,059	59	0.0000031
100 %		+ 10	1,879,999,917	-83	-0.0000044
100 %		+ 20	1,880,000,003	3	0.0000002
100 %		+ 30	1,879,999,926	-74	-0.0000039
100 %		+ 40	1,879,999,895	-105	-0.0000056
100 %		+ 50	1,880,000,062	62	0.0000033
BATT. ENDPOINT	3.40	+ 20	1,879,999,951	-49	-0.0000026

 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: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency Stability / Temperature Variation §2.1055 §24.235

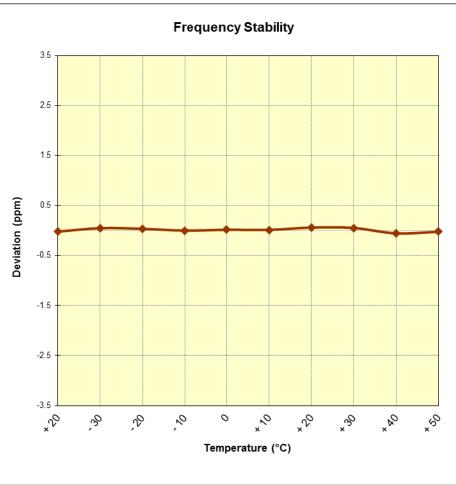


Figure 7-12. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFK428		FCC Pt. 22, 24, & 27 GSM / GPRS / EDGE / WCDMA MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed 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: ZNFK428 complies with all the requirements of Parts 22, 24, & 27 of the FCC rules.

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