

PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctestlab.com



MEASUREMENT REPORT

FCC Part 22, 24, & 27

Applicant Name:

LG Electronics MobileComm U.S.A 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States Date of Testing: 3/14 - 5/6/2016 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1604120762.ZNF

FCC ID:

ZNFK550BN

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 LG-K550BN, LGK550BN, LG-K550, LGK550, LGMS550, LG-MS550, LG-K550BNGO1, LGK550BNGO1, K550BNGO1 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) §2 §22(H) §24(E) §27(L) ANSI/TIA-603-C-2004, KDB 971168 D01 v02r02 *identical prototype* [S/N: 806, 939, 2026, 2034]

			ERP/	EIRP
Mode	Tx Frequency (MHz)	Emission Designator	Max. Power (W)	Max. Power (dBm)
GSM850	824.2 - 848.8	244KGXW	1.652	32.18
EDGE850	824.2 - 848.8	251KG7W	0.343	25.36
GSM1900	1850.2 - 1909.8	248KGXW	1.524	31.83
EDGE1900	1850.2 - 1909.8	242KG7W	0.506	27.04
WCDMA850	826.4 - 846.6	4M13F9W	0.062	17.95
WCDMA1700	1712.4 - 1752.6	4M16F9W	0.292	24.65
WCDMA1900	1852.4 - 1907.6	4M12F9W	0.319	25.04

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

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

Randy Ortanez President



FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 1 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 1 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



TABLE OF CONTENTS

FCC PA	ART 22	2, 24, & 27 MEASUREMENT REPORT	.3
1.0	INTRO	DDUCTION	.4
	1.1	Scope	.4
	1.2	Testing Facility	.4
2.0	PROD	DUCT INFORMATION	.5
	2.1	Equipment Description	.5
	2.2	Device Capabilities	. 5
	2.3	Test Configuration	. 5
	2.4	EMI Suppression Device(s)/Modifications	. 5
3.0	DESC	RIPTION OF TESTS	.6
	3.1	Evaluation Procedure	.6
	3.2	Cellular - Base Frequency Blocks	. 6
	3.3	Cellular - Mobile Frequency Blocks	. 6
	3.4	PCS - Base Frequency Blocks	. 6
	3.5	PCS - Mobile Frequency Blocks	.7
	3.6	AWS - Base Frequency Blocks	.7
	3.7	AWS - Mobile Frequency Blocks	.7
	3.8	Radiated Measurements	. 8
4.0	MEAS		.9
5.0	TEST	EQUIPMENT CALIBRATION DATA1	10
6.0	SAMF	PLE CALCULATIONS1	11
7.0	TEST	RESULTS	12
	7.1	Summary	12
	7.2	Occupied Bandwidth	13
	7.3	Spurious and Harmonic Emissions at Antenna Terminal	18
	7.4	Band Edge Emissions at Antenna Terminal	42
	7.5	Peak-Average Ratio	51
	7.6	Radiated Power (ERP/EIRP)	54
	7.7	Radiated Spurious Emissions Measurements	58
	7.8	Frequency Stability / Temperature Variation	66
8.0	CONC	CLUSION	79

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 2 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Fage 2 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



MEASUREMENT REPORT FCC Part 22, 24, & 27



§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 LABORATORY, INC.
TEST SITE ADDRESS:	7185 Oakland Mills Road, Columbia, MD 21046 USA
FCC RULE PART(S):	§2 §22(H) §24(E) §27(L)
BASE MODEL:	LG-K550BN
FCC ID:	ZNFK550BN
FCC CLASSIFICATION:	PCS Licensed Transmitter Held to Ear (PCE)
MODE:	GSM/GPRS/EDGE/WCDMA
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	806, 939, 2026, 2034
DATE(S) OF TEST:	3/14 - 5/6/2016
TEST REPORT S/N:	0Y1604120762.ZNF

Test Facility / Accreditations

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

- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and . Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- ۲ Agelbau
 - 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 Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and

- 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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 2 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 3 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



21





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.

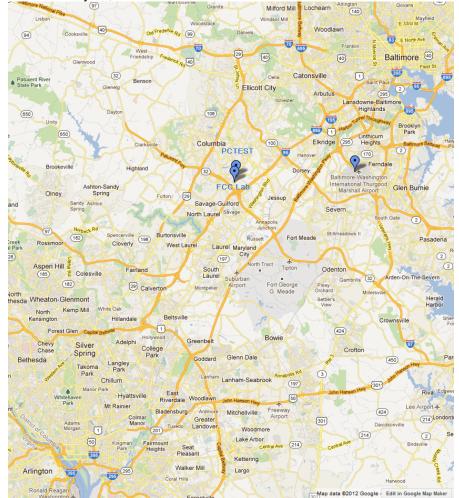


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

FCC ID: ZNFK550BN	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 4 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 4 01 79
© 2016 PCTEST Engineerin	g Laboratory, Inc.			V 3.3



2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFK550BN**. 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, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

2.3 Test Configuration

The LG Portable Handset FCC ID: ZNFK550BN was tested per the guidance of ANSI/TIA-603-C-2004 and KDB 971168 D01 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.4 EMI Suppression Device(s)/Modifications

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 5 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 5 of 79
© 2016 PCTEST Engineerin	g Laboratory, Inc.			V 3.3

12/01/2015

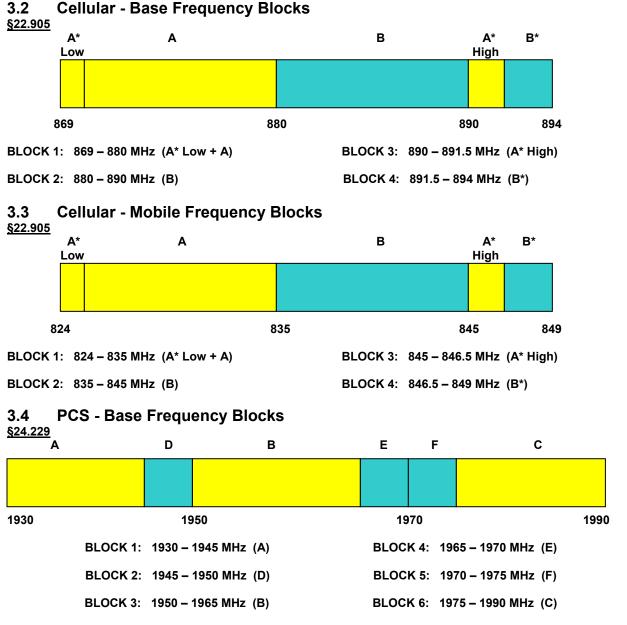


3.0 **DESCRIPTION OF TESTS**

3.1 Evaluation Procedure

The measurement procedures described in the "Land Mobile FM or PM - Communications Equipment -Measurements and Performance Standards" (ANSI/TIA-603-C-2004) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v02r02) were used in the measurement of the LG Portable Handset FCC ID: ZNFK550BN.

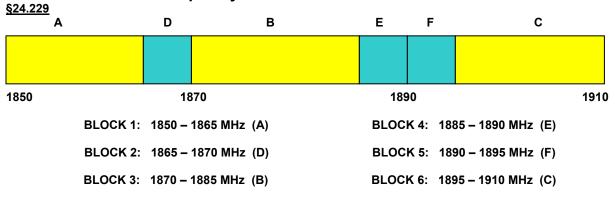




FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 6 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 6 01 79
© 2016 PCTEST Engineerir	ng Laboratory, Inc.			V 3.3 12/01/2015

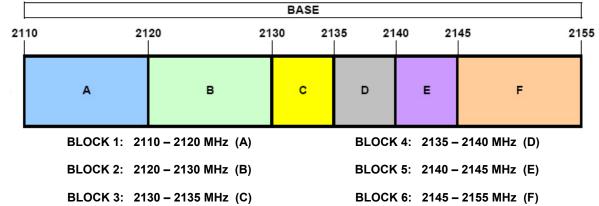


3.5 PCS - Mobile Frequency Blocks



3.6 AWS - Base Frequency Blocks





3.7 AWS - Mobile Frequency Blocks

<u>§27.5(h)</u>

	MOBILE							
17	10	17	20 17	30 17	35 17	40 17	45	1755
	A		в	с	D	E	F	
	BLOCK 1	: 171	0 – 1720 MHz (A)		BLOCK	4: 1735 –	1740 MHz (D)	
	BLOCK 2	: 172	20 – 1730 MHz (B)		BLOCK	5: 1740 –	1745 MHz (E)	
	BLOCK 3	3: 17:	80 – 1735 MHz (C)		BLOCK	6: 1745 –	1755 MHz (F)	

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 7 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 7 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



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:

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

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

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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 9 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 8 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



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

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 9 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 9 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



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
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	4/28/2015	Annual	4/28/2016	RE1
-	LTx3	Licensed Transmitter Cable Set	6/12/2015	Annual	6/12/2016	LTx3
Agilent	N9020A	MXA Signal Analyzer	11/5/2015	Annual	11/5/2016	US46470561
Agilent	N9038A	MXE EMI Receiver	4/24/2015	Annual	4/24/2016	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/24/2015	Annual	3/24/2016	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	2/26/2016	Annual	2/26/2017	441119
Emco	3115	Horn Antenna (1-18GHz)	3/30/2014	Biennial	3/30/2016	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/17/2015	Annual	3/17/2016	17620
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	13SH10-1000/U1000	N Type High Pass Filter	7/18/2015	Annual	7/18/2016	13SH10-1000/U1000-1
K & L	11SH10-3075/U18000	High Pass Filter	7/18/2015	Annual	7/18/2016	11SH10-3075/U18000-2
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	PWR-SENS-4RMS	USB Power Sensor	3/4/2016	Annual	3/4/2017	11210140001
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
Rohde & Schwarz	CMU200	Base Station Simulator		N/A		107826
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
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/17/2015	Annual	7/17/2016	100348
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 10 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 10 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 11 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 11 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



7.0 TEST RESULTS

7.1 Summary

Company Name:	LG Electronics MobileComm U.S.A
FCC ID:	ZNFK550BN
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	GSM/GPRS/EDGE/WCDMA

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, 0
24.232(d)	Peak-Average Ratio < 13 dB CONDUCTED		PASS	Section 7.5	
2.1046	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24, 27)		PASS	Section 7.8
22.913(a.2)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 7.6
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	-	PASS	Section 7.6
27.50(d.4)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Spurious Emissions	> 43 + log 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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 12 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 12 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.	•		V 3.3



7.2 Occupied Bandwidth §2.1049

Test Overview

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

Test Procedure Used

KDB 971168 D01 v02r02 - Section 4.2

Test Settings

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

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

Test Setup

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

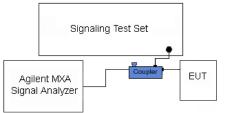


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 13 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Fage 13 0179
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





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



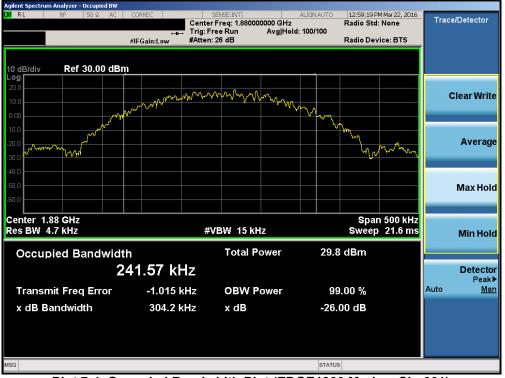
Plot 7-2. Occupied Bandwidth Plot (EDGE850 Mode - Ch. 190)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 14 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 14 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015









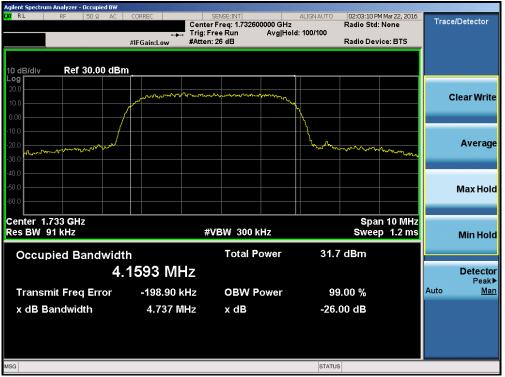
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 15 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 15 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





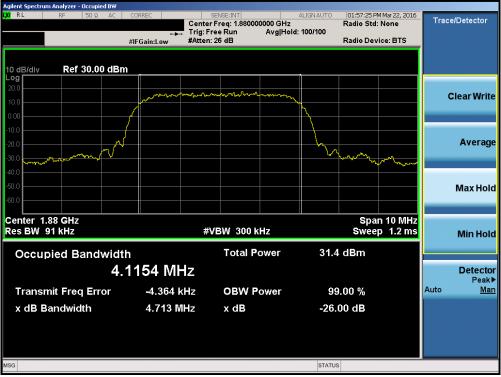
Plot 7-5. Occupied Bandwidth Plot (Cellular WCDMA Mode – Ch. 4183)



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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 16 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 16 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 17 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 17 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



7.3 Spurious and Harmonic Emissions at Antenna Terminal §22.1051 §22.917(a) §24.238(a) §27.53(h)

Test Overview

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

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

Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

Test Settings

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

Test Setup

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

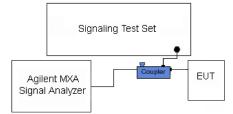


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

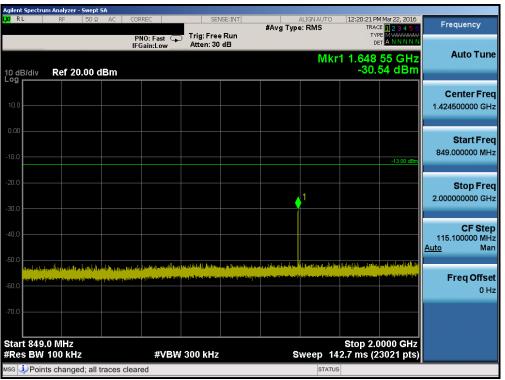
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth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

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 19 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 18 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	rum Analyzer - Swept SA					
l <mark>XI</mark> RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AU #Avg Type: RMS	TO 12:20:01 PM Mar 22, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🗔	Trig: Free Run	#Avg Type: Rivis	TYPE M WANNAN	
		IFGain:Low	Atten: 30 dB		DET A N N N N N	
					Mkr1 822.35 MHz	Auto Tune
10 dB/div	Ref 20.00 dBm				-44.03 dBm	
	Rei 20.00 übili					
						Center Freq
10.0						426.500000 MHz
						420.00000 1411 12
0.00						
0.00						Start Freq
						30.000000 MHz
-10.0					-13.00 dBm	50.000000 Wil 12
-20.0						Stop Freq
						823.000000 MHz
-30.0						823.000000 WIFI2
30.0						
					1	CF Step
-40.0						79.300000 MHz
						<u>Auto</u> Man
-50.0			and the last of the second second	يجم العالية فالسفانية	Sector operates puttered and	
Index of the	A Trach C Angeler and the set of the State of the set o	an an Andrew a New York and Malana and Anna an	ange processen og som processer ange angen men tilte slove bil berkked bladet kenne sentered	n an	and a set of a set of a set of the set of the set of a set of the	Freq Offset
-60.0			Lease of a set frame of the		*	0 Hz
						0 HZ
-70.0						
Start 30.	0 MHz				Stop 823.0 MHz	
	V 100 kHz	#VBW	300 kHz	Sweep	98.33 ms (15861 pts)	
MSG					ATUS	
MSG						

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



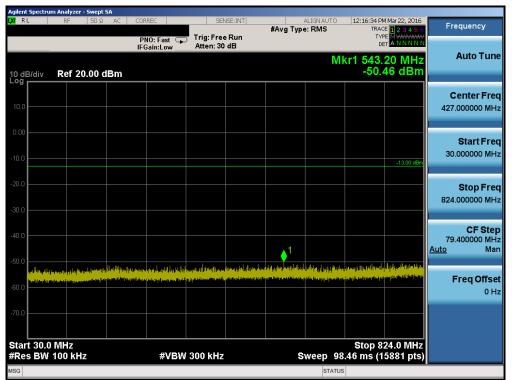
Plot 7-9. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 19 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 19 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ım Analyzer - Swe									
LXI RL	RF 50	Ω AC I	CORREC	SEN	VSE:INT	#Avg Typ	ALIGNAUTO		Mar 22, 2016	Frequency
			PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 30	Run	ming typ		TYI		
			IFGain:Low	Auen. oo			MAL	w1 0 60		Auto Tune
10 dB/div	Ref 20.00	dBm					IVIP	-35.	8 0 GHz 58 dBm	
										Center Freq
10.0										6.000000000 GHz
										0.0000000000000
0.00										
										Start Freq
-10.0									-13.00 dBm	2.00000000 GHz
-20.0										Stop Freq
										10.00000000 GHz
-30.0								1_		
	an a		a la la cita	ر لىلىقىرىر بى مال بار	و رو بولد فالغول و	والمعاط الاحتصاد الروالي	Hales, and studentile	anglater and and	and the second second	CF Step
-40.0	an a		and the second sec	And Instant And Adventure	A COLUMN TO A COLUMN	and the second	a disease in the second	منافي هار بالكر الأس	a di kana kana kana kana kana kana kana kan	800.000000 MHz
-50.0										<u>Auto</u> Man
-30.0										
-60.0										Freq Offset
										0 Hz
-70.0										
Start 2.00								Oton 10		
start 2.00 #Res BW			#VBW	/ 3.0 MHz		5	weep 13	- 510p-10 3.87 ms_(1	.000 GHz 6001 pts)	
MSG							STATUS		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
							0			





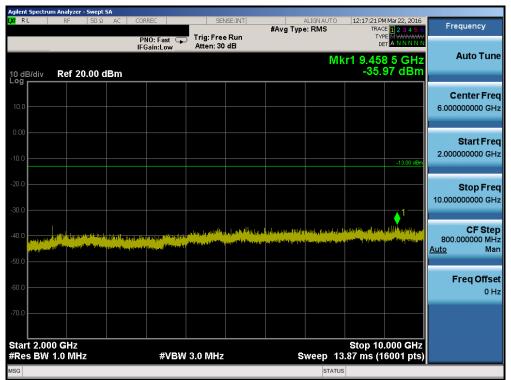
Plot 7-11. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 20 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ım Analyzer - Swept Sf									
L <mark>XI</mark> RL	RF 50 Ω	AC CORRI	EC	SEN	JSE:INT	#Avg Typ	ALIGN AUTO		4 Mar 22, 2016	Frequency
			D: Fast 😱 iin:Low	Trig: Free Atten: 30	e Run dB	#Avg iyp	e: RIMS	TY	23456 PE MWWWWW A NNNNN	
10 dB/div Log	Ref 20.00 dE	3m					Mkr	1 1.673 -29.	30 GHz 83 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
-50.0 -60.0	n an	1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C						ng kan ang ang atawa kata Mga pang panasa ka	l termi Miller di Bangari (Miller 1963 - Ali sectione Mantalera	Freq Offset 0 Hz
-70.0										
Start 849 #Res BW			#VBW	300 kHz		s	weep 14	Stop 2.0 2.7 ms (2	0000 GHz 3021 pts)	
мsg 連 Poin	its changed; all tra	aces cleared	d				STATUS			



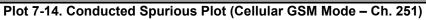


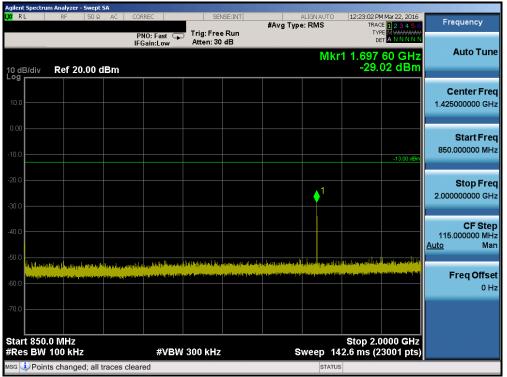
Plot 7-13. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 21 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 21 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



		n Analyzer - S												
L <mark>XI</mark> RL		RF	50 Ω	AC CC	RREC	SEM	JSE:INT	#Avg Ty	ALIGN AU	то		4 Mar 22, 2016		Frequency
					PNO: Fast 🕞	Trig: Free		and give	pe. rano		TYF			
				II-	Gain:Low	Atten: 30	αÐ							Auto Tune
										IVIKI	r1 745.	30 MHz 44 dBm		Auto Func
10 dBi	/div	Ref 20.	00 dE	3m							-50.7			
														Center Freq
10.0													4	27.000000 MHz
0.00														
														Start Freq
-10.0												-13.00 dBm		30.000000 MHz
F												-13.00 0.011		
-20.0														Stop Freq
													8	24.000000 MHz
-30.0														
-40.0														CF Step 79.400000 MHz
												1	Auto	
-50.0					a Nadaa aha mate			Alexandra I				Late 1. Jakoba		
		Dises December			en Narel per an al despension In destationen personale		et en ser proprio de la composición A l'esta francé de la composición de la composición de la composición de la		an a suite aige a suite an			and a second second second		Freq Offset
-60.0	1 m 1 m 2 m	te estate i tre ob												0 Hz
														0112
-70.0														
Ctort	20.0										Oton O			
Start #Res		100 kHz			#VBIA	300 kHz		_	Sween	98.4		24.0 MHz 5881 pts)		
MSG						0.000 1112				ATUS	earried (obo i proj	-	
									51	100				





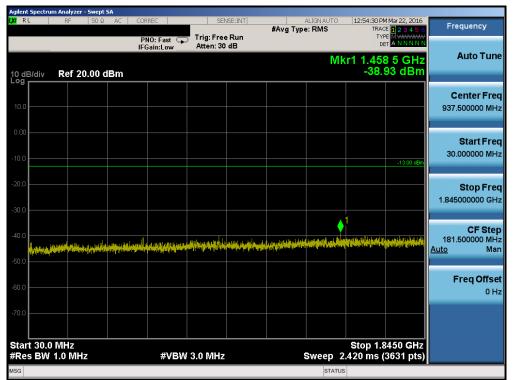
Plot 7-15. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 22 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 22 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



RL RF 50 Q AC CORREC SENSE:INT ALIGNAUTO 12:23:28 PM Mar 22, 2015 PN0: Fast IFGain:Low Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Trig: Tree Run Atten: 30 dB Trig: Free Run Other ANNUNN Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Trig: Free Run Atten: 30 dB Auto Trig: Free Run Other ANNUNN 0 dB/div Ref 20.00 dBm Center F 6.000000000 6.000000000 0 0 Image: Sense Run Atten: 30 dB Image: SenseRun Atten: 30 dB Image: SenseRun Atten:
PHO: Fast Trig: Free Run IF Gain: Low Trig: Free Run Atten: 30 dB Mkr1 2.546 5 GHz -33.32 dBm Auto Tr 0 dB/div Ref 20.00 dBm -33.32 dBm -33.32 dBm -60.000000000 -60.00000000000000000000000000000000000
Open Start F Conter F 000
Center F 0.00 Center F 0.00 Start F
0.0
StopP
tart 2.000 GHz Stop 10.000 GHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 13.87 ms (16001 pts)
SG STATUS





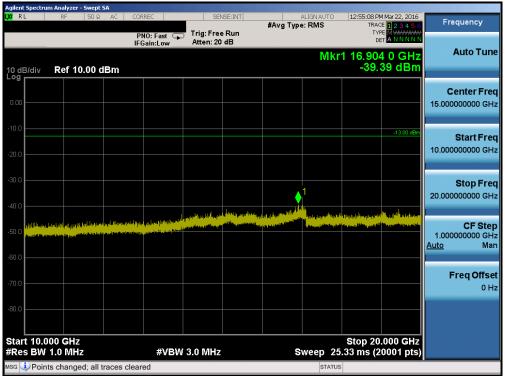
Plot 7-17. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 22 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 23 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



XI RL	RF 50	Ω AC	CORREC							
			LUKKEL	SEN	VSE:INT	#Avg Typ	ALIGN AUTO		Mar 22, 2016	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 30	e Run dB	wavg iyp	e. RIVIS	TYF	PE MWWWWW TANNNNN	
10 dB/div Log	Ref 20.00	dBm					Mk	r1 9.88 -35.	7 0 GHz 77 dBm	Auto Tune
10.0										Center Freq 5.955000000 GHz
-10.0									-13.00 dBm	Start Freq 1.910000000 GHz
-20.0									1	Stop Freq 10.000000000 GHz
-40.0	an a		and a second		y Jaan y Koop Jalapapa Yu taa sa taa	ya kata ang katalak na sa katala sa ka	Anthyrae of Addressing	ad payor barran an an an an		CF Step 809.000000 MHz <u>Auto</u> Man
-60.0										Freq Offset 0 Hz
-70.0	0 GHz							Stop 10	.000 GHz	
#Res BW			#VBW	/ 3.0 MHz		9	weep 14	.02 ms (1	6181 pts)	
MSG 🗼 Point	s changed; a	Il traces cle	eared				STATUS	;		





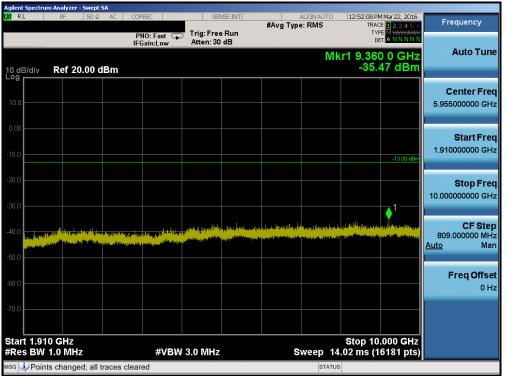
Plot 7-19. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 24 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Agilent Spectru										
LXI RL	RF 5	OΩ AC	CORREC	SEN	JSE:INT	#Aug Tu	ALIGNAUTO		Mar 22, 2016	Frequency
			PNO: Fast 🔾 IFGain:Low	Trig: Free Atten: 30		word it	pe. RMS	TYP		
10 dB/div	Ref 20.0	0 dBm					Mł	(r1 1.65) -38.	3 5 GHz 11 dBm	Auto Tune
10.0										Center Freq 940.000000 MHz
-10.0									-13.00 dBm	Start Freq 30.000000 MHz
-20.0									4	Stop Freq 1.85000000 GHz
-40.0	بيورية الأرارية الأليانية ا	i in the second s	gine provide and the state of the	a data na sa guisti iti da	ie fingte bij pleis i om j	ning blassistasist	n dag bel so in specific of			CF Step 182.000000 MHz <u>Auto</u> Man
-60.0										Freq Offset 0 Hz
-70.0 Start 30.0	MHz							Ston 1-8	500 GHz	
#Res BW			#VBV	V 3.0 MHz			Sweep 2			
MSG							STATUS	3		





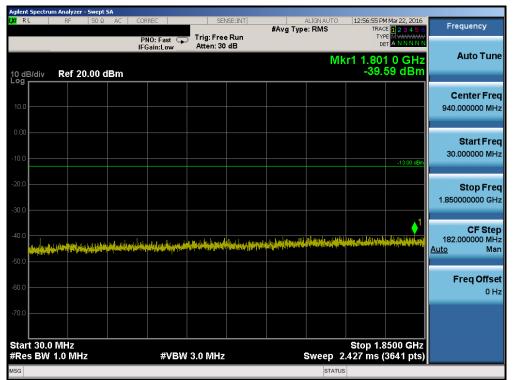
Plot 7-21. Conducted Spurious Plot (PCS GSM Mode - Ch. 661)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 25 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Agilent Spectru								
LXI RL	RF	50Ω AC	CORREC	SENSE:INT	WALLA TH	ALIGNAUTO pe: RMS	12:52:27 PM Mar 22, TRACE 1 2 3	
			PNO: Fast 🕞 IFGain:Low) Trig: Free Run Atten: 20 dB	#Avg iy	pe. Kino		
10 dB/div Log	Ref 10.0	00 dBm				Mkr	1 16.905 5 G -39.07 d	iHz Auto Tune Bm
0.00								Center Freq 15.000000000 GHz
-10.0							-13.0	0 dBm Start Freq 10.000000000 GHz
-30.0								Stop Freq 20.000000000 GHz
-50.0	lagastig na _{sa} asan dan da	n a star a na star an star an star a star star a star star star star	n Million (contract de la contract En la contract de la c	gaar and dispect of the spatial sector of the sector of th			densilaansa Holeppelyken kees (noombo) 19. jaard - Andrea Stanger (Marine politika)	CF Step 1.00000000 GHz <u>Auto</u> Man
-70.0								Freq Offset 0 Hz
-80.0 Start 10.0			47/514	2.0. MU-		6	Stop 20.000 (GHz
#Res BW				3.0 MHz			.33 ms (20001	prsj
мsg 횢 Point	is changed	all traces of	cleared			STATUS		





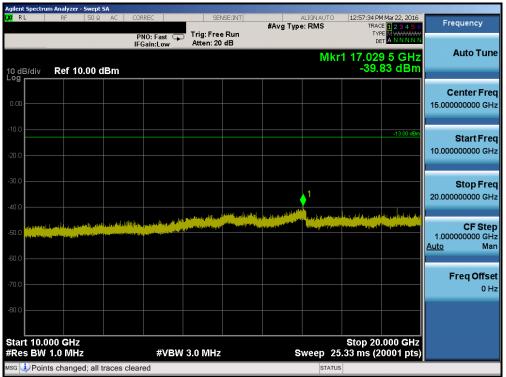
Plot 7-23. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 26 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 26 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



PNO: Fast IFGain:Low Trig: Free Run Atten: 30 dB Trace Trig: Free Run Atten: 30 dB <thtrace Trig: Free Run Atten: 30 dBTrig: Free R</thtrace 		Analyzer - Swept S										
PN0: Fast IFGain:Low Trig: Free Run Atten: 30 dB Mikr1 8.785 5 GHz -38.22 dBm Center F 5.957500000 0 Center F 5.95750000 0 Center F 5.957500000 0 Center F 5.957500000 0 Center F 5.95750000 0 Cen	X/RL	RF 50 Ω	AC COP	RREC	SEN	JSE:INT					Frequency	
Center F 0.0 -36.22 dBm 0.00 -36.22 dBm 10.00 -36.22 dBm 11.01 -36.20 dBm 11.01 <t< td=""><td></td><td></td><td></td><td></td><td>Trig: Free Atten: 30</td><td>Run dB</td><td>word thb.</td><td>e. RM5</td><td>TYF</td><td>E M WWWWWW</td><td></td><td></td></t<>					Trig: Free Atten: 30	Run dB	word thb.	e. RM5	TYF	E M WWWWWW		
Image: Conter F Conter F 100 Image: Conter F 5.957500000 0 000 Image: Conter F 5.957500000 0 000 Image: Conter F 5.957500000 0 100 Image: Conter F 1.91500000 0	10 dB/div	Ref 20.00 d	IBm					Mk	(r1 8.78) -36.1	5 5 GHz 22 dBm	Auto Tu	ine
10.0 Image: Constraint of the second of th	10.0										Center Fr 5.957500000 G	1
30.0 40.0 50.0	-10.0									-13.00 dBm	Start Fr 1.915000000 G	
	-20.0								1		Stop Fr 10.000000000 G	
	and and the set	and the state particular for the state of th	Alf and selection of the selection of th			r <mark>ense og hillense forstalle</mark> Lessen i still ållerte som å	a fra ta Jacopa Verpanj Gr Lana - April Statistica - A	(Alex) Ang di Igres Ang di Mang panantan Ang di		aylayahati edaklarayad ayaalahati energi ayaa	CF St 808.500000 M <u>Auto</u> M	
	-60.0										Freq Offs 0	set Hz
70.0 TO TO	-70.0	GH7							Stop 10	000 GHz		
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 14.01 ms (16171 pts)				#VBW	3.0 MHz		s	weep 14	.01 ms (1	6171 pts)		
IsG Points changed; all traces cleared	ASG 🛈 Points	changed; all t	traces clear	red				STATUS	5			



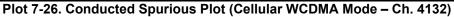


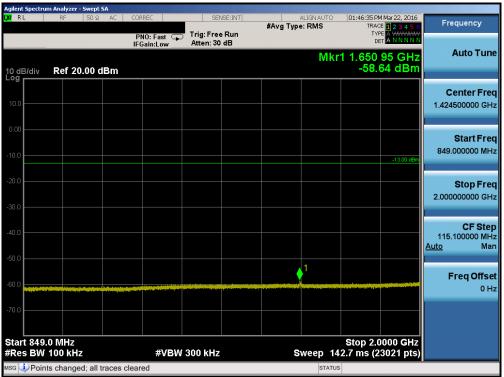
Plot 7-25. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 27 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 27 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ım Analyzer - Swept SA						
LXIRL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN #Avg Type: RN		1 Mar 22, 2016 E <mark>1 2 3 4 5 6</mark>	Frequency
		PNO: Fast 🖵 IFGain:Low) Trig: Free Run Atten: 30 dB	#Avg Type: Riv	TYP	E A WWWWW T A NNNNN	
10 dB/div Log	Ref 20.00 dBm				Mkr1 823. -34.3	00 MHz 30 dBm	Auto Tune
10.0							Center Freq 426.500000 MHz
-10.0						-13.00 dBm	Start Freq 30.000000 MHz
-20.0						1/	Stop Freq 823.000000 MHz
-40.0							CF Step 79.300000 MHz <u>Auto</u> Man
-60.0						a ja ipani kati pipana	Freq Offset 0 Hz
-70.0							
Start 30.0 #Res BW		#VBW	300 kHz	Swee	82 Stop 19 98.33 ms 19	23.0 MHz 5861 pts)	
MSG					STATUS		





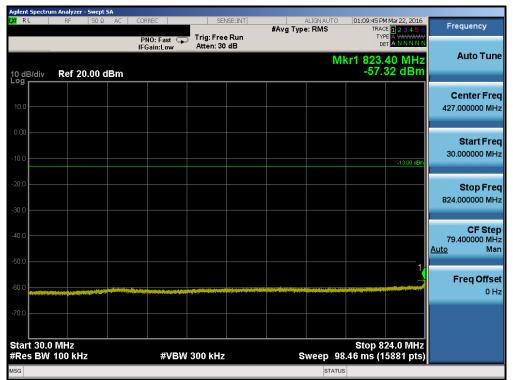
Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 28 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.	•		V 3.3



	m Analyzer - Sw								
LXI RL	RF 5	OΩ AC	CORREC	SENSE:INT	A #Avg Type		01:46:56 PM Ma	r 22, 2016 2 3 4 5 6	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Run Atten: 20 dB	wavg rype.	. RIVIS	TYPE A		
10 dB/div Log	Ref 10.0	0 dBm				Mk	r1 2.477 (-52.86) GHz 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	1								CF Step 800.000000 MHz <u>Auto</u> Man
-70.0									Freq Offset 0 Hz
-80.0 Start 2.00							Stop 10.00	0 GHz	
#Res BW		all traces (/ 3.0 MHz	SV	status	.87 ms (160	or prs)	
FUII	to changed,	anuaces	Jeareu			314103			

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

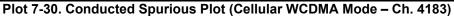


Plot 7-29. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 29 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 29 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



	m Analyzer - Swept SA					
LXI RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	01:10:07 PM Mar 22, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE A WWWWW DET A N N N N N	
10 dB/div Log	Ref 20.00 dBm			Mkr	1 1.674 80 GHz -58.55 dBm	Auto Tune
10.0						Center Freq 1.424500000 GHz
-10.0					-13.00 dBm	Start Freq 849.000000 MHz
-20.0						Stop Freq 2.000000000 GHz
-40.0						CF Step 115.100000 MHz <u>Auto</u> Man
-60.0				• •	deserve the second s	Freq Offset 0 Hz
-70.0						
Start 849. #Res BW		#VBW	300 kHz	Sweep 14	Stop 2.0000 GHz 2.7 ms (23021 pts)	
мsg 🗼 Poin	ts changed; all traces	cleared		STATUS		



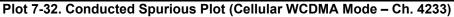


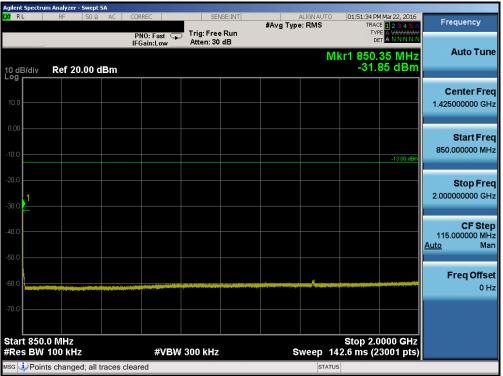
Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 30 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



	um Analyzer - Swept SA					
LXI RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:51:08 PM Mar 22, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE A WWWWWW DET A N N N N N	
10 dB/div Log	Ref 20.00 dBm			M	kr1 823.35 MHz -59.36 dBm	Auto Tune
						Center Freq
10.0						427.000000 MHz
0.00						Start Freq
-10.0					-13.00 dBm	30.000000 MHz
-20.0						Stop Freq
-30.0						824.000000 MHz
-40.0						CF Step 79.400000 MHz
-50.0						<u>Auto</u> Man
					1	Freq Offset
-60.0						0 Hz
-70.0						
Start 30.0					Stop 824.0 MHz	
#Res BW	100 kHz	#VBW	300 kHz		3.46 ms (15881 pts)	
MSG				STATU	5	





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 31 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.	•		V 3.3



Agilent Spectru								
LXI RL	RF 5	OΩ AC	CORREC	SENSE:INT	#Avg Typ	ALIGN AUTO	01:51:53 PM Mar 22, 2 TRACE 1 2 3 4	
			PNO: Fast 🕞 IFGain:Low	Trig: Free Run Atten: 20 dB	wavg typ	e. Rivis	TYPE A WANA DET A N N N	N N
10 dB/div Log	Ref 10.0	0 dBm				Mk	r1 2.537 0 Gl -51.43 dB	Hz Auto Tune m
0.00								Center Freq 6.000000000 GHz
-10.0							-13.00	Start Freq 2.000000000 GHz
-30.0								Stop Freq 10.000000000 GHz
-50.0								CF Step 800.000000 MHz <u>Auto</u> Man
-70.0								Freq Offset 0 Hz
-80.0							Stop 10.000 G	Hz
#Res BW		all traces a		3.0 MHz	9		.87 ms (16001 p	ts)
Poin	ts changed;	all traces of	cleared			STATUS		

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



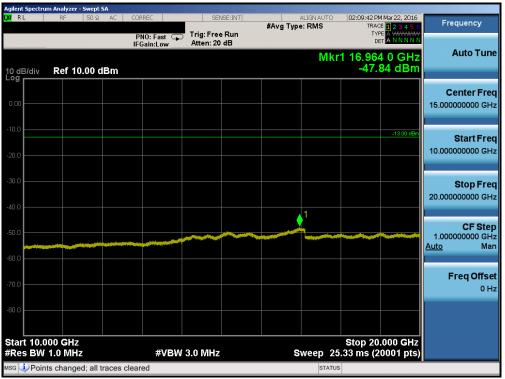
Plot 7-35. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 32 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	n Analyzer - Swept S									
LXIRL	RF 50 Ω	AC CC	DRREC	SE	NSE:INT		ALIGNAUTO Type: RMS		M Mar 22, 2016	Frequency
			PNO: Fast 🕞 Gain:Low	Trig: Fre Atten: 30	e Run) dB	#Avg	Type: RIVIS	TY	CE 123456 PE A WWWAAAA ET A N N N N N	
10 dB/div	Ref 20.00 d	Bm					Mk	r1 8.66 -44.	3 5 GHz 42 dBm	Auto Tune
10.0										Center Freq 5.877500000 GHz
-10.0									-13.00 dBm	Start Freq 1.755000000 GHz
-20.0										Stop Freq 10.000000000 GHz
-40.0		and the state of the								CF Step 824.500000 MHz <u>Auto</u> Man
-60.0										Freq Offset 0 Hz
-70.0 Start 1.75								Stop 10	.000 GHz	
#Res BW	1.0 MIHZ s changed; all t	racos olos		3.0 MHz			Sweep 14		6491 pts)	
										4040

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



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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 33 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 33 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.	•		V 3.3



		Analyzer - Si		1	1						
L <mark>XI</mark> RL		RF	50Ω AC	CORREC	SE	ENSE:INT	#Aun Tu	ALIGN AUTO		4 Mar 22, 2016 Æ <mark>1 2 3 4 5 6</mark>	Frequency
				PNO: Fast IFGain:Low	Trig: Fre	e Run 0 dB	HOYY I	pe. Ano	TYP		
10 dE Log r	3/div	Ref 20.0	0 dBm					MI	(r1 1.48) -48.	5 5 GHz 47 dBm	Auto Tune
10.0 +											Center Freq 870.000000 MHz
0.00 ·										-13.00 dBm	Start Freq 30.000000 MHz
-20.0 -30.0											Stop Freq 1.710000000 GHz
-40.0 +									↓ ¹	ماريند مارينا ماريند مارينا مارينا مارينان مارينا مارينان مارينا ماري مارينا مار مان مان مان مار مار مان مار مار مار ما ما م مار ما م مار ما ما م مار ما م مار ما م ما م مار ما م م م م	CF Step 168.000000 MHz <u>Auto</u> Man
-60.0	n: (1.000)			1							Freq Offset 0 Hz
-70.0	t 30.0 l	MHz							Stop 1-7	'100 GHz	
#Res		.0 MHz		#V	BW 3.0 MHz	z		Sweep 2	.240 ms (3361 pts)	
MSG								STATUS	3		





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 24 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 34 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	m Analyzer - Swept SA					
LXI RL	RF 50Ω A	C CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	02:03:56 PM Mar 22, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 📮 IFGain:Low	Trig: Free Run Atten: 20 dB	HAY Y TYPE. AND		
10 dB/div Log	Ref 10.00 dBr	n		Mkr	1 16.945 5 GHz -47.85 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						CF Step 1.00000000 GHz <u>Auto</u> Man
-70.0						Freq Offset 0 Hz
-80.0 Start 10.0 #Res BW		#\/B\M	3.0 MHz	Swoon-25	Stop 20.000 GHz .33 ms (20001 pts)	
	ts changed; all trac		5.0 WHZ	Sweep 25		
	to onungou, un trac			UNIDO		





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

FCC ID: ZNFK550BN	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 35 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	m Analyzer - Swept SA					
LXI RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	02:12:09 PM Mar 22, 2016	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB	#Avg Type: Rivis	TRACE 123456 TYPE A WWWWW DET A N N N N N	
10 dB/div Log	Ref 20.00 dBm			Mk	r1 1.760 0 GHz -35.07 dBm	Auto Tune
10.0						Center Freq 5.88000000 GHz
-10.0					-13.00 dBm	Start Freq 1.760000000 GHz
-20.0						Stop Freq 10.000000000 GHz
-40.0						CF Step 824.000000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-70.0 Start 1.76					Stop 10.000 GHz	
#Res BW			3.0 MHz		.28 ms (16481 pts)	
MSG 🕂 Point	ts changed; all traces	s cleared		STATUS		

Plot 7-42. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1862)



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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 36 of 79	
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 36 01 79	
© 2016 PCTEST Engineering Laboratory, Inc.					



Agilent Spectrum Analyzei						_		
(X) RL RF	50 Ω AC COP	RREC	SENSE:INT	#Avg Type	LIGN AUTO	TRACI	Mar 22, 2016	Frequency
10 dB/div Ref 2		NO: Fast 😱 Trig: Fr Gain:Low Atten:	ree Run 30 dB		Mk	TYP		Auto Tune
10.0								Center Freq 937.500000 MHz
-10.0							-13.00 dBm	Start Freq 30.000000 MHz
-20.0							1	Stop Freq 1.845000000 GHz
-40.0	un staligentiget might billing fragester party werk	an sala na dana kata kata kata kata kata kata kata k	lehet er gest eg jugg an die seijerg	and a start of the	aftaði þýr tenar veðu sléva	چىنىيەر يەمەرمەر مەردىيەر يەردى ئۇرىنىيەر يەمەرمەر يەردىمەر يەردىمەر يەردىمەر يەردىمەر يەردىمەر يەردىمەر يەردىم	-Anton Manager	CF Step 181.500000 MHz <u>Auto</u> Man
-60.0								Freq Offset 0 Hz
Start 30.0 MHz #Res BW 1.0 MH	lz	#VBW 3.0 MF	Iz		Sweep 2	Stop 1.8 420 ms (3	450 GHz 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: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 27 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 37 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ım Analyzer - Swept SA					
LXI RL	RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:59:50 PM Mar 22, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 20 dB	anig type. tuto		
10 dB/div Log	Ref 10.00 dBm			Mk	r1 16.962 5 GHz -47.75 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						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	1.0 MHz its changed; all trace		3.0 MHz	Sweep 2:	5.33 ms (20001 pts)	
	na changeu, an trace	sciedieu		STATU		





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

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 29 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 38 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	n Analyzer - Swept							
LXI RL	RF 50 Ω	AC	CORREC	SENSE:INT	#^	ALIGNAUTO g Type: RMS	01:57:53 PM Mar 22, 20 TRACE 1234	
			PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB	#51	g Type. Kivis	TYPE A WWW DET A N N N	
10 dB/div Log	Ref 20.00 (dBm				MI	r1 3.758 5 GH -41.04 dB	lz Auto Tune m
10.0								Center Freq 5.955000000 GHz
-10.0							-13.00 c	Start Freq 1.910000000 GHz
-20.0								Stop Freq 10.000000000 GHz
-40.0	~~~~			,		n de la gran de la factoria y promo de la metro de la del		CF Step 809.000000 MHz <u>Auto</u> Man
-60.0								Freq Offset 0 Hz
-70.0 Start 1.91							Stop 10.000 GF	1z
#Res BW				3.0 MHz			.02 ms (16181 pi	(5)
mog VPoint	s changed; all	uaces cl	eared			STATUS		





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 39 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ctrum Analyzer - Sv									
L <mark>XI</mark> RL	RF 5	50Ω AC	CORREC	SENSE		#Avg Type			Mar 22, 2016	Frequency
			PNO: Fast 🕞 IFGain:Low	Trig: Free F Atten: 30 d	Run	word the		TYP	A WAWAAAA A N N N N N N	
10 dB/di Log r	v Ref 20.0	0 dBm					Mk	r1 1.582 -48.0	25GHz 01dBm	Auto Tune
10.0										Center Freq 940.000000 MHz
-10.0									-13.00 dBm	Start Freq 30.000000 MHz
-20.0										Stop Freq 1.850000000 GHz
-40.0							natistan tah Linn tanu ny alike.	↓ 1	er instal of the state of the s	CF Step 182.000000 MHz <u>Auto</u> Man
-60.0		and the second s			<u>,</u>	9419649 9 V V V V V V V V V V V V V V V V V V				Freq Offset 0 Hz
-70.0										
#Res B	0.0 MHz W 1.0 MHz		#VBW	/ 3.0 MHz		ş		.427 ms (500 GHz 3641 pts)	
MSG							STATUS			





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 40 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 40 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	ım Analyzer - Swept SA					
L <mark>XI</mark> RL	RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	02:02:02 PM Mar 22, 2016	Frequency
		PNO: Fast 📮 IFGain:Low	Trig: Free Run Atten: 20 dB	#Avg Type: Rivis	TRACE 123456 TYPE A WWWWW DET A NNNNN	
10 dB/div Log	Ref 10.00 dBm			Mkr	1 17.026 0 GHz -48.16 dBm	Auto Tune
0.00						Center Freq 15.00000000 GHz
-10.0					-13.00 dBm	Start Freq 10.00000000 GHz
-30.0						Stop Freq 20.000000000 GHz
-50.0						CF Step 1.00000000 GHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
-80.0						
Start 10.0 #Res BW	1.0 MHz		3.0 MHz		Stop 20.000 GHz .33 ms (20001 pts)	
мsg 🎝 Poin	ts changed; all traces	cleared		STATUS	5	

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 41 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 41 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



7.4 Band Edge Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

Test Overview

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

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

Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

Test Settings

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

Test Setup

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

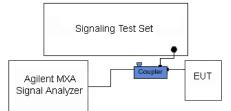


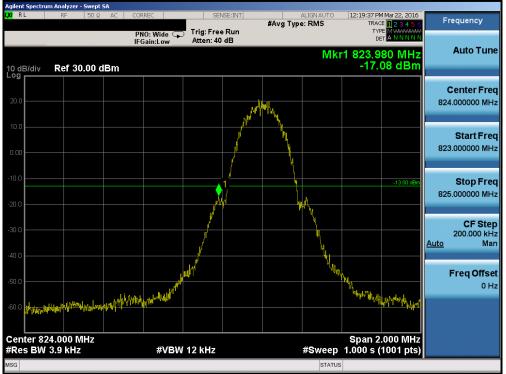
Figure 7-3. Test Instrument & Measurement Setup

Test Notes

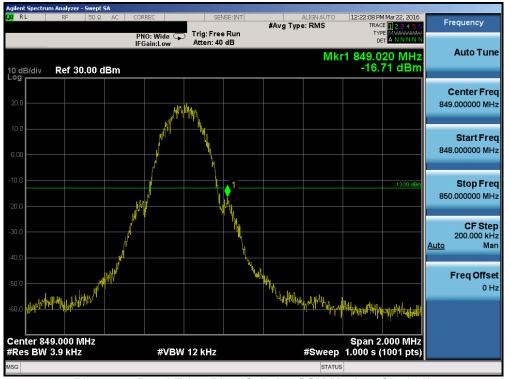
Per 22.917(b), 24.238(b), 27.53(h)(3), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 42 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 42 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.	·		V 3.3





Plot 7-53. Band Edge Plot (Cellular GSM Mode – Ch. 128)



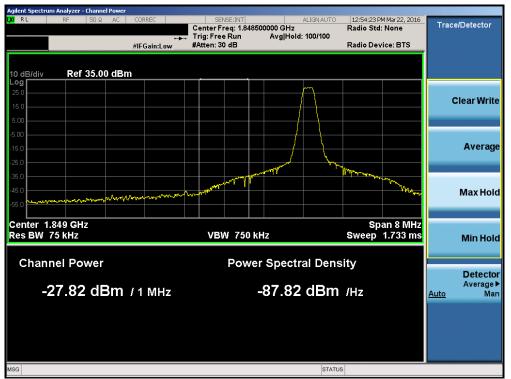
Plot 7-54. Band Edge Plot (Cellular GSM Mode – Ch. 251)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 42 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 43 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





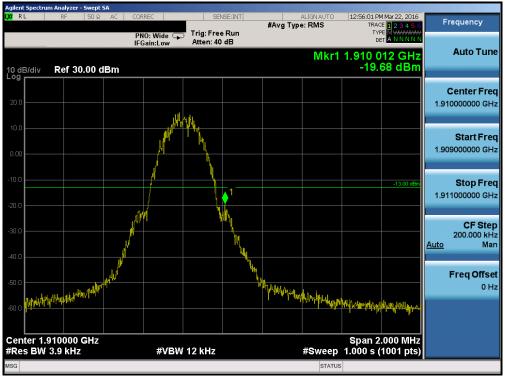
Plot 7-55. Band Edge Plot (PCS GSM Mode – Ch. 512)

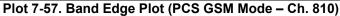


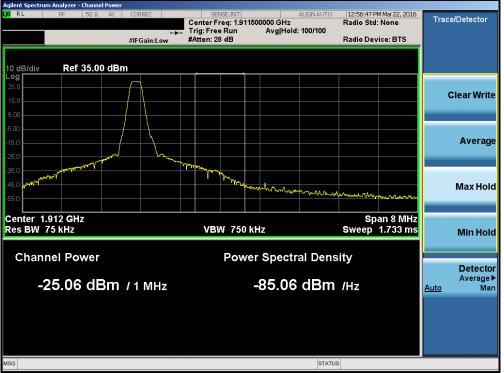
Plot 7-56. 4MHz Span Plot (PCS GSM Mode – Ch. 512)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 44 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 44 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015









Plot 7-58. 4MHz Span Plot (PCS GSM Mode - Ch. 810)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 45 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3





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



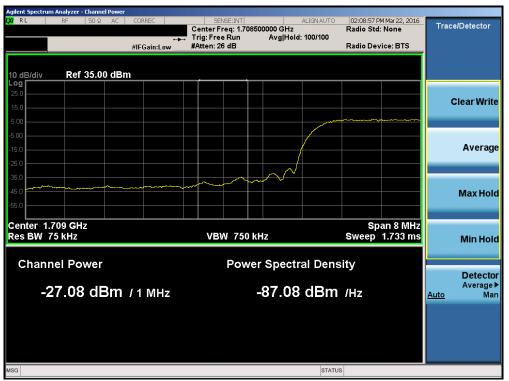
Plot 7-60. Band Edge Plot (Cellular WCDMA Mode – Ch. 4233)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 46 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 40 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





Plot 7-61. Band Edge Plot (AWS WCDMA Mode - Ch. 1312)



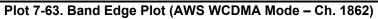
Plot 7-62. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1312)

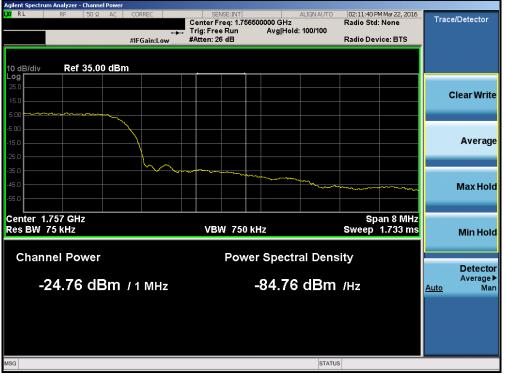
FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 47 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 47 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3

12/01/2015



	m Analyzer - Swept SA									
LXI RL	RF 50 Ω	AC COR	REC	SEN	ISE:INT	#Avg T	ALIGNAUTO	TRA	M Mar 22, 2016	Frequency
			IO: Fast 😱 iain:Low	Trig: Free Atten: 40			,,	TY	PE A WWWWWW	
		IFC	ain:Low	Atten: 40			Mket	1 755 0		Auto Tune
10 dB/div Log	Ref 30.00 dE	3m						-29.	000 GHz 25 dBm	
										Center Freq
20.0										1.755000000 GHz
10.0		m								Start Freq
0.00				A.						1.747500000 GHz
0.00	1									
-10.0	/								-13.00 dBm	Stop Freq
									-13.00 dBm	1.762500000 GHz
-20.0										
					1					CF Step
-30.0	N				Man.					1.500000 MHz
-40.0	w w				0.4 %	- Marine	~~			<u>Auto</u> Man
-40.0							har war	mm		_
-50.0								north	huma	Freq Offset 0 Hz
										UHZ
-60.0										
	755000 GHz							Span 1	5.00 MHz	
#Res BW	100 kHz		#VBW	300 kHz			Sweep 1	.867 ms ((1001 pts)	
MSG							STATUS	S		





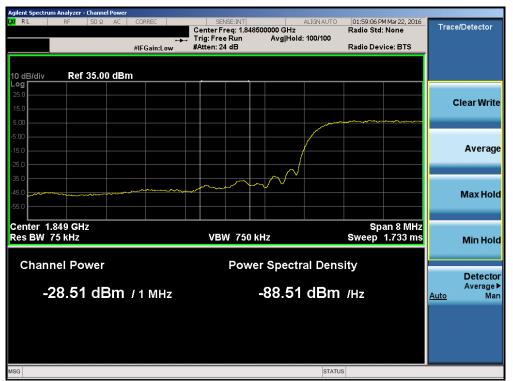
Plot 7-64. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1862)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 48 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 46 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3





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



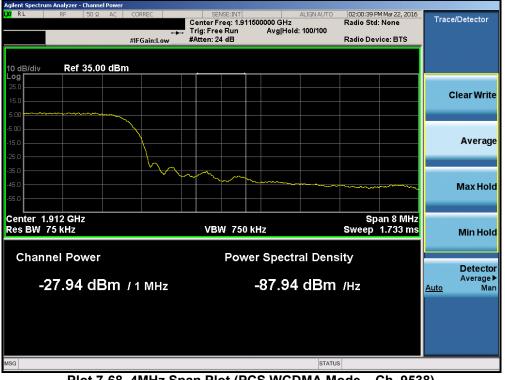
Plot 7-66. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9262)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 40 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 49 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



	m Analyzer - Swept										
LXI RL	RF 50 Ω	AC	CORREC	SEN	ISE:INT	#Ava Tu	ALIGN AUTO		M Mar 22, 2016	Frequency	
			PNO: Fast 😱	Trig: Free				TY			
			IFGain:Low	Atten: 40	dB					Auto Tu	Ine
							Mkr	1 1.910 (000 GHz	Autori	
10 dB/div Log	Ref 30.00	dBm						-19.	66 dBm		
										Center F	rea
20.0										1.91000000 0	
										1.5100000000	5112
10.0											
		James	mann	m						Start F	req
0.00		/		1						1.902500000 0	GHz
		/									
-10.0										01 E	
					1				-13.00 dBm	Stop Fi	
-20.0					<u> </u>					1.917500000 0	SHZ
20.0											
-30.0	4				5					CF St	
00.0	N				M.					1.500000 M Auto	MHz Man
-40.0	~~~^N					M	mar and a second			Auto	Mari
-0.0							mon	mm			
-50.0								5~	manna	Freq Off	
										0) Hz
-60.0											
00.0											
	910000 GHz							Span 1	5.00 MHz		
#Res BW	100 kHz		#VBW	300 kHz			Sweep	1.867 ms ((1001 pts)		
MSG							STATU	JS			





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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 50 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Fage 50 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3

12/01/2015



7.5 Peak-Average Ratio §24.232(d)

Test Overview

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

Test Procedure Used

KDB 971168 D01 v02r02 - Section 5.7.1

Test Settings

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

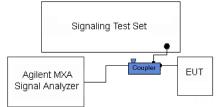


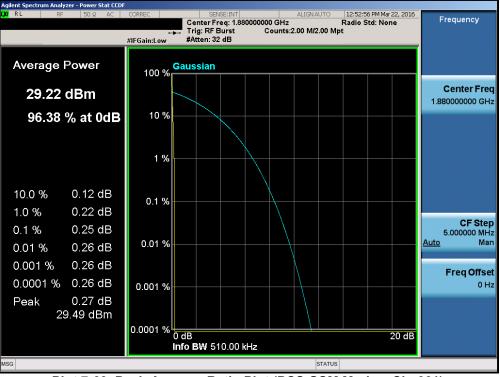
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

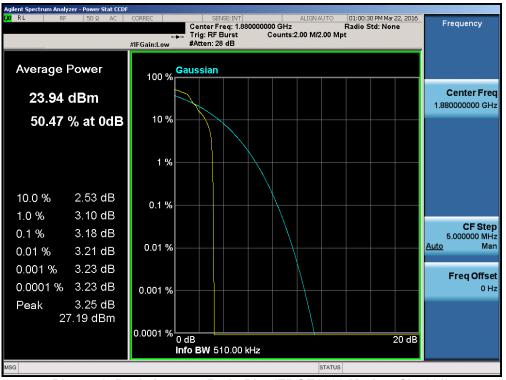
None

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 51 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 51 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





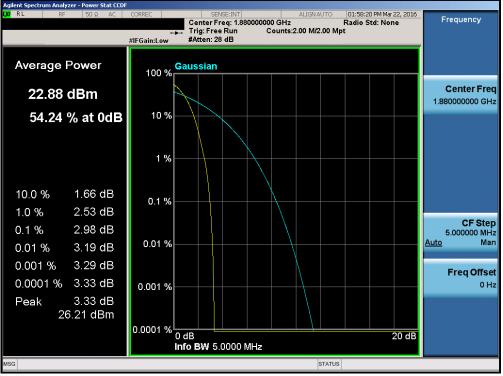




Plot 7-70. Peak-Average Ratio Plot (EDGE1900 Mode - Ch. 661)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 52 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015





Plot 7-71. Peak-Average Ratio Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 53 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



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 horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using horizontally and vertically polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 - Section 5.2.1

ANSI/TIA-603-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 \ge 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points \geq 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 54 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 54 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



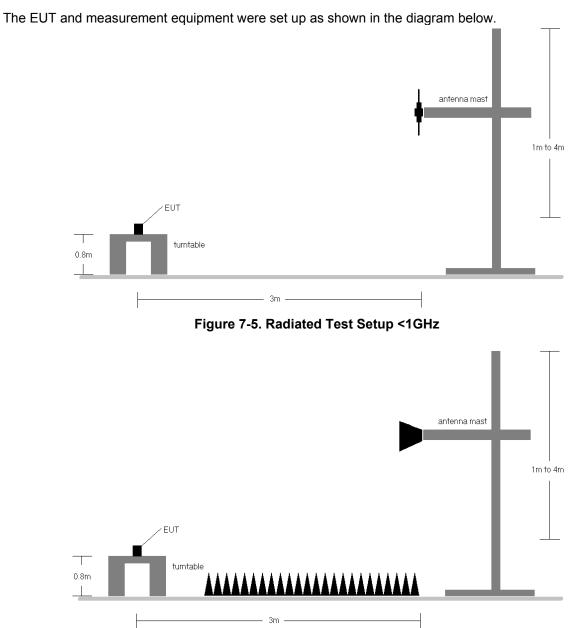


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago EE of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 55 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



- 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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 56 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Fage 50 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.20	GSM850	Н	225	214	26.04	5.00	31.04	1.272	38.45	-7.41
836.60	GSM850	Н	100	221	26.07	5.16	31.23	1.327	38.45	-7.22
848.80	GSM850	Н	357	221	26.87	5.31	32.18	1.652	38.45	-6.27
848.80	EDGE850	Н	358	219	20.20	5.16	25.36	0.343	38.45	-13.09

Table 7-2. ERP (Cellular GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level	Ant. Gain [dBd]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	156	12	12.75	4.95	17.70	0.059	38.45	-20.75
836.60	WCDMA850	V	134	360	12.81	5.00	17.81	0.060	38.45	-20.64
846.60	WCDMA850	V	139	89	12.91	5.04	17.95	0.062	38.45	-20.50

Table 7-3. ERP (Cellular WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	Н	103	269	14.22	9.65	23.87	0.244	30.00	-6.13
1732.60	WCDMA1700	Н	100	27	14.33	9.61	23.94	0.248	30.00	-6.06
1752.60	WCDMA1700	Н	103	270	15.08	9.57	24.65	0.292	30.00	-5.35

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	GSM1900	Н	100	268	22.48	9.35	31.83	1.524	33.01	-1.18
1880.00	GSM1900	Н	100	262	22.47	9.27	31.74	1.494	33.01	-1.27
1909.80	GSM1900	н	100	258	21.75	9.25	31.00	1.259	33.01	-2.01
1850.20	EDGE1900	Н	100	258	17.69	9.35	27.04	0.506	33.01	-5.97

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	202	15.41	9.34	24.75	0.299	33.01	-8.26
1880.00	WCDMA1900	н	103	260	15.77	9.27	25.04	0.319	33.01	-7.97
1907.60	WCDMA1900	Н	103	262	14.85	9.24	24.09	0.257	33.01	-8.92

Table 7-6. EIRP (PCS WCDMA)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 57 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 57 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



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

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-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 D01 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 $\geq 2 \times \text{span} / \text{RBW}$
- 5. Detector = Peak
- 6. Trace mode = max hold
- 7. The trace was allowed to stabilize

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 59 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 58 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



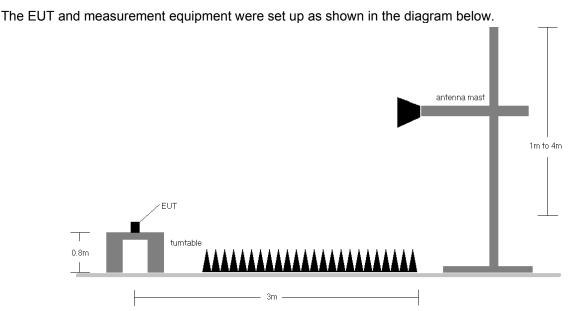


Figure 7-7. Test Instrument & Measurement Setup

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.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 59 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 59 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



OPERATING FREQUENCY:	824.20	824.20				
CHANNEL:	128	_				
MEASURED OUTPUT POWER:	31.04 dBn	n =	1.272	W		
MODULATION SIGNAL:	GSM (GMSK)					
DISTANCE:	3 meter	S				
LIMIT:	43 + 10 log ₁₀ (W) =	44.04	dBc			

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1648.40	Н	112	95	-54.26	5.52	-48.73	79.8
2472.60	Н	100	290	-47.20	6.74	-40.46	71.5
3296.80	Н	-	-	-58.87	7.12	-51.75	82.8

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

OPERATING FREQUENCY:	836	6.60	MHz	
CHANNEL:	1			
MEASURED OUTPUT POWER:	31.23	dBm =	1.327	W
MODULATION SIGNAL:	GSM (GMSK)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	44.23	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	100	192	-50.23	5.33	-44.90	76.1
2509.80	Н	100	295	-45.36	6.79	-38.57	69.8
3346.40	Н	-	-	-58.09	7.08	-51.01	82.2

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 60 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 60 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



OPERATING FREQUENCY:	848	3.80	MHz
CHANNEL:	2	_	
MEASURED OUTPUT POWER:	32.18	dBm =	1.652 W
MODULATION SIGNAL:	GSM (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	45.18	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	100	190	-45.91	5.14	-40.76	72.9
2546.40	Н	100	299	-41.30	6.87	-34.43	66.6
3395.20	Н	-	-	-58.36	7.04	-51.32	83.5

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

OPERATING FREQUENCY:	826	6.40	MHz	
CHANNEL:	41	32		
MEASURED OUTPUT POWER:	17.70	dBm =	0.059	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	30.70	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	-	-	-62.43	5.49	-56.94	74.6
2479.20	V	100	327	-53.40	6.74	-46.66	64.4

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

	FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
	Test Report S/N:	Test Dates:	EUT Type:		Page 61 of 79
	0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Fage 01 01 79
1	© 2016 PCTEST Engineering	Laboratory, Inc.			V 3.3



OPERATING FREQUENCY:	836	6.60	MHz	
CHANNEL:	41			
MEASURED OUTPUT POWER:	17.81	dBm =	0.060 V	N
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	30.81	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	V	-	-	-63.75	5.33	-58.42	76.2
2509.80	V	100	322	-53.41	6.79	-46.62	64.4

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

OPERATING FREQUENCY:	846	6.60	MHz	
CHANNEL:	42	33		
MEASURED OUTPUT POWER:	17.95	dBm =	0.062 V	V
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	30.95	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]
1693.20	V	100	195	-56.30	5.18	-51.12	69.1
2539.80	V	100	270	-52.99	6.86	-46.13	64.1

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 62 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 62 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



OPERATING FREQUENCY:	1712.40	MHz
CHANNEL:	1312	
MEASURED OUTPUT POWER:	dBm =	0.244 W
MODULATION SIGNAL:	WCDMA	
DISTANCE:	3meters	
LIMIT:	43 + 10 log ₁₀ (W) = 36.87	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	100	112	-56.20	9.22	-46.97	70.8
5137.20	Н	-	-	-59.09	10.87	-48.22	72.1

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

OPERATING FREQUENCY:	173	2.60	MHz	
CHANNEL:	14	13	_	
MEASURED OUTPUT POWER:	23.94	dBm =	0.248	W
MODULATION SIGNAL:	WCDMA	_		
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	36.94	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.20	Н	100	108	-56.63	9.28	-47.36	71.2
5197.80	Н	-	-	-58.66	10.81	-47.85	71.7

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 63 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 65 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



OPERATING FREQUENCY:	1752	MHz	
CHANNEL:	15	13	_
MEASURED OUTPUT POWER:	24.65	dBm =	0.292 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	37.65	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	-	-	-56.79	9.34	-47.45	71.3
5257.80	Н	-	-	-58.85	10.79	-48.06	71.9

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

OPERATING FREQUENCY:	185	0.20	MHz
CHANNEL:	5	12	
MEASURED OUTPUT POWER:	31.83	dBm =	1.524 W
MODULATION SIGNAL:	GSM (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	44.83	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3700.40	Н	100	350	-49.60	9.23	-40.37	72.2
5550.60	Н	100	182	-41.30	10.84	-30.46	62.3

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 64 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 64 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



OPERATING FREQUENCY:	1880	0.00	MHz	
CHANNEL:	66			
MEASURED OUTPUT POWER:	31.74	dBm =	1.494	W
MODULATION SIGNAL:	GSM (GMSK)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	44.74	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	100	12	-46.05	9.10	-36.95	68.8
5640.00	Н	100	193	-44.11	10.93	-33.18	65.0
7520.00	Н	-	-	-50.07	10.67	-39.40	71.2

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

OPERATING FREQUENCY:	190	9.80	MHz
CHANNEL:			
MEASURED OUTPUT POWER:	31.00	dBm =	1.259 W
MODULATION SIGNAL:	GSM (GMSK)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	44.00	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	100	0	-43.37	9.03	-34.34	66.2
5729.40	Н	100	180	-46.31	10.96	-35.35	67.2
7639.20	Н	-	-	-50.79	10.85	-39.94	71.8

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 65 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 65 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



OPERATING FREQUENCY:	1852	2.40	MHz	
CHANNEL:	92	62	- -	
MEASURED OUTPUT POWER:	24.75	dBm =	0.299	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	37.75	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	-	-	-56.66	9.22	-47.44	72.2
5557.20	Н	-	-	-57.75	10.85	-46.90	71.7

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

OPERATING FREQUENCY:	18	MHz	
CHANNEL:	9		
MEASURED OUTPUT POWER:	25.04	dBm =	0.319 W
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W)	= 38.04	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	-	-	-55.62	9.10	-46.52	71.3
5640.00	Н	-	-	-57.50	10.93	-46.57	71.3

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 66 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 66 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



OPERATING FREQUENCY:	1907	MHz		
CHANNEL:	95			
MEASURED OUTPUT POWER:	24.09	dBm =	0.257	W
MODULATION SIGNAL:	WCDMA			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log ₁₀ (W) =	37.09	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	-	-	-57.46	9.02	-48.43	73.2
5722.80	Н	-	-	-59.59	10.95	-48.63	73.4
7630.40	Н	100	141	-51.23	10.85	-40.38	65.1

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 67 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 67 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



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

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-C-2004. The frequency stability of the transmitter is measured by:

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

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 68 of 79
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 66 01 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



Frequency Stability / Temperature Variation §2.1055 §22.355

OPERATING FREQUENCY: 836,600,000 Ηz

CHANNEL:

190

3.85

VDC

REFERENCE VOLTAGE:

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,600,296	296	0.0000354
100 %		- 30	836,599,904	-96	-0.0000115
100 %		- 20	836,599,892	-108	-0.0000129
100 %		- 10	836,599,913	-87	-0.0000104
100 %		0	836,600,012	12	0.0000014
100 %		+ 10	836,600,222	222	0.0000265
100 %		+ 20	836,600,188	188	0.0000225
100 %		+ 30	836,599,945	-55	-0.0000066
100 %		+ 40	836,600,370	370	0.0000442
100 %		+ 50	836,599,849	-151	-0.0000180
BATT. ENDPOINT	3.45	+ 20	836,600,068	68	0.0000081

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 60 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 69 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3

12/01/2015



Frequency Stability / Temperature Variation §2.1055 §22.355

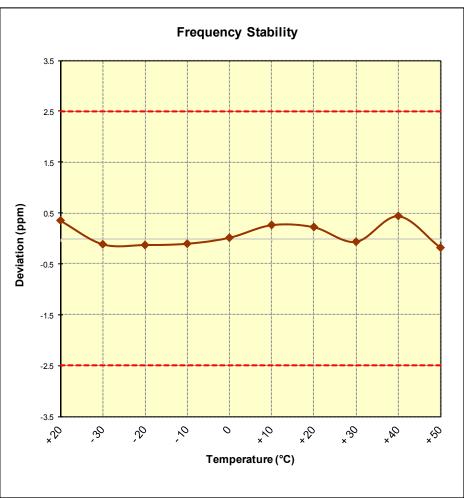


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 70 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 70 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation §2.1055 §22.355

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

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,600,101	101	0.0000121
100 %		- 30	836,600,063	63	0.0000075
100 %		- 20	836,599,906	-94	-0.0000112
100 %		- 10	836,599,907	-93	-0.0000111
100 %		0	836,600,171	171	0.0000204
100 %		+ 10	836,599,550	-450	-0.0000538
100 %		+ 20	836,599,804	-196	-0.0000234
100 %		+ 30	836,600,341	341	0.0000408
100 %		+ 40	836,600,262	262	0.0000313
100 %		+ 50	836,600,014	14	0.0000017
BATT. ENDPOINT	3.45	+ 20	836,600,108	108	0.0000129

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 71 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 71 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3



Frequency Stability / Temperature Variation §2.1055 §22.355

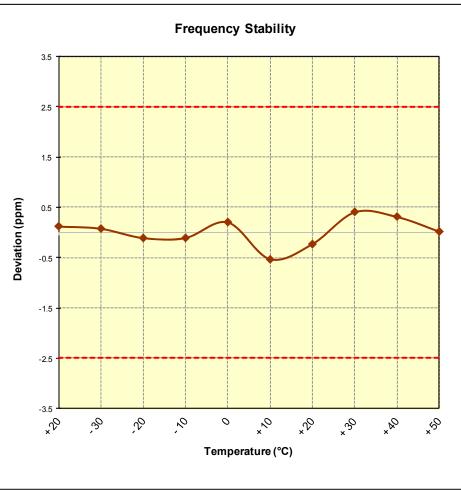


Figure 7-9. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 70 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 72 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,599,898	-102	-0.0000059
100 %		- 30	1,732,599,952	-48	-0.0000028
100 %		- 20	1,732,599,712	-288	-0.0000166
100 %		- 10	1,732,600,017	17	0.0000010
100 %		0	1,732,600,028	28	0.0000016
100 %		+ 10	1,732,599,820	-180	-0.0000104
100 %		+ 20	1,732,600,229	229	0.0000132
100 %		+ 30	1,732,600,183	183	0.0000106
100 %		+ 40	1,732,599,870	-130	-0.0000075
100 %		+ 50	1,732,599,783	-217	-0.0000125
BATT. ENDPOINT	3.45	+ 20	1,732,599,892	-108	-0.0000062

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

Note:

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

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 72 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 73 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation §2.1055 §27.54

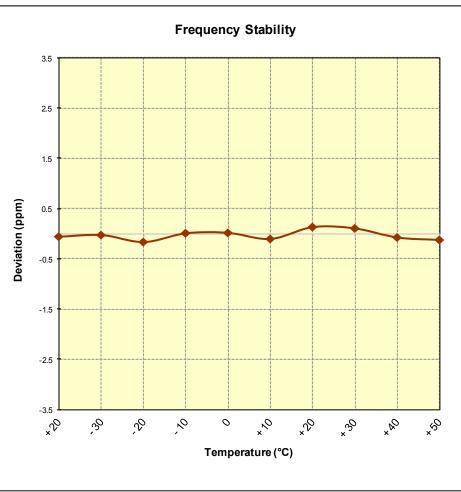


Figure 7-10. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 74 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 74 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation §2.1055 §24.235

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,880,000,030	30	0.0000016
100 %		- 30	1,879,999,922	-78	-0.0000041
100 %		- 20	1,880,000,225	225	0.0000120
100 %		- 10	1,880,000,207	207	0.0000110
100 %		0	1,879,999,822	-178	-0.0000095
100 %		+ 10	1,879,999,819	-181	-0.0000096
100 %		+ 20	1,880,000,148	148	0.0000079
100 %		+ 30	1,880,000,138	138	0.0000073
100 %		+ 40	1,879,999,818	-182	-0.0000097
100 %		+ 50	1,880,000,049	49	0.0000026
BATT. ENDPOINT	3.45	+ 20	1,879,999,980	-20	-0.0000011

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: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 75 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 75 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation §2.1055 §24.235

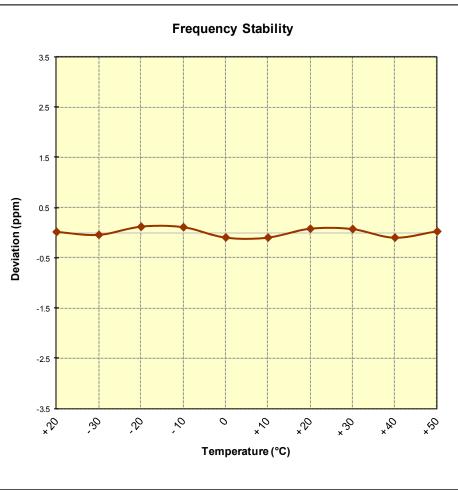


Figure 7-11. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 76 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 76 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,880,000,403	403	0.0000214
100 %		- 30	1,879,999,656	-344	-0.0000183
100 %		- 20	1,880,000,306	306	0.0000163
100 %		- 10	1,879,999,873	-127	-0.000068
100 %		0	1,879,999,798	-202	-0.0000107
100 %		+ 10	1,880,000,191	191	0.0000102
100 %		+ 20	1,880,000,235	235	0.0000125
100 %		+ 30	1,880,000,058	58	0.0000031
100 %		+ 40	1,880,000,028	28	0.0000015
100 %		+ 50	1,879,999,923	-77	-0.0000041
BATT. ENDPOINT	3.45	+ 20	1,880,000,009	9	0.0000005

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: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 77 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 77 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



Frequency Stability / Temperature Variation §2.1055 §24.235

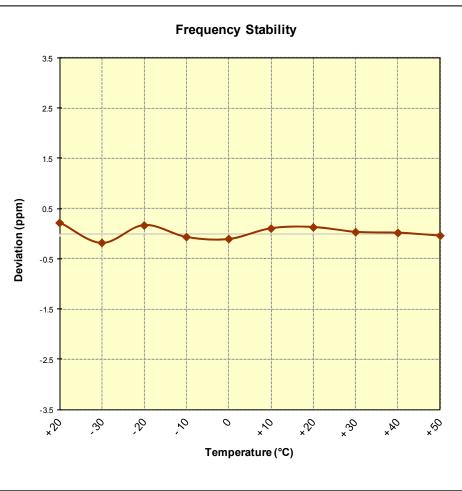


Figure 7-12. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFK550BN	PCTEST	FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 79 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 78 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3 12/01/2015



8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the LG Portable Handset FCC ID: ZNFK550BN complies with all the requirements of Parts 22, 24, & 27 of the FCC rules.

FCC ID: ZNFK550BN		FCC Pt. 22, 24, & 27 GSM/GPRS/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 70 of 70
0Y1604120762.ZNF	3/14 - 5/6/2016	Portable Handset		Page 79 of 79
© 2016 PCTEST Engineering	g Laboratory, Inc.			V 3.3